

# BP-600.1

The JBL logo is enclosed in a square border.

1 CHANNEL

AUTOMOTIVE AMPLIFIER

***RTV servis Horvat***

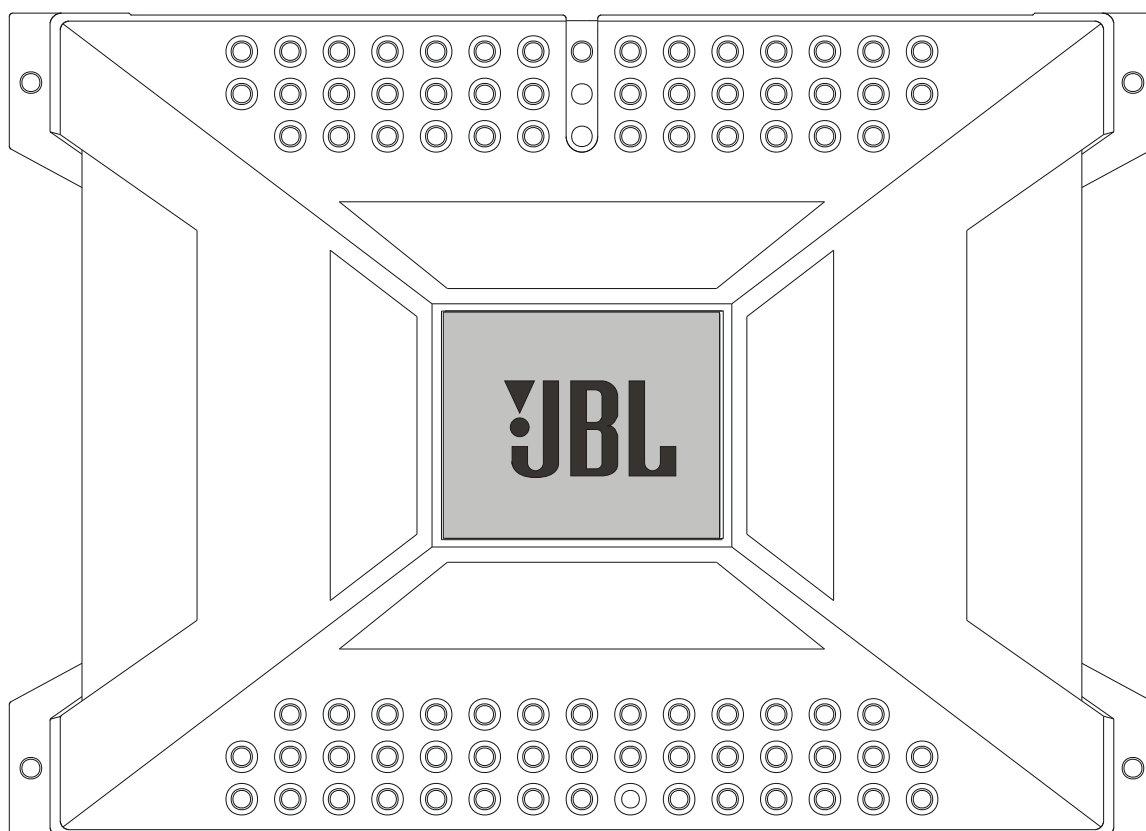
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## TECHNICAL MANUAL



JBL CONSUMER PRODUCTS  
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## Controls and connections

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## SPECIFICATIONS

Number of Channels . . . . .	1
4 Ohms . . . . .	300W
2 Ohms . . . . .	600W
T.H.D. @ 4 Ohms rated Power . . . . .	0.10%
Frequency Response . . . . .	10 Hz ~ 320 Hz
Signal to noise Ratio . . . . .	>90dB
Maximum Current Draw. . . . .	57A
Line Level Sensitivity. . . . .	250mV ~ 4V
Minimum Speaker Impedance . . . . .	1ohm
External Dimensions (Inches)	
Length . . . . .	12 9/16
Width . . . . .	9 1/16
Depth . . . . .	2 11/16
External Dimensions (mms)	
Length . . . . .	319
Width . . . . .	229
Depth . . . . .	68

JBL continually strives to improve its products. New materials, production methods and design refinements are introduced into existing models without notice as a routine expression of our design philosophy. For this reason, BP Series Multichannel Automotive Amplifiers may differ in some respects from their published specifications and descriptions, but will always equal or exceed the original specifications unless otherwise stated.

## Features

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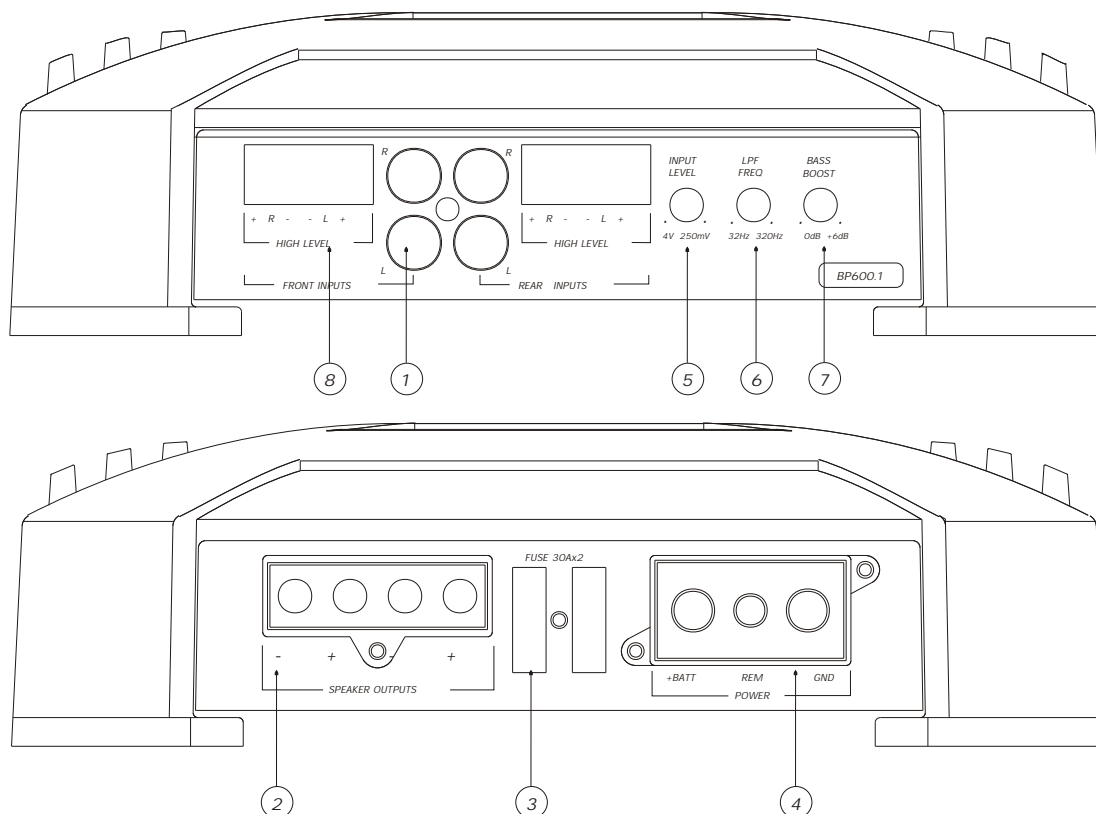
- 1-Channel Operation
- Advanced MOSFET Oversized Floating Rail Power Supply
- Floating Ground Factory - Head - Unit Speaker - Level input
- Variable Input Sensitivity (250mV - 4V)
- Fully Complementary Output Stage with Class-A Voltage Amplification
- Gold-plated Power, Input and Output Connectors
- 2-Ohm Stable

