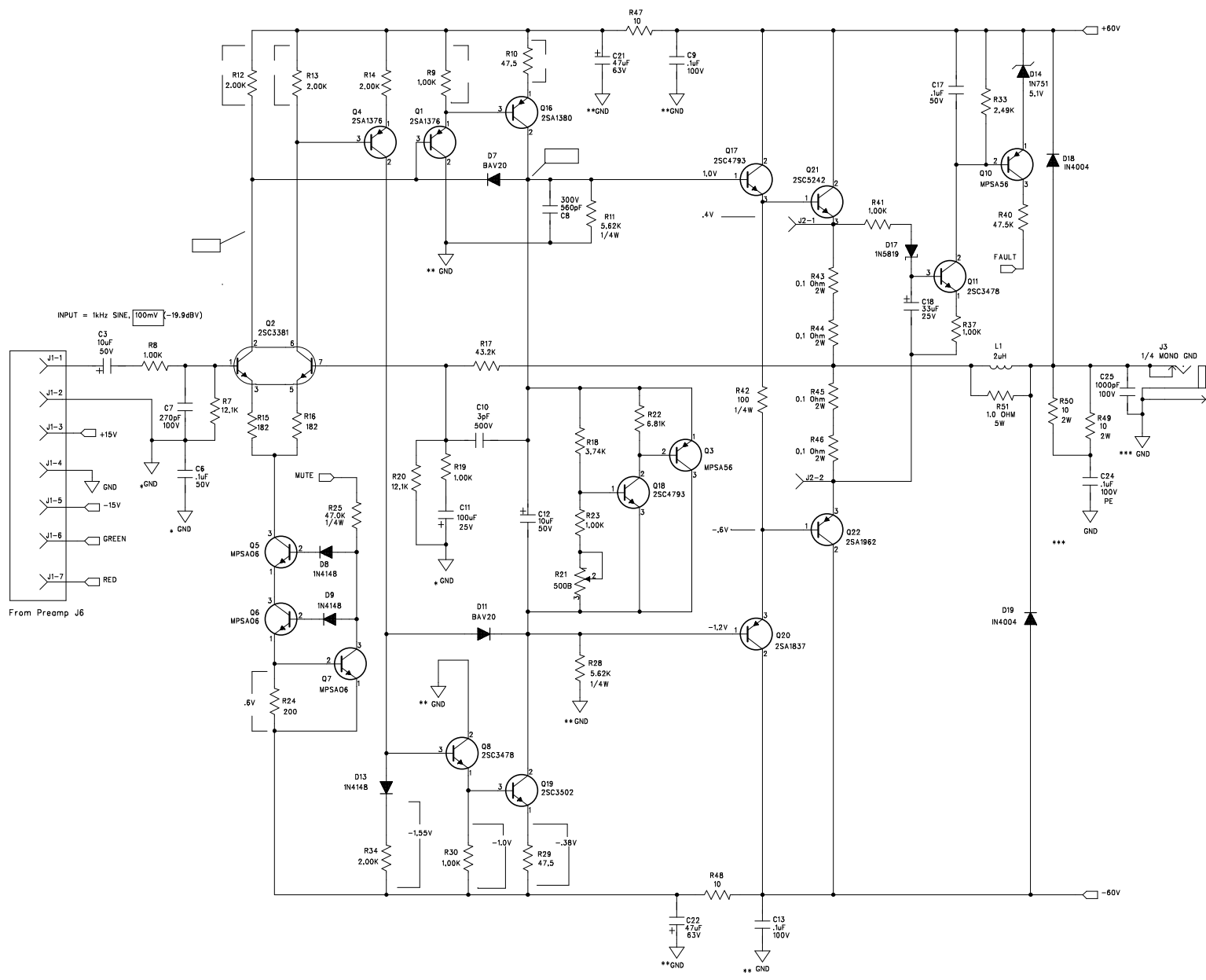
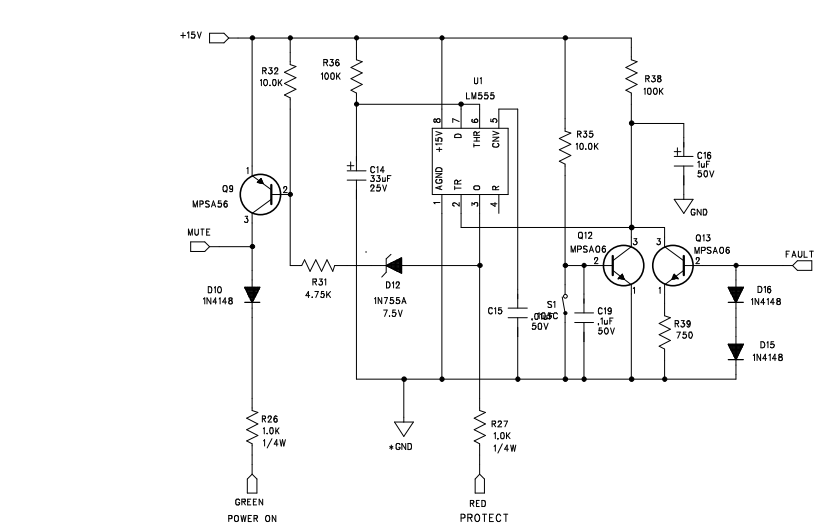
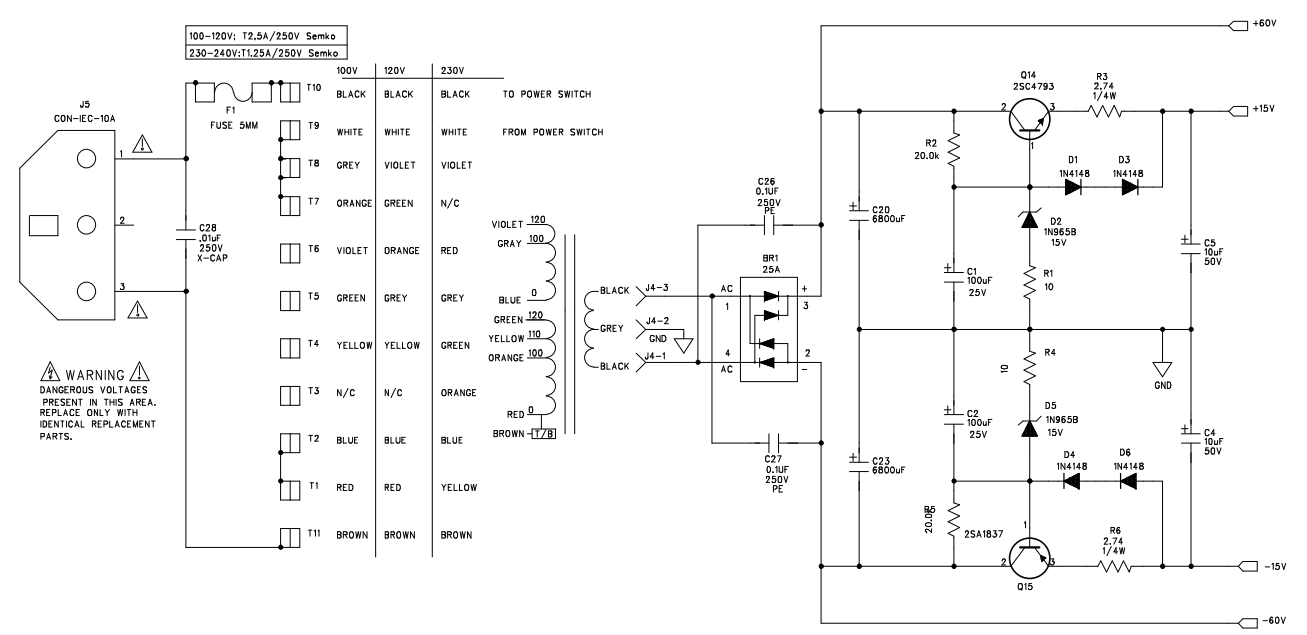


REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



- NOTES: UNLESS OTHERWISE SPECIFIED,
- TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 - DENOTES RMS AC VOLTAGE

BIAS ADJUSTMENT PROCEDURE:
WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

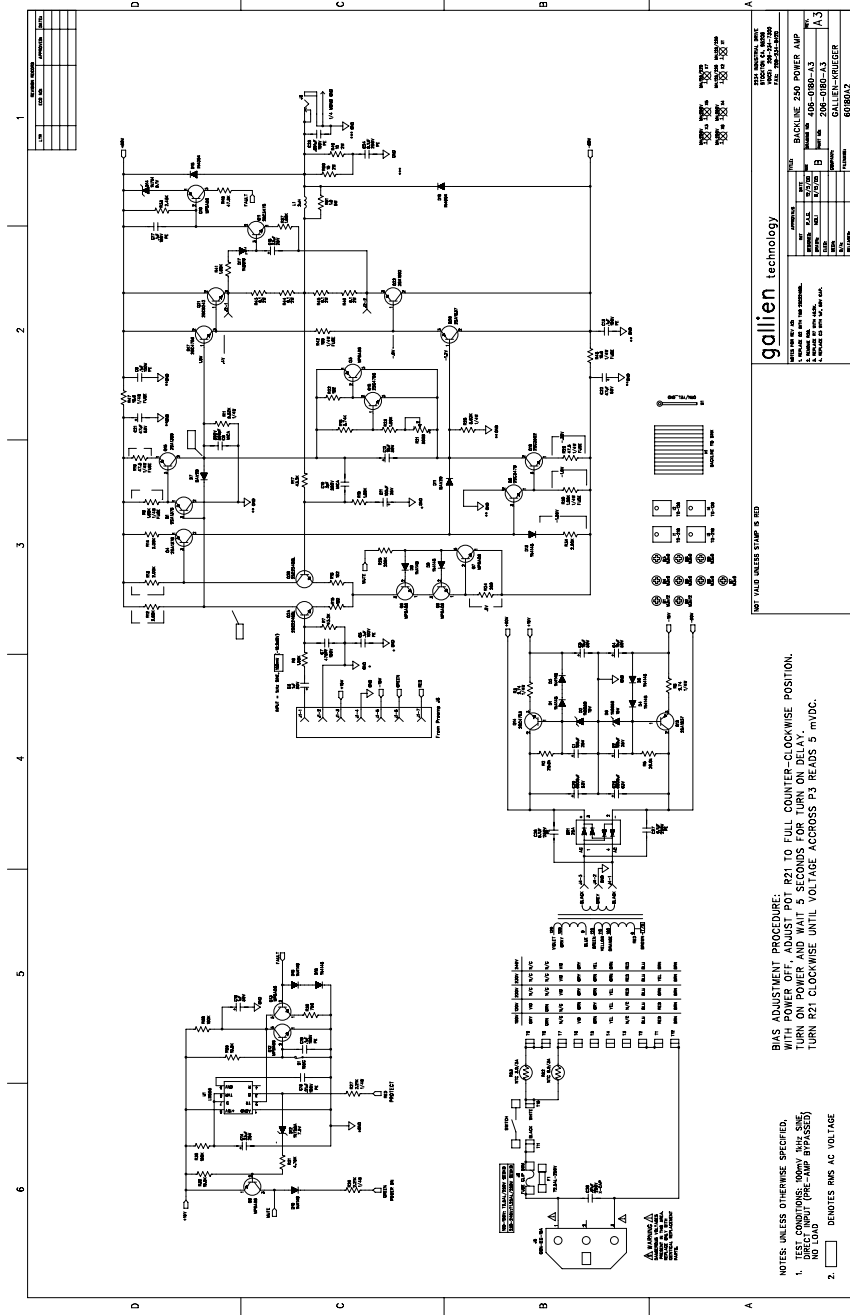
NOT VALID UNLESS STAMP IS RED

gallien technology

MH200V	MH200V	MH125/220
1 X3	1 X5	1 X7
MH200V	MH200V	MH125/220
1 X8	1 X4	1 X2
		1 X1

2240 PARAGON DRIVE
SAN JOSE CA. 95131
VOICE: 408-441-8081
FAX: 408-441-8085

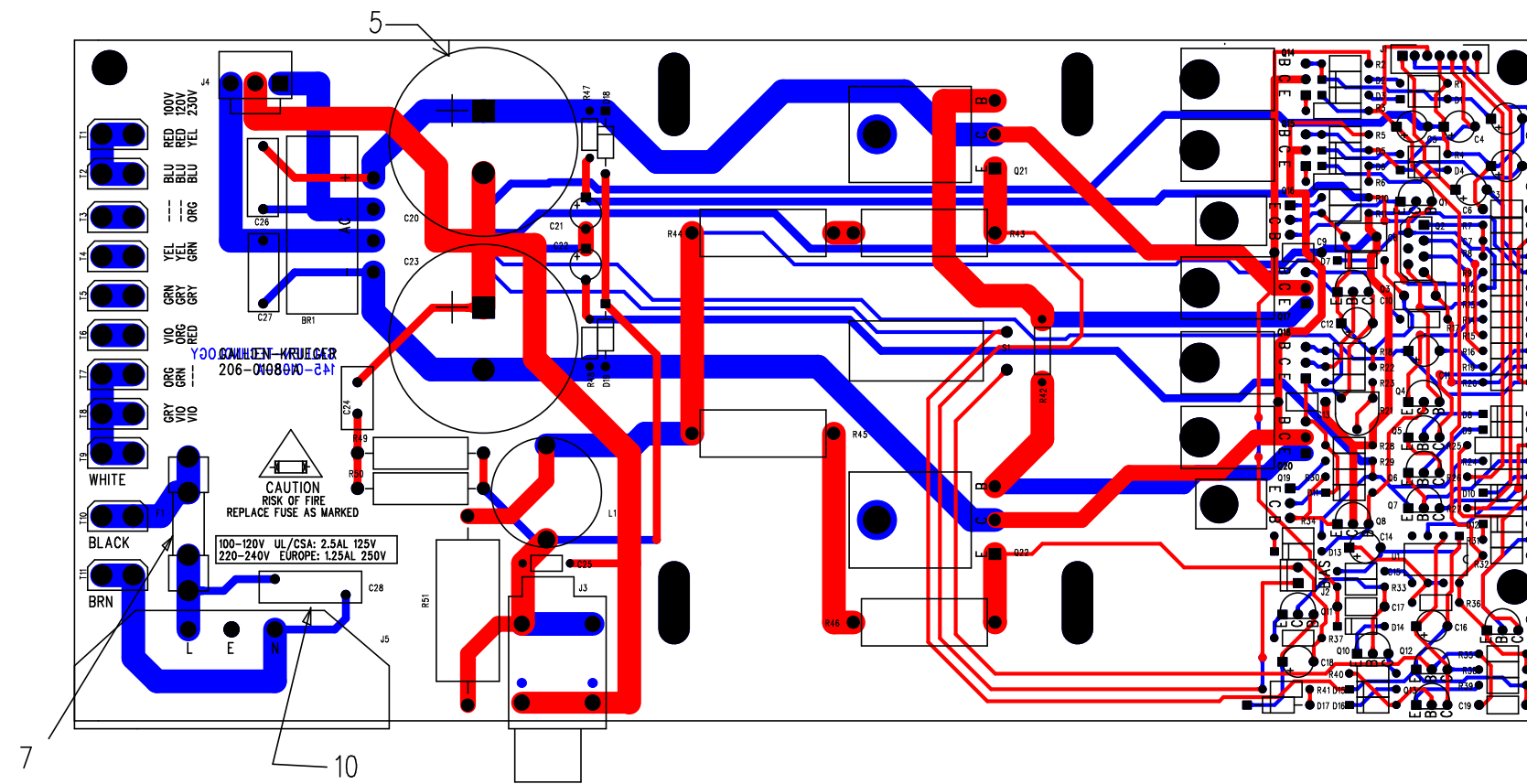
1. Fuse spec changed to T2.5A/250V Semko		APPROVALS		TITLE: BACKLINE 250 POWER AMP	
DESIGNED: R.A.G.	DATE: 12/3/00	INIT	DATE	REV	REV
DRAWN: R.A.G.	DATE: 3/04/02			B	A
ELEC:					
MECH:					
Q/A:					
RELEASED:					
COMPANY: GALLIEN-KRUEGER				PART NO: 206-0108-A	
FILENAME: 60108A				DRAWING NO: 406-0108-A	



Bill of Materials Backline Power Amp

Qty	Reference	Description	Part No.
1	C28	CAP, CERMIC DISK, 103, 10%, X-250V	034-7103-0
1	C15	CAP CER AXIAL,103,10%,50V,X7R	030-2103-0
2	C9 C13	CAP CER AXIAL,104,10%,100V, ,X7R	030-4104-0
1	C24	CAP,PE,104,5%,100V,	032-4104-0
2	C26-27	CAP,PE,104,20%, 250V	032-7104-0
3	C6 C17 C19	CAP CER AXIAL,104,10%,50V,X7R	030-2104-0
1	C25	CAP CER AXIAL,102,10%,100V,X7R	030-4102-0
3	C1-2 C11	CAP,ELEC,RAD,107,20%,25V	031-1107-0
4	C3-5 C12	CAP,ELEC,RAD, 106, 20%, 50V	031-2106-0
1	C16	CAP,ELEC,RAD, 105, 20%, 50V	031-2105-0
1	C7	CAP CER AXIAL, 271, 5%, 100V, NPO	030-4271-0
2	C14 C18	CAP,ELEC,RAD,336,20%,25V	031-1336-0
1	C10	CAP MICA AXIAL , 3pF, 10%, 500V	035-8030-0
2	C21-22	CAP,ELEC,RAD,476,20%,63V	031-3476-0
1	C8	CAP MICA RADIAL, 561, 5%, 300V	035-8561-0
2	C20 C23	CAP, ELEC, RADIAL, 6800UF, 20%, 63V, HIGH	031-3688-0
1	J5	CON, IECX3, 10A, 250V, PC TERM	092-0001-0
1	J3	JACK,1/4",MONO,PC, GROUNDING	092-0082-0
11	T1-11	FASTON, M, PC, .250"	092-0066-0
1	D19	1N4004,RECT,1A,150V,DO-41	020-2106-0
1	D18	1N4004,RECT,1A,400V,DO-41	020-2106-0
10	D1 D3-4 D6 D8-10 D13 D15-16	1N4148, RECT-FAST, 200MA, 100V	020-1000-0
1	D17	SHOTTKY, 1A, 40V, 10NS, DO-41	020-1104-0
1	D14	1N751, ZENER,5.1V,10%,400MW,DO-35	020-0050-0
1	D12	1N755A, ZENER,7.5V,500MW ,D035	020-0004-0
2	D2 D5	1N965B, ZENER, 15V, 5%, 500mW, DO-35	020-0150-0
2	D7 D11	BAV20, RECT, 200V, DO-35	020-1022-0
1	BR1	BRIDGE, 25A, 200V, VERT, PC, MO25S-02	023-0112-0
1	F1	FUSE CLIP, 5MM, 15A, P.C.	094-0004-0
1	S1	THRM BRKR, 105C +/-5,0-DIFF, PC	091-1002-0
1	J4	HDR,.156X3,VERT,MALE,LOCKING	093-0080-0
1	J2	HDR,.1X2,VERT,MALE,LOCK,GOLD	093-0025-0
1	J1	HDR, 2MMX7, VERT, SHROUDED	093-2005-0
1	U1	LM555, TIMER	001-2060-0
1	L1	INDUCTOR,2UH,20A,AIR CORE	081-0055-0
1	R21	POT,500B TRIM, 200mW	070-0520-0
4	R43-46	RES, CERAMIC, 0.1 Ohm, 2W,5%	055-.100-0
7	R8-9 R19 R23 R30 R37 R41	RES,METAL FILM, 1.00K, 1/8W, 1%	060-1002-0
2	R26-27	RES,CARBON FILM,1.0K,1/4W	051-1002-0
1	R51	RES, CERAMIC WW, 1.0 OHM, 5W, 10%	056-0100-0
2	R32 R35	RES,METAL FILM, 10.0K, 1/8W,1%	060-1003-0
4	R1 R4 R47-48	RES,METAL FILM, 10.0, 1/8W, 1%	060-1000-0
2	R36 R38	RES,METAL FILM, 100K, 1/8W, 1%	060-1004-0
1	R42	RES,METAL FILM,100 OHM,1/4W,1%	052-1001-0
2	R49-50	RES, METAL OXIDE, 10 OHM, 2W, 5%	055-0101-0
2	R7 R20	RES,METAL FILM, 12.1K OHM, 1/8W, 1%	060-1213-0

2	R15-16	RES,METAL FILM, 182, 1/8W, 1%	060-1821-0
4	R12-14 R34	RES,METAL FILM, 2.00K, 1/8W, 1%	060-2002-0
1	R33	RES,METAL FILM, 2.49K, 1/8W, 1%	060-2492-0
2	R3 R6	RES,METAL FILM, 2.74, 1/4W, 1%	052-2.74-0
2	R2 R5	RES,METAL FILM, 20.0K, 1/8W, 1%	060-2003-0
1	R24	RES,METAL FILM, 200, 1/8W, 1%	060-2001-0
1	R18	RES,METAL FILM, 3.74K, 1/8W, 1%	060-3742-0
1	R31	RES,METAL FILM, 4.75K, 1/8W, 1%	060-4752-0
1	R17	RES,METAL FILM, 43.2K, 1/8W, 1%	060-4323-0
1	R25	RES,METAL FILM, 47.0K, 1/4W, 1%	051-4703-0
1	R40	RES,METAL FILM, 47.5K, 1/8W, 1%	060-4753-0
2	R10 R29	RES,METAL FILM, 47.5, 1/8W, 1%	060-4750-0
2	R11 R28	RES,METAL FILM,5.62K,1/4W,1%	052-5622-0
1	R22	RES,METAL FILM, 6.81K OHM, 1/8W, 1%	060-6812-0
1	R39	RES,METAL FILM, 750 OHM, 1/8W, 1%	060-7501-0
2	Q1 Q4	2SA1376, PNP,180V,100MA,TO-92	010-1002-0
1	Q16	2SA1380-F,PNP,200V,100MA,TO-126	010-1003-0
2	Q15 Q20	2SA1837,PNP,200V,1.5A,2-10R1A	012-1002-0
1	Q22	2SA1962,PNP,230V,15A,2-16C1A	012-1003-0
1	Q2	2SC3381BL,NPNX2,80V,100MA,2-10M1B	010-0000-0
2	Q8 Q11	2SC3478, NPN,180V,100MA,TO-92	010-0001-0
1	Q19	2SC3502-F,NPN,200V,100MA,TO-126	010-0003-0
3	Q14 Q17-18	2SC4793,NPN,200V,1.5A,2-10R1A	012-0002-0
1	Q21	2SC5242,NPN,230V,15A,2-16C1A	012-0003-0
5	Q5-7 Q12-13	MPSAO6, NPN,80V,500MA,TO-92	010-0012-0
3	Q3 Q9-10	MPSA56 PNP 80V 500MA TO-92	010-1013-0



PCB WORK INSTRUCTIONS

DWG 420-0108-P1

NOTES:

UNLESS OTHERWISE SPECIFIED:

1. SQUARE PADS ON THRU HOLE PARTS (ie: CONNECTORS, DIPS, SIPS, LEDS) DENOTE PIN 1.
2. ALL BOARDS REQUIRE A COMPLETE AND THOROUGH VISUAL INSPECTION.
3. ALL BOARDS MUST BE BARE BOARD TESTED.
4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.

