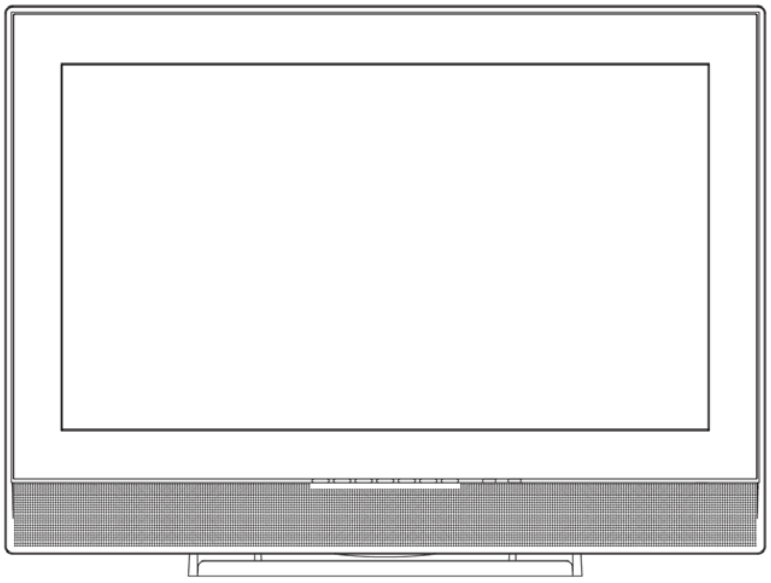
PDi™
Communication
Systems, Inc.

COLOR TFT-LCD TV
SERVICE MANUAL

MODEL : PDI-P23LCD

CAUTION !!
BEFORE SERVICING THE TFT-LCD TV,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



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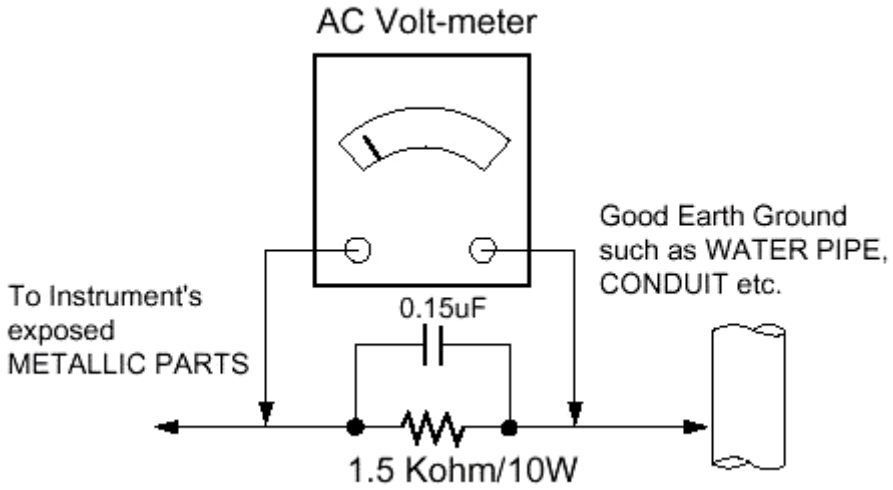
SAFETY PRECAUTIONS

!! Important Safety Notice !!

Many electrical and mechanical parts in this chassis have special safety-related characteristics.
These parts are identified by in the Schematic Diagram and Replacement Parts List.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.
Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug of the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS, which is, corresponds to 0.5mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SERVICING PRECAUTIONS

CAUTION!!
Before servicing receivers covered by this service manual, read and follow the SAFETY PRECAUTIONS on page 2 of this publication.

General Servicing Precautions
1.Always unplug the receiver AC power cord from AC power source before;
ⓐRemoving or reinstalling any component, circuit board module or any other receiver assembly.
ⓑDisconnecting or reconnecting any receiver electrical plug or other electrical connection.
ⓒConnecting a test substitute in parallel with an electrolytic capacitor in the receiver.
CAUTION!! A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion harzard.
2.Do not spray chemicals on or near this receiver or any of its assemblies.
3.Do not defect any plug/socket voltage interlocks with which receivers covered by this service manual might be equipped.
4.Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead. Always remove the test receiver ground lead last.
5.Do not connect the test fixture ground strap to power supply heatsink in this receiver

Electrostatically Sensitive(ES) Devices
Some semiconductor(solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive(ES) Device.Examples

Circuit Board Foil Repair
Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil th separate from or “lift-off” the board.
The following guidelines and procedures should be flollowed whenever this condition is encountered.

At IC Connections
To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board.(Use this technique only on IC connections.)

1.Carefully remove the damaged copper pattern with a sharp knife.
(Remove only as much copper as absolutely necessary.)
2.Carefully scratch away the solder resist and acrylic coating(if used) from the end of the remaining coopper pattern.
3.Bend a small “U” in one end of a small guage jumper wire and carefully crimp it around the IC pin.
4.Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

SPECIFICATIONS

Note: Specifications and others are subject to change without notice for improvement.

1.Scope.
This document is the specification of 23" Hospital grade TFT-LCD Color TV.

2.Power
1) Power requirement
Input Frequency : 50/60㎐
Input Voltage: AC 100V ~ AC 240V
Power consumption : Less than 140Watt.(Average: 95~100 Watt)

2) Power cord
Use UL listed hospital grade power cord

3.Tuning system
FS, 181 Channel

4.Sound output
10W+10Wrms Stereo (Max)

5.Antenna input impedance
VHF / UHF at 75ohm

6.OSD Type (On Screen Display)
Windows type (Center)

7.External in/output
PC ANALOG INPUT, PC DIGITAL INPUT, PC AUDIO INPUT, HEADPHONE OUTPUT, COMPONENT 1 INPUT,COMPONENT2INPUT, S-VIDEO INPUT, TUNER,VIDEO OUTPUT
(Audio In : 0.4Vrms, over 10KΩ Video In : 1Vp-p, over 75Ω)

8. Function
CATV/Hyper band
Auto Program
Manual Program
Auto Sleep
Quick view
ACMS(Auto channel Memory System)
PSM(Picture Status memory)
SSM(Sound Status memory)
PIP **:** PC ANALOG, PC DIGITAL(Main) – TV, Component, Video, S-Video
ARC(ASPECT RATIO CONTROL): 16:9 / 14:9 / 4:3 / 16:9 zoom / 14:9 zoom / 4:3 zoom

SPECIFICATIONS

9.Receiving RF TV system

NO	Model System	PDI-P23LCD	/	/
1	PAL-B	X	/	/
2	PAL-G	X	/	/
3	PAL-I, I /I	X	/	/
4	PAL-D	X	/	/
5	PAL-K	X	/	/
6	SECAM-B	X	/	/
7	SECAM-G	X	/	/
8	SECAM-D	X	/	/
9	SECAM-K	X	/	/
10	SECAM-K1	X	/	/
11	SECAM-I (6.0)	X	/	/
12	NTSC-3.58 / 4.5	O	/	/
13	NTSC-3.58 / 5.5	X	/	/
14	NTSC-3.58 / 6.0	X	/	/
15	NTSC-3.58 / 6.5	X	/	/
16	NTSC-3.58 / 4.5(5.0)	X	/	/
17	NTSC-4.43 / 5.5	X	/	/
18	NTSC-4.43 / 6.0	X	/	/
19	NTSC-4.43 / 6.5	X	/	/
20	PAL 5.5 / 60Hz	X	/	/
21	PAL 6.0 / 60Hz	X	/	/
22	PAL 6.5 / 60Hz	X	/	/
23	SECAM 5.5 / 60Hz	X	/	/
24	SECAM 6.0 / 60Hz	X	/	/
25	SECAM 6.5 / 60Hz	X	/	/
26	SECAM L / L'	X	/	/
	TOTAL SYSTEM	1	/	/

SPECIFICATIONS

10. PC Mode Scan Frequency & Timing

1)Scan Freq **:** H: 31 ~ 61 kHz / V : 56 ~ 75㎐

2)Preset Timing Chart

Mode	Resolution	Horizontal Frequency(KHz)	Vertical Frequency(Hz)
VGA	640 x 480	31.5 KHz	60 Hz
	640 x 480	37.9 KHz	72 Hz
	640 x 480	37.5 KHz	75 Hz
SVGA	800 x 600	35.1 KHz	56 Hz
	800 x 600	37.9 KHz	60 Hz
	800 x 600	48.1 KHz	72 Hz
	800 x 600	46.9 KHz	75 Hz
XGA	1024 x 768	48.4 KHz	60 Hz
	1024 x 768	56.5 KHz	70 Hz
	1024 x 768	60.0 KHz	75 Hz
WXGA	1280 x 768	47.4 KHz	60Hz RB
	1280 x 768	47.8 KHz	60 Hz
	1360 x 768	47.7 KHz	60 Hz
DTV	720 x 480p	31.5 KHz	60 Hz
	1280 x 720p	45.0 KHz	60 Hz
	1920 x 1080i	33.7 KHz	60 Hz

Note!! :

a. If the set is cold, there may be a small “flicker” when the set is switched on. This is normal, there is nothing wrong with the set.

b. Some dot defects may appear on the screen, like Red,Green or Blue spots, However, this will have no impact or effect on the monitor performance.

c. The resolution which is not supported will appear at the resolution which gets near to the resolution which is supported.

*The standard of the resolution which gets near : H/V sync.

d.Press the Q.VIEW button to switch the 640x480 60hz to 720x480P 60Hz

11. TFT – LCD Panel Character

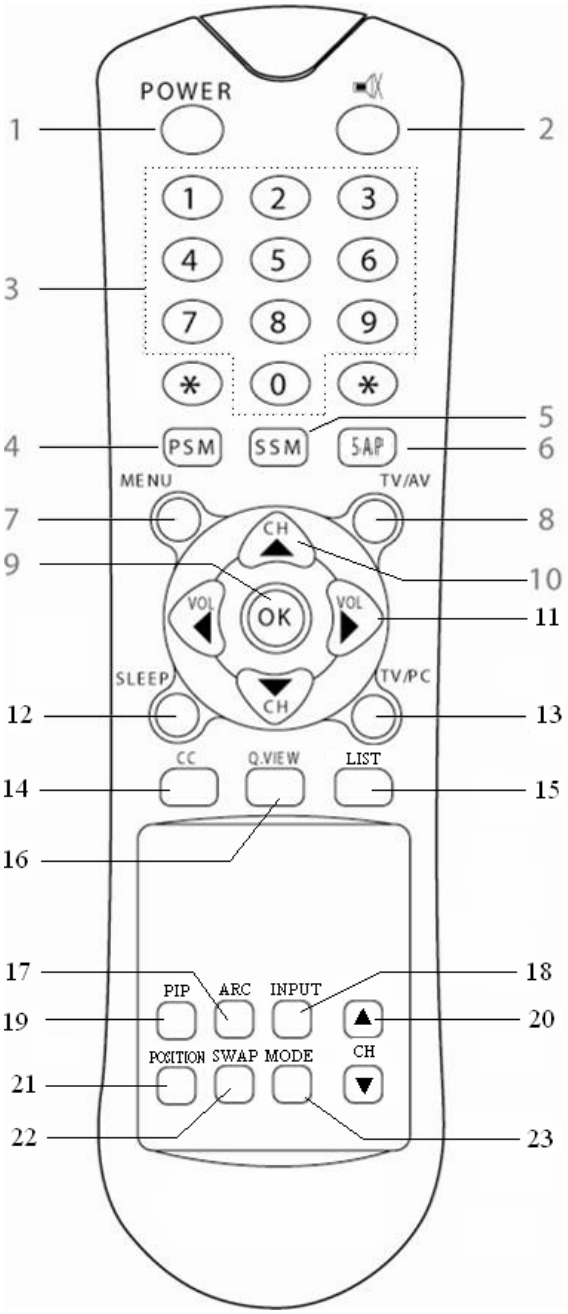
1) Feature

Size	:23”
LCD Type	:Color Active Matrix TFT
Pixel Pitch	:0.372 mm(H) x 0.372 mm(V)
Pixel Format	:1366x768 Pixels, RGB Stripe
Active Video Area	:508.125mm(H) x 285.696mm(V)
Surface treatment	:Haze 44% , Hard coating(3H)
Response Time(Typ)	:25mS(Typ)
Viewing Angle<CR≥10>	: Hor [Left/Right] → 89Deg (Typ) / 89Deg (Typ), Ver [High(Top)/Low(Bottom)] → 89Deg (Typ) / 89Deg (Typ)
Luminance(Typ)	: 450 cd/㎡(Typ)
Contrast Ratio(Typ)	: 1200(Typ)
Display Color	: 16,777,216 Color - True
Back Light	: 6 CCFL – U Type

LOCATION OF CONTROL

All the function can be controlled with the remote controller.
Some functions can also adjusted with the buttons on the controls on the TV front panel.

12. Remote controller
Note !! : Before you use the remote controller, please install the batteries.



1.POWER:
Turns the TV on from standby or off to standby mode.

2.MUTE:
Turns the sound on and off

3.NUMBER buttons**:** Select channel numbers.

4.PSM (**P**icture **S**tatus **M**emory):
Recalls your preferred picture setting.

5.SSM (**S**ound **S**tatus **M**emory):
Recalls your preferred sound setting.

6. SAP:
Adjusts the MTS-STEREO,MONO,SAP

7.MENU: Displays a main menu.

8.TV / AV: Selects input signal source./ Clears the menu from the screen.

9.OK:
Accepts your selection or displays the current mode.

10.CH ▲ / ▼ (Channel Up/Down):
Selects next channel or a OSD menu item.

11.VOL ◀/▶ (Volume Up/Down)
Adjusts the sound level. Adjusts menu settings.

12.SLEEP: Sets the sleep timer.

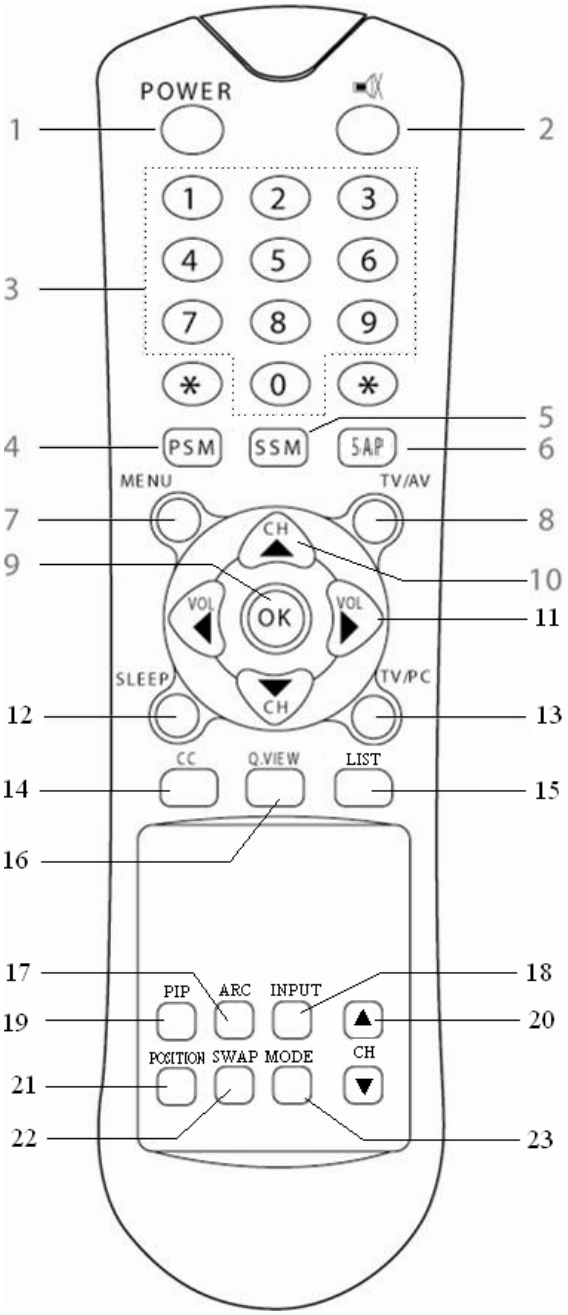
13.TV / PC : Selects TV or PC mode directly.

14.CC: Sets the caption function.

15.LIST: Displays the channel list menu.

16.Q.VIEW:
Returns to the previously viewed channel.

LOCATION OF CONTROL



17.ARC You can watch TV in various picture formats; **16:9, 14:9, 4:3, 16:9 Zoom, 14:9 Zoom, 4:3 Zoom.** Repeatedly press the **ARC** button to select your desired picture format. **Note:** In PC mode only 16:9 and 4:3 sized displays available.

18. INPUT:
Selecs the AV source for sub picture in PIP mode.

19.PIP:
Displays a PIP(Picture In Picture) screen.
The PIP function is available except 480i signal in COMPONENT1 and COMPONENT2 mode.

20. ▲CH▼:
Selects a channel when TV signal is displayed in PIP window mode.

21.POSITION:
Selects a position of PIP screen.

22. SWAP:
Switches a main picture for sub picture in PIP mode. The PIP screen will disappear after pressing the SWAP button.

22. MODE:
Selects a PIP screen size – 16:1, 9:1 and 3:1 mode.

LOCATION OF CONTROL

13. Controller of Panel

1. ON/OFF: Switches TV set on or off.

2. MENU : Displays menu.

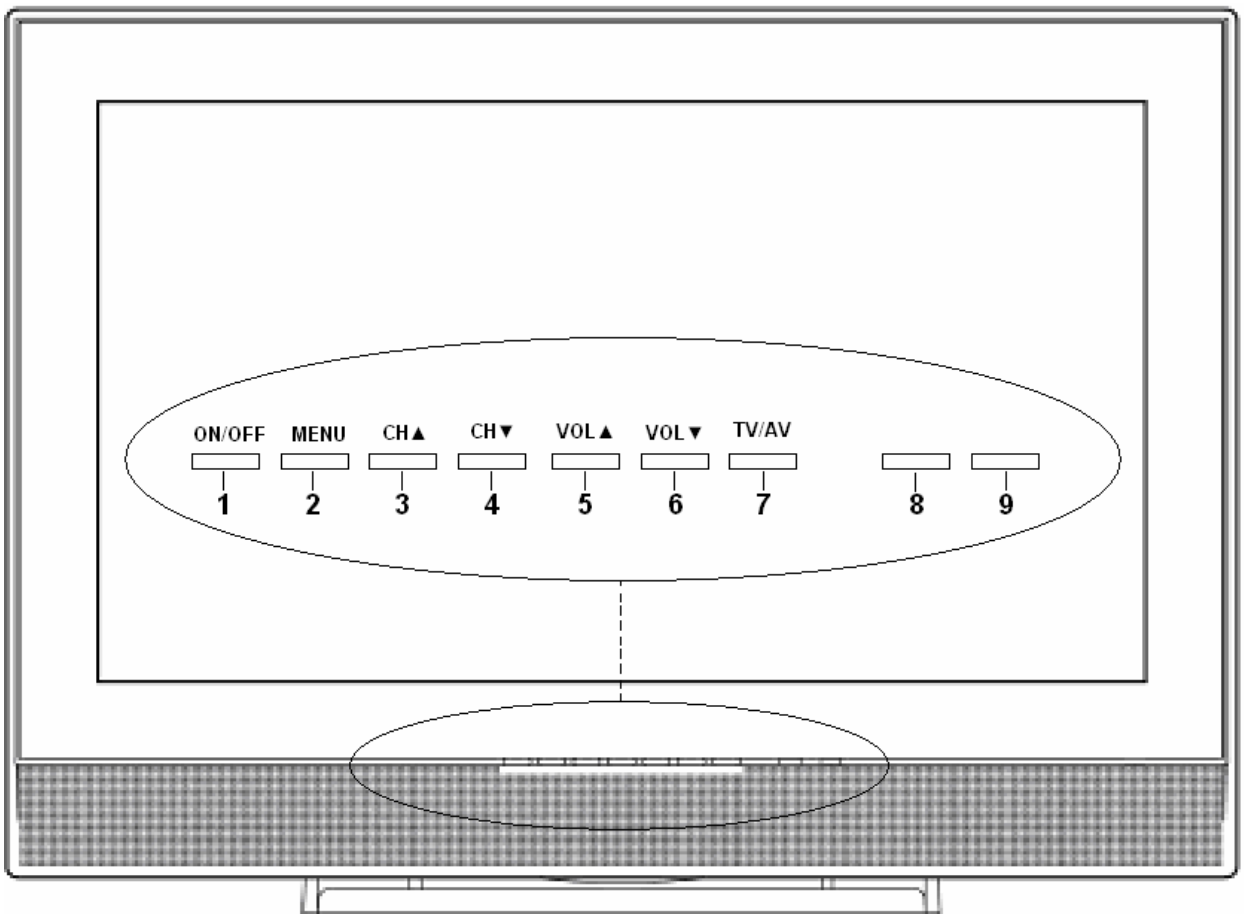
3~4. CH▲ / ▼: (Channel Up/Down) Selects a channel or a menu item.

5~6. VOL▲ / ▼ (Volume Up/Down) Adjusts the volume or menu settings.

7. TV/AV Selects TV, VIDEO, S-VIDEO, RADIO(Only when the Radio is set on), PC Analog, PC Digital, COMPONENT1 or COMPONENT2 mode. Clears the menu from the screen.

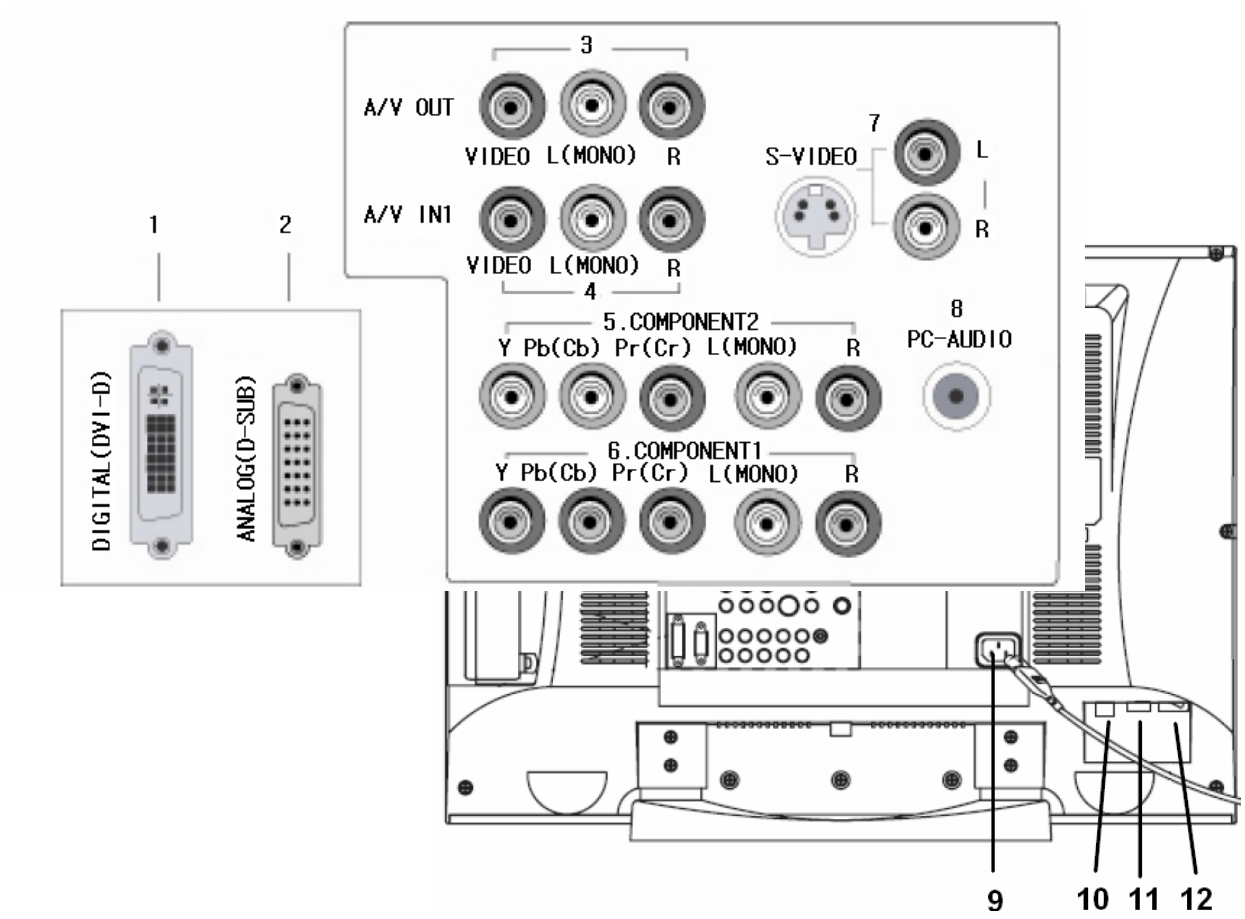
8. Remote control sensor Accepts the IR signal of remote controller.

9. Power Indicator IIluminates in red when the TV is OFF. IIluminates in green when the TV is ON. IIluminates in amber when the power save mode is active (only PC mode).



EXTERNAL IN/OUT

14.External IN / OUT



1. PC DIGITAL IN (DVI-D) : Connect the DVI from PC.

2. PC ANALOG IN (D-SUB) Connect the 15pin D-SUB from PC.

3. AV OUT: Connect these outputs to the Audio/Video inputs of extemal equipment.

4. AV IN: Connect the Audio/Video outputs of extemal equipment to these inputs.

5. COMPONENT2 IN: Connect the Y, Pb, Pr signal from DVD or Set Top Box.

6. COMPONENT1 IN: Connect the Y, Pb, Pr signal from DVD or Set Top Box.

7. S-VIDEO IN: Connect the output of the S-VIDEO(Y,C) on the VCR to the S-VIDEO inout.
Connect the audio outputs of the S-VIDEO on the VCR to the Audio IN L(MONO),R

8. PC AUDIO IN: Connect the audio cable from the PC to the OC AUDIO IN of the set.

9. AC INLET: Connect the power cable from wall.

10.PILLOW: Pillow Speaker Port.

11. COMM: CCI/Cloner Comm Port.

12. SPK: On Off switch for the intemal TV speakers and H/P jack.

INSPECTION INSTRUCTION

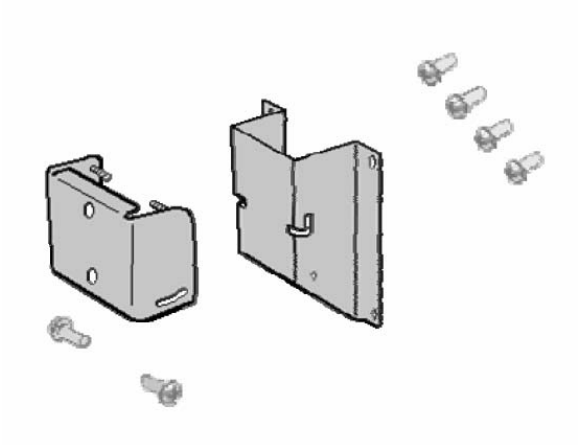
1. Supplied Accessories

Note: Make Sure the following accessories are provided with Product.

