

SP550S

Service manual

IBBK

CAUTIONS



- There is high voltage inside this unit. Make sure to pull out the plug of this unit before repairing!
- There are many high voltage components inside this unit. Please pay attention to all warnings and instructions marked on this unit to avoid electric shock!
- Specifications of the replaced components must be the same as that of the original components. Do not change the components' specifications to prevent risks!

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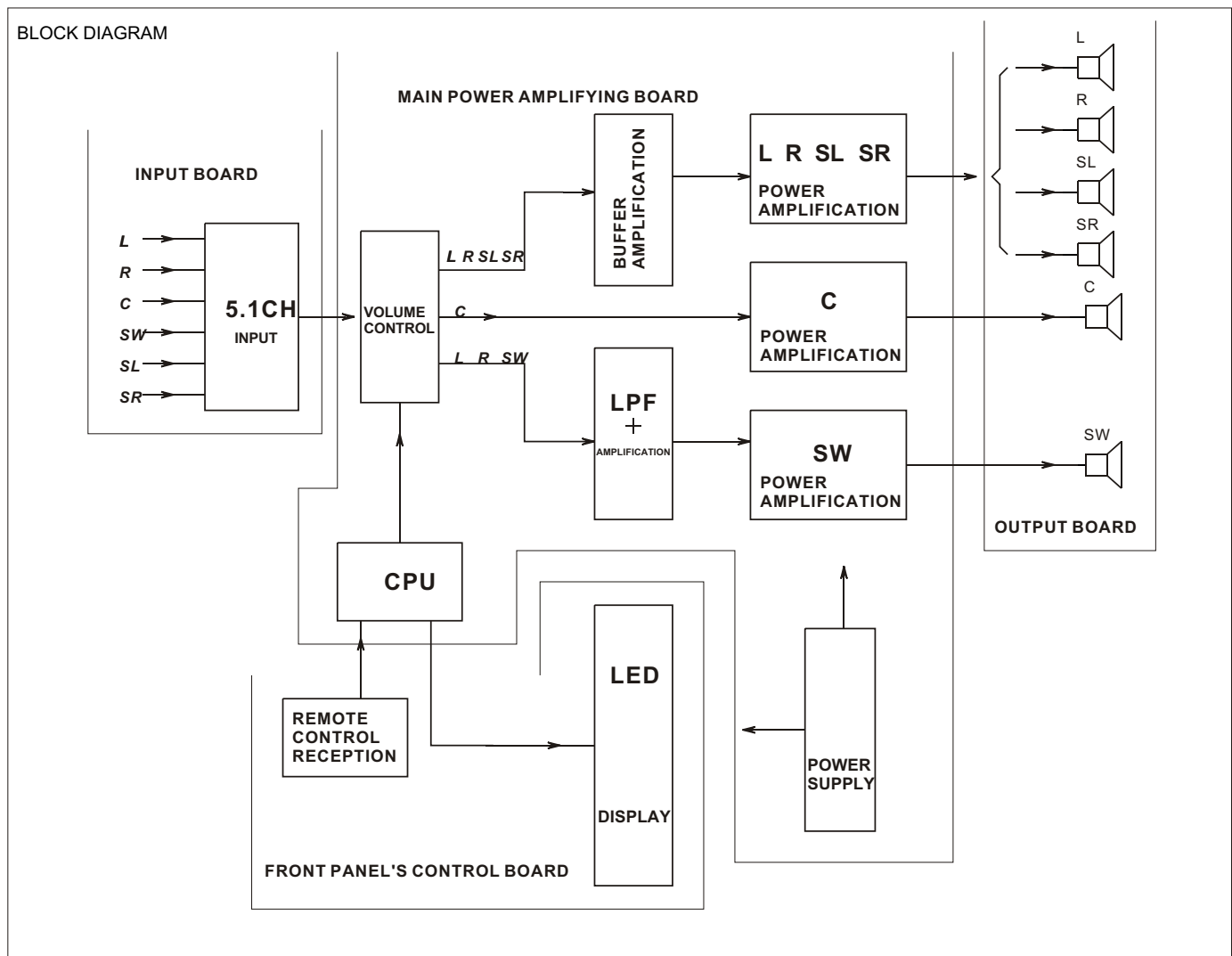
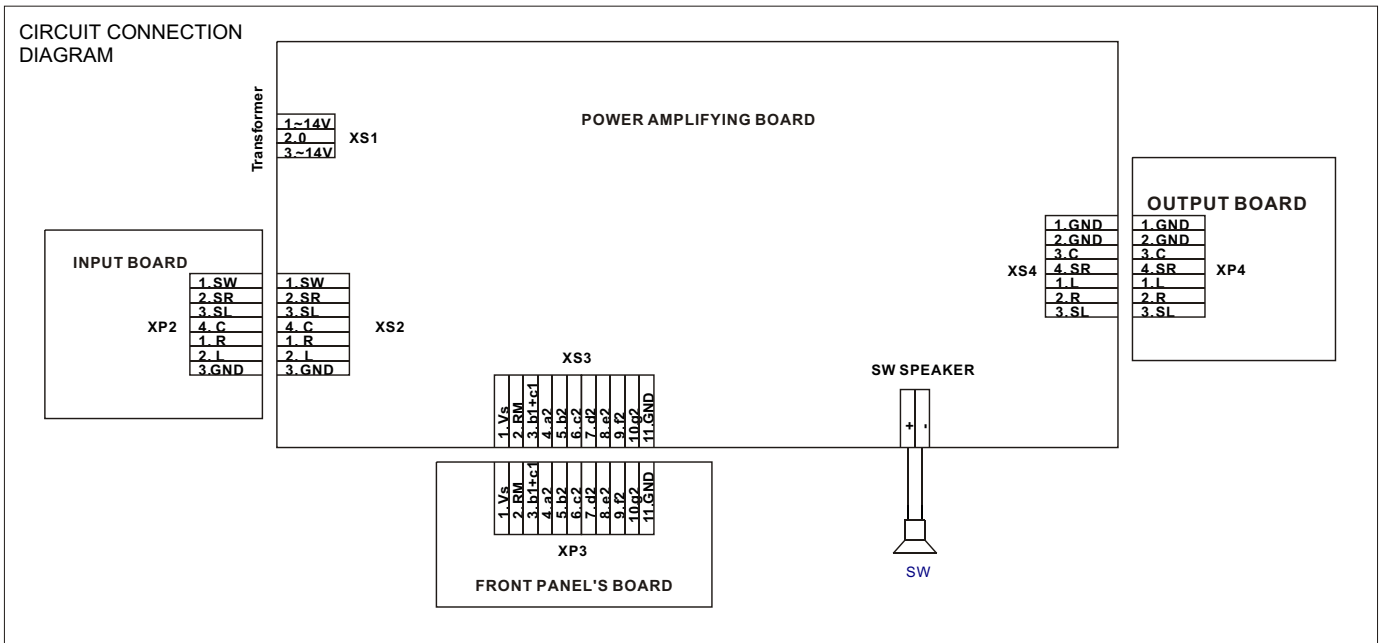
10 THE EXPLANATION FOR KEY COMPONENTS