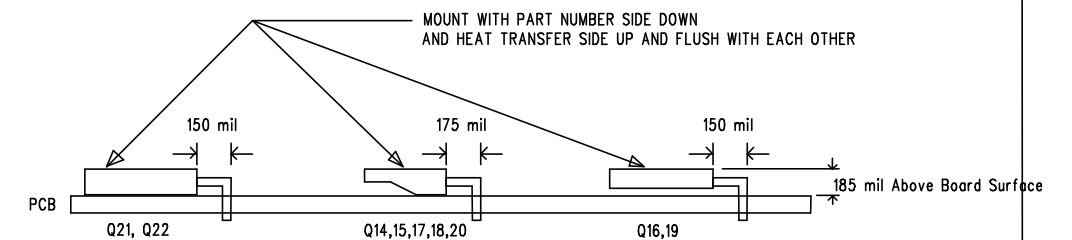
LOADING

5. C20, C23 LOAD WITH SILICON GLUE BETWEEN BOTTOM OF PART AND PCB
6. LOAD Q16 AND Q19 AFTER WAVE AS SHOWN BELOW
7. FUSE LOADING - F1
 - FOR 120V MODEL: LOAD FUSE, 5MM, 2.5AL, 125V
 - FOR 100V MODEL: LOAD FUSE 5MM, 2.5AL 125V
 - FOR 230V MODEL: LOAD FUSE, 5MM, 1.25AL, 250V

FINAL QA

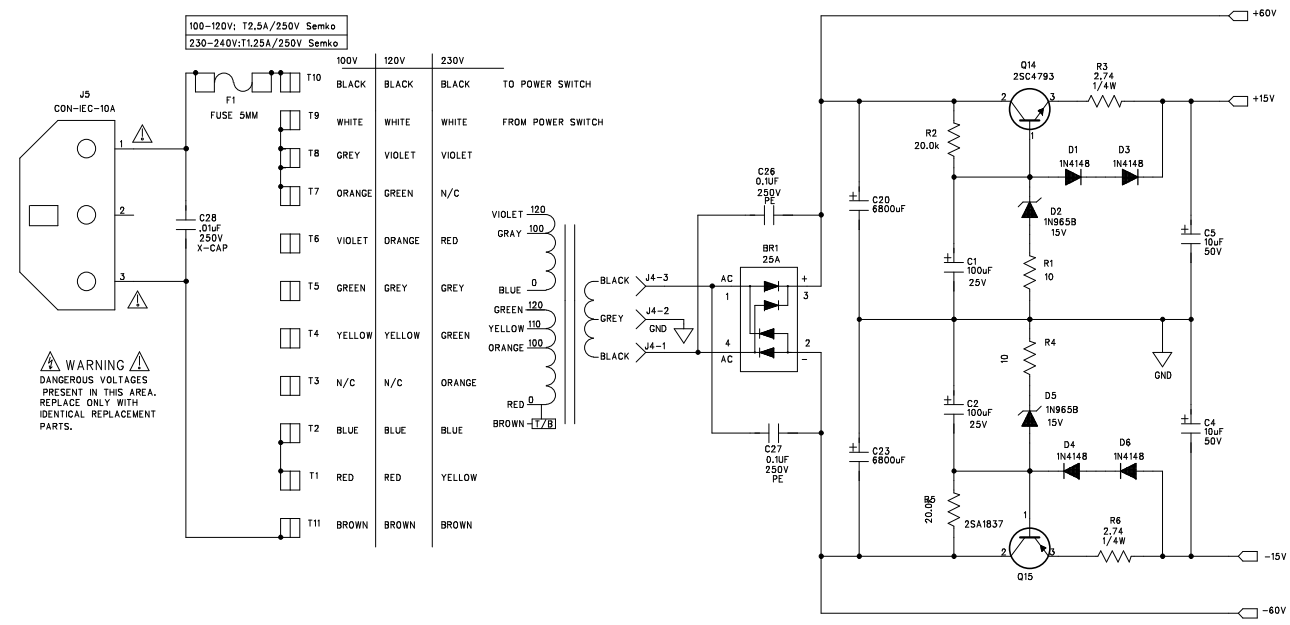
8. CHECK R43, 44, 45, 46 TO BE FLUSH WITH PCB
9. CHECK J1,2,3,4,5,6 TO SEE COMPONENTS ARE FLUSH WITH PCB
10. GLUE C28 TO J5 WITH SILICON RTV

NOT VALID UNLESS STAMP IS RED		2240 PARAGON DRIVE SAN JOSE CA. 95131 VOICE: 408-441-8081 FAX: 408-441-8085	
		TITLE: BACKLINE 250 POWER AMP	
		DESIGNED: R.A.G. 2/15/01	SIZE: DRAWING NO: 405-0108-A REV. B
DRAWN: R.A.G. 4/06/01		PART NO: 145-0108-A REV. A	
ELEC:		COMPANY: GALLIEN-KRUEGER	
MECH:		SCALE: FILENAME: 50108A	
GERBER FILE NAME: 50108A			
LAYER DESCRIPTION: FOR SILICON SCREEN			

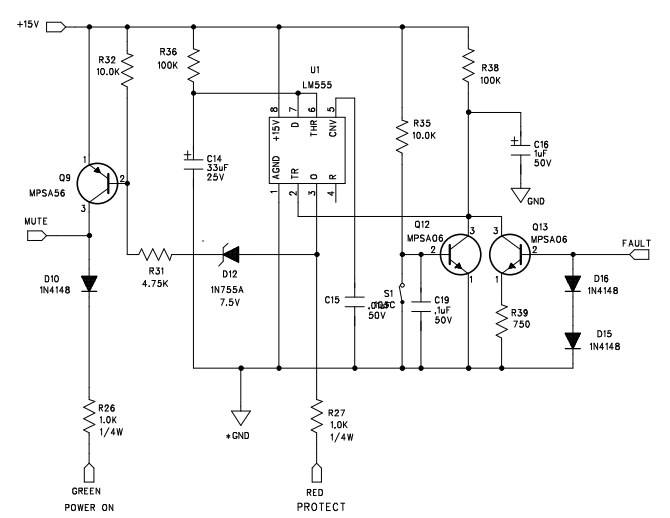
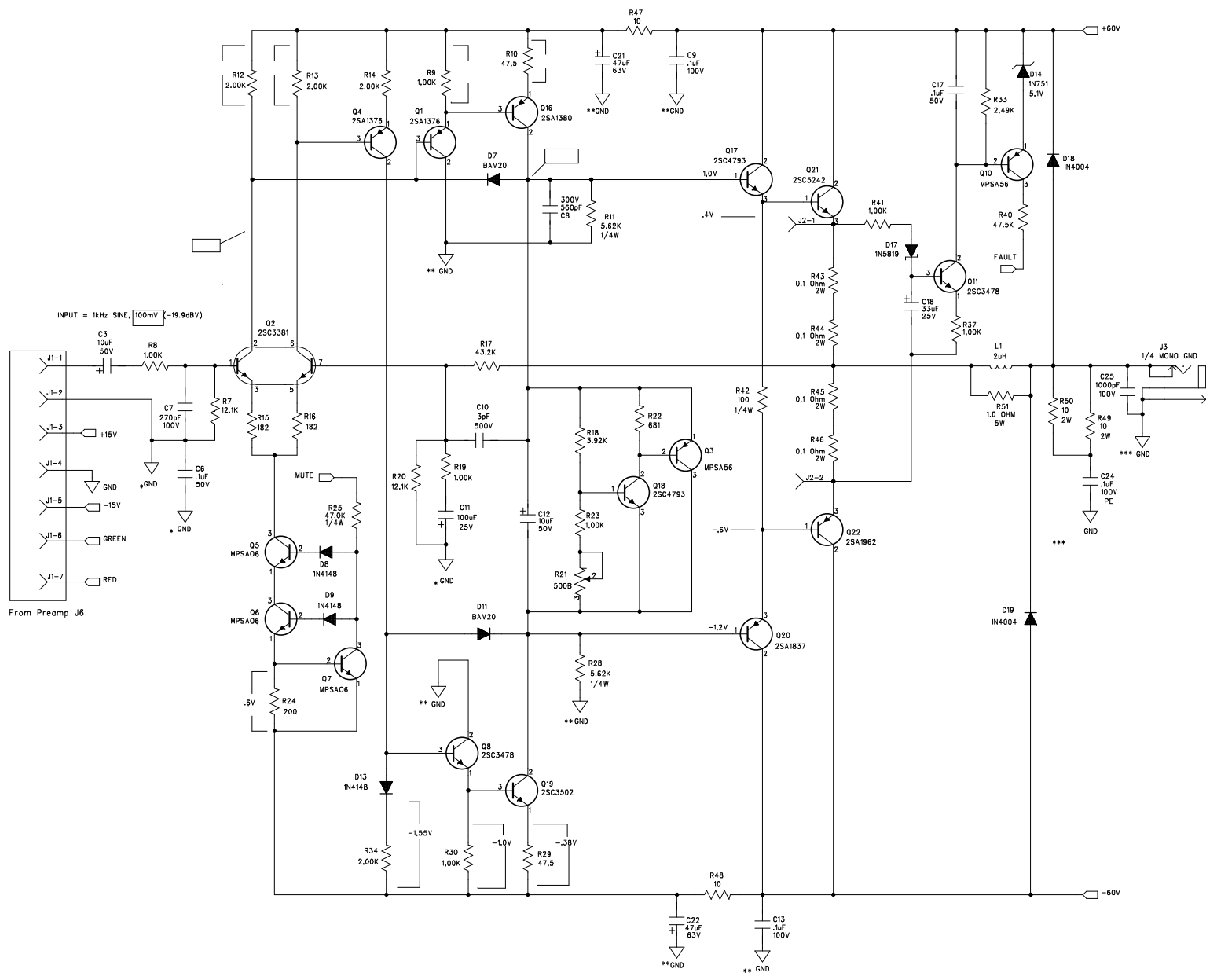


Customer Name:		Gallien-Krueger		Current Rev #:	A00	New ECO Rev #:	A01		
Model:		Backline 250 / Backline 115				Page:	1	Of:	1
Assembly Description:		Power Amp. Module		Originator:	R. Gallien				
Assembly Numbers:		206-0108-A		Approved by:					
				Effective Date:	2/26/2002				
Effective				Document Update		Date	Initials		
<input checked="" type="checkbox"/>	All in Process	<input checked="" type="checkbox"/>	Next Buy	<input type="checkbox"/>	Artwork				
<input checked="" type="checkbox"/>	All in Service	<input checked="" type="checkbox"/>	Next Production Run	<input type="checkbox"/>	Assembly Dwg.				
<input checked="" type="checkbox"/>	All in Stock	<input type="checkbox"/>		<input type="checkbox"/>	Board Artwork				
Beginning Serial Number:				<input checked="" type="checkbox"/>	BOM		RAG		
Reason For Change				<input type="checkbox"/>	Control Form				
Update fuse from F2.5A to T2.5A. Time lag is required to withstand inrush at turn on.				<input type="checkbox"/>	Costing				
				<input type="checkbox"/>	Fab Drawing				
				<input type="checkbox"/>	Inspection Proc.				
Add new fuse label to power amp marked: 100-120V:T2.5A/250V Semko For 100 and 120V models.				<input checked="" type="checkbox"/>	Part Master File		RAG		
				<input checked="" type="checkbox"/>	Schematic		RAG		
				<input type="checkbox"/>	Service Manual				
				<input type="checkbox"/>	Test Procedure				
Add new Rev level to power amp marked: 206-0108-A1				<input type="checkbox"/>					
				<input type="checkbox"/>					
Other Affected Assemblies									
302-0070-A									
<input type="checkbox"/>	Continued on ECO Supplement Page								
Description Of Change				Distribution		Date	Initials		
				<input type="checkbox"/>	Accounting				
				<input type="checkbox"/>	Assembly				
				<input type="checkbox"/>	Customer				
				<input checked="" type="checkbox"/>	Engineering				
				<input checked="" type="checkbox"/>	Incoming Q.C.				
				<input type="checkbox"/>	Planning				
				<input checked="" type="checkbox"/>	Production Eng.				
				<input checked="" type="checkbox"/>	Purchasing				
				<input type="checkbox"/>	Q.A.				
				<input type="checkbox"/>	Receiving				
				<input checked="" type="checkbox"/>	Service				
				<input checked="" type="checkbox"/>	Test				
				<input type="checkbox"/>	Vendor				
				<input type="checkbox"/>					
				<input type="checkbox"/>					
<input type="checkbox"/>	Continued on ECO Supplement Page								
<input type="checkbox"/>	Drawing(s) attached								
Part Number	Description	Parts Added		Parts Deleted					
		Qty	Ref. Designator	Qty	Ref. Designator				
N/A	F2.5A, 125V			1	F1				
091-0018-0	T2.5A, Semko	1	F1						

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



WARNING
DANGEROUS VOLTAGES
PRESENT IN THIS AREA.
REPLACE ONLY WITH
IDENTICAL REPLACEMENT
PARTS.



MH200V	MH200V	MH125/220
X3	X5	X7
MH200V	MH200V	MH125/220
X8	X4	X2
		X1

- NOTES: UNLESS OTHERWISE SPECIFIED,
- TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 - DENOTES RMS AC VOLTAGE

BIAS ADJUSTMENT PROCEDURE:
WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

