

Service

Service

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Service Manual



Bluetooth®

AUDIO IN

MP3

RIP PLUS

USB DIRECT

MAX SOUND

650W_{RMS}
Total Power

KARAOKE

TABLE OF CONTENTS

	Page
Technical specification	1-11
Safety instruction.....	2-1
ESD protection.....	2-4
Set Block diagram	3-1
Set Wiring diagram	4-1
Disassembly diagram	5-1
Main board	
Circuit diagram.....	6-1..6-2
Layout diagram.....	6-3
Display board	
Circuit diagram.....	7-1..7-2
Layout diagram.....	7-3
Amp board	
Circuit diagram.....	8-1..8-2
Layout diagram.....	8-3..8-4
Mechanical Exploded view.....	9-1

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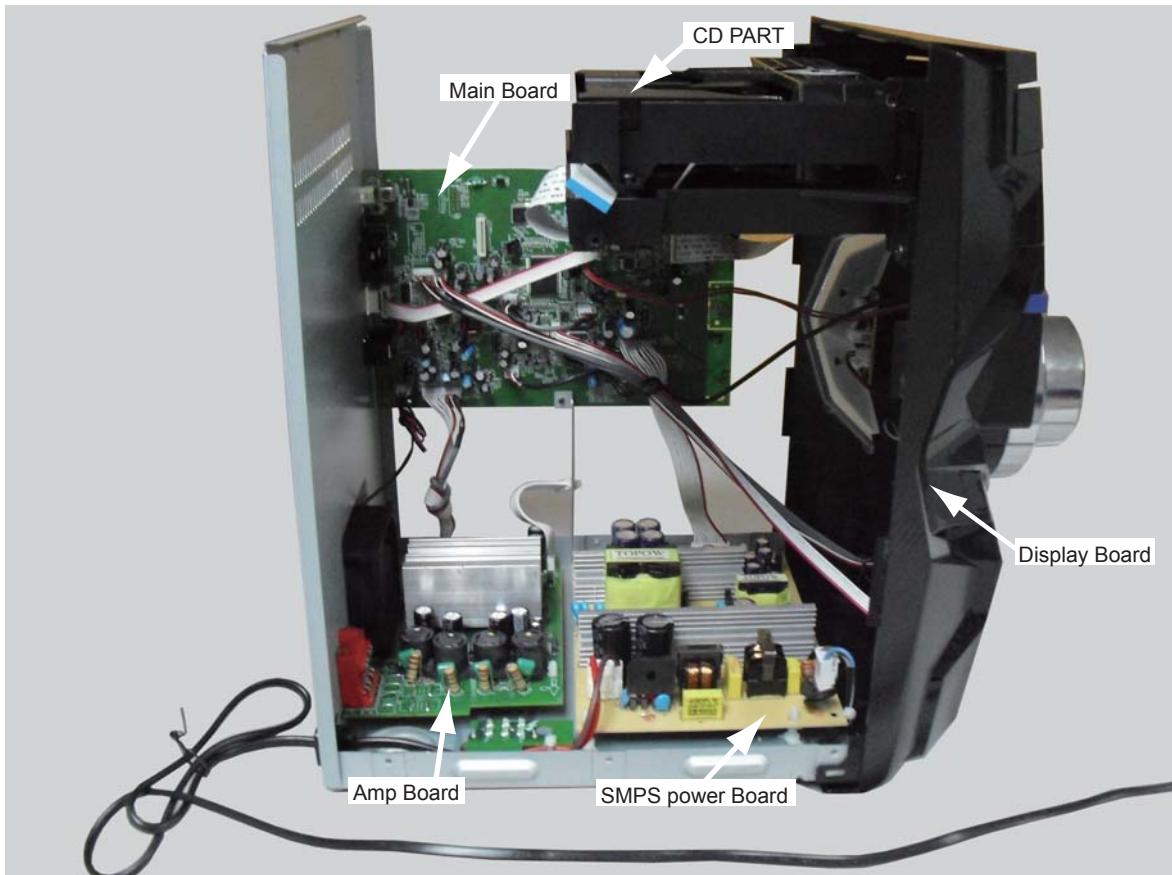
**CLASS 1
LASER PRODUCT**



PHILIPS

Technical Specification and Connection Facilities

Location of PC Boards



VERSION VARIATION

FM 电气指标及数据

Electrical Specification & Data

MODEL : FWT3600

文件编号：
发行版本： Ver 1.0
附录： 第1页 共8页

项目	内容	Description	条件 Condition	单位 Unit	标准Nor	极限Limit	数据Data#1	数据Data#2	数据Data#3
1	波段范围	Band coverage		MHz	87.5-108				
2	* 26dB有限噪声灵敏度	26dB quieting sensitivity	90/98/106 MHz	dBuV (EMF)	13	17			
3	* 频率响应 (1kHz ref)	Overall frequence response (1kHz ref)	98MHZ 22.5kHz dev	Hz	15	100			
				KHz	3k	6K			
4	10%失真输出功率	Output power At 10% THD	67.5kHz dev	W	50	40			
5	* 失真度	Distortion	1mV, 22.5kHz dev	%	1	3			
6	信噪比	S/N ratio (A-Weighted)	4mV,22.5kHz dev	dB	55	50			
7	* 声道分离度 1000Hz	Channel separation (1000Hz)	1mV ,22.5kHz dev	dB	25	20			
8	* 声道分不平衡	Channel unbalance (1000Hz)	1mV ,22.5kHz dev	dB	0	3			
9	选台灵敏度	Search tuning sensitivity		dBuV (EMF)	28-30	22 to 36			

标准输出Ref.o/p : 500 mW 负载O/p imped

*** testing with 20 to 20k Hz filter**

AM 电气指标及数据
Electrical Specification & Data

MODEL : FWT3600

文件编号 :

发行版本 :

Ver 1.0

附录 :

第2页 共8页

项目	内容	Description	条件 Condition	单位 Unit	标准Nor	极限Limit	数据Data#1	数据Data#2
1	波段范围	Band coverage		kHz	See version table / sh190			
2	中心频率	Intermediate frequency		kHz	/			
3	26dB有限噪声灵敏度	26dB quieting sensitivity	603/999/1404 (600/1000/1410) KHz	dBuV/m (EMF)	66	72		
4	中频抑制	I.F. rejection	603/610 kHz	dB	/	/		
5	镜像抑制	Image rejection	1404/1410 kHz	dB	/	/		
6	假像抑制响应	Spurious response rejection	999/1000 kHz	dB	/	/		
7	带宽	Bandwidth (3 dB)	999/1000 kHz	kHz	/			
8	自动增益控制	A.G.C. (figure of merit)	999/1000 kHz	dB	30	25		
9	选择性	Selectivity S9/S10	999/1000 kHz	dB	/	/		
10	失真度	Distortion	74dBuV/m, 30% mod	%	1	4		
11	最大有用输入信号	Large signal handling	M80%, ref o/p with 10%	dBuV/m	120	114		
12	中频啸叫	2X,3X I.F. harmonics rejection	64~94dBuV/m, M30%	dB	/	10		
13	频率响应	Overall frequency response (-3dB)	94dBuV/m, M30%	Hz (lo)	40	120		
		(1kHz ref)		Hz (hi)	3k	2k		
14	10%失真输出功率	Output power at 10% THD	M80%	W	50	40		
15	信噪比	Strong S/N Ratio	94dBuV/in, M80% A-weight	dB	45	35		
16	噪声	74dBuV/m, 30% Hum	off mod Vol. 1	mV	1.2	3.2		
17	选台灵敏度	Search tuning sensitivity		dB	Alpha 26dB +/- 10dB			

* testing with 20 to 20k Hz filter

CD 电气指标及数据

Electrical Specification & Data

MODEL : FWT3600

文件编号 :

发行版本 : Ver 1.0

附录 : 第3页 共8页

音频 Audio part (measured with Audio Signal TCD781)

项目	内容	Description	条件 Condition	单位 Unit	标准Nor	极限Limit	数据Data	数据Data	数据Data
1	*声道平衡	Channel balance	1 KHz	dB	0	3			
2	*失真	THD (1KHz)		%	0.5	1			
3	*串音	Crosstalk 1K	TNO 67, 71 & TNO 66 to 73	dB	45 / 40	30 / 30			
4	*频率响应	Frequency response (1Khz ref.)	60Hz	dB	0	±3			
			Ref	dB	0	0			
			10Khz	dB	0	±3			
5	10%失真输出	10% THD o/p	0 dB 1KHz	W	125	+/-10%			
6	信噪比	SNR wtd. A-weight	Class 1 spec	dBA	62	55			
7	*噪声 (最大音量 - 20dB)wtd. A-weight	hum	Vol. max. -20dB to vol. Min.	nW	200	200			

标准输出Ref.o/p : 500 mW 负载O/p imped : 3 ohm

*** testing with 20 to 20k Hz filter**

USB 电气指标及数据

Electrical Specification & Data

MODEL : FWT3600

文件编号：
发行版本：
附录：
Ver 1.0
第4页 共8页

(Use the ScanDisk as measured device, the testing signal copy from audio signal disc of TCD781)

项目	内容	Description	条件 Condition	单位 Unit	标准Nor	极限Limit	数据Data	数据Data	数据Data
1	声道平衡	Channel balance	0 dB1/KHz	dB	0	3			
2	* 失真	THD (1KHz)		%	0.5	1			
3	* 串音	Crosstalk 1K		dB	45 / 40	30 / 30			
4	* 频率响应	Frequency response	60Hz	dB	0	±3			
			1KHz Ref.	dB	0	0			
			10KHz	dB	0	±3			
5	10%失真输出	10% THD o/p	0 dB 1KHz	W	125	+/-10%			
6	信噪比	SNR wtd. A-weight	Class 1 spec	dBA	62	55			
7	*噪声 (最大音量 - 20dB)wtd. A-weight	hum	Vol. max. -20dB to vol. Min.	nW	200	200			

