"THE MATERIAL HEREIN IS FOR INFORMATION PURPOSES ONLY AND IS SUBJECT TO CHANGE WITHOUT NOTICE. DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR ANY ERRORS WHICH MAY APPEAR HEREIN."

FIELD MAINTENANCE PRINT SET

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION."

TABLE OF CONTENTS

B-TC-ETLSI11-Ø-Ø	ET-LSI-11 FIELD MAINTENANCE PRINT SET
D-UA-A6ØØ1-Ø-Ø	(AAV11) 4 CHANNEL D-A
D-CS-A6ØØ1-Ø-1	(AAV11) 4 CHANNEL D-A
C-UA-AØ12-Ø-Ø	(ADV11) A-D FOR 11Ø3
D-CS-AØ12-Ø-1	(ADV11) A-D FOR 11Ø3
D-UA-M8Ø12-Ø-Ø	(BDV11) BOOT TERMINATOR AND DIAGNOSTIC ROM
D-CS-M8Ø12-Ø-1	(BDV11) BOOT-TERMINATOR AND DIAGNOSTIC ROM
D-CS-M794Ø-Ø-1	(DLV11) SERIAL LINE UNIT
D-UA-M8Ø17-Ø-Ø	(DLV11-E) ALI
D-CS-M8Ø17-Ø-1	(DLV11-E) ASYN LINE INTERFACE
D-UA-M8Ø28-Ø-Ø	(DLV11-F) ASYNCHRONOUS LINE INTERFACE
D-CS-M8Ø28-Ø-1	(DLV11-F) ASYN LINE INTERFACE
D-UA-M8Ø43-Ø-Ø	(DLV11-J) 4 SERIAL LINE PER. CTLR
D-EC-5013216-0-0	(DLV11-J) ETCH CUT DRAWING (M8Ø43)
D-CS-M8Ø43-Ø-1	(DLV11-J) 4 SERIAL LINE PER. CTLR
D-UA-5413679-0-0	(DLV11-KA) EIA-TO-2Ø MA CONVERTER
D-CS-5413679-0-1	(DLV11-KA) EIA-TO-2Ø MA CONVERTER
D-CS-M7941-Ø-1	(DRV11) PARALLEL LINE UNIT

UNIT VARIATIONS COVERED BY THIS PRINT SET

ET-LSI-11
Field Maintenance Print Set

Digital Equipment Corporation

FIELD MAINTENANCE PRINT SET
ORDER NO. MPØØ7Ø6

REV. D

SIZE R | CODE TC | ETLSI11-0-0 NUMBER

REVISIONS			
REV.		C	D
CHG. NO.	ORIGINATED	ETLSII-MROOI	
DATE		21 DEC 81	

DRB 124

USED ON OPTION/MODEL	
ET-LSI-11	

SHEET 1 OF 3

DRN.	B.H.	DATE	9OCT78
CHK'D	D.SCHANIN	DATE	12ØCT78
PROJ. ENG.	D.SCHANIN	DATE	12OCT78
FIELD SERV.	G.NEALAND	DATE	12OCT78

digital

TITLE: ET-LSI-11
FIELD MAINTENANCE
PRINT SET

SIZE	CODE	NUMBER	REV.
B	TC	ETLSI11-0-0	D

DIST.

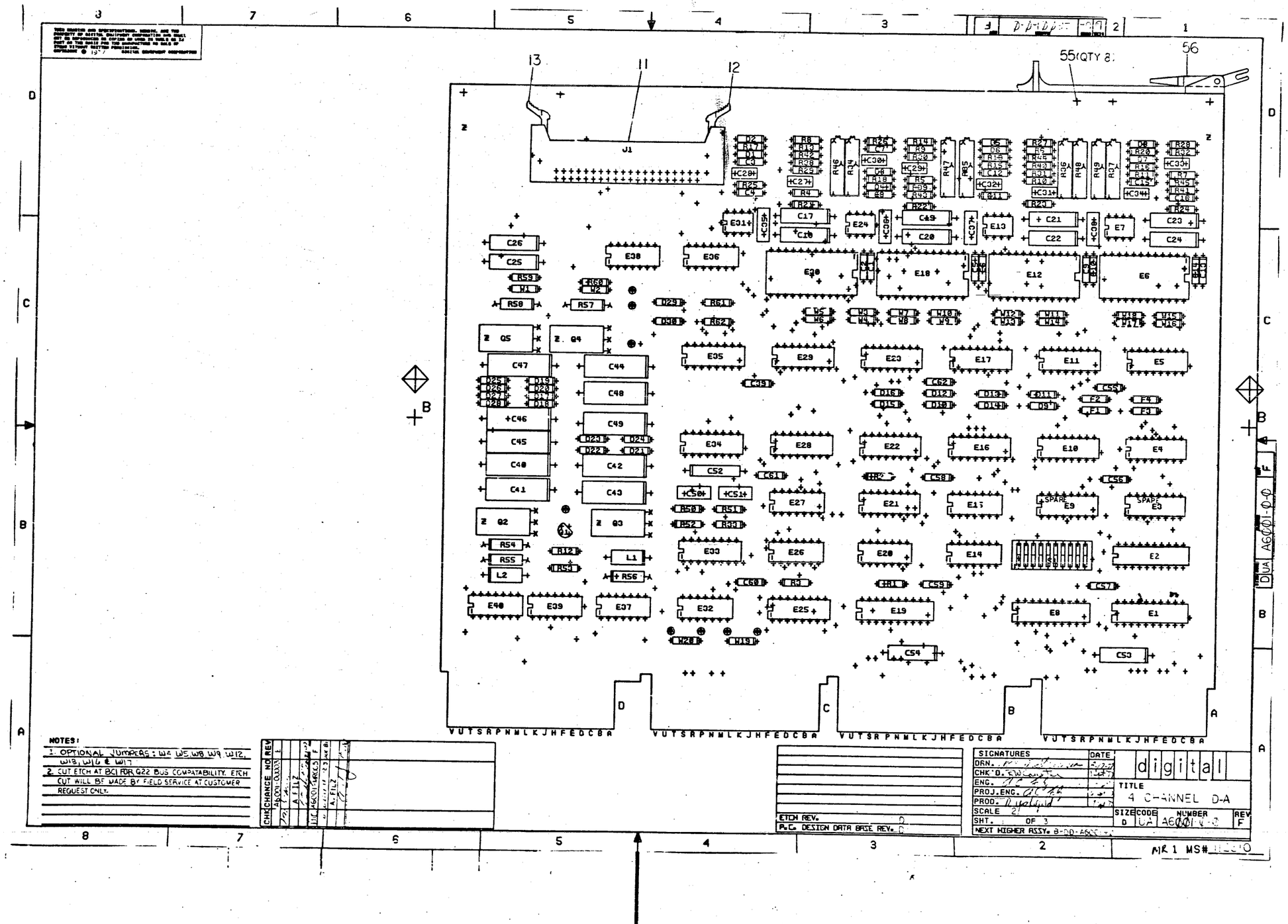
MR

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. 1980
COPYRIGHT © DIGITAL EQUIPMENT CORPORATION"

D-UA-M795Ø-Ø-Ø	(DRV11-B) LSI-11 DMA INTERFACE
D-CS-M795Ø-Ø-1	(DRV11-B) LSI-11 DMA INTERFACE
D-UA-M8Ø49-Ø-Ø	DRV11-J
D-CS-M8Ø49-Ø-1	DRV11-J
D-UA-M7948-Ø-Ø	(DRV11-P) LSI-11 FOUNDATION MODULE
D-CS-M7948-Ø-1	(DRV11-P) LSI-11 FOUNDATION MODULE
D-UA-M7951-Ø-Ø	(DUV11) LSI SYNC INTERFACE BOARD
D-CS-M7951-Ø-1	(DUV11) LSI-11 SYNC INTF
D-UA-M7957-Ø-Ø	(DZV11) ASYN MUX
D-CS-M7957-Ø-1	(DZV11) ASYN MUX
D-UA-M7954-Ø-Ø	(IBV11) LSI INTERFACE
D-CS-M7954-Ø-1	(IBV11) LSI11/IB INTERFACE
D-CS-M7264-Ø-1	(KD11-F) LSI-11 CPU MODULE
D-UA-M727Ø-Ø-Ø	(KD11-HA) LSI-11 CPU
D-EC-5013216-0-0	(KD11-HA) ETCH CUT DRAWING (M727Ø)
D-CS-M727Ø-Ø-1	(KD11-HA) LSI-11 CPU
D-UA-M8186-Ø-Ø	(KDF11-A) KDF11 CPU
D-EC-5013326-0-0	(KDF11-A) ETCH CUT DRAWING (M8186)
D-CS-M8186-Ø-1	(KDF11-A) KDF11-A CPU
D-UA-M8Ø16-Ø-Ø	(KPV11) POWER FAIL TIME CLOCK GEN.
D-CS-M8Ø16-Ø-1	(KPV11) POWER FAIL/LINE TIME CLK GENERATOR
D-UA-M8Ø18-Ø-Ø	(KUV11) WRITEABLE CONTROL STORE
D-CS-M8Ø18-Ø-1	(KUV11) WRITEABLE CONTROL STORE (WCS-LSI-11)
D-UA-M7952-Ø-Ø	(KWV11) PROG REAL TIME CLOCK
D-CS-M7952-Ø-1	(KWV11) PROG REAL TIME CLOCK
D-UA-M8Ø27-Ø-Ø	(LPV11) PRINTER INTERFACE
D-CS-M8Ø27-Ø-1	(LPV11) LPV11 PRINTER INTERFACE
D-CS-G653-Ø-1	MMV11-A 4K x 16 BIT MEMORY
D-CS-M7942-Ø-1	(MRV11-A) 4K/2K PROM
D-UA-M8Ø21-Ø-Ø	(MRV11-B) LSI11 UV PROM RAM
D-CS-M8Ø21-Ø-1	(MRV11-B) LSI11 UV PROM RAM
D-UA-M8Ø48-Ø-Ø	(MRV11-C) LSI11 ROM
D-CS-M8Ø48-Ø-1	(MRV11-C) LSI11 ROM
D-CS-M7944-Ø-1	(MSV11-B) 4K RAM
D-UA-M7955-Ø-Ø	MSV11-C MOS MEMORY, LSI
D-CS-M7955-Ø-1	MSV11-C MOS MEMORY, LSI
D-UA-M8Ø44-Ø-Ø	(MSV11-D) 32K 16 BIT MOS MEMORY
D-CS-M8Ø44-Ø-1	(MSV11-D) 32K 16 BIT MOS MEMORY
D-UA-M8Ø47-Ø-Ø	(MXV11-A) LSI-11 MEM & I/O
D-CS-M8Ø47-Ø-1	(MXV11-A) LSI-11 MEM AND I/O
D-UA-M94ØØ-Ø-Ø	(REV11) LSI REE BOOT CABLE CONN.
D-CS-M94ØØ-Ø-1	(REV11) LSI REF. BOOT CONN.
D-UA-M7269-Ø-Ø	(RKV11-D) RKV11 CONTROL
D-CS-M7269-Ø-1	(RKV11-D) RKV11-D CONTROL
D-UA-M8Ø14-Ø-Ø	RLV11 BUS CONTROL
D-UA-M8Ø13-Ø-Ø	RLV11 DISK CONTROL
D-CS-M8Ø14-Ø-1	RLV11 BUS CONTROL
D-CS-M8Ø13-Ø-1	RLV11 DISK CONTROL
D-CS-M7946-Ø-1	RXV11 LSI 11 INTERFACE
D-UA-M8Ø29-Ø-Ø	RXV21 LSI11 RXØ2 CONTROLLER
D-EC-5013080-0-0	(RXV21) ETCH CUT DRAWING (M8Ø29)
D-CS-M8Ø29-Ø-1	RXV21 LSI11 CONTROLLER
E-UA-5413489-0-0	(TU58) SERIAL TU58
D-CS-5413489-0-1	(TU58) TU58 ELECTRONICS:SERIAL
D-UA-M7142-Ø-Ø	VK17Ø SERIAL VIDEO BOARD
D-CS-M7142-Ø-1	VK17Ø SERIAL VIDEO MODULE

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. 1981
COPYRIGHT © DIGITAL EQUIPMENT CORPORATION"

D-UA-M8Ø2Ø-Ø-Ø	DPV11 (SYNC INTERFACE BOARD)
D-EC-5013326-0-0	(DPV11) ETCH CUT DRAWING (M8Ø2Ø)
D-CS-M8Ø2Ø-Ø-1	DPV11 LOGIC DIAGRAM
D-UA-M8188-Ø-Ø	FPF-11 (FLOATING POINT FOR LSI-11/23)
D-EC-5014348-0-0	(FPF11) ETCH CUT DRAWING (M8188)
D-CS-M8188-Ø-FPF1	(FPF11) CONTROL STORE
D-CS-M8188-Ø-FPF2	(FPF11) BYTES Ø & 7
D-CS-M8188-Ø-FPF3	(FPF11) BYTES 2 & 1
D-CS-M8188-Ø-FPF4	(FPF11) BYTES 4 & 3
D-CS-M8188-Ø-FPF5	(FPF11) BYTES 6 & 5
D-CS-M8188-Ø-FPF6	(FPF11) NADRS SEQUENCER
D-CS-M8188-Ø-FPF7	(FPF11) MIB INTERFACE
D-CS-M8188-Ø-FPF8	(FPF11) DAL INTERFACE
D-CS-M8188-Ø-FPF9	(FPF11) RESTE, CSEL, MIB & DAL ENA LOGIC
D-CS-M8188-Ø-FPFA	(FPF11) T-BUS RESOURCES
D-CS-M8188-Ø-FPFB	(FPF11) MISC. SLICE LOGIC
D-CS-M8188-Ø-FPFC	(FPF11) CAP DRAW
D-UA-M8Ø63-Ø-Ø	KXT11-AA (SINGLE BOARD COMPUTER)
D-EC-5014484-0-0	(KXT11-AA) ETCH CUT DRAWING (M8Ø63)
D-CS-M8Ø63-Ø-KXT1	KXT11-AA CPU
D-CS-M8Ø63-Ø-KXT2	KXT11-AA CLOCK CONTROL
D-CS-M8Ø63-Ø-KXT3	KXT11-AA BUS CONTROL
D-CS-M8Ø63-Ø-KXT4	KXT11-AA BUS I/O
D-CS-M8Ø63-Ø-KXT5	KXT11-AA MEMORY
D-CS-M8Ø63-Ø-KXT6	KXT11-AA SERIAL I/O
D-CS-M8Ø63-Ø-KXT7	KXT11-AA PARALLEL I/O
D-UA-M8Ø59-Ø-Ø	(MSV11-L) 128K PAR/CSR MOS MEM
D-EC-5014144-0-0	(MSV11-L) ETCH CUT DRAWING (M8Ø59)
D-CS-M8Ø59-Ø-1	(MSV11-L) 128K PAR/CSR MOS MEM


J1
13
11
12
55 (QTY 8)
56
E1
E2
E3
E4
E5
E6
E7
E8
E9
E10
E11
E12
E13
E14
E15
E16
E17
E18
E19
E20
E21
E22
E23
E24
E25
E26
E27
E28
E29
E30
E31
E32
E33
E34
E35
E36
E37
E38
E39
E40
Q1
Q2
Q3
Q4
Q5
L1
L2
SPARE
SPARE
NOTES:
1. OPTIONAL JUMPERS: W4 W5 W8 W9 W12, W13, W16 & W17
2. CUT ETCH AT BCI FOR G22 BUS COMPATABILITY. ETCH CUT WILL BE MADE BY FIELD SERVICE AT CUSTOMER REQUEST ONLY.
CHG
CHANGE NO
REV
ETCH REV.
P.C. DESIGN DATA BASE REV.
SIGNATURES
DATE
DRN.
CHK'D.
ENG.
PROJ.ENG.
PROD.
SCALE 2/
SHT. OF 3
NEXT HIGHER ASSY. B-DD-A6001-0-0
digital
TITLE
4 CHANNEL D-A
SIZE
D
CODE
UA
NUMBER
A6001-0-0
REV
F
DUA A6001-0-0
MR 1 MS#

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

L1

MS30285 A6001 5012107 DP4

CS*ABCDEFHJKLMNPRS

SIDE 1

digital

J1

W20

W19

A V V A V A V A

D C B A

SEE NOTE 2

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
4 CHANNEL D-A	D	UA	A6001-0-0	F
SCALE 2/1 SHEET 2 OF 3	DIST			

MP-1

DUAA6001-0-0 F

THIS DRAWING AND SPECIFICATION, HEREIN, IS THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1 DIGITAL EQUIPMENT CORPORATION

L2

SIDE 1

CSXABCDEFHJKLMNPRS

MS30285 A6001 5012107 DP4

4 CHANNEL D-A SIDE 2

A B C D

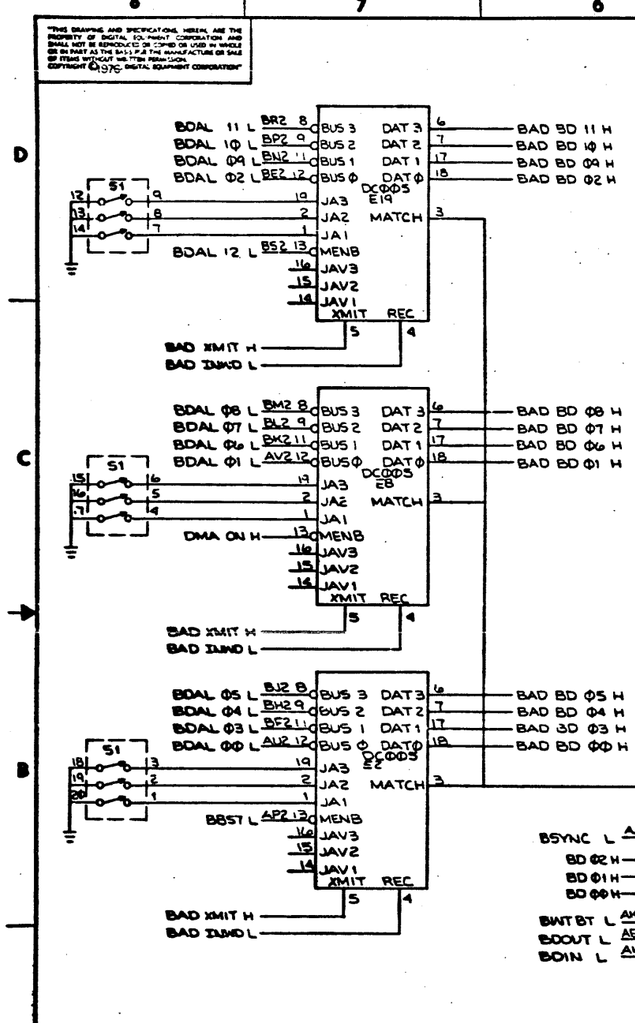
REVISIONS		
CHK	CHANGE NO	REV

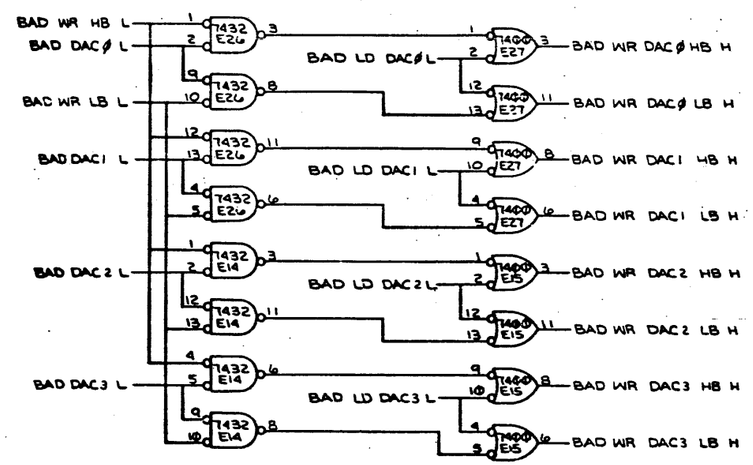
TITLE	SIZE	CODE	NUMBER	REV.
4 CHANNEL D-A	D	UA	A6001-0-0	F
SCALE 3/1 SHEET 3 OF 3	DIST.			

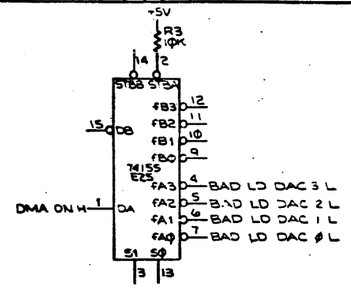
DWG SIZE D UA A6001-0-0 REV F

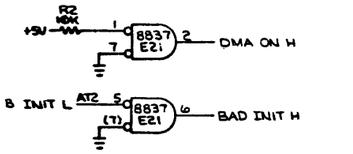
MR

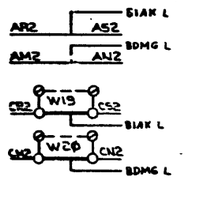
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

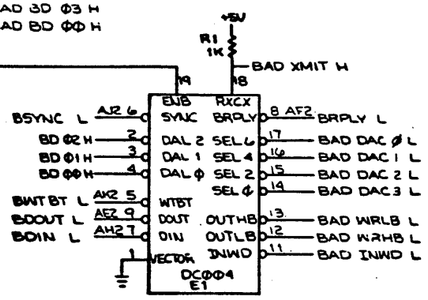


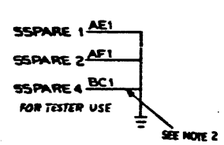




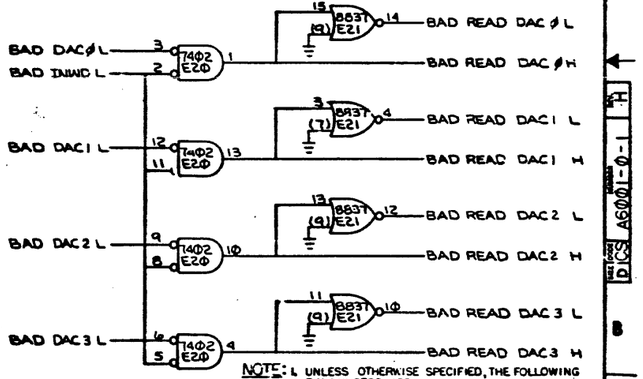






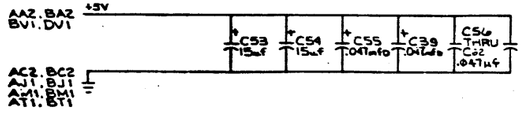


NOTES:
2. CUT ETCH AT BC1 FOR Q22 BUS COMPACABILITY. ETCH CUT WILL BE MADE BY FIELD SERVICE AT CUSTOMER REQUEST ONLY.



NOTE: 1. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:

PACKAGE TYPE	VCC	GND	-VCC
16 PIN DIP	16	8	-
14 PIN DIP	14	7	-
DEC DCΦ4	18	9	-
DEC DCΦΦ5	20	10	-
2505	7	-	4
AD27ΦΦ	3	7	-



BUS & ADDRESS & DATA

REVISIONS			
DWR	CHANGE NO.	REV.	
	ORIGINAL	Ø	
	A6001-00001	L	
	A6001-00002	M	
	A6001-00003	N	
	A6001-00004	P	
	A6001-00005	R	
	A6001-00006	S	
	A6001-00007	T	
	A6001-00008	U	
	A6001-00009	V	
	A6001-00010	W	
	A6001-00011	X	
	A6001-00012	Y	
	A6001-00013	Z	
	A6001-00014	A	
	A6001-00015	B	
	A6001-00016	C	
	A6001-00017	D	
	A6001-00018	E	
	A6001-00019	F	
	A6001-00020	G	
	A6001-00021	H	

DRWR		FIRST USED ON
CHK'D		
ENG.		digital
PROJ. ENG.		TITLE
PROD.		4 CHANNEL D-A (BAD)
NEXT HIGHER ASSY.		
B-DD-AFΦΦ1-Ø		SIZE D CODE DCS NUMBER A6001-Ø-1 REV. H
SCALE		DIST.
SHEET 1 OF 4		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

NOTES
1. * DENOTES FUSIBLE RESISTOR

DAC Ø	VOLTAGE	DAC 1
W3 IN	±2.56V	W7 IN
W4 OUT		W8 OUT
W5 IN		W9 IN
W6 IN		W10 IN
W3 IN	±5.12V	W7 IN
W4 OUT		W8 OUT
W5 OUT		W9 OUT
W6 IN		W10 IN
W3 OUT	±10.24V	W7 OUT
W4 IN		W8 IN
W5 OUT		W9 OUT
W6 IN		W10 IN
W3 IN	Ø→+5.12V	W7 IN
W4 OUT		W8 OUT
W5 IN		W9 IN
W6 OUT		W10 OUT
W3 IN	Ø→10.24V	W7 IN
W4 OUT		W8 OUT
W5 OUT		W9 OUT
W6 OUT		W10 OUT

NOTES: 2. WHEN ADJUSTING FOR ±2.56 VOLTS BIPOLAR OR Ø→+5.12 VOLTS UNIPOLAR, REMOVE R21 OR R22 OF DACØ OR DAC1 RESPECTIVELY TO OBTAIN DESIRED RANGES AND REPLACE WITH JUMPER.

DACØ & DAC1

REVISIONS		
ONE	CHANGE NO.	REV.

TITLE: 4 CHANNEL D-A (DAD)		SIZE: D	CODE: CS	NUMBER: A6001-0-1	REV: H
SCALE	SHEET 2 OF 4	DIST.			

DCS A6001-0-1 H

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

NOTES

1. ✱ DENOTES FUSIBLE RESISTOR

DAC 2	VOLTAGE	DAC 3
W11 IN W12 OUT W13 IN W14 IN	±2.56V	W15 IN W16 OUT W17 IN W18 IN
W11 IN W12 OUT W13 OUT W14 IN	±5.12V	W15 IN W16 OUT W17 OUT W18 IN
W11 OUT W12 IN W13 OUT W14 IN	±10.24V	W15 OUT W16 IN W17 OUT W18 IN
W11 IN W12 OUT W13 IN W14 OUT	0→+5.12V	W15 IN W16 OUT W17 IN W18 OUT
W11 IN W12 OUT W13 OUT W14 OUT	0→10.24V	W15 IN W16 OUT W17 OUT W18 OUT

NOTES: 2. WHEN ADJUSTING FOR ±2.56 VOLTS BIPOLAR OR 0→+5.12 VOLTS UNIPOLAR, REMOVE R23 OR R24 OF DAC2 OR DAC3 RESPECTIVELY TO OBTAIN DESIRED RANGES AND REPLACE WITH JUMPER.

DAC2 & DAC3

REVISIONS		
ECO	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
4 CHANNEL D-A. (DAY)	D	CS	A6001-0-1	H
SCALE	SHEET 3 OF 4	DIST.		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 19?? DIGITAL EQUIPMENT CORPORATION"

NOTES:
1. ✱ DENOTES FUSIBLE RESISTOR

AD2, BD2 +12V
PWR SW A L
PWR SW B L
+5V
+20V
-20V
+3V0
PWR +15V
PWR -15V
LM325N1 E36
7404 E37
7410 E39
7493 E32
74123 E33
TP1
TP2
TP3
TP4
W1
W2
REF

J1

DAD DAC1 HQ GND	DAY BIT 3 OUT
DAY DAC2 HQ GND	DAY BIT 2 OUT
DAY DAC3 HQ GND	DAY BIT 1 OUT
PWR -15T	DAY BIT Φ OUT
PWR +15T	DAY DAC3 OUT
DAD DACΦ HQ GND	DAY DAC2 OUT
	DAD DAC1 OUT
	DAD DACΦ OUT

POWER SUPPLY

REVISIONS		
CHK	CHANGE NO	REV.

TITLE: 4 CHANNEL D-A (PWR)	SIZE: D	CODE: CS	NUMBER: A6001-0-1	REV: H
SCALE: —	SHEET 4 OF 4	DIST.		

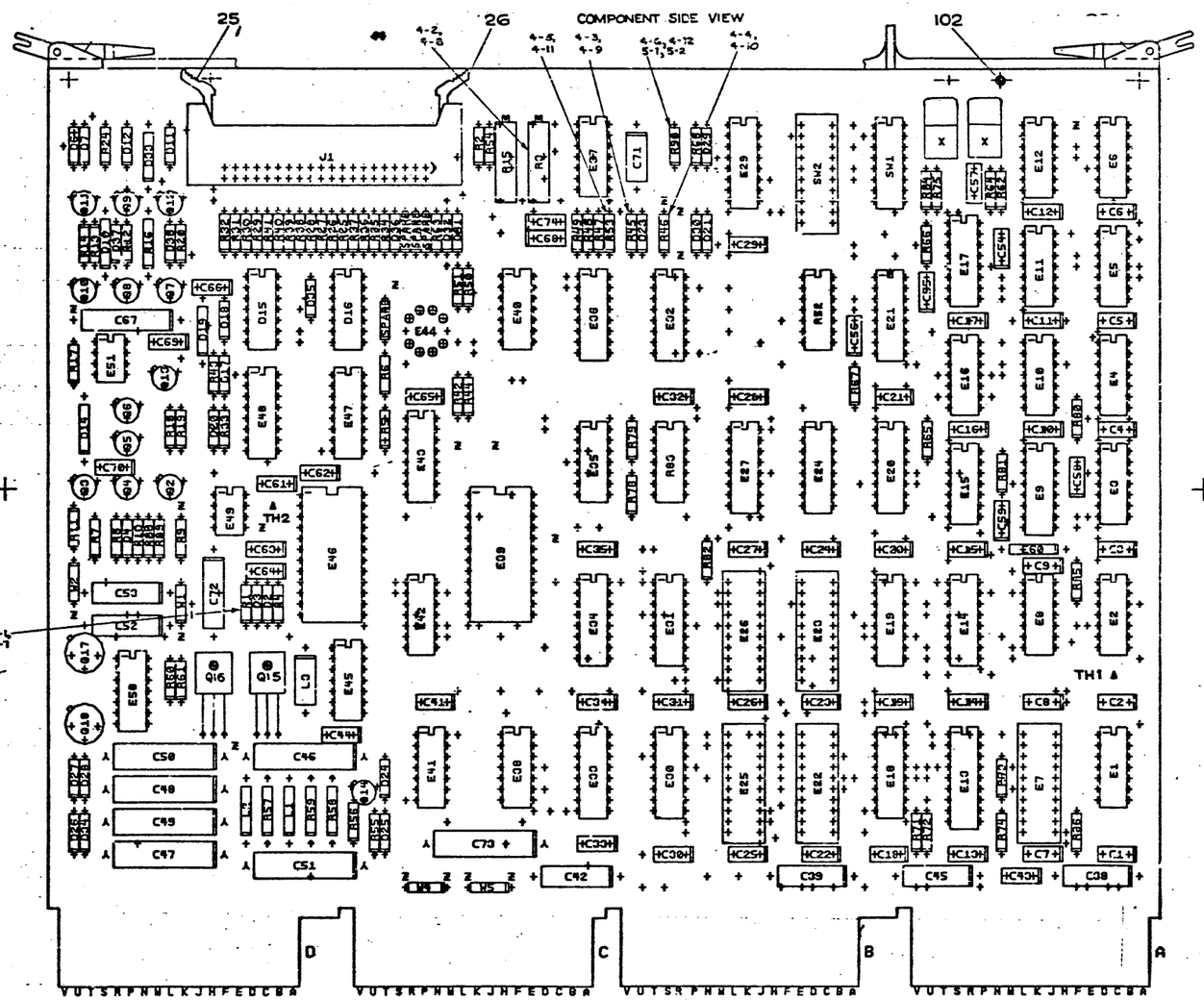
THIS DRAWING AND SPECIFICATIONS, EITHER THIS PROPERTY OF & ALL RIGHTS IN SAME ARE RESERVED. NOT TO BE COPIED OR USED IN WHOLE OR IN PART OR DISCLOSED TO OTHERS FOR ANY PURPOSE EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING BY DIGITAL EQUIPMENT CORPORATION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION

REWORK INSTRUCTIONS
ECO #4

COMPONENT DELETES SIDE 1:
4-1. R1 (P/N 1302957)
4-2. R3 (P/N 1309143-04)
4-3. R45 (P/N 1302391)
4-4. R46 (P/N 1309479)
4-5. R53 (P/N 1304891)
4-6. R9Ø (P/N 1302396)

COMPONENT ADDS SIDE 1:
4-7. R1 (P/N 1303038)
4-8. R3 (P/N 1309143-05)
4-9. R45 (P/N 1305418)
4-10. R46 (P/N 1303311)
4-11. R53 (P/N 1302396)
4-12. R9Ø (P/N 1305425)

ECO #5
COMPONENT DELETES SIDE 1:
5-1. R9Ø (P/N 1305425).
COMPONENT ADDS SIDE 1:
5-2. R9Ø (P/N 1315012).



NOTES: 1. CUT ETCH AT BCI FOR Q22 BUS COMPATABILITY. ETCH CUT WILL BE MADE BY FIELD SERVICE AT CUSTOMER REQUEST ONLY.

CHG/CHANGE NO.	REV
1-2 AØ12-212A	E
	D
	C
	B
	A

SIGNATURES	DATE
DRN. J. CARTER	4-12-77
CHK'D.	4-14-77
ENG.	4-14-77
PROJ. ENG.	4-14-77
PROJ.	

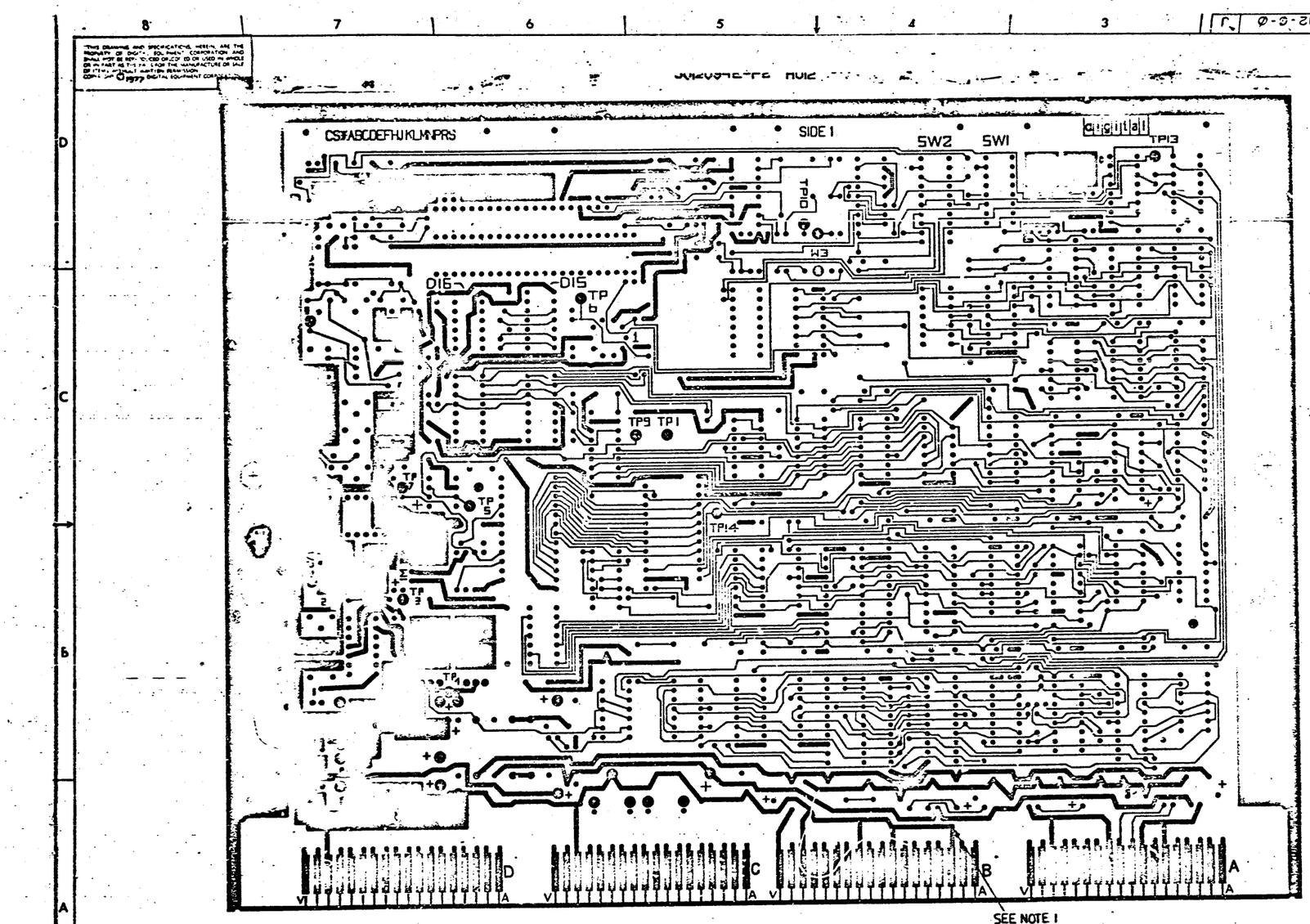
ETCH REV. E
P.C. DESIGN DATA BASE REV. E-P2

digital

TITLE: A-D FOR i103

SCALE 2/1 | SIZE D | CODE UA | NUMBER AØ12-0-0 | REV J
SHT. 1 OF 3
NEXT HIGHER ASSY. B-DD-AØ12-Ø

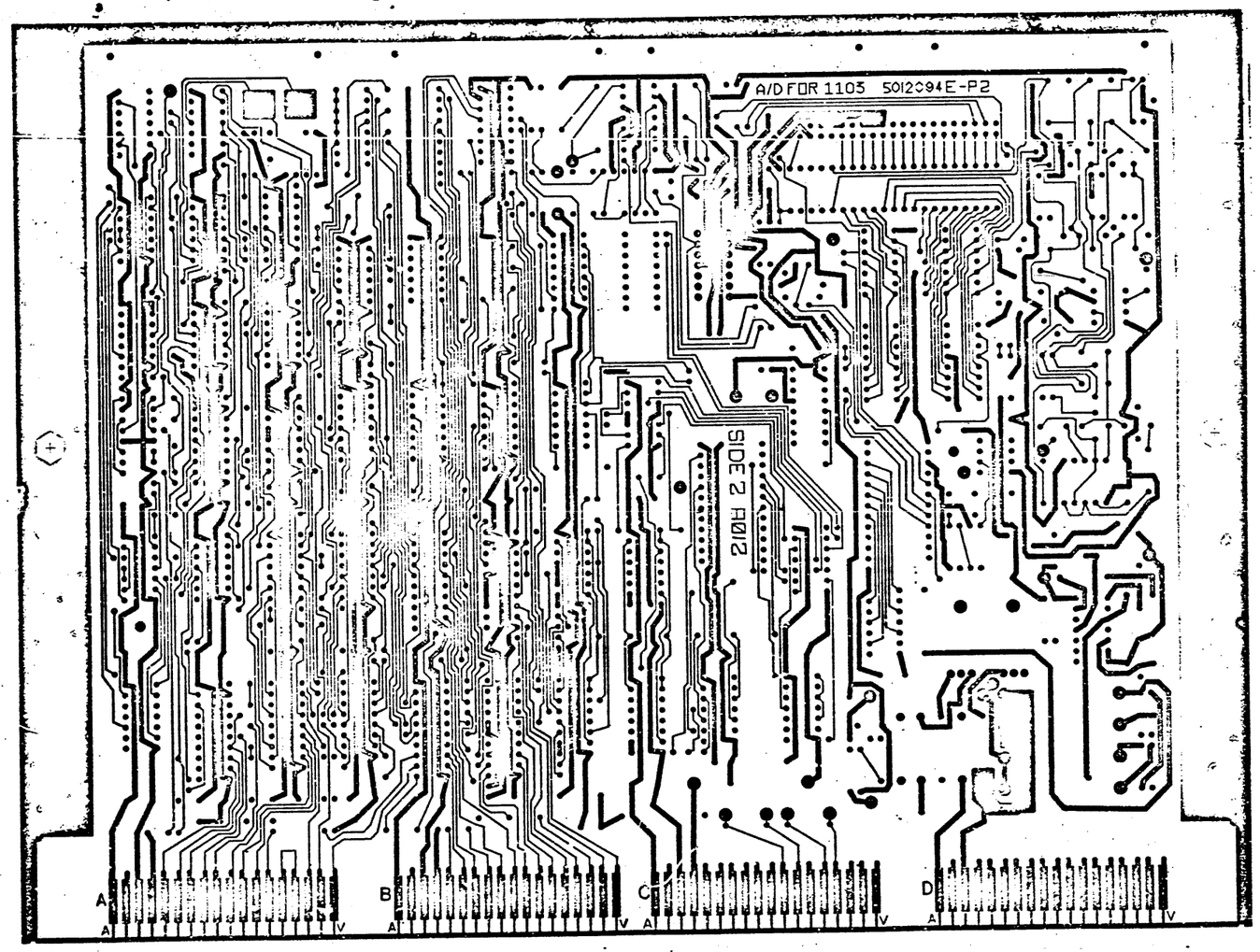
MS# MR



REVISIONS		
CHG	EXCHANGE NO.	REV.

| | | |

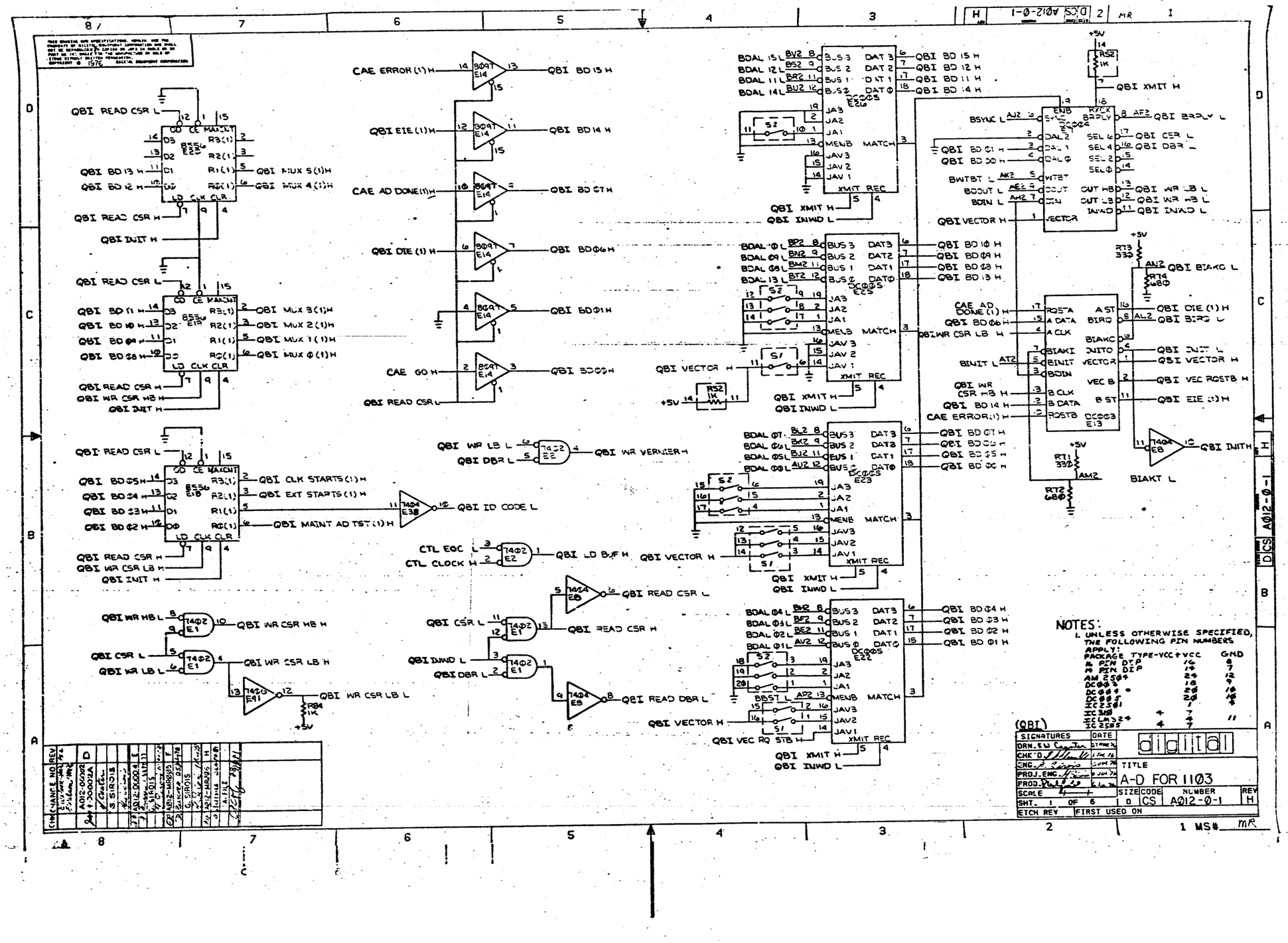
THIS DRAWING AND SPECIFICATION, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS IT IS NOT TO BE LOANED, PATENTED OR SOLD WITHOUT THE WRITTEN PERMISSION OF DIGITAL EQUIPMENT CORPORATION.
©1977 DIGITAL EQUIPMENT CORPORATION



REVISIONS		
CHR	CHANGE NO.	REV

TITLE: A-D FOR 1103		SIZE: D	CODE: UA	NUMBER: A012-0-0
SCALE: 2/1	SHEET 3 OF 3	DIST		REV: J

DWG A012-0-0 J


QBI READ CSR L
QBI BD 13 H
QBI BD 12 H
QBI READ CSR H
QBI INIT H
QBI MUX 5(1)H
QBI MUX 4(1)H
QBI BD 11 H
QBI BD 10 H
QBI BD 09 H
QBI BD 08 H
QBI MUX 3(1)H
QBI MUX 2(1)H
QBI MUX 1(1)H
QBI MUX 0(1)H
QBI WR CSR HB H
QBI WR CSR LB H
CAE ERROR(1)H
QBI EIE(1)H
CAE AD DONE(1)H
QBI DIE(1)H
CAE GO H
QBI READ CSR L
QBI BD 15 H
QBI BD 14 H
QBI BD 07 H
QBI BD 06 H
QBI BD 01 H
QBI BD 00 H
QBI WR LB L
QBI DBR L
QBI WR VERNIER H
QBI BD 05 H
QBI BD 04 H
QBI BD 03 H
QBI BD 02 H
QBI CLK STARTS(1) H
QBI EXT STARTS(1) H
QBI MAINT AD TST(1) H
QBI ID CODE L
CTL EOC L
CTL CLOCK H
QBI LD BUF H
QBI CSR L
QBI INWD L
QBI READ DBR L
QBI WR CSR LB L
QBI VECTOR H
QBI XMIT H
QBI INWD L
QBI BD 10 H
QBI BD 09 H
QBI BD 08 H
QBI BD 03 H
QBI BD 02 H
QBI BD 01 H
QBI BD 00 H
QBI XMIT L
QBI BRPLY L
QBI CSR L
QBI DBR L
QBI WR LB L
QBI WR HB L
QBI INAD L
QBI VECTOR H
QBI BIAKO L
QBI DIE(1) H
QBI BIRQ L
QBI INIT L
QBI VECTOR H
QBI VEC RQSTB H
QBI EIE(1)H
QBI INITH
BIAKT L
QBI WR CSR HB H
QBI WR CSR LB H
QBI READ CSR H
QBI READ DBR L
QBI VEC RQ STB H
CAE ERROR(1)H
QBI WR CSR H
QBI WR CSR LB H
QBI INIT H
QBI BD 14 H
QBI BD 13 H
QBI BD 12 H
QBI BD 11 H
QBI BD 10 H
QBI BD 09 H
QBI BD 08 H
QBI BD 07 H
QBI BD 06 H
QBI BD 05 H
QBI BD 04 H
QBI BD 03 H
QBI BD 02 H
QBI BD 01 H
QBI BD 00 H
BSYNC L
BWTBT L
BDOUT L
BDIN L
BBS7 L
BIAKI L
BINIT L
BDIN
BIAKO
BSYNC
BWTBT
BDOUT
BDIN
BINIT
BBS7
BIAKI
BIAKO
+5V
NOTES:
1. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:
PACKAGE TYPE-VCC +VCC GND
16 PIN DIP 16 8
14 PIN DIP 14 7
AM 2504 24 12
DC003 20 10
DC004 • 24 12
DC005 24 12
IC2501 7 4
IC3N8 7 11
IC2585 4 7
(QBI)
SIGNATURES DATE
DRN. E.W. Cox Jan
CHK'D. Allen W. Jan 16
ENG. R. Sirois Jan 26
PROJ. ENG. Jan 26
PROD. Jan 26
SCALE 4
SHT. 1 OF 6
ETCH REV
FIRST USED ON
digital
TITLE
A-D FOR 1103
SIZE D CODE CS NUMBER A012-0-1 REV H
1 MS# MR
CHK CHANGE NO REV
A012-0002A
A012-0003A
A012-MR005
A012-MR006
A012-MR007
A012-MR008
A012-MR009
A012-MR010
A012-MR011
A012-MR012
A012-MR013
A012-MR014
A012-MR015
A012-MR016
A012-MR017
A012-MR018
A012-MR019
A012-MR020
A012-MR021
A012-MR022
A012-MR023
A012-MR024
A012-MR025
A012-MR026
A012-MR027
A012-MR028
A012-MR029
A012-MR030
A012-MR031
A012-MR032
A012-MR033
A012-MR034
A012-MR035
A012-MR036
A012-MR037
A012-MR038
A012-MR039
A012-MR040
A012-MR041
A012-MR042
A012-MR043
A012-MR044

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION

CAE DEL HOLD H
CTL CLOCK H
7450 E6
CTL CLOCK L
+3V
CAE HOLD Ø L
TPH ØTPTR
TP:3 ØTPC
ADC COMP H
7401 E15
7404 E8
QBI MAINT AD TST (1) H
QBI MUX Ø (1) H
R92 1K
+5V
AM2504 SAR E39
MSB
LSB
CC
CTL SAR 11 H
CTL SAR 11 L
CTL SAR Ø0 L
CTL SAR Ø9 L
CTL SAR Ø8 L
CTL SAR Ø7 L
CTL SAR Ø6 L
CTL SAR Ø5 L
CTL SAR Ø4 L
CTL SAR Ø3 L
CTL SAR Ø2 L
CTL SAR Ø1 L
CTL SAR ØØ L
CTL EOC L
R78 1K
QBI READ DBR L
QBI LD BUF H
QBI ID CODE L
DATA ENA 74173 E31
OUT CONT
CLK CLR
R3(1) QBI BD 15 H
R2(1) QBI BD 14 H
R1(1) QBI BD 13 H
RØ(1) QBI BD 12 H
DATA ENA 74173 E39
QBI BD 11 H
QBI BD 10 H
QBI BD Ø9 H
QBI BD Ø8 H
DATA ENA 74173 E34
QBI BD Ø7 H
QBI BD Ø6 H
QBI BD Ø5 H
QBI BD Ø4 H
DATA ENA 74173 E38
QBI BD Ø3 H
QBI BD Ø2 H
QBI BD Ø1 H
QBI BD ØØ H
QBI INIT H
+5V
R86 1K
AL1
AK1
T3 74LS221 E9
T2 74LS221 E9
C58 22Ø pF
C59 22Ø pF
R87 681
R91 6.8K
C60 1 µF
R85 2K
CTL CLOCK H
CTL CLOCK L
R83 1K
QBI BD Ø7 H
QBI BD Ø6 H
QBI BD Ø5 H
QBI BD Ø4 H
CAE AZT L
QBI WR VERNIER H
QBI INIT H
DATA ENA 74173 E24
DATA ENA 74173 E27
CTL VDAC Ø7 H
CTL VDAC Ø6 H
CTL VDAC Ø5 H
CTL VDAC Ø4 H
CTL VDAC Ø3 H
CTL VDAC Ø2 H
CTL VDAC Ø1 H
CTL VDAC ØØ H
OUT CONT
CLK CLR

REVISIONS		
ECN	CHANGE NO	REV

TITLE	A-D FOR 11Ø3				
SIZE	CODE	NUMBER		REV.	
D	CS	A012-Ø-1		4	
SCALE		SHEET 2 OF 6	DIST.		

(CTL)

DCS A012-Ø-1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

CAE PRG GO L
CAE HOLD(1) L
CAE GO H
EXT ST L (SEE NOTE 2)
ST1 L
CLKOV L
QBI LD BUF H
QBI INIT L
READ QBI DBR L
CAE AD DONE(1) H
CAE AZT L
CAE HOLD(1) L
CAE ERROR C L
CAE TRANS INTRVL L
CAE ERROR B H
QBI EXT STARTS(1) H
QBI CLK STARTS(1) H
QBI MUX 5(1) H
QBI MUX 4(1) H
QBI MUX 3(1) H
QBI MUX 2(1) H
QBI MUX 1(1) H
QBI MUX Ø(1) H
CAE A3 H
CAE A2 H
CAE A1 H
CAE AØ H
QBI WR CSR LB L
QBI BDØØ H
QBI INIT L
CAE DEL HOLD H
CRE HOLD(1) H
CAE HOLD(1) L
CAE HOLD(Ø) L
CAE ERROR A+C(1) H
CAE PRG GO L
CAE TRANS INTRVL L
CTL EOC L
Q2IINIT L
CAE ERROR(1) L
CAE HOLD(1) L
CAE ERROR A+C(1) H
CAE ERROR B H
CAE SET ERROR L
QBI BD 15 H
QBI WR CSR HB H
CAE ERROR(1) H
CAE ERROR(1) L
CAE HOLD(1) H
CAE ZC DELAY H
QBI WR CSR HB H
CAE DEL HOLD H
CAE HOLD(1) L
CAE AZT L
CAE AZT L
SE L
CAE A3 H
CAE A2 H
CAE AMUX BIT 2 H
CAE BMUX BIT 2 H
CAE EN BMUX H
CAE EN AMUX H
CAE ADZC L
CAE ZC DELAY H

NOTES:
2. MUST BE PULSE LESS THAN 10usec

(CAE)

REVISIONS		
CHK	CHANGE NO.	REV.

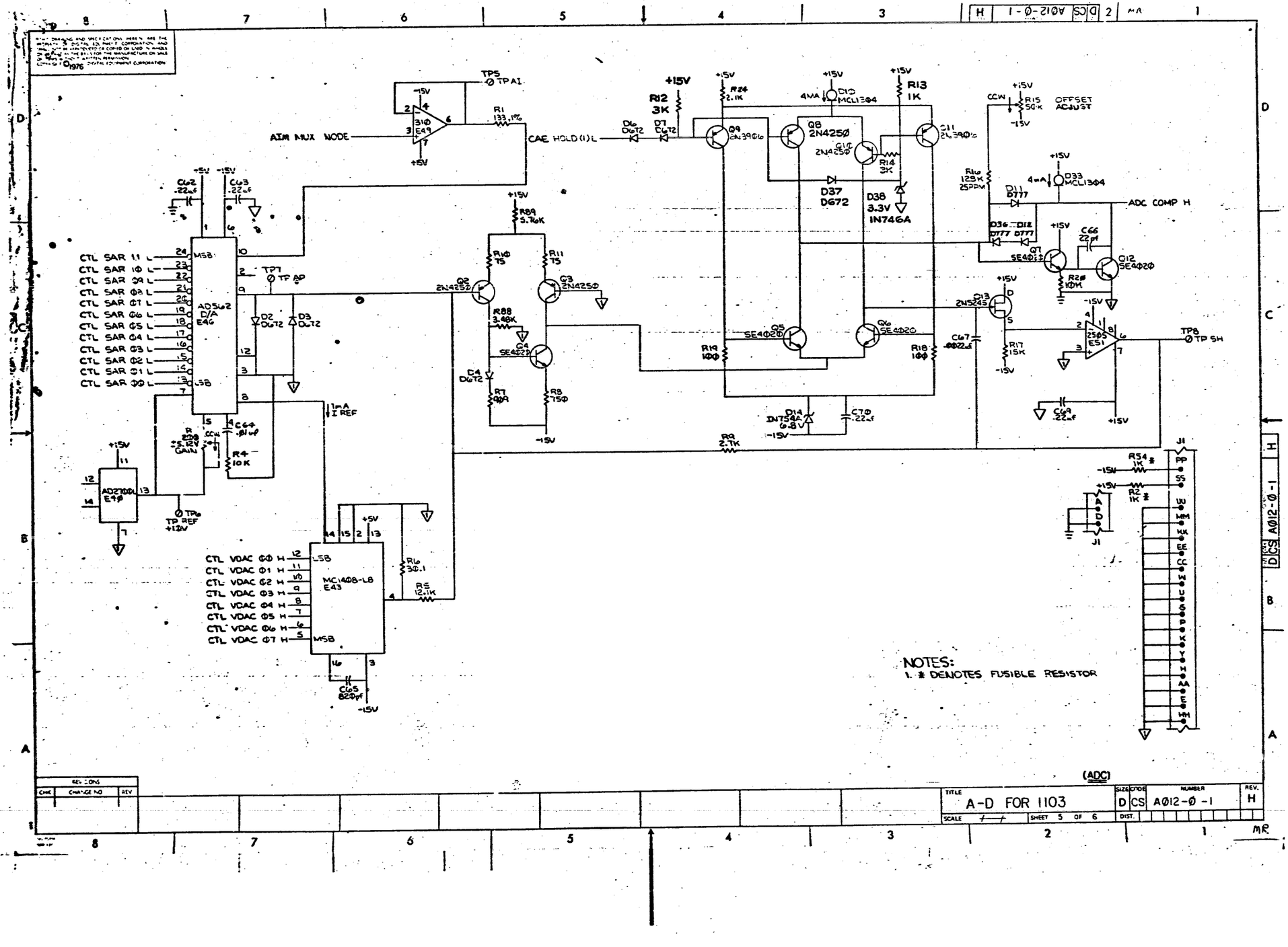
TITLE	SIZE	CODE	NUMBER	REV.
A-D FOR 1103	D	CS	AØ12-Ø-1	R
SCALE —	SHEET 3 OF 6	DIST.		

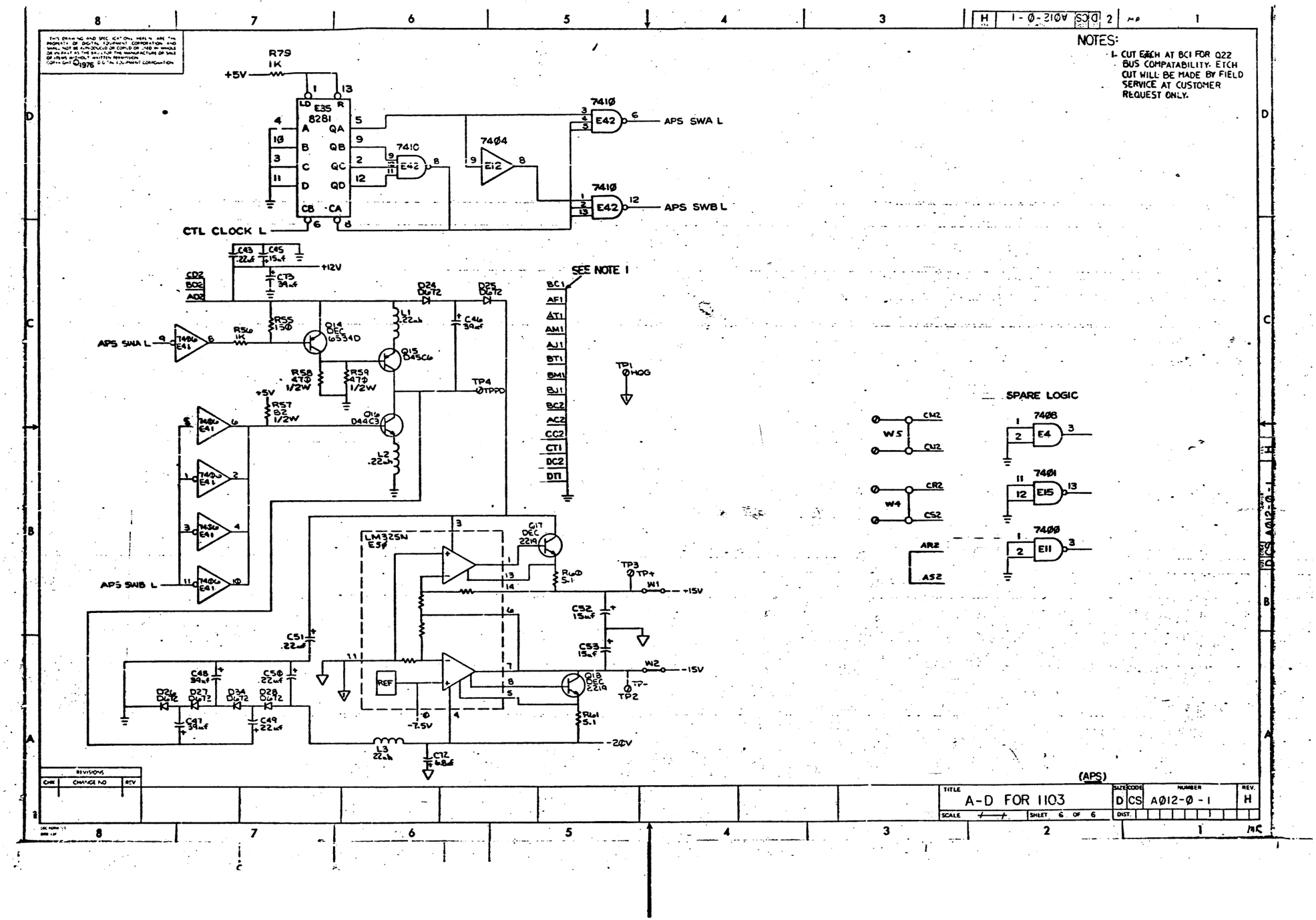
THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN PART OR IN WHOLE WITHOUT THE PERMISSION OF DIGITAL EQUIPMENT CORPORATION. COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION

CAE AMUX B.T 2 H
CAE A1 H
CAE AØ H
CAE EN AMUX H
CAE ADZC L
TP9 TPWN
AIM MUX MODE
CAE EN BMUX H
CAE BMUX BIT 2 H
CAE A1 H
CAE AØ H
RAMP
+4.5V
-4.5K

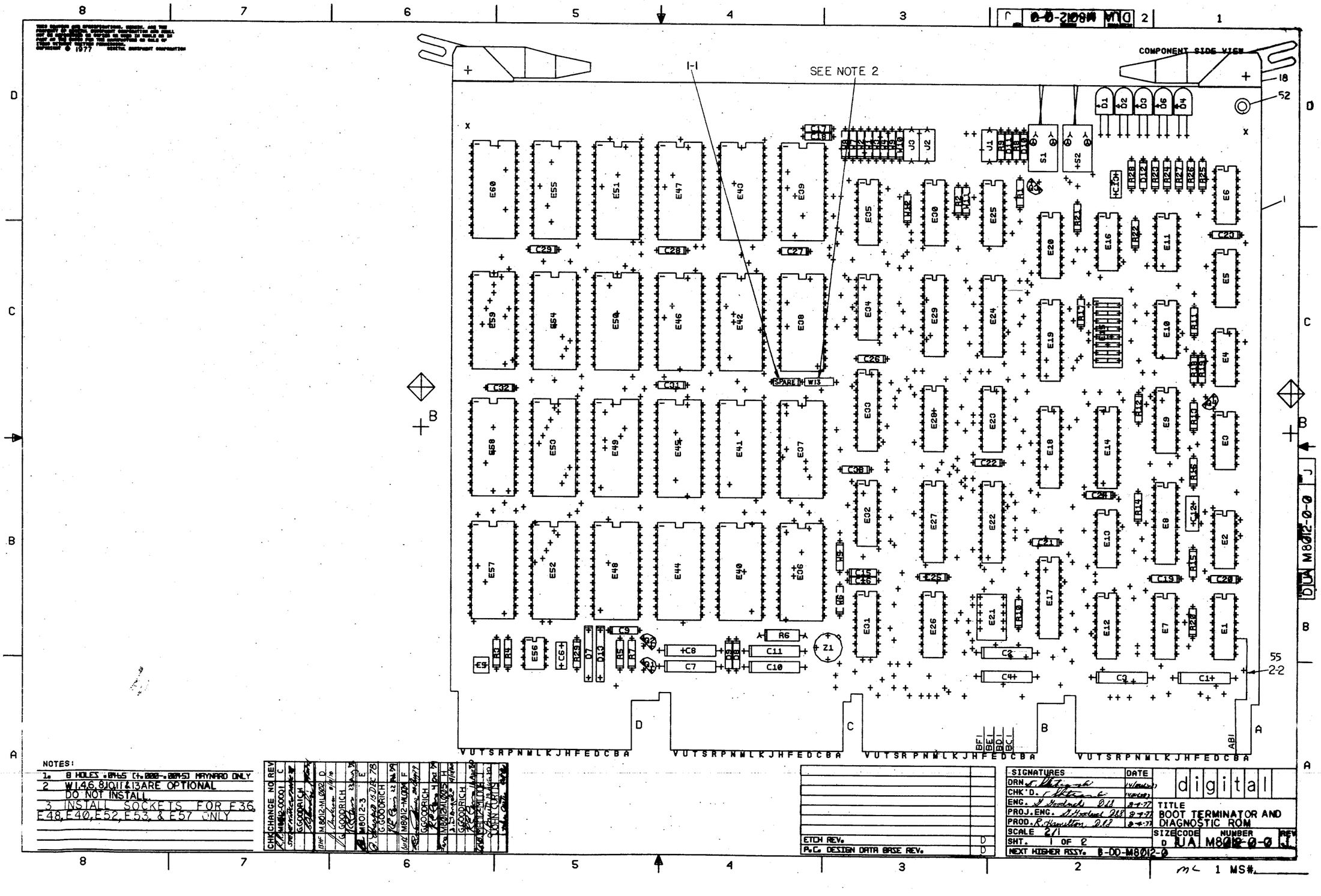
REVISIONS		
ONE	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
A-D FOR 1103 (AIM)	D	CS	AØ12-Ø-1	H
SCALE	SHEET 4 OF 6	DIST		


AIM MUX MODE
CAE HOLD(1)L
TP5 Ø TP A1
R1 133.1%
+15V
R12 3K
R13 1K
R24 2.1K
D10 MCL1304
4mA
R15 50K OFFSET ADJUST
CCW
D37 D672
D38 3.3V IN746A
R14 3K
R16 125K 25PPM
D33 MCL1304
D11 D777
ADC COMP H
D36 D777
C66 22pf
Q7 SE4020
Q12 SE4020
R28 10KM
C13 2N5245
C67 .0022uf
R17 15K
TP8 Ø TP SH
C69 .22uf
R89 5.76K
R10 75
R11 75
Q2 2N4250
Q3 2N4250
R88 3.48K
Q4 SE4020
C4 D672
R7 909
R8 750
D2 D672
D3 D672
1mA I REF
C64 .01uf
R4 10K
TP7 Ø TP AP
TP6 TP REF +13V
ADS402 D/A E46
ADZ100L E48
CTL SAR 11 L
CTL SAR 10 L
CTL SAR 09 L
CTL SAR 08 L
CTL SAR 07 L
CTL SAR 06 L
CTL SAR 05 L
CTL SAR 04 L
CTL SAR 03 L
CTL SAR 02 L
CTL SAR 01 L
CTL SAR 00 L
MSB
LSB
Q5 SE4020
Q6 SE4020
R19 100
R18 100
D14 IN754A 6.8V
C70 .22uf
R9 2.7K
C62 .22uf
C63 .22uf
CTL VDAC 00 H
CTL VDAC 01 H
CTL VDAC 02 H
CTL VDAC 03 H
CTL VDAC 04 H
CTL VDAC 05 H
CTL VDAC 06 H
CTL VDAC 07 H
MC1408-L8 E43
R6 30.1
R5 12.1K
C65 820pf
J1
RS4 1K *
R2 1K *
NOTES:
1. * DENOTES FUSIBLE RESISTOR
(ADC)
A-D FOR 1103
A012-Ø-1
SIZE D
CODE CS
REV H
SHEET 5 OF 6


NOTES:
1. CUT EACH AT BC1 FOR Q22 BUS COMPATABILITY. ETCH CUT WILL BE MADE BY FIELD SERVICE AT CUSTOMER REQUEST ONLY.
R79 1K
+5V
E35 8281
CTL CLOCK L
7410 E42
APS SWA L
APS SWB L
7404 E12
7410 E42
7410 E42
7410
E42
APS SWA L
APS SWB L
+12V
+5V
-7.5V
-20V
+15V
-15V
LM325N
REF
SEE NOTE 1
BC1
AF1
AT1
AM1
AJ1
BT1
BM1
BJ1
BC2
AC2
CC2
CT1
DC2
DT1
TP1 HOG
TP4 TPPD
TP3 TP+
TP2 TP-
W1
W2
SPARE LOGIC
W5
W4
CM2
CR2
CS2
AR2
AS2
7408 E4
7401 E15
7400 E11
REVISIONS
CHR
CHANGE NO
REV
A-D FOR 1103
(APS)
SIZE D
CODE CS
NUMBER A012-0-1
REV. H
SCALE
SHEET 6 OF 6
DIST.

COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION



NOTES:

1. 8 HOLES .0465 [+.000-.0045] MAYNARD ONLY
2. W1,4,6,8,10,11&13 ARE OPTIONAL DO NOT INSTALL.
3. INSTALL SOCKETS FOR E36, E48, E40, E52, E53, & E57 ONLY

CH	CHANGE NO	REV
	MMG-0001	C
	M8012-ML002	D
	M8012-3	E
	M8012-ML004	F
	M8012-ML005	H
	M8012-ML006	J

ETCH REV. D
P.C. DESIGN DATA BASE REV. D

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	2-7-77
PROJ.ENG.	2-7-77
PROD. R. Hamilton	2-7-77
SCALE 2/1	
SHT. 1 OF 2	
NEXT HIGHER ASSY. B-DD-M8012-0	

digital

TITLE: BOOT TERMINATOR AND DIAGNOSTIC ROM

SIZE D | CODE | NUMBER: DUA M8012-0-0 | REV J

DUA M8012-0-0 J

MS#

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © DIGITAL EQUIPMENT CORPORATION"

REWORK INSTRUCTIONS

E.C.O. # 1

COMPONENT DELETES SIDE 1:

1-1. DELETE C30, .047uf (P/N 1012784)

COMPONENT ADDS SIDE 1:

E.C.O. # 2

~~2-1 CUT ETCH SIDE 2 BETWEEN E Ø1 PIN 11 AND FINGER AB2~~

2-2 ADD WIRE SIDE 1 BETWEEN E Ø1 PIN 11 AND FINGER AB1

~~ECO # 5~~

~~WIRE ADDS, SIDE 1~~

~~5-1 ADD WIRE FROM FINGER BC1 TO E1 PIN 15~~

~~5-2 ADD WIRE FROM FINGER BD1 TO E1 PIN 14~~

~~5-3 ADD WIRE FROM FINGER BE1 TO E1 PIN 13~~

~~5-4 ADD WIRE FROM FINGER BF1 TO E1 PIN 12~~

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	BOOT TERMINATOR AND DIAGNOSTIC ROM	SIZE / CODE	NUMBER / REV.
SCALE	2/1	SHEET 2 OF 2	D / UA / M8Ø12-Ø-Ø / J
		DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977, DIGITAL EQUIPMENT CORPORATION"

8 7 6 5 4 3 2 1

D C B A

E1 — 8 — 390Ω 180Ω

1	AJ2	B SYNC L
2	AK2	B WTBT L
3	AC2	B DOUT L
4	AH2	B DIN L
5	AD1	B SPARE 4
6	AF2	B RPLY L
7	AL2	B IRQ L
9	AR1	B SPARE 1
10	AC1	B SPARE 3
11	AB1	B SPARE 2
12	BF1	B DAL 21 L
13	BE1	B DAL 20 L
14	BD1	B DAL 19 L
15	BC1	B DAL 18 L
16		

E12 — 8 — 390Ω 180Ω

1	AP2	BBS 7 L
2	AU2	B DAL 8 L
3	BT2	B DAL 13 L
4	BM2	B DAL 8 L
5	AV2	B DAL 1 L
6	BB1	B POK H
7	AT2	B INIT L
9	AP1	B HALT L
10	AN1	B DMR L
11	AN2	B IAKO L
12	AS2	B DMSO L
13	AR1	B REF
14	BM1	B DCOK H
15	BE2	B DAL 2 L
16		

E26 — 8 — 390Ω 180Ω

1	BP1	B SPARE L
2	BP2	B DAL 10 L
3	BS2	B DAL 12 L
4	BN2	B DAL 9 L
5	BM2	B DAL 4 L
6	BF2	B DAL 3 L
7	BN1	B SACK L
9	BU2	B DAL 14 L
10	BR1	B CWN T L
11	BL2	B DAL 7 L
12	BV2	B DAL 15 L
13	BK2	B DAL 6 L
14	BJ2	B DAL 5 L
15	BR2	B DAL 11 L
16		

GROUND: AC2 (J1), AJ1, AM1, AT1, BC2, BJ1, BM1, BT1

+5V: BA2, AA2, BV1 — R1 560Ω (J2)

+12V: AD2, BD2 — R2 560Ω (J3)

C1 6.8Mf, C2 6.8Mf, C3 6.8Mf, C4 6.8Mf

R3 5.1K, R4 2.2K, C6 .01Mf

CTL VTH DCG — 555 E56 — C5 5600PF

R29 120Ω

D13 6.8V INT54A, R5 220Ω, Q1 MXA55

D7 6.8V INT54A, Q2 MXA05, C9 .047Mf, R7 220Ω

C7 15Mf, C8 15Mf, D8 D672, R6 2.7 1/2W, D9 D672

C10 15Mf, C11 15Mf

BK1, BL1 — -5V

AM2 AN2 CM2 CN2 AR2 AS2 CA2 CB2

+5V: R8 1K, D10 3.3V IN752A

+12V: R9 150Ω, Q5 2N6CD, D11 8.2V IN756A, Q3 MXA05

REVISIONS	ORIG.	CHANGE NO.	REV.
	M8012	-00001	C
	M8012	-M002	D
	M8012	-M005	E
	M8012	-M006	F

DRN	5/24/77
CHK'D	6-22-77
ENG.	8-1-77
PROJ. ENG.	8-1-77
PROD.	8-1-77
NEXT HIGHER ASSY.	D-UA-M8012-0-0
SCALE	NONE
SHEET	1 OF 4

FIRST USED ON: BDV11AA

TITLE: BOOT-TERMINATOR & DIAGNOSTIC ROM (SH1)

SIZE D | CODE CS | NUMBER M8012-0-1 | REV. F | DIST.

REV. E | NUMBER M8012-0-1 | SIZE D | CODE CS

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

SH2 REG L
SH2 SEL 4 L
SH2 INWID L
74LS27 E3
74LS04 E5
74Ø6 E16

BDAL 9 L(BN2)
BDAL 10 L(BP2)
BDAL 11 L(BR2)
BDAL 12 L(BS2)
BBS 7 L(AP2)
DC ØØ5 E17
BUS 3
BUS 2
BUS 1
BUS Ø
MEMB
JAI
JA2
JA3
JAV 3
JAV 2
JAV 1
XMIT
REC
DAT 3
DAT 2
DAT 1
DAT Ø
MATCH
SH2 DAL 9 H
SH2 DAL 10 H
SH2 DAL 11 H
SH2 DAL 12 H
+5V
R10 180
E21
E15
SH2 INWID L
SH2 XMIT H

B DAL Ø L (AN2)
B DAL 1 L (AV2)
B DAL 2 L (BE2)
B DAL 13 L (BT2)
DC ØØ5 E19
SH2 DAL Ø H
SH2 DAL 1 H
SH2 DAL 2 H
SH2 DAL 13 H

B DAL 6 L(BK2)
B DAL 7 L(BL2)
B DAL 8 L(BM2)
BDAL 15 L(BV2)
DC ØØ5 E18
SH2 DAL 6 H
SH2 DAL 7 H
SH2 DAL 8 H
SH2 DAL 15 H
R13 1K
E21
E15

B DAL 3 L (BF2)
B DAL 4 L (BH2)
B DAL 5 L (BJ2)
B DAL 14 L (BU2)
DC ØØ5 E14
SH2 DAL 3 H
SH2 DAL 4 H
SH2 DAL 5 H
SH2 DAL 14 H
E15

R16 5.1K
C12 470 pf
DCØØ4 E8
RXCX
VECTOR
DAL 2
DAL 1
DAL Ø
WTBT
DOUT
DIN
SYNC
ENB
INWID
SEL 6
SEL 4
SEL 2
SEL Ø
OUT MB
OUT LB
BRPLY
SH2 DAL 2 H
SH2 DAL 1 H
SH2 DAL Ø H
B WTBT L(AK2)
B DOUT L(AE2)
B DIN L(AN2)
SH2 SYNC L
SH2 SEL Ø L
SH2 SEL 2 L
SH2 SEL 4 L
SH2 SEL 6 L
SH2 OUT LB L
SH2 OUT MB L
SH2 INWID L
74LS10 E11
74LS04 E13
74LS27 E8
SH2 XMIT H
SH2 XMIT L

+5V
R11 1K
R12 1K
R14 1K
SH2 AP1 L
74S74 E10
SH2 REG H
SH2 REG L
SH2 SYNC H
SH2 DC NOK L
SH2 DAL 12 H
74LS04 E5
74Ø6 E16

8PS23 E9
DØ(1)
D1 (1)
D2 (1)
D3 (1)
D4 (1)
D5 (1)
D6 (1)
D7 (1)
ENB
SH2 DAL 11 H
SH2 DAL 5 H
SH2 DAL 4 H
R4
R3
R2
R1
RØ

+5V
R15 1K
74LS04 E13

+5V
R21 1K
R20 1K
RUN
S1
2,3
HALT
74Ø6 E16
R17 1K
RESTART
S2
C13 .01 µf
74Ø6 E6

+5V
R22 1K
R23 1K
R24 1K
D12 DS72
C13 .01 µf

74LS04 E13
(BA1) B DCOK H
SH2 DC NOK H
SH2 DC NOK L
(AP1) B HALT L
(AF2) B REPLY L
(AJ2) B SYNC L
SH2 SYNC L
SH2 SYNC H
8641 E7

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
BOOT-TERMINATOR & DIAGNOSTIC ROM (SH2)	D	DCS	M8Ø12-Ø-1	E
SCALE NONE	SHEET 2 OF 4	DIST.		

DEC FORM NO. BMD 138

M8Ø12-Ø-1 REV F

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

74LS273 E27: SH2 DAL 15 H 18 … SH2 DAL 8 H 3 → SH3 R15 H … SH3 R12 H; SH2 REG L 11, SH2 SEL 0 L 10, SH2 OUT HB L 9 → 74LS27 E3 8; CLK ← SH2 DC NOK L, CLR ← 11, 1

74LS257 E32: SH3 R11 H … SH3 R8 H → SH3 A10 H, SH3 A9 H, SH3 A8 H, SH3 A7 H; OUT CONT ← 15, SØ ← 1

74LS257 E34: SH3 R15 H … SH3 R12 H → SH3 A14 H, SH3 A13 H, SH3 A11 H; OUT CONT ← 15, 3Ø ← 1

74LS273 E29: SH2 DAL Ø H 3 … SH2 DAL 7 H 18 → SH3 RØ N … SH3 R7 H; SH2 REG L 3, SH2 SEL Ø L 4, SH2 OUT LE L 5 → 74LS27 E3 6; CLK ← SH2 DC NOK L, CLR ← 11, 1

74LS273 E33: SH2 DAL 8 H 18 … SH2 DAL 1 H 3 → SH3 A6 H … SH3 AØ H; SH2 SYNC H ← 11, SH2 DC NOK L ← 1

SH2 PR 1 L 10 → 74S74 E10 D 1, 9, 8; SH2 DAL 6 H 12 → D 1; SH2 REG L 3, SH2 OUT LB L 4, SH2 SEL 6 L 5 → 74LS74 E2 6; C 11 ← SH2 DC NOK L; C 9, 8; Q 13

+5V → R18 1K, R19 1K → Q4 MX A05; B.EVNT L 5 → E21

SH2 SEL 2 L 13 → 74LS04 E5 12 → SH2 REG H 9, SH2 XMIT H 11 → 74LS10 E11 8 → SH3 OUT 2 L

74LS299 E22: S/L 18, S/R 11, QH' 17, QA' 8, SØ 1, S1 19, CLK 12, CLR G1 G2 9 2 3; R8 16 SH2 DAL 15 H … R1 7 SH2 DAL 11 H

SH2 REG L 1, SH2 SEL 2 L 2, SH2 OUT HB L 13 → 74LS27 E4 12

74LS299 E24: S/L 18, S/R 11, QH' 17, QA' 8, SØ 1, S1 19, CLK 12, CLR G1 G2 9 2 3; R8 16 SH2 DAL 7 H … R1 7 SH2 DAL 3 H

SH2 REG L 4, SH2 OUT LE L 5, SH2 SEL 2 L 3 → 74LS27 E4 6; SH2 DC NOK L ← 9, 2, 3

SH3 A 14 N 1 → 74LS04 E5 2 → SH3 A14 L → W3, W4

SH2 PR1 L 6 → G1, W3 4 → G2A, W4 5 → G2B; 74LS138 E35: A 1, B 2, C 3; SH3 A11 H N 1; Y0 16 SH3 SP 8 L … Y7 7 SH3 SP 1 L

SH3 A10 H → W1; SH3 A13 H → W2

W12 → 74LS139 E36: 2G 15, 2A 14, 2B 13, 1A 3, 1B 2, 1G 1; 2Y0 12, 2Y1 11, 2Y2 10 SH3 SE1 L, 2Y3 9 SH3 SE2 L, 1Y0 4 SH3 SB1 L, 1Y1 5 SH3 SB2 L, 1Y2 6, 1Y3 7; SH3 A10 H → 14, SH3 A11 H → 2

9 → 74LS04 E5 8 → W11

SH3 A14 H → W9; SH3 A14 L → W10

+12V → W8; C17, C18 .047UF

SH3 A10 H → W7 → SH3 SI2

+5V → W13 → W5, W6; C82, D82; SH3 SI1; C14 THRU C16 .047MF

74LS257 E28: SH3 R7 N 13 … SH3 R4 N 3 → SH2 DAL 7 N … SH2 DAL 4 N; OUT CONT ← 15, SØ ← 1

74LS257 E26: SH3 R15 H 13 … SH3 R12 H 3 → SH2 DAL 15 H … SH2 DAL 12 H; OUT CONT ← 15, SØ ← 1

74LS257 E23: SH3 R3 H 13 … SH3 R1 H 6, SH3 RØ H 3 → SH2 DAL 3 H … SH2 DAL 1 H, SH2 DAL Ø H; OUT CONT ← 15, SØ ← 1

74LS257 E31: SH3 R11 H 13 … SH3 R8 H 3 → SH2 DAL 11 H … SH2 DAL 8 H; OUT CONT ← 15, SØ ← 1

SH2 REG H → SH2 XMIT H 1, 2 → 74LS10 E11 12 → SH2 OUT 2 H

74LS175 E25: D3 … D0 5, 6, 11, 12; R3 (N) 14, R3 (1) 15, R2 (1) 10, R2 (2) 11, R1 (1) 7, R1 (2) 6, RØ (1) 2, RØ (2) 3; CLK ← 9, CLR ← 1

SH2 DAL 3 H 13 → D3; SH2 DAL 2 H 12 → D2; SH2 DAL 1 H 5 → D1; SH2 DAL Ø H 4 → D0

74S06 E6: 5 → 6 → RP5 220Ø → D4 2N6CD; 9 → 8 → RP6 220Ø → D3 2N6CD; 11 → 10 → RP7 220Ø → D2 2N6CD; 13 → 12 → RP8 220Ø → D1 2N6CD; +5V

SH2 REG L 11, SH2 OUT LB L 10, SH2 SEL 4 L 9 → 74LS27 E4 8 → SH2 DC NOK L

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE BOOT-TERMINATOR & DIAGNOSTIC ROM (SH3) | SIZE D | CODE DCS | NUMBER M8012-Ø-1 | REV. E | SCALE NONE | SHEET 3 OF 4 | DIST.

BSC FORM NO. 5900 135

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

NOTES: ALL SIGNALS ON THIS SHEET, EXCEPT THOSE CONNECTED TO PIN 20 OF ALL SOCKETS ON THIS SHEET ARE HIGH IN PUTS AND OUTPUTS. THE SIGNALS CONNECTED TO PIN 20 OF ALL SOCKETS ON THIS SHEET ARE LOW

SM3 A7 1	XE39	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SAI
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE43	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SAI
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE47	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SAI
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE51	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SAI
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE55	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA5
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE60	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA5
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE59	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA7
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE54	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA8
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE50	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA9
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE46	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA9
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE42	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA9
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE38	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA9
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE37	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA5
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE41	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA5
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE45	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA9
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE49	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 SM3 S7I
SM3 A3 5		20 SM3 SA8
SM3 A2 6		19 SM3 S12
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE53	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 GND
SM3 A3 5		20 SM3 SA1
SM3 A2 6		19 SM3 A10
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE58	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 GND
SM3 A3 5		20 SM3 SA2
SM3 A2 6		19 SM3 A10
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE57	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 -5V
SM3 A3 5		20 SM3 SE1
SM3 A2 6		19 +12V
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE52	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 -5V
SM3 A3 5		20 SM3 SE0
SM3 A2 6		19 +12V
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 015
SM4 08 9		16 SM4 014
SM4 09 10		15 SM4 013
SM4 010 11		14 SM4 012
GND 12		13 SM4 011

SM3 A7 1	XE48	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 GND
SM3 A3 5		20 SM3 SB1
SM3 A2 6		19 SM3 A10
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE44	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 GND
SM3 A3 5		20 SM3 SB2
SM3 A2 6		19 SM3 A10
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

SM3 A7 1	XE40	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 -5V
SM3 A3 5		20 SM3 SE1
SM3 A2 6		19 +12V
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

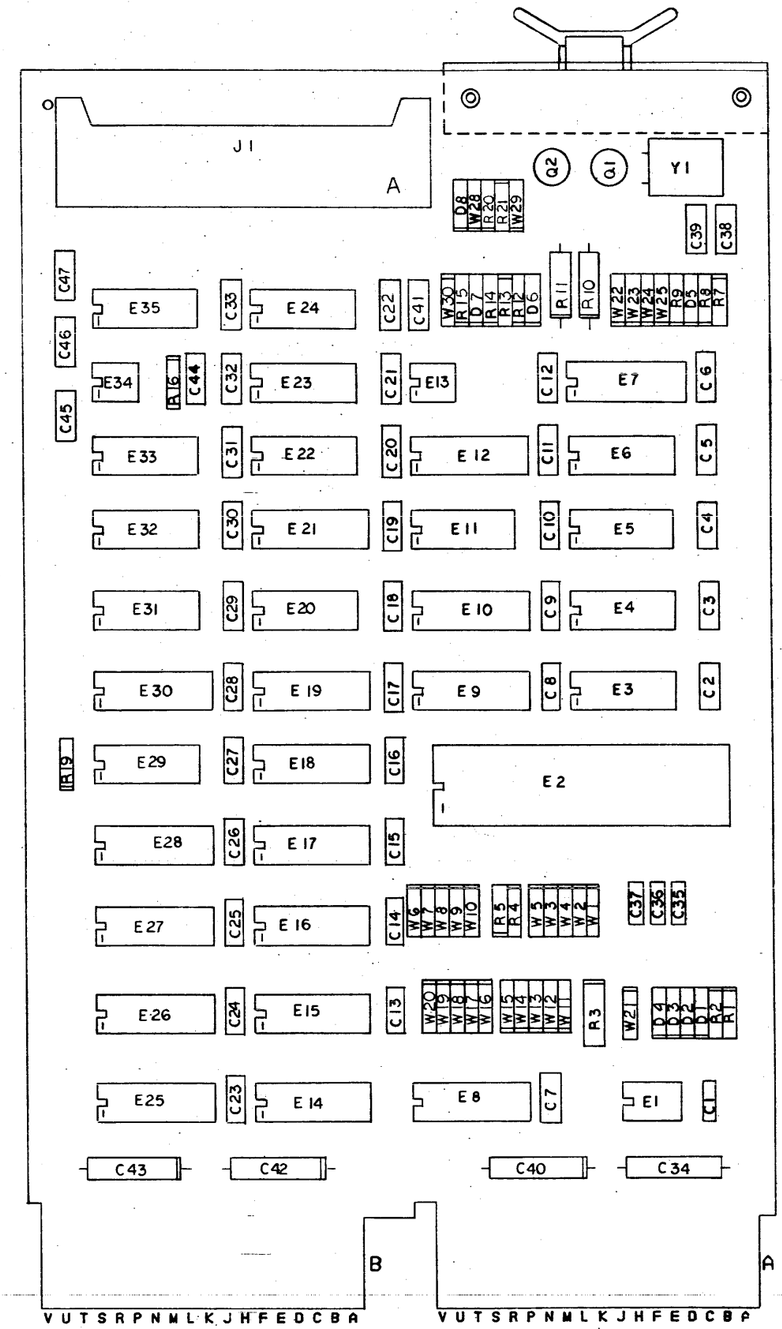
SM3 A7 1	XE56	24 +5V
SM3 A6 2		23 SM3 A8
SM3 A5 3		22 SM3 A9
SM3 A4 4		21 -5V
SM3 A3 5		20 SM3 SE2
SM3 A2 6		19 +12V
SM3 A1 7		18 GND
SM3 A0 8		17 SM4 07
SM4 08 9		16 SM4 06
SM4 01 10		15 SM4 05
SM4 02 11		14 SM4 04
GND 12		13 SM4 03

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	BOOT-TERMINATOR & DIAGNOSTIC ROM (SH4)		
SIZE	CODE	NUMBER	REV.
D	CS	M8012-Ø-1	E
SCALE	NONE	SHEET 4 OF 4	DIST.

M8012-Ø-1 E DCS

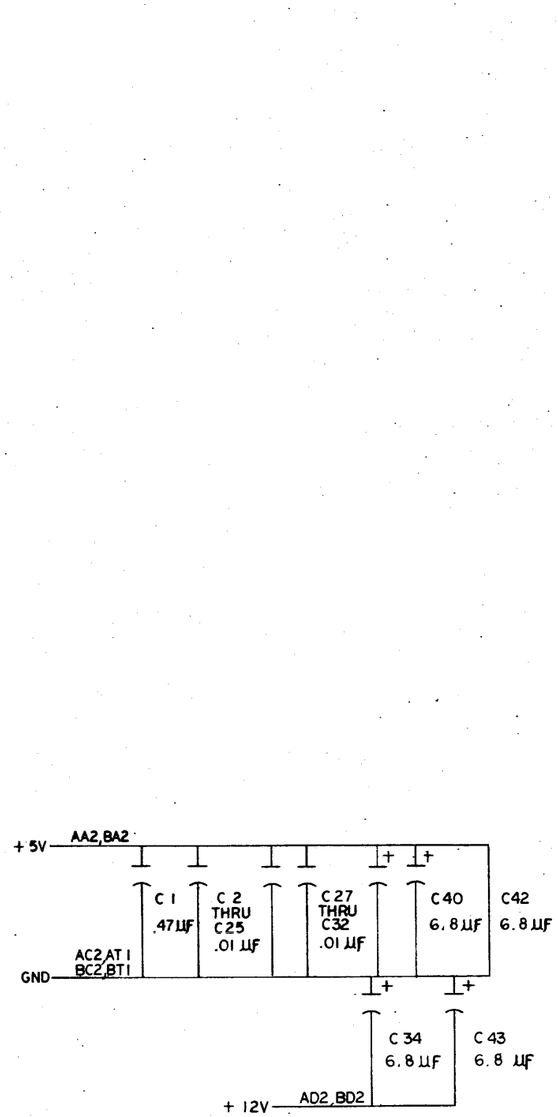
THESE DRAWINGS AND SPECIFICATIONS, CONCEPTS, AND THE EXPRESSIONS THEREOF CONTAINED HEREIN ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION



I.C. DEC MHØØ26C	3			6
I.C. DEC HSUART	3	1	2	
I.C. DEC 1488			1	14
I.C. DEC 7493	10	5		
I.C. DEC 74175	8	16		
I.C. DEC 74157	8	16		
I.C. DEC 74155	8	16		
I.C. DEC 8837	8	16		
I.C. DEC 8641	8	16		
I.C. DEC 8136	8	16		
IC TYPE	GND	+5V	−12V	+12V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS



NOTES:

STEP Ø	↑ Y AXIS ____ STEP 0 TIMES
REPEAT	→ X AXIS 5.250 STEP 1 TIMES

CHK	CHANGE NO	REV
	M7940-A8007 ORIGINATED	A
S.B.	M7940-A8008 Skew 4-29-80 J. CURTIS R.F. Quackenbush	K
S.B.	M7940-A8009 cover, trim J. CURTIS W.C.	L

SIGNATURES	DATE
DRN. VINCENT	4-8-75
CHK'D. FERGISON	5-8-75
MECH.ENG. CYR	6-12-75
PROJ.ENG. CYR	6-12-75
PROD. DEHAVE	6-12-75

digital

TITLE SERIAL LINE UNIT

SCALE	SIZE	CODE	NUMBER	REV
2/1	D	CS	M7940-0-1	L
SHT. 1 OF 5				

NEXT HIGHER ASSY. D-UA-M7940-0-0

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

RCSR BIT 7 INITIALIZED TO A "0"
XCSR BIT 7 " " " "1"

8837 E12 — DA H

SEL 2 IN L — CLRR DONE — R DONE
STB STATUS — OR ERR — OVERRUN LOADED CHAR OVER ANOTHER IN RCSR
STBRD — FR ERR — 8881 E3 — W21 (FEH) — API — B HALT L
BLI H — RCLK — P ERR
J1 E — TTL SERIAL DATA IN L — SERIAL IN — RD7 RD6 RD5 RD4 RD3 RD2 RD1 RDØ
HS UART E2

RDAB 7 H — XD7
RDAB 6 H — XD6
RDAB 5 H — XD5
RDAB 4 H — XD4
RDAB 3 H — XD3
RDAB 2 H — XD2
RDAB 1 H — XD1
RDAB Ø H — XDØ
(XMIT BUFFER IN) (CANNOT HAVE SPLIT BAUD RATE)

(LOAD XMIT BUF) SEL 6 OUT L (SW3) — LDXD
CLK L — XCLK
SERIAL OUT — 7410 E22 — 8881 E3 — SO L
XRDY
EOC
CLR LDC NB2 NB1 NP EP 2SB

+3V — (RECEIVE DA BIT Ø) RDAB Ø H — 7474 E5 BREAK — BREAK H
SEL 4 OUT H — DISABLES OUTPUT TO TERMINAL FOR MAINTENANCE
INIT L

B DC OK H — BAI — 8837 E25 — DC OK L

W4 (NB2)
W3 (NB1)
W1 (NP)
W5 (PEV)
W2 (2SB)

74S04 E4 — 7402 E23 — TBMT H

AR2 AS2

DATA SELECTOR (VECTOR OR DATA)

74157 E27

RD 7 H — (V7) W6 — DPR 9B — DDAB 7 H
RD 6 H — (V6) W7 — DPR 8B — DDAB 6 H
RD 5 H — (V5) W8 — DPR 7B — DDAB 5 H
RD 4 H — (V4) W9 — DPR 6B — DDAB 4 H
STB SØ

74157 E17

RD 3 H — (V3) W10 — DPR 5B — DDAB 3 H
RD 2 H — REC. OR XMIT (SW5) VEC 2 H — DDAB 2 H
RD 1 H — DDAB 1 H
RD Ø H — DDAB Ø H
STB SØ
VEC L

74157 E30

MODEM ST. H — BV2 — 8881 E29 — BDAL 15 L
TBMT H — 8881 E29 — BDAL 7 L
DA H — 8881 E29 — BDAL 6 L
TDINT EN H — 8881 E29 — BDAL Ø L
RDINT EN H
BREAK H
STB SØ

DPR 11B
SEL Ø IN L — 8881 E3
SEL 4 IN L (XCSR SEL)

(UART & MULTIPLEXOR LOGIC)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
SERIAL LINE UNIT	D	CS	M7940-0-1	L
SCALE 1/1	SHEET 2 OF 5	DIST.		

DEC FORM NO. DRD 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

ADDRESS DECODERS

BBS 7 L — AP2 — 8837 E8

8136 E26 — $\overline{STB}$ — +5V

RDAB 12 H — DPR 1A — W11 (A12)
RDAB 11 H — DPR 12A — W12 (A11)
RDAB 10 H — DPR 13A — W13 (A10)
RDAB 9 H — DPR 14A — W14 (A9)
OUT → DPR 8A

8136 E15 — $\overline{STB}$

RDAB 8 H — DPR 1B — W15 (A8)
RDAB 7 H — DPR 3A — W16 (A7)
RDAB 6 H — DPR 4A — W17 (A6)
RDAB 5 H — DPR 5A — W18 (A5)
RDAB 4 H — DPR 6A — W19 (A4)
RDAB 3 H — DPR 7A — W20 (A3)
OUT

BDAL 8 L (BM2) — 8837 E25 — RDAB 8 H
BDAL 9 L (BN2) — 8837 E25 — RDAB 9 H
BDAL 10 L (BP2) — 8837 E25 — RDAB 10 H
BDAL 11 L (BR2) — 8837 E25 — RDAB 11 H
BDAL 12 L (BS2) — 8837 E25 — RDAB 12 H

74S04 E4

REGISTER SELECTOR

STBB STBA 74155 E10 — DB DA SA SB
fB3 — SEL 6 OUT L
fB2 — SEL 4 OUT L
fB1 — NC (WRITE TO RSBE WILL CAUSE TIMEOUT)
fB0 — SEL 0 OUT L
fA3
fA2 — SEL 4 IN L
fA1 — SEL 2 IN L
fA0 — SEL 0 IN L

BDOUT L — AE2 — 8837 E8 — OUT H
BDIN L — AH2 — 8837 E8 — IN H
7402 E23

READING XBUF WILL ASSERT REPLY THOUGH IT DID NOT occur

SH2 {
DDAB 0 H — AU2 — BDAL 0 L — RDAB 0 H
DDAB 1 H — AV2 — BDAL 1 L — RDAB 1 H
DDAB 2 H — BE2 — BDAL 2 L — RDAB 2 H
DDAB 3 H — BF2 — BDAL 3 L — RDAB 3 H
8641 E18

DDAB 4 H — BH2 — BDAL 4 L — RDAB 4 H
DDAB 5 H — BJ2 — BDAL 5 L — RDAB 5 H
DDAB 6 H — BK2 — BDAL 6 L — RDAB 6 H
DDAB 7 H — BL2 — BDAL 7 L — RDAB 7 H
8641 E16

SEL 2 IN L — 7408 E21
VEC L
SEL 0 IN L
SEL 2 IN L
SEL 4 IN L
SEL 0 OUT L
SEL 4 OUT L
SEL 6 OUT L
7430 E11

7408 E21 — τ ≈ 100 ns — R19 100Ω — C26 820 pf — REPLY DELAY
8881 E19 — AF2 — BRPLY L

74175 E9 ME — C — INIT L
74175 E9 A1 — RDAB 1 H
74175 E9 A2 — RDAB 2 H
REGISTER SELECT BITS

BSYNC L — AJ2 — 8837 E8

(BUS ADDRESS & I/O LOGIC)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
SERIAL LINE UNIT	D	CS	M7940-0-1	L
SCALE —	SHEET 3 OF 5	DIST.		

DEC FORM NO. DRD 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1975 DIGITAL EQUIPMENT CORPORATION"

Jumpered to 33 Source of J1-E(SH2)

J1

IN FROM TERMINAL

EIA DATA IN L — 1489 E35 — EIA/TTL RCVD DATA H — J1 M
C45 33Øpf

(TTL) SO L — 1488 E24 — EIA TRANS. DATA H — J1 F
C42 33Øpf

CLEAR TO SEND H — 1489 E35 — 7402 E23 — MODEM ST. H — J1 T
CARRIER — J1 BB
C46 33Øpf

DATA SET RDY H — 1489 E35
C47 33Øpf
J1 Z

MODEM CONTROL

1488 E24 — RQST TO SEND H — J1 V
DATA TERM RDY H — J1 DD
1488 E24 — BUSY H — J1 C
8837 E12 — 2ØMA/TTL RCVD DATA L — J1 H
CABLED TO PWR BOARD
J1 S *

+5V — R16 2K

TP1 — C44 .ØØ5uf — TP2 — INSERT FOR TTY USE ONLY

4N26-02 E34 (OCI) — R14 22Ø — D7 IN4ØØ4 — R21 180 (CL2)

+5V — R15 15Ø — R11 270 — +12V — W28 (CL1) — J1 K *
J1 KK *

4N26-02 E13 (OCI) — R12 68K — Q2 MXA55 — D6 IN4ØØ4 — 20mA
D8 MCL13Ø1

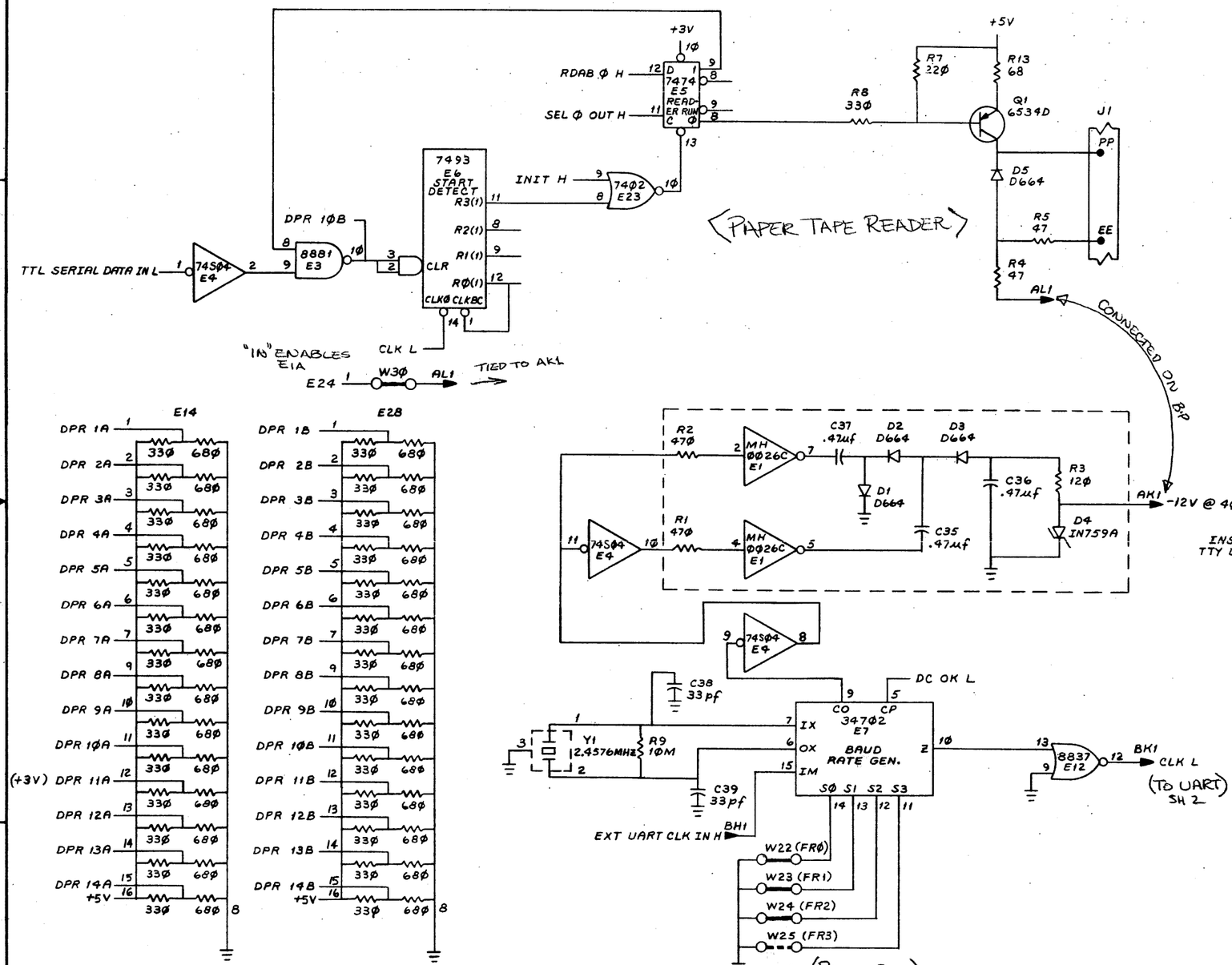
(TTL) SO L — (20mA CKTS.)

R10 270 — +12V — W29 (CL4) — J1 AA *

ACTIVE OR PASSIVE SELECT (ACTIVE SHOWN)

J1 A, B, SS, TT, UU, VV

* SEE NOTE 2



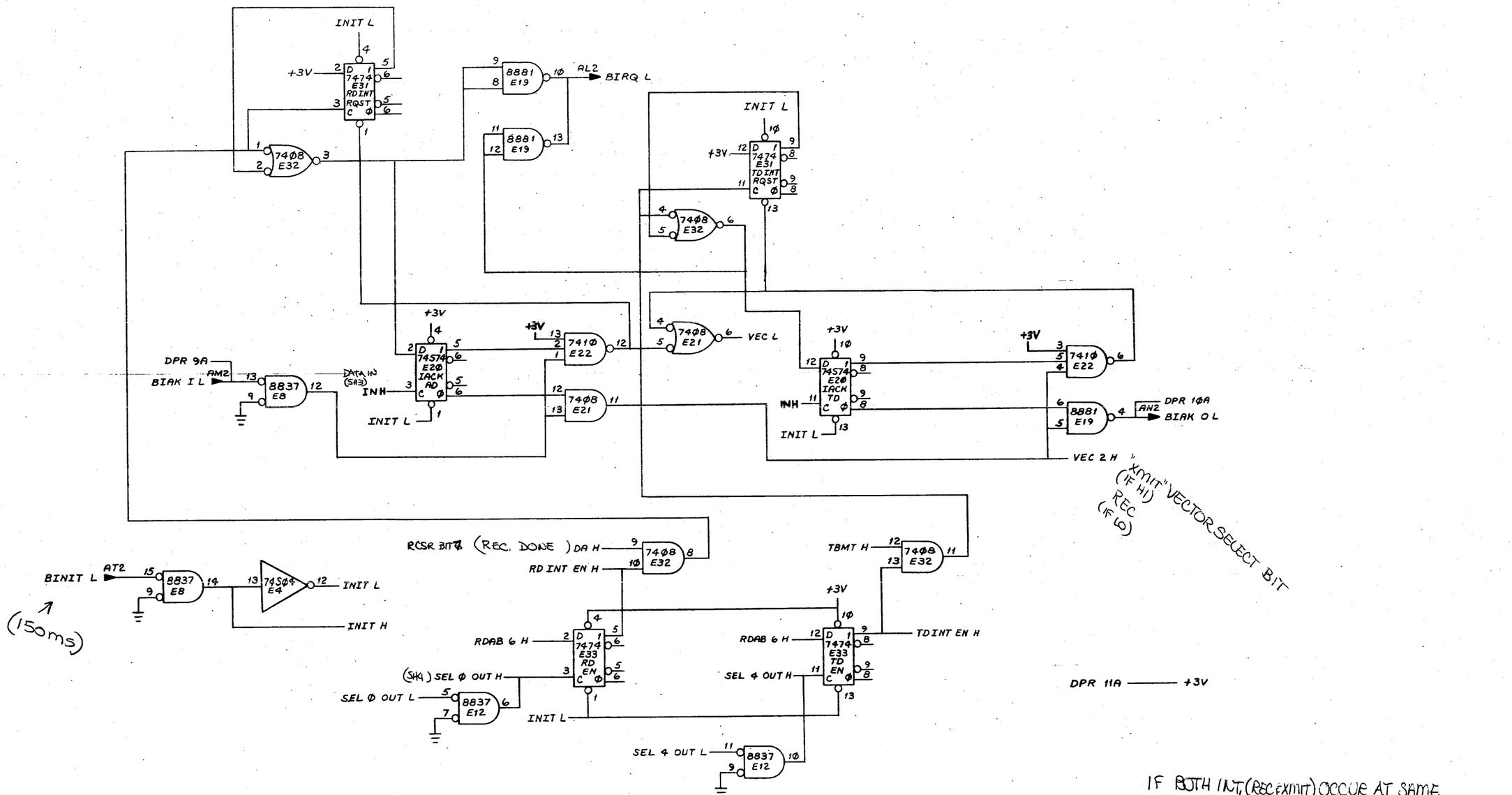
(PERIPHERAL & BAUD RATE LOGIC)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
SERIAL LINE UNIT	D	CS	M7940-Ø-1	L
SCALE —	SHEET 4 OF 5	DIST.		

DEC FOR NO. DRD 12E

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"



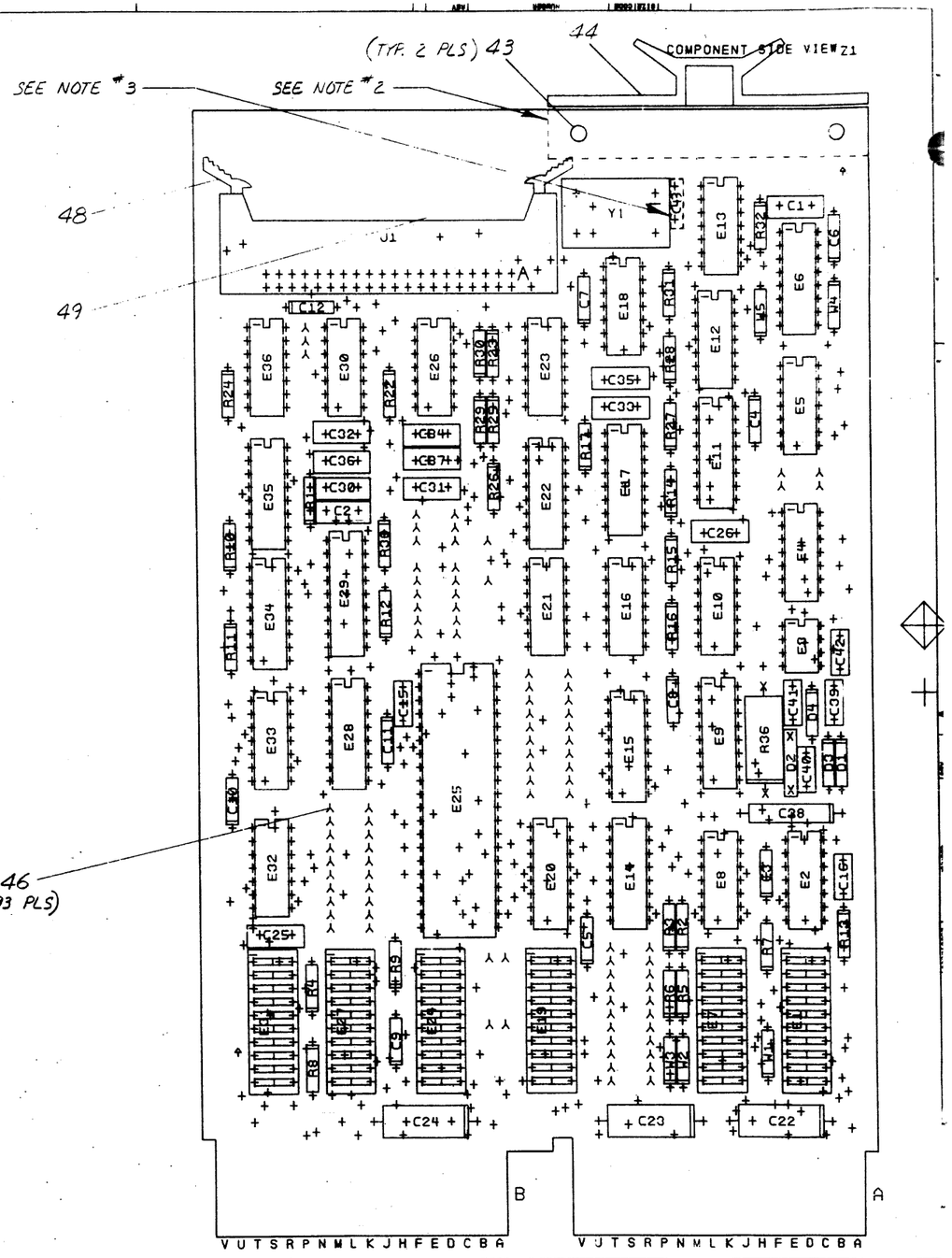
REVISIONS		
CHK	CHANGE NO.	REV.

(INTERRUPT & ENABLE LOGIC)

TITLE	SIZE	CODE	NUMBER
SERIAL LINE UNIT	D	CS	M7940-0-1
SCALE	SHEET 5 OF 5	DIST.	

DEC FORM NO. DRD 138

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION



NOTES: 1) .012 ETCH .013 SPACING.
2. ITEM NO. 45 UNDERNEATH HANDLE
3. OPTIONAL ITEM, USE PART NO. 1010279-00.

STEP & REPEAT	↑ Y AXIS .0 STEP 0 TIMES
	→ X AXIS 5.250 STEP 2 TIMES

CHG	CHANGE NO	REV
	M8017-AB004	F
	REVISED & REDRAWN	7-3-80
	J. CURTIS	

ETCH REV. D-P4

SIGNATURES		DATE
DRN.	FRANK SMART	6-22-77
CHK D.	FRANK SMART	6-22-77
MECH.ENG.	M. D. MICHAUD	7-1-77
PROJ.ENG.	M. D. MICHAUD	7-1-77
PROD.	M. D. MICHAUD	7-1-77

digital

TITLE A.L.I.

SCALE 2/1	SIZE	CODE	NUMBER	REV
SHT. 1 OF 1	D	JA	M8017-AA	F

NEXT HIGHER ASSY. B-DD-M8017-AA

MS# 15032

1976 DIGITAL EQUIPMENT CORPORATION

MISCELLANEOUS JUMPERS			
JUMPERS IN	JUMPERS OUT	FEATURE	
1, 2		5 DATA BITS	
1	2	6 DATA BITS	
2	1	7 DATA BITS	
	1, 2	8 DATA BITS	*
P		PARITY CHECK	
	P	NO PARITY CHECK	*
-E		ODD PARITY	
	-E	EVEN PARITY	*
PB		PGM BAUD RATES ENABLED	
	PB	PGM BAUD RATES DISABLED	*
BG		BREAK GENERATION ENABLED	*
	BG	BREAK GENERATION DISABLED	
C, C1	S, S1	COMMON SPEED	*
S, S1	C, C1	SPLIT SPEED	
H		HALT ON FRAMING ERROR	
	H	NO HALT ON FRAMING ERROR	*
B	-B	BOOT ON FRAMING ERROR	
-B	B	NO BOOT ON FRAMING ERROR	*
-FR		NO FORCE OF REQ TO SEND	*
	-FR	FORCE REQ TO SEND ON	
-FD		NO FORCE OF DTR	*
	-FD	FORCE DTR ON	
RS		REQUEST TO SEND ENABLED	*
	RS	REQUEST TO SEND DISABLED	
FB		FORCE BUSY ENABLED	
	FB	FORCE BUSY DISABLED	*
	M1	FACTORY USE ONLY	*
INIT	DCOK	UART CLEAR SIG.	*

BAUD RATE SELECT JUMPERS					
RECEIVER	R3	R2	R1	R0	BAUD RATE
TRANSMITTER	T3	T2	T1	T0	
	I	I	I	I	50
	I	I	I	R	75
	I	I	R	I	110 * RECEIVER
	I	I	R	R	134.5
	I	R	I	I	150
	I	R	I	R	300
	I	R	R	I	600
	I	R	R	R	1200
	R	I	I	I	1800
	R	I	I	R	2000
	R	I	R	I	2400
	R	I	R	R	3600
	R	R	I	I	4800
	R	R	I	R	7200
	R	R	R	I	9600 * TRANSMITTER
	R	R	R	R	19200

I = INSTALLED R = REMOVED

SEE NOTE #2

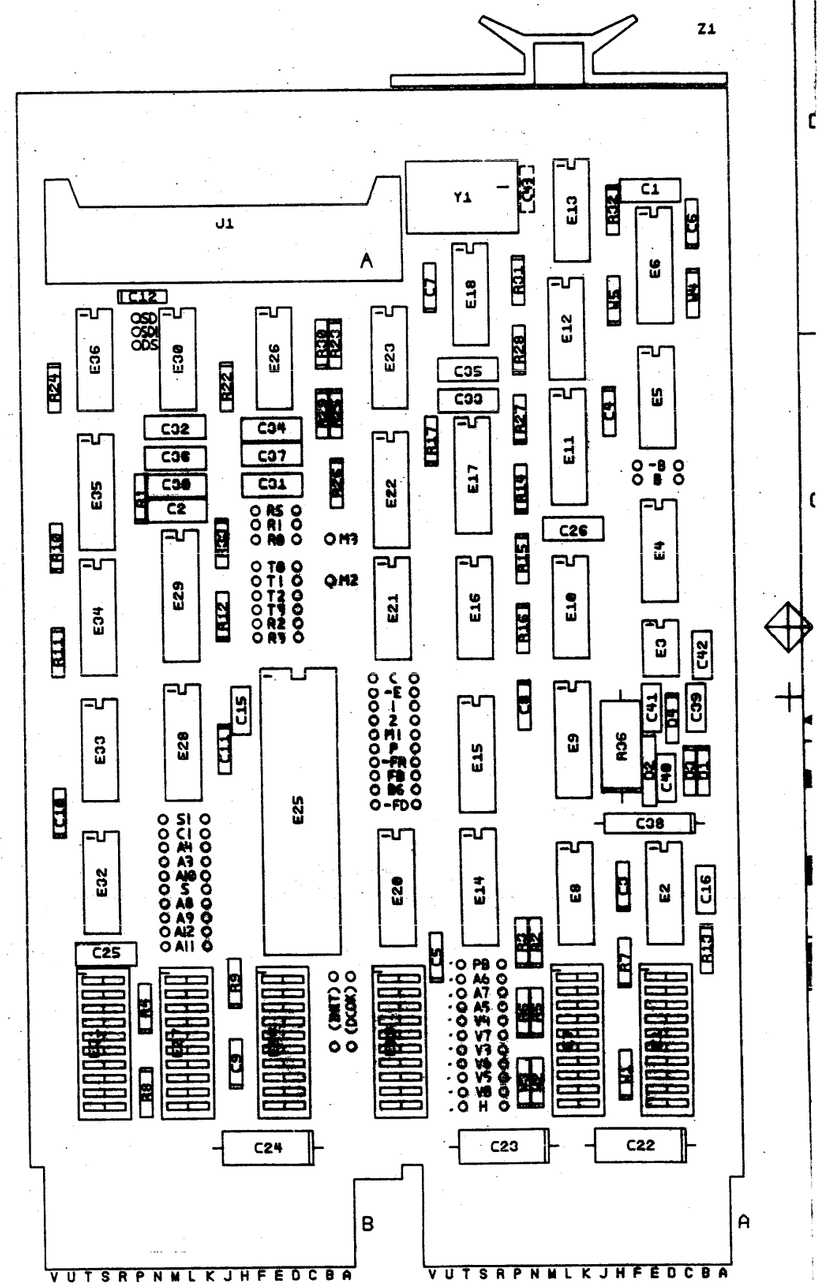
DEVICE ADDRESS JUMPERS			
JUMPERS IN	JUMPERS OUT	ADDRESS	
A4, A5, A6, A8, A9, A10, A11, A12	A3, A7	CONSOLE TT/TS8X	
A3, A7, A8, A9, A11, A12	A4, A5, A6, A10	DLV11-E UNIT #1 TT/TS8X	*
ADDRESS SETUP DIAGRAM			
A17 A16 A15 A14 A13 A12 A11 A10 A9 A8 A7 A6 A5 A4 A3 A2 A1 A0			

SEE NOTE #3

SEE NOTE #2

VECTOR ADDRESS JUMPERS			
JUMPERS IN	JUMPERS OUT	ADDRESS	
V4, V5	V3, V6, V7 V8	CONSOLE 60, 64	
V6, V7	V3, V4, V5 V8	DLV11-E UNIT #1 300, 304	*
VECTOR SETUP DIAGRAM			
V8 V7 V6 V5 V4 V3 V2 V1 V0			

SEE NOTE #3



4. W1, W2, W3, W5 NOT INSTALLED.

NOTES
1. MODULE SHIPPED FROM FACTORY IN THIS CONFIGURATION.
2. [illegible] SHOWN FOR DEVICE VECTOR ADDRESS ARE ONLY A FEW EXAMPLES FOR A COMPLETE LIST, SEE DIVIDE/DLV11-E USERS MANUAL [illegible] ADDRESS SETUP DIAGRAMS PROVIDED FOR USERS CONVENIENCE.

STEP ↓	+ Y AXIS	STEP =	TIMES
REPEAT	→ X AXIS	STEP =	TIMES

CHK	CHANGE NO	REV
	M8017A004	F
	REVISED - REFORMATTED	
J. CURTIS		

SIGNATURES	DATE
DRN. B. B. BLODGETT	4-6-77
CHK'D. F. SMART	7-1-77
MECH. ENG. M. D. MICHAUD	7-1-77
PROJ. ENG. M. D. MICHAUD	7-1-77
PROD. M. D. MICHAUD	7-1-77

digital

TITLE ASYN LINE INTERFACE

SCALE 2/1
SHT. 1 OF 6
SIZE D | CODE CS | NUMBER M8017-AA-I | REV F
NEXT HIGHER ASSY. B-DD-M8017-AA

1 MS# 150380

[K-4] SEL 4 IN L
[K-3] INWD L
BIRQ 5L
BIRQ 7L
BIRQ 6L
[K-5] R DONE (I) H
[K-7] ₩ INT EN (₩) H
[K-7] DSET INT (I) H
[K-7] DSET INT EN (I) H
[K-7] SEL Ø OUT LB H
BINIT L
[K-5] XRDY H
[K-4] SEL 4 OUT LB H
[K-3] DAT 6 H
BIAKI L
[K-3] DAT 15 H
[K-3] DAT 12 H
[K-3] DAT 11 H
[K-3] DAT 14 H
+5V
[K-3] INIT H
[K-3] DAT 10 H
[K-3] INIT L
[K-3] DAT 13 H
AL2 BIRQ L + [BIRQ 4L]
[K-3] T INT EN (I) H
VECTOR H
VEC RQST B H
AN2 BIAKO L
[K-3] DAT 7 H
[K-3] DAT 6 H
[K-3] DAT 5 H
[K-3] DAT Ø H
[K-3] DAT 4 H
[K-3] DAT 3 H
[K-3] DAT 2 H
[K-3] DAT 1 H
AM2 BDIN L
[K-3] DIN L
BA1 BDC OK H
[K-3] DC OK L
(H) AP1 B HALT L
+5V
[K-3] +3V
AA2, BA2
+12V AD2
BWTBT L
BSYNC L
BDOUT L
[K-3] DAT 2 H
[K-3] DAT 1 H
[K-3] DAT Ø H
[K-3] INWD L
[K-3] OUT HB L
[K-3] OUT LB L
AF2 BRPLY L
[K-3] SEL Ø L
[K-3] SEL 2 L
[K-5] SEL 4 L
[K-3] SEL 6 L
AP2 SBS7 L
BDAL 15 L
BDAL 12 L
BDAL 11 L
BDAL 14 L
BDAL Ø L
BDAL 9 L
BDAL 8 L
BDAL 13 L
BDAL 7 L
BDAL 6 L
BDAL 5 L
BDAL Ø L
BDAL 4 L
BDAL 3 L
BDAL 2 L
BDAL 1 L

* DC005 BRACKETED #'S REFER TO DC005 PRIME CHIP.
PIN No. 20 — +5V
PIN No. 9 — GND.

5012499 D
(BUS RECEIVERS & DRIVERS) [K-3]

DRN.		7-30-76
CHK'D		7-1-77
ENG.		7-1-77
PROJ. ENG.		7-1-77
PROD.		7-1-77
NEXT HIGHER ASSY.		
SCALE		
SHEET	2 OF 6	

FIRST USED ON
TITLE ASYN. LINE INTERFACE
SIZE D CODE CS NUMBER M8017-AA-1 REV. F
DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

+5V
R33 10K
R10 10K
R11 10K
R12 10K
74LS298 E34
(R0) (R1) (R2) (R3)
[K-5] DAT 12 H
[K-5] DAT 13 H
[K-5] DAT 14 H
[K-5] DAT 15 H
R0(1) R1(1) R2(1) R3(1)
WS CLK
R13 10K
[K-5] DC OK L
C26 470 PF
R15 1.5K
R14 1K
[K-5] DAT 11 H
[K-5] SEL 4 L
[K-5] OUT MB L
[K-5] DIN L
(P8)
[K-4] SEL 4 IN L
(BG)
R16 10K
[K-5] +5V
[K-5] DAT 0 H
[K-5] OUT LB L
[K-5] SEL 4 L
[K-5] DAT 2 H
[K-5] INIT L
74LS174 E10
[K-4] BREAK (1) H
[K-5] SERIAL OUT H
[K-4] SO MARK H
J1 SS
[K-4] MAINT (1) H
[K-4] MAINT (1) L
[K-4] SEL 4 OUT LB H
+5
STT STR
PA PB PC PD
5016 E29
+12V
(T0) (T1) (T2) (T3)
TA TB TC TD
EXT 1 EXT 2
BK1 (SEE NOTE 1)
INT R CLK H
INT T CLK H
(S1)
OSC 5.0688 MHZ Y1
N/C
[K-4] 110 BAUD H
J1 CC
CONN CLK INPUT H
EXT R CLK H
(C1)
[K-7] SI MARK H
[K-4] SO MARK H
[K-4] MAINT (1) H
EXT T CLK H
BM1
STB1 STB0
A0 B0 C0 D0
74LS153 E22
A1 B1 C1 D1
S1 S0
F0 F1
[K-4] R CLK H
(C) [K-4] T CLK H
(S) [K-4] SERIAL IN H
J1 U MM
CONN CLK EN L
R17 10K
N/C
74LS390 E6 (1) (2)
QD QC QB QA
W4 (SEE NOTE 3)
W5
AK1 -12V @ 40 MA MAX.
AL1 [K-4] -12V RET (SEE NOTE 2)
C38 6.8 μf
C39 .47 μf
C42 .47 μf
D1 D664
D4 D664
D3 D664
C41 .47 μf
D2 IN4740A 5% 1W
C40 .47 μf
R36 82 1W

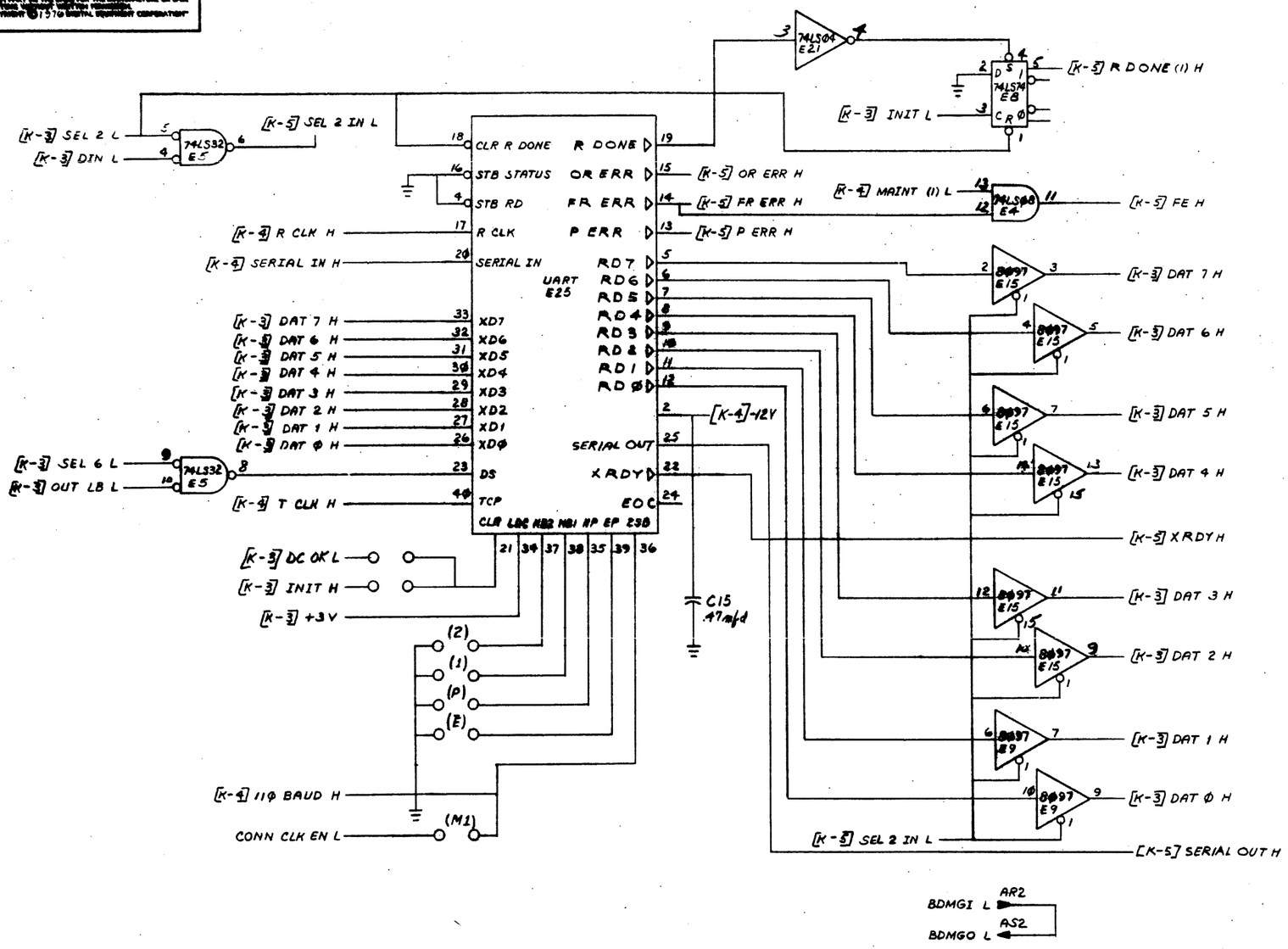
NOTES:
1. BK1 AND BL1 ARE TIED TOGETHER ON THE BUS
2. AK1 AND AL1 ARE TIED TOGETHER ON THE BUS
3. W4 NORMALLY INSTALLED

(TCSR, BAUD RATE CKT AND -12V SUPPLY) [K-4]

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ASYN LINE INTERFACE	D	CS	M8017-AA-1	F
SCALE	SHEET 5 OF 6	DIST.		

THIS DRAWING AND SPECIFICATION, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION

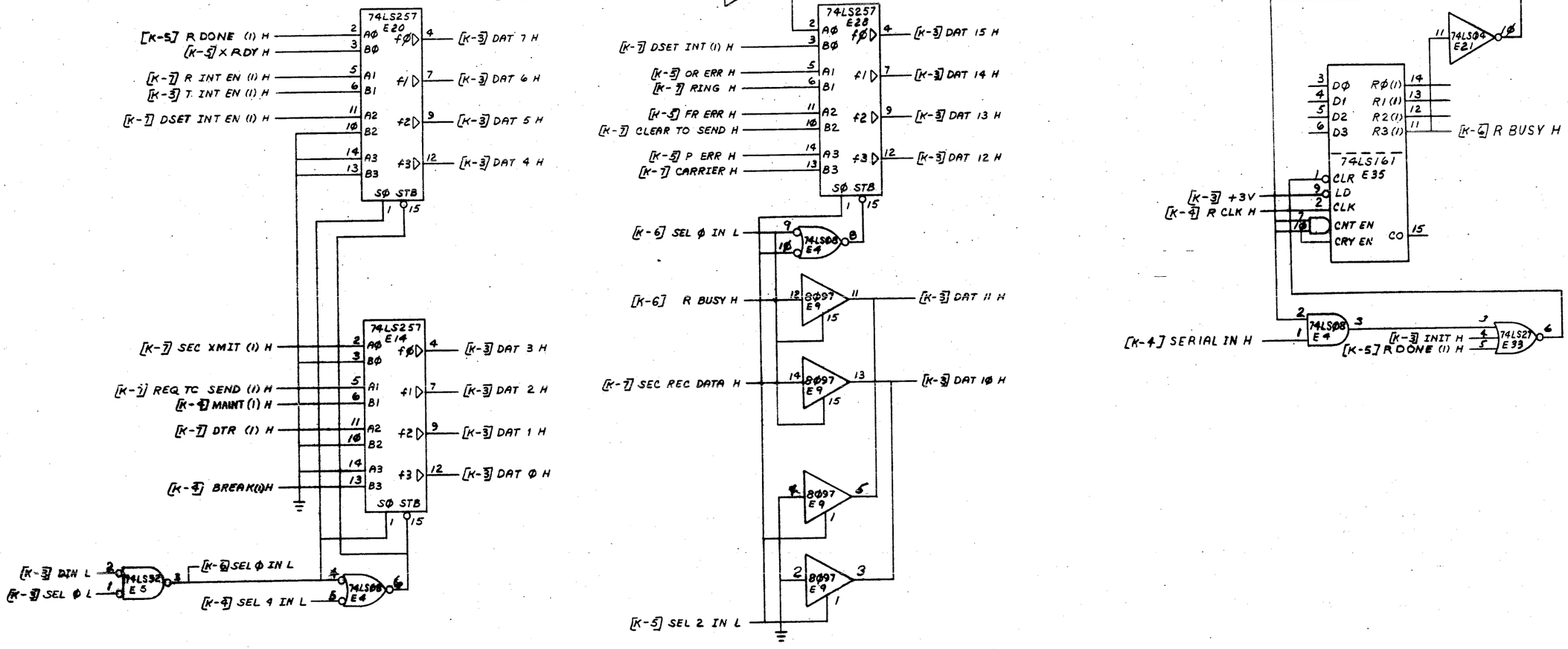


REVISIONS		
CHK	CHANGE NO.	REV.

(UART CKT) [K-5]

TITLE	SIZE	CODE	NUMBER
ASYN LINE INTERFACE	D	CS	M8017-AA-1
SCALE —	SHEET 4 OF 6	DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"



(INTERNAT BUS DRIVERS & RCVR BUSY CKT) [K-6]

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: ASYN LINE INTERFACE
SIZE: D | CODE: CS | NUMBER: M8Ø17-AA-1 | REV: F
SCALE: — | SHEET: 5 OF 6 | DIST:

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

NOTE:
1. NUMBERS WITHIN BOXES REFER TO PINS ON THE MALE CINCH CONNECTOR WHEN USING THE BC08V OR BC05C CABLE. THESE ALSO CONNECTS J1 PINS M TO E.

J1

[22] EIA RING H — X — 1489 E30 — 74S04 E26 — [K-7] RING H
C30 470PF, C2 330 pf, +5V, R22 470Ω, C31 220 PF, R23 220, 74LS266 E23, +5V, R24 1K

[8] EIA CARRIER H — BB — 1489 E30 — 74S04 E26 — [K-7] CARRIER H
C32 470PF, R25 1K, C33 220PF, R26 2K, 74LS266 E29

[5] EIA CLEAR TO SEND H — T — 1489 E30 — 74S04 E26 — [K-7] CLEAR TO SEND H
C34 470PF, R27 1K, C35 220PF, R28 2K, 74LS266 E29

[2] EIA SEC REC DATA H — JJ — SD — SD1 — 1489 E30 — 74S04 E26 — [K-7] SEC REC DATA H
DS, C36 470 PF, R29 1K, C37 220 PF, R30 2K, 74LS266 E23

[4] EIA DATA SET RDY — 2 — DS

[3] EIA RECEIVE DATA H — J — 1489 E13 — 74S04 E26 — J1 M — EIA INTLCK H
+5V — TT, C1 470 PF, 74LS74 E36 — [K-7] DSET INT (1) H
[K-3] SEL Ø IN L
[K-3] INIT L

TTL SI MARK L — E — 74LS00 E21 — [K-7] SI MARK H

74LS175 E17
[K-3] DAT 5 H — D3 — R3(1) — M3 — [K-7] DSET INT EN (1) H
[K-3] DAT 3 H — D2 — R2(1) — M2 — [K-7] SEC XMIT (1) H; R2(Ø) — [K-7] SEC XMIT (1) L
[K-3] DAT 2 H — D1 — R1(1) — (FR) — [K-7] REQ TO SEND (1) H
R1(Ø)
[K-3] DAT G H — DØ — RØ(1) — [K-7] PRINT EN (1) H; RØ(Ø)
R31 2.4K +5V — 1489 E13 — [K-7] REQ TO SEND (1) L
CLR CLK
[K-3] SEL Ø L, [K-3] OUT LB L — 74LSØ2 E2 — [K-7] SEL Ø OUT LB H

[K-3] INIT. L
[K-3] DAT 1 H — 74LS74 E36 — (-FD) — [K-7] DTR (1) H
[K-7] SEL Ø OUT LB H
R32 2.4K +5V — 1489 E13 — [K-7] DTR (1) L
+3V

J1
[K-3] SO MARK H — 1488 E18 — F — EIA XMIT DATA [2]
[K-7] DTR (1) L — 1488 E18 — DD — EIA DATA TERMINAL READY [20]
[K-7] REQ TO SEND (1) L — 1488 E18 — (RS) — V — EIA REQ TO SEND [4]
(FB) — C — EIA FORCE BUSY [25]
[K-7] SEC XMIT (1) L — 1488 E18 — FF — EIA SEC XMIT DATA [11]

* ETCH CONNECTS PIN JJ OF BERG HOUSING TO PIN 1 OF E30 THROUGH STAKE PINS SD AND SD1. IF USAGE OF PIN 2 TO PIN 1 OF E30, CUT ETCH ON SIDE TWO CONNECTING STAKE PIN SD1 AND STAKE PIN SD, THEN WIREWRAP STAKE PIN DS TO STAKE PIN SD1.

REVISIONS		
CHK	CHANGE NO.	REV.

(MODEM CONTROL CKT) [K-7]

TITLE	SIZE	CODE	NUMBER	REV
ASYN LINE INTERFACE	D	CS	M8017-AA-1	F
SCALE —	SHEET 6 OF 6	DIST.		

THIS DRAWING AND SPECIFICATIONS, HEREON, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION

VIEW FROM SIDE 1:

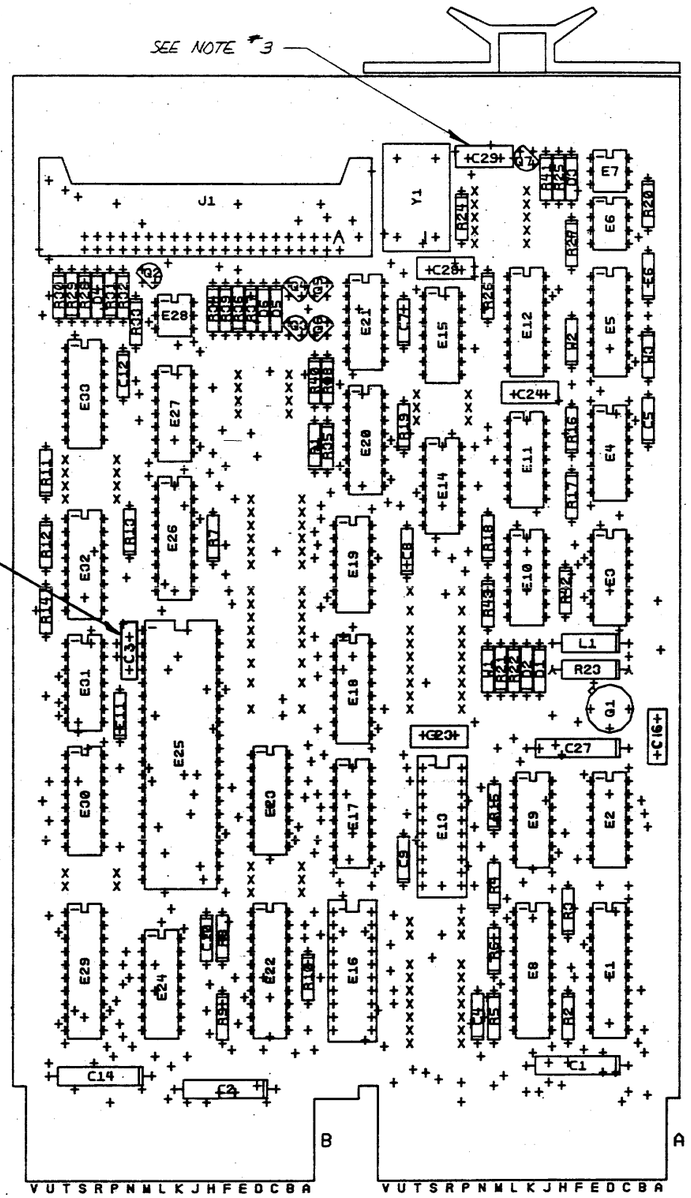
VENDOR NAME: GPSA(GE)

MOTOROLA, ITT
NATIONAL TRANSISTOR
NATIONAL SEMICONDUCTOR

ACTUAL Q2 INSERTION IS DEPENDANT UPON VENDOR VARIATION

SEE NOTE #3

SEE NOTE #2



NOTES:
1. B HOLES .0465 [+.000 -.0045] MAYNARD ONLY.
2. C3 AND C16 ARE HAND INSERTED AT ASS'Y.
3. C29 TO BE INSTALLED IN FIELD OR BY CUSTOMER ONLY.
4. REMOVE THE FOLLOWING UNUSED FINGERS ON ARTWORK: ADI, AEI, AFI, AHI, AJI, AMI, ANI, ARI, ASI, AUI, BCI, BDI, BEI, BFI, BJI, BMI, BNI, BRI, BSI, BUI.

CHK	CHANGE NO	REV
FD	M8028-A8004	F
J. CURTIS		
J. CURTIS	M8028-A8006	H
J. CURTIS	M8028-A8008	J

ETCH REV. E
P.C. DESIGN DATA BASE REV. E

SIGNATURES	DATE
DRN. F. SMART	1 AUG 77
CHK'D. F. SMART	1 AUG 77
ENG. M.D. MICHAUD	29 AUG 77
PROJ. ENG. M.D. MICHAUD	29 AUG 77
PROD. F. CORTAZZO	
SCALE 2/1	
SHT. 1 OF 1	

digital

TITLE ASYNCHRONOUS LINE INTERFACE

SIZE	CODE	NUMBER	REV
D	UA	M8028-0-0	J

NEXT HIGHER ASSY. B-DD-M8028-0-0

M8028-0-0 D UA J

1 MS#_____

THIS DRAWING AND SPECIFICATION, EITHER, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND MAY NOT BE REPRODUCED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION

BAUD RATE SELECT JUMPERS					
RECEIVER	(R3)	(R2)	(RI)	(RØ)	BAUD
TRANSMITTER	(T3)	(T2)	(TI)	(TØ)	RATE
	I	I	I	I	50
	I	I	I	R	75
	I	I	R	I	110 * RECEIVER
	I	I	R	R	134.5
	I	R	I	I	150
	I	R	I	R	300
	I	R	R	I	600
	I	R	R	R	1200
	R	I	I	I	1800
	R	I	I	R	2000
	R	I	R	I	2400
	R	I	R	R	3600
	R	R	I	I	4800
	R	R	I	R	7200
	R	R	R	I	9600 * TRANSMITTER
	R	R	R	R	19200

I : INSTALLED R : REMOVED

DEVICE ADDRESS JUMPERS		
JUMPERS IN	JUMPERS OUT	ADDRESS
A4, A5, A6, A8 A9, A10, A11, A12	A3, A7	CONSOLE ADDRESS 17756X *
A3, A7, A8 A9, A11, A12	A4, A5, A6 A10	DLVII-F UNIT #1 176500

ADDRESS SETUP DIAGRAM

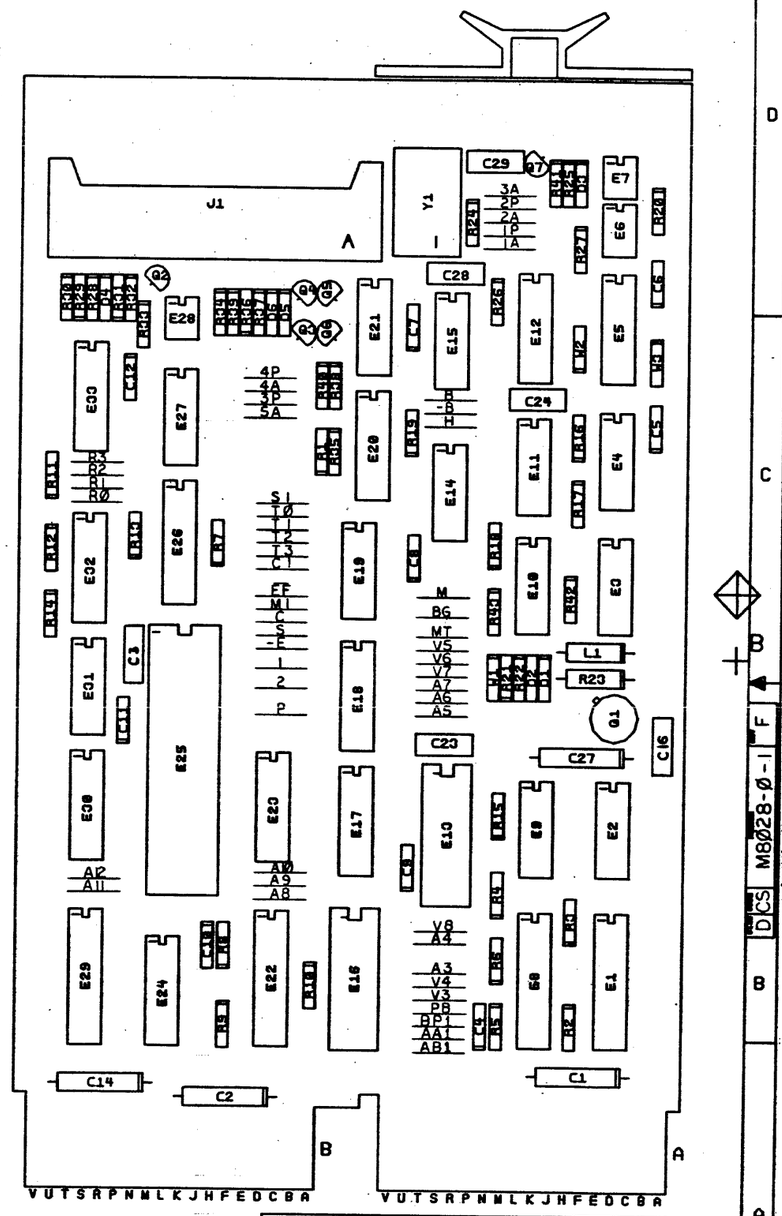
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	Ø
▨	▨	▨										▨	▨	▨	▨

VECTOR ADDRESS JUMPERS		
JUMPERS IN	JUMPERS OUT	ADDRESS
V4, V5	V3, V6, V7 V8	CONSOLE 60, 64 *
V6, V7	V3, V4, V5 V8	DLVII-F UNIT #1 300, 304

VECTOR SETUP DIAGRAM

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	Ø
▨	▨	▨	▨	▨	▨	▨							▨	▨	▨

MISCELLANEOUS JUMPERS			
JUMPERS IN	JUMPERS OUT	FEATURE	
1,2	▨	5 DATA BITS	
1	2	6 DATA BITS	
2	1	7 DATA BITS	
▨	1,2	8 DATA BITS	*
P	▨	PARTY CHECK	
▨	P	NO PARTY CHECK	*
-E	▨	ODD PARITY	
▨	-E	EVEN PARITY	*
PB	▨	PROG. BAUD RATES ENAB	
▨	PB	PROG. BAUD RATES DISAB	*
BG	▨	BREAK GENERATION ENAB	*
▨	BG	BREAK GENERATION DISAB	
C, CI	S, SI	COMMON SPEED	*
S, SI	C, CI	SPLIT SPEED	
H	▨	HALT ON FRAMING ERROR	*
▨	H	NO HALT ON FRAMING ERROR	
B	-B	BOOT ON FRAMING ERROR	
-B	B	NO BOOT ON FRAMING ERROR	*
-EF	▨	ERROR FLAGS DISABLED	*
▨	-EF	ERROR FLAGS ENABLED	
1A, 2A, 3A	1P, 2P	ACTIVE RECIEVE 20 MA CURRENT LOOP	*
1P 2P	1A, 2A, 3A	PASSIVE RECIEVE 20 MA CURRENT LOOP	
4A, 5A	3P, 4P	ACTIVE TRANSMIT 20 MA CURRENT LOOP	*
3P, 4P	4A, 5A	PASSIVE TRANSMIT 20 MA CURRENT LOOP	
M	MI	FACTORY USE ONLY	*
MT	▨	MAINTENANCE BIT ENABLED	
▨	MT	MAINTENANCE BIT DISABLED	*



NOTES:

1. * MODULE SHIPPED FROM FACTORY IN THIS CONFIGURATION.

NOTES:

1. 8 HOLES .Ø76±.Ø05 [1.93±.13] MAYNARD ONLY

CH	CHANGE NO	REV
F3J	M8028-ABØØ3	D
	REVISED & REDRAWN	
	J. CURTIS	
F3J	M8028-ABØØ5	E
	J. CURTIS	
F3J	M8028-ABØØ8	F
	J. CURTIS	

SIGNATURES	DATE
DRN. B. BLODGETE	25JULY77
CHK'D. F. SMART	3AUG77
ENG. M.D. MICHAUD	29AUG77
PROJ. ENG. M.D. MICHAUD	29AUG77
PROD. F. CORTAZZO	13SEP77

digital

TITLE ASYN LINE INTERFACE

SCALE -/-/-

SHT. 1 OF 6

NEXT HIGHER ASSY. D-UA-M8028-0-0

SIZE D | CODE CS | NUMBER M8028-Ø-1 | REV F

ETCH REV. E

MS#

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

+5V R1 10K (EF)

[K-5] SEL 2 IN L
[K-4] SEL 4 IN L
74LS08 E13
74LS00 E14
[K-3] IN WD L
74LS04 E11

[K-3] DAT 15 H
[K-3] DAT 12 H
[K-3] DAT 11 H
[K-3] DAT 14 H
+5V

* SEE NOTE 1

BIRQ5L AA1
BIRQ7L BP1
BIRQ6L AB1

74LS04 E11 → [K-3] INIT H

DC0003 E8

[K-5] R DONE (1) H
[K-3] DAT 6 H
[K-7] SEL 0 OUT LB H
BINIT L AT2
[K-5] XRDY H
[K-3] DAT 6 H
[K-4] SEL 4 OUT LB H
BIAKI L AH2

RQSTA H
ENA DATA H
INIT L → [K-3] INIT L
ENA CLK H
INTERRUPT
BIRQL → AL2 BIRQ4L
RQST B H
ENB ST H → [K-3] T INT EN (1) H
ENB DATA H
VECTOR H
ENB CLK H
VEC RQST B H
BDIN L
BIAKI L BIAKO L → AN2 BIAKO L

[K-3] R INT EN (1) H

[K-3] DAT 10 H
[K-3] DAT 13 H

R9 2.4K R10 2.4K

DC0005 E22 SST
XMIT H DAT 3 DAT 2 DAT 1 DAT 0
REC H BUS 3 BUS 2 BUS 1 BUS 0
JA3 JA2 JA1 JV3 JV2 JV1 MENB L MATCH H

BP2 BDAL 10 L
BN2 BDAL 9 L
BM2 BDAL 8 L
BT2 BDAL 13 L

DC0005 E27 SST
BV2 BDAL 15 L
BS2 BDAL 12 L
BR2 BDAL 11 L
BU2 BDAL 14 L

[K-3] DAT 7 H
[K-3] DAT 6 H
[K-3] DAT 5 H
[K-3] DAT 0 H

DC0005 E13 SST
BL2 BDAL 7 L
BK2 BDAL 6 L
BJ2 BDAL 5 L
AU2 BDAL 0 L

R2 330 +5V
R3 680
R5 330 +5V
R6 680
R4 330 +5V

AH2 BDIN L
[K-3] DIN L
74LS04 E11
[K-4] SO MARK L
[K-3] SO H
[K-3] SO L
BA1 B DC OK H
[K-3] DC OK L
AP1 B HALT L
[K-5] FE H
8641 E12
+5V R7 1K [K-3] +3V

DC0004 E1 PROTOCOL
ENB H
BWTBT L AK2
BSYNC L AJ2
BDOUT L AE2
BDIN L
BDAL2
BDAL1
BDAL0
VECTOR
RXCX
OUT LB L
OUT HB L
REPLY L AF2 BRPLY L
SEL 6 L
SEL 4 L
SEL 2 L
SEL 0 L
INWD L → [K3] IN WD L

[K-3] DAT 2 H
[K-3] DAT 1 H
[K-3] DAT 0 H
[K-3] OUT HB L
[K-3] OUT LB L
[K-3] SEL 0 L
[K-3] SEL 2 L
[K-3] SEL 4 L
[K-3] SEL 6 L

+5V R8 1K C23 470PF

[K-3] DAT 4 H
[K-3] DAT 3 H
[K-3] DAT 2 H
[K-3] DAT 1 H
+5V
BBS7 L AP2

DC0005 E16 SST
BH2 BDAL 4 L
BF2 BDAL 3 L
BE2 BDAL 2 L
AV2 BDAL 1 L

+5V AA2, BA2
AC2, AT1 BC2, BT1 .047 UFD C4-12
C1 6.8 UFD
C14 6.8
GND
C16 .047
C2 6.8
+12V AD2, BD2

NOTE: 1 BRACKETED PIN #'S REFER TO DC104 - DC107 CHIPS.

[K-3]

DRN.	
CHK'D	
ENG.	
PROJ. ENG.	
PROD.	
NEXT HIGHER ASSY.	
SCALE	
SHEET	2 OF 6

FIRST USED ON

digital

TITLE
ASYNC LINE INTERFACE
(BUS RECEIVERS & DRIVERS)

SIZE D | CODE CS | NUMBER M8028-0-1 | REV F
DIST.

