

MS11-B
MOS memory
engineering drawings

THIS IS PRINT SET

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SEQUENCE

(SHEET ONE ONLY)

A-AL-MS 11-Ø-2

A-AL-MS11-Ø-2

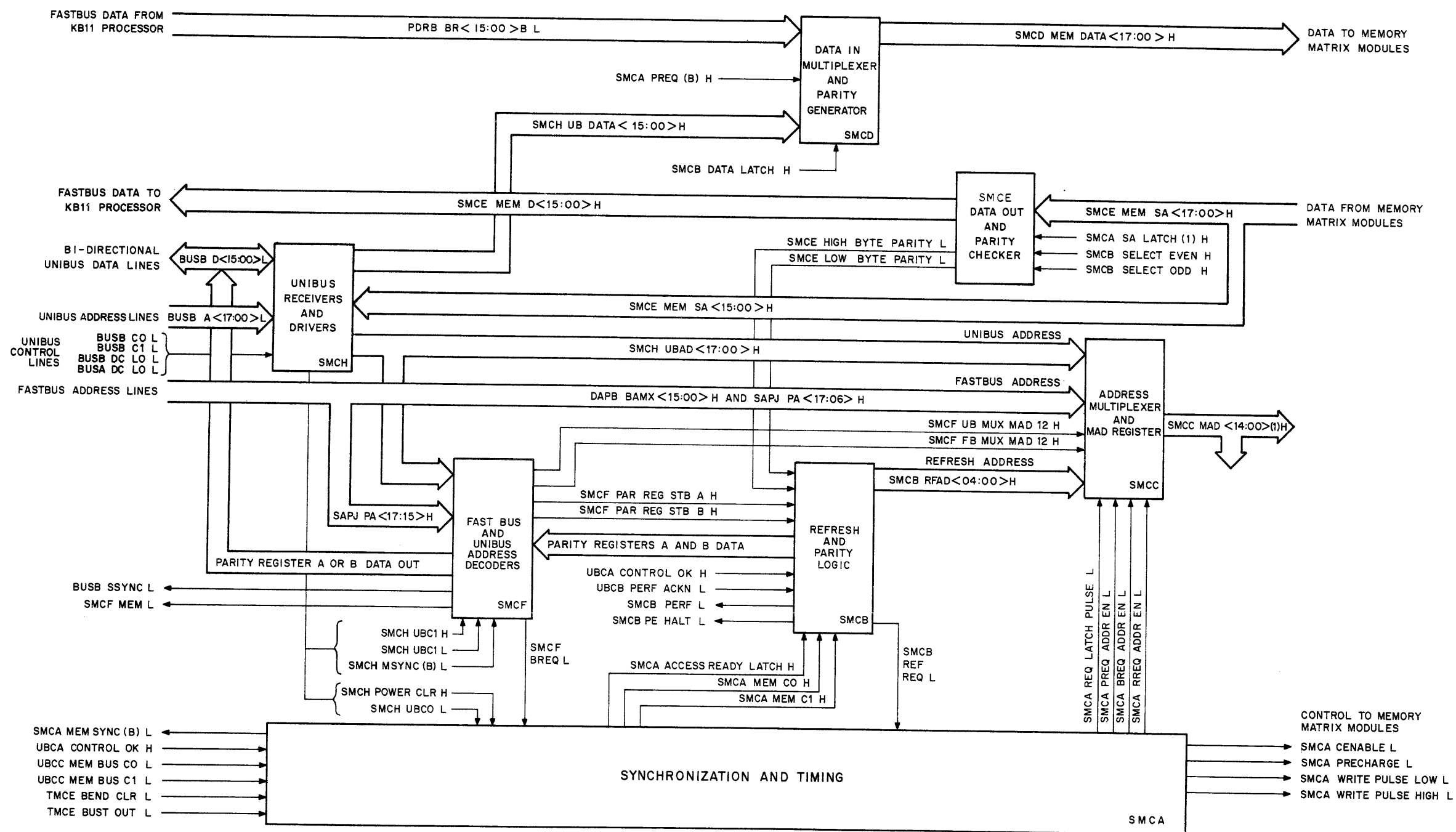
A-AL-MS11-Ø-2

PRINT SET TYPE

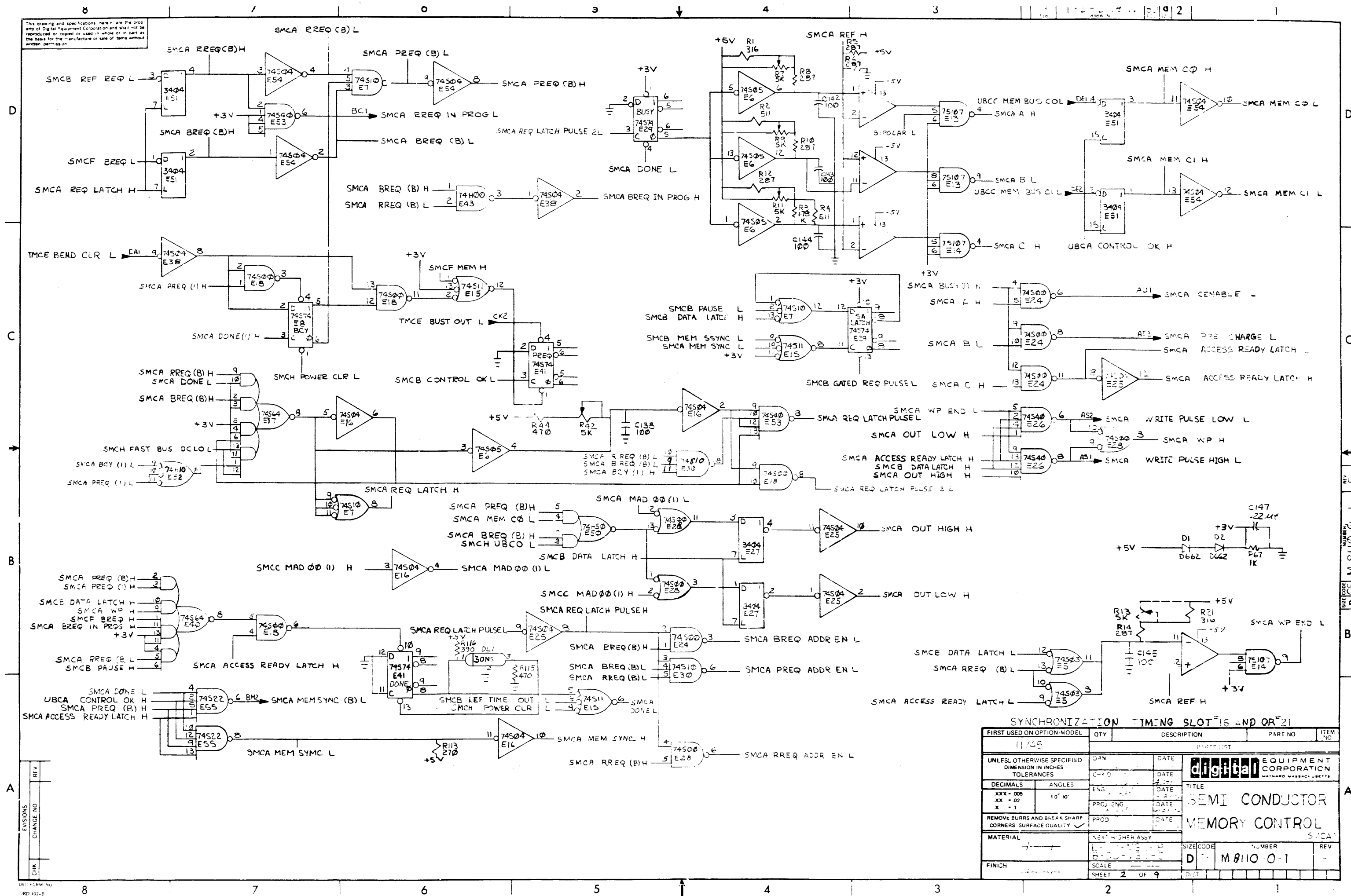
REVISIONS				
DATE	CHG. NO.	REV		
6/72	MS11B-1	A		

