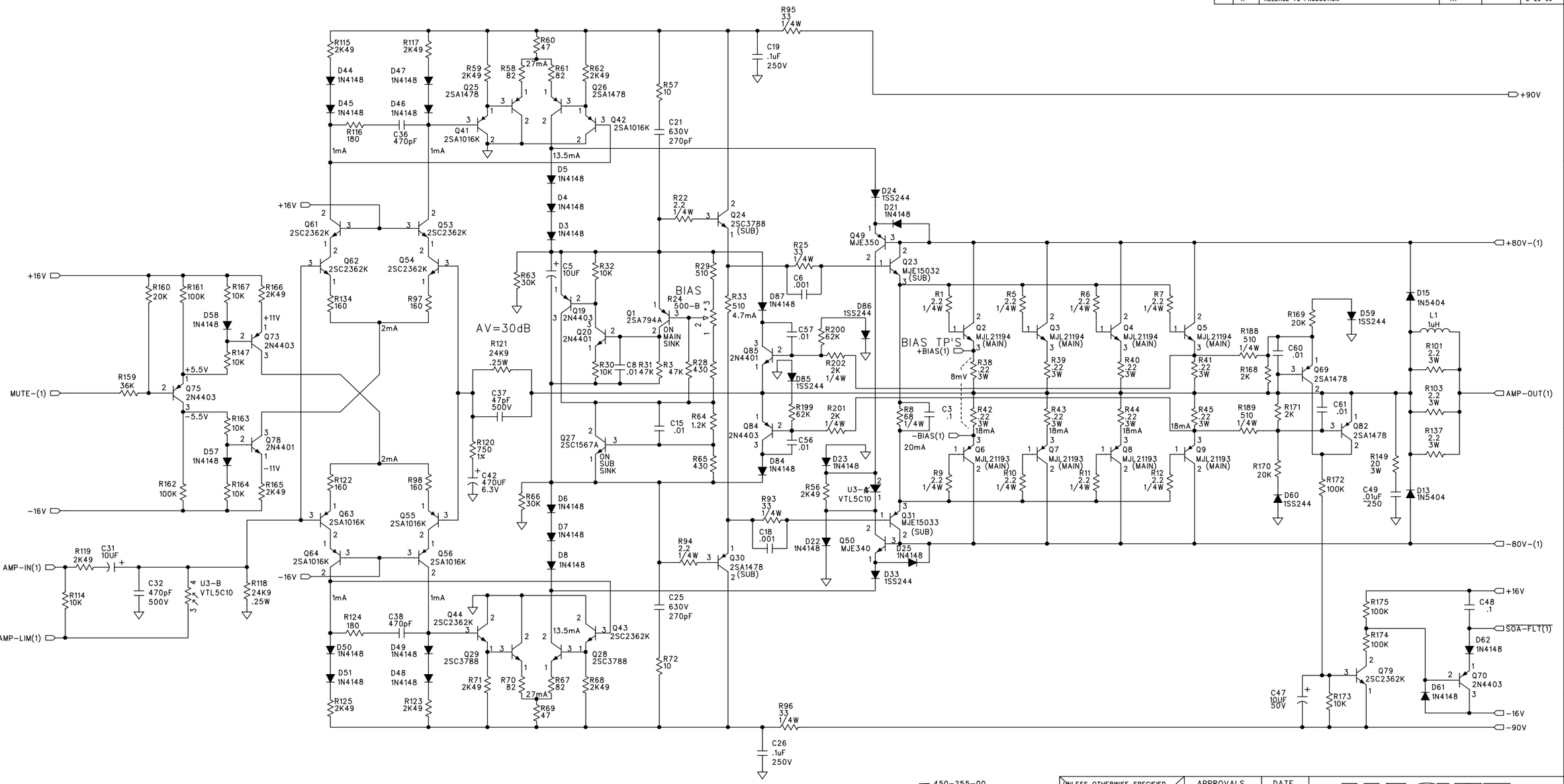
DWG.	NO.	SHT	REV:
	990-255-00	1	A

REV:	ECO#	DESCRIPTION	REV. BY:	APP. BY:	DATE
	1	MADE FROM 990-081-00 W/ DESIGNS CHANGES. INCORP ECOS: 1092,1098, 1142, 1170, 1203, 104, 1359, 1400, 1433 2118, 2134	WGW		2-12-99
	A	RELEASE TO PRODUCTION	TH		3-26-99



450-255-00 PCB, MAIN M-1400-S2

400-060-00 FUSE CLIP PC MT 5mm DIA

400-129-00 FUSE CLIP PC MT .25" DIA

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: DECIMALS: ANGLES: ±NA .XX ±.01 ±NA .XXX ±.005	APPROVALS	DATE
	DRAWN: Cam Jones	1-22-99
	CHECKED:	
	NP ENG:	
MATERIAL: SEE NOTES	MATERIAL:	
FINISH: SEE NOTES	MFG:	
	MFG ENG:	
DO NOT SCALE DRAWING	ISSUED:	

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Mackie Designs Inc. Woodinville, Wa.