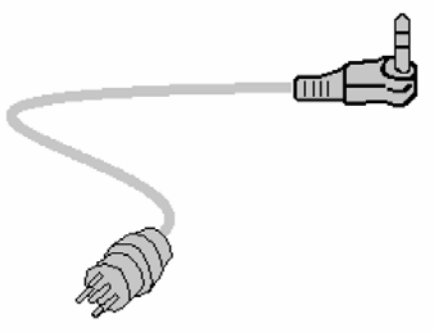
1. AC Code

2. Owner's manual

3.Mounting Brackets &Hardware
(Not included with the "-NB" model)



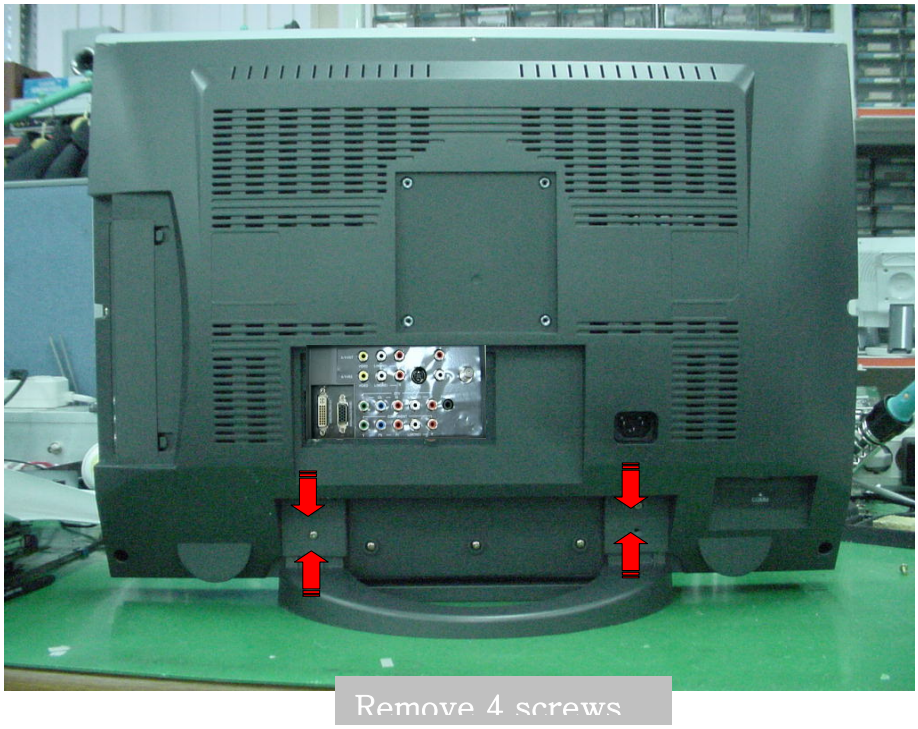
4. Pillow Speaker Jumper
(Not included with the "-NB" model)