## Test Conditions and Notes

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- All tests to be done, unless otherwise specified, from 10Hz to 320Hz at 14.4V DC into 4 ohm loads and adjust the units gain so that with a .775 volt input signal the unit is at its maximum rated output. All measurements will be done using an Audio precision system one and the supply voltage.
- An A+ line voltage of 14.4V DC shall be applied to the unit under test for all measurements unless otherwise specified. The voltage applied to the unit shall be measured at the power connection On the Amplifier.
- **Signal Source**  
Unless otherwise specified, all tests shall be conducted with the Audio Signal Generator output configured to be balanced, less than or equal to 50 ohm source impedance, and floating. The signal source "GND" shall be connected to the Amplifier PWR GND at the Amplifier.
- **Output Load**  
Unless otherwise specified, all tests shall be conducted with 4 ohm resistive loads having less than 10% reactive components at any frequency below 75KHz. Each resistor shall have a value that remains within 1% while dissipating the rated output of the unit under test.
- Power Indicator LED steadily illuminates for normal operation. LED blinks when protection circuitry is engaged, and during power up.

## Controls and Connections



## Controls and Connections

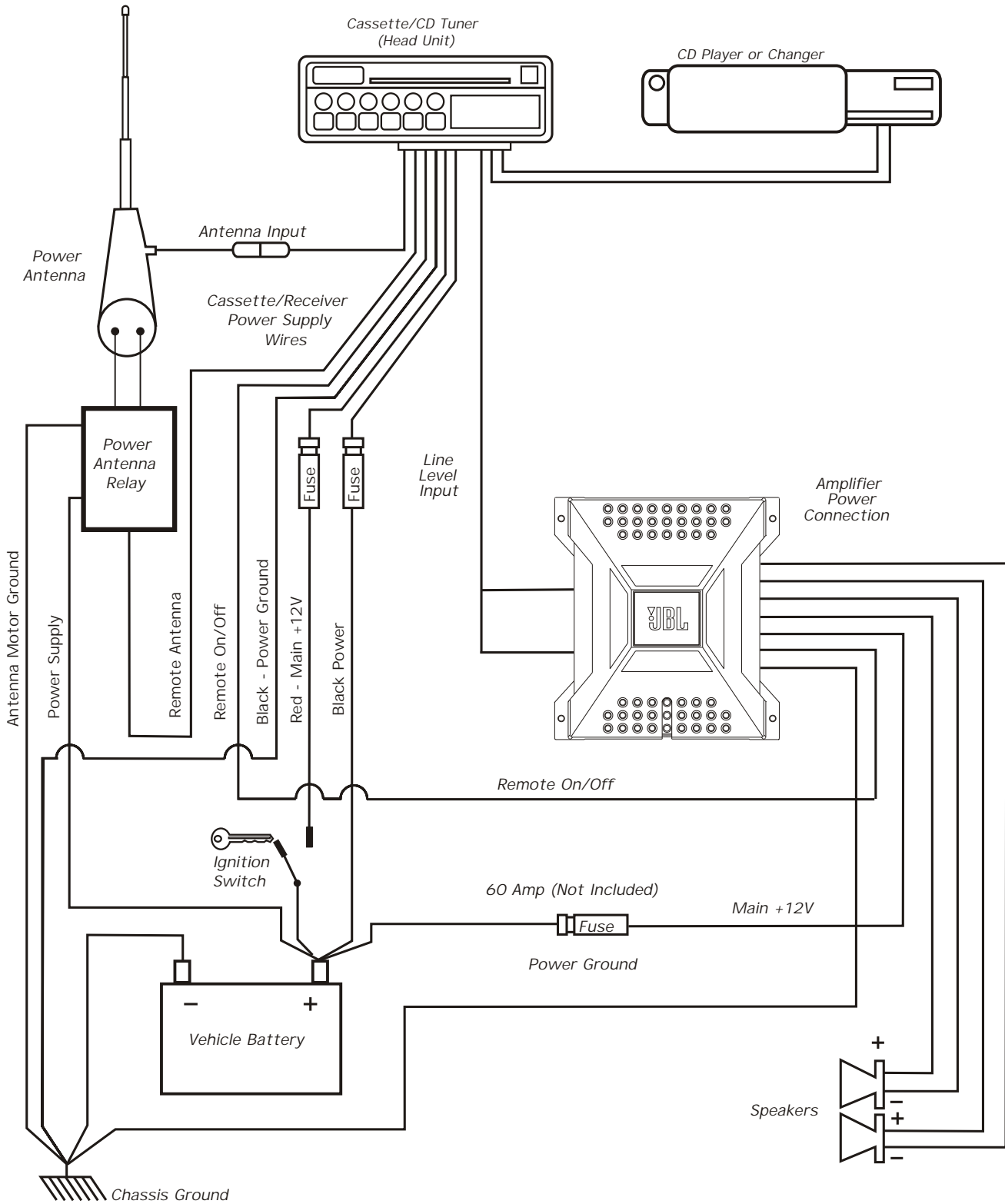
1. It allows left and right input channels to be connected to the amplifier using RCA plugs.
2. Speaker Output Connector - Connect speaker wiring to these connectors. See wiring instructions on page 4 for more information.
3. Fuse - Two 30 Amp ATC type Fuses.
4. Power Connection for 12V+, GND and REM connections for power wires. See wiring instructions on page 4 for more information.
5. Input-Level Control - Adjusts input sensitivity for pre-amp level and speaker level inputs.
6. The electronic crossover is a 12dB/oct. Low pass filter which can be Set at any frequency between 32Hz and 320Hz.
7. The bass boost control will provide up to 6dB of boost at 50Hz.
8. It allows left and right input channels such as high level speaker output signals to be the amplifier.

