

**Agilent 6653A
Component Level
Information**

Agilent 6653A

System Power Supply

Component Level Information

Information in this packet applies to the following assemblies:

- 1. 06653-60020 Main Board Assembly**
- 2. 06653-60022 Left Tunnel Board Assembly**
- 3. 06653-60023 Right Tunnel Board Assembly**
- 4. 5060-3399 GPIB Board Assembly**
- 5. 5063-3407 Front Panel/Keypad Board Assembly**

The following is included in this packet:

- 1. Component Locators**
- 2. Schematics**
- 3. Parts lists with Agilent and manufacturer's part numbers**

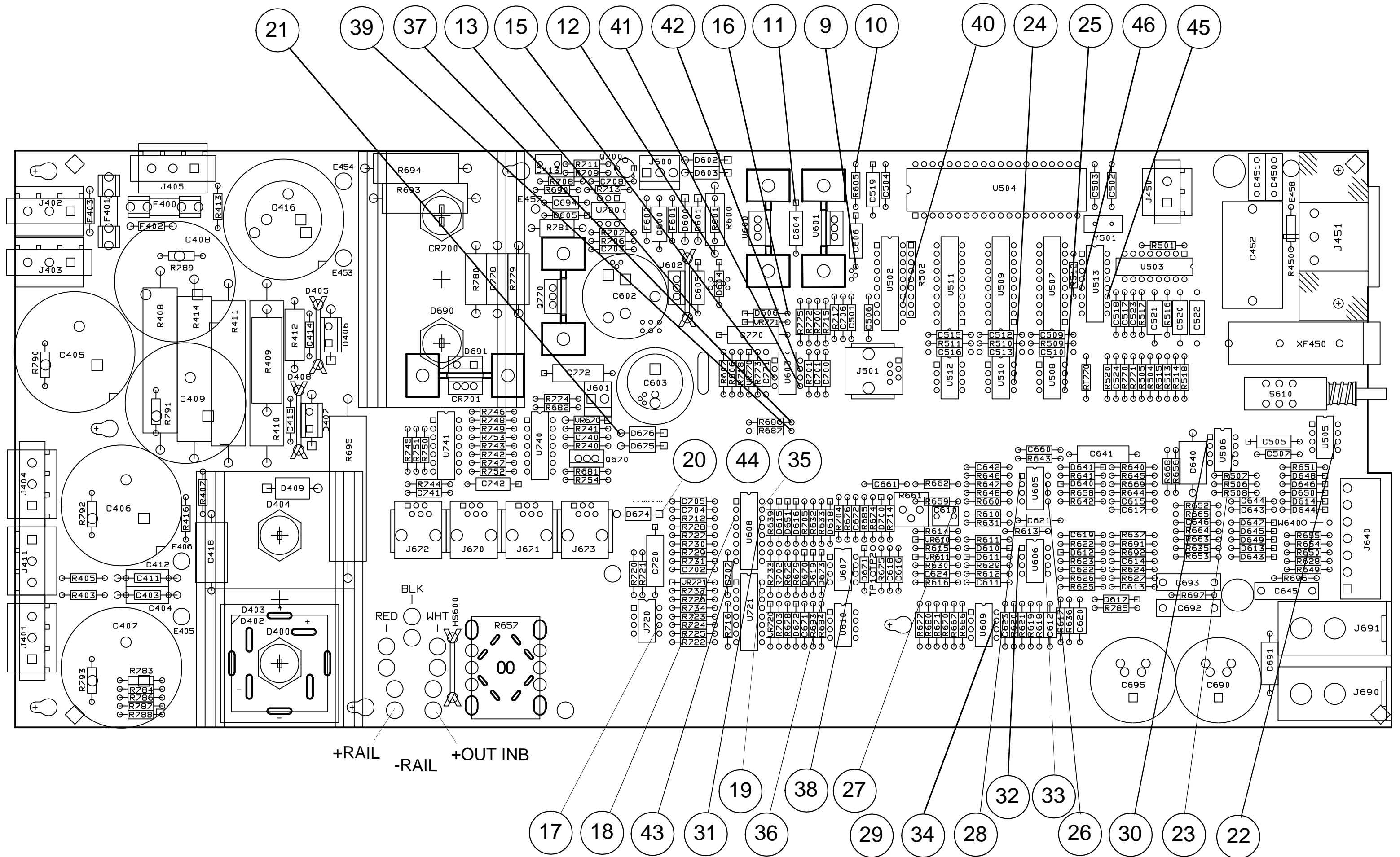


Figure 6-5. A1 Main Board Assembly Diagram and Test Points for 655xA & 665xA Models Only

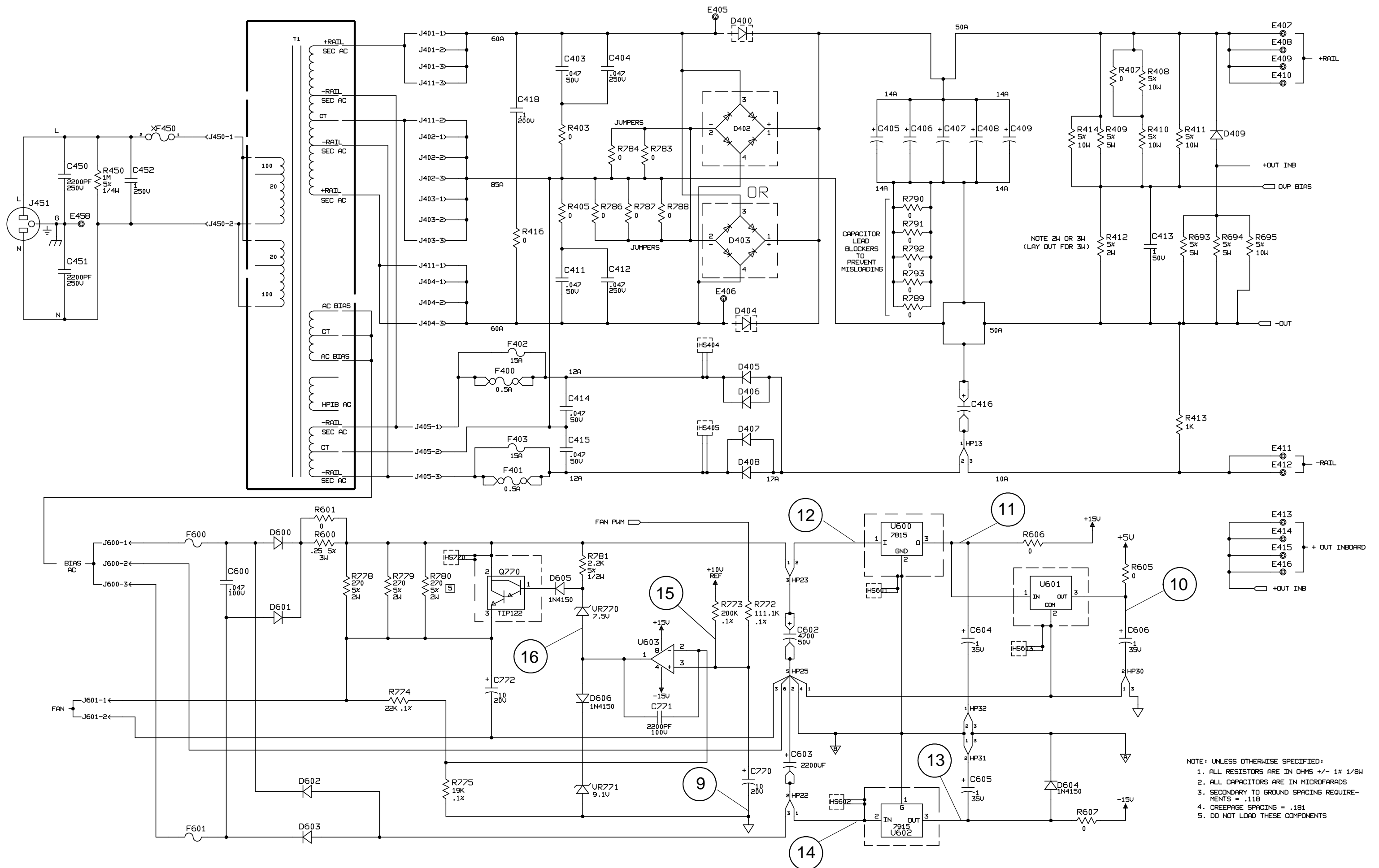
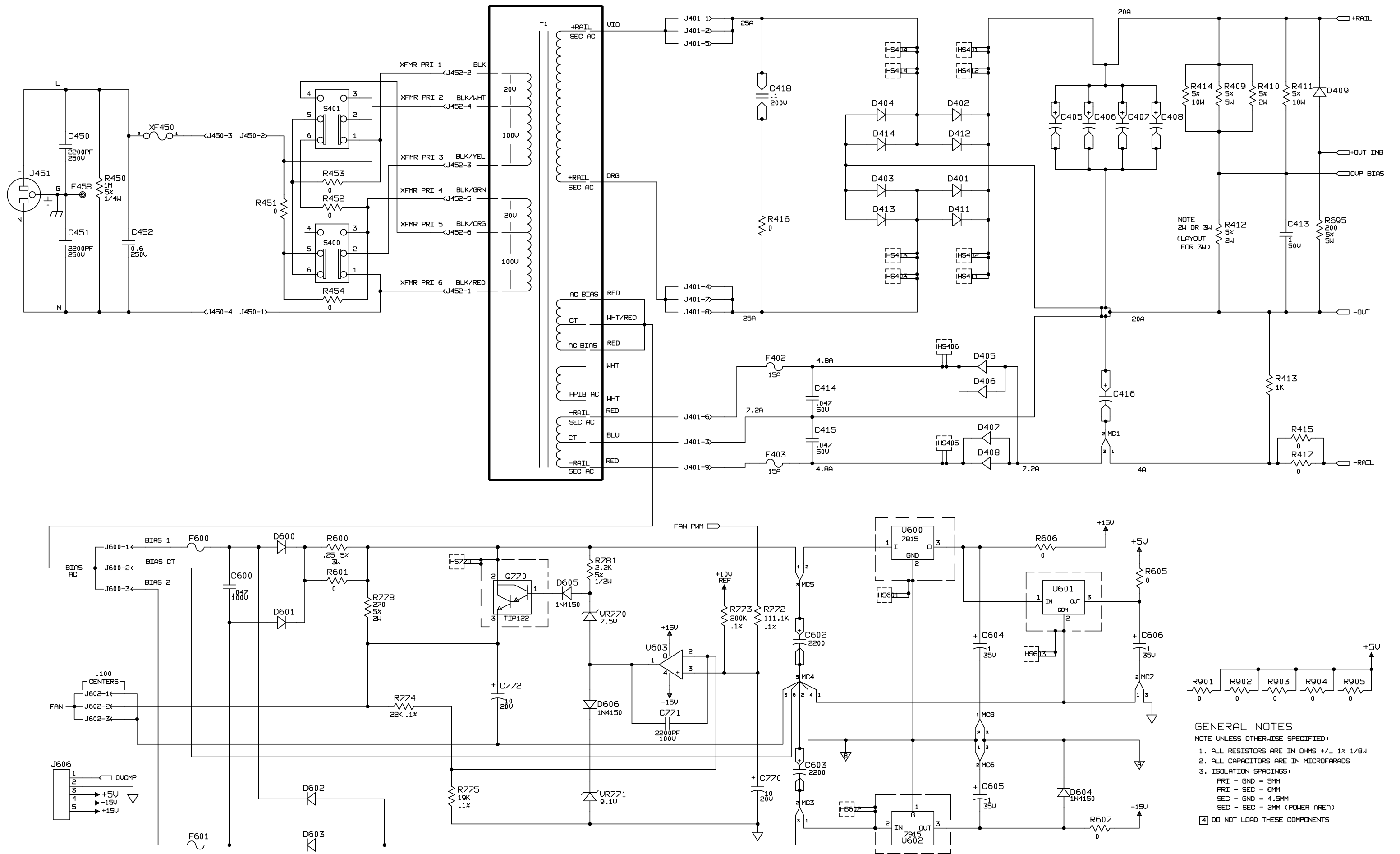
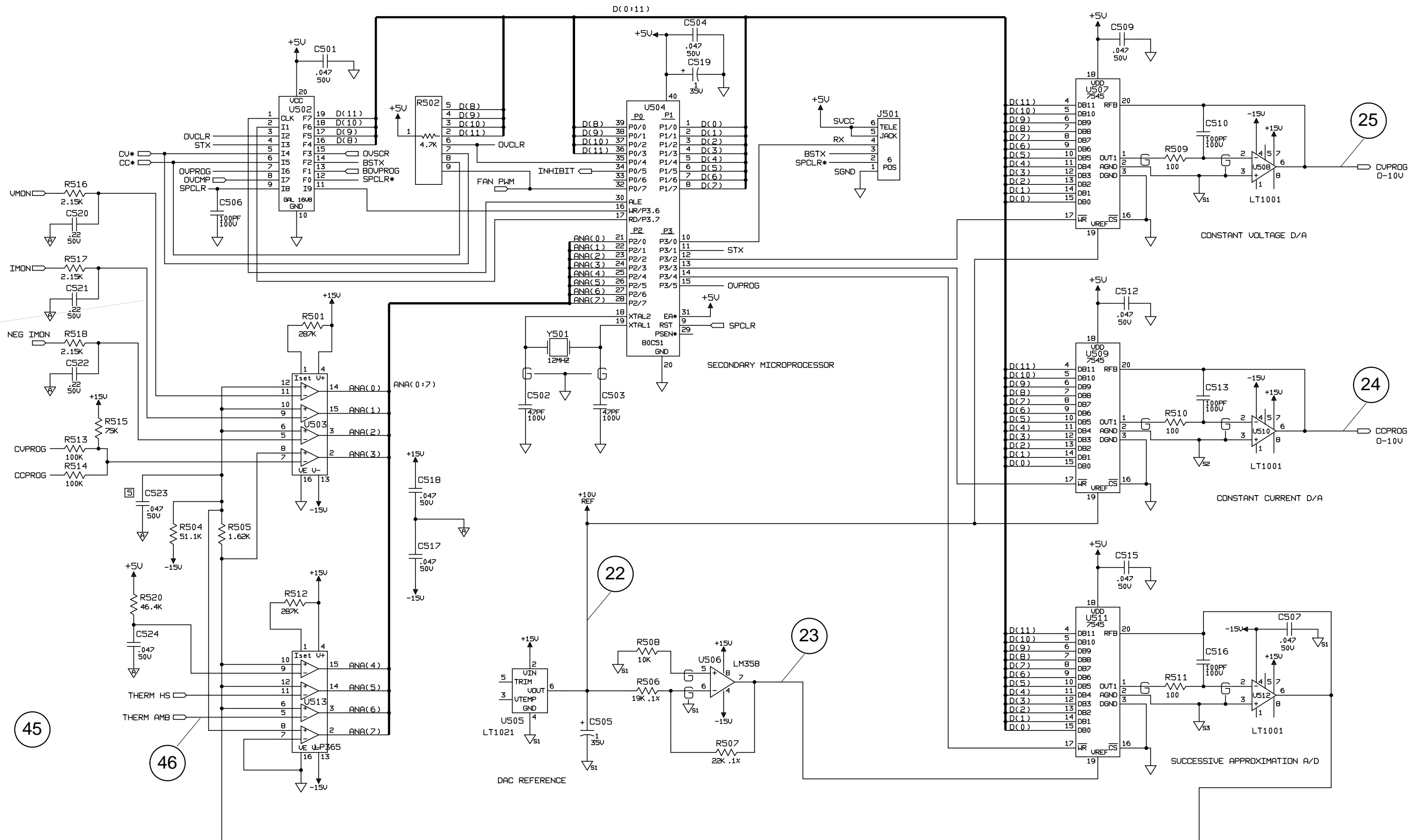


