pdp11

digital

Walter Risen

MF11-U/UP memory system engineering drawings

digital equipment corporation · maynard. massachusetts

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

DRAWING DIRECTORY

CUSTOMER PRINT SET INDEX

SEQUENCE	
DRAWING DIRECTORY	B-DD-MF11-U
MODULE UTILIZATION	D-MU-MF11-U-MU
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16K X-Y DRIVE	D-CS-G235-0-1
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SEQUENCE	MFG. PRINT SET
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NOTE: TO INSTALL MF11-U OR MF11-UP IN 11/40 CPU WITH SERIAL NUMBER LESS THAN 6000 OR H96Ø-D (OR-E) WITH SERIAL LESS THAN 7000 A FIELD MODIFICATION KIT (FM11-UA, -UB, OR -UC) IS REQUIRED.

THIS IS PRINT SET

UNIT VARIATIONS

VAR	TITLE	PRINT SET MF11-U	MF11-W
MF11-U	16K SENSE MEMORY	X	
MM11-U	16K SENSE MEMORY	X	
MF11-UP	16K SENSE MEMORY (PARITY)	X	
MM11-UP	16K SENSE MEMORY (PARITY)	X	
MM11-UB	32K X16 MEMORY	X	
MM11-UC	64K X16 MEMORY	X	
MF11-UR	32K X18 MEMORY (PARITY)	X	
MF11-US	64K X18 MEMORY (PARITY)	X	
MF11-W	32Kx16,18 MEMORY		X
MF11-WP	32K X18 MEMORY (PARITY)		X

REVISIONS		
REV	CHG. NO.	DATE
A	MF11U-1	12/73
B	MF11U-2	9/74
C	MF11U-3	12/74
D	MF11U-4	2 75
E	MF11U-5	11/75
F	MF11U-6	1/76

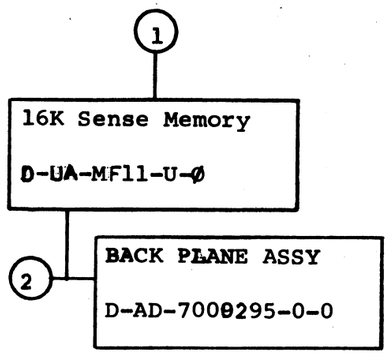
USED ON OPTION/MODEL

SHEET 1 OF 3

DRN. J. FLEMING	DATE 5/1/73	TITLE: 16K SENSE MEMORY
CHK'D. W. MAJOR	DATE 5/11/73	
PROJ ENG. D. SMELSER	DATE 5/15/73	
PROD. R. SHOOP	DATE 6/13/73	SIZE B / CODE DD / NUMBER MF11-U / REV D
FIELD SERV. WP AUBEE	DATE 1/8/74	DIST

DEC 19-12351-1062-1A912

DRB 106



TITLE				
16K SENSE MEMORY	SHEET 2 OF 3	D	DEC	MF11-UA

CUSTOMER PRINT SET				MFG. SET	ELECTRICAL						CUSTOMER PRINT SET				MFG SET	MECHANICAL					
MF11-U					FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE						FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
X					1	A-PL-MF11-U-0	D	1	16K SENSE MEMORY							1	A-PL-MF11-U-0	D	1	16K SENSE MEMORY	
X						D-CS-G114-0-1	#	9	16K SENSE INHIBIT		X						E-IA-7009535-0-0	#	1	OPTION HARNESS	
X						D-CS-G235-0-1	#	9	16K X-Y DRIVE								D-UA-MF11-U-0	D	1	MF11-U MEMORY	
X						D-CS-M8293-0-1	#	10	16K UNIBUS TIMING												
X						D-CS-H217-0-1	#	3	MEMORY STACK												
X						D-MU-MF11-U-MU	B	1	MODULE UTILIZATION												
X						D-TD-MF11-U-1	A	1	TIMING DIAGRAM												
X						D-CS-M7259-0-1	#	3	PARITY CONTROL												
X						A-SP-MF11-U-3	*	2	CUSTOMER ACCEPTANCE PROCEDURE												
				X		A-SP-MF11-U-2	*	6	ONLINE TEST PROCEDURE												
				X		A-SP-MF11-U-4	*	3	MF11-U ENG. SPEC.												
X						D-UA-MF11-U-0	D	1	MF11-U MEMORY												
X					2	D-AD-7009295-0-0	#	1	BACK PLANE ASSY												
X						D-CS-5410345-0-1	#	1	32K X 16,18 MEMORY BACKPLANE												
X				X		A-WT-7009295-3	#		AUTO WIRE TEST REV STAT												
X				X		A-WT-7009295-4	#		AUTO WIRE TEST REV STAT												

CUSTOMER PRINT SET CODES	
	X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
	C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
	S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE		SIZE	CODE	NUMBER	REV
16K SENSE MEMORY	SHEET 3 OF 3	B	DD	MF11-U	B

NOTES:

* 1. FOR MF11-UP (MEMORY WITH PARITY), USE H217-C MEMORY STACK. THE H217C OR H217B MAY BE SUBSTITUTED FOR THE H217D IN NON PARITY SYSTEMS. THE H217B MAY BE SUBSTITUTED FOR THE H217C.

**2. M7259 IS USED WITH MF11-UP ONLY.

3. INSTALL "A" MODULES FOR FIRST 16K, "B" MODULES FOR 2ND 16K.

Slot	A–B	C–F	
1	UNIBUS IN	M8293 TIMING & CONTROL	B
2	**M7259 PARITY	BLANK	
3	G114 SENSE INHIBIT		B
4	*H217D MEMORY STACK		B
5	G235 X\Y DRIVER		B
6	G235 X\Y DRIVER		A
7	*H217D MEMORY STACK		A
8	G114 SENSE INHIBIT		A
9	UNIBUS OUT	M8293 TIMING & CONTROL	A

SLOT SIDE

VIEWED FROM MODULE SIDE OF BACKPLANE

IC TYPE	GND	+5V

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

IC PIN LOCATIONS

REV	CHANGE NO.		CHK
A	MF11U-00001	P. DURANT 1-3-74	
B	MF11U-00006	D. SMELSER 1-14-76	

REVISIONS

FIRST USED ON OPTION MODEL: MF11-U

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV

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

SEMICONDUCTOR CONVERSION CHART

DRN. DATE 4-11-73
CHK'D W. Major DATE 4/13/73
ENG. D. Smelser DATE 5/15/73
PROJ. ENG. D. Smelser DATE 5/15/73
PROD. DATE 6/11/73
NEXT HIGHER ASSY B-DD-MF11-U
SCALE
SHEET 1 OF 1

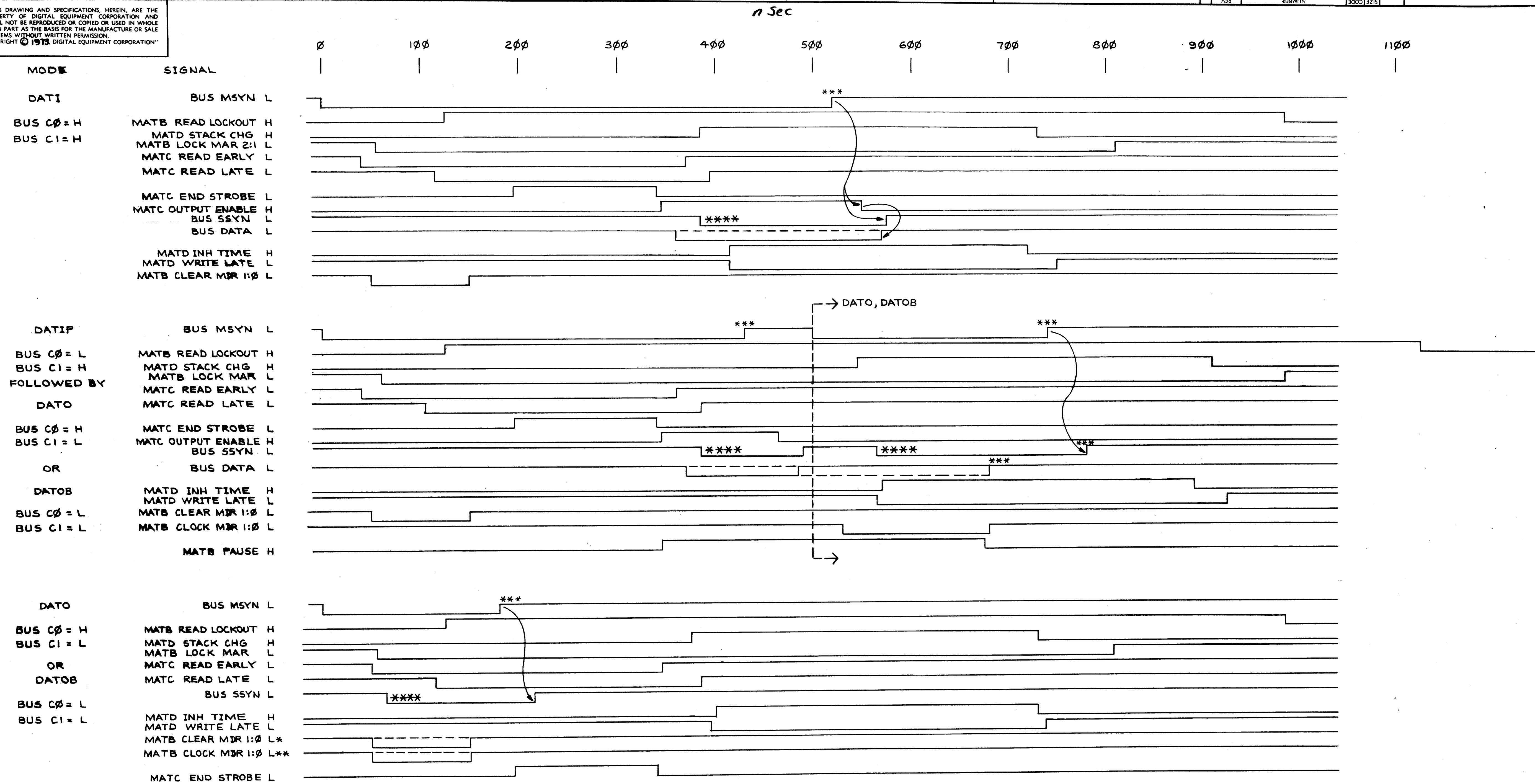
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: MODULE UTILIZATION

SIZE D CODE MU NUMBER MF11-U-MU REV. B

DIST.

DEC FORM NO. DRP-1105



NOTES:

1. * IN THE DATOB MODE CLEAR MDRL ONLY OCCURS IN THE BYTE NOT BEING ADDRESSED.
2. ** IN THE DATOB MODE CLOCK MDRL ONLY OCCURS IN THE BYTE BEING ADDRESSED.
3. *** ACTUAL TIME DEPENDS ON BUS AND PROCESSOR DELAYS.
4. **** IN PARITY SYSTEMS BUS SSYNL WILL BE 20 NS LATER THAN SHOWN FOR DATO-DATOB BUSS MODES AND 150 NS LATER FOR DATI-DATIP MODES.

REVISIONS		
REV	CHANGE NO	CHK
A	MF11U-00001	

FIRST USED ON OPTION/MODEL	MF11-U
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES	
TOLERANCES	
DECIMALS: .xxx = .005, .xx = .02, .x = .1	ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √	
MATERIAL	
FINISH	

DRN.		DATE 4-19-73
CHK'D.		DATE 4/30/73
ENG.		DATE 5/29/73
PROJ. ENG.		DATE 5/29/73
PROD.		DATE 6/11/73

QTY. | DESCRIPTION | PART NO. | ITEM NO.

PARTS LIST

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: MF11-U TIMING DIAGRAM (UNIBUS INTERFACE)

NEXT HIGHER ASSY.: B-DD-MF11-U

SIZE	CODE	NUMBER	REV.
D	TD	MF11-U-1	A

SCALE — / — SHEET 1 OF 1 DIST.

DEC FORM NO. DRD 102-C

PAGE REVISION CONTROL SHEET

SH NO.	PAGE REVISIONS						REMARKS
1	A	B	C	D	E	F	
2	A	B	C	D	E	F	
3	A	B	C	D	E	F	
4	A	B	C	D	E	E	
5	A	B	C	D	E	E	
6	A	B	C	D	E	E	
7	A	B	C	D	E	E	
8	A	B	C	D	E	E	
9	A	B	C	D	E	E	
10	A	B	C	D	E	E	

ECO NO.	ORIG.	00001	00002	00003	00004	00005
ETCH REV.	B	B	B	C	C	C
ENG.		RBD	RBD	[illegible]	[illegible]	[illegible]
DATE		9/27/73	11/16/73	11-4-74	4-16-75	28-APR-76

FIRST USED ON OPTION/MODEL

MM11-U

DRN. W. MAJOR	DATE 5/10/73	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D W. Major	DATE 5/10/73	
ENG. D. Lenker	DATE 5/9/73	
PROJ. ENG. D. Lenker	DATE 5/10/73	
PROD. R. [illegible]	DATE 5/10/73	

TITLE

16K UNIBUS TIMING

NEXT HIGHER ASSY.

B-DD-MM11-U

SCALE

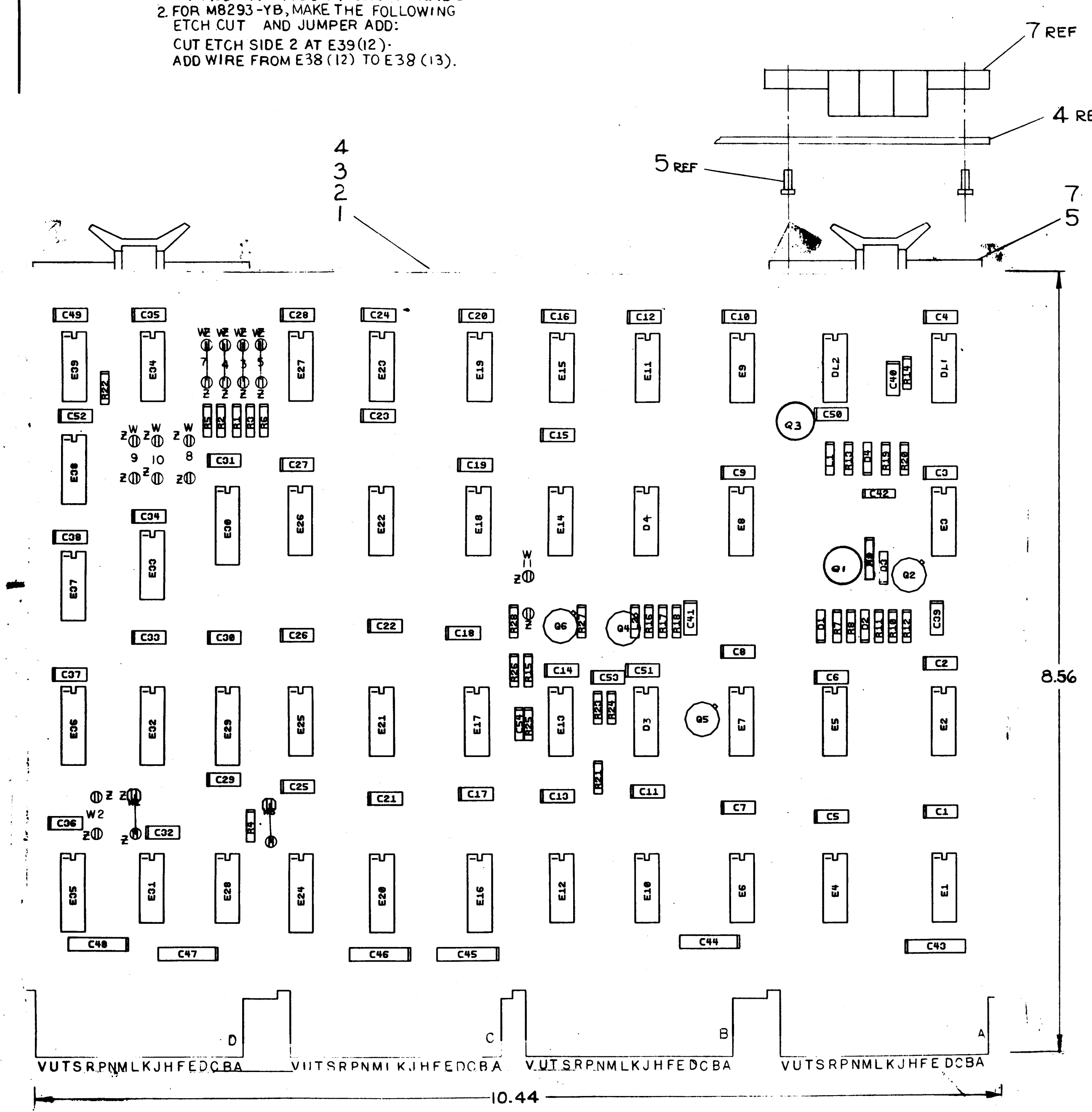
SHEET 1 OF 10

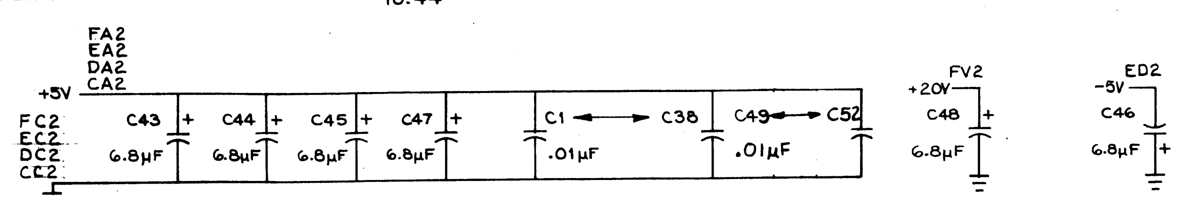
SIZE	CODE	NUMBER	REV.
B	CS	M8293-0-1	F

DIST.

DRB NO

NOTES:
1. UNLESS OTHERWISE SPECIFIED:
   RESISTANCE IS IN OHMS,
   CAPACITANCE IS IN MICROFARADS.
2. FOR M8293-YB, MAKE THE FOLLOWING ETCH CUT AND JUMPER ADD:
   CUT ETCH SIDE 2 AT E39(12).
   ADD WIRE FROM E38 (12) TO E38 (13).





7483	12	5
7485	8	16
380	1	8
7475	12	5
IC TYPE	GND	+ 5V

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

IC PIN LOCATIONS

QTY	QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
REF	REF		X-Y COORDINATE HOLE LOCATION	K-CO-M8293-0-4	1
REF	REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M8293-0-5	2
REF	REF		MODULE ECO HISTORY	B-MH-M8293-0-6	3
1	1		ETCHED CIRCUIT BOARD	5010473	4
8	8		EYELET GS-4-7	9006732	5
22	22		SPLIT LUGS	9006735	6
4	4		HANDLE FLIP-CHIP MAGENTA	9008337-6	7
2	2	C40, C41	CAP 82 PF 100V ±5% DM	1000015	8
1	1	C39	CAP 1000 PF 100V ±5% DM	1000042	9
43	43	C1 ←→ 38, 42, 49-52	CAP .01μF 50V ±20%	1001610	10
6	6	C43 ←→ 48	CAP 6.8μF 35V ±10% S, TANT	1005306	11
1	1	D3	DIODE 1N746A 3.6V ±5% ZENER	1104860	12
3	3	D1, 2, 4	DIODE D672	1105275	13
3	3	R13, 14, 18	RES 100 1/4 W 5%	1300229	14
1	1	R17	RES 120 1/4W 5%	1300247	15
1	1	R9	RES 750 1/2W 5%	1300354	16
3	3	R16, R25, R27	RES 1K 1/4W 5%	1300365	17
10	10	R1 ←→ 6, 10, 21, 15, 22	RES 2K 1/4W 5%	1302388	18
3	3	R7, 11, 8	RES 20K 1/4W 5%	1302391	19
2	2	R19, 12	RES 560 1/4W 5%	1301890	20
1	1	R20	RES 33K 1/4W 10%	1300510	21
1	1	Q1	TRANSISTOR DEC 6534 D	1503409	22
5	5	Q2, 3, 4, 5, 6	TRANSISTOR DEC 3009 B	1503100	23
2	2	L1, 2	INDUCTOR 100μH	1610662	24
4	4	DL1, 2, 3, 4	DELAY LINE 250 NS, TAPPED	1611243	25
1	1	E28	IC DEC 74H40	1905586	26
5	5	E20, 24, 16, 36, 35	IC DEC 7475	1909050	27
5	5	E15, 8, 26, 37, 38	IC DEC 74H00	1909056	28
5	5	E14, 19, 1, 39, 18	IC DEC 74H10	1909057	29
2	2	E21, 33	IC DEC 74H50	1909060	30
2	2	E11, 25	IC DEC 74H53	1909062	31
2	2	E23, 27	IC DEC 74H55	1909063	32
6	6	E31, 4, 6, 17, 7, 5	IC DEC 8640	1911469	33
4	4	E9, 22, 13, 34	IC DEC 74H04	1909931	34
1	1	E30	IC DEC 7483	1909932	35
2	2	E29, 32	IC DEC 7485	1910224	36
2	2	E3, 10	IC DEC 8885	1910649	37
2	2	E2, 12	IC DEC 7427	1910878	38
2	2	R23, 24	RES 330 1/4W 5%	1300298	39
1	1	C53	CAP 120 PF 100V ±5% D.M.	1000018	40
1	1	C 54	CAP 220 PF 100V ± 5% D.M.	1000021	41
1	1	R 26	RES 2.4K 1/4 W 5%	1303177	42
1	1	R 28	RES 511 1/4 W 1%	1302411	43
6	6	W1, W3 ←→ W7	WIRE, JUMPER	9107560-01	44
AR	–		WIRE, JUMPER, #30 AWG	9105740-44	45
M8293-YB	M8293				

PARTS LIST

FIRST USED ON OPTION MODEL: MM11-U

ETCH BOARD REV: C

SEMICONDUCTOR CONVERSION CHART (DEC NO. / EIA NO. / DEC NO. / EIA NO.)