SCHEM, M-1400, M-1400i

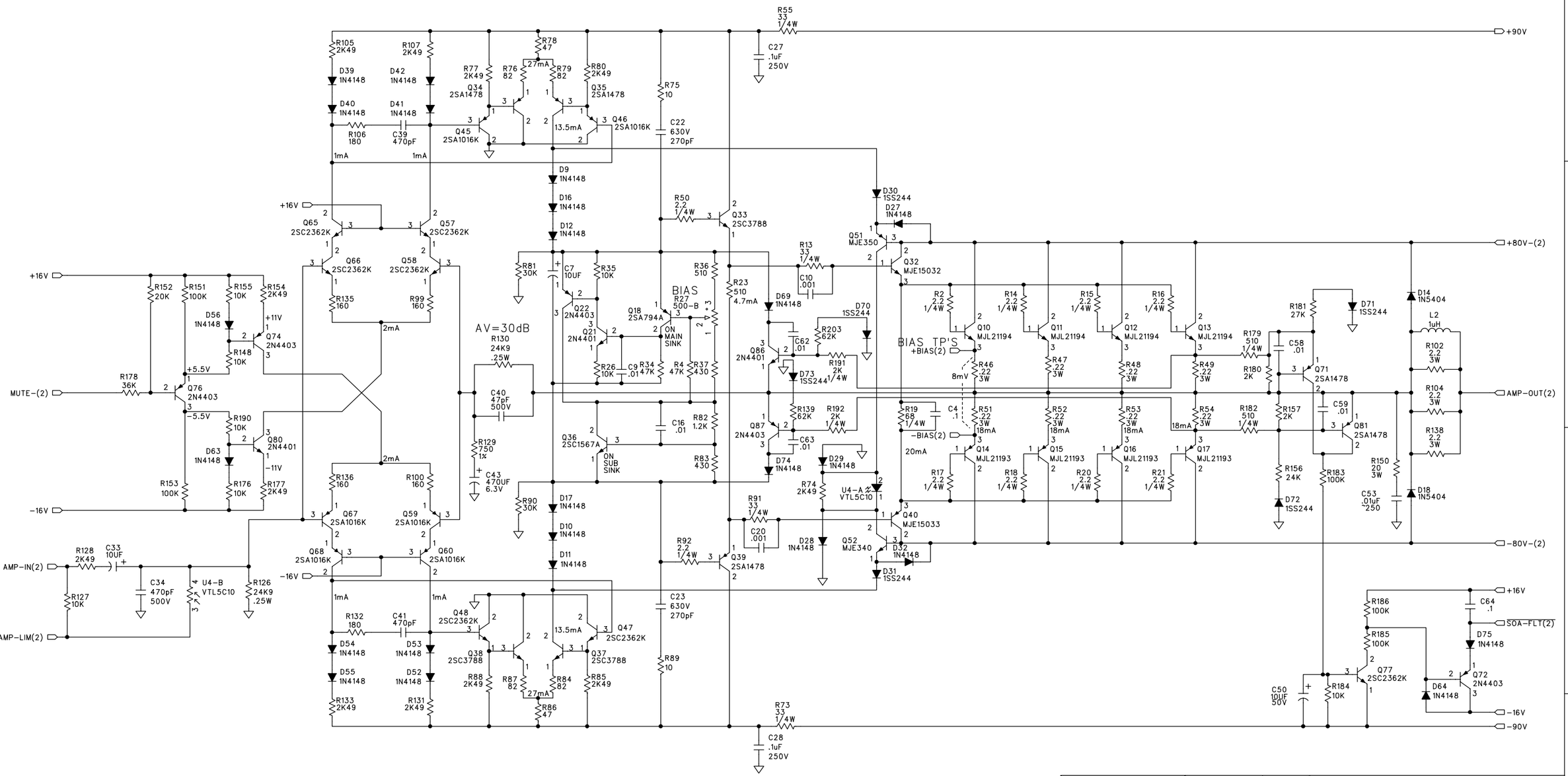
CH-1 MAIN AMP

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-255-00	A
DWG FILE:		SHEET 1 OF 3	

BACK

DWG. NO.	SHT	REV:
990-255-00	2	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: DECIMALS: ANGLES: ±NA .XX ±.01 ±NA .XXX ±.005	APPROVALS	DATE
MATERIAL: SEE NOTES	DRAWN:	
FINISH: SEE NOTES	CHECKED:	
DO NOT SCALE DRAWING	NP ENG:	
	MATERIAL:	
	MFG:	
	MFG ENG:	
	ISSUED:	

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Mackie Designs Inc. Woodinville, Wa.

SCHEM, M-1400, M-1400i
CH-2 MAIN AMP

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-255-00	A
DWG FILE:		SHEET 2 OF 3	

BACK

DWG. NO.	SHT	REV:
990-255-00	3	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE

PRIMARY FUSE VALUES:
FOR 100VAC: 20A SB 250V (510-017-00)
FOR 120VAC: 20A SB 250V (510-017-00)
FOR 240VAC: 8A SB 250V (510-023-00)

FROM POWER CORD

F1

J5 (BRN) (HOT)
J4 (BLU) (NEUTRAL)
J38 040-135-00 CABLE ASSY, 18AWG, GN/YW, 4" (TO SAFETY LUG)

C54 .01uF ~250
C84 1000pF ~250
C77 1000pF ~250

J32 (VIO)
J31 (BLU)
J34 (BLU)
J35 (BRN)
J33 (BRN)
J36 (BRN)

N.O.

J1-6 (YEL)
J1-3 (RED)
J1-5 (BLK)
J1-1 (RED)
J1-4 (YEL)
J1-2 (VIO)

C30 .01
C2 .01
C1 .01
C29 .01

D20 1N4004
D26 1N4004
D1 SF304
D2 SF304A
MOUNTED TO MAIN SINK
D35 1N4004
D19 1N4004

C11 1000UF 25V
C12 80V
C13 80V
C14 1000UF 25V

F2 F-10A
F3 F-10A
F4 F-10A
F5 F-10A

D34 1N4004
D36 1N4004

+90V
+80V-(1)
+80V-(2)
+80V
-80V
-80V-(1)
-80V-(2)
-90V

C45 80V
C46 80V

J30 JUMPER
J26 TO INPUT BOARD (HIGH CURRENT SHUNT)

NOTE:
C11, C12, C15, C16 ARE
10,000uF 80V (220-033-00) IN M-1400i
12,000uF 80V (220-035-00) IN M-1400

AMPLIFIER OUTPUT CONNECTORS
(NOTE THAT SPEAKON'S [J42 & J46] ARE USED ON M-1400 AND 1/4" PHONE [J43 & J45 ON M-1400i)

J43 J44 J45 J42 J46

PRODUCTION TEST JUMPER TEMP. SIM.

69-C J20-1
88-C J20-2
J20-3

+16V
R158 9.1K
.88V
R113 120
.69V
R187 430

AMP-OUT(1)
SOA-FLT(1)
AMP-OUT(2)
SOA-FLT(2)

D77 1N4148
D76 1N4148

TEMP SENSOR MOUNTED TO MAIN HEATSINK

U1 LM35DZ
+VS
VOUT
GND
R146 2K
T-SENS
C44 10UF
10mV/DEG C

R140 6BK
R141 390K
R145 36K
OVERTEMP
.8V
R142 3K3
U5-A LM339
OVERTEMP (MUTE AT 80 DEG C. UN-MUTE AT 55 DEG C.)

D81 1N4148
D83 1N4148
D80 1N4148
R193 3K3
R196 360K
R197 36K
C65 10UF
.5V
U5-C LM339
TURN-ON DELAY MUTING (4 SEC)

R194 3K3
R195 360K
R198 36K
D82 1N4148
D79 1N4148
C55 10UF
D78 1N4148
D67 1N4148
D65 1N4148
D66 1N4148
U5-D LM339
TURN-ON DELAY MUTING (4 SEC)

R217 4K7 .25W
R216 4K7 .25W
Q93 MBS4992
R208 47
C78 100uF 10V
R209 1K
C71 .1
Q83 MAC224A4

R218 4K7 .25W
R219 4K7 .25W
Q95 MBS4992
R213 47
C80 100uF 10V
R212 1K
C72 .1
Q88 MAC224A4

+16V
DC-FAULT TEST JUMPERS
J37-1 ADJUST 1KHz SIN INPUT FOR 10V AT BOTH AMPLIFIER OUTPUTS.
J37-2 SHORT PIN 1 TO 2 AND VERIFY CHANNEL-1 "SHORT" LED FLICKERS.
J37-3 SHORT PIN 2 TO 3 AND VERIFY CHANNEL-2 "SHORT" LED FLICKERS.