NOT VALID UNLESS STAMP IS RED

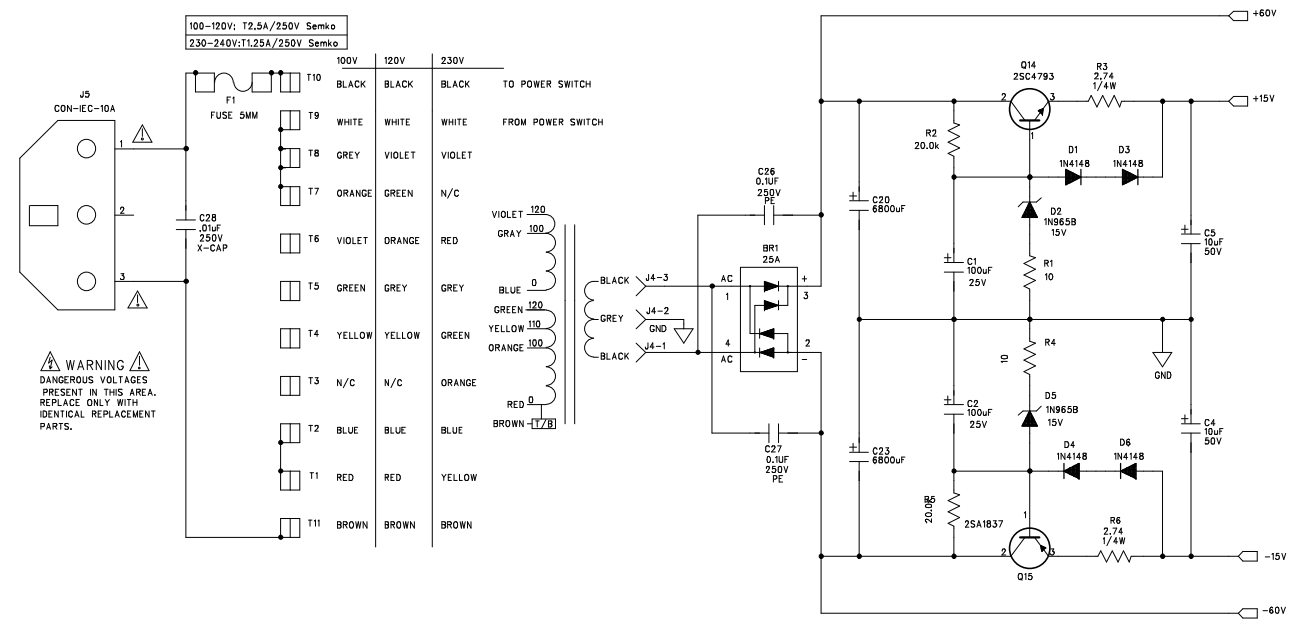
gallien technology

2240 PARAGON DRIVE
SAN JOSE CA. 95131
VOICE: 408-441-8081
FAX: 408-441-8085

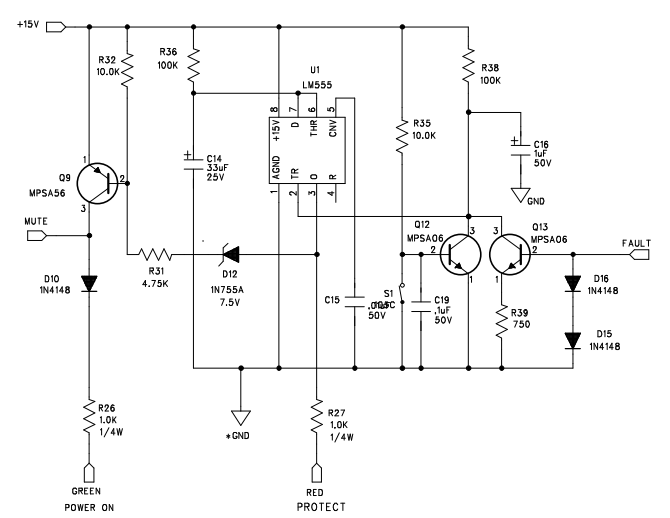
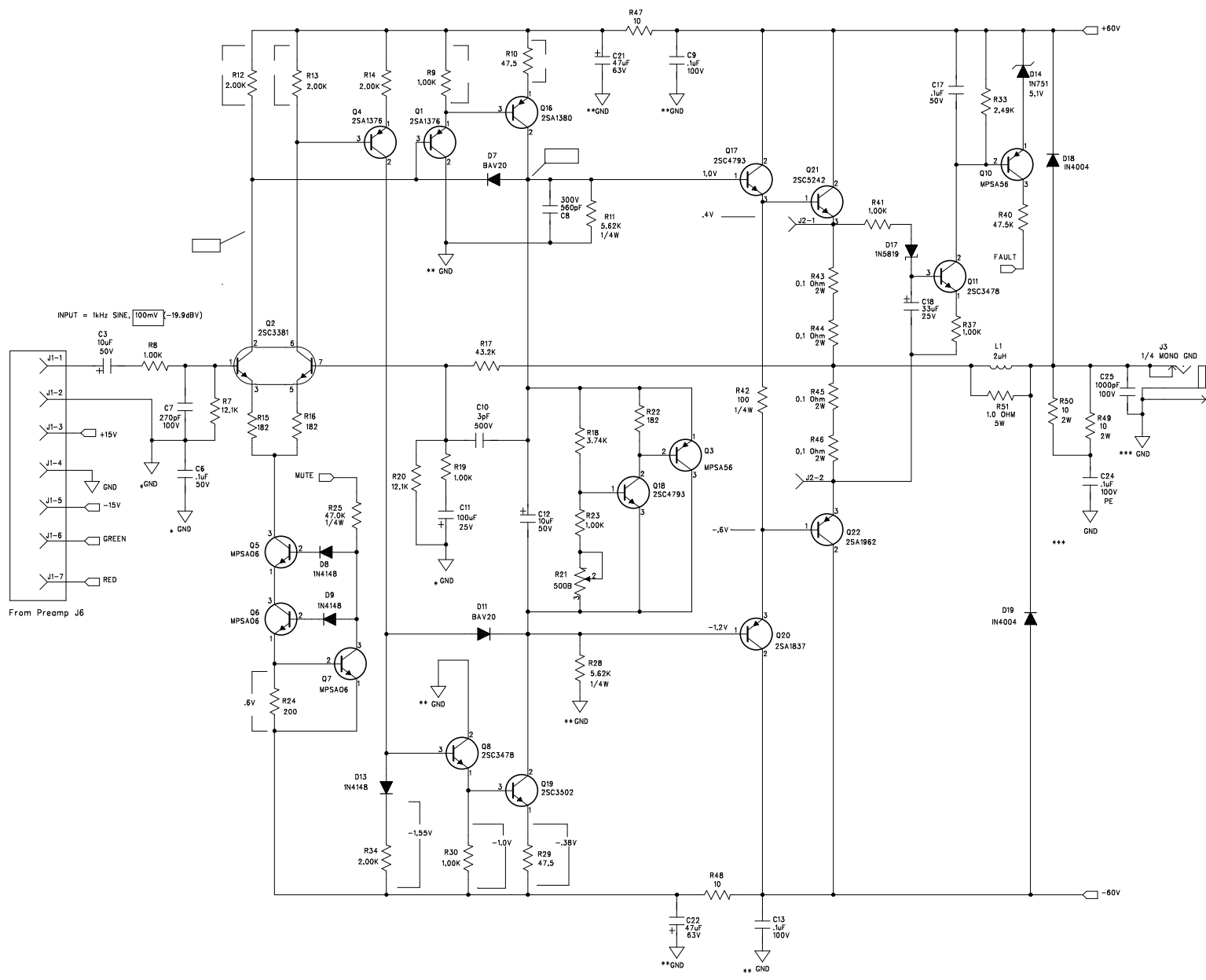
1. Changed R18 from 3.74K to 3.92K.		2. Changed R22 from 6.81K to 681 ohms.	
APPROVALS		TITLE: BACKLINE 250 POWER AMP	
INIT	DATE	REV	DRAWING NO:
DESIGNED: R.A.G.	12/3/00	B	406-0108-A1
DRAWN: R.A.G.	3/04/02		PART NO: 206-0108-A1
ELEC:			
MECH:		COMPANY:	GALLIEN-KRUEGER
Q/A:		FILENAME:	60108A1
RELEASED:			

Customer Name:	Gallien-Krueger		Current Rev #:	A01	New ECO Rev #:	A02	
Model:	Backline 250/Backline 115			Page:	1	Of:	1
Assembly Description:	Power Amp module		Originator:	A. T. Millet			
Assembly Numbers:	206-0108-A		Approved by:				
			Effective Date:	7/31/2002			
Effective			Document Update		Date	Initials	
<input checked="" type="checkbox"/>	All in Process	<input type="checkbox"/>	Next Buy	<input type="checkbox"/>	Artwork		
<input checked="" type="checkbox"/>	All in Service	<input checked="" type="checkbox"/>	Next Production Run	<input type="checkbox"/>	Assembly Dwg.		
<input checked="" type="checkbox"/>	All in Stock	<input type="checkbox"/>		<input type="checkbox"/>	Board Artwork		
Beginning Serial Number:			<input checked="" type="checkbox"/>	BOM		RAG	
Reason For Change			<input type="checkbox"/>	Control Form			
To make the bias voltage more stable at any change in temperature.			<input type="checkbox"/>	Costing			
			<input type="checkbox"/>	Fab Drawing			
			<input type="checkbox"/>	Inspection Proc.			
			<input checked="" type="checkbox"/>	Part Master File		RAG	
			<input checked="" type="checkbox"/>	Schematic		RAG	
			<input type="checkbox"/>	Service Manual			
			<input type="checkbox"/>	Test Procedure			
			<input type="checkbox"/>				
			<input type="checkbox"/>				
Other Affected Assemblies							
Motor, Head and Combos							
<input type="checkbox"/>	Continued on ECO Supplement Page						
Description Of Change			Distribution		Date	Initials	
Changed R22 from 6.81K to 182 ohms.			<input type="checkbox"/>	Accounting			
			<input type="checkbox"/>	Assembly			
			<input type="checkbox"/>	Customer			
			<input checked="" type="checkbox"/>	Engineering			
			<input checked="" type="checkbox"/>	Incoming Q.C.			
			<input type="checkbox"/>	Planning			
			<input checked="" type="checkbox"/>	Production Eng.			
			<input checked="" type="checkbox"/>	Purchasing			
			<input type="checkbox"/>	Q.A.			
			<input type="checkbox"/>	Receiving			
			<input checked="" type="checkbox"/>	Service			
			<input checked="" type="checkbox"/>	Test			
			<input type="checkbox"/>	Vendor			
			<input type="checkbox"/>				
			<input type="checkbox"/>				
<input type="checkbox"/>	Continued on ECO Supplement Page						
<input type="checkbox"/>	Drawing(s) attached						
Part Number	Description	Parts Added		Parts Deleted			
		Qty	Ref. Designator	Qty	Ref. Designator		
060-6812-0	6.81K,1/8W,res.	0		1	R22		
060-1821-0	182,1/8W,res.	1	R22	0			

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



WARNING
DANGEROUS VOLTAGES
PRESENT IN THIS AREA.
REPLACE ONLY WITH
IDENTICAL REPLACEMENT
PARTS.



- NOTES: UNLESS OTHERWISE SPECIFIED,
- TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 - DENOTES RMS AC VOLTAGE

BIAS ADJUSTMENT PROCEDURE:
WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

NOT VALID UNLESS STAMP IS RED

gallien technology

2240 PARAGON DRIVE
SAN JOSE CA. 95131
VOICE: 408-441-8081
FAX: 408-441-8085

NOTES FOR ECO A02:
1. CHANGED R22 TO 182.

APPROVALS		DATE		TITLE	
INIT	DATE	DATE	DATE	BACKLINE 250 POWER AMP	
DESIGNED: R.A.G.	12/3/00	DATE	DATE	DRAWING NO:	406-0108-A2
DRAWN: R.A.G.	3/04/02	DATE	DATE	PART NO:	206-0108-A2
ELEC:		DATE	DATE	REV:	A2
MECH:		DATE	DATE	COMPANY:	GALLIEN-KRUEGER
Q/A:		DATE	DATE	FILENAME:	60108A2
RELEASED:		DATE	DATE		

MH200V	MH200V	MH125/220
1 X3	1 X5	1 X7
MH200V	MH200V	MH125/220
1 X8	1 X4	1 X2
		1 X1

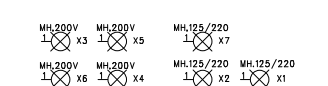
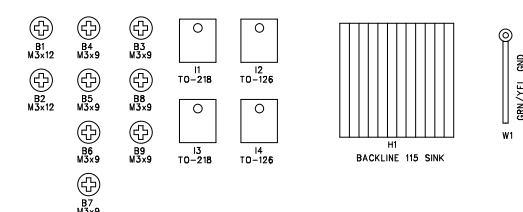
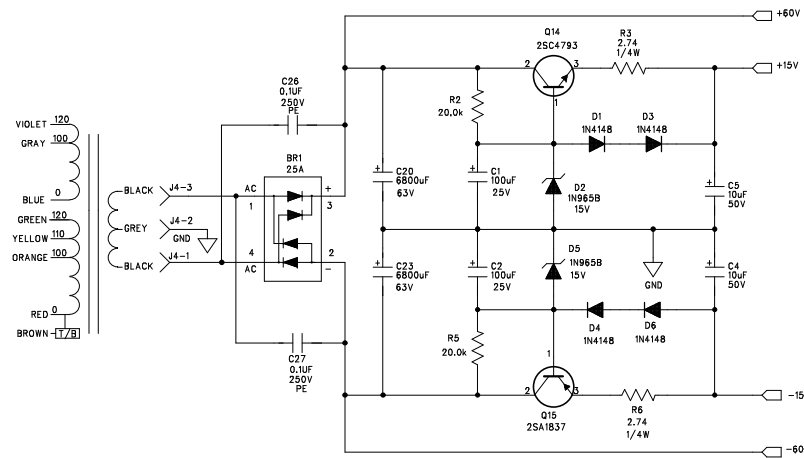
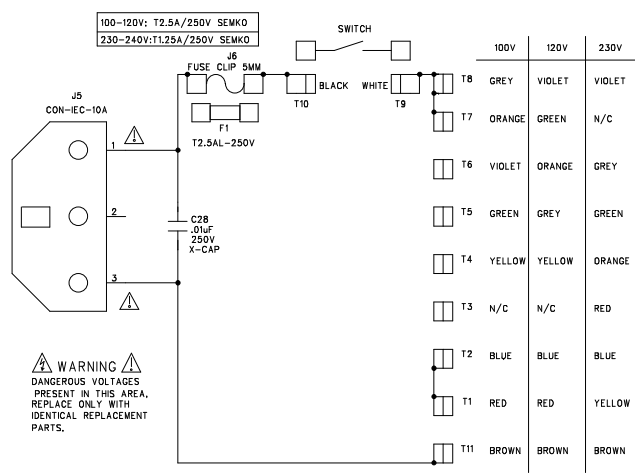
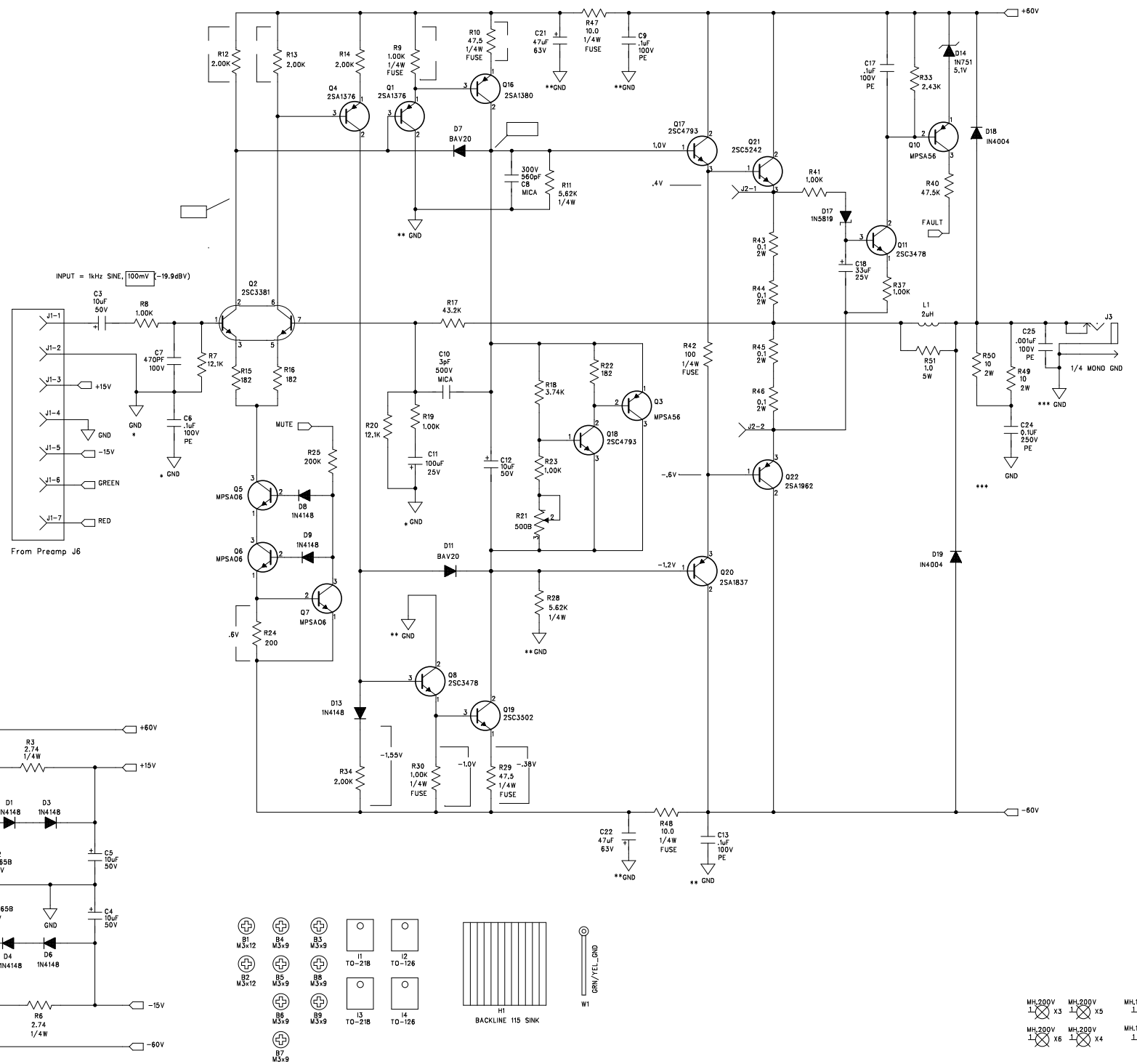
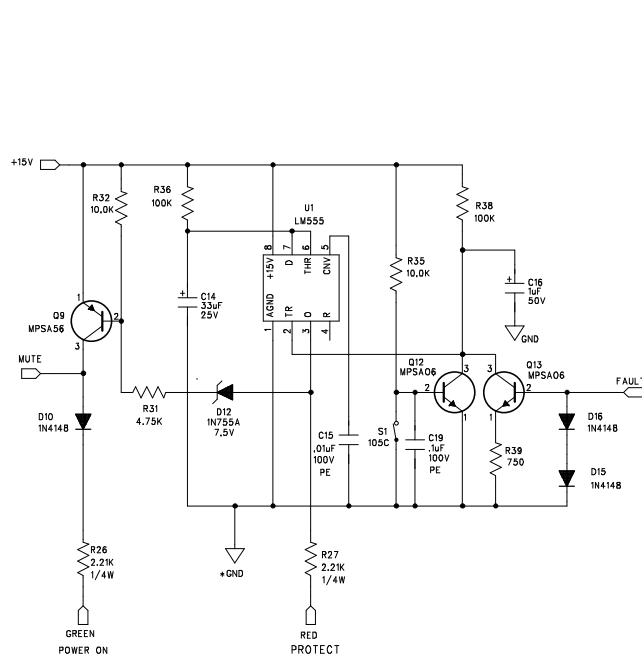
Bill of Materials Backline Power Amp

Qty	Reference	Description	Part No.
1	C28	CAP, CERMIC DISK, 103, 10%, X-250V	034-7103-0
1	C15	CAP CER AXIAL,103,10%,50V,X7R	030-2103-0
2	C9 C13	CAP CER AXIAL,104,10%,100V, ,X7R	030-4104-0
1	C24	CAP,PE,104,5%,100V,	032-4104-0
2	C26-27	CAP,PE,104,20%, 250V	032-7104-0
3	C6 C17 C19	CAP CER AXIAL,104,10%,50V,X7R	030-2104-0
1	C25	CAP CER AXIAL,102,10%,100V,X7R	030-4102-0
3	C1-2 C11	CAP,ELEC,RAD,107,20%,25V	031-1107-0
4	C3-5 C12	CAP,ELEC,RAD, 106, 20%, 50V	031-2106-0
1	C16	CAP,ELEC,RAD, 105, 20%, 50V	031-2105-0
1	C7	CAP CER AXIAL, 271, 5%, 100V, NPO	030-4271-0
2	C14 C18	CAP,ELEC,RAD,336,20%,25V	031-1336-0
1	C10	CAP MICA AXIAL , 3pF, 10%, 500V	035-8030-0
2	C21-22	CAP,ELEC,RAD,476,20%,63V	031-3476-0
1	C8	CAP MICA RADIAL, 561, 5%, 300V	035-8561-0
2	C20 C23	CAP, ELEC, RADIAL, 6800UF, 20%, 63V, HIGH	031-3688-0
1	J5	CON, IECX3, 10A, 250V, PC TERM	092-0001-0
1	J3	JACK,1/4",MONO,PC, GROUNDING	092-0082-0
11	T1-11	FASTON, M, PC, .250"	092-0066-0
1	D19	1N4004,RECT,1A,150V,DO-41	020-2106-0
1	D18	1N4004,RECT,1A,400V,DO-41	020-2106-0
10	D1 D3-4 D6 D8-10 D13 D15-16	1N4148, RECT-FAST, 200MA, 100V	020-1000-0
1	D17	SHOTTKY, 1A, 40V, 10NS, DO-41	020-1104-0
1	D14	1N751, ZENER,5.1V,10%,400MW,DO-35	020-0050-0
1	D12	1N755A, ZENER,7.5V,500MW ,D035	020-0004-0
2	D2 D5	1N965B, ZENER, 15V, 5%, 500mW, DO-35	020-0150-0
2	D7 D11	BAV20, RECT, 200V, DO-35	020-1022-0
1	BR1	BRIDGE, 25A, 200V, VERT, PC, MO25S-02	023-0112-0
1	F1	FUSE CLIP, 5MM, 15A, P.C.	094-0004-0
1	S1	THRM BRKR, 105C +/-5,0-DIFF, PC	091-1002-0
1	J4	HDR,.156X3,VERT,MALE,LOCKING	093-0080-0
1	J2	HDR,.1X2,VERT,MALE,LOCK,GOLD	093-0025-0
1	J1	HDR, 2MMX7, VERT, SHROUDED	093-2005-0
1	U1	LM555, TIMER	001-2060-0
1	L1	INDUCTOR,2UH,20A,AIR CORE	081-0055-0
1	R21	POT,500B TRIM, 200mW	070-0520-0
4	R43-46	RES, CERAMIC, 0.1 Ohm, 2W,5%	055-.100-0
7	R8-9 R19 R23 R30 R37 R41	RES,METAL FILM, 1.00K, 1/8W, 1%	060-1002-0
2	R26-27	RES,CARBON FILM,1.0K,1/4W	051-1002-0
1	R51	RES, CERAMIC WW, 1.0 OHM, 5W, 10%	056-0100-0
2	R32 R35	RES,METAL FILM, 10.0K, 1/8W,1%	060-1003-0
4	R1 R4 R47-48	RES,METAL FILM, 10.0, 1/8W, 1%	060-1000-0
2	R36 R38	RES,METAL FILM, 100K, 1/8W, 1%	060-1004-0
1	R42	RES,METAL FILM,100 OHM,1/4W,1%	052-1001-0
2	R49-50	RES, METAL OXIDE, 10 OHM, 2W, 5%	055-0101-0
2	R7 R20	RES,METAL FILM, 12.1K OHM, 1/8W, 1%	060-1213-0