CHANGE NO. / REVISIONS / CHK / REV

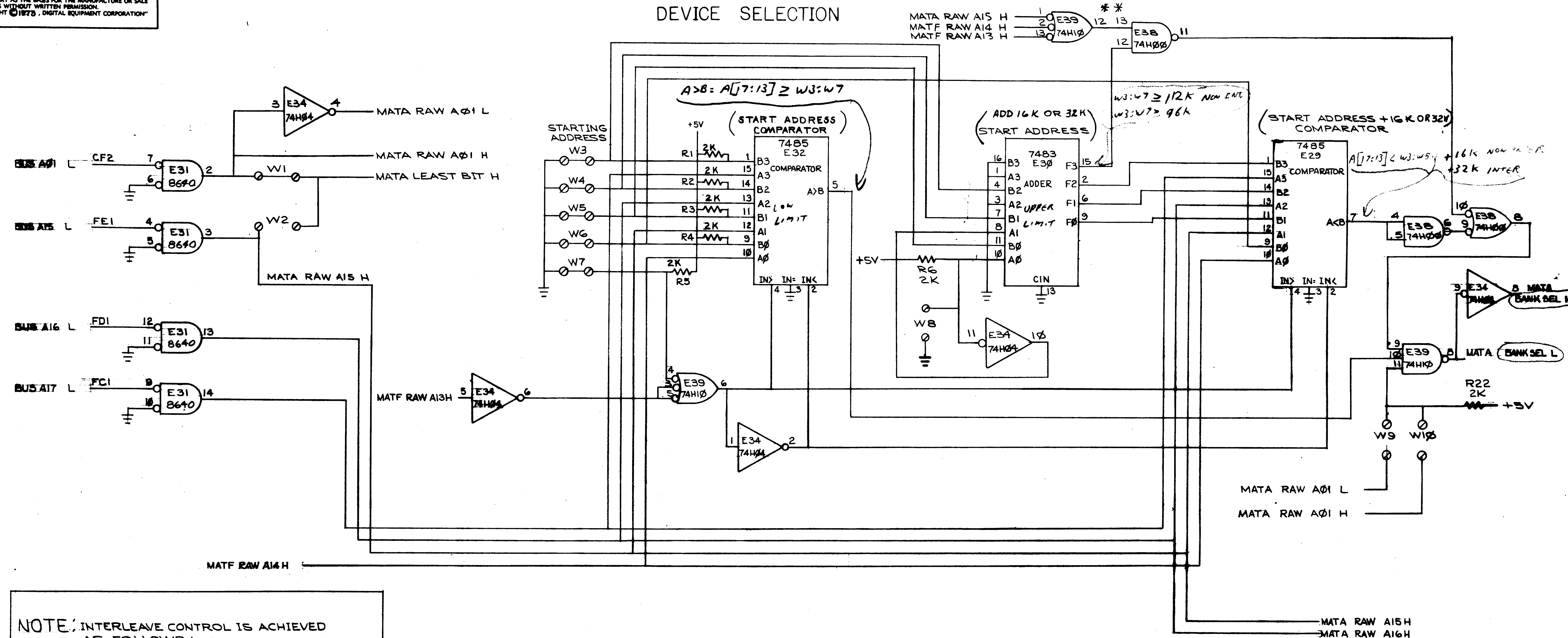
DRN. B. BALENTINE	DATE 1-23-73
CHK'D. W. Major	DATE 5/10/73
ENG. D. Lucke	DATE 5/10/73
PROD. ENG. D. Lucke	DATE 5/10/73
PROD. R. Schaaf	DATE 5/10/73
NEXT HIGHER ASSY B-DD-MM11-U	
SCALE —	
SHEET 2 OF 10	

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: 16K UNIBUS TIMING

SIZE D | CODE CS | NUMBER M8293-Ø-1 | REV. F

DEVICE SELECTION



NOTE: INTERLEAVE CONTROL IS ACHIEVED AS FOLLOWS:

a) NON-INTERLEAVED

W1 IN
W2, W8, W9 & W1Ø OUT

b) INTERLEAVED

W1 OUT
W2 & W8 IN

W9 IN, W1Ø OUT } ONE MEMORY

W9 OUT, W1Ø IN } THE OTHER MEMORY

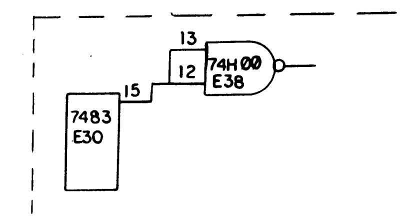
STARTING ADDRESS FOR THE COMBINED INTERLEAVED MEMORY IS THE SAME AS FOR THE NON-INTERLEAVED CASE (W3 THRU W7 MUST BE CUT THE SAME FOR BOTH INTERLEAVED MEMORIES) BUT THE INTERLEAVED MAX ADDRESS IS INCREASED BY 16K (1ØØØØØ₈)

Ø = IN 1 = OUT

NON-INTERLEAVED START ADDRESS	A17 W3	A16 W4	A15 W5	A14 W6	A13 W7	NON-INTERLEAVED MAX ADDRESS
ØØØØØØ (ØK)	Ø IN	Ø IN	Ø IN	Ø IN	Ø IN	Ø77776
Ø2ØØØØ (4K)	Ø IN	Ø IN	Ø IN	Ø IN	1 OUT	117776
Ø4ØØØØ (8K)	Ø	Ø	Ø	1	Ø	137776
Ø6ØØØØ (12K)	Ø	Ø	Ø	1	1	157776
1ØØØØØ (16K)	Ø	Ø	1	Ø	Ø	177776
12ØØØØ (20K)	Ø	Ø	1	Ø	1	217776
14ØØØØ (24K)	Ø	Ø	1	1	Ø	237776
16ØØØØ (28K)	Ø	Ø	1	1	1	257776
2ØØØØØ (32K)	Ø	1	Ø	Ø	Ø	277776
22ØØØØ (36K)	Ø	1	Ø	Ø	1	317776
24ØØØØ (40K)	Ø	1	Ø	1	Ø	337776
26ØØØØ (44K)	Ø	1	Ø	1	1	357776
3ØØØØØ (48K)	Ø	1	1	Ø	Ø	377776
32ØØØØ (52K)	Ø	1	1	Ø	1	417776
34ØØØØ (56K)	Ø	1	1	1	Ø	437776
36ØØØØ (60K)	Ø	1	1	1	1	457776
4ØØØØØ (64K)	1	Ø	Ø	Ø	Ø	477776

✱✱ M8293-YB WILL RESPOND TO BUS ADDRESSES BETWEEN 124-128K.
✱ THE MEMORY WILL NOT RESPOND TO BUS ADDRESSES BETWEEN 124-128K

	W3	W4	W5	W6	W7	
42ØØØØ (68K)	1	Ø	Ø	Ø	1	517776
44ØØØØ (72K)	1	Ø	Ø	1	Ø	537776
46ØØØØ (76K)	1	Ø	Ø	1	1	557776
5ØØØØØ (80K)	1	Ø	1	Ø	Ø	577776
52ØØØØ (84K)	1	Ø	1	Ø	1	617776
54ØØØØ (88K)	1	Ø	1	1	Ø	637776
56ØØØØ (92K)	1	Ø	1	1	1	657776
6ØØØØØ (96K)	1	1	Ø	Ø	Ø	677776
62ØØØØ (100K)	1	1	Ø	Ø	1	717776
64ØØØØ (104K)	1	1	Ø	1	Ø	737776
66ØØØØ (108K)	1	1	Ø	1	1	757776
7ØØØØØ (112K)	1	1	1	Ø	Ø	757776 } ✱
72ØØØØ (116K)	1	1	1	Ø	1	757776 } ✱
74ØØØØ (120K)	1	1	1	1	Ø	757776 } ✱



DEVICE SELECTION LOGIC

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE 16K UNIBUS TIMING (MATA)

SIZE D CODE CS NUMBER M8293-Ø-1 REV. F

SCALE — SHEET 3 OF 1Ø DIST.

WRITE DELAY

MATD 450NS DLY L

MATB START READ L

(LOCK MAR FLIP-FLOP)

E28 74H4Ø — MATB LOCK MAR 1 L TO MATE

NORM H

E28 74H4Ø — MATB LOCK MAR 2 L TO MATF,H

E26 74H08

MATA BANK SEL H

E19 74H1Ø — CK1 MATB A EARLY L TO DRUC

MATD END OF WRITE L

MATJ I2 L INIT

E19 74H1Ø

E15 74H00 — MATB READ LOCK OUT H

(READ LOCKOUT FLIP-FLOP)

BUS MSYN L — CA1 1Ø — E5 8640 — 14

POWER MONT+INT

MATJ MSYN HOLDOFF H WORM L

MATA BANK SEL L

E11 74H53 — 8

(DEL DRIVER GATE)

+5V

Q3 3Ø9Ø9B

L 1ØØ µH

R13 1ØØ

E9 74H04 — MATB MSYN H — MATB MSYN L

E22 74H04 — E22 74H04 — MATB START READ L TO E11

MATB START READ H

MATB 75 NS DLY L

E9 74H04 — MATB 75NS DLY H

MATB 5ØNS DLY H

MATB 15ØNS DLY H

DL2 TAPPED DELAY LINE — 25 5Ø 75 1ØØ 125 15Ø 175 2ØØ 225 — MATB 25ØNS DLY H

MATH WRITE BYTE Ø L

E8 74H00 — DM1 MATB CLEAR MDR Ø L

TO SENSE INHB

MATH WRITE BYTE 1 L

E8 74H00 — DD1 MATB CLEAR MDR 1 L

SEE PAGE 2-8

(PAUSE FLIP-FLOP)

MATD 125 NS DLY L WRITE DELAY

E14 74H1Ø — RESET

MATB PAUSE H

MATC DEL DATIP L — SET

E26 74H00 — MATH WRITE BYTE Ø H

E23 74H55 — 8 DD2 MATB CLK MDR Ø L

TO SENSE INHB

MATD MSYN STILL LO L

MATB MSYN H

MATB PAUSE H

MATH WRITE BYTE 1 H

E27 74H55 — 8 DN1 MATB CLK MDR 1 L

REVISIONS

CHK	CHANGE NO.	REV.

READ START TIMING

TITLE	SIZE	CODE	NUMBER	REV.
16K UNIBUS TIMING (MATB)	D	CS	M8293-Ø-1	E

SCALE — | SHEET 4 OF 1Ø | DIST.

DEC FORM NO. DRD 138

MATC 300 NS DLY H
MATC 325NS DLY H
MATB START READ H
E2 7427
E3 8885
CJ1 MATC READ EARLY L
ORVC
(READ EARLY FLIP-FLOP)

MATB 150 NS DLY H
CD1 MATC END STROBE L
NORM LOW TO ORVA
(END STROBE FLIP-FLOP)

MATH C1 L
E1 74H10
DE2 MATC OUTPUT ENABLE H
DATA TO UNIBUS
TO SIVA
+5V
R21 2K
ALWAYS HIGH
PCL MSYN DISABLE L DT2
MATB MSYN H
(OUTPUT ENABLE FLIP-FLOP)

MATH C0 H
MATH C1 L
E26 74H00
E22 74H64
MATC DATIP CYCLE L
MATC DEL DATIP L

MATJ 12 H
MATC 350NS DLY H
MATB 75 NS DLY H
CM1 MATC READ LATE L
TO ORVC
X READ DRIVERS
(READ LATE FLIP-FLOP)

MATC 300NS DLY H

MATB 250NS DLY H
DL1 TAPPED DELAY LINE
275 300 325 350 375 400 425 450 475
R14 100
C40 82 pf

MATH C1 L
MATB MSYN H
E21 74H50
MATC SSYN L
MATB CLK MDR 0 L
MATB CLK MDR 1 L
E14 74H10
(SSYN FLIP-FLOP)
+5V
R23 330
C53 120 PF
R24 330
Q5 3904SB
CB2
BUS SSYN L *

MATC 325 NS DLY H

* THIS SIGNAL IS CALLED
'BUS SSYN L' FOR MF11-U
'SSYN INT BUS L' FOR MF11-UP

REVISIONS
CHK | CHANGE NO. | REV.

READ TIMING
TITLE 16K UNIBUS TIMING (MATC)
SCALE — # — SHEET 5 OF 10
SIZE D | CODE CS | NUMBER M8293-0-1 | REV. E
DIST.

DEC FORM NO. DRD 120

(WRITE DEL DRIVER GATING)

MATC 325NS DLY H
MATC DATI P CYCLE L
MATB PAUSE H
MATB MSYN H
MATB START READ L
E8 74H00
E25 75H53
MATD MSYN STILL LO L
E13 74H04
+5V
R15 2K
PC.2 DATIP CLR PAUSE 1 L — CE2
ORIGINATES FROM M7259 PARITY CONTROL MODULE (SHEET3) VIA M FII-UP BACKPLANE
MATD WRITE LOCKOUT H
E21 74H50
MATD WRITE Ø DLY L
MATD WRITE START H

(INH FLIP-FLOP)
MATD 25 NS DLY H
E10 8885
E12 7427
DK2 MATD INH TIME H TO SIN
MATJ IZ H
(WRITE LATE FLIP-FLOP)
MATD 400 NS DLY H
DP1 MATD WRITE LATE L TO DRVC
MATD 125 NS DLY L
MATJ IZ L
E13 74H04
E15 74H00
E19 74H10
(WRITE LOCKOUT FLIP-FLOP)
MATD 125 NS DLY H
MATD 350 NS DLY H
MATD 450 NS DLY H
MATD WRITE END DLY H

+5V
R25 1K
R26 2.4K
W11
R27 1K
R28 5K 1%
C54 220 PF
DELAY
Q6 3009B
E13 74H04
E16 74H18
MATB START READ L
E18 74H00
MATC SSYN L
MATD END OF WRITE L
MATD 450 NS DLY L

+5V
R16 1K
Q4 3009B
L2 100 µH
R17 120
(WRITE DEL DRIVER)

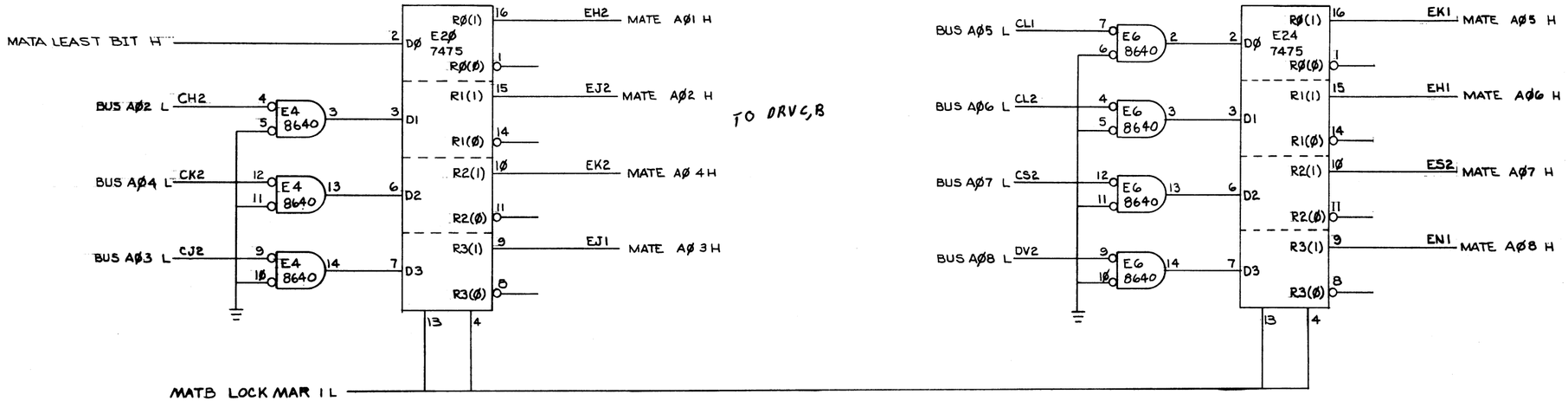
MATD WRITE Ø DLY H
25 50 75 100 125 150 175 200 225 NS
(DL4 TAPPED DELAY LINE)
275 300 325 350 375 400 425 450 475 NS
(DL3 TAPPED DELAY LINE)
R18 100
C41 82 PF

E10 8885
E12 7427
DB2 MATD STACK CHG H TO STAK
CM2 MATD WRITE EARLY L XY SWITCHES TO DRVC
MATJ IZ H
(STACK CHG FLIP-FLOP)

REVISIONS		
CHK	CHANGE NO.	REV.

WRITE TIMING

TITLE	SIZE	CODE	NUMBER	REV.
16K UNIBUS TIMING (MATD)	D	CS	M8293-Ø-1	E
SCALE —	SHEET 6 OF 10	DIST.		



IF LOCK MAR IS H
The input is passed to output

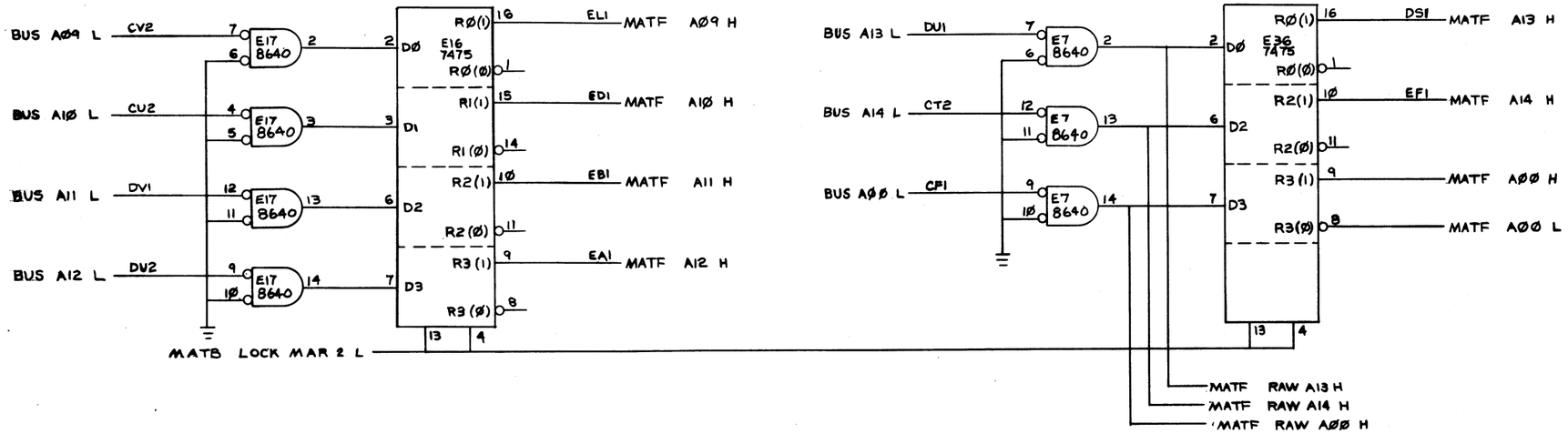
L inhibit input

AØ1-AØ8 LATCHES

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
16K UNIBUS TIMING (MATE)	D	CS	M8293-Ø-1	E
SCALE —	SHEET 7 OF 10	DIST.		

