

# **AKAI**

# **SERVICE MANUAL**

---

---

**Model:**  
**LCT2765TD**

Safety Instructions.....	1~2
Production specification.....	3~11
DVD Player's Spec. For LCD-TV Comb.....	12
LCD COMBO Connection.....	13
Panel Inverter Power.....	14~29
Basic Operations & Circuit Description.....	30
PCB Function.....	31
PCB Failure Analysis.....	32
Basic Operation of LCD-TV.....	33~34
IC Descriptions.....	35~45
LCD Panel specification.....	46~98
Disassembly.....	99
Exploded View Diagram.....	100
Spare parts list.....	101~102
V-Chip Password.....	103
Software Upgrade.....	103~104

---

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.

## I. Safety Instructions



**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN



**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.**



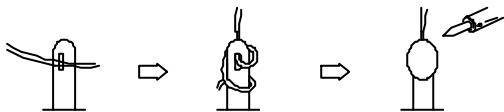
The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



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.

### PRECAUTIONS DURING SERVICING

1. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements. Examples: RF converters, tuner units, antenna selection switches, RF cables, noise-blocking capacitors, noise-blocking filters, etc.
2. Use specified internal Wiring. Note especially:
  - 1) Wires covered with PVC tubing
  - 2) Double insulated wires
  - 3) High voltage leads
3. Use specified insulating materials for hazardous live parts. Note especially:
  - 1) Insulating Tape
  - 2) PVC tubing
  - 3) Spacers (insulating barriers)
  - 4) Insulating sheets for transistors
  - 5) Plastic screws for fixing micro switches
4. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



5. Make sure that wires do not contact heat generating parts (heat sinks, oxide metal film resistors, fusible resistors, etc.)
6. Check if replaced wires do not contact sharply edged or pointed parts.
7. Make sure that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

### MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can.  
Please leave them at an appropriate depot.



### WARNING:

Before servicing this TV receiver, read the X-RAY RADIATION PRECAUTION, SAFETY INSTRUCTION and PRODUCT SAFETY NOTICE.

### X-RAY RADIATION PRECAUTION

1. Excessively high can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not exceed the specified limit. The normal value of the high voltage of this TV receiver is 27 KV at zero beam current (minimum brightness). The high voltage must not exceed 30 KV under any circumstances. Each time when a receiver requires servicing, the high voltage should be checked. The reading of the high voltage is recommended to be recorded as a part of the service record, It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type as specified in the parts list.
3. Some parts in this TV receiver have special safety related characteristics for X-RADIATION protection. For continued safety, the parts replacement should be undertaken only after referring the PRODUCT SAFETY NOTICE.

### SAFETY INSTRUCTION

The service should not be attempted by anyone unfamiliar with the necessary instructions on this TV receiver. The following are the necessary instructions to be observed before servicing.

1. An isolation transformer should be connected in the power line between the receiver and the AC line when a service is performed on the primary of the converter transformer of the set.
2. Comply with all caution and safety related provided on the back of the cabinet, inside the cabinet, on the chassis or picture tube.
3. To avoid a shock hazard, always discharge the picture tube's anode to the chassis ground before removing the anode cap.

4. Completely discharge the high potential voltage of the picture tube before handling. The picture tube is a vacuum and if broken, the glass will explode.
5. When replacing a MAIN PCB in the cabinet, always be certain that all protective are installed properly such as control knobs, adjustment covers or shields, barriers, isolation resistor networks etc.
6. When servicing is required, observe the original lead dressing. Extra precaution should be given to assure correct lead dressing in the high voltage area.
7. Keep wires away from high voltage or high temperature components.
8. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlay, control shafts, etc., to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly to the AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5K ohms volt sensitivity or more in the following manner.

Connect a 1.5K ohm 10 watt resistor paralleled by a 0.15 $\mu$ F AC type capacitor, between a good earth ground (water pipe, conductor etc.) and the exposed metallic parts, one at a time.

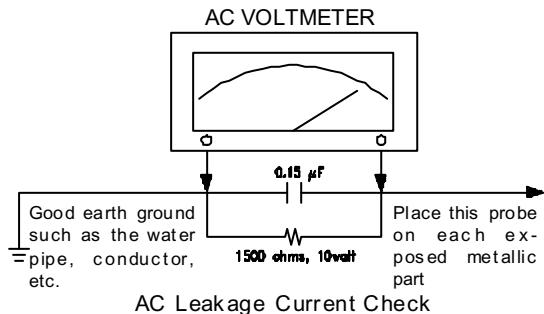
Measure the AC voltage across the combination of the 1.5K ohm resistor and 0.15 uF capacitor. Reverse the AC plug at the AC outlet and repeat the AC voltage measurements for each exposed metallic part.

The measured voltage must not exceed 0.3V RMS. This corresponds to 0.5mA AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

The resistance measurement should be done between accessible exposed metal parts and power cord plug prongs with the power switch "ON". The resistance should be more than 6M ohms.

## PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this TV receiver have special safety-related characteristics. These characteristics are often passed unnoticed by visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for a higher voltage, wattage, etc. The replacement parts which have these special safety characteristics are identified by  $\Delta$  marks on the schematic diagram and on the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, X-RAY RADIATION or other hazards.



# Product Specification

<b>1.1 VIDEO SECTION</b>	<b>CHIMEI V270B1-L01 MK8205 USA</b>
Display size	27"/16:9
Display Resolution	1366 X 768
Pixel Pitch	0.1460mm×0.4365mm
Peak Brightness	550(nits)
Contract Ratio	1000:1, Typical (1/100 White Window, Dark Room)
View Angle	Hor. And Vert. 170 degree
Color Deeps	16.7M Color (R / G / B each 256 Scales)
PC Resolution Supporting	VGA, SVGA, XGA, WXGA
HDTV Compatible	480i / 480p / 720p / 1080i
Progressive Scanning	Yes
Film Mode Pull Down	Yes
“GAMMA” Correction	Yes
Color Temperature Control	Yes
Comb Filter	Yes
Second De-interlace for Sub picture	No
Wide Mode	Normal, Full, Wide 1, Wide 2, Wide 3, 4:3, No scale and Panoramic.
TV System	NTSC M
Dual Tuner System	No
AV Input Color System	PAL / NTSC
PIP	Basic mode (video on graphic mode, resolution 1024×768)
<b>1.2 AUDIO SECTION</b>	
Audio Output Power	6W×2 Max.(8 ohm)
Sound Effect	Spatial Effect and Surround
Tone Control	Yes
<b>1.3 Input Terminals</b>	D-Sub 15 Pin Type(Analog-RGB Input ) ×1 D-Sub 9 Pin (RS-232) RF (F-type Input) ×1 Component Video-YPbPr ×1 RCA Terminals S-Video Input (Mini Din 4Pin) ×1 Video Input RCA Terminals Stereo Audio Input for YPbPr x 1 (3.5mm Phone Type) x 1
<b>1.4 Output Terminals</b>	Audio Output (RCA ; L&R Type) ×1
<b>1.5 Others</b>	
Closed Caption / V-Chip	Yes
Teletext	No
OSD Language	English, Français, Español

# KAWA ELECTRONIC RESEARCH & DEVELOPMENT CENTRE

Reference No : LCT2765TD

Stereo Decode	MTS with SAP
Power Rating	AC 120 V, 60Hz
Power Consumption	200W

## 1.6 Support the Signal Mode

This machine can support the different from VGA signal mode in 7 kinds

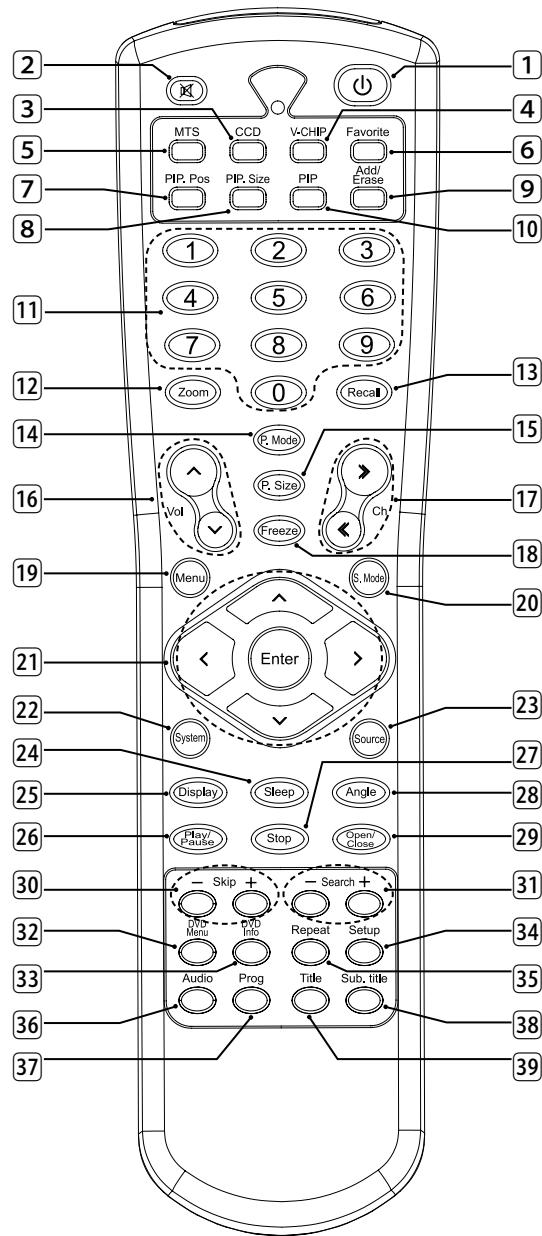
No	Resolution	Horizontal Frequency(Hz)	Vertical Frequency(KHz)	Dot Clock Frequency(MHz)
1)	640×480	31.50	60.00	25.18
2)	640×480	37.86	72.81	31.50
3)	800×600	35.16	56.25	36.00
4)	800×600	37.90	60.32	40.00
5)	800×600	46.90	75.00	49.50
6)	800×600	48.08	72.19	50.00
7)	1024×768	48.40	60.00	65.00

## 1.7 HDTV Mode (YPbPr)

No	Resolution	Horizontal Frequency(KHz)	Vertical Frequency(Hz)	Dot Clock Frequency(MHz)
1)	480i	15.734	59.94	13.50
2)	480p(720×480)	31.468	59.94	27.00
3)	720p(1280×720)	45.00	60.00	74.25
4)	1080i(1920×1080)	33.75	60.00	74.25

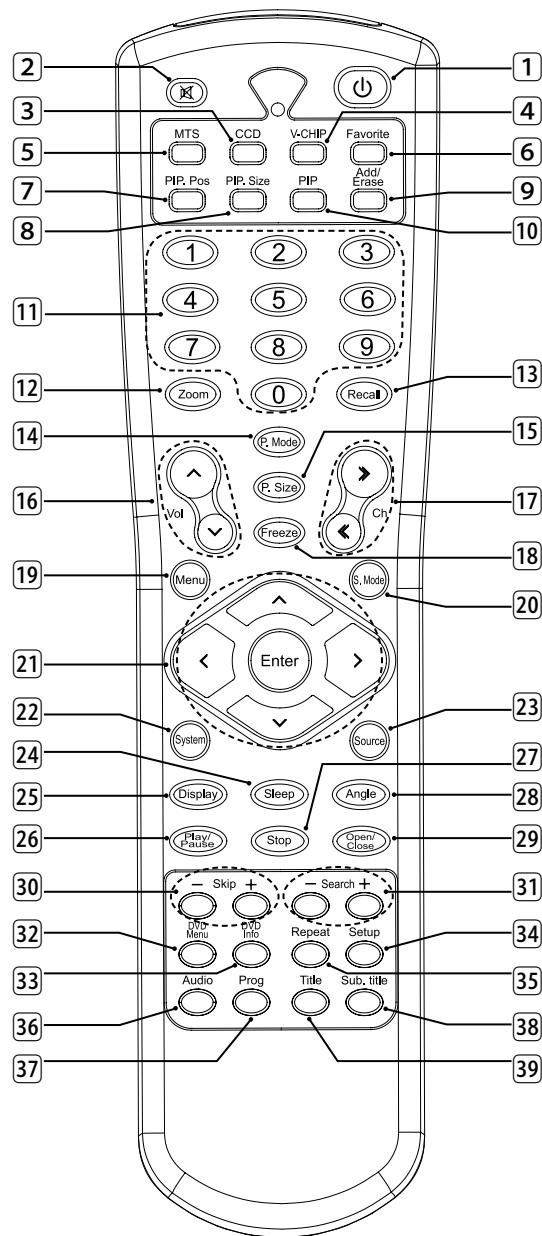
## 1.8 Remote Control

- ① **Power ( ⌂ )**: Press to turn on and off.
- ② **Mute ( ✘ )**: Press to mute the sound. Press again or press < , > to restore the sound.
- ③ **CCD**: Press to select the Closed Caption mode.
- ④ **V-CHIP**: Press to select the child protect mode.
- ⑤ **MTS**: Press repeatedly to cycle through the Multi-channel TV sound (MTS) options: Mono, Stereo and SAP (Second Audio Program).
- ⑥ **Favorite**: Press repeatedly to cycle through the favorite channel list.
- ⑦ **PIP. Pos**: Press to change the PIP window position under PIP mode.
- ⑧ **PIP. Size**: Press to cycle through the PIP size, such as Large, Medium, Small.
- ⑨ **Add/Erase**: Press to add or delete favorite channel.
- ⑩ **PIP**: Press to cycles through the different POP or PIP modes, such as Basic PIP, LR POP, and exit.
- ⑪ **0~9 Number Buttons**: In TV mode, press 0~9 to select a channel; the channel changes after 2 seconds. In DVD mode, press 0~9 to input the items.
- ⑫ **Zoom**: Press to zoom the image max from 8 times to minimally 1/8 times.
- ⑬ **Recall**: Press to return to previous channel.
- ⑭ **P.Mode**: Press repeatedly to cycle through the picture mode: Hi-Bright, User, Dark, Normal and Vivid.
- ⑮ **P.Size**: Press repeatedly to cycle through the picture size that best corresponds your viewing requirements: Normal, Full, Wide1, Wide2, Wide3, 4:3, No scale, Panoramic and Normal.  
When in POP mode, it can select picture size is: Full, 4:3 and Normal.
- ⑯ **Vol ▲ / ▼**: Press to adjust the volume.
- ⑰ **Ch >/<**: Press to scan through channels. To scan quickly through channels, press and hold down either channels.
- ⑱ **Freeze**: Press to freeze the picture, press again to restore the picture.



(Continued on next page)

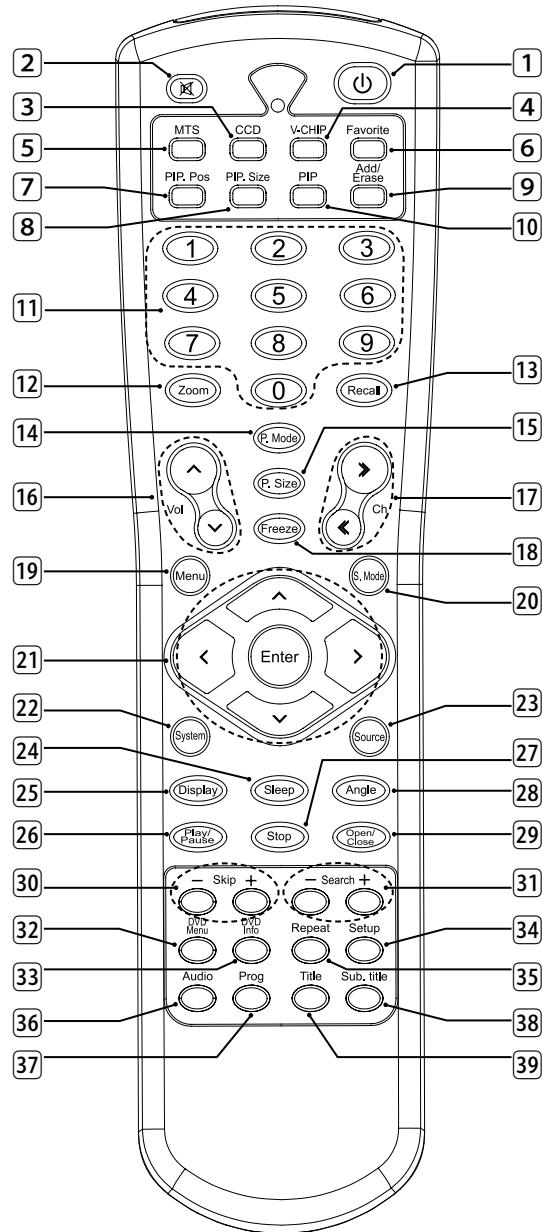
- [19] **Menu:** Press to enter into the on-screen setup menu, press again to exit.
- [20] **S.Mode:** Press repeatedly to cycle through the sound mode: Normal, News, Cinema, Flat and User.
- [21] <, ^, V, >, **Enter:** Press <, ^, V, > to move the on-screen cursor. To select an item, press ENTER to confirm. And it can also press ^ or V to scan through channels, press < or > to adjust the volume excepting DVD mode.
- [22] **System:** Press repeatedly to cycle through the system options: AUTO and NTSC3.58.  
(This button is inactive for TV, VGA, COMPONENT input source.)
- [23] **Source:** Press to select the signal source, such as TV, AV, S-Video, Component, DVD or VGA.
- [24] **Sleep:** Press repeatedly until it displays the time in minutes (5 Min, 10 Min, 15 Min, 30 Min, 60 Min, 90 Min, 120 Min and, OFF) that you want the TV to remain on before shutting off. To cancel sleep time, press **Sleep** button repeatedly until sleep OFF appears.
- [25] **Display:** Press to display the channel information and it disappear after 3 seconds.
- [26] **Play/Pause:** Press to play or pause the DVD disc.
- [27] **Stop:** Press to stop playing the disc.
- [28] **Angle:** Press to select desired viewing angle of the Video (disc feature).
- [29] **Open/Close:** Press to open or close the disc tray.
- [30] **Skip+/-:** Press to skip the forward or backward.
- [31] **Search+/- :** Press to search the forward or backward.
- [32] **DVD Menu:** Press to return DVD disc menu.



*(Continued on next page)*

- 33 **DVD Info:** Press to display DVD information.
- 34 **Setup:** Press to display a menu. Press it again to exit menu.
- 35 **Repeat:** Press repeatedly to cycle through the options: CHAPTER, TITLE, ALL and nothing.
- 36 **Audio:** Press to select desired audio track.
- 37 **Prog:** Press to display the program menu. Press it again to exit.
- 38 **Sub. title:** Press to select desired DVD subtitle.
- 39 **Title:** Press to display to DVD disc title.

*Note: Press **Ch >/<** on the remote control can turn on TV set from last preview mode.*



# KAWA ELECTRONIC RESEARCH & DEVELOPMENT CENTRE

Reference No : LCT2765TD

## Technical Data

<b>1. Power supply</b>	<b>TV</b>	<b>AC 120V, 60Hz</b>
	<b>Remote control</b>	<b>Battery 3V (UM-3/R6P/AA×2)</b>
<b>2. TV system</b>	<b>RF input</b>	<b>NTSC M</b>
	<b>Video input</b>	<b>PAL/NTSC 3.58/NTSC 4.43</b>
<b>3. Receiving channels</b>	<b>TV</b>	<b>VHF-L : 2~6CH VHF-H : 7~13CH UHF : 14~69CH</b>
	<b>CATV</b>	<b>1~125CH</b>
<b>4. Intermediate frequencies</b>	<b>Picture</b>	<b>45.75MHz</b>
<b>5. Scanning</b>	<b>Horizontal (Hz)</b>	<b>15625/15750</b>
	<b>Vertical (Hz)</b>	<b>50/60</b>
<b>6. AC plug</b>		<b>UL Plug</b>
<b>7. Panel</b>		<b>V270B1-L01</b>
<b>8. Speaker</b>	<b>Internal</b>	<b>8 ohm 6W (max) ×2</b>
<b>9. Operating temperature</b>	Fulfill all specifications	<b>15 C ~ 30 C</b>
Accept	picture/sound reproduction	<b>5 C ~ 33 C</b>
<b>10. Operating relative humidity</b>	Fulfill all specifications	<b>45% ~ 75%</b>
Accept	picture/sound reproduction	<b>20% ~ 80%</b>
<b>11. Electrical &amp; optical specification</b>		<b>See the attachment 1.</b>
<b>12. Circuit diagram drawing No.</b>		<b>LCT2765TD</b>
<b>13. Cabinet</b>		
<b>14. Cabinet color</b>		
<b>15. Packing</b>		<b>1 set per</b>
<b>16. Container stuffing method</b>		<b>RD/05/P/LC26HAB/CSI/02 REV: 01</b>
<b>17. Dimension (mm) (No packing)</b>	<b>LCD-TV</b>	<b>698(W) x 513(H) x 99(D)mm (w/o Stand)</b>
		<b>698(W) x 554(H) x 250(D)mm (with Stand)</b>
	<b>Remote control unit</b>	<b>183(L) x 53(W) x 28(T)mm</b>
<b>18. Net weight</b>	<b>LCD-TV</b>	<b>13.9Kg (with Stand) approx.</b>
	<b>Remote control</b>	<b>70g (approx.)</b>
<b>19. Cell Defect</b>		<b>Subject to Panel supplier specification</b>

**Attachment 1:Electrical &Optical Specification**

No	Items	Instruction		Typical	Limit	Unit	
1	Video sensitivity	For 30dB S/N		44	$\leq 51$	dBuV	
2	FM sound sensitivity	For 30dB S/N		21	$\leq 35$	dBuV	
3	Color sensitivity	For RF transmission		37	$\leq 40$	dBuV	
4	CCD sensitivity	TV screen refreshes 40 times number of mistakes $\leq 8$		43	$\leq 50$	dBuV	
5	Minimum NICAM threshold	Without crackline noise		N/A	N/A	dBuV	
6	Stereo Channel Separation	BTSC.		18	$\geq 15$	dB	
7	AGC static characteristic	Accept. Picture/Sound repr.		90	$\geq 90$	dBuV	
8	Selectivity	Adjacent sound carrier		30	$\geq 28$	dB	
		Below adjacent sound carrier		30	$\geq 30$		
		Adjacent picture carrier		45	$\geq 40$		
		Up adjacent picture carrier		40	$\geq 30$		
9	IF rejection			55	$\geq 45$	dB	
10	Image rejection	VHF		57	$\geq 45$	dB	
		UHF		55	$\geq 40$		
11	AFT pull-in range			$\pm 1.0$	$\geq  \pm 1.0 $	MHz	
12	Chroma sync pull-in range			$\pm 500$	$\geq  \pm 200 $	Hz	
13	Color killer function			-11	$\leq -10$	dB	
14	Resolution	RF	Horizontal	PAL	300	$\geq 300$	Lines
				NTSC	260	$\geq 240$	Lines
			Vertical	PAL	410	$\geq 400$	Lines
				NTSC	320	$\geq 300$	Lines
		Video	Horizontal		450	$\geq 450$	Lines
			Vertical		400	$\geq 400$	Lines

15	Color Coordination	White	Xw	Full Pattern		0.295	0.295 $\pm 0.02$	
			Yw			0.300	0.300 $\pm 0.02$	
16	View Angle(Lo/3)	Horizontal				170	$\geq 170$	Degree
		Vertical						
17	Overscan		Cross hatch signal		96	94~98	% mm	
18	Picture position		In all direction		$\pm 2$	$\leq  \pm 3 $		
19	H sync pull-in range				$\pm 400$	$\geq  \pm 200 $	Hz	
20	V sync pull-in range				6	$\geq 6$	Hz	
21	Audio frequency response		$\pm 3$ dB ref. to 1KHz		0.15~12	0.2~12	KHz	

# KAWA ELECTRONIC RESEARCH & DEVELOPMENT CENTRE

Reference No : LCT2765TD

22	Max Audio Power	7x2		$\geq 5.0 \times 2$	W
23	Audio output power 10% THD	1KHz 10% THD	6x2	$\geq 4.0 \times 2$	W
24	THD	Po=0.5W	0.5	$\leq 3$	%
25	Signal to buzz ratio	coequiring	50	$\geq 30$	dB
26	Minimum volume hum	coequiring	6	$\leq 10$	mVrms
27	Maximum woofer output power		N/A	N/A	W
28	Woofer audio frequency response	$\pm 3$ dB ref. to 15Hz AV mode	N/A	N/A	Hz
29	Tone low frequency	100Hz ref. to 1KHz AV mode	$\pm 8$	$\geq  \pm 3 $	dB
30	Tone high frequency	10KHz ref. to 1KHz AV mode	$\pm 8$	$\geq  \pm 3 $	dB
31	Balance	Center	0	$\leq  \pm 2 $	dB
		Max.	3	$> 2$	
		Min.	-35	$\leq -30$	

32	Video input level		1.0	$1 \pm 0.3$	Vpp
33	Audio input level* (1)		1.0 *	$0.5 \pm 0.3$	Vrms
34	Video output level		N/A	N/A	Vrms
35	Audio output level* (2)		0.3 *	$0.5 \pm 0.3$	Vrms
36	AV Audio input max. level		2	$\leq 2$	Vrms
37	AV Audio output L/R Separation		35	$\geq 30$	dB
38	Power consumptun	Operating	200	$\leq 200$	W
		Stand by	3	$\leq 5$	W
39	IR receiving distance	0 Degree	7	$\geq 6$	m
40	IR receiving angle	5m	60	$\geq 45$	Degree
			20	$\geq 15$	Degree
41	Dielectric strength	DC 3KV 1min.	5	$\leq 10$	mArms
42	The vibration noise from electromagnetic devices in LCD- TV set	The distance between the tester and the LCD-TV set is four times as many as the screen height	No obvious vibration noise can be heard		

**Test Condition**

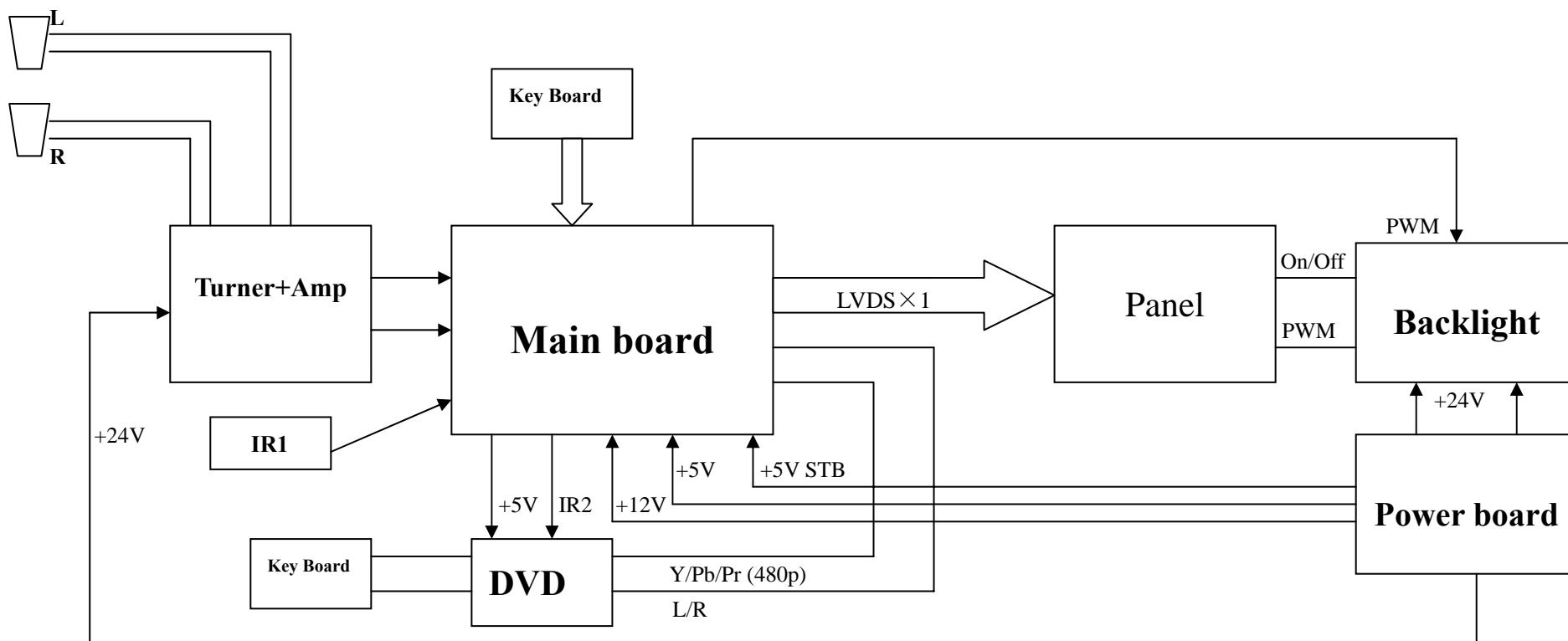
All tests shall be performed under the following conditions unless otherwise specified

1	Picture Modulation	87.5%
2	Sound Modulation	27KHz Dev. For DK/I/BG 15KHz Dev. For M/N
3	Picture to Sound Ratio	10dB
4	Sound Artificial Load Resistor	8 ohm
5	Video signal	Stair and Special
6	Audio signal	1KHz sine wave 0.5Vrms
7	Other conditions:	<p>A. Switch LCD-TV on and let it warm up for more than 30 minutes. Viewing distance: 3H (H: Panel High) in front of LCD, about 2M. Ambient light: <math>\leq 0.1 \text{ cd/m}^2</math></p> <p>B. Brightness, Contrast, Saturation, Tint, sharpness set at normal.</p> <p>C. Connect RMS volt meter to speaker terminals and adjust the LCD volume to get 500mW RMS power at each terminals.</p> <p>D. With image sticking protection of LCD module. The luminance will descend by time on a same still screen and rapidly go down in 5 minutes, when measuring the color tracking and luminance of a same still screen, be sure to accomplish the measurement in one minute to ensure its accuracy.</p> <p>E. Due to the structure of LCD module. The extra-high-bright same screen should not hold over 5 minutes for fear of branding on the panel.</p> <p>F. RF test point: Video output.</p>
8	Note:	<p>*(1) Now this project cannot fit the limited spec. the typical audio input level is 1.0 Vrms, *(2) The audio out level is controlled by the volume level, the range is from 0 to 0.5Vrms.</p>

## DVD player's spec. For LCD-TV Combo

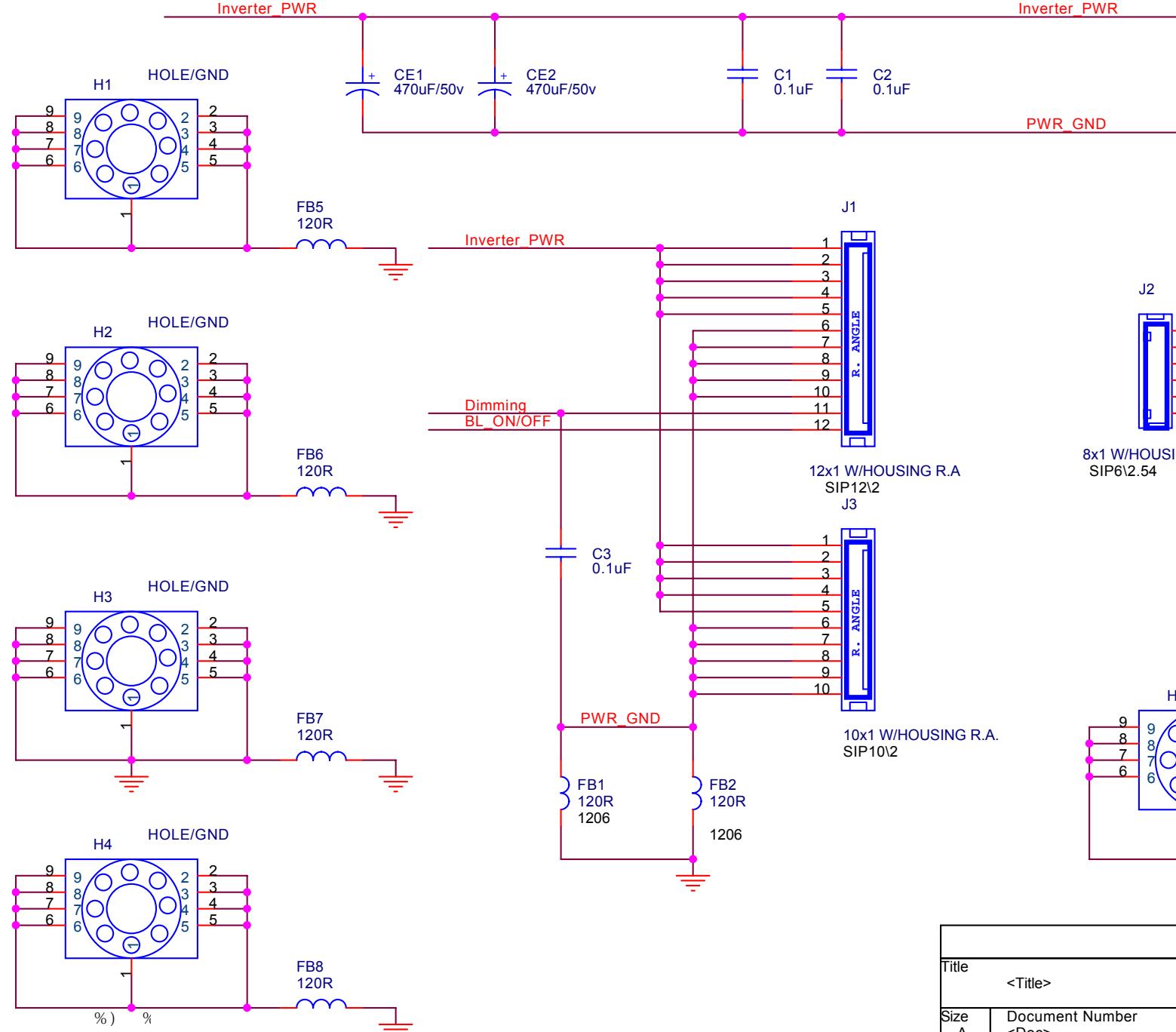
Division	Section	Remarks
General	name	AKAI
	Marketing Area( setup default language)	USA
	Power supply	+5v,+3.3v
	Power Consumption	15W
	Manufactuer of Loader mechanism	Foryou DL06-LS
DVD Module	Optical Pick UP	Sanyo HD-62/65
	Chipset used	MTK 1389FE
Playback Disc Type	Playable Media Type	Playable Disc Type: DVD, CD,
	Playable Disc Type	DVD(Single/ Dual layer, Double sided), CD
	Disc Size	8cm/12cm
	Regional code	Regional 1
	NTSC/ PAL Disc playback	O/O
Video	Video output signal	NTSC
	Video DAC	27MHz/ 10bit
Audio	Audio DAC	48Khz/ 96Khz/24-bit:selectable
	Dynamic range	Present
	Dolby digital decoder	Present
	DTS decoder	optional
	SRS + TruSurround for 2 channel	Not present
	3D Virtual surround for 2 channel	Not present
Playback Features	Fast forward/backward	x2,x4,x8,x16,x32
	Slow motion forward	x1/2,x1/4,x1/8,x1/16
	Slow motion backward	optional
	Still picture	Present
	Frame by frame forward/reverse	Forward only (Step function)
	Skip forward/reverse	Present
	Repeat function	Present
	DVD closed caption	Present
	Transition Effect for picture CD	Not present
	Rotation of picture for picture CDs	Present
	Last Memory	Present
Display user operation	Graphical user interface	Not present
	OSD Language	3 (ENG is base ,SPA and French)
	Subtitle	Present
	Screen saver	Present
	Resume play	Present
	Program function	Present
	PBC ON/OFF	Default on PCB
	Parental lock	Password : 0000
	Picture mode selector	16:9, 4:3 LB, 4:3 PS(4:3 PS as default)
	Intro scan	Not present
	Digest in VCD	Present, only for PIC CD
	Time search	Present
	Multi angle	Present
	Selectable audio language streams	Present
Front Panel	kalaoke function	x
	VFD/ LED	x
	No. of keys	3(Open/Close, Play, Stop)
Rear Panel	Composite Video output	x
	Component Video output	x
	Progressive scan output (480P)	Present
	2 channel audio output	Present
	Coaxial audio output	Present

