

REVISIONS			
DR	ECO NO	DESCRIPTION	REV
PHD		Restricted Release	2/1/82
EGT		Release	JAN 1983
EGT		SHTS. 1-4 REDRAWN TO STANDARDS, SHT. 5 ADDED.	11
EGT		12-B2 WAH/HPH	11

- A0 (2,4,5)
- A1 (2,4,5)
- A2 (4)
- A3 (5)
- A4 (2)
- A5 (5)
- A14 (2,4,5)
- A15 (2,4,5)
- D0 (2,4,5)
- D1 (2,4,5)
- D2 (2,4,5)
- D3 (2,4,5)
- D4 (2,4,5)
- D5 (2,4,5)
- D6 (2,4,5)
- D7 (2,4,5)

- NOTES:
1. CAPACITORS VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 2. RESISTOR VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
 3. RESISTORS ARE 1/4 WATT ± 5% UNLESS OTHERWISE SPECIFIED.
 4. PRECISION (1% OR 0.5%) RESISTORS ARE 1/8 WATT UNLESS OTHERWISE SPECIFIED.

UNUSED GATES	C NUMBER	PIN
U21	4,5,6	
U47	11,12,13	

PWR/GND CONNECTIONS	REF DES	+5D/GND
U5,7,23,24,29,38,39,47,49,14		7
U1,2,6,8,9,15,20,29,50-55		8
U0,11,40,43		20 10
U37		24 12
U3,25-27		20 1
U35,36		28 14

HIGHEST REF DES	UNUSED
C71	
CR44	
J6	
Q18	
R133	
U64	
Z8	
B1	
L2	
TP10	

- ▽ = ANALOG GROUND
- ▽ = DIGITAL GROUND
- ▽ = PRECISION GROUND

REVISION STATUS OF SHEETS	SHEET	1	2	3	4	5
REV		1	1	1	1	1

TOLERANCES UNLESS SPECIFIED ARE ANGLES ± DECIMALS ±

GENRAD COMPONENT TEST DIVISION BOSTON, MA 02114

CAUTION THE FOLLOWING COMPONENTS REQUIRE SPECIAL HANDLING FOR STATIC PROTECTION: U3, U5, U6, U7, U9, U10, U11, U12, U13, U14, U15, U16, U17, U18, U19, U20, U21, U22, U23, U24, U25, U26, U27, U28, U29, U30, U31, U32, U33, U34, U35, U36, U37, U38, U39, U40, U41, U42, U43, U44, U45, U46, U47, U48, U49, U50, U51, U52, U53, U54, U55, U56, U57, U58, U59, U60, U61, U62, U63, U64, U65, U66, U67, U68, U69, U70, U71, U72, U73, U74, U75, U76, U77, U78, U79, U80, U81, U82, U83, U84, U85, U86, U87, U88, U89, U90, U91, U92, U93, U94, U95, U96, U97, U98, U99, U100.

UNUSED INPUTS / OUTPUTS SHOWN BY PIN NUMBER AND A SHORT LINE

SIGNAL FLOW: IN DIRECTION OF ARROW HEAD, BI-DIRECTIONAL

SIGNAL INPUTS TO THE BOARD: PPLAD, P2-19

SIGNAL OUTPUTS FROM THE BOARD: P2-19, PPLAD

CONNECTOR NUMBER, CONTACT NUMBER, SIGNAL NAME

INTERRUPTED SIGNAL LINES: (2) MAX0

SIGNAL NAME, SIGNAL SOURCE, SCHEMATIC SHEET NUMBER

SIGNAL DESTINATION(S), SCHEMATIC SHEET NUMBER(S)

ANALOG & CONTROL BD. LOGIC DIAGRAM SHEET 1 OF 5

1689-4700 SCALE: B FILED AT: BOSTON, MA DEC 9 1982

GenRad

Figure 6-3. Main Board, schematic sheet 1, 1689-4700-SD

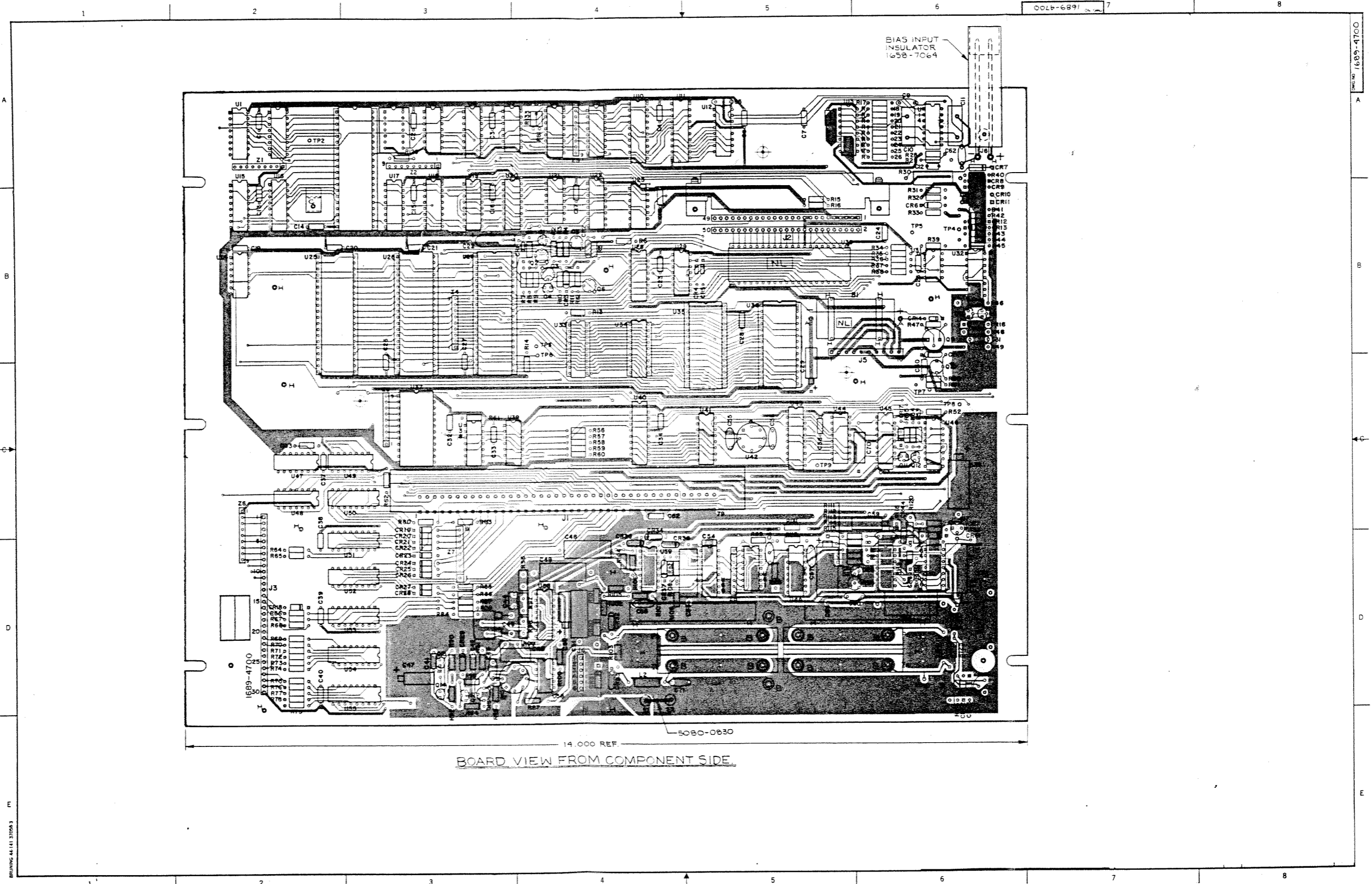
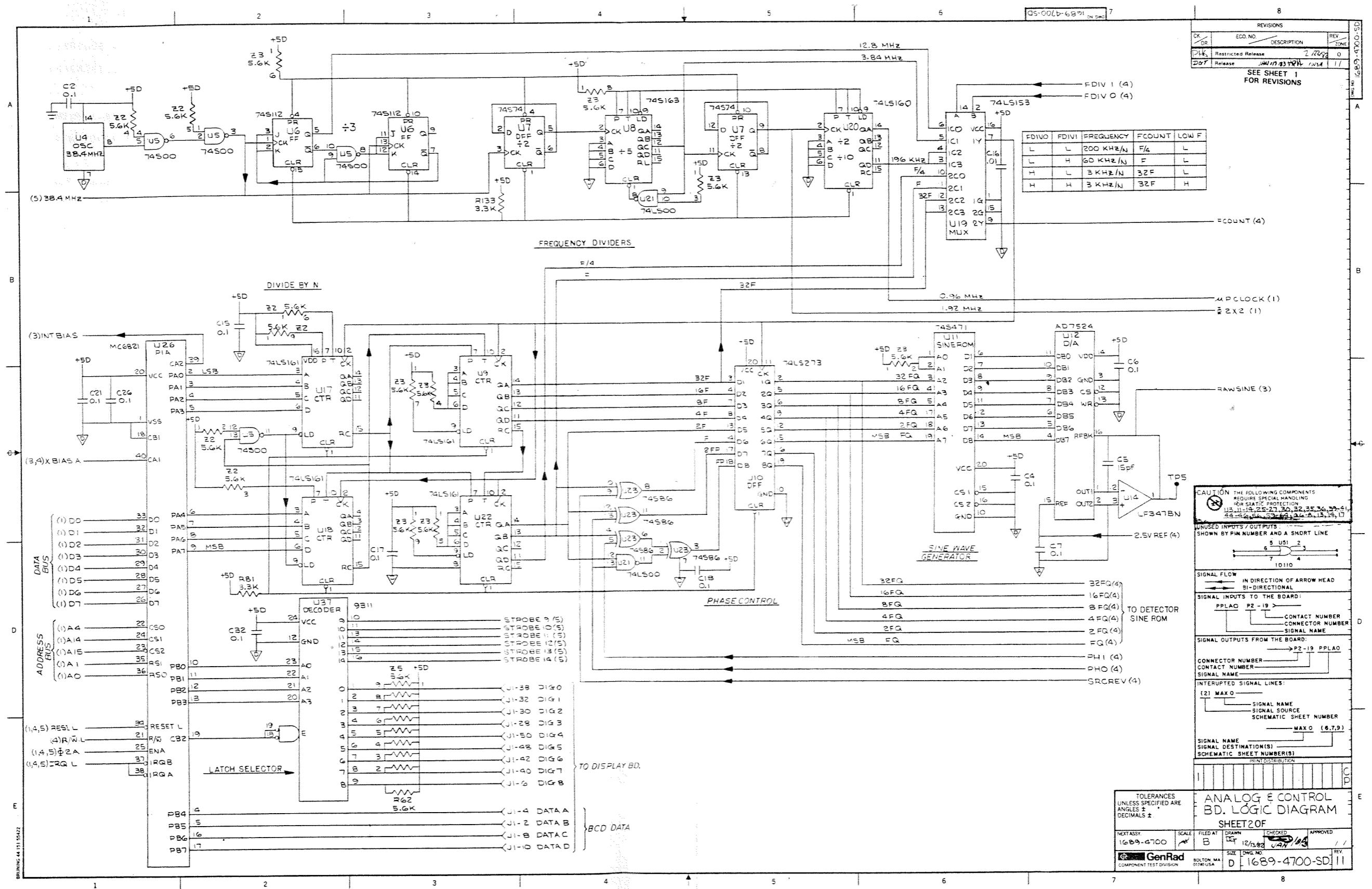


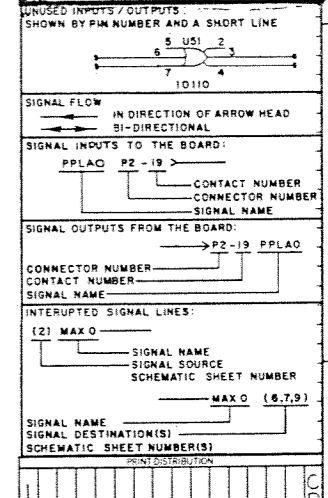
Figure 6-4. Main Board, layout, 1689-4700



REVISIONS			
CK	DR	ECO. NO.	DESCRIPTION
CHK		1	Restricted Release
DR		2	Release

FDIV0	FDIV1	FREQUENCY	F/COUNT	LOW F
L	L	200 KHZ/N	F/4	L
L	H	60 KHZ/N	F	L
H	L	3 KHZ/N	32F	L
H	H	3 KHZ/N	32F	H

CAUTION THE FOLLOWING COMPONENTS REQUIRE SPECIAL HANDLING FOR STATIC PROTECTION
 U11, U12, U13, U14, U15, U16, U17, U18, U19, U20, U21, U22, U23, U24, U25, U26, U27, U28, U29, U30, U31, U32, U33, U34, U35, U36, U37, U38, U39, U40, U41, U42, U43, U44, U45, U46, U47, U48, U49, U50, U51, U52, U53, U54, U55, U56, U57, U58, U59, U60, U61, U62, U63, U64, U65, U66, U67, U68, U69, U70, U71, U72, U73, U74, U75, U76, U77, U78, U79, U80, U81, U82, U83, U84, U85, U86, U87, U88, U89, U90, U91, U92, U93, U94, U95, U96, U97, U98, U99, U100



TOLERANCES UNLESS SPECIFIED ARE ANGLES ± DECIMALS ±

ANALOG & CONTROL BD. LOGIC DIAGRAM SHEET 2 OF

NEXT ASSY: 1689-4700	SCALE: B	FILED AT: B	DRAWN: [Signature]	CHECKED: [Signature]	APPROVED: [Signature]
GenRad	BOLTON MA 01740 USA	SIZE: [Blank]	DWG. NO: D 1689-4700-SD	REV: 11	

Figure 6-5. Main Board, schematic sheet 2, 1689-4700-SD

ELECTRICAL PARTS LIST (cont)

1689 RLC DIGIBRIDGE ASM P/N 1689-3000

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART	NUMBER
B 1	FAN ASSEMBLY	1689-1020	24655	1689-1020		
BT 1	BATTERY LITHIUM 2.80V	8410-3480	90303	LD-32		
R 132	RES COMP 4.7 K 5PCT 1/4W	6099-2475	81349	RCR07G472J		

NOTE: THIS ASSEMBLY INCLUDES THE MAIN CHASSIS, CIRCUIT BOARDS, ETC.