VOLUME CONTROL IC PT2258
 CPU IC AT89C2051
 POWER IC TDA7370B
 POWER IC TDA2003
 POWER IC LM1875

SP550S FEATURES

- 5.1CH volume and level adjustment incorporate IC PT2258 and realize the standby and mute functions.
- CPU incorporates IC AT89C2051.
- Small signal amplification and amplified LPF incorporate IC NJM4558.
- Power amplification of L, R, SL and SR channels incorporates power IC TDA7370B.
- Power amplification of the C channel employs power IC TDA2003.
- Power amplification of the SW channel employs two LM1875 to form BTL.
- Status display employs a LED digital tube, displayed range: 0~16.
- Full function remote control.
- Square power transformer, bridge and full wave rectifying circuit.
- Satellite speakers employ plastic body. Subwoofer speaker's body employs xyloid MDF construction with PVC cover.
- Satellite speakers employ 3-foot wide frequency band high performance unit.
- Subwoofer incorporates 8-foot aluminum audio coil with dual magnetic circuits exclusively for the subwoofer unit.
- All-in-one flat radiator board with long radiator sluts for excellent heat radiation.

CIRCUIT CONNECTION DIAGRAM & BLOCK DIAGRAM



DETAILED CIRCUIT EXPLANATIONS

1. THE POWERAMPLIFYING BOARD

- MAIN PARTS LIST OF THE MAIN POWERAMPLIFYING BOARD

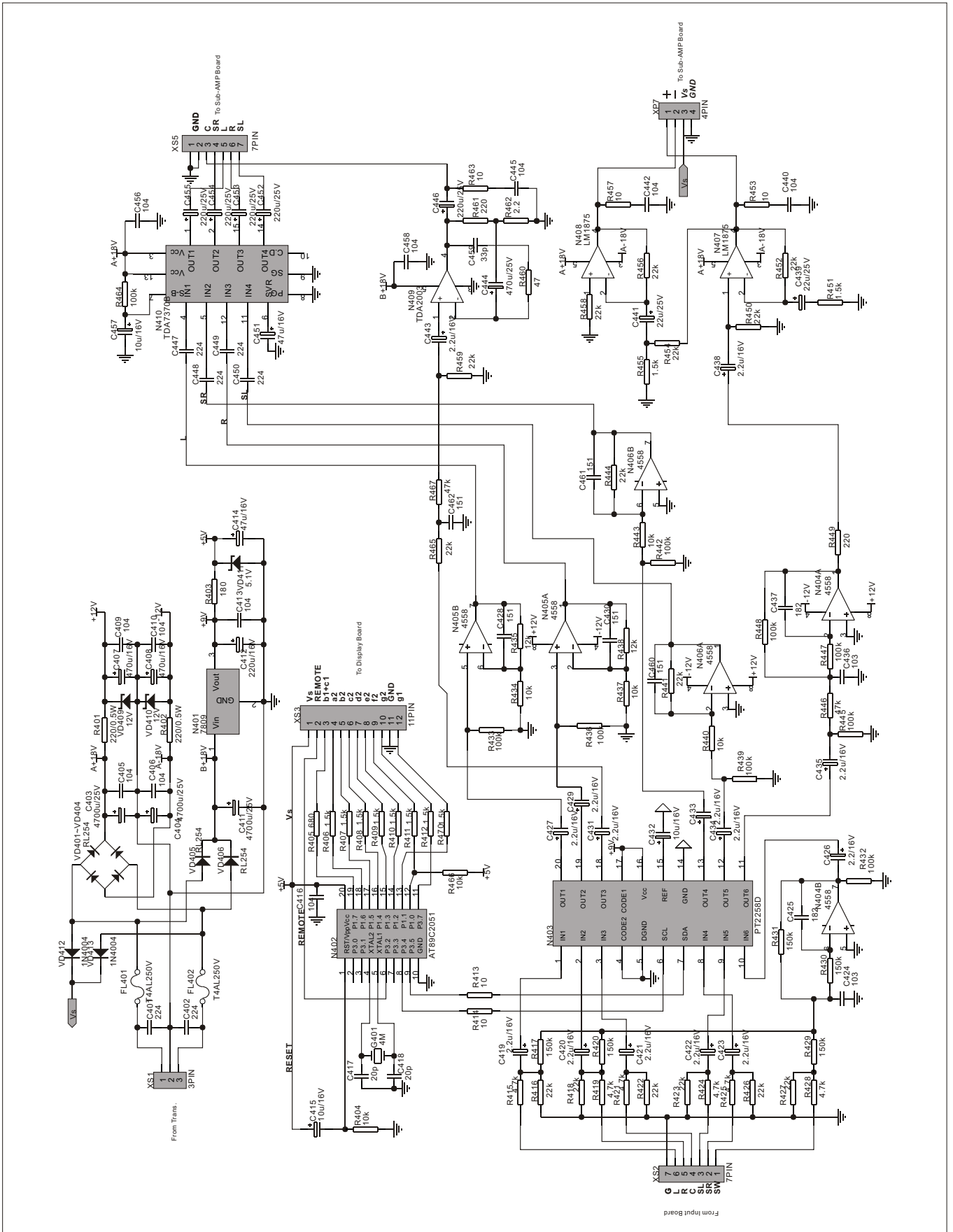
NO	LOCATION SPECIFICATIONS	DESCRIPTION	SPECIFICATIONS / PART NUMBER
1	R405	Carbon-film Resistor	1/6W680Ω ±5% SHAPED 7.5
2	R406~R412,R451,R455,R470	Carbon-film Resistor	1/6W1.5K±5% SHAPED 7.5
3	R415,R419,R421,R424,R425,R428	Carbon-film Resistor	1/6W4.7K±5% SHAPED 7.5
4	R404,R434,R437,R440,R443,R466	Carbon-film Resistor	1/6W10K±5% SHAPED 7.5
5	R435,R438	Carbon-film Resistor	1/6W12K±5% SHAPED 7.5
6	R450,R458,R452,R454,R456,R416,R418, R422,R423, R426,R427,R441,R444,R459,R465	Carbon-film Resistor	1/6W22K±5% SHAPED 7.5