## LCD COMBO Connection

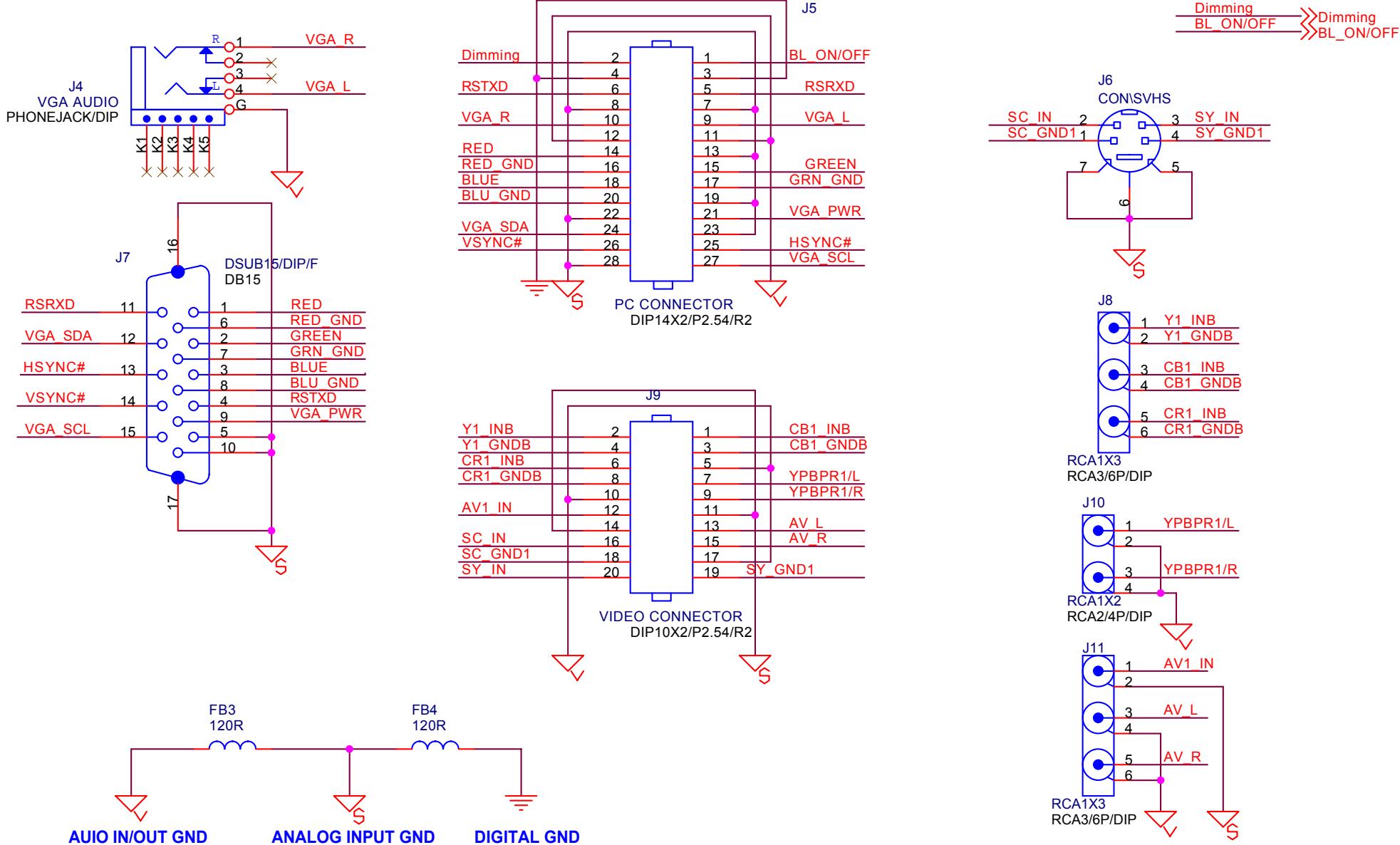


# PANEL INVERTER POWER

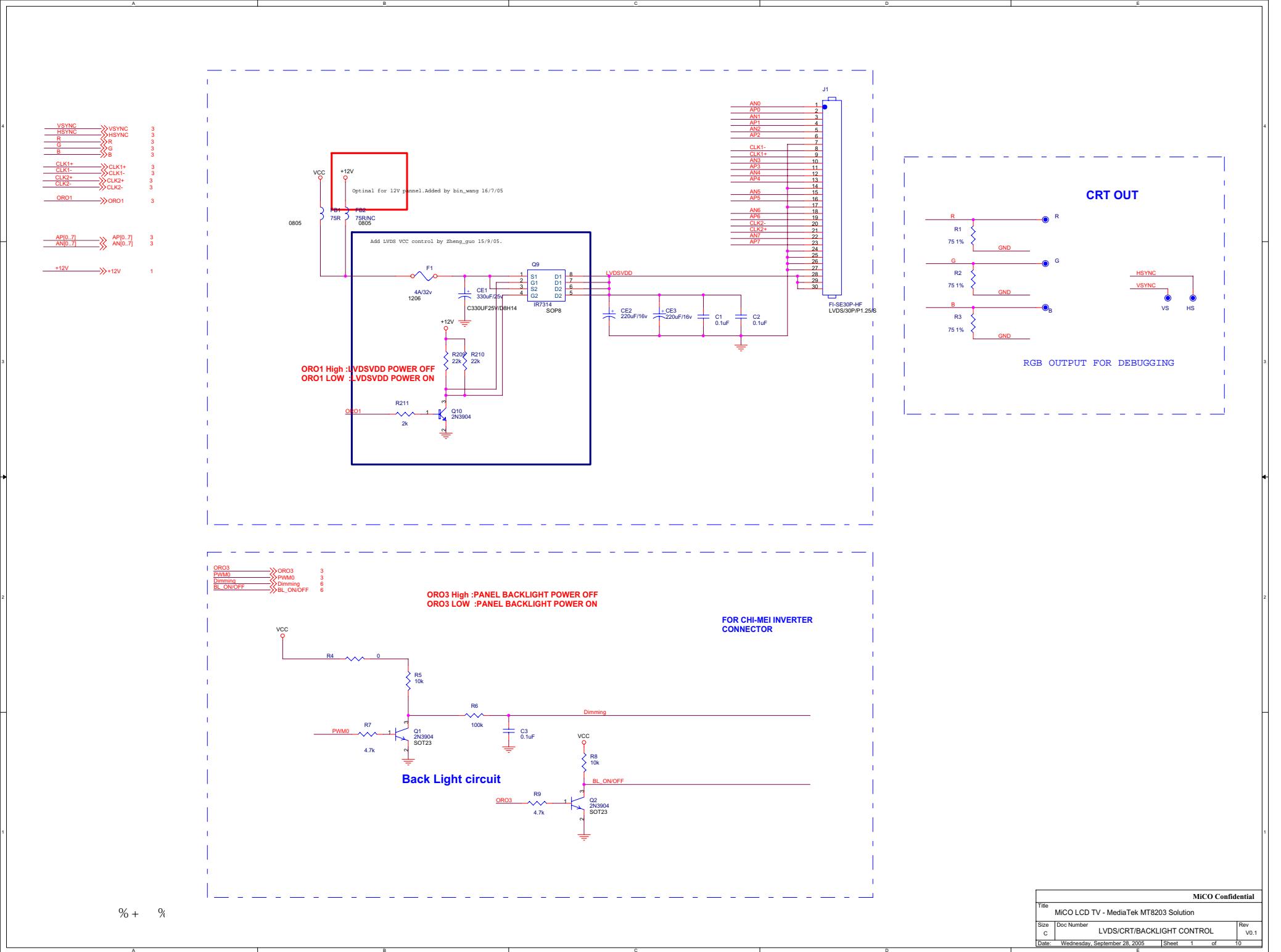
Dimming  
BL\_ON/OFF Dimming  
BL\_ON/OFF

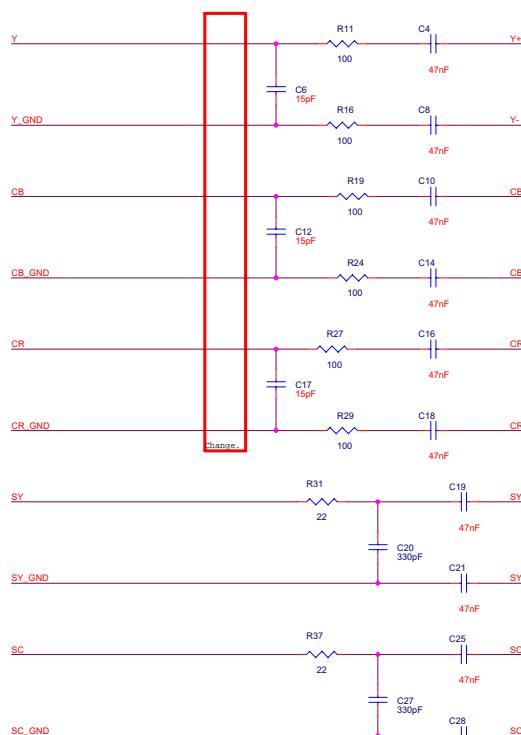
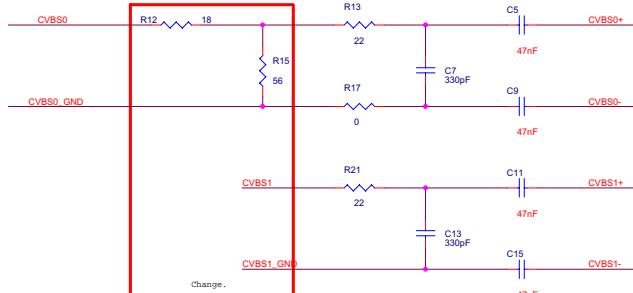
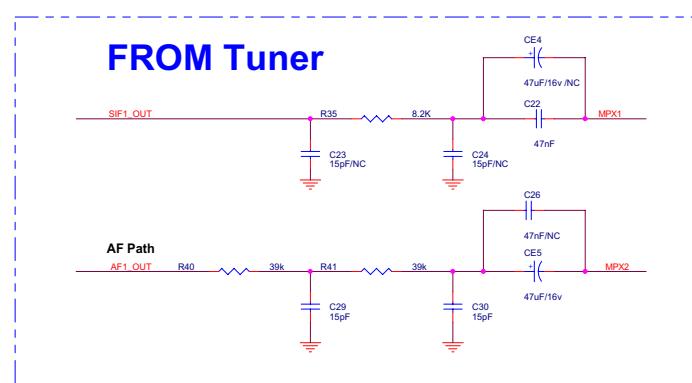
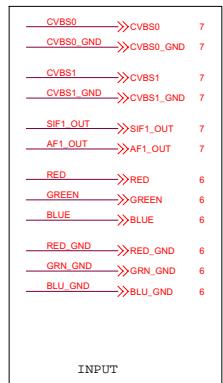
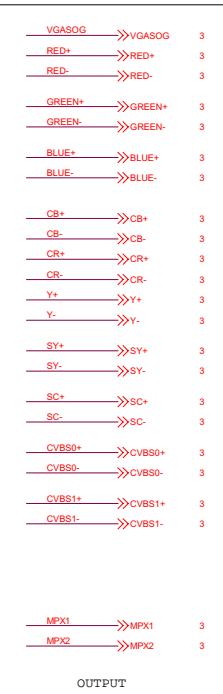


Title <Title>		Rev <RevCode>
Size A	Document Number <Doc>	
Date: Wednesday, August 24, 2005	Sheet 1 of 2	

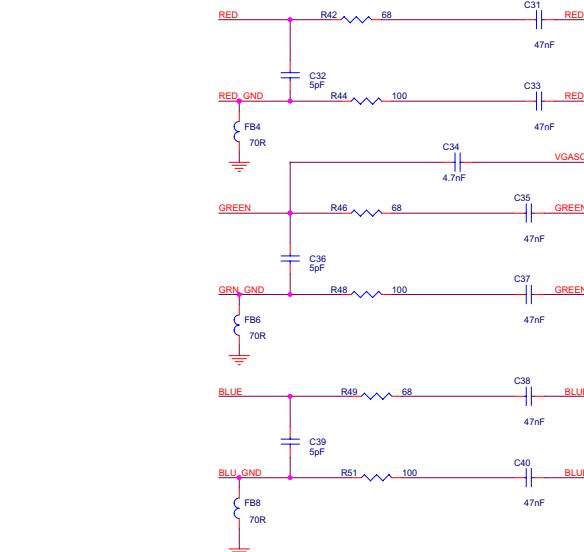


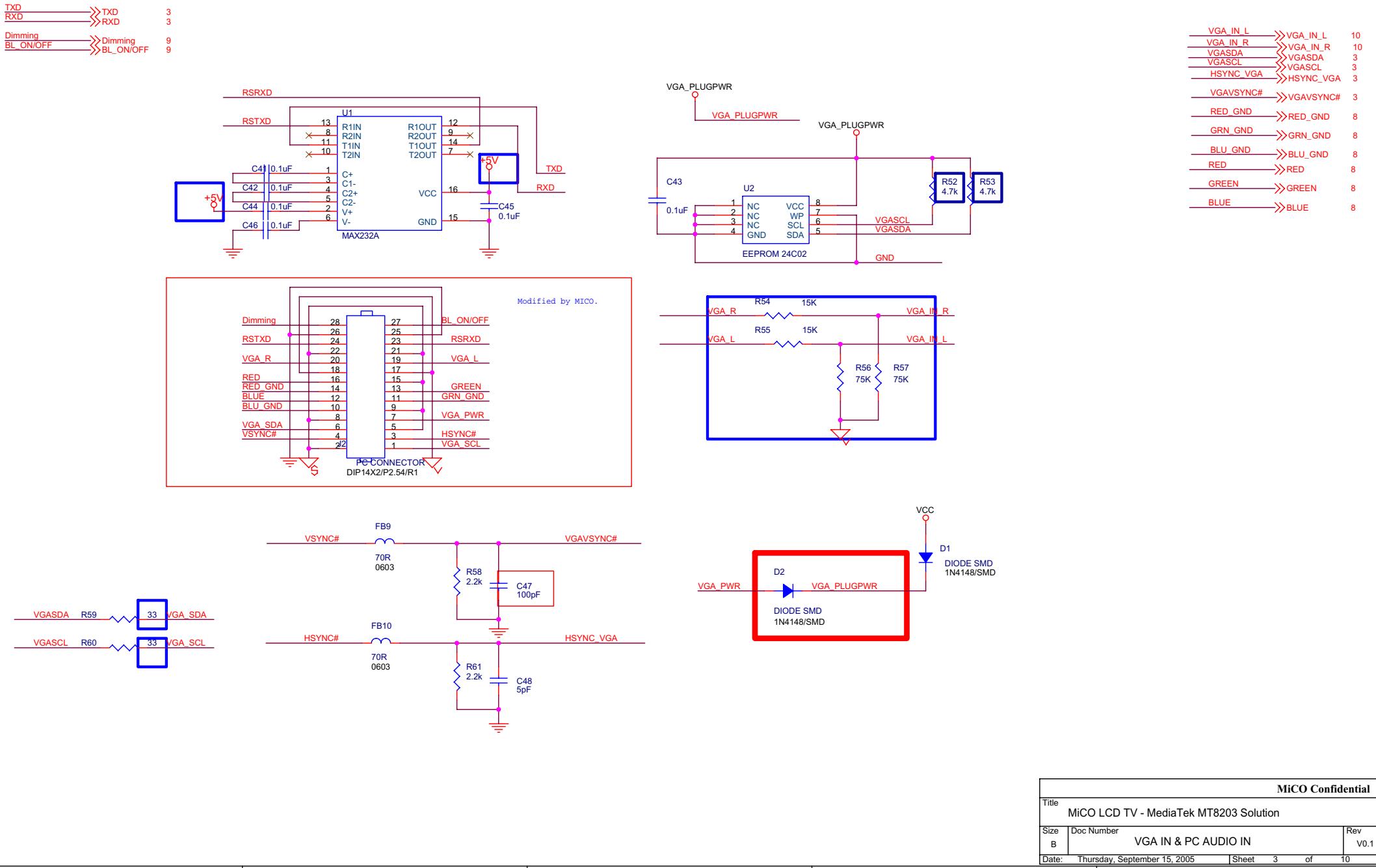
Title		A
<Title>		
Size A	Document Number <Doc>	Rev <RevCode>
Date:	Wednesday, August 24, 2005	Sheet 2 of 2





ATTENTION: WHEN PCB LAYOUT, MUST NEAR VGA INPUT PORT! BIN\_WANG. 16/7/05

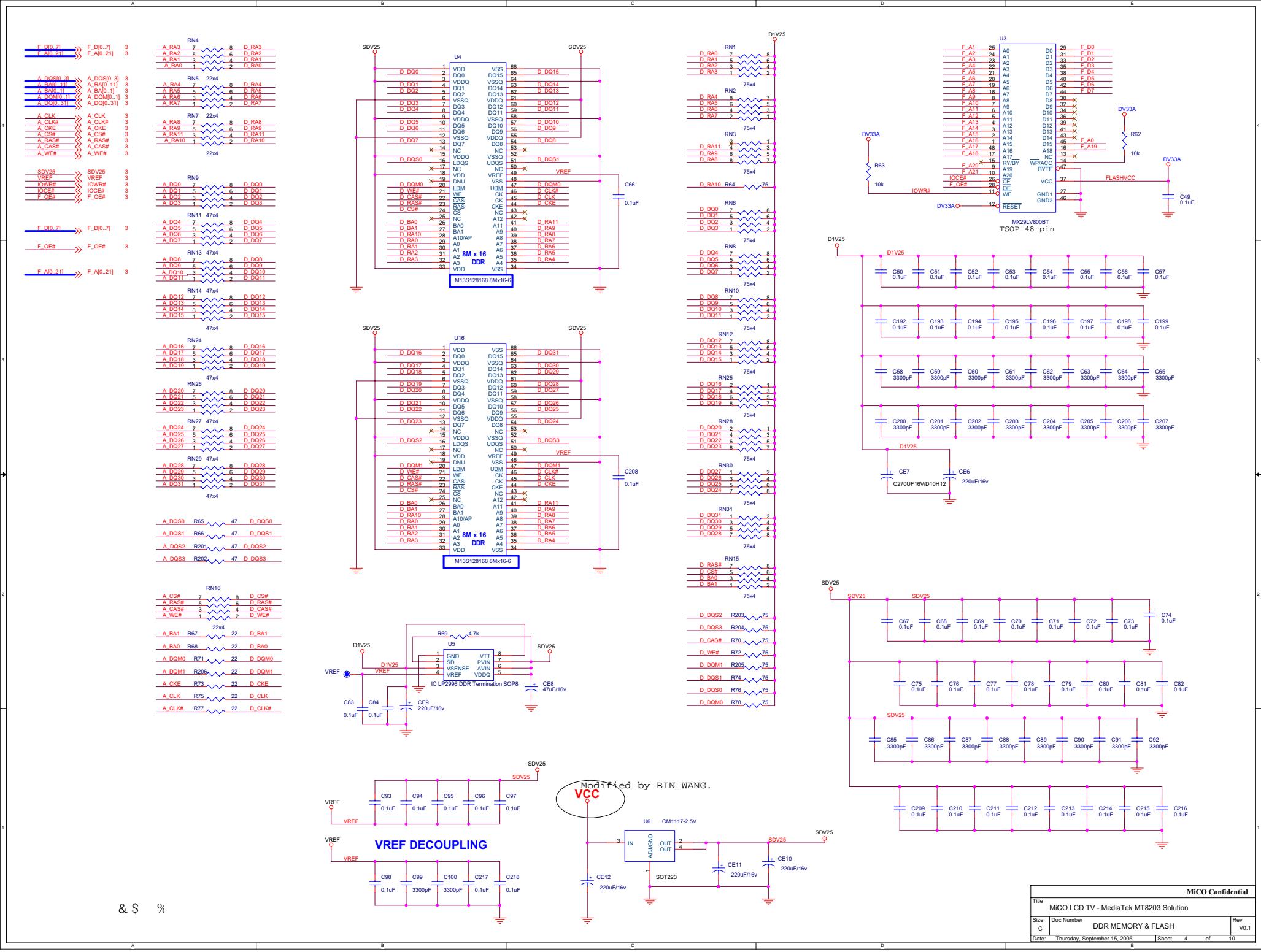




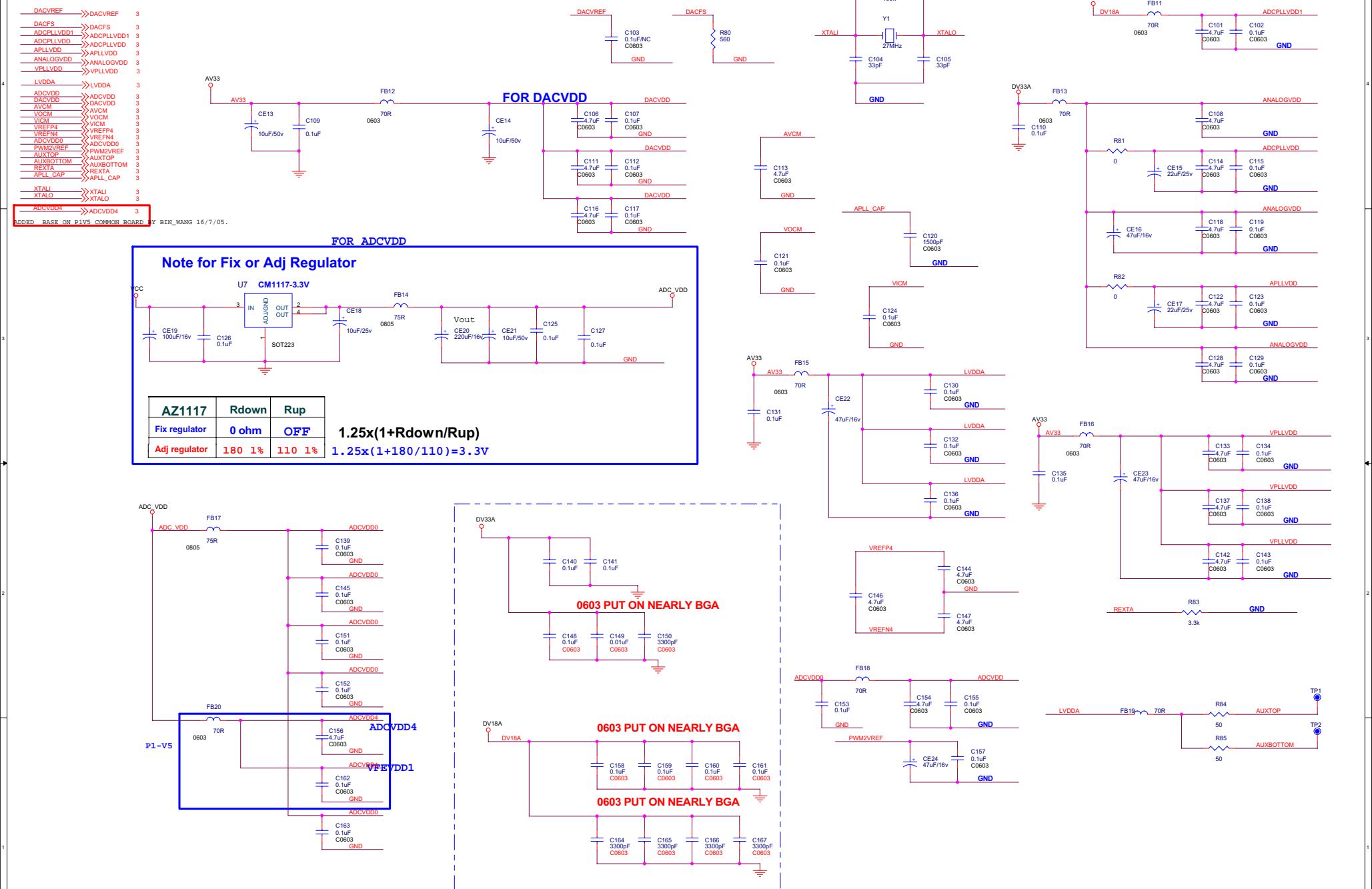
% - %

% 8 % \$ )

MiCO Confidential			
Title MiCO LCD TV - MediaTek MT8203 Solution			
Size	Doc Number	VGA IN & PC AUDIO IN	Rev
B			V0.1
Date:	Thursday, September 15, 2005	Sheet	3 of 10

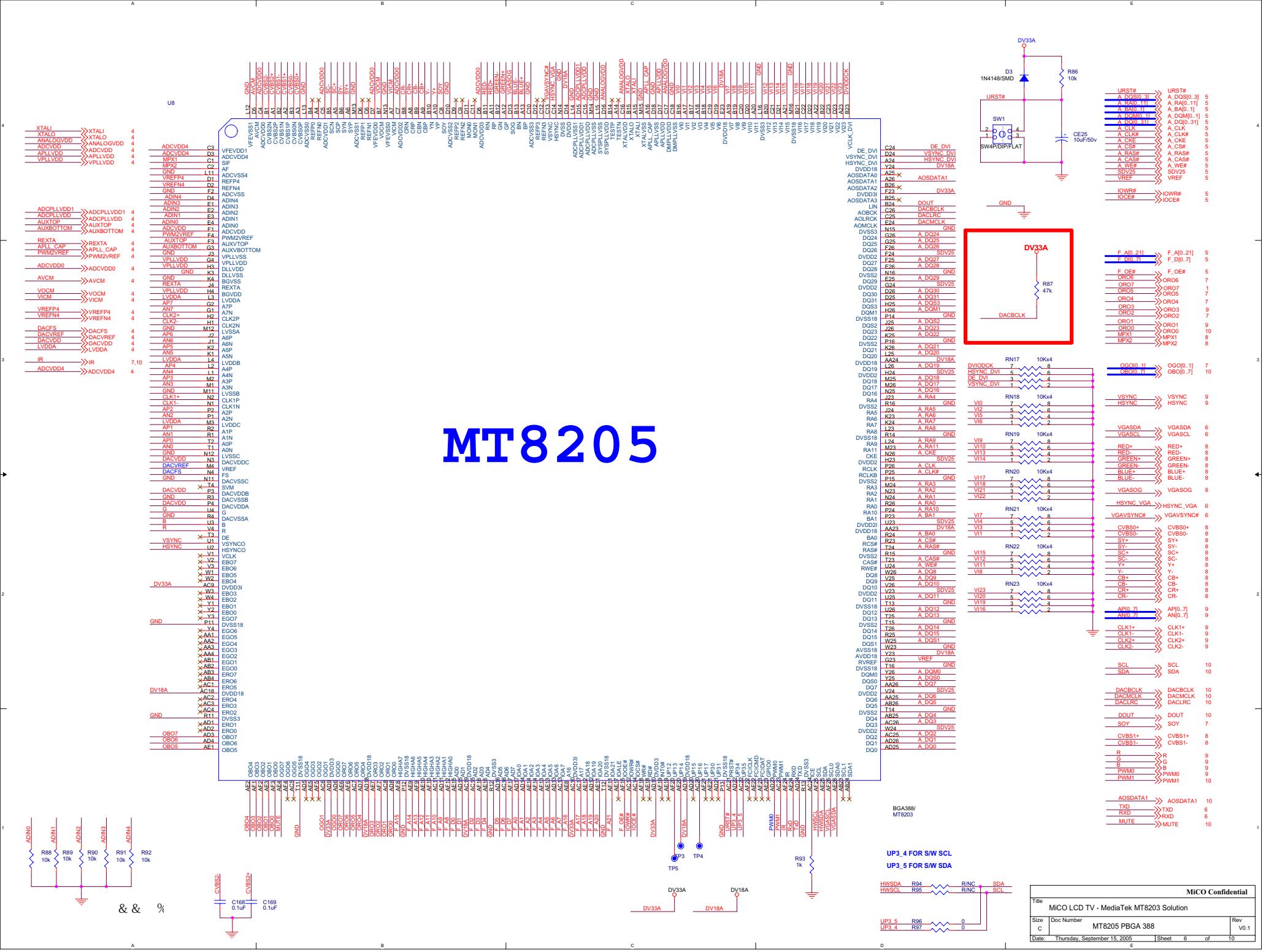


# MT8203 ANALOG&DIGITAL DECOUPLING

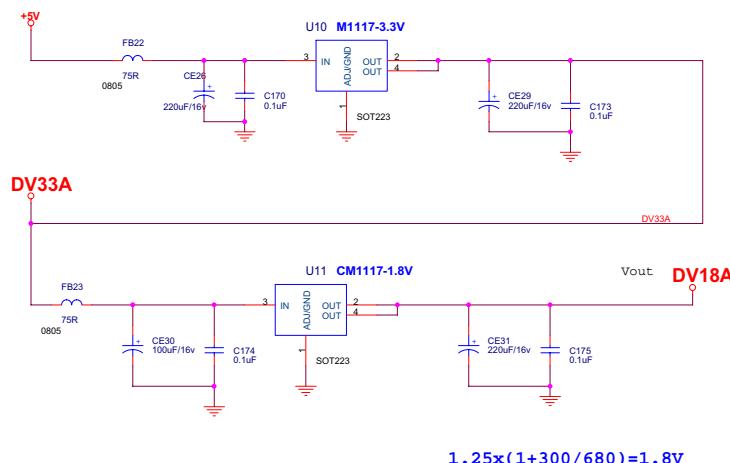
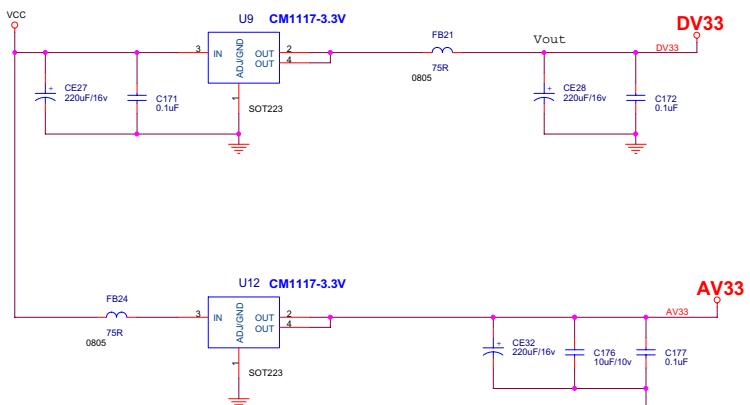


& % %

20 % \$ )