ANALOG AND CONTROL BOARD P/N 1689-4700

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART	NUMBER
C 1	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 2	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 3	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 4	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 5	CAP CER DISC 15PF 5PCT 500V	4404-0155	72982	083108225D00150J		
C 6	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 7	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 8	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 9	CAP CER DISC 10PF 5PCT 500V	4404-0105	72982	083108225F00100J		
C 10	CAP MICA 1470PF 1PCT 500V	4710-1134	81349	CM06FD1470FN		
C 11	CAP MICA 1200PF 1PCT 500V	4710-1210	81349	CM06FD122FN		
C 12	CAP CER MONO 1UF 20PCT 50VGP	4400-2070	72982	8131-M050-651-105M		
C 13	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 14	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 15	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 16	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 17	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 18	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 19	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 20	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 21	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 22	CAP TANT 10 UF 20PCT 20V	4450-5100	56289	150D106X0020B2		
C 23	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 24	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 25	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 26	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 27	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 28	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 29	CAP TANT 120 UF 20PCT 10V WET S	4450-6301	90201	MTP 120UF 20PCT 10V		
C 30	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 31	CAP CER MONO 0.33UF 20PCT 50VGP	4400-2053	72982	8131-M050-651-334M		
C 32	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 33	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 34	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 35	CAP CER DISC 33PF 5PCT 500V	4404-0335	72982	083108225D00330J		
C 36	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 37	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 38	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 39	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 40	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 41	CAP CER MONO 0.33UF 20PCT 50VGP	4400-2053	72982	8131-M050-651-334M		
C 42	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 43	CAP CER DISC 33PF 5PCT 500V	4404-0335	72982	083108225D00330J		
C 44	CAP MICA 41.2PF .5PF 100V	4710-3153	81349	D10 41.2PF.5PF 100V		
C 45	CAP MICA 665PF 1PCT 300V	4710-0645	81349	CM05FC665FN		
C 46	CAP POLYSTYR .01UF 1PCT 100V	4864-3101	84411	863UW .01UF 1PCT		
C 47	CAP TANT 120 UF 20PCT 10V WET S	4450-6301	90201	MTP 120UF 20PCT 10V		
C 48	CAP M-PC .270UF 1PCT 100V	4862-6206	12673	32 MPC		
C 49	CAP M-PC .270UF 1PCT 100V	4862-6206	12673	32 MPC		
C 50	CAP TANT 120 UF 20PCT 10V WET S	4450-6301	90201	MTP 120UF 20PCT 10V		
C 51	CAP M-PC .270UF 1PCT 100V	4862-6206	12673	32 MPC		
C 52	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		

ELECTRICAL PARTS LIST (cont)

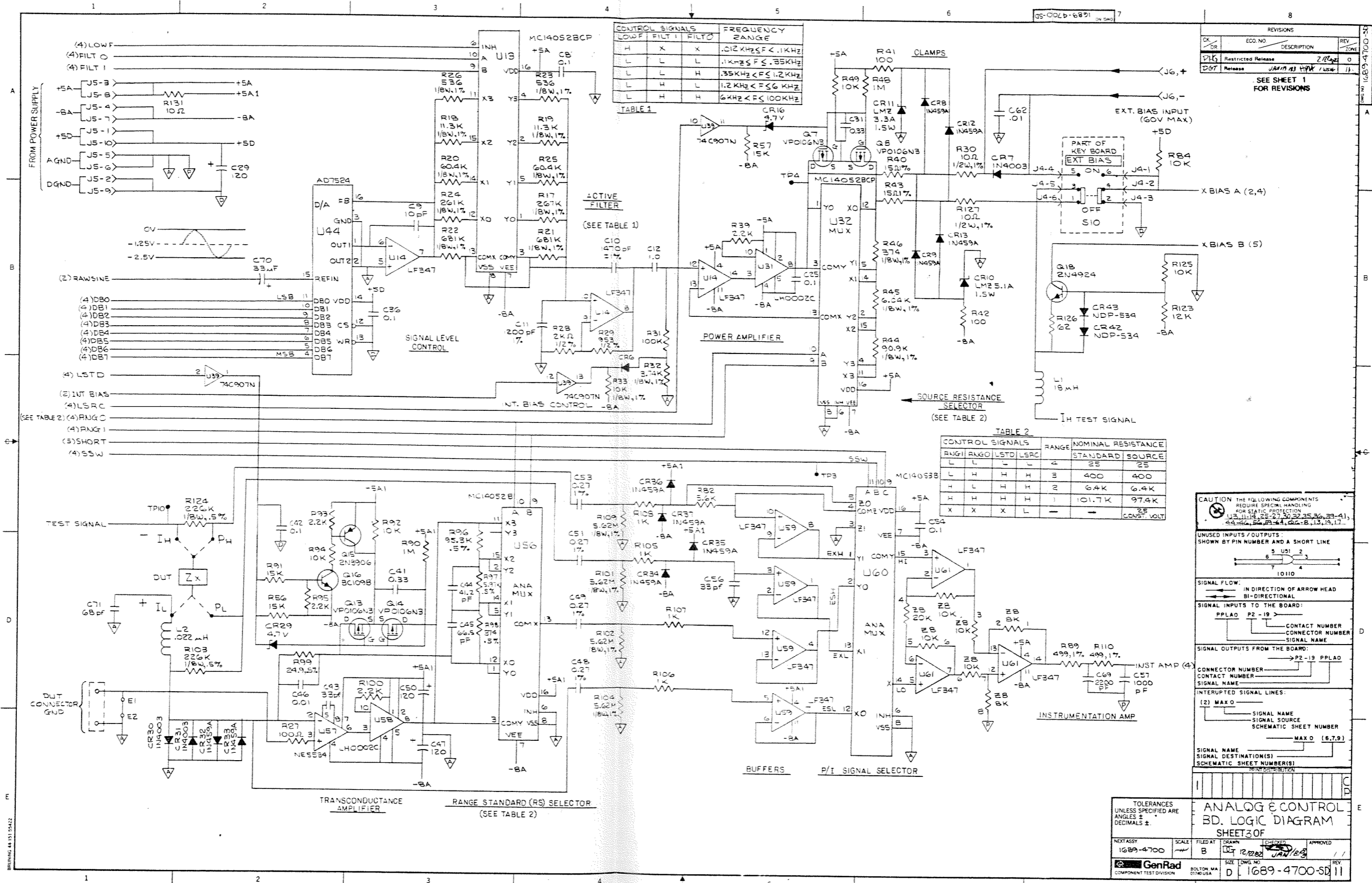
ANALOG AND CONTROL BOARD P/N 1689-4700

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART	NUMBER
C 53	CAP M-PC .270UF 1PCT 100V	4862-6206	12673	32 MPC		
C 54	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 55	CAP CER DISC 22PF 5PCT 500V	4404-0225	72982	083108225D00220J		
C 56	CAP CER DISC 33PF 5PCT 500V	4404-0335	72982	083108225D00330J		
C 57	CAP CER DISC 1000PF 5PCT 500V	4405-2105	72982	080108225D00102J		
C 58	CAP TANT 330UF 20PCT 10V	4450-5724	33173	69F933		
C 59	CAP TANT 120 UF 20PCT 10V WET S	4450-6301	90201	MTP 120UF 20PCT 10V		
C 60	CAP CER DISC 510PF 5PCT.500V	4404-1515	72982	083108225F00511J		
C 61	CAP CER DISC 510PF 5PCT.500V	4404-1515	72982	083108225F00511J		
C 62	CAP CER DISC .01UF 80/20PCT 100V	4401-3100	72982	080554025U00103Z		
C 63	CAP TANT 120 UF 20PCT 10V WET S	4450-6301	90201	MTP 120UF 20PCT 10V		
C 64	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 65	CAP TEF 0.10UF 5PCT 50V	4863-3410	09047	A918104JSW		
C 66	CAP TANT 330UF 20PCT 10V	4450-5724	33173	69F933		
C 67	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 68	CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA		
C 69	CAP CER DISC 2200PF 10PCT 500V	4406-2228	72982	087108225D00222J		
C 70	CAP TANT 33 UF 20PCT 10V	4450-5400	56289	150D336X0010B2		
CR 1	DIODE HPQSCH-1691 70PIV1MAIF SI	6082-1034	28480	QSCHE-1691		
CR 2	ZENER CDXXXX 5.0V 1PCT .4W	6083-1102	24655	6083-1102		
CR 3	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 4	DIODE HPQSCH-1691 70PIV1MAIF SI	6082-1034	28480	QSCHE-1691		
CR 5	DIODE HPQSCH-1691 70PIV1MAIF SI	6082-1034	28480	QSCHE-1691		
CR 6	DIODE DHD-707 30PIV IR.001UA SI	6082-1009	07910	CD81172		
CR 7	RECT 1N4005 600PIV .75A SI A50A	6081-1003	14433	1N4005		
CR 8	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 9	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 10	ZENER LMZ-5.1A 5.1V 5PCT 1.5W	6083-1098	24444	LMZ-5.1A 1.5R5.1B		
CR 11	ZENER LMZ-3.3A 3.3V 5PCT 1.5W	6083-1078	24444	LMZ 3.3A		
CR 12	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 13	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 14	DIODE HPQSCH-1691 70PIV1MAIF SI	6082-1034	28480	QSCHE-1691		
CR 15	ZENER 1N746 3.3V 10PCT .4W	6083-1005	14433	1N746		
CR 16	ZENER 1N750A 4.7V 5PCT .4W	6083-1028	14433	1N750A		
CR 17	DIODE HPQSCH-1691 70PIV1MAIF SI	6082-1034	28480	QSCHE-1691		
CR 18	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 19	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 20	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 21	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 22	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 23	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 24	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 25	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 26	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 27	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 28	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 29	ZENER 1N750A 4.7V 5PCT .4W	6083-1028	14433	1N750A		
CR 30	RECT 1N4005 600PIV .75A SI A50A	6081-1003	14433	1N4005		
CR 31	RECT 1N4005 600PIV .75A SI A50A	6081-1003	14433	1N4005		
CR 32	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 33	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 34	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 35	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 36	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 37	DIODE 1N459A 175PIV IR.025UA SI	6082-1011	14433	1N459A		
CR 38	IC LM336Z 2.49V REF DIODE	5434-0220	12040	LM336Z		
CR 39	DIODE HPQSCH-1691 70PIV1MAIF SI	6082-1034	28480	QSCHE-1691		
CR 40	ZENER CD332588 5.1V 1PCT .4W	6083-1076	07910	CD332588		
CR 41	DIODE 1N4151 75PIV IR.1UA SI	6082-1001	14433	1N3604		
CR 42	DIODE DHD-707 30PIV IR.001UA SI	6082-1009	07910	CD81172		
CR 43	DIODE DHD-707 30PIV IR.001UA SI	6082-1009	07910	CD81172		
CR 44	DIODE HPQSCH-1691 70PIV1MAIF SI	6082-1034	28480	QSCHE-1691		
J 1	CONNECTOR PC 40 PGS DR	1657-0400	24655	1657-0400		
J 2	CONN JP 50E 25P .100X.200 RT ANG	4230-5009	95238	6100-200-50W90		
J 3	HEADER FEMALE 30 CONT	4230-8048	30146	929850-30		
J 4	HEADER FEMALE 6 CONT	4230-8044	30146	929850-6		
J 6	BIAS INPUT INSULATOR	1658-7064	24655	1658-7064		
J 6	BIAS TERMINAL	1658-6002	24655	1658-6002		
L 1	CHOKE MOLDED 18.0 UH 10PCT	4300-2500	99800	1537-42		
L 2	CHOKE MOLDED 0.22 UH 20PCT	4300-0200	99800	1537-02		

ELECTRICAL PARTS LIST (cont)

ANALOG AND CONTROL BOARD P/N 1689-4700

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART NUMBER
Q 1	TRANSISTOR 2N3906	8210-1112	04713	2N3906	
Q 2	TRANSISTOR BC-109B	8210-1248	27014	BC-109B	
Q 3	TRANSISTOR BC-109B	8210-1248	27014	BC-109B	
Q 4	TRANSISTOR 2N3906	8210-1112	04713	2N3906	
Q 5	TRANSISTOR BC-109B	8210-1248	27014	BC-109B	
Q 6	TRANSISTOR(STATIC PROTECT REQ)	8210-1180	17856	3N164	
Q 7	TRANS VPO106N3(STATIC PROTECT RE	8210-1352	59640	VPO106N3	
Q 8	TRANS VPO106N3(STATIC PRTECT RE	8210-1352	59640	VPO106N3	
Q 9	TRANSISTOR 2N2904	8210-1074	04713	2N2904	
Q 10	TRANSISTOR BC-109B	8210-1248	27014	BC-109B	
Q 11	TRANSISTOR 2N4121	8210-1280	07263	FPN41Z1	
Q 12	TRANSISTOR 2N4121	8210-1280	07263	FPN41Z1	
Q 13	TRANS VPO106N3(STATIC PROTECT RE	8210-1352	59640	VPO106N3	
Q 14	TRANS VPO106N3(STATIC PROTECT RE	8210-1352	59640	VPO106N3	
Q 15	TRANSISTOR 2N3906	8210-1112	04713	2N3906	
Q 16	TRANSISTOR BC-109B	8210-1248	27014	BC-109B	
Q 17	TRANSISTOR(STATIC PROTECT REQ)	8210-1142	17856	2N4416	
Q 18	TRANSISTOR 2N4924	8210-1266	04713	2N4924	
R 1	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 2	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 3	RES COMP 1.0 K 5PCT 1/4W	6099-2105	81349	RCR07G102J	
R 4	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 5	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 6	RES COMP 5.6 K 5PCT 1/4W	6099-2565	81349	RCR07G562J	
R 7	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 8	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 9	RES COMP 47 K 5PCT 1/4W	6099-3475	81349	RCR07G473J	
R 10	RES COMP 100 K 5PCT 1/4W	6099-4105	81349	RCR07G104J	
R 11	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 12	RES COMP 100 K 5PCT 1/4W	6099-4105	81349	RCR07G104J	
R 13	RES COMP 27 K 5PCT 1/4W	6099-3275	81349	RCR07G273J	
R 14	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 15	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 16	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 17	RES FLM 267K 1 PCT 1/8W	6250-3267	81349	RN55D2673F	
R 18	RES FLM 11.3K 1 PCT 1/8W	6250-2113	81349	RN55D1132F	
R 19	RES FLM 11.3K 1 PCT 1/8W	6250-2113	81349	RN55D1132F	
R 20	RES FLM 60.4K 1 PCT 1/8W	6250-2604	81349	RN55D6042F	
R 21	RES FLM 681K 1 PCT 1/8W	6250-3681	81349	RN55D6813F	
R 22	RES FLM 681K 1 PCT 1/8W	6250-3681	81349	RN55D6813F	
R 23	RES FLM 536 OHM 1 PCT 1/8W	6250-0536	81349	RN55D5360F	
R 24	RES FLM 267K 1 PCT 1/8W	6250-3267	81349	RN55D2673F	
R 25	RES FLM 60.4K 1 PCT 1/8W	6250-2604	81349	RN55D6042F	
R 26	RES FLM 536 OHM 1 PCT 1/8W	6250-0536	81349	RN55D5360F	
R 27	RES COMP 100 OHM 5PCT 1/4W	6099-1105	81349	RCR07G101J	
R 28	RES FLM 2K 1/2PCT 1/8W	6251-1200	81349	RN55D20010	
R 29	RES FLM 953 OHM 1/2PCT 1/8W	6251-0953	81349	RN55D95300	
R 30	RES FLM 10.0 1PCT 100PPM 1/8W	6450-9100	81349	RN55D10R0F	
R 31	RES COMP 100 K 5PCT 1/4W	6099-4105	81349	RCR07G104J	
R 32	RES FLM 3.74K 1 PCT 1/8W	6250-1374	81349	RN55D3741F	
R 33	RES FLM 10.0K 1 PCT 1/8W	6250-2100	81349	RN55D1002F	
R 34	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 35	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 36	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 37	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 38	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 39	RES COMP 2.2 K 5PCT 1/4W	6099-2225	81349	RCR07G222J	
R 40	RES FLM 15.0 1PCT 100PPM 1/8W	6250-9150	81349	RN55D15R0F	
R 41	RES COMP 100 OHM 5PCT 1/4W	6099-1105	81349	RCR07G101J	
R 42	RES COMP 100 OHM 5PCT 1/4W	6099-1105	81349	RCR07G101J	
R 43	RES FLM 15.0 1PCT 100PPM 1/8W	6250-9150	81349	RN55D15R0F	
R 44	RES FLM 90.9K 1 PCT 1/8W	6250-2909	81349	RN55D9092F	
R 45	RES FLM 6.04K 1 PCT 1/8W	6250-1604	81349	RN55D6041F	
R 46	RES FLM 374 OHM 1 PCT 1/8W	6250-0374	81349	RN55D3740F	
R 47	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 48	RES COMP 1.0 M 5PCT 1/4W	6099-5105	81349	RCR07G105J	
R 49	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	