7	R446,R467	Carbon-film Resistor	1/6W47K±5% SHAPED 7.5
8	R432,R433,R439,R442,R447,R448,R464, R445,R436	Carbon-film Resistor	1/6W100K±5% SHAPED 7.5
9	R417,R420,R429~R431	Carbon-film Resistor	1/6W150K±5% SHAPED 7.5
10	R413,R414,R453,R457,R463	Carbon-film Resistor	1/4W10Ω ±5% SHAPED 10
11	R462	Carbon-film Resistor	1/6W2.2Ω ±5% SHAPED 7.5
12	R401,R402	Carbon-film Resistor	1/2W220Ω ±5% SHAPED 12.5
13	R449	Carbon-film Resistor	1/6W220Ω ±5% SHAPED 7.5
15	R460	Carbon-film Resistor	1/6W47Ω ±5% SHAPED 7.5
16	R403	Carbon-film Resistor	1/4W180Ω ±5% SHAPED 10
17	R461	Carbon-film Resistor	1W220Ω ±5% SHAPED 10
18	C459	Porcelain Capacitor	50V 33P±10% NPO 2.5mm
19	C462,C428,C430,C460,C461	Porcelain Capacitor	50V 151 ±10% 2.5mm
20	C417,C418	Porcelain Capacitor	50V 20P±10% NPO 2.5mm
21	C405,C406,C409,C410,C413,C416,C456, C458	Porcelain Capacitor	50V 104 ±10% 5mm
22	C424,C436	Terylene Capacitor	100V 103 ±10% 3.5mm
23	C440,C442,C445	Terylene Capacitor	100V 104 ±10% 7mm
24	C401,C402	Terylene Capacitor	100V 224 ±10% 8mm
25	C425,C437	Terylene Capacitor	100V 182 ±5% 3.5mm
26	C447~C450	Metal Polyester Film Capacitor	CL21X 100V224±10% 7.5
27	C415,C432,C457	CD	CD11 16V10U±20%5#11 2
28	C414,C451	CD	CD11 16V47U±20%5#11 2
29	C412	CD	CD11 16V220U±20%6#12 2.5
30	C407,C408,C444	CD	CD11 16V470U±20%8#12 3.5
31	C439,C441	CD	CD11 25V22U±20%5#11 2
32	C419~C423,C426,C427,C429,C431,C433, C434,C435,C438,C443	CD	CD11 50V2.2U±20%5#11 2
33	C403,C404,C411	CD	CD11 25V4700U±20%16#B5 7.5
34	C446,C452~C455	CD	CD11 25V220U±20%8#12 3.5
35	VD412,VD413	Diode	1N4004
36	VD401~VD406	Diode	RL254
37	VD411	Voltage Regulator Diode	5.1V 1/2W
38	VD409,VD410	Voltage Regulator Diode	12V 1/2W
39	N402	Software Program CPU, AT89C2051 DIP	CPUHT60(EN)-0
40	N404~N406	IC	4558C DIP