DEC FORM NO. DRD 138

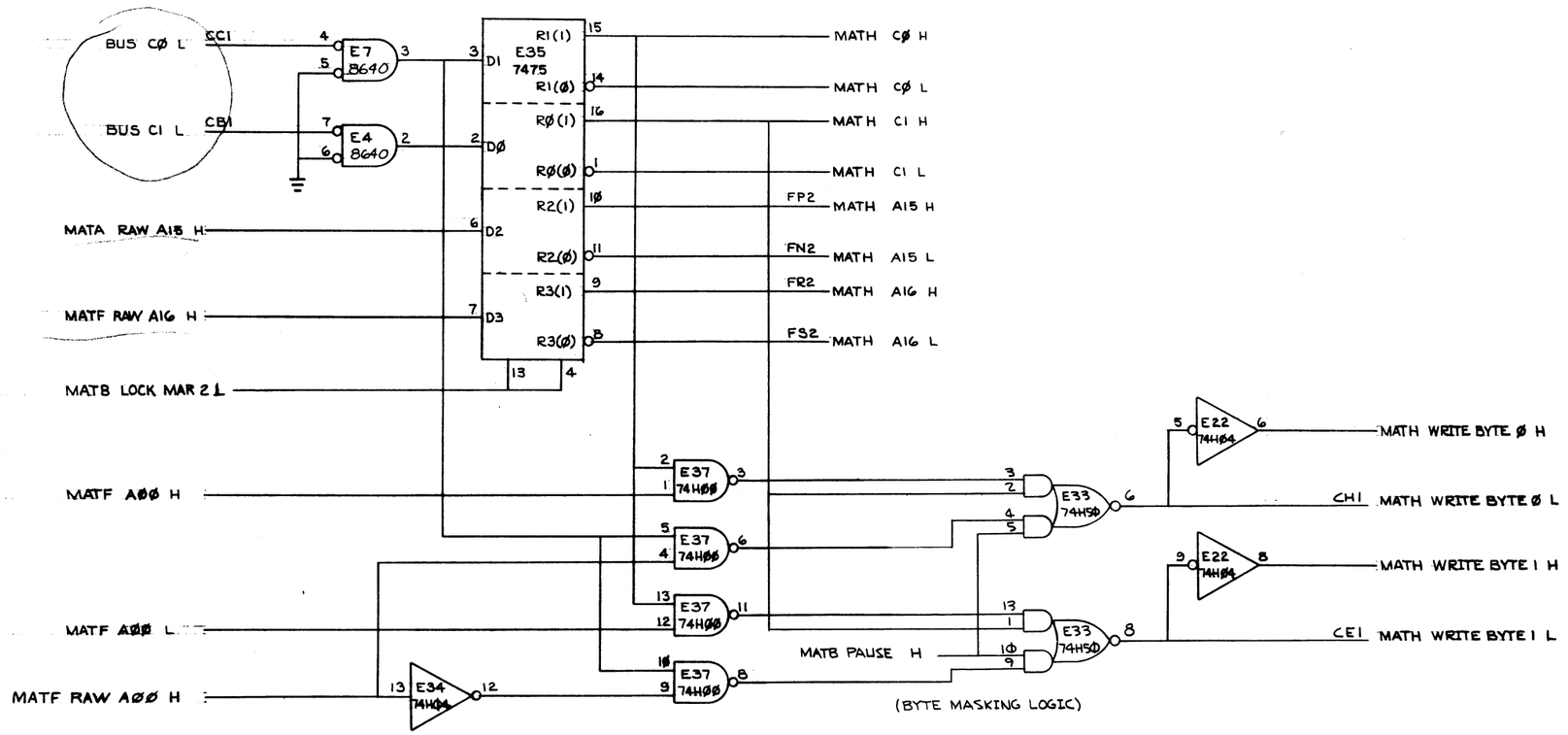


A00, A09 → A13 LATCHES

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. DRD 138

TITLE	SIZE	CODE	NUMBER	REV.
16K UNIBUS TIMING (MATF)	D	CS	M8293-0-1	E
SCALE —11—	SHEET 8 OF 10	DIST.		



BYTE Ø = LOW BYTE
BYTE 1 = HIGH BYTE

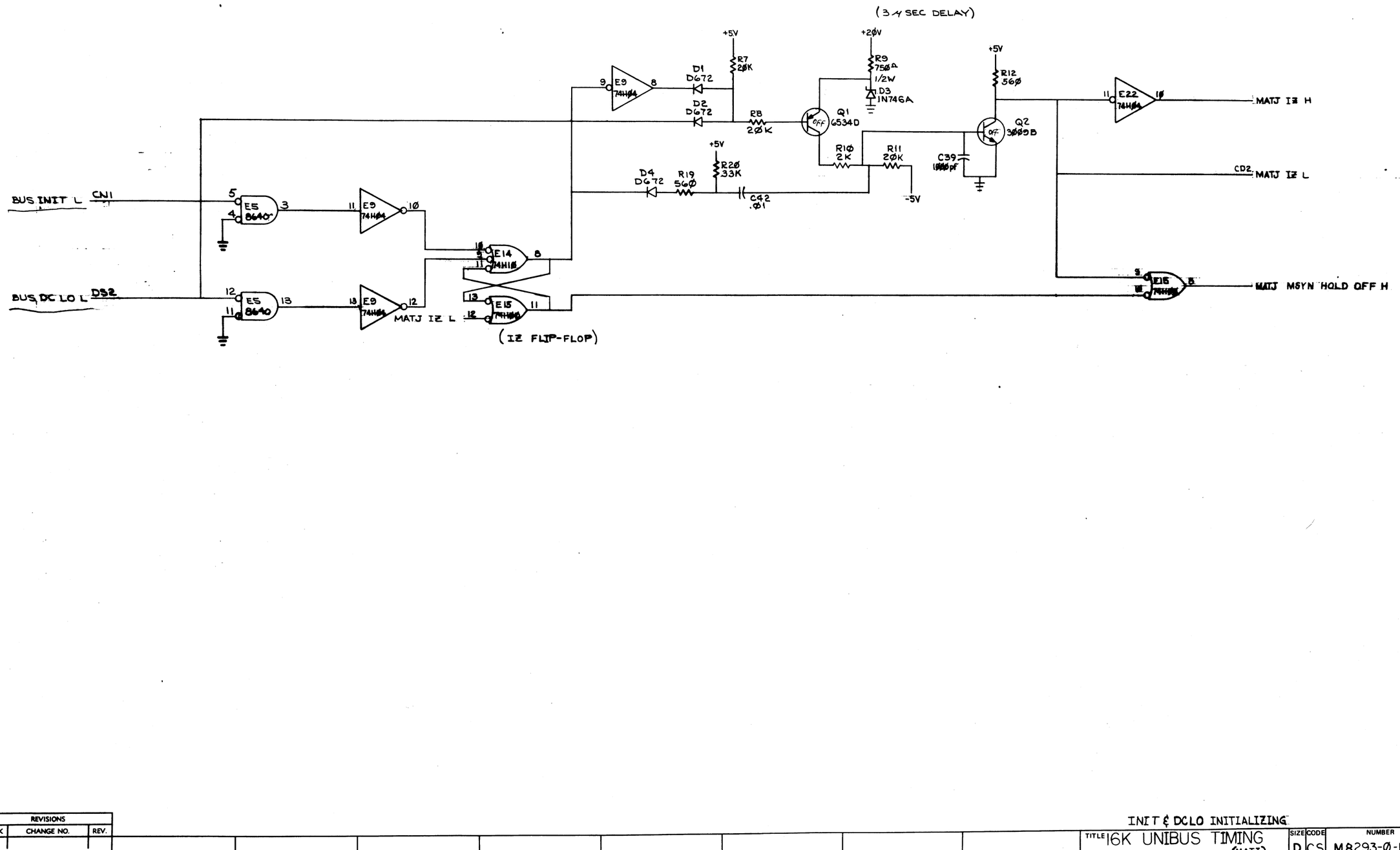
REVISIONS		
CHK	CHANGE NO.	REV.

LATCHES & BYTE MASKING

TITLE	SIZE	CODE	NUMBER	REV.
16K UNIBUS TIMING (MATH)	D	CS	M8293-Ø-1	E

SCALE — SHEET 9 OF 10 DIST.

DEC FORM NO. DRD 128



REVISIONS		
CHK	CHANGE NO.	REV.

INIT & DCLO INITIALIZING

TITLE	SIZE	CODE	NUMBER	REV.
16K UNIBUS TIMING (MATJ)	D	CS	M8293-Ø-1	E
SCALE —	SHEET 1Ø OF 1Ø	DIST.		

DEC FORM NO. DRD 130

M8293-Ø-1 E
SIZE D CODE CS NUMBER M8293-Ø-1 REV E

PAGE REVISION CONTROL SHEET

SH NO.	PAGE REVISIONS										REMARKS
1	C	D	E	F	H	J	K	L	M	N	
2	C	D	E	F	H	J	K	L	M	N	
3	C	D	E	F	H	J	K	L	M	N	
4	C	D	E	F	H	J	K	L	M	N	
5	C	D	E	F	H	J	K	L	M	N	
6	C	D	E	F	H	J	K	L	M	N	

ECO NO.	1	1	2	3	4	5	6	7	8	9
ETCH REV.	D	D	D	D	D	D	D	D	D	D
ENG.	—	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DATE	—	7/23/73	8-15-73	11-16-73	12-19-73	3/13/74	9-11-74	11-23-75	5-12-75	5/12/76

FIRST USED ON OPTION/MODEL
MF11-U & MF11-UP

DRN.	B. ABLENTINE	DATE 2-9-73
CHK'D.	MARCHAND	DATE 4-4-73
ENG.	[illegible]	DATE 4/4/73
PROJ. ENG.	[illegible]	DATE 4/4/73
PROD.	[illegible]	DATE 4/4/73
NEXT HIGHER ASSY.	—	
SCALE	—	
SHEET	1 OF 6	

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

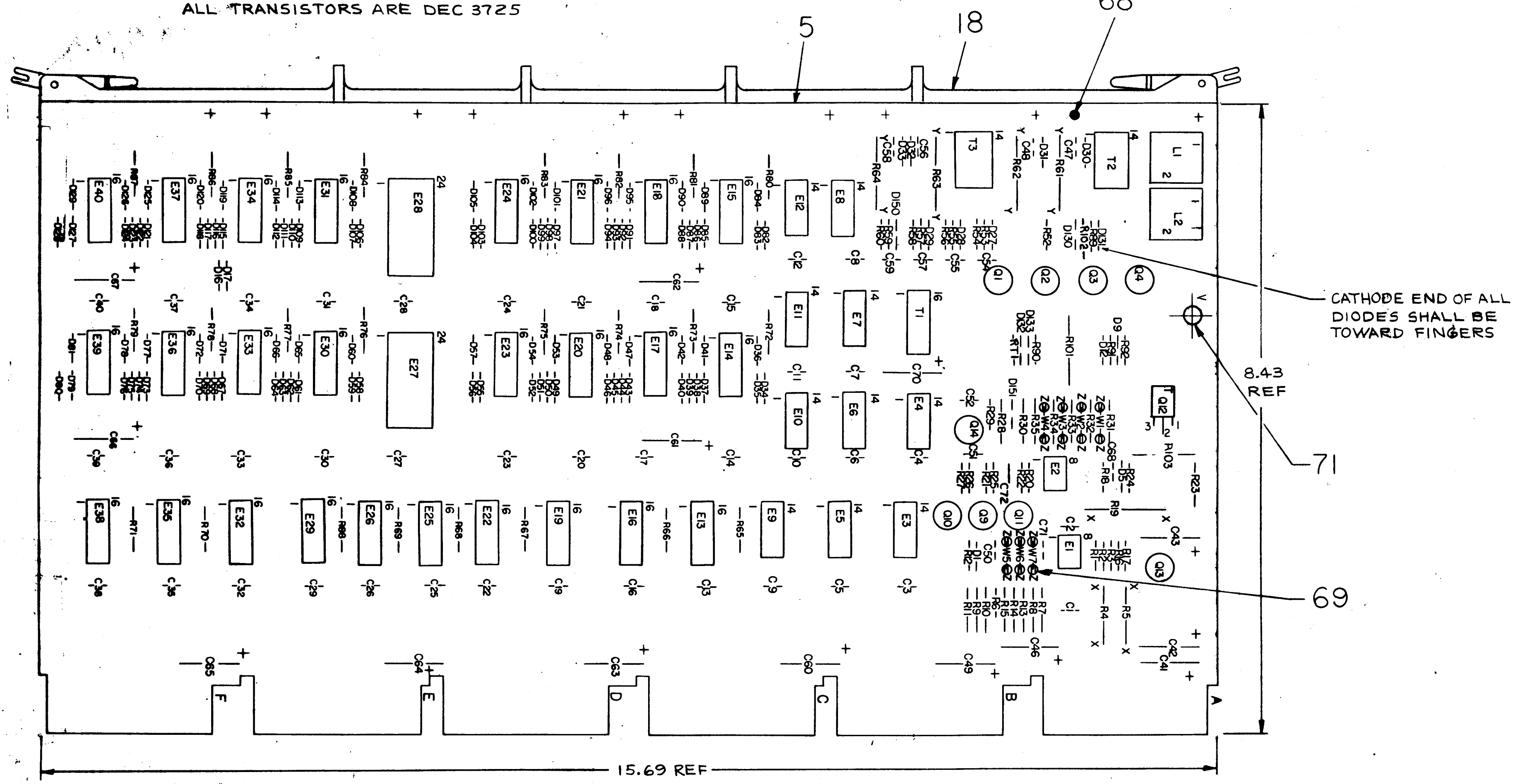
TITLE
16K X-Y DRIVE

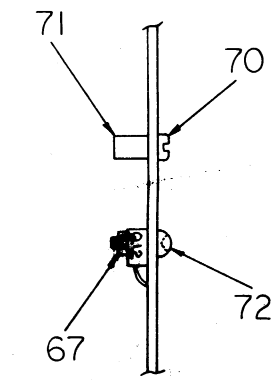
SIZE	CODE	NUMBER	REV.
B	CS	G235 - 0 - 1	N

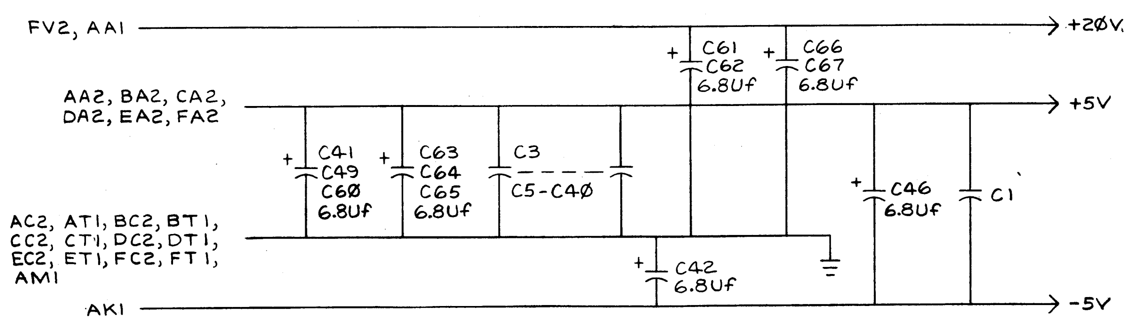
DIST.

NOTES:

1. * INDICATES NOT USED ON MF11-U & MF11-UP (2 PLACES).
2. ** INDICATES NOT USED ON MF11-U & MF11-UP, BUT ARE TIED TO UNUSED TERMINATORS ON THE G114 MODULE, WHICH FORCES THEM TO +3V (5 PLACES).
3. 2 THERMISTOR LOCATED ON H217 STACK MODULE, 1 ON G235
4. UNLESS OTHERWISE INDICATED;
   ALL DIODES ARE D672
   ALL CAPACITORS ARE .01 UF
   ALL RESISTORS ARE 1/4W
   ALL TRANSISTORS ARE DEC 3725







74121	7	—	—
741	—	—	—
75325	—	9	16
7442	8	16	—
74154	12	24	—
IC TYPE	GND	+ 5V	+20V

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

IC PIN LOCATIONS

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION MODEL: MF11-U & MF11-UP

ETCH BOARD REV: D

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

SEMICONDUCTOR CONVERSION CHART

CHANGE NO. / REVISIONS / REV / CHK

DRN. [signature] DATE 4-4-73
CHK'D. MARCHAND DATE 4-4-73
ENG. [signature] DATE 4/4/73
PROJ. ENG. D. [signature] DATE 4/4/73
PROD. R. [signature] DATE 4/4/73

NEXT HIGHER ASSY

SCALE

SHEET 2 OF 6

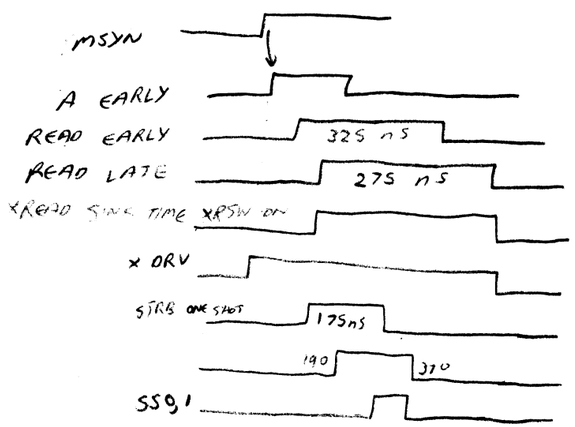
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: 16K X-Y DRIVE

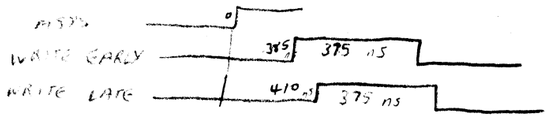
SIZE D CODE CS NUMBER G235-Ø-1 REV. N

DIST.

READ



WRITE



QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO.
1	E6	IC DEC 74H04	1909931	62
1	E10	IC DEC 74H10	1909057	63
2	E7,E11	IC DEC 74H40	1905586	64
24	E13-E18,E20-E26,E29-E31, E33-E40	IC DEC 75325	1910960	65
2	E9,E12	IC DEC 74H50	1909060	66
1		KEPNUT 4-40	9006557	67
12		EYELET HANDLE	9006732	68
14		SPLIT LUGS	9006735	69
1		SCREW NYLON 6-32	9008212-1	70
1		STAND OFF 1/4 X 3/8	9008213	71
1		SCREW (PHILLIPS PAN HEAD)4-40 X 5/16	9006010-1	72
1	R31	RES 19.6K 1/8W 1%	1309419	73
AR	W1-W7	WIRE #22 AWG (SOLID)	9107560-1	74
1	R91,	RES 180Ω 1/4W 5%	1301322	75
1	D133	DIODE ZENER IN752A 5.6V 5%	1102808	76
1	R92	RES 150Ω 1/4W 5%	1300250	77
2	C47, C56	CAP. .022UF 50V	1011683	78
1	RT1	THERMISTER 300Ω 2%	1309785	79
1	R102	RES 330Ω 1/4W 5%	1300295	80
1	Q11	TRANS. DEC 4258	1505321	81
1	E3	I.C. DEC 74H20	1905635	82
1	R7	RES. 9.09K 1/8W 1%	1304855	83
1	R103	RES. 75Ω 1W 5%	1305281	84
A/R		WIRE #30	9105740-55	85

QTY	REF DESIGNATION	DESCRIPTION	PART NO	ITEM NO.
		X-Y COORDINATE HOLE LOCATION	K-CO-G235-0-4	1
		ASSY/DRILLING HOLE LAYOUT	D-AH-G235-0-5	2
		ECO MODULE HISTORY	B-MH-G235-0-6	3
1		ETCHED CIRCUIT BD.	5010145	4
1	C71	CAP 47 PF 100V 5% D.M.	1000011	5
46	C1-C40, C48, C50, C52, C58, C68, C72	CAP .01UF 50V 20%	1001610	6
4	C59, C54, C55, C57	CAP .005 UF 100V 20% DISC	1001765	7
1	C51	CAP 18 PF 100V 5% D.M.	1002608	8
1	C43	CAP 47 UF 20V 10% S. TANT	1004814	9
13	C41, C42, C46, C49, C60-C67, C70	CAP 6.8UF 35V 10% S. TANT	1005306	10
1	D1	DIODE ZENER IN753A 6.2V ± 5%	1102421	11
109	D9, D12, D17, D27-D130, D132, D150	DIODE D672	1105275	12
1	D16	DIODE ZENER IN5248B 18V ± 10%	1110766	13
1	D5	DIODE ZENER IN749A 4.3V ± 5%	1109977	14
1	D131	DIODE ZENER IN754A 6.8V ± 5%	1109991	15
1	D151	DIODE ZENER IN750A 4.7V ± 5%	1100124	16
1		HANDLE ASSY	1210711-2	17
2	R18, R24	RES 100 1/4W 5%	1300229	18
12	R69-R71, R76-R79, R84-R88	RES 220 1/2W 5%	1300274	19
1	R101	RES 220 2W 10%	1300278	20
12	R65-R68, R72-R75, R80-R83	RES 270 1/2W 5%	1300285	21
2	R21, R27	RES 470 1/4W 5%	1300316	22
2	R3, R16,	RES 1K 1/4W 5%	1300385	23
1	R23	RES 1K 1/2W 5%	1300364	24
1	R2	RES 4.7K 1/4W 5%	1300447	25
1	R17	RES 10 1/4W 5%	1301317	26
1	R89	RES 82Ω 1/4W 5%	1301477	27
4	R61-R64	RES 10Ω 2W 10%	1300172	28
1	R22	RES 22K 1/4W 5%	1301808	29
1	R12	RES 270 1/4W 5%	1301972	30
4	R54, R56, R58, R60	RES 18 1/4W 5%	1302124	31
4	R53, R55, R57, R59	RES 75 1/4W 5%	1302378	32
4	R25, R26, R52, R20	RES 2K 1/4W 5%	1302388	33
2	R1, R6	RES 470K 1/4W 5%	1302398	34
1	R29	RES 120K 1/4W 5%	1300539	35
2	R32, R8	RES 10K 1/8W 1%	1302886	36
2	R28, R30	RES 14.7K 1/8W 1%	1302941	37
1	R9	RES 287 1/8W 1%	1305124	38
1	R10	RES 196 1/8W 1%	1302956	39
1	R35	RES 3.16K 1/8W 1%	1303045	40
1	R34	RES 34.8K 1/8W 1%	1303156	41
1	R14,	RES 243K 1/8W 1%	1304843	42
1	R11	RES 2.61K 1/8W 1%	1303303	43
2	R15, R33,	RES 68.1K 1/8W 1%	1305252	44
1	R13	RES 121K 1/8W 1%	1305255	45
2	R4, R5	RES .25 3W 1%	1310219	46
1	R19	RES .08 5W 3%	1310983	47
1	R90	RES 56Ω 1/4W 5%	1302602	48
1	Q14	TRANS DEC 2904A	1501913	49
1	Q13	TRANS DEC 6534B	1503409-1	50
1	Q12	TRANS DEC 4920	1509605	51
6	Q1-Q4, Q9, Q10	TRANS DEC 3725	1510959	52
1	T1	PULSE TRANSFORMER (DIP)	1609651	53
2	T2, T3	SATURATING TRANSFORMER-XY	1610962	54
2	L1, L2	CHOKE 400 UH	1610963	55
2	E27, E28	IC DEC 74154	1909701	56
2	E19, E32	IC DEC 7442	1910046	57
1	E4	IC DEC 74121	1910230	58
2	E1, E2	IC DEC 741	1910298	59
2	E5, E8	IC DEC 74H00	1909056	60

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
16K X-Y DRIVE	D	CS	G235-0-1	N
SCALE 1/1	SHEET 3 OF 6	DIST.		