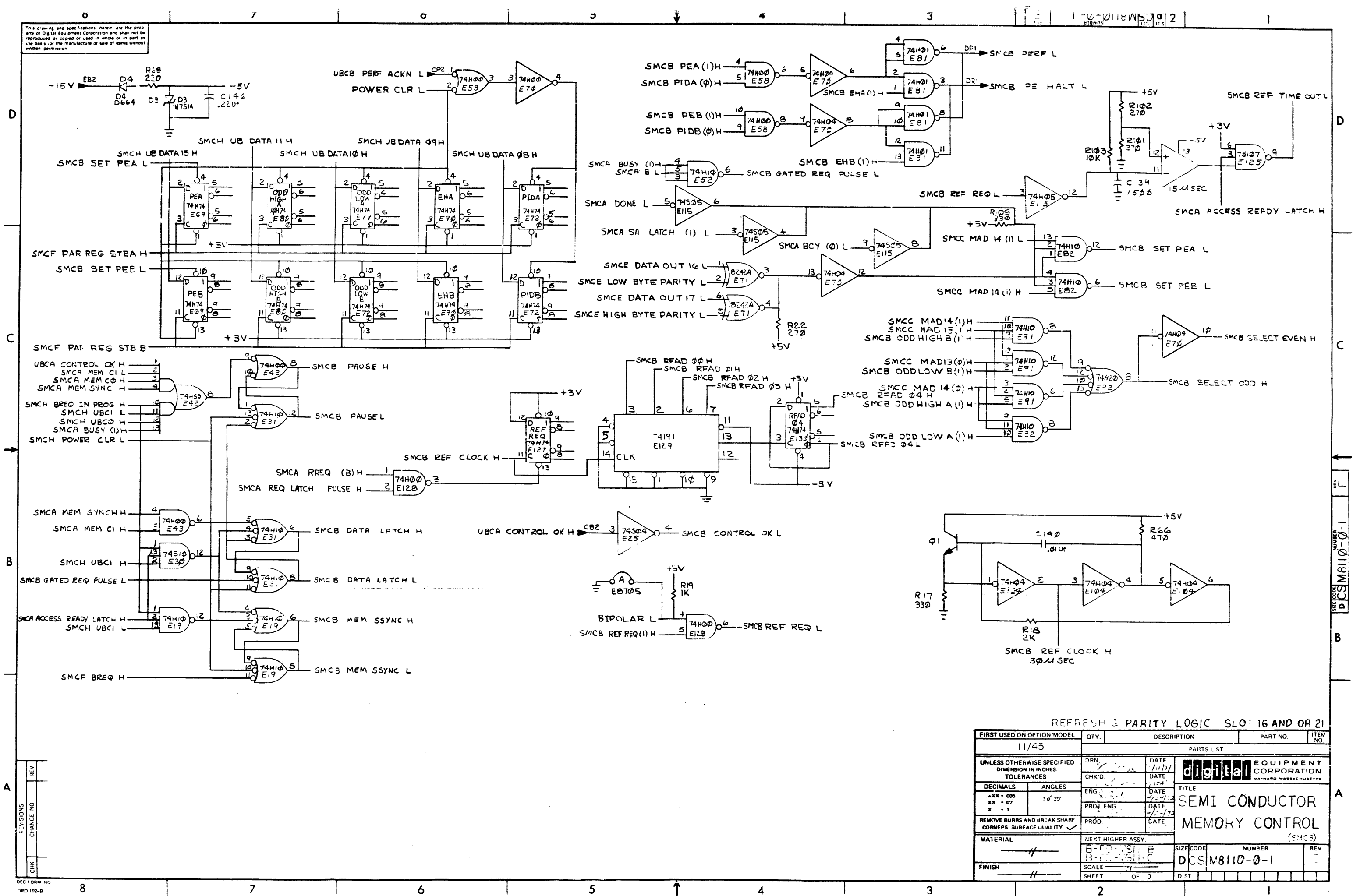
USED ON OPTION/MODEL		DRN.	DATE	TITLE									
11/45		R. COOK	33072	MOS MEMORY									
		CHK'D	DATE										
		PROJ ENG.	DATE										
		PROD.	DATE										
		FIELD SERV.	DATE										
		SHEET 1 OF 3		SIZE	CODE	NUMBER					REV		
				B	DD	MS11-B					A		
				DIST									

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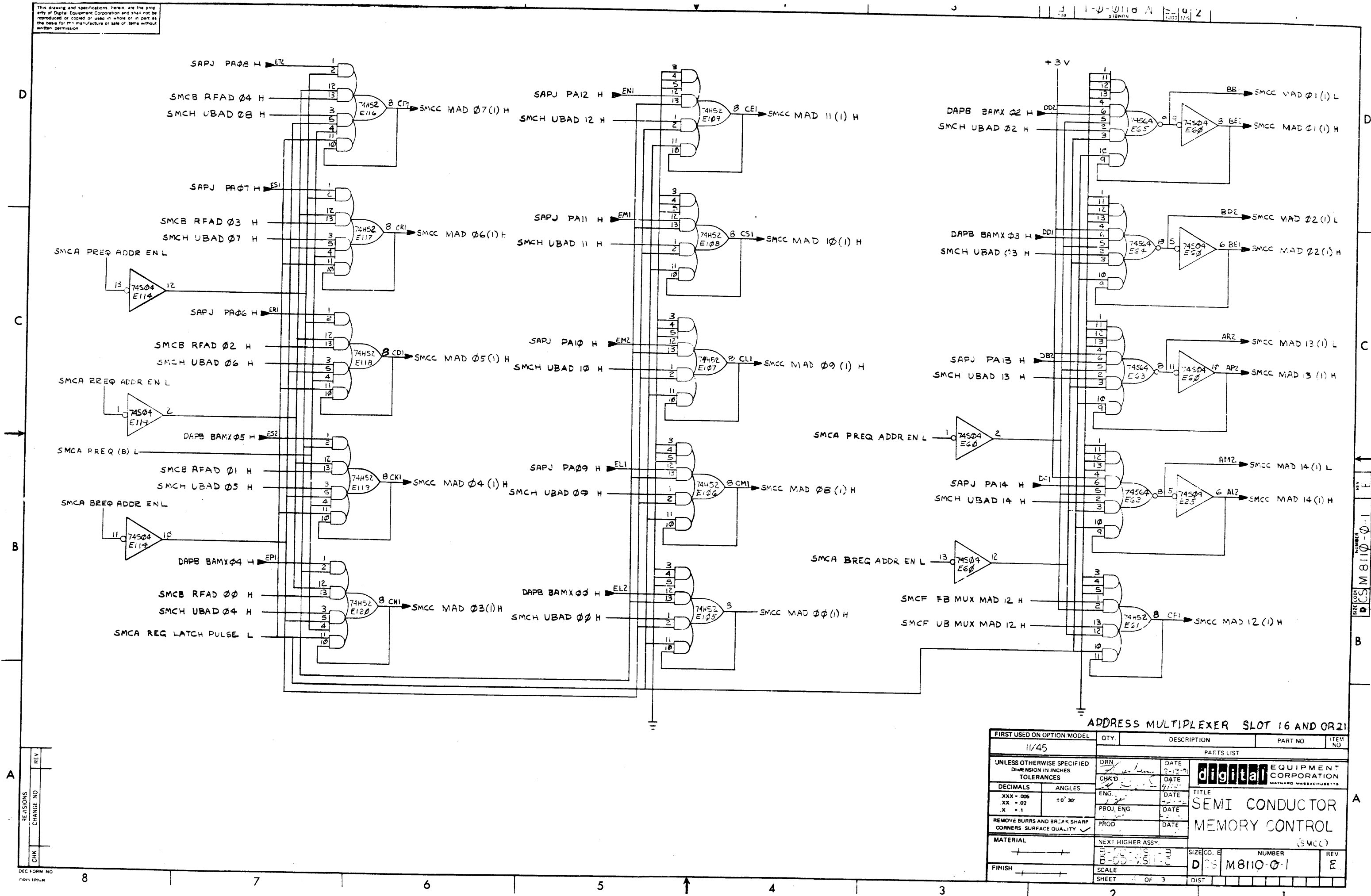


FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES				
DECIMALS	ANGLES	DATE	PARTS LIST	
.XXX = .005	± 0° 30'	4/12/72	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
.XX = .02		4/28/72	TITLE	
.X = .1		4/29/72	BLOCK DIAGRAM	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		PROD. DATE	DATE	
		4/28/72	4/28/72	
MATERIAL		NEXT HIGHER ASSY.		
FINISH		SCALE	REV.	
		1 OF 1	D BD MS11-0-1	
		SHEET	DIST.	

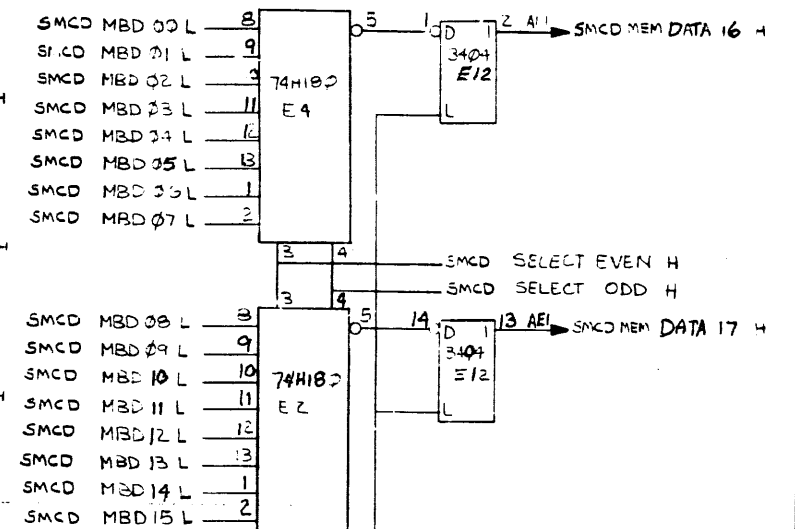
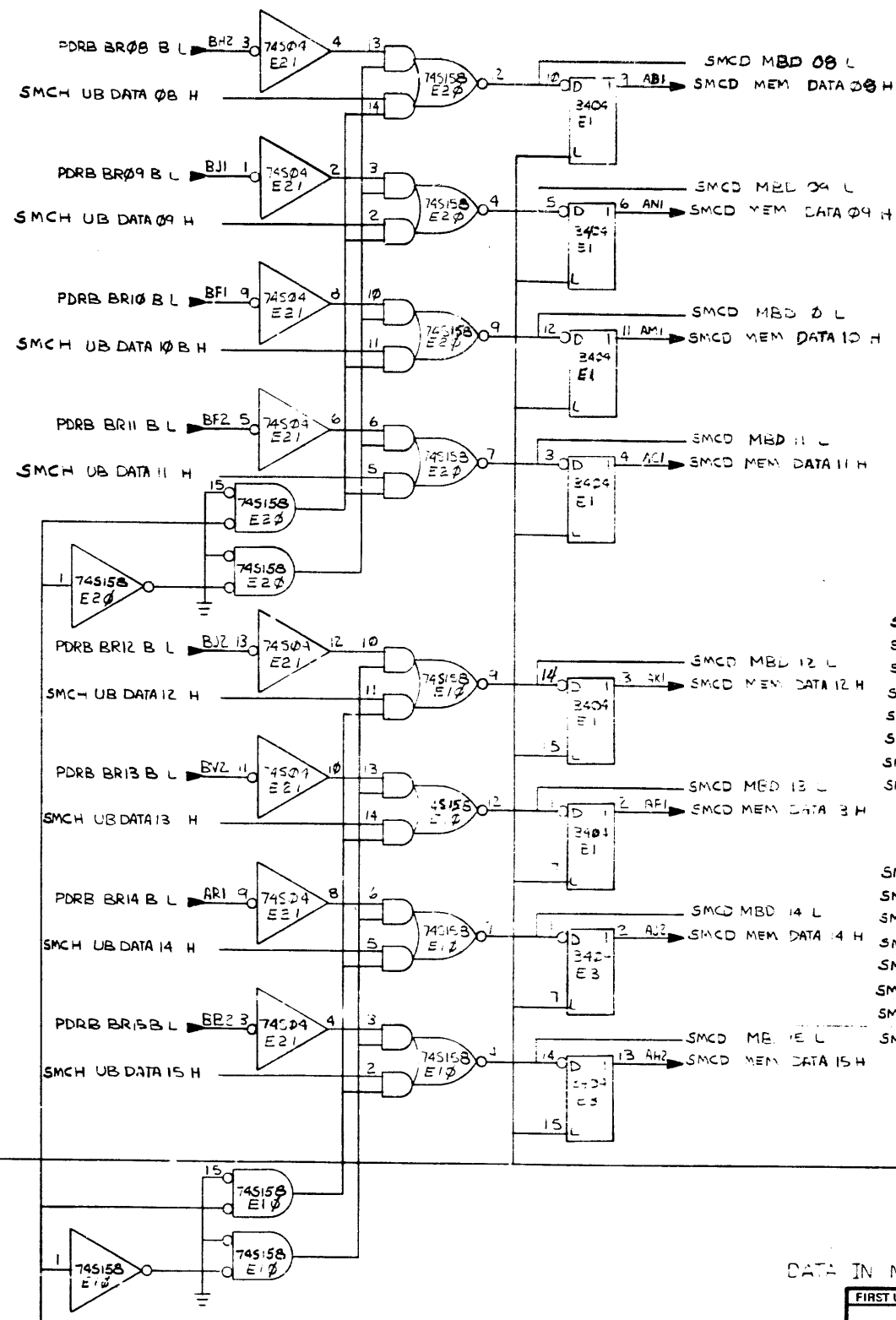
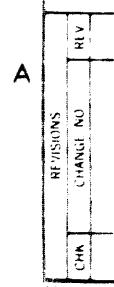




