SERVICE MANUAL

MODEL:LEM1968DT/LEM2268FDT/LEM2468FDT

(SOURTION MSD309)

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This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product.

IMPORTANT SAFETY INSTRUCTIONS

This symbol indicates " dangerous voltage " inside the product that presents a risk of electric shock or personal injury.

This symbol indicates important instructions accompanying the product.

Please read this manual carefully before using this product.

- Before connecting the AC power cord ,make sure the voltage designation of the LCD TV corresponds to the local electrical supply .
  If you are unsure of your power supply , ask your local power company .

- Never insert anything metallic into the cabinet openings of the liquid crystal display LCD TV/monitor;otherwise it may create the danger of electric shock.

- To avoid electric shock, Never touch the inside of the LCD TV/monitor .
  Only a qualified technician should open the case of the LCD TV/monitor.

- Never use your LCD TV/monitor if the power cord has been damaged .
  Do not allow anything to rest on the power cord, and keep the cord away from place where people can trip over it .

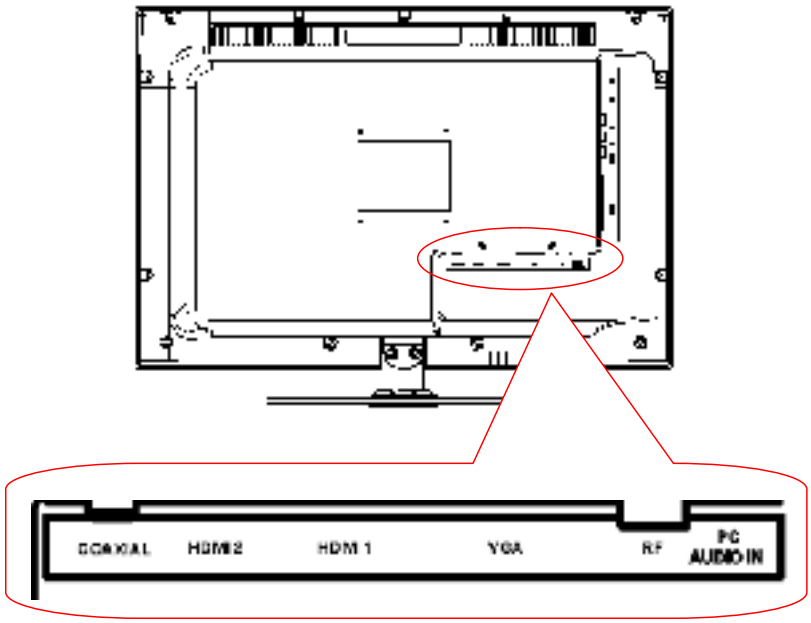
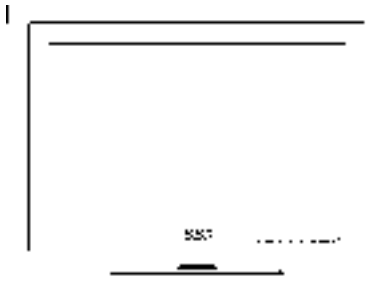
- Be sure to hold the plug, not the cord, when disconnecting the power cord from an electric socket.

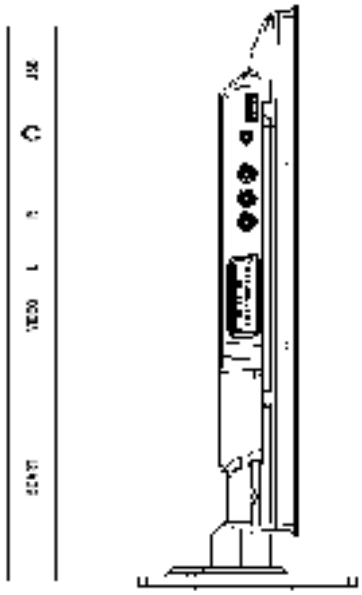
- Openings in the LCD TV/monitor cabinet are provided for ventilation.
  To prevent overheating, these openings should not be blocked or covered. Also, avoid using the LCD TV/monitor on a bed ,sofa ,rug, or other soft surface. Doing so may block the ventilation openings in the bottom of the cabinet. If you put the LCD TV/monitor in a bookcase or some other enclosed space, be sure to provide adequate ventilation.

- Do not expose the LCD TV/monitor to extreme temperature conditions or to extreme humidity conditions.

- The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids.

Product Specification

Model	LEM1968DT / LEM2268FDT / LEM2468FDT		
Solution	MSD309		
ATV System	PAL BG/DK/ I SECAM BG/DK/L		
	48.25~863.25 MHz		
	Picture I.F.	38.90MHz （BG,DK,I）	
	Sound I.F.	33.40 (BG)	
		32.40MHz(DK,L)	
		32.90MHz(I)	
	Tuning System		FS With PLL
	Tuner Band		Standard system with hyper band
	Auto Channel Scanning		Yes
	Number Of Preset Channels		100
DTV System	DVB-T:	COFDM 2K/8K QPSK, 16QAM, 64QAM	
	Receiving	VHF (174MHz – 230MHz) UHF (474MHz - 862MHz)	
	Bandwidth	7MHz/8MHz	
	Video System	MPEG-2, MPEG-4,H.264 video decoding	
	Sound System	MPEG Audio,Dolby Digital	
Antenna Impedance	75 Ohm Unbalanced		
Power Supply	Power supply: AC 100V-240V, 50/60Hz		
Back Panel Viewing			
	Terminals	COAXIAL,HDMI,VGA,RF,PC Audio IN	
	USB2.0 Socket		
Front Panel Viewing			
	Touch KEY	STANDBY,SOURCE, MENU, CH+/CH-, VOL +/-	
	LED Indicators	Red :Standby Green :On	

Side Viewing				
Terminals	Image In	TV 75ohm Aerial		X 1
		HDMI Connector		X 2
		RCA Jack(CVBS) -Yellow		X 1
Terminals	Audio In	RCA Audio (L/R) Jack - White/Red		X 1
		φ3.5 Stereo Jack		X 1
	VGA In	D-sub 15 Pin VGA Connector		X 1
	USB	USB2.0 Host		X 1
	SCART	Full SCART		X 1
	COAX Output	RCA Jack (Black) optional		X 1
	Audio Output	φ3.5 Earphone Jack		X 1
Audio	Output Power (1 KHz 10% THD)			2.5W
	NICAM / STEREO			Yes
	Bass			Yes
	Treble			Yes
	Balance			Yes
OSD Language	Russian , English			
LCD Panel （Only For Reference, Parameters according to panel model）	LEM1968DT	Brand		INNOLUX
		Model		MT185GW01
		Size		18.5”
		Backlight		LED
		Pixel Pitch		0.3mm (H) x 0.3mm(V)
		Resolution	Horizontal (dots)	1366
			Vertical (Lines)	768
		Brand		LG
		Model		LM215WF4
		Size		21.6”

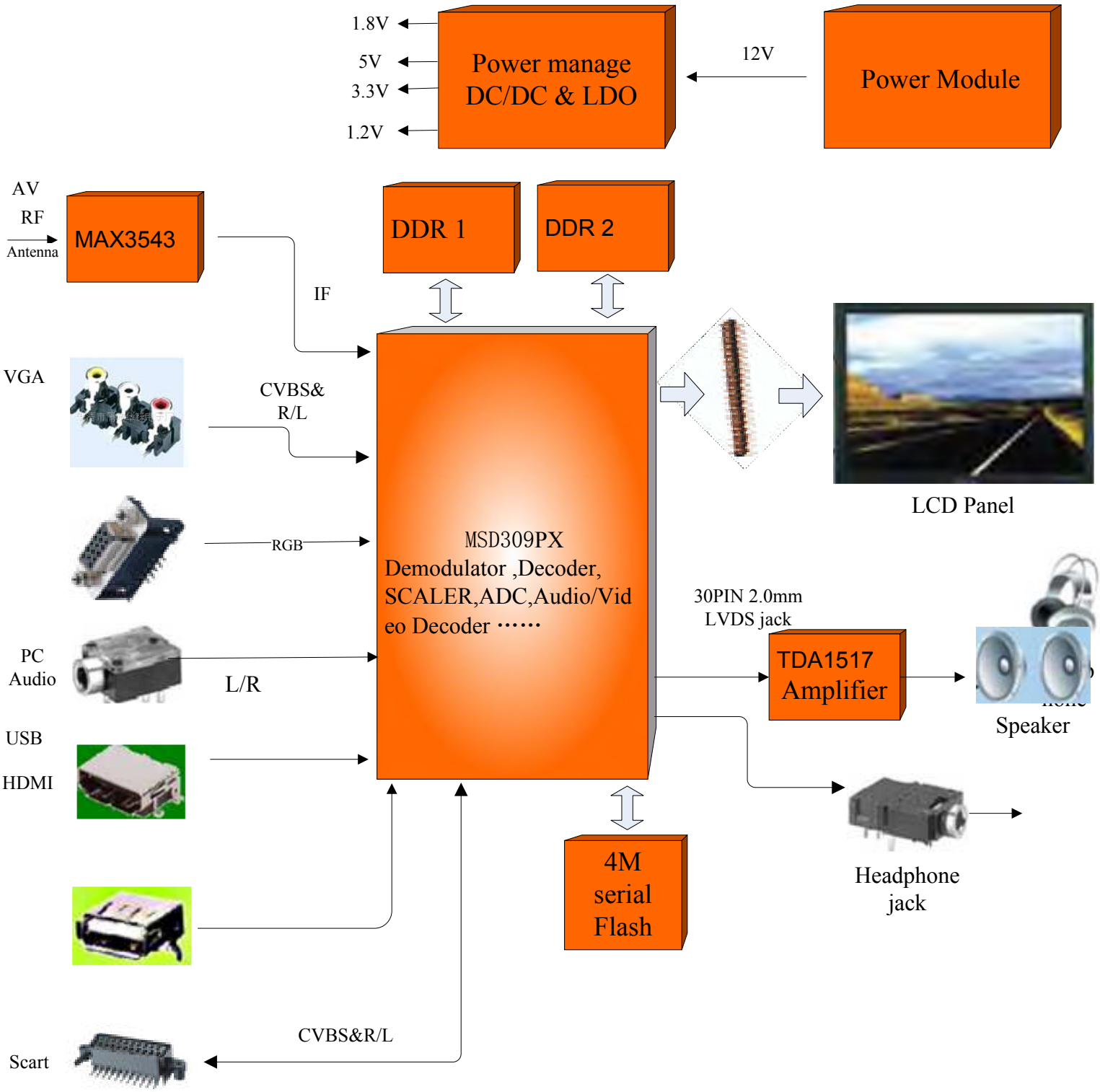
LCD Panel （Only For Reference, Parameters according to panel model）	LEM2268FDT	Backlight		LED
		Pixel Pitch		0.248 mm x 0.248mm
		Resolution	Horizontal (dots)	1920
			Vertical (Lines)	1080
	LEM468FDT	Brand		LG
		Model		LM230WF5
		Size		23.6”
		Backlight		LED
		Pixel Pitch		0.265 mm x 0.265mm
		Resolution	Horizontal (dots)	1920
			Vertical (Lines)	1080
Support Resolution(For PC)	Horizontal (dots) (Max)			1920
	Vertical (Lines) (Max)			1080
Speaker	4 Ohm /5W			x2pcs
Power Consumption	On working			45W Max
	Standby			≦1W