REVISIONS | REV. | CHANGE NO. | CHK

THIS DRAWING AND SPECIFICATION, NEXT ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION

+5V
R11 10K
R12 10K
R13 10K
R14 10K
(R0)
(R1)
(R2)
(R3)
[K-3] DAT 12 H
[K-3] DAT 13 H
[K-3] DAT 14 H
[K-3] DAT 15 H
74LS298 E32
A2 A1 B2 B1 C2 C1 D2 D1
R0(1) R1(1) R2(1) R3(1)
WS CLK
+5V
R15 10K
+5V
R16 1K
C24 470PF
[K-3] DC OK L
R17 1.5K
[K-3] DAT 11 H
74LS86 E19
74LS08 E19
74LS08 E14
(P8)
[K-3] SEL 4 L
[K-3] OUT HB L
74LS32 E2
74LS32 E4
[K-3] DIN L
[K-4] SEL 4 IN L
+3V
STT STR
PA PB PC PD
5016 E26
+12V
(T0) (T1) (T2) (T3)
TA TB TC TD
EXT1 EXT2
ST
BK1 (SEE NOTE 1)
INT R CLK H
(S1)
+5V
OCS 5.0688 MHZ Y1
74LS14 E27
74LS27 E31
74LS08 E19
[K-4] 110 BAUD H
74LS04 E11
N/C
74LS390 E5
74S64 E6
+12V
421 10Ω
422 47Ω
Q1 2N2905A
D1 DG72
L1 270 uH
C27 4.8MF 35V DC
423 82,1W
D2 IN4742
AK1 -12V @ 49 ma MAX
W1
W2
W3
AL1 [K-4] -12V (SEE NOTE 2)
J1
CONN CLK INPUT H
EXT R CLK H
[K-3] SI MARK H
[K-4] SO MARK H
[K-4] MAINT (1) H
EXT T CLK H
74LS153 E23
STB1 STB0
A0 B0 C0 D0
A1 B1 C1 D1
S1 S0
[K-4] R CLK H
[K-4] T CLK H
[K-4] SERIAL IN H
CONN CLK EN L
R15 10K
(BG)
R18 18K
+5V
[K-3] +3V
[K-3] DAT 0 H
[K-3] OUT LB L
[K-3] SEL 4 L
74LS32 E2
74LS74 E10
[K-4] BREAK (1) H
[K5] SERIAL OUT H
74LS08 E14
74LS04 E11
[K-3] SO MARK L
[K6] SO MARK H
[K-3] DAT 2 H
[K-3] INIT L
[K-4] MAINT (1) H
[K-4] MAINT (1) L
(MT)
R42 10K
+5V
[K-4] SEL 4 OUT LB H

NOTES:
1) BK1 AND BL1 ARE TIED TOGETHER ON THE BUS.
2) AK1 AND AL1 ARE TIED TOGETHER ON THE BUS.

(TCSR, BAUD RATE CKT. & -12V SUPPLY) [K-4]

REVISIONS		
OK	CHANGE NO.	REV.

TITLE	ASYN LINE INTERFACE	SIZE/CODE D CS	NUMBER M8028-0-1 REV. F
SCALE	SHEET 3 OF 6	DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

[K-3] SEL 2 L
[K-3] DIN L
74LS32 E4
[K-5] SEL 2 IN L
74LS08 E3
[K-5] RDA L
[K7] ADR (1) L
10 K R43
+5

CLR R DONE
STB STATUS
STB RD
R CLK
SERIAL IN
UART E25
XD7 XD6 XD5 XD4 XD3 XD2 XD1 XD0
DS
TCP
CLR LDC M02 M01 NP EP 2SB
R DONE
OR ERR
FR ERR
P ERR
RD7 RD6 RD5 RD4 RD3 RD2 RD1 RD0
SERIAL OUT
X RDY
EOC

[K-4] R CLK H
[K-4] SERIAL IN H
[K-3] DAT 7 H
[K-3] DAT 6 H
[K-3] DAT 5 H
[K-3] DAT 4 H
[K-3] DAT 3 H
[K-3] DAT 2 H
[K-3] DAT 1 H
[K-3] DAT Ø H
[K-3] SEL 6 L
[K-3] OUT LB L
[K-4] T CLK H
[K-4] -12V
C3.47 UF
[K-3] INIT H
[K-3] +3V
(2) (1) (P) (E)
[K-4] 110Ø BAUD H
CONN CLK EN L (M1)

[K-3] SERIAL OUT H
[K-5] XRDY H
[K-3] SEL 2 IN L

[K-5] OR ERR H
[K-5] FR ERR H
[K-5] P ERR H
[K-4] MAINT (1) L
74LS04 E11
74LS08 E3
[K-5] FE H
8097 E18
8097 E24
74LS74 E9
[K-3] INIT L
[K-5] R DONE (1) H

BDMGI L AR2
BDMGO L AS2

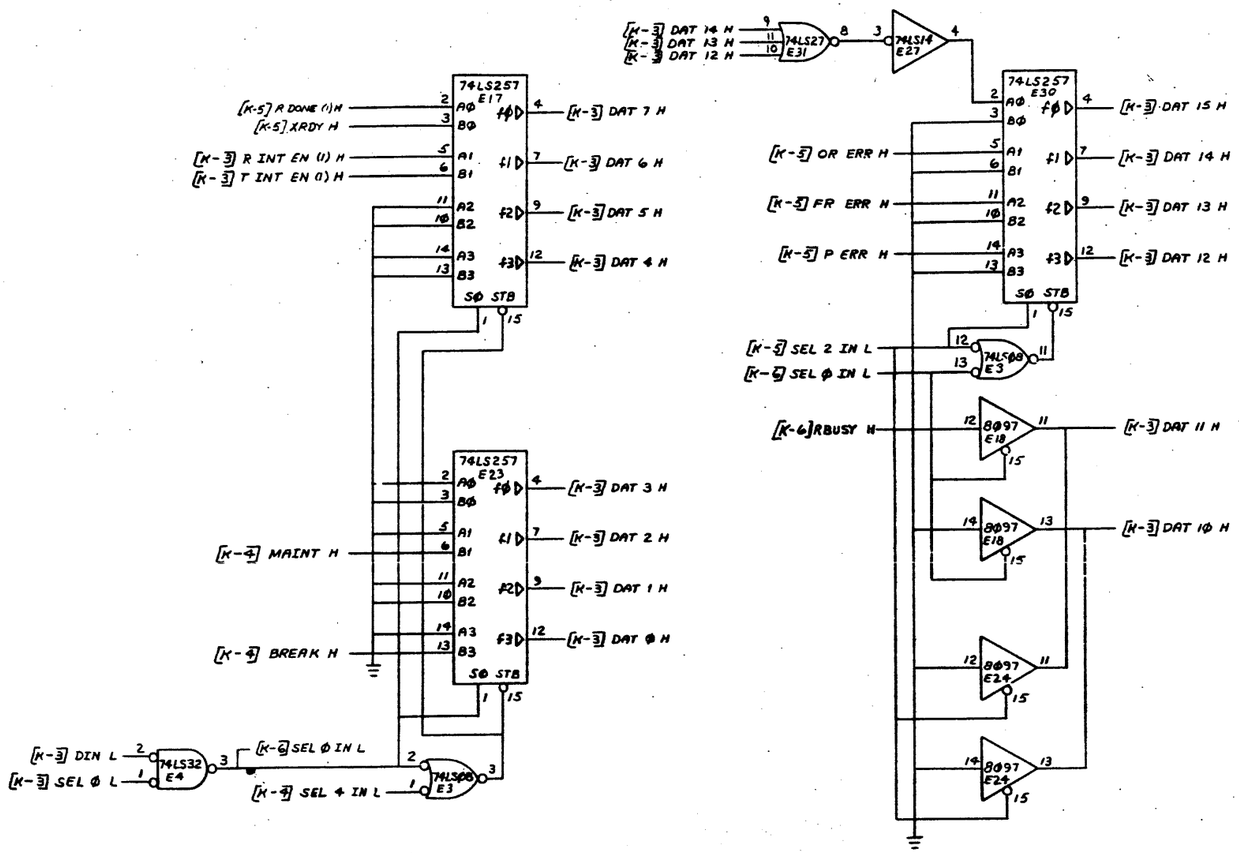
(UART CKT) [K-5]

REVISIONS
CHK | CHANGE NO. | REV.

TITLE: ASYN LINE INTERFACE
SIZE D | CODE CS | NUMBER M8028-0-1 | REV. F
SCALE — | SHEET 4 OF 6 | DIST.

8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"



(INTERNAL BUS DRIVERS & RCVR BUSY CKT) [K-6]

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ASYN LINE INTERFACE	D	CS	M8028-0-1	F
SCALE	SHEET 5 OF 6	DIST.		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1970 DIGITAL EQUIPMENT CORPORATION"

[K-4] -12V
+12V
J1
V EIA REQ TO SEND [4]
C EIA FORCE BUSY [25]
DD EIA DATA TERMINAL READY [20]
F EIA XMIT DATA [2]
M EIA INTLCK
1488 E21
1489 E15
74LS14 E27
C28
[K-4] SO MARK H
[13] EIA RECEIVER DATA H
TTL SI MARK L
[K7] SI MARK H

NOTE:
1. NUMBERS WITHIN BOXES REFER TO PINS ON THE MALE CINCH CONNECTOR WHEN USING THE BC05-C, BC01V OR BC03L CABLES. THESE CABLES ALSO CONNECT J1 PIN M TO PIN E.
2. NUMBERS WITHIN TRIANGLES REFER TO PINS ON THE FEMALE MATE-N-LOK CONNECTOR WHEN USING THE BC05-M CABLE. THIS CABLE ALSO CONNECTS J1 PINS H TO E.

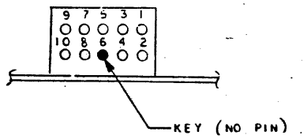
+12V
+5V
+3V
INSERT FOR TTY ONLY
C29
R24 1K
R41 10K
R20 1M
Q7 A05
4N26-2 E7
R25 220
D9 D672
R26 270
(1A) (1P) (2A) (2P) (3A)
R27 180
J1
K
H
S
20 MA RECEIVE
[K-3] DAT Ø H
[K-3] SEL Ø L
[K-3] OUT LB L
[K-7] SEL Ø OUT LB H
74LS02 E2
74LS74 E9
[K-7] RDR (1) L
R28 470
R30 68
R29 680
Q2 A55
D4 D672
R31 47
R32 47
PP
EE
[K-4] -12V
READER RUN

+5V
R33 180
4N26-2 E23
R34 68K
A55 Q3
MCL139A D6
[K3] SOL
[K3] SOH
D5 D672
74LS14 E27
R35 1K
+12V
R39 47
R36 1K
Q4 A55
R37 3K
Q5 A05
Q6 A05
R38 1K
R40 47
(3P) (4A) (5A) (4P)
AA
KK
UU
VV
TT
20 MA TRANSMITTER

(CURRENT LOOP CKT) [K-7]

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: ASYN LINE INTERFACE
SIZE D | CODE DCS | NUMBER M8028-0-1 | REV. F
SCALE —H— | SHEET 6 OF 6 | DIST.



DETAIL A-A
4 PLACES

NOTES:
1. PLACEMENT OF Q1 FOR TO 92(LEADS IN-LINE)

ON UA = TO-92

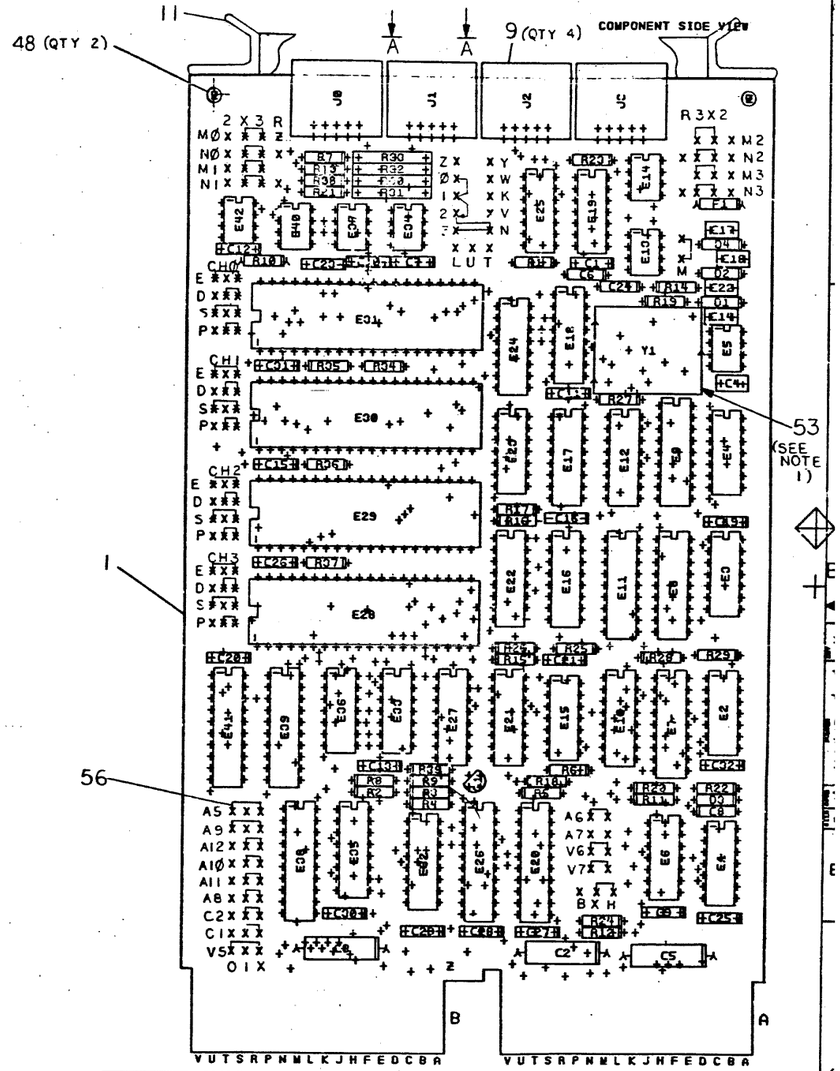
BEND MIDDLE LEAD OUT

FOR TO 18 PKG (METAL CAN)
ON UA = TO-18

FOR TO-105/106 PKG (ROUND TOP PLASTIC)
ON UA = TO-105/106 FLAT

FOR ON UA △ PAT LEADS IN TRIANGULAR PATTERN
= FLAT

NOTE: DIFFERENCE
TO-92 VS △ PAT



NOTES: 1. R30 THRU R33 OPTIONAL
2. CASE OF Y1 MUST BE INSULATED FROM PCB WITH ITEM #53
3. ⬧ DESIGNATES WIRE WRAP JUMPER (ITEM #56) INSULATED FOR SHIPMENT

CHK	CHANGE NO	REV
MC	M8043-MR03	E
T. ZAJAC	M8043-MR4	F
BI.VAN DOLE	M8043-MR5	H
R.GALLEGOS	M8043-MR6	J
B. LOCKE	M8043-AB009	K
J. CURTIS		

ETCH REV.	E-P1
P.C. DESIGN DATA BASE REV.	C

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	
PROJ. ENG.	
PROD. K. MERCADE	
SCALE	
SHT. 1 OF 2	
NEXT HIGHER ASSY. B-DD-M8043-0	

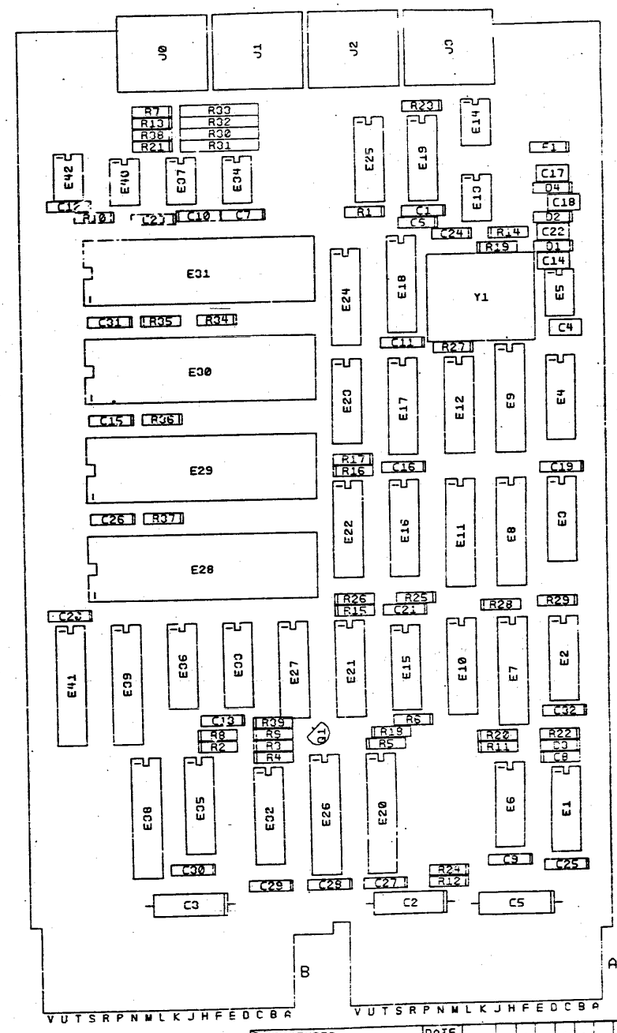
digital

TITLE 4 SERIAL LINE PER. CTLR

SIZE	CODE	NUMBER	REV
D	UA	M8043-0-0	K

MR 1 MS#1800230

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © DIGITAL EQUIPMENT CORPORATION



B

NOTES:

CHG NO	REV

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	
PROJ.ENG.	
PROD.	
SCALE	
SHT. 2 OF 2	
NEXT HIGHER ASSY. B-DD-MS043-0	

digital

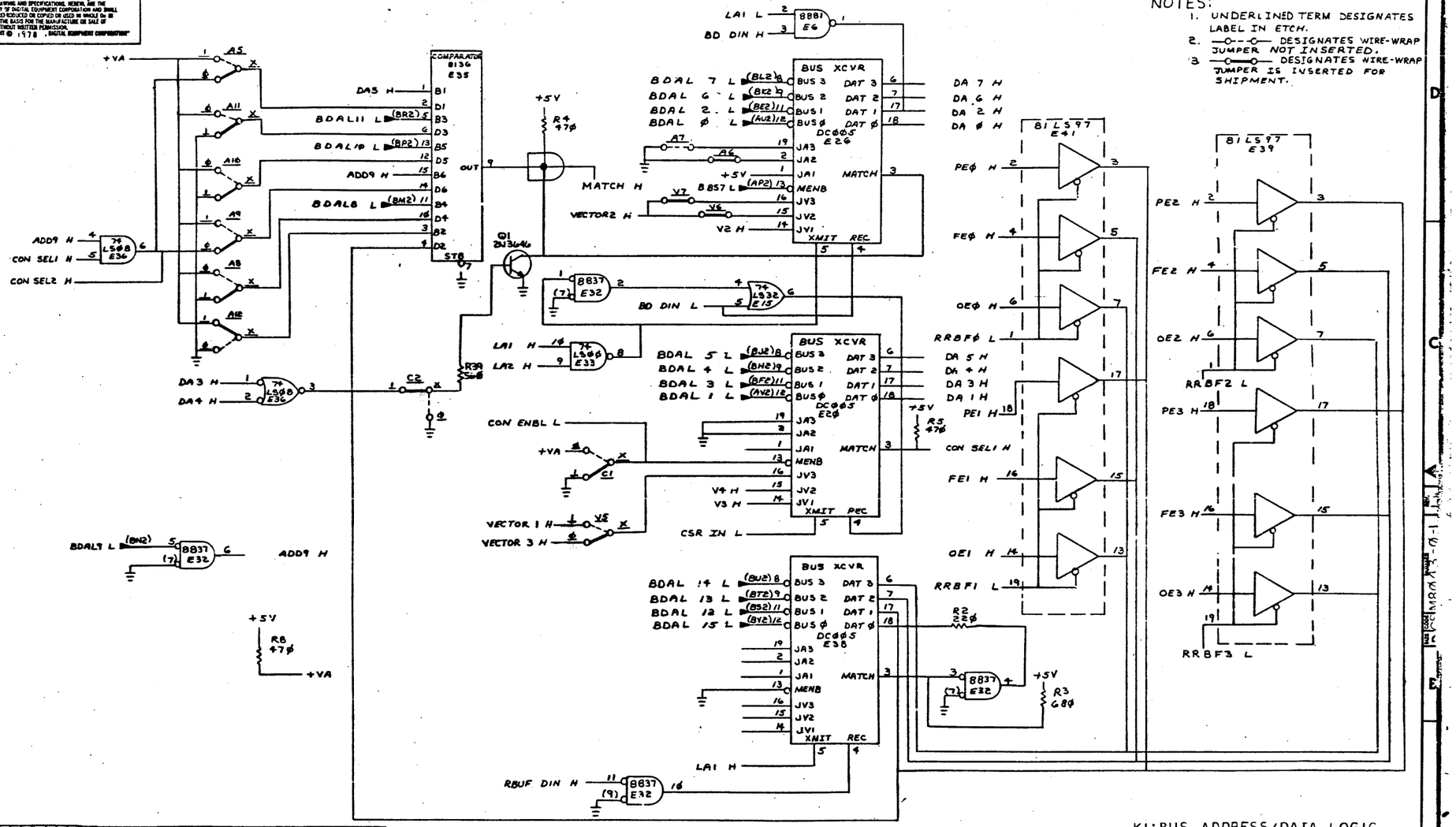
TITLE 4 Serial Line Per. Ctlr

SIZE D | CODE | NUMBER MS043-00 | REV K

1 MS#

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 , DIGITAL EQUIPMENT CORPORATION"

NOTES:
1. UNDERLINED TERM DESIGNATES LABEL IN ETCH.
2. —o---o— DESIGNATES WIRE-WRAP JUMPER NOT INSERTED.
3. —o—o— DESIGNATES WIRE-WRAP JUMPER IS INSERTED FOR SHIPMENT.



KI:BUS ADDRESS/DATA LOGIC

REVISIONS		
CHK	CHANGE NO.	REV.
RBC	M8043-MR0001	D
RBC	M8043-MR0002	E
RBC	M8043-MR0003	F
RBC	M8043-MR0004	G
RBC	M8043-MR0005	J
RBC	M8043-MR0006	K
RBC	M8043-AB0081	L

DRN.	E. Wilson 30JAN78
CHK'D	D. Cutler 25Feb78
ENG.	J. Hayes 2 MAR 78
PROJ. ENG.	J. Hayes 21MAR78
PROD.	[illegible] 3/6/78
NEXT HIGHER ASSY.	R-DD-M8043-0
SCALE	NONE
SHEET	1 OF 7

FIRST USED ON: DLV11-J

digital

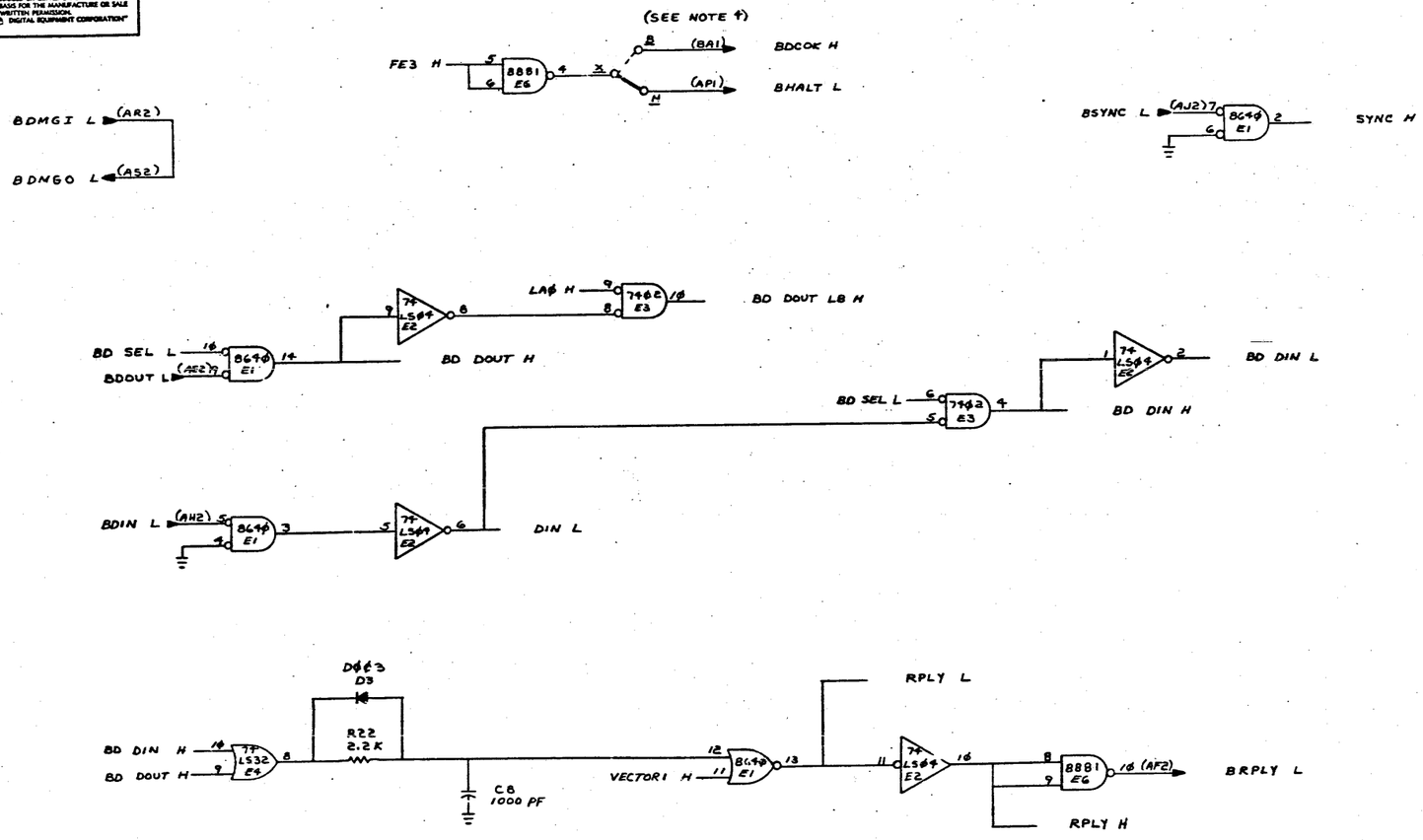
TITLE: 4 SERIAL LINE PER. CTLR.

SIZE D | CODE | NUMBER CS:M8043-0-1 | REV. L

DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

NOTES:
1. TO ENABLE HALT ON RECEIVING BREAK, CONNECT X TO H. TO ENABLE BOOT ON RECEIVING BREAK, CONNECT X TO B.



REVISIONS		
CHK	CHANGE NO.	REV.

K2: CONTROL AND HALT/BOOT LOGIC

TITLE	SIZE	CODE	NUMBER	REV.
4 SERIAL LINE PER. CTLR.	D	CS	M8043-0-1	L

SCALE NONE | SHEET 2 OF 7 | DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

LATCH 74LS174 E21
MATCH H — D0
DA1 H — D1
DA2 H — D2
DA3 H — D3
DA4 H — D4
DA0 H — D5
CLR CLK
R0(1) R1(1) R2(1) R3(1) R4(1) R5(1)
BD SEL H
LA2 H
LA3 H
LA4 H
LA0 H
74LS32 E15: DA3 H, CON SEL2 H
74LS32 E15: BD SEL L, SYNC H — SYNC H
8837 E32
LA1 L
LA1 H
74LS08 E36: LA2 H, BD DOUT LB H
74LS08 E33: LA1 H
RPLY H
3-TO-8 DECODER 74LS155 E27: LA4 H, LA3 H
WXBF3 L
WXBF2 L
WXBF1 L
WXBF0 L
RRBF3 L
RRBF2 L
RRBF1 L
RRBF0 L
+5V
R15 680 R16 680 R17 680 R18 680
7402 E3: LA2 H, BD DIN L — RBUF DIN H
3-TO-8 DECODER 74LS138 E12: LA3 H, LA4 H, LA2 H
RINT ENBL0 STB L
RINT ENBL1 STB L
RINT ENBL2 STB L
RINT ENBL3 STB L
XINT ENBL0 STB L
XINT ENBL1 STB L
XINT ENBL2 STB L
XINT ENBL3 STB L
8-TO-1 MUPLX 74LS251 E22
R INT ENBL0 H
R INT ENBL1 H
R INT ENBL2 H
R INT ENBL3 H
X INT ENBL0 H
X INT ENBL1 H
X INT ENBL2 H
X INT ENBL3 H
LA3 H
LA4 H
LA2 H
STB
OUT Y — DAG H
74LS04 E33: LA1 L, BD DIN H — CSR IN L
ADDR'ABLE LATCH 74LS259 E17
LA3 H, LA4 H, LA2 H
RDR ENBL PLS0 H
RDR ENBL PLS1 H
RDR ENBL PLS2 H
RDR ENBL PLS3 H
BRK0 H
BRK1 H
BRK2 H
BRK3 H
74LS32 E15: LA2 H, RPLY L
74LS08 E36: DA0 H
DATA
INIT0 L
74LS04 E33: BD DOUT LB H, LA1 L
RRBF0 L — RDR ENBL PLS0 H — 74LS86 E23 — DRR0 L
RRBF1 L — RDR ENBL PLS1 H — 74LS86 E23 — DRR1 L
RRBF2 L — RDR ENBL PLS2 H — 74LS86 E23 — DRR2 L
RRBF3 L — RDR ENBL PLS3 H — 74LS86 E23 — DRR3 L
8-TO-1 MUPLX 74LS251 E24
BRK0 H, BRK1 H, BRK2 H, BRK3 H, LA3 H, LA4 H, LA2 H
STB
OUT Y — DA0 H
CSR IN L
8-TO-1 MUPLX 74LS251 E16
DR0 H, DR1 H, DR2 H, DR3 H, XRDY0 H, XRDY1 H, XRDY2 H, XRDY3 H, LA3 H, LA4 H, LA2 H
STB
OUT Y — DA7 H
CSR IN L

REVISIONS
CHK | CHANGE NO. | REV.

K3: ADDRESS LATCH AND REGISTER LOGIC

TITLE 4 SERIAL LINE PER. CTLR.
SIZE D CODE CS NUMBER M8043-0-1 REV L
SCALE NONE SHEET 3 OF 7 DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

+5V
R11 330
R24 680

DRØ H
DA6 H
BIAKI L (AM2)
BINIT L (AT2)
DIN L
DRI H

DCØØ3 E7
RQSTA ENA ST
ENA DAT VEC RQSTB
BIAKI BIRQ
BINIT BIAKO
BDIN INITO
RQSTB VECTOR
ENB DAT ENB ST
ENA CLK ENB CLK

R INT ENBLØ H
INITO L
R INT ENBLI H

R INT ENBLØ STB L
R INT ENBLI STB L

DR2 H
R25 470
+5V
DR3 H

DCØØ3 E11

R INT ENBL2 H
R INT ENBL3 H

R INT ENBL2 STB L
R INT ENBL3 STB L

XRDYØ H
R26 470
+5V
XRDYI H

DCØØ3 E9

X INT ENBLØ H
X INT ENBLI H

X INT ENBLØ STB L
X INT ENBLI STB L

XRDY2 H
R27 470
+5V
XRDY3 H

DCØØ3 E8

X INT ENBL2 H
X INT ENBL3 H

X INT ENBL2 STB L
X INT ENBL3 STB L

+5V
R28 470
74LSØ4 E6
8881 E6
(AL2)
BIRQ L

256 X 4 ROM
BZ5129 E10
E1 A1 A2 A3 A4 A5 A6 A7 E2 E3 E4 A8
Ø1 Ø2 Ø3 Ø4

+5V
R29 470
R2Ø 470

VECTOR2 H
V2 H
V3 H
V4 H
SEE TABLE BELOW

CON ENBL L

4Ø49 E18
INITO H

VECTOR2 H
74LS32 E4
VECTOR1 H
VECTOR 3 H

+5V
R12 330
R6 68Ø
(AN2)
BIAKO L

	CON ENBL L = Ø				CON ENBL L = 1			
E16	VECTOR 2 H	V2 H	V3 H	V4 H	VECTOR 2 H	V2 H	V3 H	V4 H
A1 = 1	1	Ø	Ø	Ø	1	Ø	Ø	Ø
A1·$\overline{E1}$=1	1	Ø	1	Ø	1	Ø	1	Ø
A2=1	1	Ø	Ø	1	1	Ø	Ø	1
A2·A3=1	Ø	Ø	Ø	1	1	Ø	1	1
A4=1	1	1	Ø	Ø	1	1	Ø	Ø
A4·A5=1	1	1	1	Ø	1	1	1	Ø
A6=1	1	1	Ø	1	1	1	Ø	1
A6·A7=1	Ø	1	Ø	1	1	1	1	1
$\overline{E1}$=Ø $\overline{EA1-7}$=Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø

K4: INTERRUPT, VECTOR AND INIT LOGIC

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE 4 SERIAL LINE PER. CTLR.
SIZE D CODE DCS NUMBER M8Ø43-Ø-1 REV. L
SCALE NONE SHEET 4 OF 7 DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

NOTES:
* 5. Y HIGH = MARK = 1
Y LOW = SPACE = Ø

LABEL	UART PARAMETER	X = Ø	X = 1	COMMENTS
D	NUMBER OF DATA BITS	7 BITS	8 BITS	LEAST SIGNIFICANT BITS ARE TRANSMITTED FIRST
S	NUMBER OF STOP BITS	1 BIT	2 BIT	
P	PARITY INHIBIT	PARITY GENERATION AND DETECTION ENABLED	PARITY BIT IS DELETED, PARITY ERROR = Ø.	
E	EVEN PARITY ENABLE	ODD PARITY ENABLED	EVEN PARITY ENABLED	ONLY WHEN P = Ø.

REVISIONS

CHK	CHANGE NO.	REV.

K5: UART LOGIC

TITLE	4 SERIAL LINE PER. CTLR.	SIZE	CODE	NUMBER	REV.
SCALE	NONE	SHEET 5 OF 7	DIST.	D	CS M8Ø43-Ø-1	L

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

NOTES:
6. CLK0-3 ARE WIREWRAP JUMPERED TO REQUIRED BAUD RATE.
7. JUMPER IS REMOVED FOR MFG. TESTING ONLY.
8. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:

PACKAGE	GND	+5V	+12V	-12V
14 PIN DIP	7	14	–	–
16 PIN DIP	8	16	–	–
18 PIN DIP	9	18	–	–
20 PIN DIP	10	20	–	–
6402	3	1	–	–
MH002	*	–	*	–
5640	1	5	–	–
9636	4	–	8	5
9637	4	1	–	–
9638	4	1	–	–
4049	8	1	–	–

* SEE SCHEMATIC

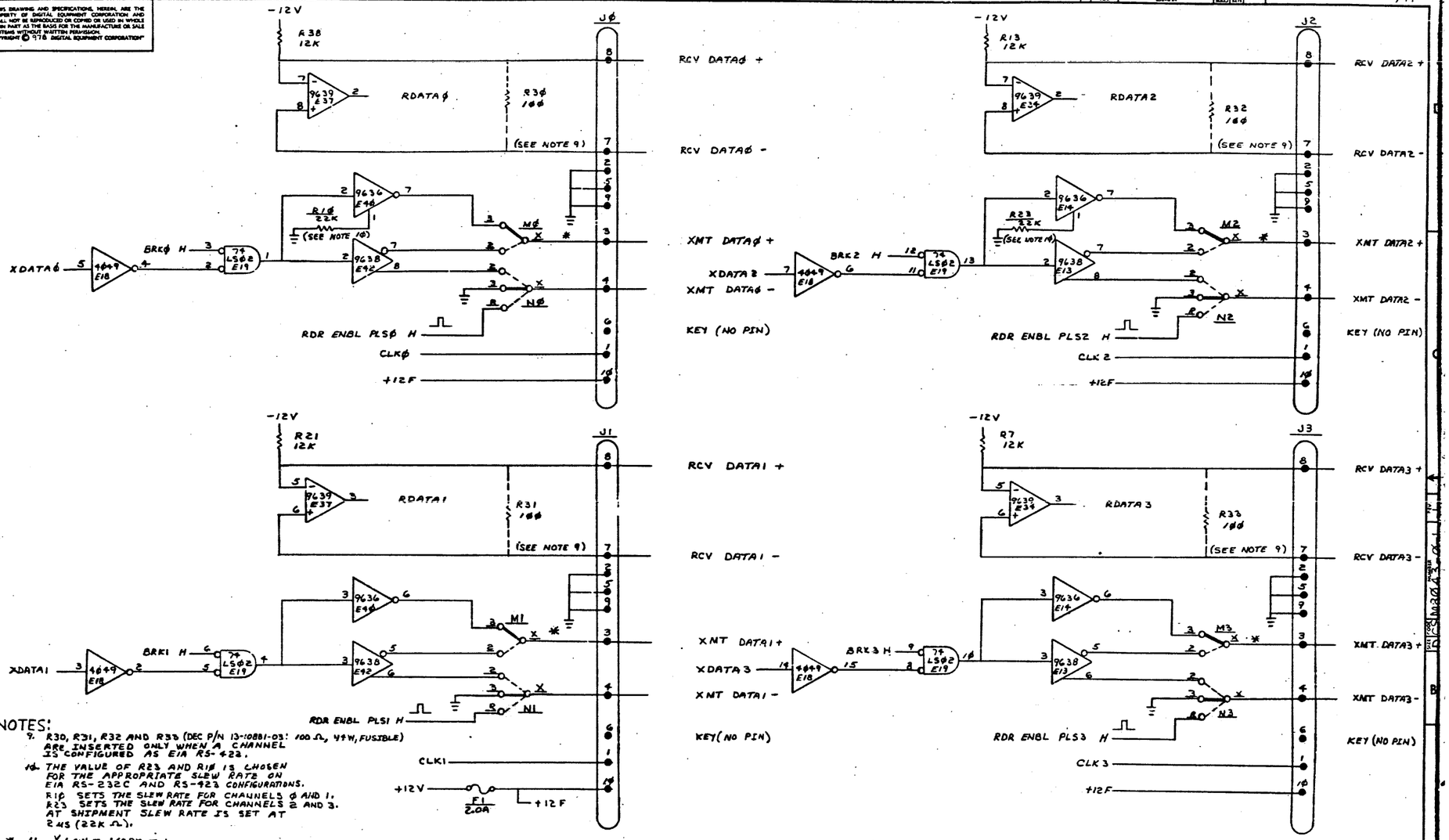
Y1 614.4KHZ
R19 1M
R14 2.2K
C6 100 PF
C24 33PF
4049 E18
74S02 E3
(SEE NOTE 7)
74 LS04 E2
74 LS32 E4
COUNTER 74LS393 E25
1QD 1QC 1QB 1QA 2QD 2QC 2QB 2QA CLR1 CLR2 CLK2 CLK1
(SEE NOTE 6)
CLK3 CLK2 CLK1 CLK0
R1 22Ø
+5V AA2, BV1, BA2
GRD AJ1, AM1, AT1, BJ1, BM1, BT1, BC2
C2 C3 C1 C9 C11 THRU C13 C15 C16 C19 THRU C21 C25 THRU C32
+12V (AD2)
GRD (AC2)
C5 8.4F
C4 .47MF
C23 .047MF
MH 0026 E5
C18 .47MF
C14 .47MF
C17 .47MF
C10 .047MF
C22 .47MF
D4 D664
D2 D664
D1 D664
-12V
+5V

K6: PWR DIST, BAUD RATE GEN & -12V CIRCUITRY

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE 4 SERIAL LINE PER. CTLR.
SIZE D CODE CS NUMBER M8043-0-1 REV. L
SCALE NONE SHEET 6 OF 7 DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"



NOTES:

9. R30, R31, R32 AND R33 (DEC P/N 13-10881-03: 100 Ω, 4 W, FUSIBLE) ARE INSERTED ONLY WHEN A CHANNEL IS CONFIGURED AS EIA RS-423.
10. THE VALUE OF R23 AND R/0 IS CHOSEN FOR THE APPROPRIATE SLEW RATE ON EIA RS-232C AND RS-423 CONFIGURATIONS. R/0 SETS THE SLEW RATE FOR CHANNELS 0 AND 1. R23 SETS THE SLEW RATE FOR CHANNELS 2 AND 3. AT SHIPMENT SLEW RATE IS SET AT 2 μS (22K Ω).

* 11. V LOW = MARK = 1
V HIGH = SPACE = 0

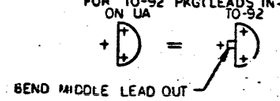
REVISIONS		
CHK	CHANGE NO.	REV.

K7: LINE INPUT/OUTPUT LOGIC

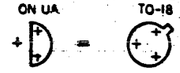
TITLE	SIZE	CODE	NUMBER	REV.
4 SERIAL LINE PER. CTLR.	D	CS	M8043-0-1	L
SCALE NONE	SHEET 7 OF 7		DIST.	

NOTES:
1. PIN 6 OF J1 MUST BE CUT OUT. SEE DETAIL "A-A"
2. ITEM 46 IS PUT IN LOCATIONS PIN 2 THRU 7 OF J2
3. MFG. MAY OPTIONALLY PLACE TRANSIPADS (ITEM 49) UNDER Q4 & Q7
4. PLACEMENT OF Q1 THRU Q3, Q5 & Q6 IS:

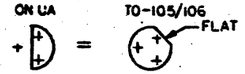
FOR TO-92 PKG (LEADS IN-LINE)



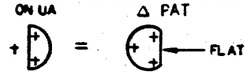
FOR TO-18 PKG. (METAL CAN)



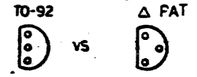
FOR TO-105/106 PKG (ROUND TOP PLASTIC)



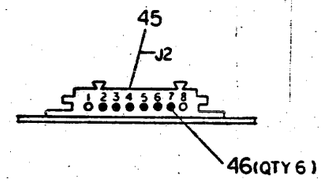
FOR LEADS IN TRIANGULAR PATTERN



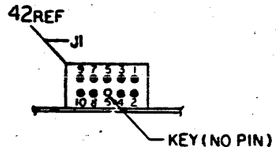
NOTE: DIFFERENCE



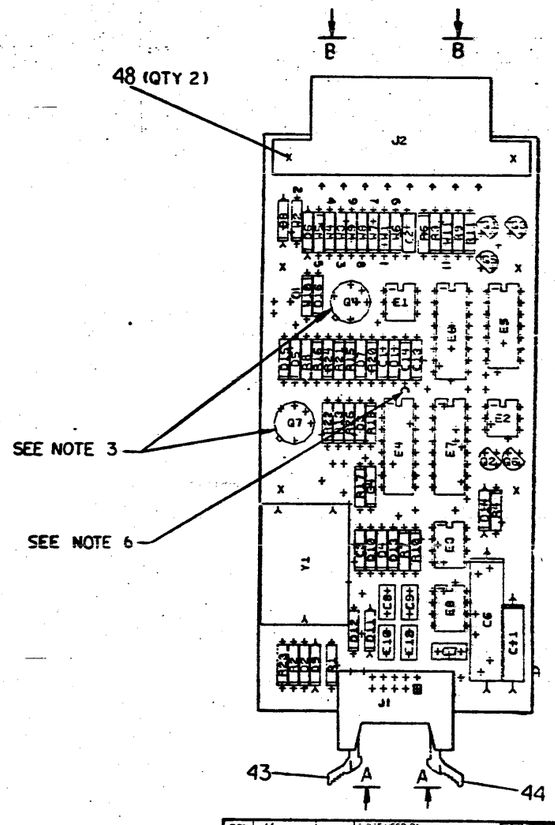
5. R8 IS ENGINEERING OPTIONAL COMPONENT.
6. C14 IS OPTIONAL. ONLY INSTALLED FOR ASR-33 USE



DETAIL "B-B"
(SEE NOTE 2)



DETAIL "A-A"
(SEE NOTE 1)



REVISIONS			
LTR	CHANGE NO	DATE	APPROVED
A	[illegible]	7-Nov-78	[illegible]
B	[illegible]	7-Nov-78	[illegible]

DRN [illegible] 10-Oct-78
CHK [illegible] 10-Oct-78
ENG [illegible] 10-Oct-78
PROJ ENG [illegible] 10-Oct-78
PROD [illegible]
NEXT HIGHER ASSY 8-00-5413679-0
SCALE 2/1
SHEET 1 OF 2

FIRST USED ON: DLVII-KB

digital

TITLE: EIA-TO-20MA CONVERTER

SIZE D | CODE JA | NUMBER 5413579-0-0 | REV

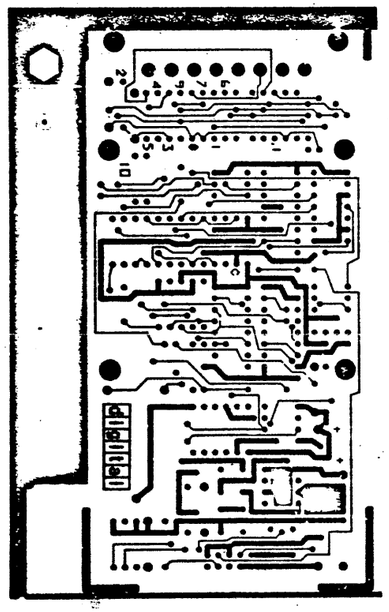
DIST

8 7 6 5 4 3 2 1

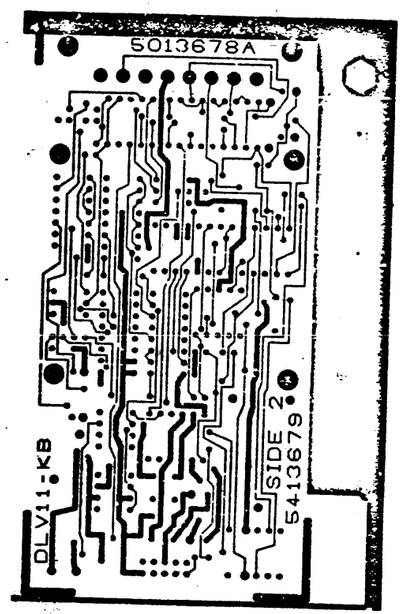
THIS DRAWING AND SPECIFICATION, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND MAY NOT BE REPRODUCED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION

L1

5013678A 5413679



L2



REVISIONS		
CHR	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV
EIA-TO-20MA CONVERTER	D	LA	5413679-0-0	B
SCALE 2/1	SHEET 2 OF 2	DIST		

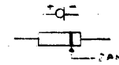
DWG 5413679-0-0 B

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 , DIGITAL EQUIPMENT CORPORATION"

NOTES:
1. INSTALL C14 (DEC PN 10-12784), .047 μf ONLY WHEN CONNECTED TO ASR33 TELETYPE.
2. IC PWR AND GND PINNING

IC'S	GND	+5V	+12V	-12V
74LS02	7	14	—	—
4049	8	1	—	—
74C161	8	16	—	—
CD4520	8	16	—	—
9636	4	—	8	5

3. ON MCL1301 LOOK LIKE THIS



4. R8 IS ENGINEERING OPTIONAL COMPONENT ; NOT INSERTED.

JUMPER CONFIGURATION	IN	OUT
PASSIVE 20MA RECEIVER	W7, W9	W6, W8, W10
ACTIVE 20MA RECEIVER	W6, W8, W10	W7, W9
PASSIVE 20MA TRANSMITTER	W2, W4	W1, W3, W5
ACTIVE 20MA TRANSMITTER	W1, W3, W5	W2, W4
110 BAUD ENABLE	W11	—
110 BAUD DISABLE	—	W11

CHN	CHANGE NO.	REV.
	5413679-HR001	A

J. KING 4-Sept-79

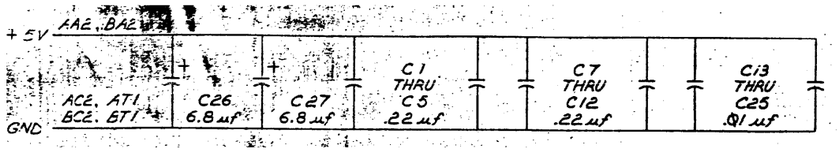
DRN. S. Wilson	28-Jun-78	FIRST USED ON DLV11-KB
CHK'D. W. Cantin	28-Jun-78	
ENG. [illegible]	1 SEPT 78	
PROJ. ENG. [illegible]	1 SEPT 78	
PROG. [illegible]	15 SEPT 78	
NEXT HIGHER ASSY. B-DD-5413679-0		
SCALE NONE		
SHEET 1 OF 1		

TITLE: EIA-TO-20MA CONVERTER

SIZE	CODE	NUMBER	REV.
D	CS	5413679-0-1	A

DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREON, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975, DIGITAL EQUIPMENT CORPORATION"



IC PIN LOCATIONS GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED BELOW		
IC TYPE	GND	+5V
I.C. DEC MM1 6330	8	16
I.C. DEC 8837	8	16
I.C. DEC 8641	8	16
I.C. DEC 8136	8	16
I.C. DEC 74175	8	16
I.C. DEC 74157	8	16
I.C. DEC 7384	1	8

NOTES:

1. THE JUMPERS ARE FACTORY SET FOR:
   ADDRESS = 16777X (ONLY W1 INSTALL).
   VECTOR = 300 (W15, 14 & 13 INSTALL).
2. THE JUMPERS ARE ASSIGNED AS FOLLOWS:
   A = ADDRESS / V = VECTOR

A3 - W10	V3 - W15
A4 - W9	V4 - W14
A5 - W8	V5 - W13
A6 - W7	V6 - W12
A7 - W6	V7 - W11
A8 - W5	
A9 - W4	
A10 - W3	
A11 - W2	
A12 - W1	

JUMPER IN = LOGIC 0.
JUMPER OUT = LOGIC 1.

REVISIONS		
DWG.	CHANGE NO.	REV.
2.0	M7941-AR005	H
2.0	M7941-AB001	J

J. CURTIS
J. CURTIS

DRW.	4-18-75
CHK.	5-1-75
ENGR. J. CYR	5-12-75
PROJ. ENGR. J. CYR	5-12-75
PROD. D. DE ROAE	5-12-75
NEXT HIGHER ASSY.	
D-UA-M7941-0-0	
SCALE	
SHEET 1 OF 4	

FIRST USED ON: LSI11

TITLE: PARALLEL LINE UNIT

SIZE D | CODE CS | NUMBER M7941-0-1 | REV. J | DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

J2

IN 0 H — D1-1 — (AU2) BDAL 0 L / BRD 0 H
IN 1 H — D1-2 — (AV2) BDAL 1 L / BRD 1 H
IN 2 H — D4-8 — (BE2) BDAL 2 L / BRD 2 H
IN 3 H — D1-7 — (BF2) BDAL 3 L / BRD 3 H
8641 E26

IN 4 H — D1-3 — (BH2) BDAL 4 L / BRD 4 H
IN 5 H — D1-4 — (BJ2) BDAL 5 L / BRD 5 H
IN 6 H — D1-5 — (BK2) BDAL 6 L / BRD 6 H
IN 7 H — D1-6 — (BL2) BDAL 7 L / BRD 7 H
8641 E25

IN 8 H — D1-8 — (BN2) BDAL 8 L / BRD 8 H
IN 9 H — D4-1 — (BP2) BDAL 9 L / BRD 9 H
IN 10 H — D4-2 — (BR2) BDAL 10 L / BRD 10 H
IN 11 H — D4-3 — (BS2) BDAL 11 L / BRD 11 H
8641 E30

IN 12 H — D4-4 — (BT2) BDAL 12 L / BRD 12 H
IN 13 H — D4-5 — (BU2) BDAL 13 L / BRD 13 H
IN 14 H — D4-6 — (BV2) BDAL 14 L / BRD 14 H
IN 15 H — D4-7 — BDAL 15 L / BRD 15 H
8641 E34

DPR 1A, SEL 4 IN L → 8881 E8 → R1 390Ω +5V → J2 C → DATA TRANSMITTED H

J1

74175 E31: BRD 7 H → OUT 7 H → J1 T; BRD 6 H → OUT 6 H → J1 R; BRD 5 H → OUT 5 H → J1 N; BRD 4 H → OUT 4 H
74175 E28: BRD 3 H → OUT 3 H → J1 U; BRD 2 H → OUT 2 H → J1 M; BRD 1 H → OUT 1 H → J1 H; BRD 0 H → OUT 0 H → J1 C
INIT L A

74175 E27: BRD 15 H → OUT 15 H → J1 JJ; BRD 14 H → OUT 14 H → J1 HH; BRD 13 H → OUT 13 H → J1 FF; BRD 12 H → OUT 12 H → J1 BB
74175 E29: BRD 11 H → OUT 11 H → J1 AA; BRD 10 H → OUT 10 H → J1 X; BRD 9 H → OUT 9 H → J1 W; BRD 8 H → OUT 8 H
INIT L A

DPR 3A, SEL 2 OUT (W+HB) L → 7404 E28 → 7402 E21 → 7404 E26 → NEW DATA READY H → J1 YY

DPR 2A, SEL 2 OUT (W + LB) L → 7402 E21

(DEVICE INPUT/OUTPUT DATA)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
PARALLEL LINE UNIT	D	CS	M7941-0-1	J
SCALE —	SHEET 2 OF 4	DIST.		

DEC FORM NO. DMD 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

(SELECT & INTERRUPT LOGIC)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
PARALLEL LINE UNIT	D	CS	M7941-0-1	J
SCALE —N—	SHEET 3 OF 4		DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

74175 E7
BRD Ø H 13 D3 R3(1) 15 → CSR Ø H
R3(Ø) 14
BRD 1 H 12 D2 R2(1) 10 → CSR 1 H
R2(Ø) 11
BRD 5 H 5 D1 R1(1) 7 → INT EN B H
R1(Ø) 6
BRD 6 H 4 DØ RØ(1) 2 → INT EN A H
RØ(Ø) 3
CLR CLK
INIT L A 1 9

J2 K
J1 VDD

DPR 7A 15
SEL Ø OUT (W+LB) L 9 8837 E5 14

+5V
P4 33Ø
+3V
R5 68Ø

74157 E18
DPR 8A 13 W11(V7) 14 B3 A3 f3 12
RQST A H
DPR 9A 10 W12(V6) 11 B2 A2 f2 9
DPR 10A 6 W13(V5) 5 B1 A1 f1 7
DPR 11A 3 W14(V4) 2 BØ AØ fØ 4
STB SØ 15 1

74157 E35
OUT 7 H 13 B3 A3 f3 12
OUT 6 H 10 B2 A2 f2 9
OUT 5 H 6 B1 A1 f1 7
OUT 4 H 3 BØ AØ fØ 4
STB SØ 15 1

74157 E6
DPR 12A 13 W15(V3) 14 B3 A3 f3 12
VEC RQST B H
10 B2 A2 f2 9
6 B1 A1 f1 7
3 BØ AØ fØ 4
STB SØ 15 1
VECTOR H

74157 E17
OUT 3 H 13 B3 A3 f3 12
OUT 2 H 10 B2 A2 f2 9
OUT 1 H 6 B1 A1 f1 7
OUT Ø H 3 BØ AØ fØ 4
STB SØ 15 1

DPR 14A 9
SEL 2 IN L 7404 E2Ø 8

5 4 11 12 7384 E9 3 13
(SEL Ø + SEL 2) IN H
VECTOR H

RQST B H 8
SEL Ø IN H 9
OUT 15 H 2 → 8881 E8 10 → 8881 E32 1 BV2 → BDAL 15 L
OUT 14 H 5 → 8881 E32 6 4 BU2 → BDAL 14 L
OUT 13 H 3 → 8881 E32 9 10 BT2 → BDAL 13 L
OUT 12 H 11 → 8881 E32 12 13 BS2 → BDAL 12 L
OUT 11 H 2 → 8881 E24 3 1 BR2 → BDAL 11 L
OUT 10 H 5 → 8881 E24 6 4 BP2 → BDAL 10 L
OUT 9 H 8 → 8881 E24 9 10 BN2 → BDAL 9 L
OUT 8 H 11 → 8881 E24 12 13 BM2 → BDAL 8 L
8881 E33 2 3 1 BL2 → BDAL 7 L
8881 E33 5 6 4 BK2 → BDAL 6 L
8881 E33 8 9 10 BJ2 → BDAL 5 L
8881 E33 11 12 13 BH2 → BDAL 4 L
8881 E14 2 3 1 BF2 → BDAL 3 L
8881 E14 5 6 4 BE2 → BDAL 2 L
8881 E14 8 9 10 AV2 → BDAL 1 L
8881 E14 11 12 13 AU2 → BDAL Ø L

D1 D664
D1-1 1
D1-2 2
D1-3 3
D1-4 4
D1-5 5
D1-6 6
D1-7 7
D1-8 8
9 +5V

D4 D664
D4-1 1
D4-2 2
D4-3 3
D4-4 4
D4-5 5
D4-6 6
D4-7 7
D4-8 8
9 +5V

E16
DPR 14A 15
DPR 13A 14
DPR 12A 13
DPR 11A 12
DPR 10A 11
DPR 9A 10
DPR 8A 9
DPR 7A 7
DPR 6A 6
DPR 5A 5
DPR 4A 4
DPR 3A 3
DPR 2A 2
DPR 1A 1
+5V 16
33Ø 68Ø
3

E13
DPR 14B 15
DPR 13B 14
DPR 12B 13
DPR 11B 12
DPR 10B 11
DPR 9B 10
DPR 8B 9
DPR 7B 7
DPR 6B 6
DPR 5B 5
DPR 4B 4
DPR 3B 3
DPR 2B 2
DPR 1B 1
+5V 16
33Ø 68Ø
8

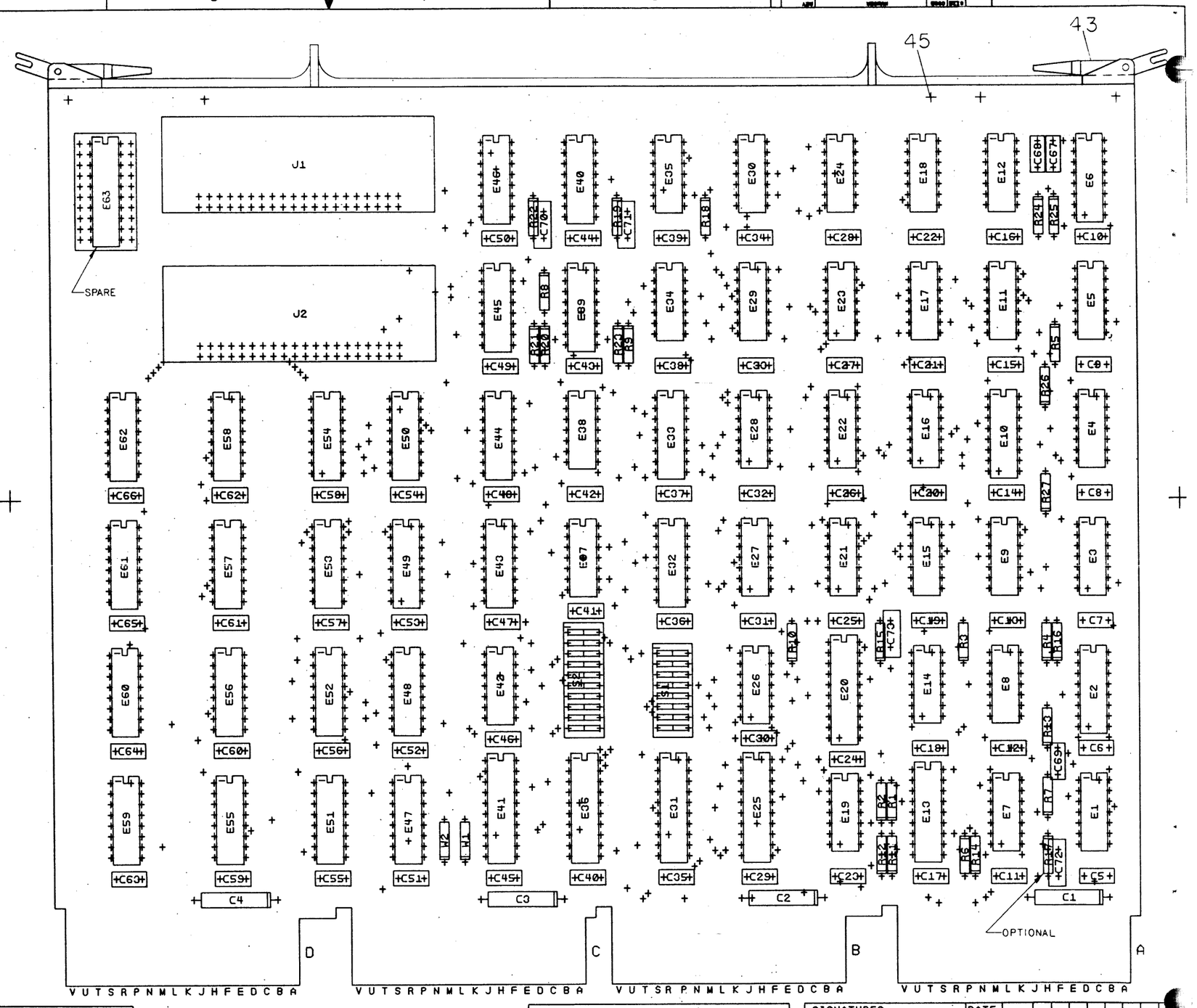
(BUS DATA IN LOGIC)

REVISIONS
CHK | CHANGE NO. | REV.

TITLE PARALLEL LINE UNIT
SIZE D CODE CS NUMBER M7941-0-1 REV F
SCALE — SHEET 4 OF 4 DIST.

DEC FORM NO. DSD 138

THESE DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART OF THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION



NOTES: 1. REMOVE THE FOLLOWING UNUSED FINGERS FROM ARTWORK: ABI, AEI, AFI, API, ARI, ASI, AUI, BCI, BDI, BEI, BFI, BHI, BKI, BLI, BPI, BRI, BSI, BUI, CBI, CCI, CDI, CEI, CFI, CHI, CJI, CKI, CLI, CMI, CNI, CPI, CRI, CSI, CUI, DBI, DCI, DDI, DEI, DFI, DHI, DJI, DKI, DLI, DMI, DNI, DPI, DRI, DSI, DUI, CD2, CE2, CF2, CH2, CJ2, CK2, CL2, CP2, CT2, CU2, DD2, DE2, DF2 DH2, DJ2, DK2, DL2, DM2, DN2, DP2, DR2, DS2, DT2, DU2.

CHK	CHANGE NO	REV
RW	M7950 - 1	C
RW	M7950 - 2	D
D BENNETT		
JB	M7950-ABOOH	E
W. CURTIS		

ETCH REV. D
P.C. DESIGN DATA BASE REV. D

SIGNATURES	DATE
DRN. R.W. Curtis	26APR76
CHK'D.	29APR76
ENG. Robert Foster	30APR76
PROJ.ENG. Robert Foster	30APR76
PROD.	3MAY76
SCALE 2/1	
SHT. 1 OF 1	
NEXT HIGHER ASSY. B-DD-M7950-0	

digital

TITLE LSI 11 DMA INTERFACE

SIZE	CODE	NUMBER	REV
D	UA	M7950-0-0	E

MS# 30312

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

S1 VECTOR
S2 ADDRESS

DC005 E41 — MATCH 3, XMIT, REC 5 4
BDAL 15 L BV2 8 — DI DA 15 H
BDAL 12 L BS2 9 — DI DA 12 H
BDAL 11 L BR2 11 — DI DA 11 H
BDAL 14 L BU2 12 — DI DA 14 H
S2: 1→20 A12 2; 2→19 A11 1
+5V 19 JA3; JA2; JAI; MENB 13; JV3 16; JV2 15; JVI 14
D4 XMIT ENB H
D4 REC ENB H

DC005 E36 — MATCH 3, XMIT, REC 5 4
BDAL 10 L BP2 8 — DI DA 10 H
BDAL 09 L BN2 9 — DI DA 09 H
BDAL 08 L BM2 11 — DI DA 08 H
BDAL 13 L BT2 12 — DI DA 13 H
S2: 3→18 A10 19; 4→17 A9 2; 5→16 A8 1
S1: 1→15 V6 15; 2→15 V8 14
D4 XMIT ENB H
D4 REC ENB H

DC005 E31 — MATCH 3, MATCH 2, XMIT, REC 5 4
BDAL 07 L BL2 8 — DI DA 07 H
BDAL 06 L BK2 9 — DI DA 06 H
BDAL 05 L BJ2 11 — DI DA 05 H
BDAL 00 L AU2 12 — DI DA 00 H
S2: 6→15 A7 19; 7→14 A6 2; 8→13 A5 1
S1: 3→14 V7 16; 4→13 V6 15; 5→12 V5 14
D4 XMIT ENB H
D4 REC ENB H

DC005 E25 — MATCH 3, MATCH 1, XMIT, REC 5 4
BDAL 04 L BH2 8 — DI DA 04 H
BDAL 03 L BF2 9 — DI DA 03 H
BDAL 02 L BE2 11 — DI DA 02 H
BDAL 01 L AV2 12 — DI DA 01 H
S2: 9→12 A4 19; 10→11 A3 2; +5V 1
BBST L AP2 13
S1: 6→11 V4 16; 7→10 V3 15; 8→9 V2 14
D4 XMIT ENB H
D4 REC ENB H

DC003 E13
+5V R2 180; R12 390
DS READY(1) H 17 RQSTA; DI DA 06 H 15 A DATA; DS CLK CSR LOW H 14 A CLK
AST 16 — DI IE (1) H
BIRQ 8 — AL2 — BIRQ L
BIAKO 6 — AN2 — BIAKO L
BIAKI L AM2 7; BINIT L AT2 5; DI DIN L 3 BDIN
INITO 4
VECTOR 1
BCLK 13; BDATA 12; RQSTB 10; VEC B 2; BST 11

+5V R1 180; R11 390

7437 E23: 12, 13 → 11 — DI INIT H; DI INIT L

NOTES:
1. UNLESS OTHERWISE SPECIFIED THE FOLLOWING PIN NUMBERS APPLY

PACKAGE TYPE	VCC	GND
14 PIN DIP	14	7
16 PIN DIP	16	8
DC003	18	9
DC007	20	10
DC005	28	14

DC004 E20
+5V R15 820; C73 180 pf; +5V R3 270
ENBH 19; RXCX 18
DI SYNC L 6 BSYNC L; BRPLY L 8 — 7404 E8 3→4 — DI SRPLY H; DI SRPLY L
DI DA 02 H 2 BDAL 2 L; DI DA 01 H 3 BDAL 1 L; DI DA 00 H 4 BDAL 0 L
SEL 6 L 17 — DI SEL 0 L
SEL 4 L 16 — DI SEL 2 L
SEL 2 L 15 — DI SEL 4 L
SEL 1 L 14 — DI SEL 6 L
BWTBT L AK2 5 BWTBT L
BD OUT L AE2 9 BD OUT L
DI DIN L 7 BDIN L
OUTHB 13 — DI OUT LB L
OUTLB 12 — DI OUT HB L
VECTOR H 1; INWD 11 — DI INWD L

R10 270 +5V

D4 SYNC(1) H 2 — AJ2 — B SYNC L — DI SYNC H — 7404 E8 1→2 — DI SYNC L
D4 DIN(1) H 5 — AH2 — BDIN L — DI DIN H — 7404 E8 5→6 — DI DIN L
DI SRPLY H 14 — AF2 — BRPLY L — DI RPLY H — 7404 E8 11→10 — DI RPLY L
AR2 — BDMGI L — DI DMGI H
8641 E2: 11, 7, 9
R14 180; R13 390 +5V

AA2, BA2, CA2, DA2 +5V
C1 THRU C4 6.8 uf; C5 THRU C66 .01 uf
AC2, BC2, AJ1, BJ1, AM1, BM1, AT1, BT1, CT1, DT1

DI

REVISIONS			
REV.	CHANGE NO.		
C	ORIGINAL	M7950	ABOCH

J. CURTIS

DRN.		6-FEB 76
CHK'D		30 APR 76
ENG.		30 APR 76
PROJ. ENG.		30 APR 76
PROD.		
NEXT HIGHER ASSY.	B-DD-M7950-0	
SCALE	NONE	
SHEET	1 OF 6	

FIRST USED ON: DRV11-B

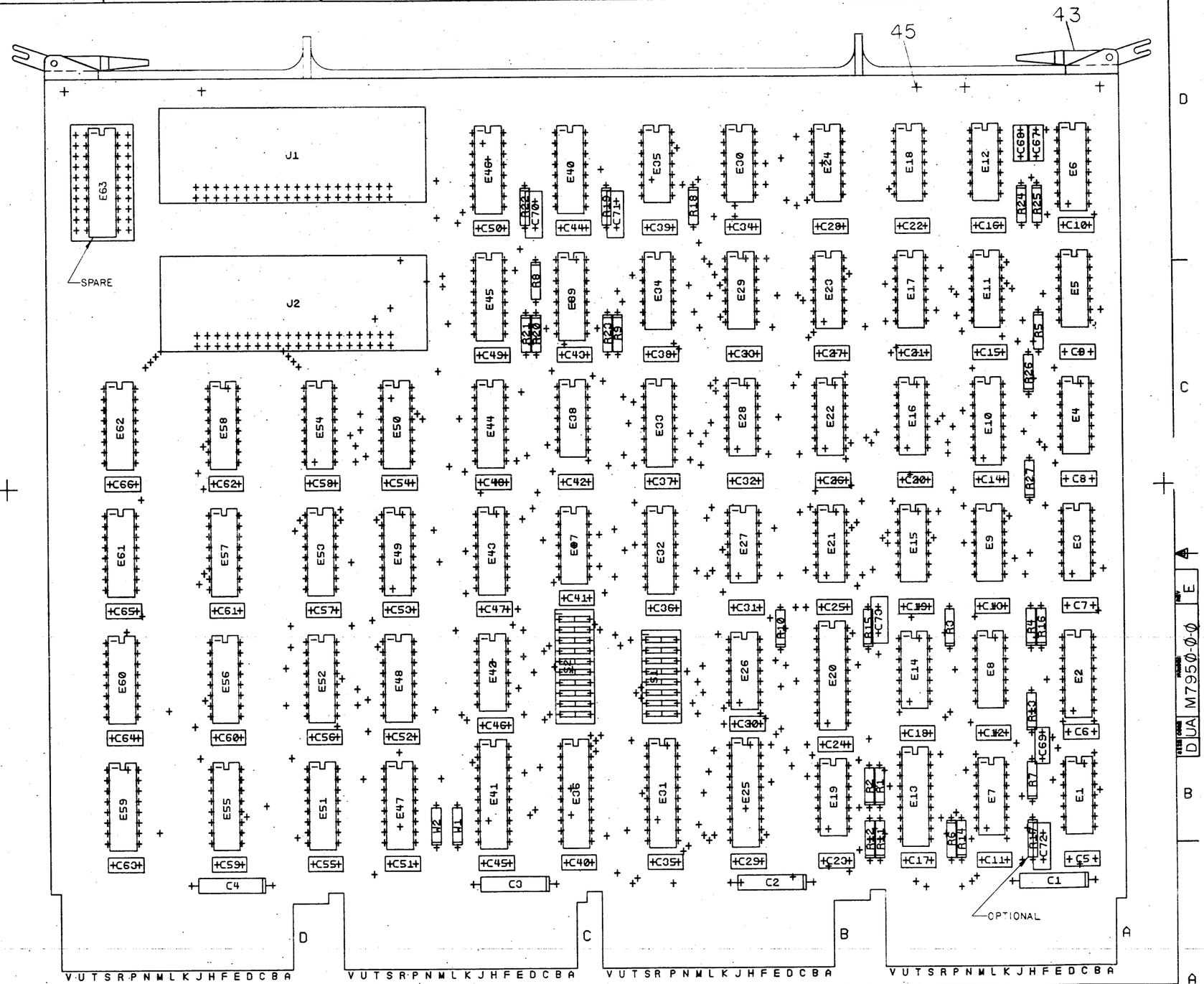
TITLE: LSI-11 DMA INTERFACE

SIZE	CODE	NUMBER	REV.
D	CS	M7950-0-1	C

DIST.

DCS M7950-0-1 REV C

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THIS SHEET FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION



NOTES: 1. REMOVE THE FOLLOWING UNUSED FINGERS FROM ARTWORK: ABI, AEI, AFI, API, ARI, ASI, AUI, BCI, BDI, BEI, BFI, BHI, BKI, BLI, BPI, BRI, BSI, BUI, CBI, CCI, CDI, CEI, CFI, CHI, CJI, CKI, CLI, CMI, CNI, CPI, CRI, CSI, CUI, DBI, DCI, DDI, DEI, DFI, DHI, DJI, DKI, DLI, DMI, DNI, DPI, DRI, DSI, DUI, CD2, CE2, CF2, CH2, CJ2, CK2, CL2, CP2, CT2, CU2, DD2, DE2, DF2 DH2, DJ2, DK2, DL2, DM2, DN2, DP2, DR2, DS2, DT2, DU2.

CHK	CHANGE NO	REV
GTR	M7950 - 1	C
GTR	M7950-2	D
R.W. Coulter 6 April 77		
D. BENNETT		
D. Bennett May 77		
R.W.	M7950-ABOOH	E
Walter Richter		
J. CURTIS		
W. Curtis		

ETCH REV. D
P.C. DESIGN DATA BASE REV. D

SIGNATURES	DATE
DRN. R.W. Coulter	26 APR 76
CHK'D.	27 APR 76
ENG. Robert Fitch	30 APR 76
PROJ.ENG. Robert Fitch	30 APR 76
PROD.	30 APR 76
SCALE 2/1	
SHT. 1 OF 1	
NEXT HIGHER ASSY. B-DD-M7950-0	

digital

TITLE LSI 11 DMA INTERFACE

SIZE	CODE	NUMBER	REV
D	UA	M7950-0-0	E

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © '76 DIGITAL EQUIPMENT CORPORATION"

BUS ADDRESS

D2 ADDR ENB L
D5 BA INC ENB L
D4 ADDR ENB H — 7402 E9
D4 REC ENB H — 7402 E9
7402 E9 → 7432 E26 (DI SEL 2 L, DI OUT LB L)
7432 E26 → 7432 E37 (DI SRPLY L) → 7400 E42
7400 E42 → DI INIT H

BUS ADDRESS CONTROL — 8556 E43 (DI DA Ø4 H, DI DA Ø3 H, DI DA Ø2 H, DI DA Ø1 H)
BUS ADDRESS CONTROL — 8556 E49 (DI DA Ø8 H, DI DA Ø7 H, DI DA Ø6 H, DI DA Ø5 H)
BUS ADDRESS CONTROL — 8556 E48 (DI DA 12 H, DI DA 11 H, DI DA 1Ø H, DI DA Ø9 H)
BUS ADDRESS CONTROL — 8556 E47 (DI DA 15 H, DI DA 14 H, DI DA 13 H)
OD CE MAX CNT; D3 D2 D1 DØ; R3(1) R2(1) R1(1) RØ(1); LD CLK CLR; 7 9 4

D4 DATA (1) L
D5 CØ (1) L
7402 E22 → 7432 E14
7432 E37 → 7410 E27
D5 C1 (1) H → 7402 E21
7432 E14 → 8881 E19 (1 AK2 → BWTBT L)
8881 E19 (4 AP2 → BBS7 L)

D5 READ CSR L
BUS ADDRESS CONTROL — 8556 E32 (DI DA Ø5 H, DI DA Ø4 H)
D5 LOAD CSR LOW L
D5 CLK CSR LOW L → 7400 E38
7400 E42 → 8881 E19 (13 AD1 → BAD 17 L)
8881 E19 → 8881 E7 (13 AC1 → BAD 16 L)
D4 ADDR ENB H

D4 END CYCLE H
D4 DAT IO (Ø) H
7400 E34 → 7400 E38

WORD COUNT

D5 WC INC ENB L
D2 WC OFLO L
D1 SEL Ø L
D1 OUT LB L
D1 SRPLY L
WORD COUNT CONTROL — 8556 E54 (DI DA Ø3 H, DI DA Ø2 H, DI DA Ø1 H, DI DA Ø4 H)
WORD COUNT CONTROL — 8556 E53 (DI DA Ø7 H, DI DA Ø6 H, DI DA Ø5 H, DI DA Ø4 H)
WORD COUNT CONTROL — 8556 E52 (DI DA 11 H, DI DA 1Ø H, DI DA Ø9 H, DI DA Ø8 H)
WORD COUNT CONTROL — 8556 E51 (DI DA 15 H, DI DA 14 H, DI DA 13 H, DI DA 12 H)

D5 AØØ (1) H → 8097 E45 → DI DA ØØ H
D2 ADDR ENB L → 8097 E45

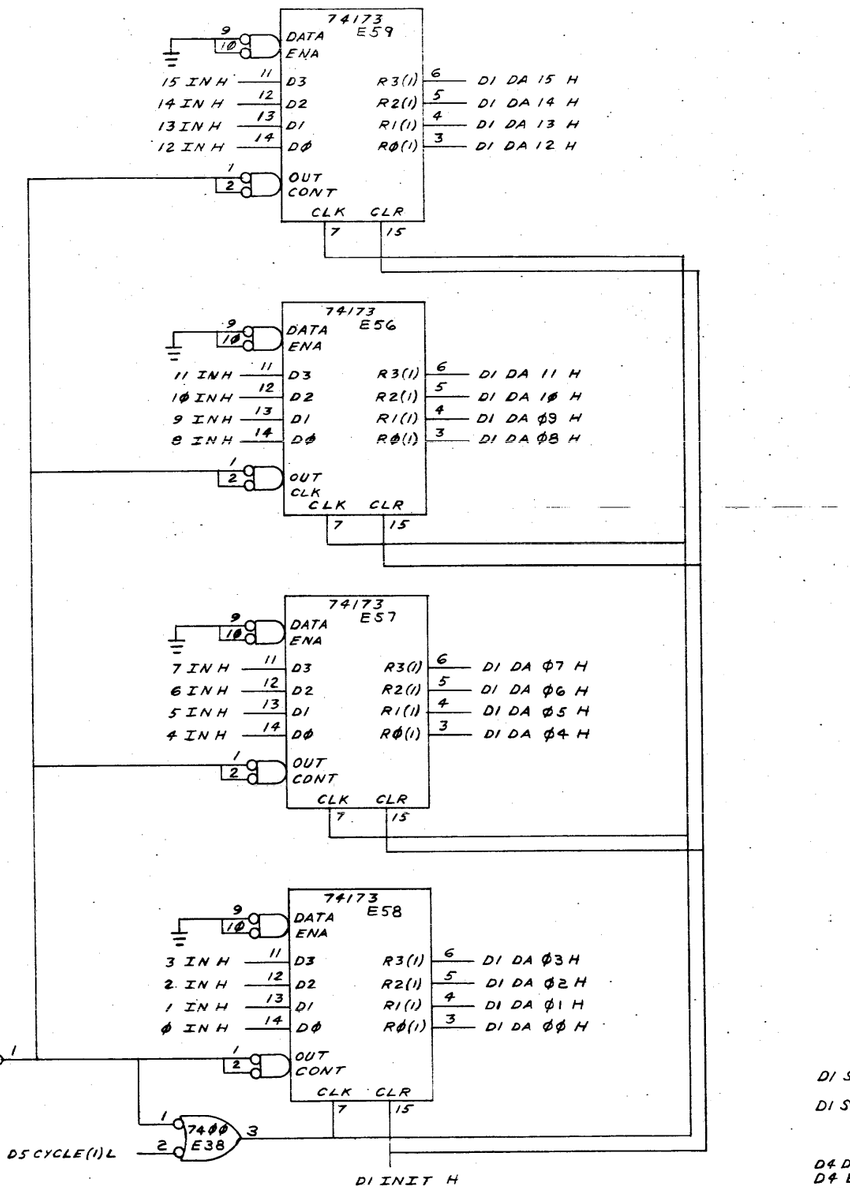
REVISIONS		
CHK	CHANGE NO.	REV.
	ORIGINAL	B

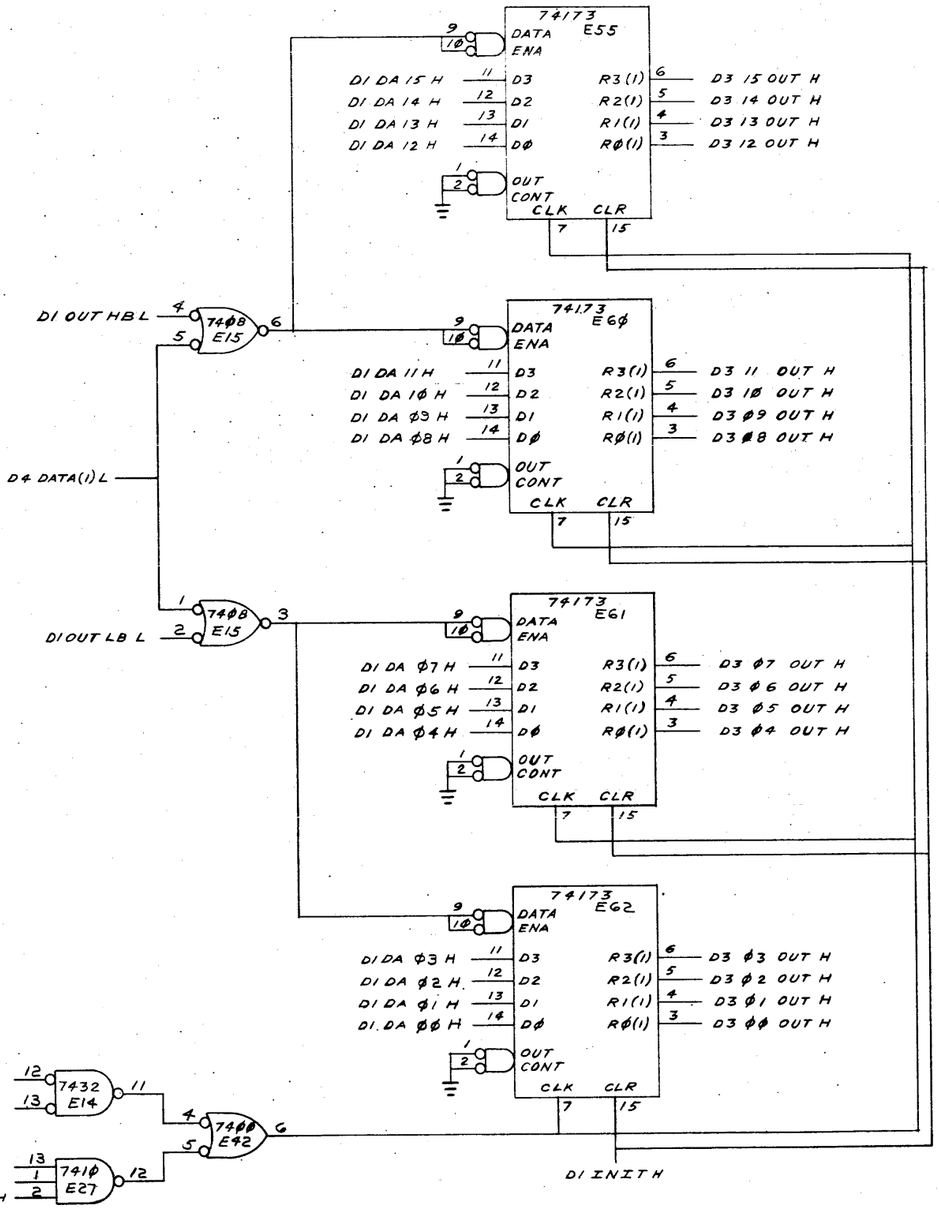
BAR WCR

D2

TITLE LSI-11 DMA INTERFACE
SIZE D CODE CS NUMBER M7950-0-1 REV C
SCALE NONE SHEET 2 OF 6 DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"





REVISIONS		
CHK	CHANGE NO.	REV.
	ORIGINAL	B

DBR IN & OUT

D3

TITLE LSI-11 DMA INTERFACE

SIZE D | CODE CS | NUMBER M7950-0-1 | REV. C

SCALE NONE | SHEET 3 OF 6 | DIST.

DEC FORM NO.

PN

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

D5 DMA REQ H
D5 TAKE GRANT 7474 E3 φ
D1 INIT L
D4 SACK 7474 E16 φ
D4 SACK(φ) H
D4 SACK(1) L
D4 CLR SACK L
8881 E7 ANI → BDMR L
8881 E13 BNI → B SACK L
D1 DMG I H
74132 E1
7404 E8
R16 82Ω
CG9 180 PF
≥ 75nS
+5V
RG 180
AS2 → BDMGO L
R14 39Ω
+5V
CG7 1000 PF
R25 47K
74123 E6 154S φ
D4 +3V H
D5 C φ (1) H
D4 DIN (φ) H
DATIO 7474 E3 φ
D4 DAT IO (φ) L
D4 DAT IO (φ) H
D4 DAT IO (1) H
D1 INIT L
D4 NEX (1) L
7437 E23
74φ2 E18
D4 DOUT(1) H
D4 MASTER (1) L
74φ2 E18
D4 +3V H
MASTER 7474 E12 φ
D4 CLK (φ) H
D4 MASTER (φ) H
SYNC 7474 E11 φ
D4 SYNC (1) H
D4 CLR CONTROL L
D4 SYNC(φ) H
DATA 7474 E12 φ
D4 CLK (1) H
D4 DATA (1) H
D5 C.I. (1) L
74φ2 E22
D4 DATA ENB H
D4 DATA (1) L
745φ2 E17
D4 ADDR ENB H
D4 SACK (1) L
D1 ~ RPLY L
D1 ~ SYNC L
7427 E24
D4 END CYCLE L
D4 DAT IO (φ) L
74φ2 E18
D4 CLK READY H
74φ4 E35
D4 CLR CONTROL L
+5V
R24 47K
CG8 1000 PF
74123 E6 154S φ
D4 +3V H
D1 DA 14 H
D5 LOAD CSR HIGH L
74φ2 E21
D1 INIT H
74φ2 E22
D1 RPLY L
NEX 7474 E16 φ
D4 NEX (1) H
D4 NEX (1) L
+5V
R18 82φ
D4 +3V H
D5 C1 (φ) L
74φ2 E9
D4 CLK (1) H
DIN 74S74 E3 φ
D4 DIN(1) H
D4 DIN(1) L
D4 CLK(φ) H
D4 DIN(φ) H
D4 SYNC(1) H
DOUT 74S74 E11 φ
D4 D OUT (1) H
D4 D OUT (1) L
D4 D OUT(φ) L
D4 DATA ENB H
D4 CLR SACK L
D4 END CYCLE L
D4 DAT IO (φ) L
D5 SC (1) L
7427 E24
D5 READY (1) H
745φ2 E17
D4 CLK (φ) H
74φ8 E15
7432 E14
D4 DIN (1) H
7408 E15
WAIT 74S175 E16 φ
74φ2 E9
CLK 74S175 E10 φ
D4 CLK (1) H
D4 CLK (φ) H
END 74S175 E10 φ
D4 END (1) H
DLY 74S175 E16 φ
D4 DLY (1) H
D4 DLY (φ) L
D4 DLY (φ) H
745φφ E4
74φ4 E35
D4 END CYCLE H
D4 END CYCLE L
+5V
R5 27φ
D4 MASTER (φ) H
D4 SYNC (φ) H
745φ3 E5
D4 DIN (1) L
D4 DOUT (1) L
DI RPLY L
745φφ E4
D4 DIN (φ) L
D4 DOUT (φ) L
DI RPLY H
745φ2 E17
D5 CYCLE (φ) L
D4 DLY (φ) L
D4 DATIO (1) H
745φ2 E17
D4 RUN L
AH1
+5V
R26 39φ
D4 CLK IN H
AL1
R27 82φ
R17 (OPTIONAL)
R7 27φ
74132 E1
AK1
D4 CLK OUT H
C72 180 PF
≥ 110nS
D4 CLR CONTROL L
D4 SACK (φ) H
D4 DLY (φ) H
745φφ E4
74φ4 E35
D4 END (1) H
D4 DOUT(1) H
8881 E7
AE2 → BDOUT L
DI ~ IN WD H
74132 E1
D4 DATA (1) H
D5 C1 (φ) H
745φφ E4
74132 E1
D4 REC ENB H
DI SRPLY L
D4 MASTER (1) L
D4 DATA (1) L
7410 E27
D4 XMIT ENB H
IAK CN2 W1 CM2
DMG CR2 W2 CS2

REVISIONS		
CHK	CHANGE NO.	REV.
	ORIGINAL	B

BUS MASTER D4

TITLE LSI-11 DMA INTERFACE
SIZE D CODE CS NUMBER M7950-0-1 REV. C
SCALE NONE SHEET 4 OF 6 DIST.

DEC FORM NO. DMD 138

8 7 6 5 4 3 2 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

D6 C1 H
D1 INIT L
D6 CØ H
D6 AØØ H
D6 SINGLE CYCLE H
D5 CYCLE (1) L
D2 ADDR ENB L
D6 ATTN H
D4 CLR CONTROL L
D2 WCOFLO L
D4 CLK READY H
D1 DAØØ H
D5 LOAD CSR LOW H
B POK H
D6 WC INC ENB H
D5 CLK CSR HIGH H
D1 DA 12 H
D6 CYCLE REQUEST H
D1 DA Ø8 H
D4 DLY (1) H
D1 INIT H
D6 BA INC ENB H
D5 LOAD CSR HIGH L
D4 CLK CSR LOW H
D5 MAINT (1) H
D5 READ CSR L
D4 NEX (1) H
D5 MAINT (1) H
D6 STATUS A H
D6 STATUS B H
D6 STATUS C H
D5 CYCLE (1) H
D1 IE (1) H
D5 DMA REQ H
D5 CYCLE (1) L
D5 CYCLE (Ø) L
D1 SEL 4 L
D4 REC ENB H
D1 OUTHB L
D1 OUT LB L
D1 SRPLY L
INIT L
D1 DA Ø2 H
D1 INIT H
D4 RUN L
D5 READY (1) H
D5 MAINT (1) L
D5 READ CSR L
D1 DA Ø3 H
D1 DA Ø2 H
D1 DA Ø1 H
D5 LOAD CSR LOW L
D5 CLK CSR LOW L
D4 END CYCLE L

D5 C1 (1) H
D5 C1 (1) L
D5 C1 (Ø) L
D5 C1 (Ø) H
D5 CØ (1) H
D5 CØ (1) L
D5 AØØ (1) H
D5 SC (1) L
D5 WC INC ENB L
D5 BA INC ENB L
D4 +3V H
D5 READY (1) H
D5 MAINT (1) L
D5 CYCLE (1) H
D5 DMA REQ H
D5 CYCLE (1) L
D5 CYCLE (Ø) L
D1 DA 15 H
D1 DA 14 H
D1 DA 13 H
D1 DA 12 H
D1 DA 11 H
D1 DA 1Ø H
D1 DA Ø9 H
D1 DA Ø8 H
D1 DA Ø7 H
D1 DA Ø6 H
D1 DA ØØ H
D5 READ CSR L
D5 LOAD CSR HIGH L
D5 CLK CSR HIGH H
D5 LOAD CSR LOW L
D5 LOAD CSR LOW H
D5 CLK CSR LOW H
D5 CLK CSR LOW L
D5 INIT V2 H
D5 INIT H
D5 BUSY H
D5 READY H
D5 FNCT 3 H
D5 FNCT 2 H
D5 FNCT 1 H

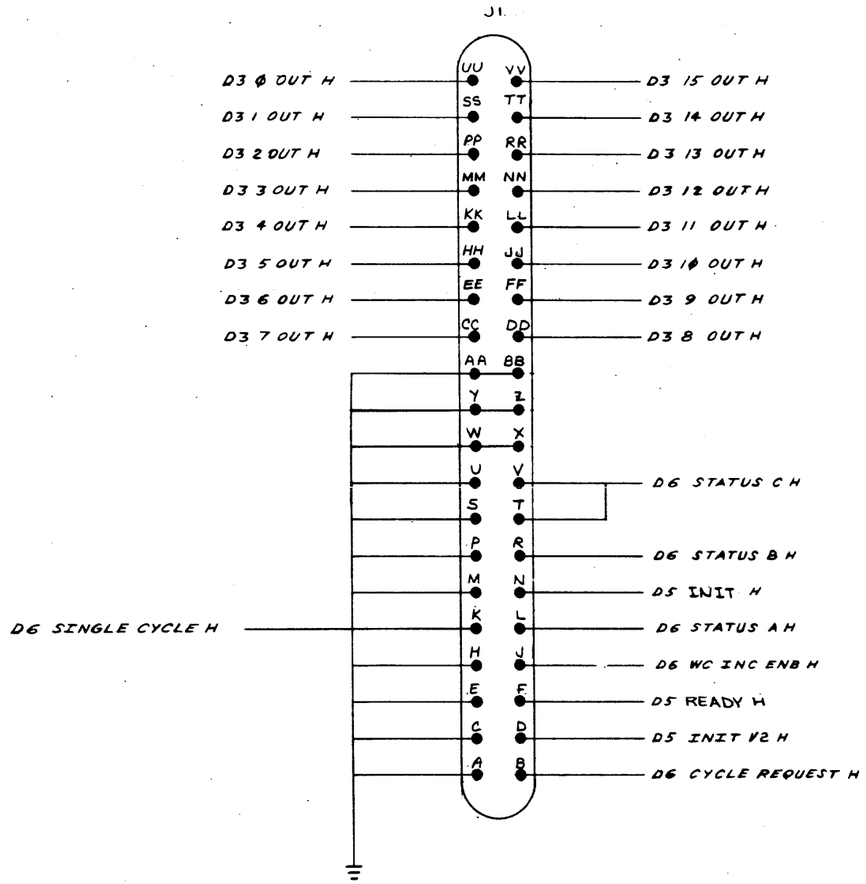
REVISIONS		
CHK	CHANGE NO.	REV.
	ORIGINAL	B

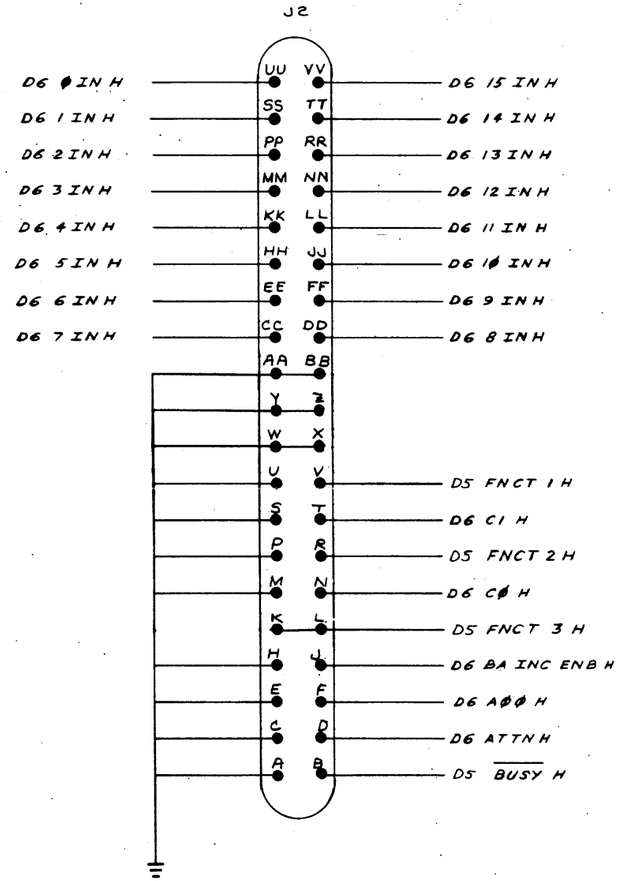
I/O SIGNALS

TITLE LSI-11 DMA INTERFACE		SIZE D	CODE CS	NUMBER M7950-0-1 REV. C
SCALE NONE	SHEET 5 OF 6	DIST.		

D5

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © '79 DIGITAL EQUIPMENT CORPORATION"





REVISIONS		
CHK	CHANGE NO.	REV.
	ORIGINAL	B

PIN ASSIGNMENT

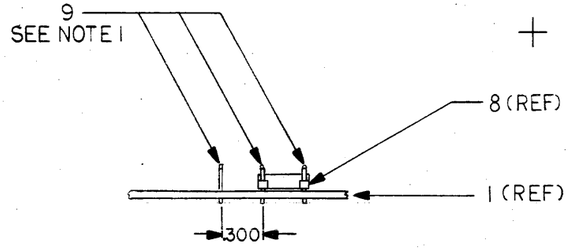
D6

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 DMA INTERFACE	D	CS	M7950-0-1	C

SCALE NONE | SHEET 6 OF 6 | DIST.

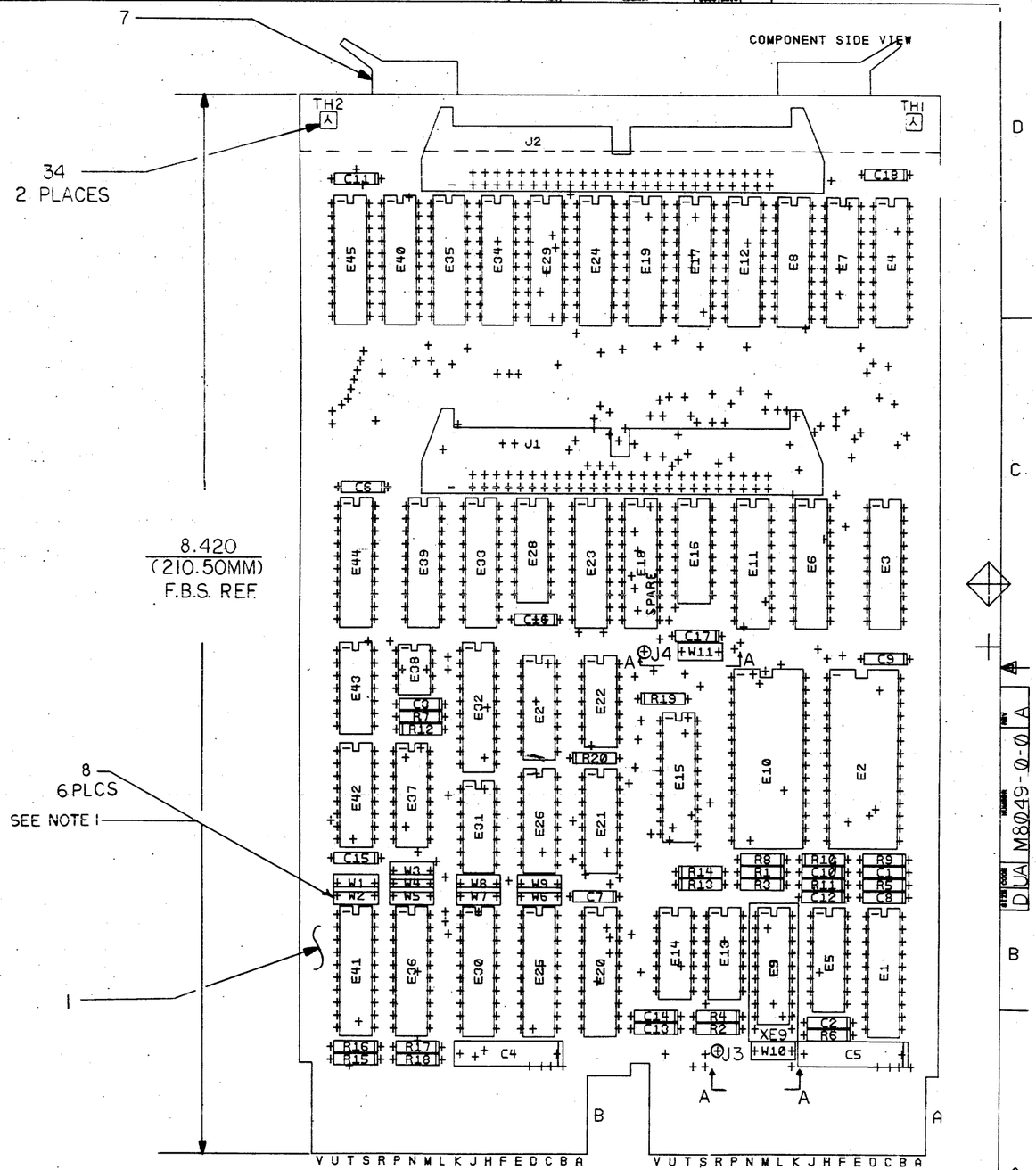
PN

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION



VIEW A-A

2ML2



NOTES:
1. ITEM #8 (W2, W7-W10) MOUNT ON ITEM #9 (STRIP CONNECTOR POSTS) #9 IN VIEW A-A ARE SINGLE ELEMENTS OF ITEM #9 TO BE MOUNTED AS SHOWN

STEP & REPEAT	↑ Y AXIS ——— STEP — TIMES
	→ X AXIS 5.250 STEP ⊥ TIMES

CHK	CHANGE NO	REV

ETCH REV. B

SIGNATURES	DATE
DRN. Mary Sousa	6/14/79
CHK'D	6-18-79
MECH. ENG.	7-26-79
PROJ. ENG.	7-26-79
PROD.	8-7-79

digital

TITLE: DRV11 J

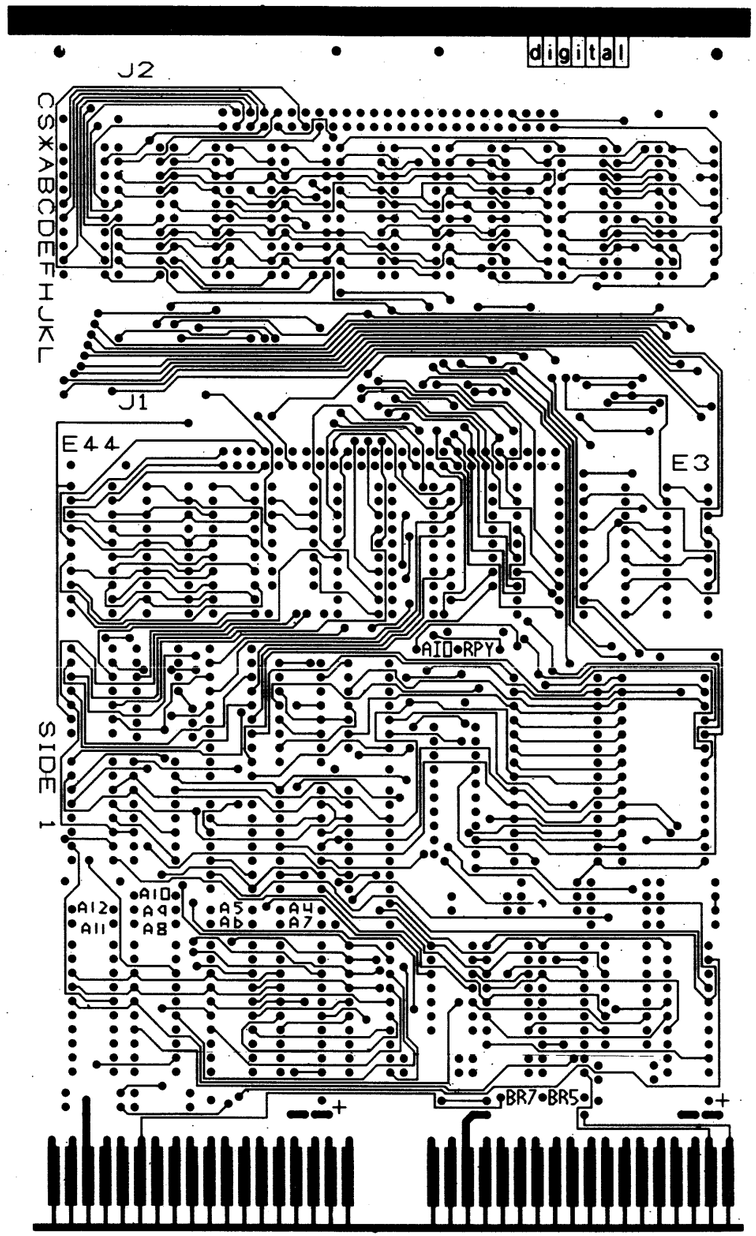
SCALE 2 | 1 | SIZE D | CODE UA | NUMBER M8049-0-0 | REV A

SHT. 1 OF 5

NEXT HIGHER ASSY. B-DD-M8049-0

1 MS# 180428B

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"

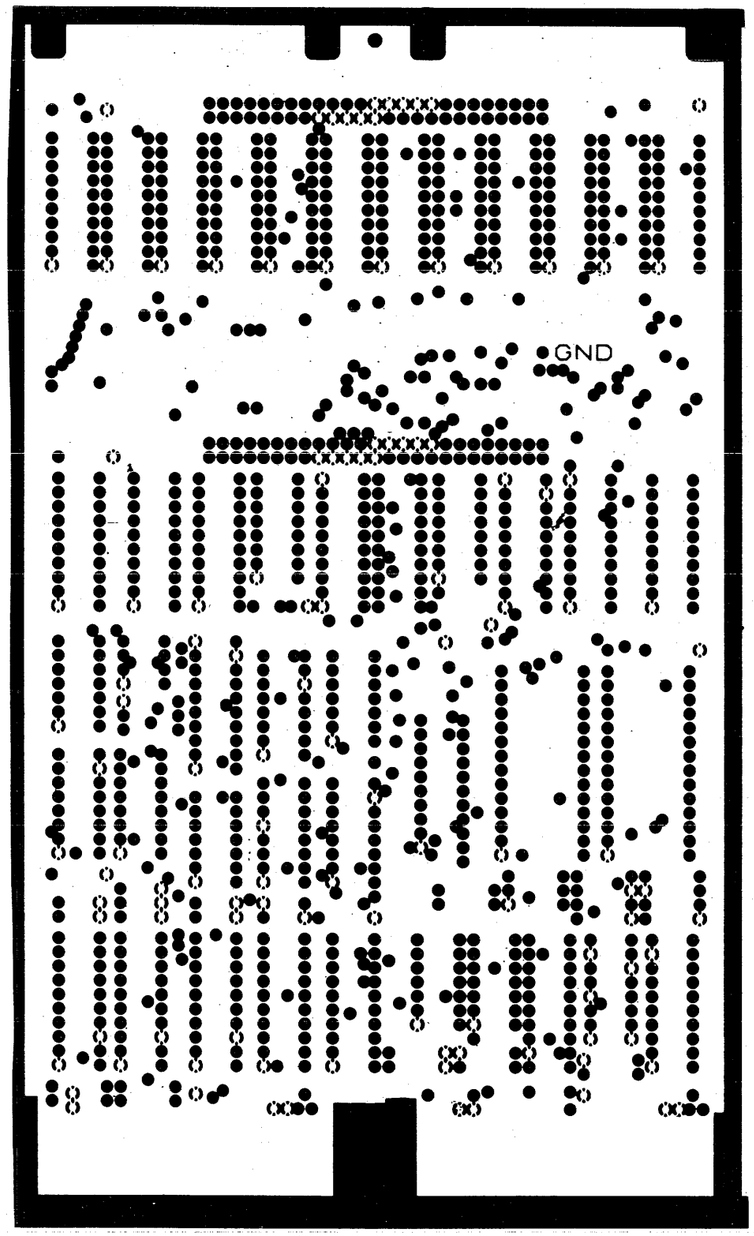


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
DRV 11 - J	D	UA	M8049-0-0	A
SCALE 2/1 SHEET 2 OF 5	DIST.			

DEC FORM NO. 10 137

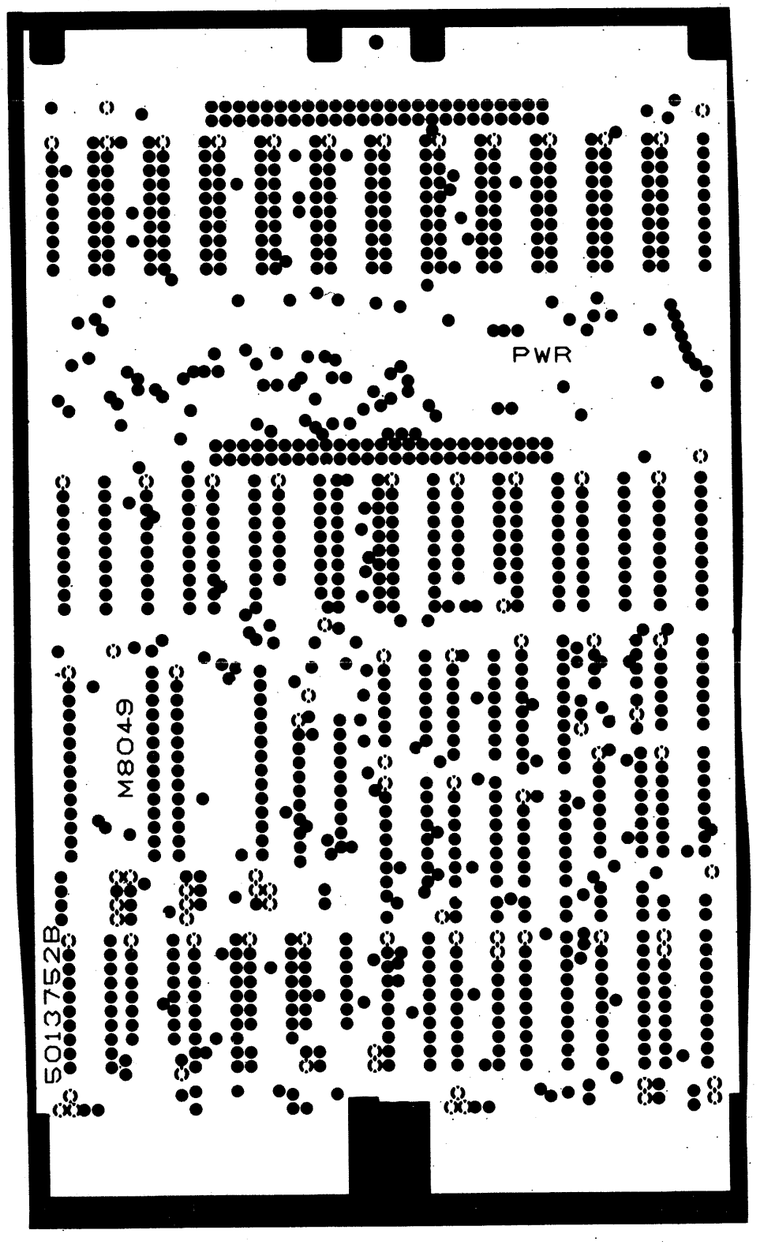
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1979 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
DRV 11 - J	D	UA	M8049-0-0	A
SCALE 2/1	SHEET 3 OF 5	DIST.		

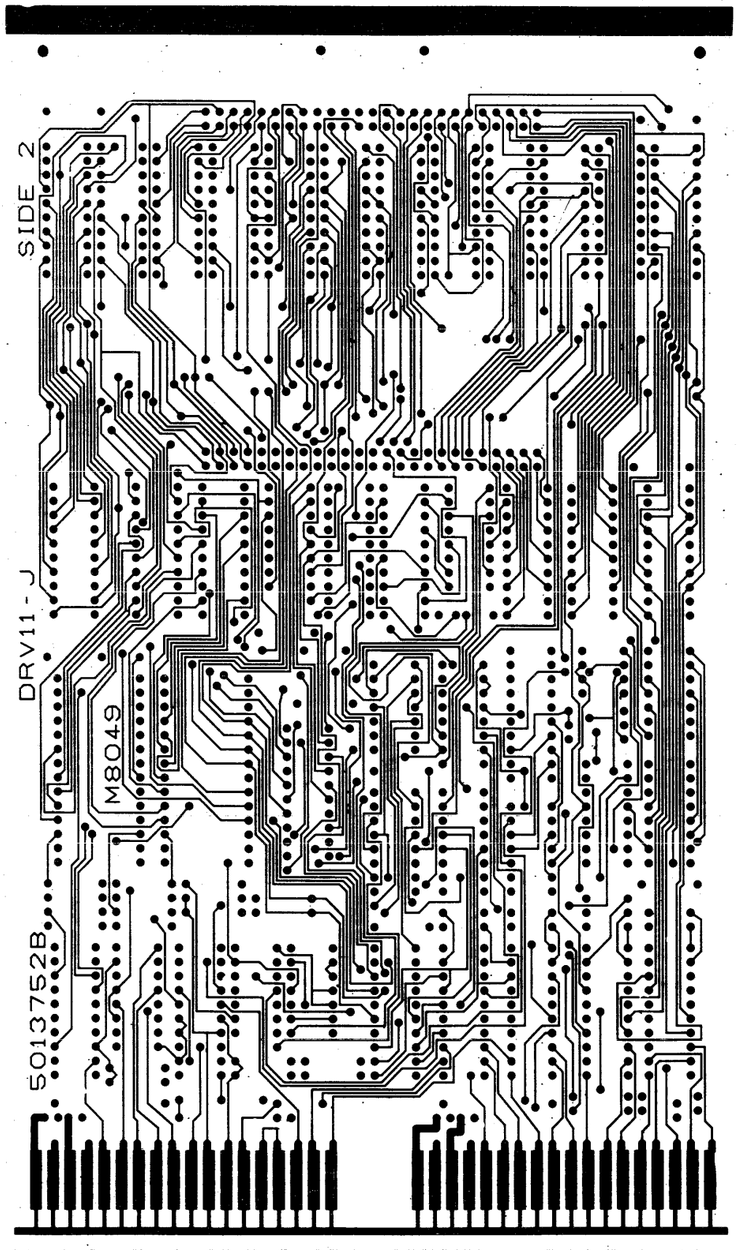
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1979 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
DRV 11 - J	D	UA	M8049-0-0	A
SCALE 2/1 SHEET 4 OF 5	DIST.			

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1979 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
DRV11-J	D	UA	M8049-0-0	A
SCALE 2/1	SHEET 5 OF 5		DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 , DIGITAL EQUIPMENT CORPORATION"

BDAL 15 L
BDAL 12 L
BDAL 11 L
BDAL 14 L
BV2
BS2
BR2
BU2
BUS 3 BUS 2 BUS 1 BUS 0
DAT 3 DAT 0 DAT 2 DAT 1
DC005 E41
+5V
W1 A12
W2 A11
JA3 JA2 JA1 MEN B JAV 3 JAV 2 JAV 1
MATCH
D4 CSR15
XMIT REC
D3 XHB
D4 XMIT (1) L

BDAL 10 L
BDAL 9 L
BDAL 8 L
BDAL 13 L
BP2
BN2
BM2
BT2
DC005 E36
W3 A10
W4 A9
W5 A8
D5 V9
D5 V8

BDAL 7 L
BDAL 6 L
BDAL 5 L
BDAL 1 L
BL2
BK2
BJ2
AV2
DC005 E30
W6 A7
W7 A6
W8 A5
D5 V7
D5 V6
D5 V5
D3 XLB

BDAL 4 L
BDAL 3 L
BDAL 2 L
BDAL 0 L
BH2
BF2
BE2
AU2
DC005 E25
W9 A4
+5V
AP2
BBS7 L
D5 V4
D5 V3
D5 V2

DI TSD15
DI TSD14
DI TSD13
DI TSD12
DI TSD11
DI TSD10
DI TSD9
DI TSD8
DI TSD7
DI TSD6
DI TSD5
DI TSD1
DI TSD4
DI TSD3
DI TSD2
DI TSD0
DI MATCH H

R16 18K
R15 18K
R14 18K
R17 18K
+5V
R13 18K
R19 18K
R20 18K
R18 18K
+5V

74LS374 E44
D3 D2 D1 D0 D7 D6 D5 D4 OC CLK
R3(1) R2(1) R1(1) R0(1) R4(1) R7(1) R6(1) R5(1)
D6 BXMIT L
D4 WRT DBB

74LS374 E35
D0 D7 D1 D6 D3 D5 D2 D4 OC CLK
R0(1) R7(1) R1(1) R6(1) R3(1) R5(1) R2(1) R4(1)

J1
B I/O 15
B I/O 14
B I/O 13
B I/O 12
B I/O 11
B I/O 10
B I/O 9
B I/O 8
B I/O 7
B I/O 6
B I/O 5
B I/O 4
B I/O 3
B I/O 2
B I/O 1
B I/O 0

74LS244 E33
DBI DB2 DB3 DAI DA4 DB4 DA2 DA3 OC1 OC2
YBI YB2 YB3 YAI YA4 YB4 YA2 YA3
DI TSD15 DI TSD14 DI TSD13 DI TSD12 DI TSD11 DI TSD10 DI TSD9 DI TSD8
D3 RD B L

74LS244 E34
DAI DB4 DB3 DA2 DBI DA3 DB2 DA4 OC1 OC2
YAI YB4 YB3 YA2 YBI YA3 YB2 YA4
DI TSD7 DI TSD6 DI TSD5 DI TSD4 DI TSD3 DI TSD2 DI TSD1 DI TSD0
D3 RD B L

AR2 → BDMGI L
AS2 → BDMGO L

NOTE
1. OPTIONAL INSTALLATION OF WIØ AND WII IS BETWEEN J3 AND WIØ GND TERMINAL AND J4 AND WII GND TERMINAL.

REVISIONS			
CHK	CHANGE NO.	REV.	
RH	M8049 - ML0001	B	12-79
	ECO SCA...		
	RICH HULTMAN		12-79
	Mark Hellman		12-79

DRN	Rich Hultman	5 JAN 79
CHK'D	Mark Hellman	5 JAN 79
ENG.	Richard Hultman	23-JUL-79
PROJ. ENG.	Richard Hultman	23-JUL-79
PROD.	Al Cohn	8-3-79
NEXT HIGHER ASSY.		
B-DD-M8049-0		
SCALE		
SHEET 1 OF 6		

FIRST USED ON 11-03

digital

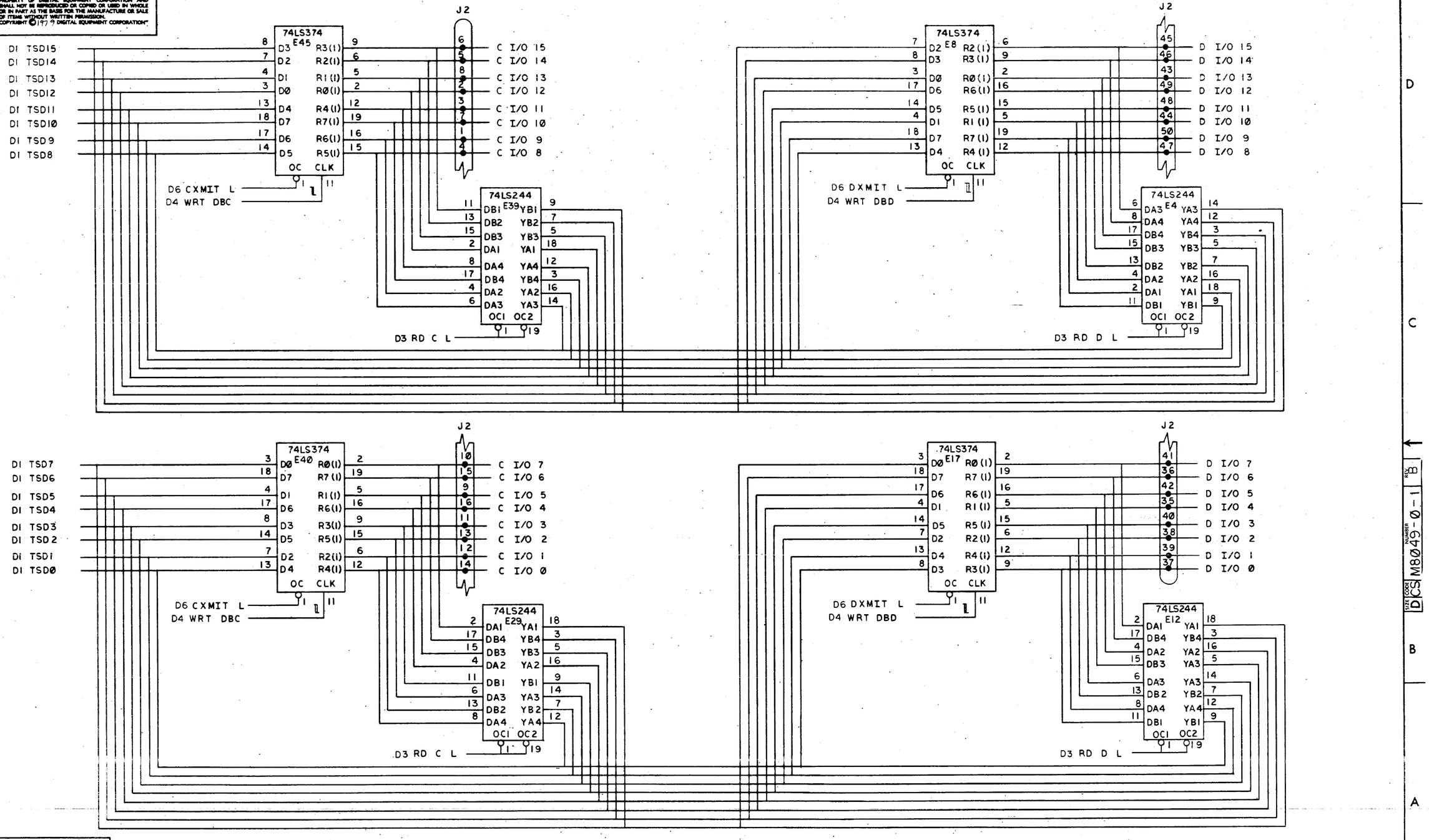
TITLE
DRVII-J
(DI)

SIZE	CODE	NUMBER	REV.
D	CS	M8049-0-1	B

DIST.

DEC FORM NO. DRD 100-0

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
DRVII – J (D2)	D	CS	M8049 – 0 – 1	B
SCALE —	SHEET 2 OF 6	DIST.		

DEC FORM NO. DRD 128

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"

C1 220 PF
R5 4.64K, 1% +5V
DI MATCH H
ENB RXCX
VEC A — VECTOR BRPLY
DC004
BWTBT L — AK2 — WTBT EI
BDOUT L — AE2 — DOUT
DIN
SYNC
DI TSD0 — DAL 0
DAL 2
DAL 1
SEL 6 — D3 SEL 0 L
SEL 4 — D3 SEL 2 L
SEL 2
SEL 0
OUT HB — D3 OUT LB L
OUT LB — D3 OUT HB L
INWD

74LSI75 E26
DI TSD1 — D0 R0 (1) R0 (0) — D3 LDAL 1 (1) H
DI TSD2 — D1 R1 (1) R1 (0) — D3 LDAL 2 (1) H
DI TSD3 — D2 R2 (1) R2 (0) — D3 LDAL 3 (1) H
D3 — R3 (1) R3 (0)
CLK CLR

R6 4.64K 1% +5V
C2 220PF
8641 E5
D3 RPLY H
AF2 — BRPLY L
D3 RPLY H
D5 PAUSE

74LS139 E28
D3 LDAL 2(1)H — 1A — 1Y0 D3 RD D L
1Y1 D3 RD C L
1Y2 D3 RD B L
D3 LDAL 3 (1) H — 1B — 1Y3 D3 RD A L
1G
D3 DIN H — 74LS279 E27
D3 SEL 2 L — 74LS279 E27

D3 SEL 0 L — 74LS02 E31 — 74LS240 E32 — D3 CS0 L
74LS02 E31 — 74LS240 E32 — D3 CS1 L
74LS00 E22 — D3 XLB
74LS04 E13 — D3 XHB

8641 E5
AJ2 — BSYNC L
AH2 — BDIN L
D3 DIN H
D5 PAUSE
74LS04 E13

+5V R2 330
R4 680
J3 BPI — BIRQ7 L
BR7
NOTE 1
BR5 W10 AA1 — BIRQ5 L
AL2 — BIRQ4 L
AB1 — BIRQ6 L
AN2 — BIAKO L
D3 INIT 0 L
D3 VEC A

D2 DIN L
IC SOCKET XE9
D4 GINT
DI TSD9
D4 WRT CSRA
BINIT L — AT2
BIAKI L — AM2
R1 330 +5V
R3 680

+5V R12 4.7K
D3 IE
75451 E38
D3 LDAL 3 (1) H — 74LS02 E31
D3 LDAL 2 (1) H

D4 DIR — 74LS04 E13
D3 XHB
D3 RPLY H — 74LS51 E14 — D3 RPLY EN L
D4 XMIT (1) H — 74LS51 E14
D3 SEL 2 L

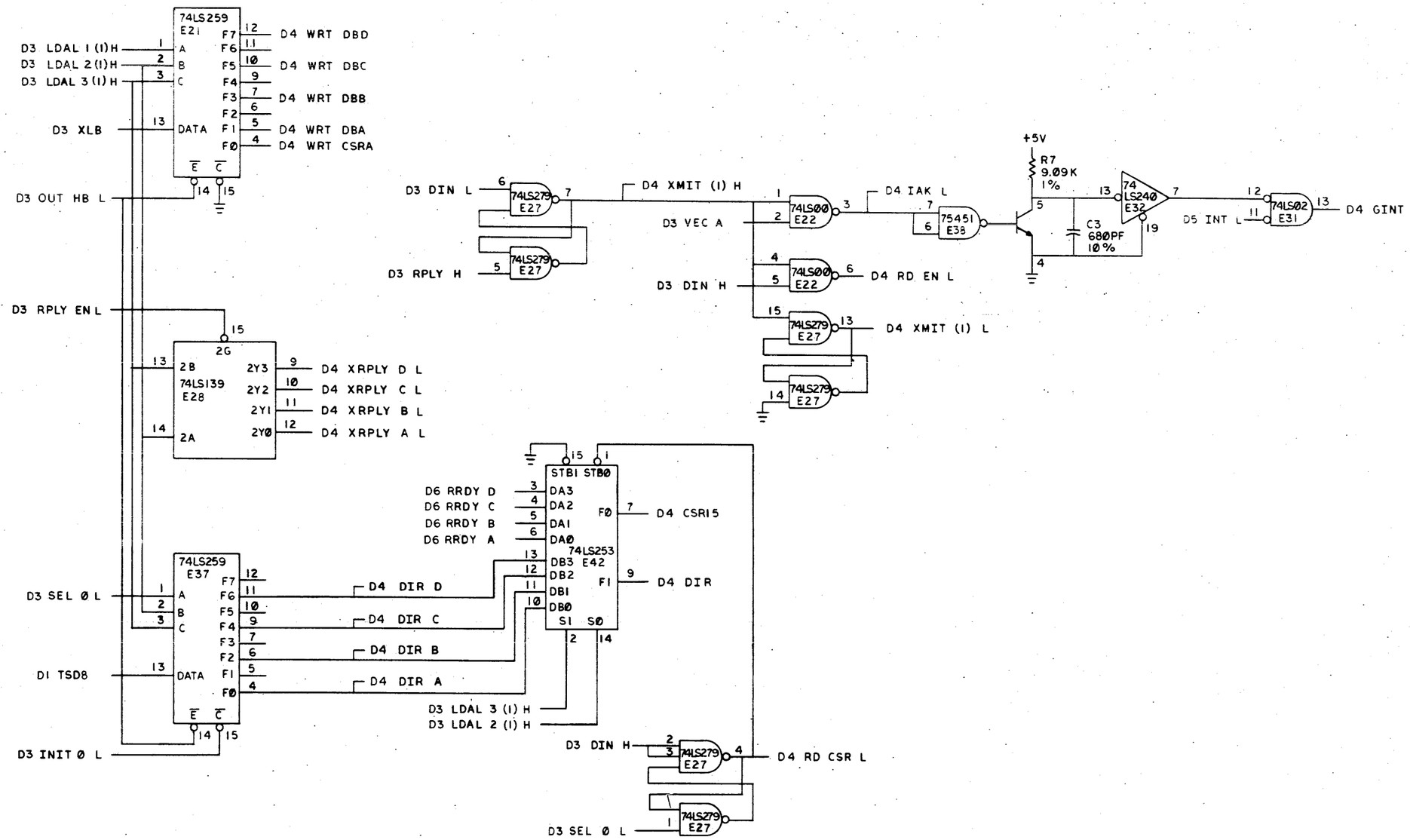
REVISIONS
CHK | CHANGE NO. | REV.

DEC FORM NO. DRD 138

TITLE DRVII-J (D3)
SCALE — SHEET 3 OF 6
SIZE D | CODE CS | NUMBER M8049-0-1 | REV. B
DIST.

NUMBER M8049-0-1 REV B
SIZE D | CODE CS

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMBER	REV.
DRVII-J (D4)		D	CS	M8049-0-1	B
SCALE	SHEET 4 OF 6	DIST.			

DEC FORM NO. DRD 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"

SIZE D | CODE CS | NUMBER M8049-0-1 | REV B

SPARES

74LS04 E13 (11 → 10)

E18 (1–20)

74LS244 E11: A I/O 7 (17) DB4 YB4 (3); A I/O 6 (11) DB1 YB1 (9); A I/O 5 (2) DA1 YA1 (18); A I/O 4 (15) DB3 YB3 (5); A I/O 3 (13) DB2 YB2 (7); A I/O 2 (8) DA4 YA4 (12); A I/O 1 (6) DA3 YA3 (14); A I/O 0 (4) DA2 YA2 (16); OC1 (1), OC2 (19)

9519A E10: IRQ7 (25) … IRQ0 (18); DB7 (4) … DB0 (11); RD (3), WR (2), CS (1), CD (27); GINT (17), IAK (26), RIP (12), PAUSE (15); EI (13), EO (16)

D3 CS0 L → CS

D1 TSD7 … D1 TSD0

74LS04 E13 (9 → 8): D5 PAUSE

R8 4.7K → +5V

74LS244 E15: D3 IE → DB3; D4 DIR → DB4; D5 V9 ← YB3; D5 V8 ← YB4; D6 RRPLY A → DA3 (YA3 14); D6 RRPLY B → DA2 (YA2 16); D6 RRPLY C → DA4 (YA4 12); D6 RRPLY D → DA1 (YA1 18); OC1 (1), OC2 (19)

D4 RD CSR L → OC1

E16 (14): +5V (16) 180 390 (18)

74LS244 E6: A I/O 15 (17) DB4 YB4 (3); A I/O 14 (11) DB1 YB1 (9); A I/O 13 (13) DB2 YB2 (7); A I/O 12 (15) DB3 YB3 (5); A I/O 11 (2) DA1 YA1 (18); A I/O 10 (8) DA4 YA4 (12); A I/O 9 (6) DA3 YA3 (14); A I/O 8 (4) DA2 YA2 (16); OC2 (19), OC1 (1)

NOTE 1: W11 J4 — RPY AIO

E16 (15): +5V (16) 180 390 (8)

9519A E2: IRQ7 (25) … IRQ0 (18); DB7 (4) … DB0 (11); RD (3), WR (2), CS (1), CD (27); PAUSE (15), RIP (12), IAK (26), GINT (17); EI (13), EO (16)

D4 RD EN L → RD

D3 OUT LB L → WR

D3 CSI L → CS

D3 LDAL 2 (1) L → CD

R11 4.7K → +5V; D4 IAK L

R10 4.7K → +5V

74LS00 E22 (9, 10 → 8)

74LS240 E32 (11 → 9): D5 INT L

R9 4.7K → +5V

74LS244 E20: D4 IAK L → OC1 (1), OC2 (19)

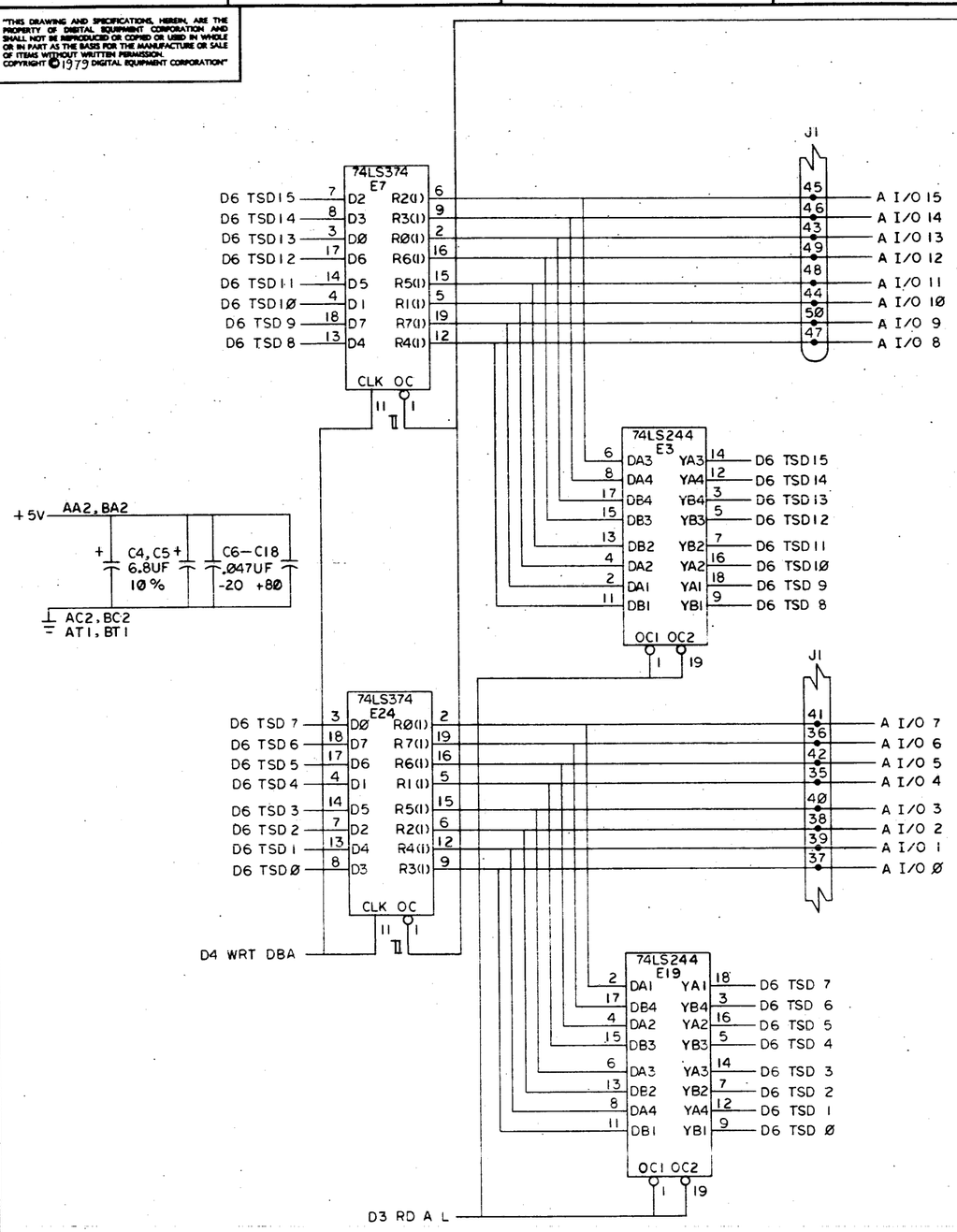
DA1 YA1 (18) D5 V9; DB4 YB4 (3) D5 V8; DA2 YA2 (16) D5 V7; DB3 YB3 (5) D5 V6; DA3 YA3 (14) D5 V5; DB2 YB2 (7) D5 V4; DA4 YA4 (12) D5 V3; DB1 YB1 (9) D5 V2

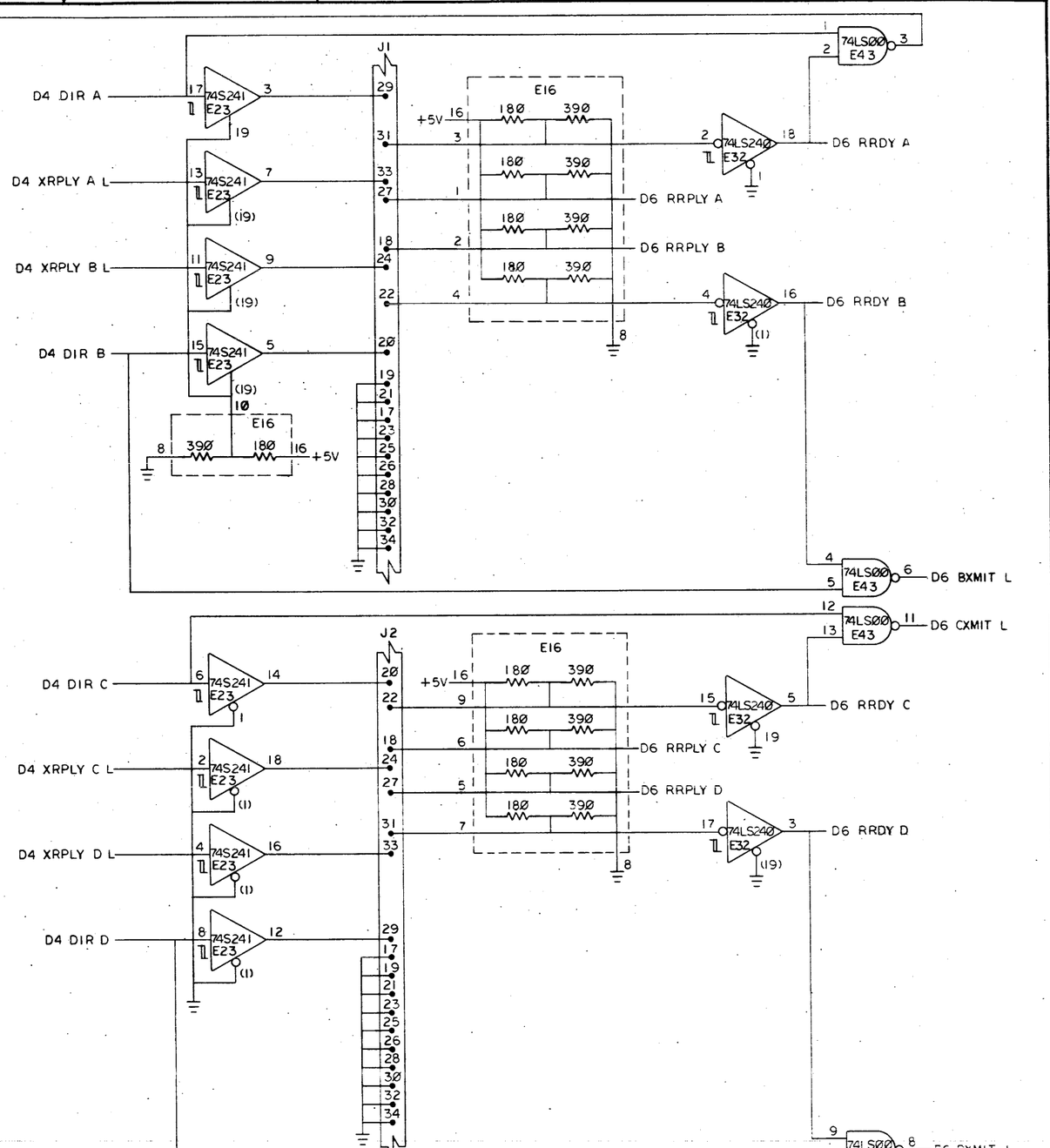
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
DRVII-J (D5)	D	CS	M8049-0-1	B
SCALE —	SHEET 5 OF 6	DIST.		

DEC FORM NO. DRD 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"





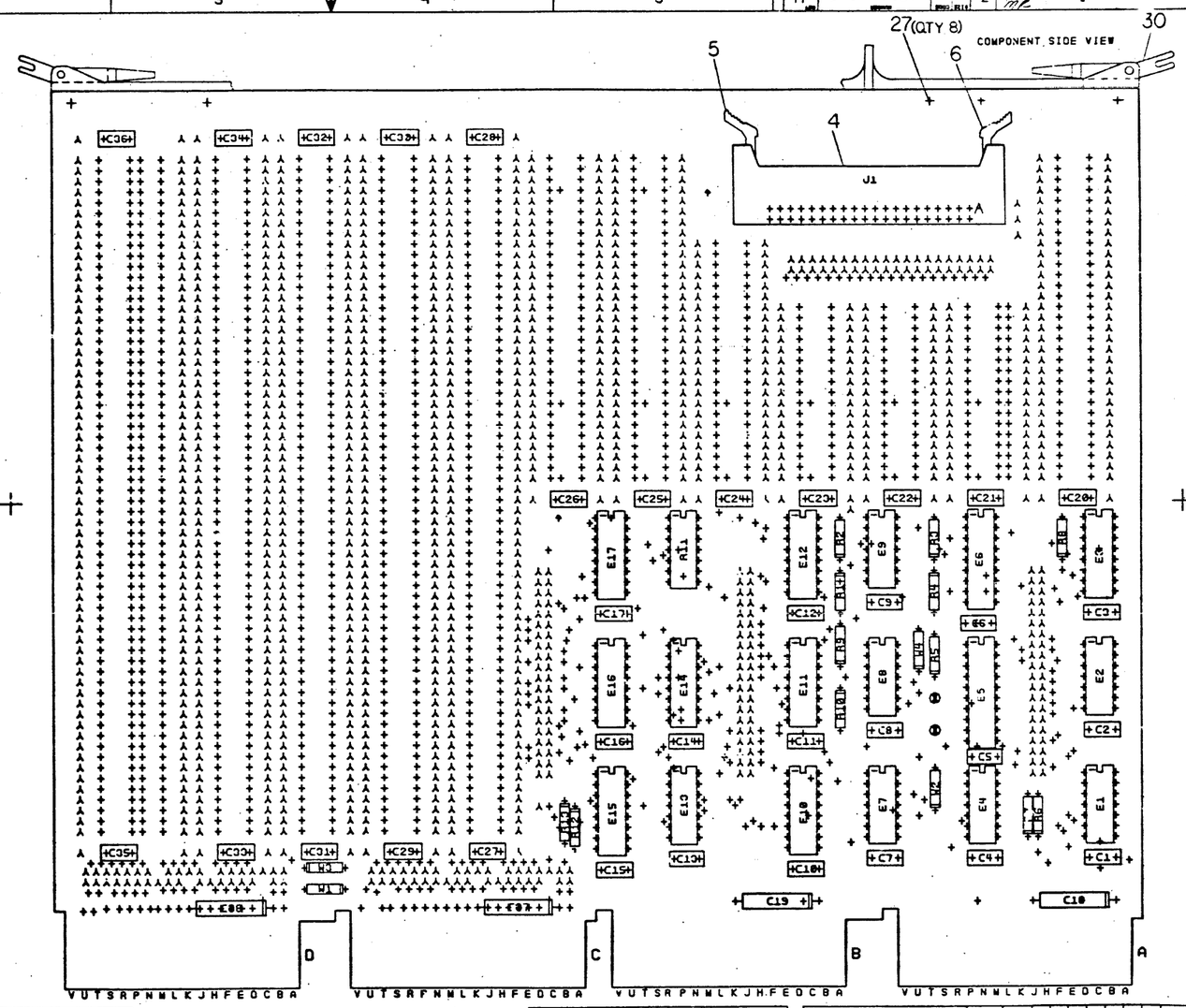
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
DRVII-J (D6)	D	CS	M8049-0-1	B
SCALE	SHEET 6 OF 6	DIST.		

DEC FORM NO. DRD 138

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
DIGITAL EQUIPMENT CORPORATION
COPYRIGHT © '77

COMPONENT SIDE VIEW



NOTES:

CHANGE NO	REV
X	C
	D
	E
	F
	H

ETCH REV. E
P.C. DESIGN DATA BASE REV. E

SIGNATURES	DATE
DRN.	
CHK'D P. J. LEBLANC	
ENG. LUTHER FOREMAN	
PROJ. ENG. L. FOREMAN	
PROD. W. L. S. PILA	

digital

TITLE LSI-11
FOUNDATION MODULE

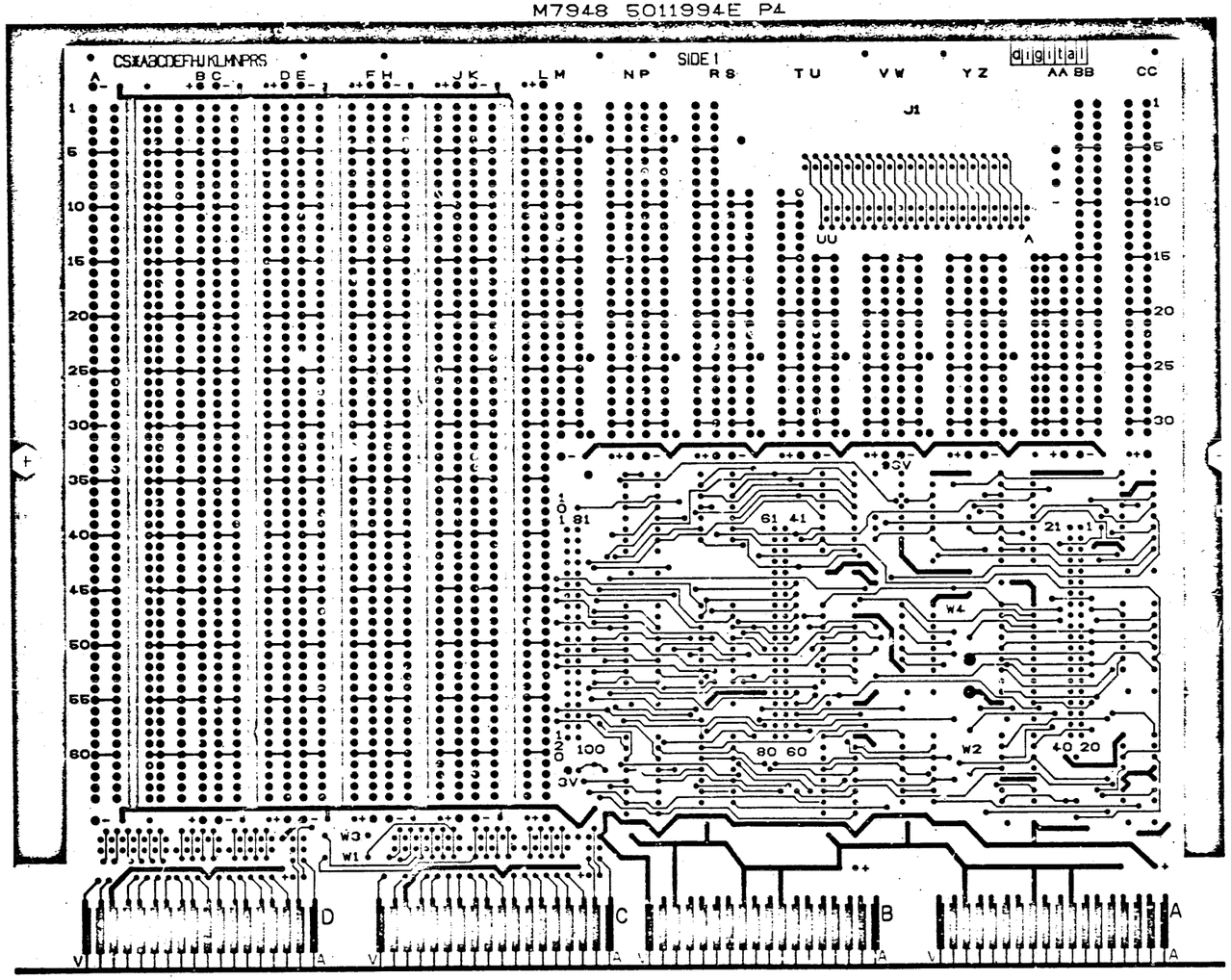
SCALE 2/1 | SIZE C | CODE 04 | NUMBER M7948-0-0 | REV H
SHT. 1 OF 3
NEXT HIGHER ASSY. B-DD-M7946-0

DUA M7948-0-0 H

1 MS# 30394

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION

M7948 5011994E P4

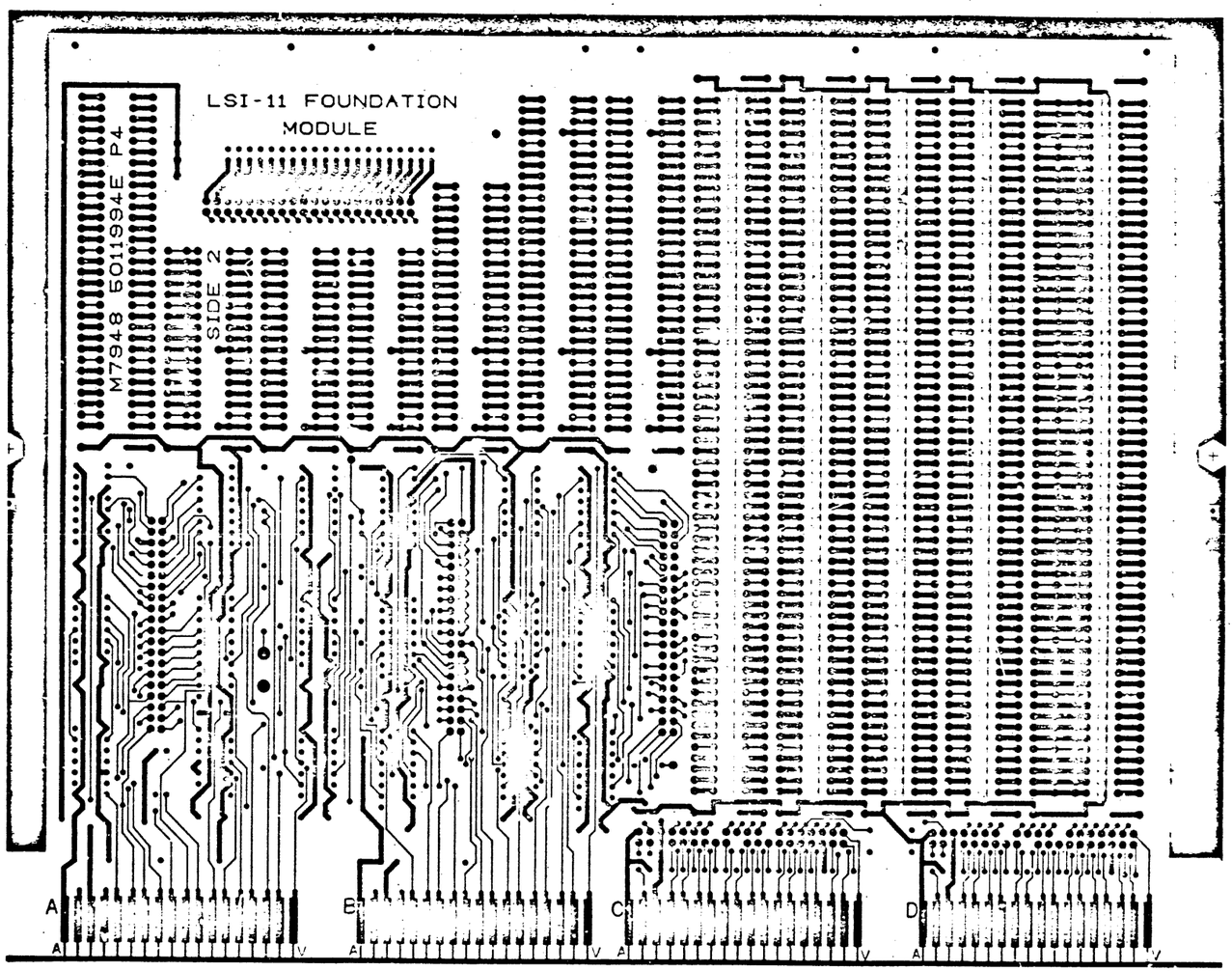


REVISIONS		
ONE	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 FOUNDATION MODULE	D	UA	M7948-0-0	H
SCALE 2/1 SHEET 2 OF 3				

mr

THIS DRAWING AND SPECIFICATION, WHETHER IN WHOLE OR IN PART, IS THE PROPRIETARY PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND NEITHER IT NOR THE INFORMATION IT EMBODIES MAY BE REPRODUCED, USED OR DISCLOSED EXCEPT AS EXPRESSLY PERMITTED IN WRITING BY DIGITAL EQUIPMENT CORPORATION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION



REVISIONS		
CHK	CHANGE NO	REV

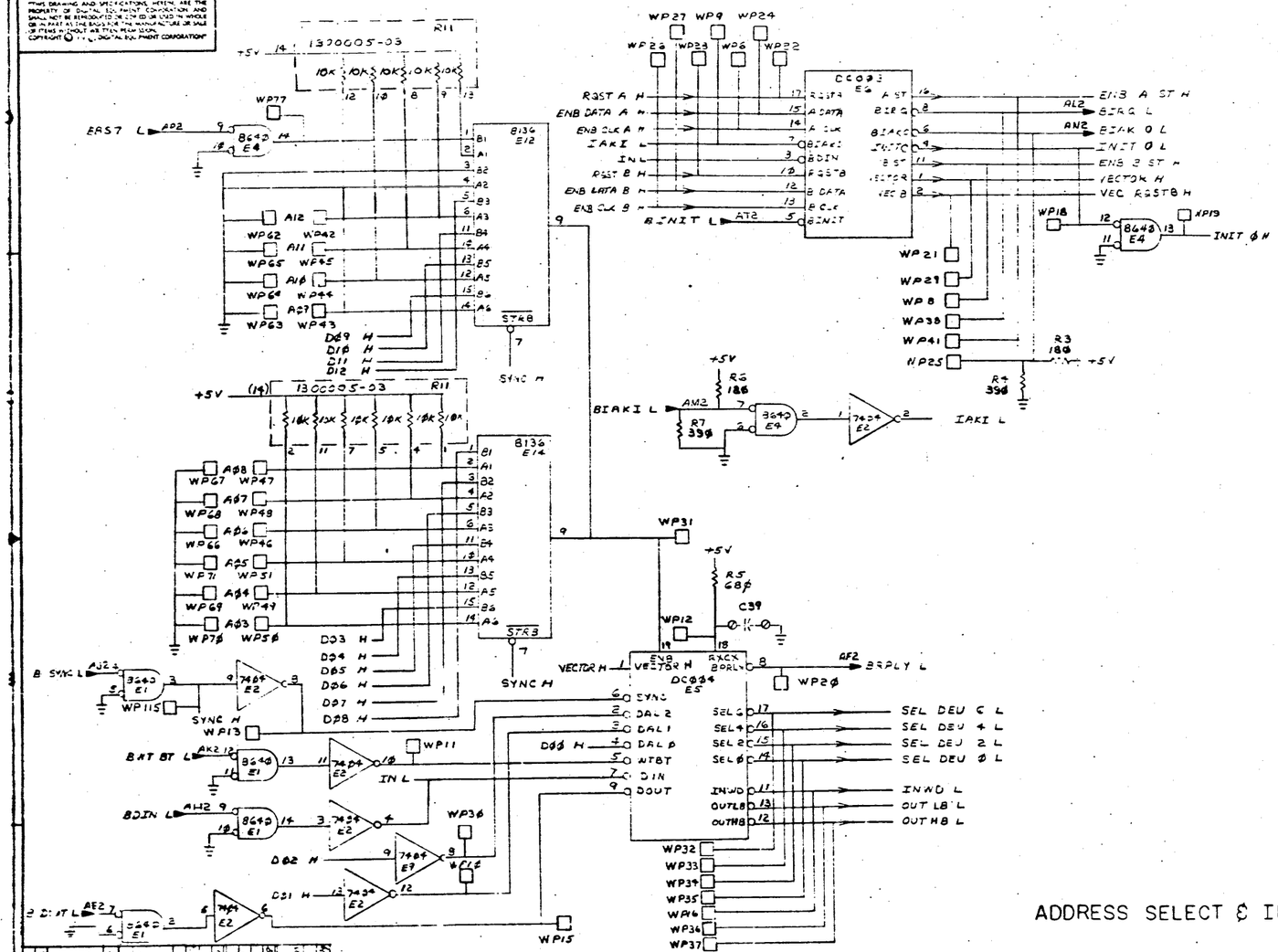
TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 FOUNDATION MODULE	D	UA	M7948-0-0	H
SCALE 2/1 SHEET 3 OF 3	DIST			

THIS DRAWING AND SPECIFICATIONS, EITHER ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION

NOTES:

1. CAPACITOR C39 IS OPTIONAL DO NOT INSERT.
2. □ INDICATES WIRE WRAP PINS
3. UNLESS OTHERWISE SPECIFIED THE FOLLOWING PIN NUMBERS APPLY:

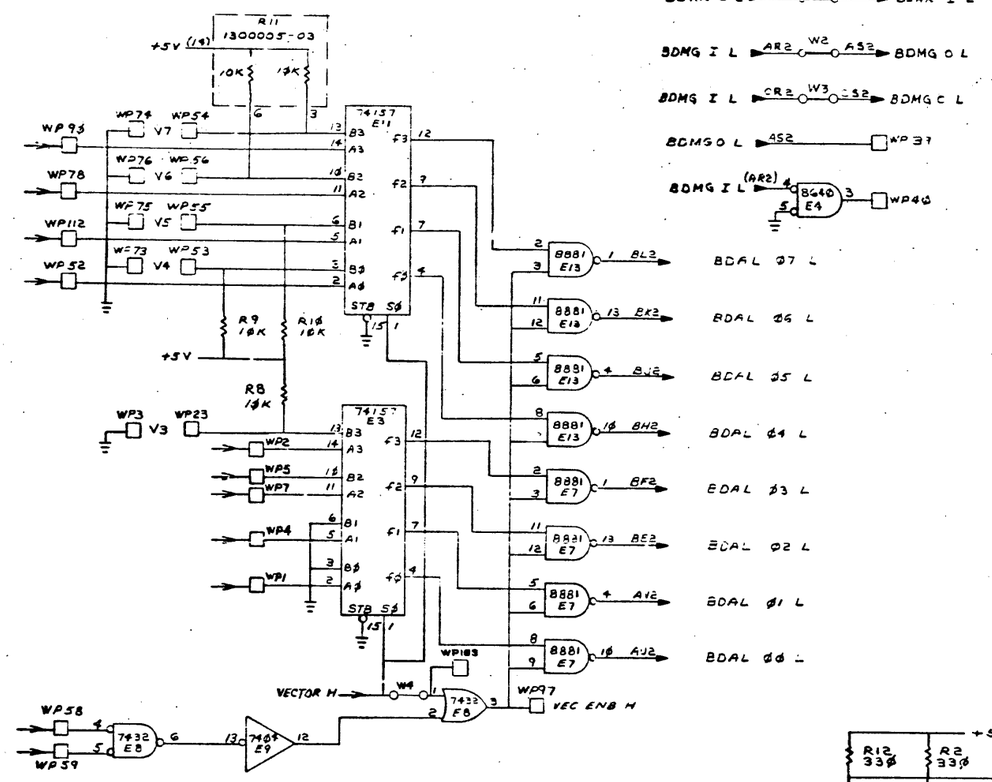
PACKAGE TYPE	VCC	GND
16 PIN DIP	16	8
14 PIN DIP	14	7
IC DEC 8640	8	1
IC DEC DC033	18	9
IC DEC DC034	20	10



ADDRESS SELECT & INTERRUPT CONTROL LOGIC

DRN		FIRST USED ON: DRV11-P
CHK'D		digital
ENG		TITLE: LSI-11 FOUNDATION MODULE
PROJ ENG		
PROG		
NEXT HIGHER ASSY.		
B-DD-M7946-3		SIZE D; CODE; NUMBER: CS-M7946-3-1; REV.
SCALE: NONE		
SHEET 1 OF 3		DIST.