Power ON alive source



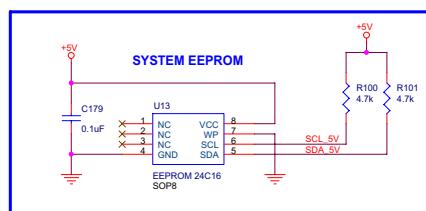
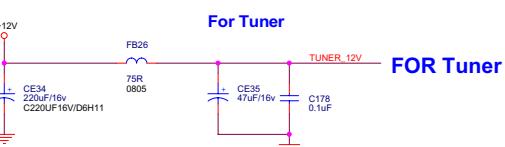
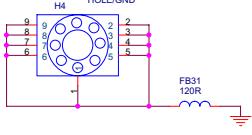
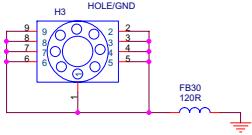
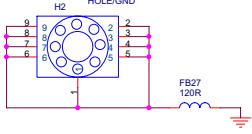
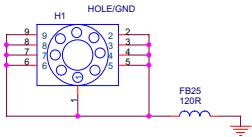
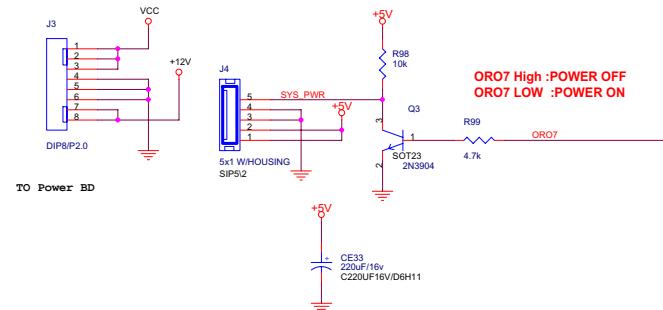
& %

MiCO Confidential			
Title MiCO LCD TV - MediaTek MT8203 Solution			
Size	Doc Number	LDO	Rev
C			V0.1
Date: Thursday, September 15, 2005	Sheet: 7	of 10	

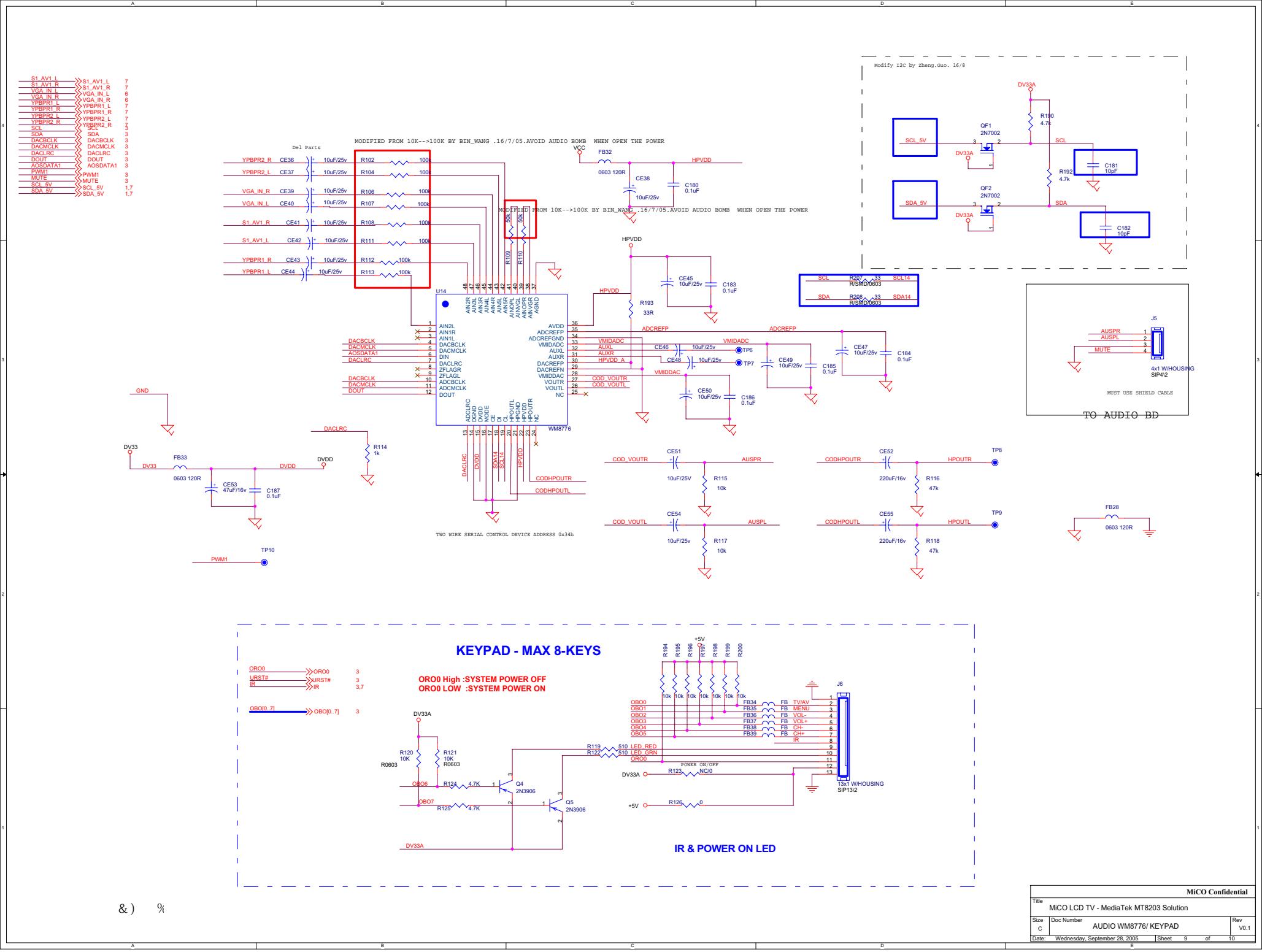
# MT8203E (PBGA388) LCDTV BOARD 4 LAYERS

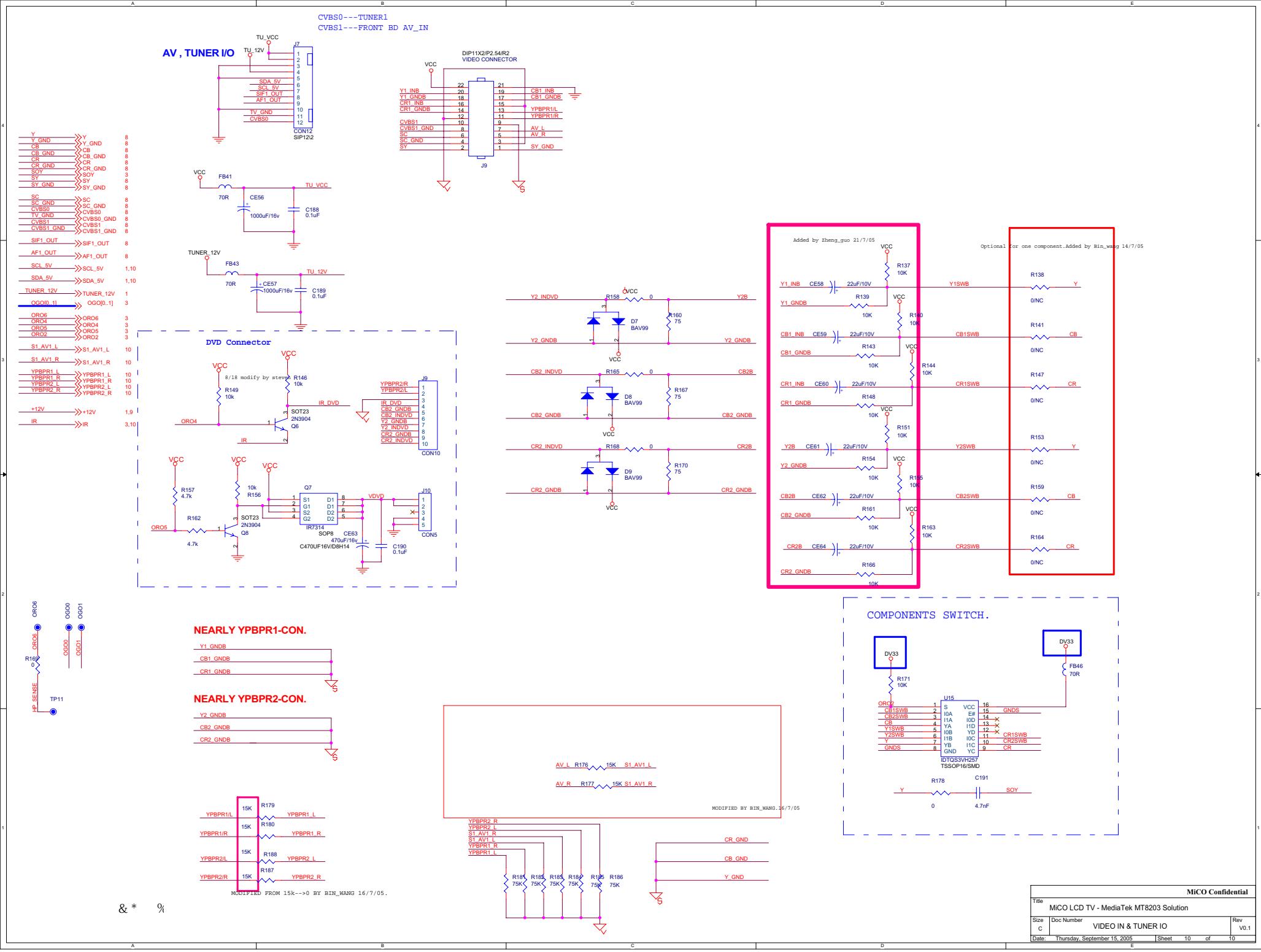
01. INDEX & POWER CONNECTOR
02. LDO
03. MT8203 PBGA 388
04. MT8203 ANALOG&DIGIT DECOUPLE
05. DDR MEMORY & FLASH
06. VGA IN & PC AUDIO IN
07. VIDEO IN & TUNER IO
08. AV IN
09. LVDS/CRT/BACK LIGHT CONTROL
10. AUDIO WM8776/ KEYPAD

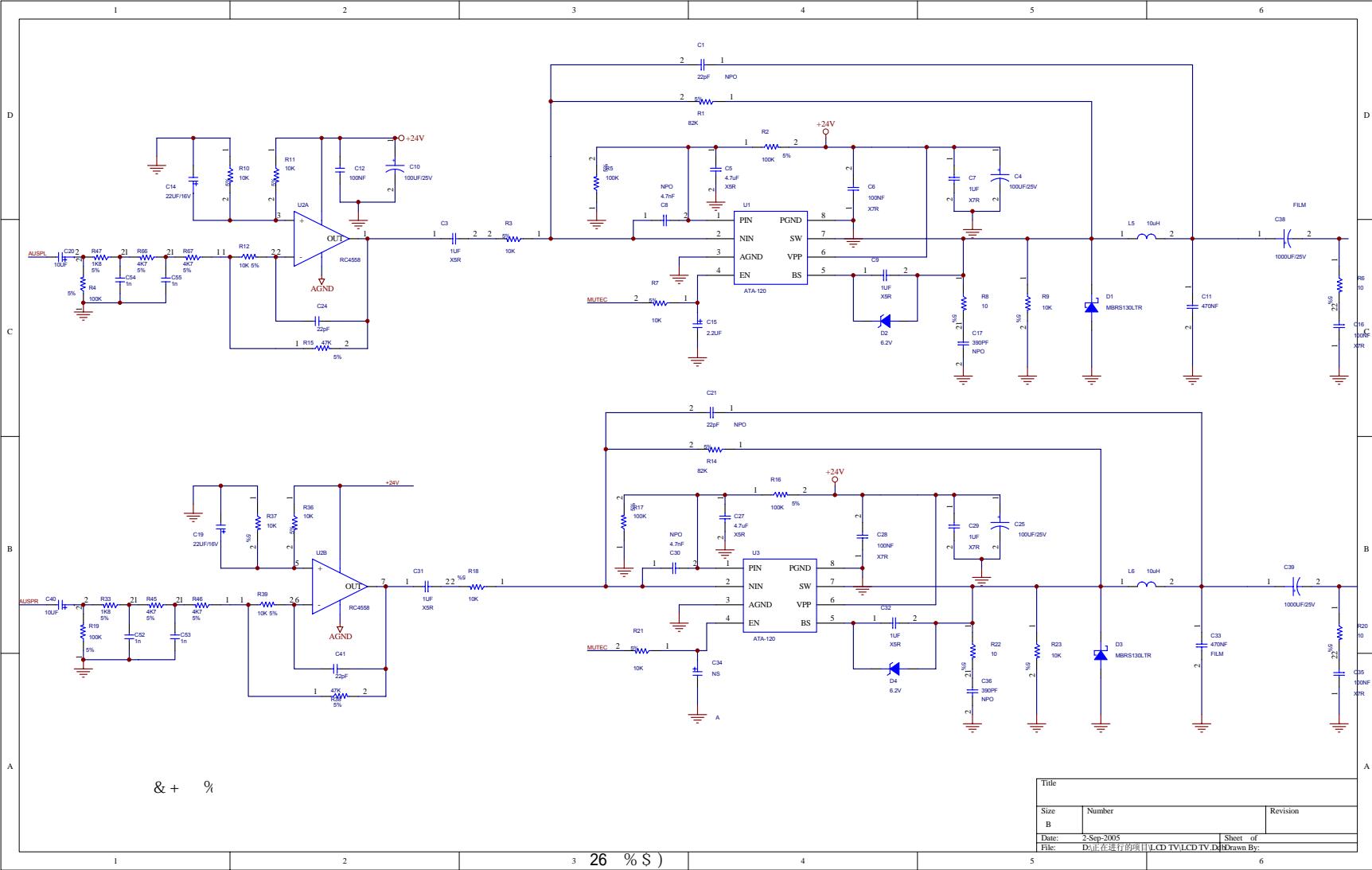
TXD	TXD	3.6
RXD	RXD	3.5
SCL 5V	SCL 5V	7.10
SDA 5V	SDA 5V	7.10
+12V	+12V	9
TUNER 12V	TUNER 12V	7
ORO7	ORO7	3

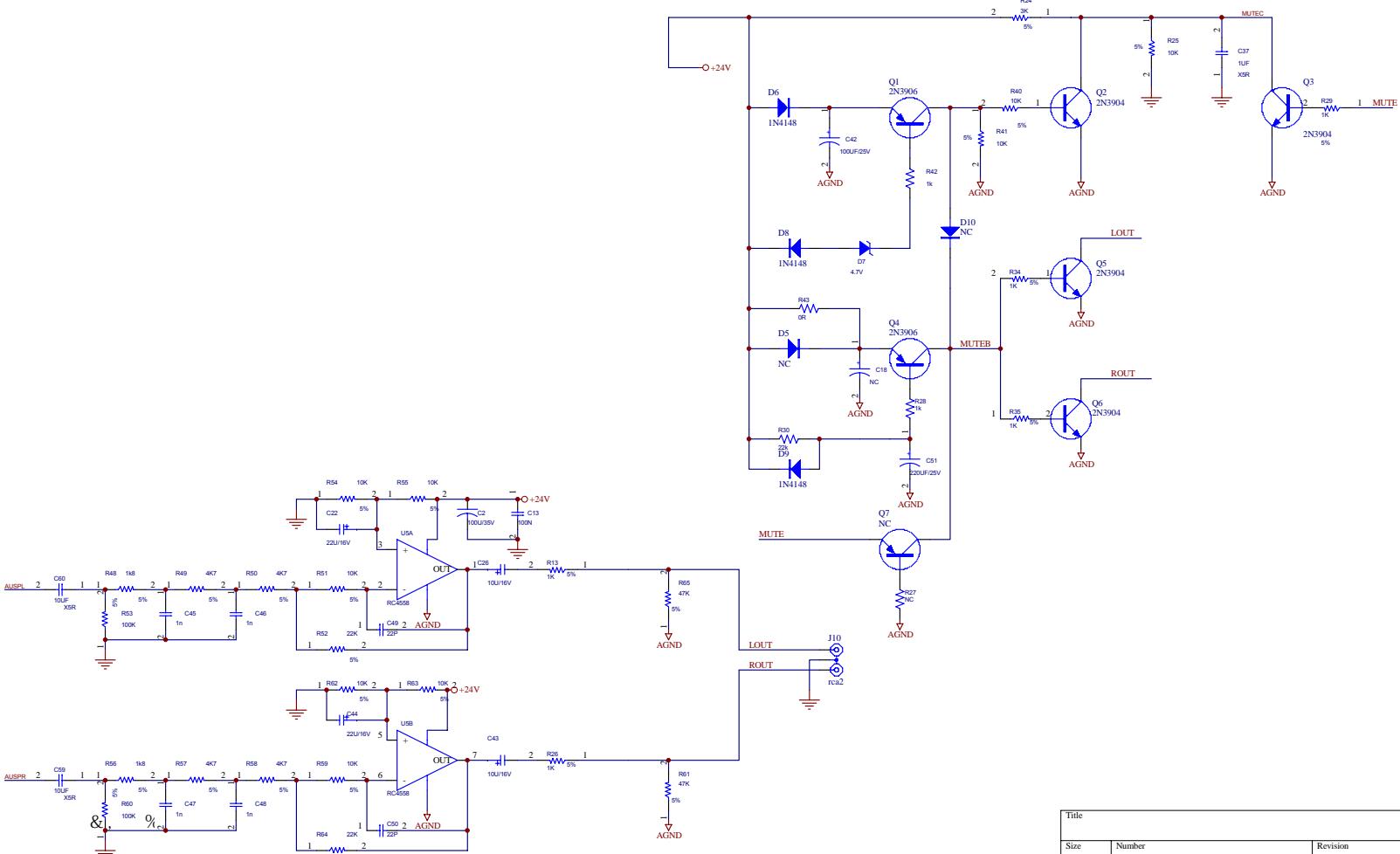


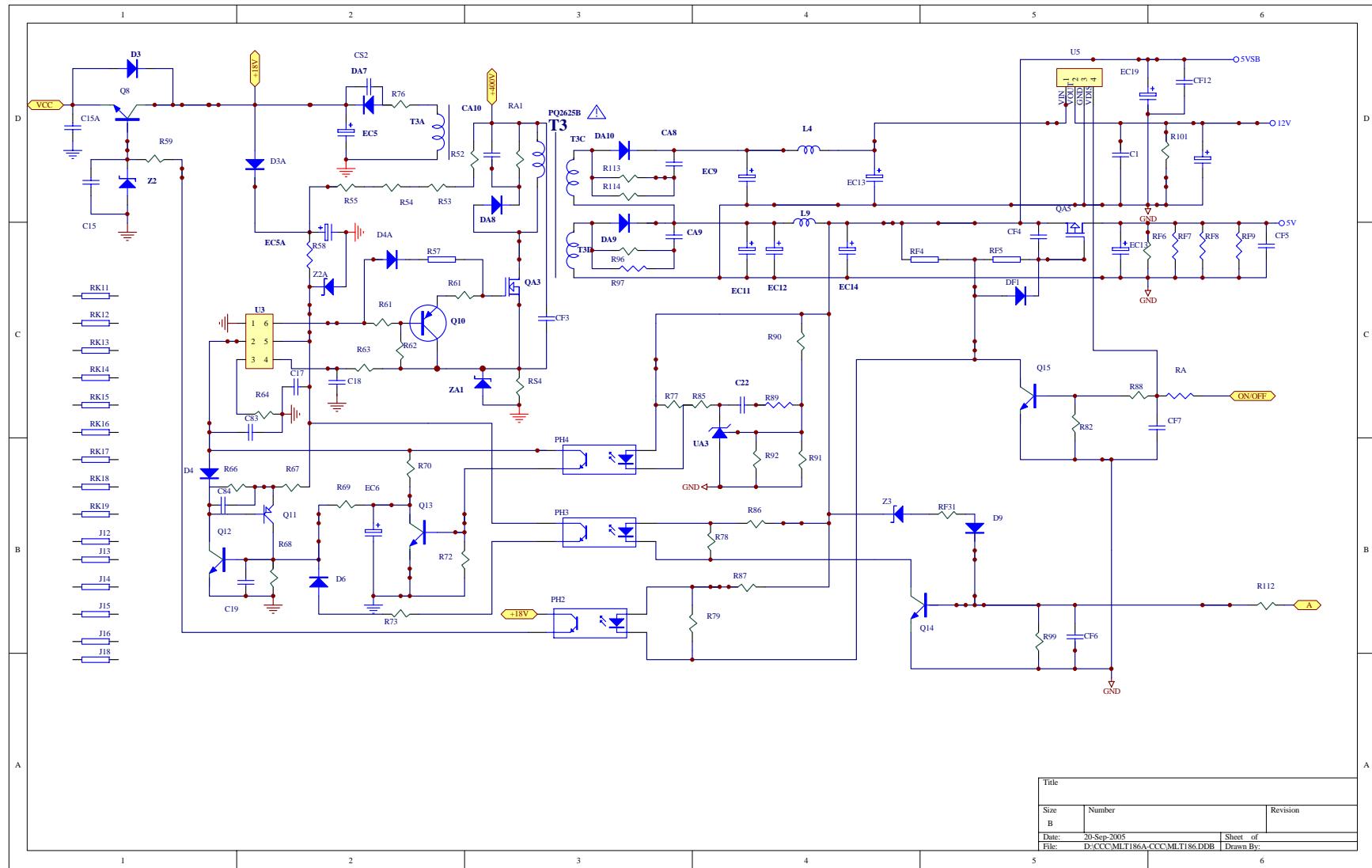
MICO Confidential		
Title	MICO LCD TV - MediaTek MT8203 Solution	
Size	Doc Number	Rev
C	INDEX & POWER CONNECTOR	V0.1
Date:	Thursday, September 15, 2005	Sheet 8 of 10

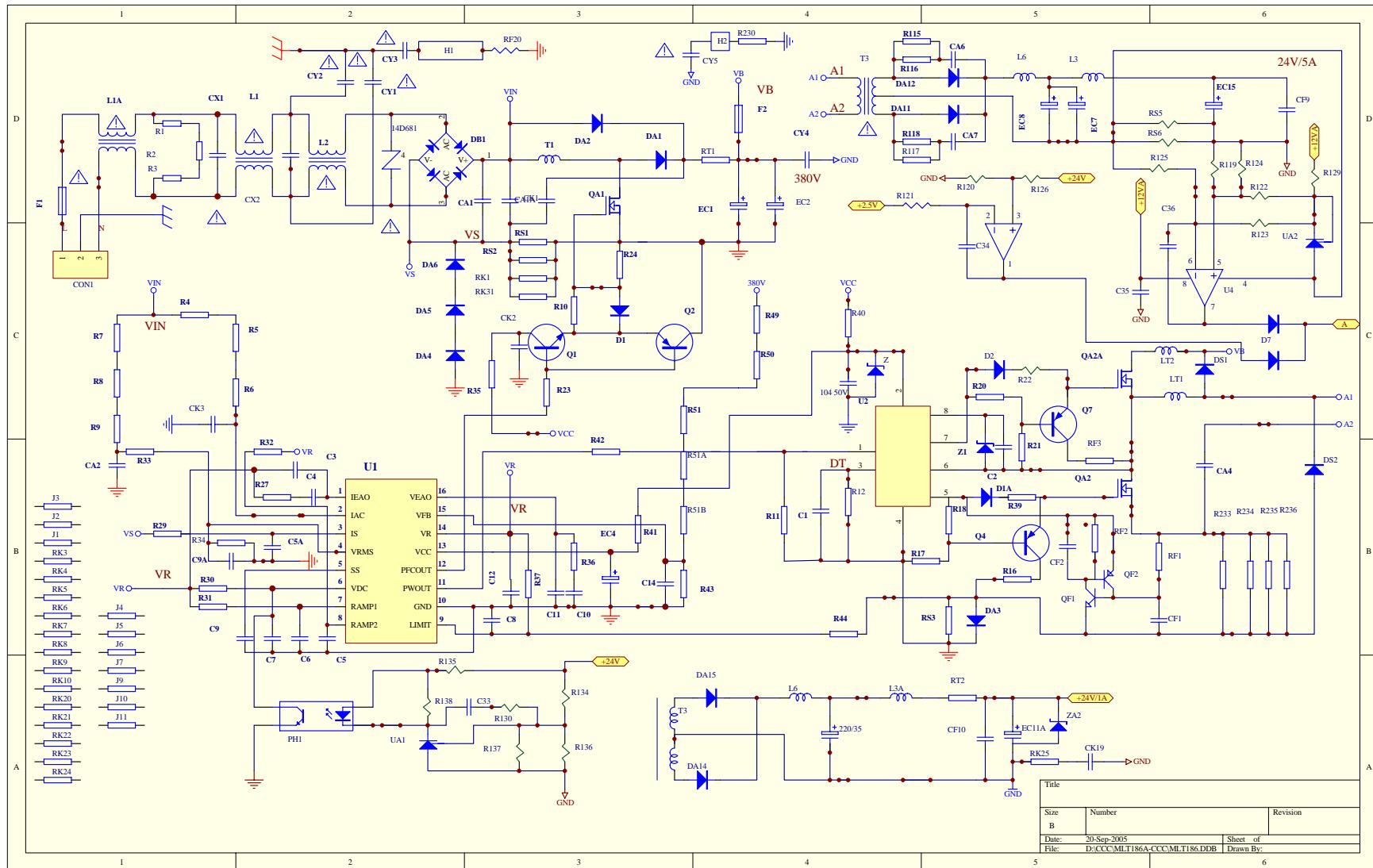












# **Basic Operations & Circuit Description**

## **Main Electric Components**

### **(1). MODULE:**

There are 1 pc. panel and 2 pcs. PCB including 1 pc. INVERTER board(L), 1 pc. T-CONTROL board,

### **(2). SIGNAL PROCESS**

There are 5 pcs. PCBs including

- 1 pc. Audio&Tuner board,
- 1 pc. Main digital board,
- 1 pc. Keypad board,
- 1 pc. Remote Control Receiver board,
- 1 pc. DVD decoder board

### **(3). POWER**

There are 1 pc. PCB for power.

# **PCB function**

## **1. Power:**

- (1). Input voltage: AC 100V~240V, 47Hz~63Hz.  
Input range: AC 90V(Min)~264V(Max) auto regulation.
- (2). To provide power for PCBs.
  - a). +24V for Inverter.
  - b). +5Vsb for standby,
  - c). +5V for signal power,
  - d). +24V for Audio Amp power and converter to
  - e). +12V for Tuner power.

## **2. Main (Video InterFace) board:**

- (1).Decoder the video signal (TV,CVBS,S-VIDEO) from analog to digital signal.
- (2).Converter the Video signals( TV,CVBS,S-VIDEO ) and graphics signal (VGA,YPbPr) from interface to progressive,
- (3). Converter the Digital to fit the panel display mode and output the LVDS signal to Panel.

## **3. Tuner & Audio Board :**

- ( 1 ) Convert TV RF signal to video and audio signal to Main board.
- ( 2 ). Decoder the TV SIF signal to audio signal,
- ( 3 ). Converter the audio to audio Amplifier and output to the speaker.

## **4. KEYBOARD**

To get the main button control on LCD\_TV as SOURCE,MENU,  
CHANNEL +,CHANNEL -, VOL +,VOL-, STANDBY functions.

## **5. Remote control board**

Receive the remote signal and active for the control.

## **6. T-CONTROL board**

Converter the LVDS signal to the digital signal for fitting the PANEL.

## **7. INVERTER board**

Converter the low DC voltage +24V to high AC voltage to drive the backlight.

# **PCB failure analysis**

## **1. CONTROL:**

- a. Abnormal noise on screen.
- b. No picture.

## **2. MAIN (VIDEO):**

- a. Lacking color, Bad color scale.
- b. No voice.
- c. No picture but with signals output, OSD and back light.
- d. Abnormal noise on screen.

## **3. POWER:**

No picture, no power output.

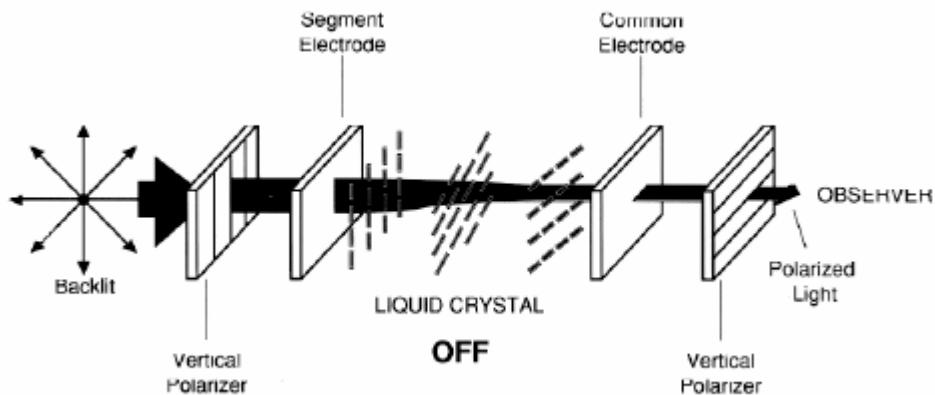
# **Basic operation of LCD-TV**

1. After turning on power switch, power board sends 5Vst-by Volt to Micro Processor IC waiting for ON signals from Key Switch or Remote Receiver.
2. When the ON signal from Key Switch or Remote Receiver is detected, Micro Processor will send ON Control signals to Power. Then Power sends (5Vsc, 12Vsc, 24V and RLY ON, Vs ON) to PCBs working. This time VIF will send signals to display back light, OSD on the panel and start to search available signal sources. If the audio signals input, them will be amplified by Audio AMP and transmitted to Speakers.
3. If some abnormal signals are detected (for example: over volts, over current, over temperature and under volts), the system will be shut down by Power off.

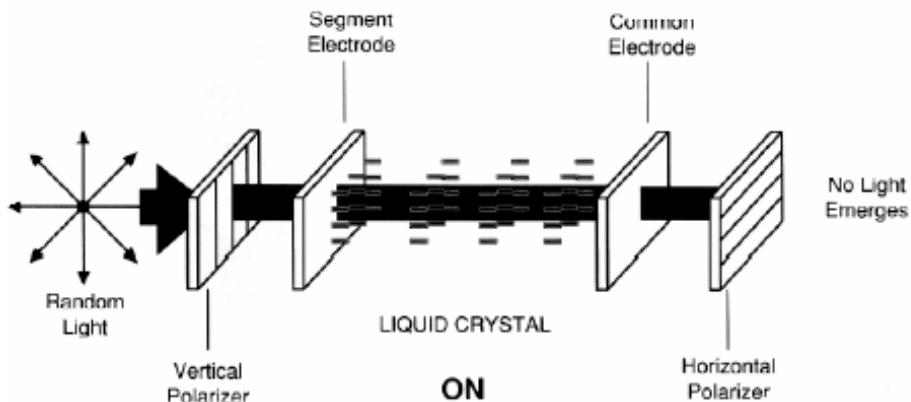
## LCD basic display theory.

When an electrical field is applied to the LC planes, the LC molecules re-align themselves so that they are parallel to the electrical field. This electrical process is known as **twisted nematic field effect** or **TNFE**. In this alignment, polarized light is not twisted as it passes through the LC material (see Diagram 3A and 3B). If the front polarizer is oriented perpendicular to the rear polarizer, light will pass through the energized display but will be blocked by the rear polarizer. An LCD in this form is acting as a light shutter.

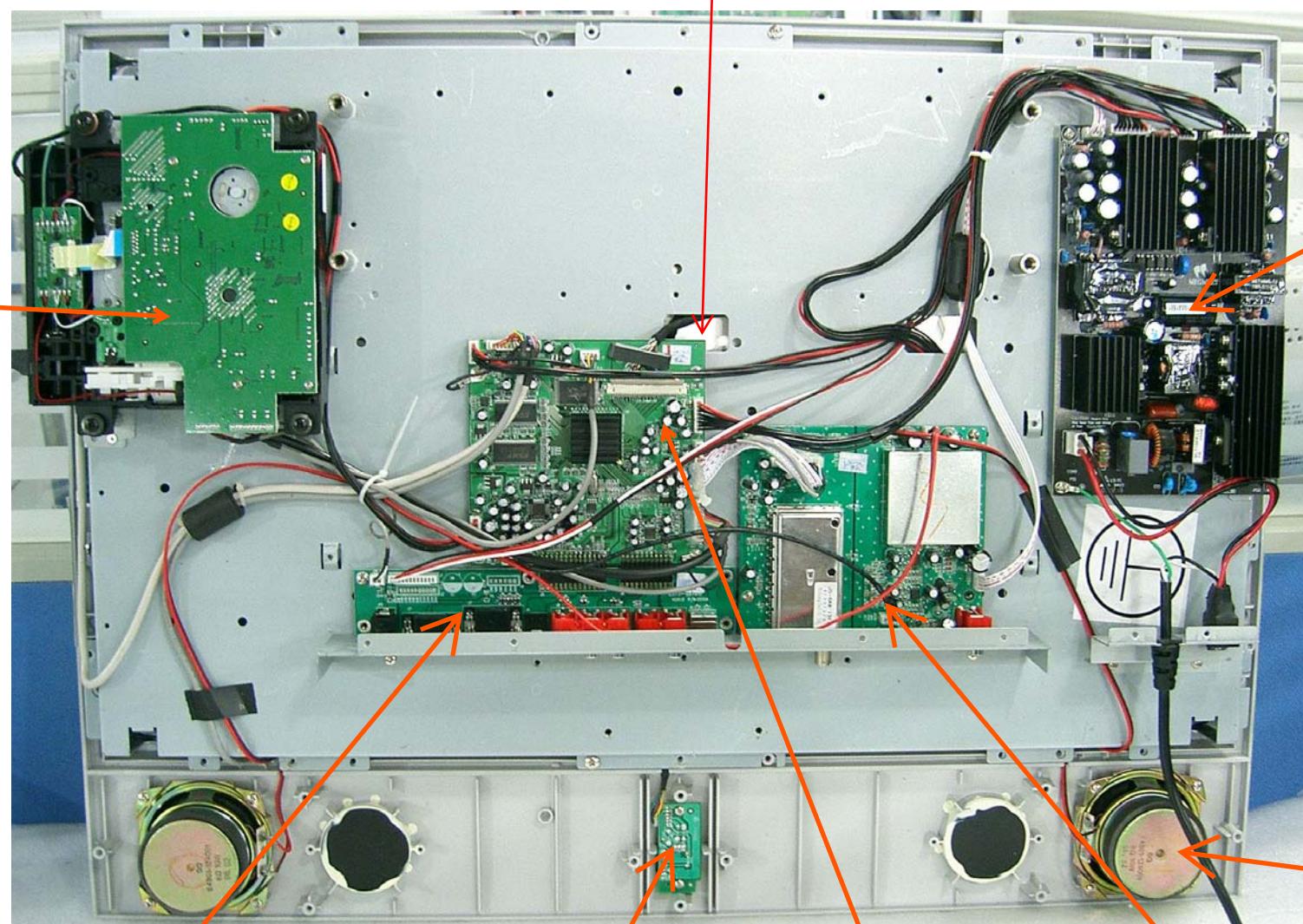
Displays with variable characters are created by selectively etching away the conductive surface that was originally deposited on the glass. Etched areas become the display's background; unetched areas become the display's characters.