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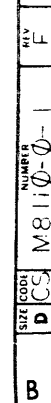


1000	1200	4
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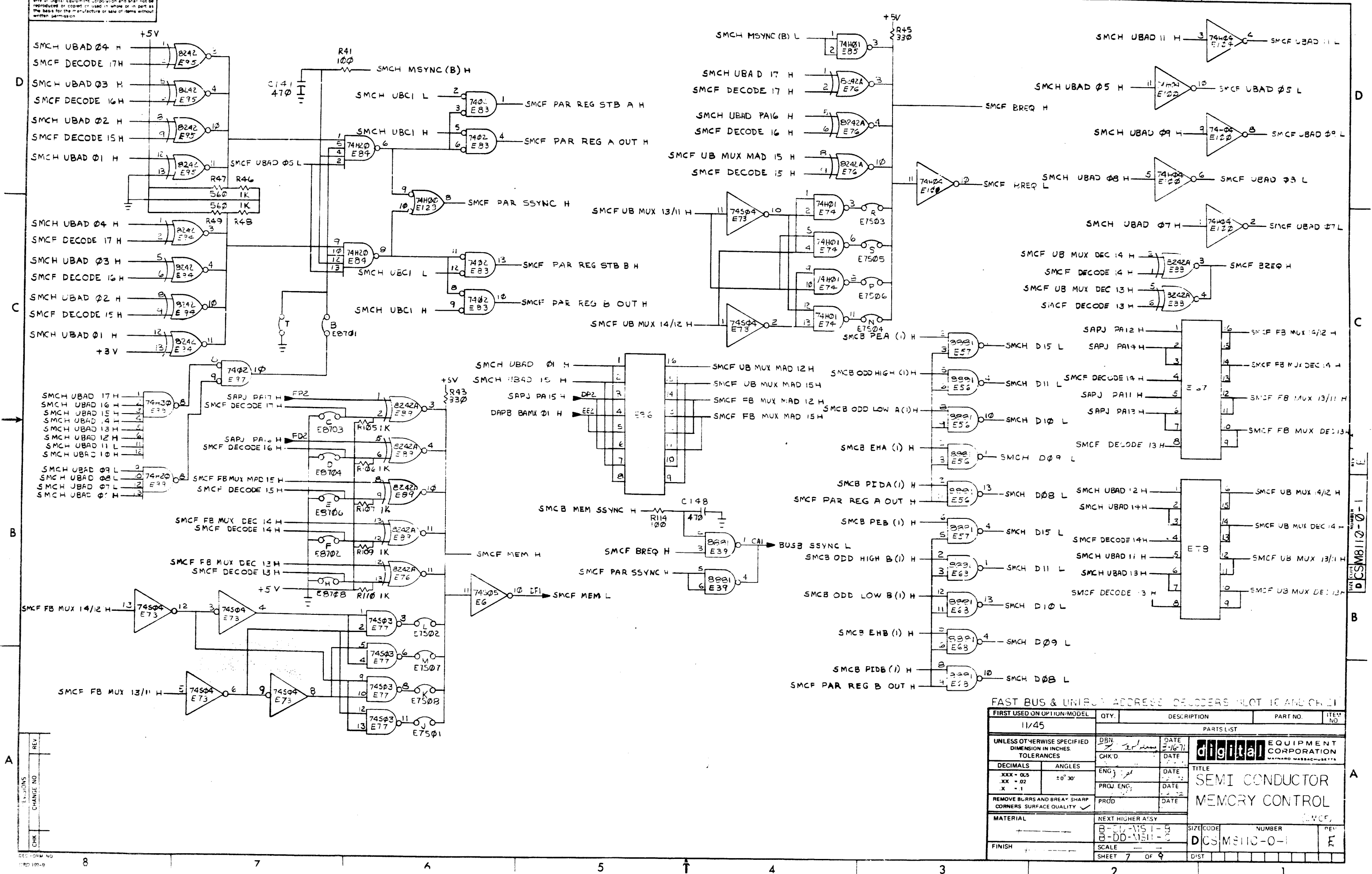
DATA IN MULTIPLEXER & PARITY GENERATION SLOT 16 AND OR 21

FIRST USED ON OPTION MODEL		QTY.	DESCRIPTION	PART NO	ITEM NO
145					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DRN	DATE	 DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
		CHK'D.	DATE		
DECIMALS	ANGLES	ENG.	DATE		
XXX = .005 XX = .02 X = .1	± 0° 30'	PROJ. ENG.	DATE		
		PROD	DATE		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓				TITLE SEMI CONDUCTOR MEMORY CONTROL	
MATERIAL		NEXT HIGHER ASSY			
					
FINISH		SCALE		SIZE CODE	NUMBER
				DPS	M 8110 O-1
		SHEET 5 OF 9		DISC	REV £



DATA OUT & PARITY CHECK		SLOT#16 AND CH#21	
FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.
11/45		PARTS LIST	
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN	DATE	 EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
DECIMALS	CHK'D	DATE	
ANGLES	ENG	DATE	
xxx = .005 xx = .02 x = .1	PROJ ENG	DATE	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	PROD	DATE	
MATERIAL	NEXT HIGHER ASSY		TITLE SEMI CONDUCTOR MEMORY CONTROL (SMCE)
FINISH	SIZE CODE		
	NUMBER		
	SCALE	DIST	REV
	SHEET 6 OF 9		

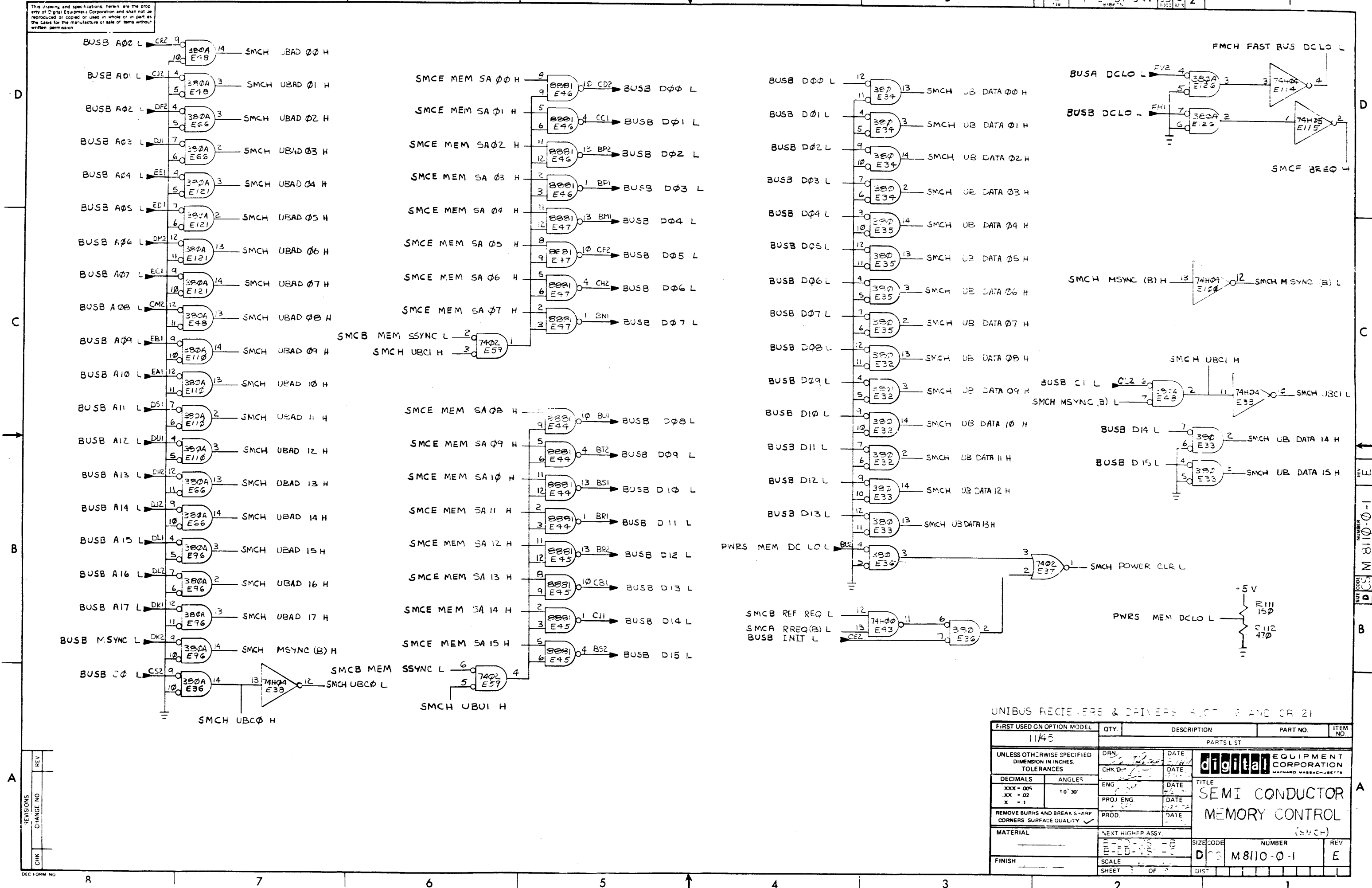
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REVISIONS	NO.	REV.
CHK	CHANGE NO.	
NO.		