## Mounting the Amplifier

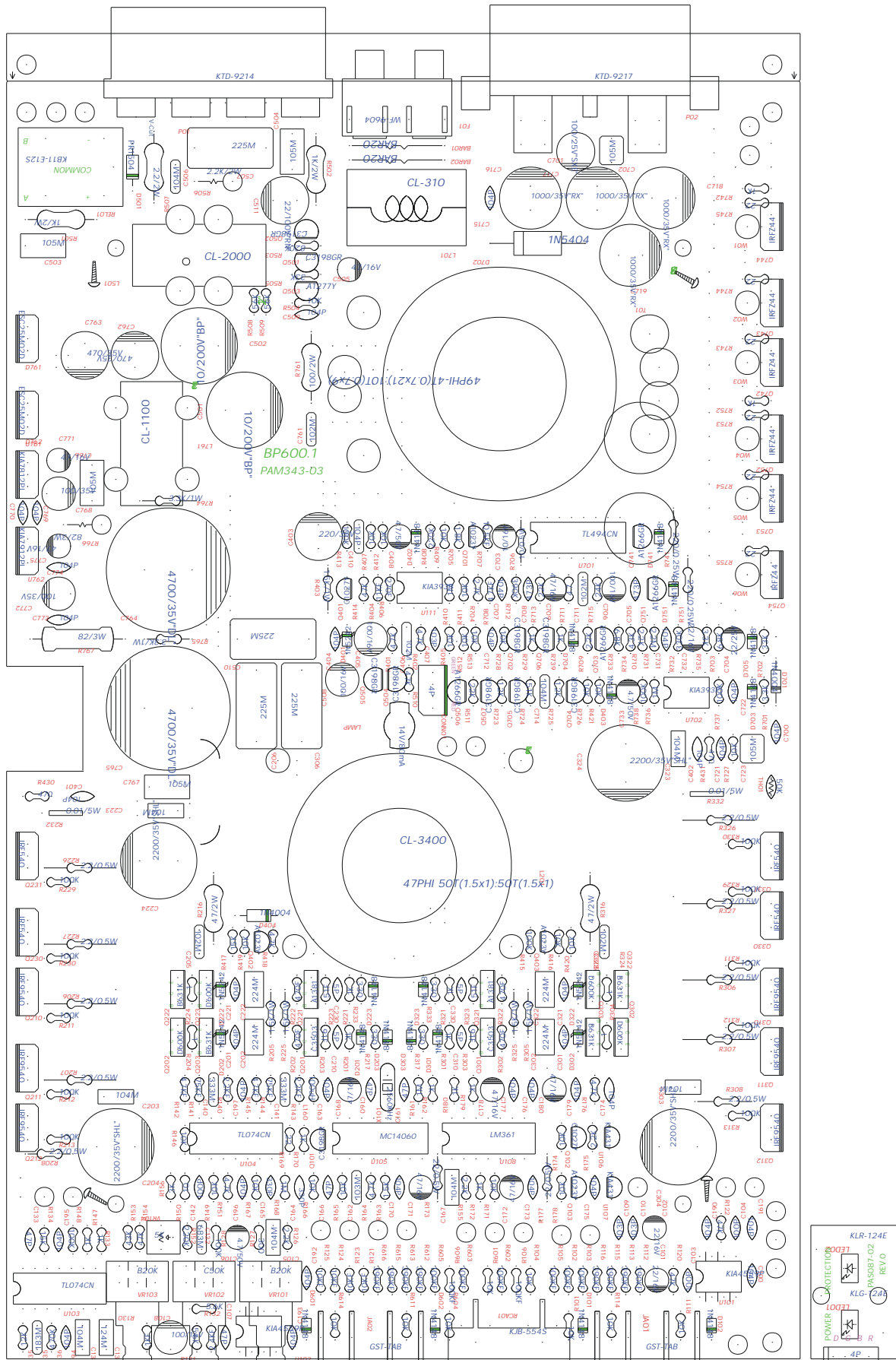
The JBL BP Series amplifiers can be mounted in virtually any location inside the vehicle. However, make sure to keep the amplifier away from heater vents or ducts.

1. At the chosen site, use the amplifier as a mounting template and mark the locations of the four mounting holes.
2. Drill a small pilot hole at each marked location.
3. Mount the amplifier and securely tighten the mounting screws.

Typical System Configuration



## Printed Circuit Board (Top View)



## BP600.1 Parts List

REF. NO	PART NO.	DESCRIPTION	Q'TY	REF. NO	PART NO.	DESCRIPTION	Q'TY
<b>Main PCB, Preamp, Crossover, Power Supply and Power Amplifier</b>				<b>RESISTORS</b>			
<b>F.E.T</b>				R101,104,111 R114,146,149 R165,166,167 R171,174,178 R405,407,409 R411,412,416 R419,420,421 R504,512,513 R601,604,611 R614,726,727 R728	RE202010300	CARBON FILM 1/5W 5% ( 10K OHM )	31
Q210,211,212 Q310,311,312	FE195400000	P-CH POWER MOSFET ( IRF9540 )	6	R102,103,105 R106,602,603 R605,606	RE212100300	METAL FILM 1/5W 1% ( 100K OHM )	8
Q230,231,330 Q331	FE105400000	N-CH POWER MOSFET ( IRF540 )	4	R112,113,115 R116,612,613 R615,616	RE212390300	METAL FILM 1/5W 1% ( 390K OHM )	8
Q742,743,744 Q752,753,754	FE100440112	N-CH POWERMOSFET ( IRFZ44 )	6	R120,122,154 R414,510	RE202047300	CARBON FILM 1/5W 5% ( 47K OHM )	5
<b>TRANSISTORS</b>				R121,123,124 R125	RE212010300	METAL FILM 1/5W 1% ( 10K OHM )	4
Q101,501,502 Q504,505,507 Q702,704,705 Q706	TR031981100	SMALL SIGNAL NPN ( KTC3198GR )	10	R126,155,175 R709,710	RE202022200	CARBON FILM 1/5W 5% ( 2.2KOHM )	5
Q102,401	TR010273100	SMALL SIGNAL NPN ( KTC1027Y )	2	R127,163	RE202015200	CARBON FILM 1/5W 5% ( 1.5K OHM )	2
Q103,402,403 Q701	TR010233100	SMALL SIGNAL PNP ( KTA1023Y )	4	R128,148,211 R212,213,229 R230,311,312 R313,329,330 R413,415,737 R738	RE202100300	CARBON FILM 1/5W 5% ( 100KOHM )	16
Q201,301	TR035030101	VIDEO NPN ( C3503 )	2	R129	RE212043200	METAL FILM 1/5W 1% ( 4.3K OHM )	1
Q202,223,302 Q323	TR006003126	SMALL SIGNAL NPN ( D600K )	4	R130	RE212001300	METAL FILM 1/5W 1% ( 1K OHM )	1
Q203,222,303 Q322	TR006313126	SMALL SIGNAL PNP ( B631K )	4	R131,132	RE202056200	CARBON FILM 1/5W 5% ( 5.6K OHM )	2
Q221,321	TR013810201	VIDEO PNP (A1381)	2	R133,147,162 R170,172,179 R180,201,221 R301,321,729 R739,742,752	RE202001300	CARBON FILM 1/5W 5% ( 1K OHM )	15
Q503,506,703 Q741,751	TR012661200	SMALL SIGNAL PNP ( KTA1266GR )	5	R134,417	RE202015300	CARBON FILM 1/5W 5% ( 15K OHM )	2
<b>DIODES</b>				R135	RE202012300	CARBON FILM 1/5W 5% ( 12K OHM )	1
D101,102,201 D203,223,301 D303,323,402 D403,601,602 D703,704,705 D741,751	DIO41480000	SWITCHING SIGNAL (1N4148)	17	R136	RE202470300	CARBON FILM 1/5W 5% ( 470K OHM )	1
D202,222,302 D322,401	DIO52420040	ZENER 12V/0.5W (1N5242)	5	R140,143	RE212022200	METAL FILM 1/5W 1% ( 2.2K OHM )	2
D404,701	DIO40040010	RECTIFIER ( 1N4004 )	2	R141,144	RE212075300	METAL FILM 1/5W 1% ( 75K OHM )	2
D501	DIO01504111	FAST RECOVERY ( PR1504 )	1	R142,145,708	RE212047200	METAL FILM 1/5W 1% ( 4.7K OHM )	3
D702	DIO54040011	FAST RECOVERY (1N5404)	1	R150	RE202010000	CARBON FILM 1/5W 5% ( 10 OHM )	1
D761,762	DIO02502031	FAST RECOVERY ( ESC25M02D )	2	R151,164,176 R401,402,418	RE202047200	CARBON FILM 1/5W 5% ( 4.7K OHM )	6
<b>I.C</b>				R152,408	RE202220300	CARBON FILM 1/5W 5% ( 220K OHM )	2
U101,102	IC007455900	DUAL OP AMP (DIP-08) ( KIA4559P )	2	R153	RE202043300	CARBON FILM 1/5W 5% ( 43K OHM )	1
U103,104	IC017007400	QUAD OP AMP (DIP-14) ( TL074CN )	2	R156	RE202003300	CARBON FILM 1/5W 5% ( 3K OHM )	1
U105	IC009140600	14-STAGE COUNTER (DIP-16) ( MC14060 )	1	R161,168,410 R736	RE202010500	CARBON FILM 1/5W 5% ( 1M OHM )	4
U106,107	IC051043100	SHUNT REGULATOR ( KIA431 )	2	R169,743,744 R745,753,754 R755	RE202022000	CARBON FILM 1/5W 5% ( 22 OHM )	7
U108	IC007036100	PRECISION (DIP-16)-LM361	1	R173,177	RE204022000	CARBON FILM 0.5W 5% ( 22 OHM )	2
U111,702	IC001039300	COMPARATOR (DIP-08) ( KIA393P )	2	R202,222,302 R322	RE212470000	METAL FILM 1/5W 1% ( 470 OHM )	4
U701	IC017049400	P.W.M IC ( TL494CN )	1	R203,303	RE212091000	METAL FILM 1/5W 1% ( 91 OHM )	2
U761	IC006781204	VOTAGE REGULATOR +12V/0.5A (KIA7812PI)	1	R204,224,304 R324	RE202001000	CA RBON FILM 1/5W 5% ( 1 OHM )	4
U762	IC006791204	VOLTAGE REGULATOR, -12V/0.5A ( KIA7912PI )	1	R206,207,208 R226,227,306 R307,308,326 R327	RE314022000	METAL FILM 0.5W 1% ( 2.2 OHM )	10

