



# Kappa One

## 1 CHANNEL POWER AMPLIFIER

# SERVICE MANUAL



Infinity Systems Incorporated  
250 Crossways Park Dr.  
Woodbury, New York 11797

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Discontinued XXXX

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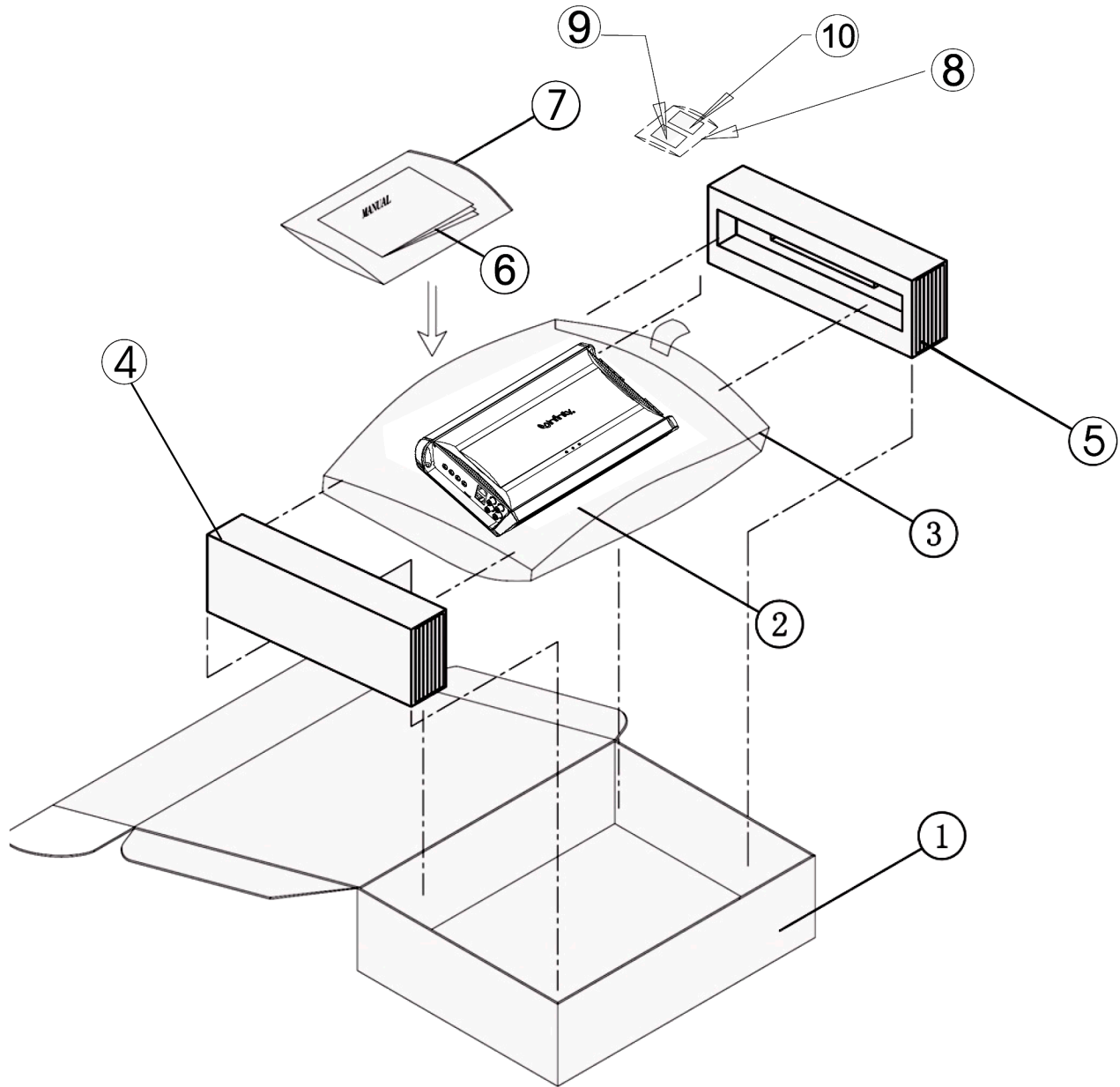
## - CONTENTS -

SPECIFICATIONS .....	1
PACKING.....	2
CONTROL/INSTALLATION INSTRUCTIONS.....	3
CONTROL/INSTALLATION DRAWINGS.....	4
BASIC TROUBLESHOOTING.....	5
DISASSEMBLY INSTRUCTIONS.....	6
EXPLODED VIEW/PARTS LIST.....	7
AMPLIFIER BLOCK DIAGRAM.....	8
ELECTRICAL PARTS LIST .....	9
P.C.B. DRAWINGS.....	14
IC/TRANSISTOR PINOUTS.....	20
SCHEMATICS.....	23

### Kappa One Specifications

Output Power:	500W RMS x 1 channels @ 4 ohms; ≤1% THD + N
(14.4V supply)	800W RMS x 1 channels @ 2 ohms; ≤1% THD + N
Total Peak Power	1600W
Signal-to-noise ratio:	85dBA (reference 1W into 4 ohms)
	109dBA (reference rated power into 4 ohms)
Frequency response:	20Hz – 320Hz (–3dB)
THD+N 1KHz LPF=22KHz	≤0.05% (rated power @ 4 ohms)
Input Impedance	>20K ohms
Maximum input signal:	6.0V
Maximum sensitivity:	200mV
Bass Boost @ 20-100Hz	0-12dB
DC Offset	<30mV
Idle Current @ 4 ohms	1.6A
Max Current Draw	76A
Remote Operating Voltages	OFF 4V
Circuit Protection	Temperature (80C), Short circuit, over/under voltage
Operating voltage range	(8-16V)
Dimensions:	13 x 7 x 1 3/4" (329 x 179 x 44mm)
Fuses:	(3) x 40A

Infinity Systems continually strives to update and improve existing products, as well as create new ones. The specifications and details in this and related JBL publications are therefore subject to change without notice.



NO.	PART NO.	DESCRIPTION	QTY
1	CH4242411020	Outer Carton	1
2	KAPPA ONE	Kappa One Amplifier	1
3		Plastic Bag	1
4	BZL23094A112	Left Packing Foam	1
5	BZL23094A111	Right Packing Foam	1
6	Visit <a href="http://www.infinitysystems.com">www.infinitysystems.com</a>	Owner's Manual	1
7		Plastic Bag	1
8	Accessories see below		1
9	LS1BJ0402501	Screw	4
10	1601-403G-01	40A Fuse	3

**Installation Warnings and Tips**

- Disconnect the negative (–) lead from your vehicle's battery.
- At the installation sites, locate and make a note of all fuel lines, hydraulic brake lines, vacuum lines and electrical wiring. Use extreme caution when cutting or drilling in and around these areas.
- Choose a safe mounting location away from moisture.
- Make sure there is sufficient air circulation at the mounting location for the amplifier to cool itself.
- Mount the amplifier, using the supplied hardware.

CEA-2006A-compliant

**1 Speaker Output Connectors**

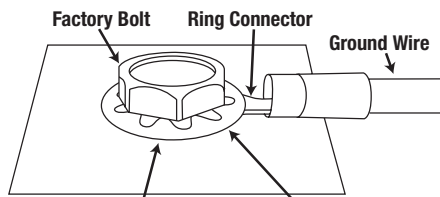
- Connect the speakers to these terminals, observing proper polarity. Gold screws indicate +, and silver screws indicate –.
- Minimum speaker impedance is 2 ohms.

**2 Fuses**

- Replace only with the same type and rating.

**3 Power Input Connectors**

- +12V: Connect to the positive terminal of the vehicle's battery. Install an appropriate fuse holder and fuse (120A minimum) within 18" (457mm) of the battery. Make sure the wire is not damaged or pinched during installation. Install protective grommets when routing wires through the firewall or other sheet metal.
- GND: Connect to the vehicle's chassis. Refer to the illustration below.

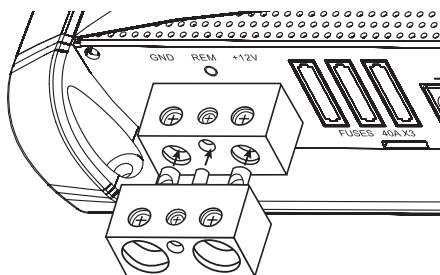


**Note:** Remove any paint below ring connector.

- REM: Connect to the "Remote Out" lead from the source unit or to a source of switched +12V (ACC).

**3a 4 AWG Adapter**

- For power wire longer than 4' (1.2m), 4 AWG wire is recommended. Use the adapter to make the connection according to the illustration below.



**4 DBO: Variable Subsonic High-Pass Filter With Variable Boost (Q)**

- For woofers in tuned (vented) enclosures, set the frequency control to a value 10Hz below the enclosure's resonance (tuned) frequency.
- For woofers in sealed boxes, set the control to any value you prefer between 30Hz and 50Hz.
- Set the Boost control according to your preference, being careful not to apply enough boost to damage your woofer(s).

**A** DBO Boost control provides up to 12dB of boost, slightly above the high-pass filter's frequency. See above for appropriate settings.

**B** DBO High-Pass Filter Frequency control, variable between 10Hz and 80Hz. See above for appropriate settings.

**5 Crossover-Frequency Control**

- 12dB/octave crossover, variable from 32Hz to 320Hz. See 12 for the adjustment procedure.

**6 Input Level Control**

- Used to match the input level of the amplifier to the output level of the source unit. See 1 for the adjustment procedure.

**7 Input Connectors**

- Connect to front outputs from the source unit or signal processor.

**8 Aux Output Connectors**

- Nonfiltered pass-through output. Connect to the input of an additional subwoofer amplifier.

**9 Protect LED**

- Illuminated under any of the following fault conditions: battery over/under voltage; short circuit in speaker wires; amplifier is too hot; amplifier's output circuit has failed (DC voltage present in the amplifier's output).