*Diagram 3A. The “off” state of a TN LCD—the LC molecules form a twist and therefore cause polarized light to twist as it passes through.*



*Diagram 3B. The “on” state—the electrical field re-aligns the LC molecules so they do not twist the polarized light.*



DVD  
Loader

LCD Panel

Power

Terminal  
Connect Board

Remote Receiver

Main Board

Tuner Board

Speaker

## **IC DESCRIPTION**

-MT8205G  
-AT24C02  
-MX29LV160BBTC  
-LP2996  
-AZ1117/H  
-WM8776  
-MX232A  
-ISAV330

## Pinout information



BGA388/SOCKET  
MT8205

## Pin Descriptions

### 2.3 Pin Descriptions

Table 2-1 provides detail video/audio port pin descriptions.

**Table 2-1 video/audio port pin descriptions.**

Pin	Symbol	Type	Description
E24	AOMCLK	O	Audio out master clock
C25	AOLRCK	O	Audio out left-right clock
C26	AOBCK	O	Audio out bit clock
A25	AOSDATA0	O	Audio out data line 0
A26	AOSDATA1	O	Audio out data line 1
B26	AOSDATA2	O	Audio out data line 2
B25	AOSDATA3	O	Audio out data line 3
B24	LIN	I	Audio line in
A3	CVBS0P	I	Composite Video input 0
A2	CVBS1P	I	Composite Video input 1
A1	CVBS2P	I	Composite Video input 2
C1	SIF	I	Tuner Sound SIF
C2	AF	I	Tuner Sound AF

## Features

- Low Voltage and Standard Voltage Operation
  - 5.0 (V<sub>CC</sub> = 4.5V to 5.5V)
  - 2.7 (V<sub>CC</sub> = 2.7V to 5.5V)
  - 2.5 (V<sub>CC</sub> = 2.5V to 5.5V)
  - 1.8 (V<sub>CC</sub> = 1.8V to 5.5V)
- Internally Organized 128 x 8 (1K), 256 x 8 (2K), 512 x 8 (4K), 1024 x 8 (8K) or 2048 x 8 (16K)
- 2-Wire Serial Interface
- Bidirectional Data Transfer Protocol
- 100 kHz (1.8V, 2.5V, 2.7V) and 400 kHz (5V) Compatibility
- Write Protect Pin for Hardware Data Protection
- 8-Byte Page (1K, 2K), 16-Byte Page (4K, 8K, 16K) Write Modes
- Partial Page Writes Are Allowed
- Self-Timed Write Cycle (10 ms max)
- High Reliability
  - Endurance: 1 Million Cycles
  - Data Retention: 100 Years
- Automotive Grade and Extended Temperature Devices Available
- 8-Pin and 14-Pin JEDEC SOIC and 8-Pin PDIP Packages

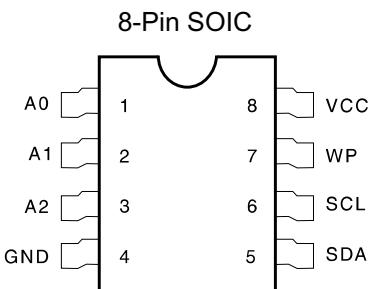
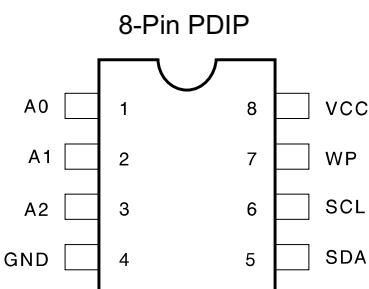
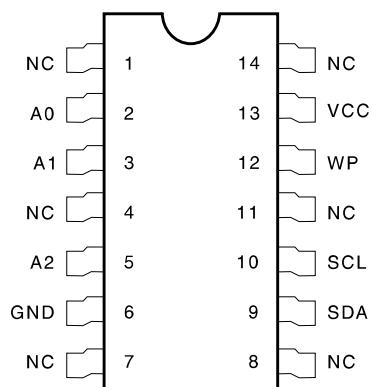
## Description

The AT24C01A/02/04/08/16 provides 1024/2048/4096/8192/16384 bits of serial electrically erasable and programmable read only memory (EEPROM) organized as 128/256/512/1024/2048 words of 8 bits each. The device is optimized for use in many industrial and commercial applications where low power and low voltage operation are essential. The AT24C01A/02/04/08/16 is available in space saving 8-pin PDIP, 8-pin and 14-pin SOIC packages and is accessed via a 2-wire serial interface. In addition, the entire family is available in 5.0V (4.5V to 5.5V), 2.7V (2.7V to 5.5V), 2.5V (2.5V to 5.5V) and 1.8V (1.8V to 5.5V) versions.

## Pin Configurations

Pin Name	Function
A <sub>0</sub> to A <sub>2</sub>	Address Inputs
SDA	Serial Data
SCL	Serial Clock Input
WP	Write Protect
NC	No Connect

14-Pin SOIC



0180C

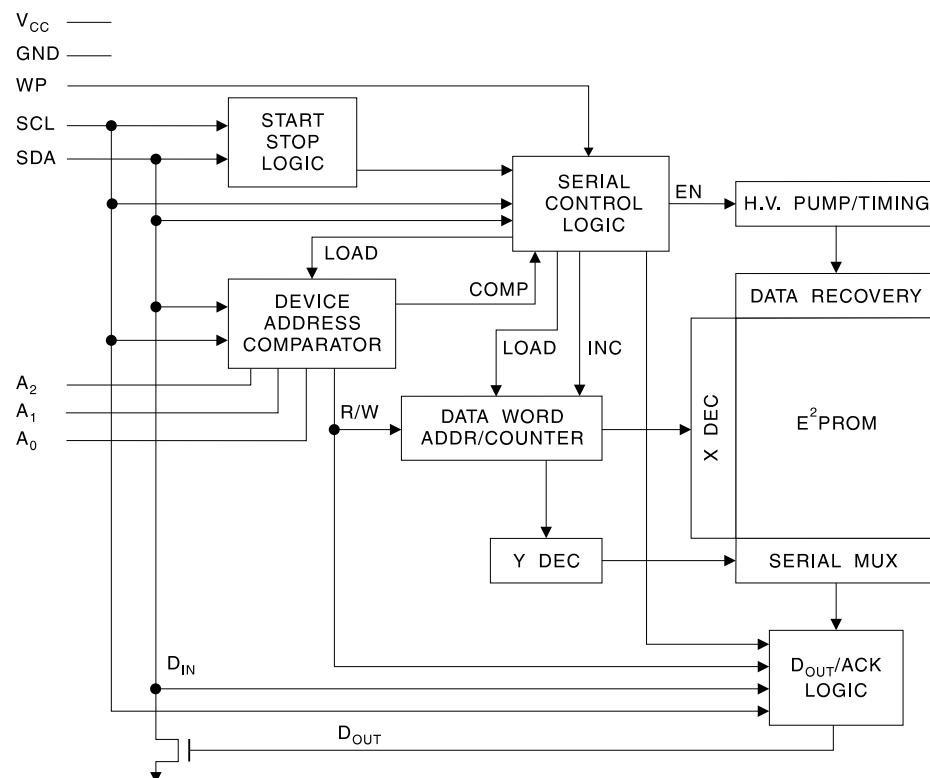


## Absolute Maximum Ratings\*

Operating Temperature.....	-55°C to +125°C
Storage Temperature.....	-65°C to +150°C
Voltage on Any Pin with Respect to Ground .....	-0.1V to +7.0V
Maximum Operating Voltage .....	6.25V
DC Output Current.....	5.0 mA

\*NOTICE: Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## Block Diagram



## Pin Description

**SERIAL CLOCK (SCL):** The SCL input is used to positive edge clock data into each E<sup>2</sup>PROM device and negative edge clock data out of each device.

**SERIAL DATA (SDA):** The SDA pin is bidirectional for serial data transfer. This pin is open-drain driven and may be wire-ORed with any number of other open-drain or open collector devices.

**DEVICE/PAGE ADDRESSES (A<sub>2</sub>, A<sub>1</sub>, A<sub>0</sub>):** The A<sub>2</sub>, A<sub>1</sub> and A<sub>0</sub> pins are device address inputs that are hard wired for the AT24C01A and the AT24C02. As many as eight 1K/2K devices may be addressed on a single bus system (device addressing is discussed in detail under the Device Addressing section).

The AT24C04 uses the A<sub>2</sub> and A<sub>1</sub> inputs for hard wire addressing and a total of four 4K devices may be addressed on a single bus system. The A<sub>0</sub> pin is a no connect.

The AT24C08 only uses the A<sub>2</sub> input for hardwire addressing and a total of two 8K devices may be addressed on a single bus system. The A<sub>0</sub> and A<sub>1</sub> pins are no connects.

The AT24C16 does not use the device address pins which limits the number of devices on a single bus to one. The A<sub>0</sub>, A<sub>1</sub> and A<sub>2</sub> pins are no connects.

(continued)



# MX29LV160BT/BB

16M-BIT [2Mx8/1Mx16] CMOS SINGLE VOLTAGE  
3V ONLY FLASH MEMORY

## FEATURES

- Extended single - supply voltage range 2.7V to 3.6V
- 2,097,152 x 8/1,048,576 x 16 switchable
- Single power supply operation
  - 3.0V only operation for read, erase and program operation
- **Fully compatible with MX29LV160A device**
- Fast access time: 70/90ns
- Low power consumption
  - 30mA maximum active current
  - 0.2uA typical standby current
- Command register architecture
  - Byte/word Programming (9us/11us typical)
  - Sector Erase (Sector structure 16K-Bytex1, 8K-Bytex2, 32K-Bytex1, and 64K-Byte x31)
- Auto Erase (chip & sector) and Auto Program
  - Automatically erase any combination of sectors with Erase Suspend capability.
  - Automatically program and verify data at specified address
- Erase Suspend/Erase Resume
  - Suspends sector erase operation to read data from, or program data to, any sector that is not being erased, then resumes the erase.
- Status Reply
  - Data polling & Toggle bit for detection of program and
  - erase operation completion.
- Ready/Busy pin (RY/BY)
  - Provides a hardware method of detecting program or erase operation completion.
- Sector protection
  - Hardware method to disable any combination of sectors from program or erase operations
  - Temporary sector unprotect allows code changes in previously locked sectors.
- CFI (Common Flash Interface) compliant
  - Flash device parameters stored on the device and provide the host system to access
- 100,000 minimum erase/program cycles
- Latch-up protected to 100mA from -1V to VCC+1V
- Boot Sector Architecture
  - T = Top Boot Sector
  - B = Bottom Boot Sector
- Low VCC write inhibit is equal to or less than 1.4V
- Package type:
  - 44-pin SOP
  - 48-pin TSOP
  - 48-ball CSP
- Compatibility with JEDEC standard
  - Pinout and software compatible with single-power supply Flash
- 10 years data retention

## GENERAL DESCRIPTION

The MX29LV160BT/BB is a 16-mega bit Flash memory organized as 2M bytes of 8 bits or 1M words of 16 bits. MXIC's Flash memories offer the most cost-effective and reliable read/write non-volatile random access memory. The MX29LV160BT/BB is packaged in 44-pin SOP, 48-pin TSOP and 48-ball CSP. It is designed to be reprogrammed and erased in system or in standard EPROM programmers.

The standard MX29LV160BT/BB offers access time as fast as 70ns, allowing operation of high-speed microprocessors without wait states. To eliminate bus contention, the MX29LV160BT/BB has separate chip enable (CE) and output enable ( $\overline{OE}$ ) controls.

MXIC's Flash memories augment EPROM functionality with in-circuit electrical erasure and programming. The MX29LV160BT/BB uses a command register to manage this functionality. The command register allows for

100% TTL level control inputs and fixed power supply levels during erase and programming, while maintaining maximum EPROM compatibility.

MXIC Flash technology reliably stores memory contents even after 100,000 erase and program cycles. The MXIC cell is designed to optimize the erase and programming mechanisms. In addition, the combination of advanced tunnel oxide processing and low internal electric fields for erase and program operations produces reliable cycling. The MX29LV160BT/BB uses a 2.7V~3.6V VCC supply to perform the High Reliability Erase and auto Program/Erase algorithms.

The highest degree of latch-up protection is achieved with MXIC's proprietary non-epi process. Latch-up protection is proved for stresses up to 100 milliamps on address and data pin from -1V to VCC + 1V.

# LP2996

## DDR Termination Regulator

### General Description

The LP2996 linear regulator is designed to meet the JEDEC SSTL-2 specifications for termination of DDR-SDRAM. The device contains a high-speed operational amplifier to provide excellent response to load transients. The output stage prevents shoot through while delivering 1.5A continuous current and transient peaks up to 3A in the application as required for DDR-SDRAM termination. The LP2996 also incorporates a  $V_{SENSE}$  pin to provide superior load regulation and a  $V_{REF}$  output as a reference for the chipset and DIMMs.

An additional feature found on the LP2996 is an active low shutdown ( $\overline{SD}$ ) pin that provides Suspend To RAM (STR) functionality. When  $\overline{SD}$  is pulled low the  $V_{TT}$  output will tri-state providing a high impedance output, but,  $V_{REF}$  will remain active. A power savings advantage can be obtained in this mode through lower quiescent current.

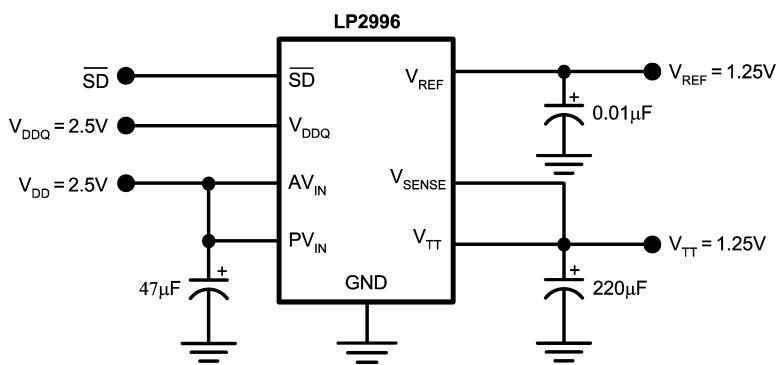
### Features

- Source and sink current
- Low output voltage offset
- No external resistors required
- Linear topology
- Suspend to Ram (STR) functionality
- Low external component count
- Thermal Shutdown
- Available in SO-8, PSOP-8 or LLP-16 packages

### Applications

- DDR-I and DDR-II Termination Voltage
- SSTL-2 and SSTL-3 Termination
- HSTL Termination

### Typical Application Circuit



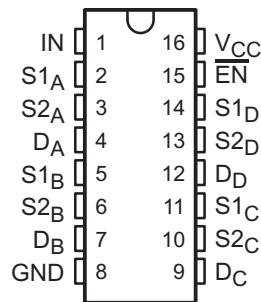
20057518

TS5V330  
QUAD SPDT WIDE-BANDWIDTH VIDEO SWITCH  
WITH LOW ON-STATE RESISTANCE

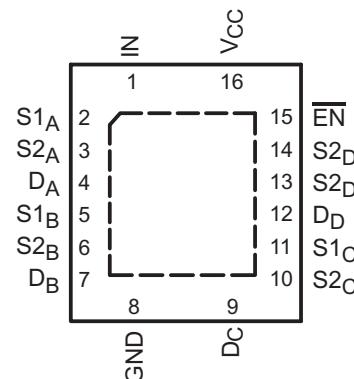
SCDS164A – MAY 2004 – REVISED MAY 2004

- Low Differential Gain and Phase ( $D_G = 0.64\%$ ,  $D_p = 0.1$  Degrees Typ)
- Wide Bandwidth (BW = 300 MHz Min)
- Low Crosstalk ( $X_{TALK} = -63$  dB Typ)
- Low Power Consumption ( $I_{CC} = 3 \mu A$  Max)
- Bidirectional Data Flow, With Near-Zero Propagation Delay
- Low ON-State Resistance ( $r_{on} = 3 \Omega$  Typ)
- $V_{CC}$  Operating Range From 4.5 V to 5.5 V
- $I_{off}$  Supports Partial-Power-Down Mode Operation
- Data and Control Inputs Provide Undershoot Clamp Diode
- Control Inputs Can Be Driven by TTL or 5-V/3.3-V CMOS Outputs
- Latch-Up Performance Exceeds 100 mA Per JESD 78, Class II
- ESD Performance Tested Per JESD 22
  - 2000-V Human-Body Model (A114-B, Class II)
  - 1000-V Charged-Device Model (C101)
- Suitable for Both RGB and Composite-Video Switching

D, DBQ, OR PW PACKAGE  
(TOP VIEW)



RGY PACKAGE  
(TOP VIEW)



### description/ordering information

The TI TS5V330 video switch is a 4-bit 1-of-2 multiplexer/demultiplexer with a single switch-enable ( $\overline{EN}$ ) input. When  $\overline{EN}$  is low, the switch is enabled and the D port is connected to the S port. When  $\overline{EN}$  is high, the switch is disabled and the high-impedance state exists between the D and S ports. The select (IN) input controls the data path of the multiplexer/demultiplexer.

### ORDERING INFORMATION

$T_A$	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
$-40^{\circ}C$ to $85^{\circ}C$	QFN – RGY	Tape and reel	TS5V330RGYR	TE330
	SOIC – D	Tube	TS5V330D	TS5V330
		Tape and reel	TS5V330DR	
	SSOP (QSOP) – DBQ	Tape and reel	TS5V330DBQR	TE330
	TSSOP – PW	Tube	TS5V330PW	TE330
		Tape and reel	TS5V330PWR	

† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

Copyright © 2004, Texas Instruments Incorporated



POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

## 24-bit, 192kHz Stereo CODEC with 5 Channel I/P Multiplexer

### DESCRIPTION

The WM8776 is a high performance, stereo audio CODEC with five channel input selector. The WM8776 is ideal for surround sound processing applications for home hi-fi, DVD-RW and other audio visual equipment.

A stereo 24-bit multi-bit sigma delta ADC is used with a five stereo channel input mixer. Each ADC channel has programmable gain control with automatic level control. Digital audio output word lengths from 16-32 bits and sampling rates from 32kHz to 96kHz are supported.

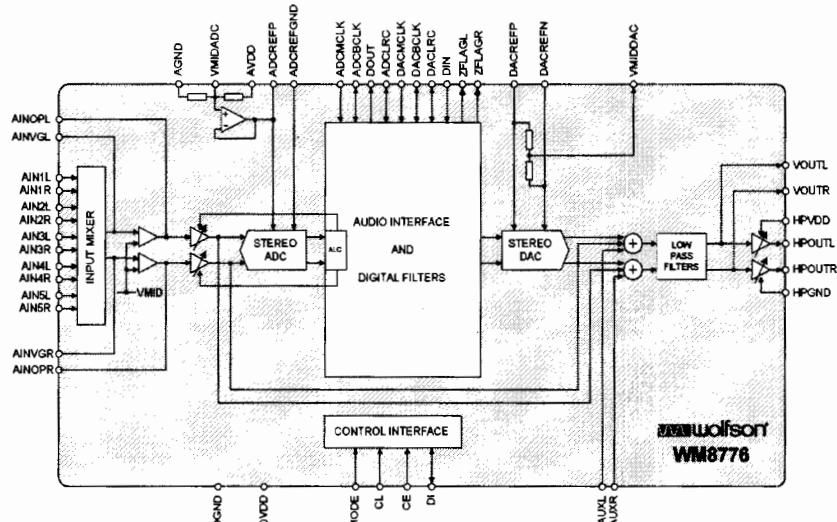
A stereo 24-bit multi-bit sigma delta DAC is used with digital audio input word lengths from 16-32 bits and sampling rates from 32kHz to 192kHz. The DAC has an input mixer allowing an external analogue signal to be mixed with the DAC signal. There are also Headphone and line outputs, with volume controls for the headphones.

The WM8776 supports fully independent sample rates for the ADC and DAC. The audio data interface supports I<sup>2</sup>S, left justified, right justified and DSP formats.

The device is controlled in software via a 2 or 3 wire serial interface, selected by the MODE pin, which provides access to all features including channel selection, volume controls, mutes, and de-emphasis facilities.

The device is available in a 48-pin TQFP package.

### BLOCK DIAGRAM



### FEATURES

- Audio Performance
  - 108dB SNR ('A' weighted @ 48kHz) DAC
  - 102dB SNR ('A' weighted @ 48kHz) ADC
- DAC Sampling Frequency: 32kHz – 192kHz
- ADC Sampling Frequency: 32kHz – 96kHz
- Five stereo ADC inputs with analogue gain adjust from +24dB to -21dB in 0.5dB steps
- Programmable Limiter or Automatic Level Control (ALC)
- Stereo DAC with independent analogue and digital volume controls
- Stereo Headphone and Line Output
- 3-Wire SPI Compatible or 2-Wire Software Serial Control Interface
- Master or Slave Clocking Mode
- Programmable Audio Data Interface Modes
  - I<sup>2</sup>S, Left, Right Justified or DSP
  - 16/20/24/32 bit Word Lengths
- Analogue Bypass Path Feature
- Selectable AUX input to the volume controls
- 2.7V to 5.5V Analogue, 2.7V to 3.6V Digital supply Operation

### APPLICATIONS

- Surround Sound AV Processors and Hi-Fi systems
- DVD-RW



## $\pm 15kV$ ESD-Protected, +5V RS-232 Transceivers

**MAX202E-MAX213E, MAX232E/MAX241E**

### General Description

The MAX202E-MAX213E, MAX232E/MAX241E line drivers/receivers are designed for RS-232 and V.28 communications in harsh environments. Each transmitter output and receiver input is protected against  $\pm 15kV$  electrostatic discharge (ESD) shocks, without latchup. The various combinations of features are outlined in the *Selection Guide*. The drivers and receivers for all ten devices meet all EIA/TIA-232E and CCITT V.28 specifications at data rates up to 120kbps, when loaded in accordance with the EIA/TIA-232E specification.

The MAX211E/MAX213E/MAX241E are available in 28-pin SO packages, as well as a 28-pin SSOP that uses 60% less board space. The MAX202E/MAX232E come in 16-pin narrow SO, wide SO, and DIP packages. The MAX203E comes in a 20-pin DIP/SO package, and needs no external charge-pump capacitors. The MAX205E comes in a 24-pin wide DIP package, and also eliminates external charge-pump capacitors. The MAX206E/MAX207E/MAX208E come in 24-pin SO, SSOP, and narrow DIP packages. The MAX232E/MAX241E operate with four  $1\mu F$  capacitors, while the MAX202E/MAX206E/MAX207E/MAX208E/MAX211E/MAX213E operate with four  $0.1\mu F$  capacitors, further reducing cost and board space.

### Applications

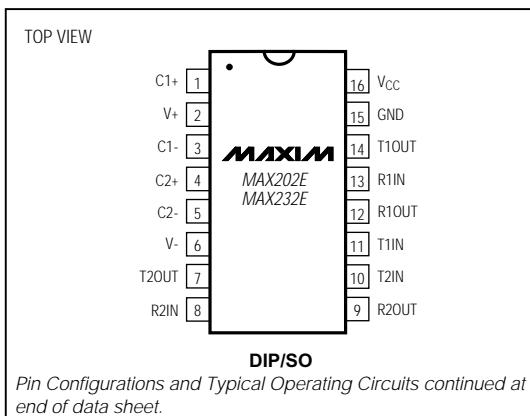
Notebook, Subnotebook, and Palmtop Computers  
Battery-Powered Equipment  
Hand-Held Equipment

*Ordering Information appears at end of data sheet.*

### Features

- ♦ **ESD Protection for RS-232 I/O Pins:**
  - ±15kV—Human Body Model
  - ±8kV—IEC1000-4-2, Contact Discharge
  - ±15kV—IEC1000-4-2, Air-Gap Discharge
- ♦ **Latchup Free (unlike bipolar equivalents)**
- ♦ **Guaranteed 120kbps Data Rate—LapLink™ Compatible**
- ♦ **Guaranteed 3V/ $\mu s$  Min Slew Rate**
- ♦ **Operate from a Single +5V Power Supply**

### Pin Configurations



### Selection Guide

PART	No. of RS-232 DRIVERS	No. of RS-232 RECEIVERS	RECEIVERS ACTIVE IN SHUTDOWN	No. of EXTERNAL CAPACITORS	LOW-POWER SHUTDOWN	TTL THREE-STATE
<b>MAX202E</b>	2	2	0	4 (0.1 $\mu F$ )	No	No
<b>MAX203E</b>	2	2	0	None	No	No
<b>MAX205E</b>	5	5	0	None	Yes	Yes
<b>MAX206E</b>	4	3	0	4 (0.1 $\mu F$ )	Yes	Yes
<b>MAX207E</b>	5	3	0	4 (0.1 $\mu F$ )	No	No
<b>MAX208E</b>	4	4	0	4 (0.1 $\mu F$ )	No	No
<b>MAX211E</b>	4	5	0	4 (0.1 $\mu F$ )	Yes	Yes
<b>MAX213E</b>	4	5	2	4 (0.1 $\mu F$ )	Yes	Yes
<b>MAX232E</b>	2	2	0	4 (1 $\mu F$ )	No	No
<b>MAX241E</b>	4	5	0	4 (1 $\mu F$ )	Yes	Yes

LapLink is a registered trademark of Traveling Software, Inc.



Maxim Integrated Products 1

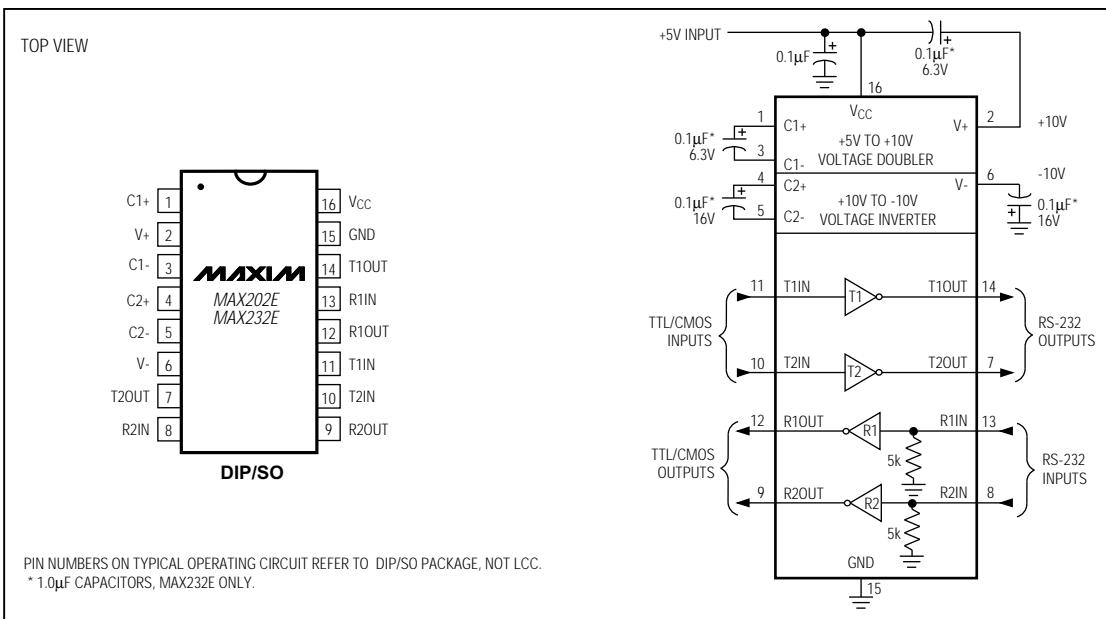
For free samples & the latest literature: <http://www.maxim-ic.com>, or phone 1-800-998-8800

*$\pm 15kV$  ESD-Protected, +5V RS-232 Transceivers*

**Table 3. DB9 Cable Connections  
Commonly Used for EIA/TIAE-232E and  
V.24 Asynchronous Interfaces**

PIN	CONNECTION	
1	Received Line Signal Detector (sometimes called Carrier Detect, DCD)	Handshake from DCE
2	Receive Data (RD)	Data from DCE
3	Transmit Data (TD)	Data from DTE
4	Data Terminal Ready	Handshake from DTE
5	Signal Ground	Reference point for signals
6	Data Set Ready (DSR)	Handshake from DCE
7	Request to Send (RTS)	Handshake from DTE
8	Clear to Send (CTS)	Handshake from DCE
9	Ring Indicator	Handshake from DCE

*Pin Configurations and Typical Operating Circuits (continued)*



**MAXIM**

## SPECIFICATION FOR APPROVAL

Part No. MLT186A  
Description: LCD Power Supply Specification  
Revision: 1.0  
Customer. SANSUI ELECTRIC  
Customer Approval No. :

Please return to us one original of “**SPECIFICATION FOR APPROVAL**” with your approved signatures.

APPROVED SIGNATURES	
APPROVED BY:	DATE:
CHOP & SIGNATURES:	

### SHENZHEN MEGMEET ELECTRICAL TECHNOLOGY CO.,LTD

Add: 6F Tower 2, Zhongjian Industrial Building  
18 Yanshan Road , Shekou, Shenzhen, P.R.China  
ZIP CODE:518067  
TEL: (0755)26693042 26693442  
FAX: (0755)26693047  
E-mail: [YDP@megmeet.com](mailto:YDP@megmeet.com)

MEGMEET				DESCRIPTION: <b>SPECIFICATION</b>
MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.				Model No. : <b>MLT186</b>
DATE	PREPARED	CHECKED	APPROVED	Document No. : <b>MLT186-1.0</b>
09-12-2005	QIU	ZHANGZHI	TONY YANG	REV: 1.0

M E G M E E T

<b>MEGMEET</b> <b>MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.</b>				DESCRIPTION: <b>SPECIFICATION</b>	
THESE SPECIFICATION ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.				Model No. : MLT186	
DATE	PREPARED	CHECKED	APPROVED	Document No. : MLT186-1. 0	REV: 1. 0
09-12-2005	QIU	ZHANGZHI	TONY YANG		

# Section

## 1. Power supply overview

- 1.1 Input Electrical Characteristics Overview
- 1.2 Output Electrical Characteristics Overview
  - 1.2.1 Output Voltage ,Current & Regulation.
  - 1.2.2 DC Output Ripple & Noise.
  - 1.2.3 Output Transient Response.
  - 1.2.4 DC Output Hold-Up Time.
  - 1.2.4 DC Output Overshoot At Turn On & Turn Off.
  - 1.2.6 DC output voltage rise time
- 1.3 Remote On/Off Control:
- 1.4 Protection:
  - 1.4.1 DC output Over Voltage Protection.
  - 1.4.2 DC Output Over current Protection.
  - 1.4.3 DC Output Short Circuit Protection.
  - 1.4.4 Over Temperature Protection.
  - 1.4.5 Reset After Shutdown.