AMP-IN(1) J17
AMP-IN(2) J12
AMP-LIM(1) J16
AMP-LIM(2) J11
+BIAS(1) J2-1
-BIAS(1) J2-2
+BIAS(2) J3-1
-BIAS(2) J3-2
AMP-OUT(1) J24
AMP-OUT(2) J19
MUTE-(1) J15
MUTE-(2) J10
SOA-FLT(1) J23
SOA-FLT(2) J18
OVERTEMP J13
T-SENS J14
F-SENS J40

AMPLIFIER TEST POINTS

+90V J8
+80V J6
+16V J21
J29
J25
-16V J22
-80V J7
-90V J9

J27-1 AMP-IN(1)
J27-2 AMP-IN(2)
J27-3
J27-4
J27-5 AMP-LIM(1)
J27-6 AMP-LIM(2)
J27-7 +16V
J27-8 -16V
J27-9
J27-10
J27-11 OVERTEMP
J27-12
J27-13 +80V
J27-14
J27-15 MUTE-(1)
J27-16 MUTE-(2)
J27-17 SOA-FLT(1)
J27-18 SOA-FLT(2)
J27-19 AMP-OUT(1)
J27-20 AMP-OUT(2)

TO INPUT BOARD

D38 1SS244
D37 1SS244
R108 47K
D43 1N4148
C35 10UF
R111 100K

R110 20K
R112 36K
U2-C LM339
PROGRAM DETECTOR
PROG-DET
5V
R144 8K2
.6V
R143 1K1
U5-B LM339
60 DEG C DETECTOR
60-C

D89 1SS244
R210 100K
C79 0.47UF 100V
R211 10K
R234 75K
D68 1N4148
R226 36K
Q94 2N4401
D90 1N4148

MUTE-(1)
MUTE-(2)

SUPPLY SUB-BOARD | MAIN BOARD

J28-1 J39-1 +80V
J28-5 J39-5
J28-9 J39-9 -80V
J28-2 J39-2
J28-6 J39-6
J28-10 J39-10 FGND

D96 1N4004
R224 3.3K 3W
R205 10 1/4W F
C66 .01
Q91 2SD1264A ON SHROUD
C69 10UF
C70 10UF
D88 1N4745 16V 1W
D97 1N4745 16V 1W
D91 1N4745 16V 1W
D94 1N4745 16V 1W
C67 10UF
C68 10UF
Q89 2SB940A ON SHROUD
C73 .01
R204 10 1/4W F
D95 1N4004
R206 3.3K 3W
R222 10K
R223 10K

R230 10K
U6-B LM339
U6-E LM339
V+
V-
FGND
C82 .1
C81 .1
J39-3 J28-3 +16V
J39-4 J28-4
J39-7 J28-7 -16V
J39-8 J28-8
FAN VOLTAGES: FAST = 28V SLOW = 14V
R225 10K 1W
R232 10K
C75 .1
Q90 2SD1264A ON SHROUD
R228 360K
R214 3K3
U6-A LM339
R229 510
C74 47UF 25V
D92 1N4148
R235 20K
R215 3K3
U6-D LM339
R220 10K
Q92 2SC3788
C83 100UF 25V
R233 10K
R221 13K
R227 10K
R231 10K
D99 1N4148
D93 1N4148
R207 82 3W
F-SENS
J41-1
C76 1,000UF 35V
J41-2
TO FAN (770-007-00) PANASONIC FBA08A24H1T

C17 .01
C52 .01
C24 .01
C51 .01
U2-E LM339
U5-E LM339
U2-A LM339
U2-B LM339

AMP-OUT(1)
AMP-OUT(2)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS: DECIMALS: ANGLES:
±NA .XX ±.01 ±NA
.XXX ±.005
MATERIAL: SEE NOTES
FINISH: SEE NOTES
DO NOT SCALE DRAWING

APPROVALS	DATE
DRAWN:	
CHECKED:	
NP ENG:	
MATERIAL:	
MFG:	
MFG ENG:	
ISSUED:	

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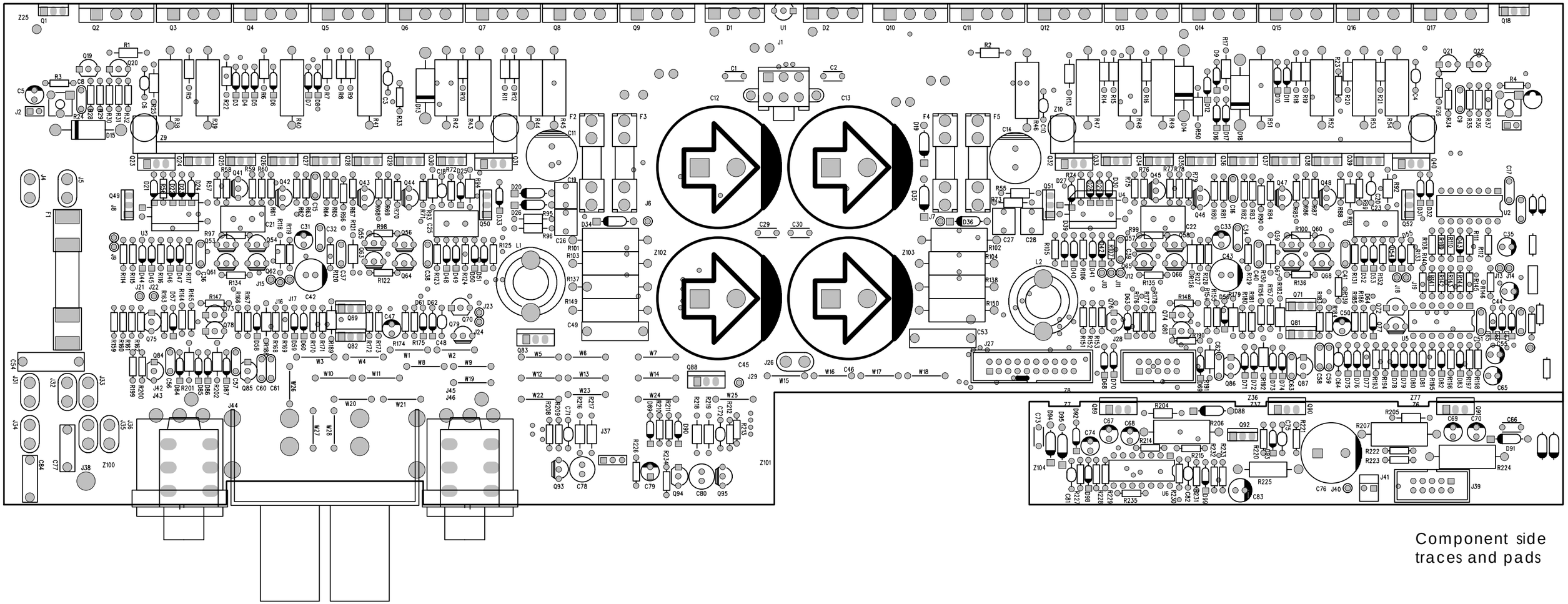
SCHEM, M-1400, M-1400i
SUPPLY, HOUSEKEEPING
AND I/O