**10 Power On LEDs**

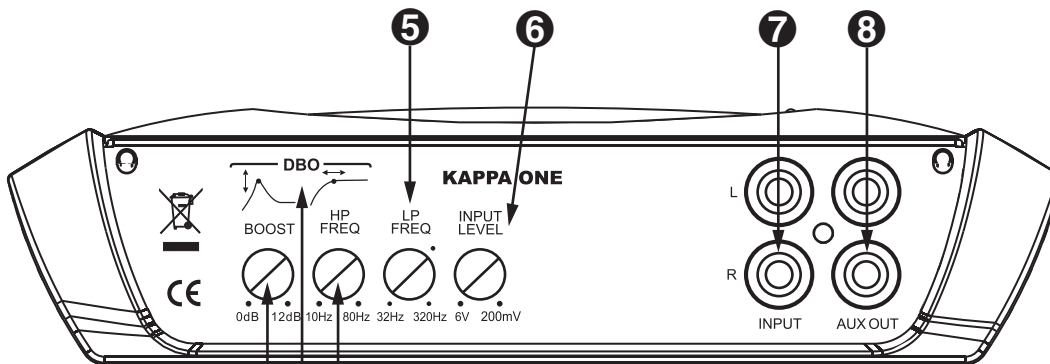
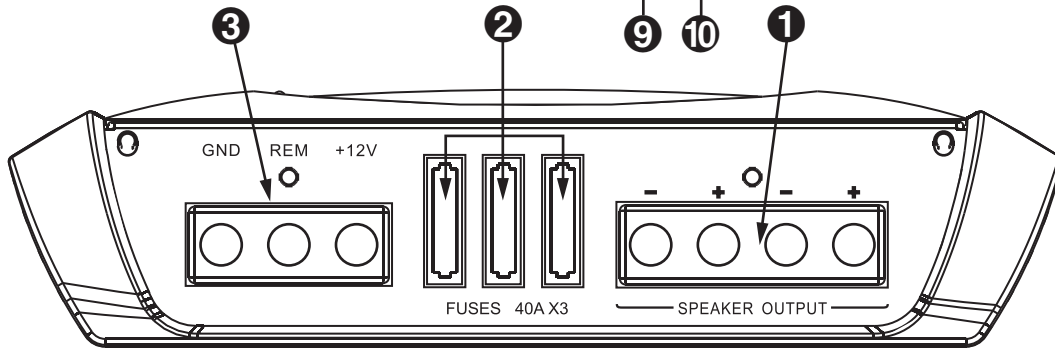
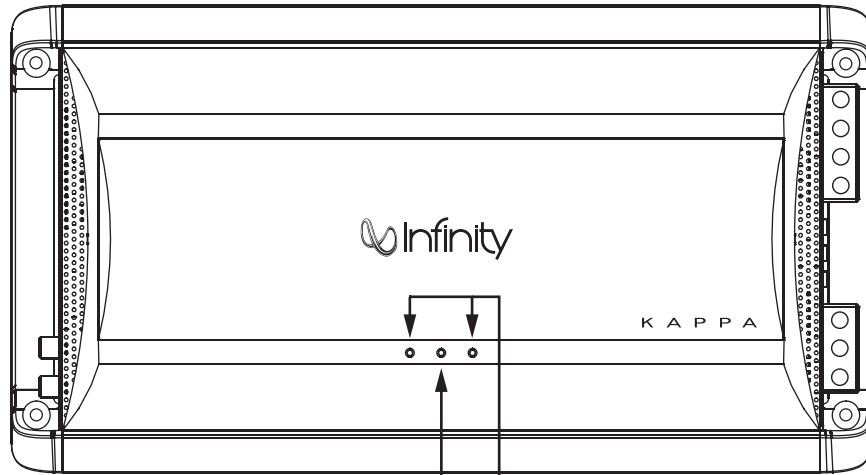
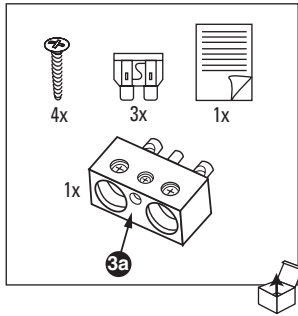
- Illuminated when the amplifier is on.

**11 Setting Input Level**

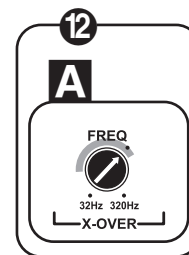
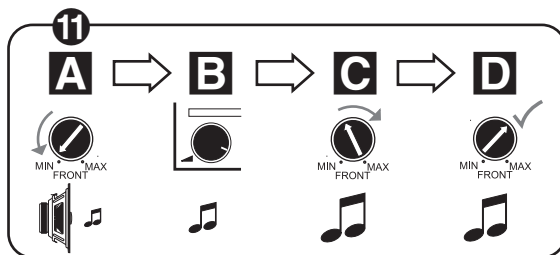
- A** Turn Input Level control counterclockwise to 6V.
- B** With a dynamic music track playing, turn the head unit's volume control to the 3/4 position.
- C** Turn Input Level control clockwise until the bass output is proportionate to the output of the high-frequency speakers, according to your preference.
- D** Input level is now adjusted correctly.

**12 Setting the Crossover**

- A** Crossover setting for subwoofers.
- Note:** Acceptable frequency ranges indicated in gray.



**A** **B**



## Amplifier Troubleshooting Guide

### 1. Status LED on Amplifier not Lit - Head Unit (Source) Turned ON

Verify:

- A. Remote turn-on wire from source to amplifier has proper voltage
- B. Power (B+) connections at amplifier, terminal blocks, and battery are secure
- C. Ground (GND) connections at amplifier and vehicle chassis are secure
- D. Battery B+ fuse (if used) is OK
- E. Amplifier fuse is OK
- F. B+ at battery and B+ at amplifier has proper voltage

### 2. Status LED's Lit, No Output from Speakers in Normal Operating Condition

Verify:

- A. RCA cables from amplifier to source are securely connected
- B. Volume adjustment on amplifier is correctly adjusted
- C. Source is ON and playing

### 3. Engine Noise From Speaker(s)

Turn source OFF, Disconnect RCA cables at amplifier. If noise stops, check equipment & cables leading to amplifier.

Verify:

- A. RCA cables are of good quality with no breakage to internal shields
- B. RCA cables from source to amplifier are not run alongside any power cables

### 4. Amplifier Output Distorted Music

Verify:

- A. Source output music to amplifier is not distorted
- B. Source output sensitivity is correctly adjusted

### 5. Amplifier Shuts Down, Green LED's are Lit - Amplifier is in Thermal Protection Mode

Verify:

- A. Amplifier is mounted with adequate air circulation around heatsinks or vents
- B. Amplifier is not mounted under carpet or sealed enclosure
- C. Speakers meet correct impedance for application (mono or stereo hookup)

### 6. Amplifier Does Not Turn ON, and Red LED is Lit Amplifier (and not Connected to a Shorted Speaker)

Verify:

- A. Speaker crossover (if used) is not defective

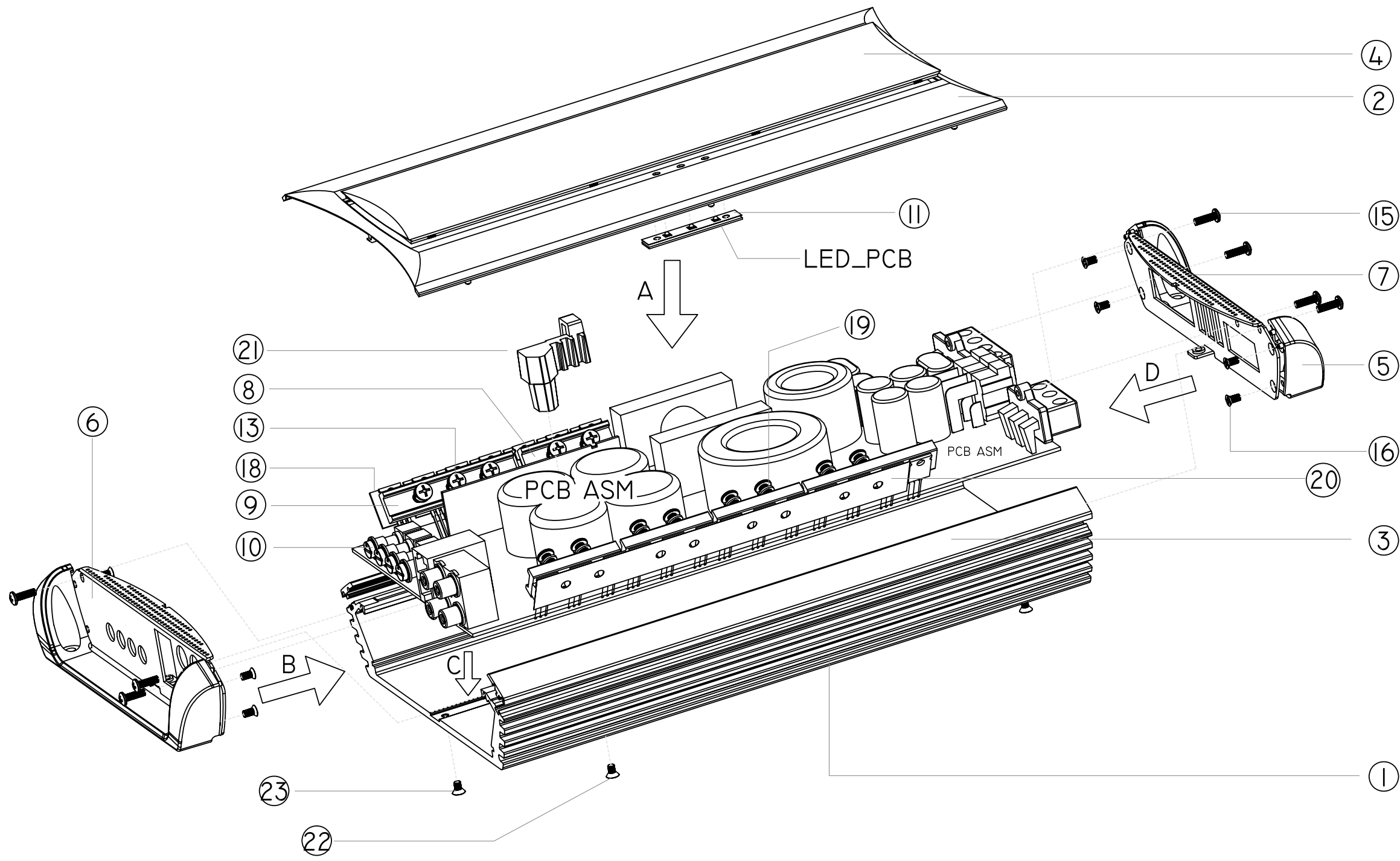
## KAPPA ONE DISASSEMBLY INSTRUCTIONS

For examination:

- 1) Remove the two screws at opposite ends on the bottom of the heatsink.
- 2) Remove the end panel on the Input side only, three Phillips screws.
- 3) Slide both pieces of silver trim off the heatsink.
- 4) Remove the top cover; it will be attached with a cable so unplug at Molex connector CN1

For any component repair, the entire PCB must be removed from the heatsink

- 5) Remove the Output end panel, four Phillips screws.
- 6) Remove the single remaining Phillips screw on the bottom of the heatsink
- 7) Remove all Phillips screws holding the Aluminum transistor clamps on
- 8) Slide the complete PCB out of the heatsink channel.