## 2. Isolation

## 3. Safety

## 4. EMC

- 4.1 EMI
- 4.2 EMS

## 5. Environmental Requirement

- 5.1 Temperature
- 5.2 Humidity
- 5.3 Altitude
- 5.4 Cooling Method
- 5.5 Vibration
- 5.6 Impact

## 6. Dimension

## 7. Weight

## 8. Pin Connection

MEGMEET				DESCRIPTION: <b>SPECIFICATION</b>
MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.				Model No. : <b>MLT186</b>
DATE	PREPARED	CHECKED	APPROVED	Document No. : <b>MLT186-1.0</b>
09-12-2005	QIU	ZHANGZHI	TONY YANG	REV: 1.0

## 9. Power Supply mounting

### 1. Power Supply Overview:

#### 1.1 Table 1 Input Electrical Characteristics Overview

Input voltage range	90Vac to 264Vac
Normal voltage range	100Vac to 240Vac
Frequency range	50Hz/60Hz ±5%
Max input ac current	3.5Amax at full load condition
Inrush current (cold start)	50Atyp peak, 120Vac; 100Atyp peak, 220Vac
Efficiency (full load)	84%min at 90Vac; 87%min at 220Vac
Harmonic current	Meet GB17625.1-1998/IEC61000-3-2 class D
Leakage Current	Less Than 0.75mA, 230Vac input
Standby Power Loss	≤0.8W, 265Vac input
Input Fuse	T5A/250Vac

#### 1.2 Output Electrical Characteristics Overview

##### 1.2.1 Table 2 Output Voltage ,Current & Regulation.

Output Voltage	Regulation	Min. current	Rated current	Peak current
+V1(+24V)	±3%	0.3A	5A	6A*
+V2(+24V)	±8%	0	1A	1.5A
+V3(+12V)	±3%	0.2A	1.5A	2A*
+5V	±5%	0.1A	6A	6A
+5.1VSB	±3%	0.01A	1A	1A

Note: \* pulse width within 100ms

##### 1.2.2 Table 3 DC Output Ripple & Noise.

Output Voltage	Ripple & Noise (Max.)
+V1/V2(+24V)	240mVp-p@25°C; 350mVp-p@-10°C
+V3(+12V)	120mVp-p@25°C; 200mVp-p@-10°C
+5V	60mVp-p@25°C; 200mVp-p@-10°C
+5.1VSB	60mVp-p@25°C; 200mVp-p@-10°C; 150mVpp when STB

Note: 1) Measurements shall be made with an oscilloscope with 20MHz bandwidth.

MEGMEET				DESCRIPTION: SPECIFICATION
MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.				
THESE SPECIFICATION ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.				Model No. : MLT186
DATE	PREPARED	CHECKED	APPROVED	Document No. : MLT186-1. 0
09-12-2005	QIU	ZHANGZHI	TONY YANG	REV: 1. 0

2) Outputs shall be bypassed at the connector with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor to simulate system loading.

### 1.2.3 Output Transient Response.

Table 4. Test condition.

Voltage Tolerance Limit	Slew Rate	Load Change
V1/V3 $\pm 5\%$	0.2A/uS	Min. to 50% load and 50% to Max load
+V2 $\pm 10\%$		
+5V $\pm 5\%$		
+5.1VSB $\pm 5\%$		
all outputs $\pm 10\%$	0.2A/uS	Min. load to Max load

Note: Transient response measurements shall be made with a load changing repetition rate of 50Hz to 10kHz.

### 1.2.4 Table 5 DC Output Hold-Up Time.

Output Voltage	120Vac input	220Vac input
+V1/+V2(+24V)	$\geq 10$ mS	$\geq 10$ mS
+V3(+12V)	$\geq 10$ mS	$\geq 10$ mS
+5V/+5.1VSB	$\geq 10$ mS	$\geq 10$ mS
Note: All of dc output at full load.		

### 1.2.5 Table 6 DC Output Overshoot At Turn On & Turn Off.

Output Channel	Output (V)	Over shoot voltage (V)	
		Turn on	Turn off
+V1	+24V	2%	2%
+V2	+24V	5%	5%
+V3	+ 12V	2%	2%
+5V	+5V	5%	5%
+5.1VSB	+5. 1V	5%	5%
Note: All of dc output current from Min. to Max.			

### 1.2.6 Table 7 DC output voltage rise time

Output Voltage	120Vac input & Full Load	220Vac input & Full Load
+V1/+V2(+24V)	$\leq 100$ mS	$\leq 100$ mS

<b>MEGMEET</b>				<b>DESCRIPTION:</b>	<b>SPECIFICATION</b>
<b>MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.</b>					
THESE SPECIFICATION ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.				Model No. :	
DATE	PREPARED	CHECKED	APPROVED	Document No. :	REV:
09-12-2005	QIU	ZHANGZHI	TONY YANG	MLT186-1. 0	1. 0

+V3(+12V)	$\leq 100$ mS	$\leq 100$ mS
+5V	$\leq 100$ mS	$\leq 100$ mS
+5.1VSB	$\leq 100$ mS	$\leq 100$ mS

Note: The output voltages shall rise from 10% to 90% of their output voltage.

### 1.3 Remote On/Off Control:

The power supply DC outputs (without +5.1Vsb) shall be enable with an active-high TTL( $\geq 2.0V/2.0mA$ ) -compatible signal(Ps-on). The +5.1Vsb is on whenever the AC power is present.

- \* When Ps-on is pulled to TTL high, the DC outputs are to be enabled.
- \* When Ps-on is pulled to TTL low or open circuit, the DC outputs are to be disabled.

Table 8.

Ps-on Signal	Comments	Outputs
Ps-on- high	$\geq 2.5V\&2.0mA$ ( source)	Enable
Ps-on- low	$\leq 1.5 V$	X
Ps-on-open	--	X

### 1.4 Protection:

#### 1.4.1 Table 9 DC output Over Voltage Protection.

Output Voltage	Max. Over Voltage	Comments
+V1(+24V)	28V	Power supply latch into shutdown state
+5.0V	7Vtyp	Hiccup

Note: The power supply shall be test at max AC voltage (270Vac) and min load or no load.

#### 1.4.2 Table 10 DC Output Over current Protection.

Output Voltage	Over Current	Comments
----------------	--------------	----------

<b>MEGMEET</b> <b>MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.</b>				<b>DESCRIPTION:</b> <b>SPECIFICATION</b>
THESE SPECIFICATION ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.				Model No. : MLT186
DATE <b>09-12-2005</b>	PREPARED <b>QIU</b>	CHECKED <b>ZHANGZHI</b>	APPROVED <b>TONY YANG</b>	Document No. : <b>MLT186-1. 0</b>
				REV: <b>1. 0</b>

+V1(+24V)	$\geq 7$ Atyp	Shutdown
+V2(+24V)	$\geq 2$ Atyp	Shutdown
+V3(+12V)	$\geq 3$ A	Shutdown
+5V/+5.1VSB	$\geq 9$ A type	Hiccup

1.4.3 Table 11 DC Output Short Circuit Protection.

Output Voltage	Comments
+V1(+24V)	Shutdown
+V2(+24V)	Shutdown
+V3(+12V)	Shutdown
+5V/5.1VSB	Hiccup

1.4.4 Reset After Shutdown.

Recycle the ps-on signal, the power supply will restart after the fault removed.

## 2. Isolation

2.1 Table 12

Input To Output	DC500V 50MΩ min (at room temperature)
Input To FG	DC500V 50MΩ min (at room temperature)
Output To FG	Non Isolated

2.2 Table 13

Input To Output	3000Vac 50Hz 1minute $\leq 10$ mA
Input To FG	1500Vac 50Hz 1minute $\leq 10$ mA
Output To FG	Non Isolated

Note: Open FG and Output return.

## 3. Safety

The power supply shall compliance with the following Criterion:

- 1) UL60950
- 2) EN60950
- 3) GB4943-1995/GB8898-2001

MEGMEET				DESCRIPTION: <b>SPECIFICATION</b>
<b>MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.</b>				
THESE SPECIFICATION ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.				Model No. : <b>MLT186</b>
DATE	PREPARED	CHECKED	APPROVED	Document No. : <b>MLT186-1.0</b>
09-12-2005	QIU	ZHANGZHI	TONY YANG	REV: 1.0

## 4. EMC

### 4.1 EMI

The power supply shall compliance with the following Criterion:

1) Conduction Emission :

- \*EN55013, CLASS B
- \*GB13837-2003, CLASS B
- \*CISPR13:2001

2) Radiated Emission :

- \*EN55013, CLASS B
- \*GB13837-2003, CLASS B
- \*CISPR13:2001

### 4.2 EMS

The power supply shall compliance with the following Criterion:

1) ESD

\*GB17626. 2-1998/IEC61000-4-2 Lever 3

2) EFT

\*GB17626. 4-1998/IEC61000-4-4 Lever 3

3) SURGE

\*GB17626. 5-1998/IEC61000-4-5 Lever 3

4) DIP

\*GB17626. 11-1998/IEC61000-4-11 Class B/C

## 5. Environmental Requirement

### 5.1 Temperature

\* Operating: -10°C to +50°C.

\* Store: -20°C to +80°C.

### 5.2 Humidity

\* Operating: From 10% to 90% relative humidity (non-condensing).

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

### 5.3 Altitude

\* Operating: to 10,000 ft.

\* Store: to 20,000 ft.

### 5.4 Cooling Method

\* Ventilation cooling.

### 5.5 Vibration

\* 10-55Hz, 49.0m/s<sup>2</sup> (5G), 3 minutes period, 20 minutes each along X, Y and Z axis.

### 5.6 Impact

\* 196.1m/s<sup>2</sup> (20G), 11ms, once each X, Y and Z axis.

MEGMEET				DESCRIPTION: <b>SPECIFICATION</b>
MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.				
THESE SPECIFICATION ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.				Model No. : <b>MLT186</b>
DATE	PREPARED	CHECKED	APPROVED	Document No. : <b>MLT186-1.0</b>
09-12-2005	QIU	ZHANGZHI	TONY YANG	REV: 1.0

## 6. Dimension (物理尺寸)

\* 200mm X 130mm X 25mm (L \*W \* H ).

## 7. Weight

\* 680g

## 8. Pin Connection

**Table 15 CN3**

**VENTER:**

NO.	Pin Connection	Function
1	+24VAUDIO	+24VDC OUTPUT
2	+24VAUDIO	+24VDC OUTPUT
3	GND	+24VDC RETURN
4	GND	+24VDC RETURN

Note: CN3 -- JST VA CONNEETION, TYPE : pitch:2.0mm

**Table 16 CN2**

**VENTER:**

NO.	Pin Connection	Function
1	+24V	+24VDC OUTPUT
2	+24V	+24VDC OUTPUT
3	+24V	+24VDC OUTPUT
4	+24V	+24VDC OUTPUT
5	GND	+24VDC RETURN
6	GND	+24VDC RETURN
7	GND	+24VDC RETURN
8	GND	+24VDC RETURN

Note: CN2 -- JST VA CONNEETION, TYPE : pitch:2.54mm

**Table 17 CN1**

**VENTER:**

NO.	Pin Connection	Function
1	+12V	+12DC OUTPUT
2	+12V	+12DC OUTPUT
3	+12V	+12DC OUTPUT
4	GND	+12V/+5VDC RETURN
5	GND	+12V/+5VDC RETURN

**MEGMEET**

**MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.**

**DESCRIPTION:**

**SPECIFICATION**

THESE SPECIFICATION ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD  
AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL  
OF APPARATUSES OR DEVICES WITHOUT PERMISSION.

**Model No. :**

**MLT186**

DATE	PREPARED	CHECKED	APPROVED	Document No. :	REV:
09-12-2005	QIU	ZHANGZHI	TONY YANG	MLT186-1. 0	1. 0

6	GND	+12V/+5VDC RETURN
7	+5V	+5DC OUTPUT
8	+5V	+5DC OUTPUT
9	+5V	+5DC OUTPUT
10	+5V	+5DC OUTPUT
11	+5V	+5DC OUTPUT

Note: CN2 -- JST VA CONNEETION, TYPE : pitch:2.0mm

**Table 15 CN4**

**VENTER:**

NO.	Pin Connection	Function
1	+5VSB	+5VSB OUTPUT
2	+5VSB	+5VSB OUTPUT
3	GND	+5VSB RETURN
4	GND	+5VSB RETURN
5	PS-ON	PS-ON

Note: CN3 -- JST VA CONNEETION, TYPE : pitch:2.0mm

**Table 18 CON1**

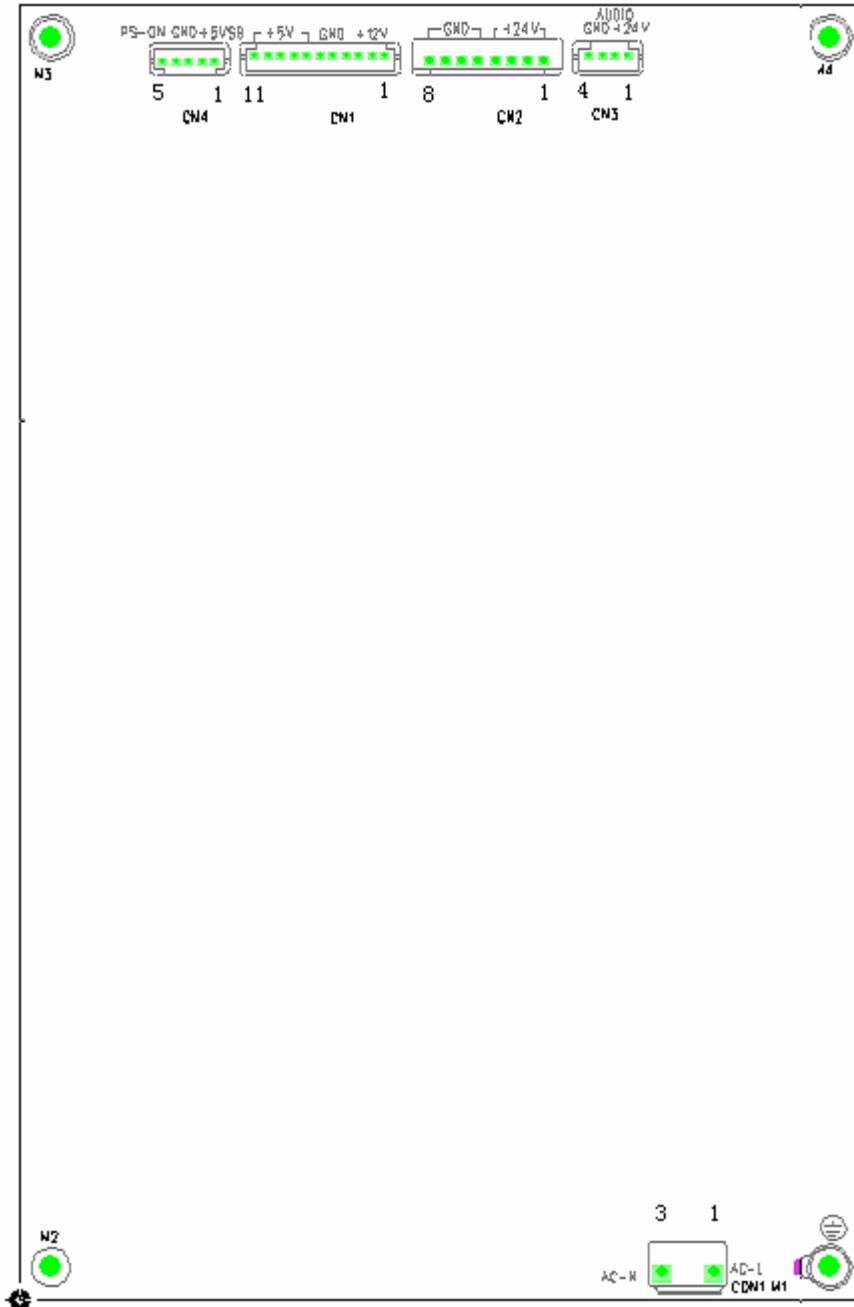
**VENTER:**

NO.	Pin Connection	Function
①	AC-L	AC INPUT LINE
②	NC	NC
③	AC-N	AC INPUT NUTURE

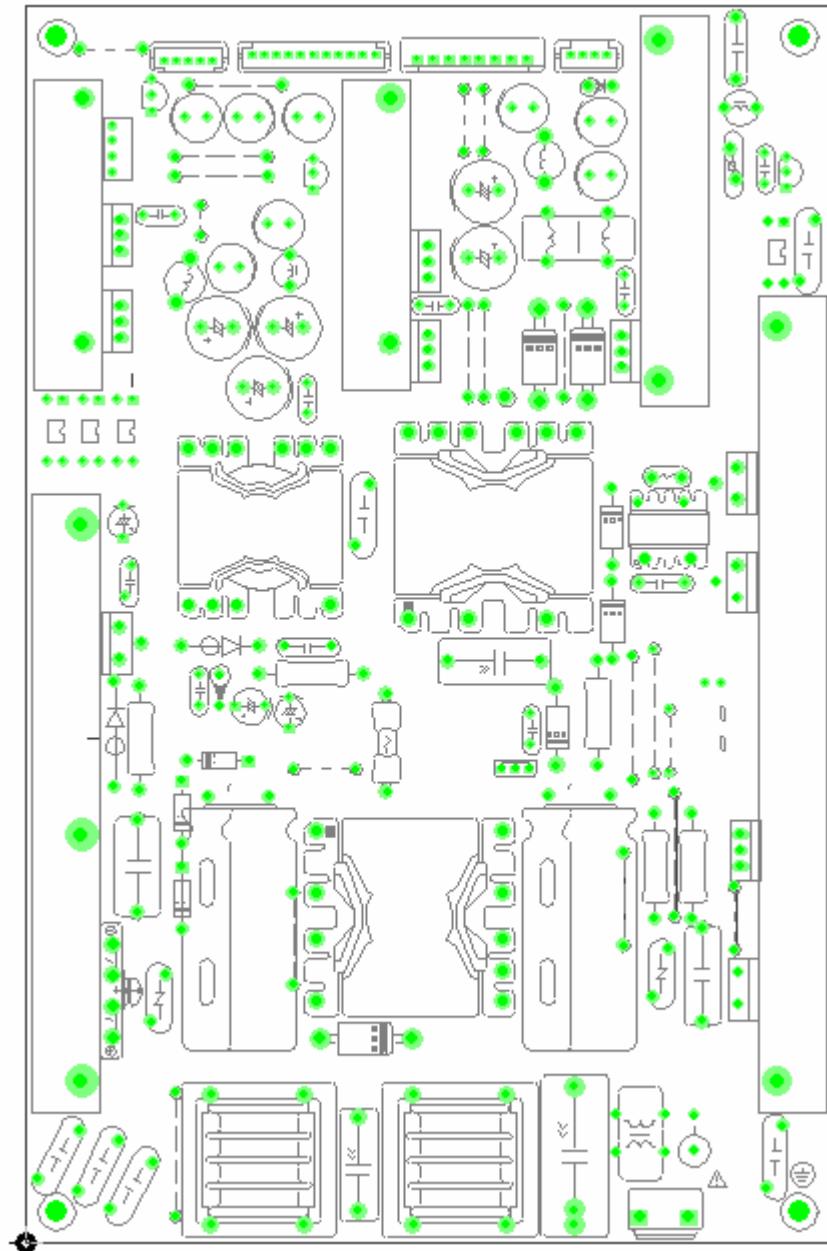
Note: CN3 -- JST VA CONNEETION, TYPE : pitch:3.96mm

**Fig.8.1 Pin Connection (Top View)**

<b>MEGMEET</b> <b>MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.</b>				<b>DESCRIPTION:</b> <b>SPECIFICATION</b>
THESE SPECIFICATION ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.				Model No. :  MLT186
DATE <b>09-12-2005</b>	PREPARED <b>QIU</b>	CHECKED <b>ZHANGZHI</b>	APPROVED <b>TONY YANG</b>	Document No. :  MLT186-1. 0
				REV:  1. 0



MEGMEET				DESCRIPTION: <b>SPECIFICATION</b>
MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.				Model No. : <b>MLT186</b>
DATE	PREPARED	CHECKED	APPROVED	Document No. : <b>MLT186-1.0</b>
09-12-2005	QIU	ZHANGZHI	TONY YANG	REV: 1.0



**MEGMEET**

**MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.**

**DESCRIPTION:**

**SPECIFICATION**

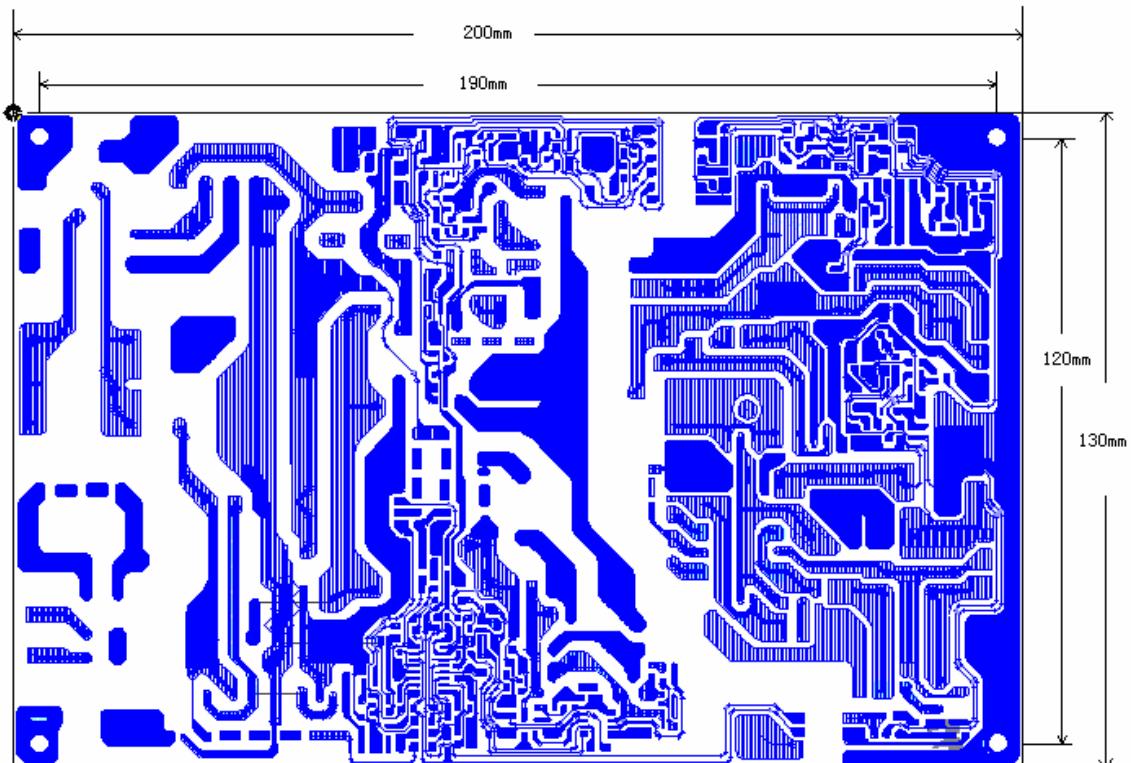
THESE SPECIFICATIONS ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD  
AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL  
OF APPARATUSES OR DEVICES WITHOUT PERMISSION.

**Model No. :**

**MLT186**

DATE	PREPARED	CHECKED	APPROVED	Document No. :	REV:
09-12-2005	QIU	ZHANGZHI	TONY YANG	MLT186-1. 0	1. 0

## 9. Power Supply Mounting



<b>MEGMEET</b> <b>MEGMEET ELECTRICAL TECHNOLOGY CO., LTD.</b>				<b>DESCRIPTION:</b> <b>SPECIFICATION</b>
THESE SPECIFICATIONS ARE THE PROPERTY OF MEGMEET ELECTRICAL TECHNOLOGY CO., LTD AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.				Model No. : <b>MLT186</b>
DATE <b>09-12-2005</b>	PREPARED <b>QIU</b>	CHECKED <b>ZHANGZHI</b>	APPROVED <b>TONY YANG</b>	Document No. : <b>MLT186-1.0</b>
				REV: <b>1.0</b>

# SPECIFICATION

CUSTOMER:

DESCRIPTION: Slot-in DVD LOADER

MODEL: DL-06 series(DL-06\*\*)

2005.11.02

ISSUE DATE:

CUSTOMER APPROVED

Approved	Checked by Sales Dept.	Checked by Technical Dept.	Prepared

**FORYOU**惠州市华阳多媒体电子有限公司  
HUIZHOU FORYOU MULTIMEDIA ELECTRONICS CO., LTD.

1. Scope
  - 1.1 This specification applies to Slot-in DVD mechanism for DVD player (hereafter called DVD mechanism ). Foryou model : DL-06\*\*.
  - 1.2 Any query over the specification shall be expressed by R&D dept. of Foryou Multimedia Electronics Co.,Ltd.
  - 1.3 For improving performance purpose, this specification is subject to change according to pre-agreement established between us.
  - 1.4 Hardware and software or manufacturing process may subject to change for improvements within the rang of the specifications.
2. Dimension of shell and installation
  - 2.1 See attachment for details of dimension of shell and installation.
3. General specification
  - 3.1 Mechanism
    - 3.1.1 Disc loading: Motorized loading.
    - 3.1.2 Disc ejecting: Motorized ejection.
    - 3.1.3 Play: Loading → auto play
    - 3.1.4 Skew adjusting: adjust two points on the base of spindle motor.
    - 3.1.5 Pick-up feed mode: gear and rack drive.
    - 3.1.6 Range of pick-up movement: 22.5mm ~ 59mm, from the center of spindle motor.

### 3.1.7

Anti vibration: two steps of dampers to reduce the vibration.

### 3.2 Power supply

DC12 ±1V (600 mA) & DC5±0.2V (660 mA) .

### 3.3 Pick-up

3.3.1 Pick-up: PVR-520T、PVR-502W (MITSUMI)、HOP-1200S (W) (HITACHI)、  
OPU-3153 (SANKYO)、SF-HD62 (SANYO)、SF-HD65 (SANYO) two laser diode and  
single object lens pickup.

### 3.4 Motor

3.4.1 Spindle motor: DC brush motor: CCM03-030R1-26O ( (Moretech).

3.4.2 Sled motor: WRF-300CA-09600.

3.4.3 Loading motor: WFF-050SB-10200.

### 3.5 Detect switch

3.5.1 Pick-up inner position detecting SW: (WI-A278)、(DS3-A-0001)

3.5.2 Disc chucking detecting SW: ESE22 (Type B)×1pcs

3.5.3 Disc detecting SW: ESE22 (Type B)×2pcs (Panasonic).

3.6 Weight: approximate 476 g.

## 4. General performance

### 4.1 Disc specification

Diameter of disc:  $\Phi 120 \pm 0.3$ ,  $\Phi 80 \pm 0.3$

Thickness of Disc: 1.2(+0.3,-0.1)

Type of disc:

DVD Video;  
CD-DA;  
Video CD;  
CD-R, CD-RW;

#### 4.2

Prevention from the 2<sup>nd</sup> disc insertion: the second disc can't be loaded when there is a disc in mechanism.

#### 4.3

Noise Spec.  $\leq 65$  dB (A)

Noise level tests shall be carried out in an anechoic room with background noise 20 dB (A) or less. Noise shall be measured at a position 10cm from the front of the mechanical section.

### 5. Conditions of operation and storage

5.1 Operation temperature range: 0°C ~ +45°C.

5.2 Range of storage: -20°C ~ +60°C

5.3 Operation moisture range: 10% ~ 80% RH.

5.4 Storage moisture range: 0% ~ 90% RH.

5.5 Atmospheric pressure: 860mBar ~ 1060 mBar.

### 6. Condition of performance evaluation

6.1 Installation: see attachment. Tightened on work table; Installation angle:  
forth and back:  $\pm 10^\circ$ , left and right:  $\pm 10^\circ$ .

#### 6.2 Environment of evaluation

Temperature :  $25\pm 2^\circ\text{C}$

Humidity :  $60\pm 5\%$  (RH)

But, if have no doubt to the evaluation result, you can also according to the following items:

Temperature : +15°C ~ +30°C

Humidity : 45% ~ 75%RH

Noise: in an anechoic room with background noise 20dB (A) or less.

### 6.3 Test circuit and equipment

#### 6.3.1

Refer FORYOU's standard circuit and equivalent.

## 7. Reliability test

### 7.1 Environment test

Item	Specification
7.1.1 Test of high temperature storage	After 24hours kept at +60°C, and then 16 hours at room temperature, the mechanism shall be able to load/eject and playback within this process.(Test disc:TCD-792 and TDV-520A)
7.1.2 Test of low temperature storage	After 24hours kept at -20°C, and then 16 hours at room temperature, the mechanism shall be able to load/eject and playback within this process.(Test disc:TCD-792 and TDV-520A)
7.1.3 Test of high temperature and high moisture storage	After 48hours kept at +40°C, 90%RH, and then 16 hours at room temperature, the mechanism shall be able to load/eject and playback within this process.(Test disc:TCD-792 and TDV-520A)

7.1.4  High and low temperature cycling test	Applied -20°C(1H)↔60°C(1H)(temperature slope 80°C/H), 5cycles,then place at normal temperature for 16 hours, the mechanism shall be able to load/eject and playback within this process.(Test disc:TCD-792 and TDV-520A)
7.1.5  Test of high temperature operation	DVD mechanism shall be kept in 45°C for 4 hours, and then operate, the mechanism shall be able to load/eject and playback within this process.(Test disc:TCD-792 and TDV-520A)
7.1.6  Test of low temperature operation	DVD mechanism shall be kept in 0°C for 4 hours, and then operate, the mechanism shall be able to load/eject and playback within this process.(Test disc:TCD-792 and TDV-520A)

## 7.2 Life test

Item	Specification
7.2.1  Continue playback ability	When a mechanism is executed for continuous playing at room temperature for 1,000H, the mechanism shall be able to playback standard disc TDV-520A and TCD-792.
7.2.2  Feed motion	After conduct 200,000 times of pick-up feeding motion at room temperature, mechanism shall be able to playback standard disc TDV-520A and TCD-792. (One cycle: inner →outer→ inner).
7.2.3  Loading and ejection	At normal room temperature, after 10,000 times of disc loading and ejection circulation, mechanism shall be able to playback standard disc TDV-520A and TCD-792. (One cycle :Disc in →playback → disc out)

## 7.3 Drop and impact test:

Item	Specification

7.3.1	
Shock test	(1 time ,6ms), 70G crash impact on each of 6 sides of mechanism. Mechanism shall be able to playback standard disc TDV-520A and TCD-792.
7.3.2	<p>Drop test</p> <p>After one time of drop test with surface, edge and corner (packing with 10sets per carton), the mechanism shall be able to playback standard disc TDV-520A and TCD-792.</p> <p>Drop with surface: drop height 600mm, Drop sequence: bottom, front, left, back, right. Each surface drop one time.</p> <p>Drop with corner: drop height 450mm, Drop one of corners of carton bottom one time.</p> <p>Drop with edge: drop height 450mm, Each edge of drop corner (three edges) drop one time.</p>

#### 7.4 Durability test of vibration

Item	Specification
7.4.1	
Durability test of vibration	Acceleration 2.5G, Frequency 10~50Hz, sweep time 5minutes, test time is 20minutes with each of 3 directions. After that test, mechanism shall be able to playback standard disc TDV-520A and TCD-792.

#### 7.5

The test environment is the same as item 6.2 except for special note.

#### 8.

Ref appearance drawing

#### 9.

Caution:

#### 9.1

It is not allowed to disassembly and re-tune the mechanism without special training because the mechanism is assembled and tuned using special method.

#### 9.2

Storage: avoid storing the mechanism in high temperature, heavy wet and dusty place.

- 9.3 Handling: avoid extra force to the mechanism when handling.
  - 9.4 Static-proof action should be taken when touch the mechanism since LD and OEIC can be easily damaged by static.
  - 9.5 Hand touch pickup is forbidden.
  - 9.6 Must avoid laser beam shooting at eyes directly since the laser beam can hurt eyes.
10. Attachment
- 10.1 《Model Description in detail》
- 10.2 《Appearance drawing of DL-06》
- 10.3 《Mechanism schematic diagram of DL-06, set in PCB of customer》
- 10.4 《customer Servo PCB of DL-06》
- 10.5 《Package specification of DL-06》
- 10.6 《Guide of Mechanism installation and cautions on assembly》
- 10.7 《installation screw》

## 10.1 «Model of list»

Series No.	Model No.	Pick-Up	SPINDLE MOTOR	Loading motor:	Sled motor:
1	DL-06L	PVR-520T (MITSUMI)	CCM03-030R1-26 O (Moretech)	WFF-050SB-102 00	WRF-300CA-09 600
2	DL-06LH	HOP-1200 (HITACHI)	Same as above	Same as above	Same as above
3	DL-06H	HOP-1200 (HITACHI)	Same as above	Same as above	Same as above
4	DL-06LS	SF-HD62(65) (SANYO)	Same as above	Same as above	Same as above
5	DL-06LS-M	SF-HD62 (65) (SANYO)	Same as above	Same as above	Same as above
6	DL-06LW	PVR-502W (MITSUMI)	Same as above	Same as above	Same as above

## TFT LCD Preliminary Specification

### MODEL NO.: V270B1 - L01

LCD TV Head Division	
AVP	郭振隆

QRA Dept.	TVHD / PDD		
	DDIII	DDII	DDI
Approval	Approval	Approval	Approval
陳永一	李汪洋	藍文錦	林文聰

LCD TV Marketing and Product Management Division	
Product Manager	陳立宜 謝芳宜

## - CONTENTS -

REVISION HISTORY	-----	3
1. GENERAL DESCRIPTION	-----	4
1.1 OVERVIEW		
1.2 FEATURES		
1.3 APPLICATION		
1.4 GENERAL SPECIFICATIONS		
1.5 MECHANICAL SPECIFICATIONS		
2. ABSOLUTE MAXIMUM RATINGS	-----	5
2.1 ABSOLUTE RATINGS OF ENVIRONMENT		
2.2 ELECTRICAL ABSOLUTE RATINGS		
2.2.1 TFT LCD MODULE		
2.2.2 BACKLIGHT UNIT		
3. ELECTRICAL CHARACTERISTICS	-----	7
3.1 TFT LCD MODULE		
3.2 BACKLIGHT INVERTER UNIT		
3.2.1 CCFL(Cold Cathode Fluorescent Lamp) CHARACTERISTICS		
3.2.2 INVERTER CHARACTERISTICS		
3.2.3 INVERTER INTERFACE CHARACTERISTICS		
4. BLOCK DIAGRAM	-----	12
4.1 TFT LCD MODULE		
5. INTERFACE PIN CONNECTION	-----	13
5.1 TFT LCD MODULE		
5.2 BACKLIGHT UNIT		
5.3 INVERTER UNIT		
5.4 BLOCK DIAGRAM OF INTERFACE		
5.5 LVDS INTERFACE		
5.6 COLOR DATA INPUT ASSIGNMENT		
6. INTERFACE TIMING	-----	19
6.1 INPUT SIGNAL TIMING SPECIFICATIONS		
6.2 POWER ON/OFF SEQUENCE		
7. OPTICAL CHARACTERISTICS	-----	22
7.1 TEST CONDITIONS		
7.2 OPTICAL SPECIFICATIONS		
8. DEFINITION OF LABELS	-----	26
8.1 CMO MODULE LABEL		
9. PACKAGING	-----	27
9.1 PACKING SPECIFICATIONS		
9.2 PACKING METHOD		
10. PRECAUTIONS	-----	29
10.1 ASSEMBLY AND HANDLING PRECAUTIONS		
10.2 SAFETY PRECAUTIONS		
11. MECHANICAL CHARACTERISTICS	-----	30

**REVISION HISTORY**

Version	Date	Page (New)	Section	Description
Ver 1.0	Jun. 15, '05	All	All	Preliminary Specification was first issued.