CONTROL SIGNALS

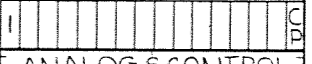
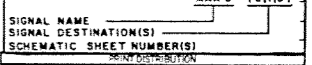
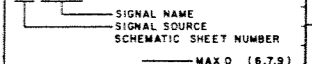
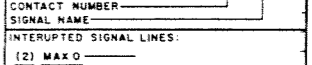
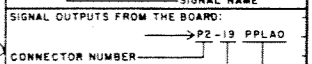
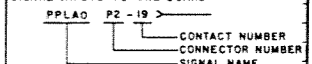
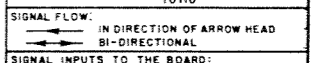
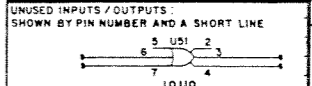
LOW F	FILT O	FILT O	FREQUENCY RANGE
H	X	X	.012 KHZ ≤ F < .1 KHZ
L	L	L	.1 KHZ ≤ F < .35 KHZ
L	L	H	.35 KHZ ≤ F < 1.2 KHZ
L	H	L	1.2 KHZ ≤ F < 6 KHZ
L	H	H	6 KHZ ≤ F < 100 KHZ

TABLE 1

TABLE 2

CONTROL SIGNALS	RANGE	NOMINAL RESISTANCE
RNG1	L	25
RNG0	L	25
LSTD	H	400
LSRC	H	400
RNG0	H	6.4K
RNG1	H	6.4K
SHORT	H	101.7K
SSW	L	25

CAUTION: THE FOLLOWING COMPONENTS REQUIRE SPECIAL HANDLING FOR STATIC PROTECTION: U13, U14, U15, U16, U17, U18, U19, U20, U21, U22, U23, U24, U25, U26, U27, U28, U29, U30, U31, U32, U33, U34, U35, U36, U37, U38, U39, U40, U41, U42, U43, U44, U45, U46, U47, U48, U49, U50, U51, U52, U53, U54, U55, U56, U57, U58, U59, U60, U61, U62, U63, U64, U65, U66, U67, U68, U69, U70, U71, U72, U73, U74, U75, U76, U77, U78, U79, U80, U81, U82, U83, U84, U85, U86, U87, U88, U89, U90, U91, U92, U93, U94, U95, U96, U97, U98, U99, U100.



TOLERANCES UNLESS SPECIFIED ARE ANGLES ± DECIMALS ±

ANALOG & CONTROL BD. LOGIC DIAGRAM SHEET 3 OF 3

NEXT ASSY: 1689-4700 SCALE: FILED AT: DRAWN: APPROVED: 1/18/83

GenRad COMPONENT TEST DIVISION BOSTON, MA 02114

SIZE: DWG. NO. 1689-4700-SD 11

Figure 6-6. Main Board, schematic sheet 3, 1689-4700-SD

ELECTRICAL PARTS LIST (cont)

ELECTRICAL PARTS LIST (cont)

ANALOG AND CONTROL BOARD P/N 1689-4700

ANALOG AND CONTROL BOARD P/N 1689-4700

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART NUMBER
R 50	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 51	RES COMP 100 OHM 5PCT 1/4W	6099-1105	81349	KCR07G101J	
R 52	RES COMP 15 K 5PCT 1/4W	6099-3155	81349	KCR07G153J	
R 53	RES COMP 2.2 K 5PCT 1/4W	6099-2225	81349	KCR07G222J	
R 54	RES COMP 1.2 K 5PCT 1/4W	6099-2125	81349	KCR07G122J	
R 55	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	KCR07G103J	
R 56	RES COMP 15 K 5PCT 1/4W	6099-3155	81349	KCR07G153J	
R 57	RES COMP 15 K 5PCT 1/4W	6099-3155	81349	KCR07G153J	
R 58	RES COMP 15 K 5PCT 1/4W	6099-3155	81349	KCR07G153J	
R 59	RES COMP 15 K 5PCT 1/4W	6099-3155	81349	KCR07G153J	
R 60	RES COMP 15 K 5PCT 1/4W	6099-3155	81349	KCR07G153J	
R 61	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	KCR07G103J	
R 62	RES COMP 5.6 K 5PCT 1/4W	6099-2565	81349	KCR07G562J	
R 63	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	KCR07G103J	
R 64	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 65	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 66	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 67	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 68	RES COMP 620 OHM 5PCT 1/4W D	6099-1625	81349	KCR07G621J	
R 69	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 70	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 71	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 72	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 73	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 74	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 75	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 76	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 77	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 78	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 79	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 80	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 81	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	KCR07G332J	
R 82	RES COMP 5.6 K 5PCT 1/4W	6099-2565	81349	KCR07G562J	
R 83	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 84	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	KCR07G103J	
R 85	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 86	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 87	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 88	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349	KCR07G221J	
R 89	RES FLM 499 OHM 1 PCT 1/8W	6250-0499	81349	RN55D4990F	
R 90	RES COMP 1.0 M 5PCT 1/4W	6099-5105	81349	KCR07G105J	
R 91	RES COMP 15 K 5PCT 1/4W	6099-3155	81349	KCR07G153J	
R 92	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	KCR07G103J	
R 93	RES COMP 2.2 K 5PCT 1/4W	6099-2225	81349	KCR07G222J	
R 94	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	KCR07G103J	
R 95	RES COMP 2.2 K 5PCT 1/4W	6099-2225	81349	KCR07G222J	
R 96	RES FLM 95.3K .50PCT 2PPM .3W	6619-6033	24655	6619-6033	
R 97	RES FLM 5.97K .50PCT 2PPM .3W	6619-6032	24655	6619-6032	
R 98	RES FLM 374 .50PCT 2PPM .3W	6619-6031	24655	6619-6031	
R 99	RES FLM 24.9 .50PCT 2PPM .3W	6619-6030	24655	6619-6030	
R 100	RES COMP 2.2 K 5PCT 1/4W	6099-2225	81349	KCR07G222J	
R 101	RES FLM 5.62M 1 PCT 1/8W	6250-4562	81349	RN55D5624F	
R 102	RES FLM 5.62M 1 PCT 1/8W	6250-4562	81349	RN55D5624F	
R 103	RES FLM 226K 1/2PCT 1/8W	6251-3226	81349	RN55D2263D	
R 104	RES FLM 5.62M 1 PCT 1/8W	6250-4562	81349	RN55D5624F	
R 105	RES COMP 1.0 K 5PCT 1/4W	6099-2105	81349	KCR07G102J	
R 106	RES COMP 1.0 K 5PCT 1/4W	6099-2105	81349	KCR07G102J	
R 107	RES COMP 1.0 K 5PCT 1/4W	6099-2105	81349	KCR07G102J	
R 108	RES COMP 1.0 K 5PCT 1/4W	6099-2105	81349	KCR07G102J	
R 109	RES FLM 5.62M 1 PCT 1/8W	6250-4562	81349	RN55D5624F	
R 110	RES FLM 499 OHM 1 PCT 1/8W	6250-0499	81349	RN55D4990F	
R 111	RES FLM 10.0K 1 PCT 1/8W	6250-2100	81349	RN55D1002F	
R 112	RES FLM 20K 1/10 PCT 25PPM 1/8W	6190-7080	75042	CEA 20 K 0.1PCT T-9	
R 113	RES COMP 1.0 K 5PCT 1/4W	6099-2105	81349	KCR07G102J	
R 114	RES FLM 33.2K 1 PCT 1/8W	6250-2332	81349	RN55D3322F	
R 115	RES FLM 80.6K 1 PCT 1/8W	6250-2806	81349	RN55D8062F	
R 116	POT CERM TRM 10K OHM 20 PCT 1T	6049-0109	80294	3329H-1-103	
R 117	RES FLM 10K 1/10 PCT 50 PPM 1/8W	6190-5660	75042	CEA 10 K 0.1PCT T-2	
R 118	RES FLM 20K 1 PCT 1/8W	6250-2200	81349	RN55D2002F	
R 119	RES FLM 267K 1 PCT 1/8W	6250-3267	81349	RN55D2673F	

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART NUMBER
K 120	RES FLM 20K 1 PCT 1/8W	6250-2200	81349	RN55D2002F	
R 121	RES FLM 31.6K 1 PCT 1/8W	6250-2316	81349	RN55D3162F	
R 122	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	KCR07G103J	
R 123	RES COMP 12 K 5PCT 1/4W	6099-3125	81349	KCR07G123J	
R 124	RES FLM 226K 1/2PCT 1/8W	6251-3226	81349	RN55D2263D	
R 125	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	KCR07G103J	
K 126	RES COMP 62 OHM 5PCT 1/4W D	6099-0625	81349	KCR07G620J	
R 127	RES FLM 10.0 1PCT 100PPM 1/8W	6450-5100	81349	RN55D1000F	
R 128	RES FLM 1K 1 PCT 1/8W	6250-1100	81349	RN55D1001F	
R 129	RES COMP 100 K 5PCT 1/4W	6099-4105	81349	KCR07G104J	
R 130	RES FLM 31.6K 1 PCT 1/8W	6250-2316	81349	RN55D3162F	
R 131	RES COMP 10 OHM 5PCT 1/4W	6099-0105	81349	KCR07G100J	
R 133	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	KCR07G332J	
U 1	ICD SN74LS161AN 16SYNBT PROCNTR	5431-8761	01295	SN74LS161AN	
U 2	ICD SN74S163N	5431-8563	01295	SN74S163N	
U 3	ICD (STATIC PROTECT REQ)	5431-2450	04713	MC6821	
U 4	IC CRYSTAL CSC 38.4MHZ .01PCT	5434-0251	04713	K1100A 38.4MHZ	
U 5	ICD SN74S00N 14D Q 2IN PU NAND	5431-8400	01295	SN74S00N	
U 6	ICD SN74S112N 16D JK EDTR FLIFLC	5431-8404	01295	SN74S112N	
U 7	ICD SN74S74N 14D D D EDTR FLIFLC	5431-8406	01295	SN74S74N	
U 8	ICD SN74S163N	5431-8563	01295	SN74S163N	
U 9	ICD SN74LS161AN 16SYNBT PROCNTR	5431-8761	01295	SN74LS161AN	
U 10	ICD SN74LS273N 20 OCTAL D FL FP	5431-8873	01295	SN74LS273N	
U 11	ICD (STATIC PROTECT REQ)	5627-0002	24655	5627-0002	
U 12	D/A AD7524JN(STATIC PROTECT REQ)	5429-5055	24355	AD 7524JN	
U 13	ICD (STATIC PROTECT REQ)	5431-7032	86684	CD4052AE	
U 14	ICL (STATIC PROTECT REQ)	5432-7010	12040	LF3478N	
U 15	ICD SN74LS161AN 16SYNBT PROCNTR	5431-8761	01295	SN74LS161AN	
U 16	ICD SN74LS161AN 16SYNBT PROCNTR	5431-8761	01295	SN74LS161AN	
U 17	ICD SN74LS161AN 16SYNBT PROCNTR	5431-8761	01295	SN74LS161AN	
U 18	ICD SN74LS161AN 16SYNBT PROCNTR	5431-8761	01295	SN74LS161AN	
U 19	IC DIGITAL SN74LS153N	5431-8753	01295	SN74LS153N	
U 20	ICD SN74LS160N 16D SYN DEC CNTR	5431-8760	01295	SN74LS160N	
U 21	IC DIGITAL SN74LS00N	5431-8600	01295	SN74LS00N	
U 22	ICD SN74LS161AN 16SYNBT PROCNTR	5431-8761	01295	SN74LS161AN	
U 23	ICD SN74S86N 14D QUAD EXCL UR	5431-8486	01295	SN74S86N	
U 24	ICD SN74LS14N HX SCHMT-TR INVERT	5431-8614	01295	SN74LS14N	
U 25	ICD (STATIC PROTECT REQ)	5431-2450	04713	MC6821	
U 26	ICD (STATIC PROTECT REQ)	5431-2450	04713	MC6821	
U 27	ICD (STATIC PROTECT REQ)	5431-2450	04713	MC6821	
U 28	ICD SN74LS138N D16 3-8LINE DECOR	5431-8738	01295	SN74LS138N	
U 29	ICD SN74LS14N HX SCHMT-TR INVERT	5431-8614	01295	SN74LS14N	
U 30	ICD (STATIC PROTECT REQ)	5431-2402	24655	5431-2402	
U 31	IC LINEAR LH0002CN	5432-1062	12040	LH0002CN	
U 32	ICD (STATIC PROTECT REQ)	5431-7032	86684	CD4052AE	
U 33	ICD UPD6514 (STATIC PROTECT REQ)	5627-1049	91417	UPD6514	
U 34	ICD UPD6514 (STATIC PROTECT REQ)	5627-1049	91417	UPD6514	
U 35	ICD EPROM (STATIC PROTECT REQ)	5627-3701	24655	5627-3701	
U 36	ICD EPROM (STATIC PROTECT REQ)	5627-3702	24655	5627-3702	
U 37	ICD 9311 24D MSI 10F16 DECODER U	5431-9617	18324	9311/74154	
U 38	IC DIGITAL SN74LS02N	5431-8602	01295	SN74LS02N	
U 39	ICD (STATIC PROTECT REQ)	5431-7042	12040	MM74C907	
U 40	ICD (STATIC PROTECT REQ)	5627-0002	24655	5627-0002	
U 41	D/A AD7524JN(STATIC PROTECT REQ)	5429-5055	24355	AD 7524JN	
U 42	IC LINEAR NE5534AT	5432-1420	18324	NE5534AT	
U 43	ICD SN74LS374N 20D OCT TR-ST F-F	5431-8974	01295	SN74LS374N	
U 44	D/A AD7524JN(STATIC PROTECT REQ)	5429-5055	24355	AD 7524JN	
U 45	ICD (STATIC PROTECT REQ)	5431-7041	12040	MM74C175	
U 46	ICD (STATIC PROTECT REQ)	5431-7000	07263	34011TC	
U 47	IC DIGITAL SN74LS00N	5431-8600	01295	SN74LS00N	
U 48	ICD SN74LS20N D 4IN POS NAND GA	5431-8620	01295	SN74LS20N	
U 49	IC DIGITAL SN74LS04N	5431-8604	01295	SN74LS04N	
U 50	IC DIGITAL SN74LS174N	5431-8774	01295	SN74LS174N	
U 51	IC DIGITAL SN74LS174N	5431-8774	01295	SN74LS174N	
U 52	IC DIGITAL SN74LS174N	5431-8774	01295	SN74LS174N	
U 53	IC DIGITAL SN74LS174N	5431-8774	01295	SN74LS174N	
U 54	IC DIGITAL SN74LS174N	5431-8774	01295	SN74LS174N	
U 55	IC DIGITAL SN74LS174N	5431-8774	01295	SN74LS174N	
U 56	ICD (STATIC PROTECT REQ)	5431-7032	86684	CD4052AE	

ELECTRICAL PARTS LIST (cont)