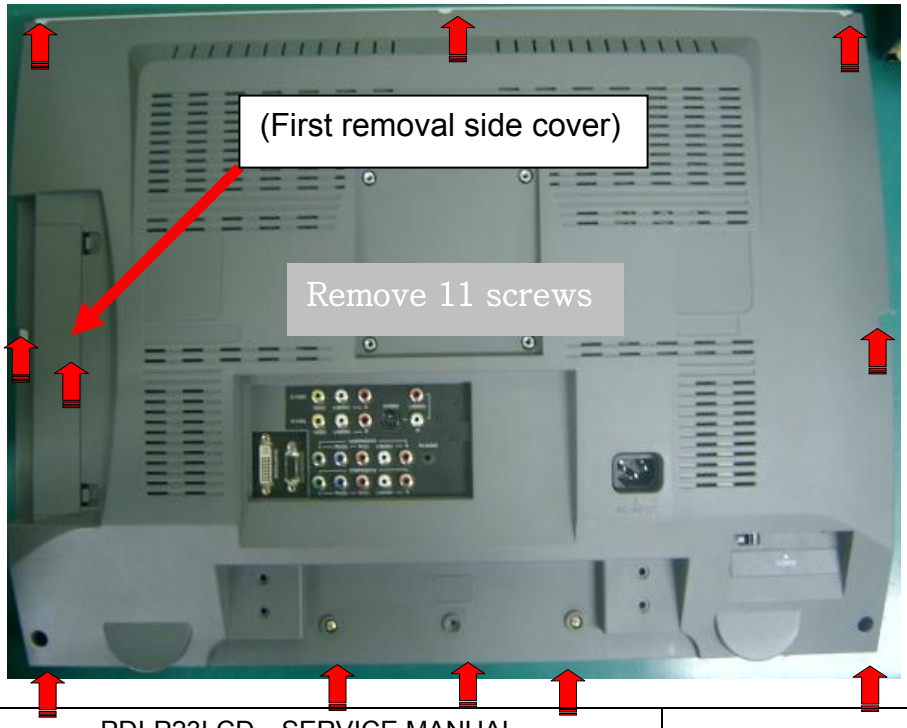
DEASSEMBLY PROCEDURE

16. Disassembly procedure

1)Removal of Stand

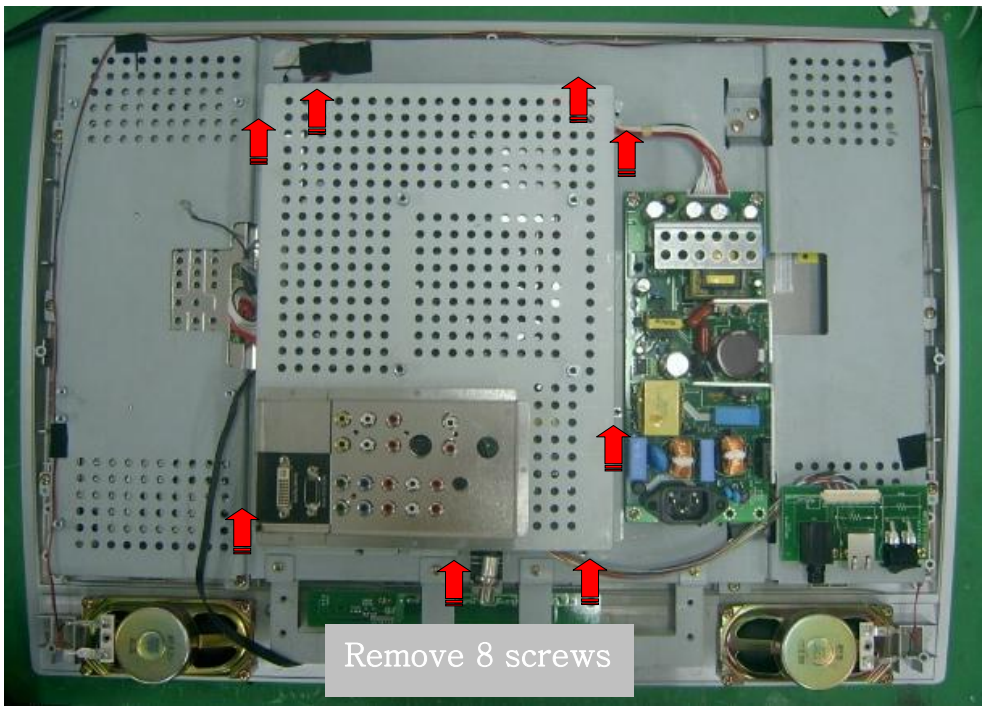


2)Removal of Back cover,

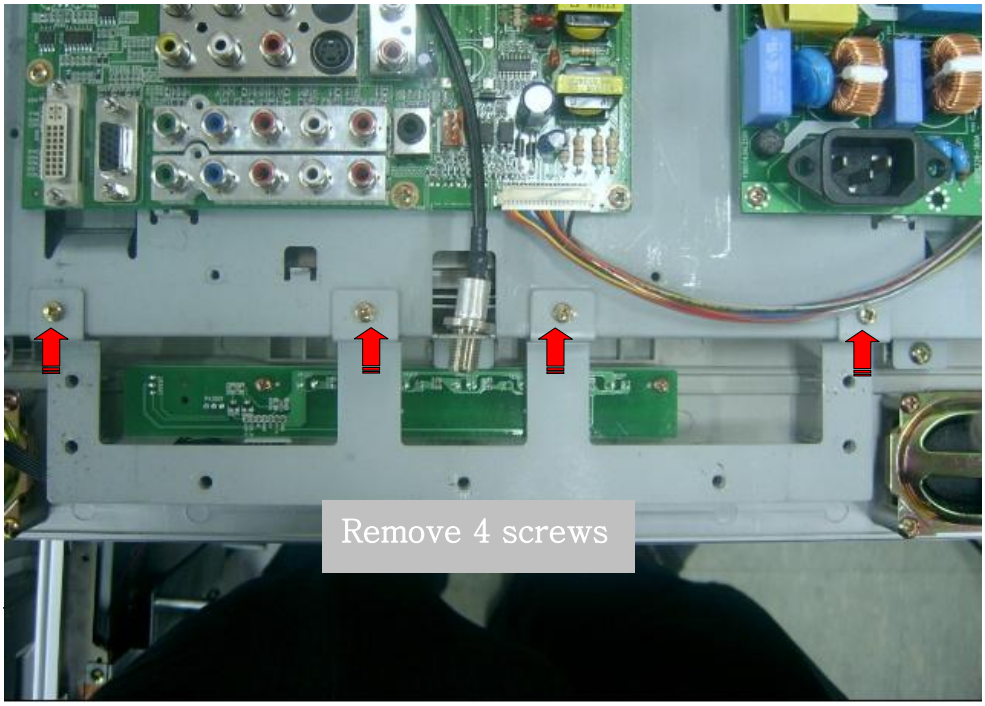


DEASSEMBLY PROCEDURE

3)Metal plate & Rear chassis

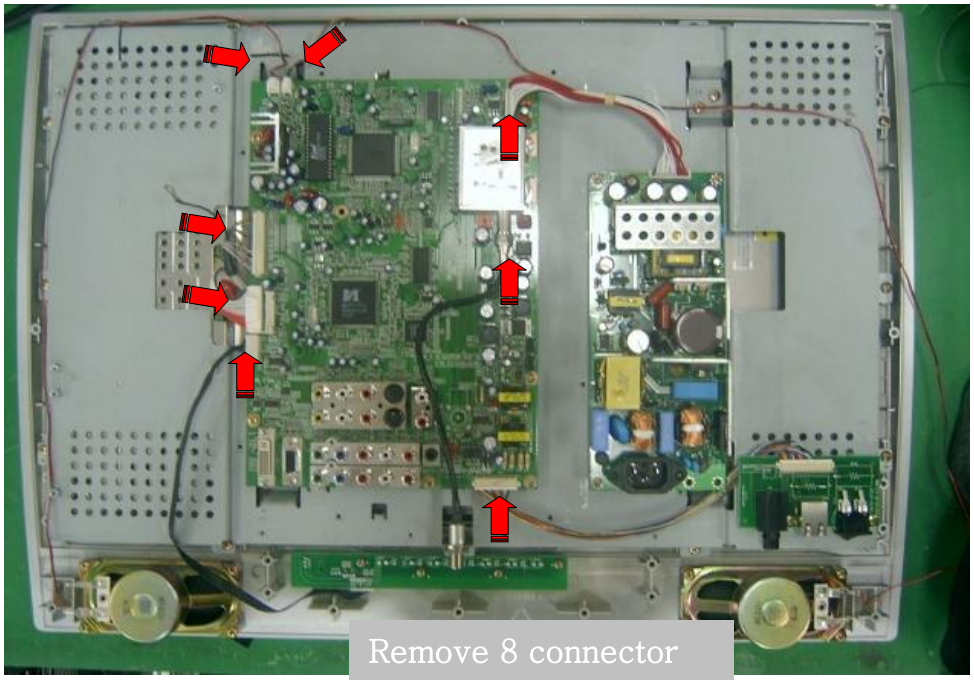


4)Remove bracket

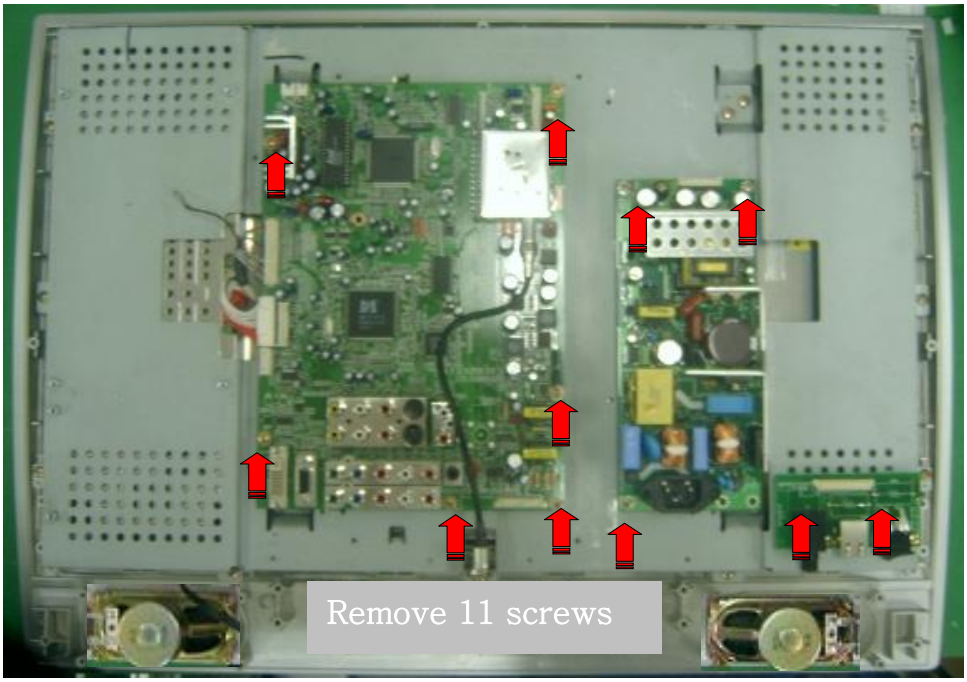


DEASSEMBLY PROCEDURE

5) Disconnect 8 plugs on Main PCB

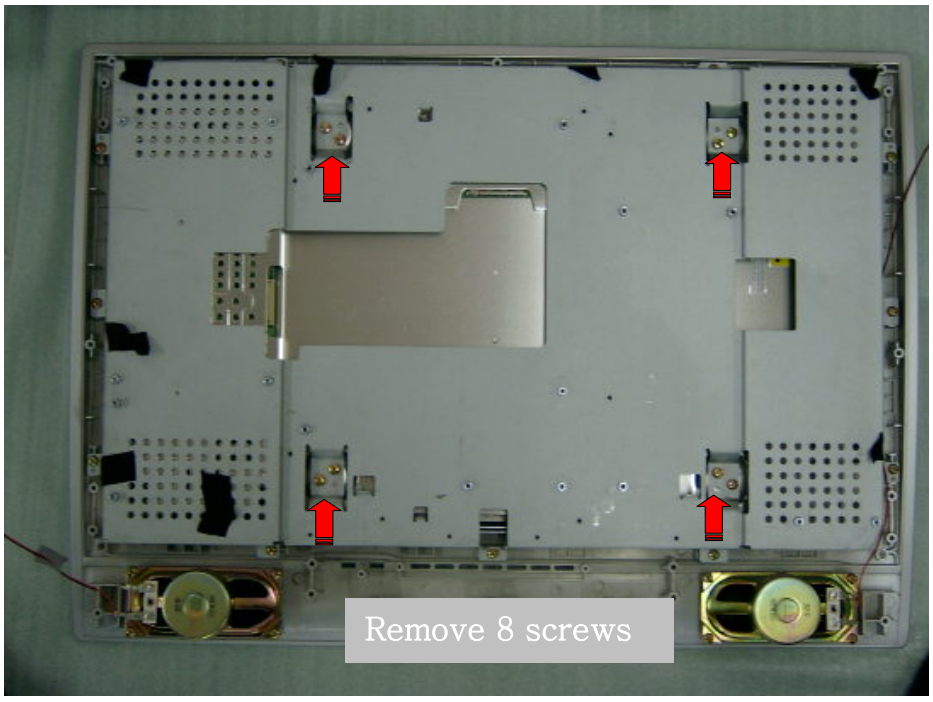


6) Remove 12 Main & SMPS PCB screws

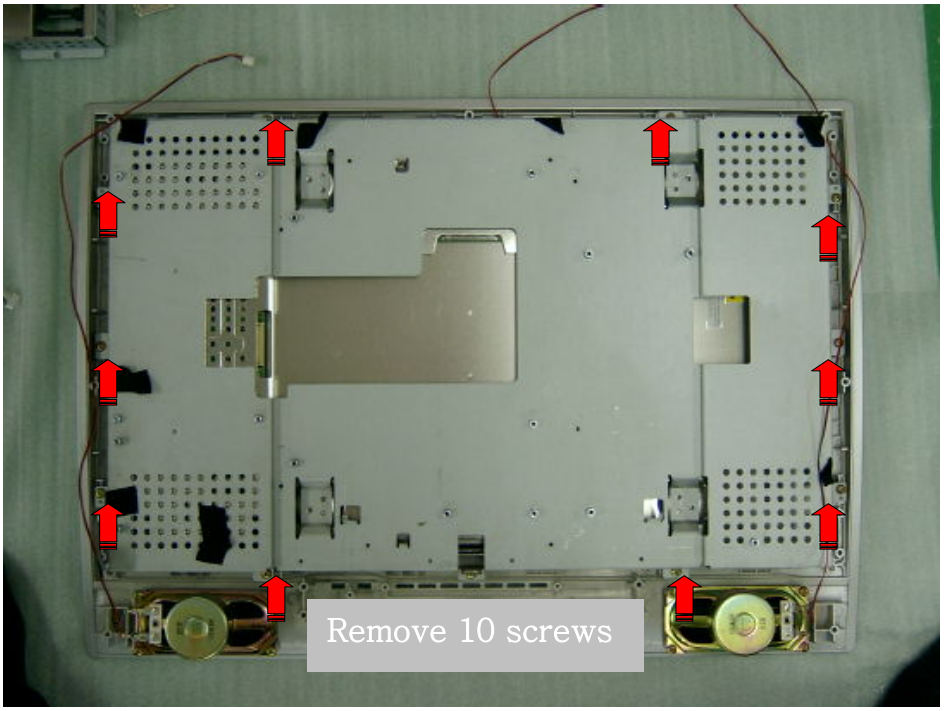


DEASSEMBLY PROCEDURE

7-1)Removal of LCD module

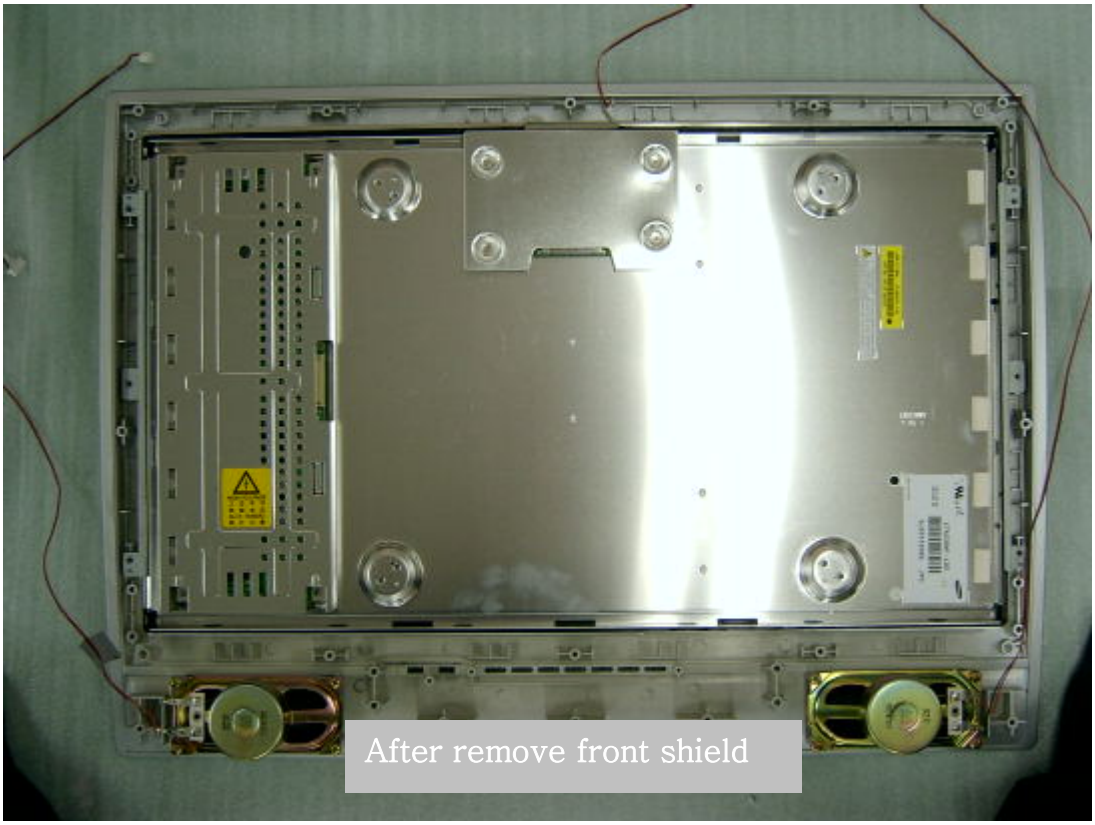


7-2)Removal of LCD module

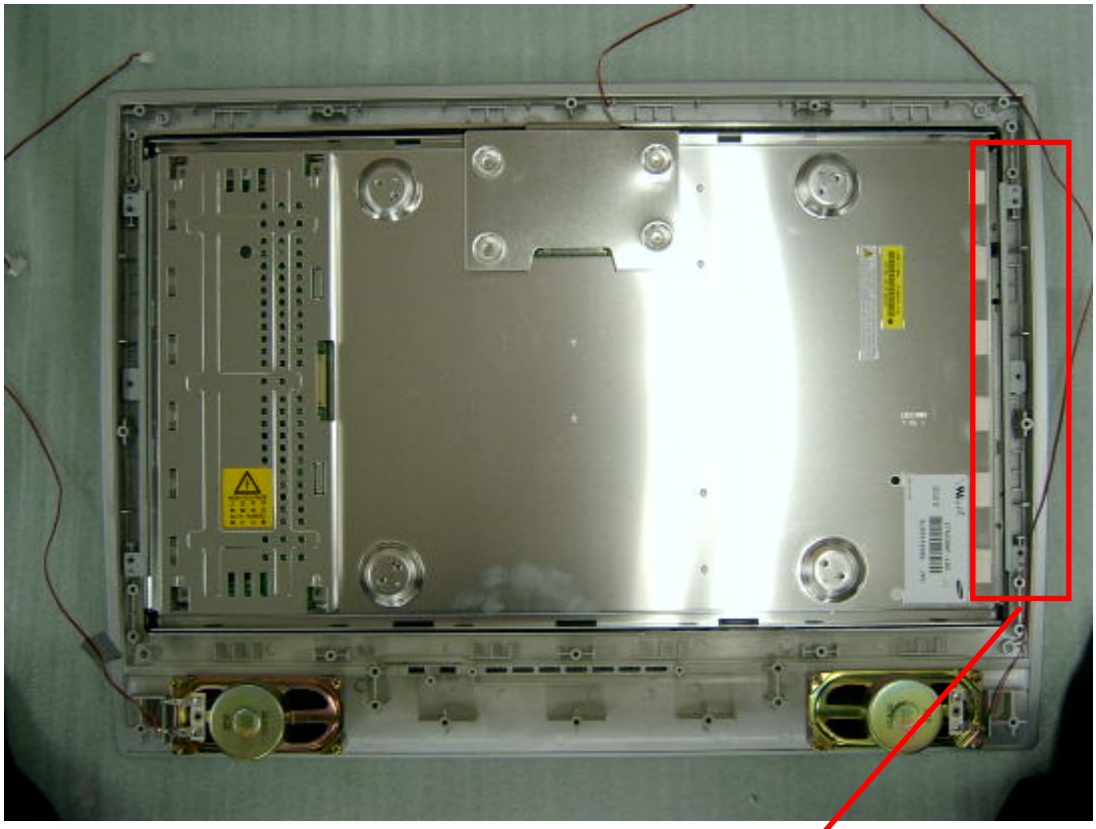


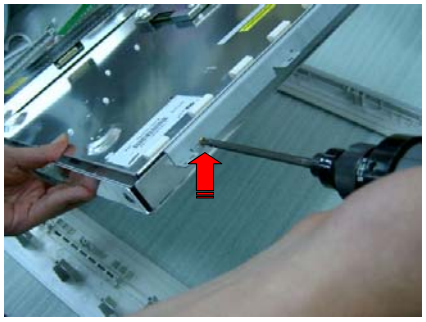
DEASSEMBLY PROCEDURE

7-3)Removal of LCD module

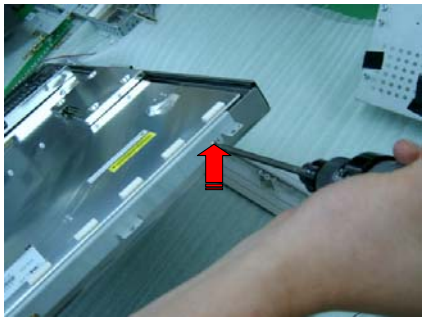


7-4) Removal of LCD module



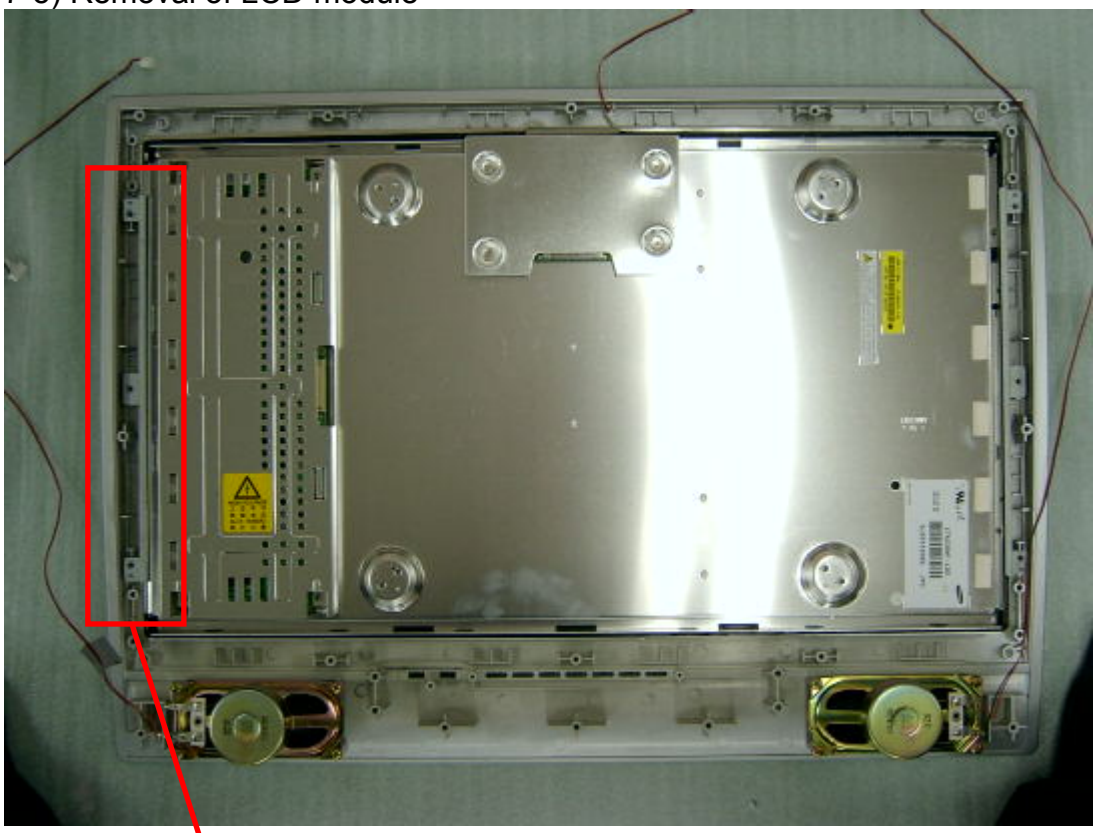


Remove 2 screws

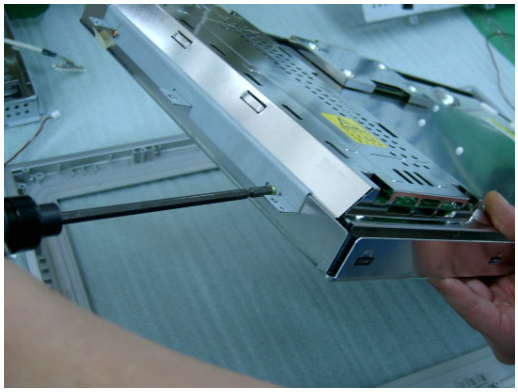


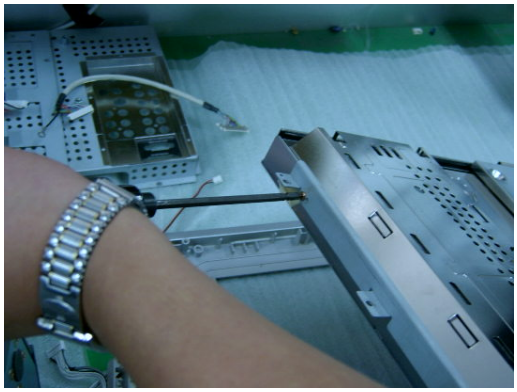
DEASSEMBLY PROCEDURE

7-5) Removal of LCD module



Remove 2 screws



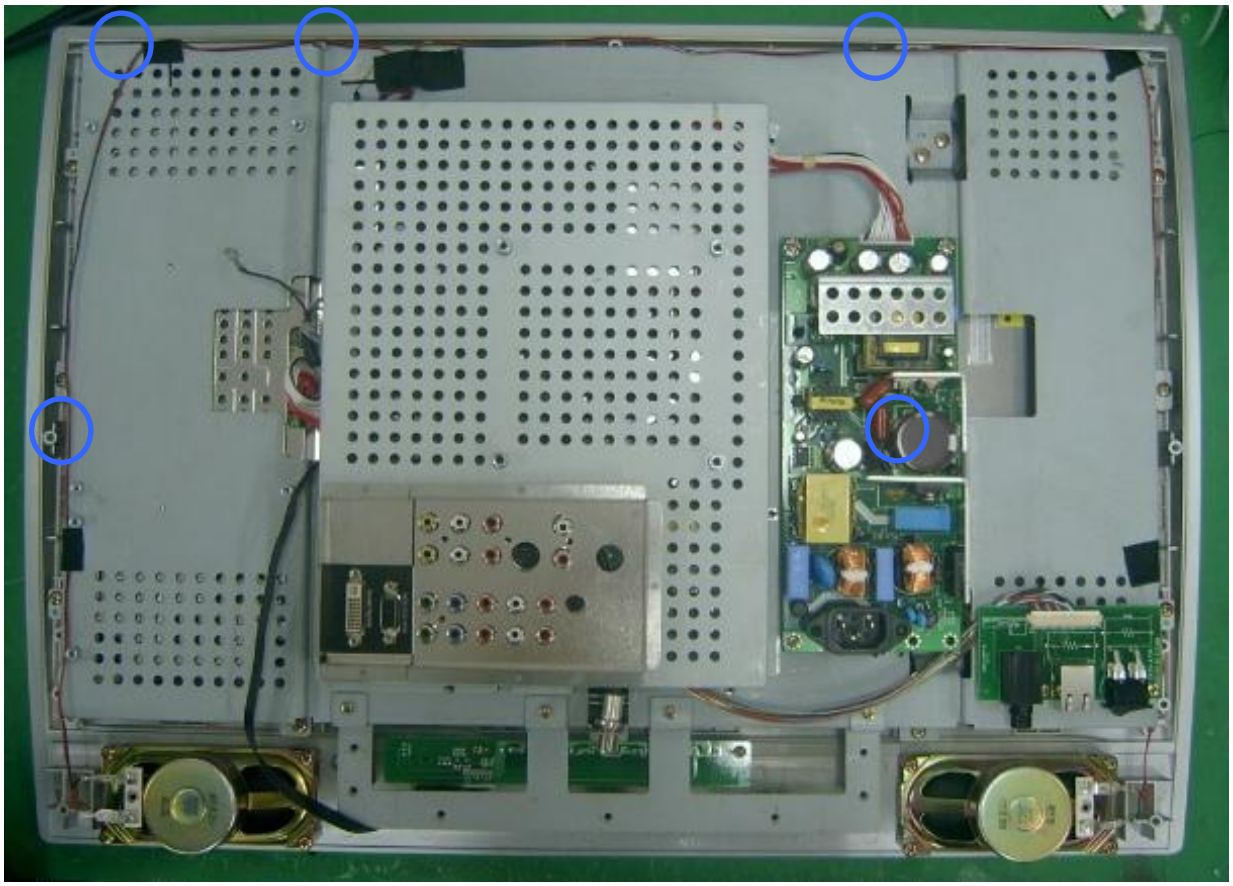


7-6)Removal of LCD Module

WIRE DRESSING

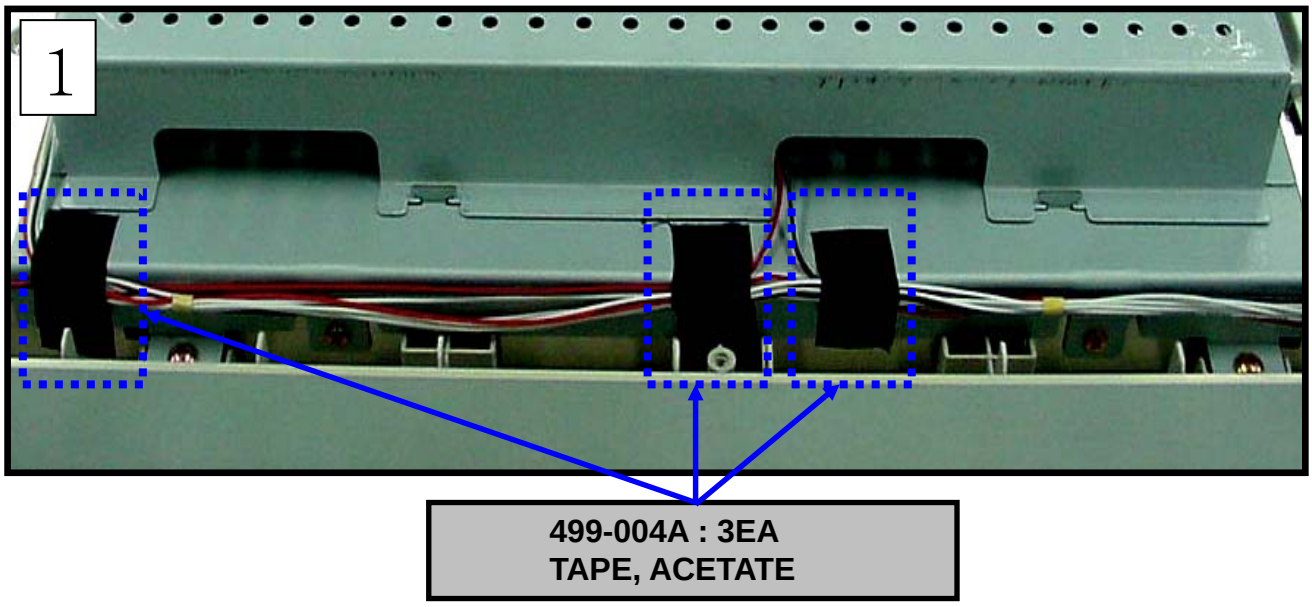
1. Wire Dressing

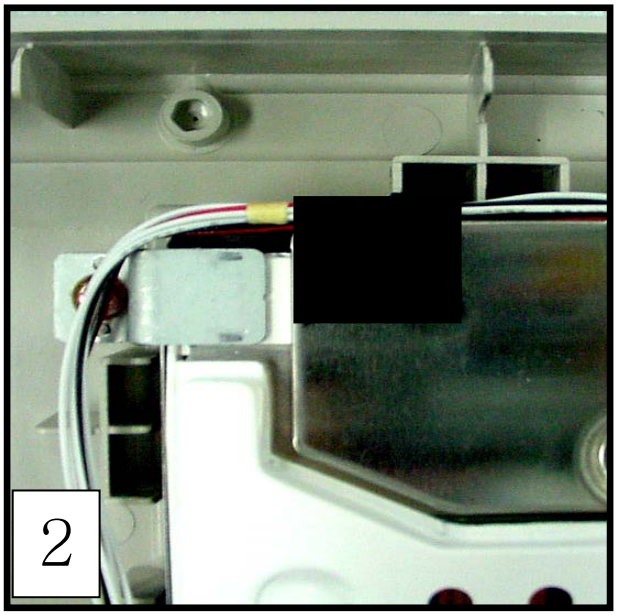
Note: Using acetate Tape

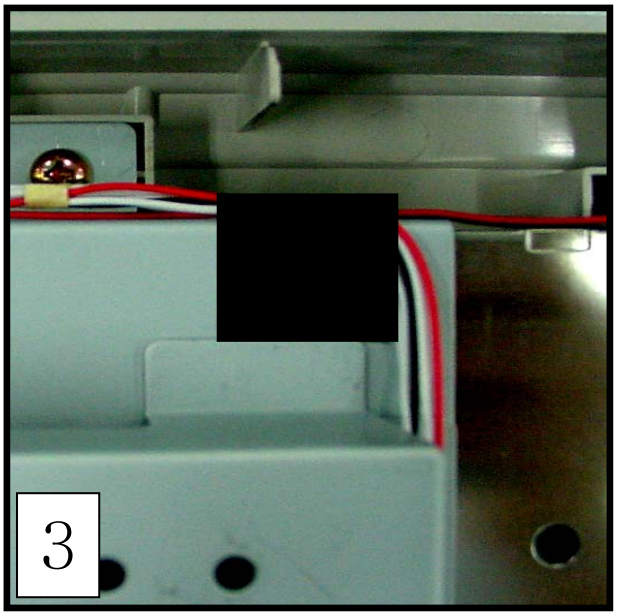


WIRE DRESSING

1) Wire Dressing for speaker & Key control. (No.1, acetate Tape)
2) Wire Dressing for Left speaker & Key control. (No.2 acetate Tape)
3) Wire Dressing for Right speaker & Key control. (No.3, acetate Tape)

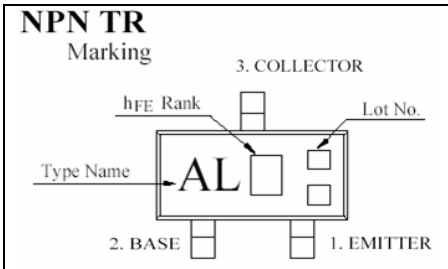






PART APPEARANCE

1.Part appearance



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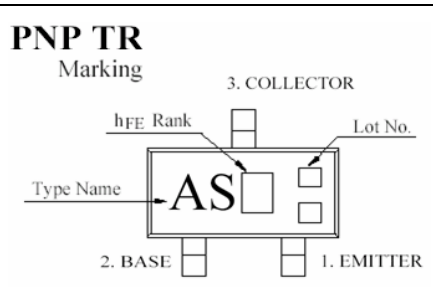

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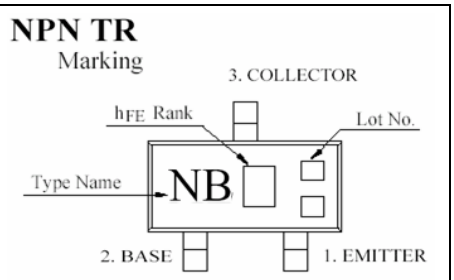
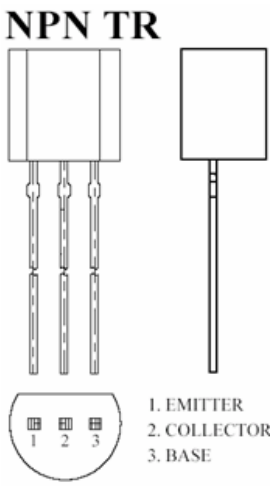
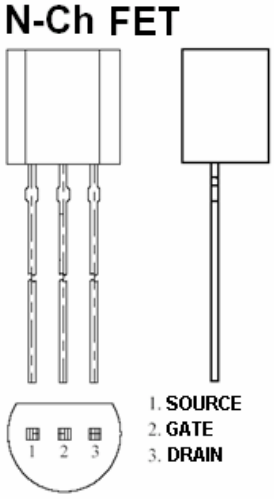


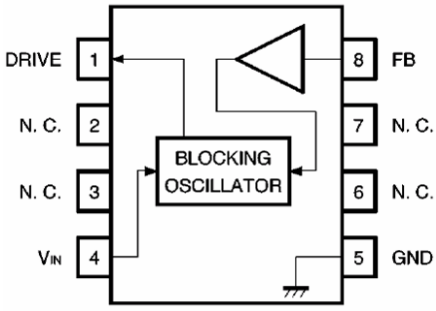
C102S



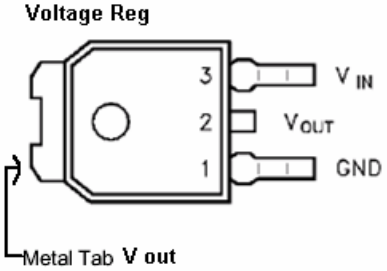
C3198



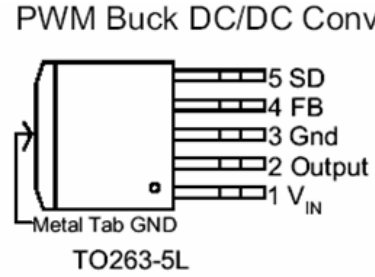
2N7000



Regulator for Tuning Voltage

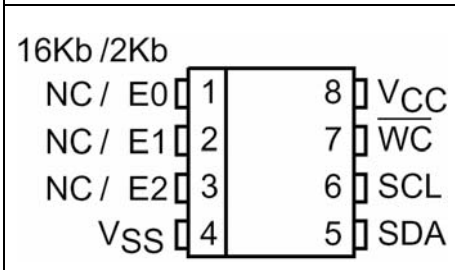


LC33V or LD33V (LD1117)

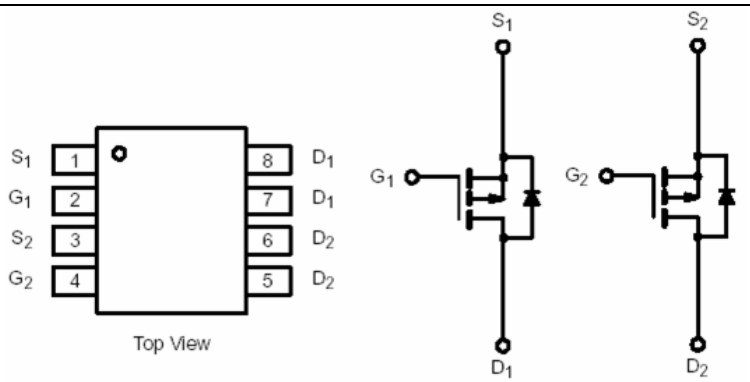


V_{IN}	Operating voltage input
Output	Switching output
Gnd	Ground
FB	Output voltage feedback control
SD	ON/OFF Shutdown