REVISIONS	NO.	REV.
CHK	CHANGE NO.	
NO.		

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UNIBUS RECEIVERS & DRIVERS SLOT 18 AND CR 21

FIRST USED ON OPTION MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11K5				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN	DATE	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
DECIMALS	CHK'D	DATE		
.XXX = .005	ENG	DATE		
.XX = .02	PROJ. ENG.	DATE		
X = .1	PROD.	DATE		
REMOVE BURRS AND BREAKS-ARP CORNERS SURFACE QUALITY			TITLE SEMI CONDUCTOR MEMORY CONTROL (SUCH)	
MATERIAL	NEXT HIGHER ASSY.	SIZE CODE	NUMBER	REV
FINISH	SCALE	SHEET	OF	
		DIST		

A
TO SET UP MEMORY CONTROL FOR BIPOLAR MEMORY

1) CUT JUMPERS IN THE FOLLOWING LOCATIONS:

E6702	E7802	E8603
E6704	E7804	E8604
E6706	E7806	E8607
E6708	E7808	E8608

2) DECODE ADDRESS BITS 17-13 BY CUTTING THE FOLLOWING JUMPERS FOR A ONE AND LEAVING IN JUMPERS FOR A ZERO.

ADDRESS BIT	JUMPER	LOCATION
17	C	E8703
16	D	E8704
15	E	E8706
14	F	E8702
13	H	E8708

3) DECODE ADDRESS BITS 11 AND 12 FOR THE FAST BUS BY CUTTING THE JUMPERS FOR THE ADDRESS COMBINATION WHERE MEMORY EXISTS.

12	11	JUMPER	LOCATION
0	0	J	E7501
0	1	K	E7508
1	0	L	E7502
1	1	M	E7507

4) DECODE ADDRESS BITS 11 AND 12 FOR THE UNIBUS BY CUTTING THE JUMPERS FOR THE ADDRESS COMBINATION WHERE MEMORY EXISTS.

12	11	JUMPER	LOCATION
0	0	N	E7504
0	1	P	E7506
1	0	R	E7503
1	1	S	E7505

5) FOR A PARITY CONTROL CUT JUMPER T LOCATED UNDER PIN 2 OF E85.

6) FOR NON-PARITY CONTROL CUT JUMPER B LOCATED AT E8701.

7) CUT THE FOLLOWING RESISTORS OUT:

R1
R2
R12
R3

8) TIMING ADJUSTMENT.
A) SYNC PROBE 1
B) ALL MEASUREMENTS AT THE 1.5V POINTS OF LOW GOING EDGES UNLESS OTHERWISE NOTED.

TO ADJUST	PROBE 1	PROBE 2	ADJUST	FOR
ADDRESS SET-UP	E17 PIN 8	E24 PIN 8	R42	85 NS
PRE-CHARGE	E24 PIN 8*		R9	60 NS
ACCESS TIME	E24 PIN 8	E25 PIN 12**	R11	60 NS

* ADJUST WIDTH OF PULSE.
** FROM LOW GOING EDGE OF E24 PIN 8 TO HIGH GOING EDGE OF E25 PIN 12.

B
TO SET UP MEMORY CONTROL FOR MOS MEMORY

1) CUT JUMPERS IN THE FOLLOWING LOCATIONS:

E8701	E7801	E8603
E8703	E7803	E8604
E8705	E7805	E8607
E8707	E7807	E8608

E 8705 (JUMPER A)

2) DECODE ADDRESS BITS 17-15 BY CUTTING THE FOLLOWING JUMPERS FOR A ONE AND LEAVING IN JUMPERS FOR A ZERO.

ADDRESS BIT	JUMPER	LOCATION
17	C	E8703
16	D	E8704
15	E	E8706

3) DECODE ADDRESS BITS 13 AND 14 FOR THE FAST BUS BY CUTTING THE JUMPERS FOR THE ADDRESS COMBINATION WHERE MEMORY EXISTS.

14	13	JUMPER	LOCATION
0	0	J	E7501
0	1	K	E7508
1	0	L	E7502
1	1	M	E7507

4) DECODE ADDRESS BITS 13 AND 14 FOR THE UNIBUS BY CUTTING THE JUMPERS FOR THE ADDRESS COMBINATION WHERE MEMORY EXISTS.

14	13	JUMPER	LOCATION
0	0	N	E7504
0	1	P	E7506
1	0	R	E7503
1	1	S	E7505

5) FOR A PARITY CONTROL CUT JUMPER T LOCATED UNDER PIN 2 OF E85.

6) FOR NON-PARITY CONTROL CUT JUMPER B LOCATED AT E8701.

7) CUT THE FOLLOWING RESISTORS OUT:

R1
R2
R12
R4

8) TIMING ADJUSTMENT.
A) SYNC PROBE 1
B) ALL MEASUREMENTS AT THE 1.5V POINTS OF LOW GOING EDGES UNLESS OTHERWISE NOTED.

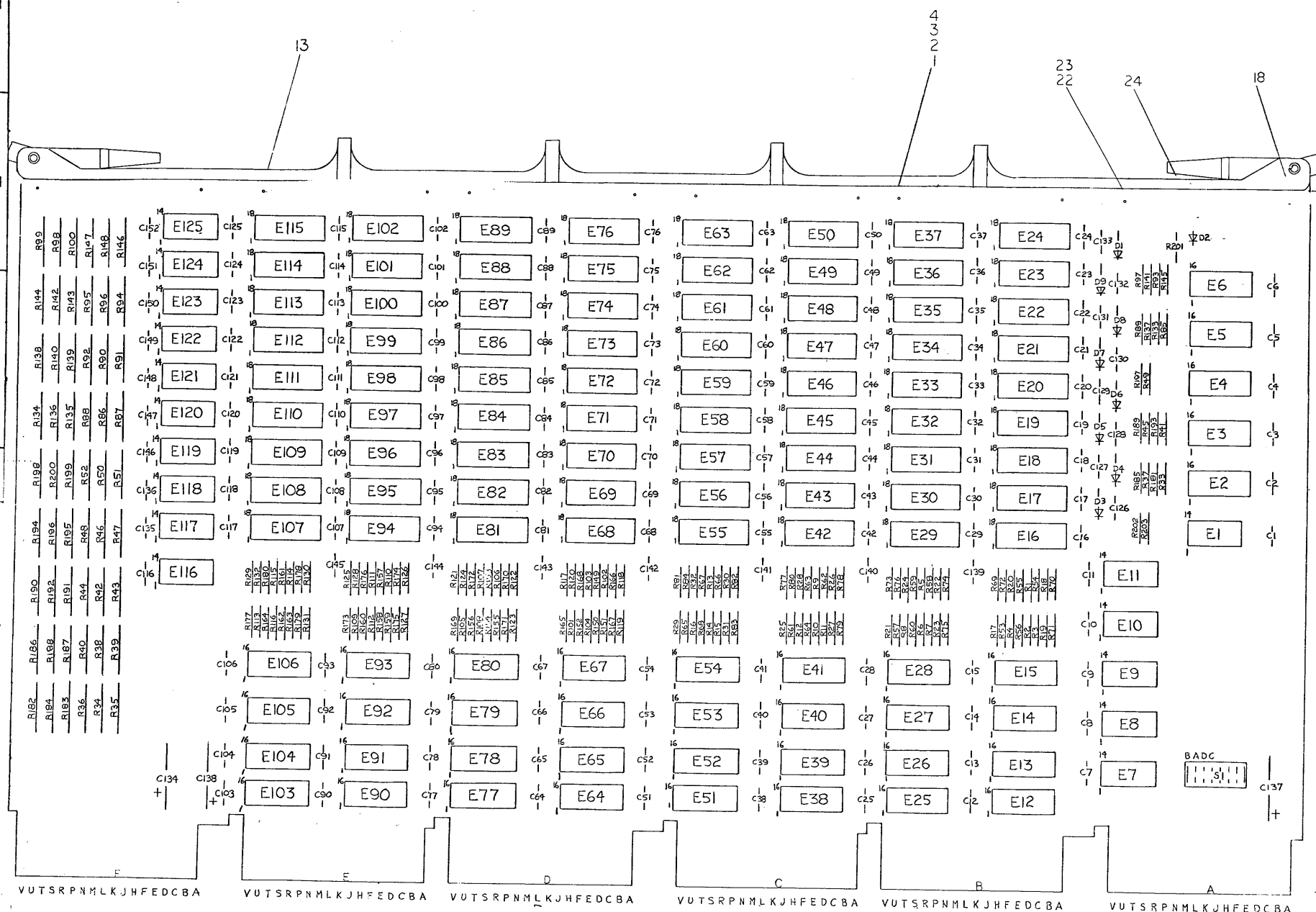
TO ADJUST	PROBE 1	PROBE 2	ADJUST	FOR
ADDRESS SET-UP	E17 PIN 8	E24 PIN 8	R42	85 NS
ENABLE	E24 PIN 8	E24 PIN 6	R7	70 NS
PRE-CHARGE	*E24 PIN 8		R9	90 NS
ACCESS TIME	E24 PIN 8	E16 PIN 12	R11	200 NS

* ADJUST WIDTH OF PULSE.