BOM			
NO.	PART NAME	PART NO.	QUANTITY
1	Heatsink	SR-APPA-0124	1
2	Top plate	SG-0011-0501	1
3	Side panel	ZS-A00010133	2
4	Top plastic	CP-A00020002	1
5	End panel	SG-0001-0133	2
6	Front plate	MK-0127-0507	1
7	Rear plate	HG-0037-0507	1
8	Layer 1	PL-A0060-000	4
9	Layer 2	PL-A0005-000	2
10	Knob	XN-I0500-012	4
11	Gummed paper	PL-V0001-I60	1
12	Insulated mat	JY4284I3003X	1
13	Screw BM4*14	LSIJM0401401	13
14	Screw BA4*25	LSIBJ0402501	4
15	Screw BT3*10	LSIJT0301001	8
16	Screw Km3*5	LSIFY0300501	8
17	Aseismatic mat	DQC270055080	2
18	Ceramic piece	JY217A12A10A	7
19	Spring mat	DQ5066040102	13
20	Mica	JY218420A01X	1
21	2010IC-heatsink	SR-KAPP-0225	1
22	Screw KM3*8	LSIFM0300801	1
23	Screw KM3*5	LSIFM0300501	2
24	Insulated paper	JY443A12A301	1
26	EVA mat	JD-A01380515	1

assembled order: C → A → D → B

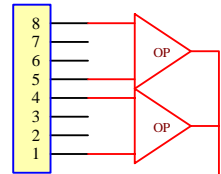
EVR MODE: KAPPA ONE		DIM			SCALE: FIT	PART NAME: PART NO:	
CUSTOMER MODE: KAPPA ONE	1.0~10	±0.05	±0.1	±0.2	UNIT: MM	SIZE: A4	DWG NO:
	10~30	±0.08	±0.15	±0.25	REV: A1	PAGE: 1/1	
	30~100	±0.15	±0.25	±0.3	DRAWN BY:		CHECKED BY:
	100~200	±0.2	±0.3	±0.4			APPROVED BY:
	200~500	±0.25	±0.4	±0.5			
	500~1000	±0.3	±0.5	±0.6			



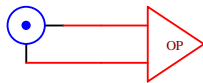
# KAPPA ONE



RJ45



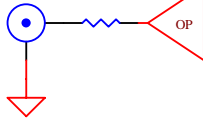
R



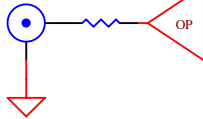
L



AUX OUT L



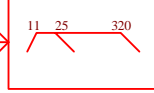
AUX OUT R



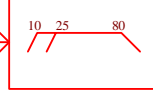
GAIN CONTROL



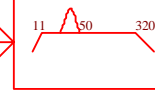
MODEL FREQ  
VARIABLE LP  
11HZ-320HZ/12dB



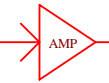
MODEL FREQ  
VARIABLE HP  
10HZ-80HZ/12dB



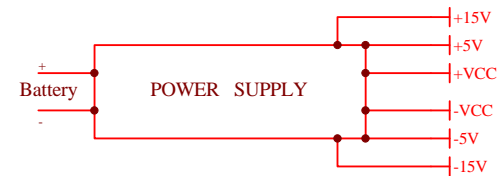
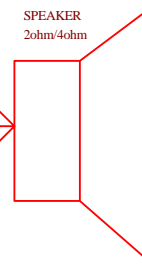
BASS BOOST  
VARIABLE  
0dB-12dB



MAIN AMP  
FRONTL



SPEAKER  
2ohm/4ohm



KAPPA ONE Electrical Parts List				
Part Number	Description		Qty	Reference Designator
<b>Main PCB</b>				
<i>Resistors</i>				
0702-0106-03	Resistor	0.1Ω ±1% Φ1.5 10.5MM H16.5MM	4	7R R127 R126 R124
0701-A123-02	Resistor	SMD 1W 12KΩ ±5% 2512	6	1R 2R 4R 3R R177 R176
0702-3103-02	Resistor	1/2W 10KΩ ±5% 12.5MM	1	R69
0701-54R7-02	Resistor	SMD 4.7Ω 1/2W ±5% 2512	1	R119
0705-5470-04	Resistor	5W 47Ω ±5% 13.5*9*23MM	1	R142
0701-2100-03	Resistor	SMD 10Ω 1/8W ±1% 0805	6	R112 R111 R110 R109 R108 R107
0712-64R7-02	Resistor	2W 4.7Ω ±5% 10MM	1	R139
0701-A220-02	Resistor	SMD 22Ω 1W ±5% 2512	3	R168 R167 R169
0704-6221-02	Resistor	2W 220Ω ±5%	1	R136
0701-3220-02	Resistor	SMD 22Ω 1/4W ±5% 1206	2	6R 5R
0702-3331-02	Resistor	1/2W 330Ω ±5% 12.5MM	2	R67 R66
0701-2101-03	Resistor	SMD 100Ω 1/8W ±1% 0805	19	R188 R187 R166 R165 R164 R162 R161 R160 R47 R190 R189 R144 R128 R90 R89 R86 R74 R125 R101
0703-3222-03	Resistor	1/2W 2.2KΩ ±1%	1	R131
0701-3101-02	Resistor	SMD 100Ω 1/4W ±5% 1206	2	R179 R178
0706-A222-02	Resistor	2.2KΩ 10W 22.5*13*13MM ±5%	1	R130
0701-2221-03	Resistor	SMD 220Ω 1/8W ±1% 0805	2	R3 R60
0701-2821-02	Resistor	SMD 820Ω 1/8W ±5% 0805	1	R50
0701-2221-03	Resistor	SMD 220Ω 1/8W ±1% 0805	1	R2
0701-2102-03	Resistor	SMD 1KΩ 1/8W ±1% 0805	7	R41 R42 R158 R157 R18 R54 R53
0701-2182-02	Resistor	SMD 1.8KΩ 1/8W ±5% 0805	1	R19
0701-2222-02	Resistor	SMD 2.2KΩ 1/8W ±5% 0805	4	R37 R135 R185 R140
0701-2302-03	Resistor	SMD 3KΩ 1/8W ±1% 0805	1	R29
0701-2472-03	Resistor	SMD 4.7KΩ 1/8W ±1% 0805	1	RX
0701-2512-02	Resistor	SMD 5.1KΩ 1/8W ±5% 0805	3	R38 R81 R82
0701-2432-03	Resistor	SMD 4.3KΩ 1/8W ±1% 0805	1	R27
0701-2103-03	Resistor	SMD 10K 1/8W ±1% 0805	9	R61 R87 R22 R21 R28 R17 R33 R34 R197
0701-2333-03	Resistor	SMD 33KΩ 1/8W ±1% 0805	3	R31 R30 R184
0701-2223-03	Resistor	SMD 22KΩ 1/8W ±1% 0805	4	R36 R20 R4 R1
07012487YK03	Resistor	SMD 48.7KΩ 1/8W ±1% 0805	1	R80
0701-2473-03	Resistor	SMD 47KΩ 1/8W ±1% 0805	22	R5 R25 R24 R194 R181 R77 R26 R14 R11 R8 R7 R10 R180 R59 R196 R195 R75 R68 R23 R13 R9 R6
0701-2183-03	Resistor	SMD 18KΩ 1/8W ±1% 0805	1	R12
0701-2104-03	Resistor	SMD 100KΩ 1/8W ±1% 0805	4	R83 R63 R62 R16
0701-2622-03	Resistor	SMD 6.2KΩ 1/8W ±1% 0805	1	R35
0701-2332-03	Resistor	SMD 3.3KΩ 1/8W ±1% 0805	1	R134
0701-2511-02	Resistor	SMD R0805 510Ω 1/8W ±5%	1	R39
0701-2133-02	Resistor	SMD 1/8W 13KΩ ±5% 0805	1	R15
0701-2164-03	Resistor	SMD 160K 1/8W ±1% 0805	1	R40
0704-4123-02	Resistor	1W 12K ±5% 15MM	1	R120
0701-2682-03	Resistor	SMD 6.8KΩ 1/8W ±1% 0805	1	R32
1204-2040-01	VR, HP FREQ	B200K/B2K L=15 ±10% B200K,B2K	1	VR3
1204-2030-01	VR, LEVEL	B20K L=15 ±10% <2.5dB	1	VR1
1204-5031-30	VR, LP FREQ	B50K ±10% :R0971G KQ	1	VR2
1204-5011-01	VR, BOOST	B500Ω KQ L=15 ±15%	1	VR4
<i>Capacitors</i>				
06D1C3357700	Capacitor	3.3UF/100V ±10% MAX : 24*18.5*10.5MM 20MM CBB21	1	C105
06D2C335C701	Capacitor	3.3UF/250V ±20% 105°C 27mm CBB21	1	C96
06D2C1067001	Capacitor	10UF/100V ±20% 20MM 10.5MM	5	C141 C106 C101 11C 12C
06D212266010	Capacitor	22uF/50V ±20% 5*11 105°C5.0MM	11	C9 C6 C5 C11 C41 C31 C10 C8 C7 C4 C3
06D102266000	Capacitor	22UF/50V ±10% Φ6.3*11 85°C NP	1	C119
06D214765000	Capacitor	47UF/35V ±20% 5*11 105°C5MM	3	C50 C49 C35
06D211073116	Capacitor	100UF/16V ±20% 5*11 105°C5MM	3	C131 C130 C129
06D214775101	Capacitor	470UF/35V ±20% Φ8*20MM 105°C	3	C134 C133 C127