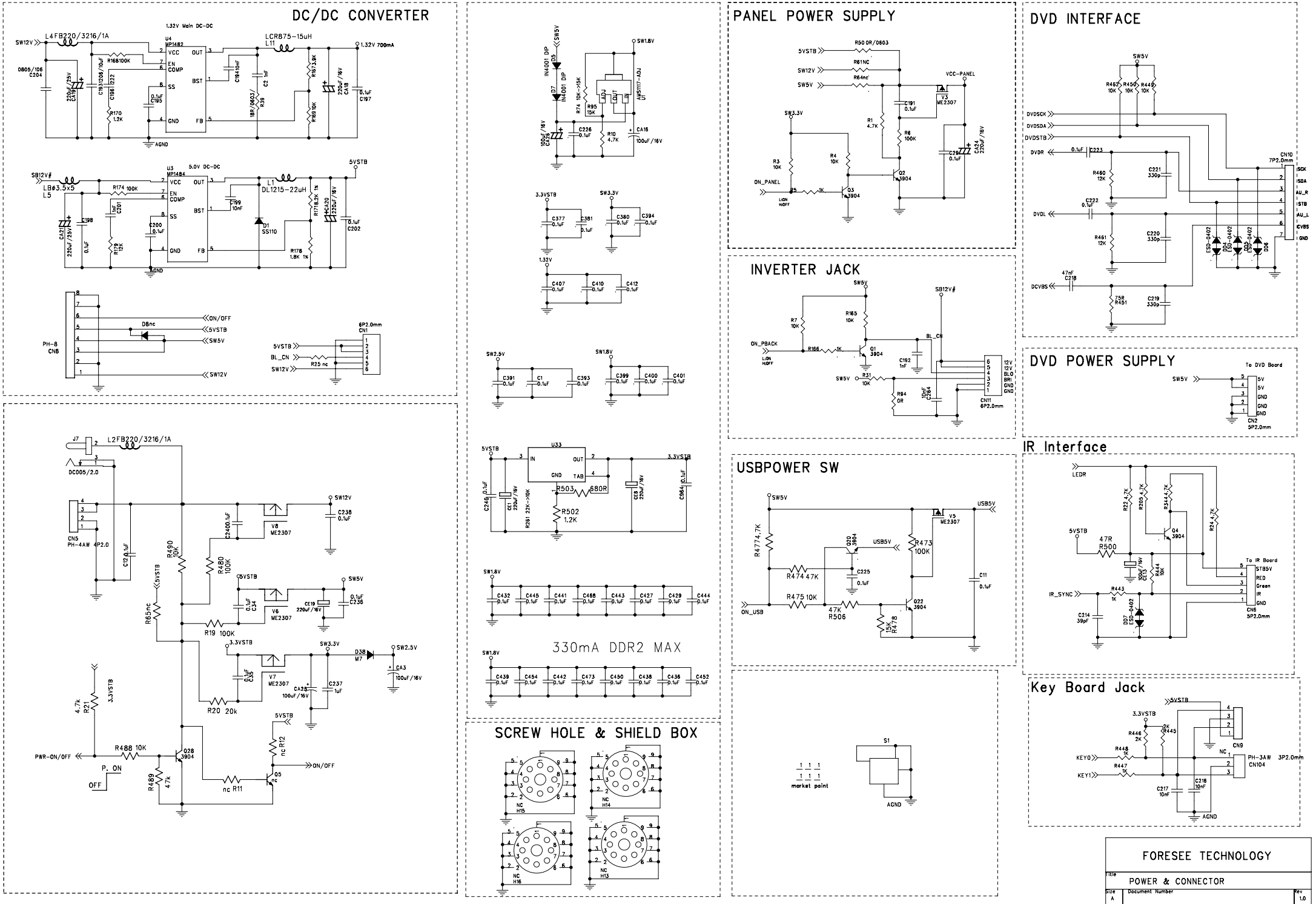
Remote Control

Color	Black
Batteries	1.5V AAA X2
Customer Code	09F6
Remark	RC2252

Note: Specifications are subject to change without notice

Block Diagram





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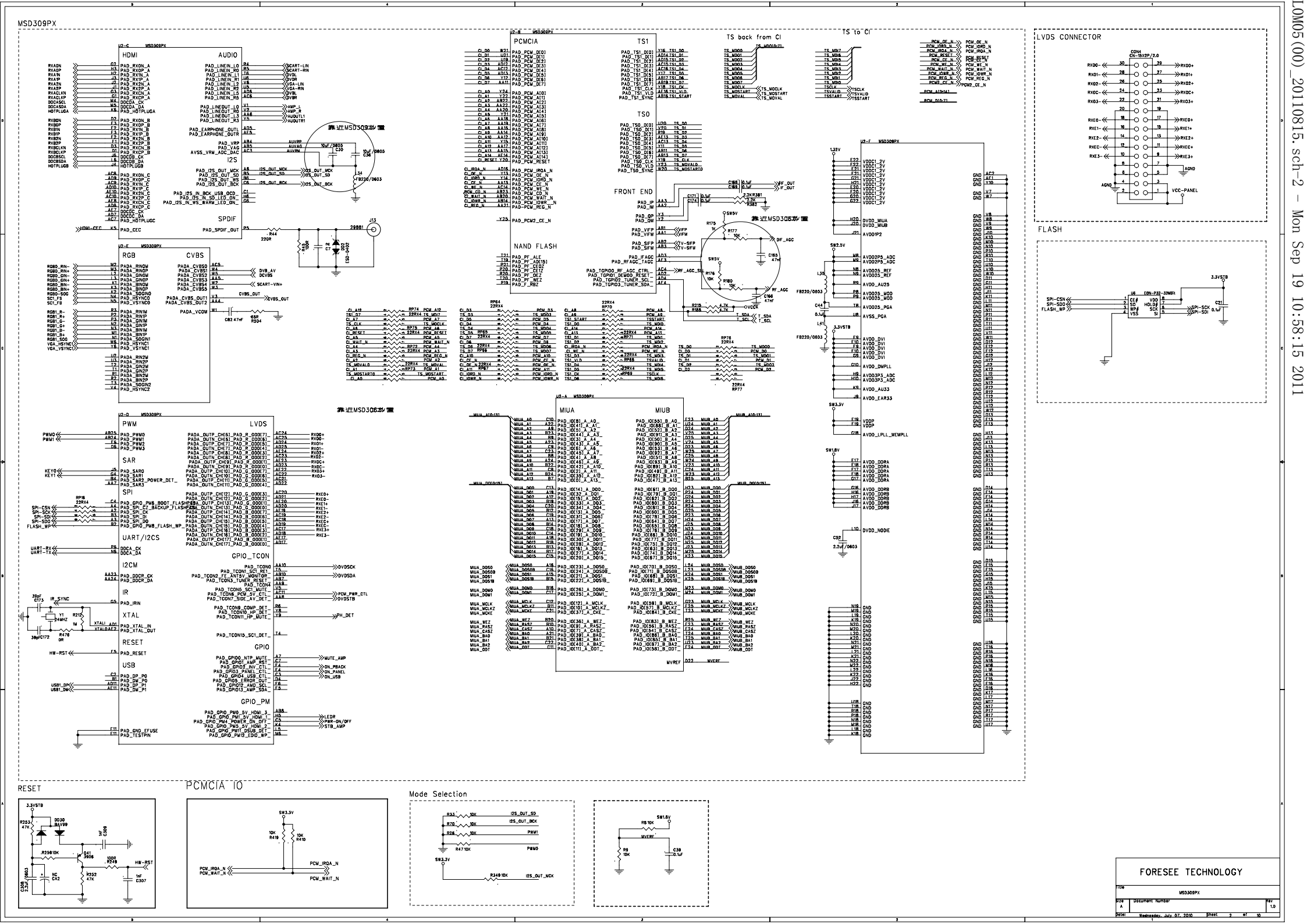
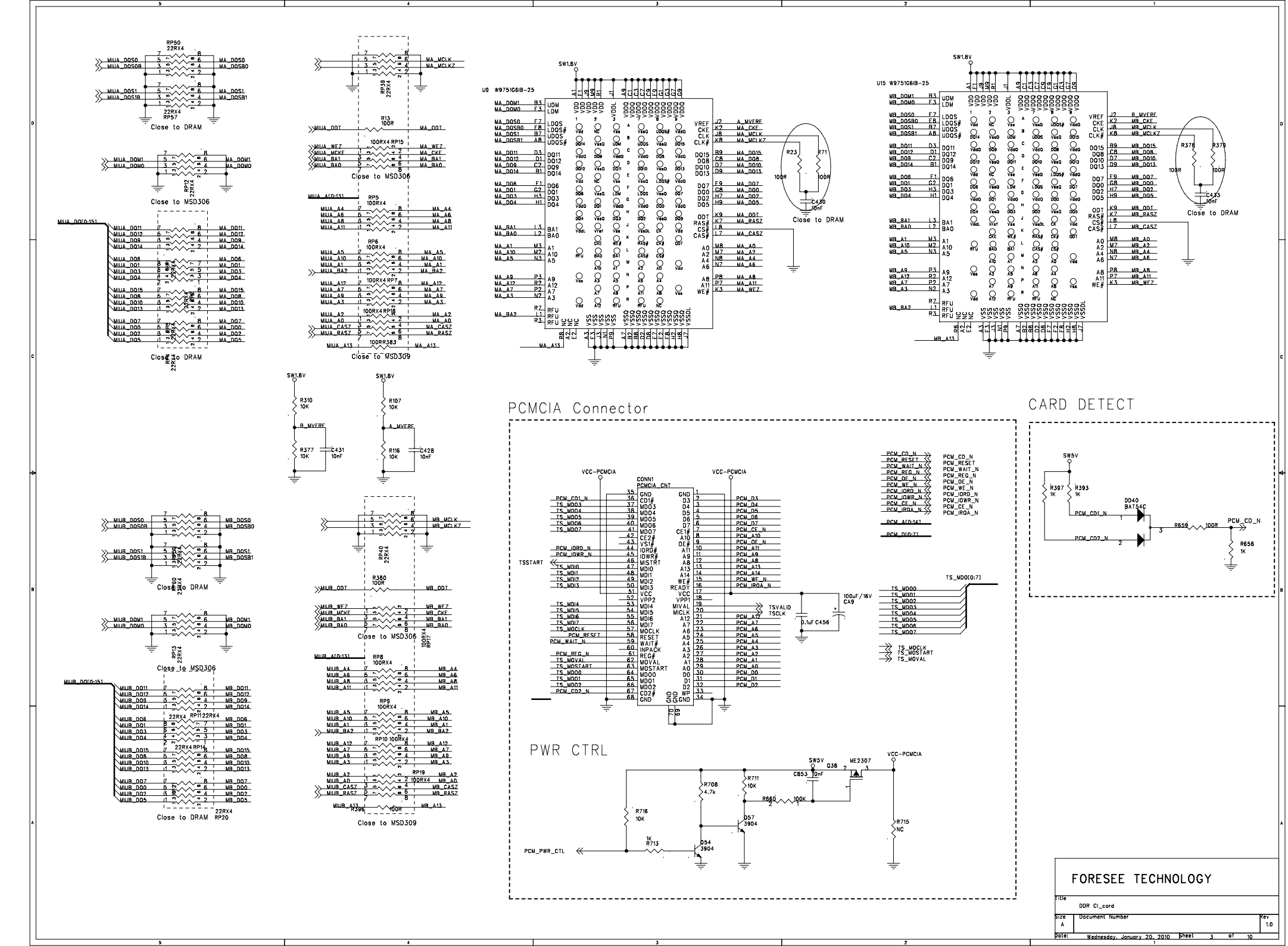
FORESEE TECHNOLOGY

Title	POWER & CONNECTOR	
Size A	Document Number	Rev 1.0
Date: 2009/11/25	Sheet 1 of 6	


MSD309PX
HDMI
AUDIO
I2S
SPDIF
RGB
CVBS
PWM
LVDS
SAR
SPI
UART/I2CS
I2CM
GPIO_TCON
IR
XTAL
RESET
USB
GPIO_PM
PCMCIA
TS1
TS0
NAND FLASH
FRONT END
TS back from CI
TS to CI
MIUA
MIUB
LVDS CONNECTOR
FLASH
RESET
PCMCIA IO
Mode Selection
FORESEE TECHNOLOGY
MSD309PX
Wednesday, July 07, 2010



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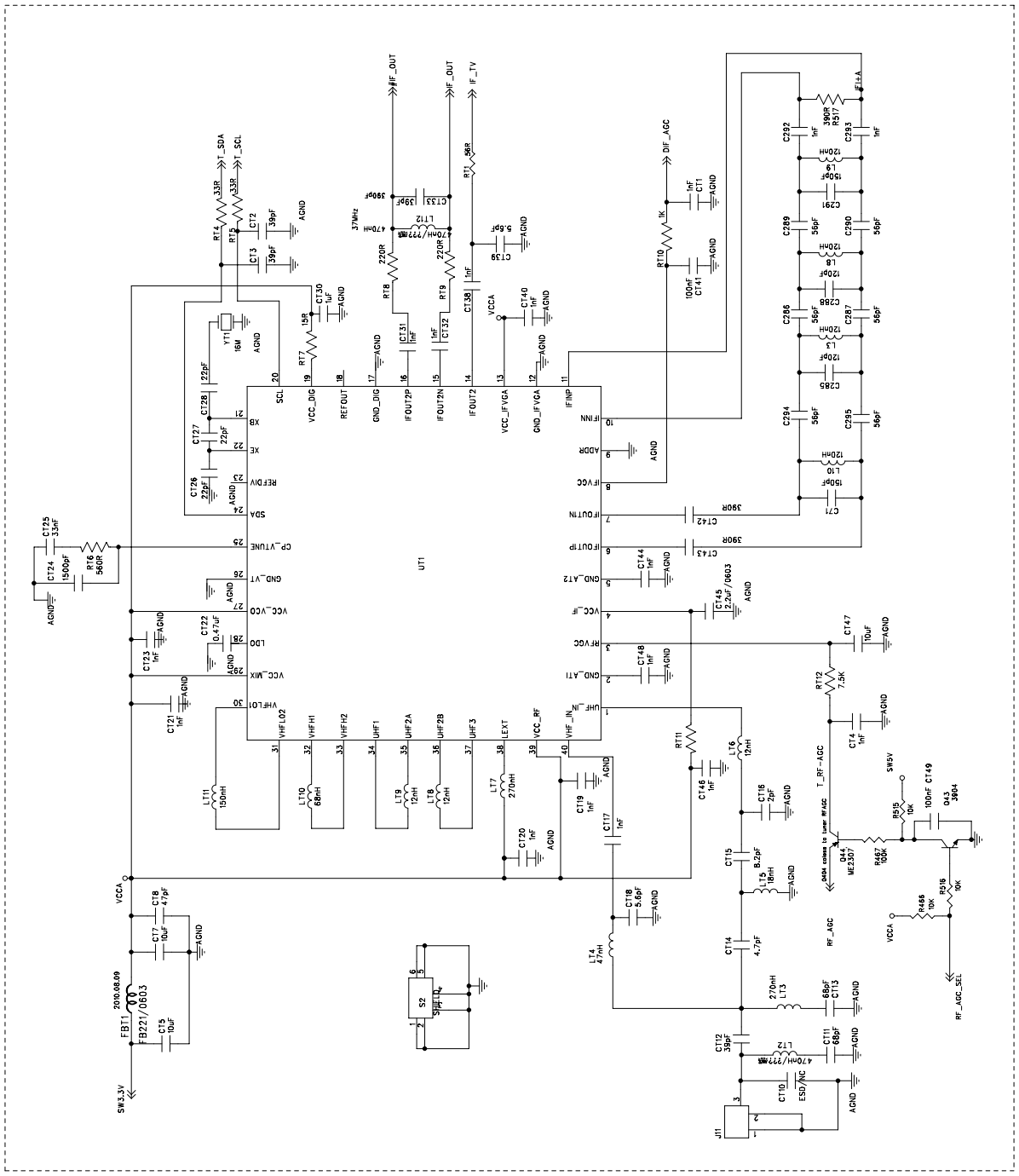
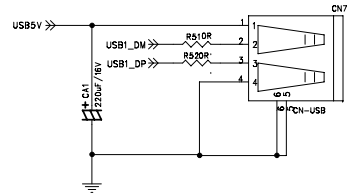
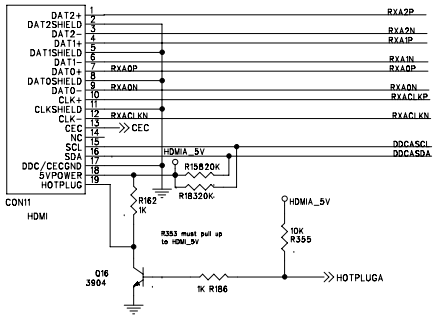
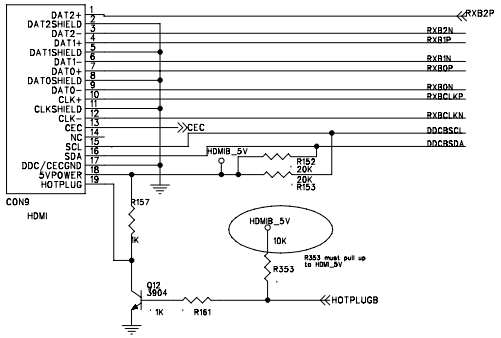
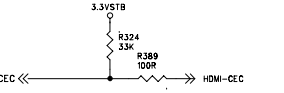

FORESEE TECHNOLOGY
TUNER
U1
IF_OUT
IF_TV
T_SDA
T_SCL
DIF_AGC
T_RF_AGC
RF_AGC
RF_AGC_SEL
VCCA
SW3.3V
SW5V
AGND
FB1
FB221/0603
S2
J11
ESD/NC
If Preamplifier
SAW Drive
VHF_12V
SW02V
IF_TV
TV-SIFP
TV-SIFN
VIFM
VIFP
U8
K9850
U7
K3953M
Close to K9850X Chip