DEC FORM NO. DRD 137

SIZE D CODE CS NUMBER G235-0-1 REV. N

DRVA X-READ CURRENT SOURCE

DRVA X WRITE CURRENT SOURCE

DRVC Y-WRITE SOURCE TIME H

MAT D WRITE LATE L

DRVC X-READ TIME H

MAT B A EARLY L

MAT B READ EARLY L

DRVC READ TIME H READ LATE

DRVC X-WRITE SOURCE TIME

DRVC X-READ SOURCE TIME

DRVC X-WRITE SINK TIME

DRVC X-READ SINK TIME L

R85 220 ½W +20V

R79 220 ½W

R76 220 ½W

R78 220 ½W

R77 220 ½W

R84 220 ½W

R86 220 ½W

R87 220 ½W

R71 220 ½W +20V

R70 220 ½W

R88 220 ½W

R69 220 ½W

DRVC XS00 DRVC XS01 DRVC XS02 DRVC XS03 DRVC XS04 DRVC XS05 DRVC XS06 DRVC XS07

DRVC XS08 DRVC XS09 DRVC XS10 DRVC XS11 DRVC XS12 DRVC XS13 DRVC XS14 DRVC XS15

X SWITCHES

DRVC X-READ TIME H

MAT D WRITE EARLY L

DRVC WRITE TIME H

DRVC Y-WRITE SINK TIME L

ADA H ADB H ADC H ADD H

DRVC STACK SEL H

DRVC STACK SEL L

DRVC STACK SEL L ALWAYS LOW

MAT F A13 H

MAT F A12 H

MAT F A11 H

MAT F A10 H

DRVC X-READ TIME L

DRVC Y READ SOURCE TIME L

DRVC X-WRITE SOURCE TIME L

DRVC X-READ SOURCE TIME L

DRVC X-WRITE SINK TIME

DRVC STACK SEL L

MAT F A09 H

MAT E A08 H

MAT E A07 H

POS. WRITE DRIVER

NEG READ

FU1 DRVC XPWD0 FS1 DRVC XNRD0

FN1 DRVC XPWD1 FM1 DRVC XNRD1

FV1 DRVC XPWD2 FU2 DRVC XNRD2

FR2 DRVC XPWD3 FP2 DRVC XNRD3

FR1 DRVC XPWD4 FP1 DRVC XNRD4

FL2 DRVC XPWD5 FM2 DRVC XNRD5

FT2 DRVC XPWD6 FS2 DRVC XNRD6

FL1 DRVC XPWD7 FN2 DRVC XNRD7

8 X DRIVERS

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV D

REV	CHANGE NO.	DEC NO.	EIA NO.	DEC NO.	EIA NO.
CHK	REVISIONS	SEMICONDUCTOR CONVERSION CHART			

DRN. DATE 7-18-72
CHK'D. MARCHAND DATE 4-4-73
ENG. DATE 4/4/73
PROJ. ENG. DATE 4/4/73
PROD. DATE 4/4/73
NEXT HIGHER ASSY
SCALE
SHEET 4 OF 6

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
16K X-Y DRIVE (DRVC)

SIZE D | CODE CS | NUMBER G235-Ø-1 | REV. N

DIST.

DRVA Y-READ CURRENT SOURCE

DRVC Y-WRITE SINK TIME L
DRVC Y-READ SOURCE TIME L

R72 270 ½W +20V
R80 270 ½W
R73 270 ½W
R81 270 ½W
R74 270 ½W
R82 270 ½W
R75 270 ½W
R83 270 ½W

75325 E14, E15, E17, E18, E20, E21, E23, E24

D36 CR1 DRVB YSØØ
D35
D34
D84 CS1 DRVB YSØ1
D83
D82
D42 CU1 DRVB YSØ2
D40
D39
D90 CV1 DRVB YSØ3
D88
D87
D41 DA1 DRVB YSØ4
D37
D38
D89 DB1 DRVB YSØ5
D85
D86
D95 DC1 DRVB YSØ6
D91
D92
D97 DD1 DRVB YSØ7
D93
D94
D48 DE1 DRVB YSØ8
D46
D45
D96 DF1 DRVB YSØ9
D94
D93
D54 DH1 DRVB YS1Ø
D52
D51
D102 DJ1 DRVB YS11
D100
D99
D53 DK1 DRVB YS12
D49
D50
D101 DL1 DRVB YS13
D97
D98
D105 DM1 DRVB YS14
D104
D103
D57 DN1 DRVB YS15
D56
D55

74154 E28 DECODER
MAT F A14H EF1 20 D3
MAT E A06H EH1 21 D2
MAT E A05H EK1 22 D1
MAT E AØ3H EJ1 23 DØ
STB1 STBØ 19 18
DRVC STACK SEL L

y SWITCHES

DRVA Y WRITE CURRENT SOURCE

DRVC Y-WRITE SOURCE TIME H
DRVC READ TIME H
74H08 E5

R65 270 ½W +20V
R68 270 ½W
R66 270 ½W
R67 270 ½W

75325 E14, E16, E25, E22, E13

DD2 DRVB YPWDØ
CV2 DRVB YNRDØ
DF2 DRVB YPWD1
DE2 DRVB YNRD1
CU2 DRVB YPWD2
CT2 DRVB YNRD2
DJ2 DRVB YPWD3
DH2 DRVB YNRD3
CS2 DRVB YPWD4
CR2 DRVB YNRD4
DL2 DRVB YPWD5
DK2 DRVB YNRD5
CP2 DRVB YPWD6
CP1 DRVB YNRD6
DN2 DRVB YPWD7
DM2 DRVB YNRD7

8 Y DRIVERS

74H04 E6
74H00 E8

SPARES

7442 E19 DECODER
DRVC STACK SEL L 12 D3
MAT E AØ4H EK2 13 D2
MAT E AØ2H EJ2 14 D1
MAT E AØ1H EH2 15 DØ

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV D

REV	CHANGE NO.	REVISIONS	CHK

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

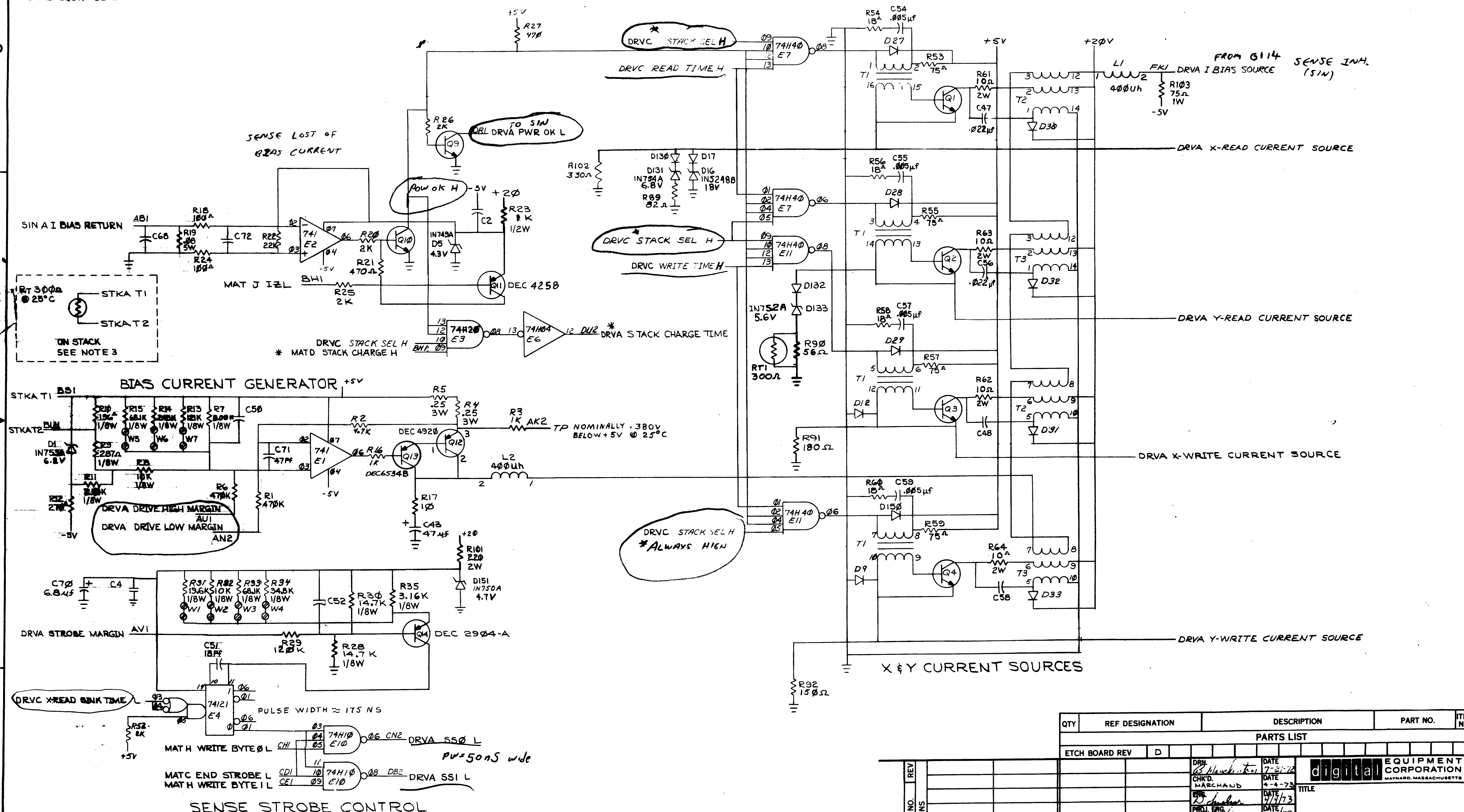
SEMICONDUCTOR CONVERSION CHART

DRWN CS Marchesseault DATE 7-24-72
CHK'D MARCHAND DATE 8-4-73
ENG. DATE 9/4/73
PROJ. ENG. DATE 9/9/73
PROD. DATE 9/4/73
NEXT HIGHER ASSY
SCALE
SHEET 5 OF 6

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
16K X-Y DRIVE
(DRVB)

SIZE D | CODE CS | NUMBER G235-Ø-1 | REV. N
DIST.



QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV D

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

SEMICONDUCTOR CONVERSION CHART

DRN. B. Blanchette	DATE 7-31-72	
CHK'D. MARCHAND	DATE 4-4-73	
ENG. D. Sinha	DATE 4/9/73	
PROJ. ENG.	DATE 4/9/73	
PROD.	DATE 4/9/73	
NEXT HIGHER ASSY		
SCALE		
SHEET 6 OF 6		

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE 16K X-Y DRIVE (DRVA)

SIZE D CODE CS NUMBER G235-0-1 REV. N

DEC FORM NO. DRD-135

PAGE REVISION CONTROL SHEET

SH NO.	PAGE REVISIONS	REMARKS
1	A B C D E F	
2	A B C D E F	
3	A B C D E F	
4	A B C D E F	
5	A B C D E F	
6	A B C D E F	
7	A B C D E F	
8	A B C D E F	
9	A B C D E F	

DATE	ENG.	ETCH REV.	ECO NO.
—	—	B	—
9-4-73	PWD	B	1
10-29-73	PWD	B	G114-00002
10-23-74	DML	C	G114-00003
11-23-74	DML	C	G114-00004
4-29-75	DML	C	G114-00005

FIRST USED ON OPTION/MODEL

MF11-U

DRN. W. Mayor	DATE 4/10/73	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. W Mayor	DATE 4/13/73	
ENG.	DATE 4/13/73	
PROJ. ENG.	DATE 4/13/73	
PROD.	DATE 4/13/73	

TITLE

16K
SENSE/INHIBIT

NEXT HIGHER ASSY. B-DD-MM11-U

SCALE

SHEET 1 OF 9

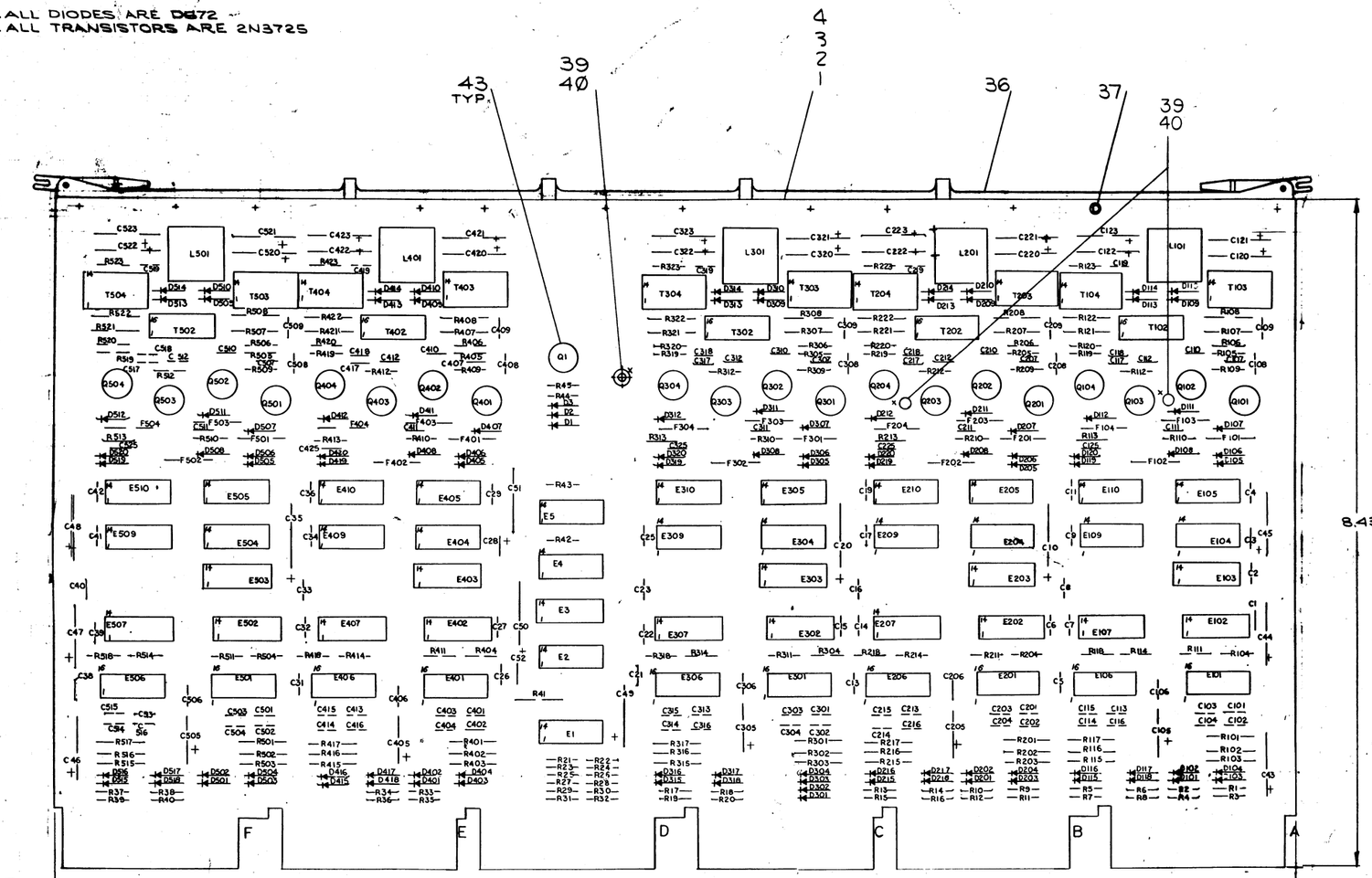
SIZE	CODE	NUMBER	REV.
B	CS	G114-0-1	F

DIST.

DNS 110

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL RESISTORS ARE IN OHMS 1/4W
2. ALL CAPACITANCE IS IN MICROFARADS
3. DATA BITS 17 & 18 ARE NOT USED IN 18 BIT SYSTEMS
4. DATA BIT 18 IS NOT USED IN 19 BIT SYSTEMS
5. DATA BITS 16, 17, 18 & 19 ARE NOT USED IN 16 BIT SYSTEMS
6. ALL DIODES ARE DG72
7. ALL TRANSISTORS ARE 2N3725



IC DEC T380	1	8	–
IC DEC [illegible]	1	8	–
IC DEC 7528	9	16	8
IC TYPE	GND	+5V	-5V

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

IC PIN LOCATIONS

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

FIRST USED ON OPTION MODEL: MF 11-U & MF 11-UP

ETCH BOARD REV: C

REV	CHANGE NO.	DEC NO.	EIA NO.	DEC NO.	EIA NO.
CHK	REVISIONS	SEMICONDUCTOR CONVERSION CHART			

DRN: [illegible] DATE 4-3-73
CHK'D. [illegible] DATE 4-13-73
ENG. [illegible] DATE 4/13/73
PROJ. ENG. [illegible] DATE 4/13/73
PROD. [illegible] DATE 4/13/73
NEXT HIGHER ASSY
SCALE
SHEET 2 OF 9

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: 16K SENSE/INHIBIT

SIZE D CODE CS NUMBER G114-0-1 REV F
DIST.

G114-0-1

1	E1	IC DEC 74H00	1909056	30
14	E2 THRU E5, E105, E110, E205, E210, E305, E310, E405, E410 E505, E510	IC DEC 74H40	1905586	31
10	E101, E106, E201, E206 E301. E306, E401, E406, E501, E506	IC DEC 7528 SENSE AMP	1910687	32
5	E107, E207, E307 E407 E507	IC DEC 8881	1909705	33
10	E104, E109, E204, E209, E304 E309, E404, E409, E504, E509	IC DEC 74H74	1909667	34
5	L101, L201, L301, L401, L501	CHOKE 400 UH	1610963	35
1		HANDLE ASS'Y	12107/1-2	36
12		EYELET GS-4-7	9006732	37
20	F101 THRU F104, F201 THRU F204, F301 THRU F304 F401 THRU F404, F501 THRU F504	FUSE PICOFUSE 3/4A	1210929-3	38
3		STANDOFF 1/4 x 3/8 #6-32 THRU	9008213	39
3		SCREW, NYLON 6/32 X 1/4 LG	9009041-1	40
5	E103, E203, E303, E403 E503	I.C. DEC 74H04	1909931	41
5	E102, E202, E302, E402 E502	IC. DEC 8640	1911469	42
21		TRANSIPAD	9007201	43
				44
A/R		24 AWG WIRE	9107470	45