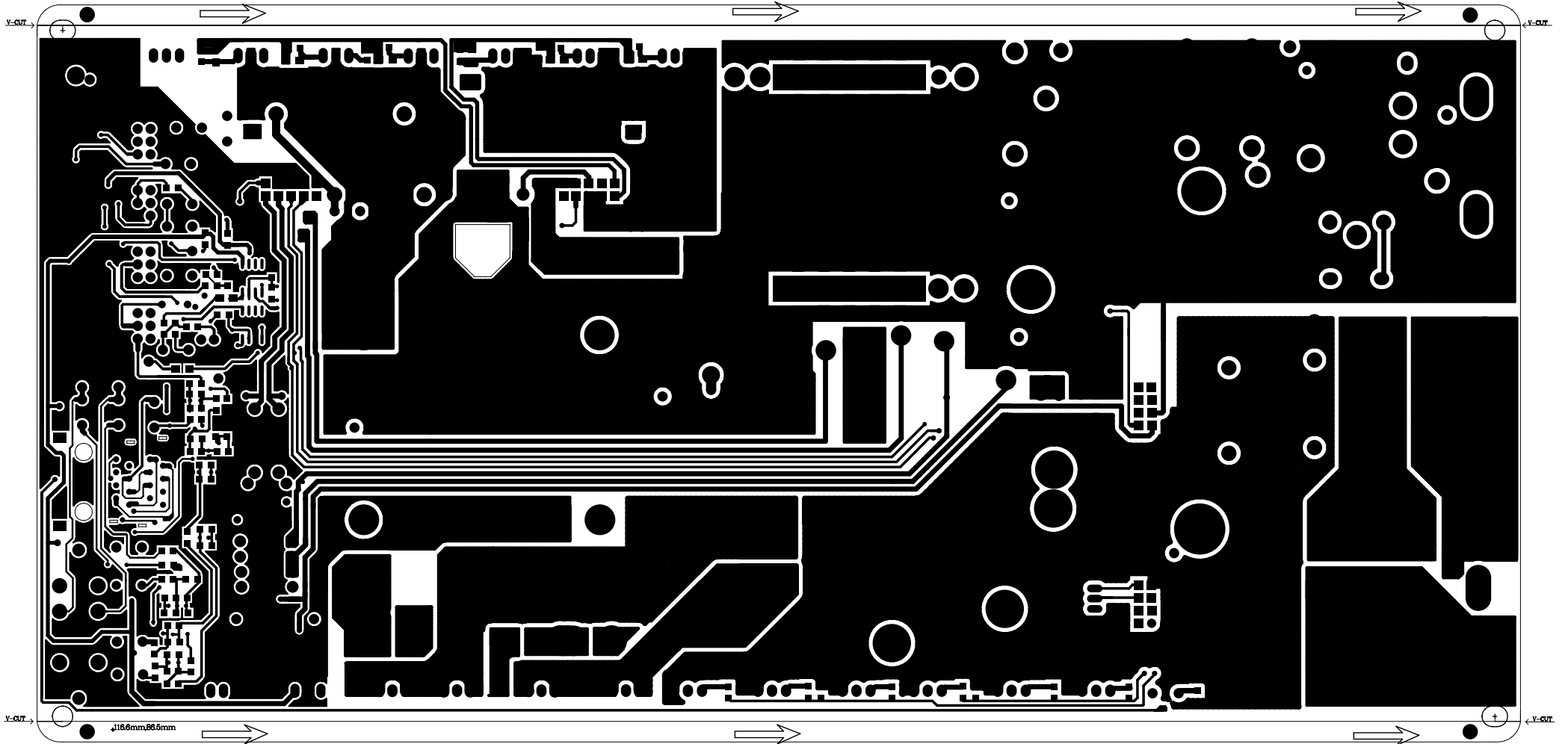
Part Number		Description	Qty	Reference Designator
<b>Main PCB</b>				
06D212285001	Capacitor	2200UF/35V 16*26MM ±20% 105°C 7.5MM SUSCON	4	C112 C111 C110 C109
06D213387002	Capacitor	3300UF/100V 35MM*25MM ±20% 105°C	4	C148 C147 C146 C145
06D231047000	Capacitor	0.1uF/100V ±20%5MM	1	C122
06D3C104C701	Capacitor	104/250V ±5% 5mm	3	C139 C86 C65
06D942247401	Capacitor	224/100V ±2% 7.2*8.5*3.5MM 5MM	2	C103 C102
06D184717400	Capacitor	471/100V X7R ±10%	1	C124
06D1C4747701	Capacitor	474/100V ±10% 7.5mm	4	C99 C98 C152 C135
06D342749400	Capacitor	274/63V ±5% 5MM	1	C2
06D344737400	Capacitor	473/100V ±5%	1	C47
06S15101F000	Capacitor	SMD 101/1KV ±10% X7R 1206	1	CX100
06D941247401	Capacitor	124/100V ±2% 7.2*6.5*3.0MM 5MM	1	C46
06S15222F000	Capacitor	SMD 222/1KV ±10% X7R 1206	1	C97
06D322227200	Capacitor	222/100V ±5% 5MM	4	15C CX1 C24 C23
06S321006000	Capacitor	SMD 10pF/50V 0805 NPO ±5%	3	C14 C12 C13
06S322206000	Capacitor	SMD 22pF/50V 0805 NPO ±5%	2	C33 C32
06S321016000	Capacitor	SMD 100pF/50V 0805 NPO ±5%	13	C40 C22 C36 C15 C44 C38 C37 C17 C16 14C 13C 3C 4C
06S121046000	Capacitor	SMD 0.1uF/50V 0805 X7R ±10%	28	C121 C120 C138 C137 C118 C76 C51 C48 C21 C20 C19 C18 C108 C90 C115 C128 C116 C29 C28 C27 C26 JP428 JP426 7C 5C 8C 2C 1C
06S321026000	Capacitor	SMD 1000pF/50V 0805 NPO ±5%	4	C42 9C 6C C25
06S121244000	Capacitor	SMD 0.12UF/25V 0805 X7R ±10%	1	C123
06S124716000	Capacitor	SMD 470pF/50V 0805 X7R ±10%	4	C30 C150 C149 CX2
06S131037000	Capacitor	SMD 103/100V X7R ±10% 1206	2	C126 C125
06D201066200	Capacitor	10UF/50V ±20% 5*11 85°C 5mm	2	C34 C39
06D2410644CB	Capacitor	SMD 10uF/25V CASE-D ±20%	2	C76 C136
06D212256301	Capacitor	2.2UF/50V ±20% 5*11 105°C 5mm	1	C43
06D348249400	Capacitor	824/63V ±5%	1	C1
<b>Semiconductors</b>				
04ZL-6A10-00	Diode	6A10 1000V	1	D17
04ZL-4007-03	Diode	1N4007 DO-41	1	D16
04GS-R104-00	Diode	FR104 1A 400V 52MM	4	D29 D28 D27 D26
03D1-TP50-24	MOSFET	TP50N20P TO-220	6	Q14 Q13 Q12 Q11 Q10 Q9
01FA-7812-04	Regulator	KA7812E TO-220 FAIRCHILD +12v	2	U13 U15
01FA-7912-04	Regulator	KA7912 TO-220 FAIRCHILD -12v	1	U14
04PT-4148-01	Diode	SMD 1N4148 DO-213AA	13	D51 D1 DX1 D2 D14 D13 D12 D11 D10 D9 D6 D3 D4
04ZL-2512-00	Diode	SMD MUR120 1A 2512	2	D35 D34
2202-1602-05	Bridge	UF1602CT AKA 16/200V TO-220	2	D31 D30
03N1-5551-04	Transistor	SMD MMBT5551LT1 NPN SOT-23	1	Q3
2202-20RG-05	Bridge	MUR1620RG KAK 16A/200V TO-220 ON SEMI	2	D33 D32
03N1-2222-04	Transistor	SMD BT2222 SOT-23 NPN	1	Q29
04WY-51AV101	Diode	SMD 5.1V DO-213AA 0.5W	2	DZ3 DZ2
04ZL-4007-02	Diode	SMD FM4007 DO-214AC	3	D25 D24 D23
0100-M833-08	Dual Op-amp	SMD LM833 SOP-8	7	U6 U3 U7 U1 U5 U4 U2
04GS-RS1G-02	Diode	SMD RS1G 400V 1A DO-214AC	5	D22 D21 D20 D7 D5
03T1-3205-02	MOSFET	IRF3205 110A 50V TO-220	6	Q28 Q27 Q26 Q24 Q23 Q22
03T1-K30A-01	FET	2SK30A TO-92	1	Q1
01TI-L072-09	Dual Op-amp	SMD TL072 SO-8	1	1U1
04WY-12BV101	Diode	SMD 12V DO-213AA 0.5W	1	DZ1
0100-78M1-07	Regulator	SMD 78M12 TO-252 +12v	1	U8
<b>Miscellaneous</b>				
1404-0020-04	RCA QUAD	AV4-8.4-38 JACKS	1	J1
1601-403G-01	Fuse	40A/32V UL Littelfuse	6	F1
1401-0001-03	Fuse holder	3PIN :BXS3-09	1	for F1
1380-0214-00	Temperature switch	90°C±5°C TO-220 PCS	1	SW1
1003-1002-08	Inductor	SMD 10UH CPL-0805 20MA ±20%	2	L1 DX2

Part Number		Description	Qty	Reference Designator
<b>Main PCB</b>				
3000-MONE-01	HF transformer	4:24:6:7 F1=F2=φ1.0*8*4TS S1=S2=φ0.8*5*24TS S3=S4=φ0.8*1*6TS S5=S6=φ0.8*1*7TS	1	L8
2901-224C-00	Relay	YL-224-C DC12V 30A	1	RL1
1004-3003-10	Inductor	90 30UH φ12φ5	2	L12 L11
1001-1820-10	Inductor	φ32 1.8MH L1=L2 φ1.0*12 4TS 38*22MM 42MM	1	L6
1001-4000-10	Inductor	40UH 40A ETD-49 φ0.1*80*14TS	1	L4
1501-0300-04	Terminal	JS23A-25A 3PIN POWER	1	CN3
1501-0400-02	Terminal	JS24A-23A 4PIN 2↑2↑ SPEAKER	1	CN2
1501-0404-00	Socket	Pitch 2.0MM 4PIN	1	CN1
24D1-0070190	Grounding	UL1015#18AWG L=70MM	2	JK1 JK2
1001-3501-10	Inductor	35UH φ33φ0.3*18*2 29MM	1	L5
2102-0052-04	FFC	4P 1430.26L=80MM-5MM-2.0105°C	1	connect to the LED board
1501-0300-05	Terminal	3P JSZ3-83 180	1	Accessory
1400-0001-16	RJ45 socket	16PIN RJ45 10P16C	1	RJ1
<b>PWM PCB</b>				
<i>Resistors</i>				
0701-2221-03	Resistor	SMD 220Ω 1/8W ±1% 0805	1	2R65
0701-2102-03	Resistor	SMD 1KΩ 1/8W ±1% 0805	5	2R156 2R155 2R5 R8 R9
0701-2202-02	Resistor	SMD R0805 2KΩ 1/8W ±5%	2	2R33 2R138
0701-2222-02	Resistor	SMD 2.2KΩ 1/8W ±5% 0805	2	2R200 2R132
0701-2472-03	Resistor	SMD 4.7KΩ 1/8W ±1% 0805	2	2R147 2R46
0701-2682-03	Resistor	SMD 6.8KΩ 1/8W ±1% 0805	1	2R102
0701-2103-03	Resistor	SMD 10K 1/8W ±1% 0805	5	2R99 2R137 2R78 2R34 2R146
0701-2113-03	Resistor	SMD 11KΩ 1/8W ±1% 0805	1	2R171
0701-2123-03	Resistor	SMD 12KΩ 1/8W ±1% 0805	2	2R35 2R149
0701-2183-03	Resistor	SMD 18KΩ 1/8W ±1% 0805	1	2R1
0701-2203-03	Resistor	SMD 20KΩ 1/8W ±1% 0805	1	2R104
0701-2303-02	Resistor	SMD 30KΩ 1/8W ±5% 0805	1	2R175
0701-2333-03	Resistor	SMD 33KΩ 1/8W ±1% 0805	1	2R98
0701-2473-03	Resistor	SMD 47KΩ 1/8W ±1% 0805	7	2R3 2R44 2R97 2R4 2R20 2R145 2R19
0701-2753-03	Resistor	SMD 75KΩ 1/8W ±1% 0805	1	2R103
0701-2104-03	Resistor	SMD 100KΩ 1/8W ±1% 0805	3	2R2 2R148 2R154
<i>Capacitors</i>				
06S321026000	Capacitor	SMD 1000pF/50V 0805 NPO ±5%	1	2C143
06S121047000	Capacitor	SMD 104/100V 0805 X7R ±10%	12	2C1 2C132 2C84 2C81 2C22 2C79 2C117 2C82 2C34 2C80 2C89 2C151
06D252274000	Capacitor	220UF/25V 8*9 ±20% 105°C	2	2C88 2C87
06D211074101	Capacitor	100UF/25V 6.3*7mm 5mm ±20% 105°C	1	2C2
<i>Semiconductors</i>				
04PT-4148-01	Diode	SMD 1N4148 DO-213AA	10	2D1 2D42 2D46 2D47 2D45 2D43 2D2 2D5 2D18 2D19
03N1-5551-04	Transistor	SMD MMBT5551LT1 NPN SOT-23	10	2Q38 2Q8 2Q7 2Q5 2Q6 2Q37 2Q2 2Q33 2Q3 2Q4
03P1-5401-04	Transistor	SMD MMBT5401LT1 PNP SOT-23	1	2Q32
01TI-L494-09	PWM	SMD TL494C SO-16	1	2U18
04WY-39AV101	Diode	SMD 3.9V DO-213AA 0.5W	1	2D15
03P1-1023-01	Transistor	A1023 TO-92 PNP	2	2Q20 2Q19
03P1-B649-07	Transistor	2SB649A 1.5A 180V 20W PNP TO-126	1	2Q17
<i>Miscellaneous</i>				
1506-0805-00	Pin	8PIN 902.5MM 2.75MM	2	2CN1 2CN2