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION



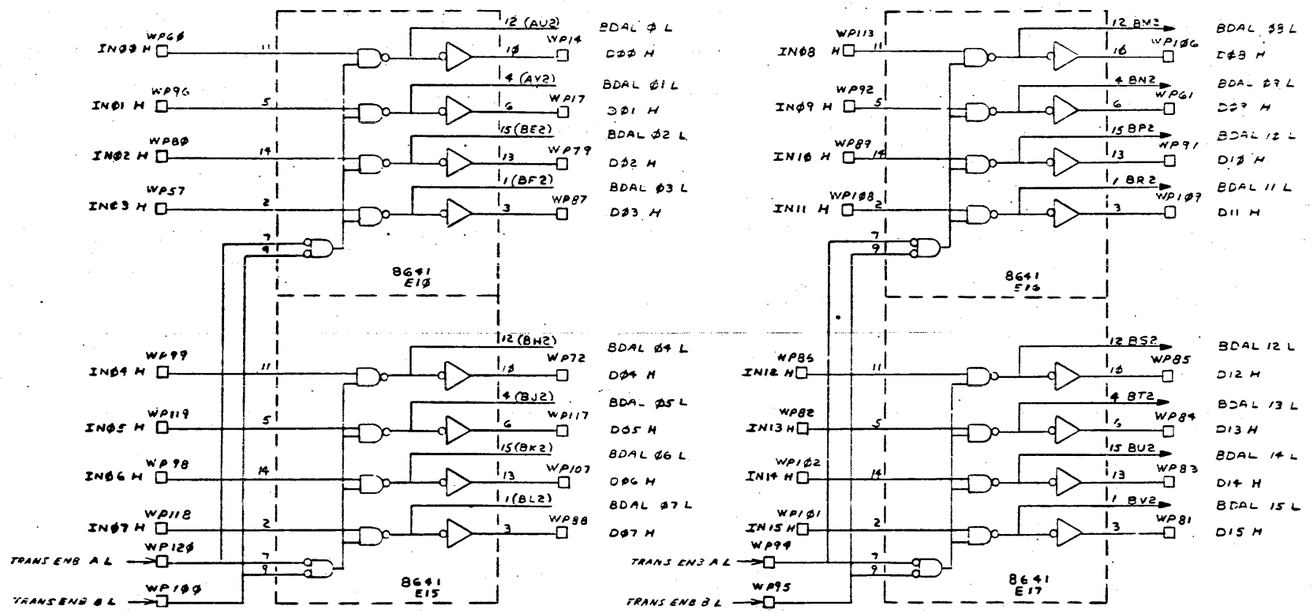
CSR & VECTOR SELECT LOGIC & I/O CONNECTOR

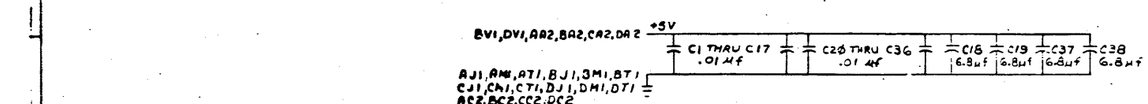
NOTE:
1. 3V WIRE WRAP PINS ARE NOT COMMON.
2. ☐ INDICATES WIRE WRAP PINS
USE BERG WIRE WRAP PINS ONLY
DEC PART NO. 9009217
BERG PART NO. 75404-028

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 FOUNDATION MODULE	D	CS	79[illegible]	J
SCALE	SHEET 2 OF 3		DIST.	

INDICATES WIRE WRAP PINS



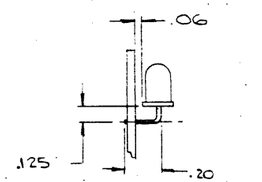


INPUT/OUTPUT DATA LINES

TITLE: LSI-11 FOUNDATION MODULE	SIZE/CODE: D	NUMBER: CS M7948-0-1	REV: J
SCALE:	SHEET: 3 OF 3		

MK

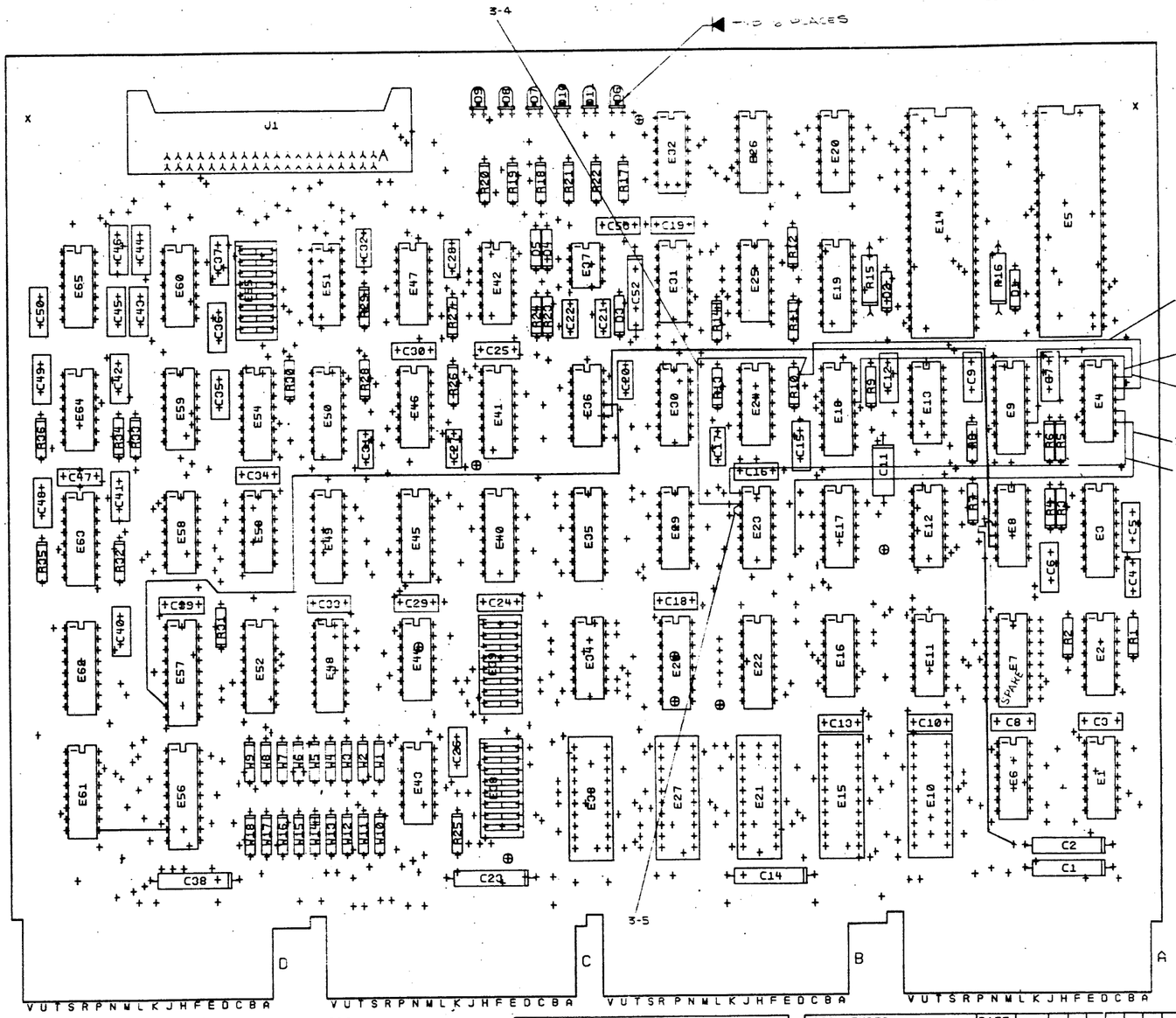
THIS DRAWING AND SPECIFICATIONS, WHETHER OR NOT THEY ARE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION



SUGGESTED LED MTG
TYPICAL 6 PLACES

ECO #3
ETCH CUT SIDE 2:
3-1. BETWEEN THE PTH FROM E18 PIN 1 SIDE 1, AND E23 PIN 6.
WIRE ADDS SIDE 1:
3-2. FROM THE PTH CONNECTED TO E23 PIN 6 AND TO E4 PIN 9.
3-3. FROM THE PTH (NEAR THE BODY OF R10) TO E4 PIN 12.
3-4. FROM THE PTH (NEAR THE BODY OF R10) TO E23 PIN 2.
3-5. FROM E23 PIN 1 TO E23 PIN 10.
3-7. FROM E18 PIN 13 TO E4 PIN 11.
3-8. FROM E9 PIN 11 TO E4 PIN 13.

COMPONENT SIDE VIEW



NOTES: WITHOUT INK

CHK	CHANGE NO	REV
GP	M7951-00001	D
CV	VALENTINE	
KA	M7951-00003	E
DL	LUKAS	
RJ	HARRINGTON	
RJH	M7951-00004	F
RJH	RJH	

ETCH CUT-SIDE 1
1. FROM AL2 TO E56-8

WIRE ADDS
1. CONNECT E61-9 TO E56-8
2. " E57-8 TO E36-11
3. " E36-10 TO E8-5&6
4. " E8-4 TO FEEDTHRU NEXT TO E2 WHICH CONNECTS TO AL2

(CONT. IN UPPER LEFT CORNER)

ETCH REV.	E-P1
P.C. DESIGN DATA BASE REV.	E

SIGNATURES	DATE
DRN. Ted Kelley	12/14/76
CHK'D. Marge Landy	12/14/76
ENG. C.J. Valentine	12/16/76
PROJ.ENG. R.J. Harrington	12/16/76
PROD.	
SCALE 2/1	
SHT. 1 OF 7	
NEXT HIGHER ASSY. 8-DD-M7951-0	

digital

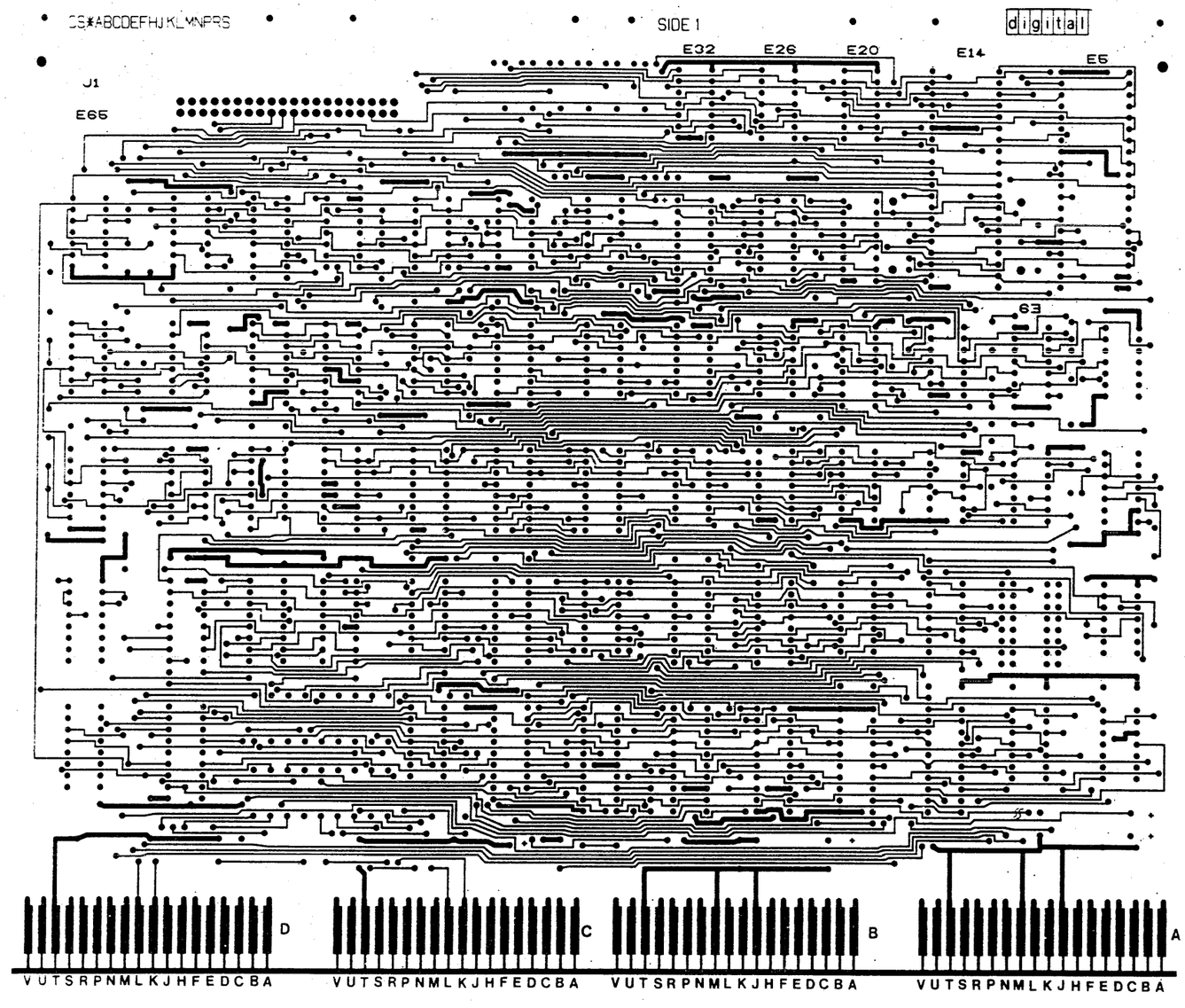
TITLE LSI SYNC INTERFACE BOARD

SIZE	CODE	NUMBER	REV
D	UA	M7951-0-0	H

DUAM7951-0-0

1 MS# 40634
MK

M7951
5012280E-P1
MS40634



WITHOUT INK

VIEWED FROM SIDE 1

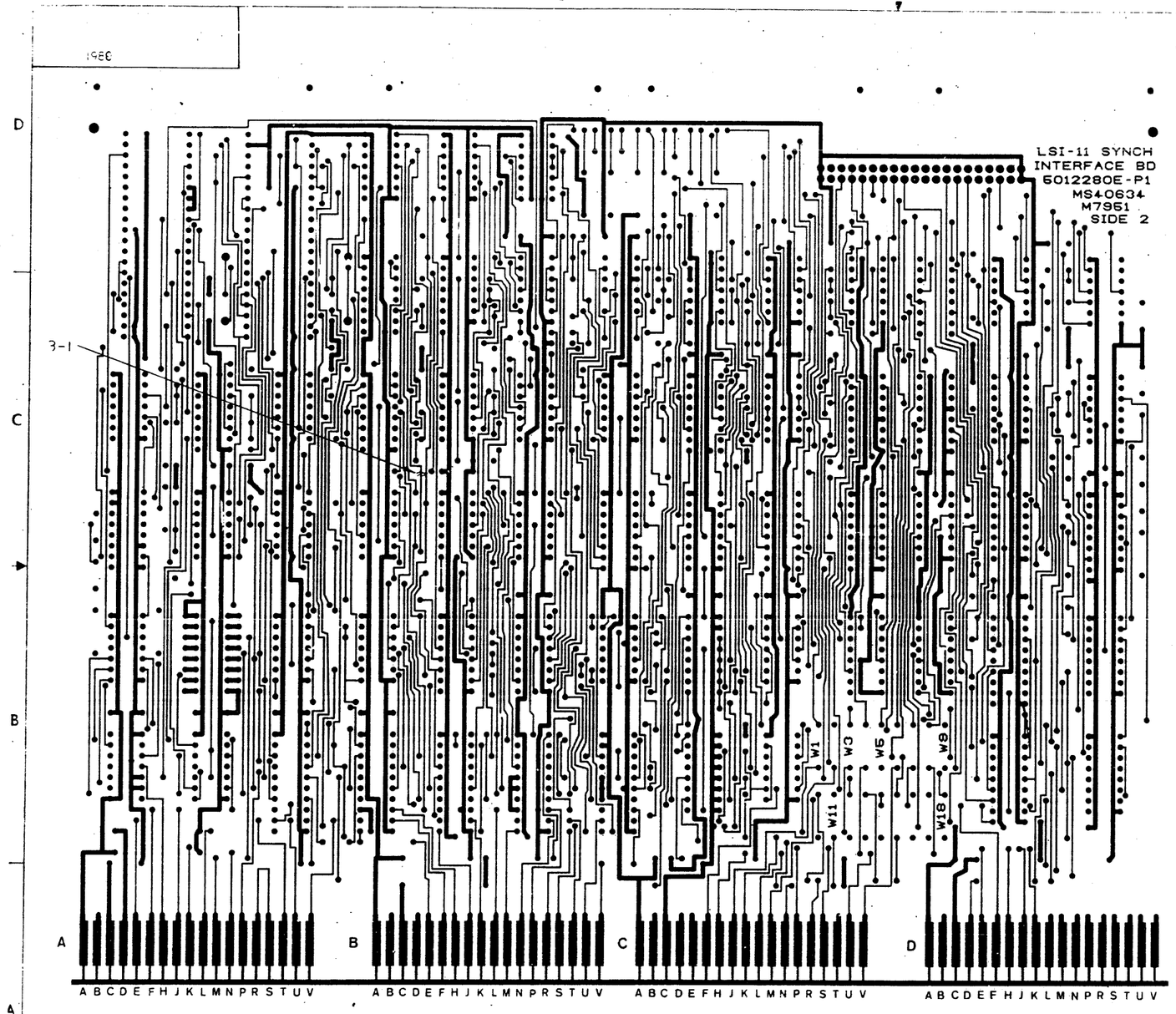
NOTES:

1. REMOVE FROM BOARD SHOP ARTWORK CONNECTOR FINGERS, SIDE 1 LAYER 1:
   A CONNECTOR-B,C,D,E,F,H,K,L,N,P,R,S,U
   B CONNECTOR-B,C,D,E,F,H,K,L,N,P,R,S,U
   C CONNECTOR-B,C,D,E,F,H,J,M,N,P,P,S,U
   D CONNECTOR-B,C,D,E,F,H,J,M,N,P,R,S,U

								TITLE: LSI SYNC INTERFACE BOARD	SIZE: D DWG NO: D-UA-M7951-0-0 REV: H
								SCALE: 2/1	SHEET 2 OF 7

8 7 6 5 4 3 2 MK 1

D-UA-M7951-0-0 H



NOTES:

1. REMOVE FROM BOARD SHOP ARTWORK CONNECTOR FINGERS, SIDE2, LAYER 2:
   A CONNECTOR-B
   B CONNECTOR-B,D
   C CONNECTOR-B,D,E,T
   D CONNECTOR-B,L,M,N,P,R,S,T,U

WITHOUT INK

VIEWED FROM SIDE 2

LSI SYNC INTERFACE BOARD DUA M7951-0-0

MK

THE DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © DIGITAL EQUIPMENT CORPORATION

REWORK INSTRUCTIONS WITH INK

ETCH CUTS

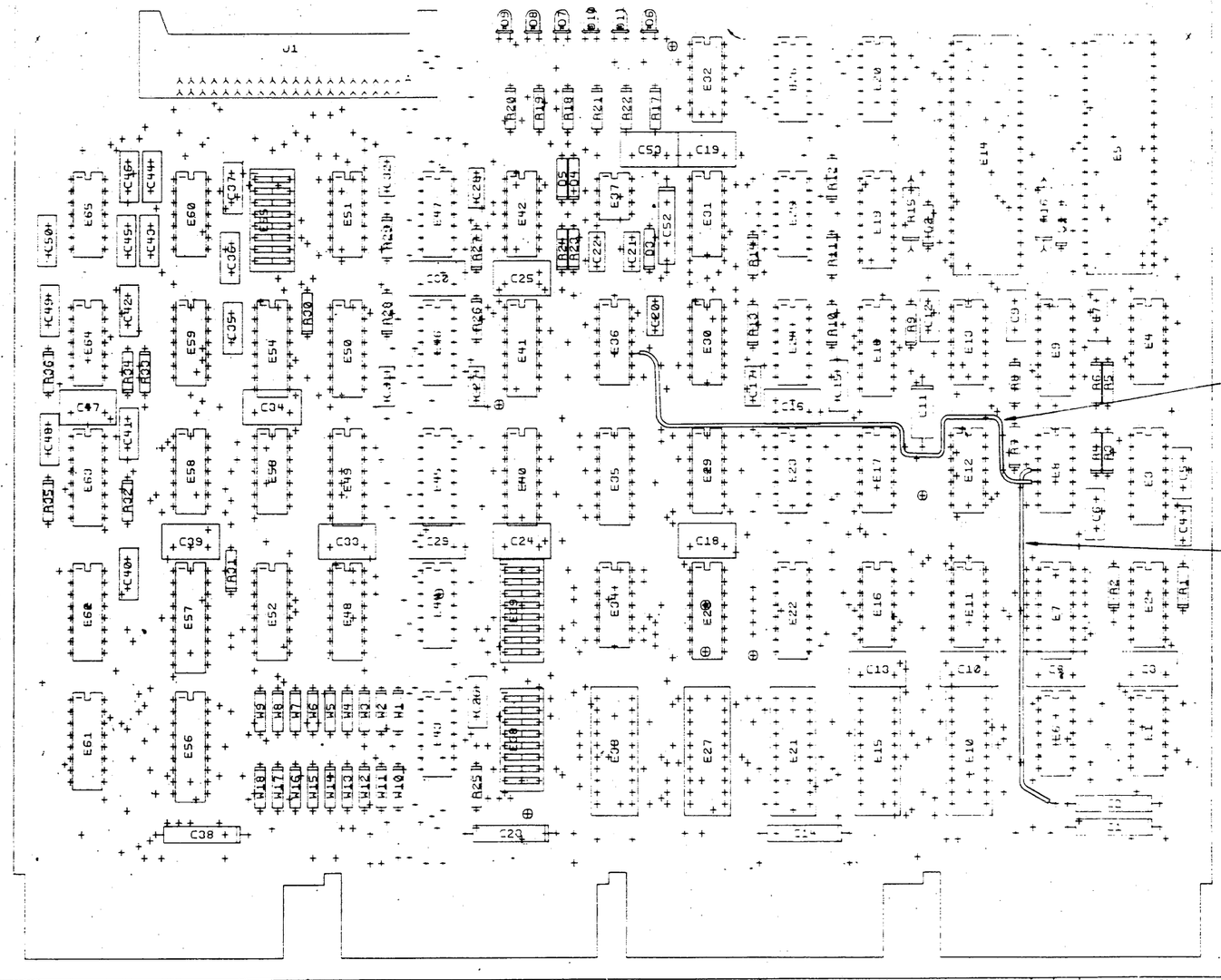
4-1 FROM AL2 TO E56-8 (SIDE 1)

4-2 BETWEEN PTH FROM E18-1, SIDE1 AND E23-6 (SIDE2)

WIRE ADDS SIDE 1

4-3 FROM E8-4 TO PTH TO LEFT OF C2 THAT CONNECTS TO AL2

4-4 FROM E8-5 TO E36-10



WITH INK

REVISIONS		
CHK	CHANGE NO	PE

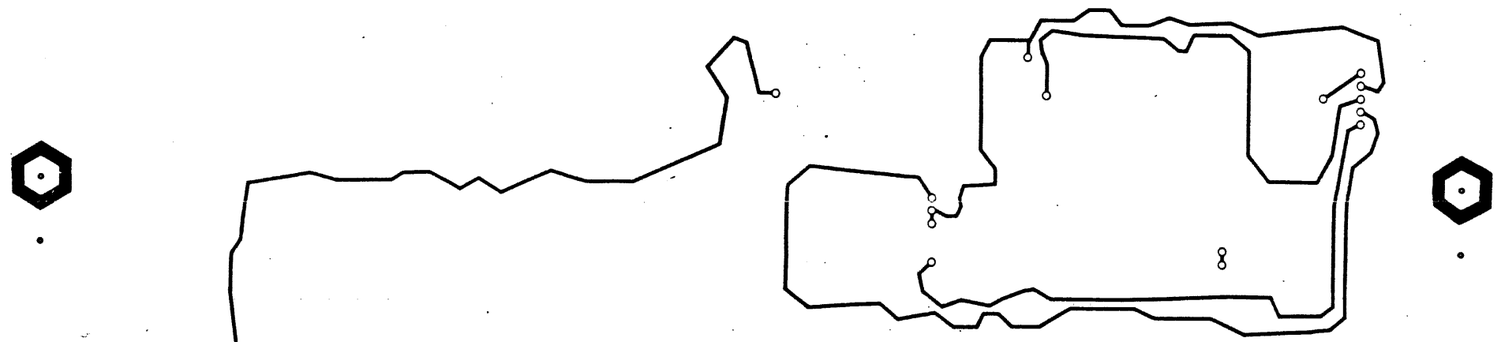
TITLE: LSI SYNC INTERFACE BOARD		SIZE/CODE: D UA	NUMBER: M7951-0-0 PE: H
SCALE: 2/1	SHEET: 4 OF 7	DIST	

DUA M7951-0-0 H

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979, DIGITAL EQUIPMENT CORPORATION

M7951
5012280D

COPPER INK REV A-P2



INK
REV A-
P2

REVISIONS		
CHK	CHANGE NO	REV

TITLE	LSI SYNC INTERFACE BOARD				
SIZE	CODE	NUMBER			REV
D	UA	M7951-Ø-Ø			H
SCALE 2/1	SHEET 5 OF 7	DIST.			

DUAM7951-Ø-Ø H

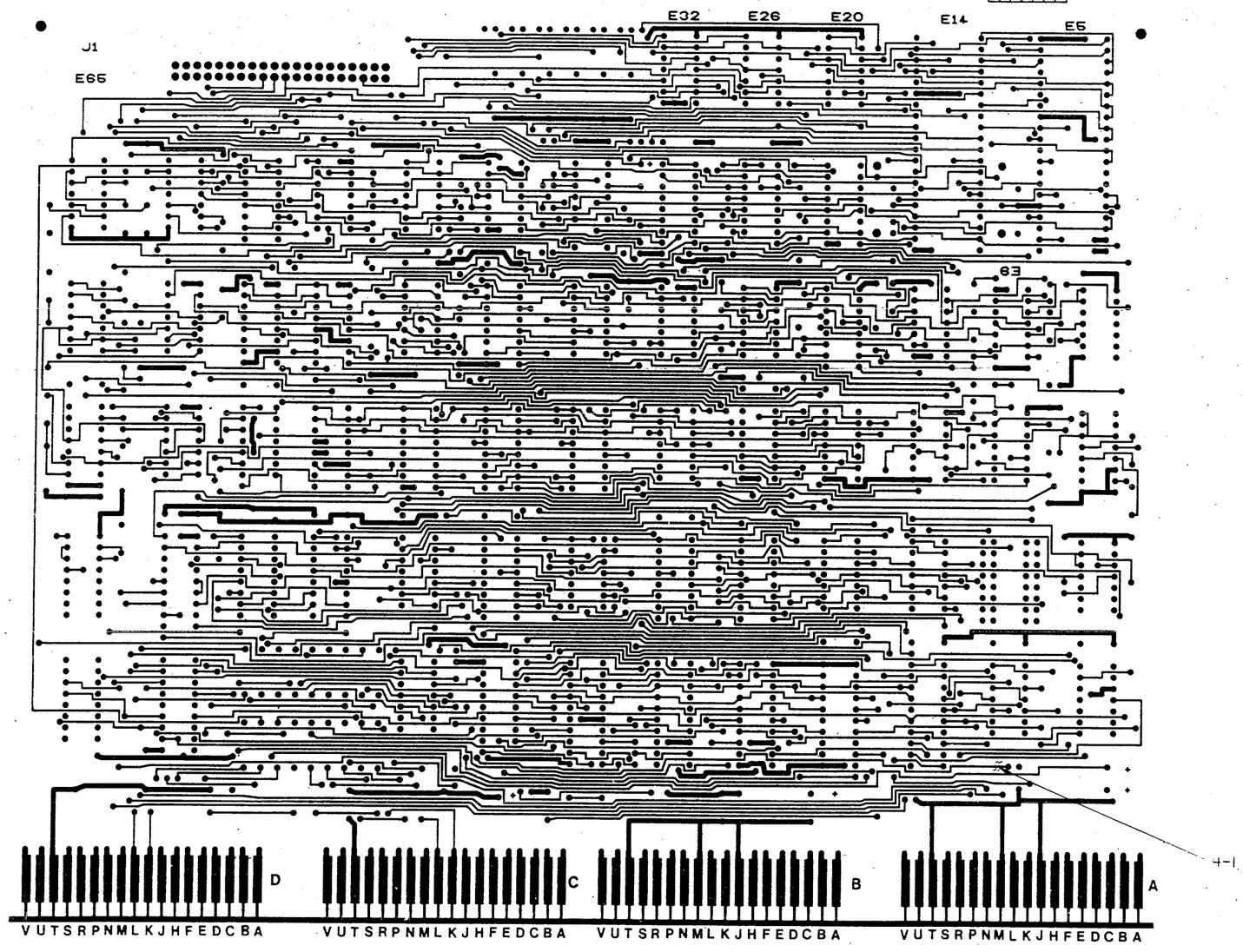
MK

M7951
5012280E-P1
MS40634

CS*ABCDEFHJKLMNPRS

SIDE 1

digital



WITH INK

VIEWED FROM SIDE 1

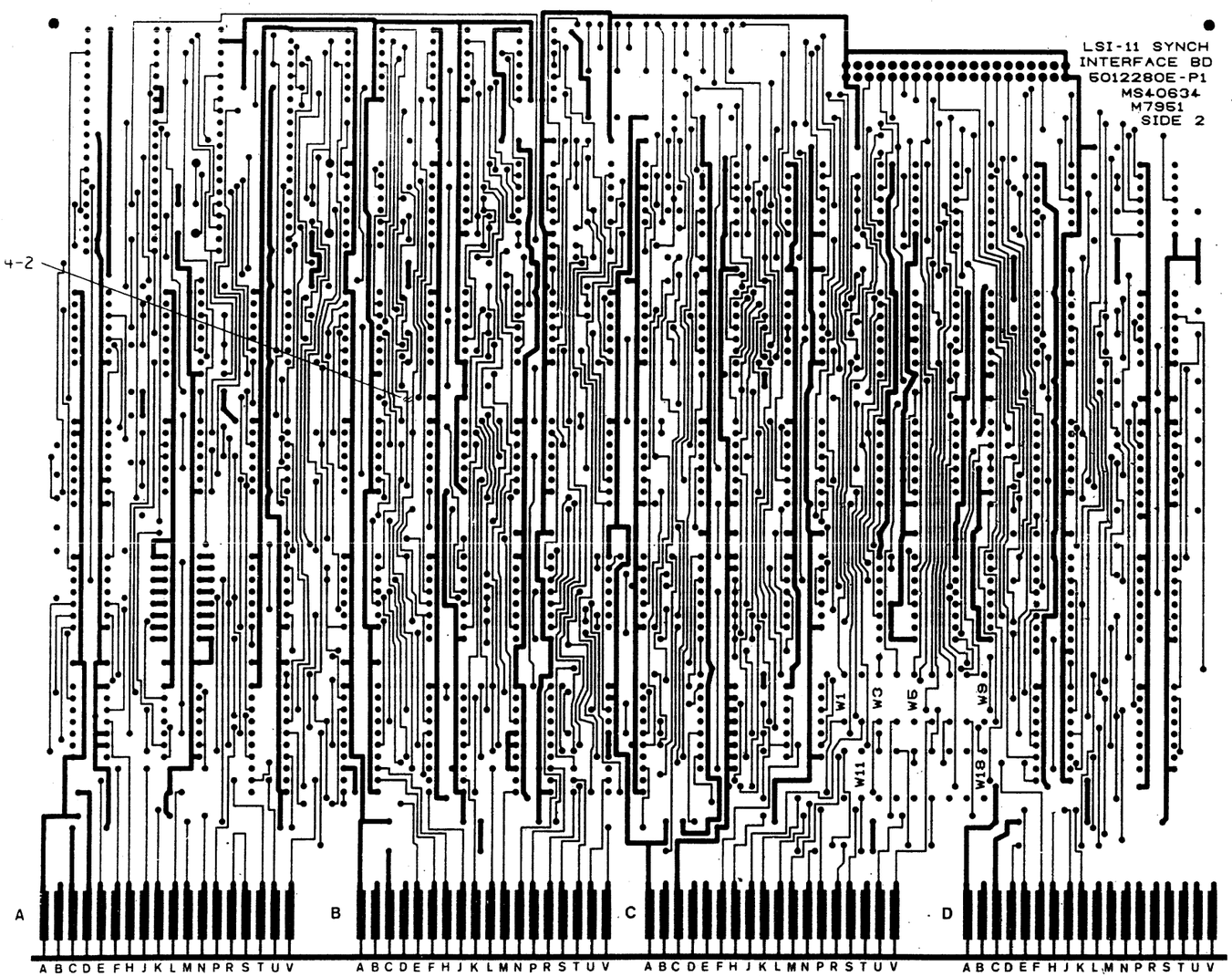
NOTES:

1. REMOVE FROM BOARD SHOP ARTWORK CONNECTOR FINGERS SIDE 1, LAYER 1:
   A CONNECTOR - B,C,D,E,F,H,K,L,N,P,R,S,U
   B CONNECTOR - B,C,D,E,F,H,K,L,N,P,R,S,U
   C CONNECTOR - B,C,D,E,F,H,J,M,N,P,R,S,U
   D CONNECTOR - B,C,D,E,F,H,J,M,N,P,R,S,U

REVISIONS		
CHK	CHANGE NO	REV

LSI SYNC INTERFACE BOARD | D.UA M7951-0-0 H | SCALE 2/1 | SHEET 6 OF 7 | MK

D.UA M7951-0-0 H



NOTES:

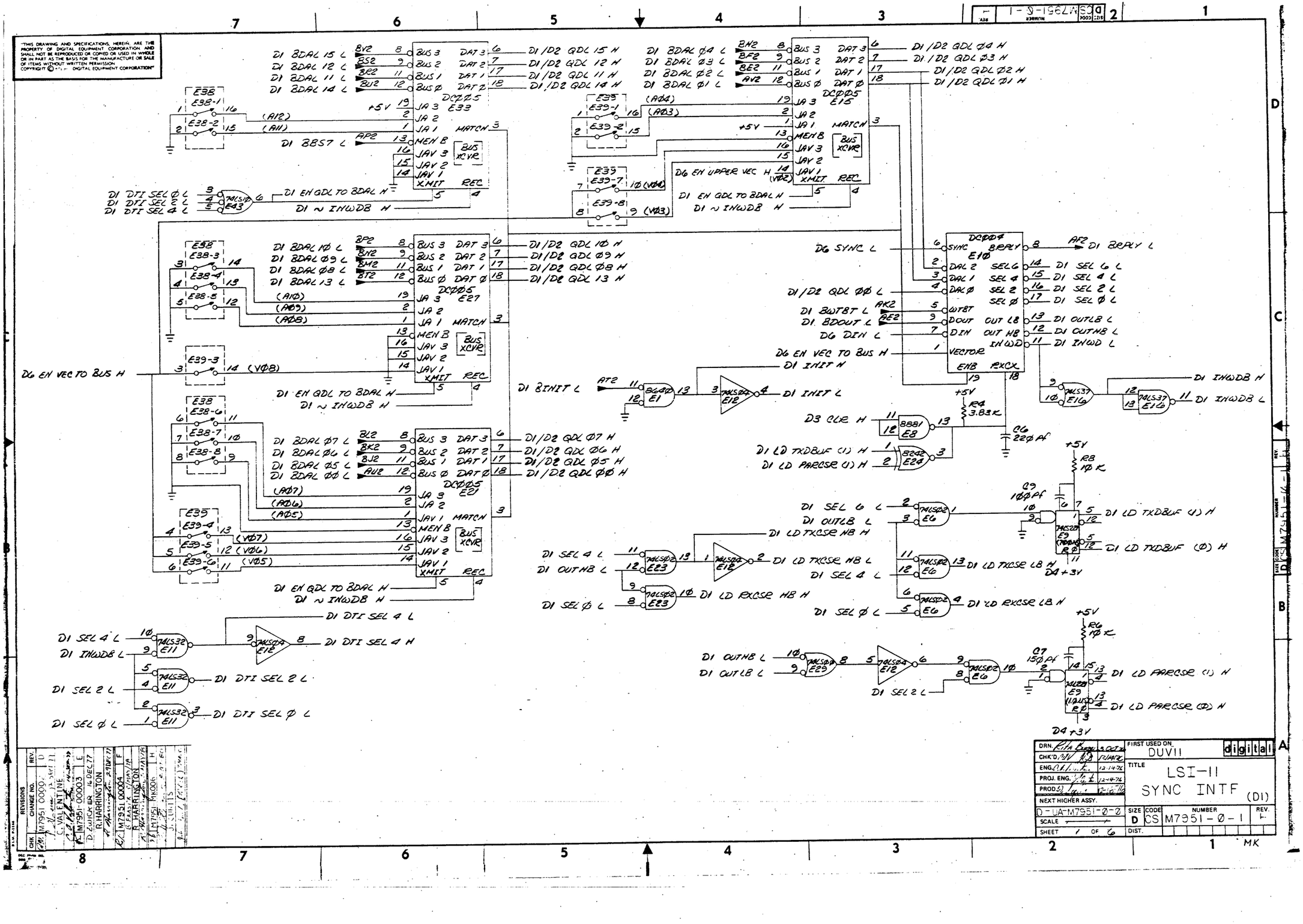
1 REMOVE FROM BOARD SHOP ARTWORK CONNECTOR FINGERS, SIDE 2, LAYER 2:
- A CONNECTOR-B
- B CONNECTOR-B,D
- C CONNECTOR-B,D,E,T
- D CONNECTOR-B,L,M,N,P,R,S,T,U

WITH INK

VIEWED FROM SIDE 2

| | | |

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1974 DIGITAL EQUIPMENT CORPORATION"



REVISIONS			
DWK	CHANGE NO.	REV.	
E.M.	M7951 00001	U	13 SEPT 11
	C. VALENTINE		
R.	M7951-00003	E	16 DEC 11
	D. LEVICK ER		
	R. HARRINGTON		
	M7951 00004	F	6 FEB 12
	R. HARRINGTON		
	M7951 MK006	H	9 OCT 74
	J. SMITH		

DRN.		FIRST USED ON DUVII
CHK'D.		digital
ENG.		TITLE LSI-11 SYNC INTF (DI)
PROJ. ENG.		
PROD.		
NEXT HIGHER ASSY.		
D-UA-M7951-0-0		SIZE D CODE CS NUMBER M7951-0-1 REV. F
SCALE		
SHEET 1 OF 6		DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

LEGEND	
SEL 0 :	A3, E2 SELECTED
SEL 2 :	A1, E1 SELECTED
SEL 4 :	A2, E2 SELECTED
SEL 6 :	(NOT USED)

D1 INWDB L

D3 DATA SET CH (1) H
D4 RX ERR H
D5 DMA H
D3 RING H
D4 OVRN ERR H
D5 MAINT DATA (1) H
→ D1/D2 QDL 15 H
→ D1/D2 QDL 14 H
74LS253 E35

D3 CLR TO SD H
D4 FRM ERR H
D5 SS CLK (1) H
D3 CARRIER H
D4 PAR ERR H
D5 MS Ø1 (1) H
→ D1/D2 QDL 13 H
→ D1/D2 QDL 12 H
74LS253 E41

D4 REC ACT (1) H
D4 MS ØØ (1) H
D3 SEC REC DAT H
D4 RX INP H
→ D1/D2 QDL 11 H
→ D1/D2 QDL 1Ø H
74LS253 E50

D3 DATA SET RDY H
D4 STRIP SYNC (1) H
D3 MSTRST (1) H
→ D1/D2 QDL Ø9 H
→ D1/D2 QDL Ø8 H
74LS253 E49

D1 SEL 4 L → 74LS04 E12
D1 SEL 2 L → 74LS04 E12

D4 RX DONE (1) H
D4 RX DBØ7 H
D5 TX DONE H
D4 RX INTEB (1) H
D4 RX DBØ6 H
D5 TX INTEB (1) H
→ D1/D2 QDL Ø7 H
→ D1/D2 QDL Ø6 H
74LS253 E40

D4 DATA SET INTEB (1) H
D4 RX DBØ5 H
D5 DMA INTEB (1) H
D4 SCH SYNC (1) H
D4 RX DBØ4 H
D5 SEND (1) H
→ D1/D2 QDL Ø5 H
→ D1/D2 QDL Ø4 H
74LS253 E45

D3 SEC TX (1) H
D4 RX DBØ3 H
D5 HALF DUP (1) H
D3 RTS (1) H
D4 RX DBØ2 H
→ D1/D2 QDL Ø3 H
→ D1/D2 QDL Ø2 H
74LS253 E48

D3 DTR (1) H
D4 RX DBØ1 H
D4 RX DBØØ H
D5 BREAK (1) H
→ D1/D2 QDL Ø1 H
→ D1/D2 QDL ØØ H
74LS253 E54

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	LSI-11 SYNC INTF (D2)	SIZE D	CODE CS	NUMBER M7951-0-1 REV. F
SCALE		SHEET 2 OF 6	DIST.	MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

D3 EIA RING H [22] SEE NOTE 1 — W1 → CN2 — 1489A E6B — C44 470 pF
+5V — R9 15K — C11 10 uf — 74LS02 E23 — 74LS74 E4 — D3 RING DLY H
D3 RING N — R11 1K — +5V — R13 100 — C17 .01 uf ≈ 2 uS — 8242 E24
D5 SS CLK (Φ) H — D5 MS Φ1 (1) H — 1488L E31 — R30 7.5K — E55-7 — D3 EIA CLK EXT L [24]
D6 5KC H — 1488L E31 — E55-5 — W15 → DD2
D3 EIA CLR TO SD N [5] — W2 → CJ2 — 1489A E6B — C35 470 pF — 74LS24 E51 — R29 100 — C32 .01 uf — 8242 E46 — D3 CLR TO SD N
D1 ~DTI SEL Φ N — 74LS74 E34 — D4 DATA SET CH (1) H — D3 CLR L
D3 EIA CARRIER N [8] — W3 → CK2 — 1489A E6B — C36 470 pF — 74LS24 E51 — R27 100 — C28 .01 uf — 8242 E46 — D3 CARRIER N
D3 EIA DATA SET RDY H [6] — W12 → CP2 — 1489A E6B — C37 470 pF — 74LS24 E51 — R26 100 — C27 .01 uf — 8242 E46 — D3 DATA SET RDY N
D3 EIA SEC REC H [12] — E55-3 — W4 → CL2 — 1489A E6B — C46 470 pF — 74LS24 E51 — R28 100 — C31 .01 uf — 8242 E46 — D3 SEC REC N
D5 SERIAL DATA OUT H — D5 MSΦΦ (Φ) H — 74LS32 E32 — D3 TTL DATA OUT L — 1488L E31 — W16 → DE2 — D3 EIA XMIT DATA L [2]
74LS175 E52 — D3 R3(1) R3(0) — D3 SEC TX (1) H — D3 SEC TX (1) L — D3 RTS (1) H — D3 RTS (1) L — D3 DTR (1) H — D3 DTR (1) L
D1/D2 GDL Φ3 H — D1/D2 GDL Φ2 H — D1/D2 GDL Φ1 H — D1 LD RXCSR LB H
D3 EIA SERIAL DATA IN L [3] — W5 → CF2
D3 EIA TRS CLK H [15] — W14 → CU2
D3 EIA REC CLK H [17] — W6 → CV2
[GND] [SIG GND] [GND]
E55-6 — E55-2 — W7 → DF2 — W17 → DH2 — D3 EIA DATA RATE SEL H [23] — D3 EIA SEC XMIT H [11]
1488L E53 — W8 → DJ2 — D3 EIA REQ TO SD H [4]
1488L E53 — W18 → DK2 — D3 EIA DATA TERM RDY H [20]
+5V — R10 10K — C15 470 pF — D1 LD TXCSR NB L — D1/D2 GDL Φ8 H — 74LS221 E18 (3 MS) — D3 MSTRST (1) H — D3 MSTRST (1) L — D1 INIT L — 74LS37 E16 — D3 CLR H — E55-1 — D3 OPT CLR L — R31 10K — +5V — D5 +3V

NOTES:
1. NUMBERS IN SQUARES ARE PIN # AT MODEM CONNECTOR END OF INTERFACE CABLE.
2. D6 -12V (A) SUPPLIES E14-16 AND E31-16. D6 -12V (B) SUPPLIES E5-16 AND E53-1.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMBER	REV.
LSI-11 SYNC INTF. (D3)		D	CS	M7951-0-1	H
SCALE	SHEET 3 OF 6	DIST.			

MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

(RXCSR BITS 6,5,4)

D4 +3V
D4 SCH SYNC (1) H
D4 SYNC (1) H
D5 ~RX CLK L
D4 SYNC (Φ) H
D4 SCH SYNC (Φ) H
D4 DATA RDY L
D4 ~MDET L
D4 REC ACT (Φ) L
E61 330Ω 68Ω +5V
D4 REC ACT (Φ) H
D4 FIRST IN (1) H
D4 ~MATCH H
D4 FIRST IN (Φ) H
D4 ~MDET L
E554
R12 10K +5V
D4 SYNC INTR (Φ) L
D4 REC ACT (1) L
D1/D2 QDL Φ6 H
D1/D2 QDL Φ5 H
D1/D2 QDL Φ4 H
D4 RX INTEB (1) H
D4 RX INTEB (1) L
D4 DATASET INTEB (1) H
D4 DATASET INTEB (1) L
D4 SCH SYNC (1) H
D4 SCH SYNC (1) L
D3 CLR L
D1 LD RXCSR LB H
D4 SCH SYNC (1) H
R44 10K +5V
D4 MAINT Φ1 OR 10 H
D5 MS Φ1 (1) H
D5 MS Φ0 (Φ) H
D4 RX INP H
D5 MAINT DATA (1) H
D4 SERIAL DATA IN H
D3 ETA SERIAL DATA IN L
C45 470 PF
D5 MS Φ0 (Φ) H
D5 MS Φ0 (1) H
D5 SERIAL DATA OUT H
PR14728 E14
D5 RX CLK H
D3 CLR H
D1/D2 QDL Φ8 N
D5 PARITY INHIBIT N
D1/D2 QDL 11 N
D1/D2 QDL 10 H
D1/D2 QDL 13 H
D5 CLR STA DR L
D1 LD PARCSR (1) L
D1/D2 QDL Φ7 H
D1/D2 QDL Φ6 H
D1/D2 QDL Φ5 H
D1/D2 QDL Φ4 H
D1/D2 QDL Φ3 H
D1/D2 QDL Φ2 H
D1/D2 QDL Φ1 H
D1/D2 QDL ΦΦ H
+5V
D6 -12V (A)
D4 RX DB Φ7 H
D4 RX DB Φ6 H
D4 RX DB Φ5 H
D4 RX DB Φ4 H
D4 RX DB Φ3 H
D4 RX DB Φ2 H
D4 RX DB Φ1 H
D4 RX DB ΦΦ H
R36 100Ω
C49 270 PF
D4 +3V
R33 10K +5V
C41 62 PF
D4 DATA RDY H
D4 FIRST IN (1) N
D4 DATA RDY L
D4 REC ACT (1) H
D4 REC ACT (Φ) N
D4 SCH SYNC (Φ) N
D3 CLR H
R35 10K +5V
C48 62 PF
R25 100Ω
D4 MDET H
C26 330 PF
D4 MATCH H
D4 MATCH L
D4 +3V
D4 STRIP SYNC (1) H
D4 RST CHAR L
D4 DATA RDY N
D4 REC ACT (1) N
D4 RX DONE (1) H
D1 ~DTE SEL 2 H
D4 RX DONE (Φ) H
D3 CLR L
D4 RX ERR H
D4 RX ERR L
D4 OVRN ERR H
D4 PAR ERR H
D4 FRM ERR H
D4 +3V
D1/D2 QDL 13 N
D1/D2 QDL 12 N
D4 SYNC INTR (1) H
D1 LD PARCSR (1) H
D4 SYNC INTR (Φ) H
D3 CLR L
D1/D2 QDL Φ8 N
D4 STRIP SYNC (1) H
D1 LD RXCSR MB H
D4 STRIP SYNC (Φ) H
D3 CLR L
D2/D3 ~QDL 13 L
D4 ISOC (1) H
D1 LD PARCSR (1) N
D4 ISOC (Φ) H
D3 CLR L
D4 SYNC (1) L
C12 12Ω PF
D4 ISOC (1) H

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	LSI-11 SYNC. INTF (D4)	SIZE/CODE	D CS M7951-0-1
SCALE	1/1	SHEET	4 OF 6
DIST.		REV.	H

MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

MAINT MODE SELECTION		
MS Ø1	MS ØØ	MODE
Ø	Ø	NORMAL (EIA)
Ø	1	LOOP-INTERNAL (TTL)
1	Ø	LOOP-EXTERNAL (EIA)
1	1	CTP-SYS TEST (TTL)

D3 EIA REC CLK H → 1488A E65 → 74LS04 E51 → D5 SYS TST CLK L
D5 MS21 (1), H, D5 MS22 (1), H → 74LS10 E25
C52 47Ø Pf
D5 MS ØØ (Ø) H → 74LS10 E26 → D5 RX CLK H
D5 HALF DUP (Ø), L → 74LS04 E29
D5 SEND (Ø) L
D5 SS CLK (1) H → 74LS08 E32
D5 MS ØØ (1) H
D3 EIA TRS CLK H → 1488A E65 → 74LS04 E51 → D5 MS ØØ (Ø) H
C43 47Ø Pf
D1/D2 ~GDL Ø9 L → 74LS04 E30 → D5 PARITY INHIBIT H
D5 TX CLK H → 74LS10 E26 → TRC
D5 SEND (1), H → CTS
D3 CLR H → MR
D1/D2 GDL Ø8 H → EPE
PI
CS2
CS1
D1/D2 GDL 13 H → MS2
MS1
D1/D2 GDL 11 H → WL2
D1/D2 GDL 1Ø H → WL1
D1 LD PARCSR (1) L → CRL
THRL
D1 LD TKDBUF (1) L → THRL
D5 RST DNA L → DAR
D1/D2 GDL Ø7 H → T8
D1/D2 GDL Ø6 H → T7 (SYNC/ASYNC XMTR)
D1/D2 GDL Ø5 H → T6
D1/D2 GDL Ø4 H → T5
D1/D2 GDL Ø3 H → T4
D1/D2 GDL Ø2 H → T3
D1/D2 GDL Ø1 H → T2
D1/D2 GDL ØØ H → T1
+5V → VSS
D7-12V (Ø) → VGG
VDD
CD
PT1482B (E5)
TRO → D5 SERIAL DATA OUT H
TCO
DD → D5 EOC L
D5 BREAK (Ø) L → 74LS04 E30 → 74LS02 E44
THRE → 74LS08 E13 → D5 TX DONE H

(TKCSR HIGH BYTE; MAINT CTRL)

74LS175 E19

D1/D2 GDL 14 H	D3 R3(1)	R3(Ø)	D5 MAINT DATA (1) H / D5 MAINT DATA (Ø) H
D1/D2 GDL 13 H	D2 R2(1)	R2(Ø)	D5 SS CLK (1) H / D5 SS CLK (Ø) H
D1/D2 GDL 12 H	D1 R1(1)	R1(Ø)	D5 MS Ø1 (1) H / D5 MS Ø1 (Ø) H
D1/D2 GDL 11 H	DØ RØ(1)	RØ(Ø)	D5 MS ØØ (1) H / D5 MS ØØ (Ø) H

CLR CLK
D3 CLR L
D1 LD TKCSR HB H

(TKCSR 6,5,4,3,Ø)

74LS174 E22

	D5 R5(1)		
D1/D2 GDL Ø6 H	D4 R4(1)		D5 TX INTEB (1) H
D1/D2 GDL Ø5 H	D3 R3(1)		D5 DMA INTEB (1) H
D1/D2 GDL Ø4 H	D2 R2(1)		D5 SEND (1) H
D1/D2 GDL Ø3 H	D1 R1(1)		D5 HALF DUP (1) H
D1/D2 GDL ØØ H	DØ RØ(1)		D5 BREAK (1) H

CLR CLK
D3 CLR L
D1 LD TKCSR LB H

D1 ~DTI SEL 4 H → 8881 E8 → D5 RST DNA L
+5V → R7 10K
D4 +3V
D1 DTI SEL 4 H → 74LS74 E4 → D5 EN RST DNA (1) H
DA → 74LS08 E13 → D5 DMA H

D2 ~INWDB L → 74LS02 E64 → 74LS27 E59
D1 DTI SEL 2 L → R34 10Ω
C42 680 Pf
≈60 NS
D4 DATA RDY L → 74LS02 E64
D4 REC ACT (Ø) L
D4 RST CHAR L → 74LS02 E64
+5V → R32 10K
C40 62Pf
74LS221 E62 (400NS)
D5 CLR STA•DR L
D4 +3V
(TO RCVR ON D4)

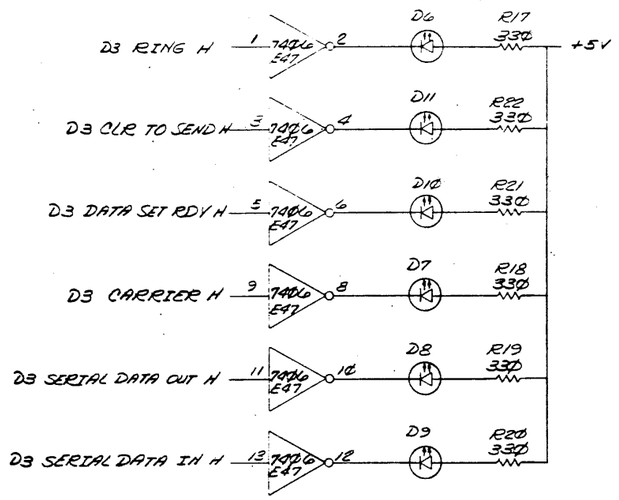
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 SYNC. INTF. (D5)	D	CS	M7951-2-1	H
SCALE —	SHEET 5 OF 6	DIST.		

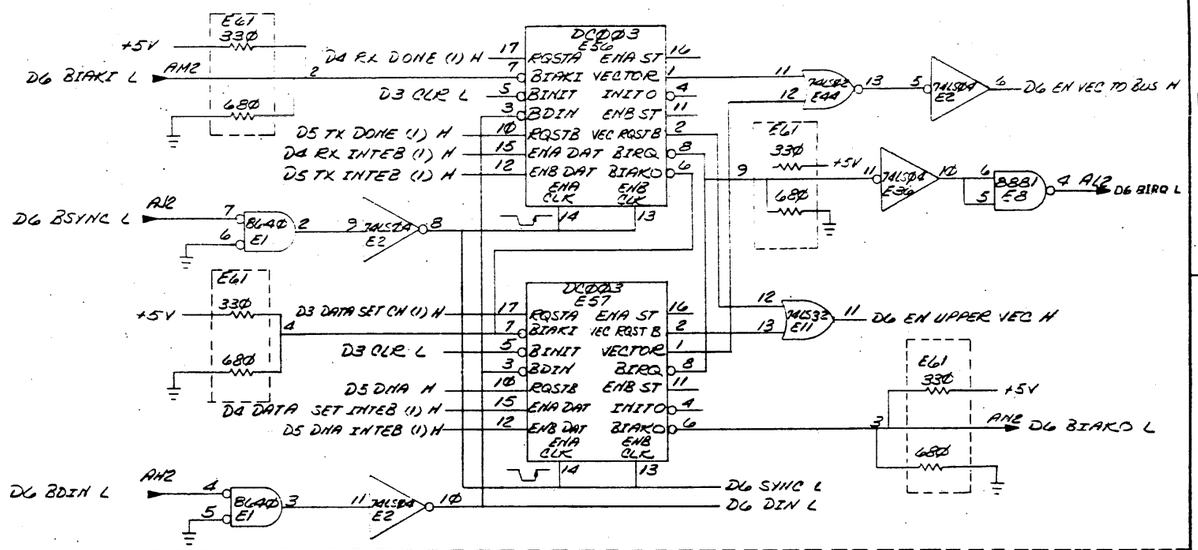
MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

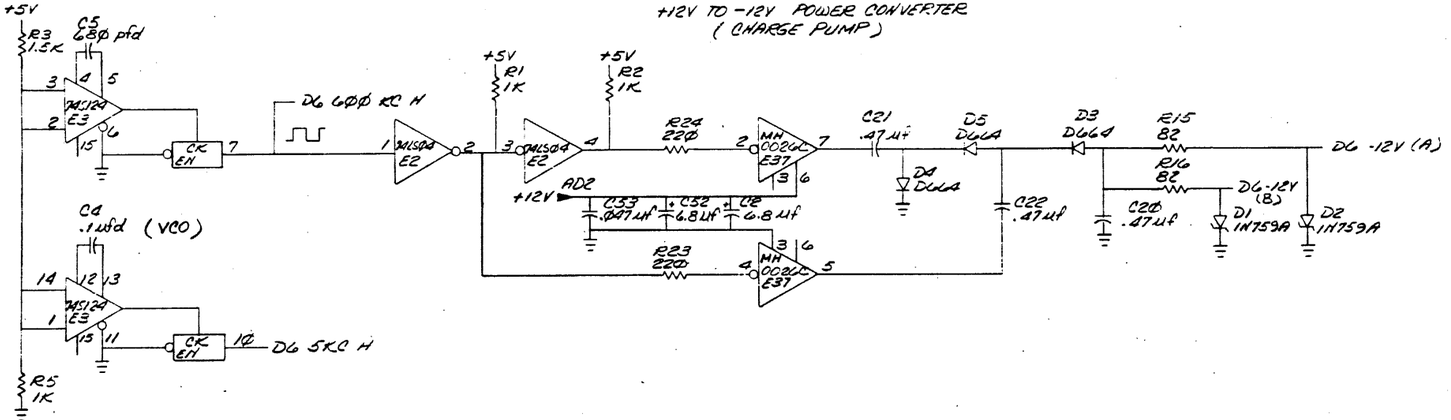
MAINTENANCE INDICATORS

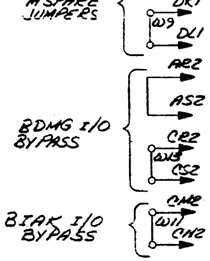


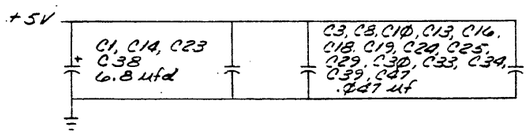
INTERRUPT CONTROL



+12V TO -12V POWER CONVERTER (CHARGE PUMP)







REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 SYNC. INTF. (D6)	D	CS	M7951-0-1	

SCALE — SHEET 2 OF 2 — DIST.

MK

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION

SIZE	DWG NO	REV
D	M7957-0-0	C

10.44
(265.17MM)
REF

COMPONENT SIDE VIEW

8.41
(213.61MM)
REF

62

61
8 PLACES

TH2

J1

E58 E47 E36 E28 E18 E10
E57 E46 E35 E27 E17 E9
E56 E45 E26 E8
E55 E44 E25 E7
E54 E43
E53 E42 E34 E24 E16 E6
E52 E41 E33 E23 E15 E5
E51 E40 E32 E22 E14 E4
E50 E39 E31 E21 E13 E3
E49 E38 E30 E20 E12
E48 E37 E29 E19 E11 E1
E79 E78 E77 E76
E72 E71 E70 E69 E68
E66 E65 E64 E63 E62 E61 E60 E59
E81 E80 E75 E74 E73
E67
E82 E98

SPARE

D1 D2 D3 D4 D5 D6 D7 D8 D9
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30 R31 R32 R33 R34 R35 R36 R37 R38 R39 R40 R41
W1 W2 W3 W4 W5 W6 W7 W8 W9 W10 W11 W12 W13 W14 W15 W16
C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26
HC1 HC2 HC3 HC4 HC5 HC6 HC7 HC8 HC9 HC10 HC11 HC12 HC13 HC14 HC15 HC16 HC17 HC18 HC19 HC20 HC21 HC22 HC23 HC24 HC25 HC26 HC27 HC28 HC29 HC30 HC31 HC32 HC33 HC34 HC35 HC36 HC37 HC38 HC39 HC40 HC41 HC42 HC43 HC44 HC45 HC46 HC47 HC48 HC49 HC50 HC51 HC52 HC53 HC54 HC55 HC56 HC57 HC58 HC59 HC60 HC61 HC62 HC63 HC64 HC65 HC66 HC67 HC68 HC69 HC70 HC71 HC72 HC73 HC74 HC75 HC76 HC77 HC78 HC79 HC80 HC81 HC82

VUTSRPNMLKJHFEDCBA VUTSRPNMLKJHFEDCBA VUTSRPNMLKJHFEDCBA VUTSRPNMLKJHFEDCBA

NOTES:
1. E77 IS A SPARE LOCATION.

CHK	CHANGE NO	REV
JK	M7957 MK0001	C
	R. PLATT	
	DARRINGTON	

STEP & REPEAT	
↑ Y AXIS ___ STEP ___ TIMES	
→ X AXIS ___ STEP ___ TIMES	

ETCH REV. D-P1

SIGNATURES		DATE
DRN.	N. LANDRY	6-1-77
CHK'D.	W. SMITH	6-14-77
MECH.ENG.	W. SMITH	8-10-77
PROJ.ENG.	W. SMITH	8-10-77
PROD.		8-10-77

digital

TITLE: ASYN MUX

SCALE	SIZE	CODE	NUMBER	REV
2/1	D	UA	M7957-0-0	C
SHT. 1 OF 1				

NEXT HIGHER ASSY. B-DD-M7957-0

1 WO# 301716

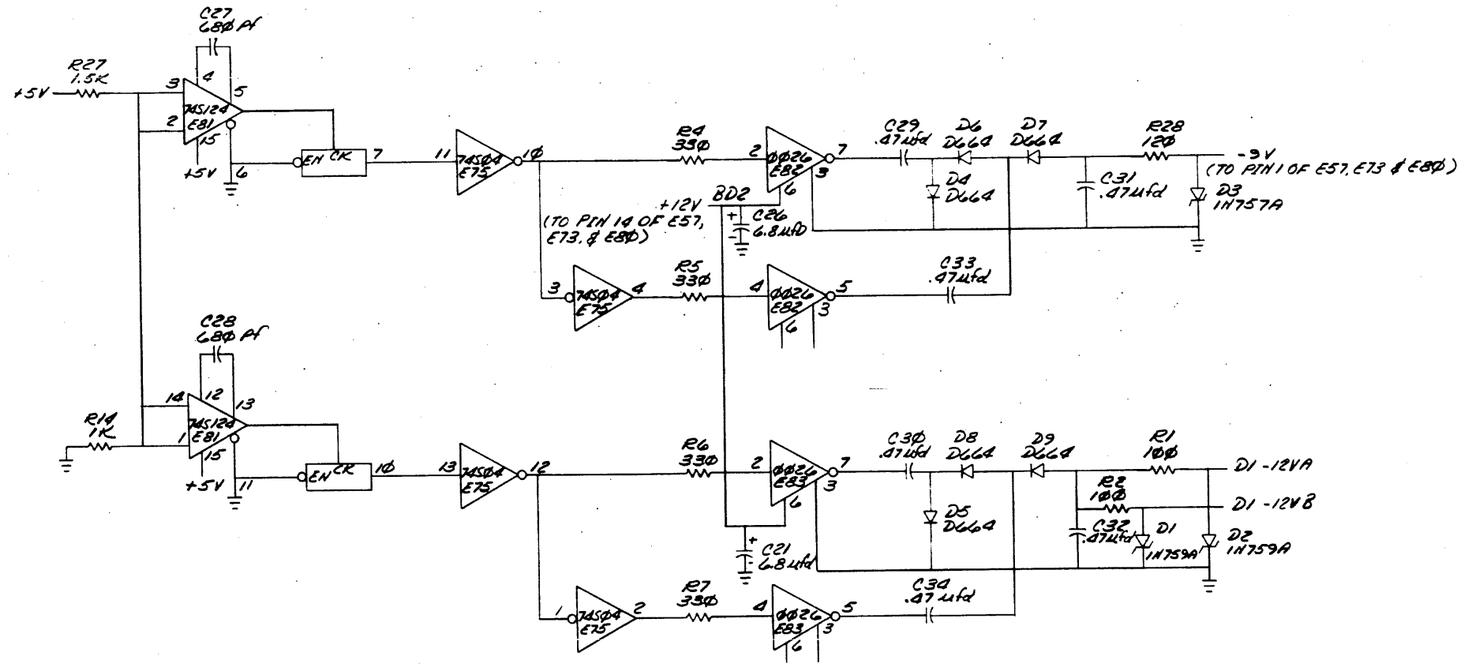
MK

DZV11

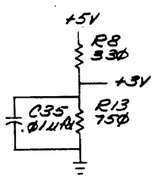
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

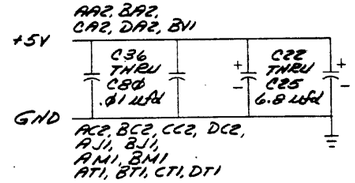
BERG PINNING CHART

A	GROUND
B	EIA XMIT DATA ØØ
C	EIA RECEIVED DATA ØØ
D	EIA DATA TERM RDY ØØ
E	EIA RING ØØ
F	EIA FORCED BUSY ØØ
N	EIA REQ TO SEND ØØ
J	
K	GROUND
L	EIA CARRIER ØØ
M	GROUND
N	EIA XMIT DATA Ø1
P	EIA RECEIVED DATA Ø1
R	EIA DATA TERM RDY Ø1
S	EIA RING Ø1
T	EIA FORCED BUSY Ø1
U	EIA REQ TO SEND Ø1
V	
W	GROUND
X	EIA CARRIER Ø1
Y	EIA CARRIER Ø2
Z	GROUND
AA	
BB	EIA REQ TO SEND Ø2
CC	EIA FORCED BUSY Ø2
DD	EIA RING Ø2
EE	EIA DATA TERM RDY Ø2
FF	EIA RECEIVED DATA Ø2
HH	EIA XMIT DATA Ø2
JJ	GROUND
KK	EIA CARRIER Ø3
LL	GROUND
MM	
NN	EIA REQ TO SEND Ø3
PP	EIA FORCED BUSY Ø3
RR	EIA RING Ø3
SS	EIA DATA TERM RDY Ø3
TT	EIA RECEIVED DATA Ø3
UU	EIA XMIT DATA Ø3
VV	GROUND



CLOCK ADDRESS D C B A	BAUD RATE	PERIOD (USEC)
Ø Ø Ø Ø	5Ø	125Ø.ØØ
Ø Ø Ø 1	75	833.33
Ø Ø 1 Ø	11Ø	568.18
Ø Ø 1 1	134.5	464.68
Ø 1 Ø Ø	15Ø	416.67
Ø 1 Ø 1	3ØØ	2ØØ.33
Ø 1 1 Ø	6ØØ	1ØØ.17
Ø 1 1 1	12ØØ	5Ø.Ø8
1 Ø Ø Ø	18ØØ	34.72
1 Ø Ø 1	2ØØØ	31.25
1 Ø 1 Ø	24ØØ	26.Ø4
1 Ø 1 1	36ØØ	17.36
1 1 Ø Ø	48ØØ	13.Ø2
1 1 Ø 1	72ØØ	8.68
1 1 1 Ø	96ØØ	6.51
1 1 1 1	INVALID	





(CHARTS)

REVISIONS			
CHK	CHANGE NO.	REV.	
RJH	M7957-MKØ1	C	13-Feb-84 11:14:51
R. HARRINGTON			

DRN		FIRST USED ON DZVII
CHK		
ENG.		
PROJ. ENG.		
PROD.		
NEXT HIGHER ASSY.		
D-UA-M7957-Ø-Ø		
SCALE		
SHEET 1 OF 14		

digital

TITLE: ASYN MUX (D1)

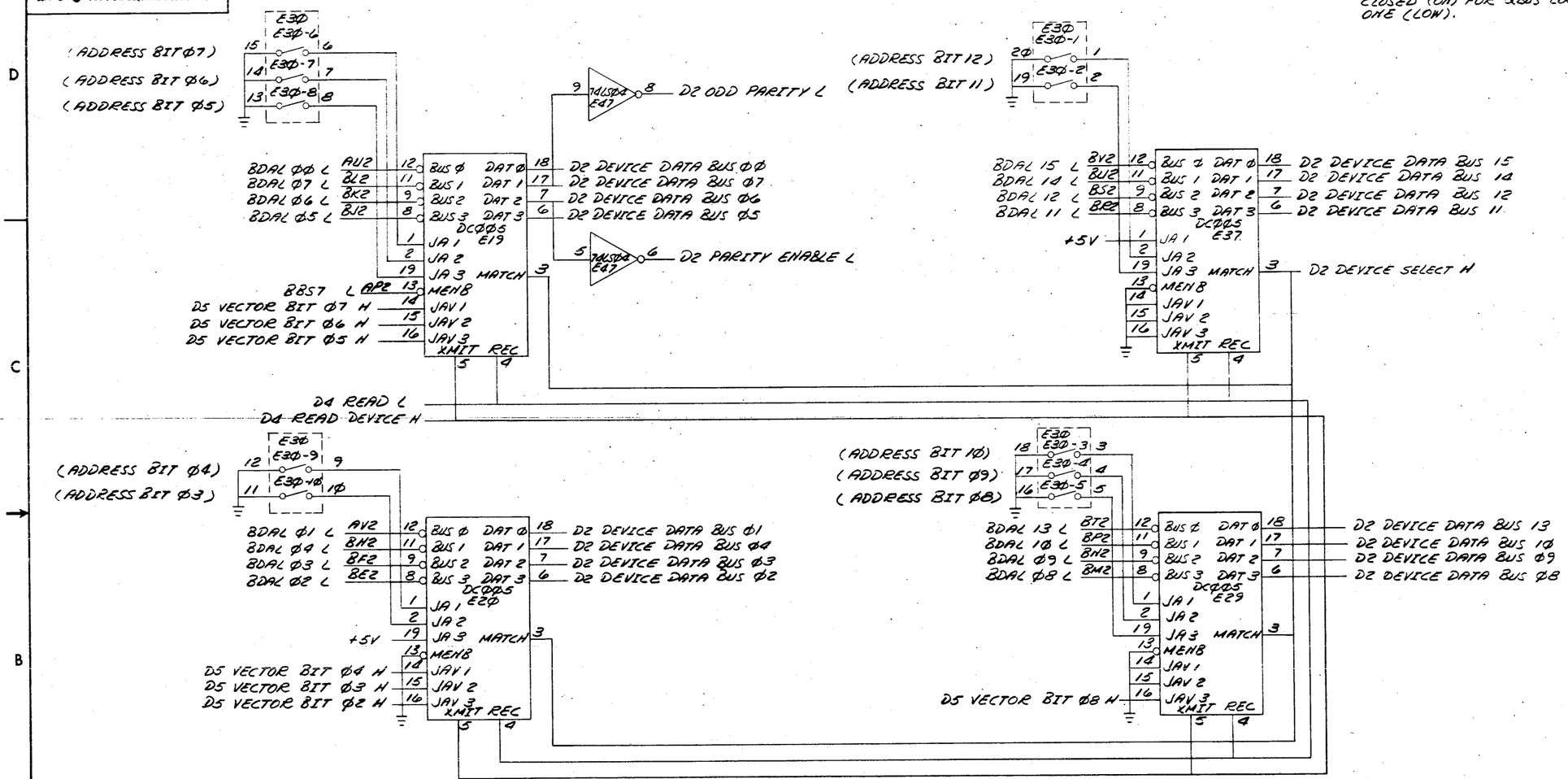
SIZE	CODE	NUMBER	REV.
D	CS	M7957-Ø-1	C
DIST.			

DEC FORM NO. 1080 1020

D-CS-M7957-Ø-1 REV C

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

NOTE:
DEVICE ADDRESS IS DETERMINED BY SWITCH PACK E3Ø. SWITCH CLOSED (ON) FOR QBUS LOGICAL ONE (LOW).

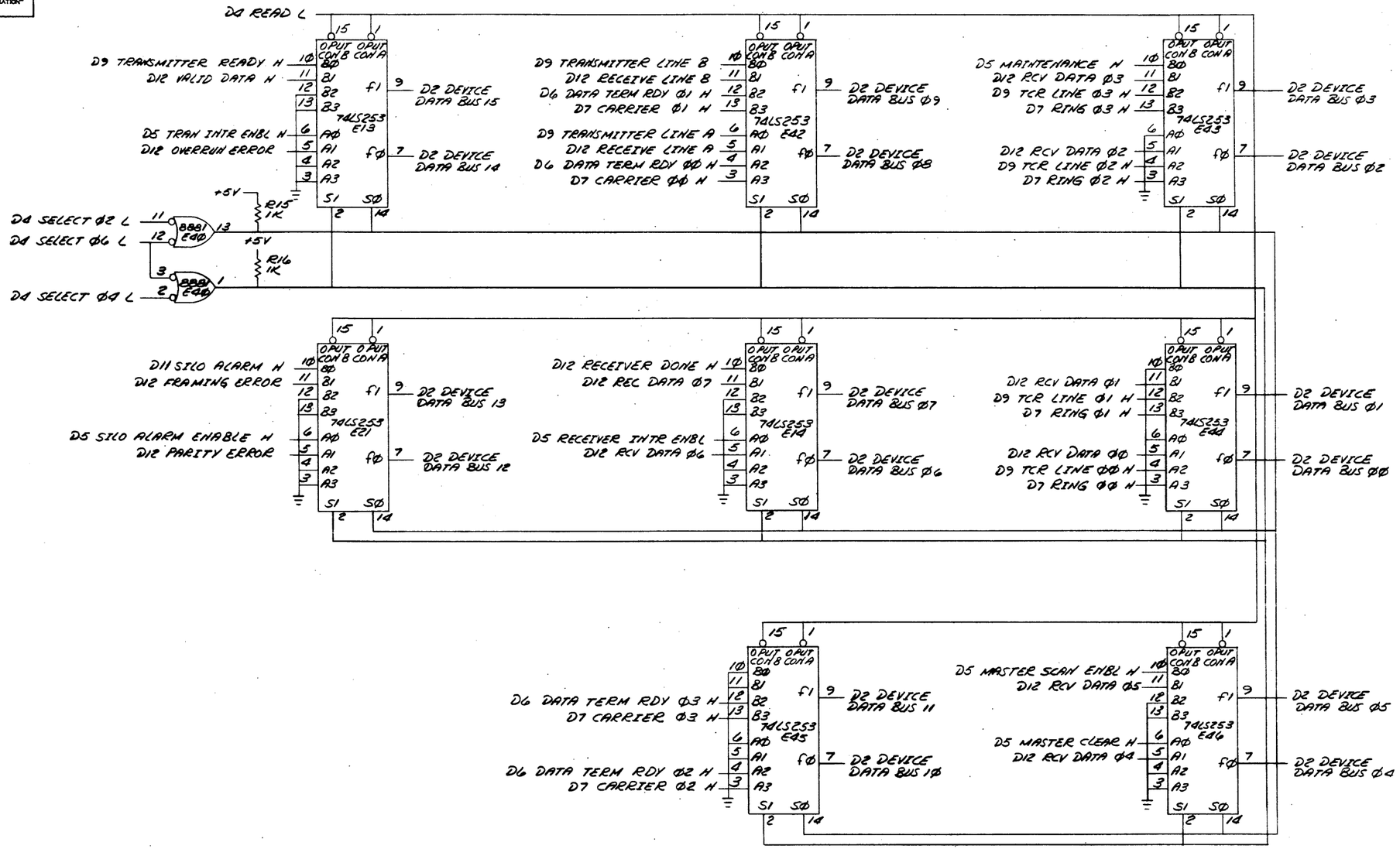


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ASYN MUX (D2)	D	DCS	M7957-Ø-1	C
SCALE —	SHEET 2 OF 14	DIST.		

MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



(OUTPUT DATA MULTIPLEXERS)

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV.
ASYN MUX (D3)	D	CS	M7957 – Ø – 1	C
SCALE —	SHEET 3 OF 14	DIST.		

MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

C3 100 Pf R21 5.6K +5V

10 74LS20 E40 3.5 ns 12 5 12 6 11 +3V

13 74LS04 E72 12 R18 1K +5V

E79 30 ns 1 2 3 4 R19 1K

D4 LOAD IN PROGRESS L

D5 CLEAR REPLY H

74LS08 E71 74LS08 E69 74LS08 E23 D4 LD LPR REGISTER L

+3V 74LS74 E50

74LS27 E49 74LS32 E59

74LS02 E38 D4 LD TDR REGISTER H

74LS02 E38 D4 LD BREAK REGISTER H

74LS02 E39 D4 LD TCR HIGH BYTE H

74LS02 E39 D4 LD TCR LOW BYTE H

8881 E40 10 AFE BREPLY L

74LS02 E39 D4 LD CSR HIGH BYTE H

74LS08 E39 D4 LD CSR LOW BYTE H

74LS08 E38 D4 READ RCV BUFFER H

74LS21 E41 74LS08 E38 D4 READ DEVICE H

D4 READ L
D4 SELECT Ø2 L
D4 SELECT Ø4 L
D4 SELECT Ø6 L

R20 3.83K C5 220 Pf +5V +5V R17 1K

D2 DEVICE SELECT H

8CØØ4 E12

BSYNC L	AJ2	6	SYNC
D2 DEVICE DATA BUS Ø2		2	DAL 2
D2 DEVICE DATA BUS Ø1		3	DAL 1
D2 DEVICE DATA BUS ØØ		4	DAL Ø
BWTBT L	AK2	5	WTBT
BDOUT L	AE2	9	DOUT
D5 DATA IN L		7	DIN
D5 VECTOR TO BUS H		1	VECTOR

ENB RXCK 19 18 BRPLY 8 INWD 11 SEL 6 17 SEL 4 16 SEL 2 15 SEL Ø 14 OUT MB 12 OUT LB 13

74LS04 E72 2

(ADDRESS SELECT & DECODE)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	ASYN MUX (D4)	SIZE/CODE	D DCS
SCALE	—	NUMBER	M7957 - Ø - 1
SHEET	4 OF 14	REV.	C
		DIST.	

MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

NOTE:
VECTOR ADDRESS IS DETERMINED BY SWITCH PACK E2. SWITCH CLOSED (ON) FOR QBUS LOGICAL ONE (LOW).

+5V R9 330 BIAK I L AM2 R11 680

D12 RECEIVER DONE H, D11 SILO ALARM H → 74LS08 E71 → 74LS32 E59 → DCΦΦ3 E11 RQSTA

BDIN L AM2 → 8640 E1 → 74LS04 E68 → D5 DATA IN L, D3 TRANSMITTER READY H → BIAKI, BINIT, BDIN

D2 DEVICE DATA BUS Φ6 → ENA DAT VEC RQST
D2 DEVICE DATA BUS 14 → ENB DAT ENB ST → D5 TRAN INTR ENBL H
ENA CLK, ENB CLK

D4 LD CSR LOW BYTE H
D4 LD CSR HIGH BYTE H

+5V R10 330 AN2 BIAK O L R12 680

ENA ST → D5 RECEIVER INTR ENBL
BIRQ → AL2 → BIRQ L
BIAKO
INITO

+5V R30 470 R31 470

E2 switches 1–6 → D5 VECTOR BIT Φ8 N, Φ7 H, Φ6 H, Φ5 H, Φ4 H, Φ3 H
D5 VECTOR BIT Φ2 N

+3V → 74LS74 E70 (D, C, CLR)
D2 DEVICE DATA BUS 12 → D5 SILO ALARM ENABLE N / D5 SILO ALARM ENABLE L
D4 LD CSR HIGH BYTE H

74LS175 E52
D2 DEVICE DATA BUS Φ5 → D3 R3(1), R3(Φ)
D2 DEVICE DATA BUS Φ4 → D2 R2(1), R2(Φ) → D5 MASTER SCAN ENBL H / D5 MASTER SCAN ENBL L
D2 DEVICE DATA BUS Φ3 → D1 R1(1), R1(Φ)
D0 R0(1), R0(Φ) → D5 MAINTENANCE H
CLR CLK
D4 LD CSR LOW BYTE H

C6 680 pf, R22 5.6K, +5V
D5 MASTER CLEAR H
74LS28 E61 (2.4 USEC one-shot) → 74LS37 E63 → D5 INITIALIZE H
74LS37 E63 → D5 INITIALIZE L
+3V
BINIT L → AT2 → 8640 E1 → 74LS04 E68 → D5 MODEM CLEAR L
D5 CLEAR REPLY N

AR2
AS2
CR2 — WIΦ — CS2 : JUMPER INSTALLED ONLY IN M927Φ BACKPLANE.
CM2 — WII — CM2 : JUMPER INSTALLED ONLY IN M927Φ BACKPLANE.

(CSR, INTR, INITIALIZE)

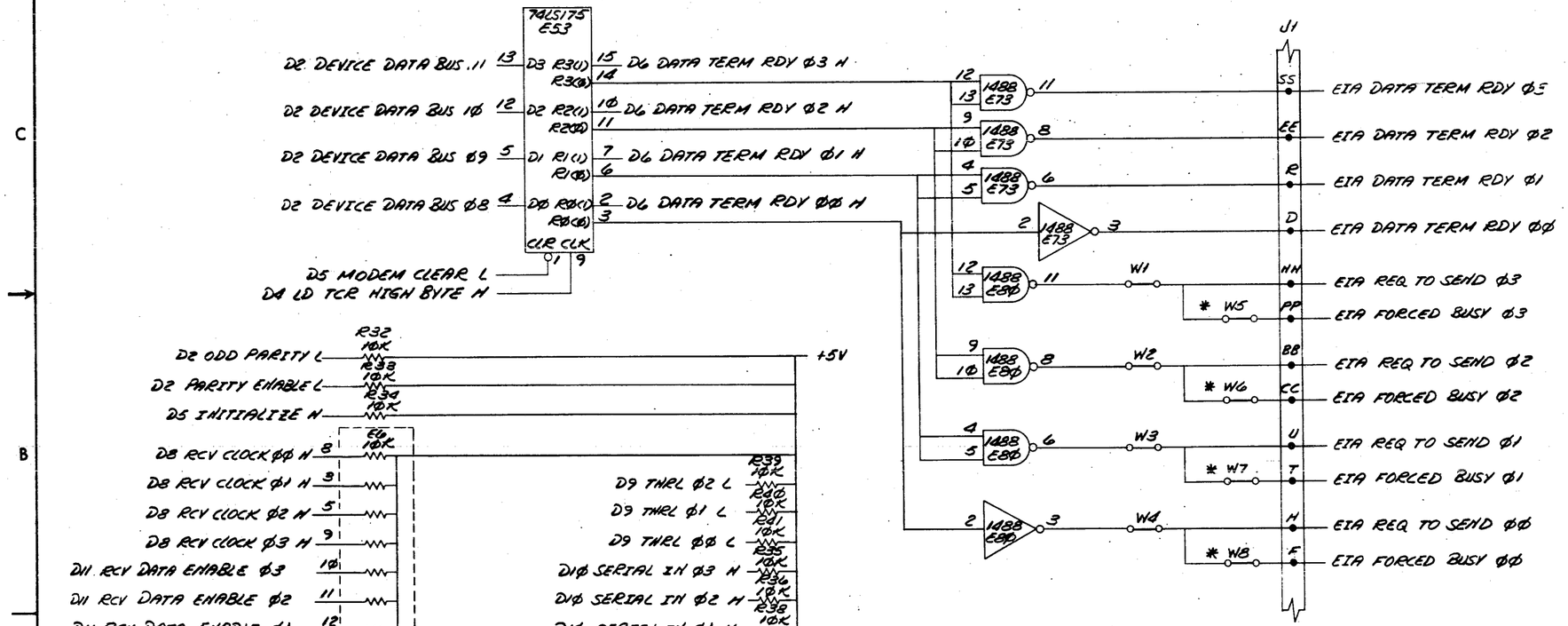
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ASYN MUX (D5)	D	CS	M7957-Φ-1	C
SCALE —	SHEET 5 OF 14	DIST.		

DEC FORM NO. GRD 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

NOTE:
* FOR 103E AND 113B MODEMS WITH THE FORCED BUSY OPTION, THIS JUMPER MUST BE INSTALLED TO ALLOW REQUEST TO SEND TO CONTROL FORCED BUSY.
(ON = BUSY) IF OPTION IS NOT INSTALLED, REMOVE THIS JUMPER.



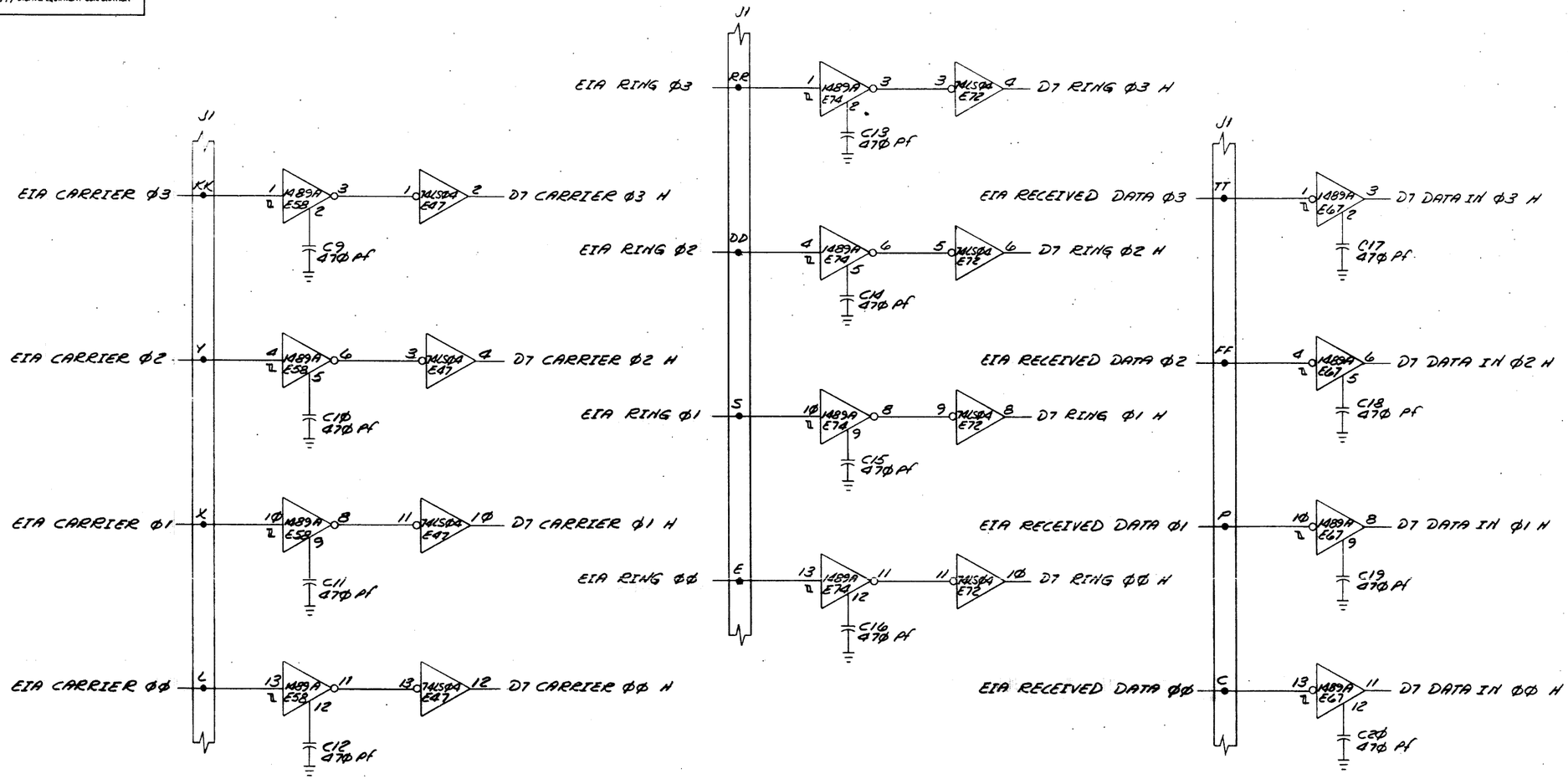
(EIA DRIVER & RECEIVERS)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ASYN. MUX (D6)	D	CS	M7957-0-1	C
SCALE 1=1	SHEET 6 OF 14	DIST.		

MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1973 DIGITAL EQUIPMENT CORPORATION"



(EIA RECEIVERS)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	ASYN MUX (D7)	SIZE	CODE	NUMBER	REV.
		D	CS	M7957 - Ø - 1	C
SCALE	SHEET 7 OF 14	DIST.			

DEC FORM NO. DRD 138

M7957-Ø-1 C

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

NOTE:
1. REMOVE JUMPERS FOR AUTOMATED MODULE TEST.

74LS90 E66
R3(1)
SET9
R2(1)
R1(1)
CLR
R0(1)
CLK B CLK A
+3V
D8 MASTER SCAN CLOCK
D5 MASTER SCAN ENBL L
E78 50.00 MHZ
+5V
W9 (SEE NOTE 1)
74LS37 E63
74LS37 E63
8D2
+12V +5V
EXT2 EXT1
D1 C1 B1 A1 D0 C0 B0 A0
CLK1 CLK2
5Ø16 E31
5Ø16 E32
F1 F0
W13 (SEE NOTE 1)
W14 (SEE NOTE 1)
W16 (SEE NOTE 1)
W15 (SEE NOTE 1)
D8 TX CLOCK ØØ H
D8 RCV CLOCK ØØ H
D8 TX CLOCK Ø1 H
D8 RCV CLOCK Ø1 H
D8 TX CLOCK Ø2 N
D8 RCV CLOCK Ø2 H
D8 TX CLOCK Ø3 N
D8 RCV CLOCK Ø3 N
74LS08 E24
74LS259 E34
D2 DEVICE DATA BUS ØØ
D2 DEVICE DATA BUS Ø1
D2 DEVICE DATA BUS Ø2
D2 DEVICE DATA BUS 12
D5 INITIALIZE L
D4 LD LPR REGISTER L
74LS259 - E34

C	E	F
L	H	CLEAR MEMORY LATCH
H	H	
H	L	

D2 DEVICE DATA BUS 11
D2 DEVICE DATA BUS 10
D2 DEVICE DATA BUS Ø9
D2 DEVICE DATA BUS Ø8
74LS259 E33
D2 DEVICE DATA BUS ØØ
D2 DEVICE DATA BUS Ø1
D2 DEVICE DATA BUS Ø2
+3V
D4 LD LPR REGISTER L
D8 CONTROL STROBE ØØ N
D8 CONTROL STROBE Ø1 N
D8 CONTROL STROBE Ø2 N
D8 CONTROL STROBE Ø3 N
74LS259 - E33

C	E	F
L	H	CLEAR DEMUX
L	L	

(CLOCKS & PARAMETER STROBE)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: ASYN MUX (D8)
SIZE: D | CODE: CS | NUMBER: M7957-Ø-1 | REV: C
SCALE: — | SHEET 8 OF 14 | DIST.

DEC FORM NO. DRD 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

NOTE:
1. REMOVE JUMPER FOR AUTOMATED MODULE TEST.

D13 TBMT Ø0
D13 TBMT Ø1
D14 TBMT Ø2
D14 TBMT Ø3

D2 DEVICE DATA BUS Ø0
D2 DEVICE DATA BUS Ø1
D2 DEVICE DATA BUS Ø2
D2 DEVICE DATA BUS Ø3

D5 INITIALIZE L
D4 LD TCR LOW BYTE H

D5 MASTER SCAN ENBL H

D9 TCR LINE Ø0 H
D9 TCR LINE Ø1 H
D9 TCR LINE Ø2 H
D9 TCR LINE Ø3 H

D4 LOAD IN PROGRESS L

D4 LD TDR REGISTER H

D9 THRL Ø3 L
D9 THRL Ø2 L
D9 THRL Ø1 L
D9 THRL Ø0 L

D9 TRANSMITTER LINE B
D9 TRANSMITTER LINE A
D9 TRANSMITTER READY H

W12 (SEE NOTE 1)

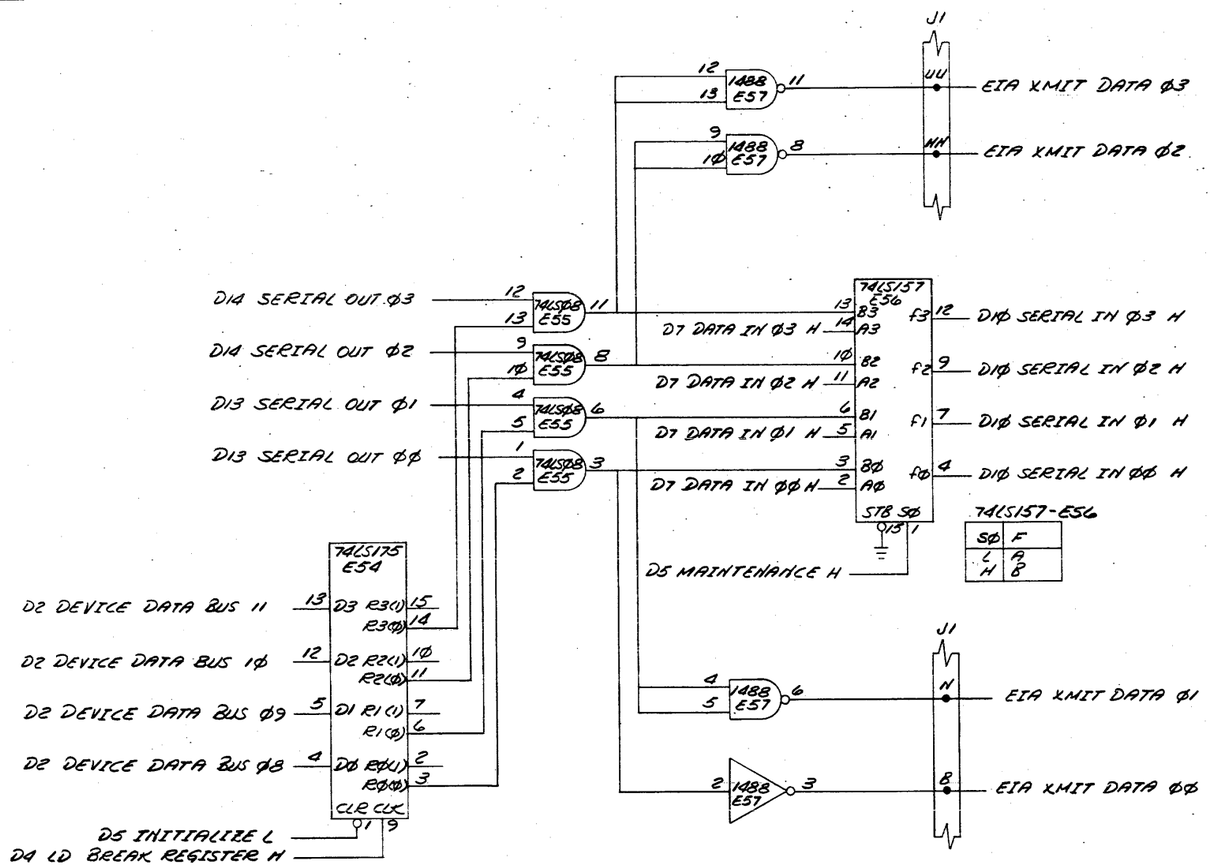
(TRANSMITTER CONTROL)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ASYN MUX (D9)	D	CS	M7957-0-1	C
SCALE —	SHEET 9 OF 14	DIST.		

DEC FORM NO. DRD 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO.	REV.

(BREAK, TRANSMIT DATA, MAINTENANCE)

TITLE	SIZE	CODE	NUMBER	REV.
ASYN MUX (DIØ)	D	CS	M7957-Ø-1	C
SCALE — SHEET 10 OF 14	DIST.			

DEC FORM NO. DRD 138

NK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © / 977 DIGITAL EQUIPMENT CORPORATION"

D11 PHASE TWO H
D11 PHASE ONE H
(PHASE THREE)
D5 MASTER SCAN ENBL H
D8 MASTER SCAN CLOCK H
D12 SILO LOAD REQUEST H
D11 LOAD SILO H
D4 READ RCV BUFFER H
D5 SILO ALARM ENABLE L
D11 RCV DATA ENABLE Ø3
D11 RCV DATA ENABLE Ø2
D11 RCV DATA ENABLE Ø1
D11 RCV DATA ENABLE ØØ
D11 RESET DA Ø3 L
D11 RESET DA Ø2 L
D11 RESET DA Ø1 L
D11 RESET DA ØØ L
D11 RCV SCAN LEAD B
D11 RCV SCAN LEAD A
D11 SILO ALARM H
+3V

(RECEIVER CONTROL)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ASYN MUX (D11)	D	DCS	M7957-Ø-1	C
SCALE	SHEET 11 OF 14	DIST.		

DEC FORM NO. DRD 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1977 DIGITAL EQUIPMENT CORPORATION"

D13 FE Ø0
D13 FE Ø1
D14 FE Ø2
D14 FE Ø3
D13 OR Ø0
D13 OR Ø1
D14 OR Ø2
D14 OR Ø3
74LS153 E9 (f1, fØ)
D11 RCV SCAN LEAD B
D11 RCV SCAN LEAD A

D13 DA Ø0
D13 DA Ø1
D14 DA Ø2
D14 DA Ø3
D13 PE Ø0
D13 PE Ø1
D14 PE Ø2
D14 PE Ø3
74LS153 E10 (f1, fØ)

74LS21 E28
74LS11 E64
D12 SILO LOAD REQUEST H

3341 E18
D12 PARITY ERROR
D12 FRAMING ERROR
D12 OVERRUN ERROR

3341 E27
D12 RECEIVE LINE A
D12 RECEIVE LINE B

3341 E17
D13 RD5
D13 RD6
D13 RD7
D14 RD8
D12 RCV DATA Ø4
D12 RCV DATA Ø5
D12 RCV DATA Ø6
D12 RCV DATA Ø7

3341 E35
D13 RD1
D13 RD2
D13 RD3
D13 RD4
D12 RCV DATA Ø0
D12 RCV DATA Ø1
D12 RCV DATA Ø2
D12 RCV DATA Ø3

D5 MASTER SCAN ENBL H
D2 -12V A
D2 -12V B
D11 LOAD SILO H

+3V
D12 RECEIVER DONE H
D12 VALID DATA H
74LS21 E28
74LS74 E70
D1 READ RCV BUFFER H
D5 INITIALIZE L

+5V
R26 5.6K
C2 .01μf
74LS00 E41
D12 UNLOAD SILO H

(SILO BUFFERS AND UNLOAD CONTROL)

REVISIONS		
CHK	CHANGE NO.	REV.

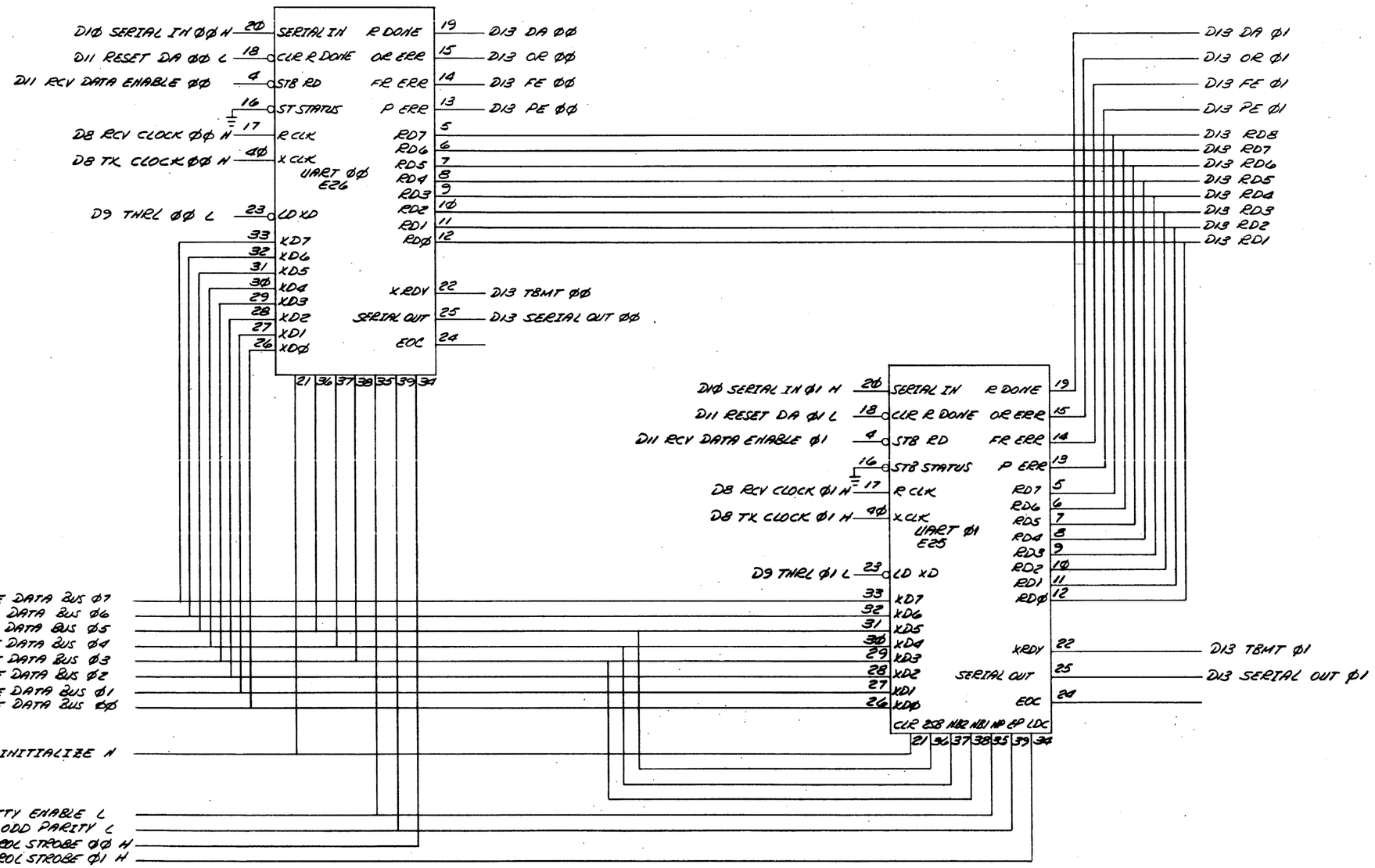
TITLE	ASYN MUX (DI2)	SIZE D	CODE CS	NUMBER M7957-Ø-1 REV. C
SCALE		SHEET 12 OF 16	DIST.	

DEC FORM NO. DRD 138

8 7 6 5 4 3 2 1

MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



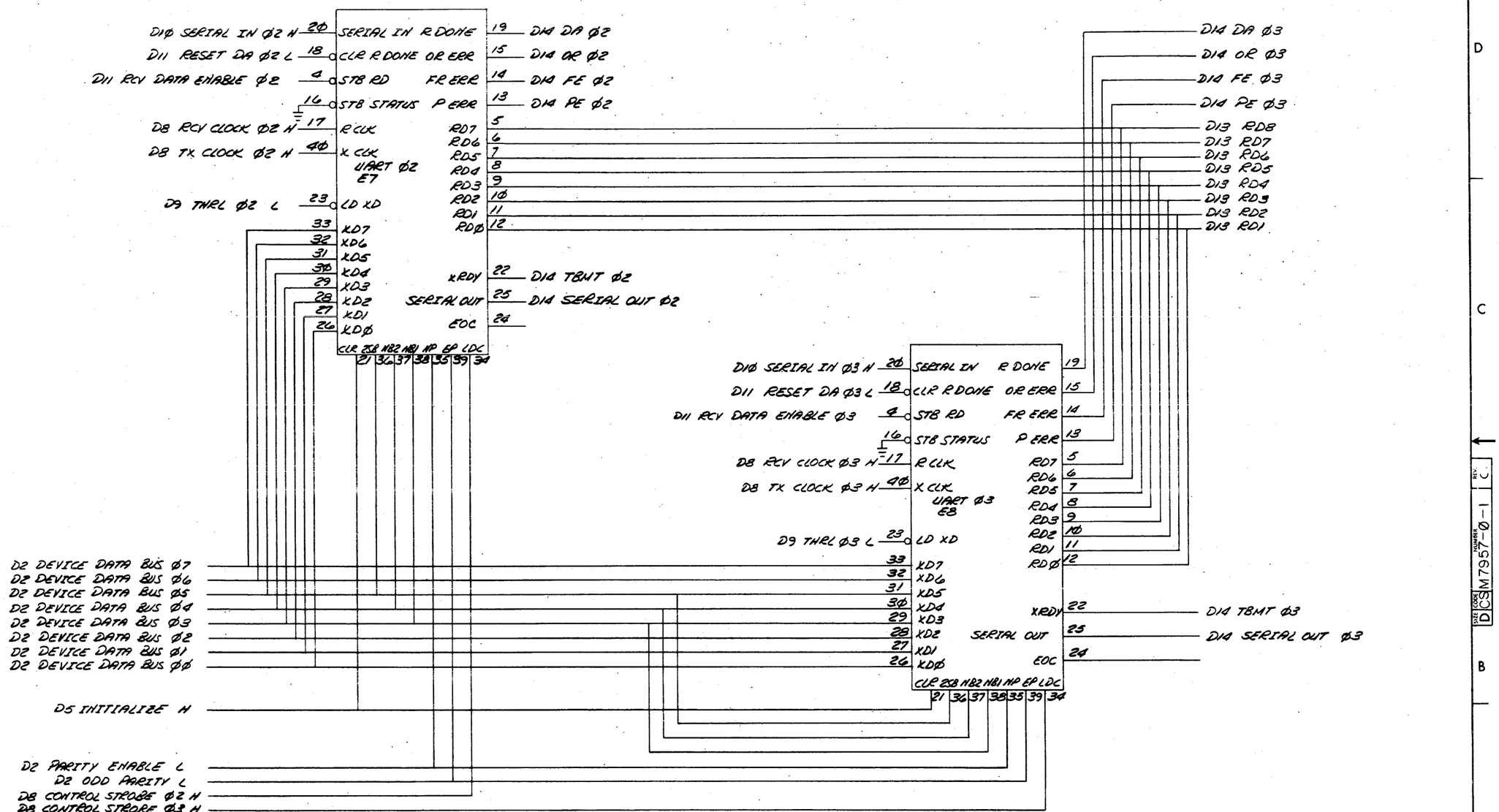
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ASYN MUX (D13)	D	CS	M7957-0-1	C
SCALE —/— SHEET 13 OF 14	DIST.			

DEC FORM NO. DRD 126

MK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



(UARTS Ø2 & Ø3)

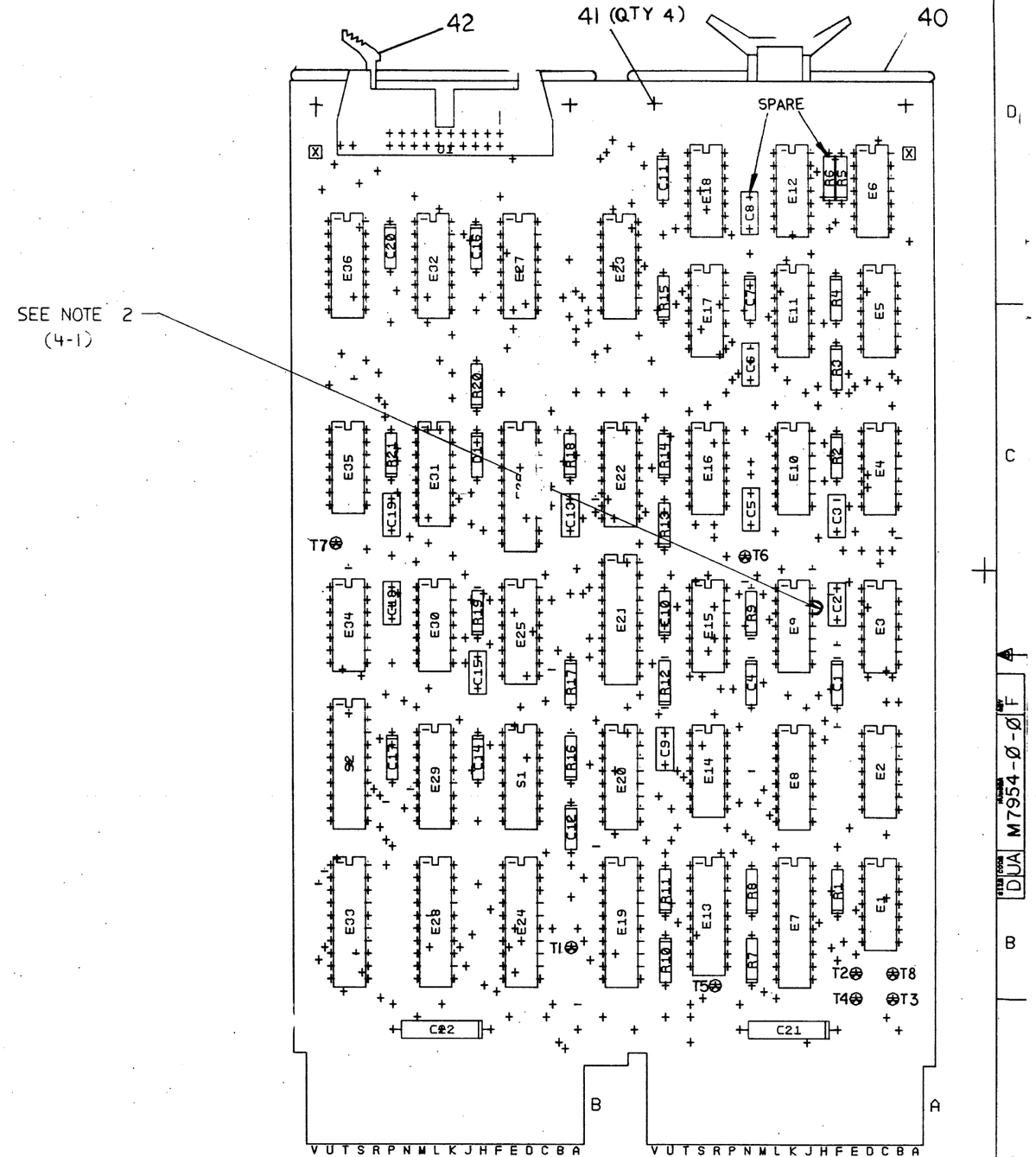
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ASYN MUX (D14)	D	CS	M7957-0-1	C
SCALE —	SHEET 14 OF 14	DIST.		

DEC FORM NO. DRD 138

MK

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION



NOTES: 1: REMOVE THE FOLLOWING UNUSED FINGERS FROM ARTWORK: ABI, ACI, ADI, AEI, AFI, AHI, AKI, ALI, ANI, API, ARI, ASI, AUI, BCI, BDI, BEI, BFI, BHI, BKI, BLI, BNI, BPI, BRI, BSI, BUI.
2. (4-1): WIRE ADDED (SIDE 1) E9 PIN 9 TO E9 PIN 10.

CHANGE NO	REV
M7954-2	C
M7954-AB03A	E
M7954-AB04	F

ETCH REV.	D
P.C. DESIGN DATA BASE REV.	D

SIGNATURES	DATE
DRN. C. Elsaesser	12/3/76
CHK'D. R. Curtis	12/14/76
ENG.	12/16/76
PROJ.ENG.	2/11/77
PROD.	2/14/77
SCALE 2/1	
SHT. 1 OF 1	
NEXT HIGHER ASSY. B-DD-M7954-0	

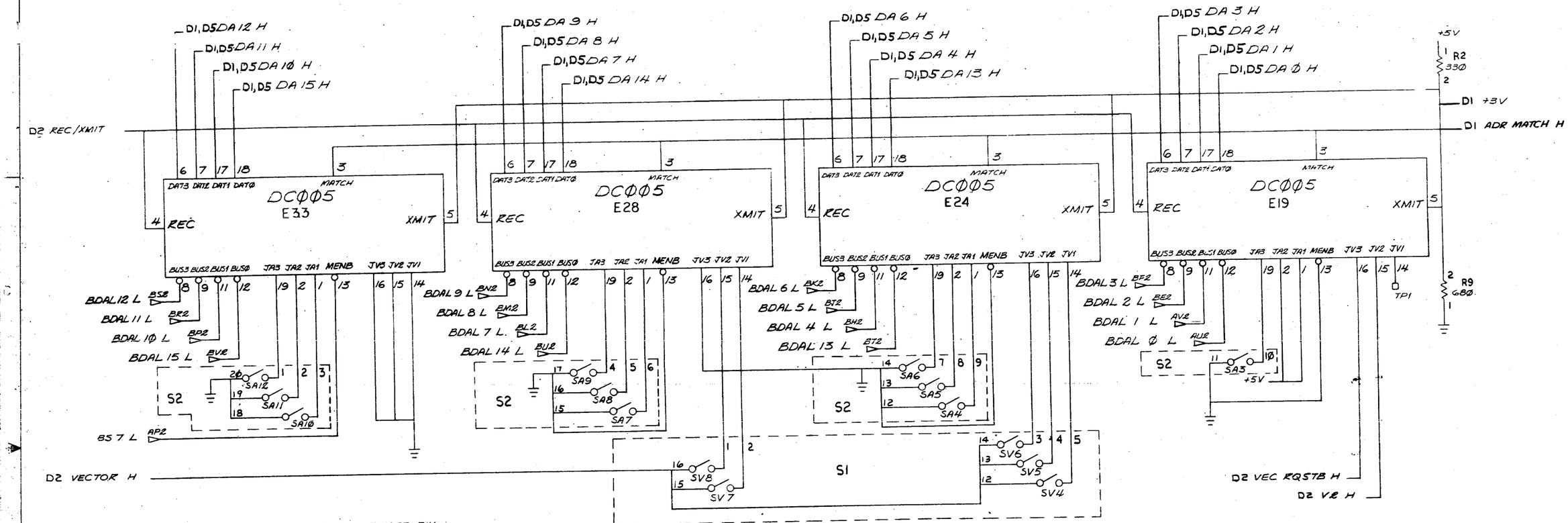
digital

TITLE: LSI INTERFACE

SIZE	CODE	NUMBER	REV
D	UA	M7954-0-0	F

1 MS#104284

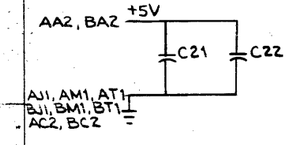
THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION



NOTES:

1. ▷ IS MODULE FINGER PIN.
2. ON THIS AND THE FOLLOWING PAGES, ALL RESISTORS ARE 1/4 W, 5% UNLESS INDICATED OTHERWISE.
3. SELECTABLE REGISTER ADDRESS RANGE: 160000 – 177770. SET AT 160150 FOR PRODUCTION TESTING AND SHIPPING.
4. SELECTABLE VECTOR ADDRESS RANGE: 000 – 760
5. SV SWITCHES
   SVi DRIVES BDAL i. BDAL i IS LOW WHEN SVi IS HIGH
   i = 4, 5, ···, 8
6. SA SWITCHES. i = 3, 4, ···, 11, 12.
   a) SAi IS COMPARED WITH BDAL i. CLOSING SWITCH IS EQUAL TO "LOW" ON THE BUS.
   b) ADR MATCH IS HIGH WHEN ALL SAi'S ARE EQUAL TO ALL BDAL'S.
7. DATA MODES:

REC	XMIT	MODES
L	L	DISABLE: BUS, DAT ARE OPEN.
L	H	DAT → BUS
H	L	BUS → DAT
H	H	BUS → DAT. VECTOR ADDRESS TRANSMITTED WHEN REQUIRED.



ADDRESS SWITCH (S2) SETTING FOR TESTING : 160150

	1	2	3	4	5	6	7	8	9	10
S2							ON	ON		ON
	OFF	OFF	OFF	OFF	OFF	OFF			OFF	
	SA12	SA11	SA10	SA9	SA8	SA7	SA6	SA5	SA4	SA3

VECTOR SWITCH (S1) SETTING FOR TESTING : 42*

	1	2	3	4	5	6	7	8*
S1	ON				ON			
		OFF	OFF	OFF		OFF	OFF	OFF
	SV8	SV7	SV6	SV5	SV4			

* ERI INH SWITCH ON SHEET 3.

LSI11 BUS INTERFACE

NOTES:

CHK	CHANGE NO	REV
GD	M7954-00001	C
D. Swartz 9 MAY 77	C. LAU	
GD	M7954-2	D
R. Hamlet 22 JUL 77	C. LAU	
GD	M7954-ABO3A	E
J. CURTIS		
GD	M7954-ABO4	F
R. SALETT		

SIGNATURES	DATE
DRN. M Cychun	24 Sept 76
CHK'D RW Gaudette	2/11/77
ENG. Ken Adam	2/11/77
PROJ. ENG. [illegible]	2/11/77
PROD D.J. Digilio	2/14/77
SCALE —	
SHT. 1 OF 7	
ETCH REV	FIRST USED ON IBVII-A

digital

TITLE LSII/IB INTERFACE D1

SIZE	CODE	NUMBER	REV
D	CS	M7954-Ø-1	F

PN 1 MS#_____

M7954-Ø-1 SHEET 1

SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

BDMGI L — AR2 — AS2 — BDMGO L

+5V — R1 1K

RXCX DC0Ø4 E7

BSYNC L — AJ2 — BSYN — BRPLY — AF2 — BRPLY L

D1, D5 DAØ H — BDAØ — SEL Ø — 17
D1, D5 DA1 H — BDA1 — SEL 2 — 16
D1, D5 DA2 H — BDA2 — SEL 4 — 15 — TP2
D1 ADR MATCH H — ENB — SEL 6 — 14 — TP3
BWTBT L — AK2 — BWTBT
BDOUT L — AE2 — BDOUT
BDIN — OUTHB — 12 — TP4
OUTLB — 13
VECTOR — INWD — 11

7427 E2

LSØ2 E1 — D2 DA→IBS LB H
LSØ2 E1 — D2 DA→IBC LB H
D2 SEL 2 L
LSØ2 E1 — D2 READ H
7437 E2 — D2 REC/XMIT

BDIN L — AH2 — 8837 E8

D1, D5 DA6 H

R10 680Ø — R11 330Ø — +5V

BIAKI L — AM2
BINIT L — AT2

DC0Ø3 E13

17	RQSTA		
15	ENA DATH	ENA ST A	16
14	ENA CLK	BIRQ	8
7	BIAKI	BIAKO	6
5	BINIT	INITO	4
3	BDIN	VECTOR	1
		VEC RQSTB	2
10	RQSTB		
12	ENB DATA	ENB ST B	11 — TP5
13	ENB CLK		

D2 IE H
AL2 — BIRQ L
R7 680 — R8 330 — +5V
AN2 — BIAKO L
D2 INIT L
D2 VECTOR H
D2 VEC RQSTB H

D4 CMD H
D4 TKR H
D4 LNR H
LS27 E9

R4 20K — R3 22K — +5V
C2 100 Pf

D4 ER2 H
D3 ER1 H
LS27 E9
LSØØ E18
LSIØ E12
LSØ4 E16
R5 22K — +5V

D6 REC SRQ H
LSØØ E18

8837 E8 — LSIØ E12 — LSØØ E14 — D2 V2 H

LSØØ E14

INTERRUPT PRIORITY	VECTOR ADDRESS	VEC RQSTB JV3	V2 JV2
ERR	XXX*	L	L
SRQ	XXX+4	L	H
CMD, TKR	XXX+1Ø	H	L
LNR	XXX+14	H	H

* ØØØ ≤ XXX ≤ 76Ø

REC SRQ H
ER2 H
E12-9
E13-17 — ~500nS

REG SEL AND INTR

D2

REVISIONS

CHK	CHANGE NO.	REV.

DEC FORM NO. DRD 158

TITLE	SIZE	CODE	NUMBER	REV.
LSI11/IB INTERFACE	D	CS	M7954-Ø-1	F
SCALE 1=1	SHEET 2 OF 7	DIST.	PN	

SIZE CODE DCS NUMBER M7954-Ø-1 REV. F

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

D1,D5 DA15 H
D1,D5 DA7 H
D1,D5 DA5 H
D1,D5 DA4 H
D1,D5 DA2 H
D1,D5 DA1 H
D1,D5 DA3 H
D2 DA→IBS LB H
D2 INIT L
D1,D5 DA0 H
D6 REC DAV H
D6 REC ATN H
D6 REC IFC H
D6 REC REN H

LS273 E21: CLR, 6D SRQ,6Q, 1D ACC,1Q, 2D TON,2Q, 3D LON,3Q, 4D REM,4Q, 5D EOP,5Q, 7D IBC,7Q, CK

D3 ER1 INH L → LS00 E14 → LS02 E4 → D3 ASRT SRQ H

D3 ACC H
D3 TON H
D3 LON H
D3 REM H
D3 EOP H

C13 .01 uf; R18 1.39K +5V; D1 1N664; R12 6.8K; LS123 E31 IBC n/BSYNC CLR; 7417 E30 OC; C9 120 pf; 8837 E8; 7437 E2 → ~445 ns

D3 IBC H
D3 TCS H

LS74 E11; LS02 E4; LS02 E5

D1 +3V; LS74 E11 ATN; LS02 E4; LS00 E18; LS10 E12; 7417 E30 OC; R19 3.3K +5V; ~500 ns; C18 470 pf

D3 ATN H
D3 ASRT NRFD L

LS04 E16; LS132 E10; LS02 E5; R20 1K +5V; 8242 E17 OC; 7417 E30 OC; R14 3.3K +5V; ~500 ns; LS132 E10; C5 470 pf

D3 ER1 H
D3 ER1 INH L

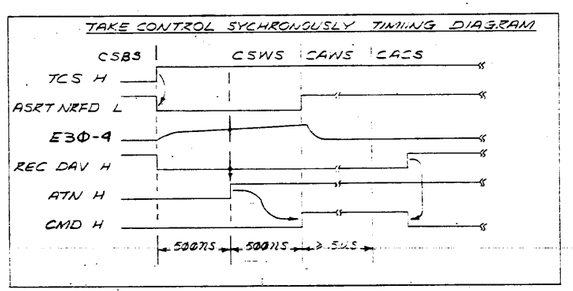
LS02 E35

R16 3.3K +5V; R15 3.3K +5V; 8242 E17 OC; C6 470 pf; S1 ER1 INH SW (SEE NOTE); LS132 E10; ~500 ns

NOTE:

SWITCH	ER1 DETECTION
CLOSE	INHIBITS
OPEN	ENABLES

TAKE CONTROL SYCHRONOUSLY TIMING DIAGRAM



CONTROL AND STATUS

D3

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: LSI11/IB INTERFACE
SIZE: D | CODE: CS | NUMBER: M7954-Φ-1 | REV: F
SCALE: — | SHEET 3 OF 7 | DIST.

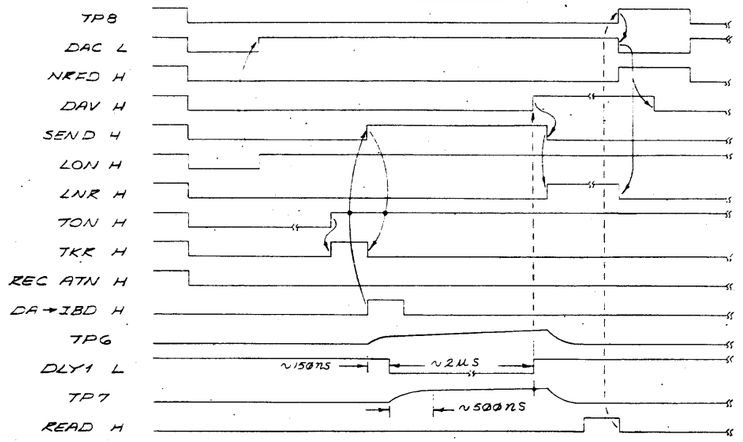
DEC FORM NO. 5509 130

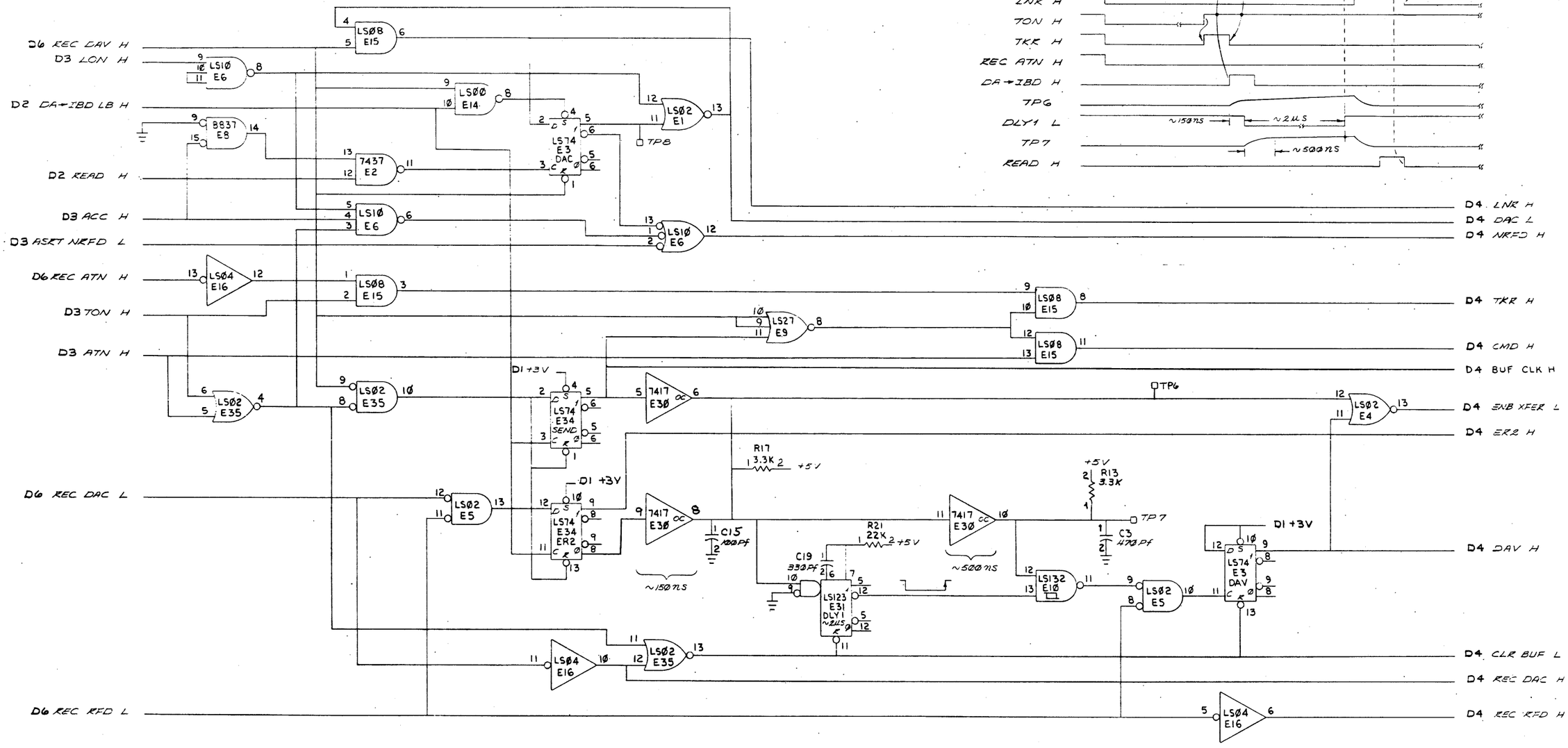
8 7 6 5 4 3 2 1

REV. F | NUMBER M7954-Φ-1 | SIZE CODE DCS | B

PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

TYPICAL HANDSHAKE TIMING DIAGRAM (TALKER – LISTENER)





CONTROL AND HANDSHAKE

D4

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI11/IB INTERFACE	D	CS	M7954-Ø-1	F
SCALE —/—	SHEET 4 OF 7	DIST.		

DEC FORM NO. DRD 130

B.L.M. P.1146

8 7 6 5 4 3 2 1

PN

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

D4 CLR BUF L

D1,D5 DA0 H

D1,D5 DA1 H

D1,D5 DA2 H

D1,D5 DA3 H

D1,D5 DA4 H

D1,D5 DA5 H

D1,D5 DA6 H

D1,D5 DA7 H

D4 BUF CLK H

LS273
E26

D5 DIO1 H

D5 DIO2 H

D5 DIO3 H

D5 DIO4 H

D5 DIO5 H

D5 DIO6 H

D5 DIO7 H

D5 DIO8 H

D4 REC DAC H

D6 REC DAV H

D4 REC RFD H

D6 REC SRQ H

D6 REC REN H

D6 REC IFC H

D6 REC ATN H

D6 REC EOI H

D2 REC/XMIT

D2 SEL2 L

D6 REC DIC1 H

D3 TCS H

D6 REC DIO2 H

D3 EOP H

D6 REC DIO3 H

D3 REM H

D6 REC DIO4 H

D3 IBC H

74LS257 E22

D1,D5 DA0 H

D1,D5 DA1 H

D1,D5 DA2 H

D1,D5 DA3 H

D6 REC DIO5 H

D3 LON H

D6 REC DIO6 H

D3 TON H

D6 REC DIO7 H

D2 IE H

D6 REC DIO8 H

D3 ACC H

74LS257 E25

D1,D5 DA4 H

D1,D5 DA5 H

D1,D5 DA6 H

D1,D5 DA7 H

D4 LNR H

D4 TKR H

D4 CMD H

74LS257 E20

D1,D5 DA8 H

D1,D5 DA9 H

D1,D5 DA10 H

D1,D5 DA11 H

D3 ER1 H

D4 ER2 H

74LS257 E29

D1,D5 DA12 H

D1,D5 DA13 H

D1,D5 DA14 H

D1,D5 DA15 H

74LS257 TRUTH TABLE

OE	S	A	B	Y	
H	X	X	X	HIGH IMP	
L	L	L	X	L	DATA
L	L	H	X	H	DATA
L	H	X	L	L	STAT
L	H	X	H	H	STAT

REVISIONS		
CHK	CHANGE NO.	REV.

DATA/STAT MUX D5

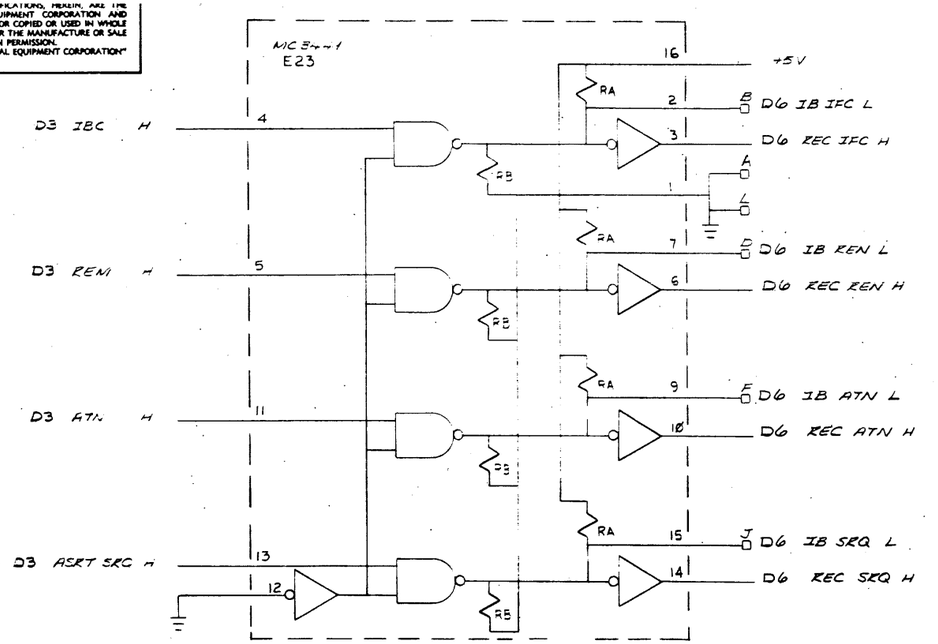
TITLE	SIZE	CODE	NUMBER	REV.
LSI11/IB INTERFACE	D	CS	M7954-0-1	F
SCALE	SHEET 5 OF 7	DIST.		

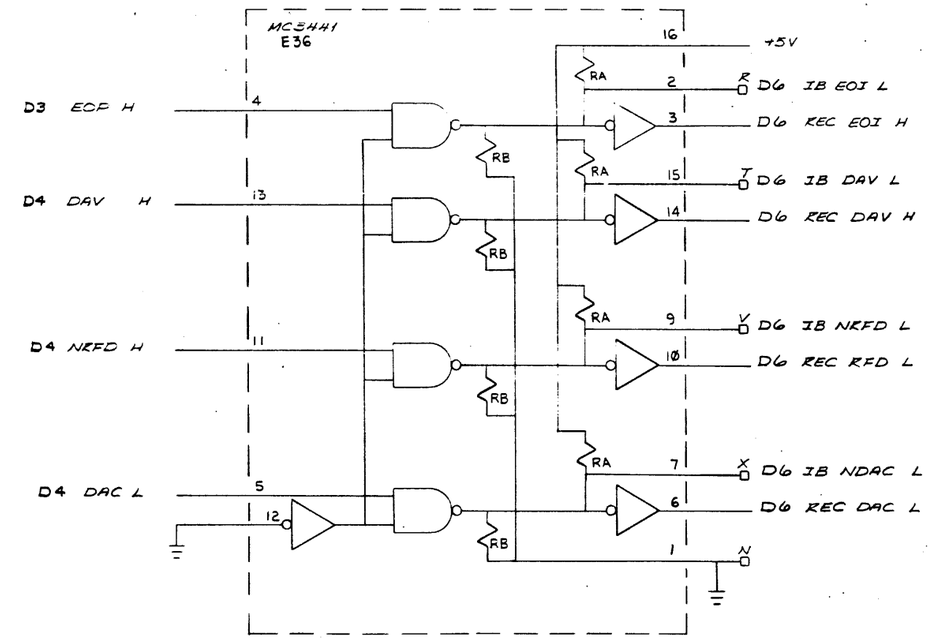
DEC FORM NO. DRD 126

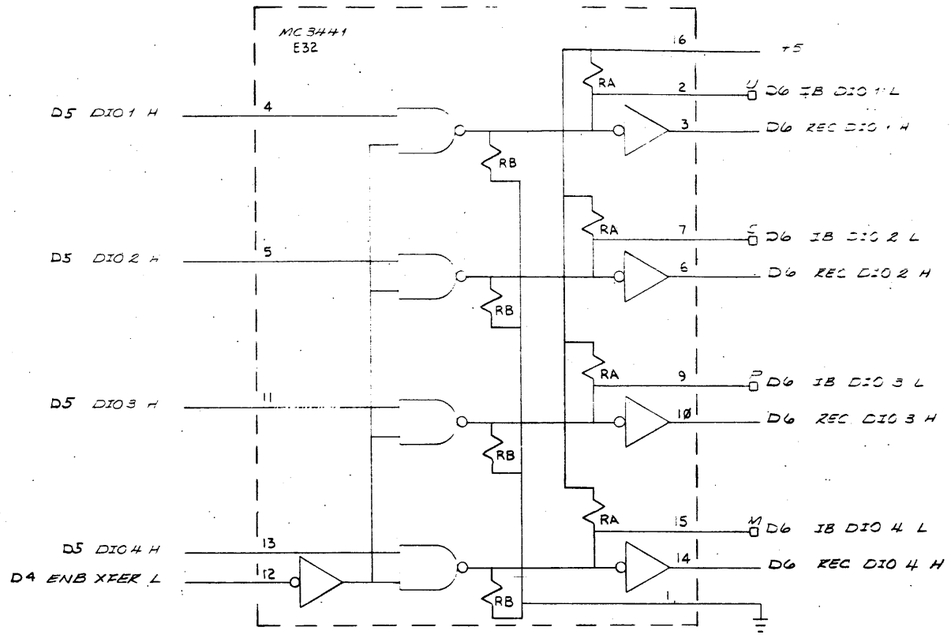
PM

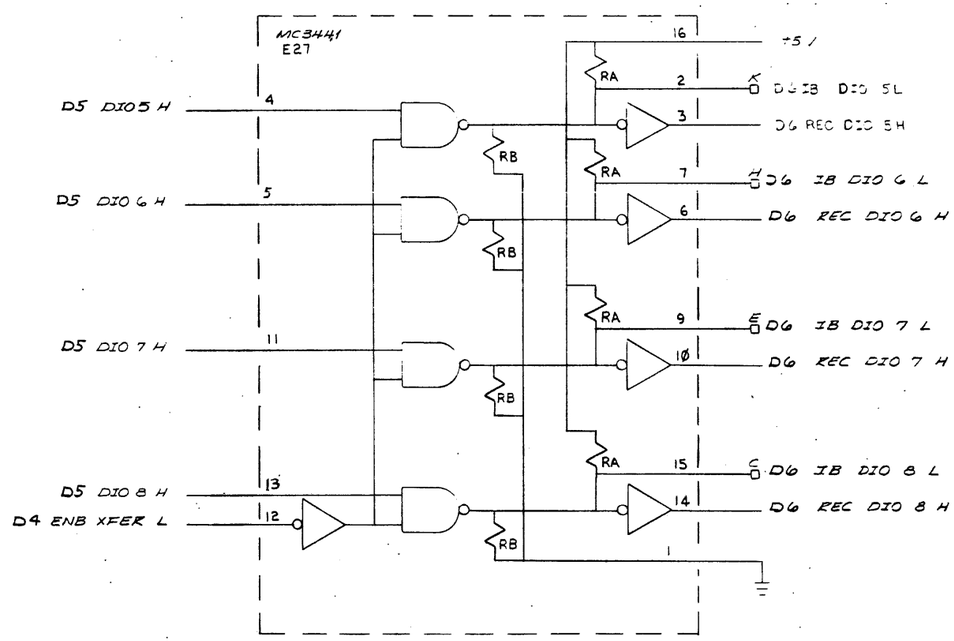
SIZE CODE DCS NUMBER M7954-0-1 REV. E

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"









NOTES: 1. RA = 3.0 KΩ, INTERNAL RESISTOR.
2. RB = 6.2 KΩ, INTERNAL RESISTOR.
3. —□ IS A BERG CONNECTOR PIN.

INSTRUMENT BUS INTERFACE D6

REVISIONS		
CHK	CHANGE NO.	REV.

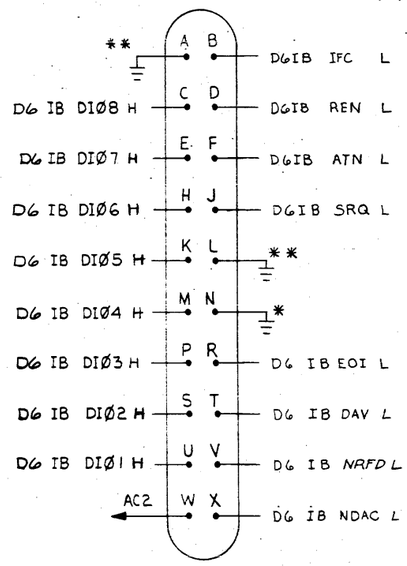
TITLE	SIZE	CODE	NUMBER	REV.
LSI11/IB INTERFACE	D	CS	M7954-Ø-1	F
SCALE —	SHEET 6 OF 7	DIST.		

DEC FORM NO. DRD 138

8 7 6 5 4 3 2 1

THIS DRAWING AND SPECIFICATION, WHETHER UNPUBLISHED OR PUBLISHED, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

NOTES:
1. (*) TERMINATION GROUND (PIN 1) OF DRIVER FOR EOI, DAV, NRFD & NDAC SIGNALS.
2. (**) TERMINATION GROUND (PIN 1) OF DRIVER FOR IFC, REN, ATN & SRQ SIGNALS.



CABLE CONNECTOR PIN ASSIGNMENT

D7

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI11 / IB INTERFACE	D	CS	M7954-Ø-1	F
SCALE — SHEET 7 OF 7	DIST.			

DEC FORM NO. DRD 138

8 7 6 5 4 3 2 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

NOTES:

NOTES:

1. ~~ADJUST R14 SO THAT THE FREQUENCY MEASURED AT E57 PIN 6 IS 2.5 MHZ MIN TO 2.631 MHZ MAX. THE MODULE MAY BE OPERATED AT OTHER FREQUENCIES FOR TEST PURPOSE ONLY. SEE SHEET (K-9) MANUFACTURING ADJUSTS TO 2.591 MIN TO 2631 MAX.~~
2. ADJUST R15 SO THAT THE REFRESH FREQUENCY MEASURED AT E78 PIN 8 IS 625 HZ ± 20 HZ. SEE SHEET (K-9).
3. TIME DELAY FROM FALLING EDGE ON E51 PIN 9 TO FALLING EDGE ON E76 PIN 4 SHOULD BE 110 TO 140 NS. R7 MAY BE REMOVED TO INCREASE THE DELAY SLIGHTLY IF LESS THAN 110 NS IS MEASURED. SEE SHEET (K-5).
4. JUMPER FUNCTIONS AND CONFIGURATION ARE AS FOLLOWS:

JUMPER SELECT FEATURES				
JUMPER	SELECTION WHEN INSTALLED	OPTION	SHIPPING STATUS M7264(REV E)	-YA
W1	RESIDENT MEMORY BANK 1	C.O.	R	R
W2	RESIDENT MEMORY BANK 0	C.O.	I	R
W3	DISABLE EVENT LINE	C.O.	R	R
W4	DISABLE MEMORY REFRESH	C.O.	R	I
W5	POWER UP MODE SELECT	C.O.	R	R
W6	POWER UP MODE SELECT	C.O.	R	R
W7	BIASING VOLTAGE VDATA = VROM	F.O.	I	I
W8	BIASING VOLTAGE VCTL = VROM	F.O.	I	I
W9	DISABLE REPLY FROM RESIDENT MEMORY	F.O.	R	I
W10	DISABLE REPLY DURING REFRESH *	C.O.	R	R
W11	ENABLE ON BOARD MEMORY SELECT	C.O.	I	R

* INSTALLED IF RESIDENT RAM IS NOT THE SLOWEST REPLY IN THE SYSTEM.

POWER-UP MODES			
MODE	JUMPERS W6	W5	MODE SELECT
0	R	R	PC AT 24 AND PS AT 28, OR HALT MODE
1	R	I	ODT MICROCODE
2	I	R	PC AT 173000 FOR USER BOOT STRAP
3	I	I	MICRO ADDRESS 3ØØ2

I; INSTALLED — C.O.; CUSTOMER OPTION
R; REMOVED — F.O.; FACTORY OPTION

4K RAM	16	9	8
DEC MHØØ26	3		
DEC 75322	7	14	
DEC 7497	8	16	
DEC 8641	8	16	
DEC 74S257	8	16	
DEC 74S174	8	16	
DEC 74S140	7	14	
DEC 74S139	8	16	
DEC 7475	12	5	
DEC 74S74	7	14	
DEC 7474	7	14	
DEC 7442	8	16	
DEC 74S11	7	14	
DEC 74S1Ø	7	14	
DEC 8837	8	16	
DEC 74SØ5	7	14	
DEC 74SØ4	7	14	
DEC 74SØØ	7	14	
DEC 7400	7	14	
IC TYPE	GND	+5V	+12V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

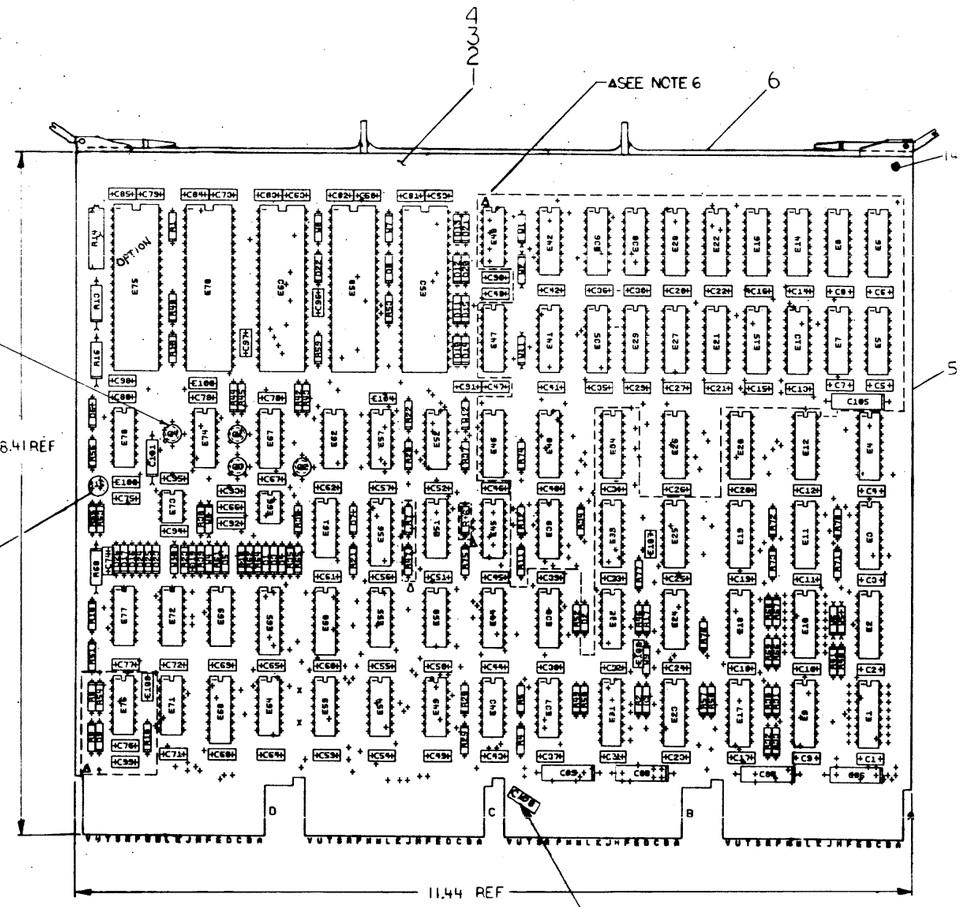
5. COMPONENTS ARE NOT INSTALLED (RESERVED OPTION) UNLESS SPECIFICALLY INSTRUCTED.
6. DELETED FOR M7264-YA VERSION
7. ~~M7264 — +5 V 8A FOR LSI CHIP SET, +5 V 8A FOR MOSTEK 4K RAM~~
   ~~M7264-YA — +5 V 8A FOR LSI CHIP SET, NO ON-BOARD RAM~~
   ~~M7264-BB — +5 V 8A FOR LSI CHIP SET, +5 V 8A FOR INTEL 4K RAM~~
   ~~M7264-HB — SAME AS M7264 EXCEPT E50, 60 & 70~~
   ~~M7264-YB — SAME AS M7264-YA EXCEPT E58, 63 & 70~~
8. SIGNAL DESIGNATION: XX YYY Z — Z = H (HIGH), L (LOW) WHEN ASSERTED; YYY = SIGNAL NAME; XX = SIGNAL ORIGIN (PAGE) IDENTIFIER
9. ALTERNATE PARTS CHART

ITEM*	PREFERRED PART	ALTERNATE PART
6	1213113-01	7413826-00 AND-01
21,22	1001610-00	1001610-01
9,10	9009149-01	9009149

10. THE 23ØØ2B6 IS AN ALLOWABLE SUBSTITUTION FOR THE 23ØØ3B6 ON THE M7264-BB AND M7264-YB. THE 23ØØ3B6 IS PREFERRED.

VARIATION CHART	
VARIATION	DESCRIPTION
M7264-AA	M7264 OR M7264-AB,CB,DB,EB,FB,HB,JB
M7264	PROCESSOR W MOSTEK 4096
M7264-AB	PROCESSOR W INTEL 2104
M7264-BB	PROCESSOR W MOSTEK 4097 AND HYBRID MICROM
M7264-CB	PROCESSOR W FUJITSU 8224
M7264-DB	PROCESSOR W INTEL 2104A
M7264-EB	PROCESSOR W MOSTEK 4027
M7264-FB	PROCESSOR W DEC 4027
M7264-HB	PROCESSOR W MOTOROLA 4027
M7264-JB	PROCESSOR W FUJITSU 8227
M7264-YA	PROCESSOR W NO MOS RAM CS REV W OR LOWER
M7264-YB	PROCESSOR W NO MOS RAM AND HYBRID MICROM
M7264-YC	PROCESSOR W NO MOS RAM CS REV AA OR HIGHER

11. FOR VARIATIONS - BB AND YB ONLY, ADJUST R14 SO THAT THE FREQUENCY MEASURED AT E57, PIN 6 IS 2.450 MHZ MIN. TO 2.490 MHZ MAX. FOR ALL OTHER VARIATIONS ADJUST R14 SO THAT THE FREQUENCY MEASURED AT E57, PIN 6 IS 2.591 MHZ MIN. TO 2.631 MHZ MAX. SEE SHEET K-9. THE MODULE MAY BE OPERATED AT OTHER FREQUENCIES FOR TEST PURPOSES ONLY.
12. ADD A .01 μfd CAPACITOR BETWEEN FINGER BR1 AND THE FEED THRU HOLE CONNECTED TO FINGER BT1
13. ADD TRANSIPAD, DEC P/N 9007201-00, TO EACH TRANSISTOR, REF DESIGNATORS Q1-Q4



4. PLACE TRANSISTOR IN ACCORDANCE TO VEDOR PART USED.

B — C — E A5T4260 B — C — E A8T4260

NOTE: FOR PARTS LIST, SEE K-PL-M7264-Ø-DBP

REV	DESCRIPTION	DATE	APPROVED
AA	M7264-00020	28 OCT 77	D. BENNETT
AB	M7264-00021	25 MAR 78	D. BENNETT
AC	M7264-ML022	27 MAY 77	D. BENNETT
AD	M7264-ML023	5 APR 78	D. BENNETT
AE	M7264-ML024	16 APR 76	J. CURTIS
AF	M7264-ML025	6 JULY 76	JOHN CURTIS
AH	M7264-ML026	1-20-76	J. CURTIS

FIRST USED ON OPTION MODEL
KD11-F

ETCH BOARD REV.	H

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN.	Linda Peterson	DATE	19 MAY 76
CHKD.	D. Maneau	DATE	19 MAY 76
ENG.	Chay S. Chi	DATE	4-20-76
PROJ. ENG.	K. Olsen	DATE	4-20-76
PROG.	Chay S. Chi	DATE	4-20-76

digital

TITLE: LSI-11 CPU MODULE

NEXT HIGHER ASSY: B-DD-M7264-0

SCALE: —

SHEET 1 OF 9

SIZE	CODE	NUMBER	REV
D	CS	M7264-0-1	AH

DIST.