标准输出Ref.o/p : 500 mW 负载O/p imped : 3ohm

*** testing with 20 to 20k Hz filter**

MP3 LINK 电气指标及数据

Electrical Specification & Data

MODEL : FWT3600	
供电电压Supply : see version table	

文件编号 :
发行版本 : Ver 1.0
附录 : 第5页 共8页

项目	内容	Description	条件 Condition	单位 Unit	标准Nor	极限Limit	数据Data	数据Data	数据Data
1	输入灵敏度	Input sensitivity		mV	2000	2500			
2	* 声道不平衡	Channel unbalance	500mV 1KHz input	dB	0	3			
3	频率响应 Frequency response (- 3 dB)	2000mV input	60Hz	dB	0	± 3			
			1KHz Ref	dB	0	0			
			10KHz	dB	0	± 3			
4	* 声道分离度	Channel separation (1K)	500mV 1KHz input	dB	45/40	30/30			
5	* 失真度	THD (1K)	500mV input	%	0.2	1			
6	10%失真输出	10% THD output power		W	125	+/-10%			
7	信噪比	S/N wtd. A-weight	2000mV 1KHz input	dB	62	55			
8	* 噪声 (最大音量 - 20dB)wtd. A-weight	Hum	Vol. max. -20dB to vol. Min.	nW	200	200			

标准输出Ref.o/p : 500 mW 负载O/p imped : 3ohm

*** testing with 20 to 20k Hz filter**

AUX 电气指标及数据

Electrical Specification & Data

MODEL : FWT3600	
供电电压Supply : see version table	

文件编号 :
发行版本 : Ver 1.0
附录 : 第5页 共8页

项目	内容	Description	条件 Condition	单位 Unit	标准Nor	极限Limit	数据Data	数据Data	数据Data
1	输入灵敏度	Input sensitivity		mV	2000	2500			
2	* 声道不平衡	Channel unbalance	500mV 1KHz input	dB	0	3			
3	频率响应 Frequency response (- 3 dB)	2000mV input	60Hz	dB	0	±3			
			1KHz Ref	dB	0	0			
			10KHz	dB	0	±3			
4	* 声道分离度	Channel separation (1K)	500mV 1KHz input	dB	45/40	30/30			
5	* 失真度	THD (1K)	500mV input	%	0.2	1 +/-10%			
6	10%失真输出	10% THD output power		W	125				
7	信噪比	S/N wt. A-weight	2000mV 1KHz input	dB	62	55			
8	* 噪声 (最大音量 - 20dB)wt. A-weight	Hum	Vol. max. -20dB to vol. Min.	nW	200	200			

标准输出Ref.o/p : 500 mW 负载O/p imped : 3ohm

* testing with 20 to 20k Hz filter

DSC 电气指标及数据

Electrical Specification & Data

文件编号：
发行版本：
附录：

Ver 1.0

第6页 共8页

MODEL : FWT3600

项目	内容	Description	条件 Condition	单位 Unit	标准Nor	极限Limit	数据Data	数据Data	数据Data
1	重低音效果	DBB/3 on	60Hz JAZZ	dB	17	±2			
2		JAZZ(DBB OFF)	60Hz	dB	-0.5	±2			
			1KHz	dB	0	±2			
			10kHz	dB	0	±2			
3		TECHNOP(DBB OFF)	60Hz	dB	7	±2			
			1KHz	dB	1	±2			
			10kHz	dB	-3	±2			
4		POP(DBB OFF)	60Hz	dB	5	±2			
			1KHz	dB	1	±2			
			10kHz	dB	3	±2			
5		OPTIMAL(DBB OFF)	60Hz	dB	2	±2			
			1KHz	dB	1	±2			
			10kHz	dB	3	±2			

标准输出Ref.o/p : 500 mW 负载O/p imped : 3ohm
*** testing with 20 to 20k Hz filter**

BT 电气指标及数据

Electrical Specification & Data

MODEL : FWT3600

文件编号 :
发行版本 : Ver 1.0
附录 : 第7页 共8页

(Use the ScanDisk as measured device, the testing signal copy from audio signal disc of TCD781)

项目	内容	Description	条件 Condition	单位 Unit	标准Nor	极限Limit	数据Data	数据Data	数据Data
1	声道平衡	Channel balance	0 dB1/KHz	dB	0	3			
2	* 失真	THD (1KHz)		%	0.5	1			
3	* 串音	Crosstalk 1K		dB	45 / 40	30 / 30			
4	* 频率响应	Frequency response	60Hz	dB	0	±3			
			1KHz Ref.	dB	0	0			
			10KHz	dB	0	±3			
5	10%失真输出	10% THD o/p	0 dB 1KHz	W	125	+/-10%			
6	信噪比	SNR wtd. A-weight	Class 1 spec	dBA	62	55			
7	*噪声 (最大音量 - 20dB)wtd. A-weight	hum	Vol. max. -20dB to vol. Min	nW	200	200			

标准输出Ref.o/p : 500 mW 负载O/p imped : 3ohm

*** testing with 20 to 20k Hz filter**

MIC 电气指标及数据

Electrical Specification & Data

MODEL : FWT3600

文件编号 :
发行版本 : Ver 1.0
附录 : 第8页 共8页

项目	内容 Description	条件 Condition	单位 Unit	标准Nor	极限Limit	数据Data	数据Data	数据Data
1	声道平衡 Channel balance	0 dB1/KHz	dB	0	3			
2	* 失真 THD (1KHz)		%	1	5			
3	* 频率响应 Frequency response	127Hz	dB	0	± 3			
		1KHz Ref.	dB	0	0			
		10KHz	dB	0	± 3			
4	10%失真输出 10% THD o/p	0 dB 1KHz	mW	0.5	1W			
5	信噪比 SNR wt'd. A-weight	Class 1 spec	dBA	62	55			
6	*噪声 (最大音量 - 20dB) hum	Vol. max. -20dB to vol. Min.	nW	500	800			
7	Mic灵敏度 Input sensitivity	Vol. max. 500mW Output	mV	1.2	2			

标准输出Ref.o/p : 500 mW 负载O/p imped : 3ohm

*** testing with 20 to 20k Hz filter**

2.0 SAFETY INSTRUCTIONS

(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

ESD



(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes. Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(F)

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

Caution: These servicing instructions are for use by qualified service personnel only.

To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.



(GB) Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(SF) Varoitus !

Avatussa laitteessa ja suojalukiukseen ohittaaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso sääteeseen!

DK Advarse !

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

2.1 ESD PROTECTION

- レンズには絶対に触れないでください。
- DO NOT TOUCH THE LENS.
- LINSE NICHT BRÜHREN.
- NE PAS TOUCHER LA LENTILLE.

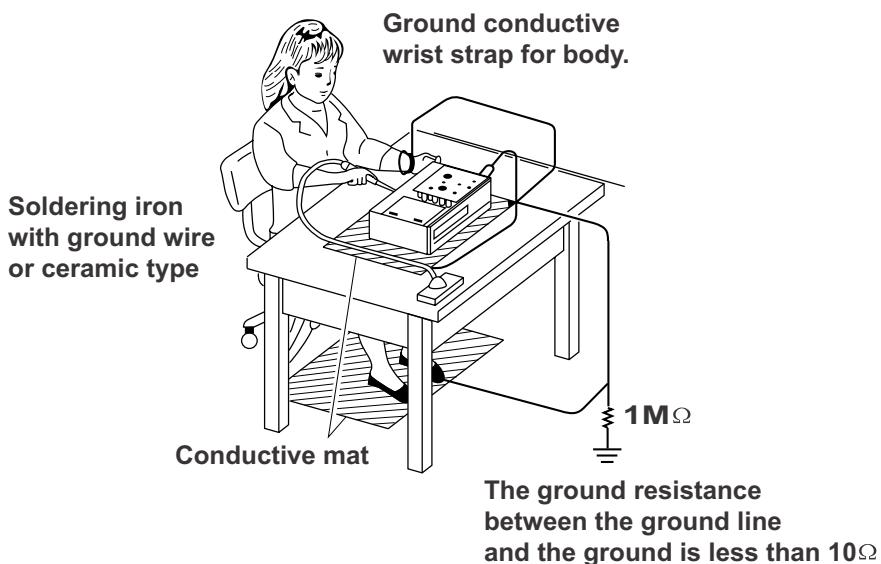
When the power supply is being turned on, you may not remove this laser cautions label. If it removes, radiation of laser may be received.

PREPARATION OF SERVICING

Pickup Head consists of a laser diode that is very susceptible to external static electricity.

Although it operates properly after replacement, if it was subject to electrostatic discharge during replacement, its life might be shortened. When replacing, use a conductive mat, soldering iron with ground wire,etc. to protect the laser diode from damage by static electricity.

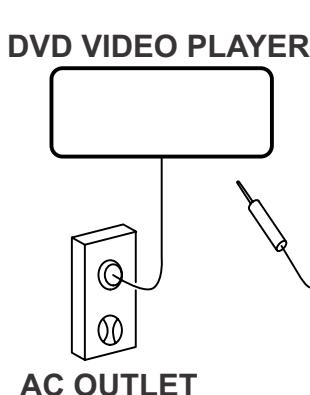
And also, the LSI and IC are same as above.