Part Number		Description	Qty	Reference Designator
<b>PROCESSOR PCB</b>				
<i>Resistors</i>				
0701-2104-03	Resistor	SMD 100KΩ 1/8W ±1% 0805	1	R64
0701-2103-03	Resistor	SMD 10K 1/8W ±1% 0805	5	R33 R30 R31 R3 R2
0701-2100-03	Resistor	SMD 10Ω 1/8W ±1% 0805	4	R117 R193 R198 R118
0701-2102-03	Resistor	SMD 1KΩ 1/8W ±1% 0805	2	R55 R58
0701-2222-02	Resistor	SMD 2.2KΩ 1/8W ±5% 0805	2	R105 R106
0701-2472-03	Resistor	SMD 4.7KΩ 1/8W ±1% 0805	4	R44 R41 R42 R43
0701-2622-03	Resistor	SMD 6.2KΩ 1/8W ±1% 0805	1	R40
0701-2681-02	Resistor	SMD 680Ω 1/8W ±5% 0805	3	R45 R116 R199
0701-2152-02	Resistor	SMD 1.5KΩ 1/8W ±5% 0805	1	R56
0701-2101-03	Resistor	SMD 100Ω 1/8W ±1% 0805	3	R191 R192 R49
0701-2303-03	Resistor	SMD 30K 1/8W ±1% 0805	1	R29
0701-2221-03	Resistor	SMD 220Ω 1/8W ±1% 0805	1	R113
0701-2331-02	Resistor	SMD 330Ω 1/8W ±5% 0805	1	R48
0701-2473-03	Resistor	SMD 47KΩ 1/8W ±1% 0805	1	R57
<i>Capacitors</i>				
06S321026000	Capacitor	SMD 1000pF/50V 0805 NPO ±5%	1	C100
06S321016000	Capacitor	SMD 100pF/50V 0805 NPO ±5%	2	C62 C61
06S121046000	Capacitor	SMD 0.1uF/50V 0805 X7R ±10%	8	C57 C59 C75 C77 C60 C63 C91 C92
06S132253000	Capacitor	SMD 2.2uF/16V 1206 X7R ±10%	2	C104 E1
06S123326000	Capacitor	SMD 332/50V ±10% X7R 0805	1	C64
06S2410724CC	Capacitor	SMD 100UF/10V CASE-C ±20%	1	C58
06S124727000	Capacitor	SMD 472/100V 0805 X7R ±10%	2	C55 C56
06S2447634CC	Capacitor	SMD 47uF/16V CASE-C ±20%	1	C43
06S2447644CD	Capacitor	SMD 47uF/25V CASE-D ±20%	2	C93 C94
<i>Semiconductors</i>				
01JR-4560-08	Dual Op-amp	SMD 4560 SOP-8 JRC	1	U8
2601-4N35-00	photocoupler	4N35 6	1	U17
01LM-M555-08	Timer	SMD LM555 SOP-8	1	U7
0100-2010-00	Hi/Lo Side Driver	IR2010S SOL-16	1	U10
03P1-5401-04	Transistor	SMD MMBT5401LT1 PNP SOT-23	1	Q30
01TC-WH04-00	Triple Inverter	TC7WH04F	1	U9
0100-74AH-00	Inverter	74AHC1G04 SOT-235	1	U16
04ZL-2512-00	Diode	SMD MUR120 1A 2512	1	D8
01LM-M311-08	Comparator	SMD LM311 SOP-8	1	U11
04PT-4148-01	Diode	SMD 1N4148 DO-213AA	5	D3 D7 D4 D2 D49
04WY-51AV101	Diode	SMD 5.1V DO-213AA 0.5W	1	DZ1
<i>Miscellaneous</i>				
1505-1009-04	Pin	PITCH 2.54mm 10PIN 912.75MM	2	CN6 CN5
<b>LED PCB</b>				
2009-0001-00	LED	SMD White with blue light, 3.2*2.4*2.4	2	LED1 LED3
200A-0001-00	LED	SMD White with red light, 3.2*2.4*2.4	1	LED2
06S121046000	Capacitor	SMD 0.1uF/50V 0805 X7R ±10%	2	C1 C2
<b>MECHANICAL</b>				
SR-APPA-0124	Heatsink	Alum.6063-T5,290*177.7*37.5MM Black		
SG-0011-0501	Top plate	Alum. alloy ADC-12,290*154.8*9.7MM black painting		
ZS-A00010133	Side bar	Alum. 6063-T5,19*290.2MM Plating		
CP-A00020002	Top plastic	Clear PC,262.2*70MM black painting with "INFINITY"LOGO holofoil		
SG-0001-0133	Side panel	Alum. alloy ADC-12,178.9*19.6*39.9MM plating		
MK-0127-0507	Front plate	171.8*37.1*1.2MM black painting + silkscreen		
HG-0037-0507	Rear plate	171.8*37.1*1.2MM black painting + silkscreen		

Part Number		Description	Qty	Reference Designator
<b>MECHANICAL</b>				
PL-A0060-000	Layer	Alum. Two holes, 43*13*5.6MM,16.5MM		
PL-A0005-000	Layer	Alum. Three holes, 64*14*7MM φ4.5MM 16.5MM		
XN-10500-012	Knob	ABS-757 Black φ10.5*9MM white arrow		
PL-V0001-160	gummed paper	3M two sided,UL94V-1, temperature durable for 110-180 degree		
JY428413003X	Insulated mat	Red UL94V-1,284*130*0.3MM One side		under the PCB
LS1JM0401401	Screw	BM4*14 black Zinc plating		Screw the layer
LS1BJ0402501	Screw	4*25MM		Accessory
LS1JT0301001	Screw	BT3*10 black Zinc plating		Screw, RCA
LS1FY0300501	Screw	KM3*5 1.2,		Screw the front/rear plate to the side panel and heatsink
LS1FM0300501	Screw	KM3*5		
DQC270055080	aseismatic mat	SBR 270*5.5*0.5MM,		
JY217A12A10A	ceramic plate	17*12*1.0mm 白色		
DQ5066040102	Spring mat	φ6.6*φ4MM*1.0MM		With BM4*14 screw
JY218420A01X	Mica	184*20.9*0.1MM		
SR-KAPP-0225	2010IC Heatsink	Dia-casting ADC-12 alum. Alloy		
LS1FM0300801	Screw	KM3*8MM Black Zinc plating		
JY443A12A301	Insulated mat	43*12*0.3MM		
LP-A001-KAPP	User manual	216*280MM multi-language		
BZB35023006Y	PE + seal bag	350*230*0.06MM		