D CS M7264-0-1 AH

DEC FORM NO. SMD 125.0

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

PREFIX "K2" APPLIES TO ALL WDAL, WMIB SIGNALS

H=1

K9 -V DATA (SEE NOTE 4) — WT — K9 -VROM

C81 .47uf

DATA ADDRESS LINES (K3 & K4)

WDAL ØØ H … WDAL 15 H

CP1611 E53 DATA CHIP

WMIB ØØ L … WMIB 15 L

C84 .47

K9 RPH 3H
K9 RPH 1 H
K9 +12 VA

+5V — R1 2K, R22 2K

K2 MSTB L
K2 MCOMB H

WMIB 15 L … WMIB 21 L

E75 J1 (KEVII) OPTION

WMIB ØØ L … WMIB 11 L

{FLOATING POINT & EXTENDED INST. SET OR PLUG FOR M8018 WRITABLE CONTROL STORE

+5V — R19 2K, R18 2K

K2 MCKD L
K2 MCK L

+5V — R48 2K

K2 MROM DISABLE L

+5V
K9 RPH 2H
K9 RPH 4 H

(NON-OVERLAPPING; 95NS BETWEEN Ø'S)

95ns
Ø1
Ø2 μADDR GOES TO ROM
Ø3 DECODES ADDR
Ø4 ROM IS ACCESSED INTERNALLY (PRECHARGE LINES)
WMIB
Ø1 ROM OUTPUTS TO WMIB (DISCHARGE ALL 1's STATES)

WMIB BI-DIRECTIONAL
WESTRON MICRO-INSTR BUS

DATA CHIP - EXECUTES M INSTRUCTIONS

C85 .47uf — K9 -VROM

WAIT H (HI DISABLES)

K9 -VCTL (SEE NOTE 4) — W8 — K9 -VROM

C82 .47uf

C83 .47uf

K9 RPH3 H
K9 RPH1 H
K9 +12VA

K8 IOIRQ (1) H
K8 EVIRQ (1) H
K8 IPIRQ (1) H
K8 RFIRQ (1) H
K8 BBUSY H
K2 MCOMP H
K8 RESET (1) L
K7 BREPLY H
K2 WDOUT H
K2 WWB H
K2 WIAK H
K2 WSYNC H
K2 WDIN H

PINS 3-12 (INPUT)
BUS CONTROL
PINS 13-18 (OUTPUT)

I3 I2 I1 IØ

CP1621B E58 CONTROL CHIP

WMIB ØØ L … WMIB 15 L

CP1631 B E63 ROM CHIP 1

CONTAIN M ROUTINE 512 X 22

CP1631 B E76 ROM CHIP 2

WMIB ØØ L … WMIB 11 L

K2 MROM DISABLE L

+5V
K9 RPH 2H
K9 RPH 4 H

IOIRQ - I/O INTERUPT REQ
EVIRQ - EVENT INTR REQ (LTC(V=100)
IPIRQ - HALT OR PWR FAIL INTR
RFIRQ - RE-FRESH INTR REQ

PIN7 - ENABLE READ NEXT INSTR
mCOMP - FIS OR EIS INPUT (OPTION)
RESET - BUS ERROR (TIME OUT) & INIT
PIN11 - ENABLE LOAD OF RETURN REG

WDOUT - WILL BECOME "BDOUT"
WWB - WILL BECOME "BUBT"
WIAK - WILL BECOME "BIAK"
WSYNC - WILL BECOME "BSYNC" (LATCH ADDR)
WDIN - WILL BECOME "BDIN"

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 CPU MODULE (K2)	D	CS	M7264-Ø-1	A H
SCALE —	SHEET 2 OF 9	DIST.		

DEC FORM NO. DRD 138

8 7 6 5 4 3 2 1

M7264-Ø-1 A H

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

+5V

2:1 MUX

POWER UP MODE SELECT

(SEE NOTE 8) R40 2K R41 2K

W5

(SEE NOTE 9) W6

745257 E2

THESE SIGNALS USED BY DATA CHIP ONLY

(TIME OUT ERROR) K7 TERR (1) H

K8 PFAIL H — 74S04 E37 — 7400 E38

K8 PFAIL (1) L

K8 FDIN (1) L (FAST DATA IN)

(LO-BYTE)

DATA CHIP PATH

745257 E4

ON BOARD RAM → K6 RAM DØØ H
From BDAL RECIEVERS → K3 DAL ØØ H LSB
K6 RAM DØ1 H
K3 DAL Ø1 H
K6 RAM DØ2 H
K3 DAL Ø2 H
K6 RAM DØ3 H
K3 DAL Ø3 H

K2 WDAL ØØ H
K2 WDAL Ø1 H
K2 WDAL Ø2 H
K2 WDAL Ø3 H

(ENABLE DATA OR ADDRESS) K7 EDAL L

8641 E3

AU2 BDAL ØØ L — K9 DPR 1ØA — K3 DAL ØØ H ← (TERMINATOR CONNECTION)
AV2 BDAL Ø1 L — K9 DPR 12A — K3 DAL Ø1 H
BE2 BDAL Ø2 L — K9 DPR 13A — K3 DAL Ø2 H
BF2 BDAL Ø3 L — K9 DPR 11A — K3 DAL Ø3 H

DATA MUX

(INTERNAL DATA IN (ONBOARD MEM)) K7 IDIN L
DATA IN REC (MEM DATA) → K7 DINR L

745257 E12

K6 RAM DØ4 H
K3 DAL Ø4 H
K6 RAM DØ5 H
K3 DAL Ø5 H
K6 RAM DØ6 H
K3 DAL Ø6 H
K6 RAM DØ7 H
K3 DAL Ø7 H

K2 WDAL Ø4 H
K2 WDAL Ø5 H
K2 WDAL Ø6 H
K2 WDAL Ø7 H

8641 E11

BH2 BDAL Ø4 L — K9 DPR 2A — K3 DAL Ø4 H
BJ2 BDAL Ø5 L — K3 DAL Ø5 H
BK2 BDAL Ø6 L — K9 DPR 15A — K3 DAL Ø6 H
BL2 BDAL Ø7 L — K9 DPR 14A — K3 DAL Ø7 H

+5V — R2 33Ø — R3 68Ø

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 CPU MODULE (K3)	D	CS	M7264-Ø-1	AH
SCALE — SHEET 3 OF 9	DIST.			

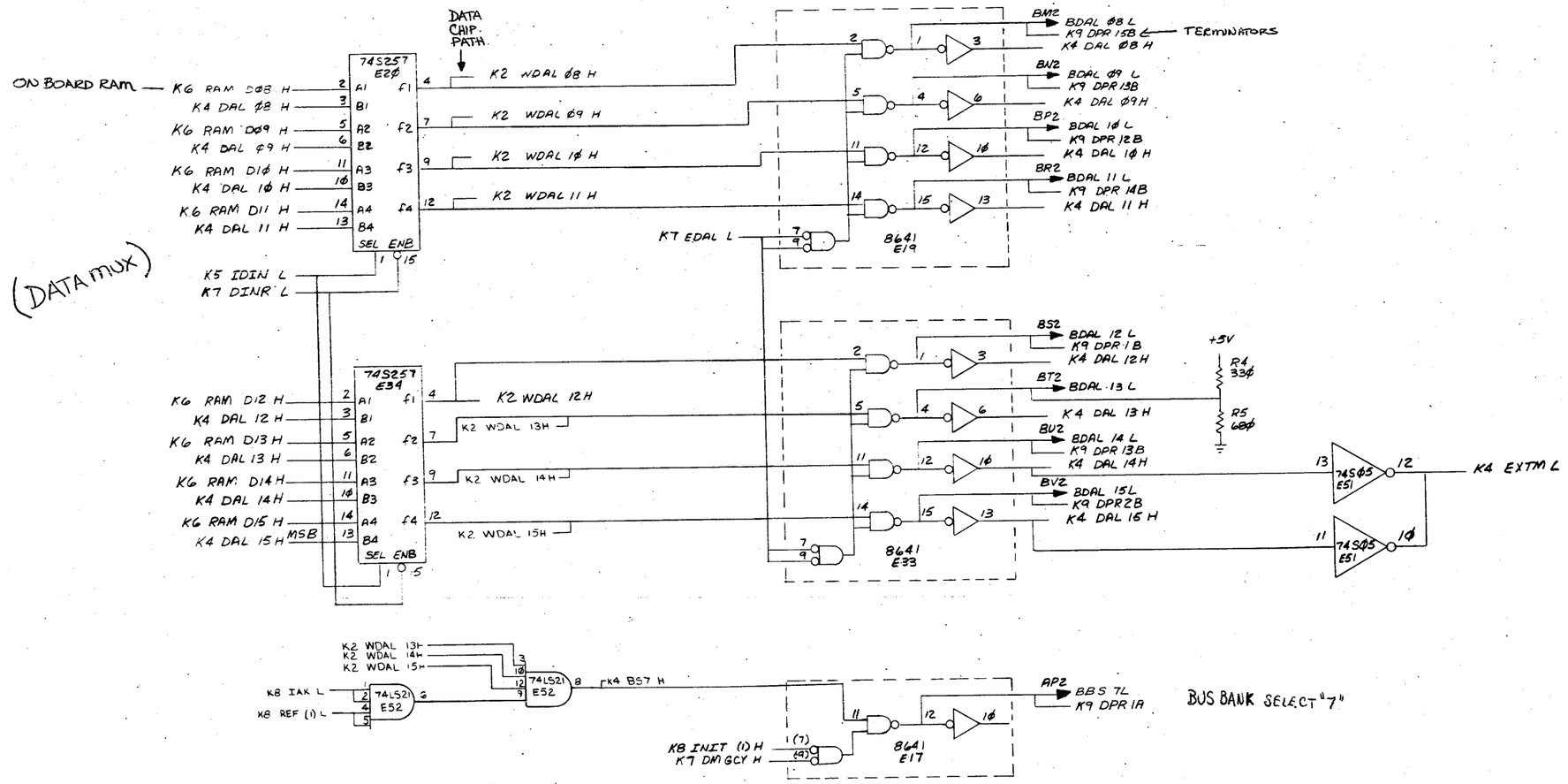
BBC FORM NO. BBD 138

8 7 6 5 4 3 2 1

D C B A

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

HI-BYTE



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	LSI-11 CPU MODULE (K4)		SIZE	CODE	NUMBER	REV.
			D	CS	M7264-Ø-1	A H
SCALE		SHEET 4 OF 9	DIST.			

DEC FORM NO. DRD 137

THIS DRAWING AND SPECIFICATION, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION

ON BOARD MEMORY

BANK DECODER

BYTE POINTER

ADDRESS LATCHES

1-6 COL. ADDR
7-12 ROW ADDR

7475 E42
K3 DAL ØØ H
+5V
R6 680
K4 EXTM L EXT. MEM. (40K & UP)
K4 DAL 13 H BANK SELECTION
K8 REFR H REFRESH RECEIVED
KT SYNCR L
K5 A Ø (1) L
KT WTBTR H
K5 A Ø (Ø) L
7400 E45
(K5) BNK OR REF H
7451Ø E48
K5 BYTE 1 WT L
K5 BYTE Ø WT L
BYTE SELECTION
K7 DOUTR H
(SEE NOTE 4)
W1 BNK 1
W2 BNK Ø
W11
(SEE NOTE 4)
CF
K5 SMEMB L
K5 BNK OR REF H (K7) (K5)
K5 REFR (Ø) H
R74 2K
R75 2K
7400 E45
7451Ø E39
R11 1Ø (22)
K5 RRAS L
ROW ADDR STROBE
(SEE NOTE 3)
R7 6.8K (DEL)
R47 3Ø9 (249) 1%
R8 133 1%
7451ØT E76
K5 AMX H
K5 -5V
R3 38.3 1%
R1Ø 133 1%
LPSI
LPSØ
TIED TOGETHER
CT1 .Ø1 UF
C1Ø3 22Øpf 1%
K5 E CAS H (K7)

7475 E4Ø
K4 DAL 12 H
K3 DAL Ø6 H
K4 DAL 11 H
K3 DAL Ø5 H
74S257 E46
K5 RAM A5 H
K5 RAM A4 H
K5 AMX H
Row/Col SELECT

7475 E47
K4 DAL 1Ø H
K3 DAL Ø4 H
K4 DAL Ø9 H
K3 DAL Ø3 H
74S257 E41
K5 RAM A3 H
K5 RAM A2 H
K5 RAM A1 H
K5 RAM AØ H

7475 E26
K4 DAL Ø8 H
K3 DAL Ø2 H
K3 DAL Ø7 H
K3 DAL Ø1 H

K7 SYNCR H
7451Ø E39
7405 E51
R12 1Ø (22)
K5 RCAS L
K5 CAS L
K5 GCAS H
C1Ø2 68Øpf (22Øpf) 1%
R46 5.11K 1%
R17 1.2K (DELETED)

K9 VNEG
R54 27Ø
K5 5V
D9 IN5IA 51V
C64 .Ø1
C99 .Ø1

NOTE:
1. COMPONENTS ON THIS SHEET ARE DELETED FOR THE YA VAR. WITH THE EXCEPTIONS OF E45, R74 AND R75.
2. NUMBERS IN BRACKETS DENOTE COMPONENT VALUES FOR M7264-EB, FB, HB AND JB VARIATIONS; 7 PLACES. ALSO DENOTE FOR M7264-BB VARIATION AT CS OF REVISION 'AH' OR LATER

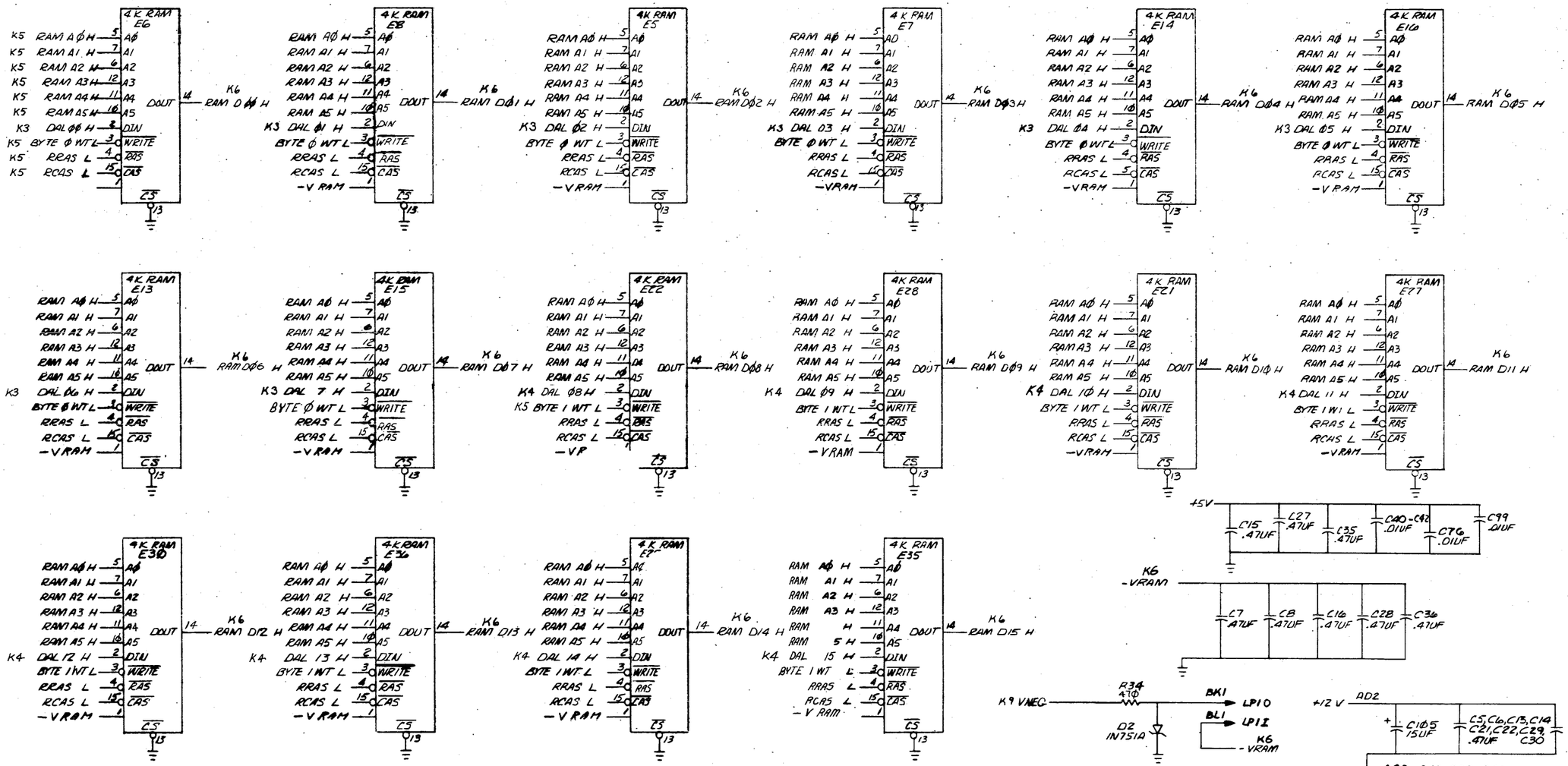
CIRCUIT SCHEMATIC ON THIS SHEET IS DELETED FOR "YA" VERSION

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	LSI-11 CPU MODULE (K5)	SIZE / CODE	NUMBER / REV.
		D CS	M7264-Ø-1 AH
SCALE	SHEET 5 OF 9	DIST.	

8 7 6 5 4 3 2 1
D C B A

(4K x 1 bit RAM CHIPS) (RAM OUTPUTS TO K3 OR K4)



CIRCUIT SCHEMATIC ON THIS SHEET IS DELETED FOR "YA" VERSION

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	LSI-11 CPU MODULE (K6)		
SIZE	CODE	NUMBER	REV.
D	CS	M7264-0-1	A H
SCALE	SHEET 6 OF 9	DIST.	

CS M7264-0-1 AH

ON BOARD MEMORY

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THIS BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1976 DIGITAL EQUIPMENT CORPORATION"

*TIMEOUT COUNTER FOR "BRPLY"

74S74 E65 — +3V, E1, E2, E4, E8, E16, E32, U/C, Z, Y, EN/OUT, CLK STB CLR EN

K7 TERR L — K8 — K7 TERR (I) H

74S10 E55 — K8 INIT (I) L, K8 TF CLR L — TIMOUT CLEAR FLAG

K9 PH 3 H

K7 REPLY (I) H

K7 DIN L

74S00 E24 — K8 DOUT D (I) L

74S04 E69

+5V — R52 680

74S11 E32 — K7 REPLY H (TO CONTROL CHIP)

74S74 E50 — +3V, K7 RPLYR H, K9 PH 1 H, K8 INIT (I) L, K2 WDOUT H, K7 REPLY (I) H, K7 REPLY (I) L

74S10 E55

74S74 E50 — +3V, K7 SYNC H, K9 PH 3 H

K7 DOUT (I) H

K7 DOUT (I) L

AE2 — BDOUT L, K9 DPR 7B

8641 E18 — K7 DOUTR H

AK2 — BWTBT L, K9 DPR 10B

From Control Chip — K2 WWB H, K8 INIT (I) H

8641 E18 — K7 WTBTR H

R57 680, R58 330 — BPI

R67 680, R66 330 — BAD 16 L, AC1

R69 680, R68 330 — BAD 17 L, AD1

R71 680, R70 330 — AA1

R73 680, R72 330 — AB1

+5V

+5V — R49 330, R50 680

BSACK L — BNI

8837 E31

74S04 E37 — K7 SACK R L (K8)

K7 DMGCY H

K7 DINR H (from K5 BNK OR RFF H)

74S10 E55

74S11 E32 — K7 EDAL L

K8 DMG (I) L

74S00 E38

74S04 E37

74S00 E35

K7 DIN L

K2 WDIN H (From Control Chip)

74S04 E37

74S04 E37 — K7 DIN H

AH2 — BDIN L, K9 DPR 4B

8641 E18 — K7 DINR H

K8 INIT (I) H

FDIN (I) L

74S00 E24 — K7 DINR L

74S00 E72 — K7 REPLY (I) H, *ASSURES BSYNC REMAINS SET

TPI — K7 SYNC H

AJ2 — BSYNC L, K9 DPR 6A

74S04 E59 — K2 WSYNC H (From Control Chip, SET STATE MOMENTARY THIS CKT LATCHES)

74S04 E59 — K7 SYNC L

74S74 E54 — K9 PH 3 L, K8 IAK L

K7 TSYNC H

8641 E18 — K8 INIT (I) H

K7 SYNCR H

74S10 E77 — K7 SYNCR L

*E62 CONTROLS "BRPLY" IF INTERNAL MEMORY DOING INPUT OPERATION

+5V — R23 680 (SEE NOTE 4)

K5 REFR (Ø) H — W12

K7 CINR H, K5 CAS H

74S10 E62

74S00 E24

INTERNAL DATA IN — K7 IDIN L

AF2 — BRPLY L, K9 DPR 11B

K7 TRPLY H

8641 E23 — K7 RPLYR H

COMPUTED MEMORY "ADDRESS" CYCLE

(SEE NOTE 4) — W9

K7 DOUTR H

74S00 E24

"BRPLY" IF INTERNAL MEMORY DOING OUTPUT OPERATION

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	LSI-11 CPU MODULE (K7)	SIZE / CODE	NUMBER	REV.
		D / CS	M7264-Ø-1	AH
SCALE	1:1	SHEET	7 OF 9	DIST.

8 7 6 5 3 2 1

D C B A

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

REQ. F/F

INTERRUPT LATCH

"INIT" REFRESH DISABLE

(SEE NOTE 4) +5V R39 2K W4

+3V

7474 E71

K9 RF OSC H

K8 RF SET L

K8 RF REQ (1) L

K7 DOUT (1) L

74S174 E60

K8 DOUT D (1) L (TO INTERRUPT LATCH)

K8 RFIRQ (1) H

K8 IOIRQ (1) H

K8 EVIRQ (1) H

K8 IPIRQ (1) H

K8 RESET (1) L

TO CONTROL CHIP K2

K7 TERR L

CLR CLK

K9 PH 2H

EVENT F/F

(SEE NOTE 4) +5V R38 2K W3

+3V

7474 E71

K8 EF CLR L (EVENT FLAG CLEAR)

AL2 BIRQ L K9 DPR 5A

8837 E31

BB1 BEVNT L K9 DPR 6B

* C108 .01μF

R32 330 +5V

R33 680

API B HALT L

K8 INIT (1) H

K7 DMG CY H

8641 E17

74S05 E51

+5V R20 680

7400 E72

K8 PFAIL H

74S11 E32

R77 330

C107 1200pf

BB1 BPWR OK H K9 DPR 7A

+3V

7474 E43

K8 PFAIL (1) L

POWER FAIL F/F

R30 330 +5V

R31 680

AN1 BDMRL

K8 DCLO L

K8 PFCLR L

7400 E38

74S04 E37

BA1 BDC OK H K9 DPR 9A

8837 E31

74S04 E59

K8 DC LO L

K7 SACKR L

+3V

74S74 E54

K9PH 1 H

K8 INIT (1) L

DMA F/F

7474 E49

K9 PH 4 H

K8 DMG (1) H

K7 SYNC L

AS2 B DMGO L K9 DPR 9B

8641 E23

K9 PH 3 L

7404 E69

DC1 K8 SPH 3 H

K2 WMIB 21 L

DH1 K8 SROM 3H

7400 E45

K9 PH 3 H

K2 WMIB 20 L

DF1 K8 SROM 2H

K2 WMIB 19 L

DE1 K8 SROM 1H

K2 WMIB 18 L

DD1 K8 SROM 0H

7442 E68

K8 EF CLRL

K8 PF CLRL

K8 TF CLRL

K8 IF CLR L

K8 RF SET L

(REF. F/F)

7474 E64

K8 REF (1) L

K8 DC LO L

K8 INIT (1) L

INIT (1) H K8 INIT (1) L

K8 BUSY H (TO CONTROL CHIP)

K7 REPLY (1) L

7400 E72

R51 220 +5V

K8 FDIN (1) H

K8 FDIN (1) H

7474 E44

K7 SYNC H

AT2 BINIT L K9 DPR 3B

8641 E23

TP2 K8 T REF (1) H

K8 INIT (1) H K7 DMG CY H

8641 E17

AR1 B REF L K9 DPR 4A

K8 REF R H

+5V R76 680

8641 E23

AF1 K8 SRUN L

CH1 K8 SRUN L

(SRUN STATE WILL NOT INDICATE IT IS RUNNING)

K2 WIAK H

74S04 E59

K8 IAK L

74S04 E52

+3V

7474 E43

K9PH 1 L

K7 DIN H

K8 IIAK (1) H

K8 IAK (1) L

K8 INIT (1) H K7 DMG CY H

8641 E17

AN2 BIAKO L K9DPR 3A

CR2 LP20 (BDMG1) DMA GRANTS

CS2 LP2I (BDMGO)

CM2 LP30 (BIAK1) INT. ACK. LINES

CN2 LP3I (BIAKO)

* C108 IS AN OPTIONAL CAP. AND IS NOT INSTALLED BY MODULE BUILD AREAS. THE CAP MAYBE INSTALLED IN M7264'S USED IN LARGE SYSTEMS AT FIELD SERVICE'S DISCRETION. REFER TO ECO* M7264-ML022.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	LSI-11 CPU MODULE (K8)			SIZE	CODE
SCALE		SHEET 8 OF 9		D	CS
DIST.				NUMBER	REV.
				M7264-0-1	AH

DEC FORM NO. DRD 137

8 7 6 5 4 3 2 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

* REFRESHES ALL OF MEMORY EACH TIME (EVERY 1.6ms)

625 HZ
1.6 ms duration (APART)

CLK GEN — REF GEN

K9 +12.VA
R16 56 1/2W
C98 .47UF
R13 56 1/2 W
DG 4.75V 5.1V
C8Ø .01UF
R14 5K
(SEE NOTE 1)
C1Ø Ø 12PF
C1Ø1 .33UF
MC 4024 E78 (2.5MHZ)
K9 RF OSC H (K8)
RG3
R15 2K (SEE NOTE 2)
R55
74ØØ E72
74S14Ø E77
K2 MCKD L
K2 MCK L

T74S139 E56
+3V
74S74 E57
K9 DIVA(Ø) H
K9 DIVB(Ø) H
K2 MSTB L
C1Ø4 68 PF
P21 150
D7 DGG4
* THESE TWO CAUSE SMALL DELAY BETWEEN PHASES
K9 PH 1 L
K9 PH 3 L
T74SØ4 E61
K9 PH 1 H
K9 PH 2 H
K9 PH 3 H
K9 PH 4 H

K9 +12VA BD2
C69 15UF
C8Ø .47UF
C53 .47UF
C58 .47UF
C63 .47UF
C73 .47UF
C79 .47UF
AC2, BC2, CC2, DC2
AT1, BT1, CT1, DT1

+5V AA2, BA2
C8G 15UF
C8B 15UF
C1-C4 .Ø1
C9-C12 .Ø1
C17-C2Ø .Ø1
C23-C26 .Ø1
C31-C34 .Ø1
C37-C52 .Ø1
C54-C57 .Ø1
C59-CG2 .Ø1
AC2, BC2, CC2, DC2
AT1, BT1, CT1, BT1

K9 DPR 15A … K9 DPR 1A
330 / 680
+5V

E9

K9 +12.VA
R65 33
R35 33
CG7 .47
K9 DIVB (Ø) H
R36 100
MHØØ2G EG6
C93 .47UF
D4 DGG4
D3 DGG4
D1 DGG4
C92 .47UF
T74SØ4 EG1
MHØØ2G EG6
+12V AD2
C8T 15UF
+5V
R28 330
R29 680
K9 VNEG
CG6 .47UF
DK1 LP4I
DL1 LP4O
R37 330
R59 *
R53 *
K9 -VROM
K9 -VCT L
K9 -VDATA
D5 INT48A 3.9V
D22 *
D8 *
C9G .Ø1 UF
C97 .Ø1 UF
D26 DGG4

K9 +12.VA
RG4 33
RG2 33
CT5 .47
K9 DIVA (Ø) H
RG1 100Ω
MHØØ2G E73
C95 .47
D17 DGG4
K9 VDVR
D16 D23 D25 D24 DGG4
+12 VA
RGØ 56 1/2W
C94 .47 UF
D18 D19 DGG4
T74SØ4 EG1
MHØØ2G E73
CT4 .47 UF

* SEE NOTE *5 ON SHEET 1

+5V
R5G 2K
C7Ø .47UF
K9 VDVR
R42 22Ω
K9 RPH 1 H
K9 PH 1 H
K9 PH 2 H
K9 PH 4 H
K9 PH 3 H
T5322 E67
T5322 E74
Q1
Q2
Q3
Q4
D2Ø DGG4
D21 DGG4
D1Ø DGG4
D11 DGG4
K9 +12.VA
R43 22Ω
K9 RPH 2 H
R45* 22Ω
K9 RPH 4 H
D14 DGG4
D15 DGG4
R44 27Ω
D12 DGG4
D13 DGG4
K9 RPH 3 H
C78 .47 UF
K9 VDVR

+5V AA2, BA2
C1ØG .Ø1
C77 C76 C72 C71 C69 C68 C65 .Ø1
K9 RPH 1 H

(TTL)
(mos)

* FOR VARIATIONS -YB AND -3B ONLY, R45 IS 15Ω.

K9 DPR 15B … K9 DPR 1B
330 / 680
+5V

E25

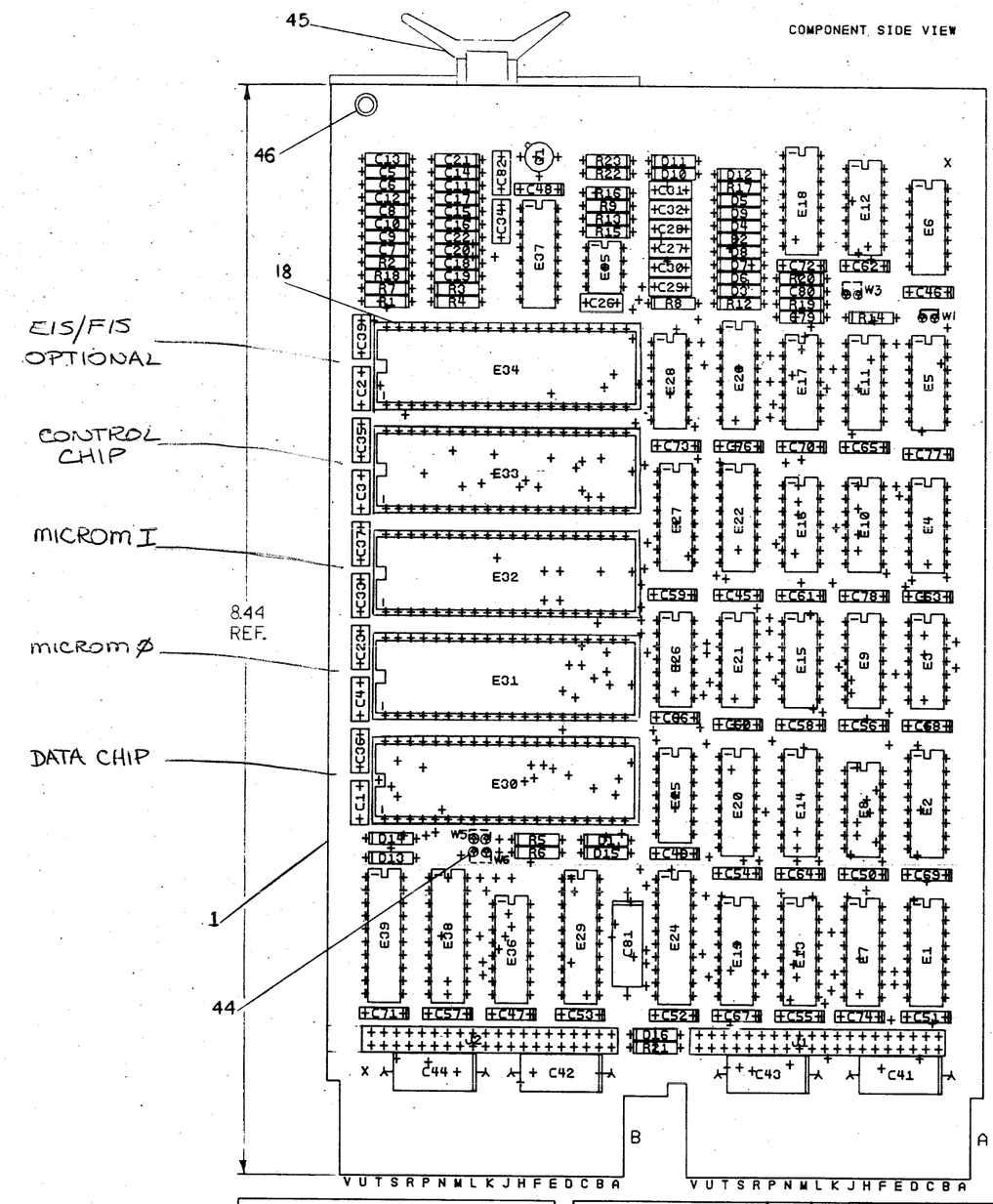
POWER INVERTER

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 CPU MODULE (K9)	D	CS	M7264-Ø-1	AH
SCALE — SHEET 9 OF 9	DIST.			

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THIS BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 19__ DIGITAL EQUIPMENT CORPORATION

COMPONENT SIDE VIEW



NOTES:
1. W1, INSTALLED. W3, W5, AND W6, NOT INSTALLED.
2. C81 MAY BE REMOVED AS A CUSTOMER OPTION.

REV	CHK	CHANGE NO	
F		M7270MR003	
H		M7270MR004	
J		M7270MR005	
K		M727ØMR006	
L	G. KUSHNER	M7270 MR007	

ETCH REV.	F-P1
P.C. DESIGN DATA BASE REV.	F

SIGNATURES	DATE
DRN. R. FETCH	10 APR 81
CHK'D. R. SALETT	28 APR 81
ENG.	
PROJ. ENG.	
PROD. K. MERCADO	28 APR 81
SCALE 2:1	
SHT. OF	
NEXT HIGHER ASSY. B-DD-M7270-Ø	

digital

TITLE LSI-11 CPU

SIZE	CODE	NUMBER	REV
D	UA	M7270-0-Ø	L

DUA M7270

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977, DIGITAL EQUIPMENT CORPORATION"

+12V
D13 D664
D14 D664
C23 .47µf
C39 .47µf
K5 -VBB
K5 RPH 3 H
K5 RPH 1 H
+12 V
C1 .47 µf
+5V
R1 2K
C2 .47 µf
K1 MSTB
K1 MCOMP H
K1 WDAL ØØ H
K1 WDAL Ø1 H
K1 WDAL Ø2 H
K1 WDAL Ø3 H
K1 WDAL Ø4 H
K1 WDAL Ø5 H
K1 WDAL Ø6 H
K1 WDAL Ø7 H
K1 WDAL Ø8 H
K1 WDAL Ø9 H
K1 WDAL 1Ø H
K1 WDAL 11 H
K1 WDAL 12 H
K1 WDAL 13 H
K1 WDAL 14 H
K1 WDAL 15 H
1611
DATA CHIP
2111549-Ø1 OR 2115579-00
E3Ø
VBB Ø3 Ø1 VDD
VSS Ø4 Ø2 WAIT
K1 WMIB ØØ L
K1 WMIB Ø1 L
K1 WMIB Ø2 L
K1 WMIB Ø3 L
K1 WMIB Ø4 L
K1 WMIB Ø5 L
K1 WMIB Ø6 L
K1 WMIB Ø7 L
K1 WMIB Ø8 L
K1 WMIB Ø9 L
K1 WMIB 1Ø L
K1 WMIB 11 L
K1 WMIB 12 L
K1 WMIB 13 L
K1 WMIB 14 L
K1 WMIB 15 L
K1 WMIB 15 L
K1 WMIB 14 L
K1 WMIB 13 L
K1 WMIB 12 L
K1 WMIB 16 L
K1 WMIB 17 L
K1 WMIB 18 L
K1 WMIB 19 L
K1 WMIB 2Ø L
K1 WMIB 21 L
1631-15
(3Ø15)
EIS/FIS E34
2300385 OPTIONAL
VSS Ø4 Ø2 VCC
K1 MROM DISABLE L
R8 2K
+5V
K5 PH 2 H
K5 PH 4 H
+5V
K5 RPH 2 H
K5 RPH 4 H

C5 33 Pf
C6 33 Pf
C9 33 Pf
C7 33 Pf
C8 33 Pf
C12 33 Pf
C21 33 Pf
C14 33 Pf
C16 33 Pf
C18 33 Pf
C2Ø 33 Pf
C22 33 Pf
C17 33 Pf
C11 33 Pf
C13 33 Pf
C1Ø 33 Pf
C15 33 Pf
C19 33 Pf
K1 WMIB ØØ L
K1 WMIB Ø1 L
K1 WMIB Ø2 L
K1 WMIB Ø3 L
K1 WMIB Ø4 L
K1 WMIB Ø5 L
K1 WMIB Ø6 L
K1 WMIB Ø7 L
K1 WMIB Ø8 L
K1 WMIB Ø9 L
K1 WMIB 1Ø L
K1 WMIB 11 L
K1 WMIB 12 L
K1 WMIB 13 L
K1 WMIB 14 L
K1 WMIB 15 L
K1 WMIB 16 L
K1 WMIB 17 L

K1 WAIT H
D1 D664
D15 D664
+12V
C35 .47µf
C36 .47µf
C37 .47µf
K5 -VBB
K5 RPH 3 H
K5 RPH 1 H
+12V
C3 .47µf
C9 .47 µf
C33 .47 µf
K3 WIOI RQ (1) H
K3 WEVI RQ (1) H
K3 WIPI RQ (1) H
K1 WMIB 17 L
K2 WBUSY H
K1 MCOMP H
K3 WRESET (1) L
K1 WMIB 16 L
K2 WREPLY H
K1 WDOUT H
K1 WWB H
K1 WIAK H
K1 WSYNC H
K1 WDIN H
1621-7
(2ØØ7)
CONTROL CHIP
23Ø2C4
E33
VBB Ø3 Ø1 VDD
VSS Ø4 Ø2 VCC
K1 WMIB ØØ L
K1 WMIB Ø1 L
K1 WMIB Ø2 L
K1 WMIB Ø3 L
K1 WMIB Ø4 L
K1 WMIB Ø5 L
K1 WMIB Ø6 L
K1 WMIB Ø7 L
K1 WMIB Ø8 L
K1 WMIB Ø9 L
K1 WMIB 1Ø L
K1 WMIB 11 L
K1 WMIB 12 L
K1 WMIB 13 L
K1 WMIB 14 L
K1 WMIB 15 L
K1 WMIB 15 L
K1 WMIB 14 L
K1 WMIB 13 L
K1 WMIB 12 L
K1 WMIB 16 L
K1 WMIB 17 L
K1 WMIB 18 L
K1 WMIB 19 L
K1 WMIB 2Ø L
K1 WMIB 21 L
1631-7
(3ØØ7)
MICROM Ø E31
2300285
K1 MROM DISABLE L
K1 WMIB 15 L
K1 WMIB 14 L
K1 WMIB 13 L
K1 WMIB 12 L
K1 WMIB 16 L
K1 WMIB 17 L
K1 WMIB 18 L
K1 WMIB 19 L
K1 WMIB 2Ø L
K1 WMIB 21 L
1631-1Ø
(3Ø1Ø)
MICROM 1 E32
2300185
K1 MROM DISABLE L
+5V
K5 RPH 2 H
K5 RPH 4 H

REVISIONS		
CHK.	CHANGE NO.	REV.
	M7270-00001	D
	M7270-MR002	E
	M7270-MR003	F
	M7270-MR004	H
	M7270-MR006	J
	M7270 MR007	L

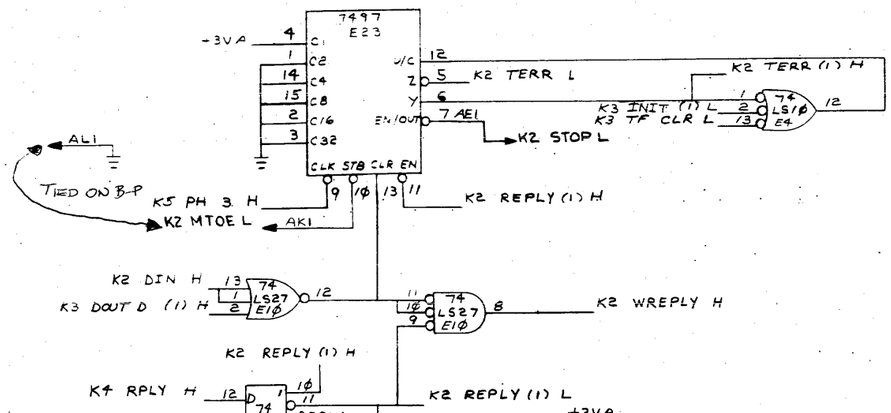
R. FITCH 1 Dec 77
R. FITCH 22 MAR 78
R. FITCH 15 MAY 78
R. SALETT 27 Sept 78
R. SALETT 11/6/78
R. SALETT 11/9/78
G. KUSHNER 5-13-81

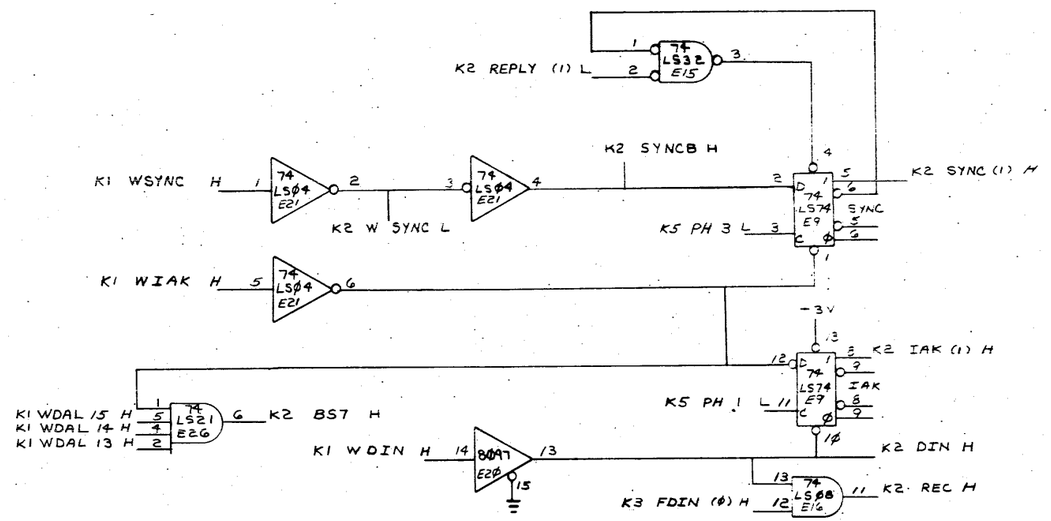
DRN.		4/19/77
CHK'D		20SEP77
ENG.		20SEP77
PROJ. ENG.		20 SEP 77
PROD.		9/29/77
NEXT HIGHER ASSY.	B-DD-M727Ø-Ø	
SCALE	NONE	
SHEET	1 OF 6	

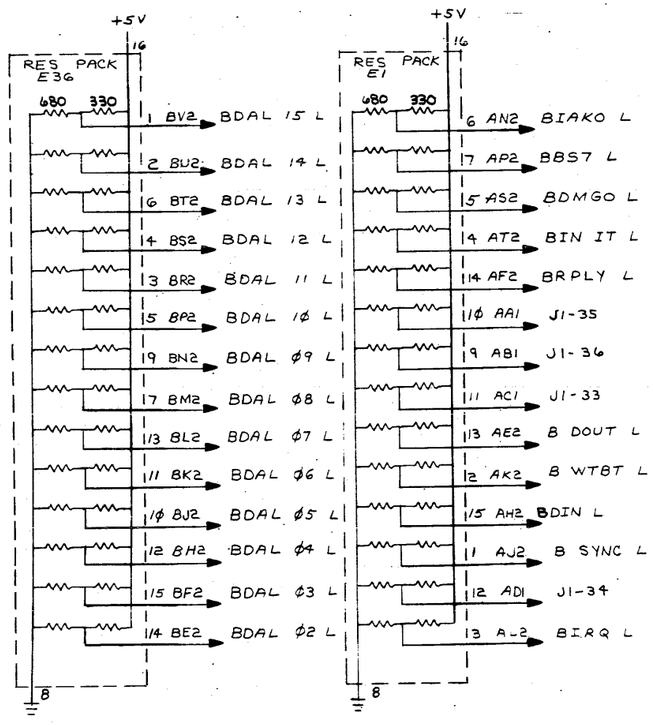
FIRST USED ON: LSI-11
digital
TITLE: LSI-11 CPU
SIZE D | CODE CS | NUMBER M727Ø-Ø-1 | REV. L
DIST.

K1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1977 DIGITAL EQUIPMENT CORPORATION"







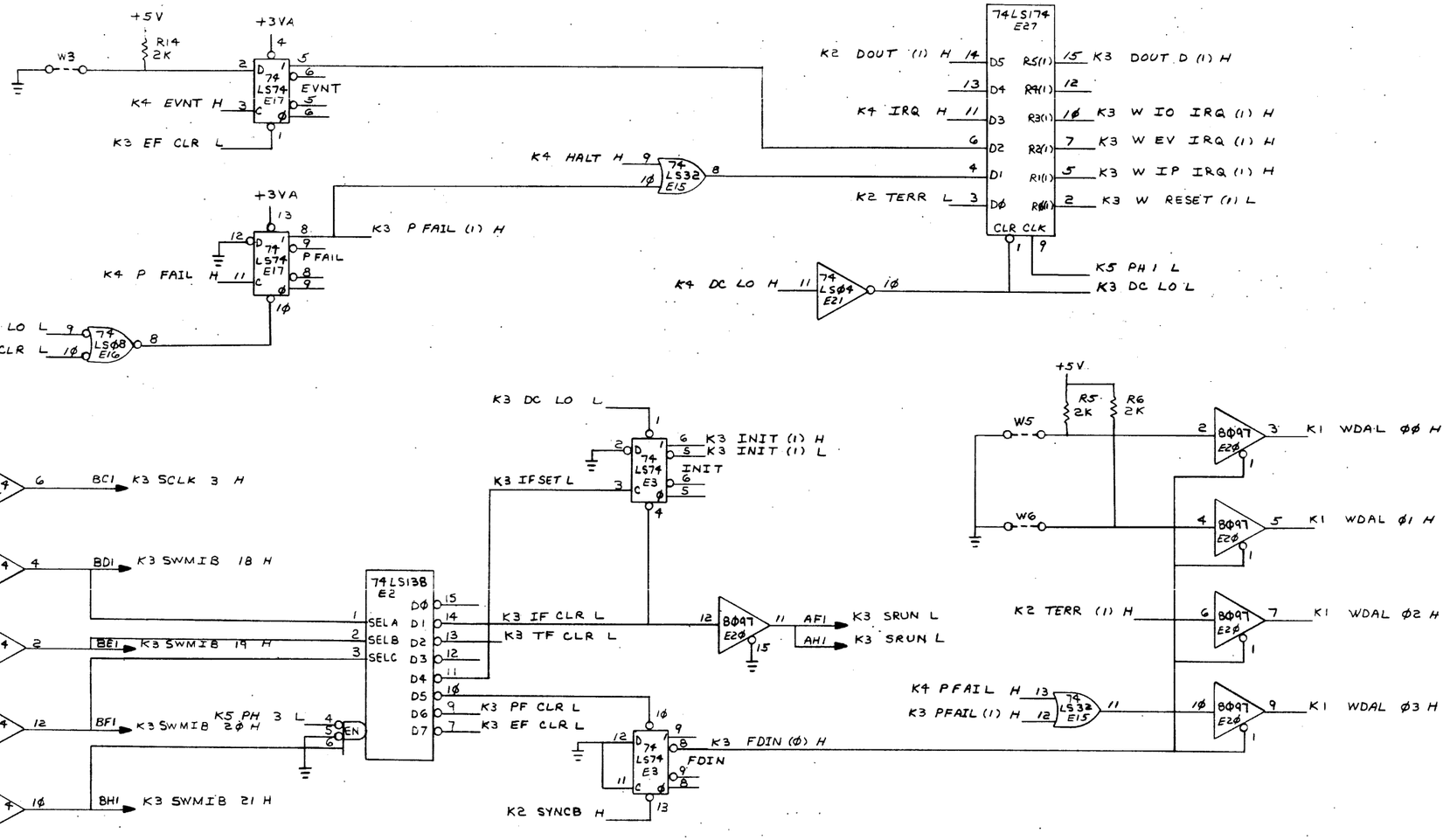
REVISIONS		
CHK	CHANGE NO.	REV.

K2

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 CPU	D	CS	M727Ø-Ø-1	K

SCALE — SHEET 2 OF 6 — DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



JUMPER TABLE

JUMPER	FUNCTION WHEN INSTALLED	FACTORY CONFIGURATION
W1	CRYSTAL CLOCK	I
W3	DISABLE EVENT LINE INTERRUPT	R
W5	POWER UP SELECT	R
W6	POWER UP SELECT	R

POWER-UP MODES

MODE	JUMPERS W6	JUMPERS W5	MODE SELECT
0	R	R	PC AT 24 AND PS AT 26, OR HALT MODE
1	R	I	ODT MICROCODE
2	I	R	PC AT 173000 FOR USER BOOTSTRAP
3	I	I	SPECIAL PROCESSOR MICROCODE (NOT IMPLEMENTED)

NOTE: R = JUMPER REMOVED, I = JUMPER INSTALLED

REVISIONS

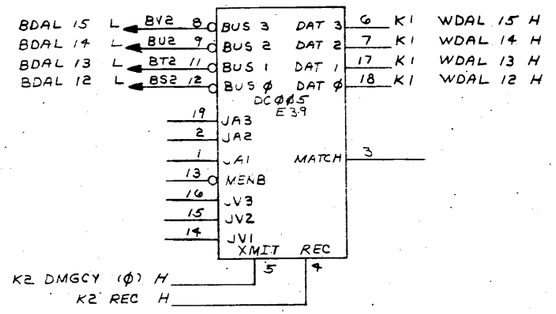
CHK	CHANGE NO.	REV.

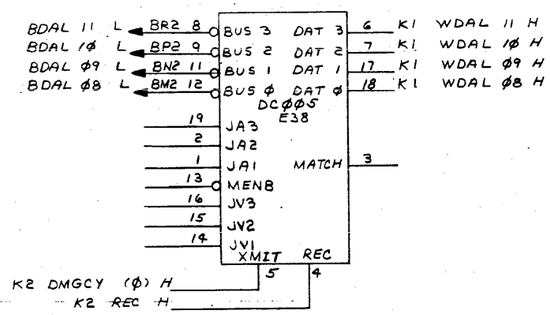
K3

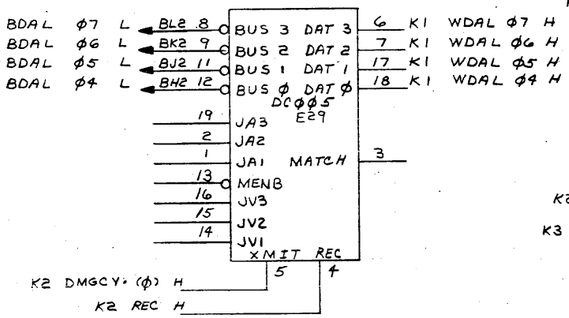
TITLE: LSI-11 CPU
SIZE D | CODE CS | NUMBER M727Ø-Ø-1 | REV. E
SCALE | SHEET 3 OF 5 | DIST.

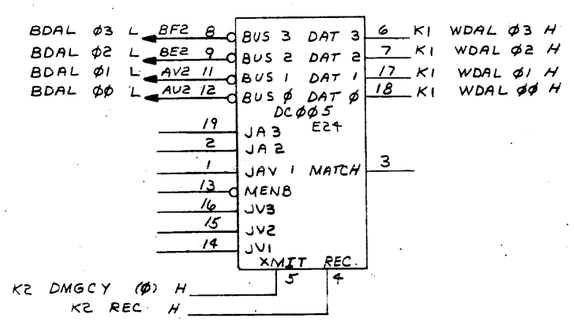
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

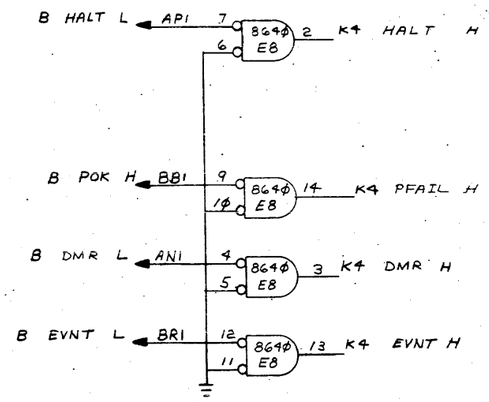
NOTES:
1. THE WAKE UP CIRCUIT MAY BE DISABLED BY REMOVING C81.

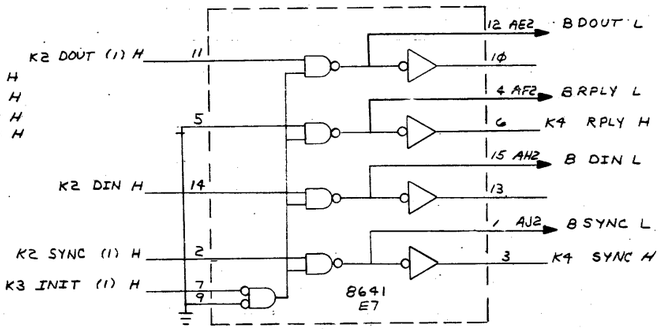


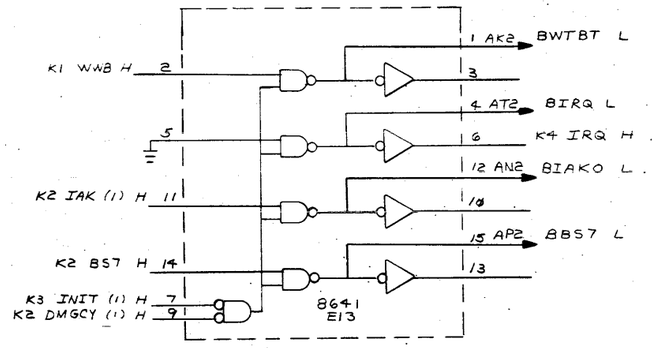


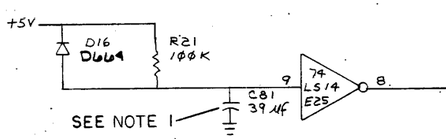


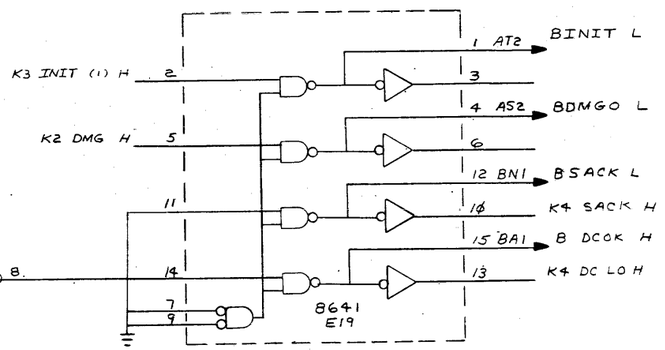










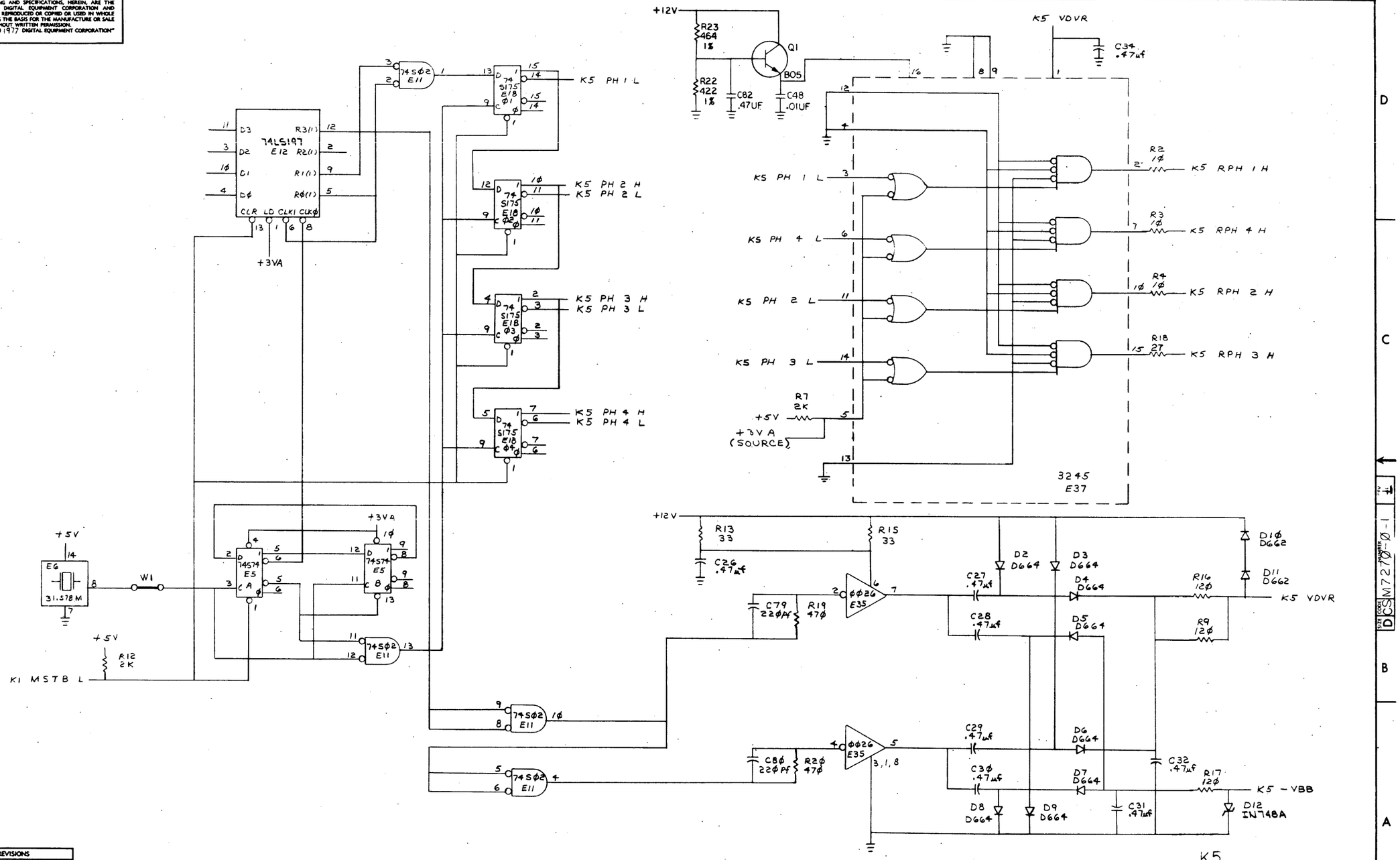


REVISIONS		
CHK	CHANGE NO.	REV.

K4

TITLE: LSI-11 CPU
SIZE D | CODE CS | NUMBER M727Ø-Ø-1 | REV. E
SCALE — | SHEET 4 OF 6 | DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



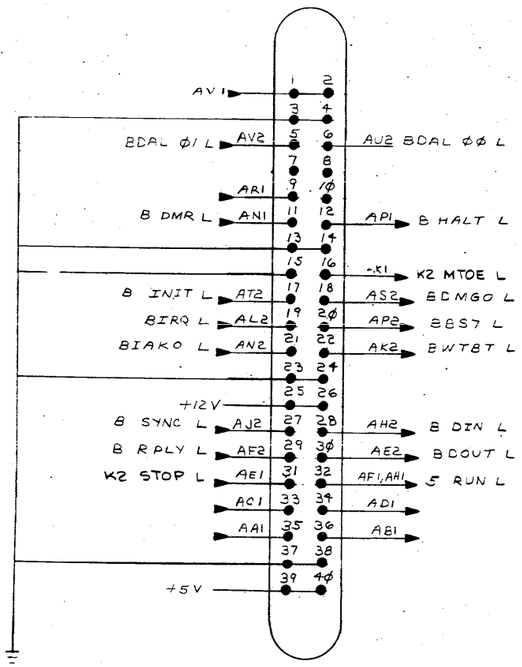
K5

REVISIONS		
CHK	CHANGE NO.	REV.

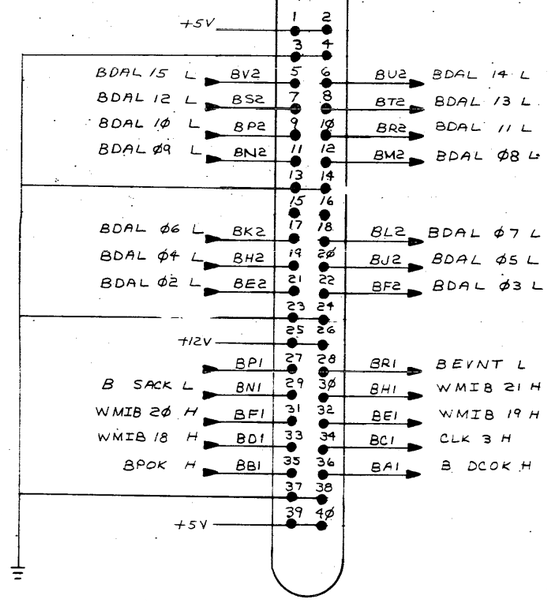
TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 CPU	D	CS	M7270-0-1	K
SCALE	SHEET 5 OF 6	DIST.		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

J1



J2



REVISIONS		
CHK	CHANGE NO.	REV.

MANUFACTURE PLUGS

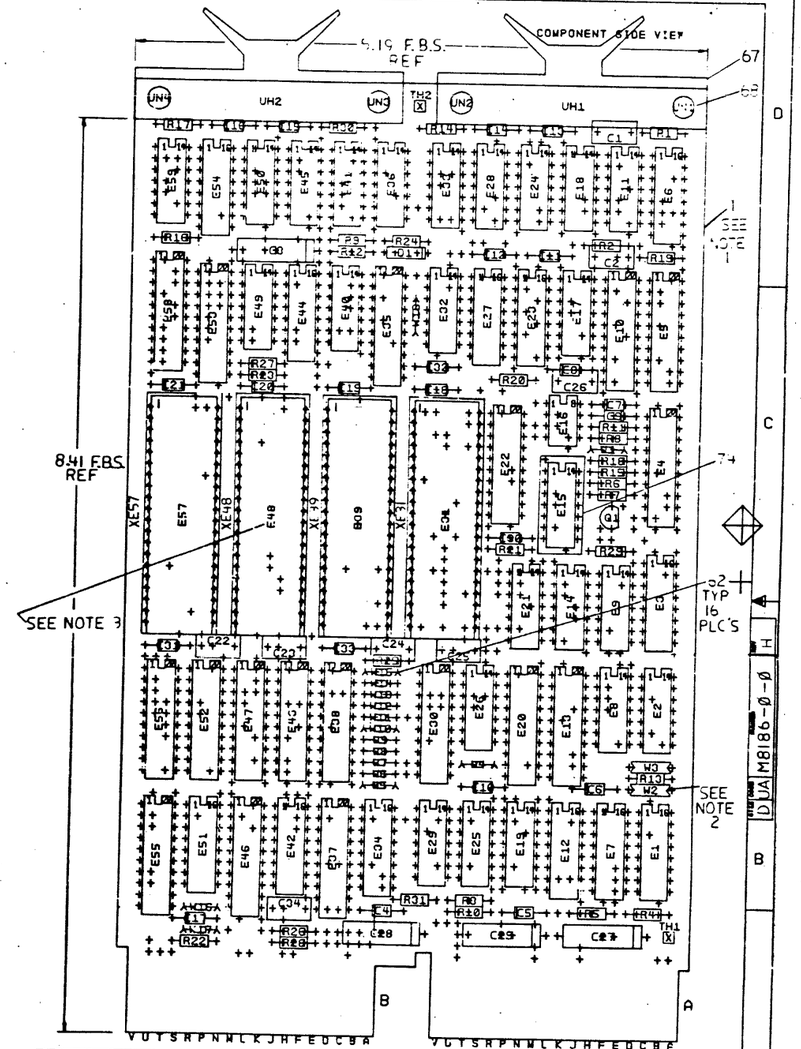
DEC FORM NO. DRD 138

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 CPU	D	CS	M727Ø-Ø-1	L
SCALE 2/1	SHEET 6 OF 6	DIST.		

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 19/ DIGITAL EQUIPMENT CORPORATION

JUMPER CONFIGURATIONS

JUMPER	NAME	FUNCTIONALITY	SHIPPING STATUS
W1	MASTER CLOCK	IN=ENABLED	IN
W2	RESERVED FOR DEC USE	FACTORY CONFIGURED, DO NOT CHANGE	OUT
W3	RESERVED FOR DEC USE	FACTORY CONFIGURED, DO NOT CHANGE	IN
W4	EVENT LINE ENABLE	OUT=ENABLED	IN
W5,W6	POWER UP MODE	MODE 0: NAME PC@24, PS@26; W5 OUT; W6 OUT MODE 1: NAME CONSOLE ODT; W5 IN; W6 OUT MODE 2: NAME BOOTSTRAP; W5 OUT; W6 IN MODE 3: NAME EXTENDED MICROCODE; W5 IN; W6 IN	W5-IN W6-OUT
W7	HALT/TRAP OPTION	IN=TRAP TO 10_8 ON HALT OUT=ENTER CONSOLE ODT ON HALT	OUT
W8	BOOTSTRAP ADDRESS	IN=POWER UP TO 173???$_8$ OUT=POWER UP TO ADDRESS SPECIFIED BY W9-W15	IN
W9-W15	USER SELECTABLE BOOTSTRAP ADDRESS	W9-W15 CORRESPOND TO ADDRESS BITS 9 THRU 15 RESPECTIVELY IN=LOGIC 1, OUT=LOGIC 0	IN
W16,W17	RESERVED FOR DEC USE	FACTORY CONFIGURED, DO NOT CHANGE	IN
W18	WAKE-UP CIRCUIT	OUT=ENABLED	IN



NOTES: 1. REFER TO PARTS LIST FOR ALL NUMBERED ITEMS.
2. W2 IS A SPARE JUMPER
3. E39, E49 & E57 ARE SPARE IC'S.

CHK	CHANGE NO	REV
		H

STEP ξ	↑ Y AXIS	STEP	TIMES
REPEAT	→ X AXIS	STEP	TIMES

SIGNATURES	DATE
DRN.	
CHK'D.	
MECH. ENG.	
PROJ. ENG.	
PROD.	

digital

TITLE: KDF11-A CPU

SIZE	CODE	NUMBER	REV
D	JA	M8186-?-?	H

SCALE 2:1 SHT. 1 OF 1

ETCH REV. D-P4

NEXT HIGHER ASSY. B-DD-M812?-?

1 WO# 2?4???

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 , DIGITAL EQUIPMENT CORPORATION"

DMA REQUEST GRANT & SELECTION ACKNOWLEDGE

KI REARB B L
KI REARB A H
8640 E25
74LS00 E45
KI SYDMR H
74S00 E2
74S04 E14
+3V
74 SII2 E44
K2 MCLK L
KI DMA ENA (1) H
74 S374 E24
K2 E65 H
KI DMA ENA (0) H
KI INIT L
74LS08 E28
KI BUS DISABLE (1) L
74 S374 E58
K2 65 CLK H
(TP3)
BSACK L
BNI
8640 E25
74 S240 E4
(19)
KI SYNC REP H
C1 750PF
R1 47K +5V
74 LSI23 E6
KI REARB B L
74 LS74 E11
KI OUT CYC L
K2 RESTART END H
K2 MCLK L
74LS27 E17
74S00 E2
KI DOUT L
8881 E8
AE2
BDOUT L
K2 E293 H
BDOUT CONTROL
8641 E12
AS2
BDMGO L
ALLOW START OF BUS CYCLE
K4 MIB 12
K4 MIB 07
74LS00 E45
74 LS273 E10
K2 MCLK L
KI DINIT L
74LS14 E40
KI BUS CYC H
KI BUS CYC L
BSYNC CONTROL
74 S240 E4
(TP4)
KI MIB 07 B L
74 LS273 E10
KI COMREP L
74LS11 E41
K2 E33 L
BSYNC F/F
+3V
74 SII2 E44
KI SYNC (1) H
8641 E12
AJ2
BSYNC L
KI RSYNC H
KI REARB A H
KI REARB B H
KI REARB B L
74LS27 E17
74 S374 E58
74S04 E14
K2 65 CLK H
(TP3)
74 S240 E4
KI DIN H
KI DIN CYC H
74S00 E2
KI DIN L
R21 2K
8881 E8
AH2
BDIN L
K2 E163 H
BDIN CONTROL
KI DLY DOUT L
K2 SYNC RESET L
74S20 E18
74S08 E9
KI BUS CYC L
K2 RESTART END H
KI SYNC REP L
KI DOUT L
K2 65 CLK H
K2 65 CLK L
(TP1)
(TP3)
POWER-UP CONTROL
18 μsec till 23
H for REPLY
R24 1K +5V +3V
KI SYNC REP H
K2 E98 H
74 276 E35
KI DMA ENA (1) H
74S32 E32
KI SYNC / DMA ENA H
KI INIT L
TIMEOUT CKTRY
C2 750PF
R2 47K +5V
KI DIN L
KI DOUT L
74LS10 E36
74 LSI23 E6
L for 18μs
K2 E423 H
74LS11 E41
KI TIMEOUT H (K2)(K1)
KI BUS ERR H (K2)
74 LS273 E10
K2 MCLK L
KI DINIT L
R14 1K
K4 MIB 13
K2 E423 H
8881 E8
AN2
BIAK L
23266A1-00 E23
32 X 8 TRI STATE PROM
I/O CODE
K4 MIB 12
K4 MIB 09
K4 MIB 08
KI BUS CYC H
KI SYNC / DMA ENA H
KI CLK HOLD H
KI BUS ENA H
KI DIN CYC H
KI OUT CYC L
KI WTBT H (OUT)
KI CLK STUT H (TO CLK CNTRL)
Bus Control Rom
BUS & CPU INIT
(50mS)
W18
+5V
R12 100K
D1 D664
C3 39UF
74LS14 E40
BAI
BDCOK H
8641 E34
KI INIT H
KI INIT L
74 S374 E22
74S74 E49
(TP2)
K2 65 CLK H
K2 65 CLK L
WAKE-UP CKT
DATI RECEIVER CONTROL
+5V
R23 1.5K
KI BUS INIT H
74S05 E59
AT2
BINIT L
K4 MIB 14
K2 MCLK L
KI DINIT L
74 LS273 E10
BUS INITIALIZE
TP1
R19 180
+5V
R3 2K
K4 MREPLY L
K2 E130 L
8640 E25
8641 E12
AF2
BRPLY L
BRPLY CKTRY
KI DIN L
74S32 E32
74LS08 E28
K3 ENA BSIO L
R22 2K
KI 2908 OE L
C34 100 PF
KI TIMEOUT H
NEEDED TO RESTART CLOCK IF NO BRPLY RECEIVED
KI SYNC REP H
KI SYNC REP L
KI RPLY RESTART L
KI DOUT HOLD L
74 S374 E58
K2 65 CLK H
TP3
R16 180
used to stop clock until slave responds

REVISIONS			
CHK	CHANGE NO.	REV.	
M	REVISED & REDRAWN M8186-ML004 M8186-ML006	E	
R. BADEAU			
M8186-ML009		F	
M. TEHRANIAN			
M8186-ML010		H	
GREG OPP			

DRAWN	Digital Bureau 14 FEB 79
CHK'D	A.C. Wilson 12 SEP 79
ENG.	R.G. Mabel 12 SEP 79
PROJ.	R.G. Mabel 12 SEP 79
PROD.	A. Soucy 19 SEP 79
NEXT HIGHER ASSY.	B-DD-M8186-0
SCALE	—
SHEET	1 OF 4
FIRST USED ON	KDF11-A
TITLE	KDF11-A CPU (K1)
SIZE	D
CODE	CS
NUMBER	M8186-0-1
REV.	H
DIST.	

digital

DCS M8186-0-1 H

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979, DIGITAL EQUIPMENT CORPORATION"

A - used for Start and Stop

B - used for mmu cycle

C - used for reset cycle

D - used for stutter cycle

Originally used w/ faster crystal
65 ns for faster Xtal
72.5 ns for present XTAL

INT. CKTRY.

CLOCK CKTRY

CLOCK RESTART

TRAP SERVICE

MEM MANAGMENT CKTRY

*ALLOWS EXTRA TIME FOR THE MMU DURING PROGRAM RELOCATION

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE KDF11-A CPU (K2)		SIZE D	CODE CS	NUMBER M8186-0-1	REV. H
SCALE	SHEET 2 OF 4	DIST.			

M8186-0-1 H

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"

330/680 TERM E5
BDAL 15 L (BV2) 15
BDAL 14 L (BU2) 14
BDAL 13 L (BT2) 7
BDAL 12 L (BS2) 6
BDAL 11 L (BR2) 13
BDAL 10 L (BP2) 12
BDAL 09 L (BN2) 5
BDAL 08 L (BM2) 4
BDAL 07 L (BL2) 11
BDAL 06 L (BK2) 10
BDAL 05 L (BJ2) 3
BDAL 04 L (BH2) 2
BDAL 03 L (BF2) 9
BDAL 02 L (BE2) 1

330/680 TERM E7
BIRQ 5 L (AA1) 13
BIRQ 6 L (AB1) 11
BIRQ 4 L (AL2) 10
BWTBT L (AK2) 9
BDIN L (AH2) 7
BDOUT L (AE2) 6
BIAK L (AN2) 15
BSYNC L (AJ2) 1
BRPLY L (AF2) 4
BDMR L 12
BBS7 L (AP2) 14
BDAL 17 L (AD1) 5
BDAL 16 L (AC1) 2
BHALT L (AP1) 3

330/680 TERM E42
BDMGO L (AS2) 12
BPOK H (BB1) 11
BDCOK H (BA1) 15
BINIT L (AT2) 14
BDAL 01 L (AV2) 1
BDAL 00 L (AU2) 2
BSACK L (BN1) 3
BEVENT L (BR1) 4
BIRQ 7 L (BP1) 5
BDAL 21 L (BF1) 13
BREF L (AR1) 6
BDAL 20 L (BE1) 10
BDAL 19 L (BD1) 9
BDAL 18 L (BC1) 7

K1 WTBT H
K2 PRECSEL H
74LS75 E27
K3 REC DAL 17
K3 REC DAL 16
K3 DAL FF CLK
K3 BDAL ENA L
2908 E37 DRCP BE RLE OE
ODD
AK2 BWTBT L
AP2 BBS7 L
ADI BDAL 17 L
AC1 BDAL 16 L
K1 2908 OE L

FOR ODT CONTROL
K4 DAL 01
K2 MCLK L
K4 DGP07 L
74S02 E33
74LS10 E36
74LS240 E20
K4 BSIO
FROM CONTROL CHIP
K4 DAL 00
K4 DAL 17
R5 680
FROM MMU
K4 DAL 16
R4 680
K2 MME HOLD H
K3 ENA BSIO L
74LS00 E45
K4 MIB 06
K1 MIB 07B L
+3V
74 J 27G K E35
K2 MCLK L
K1 INIT L
74LS244 E53
K4 MIB 15
R29 150
K3 DMMUS L
K4 MIB 12
74S240 E4
74S20 E18
K2 E98 H
K2 E33 H
74S241 E13
(TP4)
K2 E130 H
K4 MIB 03
K3 FDIN ENA L
K2 PRECSEL H

2908 E47 DRCP BE OE RLE
K4 DAL 03 BF2 BDAL 03 L
K4 DAL 02 BE2 BDAL 02 L
K4 DAL 01 AV2 BDAL 01 L
K4 DAL 00 AU2 BDAL 00 L

2908 E52 DRCP BE OE RLE
K4 DAL 07 BL2 BDAL 07 L
K4 DAL 06 BK2 BDAL 06 L
K4 DAL 05 BJ2 BDAL 05 L
K4 DAL 04 BH2 BDAL 04 L
TO BUS

2908 E55 DRCP BE OE RLE
K4 DAL 11 BR2 BDAL 11 L
K4 DAL 10 BP2 BDAL 10 L
K4 DAL 09 BN2 BDAL 09 L
K4 DAL 08 BM2 BDAL 08 L

2908 E56 DRCP BE OE RLE
K4 DAL 15 BV2 BDAL 15 L
K4 DAL 14 BU2 BDAL 14 L
K4 DAL 13 BT2 BDAL 13 L
K4 DAL 12 BS2 BDAL 12 L

K2 MMUSTR H (AM2)
K2 E163 H
74S32 E32
K3 DAL FF CLK H
K1 2908 OE L
K1 BUS ENA H
K2 E130 L
74 J 276 K E35
K1 BUS DISABLE (1) L
74LS00 E45
K3 BDAL ENA L
K1 INIT L

+5V
E26
W15 W14 W13 W12 W11 W10 W9 W8 W7 W6 W5
74LS240 E30
K4 DAL 15
K4 DAL 14
K4 DAL 13
K4 DAL 12
K4 DAL 11
K4 DAL 10
K4 DAL 09
K4 DAL 08
FAST DATA IN (DATI) MUX
74LS240 E20
K2 POK L
K4 DAL 07
K4 DAL 02
K4 DAL 01
K4 DAL 00
K3 FDIN ENA L
(Pg 324)

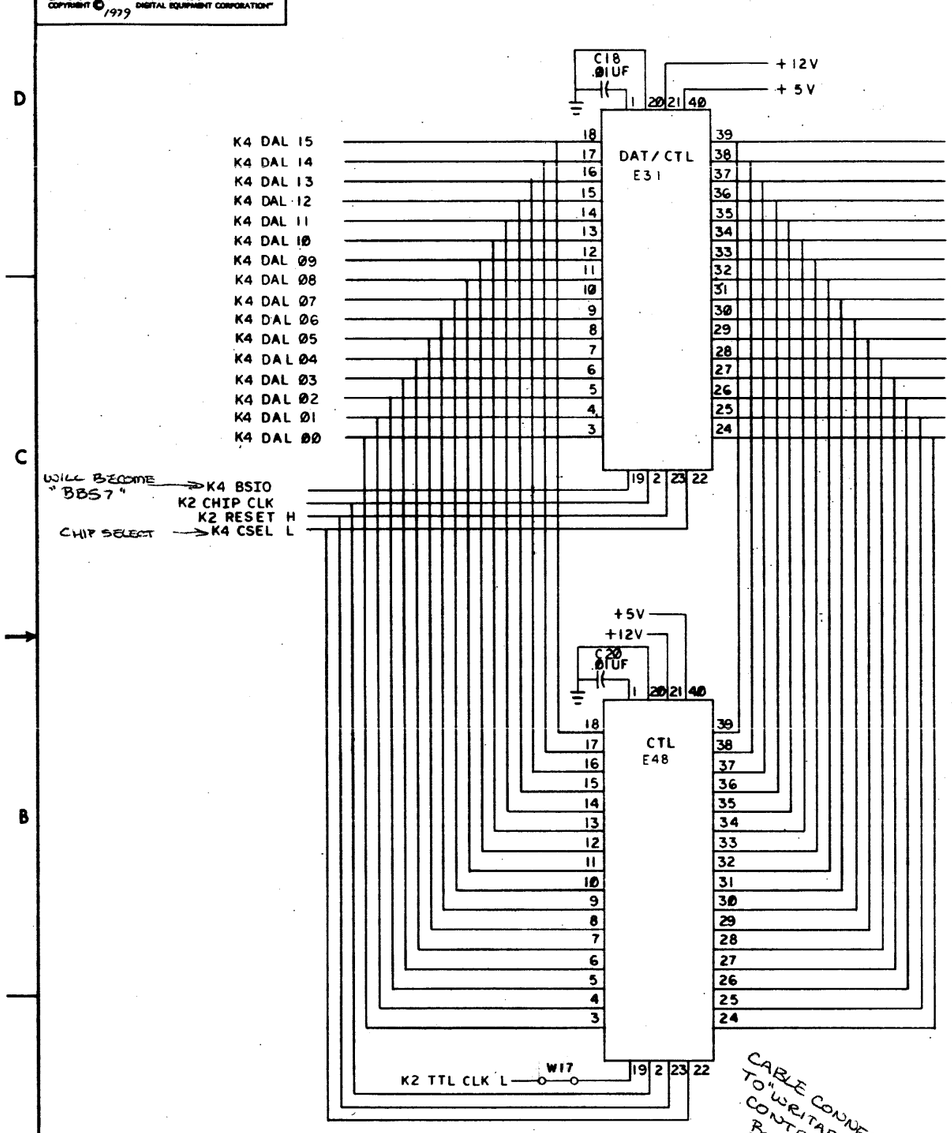
DRCP — TO FROM
BE — LOAD ~~FROM~~ BUS TO CHIP(2908) (DATO)
OE — ENABLE FROM CHIP TO K4 DAL (DATI)
RLE —

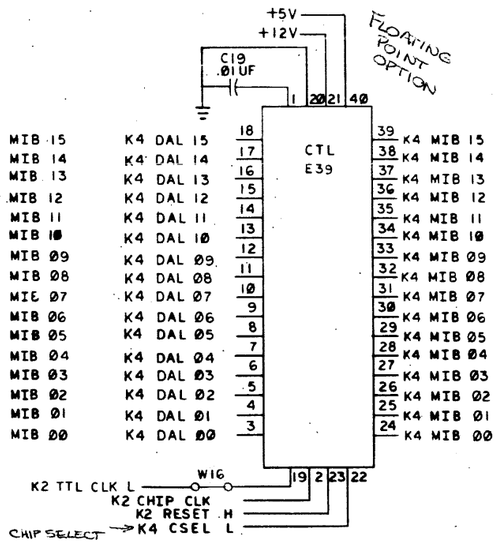
REVISIONS		
CHK	CHANGE NO.	REV.

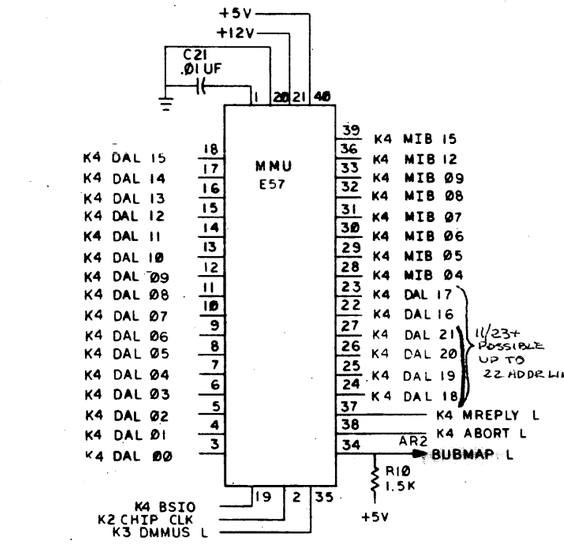
TITLE KDF11-A CPU (K3)			SIZE D	CODE CS
SCALE	SHEET 3 OF 4	DIST.	NUMBER M8186-0-1	REV. H

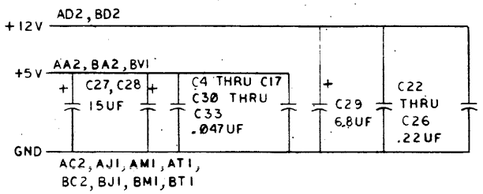
BBC FORM NO. BRD 138
ML2

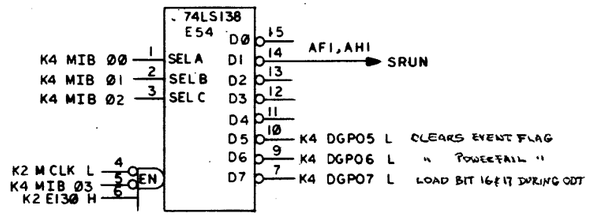
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"

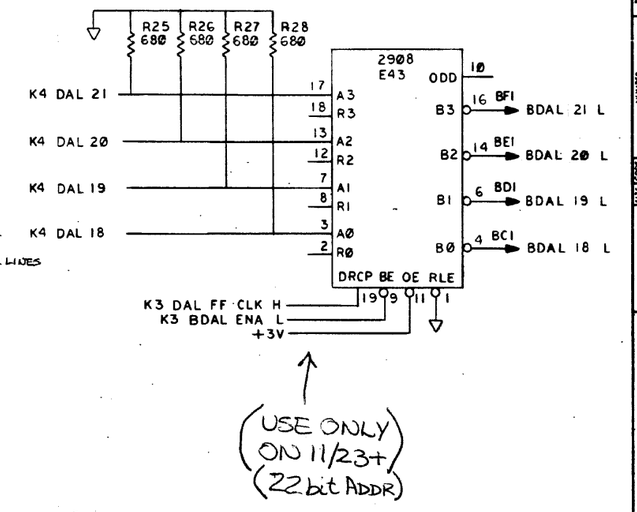










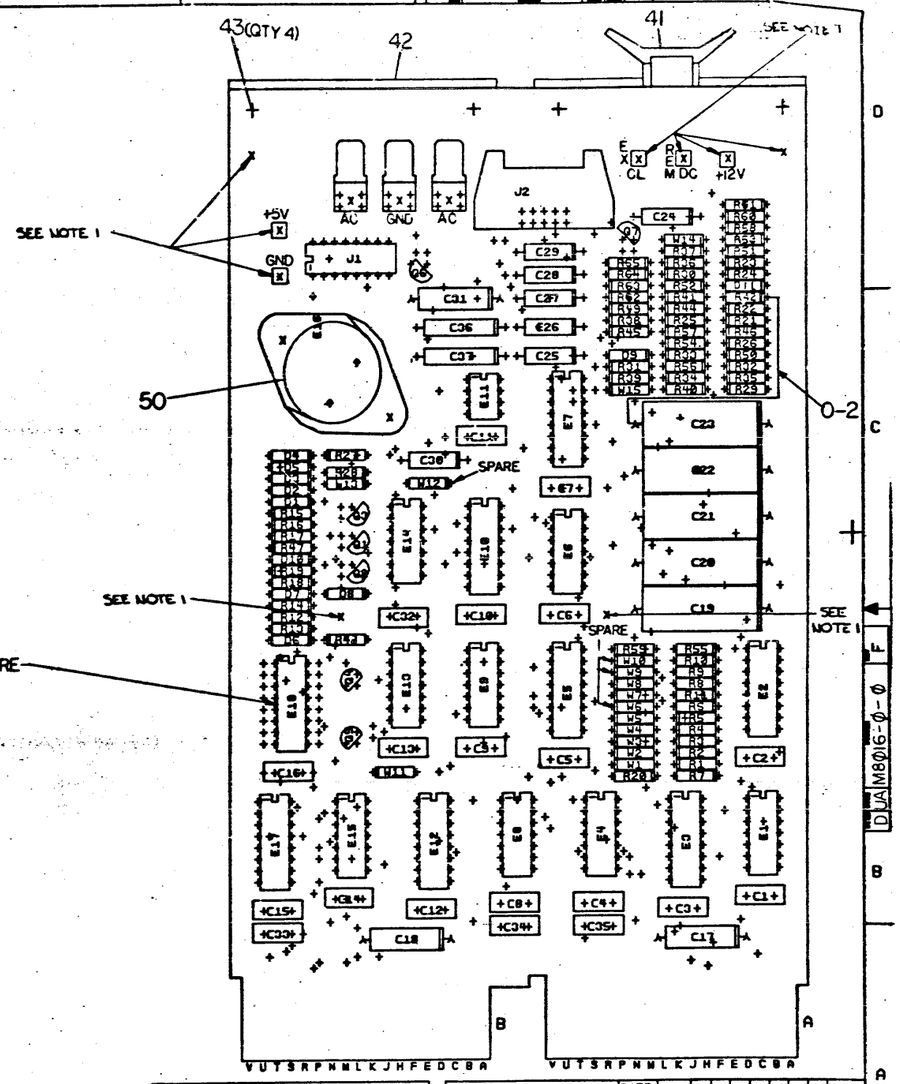


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	KDFII A CPU (K4)	SIZE	CODE	NUMBER	REV.
		D	CS	M8186-0-1	H
SCALE	SHEET 4 OF 4	DIST.			

REWORK INSTRUCTION
ETCH CUT SIDE 1
0-1 TO RIGHT SIDE OF R42

WIRE ADD SIDE 1 AS SHOWN
0-2 FROM R42 TO C23



NOTES: 1. FILL "X" HOLES DESIGNATED ON DRAWING WITH SOLDER MASKING COMPOUND BEFORE WAVE SOLDER.
2. E3, E12, E17 ARE OPTIONAL.

REV	CHK	CHANGE NO
D		M8016-1
E	J. HART	
F	MROO3	

ETCH REV. E
P.C. DESIGN DATA BASE REV. E

SIGNATURES	DATE
DRN.	
CHK'D	
ENG.	
PROJ. ENG.	
PROD.	
SCALE 2/1	
SHT. 1 OF 1	
NEXT HIGHER ASSY. B-DD-M8016-0	

digital

TITLE POWER FAIL
TIME CLOCK GEN.

SIZE	CODE	NUMBER	REV
D	UA	M8016-0-0	F

DUA M8016-0-0 F

MR 1 MS# 04253

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

NOTE:
1. UNLESS NOTED OTHERWISE, ALL +5V SOURCES ORIGINATE FROM THE LM309K +5 VOLT REGULATOR (VCC), AND IS REFERENCED TO EARTH (VIRTUAL) GROUND.

NOTE:
UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:

PACKAGE TYPE	VCC	GND
16 PIN DIP	16	8
14 PIN DIP	14	7
IC DEC T5451	8	4
IC DEC 8L40	8	1
IC DEC LM339	3	12

REVISIONS			
CHK	CHANGE NO.	REV.	
	M8016-01	D	
	M8016-MK002	E	
	M8016-MK003	F	

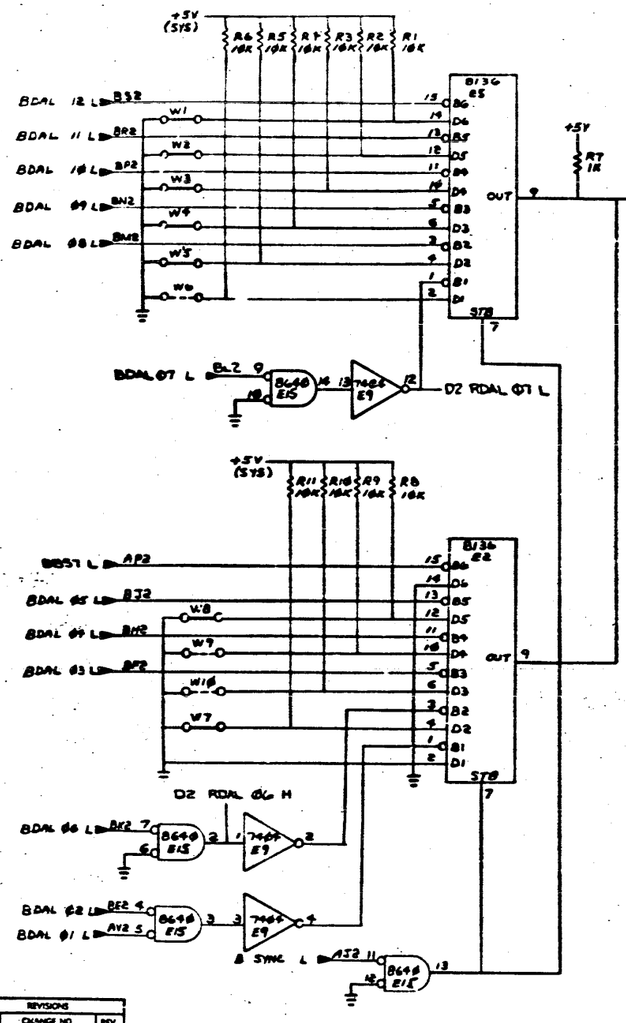
DRWN J. HART
CHK'D J. SURITS
ENG.
PROJ ENG.
PROD?
NEXT HIGHER ASSY. B-DD-M8016-2
SCALE NONE
SHEET 1 OF 3

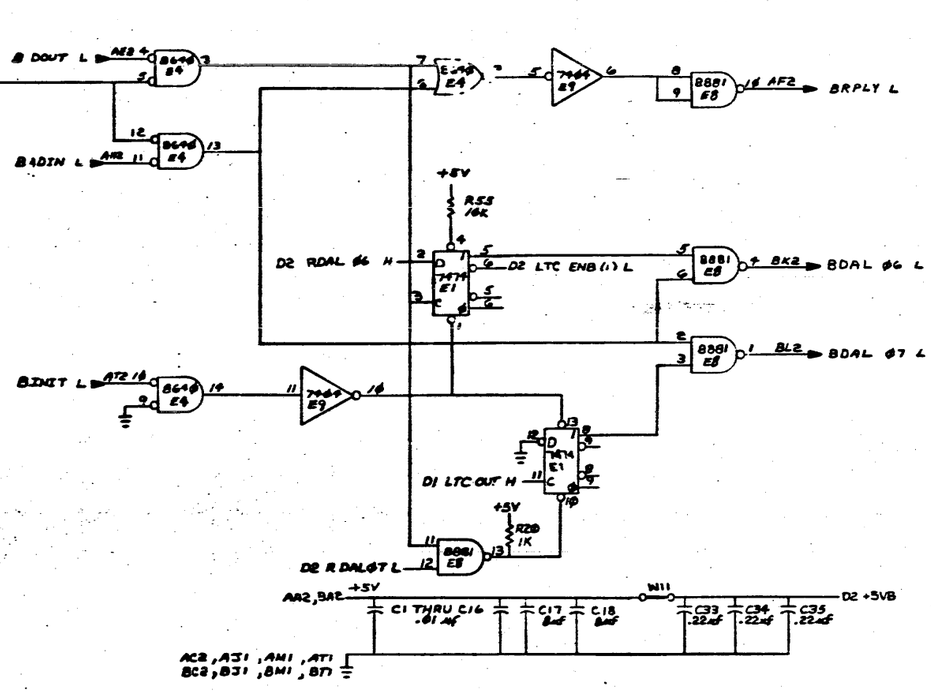
FIRST USED ON
TITLE PWR FAIL/LINE TIME CLK GENERATOR
SIZE D CODE CS NUMBER M8016-0-1 REV. F
DIST.

D1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS, WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

NOTE
1. +5V SOURCE FOR LOGIC ON THIS PAGE IS FROM SYSTEM POWER SUPPLY. (AA2, BA2)





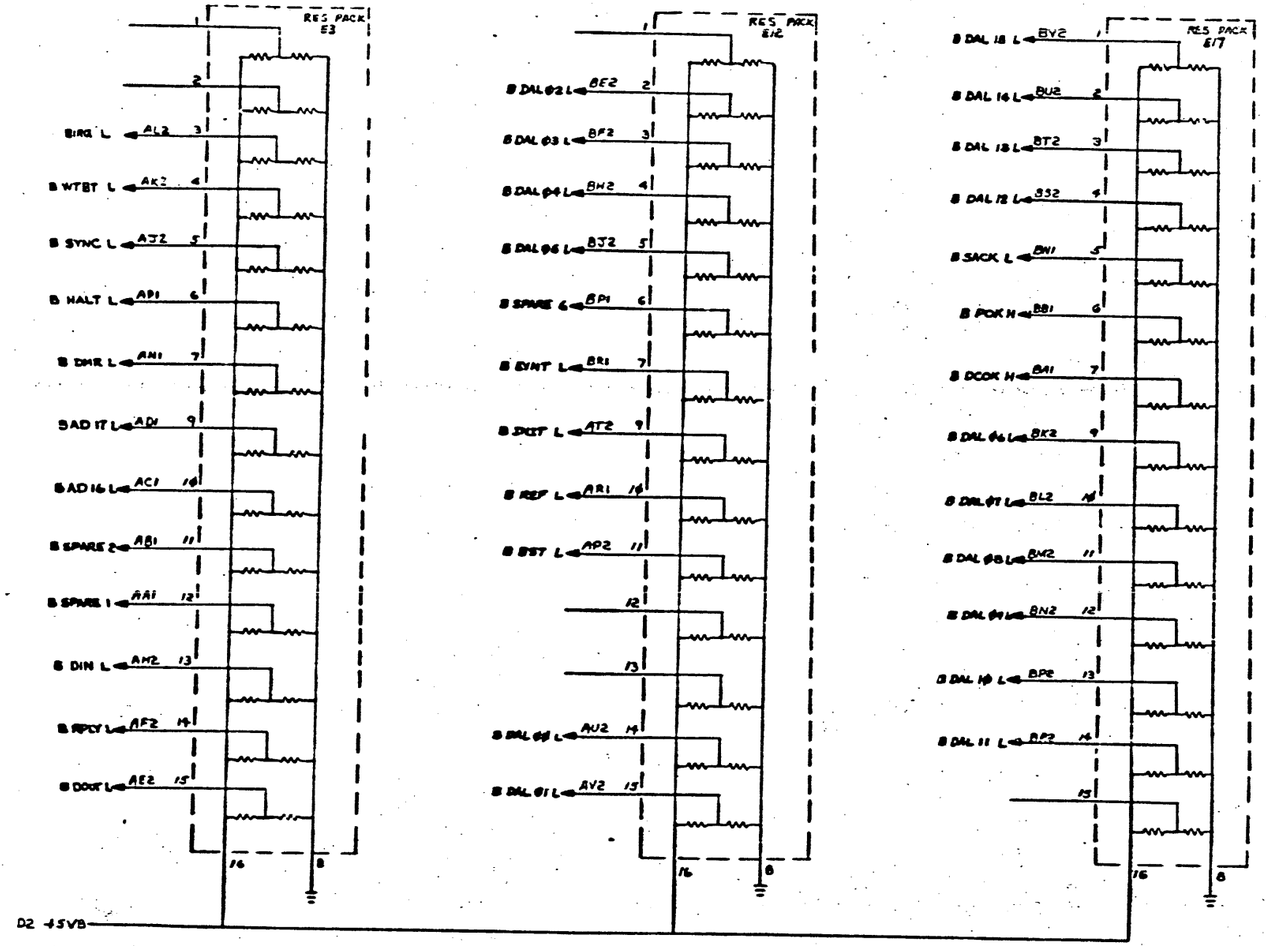
REVISIONS		
CHK	CHANGE NO	REV

D2

TITLE	SIZE	CODE	NUMBER	REV.
PWR FAIL/LINE TIME CLK GENERATOR	D	CS	M8Ø16-C-1	F
SCALE	SHEET 2 OF 3	DIST.		

1 MK

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1974 DIGITAL EQUIPMENT CORPORATION



NOTE:
1. CURCUIT SHOWN WITH OPTIONAL TERMINATION RESISTOR PACKS USED ON M8316-YB(120-OHM) AND M8316-YC (330 OHM).

2. W11 IS FOR VOLTAGE MARGINING
3. +5V SOURCE ON THIS PAGE IS SYSTEM POWER (AA2; BA2).

JUMPER USAGE CHART

JUMPER	INSTALLED	REMOVED
W1	*YES	NO
W2	*YES	NO
W3	*YES	NO
W4	*YES	NO
W5	*YES	NO
W6	NO	*YES
W7	*YES	NO
W8	*YES	NO
W9	NO	*YES
W10	NO	*YES
W11	*VOLTAGE MARGINING	EXTERNAL 5V SOURCE MAY BE USED
W12	ENABLE MANUAL CONTROL OR CONTINUOUS LTC INTERRUPT REQUEST OPERATION. OR NOT INSTALL WHEN W13 IS INSTALLED.	*DISABLE CONTINUOUS OR MANUAL OPERATION.
W13	*LTC INTERRUPT REQUESTS CAN BE ENABLED AND DISABLED BY PROGRAM. DO NOT INSTALL WHEN W12 IS INSTALLED.	LTC INTERRUPT REQUESTS CANNOT BE PROGRAM CONTROLLED.
W14	*CONSOLE (OPTIONAL) LTC ON/OFF SWITCH ENABLED.	CONSOLE LTC ON/OFF SWITCH DISABLED.
W15	*LTC SIGNAL OCCURS AT THE POWER LINE FREQUENCY.	LTC FREQUENCY IS DETERMINED BY AN EXTERNAL SOURCE VIA EXT TIME REF ETCHED PAD ON MODULE.

*FACTORY-JUMPERED CONFIGURATION

REVISIONS		
ECO	CHANGE NO	REV

D3

TITLE PWR FAIL/LINE TIME CLK GENERATOR
SIZE D CODE DCS NUMBER M8016-0-1 REV F
SCALE SHEET 3 OF 3 DIST
MR

THIS DOCUMENT AND SPECIFICATIONS, DESIGNS, AND THE INFORMATION CONTAINED HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION

MODE	SW1 S1	S2	S3	S4	S5	S6	S7	S8	MICRO ADDRESS RESPONSE
I	ON	OFF	OFF	ON	OFF	ON	OFF	-	MICRO ADDRESSES 2000-3777 CORRESPOND TO WCS RAM ADDRESSES 0-1777
II	OFF	ON	OFF	ON	OFF	OFF	ON	-	INITIAL MICRO ADDRESSES 3000-3777 CORRESPOND TO WCS ADDRESSES 0-777. TOGGLED MICRO ADDRESSES 3000-3777 CORRESPOND TO WCS ADDRESSES 1000-1777
III	OFF	OFF	ON	ON	OFF	ON	OFF	-	MICRO ADDRESSES 2000-3777 CORRESPOND TO WCS RAM ADDRESSES 0-1777. THIS IS IDENTICAL TO MODE I, EXCEPT THE TWO 512 WORD BLOCKS OF RAM ARE SWAPPED.
IV	ON	OFF	OFF	OFF	ON	ON	OFF	-	MICRO ADDRESSES 0-1777 CORRESPOND TO WCS RAM ADDRESSES 0-1777

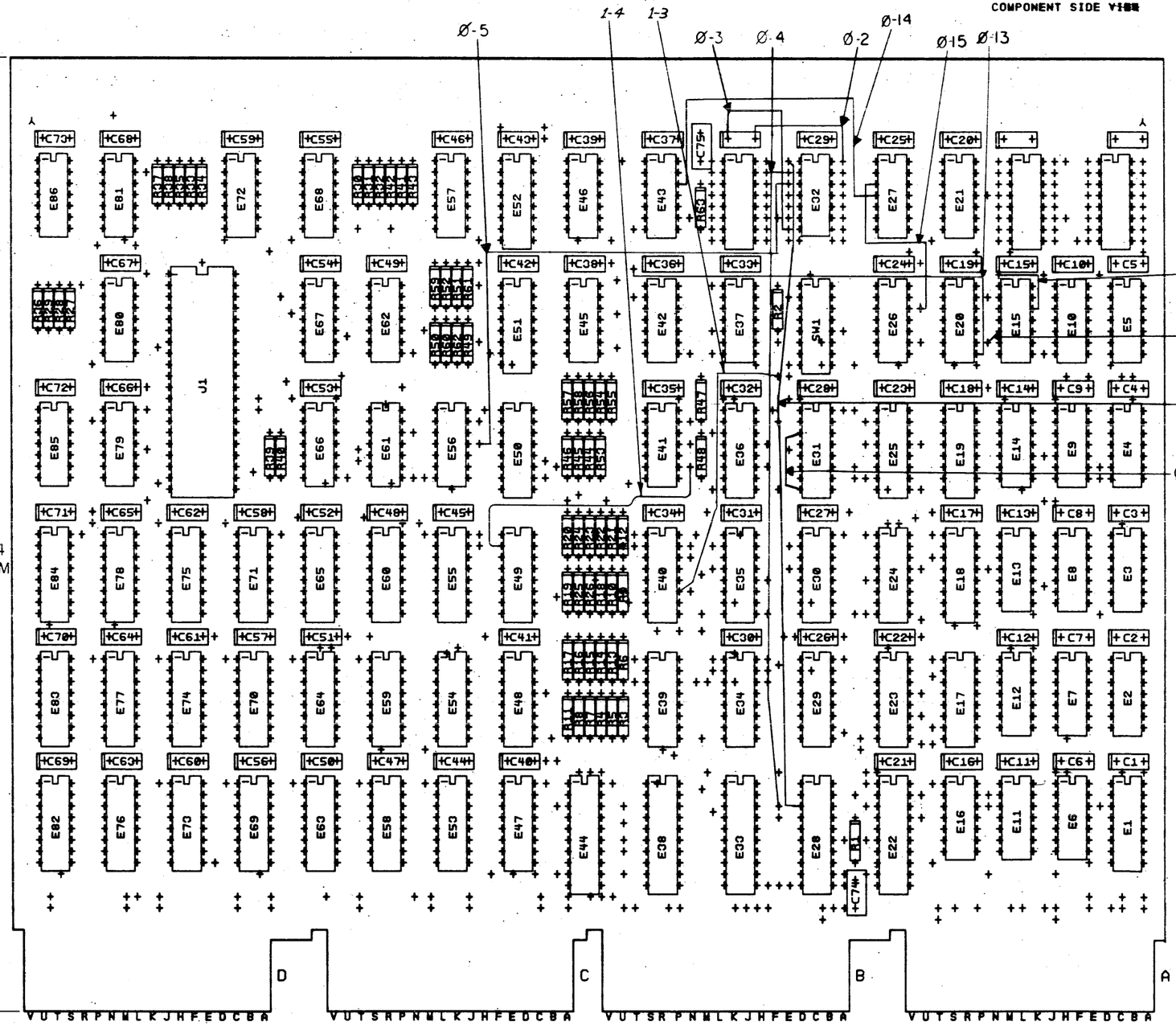
WCS COMMAND/STATUS REGISTER (177540)	
BIT	FUNCTION
15	WHEN SET TO A 1 THE TRACE RAM ADDRESS IS INITIALIZED TO Ø AND THE PAGING LOGIC IS INITIALIZED TO THE LOWER 512 WORDS OF RAM, SUBSEQUENTLY CLEARING THIS BIT TO A Ø ENABLES THE TRACE RAM AND PAGING LOGIC.
14	WHEN SET TO A 1, THE DATA AT THE CURRENT TRACE RAM LOCATION CAN BE READ (ONLY) AT ADDRESS 177542.
13	WHEN SET TO A 1 AND THEN CLEARED TO A Ø, THE NEXT TRACE RAM LOCATION IS ADDRESSED TO BE ACCESSED USING CSR BIT (14).
12	WHEN SET TO A 1, THE WCS IS ENABLED TO RESPOND TO THE LSI-11 MIB. WHEN CLEARED TO A Ø, THE WCS WILL NOT RESPOND TO THE LSI-11 MIB AND THE RAM LOCATION POINTED TO BY CSR BITS 9;Ø CAN BE READ OR WRITTEN (RAM BITS <23:16> AT 177544 AND RAM BITS <15:Ø> AT 177542).
11-1Ø	UNUSED, WILL ALWAYS BE READ AS CLEARED TO Ø.
9-Ø	THE WCS RAM ADDRESS THAT CAN BE ACCESSED WHEN BITS <14,12> ARE CLEARED TO A Ø.

8.44
214.37MM
F.B.S.

2115-02	8	16
74298	8	16
74174	8	16
74LS253	8	16
74193	8	16
7489	8	16
8640	1	8
74148	8	16
SD5101	4	11
DC005	10	20
DC004	10	20
ICTYPE	GND	+5V

GND AND +5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS



NOTES: Ø-1: ADD WIRE FROM E31-3 TO E31-8.
Ø-2: ADD WIRE FROM E32-14 TO NEAR CAPACITOR PAD OVER SPARE IC LEFT OF E32.
Ø-3: ADD WIRE FROM E32-7 TO FAR CAPACIATOR PAD OVER SPARE IC LEFT OF E32.
Ø-4: ADD WIRE FROM E32-2 TO PTH RIGHT OF E33-18
Ø-5: ADD WIRE FROM E32-3 TO PTH LEFT OF E50-4
Ø-6: ADD WIRE FROM E32-1 TO E28-3.
1-3: FROM E40-11 TO PTH TO THE RIGHT OF C32.

CHG	CHANGE NO	REV
	TPG M8Ø18-ØØØØ11	C
	A. DRINKARD	
	M8Ø18-Ø-Ø	D
	JOHN CURTIS	

NOTES: Ø-8: ADD WIRE FROM E15-5 TO PTH LEFT OF E15-6.
~~Ø-9: SIDE 2 ETCH CUT FROM E15-4 AND PTH ABOVE E15-1.~~
~~Ø-10: SIDE1 ETCH AFTER PTH ABOVE LEFT OF E42-1.~~
~~Ø-11: SIDE1 ETCH CUT AFTER E43-12.~~
Ø-12: ADD WIRE FROM E15-12 TO PTH ABOVE E15-1.
Ø-13: ADD WIRE FROM E20-8 TO PTH ABOVE LEFT OF E42-1.
Ø-14: ADD WIRE FROM E27-4 TO E43-12.
Ø-15: ADD WIRE FROM E27-3 TO PTH RIGHT OF E26-12.
1-4: FROM E49-2 TO PTH TO THE RIGHT OF E49.

BOARD FABRICATION INFORMATION	
PANEL SIZE	
PANEL DATA DWG.#	
PANEL MAT'L	
QTY. OF LAYERS	
COPPER THICKNESS	
PTH. X PRINT AND ETCH	
MODULE INSERTED 100 TIMES OR MORE?	

SIGNATURES	DATE
DRN. D. KRUEGER	12-27-76
CHK'D. J. CURTIS	1-6-77
ENG. A. Drinkard	8-22-77
PROJ.ENG. A. Drinkard	8-22-77
PROD.	12-1-77
SCALE 2/1	
SHT. 1 OF 1	
NEXT HIGHER ASSY. B-DD-M8Ø18-Ø	

digital

TITLE WRITEABLE CONTROL STORE

SIZE	CODE	NUMBER	REV
D	UA	M8Ø18-Ø-Ø	D

ETCH REV. C-P1

MS#

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

MIB INTERFACE TRANSCIEVERS

K-1 OUT ØØ H → SD5101 E67 D → K-1 MIB ØØ L; R62 47Ø +5V → K-1 REC ØØ H
K-1 MIB ØØ L
K-1 OUT Ø1 H → SD5101 E67 D → K-1 MIB Ø1 L; R61 47Ø +5V → K-1 REC Ø1 H
K-1 MIB Ø1 L
K-1 OUT Ø2 H → SD5101 E62 D → K-1 MIB Ø2 L; R60 47Ø +5V → K-1 REC Ø2 H
K-1 MIB Ø2 L
K-1 OUT Ø3 H → SD5101 E62 D → K-1 MIB Ø3 L; R59 47Ø +5V → K-1 REC Ø3 H
K-1 MIB Ø3 L
K-1 OUT Ø4 H → SD5101 E37 D → K-1 MIB Ø4 L; R52 47Ø +5V → K-1 REC Ø4 H
K-1 MIB Ø4 L
K-1 OUT Ø5 H → SD5101 E37 D → K-1 MIB Ø5 L; R51 47Ø +5V → K-1 REC Ø5 H
K-1 MIB Ø5 L
K-1 OUT Ø6 H → SD5101 E56 D → K-1 MIB Ø6 L; R50 47Ø +5V → K-1 REC Ø6 H
K-1 MIB Ø6 L
K-1 OUT Ø7 H → SD5101 E56 D → K-1 MIB Ø7 L; R49 47Ø +5V → K-1 REC Ø7 H
K-1 MIB Ø7 L

K-1 OUT Ø8 H → SD5101 E61 D → K-1 MIB Ø8 L; R48 47Ø +5V → K-1 REC Ø8 H
K-1 MIB Ø8 L
K-1 OUT Ø9 H → SD5101 E61 D → K-1 MIB Ø9 L; R47 47Ø +5V → K-1 REC Ø9 H
K-1 MIB Ø9 L
K-1 OUT 1Ø H → SD5101 E66 D → K-1 MIB 1Ø L; R46 47Ø +5V → K-1 REC 1Ø H
K-1 MIB 1Ø L
K-1 OUT 11 H → SD5101 E66 D → K-1 MIB 11 L
K-1 OUT 12 H → SD5101 E66 D → K-1 MIB 12 L
K-1 OUT 13 H → SD5101 E80 D → K-1 MIB 13 L
K-1 OUT 14 H → SD5101 E80 D → K-1 MIB 14 L
K-1 OUT 15 H → SD5101 E80 D → K-1 MIB 15 L
K-1 OUT 16 H → SD5101 E80 D → K-1 MIB 16 L
K-1 OUT 17 H → SD5101 E79 D → K-1 MIB 17 L
K-1 MIB 16 L
K-1 OUT 18 H → SD5101 E79 D → K-1 MIB 18 L
K-1 OUT 19 H → SD5101 E79 D → K-1 MIB 19 L
K-1 OUT 2Ø H → SD5101 E85 D → K-1 MIB 2Ø L
K-1 OUT 21 H → SD5101 E85 D → K-1 MIB 21 L

MIB DATA OUT SELECTION

K-4 DOUT ØØ H, K-6 PØ1 H, K-6 DABL L → 74S15 E45 → K-1 OUT ØØ H
K-4 DOUT Ø1 H → 74S15 E45 → K-1 OUT Ø1 H
K-4 DOUT Ø2 H → 74S15 E45 → K-1 OUT Ø2 H
K-4 DOUT Ø3 H → 74S15 E42 → K-1 OUT Ø3 H
K-4 DOUT Ø4 H → 74S15 E42 → K-1 OUT Ø4 H
K-4 DOUT Ø5 H → 74S15 E42 → K-1 OUT Ø5 H
K-4 DOUT Ø6 H → 74S15 E41 → K-1 OUT Ø6 H
K-4 DOUT Ø7 H → 74S15 E41 → K-1 OUT Ø7 H
K-4 DOUT Ø8 H → 74S15 E41 → K-1 OUT Ø8 H
K-4 DOUT Ø9 H, K-6 RØ1 H, K-6 DABB L → 74S15 E57 → K-1 OUT Ø9 H
K-4 DOUT 1Ø H → 74S15 E57 → K-1 OUT 1Ø H
K-4 DOUT 11 H → 74S15 E57 → K-1 OUT 11 H

K-4 DOUT 12 H, K-6 RØ1 H, K-6 DABB L → 74S15 E68 → K-1 OUT 12 H
K-4 DOUT 13 H → 74S15 E68 → K-1 OUT 13 H
K-4 DOUT 14 H → 74S15 E68 → K-1 OUT 14 H
K-4 DOUT 15 H → 74S15 E72 → K-1 OUT 15 H
K-3 DOUT 16 H → 74S15 E72 → K-1 OUT 16 H
K-3 DOUT 17 H → 74S15 E72 → K-1 OUT 17 H
K-1 LOUT 18 H, K-6 DABC L, K-6 P23 H → 74S15 E81 → K-1 OUT 18 H
K-1 LOUT 19 H → 74S15 E81 → K-1 OUT 19 H
K-1 LOUT 2Ø H → 74S15 E81 → K-1 OUT 2Ø H
K-1 LOUT 21 H → 74S15 E86 → K-1 OUT 21 H

K-3 DOUT 18 H → 74174 E52 D4 → K-1 LOUT 18 H
K-3 DOUT 19 H → 74174 E52 D5 → K-1 LOUT 19 H
K-3 DOUT 2Ø H → 74174 E52 D2 → K-1 LOUT 2Ø H
K-3 DOUT 21 H → 74174 E52 D3 → K-1 LOUT 21 H
K-3 DOUT 22 H → 74174 E52 D4 R4(1) → AE1 → K-1 SROM 4 H
K-3 DOUT 23 H → 74174 E52 D5 R5(1) → AF1 → K-1 SROM 5 H
K-6 DABL L, K-6 PØ1 H → 74174 E52 CLR CLK
K-1 LOUT 18 H, K-1 LOUT 19 H → 74S11 E46
K-1 LOUT 2Ø H, K-1 LOUT 21 H → 74Ø7 E14
74S11 E46 + K-6 PØ2 H → 74S11 E46 → 74S74 E93 → K-1 PAGE H
K-6 CSR 15 L → 74S74 E93

PAGING LOGIC AND USER BITS

J1
K-1 MIB ØØ L
K-1 MIB Ø1 L
K-1 MIB Ø2 L
K-1 MIB Ø3 L
K-1 MIB Ø4 L
K-1 MIB Ø5 L
K-1 MIB Ø6 L
K-1 MIB Ø7 L
K-1 MIB Ø8 L
K-1 MIB Ø9 L
K-1 MIB 1ØL
K-1 MIB 11L
K-1 Ø2 H
K-1 Ø4 H
K-1 MIB 15L
K-1 MIB 14L
K-1 MIB 13L
K-1 MIB 12L
K-1 MIB 16L
K-1 MIB 17L
K-1 MIB 18L
K-1 MIB 19L
K-1 MIB 2ØL
K-1 MIB 21L

(K-1)

REVISIONS					
SYM	CHANGE NO.	REV.			
PC	M8018-00001	C	J. Hanks 18 MAR 76	A. DENKARD	
PC	M8018-ML002	D	A. Denkard 2 Jul 79	G. Spang 24 SEP 79	J.W. CURTIS
PC	M8018-ML004	E	K.P. Penn 26 Sep 79	K.P. Penn	JOHN CURTIS

DRN.	J. Dinsmore	8-3-76
CHK'D		
ENG.	A. Denkard	8-12-77
PROJ. ENG.	A. Denkard	8-22-77
PROD.		12-1-77
NEXT HIGHER ASSY.		
SCALE	—	
SHEET	1 OF 6	

FIRST USED ON: M8Ø18

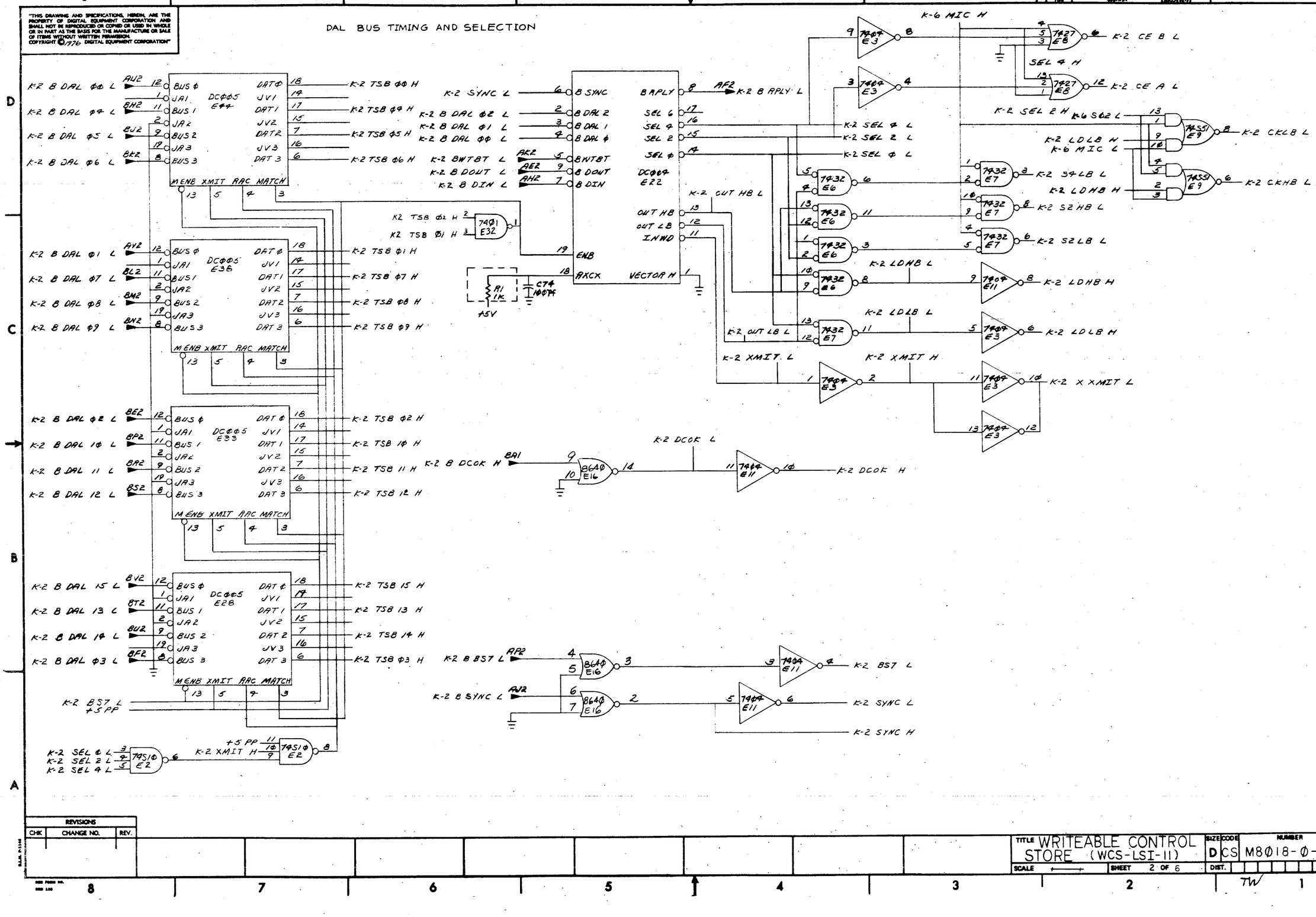
TITLE: WRITEABLE CONTROL STORE (WCS-LSI-11)

SIZE	CODE	NUMBER	REV.
D	CS	M8Ø18-Ø-1	E
DIST.			

DCS M8Ø18-Ø-1 W B A

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

DAL BUS TIMING AND SELECTION



REVISIONS		
CHK	CHANGE NO.	REV.

(K-2)

TITLE WRITEABLE CONTROL STORE (WCS-LSI-11)
SIZE D | CODE DCS | NUMBER M8018-Ø-1 | REV E
SCALE | SHEET 2 OF 6 | DIST.
TW

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

RAM ADDRESS MUX AND LATCH

DATA RAMS

(K-3)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
WRITEABLE CONTROL STORE (WCS-LSI-11)	D	CS	M8018-0-1	E
SCALE	SHEET 3 OF 6	DIST.		

TW

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

DATA RAMS

K-2 TSB Ø0 H — K-4 DOUT Ø0 H — R3 390 +5V — 2115 E97
K-2 TSB Ø1 H — K-4 DOUT Ø1 H — R4 390 +5V — 2115 E53
K-2 TSB Ø2 H — K-4 DOUT Ø2 H — R5 390 +5V — 2115 E58
K-2 TSB Ø3 H — K-4 DOUT Ø3 H — R6 390 +5V — 2115 E63
K-2 TSB Ø4 H — K-4 DOUT Ø4 H — R7 390 +5V — 2115 E69
K-2 TSB Ø5 H — K-4 DOUT Ø5 H — R8 390 +5V — 2115 E73
K-2 TSB Ø6 H — K-4 DOUT Ø6 H — R9 390 +5V — 2115 E76
K-2 TSB Ø7 H — K-4 DOUT Ø7 H — R10 390 +5V — 2115 E82
K-2 TSB Ø8 H — K-4 DOUT Ø8 H — R11 390 +5V — 2115 E78
K-2 TSB Ø9 H — K-4 DOUT Ø9 H — R12 390 +5V — 2115 E54
K-2 TSB 10 H — K-4 DOUT 10 H — R13 390 +5V — 2115 E59
K-2 TSB 11 H — K-4 DOUT 11 H — R14 390 +5V — 2115 E67
K-2 TSB 12 H — K-4 DOUT 12 H — R15 390 +5V — 2115 E70
K-2 TSB 13 H — K-4 DOUT 13 H — R16 390 +5V — 2115 E72
K-2 TSB 14 H — K-4 DOUT 14 H — R17 390 +5V — 2115 E77
K-2 TSB 15 H — K-4 DOUT 15 H — R18 390 +5V — 2115 E83

All 2115 chips: R/W, CE

K-2 CE A L
K-2 S2 L8 L
K-2 S2 H8 L

K-3 MADR Ø9 H
K-3 MADR Ø8 H
K-3 MADR Ø7 H
K-3 MADR Ø6 H
K-3 MADR Ø5 H
K-3 MADR Ø4 H
K-3 MADR Ø3 H
K-3 MADR Ø2 H
K-3 MADR Ø1 H
K-3 MADR Ø0 H

(K-4)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
WRITEABLE CONTROL STORE (WCS-LST-11)	D	CS	M8Ø18-Ø-1	E
SCALE	SHEET 4 OF 6	DIST.		

MAY NOT BE USED WITHOUT PERMISSION

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © '7.. DIGITAL EQUIPMENT CORPORATION"

DAL OUTPUT MUX's (TO DCØØ5's)

K-2 XXMIT L

STB1 STBØ — 74LS253 — AI E39 — BI CI DI — fØ f1 — SI SØ

K-5 SA Ø1 H	AØ	K-2 TSB ØØ H
K-3 MADR ØØ H	BØ	
K-4 DOUT ØØ H	CØ	
K-3 DOUT 16 H	DØ	
K-5 SA Ø1 H	AI	K-2 TSB Ø1 H
K-3 MADR Ø1 H	BI	
K-4 DOUT Ø1 H	CI	
K-3 DOUT 17 H	DI	

STB1 STBØ — 74LS253 — AI E29 — BI CI DI — fØ f1 — SI SØ

K-5 SA Ø2 H	AØ	K-2 TSB Ø2 H
K-3 MADR Ø2 H	BØ	
K-4 DOUT Ø2 H	CØ	
K-3 DOUT 18 H	DØ	
K-5 SA Ø3 H	AI	K-2 TSB Ø3 H
K-3 MADR Ø3 H	BI	
K-4 DOUT Ø3 H	CI	
K-3 DOUT 19 H	DI	

STB1 STBØ — 74LS253 — AI E23 — BI CI DI — fØ f1 — SI SØ

K-5 SA Ø4 H	AØ	K-2 TSB Ø4 H
K-3 MADR Ø4 H	BØ	
K-4 DOUT Ø4 H	CØ	
K-3 DOUT 2Ø H	DØ	
K-5 SA Ø5 H	AI	K-2 TSB Ø5 H
K-3 MADR Ø5 H	BI	
K-4 DOUT Ø5 H	CI	
K-3 DOUT 21 H	DI	

STB1 STBØ — 74LS253 — AI E24 — BI CI DI — fØ f1 — SI SØ

K-5 SA Ø6 H	AØ	K-2 TSB Ø6 H
K-3 MADR Ø6 H	BØ	
K-4 DOUT Ø6 H	CØ	
K-3 DOUT 22 H	DØ	
K-5 SA Ø7 H	AI	K-2 TSB Ø7 H
K-3 MADR Ø7 H	BI	
K-4 DOUT Ø7 H	CI	
K-3 DOUT 23 H	DI	

K-6 SEL B H
K-6 SEL A H

STB1 STBØ — 74LS253 — AI E4Ø — BI CI DI — fØ f1 — SI SØ

K-5 SA Ø8 H	AØ	K-2 TSB Ø8 H
K-3 MADR Ø8 H	BØ	
K-4 DOUT Ø8 H	CØ	
K-5 SA Ø9 H	AI	K-2 TSB Ø9 H
K-3 LREC 9 H	BI	
K-4 DOUT Ø9 H	CI	

STB1 STBØ — 74LS253 — AI E34 — BI CI DI — fØ f1 — SI SØ

K-5 SA 1Ø H	AØ	K-2 TSB 1Ø H
K-4 DOUT 1Ø H	BØ	
	CØ	
	DØ	
K-5 SA 11 H	AI	K-2 TSB 11 H
K-6 CSR 11 H	BI	
K-4 DOUT 11 H	CI	
	DI	

STB1 STBØ — 74LS253 — AI E35 — BI CI DI — fØ f1 — SI SØ

K-5 SA 12 H	AØ	K-2 TSB 12 H
K-6 CSR 12 H	BØ	
K-4 DOUT 12 H	CØ	
K-5 SA 13 H	AI	K-2 TSB 13 H
K-6 CSR 13 H	BI	
K-4 DOUT 13 H	CI	

STB1 STBØ — 74LS253 — AI E3Ø — BI CI DI — fØ f1 — SI SØ

K-5 SA 14 H	AØ	K-2 TSB 14 H
K-6 CSR 14 H	BØ	
K-4 DOUT 14 H	CØ	
K-5 SA 15 H	AI	K-2 TSB 15 H
K-6 CSR 15 H	BI	
K-4 DOUT 15 H	CI	
	DI	

TRACE MODE LOGIC

K-6 STWE H → 74SØ4 E27 → K-6 WE L

K-6 WE L, +5PP → 74S11 E21

74193 E25 — CRY BRW — DØ D1 D2 D3 — RØ(1) R1(1) R2(1) R3(1) — CLR LD CUP CDN

K-6 CSR 15 H	CLR
+5PP	LD
K-6 CKUP L	CUP
K-6 CKDN L	CDN

74S189 E17 — WR ENB — DØ D1 D2 D3 — MØ(1) M1(1) M2(1) M3(1) — AI A2 A3 AØ

K-3 MADR ØØ H	DØ
K-3 MADR Ø1 H	D1
K-3 MADR Ø2 H	D2
K-3 MADR Ø3 H	D3
	AI A2 A3 AØ = K-5 SA ØØ H, K-5 SA Ø1 H, K-5 SA Ø2 H, K-5 SA Ø3 H

74S189 E18 — WR ENB — DØ D1 D2 D3 — MØ(1) M1(1) M2(1) M3(1) — AI A2 A3 AØ

K-3 MADR Ø4 H	DØ
K-3 MADR Ø5 H	D1
K-3 MADR Ø6 H	D2
K-3 MADR Ø7 H	D3
	AI A2 A3 AØ = K-5 SA Ø4 H, K-5 SA Ø5 H, K-5 SA Ø6 H, K-5 SA Ø7 H

74S189 E19 — WR ENB — DØ D1 D2 D3 — MØ(1) M1(1) M2(1) M3(1) — AI A2 A3 AØ

K-3 MADR Ø8 H	DØ
K-3 MADR Ø9 H	D1
K-6 LREC 1Ø H	D2
K-6 DBEL L	D3
K-5 SA 12 H	AI
K-5 SA 13 H	A2
K-5 SA 14 H	A3
K-5 SA 15 H	AØ
	AI A2 A3 AØ = K-5 SA Ø8 H, K-5 SA Ø9 H, K-5 SA 1Ø H, K-5 SA 11 H

74SØ4 E12: 1→K-5 SA ØØ H, 3→K-5 SA Ø1 H, 5→K-5 SA Ø2 H, 9→K-5 SA Ø3 H, 11→K-5 SA Ø4 H, 13→K-5 SA Ø5 H

74SØ4 E13: 1→K-5 SA Ø6 H, 3→K-5 SA Ø7 H, 5→K-5 SA Ø8 H, 9→K-5 SA Ø9 H, 11→K-5 SA 1Ø H, 13→K-5 SA 11 H

SEL BH	SEL AH	OUTPUT
Ø	Ø	TRACE
Ø	1	CSR
1	Ø	LO WORD
1	1	HI WORD

(K-5)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE WRITEABLE CONTROL STORE (WCS-LSI-11)
SIZE D CODE CS NUMBER M8Ø18-Ø-1 REV E
SCALE — SHEET 5 OF 6 DIST.

DEC FORM NO. DRD 126

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

DAL OUTPUT MUX SELECTION

K-2 SEL 2 L
K-6 CSR 14 H
7432 E4
K-6 SL2 L
7432 E4
K-6 SE2 L
74S04 E5
74148 E1
K-2 SEL Ø L
K-2 SEL 4 L
I3 I2 I1 IØ A1 AØ
K-6 SEL B H
K-6 SEL A H

CONTROL/STATUS REGISTER

74174 E31
DØ D1 D2 D3 D4 D5 CLK CLR
RØ(1) R1(1) R2(1) R3(1) R4(1) R5(1)
K-6 CSR11 H
K-2 TSB 12 H
K-2 TSB 13 H
K-2 TSB 14 H
K-2 TSB 15 H
K-2 LDHB H
K-6 MIC H
K-6 CSR 12 H
K-6 CSR 13 H
K-6 CSR 14 H
K-6 CSR 15 H
K-6 STOP H
7432 E4
74S04 E5
K-6 R01 H
K-6 R02 H
74S00 E26
K-6 WE L
K-6 CKUP L
K-6 CKDN L

MIB I/O TIMING

SW1
K-3 LREC 1Ø H
K-3 LREC 9 H
+5PP
74S04 E5
K-6 RC 1Ø H
K-1 REC 16 H
74S04 E27
K-6 HOOK H
74S1Ø E2
K-6 MIBE L
K-6 MIC H
74S04 E5
K-6 MIC L
K-2 DCOK H
74S00 E26
74S74 E2Ø
K-6 DABL L
74S04 E27
K-6 DABC L
K-6 DABB L

AM2 AN2
CM2 CN2
AR2 AS2
CR2 CS2

+5V
R2 47Ø
+5PP

+5V AA2, BA2, CA2, DA2
C1 THRU C73 .22 µf
AC2, AJ1, AMI, ATI
BC2, BJ1, BMI, BT1
CC2, CJ1, CMI, CT1
DC2, DJ1, DMI, DT1

+5PP
K-6 P23 H
K-6 RØ1 L
K-6 PØ4 L
K-1 Ø4 H
74S04 E5
74S74 E1Ø
K-6 PØ4 H
74S04 E15
K-6 RØ4 L
K-6 RØ4 H
K-6 MIBE H
K-6 CSR 11 H
7432 E4
74S04 E27

+5PP
PØ1 H
K-6 RØ1 H
K-6 RØ4 L
K-1 Ø2 H
K-6 PØ2 L
K-6 PØ2 H
K-6 RØ2 L
K-6 RØ2 H
74Ø4 E14
K-6 SØ2 L
K-3 DOUT 23 H
74S11 E46
K-6 STWE H
74S74 E93
K-6 STOP H
R63 47Ø
C75 47PF
K-6 CSR 15 H
74Ø4 E17
K-6 CSR 15 L

SPARE LOGIC

74S04 E5
74Ø4 E11
74S74 E2Ø
7427 E8
74S11 E21
+5V
R28 27Ø
R27 27Ø
K-6 DABC L
K-6 P23 H
74S15 E86
SD51Ø1 E85
8640 E16
74Ø1 E32
SW1 OS8

NOTE:
THERE ARE THREE SPARE I.C. LOCATIONS

(K-6)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
WRITEABLE CONTROL STORE (WCS-LSI-11)	D	CS	M8Ø18-Ø-1	E
SCALE —	SHEET 6 OF 6	DIST.		

ECO #2
REWORK INSTRUCTIONS

ETCH CUTS, SIDE 2 AS SHOWN

2-1 AT E45(3)
2-2 AT PTH TO THE LEFT OF J1(B)
2-3 ON ETCH TO THE LEFT OF J1(B)
2-4 AT E45(2)

WIRE ADDS SIDE 1, AS SHOWN

2-5 E45(3) TO PTH TO THE RIGHT OF J1(B)
2-6 E45(2) TO PTH TO THE LEFT OF D4

ECO #3
REWORK INSTRUCTIONS

COMPONENT ADDS, SIDE 1 AS SHOWN:
3-1 C41 FROM PTH BELOW E36 TO PTH BELOW E41
3-2 C42 FROM PTH BELOW E51 TO PTH BELOW E56

WIRE ADDS, SIDE 1 AS SHOWN:
3-3 FROM PTH BELOW E30-10 TO PTH BELOW E46 (USING ITEM #71)
3-4 FROM PTH BELOW E30-11 TO PTH BELOW E46 (USING ITEM #72)

WIRE ADDS, SIDE 2 AS SHOWN:
3-5 FROM CA2 TO PTH ABOVE CE2 (USING ITEM #72)
3-6 FROM CC2 TO PTH ABOVE CF2 (USING ITEM #71)

SEE NOTE 1

COMPONENT SIDE VIEW

NOTES: 1. W3 INSERTED AFTER QR TEST.

CH	CHANGE NO	REV
		E
		D
		C

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	
PROJ.ENG.	
PROD.	
SCALE 2/1	
SHT. 1 OF 3	
NEXT HIGHER ASSY. A-CD-M7952-	

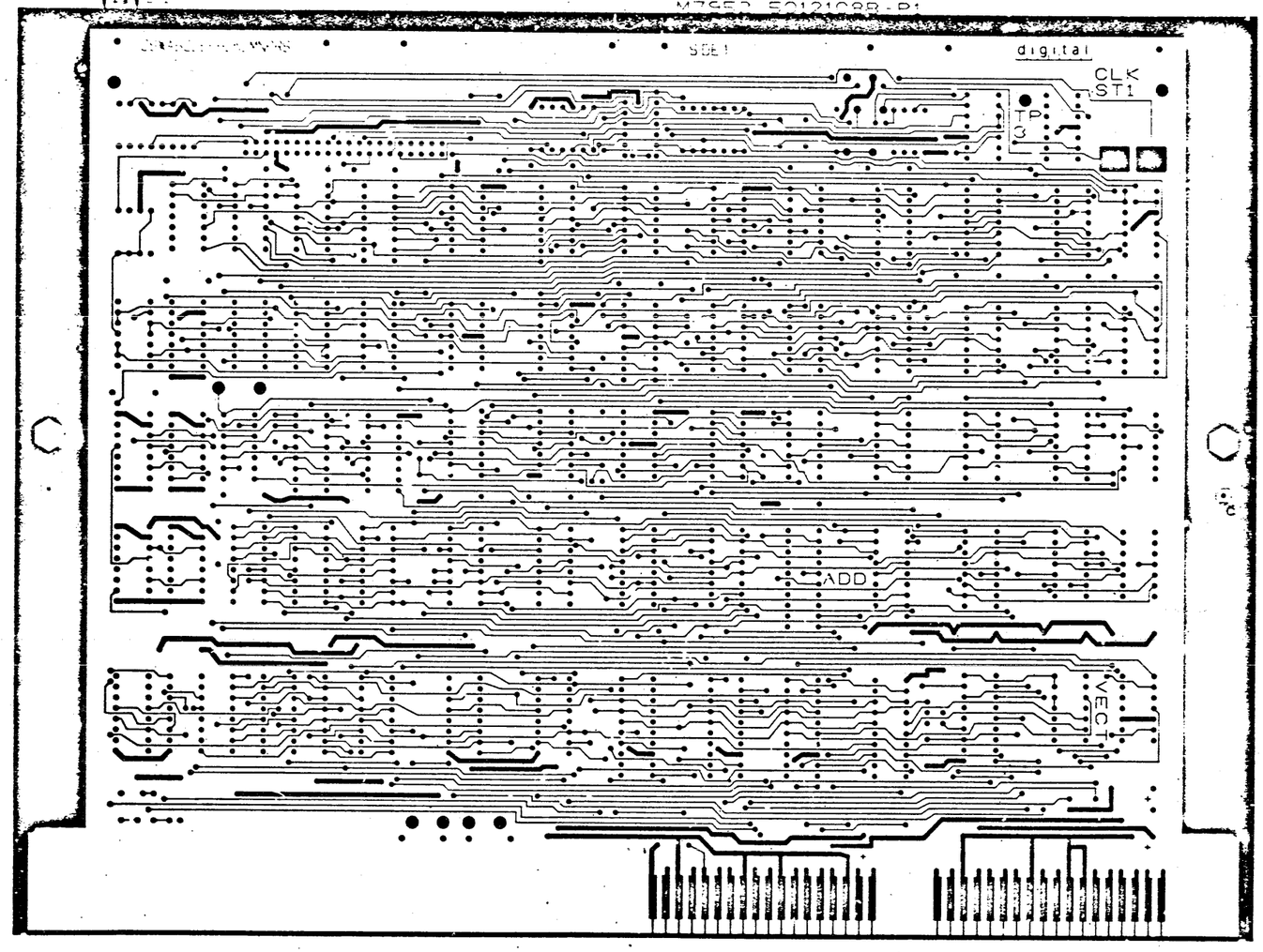
ETCH REV. #1
P.C. DESIGN DATA BASE REV.

digital

TITLE PROG. REAL TIME CLOCK

SIZE	CODE	NUMBER	REV
D	CA	M7952-0-0	C

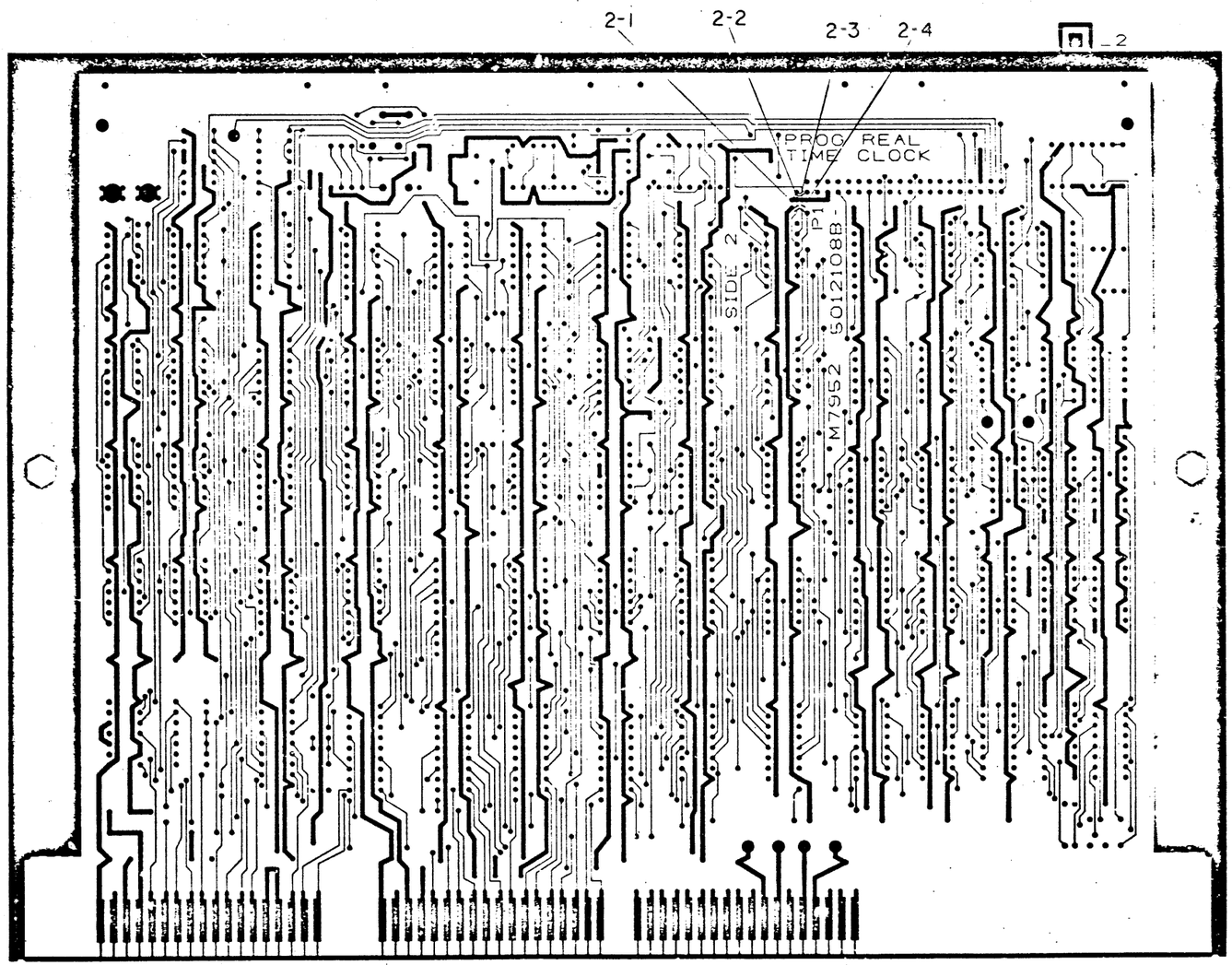
1 MS#



TITLE	SIZE	CODE	NUMBER	REV
PROG REAL TIME CLOCK	D	UA	M7952-0-0	C

SCALE 2/1 SHEET 2 OF 3

DUA M7952-0-0 C

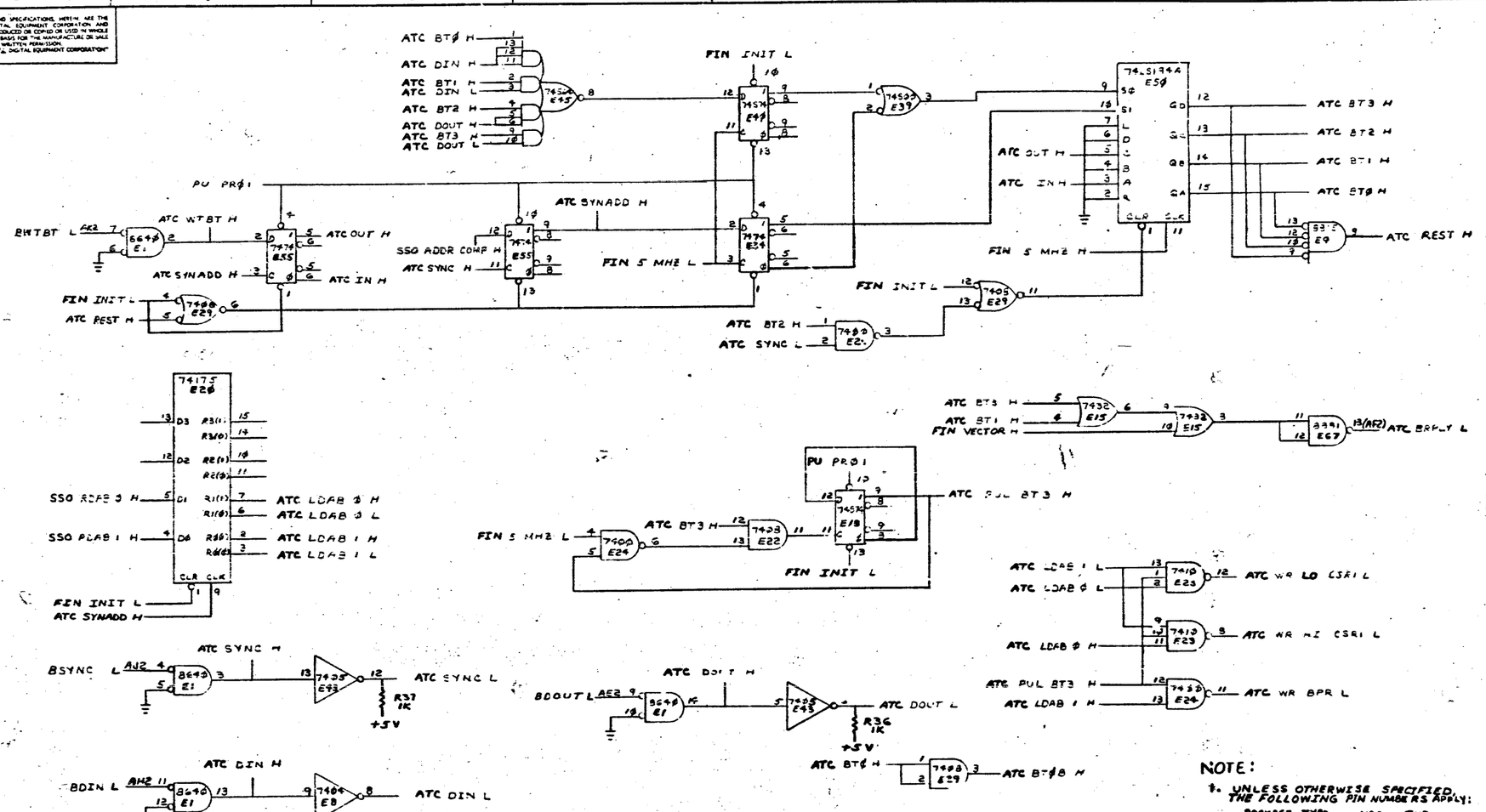


TITLE	SIZE	CODE	NUMBER	REV.
PROG REAL TIME CLOCK	D	UA	M7952-0-0	C

SCALE 2 1 SHEET 3 OF 3 DIST

DEC CODE DUA M7952-0-0 C

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 by DIGITAL EQUIPMENT CORPORATION"



NOTE:

1. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:

PACKAGE TYPE	VCC	GND
16 PIN DIP	16	8
19 PIN DIP	14	7
IC 8640	1	9
DC003	10	7
DC005	20	10

ATC

ADDR & TIMING CONTROL

REVISIONS		
CHK	CHANGE NO.	REV
	M7952-00001	A
	M7952-M0002	B
	M7952-M0003	C

DRN
CHK'D
ENG
PROJ ENG
PROD
NEXT HIGHER ASSY
SCALE
SHEET 1 OF 7

FIRST USED ON

digital

TITLE
PROG REAL TIME CLOCK

SIZE	CODE	NUMBER	REV.
D	CS	M7952-Ø-1	C

DIST

M7952-Ø-1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

ST SET ST2 L
CSR ST2 GO ENABLE L
1432 E28
SSO RDAB Ø H
ATC WR LO CSRI L
7474 E38
7429 E8
CSR GO L
7437 E34
CSR GO H
CSR M Ø L
BPC SET OVFLO L
FIN INIT L
7432 E6
7408 E29
74S174 E36
SSO RDAB 1 H
SSO RDAB 2 H
SSO RDAB 3 H
SSO RDAB 4 H
SSO RDAB 5 H
CLR CLK
CSR RATE Ø H
CSR RATE 1 H
CSR RATE 2 H
FIN INIT L
CSR WR LO CSRI H
ATC IN H
CSR OVFLOFLAB L
7400 E13
SSO RDAB 7 L
ATC WR LO CSRI H
7410 E7
CSR GO1 + INIT L
7408 E3
PU PR Ø 2
SSO RDAB 11 H
CSR DISABLE INT OSC H
CSR DISABLE INT OSC L
CSR HI BYTE CSRI H
FIN INIT L
CSR M3 L
S188 S18A 74135 E12
BPC CLK BPR L
CSR M3BPR L
CSR GO H
CSR M3 L
CSR M2 L
CSR M1 L
CSR M Ø L
CSR MODE Ø H
CSR MODE 1 H
74175 E48
SSO RDAB 9 H
SSO RDAB 7 H
SSO RDAB 13 H
CSR MAINT ST1 H
CSR MAINT ST2 H
CSR MAINT OSC H
FIN INIT H
ATC REST H
7432 E27
CSR HI BYTE CSRI H
BPC SET OVFLO L
CSR OVFLO FLAG L
7474 E38
ATC RESB H
CSR OVFLO FLAG H
CSR OVFLOFLAB H
CSR OVFLOFLAB L
PU PR Ø 2
CSR ST2 GO ENABLE L
CSR GO 1 TR H
FIN INIT L
7474 E5
ST SET ST2 L
CSR GO L
7432 E28
CSR PS ST2
CSR ST2 FLAG L
7474 E49
ATC IN H
CSR ST2FLAB L
SSO RDAB 15 L
7410 E7
7400 E4
7404 E8
7413 E23
GO 1 TR L
FIN INIT L
PU PR09
ATC ET Ø B H
CSR ST2 FLAG H
7414 E38
+5V
R18 33K
CSR GO 1 TR H
CSR GO 1 TR L
7402 E33
CSR GO L
FIN INIT L
ATC WR HI CSRI L
SSO RDAB 13 H
CSR ST2 GO ENABLE H
CSR ST2 GO ENABLE L
ATC WR LO CSRI L
ATC WTBT H
7432 E28
7402 E29
CSR HI BYTE CSRI H
CSR GO1 TR L
7408 E4
CSR GO1 + INIT L
FIN INIT L
CSR ST1FLAB H
CSR ST2FLAB L
ATC ET Ø B H
FIN SET ISA L
CSR ISA H
PU PR12
CSR FOR H
CSR FOR L
ATC IN H
CSR FOR L
7400 E13
CSR HI BYTE CSRI H
SSO RDAB 12 L
7413 E7
CSR GO1 + INIT L
7408 E4

CSR

REVISIONS		
CHR	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
PROG REAL TIME CLOCK	D	DCS	M7952-0-1	C
SCALE	SHEET 2 OF 7	DIST.		

CSRI

1 MR

"THESE DRAWINGS AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

J1 VV — PU ST1 IN — R26 100Ω — D1 DG64 — D2 DG64 — R8 2K — R14 20K — R16 20K — +5V — +3V — +12V — R22 1M — PU PRØ3 — LM339 E35 — C28 .Ø47 — ST LEVEL 1 — ST SLOPE 1 — 7486 E63 — ST ST1 H

ST STIP H — CSR MAINT ST1 H — 7432 E99 — ST SET ST1 H

ST SET ST1 H — 8881 E67 — D6 1N4004 — R6 47Ø — D5 1N4004 — R4 47 FUSIBLE — TP1 — ST ST1 OUT L — J1 UU

LM339 E35 — LM339 E35

AH1 BC1

+12V AD2, BD2 — C27 .Ø47 — C31 6.3µF

+12 — D9 MCL1304 — D10 DG64 — D11 DG64 — D12 DG64 — D13 DG64 — +3V — J1 W — TTL REF

J1 TT — PU ST2 IN — R21 100K — D3 DG64 — D4 DG64 — R28 2K — R15 20K — R17 20K — +5V — +3V — R33 1M — PU PRØ4 — LM339 E35 — ST SLOPE 2 — 7486 E63 — ST ST2 H

J1 N — ST POT 1 — J1 L — ST POT 2 — S2 — J1 T — ST LEVEL 1 — J1 R — ST LEVEL 2 — C29 .Ø47 — ST SLOPE 1 — ST SLOPE 2 — +3V — R18 6.8K — R19 2.8K

+5V — C37 22ØPF — R33 5.6K — C36 22ØPF — R34 5.6K — 9602 E53 — ST ST1 PR/Ø H — ST ST2 H — ST ST1P H — ST ST2P H — FIN INIT L

ST ST2P H — CSR MAINT ST2 H — 7432 E99 — ST SET ST2 H

ST SET ST2 H — 8881 E67 — D7 1N4004 — R27 47Ø — D8 1N4004 — R5 47 FUSIBLE — TP3 — ST ST2 OUT L — J1 SS

7486 E58 — ST SET ST2 L

REVISIONS		
CHK	CHANGE NO.	REV.