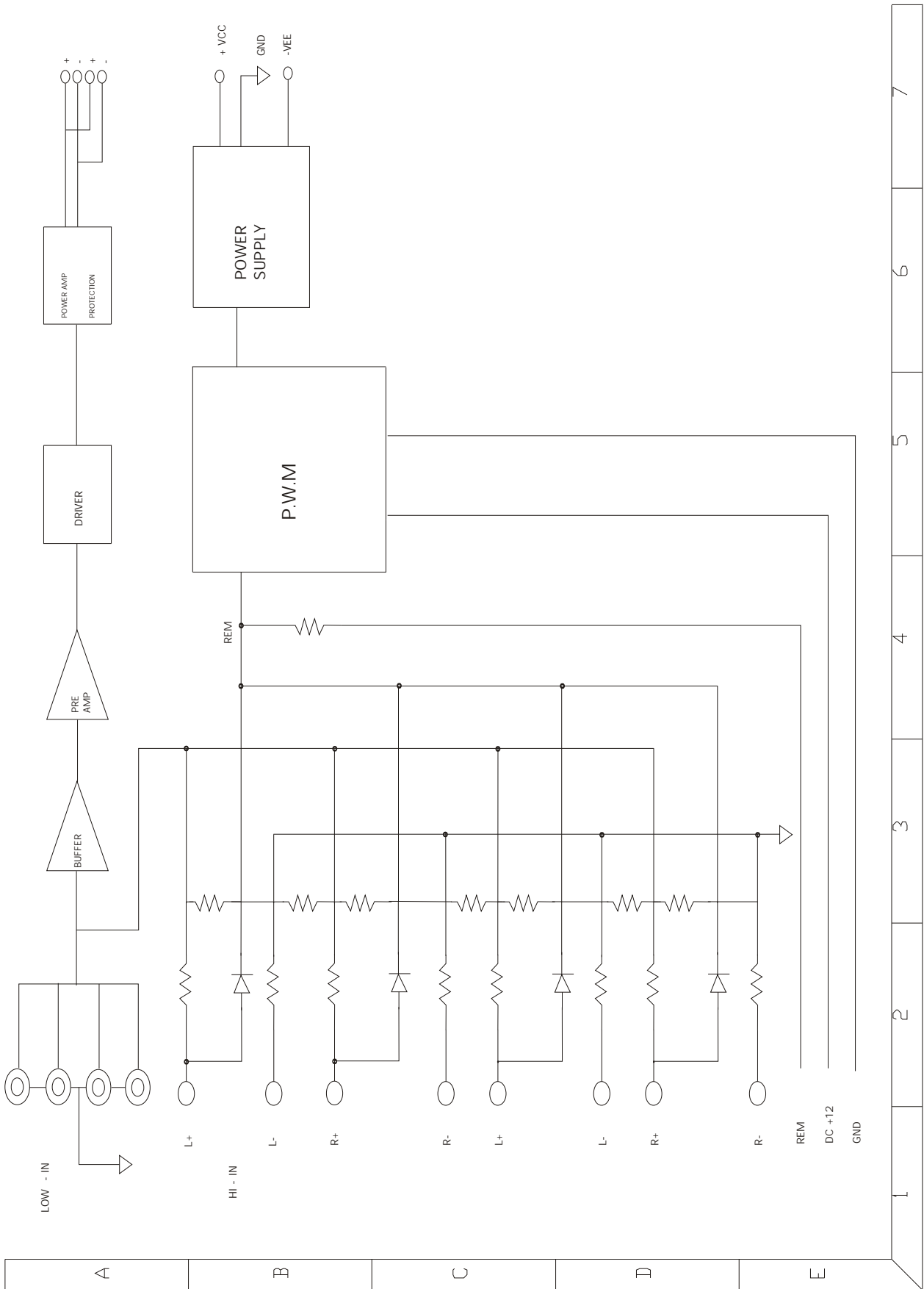
## BP600.1 Parts List

REF. NO	PART NO.	DESCRIPTION	Q'TY	REF. NO	PART NO.	DESCRIPTION	Q'TY
CAPACITORS				C210,230,310 C330	CC011050100	CERAMIC DISK 50V "NPO" ( 5pF )	4
R205,225,305 R325,403	RE305015201	CARBON FILM 1W 5% ( 1.5K OHM )	5	C410	CC051104020	RADIAL MLCC (0.1uF)	1
R216,316	RE306047000	METAL FILM 2W 5% ( 47 OHM )	2	C705,708	CC011473500	CERAMIC DISK 50V ( 0.47uF )	2
R217,233,317 R333	RE202330000	CARBON FILM 1/5W 5% ( 330 OHM )	4	C105,134,167 C203,223,303 C323,506,714	MC091410407	MYLAR 5% 63V "TL TYPE" ( 0.1uF )	9
R223,323	RE212051000	METAL FILM 1/5W 1% ( 51 OHM )	2	C131	MC091412407	MYLAR 5% 63V "TL TYPE" ( 0.12uF )	1
R232,332	RE908010013	SHUNT 5W 5% ( 0.01 OHM )	2	C132	MC091468307	MYLAR 5% 63V "TL TYPE" ( 0.068uF )	1
R404	RE212011300	METAL FILM 1/5W 1% ( 11K OHM )	1	C135	MC091418307	MYLAR 5% 63V "TL TYPE" ( 0.018uF )	1
R406	RE212330000	METAL FILM 1/5W 1% ( 270 OHM )	1	C140,141	MC091433307	MYLAR 5% 63V "TL TYPE" ( 0.033uF )	2
R430,431	RE202470000	CARBON FILM 1/5W 5% ( 470 OHM )	2	C162	MC001110300	MYLAR 5% 50V (0.01uF)	1
R501,502	RE306001300	METALFILM 2W 5% ( 1K OHM )	2	C202,222,302 C322	MC001422401	MYLAR 5% 63V "BOX TYPE" ( 0.22uF )	4
R503	RE202820300	CARBON FILM 1/5W 5% ( 820K OHM )	1	C205,305,406 C711,761	MC001110200	MYLAR 5% 50V (0.001uF)	5
R505,702	RE202033300	CARBON FILM 1/5W 5% ( 33K OHM )	2	C206,306,507 C510	MC001222511	MYLAR 5% 100V "BOX TYPE" ( 2.2uF )	4
R506	RE306022200	METAL FILM 2W 5% ( 2.2K OHM )	1	C503,504,766 C767	MC001410530	MYLAR 5% 63V "BOX TYPE" ( 1uF )	4
R507	RE306022800	METAL FILM 2W 5% ( 2.2 OHM )	1	C702,723	MC091410507	MYLAR 5% 63V "TL TYPE" ( 1uF )	2
R508,509	RE202056300	CARBON FILM 1/5W 5% ( 56K OHM )	2	C101,102,732	EC040112200	ELECTROLYTIC "SMS" ( 22uF/16V )	3
R511,713	RE202022300	CARBON FILM 1/5W 5% ( 22K OHM )	2	C106,408,733	EC070114760	ELECTROLYTIC "SMS" ( 4.7uF/50V )	3
R701,735	RE202033200	CARBON FILM 1/5W 5% ( 3.3K OHM )	2	C108,405,508 C706	EC040111010	ELECTROLYTIC "SMS" ( 100uF/16V )	4
R703,733	RE202068200	CARBON FILM 1/5W 5% ( 6.8K OHM )	2	C168,171,172 C178,180,505 C709,771,775	EC040114700	ELECTROLYTIC "SMS" ( 47uF/16V )	9