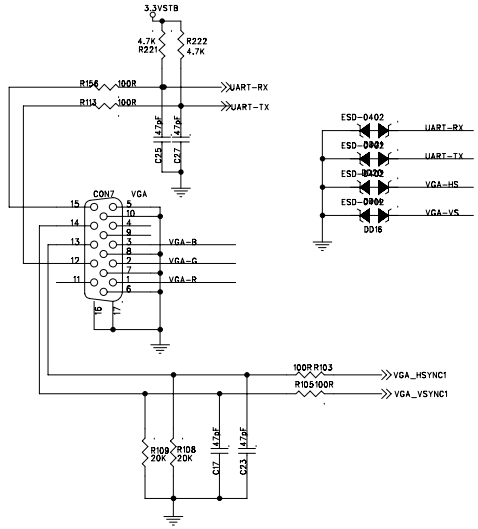


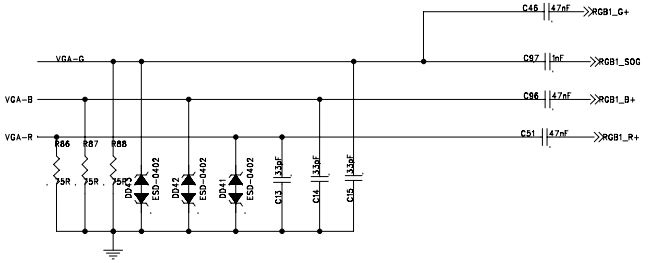


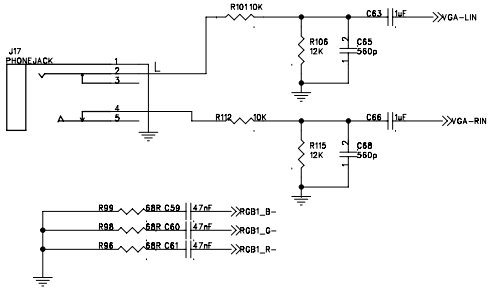




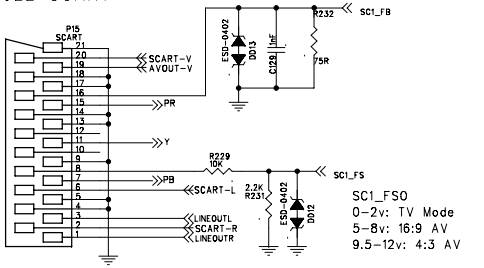
VGA INPUT

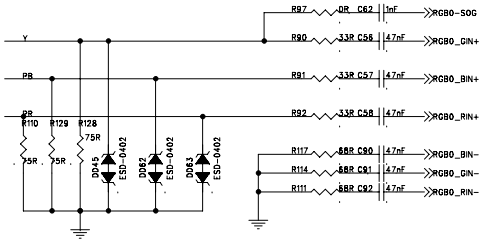


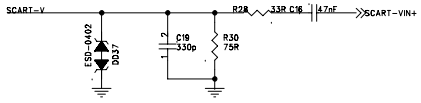




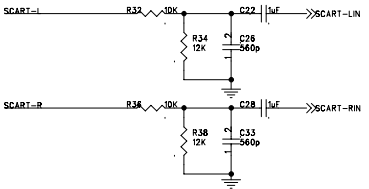
FULL SCART

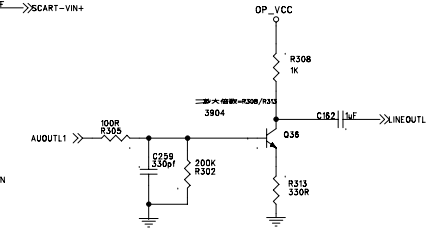


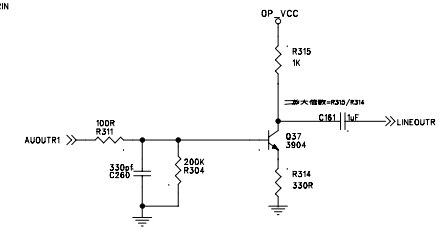




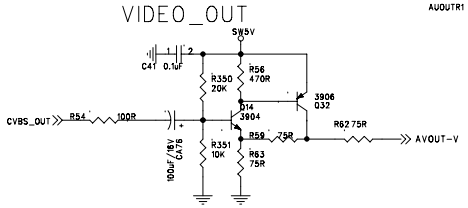
Keep AGND trace with signal
Keep spacing for L/R







VIDEO_OUT



Ground in the middle of the L/R
Near MST.IC

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Title: TERMINAL		
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Date: Monday, December 21, 2009	Sheet 6 of 10	

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Title: FM & AUDIO

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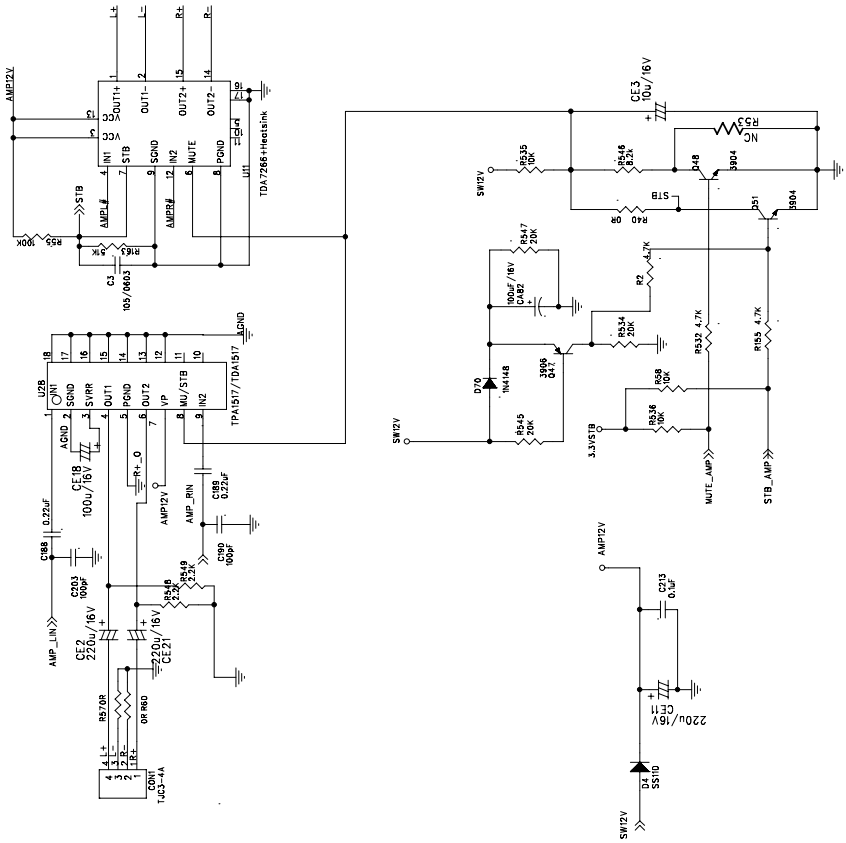
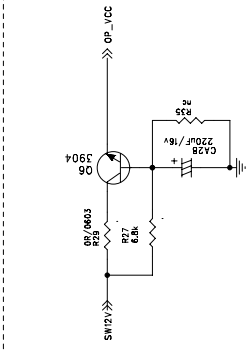
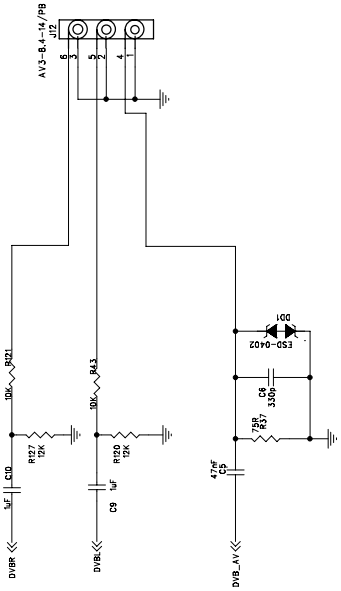
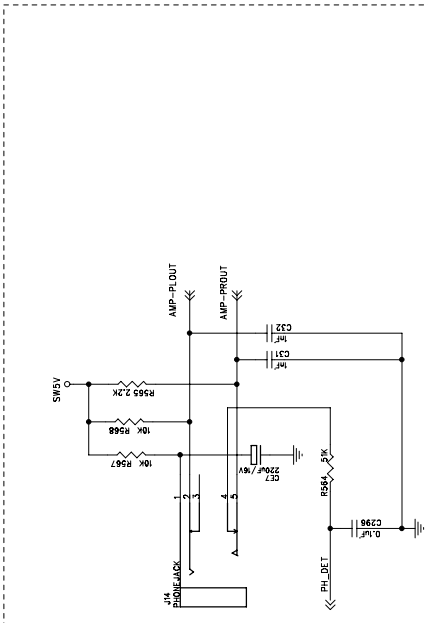
AUDIO AMPLIFIER

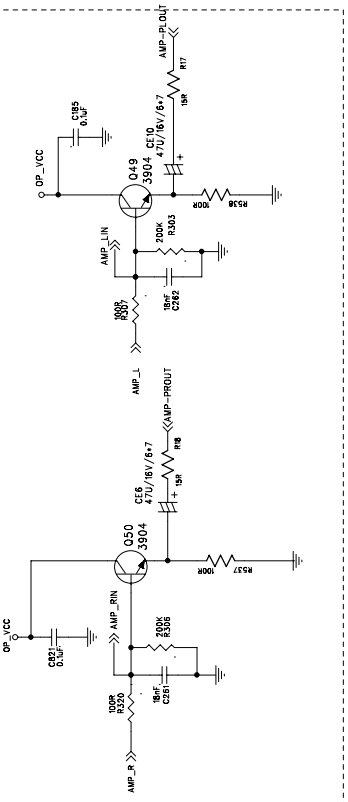




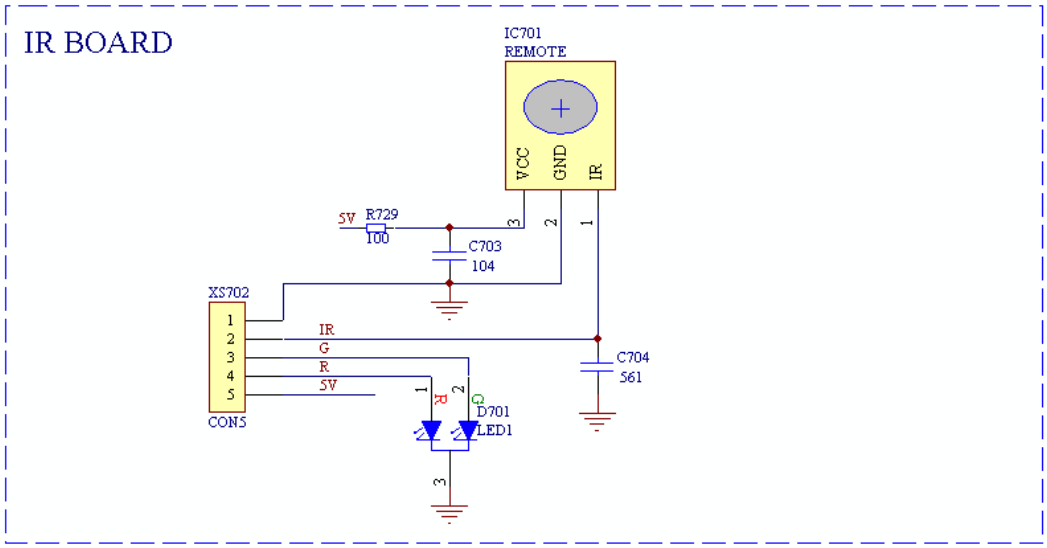
DVB INTERFACE



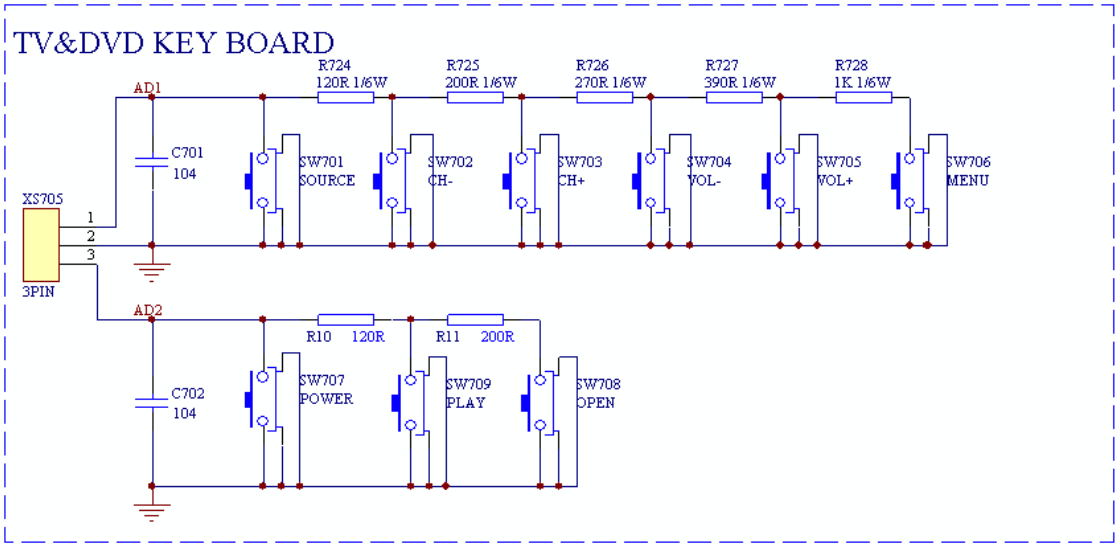




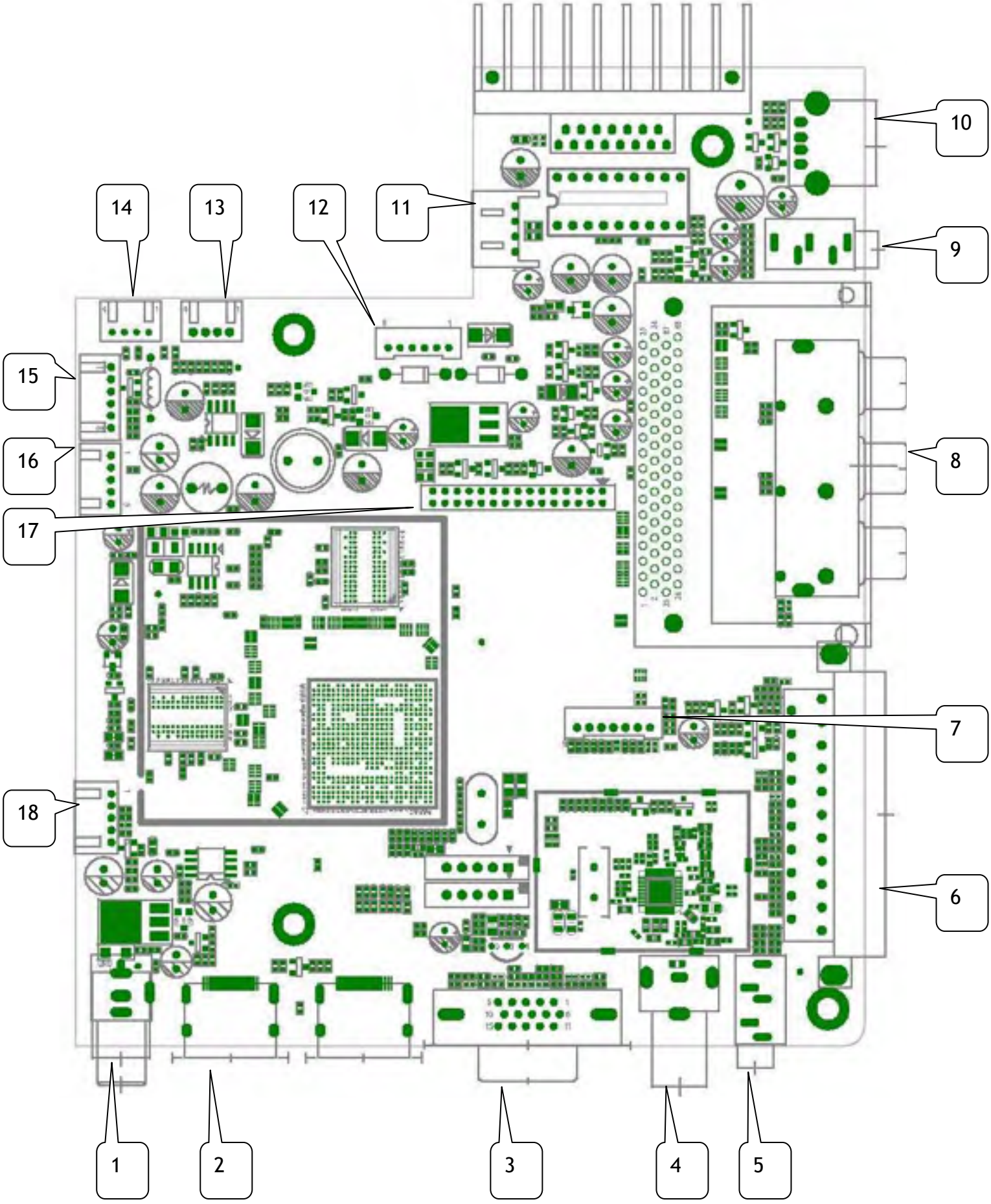
IR BOARD SCHEMATICS



TV&DVD KEY BOARD SCHEMATICS



Interface Description



NO	Ref	Description	NO	Ref	Description
1	J13	COAXIAL Output	10	J2	USB 2.0 jack
2	CON9,CON11	HDMI Input	11	CON1	Speaker Jack
3	CON7	VGA Input	12	CN1(optional)	power supply jack
4	J11	RF Input	13	CN9	Key Jack
5	J17	PC Audio Input	14	CN5(optional)	12V power supply jack
6	P1	Full Scart	15	CN11	Inverter Jack
7	CN10	DVD Interface	16	CN2	DVD power supply jack
8	J12	AV Input	17	CON4	LVDS Interface
9	J14	Headphone output	18	CN6	IR Jack