DETAILED CIRCUIT EXPLANATIONS

43	N403	IC	PT2258 DIP
44	N410	IC	TDA7370B MULTIWATT15V
45	N409	IC	TDA2003 PENTAWATT
46	G401	Crystal Oscillator	4.0MHz 49-U
47		PCB	4MA800-1
48	XS2,XS5	Socket	7 PINS 2.5mm
49	XS1	Socket	3 PINS 3.96mm
50	XS3	Socket	12 PINS 2.5mm
51	W1,W3~W8,W11,W14,W17,W18,W20, W23,W28,W27,W19,W24	Connection Cords	∅.6 SHAPED 7.5mm
52	W9,W10,W13,W21,W22,W25,W26	Connection Cords	∅.6 SHAPED 10mm
53	W2,W12,W15	Connection Cords	∅.6 SHAPED 12.5mm
54	W16	Connection Cords	∅.6 SHAPED 15mm
55	XP7	Raft Cords	4P300 3.96 1 PLUG
56	XP6	Raft Cords	2P90 2.5 1 PLUG WITH NEEDLES, BLACK 22# CORDS
57	FL401,FL402	Fuse Tube	T4AL 250V
58	FL401,FL402	Fuse Holder	0

DETAILED CIRCUIT EXPLANATIONS

- SCHEMATIC DIAGRAM OF THE MAIN POWERAMPLIFYING BOARD

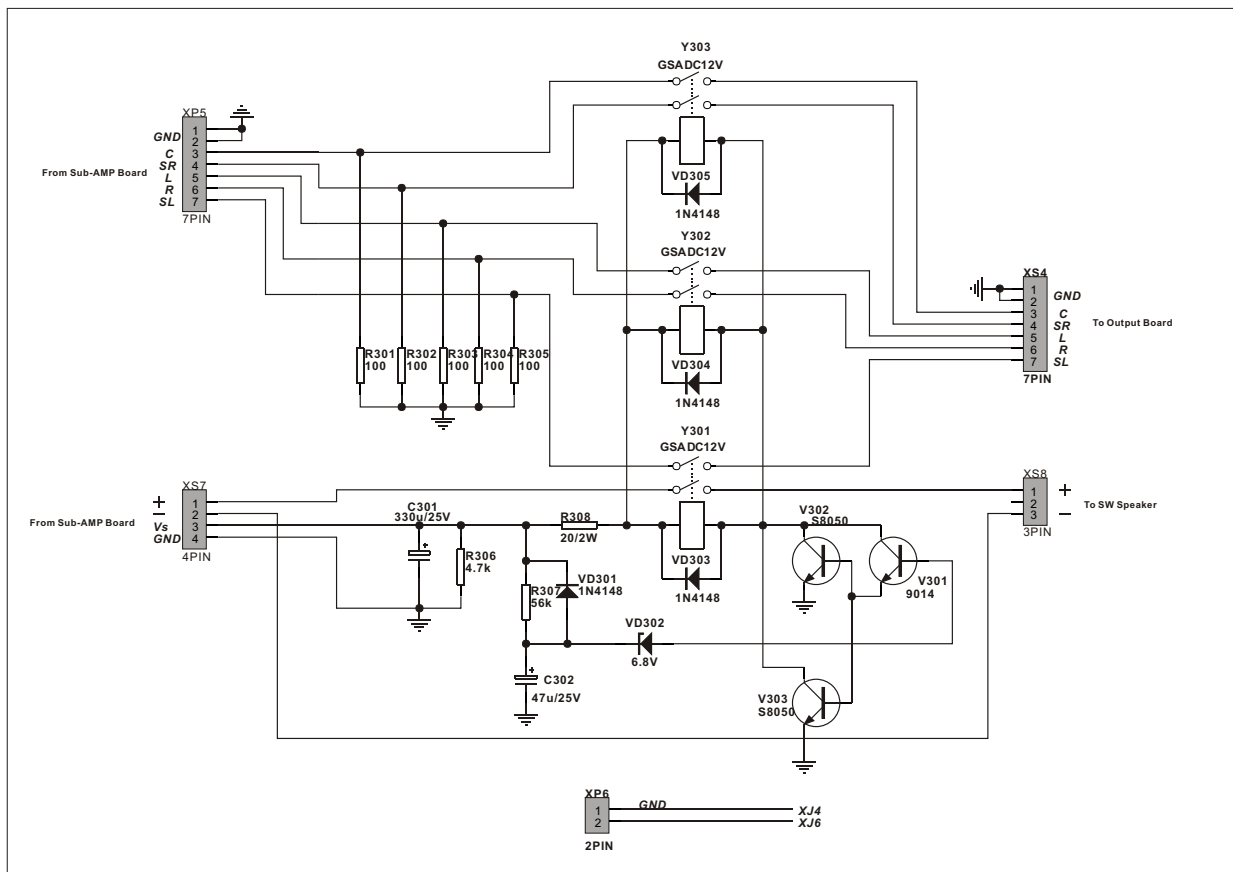


DETAILED CIRCUIT EXPLANATIONS

• MAIN PARTS LIST OF THE AUXILIARY POWER AMPLIFYING BOARD

NO.	LOCATION SPECIFICATIONS	DESCRIPTION	SPECIFICATIONS / PART NUMBER
1	R306	Carbon-film Resistor	1/4W4.7K±5% SHAPED 10
2	R307	Carbon-film Resistor	1/6W56K±5% SHAPED 75
3	R308	Metal Film Resistor	3W20Ω ±5% R-SHAPED 20 x 8
4	R301~R305	Carbon-film Resistor	1W100Ω ±5% R-SHAPED 15 x 8
5	C301	CD	CD11 25V 330U±20% 8 x 14 3.5
6	C302	CD	CD11 25V 47U±20% 5 x 11 2
7	VD301,VD303,VD304,VD305	Diode	IN4148
8	VD302	Voltage Regulator Diode	6.8V 1/2W
9	V301	Triode	9014C
10	V302,V303	Triode	S8050D
11	Y301~Y303	Relay	JH4237-012-2H DC 12V
12	XP5	Raft Cords	7P 180 2.5 2 PLUGS WITH NEEDLES
13	XS4	Socket	7 PINS 2.5 mm
14	XS8	Socket	2 PINS 7.92mm
15	XS7	Socket	4 PINS 3.96mm
16		PCB	3MA 800-1
17	W1,W2	Connection Cords	∅.6 SHAPED 7.5 mm