AP1501



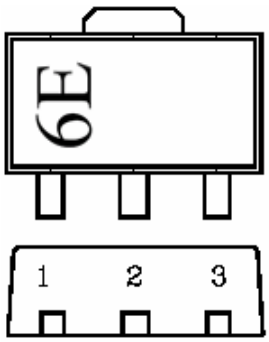
EEPROM 24C16W ,24C02W



TTL LOGOC IC 74F08

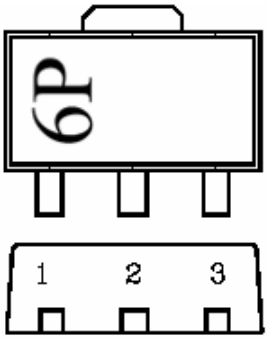
PART APPEARANCE

1-1. Part appearance



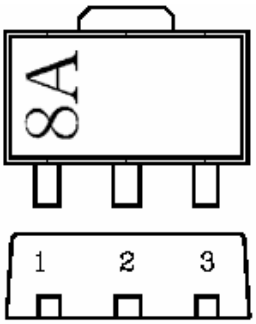
1. V_{CC}
2. GND
3. OUT

Voltage Detector
KIA7027AF



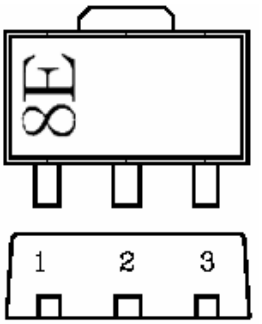
1. V_{CC}
2. GND
3. OUT

Voltage Detector
KIA7042AF



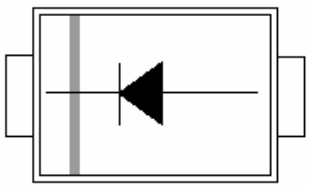
1. OUTPUT
2. COMMON(CASE)
3. INPUT

Voltage Reg
KIA78L05F

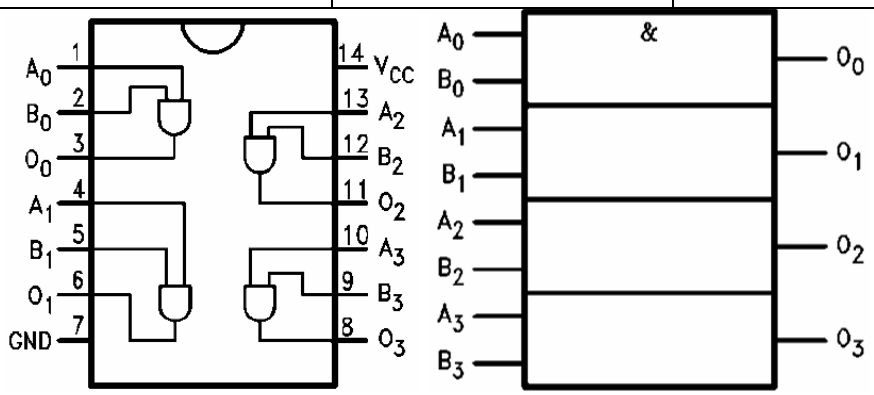


1. OUTPUT
2. COMMON(CASE)
3. INPUT

Voltage Reg
KIA78L09F



Schottky Rectifier B340

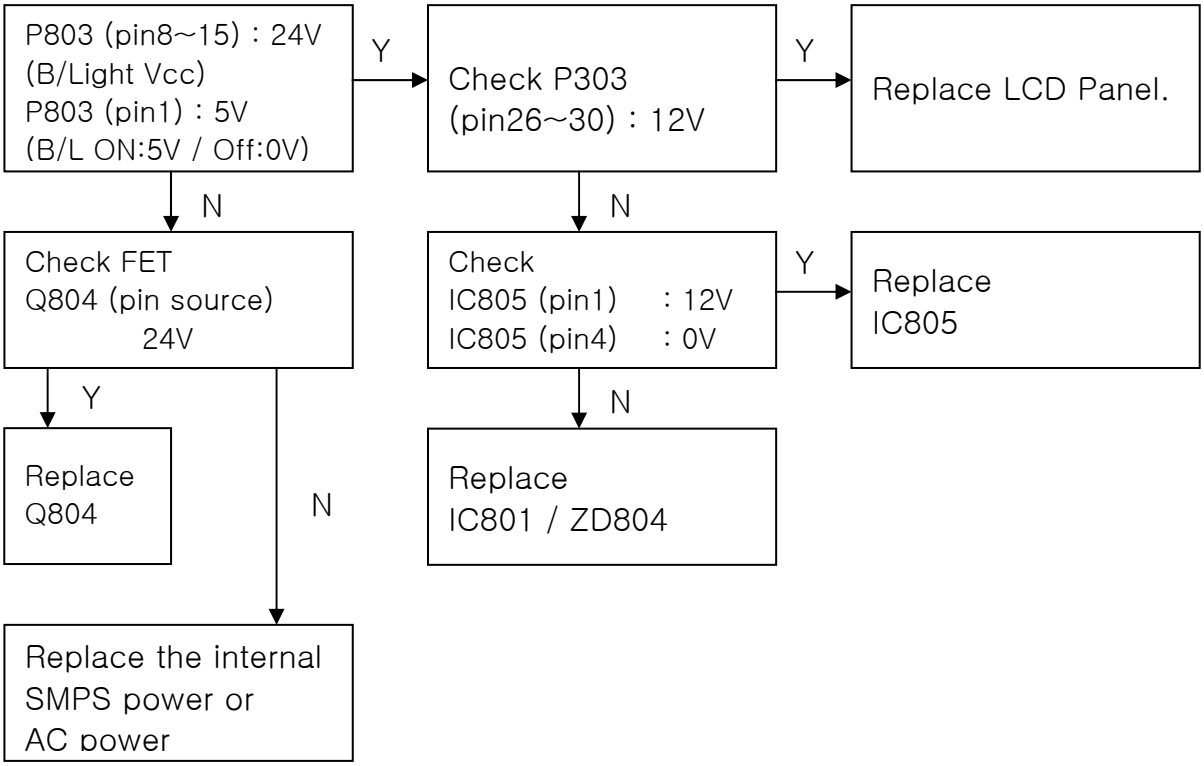


TTL LOGIC IC 74F08

TROUBLE SHOOTING

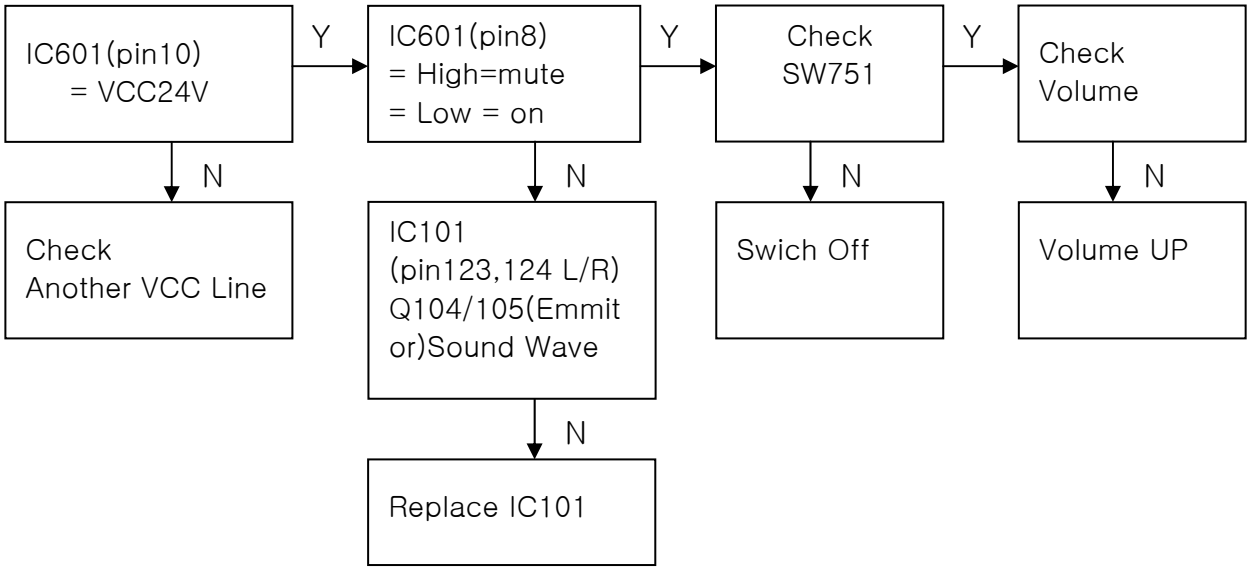
15.Troble shooting

15-1.No Raster

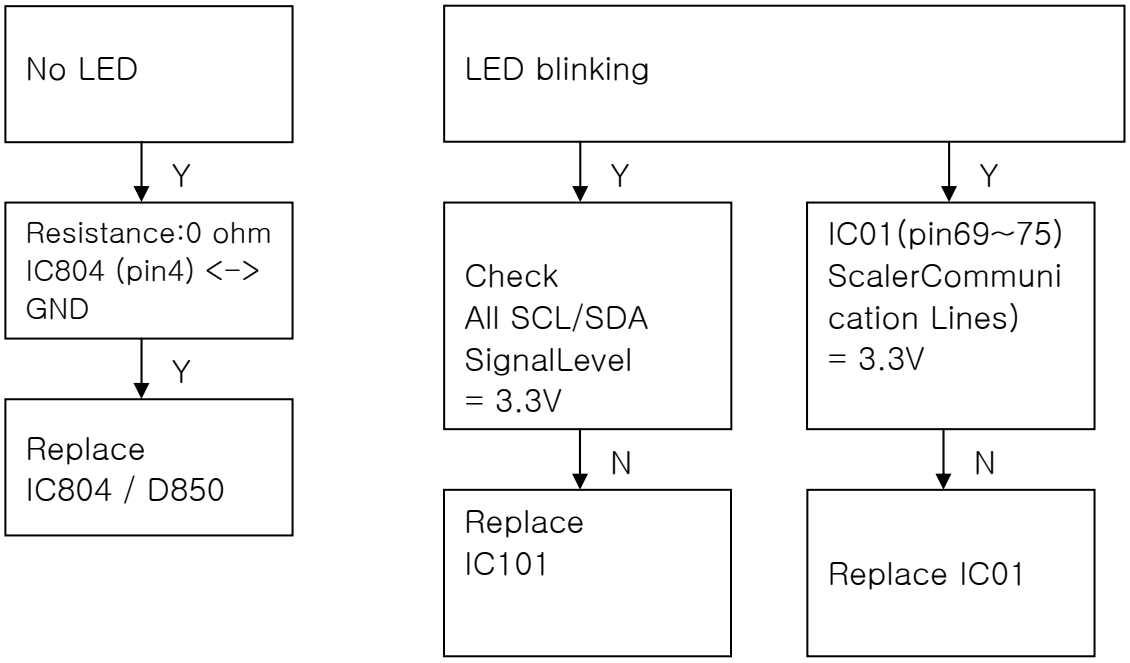


TROUBLE SHOOTING

15-2. No Sound & Picture OK



15-3. No Operation



Schematic Diagram

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

111-A73A

111-A74A

DRAWING	CHECK	APPROVAL

PDI-P23LCD

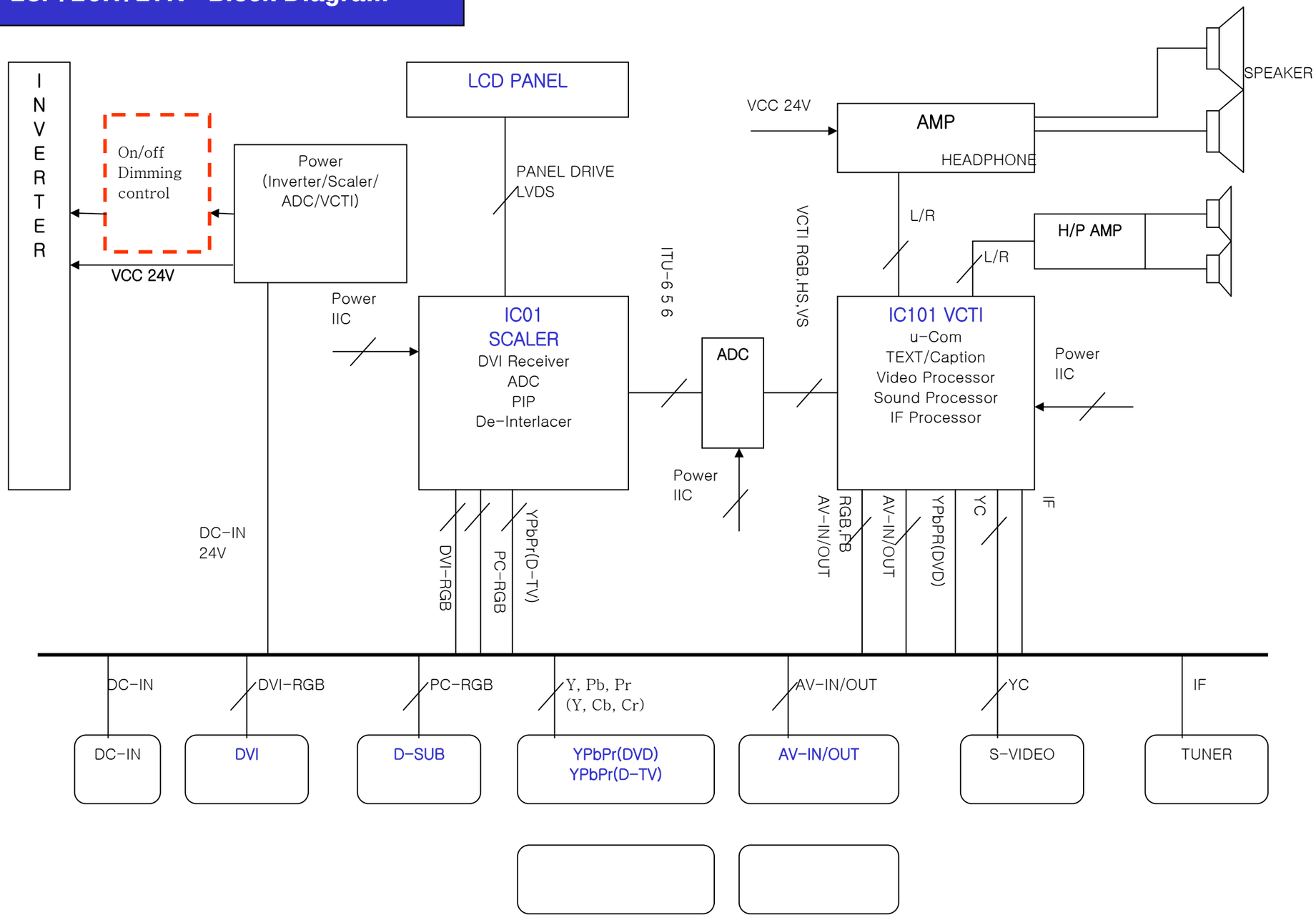
2005.07.06

PDI Inc

BLOCK DIAGRAM

1. Block Diagram

23F/26H/27K Block Diagram

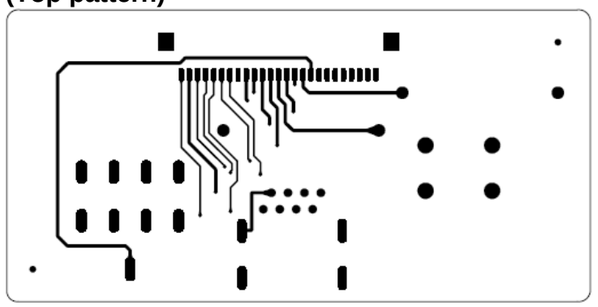


PCB LAYOUT

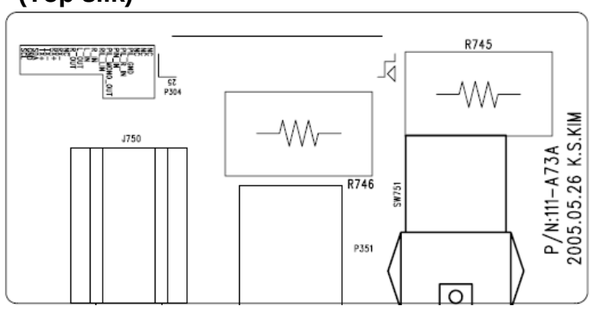
1. CONTROL PCB & PILLOW JACK PCB

1-1.Pillow PCB

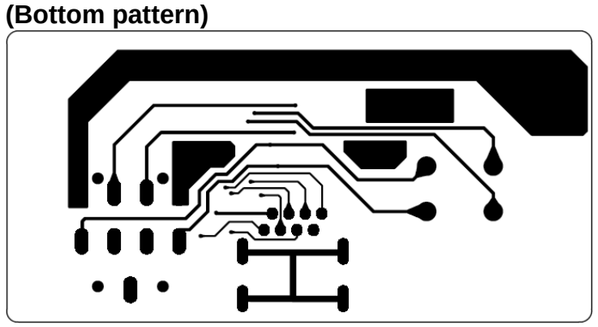
(Top pattern)



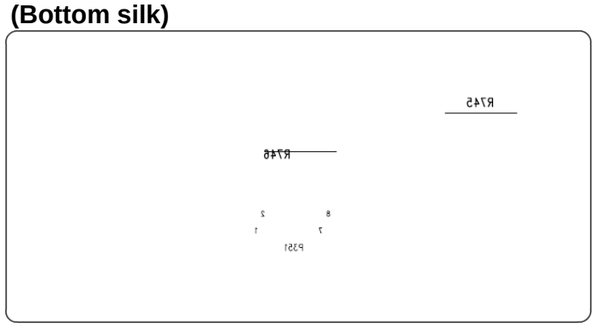
(Top silk)



(Bottom pattern)

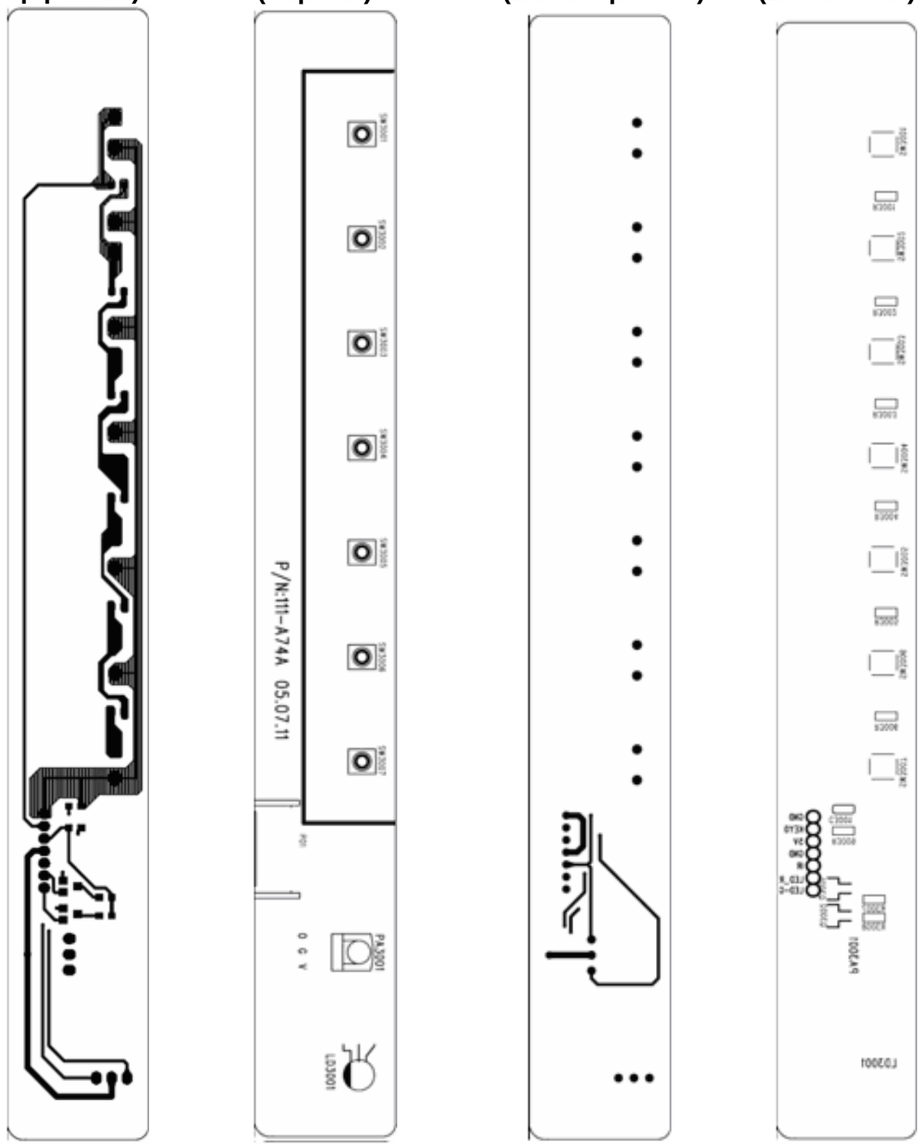


(Bottom silk)



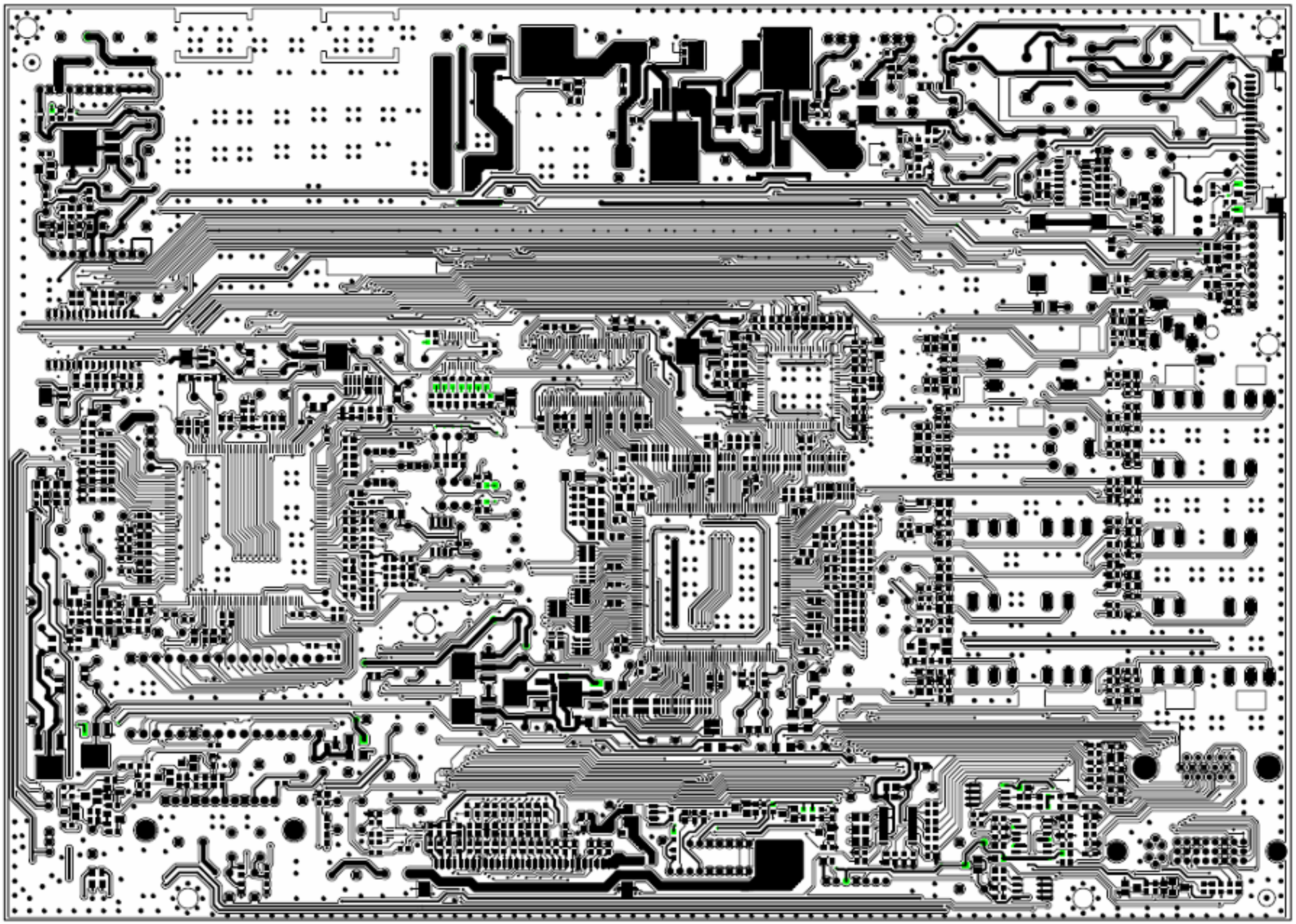
1-2.Control PCB

(Top pattern) (Top silk) (Bottom pattern) (Bottom silk)



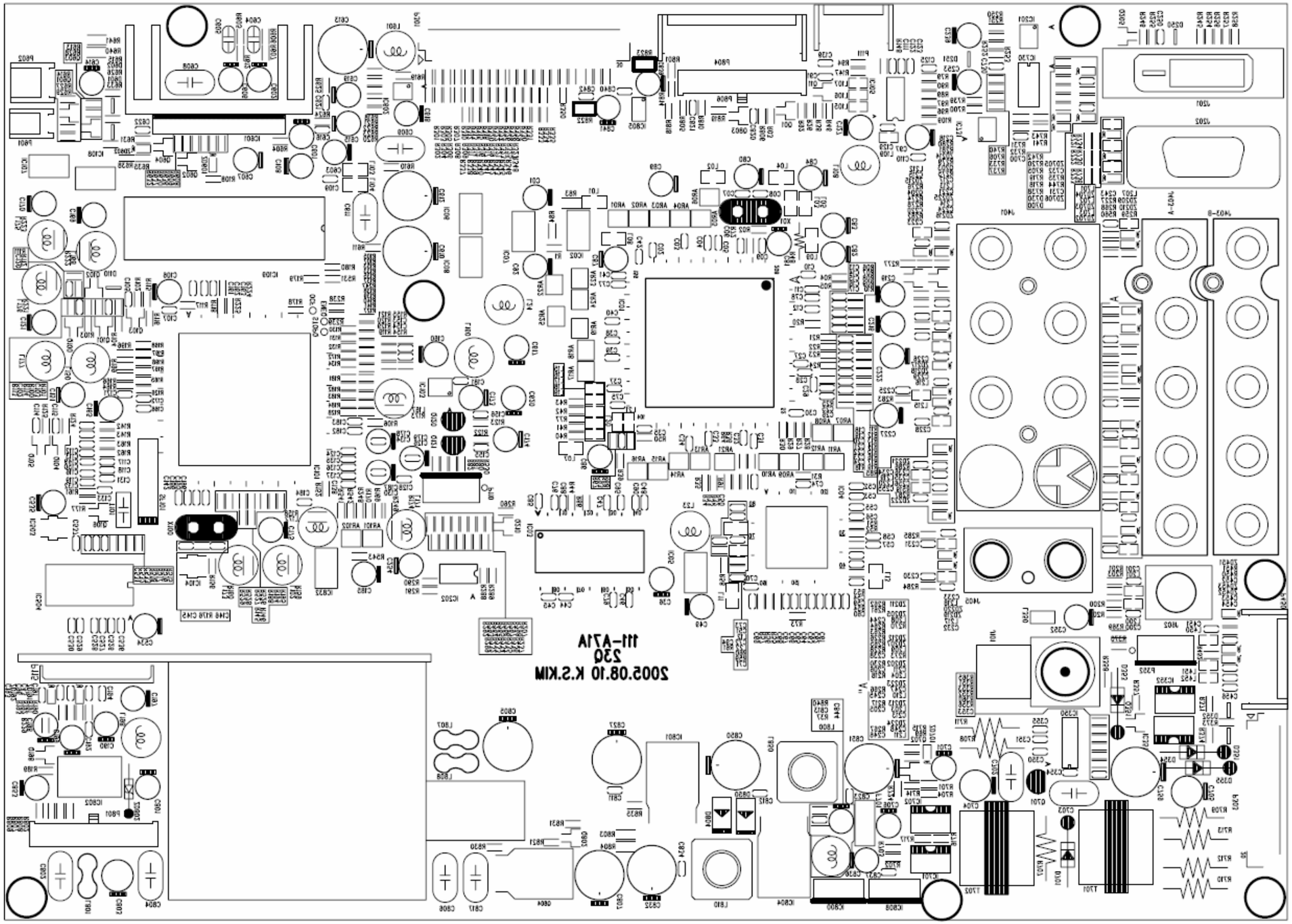
PCB LAYOUT

2. Main PCB (TOP PATTERN)



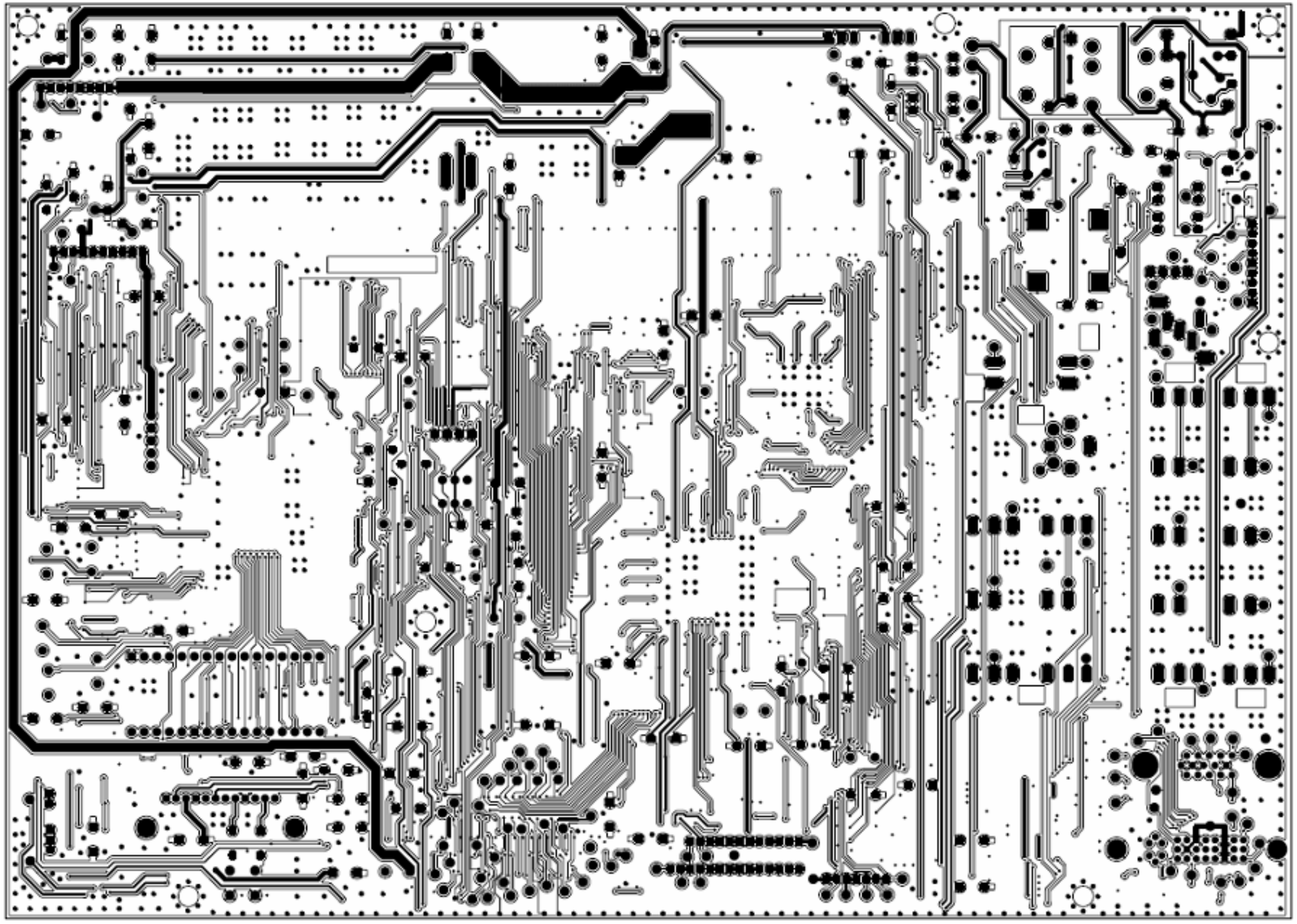
PCB LAYOUT

3. Main PCB (TOP SILK)



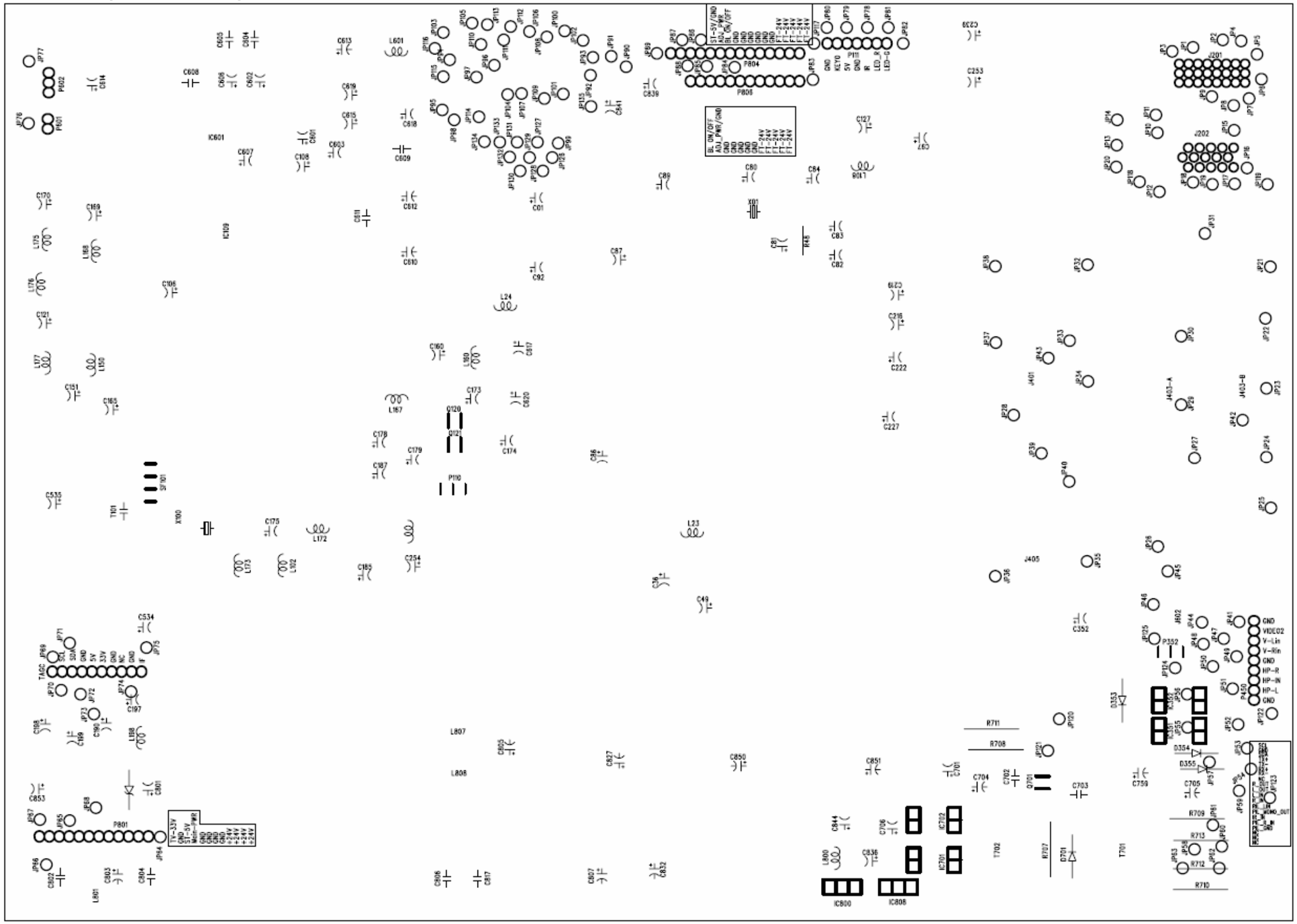
PCB LAYOUT

4. Main PCB (BOTTOM PATTERN)



PCB LAYOUT

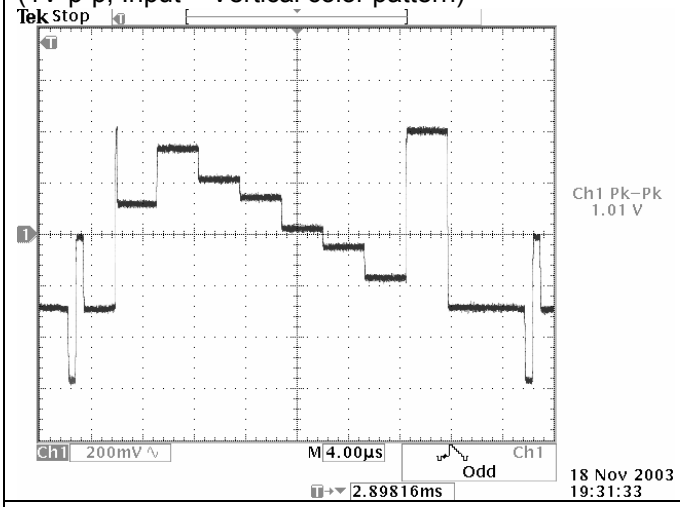
4. Main PCB (BOTTOM SILK)



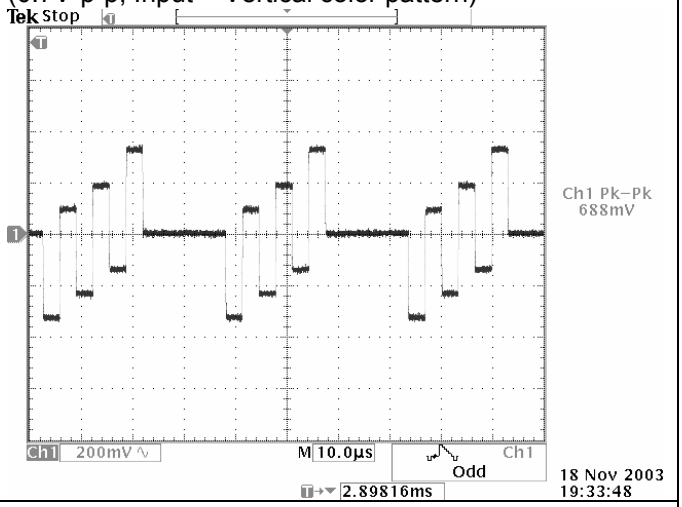
WAVE FORM

NOTE!!:ⓐVideo = Gray scale pattern input / Audio = 1Khz input at volume step 20~40.