SAFTY NOTICE**SAFTY PRECAUTIONS****LEAKAGE CURRENT CHECK**

Plug the AC line cord directly into a 120V AC outlet (do not use an isolation transformer for this check). Use an AC voltmeter, having 5000Ω per volt or more sensitivity. Connect a 1500Ω 10W resistor, paralleled by a $0.15\mu F$ 150V AC capacitor between a known good earth ground (water pipe, conduit, etc.) and all exposed metal parts of cabinet (antennas, handle bracket, metal cabinet screwheads, metal overlays, control shafts, etc.).

Measure the AC voltage across the 1500Ω resistor. The test must be conducted with the AC switch on and then repeated with the AC switch off. The AC voltage indicated by the meter may not exceed 0.3V. A reading exceeding 0.3V indicates that a dangerous potential exists, the fault must be located and corrected. Repeat the above test with the DVD VIDEO PLAYER power plug reversed. NEVER RETURN A DVD VIDEO PLAYER TO THE CUSTOMER WITHOUT TAKING NECESSARY CORRECTIVE ACTION.

READING SHOULD NOT EXCEED 0.3V**AC VOLTMETER**

(5000Ω per volt
or more sensitivity)

Good earth ground
such as a water pipe,
conduit, etc.

Test all exposed metal.
Voltmeter Hook-up for Leakage Current Check



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

2.2 SAFETY INSTRUCTIONS

Battery Handling Guideline

Since the battery is packed in soft package, to ensure its good performance, it's very important to carefully handle the battery

2.2.1 Soft Aluminium foil

The soft aluminum packing foil is very easily damaged by sharp edge parts such as Ni-tabs, pins and needles.

- Don't strike battery with any sharp edge parts
- Trim your nail or wear glove before taking battery
- Clean worktable to make sure no any sharp particle



2.2.2 Sealed edge

Sealing edge is very flimsy

- Don't bend or fold sealing edge



2.2.3 Folding edge

The folding edge is formed in battery process and has passed all hermetic tests.

- Don't open or deform folding edge



2.2.4 Tabs

The battery tabs are not so rigid especially for aluminum tab.

- Don't bend tab



2.2.5 Mechanical shock

- Don't fall, hit, bend battery body



2.2.6 Short

Short terminals of battery is strictly prohibited, it may damage battery.

Caution: Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type.

The battery shall not be exposed to such as sunshine, fire or similar overheated environment.

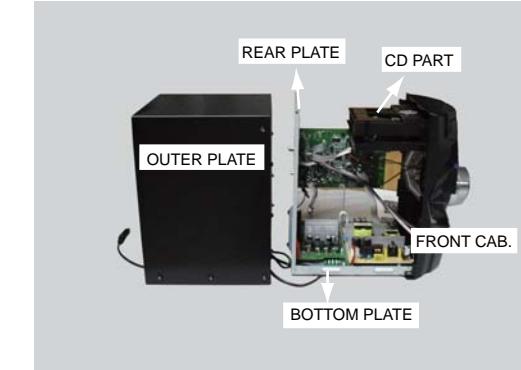
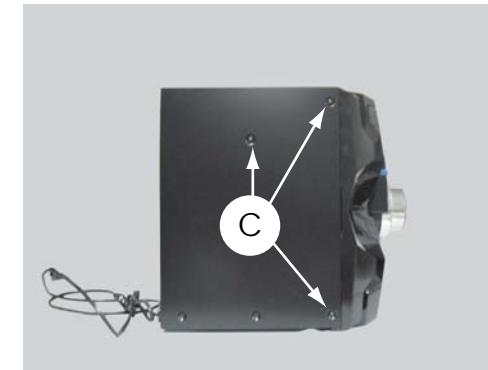
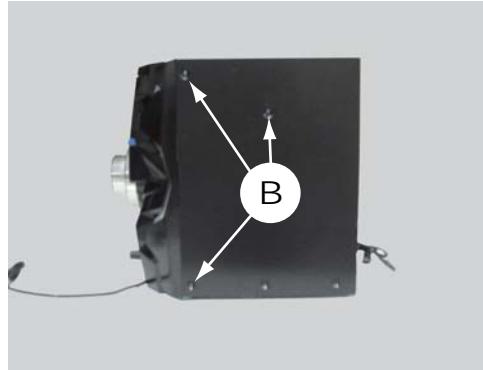
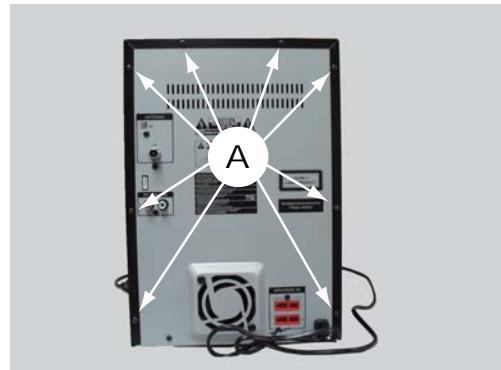
如果电池更换不当会有爆炸危险, 只能用同样类型或等效类型的电池来更换.

电池不得暴露在诸如日照、火烤或类似过热环境

DISASSEMBLY INSTRUCTIONS

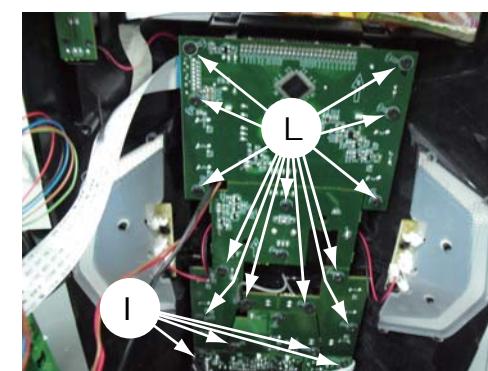
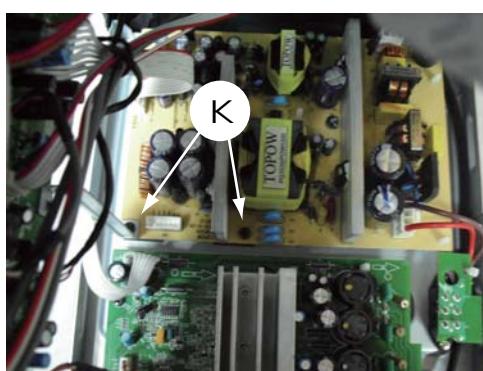
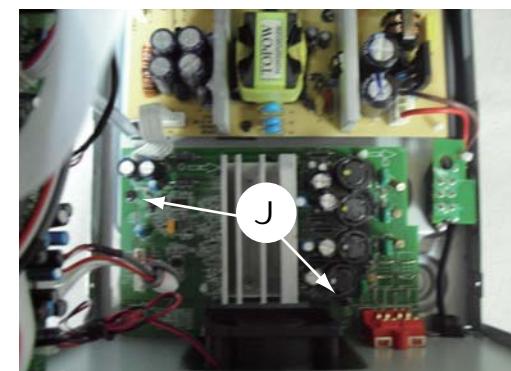
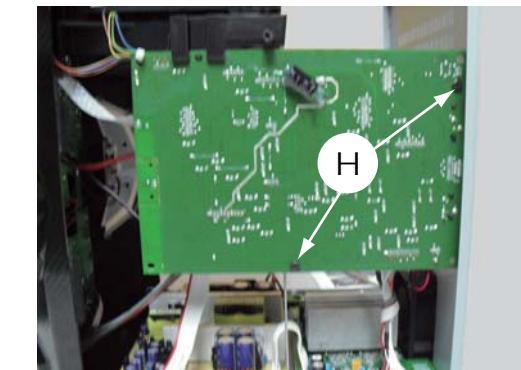
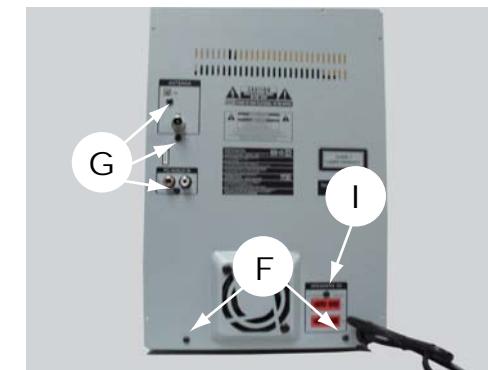
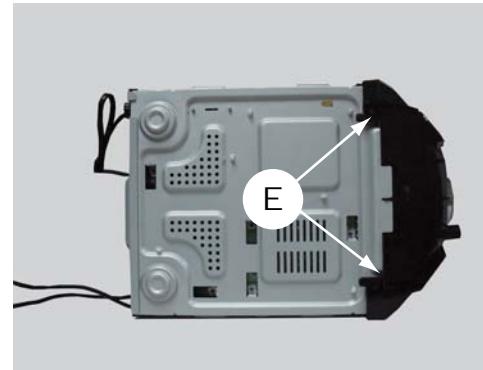
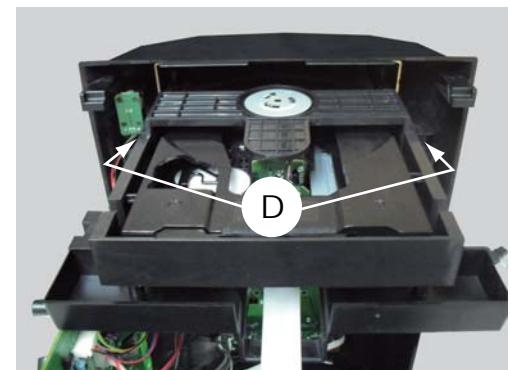
Dismantling of **OUTER** Portion

- 1) Remove 8 screws A and 6 screws B/C as indicated to loosen the outer plate.