JUMPER NOTES SLOT #16 AND CR #21

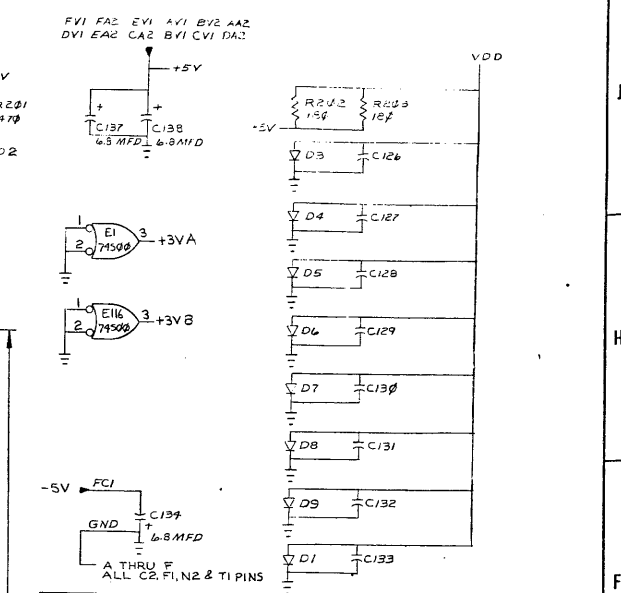
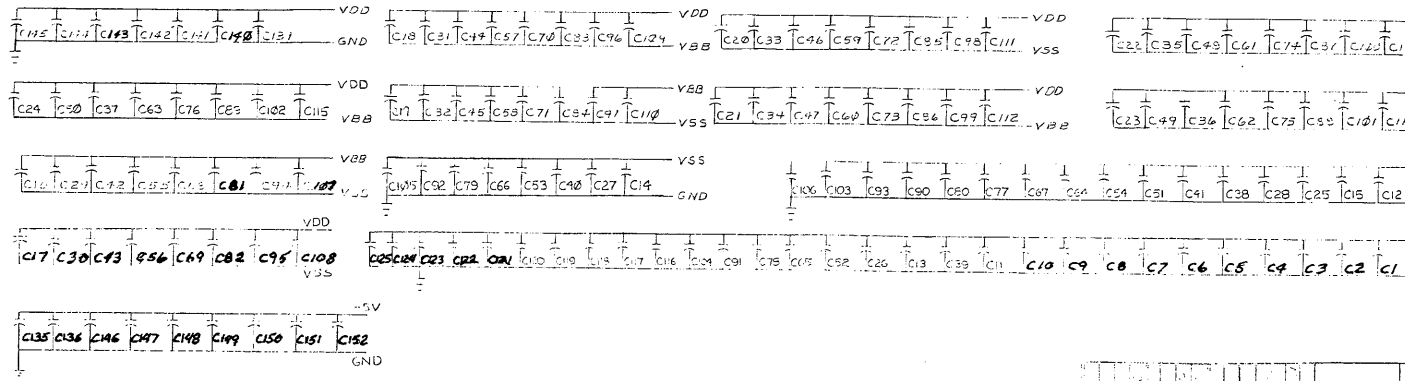
FIRST USED ON OPTION MODEL	QTY	DESCRIPTION	PART NO	ITEM NO
11/45				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN. DATE	PARTS LIST		
DECIMALS	CHK'D DATE	digital EQUIPMENT CORPORATION		
ANGLES	ENG. DATE	TITLE		
XXX + .005	PROJ ENG DATE	SEMI CONDUCTOR		
XX + .02	PROD DATE	MEMORY CONTROL		
X + .1				
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY				
MATERIAL	NEXT HIGHER ASSY			
FINISH				
		SIZE CODE	NUMBER	REV
		DCS	M8110-G 1	E
		SCALE		
		SHEET 9 OF 9	DIST	

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NOTE:
1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω . CAPACITANCE IS IN PICO-FARADS.
CAPS WITHOUT VALUE NOTED ARE .22 MFD.
2. A, B, C, D ARE JUMPERS
* 3. E21, E34, E47, E60, E68, E81, E94 AND E107, ARE INSTALLED IN G401 YA PARITY VARIATION ONLY.

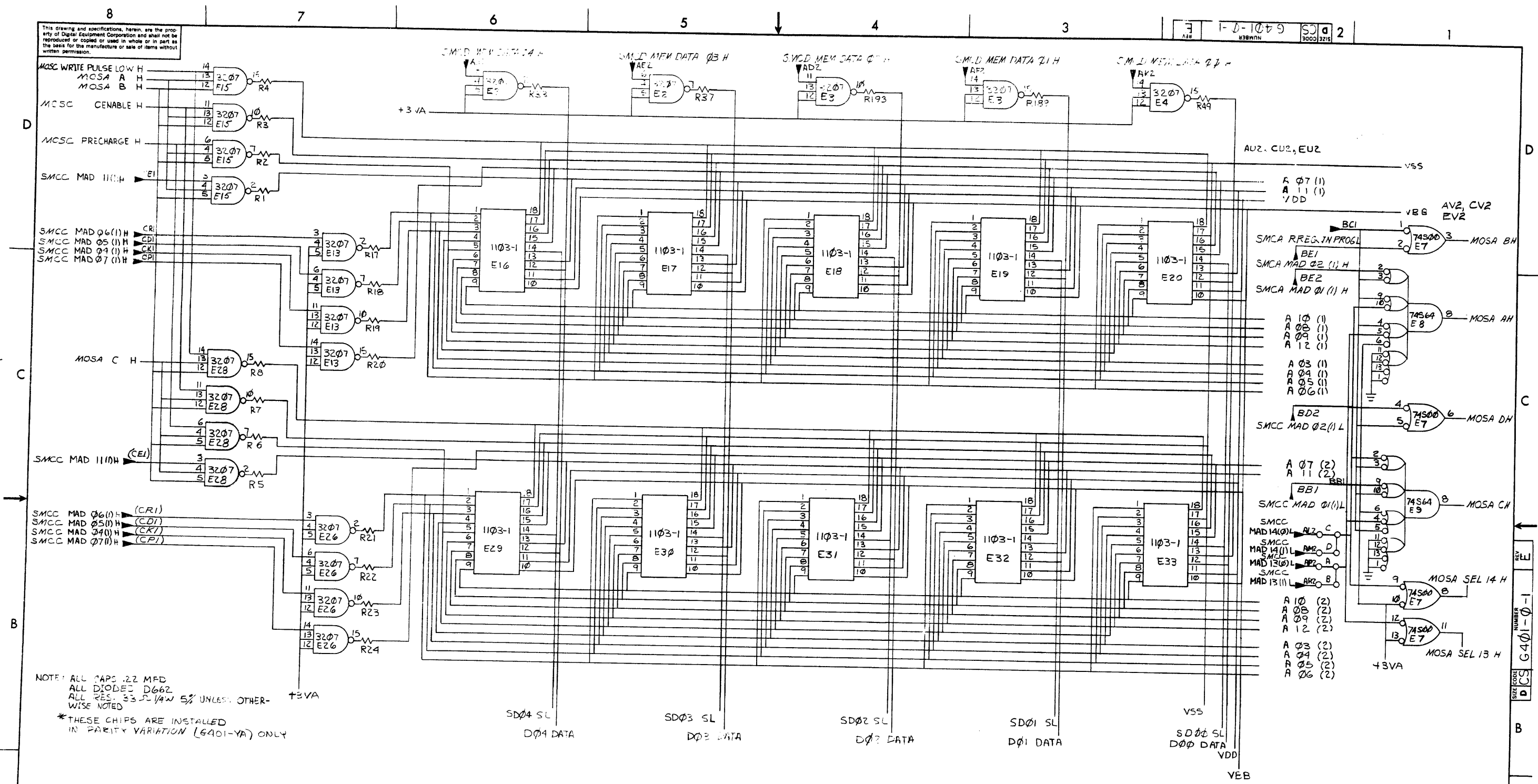
ITEM NO.	QTY	DESCRIPTION	FROM PT.	TO PT.
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2	1	DEC 3207-1		
3	1	DEC 3207-1		
4	1	DEC 3207-1		
5	1	DEC 3207-1		
6	1	DEC 3207-1		
7	1	DEC 3207-1		
8	1	DEC 3207-1		
9	1	DEC 3207-1		
10	1	DEC 3207-1		
11	1	DEC 3207-1		
12	1	DEC 3207-1		
13	1	DEC 3207-1		
14	1	DEC 3207-1		
15	1	DEC 3207-1		
16	1	DEC 3207-1		
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122	1	DEC 3207-1		
123	1	DEC 3207-1		
124	1	DEC 3207-1		
125	1	DEC 3207-1		



QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	STOCK NO.
1	D1	DIODE, 1N4001	1N4001	
1	D2	DIODE, 1N4001	1N4001	
1	D3	DIODE, 1N4001	1N4001	
1	D4	DIODE, 1N4001	1N4001	
1	D5	DIODE, 1N4001	1N4001	
1	D6	DIODE, 1N4001	1N4001	
1	D7	DIODE, 1N4001	1N4001	
1	D8	DIODE, 1N4001	1N4001	
1	D9	DIODE, 1N4001	1N4001	
1	D10	DIODE, 1N4001	1N4001	
1	D11	DIODE, 1N4001	1N4001	
1	D12	DIODE, 1N4001	1N4001	
1	D13	DIODE, 1N4001	1N4001	
1	D14	DIODE, 1N4001	1N4001	
1	D15	DIODE, 1N4001	1N4001	
1	D16	DIODE, 1N4001	1N4001	
1	D17	DIODE, 1N4001	1N4001	
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1	D23	DIODE, 1N4001	1N4001	
1	D24	DIODE, 1N4001	1N4001	
1	D25	DIODE, 1N4001	1N4001	
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1	D28	DIODE, 1N4001	1N4001	
1	D29	DIODE, 1N4001	1N4001	
1	D30	DIODE, 1N4001	1N4001	
1	D31	DIODE, 1N4001	1N4001	
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1	D109	DIODE, 1N4001	1N4001	
1	D110	DIODE, 1N4001	1N4001	
1	D111	DIODE, 1N4001	1N4001	
1	D112	DIODE, 1N4001	1N4001	
1	D113	DIODE, 1N4001	1N4001	
1	D114	DIODE, 1N4001	1N4001	
1	D115	DIODE, 1N4001	1N4001	
1	D116	DIODE, 1N4001	1N4001	
1	D117	DIODE, 1N4001	1N4001	
1	D118	DIODE, 1N4001	1N4001	
1	D119	DIODE, 1N4001	1N4001	
1	D120	DIODE, 1N4001	1N4001	
1	D121	DIODE, 1N4001	1N4001	
1	D122	DIODE, 1N4001	1N4001	
1	D123	DIODE, 1N4001	1N4001	
1	D124	DIODE, 1N4001	1N4001	
1	D125	DIODE, 1N4001	1N4001	

ETCH BOARD REV		PARTS LIST	
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NOTE: ALL CAPS .22 MFD
ALL DIODES D66Z
ALL RES. 33 Ω 1/4W 5% UNLESS OTHERWISE NOTED
* THESE CHIPS ARE INSTALLED IN PARITY VARIATION (G401-YA) ONLY

JUMPER CONFIGURATION	
CUT JUMPER	FOR
B,D	1ST 4K OF 16K BANK
A,D	2ND 4K OF 16K BANK
B,C	3RD 4K OF 16K BANK
A,C	4TH 4K OF 16K BANK

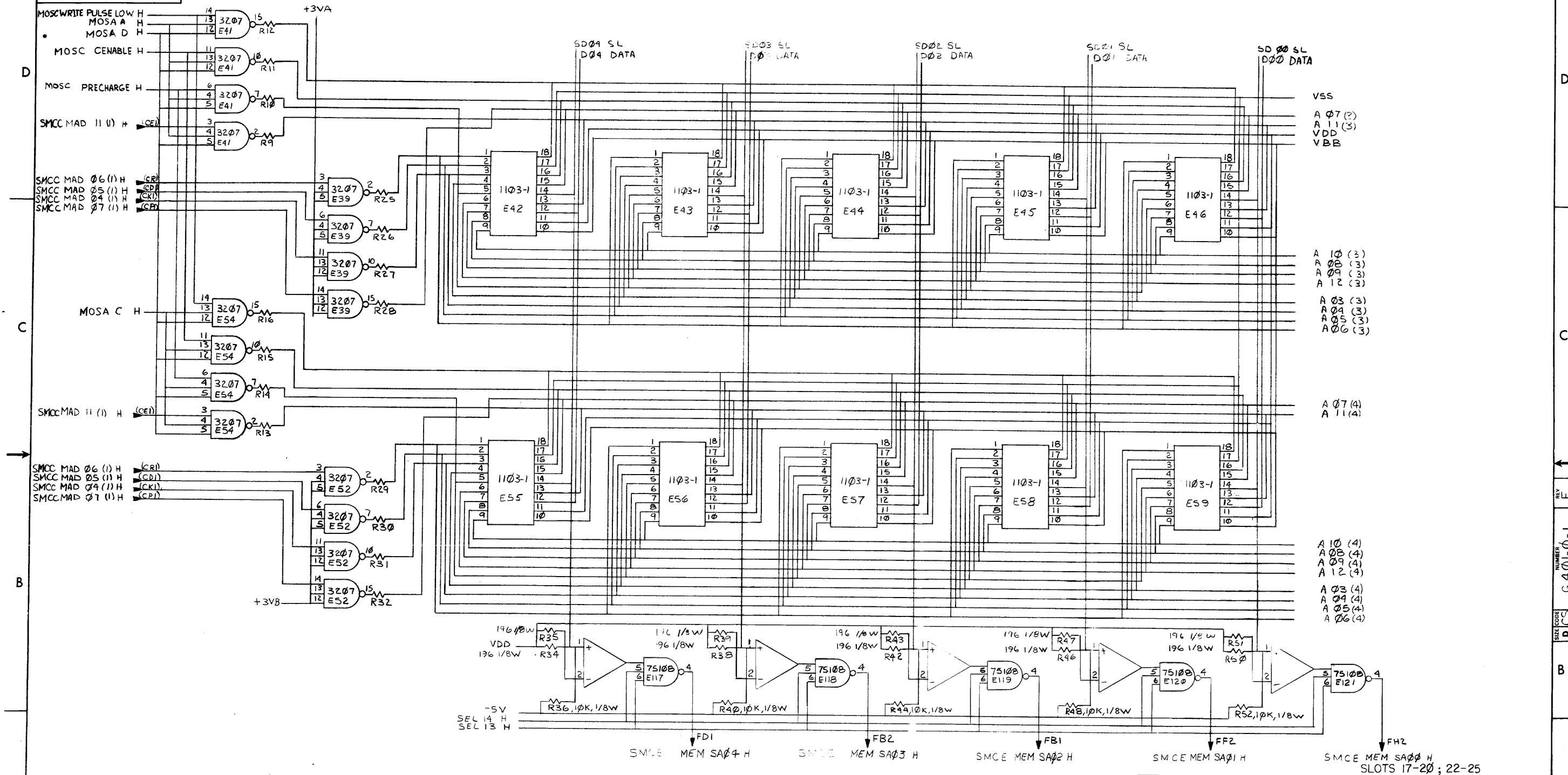
FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES			DATE	7/3/71	
DECIMALS	ANGLES		DATE	2/23/72	
.XXX = .005	$\pm 0^{\circ} 30'$		DATE	7/23/72	
.XX = .02			DATE	7/23/72	
.X = .1			DATE	2/23/72	
REMOVE BURRS AND BREAK SHARP CORNERS. SURFACE QUALITY			DATE	2/23/72	
MATERIAL			NEXT HIGHER ASSY.		
FINISH			B-DD-11/45-0		
			SCALE		
			SHEET 2	OF 9.	

SLOTS 17-20; 22-25	
SIZE CODE	NUMBER
D CS	G401-0-1
REV.	E

REV	CHANGE NO.

DEC FORM NO 100-102-B

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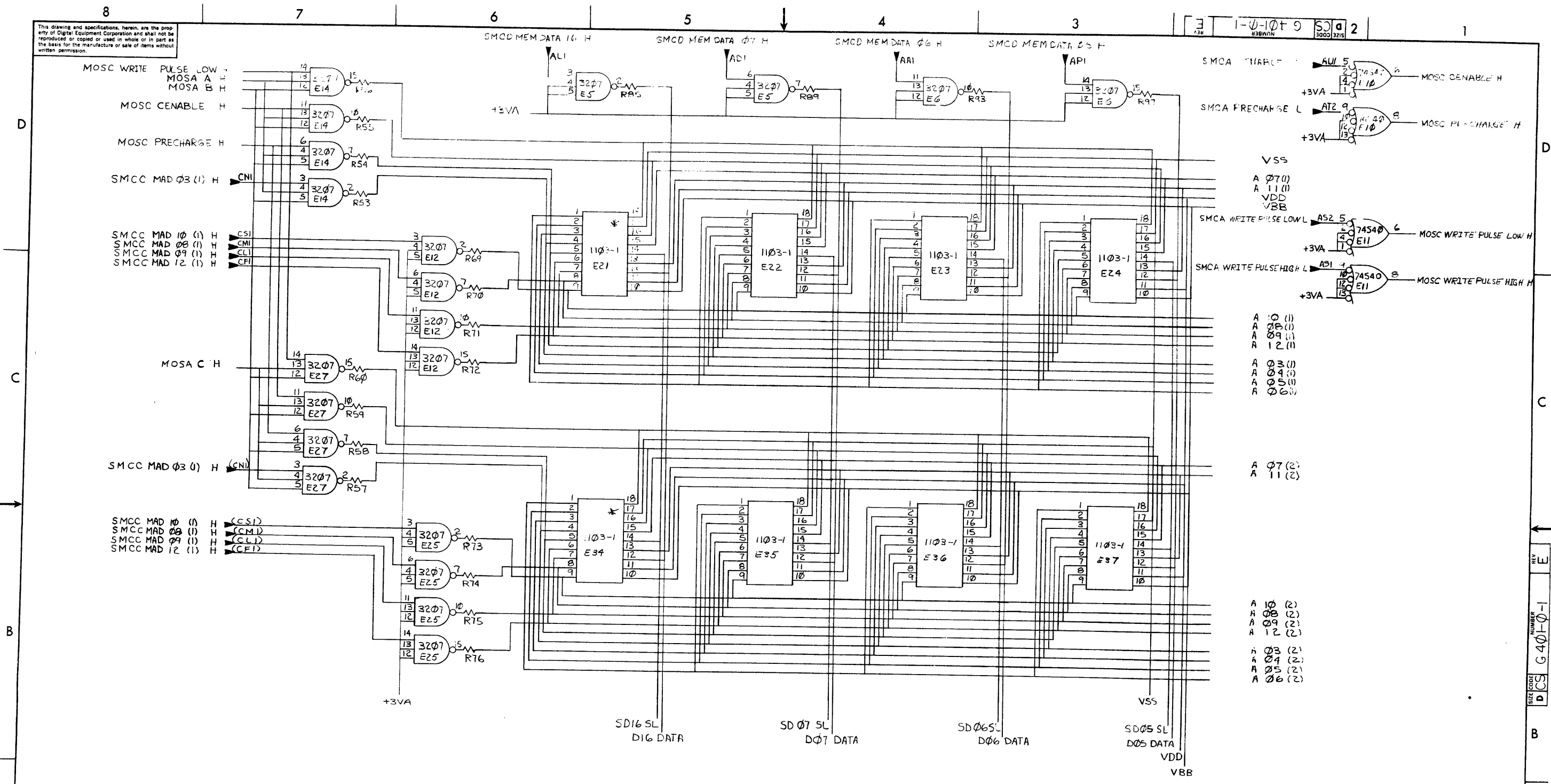


FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45					
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES		DATE	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS		
DECIMALS		DATE			
ANGLES		DATE			
XXX - .005		DATE			
XX - .02		DATE			
X - .1		DATE			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE	TITLE HIGH SPEED MOS MEMORY MATRIX (MOSB)		
MATERIAL		DATE			
NEXT HIGHER ASSY.		DATE			
FINISH		DATE			
B-DD-11/45-0		DATE	SIZE CODE	NUMBER	REV.
SCALE		DATE	D CS	G 401-0-1	E
SHEET 3 OF 9		DATE	DIST.		