★CN11(6PIN2.0) Inverter jack (Optional)

NO.	Definition	Description
1	12v	Power Supply
2	12v	Power Supply
3	BLO	Black-Light ON/OFF Control
4	Bri	Brightness Adjustment
5	GND	Ground
6	GND	Ground

★CON1(4PIN2.54) Speaker jack

NO.	Definition	Description
1	R	Right Speaker Output
2	GND	GND
3	GND	GND
4	L	Left Speaker Output

★ CN104:(4PIN2.0) Key jack

NO.	Definition	Description
1	K1	Key 1 (ADC Input)
2	GND	GND
3	K2	Key 2 (ADC Input)
4	VCC	KEY 5V Power Supply

★CN10: (7PIN2.0) DVD INTERFACE(Optional)

NO.	Definition	Description
1	SCK	SPI Communication Protocol SCL
2	SDA	SPI Communication Protocol SDA
3	DRIN	Right Channel of DVD Audio Input
4	STB	SPI Communication Protocol STB
5	DLIN	Left Channel of DVD Audio Input
6	CVBS	DVD Video Signal
7	GND	GND

★CN2: (5PIN2.0) DVD Power jack (Optional)

NO.	Definition	Description
1	5V	DVD 5V Power Supply
2	5V	DVD 5V Power Supply
3	GND	GND
4	GND	GND
5	GND	GND

★CN6: IR&LED jack

NO.	Definition	Description
1	GND	GND
2	IR	Remote Receiver
3	LED-G	Green Indicator
4	LED-R	Red Indicator
5	5V	Power Supply

★CN5: (4PIN2.0) Internal power supply jack for small size TV(Optional)

NO.	Definition	Description
1	12v	Internal 12V Power Supply
2	12v	Internal 12V Power Supply
3	GND	GND
4	GND	GND

★CN11(6PIN2.0) Internal power supply jack (Optional)

NO.	Definition	Description
1	12V	12V Power Supply
2	GND	GND
3	BL_ON	Back Light ON/OFF
4	5V_STB	5V Power Supply
5	5V_STB	5V Power Supply
6	GND	GND

★J2: (4PIN2.0)

NO.	Definition	Description
1	5V	USB 5V Power Supply
2	D-	USB Negative Signal
3	D+	USB Positive Signal
4	GND	GND

★CON4: LVDS Interface

NO.	Definition	Description
1	LCD-VDD	Power for Panel
2	LCD-VDD	Power for Panel
3	LCD-VDD	Power for Panel
4	GND	GND
5	GND	GND
6	GND	GND
7	GND	GND
8	GND	GND
9	EDA3+	LVDS EVEN3+ Signal
10	EDA3-	LVDS EVEN3+ Signal
11	ECK+	LVDS EVEN Clock + Signal
12	ECK-	LVDS EVEN Clock - Signal
13	EDA2+	LVDS EVEN2 + Signal

14	EDA2-	LVDS EVEN2 - Signal
15	EDA1+	LVDS EVEN1 + Signal
16	EDA1-	LVDS EVEN1 - Signal
17	EDA0+	LVDS EVEN0 + Signal
18	EDA0-	LVDS EVEN0 - Signal
19	GND	GND
20	GND	GND
21	ODA3+	LVDS ODD3 + Signal
22	ODA3-	LVDS ODD3 + Signal
23	OCK+	LVDS ODD Clock + Signal
24	OCK-	LVDS ODD Clock - Signal
25	ODA2+	LVDS ODD2 + Signal
26	ODA2-	LVDS ODD2 - Signal
27	ODA1+	LVDS ODD1 + Signal
28	ODA1-	LVDS ODD1 - Signal
29	ODA0+	LVDS ODD0 + Signal
30	ODA0-	LVDS ODD0 - Signal

1) How to enter service mode
   Press “Source” button on the remote control, then press”2580”, the service menu will be displayed.

2) Service mode description

Color Temp: select a color temperature mode that you want to adjust;
R Gain: red gain for white balance adjusting;
G Gain: green gain for white balance adjusting;
B Gain: blue gain for white balance adjusting;
R Offset: red offset for white balance adjusting;
G Gain: green offset for white balance adjusting;
B Gain: blue offset for white balance adjusting;
Aging: to turn on or off aging mode, optional setting: On /Off;
Auto config: Auto adjust ADC channel difference, only available in VGA mode;
EEprom clear: reset EEPROM data to default value, all users' program and setting will be lost;
Panel: select different panel for factory;
TTX language: select Teletext language, optional setting: West East Russia;
DVD source set: to turn on or off DVD source in the user menu, optional setting: On/Off;
Hotel mode: to turn on or off hotel mode, optional setting: On/Off;
Key mode:to turn on or off local keyboard, optional setting: On/Off;
Power on: to setting the power on source, optional setting: TV Other;
Power mode: to setting the power on mode, optional setting: Force on Memory standby;
Volume:to setting the max sound volume when hotel mode is active;
AGC: to setting tuner's RF AGC value;
Notes:

1. color temperature adjusting:in different source the white balance can be adjust separated.the details as below:
   1) DVD&YpbPr source use same group color temperature value.
   2) TV&Scart source use same group color temperature value.
   3) VGA&HDMI source use separated color temperature value.
2. Auto Config:please change source to VGA mode and with grey scale pattern then enter service mode to do this item.

Soft Updating

Main Board Software upgrade

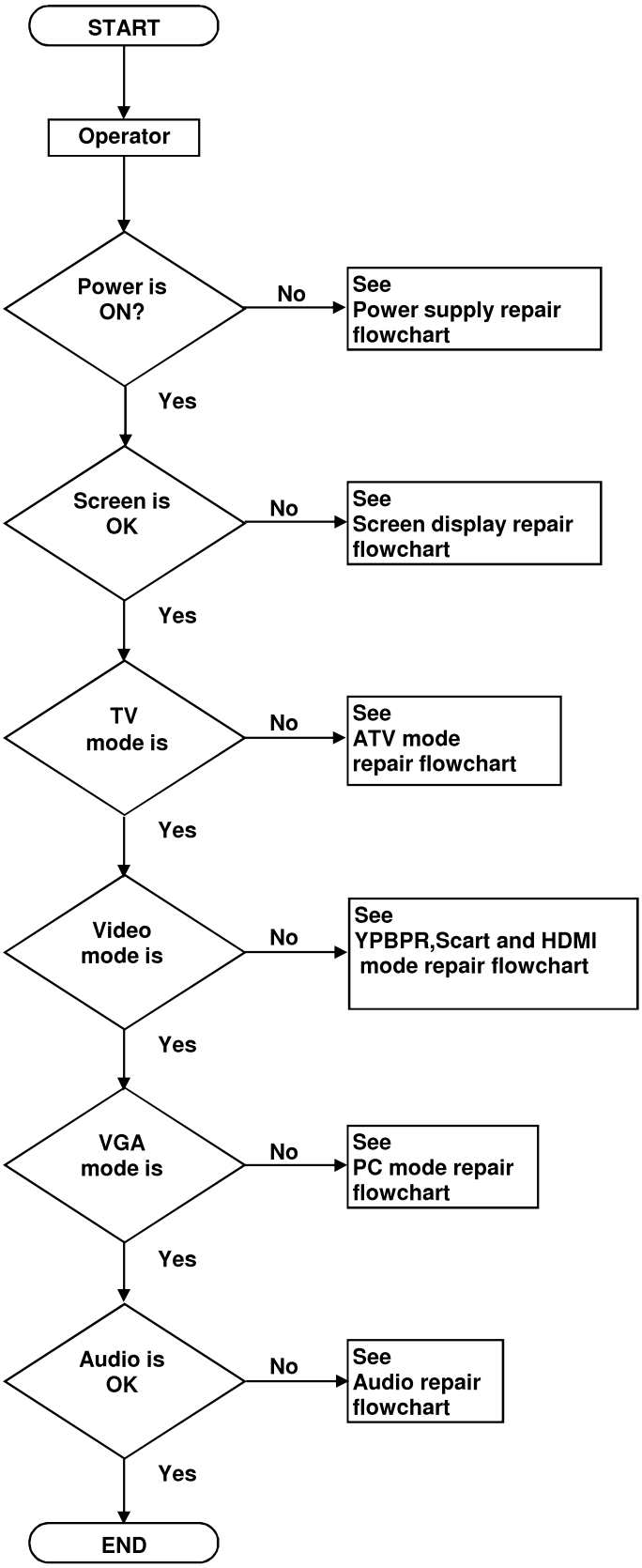
1 Please burn the software to USB device. Noted please, software name have to be MERGE309.bin.

2 Power on TV, and switch source to ATV.

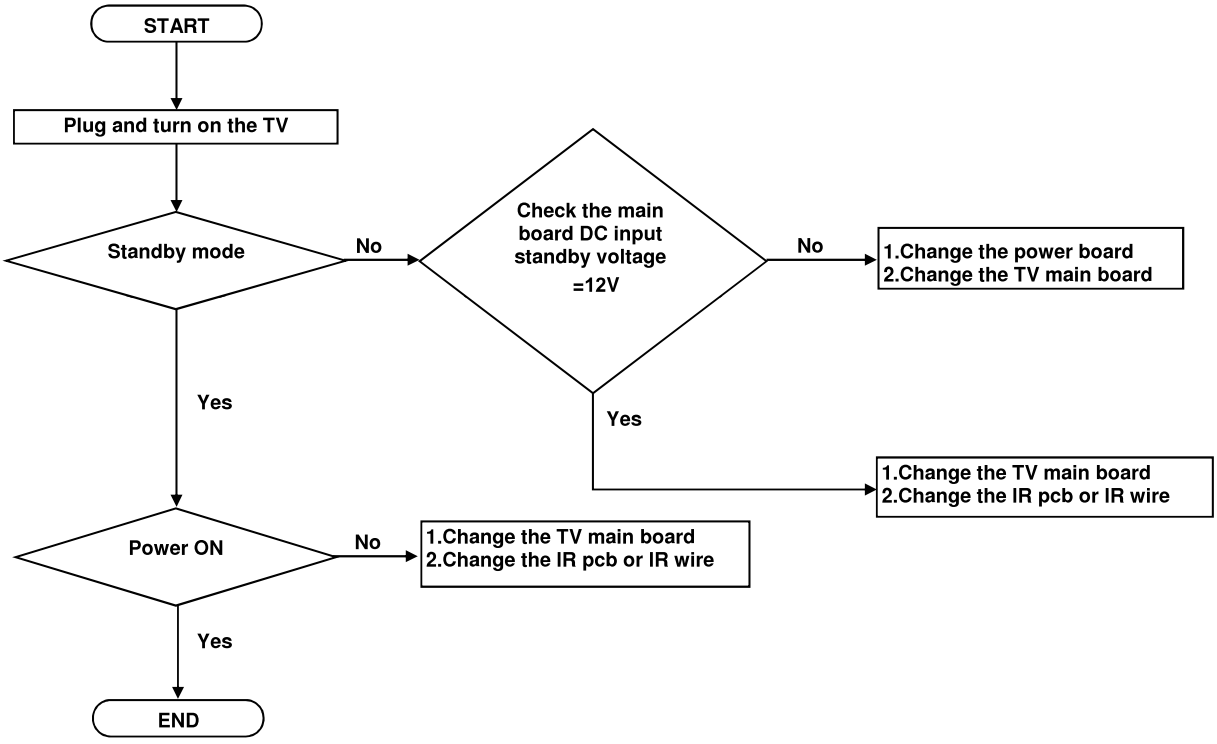
3 Insert USB device to TV, then screen will display a message window to inform you upgrade TV or not. Press” LEFT” direction button to upgrade