2	R15-16	RES,METAL FILM, 182, 1/8W, 1%	060-1821-0
4	R12-14 R34	RES,METAL FILM, 2.00K, 1/8W, 1%	060-2002-0
1	R33	RES,METAL FILM, 2.49K, 1/8W, 1%	060-2492-0
2	R3 R6	RES,METAL FILM, 2.74, 1/4W, 1%	052-2.74-0
2	R2 R5	RES,METAL FILM, 20.0K, 1/8W, 1%	060-2003-0
1	R24	RES,METAL FILM, 200, 1/8W, 1%	060-2001-0
1	R18	RES,METAL FILM, 3.74K, 1/8W, 1%	060-3742-0
1	R31	RES,METAL FILM, 4.75K, 1/8W, 1%	060-4752-0
1	R17	RES,METAL FILM, 43.2K, 1/8W, 1%	060-4323-0
1	R25	RES,METAL FILM, 47.0K, 1/4W, 1%	051-4703-0
1	R40	RES,METAL FILM, 47.5K, 1/8W, 1%	060-4753-0
2	R10 R29	RES,METAL FILM, 47.5, 1/8W, 1%	060-4750-0
2	R11 R28	RES,METAL FILM,5.62K,1/4W,1%	052-5622-0
1	R22	RES,METAL FILM, 6.81K OHM, 1/8W, 1%	060-6812-0
1	R39	RES,METAL FILM, 750 OHM, 1/8W, 1%	060-7501-0
2	Q1 Q4	2SA1376, PNP,180V,100MA,TO-92	010-1002-0
1	Q16	2SA1380-F,PNP,200V,100MA,TO-126	010-1003-0
2	Q15 Q20	2SA1837,PNP,200V,1.5A,2-10R1A	012-1002-0
1	Q22	2SA1962,PNP,230V,15A,2-16C1A	012-1003-0
1	Q2	2SC3381BL,NPNX2,80V,100MA,2-10M1B	010-0000-0
2	Q8 Q11	2SC3478, NPN,180V,100MA,TO-92	010-0001-0
1	Q19	2SC3502-F,NPN,200V,100MA,TO-126	010-0003-0
3	Q14 Q17-18	2SC4793,NPN,200V,1.5A,2-10R1A	012-0002-0
1	Q21	2SC5242,NPN,230V,15A,2-16C1A	012-0003-0
5	Q5-7 Q12-13	MPSAO6, NPN,80V,500MA,TO-92	010-0012-0
3	Q3 Q9-10	MPSA56 PNP 80V 500MA TO-92	010-1013-0

Customer Name:	Gallien-Krueger	Current Rev #:	A02	New ECO Rev #:	B
Model:	Gallien-Krueger	Distribute To:		Page:	1 Of: 1
Assembly Description:	Backline 250/Backline 115	Originator:	Noli Valdez		
Assembly Numbers:	Power Amp module 206-0108-B	Approved by:			
		Effective Date:	2/11/2003		
Effective		Document Update		Date	Initials
<input type="checkbox"/>	All in Process	<input checked="" type="checkbox"/>	Next Buy		
<input type="checkbox"/>	All in Service	<input checked="" type="checkbox"/>	Next Production Run		
<input type="checkbox"/>	All in Stock	<input type="checkbox"/>			
Beginning Serial Number:		<input checked="" type="checkbox"/>	BOM		RAG
Reason For Change		<input type="checkbox"/>	Control Form		
Replaced and eliminate critical components for better response and avoid excessive damage on module during breakdown.		<input type="checkbox"/>	Costing		
		<input type="checkbox"/>	Fab Drawing		
		<input type="checkbox"/>	Inspection Proc.		
		<input checked="" type="checkbox"/>	Part Master File		RAG
		<input checked="" type="checkbox"/>	Schematic		RAG
		<input type="checkbox"/>	Service Manual		
		<input type="checkbox"/>	Test Procedure		
		<input type="checkbox"/>			
		<input type="checkbox"/>			
Other Affected Assemblies					
290-0180, 290-0070					
<input type="checkbox"/>	Continued on ECO Supplement Page				
Description Of Change		Distribution		Date	Initials
Changed all axial ceramic to polyester capacitor.		<input type="checkbox"/>	Accounting		
Changed critical resistors to fuse type.		<input type="checkbox"/>	Assembly		
Changed C7 from 270pf 100V to 470pf 100V.		<input checked="" type="checkbox"/>	Customer		
Removed R1 and R4 from the regulated power supply circuit.		<input checked="" type="checkbox"/>	Engineering		
Update Bom and Part Master File.		<input checked="" type="checkbox"/>	Incoming Q.C.		
		<input type="checkbox"/>	Planning		
		<input checked="" type="checkbox"/>	Production Eng.		
		<input checked="" type="checkbox"/>	Purchasing		
		<input type="checkbox"/>	Q.A.		
		<input type="checkbox"/>	Receiving		
		<input type="checkbox"/>	Service		
		<input checked="" type="checkbox"/>	Test		
		<input type="checkbox"/>	Vendor		
		<input type="checkbox"/>			
		<input type="checkbox"/>			
<input type="checkbox"/>	Continued on ECO Supplement Page				
<input type="checkbox"/>	Drawing(s) attached				
Part Number	Description	Parts Added		Parts Deleted	
		Qty	Ref. Designator	Qty	Ref. Designator
030-4271-0	270pf 100V capacitor			1	C7
034-4471-0	470pf 100V capacitor	1	C7		
060-1000-0	10 ohms 1/8 watt resistor			2	R1, R4

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



- NOTES: UNLESS OTHERWISE SPECIFIED,
- TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 - DENOTES RMS AC VOLTAGE

BIAS ADJUSTMENT PROCEDURE:
 WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
 TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
 TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

NOT VALID UNLESS STAMP IS RED

gallien technology

2240 PARAGON DRIVE
 SAN JOSE CA. 95131
 VOICE: 408-441-8081
 FAX: 408-441-8085

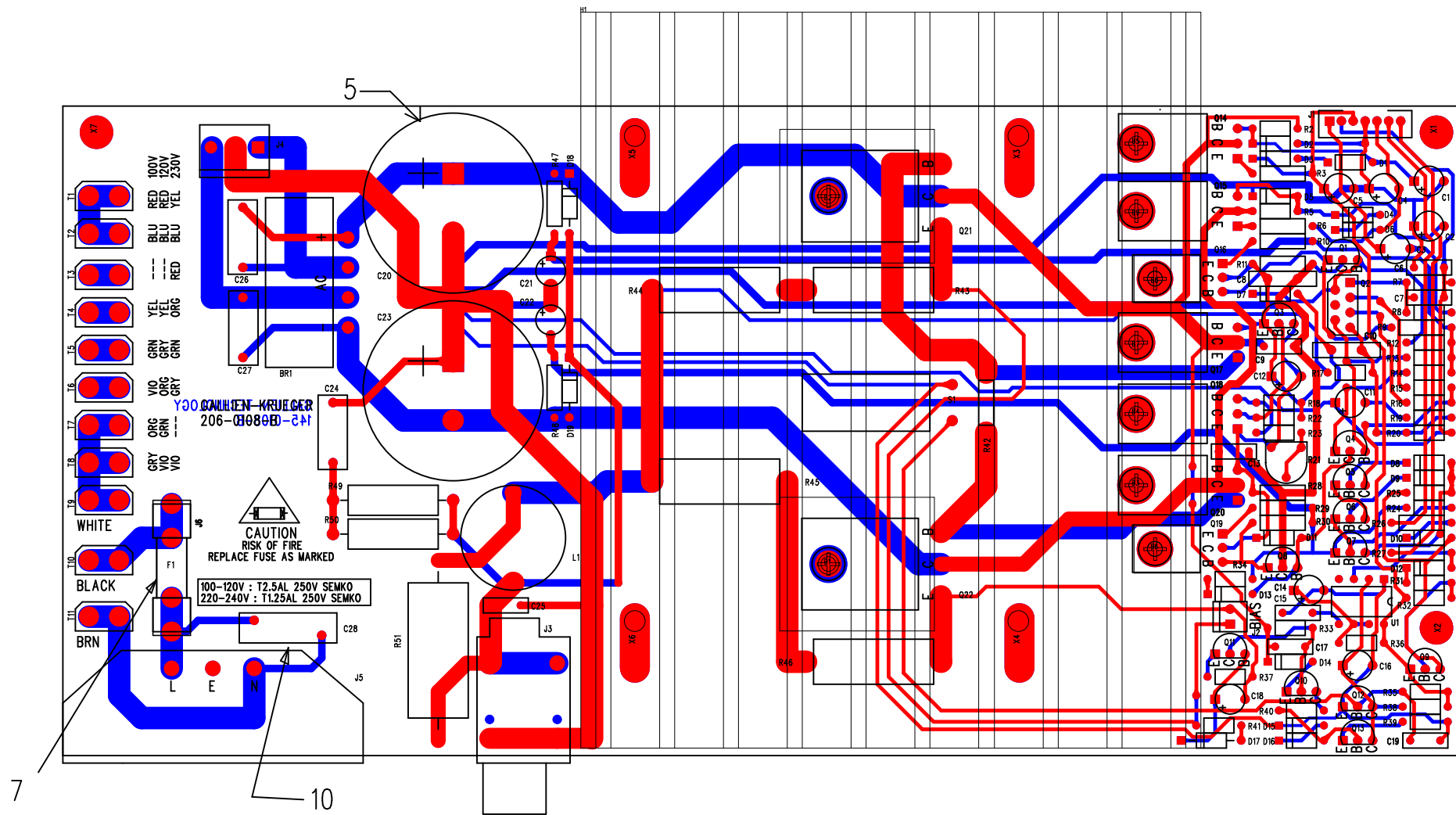
NOTES FOR ECO B:

- CHANGED ALL AXIAL CER TO POLYESTER.
- CHANGE CRITICAL RESISTORS TO FUSE TYPE.
- C7 470 pF.
- REMOVE R14 (REV A2)

APPROVALS		DATE	TITLE
INIT	R.A.G.	12/3/00	BACKLINE 115 POWER AMP
DRAWN:	R.A.G.	9/27/02	DRAWING NO: 406-0108-B
ELEC:			PART NO: 206-0108-B
MECH:			COMPANY: GALLIEN-KRUEGER
Q/A:			FILENAME: 60108B
RELEASED:			

Backline 115 Power Amp 206-0108-B

Part No.	Reference	Description	Manufacturer	Mfr. Part No.
001-2060-0	U1	LM555, TIMER	NATIONAL	LM555CN
010-0000-0	Q2	2SC3381BL,NPNX2,80V,100MA,2-10M1B	TOSHIBA	2SC3281BL
010-0001-0	Q8 Q11	2SC3478, NPN,180V,100MA,TO-92	NEC	2SC3478-K
010-0003-0	Q19	2SC3502-F,NPN,200V,100MA,TO-126	TOSHIBA	2SC3502
010-0012-0	Q5-7 Q12-13	MPSA06, NPN,80V,500MA,TO-92	MOTOROLA	MPS-A06
010-1002-0	Q1 Q4	2SA1376, PNP,180V,100MA,TO-92	NEC	2SA1376-K
010-1003-0	Q16	2SA1380-F,PNP,200V,100MA,TO-126	SANYO/TOSHIBA	2SA1380-F/E
010-1013-0	Q3 Q9-10	MPSA56 PNP 80V 500MA TO-92	MOTOROLA	MPS-A56
012-0002-0	Q14 Q17-18	2SC4793,NPN,200V,1.5A,2-10R1A	TOSHIBA	2SC4793
012-0003-0	Q21	2SC5242,NPN,230V,15A,2-16C1A	TOSHIBA	2SC5242-O
012-1002-0	Q15 Q20	2SA1837,PNP,200V,1.5A,2-10R1A	TOSHIBA	2SA1837
012-1003-0	Q22	2SA1962,PNP,230V,15A,2-16C1A	TOSHIBA	2SA1962
020-0004-0	D12	1N755A, ZENER,7.5V,500MW ,D035	TAITRON	1N755A
020-0050-0	D14	1N751, ZENER,5.1V,10%,400MW,DO-35	NATIONAL	1N751
020-0150-0	D2 D5	1N965B, ZENER, 15V, 5%, 500mW, DO-35	TAITRON	1N965B
020-1000-0	D1,3,4,6,8-10,13,15,16	1N4148, RECT-FAST, 200MA, 100V	MOTOROLA	1N4148
020-1022-0	D7 D11	BAV20, RECT, 200V, DO-35	NATIONAL	BAV20
020-1104-0	D17	SHOTTKY, 1A, 40V, 10NS, DO-41	MOTOROLA	1N5819
020-2106-0	D18-19	1N4004,RECT,1A,400V,DO-41	TAITRON	1N4004
023-0112-0	BR1	BRIDGE, 25A, 200V, VERT, PC, MO25S-02	CHENG-YI	MP25-02S
031-1107-0	C1-2 C11	CAP,ELEC,RAD,107,20%,25V	UNITED CHEMI-CON	SMG25VB101M6X11LL
031-1336-0	C14 C18	CAP,ELEC,RAD,336,20%,25V	UNITED CHEMI-CON	SRG25VB33RM5X7LL
031-2105-0	C16	CAP,ELEC,RAD, 105, 20%, 50V	UNITED CHEMI-CON	C440C105M5U5CA
031-2106-0	C3-5 C12	CAP,ELEC,RAD, 106, 20%, 50V	UNITED CHEMI-CON	SMG50VB10RM5X11LL
031-3476-0	C21-22	CAP,ELEC,RAD,476,20%,63V	UNITED CHEMI-CON	SMG63VB47RM6X11LL
031-3688-0	C20 C23	CAP, ELEC, RADIAL, 6800UF, 20%, 63V	UNITED CHEMI-CON	SMH63VN682M30X40T2
032-4102-0	C25	CAP,PE,102,5%,100V,	PANASONIC	ECQB1102JF
032-4103-0	C15	CAP,PE,103,5%,100V,	PANASONIC	ECQV1103JM
032-4104-0	C6 C9 C13 C17 C19	CAP,PE,104,5%,100V,	PANASONIC	ECQV1104JM
032-7104-0	C24 C26-27	CAP,PE,104,10%, 250V	ILLINOIS CAPACITOR	104MSR250K
034-4471-0	C7	CAP,MCR,470pF,5%,100V,	TAITRON	TMRS471J100NPOB
034-7103-0	C28	CAP, CERMIC DISK, 103, 10%, X-250V	PANASONIC	ECK-DRS103ZV
035-8030-0	C10	CAP MICA AXIAL , 3pF, 10%, 500V	CORNELL	CD10CD030D03
035-8561-0	C8	CAP MICA RADIAL, 561, 5%, 300V	CORNELL	CD15FC561J103
052-2.74-0	R3 R6	RES,METAL FILM, 2.74, 1/4W, 1%	ECI	M2F1AJ002.74
052-2212-0	R26-27	RES,METAL FILM, 2.21k, 1/4W,1%	ECI	M2F1AK002.21
052-5622-0	R11 R28	RES,METAL FILM,5.62K,1/4W,1%	ECI	M5F1AK005.62
055-.100-0	R43-46	RES, CERAMIC, 0.1, 2W,5%	ECI	MOM20J3AJ00.10
055-0101-0	R49-50	RES, METAL OXIDE, 10 OHM, 2W, 5%	ECI	MOM20J3AJ010.00
056-0100-0	R51	RES, CERAMIC WW, 1.0, 5W, 10%	ECI	WWC50J3AJ001.00
059-1000-0	R47-48	RES,MF,FUSE, 10.0, 1/4W, 1%	JUKN.OHM	FR25-10.0
059-1001-0	R42	RES,MF,FUSE, 100, 1/4W, 1%	JUKN.OHM	FR25-100
059-1002-0	R9 R30	RES,MF,FUSE, 1.00K, 1/4W, 1%	JUKN.OHM	FR25-1.00K
059-4750-0	R10 R29	RES,MF,FUSE, 47.5, 1/4W, 1%	JUKN.OHM	FR25-47.5
060-1002-0	R8 R19 R23 R37 R41	RES,METAL FILM, 1.00K, 1/8W, 1%	ECI	M1F1AK001.00
060-1003-0	R32 R35	RES,METAL FILM, 10.0K, 1/8W,1%	ECI	M1F1AK010.00
060-1004-0	R36 R38	RES,METAL FILM, 100K, 1/8W, 1%	ECI	M1F1AK100.00
060-1213-0	R7 R20	RES,METAL FILM, 12.1K, 1/8W, 1%	ECI	M1F1AK012.10
060-1821-0	R15-16 R22	RES,METAL FILM, 182, 1/8W, 1%	ECI	M1F1AJ182.00
060-2001-0	R24	RES,METAL FILM, 200, 1/8W, 1%	ECI	M1F1AJ200.00
060-2002-0	R12-14 R34	RES,METAL FILM, 2.00K, 1/8W, 1%	ECI	M1F1AK002.00
060-2003-0	R2 R5	RES,METAL FILM, 20.0K, 1/8W, 1%	ECI	M1F1AK020.00
060-2004-0	R25	RES,METAL FILM, 200K, 1/8W, 1%	ECI	M1F1AK200.00
060-2432-0	R33	RES,METAL FILM, 2.43K, 1/8W, 1%	ECI	M1F1AK002.43
060-3742-0	R18	RES,METAL FILM, 3.74K, 1/8W, 1%	ECI	M1F1AK003.92
060-4323-0	R17	RES,METAL FILM, 43.2K, 1/8W, 1%	ECI	M1F1AK043.20
060-4752-0	R31	RES,METAL FILM, 4.75K, 1/8W, 1%	ECI	M1F1AK004.75
060-4753-0	R40	RES,METAL FILM, 47.5K, 1/8W, 1%	ECI	M1F1AK047.50
060-7501-0	R39	RES,METAL FILM, 750, 1/8W, 1%	ECI	M1F1AJ750.00
070-0520-0	R21	POT,500B TRIM, 200mW	SONG HUEI	SH-655MCL-500B
081-0055-0	L1	INDUCTOR,2UH,20A,AIR CORE	SCHONBERG	081-0055-0
091-0018-0	F1	FUSE,5mm,T2.5AL,250V,SEMKO	LITTLE FUSE	218-02.5
091-1002-0	S1	THRM BRKR, 105C +/-5,0-DIFF, PC	KLIXON	7AM-028-A5
092-0001-0	J5	CON, IECX3, 10A, 250V, PC TERM	DIHTAIN	DTS-0045
092-0066-0	T1-11	FASTON, M, PC, .250"	KEYSTONE	1021



PCB WORK INSTRUCTIONS

DWG 420-0108-B

NOTES:

UNLESS OTHERWISE SPECIFIED:

1. SQUARE PADS ON THRU HOLE PARTS (ie: CONNECTORS, DIPS, SIPS, LEDES) DENOTE PIN 1.
2. ALL BOARDS REQUIRE A COMPLETE AND THOROUGH VISUAL INSPECTION.
3. ALL BOARDS MUST BE BARE BOARD TESTED.
4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.