Figure 6-5. A1 Main Board AC Input, Power Rectifier, Bias, and Fan Speed Control Circuits Schematic Diagram for 655xA & 665xA Models Only (sheet 1A)



GENERAL NOTES
 NOTE UNLESS OTHERWISE SPECIFIED:
 1. ALL RESISTORS ARE IN OHMS +/- 1% 1/8W
 2. ALL CAPACITORS ARE IN MICROFARADS
 3. ISOLATION SPACINGS:
 PRI - GND = 5MM
 PRI - SEC = 6MM
 SEC - GND = 4.5MM
 SEC - SEC = 2MM (POWER AREA)
 [4] DO NOT LOAD THESE COMPONENTS

Figure 6-5. A1 Main Board AC Input, Power Rectifier, Bias, and Fan Speed Control Circuits Schematic Diagram for 654xA & 664xA Models Only (sheet 1B)



SECONDARY INTERFACE

Figure 6-5. A1 Main Board Secondary Interface & CV/CC Readback DACs Schematic Diagram for All Models (sheet 3)

06653-60020 Main Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C404, 412	2	0160-6803	CAP-FXD 0.047uF +-10pct 250 V POLYE-MET	0160-6803-47NF+/- 10%250V MKT 1813-347/255	AMERICAN SHIZUKI VISHAY
C405, 406, 407	3	0180-4272	CAP-FXD +-20pct 80 V AL-ELCTLT	3487DH103M080UFA2 3487DH103M080UFA2 82D103M080MG2B	VISHAY BC COMPONENTS VISHAY NIPPON CHEMI-CON
C413, 610	2	0160-5469	CAP-FXD 1uF +-10PCT 50 V POLYE-MET	MKS 2 1.0/10/50 PCM5 TR MMK5105K50J02TR18	WIMA EVOX/RIFA
C414, 415, 501, 504, 507, 509, 512, C515, 517, 518, 524, 615-618, 643, C644, 691, 700, 701, 703-705, 707	24	0160-5422	CAP-FXD 0.047uF +-20pct 50 V CER X7R	C420C473M5R5CA DA13X7R1H473M SA205C473MAAH	KEMET ELECTRONICS TDK AVX
C416	1	0180-3963	CAP-FXD +30pct -10pct 16 V AL-ELCTLT	380E1047 80D2257	CORNELL-DUBILIER ELECTRONICS NIPPON CHEMI-CON
C450, 451	2	0160-4281	CAP-FXD 2200pF +-20PCT 250 V PPR-MET	MP3Y2- 2200F/250VAC/20%,4X8.5X 13.5, Pitch10mm PME271Y422MR30	WIMA EVOX/RIFA
C452	1	0160-7606	CAP-FXD 1uF +-20PCT 275 V POLYE-MET	PHE820MF7100MR06L2 MKP-X2- 1uF/275Vac/20%,13X24X31. 5,Pitch 27.55mm	EVOX/RIFA WIMA
C502, 503, 646	3	0160-4805	CAP-FXD 47pF +-5pct 100 V CER C0G	C410C470J1G5CA SA102A470JAAH SA102A470JAAH	KEMET ELECTRONICS AVX KYOCERA
C505, 519, 604, 606	4	0180-4129	CAP-FXD 1uF +-10pct 35 V TA	TARR105K035 T322B105K035AS	AVX KEMET ELECTRONICS
C506, 510, 513, 516, 741	5	0160-4801	CAP-FXD 100pF +-5pct 100 V CER C0G	C410C101J1G5CA SA102A101JAAH SA102A101JAAH	KEMET ELECTRONICS AVX KYOCERA
C520-522	3	0160-5098	CAP-FXD 0.22uF +-10pct 50 V CER X7R	C440C224K5R5CA SA405C224KAAH SA405C224KAAH	KEMET ELECTRONICS AVX KYOCERA

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Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C600	1	0160-4834	CAP-FXD 0.047uF +-10pct 100 V CER X7R	C430C473K1R5CA DA13X7R2A473K SA301C473KAAH SA301C473KAAH	KEMET ELECTRONICS TDK AVX KYOCERA
C602	1	0180-3458	CAP-FXD 4700uF +30pct -10pct 50 V AL-ELCTLT	50TWP4700 80D472P050JE2	RUBYCON NIPPON CHEMI-CON
C603	1	0180-3298	CAP-FXD 2200uF +30pct -10pct 50 V AL-ELCTLT	80D222P050HD2	NIPPON CHEMI-CON
C605, C742	2	0180-0197	CAP-FXD 2.2uF +-10pct 20 V TA	TAAA225K020 T110A225K020AS TAAA2R2K20RX	AVX KEMET ELECTRONICS STC
C611	1	0160-4808	CAP-FXD 470pF +-5pct 100 V CER C0G	C410C471J1G5CA SA101A471JAAH SA101A471JAAH	KEMET ELECTRONICS AVX KYOCERA
C612	1	0160-4835	CAP-FXD 0.1uF +-10pct 50 V CER X7R	C420C104K5R5CA SA105C104KAAH SA105C104KAAH	KEMET ELECTRONICS AVX KYOCERA
C613, 614	2	0160-5166	CAP-FXD 0.015uF +-20pct 100 V CER X7R	C420C153M1R5CA DA13X7R2A153M SA201C153MAAH SA201C153MAAH	KEMET ELECTRONICS TDK AVX KYOCERA
C619, 622, 624, 671	4	0160-4791	CAP-FXD 10pF +-5PCT 100V CER C0G	C410C100J1G5CA SA102A100JAA SA102A100JAA	KEMET ELECTRONICS AVX KYOCERA
C621	1	0160-4821	CAP-FXD 1200pF +-5pct 100 V CER C0G	C420C122J1G5CA DA13C0G2A122J SA201A122JAAH SA201A122JAAH	KEMET ELECTRONICS TDK AVX KYOCERA
C640	1	0160-6827	CAP-FXD 0.022uF +-10pct 400 V POLYE-MET	0160-6827-22NF+/- 10%400V MKT 1813-322/405	AMERICAN SHIZUKI VISHAY
C641	1	0160-0161	CAP-FXD 0.01uF +-10pct 200 V POLYE-FL	WMC2S1-F HEW-238T-10NF+/- 10%200V	CORNELL-DUBILIER ELECTRONICS AMERICAN SHIZUKI

06653-60020 Main Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C642	1	0160-4803	CAP-FXD 68pF +-5pct 100 V CER C0G	C410C680J1G5CA SA101A680JAA SA101A680JAA	KEMET ELECTRONICS AVX KYOCERA
C645, 692, 693	3	0160-4355	CAP-FXD 0.01uF +-20pct 250 V PPR-MET	MP3-Y2- 0.01UF/250VAC/20% PME271Y510MR30	WIMA EVOX/RIFA
C672	1	0160-4807	CAP-FXD 33pF +-5pct 100 V CER C0G	C410C330J1G5CA SA102A330JAAH SA102A330JAAH	KEMET ELECTRONICS AVX KYOCERA
C690	1	0180-3382	CAP-FXD 440uF +100pct -10pct 50 V AL-ELCTLT	300441W050JE2	CORNELL-DUBILIER ELECTRONICS
C694	1	0160-5410	CAP-FXD 3300pF +-5pct 50 V CER C0G	C430C332J5GCA SA305A332JAAH	KEMET ELECTRONICS AVX
C702	1	0160-4812	CAP-FXD 220pF +-5pct 100 V CER C0G	C410C221J1G5CA SA101A221JAAH SA101A221JAAH	KEMET ELECTRONICS AVX KYOCERA
C706, 708	2	0160-4832	CAP-FXD 0.01uF +-10pct 100 V CER X7R	C410C103K1R5CA SA101C103KAAH SA101C103KAAH	KEMET ELECTRONICS AVX KYOCERA
C720, 770	2	0180-4136	CAP-FXD 10uF +-10pct 20 V TA	TARS106K020 T322C106K020AS	AVX KEMET ELECTRONICS
C740	1	0160-4831	CAP-FXD 4700pF +-10pct 100 V CER X7R	C410C472K1R5CA SA101C472KAAH SA101C472KAAH	KEMET ELECTRONICS AVX KYOCERA
C772	1	0180-4132	CAP-FXD 6.8uF +-10pct 35 V TA	TARW685K035 T322D685K035AS	AVX KEMET ELECTRONICS
CBL1	2	06652-80002	CBL-ASSY,R SHELF		
CBL2	2	06652-80001	CBL-ASSY,L SHELF		
CR700	1	1884-0365	THYRISTOR-SCR TO-208AC VRRM=400	D2664	MICROSEMI
D400, 404	2	1901-1182	DIO 400V 17A	1901-1182 UFR-7140	STMICROELECTRONICS MICROSEMI
D405, 408	2	5060-3228	ASSY-HS 810		
D405, 408a	1	0361-1641	EYELET-RLD-FLG .121-OD .187-LG .0095-THK	GS 4-6 STEEL-TIN PLATE	STIMPSON EDWIN B
D405, 408b	1	1205-0282	HEAT SINK PLSTC-PWR-CS	6025D	AAVID THERMALLOY

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Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
D405, 408c	1	1901-1387	DIODE-PWR RECT 200V 8A 35NS TO-220AC	MUR820G	ON SEMICONDUCTOR
D409	1	1901-1087	DIODE-PWR RECT 600V 3A 200NS	GI856 MR856RLG	VISHAY ON SEMICONDUCTOR
D600-603, 674-676	7	1901-0731	DIODE-PWR RECT 400V 1A	1N4004G 1901-0731 GP10G044	ON SEMICONDUCTOR TEMIC TELEFUNKEN MICROELECTRON VISHAY
D604-606, 615-619, 651, 670-673	13	1901-1098	DIODE-SWITCHING 1N4150 50V 200MA 4NS	1N4150 1N4150	FAIRCHILD SEMICONDUCTOR ROHM
D610-614, 640, 641, 643-650, 700	16	1901-0033	DIODE-GEN PRP 180V 200MA DO-35	1MD2-FDH3369C	FAIRCHILD SEMICONDUCTOR
D690	1	1901-0317	DIODE-PWR RECT 1N1184A 100V 40A DO-5	1N1184A 1N1184A	MICROSEMI VISHAY
F402, 403	2	2110-0697	FUSE-SUBMINIATURE 15A 32V NTD AX	0251015 L	LITTELFUSE
F600, 601	2	2110-0685	FUSE-SUBMINIATURE 7A 125V NTD AX UL-LST	0251007 L	LITTELFUSE
HS400, HS690	2	1205-0587	HEAT SINK DUAL DO-5-CS	035566	AAVID THERMALLOY
J403, 405, 411	3	1251-4781	CONN-UTIL MT-LK 3-CONT-POS 3-CONT	350789-1	TYCO ELECTRONICS AMP
J450	1	1251-7616	CONN-UTIL MT-LK 2-CONT-POS	350787-1	TYCO ELECTRONICS AMP
J451	1	1252-3771	CONNECTOR-AC PWR IEC320 C14 MALE FLG-MTG	GSP1.9103.1M 42R65-1111D3	SCHURTER POWER DYNAMICS
J501, 670-673	5	1251-8184	MODULAR PHONE RCPT PERPENDICULAR MOUNT	5520258-3	TYCO ELECTRONICS AMP
J600	1	1251-4246	CONN-HDR VERT 3-PIN 3.96MM 1-ROW SHROUDED	3160-8-203-22W	METHODE ELECTRONICS
J601	1	1251-4245	CONN-HDR VERT 2-PIN 3.96MM 1-ROW	640388-2 3160-8-202-22W	TYCO ELECTRONICS AMP METHODE ELECTRONICS
J640	1	1252-3693	CONN-POST TYPE 5.0-PIN-SPCG-MTG-END	ELFH07110 MSTBA1.5/7G 1758720 871907	PCD PHOENIX CONTACT & CO AXSYS TECHNOLOGIES
Q670	1	1854-0872	TRANSISTOR NPN TO-220AB PD=1.67W		
Q700	1	1854-0477	TRANSISTOR NPN PN2222A SI TO-92 PD-625MW	PN2222A PN2222ABU	CENTRAL SEMICONDUCTOR FAIRCHILD SEMICONDUCTOR
Q770	1	5060-3322	ASSY-HS,XSTR		