## 1. GENERAL DESCRIPTION

### 1.1 OVERVIEW

V270B1- L01 is a TFT Liquid Crystal Display module with 14-CCFL Backlight unit and 1ch-LVDS interface. The display diagonal is 27". This module supports 1366 x 768 WXGA format and can display true 16.7M colors(8-bits colors). The inverter module for backlight is built-in.

### 1.2 FEATURES

- Excellent brightness (550 nits)
- Ultra high contrast ratio (1000:1)
- Fast response time (8ms)
- High color saturation NTSC 75%
- WXGA (1366 x 768 pixels) resolution
- DE (Data Enable) only mode
- LVDS (Low Voltage Differential Signaling) interface
- Optimized response time for both 50/60 Hz frame rate
- Ultra wide viewing angle: 176(H)/176(V) (CR>20) Super MVA technology
- 180 degree rotation display option
- Low color shift function option
- Color reproduction (Nature color)

### 1.3 APPLICATION

- TFT LCD TVs
- High brightness, multi-media displays
- 

### 1.4 GENERAL SPECIFICATIONS

Item	Specification	Unit	Note
Active Area	596.259 (H) x 335.232 (V) (27" diagonal)	mm	(1)
Bezel Opening Area	603.22 (H) x 341.98 (V)	mm	
Driver Element	a-si TFT active matrix	-	
Pixel Number	1366 x R.G.B. x 768	pixel	
Pixel Pitch (Sub Pixel)	0.1460 (H) x 0.4365 (V)	mm	
Pixel Arrangement	RGB vertical stripe	-	
Display Colors	16.7M	color	
Display Operation Mode	Transmissive mode / Normally black	-	
Surface Treatment	Hardness : 3H, Haze : 40% Anti-reflective coating < 2% reflection	-	

### 1.5 MECHANICAL SPECIFICATIONS

Item	Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal(H)	636.85	637.55	mm	
	Vertical(V)	379.1	379.8	mm	
	Depth(D)	33.9	35.4	mm	To PCB cover
	Depth(D)	39.2	40.7	mm	To inverter cover
Weight	3700	4000	4300	g	

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.

## 2. ABSOLUTE MAXIMUM RATINGS

### 2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	$T_{ST}$	-20	+60	°C	(1)
Operating Ambient Temperature	$T_{OP}$	0	+50	°C	(1), (2)
Shock (Non-Operating)	$S_{NOP}$	-	50	G	(3), (5)
Vibration (Non-Operating)	$V_{NOP}$	-	1.0	G	(4), (5)

Note (1) Temperature and relative humidity range is shown in the figure below.

- (a) 90 %RH Max. ( $T_a = 40$  °C).
- (b) Wet-bulb temperature should be 39 °C Max. ( $T_a > 40$  °C).
- (c) No condensation.

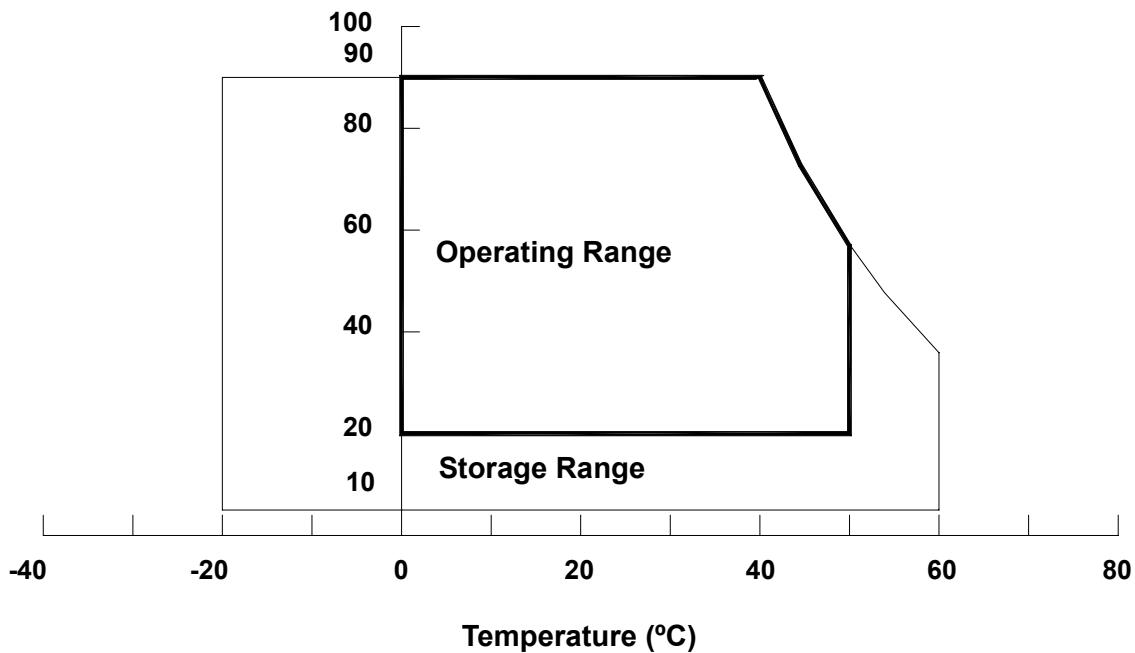
Note (2) The maximum operating temperature is based on the test condition that the surface temperature of display area is less than or equal to 60 °C with LCD module alone in a temperature controlled chamber. Thermal management should be considered in final product design to prevent the surface temperature of display area from being over 60 °C. The range of operating temperature may degrade in case of improper thermal management in final product design.

Note (3) 11 ms, half sine wave, 1 time for  $\pm X, \pm Y, \pm Z$ .

Note (4) 10 ~ 500 Hz, 10 min, 1 time each X, Y, Z.

Note (5) At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.

Relative Humidity (%RH)



## 2.2 ELECTRICAL ABSOLUTE RATINGS

### 2.2.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	V <sub>CC</sub>	-0.3	6.0	V	(1)
Input Signal Voltage	V <sub>IN</sub>	-0.3	3.6	V	

### 2.2.2 BACKLIGHT UNIT

Item	Symbol	Test Condition	Min.	Type	Max.	Unit	Note
Lamp Voltage	V <sub>W</sub>	T <sub>a</sub> = 25	-	-	3000	V <sub>RMS</sub>	
Power Supply Voltage	V <sub>BL</sub>	-	0	-	30	V	(1)
Control Signal Level	-	-	-0.3	-	7	V	(1), (3)

Note (1) Permanent damage to the device may occur if maximum values are exceeded. Functional operation should be restricted to the conditions described under normal operating conditions.

Note (2) No moisture condensation or freezing.

Note (3) The control signals includes Backlight On/Off Control, Internal PWM Control, External PWM Control and Internal/External PWM Selection.

### 3. ELECTRICAL CHARACTERISTICS

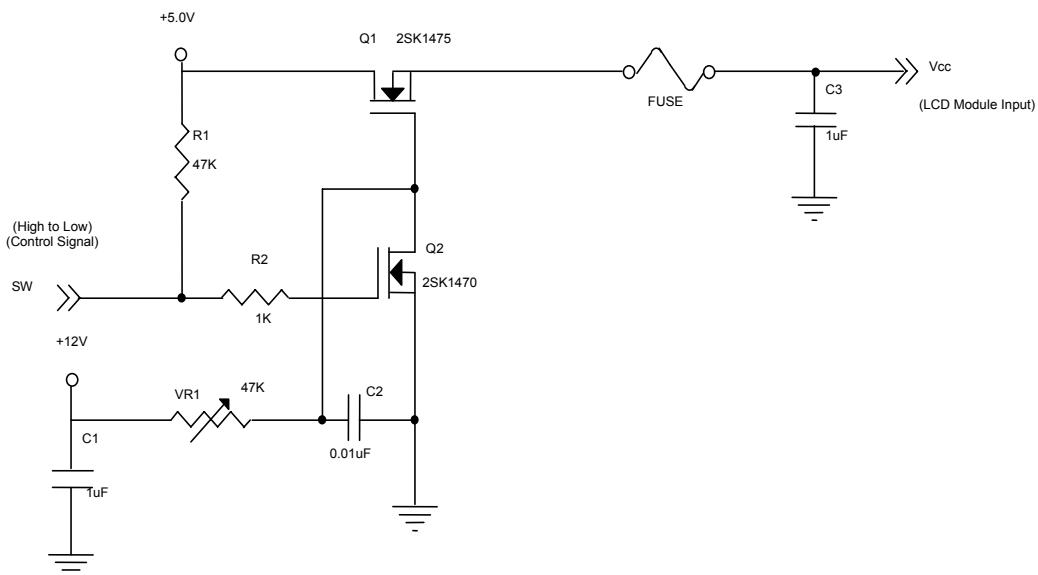
#### 3.1 TFT LCD MODULE

T<sub>a</sub> = 25 ± 2 °C

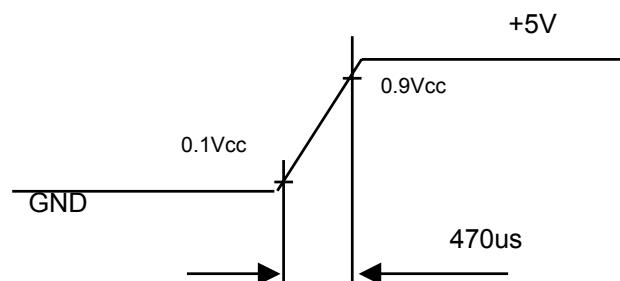
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	V <sub>CC</sub>	4.5	5.0	5.5	V	(1)
Power Supply Ripple Voltage	V <sub>RP</sub>	-	-	150	mV	
Rush Current	I <sub>RUSH</sub>	-	-	3.0	A	(2)
Power Supply Current	I <sub>CC</sub>	-	1.8	-	A	(3)
		-	1.2	-	A	
		-	1.65	-	A	
LVDS Interface	Differential Input High Threshold Voltage	V <sub>LVTH</sub>	-	-	+100	mV
	Differential Input Low Threshold Voltage	V <sub>LVTL</sub>	-100	-	-	mV
	Common Input Voltage	V <sub>LVC</sub>	1.125	1.25	1.375	V
	Terminating Resistor	R <sub>T</sub>		100		ohm
CMOS interface	Input High Threshold Voltage	V <sub>IH</sub>	2.7	-	3.3	V
	Input Low Threshold Voltage	V <sub>IL</sub>	0	-	0.7	V

Note (1) The module should be always operated within above ranges.

Note (2) Measurement Conditions:

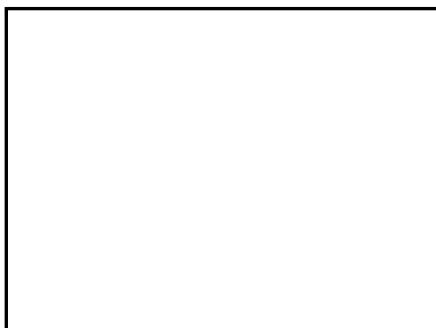


Vcc rising time is 470us



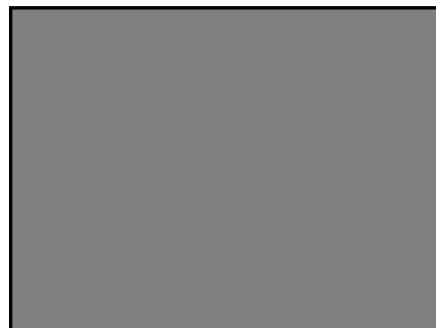
Note (3) The specified power supply current is under the conditions at  $V_{CC} = 5$  V,  $T_a = 25 \pm 2$  °C,  $f_v = 60$  Hz, whereas a power dissipation check pattern below is displayed.

a. White Pattern



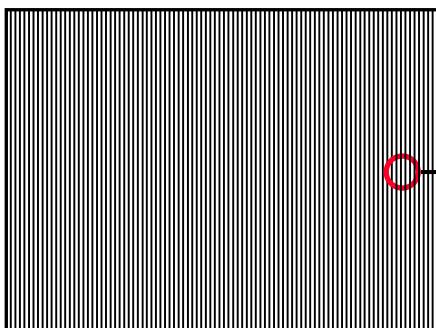
Active Area

b. Black Pattern

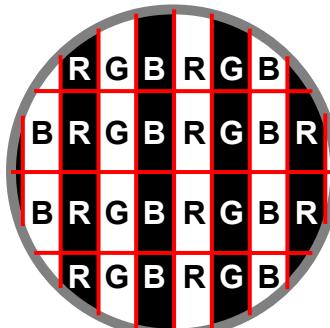


Active Area

c. Vertical Stripe Pattern



Active Area



### 3.2 BACKLIGHT INVERTER UNIT

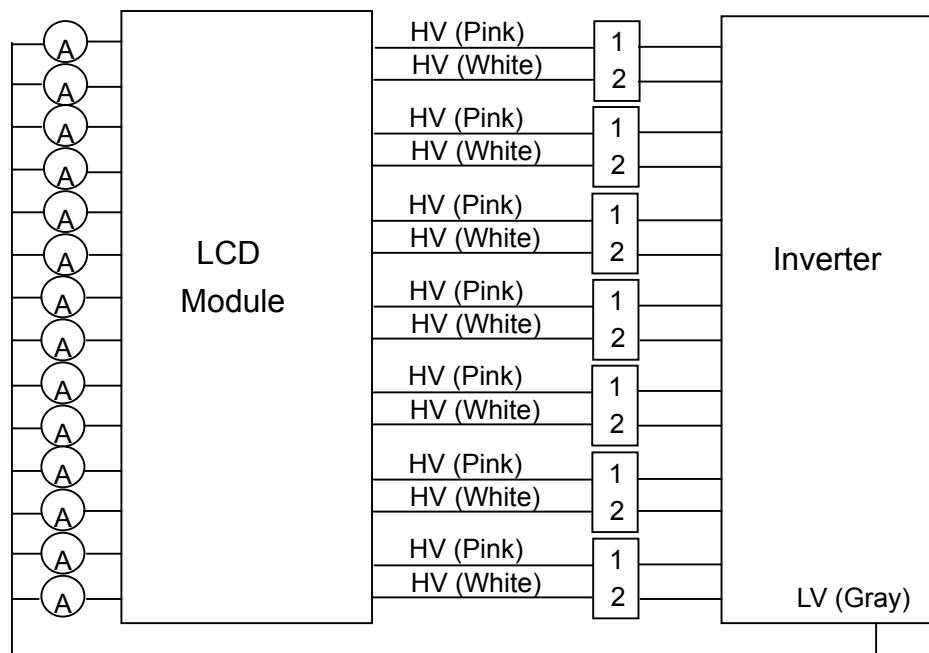
#### 3.2.1 CCFL (Cold Cathode Fluorescent Lamp) CHARACTERISTICS ( $T_a = 25 \pm 2$ °C)

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Lamp Voltage	$V_W$	-	1120	-	$V_{RMS}$	$I_L = 4.7\text{mA}$
Lamp Current	$I_L$	4.2	4.7	5.2	$\text{mA}_{RMS}$	(1)
Lamp Starting Voltage	$V_S$	-	-	1650	$V_{RMS}$	(2), $T_a = 0$ °C
		-	-	1500	$V_{RMS}$	(2), $T_a = 25$ °C
Operating Frequency	$F_O$	50	-	70	KHz	(3)
Lamp Life Time	$L_{BL}$	50,000	60,000	-	Hrs	(4)

3.2.2 INVERTER CHARACTERISTICS ( $T_a = 25 \pm 2 {}^\circ C$ )

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Consumption	P <sub>BL</sub>	-	92	-	W	(5), I <sub>L</sub> = 4.7mA
Power Supply Voltage	V <sub>BL</sub>	22.8	24	25.2	V <sub>DC</sub>	
Power Supply Current	I <sub>BL</sub>	-	3.8	-	A	Non Dimming
Input Ripple Noise	-	-	-	500	mV <sub>P-P</sub>	V <sub>BL</sub> = 22.8V
Backlight Turn on Voltage	V <sub>BS</sub>	1790	-	-	V <sub>RMS</sub>	T <sub>a</sub> = 0 °C
		1200	-	-	V <sub>RMS</sub>	T <sub>a</sub> = 25 °C
Oscillating Frequency	F <sub>W</sub>	53	56	59	kHz	
Dimming Frequency	F <sub>B</sub>	150	160	170	Hz	
Minimum Duty Ratio	D <sub>MIN</sub>	-	10	-	%	

Note (1) Lamp current is measured by utilizing high frequency current meters as shown below:



Note (2) The lamp starting voltage V<sub>S</sub> should be applied to the lamp for more than 1 second under starting up duration. Otherwise the lamp could not be lighted on completed.

Note (4) The life time of a lamp is defined as when the brightness is larger than 50% of its original value and the effective discharge length is longer than 80% of its original length (Effective discharge length is defined as an area that has equal to or more than 70% brightness compared to the brightness at the center point.) as the time in which it continues to operate under the condition  $T_a = 25 \pm 2$  and  $I_L = 4.2 \sim 5.2 \text{ mA}_{\text{RMS}}$ .

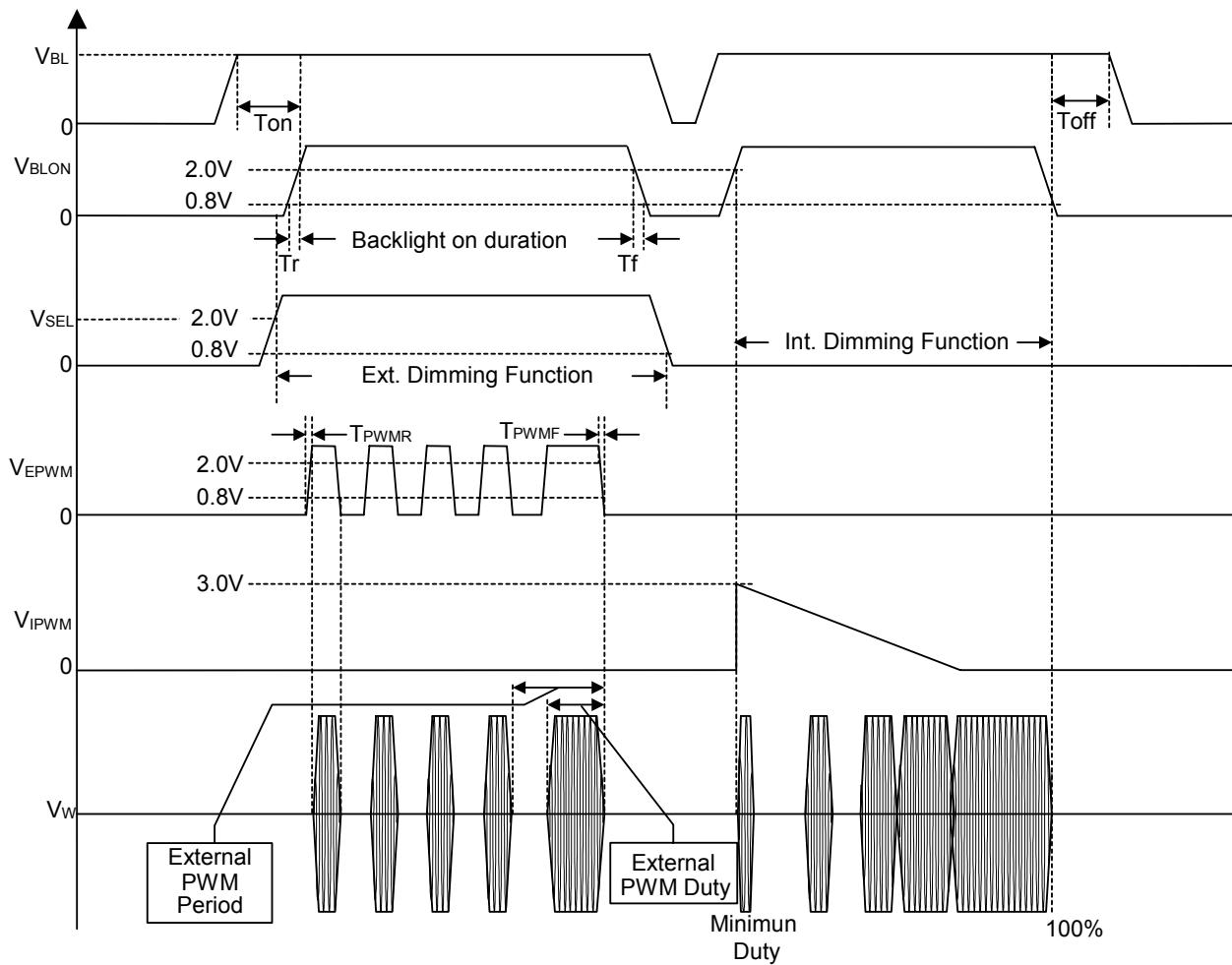
Note (5) The power supply capacity should be higher than the total inverter power consumption  $P_{BL}$ . Since the pulse width modulation (PWM) mode was applied for backlight dimming, the driving current changed as PWM duty on and off. The transient response of power supply should be considered for the changing loading when inverter dimming.

### 3.2.3 INVERTER INTERFACE CHARACTERISTICS

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit	Note
On/Off Control Voltage	ON	$V_{BLON}$	-	2.0	-	5.0	V
	OFF		-	0	-	0.8	V
Internal/External PWM Select Voltage	HI	$V_{SEL}$	-	2.0	-	5.0	V
	LO		-	0	-	0.8	V
Internal PWM Control Voltage	MAX	$V_{IPWM}$	$V_{SEL} = L$	-	-	3.0	V
	MIN			-	0	-	V
External PWM Control Voltage	HI	$V_{EPWM}$	$V_{SEL} = H$	2.0	-	5.0	V
	LO			0	-	0.8	V
Control Signal Rising Time	$T_r$		-	-	100	ms	
Control Signal Falling Time	$T_f$		-	-	100	ms	
PWM Signal Rising Time	$T_{PWMR}$		-	-	-	50	us
PWM Signal Falling Time	$T_{PWMF}$		-	-	-	50	us
Input impedance	$R_{IN}$		-	1	-	-	M
BLON Delay Time	$T_{on}$		-	1	-	-	ms
BLON Off Time	$T_{off}$		-	1	-	-	ms

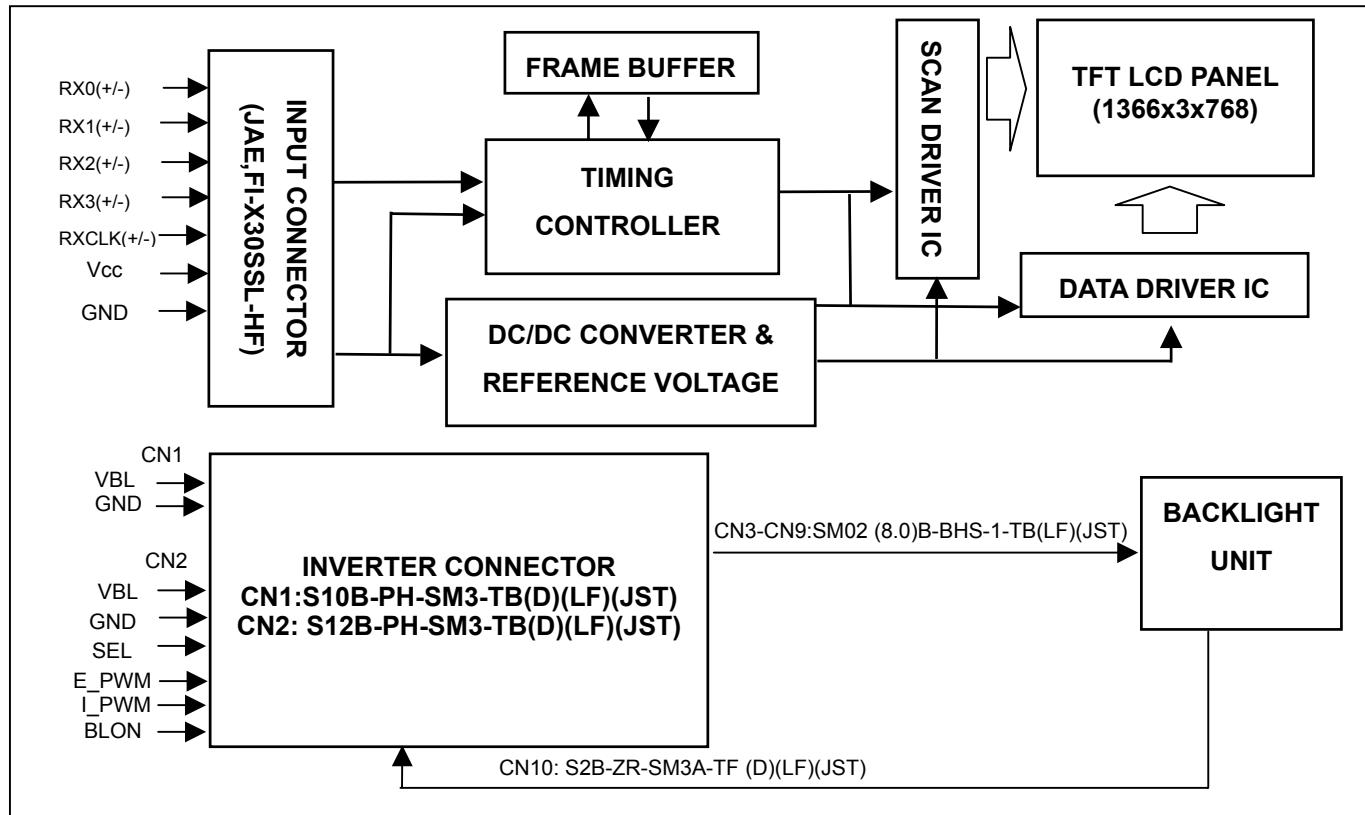
Note (1) The SEL signal should be valid before backlight turns on by BLON signal. It is inhibited to change the internal/external PWM selection (SEL) during backlight turn on period.

Note (2) The power sequence and control signal timing are shown as the following figure.



## 4. BLOCK DIAGRAM

### 4.1 TFT LCD MODULE



## 5. INTERFACE PIN CONNECTION

### 5.1 TFT LCD MODULE

#### CNF1 Connector Pin Assignment

Pin No.	Symbol	Description	Note
1	GND	Ground	
2	RPF	Display Rotation	(3)
3	SELLVDS	Select LVDS data format	(5)
4	NC	No Connection	
5	NC	No Connection	(2)
6	ODSEL	Overdrive Lookup Table Selection	(4)
7	EN LCS	Low Color Shift	(6)
8	GND	Ground	
9	RX0-	Negative transmission data of pixel 0	
10	RX0+	Positive transmission data of pixel 0	
11	RX1-	Negative transmission data of pixel 1	
12	RX1+	Positive transmission data of pixel 1	
13	RX2-	Negative transmission data of pixel 2	
14	RX2+	Positive transmission data of pixel 2	
15	RXCLK-	Negative of clock	
16	RXCLK+	Positive of clock	
17	RX3-	Negative transmission data of pixel 3	
18	RX3+	Positive transmission data of pixel 3	
19	GND	Ground	
20	GND	Ground	
21	GND	Ground	
22	GND	Ground	
23	GND	Ground	
24	GND	Ground	
25	GND	Ground	
26	VCC	Power supply: +5V	
27	VCC	Power supply: +5V	
28	VCC	Power supply: +5V	
29	VCC	Power supply: +5V	
30	VCC	Power supply: +5V	

Note (1) Connector Part No.: FI-X30SSL-HF(JAE) or compatible

Note (2) Reserved for internal use. Left it open.

Note (3) Low : normal display (default), High : display with 180 degree rotation

Note (4) Overdrive lookup table selection. The Overdrive lookup table should be selected in accordance to the frame rate to optimize image quality.

ODSEL	Note
L	Lookup table was optimized for 60 Hz frame rate.
H	Lookup table was optimized for 50 Hz frame rate.

Note (5) Please refer to 5.5 LVDS INTERFACE (Page 17)

Note (6) Enable Low color shift function.

EN LCS	Note
L	Low color shift off
H	Low color shift on

## 5.2 BACKLIGHT UNIT

The pin configuration for the housing and leader wire is shown in the table below.

CN3-CN9 (Housing): BHR-03VS-1 (JST)

Pin No.	Symbol	Description	Wire Color
1	HV	High Voltage	Pink
2	HV	High Voltage	White

Note (1) The backlight interface housing for high voltage side is a model BHR-03VS-1, manufactured by JST.

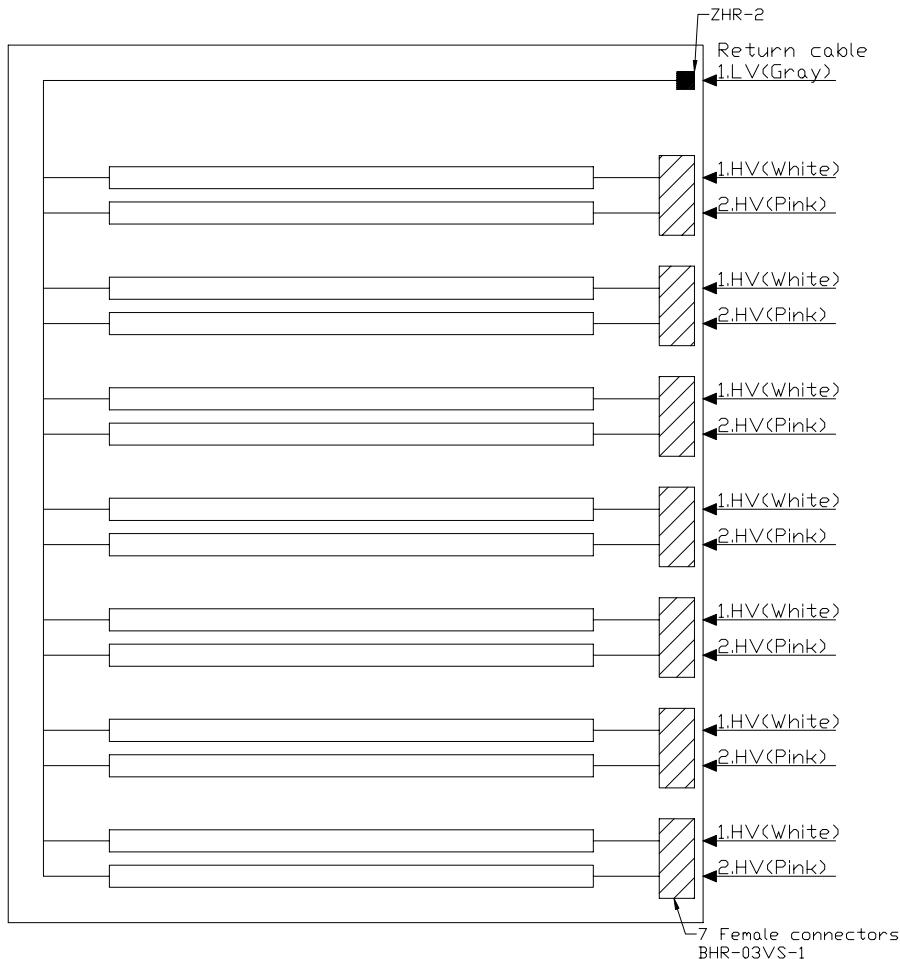
The mating header on inverter part number is SM02(8.0)B-BHS-1-TB(LF) or equivalent.

CN10 (Housing): ZHR-2 (JST) or equivalent

Pin No.	Symbol	Description	Wire Color
1	LV	Low Voltage (+)	Gray
2	NC	No Connection	-

Note (2) The backlight interface housing and return cable for low voltage side is a model ZHR-2 , manufactured

by JST or equivalent. The mating header on inverter part number is S2B-ZR-SM3A-TF(D)(LF) or equivalent.



### 5.3 INVERTER UNIT

CN1(Header): S10B-PH-SM3-TB(D)(LF)(JST) or equivalent.

Pin	Name	Description
1	VBL	+24V Power input
2		
3		
4		
5		
6	GND	Ground
7		
8		
9		
10		

CN2(Header): S12B-PH-SM3-TB(D)(LF)(JST) or equivalent.