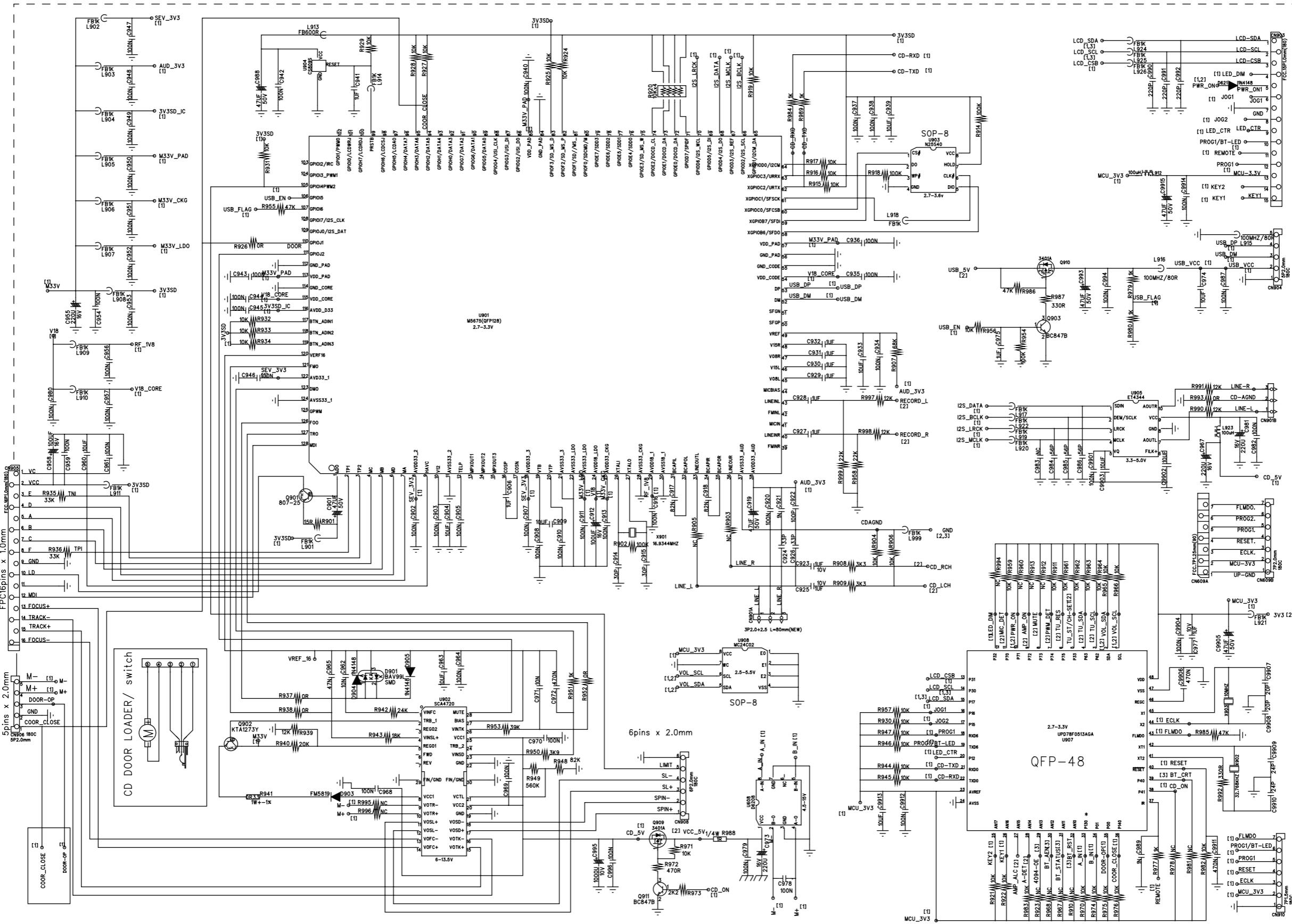


Dismantling of the CD part and Bottom plate and PCB Board

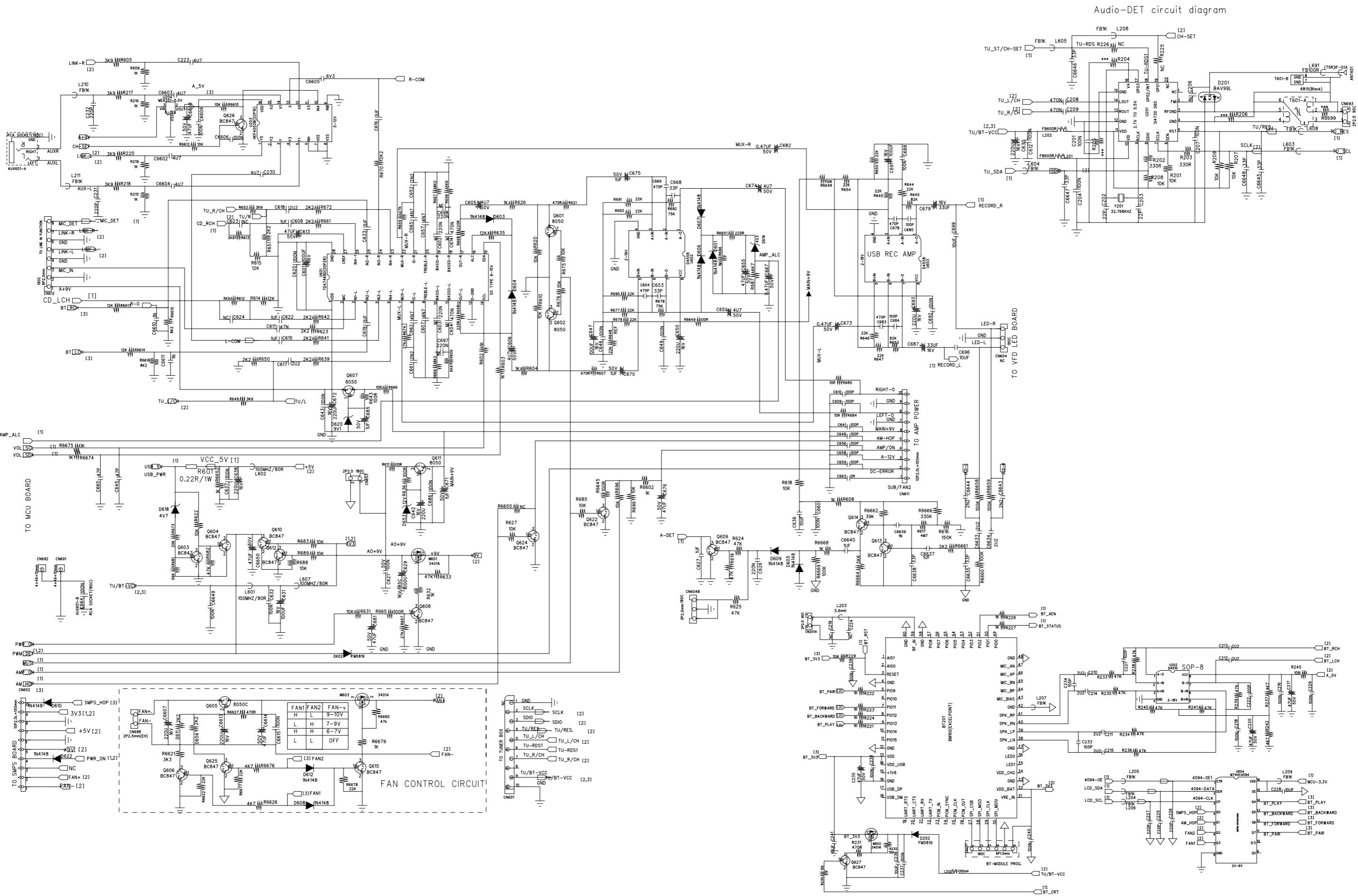
- 1) Remove 2 screws D as indicated to loosen the CD part.
- 2) Remove 2 screws E and 2 screws F as indicated to loosen the Bottom Plate.
- 4) Remove 3 screws G and 2 screws H as indicated to loosen the Main Board.
- 5) Remove screw I and 2 screws J as indicated to loosen the Amp Board.
- 6) Remove 2 screws K as indicated to loosen the smps power Board.
- 7) Remove screws L and I as indicated to loosen the Display Board.