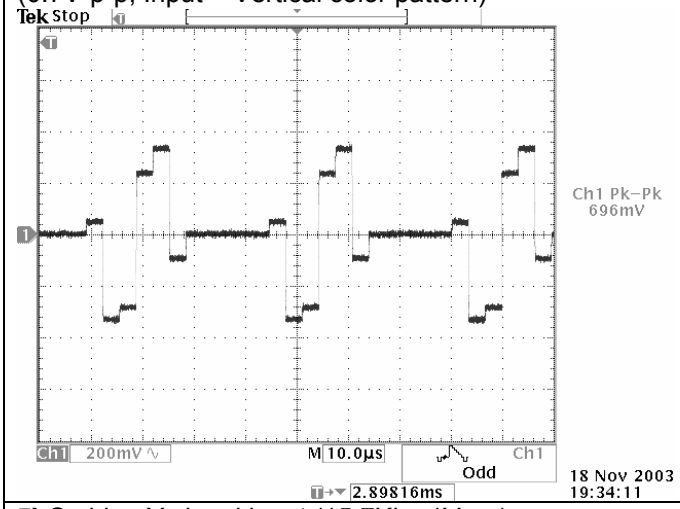
1)Component Y input, (L207 & R560 MEASURE)
(1V-p-p, Input = Vertical color pattern)



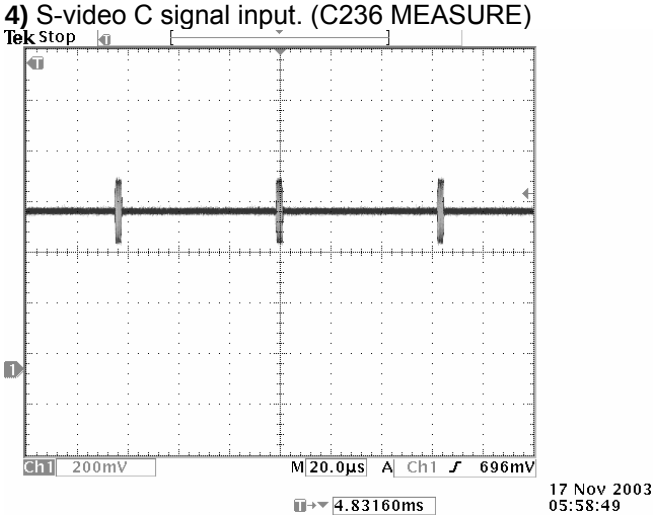
2)Component Cb input, (L208 & R262 MEASURE)
(0.7V-p-p, Input = Vertical color pattern)



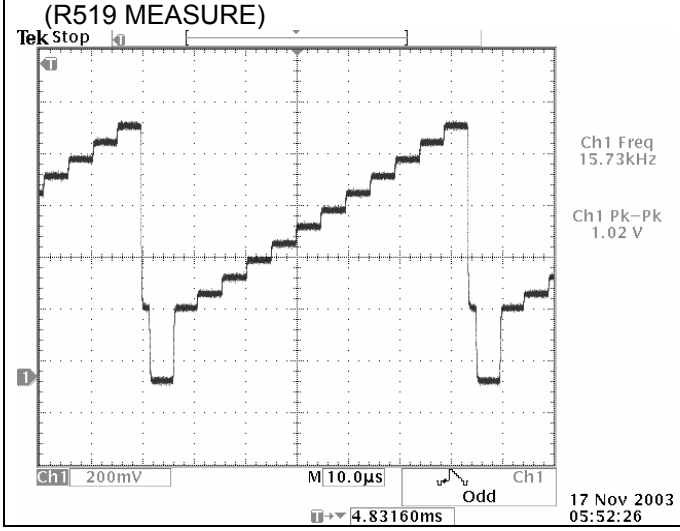
3) Component Cr input, (L209 & R265 MEASURE)
(0.7V-p-p, Input = Vertical color pattern)



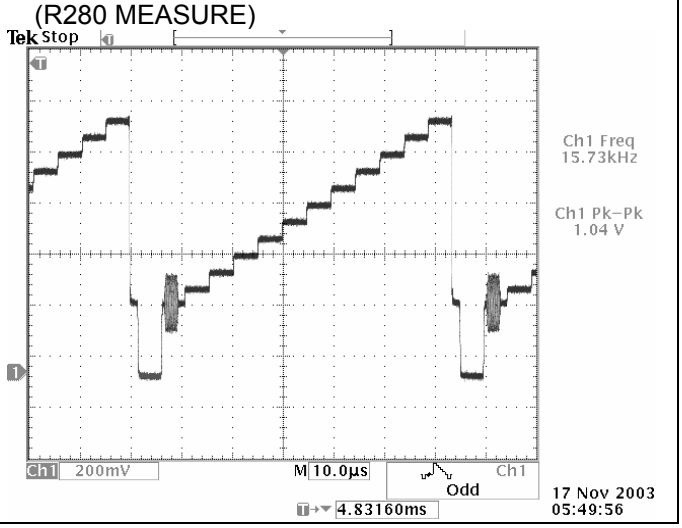
4) S-video C signal input. (C236 MEASURE)



5) S-video Y signal input.(15.7Khz,1Vp-p)
(R519 MEASURE)



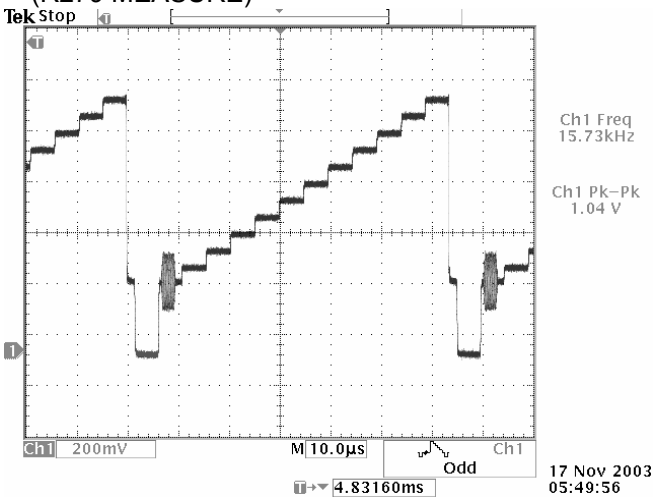
6) CVBS Video signal input.(15.7Khz,1Vp-p)
(R280 MEASURE)



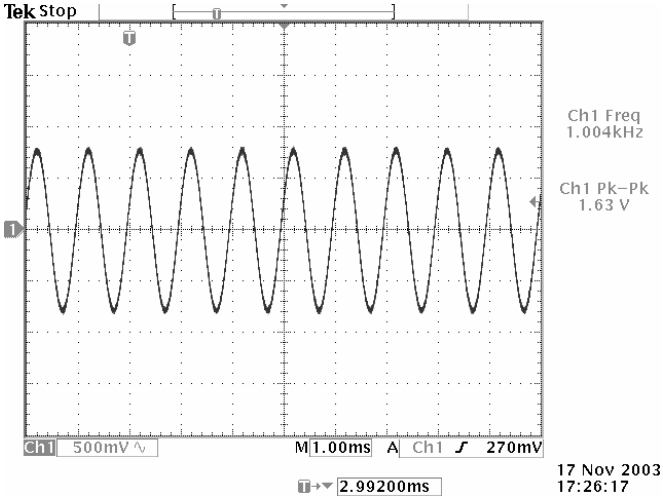
WAVE FORM

NOTE!!: Video = Gray scale pattern input / Audio = 1Khz input at volume step 40.

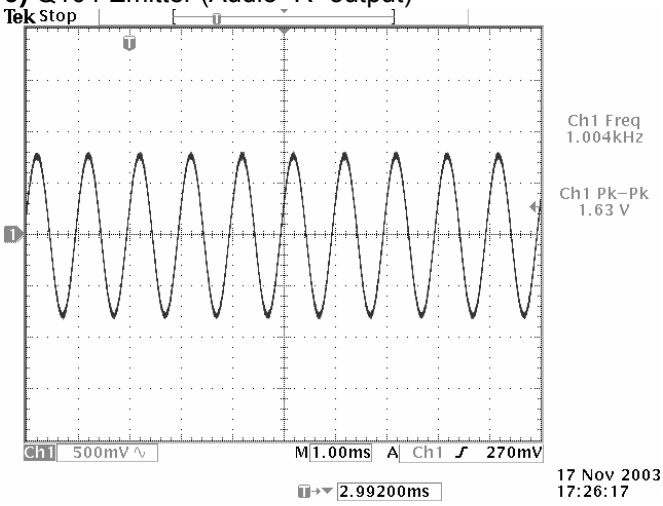
7) CVBS Video signal output.(15.7Khz,1Vp-p)
(R279 MEASURE)



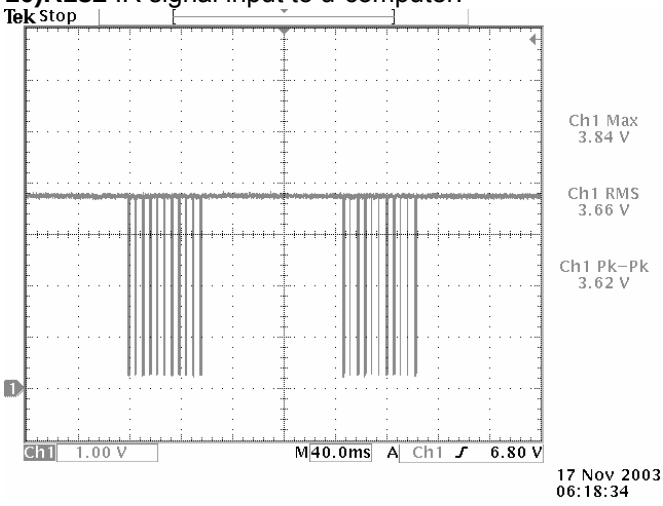
8) Q105 Emitter (Audio "L" output)



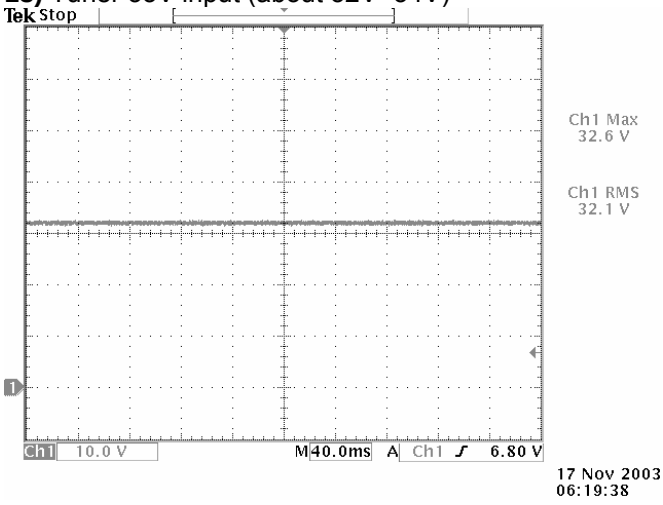
9) Q104 Emitter (Audio "R" output)



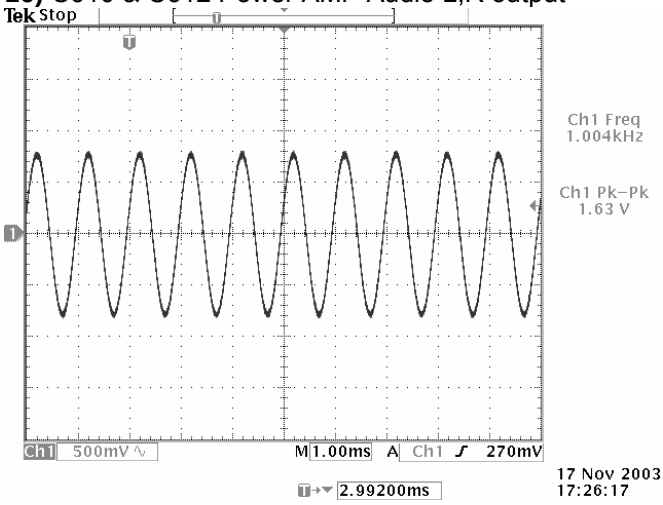
10)R132 IR signal input to u-computer.



13) Tuner 33V input (about 32V~34V)



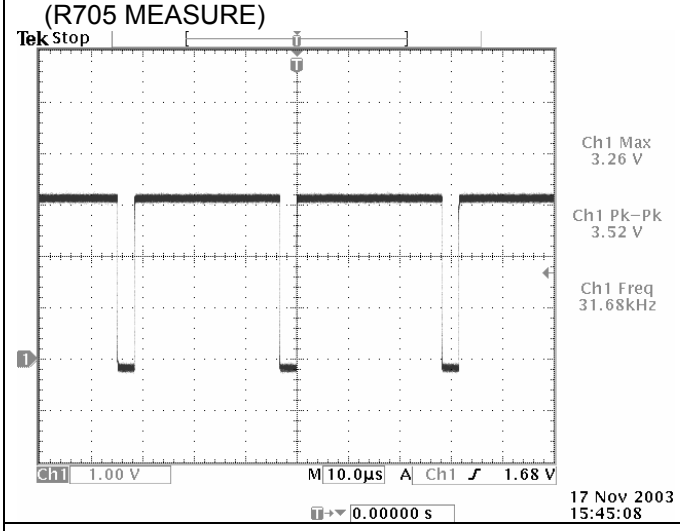
16) C610 & C612 Power AMP Audio L,R output



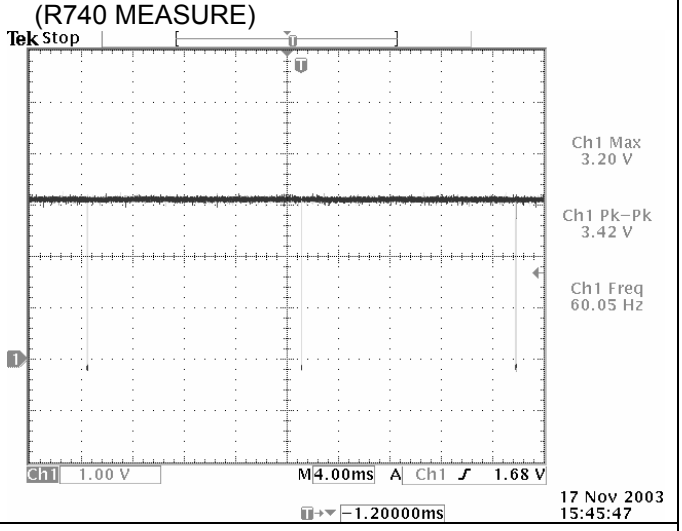
WAVE FORM

NOTE!!: PC INPUT = 640x480 @ 60Hz Cross hatch pattern.

29) PC-DSUB Hsync input
(R705 MEASURE)



28) PC D-SUB Vsync input
(R740 MEASURE)



ADJUSTMENT INSTRUCTION
WITH DEFAULT FACTORY DATA

1.SVC mode data Adjustment

NOTE!! When the EEPROM has been replaced, the SVC data should be restored as the function of individual system and specification.
When the EEPROM has been replaced White Blance Checking.

[Enter and exit SVC mode]
Note: into the SVC mode, Initialize with default data.

1) Press 5 Seconds MENU buttons on both TV set and Remote Controller at the same time to get into SVC mode.
2) Press the PR ▲▼ button several times to find SVC Data.
3) Input the corresponding SVC data referring to Table below with the VOL ◀▶, key.
4) Press TV/AV button to exit SVC mode

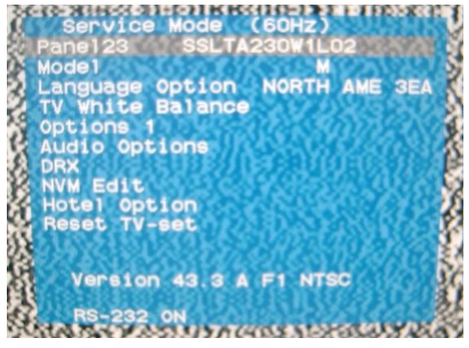
1-1. Factory outgoing setting & Initialize with default data (into the SVC mode)]

Main menu	Change value	Sub menu	Change value
(Model)	(M)		
Language Option	NORTH AME 3EA		
(TV White Balance)	TV White Balance Sub-menu	Settings	ALL
		Start	
		PC	Yes
Option 1	Option 1 Sub-menu	System	M USA
		China/Australia	No
		AV1	YUV1
		Text	EAST EU1
		Top	No
		VPS/PDC	No
		Data Service	Caption
		ATS Delay Time	60
		Game	No
		DVI	Yes
		DTV	Yes
		QURAN	No
Audio Options	Audio Options Sub-menu	M	+ 42
		BG/I/DK	+ 21
		NICAM	+ 26
		FM Radio	+ 10
		Scart Volume	+ 118
		Surround	0
		Mute if no carrier	No
		High Deviation	No
		DUAL	No
		MONO	No
		STEREO	Yes
(DRX)	(Sub-menu)		
(NVM Edit)	(Sub-menu)		
(Hotel Option)	(Sub-menu)		
(Reset TV-set)	(Sub-menu)		

Warning: Do not adjust the “( )” item…

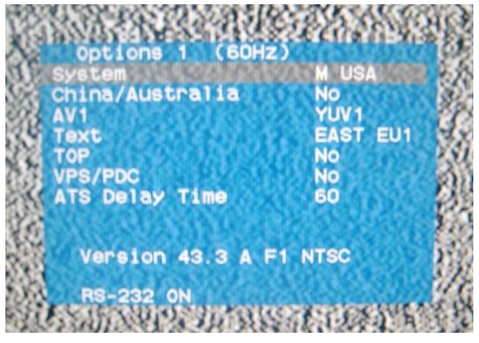
ADJUSTMENT INSTRUCTION
WITH DEFAULT FACTORY DATA

2. White Blance Checking

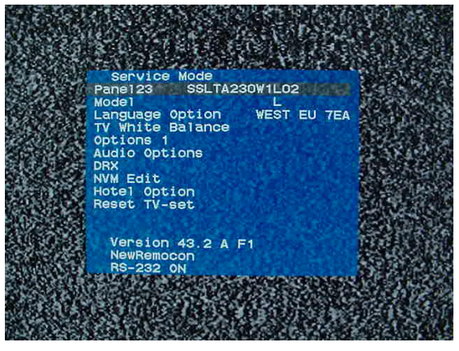


1.RF when it presses a SVC height from the screen , with the SVC Mode Main screen movement

- Panel23 : SSLTA230W1L02
- Language Options : NORTH AME 3EA
- Model : M

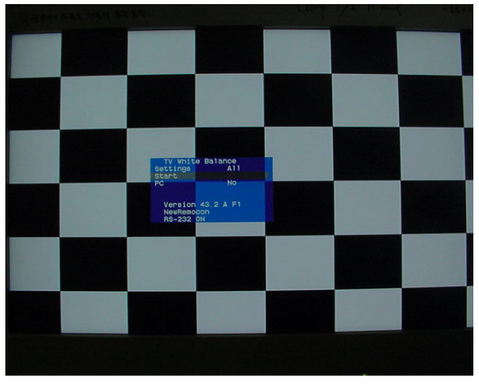


2. Option1
System : M USA
Text : EAST EU1



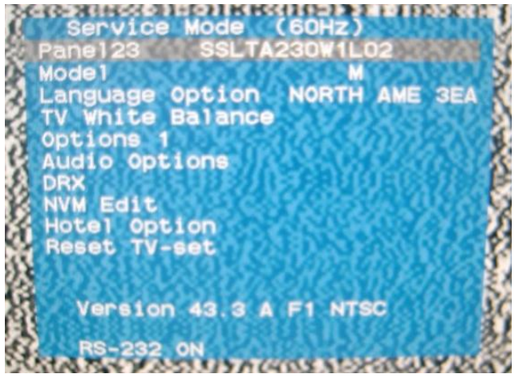
3. It presses the Menu of the remote control , with the SVC Mode Main screen movement

4. TV White Balance Setting
: All Start



5. TV White Balance Setting

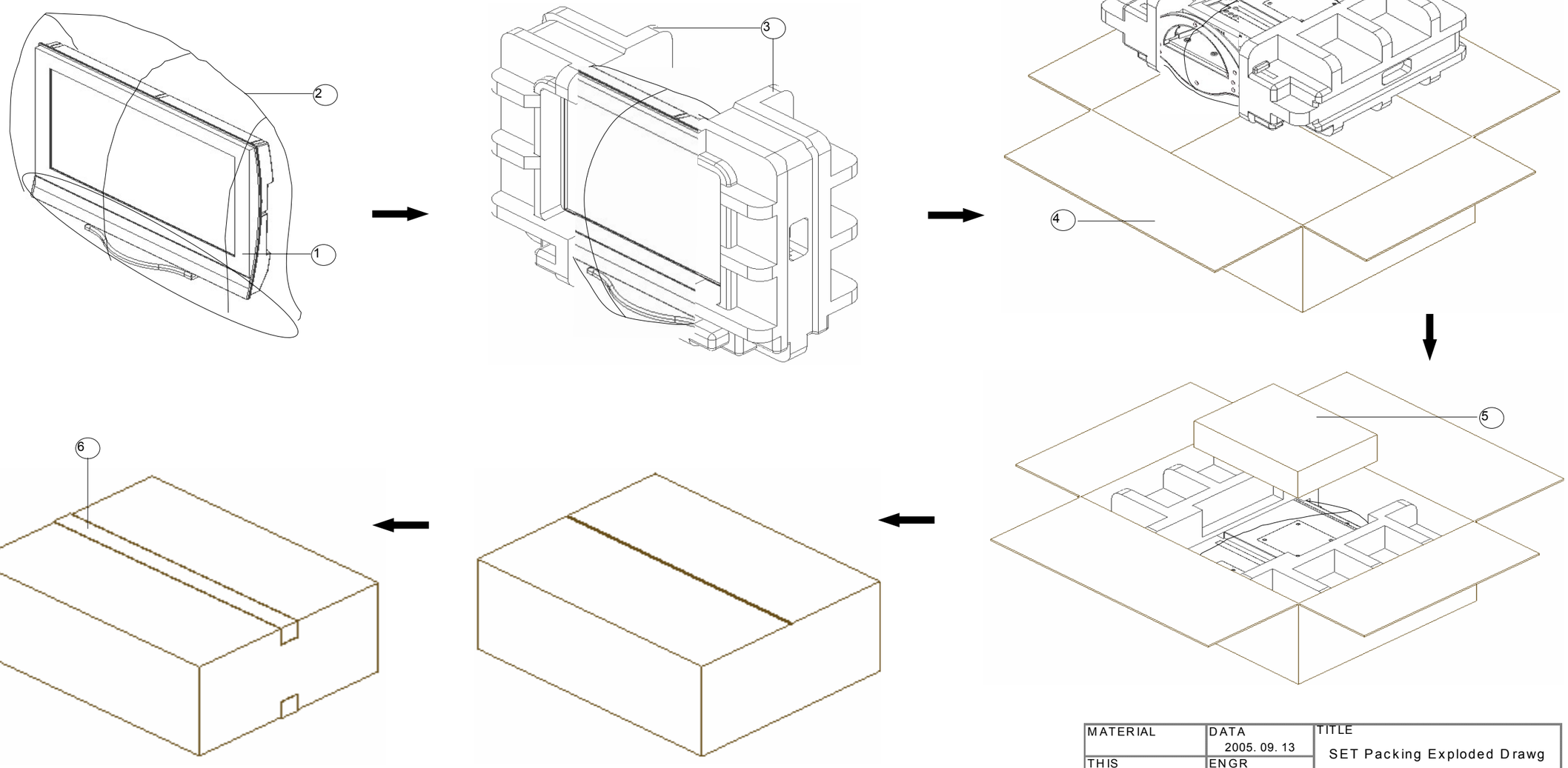
6.Completion of white balance setting



7.SVC Mode Settingfinish The TV/AV bu

PACKING INSTRUCTION

NO	PART NO	DESCRIP TION	MATERKAL	COLOR	Q'TY
1	-	23" LCD COLOR TV	-	-	1
2	321-008A	BAG PACKING	PE	-	1
3	310-025E,F	PACKING L,R	EPS	WHITE	1
4	300-011W	BOX CARTON	PAPER	-	1
5	-	ACCESSORY	-	-	1
6	499-002A	TAPE OPP	70mm	-	3000mm