4 It will cost 40 seconds to upgrade. In this process, please don’t unplug USB device, don’t power off TV.

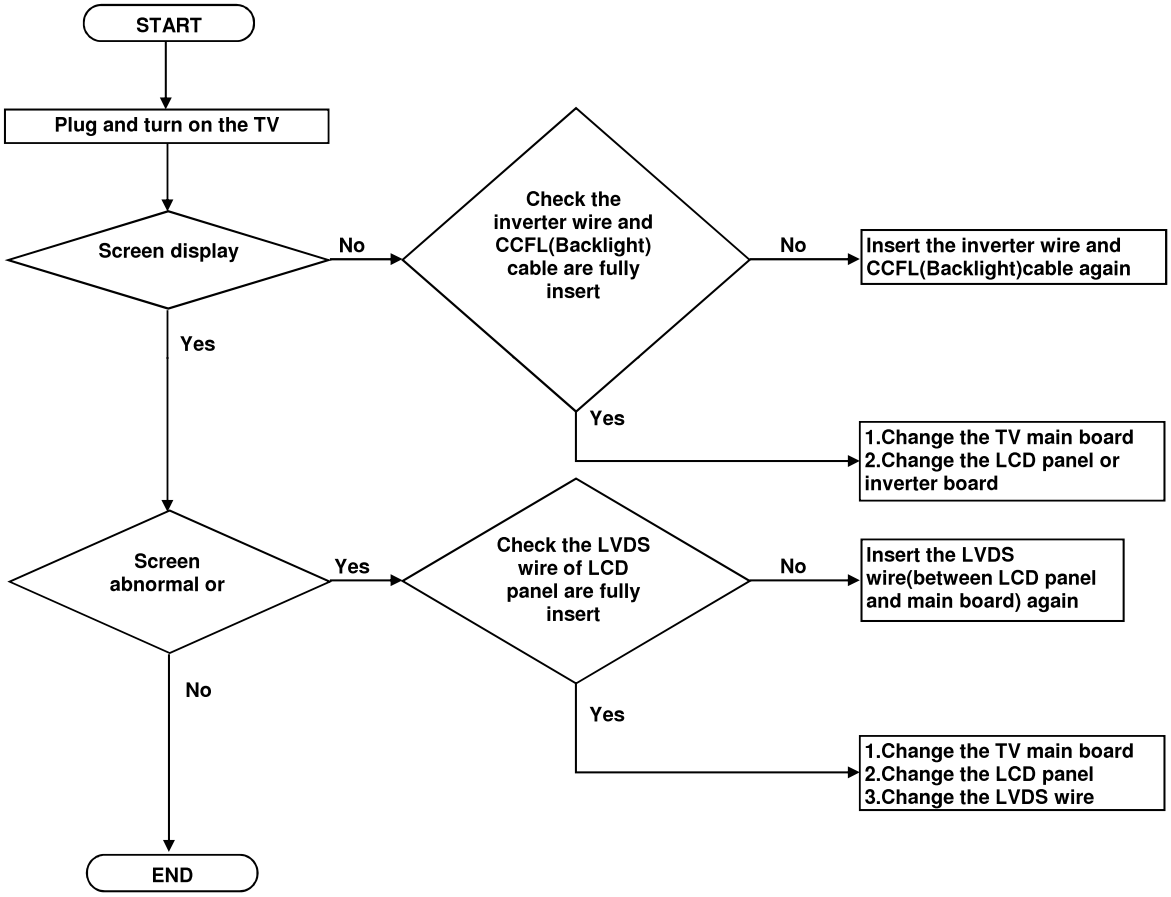
TV Fault finding tree



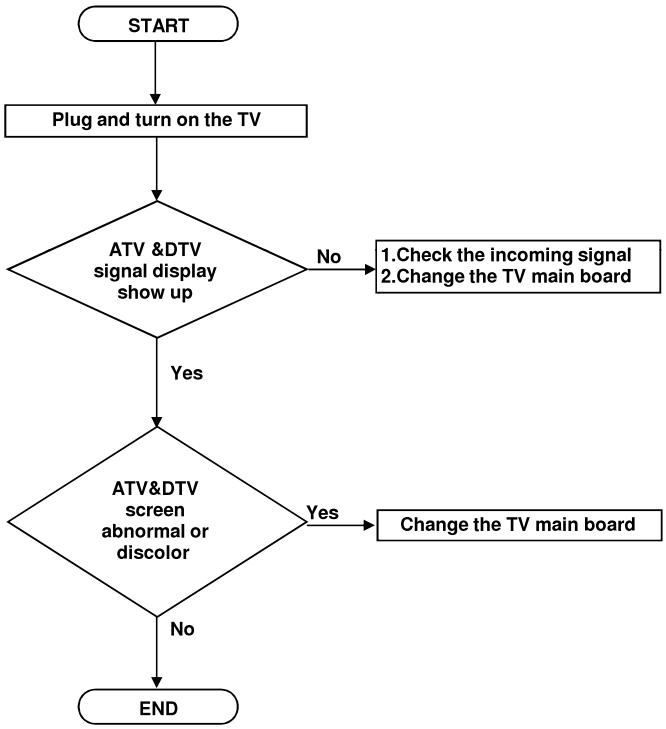
Power supply repair flowchart



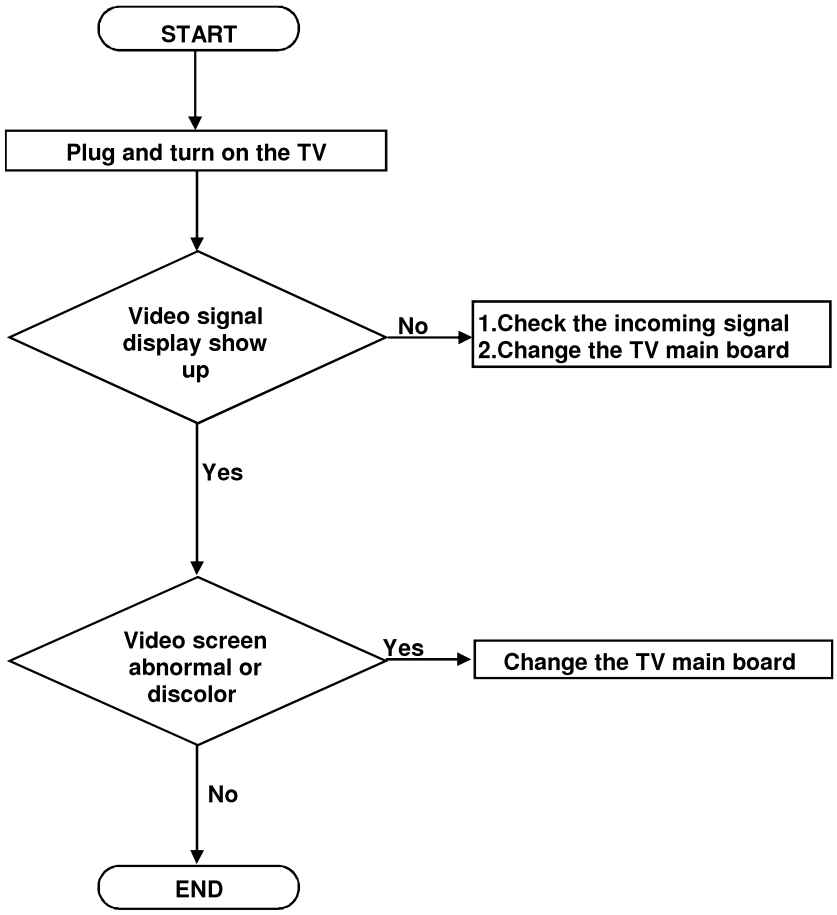
Screen Display repair flowchart



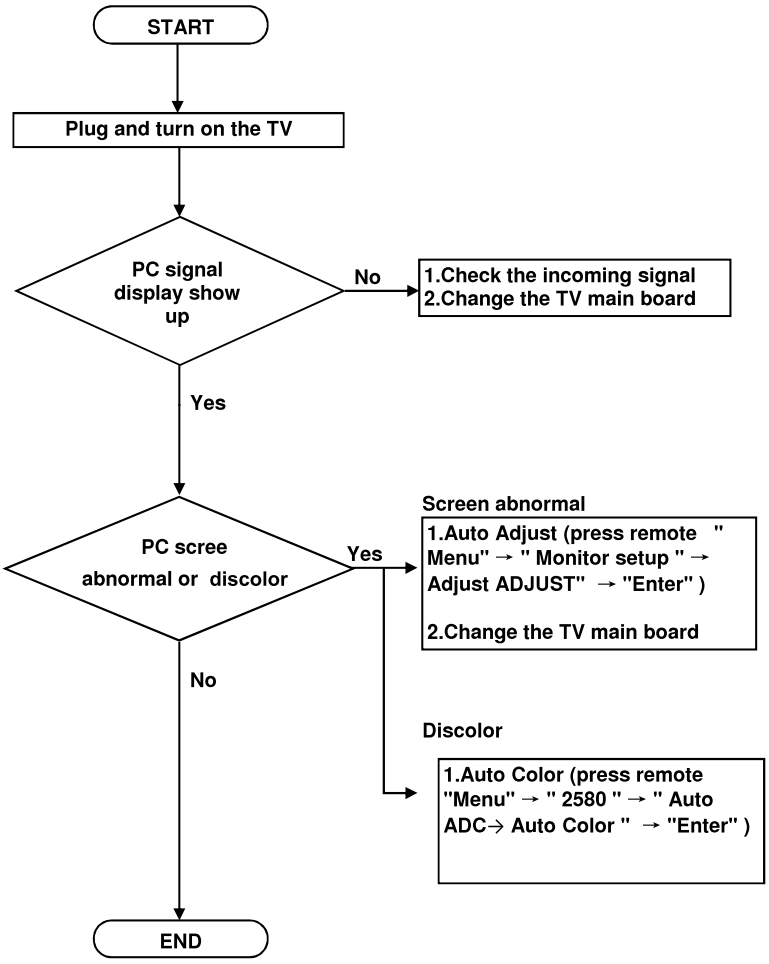
TV mode repair flowchart



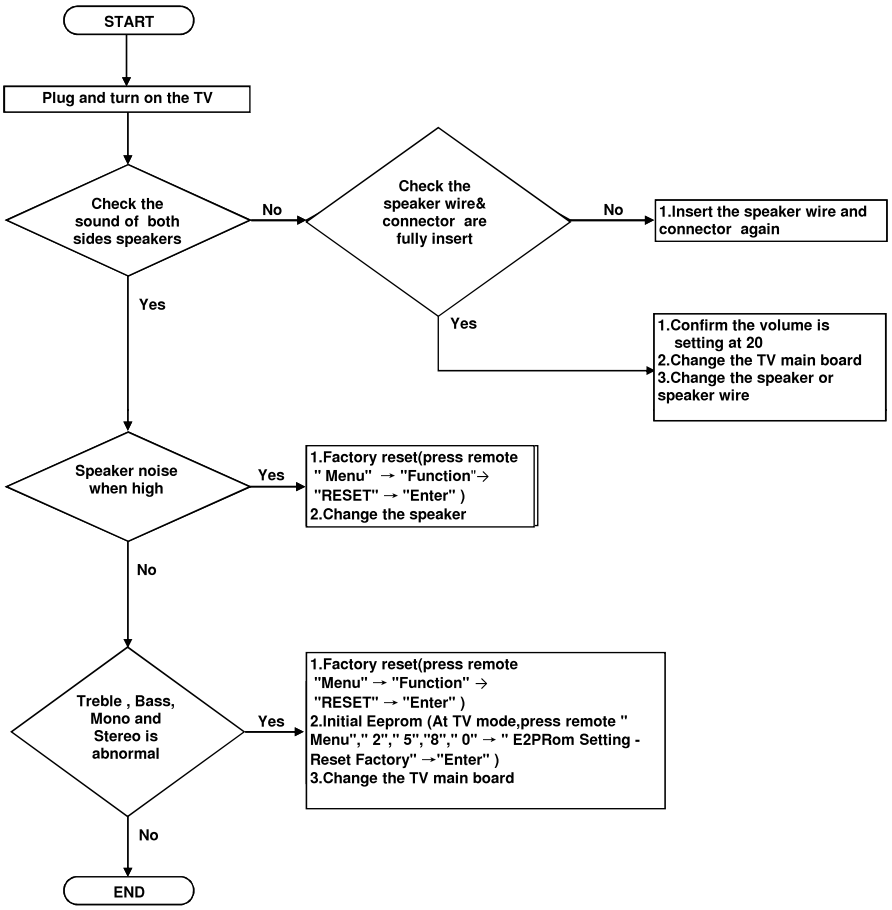
AV,Scart and HDMI mode repair flowchart



PC mode repair flowchart

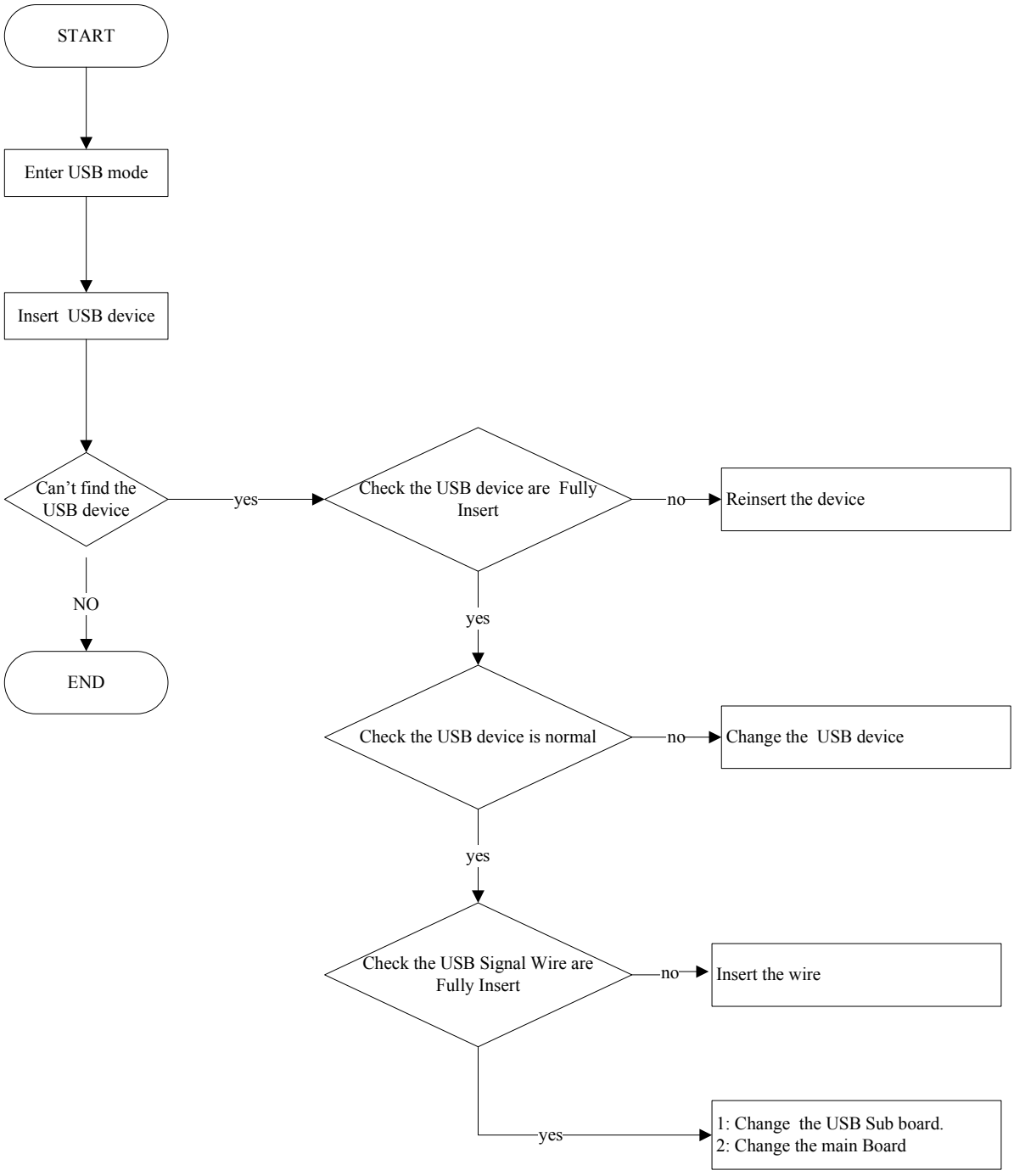


Audio repair flowchart



REMARK : After Default Setting , PC mode must " Auto Color"(press remote " Menu" → "2580" →"Auto ADC"→ "Auto Color" → "Enter")

USB Repair Flowchart



深圳市博源电子有限公司

SHEN ZHEN TOPOW ELECTRONICS CO.,LTD.