Pin	Name	Description
1	VBL	+24V Power input
2		
3		
4		
5		
6	GND	Ground
7		
8		
9	SEL	Internal/external PWM selection High : external dimming Low : internal dimming
10	E_PWM	External PWM control signal E_PWM should be connected to low when internal PWM was selected (SEL = low).
11	I_PWM	Internal PWM control signal I_PWM should be connected to ground when external PWM was selected (SEL = high).
12	BLON	Backlight on/off control

CN3-CN9(Header): SM02(8.0)B-BHS-1-TB(LF)(JST) or equivalent

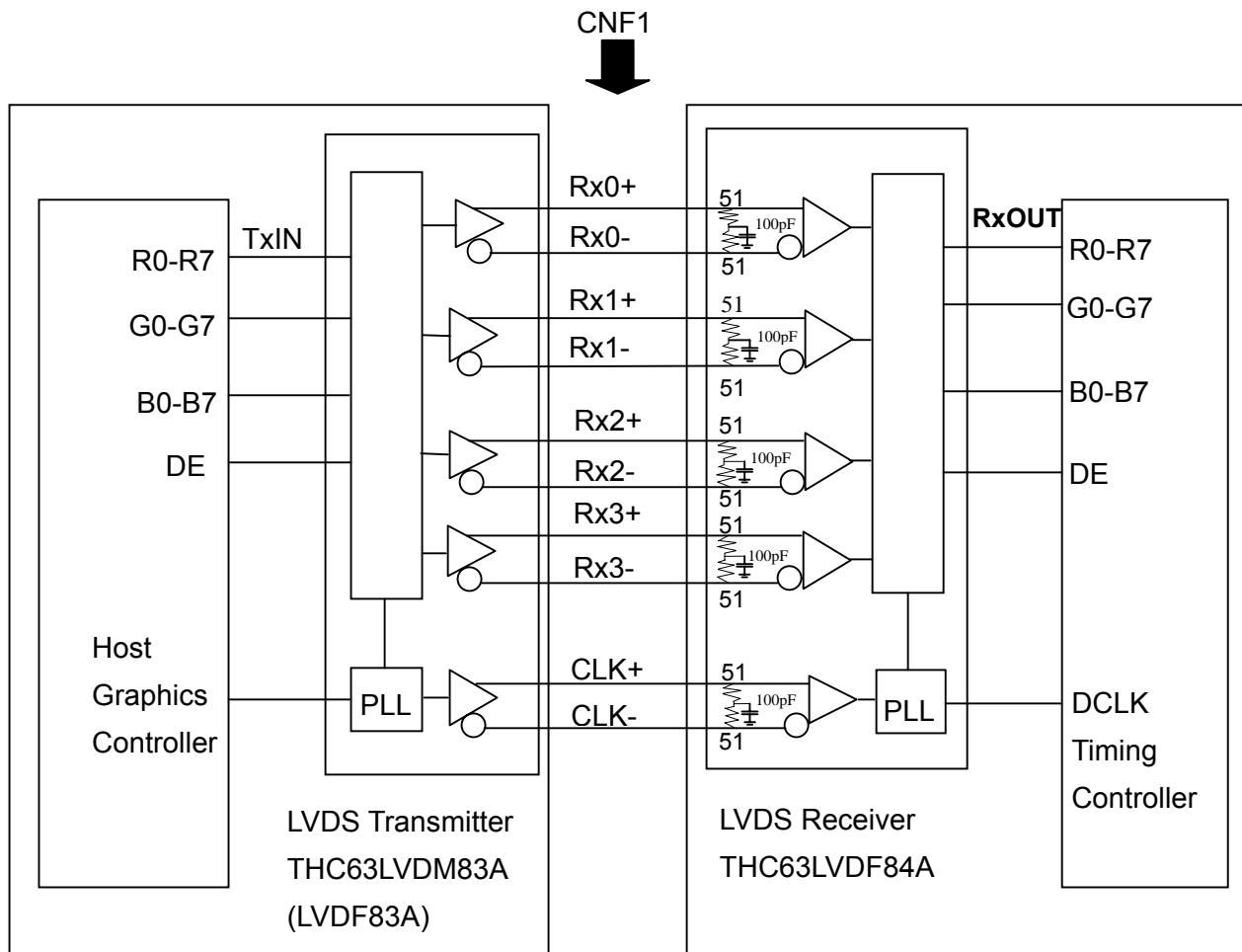
Pin	Name	Description
1	CCFL HOT	CCFL high voltage
2	CCFL HOT	CCFL high voltage

CN10(Header): S2B-ZR-SM3A-TF(D)(LF)(JST) or equivalent

Pin	Name	Description
1	CCFL COLD	CCFL low voltage
2	NC	-

Note (1) Floating of any control signal is not allowed.

#### 5.4 BLOCK DIAGRAM OF INTERFACE



R0~R7 : Pixel R Data ,

G0~G7 : Pixel G Data ,

B0~B7 : Pixel B Data ,

DE : Data enable signal

Note (1) The system must have the transmitter to drive the module.

Note (2) LVDS cable impedance shall be 50 ohms per signal line or about 100 ohms per twist-pair line when it is used differentially.

## 5.5 LVDS INTERFACE

	SIGNAL		TRANSMITTER THC63LVDM83A		INTERFACE CONNECTOR		RECEIVER THC63LVDF84A		TFT CONTROL INPUT	
	SELLVDS =L	SELLVDS =H	PIN	INPUT	Host	TFT-LCD	PIN	OUTPUT	SELLVDS =L	SELLVDS =H
24 bit	R0	R2	51	TxIN0	TA OUT0+	Rx 0+	27	Rx OUT0	R0	R2
	R1	R3	52	TxIN1			29	Rx OUT1	R1	R3
	R2	R4	54	TxIN2			30	Rx OUT2	R2	R4
	R3	R5	55	TxIN3			32	Rx OUT3	R3	R5
	R4	R6	56	TxIN4			33	Rx OUT4	R4	R6
	R5	R7	3	TxIN6			35	Rx OUT6	R5	R7
	G0	G2	4	TxIN7	TA OUT0-	Rx 0-	37	Rx OUT7	G0	G2
	G1	G3	6	TxIN8			38	Rx OUT8	G1	G3
	G2	G4	7	TxIN9			39	Rx OUT9	G2	G4
	G3	G5	11	TxIN12	TA OUT1+	Rx 1+	43	Rx OUT12	G3	G5
	G4	G6	12	TxIN13			45	Rx OUT13	G4	G6
	G5	G7	14	TxIN14			46	Rx OUT14	G5	G7
	B0	B2	15	TxIN15	TA OUT1-	Rx 1-	47	Rx OUT15	B0	B2
	B1	B3	19	TxIN18			51	Rx OUT18	B1	B3
	B2	B4	20	TxIN19			53	Rx OUT19	B2	B4
	B3	B5	22	TxIN20			54	Rx OUT20	B3	B5
	B4	B6	23	TxIN21	TA OUT2+	Rx 2+	55	Rx OUT21	B4	B6
	B5	B7	24	TxIN22			1	Rx OUT22	B5	B7
	DE	DE	30	TxIN26			6	Rx OUT26	DE	DE
	R6	R0	50	TxIN27	TA OUT2-	Rx 2-	7	Rx OUT27	R6	R0
	R7	R1	2	TxIN5			34	Rx OUT5	R7	R1
	G6	G0	8	TxIN10			41	Rx OUT10	G6	G0
	G7	G1	10	TxIN11			42	Rx OUT11	G7	G1
	B6	B0	16	TxIN16	TA OUT3+	Rx 3+	49	Rx OUT16	B6	B0
	B7	B1	18	TxIN17			50	Rx OUT17	B7	B1
	RSVD 1	RSVD 1	25	TxIN23			2	Rx OUT23	NC	NC
	RSVD 2	RSVD 2	27	TxIN24			3	Rx OUT24	NC	NC
	RSVD 3	RSVD 3	28	TxIN25	TA OUT3-	Rx 3-	5	Rx OUT25	NC	NC
		DCLK	31	TxCLK IN			26	RxCLK OUT	DCLK	

R0~R7: Pixel R Data (7; MSB, 0; LSB)

G0~G7: Pixel G Data (7; MSB, 0; LSB)

B0~B7: Pixel B Data (7; MSB, 0; LSB)

DE: Data enable signal

Notes(1) RSVD(reserved)pins on the transmitter shall be "H" or "L".

## 5.6 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 8-bit gray scale data input for the color. The higher the binary input, the brighter the color. The table below provides the assignment of color versus data input.

Color		Data Signal																							
		Red								Green								Blue							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale Of Red	Red(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	Red(253)	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(254)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	Green(253)	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0
	Green(254)	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	Green(255)	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	Blue(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Gray Scale Of Blue	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	Blue(253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0
	Blue(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1

Note (1) 0: Low Level Voltage, 1: High Level Voltage

## 6. INTERFACE TIMING

### 6.1 INPUT SIGNAL TIMING SPECIFICATIONS

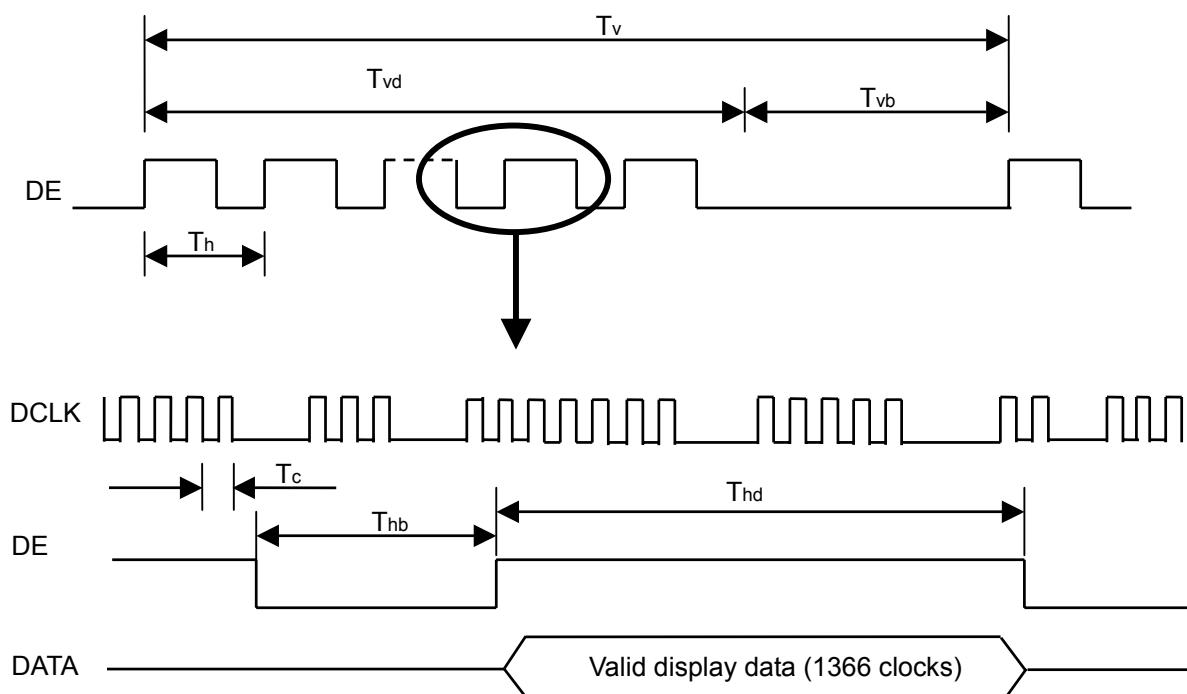
The input signal timing specifications are shown as the following table and timing diagram.

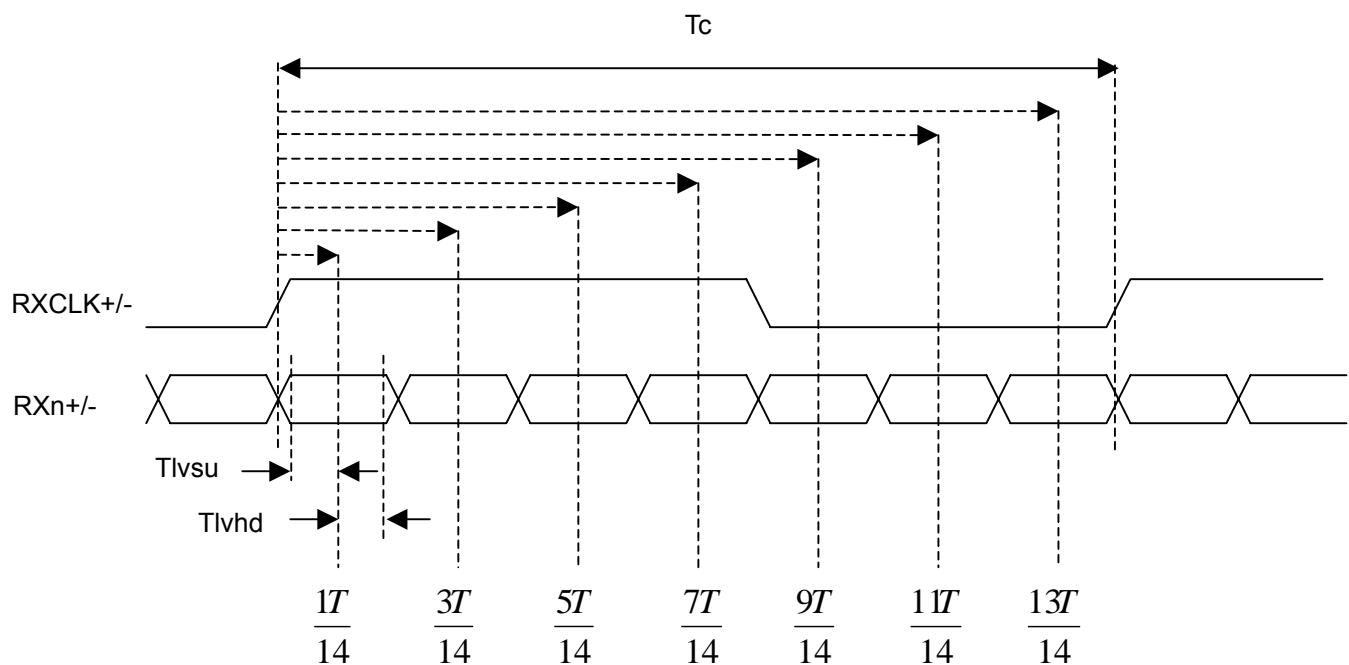
Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Receiver Clock	Frequency	1/Tc	60	86	88	MHz	
	Input cycle to cycle jitter	Trcl	-	-	200	ps	
LVDS Receiver Data	Setup Time	Tlvsu	600	-	-	ps	
	Hold Time	Tlvhd	600	-	-	ps	
Vertical Active Display Term	Frame Rate	Fr5	47	50	53	Hz	(2)
		Fr6	57	60	63	Hz	
	Total	Tv	770	795	888	Th	Tv=Tvd+Tvb
	Display	Tvd	768	768	768	Th	-
	Blank	Tvb	2	27	120	Th	-
	Total	Th	1436	1798	1936	Tc	Th=Thd+Thb
Horizontal Active Display Term	Display	Thd	1366	1366	1366	Tc	-
	Blank	Thb	70	432	570	Tc	-

Note (1) Since this module is operated in DE only mode, Hsync and Vsync input signals should be set to low logic level. Otherwise, this module would operate abnormally.

(2) Please refer to 5.1 for detail information.

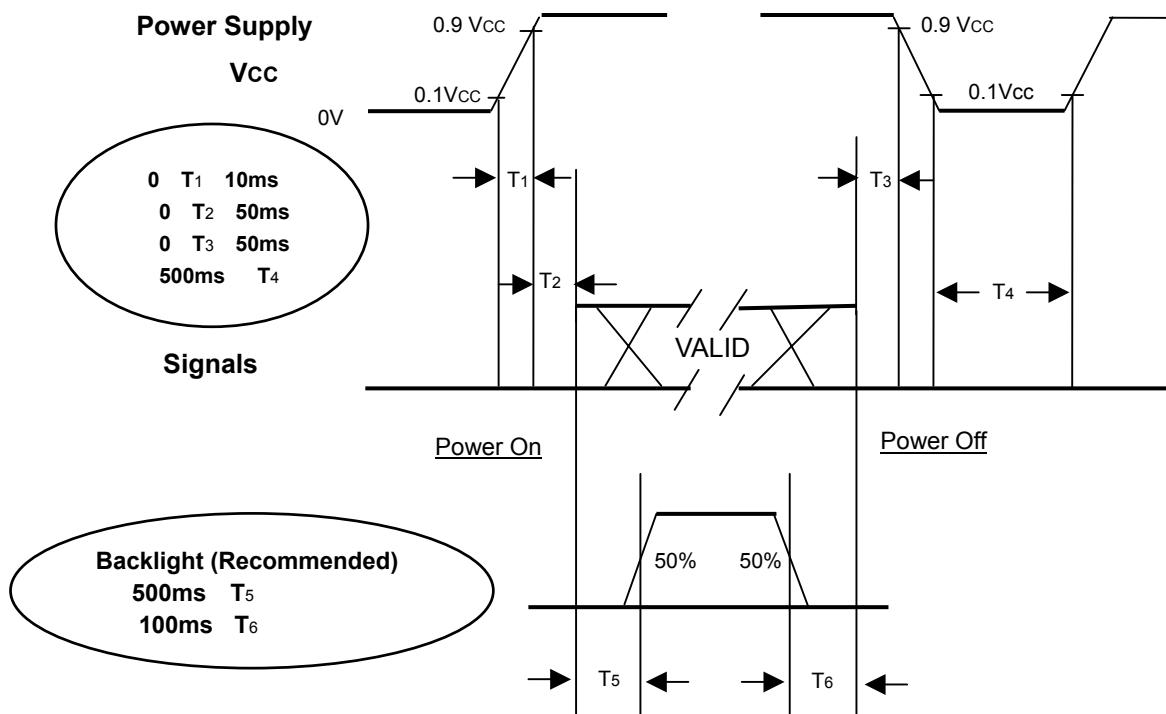
### INPUT SIGNAL TIMING DIAGRAM



LVDS RECEIVER INTERFACE TIMING DIAGRAM


## 6.2 POWER ON/OFF SEQUENCE

To prevent a latch-up or DC operation of LCD module, the power on/off sequence should be as the diagram below.



Note (1) The supply voltage of the external system for the module input should follow the definition of Vcc.

Note (2) Apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation or the LCD turns off before the backlight turns off, the display may momentarily become abnormal screen.

Note (3) In case of Vcc is in off level, please keep the level of input signals on the low or high impedance.

Note (4) T4 should be measured after the module has been fully discharged between power off and on period.

Note (5) Interface signal shall not be kept at high impedance when the power is on.

## 7. OPTICAL CHARACTERISTICS

### 7.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	T <sub>a</sub>	25±2	°C
Ambient Humidity	H <sub>a</sub>	50±10	%RH
Supply Voltage	V <sub>CC</sub>	5.0	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		
Lamp Current	I <sub>L</sub>	4.7 ± 0.5	mA
Oscillating Frequency (Inverter)	F <sub>w</sub>	56 ± 3	KHz

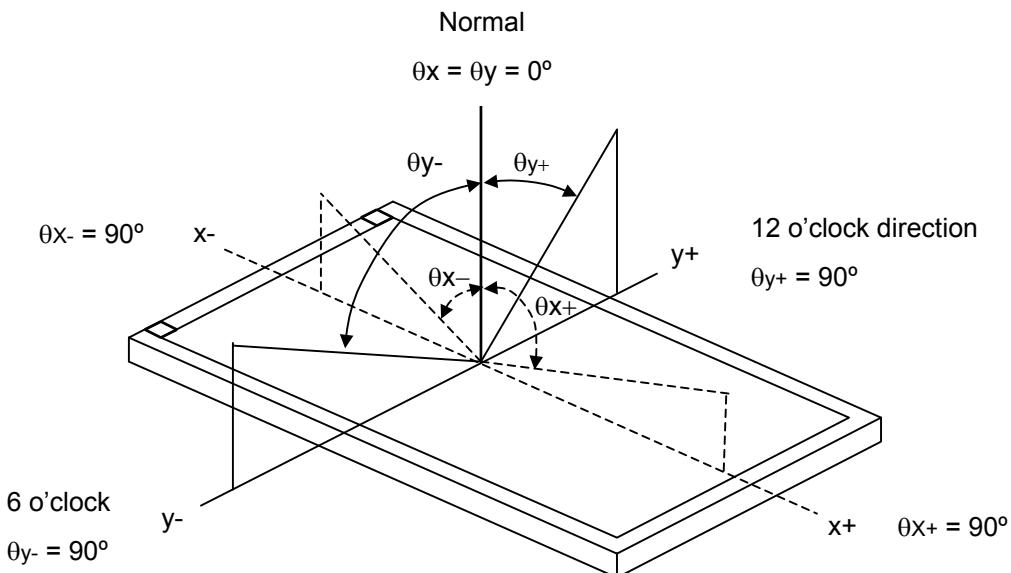
### 7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 7.2. The following items should be measured under the test conditions described in 7.1 and stable environment shown in Note (6).

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio	CR	$\theta_x=0^\circ, \theta_Y=0^\circ$ Viewing Normal Angle	(1000)			-	(2)
Response Time	Gray to gray average		(8)			ms	(3)
Center Luminance of White	L <sub>c</sub>		(550)			cd/m <sup>2</sup>	(4)
White Variation	δW			(1.3)		-	(7)
Cross Talk	CT			(4)		%	(5)
Color Chromaticity	Red		(0.652)			-	(6)
	Ry		(0.331)			-	
	Green		(0.275)			-	
	Gy		(0.597)			-	
	Blue		(0.143)			-	
	Bx		(0.063)			-	
Viewing Angle	By	CR≥20	(0.285)			Target	(1)
	White		(0.293)				
	Wx		(75)			%	
	Wy					NTSC	
Viewing Angle	Color Gamut						
	Horizontal		(88)			Deg.	(1)
	θ <sub>x</sub> +		(88)				
	θ <sub>x</sub> -		(88)				
Vertical	θ <sub>y</sub> +		(88)				(1)
	θ <sub>y</sub> -		(88)				

Note (1) Definition of Viewing Angle ( $\theta_x$ ,  $\theta_y$ ):

Viewing angles are measured by EZ-Contrast 160R (Eldim)



Note (2) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

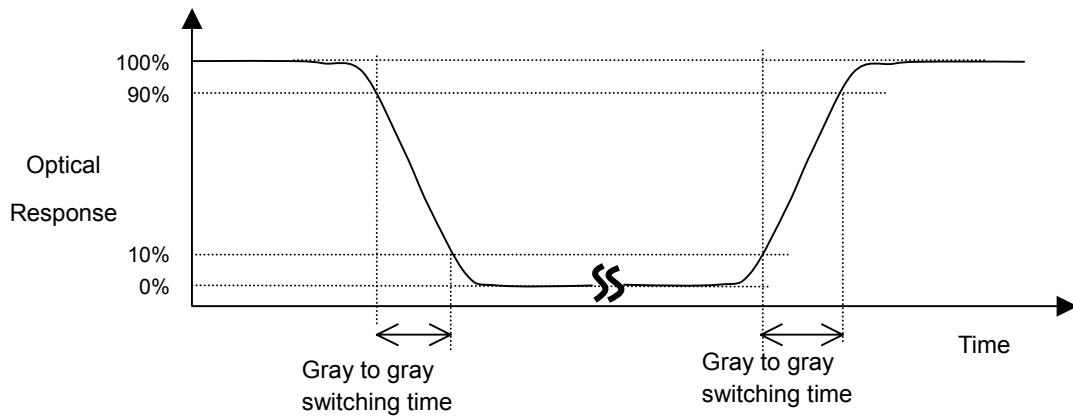
$L_{255}$ : Luminance of gray level 255

$L_0$ : Luminance of gray level 0

$$CR = CR (5)$$

CR (X) is corresponding to the Contrast Ratio of the point X at the figure in Note (7).

Note (3) Definition of Gray to Gray Switching Time :



The driving signal means the signal of gray level 0, 63, 127, 191, 255.

Gray to gray average time means the average switching time of gray level 0 ,63,127,191,255 to each other .

Note (4) Definition of Luminance of White ( $L_C$ ,  $L_{AVE}$ ):

Measure the luminance of gray level 255 at center point and 5 points

$$L_C = L(5)$$

$$L_{AVE} = [L(1) + L(2) + L(3) + L(4) + L(5)] / 5$$

$L(x)$  is corresponding to the luminance of the point X at the figure in Note (7).

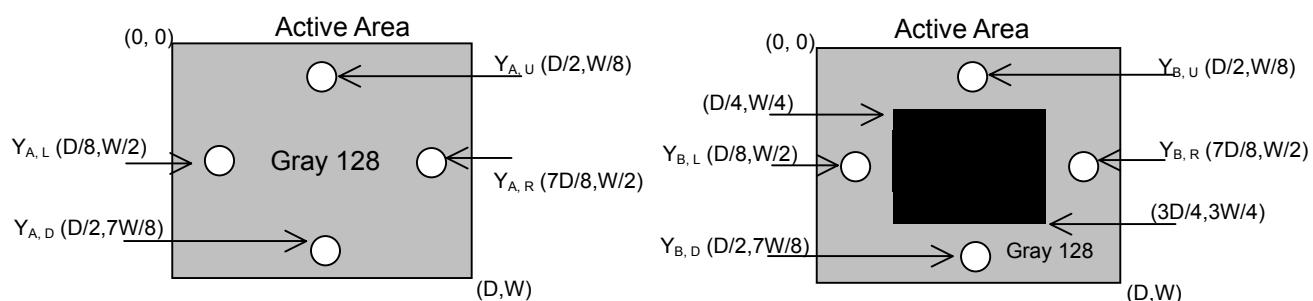
Note (5) Definition of Cross Talk (CT):

$$CT = |Y_B - Y_A| / Y_A \times 100 (\%)$$

Where:

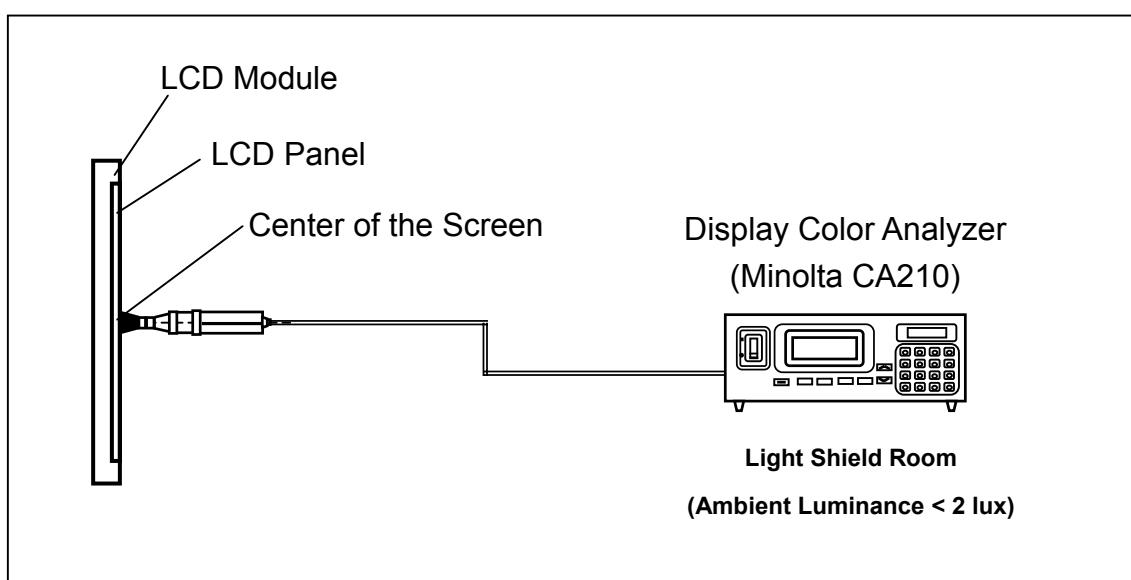
$Y_A$  = Luminance of measured location without gray level 0 pattern ( $\text{cd}/\text{m}^2$ )

$Y_B$  = Luminance of measured location with gray level 0 pattern ( $\text{cd}/\text{m}^2$ )



Note (6) Measurement Setup:

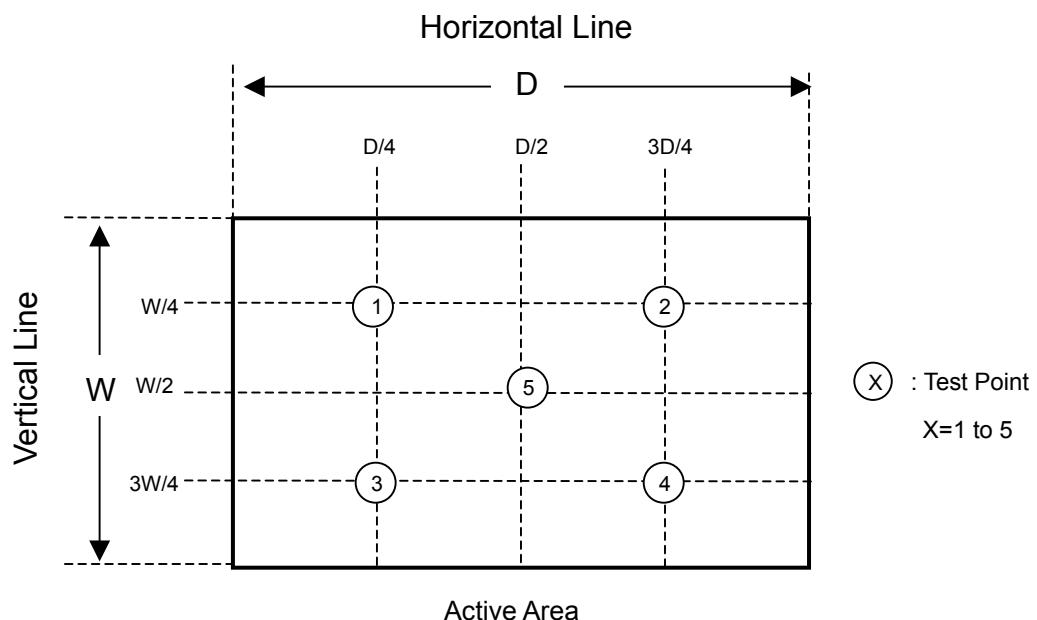
The LCD module should be stabilized at given temperature for 1 hour to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 1 hour in a windless room.



Note (7) Definition of White Variation ( $\delta W$ ):

Measure the luminance of gray level 255 at 5 points

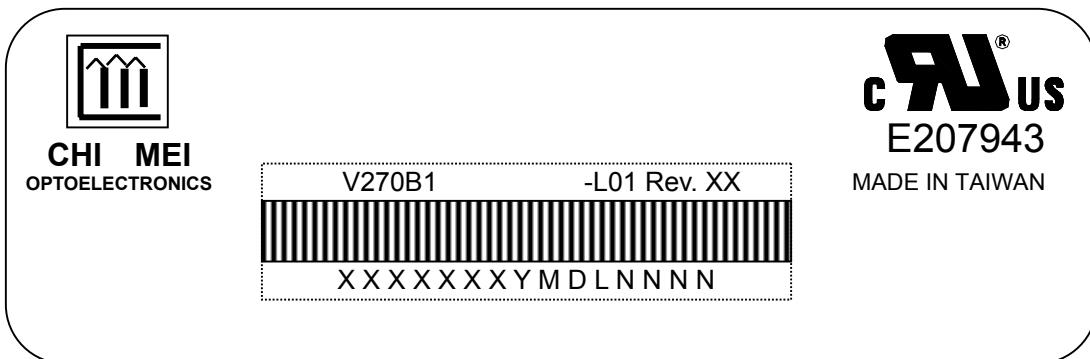
$\delta W = \text{Maximum} [L(1), L(2), L(3), L(4), L(5)] / \text{Minimum} [L(1), L(2), L(3), L(4), L(5)]$



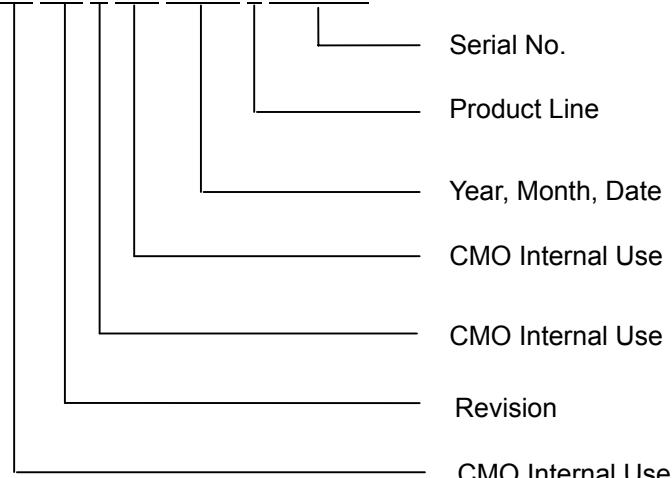
## 8. DEFINITION OF LABELS

### 8.1 CMO MODULE LABEL

The barcode nameplate is pasted on each module as illustration, and its definitions are as following explanation.