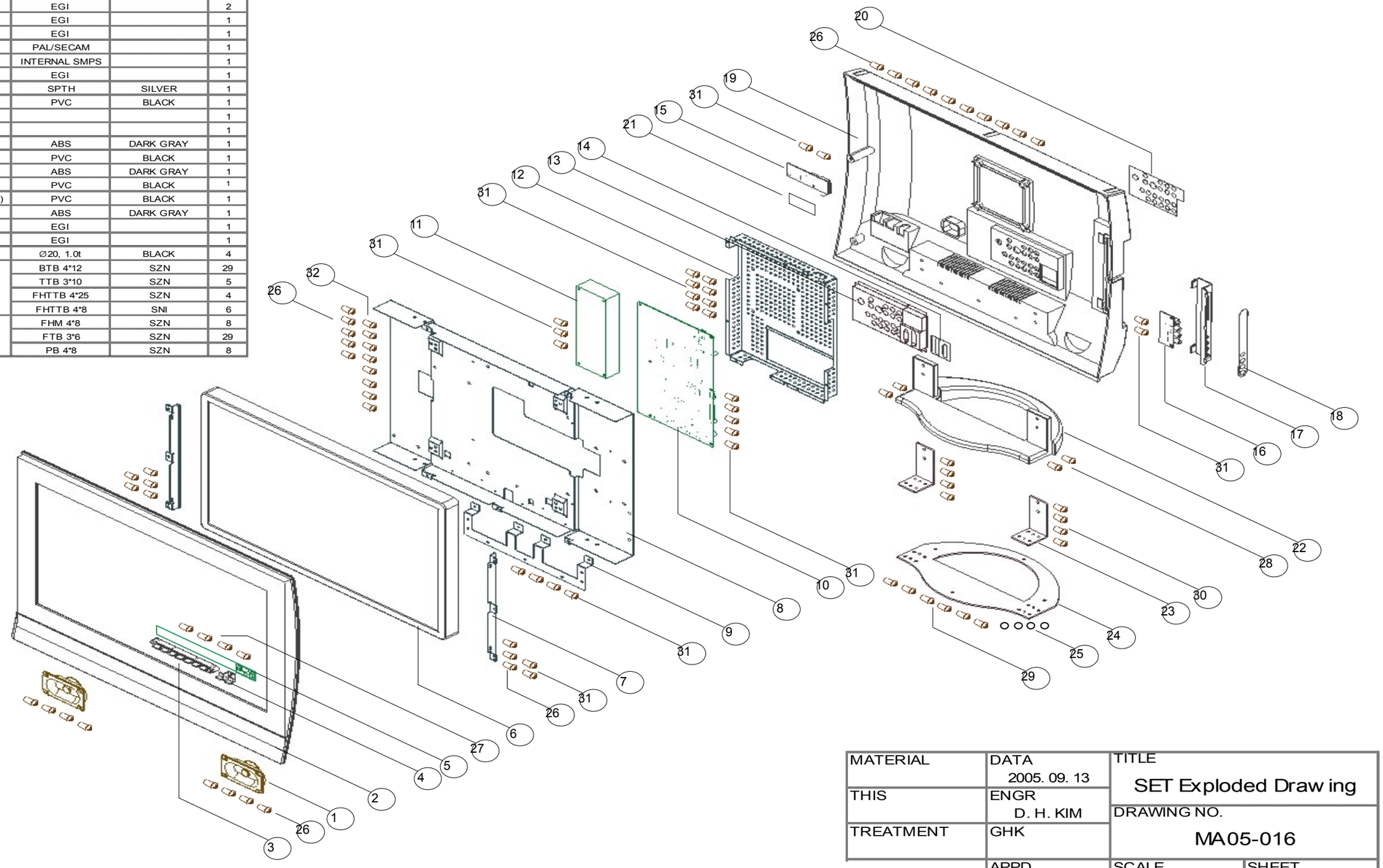


MATERIAL	DATA 2005. 09. 13	TITLE SET Packing Exploded Drawg	
THIS	ENGR D. H. KIM	DRAWING NO. MA05-017	
TREATMENT	GHK		
MODEL LT23Q5LF	APPD	SCALE -	SHEET 1 / 1

MECHANICAL EXPLODED VIEW

1. Explode View

NO	PART NO	DESCRIPTION	MATERIAL	COLOR	Q'TY
1	610-005C	SPEAKER	5W, 8Ω	-	2
2	400-002E	FRONT COVER	ABS	SILVER	1
3	404-001B	BLOCK KNOB	ABS	SILVER	1
4	408-002J	LENS SENSOR	PC	TRANSPARENCE	1
5	AYMALT41-103	CONTROL PCB ASS'Y			1
6	PANLT230W010	PANEL	SAMSUNG		1
7	407-006F	SHIELD SUPPORT	EGI		2
8	407-011E	SHIELD FRONT	EGI		1
9	407-007C	SHIELD BRKT	EGI		1
10	AYMALT41-401	MAIN PCB ASS'Y	PAL/SECAM		1
11	620-005G	AC/DC ADAPTER	INTERNAL SMPS		1
12	407-007D	SHIELD REAR	EGI		1
13	407-006K	SHIELD JACK	SPTH	SILVER	1
14	450-006K	REAR PLATE (D-SUB)	PVC	BLACK	1
15	AYMALT41-202	ISP PCB ASS'Y			1
16	AYMALT41-203	SIDE PCB ASS'Y			1
17	401-003T	SIDE COVER	ABS	DARK GRAY	1
18	450-007B	SIDE PLATE	PVC	BLACK	1
19	401-004K	BACK COVER	ABS	DARK GRAY	1
20	450-006U	REAR PLATE (SCART)	PVC	BLACK	1
21	450-007C	REAR PLATE (ISP,COMM)	PVC	BLACK	1
22	402-001S	STAND BASE	ABS	DARK GRAY	1
23	401-003V	BRKT STAND	EGI		1
24	401-003U	BRKT BOTTOM	EGI		1
25	496-001U	RUBBER FOOT	∅20, 1.0t	BLACK	4
26	410-001Q	SCREW TAPPING	BTB 4*12	SZN	29
27	410-001L		TTB 3*10	SZN	5
28	410-008D		FHTTB 4*25	SZN	4
29	410-008C		FHTTB 4*8	SNI	6
30	410-008E	SCREW MACHINE	FHM 4*8	SZN	8
31	410-001N		FTB 3*6	SZN	29
32	410-001R		PB 4*8	SZN	8



MATERIAL	DATA 2005. 09. 13	TITLE SET Exploded Draw ing	
THIS	ENGR D. H. KIM	DRAWING NO. MA05-016	
TREATMENT	GHK		
PDI-P23LCD	APPD	SCALE -	SHEET 1 / 1

REPLACEMENT PART LIST

1.Parts List (Assemble process)

LEVEL	PART NO	PART NAME	DESCRIPTION	Q,TY
1	300-003J	201/23 F MODEL 공용	BOX, ACCESSORY	1
1	300-011B	23F/N COM,NO SPEC	BOX, GIFT	1
1	310-014A	23" F/N MODEL COMMON	PACKING, LEFT	1
1	310-014B	23" F/N MODEL COMMON	PACKING, RIGHT	1
1	320-001A	ACCESSORY PACKING	BAG, VINYL	1
1	321-008A	23 SET PACKING	BAG, PACKING	1
1	404-004A	F/N, L/KEY,Chromium	BLOCK KNOB	1
1	407-004F	23,FIX BRKT,4-03-006	FIX BRKT	4
1	407-004X	VCTI-23F,SHIELD JACK	SHIELD, JACK(SCART)	1
1	407-004Z	VCTI-23F,SHIELD REAR	SHIELD, REAR	1
1	407-005E	VCTI-23F,LG/IPS	SHIELD, FRONT	1
1	410-001K	TTB 3*8	SCREW	6
1	410-001L	TTB 3*10	SCREW	9
1	410-001N	FTB 3*6	SCREW	16
1	410-001Q	BTB 4*12	SCREW	16
1	410-002R	PP 4*12	SCREW	4
1	410-002Z	PB 3*10	SCREW	4
1	499-002A	W:70mm	TAPE, OPP	3000
1	500-022M	23FLF,4LANG,DIBOSS	OWNERS MANUAL	1
1	501-001B	ENGLISH	LABEL, WARNING	1
1	501-0030	원자재, SILVER/BLACK	LABEL, SERIAL	1
1	501-017D	23"DIBOSS 34mm	STICKER, LOGO	1
1	501-102L	LT-23FLF,NEW DIBOSS	LABEL, ID	1
1	502-0010	ALL MODEL	LABEL, BOX ID	1
1	509-011W	D.BOSS (wing),93mm	LABEL, BRAND	2
1	510-004A	30.1",EU,(PR)	REMOCON(유럽향)	1
1	507-001A	PANEL FILM FIX	LABEL, PROTECTIVE	4
1	520-001A	1.5V, AAA SIZE	BATTERY	2
1	610-005C	5W, 8 OHM	SPEAKER	2
1	620-004C	24V, 5.42A, 1.8M	AC/DC ADAPTER	1
1	621-001G	220V,SWISS,KKP-4819S	POWER CORD	1
1	626-001A	IVORY, 1.8M, 15-PIN	CABLE, PC RGB	1
1	627-001A	1.8M, BK	CABLE, PC-SOUND	1
1	CON05P200ABH	301 LED,5P 200MM H/H	LEAD ASSY(SENSOR)	1
1	CON02P200A0S	2627,SPK,2P,600MM	LEAD ASSY(SPK)	1
1	CON03P200A01	2627,SPK,3P,600MM	LEAD ASSY(SPK)	1
1	CON07P200AD3	27K,7P-10P,1000 CTRL	LEAD ASSY(CTRL)	1
1	CON12P200ACF	23,INVETE,12P 160MM	LEAD ASSY(INV)	1
1	CON20P125ADH	23,Panel,20P,200MM	LEAD ASSY(LVDS)	1
1	PANLC230W010	23", LC230W01-A2-A	PANEL, LCD COLOR	1
1	AYBCLT23B01A	VCTI23,F-MODEL,SCART	REAR, COVER ASSY	1
1	AYCALT23A01A	23", F-MODEL, (PR)	CABINET ASSY	1
1	AYSTLT23A01A	23" F-MODEL	STAND ASSY	1
1	AYMALT41F01A	23F,VCT-I,SCART	MAIN PCB ASSY	1
1	AYCOLT40A01A	VCTI N/F CONTROL	CONTROL PCB ASSY	1

REPLACEMENT PART LIST

2. Parts List (Main PCB)

LEVEL	PART NO	PART NAME	DESCRIPTIONS	LOCATION NO
0	**AYMALT41F01A**	**MAIN PCB ASS'Y**	**LT-23FLF**	
1	**GRLT41DM001B**	**GR, SCART MANUAL**		
2	0JASCART000D	JACK, SCART	RGB21PIN,VP 381-091B	J401,J403
1	**GRLT41DA001B**	**GR, SCART AUTO**		
2	0CESS100CMTR	CESSL1C100M0511AD	Capacitor, AL.E 10UF 16V	C240,C241
2	0CESS220CMTR	CESSL1C220M0511AD	Capacitor, AL.E 22UF 16V	C207,C208
1	**GRLT41DS001B**	**GR, SCART SMD**		
2	0CHSS080DCTS	8P	Capacitor, chip 8PF	C202
2	0CHSS101DJTS	CL10C101JBNC	Capacitor, chip 100PF	C203,C212,C214
2	0CHSS104DZTS	CL10F104ZANC	Capacitor, chip 0.1UF	C242
2	0CHSS471DJTS	CL10C471JBNC	Capacitor, chip 470PF	C209,C210
2	0LHSS120EJTS	INDUCTOR, CHIP	12UH, 2012	L205,L206,L202
2	0RHSS000DJTS	RC1608J000CS	Resistor, chip 0 ohm	R231,R269,R271,R272
2	0RHSS102DJTS	RC1608J102CS	Resistor, chip 1K	R210
2	0DHKEKDS226S	KDS226, DIODE	Diode, chip KDS226	D252
2	0RHSS103DJTS	RC1608J103CS	Resistor, chip 10K ohm	R243
2	0RHSS182DJTS	RC1608J182CS	Resistor, chip 1.8K ohm	R240
2	0RHSS220DJTS	RC1608J220CS	Resistor, chip 22 ohm	R211,R212,R213
2	0RHSS273DJTS	RC1608J273CS	Resistor, chip 27K	R242
2	0RHSS393DJTS	RC1608J393CS	Resistor, chip 39K ohm	R219
2	0RHSS471DJTS	RC1608J471CS	Resistor, chip 470 ohm	R205,R241
2	0RHSS513DJTS	RC1608J513CS	Resistor, chip 51K	R220
2	0RHSS750DJTS	RC1608J750CS	Resistor, chip 75 ohm	R206,R208,R209,R214 R215,R216
2	0RHSS821DJTS	RC1608J821CS	Resistor, chip 820 ohm	R244
2	0TRKE1504STS	KTA1504S Y	Transistor, chip A1504	Q201
2	0TRKE3875STS	C3875	Transistor, chip C3875	Q202
2	1DZSC5231BTS	MMSZ5231BS	Zener diode, chip 5.1V	ZD201,ZD203,ZD204,ZD206 ZD208
1	**GRLT41DM001A**	**GR, COMMON MANUAL**		
2	0CESH471FHBD	CAPACITOR, ELEC.	470UF 35V, 105도	C613
2	0CESH471FMBD	CAPACITOR, ELEC.	470UF 35V	C832,C837,C851,C610 C612,C827,C836,C850
2	0ISSY32P00BD	SOCKET, IC	DIP 32P	IC109
2	1ICSY49F040D	IC, MICOM	ATMEL AT49F040	IC109
2	0ICKE78080AD	KIA7808AP	IC, KIA7808	IC800
2	0JADM15RF00D	JACK, D-SUB	DAH-15RF-4B4	J202
2	0JAGE14060BD	JACK, SOUND	RCA-1406(W/R) 2열	J405
2	0JAKKST215BD	ST-215	Jack, PC-AUDIO	J601,J602
2	0JAPK6046GBD	S-VHS, PJ6046G	JACK, S-VHS	J406
2	0JASYDC4P0BD	JACK, DC-POWER	4P POWER	J801
2	0JASYDVI29BD	JACK, DVI-CON	DVI-CON	J201
2	0LRSM00100BD	SMC103	Inductor, 1MH	L802
2	0XTKI143180D	CRYSTAL, RADIAL	14.318MHZ	X01
2	0XTKI202500D	CRYSTAL, RADIAL	Crystal, 20.25MHZ	X100
2	AYHSAP1501BD	AP1501A-50T5,25*16	HEAT SINK ASSY	IC804
2	1ICIPAP5T5TD	IC, DC/DC CONVERTER	AP1501A-50T5,5V,5A	
2	410-001J	PB 3*8	SCREW	
2	420-001F	15*25	HEAT SINK(25mm)	
2	498-001A		Silicon Grease	
2	AYHSLA4282IB	LA4282, 42*16	HEAT SINK ASSY	IC601
2	1ICSA42820AD	LA4282, SANYO	IC, SOUND AMP	
2	410-001J	PB 3*8	SCREW	
2	420-001A	LA4282 42*16	HEAT SINK	
2	498-001A		Silicon Grease	
2	WAFLG04250SD	GIL-G-4P-S3T2	Pin wafer, 4-PIN	P110,P101
2	WAFML07200AD	53015-0710	Wafer, 7-PIN	P111
2	WAFYH02200SD	SMW200-02	Pin wafer, 2-PIN	P601
2	WAFYH03200SD	SMW200-03	Pin wafer, 3-PIN	P602
2	WAFYH10200SD	WAFER, PIN	10P, P2.0mm STRAIGHT	P115

REPLACEMENT PART LIST

3. Parts List (Main PCB)

LEVEL	PART NO	PART NAME	DESCRIPTIONS	LOCATION NO
1	**GRLT41DA001A**	**GR, COMMON AUTO**		
2	0CESS100HMTR	CAPACITOR, ELEC.	10UF 50V	C108,C173,C174,C216,C219 C239,C253,C254,C80,C81 C82,C83,C84,C86,C87
2	0CESS101CMTR	CAPACITOR, ELEC.	Capacitor, 100UF 16V	C01,C601,C603,C607,C617
2	0CESS101EMTR	CAPACITOR, ELEC.	100UF 25V	C839
2	0CESS010HMTR	1UF 50V	CAPACITOR, ELEC.	C618
2	0CESS220CMTR	CESSL1C220M0511AD	Capacitor, 22UF 16V	C534,C222,C227
2	0CESS221AMTR	CAPACITOR, ELEC.	220UF 10V	C175,C190
2	0CESS2R2HMTR	CAPACITOR, ELEC.	Capacitor, 2.2UF 50V	C178,C179,C187,C602,C606
2	0CESS3R3HMTR	CAPACITOR, ELEC.	Capacitor, 3.3UF 50V	C165
2	0CESS470CMTR	CESSL1C470M0511AD	Capacitor, 47UF 16V	C121,C151,C251,C535,C844 C160,C169,C170,C185,C3
2	0CESS470FMTR	CAPACITOR, ELEC.	47UF 35V	C614
2	0CESS4R7HMTR	0CESS4R7HMTR	Capacitor, 4.7UF 50V	C106,C197,C807,C858,C85
2	0CQSS104KKTR	CAPACITOR, MYLER	0.1UF 100V	C608,C609,C611,C806,C81
2	0CQSS682KKTR	CAPACITOR, MYLER	0.0068UF 100V	C604,C605
2	0LBSS3580RTR	BFD-3580R2F	Bead, radial 1UH	L807,L808
2	0LRSU220KKTR	INDUCTOR	22U/RAD,5MM RADIAL	L102,L150,L160,L167,L168 L171,L172,L173,L175,L176 L177,L198,L199
2	0RNSS391FFTA	Resistor, Axial	390 ohm 1/6W, 1%	R48
2	1DDSKEU1Z0TA	DIODE, RECTIFIER	FAST RECVRY, 200V	D801
2	1DZSSHZT33TA	DIODE, ZENER AXIAL	33V	ZD802
2	1ICFC2N700TR	2N7000TA	IC, 2N7000	Q120,Q121
1	**GRLT41DS001A**	**GR, COMMON SMD**		
2	0CHSS080DCTS	8PF,1608	CAPACITOR, CHIP	C215.C255
2	0CHSS100DJTS	CAPACITOR, CHIP	Capacitor, chip 10PF,1608	C702,C703
2	0CHSS101DJTS	CL10C101JBNC	Capacitor, chip 100PF	C155,C156,C211,C213,C218 C221,C224,C226,C229,C232 C233,C256,C857
2	0CHSS102DKTS	CL10B102KBNC	Capacitor, chip 1000PF	C112,C113,C114,C115,C149 C150
2	0CHSS103DKTS	CL10B103KBNC	Capacitor, chip 0.01UF	C192,C193,C507,C509,C511 C513,C515,C517
2	0CHSS104DZTS	CL10F104ZANC	Capacitor, chip 0.1UF	C191,C02,C03,C04,C05 C06,C09,C10,C107,C109 C11,C12,C120,C124,C128 C133,C136,C137,C138,C142 C147,C148,C152,C158,C159 C161,C162,C163,C166,C171 C172,C180,C181,C182,C183 C184,C186,C195,C196,C217 C236,C250,C252,C27,C28 C29,C30,C301,C31,C32 C33,C34,C35,C37,C38
2	0CHSS105DZTS	CAPACITOR, CHIP	1UF,1608	C62,C65,C68
2	0CHSS150DJTS	15PF,1608	CAPACITOR, CHIP	C235
2	0CHSS220DJTS	CL10C220JBNC	Capacitor, Chip, 22PF	C07,C08
2	0CHSS222DKTS	CAPACITOR, CHIP	Capacitor, chip 2200PF,1608	C616,C621

REPLACEMENT PART LIST

4. Parts List (Main PCB)

LEVEL	PART NO	PART NAME	DESCRIPTIONS	LOCATION NO
2	0CHSS224DZTS	CAPACITOR, CHIP	Capacitor, chip 0.22UF	C139,C622
2	0CHSS330DJTS	CL10C330JBNC	Capacitor, Chip, 33PF	C145,C146,C234,C94
2	0CHSS331DJTS	CL10C331JBNC	Capacitor, chip 330PF	C153,C154
2	0CHSS334DZTS	CAPACITOR, CHIP	Capacitor, chip,0.33UF,1608	C116,C117,C118,C119,C131 C132,C526,C527,C528,C529 C530,C531,C532,C533
2	0CHSS471DJTS	CL10C471JBNC	Capacitor, chip 470PF	C200,C201,C205,C206,C220 C223,C225,C228,C230,C231
2	0CHSS473DKTS	CL10B473KANC	Capacitor, chip 0.047UF	C13,C14,C15,C16,C17 C18,C19,C20,C21,C22 C23,C24,C25,C26
2	0DHKEKDS181S	KDS181, DIODE	Diode, chip KDS181	D01,D250,D251,D601,D602
2	0DHKEKDS226S	KDS226, DIODE	Diode, chip KDS226	D110
2	0DSSCB340ATS	DIODE, SCHOTTKY CHIP	B340A, 3A	ZD804
2	0ICHNV8100BS	IC, SDRAM CHIP	128K x 8bit, SRAM, 70ns	IC105
2	0ICKE7027FTS	KIA7027AF	IC, KIA7027	IC104
2	0ICKE78L9FTS	KIA78L09F	IC, KIA78L09F	IC503
2	0ICVI4925DTS	IC, MOSFET CHIP	DUAL P-CHANNEL 30V MOSFET	IC805,IC821
2	0LBSS101DJTS	BEAD, CHIP	100 OHM, 2012	L15,L16,L17,L18,L19 L20,L21,L22,L701,L702 L703
2	0LBSS601FJTS	BEAD, CHIP	600 OHM, 3216	L01,L02,L03,L04,L05 L07,L08,L09,L10,L104 L11,L12,L13
2	0LHSS120EJTS	INDUCTOR, CHIP	12UH, 2012	L200,L201,L203,L204,L212 L213,L214,L215,L216,L217 L218,L219,L220,L221,L222
2	0LRSL10100BS	33UH, SMD12128.5	INDUCTOR	L810,L850
2	0RHSS000DJTS	RC1608J000CS	Resistor, chip 0 ohm	C135,R06,R07,R09,R10 R108,R109,R11,R110,R118 R12,R127,R128,R13,R14 R15,R152,R16,R161,R164 R165,R166,R167,R178,R179 R18,R180,R185,R188,R19 R196,R197,R198,R199,R224 R225,R238,R239,R251,R27 R30,R40,R41,R42,R545 R548,R549,R55,R552,R66 R67,R68,R69,R700,R721 R722,R723,R833,R83,R84 R85
2	0RHSS000EJTS	RC2012J000CS	Resistor, chip 0 OHM	R157,R602,R617,R601,R603
2	0RHSS100DJTS	RC1608J100CS	Resistor, chip 10 ohm	R168
2	0RHSS101DJTS	RC1608J101CS	Resistor, chip 100 ohm	R08,R105,R106,R107,R130 R131,R132,R133,R135,R137 R138,R139,R140,R141,R142 R143,R145,R146,R147,R148 R149,R150,R151,R153,R162 R163,R17,R194,R195,R288 R289,R291,R292,R293,R294 R295,R296,R297,R298,R36 R52,R59,R60,R609,R635 R703,R711,R718,R719,R91
2	0RHSS102DJTS	RC1608J102CS	Resistor, chip 1K	R117,R254,R518,R628,R631 R712,R713,R717,R839
2	0RHSS103DJTS	RC1608J103CS	Resistor, chip 10K	R189,R190,R232,R233,R234 R235,R236,R237,R255,R256 R278,R290,R613,R627,R629 R630,R636,R704,R705,R706 R707,R72,R836,R837,R846 R841,R842,R845

REPLACEMENT PART LIST

5. Parts List (Main PCB)

LEVEL	PART NO	PART NAME	DESCRIPTIONS	LOCATION NO
2	0RHSS104DJTS	RC1608J104CS	Resistor, chip 100K	R620,R621,R632,R633,R637 R802,R808,R821
2	0RHSS105DJTS	RESISTOR, CHIP	1M OHM, 1608 J	R02
2	0RHSS122DJTS	RC1608J122CS	Resistor, chip 1.2K	R809
2	0RHSS123DJTS	RESISTOR, CHIP	12K OHM, 1608 J	R838
2	0RHSS151DJTS	RC1608J151CS	Resistor, chip 150 ohm	R100,R101,R102,R113,R114 R115
2	0RHSS153DJTS	RESISTOR, CHIP	15K OHM, 1608 J	R618,R623
2	0RHSS182DJTS	RESISTOR, CHIP	Resistor, chip 1.8K ohm	R276
2	0RHSS220DJTS	RC1608J220CS	Resistor, chip 22 ohm	R04,R05,R111,R120,R129 R154,R155,R169,R170,R192 R193,R252,R253,R32,R33 R34,R44,R50,R56,R57 R701,R702,R80,R81,R82
2	0RHSS223DJTS	RC1608J223CS	Resistor, chip 22K	R156
2	0RHSS271DJTS	RC1608J271CS	Resistor,chip 270	R103,R104,R116
2	0RHSS272DJTS	RC1608J272CS	Resistor, chip 2.7K	R112,R204
2	0RHSS273DJTS	RC1608J273CS	Resistor, chip 27K	R260,R274,R803,R816,R818
2	0RHSS332DJTS	RC1608J332CS	Resistor, chip 3.3K	R03,R134,R247,R248,R249 R541,R542
2	0RHSS392DJTS	RC1608J392CS	Resistor, chip 3.9K	R124,R125
2	0RHSS393DJTS	RESISTOR, CHIP	Resistor, chip 39K	R619,R622
2	0RHSS3R0DJTS	RESISTOR, CHIP	3 OHM, 1608 J	R43
2	0RHSS3R3DJTS	RC1608J3R3CS	Resistor, chip 3.3 OHM	R610,R611
2	0RHSS470DJTS	RESISTOR, CHIP	Resistor, chip 47 ohm	R257,R258
2	0RHSS471DJTS	RC1608J471CS	Resistor, chip 470 ohm	R275,R280,R519,R844
2	0RHSS472DJTS	RC1608J472CS	Resistor, chip 4.7K	R119,R121,R122,R123,R843 R181,R182,R183,R184,R207 R246,R26,R530,R607,R612 R709,R710,R720,R819
2	0RHSS473DJTS	RC1608J473CS	Resistor, chip 47K	R126,R187,R245,R615,R626 R817
2	0RHSS474DJTS	RC1608J474CS	Resistor, chip 470K	R202,R203
2	0RHSS512DJTS	5.1K OHM, 1608 J	RESISTOR, CHIP	R191,R200,R201,R217,R218 R282,R283,R284,R285
2	0RHSS560DJTS	RESISTOR, CHIP	56 OHM, 1608 J	R61
2	0RHSS561DJTS	RC1608J561CS	Resistor, chip 560 ohm	R604,R608,R515,R516
2	0RHSS622DJTS	6.2K OHM, 1608 J	RESISTOR, CHIP	R624,R625
2	0RHSS683DJTS	68K OHM, 1608 J	RESISTOR, CHIP	R614
2	0RHSS750DJTS	RC1608J750CS	Resistor, chip 75 ohm	R227,R228,R279,R281,R286 R287,R714,R715,R716
2	0RHSS821DJTS	RC1608J821CS	Resistor, chip 820 ohm	R277
2	0RHSS912DJTS	9.1K OHM 1608, J	RESISTOR, CHIP	R229
2	0RYSS101FJTS	RESISTOR, ARRAY CHIP	100 OHM, 3216	AR09,AR10
2	0RYSS101FJTS	RESISTOR, ARRAY CHIP	100 OHM, 3216	AR01,AR02,AR03
2	0RYSS220FJTS	RESISTOR, ARRAY	22 OHM, *8 J	AR13,AR14,AR15,AR16,AR17 AR18,AR19,AR21,AR22,AR23 AR24,AR25
2	0TRKE1504STS	KTA1504S Y	Transistor, chip A1504	Q100,Q101,Q103,Q601,Q203 Q603,Q104,Q105
2	0TRKE3875STS	KTC3875S Y	Transistor, chip	Q01,Q102,Q11,Q204,Q198 Q205,Q210,Q602,Q604,Q800 Q802,Q803,Q812,Q813
2	1DHSTS1545GS	DIODE, RECTIFIER	D2PAK, 45V 15A	D850
2	1DZSC5231BTS	DIODE, ZENER CHIP	5.1V, MMSZ5231BS-7	D700,D701,ZD191,ZD192,ZD202 ZD205,ZD207,ZD209,ZD213,ZD214 ZD215,ZD216,ZD217,ZD218,ZD219 ZD220,ZD221,ZD222,ZD225,ZD601 ZD602,ZD702,ZD703,ZD704,ZD705 ZD706,ZD805,ZD806

REPLACEMENT PART LIST

6. Parts List (Main PCB)

LEVEL	PART NO	PART NAME	DESCRIPTIONS	LOCATION NO
2	1ICIPAP120TS	IC, DC/DC CONVERTER	AP1501A-12K5,12V,5A	IC801
2	1ICMS9883CBS	MST9883C	MST9883C	IC04
2	1ICMST6151BS	MST6151	IC, SCALER	IC01
2	1ICPH74F08TS	N74F08D	IC, N74F08D	IC702
2	1ICPH8574ATS	PCF8574,REMOTE 8-BIT	IC, I/O EXPANDER	IC202
2	1ICRO6161FTS	BA6161F	IC, BA6161F	IC803
2	1ICSE24C16TS	S-24C16AFJA-TB	IC, 24C16	IC103
2	1ICST24C02WS	IC, EEPROM	24C02W	IC201,IC701
2	1ICST6420DTS	TEA6420D	TEA6420D	IC504
2	1ICST80PF55S	STB80PF55	STB80PF55	Q804
2	1ICSTLD18TTS	Regulator(STM)	LD1117S18TR	IC832
2	1ICSTLD33TTS	Regulator(STM)	LD1117S33TR	IC05,IC06,IC08 IC107,IC108
2	1ICSTTS482TS	IC, HEADPHONE AMP	TS482IST, MINI08	IC602
2	0CHSS472DKTS	CAPACITOR, CHIP	4700PF,1608	C249,C257,C259
2	1ICWB986532S	IC, SDRAM CHIP	512Kx32bitx4 SDRAM	IC03
2	1ICMI49XYIC7	IC,V/S DECODER	VCTI, 49XYI-C7	IC101
1	**GRLT41CM001F**	**GR, 201 CMO TUNER M/I**		
2	0TULGG083DBD	TAEM-G083D	Tuner	
2	111-A46A	20.1",VCT-I	PCB, IF	
2	1SFEPX6966MD	X6966M	SAW FILTER	SF101
2	WAFYH10200AD	WAFER, PIN	Pin wafer, 10-Pin	P102
1	**GRLT41AM001H**	**GR, LL' MANUAL**		
2	1TPMU40R9MTD	TRAP,40.9MHZ	MKTGA40M9AAHP00A03	T101
1	**GRLT41DS001G**	**GR, LL' SMD**		
2	0TRKE3875STS	TRANSISTOR, CHIP	KTC3875S	Q106
2	0RHSS472DJTS	RC1608J472CS	Resistor, chip 4.7K	R177
1	**GRLT41DM001F**	**GR, PANEL MANUAL(LG)**		
2	WA1YH12200SD	WAFER, PIN	12P, STRAIGHT	P803
1	**GRLT41DS001F**	**GR, PANEL SMD(LG)**		
2	0CHSS101DJTS	CL10C101JBNC	Capacitor, chip 100PF	C846
2	0CHSS104DZTS	CL10F104ZANC	Capacitor, chip 0.1UF	C845,C847
2	0RHSS000DJTS	RC1608J000CS	Resistor, chip 0 ohm	R824
2	0RHSS000EJTS	RC2012J000CS	Resistor, chip 0 OHM	R823
2	0RHSS103DJTS	RC1608J103CS	Resistor, chip 10K	R825
2	0RHSS473DJTS	RC1608J473CS	Resistor, chip 47K	R826
2	WAFYH30125AS	WAFER, PIN	30P, P125, ANGLE	P303

CIRCUIT DESCRIPTIONS

General Description for 23.01” color TFT LCD TV.