承认书

SWITCHING POWER SUPPLY

CUSTOMER: _____

CUSTOMER DWG. /PART NO.: _____

TOPOW PART NO.: TPE040A

DESCRIPTION.: _____ REV.: 1.0

ISSUE DATE: 2010/6/1

APPROVED SIGNATURES /客户确认		
TOPOW ELECTRONICS（SHEN ZHEN）		
DESIGN/拟制	CHECK/审核	APPROVAL/批准

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TEL: 86-755-61181098(88) FAX:86-755-61181099

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2 Isolation 绝缘性能

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3 Safety 安全规格

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4.1 **EMI** （电磁干扰）

4.2 **EMS** （电磁抗扰）

5. Environmental Requirement 环境

5.1 **Temperature** （环境温度）

5.2 **Humidity** （环境湿度）

5.3 **Altitude** （海拔高度）

5.4 **Cooling Method** （冷却方式）

5.5 **Vibration** （振动耐受）

5.6 **Impact** （冲击耐受）

6 Dimension （物理尺寸）

7 Weight （重量）

8 Pin Connection (连接器脚位定义)

9 Power Supply mounting （安装尺寸）

1.1 Table 1 Input Electrical Characteristics Overview（输入特性）

Input voltage range 输入电压	90Vac to 264Vac
Normal voltage range 标称输入	100Vac to 240Vac
Frequency range 频率范围	50Hz/60Hz±5%
Max input ac current 满载输入电流	1Amax at full load condition
Inrush current (cold start) 浪涌电流	30Atyp peak, 120Vac;60Atyp peak, 220Vac
Efficiency(full load) 效率	80%min at 90Vac; 83%min at 220Vac
Harmonic current 谐波电流	Meet GB17625.1-1998/IEC61000-3-2 class D
Leakage Current 泄漏电流	Less Than 0.75mA, 230Vac input
Standby Power Loss 待机功耗	≦0.5W, 264Vac input
Input Fuse 输入保险	T2A/250Vac

1.2 Output Electrical Characteristics Overview（输出特性）

1.2.1 Table 2 Output Voltage ,Current & Regulation.（输出调整率）

Output Voltage 输出电压	Regulation 调整率	Min. current 最小电流	Rated current 额定电流	Peak current 峰值电流
+12V	±5%	0 A	3A	4A

1.2.2 Table 3 DC Output Ripple & Noise. （输出纹波和噪声）

Output Voltage 输出电压	Ripple & Noise (Max.) 最大纹波和噪音
+12V	120mVp-p@25℃； 200mVp-p@-10℃

Note: 1) Measurements shall be made with an oscilloscope with 20MHz bandwidth.
2) Outputs shall be bypassed at the connector with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor to simulate system loading.

注： 1)示波器须设置在20 兆赫兹带宽

2）离电源板大于30CM 处输出电源端并联0.1uF 的陶瓷电容和10uF 的电解电容来模拟负载测试。

1.2.3 Output Transient Response. （输出动态响应）

Table 4. Test condition.测试条件

Voltage regulation 电压变化率	Slew Rate 斜率	Test Condition: Load Changing Scope 测试条件：负载变化度
+12V,±5%;	0.2A/uS	Min. to 50% load and 50% to Max load 最小载至半载；半载至满载
所有输出(All outputs) ±5%	0.2A/uS	Min. load to Max load 最小载至满载

Dynamic response measurements shall be set with a load changing repetition rate of 50Hz to 10kHz.

注：动态测试的负载变化频率范围是50赫兹至10千赫兹。

1.2.4 Table 5 DC Output Hold-Up Time. （输出保持时间）

Output Voltage 输出电压	120Vac input 120Vac输入	220Vac input 220Vac输入
+12V	≥10mS	≥10 mS

Note: All of dc output at full load.

注：所有输出带满载

1.2.5 Table 6 DC Output Overshoot At Turn On & Turn Off.（输出超调）

Output Channel	Output(V) shoot	Over voltage(V)超调电压	
		Turn on 开机	Turn off 关机
+ 12V	+ 12V	5%	5%

Note: All of dc output current from Min. to Max.

注：测试时负载范围：最小到最大

1.2.6 Table 7 DC output voltage rise time（输出上升时间）

Output Voltage 输出电压	120Vac input &Full Load 120Vac输入&全载	220Vac input &Full Load 220Vac输入&全载
+12V	≤100 mS	≤100 mS

Note: The output voltages shall rise from10% to 90% of their output voltage.

注：输出从10%上升到90%的时间

1.4 Protection: （保护功能）

1.4.2 Table 10 DC Output Over current Protection. （输出过流保护）

Output Voltage 输出电压	Over Current 过电流	Comments 注解
+12V	≥4Atyp	Hiccup 打嗝

1.4.3 Table 11 DC Output Short Circuit Protection. （输出短路保护）

Output Voltage 输出电压	Comments 注解
+12V	Hiccup 打嗝

2. Isolation（绝缘性能）

2.1 Table 12 （绝缘阻抗）

Input To Output 输入到输出	DC500V 50MΩmin (at room temperature)

2.2 Table 13 （绝缘耐压）

Input To Output 输入到输出	1500Vac 50Hz 1minute ≤10mA

3. Safety （安全规格）

The power supply shall compliance with the following Criterion:

电源安全性满足下列标准

1) UL60950
2) EN60950
3) GB4943-1995

4. EMC （电磁兼容性）

4.1 EMI （电磁干扰）

The power supply shall compliance with the following Criterion:

电源电磁干扰满足下列规则：

1) Conduction Emission : （传导干扰）

*EN55022, CLASS B
*GB9254, CLASS B
*FCC PART15 CLASS B

2) Radiated Emission : （辐射干扰）

*EN55022, CLASS B
*GB9254, CLASS B
*FCC PART15 CLASS B

4.2 EMS （电磁抗扰）

The power supply shall compliance with the following Criterion:

电源电磁抗扰满足下列规则：

1) ESD （静电抗扰）

*GB17626.2-1998/IEC61000-4-2

2) EFT （脉冲群抗扰）

*GB17626.4-1998/IEC61000-4-4 3KV

3) Surge （雷击浪涌）

*GB17626.5-1998/IEC61000-4-5 1.5KV / 3KV

5. Environmental Requirement （工作环境）

5.1 Temperature （环境温度）

* Operating: -5℃ to +40℃ 运行温度：-5℃ to +40℃.

* Store: -20℃ to +80℃ 储存温度：-20℃ to +80℃.

5.2 Humidity （环境湿度）

* Operating: From 10%to90% relative humidity (non-condensing).
* Store: From 5 to 95% relative humidity (non-condensing).

5.3 Altitude （海拔高度）

* Operating: to10,000 ft.
* Store: to 20,000ft.

5.4 Cooling Method （冷却方式）

* Ventilation cooling . 自然冷却

5.5 Vibration Testing（振动测试）

* 10-55Hz, 49.0m/s²(5G), 3minutes period, 60minutes each along X, Y and Z axis.

5.6 Impact Testing（冲击测试）

* 196.1m/s²(20G),11ms, once each X, Y and Z axis.

6. Dimension （物理尺寸）

* 160mm X 60mm X 12mm (长L *宽W * 高H).

7. Weight （重量）：

8. Pin Connection（连接器脚位定义）

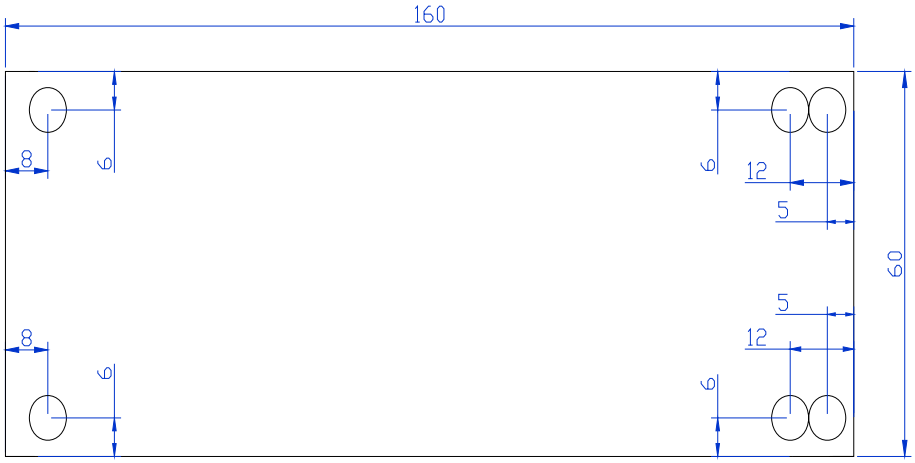
Table 15 Pin-CON2 Connection And Function TYPE : 2.0MM*6PIN

NO.	Pin Connection 连接器脚位	Function 功能
1.2.3	＋12V	＋12V OUTPUT
4.5.6	GND	＋12V RETURN

Table 16 Pin-C0N1 Connection And Function TYPE : 3.96MM*3PIN(中空)

NO.	Pin Connection 连接器脚位	Function 功能
1	AC-L	AC INPUT LINE
2	AC-N	AC INPUT NUTURE

9. Power Supply Mounting （安装尺寸）



深圳市博源电子有限公司

SHEN ZHEN TOPOW ELECTRONICS CO.,LTD.

承认书

SWITCHING POWER SUPPLY

CUSTOMER: _____

CUSTOMER DWG. /PART NO.: _____

TOPOW PART NO.: TPE056

DESCRIPTION.: _____ REV.: 1.0

ISSUE DATE: 2010/6/1

APPROVED SIGNATURES /客户确认		
TOPOW ELECTRONICS (SHEN ZHEN)		
DESIGN/拟制	CHECK/审核	APPROVAL/批准

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TEL: 86-755-61181098(88) FAX:86-755-61181099

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1.2.2 DC Output Ripple & Noise. （输出纹波和噪声）

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1.2.4 DC Output Hold-Up Time. （输出保持时间）

1.2.5 DC Output Overshoot At Turn On & Turn Off.（输出超调）

1.2.6 DC output voltage rise time（输出上升时间）

1.4 Protection: （保护功能）

1..2 DC Output Over current Protection. （输出过流保护）

1..3 DC Output Short Circuit Protection. （输出短路保护）

2 Isolation 绝缘性能

2.1 Isolation Resistance （绝缘阻抗）

2.2 Isolation Withstanding Voltage（绝缘耐压）

3 Safety 安全规格

4 EMC 电磁兼容性

4.1 **EMI** （电磁干扰）

4.2 **EMS** （电磁抗扰）

5. Environmental Requirement 环境

5.1 **Temperature** （环境温度）

5.2 **Humidity** （环境湿度）

5.3 **Altitude** （海拔高度）

5.4 **Cooling Method** （冷却方式）

5.5 **Vibration** （振动耐受）

5.6 **Impact** （冲击耐受）

6 Dimension （物理尺寸）

7 Weight （重量）

8 Pin Connection (连接器脚位定义)

9 Power Supply mounting （安装尺寸）

1.1 Table 1 Input Electrical Characteristics Overview（输入特性）

Input voltage range 输入电压	90Vac to 264Vac
Normal voltage range 标称输入	100Vac to 240Vac
Frequency range 频率范围	50Hz/60Hz±5%
Max input ac current 满载输入电流	1Amax at full load condition
Inrush current (cold start) 浪涌电流	30Atyp peak, 120Vac;60Atyp peak, 220Vac
Efficiency(full load) 效率	80%min at 100Vac; 83%min at 220Vac
Harmonic current 谐波电流	Meet GB17625.1-1998/IEC61000-3-2 class D
Leakage Current 泄漏电流	Less Than 0.75mA, 230Vac input
Standby Power Loss 待机功耗	≦0.5W, 264Vac input
Input Fuse 输入保险	T2A/250Vac

1.2 Output Electrical Characteristics Overview（输出特性）

1.2.1 Table 2 Output Voltage ,Current & Regulation.（输出调整率）

Output Voltage 输出电压	Regulation 调整率	Min. current 最小电流	Rated current 额定电流	Peak current 峰值电流
+12V	±5%	0 A	4A	5A

1.2.2 Table 3 DC Output Ripple & Noise. （输出纹波和噪声）

Output Voltage 输出电压	Ripple & Noise (Max.) 最大纹波和噪音
+12V	120mVp-p@25℃； 200mVp-p@-10℃

Note: 1) Measurements shall be made with an oscilloscope with 20MHz bandwidth.
2) Outputs shall be bypassed at the connector with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor to simulate system loading.

注： 1)示波器须设置在20 兆赫兹带宽

2）离电源板大于30CM 处输出电源端并联0.1uF 的陶瓷电容和10uF 的电解电容来模拟负载测试。

1.2.3 Output Transient Response. （输出动态响应）

Table 4. Test condition.测试条件

Voltage regulation 电压变化率	Slew Rate 斜率	Test Condition: Load Changing Scope 测试条件：负载变化度
+12V,±5%;	0.2A/uS	Min. to 50% load and 50% to Max load 最小载至半载；半载至满载
所有输出(All outputs) ±5%	0.2A/uS	Min. load to Max load 最小载至满载

Dynamic response measurements shall be set with a load changing repetition rate of 50Hz to 10kHz.

注：动态测试的负载变化频率范围是50赫兹至10千赫兹。

1.2.4 Table 5 DC Output Hold-Up Time. （输出保持时间）

Output Voltage 输出电压	120Vac input 120Vac输入	220Vac input 220Vac输入
+12V	≥10mS	≥10 mS

Note: All of dc output at full load.

注：所有输出带满载

1.2.5 Table 6 DC Output Overshoot At Turn On & Turn Off.（输出超调）

Output Channel	Output(V) shoot	Over voltage(V)超调电压	
		Turn on 开机	Turn off 关机
+ 12V	+ 12V	5%	5%

Note: All of dc output current from Min. to Max.

注：测试时负载范围：最小到最大

1.2.6 Table 7 DC output voltage rise time（输出上升时间）

Output Voltage 输出电压	120Vac input &Full Load 120V输入&全载	220Vac input &Full Load 220V输入&全载
+12V	≤100 mS	≤100 mS

Note: The output voltages shall rise from10% to 90% of their output voltage.

注：输出从10%上升到90%的时间

1.4 Protection: （保护功能）

1.4.2 Table 10 DC Output Over current Protection. （输出过流保护）

Output Voltage 输出电压	Over Current 过电流	Comments 注解
+12V	≥5Atyp	Hiccup 打嗝

1.4.3 Table 11 DC Output Short Circuit Protection. （输出短路保护）

Output Voltage 输出电压	Comments 注解
+12V	Hiccup 打嗝

2. Isolation（绝缘性能）

2.1 Table 12 （绝缘阻抗）

Input To Output 输入到输出	DC500V 50MΩmin (at room temperature)

2.2 Table 13 （绝缘耐压）

Input To Output 输入到输出	1500Vac 50Hz 1minute ≤10mA

3. Safety （安全规格）

The power supply shall compliance with the following Criterion:

电源安全性满足下列标准

1) UL60950
2) EN60950
3) GB4943-1995

4. EMC （电磁兼容性）

4.1 EMI （电磁干扰）

The power supply shall compliance with the following Criterion:

电源电磁干扰满足下列规则：

1) Conduction Emission : （传导干扰）

*EN55022, CLASS B
*GB9254, CLASS B
*FCC PART15 CLASS B

2) Radiated Emission : （辐射干扰）

*EN55022, CLASS B
*GB9254, CLASS B
*FCC PART15 CLASS B

4.2 EMS （电磁抗扰）

The power supply shall compliance with the following Criterion:

电源电磁抗扰满足下列规则：

1) ESD （静电抗扰）

*GB17626.2-1998/IEC61000-4-2

2) EFT （脉冲群抗扰）

*GB17626.4-1998/IEC61000-4-4 3KV

3) Surge （雷击浪涌）

*GB17626.5-1998/IEC61000-4-5 1.5KV / 3KV

5. Environmental Requirement （工作环境）

5.1 Temperature （环境温度）

* Operating: -5℃ to +40℃ 运行温度：-5℃ to +40℃.