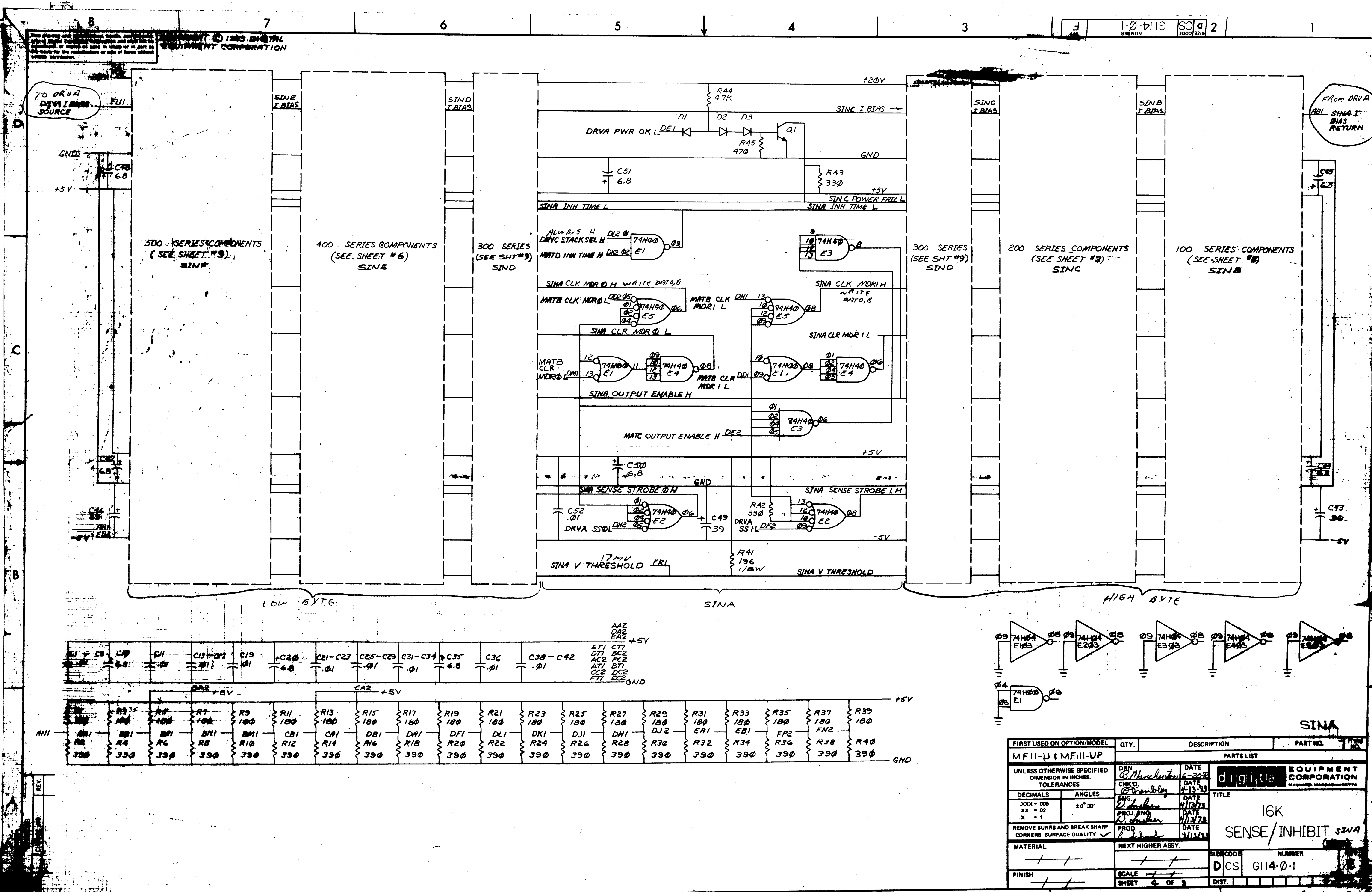
1			ETCHED CIRCUIT BOARD	5010478	1
REF			X-Y COORDINATE HOLE LOCATION	K-CO-6114-0-4	2
REF			ASSY/DRILLING HOLE LAYOUT	D-AH-6114-0-5	3
REF			MODULE ECO HISTORY	B-MH-6114-0-6	4
55	C1 THRU C5, C11, C13 THRU C17 C19, C21, C22, C23, C25 THRU C29, C31, C32, C33 C34, C36 C38 THRU C42, C52, C104, C106 C108, C114 C204 C206, C208, C214, C304 C306, C308, C314 C404, C408, C414, C504 C508, C514	CAP .01UF 50V, 20% CER	1001610	5
29	C10, C20, C30 C120 THRU C123, C220 THRU C223, C320 THRU C323 C420 THRU C423, C520 THRU C523, C44, C45, C47 C48, C49, C51	CAP 6.8UF, 35V, 10% TANT	1005306	6
30	C101, C103, C113, C115, C201, C203 C213, C215, C301, C303, C313 C315, C401, C403, C413, C415, C501, C503, C513, C515 C102, C116, C202, C216, C302 C316, C402, C416, C502, C516	CAP 82 PF, 100V, 5%, D.M.	1000015	7
5	C105, C205, C305, C405, C505	CAP 3.9 uF 10V, ±10% TANT	1000064	8
3	C46, C146, C49	CAP 39 uF 10V ±10% TANT	1000078	9
20	C107, C111, C112, C125, C207, C211, C212, C225, C307, C311, C312, C325, C407, C411, C412 C425, C507, C511, C512, C525	CAP 560 PF, 100V, 5%, D.M.	1000025	10
20	C109, C110, C117, C118, C209 C210, C217, C218, C309, C310 C317, C318, C409, C410, C417 C418, C507, C518	CAP .005UF/100V, 20%, DISC	1001765	11
5	C119, C219, C319, C419, C519	CAP .22 UF 50V +80% -20% CER	1010274-0	12
103	D101 THRU D120 D201 THRU D220, D301 THRU D320, D401 THRU D420 D501 THRU D520	DIODE D672	1105275	13
20	R1, R3, R5, R7, R9, R11, R13, R15 R17, R19, R21, R23, R25, R27 R29, R31, R33, R35, R37, R39	RES. 180, 1/4W, 5%	1301322	14
1	R4	RES. 196, 1/8W, 1% MF	1302956	15
20	R2, R4, R6, R8, R10, R12, R14, R16 R18, R20, R22, R24, R26, R28, R30 R32, R34, R36, R38, R40	RES. 390, 1/4W, 5%	1300309	16
2	R42, R44	RES. 330, 1/4W, 5%	1300295	17
1	R43	RES. 4.7K, 1/4W, 5%	1300447	18
20	R101, R103, R105, R117, R201, R203 R216, R217, R301, R302, R316 R317, R401, R402, R416, R417 R501, R502, R516, R517	RES. 19.6, 1/8W, 1% MF	1303110	19
10	R103, R115, R203, R215, R303 R315, R403, R415, R503, R515	RES. 1K 1/8W 1% MF	1303114	20
20	R104, R117, R204, R218, R204 R211, R213, R218, R304, R311 R314, R318, R404, R411, R414 R418, R504, R511, R514, R518	RES. 1K, 1/4W, 5%	1300365	21
20	R105, R107, R109, R113, R209, R210, R212, R213, R309, R310, R312, R313, R410, R412, R418, R513	RES 100 1/4W 5%	1300229	22
20	R106, R108, R110, R120, R205, R206, R208, R220, R305, R306 R315, R320, R406, R406, R419 R420, R506, R506, R519, R520	RES 5.1 1/4W 5%	1309422	23
1	R45	RES 470 1/4W 5%	1300316	24
5	R123, R223, R323, R423, R523	RES 150 1/4W 5%	1300250	25
20	R107, R108, R121, R122, R207, R209, R221, R222, R307, R308 R321, R322, R407, R408, R421 R423, R507, R508, R521, R522	RES 56 1/2W 5%	1309995	26
21	Q1, Q101 THRU Q104, Q201 THRU Q204, Q301 THRU Q304, Q401 THRU Q404 Q501 THRU Q504	TRANS 2N3725 (TO5)	1510959	27
10	T101, T103 THRU T104, T201, T203 T204, T301, T303 T304, T401, T403 T404, T501, T503, T504	TRANSFORMER SATURATING INHIBIT	1610961	28
5	T102, T202, T302, T402, T502	TRANSFORMER, PULSE (DIP)	1609996	29
QTY	REF DESIGNATION	DESCRIPTION	PART NO.	REV. NO.

PARTS LIST

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	16K SENSE/INHIBIT	SIZE D	CODE CS	NUMBER G114-0-1	REV. F
SCALE		SHEET 3 OF 9	DIST.		

DEC FORM NO. DRD 130


COPYRIGHT © 1973 DIGITAL EQUIPMENT CORPORATION
TO DRVA DRVA I BIAS SOURCE
FROM DRVA ABI SINA I BIAS RETURN
500 SERIES COMPONENTS (SEE SHEET #3) SINF
400 SERIES COMPONENTS (SEE SHEET #6) SINE
300 SERIES (SEE SHT #9) SIND
300 SERIES (SEE SHT #9) SIND
200 SERIES COMPONENTS (SEE SHEET #3) SINC
100 SERIES COMPONENTS (SEE SHEET #8) SINB
SINE I BIAS
SIND I BIAS
SINC I BIAS
SINB I BIAS
+20V
R44 4.7K
D1 D2 D3
DRVA PWR OK L
Q1
R45 470
GND
C51 6.8
R43 330
+5V
SINC POWER FAIL L
SINA INH TIME L
ALWAYS H
DRVC STACK SEL H
MATD INH TIME H
74H00 E1
74H40 E3
SINA CLK MDR 0 H
WRITE DATO,B
MATB CLK MDR 0 L
74H40 E5
MATB CLK MDR1 L
SINA CLK MDR1 H
SINA CLR MDR 0 L
SINA CLR MDR 1 L
MATB CLR MDR 0 L
74H40 E4
MATB CLR MDR 1 L
SINA OUTPUT ENABLE H
MATC OUTPUT ENABLE H
C50 6.8
SINA SENSE STROBE 0 H
SINA SENSE STROBE 1 H
C52 .01
C49 39
DRVA SS0L
R42 330
DRVA SS1L
74H40 E2
-5V
R41 196 1/8W
17 mv
SINA V THRESHOLD
LOW BYTE
SINA
HIGH BYTE
74H04 E1
74H04 E2
74H04 E3
74H04 E4
74H04 E5
74H00 E1
C1–C3 .01
C19 .01
C20 6.8
C21–C23 .01
C25–C29 .01
C31–C34 .01
C35 6.8
C36 .01
C38–C42 .01
+5V
GND
AN1
R11 180
R13 180
R15 180
R17 180
R19 180
R21 180
R23 180
R25 180
R27 180
R29 180
R31 180
R33 180
R35 180
R37 180
R39 180
R12 390
R14 390
R16 390
R18 390
R20 390
R22 390
R24 390
R26 390
R28 390
R30 390
R32 390
R34 390
R36 390
R38 390
R40 390
SINA

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
MF11-U & MF11-UP		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL — FINISH

DRN. DATE 6-20-73 — CHK'D. DATE 4-13-73 — ENG. DATE 4/13/73 — PROJ. ENG. DATE 4/13/73 — PROD. DATE

NEXT HIGHER ASSY.

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: 16K SENSE/INHIBIT SINA

SIZE D — CODE CS — NUMBER G114-Ø-1

SCALE — SHEET 4 OF 9

DRVA I BIAS SOURCE
L5Ø1 4ØØuH
C519 .22
R523 15Ø
R519 5.1
C517 .ØØ5
+2ØV
T5Ø4
D514
C522 6.8
R52Ø 5.1
C518 .ØØ5
SINF INH TIME 2H
SINA INH TIME L
74H24 E5Ø3
+5V
R522 56 1/2W
D52Ø
T5Ø2
Q5Ø4
C525 56ØPF
SINF INØ FJ1
F5Ø4 3/4 A
SINA POWER FAIL L
74H4Ø E51Ø
SINA POWER FAIL L
D512
R513 1ØØ
SINF INH TIME 2H
R521 56 1/2W
D519
C516 .ØØ5
T5Ø2
Q5Ø3
C512 56ØPF
SINF IN1 FJ2
F5Ø3 3/4 A
SINA POWER FAIL L
D511
R512 1ØØ
+2ØV
T5Ø4
D513
C523 6.8
C5Ø8 .Ø1
R5Ø6 5.1
+5V
R5Ø8 56 1/2W
D5Ø6
T5Ø2
Q5Ø2
C511 56ØPF
SINF IN2 EJ2
F5Ø2 3/4A
SINA POWER FAIL L
R51Ø 1ØØ
+2ØV
T5Ø3
D5Ø9
C521 6.8
R5Ø6 5.1
+5V
R5Ø7 56 1/2W
D5Ø5
T5Ø2
Q5Ø1
C5Ø7 56ØPF
SINF IN3 EN2
F5Ø1 3/4A
SINA POWER FAIL L
D5Ø7
R5Ø9 1ØØ
+2ØV
SINE I BIAS
T5Ø3
D51Ø
C52Ø 6.8
74H4Ø E5Ø5

FT2 UNIBUS I/O BUS DØØ L
SINA OUTPUT ENABLE H
8881 E5Ø7
8641 E5Ø2
74H74 E5Ø9
SINA CLK MDRØH
SINA CLEAR MDRØL
+5V
R518 1K
SINA SENSE STROBEØH
C516 82PF
C515 82PF
7528 E5Ø6
E5Ø6
74H04 E5Ø3
C514 .Ø1
SENSE A STKA 8AØ FK1 D515 R517 19.6 1/8W
SENSE B STKA 8BØ FK2 D516 R516 19.6 1/8W
R515 1K ±1% 1/8W
SINA V THRESHOLD
C5Ø5 3.9

FS2 BUS DØ1 L
SINA OUTPUT ENABLE H
SINA CLK MDRØH
SINA CLEAR MDRØL
74H74 E5Ø9
+5V
R514 1K
SINA SENSE STROBEØH
C513 82PF
7528 E5Ø6
E5Ø6
74H04 E5Ø3
STKA SB1 FH2 D517
STKA SA1 FH1 D518

EV1 BUS DØ2 L
SINA OUTPUT ENABLE H
SINA CLK MDRØH
SINA CLEAR MDRØL
8641 E5Ø2
74H74 E5Ø4
+5V
R511 1K
C5Ø6 .Ø1
-5V
SINA SENSE STROBEØH
C5Ø2 82 PF
C5Ø3 82PF
7528 E5Ø1
E5Ø1
74H04 E5Ø3
C5Ø4 .Ø1
STKA SB2 EP2 D5Ø1 R5Ø2 19.6 1/8W
STKA SA2 EP1 D5Ø2 R5Ø1 19.6 1/8W
R5Ø3 1K ±1% 1/8W
SINA V THRESHOLD

FB1 BUS DØ3 L
SINA OUTPUT ENABLE H
SINA CLK MDRØH
SINA CLEAR MDRØL
8641 E5Ø2
74H74 E5Ø4
+5V
R5Ø4 1K
SINA SENSE STROBEØH
C5Ø1 82PF
7528 E5Ø1
E5Ø1
74H04 E5Ø3
STKA SB3 EM2 D5Ø4
STKA SA3 EM1 D5Ø3

5ØØ SERIES SINF

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: 16K SENSE/INHIBIT (SINF)	SIZE D	CODE CS	NUMBER G114-Ø-1 REV. F
SCALE	SHEET 5 OF 9	DIST.	

SINE I BIAS
L4Ø1 4ØØuh
C419 .22
R423 15Ø
R419 5.1
SINE INH TIME 2H
SINA INH TIME L
74H64 E4Ø3
+5V R422 56 1/2W
D42Ø
C417 .ØØ5
T4Ø2
Q4Ø4
C425 56ØPF
F4Ø4 3/4 A
SINA POWER FAIL L
74H4Ø E41Ø
SINA POWER FAIL L
D412
R413 1ØØ
+2ØV
T4Ø4
C422 6.8
D414
SINE IN4 EJ2
R42Ø 5.1
C418 .ØØ5
R421 56 1/2W
+5V
SINE INH TIME 2H
74H4Ø E41Ø
D419
T4Ø2
Q4Ø3
C412 56ØPF
F4Ø3 3/4 A
SINA POWER FAIL L
D411
R412 1ØØ
+2ØV
T4Ø4
C423 6.8
D413
SINE IN5 EE2
C4Ø8 .Ø1
R4Ø6 5.1
+5V
R4Ø8 56 1/2W
SINE INH TIME 2H
74H4Ø E4Ø5
D4Ø6
T4Ø2
Q4Ø2
C411 56ØPF
F4Ø2 3/4 A
SINA POWER FAIL L
D4Ø8
R41Ø 1ØØ
+2ØV
T4Ø3
C421 6.8
D4Ø9
SINE IN6 DT2
SINE INH TIME 2H
74H4Ø E4Ø5
+5V R4Ø7 56 1/2W
D4Ø5
T4Ø2
Q4Ø1
C4Ø7 56ØPF
F4Ø1 3/4A
SINA POWER FAIL L
D4Ø7
R4Ø9 1ØØ
+2ØV
SIND I BIAS
T4Ø3
C42Ø 6.8
D41Ø
R4Ø5 5.1
SINE IN7 DR2

SINA OUTPUT ENABLE H
EU1 BUS DØ4 L
8881 E4Ø7
8641Ø E4Ø2
74H74 E4Ø9
SINA CLK MDRØH
SINA CLEAR MDRØL
+5V
R418 1K
SINA SENSE STROBEØH
C416 82 PF
C415 82PF
7528 E4Ø6
C414 .Ø1
D415
R417 19.6 1/8W
D416
R416 19.6 1/8W
R415 1K ±1% 1/8W
C4Ø5 3.9
SINA V THRESHOLD
STKA SA4 EL2
STKA SB4 EK2

ES1 BUS DØ5L
SINA OUTPUT ENABLE H
SINA CLEAR MDRØL
SINA CLK MDRØH
+5V
R414 1K
SINA SENSE STROBEØH
C413 82PF
7528 E4Ø6
E4Ø6
74H64 E4Ø3
STKA SA5 EH2
STKA SB5 EF2
D417
D418

DM2 BUS DØ6 L
SINA OUTPUT ENABLE H
SINA CLEAR MDRØL
SINA CLK MDRØH
+5V
R411 1K
C4Ø6 .Ø1
-5V
SINA SENSE STROBEØH
C4Ø2 82 PF
C4Ø3 82PF
7528 E4Ø1
E4Ø1
74H64 E4Ø3
C4Ø4 .Ø1
D4Ø1
R4Ø2 19.6 1/8W
D4Ø2
R4Ø1 19.6 1/8W
R4Ø3 1K ±1% 1/8W
STKA SB6 DS2
STKA SA6 DS1
SINA V THRESHOLD

DN2 BUS DØ7 L
SINA OUTPUT ENABLE H
SINA CLEAR MDRØL
SINA CLK MDRØH
+5V
R4Ø4 1K
SINA SENSE STROBEØH
C4Ø1 82PF
E4Ø1
74H64 E4Ø3
STKA SA7 DP1
STKA SB7 DP2
D4Ø4
D4Ø3

REVISIONS
CHK | CHANGE NO. | REV.

400 SERIES SINE

TITLE 16K SENSE/INHIBIT (SINE)
SIZE D CODE CS NUMBER G114-Ø-1 REV F
SCALE — SHEET 6 OF 9 DIST.

SIZE D CODE CS NUMBER G114-0-1 REV F

SINC I BIAS
L201 400uh
C219 .22
R223 150
R219 5.1
SINC INH TIME 2H
SINA INH TIME L
74H04 E203
+5V
R222 56 1/2W
C217 .005
D220
T202
Q204
C225 560 PF
F204 3/4 A
SINA POWER FAIL L
D212
R213 100
+20V
T204
D214
C222 6.8
SINC IN8 BT2
R220 5.1
C218 .005
D219
SINC INH TIME 2H
Q203
C212 560PF
F203 3/4 A
SINC IN9 BP1
D211
R212 100
T204
D213
C223 6.8
C208 .01
R206 5.1
D206
SINC INH TIME 2H
Q202
C211 560PF
F202 3/4 A
SINC IN10 BJ2
D208
R210 100
T203
D209
C221 6.8
SINBI BIAS
T203
D210
C220 6.8
R205 5.1
C210 .005
D205
SINC INH TIME 2H
Q201
C207 560PF
F201 3/4A
SINC IN11 BH2
D207
R209 100
74H40 E205
SINA OUTPUT ENABLE H
SINA CLK MDRI H
SINA CLEAR MDRI L
8881 E207
8640 E202
74H74 E209
74H74 E204
CC1 BUS D08L
BD2 BUS D10L
BE2 BUS D11 L
SINA SENSE STROBE 1H
C216 82 PF
C215 82PF
7528 E206
C214 .01
R218 1K
74H04 E203
E206
STKA SA8 BV2
STKA SB8 BU2
D215
D216
R217 19.6 1/8W
R216 19.6 1/8W
R215 1K ±1% 1/8W
SINA V THRESHOLD
C205 3.9
C213 82PF
R214 1K
STKA SA9 BC2
STKA SB9 BR2
D217
D218
C203 82PF
C204 .01
D201
D202
R202 19.6 1/8W
R201 19.6 1/8W
R203 1K ±1% 1/8W
R211 1K
C206 .01
-5V
E201
C201 82PF
R204 1K
STKA SA11 BF1
STKA SB11 BE2
D204
D203

200 SERIES SINC

REVISIONS		
	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUM	REV.
16K SENSE/INHIBIT (SINC)	D	CS	G114-0	F
SCALE	SHEET 7 OF 9	DIST.		

SINB I BIAS
L101 400uH
C119 .22
R123 150
R119 5.1
SINB INH TIME 2H
SINA INH TIME L
74H04 E103
R122 56 1/2W
C117 .005
+5V
D120
74H40 E110
SINA POWER FAIL L
+20V
T104
D114
C122 6.8
SINB IN12
AU2
Q104
C125 560PF
FI04 3/4A
D112
R113 100
T102
R120 5.1
R121 56 1/2W
C118 .005
D119
SINB INH TIME 2H
SINB IN13
AP2
Q103
C112 560PF
FI03 3/4 A
D111
R112 100
T104
D113
C123 6.8
C108 .01
R106 5.1
R108 56 1/2W
C109 .005
D106
SINB INH TIME 2H
SINB IN14
AL2
Q102
C111 560PF
FI02 3/4 A
D108
R110 100
T103
D109
C121 6.8
SINA I BIAS RETURN
R105 5.1
R107 56 1/2W
C110 .005
D105
SINB INH TIME 2H
SINB IN15
AH2
Q101
C107 560PF
FI01 3/4A
D107
R109 100
T103
D110
C120 6.8
BC1 BUS DI2 L
BD1 BUS DI3 L
AD2 BUS DI4 L
AE2 BUS DI5 L
8881 E107
8640 E102
74H74 E109
74H74 E104
SINA OUTPUT ENABLE H
SINA CLK MDRI H
SINA CLEAR MDRI L
SINA SENSE STROBE 1H
C116 82 PF
C115 82PF
7528 E106
E106
74H04 E103
R118 1K
R114 1K
R111 1K
R104 1K
C113 82PF
C103 82PF
C101 82PF
7528 E101
E101
C114 .01
C104 .01
C106 .01
-5V
STKA SA12 AV1
STKA SB12 AV2
STKA SA13 AS2
STKA SB13 AR2
STKA SB14 AJ1
STKA SA14 AH1
STKA SA15 AF1
STKA SB15 AF2
D115
D116
D117
D118
D101
D102
D104
D103
R117 19.6 1/8W
R116 19.6 1/8W
R102 19.6 1/8W
R101 19.6 1/8W
R115 1K ±1% 1/8W
R103 1K ±1% 1/8W
SINA V THRESHOLD
C105 3.9

100 SERIES SINB

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
16K SENSE/INHIBIT (SINB)	D	CS	G114-0-1	F
SCALE	SHEET 8 OF 9	DIST.		