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Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
Q770a	1	1205-0402	HEAT SINK SGL TO-220-CS	1A059 1205-0402 60130-020PB 637-20-ABP	BOSSARD AAVID THERMALLOY WAKEFIELD ENGINEERING
Q770b	1	1854-0828	TRANSISTOR NPN SI DARL TO-220AB PD=65W	NTD560 TIP122G	NEC ELECTRONICS ON SEMICONDUCTOR
Q770c	1	0361-1641	EYELET-RLD-FLG .121-OD .187-LG .0095-THK	GS 4-6 STEEL-TIN PLATE	STIMPSON EDWIN B
R403, 405, 605-607, 670, 686, 687	8	8159-0005	RESISTOR 0 CWM	106 L-2007-1 YZO 1/4 Z-25 Z25C	MICRO-OHM GETTIG ENGRG & MFG TT ELECTRONICS ASJ KOA
R412	1	0811-1799	RESISTOR 390 +-5pct 3W PWI TC=0+-20	RS-23905% T2B-9-39R-5%	VISHAY TT ELECTRONICS
R413, 645, 668, 672, 679, 680, 715, R721, 722, 744, 750	11	0757-0280	RESISTOR 1K +-1pct .125W TF TC=0+-100	5053HD1K000F CMF-551001FT-1 NK4H.125W1%+/- 100PPM1001	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R414	1	0811-0944	RESISTOR 800 +-5pct 10W PWI TC=0+-20	RS-10 800 5% T10-78	VISHAY TT ELECTRONICS
R450, 705, 713	3	0698-8827	RESISTOR 1M +-1pct .125W TF TC=0+-100	5053HD1M000F CMF-551004FT-1	VISHAY BC COMPONENTS VISHAY
R501, 512, 639	3	0698-3456	RESISTOR 287K +-1pct .125W TF TC=0+-100	5053HD287K0F CMF-552873FT-1 NK4H.125W1%+/- 100PPM2873	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R502	1	1810-0305	NET-RES 8 4.7K OHM 9-PIN	908-472G CSC09A01-472K	EPITEK ELECT VISHAY
R504, 658	2	0757-0458	RESISTOR 51.1K +-1pct .125W TF TC=0+-100	5053HD51K10F CMF-555112FT-1 NK4H.125W1%+/- 100PPM5112	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS

06653-60020 Main Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
R505	1	0757-0428	RESISTOR 1.62K +-1pct .125W TF TC=0+-100	5053HD1K620F CMF-551621FT-1 NK4H.125W1%+/- 100PPM1621	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R506, 774	2	0699-1212	RESISTOR 19K +-0.1pct .125W TF TC=0+-25	B0207E19K00B CMF-551902BT-9	VISHAY BC COMPONENTS VISHAY
R507	1	0698-6392	RESISTOR 22K +-0.1PCT .125W TF TC=0+-25	B0207E22K00B CMF-552202BT-9	VISHAY BC COMPONENTS VISHAY
R508, 612, 642, 684, 727, 729, 734, R770, 771	9	0757-0442	RESISTOR 10K +-1pct .125W TF TC=0+-100	5053HD10K00F CMF-551002FT-1 NK4H.125W1%+/- 100PPM1002	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R509-511, 682, 707, 709, 711	9	0757-0401	RESISTOR 100 +-1pct .125W TF TC=0+-100	5053HD100R0F CMF-551000FT-1	VISHAY BC COMPONENTS VISHAY
R513, 514, 704, 753	4	0757-0465	RESISTOR 100K +-1pct .125W TF TC=0+-100	5053HD100K0F CMF-551003FT-1 NK4H.125W1%+/- 100PPM1003	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R515	1	0757-0462	RESISTOR 75K +-1pct .125W TF TC=0+-100	5053HD75K00F CMF-557502FT-1 NK4H.125W1%+/- 100PPM7502	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R516-518, 654, 664, 669, 708, 716, R730	9	0698-0084	RESISTOR 2.15K +-1pct .125W TF TC=0+-100	5053HD2K150F CMF-552151FT-1 NK4H.125W1%+/- 100PPM2151	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R520, 637, 712, 725, 732, 733, 740, R741	8	0698-3155	RESISTOR 4.64K +-1pct .125W TF TC=0+-100	5053HD4K640F CMF-554641FT-1 NK4H.125W1%+/- 100PPM4641	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R600	1	0699-4707	RES .25 OHM	0699-4707	TT ELECTRONICS
R610	1	0698-6360	RES-FXD 10K +-0.1PCT 0.125W TC 0+-25 0207	CMF-551002BT-9 MBB0207-25 0.1%__10K	VISHAY VISHAY BC COMPONENTS

06653-60020 Main Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
R611, 640	2	0698-6343	RES-FXD 9KOHM +-0.1PCT .125W TC 0+-25	CMF559K0000BEEA B0207E9K000B	VISHAY VISHAY BC COMPONENTS
R613, 643, 651, 652, 666, 667, 775	7	0698-6630	RES-FXD 20K +-0.1PCT 0.125W TC 0+-25 0207	CMF-552002BT-9 MBB0207-25 0.1%__20K	VISHAY VISHAY BC COMPONENTS
R614, 615, 632, 644, 656	5	0698-3156	RESISTOR 14.7K +-1pct .125W TF TC=0+-100	5053HD14K70F CMF-551472FT-1 NK4H.125W1%+/- 100PPM1472	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R616	1	0683-2255	RESISTOR 2.2M +-5pct .25W CF TC=0-830	CF 14 2M 5% CF1/4C__225J	ASJ KOA
R617, 677	2	0757-0279	RESISTOR 3.16K +-1pct .125W TF TC=0+-100	5053HD3K160F CMF-553161FT-1 NK4H.125W1%+/- 100PPM3161	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R618, 743	2	0757-0441	RESISTOR 8.25K +-1pct .125W TF TC=0+-100	5053HD8K250F CMF-558251FT-1 NK4H.125W1%+/- 100PPM8251	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R619, 690	2	0698-0082	RESISTOR 464 +-1pct .125W TF TC=0+-100	5053HD464R0F CMF-554640FT-1 NK4H.125W1%+/- 100PPM464R0	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R620, 621, 728	3	0757-0449	RESISTOR 20K +-1pct .125W TF TC=0+-100	5053HD20K00F CMF-552002FT-1 NK4H.125W1%+/- 100PPM2002	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R622, 625	2	0699-2246	RESISTOR 25K +-0.05pct .125W TF TC=0+-5	PR1/10T525K0.05% PTF-5625K00AT-16 UXBA25K000A	PRECISION RESISTIVE PRODUCTS VISHAY VISHAY BC COMPONENTS
R623, R626	2	0699-2879	RESISTOR 80K +-0.05pct .1W TF TC=0+-5	PR1/10T580K0.05% PTF-5680K00AT-16 UXBA80K000A	PRECISION RESISTIVE PRODUCTS VISHAY VISHAY BC COMPONENTS

06653-60020 Main Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
R624, 627	2	0698-6614	RESISTOR 7.5K +-0.1pct .125W TF TC=0+-25	B0207E7K500B CMF-557501BT-9	VISHAY BC COMPONENTS VISHAY
R628, 635, 649, 650, 653, 655, 663, R665	8	0698-6320	RES-FXD 5K +-0.1PCT 0.125W TC 0+-25 0207	CMF-555001BT-9 MBB0207-25 0.1%__5K	VISHAY VISHAY BC COMPONENTS
R629	1	0757-0481	RESISTOR 475K +-1pct .125W TF TC=0+-100	5053HD475K0F CMF-554753FT-1	VISHAY BC COMPONENTS VISHAY
R630	1	0698-4470	RESISTOR 6.98K +-1pct .125W TF TC=0+-100	5053HD6K980F CMF-55698FT-1 NK4H.125W1%+/- 100PPM6981	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R631	1	0698-4014	RESISTOR 787 +-1pct .125W TF TC=0+-100	CMF-557870FT-1 5053HD787R0F NK4H.125W1%+/- 100PPM787R0	VISHAY VISHAY BC COMPONENTS E-SIL COMPONENTS
R633, 676, 700, 701, 746	5	0698-3162	RESISTOR 46.4K +-1pct .125W TF TC=0+-100	5053HD46K40F CMF-554642FT-1 NK4H.125W1%+/- 100PPM4642	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R641	1	0698-8061	RESISTOR 8.25K +-0.1pct .125W TF TC=0+-25	B0207E8K250B CMF-558251BT-9	VISHAY BC COMPONENTS VISHAY
R646, 660	2	0698-6353	RES-FXD 50K +-0.1PCT 0.125W TC 0+-25 0207	CMF-555002BT-9 MBB0207-25 0.1%__50K	VISHAY VISHAY BC COMPONENTS
R647, 648	2	0698-6344	RES-FXD 900 OHM +-0.1PCT 0.125W TC 0+-25 0207	CMF-559000BT-9 MBB0207-25 0.1%__900R	VISHAY VISHAY BC COMPONENTS
R657	1	5080-2079	RES-CUPRON		
R674, 681, 683, 752	4	0698-3160	RESISTOR 31.6K +-1pct .125W TF TC=0+-100	5053HD31K60F CMF-553162FT-1 NK4H.125W1%+/- 100PPM3162	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R675, 703	2	0757-0457	RESISTOR 47.5K +-1pct .125W TF TC=0+-100	5053HD47K50F CMF-554752FT-1 NK4H.125W1%+/- 100PPM4752	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS

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Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
R678, 714	2	0698-8826	RESISTOR 825K +-1pct .125W TF TC=0+-100	5053HD825K0F CMF-558253FT-1	VISHAY BC COMPONENTS VISHAY
R685, 706	2	0757-0419	RESISTOR 681 +-1pct .25W TF TC=0+-100	5053HD6810F CMF-55681FT-1 NK4H.25W1%+/- 100PPM681	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R691, 692	2	0757-0274	RESISTOR 1.21K +-1pct .125W TF TC=0+-100	5053HD1K210F CMF-551211FT-1 NK4H.125W1%+/- 100PPM1211	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R695	1	0818-0054	RESISTOR 300 +-5pct 10W PWI TC=0+-20	NS-10_300_5% T10-78	VISHAY TT ELECTRONICS
R696, 697	2	0699-1797	RESISTOR 10M +-5pct .25W CF TC=0-1000	CF 1/4 C ___ 106 J CF1/ 10M5%	KOA ASJ
R702, 720, 726	3	0698-3153	RESISTOR 3.83K +-1pct .125W TF TC=0+-100	5053HD3K830F CMF-553831FT-1 NK4H.125W1%+/- 100PPM3831	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R717, 718	2	0698-3441	RESISTOR 215 +-1pct .125W TF TC=0+-100	5053HD215R0F CMF-552150FT-1 NK4H.125W1%+/- 100PPM215R0	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R723, 724, 731	3	0698-3260	RESISTOR 464K +-1pct .125W TF TC=0+-100	5053HD464K0F CMF-554643FT-1	VISHAY BC COMPONENTS VISHAY
R742, 747-749	4	0757-0199	RESISTOR 21.5K +-1pct .125W TF TC=0+-100	5053HD21K50F CMF-552152FT-1 NK4H.125W1%+/- 100PPM2152	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R745, 751	2	0683-0475	RESISTOR 4.7 +-5pct .25W CF TC=0-400	CF 1/4 C ___ 4R7 J CF 14 4R 5% RC1/4 4R7 5%	KOA ASJ SEI ELECTRONICS
R754	1	0698-8816	RESISTOR 2.15 +-1pct .125W TF TC=0+-100	5053HD2R150F CMF-552R15FT-1	VISHAY BC COMPONENTS VISHAY

06653-60020 Main Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
R772	1	0757-0470	RESISTOR 162K +-1pct .125W TF TC=0+-100	5053HD162K0F CMF-551623FT-1 NK4H.125W1%+/- 100PPM1623	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R773	1	0698-6376	RESISTOR 200K +-0.1pct .125W TF TC=0+-25	B0207E200K0B CMF-552003BT-9	VISHAY BC COMPONENTS VISHAY
R778, 779	2	0811-2201	RESISTOR 270 +-5pct 2W PWI TC=0+-400	SPH	TT ELECTRONICS
R781	1	0686-2225	RESISTOR 2.2K +-5pct .5W CC TC=0+647		
R785	1	0757-0397	RESISTOR 68.1 +-1pct .125W TF TC=0+-100	5053HD68R10F CMF-5568R1FT-1 NK4H.125W1%+/- 100PPM68R1	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
REF (4) BUSS BARS	4	2190-0586	WASHER-LK HLCL 4.0 4.1-MM-ID 7.6-MM-OD	A2WASPSR0158	HOUSE OF METRICS
REF BUSS BARS TO PCB	4	0515-0909	SCREW-MACH M4 X 0.7 12MM-LG PAN-HD ; SCREW-MACHINE ; M4.0 X 0.70; 12 MM LONG	0515-0909 0515-0909 0515-0909	ILLINOIS TOOL WORKS MID-CONTINENT SCREW PROD TEXTRON
REF D400, 404, 690, CR700	4	2680-0232	SCREW-MACH 10-32 .312-IN-LG PAN-HD-PHL ; SCREW-MACHINE ; 10-32 UNF-2A; 0.312 IN LONG; ; INTERNAL TOOTH LOCKWASHER ; LOCKWASHER STEEL,ZINC-CLEAR ; CHROMATE CONVERSION	2680-0232	NORTH AMERICAN BOLT & SCREW CO
REF D400, 404, 690, CR700	4	3050-0236	WASHER-FL MTLC NO. 10 .203-IN-ID ; WASHER-FLAT ; 0.203 IN NOM ID; 0.375 IN NOM ; OD; 0.031 IN THICK; BRASS, ; NICKEL PLATED	3050-0236	TILLEY
REF D400, 404, 690, CR700	4	2190-0084	WASHER-LK INTL T 1/4 IN .256-IN-ID	1214-05	ILLINOIS TOOL WORKS
REF D400, 404, 690, CR700	4	3050-0420	WASHER-FL MTLC 1/4 IN .255-IN-ID	1496	FEDERAL SCREW PRODUCTS
REF D400, 404, 690, CR700	4	0380-1128	STANDOFF-HEX .62-IN-LG 10-32-THD ; STANDOFF-HEX	0380-1128 0380-1128	KEYSTONE ELECTRONICS LYN-TRON
REF J451	2	3050-0891	WASHER-FL MTLC 3.0 3.3-MM-ID 6.85-MM-OD ; WASHER-FLAT ; FITS SCREW SIZE: 3.0 MM	3050-0891	HOUSE OF METRICS
REF J451	2	0570-0647	STD-PRS-IN M3 X 0.5 15.000 PH-BRZ	KFH-M3-15-ET	PENN ENGINEERING & MFG
REF J451	2	0535-0031	NUT-HEX; W/LOCKWASHER M3 X 0.5 2.4MM- THK;M3 X 0.5 THREAD; 5	0535-0031	HOUSE OF METRICS
REF J690, 691	2	06652-00005	BUS BAR	06652-00005 06652-00005	EVS METAL AMTEK /AE TECHNOLOGIES