REV	CHANGE NO.
1	
2	
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6	
7	
8	

DEC FORM NO
DRD 102-B

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VSS
A 07 (1)
A 11 (1)
VDD
VBB
A 03 (1)
A 04 (1)
A 05 (1)
A 06 (1)

A 07 (2)
A 11 (2)

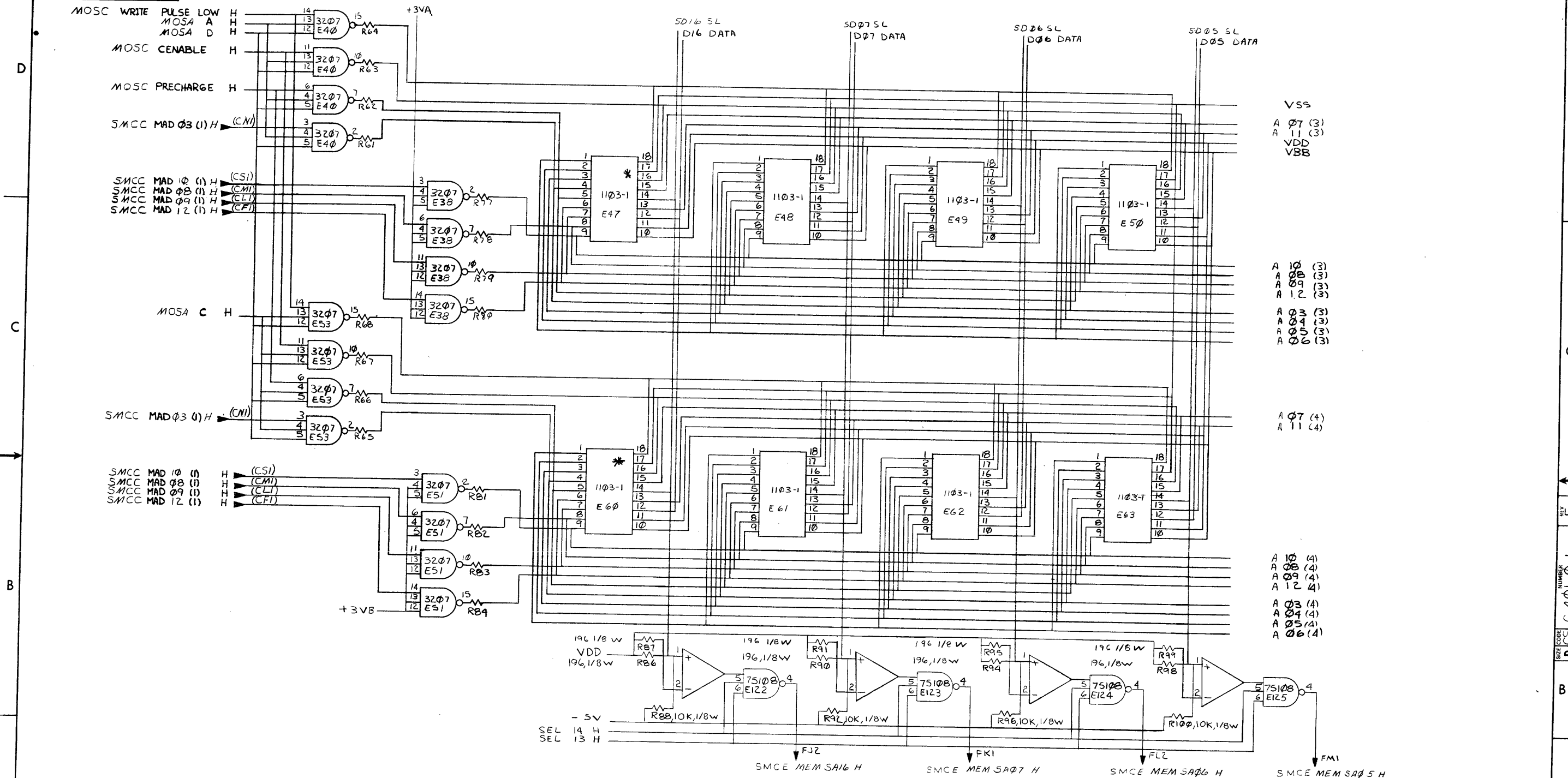
A 10 (2)
A 08 (2)
A 09 (2)
A 12 (2)
A 03 (2)
A 04 (2)
A 05 (2)
A 06 (2)

SLOTS 17-20; 22-25			
FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.
11/45			
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES		DATE	DATE
DECIMALS	ANGLES	DATE	DATE
.XXX = .005	± 0° 30'	DATE	DATE
.XX = .02		DATE	DATE
.X = .1		DATE	DATE
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		DATE	DATE
MATERIAL		DATE	DATE
FINISH		DATE	DATE
NEXT HIGHER ASSY.		DATE	DATE
B-DD-11/45-0		DATE	DATE
SCALE		DATE	DATE
SHEET 4 OF 9		DATE	DATE
TITLE		DATE	DATE
HIGH SPEED MOS MEMORY MATRIX (MOSC)		DATE	DATE
SIZE CODE		DATE	DATE
DCS G 401-0-1		DATE	DATE
NUMBER		DATE	DATE
REV.		DATE	DATE
E		DATE	DATE

REV.	CHANGE NO.
1	1
2	2
3	3
4	4
5	5
6	6
7	7
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1-0-1049 SC 2



VSS
A 07 (3)
A 11 (3)
VDD
VBB

A 10 (3)
A 08 (3)
A 09 (3)
A 12 (3)
A 03 (3)
A 04 (3)
A 05 (3)
A 06 (3)

A 07 (4)
A 11 (4)

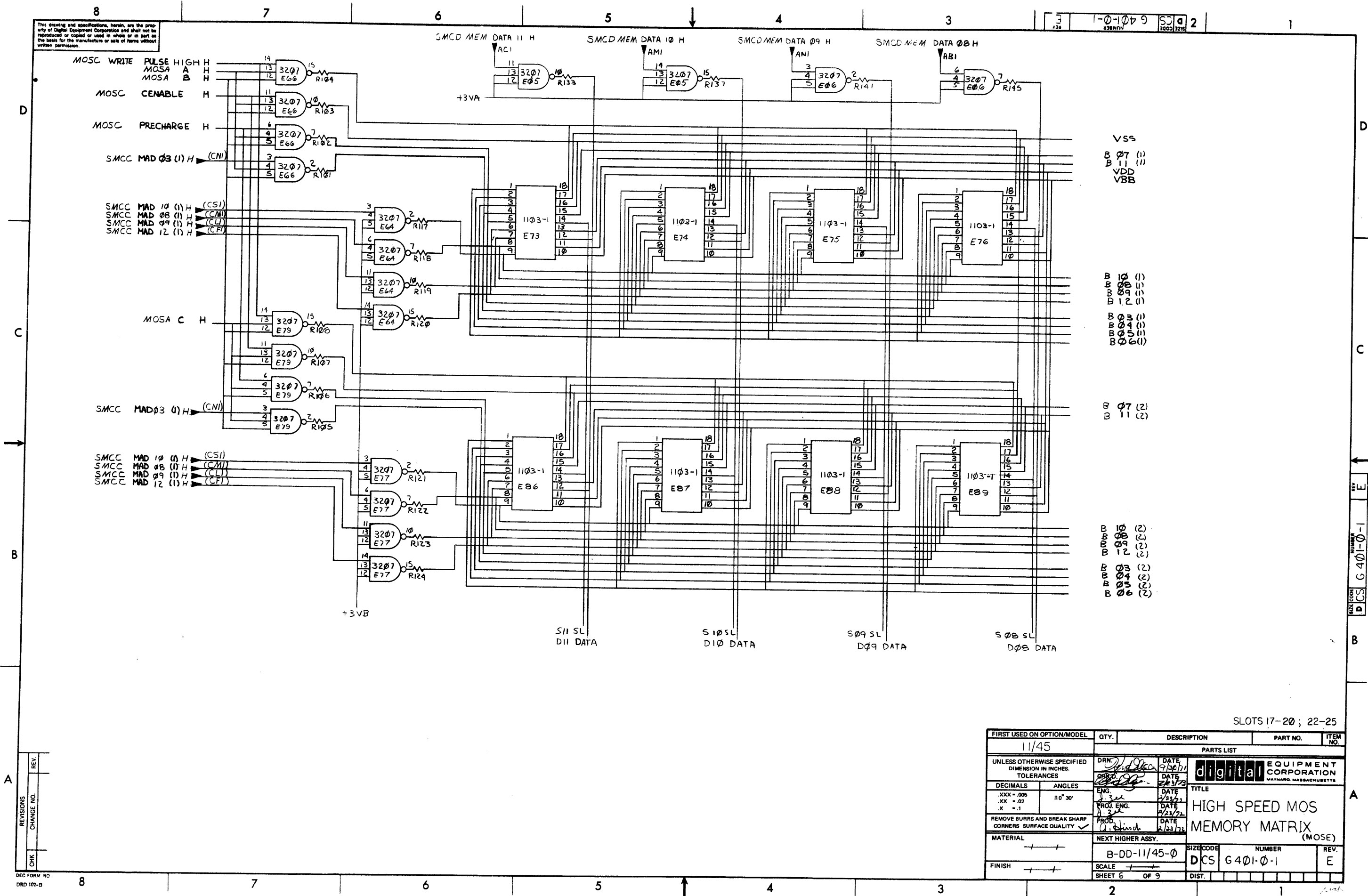
A 10 (4)
A 08 (4)
A 09 (4)
A 12 (4)
A 03 (4)
A 04 (4)
A 05 (4)
A 06 (4)