DEC FORM NO. DRD 138

SIND I BIAS
L3Ø1 400uH
C319 .22
R323 150
R319 5.1
SIND INH TIME 2H
SINA INH TIME L
74H04 E3Ø3
+5V R322 56 1/2W
D32Ø
C317 .ØØ5
T3Ø2
Q3Ø4
C325 560PF
F3Ø4 3/4 A
SINA POWER FAIL L
74H4Ø E31Ø
D312
R313 1ØØ
T3Ø4
D314
C322 6.8
+2ØV
SIND IN16 CN2

SIND INH TIME 2H
R321 56 1/2W
D319
C318 .ØØ5
R32Ø 5.1
Q3Ø3
C312 560PF
F3Ø3 3/4 A
SINA POWER FAIL L
D311
R312 1ØØ
T3Ø4
D313
C323 6.8
+2ØV
SIND IN17 CJ1

SIND INH TIME 2H
+5V
R3Ø8 56 1/2W
D3Ø6
C3Ø8 .Ø1
R3Ø6 5.1
C3Ø9 .ØØ5
T3Ø2
Q3Ø2
C311 560PF
F3Ø2 3/4 A
SINA POWER FAIL L
D3Ø8
R31Ø 1ØØ
T3Ø3
D3Ø9
C321 6.8
+2ØV
SIND IN18 CJ2

SIND INH TIME 2H
+5V R3Ø7 56 1/2W
D3Ø5
C31Ø .ØØ5
R3Ø5 5.1
T3Ø2
Q3Ø1
C3Ø7 560PF
F3Ø1 3/4A
SINA POWER FAIL L
D3Ø7
R3Ø9 1ØØ
T3Ø3
D31Ø
C32Ø 6.8
+2ØV
SINC I BIAS
SIND IN19 CE2

SINA OUTPUT ENABLE H
88B1 E3Ø7
PARITY LOW BYTE
DB2 INT BUS DI6 L
8640 E3Ø2
SINA CLK MDRØH
74H74 E3Ø9
SINA CLEAR MDRØL
SINA SENSE STROBEØH
C316 82 PF
7528 E3Ø6
C315 82PF
C314 .Ø1
STKA SB16 CM2
D315
R317 19.6 1/8W
STKA SA16 CM1
D316
R316 19.6 1/8W
R315 1K ±1% 1/8W
SINA V THRESHOLD
C3Ø5 3.9
+5V
R318 1K
74H04 E3Ø3
E3Ø6

NOT USED
DC1 INT BUS DI7L
SINA OUTPUT ENABLE H
SINA CLK MDRØH
SINA CLEAR MDRØL
SINA SENSE STROBEØH
C313 82PF
STKA SB17 CL2
D317
STKA SA17 CK2
D318
R314 1K
+5V
E3Ø6

NOT USED
CB2 INT BUS DI8L
SINA OUTPUT ENABLE H
SINA CLK MDR1 H
SINA CLEAR MDR1 L
SINA SENSE STROBE1 H
C3Ø2 82 PF
C3Ø3 82PF
C3Ø4 .Ø1
STKA SB18 CH2
D3Ø1
R3Ø2 19.6 1/8W
STKA SA18 CH1
D3Ø2
R3Ø1 19.6 1/8W
R3Ø3 1K ±1% 1/8W
SINA V THRESHOLD
C311 -5V
R311 1K
+5V
E3Ø1

PARITY HIGH BYTE
CD2 INT BUS DI9 L
SINA OUTPUT ENABLE H
SINA CLK MDR1 H
SINA CLEAR MDR1 L
SINA SENSE STROBE1H
C3Ø1 82PF
STKA SA19 CF1
D3Ø4
STKA SB19 CF2
D3Ø3
R3Ø4 1K
+5V
E3Ø1

REVISIONS		
CHK	CHANGE NO.	REV.

ODD PARITY

300 SERIES SIND

TITLE	SIZE	CODE	NUMBER	REV.
16K SENSE/INHIBIT (SIND)	D	CS	G114-Ø-1	F
SCALE —	SHEET 9 OF 9		DIST.	

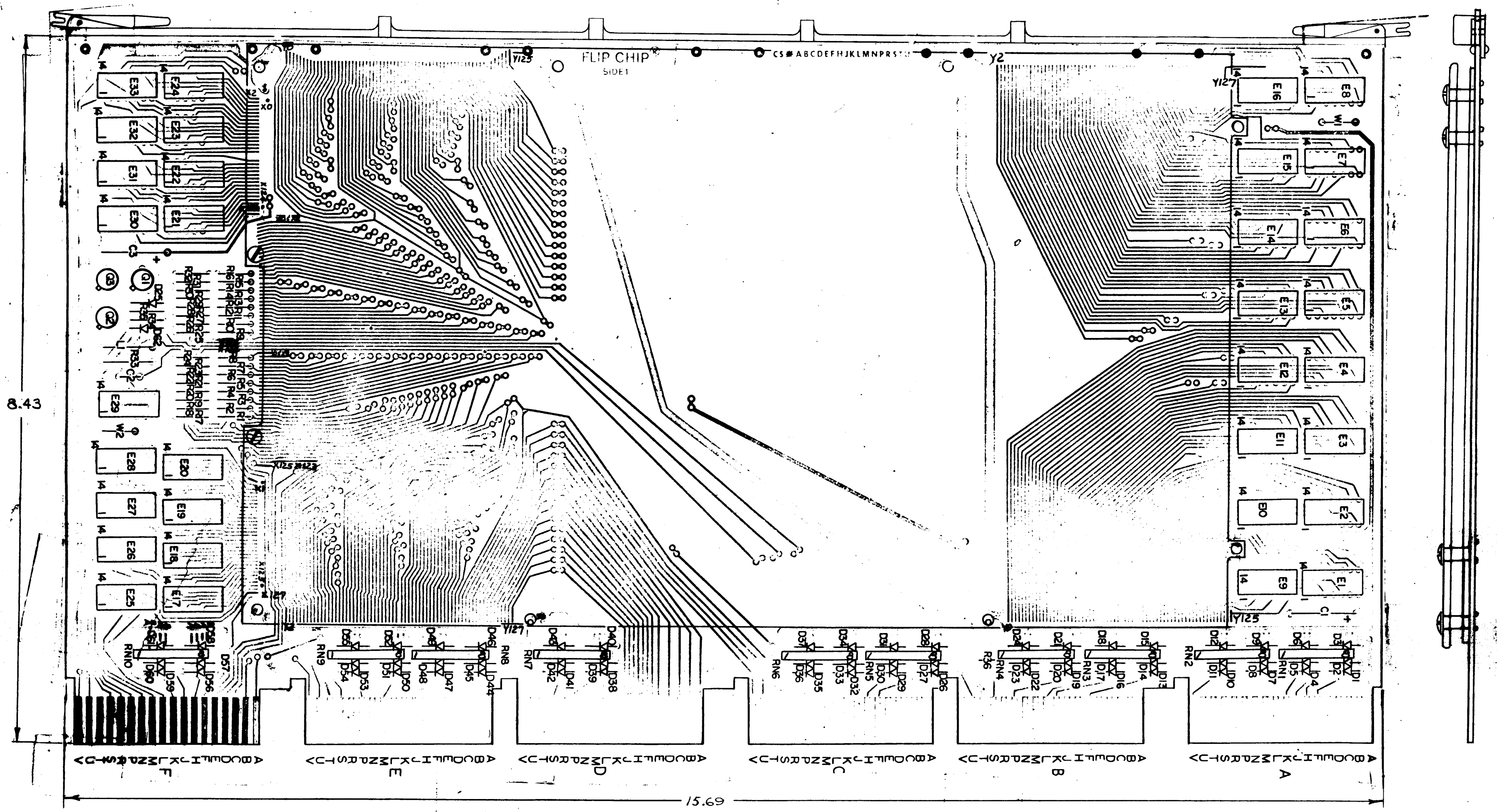
DEC FORM NO. DRD 130

NOTES:

1. —o XØ THRU X127 o— & —o YØ THRU Y127 o— INDICATES MAGNET WIRE TERMINATION (SOLDERED TO PRINTED CIRCUIT PAD).
2. FOR ASSEMBLY INFORMATION & PART NO'S. OF ITEMS NOT CALLED OUT ON THIS DRAWING REFER TO E-AD-9305680-0-0 (MEMORY STACK ASS'Y).

LEGEND

NUMBER	DEC PURCHASE SPEC	DEC PART NO.	STACK CONFIGUREATION
9305680-1		H217-A	16K x 20
9305680-2		H217-B	16K X 19
9305680-3		H217-C	16K x 18
9305680-4		H217-D	16K X 16



DEC 2501	N/A	N/A
IC TYPE	GND	+ 5V

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

IC PIN LOCATIONS

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		MEMORY STACK ASSY	9305680	24
3		TRANSIPADS	9007200	23
2	W1, W2	WIRE, BUS #22 AWG	9107560-1	22
				21
				20
				19
1	R36	RES 300 2% THERMAL DISC	1303785	18
1	L1	CHOKE 100Uh 10%	16 10662	17
3	Q1, Q2, Q3	TRANSISTOR DEC 3734	15 10062	16
32	R1 THRU R32	RES. 220, 1/4W 5%	13 00271	15
2	R34, R35	RES. 68, 1/4W 5%	13 00219	14
1	R33	RES. 39, 1/2W 5%	13 02336	13
10	RN1 THRU RN10	RES NETWORK 2-.5K, 4-.1K	13 10964	12
1	E29	IC DEC. 74H40	19 05586	11
32	E1 THRU E28, E30 THRU E33	IC DEC. 2501 (16 DIODE)	19 10010	10
62	D1 THRU D62	DIODE D672	11 05275	9
2	C1, C3	CAP. 6.8UF. 35V 10% S. TANT	10 05306	8
1	C2	CAP. .01 uf 50 V. 20%	10 01610-00	7
				6
				5
				4
				3
REF		X-Y COORDINATE HOLE LOCATION	K-CO-H217-Ø-4	2
1		ETCH CKT. BOARD (G 647)	5010023	1

PARTS LIST

FIRST USED ON OPTION MODEL: MF11-U/UP

ETCH BOARD REV: E

SEMICONDUCTOR CONVERSION CHART

DEC NO.	EIA NO.	DEC NO.	EIA NO.
		DEC 3734	NONE
		D672	1N3653

REVISIONS

REV	CHANGE NO.			
E	H217-00003	D. SMELSER	9/25/74	7-1974
C	H217-00004	D. SMELSER	04 Mar 76	3/10/76

DRN.	B. Manchester	DATE 7-11-72
CHKD.		DATE 2 Jan 73
ENG.	D. Smelser	DATE 1/10/73
PROJ. ENG.	D. Smelser	DATE 1/10/73
PROD.		DATE 5/16/73

NEXT HIGHER ASSY

SCALE

SHEET 1 OF 3

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: STACK BOARD

SIZE D · CODE CS · NUMBER H217 Ø-1 · REV. E

DIST.

DEC FORM NO. DRD-135A

-5V AK1

SINF IN0 FJ1 D60 D672 2 IA D59 D672 3 IB RN10 5 D61 D672 → BIT 0 → FK1 STKA SA0, FK2 STKA SB0

SINF IN1 FJ2 D57 D672 7 IA D56 D672 8 IB RN10 5 D58 D672 → BIT 1 → FH1 STKA SA1, FH2 STKA SB1

SINF IN2 ER2 D54 D672 2 IA D53 D672 3 IB RN9 5 D55 D672 → BIT 2 → EP1 STKA SA2, EP2 STKA SB2

SINF IN3 EN2 D51 D672 7 IA D50 D672 8 IB RN9 5 D52 D672 → BIT 3 → EM1 STKA SA3, EM2 STKA SB3

SINE IN4 EJ2 D48 D672 2 IA D47 D672 3 IB RN8 5 D49 D672 → BIT 4 → EL2 STKA SA4, EK2 STKA SB4

SINE IN5 EE2 D45 D672 7 IA D44 D672 8 IB RN8 5 D46 D672 → BIT 5 → EH2 STKA SA5, EF2 STKA SB5

SINE IN6 DT2 D42 D672 2 IA D41 D672 3 IB RN7 5 D43 D672 → BIT 6 → DS1 STKA SA6, DS2 STKA SB6

SINE IN7 DR2 D39 D672 7 IA D38 D672 8 IB RN7 5 D40 D672 → BIT 7 → DP1 STKA SA7, DP2 STKA SB7

SIND IN16 CN2 D36 D672 2 IA D35 D672 3 IB RN6 5 D37 D672 → BIT 16 (PA) → CM1 STKA SA16, CM2 STKA SB16

SIND IN17 CJ1 D33 D672 7 IA D32 D672 8 IB RN6 5 D34 D672 → BIT 17 → CL2 STKA SA17, CK2 STKA SB17

SIND IN18 CJ2 D30 D672 2 IA D29 D672 3 IB RN5 5 D31 D672 → BIT 18 → CH1 STKA SA18, CH2 STKA SB18

SIND IN19 CE2 D27 D672 7 IA D26 D672 8 IB RN5 5 D28 D672 → BIT 19 (PB) → CF1 STKA SA19, CF2 STKA SB19

SEE NOTES 3 & 4

SINC IN8 BT2 D23 D672 2 IA D22 D672 3 IB RN4 5 D24 D672 → BIT 8 → BV2 STKA SA8, BU2 STKA SB8

SINC IN9 BP1 D20 D672 7 IA D19 D672 8 IB RN4 5 D21 D672 → BIT 9 → BS2 STKA SA9, BR2 STKA SB9

SINC IN10 BJ2 D17 D672 2 IA D16 D672 3 IB RN3 5 D18 D672 → BIT 10 → BL1 STKA SA10, BK1 STKA SB10

SINC IN11 BH2 D14 D672 7 IA D13 D672 8 IB RN3 5 D15 D672 → BIT 11 → BF1 STKA SA11, BF2 STKA SB11

SINB IN12 AU2 D11 D672 2 IA D10 D672 3 IB RN2 5 D12 D672 → BIT 12 → AV1 STKA SA12, AV2 STKA SB12

SINB IN13 AP2 D8 D672 7 IA D7 D672 8 IB RN2 5 D9 D672 → BIT 13 → AS2 STKA SA13, AR2 STKA SB13

SINB IN14 AL2 D5 D672 2 IA D4 D672 3 IB RN1 5 D6 D672 → BIT 14 → AJ1 STKA SA14, AH1 STKA SB14

SINB IN15 AH2 D2 D672 7 IA D1 D672 8 IB RN1 5 D3 D672 C1 6.8UF → BIT 15 → AF1 STKA SA15, AF2 STKA SB15

+5V DR2 D62 D672 R33 39

+20V 4A1 Q1 DEC 3734 L1 100 UH D63 D672 C3 6.8UF C2 .01UF

Q2 DEC 3734 R34 68 MATD STACK CHG H DB2 10 12 13 74H40 E29 8

Q3 DEC 3734 R35 68

AC2, BT1 DC2, ET1

R36 RT BS1 BU1 STKA T1 STKA T2

SEE NOTE 1

READ XNR0Ø X543

STK A CHG

F8 220 F6 220 F1 220 F24 220 F23 220 F7 220 F5 220 F22 220 R21 220 R5 220 R20 220 R4 220 R17 220 R18 220 R3 220 R19 220

E33 E32 E31 E30 E29 E28 E27 E26 E25 E24 E23 E22 E21 E20 E19 E18

11 oXØ	12 oX4	8 oX1Ø	9 oX14	2 oX16	3 oX2Ø	7 oX26	5 oX3Ø	12 oX34	11 oX38	9 oX4Ø	8 oX44	3 oX5Ø	5 oX54	2 oX56	7 oX6Ø	DRVC XNRDØ FS1
12 oX2	11 oX6	9 oX8	8 oX12	3 oX18	5 oX22	2 oX24	7 oX28	12 oX32	11 oX36	8 oX42	9 oX46	2 oX48	3 oX52	7 oX58	5 oX62	DRVC XPWDØ FU1 / DRVC XNRD2 FU2
12 oX64	11 oX63	8 oX74	9 oX78	2 oX8Ø	3 oX84	7 oX9Ø	5 oX94	12 oX98	11 oX102	9 oX104	8 oX108	3 oX114	5 oX118	2 oX12Ø	7 oX124	DRVC XPWD2 FV1 / DRVC XNRD4 FP1
12 oX66	11 oX7Ø	9 oX72	8 oX76	3 oX82	5 oX86	2 oX88	7 oX92	12 oX96	11 oX100	8 oX106	9 oX110	2 oX112	3 oX116	7 oX122	5 oX126	DRVC XPWD4 FR1 / DRVC XNRD6 FS2
12 oX1 W2	11 oX5	8 oX11	9 oX15	2 oX17	3 oX21	7 oX27	5 oX31	11 oX35	12 oX39	9 oX41	8 oX45	3 oX51	5 oX55	oX57	oX61	DRVC XPWD6 FT2 / DRVC XNRD1 FM1
12 oX3	11 oX7	9 oX9	8 oX13	3 oX19	5 oX23	2 oX25	7 oX29	12 oX33	11 oX37	8 oX43	9 oX47	2 oX49	3 oX53	7 oX59	5 oX63	DRVC XPWD1 FN1 / DRVC XNRD3 FP2
12 oX65	11 oX69	9 oX75	9 oX79	2 oX81	3 oX85	7 oX91	5 oX95	11 oX99	12 oX103	9 oX105	8 oX109	3 oX115	5 oX119	2 oX121	7 oX125	DRVC XPWD3 FR2 / DRVC XNRD5 FM2
11 oX67	12 oX71	9 oX73	8 oX77	3 oX83	5 oX87	2 oX89	7 oX93	12 oX97	11 oX101	8 oX107	9 oX111	3 oX113	2 oX117	5 oX123	7 oX127	DRVC XPWD5 FL2 / DRVC XNRD7 FN2 / DRVC XPWD7 FL1

EV1 DRVC XSØØ; FF2 DRVC XSØ1; FA1 DRVC XSØ2; FC1 DRVC XSØ3; EU2 DRVC XSØ4; FB1 DRVC XSØ5; EV2 DRVC XSØ6; EU1 DRVC XSØ7; ET2 DRVC XSØ8; FB2 DRVC XSØ9; ES1 DRVC XS1Ø; FD2 DRVC XS11; FF1 DRVC XS12; FE1 DRVC XS13; FE2 DRVC XS14; FD1 DRVC XS15

X AXIS

NOTES:

1. THERMISTOR FOR TEMPERATURE COMPENSATION
2. JUMPER W2 IS A CURRENT LOOP FOR TEST USE ONLY
3. FOR H217-D (16 BIT STACK) THE FOLLOWING COMPONENTS MUST BE DELETED; RN5, RN6, D26 THRU D37
4. FOR H217C (18 BIT STACK) THE FOLLOWING COMPONENTS MUST BE DELETED; D29, D30, D32, D33. FOR THE UNUSED BITS, THE FOUR MAGNET WIRE TERMINATION PADS (1A, 1B, 5A, 5B) MUST BE SHORTED TOGETHER

   FOR H217B (19 BIT STACK) THE FOLLOWING COMPONENTS MUST BE DELETED; D29, D30. FOR THE UNUSED BIT THE FOUR MAGNET WIRE TERMINATION PADS (1A, 1B, 5A, 5B) MUST BE SHORTED TOGETHER