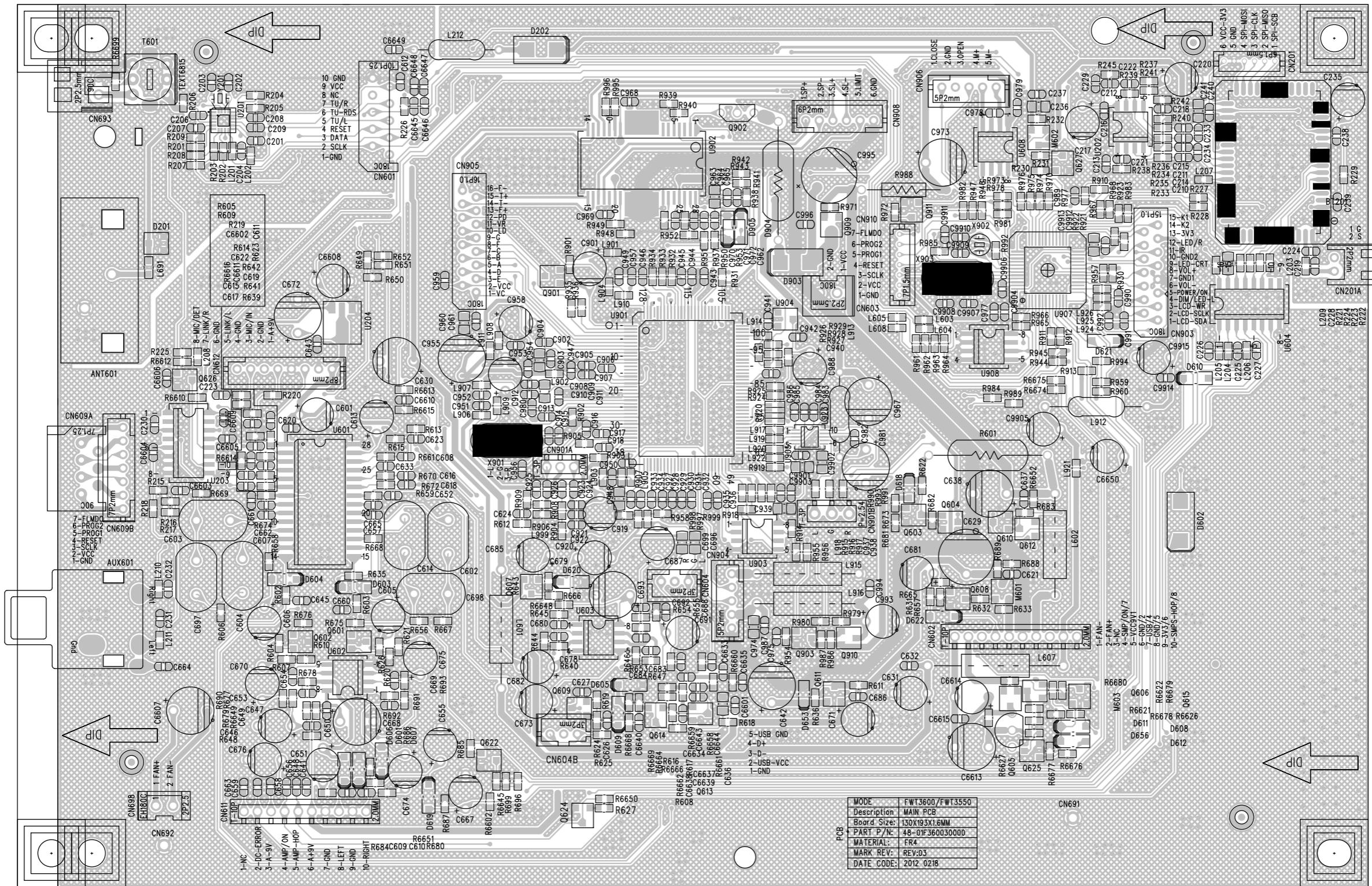
CIRCUIT DIAGRAM - MAIN BOARD



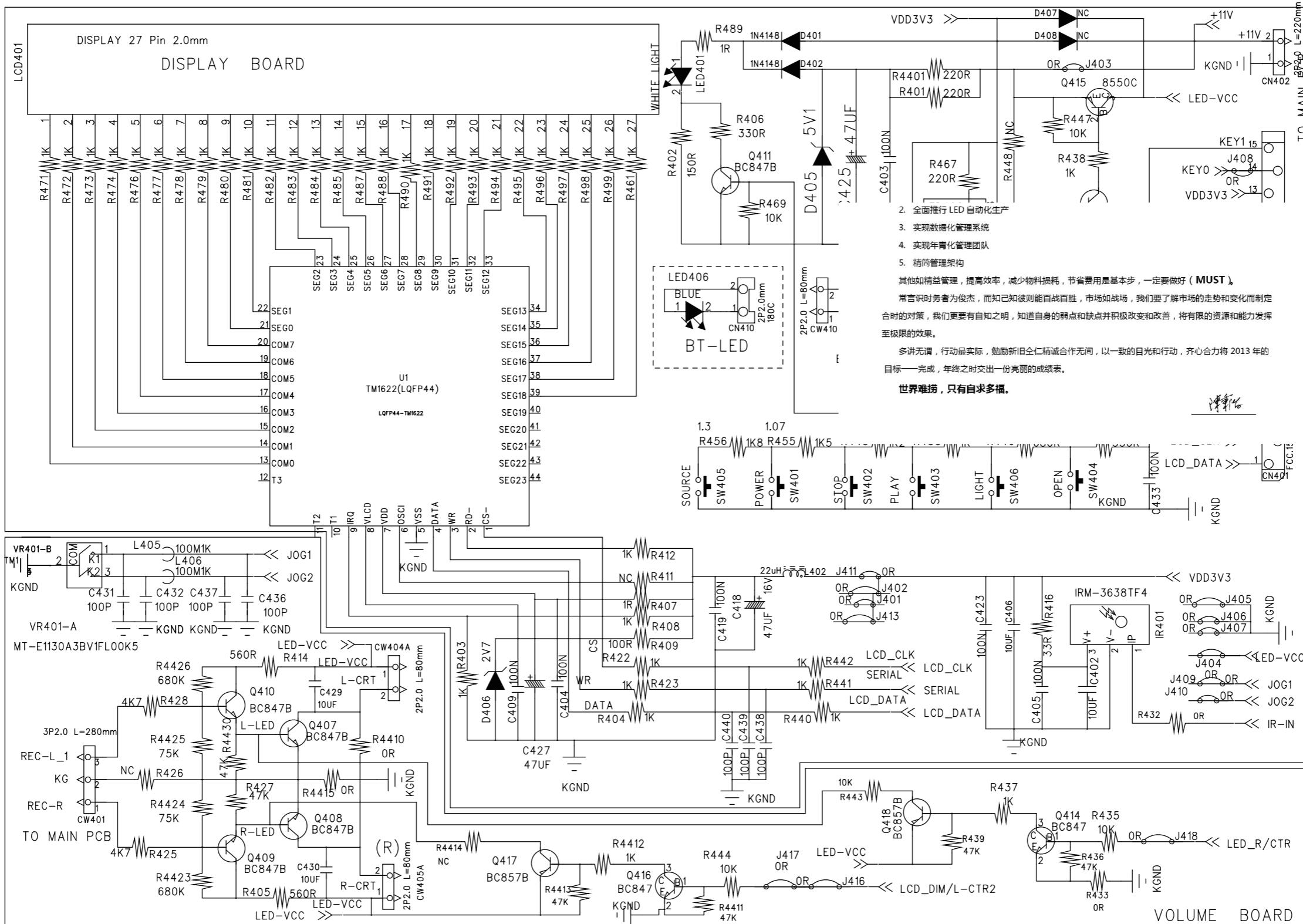
CIRCUIT DIAGRAM - MAIN BOARD