06653-60020 Main Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
Ref U504	1	1822-1762	IC MCU W/ROM 4KX8 CMOS 40-DIP	P87C51SBPN P87C51SBPN	PHILIPS NXP
REF Y501	1	0340-1277	INSULATOR-CAP PLASTIC		
RT770	1	0837-0397	THERMISTOR CYL CHIP 10K-OHM	135-103LFW-J01	HONEYWELL
S610	1	3101-2894	SWITCH-PB DPDTALTNG .01A 100 VAC	F2UEE AU	ITT INDUSTRIES
U502	1	5080-2150	PRGMD-GAL,MAIN 1820-5398		
U502a		1820-5398	IC PLD EEPLD UNPRGMD CMOS GAL16V8	GAL16V8D-25QP	LATTICE SEMICONDUCTOR
U503, 513, 608	3	1826-1370	IC COMPARATOR QUAD 16 PIN DIP-P		
U504	1	5185-1398	Programmed Secondary Processor		
U505	1	1826-1369	IC PWR MGT-V-REF-FXD 9.95/10.05V 8 PINS	LT1021DCN8-10	LINEAR TECHNOLOGY
U506	1	1826-0346	IC OP AMP GP DUAL 8 PIN DIP-P	LM358NNOPB	NATIONAL SEMICONDUCTOR
U507, 509, 511	3	1826-2187	D/A 12-BIT 20-PLASTIC CMOS	AD7545LNZ	ANALOG DEVICES
U508, 510, 512	3	1826-1896	IC OP AMP PRCN 8 PIN DIP-P	LT1001CN8 LT1001CN8	LINEAR TECHNOLOGY MAXIM INTEGRATED PRODUCTS
U600	1	5060-3321	ASSY-HS,REG 7815		
U600a	1	1826-0106	IC PWR MGT-V-REG-FXD-POS 14.4/15.6V	LM340T-15NOPB	NATIONAL SEMICONDUCTOR
U600b	1	0361-1641	EYELET-RDL-FLG .121-OD .187-LG .0095-THK	GS 4-6 STEEL-TIN PLATE	STIMPSON EDWIN B
U600c	1	1205-0402	HEAT SINK SGL TO-220-CS	1A059 1205-0402 60130-020PB 637-20-ABP	BOSSARD AAVID THERMALLOY WAKEFIELD ENGINEERING
U601	1	5060-3320	ASSY-HS,REG 7805		
U601a	1	1205-0402	HEAT SINK SGL TO-220-CS	1A059 1205-0402 60130-020PB 637-20-ABP	BOSSARD AAVID THERMALLOY WAKEFIELD ENGINEERING
U601b	1	1826-0122	IC PWR MGT-V-REG-FXD-POS 4.8/5.2V TO-220	LM340T-5 MC7805CTG	NATIONAL SEMICONDUCTOR ON SEMICONDUCTOR
U601c	1	0361-1641	EYELET-RDL-FLG .121-OD .187-LG .0095-THK	GS 4-6 STEEL-TIN PLATE	STIMPSON EDWIN B
U602	1	5060-3229	ASSY-HS 7915C		
U602a	1	1205-0282	HEAT SINK PLSTC-PWR-CS	6025D	AAVID THERMALLOY
U602b	1	0361-1641	EYELET-RDL-FLG .121-OD .187-LG .0095-THK	GS 4-6 STEEL-TIN PLATE	STIMPSON EDWIN B
U602c	1	1826-0214	IC PWR MGT-V-REG-FXD-NEG -14.4/-15.6V	MC7915CTG	ON SEMICONDUCTOR
U603, 609, 610	4	1826-0962	IC OP AMP LOW-BIAS-H-IMPD DUAL 8 PIN	LF412CNNOPB	NATIONAL SEMICONDUCTOR
U605	1	1826-2252	IC OP AMP LOW-NOISE DUAL 8 PIN DIP-P	OP-270GN8 OP270GPZ	LINEAR TECHNOLOGY ANALOG DEVICES
U606	1	1826-1878	IC OP AMP PRCN DUAL 8 PIN DIP-P		
U607	1	1826-1533	IC OP AMP H-SLEW-RATE DUAL 8-PDIP	MC34072P	ON SEMICONDUCTOR

06653-60020 Main Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
U700	1	1990-1074	S1C-LTB	4N35-M	FAIRCHILD SEMICONDUCTOR
U720	1	1826-0468	IC PWR MGT-OV-V-SEN 2.3/37.8V 8 PINS	MC3423P1G	ON SEMICONDUCTOR
U721	1	1858-0047	TRANSISTOR ARRAY 16-PIN PLSTC DIP	ULN2003AN	TEXAS INSTRUMENTS
U740	1	1858-0076	TRANSISTOR ARRAY 14-PIN PLSTC TO-116	MPQ2907Lead Free	CENTRAL SEMICONDUCTOR
U741	1	1858-0077	TRANSISTOR ARRAY 14-PIN PLSTC TO-116	MPQ2222	CENTRAL SEMICONDUCTOR
VR610, 611	2	1902-0958	DIODE-ZNR 10V 5pct DO-35 PD=.4W TC=+.075pct	1N961B	MICROSEMI
VR670	1	1902-0556	DIODE-ZNR 20V 5pct PD=1W IR=5UA	1N4747A	MICRO COMMERCIAL COMPONENTS
VR720, 721	2	1902-0947	DIODE-ZNR 3.6V 5PCT DO-35 PD .5W	SZ30035-5RL 1N5227B	TAK CHEONG ELECTRONICS MICRO COMMERCIAL COMPONENTS
VR770	1	1902-0955	DIODE-ZNR 1N5236B 7.5V 5pct DO-35 PD=.4W	1N958B-DO35	MICROSEMI
VR771	1	1902-0957	DIODE-ZNR 1N5239B 9.1V 5pct DO-35 PD=.4W	1N960B-D035	MICROSEMI
XF 450	1	2110-0927	FUHLR-HPZ-PC250V /CSA/VDE/SEMKO	345101	LITTELFUSE
Y501	1	0410-4219	CRYSTAL-QUARTZ 11.950 MHZ HC49/S-HLDR	HC49SLF 11.950MHZ	FOX ELECTRONICS
	1	0160-4830	CAP-FXD 2200pF +-10pct 100 V CER X7R	C410C222K1R5CA SA101C222KAAH SA101C222KAAH	KEMET ELECTRONICS AVX KYOCERA

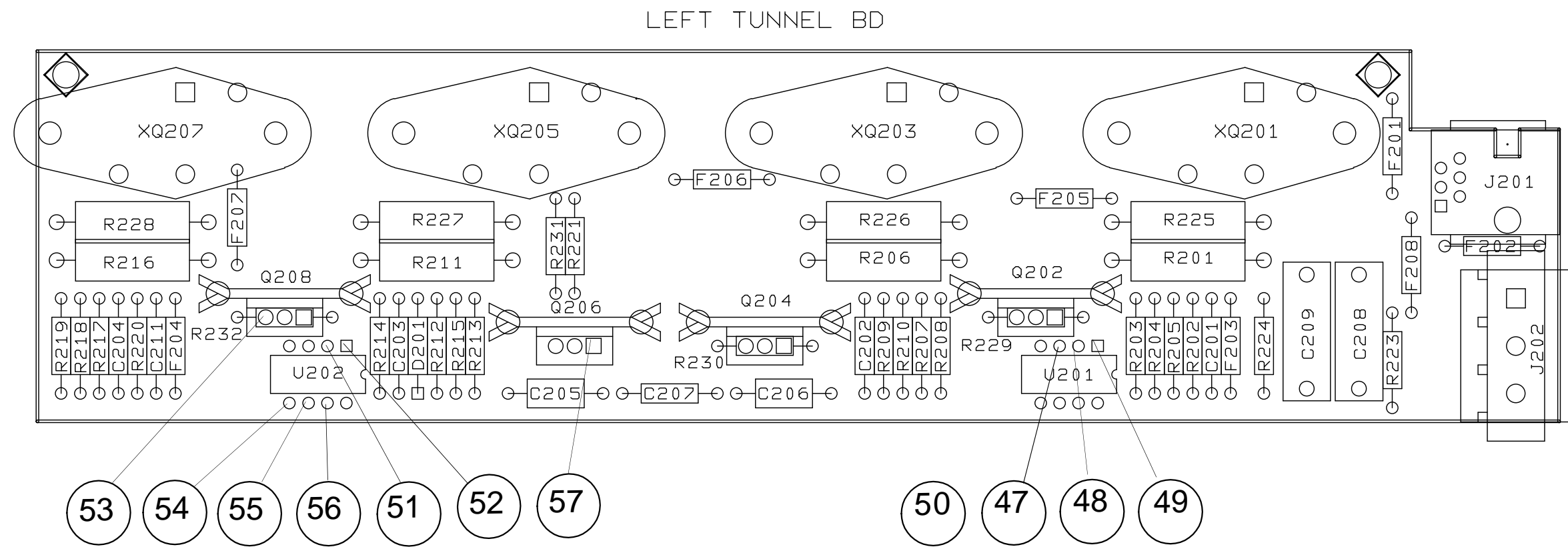
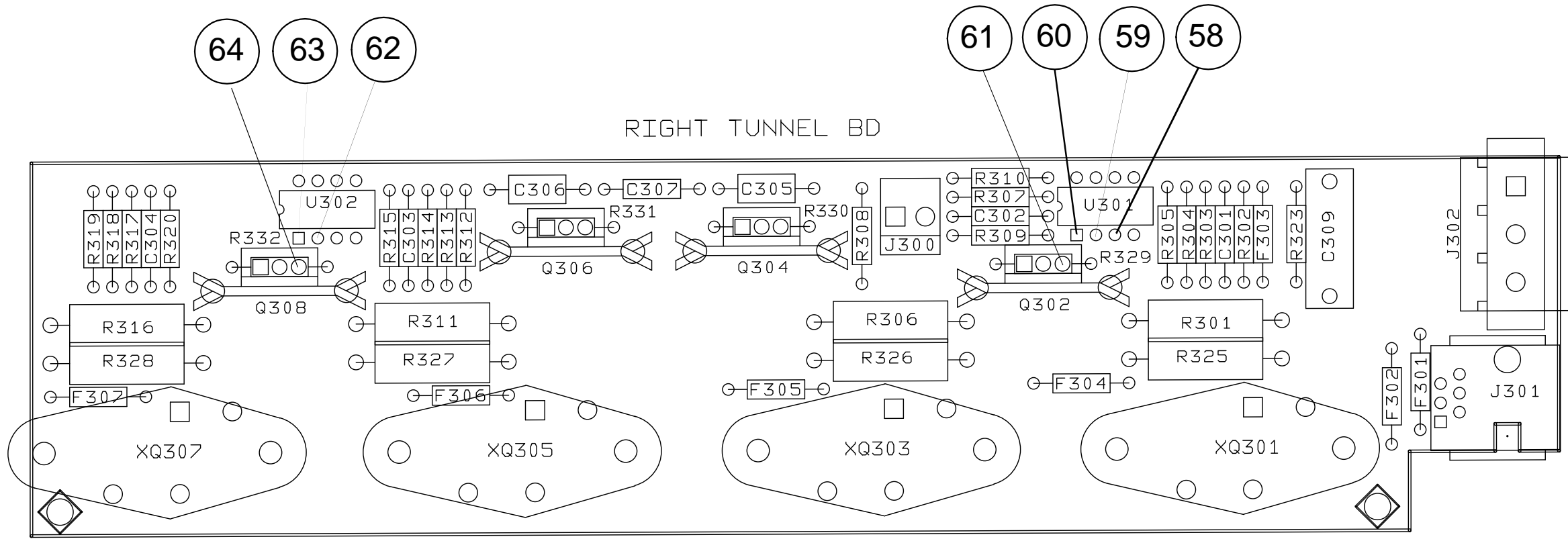
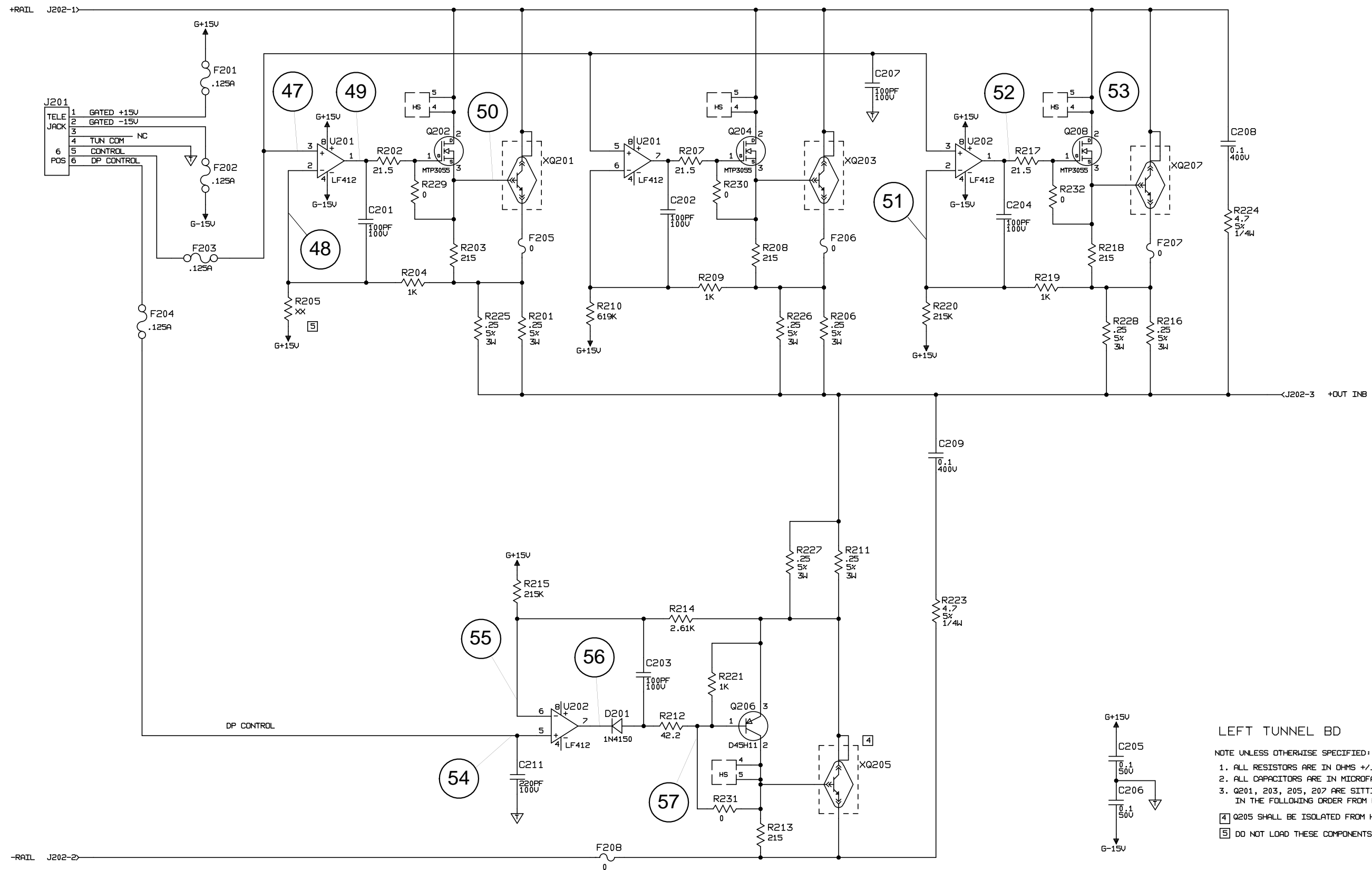