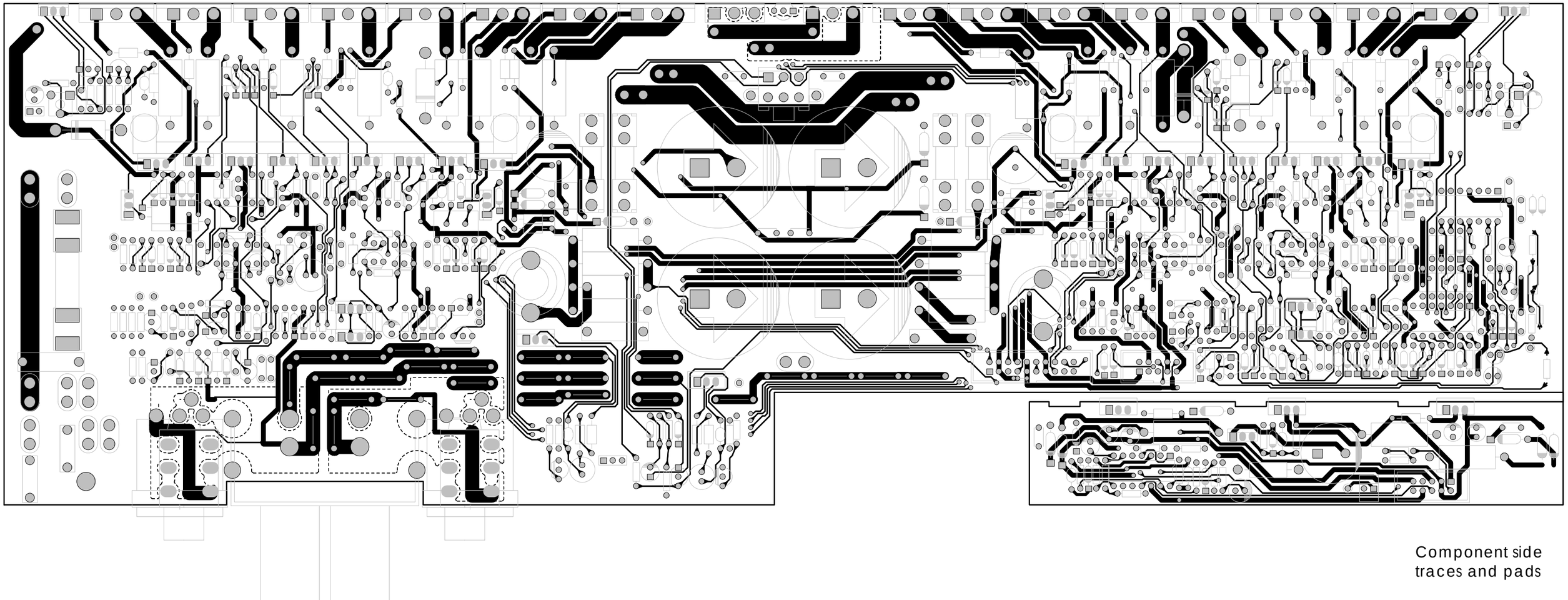
SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-255-00	A