The TFT LCD TV described in the followings is based on a Multi TV system, digital Control display, 23.01" diagonal. The TFT LCD TV is intended to be a finished product, Basically a display device mounted inside an enclosure which will provide the safety Requirements. With the exception of LCD Panel, the display device shall be composed entirely of solid state components.
These components shall have a history of reliable service in identity applications and shall be applied in the circuits.

1. SCALER SECTION.
2. VCT 49xxi SECTION.
3. Video A/D Converter

CIRCUIT DESCRIPTIONS

1.SCALER SECTION.

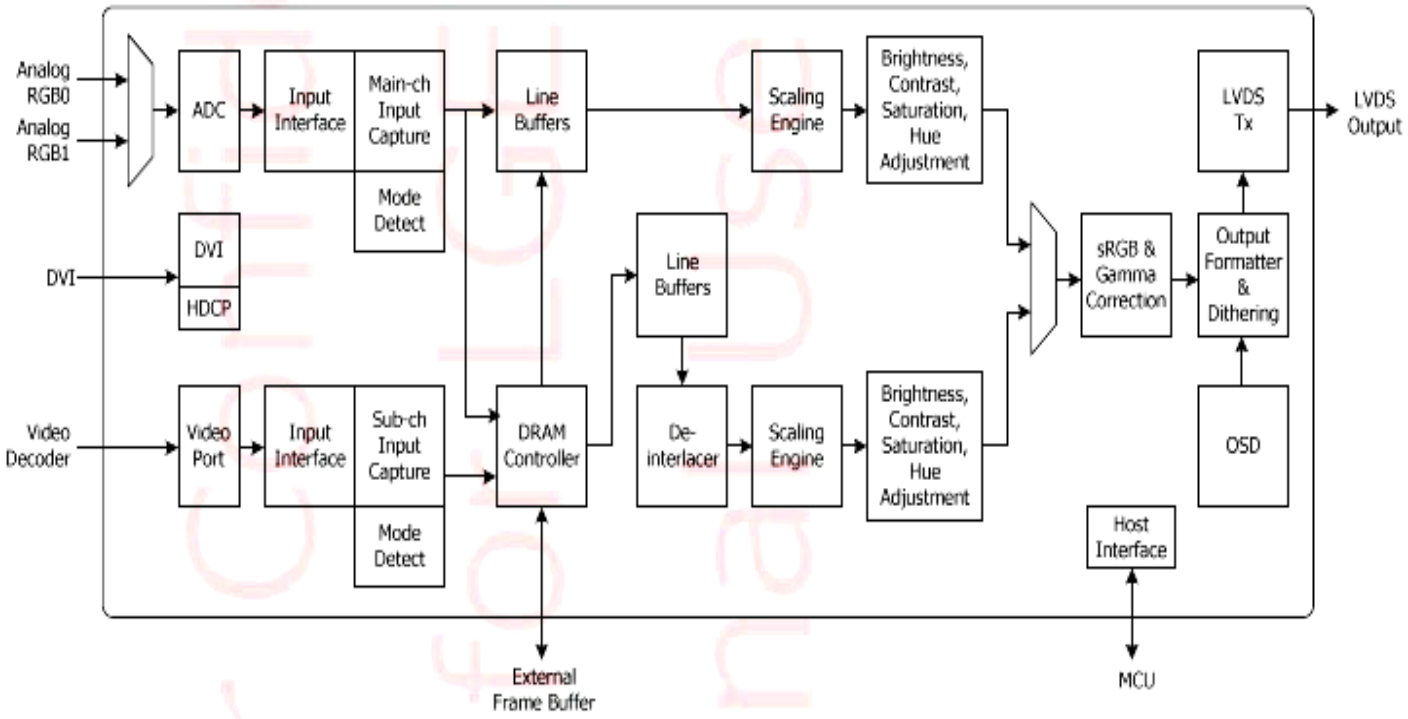
Device : MST6151

Features: Input supports up to UXGA & 1080P
Panel supports up to SXGA/WXGA
Integrated two-port triple-ADC/PLL
Integrated DVI/HDCP compliant receiver
YUV422 digital video input ports
Dual high-quality scaling engines
Built-in 3-D video de-interlacer
Video-over-graphic PIP
Video-by-graphic split screen
MStarACE advanced picture/color processing engine
Embedded On-screen Display Controller (OSD) engine
Built-in dual-link LVDS transmitter
5-Volt tolerant inputs
Low EMI and power saving features
Supports PWM & GPO controls
208-pin PQFP package
Analog RGB/YPbPr Input Ports
DVI/HDCP Compliant Input Port
Video Input Port
Auto-Configuration/Auto-Detection
Dual High-Performance Scaling Engines
Video Processing & Conversion
On-Screen OSD Controller

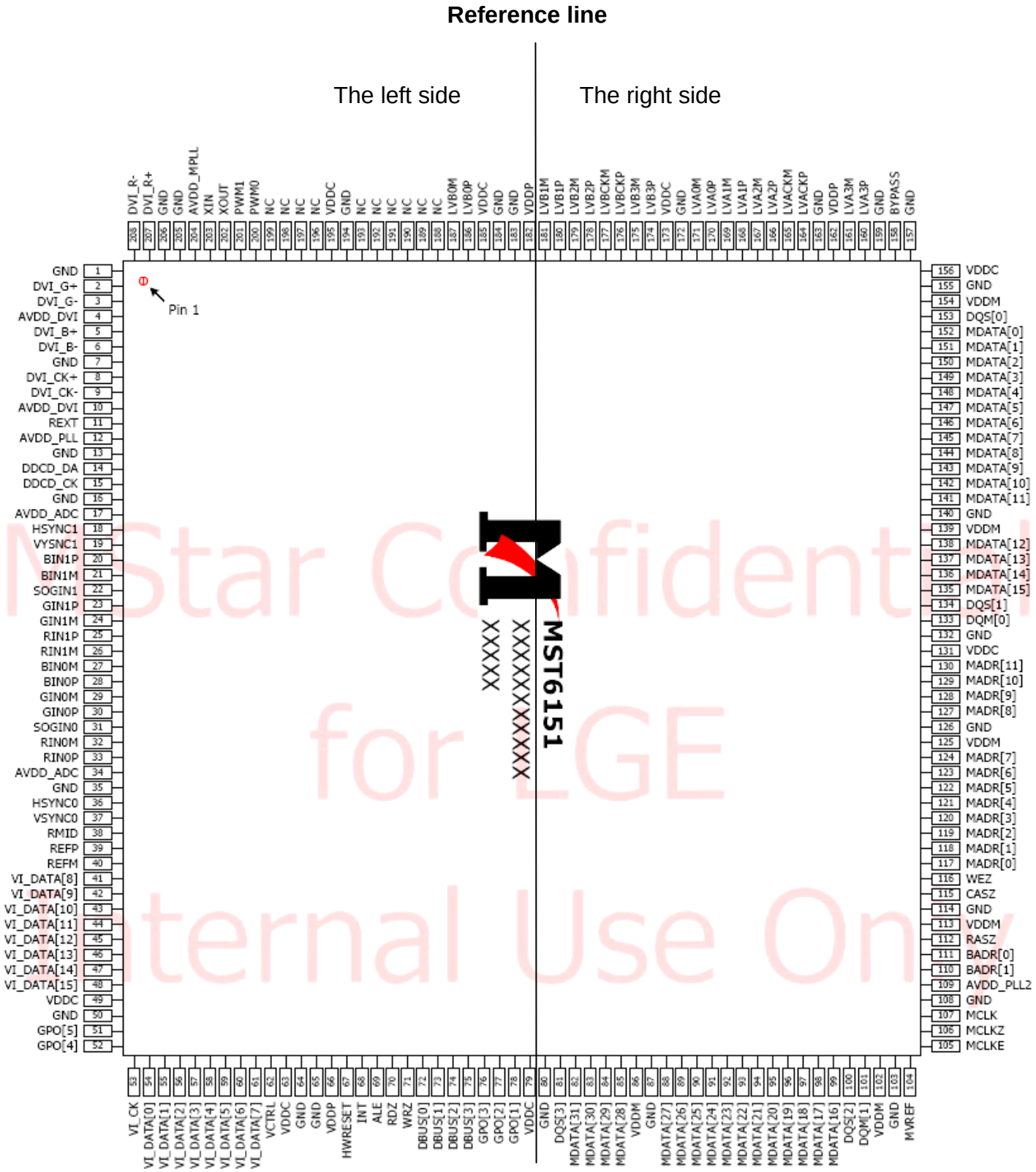
1) Description

The MST6151 is a high performance and fully integrated graphics processing IC solution for multi-function LCD monitor/TV with resolutions up to SXGA/WXGA. It is configured with an integrated triple-ADC/PLL, an ntegrated DVI/HDCP receiver, a video de-interlacer, two high quality scaling engines, an on-screen display controller, and a built-in output clock generator. By use of external frame buffer, PIP is provided for multimedia applications. It supports de-interlaced full-screen video, video-on-graphic overlay, video-by-graphic split screen, frame rate conversion, and aspect ratio conversion for various video sources. To further reduce system costs, the MST6151 also integrates intelligent power management control capability for green-mode requirements and spread-spectrum support for EMI management.

2) Block Diagram.



3) Pin configuration.



CIRCUIT DESCRIPTIONS

3-1) Pin configuration

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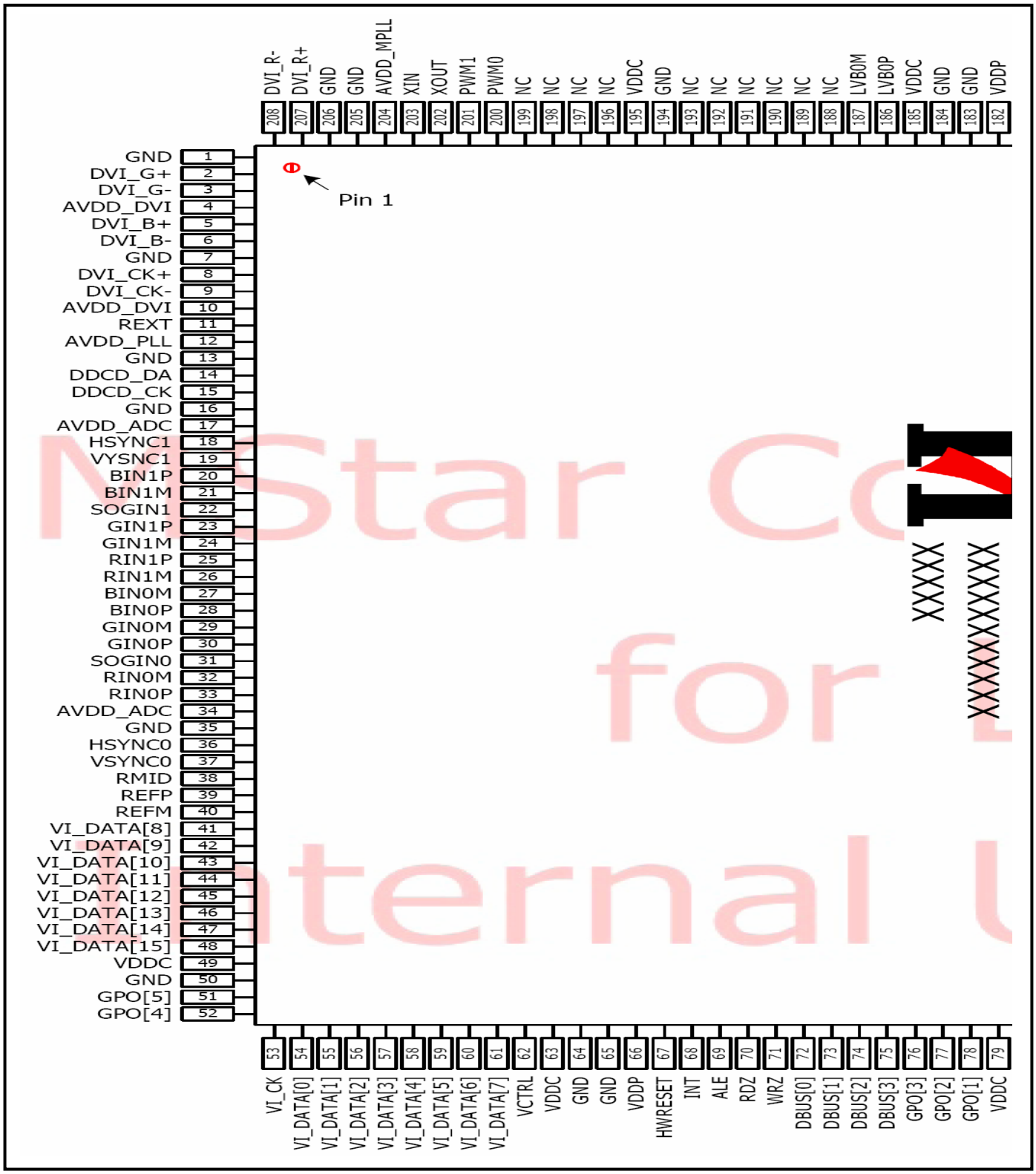


3-2) Pin configuration

< The right side >

4) Pin Functions.

[MCU Interface]

Pin Name	Pin Type	Function	Pin
HWRESET	Schmitt Trigger Input w/ 5V-tolerant	Hardware Reset, active high	67
DBUS [3:0]	I/O w/ 5V-tolerant	MCU 4-bit DDR Direct bus; 4mA driving strength	75-72
ALE	I w/ 5V-tolerant	MCU Bus ALE, active high	69
RDZ	I w/ 5V-tolerant	MCU Bus RDZ, active high	70
WRZ	I w/ 5V-tolerant	MCU Bus WDZ, active high	71
INT	Output	MCU Bus Interrupt; 4mA driving strength	68

[Analog Interface]

Pin Name	Pin Type	Function	Pin
RMID		Mid-Scale Voltage Bypass	38
REFP		Internal ADC Top De-coupling Pin	39
REFM		Internal ADC Bottom De-coupling Pin	40
REXT	Analog Input	External Resister 390 ohm to AVDD_DVI	11
HSYNC0	Schmitt Trigger Input w/ 5V-tolerant	Analog HSYNC Input from Channel 0	36
VSYNC0	Schmitt Trigger Input w/ 5V-tolerant	Analog VSYNC Input from Channel 0	37
BIN0M	Analog Input	Reference Ground for Analog Blue Input from Channel 0	27
BIN0P	Analog Input	Analog Blue Input from Channel 0	28
GIN0M	Analog Input	Reference Ground for Analog Green Input from Channel 0	29
GIN0P	Analog Input	Analog Green Input from Channel 0	30
SOGIN0	Analog Input	Sync On Green Input from Channel 0	31
RIN0M	Analog Input	Reference Ground for Analog Red Input from Channel 0	32
RIN0P	Analog Input	Analog Red Input from Channel 0	33
HSYNC1	Schmitt Trigger Input w/ 5V-tolerant	Analog HSYNC Input from Channel 1	18
VSYNC1	Schmitt Trigger Input w/ 5V-tolerant	Analog VSYNC Input from Channel 1	19
BIN1M	Analog Input	Reference Ground for Analog Blue Input from Channel 1	21
BIN1P	Analog Input	Analog Blue Input from Channel 1	20
SOGIN1	Analog Input	Sync On Green Input from Channel 1	22
GIN1M	Analog Input	Reference Ground for Analog Green Input from Channel 1	24

Pin Name	Pin Type	Function	Pin
GIN1P	Analog Input	Analog Green Input from Channel 1	23
RIN1M	Analog Input	Reference Ground for Analog Red Input from Channel 1	26
RIN1P	Analog Input	Analog Red Input from Channel 1	25

[DVI Interface]

Pin Name	Pin Type	Function	Pin
DVI_R+	Input	DVI Input Channel Red +	207
DVI_R-	Input	DVI Input Channel Red -	208
DVI_G+	Input	DVI Input Channel Green +	2
DVI_G-	Input	DVI Input Channel Green -	3
DVI_B+	Input	DVI Input Channel Blue +	5
DVI_B-	Input	DVI Input Channel Blue -	60
DVI_CK+	Input	DVI Input Clock +	8
DVI_CK-	Input	DVI Input Clock -	9

[Video Interface]

Pin Name	Pin Type	Function	Pin
VI_CK	Input w/ 5V-tolerant	Digital Video Input Clock	53
VI_DATA[15:0]	Input w/ 5V-tolerant	Digital Video Input Data[15:0]	48-41, 61-54

[LVDS Interface]

Pin Name	Pin Type	Function	Pin
LVA0M	Output	A-Link Negative LVDS Differential Data Output	171
LVA0P	Output	A-Link Positive LVDS Differential Data Output	170
LVA1M	Output	A-Link Negative LVDS Differential Data Output	169
LVA1P	Output	A-Link Positive LVDS Differential Data Output	168
LVA2M	Output	A-Link Negative LVDS Differential Data Output	167
LVA2P	Output	A-Link Positive LVDS Differential Data Output	166
LVA3M	Output	A-Link Negative LVDS Differential Data Output	161
LVA3P	Output	A-Link Positive LVDS Differential Data Output	160
LVACKM	Output	A-Link Negative LVDS Differential Data Output	165
LVACKP	Output	A-Link Positive LVDS Differential Data Output	164
LVB0M	Output	B-Link Negative LVDS Differential Data Output	187
LVB0P	Output	B-Link Positive LVDS Differential Data Output	186
LVB1M	Output	B-Link Negative LVDS Differential Data Output	181

Pin Name	Pin Type	Function	Pin
LVB1P	Output	B-Link Positive LVDS Differential Data Output	180
LVB2M	Output	B-Link Negative LVDS Differential Data Output	179
LVB2P	Output	B-Link Positive LVDS Differential Data Output	178
LVB3M	Output	B-Link Negative LVDS Differential Data Output	175
LVB3P	Output	B-Link Positive LVDS Differential Data Output	174
LVBCKM	Output	B-Link Negative LVDS Differential Data Output	177
LVBCKP	Output	B-Link Positive LVDS Differential Data Output	176

[GPO Interface]

Pin Name	Pin Type	Function	Pin
PWM0	Output	GPO with PWM Function; 4mA driving strength	200
PWM1	Output	GPO with PWM Function; 4mA driving strength	201
GPO[1]	I/O	GPO / FIELD input; 4mA driving strength	78
GPO[2]	I/O	GPO / Digital VSYNC Input; 4mA driving strength	77
GPO[3]	I/O	GPO / DE Input; 4mA driving strength	76
GPO[4]	I/O	GPO / Secondary Video Clock Input; 4mA driving strength	52
GPO[5]	I/O	GPO / Digital HSYNC Input; 4mA driving strength	51

[DRAM Interface]

Pin Name	Pin Type	Function	Pin
MVREF	Input	Reference Voltage for DDR SDRAM Interface	104
MCLKE	Output	DRAM Memory Clock Enable	105
MCLKZ	Output	DRAM Memory clock Complementary /Input (for differential clocks)	106
MCLK	Output	DRAM Memory Clock	107
RASZ	Output	Row Address Strobe, active low	112
CASZ	Output	Column Address Strobe, active low	115
WEZ	Output	Write Enable, active low	116
DQM[1:0]	Output	Data Mask Byte Enable	133, 101
DQS[3:0]	Output	Data Strobe	81, 100, 134, 153
BADR[1:0]	Output	Memory Bank Address	110, 111
MADR[11:0]	Output	Memory Address	130-127, 124-117
MDATA[31:0]	I/O	Memory Data	82-85, 88-99, 135-138, 141-152

CIRCUIT DESCRIPTIONS

[Misc. Interface]

Pin Name	Pin Type	Function	Pin
XIN	Crystal Oscillator Input	Crystal Oscillator Input	203
XOUT	Crystal Oscillator Output	Crystal Oscillator Output	202
DDCD_DA	I/O w/ 5V-tolerant	HDCP Serial Bus Data / DDC data of DVI port; 4mA driving strength	14
DDCD_CK	Input w/ 5V-Tolerant	HDCP Serial Bus Clock / DDC Clock of DVI Port	15
BYPASS		For External Bypass Capacitor	158
VCTRL	Output	Regulator Control	62

[Power Pins]

Pin Name	Pin Type	Function	Pin
AVDD_DVI	3.3V Power	DVI Power	4, 10
AVDD_ADC	3.3V Power	ADC Power	17, 34
AVDD_PLL	3.3V Power	PLL Power	12
AVDD_PLL2	3.3V Power	PLL Power	109
AVDD_MPLL	3.3V Power	PLL Power	204
VDDM	3.3V Power (SDR SDRAM) / 2.5V Power (DDR SDRAM)	DRAM Interface Power	86, 102, 113, 125, 139, 154
VDDP	3.3V Power	Digital Output Power	66, 162, 182
VDDC	2.5V Power	Digital Core Power	49, 63, 79, 131, 156, 173, 185, 195
GND	Ground	Ground	1, 7, 13, 16, 35, 50, 64, 65, 80, 87, 103, 108, 114, 126, 132, 140, 155, 157, 159, 163, 172, 183, 184, 194, 205, 206

[No Connects]

Pin Name	Pin Type	Function	Pin
NC		No connect. Leave these pins floating.	188-193, 196-199

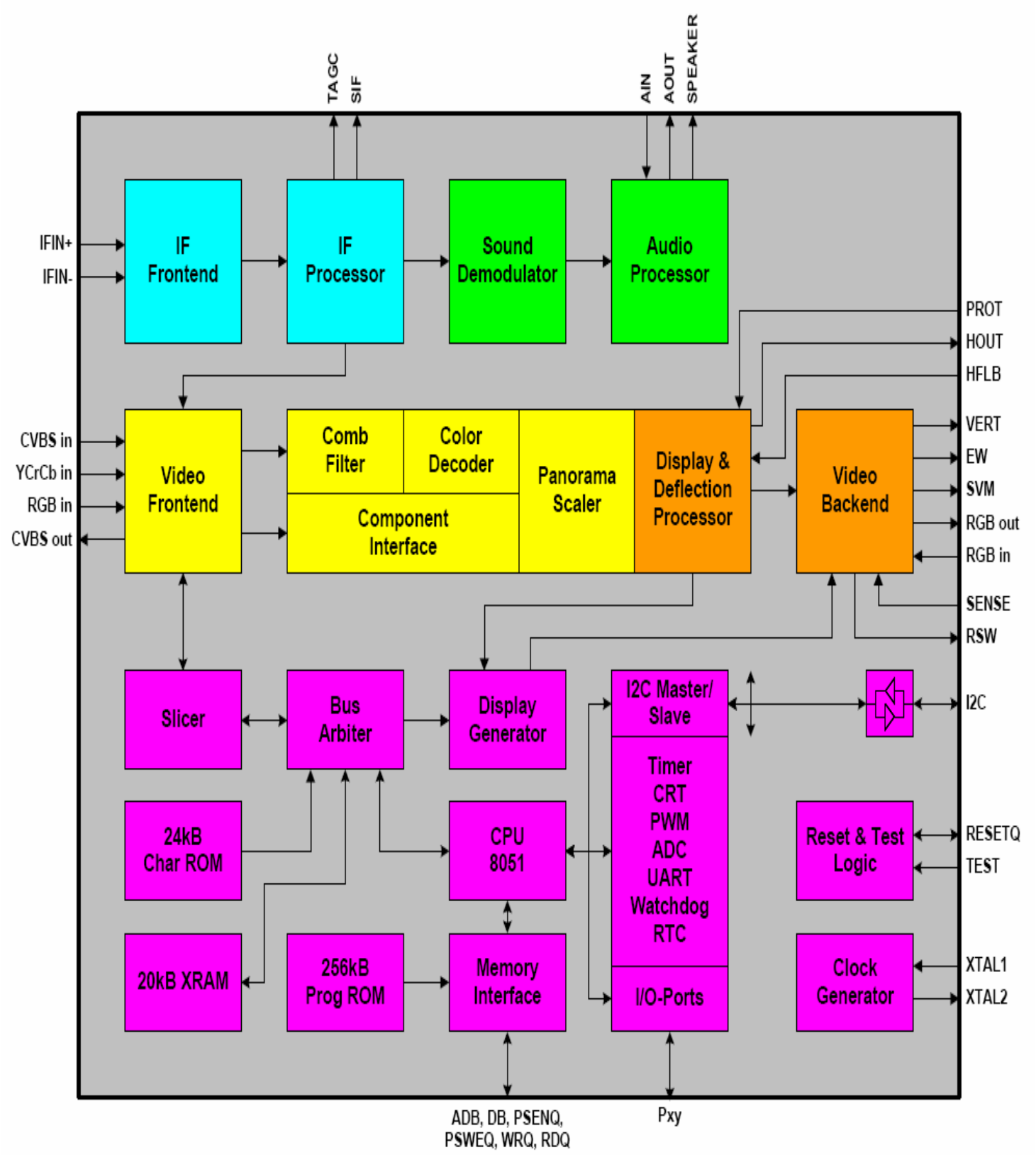
2. VCT 49xxi SECTION.