• SCHEMATIC DIAGRAM OF THE AUXILIARY POWER AMPLIFYING BOARD



NOTE:

When repairing the power amplifying board, make sure that the IC is fixed to the big radiator board closely and rightly without any inclination in assembling the Power IC N407, N408, N409 and N410. A silicon oiled mica spacer needs to be placed between the IC and the big radiator board. When fixing the screws of the Power IC N407, N408, N409 and N410, the insulating spacers need to be placed between the screws and the Power IC. A multimeter can be used to detect whether the insulation is effective or not. Otherwise, a short circuit may be resulted to burn out the ICs.

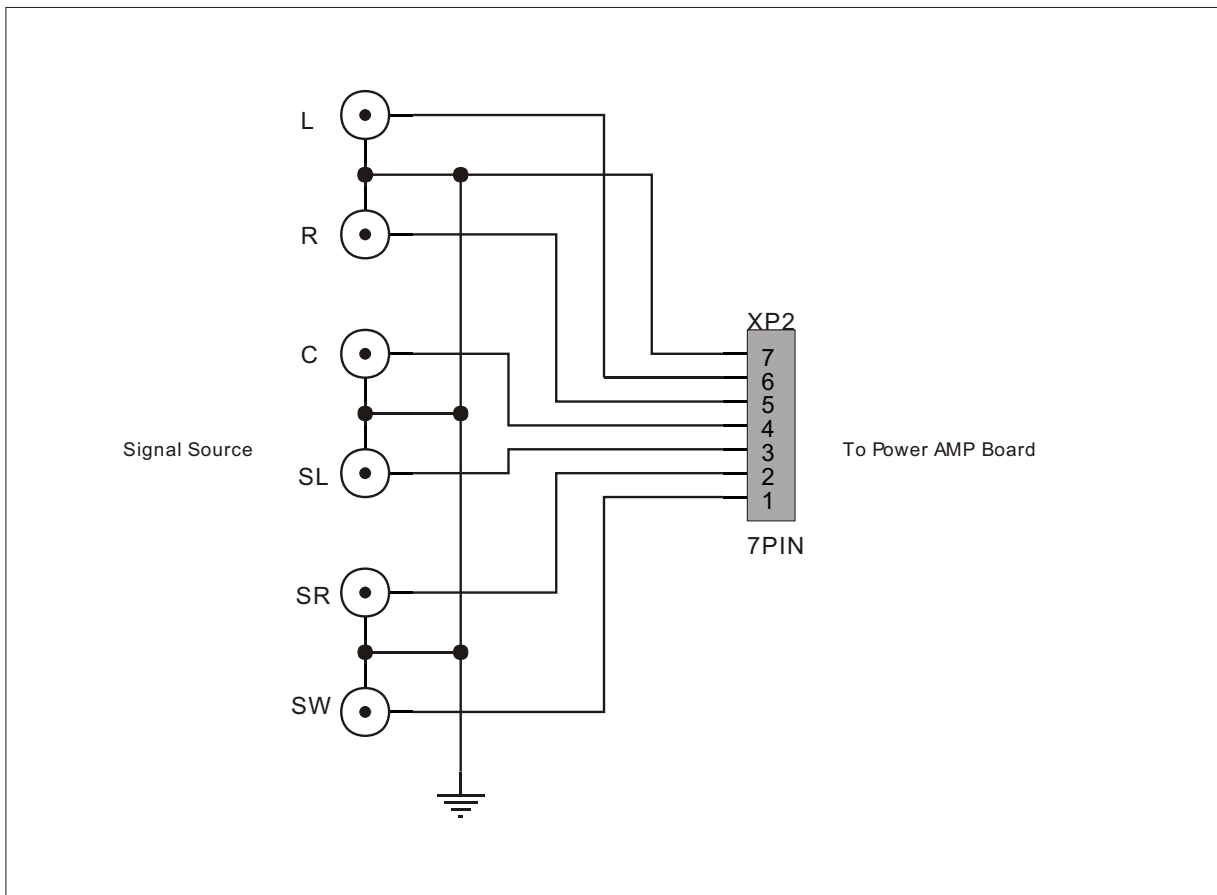
DETAILED CIRCUIT EXPLANATIONS

2. INPUT BOARD

- MAIN PARTS LIST OF THE INPUT BOARD

MAIN PARTS LIST OF THE INPUT BOARD			
NO.	LOCATION SPECIFICATIONS	DESCRIPTION	SPECIFICATIONS / PART NUMBER
1		PCB	1BSY02-1
2	XC1	Terminal Socket	AV6-8.4 - 3C
3	XP2	Raft Cords	7P130 2.5T2 6 SHIELDED WITH NEEDLES, PIN7 GROUNDED