Figure 6-6. Left/Right Tunnel Board Assembly Diagram and Test Points for 655xA & 665xA Models Only

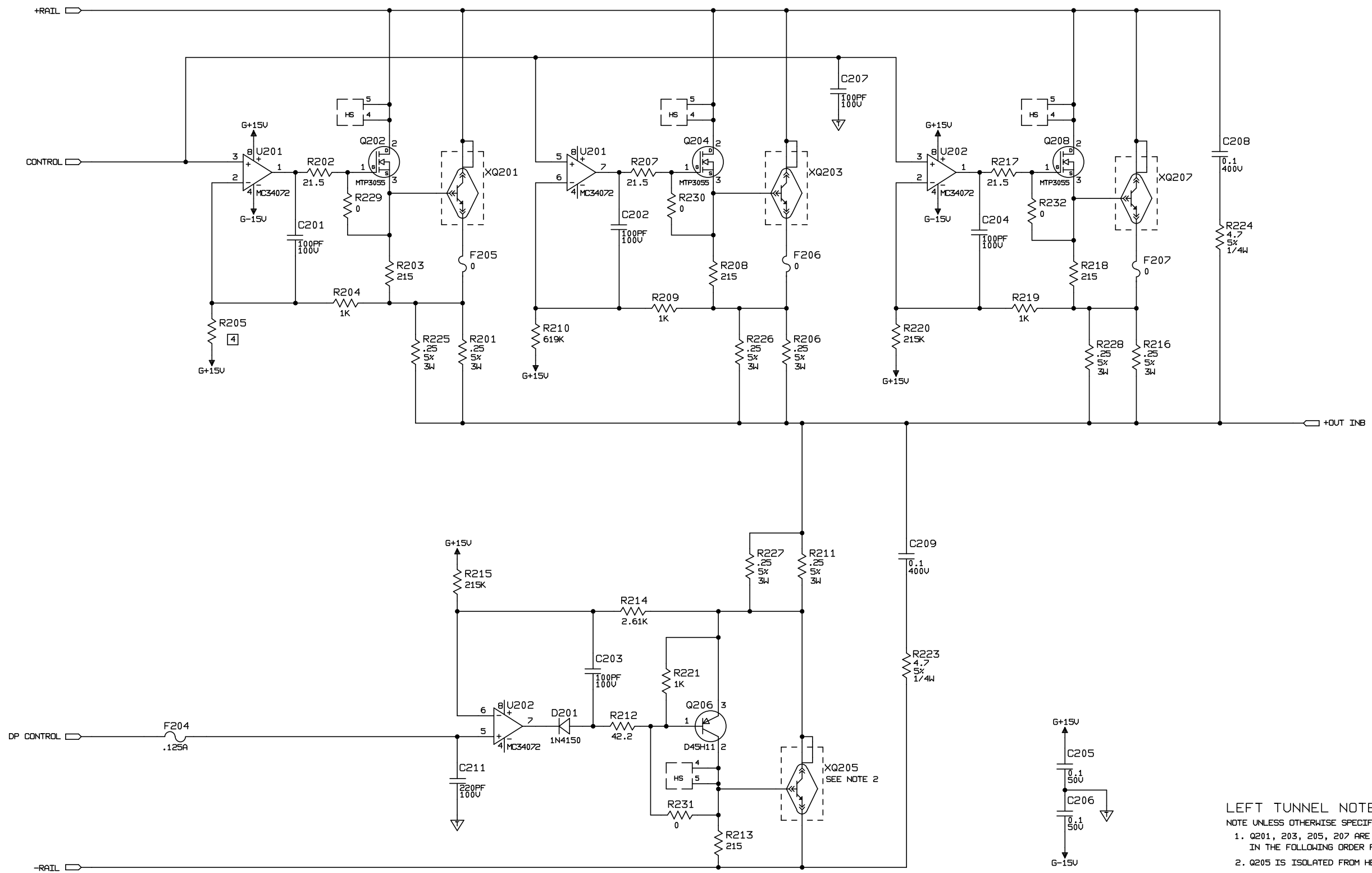


LEFT TUNNEL BD

NOTE UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTORS ARE IN OHMS +/- 1% 1/8W
2. ALL CAPACITORS ARE IN MICROFARADS
3. Q201, 203, 205, 207 ARE SITTING ON SAME HEATSINK IN THE FOLLOWING ORDER FROM FAN: Q201, 203, 205, 207
- 4 Q205 SHALL BE ISOLATED FROM HEATSINK
- 5 DO NOT LOAD THESE COMPONENTS

Figure 6-6. Left Tunnel Circuits Schematic Diagram for 655xA & 665xA Models Only (sheet 1)



LEFT TUNNEL NOTES
 NOTE UNLESS OTHERWISE SPECIFIED:
 1. Q201, 203, 205, 207 ARE SITTING ON SAME HEATSINK
 IN THE FOLLOWING ORDER FROM FAN: Q201, 203, 205, 207
 2. Q205 IS ISOLATED FROM HEATSINK

Figure 6-6. Left Tunnel Circuits Schematic Diagram for 654xA & 664xA Models Only (sheet 2)

06653-60022 Left Tunnel Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C201-204, 207	5	0160-4801	CAP-FXD 100pF +-5pct 100 V CER C0G	C410C101J1G5CA SA102A101JAAH SA102A101JAAH	KEMET ELECTRONICS AVX KYOCERA
C205, 206	2	0160-4835	CAP-FXD 0.1uF +-10pct 50 V CER X7R	C420C104K5R5CA SA105C104KAAH SA105C104KAAH	KEMET ELECTRONICS AVX KYOCERA
C208, 209	2	0160-6806	CAP-FXD 0.1uF +-10pct 400 V POLYE-MET	MKS4 0.1UF/400V/10% MKT 1822-410/405 MMK15104K400A03L4	WIMA VISHAY EVOX/RIFA
C211	1	0160-4812	CAP-FXD 220pF +-5pct 100 V CER C0G	C410C221J1G5CA SA101A221JAAH SA101A221JAAH	KEMET ELECTRONICS AVX KYOCERA
D201	1	1901-1098	DIODE-SWITCHING 1N4150 50V 200MA 4NS	1N4150 1N4150	FAIRCHILD SEMICONDUCTOR ROHM
F201-204	4	2110-0716	FUSE-SUBMINIATURE .5A 125V NTD AX UL-LST	0251.500___L	LITTELFUSE
F205-208	4	8159-0005	RESISTOR 0 CWM	106 L-2007-1 YZO 1/4 Z-25 Z25C	MICRO-OHM GETTIG ENGRG & MFG TT ELECTRONICS ASJ KOA
J201	1	1251-8184	MODULAR PHONE RCPT PERPENDICULAR MOUN	5520258-3	TYCO ELECTRONICS AMP
J202	1	1251-4781	CONN-UTIL MT-LK 3-CONT-POS 3-CONT	350789-1	TYCO ELECTRONICS AMP
Q202, 204, 208	3	5060-3314	ASSY-HS IRF610		
Q202, 204, 208a	1	1205-0282	HEAT SINK PLSTC-PWR-CS	6025D	AAVID THERMALLOY
Q202, 204, 208b	1	1855-0641	TRANSISTOR MOSFET N-CHAN E-MODE TO-220A	IRF610 IRF610	SAMSUNG VISHAY
Q202, 204, 208c	1	0361-1641	EYELET-RLD-FLG .121-OD .187-LG .0095-THK	GS 4-6 STEEL-TIN PLATE	STIMPSON EDWIN B
Q206	1	5060-3250	ASSY-HS MJE15031		
Q206a	1	0361-1641	EYELET-RLD-FLG .121-OD .187-LG .0095-THK	GS 4-6 STEEL-TIN PLATE	STIMPSON EDWIN B
Q206b	1	1205-0282	HEAT SINK PLSTC-PWR-CS	6025D	AAVID THERMALLOY
R201, 206, 211, 216	4	0699-4706	RES .39 OHMS	0699-4706	TT ELECTRONICS
R202, 207, 217	3	0698-3430	RESISTOR 21.5 +-1pct .125W TF TC=0+-100	5053HD21R50F CMF-5521R5FT-1 NK4H.125W1%+/- 100PPM21R5	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS

06653-60022 Left Tunnel Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
R203, 208, 213, 218	4	0698-3441	RESISTOR 215 +-1pct .125W TF TC=0+-100	5053HD215R0F CMF-552150FT-1 NK4H.125W1%+/- 100PPM215R0	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R204, 209, 219, 221	4	0757-0280	RESISTOR 1K +-1pct .125W TF TC=0+-100	5053HD1K000F CMF-551001FT-1 NK4H.125W1%+/- 100PPM1001	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R210	1	0757-0481	RESISTOR 475K +-1pct .125W TF TC=0+-100	5053HD475K0F CMF-554753FT-1	VISHAY BC COMPONENTS VISHAY
R212	1	0757-0316	RESISTOR 42.2 +-1pct .125W TF TC=0+-100	5053HD42R20F CMF-5542R2FT-1 NK4H.125W1%+/- 100PPM42R2	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R214	1	0698-0085	RESISTOR 2.61K +-1pct .25W TF TC=0+-100	5043ED2K610F CMF-552611FT-1 NK4H.25W1%+/- 100PPM2611	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R215, 220	2	0698-3454	RESISTOR 215K +-1pct .125W TF TC=0+-100	5053HD215K0F CMF-552153FT-1 NK4H.125W1%+/- 100PPM2153	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R223, 224	2	0683-0475	RESISTOR 4.7 +-5pct .25W CF TC=0-400	CF 1/4 C ___ 4R7 J CF 14 4R 5% RC1/4 4R7 5%	KOA ASJ SEI ELECTRONICS
REF Q110	1	1853-0652	TRANSISTOR PNP SI TO-220AB PD=2W	MJE15031G	ON SEMICONDUCTOR
REF Q201, 203, 205, 207	4	1200-1158	SOCKET-XSTR 2-CONT TO-3 DIP-SLDR	8118PF303	AAVID THERMALLOY
U201, 202	2	1826-0962	IC OP AMP LOW-BIAS-H-IMPED DUAL 8 PIN	LF412CNNOPB	NATIONAL SEMICONDUCTOR