SCHMITT TRIGGERS

ST

TITLE	SIZE	CODE	NUMBER	REV.
PROG REAL TIME CLOCK	D	DCS	M7952-Ø-1	C
SCALE	SHEET 3 OF 7	DIST.		

DCSM7952-Ø-1 C

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

74298 E41
SSO RDAB Ø H
BPC CTR Ø H
SSO RDAB 1 H
BPC CTR 1 H
SSO RDAB 2 H
BPC CTR 2 H
SSO RDAB 3 H
BPC CTR 3 H
WS CLK
BPC BPR Ø H
BPC BPR 1 H
BPC BPR 2 H
BPC BPR 3 H

BPC CLK BPR L

74298 E51
SSO RDAB 4 H
BPC CTR 4 H
SSO RDAB 5 H
BPC CTR 5 H
SSO RDAB 6 H
BPC CTR 6 H
SSO RDAB 7 H
BPC CTR 7 H
WS CLK
BPC BPR 4 H
BPC BPR 5 H
BPC BPR 6 H
BPC BPR 7 H

74298 E52
SSO RDAB 8 H
BPC CTR 8 H
SSO RDAB 9 H
BPC CTR 9 H
SSO RDAB 10 H
BPC CTR 10 H
SSO RDAB 11 H
BPC CTR 11 H
WS CLK
BPC BPR 8 H
BPC BPR 9 H
BPC BPR 10 H
BPC BPR 11 H

74298 E26
SSO RDAB 12 H
BPC CTR 12 H
SSO RDAB 13 H
BPC CTR 13 H
SSO RDAB 14 H
BPC CTR 14 H
SSO RDAB 15 H
BPC CTR 15 H
WS CLK
BPC BPR 12 H
BPC BPR 13 H
BPC BPR 14 H
BPC BPR 15 H

BPC M2 +M3 H
FIN INIT H
7402 E27
7474 E32
ATC BT2 H
7404 E8

CSR M1 L
7404 E6
BPC SET OVRFLO H
7408 E2
CSR GO 1 TR H
7400 E2
CSR M0 L
CSR M1 L
7400 E2
7408 E3
FIN SEL CLK H
7403 E43
R39 2.7K
C39 220PF
7414 E38
7414 E38

+5V
C34 22PF
R40 5.6K
FIN SEL CLK L
9602 E69
BPC CLK BPR L
C35 33PF
R41 5.6K
R42 1K
CSR ST2 FLAG H
9602 E69
7408 E22
BPC CLBP H
FIN INIT L

+5V
C30 22PF
R11 5.6K
8881 E67
BPC SET OVFLO H
BPC SET OVFLO L
BPC OVRFLO H PU PRØS
9602 E33
FIN INIT L
R29 470
D14 IN4004
D15 IN4004
R24 47 FUSIBLE
TP2 FASTON
BPC CLK OV L
J1 R.R

FIN INIT H
CSR GO L
7402 E27
7408 E22
CSR M3 BPR L
R43 56Ω
C40 68PF
7414 E38
CSR M2 L
CSR M3 L
7400 E2
BPC M2+M3 H
BPC CLBP H
7450 E39
7450 E39
ATC WR BPR L
7432 E49
+5V
R38 2.7K
FIN INIT L
7405 E43
C38 220 PF
7402 E27
BPC CLK BPR L

74193 E42
BPC BPR Ø H
BPC BPR 1 H
BPC BPR 2 H
BPC BPR 3 H
CRY BRW
CLR LD CUP CDN
PRØS
BPC CTR Ø H
BPC CTR 1 H
BPC CTR 2 H
BPC CTR 3 H

74193 E56
BPC BPR 4 H
BPC BPR 5 H
BPC BPR 6 H
BPC BPR 7 H
BPC CTR 4 H
BPC CTR 5 H
BPC CTR 6 H
BPC CTR 7 H

74193 E57
BPC BPR 8 H
BPC BPR 9 H
BPC BPR 10 H
BPC BPR 11 H
BPC CTR 8 H
BPC CTR 9 H
BPC CTR 10 H
BPC CTR 11 H

BPC OVRFLO H
74193 E21
BPC BPR 12 H
BPC BPR 13 H
BPC BPR 14 H
BPC BPR 15 H
BPC CTR 12 H
BPC CTR 13 H
BPC CTR 14 H
BPC CTR 15 H

REVISIONS
CHK | CHANGE NO. | REV.

BPC
BPR & CTR
TITLE PROG REAL TIME CLOCK
SIZE D | CODE | NUMBER DCS M7952-0-1 | REV. C
SCALE | SHEET 4 OF 7 | DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

* W3 TO BE INSERTED AFTER GR TEST

FIN 100 KHZ H
FIN 10 KHZ H
FIN 1 KHZ H
FIN 100 HZ H
FIN 10 HZ H
FIN 1 HZ H
FIN RC1 L
FIN RC2 L
FIN RC3 L
FIN RC4 L
CSR GO H
BDMG I L AR2
BDMG O L AS2
CR1
CSR DISABLE INT OSC L
CSR MAINT OSC H
R35 1K
+5V
BIAKI L
FIN BIAKO L
CSR OVFLO FLAG H
SSO RDAB 6 H
ATC WR LO CSR1 H
BINIT L
ATC DIN L
CSR HI BYTE CSR1 H
SSO RDAB 14 H
CSR ST2 FLAG H
FIN INTOV H
FIN BIRQ L
FIN VECTOR H
FIN VEC 2 H
FIN INT2 H
FIN INIT H
FIN INIT L
FIN 10 MHZ H
FIN 5 MHZ H
FIN 5 MHZ L
INIT L
BPC SET OVFLO L
CSR ST2 FLAG H
CSR PS ST2 L
PU PR07
PR07
FIN SET ISA L
BEVNT L
ST SET ST1 H
FIN SEL CLK H
FIN SEL CLK L
CSR RATE 2² H
CSR RATE 2¹ H
CSR RATE 2⁰ H
CM2
CN2
CR2
CS2
TP6
TP7
TP8
TP9
W1
W2

REVISIONS		
CHK	CHANGE NO.	REV.

FIN
FREQ. DIVIDER & INTERRUPT CONTROL

TITLE	SIZE	CODE	NUMBER	REV.
PROG REAL TIME CLK	D	CS	M7952-0-1	C
SCALE	SHEET 5 OF 7	D-ST		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © '7_ = DIGITAL EQUIPMENT CORPORATION"

SSO RDAB 15 H — 1 — 7404 E6 — 2 — SSO RDAB 15 L

SSO RDAB 12 H — 13 — 7404 E6 — 12 — SSO RDAB 12 L

SSO RDAB 7 H — 11 — 7404 E6 — 10 — SSO RDAB 7 L

S1

1	20	A11
2	19	A10
3	18	A9
4	17	A8
5	16	A7
6	15	A6
7	14	A5
8	13	A4
9	12	A3
10	11	A2

S3

VECTOR H	1	14 — V8
	2	13 — V7
	3	12 — V6
	4	11 — V5
	5	10 — V4
	6	9 — V3
	7	8

DC005 E38

BDAL 15 L	BV2 8	BUS 3
BDAL 12 L	BS2 9	BUS 2
BDAL 11 L	BR2 11	BUS 1
BDAL 14 L	BJ2 12	BUS 0
+5V	19	JA3
	2	JA2
A11	1	JA1
	13	MENB
	16	JAV3
	15	JAV2
	14	JAV1
	5	XMIT
	4	REC
	6	DAT 3 — SSO RDAB 15 H
	7	DAT 2 — SSO RDAB 12 H
	17	DAT 1 — SSO RDAB 11 H
	18	DAT 0 — SSO RDAB 14 H
	3	MATCH — SSO ADDR COMP H

PU PRØB

SSO BTI L

DC005 E25

BDAL 10 L	BP2 8	BUS 3
BDAL 9 L	BN2 9	BUS 2
BDAL 8 L	BM2 11	BUS 1
BDAL 13 L	BT2 10	BUS 0
A10	19	JA3
A9	2	JA2
A8	1	JA1
	13	MENB
	16	JAV3
	15	JAV2
V8	14	JAV1
	5	XMIT
	4	REC
	6	DAT 3 — SSO RDAB 10 H
	7	DAT 2 — SSO RDAB 9 H
	17	DAT 1 — SSO RDAB 8 H
	18	DAT 0 — SSO RDAB 13 H
	3	MATCH

DC005 E21

BDAL 7 L	BL2 8	BUS 3
BDAL 6 L	BK2 9	BUS 2
BDAL 5 L	BJ2 1	BUS 1
BDAL 1 L	AV2 12	BUS 0
A7	19	JA3
A6	2	JA2
A5	1	JA1
	13	MENB
V7	16	JAV3
V6	15	JAV2
V5	14	JAV1
	5	XMIT
	4	REC
	6	DAT 3 — SSO RDAB 7 H
	7	DAT 2 — SSO RDAB 6 H
	17	DAT 1 — SSO RDAB 5 H
	18	DAT 0 — SSO RDAB 1 H
	9	

DC005 E16

BDAL 4 L	BH2 8	BUS 3
BDAL 3 L	BF2 9	BUS 2
BDAL 2 L	BE2 11	BUS 1
BDAL 0 L	AJ2 10	BUS 0
A4	19	JA3
A3	2	JA2
A2	1	JA1
BBS7 L	AF2 13	MENB
V4	16	JAV3
V3	15	JAV2
FIN VEC 2 H	14	JAV1
	5	XMIT
	4	REC
	6	DAT 3 — SSO RDAB 4 H
	7	DAT 2 — SSO RDAB 3 H
	17	DAT 1 — SSO RDAB 2 H
	18	DAT 0 — SSO RDAB 0 H
	3	

ATC BTI H — 9 — 7404 E6 — 8 — SSO BTI L

74LS257 E37

CSR GO H	2	A1
BPC BPR 0 H	3	B1
CSR MODE 0 H	5	A2
BPC BPR 1 H	6	B2
CSR MODE 1 H	11	A3
BPC BPR 2 H	10	B3
CSR RATE 0 H	14	A4
BPC BPR 3 H	13	B4
	1	SEL
	15	OC
	4	Y1 — SSO RDAB 0 H
	7	Y2 — SSO RDAB 1 H
	9	Y3 — SSO RDAB 2 H
	12	Y4 — SSO RDAB 3 H

74LS257 E46

ATC LOAB 1 H	2	A1
	3	B1
CSR RATE 1 H	5	A2
BPC BPR 4 H	6	B2
CSR RATE 2 H	11	A3
BPC BPR 5 H	10	B3
FIN INTOV H	14	A4
BPC BPR 6 H	13	B4
CSR OVFLOFLAB H	1	SEL
BPC BPR 7 H	15	OC
	4	Y1 — SSO RDAB 4 H
	7	Y2 — SSO RDAB 5 H
	9	Y3 — SSO RDAB 6 H
	12	Y4 — SSO RDAB 7 H

74LS257 E47

CSR MAINT ST1 H	2	A1
BPC BPR 8 H	3	B1
CSR MAINT ST2 H	5	A2
BPC BPR 9 H	6	B2
CSR MAINT OSC H	11	A3
BPC BPR 10 H	10	B3
CSR DIS INT OSC H	14	A4
BPC BPR 11 H	13	B4
	1	SEL
	15	OC
	4	Y1 — SSO RDAB 8 H
	7	Y2 — SSO RDAB 9 H
	9	Y3 — SSO RDAB 10 H
	12	Y4 — SSO RDAB 11 H

74LS257 E17

CSR FOR H	2	A1
BPC BPR 12 H	3	B1
CSR ST2 GO ENABLE H	5	A2
BPC BPR 13 H	6	B2
FIN INT2 H	11	A3
BPC BPR 14 H	10	B3
CSR STEP LAB H	14	A4
BPC BPR 15 H	13	B4
	1	SEL
	15	OC
	4	Y1 — SSO RDAB 12 H
	7	Y2 — SSO RDAB 13 H
	9	Y3 — SSO RDAB 14 H
	12	Y4 — SSO RDAB 15 H

SSO

SST & OUT. MUX

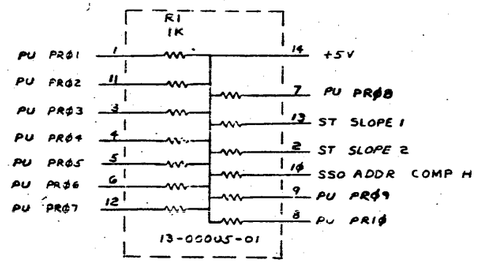
REVISIONS		
ONE	CHANGE NO.	REV.

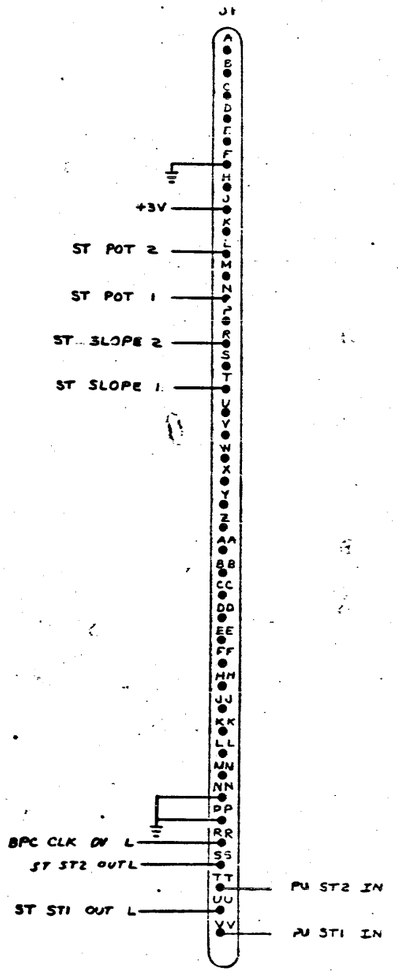
TITLE	PROG REAL TIME CLOCK		
SIZE	CODE	NUMBER	REV.
D	DCSM7952-Ø-1		C
SCALE	SHEET 6 OF 7	DIST.	

DCSM7952-Ø-1 REV C

1 NH

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"





PULL UPS

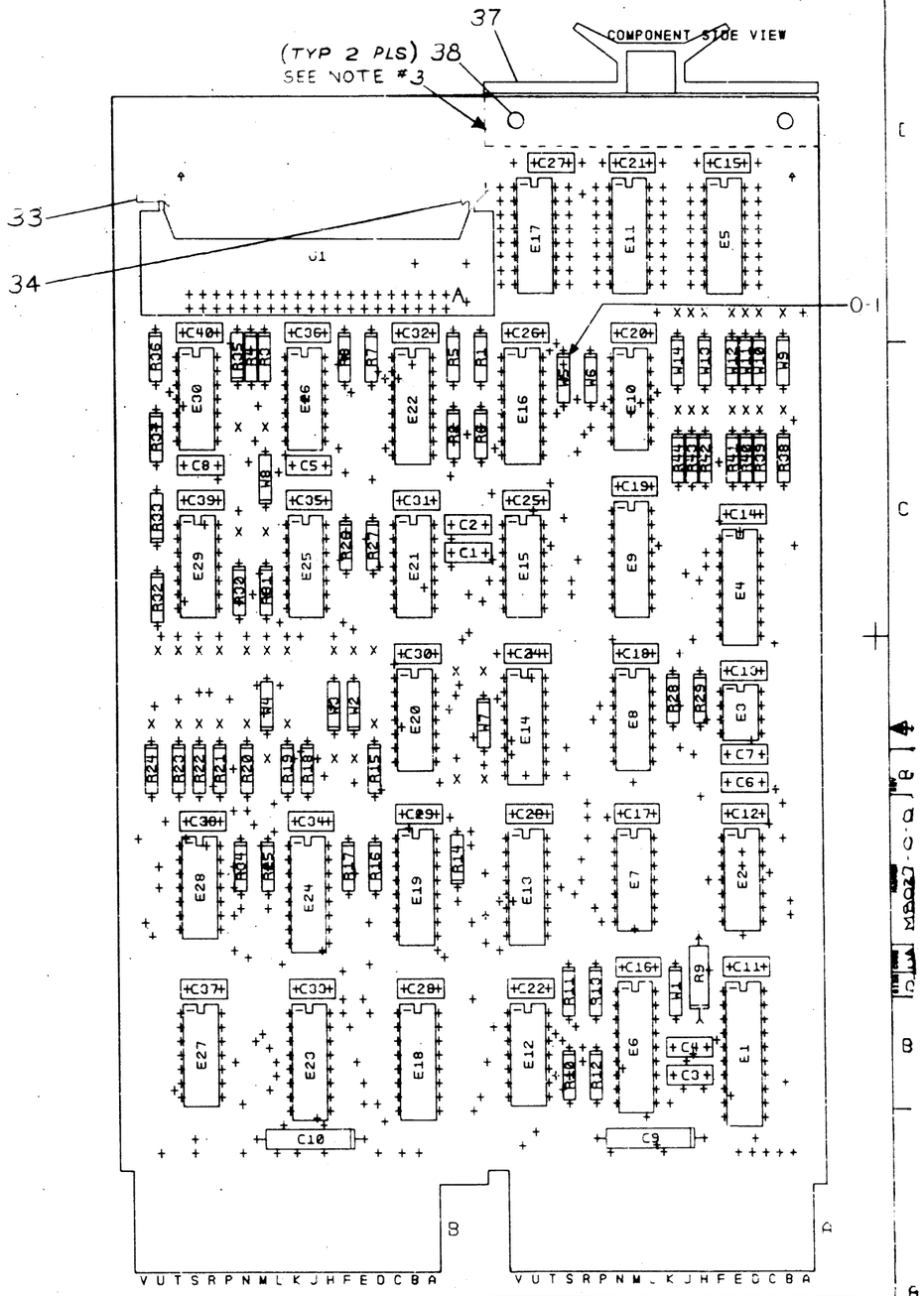
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
PROG REAL TIME CLOCK	D	CS	M7952-0-1	C
SCALE	SHEET 1 OF 1	DIST.		

D CS M7952-0-1 C

MR

1977



NOTES:
1. C11 NOT INSERTED
2. REMOVE THE FOLLOWING UNUSED FINGERS
   ON ARTWORK: A- AN1, AP1, A2, AU1, BD1, BH1, BP1, BR1, N1, S1, C2, DD 2H1, DP1, DR1.
3. ITEM NO 35 UNDERNEATH HANDLE

CHG	CHANGE NO	REV

ETCH REV.	
P.C. DESIGN DATA BASE REV.	

SIGNATURES		DATE
DRN.	FITZGERALD	1/19/77
CHK'D.	Brooks	1/19/77
ENG.	RH	1/19/77
PROJ. ENG.		1/24/77
PROD.		6/21/77
SCALE	2/1	
SHT.	1 OF 1	

digital

TITLE: PRINTER INTERFACE

SIZE	CODE	NUMBER	REV
D	UA	MB027-0-0	B

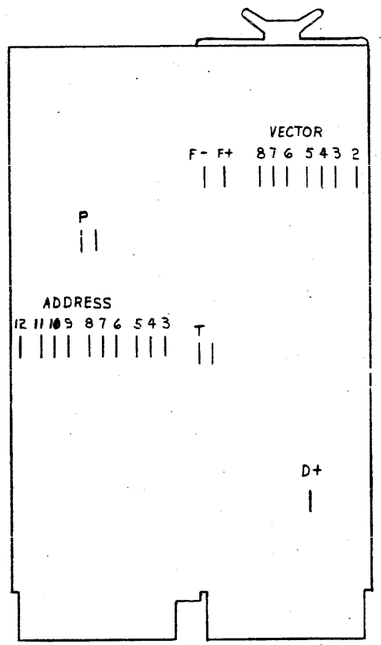
NEXT HIGHER ASSY. B DD-MB027-0

MB027-0-0 B

MS# 5554

"THIS DRAWING AND SPECIFICATIONS, HEREON, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 , DIGITAL EQUIPMENT CORPORATION"

CROSS REFERENCE DRAWING
(SEE NOTE 3)



NOTES:
1. TERMINATING RESISTORS MUST BE PRESENT ON THE CONNECTOR BOARD WITHIN THE LP05.
2. IN THE EVENT THAT THE LP05 IS EQUIPPED WITH DAVFU, IT IS RECOMMENDED THAT THE PAPER INSTRUCTION (DATA 8) JUMPER W8 BE REMOVED, SINCE THE LPVII DOES NOT SUPPORT THIS OPTION.
3. SEE UA DRAWING M8027-0-0 FOR W DESIGNATIONS OF JUMPERS.

JUMPER TABLE

FUNCTION	DESIGNATION	
ADDRESS SELECTION	A12-A3	DESIGNATIONS CORRESPOND TO THE BIT POSITION IN THE ADDRESS. HARD WIRE JUMPERS W2, W3 AND W4 BRIDGE A4, A5 AND A7 RESPECTIVELY, AND SPECIFY THE STANDARD ADDRESS OF: 177514 CS 177516 DB JUMPER IN = 0 JUMPER OUT = 1
VECTOR SELECTION	V8-V2	DESIGNATIONS CORRESPOND TO THE BIT POSITION IN THE VECTOR ALL VECTOR JUMPERS W9-W14 ARE INSERTED WITH THE EXCEPTION OF V7, TO SPECIFY THE STANDARD VECTOR OF 200. JUMPER IN = 0 JUMPER OUT = 1
CHARACTER TRANSLATION	W7 T	WHEN W7 IS INSERTED DATA FLOWS THROUGH LPVII WITHOUT TRANSLATION. [STANDARD CONFIGURATION] WHEN T IS INSERTED DATA IS MODIFIED BY THE LPVII: LOWER CASE CHARACTERS ARE TRANSLATED TO UPPER CASE INSERT W7 OR T, DO NOT INSERT BOTH SIMULTANEOUSLY.
PARITY	W8 P	WHEN W8 IS INSERTED, P DATA 8 (LP05 PAPER INSTRUCTION / LA180 PARITY) WILL BE TRANSMITTED DIRECTLY [STANDAND CONFIGURATON] WHEN P IS INSERTED, P DATA 8 WILL BE HELD HIGH IF BOTH W8 AND P ARE REMOVED P DATA 8 WILL BE HELD LOW (USED WITH LP05 IF DAVFU IS PRESENT.) BOTH W8 AND P MUST NEVER BE INSERTED SIMULTANEOUSLY.
FAULT FILTER	F+ F-	WHEN F+ (W6) IS INSERTED, NOISE IS FILTERED ON LP05 FAULT LINE. [STANDARD CONFIGURATION] WHEN F- (W5) IS INSERTED, NOISE IS NOT FILTERED ON LP05 FAULT LINE. INSERT F+ OR F-, DO NOT INSERT BOTH SIMULTANEOUSLY.
DELAY	D	THIS JUMPER (W1) MUST BE INSERTED [STANDARD CONFIGURATION]. REMOVAL CAUSES BRPLY DELAY TO CHANGE, RESERVED FOR FUTURE USE

NOTE: 1. ALL DESIGNATIONS WHICH HAVE A W PREFIX ARE NOT LABELLED IN ETCH, ALL OTHERS ARE LABELLED IN ETCH (ADDRESS DESIGNATIONS SHOW ALTERNATELY, DUE TO A LACK OF SPACE).

REV.	CHANGE NO.	
B	M8027-AB002	Address 2 Oct. 77 J. CURTIS

DRN. Silvia 7-28-77
CHK'D
ENG.
PROJ. ENG.
PROD.
NEXT HIGHER ASSY.
SCALE
SHEET 1 OF 5

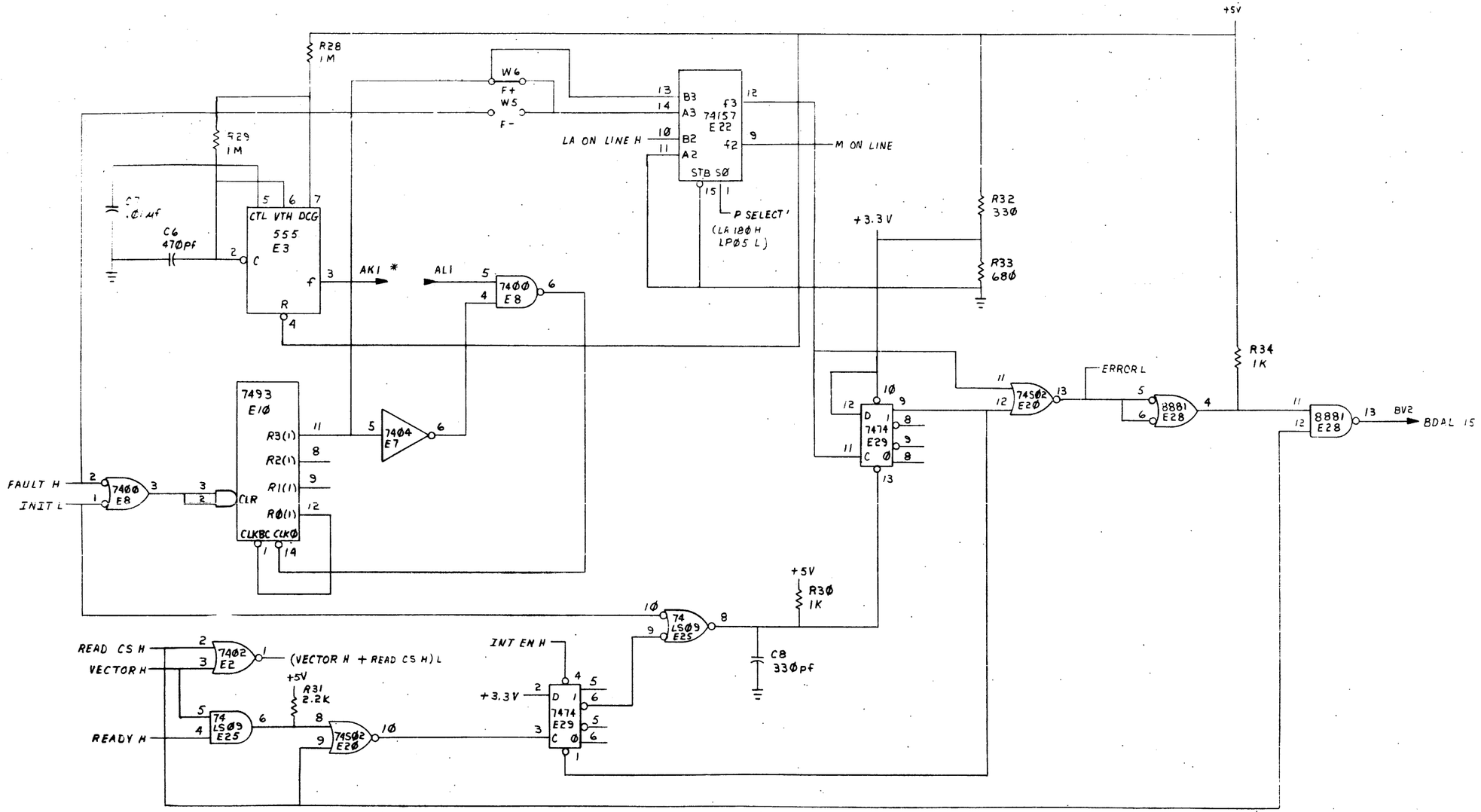
FIRST USED ON

TITLE LPVII PRINTER INTERFACE

SIZE D | CODE CS | NUMBER M8027-0-1 | REV B
DIST.

PN

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 , DIGITAL EQUIPMENT CORPORATION"



NOTE : * PINS AK1 & AL1 ARE JUMPERED THROUGH THE BACKPLANE.

DRN. Silvia	6-17-77	FIRST USED ON
CHK'D	20 Jun 77	
ENG.	20 Jun 77	
PROJ. ENG.	20 Jun 77	
PROD.		
NEXT HIGHER ASSY.		
SCALE		
SHEET 2 OF 5		

TITLE: LPV-11 PRINTER INTERFACE

SIZE	CODE	NUMBER	REV.
D	CS	M8027-0-1	B

DIST.

REVISIONS: REV. | CHANGE NO. | CHK

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

J1
P DEMAND H — X
P BUSY L — W
P ON LINE H — F
P FAULT L — E
M CONN L — N
P CONN L — M
P SELECT (LA 180 L) (LP 05 H) — R, P, V, U, T, S

R1 330Ω
R2 330Ω
R3 150Ω
R4 150Ω
R5 150Ω
R6 150Ω
R7 1K
R8 1K
R9 4.02K
R26 1K
R27 2.2K
R36 150Ω
R37 330Ω

C1 .01mf
C2 .01mf
C3 180pf
C4 150pf
C5 150pf

8641 E16
7414 E21
7404 E7
74LS03 E25
74LS09 E25
7474 E15
7414 E21
7400 E8
8640 E12
DC004 E1
7402 E2
74157 E22
8881 E28

BUSY H
FAULT H
LA ON LINE H
INIT L
READY H
ERROR L
WRITE DB L
LP STROBE L
READY · ERR
RQST A
BSYNC AJ2
DAL02 H
DAL01 H
DAL00 H
BWTBT AK2
BDOUT AE2
BD IN L AH2
VECTOR H
BDIN
ENB H
BRPLY AF2
SEL6
SEL4
SEL2
SEL0
OUT HB
OUT LB
INWD
WRITE CS
READ CS H
WRITE DB H
M CONN L
P STROBE
P SELECT' (LA 180 H LP05)

7493	10	5
555	1	8
8641	8	16
8640	1	8
8136	8	16
74175	8	16
74157	8	16
DC003	9	18
DC004	10	20
IC TYPE	GND	+5

CUST	CHANGE NO.	REV.

TITLE: LPV-11 PRINTER INTERFACE
SIZE CODE: D CS
NUMBER: M8027-0-1
REV: B
SCALE: —
SHEET 3 OF 5
DIST.

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION

+5V
R10 330
R12 330
AM2
BIAKI
DC003 E6
RQST A 17 RQSTA
7 BIAKI
AT2 5 BINIT
B INIT L 3 BDIN
BDIN 10 RQSTB
15 ENA DAT
12 ENB DAT
ENA CLK
ENB CLK
ENA ST 16
BIRQ 8
BIAKO 6
INIT 0 4
VECTOR 1
VEC RQST 2
ENB ST 11
14 13
AL2 INT EN H
AN2 BIRQ L
BIAKO L
INIT L
VECTOR H
R11 680
R13 680
WRITE CS

74175 E14
DAL 03 H 13 D3 R3(1) 15, R3(0) 14
DAL 02 H 12 D2 R2(1) 10, R2(0) 11
DAL 01 H 5 D1 R1(1) 7, R1(0) 6
DAL 00 H 4 D0 R0(1) 2, R0(0) 3
CLR CLK 1 9
8881 E26 (5,6 → 4) (2,3 → 1) (11,12 → 13) (8,9 → 10)
FF
P DATA 14 H
P DATA 03 H
P DATA 02 H
P DATA 01 H
EE BB AA LL KK JJ HH

74175 E13
DAL 07 H 13 D3 R3(1) 15, R3(0) 14
DAL 06 H 12 D2 R2(1) 10, R2(0) 11
DAL 05 H 5 D1 R1(1) 7, R1(0) 6
DAL 04 H 4 D0 R0(1) 2, R0(0) 3
CLR CLK 1 9
INIT L
WRITE DB H
W7
W8
P
74S02 E20 (2,3 → 1) (6,5 → 4)
T
+5V R35 1K
8881 E30 (11,12 → 13) (8,9 → 10) (2,3 → 1) (5,6 → 4)
D C DD CC RR PP TT SS
P DATA 08 H
P DATA 07 H
P DATA 06 H
P DATA 05 H

+5V AA2, BA2
AM1, AJ1
AT1, BJ1
BM1, BT1
C9 6.8μf
C10 6.8μf
C11 THRU C41 .01μf

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LPV-11 PRINTER INTERFACE	D	CS	M8027-0-1	B
SCALE —H—	SHEET 4 OF 5	DIST.		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

+5V
R39 1K
R38 1K
R43 1K
R42 1K
R41 1K
R40 1K
R44 1K
V10 V3
W9 V2
V7
W13 V6
W12 V5
W11 V4
W14 V8
M ON LINE
BUSY H
READY-ERR
INT EN H
74157 E4
74157 E3
STB S0
VECTOR H
8881 E28
(VECTOR H + READ CS H) L
8641 E18
8641 E23
AU2 BDAL 00 L
DAL 00 H
AV2 BDAL 01 L
DAL 01 H
BE2 BDAL 02 L
DAL 02 H
BF2 BDAL 03 L
DAL 03 H
BH2 BDAL 04 L
DAL 04
BJ2 BDAL 05 L
DAL 05 H
BK2 BDAL 06 L
DAL 06 H
BL2 BDAL 07 L
DAL 07 H
BM2 BDAL 08 L
R19 1K
R18 1K
R17 1K
R16 1K
R15 1K
R14 1K
A7 W4 A6 A5 W3 A4 W2 A3
3136 E13
OUT 9 ENE H
STB 7
R25 1K
R24 1K
R23 1K
R22 1K
R21 1K
R20 1K
A12 A11 A10 A9 A8
8136 E24
OUT 9
STB 7
8640 E12
8640 E27
BM2 BDAL 08
BN2 BDAL 09
BP2 BDAL 10
BR2 BDAL 11
BS2 BDAL 12
AP2 BBS 7
AR2 BDMG1 L
AS2 BDMG0 L

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE LPV-11 PRINTER INTERFACE
SIZE D CODE CS NUMBER M8027-0-1 REV. B
SCALE SHEET 5 OF 5 DIST.
DEC/CSD M8027-0-1 REV B
PN

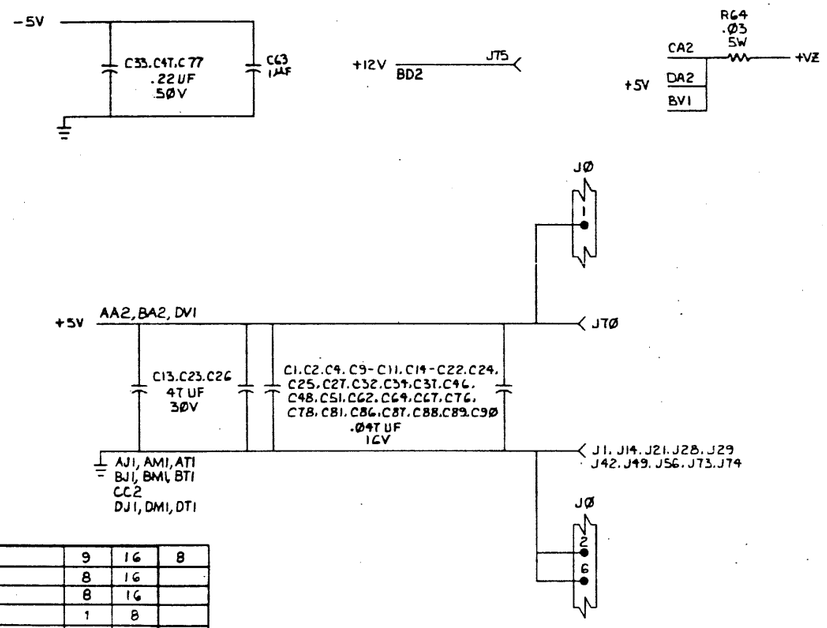
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

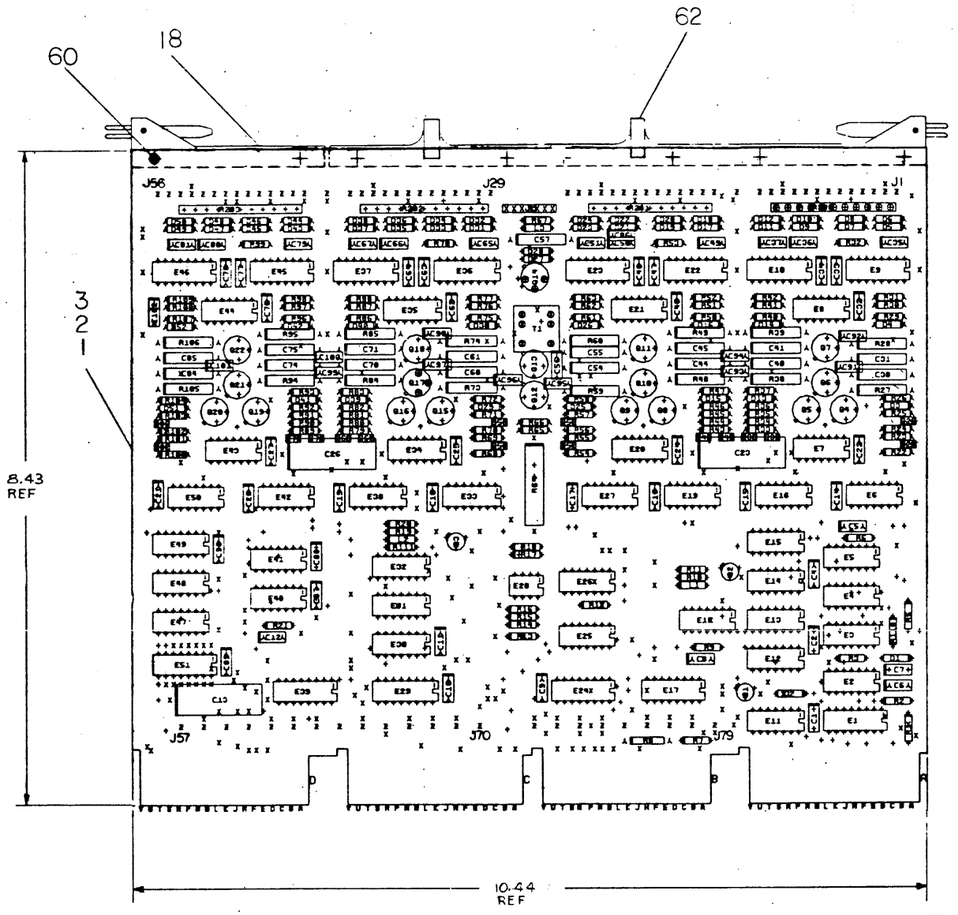
NOTES:

1. 8640. E11 PIN 8 IS +5 *
2. 8837. E1 PIN 16 IS +5 *

S3	S2	S1	DESIRED BANK
ON	ON	ON	0-4K
ON	ON	OFF	4-8K
ON	OFF	ON	8-12K
ON	OFF	OFF	12-16K
OFF	ON	ON	16-20K
OFF	ON	OFF	20-24K
OFF	OFF	ON	24-28K
OFF	OFF	OFF	28-32K

E-28 SWITCH POSITIONS FOR BANK SELECT.





7528	9	16	8
8837	8	16	
8838	8	16	
8640	1	8	
IC TYPE	GND	+5V	-5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

REV	CHK	CHANGE NO	REVISIONS	DEC NO.	EIA NO.
C		G653-00001	P. Durant 12-22-74		
D		G653-00002	N. Bjornson 11-24-75 P. Durant 9-12-75		
E		G653-00003	P. Durant 12-9-75 N. Bjornson 14 DEC '75 P. DURANT 1-5-76		
F		G653-00004	P. Durant 14-DEC-75 N. Bjornson 14-DEC-75 P. DURANT		

SEMICONDUCTOR CONVERSION CHART

FIRST USED ON OPTION MODEL

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV. C

DRN: M. POIRIER	DATE 5-12-75	digital
CHK'D Robert Hammond	DATE 7-1-75	
ENG. P. Durant	DATE 7-2-75	TITLE MMVII-A 4KX16 BIT MEMORY
PROJ. ENG. P. Durant	DATE 7-2-75	
PROD. [illegible]	DATE 7-3-75	
NEXT HIGHER ASSY		SIZE D CODE CS NUMBER G653-0-1 REV. F
SCALE		
SHEET 1 OF 8		DIST.

G653-0-1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1975 DIGITAL EQUIPMENT CORPORATION"

PARTS LIST

QTY	REF DESIGNATIONS	DESCRIPTION	PART NO	ITEM NO
REF		ASSY/DRILL HOLE LAYOUT	D-AH-G653-0-5	1
REF		MODULE ECO HISTORY	B-MH-G653-0-6	2
1		ETCHED CIRCUIT BOARD	5011632	3
2	C8,12	CAP 82 PF 100V	1000015	4
1	C8	CAP 1000 PF 100V	1000042	5
8	C35,36,49,50,65,66,79,80	CAP 120 PF 100V	1000018	6
2	C5,C7	CAP 820 PF 100V	1000027	7
35	C1,2,4,9,10,11,14-22,24 25,27,32,34,37,46,78,81, 48,51,62,86,64,67,76,89, 90,87,88	CAP .047 UF 16V	1009678	8
17	C30,31,40,41,44,54,45,55, 60,61,70,71,74,75,84,85, 57	CAP S. TANT 6.8 UF 35V	1005306	9
18	C28,29,38,39,42,43,52,53, 58,59,68,69,72,73,82,83	CAP 3300 PF 50V	1011740-01	10
3	C13,23,26	CAP 47 UF 30V	1012219	11
16	C56,91-102,33,47, ,77	CAP,22 UF 50V	1010274	12
1	D2	DIODE IN752A	1102808	13
51	D1,D3-D52	DIODE D672	1105275	14
1	E28	SWITCH 4 POLE DIP	1211164-00	15
79	J1-J79	CONTACT, FEMALE	1211728	16
1	J0	CONN. PLUG, 7 PIN	1212104	17
1		HANDLE, L.H.	7413826-00	18
1	R64	RES .03 5W 3%	1310876-01	19
16	R23,25,34,36,44,46,55,57 69,71,80,82,90,92,101,103	RES 120 5% 1/4W	1300247	20
16	R22,24,33,35,43,45,54,56, 68,70,79,81,89,91,100,102	RES 33 5% 1/4W	1300197	21
16	R26,29,37,40,47,50,58,61, 72,75,83,86,93,104,107,96	RES 5.1 5% 1/4W	1309422	22
20	R30,31,41,42,51,52,62,63, 11,78,77,87,88,97,98,108 109,5,111,12	RES 1K 5% 1/4W	1300365	23
5	R9,10,19,21 110	RES 100 5% 1/4W	1300229	24
4	R1,85,7,66	RES 470 5% 1/4W	1300316	25
1	R3	RES 180 5% 1/4W	1301322	26
1	R8	RES 56 5% 1/2W	1309995	27
7	R13-18,20,	RES 4.7K 5% 1/4W	1300447	28
1	R2	RES 10K 5% 1/4W	1300479	29
1	R6	RES 75 5% 1/4W	1302379	30
1	R67	RES 5.62 K 1% 1/8W	1306128	31
4	R32,53,78,99	RES 10.0K 1% 1/8W	1303312	32
4	R200,201,202,203	RES PACK 11 PIN #80	1311741	33
16	R27,28,38,39,48,49,59,60 73,74,84,85,94,95,105,106	RES 2.0 1% 3W WW	1312542	34
2	Q2,Q3	TRANS 30098	1503100	35
1	Q1	TRANS 6531B	1509338	36
16	Q4-11, 15-22	TRANS 3782	1509649-01	37
2	Q12,13	TRANS 3725	1510959	38
2	L1,L2	INDUCTOR 100 UH	1610662	39
1	L3	INDUCTOR 2.2 UH	1609756	40
1	T1	TRANSFORMER.	1612523	41
2	E18,40	DELAY LINE 250 NS	1611243	42

PARTS LIST

QTY	REF DESIGNATIONS	DESCRIPTION	PART NO	ITEM NO
1	E41	I.C. 7400	1905575	43
1	E5	I.C. 7451	1905828	44
1	E2	I.C. 8881	1909705	45
1	E26	I.C. 74H53	1909062	46
12	E3,6,12,14,16,19,27,32,33, 38,42,50	I.C. 74H74	1909667	47
4	E7,20,34,43	I.C. 7437	1910091	48
1	E25	I.C. 8242	1909712	49
6	E8,15,21,35,44,48	I.C. 74H04	1909931	50
8	E9,10,22,23,36,37,45,46	I.C. 7528	1910687	51
6	E4,13,30,31,47,49	I.C. 74128	1912068	52
1	E1	I.C. 8837	1911116	53
4	E17,24,29,38	I.C. 8641	1911579	54
1	E11	I.C. 8640	1911469	55
1	Q14	DEC 320-5.0	1912541-00	56
19		TRANSIPADS	9007201	57
4		STANDOFF SPACERS	9008213	58
4		NYLON SCREW 6-32 X .250	9009041-1	59
8		EYELET, HANDLE	9006732	60
1		HEAT SINK 2201 RED	1210001-00	61
1		HANDLE R.H.	7413826-01	62
REF	E51	SPARE		63
1	CG3	CAP 1UF RADIAL	1010274-02	64

REVISIONS

CHK	CHANGE NO.	REV.

TITLE: MMVII-A 4KX16 BIT MEMORY
SIZE: D | CODE: DCS | NUMBER: G653-Ø-1 | REV: F
SCALE | SHEET 2 OF 8 | DIST.

DCS G653-Ø-1 REV F

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

BUS SYNC L AJ2
BUS REF L AR1
MTDB RESET L
MTDA RESET H
MTDA D SEL H
MTDA F BUSY H
MTDA R DOUT H
MTDA F BYTE L
MTDA RESET H
MTDA F READ H
MTDA RT 50 H
MTDA RT 100 H
MTDA RT 150 H
MTDA RT 200 H
READ TIMING DELAY CKT
MTDA RT 175 H
MTDA RT 25 H
BUS DIN L AH2
MTDA R DIN H
BUS DOUT L AE2
MTDA R DOUT H
MTDA T INH H
MTDB RESET L
MTDC RAW Ø H
MTDA F BYTEL
MTDA FAØ H
MTDA FAØ L
J79 MTDA F BUSY L
J62 MTDA READ EARLY L
J60 MTDA READ LATE L
BUS WRITE BYTE L AK2
MTDA R W BYTE L
MTDA DATA OUT L
MTDA F READ H
MTDA RT 50 H
MTDA RT 100 H
MTDA RT 25 H
(BITS Ø-7) MTDA CLR Ø L
(BITS 8-15) MTDA CLR 1 L
MTDA INH L
MTDA T INH H
MTDA FAØ L
MTDA R W BYTE L
MTDA F AØ H
MTDA R DOUT H
MTDA WRITE TIME ENABLE H
MTDA MDR CLK Ø H
MTDA MDR CLK 1 H
MTDA R DIN H
AFZ BUS REPLY L
MTDA WT 175 H
MTDA WT 225 H
J59 MTDA W LATE'
J57 MTDA STK CHG H
J61 MTDA W EARLY L
BUS TIMING BUFFERS
MTDB LOCKOUT L
MTDF RAW A 13 H
MTDF RAW A 14 H
MTDF RAW A 15 H
MTDA RT 100 H
MTDA RT 150 H
MTDA W CLR L
MTDA R DIN H
MTDA R DOUT H
MTDA RT 150 H
MTDA WRITE TIME ENABLE H
MTDA RESET H
MTDA W CLR L
WRITE TIMING DELAY LINE CKT
NOT USED
BANK TO BE USED
BANK SELECT CKT

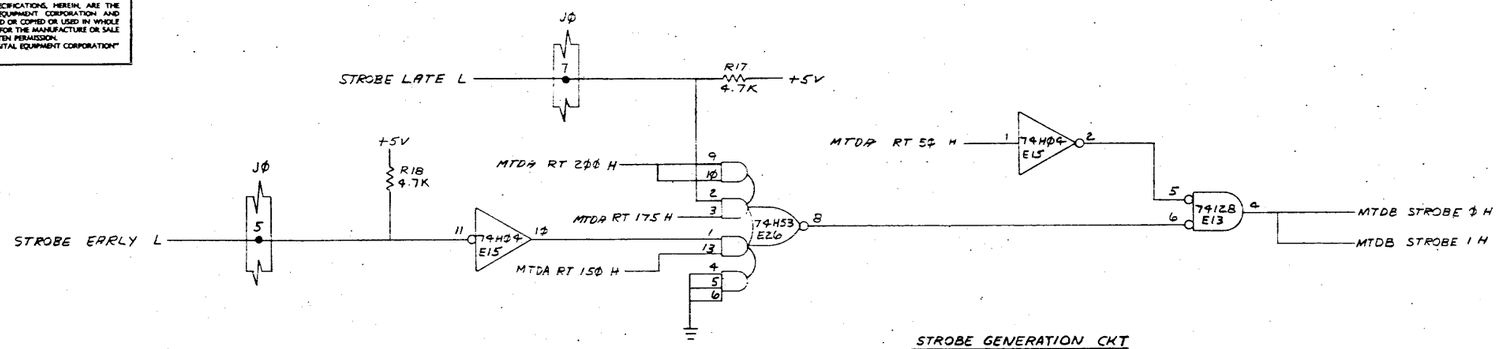
	SW1	SW2	SW3	
Ø	1	1	1	Ø - 4K
1	Ø	1	1	4 - 8K
2	1	Ø	1	8 - 12K
3	Ø	Ø	1	12 - 16K
4	1	1	Ø	16 - 20K
5	Ø	1	Ø	20 - 24K
6	1	Ø	Ø	24 - 28K
7	Ø	Ø	Ø	28 - 32K

Ø SW OPEN OFF
1 SW CLOSED ON

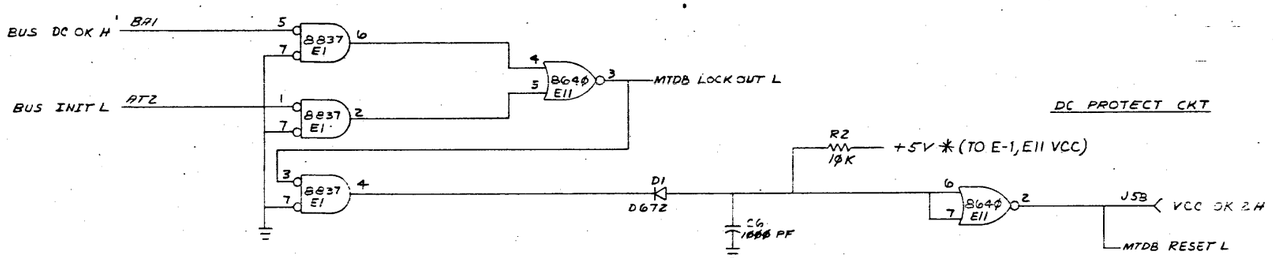
REVISIONS		
CHK	CHANGE NO	REV

(CONTROL TIMING)
TITLE MMVII-A 4KX16 BIT MEMORY (MTDA)
SIZE D CODE CS NUMBER G653-Ø-1 REV F
SCALE — SHEET 3 OF 8 DIST.

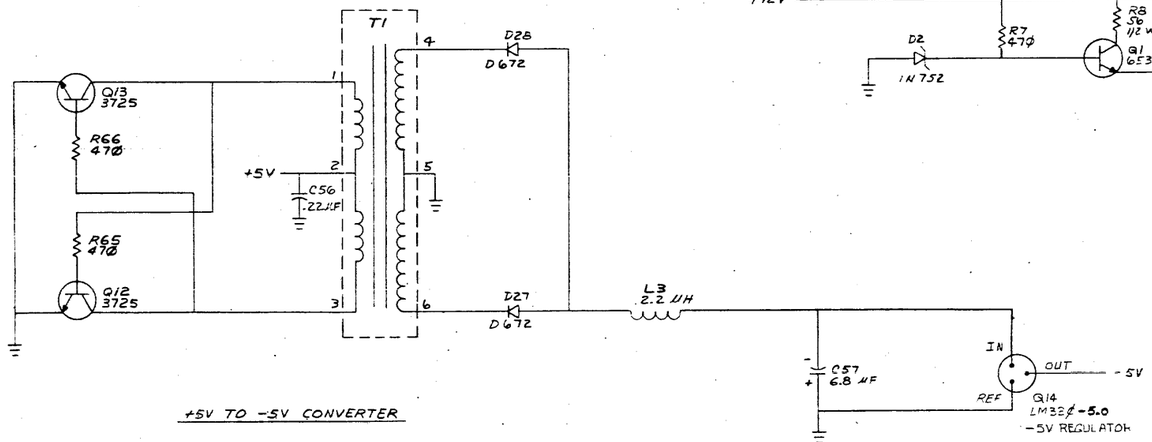
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"



STROBE GENERATION CKT



DC PROTECT CKT



+5V TO -5V CONVERTER

REVISIONS		
CHK	CHANGE NO	REV.

(CONTROL TIMING)

TITLE	SIZE	CODE	NUMBER	REV.
MMVII-A 4KX16 BIT MEMORY (MTDB)	D	CS	G653-Ø-1	F
SCALE	SHEET 4 OF 8	DIST.		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1974 DIGITAL EQUIPMENT CORPORATION"

MTDC VTH

MTDA INH L

VTH TEST POINT

J0 4

R67 5.62K +5V

R78 10K 1/8W

C86 .047UF

C67 .047uf

P202

MTDC RAW ØH

MTDA DATA OUT L

BUS DAL ØL CU2

8641 E29

74H74 E33

MTDA MDR CLKØH

MTDC CLR Ø L

SB ØØ J31

SA ØØ J32

R202

7528 E36

D32 D672

D31 D672

C65 120PF

MTDB STROBE Ø H

+5V R76 1K

74H04 E35

7437 E34

BIT ØØ

C62 6.8 UF

R69 12Ω

R73 2.Ø 3W

C58 3322 PF

R58 33

Q15 3762

J30 MTDC INH ØØ

D29 D672

R72 5.1

J69 MTDC STK A I H

BUS DAL 1L CV2

MTDA MDR CLK Ø H

MTDA CLR Ø L

STKC SB Ø1 J34

STKC SA Ø1 J35

R202

7528 E36

D34 D672

D33 D672

MTDB STROBE Ø H

R77 1K

74H04 E35

BIT Ø1

C61 6.8 UF

R71 12Ω

R74 2.Ø 3W

C59 3322 PF

R70 33

Q18 3762

J33 MTDC INH Ø1

D28 D672

R75 5.1

J68 MTDC A 2 H

BUS DAL 2L DE2

MTDA MDR CLK Ø H

MTDA CLR Ø L

STKC SB Ø2 J37

STKC SA Ø2 J38

R202

7528 E37

D36 D672

D35 D672

C66 120PF

MTDB STROBE Ø H

R87 1K

74H04 E35

7437 E34

BIT Ø2

C71 6.8 UF

R82 12Ω

R85 2.Ø 3W

C69 3322 PF

R79 33

Q17 3762

J36 MTDC INH Ø2

D48 D672

R86 5.1

J67 MTDC A 3 H

BUS DAL 3L DF2

MTDA MDR CLK Ø H

MTDA CLR Ø L

STKC SB Ø3 J41

STKC SA Ø3 J40

R202

7528 E37

D37 D672

D38 D672

MTDB STROBE Ø H

R88 1K

74H04 E35

7437 E34

BIT Ø3

C70 6.8 UF

R83 12Ω

R84 2.Ø 3W

C68 3322 PF

R81 33

Q16 3762

J39 MTDC INH Ø3

D39 D672

R83 5.1

REVISIONS		
CHK	CHANGE NO	REV.

(SENSE INHIBITS 00-03)

TITLE	SIZE	CODE	NUMBER	REV
4KX16 BIT MEMORY (MTDC)	D	CS	G653-C-1	F
SCALE		DIST.		

DCS G653-Ø-1 REV F

SHEET 5 OF 8

DEC FORM NO 3900 1/68

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

MTDA INH L — 74H04 E44

BIT Ø4

J66 MTDD RAW Ø H
MTDC VTH — R99 10K 1/8W — C81 .047MF — R201
MTDA DATA OUT L — 8641 E39 — 74H74 E42
BUS DAL 4 L DH2
MTDA MDR CLK Ø H
MTDA CLR Ø L
STKC SBØ4 J44
STKC SAØ4 J45
R2Ø3 — 7528 E45 — D44 D672 — D43 D672 — C79 120PF
MTDB STROBE Ø H
+5V — R97 1K — 74H04 E44
7437 E43 — C74 6.8MF — R9Ø 12Ø — R94 2.Ø 3W — C73 3300PF — R89 33 — Q19 3762 — J43 MTDD INH Ø 4
D41 D672 — R93 5.1

BIT Ø5

J65 MTDD A5 H
BUS DAL 5 L DJ2
MTDA MDR CLK Ø H
MTDA CLR Ø L
STKC SBØ5 J47
STKC SAØ5 J48
R2Ø3 — 7528 E45 — D46 D672 — D45 D672
MTDB STROBE Ø H
+5V — R98 1K — 74H04 E44
7437 E43 — C75 6.8MF — R92 12Ø — R95 2.Ø 3W — C72 3300PF — R91 33 — Q22 3762 — J46 MTDD INH Ø5
D42 D672 — R96 5.1

BIT Ø6

J63 MTDD A6 H
BUS DAL 6L DK2
MTDA MDR CLK Ø H
MTDA CLR Ø L
STKC SBØ6 J51
STKC SAØ6 J52
R2Ø3 — 7528 E46 — D48 D672 — D47 D672 — C86 120PF
MTDB STROBE Ø H
+5V — R1Ø8 1K — 74H04 E44
7437 E43 — C85 6.8MF — R1Ø1 12Ø — R1Ø6 2.Ø 3W — C82 3300PF — R1Ø0 33 — Q21 3762 — J5Ø MTDD INH Ø6
D52 D672 — R1Ø7 5.1

BIT Ø7

J64 MTDD A7 H
BUS DAL 7L DL2
MTDA MDR CLK Ø H
MTDA CLR Ø L
STKC SBØ7 J55
STKC SAØ7 J54
R2Ø3 — 7528 E46 — D49 D672 — D5Ø D672
MTDB STROBE Ø H
+5V — R1Ø9 1K — 74H04 E44
7437 E43 — C84 6.8MF — R1Ø3 12Ø — R1Ø5 2.Ø 3W — C83 3300PF — R1Ø2 33 — Q2Ø 3762 — J53 MTDD INH Ø7
D51 D672 — R1Ø4 5.1

REVISIONS

CHK	CHANGE NO	REV.

(SENSE INHIBIT BITS 4 -7)

TITLE	MMVII-A 4KX16 BIT MEMORY (MTDD)	SIZE	CODE	NUMBER	REV.
		D	CS	G653-Ø-1	F
SCALE		SHEET 6 OF 8		DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

MTDA INH L — 74H04 E8

BIT 08

J78 MTDE AB H

MTDE VTH — R32 18K 1/8W — C37 .047uf — R200

MTDA DATA OUT L — BUS DAL 8 L BM2

8641 E17 — 74H74 E6

MTDA MDR CLK I H

MTDA CLR I L

STKC SB08 J3

STKC SA08 J4

R200 — 7528 E9 — D6 D672 — D5 D672 — C35 120pF

MTDB STROBE I H

+5V — R30 1K — 74H04 E8

7437 E7 — C30 6.8 uF — R23 120 — R27 2.0 3W — C28 3300 PF — R22 33 — Q4 3762 — J2 MTDE IND 08

D3 D672 — R26 5.1

BIT 09

J76 MTDE A9 H

MTDA DATA OUT L — BUS DAL 9 L BN2

8641 E17 — 74H74 E6

MTDA MDR CLK I H

MTDA CLR I L

STKC SB09 J6

STKC SA 09 J7

R200 — 7528 E9 — D8 D672 — D7 D672

MTDB STROBE I H

+5V — R31 1K — 74H04 E8

7437 E7 — C31 6.8 uF — R25 120 — R28 2.0 3W — C29 3300PF — R24 33 — Q7 3762 — J5 MTDE INH 09

D4 D672 — R29 5.1

BIT 10

J77 MTDE A10 H

MTDA DATA OUT L — BUS DAL 10 L BP2

8641 E17 — 74H74 E16

MTDA MDR CLK I H

MTDA CLR I L

STKC SB10 J9

STKC SA 10 J10

R200 — 7528 E10 — D10 D672 — D9 D672 — C36 120 PF

MTDB STROBE I H

+5V — R41 1K — 74H04 E8

7437 E7 — C41 6.8 uF — R34 120 — R39 2.0 3W — C39 3300 PF — R33 33 — Q6 3762 — J8 MTDE INH 10

D14 D672 — R40 5.1

BIT 11

J72 MTDE A11 H

MTDA DATA OUT L — BUS DAL 11 L BR2

8641 E17 — 74H74 E16

MTDA MDR CLK I H

MTDA CLR I L

STKC SB11 J13

STKC SA 11 J12

R200 — 7528 E10 — D11 D672 — D12 D672

MTDB STROBE I H

+5V — R92 1K — 74H04 E8

7437 E7 — C40 6.8 uF — R36 120 — R38 2.0 3W — C38 3300 PF — R35 33 — Q5 3762 — J11 MTDE INH 11

D13 D672 — R37 5.1

REVISIONS		
CHK	CHANGE NO	REV.

(SENSE INHIBIT BITS 8-11)

TITLE	SIZE	CODE	NUMBER	REV.
MMV11-A 4KX16 BIT MEMORY (MTDE)	D	CS	G653-0-1	F
SCALE —	SHEET 7 OF 8		DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

MTDA INH L — 74H04 E21

BIT 12

J71 MTDFA12H — MTDC VTH — R53 10K 1/8W — C81 .047UF — R201

MTDA DATAOUT L — BUS DAL12L BS2 — 8641 E24 — 74H74 E19

MTDA MDR CLK1H — MTDA CLR1L

STKC SB12 J16 — STKC SA12 J17 — R201 — 7528 E22

D18 D672 — D17 D672 — C49 120pF — MTDB STROBE1H

+5V — R51 1K — 74H04 E21

7437 E20 — C44 6.8 UF — R44 120 — R48 2.0 3W — C43 3300 PF — R43 33 — Q15 3762 — J15 MTDF INH 12

D15 D672 — R47 5.1

BIT 13

MTDF RAW A13H — BUS DAL13L BT2 — 8641 E24 — 74H74 E19

MTDA MDR CLK1H — MTDA CLR1L

STKC SB13 J19 — STKC SA13 J20 — R201 — 7528 E22

D20 D672 — D19 D672 — MTDB STROBE1H

+5V — R52 1K — 74H04 E21

7437 E20 — C45 6.8 UF — R46 120 — R49 2.0 3W — C42 3300 PF — R45 33 — Q11 3762 — J18 MTDF INH 13

D16 D672 — R50 5.1

BIT 14

MTDF RAW A14H — BUS DAL14L BU2 — 8641 E24 — 74H74 E27

MTDA MDR CLK1H — MTDA CLR1L

STKC SB14 J23 — STKC SA14 J24 — R201 — 7528 E23

D22 D672 — D21 D672 — C50 120PF — MTDB STROBE1H

+5V — R62 1K — 74H04 E21

7437 E20 — C55 6.8 UF — R55 120 — R60 2.0 3W — C52 3300 PF — R54 33 — Q16 3762 — J22 MTDF INH 14

D26 D672 — R61 5.1

BIT 15

MTDF RAW A15H — BUS DAL15L BV2 — 8641 E24 — 74H74 E27

MTDA MDR CLK1H — MTDA CLR1L

STKC SB15 J27 — STKC SA15 J26 — R201 — 7528 E23

D23 D672 — D24 D672 — MTDB STROBE1H

+5V — R63 1K — 74H04 E21

7437 E20 — C54 6.8 UF — R57 120 — R59 2.0 3W — C53 3300 PF — R56 33 — Q9 3762 — J25 MTDF INH 15

D25 D672 — R58 5.1

REVISIONS		
CHK	CHANGE NO.	REV.

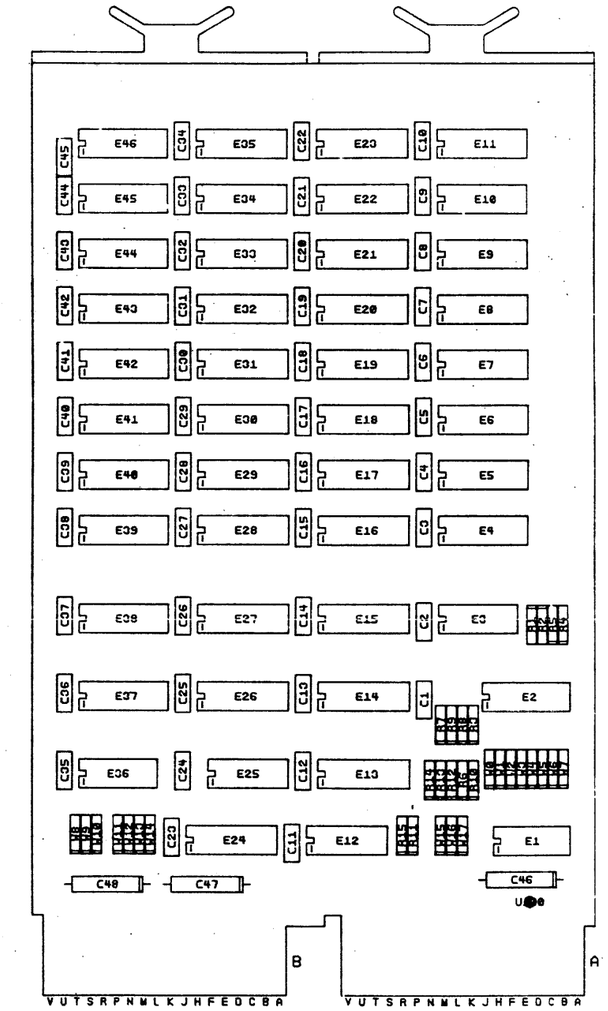
(SENSE INHIBIT BIT-12-15)

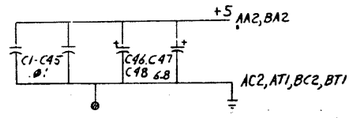
TITLE	MM-11-A 4KX16 BIT MEMORY (MTDF)	SIZE	CODE	NUMBER / REV.
		D	CS	G653-0-1 F
SCALE	—	SHEET 8 OF 8	DIST.	

DIGITAL EQUIPMENT CORP. MAYNARD, MASS.

CAT. CODE NUMBER DCSG653-0-1 REV. F

THIS DRAWING AND SPECIFICATIONS, ORIGINAL AND THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION





NOTES:
1. SHIPPING CONFIGURATION IS ALL JUMPERS INSTALLED EXCEPT W11,W12,W13 AND W14.

STEP E	↑ Y AXIS — STEP X TIMES
REPEAT	→ X AXIS 5.250 STEP 1 TIMES

CHK	CHANGE NO	REV
JC	M7942-AE	M

J. CURTIS 2-5-80

SIGNATURES	DATE
DRN. J. PHELLEN	5-75
CHK'D. R. FONTANE	6-75
MECH. ENG. W. ERICSON	6-75
PROJ. ENG. W. ERICSON	6-75
PROD. W. ERICSON	6-75
SCALE 2/1	
SHT. 1 OF 4	
NEXT HIGHER ASSY. D-UA-M7942-0-0	

digital

TITLE 4K/2K PROM

SIZE	CODE	NUMBER	REV
D	CS	M7942-0-1	M

MS# 150996

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

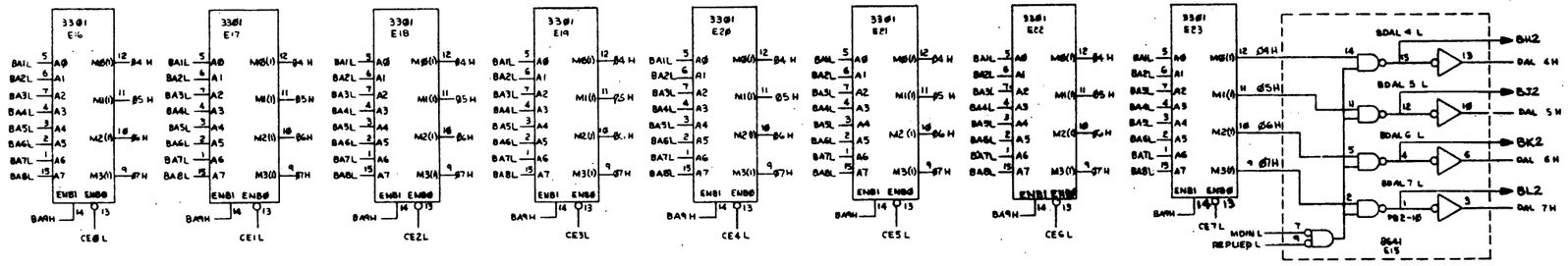
8 7 6 5 4 3 2 1

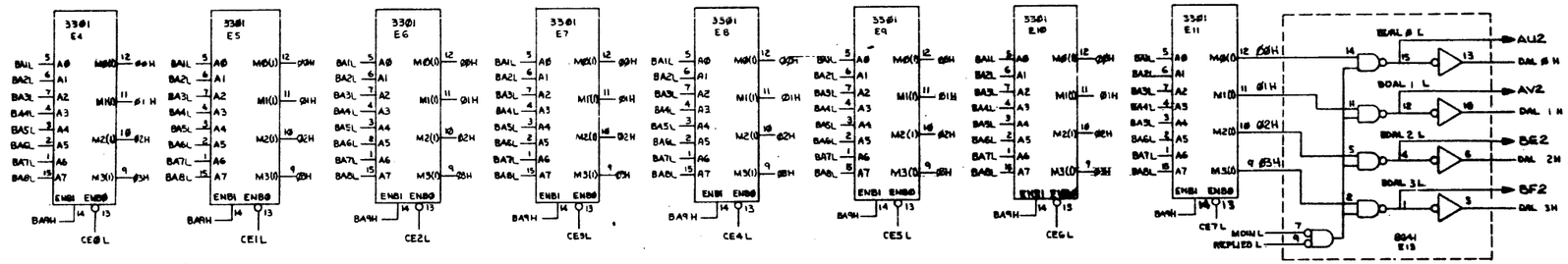
A B C D

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
4K/2K PROM	D	CS	M7942-0-1	M
SCALE —	SHEET 2 OF 4	DIST.	DN 1	

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1975 DIGITAL EQUIPMENT CORPORATION





REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
4K/2K PROM	D	CS	M7942-Ø-1	M
SCALE —	SHEET 3 OF 4	DIST.		

DWG M7942-Ø-1 REV M

8 7 6 5 4 3 2 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
4K/2K PROM	D	CS	M7942-0-1	M
SCALE	SHEET 4 OF 4	DIST.		

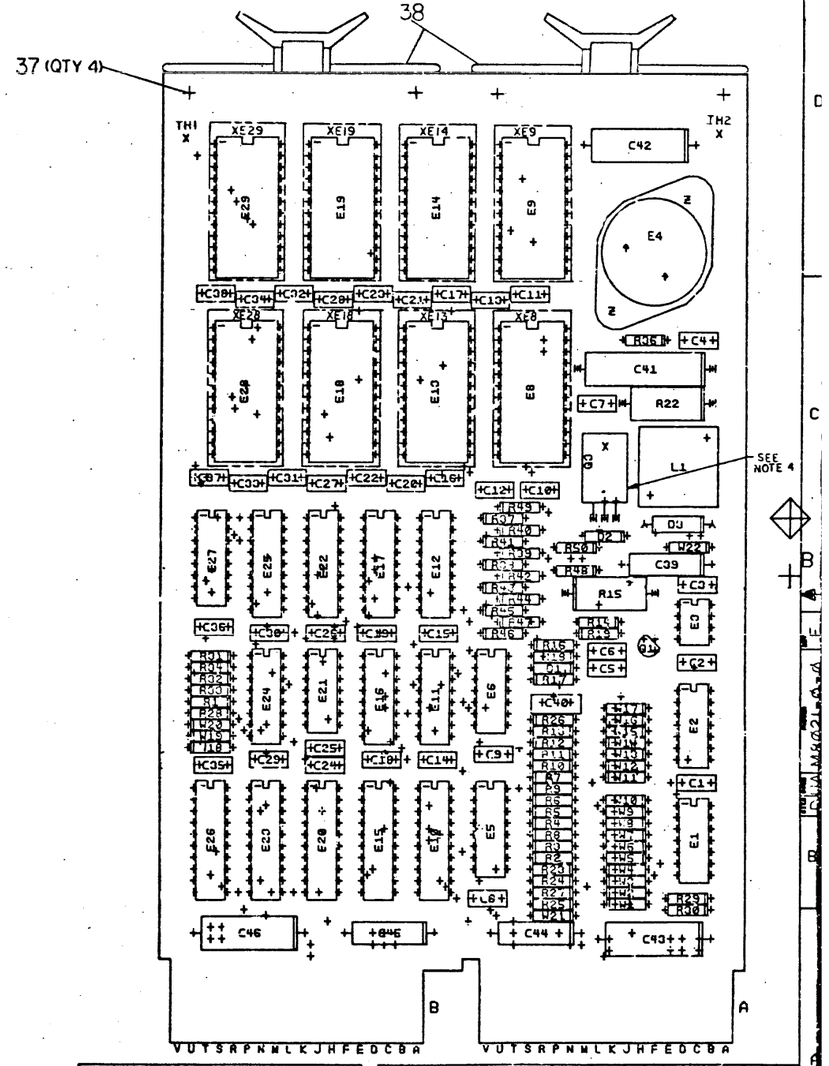
DEC FORM NO. DRD 128

PN 1

THESE DRAWINGS AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED AS A BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION

NOTES CONT.

5. PART NO. 1001610-01 IS AN ALLOWABLE SUBSTITUTE FOR PART NO. 1001610-00
6. PART NO. 2113106-00 FOR RAM DESIGNATIONS E12, E17, E22, E25, IS ACCEPTABLE AS A VENDOR TYPE "8111A4 OR "2111A4.
7. REMOVE THE FOLLOWING UNUSED FINGERS ON ARTWORK: AB1, AE1, AF1, AH1, AL1, AN1, AP1, AR1, AS1, AU1, BB1, BC1, BD1, BE1, BF1, BH1, BK1, BL1, BN1, BP1, BR1, BS1, AL2.



NOTES:
1. AT SOLDER WAVE TIME, MASK OFF X HOLES (TH1 & TH2).
2. W7, W10, W16, W19, W20 & W22 ARE OPTIONAL
3. E8, E9, E13, E14, E18, E19, E28 & E29 ARE OPTIONAL AND IS PICKED UP AT A HIGHER ASSEMBLY
4. PLACE INSULATOR (ITEM #43) UNDER Q3 (TRANSISTOR) BEFORE MOUNTING.

CH	CHANGE NO	REV
		D
		E
		F

SIGNATURES	DATE
DRN. E. WILSON	16FEB77
CHK'D. R.W. CAUNTER	23FEB77
ENG. T. WITOWSKI	27FEB77
PROJ. ENG. R. FITCH	MAR77
PROD. W. SIPILA	MAR77
SCALE 2/1	
SHT. 1 OF 1	
NEXT HIGHER ASSY. 8-00-M8021-0	

ETCH REV. [illegible]
P.C. DESIGN DATA BASE REV. E

digital

TITLE LSI 11 UV PROM RAM

SIZE	CODE	NUMBER	REV
D	UA	M8021-0-0	F

MS# MR

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1973 DIGITAL EQUIPMENT CORPORATION

NOTE:
1. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:

PACKAGE TYPE	VCC	GND
IC PIN DIP	16	8
14 PIN DIP	14	7
IC. DEC 8640	8	1
I.C. DEC DC004	20	10
I.C. DEC DC005	20	10
I.C. DEC 74LS75	5	12

BDAL 15 L — BV2 8 — BUS 3 — DAT 3 — 6 — M1 DAL 15 H
BDAL 14 L — BV2 9 — BUS 2 — DAT 2 — 7 — M1 DAL 14 H
BDAL 13 L — BT2 11 — BUS 1 — DAT 1 — 17 — M1 DAL 13 H
BDAL 12 L — BS2 12 — BUS 0 — DAT 0 — 18 — M1 DAL 12 H
DC005 E26
W15 W14 W16 — JA3 JA2 JA1 — MEN 3 — JAV 3 JAV 2 JAV 1 — XMIT REC — MATCH 3
M2 XMIT H
M1 REC H
+5V R26 1K — M1 MATCH 4K H — 74S03 E21 — R31 470
+5V R25 10K — W1 — M2 AD17 9 — B242 E2 — 18
+5V R27 10K — W2 — M2 AD16 10 — B242 E2 — 11
74S139 E16 — M1 DAL 11 H — M1 DAL 12 H — A2 B2 — FB0 FB1 FB2 FB3 — ENB2
+5V R16 1K R11 1K R12 1K R13 1K — W14 W13 W12 W11 — 74S26 E6 — M1 PROM S H

BDAL 11 L — BR2 8 — BUS 3 — DAT 3 — 6 — M1 DAL 11 H
BDAL 10 L — BP2 9 — BUS 2 — DAT 2 — 7 — M1 DAL 10 H
BDAL 9 L — BN2 11 — BUS 1 — DAT 1 — 17 — M1 DAL 9 H
BDAL 8 L — BM2 12 — BUS 0 — DAT 0 — 18 — M1 DAL 8 H
DC005 E23
+5V W19 W20 — JA3 JA2 JA1 — MEN 3 — JAV 3 JAV 2 JAV 1 — XMIT REC — MATCH 3 — M1 MATCH 256 H
M2 XMIT H
M1 REC H
+5V R24 10K — W3 — M2 AD17 — B242 E2 — 3
+5V R23 10K — W4 — M2 AD16 — B242 E2 — 4
M2 ENB H
+5V R9 1.5K — C49 .68 μF
M2 SYNC L — M2 RANS H — M1 DAL 0 H — BWTBT L — M1 DOUT L — BDIN L — DC004 E10 — ENB RACK — SYNC DAL 2 DAL 1 DAL 0 SEL 6 SEL 4 SEL 2 SEL 0 — WTBT DOUT DIN — VECTOR — BRPLY AE2 — M1 BRPLY L — M1 SEL 6 L — M1 SEL 2 L — W21 W22 — OUTHB OUTLB INWD — M1 OUTLE L — M1 OUTHB L — M1 REC H
BDOUT L — AE2 7 — 8640 E1 — 74S05 E21 — +5V R34 470 — M1 DOUT L

BDAL 7 L — BL2 8 — BUS 3 — DAT 3 — 6 — M1 DAL 7 H
BDAL 6 L — BK2 9 — BUS 2 — DAT 2 — 7 — M1 DAL 6 H
BDAL 5 L — BJ2 11 — BUS 1 — DAT 1 — 17 — M1 DAL 5 H
BDAL 4 L — BH2 12 — BUS 0 — DAT 0 — 18 — M1 DAL 4 H
DC005 E29
+5V — JA3 JA2 JA1 — MEN 3 — JAV 3 JAV 2 JAV 1 — XMIT REC — MATCH 3 — W18
BBS7 L — AD2 13
M2 XMIT H
M1 REC H
+5V R28 1K

BDAL 3 L — BF2 8 — BUS 3 — DAT 3 — 6 — M1 DAL 3 H
BDAL 2 L — BE2 9 — BUS 2 — DAT 2 — 7 — M1 DAL 2 H
BDAL 1 L — AV2 11 — BUS 1 — DAT 1 — 17 — M1 DAL 1 H
BDAL 0 L — AV2 12 — BUS 0 — DAT 0 — 18 — M1 DAL 0 H
DC005 E15
+5V — JA3 JA2 JA1 — MEN 3 — JAV 3 JAV 2 JAV 1 — XMIT REC — MATCH 3
M2 XMIT H
M1 REC H
M1 MATCH 256 H — W18 W9 W8 W7 W6 W5
M1 DAL 11 H — M1 DAL 12 H — M1 DAL 13 H — M1 DAL 14 H — M1 DAL 15 H
R1 1K R2 10K R3 10K R4 10K R5 10K R6 10K R7 10K
8136 E5 — B1 D1 B2 D2 B3 D3 B4 D4 B5 D5 B6 D6 — STB — OUT 9 — +5V R8 1K — M1 RAM S H
M2 SYNC H

M1

DWN J Wilson	19 FEB 73	FIRST USED ON	MRVII-BA
CHK'D R Newton	23 OCT 73		
ENG		TITLE	LS111 UV PROM RAM
PROJ. ENGR.			
PROJECT			
NEXT HIGHER ASSY.			
8-DD-MEM21-0		SIZE CODE / NUMBER	D MEM21-0-1
SCALE NONE		REV.	
SHEET 1 OF 4		DIST.	

REVISIONS

DW	CHANGE NO.	REV.
	ORIGINAL RELEASE	C
	ENGINEERING CHANGE ORDER	D
	ENGINEERING CHANGE ORDER	E
	ENGINEERING CHANGE ORDER	F

J. PAPA
J. CURTIS

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION" AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

74LS75 E27 — R49 1.5K, R38 1.5K, R39 1.5K, R46 1.5K, +5V
M1 DAL 1 H → D0 → M2 BA1 H
M1 DAL 2 H → D1 → M2 BA2 H
M1 DAL 3 H → D2 → M2 BA3 H
M1 DAL 4 H → D3 → M2 BA4 H
ENB1 ENB2
M2 SYNC L

M1 SEL 2 L, M1 SEL 6 L → 74S20 E6 → M2 XMIT H

M1 RAM S H → 74S03 E21 → R33 470 +5V
M1 PROM S H → 74S03 E21 → 74S03 E21 → M2 ENB H

74LS75 E29 — R41 1.5K, R42 1.5K, R43 1.5K, R44 1.5K, +5V
M1 DAL 5 H → D0 → M2 BA5 H
M1 DAL 6 H → D1 → M2 BA6 H
M1 DAL 7 H → D2 → M2 BA7 H
M1 DAL 8 H → D3 → M2 BA8 H
ENB1 ENB2

BAD 17 ← AD1 ← R29 10K +5V → 8640 E1 → M2 AD17
BAD 16 ← AC1 ← R30 10K +5V → 8640 E1 → M2 AD16

BSYNC L → A32 → 8640 E1 → M2 SYNC H
M2 SYNC H → 74S04 E21 → M2 SYNC L
R32 470 +5V

74LS75 E28 — R45 1.5K, R47 1.5K, +5V
M1 DAL 9 H → D0 → M2 BA9 H
M1 DAL 10 H → D1 → M2 BA10 H
M1 DAL 11 H → D2
M1 DAL 12 H → D3
ENB1 ENB2

74S139 E16 — R40 1.5K, R48 1.5K, R37 1.5K
A1 → M2 CE0 (1K)
FA1 → M2 CE1 (2K)
FA2 → M2 CE2 (3K)
FA3 → M2 CE3 (4K)
B1 ENB1
M1 SEL 6 L

BDMG I L → AR2 → AS2 → BDMG O L
BIAK I L → AN2 → AN2 → BIAK O L

8111A-4 E12
M2 BA1 H → A0
M2 BA2 H → A1
M2 BA3 H → A2
M2 BA4 H → A3
M2 BA5 H → A4
M2 BA6 H → A5
M2 BA7 H → A6
M2 BA8 H → A7
R/W CE1 CE2
I/O1 → M1 DAL 15 H
I/O2 → M1 DAL 14 H
I/O3 → M1 DAL 13 H
I/O4 → M1 DAL 12 H
OD → M1 REC H
M1 OUT H8 L
M1 SEL 2 L

8111A-4 E17
M2 BA1 H → A0
M2 BA2 H → A1
M2 BA3 H → A2
M2 BA4 H → A3
M2 BA5 H → A4
M2 BA6 H → A5
M2 BA7 H → A6
M2 BA8 H → A7
R/W CE1 CE2
I/O1 → M1 DAL 11 H
I/O2 → M1 DAL 10 H
I/O3 → M1 DAL 9 H
I/O4 → M1 DAL 8 H
OD → M1 REC H
M1 OUT H8 L
M1 SEL 2 L

8111A-4 E22
M2 BA1 H → A0
M2 BA2 H → A1
M2 BA3 H → A2
M2 BA4 H → A3
M2 BA5 H → A4
M2 BA6 H → A5
M2 BA7 H → A6
M2 BA8 H → A7
R/W CE1 CE2
I/O1 → M1 DAL 7 H
I/O2 → M1 DAL 6 H
I/O3 → M1 DAL 5 H
I/O4 → M1 DAL 4 H
OD → M1 REC H
M1 OUT L8 L
M1 SEL 2 L

8111A-4 E25
M2 BA1 H → A0
M2 BA2 H → A1
M2 BA3 H → A2
M2 BA4 H → A3
M2 BA5 H → A4
M2 BA6 H → A5
M2 BA7 H → A6
M2 BA8 H → A7
R/W CE1 CE2
I/O1 → M1 DAL 3 H
I/O2 → M1 DAL 2 H
I/O3 → M1 DAL 1 H
I/O4 → M1 DAL 0 H
OD → M1 REC H
M1 OUT L8 L
M1 SEL 2 L

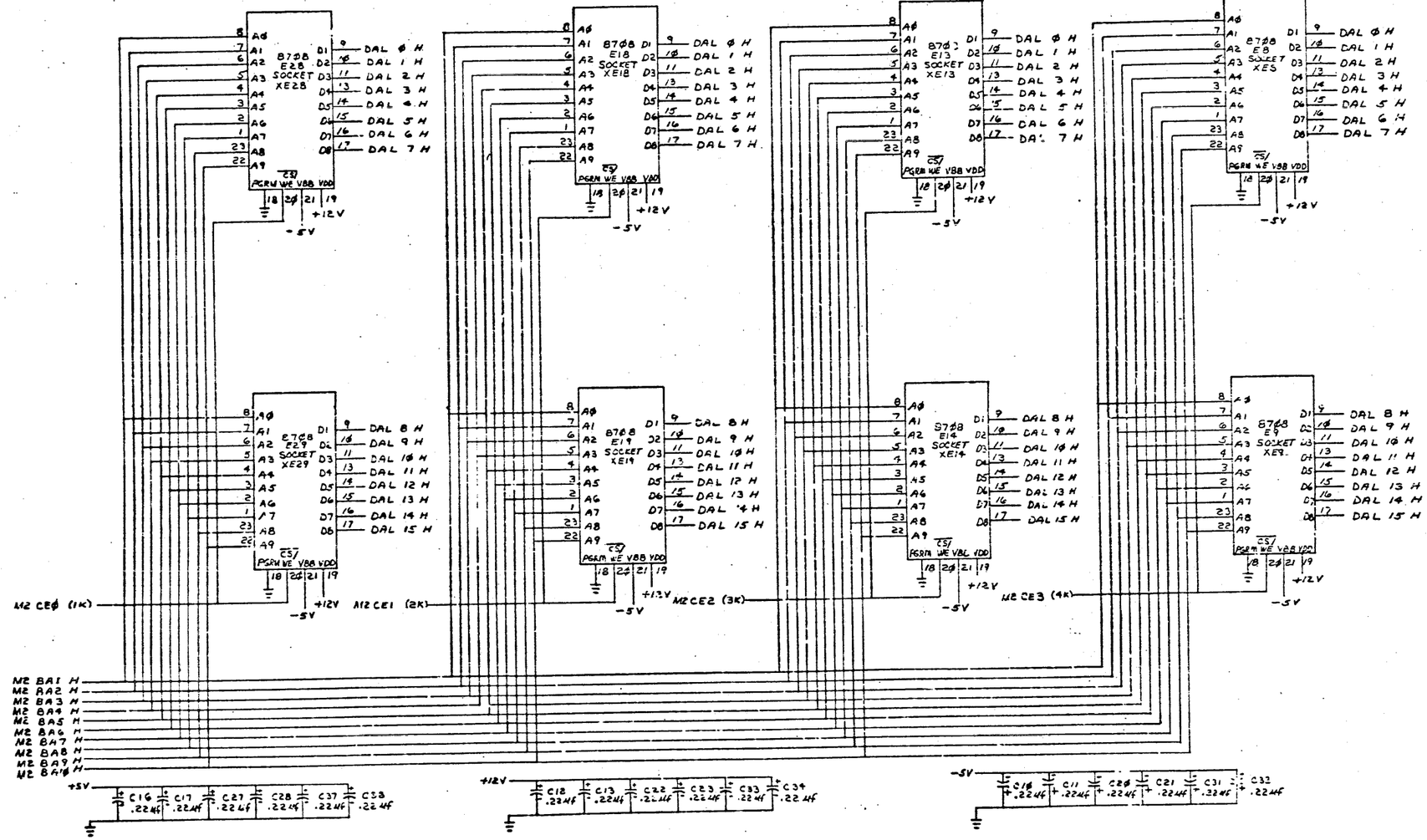
M2

REVISIONS		
CHK	CHANGE NO.	REV

TITLE LSI11 UV PROM RAM
SIZE D CODE DCS NUMBER M9021-0-1 REV. F
SCALE NONE SHEET 2 OF 4 DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

NOTES:
2. ALL I.C.'S SHOWN ON THIS PAGE ARE OPTIONAL.
3. SOURCE FOR 'DAL Ø H' THRU 'DAL 7 H' IS SHT 1 (M1).

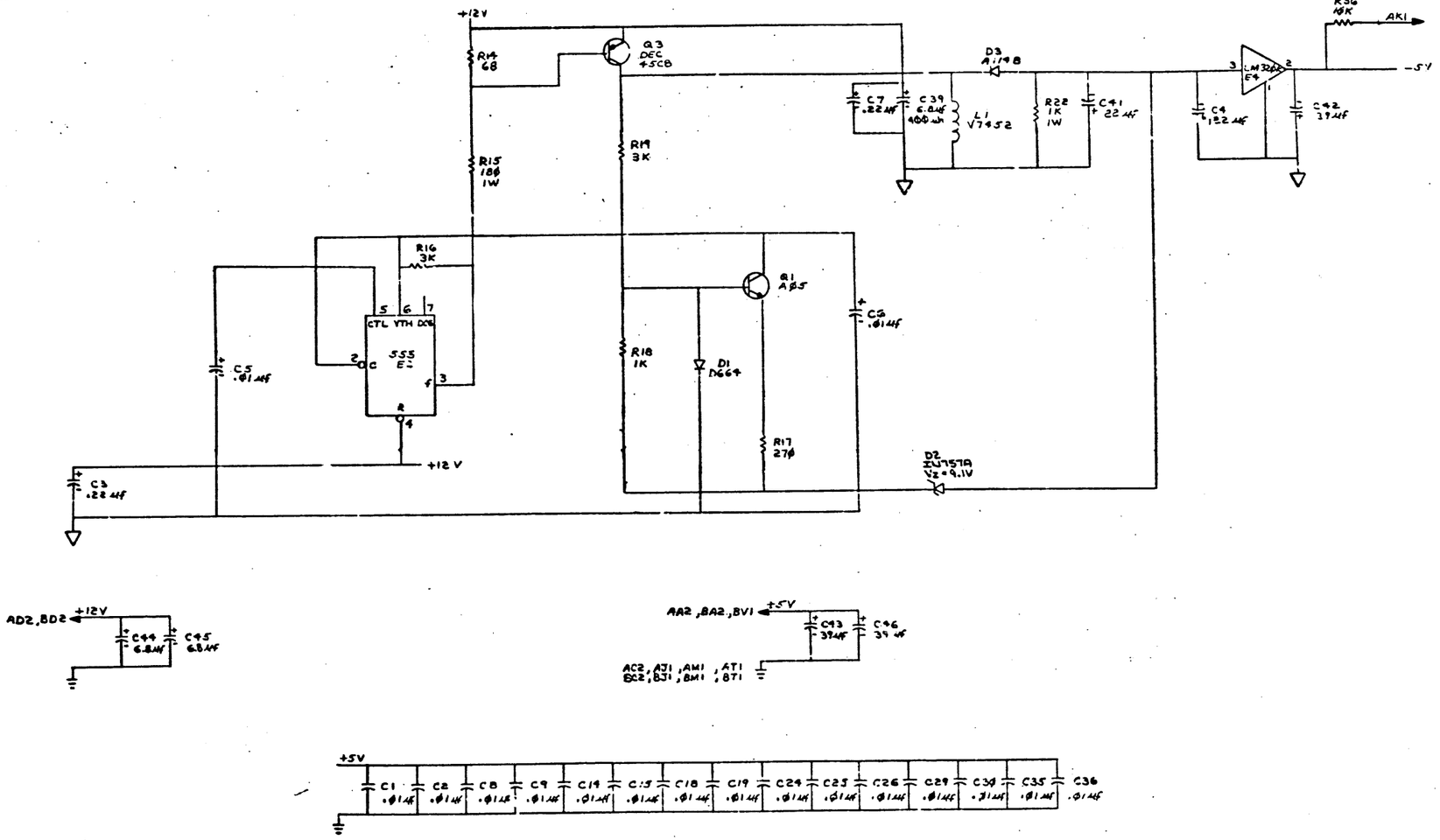


M3: UV PROM

REVISIONS		
OK	CHANGE NO.	REV.

TITLE	LSI11 UV PROM RAM
SIZE	D
CODE	DCS
NUMBER	M8Ø21-Ø-i
REV.	F
SCALE	NONE
SHEET	3 OF 4
DIST.	

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION

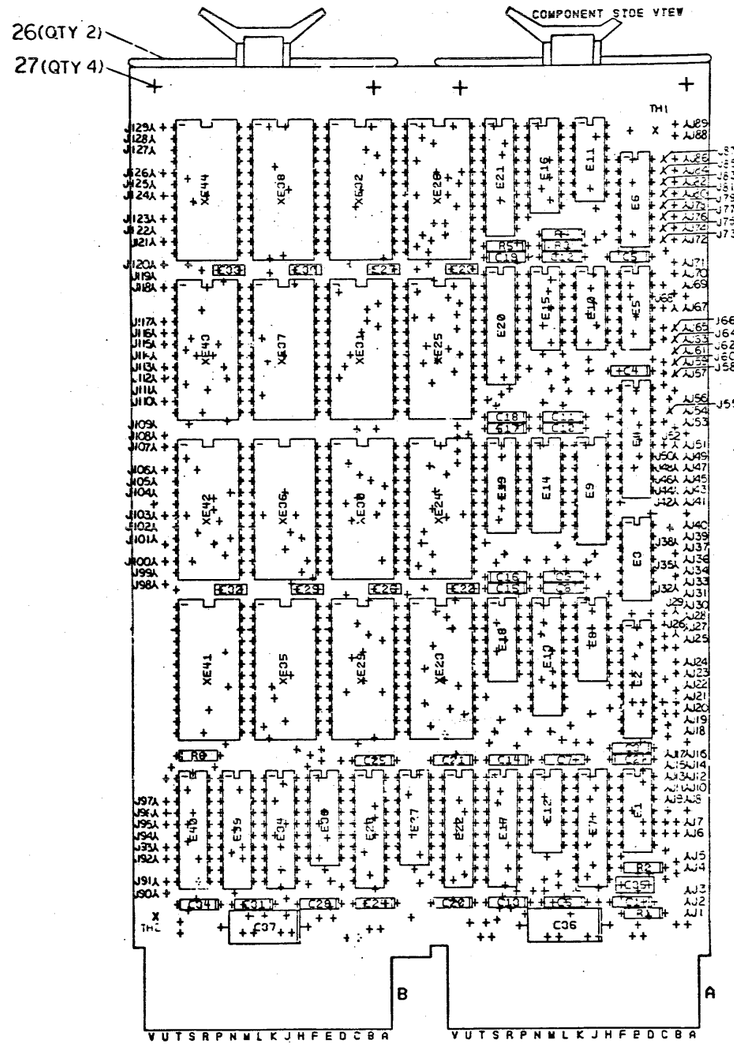


M4: -5V PWR SUPPLY

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	LSI11 UV PROM RAM			
SIZE	CODE	NUMBER		REV.
D	CS	M8Ø21-Ø-1		F
SCALE	NONE	SHEET 4 OF 4	DIST.	

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN PART OR WHOLE OR IN PART AS THIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION



NOTES:

NO REV	CHANGE	BY	DATE
6	MRJ-18-1	B LOCKE	4-11-81

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	
PROJ. ENG.	
PROD.	
SCALE	
SHT. OF 1	
NEXT HIGHER ASSY.	

ETCH REV.
P.C. DESIGN DATA BASE REV.

digital

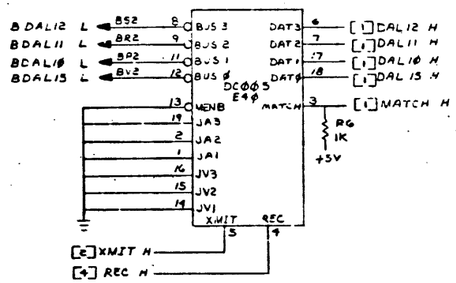
TITLE: M8048 ILLEGIBLE

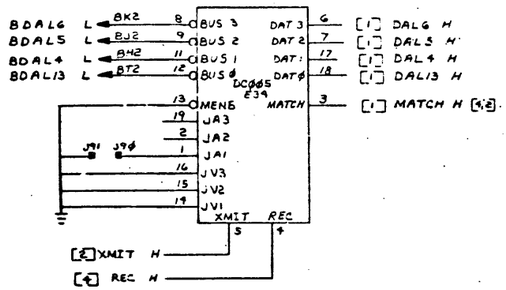
SIZE	CODE	NUMBER	REV
D	VA	M8048-Z-15	

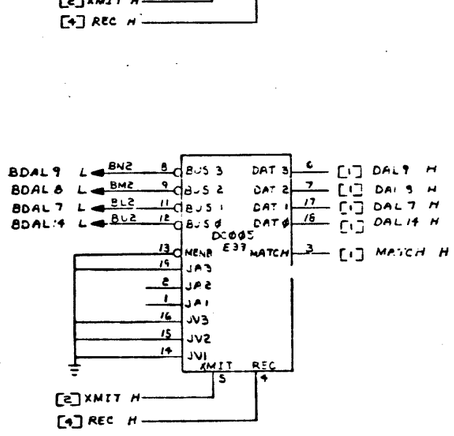
MR 1 MS#

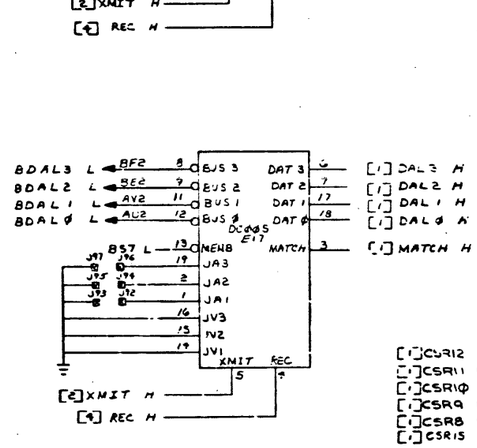
THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975, DIGITAL EQUIPMENT CORPORATION

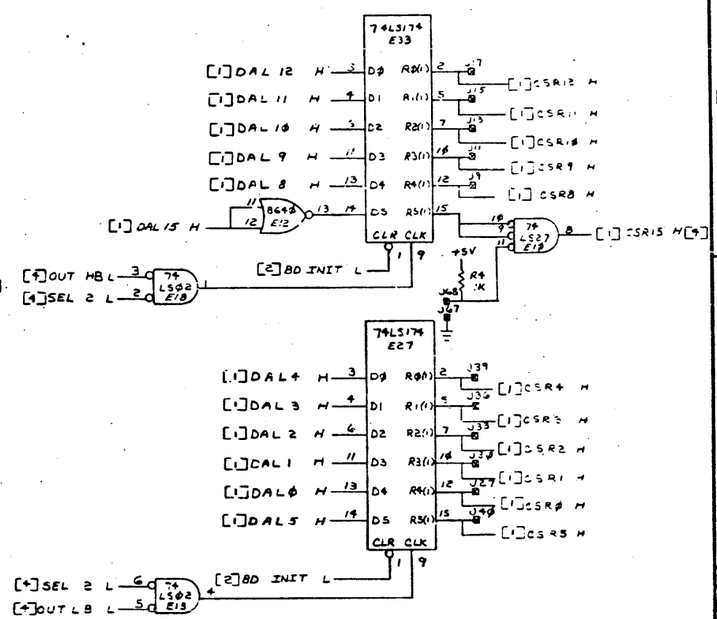
CSR

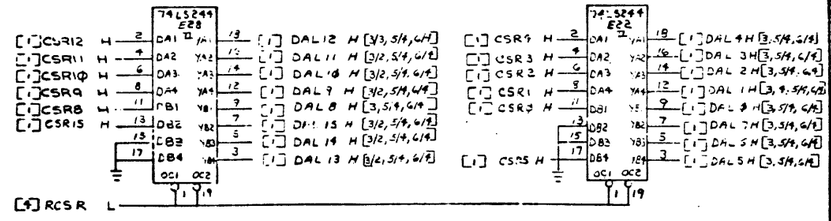










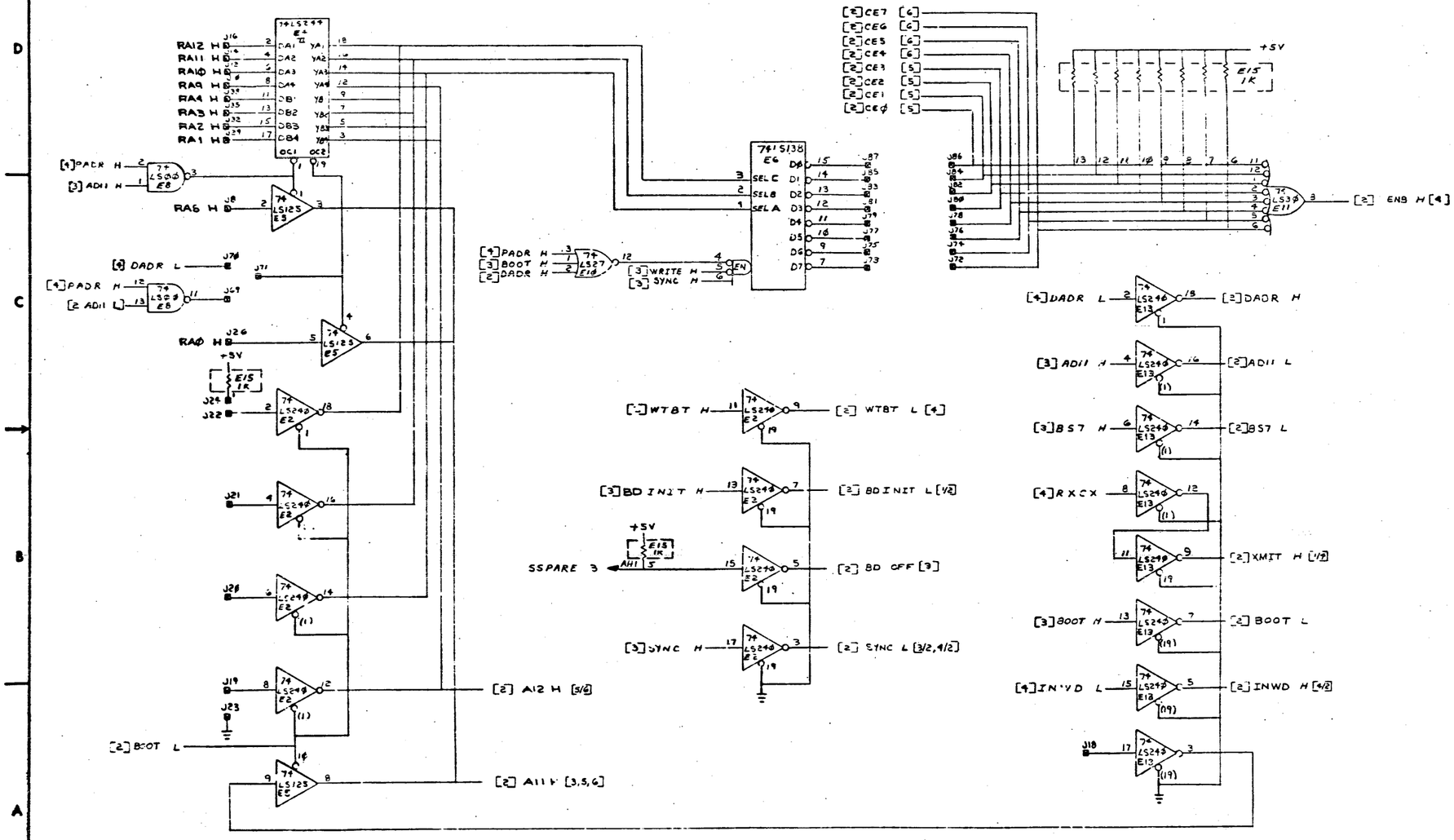


DRN. [illegible]		FIRST USED ON	digital
CHK. [illegible]		LSI11/2	
ENG. [illegible]		TITLE	
PROJ. ENG. [illegible]		LSI-11 PCM	
PROD. [illegible]			
NEXT HIGHER ASSY.			
B-DD-MSV48-0		SIZE D	CODE [illegible]
SCALE NONE		NUMBER M8048-0-1	REV. B
SHEET 1 OF 6		DIST.	

REVISIONS: REV. | CHANGE NO. | CHK | DATE | BY | PLOTTED

DEC MSV48-0-1 SHEET 1 REV B

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS IN ONLY WITH PERMISSION
COPYRIGHT © - 1 DIGITAL EQUIPMENT CORPORATION



REVISIONS		
DRR	CHANGE NO	REV

TITLE: LSI11 RCN	SIZE: D	CODE: CS	NUMBER: M8048-0-1
SCALE	SHEET	OF	REV: B
	DIST.		

MR

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © '77 DIGITAL EQUIPMENT CORPORATION"

BAD16 L ← AC1 — 8640 E1 — [3] AD16 H [4]

BAD17 L ← AD1 — 8640 E1 — [3] AD17 H [4]

BDCOK H ← BA1 — 8640 E1 — [3] BD INIT H [1]

BSYNC L ← AT2 — BD OFF — 8640 E1 — [3] SYNC H [2/2]

BBS7 L ← AP2 — 8640 E12 — [3] BS7 H [2]

BWTBT L ← AK2 — 8640 E12 — [3] WTBT H [2]

74LS373 E21: [1] DAL1 H … DAL8 H → D0…D7; [3] AD1 H … AD8 H [5/6]; OC, EN; [2] SYNC L

74LS373 E20: [1] DAL9 H … DAL15 H → D0…D7; [3] AD9 H … AD15 H [5/6]; [3] WTBT H → J35, J38, J31, J34, J37; [3] WRITE H [2]; [3] AD11 H, AD12 H, [3] AD13 H [4], [3] AD14 H [4], [3] AD15 H [4]; OC, EN; [2] SYNC L

+5V — E3 10K

8136 E14: [1] DAL12 H, DAL13 H, DAL14 H, DAL15 H, AD16 H, AD17 H → B1…B6; J51/J52, J41/J42, J43/J44, J45/J46, J47/J48, J49/J50; STB; [3] SYNC H

+5V — E15 1K — [3] P ADR H [2/3,4] — J7, J6

+5V — R5 1K

8136 E16: [3] BS7 H, [1] DAL12 H, DAL13 H, DAL14 H, DAL15 H, DAL9 H, DAL11 H → B1…B6; STB; [3] SYNC H

+5V — E15 1K — J88, J87

+5V — R3 1K — [3] BOOT H [2/12,4]

REVISIONS		
CHK	CHANGE NO	REV

TITLE: LSI11 ROM			SIZE: D	CODE: DCS	NUMBER: M8048-01	REV: B
SCALE: —	SHEET 3 OF 5		DIST.			

MR

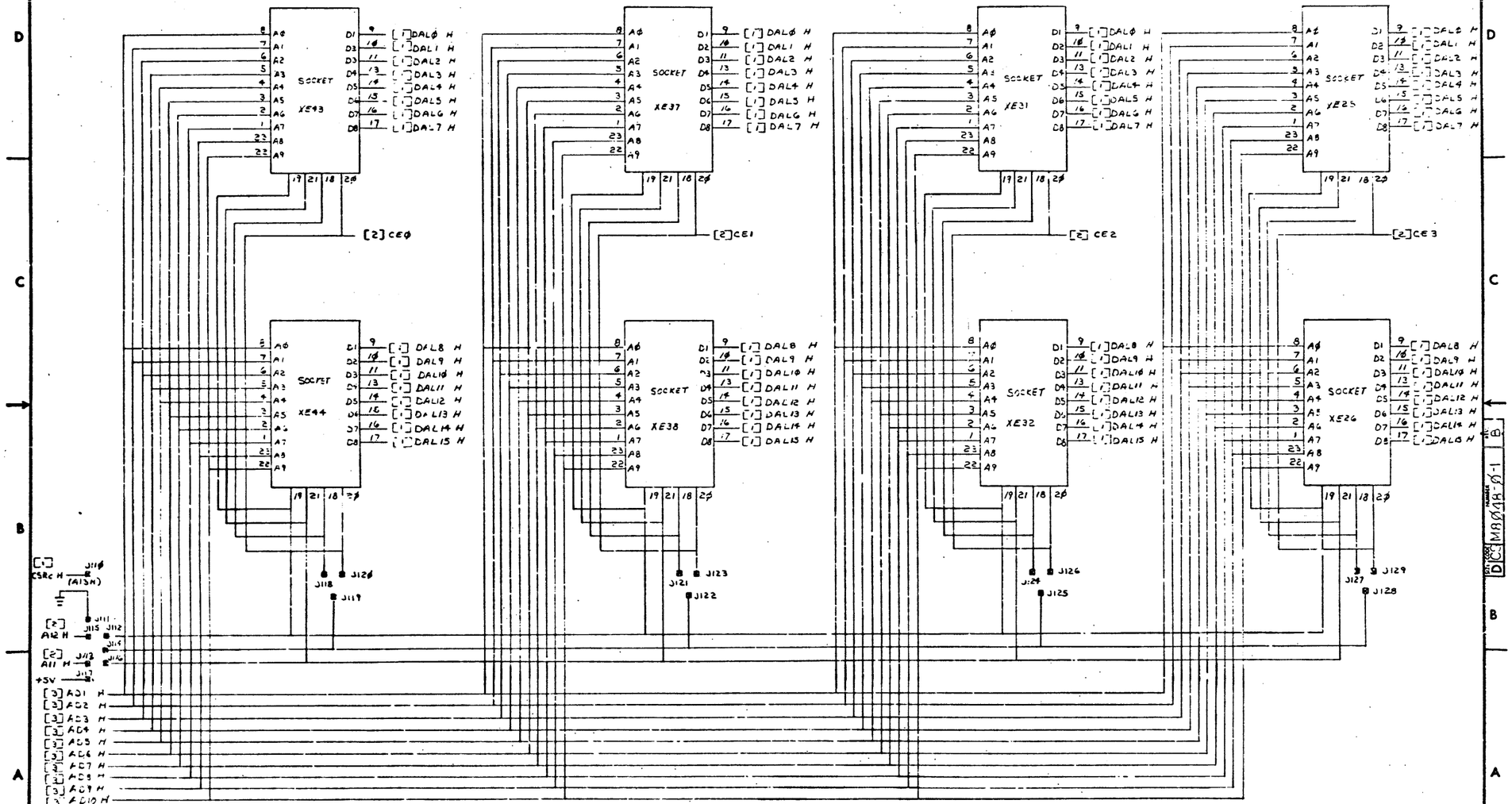
THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1974 DIGITAL EQUIPMENT CORPORATION

74LS75 E19
[3] AD16 H
[3] AD17 H
[4] MATCH H
[4] CSR15 H
[2] SYNC L
[4] A16 H
[4] A17 H
[4] L MATCH H
[4] L MATCH L
74 LS125 E3
[3] PADR H [3/3]
+5V
R2 3.83K
R1 3.83K
J1
J3 [4] RXCX [2]
J2
C35 220 pF
E3 1K
J5 J4
[4] L MATCH H
BDOUT L AE2
8640 E12
74 LS00 E6
74 LS02 E18
74 LS02 E10
[2] SYNC L
[2] L MATCH L
[2] ENB H
[1] MATCH H
[1] DAL0 H
[2] WTBT L
BDIN L AH2
DC00 E7
ENB SYNC DAL2 DAL1 DAL0 WTBT DOUT DIN VECTOR
RXCX BRPLY SEL6 SEL4 SEL2 SEL0 OUTHB OUTLB INWD
B AF2
BRPLY L
[4] SEL 2 L [1/2]
[4] OUT LB L [1]
[4] OUT HB L [1]
[4] INWD L [2]
+5V
E3 1K
J59 J58 J57 J56 J55 J54 J53 J52
[4] A17 H
[4] A16 H
[3] AD15 H
[3] AD14 H
[3] AD13 H
1K x 4 PROM E9
D9 D8 D7 D6 D5 D4 D3 D2 D1 D0
CE1 CE2
M4 M3 M2 M1
J53 J54 J56
[3] PADR H
[3] BOOT H
+5V
E15 1K
J55
[4] PADR L [3/3]
[2] ENB H
[2] INWD H
74 LS27 E13
[4] REC H [1/B]
[4] L MATCH H
[2] INWD H
74 LS08 E8
[4] RCSR L [1]
BDM31 L AR2 AS2 BDMGO L
BIAK1 L AM2 AN2 BIAKO L

REVISIONS
CHK | CHANGE NO | REV.

TITLE: LSI11 ROM
SIZE: D | CODE | NUMBER: DCSM8048-0-1 | REV: B
SCALE | SHEET 2 OF | DIST.

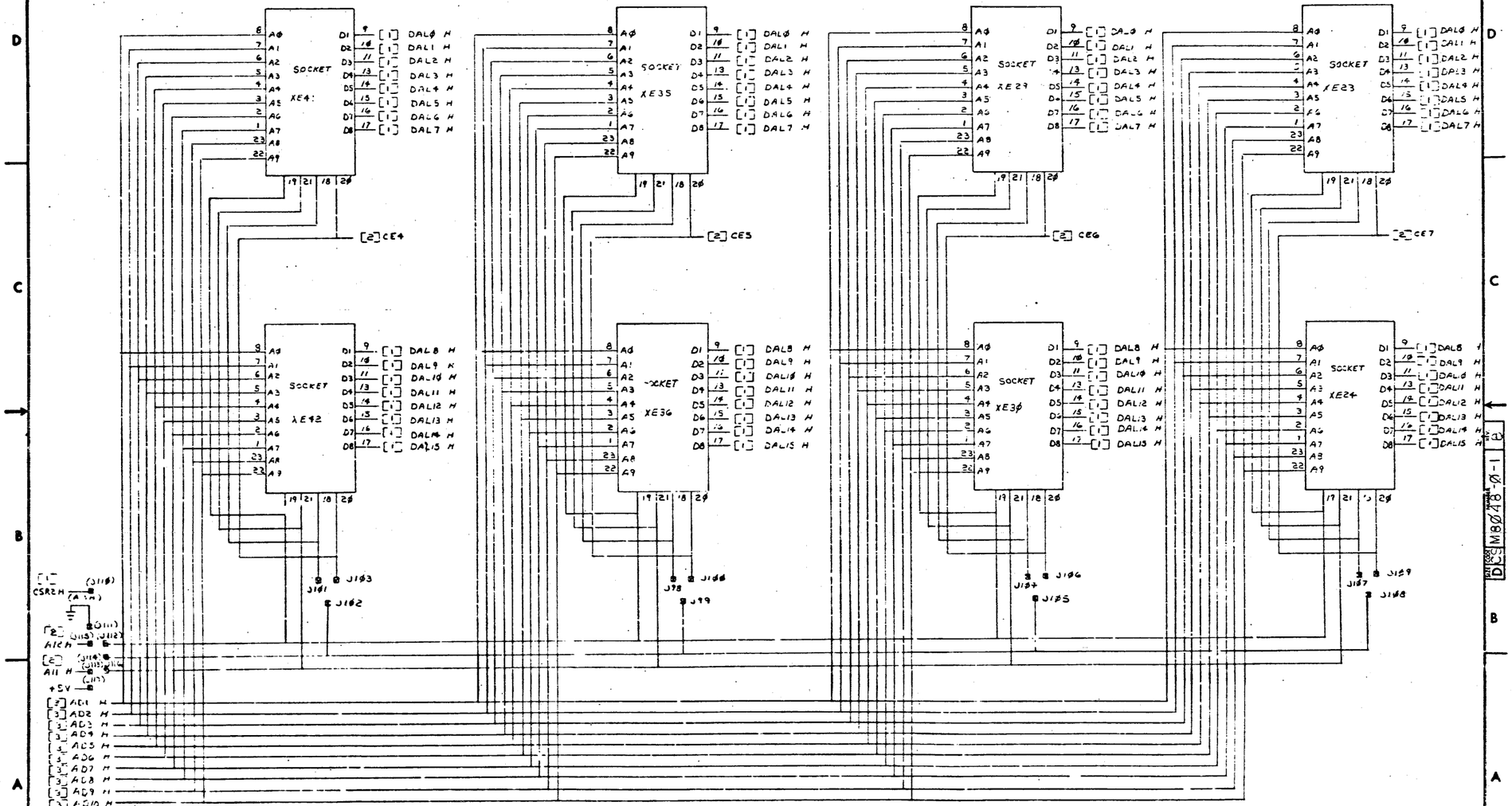
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 19__, DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
LSI11 ROM	D	DCS	M8046-0-1	B
SCALE	SHEET	OF	DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"



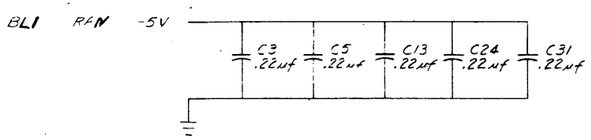
REVISIONS		
CHK	CHANGE NO	REV

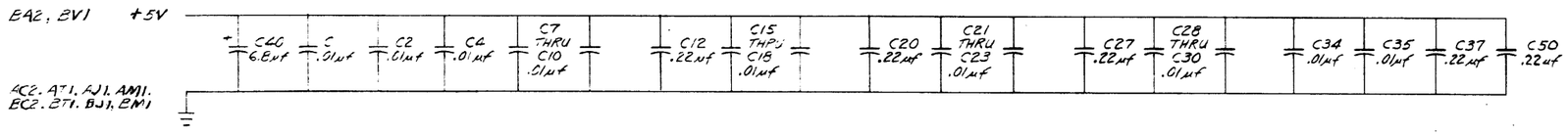
TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 BCV1	D	CS	M8048-0-1	B
SCALE	SHEET	OF	DIST.	

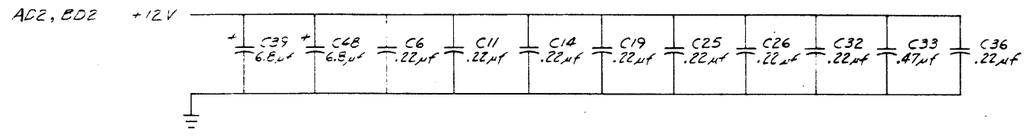
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

NOTES:

1. W4 IS A CUSTOMER OPTION NOT TO BE INSERTED







IC TYPE	GND	+5V	+12	-5	-9	-5 RAM
4K RAM	16	9	8			
IC NH0026C	3		6			
IC DEC 7S-07	7	14		3		
IC DEC 74 X3	8	16				
IC DEC B64	8	16				
IC DEC 74S257	8	16				
IC DEC 7475	12	5				

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

SEE OFF SHEET PARTS LIST

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION MODEL: LSI 11

ETCH BOARD REV. C

REV.	CHANGE NO.	REVISIONS
J	M7944-00007	D. BENNETT 2NOV77
CHK		D. Bennett 3NOV77

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN. B Lacai DATE 3 Nov 77
CHK'D. Jr te DATE 12-13-77
ENG. Dick Bennett DATE 30 NOV 77
PROJ. ENG. Dick Bennett DATE 30 NOV 77
PROD. Brian DATE 77

NEXT HIGHER ASSY: MSV11-B

SCALE: NONE

SHEET 1 OF 4

digital

TITLE: 4K RAM

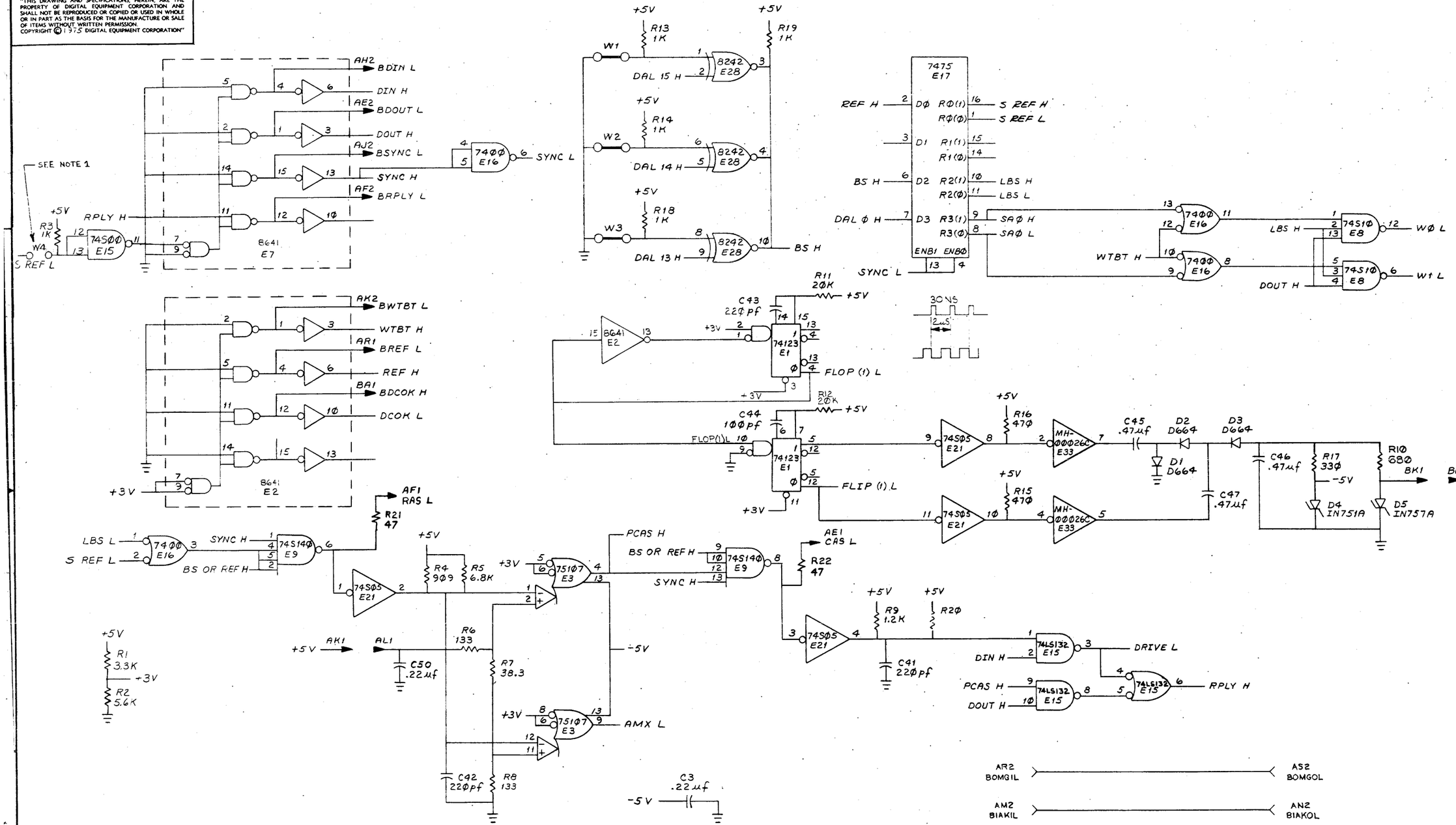
SIZE	CODE	NUMBER	REV.
D	CS	M7944-0-1	J

DIST.

DN

DEC FORM NO. DRD 135.8

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"



(TIMING GENERATOR & CHARGE PUMP)

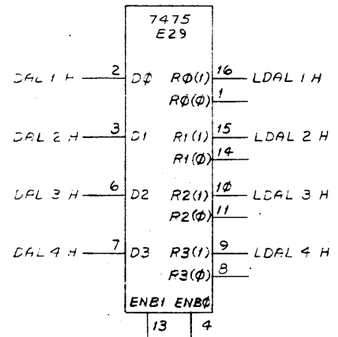
REVISIONS		
CHK	CHANGE NO.	REV.

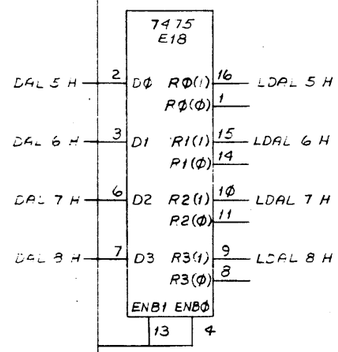
TITLE	SIZE	CODE	NUMBER	REV.
4K RAM	D	CS	M7944-Ø-1	J
SCALE —// SHEET 2 OF 4	DIST.			

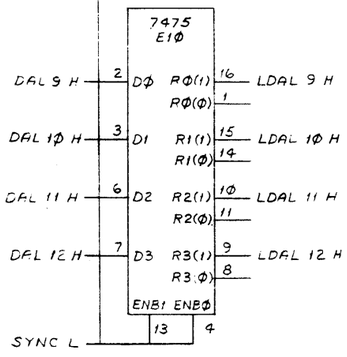
DEC FORM NO. DRD 138

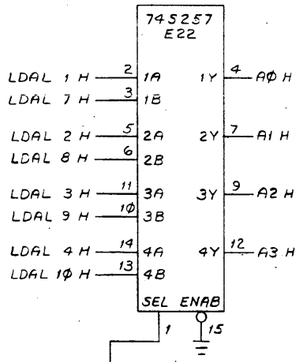
PN 1

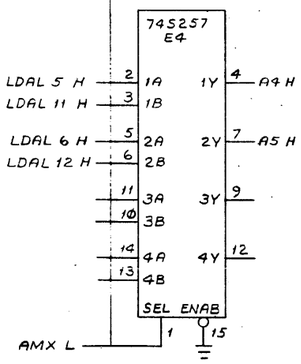
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

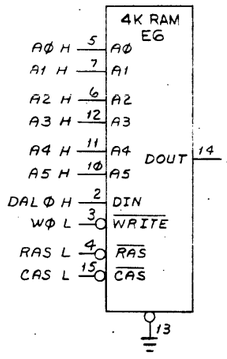


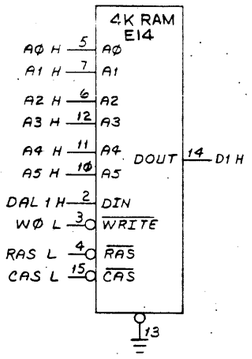


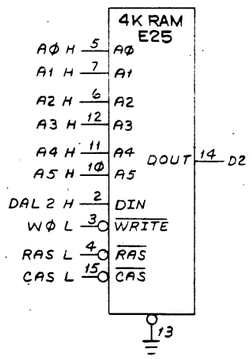


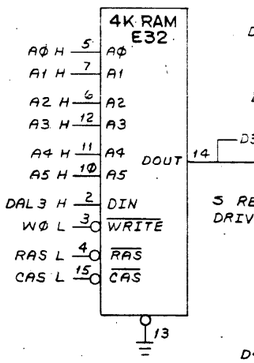


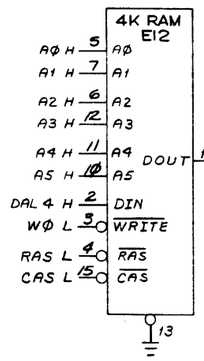


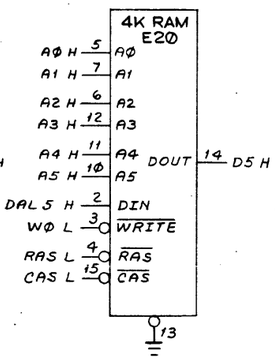


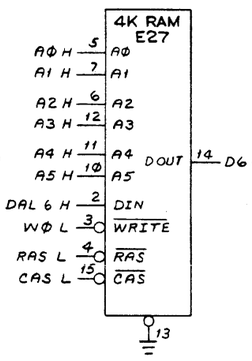


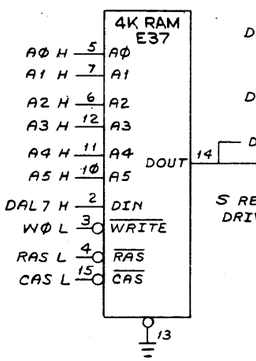


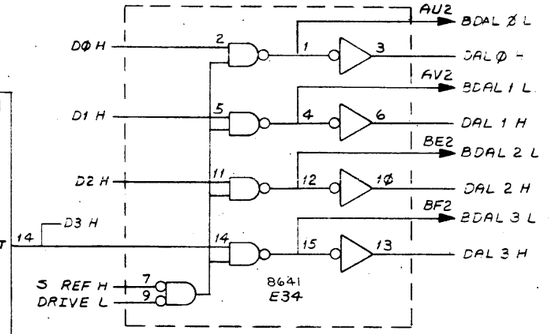


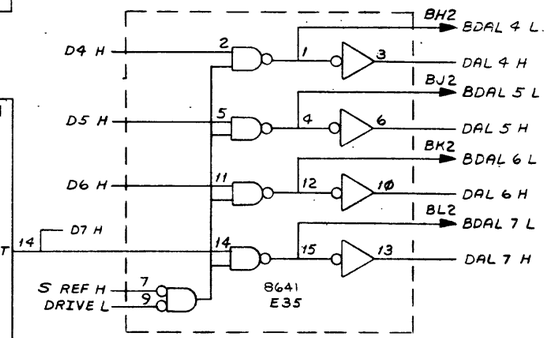












JUMPERED ADDRESS SELECTION				
W1	W2	W3	4K RANGE	ADDRESS RANGE
IN	IN	IN	0-4K	000000 - 017776
IN	IN	OUT	4-8K	020000 - 037776
IN	OUT	IN	8-12K	040000 - 057776
IN	OUT	OUT	12-16K	060000 - 077776
OUT	IN	IN	16-20K	100000 - 117776
OUT	IN	OUT	20-24K	120000 - 137776
OUT	OUT	IN	24-28K	140000 - 157776
OUT	OUT	OUT	28-32K	160000 - 177776

(RAM & DRIVER)

REVISIONS		
CHK	CHANGE NO.	REV.

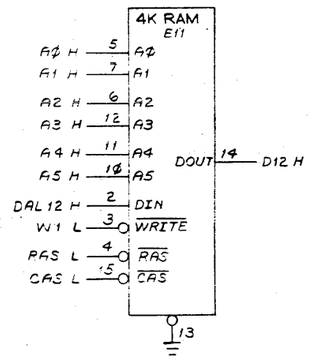
TITLE	SIZE	CODE	NUMBER	REV.
4K RAM	D	CS	M7944-0-1	J
SCALE —//	SHEET 3 OF 4	DIST.		

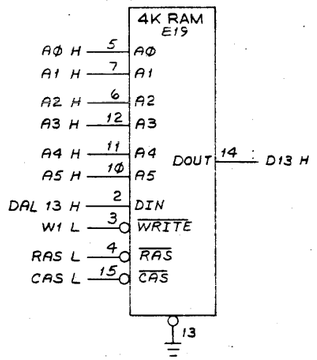
DEC FORM NO. DRD 138

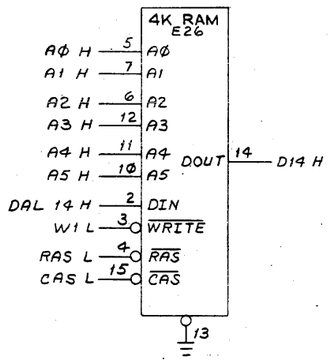
8 7 6 5 4 3 2 1

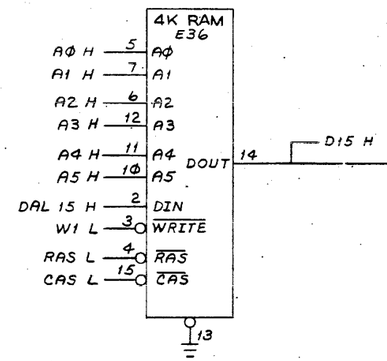
B A

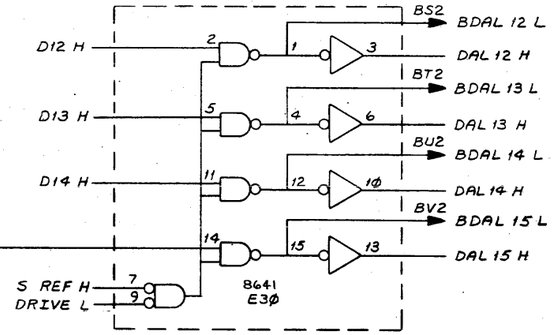
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1975 DIGITAL EQUIPMENT CORPORATION"

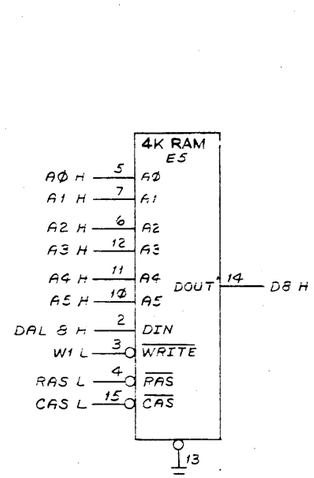


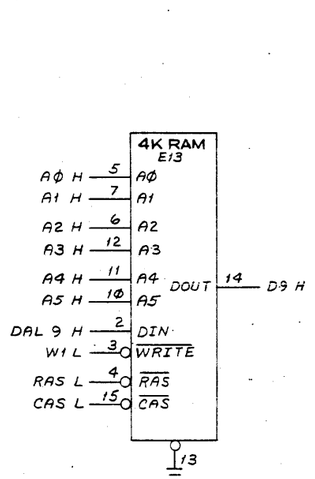


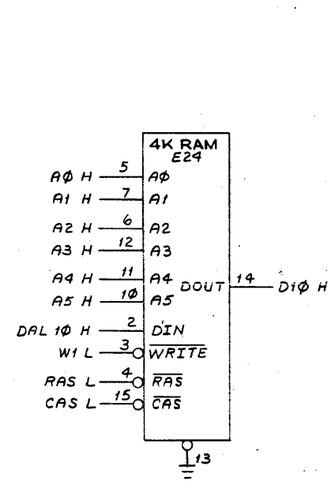


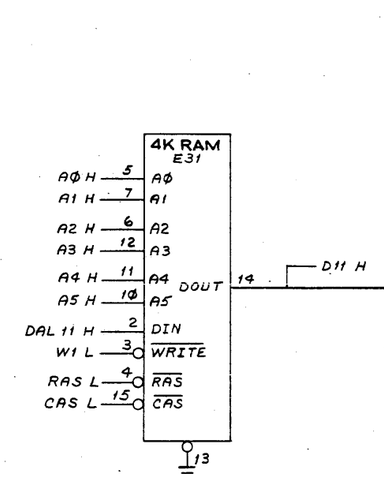


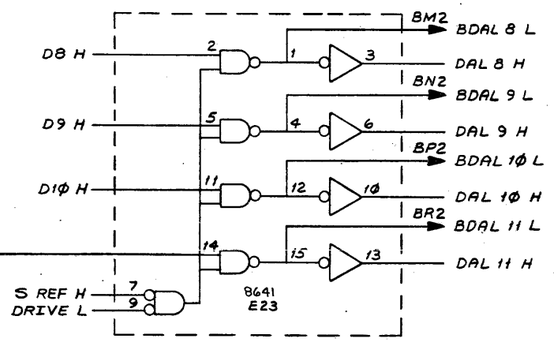












(RAM & DRIVER)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
4K RAM	D	CS	M7944-Ø-1	J
SCALE —/—	SHEET 4 OF 4	DIST.		

DEC FORM NO. SRD 138

DCS M7944-Ø-1 REV. J

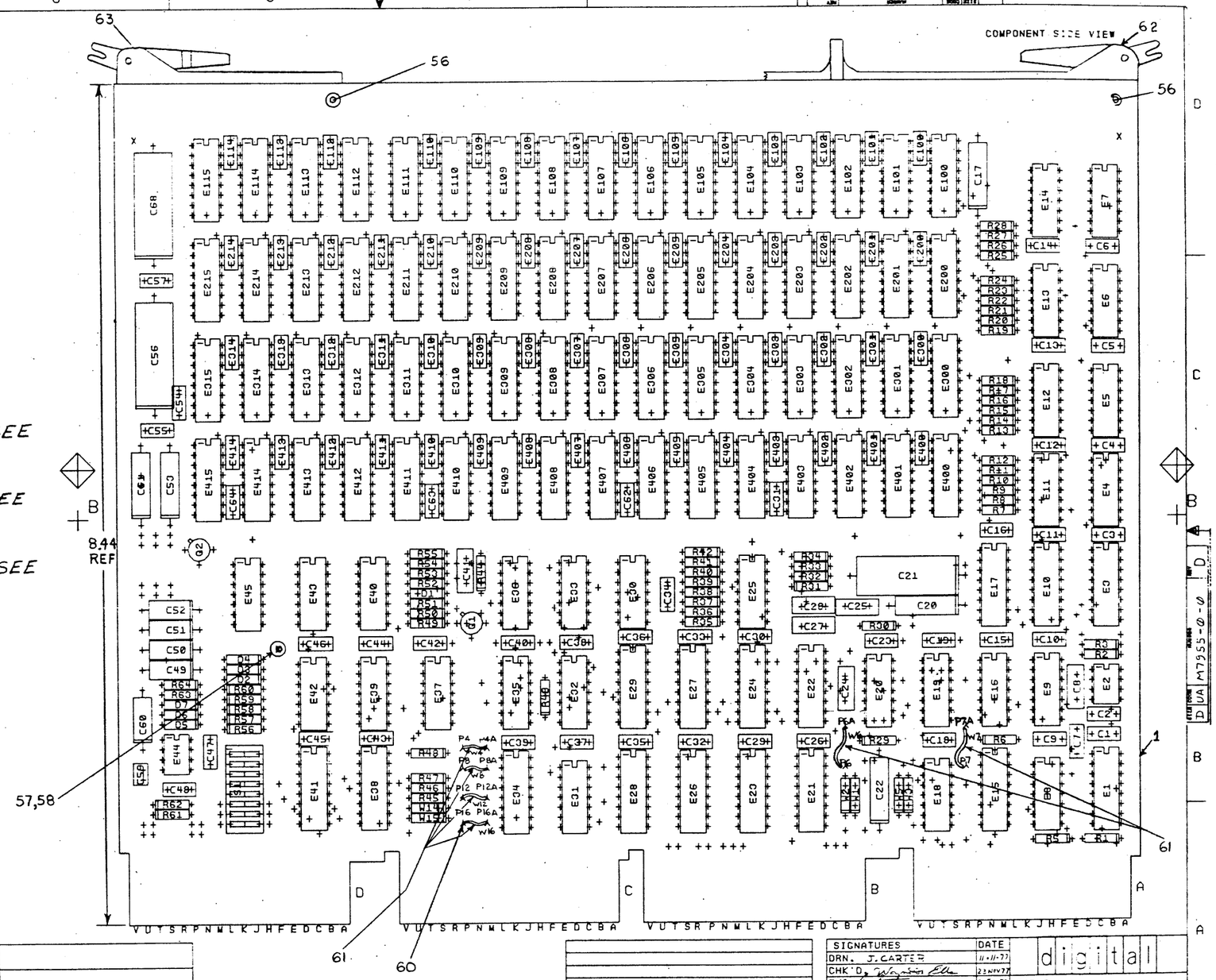
THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION

MODULE VARIATION: M7955-AD

NOTE: 1. FOR M7955-AC, SEE SH. 2

2. FOR M7955-AB, SEE SH. 3

3. FOR M7955-AA, SEE SH. 4



NOTES: 1. M7955-AD=M7955-YD&YJ

CHK	CHANGE NO	REV
JMC	M7955-000A	C
	M7955-0001	D

J. CARTER
J. SLAMAN
PDURANT

FOR PL, SEE B-PL-M7955-0-0

ETCH REV. D-P2
P.C. DESIGN DATA BASE REV. D

SIGNATURES	DATE
DRN. J. CARTER	11-11-77
CHK'D,	23 NOV 77
ENG.	5 JAN 78
PROJ.ENG.	5 JAN 78
PROD.	
SCALE 2/1	
SHT. OF 9	
NEXT HIGHER ASSY. B-DD-M7955-0	

digital

TITLE MSV11-C MOS MEMORY, LSI

SIZE	CODE	NUMBER	REV
D	UA	M7955-0-0	D

D UA M7955-0-0 D

: MS#_____

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION

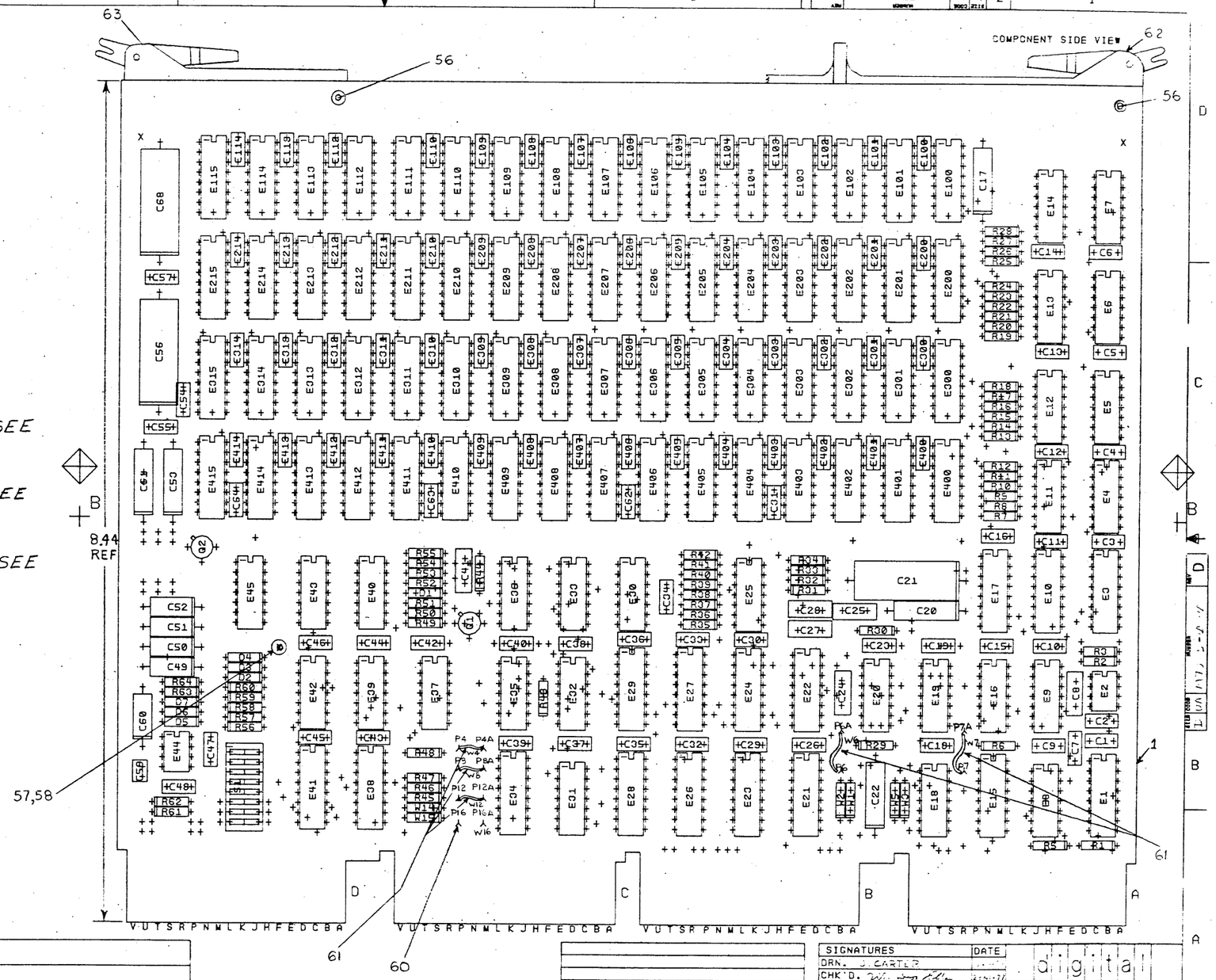
MODULE VARIATION:

M7955-AC

NOTE: 1. FOR M7955-AC, SEE SH. 2

2. FOR M7955-AB, SEE SH. 3

3. FOR M7955-AA, SEE SH. 4



FOR PL, SEE B-PL-M7955-0-0

NOTES: 1. M7955-AC = M7955-YC & YH

REV	CHK	CHANGE NO
C		M7955-0-0001A

SIGNATURES	DATE
DRN. J. CARTER	
CHK'D.	
ENG.	
PROJ. ENG.	
PROD.	

digital

TITLE M8VII-C MOD MEMORY, LSI

SCALE	SIZE	CODE	NUMBER	REV
2/1	D	UA	M7955-0-0	D

SHT. 2 OF 9

ITCH REV. D-4e

P.C. DESIGN DATA BASE REV. I

NEXT HIGHER ASSY.

MS#

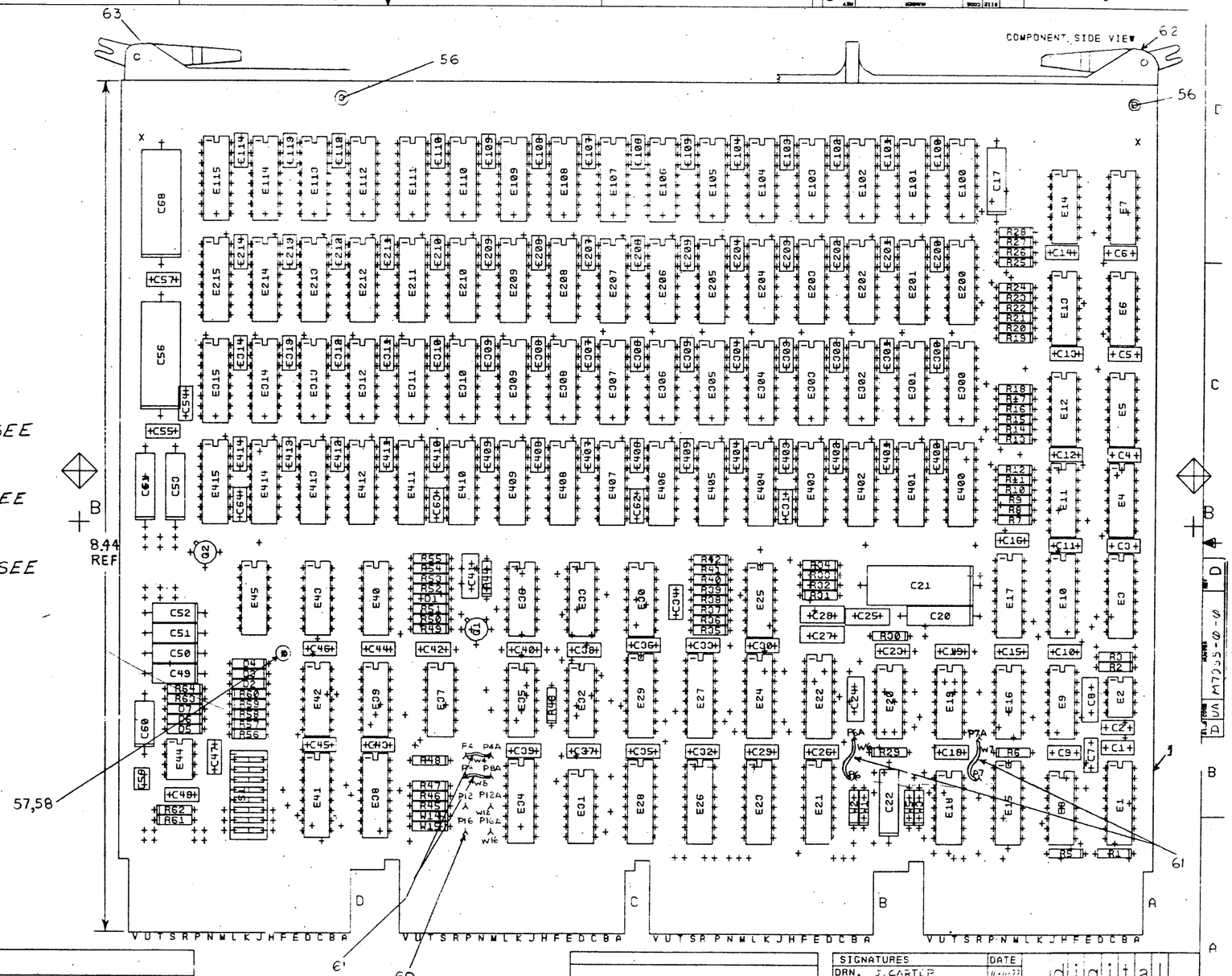
THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION

MODULE VARIATION: M7955-AB

NOTE: 1. FOR M7955-AC, SEE SH. 2

2. FOR M7955-AB, SEE SH. 3

3. FOR M7955-AA, SEE SH. 4



FOR PL, SEE B-PL-M7955-0-0

NOTES: 1. M7955-AB = M7955-YB&YF

CHK	CHANGE NO	REV
	INC M7955-0 INITIAL	C

SIGNATURES	DATE
DRN. J. CARTLIP	11-Nov-77
CHK'D. W. [illegible]	22-Nov-77
ENG.	
PROJ. ENG.	
PROD.	

digital

TITLE MSVII-C MOS MEMORY, LSI

SCALE 2/1	SIZE	CODE	NUMBER	REV
SHT. 3 OF 9	D	UA	M7955-0-0	D

NEXT HIGHER ASSY. [illegible]

ETCH REV. 3-P2

P.C. DESIGN DATA BASE REV. D

MS#_____

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1 DIGITAL EQUIPMENT CORPORATION

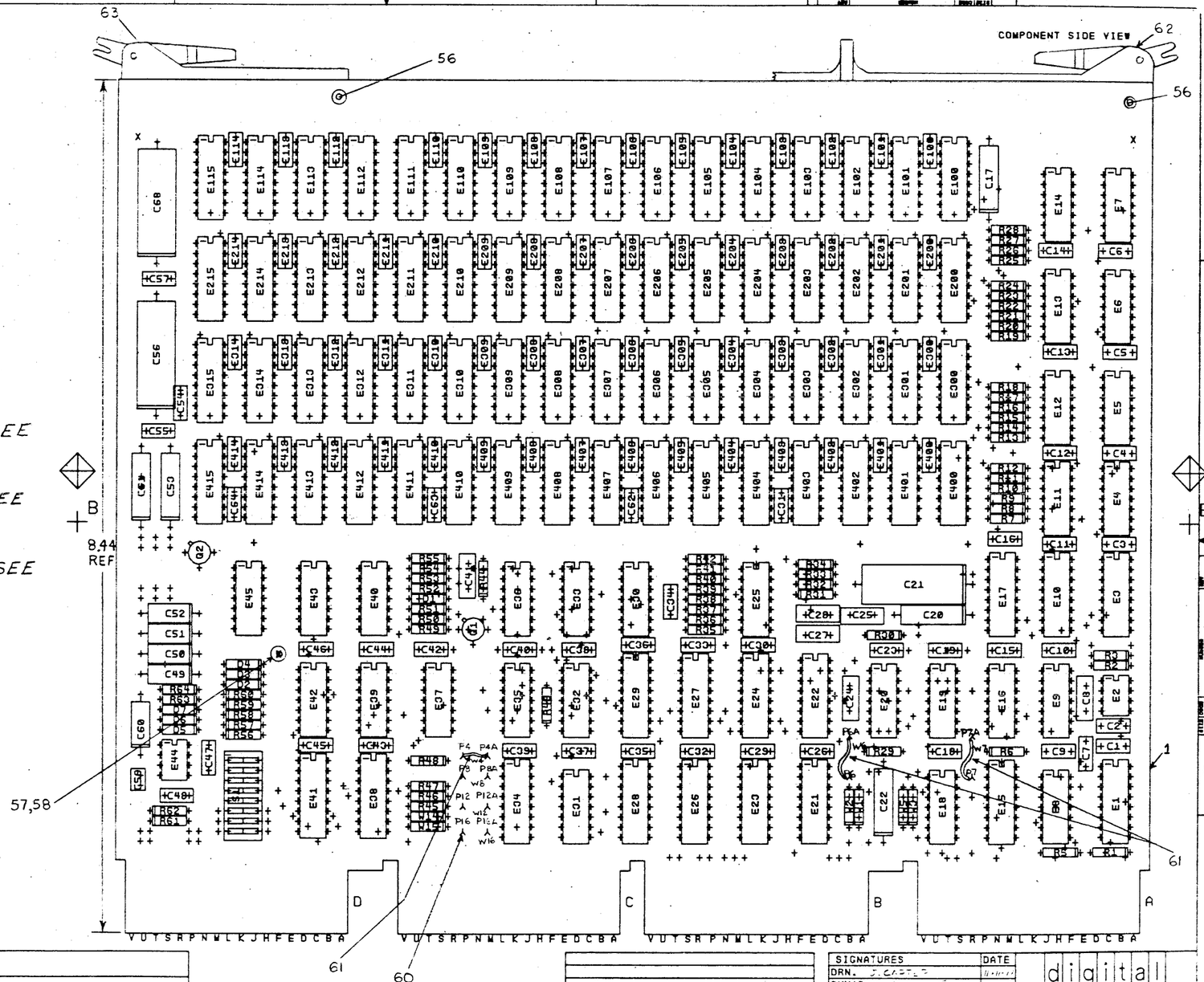
MODULE VARIATION:

M7955-AA

NOTE: 1. FOR M7955-AC, SEE SH. 2

2. FOR M7955-AB, SEE SH. 3

3. FOR M7955-AA, SEE SH. 4



NOTES: 1. M7955-AA - M7955-YA & YE

CHK	CHANGE NO	REV
		C
		D

FOR PL, SEE B PL M7955-0-0

ETCH REV. D-P2
P.C. DESIGN DATA BASE REV. D

SIGNATURES	DATE
DRN. S.CARTER	
CHK'D.	
ENG.	
PROJ.ENG.	
PROD.	

digital

TITLE MSVII-C MOS MEMORY, LSI

SCALE 2/1
SHT. 4 OF 9
NEXT HIGHER ASSY.