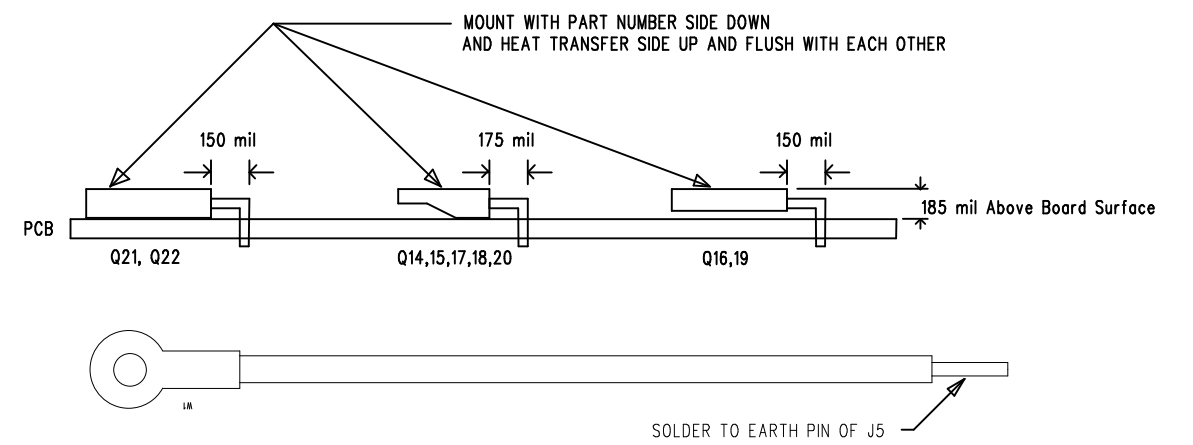
LOADING

5. C20, C23 LOAD WITH SILICON GLUE BETWEEN BOTTOM OF PART AND PCB
6. LOAD Q16 AND Q19 AFTER WAVE AS SHOWN BELOW, APPLY RUBER INSULATOR 105-0005-0. APPLY GREASED MICA INSULATOR TO Q21 AND Q22.
7. FUSE LOADING - F1
 FOR 120V MODEL: LOAD FUSE, 5MM, T2.5AL, 250V
 FOR 100V MODEL: LOAD FUSE 5MM, T2.5AL 250V
 FOR 230V MODEL: LOAD FUSE, 5MM, T1.25AL, 250V

FINAL QA

8. CHECK R43, 44, 45, 46 TO BE FLUSH WITH PCB
9. CHECK J1,2,3,4,5,6 TO SEE COMPONENTS ARE FLUSH WITH PCB
10. GLUE C28 TO J5 WITH SILICON RTV

NOT VALID UNLESS STAMP IS RED	gallien technology		2240 PARAGON DRIVE SAN JOSE CA. 95131 VOICE: 408-441-8081 FAX: 408-441-8085	
	APPROVALS		TITLE: BACKLINE 250 POWER AMP	
		INIT	DATE	SIZE
		DESIGNED: R.A.G.	2/15/01	DRAWING NO: 405-0108-B
		DRAWN: R.A.G.	9/27/02	REV. B
		ELEC:		PART NO: 145-0108-B
LAYER DESCRIPTION:		MECH:	COMPANY: GALLIEN-KRUEGER	
TO BE SOLDERED		GERBER FILE NAME:	FILENAME: 50108B	



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

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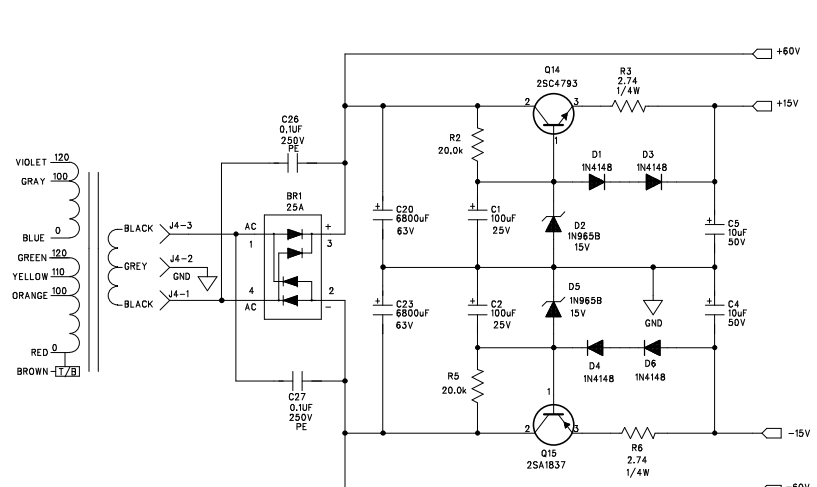
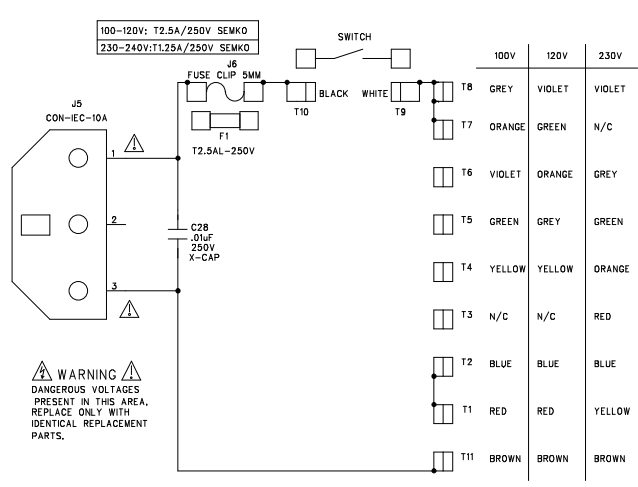
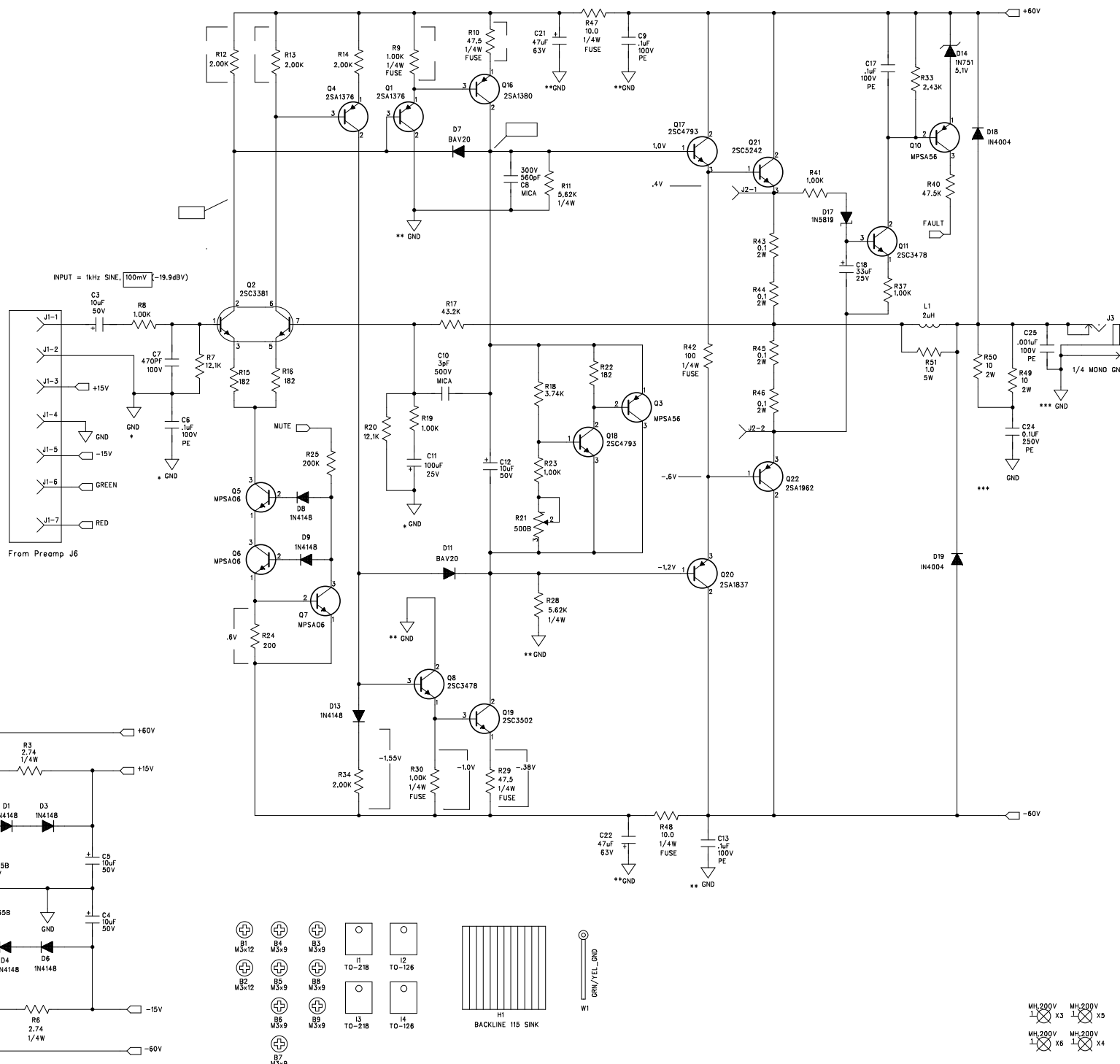
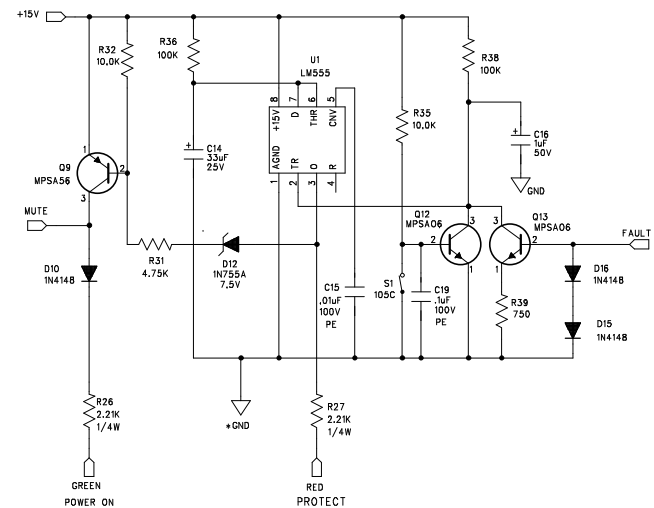
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4

3

2

1



WARNING
DANGEROUS VOLTAGES
PRESENT IN THIS AREA.
REPLACE ONLY WITH
IDENTICAL REPLACEMENT
PARTS.

BIAS ADJUSTMENT PROCEDURE:
WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

- NOTES: UNLESS OTHERWISE SPECIFIED,
- TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 - DENOTES RMS AC VOLTAGE

NOT VALID UNLESS STAMP IS RED

gallien technology

2240 PARAGON DRIVE
SAN JOSE CA. 95131
VOICE: 408-441-8081
FAX: 408-441-8085

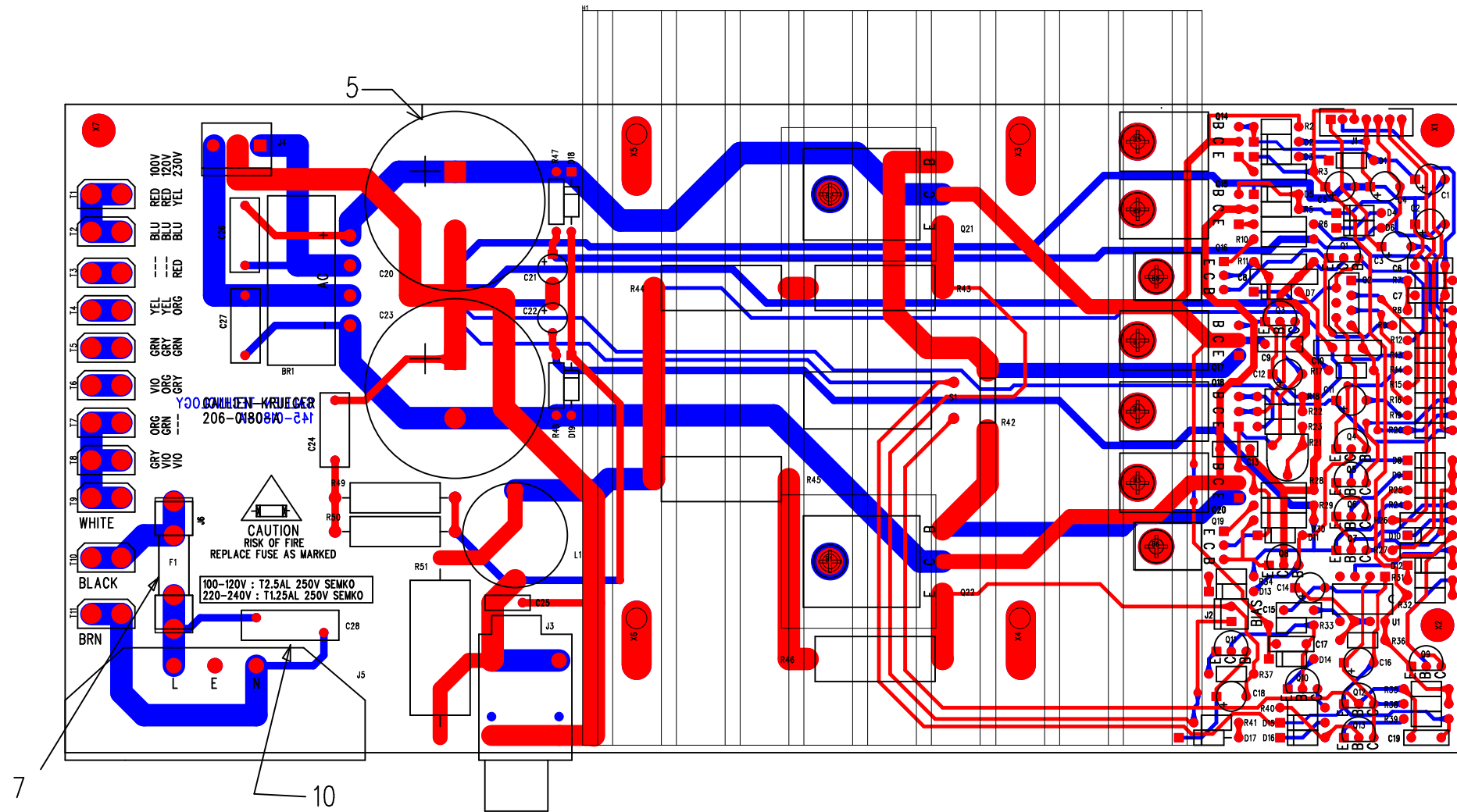
APPROVALS		DATE	TITLE
INIT	R.A.G.	12/3/00	BACKLINE 115 POWER AMP
DRAWN:	R.A.G.	12/8/02	SIZE: B
ELEC:			DRAWING NO: 406-0180-A
MECH:			PART NO: 206-0180-A
Q/A:			COMPANY: GALLIEN-KRUEGER
RELEASED:			FILENAME: 60180A

NOTES FOR ECO B:
1. UPDATED PAD AND HOLE SIZES.
2. CHANGED BOARD NO. TO 206-0180-A FROM 206-0108-B

MH:200V X3
MH:200V X4
MH:200V X5
MH:200V X6
MH:125/220 X7
MH:125/220 X8
MH:125/220 X9
MH:125/220 X10
MH:125/220 X11

Backline 115 Power Amp 206-0180-A

Part No.	Reference	Description	Manufacturer	Mfr. Part No.
001-2060-0	U1	LM555, TIMER	NATIONAL	LM555CN
010-0000-0	Q2	2SC3381BL,NPNX2,80V,100MA,2-10M1B	TOSHIBA	2SC3281BL
010-0001-0	Q8 Q11	2SC3478, NPN,180V,100MA,TO-92	NEC	2SC3478-K
010-0003-0	Q19	2SC3502-F,NPN,200V,100MA,TO-126	TOSHIBA	2SC3502
010-0012-0	Q5-7 Q12-13	MPSA06, NPN,80V,500MA,TO-92	MOTOROLA	MPS-A06
010-1002-0	Q1 Q4	2SA1376, PNP,180V,100MA,TO-92	NEC	2SA1376-K
010-1003-0	Q16	2SA1380-F,PNP,200V,100MA,TO-126	SANYO/TOSHIBA	2SA1380-F/E
010-1013-0	Q3 Q9-10	MPSA56 PNP 80V 500MA TO-92	MOTOROLA	MPS-A56
012-0002-0	Q14 Q17-18	2SC4793,NPN,200V,1.5A,2-10R1A	TOSHIBA	2SC4793
012-0003-0	Q21	2SC5242,NPN,230V,15A,2-16C1A	TOSHIBA	2SC5242-O
012-1002-0	Q15 Q20	2SA1837,PNP,200V,1.5A,2-10R1A	TOSHIBA	2SA1837
012-1003-0	Q22	2SA1962,PNP,230V,15A,2-16C1A	TOSHIBA	2SA1962
020-0004-0	D12	1N755A, ZENER,7.5V,500MW ,D035	TAITRON	1N755A
020-0050-0	D14	1N751, ZENER,5.1V,10%,400MW,DO-35	NATIONAL	1N751
020-0150-0	D2 D5	1N965B, ZENER, 15V, 5%, 500mW, DO-35	TAITRON	1N965B
020-1000-0	D1,3,4,6,8-10,13,15,16	1N4148, RECT-FAST, 200MA, 100V	MOTOROLA	1N4148
020-1022-0	D7 D11	BAV20, RECT, 200V, DO-35	NATIONAL	BAV20
020-1104-0	D17	SHOTTKY, 1A, 40V, 10NS, DO-41	MOTOROLA	1N5819
020-2106-0	D18-19	1N4004,RECT,1A,400V,DO-41	TAITRON	1N4004
023-0112-0	BR1	BRIDGE, 25A, 200V, VERT, PC, MO25S-02	CHENG-YI	MP25-02S
031-1107-0	C1-2 C11	CAP,ELEC,RAD,107,20%,25V	UNITED CHEMI-CON	SMG25VB101M6X11LL
031-1336-0	C14 C18	CAP,ELEC,RAD,336,20%,25V	UNITED CHEMI-CON	SRG25VB33RM5X7LL
031-2105-0	C16	CAP,ELEC,RAD, 105, 20%, 50V	UNITED CHEMI-CON	C440C105M5U5CA
031-2106-0	C3-5 C12	CAP,ELEC,RAD, 106, 20%, 50V	UNITED CHEMI-CON	SMG50VB10RM5X11LL
031-3476-0	C21-22	CAP,ELEC,RAD,476,20%,63V	UNITED CHEMI-CON	SMG63VB47RM6X11LL
031-3688-0	C20 C23	CAP, ELEC, RADIAL, 6800UF, 20%, 63V	UNITED CHEMI-CON	SMH63VN682M30X40T2
032-4102-0	C25	CAP,PE,102,5%,100V,	PANASONIC	ECQB1102JF
032-4103-0	C15	CAP,PE,103,5%,100V,	PANASONIC	ECQV1103JM
032-4104-0	C6 C9 C13 C17 C19	CAP,PE,104,5%,100V,	PANASONIC	ECQV1104JM
032-7104-0	C24 C26-27	CAP,PE,104,10%, 250V	ILLINOIS CAPACITOR	104MSR250K
034-4471-0	C7	CAP,MCR,470pF,5%,100V,	TAITRON	TMRS471J100NPOB
034-7103-0	C28	CAP, CERMIC DISK, 103, 10%, X-250V	PANASONIC	ECK-DRS103ZV
035-8030-0	C10	CAP MICA AXIAL , 3pF, 10%, 500V	CORNELL	CD10CD030D03
035-8561-0	C8	CAP MICA RADIAL, 561, 5%, 300V	CORNELL	CD15FC561J103
052-2.74-0	R3 R6	RES,METAL FILM, 2.74, 1/4W, 1%	ECI	M2F1AJ002.74
052-2212-0	R26-27	RES,METAL FILM, 2.21k, 1/4W,1%	ECI	M2F1AK002.21
052-5622-0	R11 R28	RES,METAL FILM,5.62K,1/4W,1%	ECI	M5F1AK005.62
055-.100-0	R43-46	RES, CERAMIC, 0.1, 2W,5%	ECI	MOM20J3AJ00.10
055-0101-0	R49-50	RES, METAL OXIDE, 10 OHM, 2W, 5%	ECI	MOM20J3AJ010.00
056-0100-0	R51	RES, CERAMIC WW, 1.0, 5W, 10%	ECI	WWC50J3AJ001.00
059-1000-0	R47-48	RES,MF,FUSE, 10.0, 1/4W, 1%	JUKN.OHM	FR25-10.0
059-1001-0	R42	RES,MF,FUSE, 100, 1/4W, 1%	JUKN.OHM	FR25-100
059-1002-0	R9 R30	RES,MF,FUSE, 1.00K, 1/4W, 1%	JUKN.OHM	FR25-1.00K
059-4750-0	R10 R29	RES,MF,FUSE, 47.5, 1/4W, 1%	JUKN.OHM	FR25-47.5
060-1002-0	R8 R19 R23 R37 R41	RES,METAL FILM, 1.00K, 1/8W, 1%	ECI	M1F1AK001.00
060-1003-0	R32 R35	RES,METAL FILM, 10.0K, 1/8W,1%	ECI	M1F1AK010.00
060-1004-0	R36 R38	RES,METAL FILM, 100K, 1/8W, 1%	ECI	M1F1AK100.00
060-1213-0	R7 R20	RES,METAL FILM, 12.1K, 1/8W, 1%	ECI	M1F1AK012.10
060-1821-0	R15-16 R22	RES,METAL FILM, 182, 1/8W, 1%	ECI	M1F1AJ182.00
060-2001-0	R24	RES,METAL FILM, 200, 1/8W, 1%	ECI	M1F1AJ200.00
060-2002-0	R12-14 R34	RES,METAL FILM, 2.00K, 1/8W, 1%	ECI	M1F1AK002.00
060-2003-0	R2 R5	RES,METAL FILM, 20.0K, 1/8W, 1%	ECI	M1F1AK020.00
060-2004-0	R25	RES,METAL FILM, 200K, 1/8W, 1%	ECI	M1F1AK200.00
060-2432-0	R33	RES,METAL FILM, 2.43K, 1/8W, 1%	ECI	M1F1AK002.43
060-3742-0	R18	RES,METAL FILM, 3.74K, 1/8W, 1%	ECI	M1F1AK003.92
060-4323-0	R17	RES,METAL FILM, 43.2K, 1/8W, 1%	ECI	M1F1AK043.20
060-4752-0	R31	RES,METAL FILM, 4.75K, 1/8W, 1%	ECI	M1F1AK004.75
060-4753-0	R40	RES,METAL FILM, 47.5K, 1/8W, 1%	ECI	M1F1AK047.50
060-7501-0	R39	RES,METAL FILM, 750, 1/8W, 1%	ECI	M1F1AJ750.00
070-0520-0	R21	POT,500B TRIM, 200mW	SONG HUEI	SH-655MCL-500B
081-0055-0	L1	INDUCTOR,2UH,20A,AIR CORE	SCHONBERG	081-0055-0
091-0018-0	F1	FUSE,5mm,T2.5AL,250V,SEMKO	LITTLE FUSE	218-02.5
091-1002-0	S1	THRM BRKR, 105C +/-5,0-DIFF, PC	KLIXON	7AM-028-A5
092-0001-0	J5	CON, IECX3, 10A, 250V, PC TERM	DIHTAIN	DTS-0045
092-0066-0	T1-11	FASTON, M, PC, .250"	KEYSTONE	1021



PCB WORK INSTRUCTIONS

DWG 420-0180-A

NOTES:

UNLESS OTHERWISE SPECIFIED:

1. SQUARE PADS ON THRU HOLE PARTS (ie: CONNECTORS, DIPS, SIPS, LEDS) DENOTE PIN 1.
2. ALL BOARDS REQUIRE A COMPLETE AND THOROUGH VISUAL INSPECTION.
3. ALL BOARDS MUST BE BARE BOARD TESTED.
4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.