DWG FILE: SHEET 3 OF 3

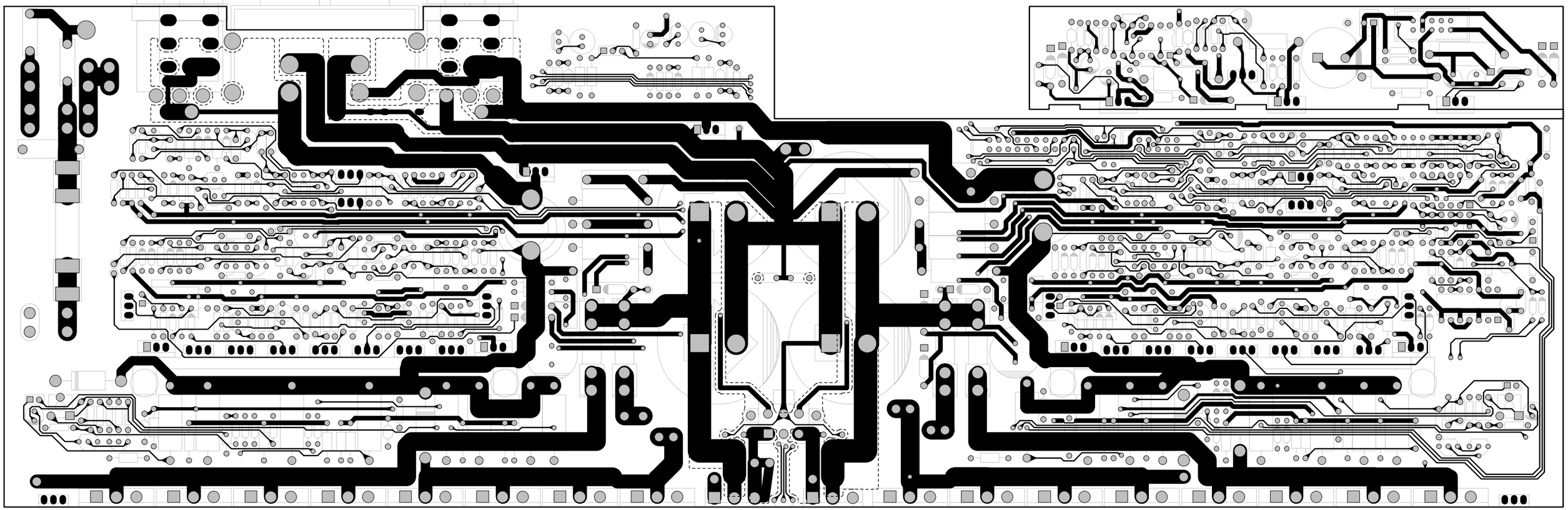
BACK



Component side
traces and pads



Component side
traces and pads

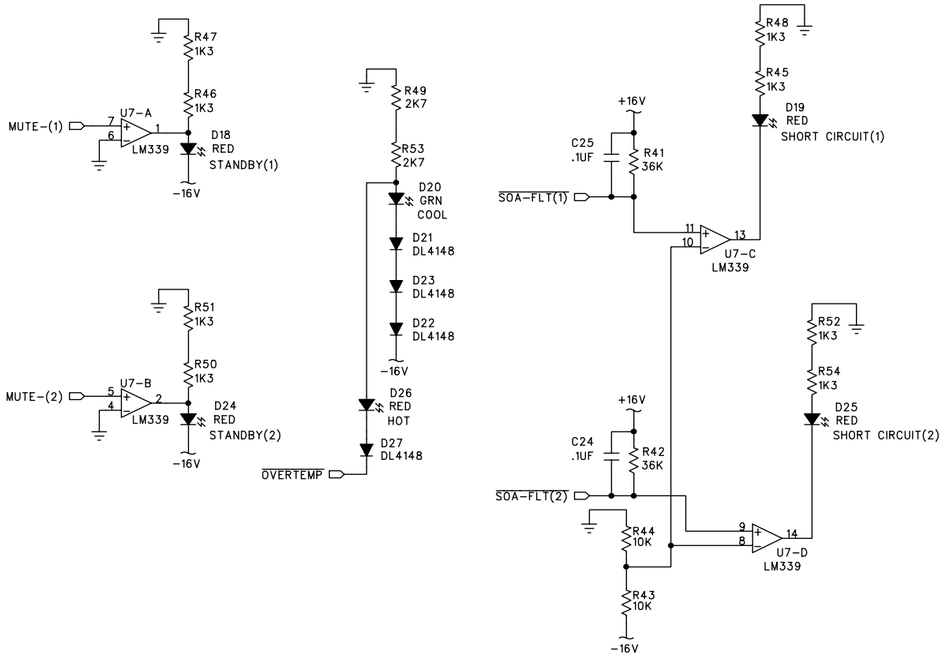


Solder side
traces and pads

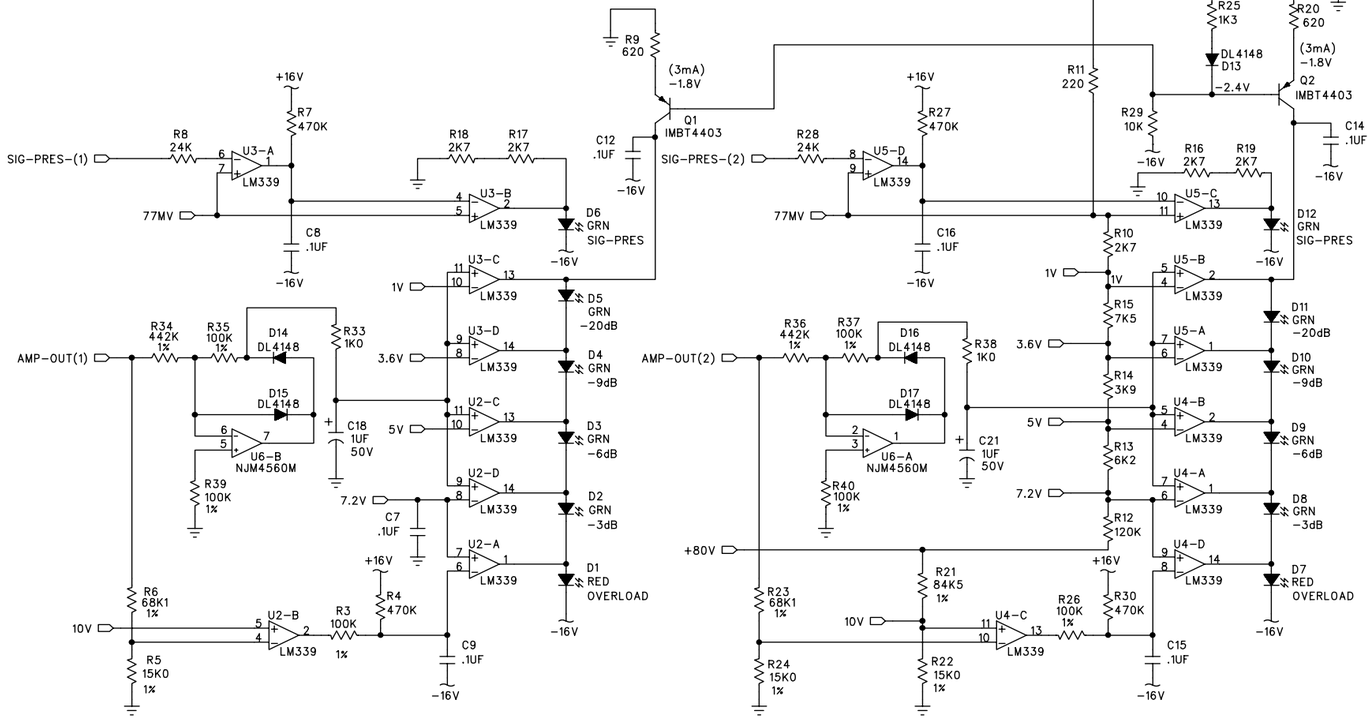
DWG. NO.	SHT	REV:
990-254-00	1	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	1	MADE FROM 990-080 W/DESIGN CHANGES. INCORP ECOS: 1116, 1118, 1121, 1137, 1327, 1359 AND 2100.	TH		2-10-99
	A	RELEASE TO PRODUCTION	TH		3-26-99

AMPLIFIER STATUS INDICATORS

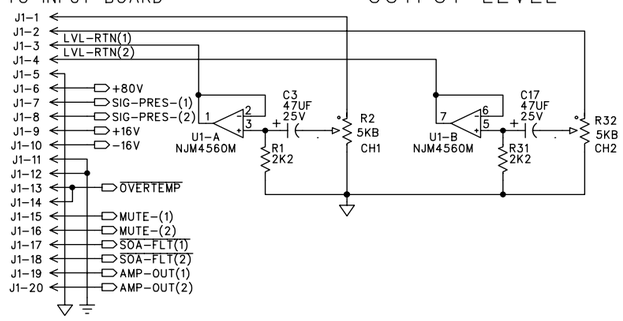


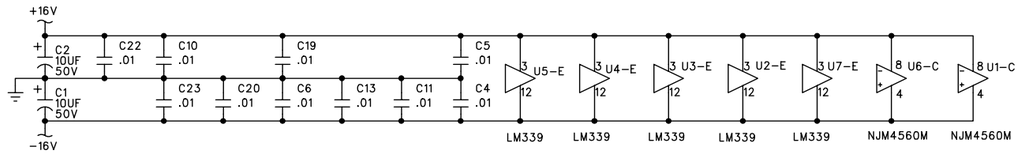
CH1 METER



CH2 METER

OUTPUT LEVEL





706-033-08
STDF SWAGE NO.4 X .665

450-254-00
PCB, DISPLAY, M1400 S2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA	APPROVALS	DATE
	DRAWN: trh	2-9-99
	CHECKED:	
	NP ENG:	
MATERIAL: SEE NOTES	MATERIAL:	
FINISH: SEE NOTES	MFG:	
DO NOT SCALE DRAWING	MFG ENG:	
	ISSUED:	