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
ETCH BOARD REV	E			

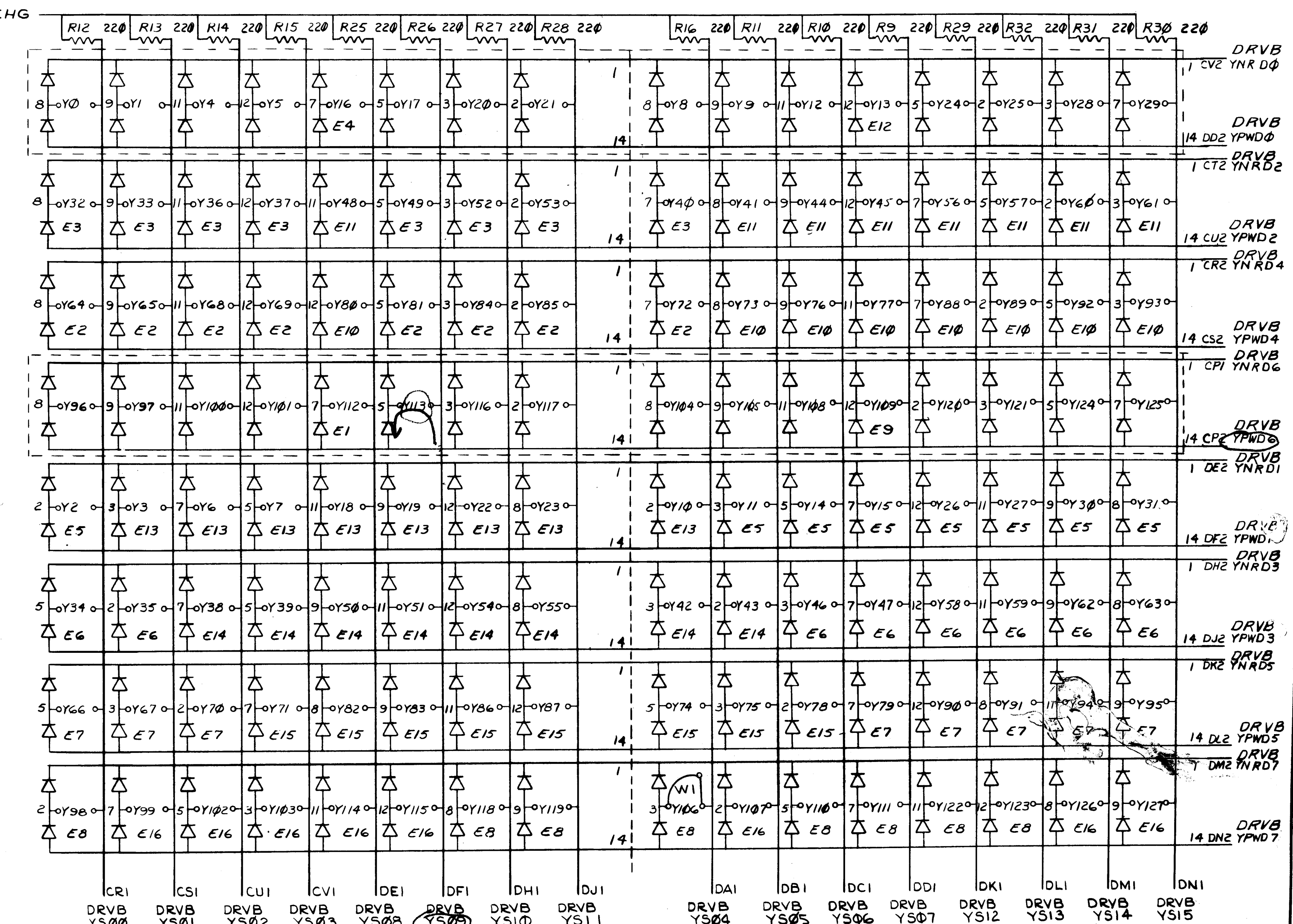
REVISIONS

REV	CHANGE NO	DEC NO.	EIA NO.	DEC NO.	EIA NO.
CHK		SEMICONDUCTOR CONVERSION CHART			

DRN.	DATE 7-7-72	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
CHK'D.	DATE 8/JAN/73	TITLE	
ENG.	DATE 11/1/73	STACK BOARD (STKA)	
PROJ. ENG.	DATE 11/1/73		
PROD.	DATE 11/16/73		
NEXT HIGHER ASSY		SIZE D CODE DCS NUMBER H217-Ø REV. C	
SCALE		DIST.	
SHEET OF			

DEC FORM NO. DRD-135

WRITE
YPWD6 Y113
YS09



Y AXIS

DRIVER 16×128
SWITCH 8×128
DIODE 128

NOTE: JUMPER W1 IS A CURRENT LOOP FOR TEST USE ONLY

0 to 128K mem DIOD.

MF11-U/UP
SEE Page 2-8

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

ETCH BOARD REV E

SEMICONDUCTOR CONVERSION CHART

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

CHANGE NO. / REVISIONS / REV / CHK

DRN. B. Manderton DATE 7-10-72
CHKD. P.J. Bloe DATE 9 Jan 73
ENG. D. Amelar DATE 1/10/73
PROJ. ENG. D. Amelar DATE 1/10/73
PROD. DATE 5/16/73
NEXT HIGHER ASSY
SCALE
SHEET 3 OF 3

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE STACK BOARD (STKB)

SIZE D CODE CS NUMBER H217-0-1 REV. C

DIST.

DEC FORM NO. DRD-136

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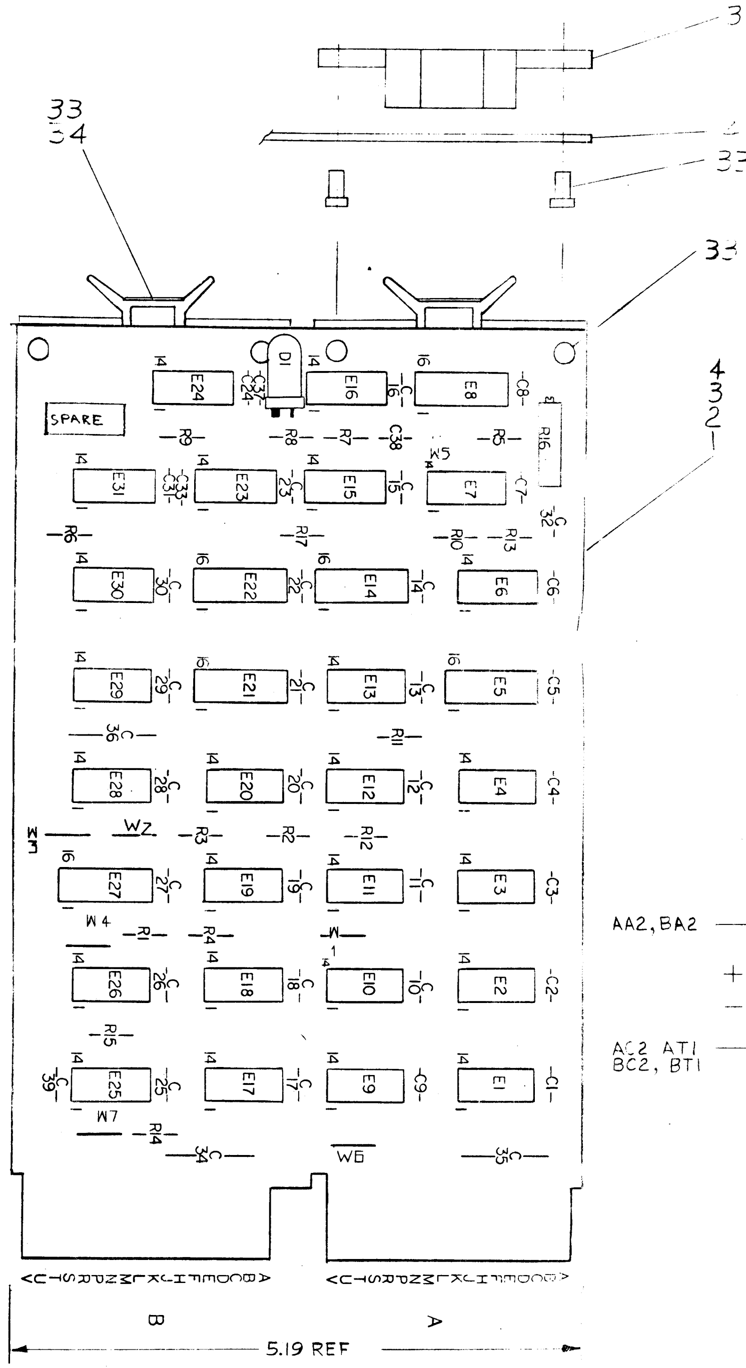
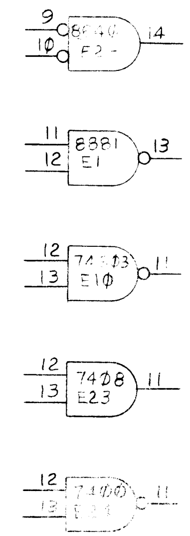
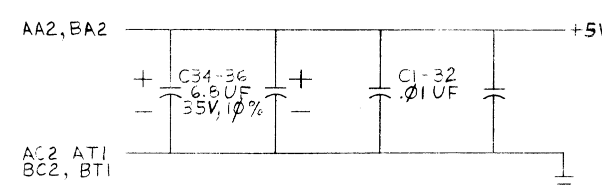
NOTES:

1. UNLESS OTHERWISE SPECIFIED: RESISTORS ARE 1/4 W, 5% CAPACITORS ARE 1ØØ V. 2Ø%
2. JUMPERS CONTROL OPERATIONS AS FOLLOWS:
   - W1-W4 SELECT CSR ADDRESS
   - W5 CAPACITOR FOR SSYN DLY; NEVER USED
   - W6 OUT FOR MF11-LP, IN FOR MF11-UP
   - W7 OUT TO HANG BUS ON PARITY ERROR.
3. DEC 864Ø REPLACES THE OBSOLETE DEC 380.







PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M7259-Ø-4	1
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M7259-Ø-5	2
REF		MODULE ECO HISTORY	B-MH-M7259-Ø-6	3
1		ETCHED CKT. BD.	5010314	4
1	C39	CAP 47Ø PF., 1ØØ V 5% D.M.	1000024	5
2	C33, C37	CAP 33Ø PF., 1ØØ V, 5% DM	1000023	6
32	C1-C32	CAP .Ø1UF., 1ØØV 2Ø% DISC	1001610	7
3	C34, C35, C36	CAP 6.8UF 35V 1Ø% S.TA	1005306	8
1	C38	CAP 22ØPF, 1ØØV, 5% DM	1000021	9
3	R8, R9, R15	RES 1ØØ, ¼W, 5%	1300229	10
6	R1-R4, R7, R14	RES 4.7K, ¼W 5%	1300447	11
5	R6. R1Ø, R11, R12 R17	RES 47Ø, ¼W, 5%	1300316	12
1	R13	RES 1K, ¼W, 5%	1300365	13
1	R16	RES 2Ø K 3/4W 1Ø% 78 P.R. POT	1309143-11	14
1	E24	IC DEC 74ØØ	1905575	15
1	E3Ø	IC DEC 743Ø	1905578	16
1	E31	IC DEC 74Ø2	1909004	17
1	E19	IC DEC 314A	1909704	18
1	E23	IC DEC 74Ø8	1910155	19
4	E1, E9, E17, E25	IC DEC 8881	1909705	20
1	E16	IC DEC 74HØ4	1909931	21
1	E27	IC DEC 7485	1910224	22
1	E8	IC DEC 74123	1910436	23
1	E1Ø	IC DEC 74SØ3	1910533	24
	[illegible]	IC DEC 74S74	1910544	25
	E21	IC DEC 74S174	1910650	26
2	E5, E22	IC DEC 74157	1910655	27
9	E2, E3, E11, E12, E18, E2Ø, E26, E28 E29	IC DEC 864Ø	1911469	28
2	E4, E13	DEC 82S62	1911201	29
1	E14	IC DEC 8266	1909934	30
2	E6, E7	IC DEC 7474	1905547	31
6	W1-W4, W7, W6	JUMPER, INSULATED GETIG ENG L-2007-1	9009105	32
4		EYELET (GS-4-7)	9008732	33
2		HANDLE, FLIP CHIP (MAGENTA)	9008337-6	34
1	R5	RES 5.6K, 1/4 W, 5%	1301874	35
1	D1	LIGHT EMITTING DIODE	1110324	36

IC PIN LOCATIONS

IC TYPE	GND	+ 5V
IC DEC 864Ø	1	8
IC DEC 8266	8	16
IC DEC 74123	8	16
IC DEC 74174	8	16
IC DEC 74157	8	16
IC DEC 7485	8	16
IC DEC 314A	1	8

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

REVISIONS

REV	CHANGE NO.	
F	M7259-00006	V. BOAEN
E	M7259-00005	S. ROTHMAN 12/13/73
D	M7259-[illegible]	
C	M7259-00003	R. MOORE
B	M7259-00002	REDRAWN REVISED, R. MOORE 5/10/73

SEMICONDUCTOR CONVERSION CHART

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

FIRST USED ON OPTION MODEL: MF11-LP

ETCH BOARD REV: D

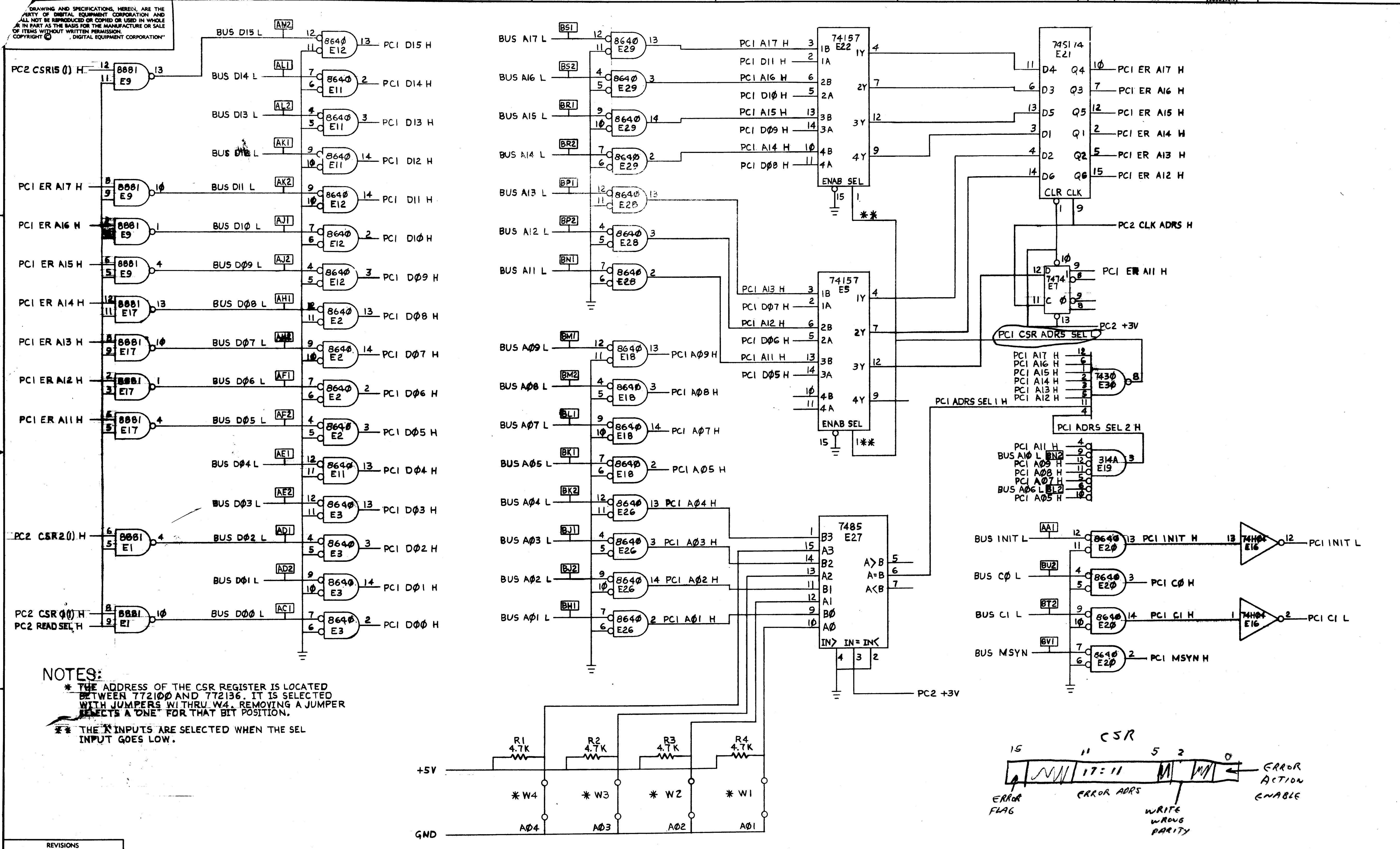
DRN. M. PIERCE, DATE 12/16/72
CHK'D. K. GLEEZEN, DATE 1/17/73
ENG. DATE 5/1/73
PROJ. ENG.
PROD.
NEXT HIGHER ASSY: B-DD-MF11-LP
SCALE: NONE
SHEET 1 OF

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: PARITY CONTROL MF11-LP

SIZE: D CODE: CS NUMBER: M7259-Ø-1 REV. F

DEC FORM NO. DRD-135A



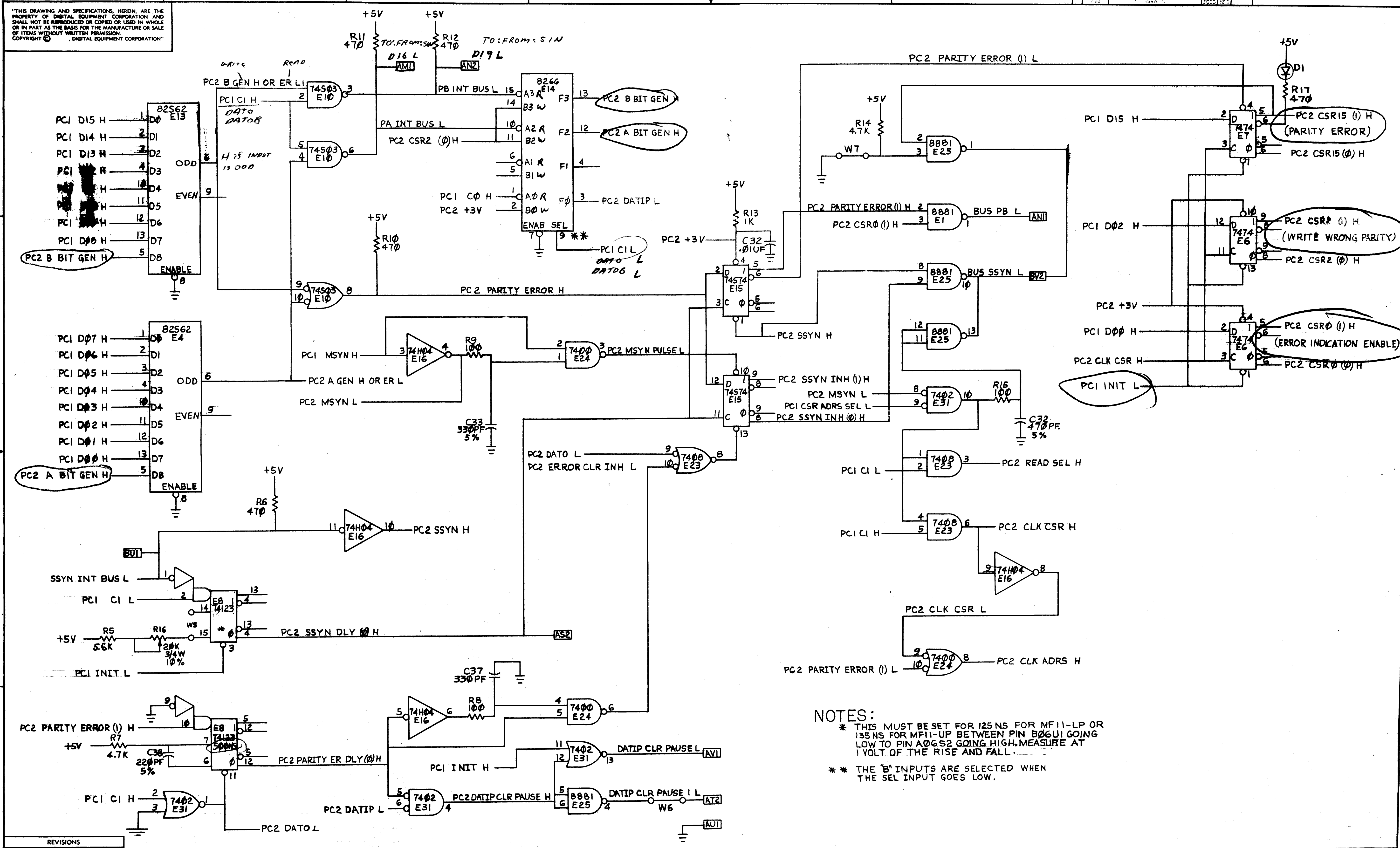
NOTES:

* THE ADDRESS OF THE CSR REGISTER IS LOCATED BETWEEN 772100 AND 772136. IT IS SELECTED WITH JUMPERS W1 THRU W4. REMOVING A JUMPER SELECTS A "ONE" FOR THAT BIT POSITION.

** THE A INPUTS ARE SELECTED WHEN THE SEL INPUT GOES LOW.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: PARITY CONTROL-MF11-LP (PCI)
SIZE: D | CODE: CS | NUMBER: M7259-Ø-1 | REV.: F
SCALE: NONE | SHEET 2 OF 3



NOTES:
* THIS MUST BE SET FOR 125 NS FOR MF11-LP OR 135 NS FOR MF11-UP BETWEEN PIN B06U1 GOING LOW TO PIN A06S2 GOING HIGH. MEASURE AT 1 VOLT OF THE RISE AND FALL.
** THE "B" INPUTS ARE SELECTED WHEN THE SEL INPUT GOES LOW.

REVISIONS		
CHK	CHANGE NO.	REV.