SIZE	CODE	NUMBER	REV
D	UA	M7955-0-0	D

MS#

6012203D-P2
M7955

L1

LAYER 1

CS*ABCDEFHJKLMNPRS

SIDE 1

digital

E115 E114 E113 E112 E111 E110 E109 E108 E107 E106 E105 E104 E103 E102 E101 E100

E14 E7

TITLE	SIZE	CODE	NUMBER	REV.
MSV11-C MOS MEMORY, LSI	D	UA	M7955-0-0	D
SCALE 2/1	SHEET 5 OF 9	DIST		

6012203D-P2
M7966

L2

LAYER 2

TITLE	SIZE	CODE	NUMBER	REV
MSVII-C MOS MEMORY, LSI	D	UA	M7955-0-0	D
SCALE 2/1 SHEET 6 OF 9	DIST			

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND [redacted] COPY IS TO BE USED IN WHOLE OR IN PART AS THE BASIS FOR MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

TITLE: MSVII-C MOS MEMORY, LSI	SIZE: D	CODE: UA	NUMBER: M7955-0-0 REV: D
SCALE: 2/1	SHEET 7 OF 9	DIST	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE T
PROPERTY OF DIGITAL EQUIPMENT CORPORATION A
DISCLOSED OR COPIED OR USED IN WHO
OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SA
OTHERWISE, WITHOUT WRITTEN PERMISSION
OF DIGITAL EQUIPMENT CORPORATIO
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION

LAYER 4

L4

M7955 5012203D-P2 SIDE 2 MSV11-C L8I MOS MEMORY

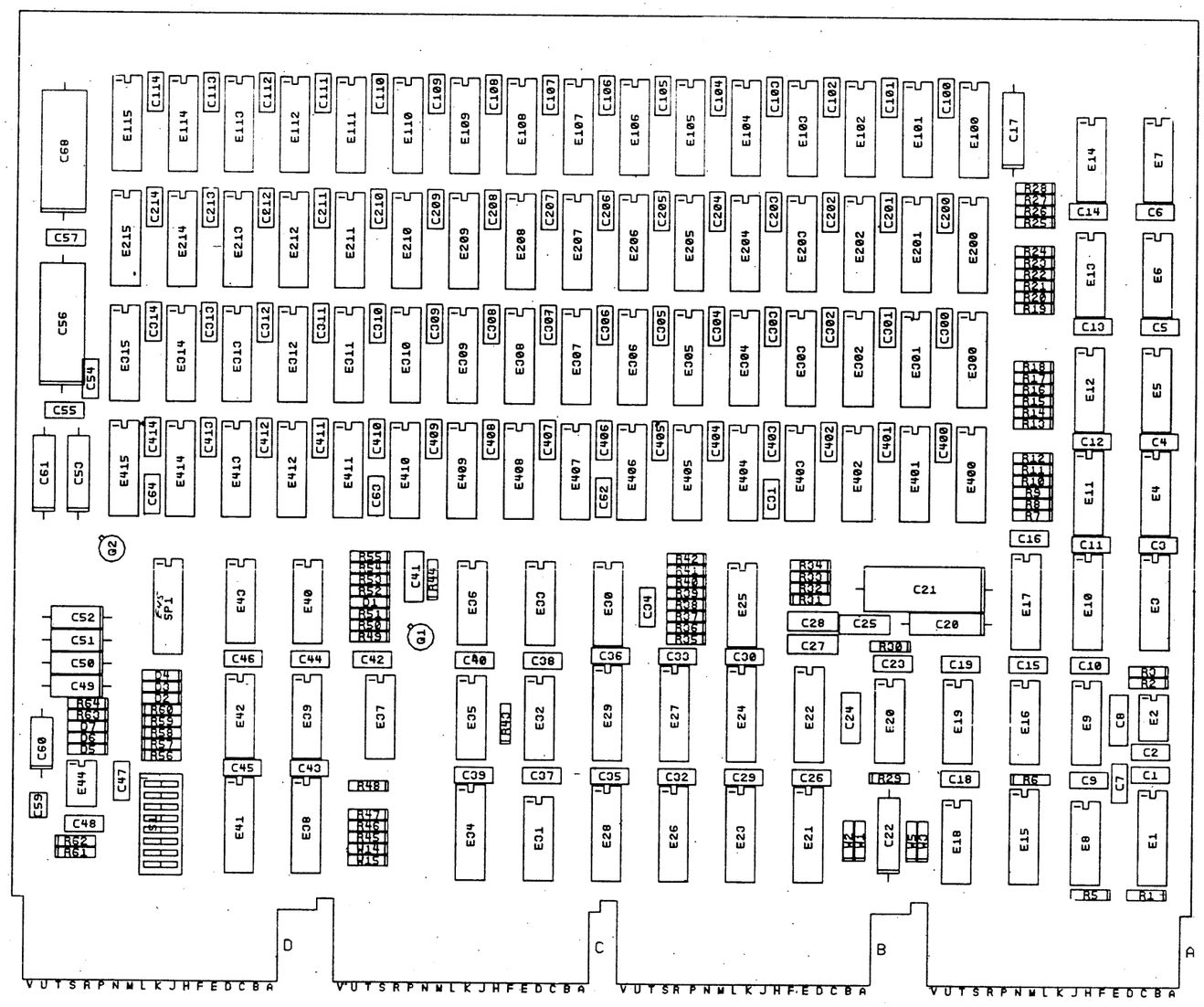
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV
MSVII-C MOS MEMCRY, LSI	D	UA	M7955-0-0	D

SCALE 2/1 SHEET 8 OF 9 DIST

D UA M7955-0-0 D

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION



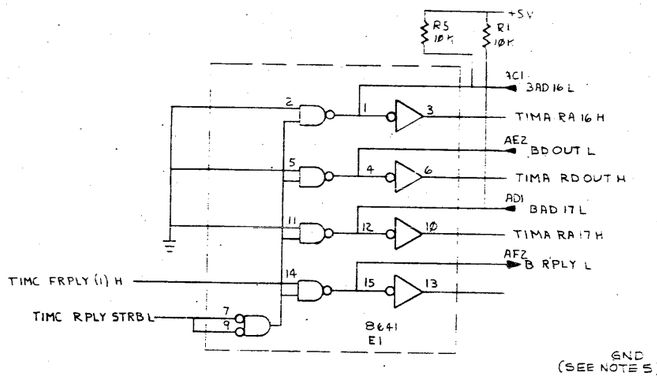
REFERENCE DOCUMENT

REVISIONS		
CHK	CHANGE NO	REV

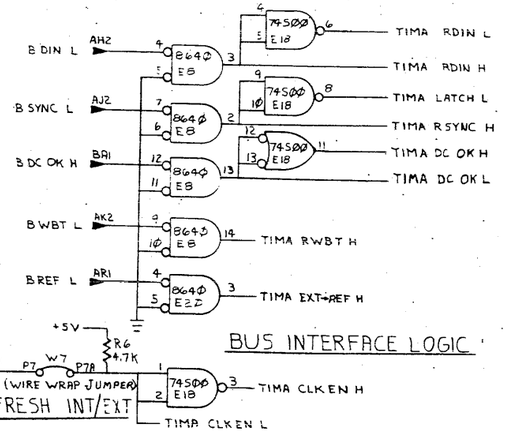
TITLE	MSV11-C MOS MEMORY, LSI	SIZE	CODE	NUMBER / REV.
SCALE 2/1	SHEET 9 OF 9	D	UA	M7955-Ø-Ø / D
		DIST		

D UA M7955-Ø-Ø D

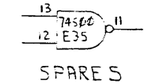
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"



BUS INTERFACE LOGIC



BUS INTERFACE LOGIC



SPARES

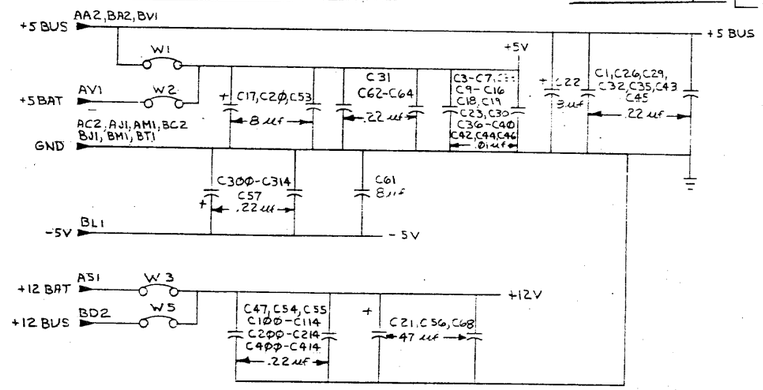
STARTING ADDRESS	SW1 SETTINGS -1	-2	-3	-4	-5
Ø				1	1
4K	2			1	1
8K		2		1	1
12K	2	2		1	1
16K			2	1	1
20K	2		2	1	1
24K		2	2	1	1
28K	2	2	2	1	1
32K				2	1
36K	2			2	1
40K		2		2	1
44K	2	2		2	1
48K			2	2	1
52K	2		2	2	1
56K	1	2	2	2	1
60K	2	2	2	2	1
64K	1	1	1	1	2
68K	2	1	1	1	2
72K	1	2	1	1	2
76K	2	2	1	1	2
80K	1	1	2	1	2
84K	2	1	2	1	2
88K	1	2	2	1	2
92K	2	2	2	1	2
96K	1	1	1	2	2
100K	2	1	1	2	2
104K	1	2	1	2	2
108K	2	2	1	2	2
112K	1	1	2	2	2
116K	2	1	2	2	2
120K	1	2	2	2	2
124K	2	2	2	2	2

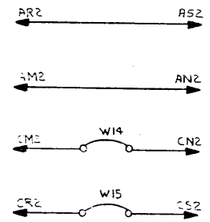
OVER LAPPING IS NOT ALLOWED IN ANY PERIPHERAL PAGE

1=ON
2=OFF

STARTING ADDRESS SELECTION

EXCEPT M7955-AD
EXCEPT M7955-AC & AD
EXCEPT M7955-AB, AC, & AD





BUS GRANT CONTINUITY JUMPERS

NOTES:

1. OPTION DESIGNATION:
   M7955-AA = M7955-YA OR M7955-YE
   M7955-AB = M7955-YB OR M7955-YF
   M7955-AC = M7955-YC OR M7955-YH
   M7955-AD = M7955-YD OR M7955-YJ
2. ALL 8641 BUS REC/DR PLUS 7483A ADDER AND 74S138 DECODER ARE POWERED BY +5 BUS. ALL OTHER CIRCUITS GO TO +5V AS SELECTED BY W1 & W2.
3. W1, W2, W3, W5, W14, W15 ARE MACHINE INSERTABLE JUMPERS. W4, W6, W7, W8, W12, W16 ARE WIRE WRAP JUMPERS.
4. ALL BDAL XX CONNECTIONS ARE BI-DIRECTIONAL LINES
5. DURING MANUFACTURING TEST GROUND MAY BE REMOVED

NOT USED REF DES

C100-C114, C200-C214, W3 W12, W16
C100-C114, C200-C214, W12, W16
C100-C114, W16

W6	W7	REFRESH OPTIONS
IN	IN	INTERNAL REFRESH WITH NO B RPLY
IN	OUT	EXTERNAL REFRESH WITH NO B RPLY
OUT	IN	ILLEGAL
OUT	OUT	EXTERNAL REFRESH WITH B RPLY

REFRESH SELECTION

M7955 VARIATIONS

JUMPERS	-AA	-AB	-AC	-AD
W4	1	1	1	1
W8	Ø	1	1	1
W12	Ø	Ø	1	1
W16	Ø	Ø	Ø	1

ALL JUMPERS NOTED AS Ø MUST NOT BE INSTALLED

IC PIN LOCATIONS

I.C. TYPE	GND	+5	+12
8641 @ E2	1	8	
8641 @ E44	1		8
7493	10	5	
7483A	12	5	
74LS75	12	5	
8640	1	8	
OTHER 16 PIN I.C.'S	8	16	
OTHER 14 PIN I.C.'S	7	14	

REVISIONS	CHANGE NO.	CHK	REV.
	M7955-0000414	JC	C
J. CARTER 10-28-77			
J. STEGEMAN			
	M7955-0000202	JA	D
STATUS: RELEASED			
P. DURANT			

ETCH REV	D-P2
DRN	
CHK'D	11/18/76
ENG.	11/22/76
PROJ. ENG.	11/29/76
PROD. ENG.	11/29/76
NEXT HIGHER ASSY.	3-DD-M7955-D
SCALE	
SHEET OF 8	

FIRST USED ON MSVII-C

digital

TITLE MSVII-C MOS MEMORY, LSI (TIMA)

SIZE	CODE	NUMBER	REV.
D	CS	M7955-0-	D

DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

ROW SELECTION

TIMC LA 17 L
TIMC LA 16 L
TIMC LA 15 L
TIMC LA 14 L
TIMB CIN H
TIMC LAT REF L
74S10 E19
74S33A E41
74S138 E38
TIMC LA 13 L
74S02 E43
74S00 E42
74S04 E42
TIMB CIN H
S1
-1 -2 -3 -4 -5
R56 4.7K
R57 4.7K
R58 4.7K
R59 4.7K
R60 4.7K
+5V
P4 P8 P12 P16
W4 W8 W12 W16
(WIREWRAP JUMPERS)
TIMB ROW 3 L
TIMB ROW 2 L
TIMB ROW 1 L
TIMB ROW 0 L
R48 4.7K
R47 4.7K
R46 4.7K
R45 4.7K
TIMA RSYNC H
TIMC LAT EXTREF L
74S32 E34
74S00 E42
TIMB BSEL H
TIMB ENDOUT H

VALID DEVICE SELECTION ADDRESS SPACE

ADDRESS SPACE SIZE & MAPPING

FAILING ROW	MEMORY SIZE			
	M7955-AA(4K)	M7955-AB(8K)	M7955-AC(12K)	M7955-AD(16K)
ROW Ø	NO SWAPPING POSSIBLE		REMOVE W4 ADD JUMPER P4 TO P12A	REMOVE W4 ADD JUMPER P4 TO P16A
ROW 1		* REMOVE W8	REMOVE W8 ADD JUMPER P8 TO P12A	REMOVE W8 ADD JUMPER P8 TO P16A
ROW 2			* REMOVE W12	REMOVE W12 ADD JUMPER P12 TO P16A
ROW 3				* REMOVE W16

1. DETERMINE MEMORY SIZE & REMOVE UPPER 4K ROW JUMPER. (INDICATED BY *)
2. LOCATE FAILING ROW, REMOVE SPECIFIED ROW JUMPER, ADD SWAPPING JUMPER IF FAILING ROW IS UPPER ADDRESS SPACE ROW. THERE IS NO SWAPPING JUMPER
3. THIS RECONFIGURED MEMORY BLOCK STILL HAS THE SAME STARTING ADDRESS AS BEFORE. IT OCCUPIES 4K LESS ADDRESS SPACE THAN BEFORE. RECONFIGURE STARTING ADDRESSES OF MEMORIES ABOVE THIS ONE IF NECESSARY SO THERE WILL BE CONTIGUOUS ADDRESS SPACE.

ROW SWAPPING MATRIX

TIMB ENDOUT H
TIMB GOTIM H
TIMC GO REF H
TIMC F RPLY(I) L
TIMC LOCKOUT L
TIMB BSEL H
TIMA RSYNC H
TIMC NODIN L
TIMA RDOUT H
TIMB ENDOUT H
TIMC FRPLY(I) L
TIMC LOCKOUT AL
74S10 E37
74S20 E31
74S00 E37
74S00 E31

MEMORY CYCLE TYPE

TIMC GO REF L
74S03 E33
+5V
R53 13
R52 220
Q1 3099B
D1 6T2
R51 330
R50 1K
C41 100PF
R44 18
R49 1K
-5V
TIMB START L
TIMB GO TIM H

REFRESH SYNCHRONIZATION

74S74 E36
TIMB TRAS (I) H
TIMB TRAS (I) L
TIMB OFF L
74S03 E33
R31 18
C28 220PF
C27 220PF
+5V
R32 1.21K
R33 14.7K
R34 6.81K
R41 196
R42 1K
TIMB PULL 2H
74S107 E30
TIMB OFF L
TIMD -5V
C34 .22 uF
TIMING MARGIN TEST POINT
ALU

TIMB PULL 2 H
74S107 E30
TIMB SRPLY H
R40 75
R39 226
+5V
R38 316
TIMB CAS H
74S107 E25
R37 1K
C33 .01uF
R36 31.6
TIMB MUX H
TIMD -5V
R35 12.

TIMING CHAIN GENERATOR

REVISIONS		
CHK	CHANGE NO	REV.

TITLE		SIZE	CODE	NUMBER	REV.
MSVII-C MOS MEMORY, LSI (TIMB)		D	CS	M7955-0-1	D
SCALE	SHEET 8 OF 8	DIST.			

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

TIMD DI ØØ H
TIMD DI Ø1 H
TIMD DI Ø2 H
TIMD DI Ø3 H
TIMA LATCH L
74LS175 E22
TIMC LA ØØ H
TIMC LA Ø0 L
TIMC LA Ø1 H
TIMC LA Ø2 H
TIMC LA Ø3 H

TIMD DI Ø4 H
TIMD DI Ø5 H
TIMD DI Ø6 H
TIMD DI Ø7 H
74LS175 E24
TIMC LA Ø4 H
TIMC LA Ø5 H
TIMC LA Ø6 H
TIMC LA Ø7 H

IMD DI Ø8 H
TIMD DI Ø9 H
TIMD DI 1Ø H
TIMD DI 11 H
74LS175 E27
TIMC LA Ø8 H
TIMC LA Ø9 H
TIMC LA 1Ø H
TIMC LA 11 H

TIMD DI 12 H
TIMD DI 13 H
TIMD DI 14 H
TIMD DI 15 H
74LS175 E29
TIMC LA 12H
TIMC LA 13L
TIMC LA 14L
TIMC LA 15L

TIMA RA 16 H
TIMA RA 17 H
TIMA RWBT H
TIMA EXT REF H
74LS175 E15
TIMC LA 16 L
TIMC LA 17L
TIMC LWBT H
TIMC LAT EXT REF L

ADDRESS+ CONTROL LATCHES

TIMD RA Ø H
TIMC LA Ø7 H
TIMC LA Ø1 H
TIMD RA 1H
TIMC LAØ8 H
TIMC LA Ø2 H
74S153 E3
TIMC MA Ø H
TIMC MA 1 H

TIMD RA 2H
TIMC LA Ø9 H
TIMC LA Ø3H
TIMD RA 3H
TIMC LA 1Ø H
TIMC LA Ø4 H
74S153 E1Ø
TIMC MA 2H
TIMC MA 3 H

TIMD RA 4H
TIMC LA 11H
TIMC LA Ø5H
TIMD RA 5H
TIMC LA 12H
TIMC LA Ø6H
74S153 E17
TIMC MA 4H
TIMC MA 5H

TIMC INTREF(1) H
TIMB MUX H

ADDRESS MUX'S

TIMB PULL 2H
TIMB TRAS(1) L
74S74 E36
TIMC RESET L
74S03 E33
R55 2.6K
R54 14.7K
C24 220 PF
+5V
8640 E20
TIMB OFF L
TIMB TRAS (1) L
74S10 E19
TIMC LOCKOUT L
TIMA DC OK L
8640 E20
TIMC LOCKOUT AL

BUS CYCLE HOLD OFF

TIMC INTREF (1) H
TIMC LAT EXT REF H
74S02 E39
P6
P6A
W6 (WIRE WRAP JUMPER)
TIMC REF L
R29 4.7K
74S10 E37
TIMB SRPLY H
8640 E20
R30 18
C25 100 PF
74S74 E40
TIMC FRPLY (1) H
TIMC FRPLY (1) L
TIMA RDOUT H
TIMA RDIN H
TIMA RSYNC H
74S02 E43
TIMC RPLY STRB L

REFRESH RPLY SELECT

TIMA CLK EN H
TIMD REF CLK H
74S74 E32
74S00 E35
TIMC GO REF L
TIMC GO REF H
TIMB GOTIM H
74S74 E40
TIMB OFF L
TIMC PULL 1H
R43 1K
TIMC INTREF(1) H
TIMB SRPLY H
TIMB TRAS(1) L
TIMA CLK EN L
TIMC LAT EXT REF L
TIMC LWBT H
TIMC NODIN L

REVISIONS		
CHK	CHANGE NO	REV

TITLE	(TIMC)	SIZE	CODE	NUMBER	REV.
MSVII-C MOS MEMORY, LSI		D	CS	M7955-Ø-1	D
SCALE	SHEET 3 OF 8	DIST.			

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

B DAL TRANSCEIVERS

MTX 3 DOUT Ø2 H → BE2 BDAL Ø2 L → TIMD DI Ø2 H
MTX 3 DOUT Ø3 H → BF2 BDAL Ø3 L → TIMD DI Ø3 H
MTX 3 DOUT Ø1 H → AV2 BDAL Ø1 L → TIMD DI Ø1 H
MTX 3 DOUT ØØ H → AU2 BDAL ØØ L → TIMD DI ØØ H
TIMC FRPLY (1) L, TIMA RDIN L
8641 E21

MTX 2 DOUT Ø6 H → BK2 BDAL Ø6 L → TIMD DI Ø6 H
MTX 2 DOUT Ø7 H → BL2 BDAL Ø7 L → TIMD DI Ø7 H
MTX 2 DOUT Ø5 H → BJ2 BDAL Ø5 L → TIMD DI Ø5 H
MTX 2 DOUT Ø4 H → BH2 BDAL Ø4 L → TIMD DI Ø4 H
8641 E23

MTX 1 DOUT 1Ø H → BP2 BDAL 1Ø L → TIMD DI 1Ø H
MTX 1 DOUT 11 H → BR2 BDAL 11 L → TIMD DI 11 H
MTX 1 DOUT Ø9 H → BN2 BDAL Ø9 L → TIMD DI Ø9 H
MTX 1 DOUT Ø8 H → BM2 BDAL Ø8 L → TIMD DI Ø8 H
8641 E26

MTX Ø DOUT 14 H → BV2 BDAL 14 L → TIMD DI 14 H
MTX Ø DOUT 15 H → BV2 BDAL 15 L → TIMD DI 15 H
MTX Ø DOUT 13 H → BT2 BDAL 13 L → TIMD DI 13 H
MTX Ø DOUT 12 H → BS2 BDAL 12 L → TIMD DI 12 H
8641 E28

REFRESH OSC

+5V, R3 100K, R2 12.1K, C2 .01 µF, 555 E2 (VTH DCG CTL), C8 220 pF, TIMA CLK EN H
E45 7414 → TIMD REF CLK H
+12V, R62 2.61K, R61 1.21K, C98 .01 µF, 555 E44 (VTH DCG CTL), C59 5600 pF
Q2 G534A, C52 2.2 µF, D2 D672, C50 2.2 µF, D4 D672, D3 D672, R63 120, R64 120, C51 2.2 µF, D5 D672, D6 D672, C60 2.2 µF, C49 2.2 µF, D7 IN751A → TIMD-5V BK1

+12 TO-5V CONVERSION

TIMA DC OK H, TIMC REF L → E7
TIMC LA ØØ H, TIMA RWBT H, TIMC LA Ø1 L → E7
TIMB MUX H, TIMA RDOUT H

WRITE BYTE CONTROL DRIVERS

E14 → TIMD WB ØL (R27 18), TIMD WB 1L (R28 18)

ROW ADDRESS STROBE DRIVERS

TIMB ROW3 L, TIMB ROW2 L, TIMB ROW1 L, TIMB ROWØ L, TIMC REF L, TIMB TRAS(1) H
E4 → E6 → TIMD RAS D L (R26 18), TIMD RAS C L (R25 18), TIMD RAS B L (R21 18), TIMD RAS A L (R20 18)

E16 (7493) → TIMD RA 5 H, TIMD RA 4 H
E9 (7493) → TIMD RA 3 H, TIMD RA 2 H, TIMD RA 1 H, TIMD RA Ø H

MOSRAM ADDRESS DRIVERS

TIMC MA ØH → TIMD AØØ AL (R17 18), TIMD AØØ B L (R15 18)
TIMC MA 1 H → TIMD AØ1 A L (R14 18), TIMD AØ1 B L (R18 18)
TIMC MA 2 H → TIMD AØ2 AL (R16 18), TIMD AØ2 BL (R13 18)
TIMC MA 3 H → TIMD AØ3 AL (R12 18), TIMD AØ3 BL (R11 18)
TIMC MA 4 H → TIMD AØ4 AL (R22 18), TIMD AØ4 BL (R24 18)
TIMC MA 5 H → TIMD AØ5 AL (R19 16), TIMD AØ5 BL (R23 18)
E12, E13

COLUMN ADDRESS STROBE DRIVERS

TIMB TRAS(1) H, TIMB CAS H → E11 → TIMD CAS ØL (R8 18), TIMD CAS 1 L (R7 18)

CHIP SELECT DRIVERS

TIMC REF L, TIMB MUX H → E11 → TIMD CS ØL (R10 18), TIMD CS 1L (R9 18)

REVISIONS		
CHK	CHANGE NO	REV.

TITLE: MSV11-C MOS MEMORY, LSI (TIMD)
SIZE D | CODE CS | NUMBER M7955-Ø-1 | REV. D
SCALE — | SHEET 4 OF 8 | DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1976 DIGITAL EQUIPMENT CORPORATION"

TIMD AØSB L
TIMD AØ4 B L
TIMD AØ3 B L
TIMD AØ2 B L
TIMD AØ1 B L
TIMD AØØ B L

TIMD DI 15 L

TIMD CSØ L
TIMD CASØ L
TIMD WB L
TIMD RASB L

TIMD RASC L
TIMD AØ5 A L
TIMD AØ4 A L
TIMD AØ3 A L
TIMD AØ2 A L
TIMD AØ1 A L
TIMD AØØ A L

TIMD CS1 L
TIMD CAS1 L
TIMD RASB L

TIMD RAS A L

4Ø96 E115 — TIMD DI 14 H
4Ø96 E114 — TIMD DI 13 H
4Ø96 E113 — TIMD DI 12 H
4Ø96 E112
4Ø96 E215
4Ø96 E214
4Ø96 E213
4Ø96 E212
4Ø96 E315
4Ø96 E314
4Ø96 E313
4Ø96 E312
4Ø96 E415 — MTXØ 15 H
4Ø96 E414 — MTXØ 14 H
4Ø96 E413 — MTXØ 13 H
4Ø96 E412 — MTXØ 12 H

4Ø96 EXX
AØ5 AØ4 AØ3 AØ2 AØ1 AØØ DIN
DOUT
CS CAS WR RAS

GND PIN 16
-5V PIN 1
+12V PIN 8
+5V PIN 9

(ARRAY) DATA BITS(15-12) MTXØ

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
MSV11-C MOS MEMORY, LSI	D	CS	M7955-Ø-1	D
SCALE —	SHEET 5 OF 8		DIST	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

TIMD AØ5BL
TIMD AØ4BL
TIMD AØ3BL
TIMD AØ2BL
TIMD AØ1BL
TIMD AØØBL

TIMD DI11H
TIMD CSØL
TIMD CASØL
TIMD WB1L
TIMD RASDL

TIMD RASCL
TIMD AØ5AL
TIMD AØ4AL
TIMD AØ3AL
TIMD AØ2AL
TIMD AØ1AL
TIMD AØØAL

TIMD CS1L
TIMD CAS1L
TIMD RASBL

TIMD RASAL

4Ø96 E111 — TIMD DIØH
4Ø96 E11Ø — TIMD DIØ9H
4Ø96 E109 — TIMD DI Ø8 H
4Ø96 E108
4Ø96 E211
4Ø96 E21Ø
4Ø96 E209
4Ø96 E208
4Ø96 E311
4Ø96 E31Ø
4Ø96 E309
4Ø96 E308
4Ø96 E411 — MTX1 11H
4Ø96 E41Ø — MTX1 1ØH
4Ø96 E409 — MTXØ Ø9 H
4Ø96 E408 — MTX1 ØB H

4Ø96 EXX
AØ5 AØ4 AØ3 AØ2 AØ1 AØØ DIN CS CAS WR RAS
DOUT

GND PIN 16
-5V PIN 1
+12V PIN 8
+5V PIN 9

(ARRAY) DATA BITS (1- 8) MTX1

REVISIONS
CHK | CHANGE NO. | REV.

TITLE: MSVII-C MOS MEMORY, LSI
SIZE D | CODE CS | NUMBER M7955-Ø-1 | REV. D
SCALE | SHEET 6 OF 8 | DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

TIMD AΦ5 BL
TIMD AΦ4 BL
TIMD AΦ3 BL
TIMD AΦ2 BL
TIMD AΦ1 BL
TIMD AΦΦ BL

TIMD DI Φ7H
TIMD DI Φ6H
TIMD DI Φ5H
TIMD DI Φ4H

TIMD CSΦ L
TIMD CAS Φ L
TIMD WB Φ L
TIMD RAS D L

TIMD RAS C L
TIMD AΦ5 AL
TIMD AΦ4 AL
TIMD AΦ3 AL
TIMD AΦ2 AL
TIMD AΦ1 AL
TIMD AΦΦ AL

TIMDCS 1L
TIMD CAS 1 L
TIMD RAS BL

TIMD RAS A L

4Φ96 E1Φ7
4Φ96 E1Φ6
4Φ96 E1Φ5
4Φ96 E1Φ4
4Φ96 E2Φ7
4Φ96 E2Φ6
4Φ96 E2Φ5
4Φ96 E2Φ4
4Φ96 E3Φ7
4Φ96 E3Φ6
4Φ96 E3Φ5
4Φ96 E3Φ4
4Φ96 E4Φ7
4Φ96 E4Φ6
4Φ96 E4Φ5
4Φ96 E4Φ4

MTX2 Φ7 H
MTX2 Φ6 H
MTX2 Φ5 H
MTX2 Φ4 H

4Φ96 EXX
AΦ5
AΦ4
AΦ3
AΦ2
AΦ1
AΦΦ
DIN
CS CAS WE RAS
DOUT

GND PIN 16
-5V PIN 1
+12V PIN 8
+5V PIN 9

(ARRAY) DATA BITS (7-4) MTX2

REVISIONS
CHK | CHANGE NO. | REV.

TITLE: MSVII-C MOS MEMORY, LSI
SIZE D | CODE CS | NUMBER M7955-Ø-1 | REV. D
SCALE | SHEET 7 OF 8 | DIST.

NEXT ASSY | USED ON | APPLICATION
NEXT ASSY D | DCS M7955-Ø-1 | SIZE CODE NUMBER REV.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"

TIMD A05BL
TIMD A04BL
TIMD A03BL
TIMD A02BL
TIMD A01BL
TIMD A00BL

TIMD DI03H

TIMD CS0L
TIMD CAS0L
TIMD WB0L
TIMD RAS0L

TIMD RAS1L
TIMD A05AL
TIMD A04AL
TIMD A03AL
TIMD A02AL
TIMD A01AL
TIMD A00AL

TIMD CS1L
TIMD CAS1L
TIMD RAS2L

TIMD RAS3L

4096 E103 — TIMD DI00H
4096 E102 — TIMDDI01H
4096 E101 — TIMDDI00H
4096 E100
4096 E203
4096 E202
4096 E201
4096 E200
4096 E303
4096 E302
4096 E301
4096 E300
4096 E403 — MTX3 03H
4096 E402 — MTX3 02H
4096 E401 — MTX3 01H
4096 E400 — MTX3 00H

4096 EXX: A05, A04, A03, A02, A01, A00, DIN, CS CAS WE RAS → DOUT

GND PIN 16
-5V PIN 1
+12V PIN 8
+5V PIN 9

(ARRAY) DATA BITS (03-00) MTX3

REVISIONS		
CHK	CHANGE NO.	REV.

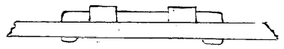
TITLE	SIZE	CODE	NUMBER	REV.
MSV11-C MOS MEMORY, LSI	D	CS	M7955-0-1	D
SCALE ½	SHEET 5 OF 8	DIST.		

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION

MODULE VARIATIONS AA&CA

1.

2. W2 THRU W5 SHOULD BE INSTALLED WITH ASSEMBLY SPACERS SO THAT THEY LOOK LIKE THE FOLLOWING:



3. R-PACKS SHOULD BE INSTALLED SO THAT LEADS DO NOT INTERFERE WITH OTHER COMPONENTS.

4. ⊗ WIRE WRAP PIN.

5.

MEMORY TYPE	JUMPER CONFIG.	VARIATION
NON-PARITY	5-7	AA, CA

6.

MEMORY SIZE	JUMPER CONFIG.		VARIATION
4 K	17-15	17-14	AA
16 K	16-15	16-14	CA

7. OPTIONAL JUMPER 1-2 WILL ALLOW USER TO EXTEND USABLE MEMORY SPACE FROM 28K TO 30K NORMAL JUMPER IS 1-3.

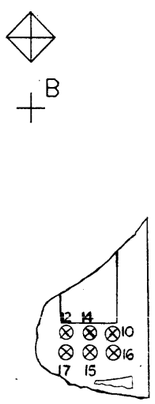
8.

JUMPER	BATTERY BACK-UP	NON BATTERY BACK-UP
W2	OUT	IN
W3	OUT	IN
W4	IN	OUT
W5	IN	OUT

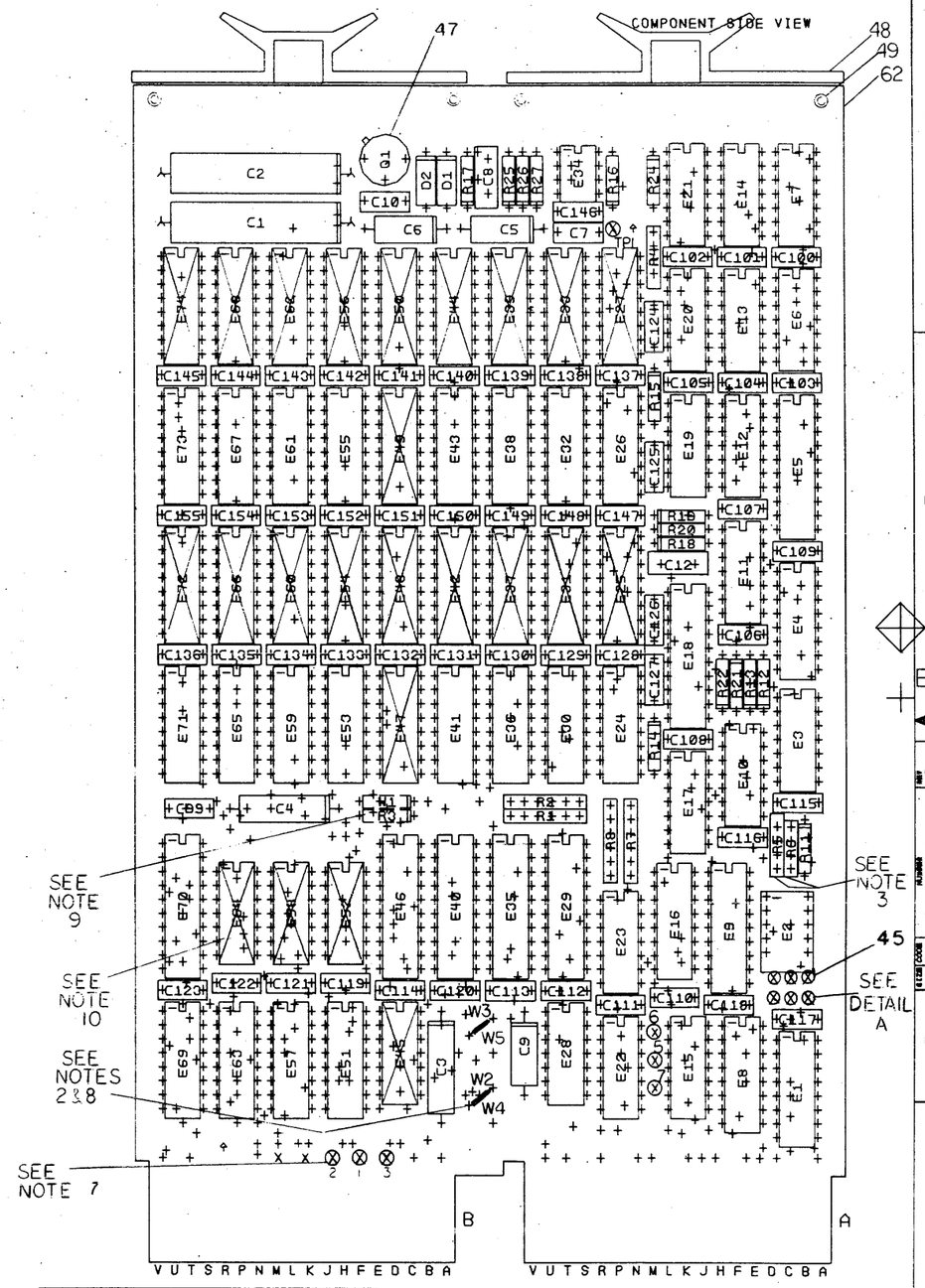
9.

MEMORY SIZE	W1	R3	VARIATION
4K	IN	OUT	AA
16K	OUT	IN	CA

10. THE FOLLOWING IC'S ARE NOT INSTALLED IN AA & CA VARIATIONS: E25, 27, 31, 33, 37, 39, 42, 44, 45, 47, 48, 49, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 72 & 74.



DETAIL A



NOTES:

CHK	CHANGE NO	REV
RG	M8044 C0001	C
	REVISED & REDRAWN	
	STORE TITLE CHANGED	
	R. GIVEN	
R. Gaccione	4-8-78	
RG	M8044 M1002	D
	28-DEC-78	
	R. GIVEN	
R. Gaccione	27-DEC-78	

ETCH. REV. D-P1
P.C. DESIGN DATA BASE REV. DL & DM

SIGNATURES	DATE
DRN.	3-20-78
CHK'D.	3-20-78
ENG.	
PROJ. ENG.	
PROD.	

digital

TITLE: 32K 16BIT MOS MEMORY

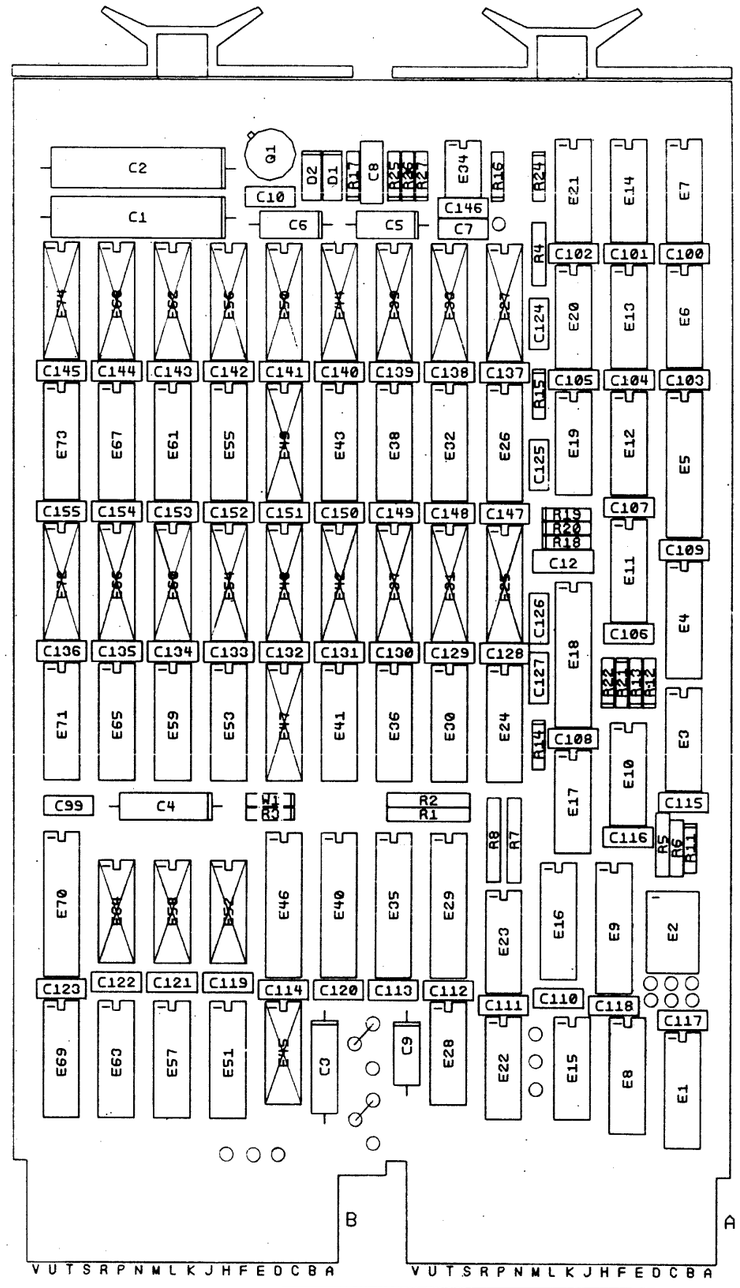
SCALE 2/1 | SHT. OF 8 | SIZE D | CODE UA | NUMBER M8044-0-0 | REV D

NEXT HIGHER ASSY. B-DD-M8045-0

1 MS# 261966

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION

MODULE VARIATIONS AA-CA



NOTES:

CHK	CHANGE NO	REV

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	
PROJ.ENG.	
PROD.	

digital

TITLE: 32K 16 BIT MOS MEMORY

SCALE	SIZE	CODE	NUMBER	REV
2/1	D	UA	M8044-0-0	D

SHT. 2 OF 8

NEXT HIGHER ASSY. B-DD-M8044-0-0

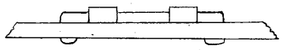
ML 1 MS#261966

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION

MODULE VARIATIONS BA & DA

1.

2. W2 THRU W5 SHOULD BE INSTALLED WITH ASSEMBLY SPACERS SO THAT THEY LOOK LIKE THE FOLLOWING:



3. R PACKS SHOULD BE INSTALLED SO THAT LEADS DO NOT INTERFERE WITH OTHER COMPONENTS.

4. ⊗ WIRE WRAP PIN.

5.

MEMORY TYPE	JUMPER CONFIG	VARIATION
NON-PARITY	5-7	BA, DA

6.

MEMORY SIZE	JUMPER CONFIG		VARIATION
8 K	17-15	12-14	BA
32 K	16-15	10-14	DA

7. OPTIONAL JUMPER 1-2 WILL ALLOW USER TO EXTEND USABLE MEMORY SPACE FROM 28K TO 30K. NORMAL JUMPER IS 1-3.

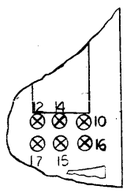
8.

JUMPER	BATTERY BACK-UP	NON BATTERY BACK-UP
W2	OUT	IN
W3	OUT	IN
W4	IN	OUT
W5	IN	OUT

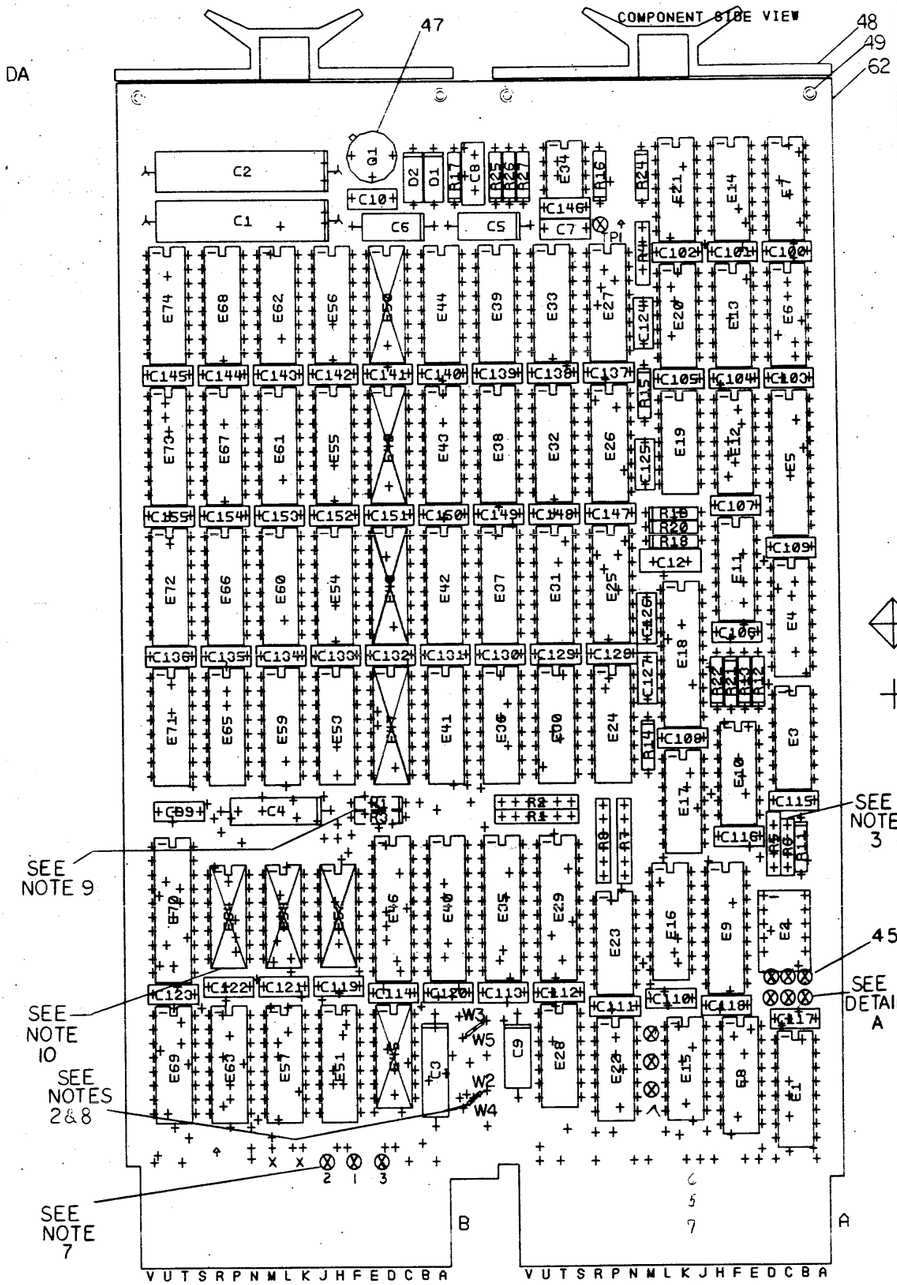
9.

MEMORY SIZE	W1	R3	VARIATION
8K	IN	OUT	BA
32K	OUT	IN	DA

10. THE FOLLOWING IC'S ARE NOT INSTALLED IN BA & DA VARIATIONS: E45, 47, 48, 49, 50, 52, 58 & 64.



DETAIL A



NOTES:

CHK	CHANGE NO	REV

SIGNATURES	DATE
DRN.	
CHK'D. Robert Y. Morris	
ENG.	
PROJ. ENG.	
PROD.	

ETCH REV. D-P1
P.C. DESIGN DATA BASE REV. DL & DM

digital

TITLE: 32K 16BIT MOS MEMORY

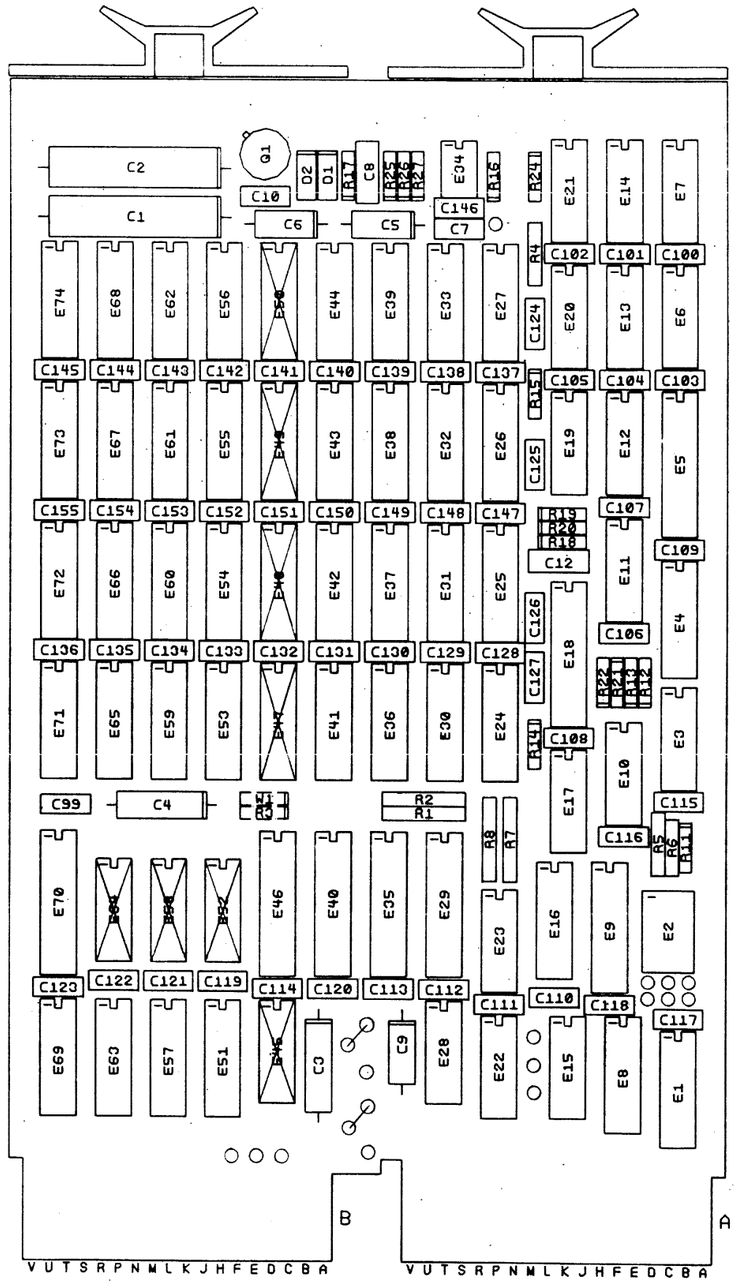
SCALE 2/1 | SHT. 3 OF 8 | NEXT HIGHER ASSY. B-DD-M8044-0

SIZE	CODE	NUMBER	REV
D	UA	M8044-0-0	D

ML 1 MS# 261966

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 197- DIGITAL EQUIPMENT CORPORATION

MODULE VARIATIONS BA DA



NOTES:

CHK	CHANGE NO	REV

SIGNATURES	DATE
DRN.	3-20-79
CHK'D. Richard V Mamon	3-20-79
ENG.	
PROJ. ENG.	
PROD.	

digital

TITLE
32K 16 BIT MOS MEMORY

SIZE	CODE	NUMBER	REV
D	UA	M8044-0-0	D

SCALE 2/1
SHT. 4 OF 8
NEXT HIGHER ASSY. B-DD-M8044-0-0

mL 1 MS#261966

M8045 5013128D-P1 L1

M8045 5013128D-P1 L1

LAYER 1

74 68 62 56 50 44 39 34 digital

74 68 62 56 50 44 39 34 digital

32K 16BIT MOS MEMORY DUA M8044-0-0

LAYER 2

32K 16BIT MOS MEMORY

DUA M8044-C-C

D

8
7
6
5
4
3
2
1
D
C
B
A
L3
L3
32K 65T MOS MEMORY
D DA M8044 -0 -0 D
D DA M8044 -0 -0 D

M8045
5013128DP1
32K 18 BIT MOS MEM
SIDE 2
M8045
5013128DP1
32K 18 BIT MOS MEM
SIDE 1
L4
L4
LAYER 4
32K 16BIT MOS MEMORY
M8044-
SCALE 2/1
D
D/A M8044-0-0 D

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977, DIGITAL EQUIPMENT CORPORATION"

NOTES:

1. ⊛ = WIRE WRAP PIN

2.

TYPE MEMORY	JUMPER CONFIGURATION
NON PARITY	5 TO 7
PARITY	5 TO 6

3.

TYPE	JUMPER CONFIGURATION
4K	17 TO 15 & 17 TO 14
8K	17 TO 15 & 12 TO 14
16K	16 TO 15 & 16 TO 14
32K	16 TO 15 & 1Ø TO 14

4.

STARTING ADDRESS		SWITCH SETTING (X = OFF)				
DEC (K)	OCTAL	S1-1	S1-2	S1-3	S1-4	S1-5
Ø	ØØØØØØ					
4	Ø2ØØØØ					X
8	Ø4ØØØØ				X	
12	Ø6ØØØØ				X	X
16	1ØØØØØ			X		
2Ø	12ØØØØ			X		X
24	14ØØØØ			X	X	
28	16ØØØØ			X	X	X
32	2ØØØØØ		X			
36	22ØØØØ		X			X
4Ø	24ØØØØ		X		X	
44	26ØØØØ		X		X	X
48	3ØØØØØ		X	X		
52	32ØØØØ		X	X		X
56	34ØØØØ		X	X	X	
6Ø	36ØØØØ		X	X	X	X
64	4ØØØØØ	X				
68	42ØØØØ	X				X
72	44ØØØØ	X			X	
76	46ØØØØ	X			X	X
8Ø	5ØØØØØ	X		X		
84	52ØØØØ	X		X		X
88	54ØØØØ	X		X	X	
92	56ØØØØ	X		X	X	X
96	6ØØØØØ	X	X			
1ØØ	62ØØØØ	X	X			X
1Ø4	64ØØØØ	X	X		X	
1Ø8	66ØØØØ	X	X		X	X
112	7ØØØØØ	X	X	X		
116	72ØØØØ	X	X	X		X
12Ø	74ØØØØ	X	X	X	X	
124	76ØØØØ	X	X	X	X	X

5. NORMAL JUMPER 1 TO 3.
OPTIONAL JUMPER 1 TO 2
WILL ALLOW USER TO EXTEND USABLE MEMORY SPACE FROM 28K TO 3ØK.

6.

JUMPER	BATTERY BACK-UP	NON BATTERY BACK-UP
W2	OUT	IN
W3	OUT	IN
W4	IN	OUT
W5	IN	OUT

7.

MEMORY SIZE	W1	R3	
4K	IN	OUT	4K CHIPS
8K	IN	OUT	
16K	OUT	IN	16K CHIPS
32K	OUT	IN	

8.

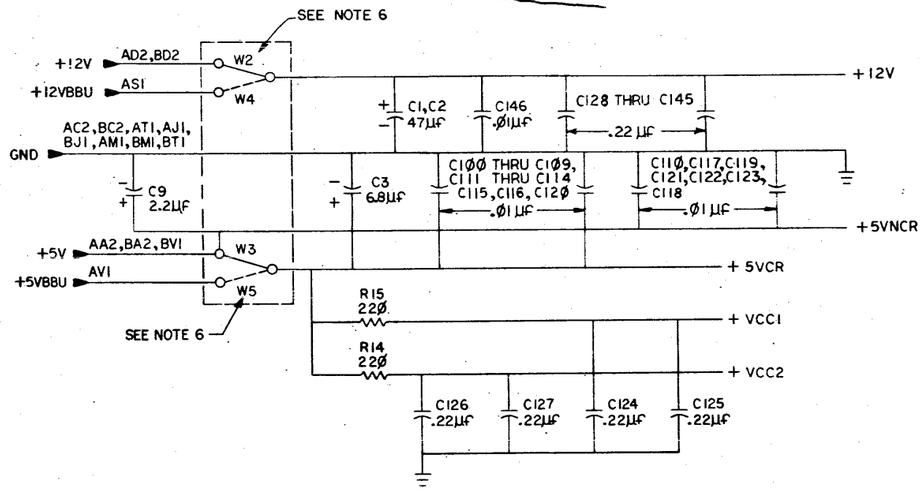
OPTION DESIGNATION	PRIMARY VARIATION	SYSTEM DESCRIPTION
MSV11-DA	M8Ø44-AA	4K X 16 BITS
MSV11-DB	M8Ø44-BA	8K X 16 BITS
MSV11-DC	M8Ø44-CA	16K X 16 BITS
MSV11-DD	M8Ø44-DA	32K X 16 BITS

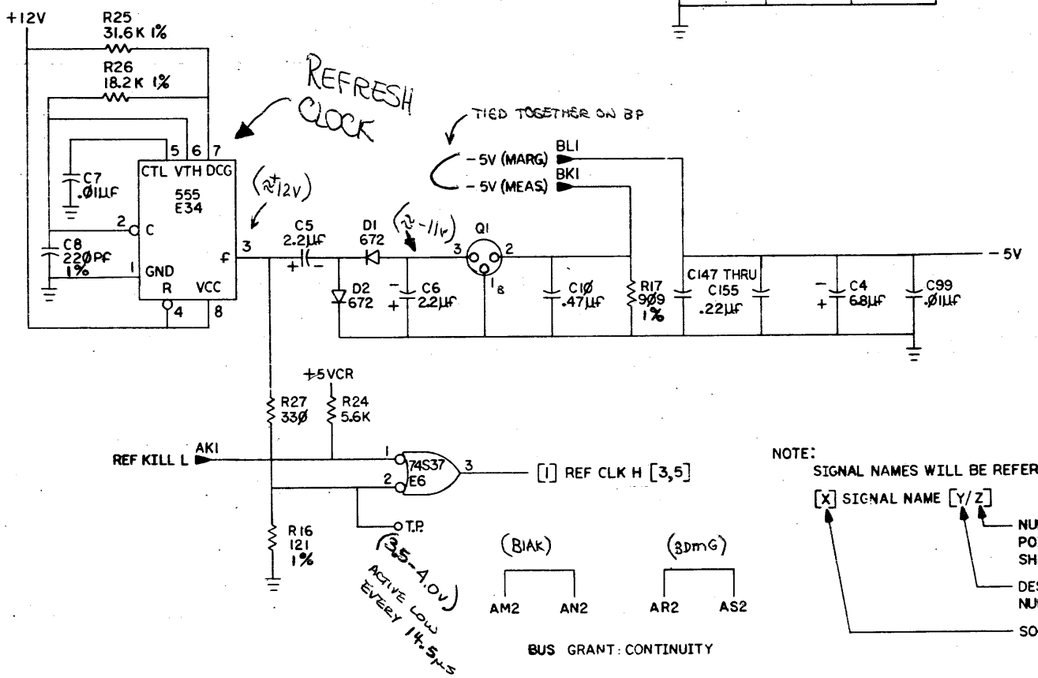
9.

IC TYPE	+5V	GND	+12V	-5V
555		1	8	
MOS	9	16	8	1
74S373	2Ø	1Ø		
74LS393	14	7		
74S28Ø	14	7		
74S74	14	7		
74S1Ø	14	7		
74S11	14	7		
8641	16	8		
864Ø	8	1		
74S24Ø	2Ø	1Ø		
74S37	14	7		
74S22	14	7		
1Kx4 PROM	18	9		
74SØ2	14	7		
74LS75	5	12		
74S32	14	7		
74LS1Ø	14	7		
74LS24Ø	2Ø	1Ø		

1Ø. THESE I.C.'S USED ONLY IN 8K & 32K CONFIG'S.

BATTERY BACK-UP CKTRY





NOTE:
SIGNAL NAMES WILL BE REFERENCED AS FOLLOWS:
[X] SIGNAL NAME [Y/Z]
- Y/Z: NUMBER OF CONNECTION POINTS ON DESTINATION SHEET.
- Y: DESTINATION SHEET NUMBER.
- X: SOURCE SHEET NUMBER.

REVISIONS			
CHK	CHANGE NO.	REV.	
	M8044-00001	B	
Steve Hill 1 May 78			
R. GIVEN			
R. Given 11 Dec 78	M8044 ML002	C	
R. GIVEN			
R. Given 27-Dec-78			

M8044-ML003	D
R. Given 7/23/80	
RON GIVEN	
Ron Given 7/31/80	

DRN Steve Garrity	10-25-77	FIRST USED ON MSV11-D
CHK'D R. GIVEN	2-21-78	digital
ENG. R. GIVEN	2-21-78	TITLE 4K-32K 16BIT MOS MEM
PROJ. ENG. R. Given	2-21-78	
PROD. P. Ryan	2-21-78	
NEXT HIGHER ASSY. B-DD-M8044-Ø		SIZE D CODE CS NUMBER M8Ø44-Ø-1 REV. D
SCALE 1/1		
SHEET 1 OF 7		DIST.

ML 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

BDCOK H — BA1 — 8640 E22 — [2] DCOK L [4]

BREF L — AR1 — 8640 E22 — [2] EXT REF H [4]

BDAL12 L — BS2 — SEE NOTE 5

2K or 4K I/O PAGE SELECT

BBS7 L — AP2 — 8640 E22 — [2] BANK SEL 7 H [4]

[2] WTBT H [4]

BWTBT L — AK2 — 8640 E22 — 74LS240 E18 — [2] WTBT L [4,5]

8641 E51

BDAL0 L — AU2

(LATCHED DATA)

[3] LAT DØØ H [2] — [2] DAL ØØ H [4,6]

BDAL1 L — AV2

[3] LAT DØ1 H [2] — [2] DAL Ø1 H [3,6]

BDAL2 L — BE2

[3] LAT DØ2 H [2] — [2] DAL Ø2 H [3,6]

BDAL3 L — BF2

[3] LAT DØ3 H [2] — [2] DAL Ø3 H [3,6]

[5] RPLY L [2/5]

[2] DIN L [2/5]

8641 E57

BDAL4 L — BH2

[3] LAT DØ4 H [2] — [2] DAL Ø4 H [3,6]

BDAL5 L — BJ2

[3] LAT DØ5 H [2] — [2] DAL Ø5 H [3,6]

BDAL6 L — BK2

[3] LAT DØ6 H [2] — [2] DAL Ø6 H [3,6]

BDAL7 L — BL2

[3] LAT DØ7 H [2] — [2] DAL Ø7 H [3,6]

[5] RPLY L [2/5]

[2] DIN L [2/5]

8641 E63

BDAL8 L — BM2

[3] LAT DØ8 H [2] — [2] DAL Ø8 H [3,7]

BDAL9 L — BN2

[3] LAT DØ9 H [2] — [2] DAL Ø9 H [3,7]

BDAL10 L — BP2

[3] LAT DIØ H [2] — [2] DAL 1Ø H [3,7]

BDAL11 L — BR2

[3] LAT DI1 H [2] — [2] DAL 11 H [3,7]

[5] RPLY L [2/5]

[2] DIN L [2/5]

8641 E69

BDAL 12 L — BS2

[3] LAT DI2 H [2] — [2] DAL 12 H [3,7]

BDAL 13 L — BT2

[3] LAT DI3 H [2] — [2] DAL 13 H [3,4,7]

BDAL 14 L — BU2

[3] LAT DI4 H [2] — [2] DAL 14 H [3,4,7]

BDAL 15 L — BV2

[3] LAT DI5 H [2] — [2] DAL 15 H [4,7]

[5] RPLY L [2/5]

[2] DIN L [2/5]

8641 E1

BAD 16 L — AC1

[4] PAR ERR H [2] — [2] WWPA 16 H [4]

BDOUT L — AE2

[2] DOUT H [4,5]

BAD 17 L — AD1

[2] A17 H [4]

[5] RPLY L [2/5]

[2] DIN L [2/5]

8641 E8

BSYNC L — AJ2

74LS240 E18 — [2] SYNC H [4/3]

[2] SYNC L [3/2,4]

74LS240 E18 — [2] SYNC 2 H [4,5/2]

BDIN L — AH2

74LS240 E18 — [2] DIN H [5]

[2] DIN L [2/5]

BRPLY L — AF2

[5] RPLY H [2]

[5] RPLY EN L [2,5]

BUS TRANSCIEVERS

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
32K 16BIT MOS MEM	D	DCS	M8044-0-1	D
SCALE —	SHEET 2 OF 7	DIST.		

ML 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1977 DIGITAL EQUIPMENT CORPORATION"

ADDRESS LATCHES

(1ST) [5] ROW ADD OUT CONT H [3]

OC 74S373-Ø1 E35

[2] DAL Ø1 H [3,6] — D7
[2] DAL Ø2 H [3,6] — D5
[2] DAL Ø3 H [3,6] — D4
[2] DAL Ø4 H [3,6] — D6
[2] DAL Ø5 H [3,6] — D3
[2] DAL Ø6 H [3,6] — D8
[2] DAL 14 H [3,4,7] — D1
D2
EN ← [2] SYNC L [3/2,4]

R7 R5 R4 R6 R3 R8 R1 R2

R2 22 → [3] MUX A1 H [6/2,7/2]
R1 22 → [3] MUX A2 H [6/2,7/2]
R2 22 → [3] MUX A3 H [6/2,7/2]
R1 22 → [3] MUX A4 H [6/2,7/2]
R2 22 → [3] MUX A5 H [6/2,7/2]
R1 22 → [3] MUX A6 H [6/2,7/2]

TO MEMORY CHIPS

R3 22 — W1 → [3] MUX A7 H [6/2,7/2]
SEE NOTE 7

(2ND) [5] COL ADD OUT CONT L [3]

OC 74S373-Ø1 E46

[2] DAL Ø7 H [3,6] — D7
[2] DAL Ø8 H [3,7] — D5
[2] DAL Ø9 H [3,7] — D4
[2] DAL 1Ø H [3,7] — D6
[2] DAL 11 H [3,7] — D3
[2] DAL 12 H [3,7] — D8
[2] DAL 13 H [3,4,7] — D1
D2
EN ← [2] SYNC L [3/2,4]

R7 R5 R4 R6 R3 R8 R1 R2

[5] REF ADD OUT CONT L [3/2]

74LS393 E23
[1] REF CLK H [3,5] → 1A
1QA 1QB 1QC 1QD
13 → 2A
2QA 2QB 2QC 2QD
ICL 2CL
2 12

OC 74S373 E29

1QA → D7
1QB → D5
1QC → D4
1QD → D6
2QA → D3
2QB → D8
2QC → D1
D2
EN ← [5] REF ADD OUT CONT L [3/2]

R7 R5 R4 R6 R3 R8 R1 R2

REFRESH COUNTER
REFRESH LATCH

OC 74S373 E4Ø

[6] DO ØØ H [3] — D1
[6] DO Ø1 H [3] — D6
[6] DO Ø2 H [3] — D2
[6] DO Ø3 H [3] — D3
[6] DO Ø4 H [3] — D4
[6] DO Ø5 H [3] — D7
[6] DO Ø6 H [3] — D8
[6] DO Ø7 H [3] — D5
EN ← [4] DATA LAT L [3/2,4]

R1 R6 R2 R3 R4 R7 R8 R5 → [3] LAT DØØ H [2] … [3] LAT DØ7 H [2]

LO BYTE

DATA OUT LATCHES

HI BYTE

OC 74S373 E7Ø

[7] DO Ø8 H [3] — D6
[7] DO Ø9 H [3] — D1
[7] DO 1Ø H [3] — D8
[7] DO 11 H [3] — D7
[7] DO 12 H [3] — D4
[7] DO 13 H [3] — D5
[7] DO 14 H [3] — D2
[7] DO 15 H [3] — D3
EN ← [4] DATA LAT L [3/2,4]

R6 R1 R8 R7 R4 R5 R2 R3 → [3] LAT DØ8 H [2] … [3] LAT D15 H [2]

+5VCR

R4 5K (2 → 1)
R4 5K (4 → 3)

74S1Ø E2Ø: 1, 2, 13 → 12 → [3] PAR ERR IND H [4] (L)

NON-PARITY BOARD

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
32K 16BIT MOS MEM	D	CS	M8Ø44-Ø-1	D
SCALE —	SHEET 3 OF 7	DIST.		

DEC FORM NO. 30 138

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

(L = DATI)

[2] WTBT H [4] — 74SØ2 E7

[2] DCOK L [4] — 74S32 EIØ

[2] WTBT L [4,5] (H = DATI) — 74SØ2 E7

[5] PLUP2 H [4/3] — 74S74 E14 (DATI F/F)

[2] SYNC H [4/3]

[4] DATI CYC END L [4]

[4] DATI REQ L [5/2] STARTS DATI TIMING

[2] DOUT H [4,5] — 74S37 E6 — [4] DATO REQ L [5] STARTS DATO TIMING

[2] SYNC H [4/3] — 74S74 E14 (DOUT F/F)

[4] DATO CYC END L [4]

[2] SYNC H [4/3] — 8640 E13

[5] DL4 L [4]
[5] DL6 H [4,5] — 74S11 E11
[5] INT REF L [4,5/5]

[5] PLUP2 H [4/3]

[2] SYNC2 H [4,5/2]

[5] PLUP2 H [4/3] — 74S74 E12 — [4] DATA LAT L [3/2,4]

74S74 E12 — 74SØ2 E7 — [4] DATO CYC END L [4]

74S74 E12 — 8640 E13 — [4] DATI CYC END L [4]

"L" if ADDR MATCH

STARTING ADDRESS SELECT

+5VNCR — R5 5K, R6 5K, R11 5.6K

SI-1 SI-2 SI-3 SI-4 SI-5 — E2

SEE NOTE 4

1KX4 PROM E9 — A9 A8 A7 A6 A5 A4 A3 A2 A1 AØ CEA CEB

[2] A17 H [4]
[2] WWPA16 H [4]
[2] DAL15 H [4,7]
[2] DAL14 H [3,4,7]
[2] DAL13 H [3,4,7]

[2] EXT REF H [4]

[2] BANK SEL7 H [4]

+5VNCR — R12 1K
+5VNCR — R13 1K

SEE NOTE 3

"L" if LOWER ½ OF BOARD MEM

74LS75 E16

[2] DAL ØØ H [4,6] — D0 — RØ(1) RØ(Ø) — [4] LAT AØØ H [5] BYTE POINTER; [4] LAT AØØ L [5]

[3] PAR ERR IND H [4] — D2 — R2(1) R2(Ø) — [4] PAR ERR H [2] (L) 8044
NON-PARITY = "L"

D1 — R1(1) R1(Ø) — [4] LAT RØ SEL L [5]; [4] LAT RØ SEL H [5] } UPPER OR LOWER ½ MEM

D3 — R3(1) R3(Ø) — [4] PLUP I H [5] (L)

ENBI ENB2

[2] SYNC L [3/2,4]

[4] DATA LAT L [3/2,4]

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
32K 16 BIT MOS MEM	D	CS	M8Ø44-Ø-1	D
SCALE —	SHEET 4 OF 7	DIST.		

M8Ø44-Ø-1 D DCS

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

REFRESH CKTRY

74LS24Ø E5 (19) ← [5] PLUP 2 H [4/3]

74LS24Ø E5 (19) → [5] REF REQ L [5]

74S74-Ø1 E21 ← [1] REF CLK H [3,5]

8640 E13 → 74S74-Ø1 E21

74LS24Ø E18 (19) → [5] ROW ADD INH L [5]

8640 E13 → [5] INT REF L [4,5/5], [5] INT REF H [5/2]

74LS1Ø E28 ← [5] DL9 H [5/2], [5] DL6 L [5/2], [5] INT REF H [5/2]

74LS24Ø E5 (1) ← [5] DL2 H [5] → [5] DL2 L [5]

74LS24Ø E5 (19) → 74LS24Ø E5 (1) ← [5] DL3 H [5] → [5] DLT 3 H [5]

74LS24Ø E5 (1) ← [5] DL2 H [5], [5] DL3 H [5], [5] DL5 H [5], [5] DL6 H [4,5], [5] DL7 H [5] → [5] DL4 L [4], [5] DL4 H [5]

DELAY LINE TIMING OUTPUTS (L→H)

START TIMING

74S1Ø E2Ø ← [5] REF REQ L [5], [4] DATI REQ L [5/2], [4] DATO REQ L [5]

74S11 E11 ← [5] LOCK OUT L [5/2]

74S22 E19 ← [5] DL6 L [5/2]

+5VCR → R18 19.6 1%

+5VCR → R19 619 1%, R2Ø 289 1%, C12 220 PF 1%

(REFRESH) BOTH CAPS IF NOT REFRESH

74LS24Ø E18 (19) → [5] DL Ø H [5/3]

+5VCR → R21 33Ø

74LS24Ø E18 (19) → E4 200 NS DEL. LINE 20 NS TAP

E4 → 74LS24Ø E5 (1) → [5] LOCK OUT L [5/2]

PREVENTS STARTING TIMING CYCLE

E4 → R22 215 → [5] DLIØ H [5]

E4 → [5] DL9 H [5/2]

74LS24Ø E18 (19) ← [5] DL5 H [5] → [5] DL5 L [5]

74LS24Ø E18 (1) → [5] DLT 5 H [5]

74LS24Ø E5 (19) ← [5] DL6 H [4,5] → [5] DL6 L [5/2]

REPLY CIRCUITRY

DISABLE DURING REFRESH

74LS1Ø E28 ← [5] INT REF L [4,5/5], [5] DL Ø H [5/3]

(NO PARITY) [5] DL7 H [5], (PARITY) [5] DL9 H [5/2] → SEE NOTE 2

74S74 E15 ← [5] RPLY EN L [2,5], [2] SYNC 2 H [4,5/2] → [5] RPLY L [2/5]

(5) DATA TO BUS

74S37 E6 ← [5] RPLY H [2]

(5) ASSERT REPLY

74S74 E15 ← [4] PLUP 1 H [5], [5] DATO RPLY CLK H [5], [2] SYNC 2 H [4,5/2]

WRITE TIMING

74S32 E1Ø ← [4] LAT AØØ L [5], [2] WTBT L [4,5] WRITE BYTE OPERATION

74S37 E3 → R8 22 → [5] WTBT Ø L [6/2]

74S32 E1Ø ← [4] LAT AØØ H [5]

74S37 E3 → R8 22 → [5] WTBT 1 L [7/2]

74S11 E11 ← [5] DL Ø H [5/2], [4] DATI REQ L [5/2], [5] INT REF L [4,5/5] (DISABLE DURING REFRESH)

74S11 E11 → [5] DATO RPLY CLK H [5] DATO ALWAYS SENDS ALL 16 BITS

74LS1Ø E28 ← [5] DL2 L [5], [5] DL5 L [5], [5] ROW ADD INH L [5] (DISABLE DURING REFRESH)

74LS1Ø E28 → [5] ROW ADD OUT CONT H [3] (1)

74LS1Ø E28 ← [5] DLØH [5/3], [5] INT REF L [4,5/5] → [5] COL ADD OUT CONT L [3] (3)

SELECT ROW/COL

COLUMN ADDRESS STROBE

[5] INT REF L [4,5/5] (DISABLE DURING REFRESH)

74S37 E3 → R7 22 → [5] CAS Ø L [6/2] LOWER ½ MEM

(4)

74S37 E3 ← [5] DLT 5 H [5]

74S37 E3 → R8 22 → [5] CAS 1 L [7/2] UPPER ½ MEM

ROW ADDRESS STROBE

[4] LAT RØ SEL L [5], [5] INT REF L [4,5/5] (ENABLE USE OF BOTH RAS SIGS DURING REFRESH)

74S37 E17 → R7 22 → [5] RAS Ø L [6,7] LOWER ½ MEM

(2)

[4] LAT RØ SEL H [5]

74S37 E17 → R7 22 → [5] RAS 1 L [6,7] UPPER ½ MEM

74S32 E1Ø ← [5] DL Ø H [5/3], [5] DLT 3 H [5]

REFRESH CKTRY

74S37 E6 ← [5] LOCK OUT L [5/2], [5] INT REF H [5/2] → [5] REF ADD OUT CONT L [3/2]

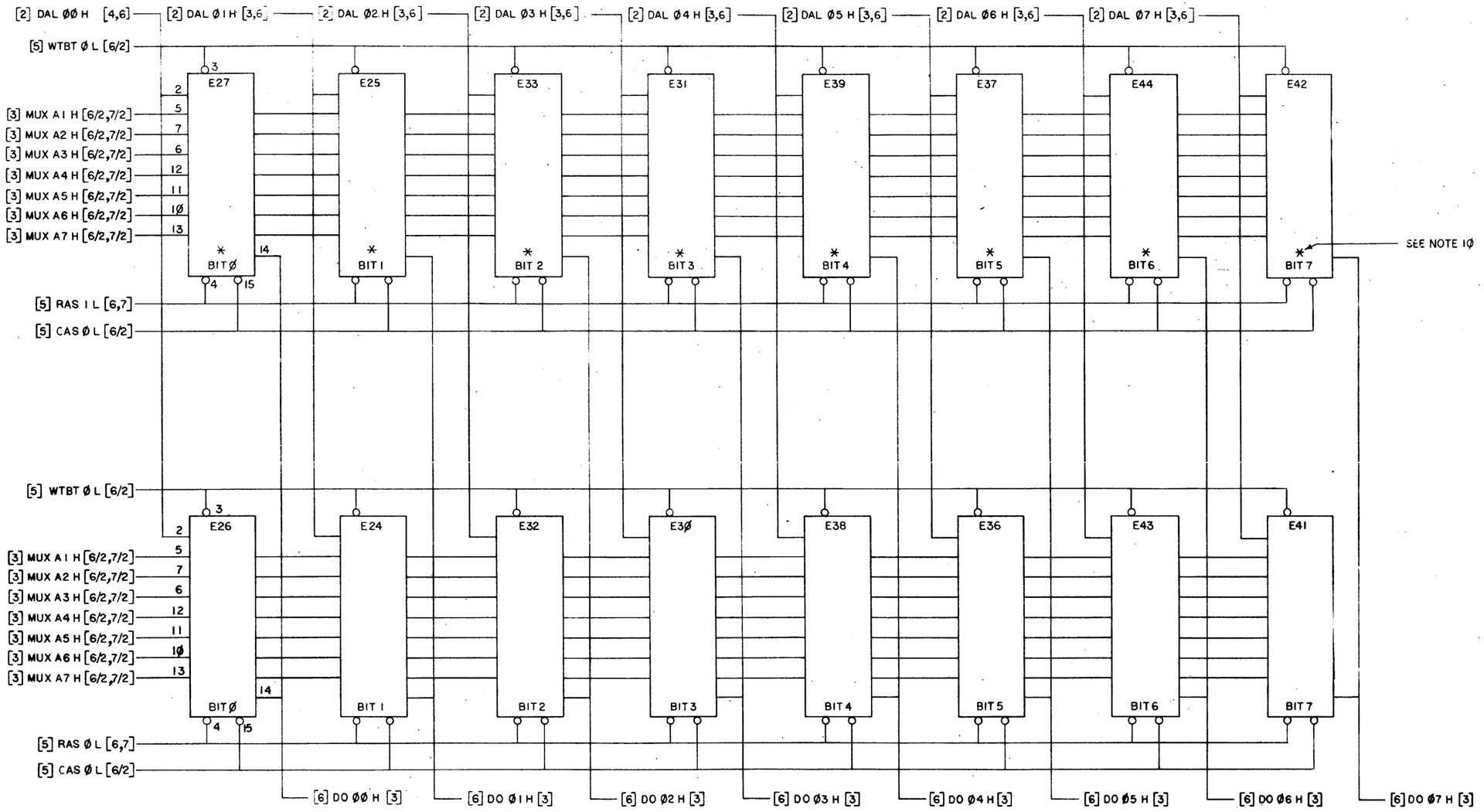
REPLY ENABLE

74S02 E7 ← [2] DIN H [5], [2] DOUT H [4,5] → [5] RPLY EN L [2,5]

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
32K 16 BIT MOS MEM	D	CS	M8Ø44-Ø-1	D
SCALE —	SHEET 5 OF 7	DIST.		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

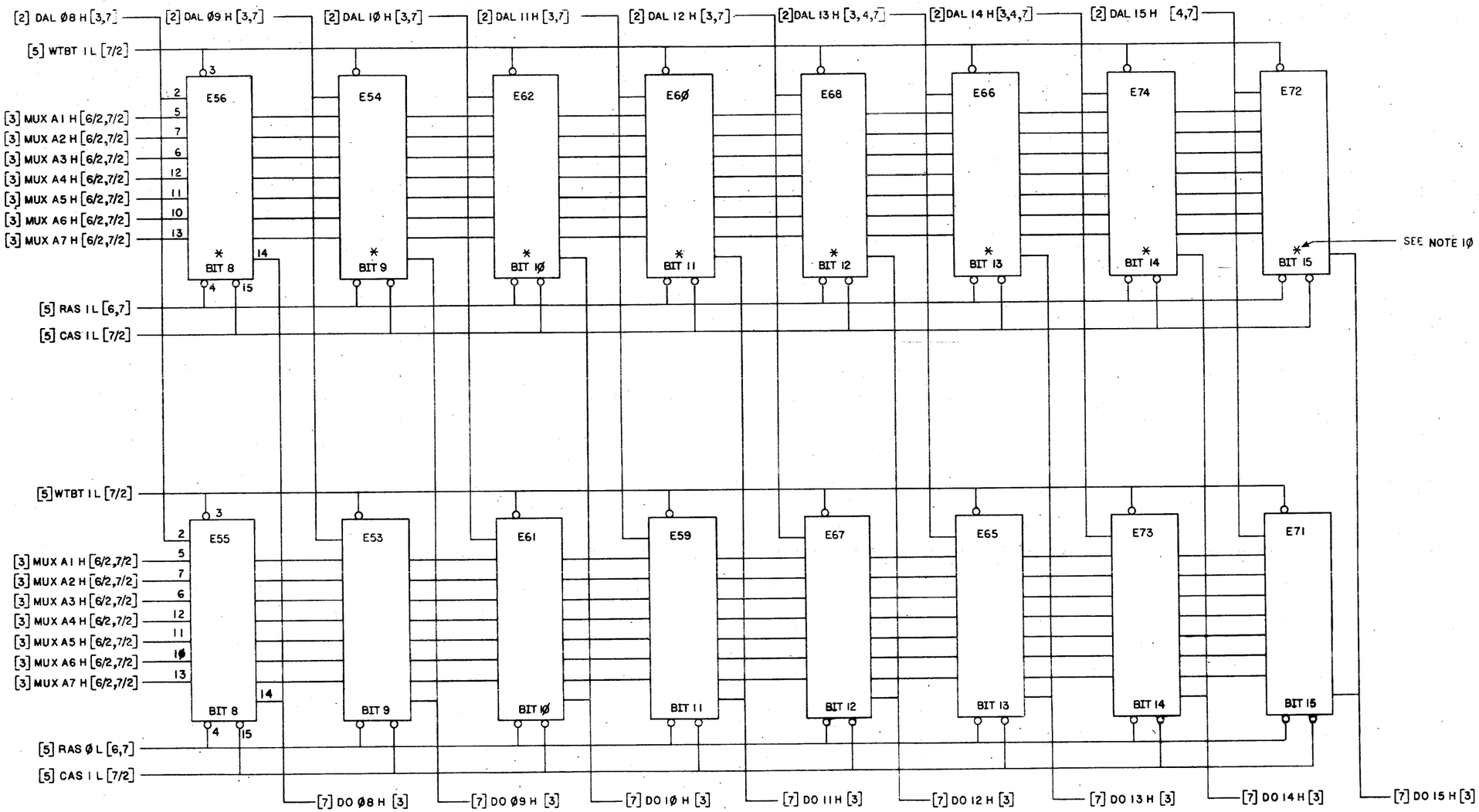


VCC1 — E26,E27,E32,E33,E38,E39,E43,E44, E55,E56,E61,E62,E67,E68,E73,E74
VCC2 — E24,E25,E3Ø,E31,E36,E37,E41,E42, E53,E54,E59,E6Ø,E65,E66,E71,E72
+5VNCR — E1, E8, E9, E15,E16,E45,E51,E52,E57,E58,E63,E64,E69,E7Ø
+5VCR — E3 THRU E7, E1Ø THRU E14, E17 THRU E23,E28,E29,E35,E4Ø,E46

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV
32K 16BIT MOS MEM	D	DCS	M8Ø44-Ø-1	D
SCALE —	SHEET 6 OF 7	DIST.		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



VCC1 — E26,E27,E32,E33,E38,E39,E43,E44, E55,E56,E61,E62,E67,E68,E73,E74
VCC2 — E24,E25,E3Ø,E31,E36,E37,E41,E42, E53,E54,E59,E6Ø,E65,E66,E71,E72
+5VNCR — E1, E8, E9, E15,E16,E45,E51,E52,E57,E58,E63,E64,E69,E7Ø
+5VCR — E3 THRU E7, E1Ø THRU E14,E17 THRU E23,E28,E29,E35,E4Ø,E46

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
32K 16 BIT MOS MEM	D	CS	M8Ø44-Ø-1	D
SCALE —	SHEET 7 OF 7	DIST.		

ML 1

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION

JUMPER SHIP CONFIGURATION

CONFIGURATION	WIRE WRAP PINS FROM	WIRE WRAP PINS TO	LEVEL
RAM BANK Ø	J3Ø J32 J31	J31 J33 J32	L1 L1 L2
CHØ ADDRESS 176500	J23 J24	J18 J19	L1 L1
CH1 ADDRESS 177560	J2Ø J26 J25 J27	J19 J15 J14 J13	L2 L1 L1 L1
ROM (TU58 BOOT)	J37 J21 J34 J33 J29	J38 J22 J37 J39 J15	L1 L1 L2 L2 L2
BAUD RATES	J45 (CHØ) J46 (CH1)	J5Ø (38.4K) J4Ø (9600)	L1 L1
VECTORS (CHØ,3ØØCH1,6Ø)	J53 J54 J56 J54	J57 J52 J51 J55	L1 L1 L1 L2
BREAK DETECTION (HALT)	J6	J7	L1
CRYSTAL CLOCK	J68	J67	L1
SLU PARAMETERS (8 DATA BITS, NO PARITY, ONE STOP BIT)	J59 J62 J6Ø J61 J59 J63	J61 J64 J63 J62 J66 J65	L1 L1 L1 L2 L2 L2

SEE NOTE *2

REMARK INSTRUCTIONS

ECO *2

ETCH CUT SIDE 1, AS SHOWN:
2-1 AT E9-2

WIRE ADD SIDE 1, AS SHOWN:
2-2 FROM E9-13 TO E14-3

COMPONENT SIDE VIEW

QTY 66

8.42 (210.50MM) F.B.S. REF

2-2

NOTES:
1. IDEA EDIT REV. IS *328
2. WIRE WRAP JUMPERS ARE INSTALLED AFTER THE MODULE HAS SUCCESSFULLY PASSED G.R. TEST.

REV	CHANGE NO	CHK
B	MR047-MR002	AD

P. LOCKE
Removed 1.8K

ETCH REV.	D
P.C. DESIGN DATA BASE REV.	A

SIGNATURES	DATE
DRN. Ed Fanning	9 FEB 79
CHK'D	2-27-79
ENG. Robert Fitch	27 MAR 79
PROJ.ENG. Robert Fitch	27 MAR 79
PROD. C. Tessel - Rth.	3/29/79
SCALE 2-1	
SHT. 1 OF 3	
NEXT HIGHER ASSY. B-DD-M8Ø47-Ø	

digital

TITLE
LSI-11 MEM & I/O

SIZE	CODE	NUMBER	REV
D	UA	M8Ø47-Ø-Ø	B

DUAM8047-Ø-Ø B

MS# 190277D

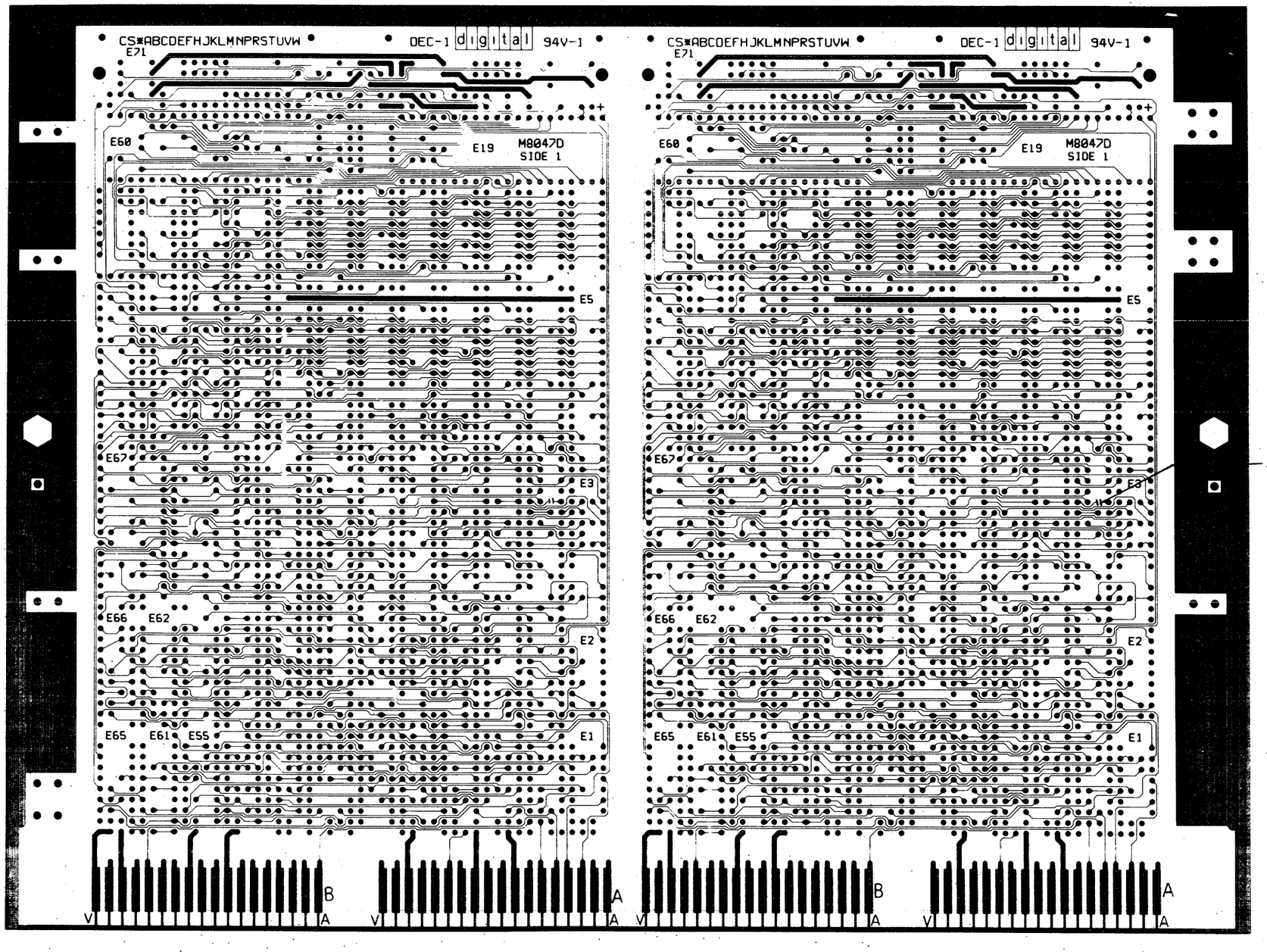
THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION

L1 LAYER 1

50-13564-D M8047

L1

50-13564-D M8047



REVISIONS		
CHK	CHANGE NO	REV.

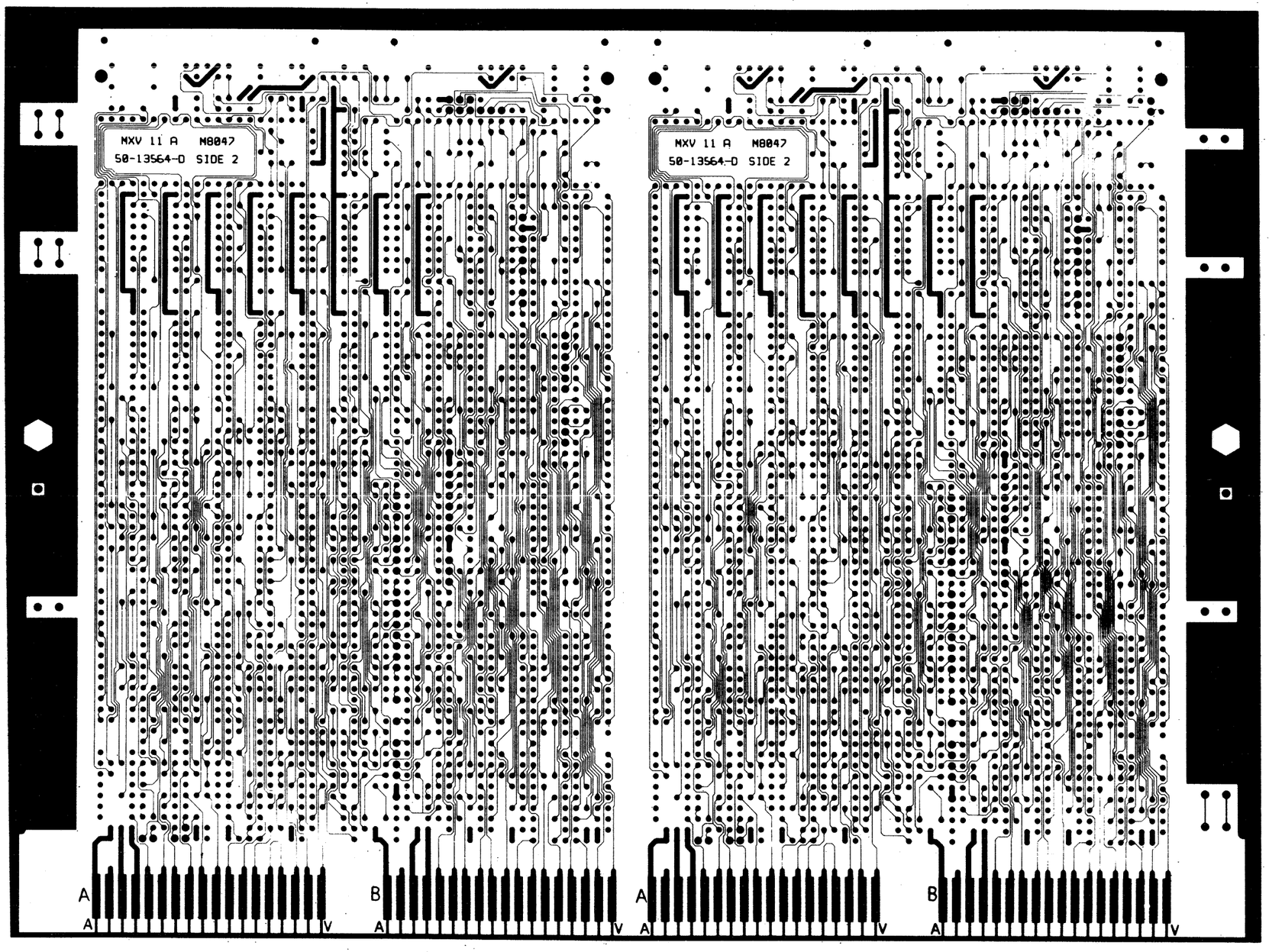
TITLE	SIZE	CODE	NUMBER	REV.
LSI11 MEM & I/O	D	UA	M8Ø47-Ø-Ø	B
SCALE 2/1	SHEET 2 OF 3		DIST.	

DEC FORM NO DRD 137

M8Ø47-Ø-Ø B

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"

L4

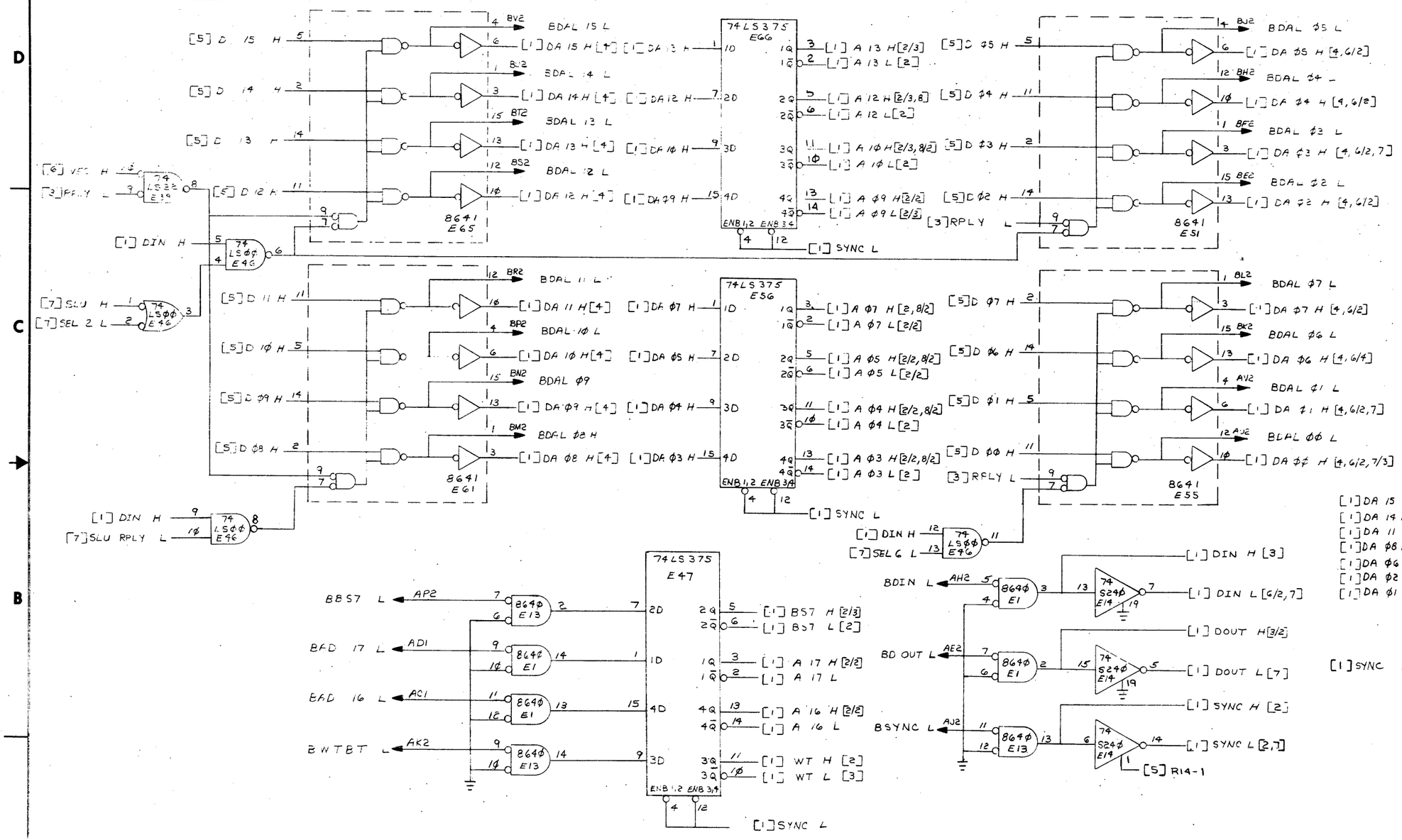


REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
LSI11 MEM & I/O	D	UA	M8047-0-0	B
SCALE 2/1 SHEET 3 OF 3	DIST. MR			

DEC FORM NO DRD 177

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978, DIGITAL EQUIPMENT CORPORATION"



DRN. E. Wilson	22AUG78	FIRST USED ON	digital
CHK'D Rick Gaumont	6 Feb 79	MXVII-A	
ENG. Robert Fitch	27MAR79	TITLE	LSI-11 MEM AND I/O
PROJ. ENG. Robert Fitch	27MAR79		
PROD. C. Purdy R.A.	5/30/79		
NEXT HIGHER ASSY.	B-DD-ME0047-0	SIZE D	CODE CS	NUMBER M8047-0-1	REV. C
SCALE NONE		SHEET 1 OF 8	DIST.

REVISIONS			
CHK	CHANGE NO.		REV.
	MR001 MR000		B
	MR047 MR000		C

A. FITCH
R. LOCKE

DEC FORM NO. 12-0
DEC 12-0-0

MR

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

[1] A 07 H → 81 LS97 E58 → [2] MUX A1 L [1/2]
[3] ROW ADD L
[1] A 08 H → [2] MUX A2 L [1/2]
[1] A 09 H → [2] MUX A3 L [1/2]
[1] A 10 H → [2] MUX A4 L [1/2]
[1] A 11 H → [2] MUX A5 L [1/2]
[1] A 12 H → [2] MUX A6 L [1/2]
[1] A 13 H → [2] MUX A7 L [1/2]

[1] A 01 H → 81 LS97 E53
[3] COL ADD L
[1] A 02 H → [2] MUX A0 L [1/2]
[1] A 03 H → [2] MUX A1 L [1/2]
[1] A 04 H → [2] MUX A2 L [1/2]
[1] A 05 H → [2] MUX A3 L [1/2]
[1] A 06 H → [2] MUX A4 L [1/2]
[1] A 14 H → [2] MUX A5 L [1/2]

[5] 9.6K → 81 LS97 EG3 → W3 / W1 → [2] MUX A7 L [1/2]
[3] REF ADD L
[5] 2.4K
[5] 19.2K
[5] 4.8K
[5] 38.4K
[5] 1.2K
[5] 600 HZ

J33 J34 +3V

1K X 4 PROM E52
A9 A8 A7 A6 A5 A4 A3 A2 A1 A0 CEA CE8
J32 J31 J30
[1] A 17 H
[1] A 16 H
[1] A 15 H
[1] A 14 H
[1] A 13 H
[1] BS7 H
[1] SYNC L
[2] 16K L
+5V
R7 2.7K
W5
W4
[2] RAM SEL L [3]
[2] 4K L

[1] BS7 L
[1] A12 L
[1] A11 H
[1] A10 L
[1] A09 L
74 S260 E49 → J22

[1] A17 H
[1] A16 H
[1] A15 H
[1] A14 H
74 S260 E49 → J20
J11 J10 [1] A13 H
J09 [1] A13 L
J08

J21
[1] SYNC H
74 LS00 E22

74 LS32 E39
[1] WT H
[2] ROM L [3]

[1] BS7 H
[1] A 12 H
[1] A 11 H
[1] A 10 H
[1] A 09 L
[1] A 08 H
[1] A 07 L
[1] A 06 H
74 S133 E34 → [2] SLU 0 L [7/8]
17650X
17651X
17652X
17653X
J23 J24
[1] A05

74 LS00 E22 → [2] SLU H

[1] BS7 H
[1] A 12 H
[1] A 11 H
[1] A 10 H
J26
[1] A 08 H
[1] A 07 L
[1] A 06 H
J25 J27 J28
74 S133 E41 → [2] SLU 1 L [7/2]
17650X TO 17657X
17750X TO 17757X

[5] CLOCK H → 8881 E7 → J3 → J4 BRI → BEVNT L
[6] FE 1 H → 8881 E7 → J6 → J5 BAI → BDCOK H
[6] RDATA 1 → J7 AFI → BHALT L
[3] PU H → 8881 E7 → AF2 → ERRLY L
AFI
AEI

[1] A 09 H → J15
[1] A 05 H → J14
[1] A 04 H → J13
[1] A 03 H → J12
[1] A 09 L → J16
[1] A 05 L → J17
[1] A 04 L → J18
[1] A 03 L → J19

+5V → AA2, BA2, BV1
+12V → AD2, BD2
GND → AC2, AJ1, AM1, AT1, BC2, BJ1, BM1, BT1
AR2 → AS2

JUMPER CHART

MODULE TYPE	W1	W3	W4	W5
M8047-AA	IN	OUT	IN	OUT
M8047-CA	OUT	IN	OUT	IN

REVISIONS

CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 MEM AND I/O	D	CS	M8047-0-1	C
SCALE	SHEET 2 OF 8		DIST.	

MR

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

NOTE:
RPLY ON TØ FOR DOUT
RPLY ON T1 FOR DIN
UN LATCH DATA ON T4
AND NOT REF

[3] TØ H → 74 LSØ2 E35 → [3] RAS L [4/2]
[3] T3 H →

[3] REF (Ø) H → 74 LSØØ E29 → [3] CAS L [4/2]
[3] T5 H
[3] T1 H
[3] T2 H
[3] T4 H [5]
[3] T6 H
[3] T7 H
[3] T8 H
[3] T9 H

+3V → 74 S74 E23 RFR → [3] RFR (1) H, [3] RFR (1) L, [3] RFR (Ø) L, [3] RFR (Ø) H
[5] T6.9 <
[3] T0 L, [3] T6 L, [3] REF H → 74 LSØ4 E9
74 LSØ4 E4 → [3] REF (1) L, [3] REF H

+3V → 74 S74 E23 REF → [3] REF (1) H, [3] REF (Ø) L, [3] REF (Ø) H [5], [3] REF CLR L

+3V → 74 LS74 E15 DATI → [3] DATI (1) H, [3] DATI (1) L, [3] DATI (Ø) L, [3] DATI (Ø) H
[1] INT L
[2] RAM SEL L → 74 LSØ4 E9

+3V → 74 LS74 E15 DATO → [3] DATO (1) L, [3] DATO (Ø) L, [3] DATO (Ø) H
[1] DOUT H

[3] TØ L, [3] T6 H, [3] REF (Ø) H → 74 LS1Ø E18

[3] DATO (1) H → 8640 E13 ← [3] T7 H
8640 E13 → [3] TØ L, [3] REF (Ø) L → 74 LS27 E16

74 LS27 E9 ← [3] TØ H, [3] T6 H
74 LS27 E9 → 8881 E2

8881 E2 → R30 19.6 → 74 S240 E14 → [5] R14-1
+5V → R28 511
8881 E2 → R33 215
+5V → R29 261
S240 E14 → 200 NS DELAY LINE 20 NS TAP E3 → [3] TIØ H, R32 196
C12 22Ø pf

[3] TØ H → 74 LSØ4 E4 → [3] TØ L
[3] T6 H → 74 LSØ4 E4 → [3] T6 L
[3] T2 H → 74 LSØ4 E4 → [3] T2 L

[6] INIT H → 74 LS27 E9 → 74 LS27 E16 → 74 LS27 E16 → 74 LS27 E9 → 74 LS27 E16
+5V → R8 7.5K
[2] ROM L, [7] SLU RPLY L → 8881 E2
C11 22Ø pf
300 NS

[1] DIN H, [1] DOUT H → 74 LSØ2 E35 → 74 LSØ2 E35 → [3] RPLY H [2,1]
[3] RPLY H [2,1] → 74 S240 E14 → [3] RPLY L [1/3], [5] R14-1

[3] REF H, [3] REF CLR L → 74 LSØØ E29 → [3] REF ADD L [2]

[3] REF (Ø) H, [3] TØ H → 74 LS1Ø E18 → [3] COL ADD L [2]

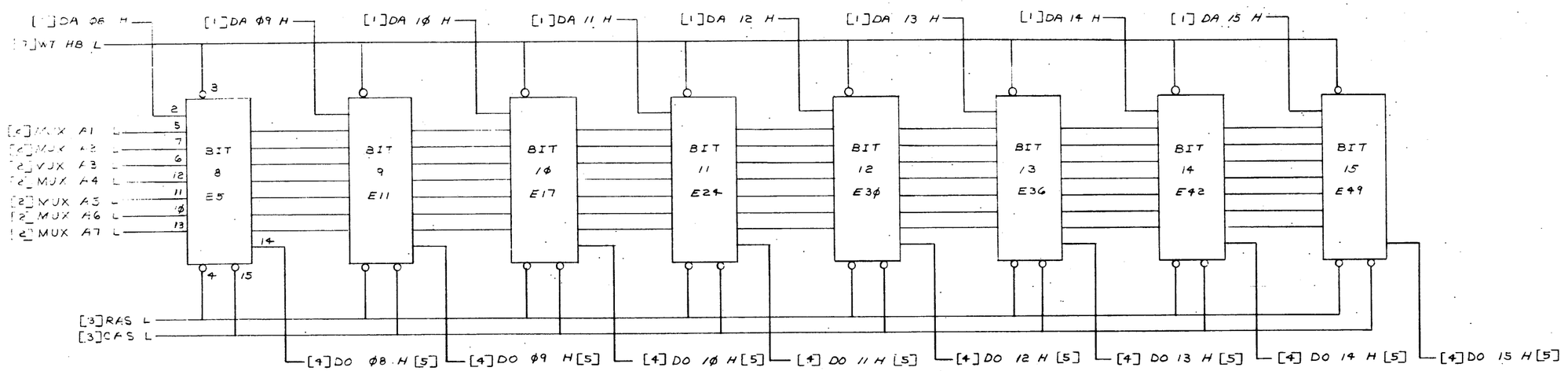
[3] T2 L, [3] REF (Ø) H → 74 LSØØ E29 → [3] ROW ADD L [2]

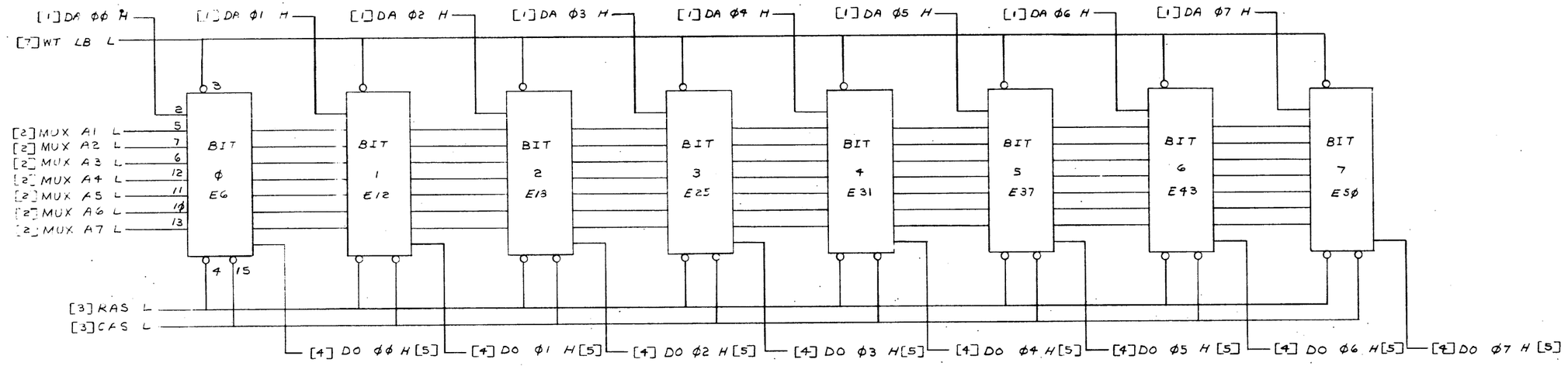
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 MEM AND I/O	D	CS	M8Ø47-Ø-1	C
SCALE	SHEET 3 OF 8	DIST.		

MAINSPACE P1488
DEC FORM NO. ORD 135
MR

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"





REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 MEM AND I/O	D	CS	M8Ø47-Ø-1	C
SCALE	SHEET 4 OF 6	DIST.		

MR

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1974 DIGITAL EQUIPMENT CORPORATION"

+5V
OSC1
14
8
E45
7
12.6603M
J66
J67

74LS393 E69
1QA 3 [5] 9.83Ø4 M
1QB 4 [5] 4.9152 M
1QC 5 [5] 2.4576 M
1QD 6 [5] 1.2288 M
2QA 11 [5] 614.4 K (38.4 K)
2QB 1Ø [5] 307.2 K (19.2 K)
2QC 9 [5] 153.6 K (9600)
2QD 8 [5] 76.8 K (REF) (4800) [3]
1A 13
2A 12
CLR1 2
CLR2 12

74LS393 E68
1QA 3 [5] 38.4 K (A7 (24ØØ) [2]
1QB 4 [5] 19.2 K (A6) (12ØØ) [2]
1QC 5 [5] 9.6 K (A5) [2]
1QD 6 [5] 4.8 K (A4) (3ØØ) [2]
2QA 11 [5] 2.4 K (A3) (15Ø) [2]
2QB 1Ø [5] 1.2K (A2) [2]
2QC 9 [5] 6ØØ HZ (A1) [2]
2QD 8 [5] 3ØØ HZ
1A 1
2A 13
CLR1 2
CLR2 12
[5] R14-1 [1,3/2]
R14 1ØØ

74LS373 E48
[4] DO 15 H 3 D1 Q1 2 [5] D 15 H [1]
[4] DO 14 H 4 D2 Q2 5 [5] D 14 H [1]
[4] DO 13 H 7 D3 Q3 6 [5] D 13 H [1]
[4] DO 12 H 8 D4 Q4 9 [5] D 12 H [1]
[4] DO 11 H 13 D5 Q5 12 [5] D 11 H [1]
[4] DO 1Ø H 14 D6 Q6 15 [5] D 1Ø H [1]
[4] DO Ø9 H 17 D7 Q7 16 [5] D Ø9 H [1]
[4] DO Ø8 H 18 D8 Q8 19 [5] D Ø8 H [1]
CO 1 ENB 11
[3] T 4 H 13
12
74 LSØ8 E28
[5] RAM SEL L [1]

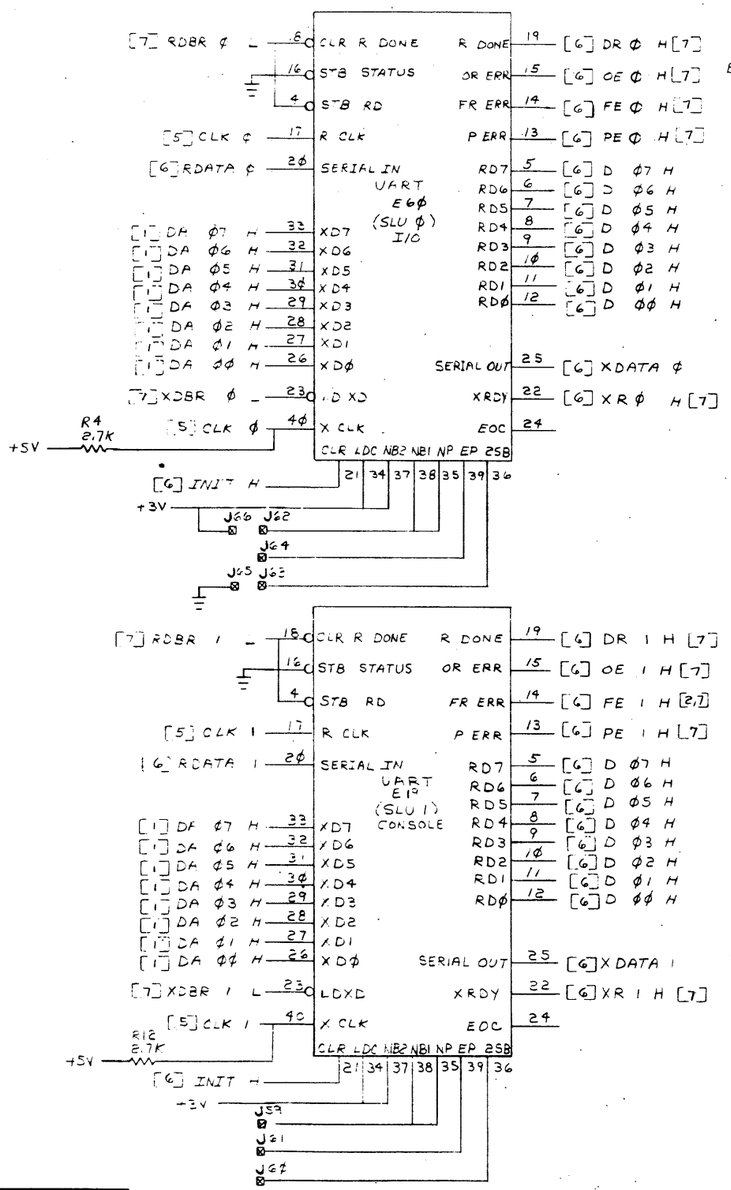
74LS373 E54
[4] DO Ø7 H 3 D1 Q1 2 [5] D Ø7 H [1]
[4] DO Ø6 H 4 D2 Q2 5 [5] D Ø6 H [1]
[4] DO Ø5 H 7 D3 Q3 6 [5] D Ø5 H [1]
[4] DO Ø4 H 8 D4 Q4 9 [5] D Ø4 H [1]
[4] DO Ø3 H 13 D5 Q5 12 [5] D Ø3 H [1]
[4] DO Ø2 H 14 D6 Q6 15 [5] D Ø2 H [1]
[4] DO Ø1 H 17 D7 Q7 16 [5] D Ø1 H [1]
[4] DO ØØ H 18 D8 Q8 19 [5] D ØØ H [1]
CO 1 ENB 11
[5] RAM SEL L

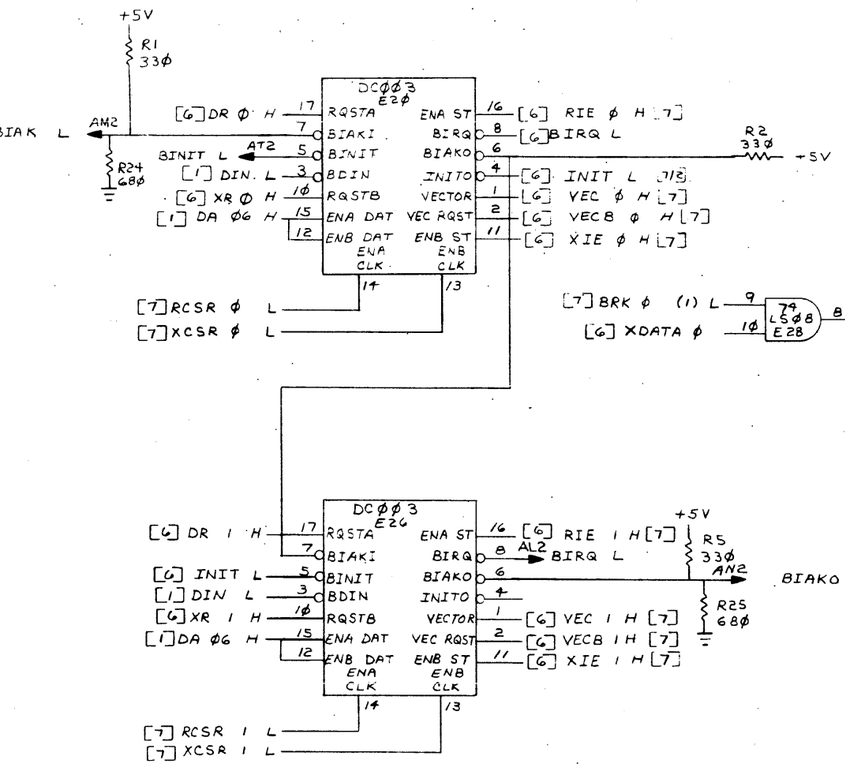
[5] 307.2 K
74 LSØ8 E28
ØØ26 E71
C2 .47 uf
+12V
C3 .47 Mf
D1 D664
D5 4.3V
D2 D664
74 LSØ8 E29
ØØ26 E71
C4 .47 Mf
D3 D664
C5 .47 Mf
R23 68Ø
-12V
D4 5.1V
C1 3.9 Mf
-5V

[5] 614.4 K J5Ø
[5] 307.2 K J49
[5] 153.6 K J48
[5] 76.8 K J47
[5] 38.4 K J44
[5] 19.2 K J42
[5] 4.8 K J43
[5] 2.4 K J41
J45 [5] CLK Ø [6/3]
J46 [5] CLK 1 [6/3]

74LS9Ø E7Ø
[6] INIT H 7 6 SET 9
3 2 CLR
R3(1) 11
R2(1) 8 [5] CLOCK H [2]
R1(1) 9
R0(1) 12
CLR0 CLK0
1 14

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"



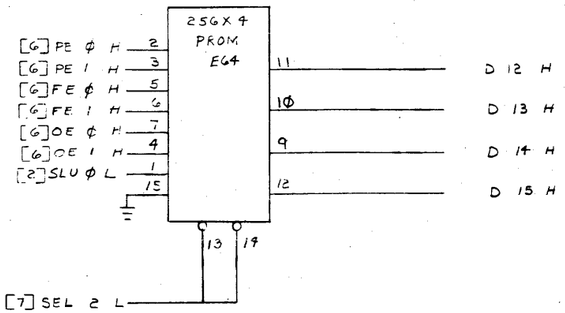


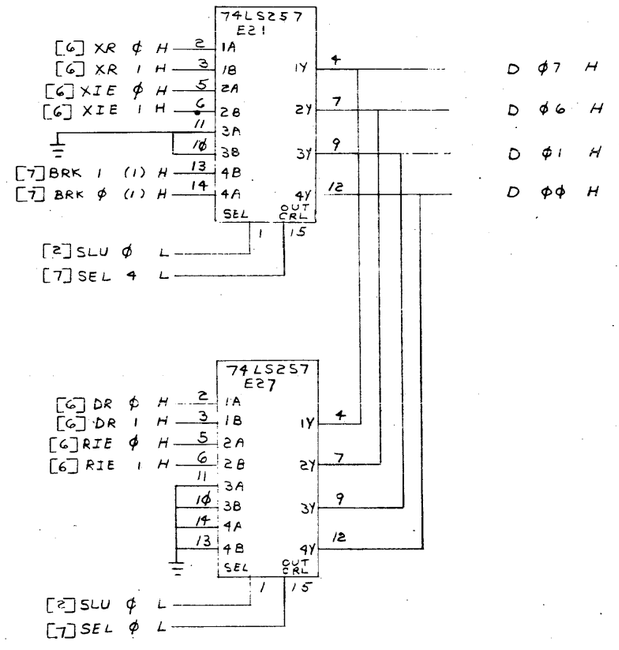
REVISIONS		
CHK	CHANGE NO.	REV.

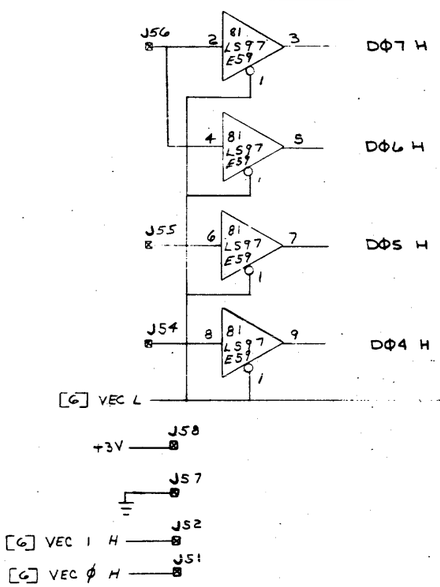
TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 MEM AND I/O	D	CS	M8Ø47-Ø-1	C
SCALE	SHEET 6 OF 8	DIST.		

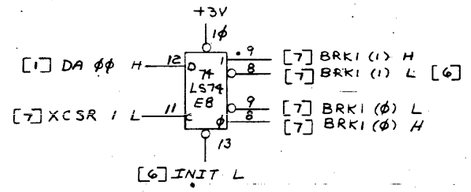
DEC 70BW NO 080 150

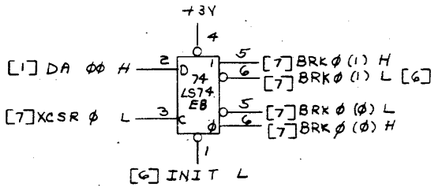
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

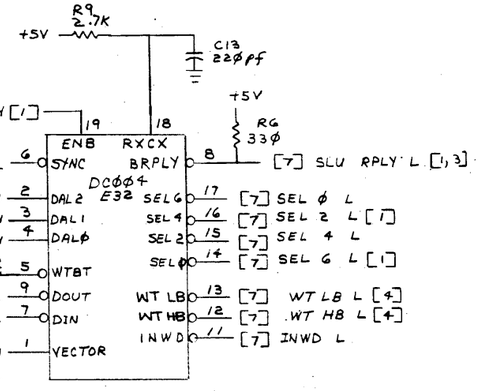


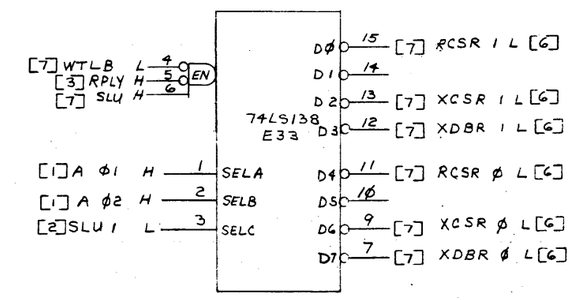


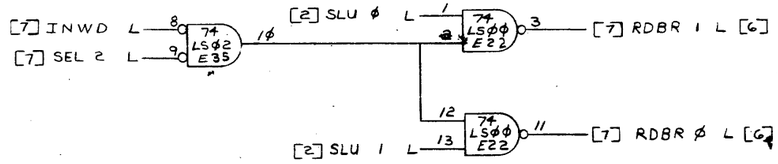










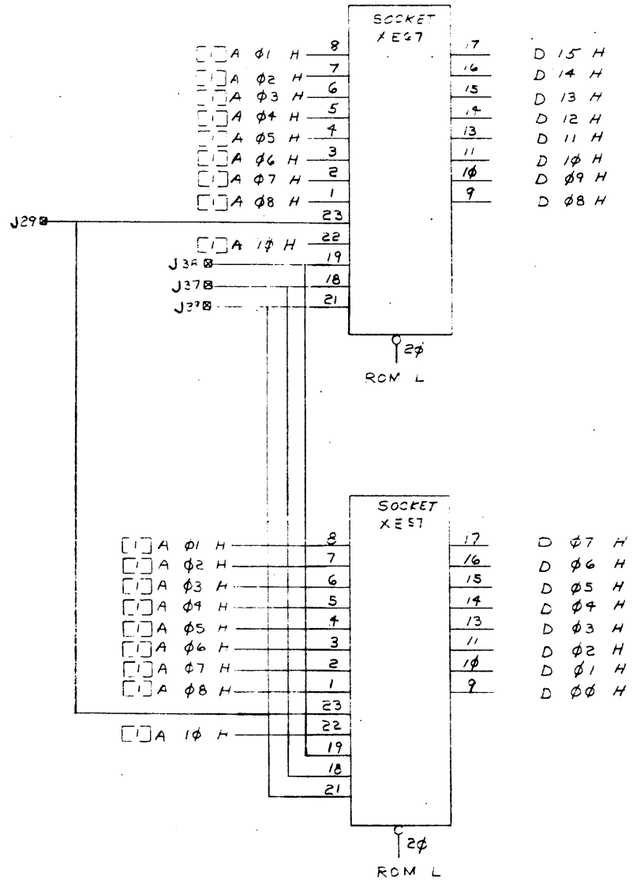


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI-11 MEM AND I/O	D	DCS	M8047-0-1	C
SCALE	SHEET 7 OF 8	DIST.		

MR

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO.	REV.

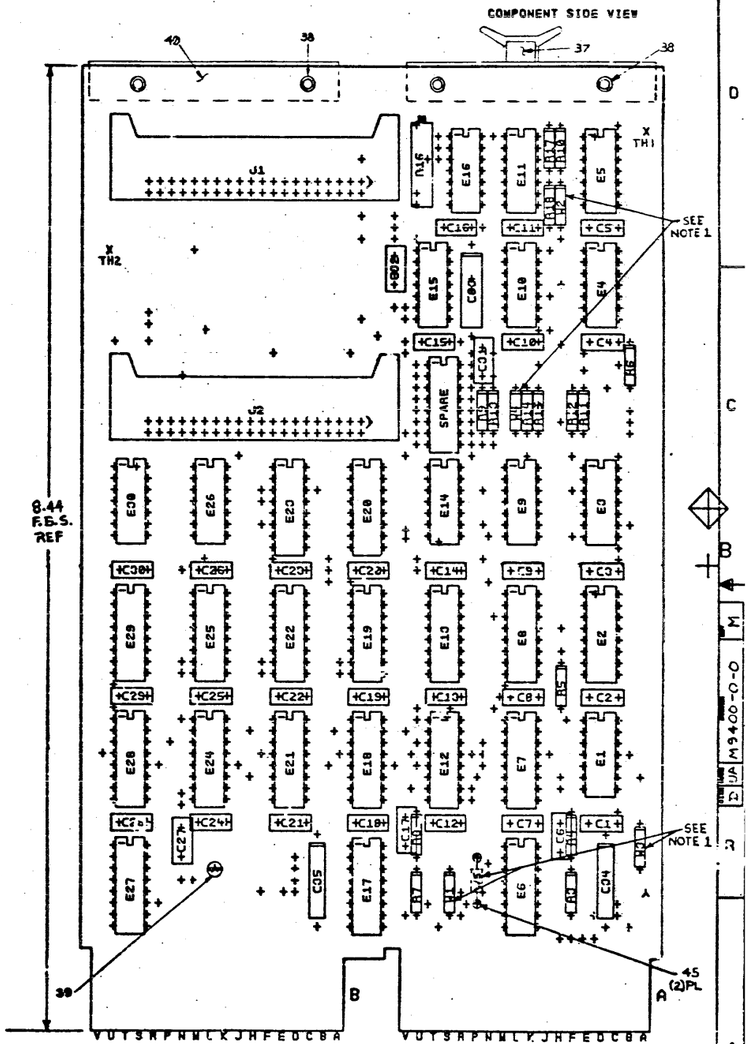
TITLE	LSI-11 MEM AND I/O	
SIZE	D	
CODE	CS	
NUMBER	M8Ø47-Ø-1	
REV.	C	
SCALE		
SHEET	8 OF 8	
DIST.		

MR

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN PART OR IN WHOLE AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION

NOTES: 1. W1-SHOULD BE IN ON VERSIONS YB,YD AND YE AND OUT ON ALL OTHER VERSIONS ALWAYS, OTHERWISE YOU WILL HAVE TERMINATING RESISTOR PROBLEMS.
W2- IS OPTIONAL FOR DMA REFRESH OR NO DMA RERESH.
W3- SHOULD ALWAYS BE IN UNLESS DOING BUS MARGININING
W4- IS OPTIONAL FOR RPLY OR NO RPLY
W5- A JUMPER WHICH WILL BE CALLED W5 IN ETCH REV D SHOULD BE IN WHEN RUNNING PROGRAMS SUCH AS DECXII WHICH MIGHT RESET INTERRUPT ENABLE BITS. THIS MIGHT RESULT IN NO RPLY TO IAK IF W5 WERE NOT INSTALLED, DEPO® MD:IDXQLA-1 MUST BE INSTALLED WHEN RUNNING DECXII.
CAUTION: W5 SHOULD NOT BE INSTALLED WHEN RUNNING OPERATING SYSTEMS. W5 WRAP POSTS FOR W5 DO NOT EXIST ON ETCH REV C AND BELOW. JUMPER AF2 TO AM2 ON BACKPLANE, REMOVE JUMPER AFTER RUNNING DECXII.
2. M9400-YN VARIATION IS THE SAME AS -YC VARIATION EXCEPT FOR REF DESIGNATIONS E19, E22, E25, E29.
3. REMOVE THE FOLLOWING UNUSED FINGERS FROM ARTWORK: AF1, AH1, AS1, AU1, BD1, BE1, BF1, BH1, BS1.

COMPONENT SIDE VIEW



NOTES:

CHG	CHANGE NO	REV
		K
		L

ETCH REV. E-F
P.C. DESIGN DATA BASE REV. E

SIGNATURES	DATE
DRN. J. RICHARD	6/11/79
CHK'D.	6/25/79
ENG.	8/24/79
PROJ. ENG.	9/4/79
PROD.	9/7/79

digital

TITLE LSI REF BOOT CABLE CONN

SCALE 2/1 | SIZE D | CODE UA | NUMBER M9400-0-0 | REV L

SHT. 1 OF 1 | NEXT HIGHER ASSY. B-DD-M9400-0

MS#

"THIS DRAWING AND SPECIFICATIONS, HEREON, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

NOTES:

1. BD INIT L AND INIT H ARE SIGNALS GENERATED BY THIS MODULE THAT ARE USED ON THIS MODULE.
2. A STANDARD ROM STARTING LOCATION FOR THE FOLLOWING BOOTSTRAPS HAS BEEN ESTABLISHED. ALL FUTURE REV 11-X'S THAT INCLUDE ANY OF THESE BOOTSTRAPS SHOULD USE THE SAME STARTING LOCATIONS. IF A NEW BOOTSTRAP IS ESTABLISHED, PLEASE ECO THIS NOTE TO INCLUDE THE DEVICE AND STARTING LOCATION.

* PERTAINS TO REV11-AC AND J ONLY.
** PERTAINS TO REV 11-HK AND L ONLY.
*** PERTAINS TO REV 11-N ONLY.

BOOTSTRAP	STARTING LOCATION
*. RX01	165242
*. ABSOLUTE LOADER	165406
*. RK05	165650
*. CPU DIAGNOSTIC (MEMORY ADDIFYING)	173302
*. CPU DIAGNOSTIC (NON-MEMORY MODIFYING)	173000
* MEMORY DIAGNOSTIC	173626
*. ODT	
**. REMOTE-11	173000
**. REMOTE-11 SECONDARY DOWNLINE LOAD	173006
**. RX01	173700
***. RX02	173000

3. ADJUST R16 SO THAT THE DMA REFRESH FREQUENCY MEASURED AT E15 PIN 8 IS AS FOLLOWS:
   MAX. FREQUENCY SETTING; 33.6 KHZ (29.76μs)
   NOM. FREQUENCY SETTING; 33.3 KHZ (30.03μs)
   MIN. FREQUENCY SETTING; 33.0 KHZ (30.30μs)
   THIS FREQUENCY IS PRE-SET AT THE FACTORY AND SHOULD NOT BE ALTERED.

4. FOR -YN VARIATION SUBSTITUTE THE FOLLOWING I.C.'S :
   E19, P/N 23871A9-00
   E22, P/N 23872A9-00
   E25, P/N 23873A9-00
   E29, P/N 23874A9-00

IC	GND	+5V
IC 5264	8	16
IC 8136	8	16
IC 74174	8	16
IC 8556	8	16
IC 8641	8	16
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

REV.	CHANGE NO.	REVISIONS	
K	M9400-0000884	D. Dingman	28 mar 78
L	M9400-ABO10	D.T. Bennet	29 mar 78
M	M9400-ABO12	J. CURTIS	28 sept 78

FIRST USED ON OPTION MODEL

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV. E P1

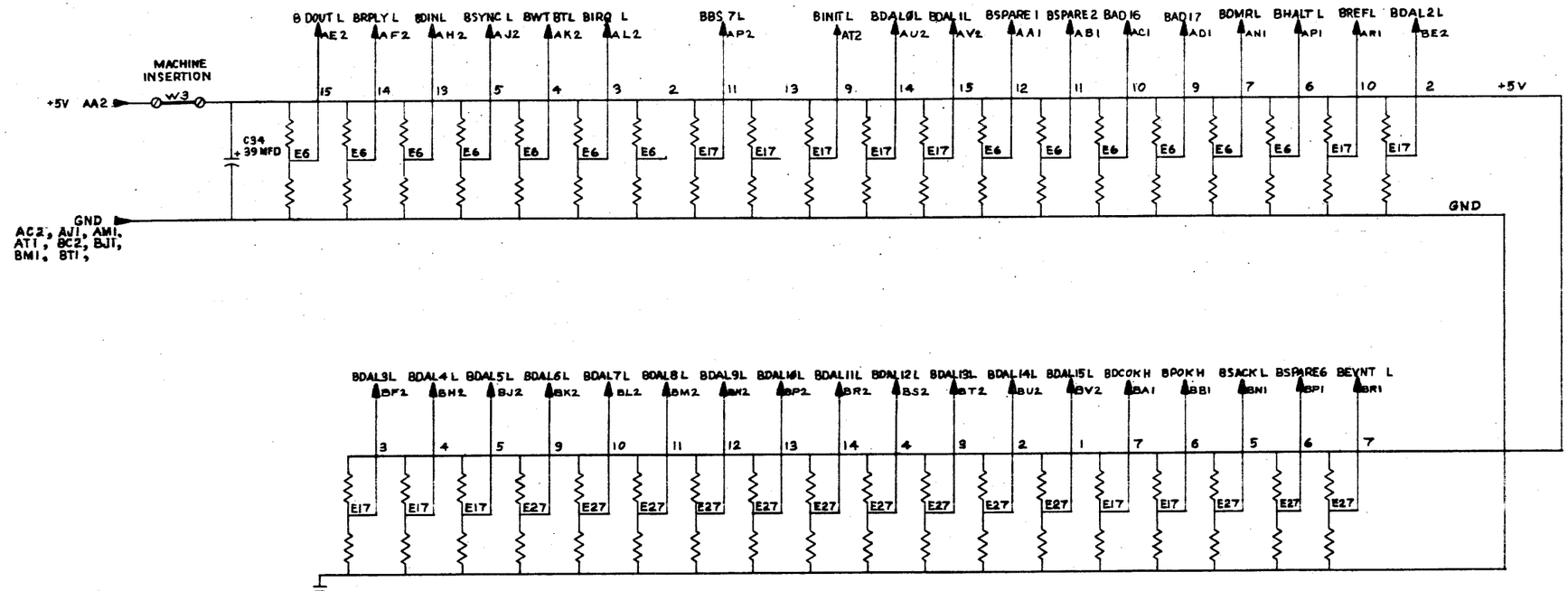
DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN. D. Dingman	DATE 3/13/78	digital
CHK'D.	DATE 3-30-78	
ENG.	DATE 12-APR-78	TITLE LSI REF. BOOT CONN.
PROJ. ENG.	DATE 12-APR-78	
PROD.	DATE 3/24/78	
NEXT HIGHER ASSY		SIZE D CODE CS NUMBER M9400-0-1 REV. M
SCALE		
SHEET 1 OF 5		DIST.

M9400-0-1 M

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"



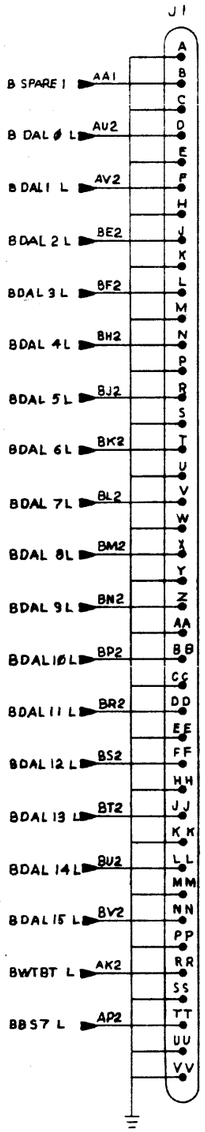
NOTE:
GROUND IS ON PIN 8
+5V IS ON PIN 16 OF EACH RESISTOR PACK.

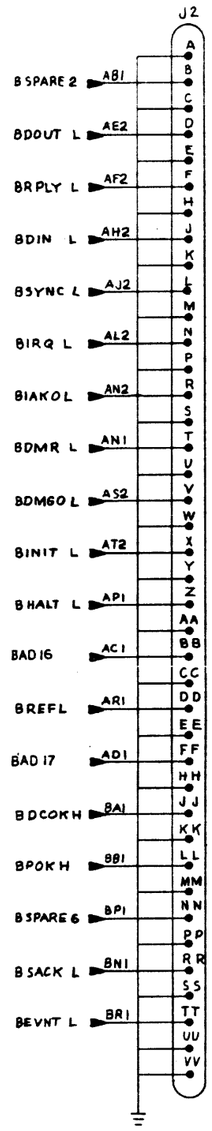
REVISIONS		
CHK	CHANGE NO.	REV.

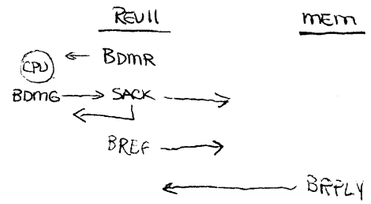
TITLE	SIZE	CODE	NUMBER	REV.
LSI REF BOOT CABLE CONN	D	CS	M9400-0-1	M
SCALE — / — SHEET 2 OF 5	DIST.			

PAT 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"







REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI REF BOOT CABLE CONN	D	CS	M9400-Ø-1	M
SCALE —	SHEET 3 OF 5	DIST.		

DEC FORM NO. DRD 128

8 7 6 5 4 3 2 1

AN 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

DMA REFRESH TIMING (PART OF)

REFRESH ADDRESS COUNTER

DMA REFRESH

CAN ONLY BE USED TO REFRESH 4K CHIPS

*REFRESHES 1/2 EVERY 30µs.

TIED ON B-P

TIED ON B-P

BUS FREE?

(NOW BUS MASTER) CLEARS REQ APPLYS SACK

REFRESH TIMING CLOCK

FREQ OF REF CYCLE (333 KHz) (30µs)

FF SET @ COMPLETION OF CYCLE

RECEIVED GRANT

(DMA) MASTER (1) H

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
LSI REF BOOT CABLE CONN	D	CS	M9400-0-1	M
SCALE —	SHEET 4 OF 5	DIST.		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

BOOTSTRAP

BOOT STORAGE

SEE NOTE #4

BA 1 H
BA 2 H
BA 3 H
BA 4 H
BA 5 H
BA 6 H
BA 7 H
BA 8 H
BA 10 H

512X4 PROM M5624 E19

REF 1 H
REF 2 H
REF 3 H

8641 E18

AU2 BDAL 0 L — DAL 0 H
AV2 BDAL 1 L — DAL 1 H
BE2 BDAL 2 L — DAL 2 H
BF2 BDAL 3 L — DAL 3 H

512X4 PROM M5624 E22

REF 4 H
REF 5 H
REF 6 H

8641 E21

BH2 BDAL 4 L — DAL 4 H
BJ2 BDAL 5 L — DAL 5 H
BK2 BDAL 6 L — DAL 6 H
BL2 BDAL 7 L — DAL 7 H

512X4 PROM M5624 E25

8641 E24

BM2 BDAL 8 L — DAL 8 H
BN2 BDAL 9 L — DAL 9 H
BR2 BDAL 11 L — DAL 11 H
BP2 BDAL 10 L — DAL 10 H

512X4 PROM M5624 E29

8641 E28

BS2 BDAL 12 L — DAL 12 H
BT2 BDAL 13 L — DAL 13 H
BU2 BDAL 14 L — DAL 14 H
BV2 BDAL 15 L — DAL 15 H

MY BANK L
MY ENABLE L
MASTER (1) H ← USED DURING BOOT, NOT DMA

+5V
R5 1K
R6 1K
R15 1K

DAL11 H — 7486 E30

BS7 H
DAL 12 H
DAL 10 H
DAL 9 H
REF H
W4 MACHINE INSERT
STROBE
SYNC H

8136 E2 OUTPUT

MY BANK H — 7404 E16 — MY BANK L
SH A5

E12 8641

AP2 BBS7 L — BS7 H
AR1 BREF L — REF H

TTL LEVELS → TTL

74174 E13

DAL 1 H — BA 1 H
DAL 2 H — BA 2 H
DAL 3 H — BA 3 H
DAL 4 H — BA 4 H
DAL 5 H — BA 5 H
DAL 6 H — BA 6 H

74174 E8

DAL 7 H — BA 7 H
DAL 8 H — BA 8 H
DAL 10 H — BA 10 H

BD INIT L
SYNC H (LATCHES ON ↑ EDGE)

DAL LATCHES

REVISIONS		
CHK	CHANGE NO.	REV

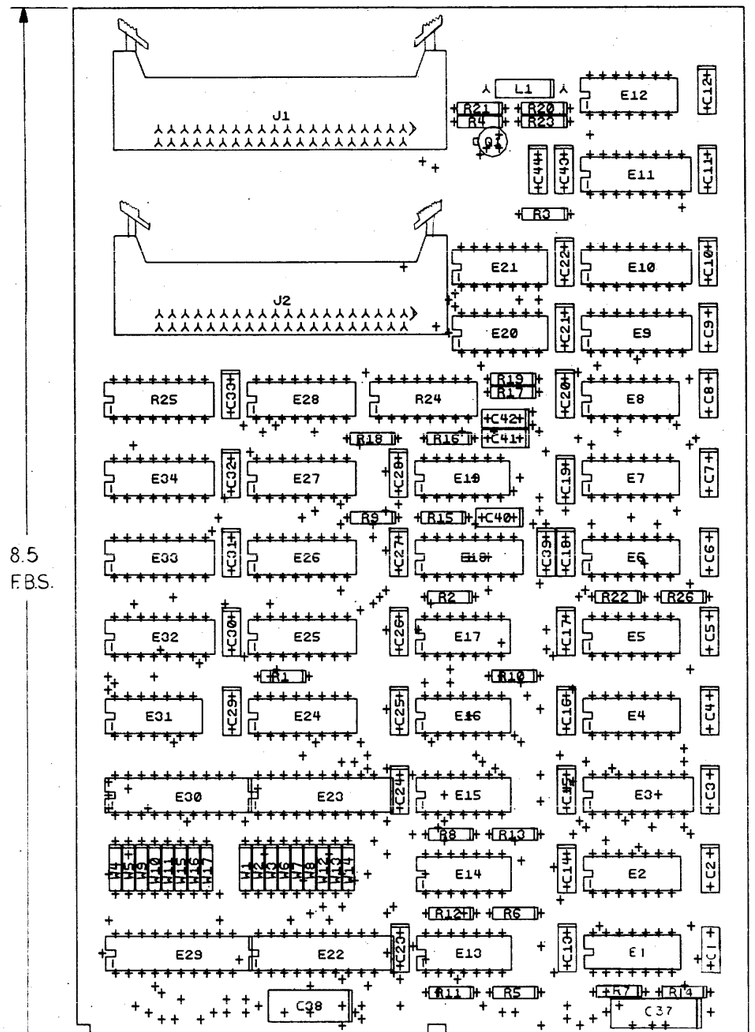
TITLE	SIZE	CODE	NUMBER	REV.
LSI REF BOOT CABLE CONN	D		CSM9400-0-1	M
SCALE —	SHEET 5 OF 5		DIST.	

DEC FORM NO. DRD 130

PN 1

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION

COMPONENT SIDE VIEW



8.5 F.B.S.

NOTES:

CHK	CHANGE NO	REV
	M7269 CXXXII	C

SIGNATURES	DATE
DRN. S Wakowski	6/16
CHK'D. S Wakowski	6/16/76
ENG.	7/26/76
PROJ.ENG.	7/26/76
PROD.	8/17/76
SCALE 2/1	
SHT. 1 OF 3	

ETCH REV. C
P.C. DESIGN DATA BASE REV. C

digital

TITLE RK VII CONTROL

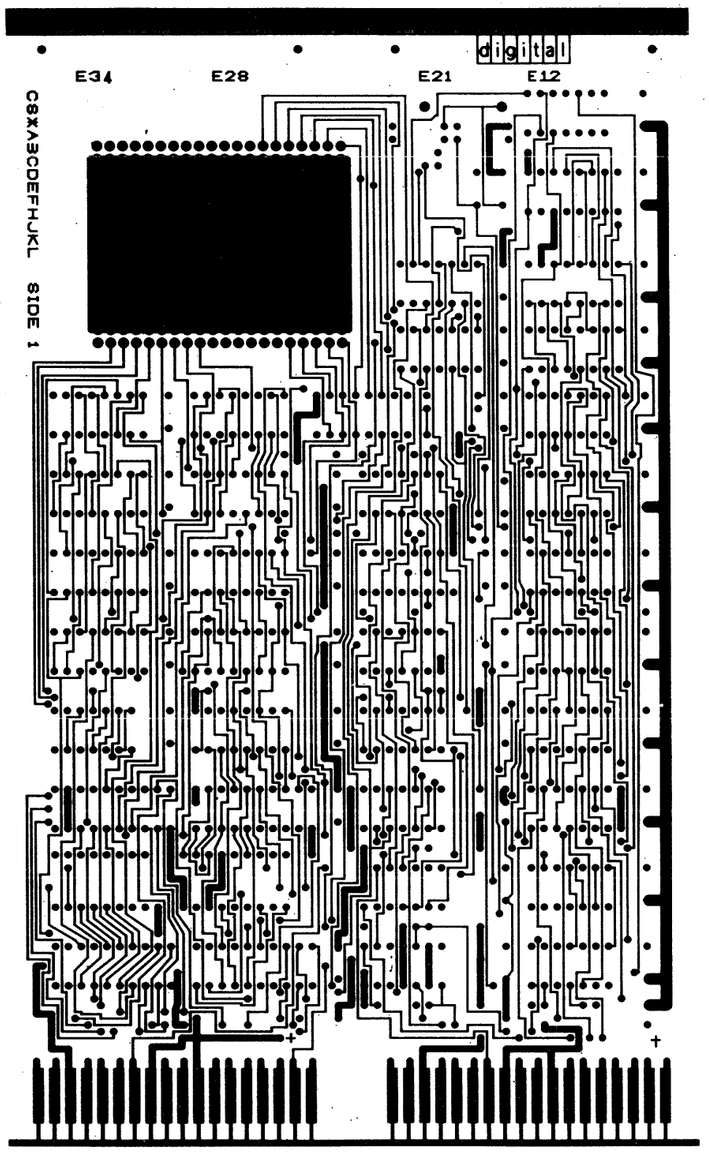
SIZE	CODE	NUMBER	REV
D	UA	M7269-0-0	C

NEXT HIGHER ASSY. B-DD-M7269-0

MS#40628

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1976 DIGITAL EQUIPMENT CORPORATION"

M7269 40628 REV-C



VIEWED FROM SIDE 1.

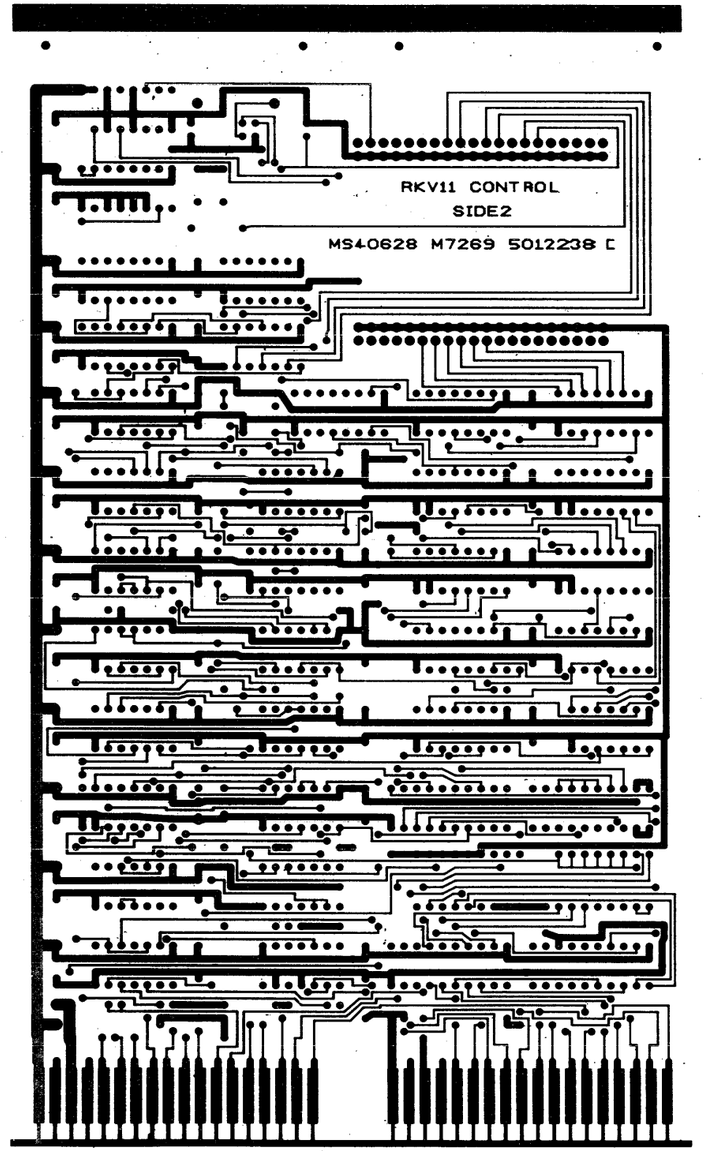
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
RKVII CONTROL	D	UA	M7269 -2-2	C
SCALE 2:1 SHEET 2 OF 3	DIST.			

DEC FORM NO. DRD 137

DUA M7269 -0-0 C

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"



VIEWED FROM SIDE 2

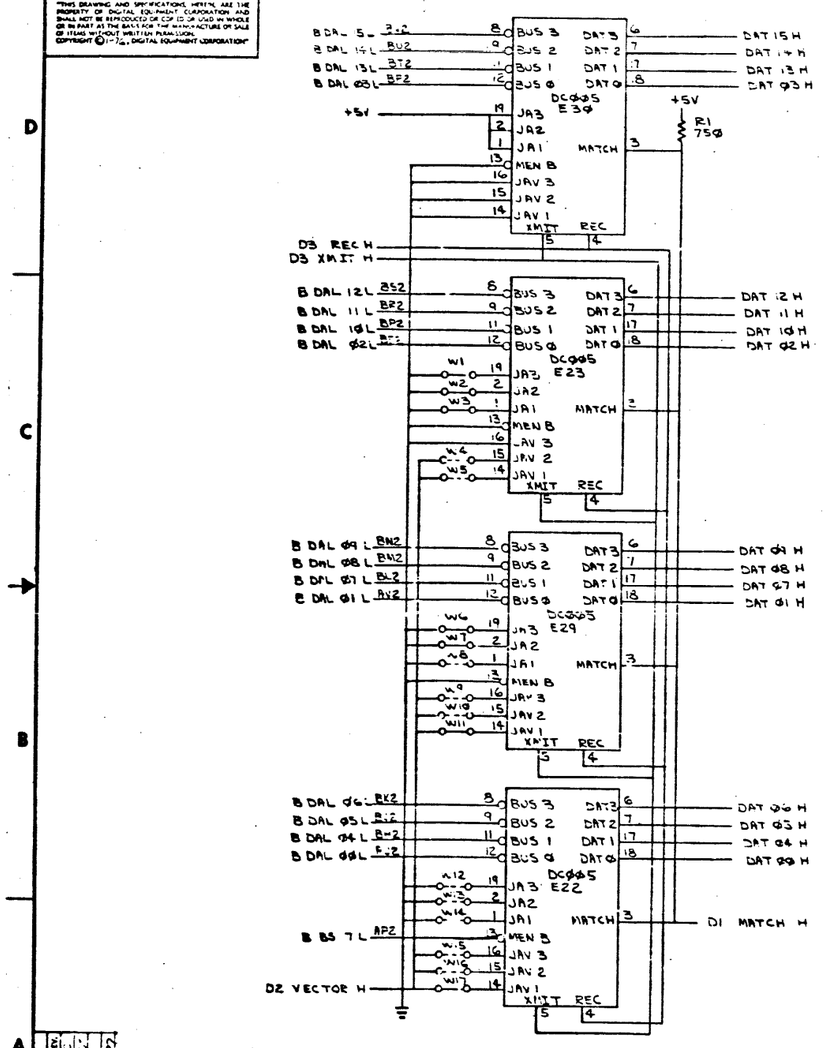
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
RKV11 CONTROL	D	UA	M7269 -2-2	C
SCALE 2:1 SHEET 3 OF 3	DIST.			