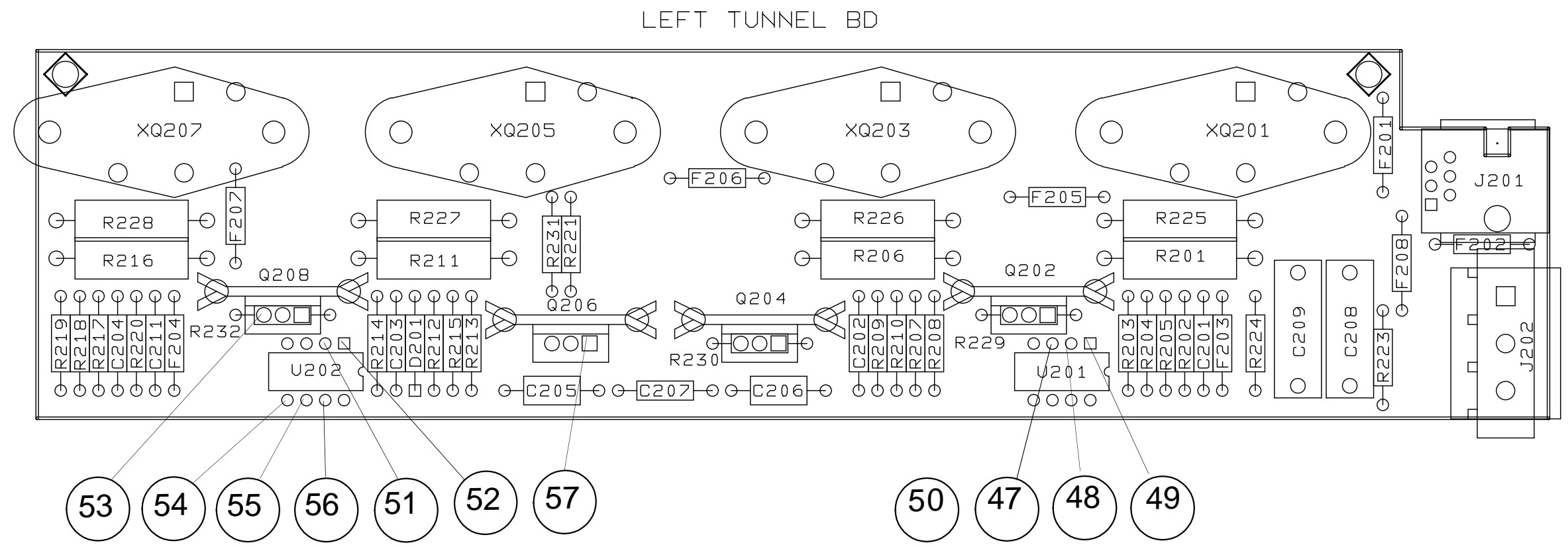
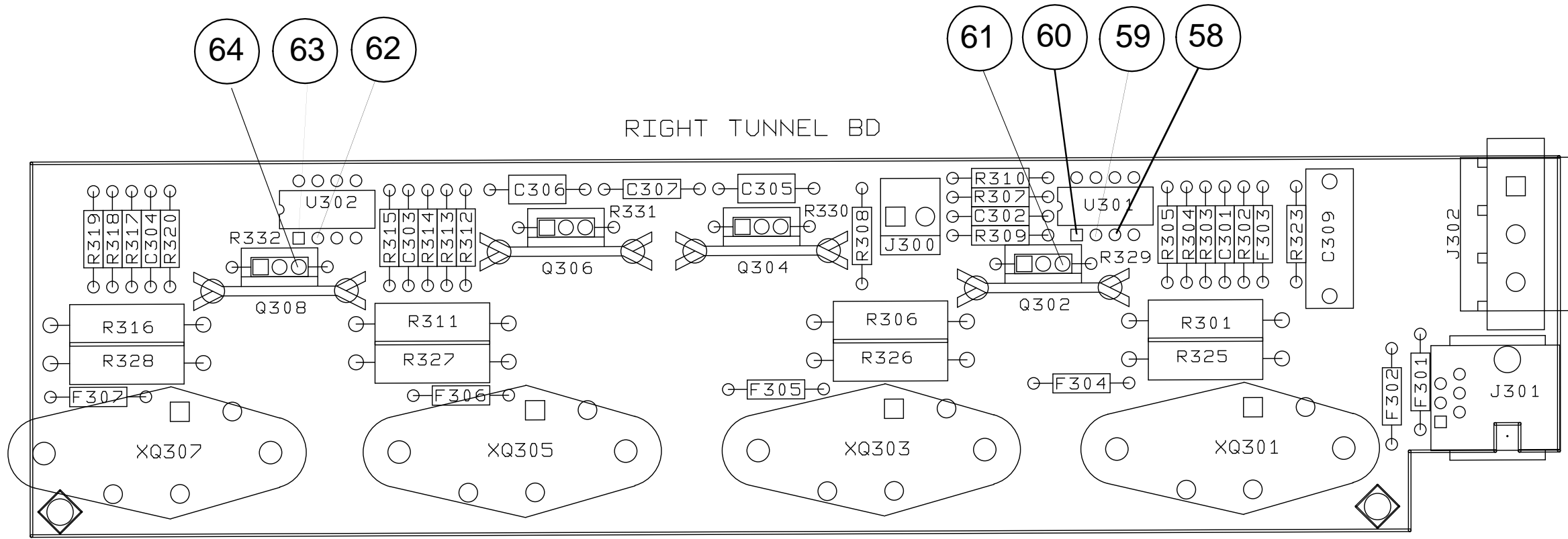
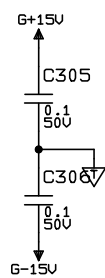
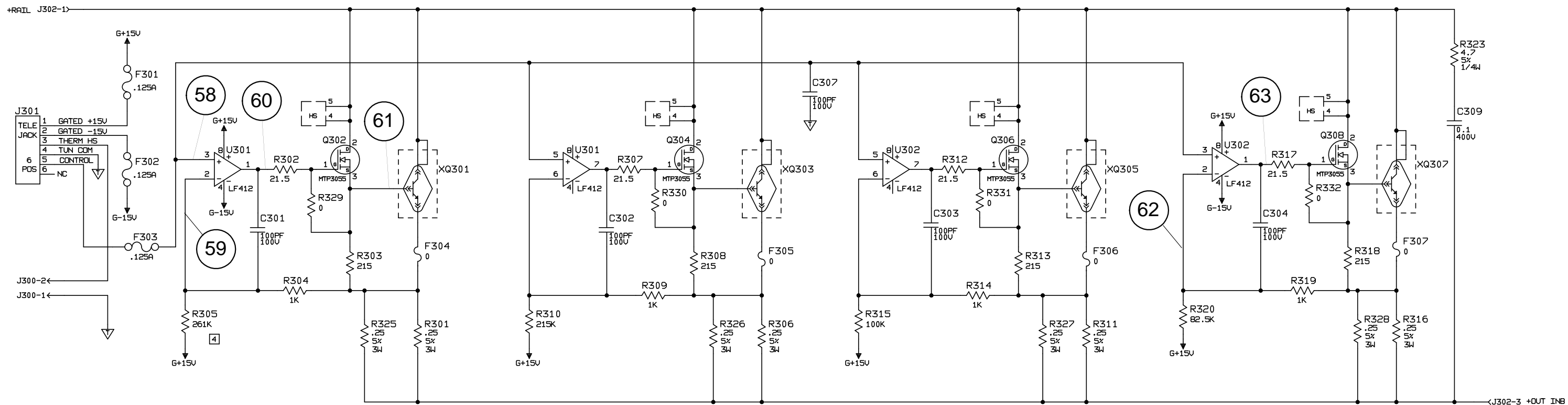


Figure 6-6. Left/Right Tunnel Board Assembly Diagram and Test Points for 655xA & 665xA Models Only



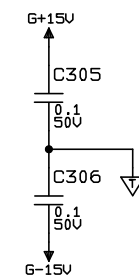
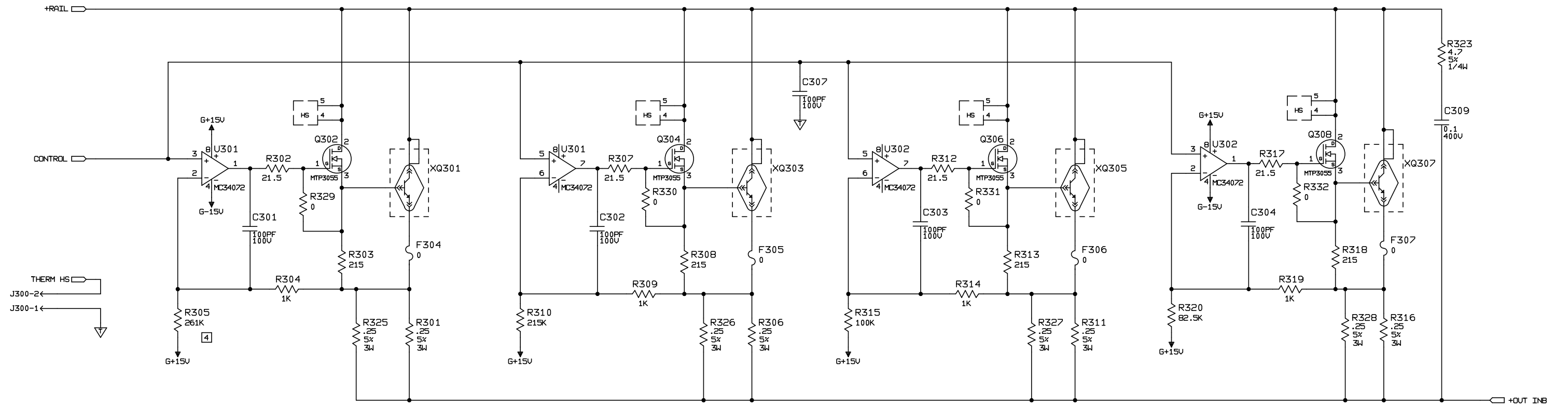
RIGHT TUNNEL BD

NOTE UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTORS ARE IN OHMS +/- 1% 1/8W
2. ALL CAPACITORS ARE IN MICROFARADS
3. Q301, 303, 305, 307 ARE SITTING ON SAME HEATSINK IN THE FOLLOWING ORDER FROM FAN: Q301, 303, 305, 307.

☐ DO NOT LOAD THESE COMPONENTS

Figure 6-7. Right Tunnel Circuits Schematic Diagram for 655xA & 665xA Models Only (sheet 1)



RIGHT TUNNEL NOTES
 NOTE UNLESS OTHERWISE SPECIFIED:
 1. Q301, 303, 305, 307 ARE SITTING ON SAME HEATSINK
 IN THE FOLLOWING ORDER FROM FAN: Q301, 303, 305, 307.

Figure 6-7. Right Tunnel Circuits Schematic Diagram for 654xA & 664xA Models Only (sheet 2)

06653-60023 Right Tunnel Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C301-304, 307	5	0160-4801	CAP-FXD 100pF +-5pct 100 V CER C0G	C410C101J1G5CA SA102A101JAAH SA102A101JAAH	KEMET ELECTRONICS AVX KYOCERA
C305, 306	2	0160-4835	CAP-FXD 0.1uF +-10pct 50 V CER X7R	C420C104K5R5CA SA105C104KAAH SA105C104KAAH	KEMET ELECTRONICS AVX KYOCERA
C309	1	0160-6806	CAP-FXD 0.1uF +-10pct 400 V POLYE-MET	MKS4 0.1UF/400V/10% MKT 1822-410/405 MMK15104K400A03L4	WIMA VISHAY EVOX/RIFA
F301-303	3	2110-0716	FUSE-SUBMINIATURE .5A 125V NTD AX UL-LST	0251.500 L	LITTELFUSE
F304-307	4	8159-0005	RESISTOR 0 CWM	106 L-2007-1 YZO 1/4 Z-25 Z25C	MICRO-OHM GETTIG ENGRG & MFG TT ELECTRONICS ASJ KOA
J301	1	1251-8184	MODULAR PHONE RCPT PERPENDICULAR MOUNT	5520258-3	TYCO ELECTRONICS AMP
J302	1	1251-4781	CONN-UTIL MT-LK 3-CONT-POS 3-CONT	350789-1	TYCO ELECTRONICS AMP
Q302, 304, 306, 308	4	5060-3314	ASSY-HS IRF610		
Q302, 304, 306, 308a	1	1205-0282	HEAT SINK PLSTC-PWR-CS	6025D	AAVID THERMALLOY
Q302, 304, 306, 308b	1	1855-0641	TRANSISTOR MOSFET N-CHAN E-MODE TO-220AB	IRF610 IRF610	SAMSUNG VISHAY
Q302, 304, 306, 308c	1	0361-1641	EYELET-RLD-FLG .121-OD .187-LG .0095-THK	GS 4-6 STEEL-TIN PLATE	STIMPSON EDWIN B
R301, 306, 311, 316	4	0699-4706	RES .39 OHMS	0699-4706	TT ELECTRONICS
R302, 307, 312, 317	4	0698-3430	RESISTOR 21.5 +-1pct .125W TF TC=0+-100	5053HD21R50F CMF-5521R5FT-1 NK4H.125W1%+/- 100PPM21R5	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R303, 308, 313, 318	4	0698-3441	RESISTOR 215 +-1pct .125W TF TC=0+-100	5053HD215R0F CMF-552150FT-1 NK4H.125W1%+/- 100PPM215R0	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R304, 309, 314, 319	4	0757-0280	RESISTOR 1K +-1pct .125W TF TC=0+-100	5053HD1K000F CMF-551001FT-1 NK4H.125W1%+/- 100PPM1001	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS

06653-60023 Right Tunnel Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
R310	1	0698-3454	RESISTOR 215K +-1pct .125W TF TC=0+-100	5053HD215K0F CMF-552153FT-1 NK4H.125W1%+/- 100PPM2153	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R315	1	0757-0470	RESISTOR 162K +-1pct .125W TF TC=0+-100	5053HD162K0F CMF-551623FT-1 NK4H.125W1%+/- 100PPM1623	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R320	1	0757-0465	RESISTOR 100K +-1pct .125W TF TC=0+-100	5053HD100K0F CMF-551003FT-1 NK4H.125W1%+/- 100PPM1003	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R323	1	0683-0475	RESISTOR 4.7 +-5pct .25W CF TC=0-400	CF 1/4 C ___ 4R7 J CF 14 4R 5% RC1/4 4R7 5%	KOA ASJ SEI ELECTRONICS
REF Q301, 303, 305, 307	4	1200-1158	SOCKET-XSTR 2-CONT TO-3 DIP-SLDR	8118PF303	AAVID THERMALLOY
U301, 302	2	1826-0962	IC OP AMP LOW-BIAS-H-IMPD DUAL 8 PIN	LF412CNNOPB	NATIONAL SEMICONDUCTOR
XRT300	1	1251-4245	CONN-HDR VERT 2-PIN 3.96MM 1-ROW	640388-2 3160-8-202-22W	TYCO ELECTRONICS AMP METHODE ELECTRONICS

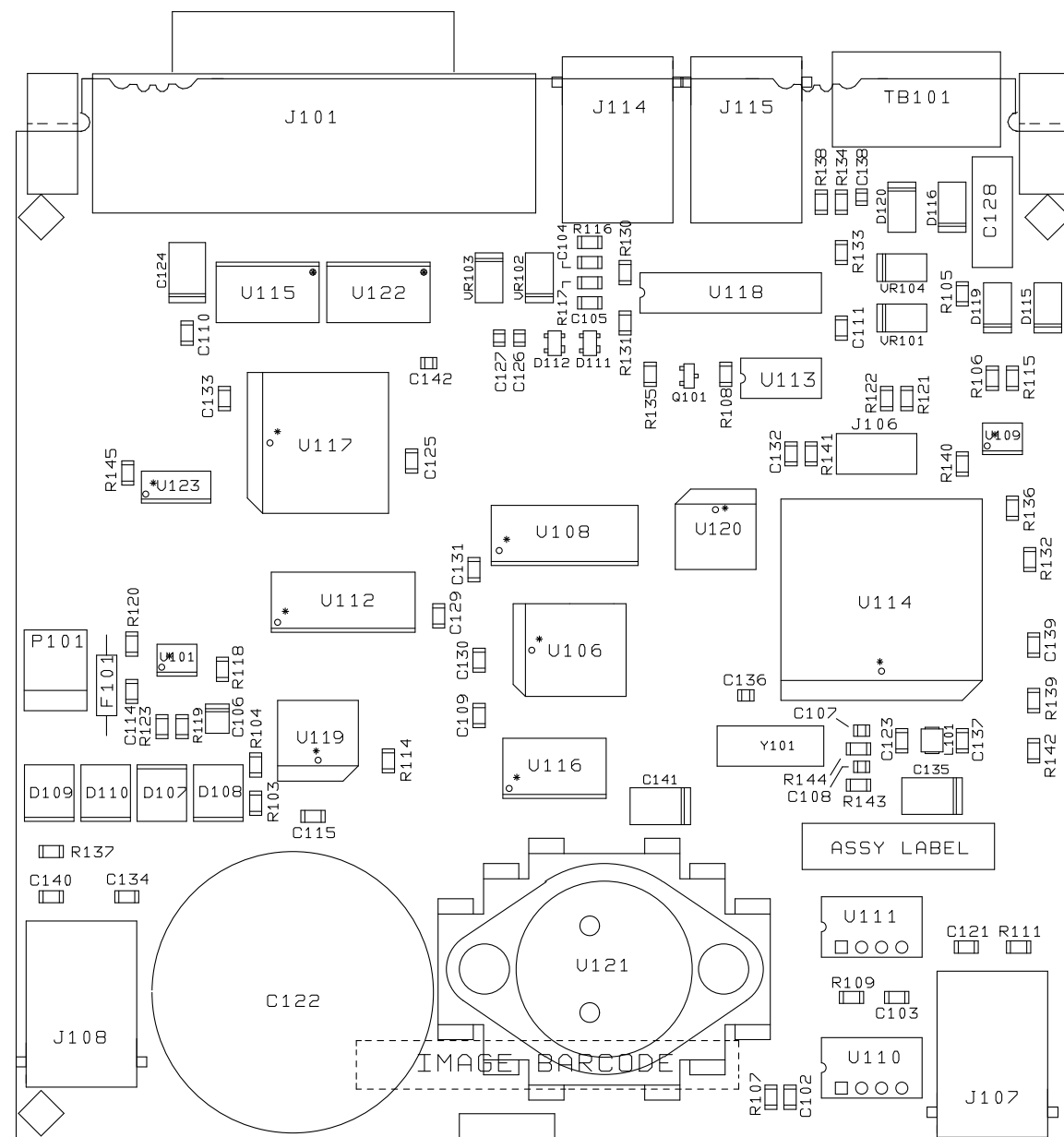


Figure 6-3. GPIB Board Assembly Diagram (sheet 1 of 2)