- SCHEMATIC DIAGRAM OF THE INPUT BOARD



DETAILED CIRCUIT EXPLANATIONS

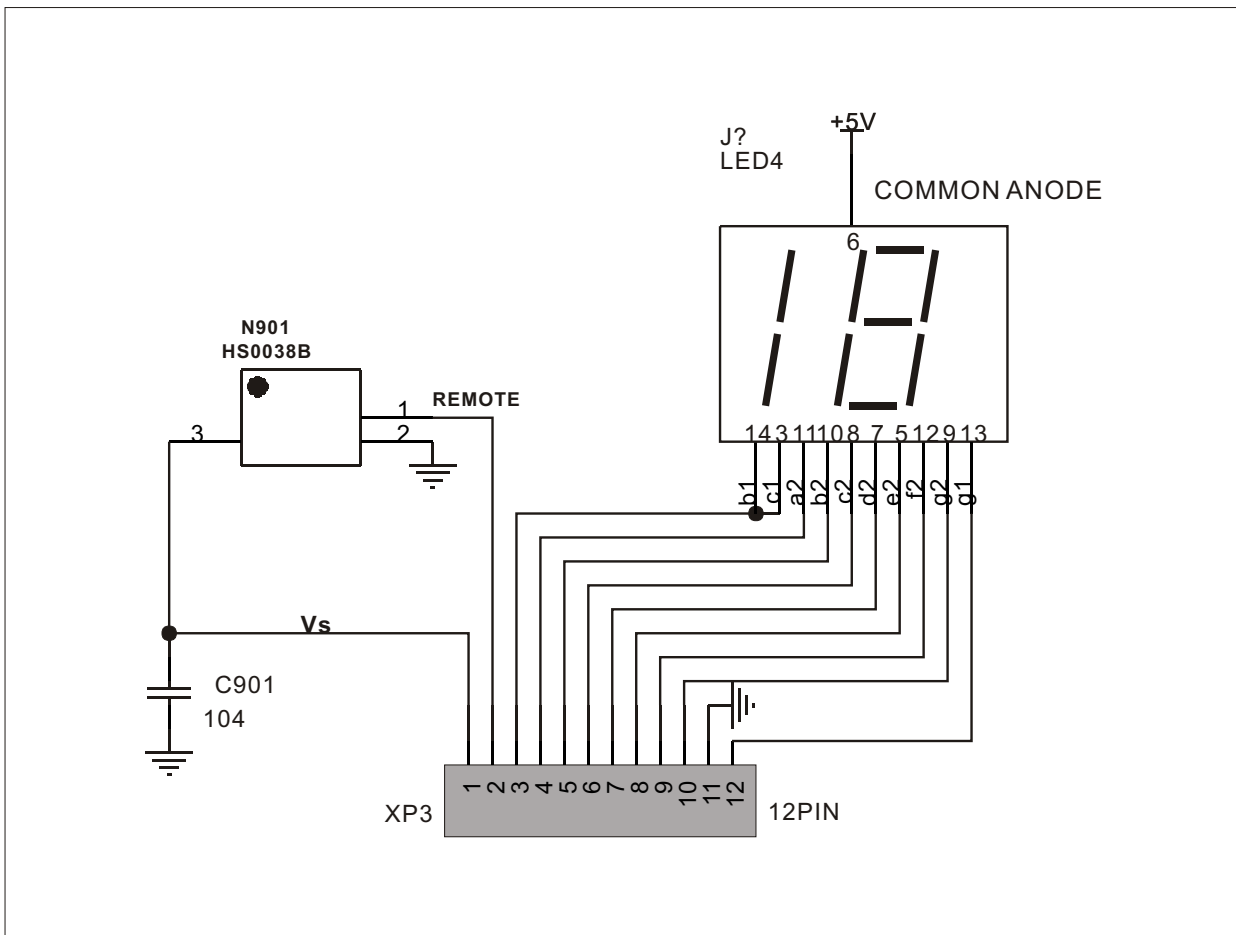
3. FRONT PANEL'S CONTROL BOARD

- MAIN PARTS LIST OF THE FRONT PANEL'S CONTROL BOARD

MAIN PARTS LIST OF THE FRONT PANEL'S CONTROL BOARD

NO.	LOCATION SPECIFICATIONS	DESCRIPTION	SPECIFICATIONS / PART NUMBER
1	C901	Porcelain Capacitor	50V 104 ±20% 5mm
	C901	Stone Capacitor	50V 104 ±20% 5mm
	C901	Chip Capacitor	50V 104 ±20% 0805
2	DS901	LED Digital Tube	E20361-G
3		PCB	9BSY02-3
4	XP3	Raft Cords	12P300 2.5 1 PLUG
5	N901	Infrared Receptor	HS0038B
6	Affix N901	Soft Sponge Pad	10㉿0㉿ DOUBLE HARD SIDED