DEC FORM NO. ORD 137

DUA M7269 -2-2 C

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1972, DIGITAL EQUIPMENT CORPORATION"

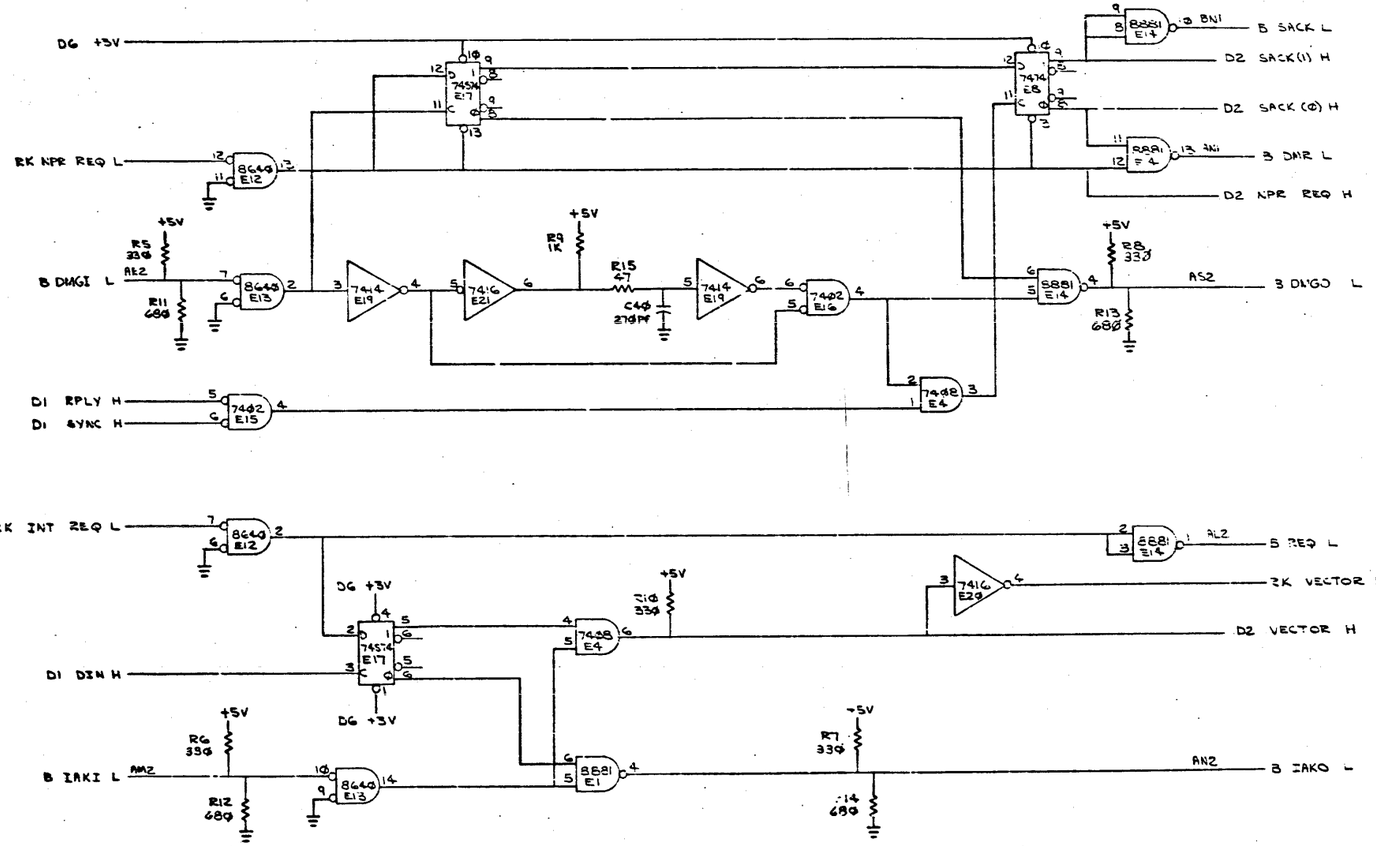


NOTE: SUBSTUTION LIST FOR 74LS2Ø - 74Ø
74LS74 - 7474
74LS174 - 74174

REVISIONS			
DW	CHANGE NO.		REV.
	M7269-1		C

DRN		FIRST USED ON	digital
CHK'D		PKVII-2	
ENG		TITLE	
PROJ. ENG.		PKVII-D CONTROL	
PROD'N MGR.		(D1)	
NEXT HIGHER ASSY.			
APPROVED		SIZE D	CODE
SCALE		NUMBER M7269-1-1	REV. C
SHEET 1 OF 2		DIST	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © '71 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO	REV.

TITLE RKV11D CONTROL (D2)	SIZE D	CODE CS	NUMBER M7269-0-1	REV. C
SCALE	SHEET 2 OF 6	DIST.		

M7269-0-1 REV C

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977, DIGITAL EQUIPMENT CORPORATION

D4 NPR XMIT DATA (1)H

74174 E24
DAT Ø3 H
DAT Ø2 H
DAT Ø1 H
DI MATCH H
DAT ØØ H
D6 +5V
DI SYNC H
CLR CLK
D5 R5(1)
D4 R4(1)
D3 R3(1)
D2 R2(1)
DØ R0(1)
D1 R1(1)

7416 E31 → RKA Ø3 L
7416 E31 → RKA Ø2 L
7416 E31 → RKA Ø1 L

7408 E4 → D3 SYNC+SEL H

B WT BT L
AK2
8640 E13
D4 READ H

7400 E2
7400 E2
7400 E2

8881 E1 → STB HI BYT L
8881 E1 → STB LO BYT L
8881 E1 → B WTBT L (AK2)

D4 NPR XMIT ADD (1) H
D4 NPR XMIT DATA (1) L

7416 E29 → SEL ADD L
7416 E29 → DAT→ RK L

D1 DIN H
D3 SYNC+SEL H
D1 DOUT H
D2 VECTOR H

7408 E5
7408 E5
7409 E5
7409 E5
7402 E16
7416 E21
7414 E19
7402 E16
7438 E4
7402 E15 → D3 REC H
7402 E15 → D3 XMIT H
7402 E16 → D3 RK RPLY H

+5V
R18 1.8K
R16 47
C41 1200 PF
R19 1K
R17 47
C42 270 PF

REVISIONS		
CHK	CHANG NO	REV.

TITLE RKV11-D CONTROL (D3)		SIZE	CODE	NUMBER	REV.
SCALE	SHEET OF 6	D		MS M7269-0-1	C
		DIST.			

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1971 DIGITAL EQUIPMENT CORPORATION"

RK READ L

8640 E12

D4 READ H

74174 E9

7416 E28

Ø → NPR L

7416 E28

DATA STR 2 L

D4 RK SYNC (1) H

D4 RK DIN (1) H

D4 RK DOUT (1) H

D4 NPR XMIT ADD (1) H

23197A-CO E10

7416 E11

D2 NPR REQ H

D6 +3V

+3V

7474 E7

D4 STOP (1) H

D4 STOP (Ø) H

D2 SACK (Ø) H

D1 TIME OUT (1) H

7402 E5

+3V

7474 E7

D4 NPR XMIT DATA (1) H

D4 NPR XMIT DATA (1) L

D2 SACK (1) H

Q1 A05

L1 22 μH

R23 1K

R21 1K

C43 6.8PF

C44 39 PF

7414 E19

R20 330

R26 1K

R22 1K

+5V

D2 SACK (Ø) H

D4 STOP (Ø) H

D4 STOP (1) H

74HS2 E24

D1 RPLY H

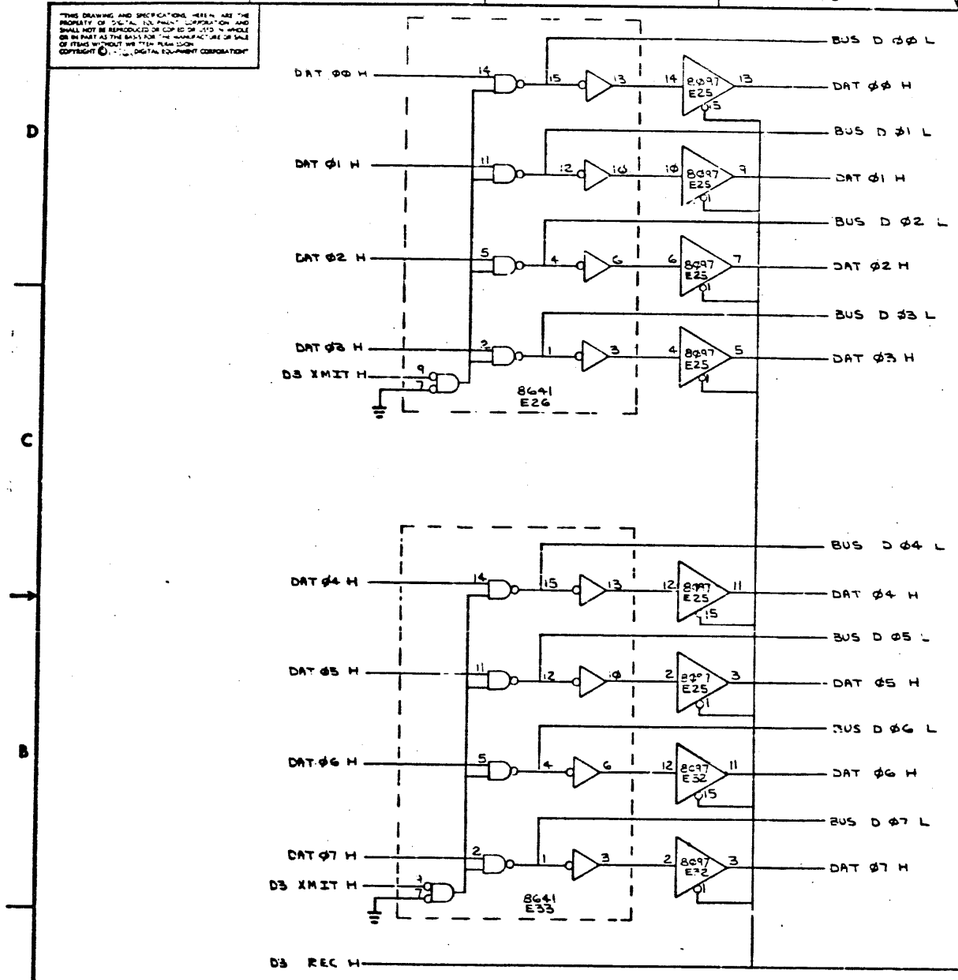
7414 E19

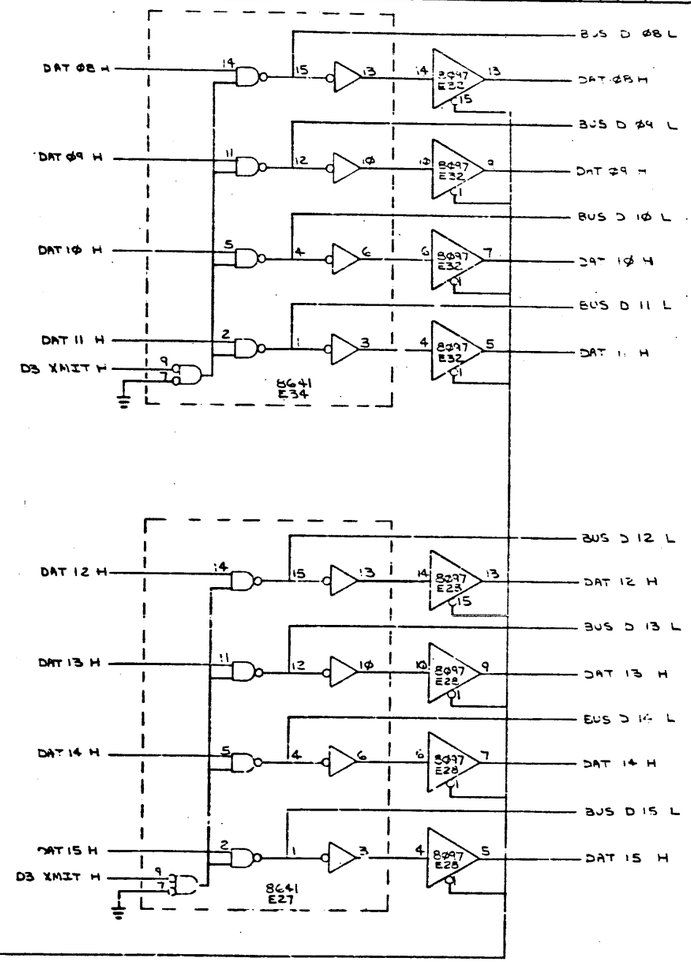
REVISIONS		
ECR	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
RKV11-D CONTROL (D4)	D	CS	M7269-Ø-1	C
SCALE —	SHEET 1 OF 6	DIST.		

DEC M7269-Ø-1 C

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION



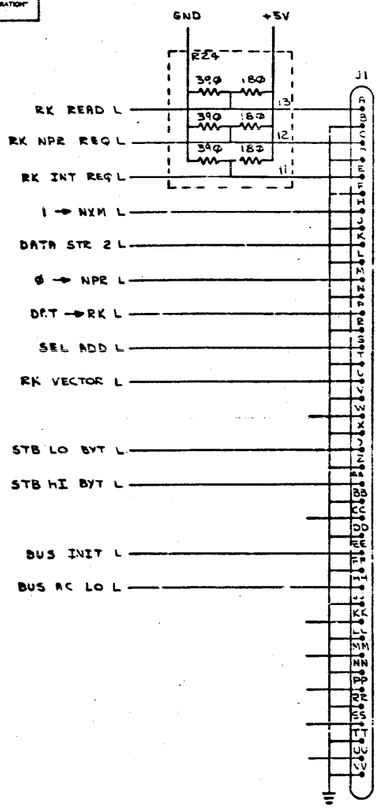


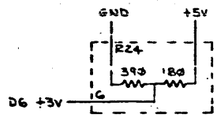
REVISIONS		
CHR	CHANGE NO	REV

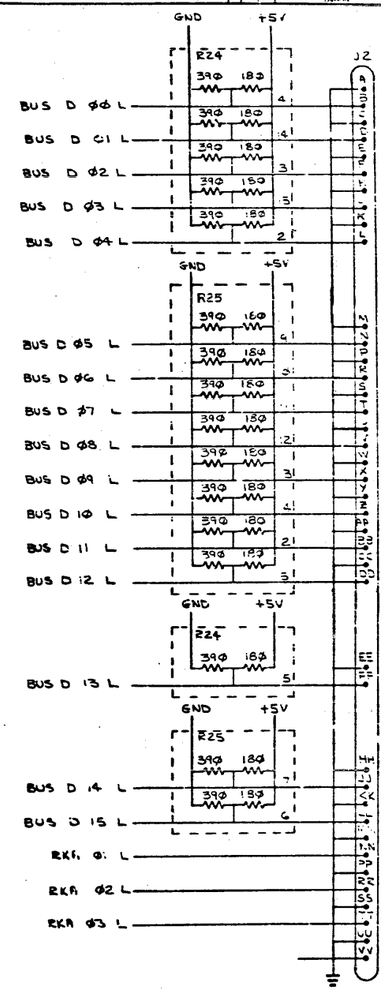
TITLE	SIZE	CODE	NUMBER	REV.
RKV11-D CONTROL (D5)	D	CS	M7269-Ø-1	C
SCALE	SHEET 5 OF 6	DIST.		

D CS M7269-Ø-1 C

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION"



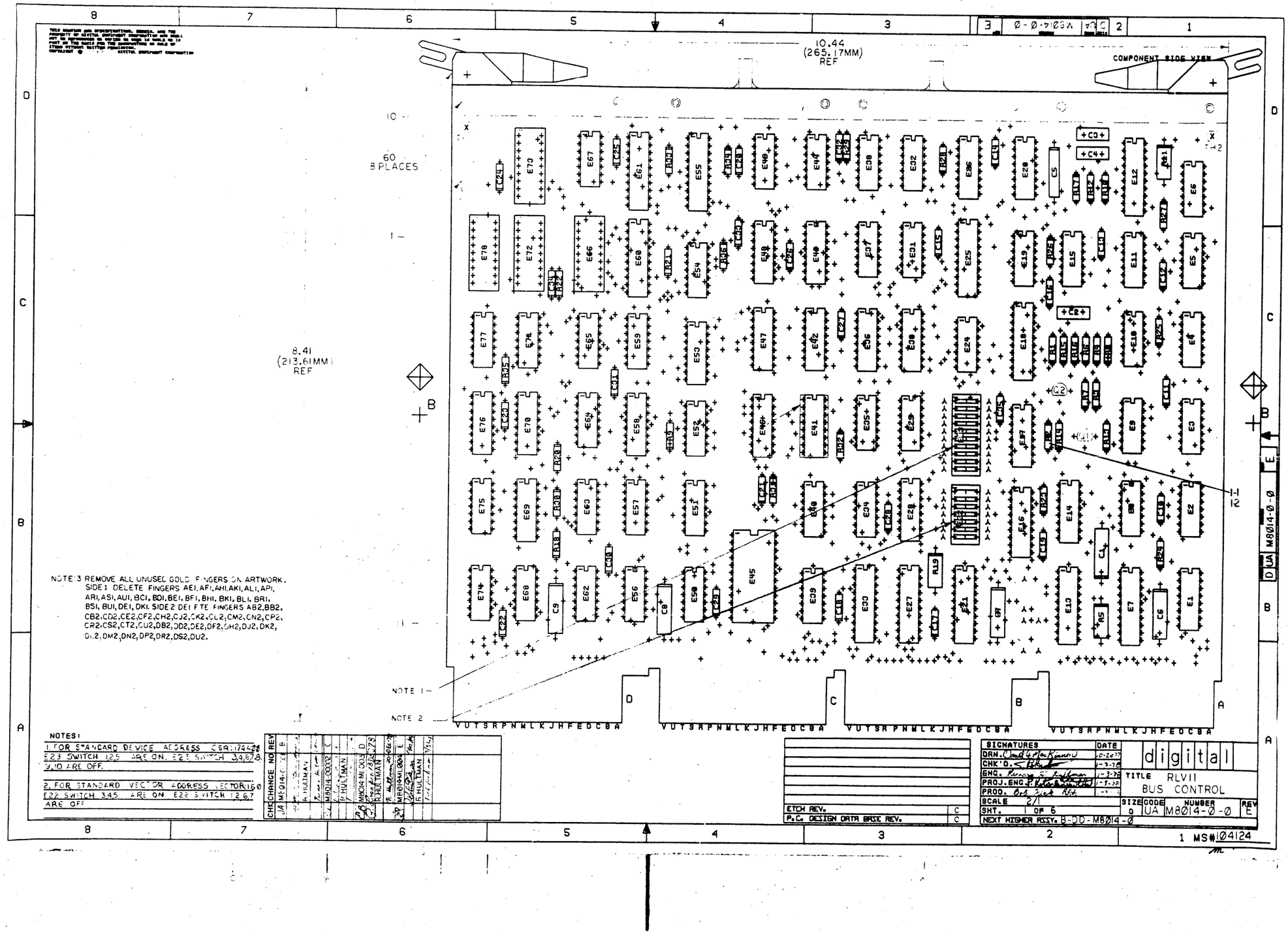




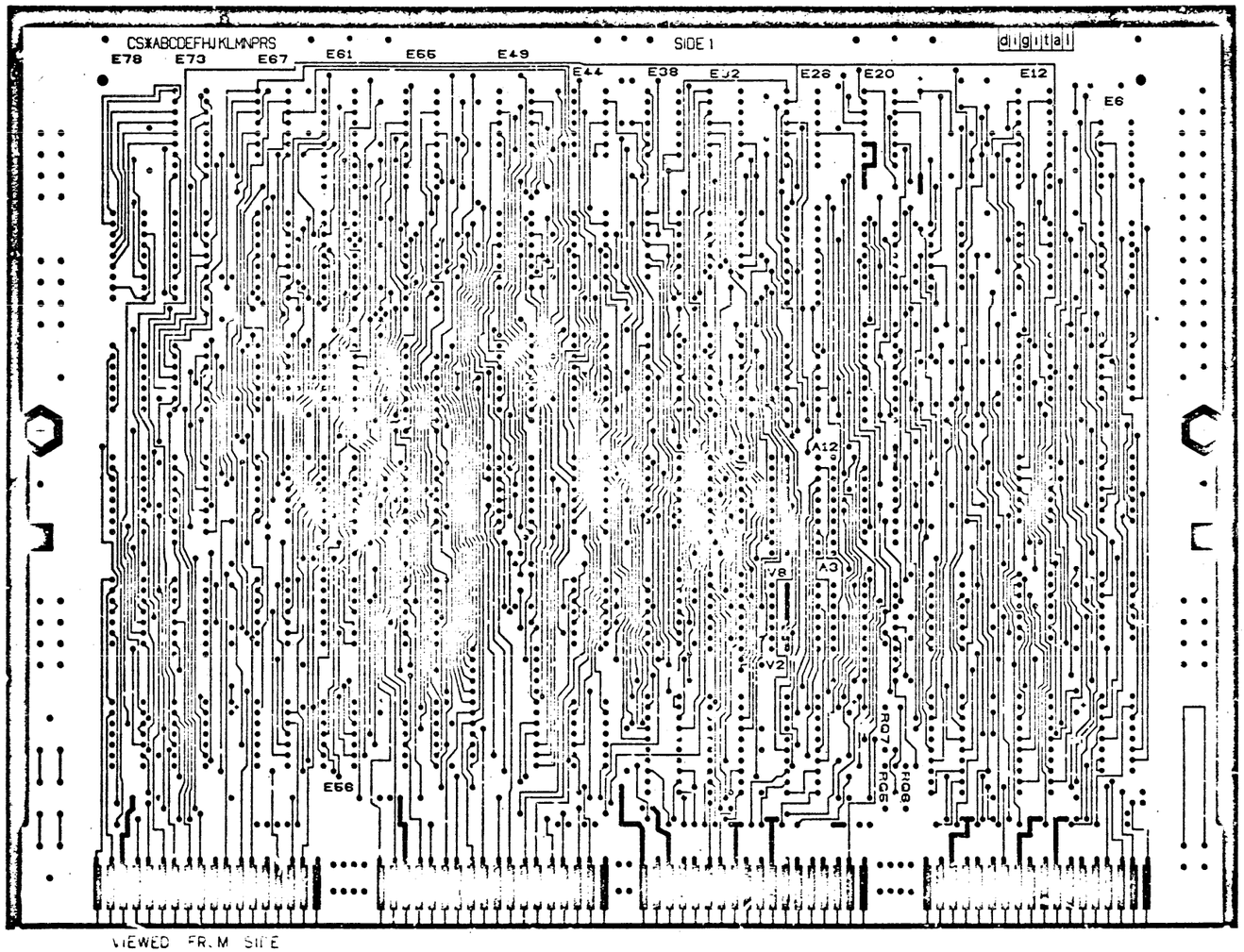
REVISIONS		
CHK	CHANGE NO	REV

TITLE RK11-D CONTROL (DS)		SIZE CODE DCS	NUMBER M7269-Ø-1	REV. C
SCALE —	SHEET 6 OF 6	DIST.		

DCS M7269-Ø-1 C


COMPONENT SIDE VIEW
10.44
(265.17MM)
REF
8.41
(213.61MM)
REF
60
8 PLACES
NOTE 1
NOTE 2
NOTE: 3 REMOVE ALL UNUSED GOLD FINGERS ON ARTWORK.
SIDE 1 DELETE FINGERS AE1, AF1, AH1, AK1, AL1, API, AR1, AS1, AU1, BC1, BD1, BE1, BF1, BH1, BK1, BL1, BR1, BS1, BU1, DE1, DK1 SIDE 2 DELETE FINGERS AB2, BB2, CB2, CD2, CE2, CF2, CH2, CJ2, CK2, CL2, CM2, CN2, CP2, CR2, CS2, CT2, CU2, DB2, DD2, DE2, DF2, DH2, DJ2, DK2, DL2, DM2, DN2, DP2, DR2, DS2, DU2.
NOTES:
1. FOR STANDARD DEVICE ADDRESS CSR: 174400
E23 SWITCH 1,2,5 ARE ON. E23 SWITCH 3,4,6,7,8,9,10 ARE OFF.
2. FOR STANDARD VECTOR ADDRESS VECTOR 160
E22 SWITCH 3,4,5 ARE ON E23 SWITCH 1,2,6,7 ARE OFF
CHG CHANGE NO REV
JA M8014-C E
M8014.0004 D
M8014.0003 C
M8014.0002 B
M8014.0001 A
ETCH REV. C
P.C. DESIGN DATA BASE REV. C
SIGNATURES DATE
DRN. 10-24-77
CHK'D. 1-3-78
ENG. 1-3-78
PROJ. ENG. 1-3-78
PROD. --
SCALE 2/1
SHT. 1 OF 6
NEXT HIGHER ASSY. B-DD-M8014-0
digital
TITLE RLVII
BUS CONTROL
SIZE D
CODE UA
NUMBER M8014-0-0
REV E
1 MS#104124

LAYER 1



VIEWED FROM SIDE

DUAL BUS CONTROL

DUAM8014-0-0

E

VIEWED FROM SIDE

RLV11 BUS CONTROL

DUA M8014-0

VIEWED FROM SIDE2

REVISIONS	
ONE	CHANGED

TITLE: [illegible] BUS CONTROL
SIZE D | CODE UA | NUMBER M8014 | REV E
SCALE 2:1 | SHEET [illegible] OF 6

D UA M8014-YA E

LAYER 4

104124

M8014
6012963 C

SIDE 2

RLV11 BUS CONTROL

VIEWED FROM SIDE 2

TITLE: RLV11 BUS CONTROL

SIZE: D | CODE: UA | NUMBER: M8014-0-4- | REV: E

SCALE: 2/1 | SHEET: 4 OF 6

DUA M8014-0-4 E

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © DIGITAL EQUIPMENT CORPORATION"

REWORK INSTRUCTIONS:

E.CO #1:

COMPONENT DELETE SIDE 1:

H1 DELETE R2, 3.3K (P/N. 1300439-00)

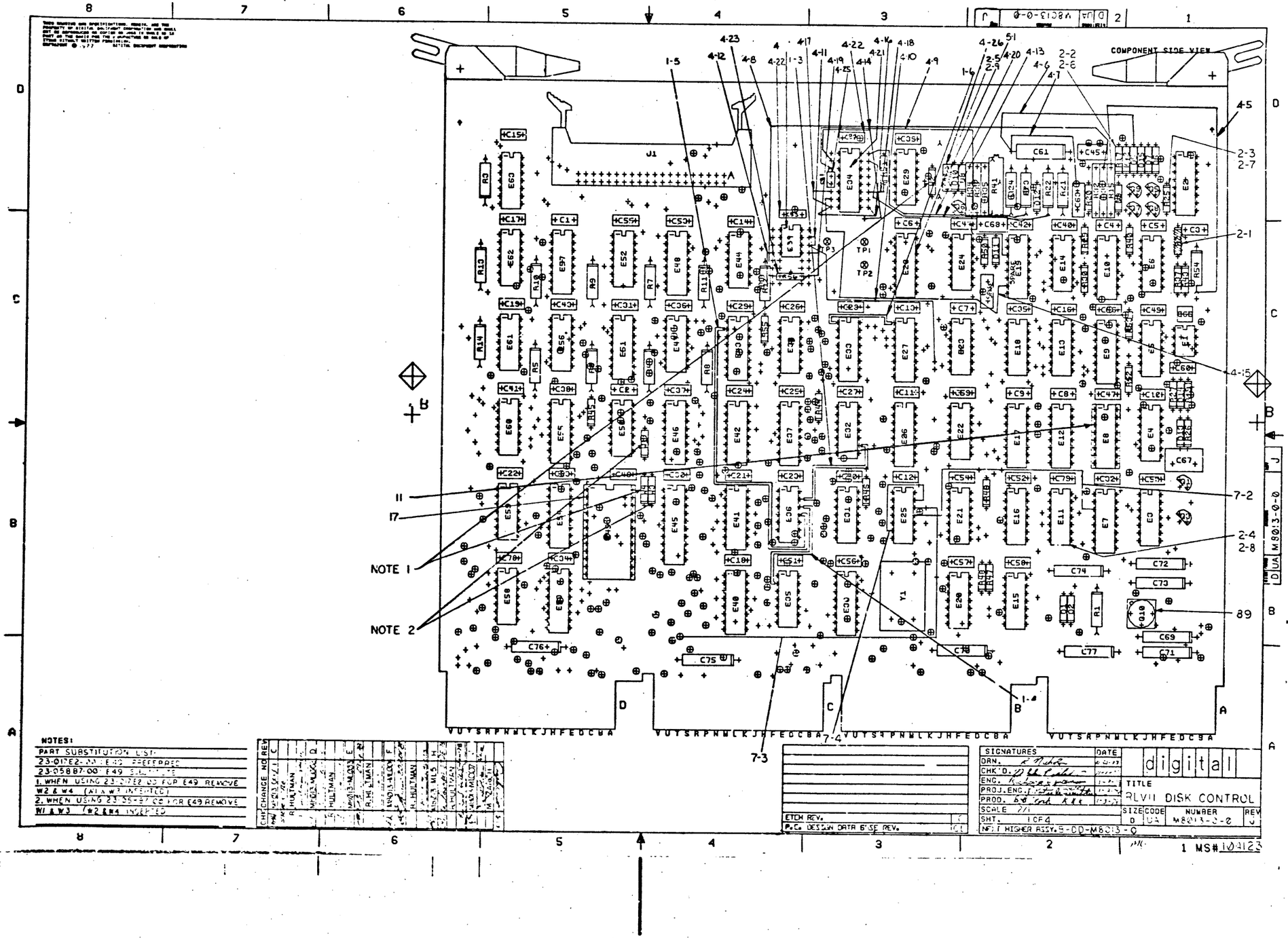
COMPONENT ADDS SIDE 1:

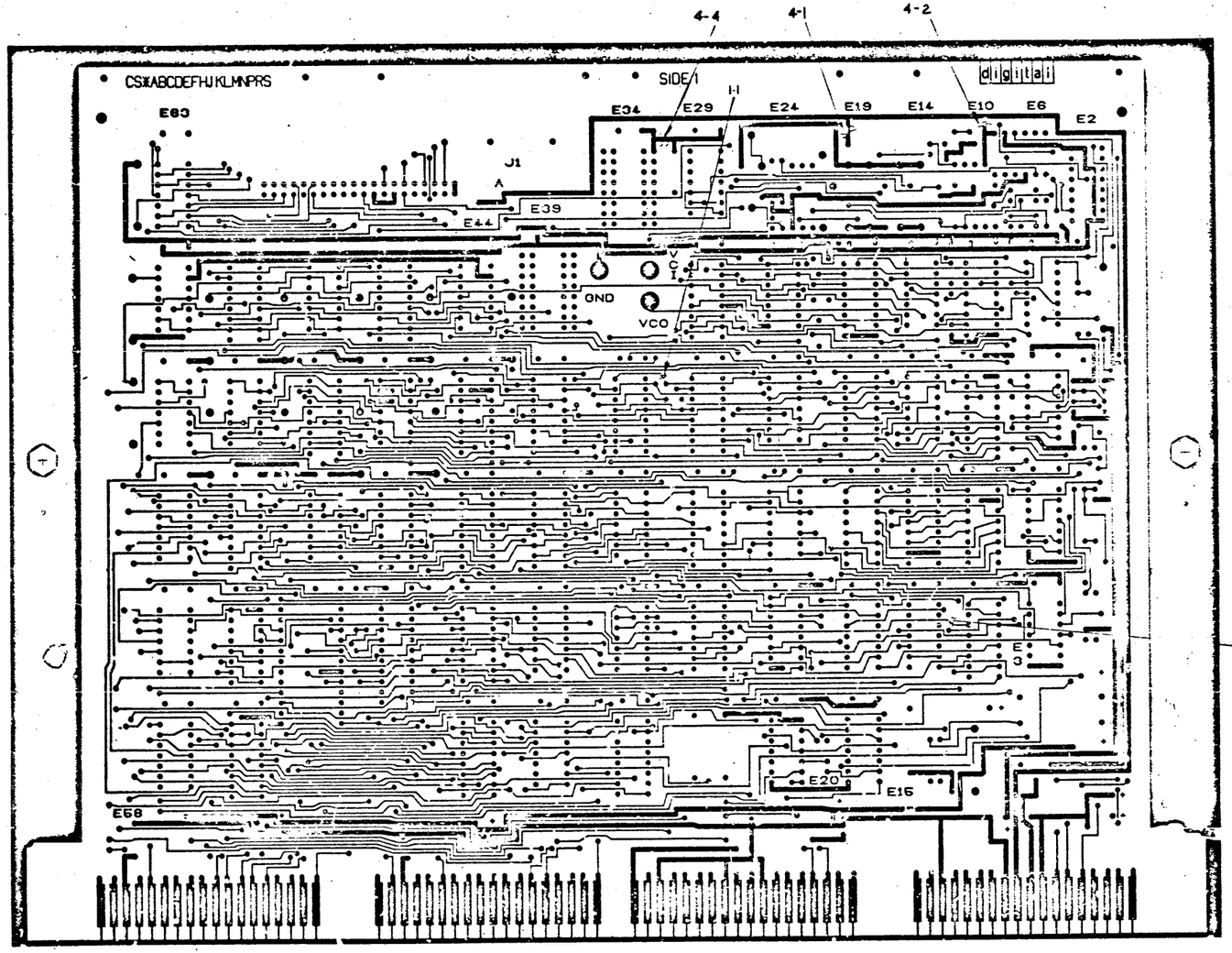
H2 ADD R2, 1.1K (P/N 1301475-00)

REVISIONS		
ZONE	CHANGE NO	APV

TITLE: RLVII BUS CONTROL		SIZE: D	CODE: UA
SCALE: 2/1	SHEET 6 OF 6	NUMBER: M8014-0-0	REV: E
DIST			

M8014-0-0 E


COMPONENT SIDE VIEW
J1
NOTE 1
NOTE 2
NOTES:
PART SUBSTITUTION LIST:
1. WHEN USING 23-017E2 OR FOR E49 REMOVE W2 & W4 (W1 & W3 INSERTED)
2. WHEN USING 23-058B7-00 FOR E49 REMOVE W1 & W3 (W2 & W4 INSERTED)
digital
RLV11 DISK CONTROL
M8013-0-0
1 MS# 104123

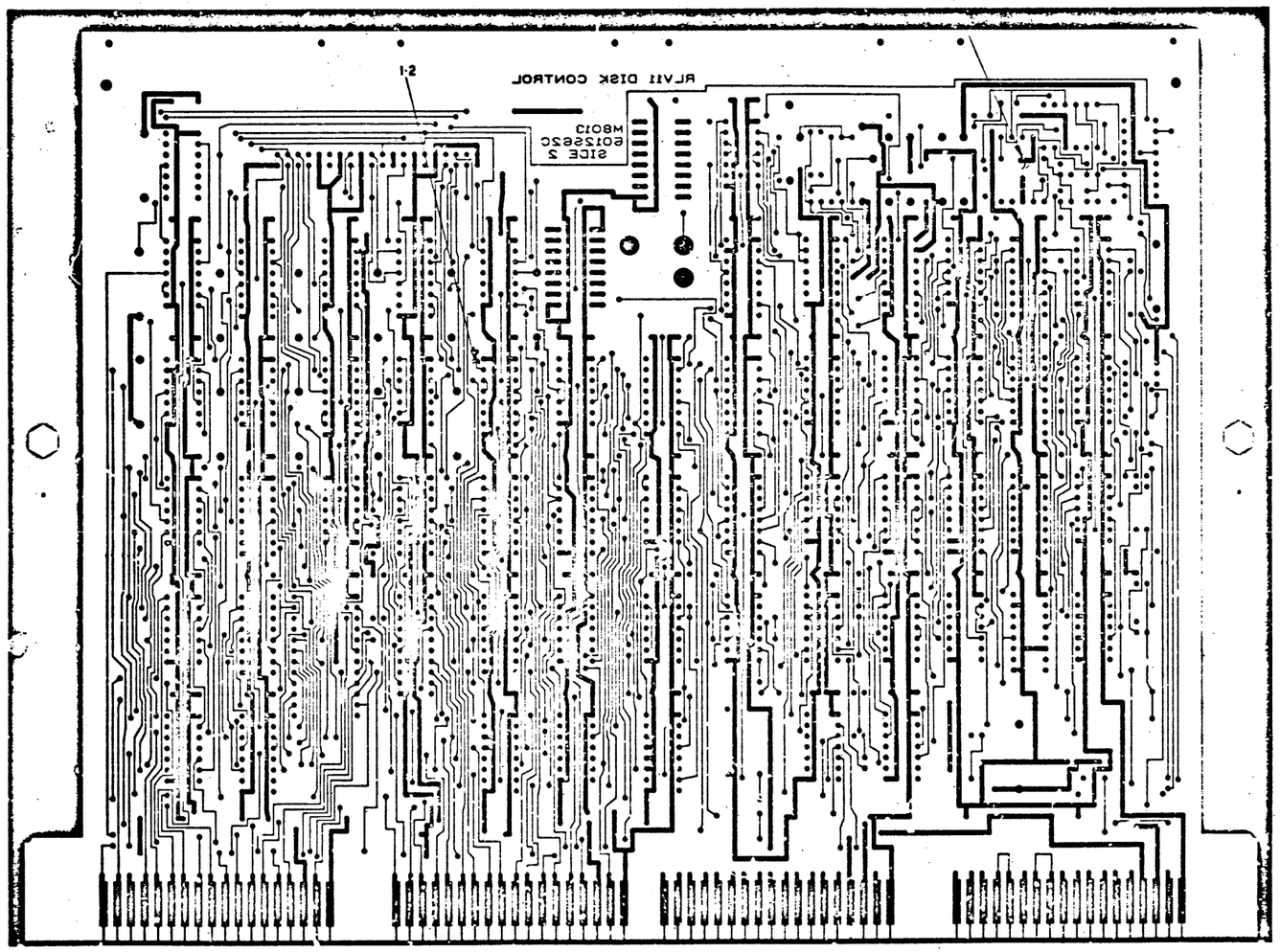


VIEWED FROM SIDE 1

REVISIONS		
ZONE	CHANGE NO	BY

TITLE	SIZE	CODE	NUMBER	REV
RL V11 DISK CONTROL	D	UA	M8013-0-0	J
SCALE 2:1 SHEET 2 OF 4	DIST			

DUA M8013-0 0



VIEWED FROM SIDE 1

REVISIONS		
CODE	CHANGE NO.	REV

TITLE: RL V11 DISK CONTROL								DWG NO: D UA M8013-0-0	REV: J
SCALE: 2:1	SHEET 3 OF 4								

D UA M8013-0-0 J

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1973 DIGITAL EQUIPMENT CORPORATION

REWORK INSTRUCTIONS:

E.C.O.#1

ETCH CUTS SIDE 1:

1-1 BETWEEN E33-1 AND PTH TO THE RIGHT OF E33-16.

ETCH CUTS SIDE 2:

1-2 BETWEEN E43-2 AND PTH ABOVE AND TO THE LEFT OF E43-1

WIRE ADDS SIDE 1:

1-3. FROM E32-9 TO E36-13
1-4. FROM E35-2 TO E36-12
1-5. FROM E43-2 TO E36-11
1-6. FROM E33-1 TO E27-1

E.C.O.#2

COMPONENT DELETES SIDE 1

2-1. R2 330Ω (P/N, 13-00295-00)
2-2. R17 180Ω (P/N, 13-01322-00)
2-3. R25, 470Ω (P/N, 13-00316-00)
2-4. E11, 7437 (P/N, 1910091-00)
2-5. E28, 74S112 (P/N, 1910545-00)

COMPONENT ADD SIDE 1

2-6 R17, 100Ω (P/N, 13-00229-00)
2-7 R25, 220Ω (P/N, 13-00271-00)
2-8 E11, 74S37 (P/N, 1912740-00)
2-9 E28, 74LS112 (P/N, 1912334-00)

ECO#4

ETCH CUTS

4-1 CUT ETCH AT LEFT SIDE OF C61, SIDE 1.
4-2 CUT ETCH AT LINE TO R17 AND R15, AT TOP OF R17, SIDE 1.
4-3 CUT ETCH AT LINE FROM TOP OF R15 TO FEED THRU UNDER R31, SIDE 2.
4-4 CUT ETCH AT E34-16 BETWEEN E34 AND R51 NEAREST R51, SIDE 1.

WIRE ADDS:

4-5 BOTTOM OF R54 TO TOP OF R15.
4-6 TOP OF D5 (ANODE) TO LEFT SIDE OF C61 (TWO WIRES, REF: REWORK STEP 4-7).
4-7 LEFT SIDE OF C61 TO TOP OF C63 (REF: REWORK STEP 4-6).
4-8 TOP OF R31 TO E39 LOCATION, PIN 7 (REF: REWORK STEP 4-23).
4-9 E19 LOCATION, PIN 2 TO C34 LOCATION, PIN 3 (ROUTE WIRE UP BETWEEN R34 AND R33 THEN LEFT OVER R29 AND E34.)
4-10 FEED THRU TO THE LEFT OF E23, PIN 6 TO E39 LOCATION, PIN 14 (ROUTE WIRE UP TO C7 THEN LEFT TO C26 THEN UP) (TWO WIRES, REF: REWORK STEP 4-11).
4-11 E39 LOCATION, PIN 14 TO E39 LOCATION, PIN 15 (REF: REWORK STEP: 4-10).
4-12 E39 LOCATION, PIN 4 TO E39 LOCATION, PIN 8.
4-13 BOTTOM OF R22 TO E34, PIN 15 (ROUTE WIRE BELOW R41 AND E29).
4-14 E34 PIN 2 TO VC1 AT FEED THRU BELOW E34, PIN 9 (ROUTE WIRE ABOVE E34 THEN DOWN TO FEED THRU).
4-15 E34, PIN 7 TO E19 LOCATION, PIN 7.
4-16 E34, PIN 8 TO E34, PIN 9 (TWO WIRES, REF: REWORK STEP 4-17).
4-17 E34, PIN 8 TO E34, PIN 6 (REF: REWORK STEP 4-16).
4-18 E34, PIN 11 TO BOTTOM OF R51.

REWORK INSTRUCTIONS CONT.
ECO #4 (CONT.)

4-19 E39 LOCATION, PIN 13 TO E39 LOCATION, PIN 10 (REF: REWORK STEP 4-23).
4-20 BOTTOM OF R23 TO E34, PIN 14.

COMPONENT ADDS: (* ONLY THESE INSTRUCTIONS SHOWN ON UA DWG)

* 4-21 E34 (P/N 19-11911-00) 74S124.
* 4-22 C80, C83 (P/N 10-12312-01) ABOVE E34 LOCATION AND E39 LOCATION.
* 4-23 R56 (P/N 13-02955-00) AT E39 LOCATION, PINS 7 AND 10 (REF: REWORK STEP 4-8 AND 4-18).
* 4-24 E39 (P/N 19-10645-00) AT PINS 1-4, 13-16.
* 4-25 C81 (P/N 10-00010-00) AT LOCATION E34 PINS 4 AND 5.
* 4-26 C82 (P/N 10-00020-00) AT LEFT OF D10 FEED THRUS TOP & BOTTOM.
4-27 R20 (P/N 13-03064-00)
4-28 R42 & R50 (P/N 13-00316-00)
4-29 R31 (P/N 13-05125-00)
4-30 R17 (P/N 13-02858-00).
4-31 R34 (P/N 13-14187-00).
4-32 R33 (P/N 13-12923-00).
4-33 R35 (P/N 13-05145-00).
4-34 R52 (P/N 13-13592-00).
4-35 R54 (P/N 13-00285-00).
4-36 R21 & R23 (P/N 13-00249-00)
4-37 C61 (P/N 10-00050-00)
4-38 C45, C68 (P/N 10-12312-01)

COMPONENT DELETES:

4-39 R31 (P/N 13-03047-00)
4-40 R17 (P/N 13-00229-00)
4-41 R20 (P/N 13-01322-00)
4-42 R34 (P/N 13-04842-00)
4-43 R33 (P/N 13-04858-00)
4-44 R35 (P/N 13-02645-00)
4-45 R32 (P/N 13-10630-00)
4-46 R54 (P/N 13-00228-00)
4-47 R21 & R23 (P/N 13-00260-00)
4-48 C61 (P/N 10-05784-00)
4-49 C45 & C68 (P/N 10-10274-00)
4-50 E19 (P/N 19-11911-00).
4-51 C62 (P/N 10-00011-00)
4-52 R42 & R50 (P/N 13000365-00)

ECO #5

COMPONENT DELETE

5-1 C82 (P/N 10-00020-00)

M8013-ML007

ETCH CUTS SIDE 1

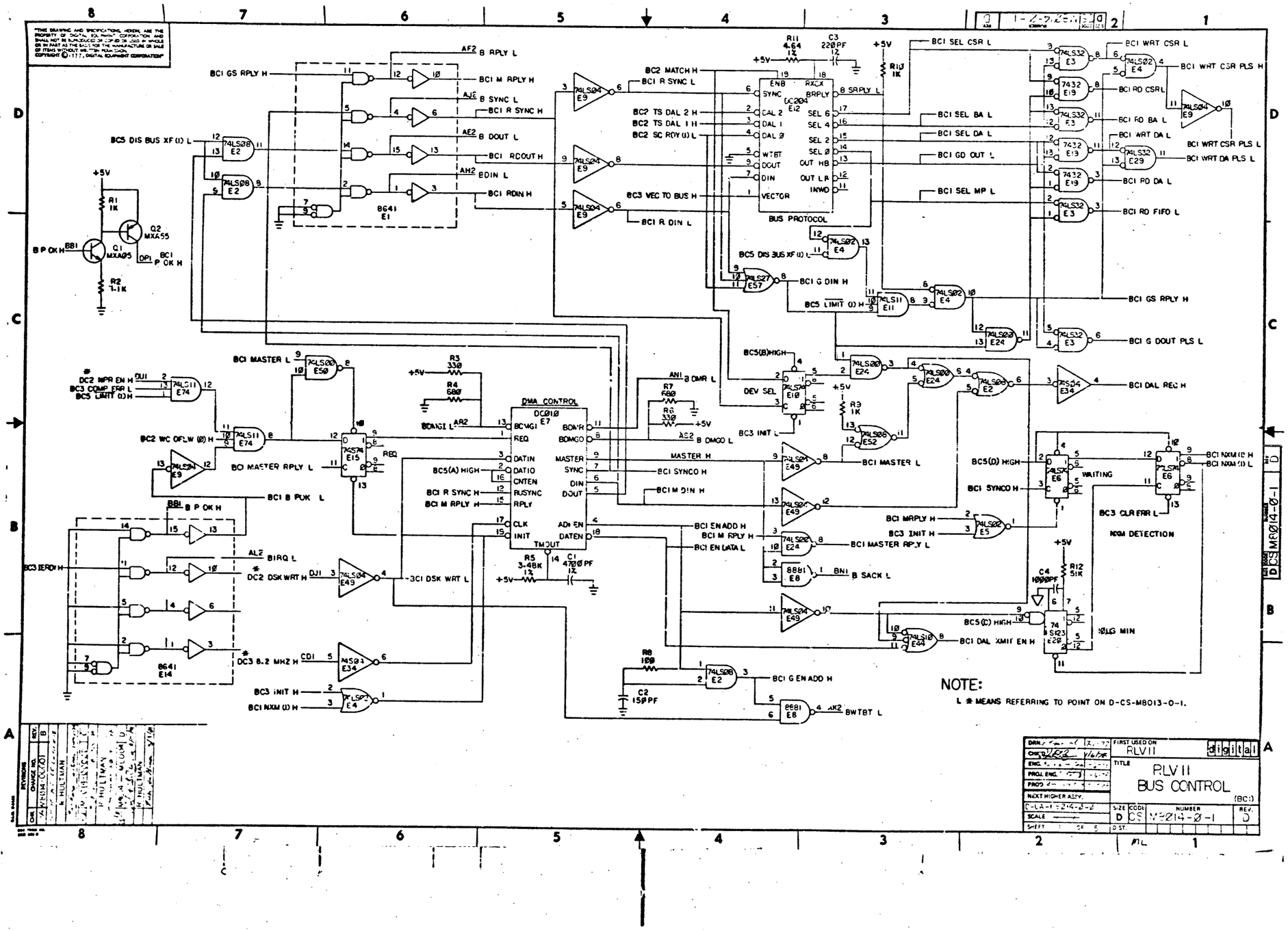
7-1 CUT ETCH BETWEEN E25-PIN 6 AND E7 PIN 3 AT E7 PIN 3

WIRE ADDS SIDE 1

7-2 E25 PIN 11 TO E7 PIN 3
7-3 E25 PIN 12 TO C72 (AT PTH ABOVE C75)
7-4 E25 PIN 3 TO E25 PIN 6

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
RL VII DISK CONTROL	D	UA	M8013-0-0	J
SCALE ——	SHEET 4 OF 4	DIST.		


BCI GS RPLY H
AF2 B RPLY L
BCI M RPLY H
AJ2 B SYNC L
BCI R SYNC H
AE2 B DOUT L
BCI RDOUT H
AH2 EDIN L
BCI RDIN H
BC5 DIS BUS XF (1) L
8641 E1
BC2 MATCH H
BCI R SYNC L
BC2 TS DAL 2 H
BC2 TS DAL 1 H
BC2 SC RDY (1) L
BC3 VEC TO BUS H
BCI R DIN L
BUS PROTOCOL
B SRPLY L
BCI SEL CSR L
BCI SEL BA L
BCI SEL DA L
BCI GD OUT L
BCI SEL MP L
BCI WRT CSR L
BCI WRT CSR PLS H
BCI RD CSR L
BCI RD BA L
BCI WRT DA L
BCI WRT DA PLS L
BCI RD DA L
BCI RD FIFO L
BC5 DIS BUS XF (1) L
BCI G DIN H
BC5 LIMIT (1) H
BCI GS RPLY H
BCI G DOUT PLS L
BCI DAL REC H
BC5(B)HIGH
DEV SEL
BC3 INIT L
BCI MASTER L
BC5(D) HIGH
BCI SYNC H
WAITING
BCI NXM(D) H
BCI NXM(D) L
BC3 CLR ERR L
NXM DETECTION
BCI MRPLY H
BC3 INIT H
BCI MASTER RPLY L
B SACK L
BNI
BC5(C) HIGH
BCI DAL XMIT EN H
10LG MIN
+5V
A1 1K
Q2 MXA55
Q1 MXA05
B P OK H
BBI
BCI P OK H
A2 1.1K
BCI MASTER L
DC2 MPR EN H
BC3 COMP ERR L
BC5 LIMIT (1) H
BC2 WC OFLW (1) H
BCI MASTER RPLY L
BCI B POK L
R3 330
R4 680
BDMGI L
AR2
DMA CONTROL
DC0110 E7
BCMGI
REQ
DATIN
DATIO
CNTEN
RUSYNC
RPLY
CLK
INIT
BDMR
BDMGO
MASTER
SYNC
DIN
DOUT
ADR EN
DATEN
TMOUT
BC5(A) HIGH
BCI R SYNC H
BCI M RPLY H
MASTER H
BCI SYNCO H
BCI M DIN H
BCI EN ADD H
BCI EN DATA L
R5 3.48K 1%
C1 4700 PF 1%
AN1 B DMR L
R7 680
R8 330
AS2 B DMGO L
R3 1K
R12 51K
C4 1000PF
R13 1K
R11 4.64 1%
C3 220PF 1%
DC200 E12
ENB
SYNC
CAL 2
DAL 1
DAL 0
WTBT
DOUT
DIN
VECTOR
RXCA
BRPLY
SEL 6
SEL 4
SEL 2
SEL 0
OUT HB
OUT LR
INWD
BBI
DPI
BCI P OK H
BC3 IERQ H
AL2 BIRQ L
DC2 DSK WRT H
BCI DSK WRT L
DC3 8.2 MHZ H
CDI
BC3 INIT H
BCI NXM (1) H
8641 E14
R9 100
C2 150PF
BCI G EN ADD H
AK2 BWTBT L
NOTE:
L * MEANS REFERRING TO POINT ON D-CS-M8013-0-1.
REVISIONS
CHANGE NO.
REV.
B
M HULTMAN
DRN
CHK
ENG
PROJ ENG
PROJ
NEXT HIGHER ASSY
FIRST USED ON
RLV11
digital
TITLE
RLV11
BUS CONTROL
(BC1)
SIZE
D
CODE
NUMBER
D CS-M8014-0-1
REV.
D
SCALE
SHEET
1 OF 5
D ST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS, WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

BUS XCVRS

DC005 E33 — BDAL 13 L BT2, BDAL 12 L BS2, BDAL 11 L BR2, BDAL 14 L BU2, +5V, BBS 7 L AP2, MATCH, REC, XMIT

DC005 E27 — BDAL 10 L BP2, BDAL 9 L BN2, BDAL 8 L BM2, BDAL 15 L BV2, MATCH, REC, XMIT

DC005 E21 — BDAL 7 L BL2, BDAL 6 L BK2, BDAL 5 L BJ2, BDAL 0 L AU2, MATCH, REC, XMIT

DC005 E13 — BDAL 4 L BH2, BDAL 3 L BF2, BDAL 2 L BE2, BDAL 1 L AV2, +5V, MATCH, REC, XMIT

E23 ON=1 — A12, A11, A10, A9, A8, A7, A6, A5, A4, A3

E22 ON=1 — RN3 261 14, +5V, V7, V6, V5, V4, V3, V2

BC3 VEC TO BUS H

BC SEL BA L, BC3 INIT L — 74LS11 E11

BC SEL MP L

BC1 GEN ADD H, BC1 FD BA L, BC1 G DOUT PLS L, BC1 EN ADD H

WC/BA LO BYTE — DC006 E18 — CNT 1A, CLK-A, S-A, CLK-C, S-C, RD, LD, RD-A; 128 D/F, 64 D/F, 32 D/F, 16 D/F, 8 D/F, 4 D/F, 2 D/F, 1 D/F, MAX-A, MAX-C

WC/BA HI BYTE — DC006 E25 — CNT 1A, CLK-A, S-A, CLK-C, S-C, RD, LD, RD-A; 128 D/F, 64 D/F, 32 D/F, 16 D/F, 8 D/F, 4 D/F, 2 D/F, 1 D/F, MAX-C, MAX-A

BC5(1) HIGH — 74LS74 E35 — 9 CSI — BC2 WC OFLW (1) H; BC2 WC OFLW (0) H

BC3 CLR ERR L, BC1 RD CSR L — 8556 E17 XBA — CE, OD, MAX CNT, D3, D2, D1, D0, LD, CLR, CLK; R3(1), R2(1), R1(1), R2(0)

8881 E8 — 10 ADI — B DAL 17X; 13 ACI — B DAL 16X

BC1 WRT CSR L, BC2 INIT A H — 74LS02 E51 — BC1 WRT CSR PLS H

BC1 EN ADD H

BC2 TS DAL 13 H, BC2 TS DAL 12 H, BC2 TS DAL 11 H, BC2 TS DAL 14 H, BC2 TS DAL 10 H, BC2 TS DAL 9 H, BC2 TS DAL 8 H, BC2 TS DAL 15 H, BC2 TS DAL 7 H, BC2 TS DAL 6 H, BC2 TS DAL 5 H, BC2 TS DAL 0 H, BC2 TS DAL 4 H, BC2 TS DAL 3 H, BC2 TS DAL 2 H, BC2 TS DAL 1 H

BC1 RD DA L — 8556 E47 — CO, CE, MAX CNT, D3, D2, D1, D0, LD, CLK, CLR; R3(1), R2(1), R1(1), R0(1)

8556 E48

BC5(F) HIGH — 8556 E36

BC5(1) HIGH — 8556 E28

BC1 WRT DA L

DISK ADDRESS REGISTER

DISK ADDRESS SERIALIZER — STB — D15, D14, D13, D12, D11, D10, D9, D8, D7, D6, D5, D4, D3, D2, D1, D0 — 74150 E45 — S3, S2, S1, S0

16 CBI BC2 DA (1) L

BC5 BCNTA 3 H, BC5 BCNTA 2 H, BC5 BCNTA 1 H, BC5 BCNTA 0 H

(BC2) INC DA L — 7408 E56 — BC1 WRT DA PLS L

BC2 MATCH H

BC1 DAL XMIT EN H, BC1 DAL REC H

BC3 INIT L — 74S04 E34 — CP1 BC2 DA 1 H; CM1 BC2 DA 0 H; BC1 INIT A H

REVISIONS

CHK	CHANGE NO	REV

TITLE: RLV11 BUS CONTROL (BC2)	SIZE: D	CODE: DCS	NUMBER: M8014-0-1	REV: D
SCALE:	SHEET 2 OF 5	DIST:		

M8014-0-1 REV D

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

INTERUPT CONTROL
DC003 E16

BIAK I L AM2
BC3 IE RDY H
B INIT L AT2
BCI R QIN L
R15 330 +5V
R16 660
R23 1K +5V
RQSTA, BIAKI, BINIT, BDIN, RQSTB, ENA DAT, ENE DAT, ENA CLK
ENA ST, BIRQ, BIAKO, INITO, VECTOR, VEC RQST, ENB ST, ENB CLK

R13 330 +5V
R14 680
BC5(B)HIGH
BC3 IERDY H
BC3 C RDY(I) H
BC3 INIT H
74LS02 E5
AN2 BIAKO L
BC3 INIT L
BC3 VEC TO BUS H

BCI WRT CSR PLS H
74LS174 E26
D3 D2 D1 D0 D4 D5 CLK CLR
R3(I) R2(I) R1(I) R0(I) R4(I) R5(I)
R20 R21 R22 10K +5V
BC2 TS DAL 1 H
BC2 TS DAL 2 H
BC2 TS DAL 3 H
BC2 TS DAL 6 H
BC2 TS DAL 8 H
BC2 TS DAL 9 H
CV1 BC3 FO (I) H
DC1 BC3 F1 (I) H
DD1 BC3 F2 (I) H
CE1 BC3 DRV SEL 0 (I) H
CC1 BC3 DRV SEL 1 (I) H

BCI RD CSR L
8097 E70

DC2 SET C RDY L DMI 10 74LS08 E52
BC5(G) HIGH
BC3 COMP ERR H
74LS74 E63
DFI BC3 C RDY (I) L
BC3 C RDY (I) H
BCI WRT CSR PLS L
BCI TS DAL 7 H
74LS32 E29
74S08 E56
74LS86 E62 12 CRI
BC3 CLR ERR H
BC3 CLR ERR L

BC3 C RDY(I) H
DC5 DRV ERR H
BC3 CRC ERR(I) H
BCI NXM (I) L
74LS51 E40
74LS10 E44
74LS04 E43
BC3 COMP ERR L
BC3 COMP ERR H
DC5 DRIVE READY H DT2
8097 E76
BC2 TS DAL 15 H
BC2 TS DAL 0 H

+5V R17 180K C5 6.8 UF
DC2 INC DA L DBI 2
74LS22 E29
BC5(G) HIGH
74LS74 E63
DC2 DLT L CUI 4
74LS08 E52
DC3 PRESET OPI L DMI
74LS109 E69
BC5(G) HIGH
BC3 CLR ERR L

BCI R SYNC L
BC5(C) HIGH
74LS74 E15
BC3 SCRDY(I) L
DC3 MIS MATCH L CKI 3
74LS22 E51
BCI NXM (I) H
8097 E30
BC2 TS DAL 7 H
BC2 TS DAL 10 H
BC2 TS DAL 12 H
BC2 TS DAL 13 H
BC2 TS DAL 11 H
BC2 TS DAL 14 H
74LS04 E3
BC3 INIT H

REVISIONS
CHK | CHANGE NO | REV

TITLE	SIZE	CODE	NUMBER	REV.
RLV11 BUS CONTROL (BC3)	D	DCS	M8014-0-1	D
SCALE	SHEET 3 OF 5		DWG	

M8014-0-1 REV D

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

BC1 PD FIFØ L
BC1 EN DATA L
74LS00 E50

BC5 ED BIN H
BC1 MDIN H
BC5 LD 3OUT PLS L

FIFO OUTPUT BUFFER

74LS295 E65: BC2 TS DAL 8 H, BC2 TS DAL 9 H, BC2 TS DAL 10 H, BC2 TS DAL 11 H
74LS295 E31: BC2 TS DAL 4 H, BC2 TS DAL 5 H, BC2 TS DAL 6 H, BC2 TS DAL 7 H
74LS295 E77: BC2 TS DAL Ø H, BC2 TS DAL 1 H, BC2 TS DAL 2 H, BC2 TS DAL 3 H
74LS295 E38: BC2 TS DAL 12 H, BC2 TS DAL 13 H, BC2 TS DAL 14 H, BC2 TS DAL 15 H
74LS295 E64: BC2 TS DAL 8 H, BC2 TS DAL 9 H, BC2 TS DAL 10 H, BC2 TS DAL 11 H
74LS295 E54: BC2 TS DAL 4 H, BC2 TS DAL 5 H, BC2 TS DAL 6 H, BC2 TS DAL 7 H
74LS295 E71: BC2 TS DAL Ø H, BC2 TS DAL 1 H, BC2 TS DAL 2 H, BC2 TS DAL 3 H

S/L M/C

BC5(L) HIGH
FIFO INPUT BUFFER
BC5(E) HIGH
BC5(L) HIGH
BC5(F) HIGH
BC5(G) HIGH
BC5(M) HIGH
BC5(C) HIGH

BC4 TS FIFO Ø H
BC4 TS FIFO 1 H
BC4 TS FIFO 2 H
BC4 TS FIFO 3 H
BC4 TS FIFO 4 H
BC4 TS FIFO 5 H
BC4 TS FIFO 6 H
BC4 TS FIFO 7 H
BC4 TS FIFO 8 H
BC4 TS FIFO 9 H
BC4 TS FIFO 10 H
BC4 TS FIFO 11 H
BC4 TS FIFO 12 H
BC4 TS FIFO 13 H
BC4 TS FIFO 14 H
BC4 TS FIFO 15 H

BC5 ED BIN H
BC1 M DIN H
74LS295 E32: BC2 TS DAL 12 H, BC2 TS DAL 13 H, BC2 TS DAL 14 H, BC2 TS DAL 15 H
BC5(E) HIGH

(RD/WRT ADDR CNTR)
DC0026 E60
CNT IA, CLK-A, S-A, CLK-C, S-C, RD, LD, RD-A
128 D/F, 64 D/F, 32 D/F, 16 D/F, 8 D/F, 4 D/F, 2 D/F, 1 D/F, MAX-A, MAX-C

74LS04 E49
BC3 CLR ERR L
BC5 INC RA H
BC5(M) HIGH
BC5 ED RAM L

2111A2 E78, E56, E73, E72
A7 A6 A5 A4 A3 A2 A1 A0
I/O1 I/O2 I/O3 I/O4
R/W CE1 CE2 OE

BC5 WRT RAM L

BC5(G) HIGH
DC5 SER DATA IN H
(SAVE)
74LS74 E68
BC3 INIT L

WRT/RD SHIFT REGISTER
74LS299 E55
S/L S/R QH QA SØ S1 CLK CLR G1 G2
R6 R7 R6 R5 R4 R3 R2 R1
BC5(K) HIGH
BC4 TS FIFO 15 H, 13 H, 11 H, 9 H, 7 H, 5 H, 3 H, 1 H
BC5 SR LD EN H
BC4 BCNTA Ø L
74LS04 E34
BC3 INIT L
BC5 WRT RAM L
DC2 DSK WRT H (DU1)

74LS299 E61 EVEN
BC5(J) HIGH
BC5 SR LD EN H
BC4 BCNTA Ø L
BC4 TS FIFO 14 H, 12 H, 10 H, 8 H, 6 H, 4 H, 2 H, Ø H

BC4 RCNTA Ø L
74LS51 E67
74LS27 E57
BC5 WRT EMPTY (Ø) L
DCIWRT DATA AREA L
DNI
BC4 SER DATA OUT H

BC5 BCNTA Ø H

REVISIONS
CHK	CHANGE NO	PTV

TITLE	RLV11 BUS CONTROL (BC4) (FIFO BUFFER)	SIZE	CODE	NUMBER	REV.
SCALE	SHEET 1 OF 3	D	CS	M8014-Ø-1	D
	DICT.				

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

AC2
BC2
CC2
DC2
AJ1
BJ1
AM1
BM1
AT1
BT1
CT1
DT1

AD2
BD2
+12V

AA2
BA2
CA2
DA2
BV1
+5V

BC5(G) HIGH
* DC2 EN WRT RAM H
74LS74 E68
74LS51 E67
BC5 WRT RAM L
BC3 CLR ERR L
BC1 DSK WRT L
74LS74 E35
74LS32 E29
BC5(I) HIGH

74LS175 E43
D0 R0(1) R0(0)
D1 R1(1) R1(0) BC5 SR LD EN H
D2 R2(1) R2(0) BC5 SYNK H BC5 SYNK L
D3 R3(1) R3(0)
CLK CLR

BC5 BCNTA 2 H
BC5 BCNTA 1 H
BC5 BCNTA 0 H
BC5 BCNTA 3 H

74LS10 E44
74LS11 E74

74LS161 E46
D0 D1 D2 D3 R0(1) R1(1) R2(1) R3(1)
CLR LD CLK CNT EN CY EN CO
LSK WRT H (DJ1) DC2 *
BC3 CLR ERR L
DC2 INC DA L (DB1)
LC1 BC ENAB H (CJ1)
BC5(H) HIGH
* DC1 CLK BC H (CF1)
74LS04 E34

23218AJ E41
A0 A1 A2 A3 A4
D1 D2 D3 D4 D5 D6 D7 D8

74LS175 E42
D0 D1 D2 D3 R0(1) R0(0) R1(1) R1(0) R2(1) R2(0) R3(1) R3(0)
CLK CLR
BC1 WRT DATA AERA L (DH1)
74LS04 E62
BC5 EO RAM H
BC5 EO RAM L
BC5 WRT INC RA H
BC5 EO BIN H
BC5 MAX MIN L
74LS00 E39
BC5 LD BOUT PLS L
BC5 WRT EMPTY (0) L
74LS20 E39

R16 1K
+5V
74LS04 E3
BC5 EN ROM L

74LS08 E56

* DC2 DSK WRT H (DJ1)
* DC2 MAINT H (DV1)
BC3 C RDY (1) H
74LS27 E57
74LS00 E50
BC2 WC OFLW (1) H (DJ10)
BC1 MASTER R PLY L
BC1 RD FIFO *
74LS08 E52
BC3 CLR ERR L
74LS74 E59
BC5 DIS BUS XF (1) H
BC5 DIS BUS XF (1) L
74LS41 E59
BC5 SYNK H
BC5 FN RAM XF (1) H

BC5 LIMIT (1) L
74LS04 E34

+5V
R24 1K BC5(A) HIGH
R25 1K BC5(B) HIGH
R26 1K BC5(C) HIGH
R27 1K BC5(D) HIGH
R28 1K BC5(E) HIGH
R29 1K BC5(F) HIGH
R30 1K BC5(H) HIGH
R31 1K BC5(I) HIGH
R32 1K BC5(J) HIGH
R33 1K BC5(K) HIGH
R34 1K BC5(L) HIGH
R35 1K BC5(M) HIGH
R36 1K

74LS00 E75
BC5 MAX MIN L
BC5(F) HIGH
BC5 LIMIT (1) H
BC5 LIMIT (1) L
74LS20 E75
74LS00 E75
6 DRI BC5 RAM STATUS H
BC5 SYNK L
BC3 CLR ERR L
74LS74 E37
* DC2 MAINT H (DV1)
74LS04 E62
BC5(F) HIGH
BC3 INIT L
BC5 WRT EMPTY (0) L
BC5 WPT EMPTY (0) H
74LS11 E74
BC1 DSK WRT L
BC2 WCO FLW (1) L
74LS22 E51
74LS20 E51
74LS51 E40
* DC2 DSKWRT H (DJ1)
74LS02 E75
BC5 INC RA H

74191 E58
MAX/MIN RCLK D3 D2 D1 D0 R3(1) R2(1) R1(1) R0(1)
BC5 EN ROM L
LD DN/UP CLK ENB
74191 E53
MAX/MIN RCLK D3 D2 D1 D0 R3(1) R2(1) R1(1) R0(1)
LD DN/UP CLK ENB
FIFO WORD COUNTER
BC3 CLR ERR L
BC5 ED RAM H

+5V
C10 – C35 .047UF
C6 – C9 3.8UF

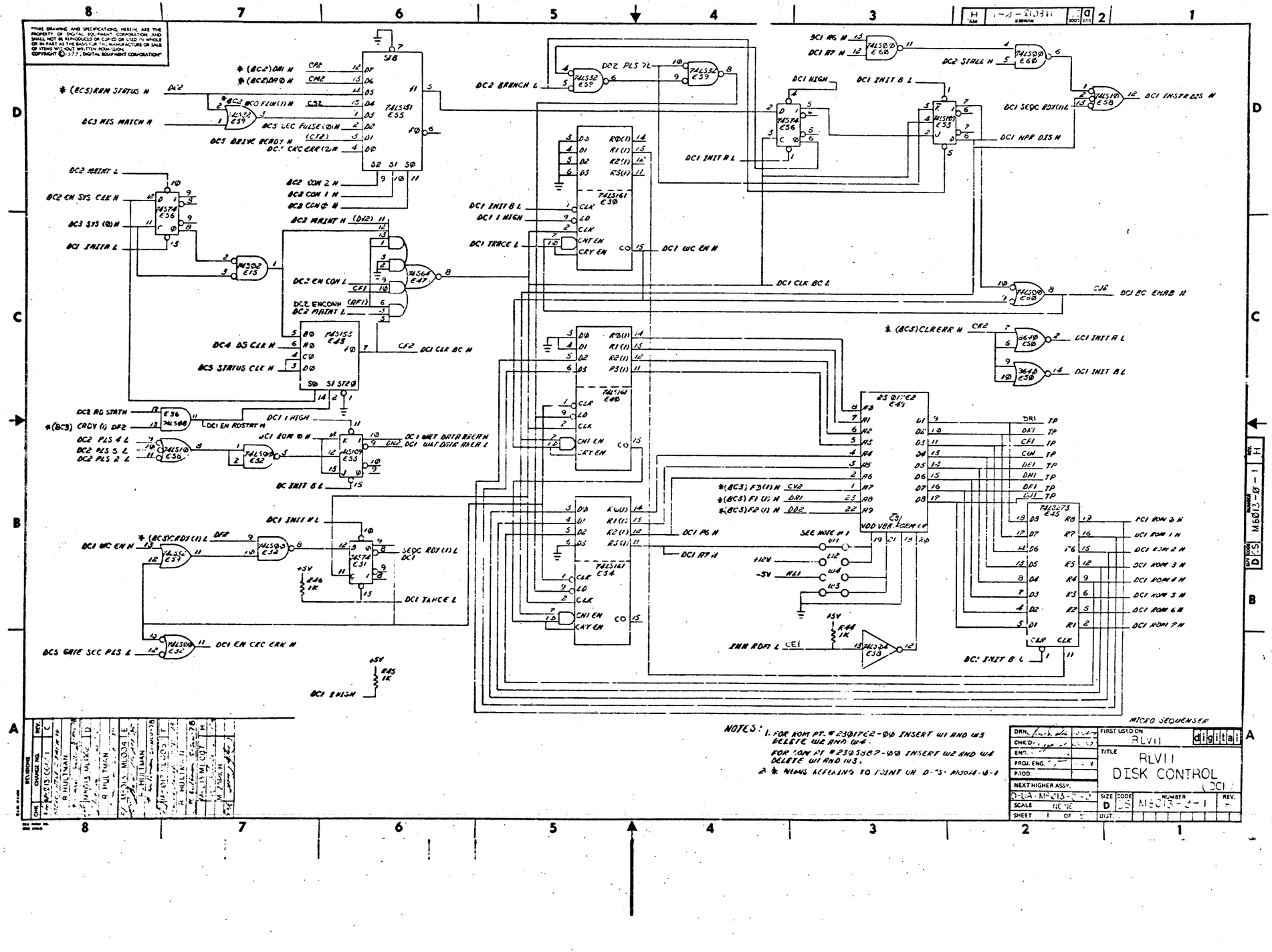
(FIFO COUNTROL)

REVISIONS		
CHK	CHANGE NO	REV

TITLE	RLV11 BUS CONTROL (BC05)	SIZE	CODE	NUMBER	REV.
		D	DCS	M8014-0-1	D
SCALE		SHEET 5 OF 5	DIST		

DCS M8014-0-1 REV D

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR ANY MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977, DIGITAL EQUIPMENT CORPORATION"

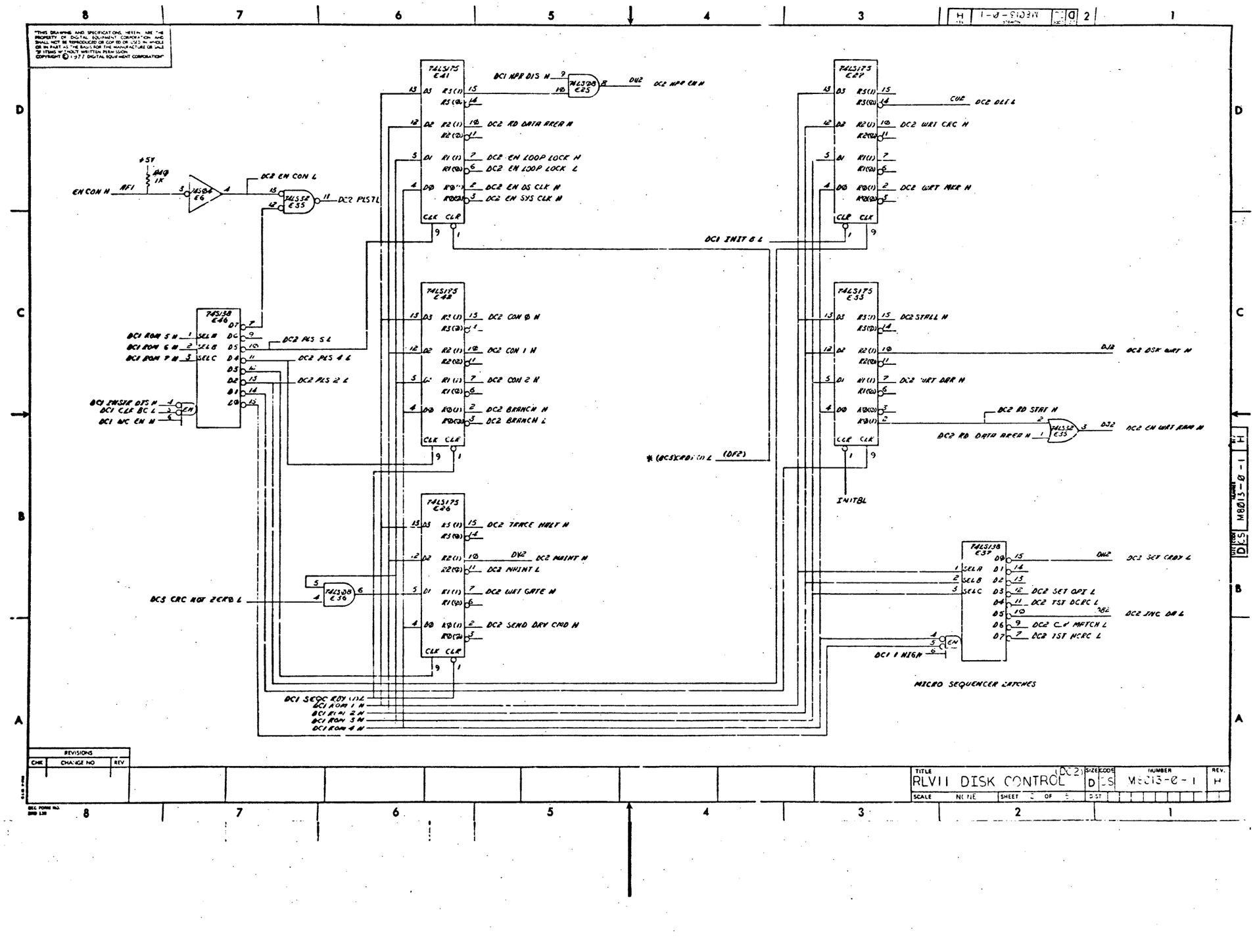


NOTES:
1. FOR ROM PT. # 23-017E2-00 INSERT W1 AND W3
   DELETE W2 AND W4.
   FOR ROM PT # 23-05867-00 INSERT W2 AND W4
   DELETE W1 AND W3.
2. * WIRING REFERRING TO JOINT UN D-CS-M9014-0-1

MICRO SEQUENCER

DRN.	FIRST USED ON	digital
CHK'D.	RLV11	
ENG.	TITLE	RLV11 DISK CONTROL (DC1)
PROJ. ENG.		
PROD.		
NEXT HIGHER ASSY.		
D-LA-MC613-0-0	SIZE D	CODE 05 NUMBER MC613-0-1 REV. -
SCALE NONE		
SHEET 1 OF 1	DIST.	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
RLV11 DISK CONTROL (DC2)	D	DS	MD013-0-1	H
SCALE NONE	SHEET 2 OF 5	DST		

MD013-0-1 H

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

DC3 2 HIGH

DISABLE CRSS L BD1

EXT CRYS L BC1

DC3 SXS (0) H

CB2 DC3 B4 MHZ

+5V

WRT PRECOMP

EXO SDNS

DC3 WRT DATA PLS H

DC3 WRT DATA PLS L

DC1 INIT B L

(DC3) SER DATA OUT CN2

DC3 CRC (1) H

DC2 WRT CPC H

DC1 WC EN H

DC2 WRT WDR H

DC2 WRT DWR H

DC2 MAINT L

DC4 B3 DATA (1) H

DC2 EN LOOP LOCK H

(DC2) DR (1) L CB2

DC3 MUX DATA L

DC1 WRT DATA BREAK H

DC1 CLK BC L

DC4 MAINT CLK

DC3 DRIVE READY H

DC2 BRANCH H

DC2 EN B3 CLK H

DC4 B3 CLK H

DC1 INIT B L

DC2 CLR MATCH L

DC3 MISMATCH L

HEADER MATCH DETECTION

CRC GENERATOR

DC3 2 HIGH

DC1 EN CRC EAR H

DC3 CRC (1) H

DC3 CRC NOT ZERO H

DC3 CRC NOT ZERO L

DC2 SET OPI L

DMZ

DC3 PRESET OPI L

DC3 2 HIGH

DC2 TST MCRC L

DC2 TST BCRC L

DC1 INIT B L

DC3 CRC ERR (1) H

DC3 CRC ERR (0) H

+5V

DC3 2 HIGH

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
RLV11 DISK CONTROL (DC3)	D	DCS	M8013-0-1	H
SCALE NONE SHEET 1 OF 5	DIST			

"THIS DRAWING AND SPECIFICATIONS, HEREIN ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION. AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 19 7 DIGITAL EQUIPMENT CORPORATION"

READ DATA PULSE GENERATOR

PHASE/FREQUENCY ERROR DETECTION

READ DATA SEPARATOR

VCO CONTROL - CHARGE PUMP AND FILTER

-16V AND -5V CHARGE PUMP

REVISIONS		
CHR	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
RLV11 DISK CONTROL (DC4)	D	DCS	M8013-0-1	H
SCALE NONE SHEET 1 OF 5	DIST.			

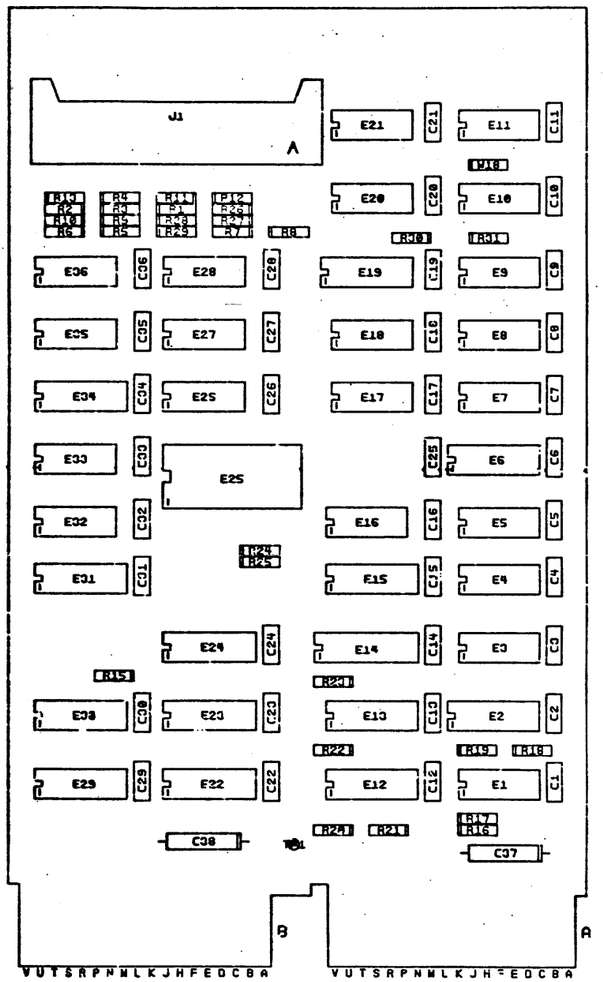
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

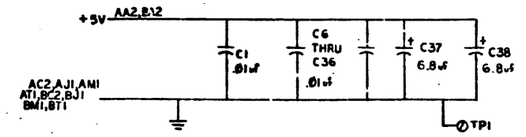
(BC5) DRV SEL 0 (1) H CE2
DC5 4 HIGH
75113 E51
R3 82 1/2W
R4 82 1/2W
+5V
E63 82
(BC5) DRV SEL 1 (1) H CH1
DC3 WRT DATA PLS H
75113 E65
R5 82 1/2W
R6 82 1/2W
DC5 4 HIGH
75113 E57
DC2 WRT GATE H
74LS08 E25
DC2 PRSNT H
74LS04 E58
DC2 SEND DRV CMD H
75113 E48
R7 82 1/2W
R8 82 1/2W
DC5 4 HIGH
75113 E45
*(BC)ROE H
DC1 INIT B L
DC3 MUX DATA L
DC3 SEC (0) H
DC5 4 HIGH
74LS74 E42
R1 82 1/2W
R10 82 1/2W
R11 82 1/2W
R12 82 1/2W
R13 82 1/2W
R14 82 1/2W
DC5 4 HIGH
75107 E52
CI2 DC5 DRIVE READY H
75107 E52
74LS04 E58
74LS08 E62
DC5 GATED SEC PLS L
DC5 READ DATA H
DC5 MARKER H (DV2)
75107 E44
74LS04 E58
74LS74 E61
DC5 SEC PULSE (1) H
DC5 SEC PULSE (0) H
DC5 STATUS CLK H
75107 E44
DC5 INIT B L
BM2
BN2
CR2
DH2
BV1
BC2
BC2
CC2
DC2
AJ1
BJ1
BM1
BM1
AT1
CT1
DT1
+5V
C1 THRU C59 .01UF
C79 THRU C98 .01UF
C70, C71, C75, C76 6-8 UF
RD2
GB2
RR2
RS2
RM2
RN2
+5V
C17 6-8 UF
+5V
R35 1K
DC5 4 HIGH
CM2 DC5 DRIVE ERR H
75107 E62
DC5 STATUS IN H
74S153 E43
DC4 DS DATA (1) H
DC1 EN RD STAT H
DC2 EN SDS CLR H
DC5 4 HIGH
74LS74 E61
CL2 DC5 SER DATA IN H
DC1 CLR BC H (CF2)
DC1 INIT B L
DRIVE BUS INTERFACE

REVISIONS		
ECO	CHANGE NO	REV

TITLE		SIZE	CODE	NUMBER	REV.
RLV11 DISK CONTROL (DC5)		D	DCS	M8013-0-1	H
SCALE NONE	SHEET 5 OF 5	DIST.			

THIS DRAWING AND SPECIFICATIONS, HERETO, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED IN COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION





NOTES:
1. JUMPER REMOVED INDICATES ASSERTION.
2. REFERENCE DESIGNATION C2-C5 AND E2-E5 ARE NOT USED.
3. JUMPERS ARE TO BE IMPLEMENTED USING 30 AWG WIRE-WRAP WIRE. SEE THE LOGIC HANDBOOK FOR RECOMMENDED TOOLS.

STEP E	+ Y AXIS ——— STEP — TIMES
REPEAT	+ X AXIS ——— STEP — TIMES

CH	CHANGE NO	REV
	M7946 ARDB	E

SIGNATURES	DATE
DRN. J.VINCENT	10-75
CHK'D. FERGUSON	11-75
MECH.ENG. M.LEWANDOWSKI	11-75
PROJ.ENG. M.LEWANDOWSKI	11-75
PROD. D. DEROME	11-75
SCALE 2/1	
SHT. 1 OF 3	
NEXT HIGHER ASSY. D-UA-M7946-0-0	

digital

TITLE RXVII
LSI 11 INTERFACE

SIZE	CODE	NUMBER	REV
D	CS	M7946-0-1	E

MS# 150994

M7946-0-1 E
DCS
8 7 6 5 4 3 2 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION"

DIN H — 7404 E28 — DIN L — 7474 E9 — SYNC H — 7408 E10 — DATO H
+3V8

WTBT H — 74175 E6

DAL REC Ø1 H — 74175 E6 — SYNC H — SINIT L — 7408 E16 — DB H
ME H — 7408 E16 — CS H — B DONE H — 7450 E18 — B TRAN REQ H
DB H

DOUT H — RX BUSY H — 7402 E8 — 7408 E16

DAL REC Ø0 H — DAL REC Ø1 H — DAL REC Ø2 H — DAL REC Ø3 H — DAL REC Ø4 H — DAL REC Ø5 H — DAL REC Ø6 H — DAL REC Ø7 H — 74199 D0 #25 D1 D2 D3 D4 D5 D6 D7 — R0(1) R1(1) R2(1) R3(1) R4(1) R5(1) R6(1) R7(1) — D Ø7 L
SHIFT H — CLK — CLR S/L J K — INIT L — RX BUSY H — SER DATA H

+5V — R24 1K R25 1K — W1 W2 — 74157 E24 — STB SØ — ENABLE DAL L — 8641 E23
AV2 BDAL Ø L — DAL REC Ø0 H
AV2 BDAL 1 L — DAL REC Ø1 H
BE2 BDAL 2 L — DAL REC Ø2 H
BF2 BDAL 3 L — DAL REC Ø3 H

CS H — VECTOR L — 7409 E16

+5V — R20 R21 R22 R23 1K — W3 W4 W5 W6 — 74157 E15 — STB SØ — DONE H — INT ENB (1) H — TRAN REQ H — CS H
74157 E12 — STB SØ
BH2 BDAL 4 L — DAL REC Ø4 H
BJ2 BDAL 5 L — DAL REC Ø5 H
3K2 BDAL 6 L — DAL REC Ø6 H
BL2 BDAL 7 L — DAL REC Ø7 H
8641 E22

VECTOR H — DIN H — ME H — 7408 E33 — 7402 F26 — ENABLE DAL L

BS7 REC H — DAL REC Ø2 H — DAL REC Ø3 H — DAL REC Ø4 H — DAL REC Ø5 H — DAL REC Ø6 H — DAL REC Ø7 H — DAL REC Ø8 H — DAL REC Ø9 H — DAL REC 10 H — DAL REC 11 H — DAL REC 12 H
680 330 E31-4 … E31-1 — W7 W8 W9 W10 W11 W12 W13 W14 W15 W16 W17
SYNC H — STB — 8136 E29 — OUT — +5V — R15 1K — ME H

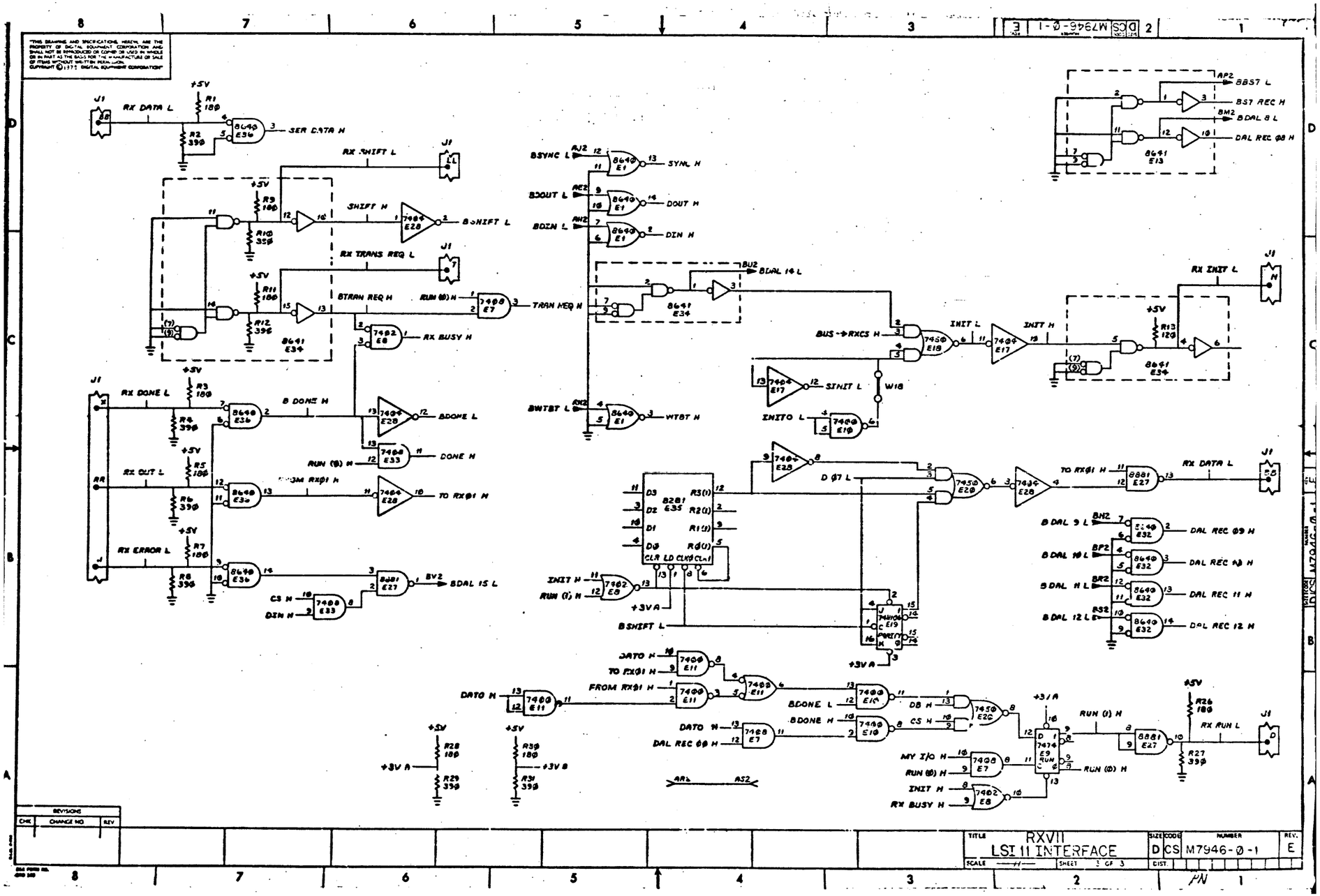
DIN H — DOUT H — 7402 E26 — MY I/O H — VECTOR H — 7404 E17 — RPLY H — AF2 BRPLY L — 8641 E13
ME H — VECTOR L
DOUT H — CS H — RPLY H — 74H11 E21 — BUS → RXCS H

+5V — R16 330 — R17 680 — DONE H — DAL REC Ø6 H — BUS → RXCS H — BIAKI L — BIAKO L — INITO L — VECTOR H — DIN L — +3V B — DC303 E14 — INTR ENB (1) H — BG RQ L — R18 330 — R19 680

REVISIONS		
CHK	CHANGE NO	REV

TITLE: RXVII LSI 11 INTERFACE
SIZE D — CODE CS — NUMBER M7946-Ø-1 — REV. E
SCALE — SHEET 2 OF 3 — DIST. 1
PN

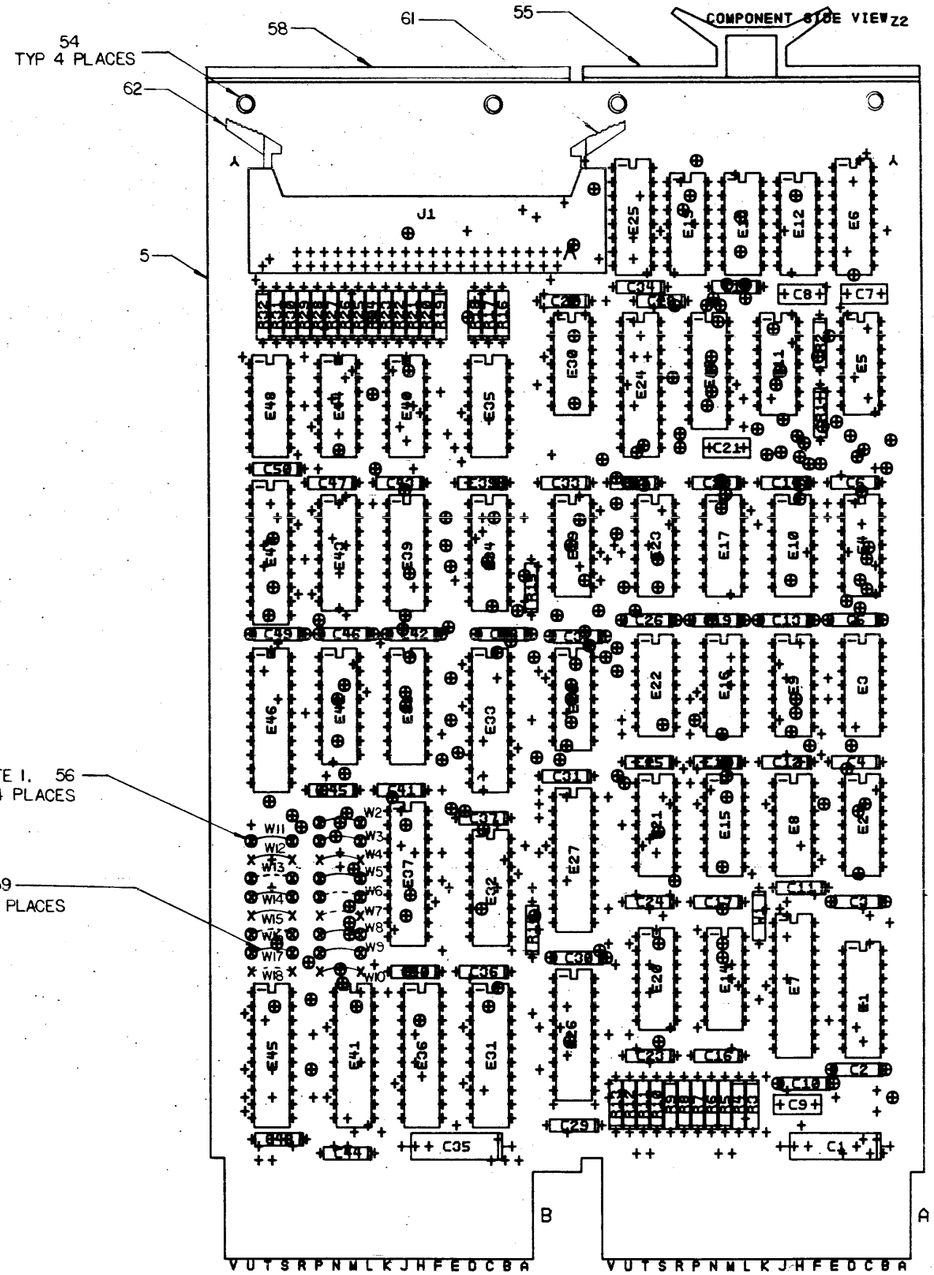
THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 DIGITAL EQUIPMENT CORPORATION



REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
RXVII LSI 11 INTERFACE	D	CS	M7946-0-1	E
SCALE —//— SHEET 3 OF 3	DIST			

THIS DRAWING AND SPECIFICATION, EITHER ... PROPERTY OF DIGITAL EQUIPMENT CORPORATION. ... ©1987 DIGITAL EQUIPMENT CORPORATION



NOTES:
1. ITEM *56 ARE WIRE WRAP PINS, W2 THRU W18

STEP & REPEAT	↑ Y AXIS ____ STEP ____ TIMES
	→ X AXIS ____ STEP ____ TIMES

CHK	CHANGE NO	REV
	REVISED AND RELAWN ML005	F

ETCH REV. D-P3

SIGNATURES	DATE
DRN. J FITZGERALD	26 JAN 87
CHK'D.	1-29-87
MECH.ENG. D Power	3/3/87
PROJ.ENG. D Power	3/3/87
PROD. D Power	3/3/87

digital

TITLE: RXV21 LSII RX02 CONTRCLLER

SCALE	SIZE	CODE	NUMBER	REV
2/1	D	UA	M8029-0-0	F
SHT. 1 OF 1				

NEXT HIGHER ASSY. B-DD-M8029-0

1 MS# 263735

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 , DIGITAL EQUIPMENT CORPORATION"

74LS174 E43
DI TS BUS 9 H — D5 — R5(I) — DI FUNCT 2 H
DI TS BUS 8 H — D4 — R4(I)
DI TS BUS 4 H — D3 — R3(I)
DI TS BUS 3 H — C2 — R2(I)
DI TS BUS 2 H — C1 — R1(I) — DI FUNCT 1 H
DI TS BUS 1 H — DØ — RØ(I) — DI FUNCT Ø H
CLR CLK
D2 INIT L
D3 WRT CSR PLS H
FUNCTION SELECT BITS

D4 BTR H — 8097 E39 — DI TS BUS 7 H
DI TS BUS 9 H — 8097 E39
DI TS BUS 8 H — 8097 E39
D4 B ERROR H — 8097 E39 — DI TS BUS 15 H
8097 E38 — DI TS BUS 12 H
DI TS BUS 4 H — 8097 E38
DI TS BUS Ø H — 8097 E38
DI TS BUS 13 H — 8097 E38
D3 IE H — 8097 E39 — DI TS BUS 6 H
+3V2 — 8097 E38 — DI TS BUS 11 H
D3 RD CSR L
D4 B DONE H — 8097 E39 — DI TS BUS 5 H
8097 E38 — DI TS BUS 14 H

DI TS BUS 3 H — 8097 E42
D2 DB SEL 1 L

74LS299 E37
D2 INIT L — CLR
D3 DB CLK H — CLK
D4 SER DATA H — SR
SL
D2 LO SEL Ø H — SØ
D2 DB SEL 1 H — SI
ENA 1
ENA 2
DI TS BUS 7 H
DI TS BUS 5 H
DI TS BUS 1 H
DI TS BUS Ø H
DI TS BUS 2 H
DI TS BUS 4 H
DI TS BUS 6 H
DI DATA 7 H

74LS257 E34
+3V2 — B3 — f3
A3
B2 — f2
A2
D4 RX AC LO H — B1 — f1 — DI TS BUS 3 H
A1
D3 NXM (1) H — BØ — fØ — DI TS BUS 11 H
AØ
OUT CONT SØ
DI EN MUX L
D4 B DONE H

74LS299 E33
D2 SHFT RT H — SR
SL
D2 HI SEL Ø H — SØ
SI
ENA 1
ENA 2
DI TS BUS 15 H
DI TS BUS 13 H
DI TS BUS 9 H
DI TS BUS 8 H
DI TS BUS 10 H
DI TS BUS 12 H
DI TS BUS 14 H
DI DATA 15 H

D4 ENA 12 BIT L — 74LSØ8 E22
D3 RD DB L
D3 EN DATA L — 74LSØ8 E22 — DI EN MUX L

DI TS BUS 11 H — 8097 E42 — DI DATA 11 H
D2 DB SEL 1 L

REVISIONS			
CHK	CHANGE NO.	REV.	
RH	M8029-00001	C	Steve Mittle 8 mar 78
ER	M8029-ML002	D	J.GLAVIN 5/9/78
CR	M8029-ML003	E	C. YOUSE 13 NOV 78
CR	M8029-ML005	F	J. RYAN 9-4-79

DRN 10/25/77
CHK'D 11/13/77
ENG. 2/24/78
PROJ. ENG.
PROD.
NEXT HIGHER ASSY. B-DD-M8029-0
SCALE
SHEET 1 OF 4

FIRST USED ON RX02

TITLE RXV21 LSI11 (DI) CONTROLLER

SIZE	CODE	NUMBER	REV.
D	CS	M8029-0-1	F

DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

B DAL 13 L BT2 — BUS 3 — DAT 3 — D2 TS BUS 13 H
B DAL 12 L BS2 — BUS 2 — DAT 2 — D2 TS BUS 12 H
B DAL 11 L BR2 — BUS 1 — DAT 1 — D2 TS BUS 11 H
B DAL 14 L BU2 — BUS Ø — DAT Ø — D2 TS BUS 14 H
DCØØ5 E41
+3V2 — JA3
JA2
JA1
BBS 7 L AP2 — MEN B
JAV3
JAV2
JAV1
MATCH
XMIT REC

W11 W1Ø W9 W8 W7 W6 W5 W4 W3 W2

B DAL 9 L BN2 — BUS 3 — DAT 3 — D2 TS BUS 9 H
B DAL 8 L BM2 — BUS 2 — DAT 2 — D2 TS BUS 8 H
B DAL 7 L BL2 — BUS 1 — DAT 1 — D2 TS BUS 7 H
B DAL 15 L BV2 — BUS Ø — DAT Ø — D2 TS BUS 15 H
DCØØ5 E45
JA3 JA2 JA1 MEN B JAV 3 JAV 2 JAV 1 MATCH
XMIT REC

D3 ENB VEC H
W18 W17 W16 W15 W14 W13 W12
R9 270 +5V

B DAL 6 L BK2 — BUS 3 — DAT 3 — D2 TS BUS 6 H
B DAL 5 L BJ2 — BUS 2 — DAT 2 — D2 TS BUS 5 H
B DAL 4 L BH2 — BUS 1 — DAT 1 — D2 TS BUS 4 H
B DAL Ø L AU2 — BUS Ø — DAT Ø — D2 TS BUS Ø H
DCØØ5 E36
JA3 JA2 JA1 MEN B JAV 3 JAV 2 JAV 1 MATCH
XMIT REC
XMIT EN 1 H

B DAL 1Ø L BP2 — BUS 3 — DAT 3 — D2 TS BUS 1Ø H
B DAL 3 L BF2 — BUS 2 — DAT 2 — D2 TS BUS 3 H
B DAL 2 L BE2 — BUS 1 — DAT 1 — D2 TS BUS 2 H
B DAL 1 L AV2 — BUS Ø — DAT Ø — D2 TS BUS 1 H
DCØØ5 E31
JA3 JA2 JA1 MEN B JAV 3 JAV 2 JAV 1 MATCH — D2 MATCH H
XMIT REC
D3 XMIT EN 2 H
D3 DAL REC H

D3 EN ADDR H
+3V2
D3 LOAD BAR L
DCØØ6 E47
CNTIA CLK-A S-A CLK-C S-C RD LD RD-A
128 D/F 64 D/F 32 D/F 16 D/F 8 D/F 4 D/F 2 D/F 1 D/F
MAX-A MAX-C
D2 TS BUS 7 H
D2 TS BUS 6 H
D2 TS BUS 5 H
D2 TS BUS 4 H
D2 TS BUS 3 H
D2 TS BUS 2 H
D2 TS BUS 1 H
D2 TS BUS Ø H

DCØØ6 E46
CNTIA CLK-A S-A CLK-C S-C RD LD RD-A
128 D/F 64 D/F 32 D/F 16 D/F 8 D/F 4 D/F 2 D/F 1 D/F
MAX-A MAX-C
D2 TS BUS 15 H
D2 TS BUS 14 H
D2 TS BUS 13 H
D2 TS BUS 12 H
D2 TS BUS 11 H
D2 TS BUS 1Ø H
D2 TS BUS 9 H
D2 TS BUS 8 H

D4 SER DATA H — D4 DONE L — DI DATA 7 H — D4 RX DONE H — 74LSØØ E9 — D2 SHFT RT H

D3 MASTER L — D4 OUT H — 74LS32 E2 — 74LS1Ø E3Ø — D3 WRT DB L — D3 WRT CSR L
D2 DB SEL 1 H
7404 E23 — DB SEL 1 L
D4 ENA 8 BIT H — 74LS32 E28 — D2 LO SEL Ø H
D4 RX DONE H — E2
D4 ENA 8 BIT L — E28 — D2 HI SEL Ø H

D3 WRT CSR H — D2 TS BUS Ø H — D4 B DONE H — 74LS1Ø E17 — D2 GO L

D4 LD BAR H — D3 WRT DB H — D3 SRPLY H — E17 — D2 LOAD BAR L

D2 B INIT L — 8640 E14 — 7402 E4 — D2 INIT L
7404 E23 — D2 INIT H

D2 TS BUS 14 H — D3 WRT CSR PLS H — E22 — D2 PROG INIT H

D3 EN ADDR H — 8881 E2Ø — D2 BAD 16 H — D2 BAD 17 H
D2 TS BUS 12 H — D2 TS BUS 13 H — D3 WRT CSR L — D2 INIT L — 74LS161 E32 — D3 WRT CSR PLS H — E4Ø — +3V2
D0 D1 D2 D3 R0(1) R1(1) R2(1) R3(1) CLR LD CLK CNT EN CRY EN CO

REVISIONS
CHK | CHANGE NO. | REV.

TITLE (D2) RXV21 LSI11 CONTROLLER
SIZE D CODE CS NUMBER M8029-0-1 REV. F
SCALE SHEET 2 OF 4 DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"

R8 680 R7 330 +5V

+5V R5 330 D3 NPR REQST (1) H BOMGI L AR2 R6 680 D4 OUT H +3V2 D3 SYNC H D3 MAS RPLY H D2 INIT H D3 8.2 MHZ

DC01Ø E7: REQ, BDMGI, DATIN, DATIO, CNTEN, BUSYNC, RPLY, TMOUT, CLK, INIT; BDMR, MASTER, BDMGO, SYNC, DIN, DOUT, ADREN, DATEN

E11 74LSØ2

8881 E2Ø: BNI → D3 B SACK L; ANI → D3 B DMR L; AS2 → D3 B DMG O L

7404 E23 → D3 MDIN H → 7432 E4 → D3 MASTER H

7408 E16: D3 M REPLY H, D3 MAS RPLY H

D3 M DIN H → E19 74LSØ4 → D3 M DIN L

D3 SYNC O H, D3 M DOUT H, D3 EN ADDR H, D3 EN DATA L

8881 E2Ø: D4 OUT H → AK2 → D3 BWT BT L

E19 74LSØ4 → E11 74LSØ2: D3 MAS RPLY H → D3 NXM (Ø) H

D3 NXM (1) H

D3 RD DB L, 7408 E16 → E19 74LSØ4 → D3 XMIT EN 2 H

+3V1 74LS74 E12: D3 SYNC Ø H

D3 RD CSR L, 7408 E16 → 8640 E14 → D3 XMIT EN 1 H

D4 ENA 12 BIT L, 7408 E16 → D3 DAL REC H

C7 1000pf R2 39.2K 1% +5V; 74123 E6

+3V1 74LS74 E12: D2 INIT L

+3V1 74LS74 EIØ: D4 NPR REQ H → D3 NPR REQST (1) H

+5V 14 8.2MHZ OSC E8 8 → WI → D3 8.2 MHZ 7

B RPLY L AF2, D3 SRPLY H, B DIN L AH2, B DOUT L AE2, B SYNC L AJ2

8641 E1: D3 REPLY H, D3 DIN H, D3 D OUT H, D3 SYNC H

74LSØ4 E15: D3 DIN L, D3 D OUT L, D3 SYNC L

D3 SEL CS L, D3 PROC OUT L → E21 74LSØ2 → 7404 E23 → D3 WRT CSR L, D3 WRT CSR H

D3 WRT CSR PLS H

D3 SEL DB L, D3 PROC OUT L → E21 74LSØ2 → E15 74LSØ4 → D3 WRT DB L, D3 WRT DB H

SRPLY L → E21 74LSØ2 → E15 74LSØ4 → D3 SRPLY L, D3 SRPLY H

D3 PROC OUT L, SRPLY L → E2 74LS32; D4 SHIFT L, D4 INHB DB H → E2 74LS32 → E17 74LSIØ → D3 DB CLK H, D2 MATCH H

D3 M DIN L, D3 MDIN H → R15 1K 1% → E9 74LSØØ; C21 120pf 5%

C9 220pf 1% R4 4.64K 1% +5V

R3 1K +5V

DC003 E26: D4 B DONE H, D2 INIT L, D3 DIN L, DI TS BUS 6 H; RQSTA, BIAKI, BINIT, BDIN, RQSTB, ENA DAT, ENB DAT ENA CLK; ENA ST, BIRQ, BIAKO, INITO, VECTOR, VEC RQST, ENB ST ENB CLK

+5V R1Ø 330 AM2 R11 680 → D3 IE H, D3 BIRQ L (AL2), D3 BIAKOL (AN2 R12 680 R13 330 +5V), D3 ENB VEC H

D3 WRT CSR PLS H

DC004 E27: D4 ENA 12 BIT H, DI TS BUS 1 H, +3V2, D3 ENB VEC H; ENB, RXCX, SYNC, DAL 2, DAL 1, DAL Ø, WTBT, DOUT, DIN, VECTOR, BRPLY, SEL6, SEL4, SEL2, SELØ, OUT HB, OUT LB, INWD

74LS32 E28: D3 RD DB L, D3 RD CSR L, D3 IN WRD L

D3 SEL CS L, D3 SEL DB L, D3 PROC OUT L

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	(D3) RXV21 LSI11 CONTROLLER			
SIZE	CODE	NUMBER	REV.	
D	CS	M8029-Ø-1	F	
SCALE		SHEET 3 OF 4	DIST.	

DEC 77005 REV. DEC 120

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1977 DIGITAL EQUIPMENT CORPORATION"

D4 BUF DONE L
D4 DONE L
D4 RX DONE H
E3 74LSØ2 E14 8640
D4 BB DONE H
D4 INHB DB H

+3V1
D3 MAS RPLY H
D3 WRT.DB H
7432 E4
D4 RUN CLOCK H
D4 SHIFT H
D2 INIT H
E21 74LSØ2
74S74 E1Ø
D4 RUN (1) H
D4 RUN (Ø) L
8881 E35
D4 RX RUN L

+3V1 D3 D2 D1 DØ RQ(I) RI(I) R2(I) R3(I) CUP CDN CRY BOR
74LS193 E25
D2 INIT H
D2 GO L
D4 CNTR CLK H
+3V1

256X8 E24 A0 A1 A2 A3 A4 A5 A6 A7 Y0 Y1 Y2 Y3 Y4 Y5 Y6 Y7 CS1 CS2
D4 NPR MODE H
D4 DEFUNCT Ø H
D4 DEFUNCT 1 H
D4 OUT H
D4 RX DONE H
D4 B DONE H
D4 BBTR H

74174 E18 D5 D4 D3 D2 D1 DØ R5(I) R4(I) R3(I) R2(I) R1(I) RØ(I) CLK CLR
D4 RUN CLOCK H
D4 NPR REQ H
D4 LD WC H
D4 ENA 16 BIT H
D4 NPR MODE H

D4 RX AC LO H
D4 BB DONE H
E4Ø 74LS32
D4 B DONE H

+5V R32 180 VV D4 RX DMA H
+5V R26 1K FF D4 RX 12 BIT L
+5V R19 120 N D4 RX INIT L

D4 SHIFT L
D4 ENA 12 BIT L
74LSØ2 E3
74LS32 E4Ø
D4 CNTR CLK H
D2 GO L
D4 LOAD WC L
D4 TR PLS L
E3Ø 74LSIØ
E19 74LSØ4
D4 LATCH CLK L
D2 INIT L

E15 74LSØ4
D4 BUF DONE L

D2 INIT H
8881 E35
BBI
B POK H
8640 E14
D4 BUS POK L

D4 LD WC H
JI
+5V R22 180 RX DONE L 8640 E44 E19 74LSØ4 D4 DONE L
D4 RX DONE H
+5V R29 180 RX OUT L RR R23 390 8640 E44 D4 OUT H
+5V R30 390
+5V R18 180 RX ERROR L J R17 390 8640 E44 D4 RX AC LO H 74LS32 E4Ø D4 B ERROR H
D4 ERROR H
D4 DONE L
+5V R27 180 RX SHIFT L LL R28 390 8640 E44 7404 E23 D4 SHIFT L
D4 SHIFT H
+5V R21 180 RX TRANSFER REQUEST L T R20 390 8640 E48 D4 TR H
RX AC LO L TT R31 300 8640 E48 D4 RX AC LO H

C8 100Pf R1 10K +5V
+3V1
D4 TR H
D4 LD WC H
74LSØ2 E11
74123 E6
D4 TR PLS L

D4 ENA 12 BIT H DI DATA 11 H
D4 ENA 8 BIT H DI DATA 7 H
D4 ENA 16 BIT H DI DATA 15 H
OUT H
74LS54 E13
8640 E48
8881 E35
+5V R25 180 R24 390
D4 SER DATA H
BB D4 RX DATA L

D4 RUN CLOCK H
D2 INIT L
74LSØ8 E22
TR H
D4 RUN (1) H
E5 74LS74
D4 ENA 12 BIT L
D4 ENA 16 BIT H
D4 ENA 12 BIT H
74LSØ2 E11
74L E19
D4 ENA 8 BIT L
D4 ENA 8 BIT H

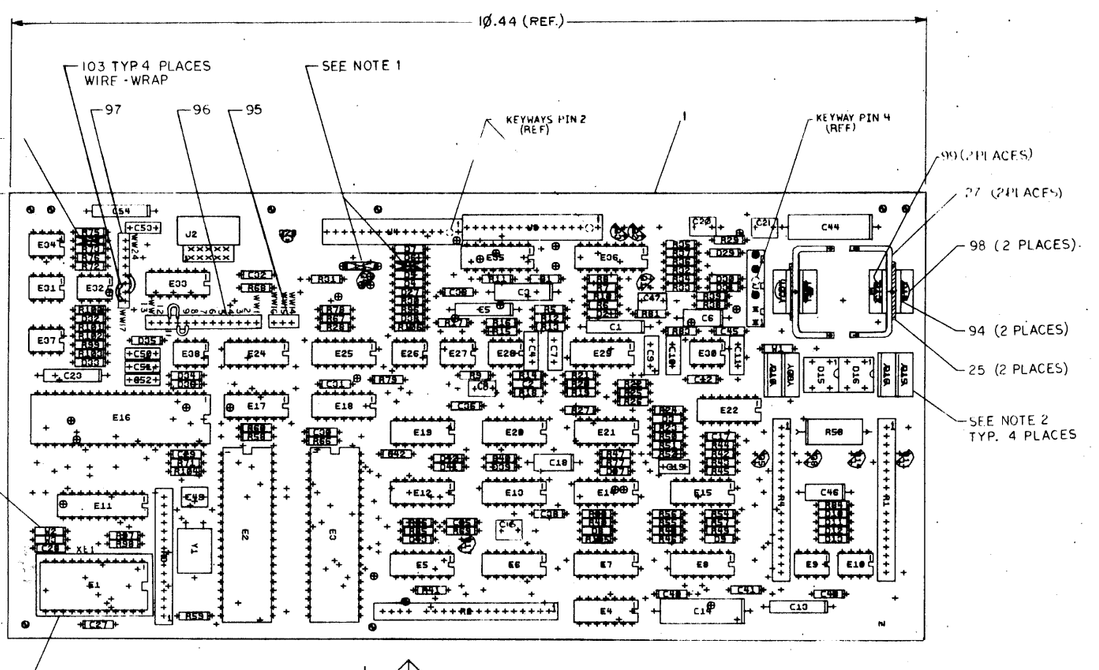
D4 BBTR H
D4 LATCH CLK L
D2 INIT H
D4 RUN (1) H
E5 74LS74
E3 74LSØ2
D4 BTR H

DI FUNCT 2 H
DI FUNCT 1 H
74LSØ2 E21
E29 74LS74
D4 DEFUNCT 1 H
D4 DEFUNCT 1 H
DI FUNCT Ø H
74LSIØ E3Ø
D4 DEFUNCT Ø H
D4 BUF DONE L
D3 NPR REQST (1) L
+5V R16 1K R14 1K +3V2

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMBER	REV.
RXV21 LSI11 CONTROLLER	(D4)	D	CS	M8029-0-1	F
SCALE	SHEET 4 OF 4	DIST.			

COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION



NOTES:
1. C15, L1 & R74 NOT USED
2. MOUNT Q9, Q10, Q15 & Q16 3/16 ABOVE BOARD SURFACE.
3. W2 IS OPTIONAL, DO NOT INSTALL.

STEP X + X AXIS .250 STEP ⊥ TIMES
REPEAT + X AXIS .250 STEP ⊥ TIMES

CHANGE NO REV
REVISED & REDRAWN M1006

SIGNATURES	DATE
DRN. D. POWERS	10-1-79
CHK'D. [illegible]	[illegible]
MECH. ENG. [illegible]	[illegible]
PROJ. ENG. [illegible]	[illegible]
PROD. [illegible]	[illegible]

ETCH REV. F-P1

digital

TITLE SERIAL TU58

SCALE 2/1
SHT. 1 OF 1
NEXT HIGHER REV. B-EC-5413489-0

SIZE E CODE UA NUMBER 5413489-00 REV J

ELM 5413489

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © , DIGITAL EQUIPMENT CORPORATION"

J3/J4 TYPICAL CONNECTION

CART L
N/C
PERMIT L
S GND
MOTOR +
MOTOR −
+12V
TACH
LED
H GND
ERASE RT
ERASE I
ERASE Ø
HEAD RT
HEAD Ø
HEAD I

E11 8B REG 74LS373 LATCH

E1 8316E ROM 2K×8

E3 RAM I/O TIMER 8155

TIMER OUT
TMR OUT L
BOOT L
3ØIPS H
ERASE ENA L
GAN REDUCE L
SEL TRK Ø L
SEL DRV B L
REVERSE H
WRT ENB H
RUN L
MARK H (SW BOOT L)
OE
RUN TP L
A CART L
B CART L
VEL TP H
WRT PERMIT L

E2 8085 CPU

RESET L
RESET IN
RESET H
RESET OUT
CLOCK
CLK H
RST 5.5
RST 6.5
RST 7.5
RD STROBE H
RD DATA H
SID
WRT DATA H
SOD
INTA
HLDA
IO/M
RDL
WRL
ALE
TRAP H
M RESET L
RESET L
(RAMCS L)

E7 BIN CTR 74LS197
CLK H
CHG CLK H.
38.4KB CLK H
3ØIPS H
VEL CLK H

E33 DUAL BIN CTR 74LS393
38.4KB CLK H
CHG CLK H
AUX B
AUX A
(RCV CLK)
(XMIT CLK)

E16 UART 64Ø2
TRO
RRI
SBS
CLS1
CLS2
EPE
CAL
PI
TBRE
PE
OE
DR
FE
TRE
RST 5.5
RST 6.5
TRAP H
OE

INTERFACE
XMIT+
XMIT−
AUX A
AUX B
RCV+
RCV−
J2

C27 THRU C32, C35, C36, C38, C40 THRU C43
GND
+12V
+5V
-12V

REVISIONS				
ORIG	CHANGE NO.	REV.		
Ed	5413489-ML0001	D	M LEIS	11/4/77
Ed	5413489-ML0003	E	M LEIS	30 Jan 78
Ed	5413489-ML0004	F	M LEIS	23 Nov 78
Ed	5413489-ML0006	H	M LEIS	10/1/80

DRN. M. LEIS 5413489	5/7/80	FIRST USED ON TU58
CHK'D M. LEIS	7-20-78	digital
ENG. ROSE/LEIS	7/4/78	TITLE TU58 ELECTRONICS:
PROJ. ENG.	8/1/78	SERIAL
PROD.	8-1-78	
NEXT HIGHER ASSY.		SIZE D CODE CS NUMBER 5413489-0-1 REV. I
B-DD-5413489-0		
SCALE		SHEET 1 OF 2 DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1978 DIGITAL EQUIPMENT CORPORATION"

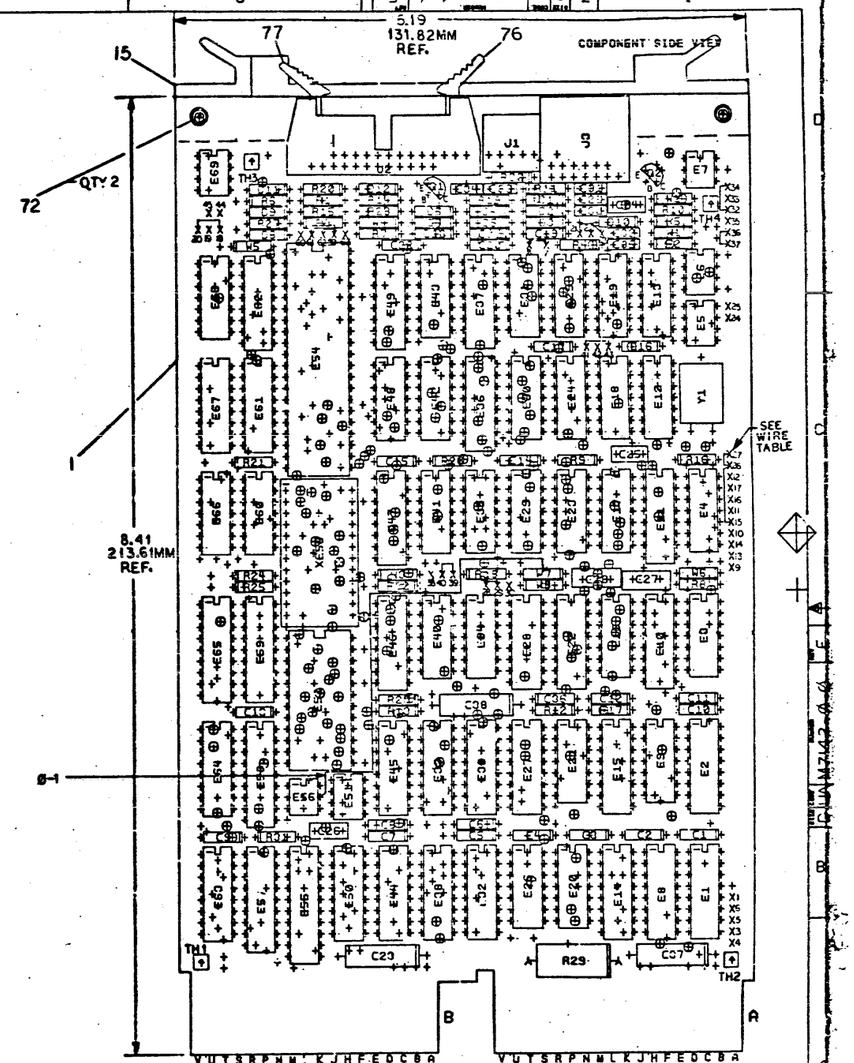
"AGC"
"AMP"
"TACH AMP"
"SERVO AMP"
"ERASE HEAD DRIVER"
"1/4 BIT DELAY"
DRIVE "A"
DRIVE "B"
GAIN REDUCE L
WRITE L
RUN L
M RESET L
WRT DATA H
WRT EMB H
WRT PERMIT L
WRITE OK L
SEL DRV B L
SEL Ø H
SEL A L
SEL Ø L
REVERSE H
F H
R H
RUN A H
RUN B H
RUN TP L
SEL TRK Ø L
ERASE ENA L
RD DATA H
RD STROBE H
VEL TP H
VEL CLK H
A CART L
B CART L
+12VIN
+V
+12V
+6V
+5V
-6V
H GND

REVISIONS
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
TU58 ELECTRONICS: SERIAL	D	CS	54 13489-0-1	H
SCALE —	SHEET 2 OF 2	DIST.		

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION

WIRE TABLE		
ITEM NO.	FROM	TO
74	UA61	UA59
	UA62	UA59
	UA26	UA27
	UA15	UA26
	UA18	UA20
	UA21	UA23
	UA34	UA32
	UA36	UA37
	UA39	UA40
	UA41	UA43
	UA7	UA8
	UA28	UA29



NOTES:
1. REF. DES. CIR IS NOT USED.
2. FINE LINE 8 MIL-LINE & MIL-SPACE.
3. WE : WE ARE OPTICAL.

STEP	↑ Y AXIS ___ STEP ___ TIMES
REPEAT	→ X AXIS ___ STEP ___ TIMES

CH	CHANGE NO	REV
	REVISED & REDRAWN M7142-MK0023	C
		D
		E

ETCH REV. C-P1

SIGNATURES	DATE
DRN.	
CHK'D.	
MECH. ENG.	
PROJ. ENG. B. FILGATE	
P.MOD. WILLIAM J BARTON	
SCALE 2:1	
SHT. 1 OF 2	
NEXT HIGHER ASSY. B-DD M7142-Ø	

digital

TITLE SERIAL VIDEO BD.

SIZE	CODE	NUMBER	REV
D	UA	M7142-Ø-Ø	E

MK 1 MS# 301670

M7142-Ø-Ø

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION"

REWORK INSTRUCTIONS M7142-MKØØ4

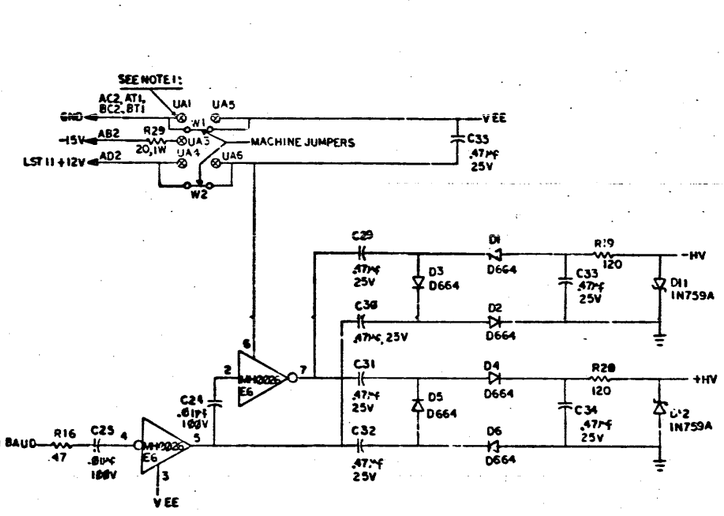
WIRE ADDS SIDE 1 AS SHOWN (P/N 9105740-55).

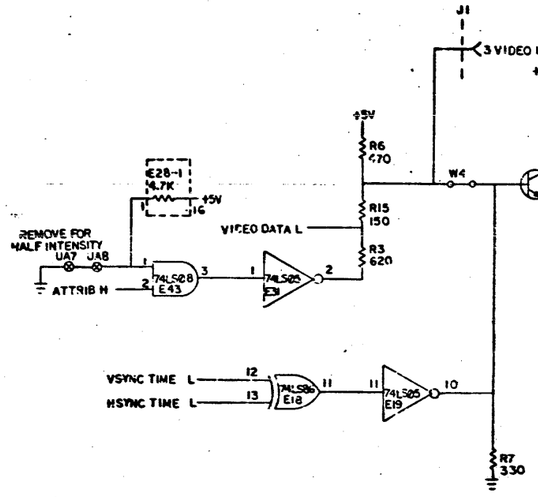
Ø-1 FROM E56-5 TO PTH ABOVE W7.

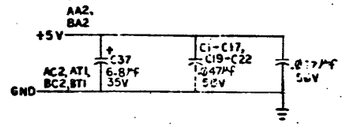
REVISIONS		
CHK	CHANGE NO	REV

TITLE: SERIAL VIDEO BD.		SIZE: D	CODE: UA	NUMBER: M7142-Ø-Ø
SCALE: NONE	SHEET 2 OF 2	DIST: MK		REV: E

POWER OPTIONS	
SUPPLY	W1 INSTALLED OR JUMPER UA1 TO UA5
+ 12VDC	W2 INSTALLED OR JUMPER UA4 TO UA6.
- 15VDC	W1 REMOVED AND JUMPER UA3 TO UA5
	W2 REMOVED AND JUMPER UA1 TO UA6







W4	VIDEO OPERATION
IN	RS170
OUT	HI Z

M7142 IC POWER PIN ASSIGNMENTS

IC	+5V	GND	+HV	-HV
14 PIN ICS	14	7	—	—
16 PIN ICS EXCEPTION: LS76	16 5	8 13	— —	— —
9636	—	4	8	5
555	8	1	—	—
9637	1	4	—	—
6402	1	3	—	—
2114-2	18	9	—	—
ES2, XES3	24	12	—	—
B1-B1	20	10	—	—

NOTES:
1. ⊗ DENOTES #30 WIRE WRAP POST.
2. UNLESS OTHERWISE SPECIFIED:
   (A) RESISTOR VALUES ARE EXPRESSED IN OHMS, 1/4W, 5%.
3. NC DENOTES NO CONNECTION.

POWER SUPPLY AND VIDEO OUTPUT STAGE

DRN	FIRST USED ON	digital
CHK'D		
ENG.	TITLE	SERIAL VIDEO MODULE
PROJ. ENG'R		
PROD. ENG'R		
NEXT HIGHER ASSY.		
D-UA-M7142-0-0	SIZE D / CODE CS / NUMBER M7142-0-1 / REV. F	
SCALE		
SHEET 1 OF 2	DIST.	

MK 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"

W6	W7	W8	REMOTE INIT FUNCTION
OUT	OUT	IN	NONE
IN	OUT	IN	BREAK (FE)
OUT	IN	OUT	FF RECEIVE
IN	IN	OUT	FF OR BREAK (FE)

INIT L
74LS279 E22
FF STRB L
W7
W8
W6
E28-13 4.7K +5V
FE-H
74LS368 E11
R17 240
C36 .047 MF 50V
74LS32 E20
INIT L
INIT H
E26-6 4.7K
C23 10 MF 20V
+5V E28-12 4.7K
SPARE
+5V E49-6 4.7K
74LS04 E12
N TEST L
C27 33 PF 100V 13.5168 MHz Y1
74LS04 E17
C28 56 PF 100V
R8 680
R9 680
74LS04 E12
74LS368 E11
COL1 H
COL0 H
COL2 H
74LS161 E2
DOT CLK L
74LS161 E1
38400 BAUD
74LS368 E18
74LS393 E4
19200 BAUD
9600 BAUD
4800 BAUD
2400 BAUD
1200 BAUD
600 BAUD
300 BAUD
150 BAUD
R12 7.5K
R31 4.2K
R13 5.6K
555 E51
WINK GATE DRIVE L
C38 39 MF 10V
C26 .01 MF 100V
≈150-350 MS

CLOCKS

DRF		FIRST USED ON	digital
CHK'D		TITLE	SERIAL VIDEO MODULE
ENG			
PROJ ENG	DFILE DATE 4-JAN-81		
PROD ART			
NEXT HIGHER ASSY			
D-LIA-M7142-0-0		SIZE D	CODE CS	NUMBER M7142-0-1	REV E
SCALE		DIST	
SHEET 2 OF 4			

MK 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979 DIGITAL EQUIPMENT CORPORATION"

Y AXIS REFRESH

V BLANK H
H SYNC TIME L
SCROLL CONTROL H
INIT L
WRITE TIME H
H BLANK H
BLANK L
VIDEO HOLD L
ROW 0 H
ROW 1 H
ROW 2 H
RY0 H
RY1 H
RY2 H
RY3 H
RY4 H
74LS161 E8
74LS161 E14
74LS32 E20
74LS32 E21
74LS10 E16
74LS04 E30
74LS05 E31
74LS02 E24
D7 D664
D6 D664
4.7K
+5V

X AXIS REFRESH

INIT L
SHIFT LOAD TIME L
RX0 H
RX1 H
RX2 H
RX3 H
RX4 H
RX5 H
RX6 H
74LS161 E62
74LS161 E61
74LS161 E63
74LS04 E17
74LS20 E45
74LS279 E22
74LS10 E34
74LS11 E40
74LS00 E36
RX0+RX2+RX6 H
SHIFT LOAD TIME H
HBLANK 74LS75
H BLANK L
H BLANK H
COL 80 H
RX0+RX2+RX6
H BLANK CLR L
H SYNC TIME L

V SYNC TIME

H BLANK H
INIT H
(SCAN 256)
V BLANK H
V BLANK L
74LS393 E3
74LS279 E10
74LS10 E16
74LS27 E9
74LS04 E30
74LS04 E32
74LS04 E12
74LS20 E30
J1
VERTICAL DRIVE L
60HZ
V SYNC TIME L
V SYNC TIME H

H BLANK L

H BLANK L
RX4 H
RX5 H
74LS10 E16
74LS279 E15
74LS368 E11
J1
HORIZONTAL DRIVE H
15360 HZ
≈ 27μs
H SYNC TIME L

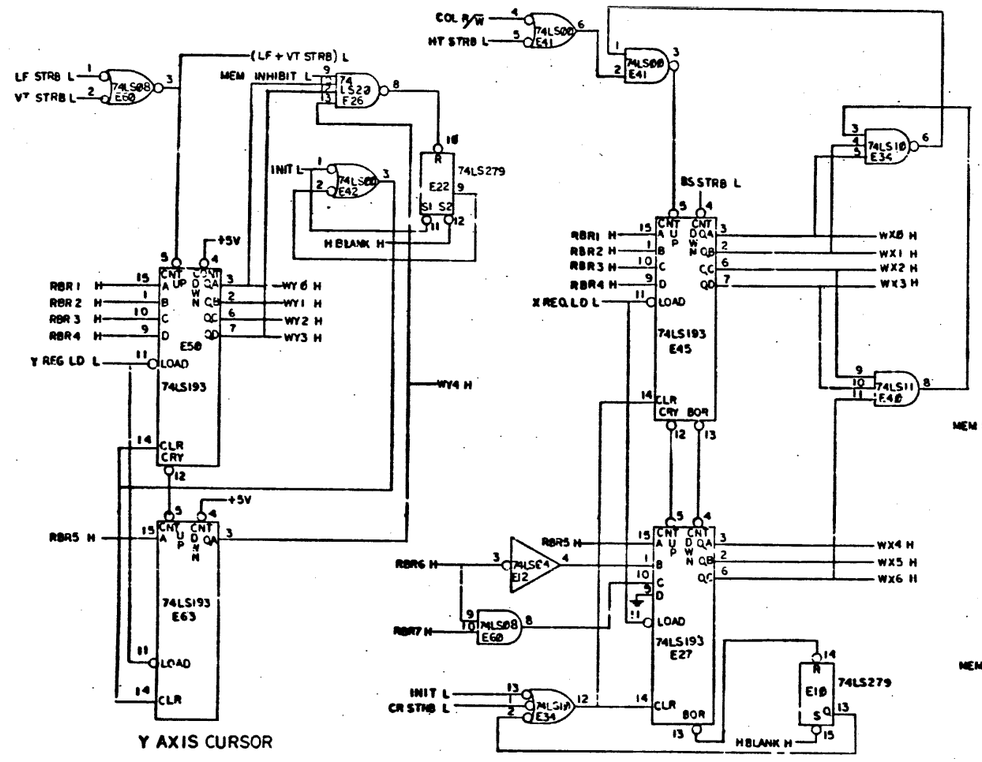
SYNC MONITOR CONTROL

DRN M. [illegible]	8-Dec-78	FIRST USED ON
CHK'D [illegible]	12-Dec-78	
ENG [illegible]	14-Dec-78	TITLE
PROJ. ENGR (DUPLICATE)	14-JAN-79	SERIAL VIDEO MODULE
PROD W BARTON	19-JAN-79	
NEXT HIGHER ASSY.		
D-UA-M7142-0-0		SIZE D CODE 25 NUMBER M7142-0-1 REV. E
SCALE 1=1		
SHEET 3 OF 8		DIST.

digital

MK 1

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION



CURSOR REGISTERS

DRN. [illegible]		FIRST USED ON	digital
CHK'D [illegible]			
ENG. [illegible]		TITLE	
PROJ. ENG'R FLICATE		SERIAL VIDEO MODULE	
PROD'N BARTON			
NEXT HIGHER ASSY.			
D-UA-M7112-0-6		SIZE D	CODE CS
SCALE		NUMBER M7142-A	REV. E
SHEET 4 OF 11		DIST.	

MK 1

THIS DRAWING AND SPECIFICATIONS, HERE IN ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION

TO / FROM	8 DATA BITS NO PARITY	7 DATA BITS EVEN PARITY	7 DATA BITS ODD PARITY
UA61	UA59	UA60	UA62
UA62	UA59	UA60	UA60
UA63	——	UA59	UA60

●DENOTES #30 WIREWRAP POST

BAUD RATE SELECTION
- 150 BAUD —● UA9
- 300 BAUD —● UA10
- 600 BAUD —● UA11
- 1200 BAUD —● UA12
- 2400 BAUD —● UA13
- 4800 BAUD —● UA14
- 9600 BAUD —● UA15
- 19200 BAUD —● UA16
- 38400 BAUD —● UA17

UART 2113937 E54

INSTALL FOR LOCAL COPY

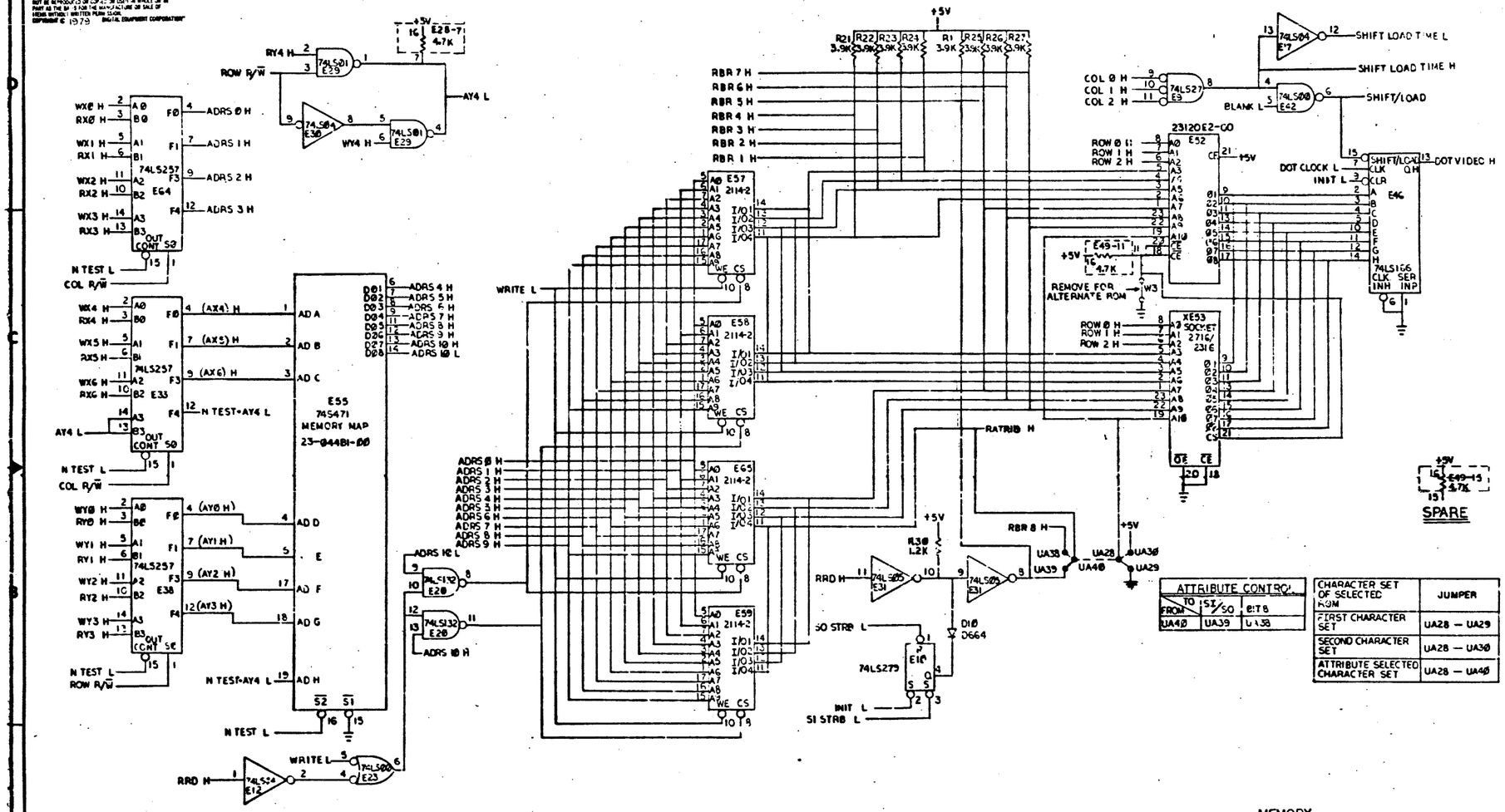
SPARES

OPERATION MODE	WIRE WRAP JUMPERS			
	UA18	UA21	UA34	UA36
RS423	UA20	UA23	UA32	UA37
20 MA	UA19	UA22	UA33	UA35

M7142 COMMUNICATION

DRN W Dumont	FIRST USED ON:	digital
CHK'D		
ENG	TITLE	SERIAL VIDEO MODULE
PROJ ENG S Pilat		
PROD W BARTON		
NEXT HIGHER ASSY.		
D-UA-M7142-0-0	SIZE D / CODE CS / NUMBER M7142-0-1	REV. E
SCALE	DIST.	
SHEET 5 OF 8		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF EQUIPMENT WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1979
DIGITAL EQUIPMENT CORPORATION"

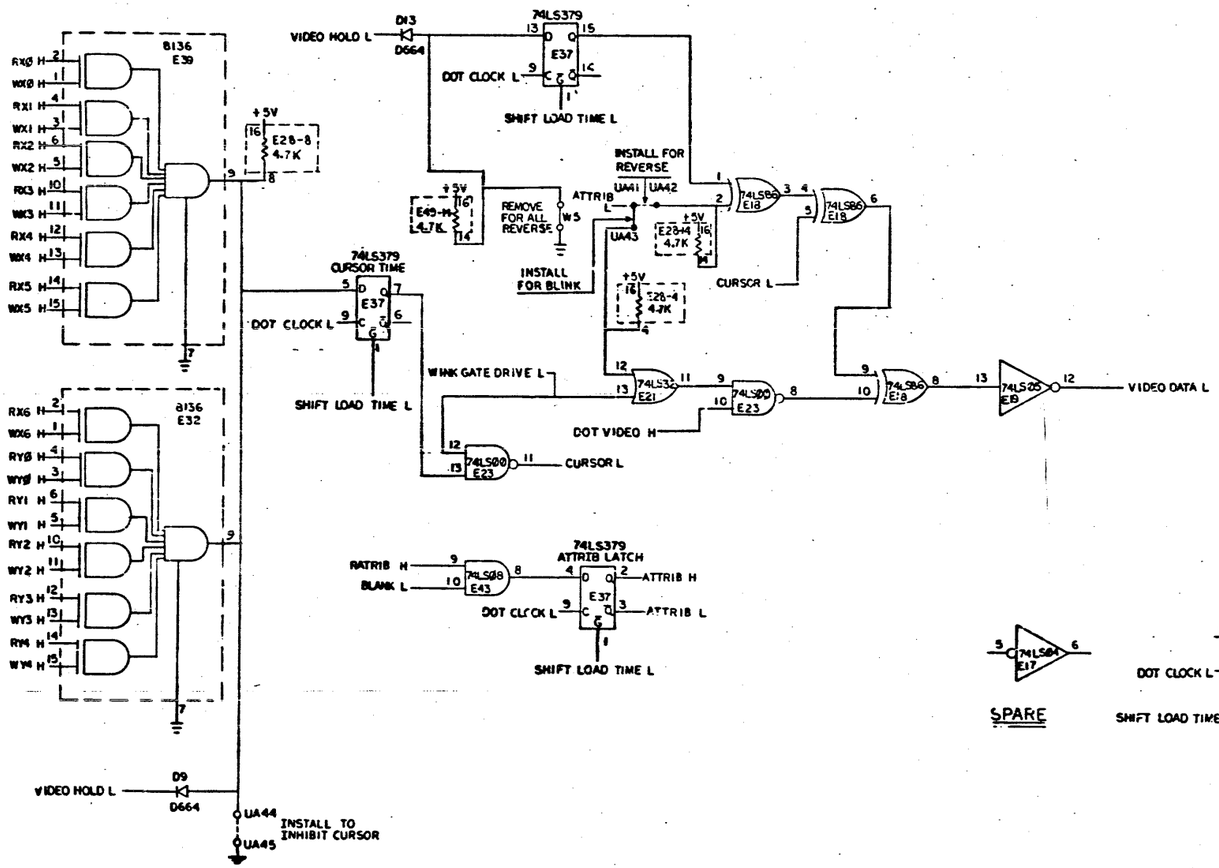


MEMORY

DRWN		FIRST USED ON	digital
CHK'D		TITLE	SERIAL VIDEO MODULE
ENG			
PROJ. ENG.			
PROJ. MGR.			
NEXT HIGHER ASSY.			
D-UA-M7142-B-0		SIZE D	CODE CS
SCALE		NUMBER M7142-B-1	REV. E
SHEET 6 OF 8		DIST.	

MK1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

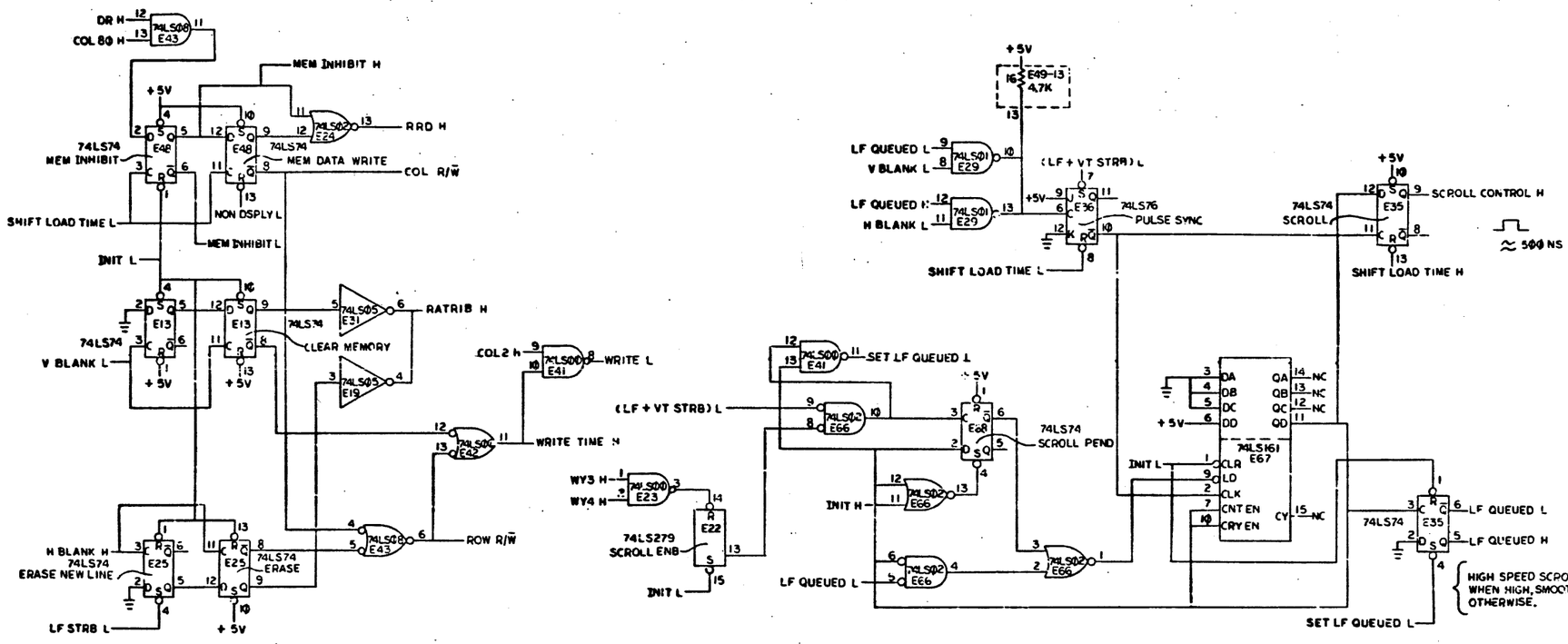


CURSOR & ATTRIBUTE LOGIC

DRN. M Stevenson		FIRST USED ON	digital
CHK'D		TITLE	
ENG.		SERIAL VIDEO MODULE	
PROJ. ENG. B FILGATE			
PROD'N BARTON			
NEXT HIGHER ASSY.			
D-UA-M7142-0-0		SIZE D	CODE CS	NUMBER M7142-0-1	REV. E
SCALE			
SHEET 7 OF 8		DIST.	

MK 1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION
COPYRIGHT © 1978 DIGITAL EQUIPMENT CORPORATION"

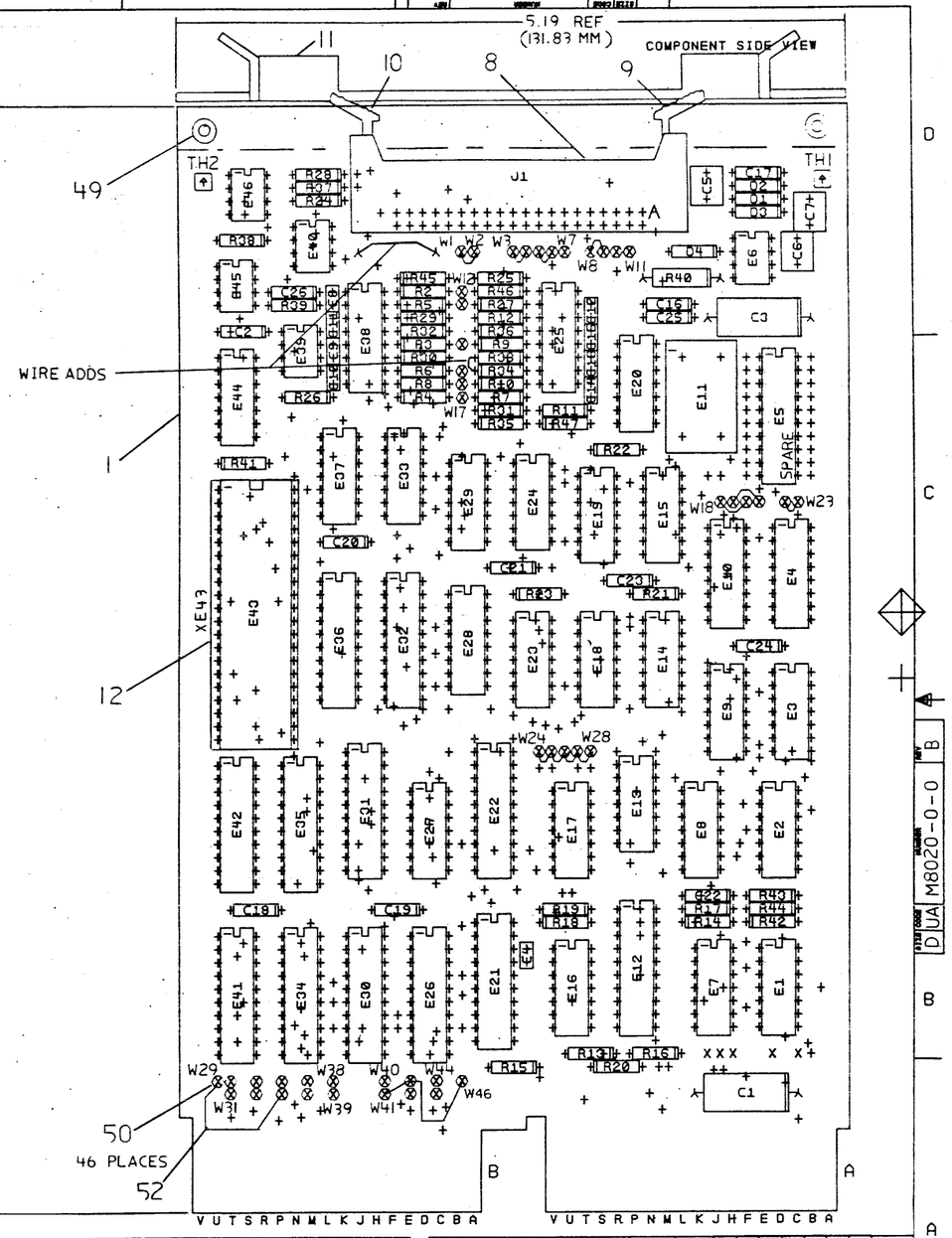


MEMORY & SCROLL CONTROL

DRN	FIRST USED ON	digital
ENG	TITLE	SERIAL VIDEO MODULE
PROJ ENG		
PROG		
NEXT HIGHER ASSY.		
D-UA-M7142-0-0	SIZE D	CODE CS
SCALE	NUMBER M7142-0-1	REV. E
SHEET 8 OF 8	DIST.	

MK 1

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION



NOTES: 1. E5 IS A SPARE IC LOCATION.
2 C4 IS NOT USED.

STEP E	↑ Y AXIS .4 STEP .4 TIMES
REPEAT	→ X AXIS 5.250 STEP 1 TIMES

CHK	CHANGE NO	REV
JC	M8020-0-MK008	B
	H/Processing	7/15/80
	1st MK COV	
	1st Mfg Release	8/6/80

ETCH REV. B

SIGNATURES	DATE
DRN. N Landry	5/27/80
CHK'D. D Fatkenheuer	5/27/80
MECH.ENG.	5/27/80
PROJ.ENG.	5/27/80
PROD. R Eveland	6/24/80

digital

TITLE: DPV 11

SCALE 2/1	SIZE	CODE	NUMBER	REV
SHT. 1 OF 2	D	UA	M8020-0-0	B

NEXT HIGHER ASSY. B-DD-M8020-0

MK 1 MS# 300547

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION"

M8020 REWORK:

ETCH CUT SIDE 1:

1. REFER TO D-EC-5013958-0-0

WIRE ADD SIDE 1:

1. ADD WIRE FROM PIN 2 OF R33 TO PIN 1 OF R34.
   (USE #30 AWG INSULATED WIRE, P/N 9105740-55).
2. ADD WIRE FROM LARGE PAD, NEXT TO E40 PIN 6, TO
   LARGE PAD NEXT TO W1

REVISIONS

CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
DPV11	D	UA	M8020-0-0	B
SCALE NONE	SHEET 2 OF 2	DIST. MK		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION"

NOTES:

1. NOS. IN PARENTHESIS ARE PINS FOR THE 20 PIN IC LOCATION. THE DC003 IS AN 18 PIN IC WITH PIN ONE OF THE DC003 MATCHING PIN ONE OF THE IC LOCATION.
2. JUMPER PINS ARE NOT ON THE PARTS LIST. RESERVED FOR FUTURE USE.
3. ADDRESS SHOWN IS 160010. VECTOR SHOWN IS 0300.
4. E38 AND E25, (P/N 19-15123-02) MAY BE TI 26LS32-2 OR AMD 26LS34.