R704	RE202027200	CARBON FILM 1/5W 5% ( 2.7K OHM )	1	C204,224,304 C324	EC060122220	ELECTROLYTIC "SHL" ( 2200uF/35V )	4
R705	RE202018200	CARBON FILM 1/5W 5% ( 1.8K OHM )	1	C403	EC060112210	ELECTROLYTIC "SMS" ( 220uF/35V )	1
R706	RE204010000	CARBON FILM 0.5W 5% ( 10 OHM )	1	C501,502	EC111211000	ELECTROLYTIC "BP" ( 10uF/200V )	2
R707	RE212105200	METAL FILM 1/5W 1% ( 10.5K OHM )	1	C511	EC091132200	ELECTROLYTIC "RN" ( 22uF/100V )	1
R711	RE202044800	CARBON FILM 1/5W 5% ( 4.7 OHM )	1	C701	EC050171010	ELECTROLYTIC "SXE" ( 100uF/25V )	1
R712	RE202390300	CARBON FILM 1/5W 5% ( 390K OHM )	1	C703	EC040111600	ELECTROLYTIC "SMS" ( 10uF/16V )	1
R715	RE202024300	CARBON FILM 1/5W 5% ( 24K OHM )	1	C704	EC050112200	ELECTROLYTIC "SMS" ( 22uF/25V )	1
R723,725	RE202012200	CARBON FILM 1/5W 5% ( 1.2K OHM )	2	C716,717,718 C719	EC061311021	ELECTROLYTIC "RX" ( 1000uF/35V )	4
R724	RE202051300	CARBON FILM 1/5W 5% ( 51K OHM )	1	C762,763	EC060114710	ELECTROLYTIC "SMS" ( 470uF/35V )	2
R731	RE202022500	CARBON FILM 1/5W 5% ( 2.2M OHM )	1	C764,765	EC060064721	ELECTROLYTIC "DL" ( 4700uF/35V )	2
R732	RE202330300	CARBON FILM 1/5W 5% ( 330K OHM )	1	C768,772	EC060111010	ELECTROLYTIC "SMS" ( 100uF/35V )	2
R734	RE202043200	CARBON FILM 1/5W 5% ( 4.3K OHM )	1	MISCELLANEOUS			
R741,751	RE203220000	CARBON FILM 0.25W 5% ( 220 OHM )	2	L160	INO12100500	AXIAL 5% ( 100uH )	1
R761	RE306100000	METAL FILM 2W 5% ( 100 OHM )	1	REL01	RLO01211020	RELAY (KB11-E12S)	1
R764,765	RE305033201	CARBON FILM 1W 5% ( 3.3K OHM )	2	VR102	VO112503512	VOLUME	1
R766,767	RE307082010	METAL FILM 3W 5% ( 82 OHM )	2	VR101,103	VO112203510	VOLUME	2
CAPACITOR				VR104	VO131502270	SEMI VOLUME	1
C103,104,142	CC011101100	CERAMIC DISK 50V "NPO" ( 100pF )	3	TH01	TH100500010	FTD5-350	1
C107,133,160 C161,166	CC011470100	CERAMIC DISK 50V "NPO" ( 47pF )	5	P01	TE000921400	TERMINAL (KTD-9214)	1
C109,110,407	CC011103600	CERAMIC DISK 50V ( 0.01uF )	3	P02	TE000921700	TERMINAL (KTD-9217)	1
C163,170,173 C174,175,176 C177,179,190 C191,192,193 C194,195,196 C197,201,221 C301,321,401 C402,404,509 C707,712,715 C721,722,731 C769,770,773 C774	CC011104600	CERAMIC DISK 50V ( 0.1uF )	34				
C164,165	CC011331200	CERAMIC DISK 50V ( 330pF )	2				