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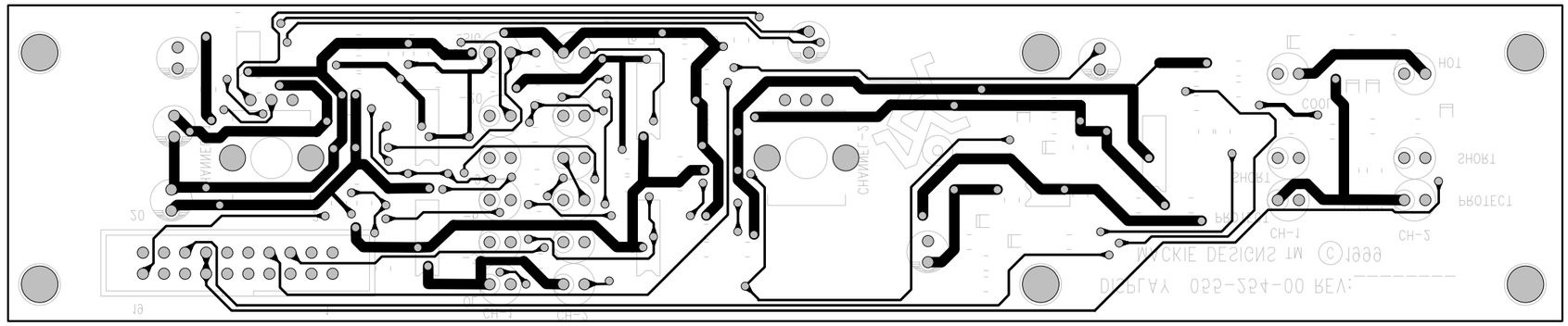
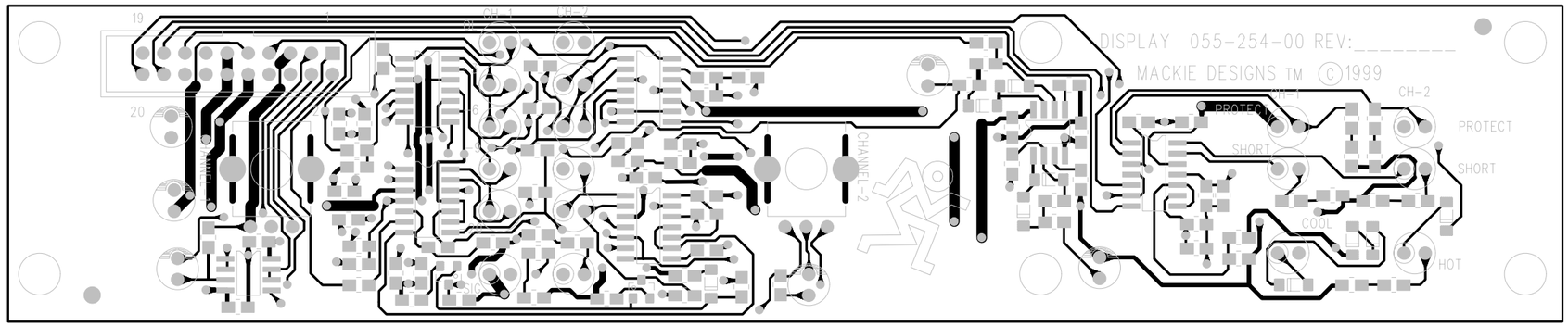
SCHEMATIC, DISPLAY, M1400 S2

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-254-00	A
DWG FILE:		SHEET 1 OF 1	

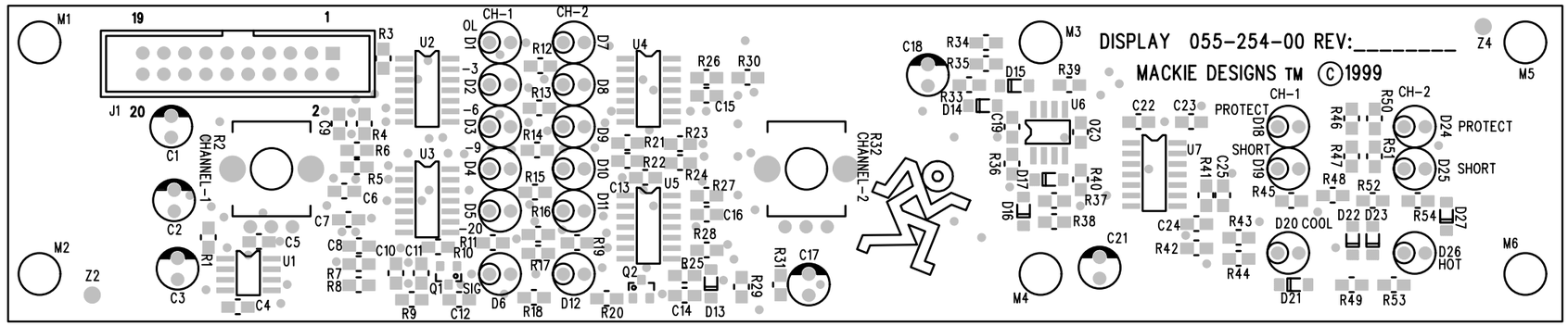
BACK



Solder side
traces and pads



Component side
traces and pads



Component side

DWG. NO.	SHT	REV:
990-253-00	1	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	1	MADE FROM 450-079-00 W/DESIGN CHANGES. INCORP ECOS: 1002, 1086, 1094, 1100, 1105, 1108, 1112, 1117, 1119 1120, 1133, 1134, 1138, 1144, 1148, 1149, 1151, 1155, 1156 1165, 1170, 1173, 1186, 1188, 1189, 1215, 1229, 1243, 1293 1336, 1610, 1681, 1950, 1955, 2064	wgw		2-12-99
	A	RELEASE TO PRODUCTION	TH		3-26-99

CHANNEL-1 INPUT

XLR-F J1 · XLR-M J2 · 1/4" TRS J3

R1 2K00 1% · R2 2K00 1% · R3 10K0 1% · R4 10K0 1% · R5 12K1 1% · R6 12K1 1%

C1 220PF · C2 220PF · C3 220PF · C4 47PF · C5 47PF

D1 DL4148 · D2 DL4148 · D3 DL4148 · D4 DL4148 · −16V · +16V

U1-A NJM4560M

CD-EQ DEFEAT/ ACTIVE

SW1-A · SW1-B

R23 1M · C13 .0047 · R20 1K6 · R21 4K7 · 10K C R22 · C21 220PF

U1-B NJM4560M

CD-EQ FREQ (2KHz – 5.7KHz)

C11 .56 · C12 .56 · R13-A 50KC · R13-B 50KC · R17 8K2 · R18 2K4 · R19 1K6

HIGHPASS FILTER (10Hz – 170Hz) (35Hz AT MIDPOINT)

J7 (LAB-REFERENCE) · (NORMAL) · MODE · SIG-PRES-(1)

LIMITER/SUB EQ SWITCH

ON – OFF – SUB-EQ (LIMITER OFF)

SW3-A · SW3-B

SUB-EQ FREQUENCY

65Hz – 130Hz

SUB-EQ LOW PASS FILTER 18dB/OCT BESSEL AT 65Hz

R35 4K7 · R37 4K7 · R38 3K9 · R39 100K · R40 100K · R41 51K · C25 .012 · C23 .47 · C24 .047 · R36 4K7

U2-B NJM4560M · U3-B NJM4560M

SUB-EQ LOW PASS FILTER 18dB/OCT BESSEL AT 130Hz

R44 51K · R42 2K00 1% · R43 51K · R45 27K · C28 .012 · C26 .47 · C27 .047

U3-A NJM4560M

SW4-A · SW4-B

AMP MODE

STEREO – DUAL MONO – BRIDGE

SW5-A · SW5-B · SW5-C · SW5-D

C39 22UF 25V · C40 22UF 25V

LVL-SEND(1) · LVL-SEND(2) · LVL-RTN(2) · AMP-IN(2)

AMP-IN(1) · R46 4K7 · R47 4K7 · U2-A NJM4560M

SOA-FLT(1) · SOA-FLT(2)

CHANNEL-2 INPUT

XLR-F J4 · XLR-M J5 · 1/4" TRS J6

R7 2K00 1% · R8 2K00 1% · R9 10K0 1% · R10 10K0 1% · R11 12K1 1% · R12 12K1 1%

C6 220PF · C7 220PF · C8 220PF · C9 47PF · C10 47PF

D5 DL4148 · D6 DL4148 · D7 DL4148 · D8 DL4148 · −16V · +16V

U4-A NJM4560M

CD-EQ DEFEAT/ ACTIVE

SW2-A · SW2-B

R34 1M · C16 .0047 · R31 1K6 · R32 4K7 · 10K C R33 · C22 220PF

U4-B NJM4560M

CD-EQ FREQ (2KHz – 5.7KHz)