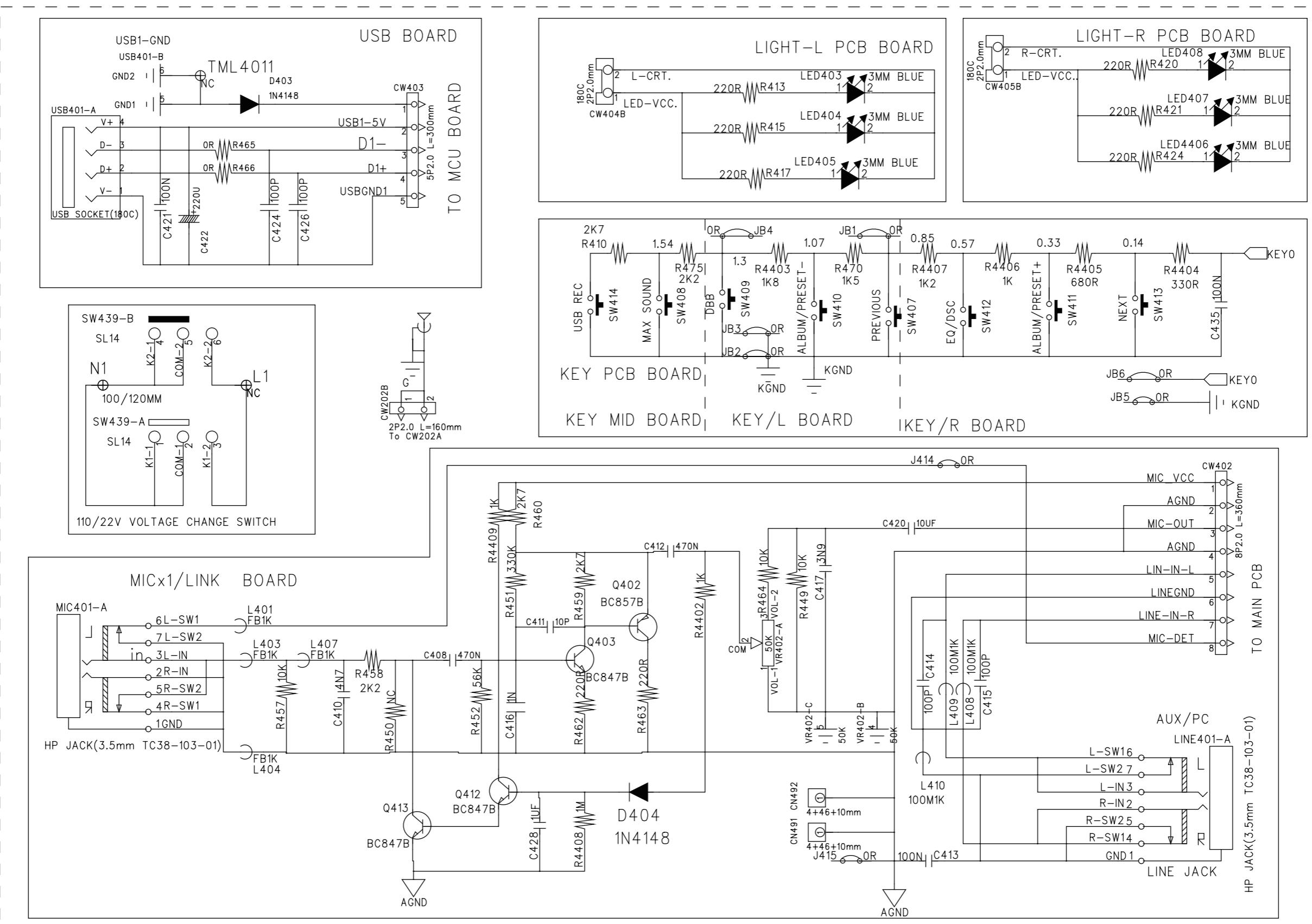
PCB LAYOUT - MAIN BOARD



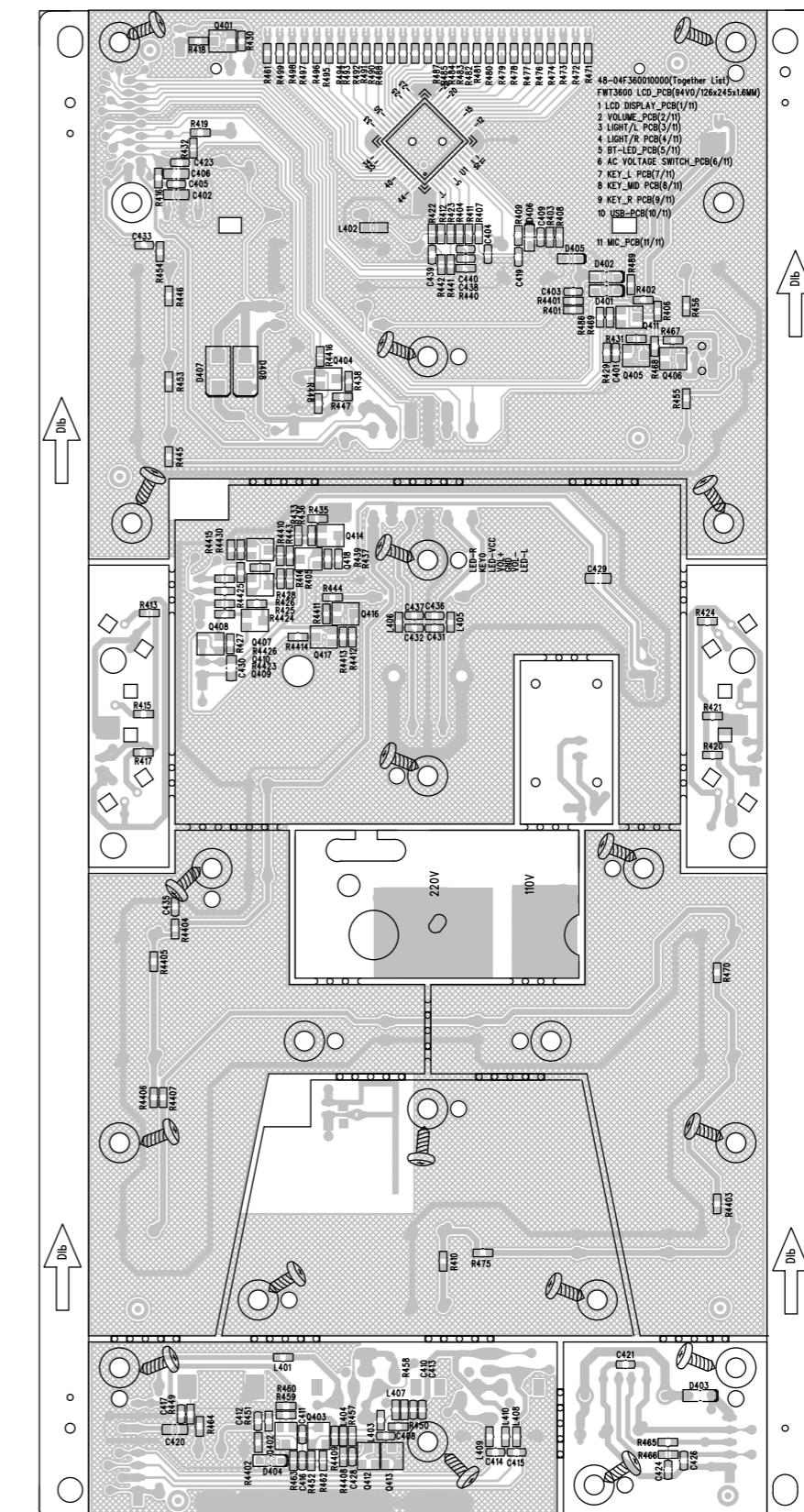
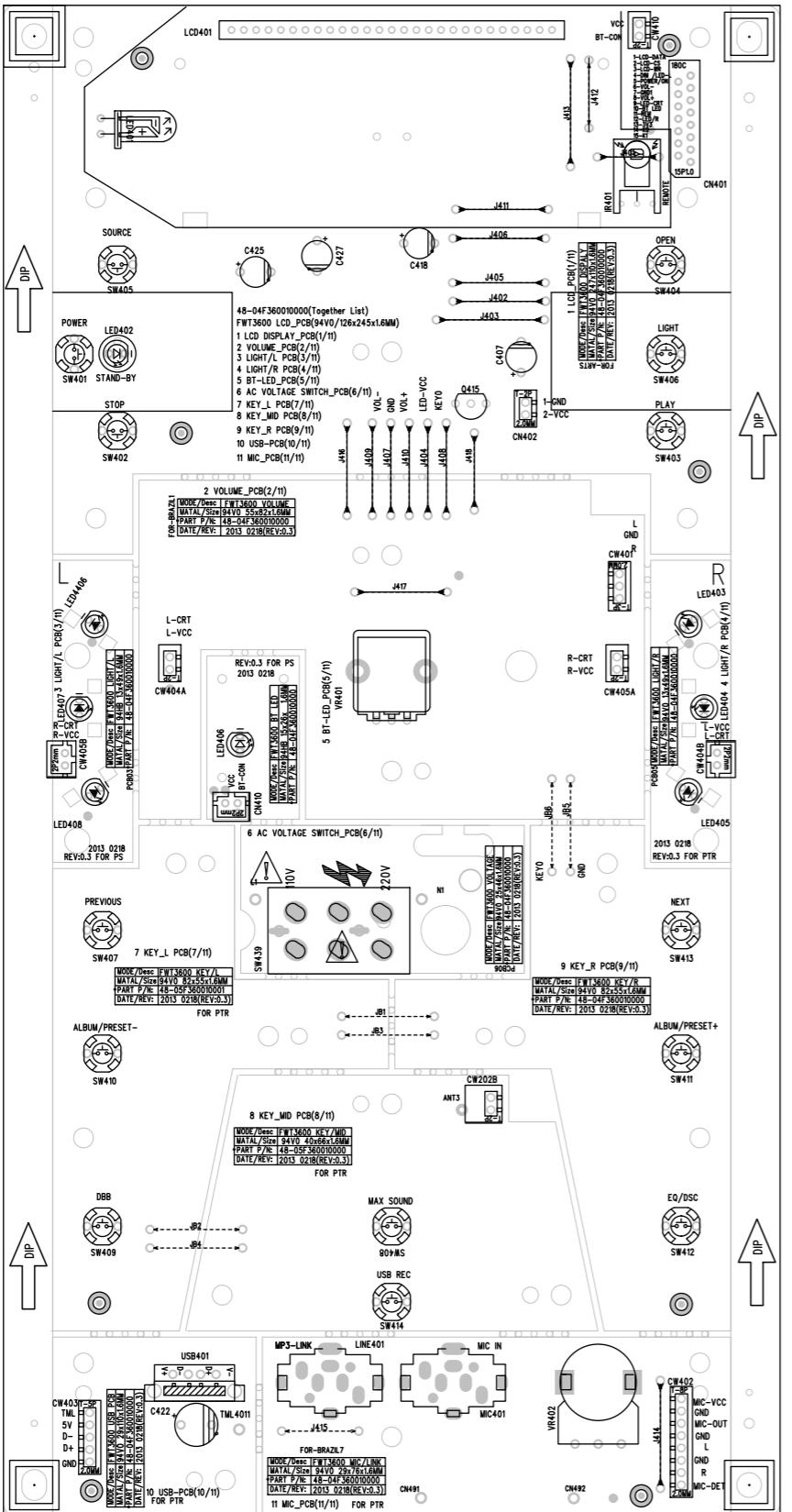
CIRCUIT DIAGRAM - DISPLAY BOARD