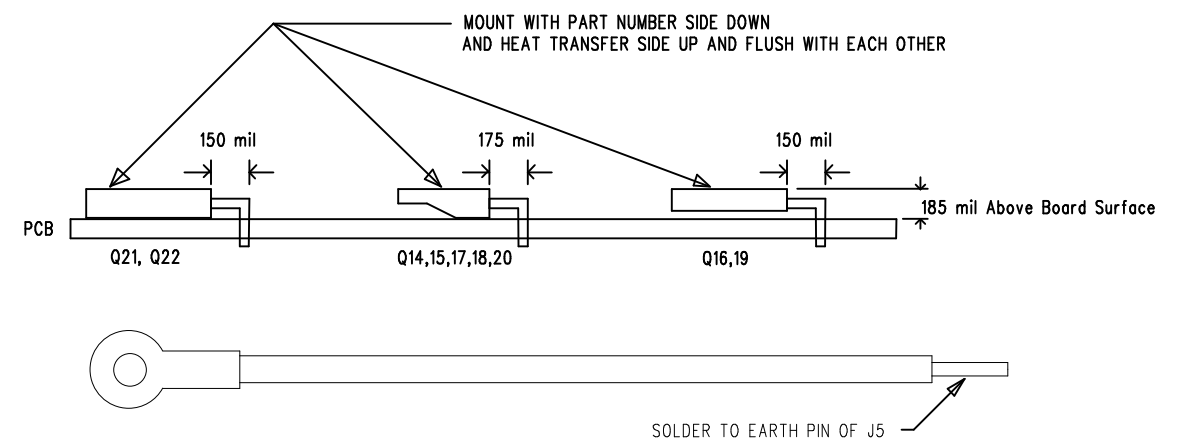
LOADING

5. C20, C23 LOAD WITH SILICON GLUE BETWEEN BOTTOM OF PART AND PCB
6. LOAD Q16 AND Q19 AFTER WAVE AS SHOWN BELOW, APPLY RUBER INSULATOR 105-0005-0. APPLY GREASED MICA INSULATOR TO Q21 AND Q22.
7. FUSE LOADING - F1
 - FOR 120V MODEL: LOAD FUSE, 5MM, T2.5AL, 250V
 - FOR 100V MODEL: LOAD FUSE 5MM, T2.5AL 250V
 - FOR 230V MODEL: LOAD FUSE, 5MM, T1.25AL, 250V

FINAL QA

8. CHECK R43, 44, 45, 46 TO BE FLUSH WITH PCB
9. CHECK J1,2,3,4,5,6 TO SEE COMPONENTS ARE FLUSH WITH PCB
10. GLUE C28 TO J5 WITH SILICON RTV

NOT VALID UNLESS STAMP IS RED		2240 PARAGON DRIVE SAN JOSE CA. 95131 VOICE: 408-441-8081 FAX: 408-441-8085	
gallien technology		TITLE: BACKLINE 250 POWER AMP	
APPROVALS		SIZE: B	
INIT	DATE	DRAWING NO:	REV.
DESIGNED: R.A.G.	2/15/01	405-0180-A	A
DRAWN: R.A.G.	12/8/02	PART NO:	
		145-0180-A	
ELEC:		COMPANY: GALLIEN-KRUEGER	
MECH:		FILENAME: 50180A	
GERBER FILE NAME: 50180A.pcb			
LAYER DESCRIPTION: TOPSIDE ROUTING			



Customer Name:	Gallien-Krueger	Current Rev #:	A	New ECO Rev #:	A1
Model:	Backline 115/250	Distribute To:		Page:	1 Of: 1
Assembly Description:	Backline 115 power amp	Originator:	RAG		
Assembly Numbers:	206-0180-A	Approved by:			
		Effective Date:	11/18/2003		

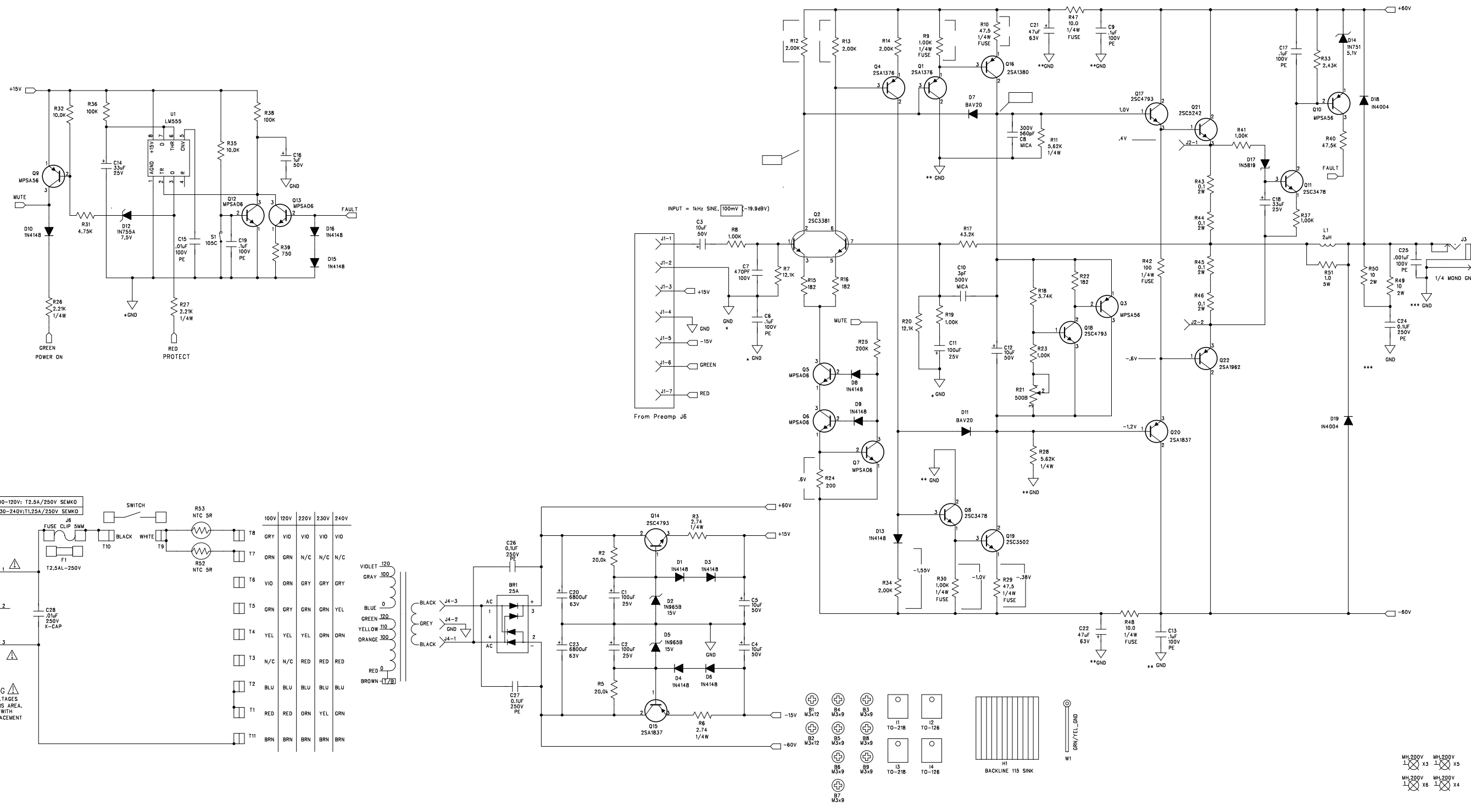
Effective		Document Update	Date	Initials
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<input type="checkbox"/> All in Service	<input type="checkbox"/> Next Production Run	<input type="checkbox"/> Assembly Dwg.		
<input type="checkbox"/> All in Stock	<input type="checkbox"/>	<input checked="" type="checkbox"/> Board Artwork		
Beginning Serial Number:		<input checked="" type="checkbox"/> BOM		
Reason For Change		<input type="checkbox"/> Control Form		
Prevent fuse failure due to inrush current at turn on.		<input checked="" type="checkbox"/> Costing		
Expand supply table to include transformer hookup for 220V and 240V.		<input type="checkbox"/> Fab Drawing		
		<input type="checkbox"/> Inspection Proc.		
		<input checked="" type="checkbox"/> Part Master File		
		<input checked="" type="checkbox"/> Schematic		
		<input type="checkbox"/> Service Manual		
		<input type="checkbox"/> Test Procedure		
		<input type="checkbox"/>		
Other Affected Assemblies				
303-0180-A, All Voltages				
<input type="checkbox"/>	Continued on ECO Supplement Page			

Description Of Change		Distribution	Date	Initials
Add thermistors in series with each transformer coil.		<input type="checkbox"/> Accounting		
Update schematic and board silkscreen with new supply table.		<input type="checkbox"/> Assembly		
		<input checked="" type="checkbox"/> Engineering		
		<input checked="" type="checkbox"/> Incoming Q.C.		
		<input checked="" type="checkbox"/> Production Eng.		
		<input checked="" type="checkbox"/> Purchasing		
		<input type="checkbox"/> Q.A.		
		<input type="checkbox"/> Service		
		<input type="checkbox"/> Test		
<input type="checkbox"/>	Continued on Supplement Page			
<input type="checkbox"/>	Drawing(s) attached			

Part Number	Description	Parts Added		Parts Deleted	
		Qty	Ref. Designator	Qty	Ref. Designator
022-3002-0	THER-NTC 5R5A	2	R52,53		

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

6 5 4 3 2 1



NOTES: UNLESS OTHERWISE SPECIFIED,
 1. TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 2. DENOTES RMS AC VOLTAGE

BIAS ADJUSTMENT PROCEDURE:
 WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
 TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
 TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

NOT VALID UNLESS STAMP IS RED

gallien technology

2234 INDUSTRIAL DRIVE
 STOCKTON CA. 95206
 VOICE: 209-234-7300
 FAX: 209-234-8420

TITLE: BACKLINE 115 POWER AMP

DESIGNED: R.A.G. DATE: 12/3/00
 DRAWN: R.A.G. DATE: 11/17/03
 ELEC:
 MECH:
 Q/A:
 RELEASED:

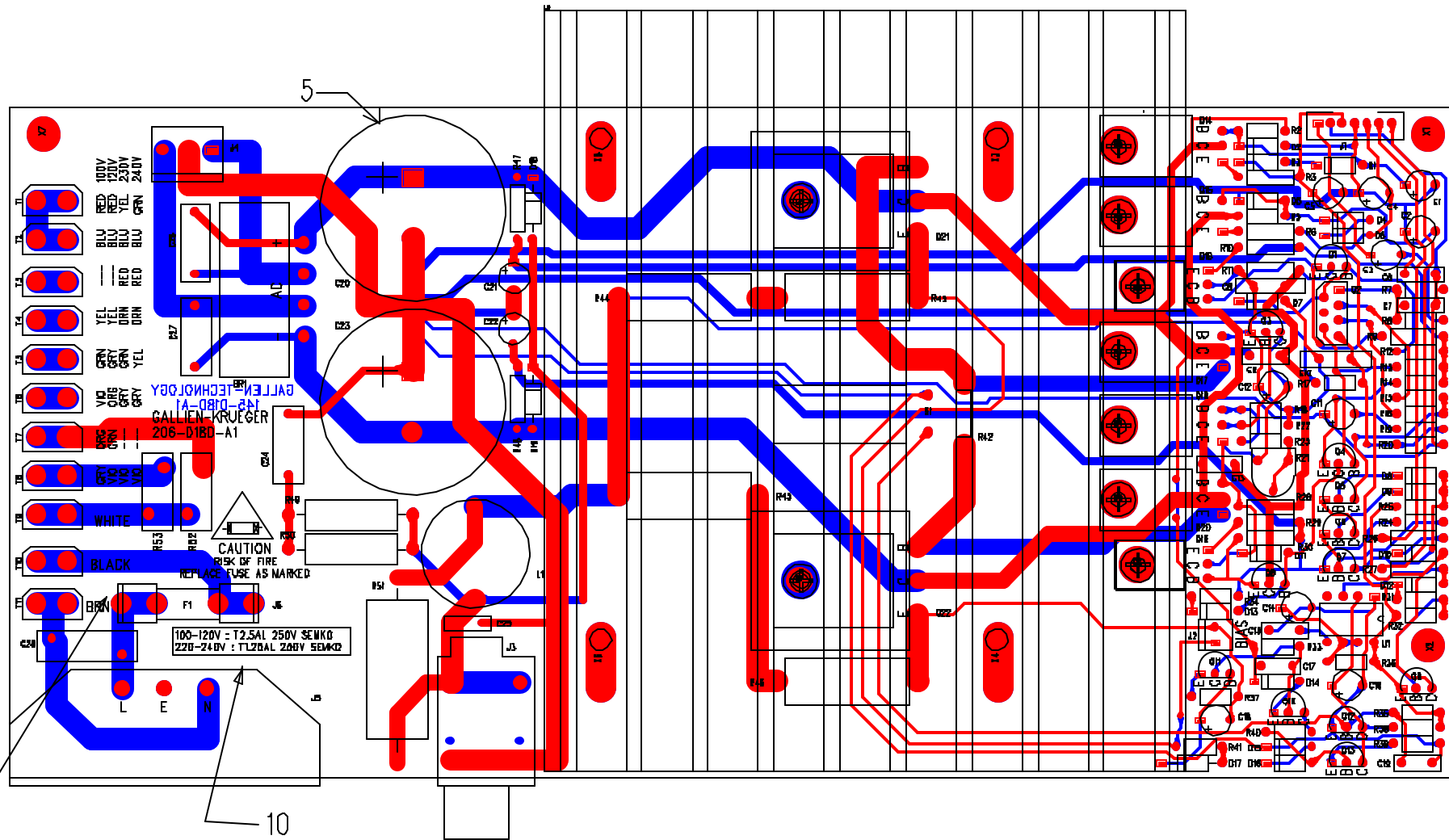
REV. A1
 DRAWING NO: 406-0180-A1
 PART NO: 206-0180-A1
 COMPANY: GALLIEN-KRUEGER
 FILENAME: 60180A1

D
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D
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A

Backline 115 Power Amp 206-0180-A1

Part No.	Reference	Description	Manufacturer	Mfr. Part No.
001-2060-0	U1	LM555, TIMER	NATIONAL	LM555CN
010-0000-0	Q2	2SC3381BL,NPNX2,80V,100MA,2-10M1B	TOSHIBA	2SC3281BL
010-0001-0	Q8 Q11	2SC3478, NPN,180V,100MA,TO-92	NEC	2SC3478-K
010-0003-0	Q19	2SC3502-F,NPN,200V,100MA,TO-126	TOSHIBA	2SC3502
010-0012-0	Q5-7 Q12-13	MPSA06, NPN,80V,500MA,TO-92	MOTOROLA	MPS-A06
010-1002-0	Q1 Q4	2SA1376, PNP,180V,100MA,TO-92	NEC	2SA1376-K
010-1003-0	Q16	2SA1380-F,PNP,200V,100MA,TO-126	SANYO/TOSHIBA	2SA1380-F/E
010-1013-0	Q3 Q9-10	MPSA56 PNP 80V 500MA TO-92	MOTOROLA	MPS-A56
012-0002-0	Q14 Q17-18	2SC4793,NPN,200V,1.5A,2-10R1A	TOSHIBA	2SC4793
012-0003-0	Q21	2SC5242,NPN,230V,15A,2-16C1A	TOSHIBA	2SC5242-O
012-1002-0	Q15 Q20	2SA1837,PNP,200V,1.5A,2-10R1A	TOSHIBA	2SA1837
012-1003-0	Q22	2SA1962,PNP,230V,15A,2-16C1A	TOSHIBA	2SA1962
020-0004-0	D12	1N755A, ZENER,7.5V,500MW ,D035	TAITRON	1N755A
020-0050-0	D14	1N751, ZENER,5.1V,10%,400MW,DO-35	NATIONAL	1N751
020-0150-0	D2 D5	1N965B, ZENER, 15V, 5%, 500mW, DO-35	TAITRON	1N965B
020-1000-0	D1,3,4,6,8-10,13,15,16	1N4148, RECT-FAST, 200MA, 100V	MOTOROLA	1N4148
020-1022-0	D7 D11	BAV20, RECT, 200V, DO-35	NATIONAL	BAV20
020-1104-0	D17	SHOTTKY, 1A, 40V, 10NS, DO-41	MOTOROLA	1N5819
020-2106-0	D18-19	1N4004,RECT,1A,400V,DO-41	TAITRON	1N4004
022-3002-0	R52,53	THERMISTOR, NTC,5R5A	UEI	N13SP005M
023-0112-0	BR1	BRIDGE, 25A, 200V, VERT, PC, MO25S-02	CHENG-YI	MP25-02S
031-1107-0	C1-2 C11	CAP,ELEC,RAD,107,20%,25V	UNITED CHEMI-CON	SMG25VB101M6X11LL
031-1336-0	C14 C18	CAP,ELEC,RAD,336,20%,25V	UNITED CHEMI-CON	SRG25VB33RM5X7LL
031-2105-0	C16	CAP,ELEC,RAD, 105, 20%, 50V	UNITED CHEMI-CON	C440C105M5U5CA
031-2106-0	C3-5 C12	CAP,ELEC,RAD, 106, 20%, 50V	UNITED CHEMI-CON	SMG50VB10RM5X11LL
031-3476-0	C21-22	CAP,ELEC,RAD,476,20%,63V	UNITED CHEMI-CON	SMG63VB47RM6X11LL
031-3688-0	C20 C23	CAP, ELEC, RADIAL, 6800UF, 20%, 63V	UNITED CHEMI-CON	SMH63VN682M30X40T2
032-4102-0	C25	CAP,PE,102,5%,100V,	PANASONIC	ECQB1102JF
032-4103-0	C15	CAP,PE,103,5%,100V,	PANASONIC	ECQV1103JM
032-4104-0	C6 C9 C13 C17 C19	CAP,PE,104,5%,100V,	PANASONIC	ECQV1104JM
032-7104-0	C24 C26-27	CAP,PE,104,10%, 250V	ILLINOIS CAPACITOR	104MSR250K
034-4471-0	C7	CAP,MCR,470pF,5%,100V,	TAITRON	TMRS471J100NPOB
034-7103-0	C28	CAP, CERMIC DISK, 103, 10%, X-250V	PANASONIC	ECK-DRS103ZV
035-8030-0	C10	CAP MICA AXIAL , 3pF, 10%, 500V	CORNELL	CD10CD030D03
035-8561-0	C8	CAP MICA RADIAL, 561, 5%, 300V	CORNELL	CD15FC561J103
052-2.74-0	R3 R6	RES,METAL FILM, 2.74, 1/4W, 1%	ECI	M2F1AJ002.74
052-2212-0	R26-27	RES,METAL FILM, 2.21k, 1/4W,1%	ECI	M2F1AK002.21
052-5622-0	R11 R28	RES,METAL FILM,5.62K,1/4W,1%	ECI	M5F1AK005.62
055-.100-0	R43-46	RES, CERAMIC, 0.1, 2W,5%	ECI	MOM20J3AJ000.10
055-0101-0	R49-50	RES, METAL OXIDE, 10 OHM, 2W, 5%	ECI	MOM20J3AJ010.00
056-0100-0	R51	RES, CERAMIC WW, 1.0, 5W, 10%	ECI	WWC50J3AJ001.00
059-1000-0	R47-48	RES,MF,FUSE, 10.0, 1/4W, 1%	JUKN.OHM	FR25-10.0
059-1001-0	R42	RES,MF,FUSE, 100, 1/4W, 1%	JUKN.OHM	FR25-100
059-1002-0	R9 R30	RES,MF,FUSE, 1.00K, 1/4W, 1%	JUKN.OHM	FR25-1.00K
059-4750-0	R10 R29	RES,MF,FUSE, 47.5, 1/4W, 1%	JUKN.OHM	FR25-47.5
060-1002-0	R8 R19 R23 R37 R41	RES,METAL FILM, 1.00K, 1/8W, 1%	ECI	M1F1AK001.00
060-1003-0	R32 R35	RES,METAL FILM, 10.0K, 1/8W,1%	ECI	M1F1AK010.00
060-1004-0	R36 R38	RES,METAL FILM, 100K, 1/8W, 1%	ECI	M1F1AK100.00
060-1213-0	R7 R20	RES,METAL FILM, 12.1K, 1/8W, 1%	ECI	M1F1AK012.10
060-1821-0	R15-16 R22	RES,METAL FILM, 182, 1/8W, 1%	ECI	M1F1AJ182.00
060-2001-0	R24	RES,METAL FILM, 200, 1/8W, 1%	ECI	M1F1AJ200.00
060-2002-0	R12-14 R34	RES,METAL FILM, 2.00K, 1/8W, 1%	ECI	M1F1AK002.00
060-2003-0	R2 R5	RES,METAL FILM, 20.0K, 1/8W, 1%	ECI	M1F1AK020.00
060-2004-0	R25	RES,METAL FILM, 200K, 1/8W, 1%	ECI	M1F1AK200.00
060-2432-0	R33	RES,METAL FILM, 2.43K, 1/8W, 1%	ECI	M1F1AK002.43
060-3742-0	R18	RES,METAL FILM, 3.74K, 1/8W, 1%	ECI	M1F1AK003.92
060-4323-0	R17	RES,METAL FILM, 43.2K, 1/8W, 1%	ECI	M1F1AK043.20
060-4752-0	R31	RES,METAL FILM, 4.75K, 1/8W, 1%	ECI	M1F1AK004.75
060-4753-0	R40	RES,METAL FILM, 47.5K, 1/8W, 1%	ECI	M1F1AK047.50
060-7501-0	R39	RES,METAL FILM, 750, 1/8W, 1%	ECI	M1F1AJ750.00
070-0520-0	R21	POT,500B TRIM, 200mW	SONG HUEI	SH-655MCL-500B
081-0055-0	L1	INDUCTOR,2UH,20A,AIR CORE	SCHONBERG	081-0055-0
091-0018-0	F1	FUSE,5mm,T2.5AL,250V,SEMKO	LITTLE FUSE	218-02.5
091-1002-0	S1	THRM BRKR, 105C +/-5.0-DIFF, PC	KLIXON	7AM-028-A5
092-0001-0	J5	CON, IECX3, 10A, 250V, PC TERM	DIHTAIN	DTS-0045
092-0066-0	T1-11	FASTON, M, PC, .250"	KEYSTONE	1021