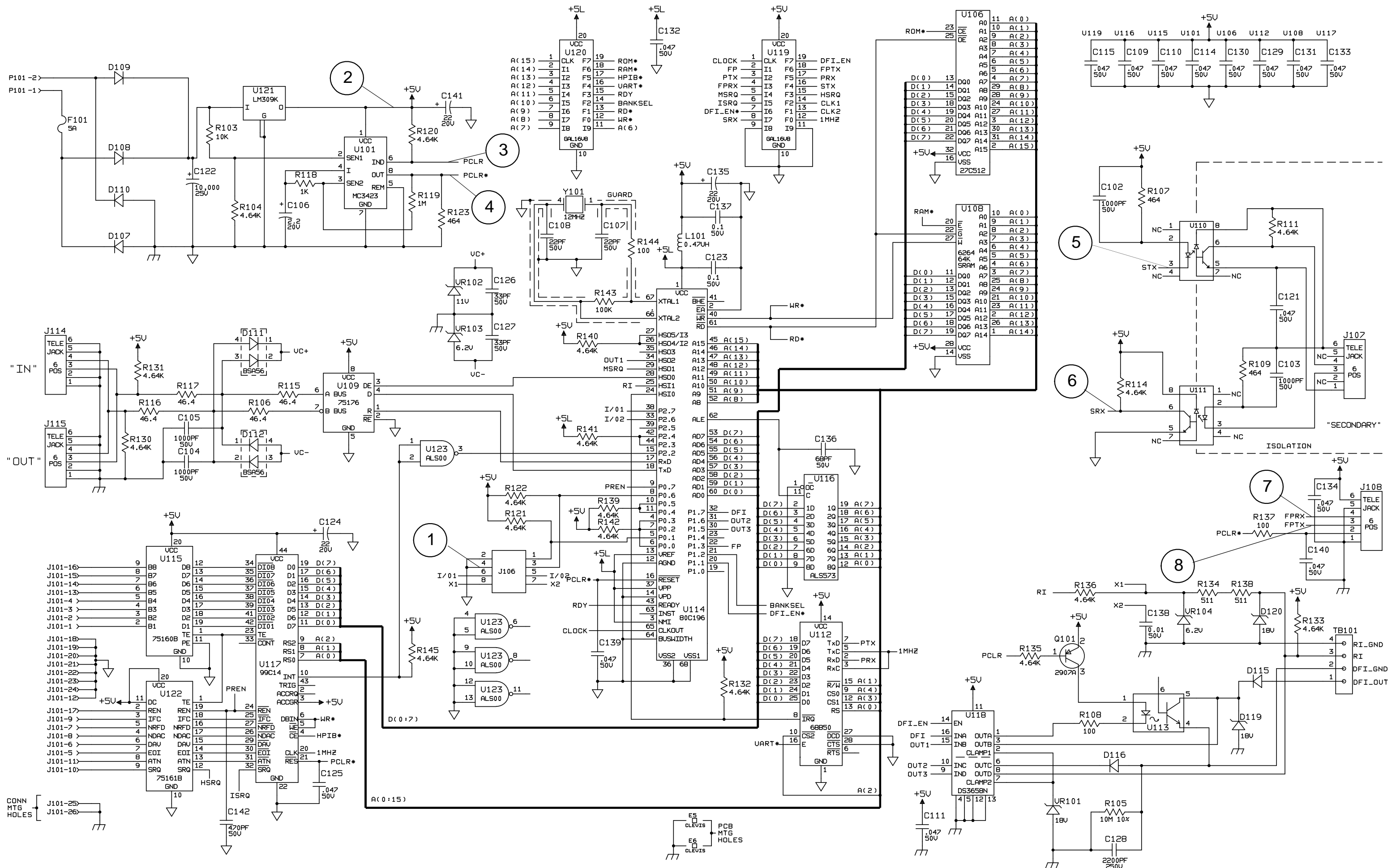


Figure 6-3. GPIB Board Schematic Diagram (sheet 2 of 2)

5060-3399 GPIB Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C128	1	0160-4281	CAP-FXD 2200pF +-20PCT 250 V PPR-MET	MP3Y2- 2200F/250VAC/20%,4X8.5 X13.5, Pitch10mm PME271Y422MR30	WIMA EVOX/RIFA
VR103, VR104	2	1902-1609	DIODE-ZNR 6.2V 5pct PD=1.5W IR=5UA	1SMB5920BT3G	ON SEMICONDUCTOR
C123, C137	2	0160-6497	CAP-FXD 0.1uF +-10pct 50 V CER X7R	12065C104KAT A 2238 581 15649 C1206C104K5RAC C3216X7R1H104KT GRM319R71H104KA01D VJ1206Y104KXAMT	AVX YAGEO KEMET ELECTRONICS TDK MURATA MANUFACTURING VISHAY
C102, C103, C104, C105	4	0160-6100	CAP-FXD 1000pF +-5pct 50 V CER C0G	12065A102JAT A C1206C102J5GAC C3216CH1H102J GRM3195C1H102JD01D	AVX KEMET ELECTRONICS TDK MURATA MANUFACTURING
MEC1	1	0340-0884	INSULATOR-XSTR THRM-CNDCT	60-11-4511-1674	PARKER HANNIFIN
D111, D112	2	1906-0337	DIODE-DUAL 60V 200MA TO-253	BAS56 BAS56	PHILIPS NXP
J107, J108, J114, J115	4	1251-7330	MODULAR PHONE RCPT RIGHT ANGLE PC MOUNT	5520250-3 95009-2661	TYCO ELECTRONICS AMP MOLEX
R106, R115, R116, R117	4	0699-1360	RESISTOR 46.4 +-1pct .125W TKF TC=0+-100	CRCW120646R4FKE_ RK73H2BT_46R4F MCR18__F46R4 232272464649	VISHAY KOA ROHM YAGEO
L101	1	9140-1101	INDUCTOR 470nH +-5pct 2.8W-mmX3.4LG-mm	NLV32T-R47J-PF KL32T__R47J	TDK KOA
C124, C135, C141	3	0180-4116	CAP-FXD 22uF +-20PCT 20V TA	ESVD1D226M 293D226X0020D__E3 TAJD226M020R	NEC TOKIN VISHAY AVX
MEC2, MEC3	2	0515-1232	SCREW-MACH M3.5 X 0.6 8MM-LG PAN-HD ; SCREW-MACHINE ; M3.5 X 0.60; 8 MM LONG	0515-1232 0515-1232 0515-1232 0515-1232	ILLINOIS TOOL WORKS MID-CONTINENT SCREW PROD PSM INTERNATIONAL TEXTRON

5060-3399 GPIB Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C109, C110, C114, C115, C121, C125, C129, C130, C131, C132, C133, C134, C139, C140	14	0160-6734	CAP-FXD 0.047uF +-10pct 50 V CER X7R	12065C473KAT A C1206C473K5RAC C3216X7R1H473K GRM319R71H473KD01L	AVX KEMET ELECTRONICS TDK MURATA MANUFACTURING
U116	1	1820-4264	IC LCH TTL/ALS TRANSPARENT OCTL	DM74ALS573BWMX SN74ALS573CDW	FAIRCHILD SEMICONDUCTOR TEXAS INSTRUMENTS
MEC4	1	1205-0758	HEAT SINK SGL TO-3-CS	575803B00700	AAVID THERMALLOY
F101	1	2110-0699	FUSE-SUBMINIATURE 5A 125V NTD AX UL-LST	0251005 L	LITTELFUSE
Y101	1	0410-4055	CRYSTAL-QUARTZ 12.000 MHZ	MA-506 12.00MC-F FPXLF120 DMX3812.00MHZ-18 DMX3812.00MHZ-18	EPSON TOYOCOM FOX ELECTRONICS DAISHINKU AMERICA DAISHINKU
U115	1	1820-6176	IC INTERFACE XCVR BIPOLAR BUS OCTL	SN75ALS160DW	TEXAS INSTRUMENTS
R105	1	0699-2682	RESISTOR 10M +-10pct .125W TKF TC=0+-500	23227116X1106 CRCW120610M0JNE_ MCR18__K106	YAGEO VISHAY ROHM
U106	1	5080-2552	PRGMD-ROM 1818-5681		
U106a		1818-5681	IC 512K-BIT OTP 120-NS CMOS	M27C512-10C6	STMICROELECTRONICS
C126, C127	2	0160-5959	CAP-FXD 33pF +-5pct 50 V CER C0G	08055A330JAT A C0805C330J5GAC C2012COG1H330J GRM2165C1H330JD01D	AVX KEMET ELECTRONICS TDK MURATA MANUFACTURING
R119	1	0699-1327	RESISTOR 1M +-1pct .125W TKF TC=0+-100	CRCW12061M00FKE_ RK73H2BT_1004F MCR18__F1004 232272461005L	VISHAY KOA ROHM YAGEO
U114	1	1821-1479	IC 16-BIT MCU 16-MHZ CMOS 68-PLCC	C	INTEL
R108, R137, R144	3	0699-1415	RESISTOR 100 +-1pct .125W TKF TC=0+-100	CRCW1206100RFKE_ RK73H2BT_1000F MCR18__F1000 232272461001L	VISHAY KOA ROHM YAGEO
R103	1	0699-1391	RESISTOR 10K +-1pct .125W TKF TC=0+-100	CRCW120610K0FKE_ RK73H2BT_1002F MCR18__F1002 232272461003L	VISHAY KOA ROHM YAGEO
U118	1	1820-4185	IC INTERFACE DRVR BIPOLAR LINE HIGH	DS3658N-NOPB	NATIONAL SEMICONDUCTOR

5060-3399 GPIB Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C138	1	0160-5945	CAP-FXD 0.01uF +-10pct 50 V CER X7R	08055C103KAT A 223858016627 C0805C103K5RAC C2012X7R1H103K GRM216R71H103KA01J VJ0805Y103KXAMT	AVX YAGEO KEMET ELECTRONICS TDK MURATA MANUFACTURING VISHAY
U122	1	1820-6814	IC INTERFACE XCVR BIPOLAR INSTRUMENT BUS	SN75ALS161DW	TEXAS INSTRUMENTS
C107, C108	2	0160-5961	CAP-FXD 22pF +-5pct 50 V CER C0G	08055A220JAT A C0805C220J5GAC C2012COG1H220J GRM2165C1H220JD01D VJ0805A220JXAMT	AVX KEMET ELECTRONICS TDK MURATA MANUFACTURING VISHAY
R143	1	0699-1330	RESISTOR 100K +-1pct .125W TKF TC=0+-100	CRCW1206100KFKE_ RK73H2BT_1003F MCR18__F1003 232272461004L	VISHAY KOA ROHM YAGEO
R104, R111, R114, R120, R121, R122, R130, R131, R132, R133, R135, R136, R139, R140, R141, R142, R145	17	0699-1384	RESISTOR 4.64K +-1pct .125W TKF TC=0+-100	CRCW12064K64FKE_ RK73H2BT_4641F MCR18__F4641 232272464642L	VISHAY KOA ROHM YAGEO
U121	1	1820-0430	IC PWR MGT-V-REG-FXD-POS 4.8/5.2V	LM309K STEEL-NOPB	NATIONAL SEMICONDUCTOR
W101	1	1258-0209	JUMPER-REMOVABLE 2 POSITION; .250 IN	68786-202LF 382811-6	FCI FRAMATOME BERG TYCO ELECTRONICS AMP
U101	1	1826-2801	IC PWR MGT-OV-V-SEN 8 PINS P-SOIC PKG	MC3423D__G	ON SEMICONDUCTOR
	0.0	5080-2518	IC-GPIB,CHIP NJD		
C136	1	0160-5955	CAP-FXD 68pF +-5pct 50 V CER C0G	08055A680JATRA C0805C680J5GAC C2012COG1H680J GRM2165C1H680JD65L	AVX KEMET ELECTRONICS TDK MURATA MANUFACTURING
P101	1	1251-4245	CONN-HDR VERT 2-PIN 3.96MM 1-ROW	640388-2 3160-8-202-22W	TYCO ELECTRONICS AMP METHODE ELECTRONICS
D115, D116	2	1901-1332	DIODE-PWR-S 40V 1A D0-214AA	SK14 SS24 STPS140U MBRS140T3G	MICROSEMI VISHAY STMICROELECTRONICS ON SEMICONDUCTOR
U110, U111	2	1990-0444	OPTO-ISOLATOR LED-PDIO/XSTR IF=25MA-MAX	6N136-000E	AVAGO TECHNOLOGIES