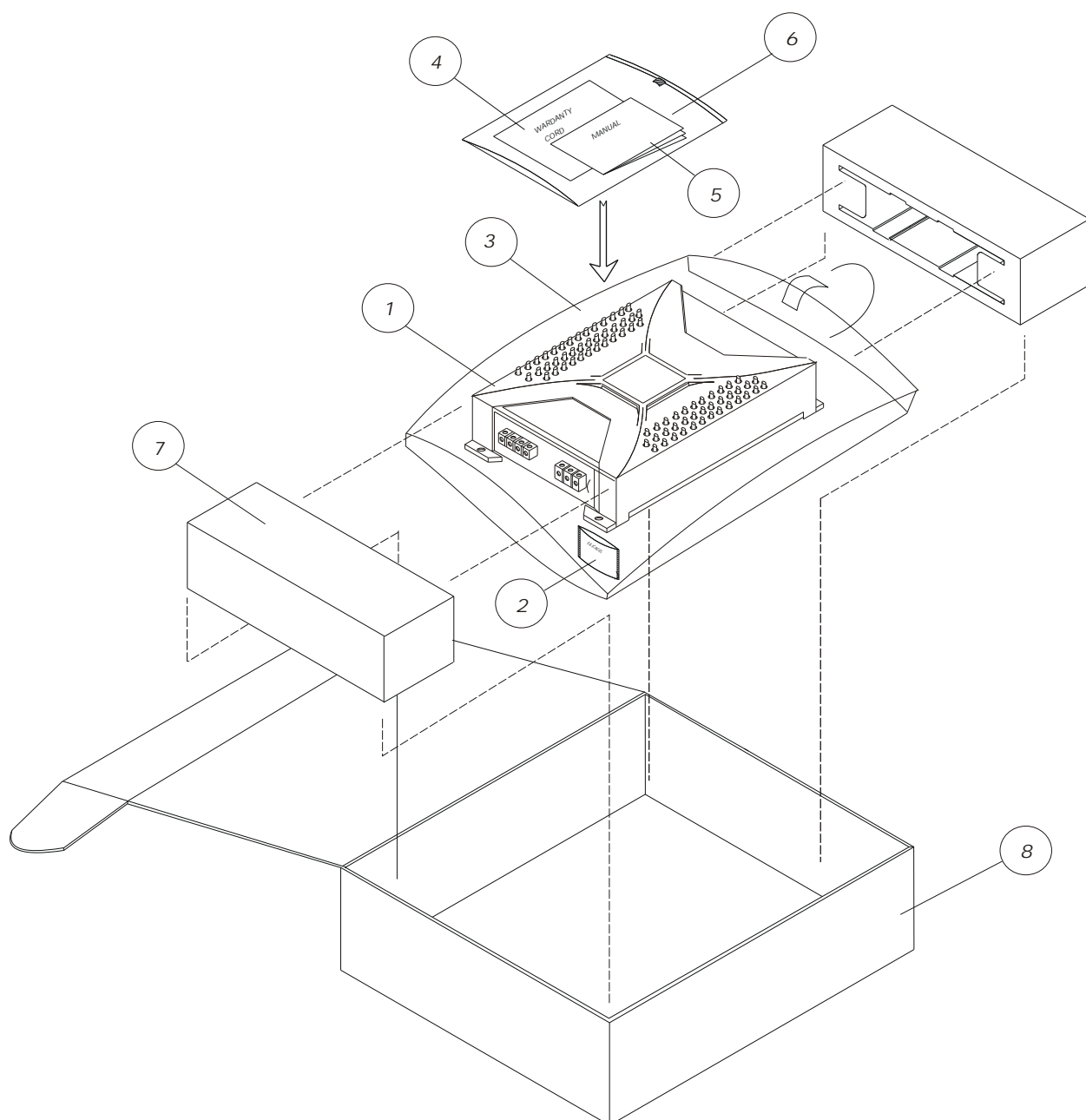


## BP600.1 Parts List

REF. NO	PART NO.	DESCRIPTION	Q'TY	REF. NO	PART NO.	DESCRIPTION	Q'TY
F01	FH000960402	FUSE HOLDER(WF-9604)	1	SCREW	MNSC0034016	SMP 4x16 (NI-P)	11
RCA01	JAO20554000	RCA JACK (KJB-554S)	1	SCREW	MNSC0034056	SMP 4x56 (NI-P)	1
T01	TF149041065	RING CORE	1	NUT	MONU0446320	M4 (NI-P)	1
L201,301	IN027550610	INDUCTOR (CL-2400)	2	PLAIN WASHER	MOPL0110910	PHI 4.2 x PHI 15x1t	2
L501	AR110290900	COIL (CL-2000)	1	PAPER WASHER	MOWA0110920	PAPER, PHI 4.2xPHI 18x0.5t	2
L761	AR412231500	IRON 23PHI (CL-1100)	1				
L701	AR200003100	BAR COIL (CL-310)	1				
BAR01,02	JU100001501	BAR JUMPER (20m/m)	2				
JAO1(4),02(4)	MATB6510430	NI PLATED	8				
LAMP	DS501408010	NEO WEDGE TYPE-14V/80mA	1				
CONNO1	CN001040001	LWL-0640-04	1				
TH01	TB001000100	TEFLON TUBE(10m/m)	2				
IC,FET,DIODE	mP010010000	PAPER SPACE	20				
FUSE	FU030120301	30A ATC FUSE	4				
LED01	DIO00124471	KLG-124E	1				
LED02	DIO00124371	KLR-124E	1				
CONNO2	WI120312003	WIRE ASS'Y	1				
X101	XR300256000	CRYSTAL (CSA256MG)	1				
MECHANICAL							
HEAT SINK	MAHS6510791	AL/DIECASTING 318.2x229.1x67.5	1				
FRONT PANEL	MAFP6537840	EGI 1.5t	1				
REAR PANEL	MARP6537850	EGI 1.5t	1				
BOTTOM COVER	MABC6528050	AL, 282.2x218x1.5t	1				
BADGE	MABG6510220	AL, 76.4x61.8x4t	1				
REFLECTOR	MAIL6510230	ACRYL/ORANGE 109x75.2x20.0	1				
LED CAP	MAIL6510240	ACRYL/CLEAR	1				
T.R BRACKET (D) "1063D"	MABR0210630	AL/BAR, 85x14x6.5	3				
T.R BRACKET (E) "1064E"	MABR0210640	AL/BAR, 56.5x14x6.5	1				
T.R BRACKET CUSHION (D)	MOCU0110720	FIBER 85x14x1.5t	3				
T.R BRACKET CUSHION (E)	MOCU0110730	FIBER, 56.5x14x1.5t	1				
SILICON PAD (C)	MASP0110781	SP1000, 88x23x0.3t	3				
SILICON PAD (D)	MASP0110831	SP1000, 60x23x0.3t	1				
RUBBER CUSHION (A)	MOCU0140970	RUBBER 12x7x1.6t	1				
RUBBER CUSHION (C)	MOCU0111140	RUBBER, PHI 18x10t	2				
RUBBER CUSHION (F)	MOCU0111260	RUBBER, PHI 18x6t	3				
SCREW	MNSC0023008	SMB 3x8 (NI-P)	2				
SCREW	MNSC0053008	SMB 3x8 NI "W/W"	2				
SCREW	MNSC0053006	SMB 3x6 (NI- P) "W/W"	4				
SCREW	MBSC0023006	SMB 3x6 BK	6				
SCREW	MBSC0323008	STT3 BH 3x8 BK	4				
SCREW	MBSC0323008	STT2 PH 3x8 BK	5				