PCB WORK INSTRUCTIONS

DWG 420-0180-A1

NOTES:

UNLESS OTHERWISE SPECIFIED:

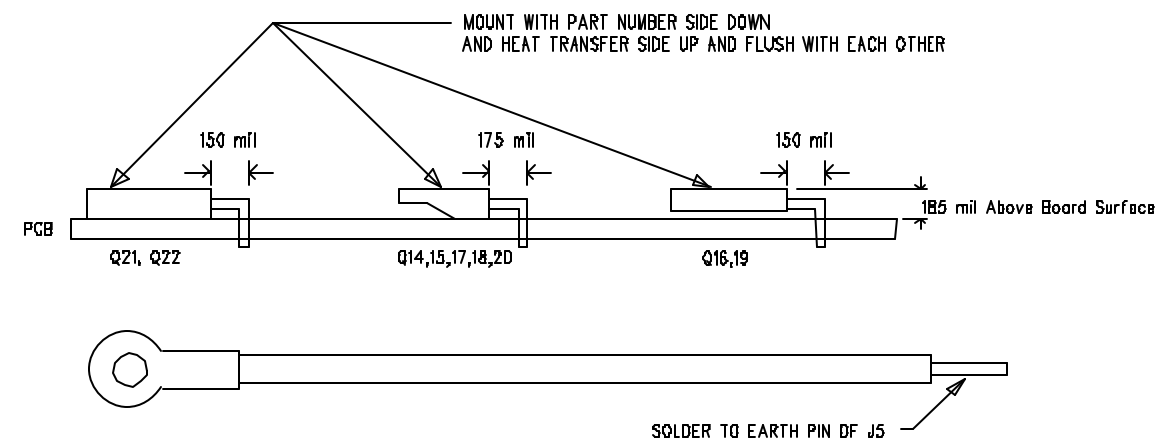
1. SQUARE PADS ON THRU HOLE PARTS (ie: CONNECTORS, DIPS, SIPS, LEDS) DENOTE PIN 1.
2. ALL BOARDS REQUIRE A COMPLETE AND THOROUGH VISUAL INSPECTION.
3. ALL BOARDS MUST BE BARE BOARD TESTED.
4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.

LOADING

5. C20, C23 LOAD WITH SILICON GLUE BETWEEN BOTTOM OF PART AND PCB
6. LOAD Q18 AND Q19 AFTER WAVE AS SHOWN BELOW, APPLY RUBBER INSULATOR 105-DDD5-0. APPLY GREASED MICA INSULATOR TO Q21 AND Q22.
7. FUSE LOADING - F1
 - FOR 120V MODEL: LOAD FUSE, 5MM, T2.5AL, 250V
 - FOR 100V MODEL: LOAD FUSE 5MM, T2.5AL 250V
 - FOR 230V MODEL: LOAD FUSE, 5MM, T1.25AL, 250V

FINAL QA

8. CHECK R43, 44, 45, 46 TO BE FLUSH WITH PCB
9. CHECK J1,2,3,4,5,6 TO SEE COMPONENTS ARE FLUSH WITH PCB
10. GLUE C28 TO J5 WITH SILICON RTV

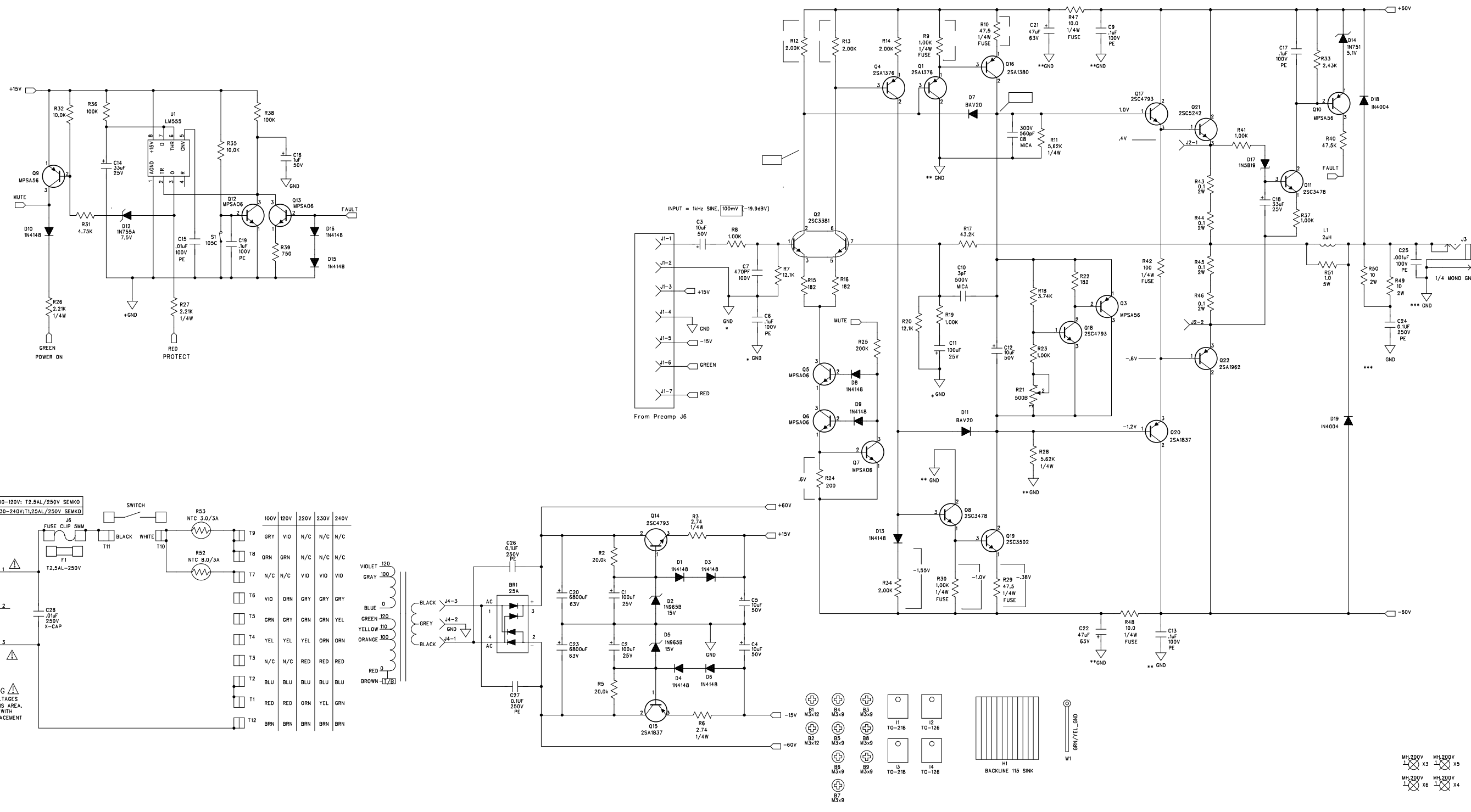


NOT VALID UNLESS STAMP IS RED		2234 INDUSTRIAL DRIVE STOCKTON CA 95206 VOICE: 209-234-7300 FAX: 209-234-8420	
gallien technology		TITLE: BACKLINE 250 POWER AMP	
APPROVALS INIT DATE		SIZE DRAWING NO: REV.	
DESIGNED: R.A.G. 2/15/01		B 405-0180-A1 A1	
DRAWN: R.A.G. 11/17/03		PART NO: 145-0180-A1	
ELEC:		COMPANY: GALLIEN-KRUEGER	
MECH:		GERBER FILE NAME: 50180A1.pcb	
LAYER DESCRIPTION: TOBESIDEYBOUTSIREN		FILENAME: 50180A1	

Customer Name:		Gallien-Krueger		Current Rev #:	A1	New ECO Rev #:	A2		
Model:		Backline 115/250		Distribute To:		Page:	1	Of:	1
Assembly Description:		Backline 115 power amp		Originator: RAG					
Assembly Numbers:		206-0180-A		Approved by:					
		1450-180-A		Effective Date: 12/14/2003					
Effective				Document Update		Date		Initials	
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<input type="checkbox"/>	All in Service	<input type="checkbox"/>	Next Production Run	<input type="checkbox"/>	Assembly Dwg.				
<input type="checkbox"/>	All in Stock	<input type="checkbox"/>		<input checked="" type="checkbox"/>	Board Artwork				
Beginning Serial Number:				<input checked="" type="checkbox"/>	BOM				
Reason For Change				<input type="checkbox"/>	Control Form				
Prevent fuse failure due to inrush current at turn on. An improvement to A1 which was not put into production.				<input checked="" type="checkbox"/>	Costing				
				<input type="checkbox"/>	Fab Drawing				
				<input type="checkbox"/>	Inspection Proc.				
				<input checked="" type="checkbox"/>	Part Master File				
				<input checked="" type="checkbox"/>	Schematic				
				<input type="checkbox"/>	Service Manual				
				<input type="checkbox"/>	Test Procedure				
				<input type="checkbox"/>					
Other Affected Assemblies									
303-0180-A, All Voltages									
<input type="checkbox"/>	Continued on ECO Supplement Page								
Description Of Change				Distribution		Date		Initials	
Add NTC thermistors to the primary side of the transformer. One for 120V and another for 230V. An additional primary terminal is added to accommodate the wiring.				<input type="checkbox"/>	Accounting				
For current production a thermistor of the proper value will be added to the bottom of the board.				<input type="checkbox"/>	Assembly				
For 220V-240V use NTC-8R/3A.				<input checked="" type="checkbox"/>	Engineering				
For 100V-120V use NTC-3R/3A.				<input checked="" type="checkbox"/>	Incoming Q.C.				
				<input checked="" type="checkbox"/>	Production Eng.				
				<input checked="" type="checkbox"/>	Purchasing				
				<input type="checkbox"/>	Q.A.				
				<input type="checkbox"/>	Service				
				<input type="checkbox"/>	Test				
<input type="checkbox"/>	Continued on Supplement Page		<input type="checkbox"/>	Drawing(s) attached					
Part Number	Description	Parts Added		Parts Deleted					
		Qty	Ref. Designator	Qty	Ref. Designator				
022-3010-0	THER-NTC 3R3A	1	R53						
022-3015-0	THER-NTC 8R3A	1	R52						
092-0066-0	FASTON	1	T12						

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

6 5 4 3 2 1



NOTES: UNLESS OTHERWISE SPECIFIED,
 1. TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 2. DENOTES RMS AC VOLTAGE

BIAS ADJUSTMENT PROCEDURE:
 WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
 TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
 TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

NOT VALID UNLESS STAMP IS RED

gallien technology

2234 INDUSTRIAL DRIVE
 STOCKTON CA. 95206
 VOICE: 209-234-7300
 FAX: 209-234-8420

TITLE: BACKLINE 115 POWER AMP

DESIGNED: R.A.G. DATE: 12/3/00
 DRAWN: R.A.G. DATE: 12/11/03
 ELEC:
 MECH:
 Q/A:
 RELEASED:

REV. A2

COMPANY: GALLIEN-KRUEGER
 FILENAME: 60180A2

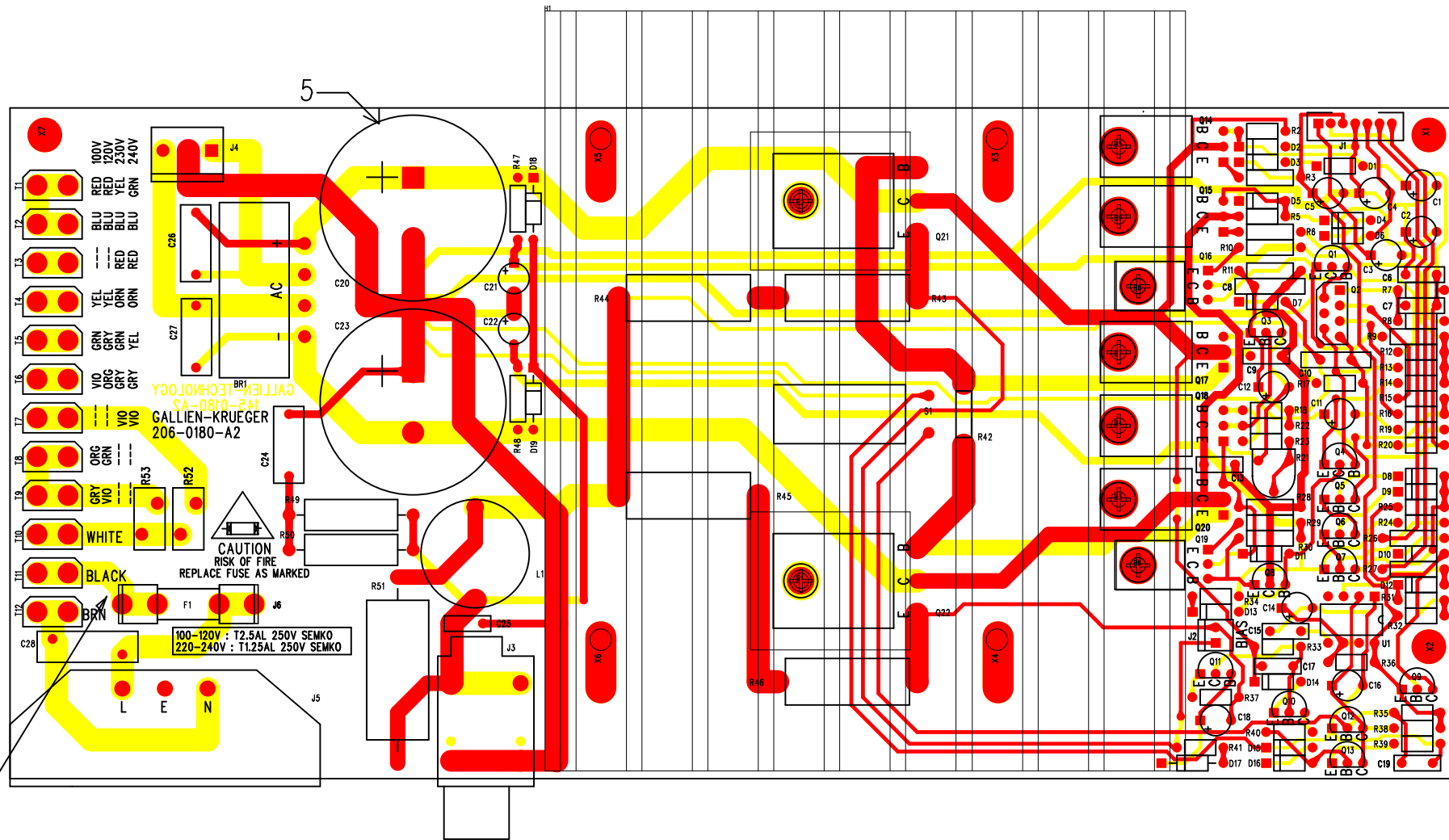
3. ADD T7.