ANALOG AND CONTROL BOARD P/N 1689-4700

REFDES		DESCRIPTION	PART NO.	FMC	MFR	PART NUMBER
U	57	IC LINEAR NE5534AT	5432-1420	18324		NE5534AT
J	58	IC LINEAR LH0002CN	5432-1062	12040		LH0002CN
U	59	ICL (STATIC PROTECT REQ)	5432-7010	12040		LF347BN
U	60	ICD (STATIC PROTECT REQ)	5431-7054	04713		MC14053BCP
U	61	ICL (STATIC PROTECT REQ)	5432-7010	12040		LF347BN
U	62	D/A AD7524JN(STATIC PROTECT REQ)	5429-5055	24355		AD 7524JN
U	63	ICD (STATIC PROTECT REQ)	5431-7061	04713		MC14016BCP
U	64	ICL (STATIC PROTECT REQ)	5432-7010	12040		LF347BN
Z	1	RESISTOR NETWORK 5.6K 5PCT	6741-0104	24655		6741-0104
Z	2	RESISTOR NETWORK 5.6K 5PCT	6741-0104	24655		6741-0104
Z	3	RESISTOR NETWORK 5.6K 5PCT	6741-0104	24655		6741-0104
Z	4	RESISTOR NETWORK 10 K 5PCT	6741-0105	24655		6741-0105
Z	5	RESISTOR NETWORK 5.6K 5PCT	6741-0104	24655		6741-0104
Z	6	RESISTOR NETWORK 10 K 5PCT	6741-0105	24655		6741-0105
Z	7	RESISTOR NETWORK 220 OHM 5PCT	6741-0106	24655		6741-0106
Z	8	RESISTOR NETWORK	1689-0800	24655		1689-0800

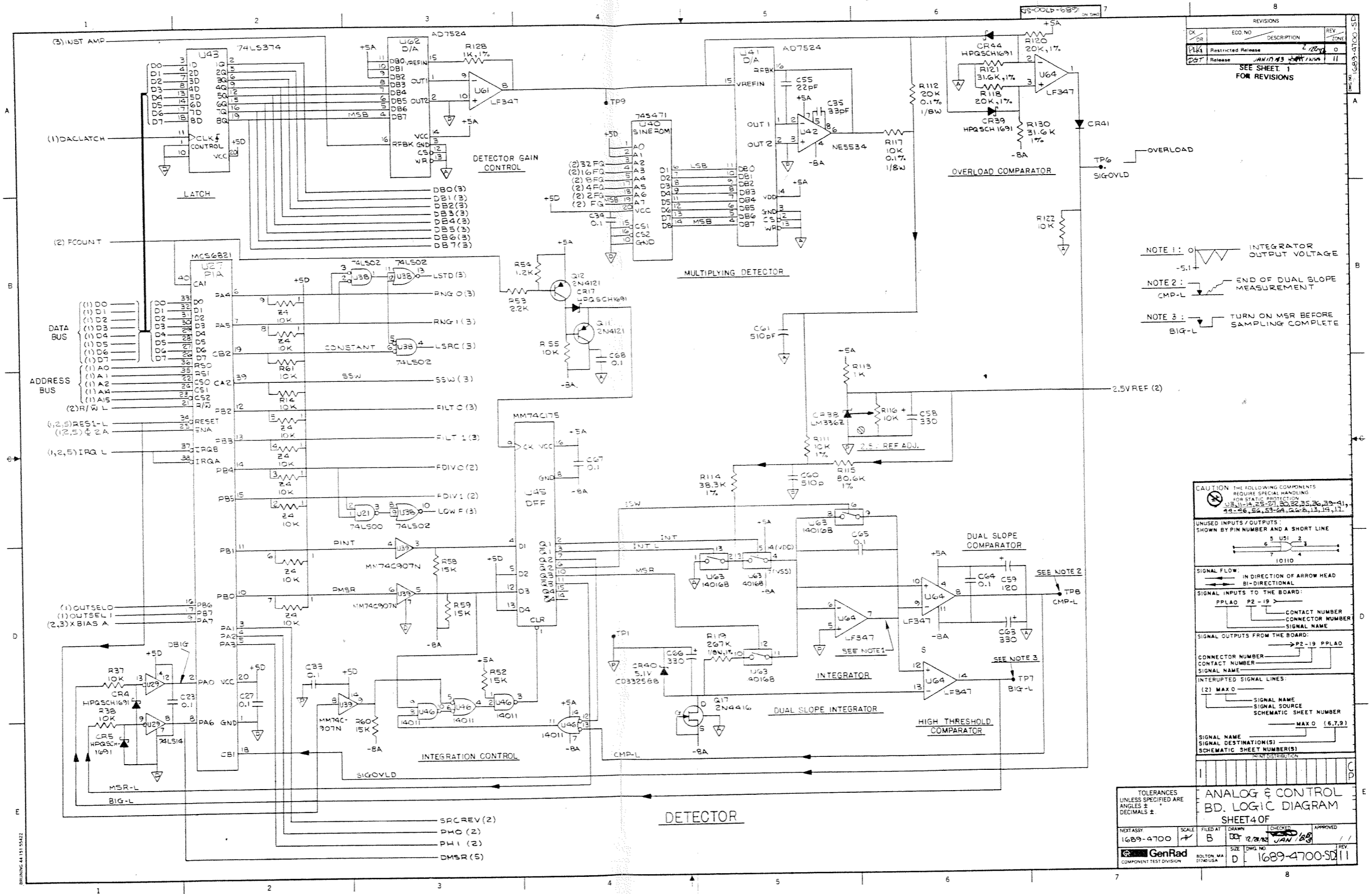


Figure 6-7. Main Board, schematic sheet 4, 1689-4700-SD

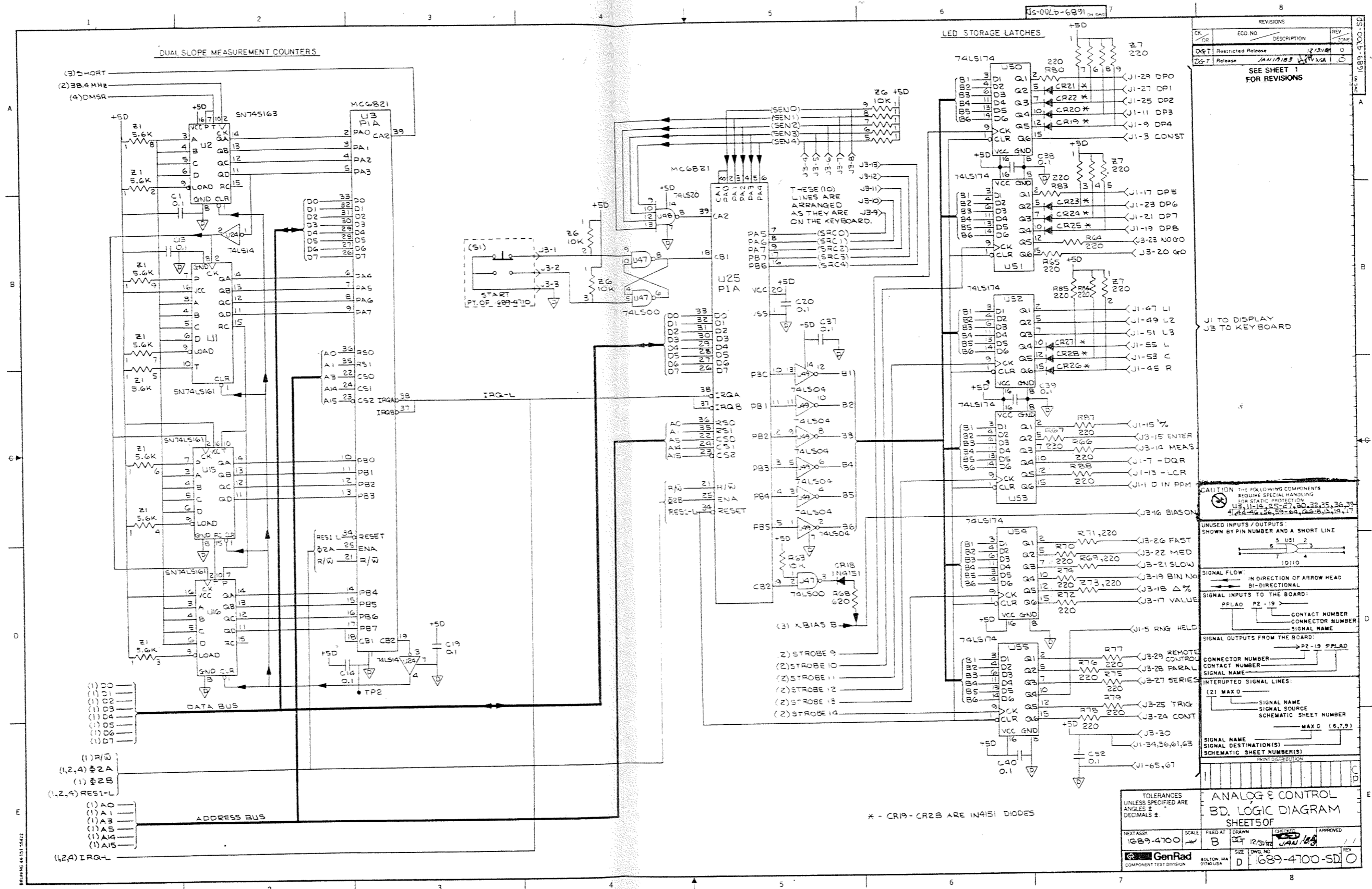


Figure 6-8. Main Board, schematic sheet 5, 1689-4700-SD

ELECTRICAL PARTS LIST

POWER SUPPLY ASM P/N 1689-2005

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART NUMBER
C 1	CAP ALUM 18000 UF 20V	4450-6231	24655		4450-6231
C 2	CAP ALUM 4500 UF 40V	4450-6221	90201		CGS 4500UF 40V
C 5	CAP TANT 1.0 UF 20PCT 35V	4450-4300	56289		150D105X0035A2
C 6	CAP TANT 1.0 UF 20PCT 35V	4450-4300	56289		150D105X0035A2
F 1	FUSE SLO-BLOW 6/10A 250V	5330-1100	75915	313	.600
J 101	RECEPTACLE POWER UL STD 15A250V	4240-0250	82389		EAC-302
S 2	SWITCH SLIDE 2 POS DPDT STEADY S	7910-0832	82389		11A-1266
T 1	TRANSFORMER POWER	0485-4095	24655		0485-4095
U 1	ICL 78H05SC TO-3 POS 5V REG	5432-1466	07263		UA78H05SC

NOTE: THIS ASSEMBLY INCLUDES CIRCUIT BOARD 1657-4720

POWER SUPPLY BOARD P/N 1657-4720

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART NUMBER
C 3	CAP TANT 1.0 UF 20PCT 35V	4450-4300	56289		150D105X0035A2
C 4	CAP TANT 1.0 UF 20PCT 35V	4450-4300	56289		150D105X0035A2
C 7	CAP TANT 1.0 UF 20PCT 35V	4450-4300	56289		150D105X0035A2
C 8	CAP CER MONO .01 UF 10PCT 50V S	4400-6351	72982		8121-M050-W5R-103K
C 9	CAP CER MONO .01 UF 10PCT 50V S	4400-6351	72982		8121-M050-W5R-103K
C 10	CAP CER MONO .01 UF 10PCT 50V S	4400-6351	72982		8121-M050-W5R-103K
C 11	CAP TANT 1.0 UF 20PCT 35V	4450-4300	56289		150D105X0035A2
CR 5	DIODE RECTIFIER 1N4003	6081-1001	14433		1N4003
CR 6	DIODE RECTIFIER 1N4003	6081-1001	14433		1N4003
CR 7	DIODE RECTIFIER 1N4003	6081-1001	14433		1N4003
CR 8	DIODE RECTIFIER 1N4003	6081-1001	14433		1N4003
CR 9	RECT 1N4140 100PIV 3A SI A1XM	6081-1014	14433		1N4140
CR 10	RECT 1N4140 100PIV 3A SI A1XM	6081-1014	14433		1N4140
S 1	SWITCH PUSH PUSH AC UL 6A	7870-1570	24655		7870-1570
U 2	IC LINEAR LM342P-5	5432-1058	12040		LM342P-5
U 3	IC LINEAR LM320MP-8	5432-1059	12040		LM320MP-8