REV.	CHANGE NO.
1	1

DEC FORM NO. DRD 102-B

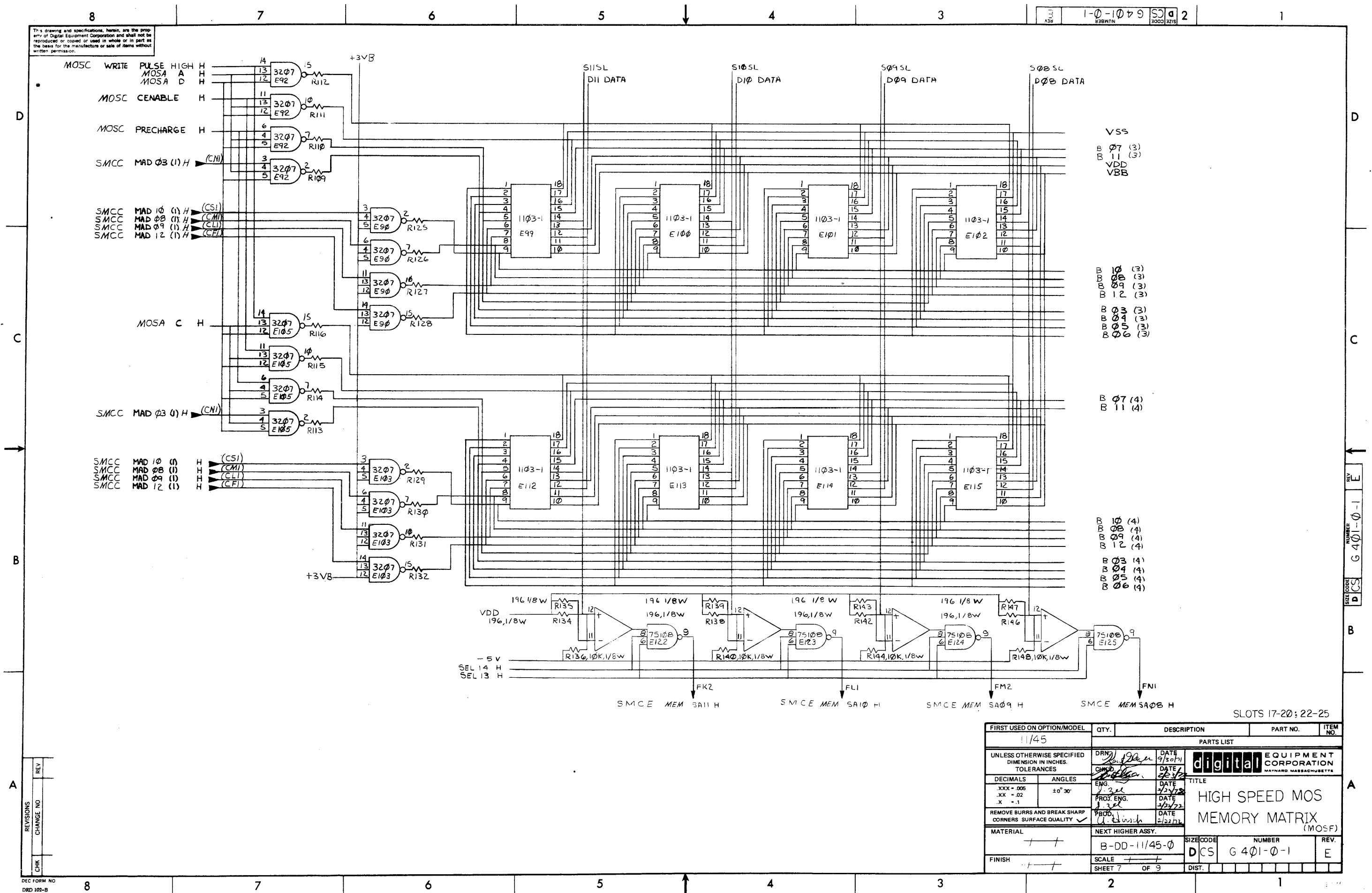
FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES		PARTS LIST			
DECIMALS	ANGLES	TITLE			
.XXX = .005	± 0° 30'	HIGH SPEED MOS			
.XX = .02		MEMORY MATRIX			
.X = .1		(MOSD)			
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		REVISIONS			
MATERIAL		NEXT HIGHER ASSY.			
FINISH		SCALE			
		SHEET 5 OF 3			
		DIST.			

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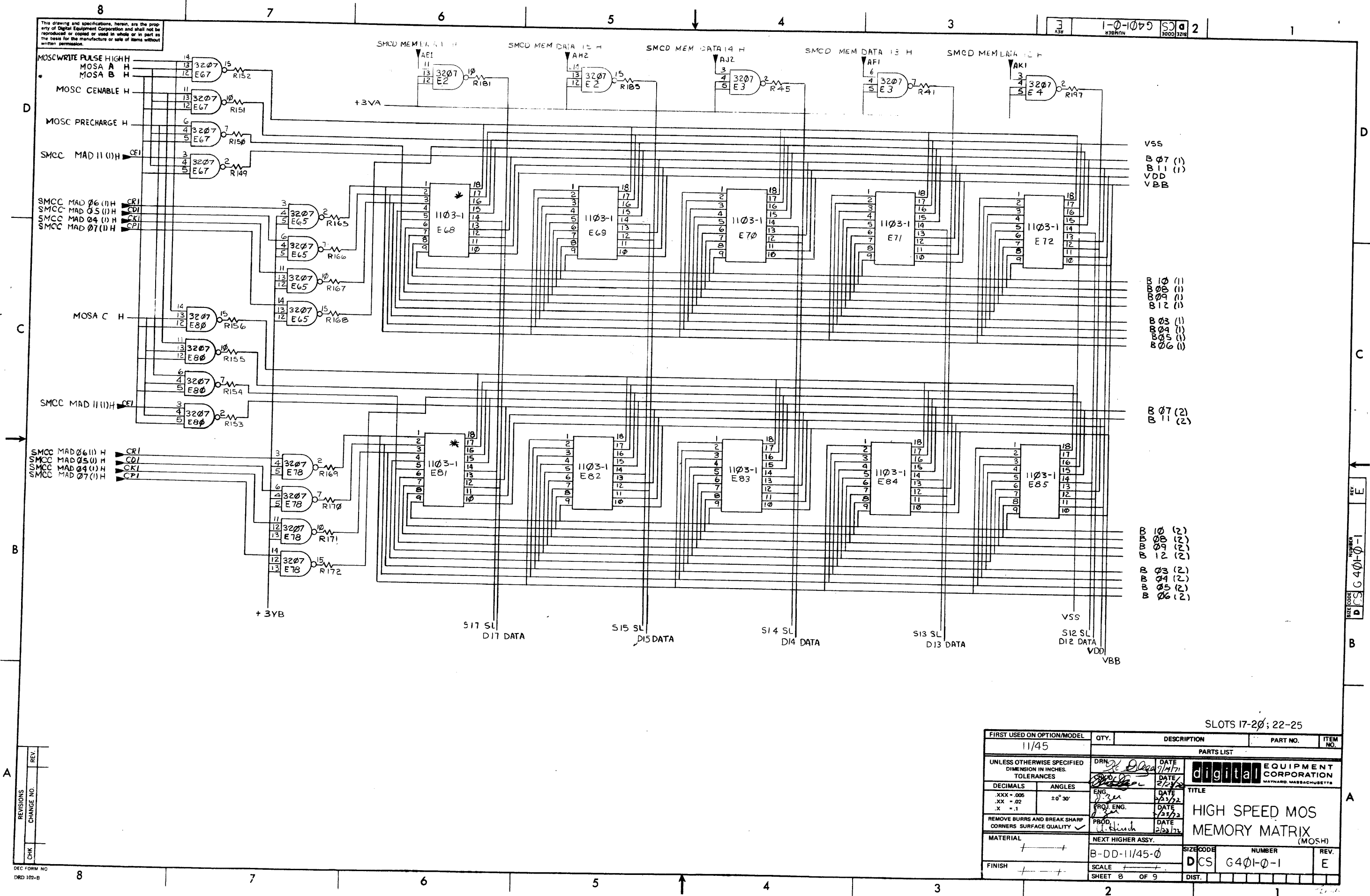


SLOTS 17-20 ; 22-25

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45				
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES	DRN	DATE	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
DECIMALS	ENG.	DATE	TITLE HIGH SPEED MOS MEMORY MATRIX (MOSE)	
ANGLES	PROJ. ENG.	DATE		
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PROD.	DATE	SIZE CODE D CS	
MATERIAL	NEXT HIGHER ASSY.		NUMBER G 401-0-1	
FINISH	B-DD-11/45-0		REV. E	
	SCALE		DIST.	
	SHEET 6	OF 9		



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FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/45					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES.		PARTS LIST			
TOLERANCES		DRN.	DATE	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
DECIMALS		ENG.	DATE		
ANGLES		PROJ. ENG.	DATE	TITLE HIGH SPEED MOS MEMORY MATRIX (MOSH)	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		PBOD.	DATE		
MATERIAL		NEXT HIGHER ASSY.		SIZE CODE	NUMBER
FINISH		SCALE		DCS	G401-0-1
SHEET 8 OF 9		DIST.		REV. E	