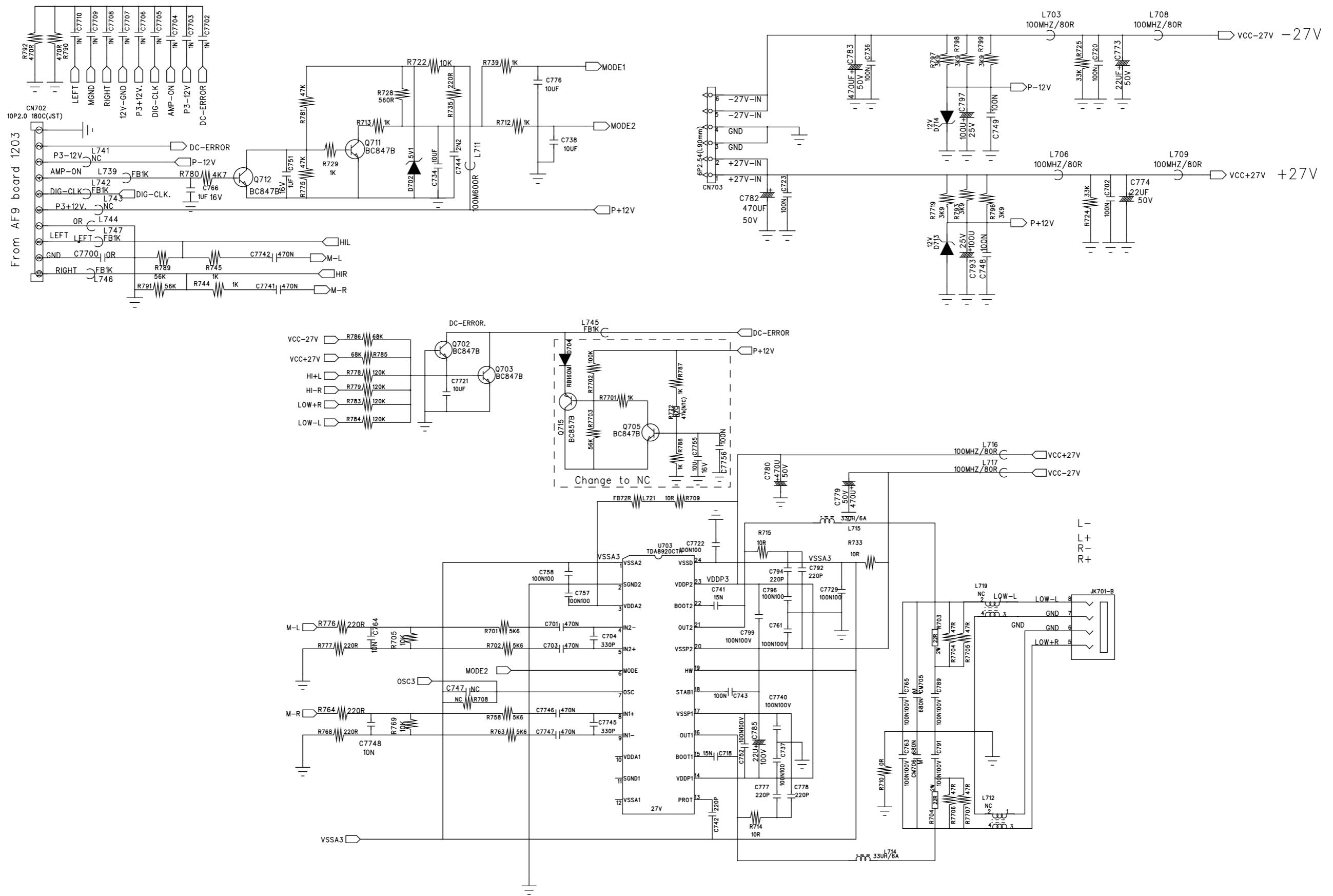
CIRCUIT DIAGRAM - DISPLAY BOARD

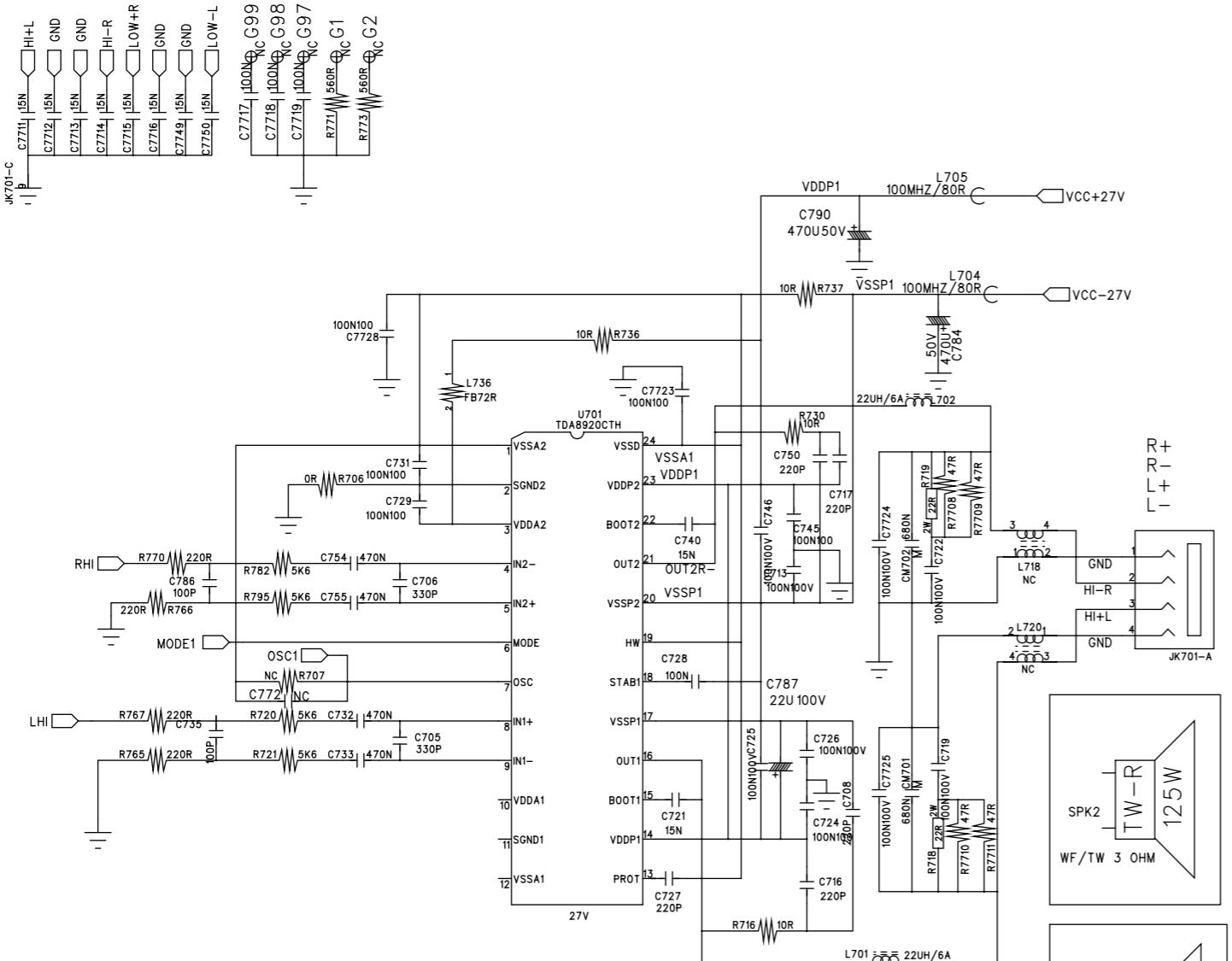


PCB LAYOUT - DISPLAY BOARD



CIRCUIT DIAGRAM - AMP BOARD

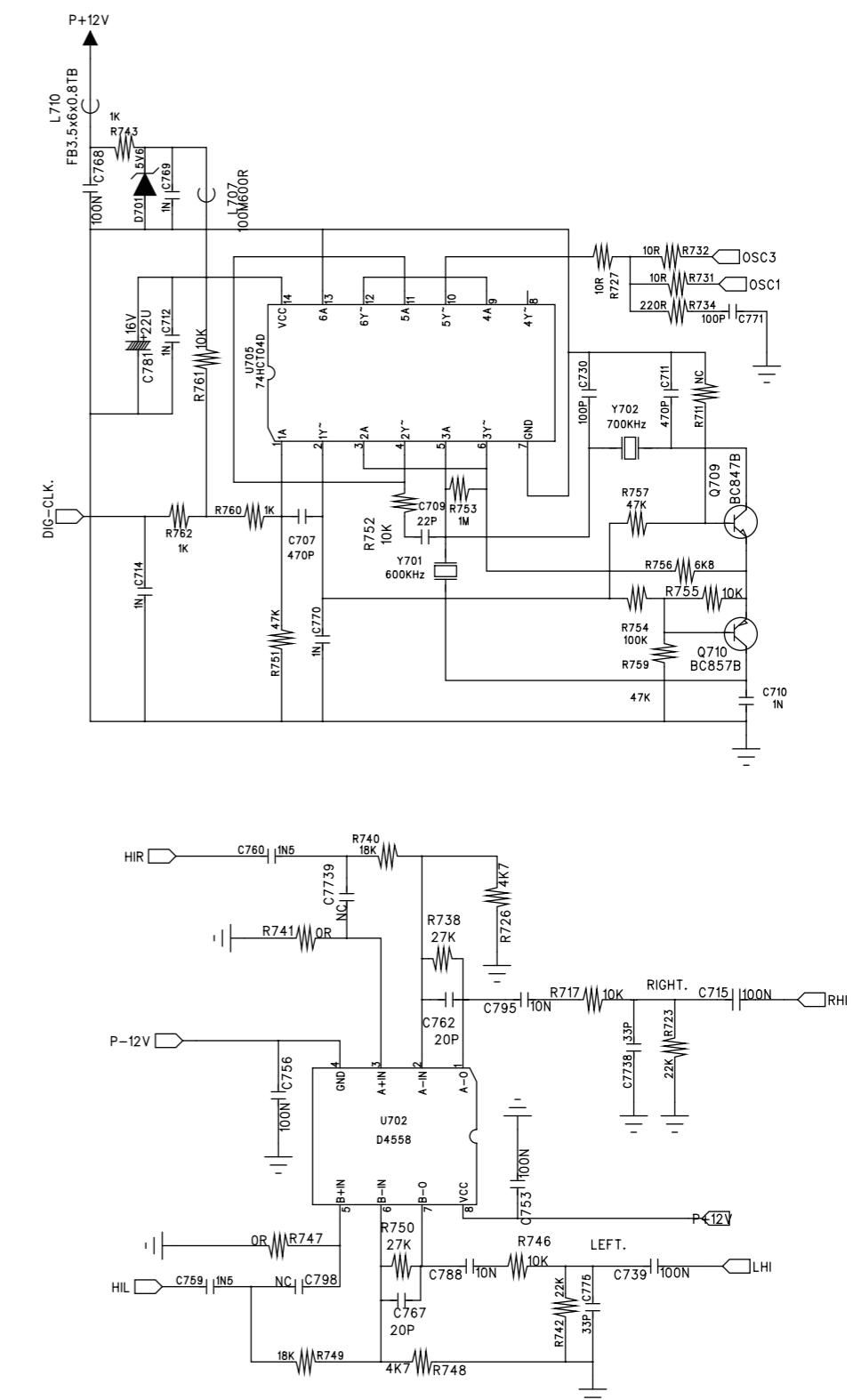


CIRCUIT DIAGRAM - AMP BOARD


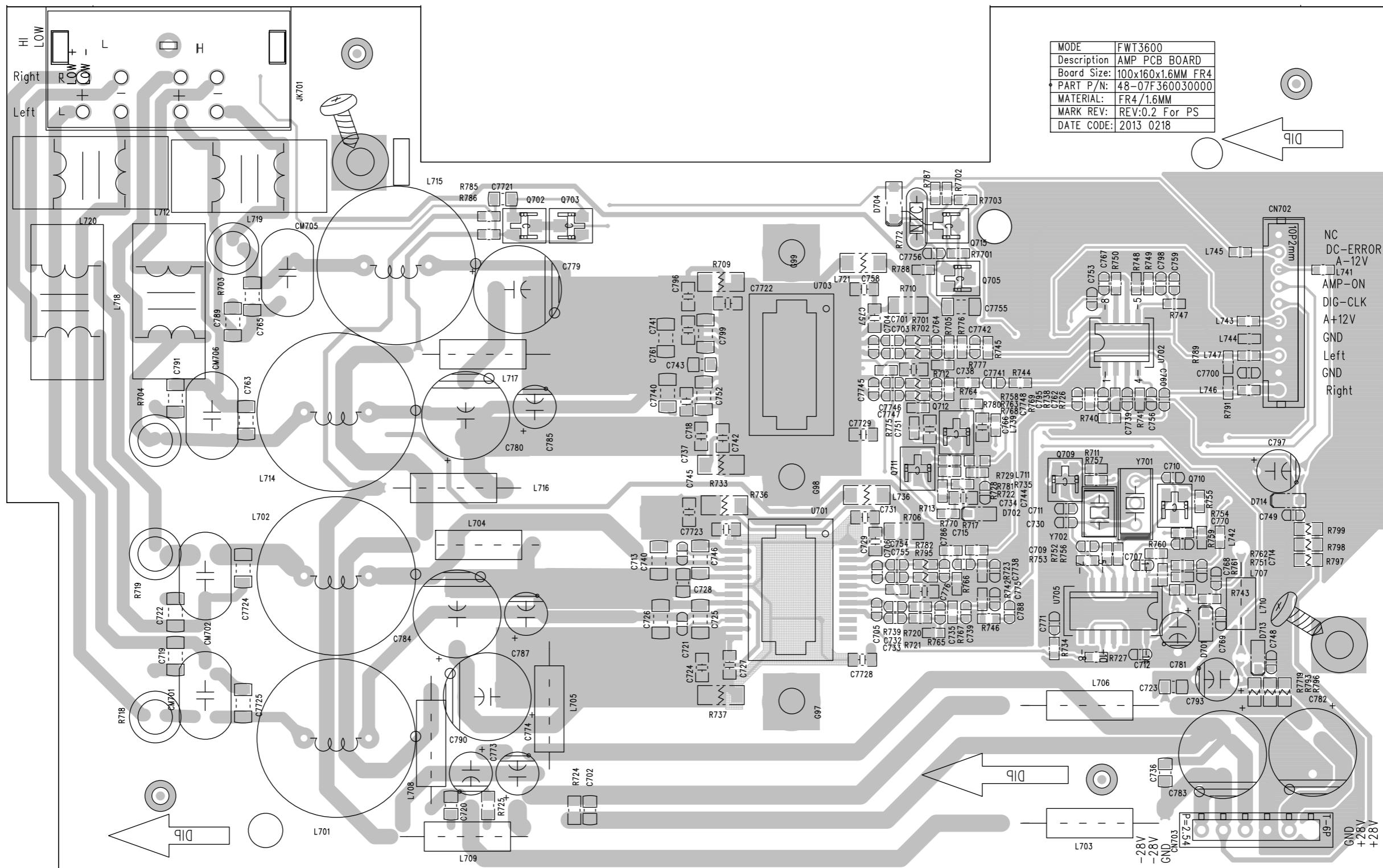
SI4702 only FM	
SI4703 only FM/RDS	
SI4730 only FM/AM	05-A18800200000 for Si4730