* Store: -20℃ to +80℃ 储存温度：-20℃ to +80℃.

5.2 Humidity （环境湿度）

* Operating: From 10%to90% relative humidity (non-condensing).
* Store: From 5 to 95% relative humidity (non-condensing).

5.3 Altitude （海拔高度）

* Operating: to10,000 ft.
* Store: to 20,000ft.

5.4 Cooling Method （冷却方式）

* Ventilation cooling . 自然冷却

5.5 Vibration Testing（振动测试）

* 10-55Hz, 49.0m/s²(5G), 3minutes period, 60minutes each along X, Y and Z axis.

5.6 Impact Testing（冲击测试）

* 196.1m/s²(20G),11ms, once each X, Y and Z axis.

6. Dimension （物理尺寸）

* 165mm X 65mm X 12mm (长L *宽W * 高H).

7. Weight （重量）：

8. Pin Connection（连接器脚位定义）

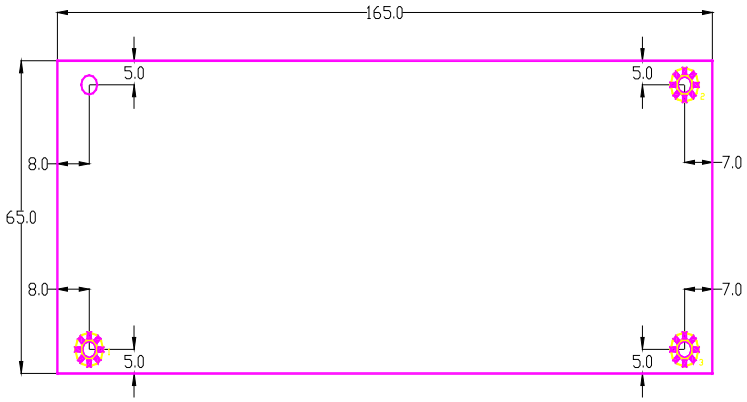
Table 15 Pin-CON2 Connection And Function TYPE : 2.54MM*6PIN

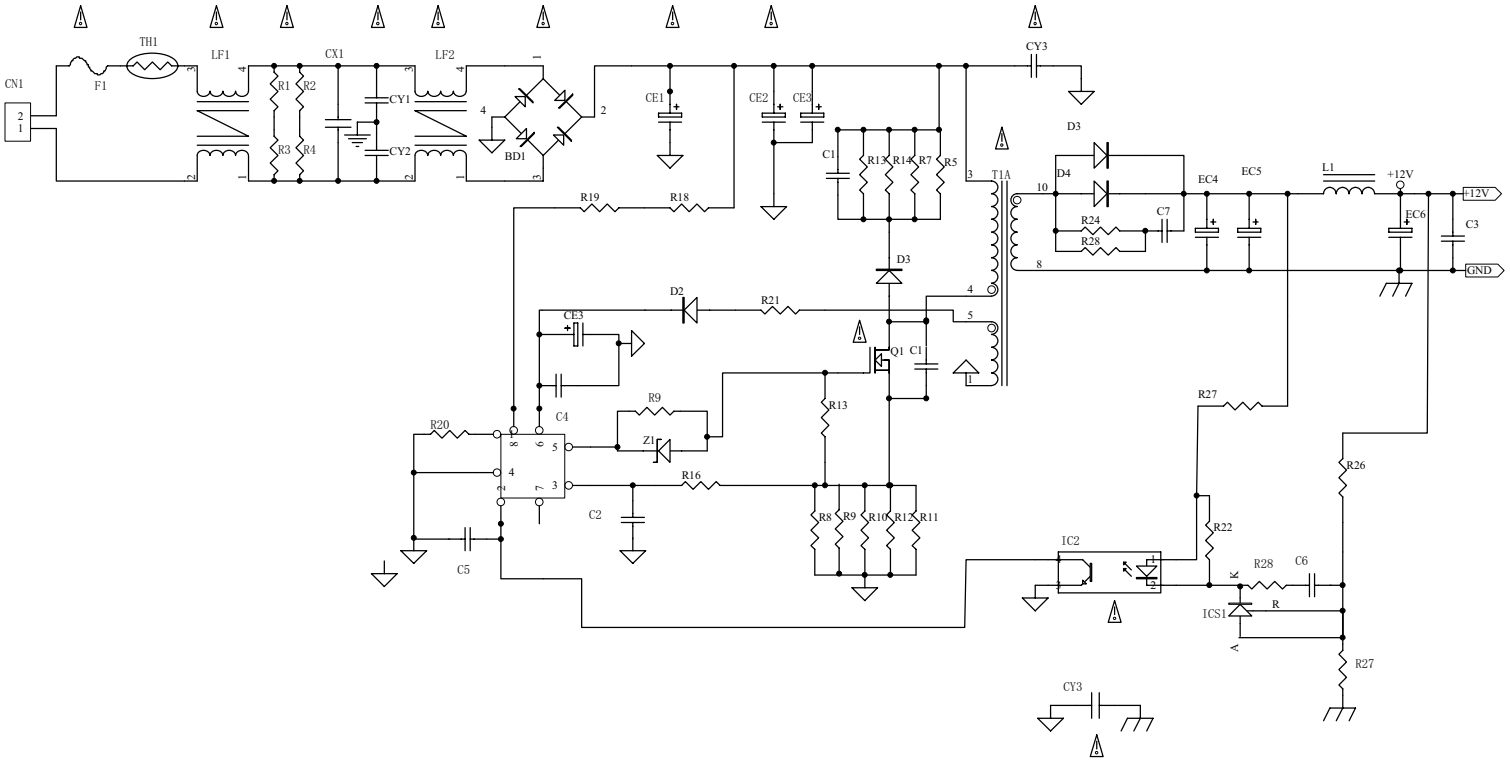
NO.	Pin Connection 连接器脚位	Function 功能
1.2.3	＋12V	＋12V OUTPUT
4.5.6	GND	＋12V RETURN

Table 16 Pin-C0N1 Connection And Function TYPE : 3.96MM*3PIN(中空)

NO.	Pin Connection 连接器脚位	Function 功能
1	AC-L	AC INPUT LINE
2	AC-N	AC INPUT NUTURE

9. Power Supply Mounting （安装尺寸）





Title		
Size A3	Number	Revision
Date: 19-Jan-2011		Sheet of
File: C:\Documents and Settings\Administrator\桌面\[illegible] SCH.DDB		

APPENDIX C : BACKLIGHT BOARD SPECIFICATION

产品规格书

SPECIFICATION SHEET

编号：_____

客户名称 Customer	中山市芯睿电子科技有限公司
料号 Pare Care	
品名 Description	LED Driver(LED 背光板)
型号 Model	LDA15-45V160H V1.0
匹配屏型号	M185B3-LA1 &V185B1-LE1 V2.1
日期 DATE	2011-03-31
客户确认签章 Approved by Customer	

批准 Approve	审核 Check	拟制 Prepare

珠海沛程电子有限公司

电话：0756-3818829　3820260　传真：0756-3818826

网址：http://www.paict.cn　E-mail: jason@penic.cn　penic888@163.com

地址：珠海市吉大九洲大道东 1200 号 6 楼

联系人：刘先生 18666113200

PACIT Electronic technology co., ltd

Preliminary LED Driver Specification

18.5” LED driver

PROJECT NO.: LDA15-45V160H

VER: 1.0

2011.03.31

Prepared by: _____

Reviewed by: _____

Approved by: _____

Record of Revision

Revision No	Date	Page	Old description	New Description	Remark
1.0	2011-03-31	All	First Edition for Customer		

1. General description

Scope:

This **LDA15-45V160H** sepic LED driver for 18.5" of LCD backlight system.

2. Applications

18.5" LED Backlight LCD panels For M185B3-LA1 &V185B1-LE1 V2.1

3. Absolute maximum rating

- Input supply voltage .: 11~13 V
- Input current . :0.89A(MAX)
- Input power : 9.82W
- Output current : 25mA x 8CH
- Output power :8.84W
- Brightness adjusted voltage : 0V(MAX)~5.0V(MIN)
- Input signal voltage :0V/OFF 5.0V/ON (ON/OFF/control)
- Ambient operating temperature :0℃~40℃
- Storage temperature :-20℃~80℃
- Operating & storage humidify: 10%~85%
- Over voltage protect(OVP)
- High efficency (TYP:90%)

4.Electrical Requirements

This section defines the electrical requirements for the LED driver

4.1Input Characteristics

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Input voltage	VIN	11	12.0	13	V	
Input current	Iin	-	0.60	0.89	A	Vadj=0V RL= LED Panel
Input power	Pin	-	7.16	9.82	W	Vadj=0V RL= LED Panel
Input voltage	Von/off	-	0	1.0	V	Off State
		2.5	5.0	5.5		On State
Bright adjust	Vadj	5	-	0	V	
Efficiency	η	-	90	-	%	Vadj=0V RL= LED Panel

4.2 Output Characteristics:

4.2.1 DC output CN5:

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Output current	Io	-	20	25	mA	Vadj=0V RL= LED Panel
		1	-	3		Vadj=5V RL= LED Panel
Output voltage	Vo	-	40.3	44.2	V	Von=5V RL= LED Panel
Out power	Puot	-	6.448	8.84	Watt	Von=5V RL=LED Panel
Over voltage	Ovp	52	53	54		LATCH

5.0 Connector:

5.1 DC input connector

5.1.1Connector type (CN1): S6BPHA (6P 2.0mm)

Pin number	Output Name
1,2	Input voltage
3	On/off
4	Vadj
5,6	GND

5.2 Output connector

5.2.1、Connector type（CN5）: 6712K-F12N-02R (ENTERY CO.,LTD)

Pin number	Output Name
1	IRLED(Current Out)
2	IRLED(Current Out)
3	IRLED(Current Out)
4	IRLED(Current Out)
5	NC
6	VLED(Voltage in)
7	VLED(Voltage in)
8	NC
9	IRLED(Current Out)
10	IRLED(Current Out)
11	IRLED(Current Out)
12	IRLED(Current Out)

5.2.2Connector type (CN1): S2BPHA (2P 2.0mm)

Pin number	Output Name
1	VLED(Voltage in)
2	IRLED(Current Out)

6.0 Operating And Storage Temperature And Humidity.

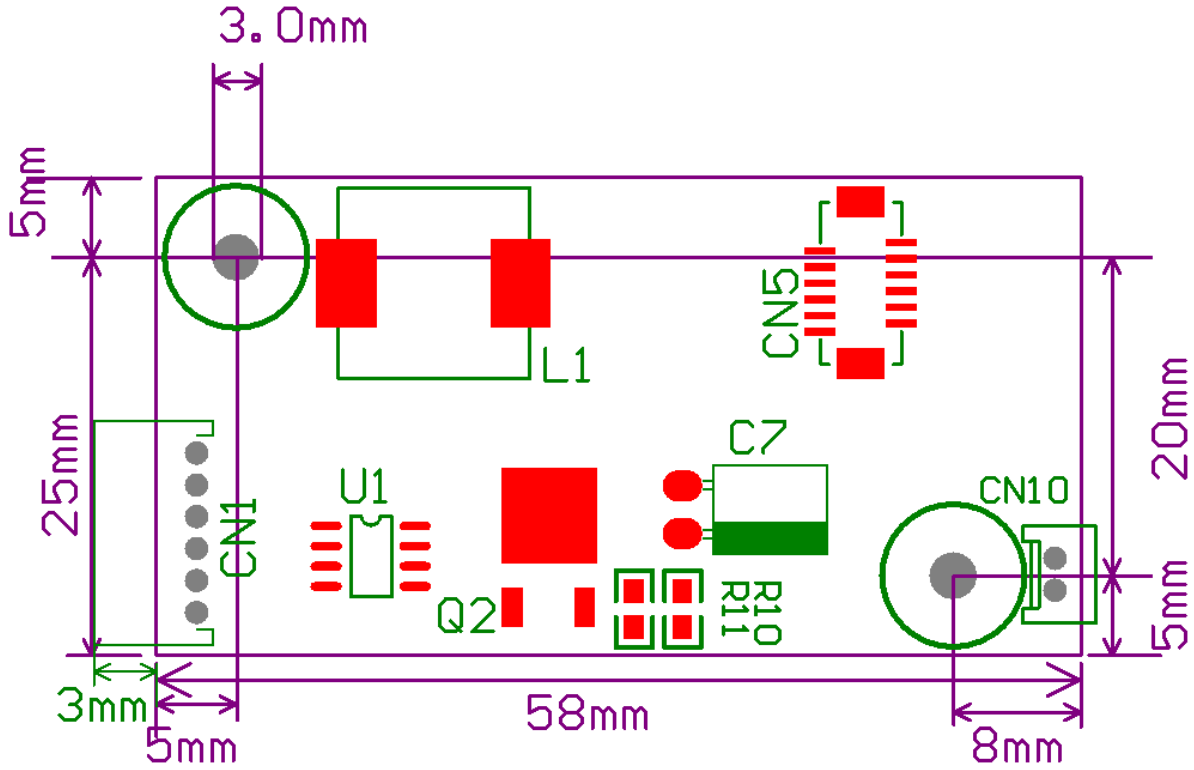
Operating Temperature Range:0 ~ 40℃

Operating Humidity: 10% ~ 85% RH, non-condensing.