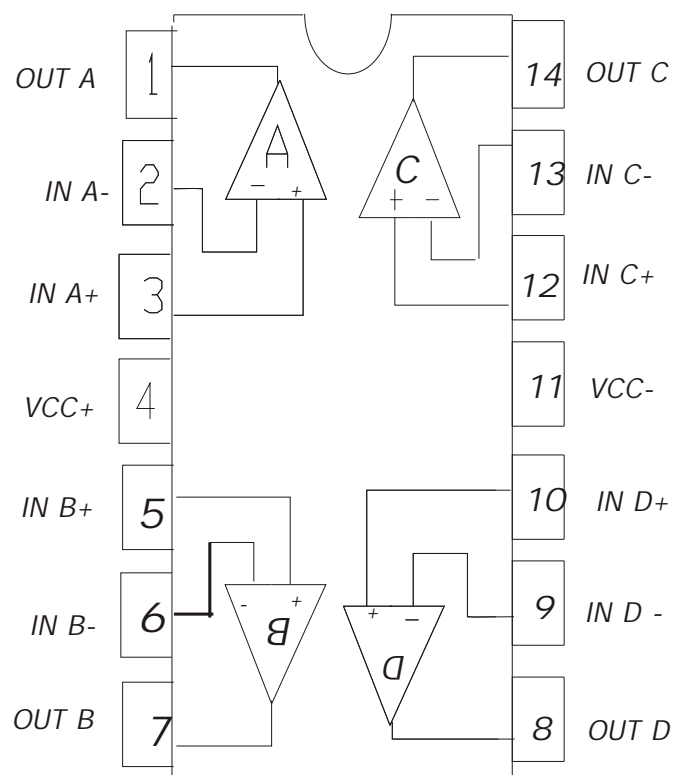
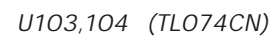
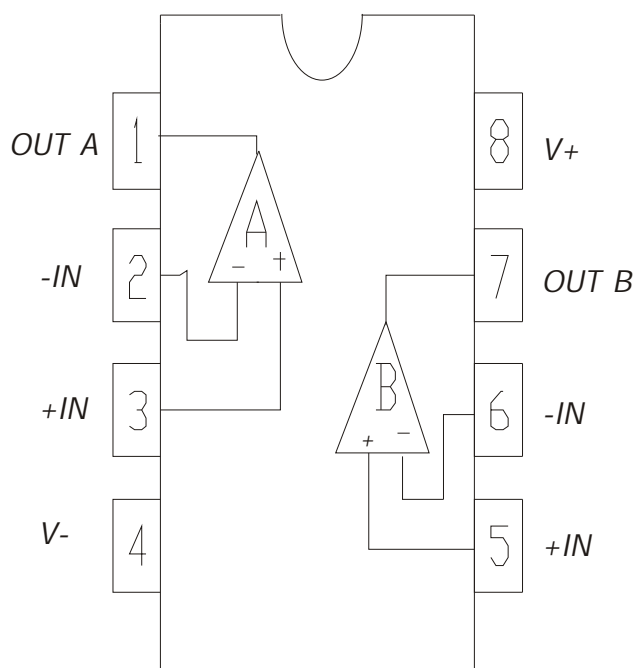
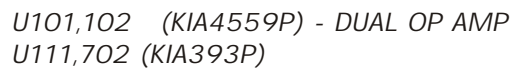
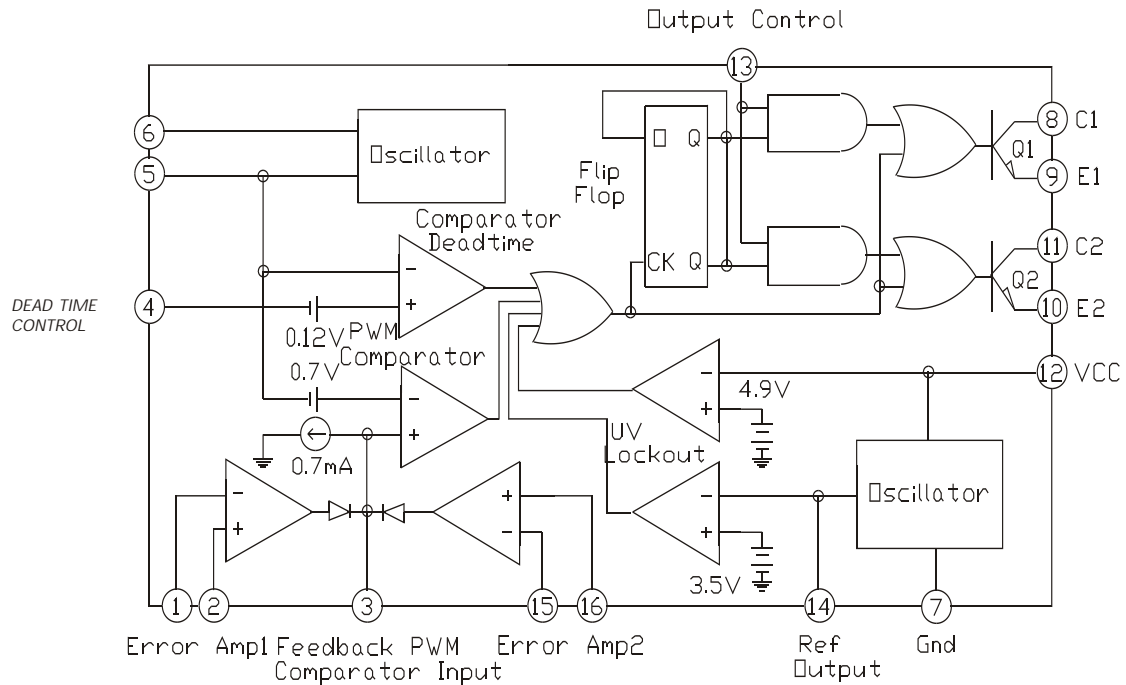
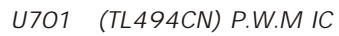