C14 .56 · C15 .56 · R24-A 50KC · R24-B 50KC · R28 8K2 · R29 2K4 · R30 1K6

HIGHPASS FILTER (10Hz – 170Hz) (35Hz AT MIDPOINT)

J8 (LAB-REFERENCE) · (NORMAL) · MODE · SIG-PRES-(2)

TO MAIN BOARD (HIGH CURRENT SHUNT)

J10 040-136-00 DIS 18GA 1007 BLK 5 QDTRM · R54 10 · SHIELD PLATE GROUND Z9

SW3-C · SW3-D

AMP-LIM(1) · AMP-LIM(2)

+16V · −16V

C33 22UF 25V · C34 22UF 25V · C17 .01 · C18 .01 · C29 .01 · C30 .01 · C19 .01 · C20 .01 · C31 .01 · C32 .01

U1-C NJM4560M · U2-C NJM4560M · U3-C NJM4560M · U4-C NJM4560M

TO MAIN BOARD

J11-1	AMP-IN(1)	J11-11	OVERTEMP
J11-2	AMP-IN(2)	J11-12	
J11-3		J11-13	+80V
J11-4		J11-14	
J11-5	AMP-LIM(1)	J11-15	MUTE-(1)
J11-6	AMP-LIM(2)	J11-16	MUTE-(2)
J11-7	+16V	J11-17	SOA-FLT(1)
J11-8	−16V	J11-18	SOA-FLT(2)
J11-9		J11-19	AMP-OUT(1)
J11-10		J11-20	AMP-OUT(2)

TO DISPLAY BOARD

J16-1	LVL-SEND(1)	J16-11	
J16-2	LVL-SEND(2)	J16-12	
J16-3	AMP-IN(1) (LVL-RTN)	J16-13	OVERTEMP
J16-4	LVL-RTN(2)	J16-14	
J16-5		J16-15	MUTE-(1)
J16-6	+80V	J16-16	MUTE-(2)
J16-7	SIG-PRES-(1)	J16-17	SOA-FLT(1)
J16-8	SIG-PRES-(2)	J16-18	SOA-FLT(2)
J16-9	+16V	J16-19	AMP-OUT(1)
J16-10	−16V	J16-20	AMP-OUT(2)

450-253-00 PCB INPUT M-1400-S2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA	APPROVALS	DATE
	DRAWN: Cam Jones	2-5-99
	CHECKED:	
	NP ENG:	
MATERIAL: SEE NOTES	MATERIAL:	
	MFG:	
FINISH: SEE NOTES	MFG ENG:	
DO NOT SCALE DRAWING	ISSUED:	

MACKIE. Mackie Designs Inc. Woodinville, Wa.

SCHEM, M-1400, INPUT BOARD

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-253-00	A

DWG FILE: · SHEET 1 OF 1

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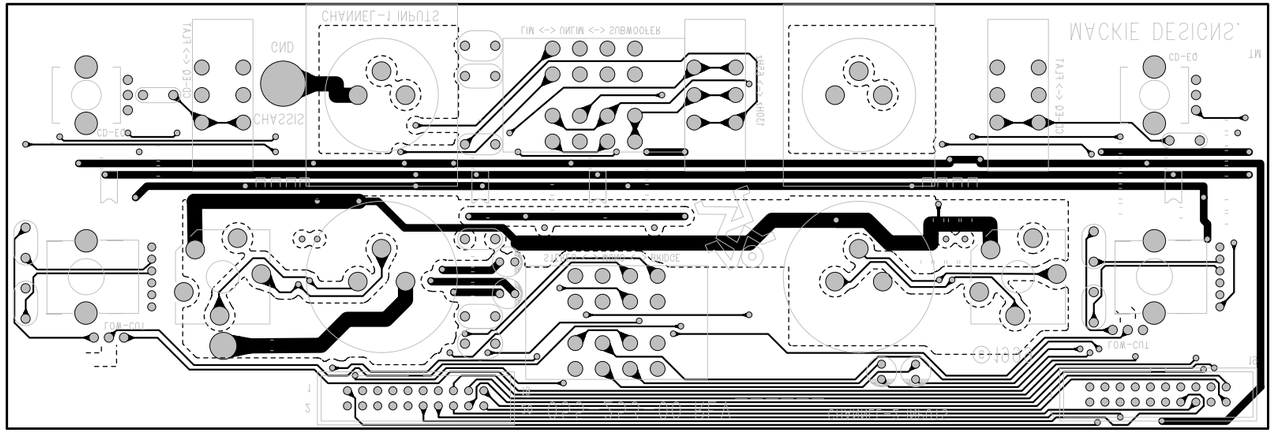
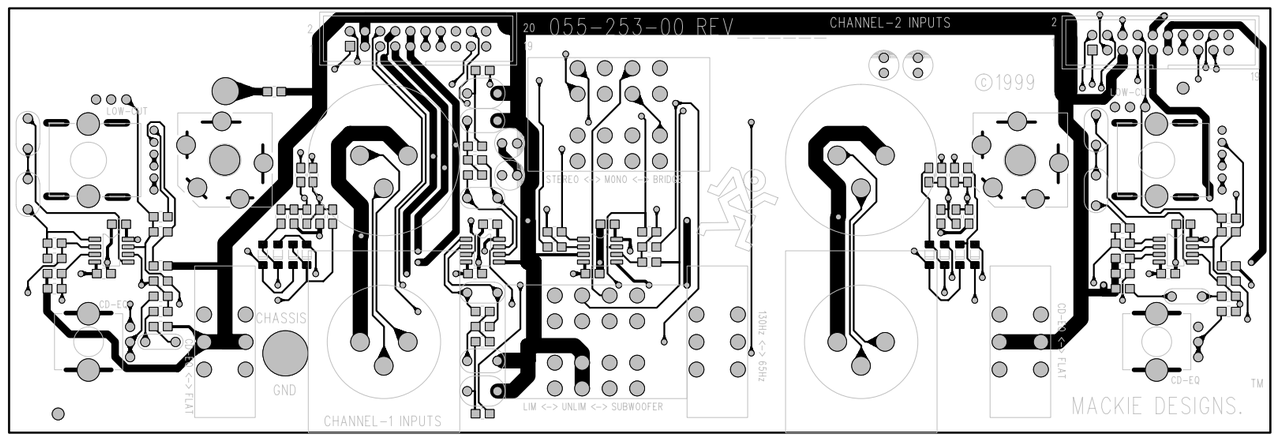
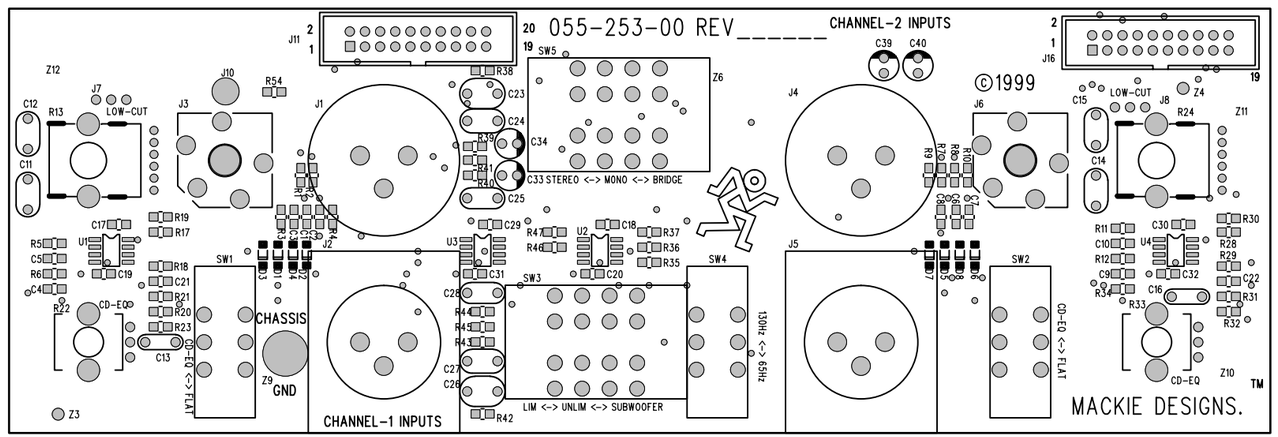