- SCHEMATIC DIAGRAM OF THE FRONT PANEL'S CONTROL BOARD



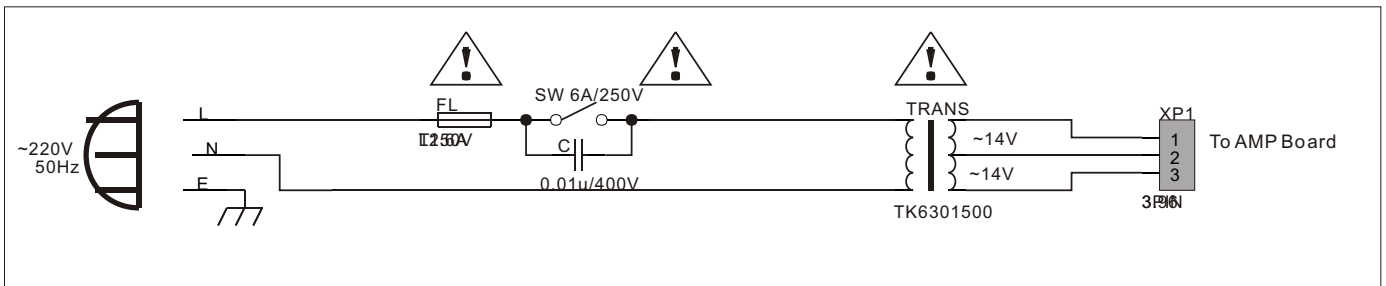
DETAILED CIRCUIT EXPLANATIONS

4. POWER SWITCHBOARD

- MAIN PARTS LIST OF THE POWER SWITCH AND POWER IC OF THE AMP BOARD

MAIN PARTS LIST OF THE POWER SWITCH AND POWER IC OF THE AMP BOARD			
NO.	DESCRIPTION	SPECIFICATIONS/PART NUMBER	LOCATION SPECIFICATIONS
1	Porcelain Capacitor	CT7 400V 103 ±20% 10mm	POWER SWITCH
2	Power Switch	PS8-11 2#	
3	Mains Cords	2P1.9m10A STC-999(MX)	
4	Fuse Tube	T1.6AL 250V	FUSE TUBE HOLDER
5	Mica Spacer	244240.1	N410
	Mica Spacer	224240.1	N410
6	Insulation Cannular	34643	N407~N410
7	Pyrocondensation Cannular	35	POWER SWITCH
8	Mica Spacer	1841340.1	N407,N408,N409

- SCHEMATIC DIAGRAM OF THE POWER SWITCH BOARD



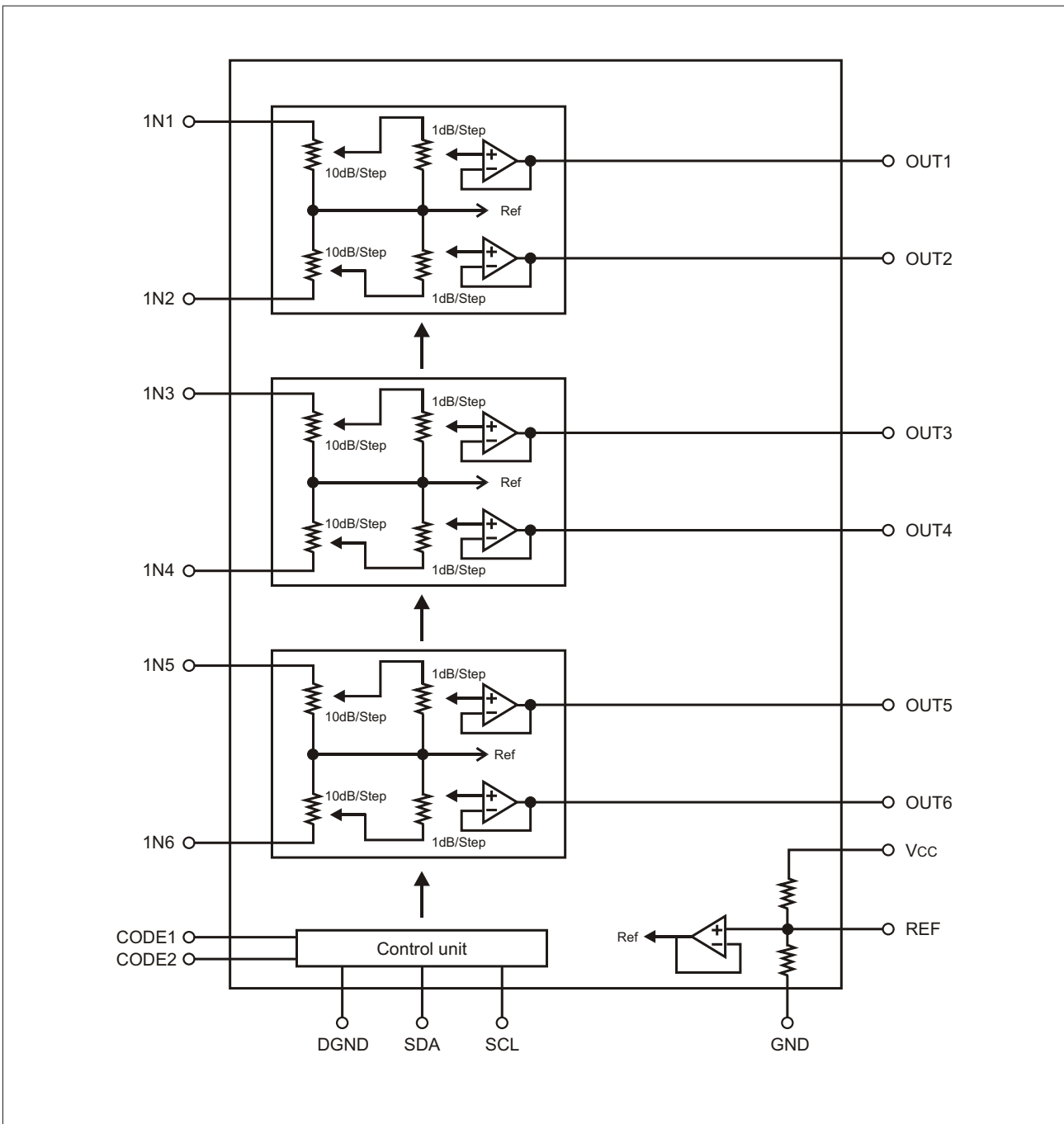
THE EXPLANATION FOR KEY COMPONENTS

VOLUME CONTROL IC PT2258

Manufactured by CMOS technology, 6-channel volume control IC. I²C control interface