ECN NO	Description	Approved	Date

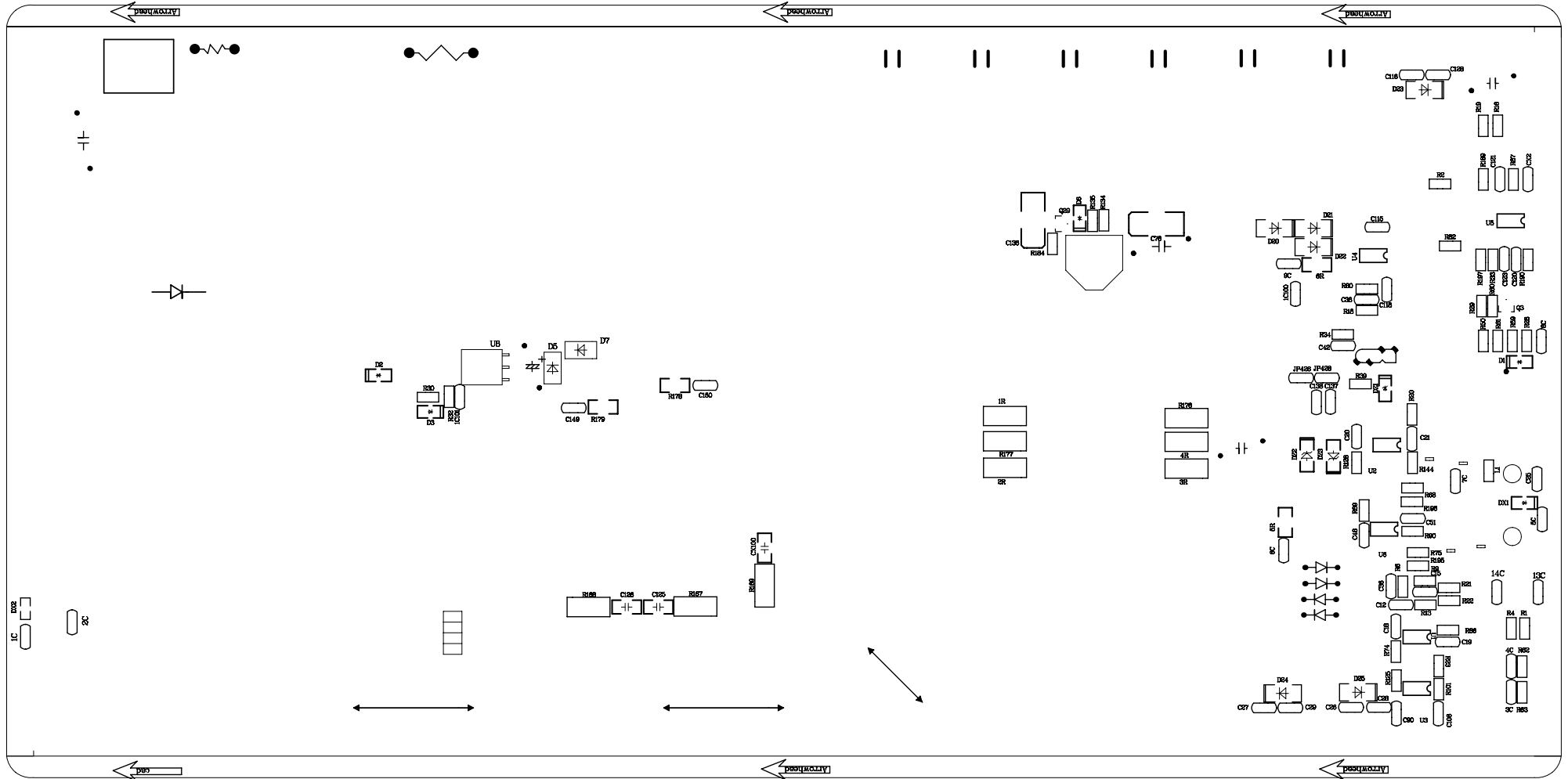


PRODUCT MO

CTRONIC COMPANY LIMITED

SCALE:	DWG BY:	DWG NO:
UNIT: mm	CHECK BY:	PART NO:
SIZE	APPROVED BY:	DATE
REV: 0.0		DATE





ECN NO	Description	Approved	Date

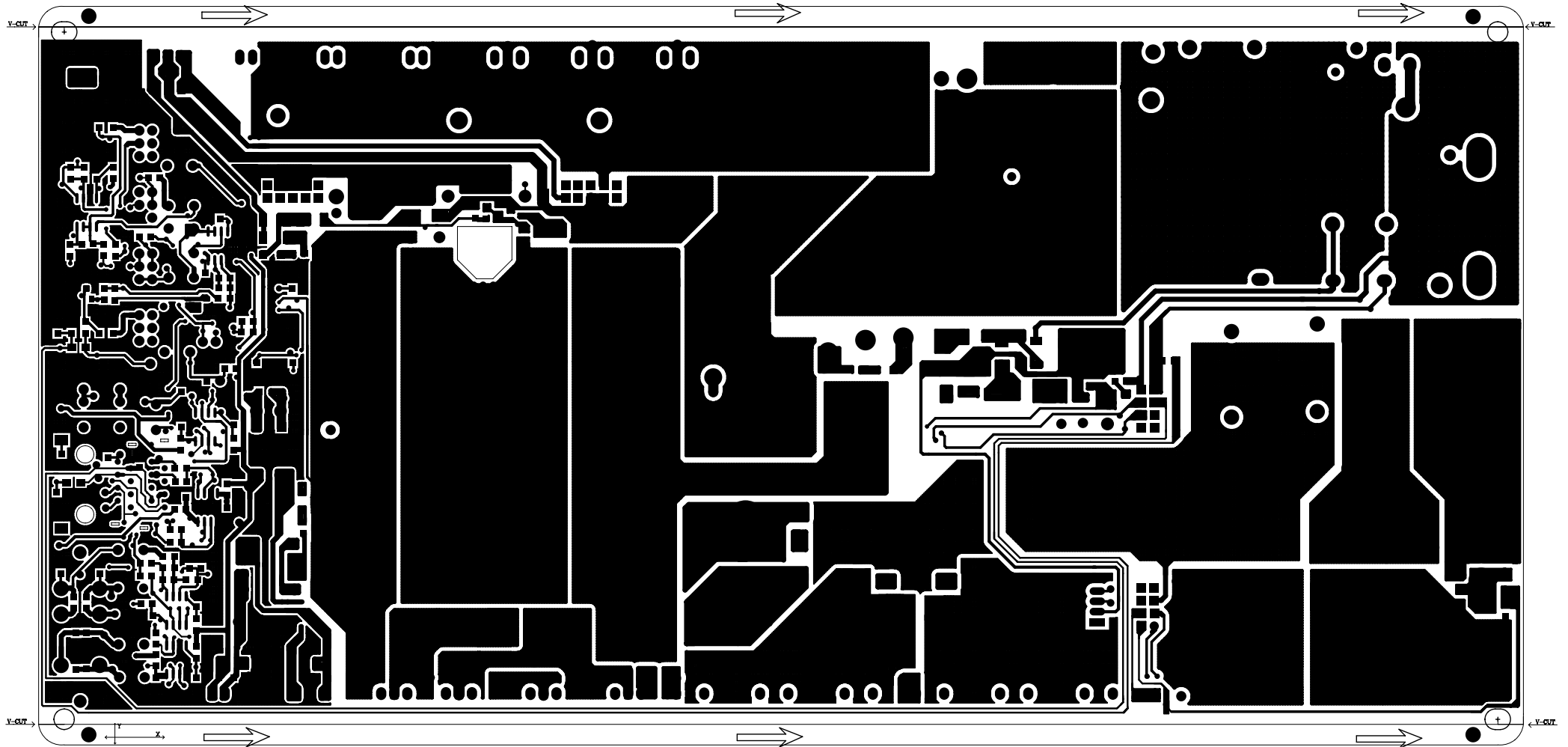
  

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KAPPA ONE		SIZE:	DATE:
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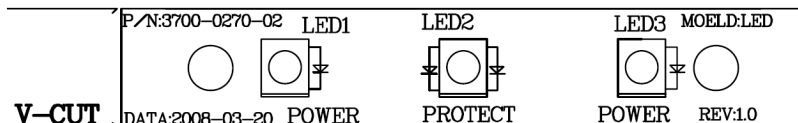
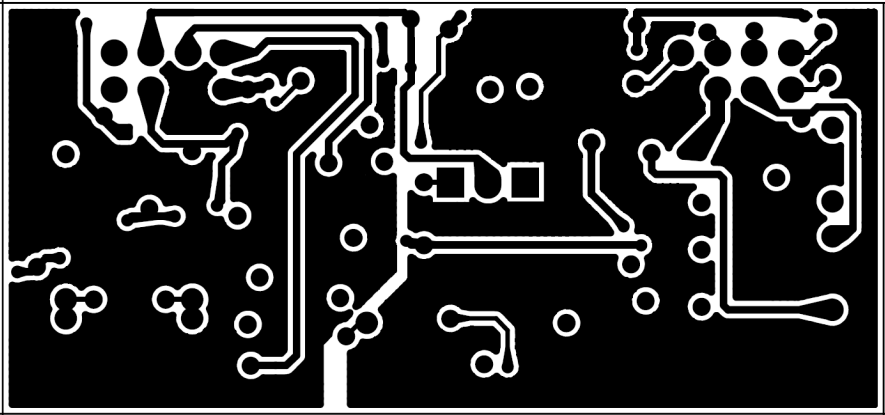
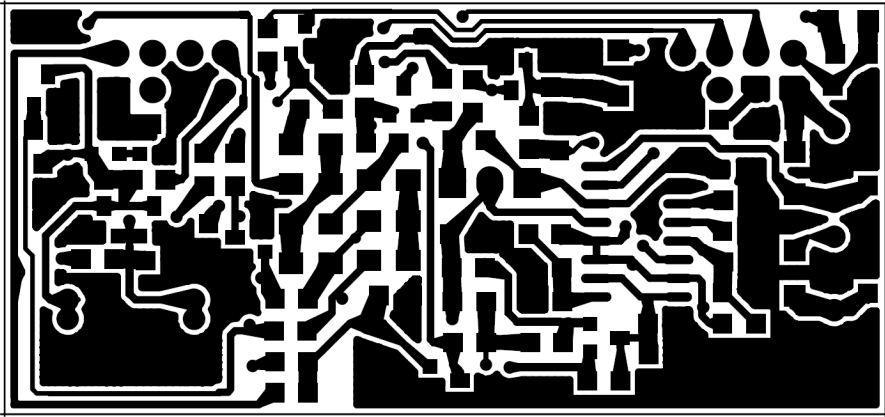
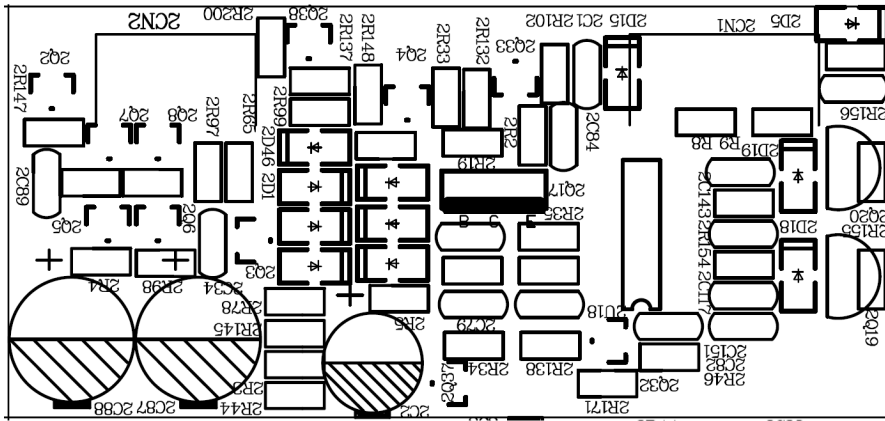
ELECTRONIC COMPANY LIMITED		DATE:
DWG BY:	CHECK BY:	DATE:
APPROVED BY:		DATE:

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ECN NO	Description	Approved	Date		SCALE	DWG BY:	DWG NO:
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					SIZE	APPROVED BY:	DATE
					REV: 0.0		DATE
				AMP POWER			
				PRODUCT MO			
				KAPPA ONE			





# International IR Rectifier

Data Sheet No. PD60195-D

## IR2010(S) & (PbF)

### HIGH AND LOW SIDE DRIVER

#### Features

- Floating channel designed for bootstrap operation  
Fully operational to 200V  
Tolerant to negative transient voltage, dV/dt immune
- Gate drive supply range from 10 to 20V
- Undervoltage lockout for both channels
- 3.3V logic compatible  
Separate logic supply range from 3.3V to 20V  
Logic and power ground  $\pm 5V$  offset
- CMOS Schmitt-triggered inputs with pull-down
- Shut down input turns off both channels
- Matched propagation delay for both channels
- Outputs in phase with inputs
- Also available LEAD-FREE

#### Product Summary

$V_{OFFSET}$	200V max.
$I_{O+/-}$	3.0A / 3.0A typ.
$V_{OUT}$	10 - 20V
$t_{on/off}$	95 & 65 ns typ.
Delay Matching	15 ns max.