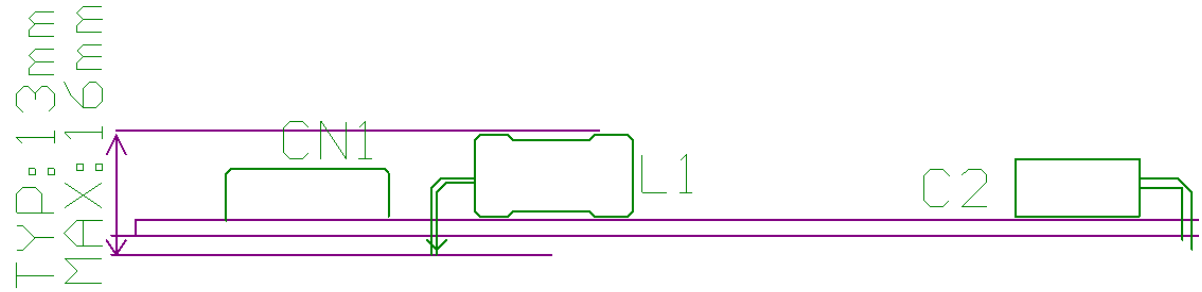
The LED driver shall be capable of operating within these specifications following storage for up to two years:

Storage Temperature Range: -20 ~ 80℃

7.0 SHAPES AND DIMENSIONS



由于电源输入座 CN1 6P2.0 采用弯针卧式的，所以整个座子会凸出板边 3 个毫米
CN10 在板边其座子体积也凸出板边 1 个毫米。



H

PACIT Electronic technology co., ltd

产品规格书

SPECIFICATION SHEET

编号：_____

客户名称 Customer	中山市芯睿电子科技有限公司
料号 Pare Care	
品名 Description	LED Driver(LED 背光板)
型号 Model	LDA15-63V240K V1.0
匹配屏型号	LM230WF5-TLD1
日期 DATE	2011-03-31
客户确认签章 Approved by Customer	

批准 Approve	审核 Check	拟制 Prepare

珠海沛程电子有限公司

电话：0756-3818829　3820260　传真：0756-3818826

网址：http://www.paict.cn　E-mail: jason@penic.cn　penic888@163.com

地址：珠海市吉大九洲大道东 1200 号 6 楼

联系人：刘先生 18666113200

PACIT Electronic technology co., ltd

Preliminary LED Driver Specification

23” LED driver

PROJECT NO.: LDA15-63V240K

VER: 1.0

2011.03.31

Prepared by: _____

Reviewed by: _____

Approved by: _____

Record of Revision

Revision No	Date	Page	Old description	New Description	Remark
1.0	2011-03-31	All	First Edition for Customer		

1. General description

Scope:

This **LDA15-63V240K** sepic LED driver for 23" of LCD backlight system.

2. Applications

23" LED Backlight LCD panels For LG LM230WF5-TLD1

3. Absolute maximum rating

- Input supply voltage .: 11~13V
- Input current . : 1.48A(MAX @11V)
- Input power : 16.32W
- Output current : 255mA MAX
- Output power : 14.69W
- Brightness adjusted voltage : 0V(MAX)~5.0V(MIN)
- Input signal voltage :0V/OFF 5.0V/ON (ON/OFF/control)
- Ambient operating temperature :0℃~40℃
- Storage temperature :-20℃~80℃
- Operating & storage humidify: 10%~85%
- Over voltage protect(OVP)
- High efficency (TYP:90%)

4.Electrical Requirements

This section defines the electrical requirements for the LED driver

4.1Input Characteristics

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Input voltage	VIN	11	12.0	13.0	V	
Input current	Iin	-	1.28	1.48	A	Vadj=0VRL= LM230WF5-LA1 Panel
Input power	Pin	-	15.35	16.32	W	Vadj=0VRL= LM230WF5-LA1 Panel
Input voltage	Von/off	-	0	1.0	V	Off State
		2.5	5.0	5.5		On State
Bright adjust	Vadj	5	-	0	V	0V MAX
Efficiency	η	-	90	-	%	Vadj=0VRL= LM230WF5-LA1 Panel

4.2 Output Characteristics:

4.2.1 DC output CN9:

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Output current	IRLED	225	240	255	mA	Vadj=0VRL= LM230WF5-LA1 Panel
		1	-	30		Vadj=0VRL= LM230WF5-LA1 Panel
Output voltage	VLB	54	57.6	61.2	V	Vadj=0VRL= LM230WF5-LA1 Panel
Output power	PO	12.96	13.82	14.69	W	Vadj=0VRL= LM230WF5-LA1 Panel
Over voltage	OVP	52	53	54	V	LATCH

5.0 Connector:

5.1 DC input connector

5.1.1Connector type (CN1): S6BPHA (6P 2.0mm)

Pin number	Output Name
1,2	Input voltage
3	On/off
4	Vadj
5,6	GND

5.2 Output connector

5.2.1、Connector type（CN9）: 6P1.0 FFC 立式连接座 (ENTERY CO.,LTD)

Pin number	Output Name
1	IRLED(Current Out)
2	IRLED(Current Out)
3	VLED(Voltage in)
4	VLED(Voltage in)
5	IRLED(Current Out)
6	IRLED(Current Out)

5.2.2Connector type (CN1): S2BPHA (2P 2.0mm)

Pin number	Output Name
1	VLED(Voltage in)
2	IRLED(Current Out)

6.0 Operating And Storage Temperature And Humidity.

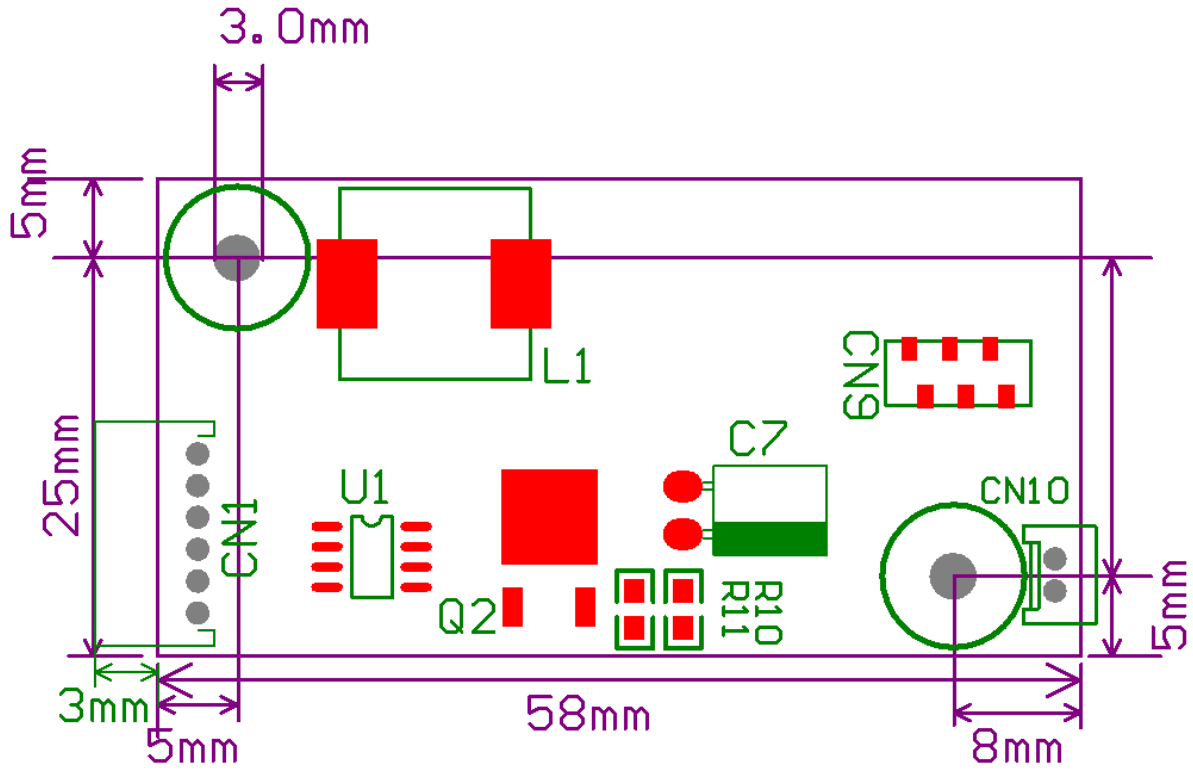
Operating Temperature Range:0 ~ 40℃

Operating Humidity: 10% ~ 85% RH, non-condensing.

The LED driver shall be capable of operating within these specifications following storage for up to two years:

Storage Temperature Range: -20 ~ 80℃

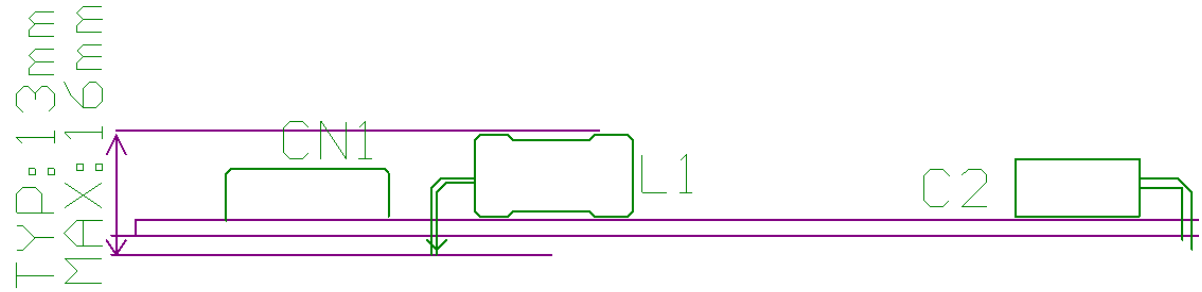
7.0 SHAPES AND DIMENSIONS



●由于电源输入座 CN1 6P2.0 采用弯针卧式的，所以整个座子会凸出板边 3 个毫米。

●CN10 在板边其座子体积也凸出板边 1 个毫米。

●Q2 TO-252 封装的 MOS 管，常规是使用 2504，GTM；12N10，TO-252，100V12A CEU 可代用。



PACIT Electronic technology co., ltd

产品规格书

SPECIFICATION SHEET

编号：_____

客户名称 Customer	中山市芯睿电子科技有限公司
料号 Pare Care	
品名 Description	LED Driver(LED 背光板)
型号 Model	LDA15-45V240H V1.0
匹配屏型号	M215H3-LA1 V236H3-DE01 K1.0
日期 DATE	2011-03-31
客户确认签章 Approved by Customer	

批准 Approve	审核 Check	拟制 Prepare

珠海沛程电子有限公司

电话：0756-3818829 3820260 传真：0756-3818826

网址：http://www.paict.cn E-mail: jason@penic.cn penic888@163.com

地址：珠海市吉大九洲大道东 1200 号 6 楼

联系人：刘先生 18666113200

PACIT Electronic technology co., ltd

Preliminary LED Driver Specification

21.5” LED driver

PROJECT NO.: LDA15-45V240H

VER: 1.0

2011.03.31

Prepared by: _____

Reviewed by: _____

Approved by: _____

Record of Revision

Revision No	Date	Page	Old description	New Description	Remark
1.0	2011-03-31	All	First Edition for Customer		

1. General description

Scope:

This **LDA15-45V240H** sepic LED driver for 21.5~24" of LCD backlight system.

2. Applications

21.5" LED Backlight LCD panels For CMO M215H3-LA1 V236H1-DE01 K1.0

3. Absolute maximum rating

- Input supply voltage .: 11~13V
- Input current . : 1.18A(MAX @11V)
- Input power : 12.95W
- Output current : 264mA MAX
- Output power : 11.66W
- Brightness adjusted voltage : 0V(MAX)~5.0V(MIN)
- Input signal voltage :0V/OFF 5.0V/ON (ON/OFF/control)
- Ambient operating temperature :0℃~40℃
- Storage temperature :-20℃~80℃
- Operating & storage humidify: 10%~85%
- Over voltage protect(OVP)
- High efficency (TYP:90%)

4.Electrical Requirements

This section defines the electrical requirements for the LED driver

4.1Input Characteristics

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Input voltage	VIN	11	12.0	13.0	V	
Input current	Iin	-	0.95	1.18	A	Vadj=0V RL= M215H3-LA1 Panel
Input power	Pin	-	11.44	12.95	W	Vadj=0V RL= M215H3-LA1 Panel
Input voltage	Von/off	-	0	1.0	V	Off State
		2.5	5.0	5.5		On State
Bright adjust	Vadj	5	-	0	V	0V MAX
Efficiency	η	-	90	-	%	Vadj=0V RL= M236H3-LA2 Panel

4.2 Output Characteristics:

4.2.1 DC output CN5:

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Output current	IRLED	216	240	264	mA	Vadj=0V RL= M215H3-LA1
		0	-	20		Vadj=5V RL= M215H3-LA1
Output voltage	VLB	23.1	42.9	44.2	V	Vadj=0V RL= M215H3-LA1 Panel
Output power	PO	-	10.3	11.66	W	Vadj=0V RL= M215H3-LA1 Panel
Over voltage	OVP	52	53	54	V	LATCH

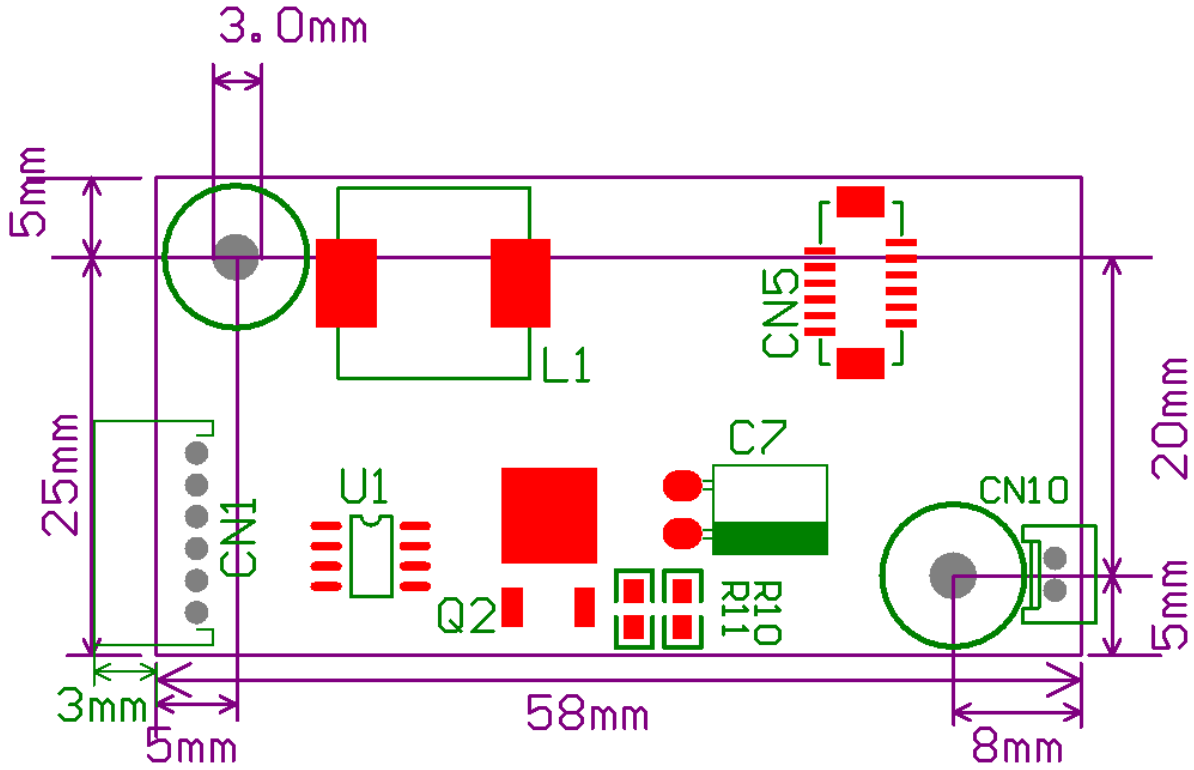
5.0 Connector:

5.1 DC input connector

5.1.1Connector type (CN1): S6BPHA (6P 2.0mm)

Pin number	Output Name
1,2	Input voltage
3	On/off
4	Vadj
5,6	GND

7.0 SHAPES AND DIMENSIONS



由于电源输入座 CN1 6P2.0 采用弯针卧式的，所以整个座子会凸出板边 3 个毫米
CN10 在板边其座子体积也凸出板边 1 个毫米。