Features:

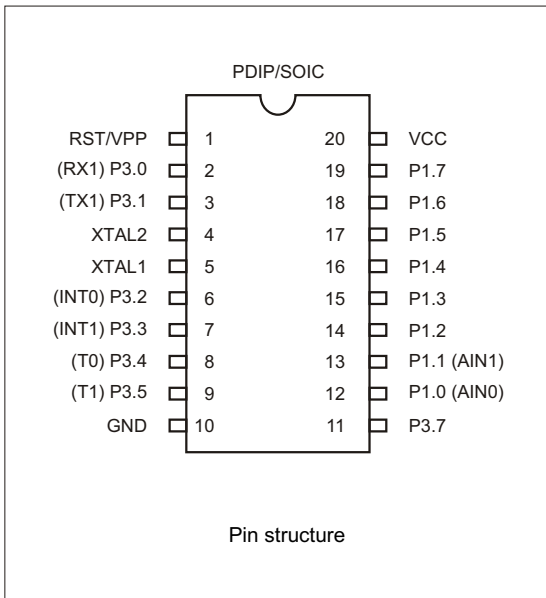
- 6-channel design, each channel 0-79 dB 1dB/STEP
- Working voltage: +5~8v
- Audio channel separability: 100dB
- I²C control interface
- DIP package



THE EXPLANATION FOR KEY COMPONENTS

CPU IC AT89C2051

8-bit microprocessor

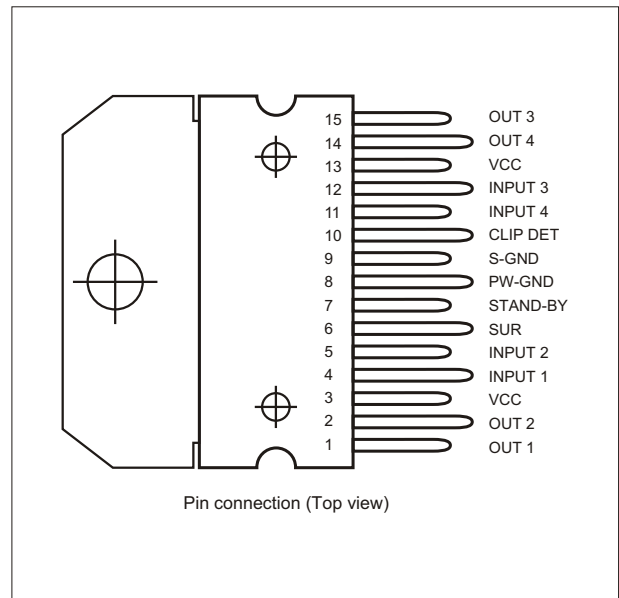


Features:

- Voltage: +2~+6v Max.+6.6v
- Max. I/O current: 20mA
- I/O numbers: 15
- RAM: 128 bits
- FLASH EEPROM: 2K
- Max. work efficiency : 24 MHz

POWER IC TDA7370B

4-channel audio amplifier



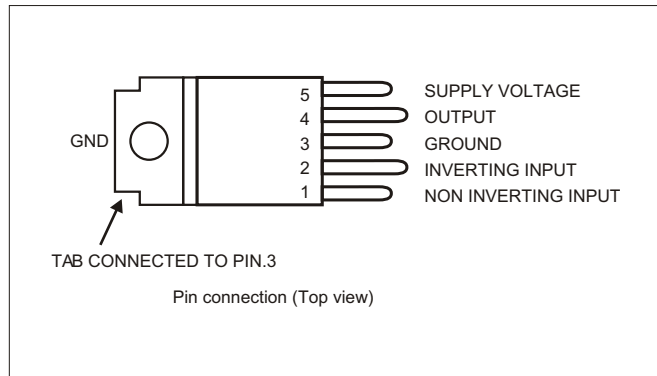
Features:

- Voltage: +18V Max.+28V
- Max. peak current: 3.5A
- Output Power (Vs=14.4V RI=4 ohm, THD=10%, f=1kHz) 6.5w*4
- Full protection function

THE EXPLANATION FOR KEY COMPONENTS

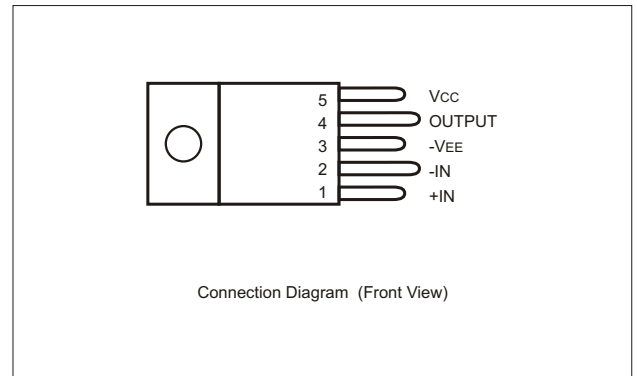
POWER IC TDA2003

Mono audio power amplifier



POWER IC LM1875

Mono power amplifier



Features:

- Voltage: +18v, Max. +28v
- Max. output peak current: 3.5A
- Output power ($V_s=14.4v, R_L=4\ \text{ohm}, THD=10\%, f=1\ \text{kHz}$): 6w
- Full protection function

Features:

- Voltage: 8V~30V
- Max. output current: 4A
- Output Power: ($V_{CC}=+25v, V_{EE}=-25v, R_L=8\ \text{ohm}, THD=1\%, f=1\ \text{kHz}$): 25w
- Full protection function