MH200V	MH200V	MH125/220
X3	X5	X7
MH200V	MH200V	MH125/220
X8	X4	X2
X1	X4	X1

GALLIEN-KRUEGER

Backline 115 Power Amp 206-0180-A2

Part No.	Reference	Description	Manufacturer	Mfr. Part No.
001-2060-0	U1	LM555, TIMER	NATIONAL	LM555CN
010-0000-0	Q2	2SC3381BL,NPNX2,80V,100MA,2-10M1B	TOSHIBA	2SC3281BL
010-0001-0	Q8 Q11	2SC3478, NPN, 180V, 100MA, TO-92	NEC	2SC3478-K
010-0003-0	Q19	2SC3502-F,NPN,200V,100MA,TO-126	TOSHIBA	2SC3502
010-0012-0	Q5-7 Q12-13	MPSA06, NPN, 80V, 500MA, TO-92	MOTOROLA	MPS-A06
010-1002-0	Q1 Q4	2SA1376, PNP, 180V, 100MA, TO-92	NEC	2SA1376-K
010-1003-0	Q16	2SA1380-F, PNP, 200V, 100MA, TO-126	SANYO/TOSHIBA	2SA1380-F/E
010-1013-0	Q3 Q9-10	MPSA56 PNP 80V 500MA TO-92	MOTOROLA	MPS-A56
012-0002-0	Q14 Q17-18	2SC4793,NPN,200V,1.5A,2-10R1A	TOSHIBA	2SC4793
012-0003-0	Q21	2SC5242,NPN,230V,15A,2-16C1A	TOSHIBA	2SC5242-O
012-1002-0	Q15 Q20	2SA1837,PNP,200V,1.5A,2-10R1A	TOSHIBA	2SA1837
012-1003-0	Q22	2SA1962,PNP,230V,15A,2-16C1A	TOSHIBA	2SA1962
020-0004-0	D12	1N755A, ZENER, 7.5V, 500MW, DO35	TAITRON	1N755A
020-0050-0	D14	1N751, ZENER, 5.1V, 10%, 400MW, DO-35	NATIONAL	1N751
020-0150-0	D2 D5	1N965B, ZENER, 15V, 5%, 500mW, DO-35	TAITRON	1N965B
020-1000-0	D1,3,4,6,8-10,13,15,16	1N4148, RECT-FAST, 200MA, 100V	MOTOROLA	1N4148
020-1022-0	D7 D11	BAV20, RECT, 200V, DO-35	NATIONAL	BAV20
020-1104-0	D17	SHOTTKY, 1A, 40V, 10NS, DO-41	MOTOROLA	1N5819
020-2106-0	D18-19	1N4004,RECT,1A,400V,DO-41	TAITRON	1N4004
022-3010-0	R53	THERMISTOR, NTC, 3 OHMS, 3 AMPS	UEI	08SP003M
022-3015-0	R52	THERMISTOR, NTC, 8 OHMS, 3 AMPS	UEI	08SP008M
023-0112-0	BR1	BRIDGE, 25A, 200V, VERT, PC, MO25S-02	CHENG-YI	MP25-02S
031-1107-0	C1-2 C11	CAP,ELEC,RAD,107,20%,25V	UNITED CHEMI-CON	SMG25VB101M6X11LL
031-1336-0	C14 C18	CAP,ELEC,RAD,336,20%,25V	UNITED CHEMI-CON	SRG25VB33RM5X7LL
031-2105-0	C16	CAP,ELEC,RAD, 105, 20%, 50V	UNITED CHEMI-CON	C440C105M5U5CA
031-2106-0	C3-5 C12	CAP,ELEC,RAD, 106, 20%, 50V	UNITED CHEMI-CON	SMG50VB10RM5X11LL
031-3476-0	C21-22	CAP,ELEC,RAD,476,20%,63V	UNITED CHEMI-CON	SMG63VB47RM6X11LL
031-3688-0	C20 C23	CAP, ELEC, RADIAL, 6800UF, 20%, 63V	UNITED CHEMI-CON	SMH63V/N682M30X40T2
032-4102-0	C25	CAP,PE,102,5%,100V,	PANASONIC	ECQB1102JF
032-4103-0	C15	CAP,PE,103,5%,100V,	PANASONIC	ECQV1103JM
032-4104-0	C6 C9 C13 C17 C19	CAP,PE,104,5%,100V,	PANASONIC	ECQV1104JM
032-7104-0	C24 C26-27	CAP,PE,104,10%, 250V	ILLINOIS CAPACITOR	104MSR250K
034-4471-0	C7	CAP,MCR,470pF,5%,100V,	TAITRON	TMRS471J100NPOB
034-7103-0	C28	CAP, CERMIC DISK, 103, 10%, X-250V	PANASONIC	ECK-DRS103ZV
035-8030-0	C10	CAP MICA AXIAL , 3pF, 10%, 500V	CORNELL	CD10CD030D03
035-8561-0	C8	CAP MICA RADIAL, 561, 5%, 300V	CORNELL	CD15FC561J103
052-2.74-0	R3 R6	RES,METAL FILM, 2.74, 1/4W, 1%	ECI	M2F1AJ002.74
052-2212-0	R26-27	RES,METAL FILM, 2.21k, 1/4W,1%	ECI	M2F1AK002.21
052-5622-0	R11 R28	RES,METAL FILM,5.62K,1/4W,1%	ECI	M5F1AK005.62
055-100-0	R43-46	RES, CERAMIC, 0.1, 2W,5%	ECI	MOM20J3AJ000.10
055-0101-0	R49-50	RES, METAL OXIDE, 10 OHM, 2W, 5%	ECI	MOM20J3AJ010.00
056-0100-0	R51	RES, CERAMIC WW, 1.0, 5W, 10%	ECI	WWC50J3AJ001.00
059-1000-0	R47-48	RES,MF,FUSE, 10.0, 1/4W, 1%	JUKN.OHM	FR25-10.0
059-1001-0	R42	RES,MF,FUSE, 100, 1/4W, 1%	JUKN.OHM	FR25-100
059-1002-0	R9 R30	RES,MF,FUSE, 1.00K, 1/4W, 1%	JUKN.OHM	FR25-1.00K
059-4750-0	R10 R29	RES,MF,FUSE, 47.5, 1/4W, 1%	JUKN.OHM	FR25-47.5
060-1002-0	R8 R19 R23 R37 R41	RES,METAL FILM, 1.00K, 1/8W, 1%	ECI	M1F1AK001.00
060-1003-0	R32 R35	RES,METAL FILM, 10.0K, 1/8W,1%	ECI	M1F1AK010.00
060-1004-0	R36 R38	RES,METAL FILM, 100K, 1/8W, 1%	ECI	M1F1AK100.00
060-1213-0	R7 R20	RES,METAL FILM, 12.1K, 1/8W, 1%	ECI	M1F1AK012.10
060-1821-0	R15-16 R22	RES,METAL FILM, 182, 1/8W, 1%	ECI	M1F1AJ182.00
060-2001-0	R24	RES,METAL FILM, 200, 1/8W, 1%	ECI	M1F1AJ200.00
060-2002-0	R12-14 R34	RES,METAL FILM, 2.00K, 1/8W, 1%	ECI	M1F1AK002.00
060-2003-0	R2 R5	RES,METAL FILM, 20.0K, 1/8W, 1%	ECI	M1F1AK020.00
060-2004-0	R25	RES,METAL FILM, 200K, 1/8W, 1%	ECI	M1F1AK200.00
060-2432-0	R33	RES,METAL FILM, 2.43K, 1/8W, 1%	ECI	M1F1AK002.43
060-3742-0	R18	RES,METAL FILM, 3.74K, 1/8W, 1%	ECI	M1F1AK003.92
060-4323-0	R17	RES,METAL FILM, 43.2K, 1/8W, 1%	ECI	M1F1AK043.20
060-4752-0	R31	RES,METAL FILM, 4.75K, 1/8W, 1%	ECI	M1F1AK004.75
060-4753-0	R40	RES,METAL FILM, 47.5K, 1/8W, 1%	ECI	M1F1AK047.50
060-7501-0	R39	RES,METAL FILM, 750, 1/8W, 1%	ECI	M1F1AJ750.00
070-0520-0	R21	POT,500B TRIM, 200mW	SONG HUEI	SH-655MCL-500B
081-0055-0	L1	INDUCTOR,2UH,20A,AIR CORE	SCHONBERG	081-0055-0
091-0018-0	F1	FUSE,5mm,T2.5AL,250V,SEMKO	LITTLE FUSE	218-02.5
091-1002-0	S1	THRM BRKR, 105C +/-5.0-DIFF, PC	KLIXON	7AM-028-A5
092-0001-0	J5	CON, IECX3, 10A, 250V, PC TERM	DIHTAIN	DTS-0045
092-0066-0	T1-12	FASTON, M, PC, .250"	KEYSTONE	1021



PCB WORK INSTRUCTIONS

DWG 420-0180-A2

NOTES:

UNLESS OTHERWISE SPECIFIED:

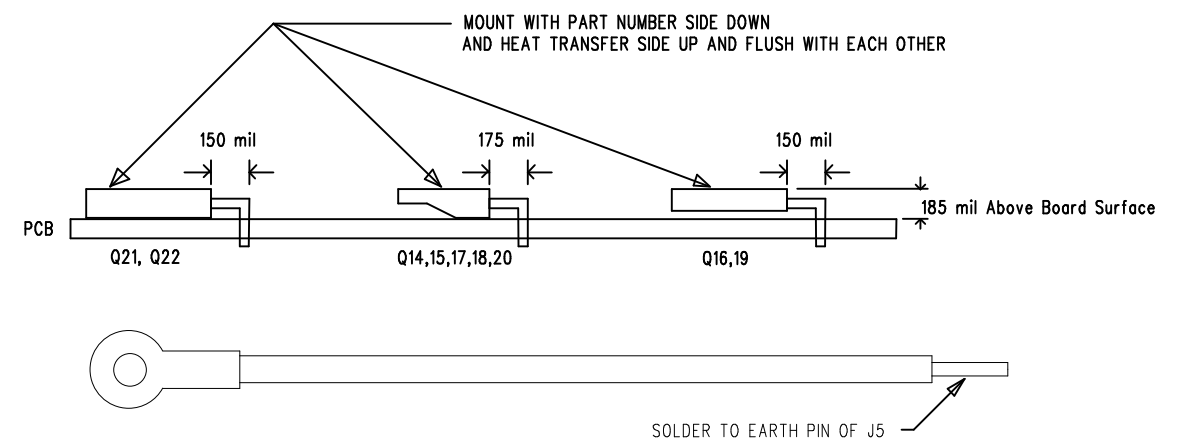
1. SQUARE PADS ON THRU HOLE PARTS (ie: CONNECTORS, DIPS, SIPS, LEDS) DENOTE PIN 1.
2. ALL BOARDS REQUIRE A COMPLETE AND THOROUGH VISUAL INSPECTION.
3. ALL BOARDS MUST BE BARE BOARD TESTED.
4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.

LOADING

5. C20, C23 LOAD WITH SILICON GLUE BETWEEN BOTTOM OF PART AND PCB
6. LOAD Q16 AND Q19 AFTER WAVE AS SHOWN BELOW, APPLY RUBER INSULATOR 105-0005-0. APPLY GREASED MICA INSULATOR TO Q21 AND Q22.
7. FUSE LOADING - F1
 FOR 120V MODEL: LOAD FUSE, 5MM, T2.5AL, 250V
 FOR 100V MODEL: LOAD FUSE 5MM, T2.5AL 250V
 FOR 230V MODEL: LOAD FUSE, 5MM, T1.25AL, 250V

FINAL QA

8. CHECK R43, 44, 45, 46 TO BE FLUSH WITH PCB
9. CHECK J1,2,3,4,5,6 TO SEE COMPONENTS ARE FLUSH WITH PCB
10. GLUE C28 TO J5 WITH SILICON RTV



NOT VALID UNLESS STAMP IS RED		2234 INDUSTRIAL DRIVE STOCKTON CA. 95206 VOICE: 209-234-7300 FAX: 209-234-8420	
gallien technology		TITLE: BACKLINE 250 POWER AMP	
APPROVALS		SIZE: B	
INIT	DATE	DRAWING NO:	REV.
DESIGNED: R.A.G.	2/15/01	405-0180-A2	A2
DRAWN: R.A.G.	12/11/03	PART NO:	
ELEC:		145-0180-A2	
LAYER DESCRIPTION:		COMPANY: GALLIEN-KRUEGER	
TOPSIDE ROUTING		GERBER FILE NAME: 50180A2	
		FILENAME: 50180A2	

This document is generated to address fuse failure due to excessive inrush current during turn on. It is applicable to Backline 115 and Backline 250 power amp boards with part number 206-0180-A.

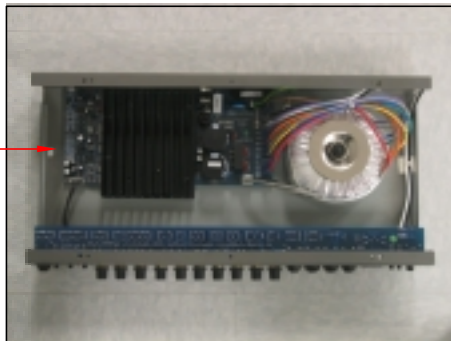
To correct the problem, a thermistor with part number 022-3010-0 is soldered in series with the primary side of the transformer.

The following is a guideline on how to modify the unit with the thermistor :

STEP I:

If the unit is a Backline 250 remove the top cover then remove the power amp board from the chassis assembly.

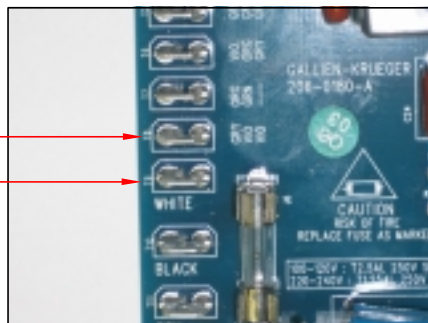
If the unit is a Backline 115, remove the chassis assembly from the cabinet, then remove the power amp board. Please see figure 1.



Chassis Assembly
figure 1

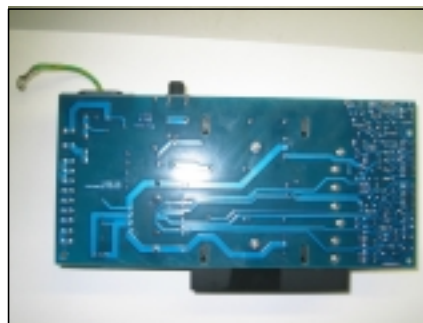
STEP II:

Locate T8 and T9 on the power amp board (figure 2a). Turn the power amp board over as per figure 2b.



location of T8
location of T9

figure 2a



Power Amp Board
figure 2b

STEP III:

Locate T8 and T9 on the bottom/solder side of the board (figure 3a). Cut the trace between T8 and T9 as shown in figure 3b.

location of T8 and T9 on the bottom/solder side of the board

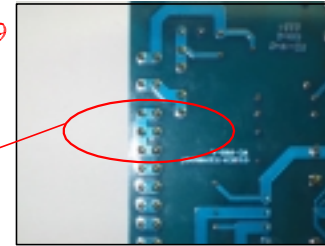


figure 3a

cut the trace here

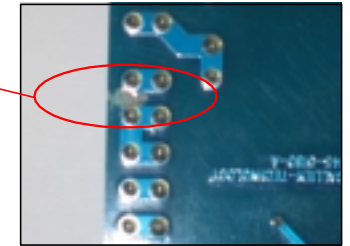


figure 3b

STEP IV:

Solder one lead of Thermistor (022-3010-0) to T9 and the other to T7, as shown in figure 4.

Note: Make sure that no portion or part of the thermistor is touching any terminal on the board except terminals T7 and T9.

Thermistor NTC 8 ohms, 3 ampere
Manufacturing Part #: 08SP003M
GK Part #: 022-3010-0

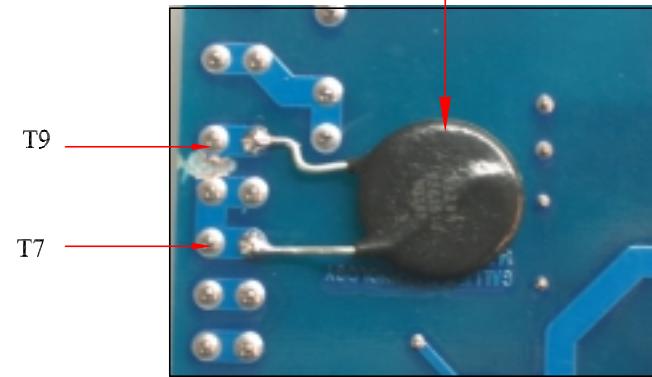


figure 4

PROPRIETARY		
THE DRAWING CONTAINS INFORMATION WHICH IS PROPRIETARY TO GALLIEN TECHNOLOGY CORPORATION. DO NOT REPRODUCE IN ANY FORM OR DISTRIBUTE IN ANY FASHION WITHOUT THE EXPRESS WRITTEN PERMISSION OF GALLIEN TECHNOLOGY CORPORATION.		
APPROVAL		
DEPT.	INITIAL	DATE
PRODUCTION	NOLLVAIDKZ	12/18/2003

gallien technology 2234 INDUSTRIAL DRIVE STOCKTON, CA, 95207	
TITLE THERMISTOR MODIFICATION	
FILE NAME BL 115 & 250 THERMISTOR MOD	REV.
DOCUMENT NUMBER	SIZE
SCALE NOT TO SCALE	SHEET 1 OF 1

This document is generated to address fuse failure due to excessive inrush current during turn on. It is applicable to Backline 115 and Backline 250 power amp boards with part number 206-0180-A.

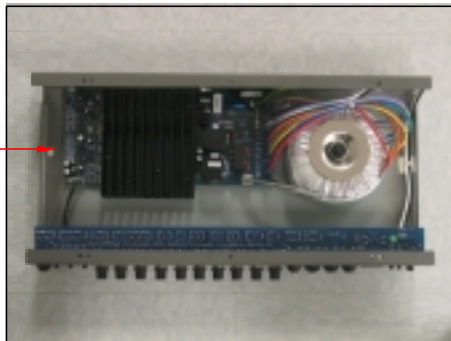
To correct the problem, a thermistor with part number 022-3015-0 is soldered in series with the primary side of the transformer.

The following is a guideline on how to modify the unit with the thermistor :

STEP I:

If the unit is a Backline 250 remove the top cover then remove the power amp board from the chassis assembly.

If the unit is a Backline 115, remove the chassis assembly from the cabinet, then remove the power amp board. Please see figure 1.

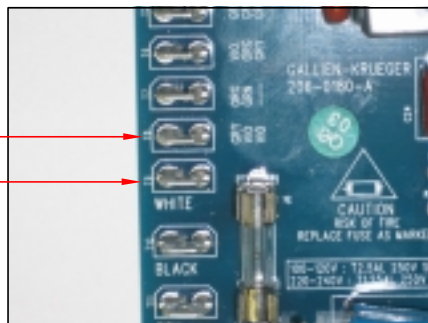


Chassis Assembly
figure 1

power amp board

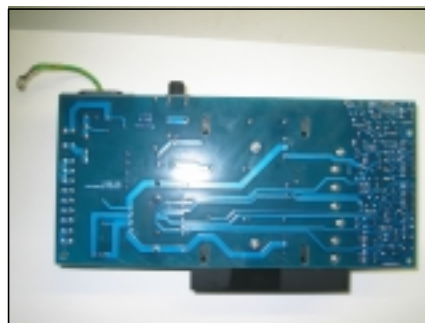
STEP II:

Locate T8 and T9 on the power amp board (figure 2a). Turn the power amp board over as per figure 2b.



location of T8
location of T9

figure 2a



Power Amp Board
figure 2b

STEP III:

Locate T8 and T9 on the bottom/solder side of the board (figure 3a). Cut the trace between T8 and T9 as shown in figure 3b.

location of T8 and T9 on the bottom/solder side of the board

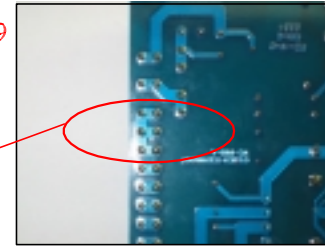


figure 3a

cut the trace here



figure 3b

STEP IV:

Solder one lead of Thermistor (022-3015-0) to T9 and the other to T7, as shown in figure 4.

Note: Make sure that no portion or part of the thermistor is touching any terminal on the board except terminals T7 and T9.

Thermistor NTC 8 ohms, 3 ampere
Manufacturing Part #: 08SP008M
GK Part #: 022-3015-0

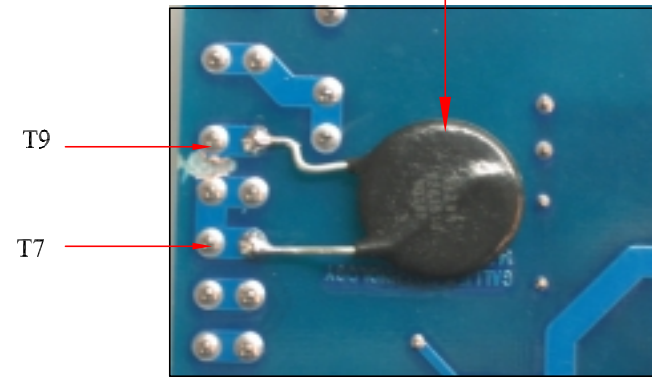


figure 4

PROPRIETARY		
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APPROVAL		
DEPT.	INITIAL	DATE
PRODUCTION	NOLLVAIDKZ	12/18/2003

gallien technology
2234 INDUSTRIAL DRIVE
STOCKTON, CA, 95207

TITLE
THERMISTOR MODIFICATION

FILE NAME
BL 115 & 250 THERMISTOR MOD

DOCUMENT NUMBER

SCALE
NOT TO SCALE

SHEET
1 OF 1