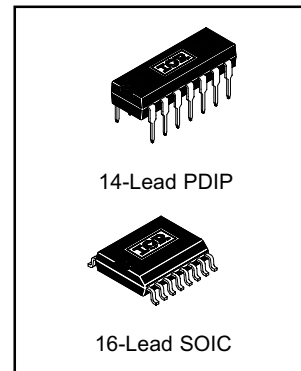
#### Applications

- Audio Class D amplifiers
- High power DC-DC SMPS converters
- Other high frequency applications

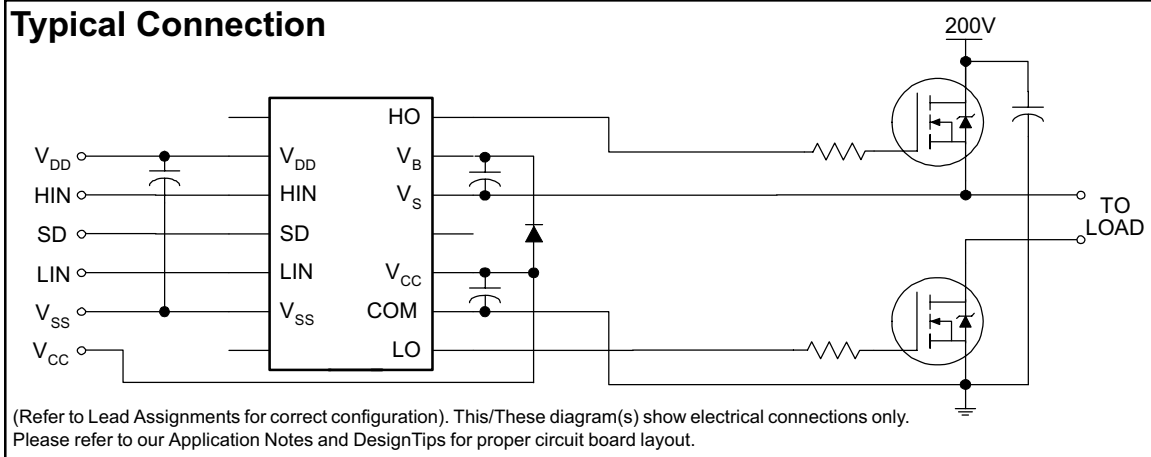
#### Description

The IR2010 is a high power, high voltage, high speed power MOSFET and IGBT drivers with independent high and low side referenced output channels, ideal for Audio Class D and DC-DC converter applications. Logic inputs are compatible with standard CMOS or LSTTL output, down to 3.0V logic. The output drivers feature a high pulse current buffer stage designed for minimum driver cross-conduction. Propagation delays are matched to simplify use in high frequency applications. The floating channel can be used to drive an N-channel power MOSFET or IGBT in the high side configuration which operates up to 200 volts. Proprietary HVIC and latch immune CMOS technologies enable ruggedized monolithic construction.

#### Packages



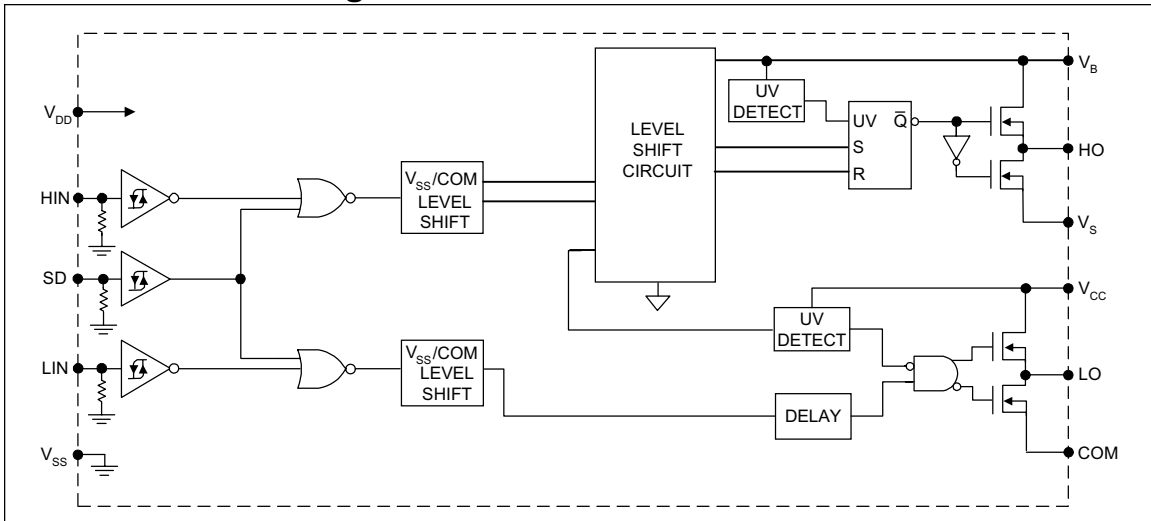
#### Typical Connection



# IR2010(S) & (PbF)

International  
**IR** Rectifier

## Functional Block Diagram



## Lead Definitions

Symbol	Description
V <sub>DD</sub>	Logic supply
HIN	Logic input for high side gate driver output (HO), in phase
SD	Logic input for shutdown
LIN	Logic input for low side gate driver output (LO), in phase
V <sub>SS</sub>	Logic ground
V <sub>B</sub>	High side floating supply
HO	High side gate drive output
V <sub>S</sub>	High side floating supply return
V <sub>CC</sub>	Low side supply
LO	Low side gate drive output
COM	Low side return

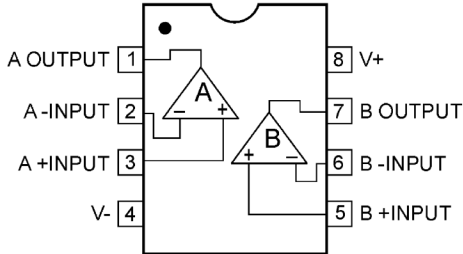
## Lead Assignments

<p>14 Lead PDIP</p>	<p>16 Lead SOIC (Wide Body)</p>
<b>IR2010</b>	<b>IR2010S</b>
<b>Part Number</b>	

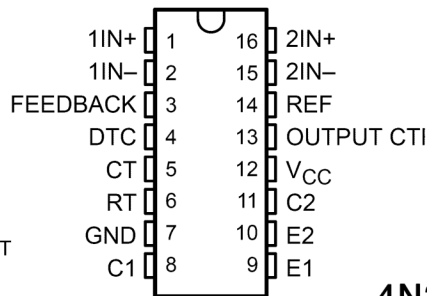
# Semiconductor Pinouts

## Dual Op-amp

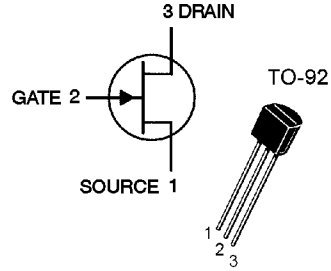
TL072N 1U1  
LM833 U1-7  
NJM4560 U8



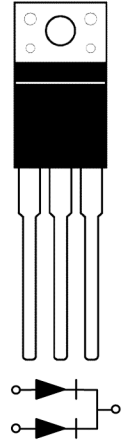
## TL494 PWM 2U18



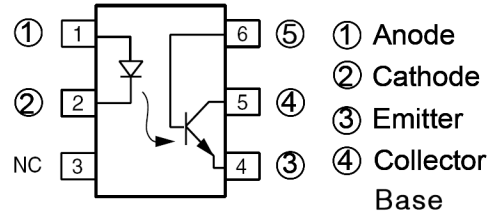
## 2SK30A FET Q1



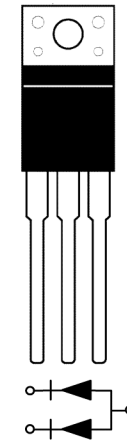
## Rectifier UF1602CT D30,31



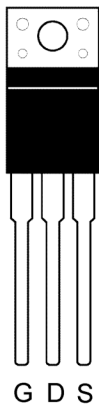
## 4N35 U17



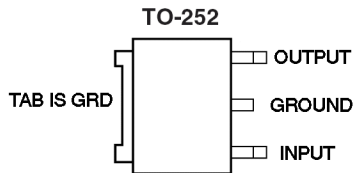
## Rectifier MUR1620CT D32,33



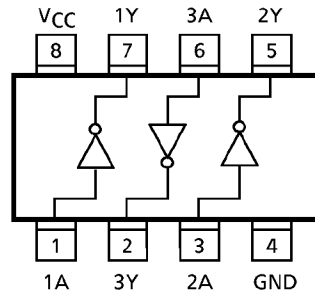
IRF3205 Q22-28  
TP50N20P Q9-14



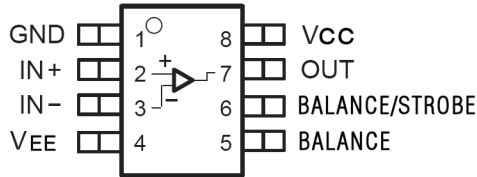
## +12 REG U8



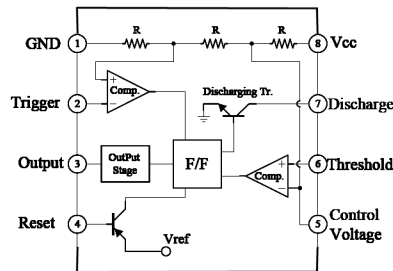
## TC7WH04F Triple Inverter U9



## LM311 Comparator U11



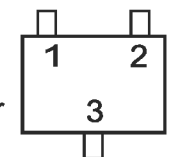
## LM555 TIMER U7



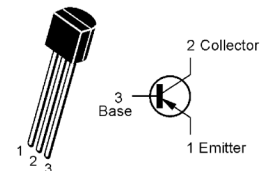
MMBT5401 SOT23,  
MMBT5551 SOT23,  
MMBT2222 SOT23,