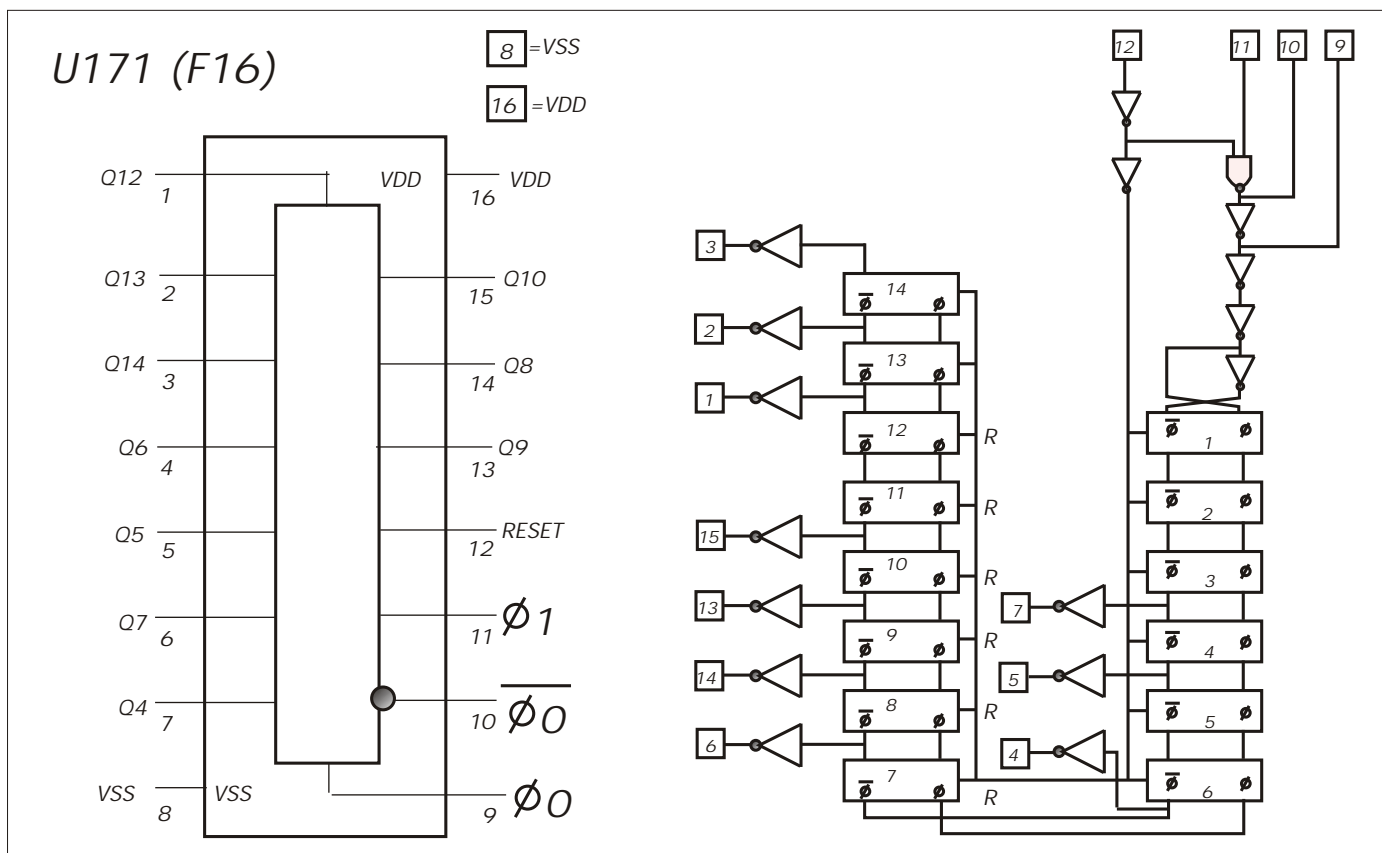
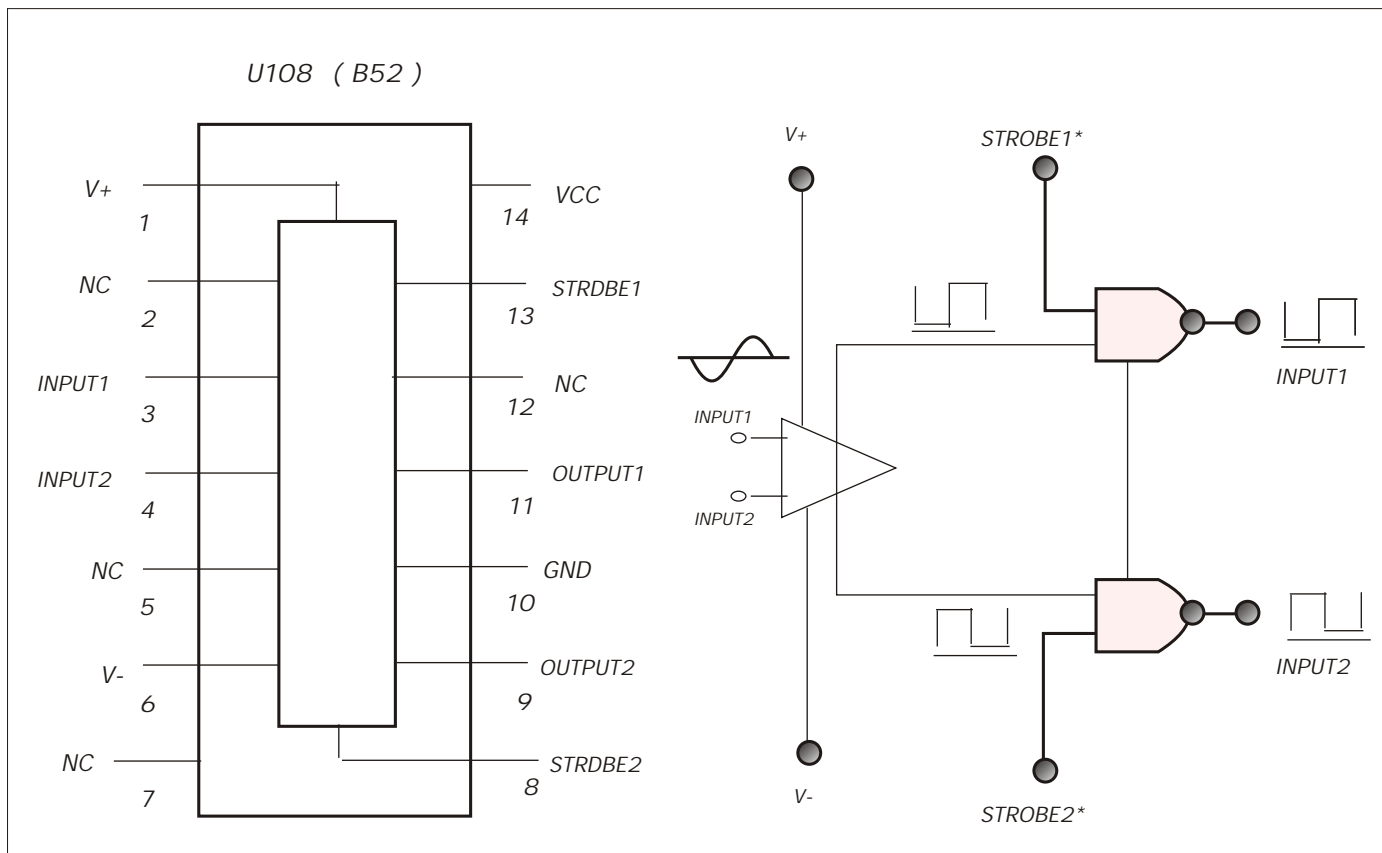
Packaging Exploded View



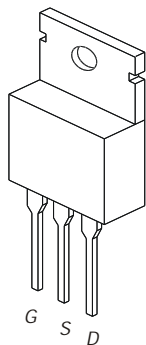
\* PACKAGE \*

①	BP600.1	SET	1	⑤	MOMA0147091	MANUAL	1
②	MOSG0147100	SILICAGEL	1	⑥	MAPB0141000	POLY BAG	1
③	MAPB0110800	POLY BAG	1	⑦	MASN0210830	SNOW PAD "L,R"	2
④	MOWT0147110	WARRANTY CARD	1	⑧	MAGB0038130	GIFT BOX	1





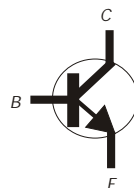
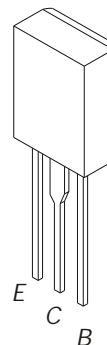
## Transistor Diagrams



\* IRF540 \*  
Q230,231,330,331



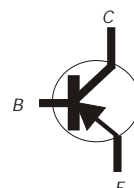
\* IRF9540 \*  
Q210,211,212,310  
Q311,312



\* KTC1027Y \*  
Q102,401

\* D600K \*  
Q202,223,302,323

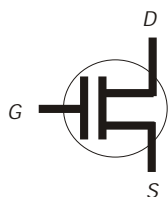
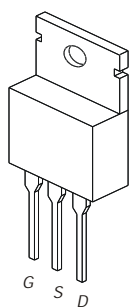
\* 2SC3503 \*  
Q201,301



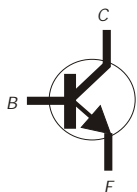
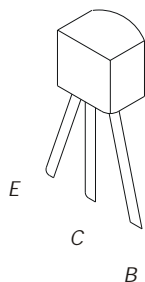
\* KTA1023Y \*  
Q103,402,403,701

\* B631K \*  
Q203,222,303,322

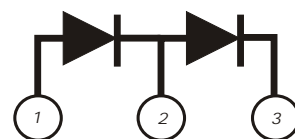
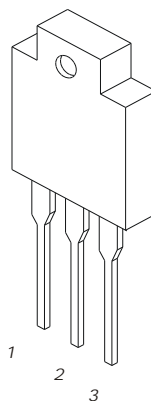
\* 2SA1381 \*  
Q221,321



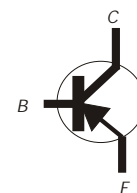
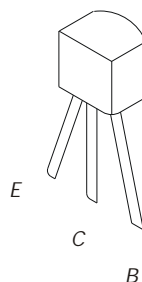
\* IRFZ44 \*  
Q742,743,744  
Q,752,753,754



\* KTC3198GR \*  
Q101,501,502,504,505  
Q507,702,704,705,706



\* ESC25M-02D \*  
D761,762



\* KTA 1266GR \*  
Q506,703,741,751