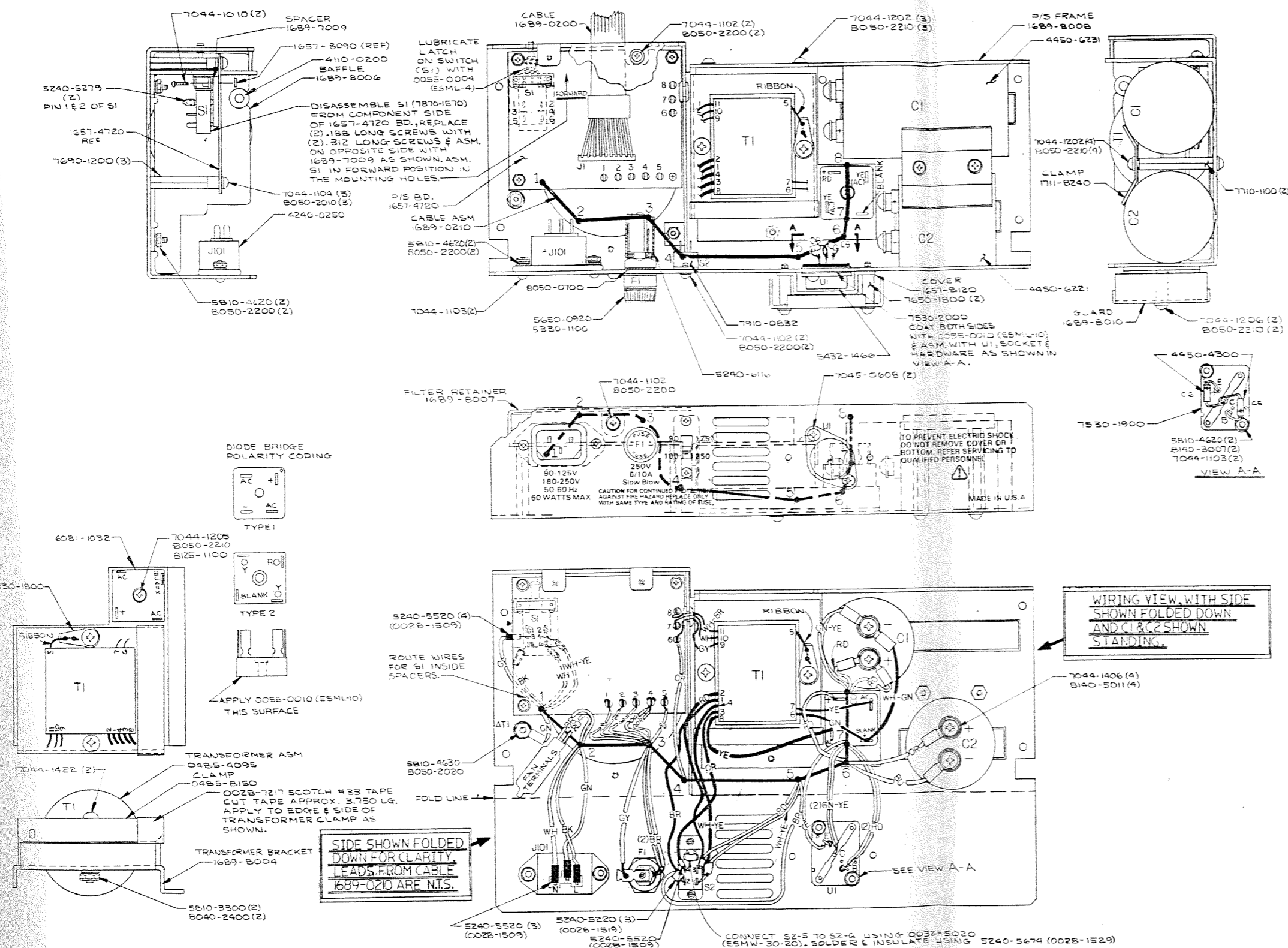


Figure 6-9. Power Supply, assembly, 1689-2005

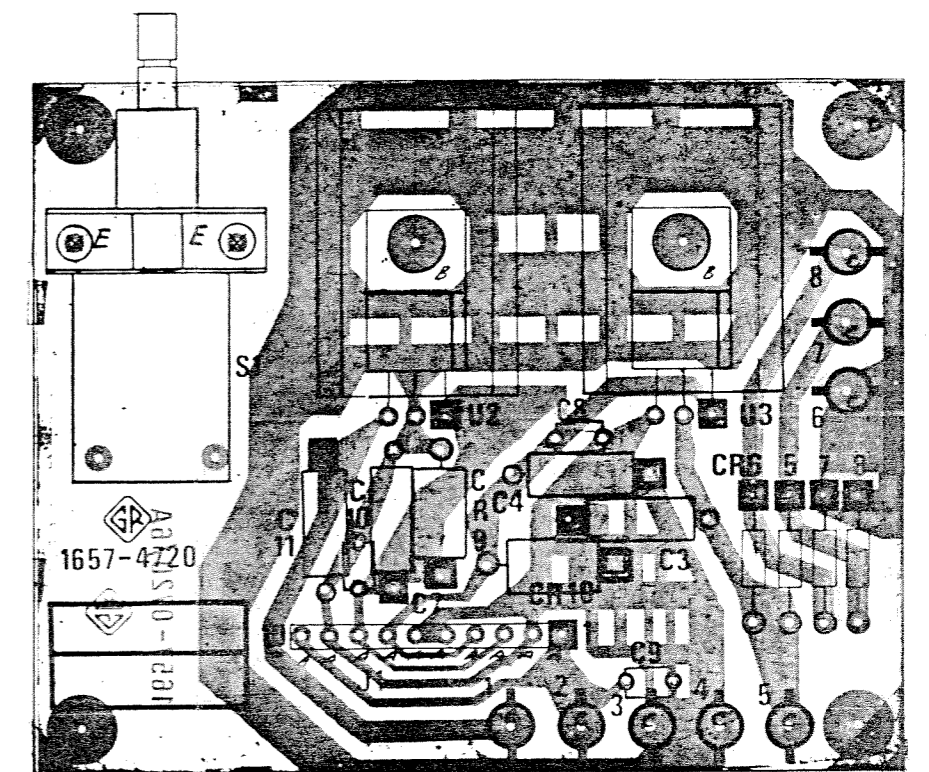
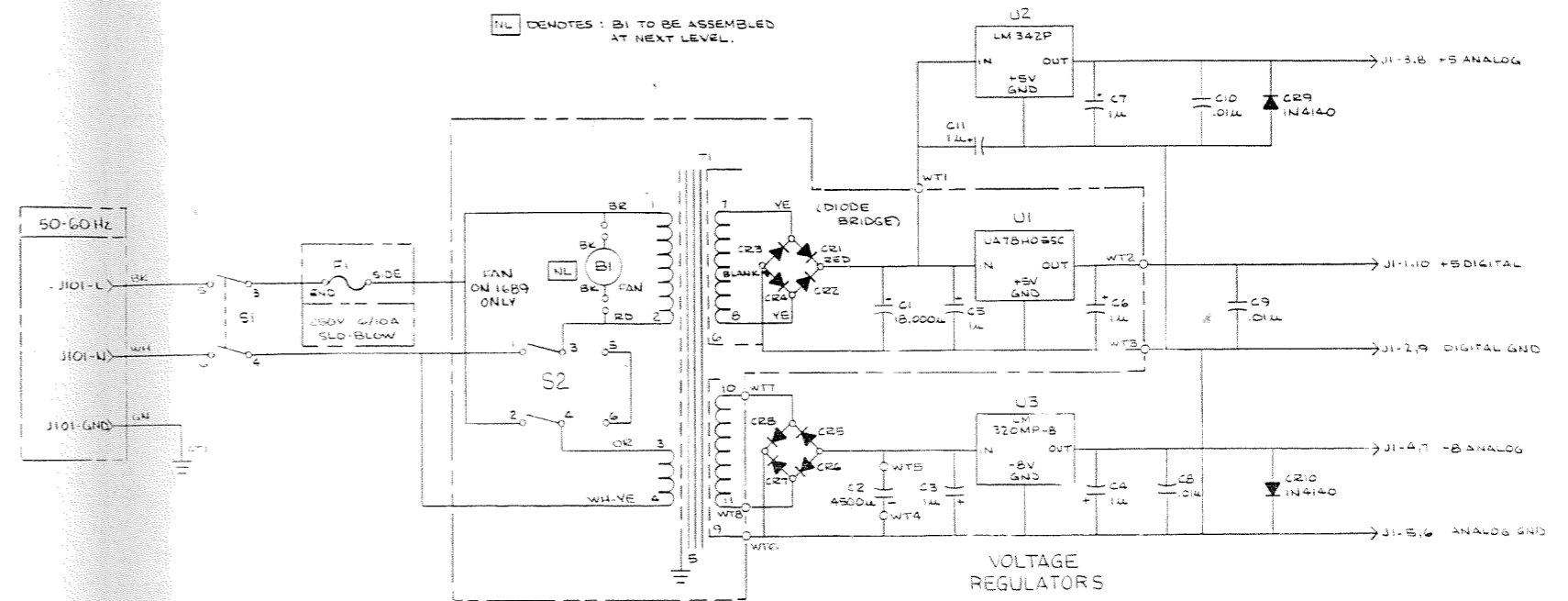


Figure 6-10. Power Supply Board, layout, 1657-4720




NOTE:
 ALL COMPONENTS INSIDE OF PHANTOM LINES (" — — — — — ") ARE PART OF POWER SUPPLY ASSEMBLY 1689-2005, WHILE ALL COMPONENTS OUTSIDE OF PHANTOM LINE ARE PART OF POWER SUPPLY BOARD 1657-4710. ANY CHANGES TO THE 1657-4710 PORTION OF THIS SCHEMATIC SHOULD BE REFLECTED UPON DWG. NO. 1657-4710-2D, WHEN APPLICABLE.

Figure 6-11. Power Supply, schematic, 1689-2005-SD

ELECTRICAL PARTS LIST

DISPLAY BOARD DB P/N 1658-4715

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART NUMBER
C 46	CAP CER MONO 0.1UF 20PCT 50VGP	4400-2050	72982		8131-M050-651-104M
C 99	CAP Z5U TUB 0.1UF 80/20PCT 50V	4400-5841	00656		MA205E104ZAA
CR 3	LED RED MV5023	6084-1104	71744		CM4-23
CR 4	LED RED MV5023	6084-1104	71744		CM4-23
CR 5	LED RED MV5023	6084-1104	71744		CM4-23
CR 6	LED RED MV5023	6084-1104	71744		CM4-23
CR 7	LED RED MV5023	6084-1104	71744		CM4-23
CR 8	LED RED MV5023	6084-1104	71744		CM4-23
CR 9	LED RED MV5023	6084-1104	71744		CM4-23
CR 10	LED RED MV5023	6084-1104	71744		CM4-23
CR 11	LED RED MV5023	6084-1104	71744		CM4-23
CR 12	LED RED MV5023	6084-1104	71744		CM4-23
CR 13	LED RED MV5023	6084-1104	71744		CM4-23
CR 16	LED RED	6084-1110	72619		555-3007
CR 17	LED RED	6084-1110	72619		555-3007
CR 18	LED RED MV5023	6084-1104	71744		CM4-23
CR 19	LED RED MV5023	6084-1104	71744		CM4-23
R 142	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349		RCR07G221J
R 143	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349		RCR07G221J
R 144	RES COMP 220 OHM 5PCT 1/4W	6099-1225	81349		RCR07G221J
R 145	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349		RCR07G332J
R 146	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349		RCR07G332J
R 147	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349		RCR07G332J
R 148	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349		RCR07G332J
U 47	ICD (STATIC PROTECT REQ)	5431-7037	04713		MC14511CP
U 48	ICD (STATIC PROTECT REQ)	5431-7037	04713		MC14511CP
U 49	ICD (STATIC PROTECT REQ)	5431-7037	04713		MC14511CP
U 50	ICD (STATIC PROTECT REQ)	5431-7037	04713		MC14511CP
U 51	ICD (STATIC PROTECT REQ)	5431-7037	04713		MC14511CP
U 52	ICD (STATIC PROTECT REQ)	5431-7037	04713		MC14511CP
U 53	ICD (STATIC PROTECT REQ)	5431-7037	04713		MC14511CP
U 54	ICD (STATIC PROTECT REQ)	5431-7037	04713		MC14511CP
U 55	ICD (STATIC PROTECT REQ)	5431-7037	04713		MC14511CP
U 56	INDICATOR DIGITAL .300 CHARACTER	5437-1400	28480		5082-7613
U 57	INDICATOR DIGITAL .300 CHARACTER	5437-1400	28480		5082-7613
U 58	INDICATOR DIGITAL .300 CHARACTER	5437-1400	28480		5082-7613
U 59	INDICATOR DIGITAL .300 CHARACTER	5437-1400	28480		5082-7613
U 60	INDICATOR DIGITAL .300 CHARACTER	5437-1400	28480		5082-7613
U 61	INDICATOR DIGITAL .300 CHARACTER	5437-1400	28480		5082-7613
U 62	INDICATOR DIGITAL .300 CHARACTER	5437-1400	28480		5082-7613
U 63	INDICATOR DIGITAL .300 CHARACTER	5437-1400	28480		5082-7613
U 64	INDICATOR DIGITAL .300 CHARACTER	5437-1400	28480		5082-7613
Z 2	RESISTOR NETWORK	1657-0810	24655		1657-0810
Z 3	RESISTOR NETWORK	1657-0810	24655		1657-0810
Z 4	RESISTOR NETWORK	1657-0810	24655		1657-0810
Z 5	RESISTOR NETWORK	1657-0810	24655		1657-0810
Z 6	RESISTOR NETWORK	1657-0810	24655		1657-0810
Z 7	RESISTOR NETWORK	1657-0810	24655		1657-0810
Z 8	RESISTOR NETWORK	1657-0810	24655		1657-0810
Z 9	RESISTOR NETWORK	1657-0810	24655		1657-0810
Z 10	RESISTOR NETWORK	1657-0810	24655		1657-0810

CAUTION 
 THE FOLLOWING COMPONENTS
 REQUIRE SPECIAL HANDLING
 FOR STATIC PROTECTION
 REFER TO CSMA-SH01-P1
 U47 THRU U55

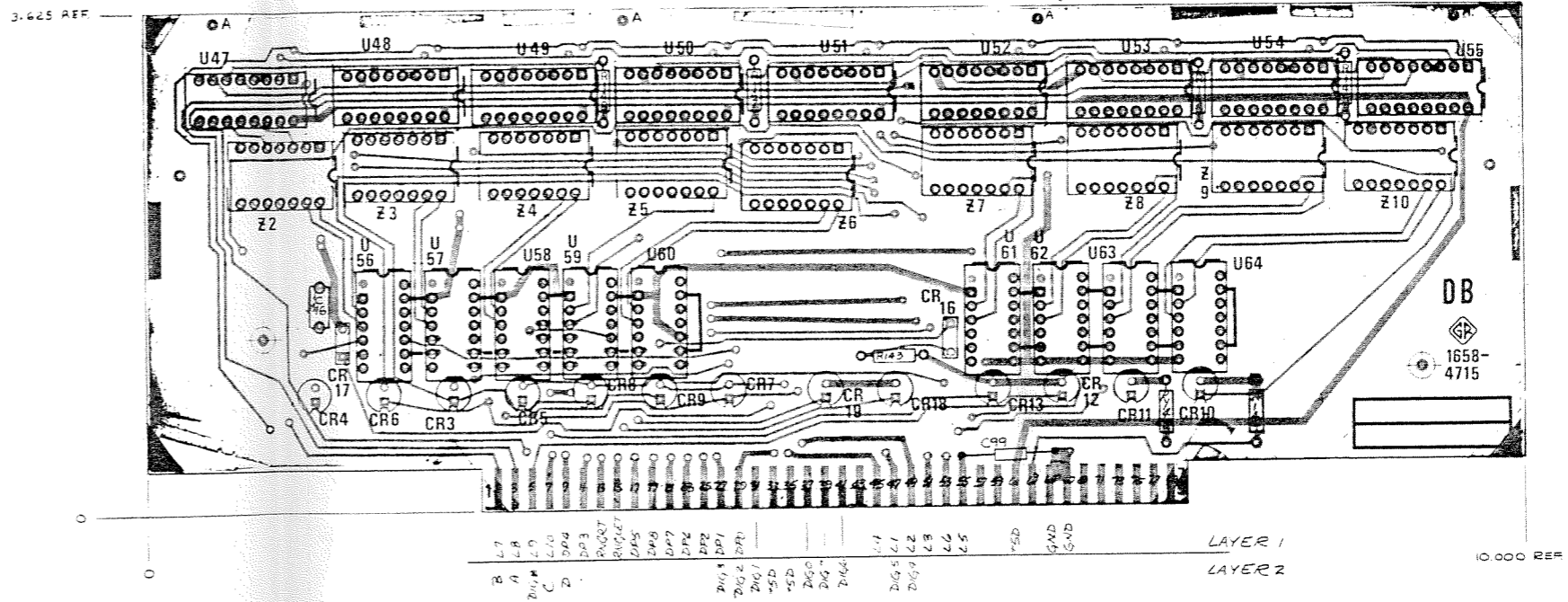
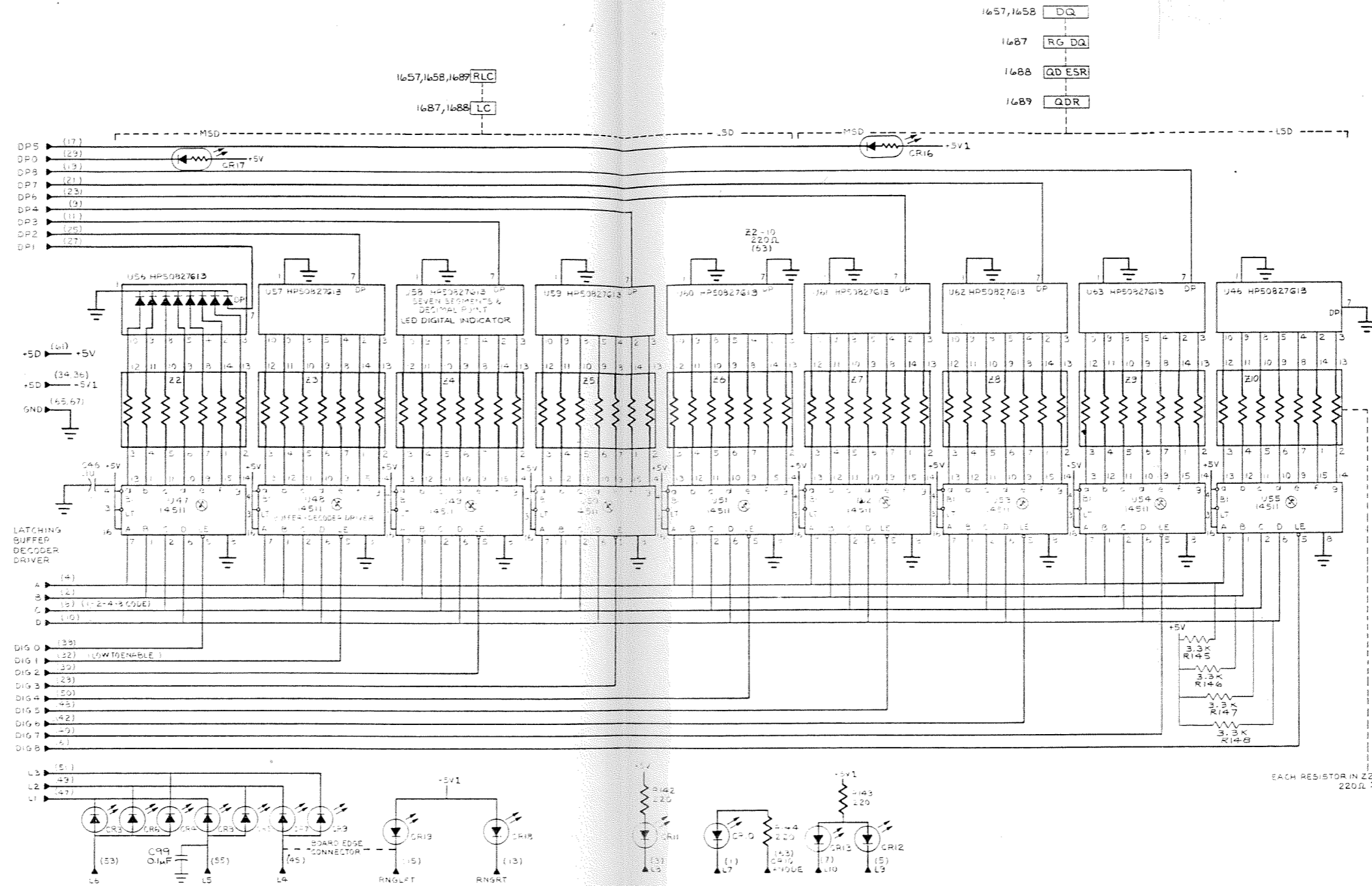