Solder side
traces and pads



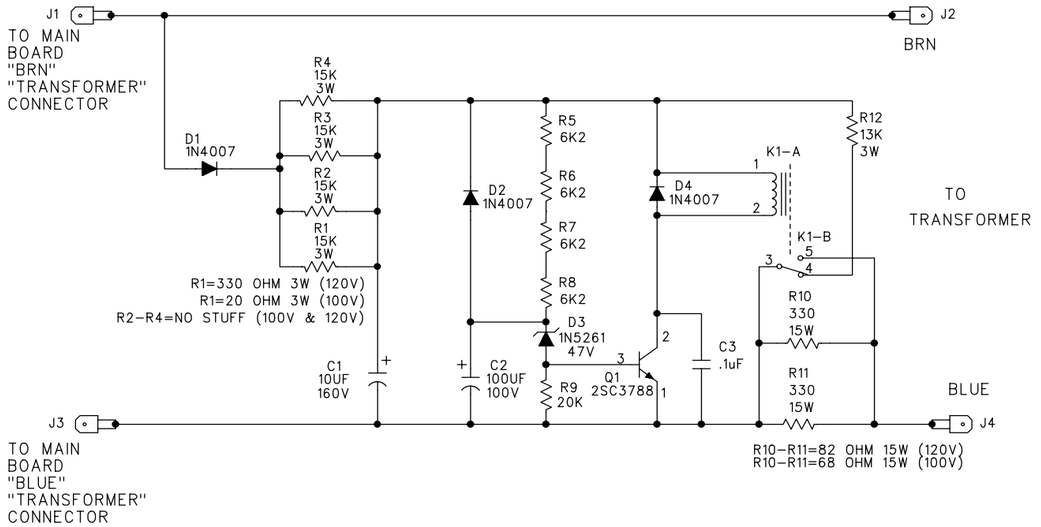
Component side
traces and pads



Component side

DWG. NO.	SHT	REV:
990-162-00	1	A

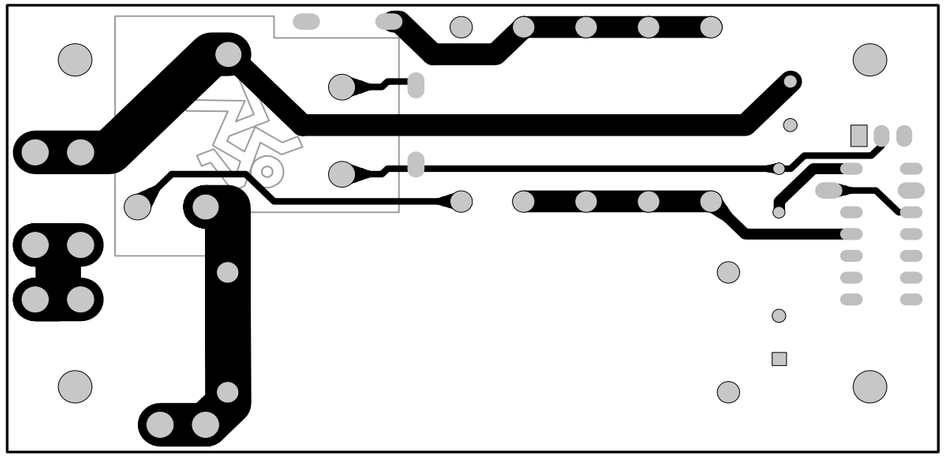
ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE

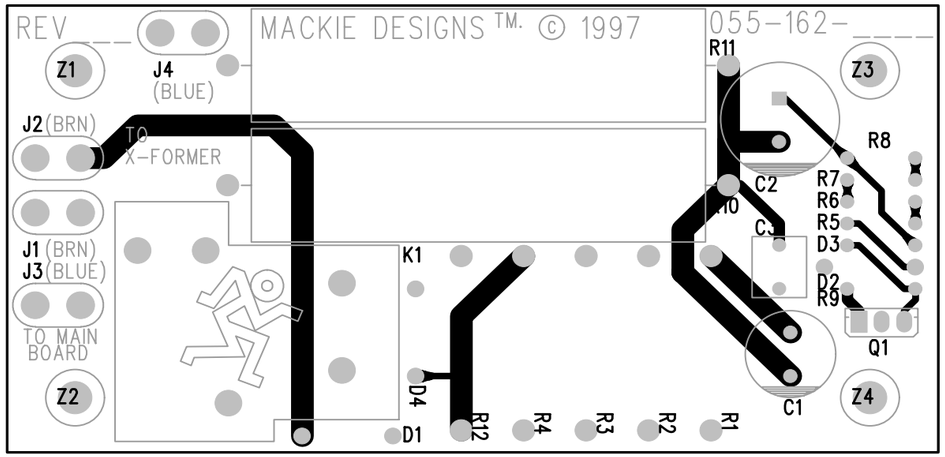


NOTE: SCHEMATIC IS SHOWN WITH 240VAC VALUES

- ☐ **NO STUFF R2-R4 FOR 100VAC OR 120VAC VERSIONS** XXX
- ☐ **REPLACES R10-R11 FOR 120VAC VERSION** 82 15W
- ☐ **REPLACES R1 FOR 120VAC VERSION** 330 3W
- ☐ **REPLACES R10-R11 FOR 100VAC VERSION** 68 15W
- ☐ **REPLACES R1 FOR 100VAC VERSION** 20 3W
- ☐ PCB, M-1200/M-1400 SOFT START

Solder side





Component side

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA	APPROVALS	DATE
	DRAWN: Chuck J	4-15-97
	CHECKED:	
	NP ENG: Cameron Jones	4-25-97
MATERIAL: SEE NOTES	MATERIAL:	
	MFG:	
FINISH: SEE NOTES	MFG ENG:	
DO NOT SCALE DRAWING	ISSUED:	

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

SCHEMATIC,
M1400
SOFT START

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-162-00	A

DWG FILE: | SHEET 1 OF 1

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