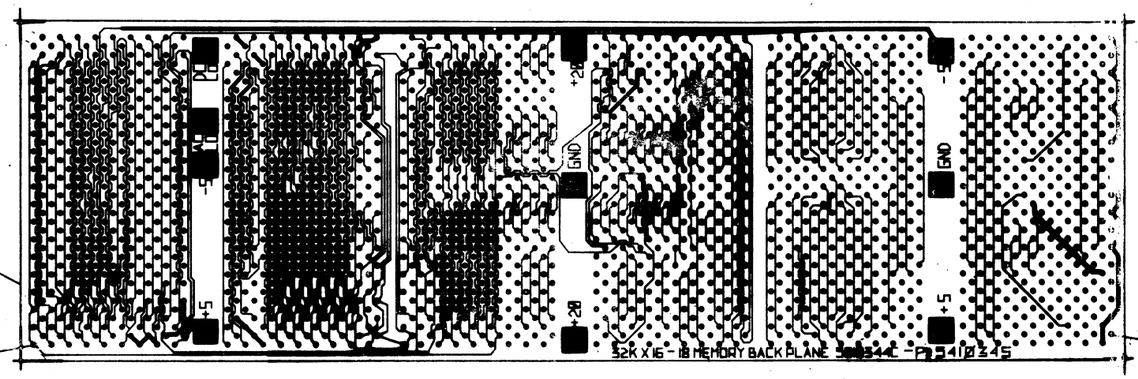
TITLE: PARITY CONTROL-MF11-LP (PC2)
SIZE: D | CODE: CS | NUMBER: M7259-0-1 | REV.: F
SCALE: NONE | SHEET 3 OF 3

NOTES:

1. THIS IS A MULTILAYER BOARD
2. +5V PINS AA2, BA2, CA2, DA2, EA2, FA2 ARE CONNECTED TOGETHER THROUGH LAYER 3.
3. GND PINS AC2, AT1, BC2, BT1, CC2, CT1, DC2, DT1 EC2, ET1, FC2, FT1, ARE CONNECTED TOGETHER THROUGH LAYER 2

A B C D E F

4
3
2
1

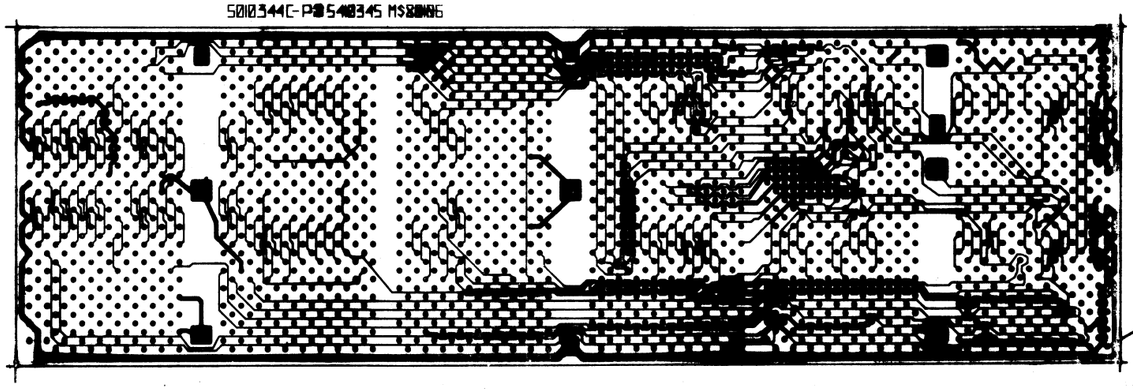


PIN AA1

PIN FV1

SOLDER SIDE

F E D C B A



PIN AA1

CONN BLOCK SIDE

IC TYPE	GND	+ 5V

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

IC PIN LOCATIONS

1		ETCHED CIRCUIT BOARD	5010344	4
REF		MODULE ECO HISTORY	B-MH-5410345-0-6	3
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-5410345-0-5	2
REF		X-Y COORDINATE HOLE LOCATION	K-CO-5410345-0-4	1
QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

REV	CHANGE NO.	CHK	REVISIONS
C	5410345-00002		D. SMELSER 2/3/75
B	5410345-00001		P. DURANT 8-22-73
			P. DURANT 9-11-73

FIRST USED ON OPTION MODEL: MM11-U

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

SEMICONDUCTOR CONVERSION CHART

ETCH BOARD REV C

DRN.	W Major	DATE 3/30/73
CHK'D.	W Major	DATE 4/6/73
ENG.		DATE 7/27/73
MANU. ENG.		DATE 7/27/73
PROD.		DATE 5/1/173

NEXT HIGHER ASSY: D-AD-7009295-0-0

SCALE: 1/1

SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: 32K X 16-18 MEMORY BACK PLANE

SIZE D | CODE DCS | NUMBER 5410345-0-1 | REV. C

DIST.

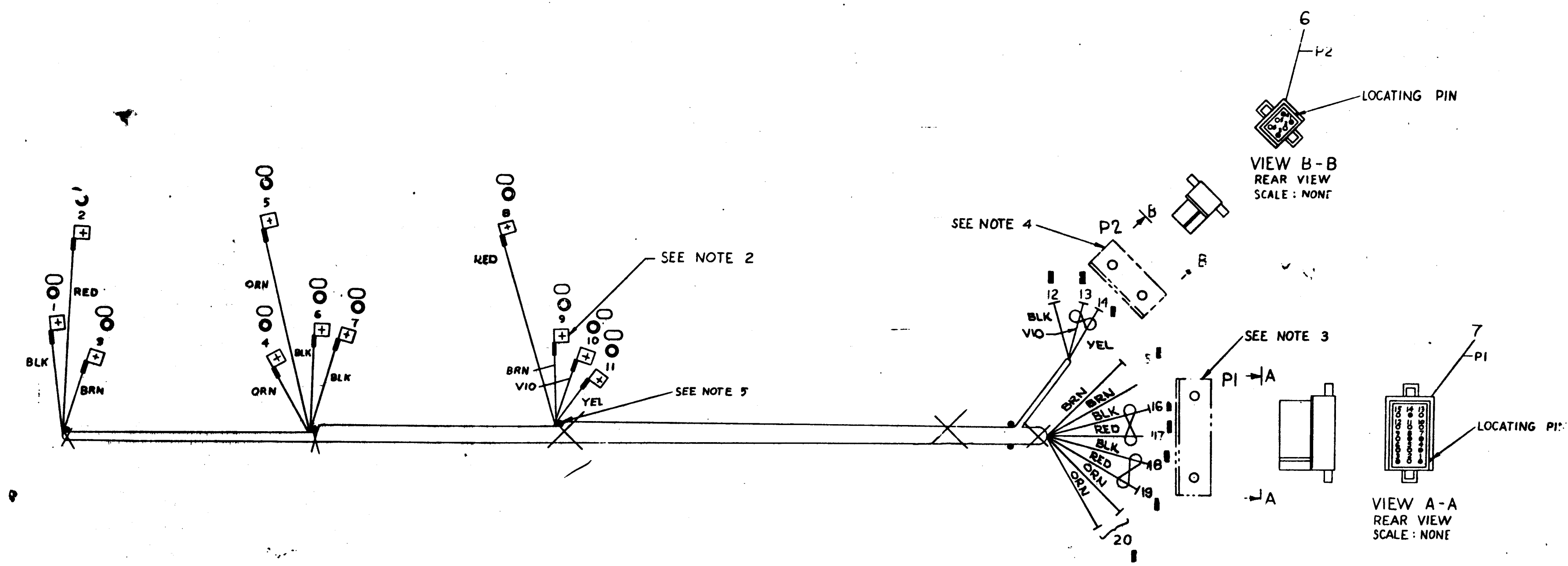
SIZE D | CODE DCS | NUMBER 5410345-0-1 | REV C

WIRE TABLE

ITEM NO.	DESCRIPTION AWG	COLOR	FROM POINT	FROM CONNECTION	FROM TERM	TO POINT	TO CONNECTION	TO TERM	SIGNAL
1	14 TWP	BLK	1		9,11	16	P1-7	8	GND
		RED	2			17	P1-4		+5V
3	18	BRN	3			15	P1-14		-5V
3	18	BRN	9						
2	18	ORN	4			20	P1-3		+20
2	18	ORN	5						
4	18	BLK	6			12	P2-1		LO GND
1	14 TWP	BLK	7			18	P1-8		GND
		RED	8			19	P1-1		+5V
5	18 TWP	VIO	10			13	P2-3		DC LO
		YEL	11		9,11	14	P2-4	8	AC LO

NOTES:

1. USE TIE WRAPS (X) ITEM #10 APPROXIMATELY EVERY THREE (3) INCHES WHEN NECESSARY, AND AT EVERY BREAKOUT POINT.
2. ATTACH MALE FASTON DEC # (9008219-0) WITH #4 WOOD SCREWS (11 PLACES).
3. USE CONN. BRKT. #C-MD-9305761-H15-0, MOUNT WITH 6 WOOD SCREWS. USE MATING CONN. #1209350-15.
4. USE CONN. BRKT. #C-MD-9305761-H6-0, MOUNT WITH #6 WOOD SCREWS. USE MATING CONN. #1209350-06.
5. DOT (•) INDICATES NAIL LOCATIONS FOR ASSEMBLY USE ONLY. COVER NAILS WITH SHRINK TUBING TO PREVENT CUTTING HARNESS.
6. WHEN WIRING, DO NOT LEAVE ANY SLACK BETWEEN FAST ON TABS AND BREAKOUT POINT.



SCALE
0 IN 6 IN 12 IN

DO NOT REDUCE
DO NOT BUILD FROM REDUCED PRINT

REF. DESIGNATION	SYM	QTY.	DESCRIPTION	PART NO.	ITEM NO.
	O	A/R	TUBING, SHRINKABLE 3/16 ID X 9/16	9107305-02	11
	X	A/R	TIE WRAPS	9007031	10
	O	11	90° FAST ON TABS	9009262-0	9
	▮	9	PIN, MALE	1209378-01	8
P1		1	HOUSING, 15 PIN	1209351-15	7
P2		1	HOUSING, 6 PIN	1209351-06	6
		A/R	WIRE #18 AWG TWP YEL/VIO	9107430-47	5
		A/R	WIRE #18 AWG BLK	9107360-00	4
		A/R	WIRE #18 AWG BRN	9107360-11	3
		A/R	WIRE #18 AWG OWN	9107360-33	2
		A/R	WIRE #14 AWG TWP BLK/RED	9107440-02	1

PARTS LIST

FIRST USED ON OPT/MOD: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES: DECIMALS ± .005, FRACTIONS ± 1/64, ANGLES ± 0°30'
FINAL SURFACE QUALITY ✓ REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL: SEE PARTS LIST

DRN. DATE 9/2/73 — CHK'D. DATE 9/26/73 — ENG. DATE 10/1/73 — PROJ. ENG. DATE 10/1/73 — PROD. DATE 10/11/73

NEXT HIGHER ASSY

EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: OPTION HARNESS MF11-U

SIZE E | CODE A | NUMBER 7009535-0-0 | REV. A

SCALE 1/1 — SHEET 1 OF 1

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY W.MAJOR DATE 5/11/73	CHECKED W.MAJOR DATE 5/11/73	SECTION 1
ENG DATE D. Smaker 5/29/73	PROD DATE R Schoof 6/13/73	ISSUED SECT. 1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION											
			MF11-U	MM11-U	MF11-UP	MM11-UP	MM11-UB	MM11-UC	MF11-UR	MF11-US				
1	D-CS-G114-0-1	16K SENSE INHIBIT	1	1	1	1	2	4	2	4				
2	D-CS-G235-0-1	16K X-Y DRIVE	1	1	1	1	2	4	2	4				
3	D-CS-M8293-0-1	16K UNIBUS TIMING	1	1	1	1	2	4	2	4				
4	D-AD-7009295-1	BACK PLANE ASSY	1	-	-	-	1	2	-	-				
5	D-CS-H217-D-1 *	MEMORY STACK (16K X 16)	1	1	-	-	2	4	-	-				
6	D-CS-H217-C-1 *	MEMORY STACK (16K X 18)	-	-	1	1	-	-	2	4				
7	D-AD-7009295-2	BACK PLANE ASSY	-	-	1	-	-	+	1	2				
REF	D-MU-MF11-U-MU	MODULE UTILIZATION												
8	D-CS-M7259-0-1	Parity(SAME AS MF11-LP)	-	-	1	-	-	-	1	2				
9	E-IA-7009535-0-0	OPTION HARNESS	1	-	1	-	1	2	1	2				
10	D-IA-7010167-0-0	SUPPORT HARNESS	1	-	1	-	1	2	1	2				
11	9006037-1	SCR PHIL PAN HD 8-32 x 3/8	4	-	4	-	4	8	4	8				
12	9008072	EXTERNAL TOOTH LOCK WASHER #8	4	-	4	-	4	8	4	8				
13	D-CS-H217-B-1 *	MEMORY STACK (16K X 19)												
*	THE H217B MAY BE SUBSTITUTED FOR THE H217C OR H217D AND THE H217C													
	MAY BE SUBSTITUTED FOR THE H217D IN NON PARITY SYSTEMS													

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
16K SENSE MEMORY	D-UA-MF11-U-0 SHEET 1 OF 1	A	PL	MF11-U-0 DIST.	B	MFU-00005

DEC FORM DEC 16-(325)-1031-N870
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

DATE 9/7/73

TITLE MF11-U/UP CUSTOMER ACCEPTANCE PROCEDURE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
P. Durant	D Johnson 12-5-73	A	SP	MF11-U-3	

DEC FORM NO. DRA 107A

SHEET 1 OF 2

ENGINEERING SPECIFICATION [redacted] CONTINUATION SHEET

TITLE MF11-U/UP CUSTOMER ACCEPTANCE PROCEDURE

1.0 Overview

1.1 This procedure contains directions pertaining to field assurance of the correct operation of an MF11-U/UP.

1.2 Prior to this acceptance, the option will have been installed, inspected, and connected and have power applied. Generally the memories shipped as add ons will have been configured and tested at the factory with their addresses beginning at 000000. Prior to running diagnostics, these memories must be re-configured for the customers system, as directed in the MF11-U/UP Customer Print Set. (See M8293 MAT A)

1.3 If this option is part of a PDP-11/40-11/45 installation, as opposed to an add on, then the system acceptance procedures provided with those systems should be utilized in place of this procedure.

2.0 Inspection

2.1 Assure presence of the following documentation:

2.1.1 Customer Acceptance Form

2.1.2 Keysheets (2)

2.1.3 Accessory Checklist

2.1.4 LIBKIT list for MF11-U/UP

2.1.5 ECO Status Sticker (for mounting in expansion box)

2.1.6 Waiver Sheet (if applicable)

2.1.7 Documentation Update Card (if applicable).

2.2 Utilize the accessory checklist, and LIBKIT list to verify that all items are present.

3.0 Diagnostic Testing:

3.1 The following tests must be run without error for the times specified:

*Maindec-11-DZQMA Memory I/O	5 min/MF11-U/UP
Maindec-11-DZQMB Memory Exerciser	5 min/MF11-U/UP
Maindec-11-DCMFA Parity Test (MF11-UP Memory Only)	2 passes/MF11-U/UP

*Only for add-on memories in systems with NPR devices

SIZE	CODE	NUMBER	REV
A	SP	MF11-U-3	

DEC FORM NO DEC 16-(381)-1022-N370 DRA 108

SHEET 2 OF 2

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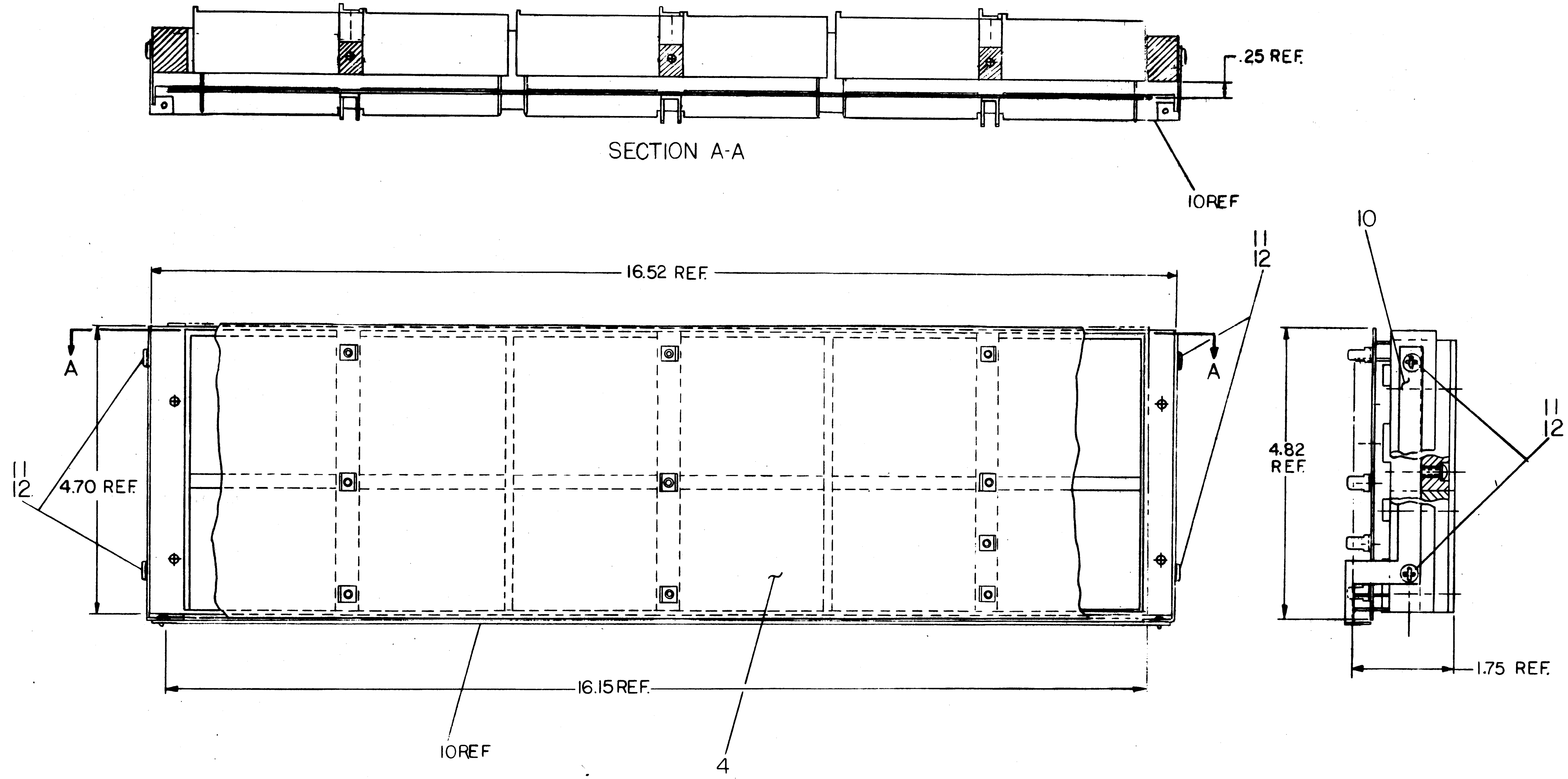
NOTES:



FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
MF11-U		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS	ANGLES
.XXX ± .005 .XX ± .02 .X ± .1	±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

		DATE
DRN	[signature]	2-25-75
CHK'D	[signature]	2-25-75
ENG	[signature]	2-26-75
PROJ. ENG	[signature]	2-26-75
PROD	[signature]	2/26/75

NEXT HIGHER ASSY. B-DD-MF11-U

SCALE 1/1

SHEET 1 OF 1

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE MF11-U MEMORY

SIZE	CODE	NUMBER	REV.
D	UA	MF11-U-0	D

DIST.

REVISIONS

CHK	CHANGE NO.	REV.
—	MF11U-00003 ORIGINATED	B
	MF11U-00004 G. [signature] 2-26-75 D. SMELSER	C
	MF11U-00006 [signature] 2-26-75 [signature] MAR-10-76 D. SMELSER 10 MAR 76	D

DEC FORM NO DRD 100-A

AUTOMATIC WIRE TESTER (AWT) REVISION STATUS

DRAWING NUMBER	INIT REL																				
	T3	C																			
D-CS-5410345-0-1	C	C																			
D-AD-7009295-0-0	C	D																			

REV. C

SIZE A CODE WT NUMBER 7009295-3

REVISIONS		
REV.	CHANGE NO.	CHK
C	MF11U-00005 ORIGINATED	—

DRN. J. Chioto	DATE 11-25-75
CHK'D. L. Gilbert	DATE 26 NOV 75
ENG. [illegible]	DATE 12-1-75
PROJ. ENG. [illegible]	DATE 12-1-75
PROD. [illegible]	DATE 12-1-75
FIRST USED ON MF11	
SCALE —	
SHEET / OF /	

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE MF11-U W BACK PLANE ASSY

AWT REVISION STATUS

SIZE	CODE	NUMBER	REV.
A	WT	7009295-3	C

DIST

DRA 123

DRAWING NUMBER	INIT REL	AUTOMATIC WIRE TESTER (AWT) REVISION STATUS	REV.
	T4	C	C
D-CS-5410345-0-1	C	C	
D-AD-7009295-0-0	C	D	

NEXT ASSY USED ON: AWT
NUMBER: 7009295-4

REVISIONS			
CHK	CHANGE NO.	REV.	
—	MFIU-00005	C	ORIGINATED

DRN. J Charlier	DATE 11-25-75	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. L Gillust	DATE 26 Nov 75	
ENG. [illegible]	DATE 12-1-75	TITLE MFII-U W BACK PLANE ASSY AWT REVISION STATUS
PROJ ENG. [illegible]	DATE 12-1-75	
PROD. [illegible]	DATE 12-1-75	
FIRST USED ON MFII		SIZE A / CODE WT / NUMBER 7009295-4 / REV. C
SCALE —		DIST.
SHEET 1 OF 1		

DRA 123

DEC 16-(325)-1097-N174

digital

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