Figure 6-12. Display Board, layout, 1658-4715



FOR 1657:	R	KΩ	MΩ	mH	H	μF	nF	◀	ADJUST RANGE	▶	FAR SERIES	120HZ 1KHZ OR 100HZ 1KHZ		
FOR 1658:	Ω	KΩ	MΩ	mH	H	μF	nF	◀	OUT OF RANGE	▶	REMOTE CONTROL	BIAS ON	RANGE HELD	
FOR 1687:								Q		D	mS	μS	Kr	r
FOR 1688:	pF	nF	μF	H	mH	KΩ	Ω	MINUS		FREQ NOT 1KHZ	REMOTE CONTROL	EXTENDED ACCURACY D in PPM	RANGE HELD	PARALLEL EQUIV CKT
FOR 1689:	pF	nF	μF	H	mH	KΩ	Ω	7%		NEG RLC	CONST VOLT	DQ in PPM	NEG QDR	RANGE HELD

UNLESS OTHERWISE SPECIFIED, ALL MARKING SHOWN IS COMMON TO 1657, 1658, 1687, 1688 & 1689. DISPLAY PANEL LEGEND

NOTE: THIS SCHEMATIC IS USED WITH 1687-4715 SD. ALSO

Figure 6-13. Display Board, schematic, 1658-4715-2D

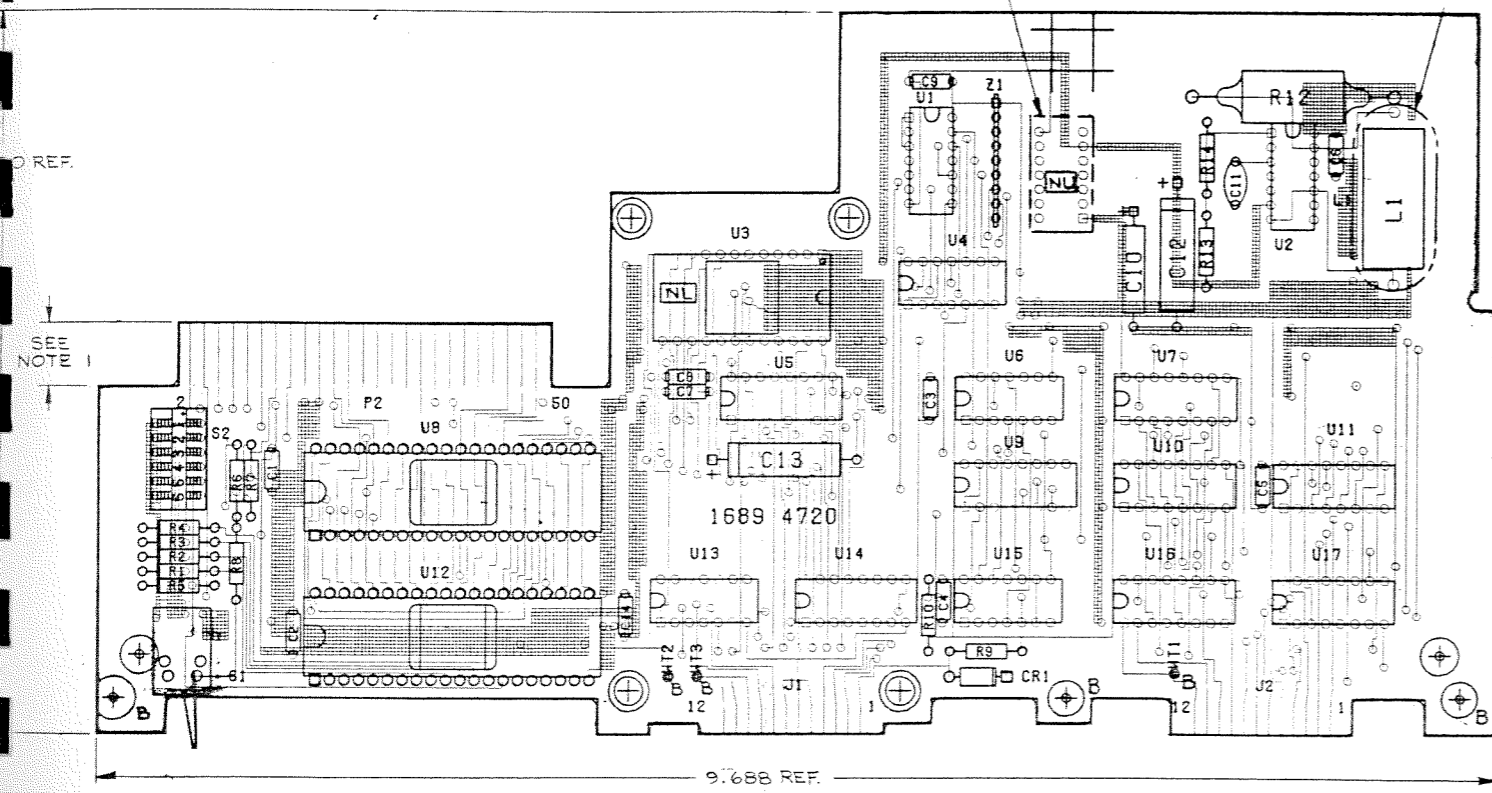


Figure 6-14. High-Speed Interface Board, layout sheet 1, 1689-4720

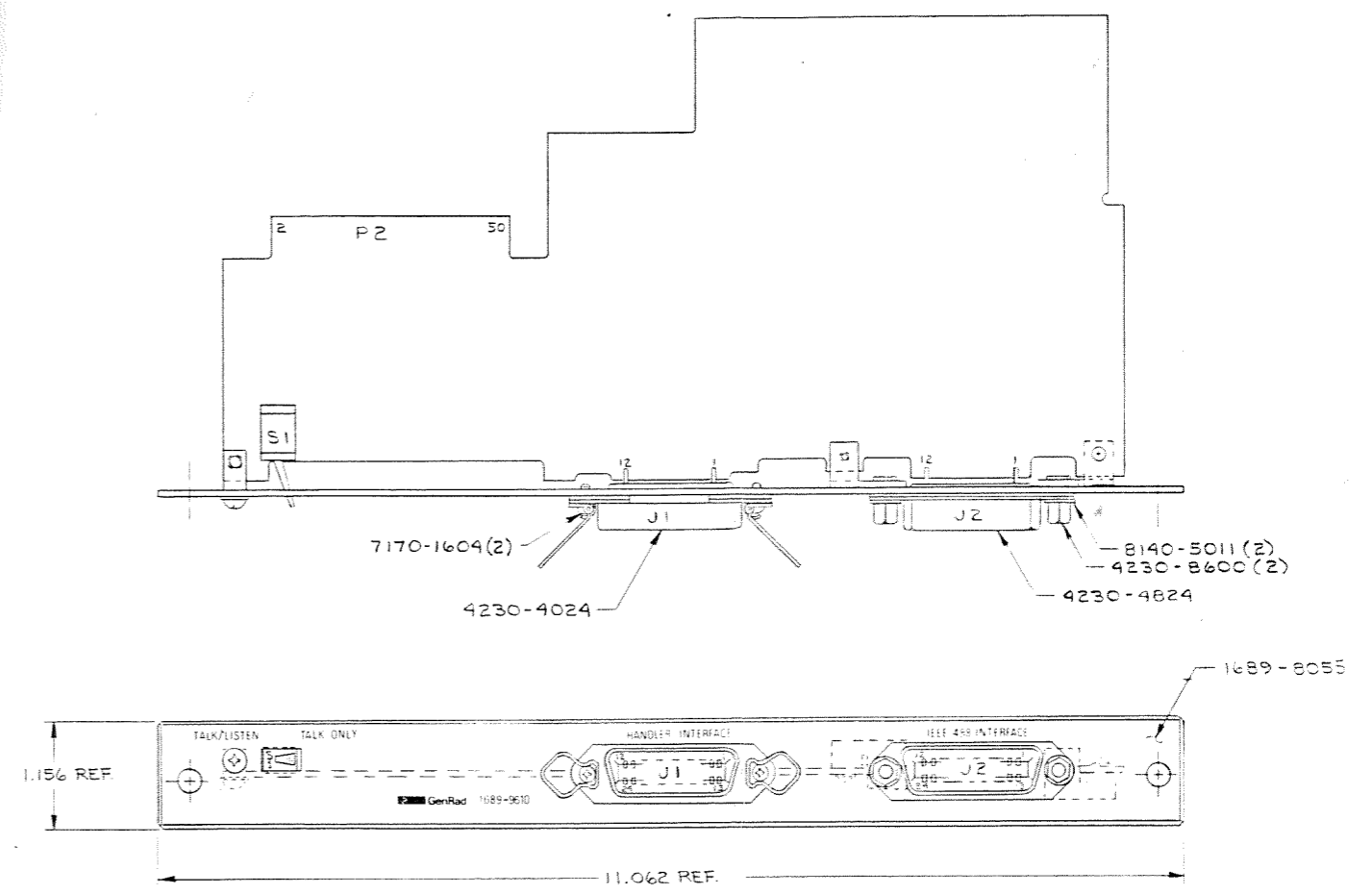


Figure 6-15. High-Speed Interface Asm, layout sheet 2, 1689-4720

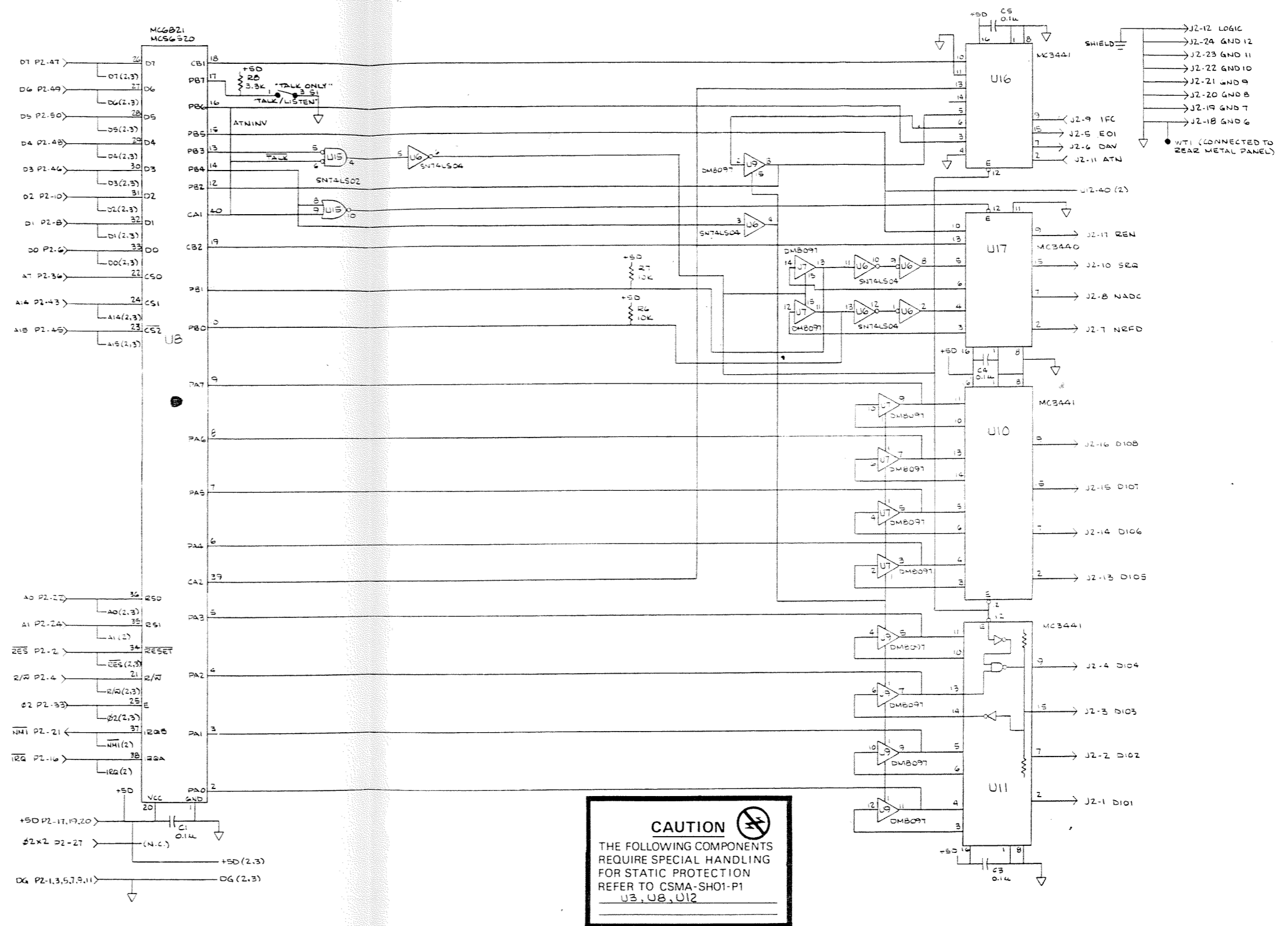


Figure 6-16. High-Speed Interface, schematic sheet 1, 1689-4720-SD

ELECTRICAL PARTS LIST

HIGH SPEED MEASUREMENT BOARD P/N 1689-4720

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART NUMBER
C	1 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	2 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	3 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	4 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	5 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	6 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	7 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	8 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	9 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	10 CAP TANT 120 UF 20PCT 10V WET S	4450-6301	90201	MTP 120UF 20PCT 10V	
C	11 CAP CER DISC 220PF 5PCT 500V	4404-1225	72982	0831082Z5D00221J	
C	12 CAP TANT 150 UF 20PCT 20V WET U	4450-5723	90201	MTP-157M-020-PIC	
C	13 CAP TANT 150 UF 20PCT 20V WET U	4450-5723	90201	MTP-157M-020-PIC	
C	14 CAP Z5U ICDIP .10UF 20PCT 50V	4431-4106	96095	MD015E104MAA	
C	15 CAP TANT 330 UF 20PCT 10 V WET	4450-5724	33173	69F933	
C	16 CAP TANT 330 UF 20 PCT 10 V WET	4450-5724	33173	69F933	
C	17 CAP CER MONO 0.1 UF 20 PCT 50 VGP	4400-2050	72982	8131-M050-651-104M	
CR	1 DIODE RECTIFIER 1N4003	6081-1001	14433	1N4003	
J	1 RECPT MICRO RIB 24 CONT	4230-4024	02660	57-40240	
J	2 CUNN PNL 24FEM CONT MICRO RIB	4230-4824	02660	57-20240-2	
L	1 INDUCTOR FERRITE 180VH 1600MA	4300-6660	04213	6860-16	
R	1 RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R	2 RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R	3 RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R	4 RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R	5 RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R	6 RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R	7 RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R	8 RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCRC7G332J	
R	9 RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R	10 RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R	12 RES WW AX LEAD 1.0 OHM 5 PCT 5W	6660-9105	75042	AS-5 10HM 5PCT	
R	13 RES FLM 11.5K 1 PCT 1/8W	6250-2115	81349	RN55D1152F	
R	14 RES FLM 1.27K 1 PCT 1/8W	6250-1127	81349	RN55D1271F	
R	15 RES COMP 2 OHM 5PCT 1/2W D	6100-9205	81349	RCR20G2R0J	