Q3,Q29,2Q2-2Q8,  
2Q38,2Q32,Q30

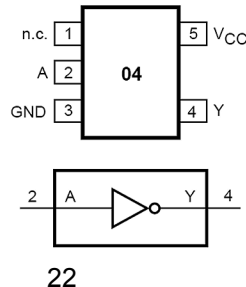
1) Emitter  
2) Base  
3) Collector



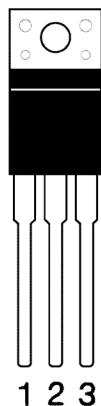
## 2SA1023 PNP 2Q19,20



## 74AHC1G04 SOT-235 INVERTER U16

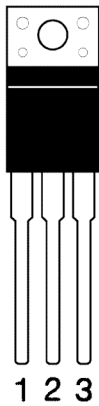


KA7912 -12 REG U14



1. GROUND  
2. IN  
3. OUT

KA7812 +12 REG U13,15



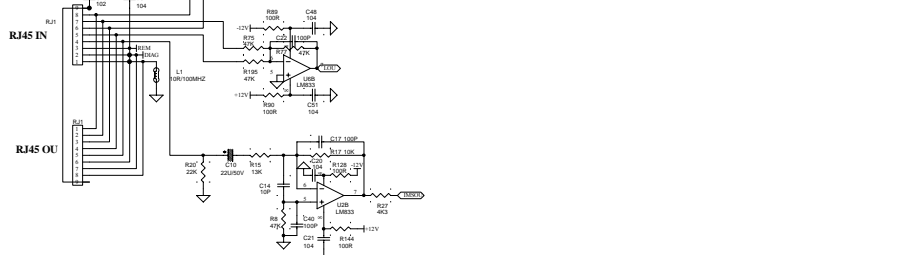
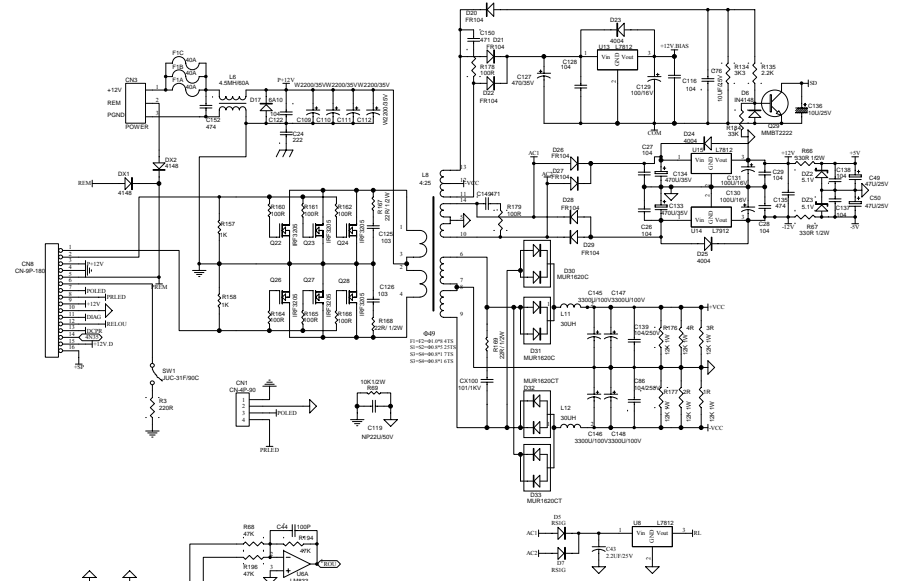
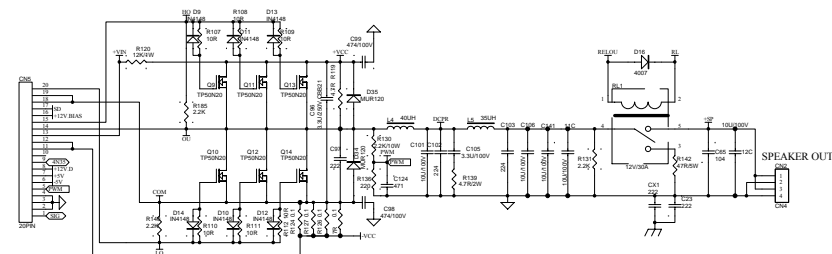
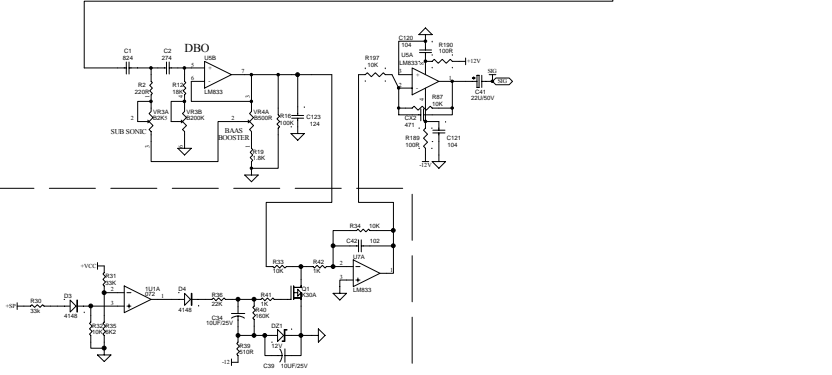
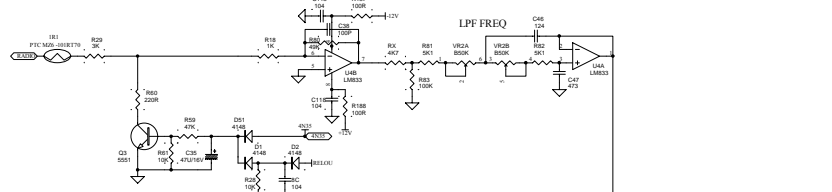
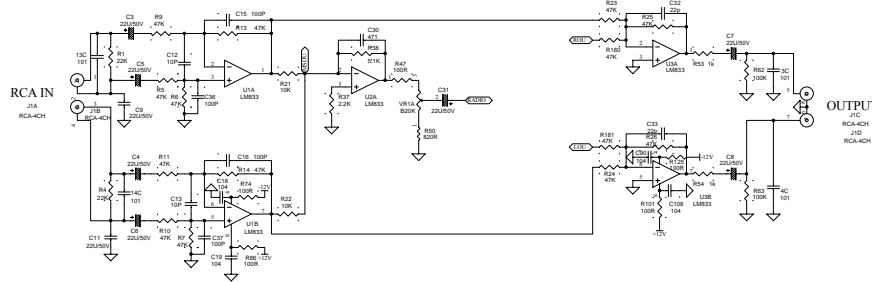
1. IN  
2. GROUND  
3. OUT

## 2SB649A 2Q17



1. Emitter  
2. Collector  
3. Base

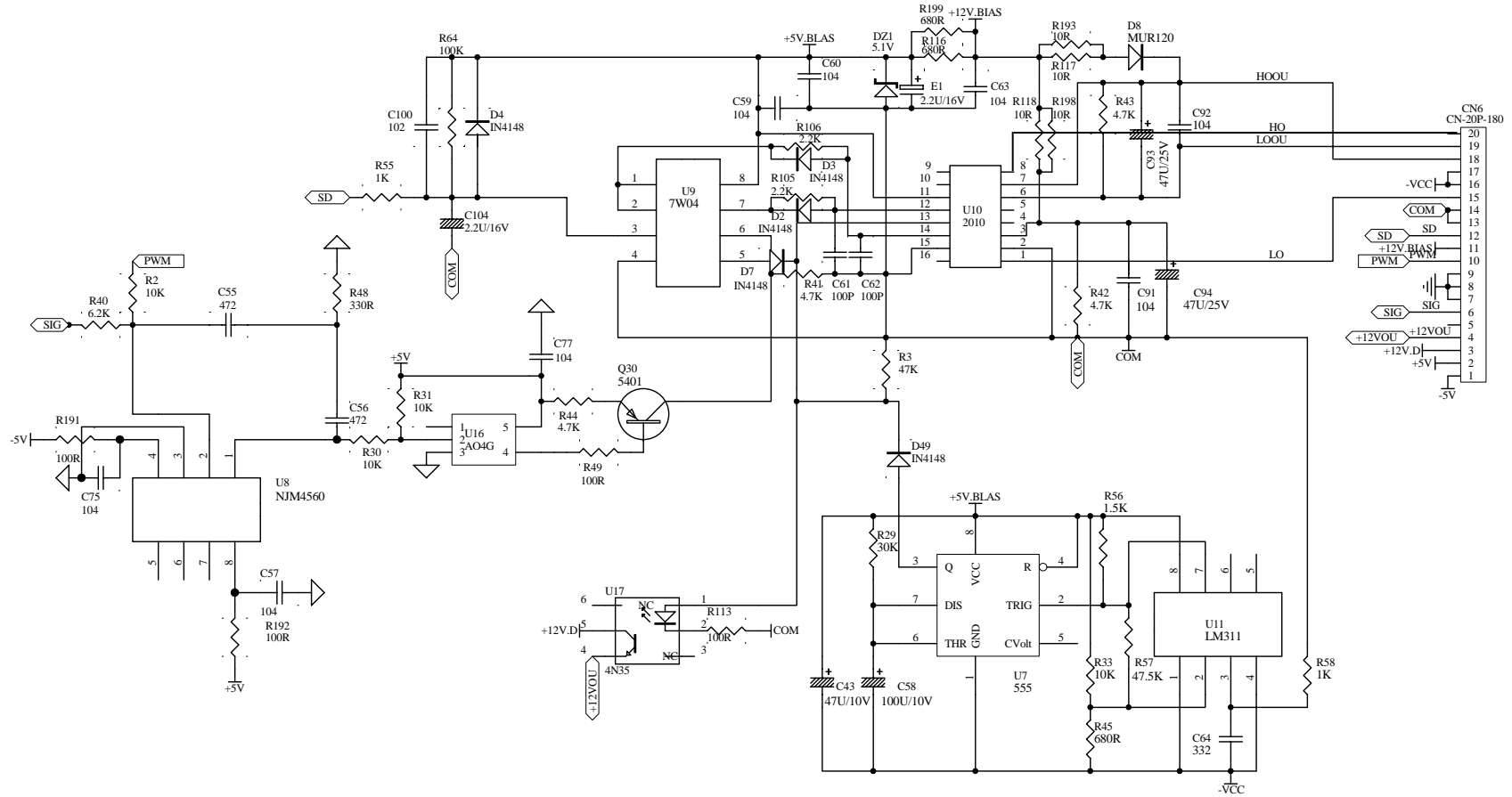
KAPPA ONE



REV	DESCRIPTION	Date	DATA	REV	DESCRIPTION	Date	APPROVED	DATA	DR/CHK
P1	MSDP/PLC MS2-0018790			IR1					
								PROJECT NAME	KAPPA ONE
								SCALE	1:1
								DESIGNED BY	IAN
								CHECKED BY	
								DATE	2008-08-26
								APPROVED BY	
								DATE	







REV	DESCRIPTION	Place	DATA	REV	DESCRIPTION	Place	APPROVED	DATA	EVERICTORY ELECTRONIC COMPANY LIMITED			DWG NO:
PV1	4.7K ohm 0805	R40	08.07.25	PV2	6.2K ohm 0805	R40		08.07.25	PART NAME: PROCESSOR			PART NO:
									SCALE: 1:1	DRAW BY: TAN.	DATE: 2008.07.25	
									UNIT: MM	CHECKED BY:	DATE:	
									PRODUCT MODE: KAPPA ONE	APPROVED BY:	DATE:	
									SIZE: A4	SHEET: 1 OF 3		
									REV: PV2			