SI4731 only FM/AM/RDS	

	Pin4	Pin10	Pin11	Pin15	Pin16	Pin18
SI4702/3	GND	Vio	VD	GND	VA	GND
SI4730/1	AM	VD	VA	DOUT	DFS	GOP2
	R6			R5	R4	
SI4702/3	OR			OR	OR	GND
SI4730/1	NC			NC	NC	NC/ESD*

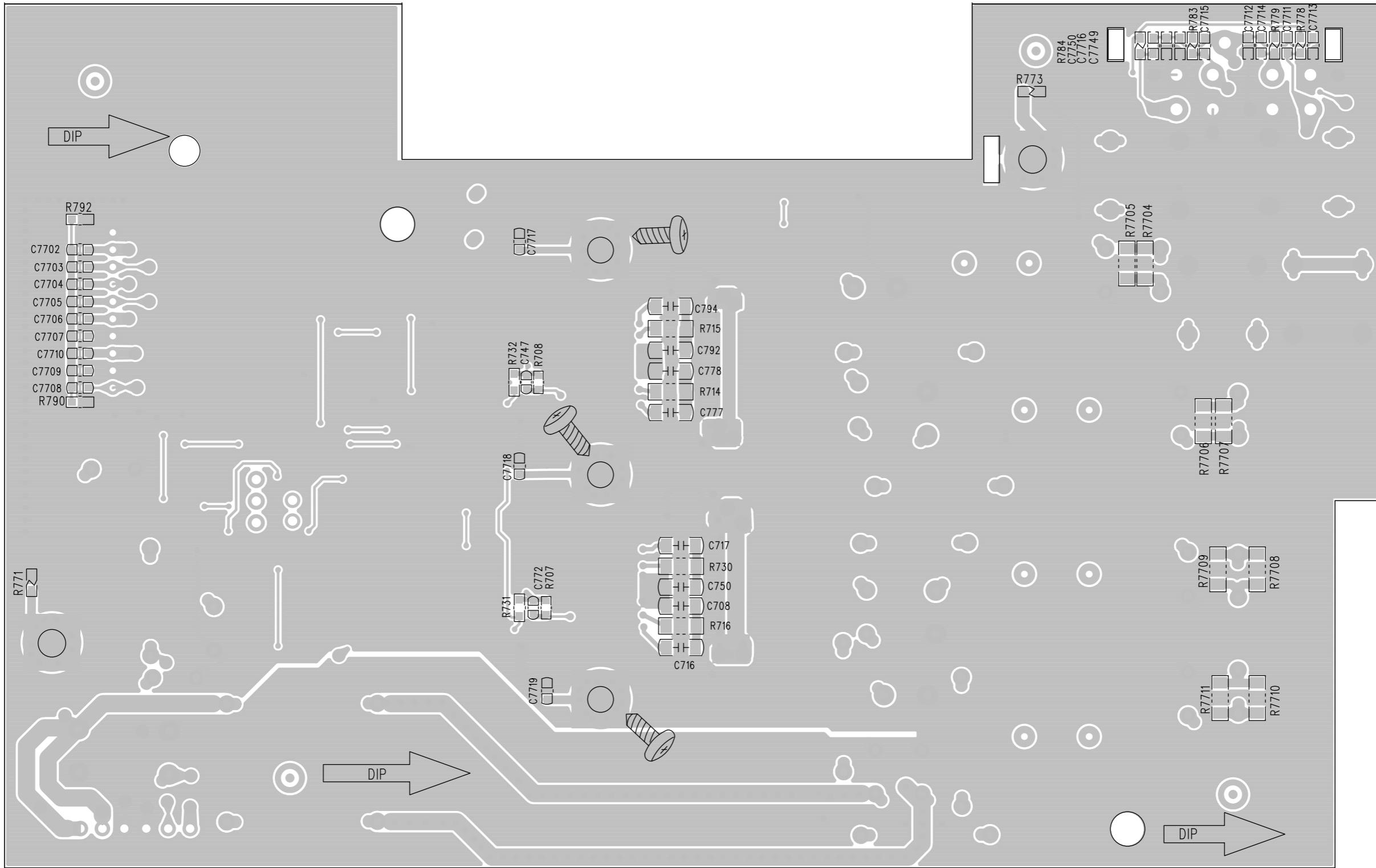
SI47xx TUNER
VD-1.6-3.6V
Vio-1.6-3.6V
VA-2.7-5.5V



PCB LAYOUT - AMP BOARD



PCB LAYOUT - AMP BOARD



EXPLODED VIEW