R	16 RES FLM 1.0K 5PCT 1/8W	6098-2105	82349	RCR05G102J	
S	1 SWITCH TOGGLE PC 2CKT STEADY	7910-1920	05402	T8001	
S	2 SWITCH TOGGLE 6STA SPST PC	7910-2030	31514	1006-692	
U	1 IC DIGITAL SN74LS10N	5431-8610	01295	SN74LS10N	
U	2 CL TL497AI 14D SW VOLTAGE REG	5432-1460	01295	TL 497AI(NIJ)	
U	3 CD AM9511A (STATIC PROTECT REQ)	5431-2418	16952	AM 9511A(PC/DC)	
U	4 IC DIGITAL SN74LS02N	5431-8602	01295	SN74LS02N	
U	5 ICD SN74LS145N BCD-DEC DECOD DR	5431-8745	01295	SN74LS145N	
U	6 IC DIGITAL SN74LS04N	5431-8604	01295	SN74LS04N	
U	7 ICD DM8097	5431-9685	12040	DM8097	
U	8 ICD (STATIC PROTECT REQ)	5431-2450	04713	MC6821	
U	9 ICD DM8097	5431-9685	12040	DM8097	
U	10 ICD MC3441	5431-9684	04713	MC3441	
U	11 ICD MC3441	5431-9684	04713	MC3441	
U	12 ICD (STATIC PROTECT REQ)	5431-2450	04713	MC6821	
U	13 ICD SN7406N 14D HX INV COL 30V S	5431-8106	01295	SN7406N	
U	14 ICD SN74LS145N BCD-DEC DECOD DR	5431-8745	01295	SN74LS145N	
U	15 IC DIGITAL SN74LS02N	5431-8602	01295	SN74LS02N	
U	16 ICD MC3441	5431-9684	04713	MC3441	
U	17 ICD MC3440	5431-9686	04713	MC3440	
Z	1 RESISTOR NETWORK 3.3 K 5PCT	6741-0109	24655	6741-0109	

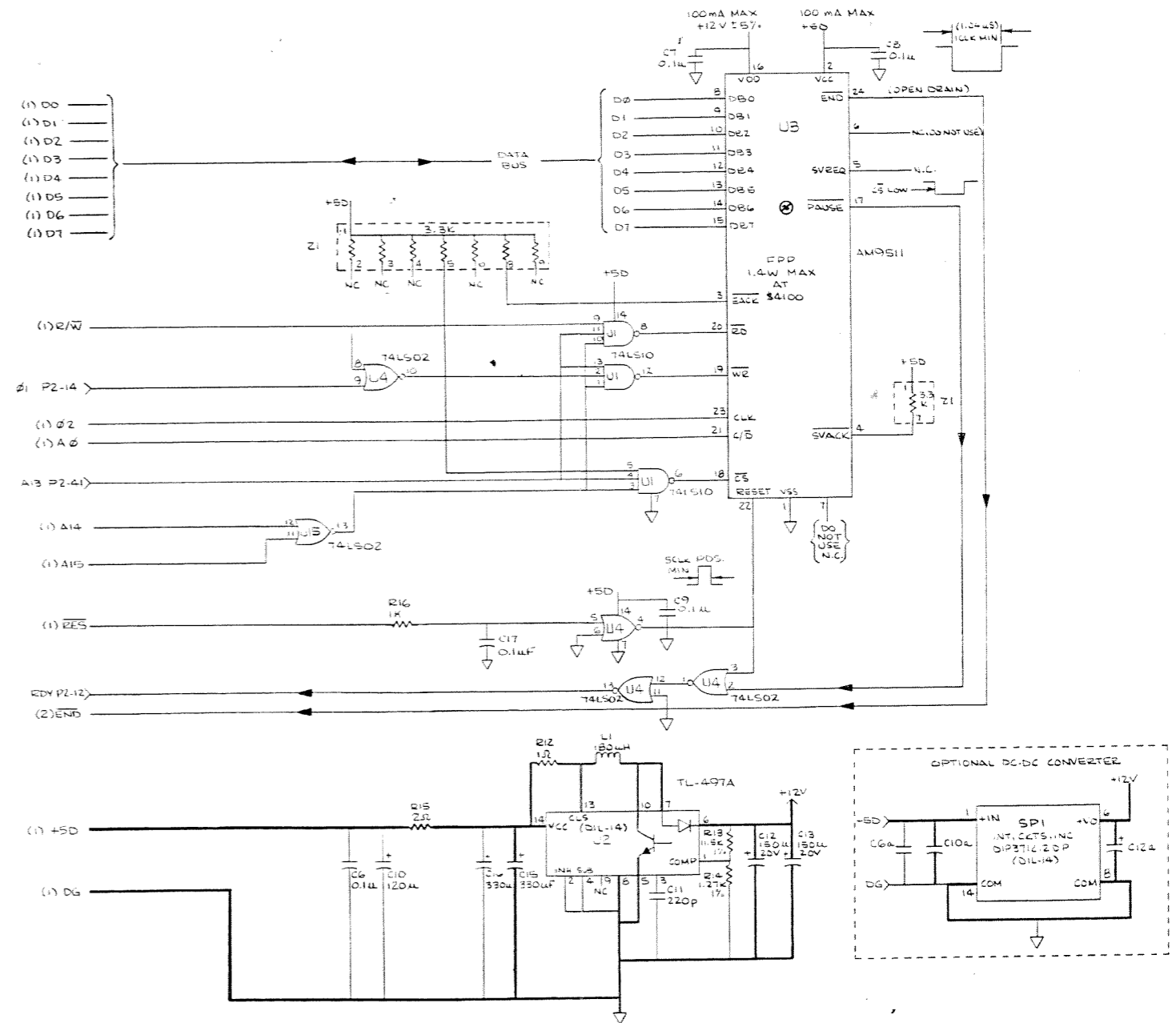


Figure 6-18. High-Speed Interface, schematic sheet 3, 1689-4720-SD

ELECTRICAL PARTS LIST

INTERFACE OPTION ASM P/N 1658-4020

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART NUMBER
J 1	RECPT MICRO RIB 24 CONT	4230-4024	02660	57-40240	
J 2	CUNN PNL 24FEM CONT MICRO RIB	4230-4824	02660	57-20240-2	

NOTE: THIS ASSEMBLY INCLUDES CIRCUIT BOARD 1658-4720

INTERFACE OPTION BBOARD P/N 1658-4720

REFDES	DESCRIPTION	PART NO.	FMC	MFGR	PART NUMBER
C 1	CAP CER MONO 0.1UF 20PCT 50VGP	4400-2050	72982	8131-M050-651-104M	
C 2	CAP CER MONO 0.1UF 20PCT 50VGP	4400-2050	72982	8131-M050-651-104M	
C 3	CAP CER MONO 0.1UF 20PCT 50VGP	4400-2050	72982	8131-M050-651-104M	
C 4	CAP CER MONO 0.1UF 20PCT 50VGP	4400-2050	72982	8131-M050-651-104M	
C 5	CAP CER MONO 0.1UF 20PCT 50VGP	4400-2050	72982	8131-M050-651-104M	
CR 1	DIODE RECTIFIER 1N4003	6081-1001	14433	1N4003	
R 1	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 2	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 3	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 4	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 5	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 6	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 7	RES COMP 10 K 5PCT 1/4W	6099-3105	81349	RCR07G103J	
R 8	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
R 9	RES COMP 3.3 K 5PCT 1/4W	6099-2335	81349	RCR07G332J	
S 2	SWITCH TOGGLE 6STA SPST PC	7910-2030	31514	1006-692	
S 12	SWITCH TOGGLE PC 2CKT STEADY	7910-1920	05402	T8001	
U 1	ICD (STATIC PROTECT REQ)	5431-2450	04713	MC6821	
U 2	ICD DM8097	5431-9685	12040	DM8097	
U 3	ICD DM8097	5431-9685	12040	DM8097	
U 4	IC DIGITAL SN74LS04N	5431-8604	01295	SN74LS04N	
U 5	ICD MC3441	5431-9684	04713	MC3441	
U 6	ICD MC3441	5431-9684	04713	MC3441	
U 7	ICD MC3440	5431-9686	04713	MC3440	
U 8	ICD MC3441	5431-9684	04713	MC3441	
U 9	IC DIGITAL SN74LS02N	5431-8602	01295	SN74LS02N	
U 10	ICD SN7406N 14D HX INV COL 30V S	5431-8106	01295	SN7406N	
U 11	ICD SN7406N 14D HX INV COL 30V S	5431-8106	01295	SN7406N	
U 12	ICD (STATIC PROTECT REQ)	5431-2450	04713	MC6821	