- (a) Model Name: V270B1-L01
- (b) Revision: Rev. XX, for example: A0, A1... B1, B2... or C1, C2...etc.
- (c) Serial ID: XX XXXX XXX Y M D L N N N N



Serial ID includes the information as below:

- (a) Manufactured Date: Year: 1~9, for 2001~2009  
 Month: 1~9, A~C, for Jan. ~ Dec.  
 Day: 1~9, A~Y, for 1<sup>st</sup> to 31<sup>st</sup>, exclude I ,O, and U.
- (b) Revision Code: Cover all the change
- (c) Serial No.: Manufacturing sequence of product
- (d) Product Line: 1 -> Line1, 2 -> Line 2, ...etc.

## 9. PACKAGING

### 9.1 PACKING SPECIFICATIONS

- (1) 4 LCD TV modules / 1 Box
- (2) Box dimensions : 742(L) X 327 (W) X 510 (H)
- (3) Weight : approximately 19Kg ( 4 modules per box)

### 9.2 PACKING METHOD

Figures 9-1 and 9-2 are the packing method

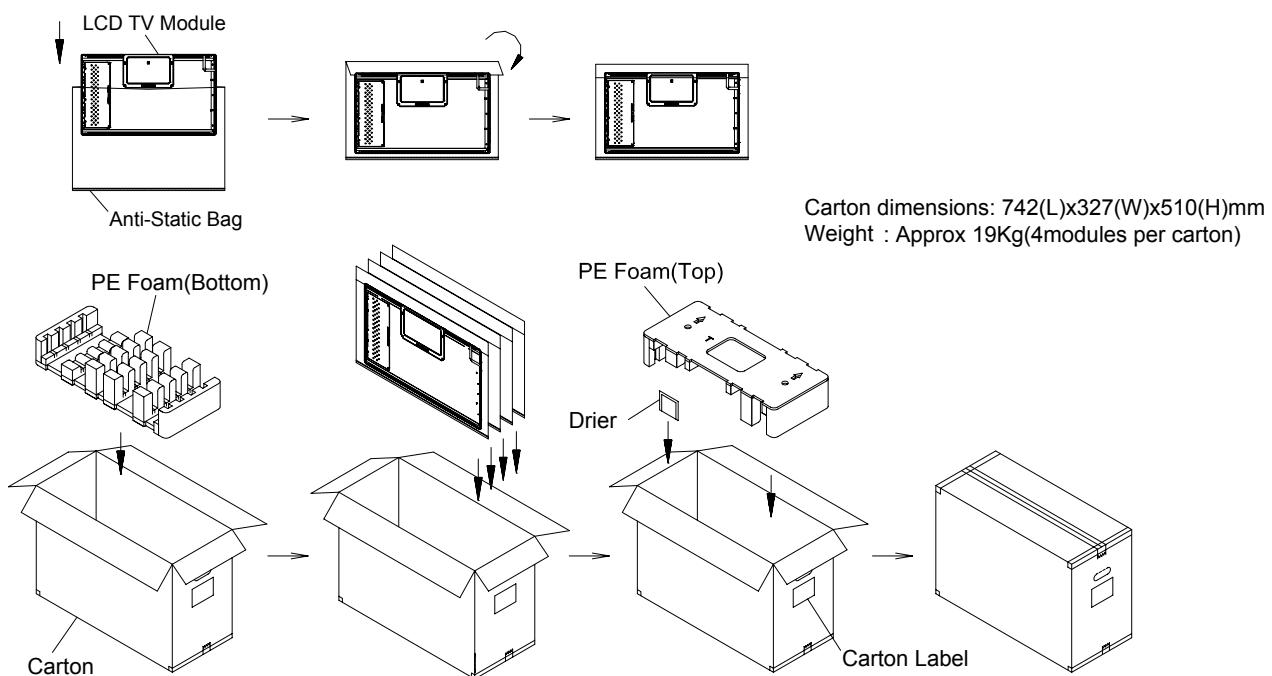


Figure.9-1 packing method

Corner Protector:L1020\*50mm\*50mm

Pallet:L1100\*W1100\*H135mm

Corrugated Fiberboard:L1100\*W1100mm

Pallet Stack:L1100\*W1100\*H1160mm

Gross:168kg

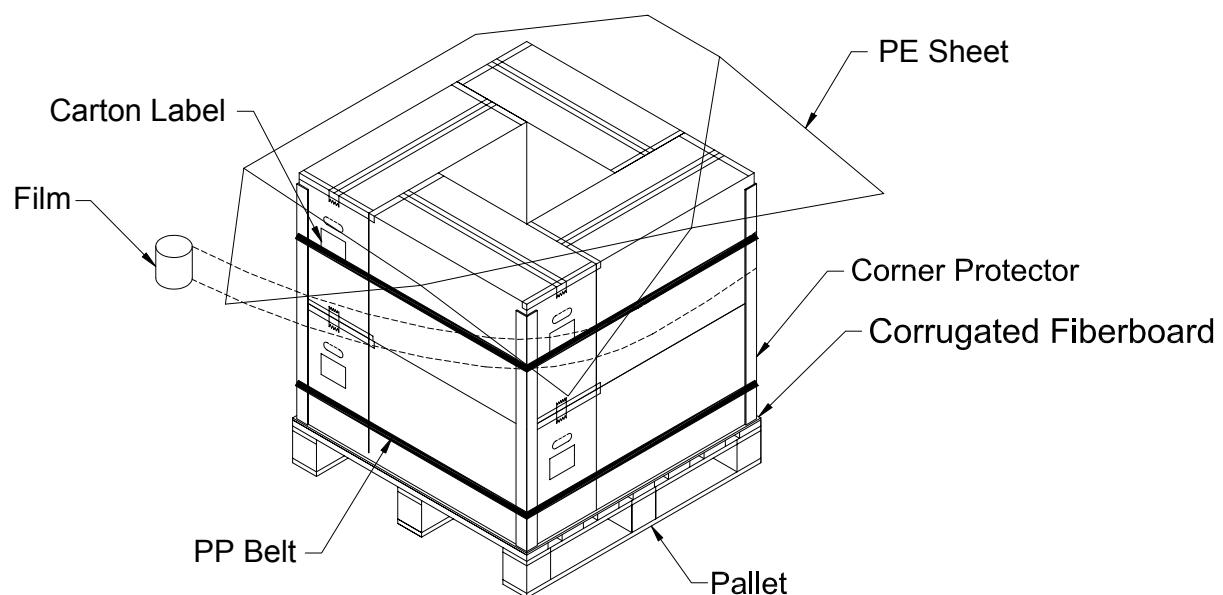


Figure. 9-2 packing method

## 10. PRECAUTIONS

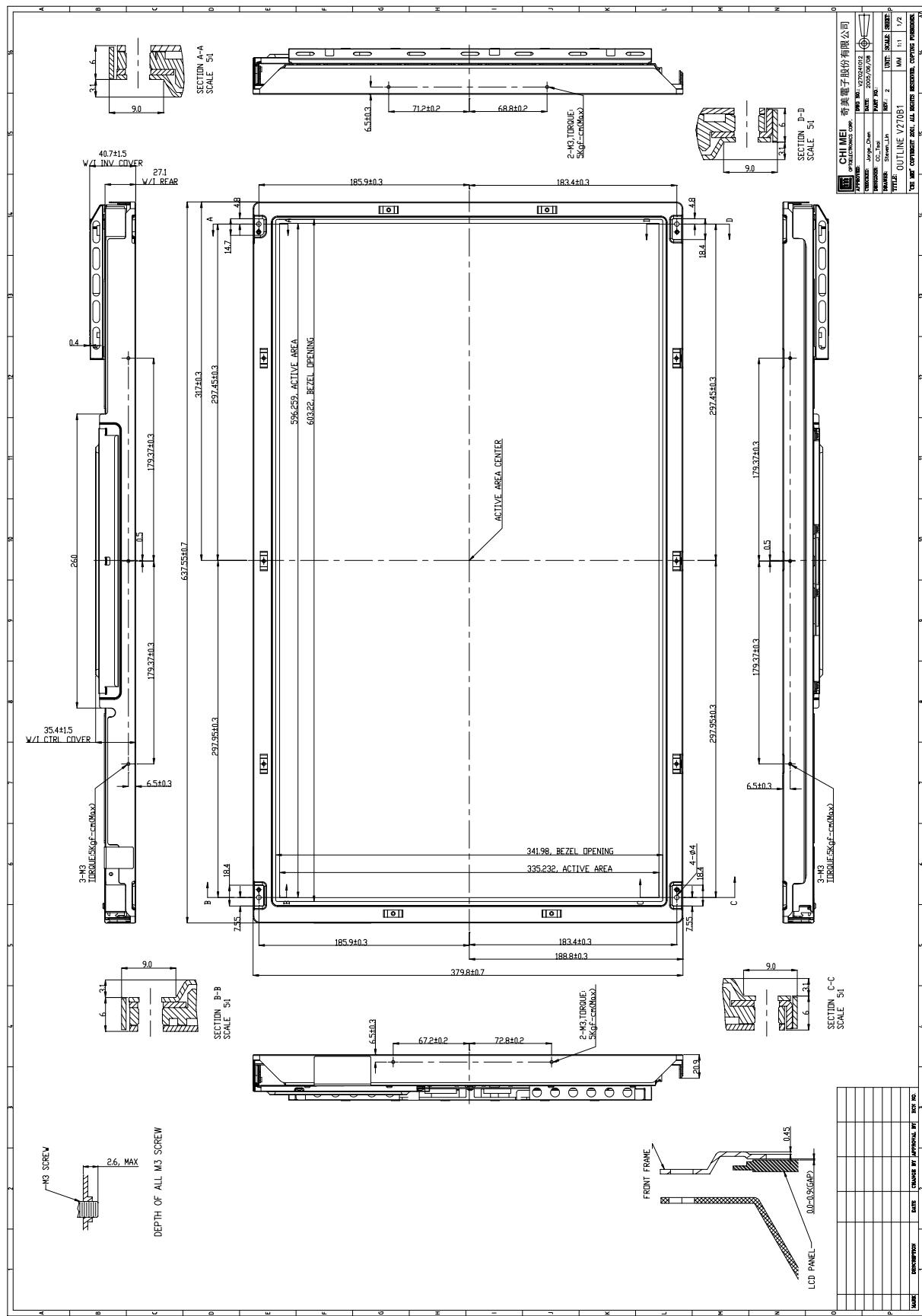
### 10.1 ASSEMBLY AND HANDLING PRECAUTIONS

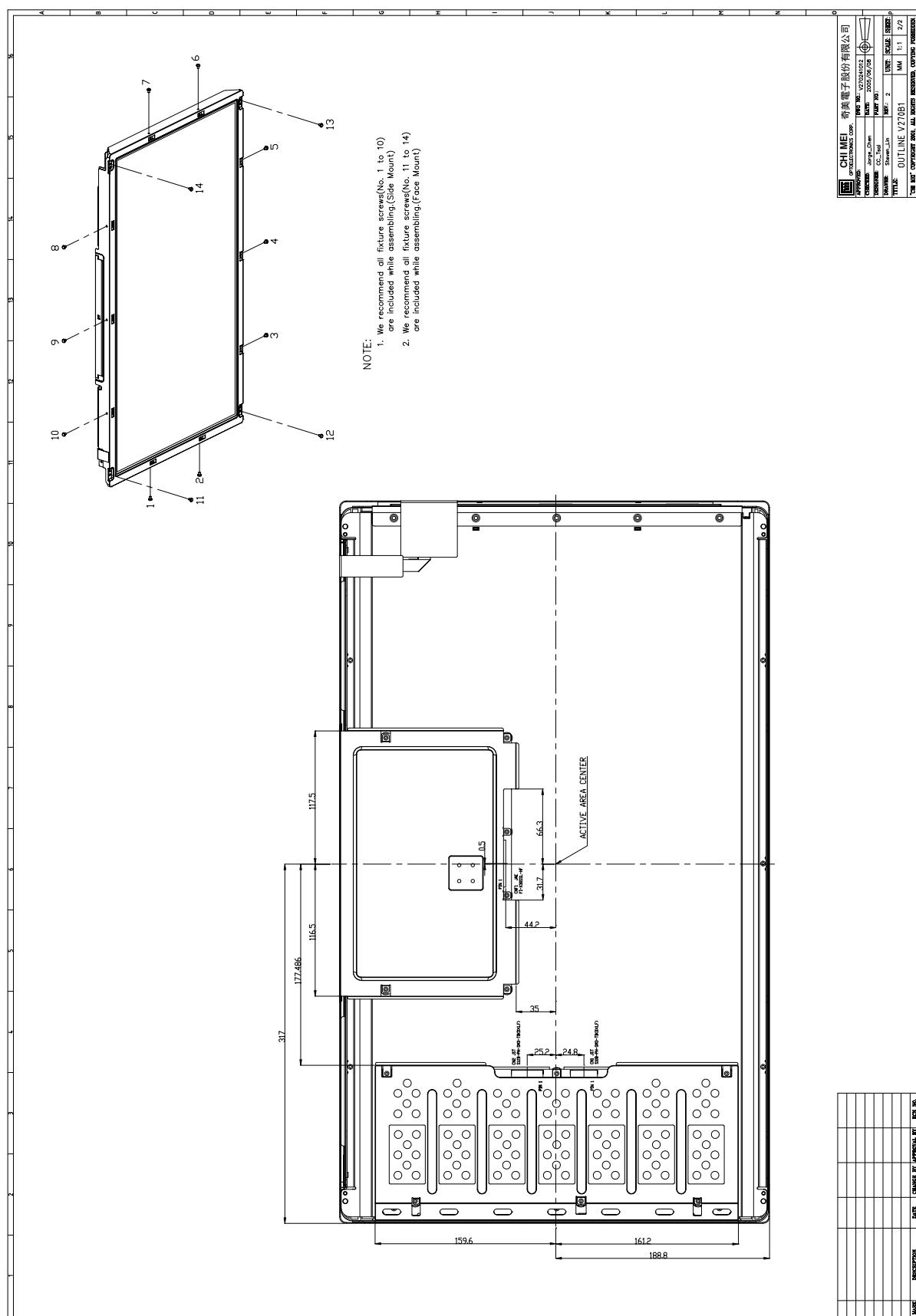
- (1) Do not apply rough force such as bending or twisting to the module during assembly.
- (2) It is recommended to assemble or to install a module into the user's system in clean working areas.  
The dust and oil may cause electrical short or worsen the polarizer.
- (3) Do not apply pressure or impulse to the module to prevent the damage of LCD panel and backlight.
- (4) Always follow the correct power-on sequence when the LCD module is turned on. This can prevent the damage and latch-up of the CMOS LSI chips.
- (5) Do not plug in or pull out the I/F connector while the module is in operation.
- (6) Do not disassemble the module.
- (7) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
- (8) Moisture can easily penetrate into LCD module and may cause the damage during operation.
- (9) High temperature or humidity may deteriorate the performance of LCD module. Please store LCD modules in the specified storage conditions.
- (10) When ambient temperature is lower than 10°C, the display quality might be reduced. For example, the response time will become slow, and the starting voltage of CCFL will be higher than that of room temperature.

### 10.2 SAFETY PRECAUTIONS

- (1) The startup voltage of a backlight is over 1000 Volts. It may cause an electrical shock while assembling with the inverter. Do not disassemble the module or insert anything into the backlight unit.
- (2) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.
- (3) After the module's end of life, it is not harmful in case of normal operation and storage.

## **11. MECHANICAL CHARACTERISTICS**



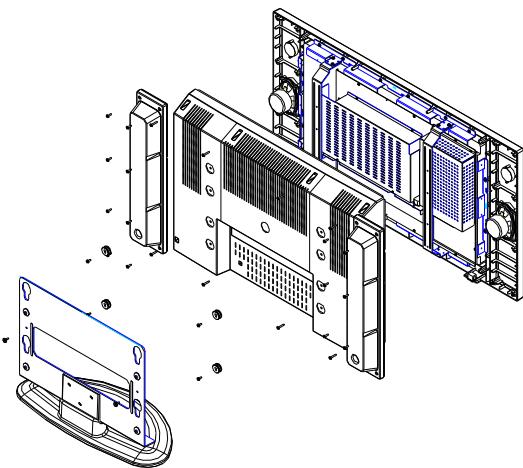


## **Disassembly**

In case of trouble, etc., Necessitating disassemble, please disassemble in the order shown in the illustrations.

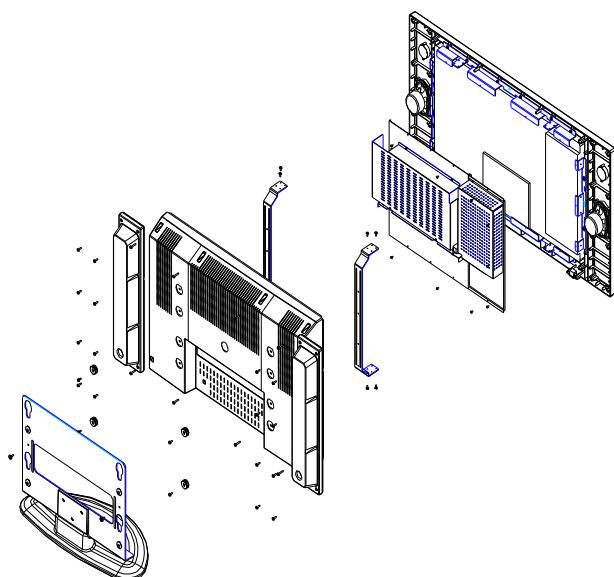
Reassemble in the reverse order.

### 1. Removal of the Back Cover

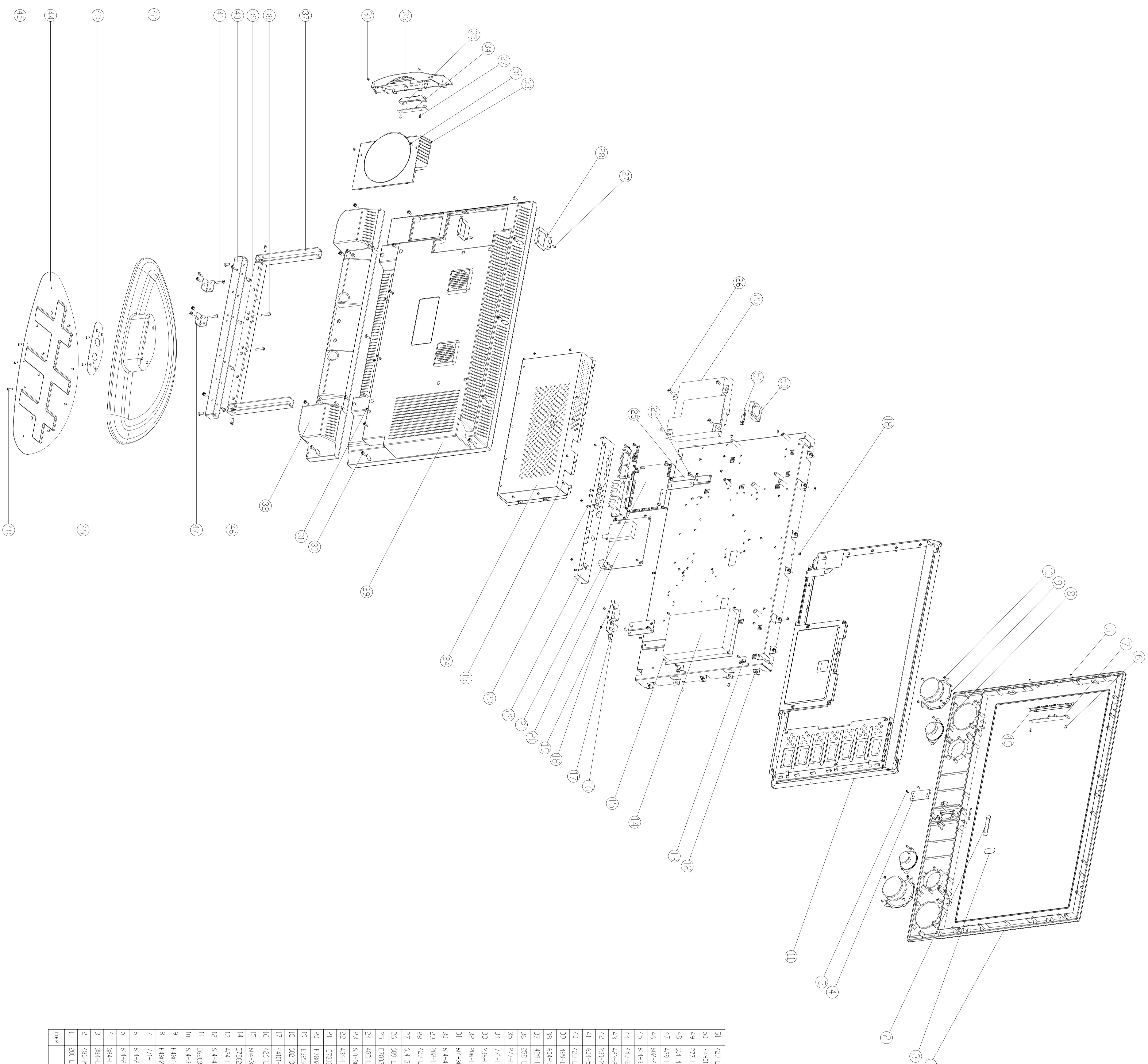


### 2. Removal of the MAIN PCB

- a. Remove the screws.
- b. Slide out the LCD chassis slightly; pull up the connector of AC cord from PCB; pull up the LCD PCB from LCD.
- c. Remove the Anode cap from Thepicture tube. To avoid a shock hazard, be sure to discharge
- d. Take out the LCD chassis.



DWG,REV.	ZONE	DESCRIPTION	DATE	REVISOR
	0	RELEASE	22-Jan-06	tZL



ITEM	PART No.	DESCRIPTION	QTY
1	200-L27AD01-MT001AV	FRONT CABINET	1
2	486-M32111-01	NAME PLATE	1
3	384-L32AD05-01H	REMOTE RECEIVE LENS	1
4	384-L32AD05-01H	REMOTE CONTROL PCB	1
5	614-260208-10	S-TAP, SCREW BID 2.6X8	4
6	614-220206-10	S-TAP, SCREW BID 2.2X6	2
7	771-L32AD01-01	KEY-ASSEMBLY	1
8	E4802-014001	HIGH SPEAKER	2
9	E4801-124001	SPEAKER	2
10	604-305005-10	S-TAP, SCREW BID M3X10	8
11	E6203-27CD02	LCD PANEL CM	1
12	614-400412-10	S-TAP, SCREW BID 4X12	21
13	424-L27AD01-01S	POWER PCB BRACKET	2
14	E7802-005008	POWER PCB	1
15	604-305005-10	MACH, SCREW BID M3X5	29
16	426-L27AD01-01S	POWER CABLE BRACKET	1
17	E4101-027001	POWER SWITCH	1
18	602-305004-10	MACH, SCREW BID M3X4	12
19	E3219-002003	POWER JACK	1
20	E7802-005007	TUNER PCB	1
21	E7802-004008	MAIN PCB	1
22	436-L27AD01-01S	TERMINAL SHEET	1
23	610-300210-10	S-TAP, SCREW BID 3X10	4
24	483-L27AD01-01S	SHIELD COVER -MAIN PCB	1
25	E7802-005006	DVD ASSY	1
26	609-L32AD01-01	SPECIAL MACH, SCREW M4X15	4
27	614-300108-10	S-TAP, SCREW BID 3X8	4
28	429-L27AD02-01S	DVD COVER BRACKET	2
29	202-L27AD01-01AV	BACK CABINET	1
30	614-400416-00	S-TAP, SCREW BID 4X16	12
31	601-3005008-00	MACH, SCREW CTS M3X8	6
32	206-L27AD01-01RV	SPEAKER BACK CABINET	1
33	236-L27AD01-01RV	DVD COVER	1
34	771-L32AD01-03	DVD KEY PCB	1
35	277-L27AD01-01S	DVD FUNCTION KNOB	1
36	258-L27AD01-01RV	DVD FUNCTION KNOB COVER	1
37	429-L32AD03-01	SECURE LEG	2
38	604-508045-00	MACH, SCREW BID M5X45	2
39	429-L32AB26-01	"U" TOP CROSSBEAM	1
40	429-L32AB25-01	"U" BOTTOM CROSSBEAM	1
41	604-508022-00	MACH, SCREW BID M5X22	2
42	230-26LA11-01RV	STAND COVER	1
43	423-27LA08-01	MIDDLE PLATE	1
44	449-27LA01-01	METAL PLATE FOR STAND BASE	4
45	614-300108-10	S-TAP, SCREW BID 3X8	4
46	602-407008-00	MACH, SCREW BID M4X8	16
47	429-L27AD06-01S	"L"BRACKET SHEET	2
48	614-400412-10	S-TAP, SCREW BID 4X12	10
49	277-L32AD01-01S	FUNCTION KEY LCT32AD SILVER	1
50	E4901-001005	FAN 40X40X10MM DC 12V	1
51	429-L27AD05-01S	FAN BRACKET FOR SPEC4010	1

## Spare Part List for LCT2765TD

Item	Part Number	Part Description	Usage / unit	Unit
1	E6203-27CD02	DISPLAY LCD	1	piece
2	E7802-004008	MAIN BOARD	1	set
3	E7802-005006	DVD BOARD	1	piece
4	E7802-005007	TUNER BOARD	1	set
5	E7802-005008	POWER PCBA	1	set
6	771-L32AD01-02	KEY PCB ASSY	1	set
7	771-L32AD01-03	KEY PCB ASSY MICO DVD	1	set
8	771-L32AD01-01	REMOTE RECEIVE PCBA	1	set
9	774PL32AB01-02 (without power jack bracket)	POWER INPUT ASSY FOR MICO	1	set
10	E4101-027001	POWER SWITCH	1	piece
11	E4801-124001	SPEAKER	2	piece
12	E4802-014001	TWEETER	2	piece
13	E3219-002003	POWER SOCKET	1	piece
14	E3471-000048	KEY WIRE FOR DVD	1	piece
15	E3471-000049	DVD SIGNAL WIRE	1	piece
16	E3461-064017	DVD POWER WIRE	1	piece
17	E3461-064019	TV+COMBO FOR DVD POWER WIRE	1	piece
18	E3421-925038	WIRE ASSY TJC3-2Y L=850MM SPK-L	3	piece
19	E3421-925053	WIRE ASSY FOR TV&DVD AUDIO L/R/MUTE	1	piece
20	E3421-925054	WIRE ASSY FOR TV&DVD TUNER	1	piece
21	E3421-925061	POWER SOCKET CABLE	1	piece
22	E3421-924009	WIRE ASSY 2P L120	2	piece
23	E3421-925032	WIRE ASSY L=450MM	1	piece
24	E3421-229007	WIRE 3P	1	piece
25	E3471-000044	SHIELD WIRE FOR 32LCD COMBO MICO KEY 13P/8P+5P	1	piece
26	E3471-000046	SHIELD WIRE FOR MICO CMO(1366X768)	1	piece
27	E3461-064021	FLAT WIRE FOR 32LCD COMBO DVD BOARD +SV POWER	1	piece
28	E3461-064018	FLAF WIRE FOR TV+COMBO DVD STANDBY POWER WIRE	1	piece
29	E3471-000050	SHIELD WIRE FOR TV+COMBO DVD COAXIAL WIRE	1	piece
30	E3461-064016	FLAF WIRE FOR TV+COMBO INVERTER WIRE	1	piece
31	E3404-157001	AC CORD	1	piece

## Spare Part List for LCT2765TD

Item	Part Number	Part Description	Usage / unit	Unit
32	230-26LA11-01RV	STAND COVER	1	piece
33	200-L27AD01-MTD01AV	CABINET FRONT SIL/BLK	1	piece
34	202-L27AD01-01AV	BACK CABINET BLACK	1	piece
35	370-42D101-01	RUBBER FOOT	4	piece
36	E7301-011002	BATTERY AA	2	piece
37	790-R00105-01	REMOTE CONTROL	1	set
38	E4901-001005	FAN	1	piece
39	236-L27AD01-01RV	DVD COVER	1	piece
40	258-L27AD01-01RV	DVD FUNCTION KNOB COVER	1	piece
41	277-L32AD01-01S	FUNCTION KEY	1	piece
42	483-L27AD01-01S	SHIELD COVER-MAIN PCB	1	piece
43	436-L27AD01-01S	TERMINAL SHEET	1	piece
44	426-L27AD01-01S	POWER JACK BRACKET	1	piece
45	263-R00101-01L	REMOTE LENS	1	piece
46	277-L27AD01-01S	DVD FUNCTION KNOB	1	piece
47	510-L27AD01-MTU01K	CARTON BOX AKAI LCT2765CD	1	piece
48	300-L27AD02-02C	POLFOAM TOP	1	piece
49	300-L27AD01-02C	POLFOAM BOTTOM	1	piece
50	310-383550-07V	POLYBAG 38"X35"X0.5MM	1	piece
51	310-111404-07V	POLYBAG FOR INSTRUCTION MANUAL 11"X14"X0.04	1	piece
52	580-L27ADHM-TU01L	INSTRUCTION MANUAL	1	piece
53	388-42D103-01H	CAUTION LABLE	1	piece
54	388-42SB04-01H	POWER PLATE	1	piece
55	387-L32AB01-MTU01H	MODEL PLATE	1	piece
56	384-L32AD01-MTU01H	SHEET FOR TERMINAL	1	piece
57	590-L27AD01-01	WARRANTY CARD	1	piece
58	593-L27AD01-01	INSERTION CARD	1	piece
59	579-L27AD02-01	UPC LABEL OF G/B	2	piece
60	579-L27AD03-01	POP LABEL ONE	1	piece
61	579-L27AD04-01	POP LABEL TWO	1	piece
62	568-P46T02-02	WARNING LABEL	1	piece
63	579-L32AD04-01	LASER WARNING LABEL	1	piece
64	579-42D103-02	ON/OFF LB ENG	1	piece
65	579-42D102-09	SERIAL NO/BAR CODE LABEL	1	piece
66	590-L27AD01-02	WARNING NOTICE	1	piece
67	579-L32AD03-01	LASER CLASSIFICATION LABEL	1	piece
68	579-42D105-01	PROTECTIVE EARTH LABE	1	piece

# If you forget your V-Chip Password

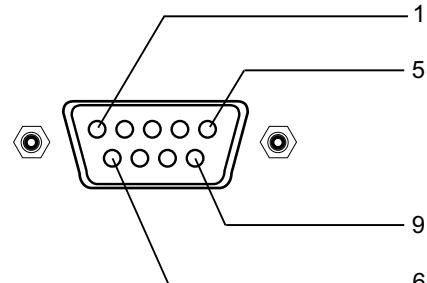
- Omnipotence V-Chip Password: **8205**.
- Press **MENU** button.
- Press **LEFT RIGHT** buttons to highlight "MISC" Menu.
- Press **Up, Down** buttons to highlight "Parentald".
- Press **ENTER** button to pop up "Input your Password Please".
- Use the **Number buttons** (0~9) to enter an omnipotence Password.
- Press **ENTER** button to confirm and you can select "CHANGE PASSWORD".
- Suggest: Change to your familiar Password again.

# Software upgrade

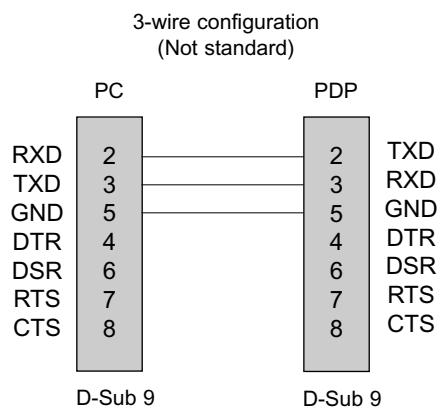
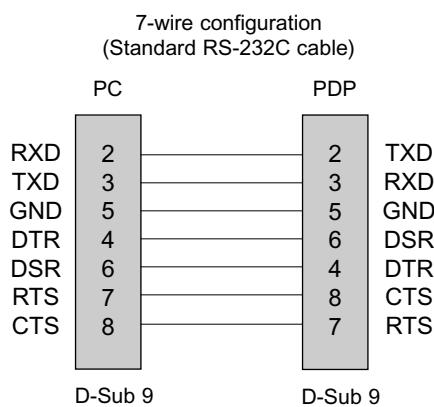
- Connect the RS-232C input jack to an external control device (such as a computer) and software upgrade.

Type of connector; D-Sub 9-pin male

No.	Pin name
1	No connection
2	RXD (Receive data)
3	TXD (Transmit data)
4	DTR (DTE side ready)
5	GND
6	DSR (DCE side ready)
7	RTS (Ready to send)
8	CTS (Clear to send)
9	No Connection



## RS-232C configurations



## **Software upgrade Process**

- Power Switch OFF.
- Connect the serial port of the control device to the RS-232 jack on the LCD-TV back panel.  
RS-232C connection cables are not supplied with the LCD-TV.
- Power Switch ON. The power indicator on the front of the panel should now display red, means that the LCD-TV is in standby mode.
- Copy the software (MTKTOOL) to the computer.
- Open the software (MTKTOOL.EXE)
- Select MTK 8205 and Point "browse" on the interface of the MTKTOOL.exe.
- Select the file which will be update.
- Point "update" on the interface of the MTKTOOL.exe.
- Waiting for the upgrader programing, when it is finished, the bar will display 100%.
- After the upgrader is finished, shut down the power switch, take out the RS-232C connection after the power indicator is extinguished.

Note: After upgrading, the first time of power on will be some long.