REVISIONS			
CHK	CHANGE NO.	REV.	
JH	M8020-MK001	B	4-APR-80
JH	M8020-MK002	C	21-MAY-80

DRN. H. Stevenson	4/29/80	FIRST USED ON 1103
CHK'D. F. Backes	4/29/80	digital
ENG. J. McCoy	4/29/80	TITLE DPV11 LOGIC DIAGRAM
PROJ. ENG. J. McCoy	4/29/80	
PROD. [illegible]	5/1/80	
NEXT HIGHER ASSY.		
B-DD-M8020-0,		SIZE D CODE CS NUMBER M8020-0-1 REV. C
SCALE NONE		
SHEET 1 OF 4		DIST.

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1980 DIGITAL EQUIPMENT CORPORATION"

REGISTER Ø

74LS174 E28

S1 DAØ H → D0 R0(!) → S2 S/R L
S1 DA1 H → D1 R1(!) → S2 DTR
S1 DA2 H → D2 R2(!) → S2 RTS
S1 DA3 H → D3 R3(!) → S2 LL
S1 DA4 H → D4 R4(!) → S2 RX ENA
S1 DA5 H → D5 R5(!) → S2 MC INT ENA
CLR CLK

S2 RESET/L
S1 W REG Ø
S1 R REG Ø

74LS244 E32

S3 RX INT ENA
S2 RDR

DA1 YA1 → S1 DAØ H
DA2 YA2 → S1 DA1 H
DA3 YA3 → S1 DA2 H
DBI YBI → S1 DA3 H
DB2 YB2 → S1 DA4 H
DB3 YB3 → S1 DA5 H
DA4 YA4 → S1 DA6 H
DB4 YB4 → S1 DA7 H
OC1 OC2

74LS244 E35

S2 SFR → DA3 YA3 → S1 DA8 H
S4 DSR → DB2 YB2 → S1 DA9 H
S2 RSR → DB1 YB1 → S1 DAIØ H
S2 RXACT → DA1 YA1 → S1 DA11 H
S4 CD → DB4 YB4 → S1 DA12 H
S4 CTS → DB3 YB3 → S1 DA13 H
S4 RING → DA4 YA4 → S1 DA14 H
S3 MC CHANGE → DA2 YA2 → S1 DA15 H
OC1 OC2

74LS04 E8 → S2 RESET/H

S1 INIT
S1 DAØ H → 74LS08 E29 → 74LS02 E13 → S2 RESET/L

REGISTER 4 LOW BYTE

+V
S1 DA3 H → 74LS74 E27 SET D C CLR → S2 M SEL/H, S2 M SEL/L
S1 DA4 H → 74LS74 E27 SET D C CLR → S2 TXENA
S1 W REG 4
S2 RESET/L

74LS244 E31

S2 TXACT
S2 TXBMT
S2 SQ/TM
S3 TXINTENA

DA4 YA4 → S1 DAØ H
DA3 YA3 → S1 DA1 H
DA2 YA2 → S1 DA2 H
DB4 YB4 → S1 DA3 H
DB3 YB3 → S1 DA4 H
DB2 YB2 → S1 DA5 H
DA1 YA1 → S1 DA6 H
DBI YBI → S1 DA7 H
OC1 OC2

S1 RREG 4

USYNR/T

5025 E43

S1 ADR Ø → ADR SEL Ø
S1 ADR 1 → ADR SEL 1
S1 ADR 2 → ADR SEL 2
S1 DP ENA → DP ENA
S1 BYTE OP → BYTE OP
S1 WRITE USYNR/T → WR TO LSI
S2 M SEL/H → MAINT SEL
S2 TX ENA → TX ENA
S2 RX ENA → RX ENA
S2 RESET/H → RESET
S4 TCP → TXCLK
S4 RCP → RXCLK
S4 RSI → RSI

DP00 DP01 DP02 DP03 DP04 DP05 DP06 DP07 DP08 DP09 DP10 DP11 DP12 DP13 DP14 DP15

SYNC+ADR
COMP → S2 SFR
RXACT → S2 RX ACT
RDATRY → S2 RDR
RSTARY → S2 RSR
TXACT → S2 TX ACT
TBEMTY → S2 TX BMT
TERR → (NOT USED)

GND VCC VDD
+5V +12V

74LS245 E36

S1 IN/OUT
S1 ENALB

B1 A1 → S1 DAØ H
B3 A3 → S1 DA1 H
B5 A5 → S1 DA2 H
B8 A8 → S1 DA3 H
B6 A6 → S1 DA4 H
B4 A4 → S1 DA5 H
B7 A7 → S1 DA6 H
B2 A2 → S1 DA7 H
DIR Ḡ

74LS245 E42

S1 IN/OUT
S1 ENAHB

B5 A5 → S1 DA8 H
B6 A6 → S1 DA9 H
B8 A8 → S1 DA10 H
B1 A1 → S1 DA11 H
B2 A2 → S1 DA12 H
B4 A4 → S1 DA13 H
B7 A7 → S1 DA14 H
B3 A3 → S1 DA15 H
DIR Ḡ

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	DPV11, LOGIC DIAGRAM (S2)	SIZE D	CODE CS
SCALE NONE	SHEET 2 OF 4	NUMBER M8020-Ø-1	REV. C
		DIST. MK	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION"

TRANSITION DETECTOR

74LS273 E22

S4 CTS
S4 CD
S4 DSR
S4 RING
S4 PUMP CLK
+V
CLK CLR

74LS266 E17

W25 W24 W28 W27 W26

+5V R23 1K

S2 RSR
S2 RDR
S3 MC INT
74LS32 E23
74LS02 E13
8640 E7

S1 INWD/H
S1 DCØ417
S1 DCØ416
74LSØØ E19
74LSØØ E2Ø

ALLOWS FOR SIMULTANEOUS MODEM CHANGE INTERRUPT AND RECEIVER INTERRUPT.

E33 74LS74

S1 GØØNS/L
S2 RESET/L

RESERVED
SEE NOTE 2
BIRQ5 L (AA1) W49
BIRQ7 L (BP1) W47
BIRQ6 L (AB1) W51
W48 W5Ø

SEE NOTE 1
+5V R15 470

DCØ203 E12

S1 DIN/L (3)
S2 RESET/L (5)
S2 TXB MT (19)
S1 DA G H (12)
(14)
(17)
AM2
BIAKI
BDIN
BINIT
RQSTA
RQSTB
ENBDAT
ENADAT
BIAKI
ENA CLK
VECTOR
VECRQST
ENASTB
INITO
ENBSTB
BIRQ
BIAK
ENB CLK

S3 VECTOR
S3 RQSTB
S3 RX INT ENA
S3 TX INT ENA
BIRQ/L (AN2)
BIAKO/L

R16 680
R13 330
R14 330
R17 680
+5V

S1 WREGØ
S1 WREG 4

E11 19.6608 MHZ
NC
8(3)
SEE NOTE 1
W22 W23

S2 MCINTENA
74LSØ8 E29
S3 MC INT

E24 74LS74

S1 RREGØ
S2 RESET/L

+V
S3 MC CHANGE
S1 SYNC H
S2 RESET/L

74LS390 E4

IN(1A) 1QA
IN(1B) 1QB
1QC
1QD (1.9660 MHZ)
IN(2A) 2QA
IN(2B) 2QB
2QC
2QD
CLR IN1 CLR IN2

S3 SR CLK (9.8304 MHZ)
(.983MHZ)
(98.3KHZ)
(9.83KHZ)

74LS390 E1Ø

S3 PUMP CLK (491.52 KHZ)
IN EXCEPT FOR GR TEST
S3 LOCAL CLK (49.152KHZ)
W21
W18
S3 NULL MODEM CLK
W19
W2Ø
S3 DIAG. CLK (1.9661 KHZ)

+5V R41 1K
74LS04 E44

S2 RESET/ H

+12V C3 8µf C16 .047µf

+V
74LSØØ E2Ø
MH0026 EG
CG .47µf
D2 DGG4
(-9V TO -15V)
-VCC

D3 DGG4
C5 .47µf
C17 .Ø47µf

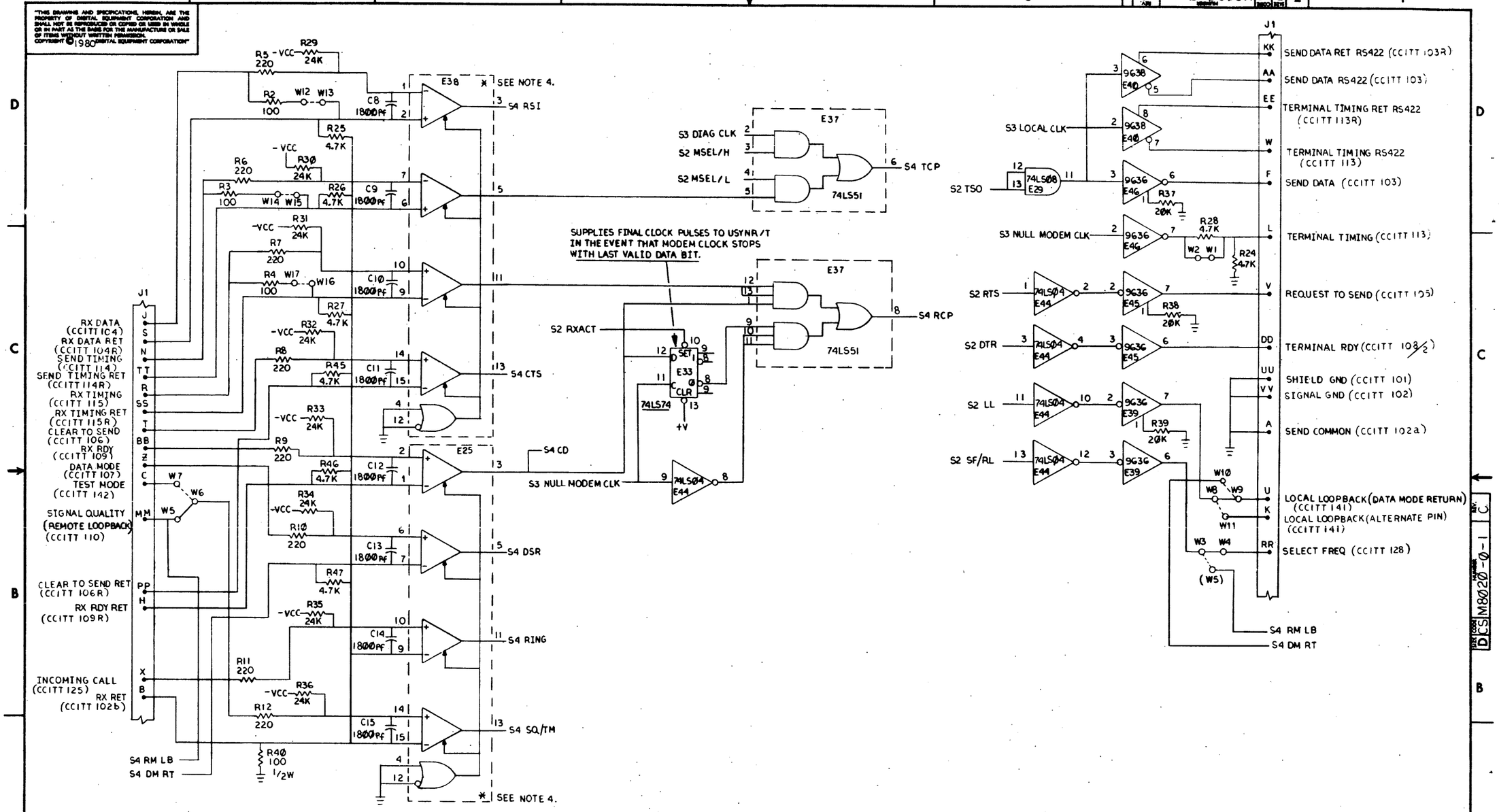
S3 PUMP CLK
74LS32 E23
MH0026 EG
C7 .47µf
D1 DGG4
D4 1N749A

(AC2)
GND

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMBER	REV.
DPV11, LOGIC DIAGRAM (S3)		D	CS	M8020-Ø-1	C
SCALE NONE	SHEET 3 OF 4	DIST.	MK		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION"



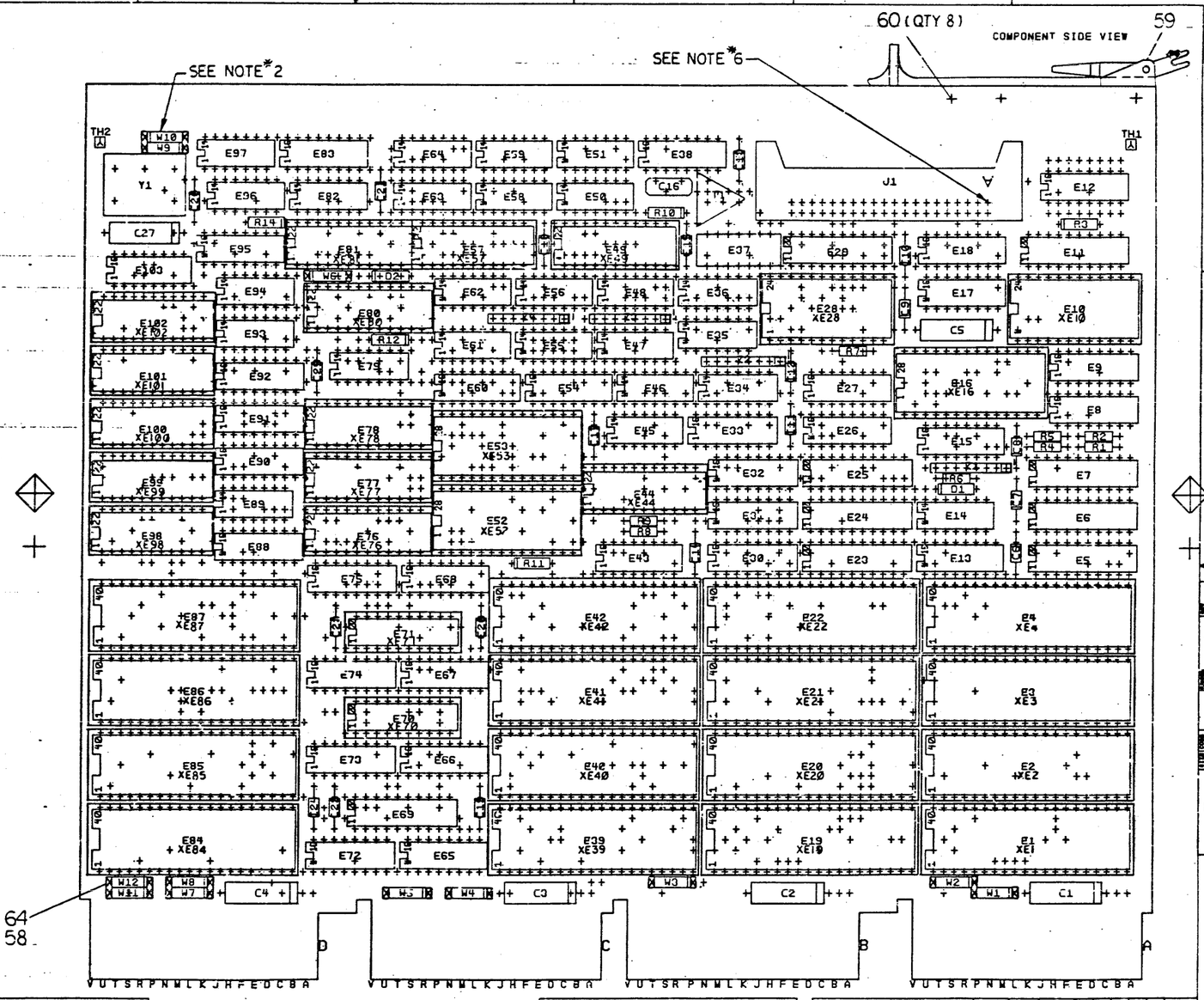
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
DPV11, LOGIC DIAGRAM (S4)	D	CS	M8020-0-1	C
SCALE NONE	SHEET 4 OF 4	DIST.		

THIS DRAWING AND SPECIFICATIONS, NORMAL HAS THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THEY SHALL FROM THE CORPORATION NOR BUILT OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION

NOTES CONT

6. PIN "A OR 1" ON J1 IS CUT OUT TO KEY THE CONNECTOR.



NOTES:
1. ITEM*58 COMES IN PAIRS & MIGHT HAVE TO BE CUT TO GO ON EITHER SIDE OF "W" JUMPERS.
2. W10 IS A SPARE JUMPER, BUT IS INSERTED.
3. SPARE LOCATIONS ARE: E12
4. USE ITEM*64 ON W1, W2, W4, W5, W6, W9, W10.
5. W3, W7, W8, W11, W12 ARE USED FOR UBUS OPERATION & MODULE IS NOT BUILT WITH THEM.

STEP ↕	↑ Y AXIS 0	STEP 0 TIMES
REPEAT	→ X AXIS 0	STEP 0 TIMES

CHG NO	CHANGE	REV

ETCH REV. C
P.C. DESIGN DATA REV A

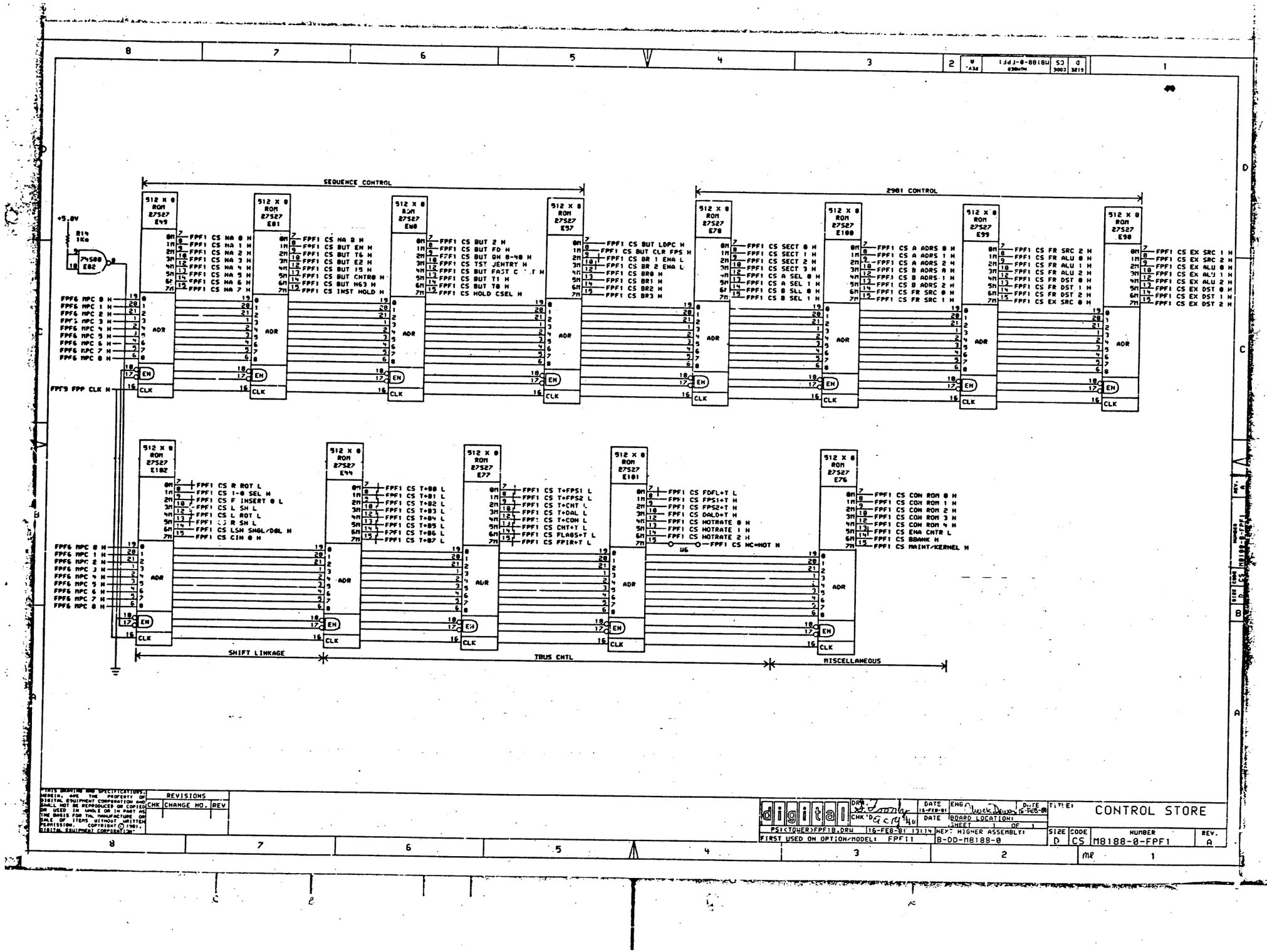
SIGNATURES	DATE
DRN. E Wilson	11/5/80
CHK'D. [illegible]	11-6-80
MECH. ENG. [illegible]	11/25/80
PROJ. ENG. [illegible]	12/1/80
PROD. [illegible]	12/4/80

digital

TITLE: FPF-11

SCALE 2/1 | SIZE D | CODE UA | NUMBER M8166-0-0 | REV A
ISHT. 1 OF 1
NEXT HIGHER ASSY. B-DD-M8166-0

MR 1 WO# 19642



THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION.

REVISIONS		
CHK	CHANGE NO.	REV

digital

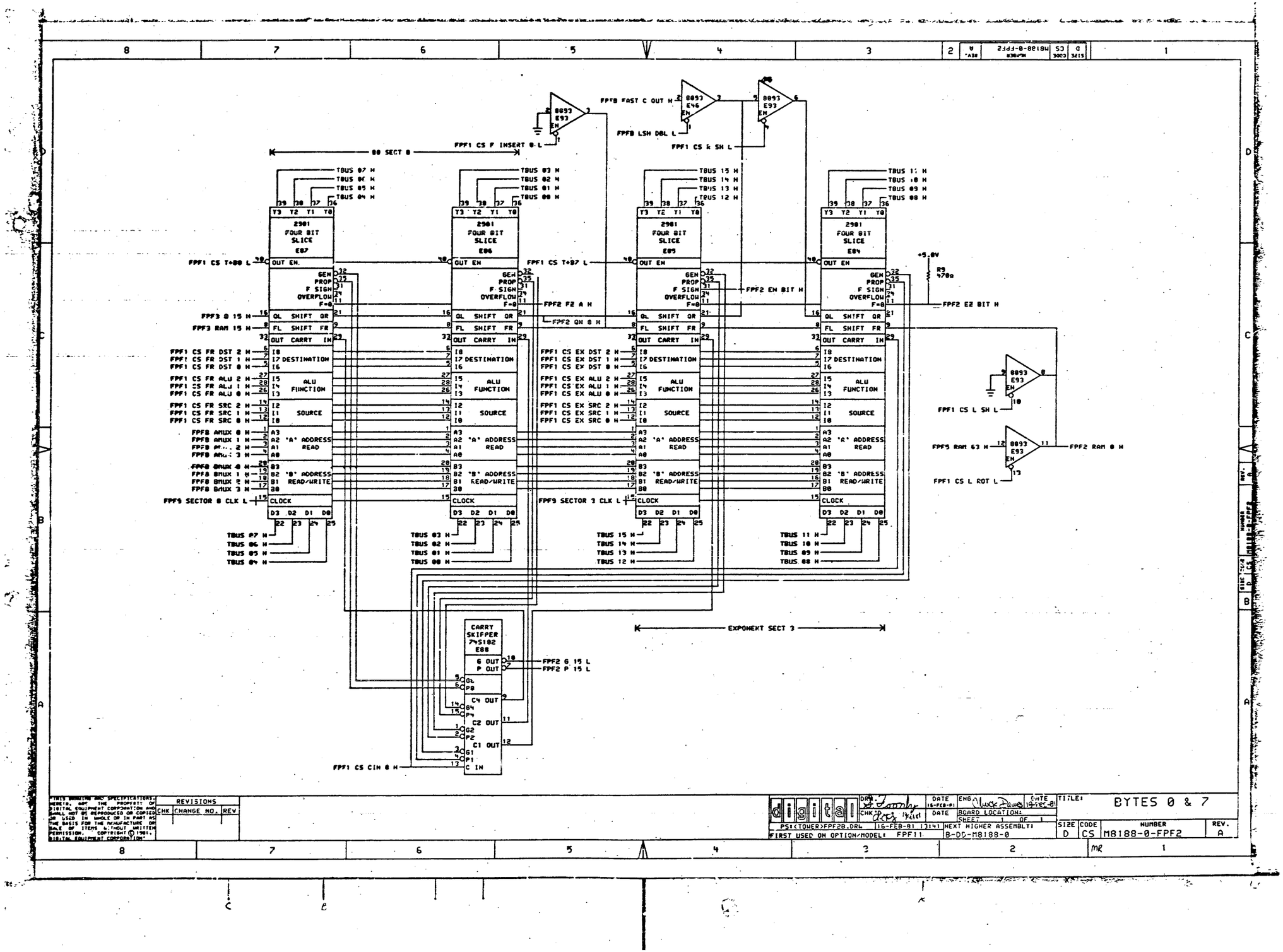
DRN [illegible] DATE 16-FEB-81
CHK [illegible] DATE
ENG [illegible] DATE 15-FEB-81
BOARD LOCATION:
SHEET 1 OF 1

PS:<TOWER>FPF1B.DRW 16-FEB-81 13:14
NEXT HIGHER ASSEMBLY:
FIRST USED ON OPTION/MODEL: FPF11 B-DD-M8188-0

TITLE: CONTROL STORE

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF1	A

MR 1



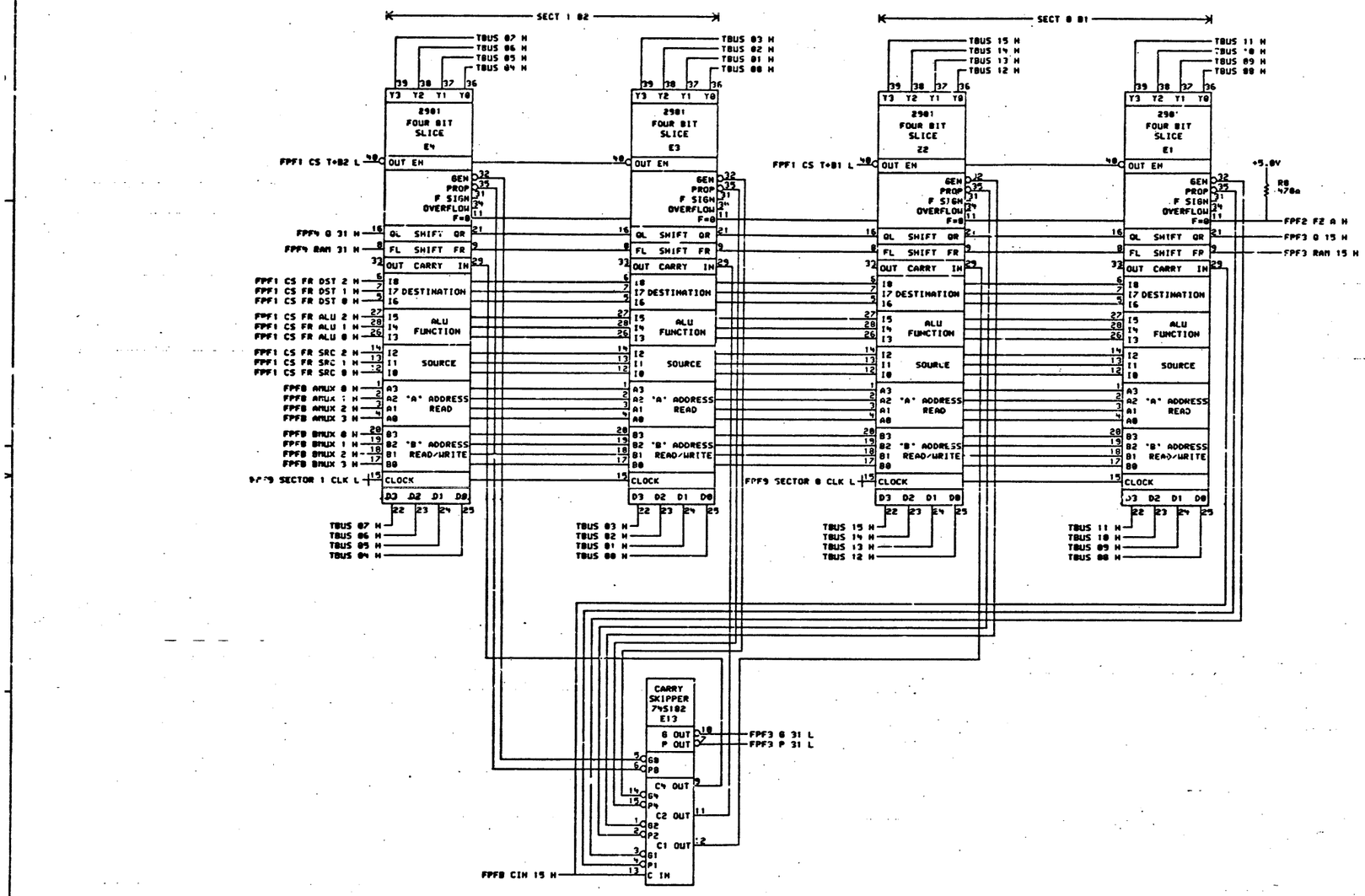
REVISIONS		
CHK	CHANGE NO.	REV

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION"

DRN	T.Looney	DATE	16-FEB-81
CHK		DATE	
ENG		DATE	
BOARD LOCATION:			
SHEET 1 OF 1			
PS:<TOWER>FPF2B.DRL 16-FEB-81 13:41	NEXT HIGHER ASSEMBLY:		
FIRST USED ON OPTION/MODEL: FPF11	B-DD-M8188-0		

TITLE: BYTES 0 & 7

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF2	A



THIS DRAWING AND SPECIFICATIONS, NOW(N, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION.

REVISIONS		
CHK	CHANGE NO.	REV

digital

DRN: J. Conley | DATE: 16-FEB-81 | ENGR: Chuck Davies | DATE: 18-FEB-81

CHK'D: D. Cody | DATE:

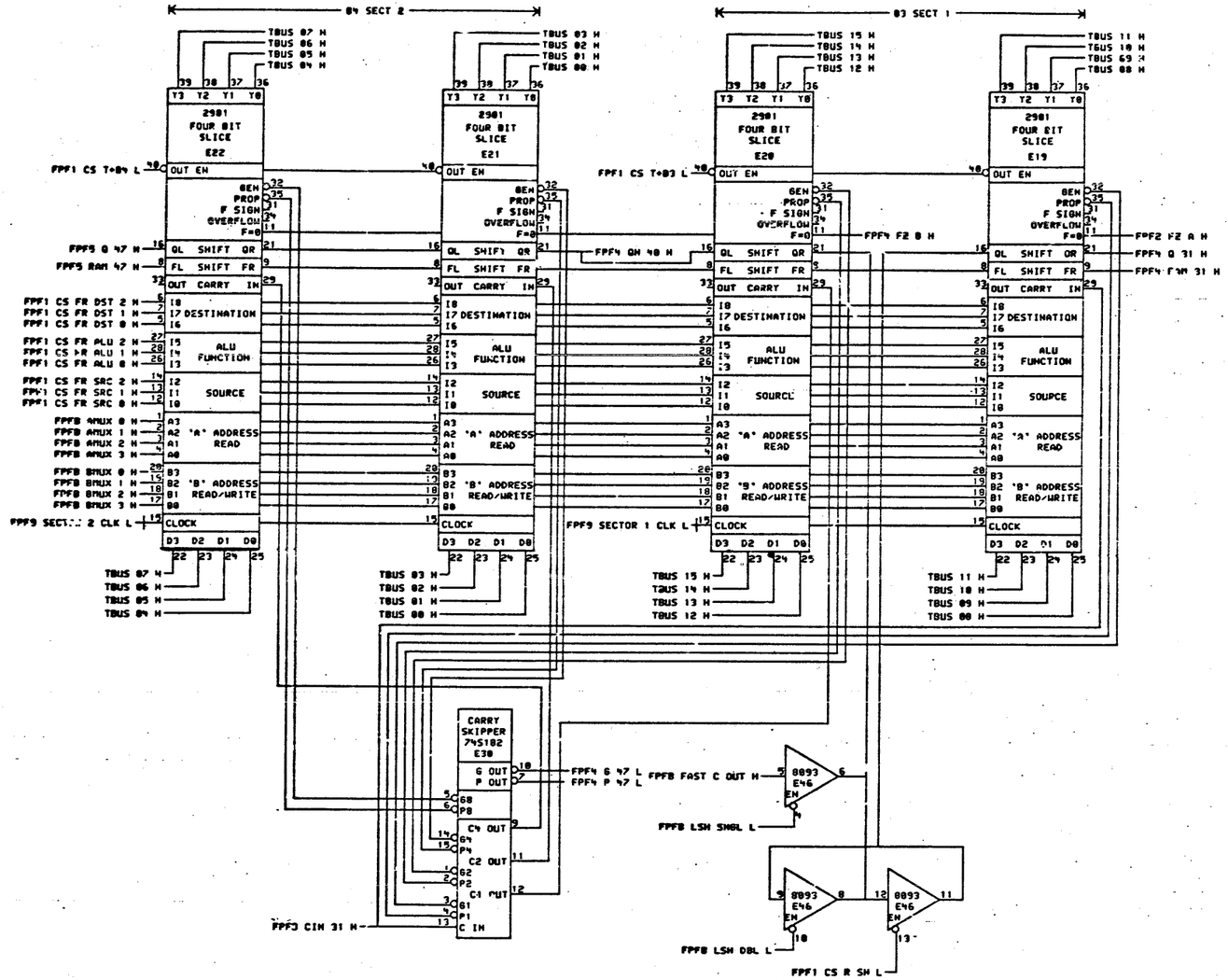
BOARD LOCATIONS | SHEET 1 OF 1

PS:<TOWER>FPF3B.DRW | 16-FEB-81 13:43 | NEXT HIGHER ASSEMBLY: B-DD-M8188-0

FIRST USED ON: OPTION/MODEL: FPF11

TITLE: BYTES 2 & 1

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF3	A



THIS DRAWING AND SPECIFICATIONS, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION

REVISIONS		
CHK	CHANGE NO.	REV

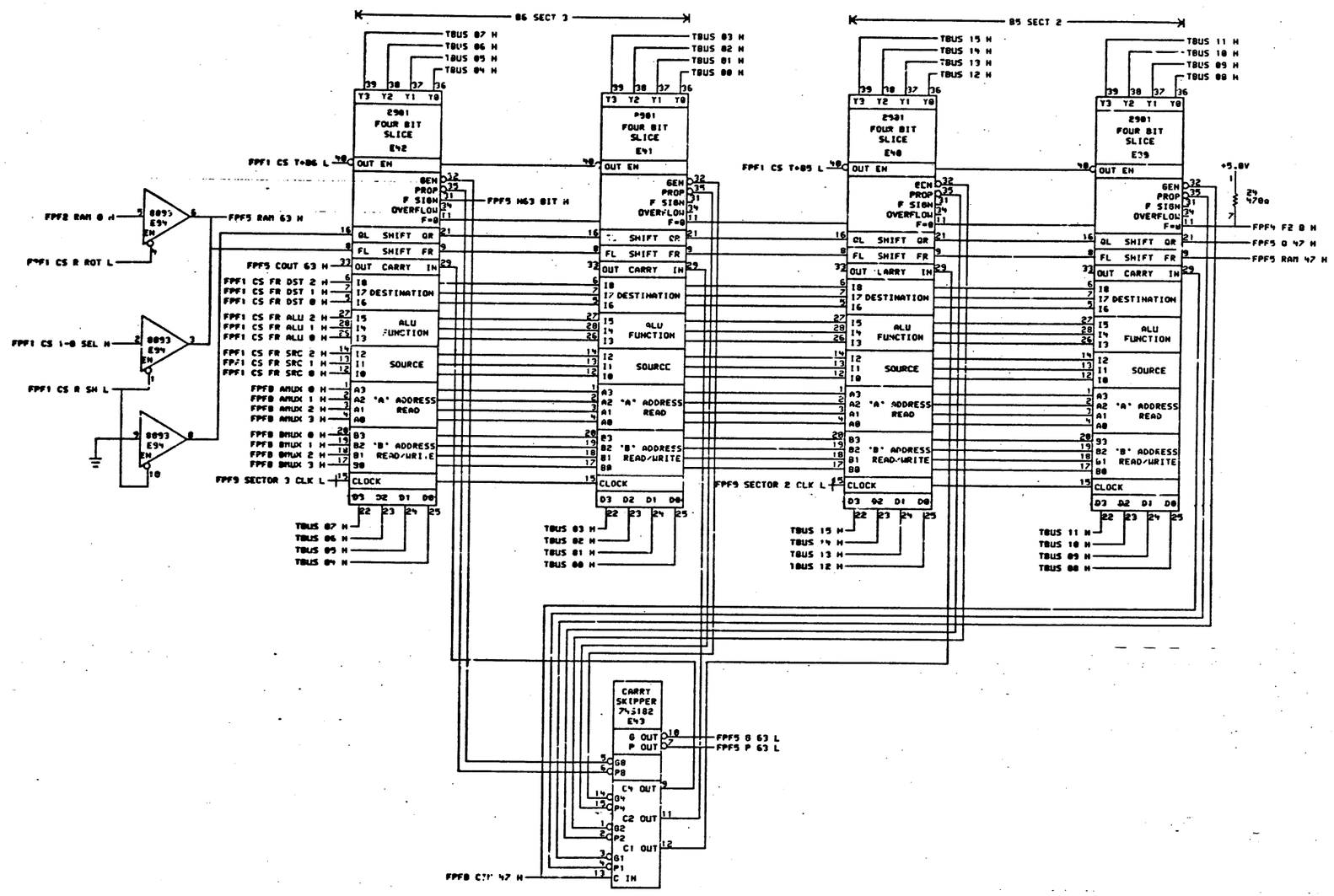
DRN	DATE	ENG	DATE
	16-FEB-81		19-FEB-81
CHK	DATE	BOARD LOCATION:	
		SHEET 1 OF 1	

PS:<TOWER>FPF4D.DRW 16-FEB-81 13:45 NEXT HIGHER ASSEMBLY:
FIRST USED ON OPTION/MODEL: FPF11 8-DD-M8188-0

TITLE: BYTES 4 & 3

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF4	A

MR



REVISIONS		
CHK	CHANGE NO.	REV

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION"

DRN: Loosley	DATE: 16-FEB-81	ENG: Chuck Davies	DATE: 19-FEB-81
CHK'D: A.B. Lucy	DATE	BOARD LOCATION: SHEET 1 OF 1	
PS:<TOWER>FPF5B.DRW	16-FEB-81 17:46	NEXT HIGHER ASSEMBLY: 8-DD-M8188-0	
FIRST USED ON OPTION/MODEL: FPF11			

TITLE: BYTES 6 &5

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF5	A

TBUS	RELEVANT BUT
T0	Y0
T1	Y9
T5	Y61
T6	Y62

MPC LOGIC

IR DECODE PLA — ARRAY PROGRM 825101 E53

BRANCH PLA — ARRAY PROGRM 825101 E52

FPF1 CS BR0 H
FPF1 CS BR1 H
FPF1 CS BR2 H
FPFA FPS FNM H
FPFA FPIR 00 H
FPFA FPIR 01 H
FPFA FPIR 02 H
FPFA FPIR 03 H
FPFA FPIR 04 H
FPFA FPIR 05 H
FPFA FPIR 06 H
FPFA FPIR 07 H
FPFA FPIR 08 H
FPFA FPIR 09 H
FPFA FPIR 10 H
FPFA FPIR 11 H

FPF1 CS BR3 H
FPFA FL (1) H
FPFA FPS FID H
FPFC FPS IUV H
FPFA FPS IU H
FPFA FPS IV H
FPFA FPS IC H
FPFA FPS PT H
FPFA GR 7 L
FPFA STAT 2 H
FPFA STAT 1 H
FPFA STAT 0 H
FPFA FD (1) H

FPF1 CS BR 1 ENA L — R11 180Ω — FPF1 CS BR 2 ENA L

FPF6 NAB 0 L
FPF6 NAB 1 L
FPF6 NAB 2 L
FPF6 NAB 3 L
FPF6 NAB 4 L
FPF6 NAB 5 L
FPF6 NAB 6 L
FPF6 NAB 7 L

FPFA CNTR BORROW L

FPF1 CS MAINT/KERNEL H
FPFA STAT 3 H
FPF2 E2 BIT H
FPF1 CS BUT E2 H
TBUS 05 H
FPF1 CS BUT T5 H
TBUS 06 H
FPF1 CS BUT T6 H
FPF5 M63 BIT H
FPF1 CS BUT M63 H
FPF1 CS BUT CNTR0 H
TBUS 01 H
FPF1 CS BUT T1 H
FPFB FAST C OUT H
FPF1 CS BUT FAST C OUT H
FPFB QN 0-48 H
FPF1 CS BUT QN 0-48 H
TBUS 00 H
FPF1 CS BUT T0 H
FPF7 LDPC ON IFETCH H
FPF1 CS BUT LDPC H
FPFA FD (1) H
FPF1 CS BUT FD H
FPF2 EN BIT H
FPF1 CS BUT EN H
FPFB Z BIT H
FPF1 CS BUT Z H
FPF7 CLR FPS H
FPF1 CS BUT CLR FPS H

FPF1 CS MA 8 H
FPF1 CS MA 7 H
FPF1 CS MA 6 H
FPF1 CS MA 5 H
FPF1 CS MA 4 H
FPF1 CS MA 3 H
FPF1 CS MA 2 H
FPF1 CS MA 1 H
FPF1 CS MA 0 H

FPF6 MAB 7 L
FPF6 MAB 6 L
FPF6 MAB 5 L
FPF6 MAB 4 L

FPF9 JAM MPC ZERO H

FPF6 MPC 8 H
FPF6 MPC 7 H
FPF6 MPC 6 H
FPF6 MPC 5 H
FPF6 MPC 4 H
FPF6 MPC 3 H
FPF6 MPC 2 H
FPF6 MPC 1 H
FPF6 MPC 0 H

"THIS DRAWING AND SPECIFICATIONS, NOTICE, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION."

REVISIONS		
CHK	CHANGE NO.	REV

digital

DRN: J. Loomby — DATE: 16-FEB-81 — ENG: [illegible] — DATE: 16-FEB-81
CHK'D: [illegible] — DAT: — BOARD LOCATION: — SHEET 1 OF 1
PS:<TOWER>FPF68.DRW — 16-FEB-81 13:48 — NEXT HIGHER ASSEMBLY: B-DD-M8188-0
FIRST USED ON OPTION/MODEL: FP11

TITLE: NADRS SEQUENCER

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF6	A

MIB ENCODER L

512 X 8 ROM 825115 E28

FPF1 CS INST HOLD H
FPF9 T FON2 CLK H
74S02 E58
FPF7 HOLD L

FPF6 MPC 0 H
FPF6 MPC 1 H
FPF6 MPC 2 H
FPF6 MPC 3 H
FPF6 MPC 4 H
FPF6 MPC 5 H
FPF6 MPC 6 H
FPF6 MPC 7 H
FPF6 MPC 8 H
P.U.
ADR
EN
LATCH

512 X 8 ROM 825115 E18
ADR
EN
LATCH
MIB ENCODER H
R3 180Ω

DUAL QUAD BUFFER 74LS244 E29
MIB 00 H
MIB 01 H
MIB 02 H
MIB 03 H
MIB 04 H
MIB 05 H
MIB 06 H
MIB 07 H

DUAL QUAD BUFFER 74LS244 E11
MIB 08 H
MIB 09 H
MIB 10 H
MIB 11 H
MIB 12 H
MIB 13 H
MIB 14 H
MIB 15 H
FPF9 MIB T/S ENA L

MIB RCVR
ANALOG SWITCH SD5008 E26
ANALOG SWITCH SD5000 E17
ANALOG SWITCH SD5000 E10
ANALOG SWITCH SD5000 E8
SOURCE

FPF7 RMIB 00 L
FPF7 RMIB 01 L
FPF7 RMIB 02 L
FPF7 RMIB 03 L
FPF7 RMIB 04 L
FPF7 RMIB 05 L
FPF7 RMIB 06 L
FPF7 RMIB 07 L
FPF7 RMIB 08 L
FPF7 RMIB 09 L
FPF7 RMIB 10 L
FPF7 RMIB 11 L
FPF7 RMIB 12 L
FPF7 RMIB 13 L
FPF7 RMIB 14 L
FPF7 RMIB 15 L

+12V
22 4.7Kø
21 4.7Kø
E34 NUMBER
E14 NUMBER
V2 BUS

6 D FF 74S174 E15
6 C FF 74S174 E9
6 D FF 74S174 E27
R0 R1 R2 R3 R4 R5
D0 D1 D2 D3 D4 D5
SET CLK
P.U.
FPF9 T FON2 CLK H

MIB DECODER
ARRAY PROGRM 825109 E16
FPF7 LDPC ON IFETCH H
FPF7 CLR FPS H
FPF7 JENTRY FPP H
D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15
EN FUSE CHIP
R7 180Ω

+12V
C5 15uF 20V
+5.0V
R6 33Ø
V2 BUS
D1 7190 4.3V 1/4W

W4 BUS JUMPERS
W3 W8 W12 W11 W7
MPC H CB1
BG7 H DL2
BG5 H DR2
BG4 H DT2
BG6 H DH2

B BUS JUMPERS
W1 W2 W4 W5
IAK 1 AN2
DMR 1 AS2
IAK 2 CN2
DMR 2 CS2

#NOTE: PIN "A" ON J1 IS CUT OUT TO KEY THE CONNECTOR.

J1

NC	A	B	NC
MIB 15 H	C	D	CHIP CLK H
MIB 14 H	E	F	DAL 00 H
MIB 13 H	H	J	DAL 01 H
MIB 12 H	K	L	DAL 02 H
MIB 11 H	M	N	DAL 03 H
MIB 10 H	P	R	DAL 04 H
MIB 09 H	S	T	DAL 05 H
MIB 08 H	U	V	DAL 06 H
MIB 07 H	W	X	DAL 07 H
MIB 06 H	Y	Z	DAL 08 H
MIB 05 H	AA	BB	DAL 09 H
MIB 04 H	CC	DD	DAL 10 H
MIB 03 H	EE	FF	DAL 11 H
MIB 02 H	HH	JJ	DAL 12 H
MIB 01 H	KK	LL	DAL 13 H
MIB 00 H	MM	NN	DAL 14 H
RESET H	PP	RR	DAL 15 H
CSEL L	SS	TT	FON2 CLK L
+12V	UU	VV	FON2 GND

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION

REVISIONS		
CHK	CHANGE NO.	REV
		C

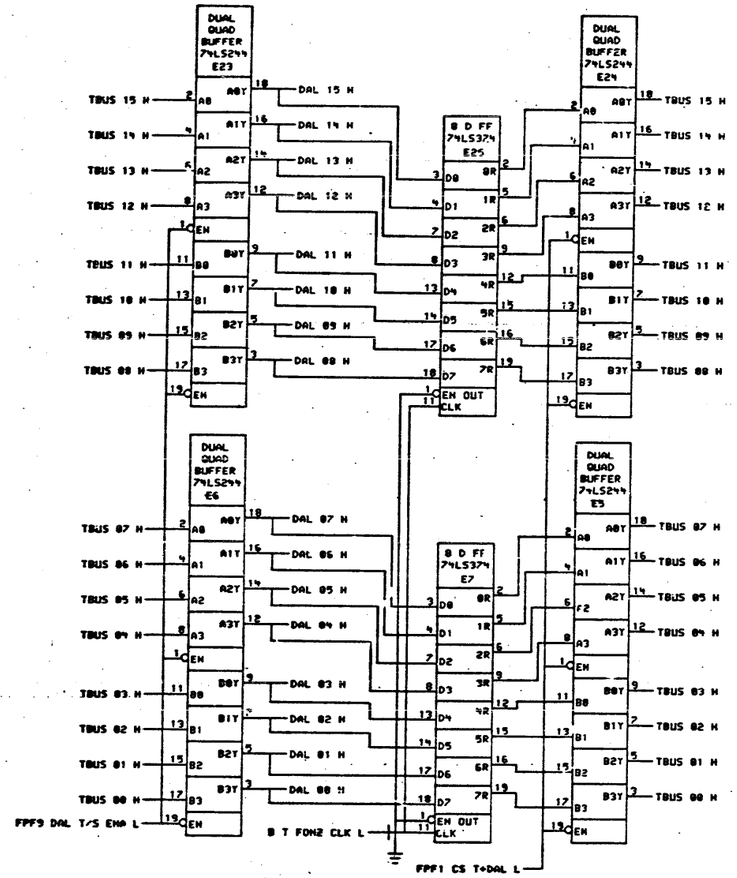
digital

DRN		DATE 26-AUG-81	ENG. T. BOWEN
CHK'D	D. DELLORCO	DATE 26AUG81	BOARD LOCATION:
PS:<BOWEN>FPF78.DRW		26-AUG-81 08:48	NEXT HIGHER ASSEMBLY: B-DD-M8188-0
FIRST USED ON OPTION/MODEL: FP11			

TITLE: MIB INTERFACE

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF7	C

SHEET 1 OF 1



THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION

REVISIONS		
CHK	CHANGE NO.	REV

digital

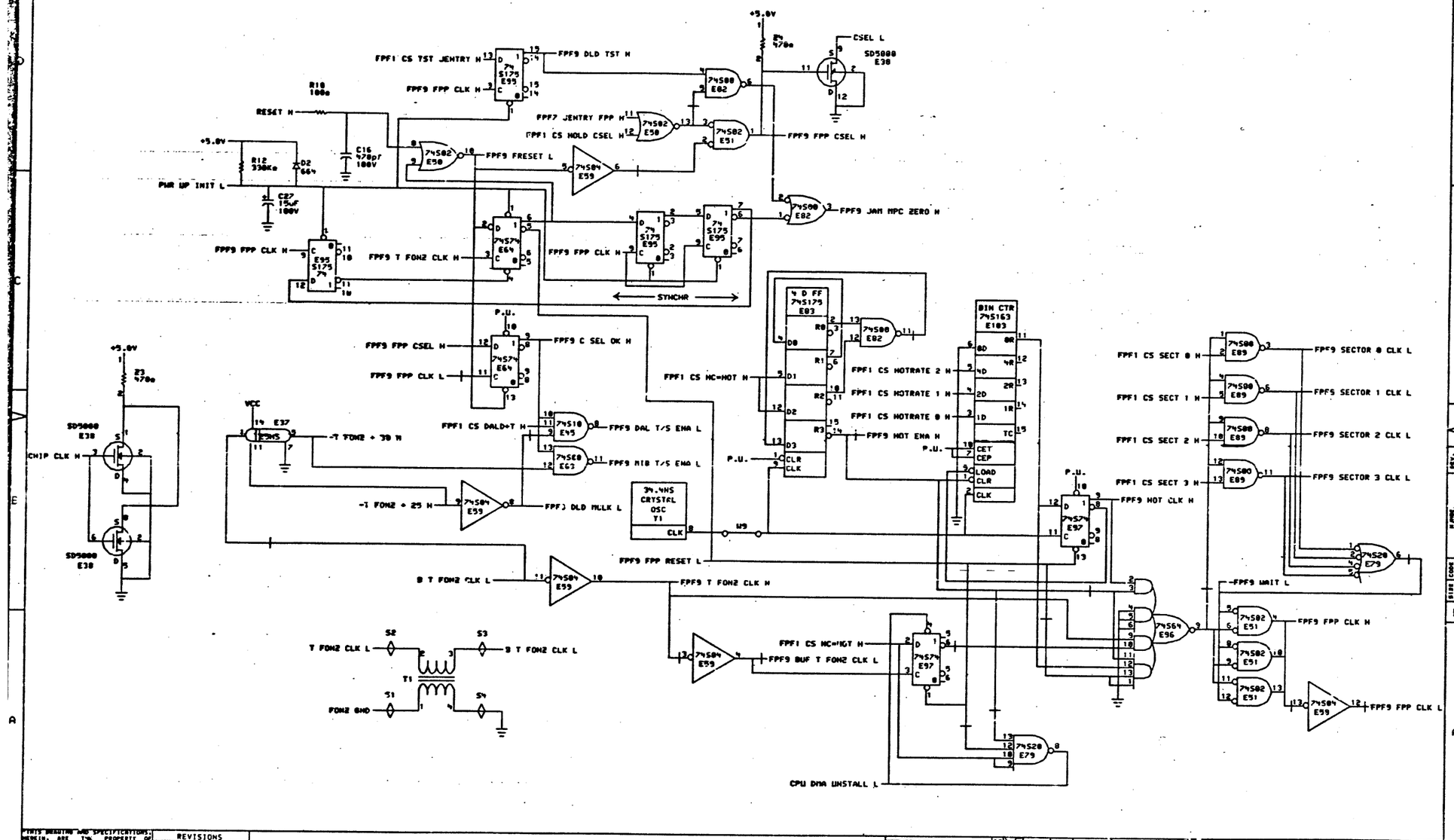
DRN: [illegible] DATE: 16-FEB-81 | SNGR: [illegible] DATE: 18-FEB 81 | CHK'D: [illegible] DATE: | BOARD LOCATION: SHEET 1 OF 1

PS<TOWER>FPF88.DRW 16-FEB-81 13:52 | NEXT HIGHER ASSEMBLY: B-DD-M8188-0 | FIRST USED ON OPTION-MODEL: FPF11

TITLE: DAL INTERFACE

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF8	A

MR



REVISIONS		
CHK	CHANGE NO.	REV

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION

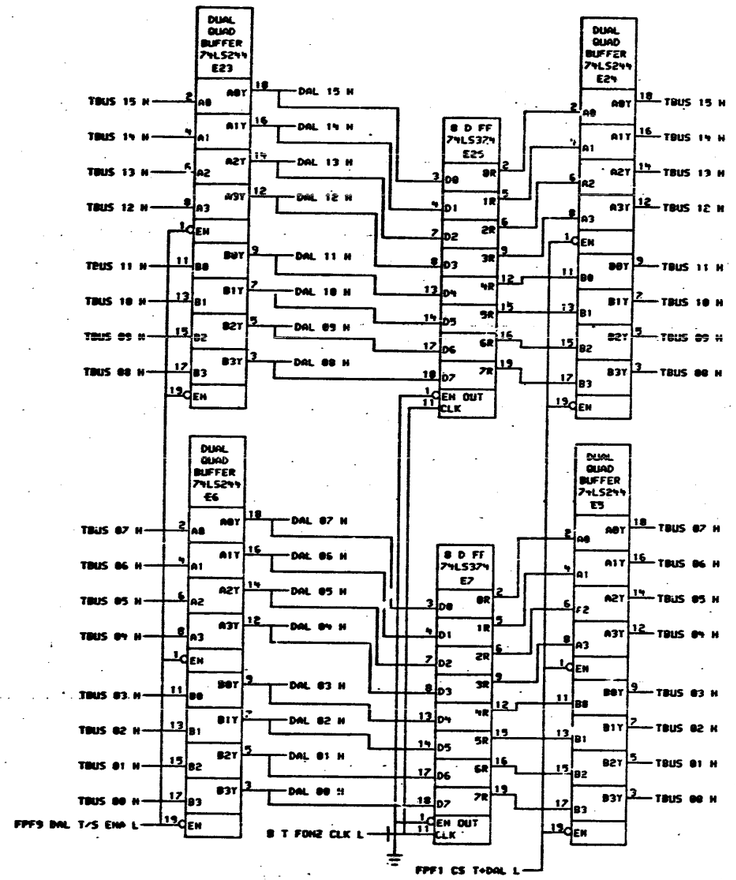
digital

DRN		DATE	
CHK'D		DATE	
ENG.		DATE	16-FEB-81
BOARD LOCATION:			
SHEET 1 OF 1			
NEXT HIGHER ASSEMBLY:			
FIRST USED ON OPTION/MODEL: FPF11		B-DD-M8188-0	

TITLE: RESTE,CSEL,MIB & DAL ENA LOGIC

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF9	A

PS:<TOWER>FPF9B.DRW 16-FEB-81 13:54



THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION.

REVISIONS		
CHK	CHANGE NO.	REV

digital

DRN: [illegible] DATE 16-FEB-81
CHK: Greg Mahi DATE
ENG: Chuck Sanders DATE 18-FEB-81
BOARD LOCATION:
SHEET 1 OF 1
PS:<TOWER>FPF8B.DRW 16-FEB-81 13:52
NEXT HIGHER ASSEMBLY: B-DD-M8188-0
FIRST USED ON OPTION/MODEL: FPF11

TITLE: DAL INTERFACE

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF8	A

MR

FPF1 CS TST JENTRY H
FPF9 DLD TST N
FPF9 FPP CLK H
R18 100Ω
RESET H
FPF7 JENTRY FPP H
FPF1 CS HOLD CSEL H
+5.0V
R12 330Ko
D2 6647
C16 470pF 100V
FPF9 FRESET L
PWR UP INIT L
C27 15uF 100V
+5.0V
R3 470Ω
CSEL L
SD5000 E38
FPF9 FPP CSEL H
FPF9 JAM MPC ZERO H
FPF9 FPP CLK H
FPF9 T FOH2 CLK H
FPF9 FPP CLK H
SYNCHR
P.U.
FPF9 FPP CSEL H
FPF9 FPP CLK L
FPF9 C SEL OK H
FPF1 CS HC=HOT H
4 D FF 74S175 E83
FPF1 CS HOTRATE 2 H
FPF1 CS HOTRATE 1 H
FPF1 CS HOTRATE 0 H
FPF9 HOT ENA H
BIN CTR 74S163 E103
+5.0V
Z3 470Ω
SD5000 E38
CHIP CLK H
VCC
E37
-T FOH2 + 30 N
FPF1 CS DALD+T H
FPF9 DAL T/S ENA L
FPF9 MIB T/S ENA L
-T FOH2 + 25 H
FPF9 DLD MLLK L
39.4MS CRYSTAL OSC Y1
FPF9 FPP RESET L
B T FOH2 CLK L
FPF9 T FOH2 CLK H
T FOH2 CLK L
B T FOH2 CLK L
T1
FOH2 GND
FPF1 CS HC=HOT H
FPF9 BUF T FOH2 CLK L
CPU DMA UNSTALL L
P.U.
FPF9 HOT CLK H
FPF1 CS SECT 0 H
FPF1 CS SECT 1 H
FPF1 CS SECT 2 H
FPF1 CS SECT 3 H
FPF9 SECTOR 0 CLK L
FPF9 SECTOR 1 CLK L
FPF9 SECTOR 2 CLK L
FPF9 SECTOR 3 CLK L
-FPF9 WAIT L
FPF9 FPP CLK H
FPF9 FPP CLK L

THIS DRAWING AND SPECIFICATIONS, WHETHER, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION.

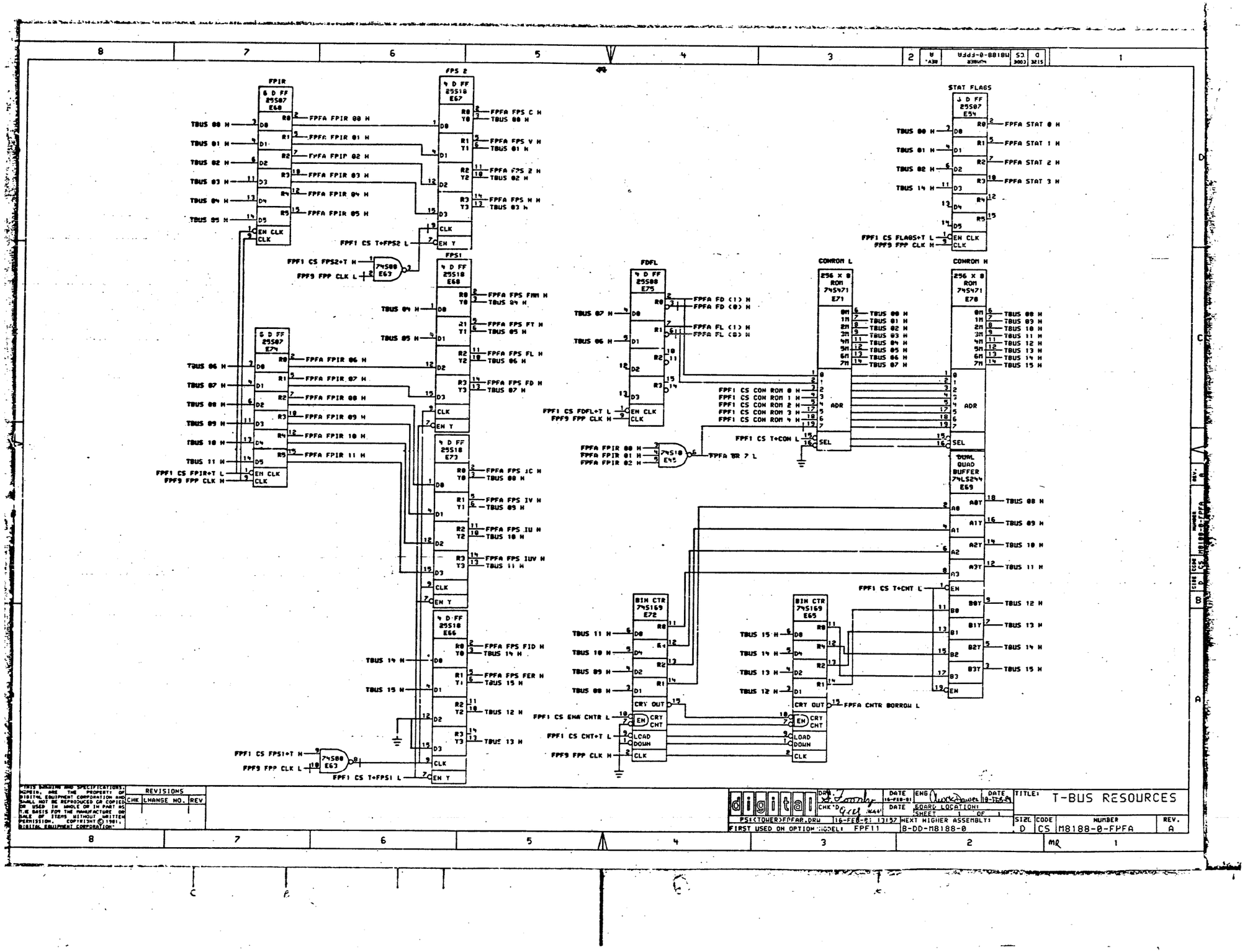
REVISIONS		
CHK	CHANGE NO.	REV

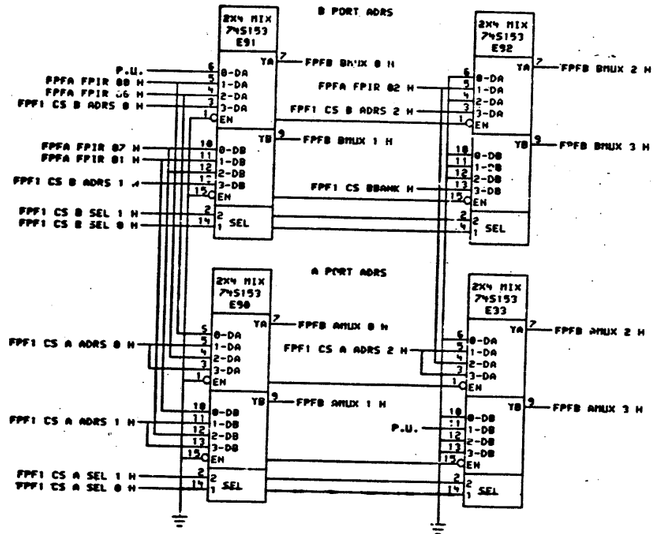
digital

DRN: Tworsky DATE 16-FEB-81
CHK'D: DCE DATE
ENG: DATE 18-FEB-81
BOARD LOCATION:
SHEET OF 1
PS:<TOWER>FPF98.DRW 16-FEB-81 13:54
NEXT HIGHER ASSEMBLY: B-DD-M8188-0
FIRST USED ON OPTION/MODEL: FPF11

TITLE: RESTE, CSEL, MIB & DAL ENA LOGIC

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPF9	A


FPIR
FPS 2
FPS1
FDFL
COMROM L
COMROM M
STAT FLAGS
FPF1 CS FPIR+T L
FPF9 FPP CLK H
FPF1 CS T+FPS2 L
FPF1 CS FPS2+T H
FPF9 FPP CLK L
FPF1 CS FPS1+T H
FPF1 CS T+FPS1 L
FPF1 CS FDFL+T L
FPF1 CS FLAGS+T L
FPF1 CS T+CON L
FPF1 CS T+CNT L
FPF1 CS ENA CNTR L
FPF1 CS CNT+T L
FPF1 CS CON ROM 0 H
FPF1 CS CON ROM 1 H
FPF1 CS CON ROM 2 H
FPF1 CS CON ROM 3 H
FPF1 CS CON ROM 4 H
FPFA FPIR 00 H
FPFA FPIR 01 H
FPFA FPIR 02 H
FPFA BR 7 L
FPFA CNTR BORROW L
DUAL QUAD BUFFER 74LS244 E69
BIN CTR 74S169 E72
BIN CTR 74S169 E65
TITLE: T-BUS RESOURCES
digital
M8188-0-FPFA



THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION

REVISIONS		
CHK	CHANGE NO.	REV

digital

DRN: [illegible] DATE 16-FEB-81
CHK'D [illegible] DATE 16-FEB-81
ENG [illegible] DATE 16-FEB-81
PS:<TOWER>FPFBB.DRW 16-FEB-81 15:13
FIRST USED ON OPTION/MODEL: FPF11
BOARD LOCATION: SHEET 1 OF 1
NEXT HIGHER ASSEMBLY: B-DD-M8188-0

TITLE: MISC. SLICE LOGIC

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPFB	A

MR

+5.0V\V\ GND TTL\8818\ +5.0V\V\ GND TTL\8818\

C1 15uF 15V
C2 15uF 15V
C3 15uF 15V
C4 15uF 15V
C5 .047uF 50V
C7 .047uF 50V
C8 .047uF 50V
C9 .047uF 50V
C10 .047uF 50V
C11 .047uF 50V
C12 .047uF 50V
C13 .047uF 50V
C14 .047uF 50V
C15 .047uF 50V
C26 .047uF 50V

C17 .047uF 50V
C18 .047uF 50V
C19 .047uF 50V
C20 .047uF 50V
C21 .047uF 50V
C22 .047uF 50V
C23 .047uF 50V
C24 .047uF 50V
C25 .047uF 50V

H10
SPARE

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION

REVISIONS		
CHK	CHANGE NO.	REV

digital

DRN: Toombs DATE 16-FEB-81
CHK'D: Jack Hall DATE
ENG: Chuck Davies DATE 16-FEB-81
BOARD LOCATION:
SHEET 1 OF 1

TITLE: CAP DRAW

PS:<TOWER>FPFCB.DRW 16-FEB-81 14:57
NEXT HIGHER ASSEMBLY: B-DD-M8188-0
FIRST USED ON OPTION: MODEL: FPF11

SIZE	CODE	NUMBER	REV.
D	CS	M8188-0-FPFC	A

NR

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART OR THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION

JUMPER SHIP CONFIGURATION

CONFIGURATION	WIRE WRAP JUMPERS FROM	TO
START ADDRESS 10,000	M26 M25 M27	M25 M24 M26
BREAK DETECTED ON SLU1	M14 M30	M13 M31
60HZ REAL TIME CLOCK	M19	M17
28(24)-PIN SOCKET	M22 M23 M39 M41 M40 M51 M36 M43 M34 M37 M42 M38 M58	M23 M24 M41 M40 M51 M57 M56 M34 M5 M42 M5 M47 M32
PARALLEL I/O	M66 M59 M63	M65 M60 M61
BATTERY BACKUP NOT SELECTED	M1 M1	M2 M4
TIME-OUT (HALT)	M7 M8	M6 M9

M65 M66 M63 M64 M61 M62 M59 M60

M31 M30 M29

M28 M27 M26 M25 M24 M21 M22 M23 M20 M19 M18 M17

M16

M15

M14 M12 M13

M11 M10 M9 M8 M7 M6 M5

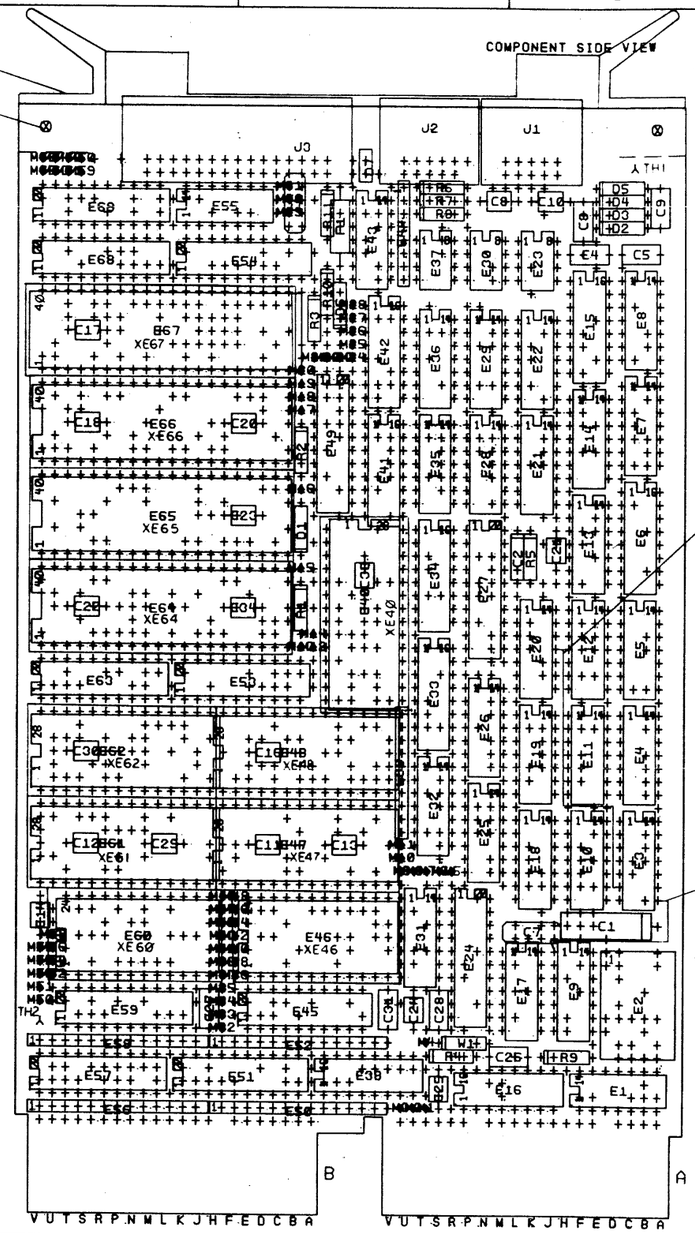
M49 M48 M47 M46 M45 M44 M43 M42 M41 M40 M39 M38 M37 M36 M35 M34 M33 M32

M58 M57 M56 M55 M54 M53 M52 M51 M50

M4

M3 M2 M1

COMPONENT SIDE VIEW



NOTES:

STEP E	↑ Y AXIS 0 STEP 0 TIMES
REPEAT	→ X AXIS 5.250 STEP 2 TIMES

CHK	CHANGE NO	REV
	M8063-MR1	B
	M8063-MR2	C
	M8063-MR3	D

ETCH REV. C

SIGNATURES	DATE
DRN.	5/13/81
CHK'D.	6/1/81
MECH. ENG.	6/1/81
PROJ. ENG.	6/1/81
PROD.	6/1/81

digital

TITLE: KXTII-AA

SIZE D | CODE UA | NUMBER M8063-D-0 | REV D

SHT. 1 OF 2

NEXT HIGHER ASSY. 5-20-M8063-0

MR 1 WO# 150454

REWORK INSTRUCTIONS

ECO #2

2-1 AND 2-2 FOR ETCH CUTS REFER
TO D-EC-5014484-0-0

WIRE ADDS, SIDE 1, AS SHOWN
2-3 E20-11 TO E3-6
2-4 E3-8 TO E9-1

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1982, DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV

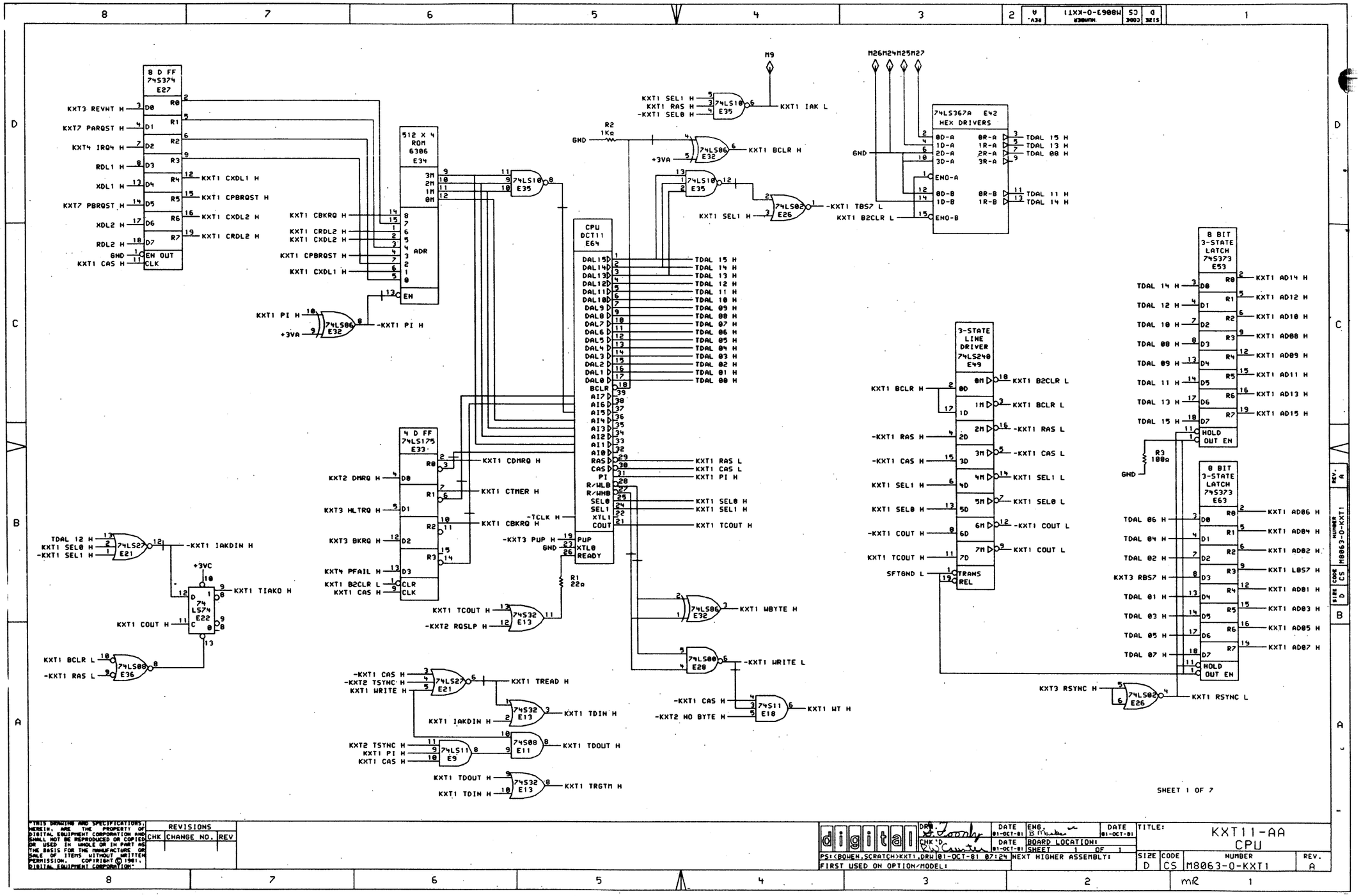
digital

DRN. D. Toomey DATE 16-FEB-82
CHK D. R.W. CAUNTER DATE 25NOV81
ENG. B. MASKAS DATE 25NOV81
BOARD LOCATION:
SHEET 2 OF 2
DSK:M80631.T2PL[4,27] 16-FEB-82 15:31
NEXT HIGHER ASSEMBLY:
FIRST USED ON OPTION/MODEL: KXT11-AA
B-DD-M8063-0

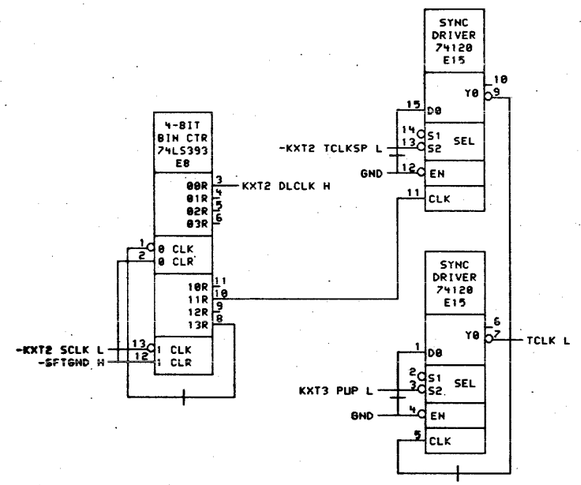
TITLE: KXT11-AA

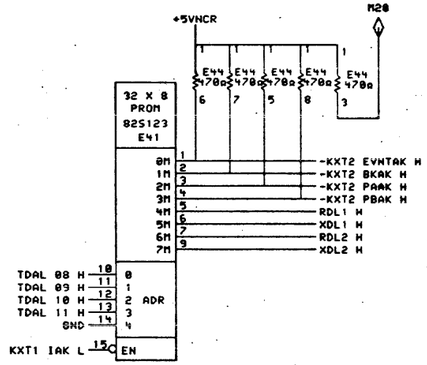
SIZE	CODE	NUMBER	REV.
D	UA	M8063-0-0	D

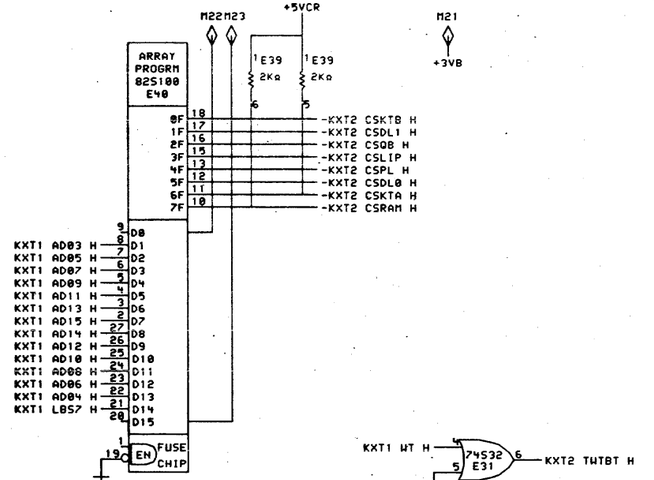
REV. D
SIZE D | CODE UA | NUMBER M8063-0-0

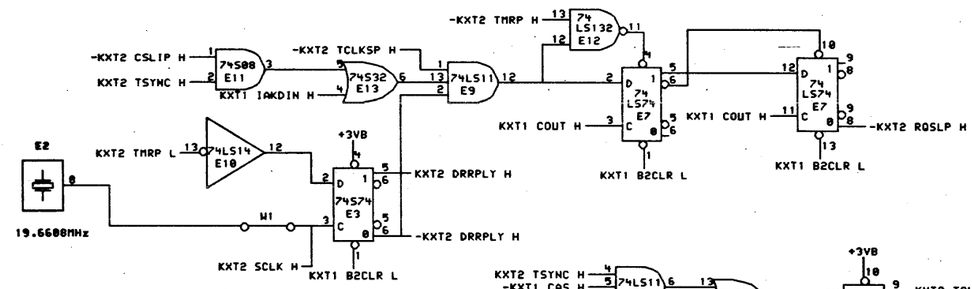


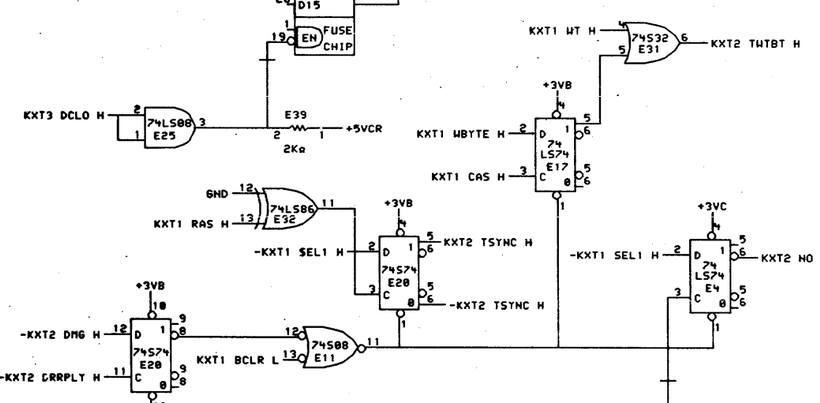
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION"

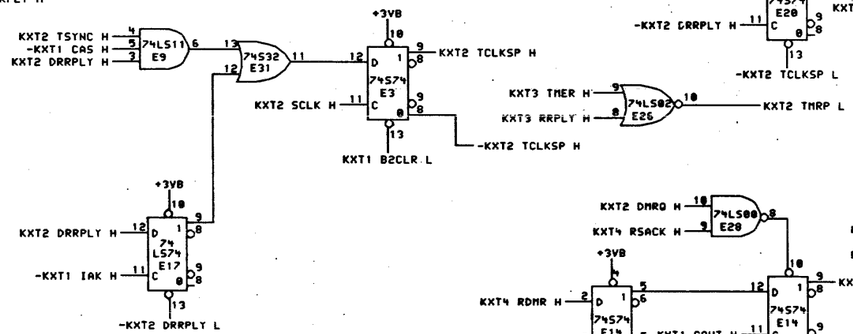


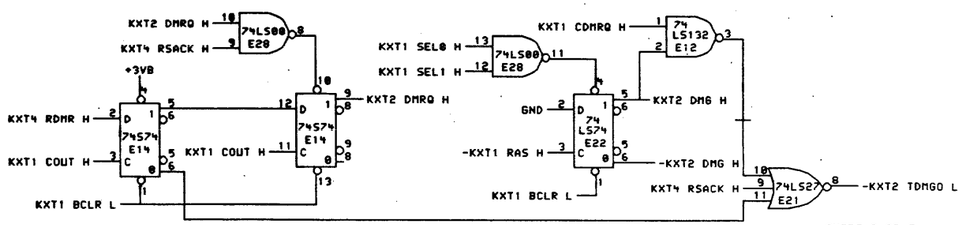












SHEET 2 OF 7

REVISIONS		
CHK	CHANGE NO.	REV
WC	M8063-MR2	B
	B. MASKAS	

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION"

digital

DRN: E. Toomey	DATE 04-DEC-81	ENG: B. MASKAS	DATE 04-DEC-81
CHK'D: R.W. CAUNTER	DATE 04-DEC-81	BOARD LOCATION:	
		SHEET 1 OF 1	

SUBCON:<ROMEH.SCRATCH>KXT2.RVB 02-DEC-81 15:04
NEXT HIGHER ASSEMBLY:
FIRST USED ON OPTION/MODEL: KXT11

TITLE: KXT11-AA CLOCK CONTROL

SIZE	CODE	NUMBER	REV.
D	CS	M8063-0-KXT2	B

MR 1

KXT2 DMRQ H
KXT2 TDMGO H
8881 E1
BDMGO L (AS2)

KXT1 TDOUT H
8881 E1
BDOUT L (AE2)

-KXT2 DMG H
KXT1 TDIN H
8881 E1
BDIN L (AH2)

KXT2 TWTBT H
8881 E1
BWTBT L (AK2)

M15 M16
D1 D664
+5VNCR
R4 100Kα
C1 33UF 10V
THALT H
TEVNT H
74LS14 E10
8641 E38
M30 M29
GND
74LS14 E10
KXT3 RRPLY L
BRPLY L (AF2)
KXT3 RRPLY H
BHALT L (AP1)
BEVNT L (BR1)
-BDCOK L (BA1)
KXT3 DCLO H
-KXT4 PFAIL L
74LS14 E10
KXT3 DCLO L
+3VC
74 LS74 E29
KXT3 REVNT H
KXT1 BCLR L
KXT2 EVNTAK L
74LS08 E36
NOTE: IF BPOK H IS ALWAYS ASSERTED THEN FF IS ALWAYS PRESET.
74 LS74 E5
74 LS132 E12
KXT3 PUP L

KXT1 TBS7 H
KXT1 BCLR H
KXT2 TSYNC H
KXT1 TIAKO H
8641 E16
BBS 7 L (AP2)
KXT3 RBS7 H
BINIT L (AT2)
BSYNC L (AJ2)
KXT3 RSYNC H
BIAKO L (AN2)

+5VNCR
R5 47Kα
C2 820Pf 50V
KXT1 TRGTM H
74 LS123 E6
KXT3 RRPLY L
74 LS123 E6
M7 M10 M11
GND +3VA
74 LS74 E5
KXT3 TMER H
-KXT1 RAS L
M6 M8 M5
+5VNCR
74 LS74 E4
KXT3 HLTRQ H
KXT1 BCLR L
74LS08 E25
KXT1 CTMER H
KXT1 TREAD H
KXT1 PI H
74LS10 E19
M31
74 LS74 E55
KXT3 BKRQ H
KXT2 BKAK L
KXT1 BCLR L
74LS08 E43

SHEET 3 OF 7

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION"

REVISIONS | CHK | CHANGE NO. | REV

digital

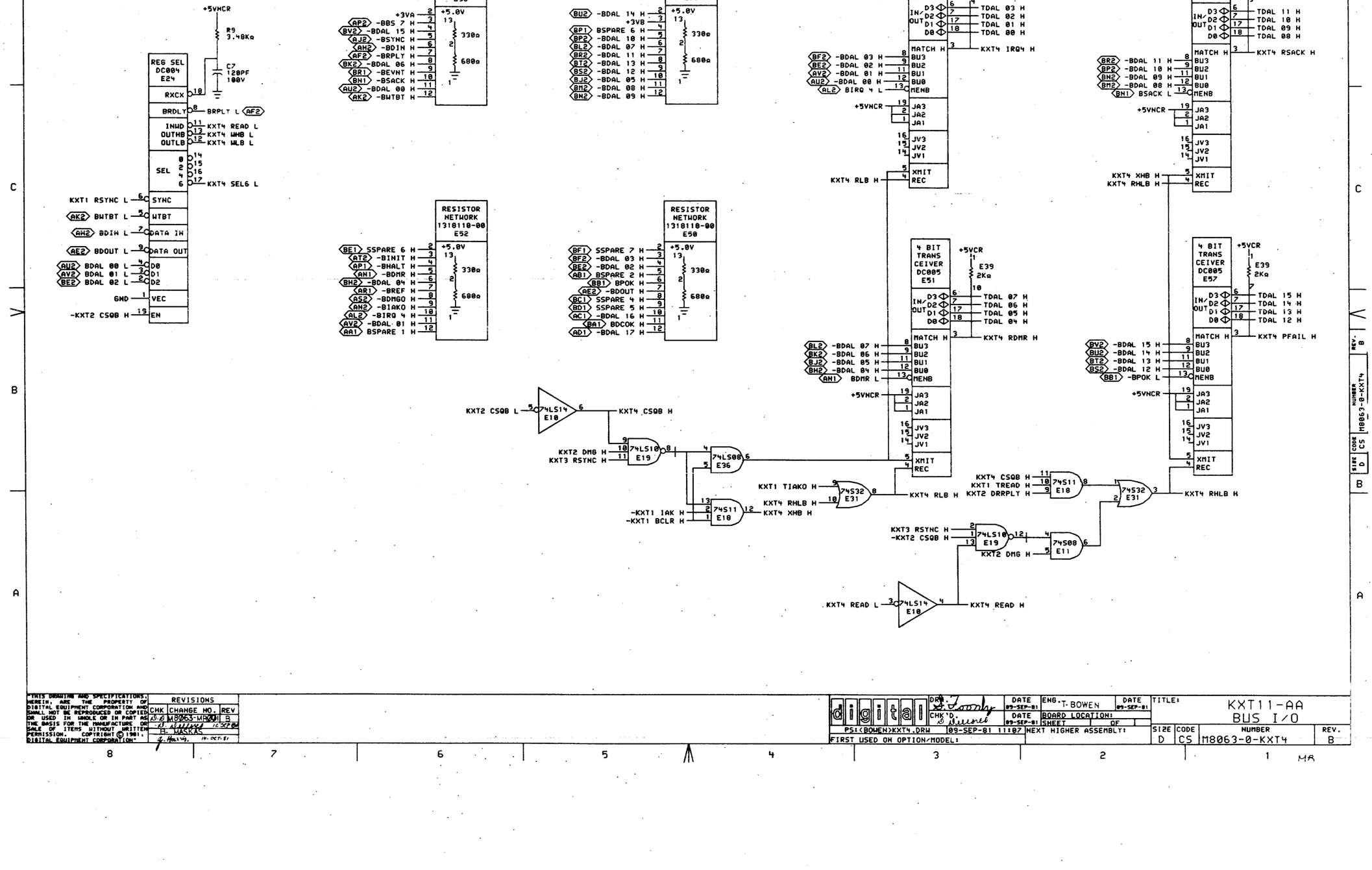
DRN. Z. Zaorsky 01-OCT-81 | ENG. B. Mauken 01-OCT-81
CHK. D. Counter 01-OCT-81 | BOARD LOCATION: | SHEET 1 OF 1

PS:<BOWEN.SCRATCH>KXT3.DRW 01-OCT-81 07:26 | NEXT HIGHER ASSEMBLY:
FIRST USED ON OPTION/MODEL:

TITLE: KXT11-AA BUS CONTROL

SIZE	CODE	NUMBER	REV.
D	CS	M8063-0-KXT3	A

mR 1



"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV
D.B	M8063-MR001	A
D. Bowen	16378	
T.H. MASKAS		
G. Hollis	14-OCT-81	

digital

DRN D. Bowen	DATE 09-SEP-81	ENG T. BOWEN	DATE 09-SEP-81	TITLE: KXT11-AA BUS I/O	
CHK D. Bowen	DATE 09-SEP-81	BOARD LOCATION:			
PS1<BOWEN>KXT4.DRW	09-SEP-81 11:07	NEXT HIGHER ASSEMBLY:		SHEET OF	
FIRST USED ON OPTION/MODEL:					

SIZE	CODE	NUMBER	REV.
D	CS	M8063-0-KXT4	B

MR

NOTE:
M4 IS WRAPPED TO M1 AND M2 NORMALLY,
IF BATTERY BACKUP IS DESIRED FOR E47
AND E61 THEN WRAP M4 TO M2 AND M3.

M44 M48 M4 M34 M52 M43 M41 M36 M58 M56

KXT2 CSKTA L

28 PIN SOCK E61

+5VNCR
KXT1 AD08 H
KXT1 AD07 H
KXT1 AD06 H
KXT1 AD05 H
KXT1 AD04 H
KXT1 AD03 H
KXT1 AD02 H
KXT1 AD01 H
TDAL 00 H
TDAL 09 H
TDAL 10 H
GND

KXT1 AD09 H
KXT1 AD10 H
TDAL 15 H
TDAL 14 H
TDAL 13 H
TDAL 12 H
TDAL 11 H

28 PIN SOCK E47

+5VNCR
KXT1 AD08 H
KXT1 AD07 H
KXT1 AD06 H
KXT1 AD05 H
KXT1 AD04 H
KXT1 AD03 H
KXT1 AD02 H
KXT1 AD01 H
TDAL 00 H
TDAL 01 H
TDAL 02 H
GND

KXT1 AD09 H
KXT1 AD10 H
TDAL 07 H
TDAL 06 H
TDAL 05 H
TDAL 04 H
TDAL 03 H

M32 KXT1 AD11 H

M47 M45 M35 M37 M42 M39 M40 M38

KXT2 CSKTB L

28 PIN SOCK E62

+5VNCR
KXT1 AD08 H
KXT1 AD07 H
KXT1 AD06 H
KXT1 AD05 H
KXT1 AD04 H
KXT1 AD03 H
KXT1 AD02 H
KXT1 AD01 H
TDAL 00 H
TDAL 09 H
TDAL 10 H
GND

KXT1 AD09 H
KXT1 AD10 H
TDAL 15 H
TDAL 14 H
TDAL 13 H
TDAL 12 H
TDAL 11 H

28 PIN SOCK E48

KXT1 AD08 H
KXT1 AD07 H
KXT1 AD06 H
KXT1 AD05 H
KXT1 AD04 H
KXT1 AD03 H
KXT1 AD02 H
KXT1 AD01 H
TDAL 00 H
TDAL 01 H
TDAL 02 H
GND

KXT1 AD09 H
KXT1 AD10 H
TDAL 07 H
TDAL 06 H
TDAL 05 H
TDAL 04 H
TDAL 03 H

+5VCR E39 2KΩ

M50 GND
M46 KXT1 AD13 H
M49 KXT1 AD12 H
+5VNCR E44 470Ω
M33

M51 M53 M55

+5VCR E39 2KΩ +3VC

2K X 8 STATIC RAM 2016P E60

KXT1 AD01 H
KXT1 AD02 H
KXT1 AD03 H
KXT1 AD04 H
KXT1 AD05 H
KXT1 AD06 H
KXT1 AD07 H
KXT1 AD08 H
KXT1 AD09 H
KXT1 AD10 H
KXT1 AD11 H

A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10

WREN
ENO
(C SEL)

M0 M1 M2 M3 M4 M5 M6 M7

TDAL 08 H
TDAL 09 H
TDAL 10 H
TDAL 11 H
TDAL 12 H
TDAL 13 H
TDAL 14 H
TDAL 15 H

-KXT4 READ H
-KXT4 WHB H
74LS08 E25
KXT2 CSRAM L

M54 M52

2K X 8 STATIC RAM 2016P E46

KXT1 AD01 H
KXT1 AD02 H
KXT1 AD03 H
KXT1 AD04 H
KXT1 AD05 H
KXT1 AD06 H
KXT1 AD07 H
KXT1 AD08 H
KXT1 AD09 H
KXT1 AD10 H
KXT1 AD11 H

A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10

WREN
ENO
(C SEL)

M0 M1 M2 M3 M4 M5 M6 M7

TDAL 00 H
TDAL 01 H
TDAL 02 H
TDAL 03 H
TDAL 04 H
TDAL 05 H
TDAL 06 H
TDAL 07 H

-KXT4 READ H
-KXT4 WLB H
74LS08 E25
KXT2 CSRAM L

NOTE:
THIS CAPACITOR NETWORK SHOWS THE DESIRED LOCATION OF DECOUPLING CAPACITORS SINCE EACH CAPACITOR HAS BEEN ASSIGNED A NUMBER WHICH COINCIDES WITH THE DIPS WHICH MOST NEED DECOUPLING.

M3 M1
AV1 +5VBB
+5.0V
AA2 BA2 BV1
+5VNCR
GND
-12V

C18 .047UF 50V
C21 .47UF 25V
C17 .047UF 50V
C25 .47UF 25V
C29 .047UF 50V
C22 .047UF 50V
C30 .047UF 50V
C16 .047UF 50V
C23 .047UF 50V
C24 .47UF 25V
C26 .47UF 25V
C28 .47UF 25V
C34 .047UF 50V
C31 .47UF 25V
C20 .047UF 50V
C27 .47UF 50V
C5 .47UF 25V
C8 .047UF 50V

AM1 AC2 AT1 AJ1 BC2 BT1 BM1 BJ1

M2
BD2
+12V
C9 .47UF 25V
C10 .047UF 50V
+5VCR
C11 .047UF 50V
C12 .047UF 50V
C14 .47UF 25V
C38 .047UF 50V
C13 .047UF 50V
GND TTL

SHEET 5 OF 7

"THIS DRAWING AND SPECIFICATIONS, WHEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1982 DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV
	M8063-MR.1	B
B.MASKAS		

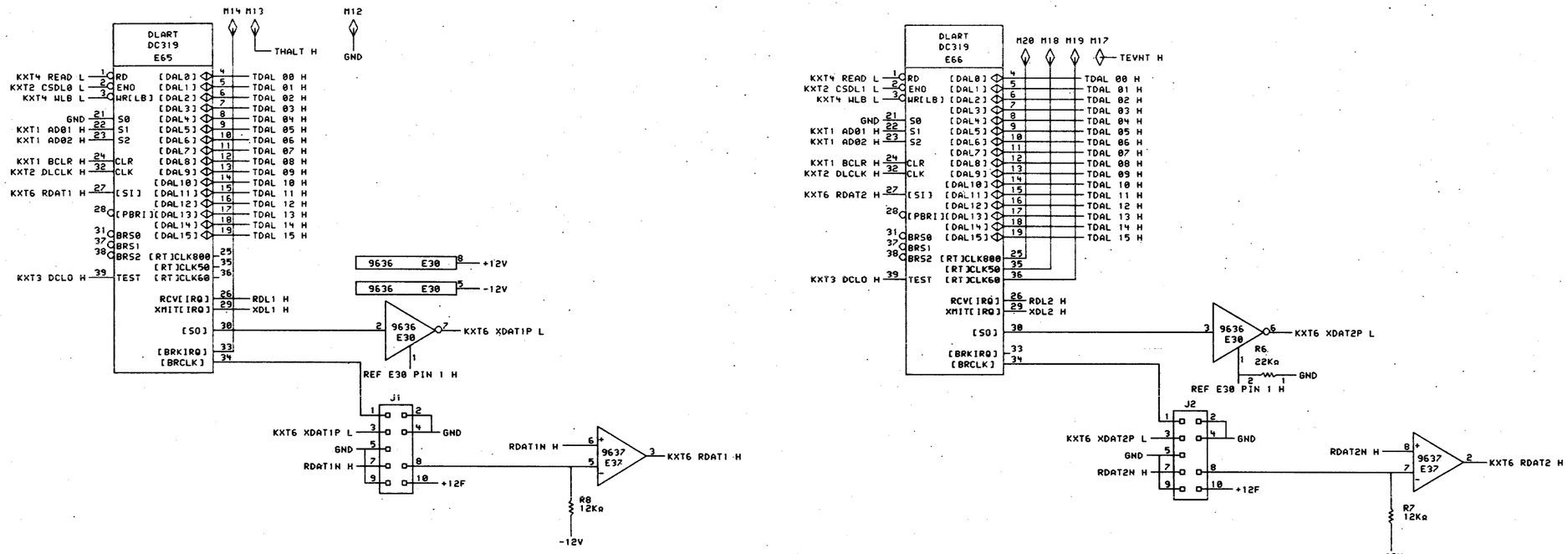
digital

DRN: L. Landry
CHK'D: P.M. CAUNTER
DATE 17-MAY-82
ENG. B.MASKAS DATE 17-MAY-82
BOARD LOCATION:
SHEET 1 OF 1
NEXT HIGHER ASSEMBLY:
FIRST USED ON OPTION/MODEL:
PS:<BOWEN>KXT5.DRW 17-MAY-82 09:42

TITLE: KXT11-AA MEMORY

SIZE	CODE	NUMBER	REV.
D	CS	M8063-0-KXT5	B

REV. B
NUMBER M8063-0-KXT5
SIZE D CODE CS



SHEET 6 OF 7

REVISIONS		
CHK	CHANGE NO.	REV

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION

digital

DRN: S. Doorly 01-OCT-81
CHK: D. Bowen 01-OCT-81
ENG. B. Mark 01-OCT-81
BOARD LOCATION:
SHEET 1 OF 1
PS:<BOWEN.SCRATCH>KXT6.DRW 01-OCT-81 07:28
NEXT HIGHER ASSEMBLY:
FIRST USED ON OPTION/MODEL:

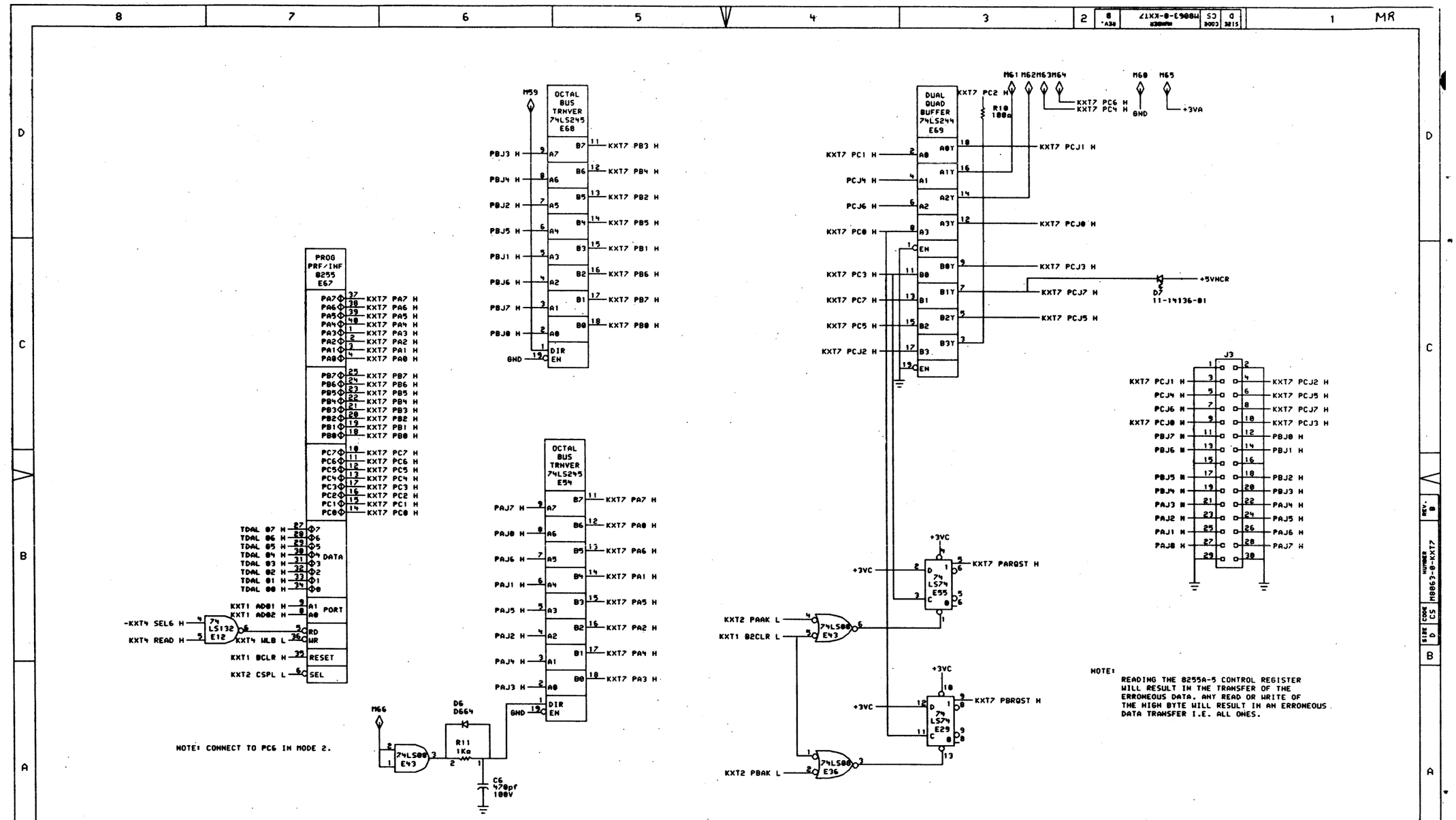
TITLE: KXT11-AA SERIAL I/O

SIZE	CODE	NUMBER	REV.
D	CS	M8063-0-KXT6	A

mk

METZGER PS:<BOWEN.SCRATCH>KXT6.DPL.1, SCALE 2, "D" RELEASE BOX

VERSATEC SUDSVP V5.8 01-OCT-81 10:35:25 KXT6.PLO



"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1981, DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV
BWL	M8063-MR2	B
AB	B. MASKAS	

digital

DRN. R.Looney DATE 30-NOV-81
CHK'D. R.W. CAUNTER DATE 30-NOV-81
ENG. B.MASKAS DATE 30-NOV-81
BOARD LOCATION:
SHEET 1 OF 1
SUBCOM:<BOWEN,SCRATCH>KXT7.RVB 13-NOV-81 13:20
NEXT HIGHER ASSEMBLY:
FIRST USED ON OPTION/MODEL:

TITLE: KXT11-AA PARALLEL I/O

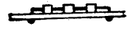
SIZE	CODE	NUMBER	REV.
D	CS	M8063-0-KXT7	B

REV. B
NUMBER M8063-0-KXT7
CODE CS
SIZE D

THIS DRAWING AND SPECIFICATIONS, EITHER, AND THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1987 DIGITAL EQUIPMENT CORPORATION

MODULE VARIATION M8059-FA

NOTES:
1. A = WIRE WRAP PIN.
2. W1 THRU W4 SHOULD BE INSTALLED WITH ASSEMBLY SPACERS SO THAT THEY LOOK LIKE THE FOLLOWING



3	TYPE MEMORY	JUMPER CONFIGURATION
	NON PARITY	9 TO 10
	WITH PARITY	11 TO 10

4.	TYPE MEMORY	JUMPER CONFIGURATION
	PARITY NON-CSR	18 TO 19
	PARITY WITH CSR	20 TO 19

5.	PERIPHERAL PAGE SELECTION	JUMPER CONFIGURATION
	2K PERIPHERAL PAGE	29 TO 28
	4K PERIPHERAL PAGE	27 TO 28

6	PARITY ERROR REPORT	JUMPER CONFIGURATION
	REPORTED ON BIO 16L NON-CSR	3 TO 2
	REPORTED ON BIO 16L & BIO 17L WITH CSR	1 TO 2

7.	WRITE WRONG PARITY (BIT 2) DIAG BIT FOR TESTER USE	JUMPER CONFIGURATION
	WITH PARITY	6 TO 7
	NON-PARITY	8 TO 7

8.	REMOVAL OF THE LOWER OR UPPER BANK IF IT HAS A FAULT	JUMPER CONFIGURATION
	NORMAL OPERATION OR UPPER BANK HAS FAILED	15 TO 16
	LOWER BANK HAS FAILED	17 TO 16

9.	FULL OR ONE HALF MEMORY SELECTION	JUMPER CONFIGURATION
	FULL MEMORY SELECTION	34 TO 33
	ONE HALF MEMORY SELECTION	32 TO 33

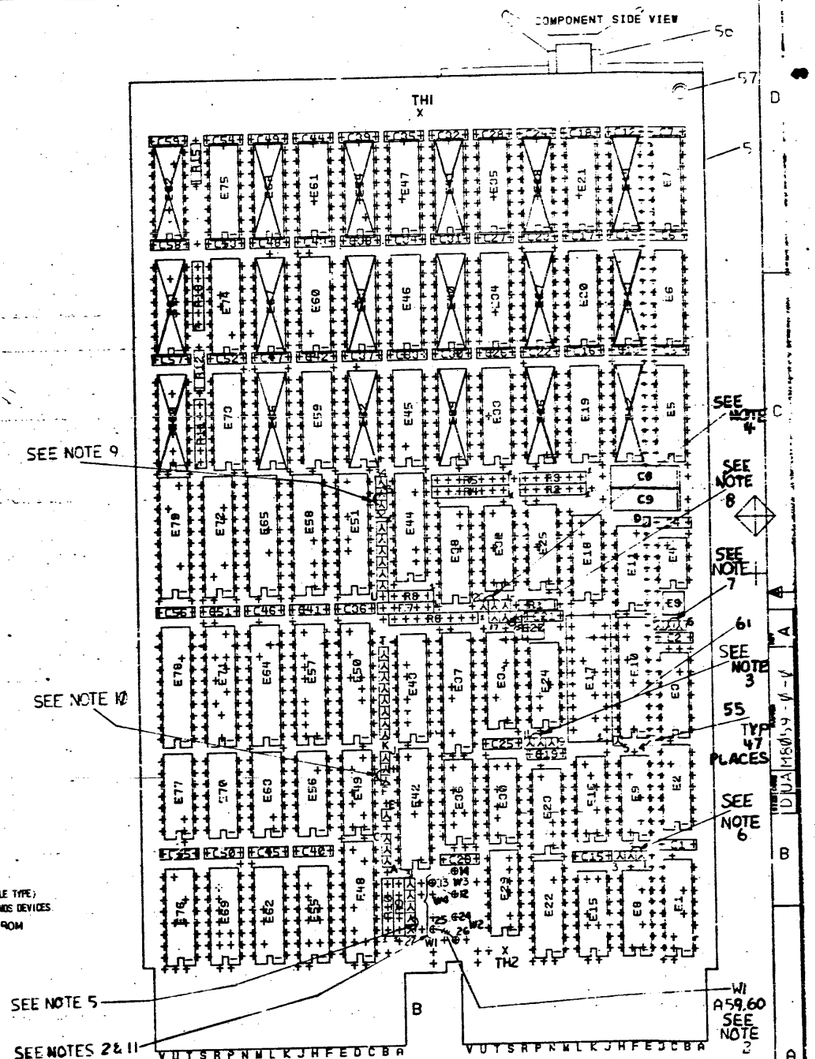
10.	CSR SELECTION	JUMPER CONFIGURATION
	WITH CSR	F TO H
	WITHOUT CSR	J TO H

11.	VOLTAGE CONNECTION	JUMPER CONFIGURATION
	+5V NON BATTERY BACKUP	26 TO 25 (B1)
	+5V BATTERY BACKUP	24 TO 25 (B2) 14 TO 13 (B3)** OR 12 TO 13 (B4)**

** AVAILABILITY FOR THE +5V BATTERY BACKUP

12 M8059-FA IS A PRIMARY VARIATION OF 64K X 18 BIT SYSTEM (NOT A MODULE TYPE)
M8059-FC,FF,FH ARE MODULE TYPES USING DIFFERENT VENDORS 64 K MOS DEVICES

13. WARNING: ALL IC'S ARE MOUNTED ON BOARD 180° FROM THE NORMAL.



NOTES: THE FOLLOWING IC'S ARE NOT INSTALLED IN THE FA VARIATION: E12 THRU E14, E26 THRU E28, E35 THRU E41, E52 THRU E54, E66 THRU E68, E80 THRU E82.
2. ITEM 5B USED ONLY IN PRODUCTION TESTING

STEP E	↑ Y AXIS	STEP TIMES
REPEAT	→ X AXIS 225	STEP TIMES

CHK	CHANGE NO.	REV

ETCH REV. C

SIGNATURES	DATE
DRN.	
CHK'D.	
MECH. ENG.	
PROJ. ENG.	
PROD.	
SCALE 2:1	
SHT. 1 OF 4	
NEXT HIGHER ASSY. B-[illegible]	

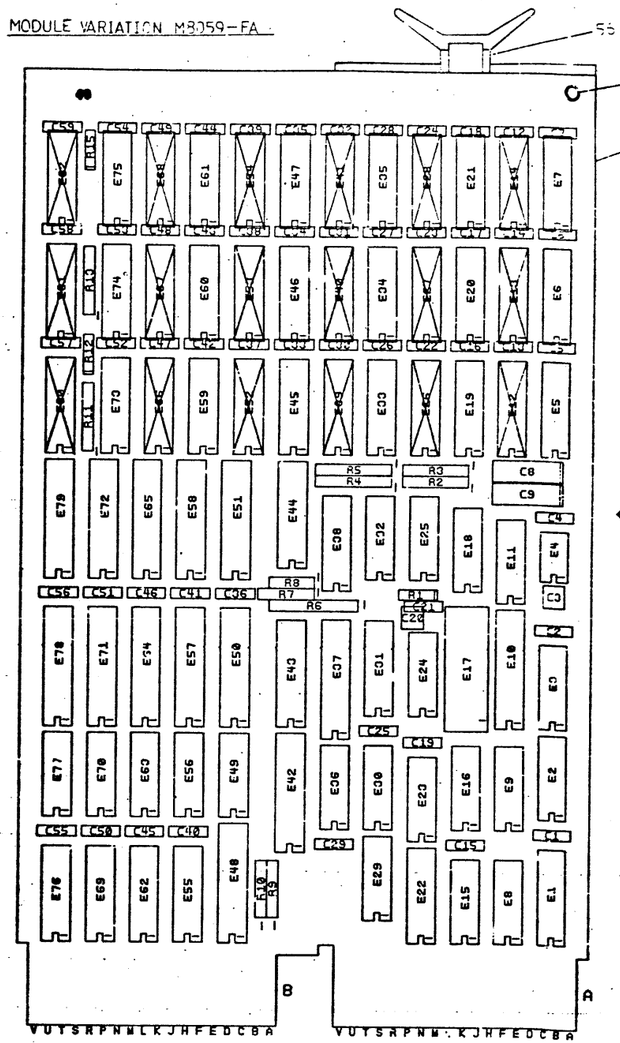
digital

TITLE 18[illegible] PAR/CSR MS MEM

SIZE	CODE	NUMBER	REV
D	UA	M8059-Y-0	A

ML2 1 WO#

MODULE VARIATION M8059-FA



NOTES:

CH	CHANGE NO	REV

STEP ↑	↑ Y AXIS	STEP	TIMES
REPEAT	→ X AXIS	STOP	TIMES

SIGNATURES	DATE
DRN.	
CHK'D.	
MECH.ENG.	
PROJ.ENG.	
PROD.	
SCALE 2:1	
SHT. 2 OF 5	
NEXT HIGHER ASSY. 8-DD-M8259-0	

digital

TITLE 128K PAR/CSR MOS MEM

SIZE	CODE	NUMBER	REV
D	UA	M8059-0-0	A

MI.2

1 WO#

THIS DRAWING AND SPECIFICATIONS, WHEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1983 DIGITAL EQUIPMENT CORPORATION

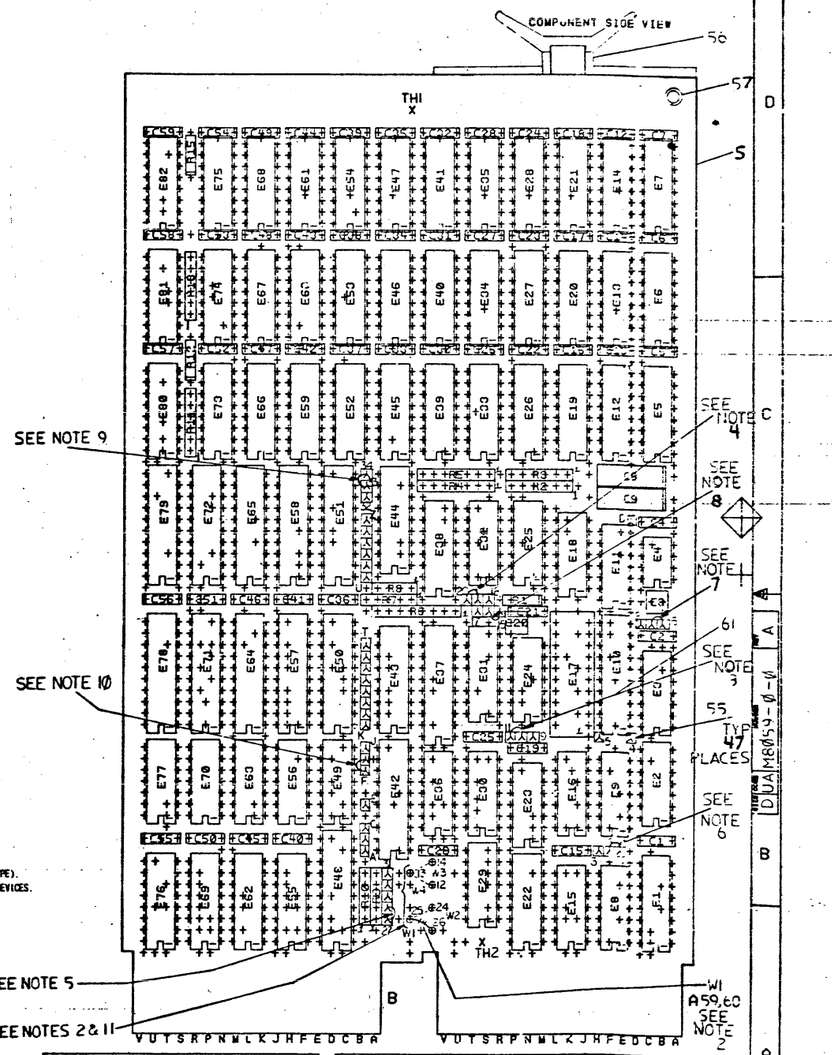
MODULE VARIATION M8059-KA

NOTES:
1. [A] = WIRE WRAP PIN.
2. W1 THRU W4 SHOULD BE INSTALLED WITH ASSEMBLY SPACERS SO THAT THEY LOOK LIKE THE FOLLOWING

3.	TYPE MEMORY	JUMPER CONFIGURATION
	NON PARITY	9 TO 10
	WITH PARITY	11 TO 10
4.	TYPE MEMORY	JUMPER CONFIGURATION
	PARITY NON-CSR	18 TO 19
	PARITY WITH CSR	20 TO 19
5.	PERIPHERAL PAGE SELECTION	JUMPER CONFIGURATION
	2K PERIPHERAL PAGE	29 TO 28
	4K PERIPHERAL PAGE	27 TO 28
6.	PARITY ERROR REPORT	JUMPER CONFIGURATION
	REPORTED ON BAD 16L NON-CSR	3 TO 2
	REPORTED ON BAD 16L & BAD 17L WITH CSR	1 TO 2
7.	WRITE WRONG PARITY (BIT 2) DIAG BIT FOR TESTER USE	JUMPER CONFIGURATION
	WITH PARITY	6 TO 7
	NON PARITY	8 TO 7
8.	REMOVAL OF THE LOWER OR UPPER BANK IF IT HAS A FAULT	JUMPER CONFIGURATION
	NORMAL OPERATION OR UPPER BACK HAS FAILED	15 TO 16
	LOWER BANK HAS FAILED	17 TO 16
9.	FULL OR ONE HALF MEMORY SELECTION	JUMPER CONFIGURATION
	FULL MEMORY SELECTION	34 TO 33
	ONE HALF MEMORY SELECTION	3[illegible] TO 33
10.	CSR SELECTION	JUMPER CONFIGURATION
	WITH CSR	F TO H
	WITHOUT CSR	J TO H
11.	VOLTAGE CONNECTION	JUMPER CONFIGURATION
	+5V NON BATTERY BACKUP	26 TO 25 (W1)
	+5V BATTERY BACKUP	24 TO 25 (W2) 14 TO 13 (W3)** OR 12 TO 13 (W4)**

**AVAILABILITY FOR THE +5V BATTERY BACKUP.

12. M8059-KA IS A PRIMARY VARIATION OF 128K X 18 BIT SYSTEM (NOT A MODULE TYPE). M8059- KC, KF, KH ARE MODULE TYPES USING DIFFERENT VENDORS 64 K MOS DEVICES.
13. WARNING : ALL IC'S ARE MOUNTED ON BOARD 180° FROM THE NORMAL.



NOTES: 1. ITEM 58 USED ONLY IN PRODUCTION TESTING.

STEP E	→ Y AXIS	STEP	TIMES
REPEAT	→ X AXIS	STEP	TIMES

CHANGE NO REV

ETCH REV. C

SIGNATURES	DATE
DRN.	
CHK'D.	
MECH. ENG.	
PROJ. ENG.	
PROD.	

digital

TITLE 128K PAR/CSR MOS MEM

SCALE 2/1 SHT 3 OF 4 NEXT HIGHER ASSY: B-DD-M8259-2

SIZE D CODE LA NUMBER M8059-0-0 REV A

DUA M8059-0-0

1 WO#

MODULE VARIATION M8059-KA

NOTES:

STEP	↑ Y AXIS ____ STEP ____ TIMES
REPEAT	→ X AXIS ____ STEP ____ TIMES

C.N.	MECHANICS	NO.	REV

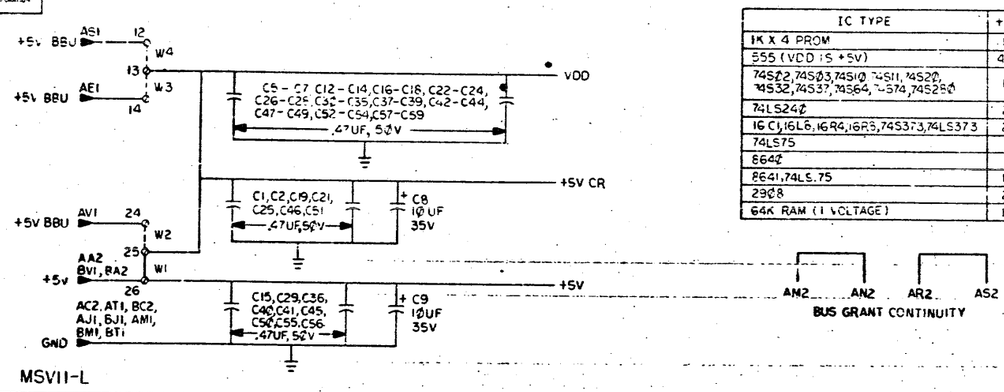
SIGNATURES	DATE
DRN.	
CHK'D.	
MECH. ENG.	
PROJ. ENG.	
PROD.	
SCALE 1:1	
SHT 1 OF 1	
NEXT HIGHER ASSY. B-DD-M8259-0	

digital

TITLE CSR PAR/CSR MOS MEM

SIZE D | CODE 04 UA | NUMBER M8059-0-0 | REV A

"THIS DRAWING AND SPECIFICATIONS, HERE IN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS. AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



IC TYPE	+5V	GND
1K X 4 PROM	18	9
555 (VDD IS +5V)	4,8	1
74S22,74S03,74S10 74S11, 74S20, 74S32,74S37, 74S64, 74S74,74S288	14	7
74LS24Ø	2Ø	1,1Ø,19
16 C1,16L8,16R4,16R8,74S373,74LS373	2Ø	1Ø
74LS75	5	12
8642	8	1
8641,74LS.75	16	8
2908	2Ø	5,15
64K RAM (1 VOLTAGE)	1.8	16

MSVII-L

STARTING ADDRESS DECIMAL (K)	STARTING ADDRESS OCTAL	JUMPERS IN (X) TO GROUND (U) Z	Y	X	W	V	COMMENTS
Ø	ØØØØØØØØ						NOTE: TO OBTAIN ANY STARTING ADDRESS ON 4KW BOUNDARIES FROM Ø-124KW, WIREWRAP DAISEY CHAIN FASHION FROM PIN "U" WHICH IS GROUNDED TO EACH SUCCESSIVE PIN LABELED WITH "X" FOR THAT ADDRESS.
4	ØØØ2ØØØØ					X	
8	ØØØ4ØØØØ				X		
12	ØØØ6ØØØØ				X	X	
16	ØØ1ØØØØ			X			
2Ø	12			X		X	
24	14			X	X		
28	16				X	X	
32	2Ø		X				
36	22		X			X	
4Ø	24		X		X		
44	26		X		X	X	
48	3Ø		X	X			
52	32		X	X		X	
56	34		X	X	X		
6Ø	36		X	X		X	
64	4Ø	X					
68	42	X				X	
72	44	X			X		
76	46	X			X	X	
8Ø	5Ø	X		X			
84	52	X		X		X	
88	54	X		X	X		
92	55	X		X	X	X	
96	6Ø	X	X				
1ØØ	62	X	X			X	
1Ø4	64	X	X		X		
1Ø8	66	X	X		X	X	
112	7Ø	X	X	X			
116	72	X	X	X		X	
12Ø	74	X	X	X	X		
124	ØØ76ØØØØ	X	X	X	X	X	

22 BIT CSR ADDRESS	18 BIT CSR ADDRESS	JUMPERS IN (X) TO GROUND (E) C	B	A	COMMENTS
177721ØØ	7721ØØ				NOTE: TO OBTAIN ANY 1 OF 8 CSR ADDRESSES, WIREWRAP DAISEY CHAIN FASHION FROM PIN "E" WHICH IS GROUNDED TO EACH SUCCESSIVE PIN LABELED "X" FOR THAT ADDRESS.
1Ø2	1Ø2			X	
1Ø4	1Ø4		X		
1Ø6	1Ø6		X	X	
11Ø	11Ø	X			
112	112	X		X	
114	114	X	X		
177716	7721 16	X	X	X	

PARTIAL STARTING ADDRESS RANGE DECIMAL (K)	OCTAL	JUMPERS IN (X) TO GROUND (K) P	N	M	L	COMMENTS
ØØØ-124	ØØØØØØØØ-ØØ76ØØØØ				X	NOTE: A PARTIAL STARTING ADDRESS, ON INCREMENTAL 128K BOUNDARIES, FROM Ø-2044KW MAY BE OBTAINED BY: WIREWRAP DAISEY CHAIN FASHION FROM PIN "K" WHICH IS GROUNDED TO EACH SUCESSIVE PIN LABELED "X" FOR THAT ADDRESS. TO OBTAIN ANY 4K BOUNDARY WITHIN THE 128K PARTIAL RANGE, GO TO THE STARTING ADDRESS TABLE AND CONTINUE WITH THE 4K INSTRUCTIONS.
128-252	Ø1ØØØØØØ-Ø176ØØØØ				X	
256-38Ø	Ø2ØØØØØØ-Ø276ØØØØ			X		
384-5Ø8	Ø3ØØØØØØ-Ø376ØØØØ			X	X	
512-636	Ø4ØØØØØØ-Ø476ØØØØ		X			
64Ø-764	Ø5ØØØØØØ-Ø576ØØØØ		X		X	
768-892	Ø6ØØØØØØ-Ø676ØØØØ		X	X		
896-1Ø2Ø	Ø7ØØØØØØ-Ø776ØØØØ		X	X	X	
1Ø24-1148	1ØØØØØØ-1Ø76ØØØØ	X				
1152-1276	11ØØØØØ-1176ØØØØ	X			X	
128Ø-14Ø4	12ØØØØØ-1276ØØØØ	X		X		
14Ø8-1532	13ØØØØØ-1376ØØØØ	X		X	X	
1536-166Ø	14ØØØØØ-1476ØØØØ	X	X			
1664-1788	15ØØØØØ-1576ØØØØ	X	X		X	
1792-1916	16ØØØØØ-1676ØØØØ	X	X	X		
1920-2044	17ØØØØØ-1776ØØØØ	X	X	X	X	

NOTE 12.

VOLTAGE CONNECTION	JUMPER CONFIGURATION
+5V NON-BATTERY BACKUP	26 TO 25 (W1)
+5V BATTERY BACKUP	24 TO 25 (W2) 14 TO 13 (W3) ** OR 12 TO 13 (W4) **

** = AVAILABILITY FOR THE +5V BATTERY BACK UP.
* = INDICATES BATTERY BACKUP.

NOTE 13.
SIGNAL NAMES WILL BE REFERENCED AS FOLLOWS:

[X] SIGNAL NAME [Y/Z]
- [X] SOURCE SHEET NUMBER.
- [Y/Z] DESTINATION SHEET NUMBER.
- Z = NUMBER OF CONNECTION POINTS ON DESTINATION SHEET.

NOTES:
1. ⊘ = WIRE WRAP PIN

2.

TYPE MEMORY	JUMPER CONFIGURATION
NON PARITY	9 TO 1Ø
WITH PARITY	11 TO 1Ø

3.

TYPE MEMORY	JUMPER CONFIGURATION
PARITY NON-CSR	18 TO 19
PARITY WITH CSR	22 TO 19

4.

PERIPHERAL PAGE SELECTION	JUMPER CONFIGURATION
2K PERIPHERAL PAGE	29 TO 28
4K PERIPHERAL PAGE	27 TO 28

5.

PARITY ERROR REPORT	JUMPER CONFIGURATION
REPORTED ON BAD 16 L NON-CSR	3 TO 2
REPORTED ON BAD 16 L & BAD 17 L WITH CSR	1 TO 2

6.

WRITE WRONG PARITY DIAG. BIT FOR TESTER USE	JUMPER CONFIGURATION
ENABLE	6 TO 7
DISABLE	8 TO 7

7. JUMPER BETWEEN PIN 32 AND 31 USED FOR MANUFACTURING TEST ONLY. FOR NORMAL OPERATION, IT IS OUT.

8.

REMOVAL OF THE LOWER OR UPPER BANK IF IT HAS A FAULT	JUMPER CONFIGURATION
NORMAL OPERATION OR UPPER BANK HAS FAILED	15 TO 16
LOWER BANK HAS FAILED	17 TO 16

9.

FULL OR ONE HALF MEMORY SELECTION	JUMPER CONFIGURATION
FULL MEMORY SELECTION	34 TO 33
ONE HALF MEMORY SELECTION	32 TO 33

10.

CSR SELECTION	JUMPER CONFIGURATION
WITH CSR	F TO H
WITHOUT CSR	J TO H

11.

EXTENDED OR NORMAL MEMORY SELECTION	JUMPER CONFIGURATION
NORMAL OPERATION (128K)	NO JUMPER BETWEEN R TO T
EXTENDED OPERATION (2M. WORDS)	INSTALL JUMPER BETWEEN R TO T

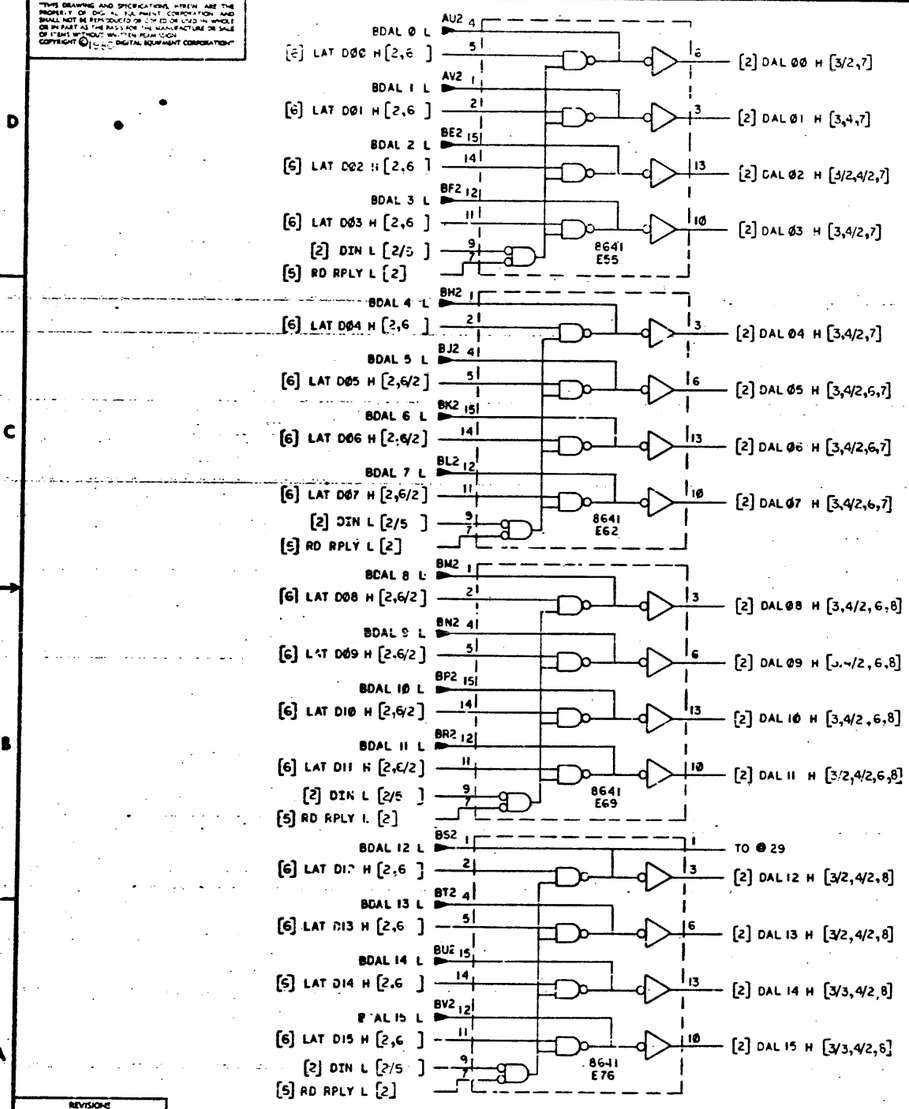
REV	DRN	CHK'D	ENG.	PROJ. ENG.	PROD.	NEXT HIGHER ASSY.
A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

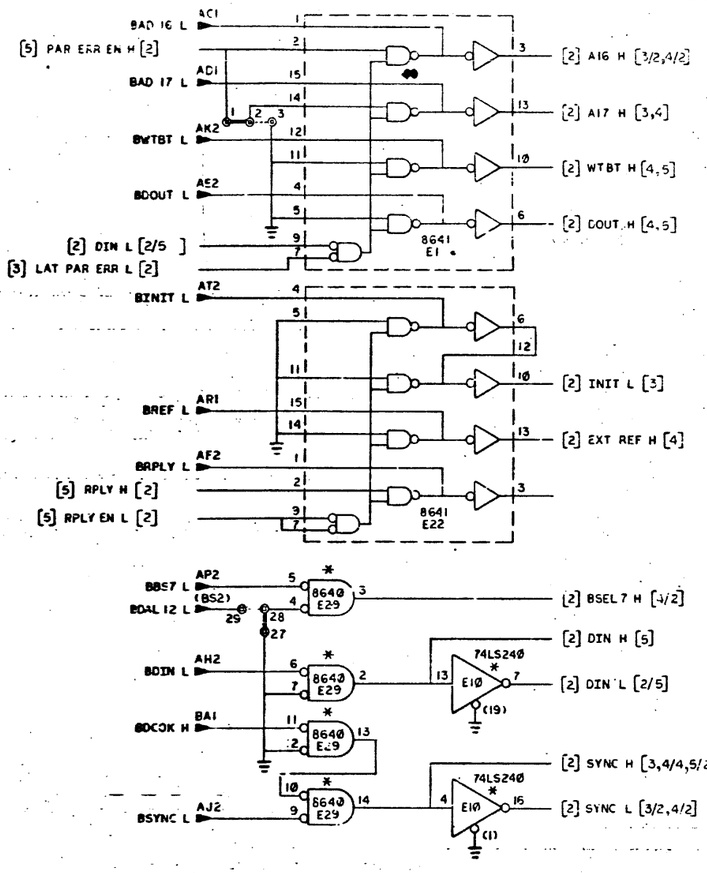
FIRST USED ON: MSVII-L
TITLE: 128K PAR/CSR MOS MEM
SIZE: D | CODE: LS | NUMBER: M8059-Ø-1 | REV: A
SCALE: —
SHEET 1 OF 8
DIST.

digital

D M8059-Ø-1 A

THIS DRAWING AND SPECIFICATIONS, WHICH ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1980 DIGITAL EQUIPMENT CORPORATION





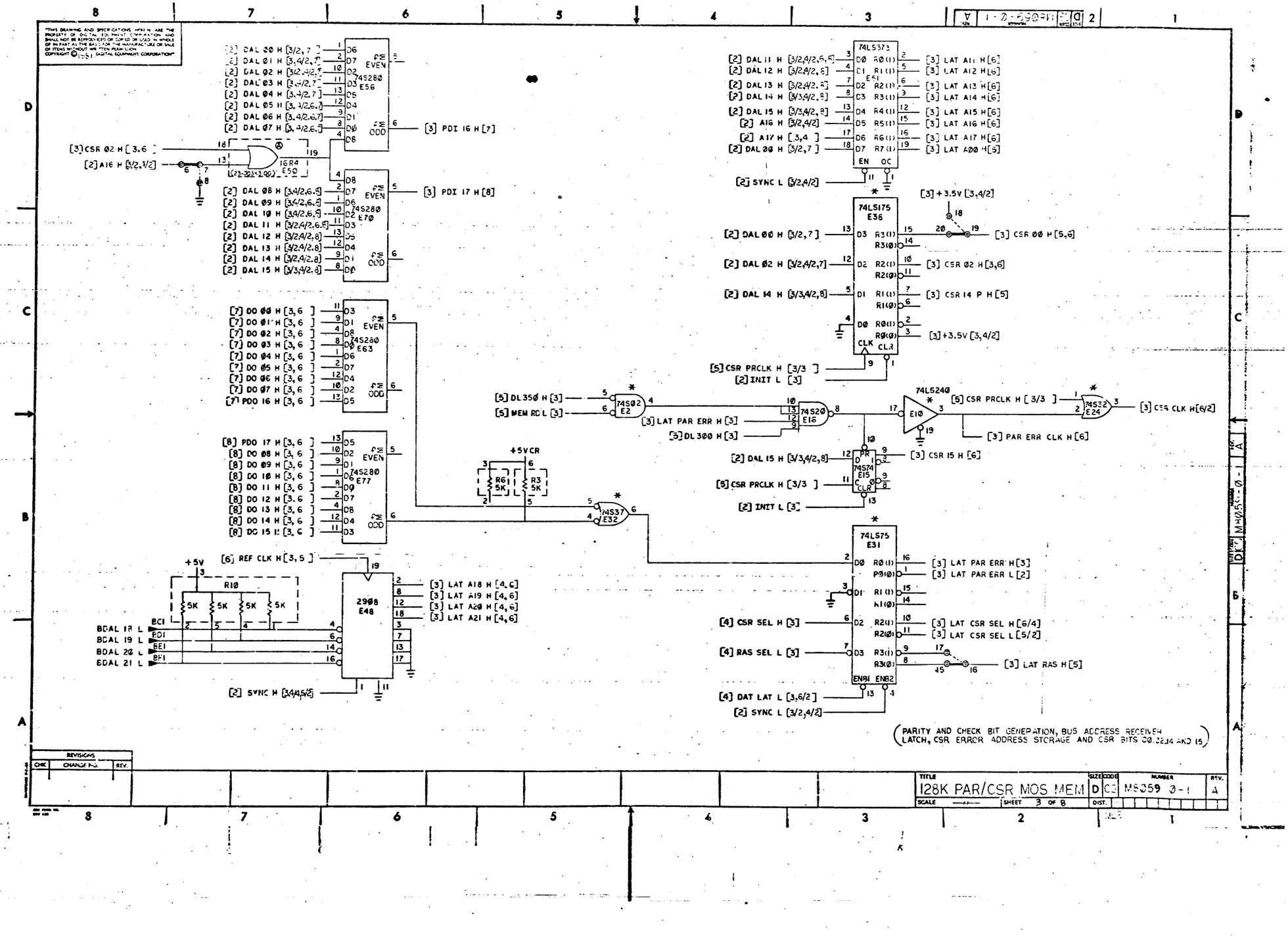
(DATA-ADDRESS, DIN, DOUT AND SYNC DRIVERS AND RECEIVERS)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
128K PAR/CSR MOS MEM	D	CS	M8059-0-1	A
SCALE — SHEET 2 OF 3	DIST.			

ML2

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION



REVISIONS		
OK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
128K PAR/CSR MOS MEM	D	CS	MS859 0-1	A
SCALE —	SHEET 3 OF 8	DIST.		

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1 DIGITAL EQUIPMENT CORPORATION

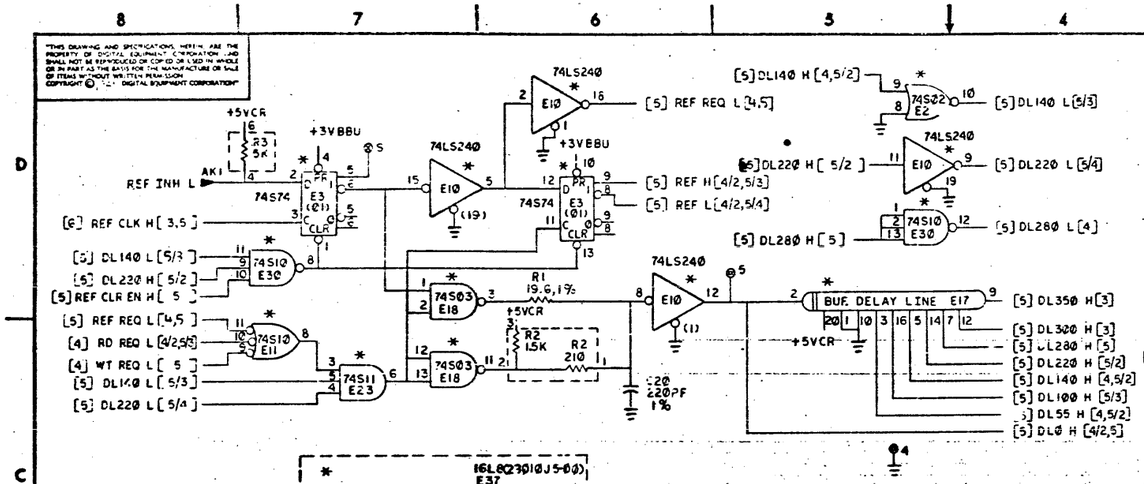
NOTE : RESISTORS R11,R12, R13 AND R15 ARE 22Ω IN THE FA VARIATION.

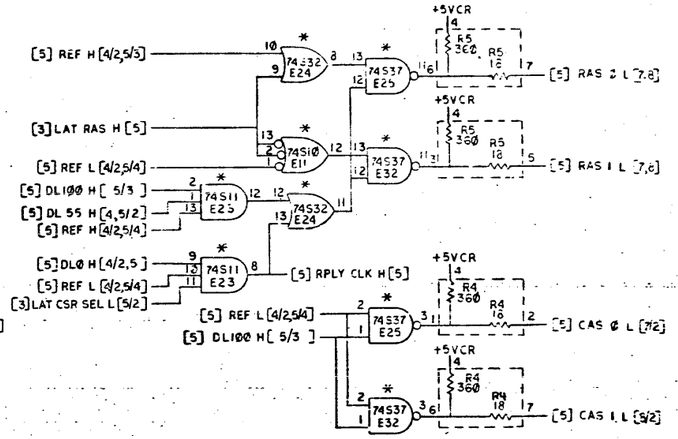
(ARRAY ADDRESS MUX DRIVERS STARTING ADDRESS SELECTION, CSR ADDRESS SELECTION AND R/W CYCLE.)

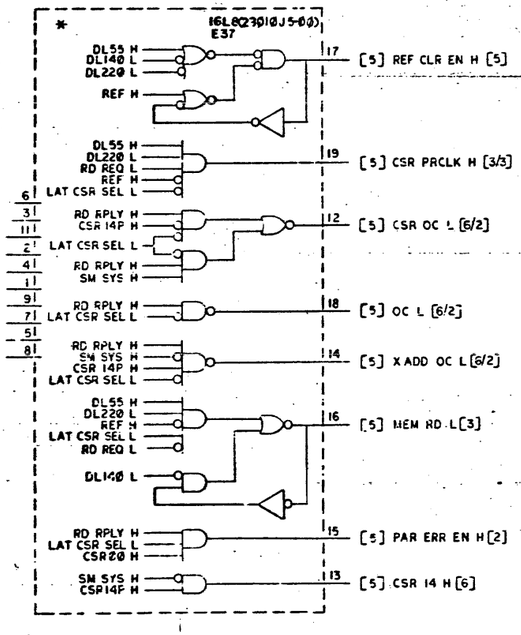
REVISIONS		
OK	CHANGE NO.	REV.

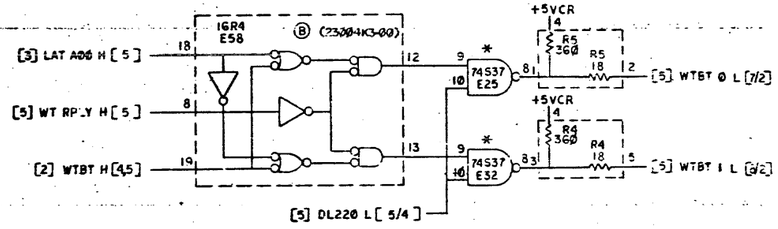
TITLE	SIZE	CODE	NUMBER	REV.
128K PAR/CSR MOS MEM	D	CS	M8059-0-1	
SCALE — SHEET 4 OF 3 DIST.				

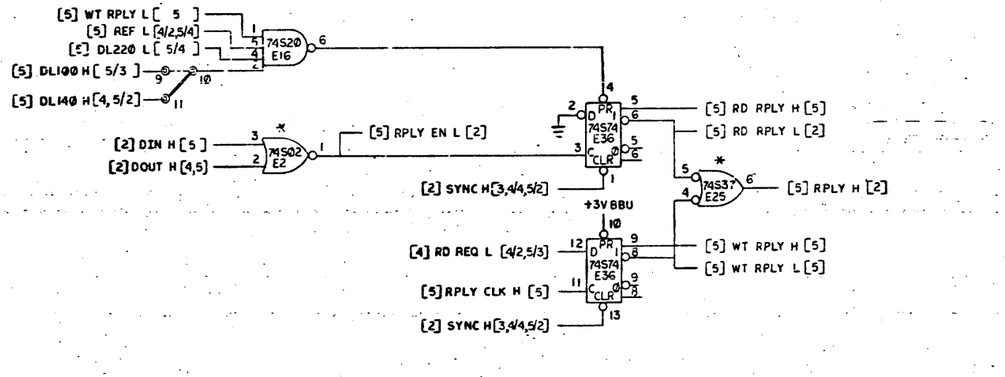
THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION

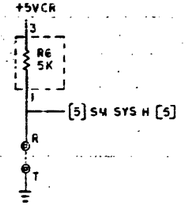










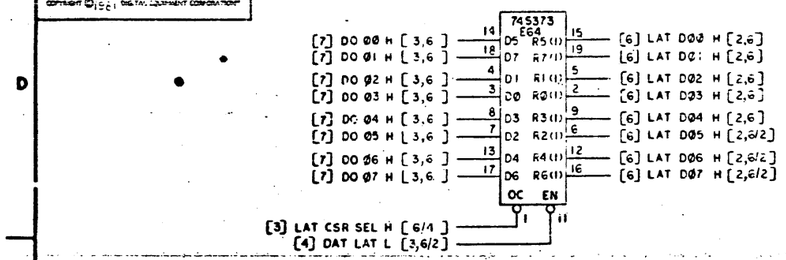


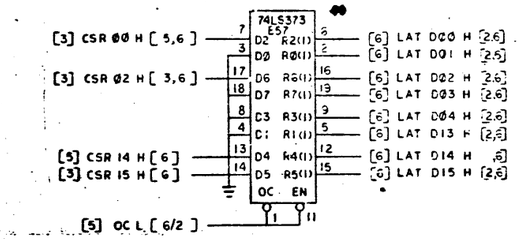
(TIMING CHAIN AND CONTROL SIGNALS)

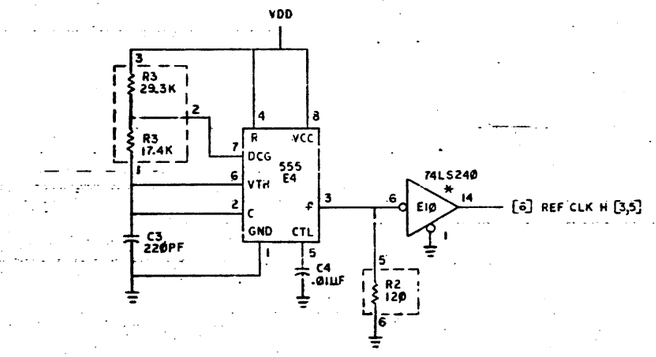
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
128K PAR/CSR MOS MEM	D	CS	M8059-3-1	A
SCALE —	SHEET 5 OF 8	DIST.		

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1981 DIGITAL EQUIPMENT CORPORATION







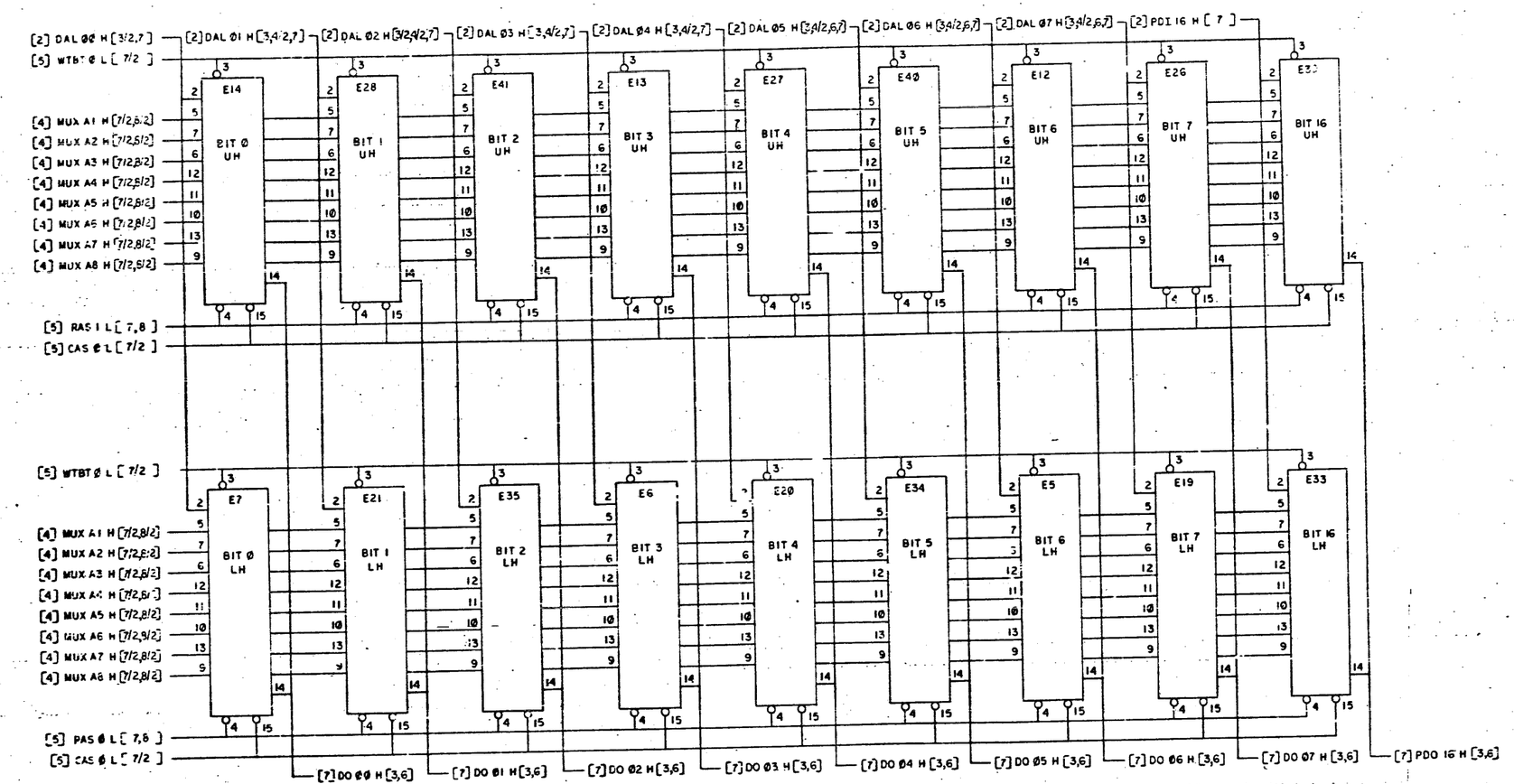
(DATA - ADDRESS LATCHES, CSR DATA - ADDRESS LATCHES AND REF CLK)

REVISIONS		
OK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
128K PAR/CSR MOS MEM	D	CS	M8059-0-1	A
SCALE —— SHEET 6 OF 8	DIST.			

THIS DRAWING AND SPECIFICATION, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1975 - DIGITAL EQUIPMENT CORPORATION

NOTE: THE VOLTAGE FOR ALL MOS RAMS ARE BATTERY BACK UP.



(MOS ARRAY)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
128K PAR/CSR MOS MEM	D	CS	M8059-Ø-1	A
SCALE	SHEET 7 OF 8	DIST.		

DCS M8059-Ø-1 A

THIS DRAWING AND SPECIFICATIONS, WHICH ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION, AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS OF THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1974 DIGITAL EQUIPMENT CORPORATION

NOTE: THE VOLTAGE FOR ALL MOS RAMS ARE BATTERY BACK UP.

[2] DAL 08 H [3,4/2,5,8] — [2] DAL 09 H [3,4/2,5,8] — [2] DAL 10 H [3,4/2,5,8] — [2] DAL 11 H [3/2,4/2,6,8] — [2] DAL 12 H [3/2,4/2,8] — [2] DAL 13 H [3/2,4/2,8] — [2] DAL 14 H [3/3,4/2,8] — [2] DAL 15 H [3/3,4/2,8] — [3] PDI 17 H [8]

[5] WTBT 1 L [8/2]

	E54	E68	E82	E53	E67	E81	E52	E66	E80
	BIT 8 UH	BIT 9 UH	BIT 10 UH	BIT 11 UH	BIT 12 UH	BIT 13 UH	BIT 14 UH	BIT 15 UH	BIT 17 UH

[4] MUX A1 H [7/2,8/2]
[4] MUX A2 H [7/2,8/2]
[4] MUX A3 H [7/2,8/2]
[4] MUX A4 H [7/2,8/2]
[4] MUX A5 H [7/2,8/2]
[4] MUX A6 H [7/2,8/2]
[4] MUX A7 H [7/2,8/2]
[4] MUX A8 H [7/2,8/2]

[5] RAS 1 L [7,8]
[5] CAS 1 L [8/2]

[5] WTBT 1 L [8/2]

	E47	E61	E75	E46	E60	E74	E45	E59	E73
	BIT 8 LH	BIT 9 LH	BIT 10 LH	BIT 11 LH	BIT 12 LH	BIT 13 LH	BIT 14 LH	BIT 15 LH	BIT 17 LH

[4] MUX A1 H [7/2,8/2]
[4] MUX A2 H [7/2,8/2]
[4] MUX A3 H [7/2,8/2]
[4] MUX A4 H [7/2,8/2]
[4] MUX A5 H [7/2,8/2]
[4] MUX A6 H [7/2,8/2]
[4] MUX A7 H [7/2,8/2]
[4] MUX A8 H [7/2,8/2]

[5] RAS 0 L [7,8]
[5] CAS 1 L [8/2]

[8] DO 08 H [3,6] — [8] DO 09 H [3,6] — [8] DO 10 H [3,6] — [8] DO 11 H [3,6] — [8] DO 12 H [3,6] — [8] DO 13 H [3,6] — [8] DO 14 H [3,6] — [8] DO 15 H [3,6] — [8] PDO 17 H [3,6]

(MOS ARRAY)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: 128K PAR/CSR MOS MEM	SIZE	CODE	NUMBER / REV.
SCALE —	D	CS	M8059-0-1 / A
SHEET 8 OF 8	DIST		

MLZ

M8059-0-1