5060-3399 GPIB Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
J101	1	1252-2161	CONN-RECT MICRORBN 24-CKT 24-CONT	5554923-2	TYCO ELECTRONICS AMP
C122	1	0180-4606	CAP-FXD +-20pct 25 V AL-ELCTLT	82D103M025KB2B	NIPPON CHEMI-CON
U113	1	1990-1074	S1C-LTB	4N35-M	FAIRCHILD SEMICONDUCTOR
D119, D120, VR101	3	1902-1634	DIODE-ZNR 18V 5pct PD=1.5W IR=5UA	1SMB5931BT3G SMZJ3795B	ON SEMICONDUCTOR VISHAY
U123	1	1820-4291	IC GATE TTL/ALS NAND QUAD 2-INP	DM74ALS00AMX SN74ALS00AD	FAIRCHILD SEMICONDUCTOR TEXAS INSTRUMENTS
R107, R109, R123	3	0699-1431	RESISTOR 464 +-1pct .125W TKF TC=0+-100	CRCW1206464RFKE_ RK73H2BT_4640F MCR18__F4640 232272464641	VISHAY KOA ROHM YAGEO
R118	1	0699-1318	RESISTOR-FXD 1K OHM +-1PCT .25W TKF TC 0+-	RK73H2BT_1001F 232272461002L CRCW12061K00FKE_ MCR18__F1001	KOA YAGEO VISHAY ROHM
R134, R138	2	0699-1432	RESISTOR 511 +-1pct .125W TKF TC=0+-100	CRCW1206511RFKE_ RK73H2BT_5110F MCR18__F5110 232272465111L	VISHAY KOA ROHM YAGEO
U112	1	1820-7680	IC ASYNCHRO COMMUNICATIONS INTFC ADAPTER		
J106	1	1251-4926	CONN-HDR VERT 8-PIN 2.54MM 2-ROW	67996-108HLF HTSW-104-07-SM-D	FCI FRAMATOME BERG SAMTEC
D107, D108, D109, D110	4	1901-1375	DIODE-PWR RECT 400V 3A 75NS	MURS340T3G	ON SEMICONDUCTOR
VR102	1	1902-1802	DIODE-ZNR 11V PD=1.5W IR=1UA	1SMB5926B G	ON SEMICONDUCTOR
C106	1	0180-3975	CAP-FXD 2.2uF +-20PCT 20V TA	TAJB225M020 293D225X0020B2E3 49MC225B020M0AS ESVB21D225M T491B225M020AS	AVX VISHAY VISHAY BC COMPONENTS NEC ELECTRONICS KEMET ELECTRONICS
U120		5080-2550	PRGMD-GAL,GPIB		
U117	1	1822-0639	IC GPIB CONTROLLER	14063-501	AMIS SEMICONDUCTOR

5060-3399 GPIB Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C142	1	0160-5950	CAP-FXD 470pF +-5pct 50 V CER C0G	08055A471JAT A C0805C471J5GAC C2012COG1H471J GRM2165C1H471JA01D VJ0805A471JXAMT	AVX KEMET ELECTRONICS TDK MURATA MANUFACTURING VISHAY
TB101	1	0360-2312	TERMINAL BLOCK 4-TERM .039 IN SQUARE	ELFH04110 MSTBA 2.5/4-G- BLK(176064) 871904	PCD PHOENIX CONTACT & CO AXSYS TECHNOLOGIES
U119		5080-2274	PRGM-GAL, GPIB		
U108	1	1818-4698	IC 64K-BIT SRAM 15-NS CMOS	CY7C185-15VI	CYPRESS SEMICONDUCTOR

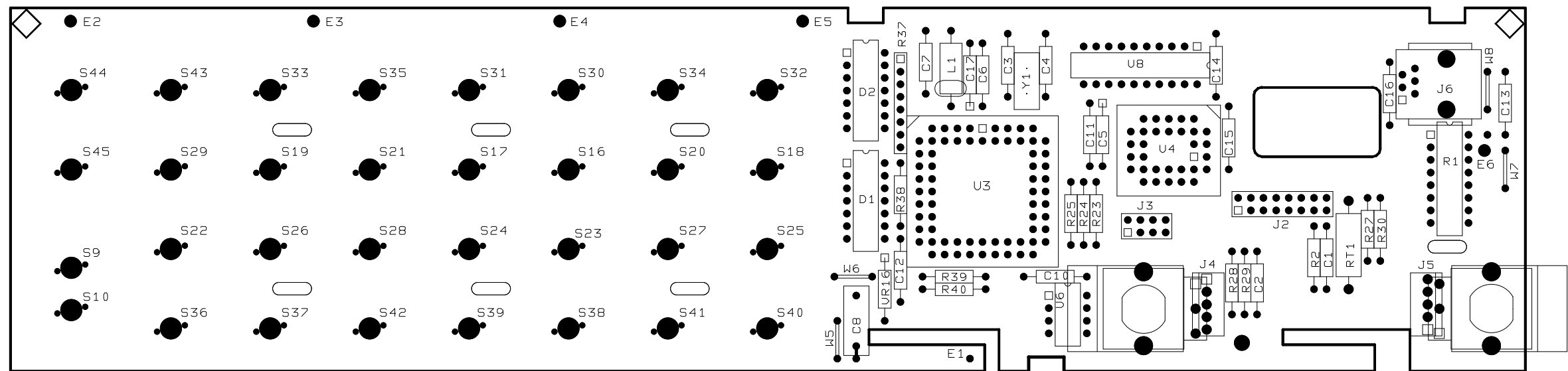
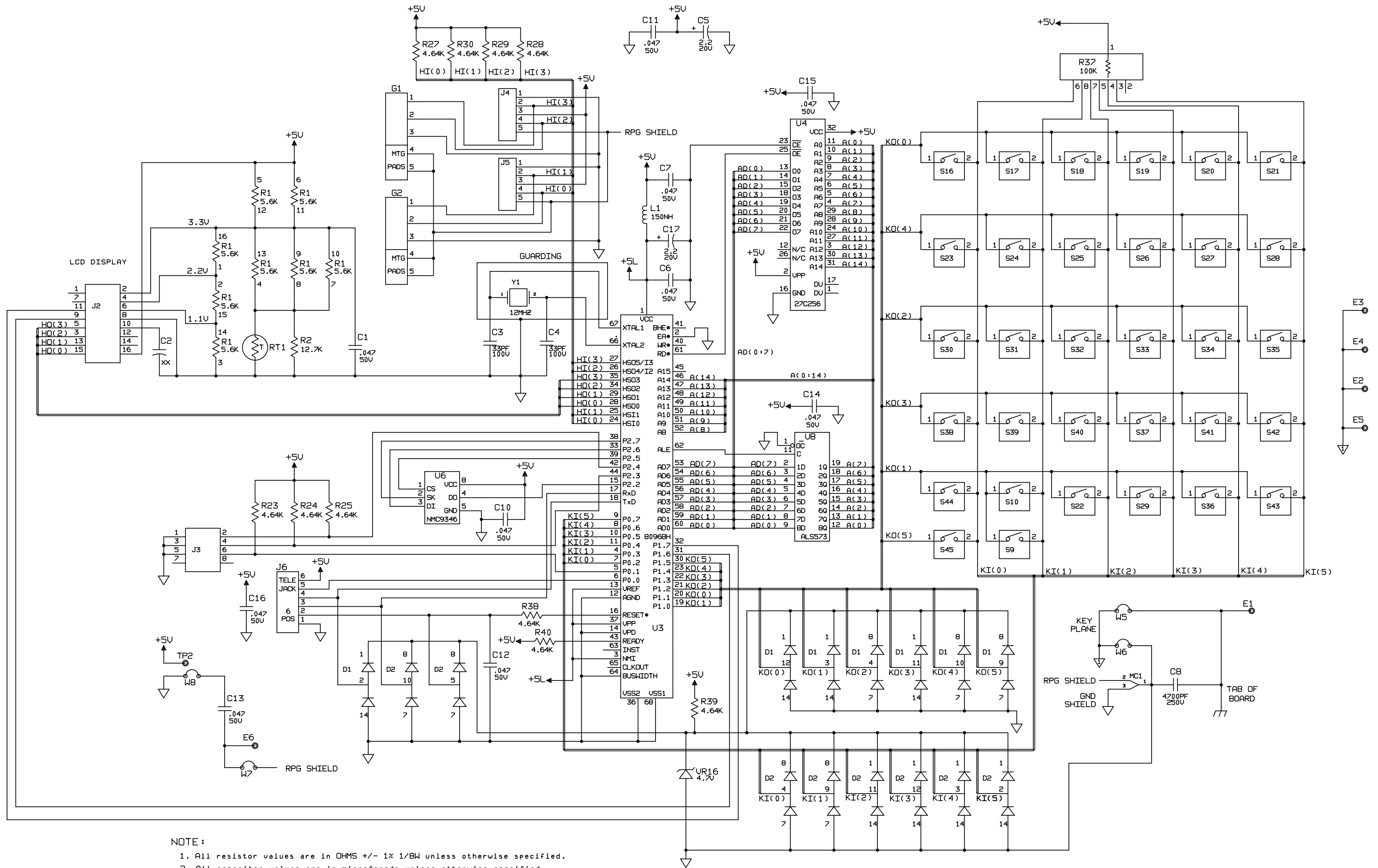


Figure 6-4. Front Panel Board Assembly Diagram (sheet 1 of 2)



NOTE :

1. All resistor values are in OHMS +/- 1% 1/BW unless otherwise specified.
2. All capacitor values are in microfarads unless otherwise specified.

Figure 6-4. Front Panel Board Schematic Diagram (sheet 2 of 2)

5063-3407 Front Panel Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
C001, 6, 7, 10-12, 14-16	9	0160-5422	CAP-FXD 0.047uF +-20pct 50 V CER X7R	C420C473M5R5CA DA13X7R1H473M SA205C473MAAH	KEMET ELECTRONICS TDK AVX
C002	1	0160-4808	CAP-FXD 470pF +-5pct 100 V CER C0G	C410C471J1G5CA SA101A471JAAH SA101A471JAAH	KEMET ELECTRONICS AVX KYOCERA
C004	1	0160-4787	CAP-FXD 22pF +-5pct 100 V CER C0G	C410C220J1G5CA SA101A220JAA SA101A220JAA	KEMET ELECTRONICS AVX KYOCERA
C005, 17	2	0180-0155	CAP-FXD 2.2uF +-20pct 20 V TA	T110A225M020AS TAAA2R2M20RX	KEMET ELECTRONICS STC
C008	1	0160-4835	CAP-FXD 0.1uF +-10pct 50 V CER X7R	C420C104K5R5CA SA105C104KAAH SA105C104KAAH	KEMET ELECTRONICS AVX KYOCERA
J002	1	1251-4927	CONN-HDR VERT 16-PIN 2.54 MM 2 ROW	67997-116HLF	FCI FRAMATOME BERG
J003	1	1251-4926	CONN-HDR VERT 8-PIN 2.54MM 2-ROW	67996-108HLF HTSW-104-07-SM-D	FCI FRAMATOME BERG SAMTEC
J003	1	1258-0209	JUMPER-REMOVABLE 2 POSITION; .250 IN	68786-202LF 382811-6	FCI FRAMATOME BERG TYCO ELECTRONICS AMP
J006, PRESS FLAT TO BRD	1	1251-8184	MODULAR PHONE RCPT PERPENDICULAR MOUN	5520258-3	TYCO ELECTRONICS AMP
L001	1	9140-0158	INDUCTOR RF-CH-MLD 1uH +-10pct	1025-20 10M101K IM-2 1UH 10%	AMERICAN PRECISION INDUSTRIES GOWANDA ELECTRONICS VISHAY
R001	1	1810-0560	NET-RES 8 5.6K OHM 16-PIN	4116R-0B0-562 MDP1603-5601F	BOURNS VISHAY
R002	1	0698-3359	RESISTOR 12.7K +-1pct .125W TF TC=0+-100	5053HD12K70F CMF-551272FT-1 NK4H.125W1%+/- 100PPM1272	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS

5063-3407 Front Panel Board Assembly Parts List

Reference Designator	QTY	Agilent P/N	Description	MPN	Manufacturer
R023-25, 27-30, 39, 40	9	0698-3155	RESISTOR 4.64K +-1pct .125W TF TC=0+-100	5053HD4K640F CMF-554641FT-1 NK4H.125W1%+/- 100PPM4641	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
R037, POLARITY	1	1810-0371	NET-RES 7 100.0K OHM 8-PIN	750-81 MSP08A01-104G 4308R-94Y-104LF	TT ELECTRONICS VISHAY BOURNS
R038	1	0698-3441	RESISTOR 215 +-1pct .125W TF TC=0+-100	5053HD215R0F CMF-552150FT-1 NK4H.125W1%+/- 100PPM215R0	VISHAY BC COMPONENTS VISHAY E-SIL COMPONENTS
REF U003, POLARITY	1	1200-1274	SOCKET-IC-PLCC 68-CONT SQUARE DIP-SLDR	1-822473-6 PLCC68PT2	TYCO ELECTRONICS AMP FCI FRAMATOME BERG
REF U004, POLARITY	1	1200-1417	SOCKET-IC-PLCC 32-CONT RECT DIP-SLDR	1-822473-3	TYCO ELECTRONICS AMP
RT001	1	0837-0412	THERMISTOR TUB WITH AXL LEADS 10K-OHM	MSB103K	RTI ELECTRONICS
U003	1	1821-1479	IC 16-BIT MCU 16-MHZ CMOS 68-PLCC	C	INTEL
U004	1	5080-2466	PRGMD ROM, FP 1818-4424		
U004a		1818-4424	IC 256K-BIT OTP EPROM 70-NS CMOS	M27C256B-70C6	STMICROELECTRONICS
U006	1	1818-4792	IC 2K-BIT EEPROM 500-NS CMOS 8-P-DIP		
U008	1	1820-2724	IC LCH TTL/ALS TRANSPARENT OCTL	DM74ALS573BN SN74ALS573CN	FAIRCHILD SEMICONDUCTOR TEXAS INSTRUMENTS
VR016	1	1902-0950	DIODE-ZNR 4.7V 5pct DO-35 PD=.4W TC=+.025pct	SZ30035-8RL 1N5230B	TAK CHEONG ELECTRONICS MICRO COMMERCIAL COMPONENTS
W005	1	0811-3590	RESISTOR 0 CWM	UN1058	VESTAL ELECTRONIC DEVICES
Y001	1	0410-2159	CRYSTAL-QUARTZ 10.0 MHZ HC49/S-HLDR	FOX5/100MS	FOX ELECTRONICS
	2	0960-0912	ENCODER-ROTARY	EC16B2410408 REB1619X7PVB25FHIN A1224E	ALPS ELECTRIC TEIKOKU TSUSHIN KOGYO
REF Y001	1	0340-1277	INSULATOR-CAP PLASTIC		

Manual Part Number: 5989-6872EN
Printed in U.S.A. May 2007
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