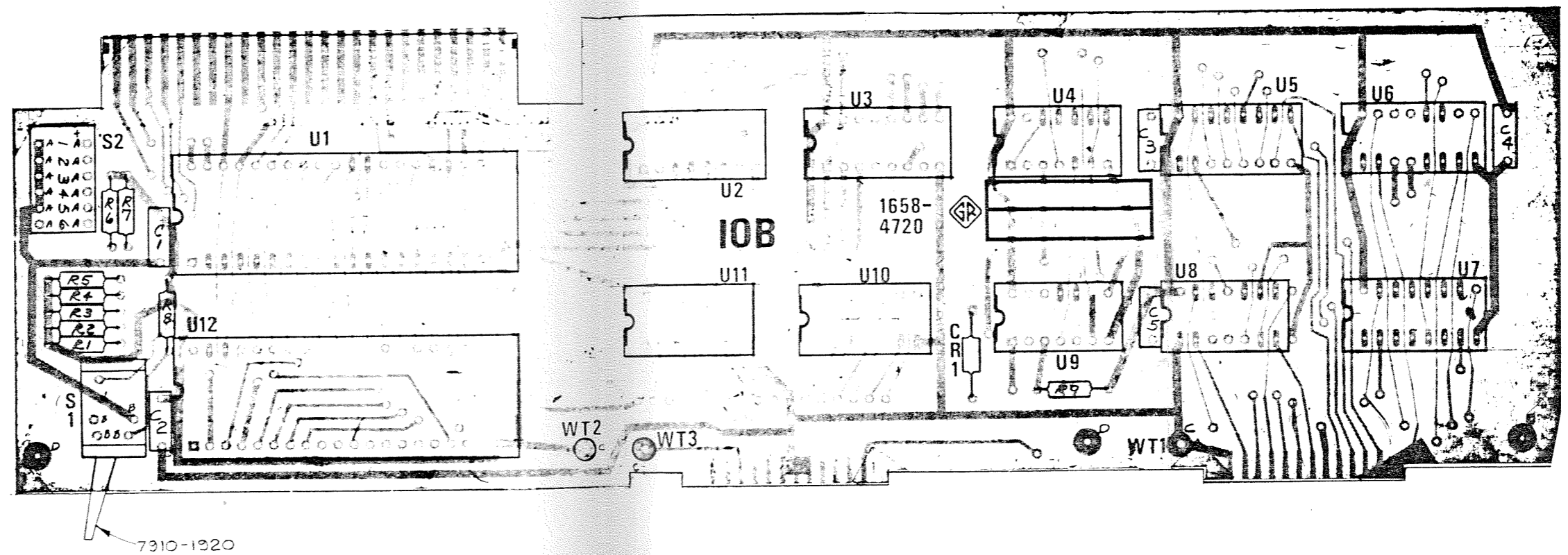



Figure 6-19. Interface Option Board, layout, 1658-4720-1D

CAUTION 
 THE FOLLOWING COMPONENTS
 REQUIRE SPECIAL HANDLING
 FOR STATIC PROTECTION
 REFER TO CSMA-SHO1-P1
 U1, U12

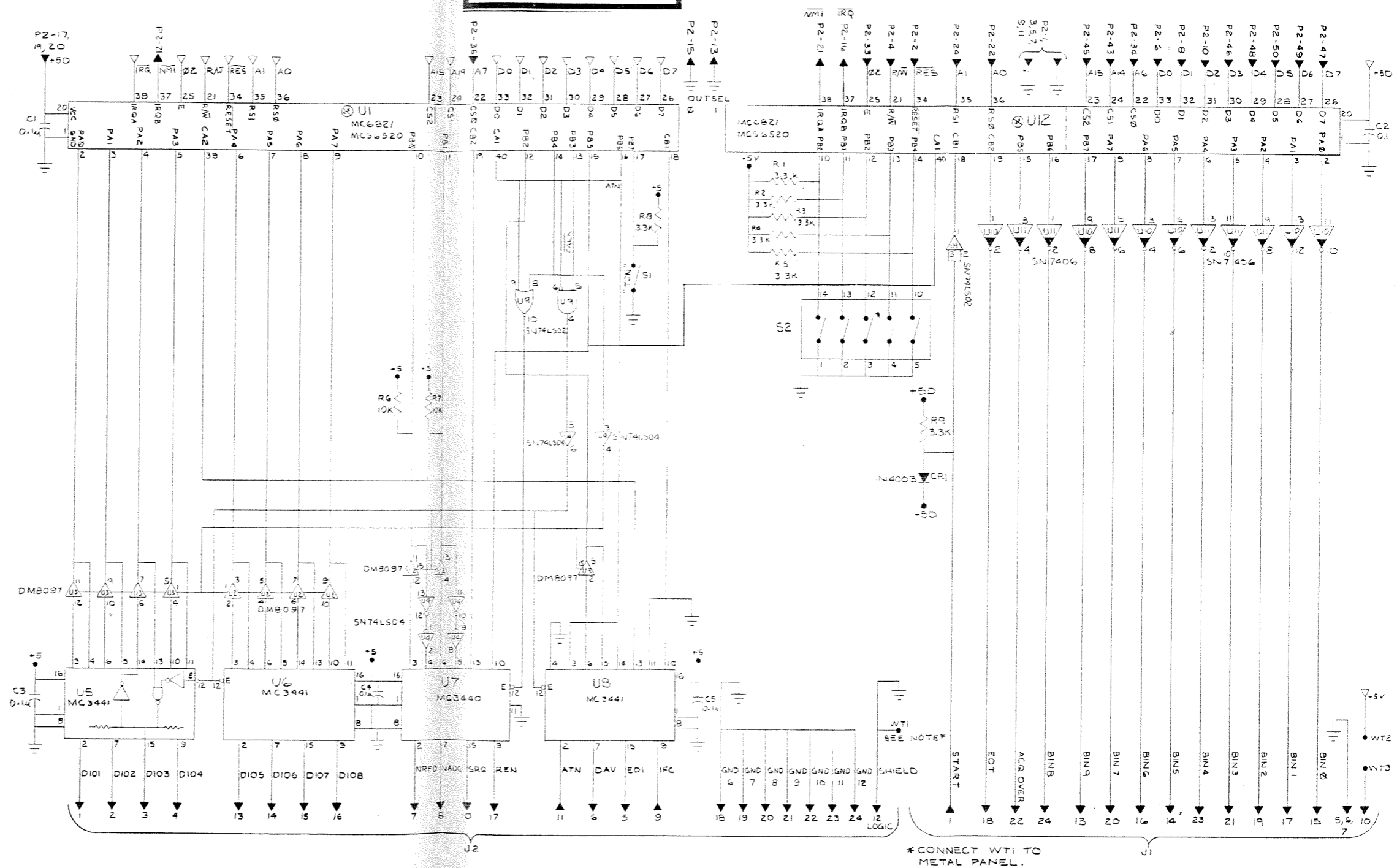


Figure 6-20. Interface Option, schematic, 1658-4720-2DA

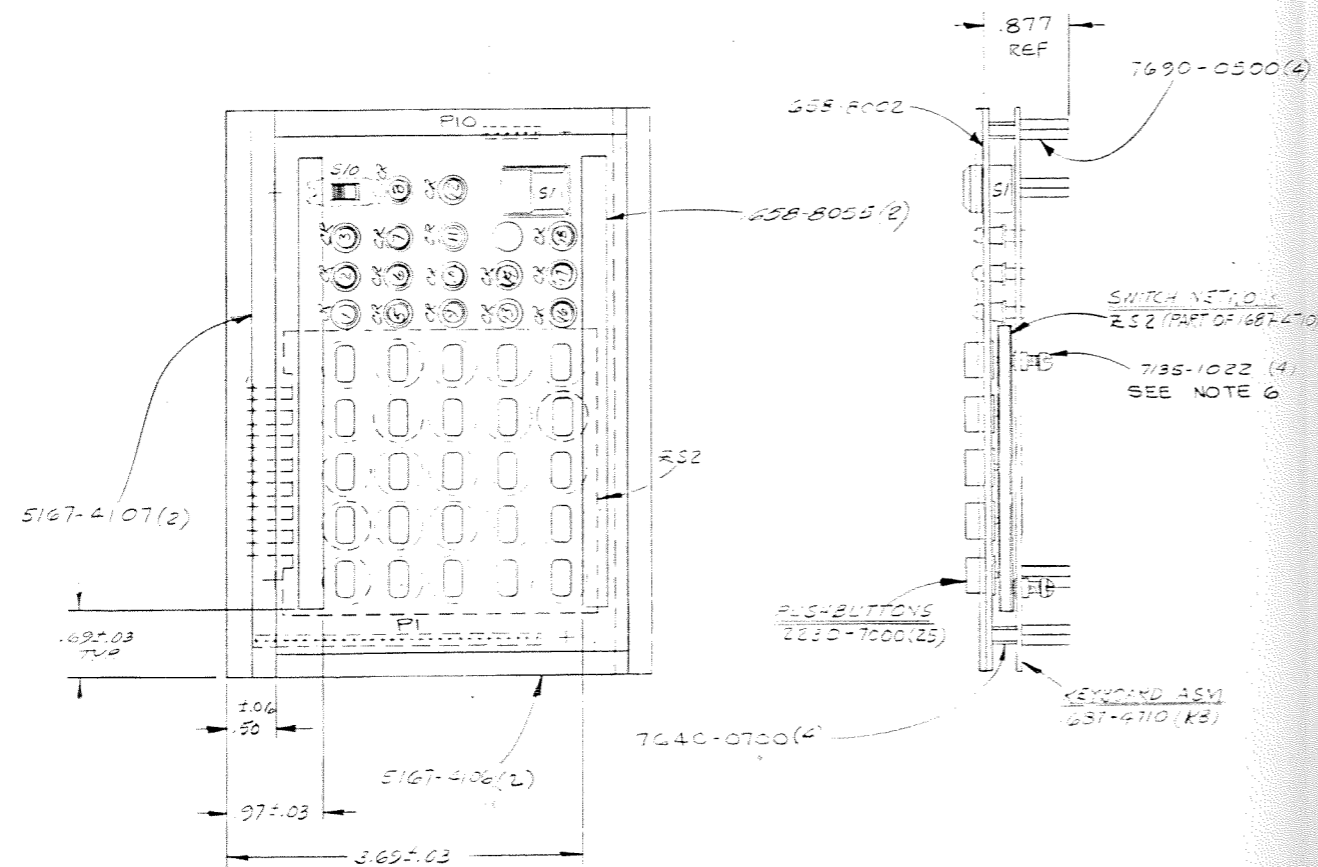


Figure 6-21. Keyboard Module, assembly, 1687-4200

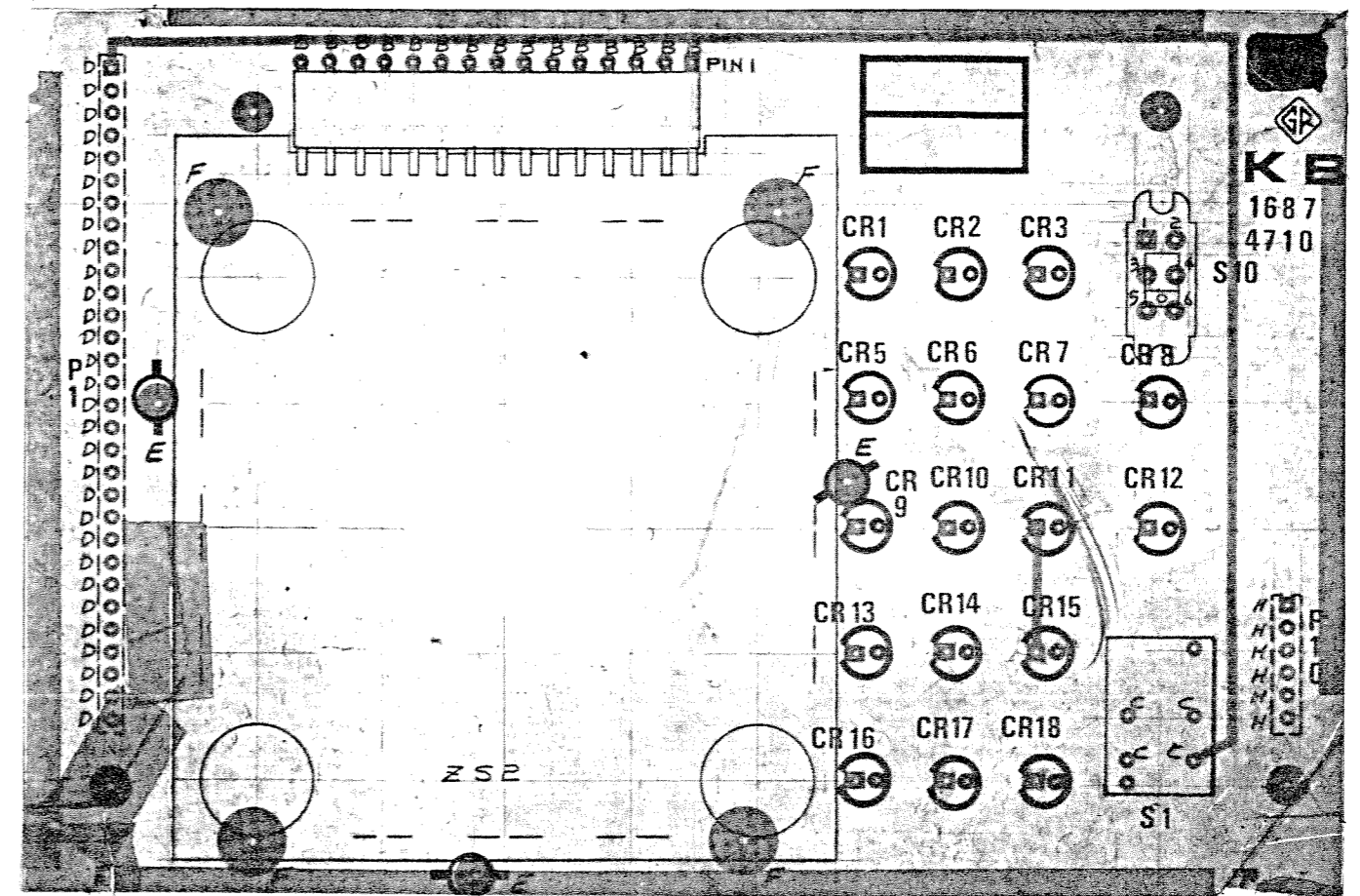
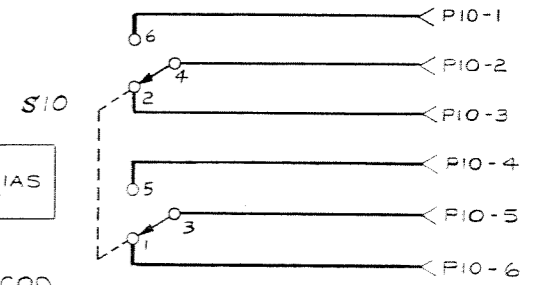
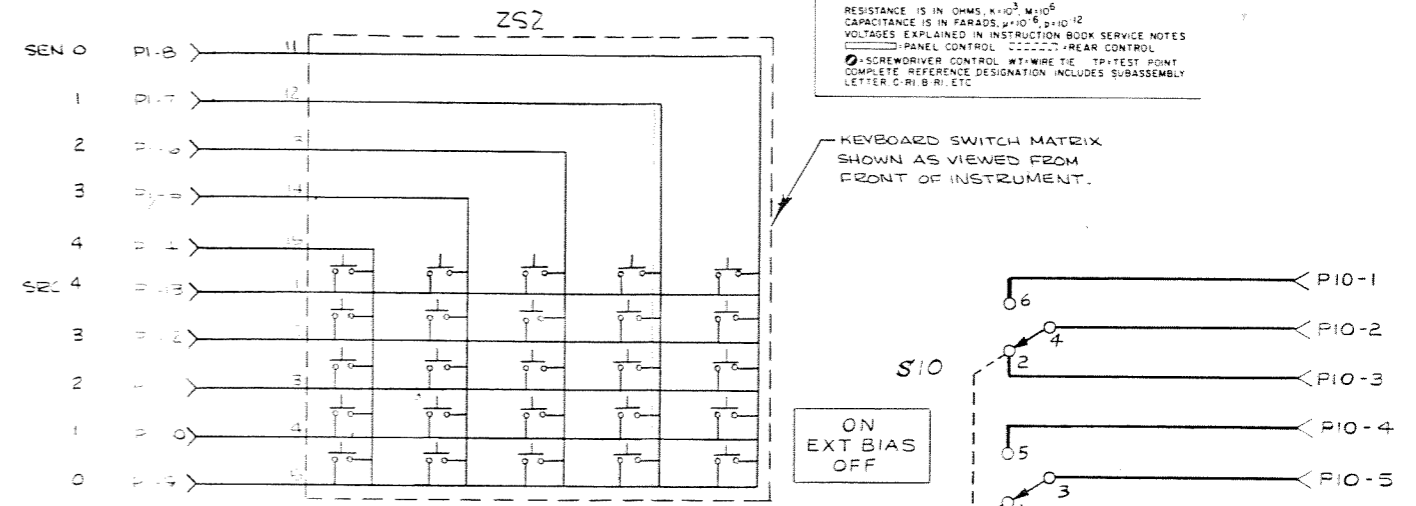


Figure 6-22. Keyboard Indicators, detail, 1687-4710-1D



- | | |
|----------|--------------|
| 1689 | 1687-E |
| VALUE | ENTER |
| Δ% | MEASURE |
| BIN NO. | BERC CALIB |
| SLOW | VALUE |
| MED. | Δ% |
| FAST | BIN. NO. |
| CONSTANT | CONT. |
| LOW | AVERAGE |
| NO GO | NO GO |
| ENTER | SLOW |
| MEASURE | FAST |
| HIGH | SINGLE |
| CONT. | SERIES |
| AVERAGE | PARALLEL |
| SINGLE | REMOTE CONT. |
| GO | GO |

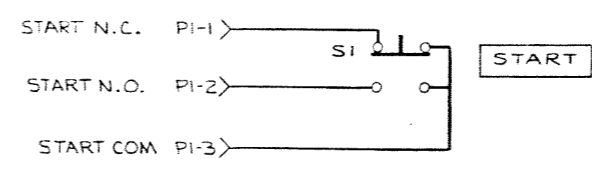
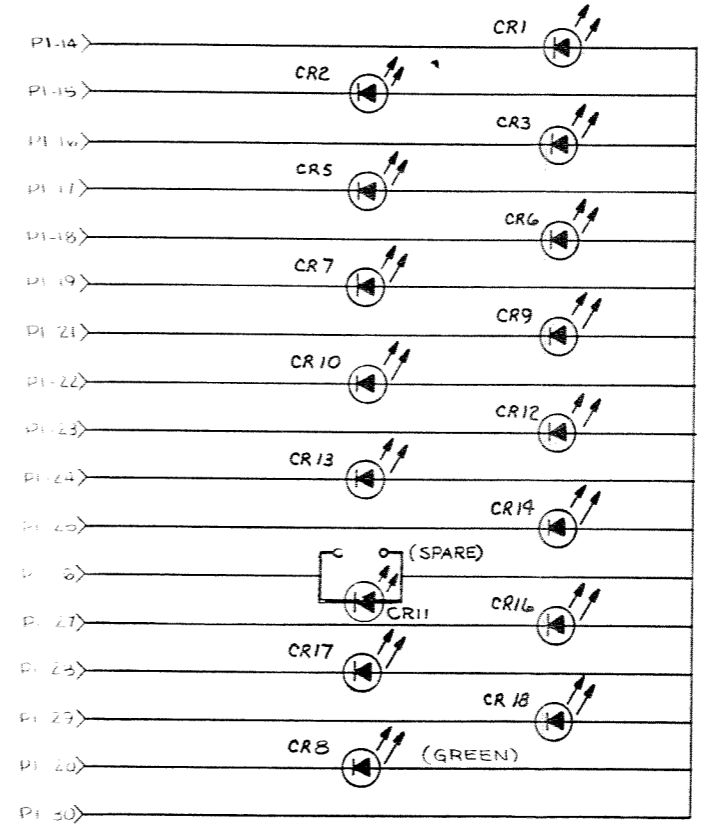


Figure 6-23. Keyboard, schematic, 1687-4710-2D