Device : VCT 49xxi
Features : PSSDIP88-1/-2 package
PMQFP144-2 package
Submicron CMOS technology
Low-power standby mode
Single 20.25-MHz reference crystal
8-bit 8051 instruction set compatible CPU
Up to 256 kB on-chip program ROM
WST, PDC, VPS, andWSS acquisition
Closed Caption and V-chip acquisition
Up to 10 pages on-chip teletext memory
Multi-standard QSS IF processing with single SAW
FM Radio and RDS with standard TV tuner
TV-sound demodulation:
Baseband sound processing for loudspeaker channel:
CVBS, S-VHS, YCrCb and RGB inputs
4H adaptive comb filter (PAL/NTSC)
multi-standard color decoder (PAL/NTSC/SECAM)
Nonlinear horizontal scaling “panorama vision”
Luma and chroma transient improvement (LTI, CTI)
Non-linear color space enhancement (NCE)
Dynamic black level expander (BLE)
Scan velocity modulation output
Soft start/stop of H-drive
Vertical angle and bow correction
Average and peak beam current limiter
Nonlinear and dynamic EHT compensation
Black switch off procedure (BSO)

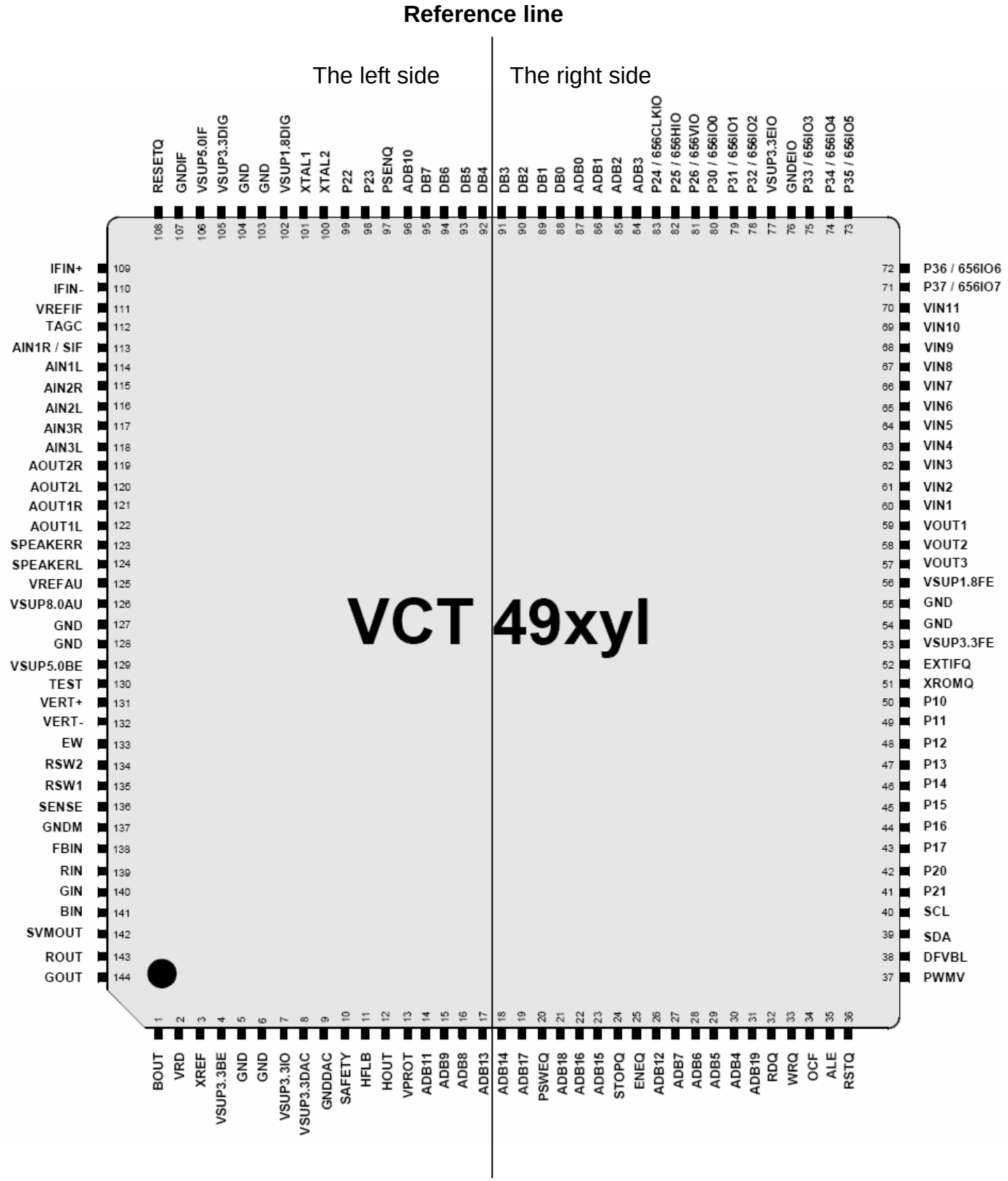
1) Description

The VCT 49xxI is an IC family of high-quality singlechip TV processors. Modular design and deep-submicron technology allow the economic integration of features in all classes of single-scan TV sets. The VCT 49xxI family is based on functional blocks contained and approved in existing products like DRX 396xA, MSP 34x5G, VSP 94x7B, DDP 3315C and SDA 55xx. Each member of the family contains the entire IF, audio, video, display, and deflection processing for 4:3 and 16:9 50/60-Hz mono and stereo TV sets. The integrated microcontroller is supported by a powerful OSD generator with integrated Teletext & CC acquisition including on-chip page memory.

2) Block Diagram.



3) Pin configuration.



CIRCUIT DESCRIPTIONS

3-1) Pin configuration

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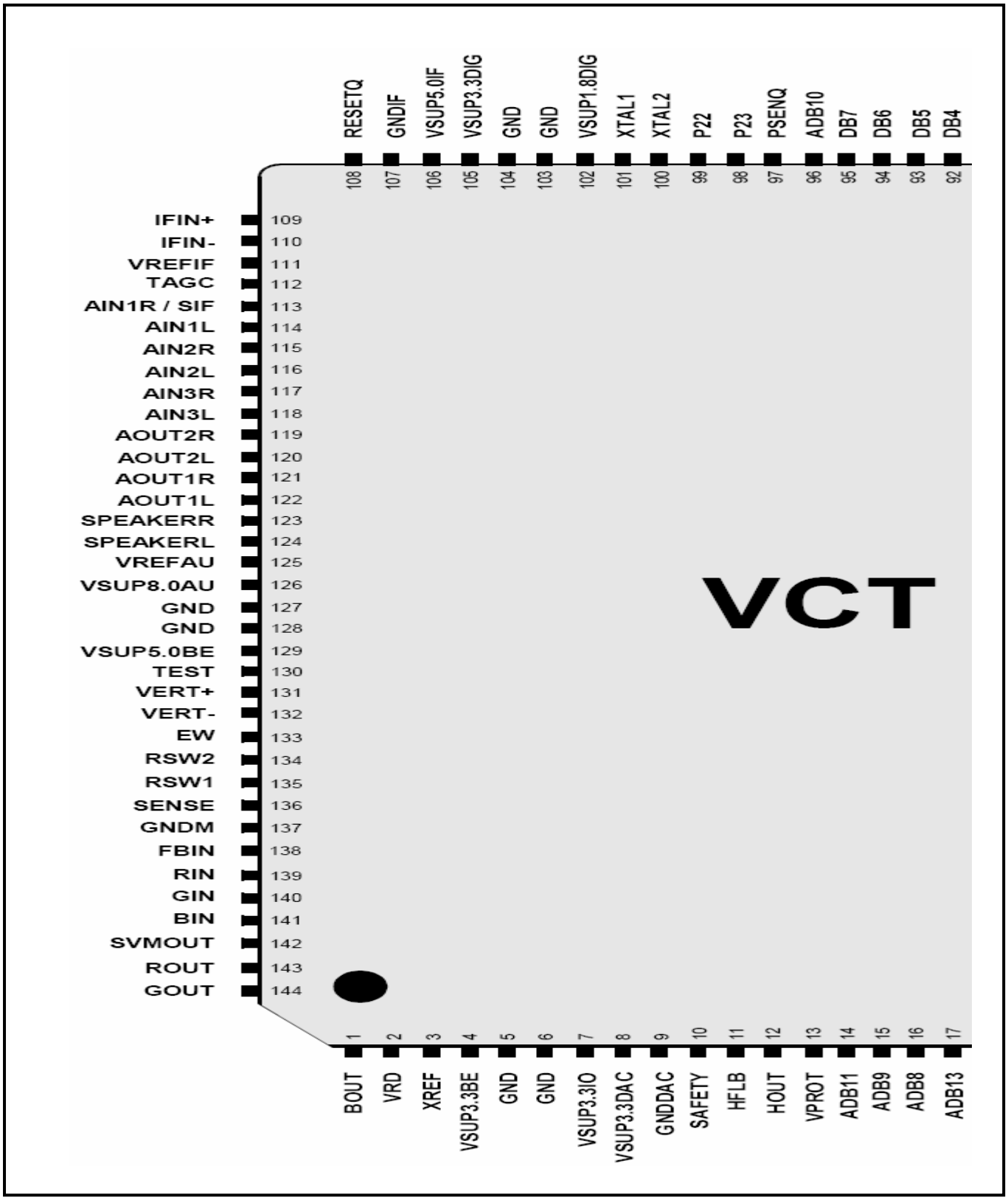

3-2) Pin configuration

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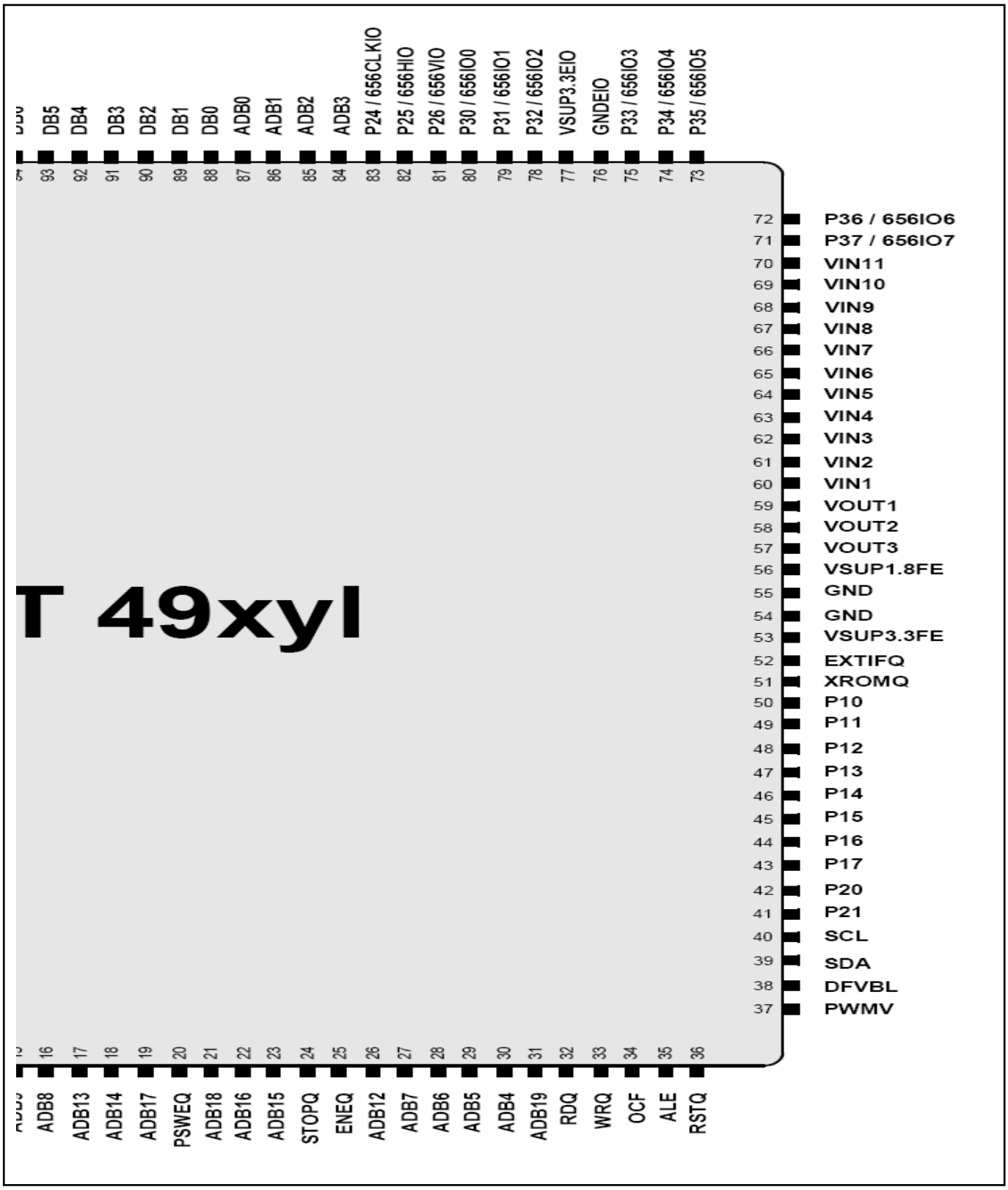


4) Pin Connections and Short Descriptions

NC = not connected
LV = if not used, leave vacant
OBL = obligatory; connect as described in circuit diagram
IN = Input Pin
OUT = Output Pin
SUPPLY = Supply Pin

4-1) Pin(Port) Functions

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
1	128	GND	SUPPLY	OBL	Ground Platform
2	129	VSUP5.0BE	SUPPLY	OBL	Supply Voltage Analog Video Back-end, 5.0 V
3	130	TEST	IN	GND	Test Input, reserved for Test
4	131	VERT+	OUT	LV	Differential Vertical Sawtooth Output
5	132	VERT-	OUT	LV	Differential Vertical Sawtooth Output
6	133	EW	OUT	LV	Vertical Parabola Output
7	134	RSW2	OUT	LV	Range Switch 2 Output
8	135	RSW1	OUT	LV	Range Switch 1 Output
9	136	SENSE	IN	GND	Sense ADC Input
10	137	GNDM	IN	GND	Reference Ground for Sense ADC
11	138	FBIN	IN	GND	Fast Blank Input, Back-end
12	139	RIN	IN	GND	Analog Red Input, Back-end
13	140	GIN	IN	GND	Analog Green Input, Back-end
14	141	BIN	IN	GND	Analog Blue Input, Back-end
15	142	SVMOUT	OUT	VSUP5.0BE	Scan Velocity Modulation Output
16	143	ROUT	OUT	VSUP5.0BE	Analog Red Output
17	144	GOUT	OUT	VSUP5.0BE	Analog Green Output
18	1	BOUT	OUT	VSUP5.0BE	Analog Blue Output
19	2	VRD		OBL	Reference Voltage for RGB DACs
20	3	XREF		OBL	Reference Current for RGB DACs
21	4	VSUP3.3BE	SUPPLY	OBL	Supply Voltage Analog Video Back-end, 3.3 V
22	5	GND	SUPPLY	OBL	Ground Platform
23	6	GND	SUPPLY	OBL	Ground Platform
24	7	VSUP3.3IO	SUPPLY	OBL	Supply Voltage I/O Ports, 3.3 V
25	8	VSUP3.3DAC	SUPPLY	OBL	Supply Voltage Video DACs, 3.3 V
26	9	GNDDAC	SUPPLY	OBL	Ground Video DACs
27	10	SAFETY	IN	GND	Safety Input

4-2) Pin(Port) Functions

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
28	11	HFLB	IN	HOUT	Horizontal Flyback Input
29	12	HOUT	OUT	LV	Horizontal Drive Output
30	13	VPROT	IN	GND	Vertical Protection Input
	37	PWMV	OUT	LV	PWM Vertical Output
	38	DFVBL	OUT	LV	Dynamic Focus Vertical Blanking Output
31	39	SDA	IN/OUT	OBL	I^2C Bus Data Input/Output
32	40	SCL	IN/OUT	OBL	I^2C Bus Clock Input/Output
33	41	P21	IN/OUT	LV	Port 2, Bit 1 Input/Output
34	42	P20	IN/OUT	LV	Port 2, Bit 0 Input/Output
35	43	P17	IN/OUT	LV	Port 1, Bit 7 Input/Output
36	44	P16	IN/OUT	LV	Port 1, Bit 6 Input/Output
37	45	P15	IN/OUT	LV	Port 1, Bit 5 Input/Output
38	46	P14	IN/OUT	LV	Port 1, Bit 4 Input/Output
39	47	P13	IN/OUT	LV	Port 1, Bit 3 Input/Output
40	48	P12	IN/OUT	LV	Port 1, Bit 2 Input/Output
41	49	P11	IN/OUT	LV	Port 1, Bit 1 Input/Output
42	50	P10	IN/OUT	LV	Port 1, Bit 0 Input/Output
43	53	VSUP3.3FE	SUPPLY	OBL	Supply Voltage Analog Video Front-end, 3.3 V
44	54	GND	SUPPLY	OBL	Ground Platform
45	55	GND	SUPPLY	OBL	Ground Platform
46	56	VSUP1.8FE	SUPPLY	OBL	Supply Voltage Analog Video Front-end, 1.8 V
47	57	VOUT3	OUT	LV	Analog Video 3 Output
48	58	VOUT2	OUT	LV	Analog Video 2 Output
49	59	VOUT1	OUT	LV	Analog Video 1 Output
50	60	VIN1	IN	GND	Analog Video 1 Input
51	61	VIN2	IN	GND	Analog Video 2 Input
52	62	VIN3	IN	GND	Analog Video 3 Input
53	63	VIN4	IN	GND	Analog Video 4 Input
54	64	VIN5	IN	GND	Analog Video 5 Input
55	65	VIN6	IN	GND	Analog Video 6 Input
56	66	VIN7	IN	GND	Analog Video 7 Input
57	67	VIN8	IN	GND	Analog Video 8 Input
58	68	VIN9	IN	GND	Analog Video 9 Input

4-3) Pin(Port) Functions

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
59	69	VIN10	IN	GND	Analog Video 10 Input
60	70	VIN11	IN	GND	Analog Video 11 Input
61	98	P23	IN/OUT	LV	Port 2, Bit 3 Input/Output
62	99	P22	IN/OUT	LV	Port 2, Bit 2 Input/Output
63	100	XTAL2	OUT	OBL	Analog Crystal Output
64	101	XTAL1	IN	OBL	Analog Crystal Input
65	102	VSUP1.8DIG	SUPPLY	OBL	Supply Voltage Digital Core, 1.8 V (main and standby supply)
66	103	GND	SUPPLY	OBL	Ground Platform
67	104	GND	SUPPLY	OBL	Ground Platform
68	105	VSUP3.3DIG	SUPPLY	OBL	Supply Voltage Digital Core, 3.3 V (main and standby supply)
69	106	VSUP5.0IF	SUPPLY	OBL	Supply Voltage Analog IF Front-end, 5.0 V
70	107	GNDIF	SUPPLY	OBL	Ground Analog IF Front-end
71	108	RESETQ	IN/OUT	OBL	$\overline{\text{Reset}}$ Input/Output
72	109	IFIN+	IN	$VREF_{IF}$	Differential IF Input
73	110	IFIN-	IN	$VREF_{IF}$	Differential IF Input
74	111	VREFIF		OBL	Reference Voltage, IF ADC
75	112	TAGC	OUT	LV	Tuner AGC Output
76	113	AIN1R / SIF	IN/OUT	GND	Analog Audio 1 Input, Right Analog 2nd Sound IF Output
77	114	AIN1L	IN	GND	Analog Audio 1 Input, Left
78	115	AIN2R	IN	GND	Analog Audio 2 Input, Right
79	116	AIN2L	IN	GND	Analog Audio 2 Input, Left
	117	AIN3R	IN	GND	Analog Audio 3 Input, Right
	118	AIN3L	IN	GND	Analog Audio 3 Input, Left
	119	AOUT2R	OUT	LV	Analog Audio 2 Output, Right
	120	AOUT2L	OUT	LV	Analog Audio 2 Output, Left
80		AIN3R / AOUT2R	IN / OUT	LV	Analog Audio 3 Input, Right Analog Audio 2 Output, Right
81		AIN3L / AOUT2L	IN / OUT	LV	Analog Audio 3 Input, Left Analog Audio 2 Output, Left
82	121	AOUT1R	OUT	LV	Analog Audio 1 Output, Right
83	122	AOUT1L	OUT	LV	Analog Audio 1 Output, Left
84	123	SPEAKERR	OUT	LV	Analog Loudspeaker Output, Right

4-4) Pin(Port) Functions

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
85	124	SPEAKERL	OUT	LV	Analog Loudspeaker Output, Left
86	125	VREFAU		OBL	Reference Voltage, Audio
87	126	VSUP8.0AU	SUPPLY	OBL	Supply Voltage Analog Audio, 8.0 V
88	127	GND	SUPPLY	OBL	Ground Platform
	71	P37 / 656IO7	IN/OUT	LV	Port 3, Bit 7 Input/Output Digital 656 Bus 7 Input/Output
	72	P36 / 656IO6	IN/OUT	LV	Port 3, Bit 6 Input/Output Digital 656 Bus 6 Input/Output
	73	P35 / 656IO5	IN/OUT	LV	Port 3, Bit 5 Input/Output Digital 656 Bus 5 Input/Output
	74	P34 / 656IO4	IN/OUT	LV	Port 3, Bit 4 Input/Output Digital 656 Bus 4 Input/Output
	75	P33 / 656IO3	IN/OUT	LV	Port 3, Bit 3 Input/Output Digital 656 Bus 3 Input/Output
	76	GNDEIO	SUPPLY	OBL	Ground Extended I/O Ports
	77	VSUP3.3EIO	SUPPLY	OBL	Supply Voltage Extended I/O Ports, 3.3 V
	78	P32 / 656IO2	IN/OUT	LV	Port 3, Bit 2 Input/Output Digital 656 Bus 2 Input/Output
	79	P31 / 656IO1	IN/OUT	LV	Port 3, Bit 1 Input/Output Digital 656 Bus 1 Input/Output
	80	P30 / 656IO0	IN/OUT	LV	Port 3, Bit 0 Input/Output Digital 656 Bus 0 Input/Output
	81	P26 / 656VIO	IN/OUT	LV	Port 2, Bit 6 Input/Output Digital 656 Vsync Input/Output
	82	P25 / 656HIO	IN/OUT	LV	Port 2, Bit 5 Input/Output Digital 656 Hsync Input/Output
	83	P24 / 656CLKIO	IN/OUT	LV	Port 2, Bit 4 Input/Output Digital 656 Clock Input/Output
	31	ADB19	OUT	LV	Address Bus 19 Output
	21	ADB18	OUT	LV	Address Bus 18 Output
	19	ADB17	OUT	LV	Address Bus 17 Output
	22	ADB16	OUT	LV	Address Bus 16 Output
	23	ADB15	OUT	LV	Address Bus 15 Output
	18	ADB14	OUT	LV	Address Bus 14 Output
	17	ADB13	OUT	LV	Address Bus 13 Output
	26	ADB12	OUT	LV	Address Bus 12 Output
	14	ADB11	OUT	LV	Address Bus 11 Output

4-5) Pin(Port) Functions

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
	96	ADB10	OUT	LV	Address Bus 10 Output
	15	ADB9	OUT	LV	Address Bus 9 Output
	16	ADB8	OUT	LV	Address Bus 8 Output
	27	ADB7	OUT	LV	Address Bus 7 Output
	28	ADB6	OUT	LV	Address Bus 6 Output
	29	ADB5	OUT	LV	Address Bus 5 Output
	30	ADB4	OUT	LV	Address Bus 4 Output
	84	ADB3	OUT	LV	Address Bus 3 Output
	85	ADB2	OUT	LV	Address Bus 2 Output
	86	ADB1	OUT	LV	Address Bus 1 Output
	87	ADB0	OUT	LV	Address Bus 0 Output
	88	DB0	IN/OUT	LV	Data Bus 0 Input/Output
	89	DB1	IN/OUT	LV	Data Bus 1 Input/Output
	90	DB2	IN/OUT	LV	Data Bus 2 Input/Output
	91	DB3	IN/OUT	LV	Data Bus 3 Input/Output
	92	DB4	IN/OUT	LV	Data Bus 4 Input/Output
	93	DB5	IN/OUT	LV	Data Bus 5 Input/Output
	94	DB6	IN/OUT	LV	Data Bus 6 Input/Output
	95	DB7	IN/OUT	LV	Data Bus 7 Input/Output
	32	RDQ	OUT	LV	$\overline{\text{Data Read Enable}}$ Output
	33	WRQ	OUT	LV	$\overline{\text{Data Write Enable}}$ Output
	34	OCF	OUT	LV	Opcode Fetch Output
	35	ALE	OUT	LV	Address Latch Enable Output
	36	RSTQ	OUT	LV	$\overline{\text{Internal CPU Reset}}$ Output
	97	PSENQ	OUT	LV	$\overline{\text{Program Store Enable}}$ Output
	20	PSWEQ	OUT	LV	$\overline{\text{Program Store Write Enable}}$ Output
	51	XROMQ	IN	OBL	$\overline{\text{External ROM Enable}}$ Input
	52	EXTIFQ	IN	LV	$\overline{\text{Enable External Interface}}$ Input
	24	STOPQ	IN	LV	$\overline{\text{Stop CPU}}$ Input
	25	ENEQ	IN	LV	$\overline{\text{Enable Emulation}}$ Input

3. Video A/D Converter

Device: MST9883CR.

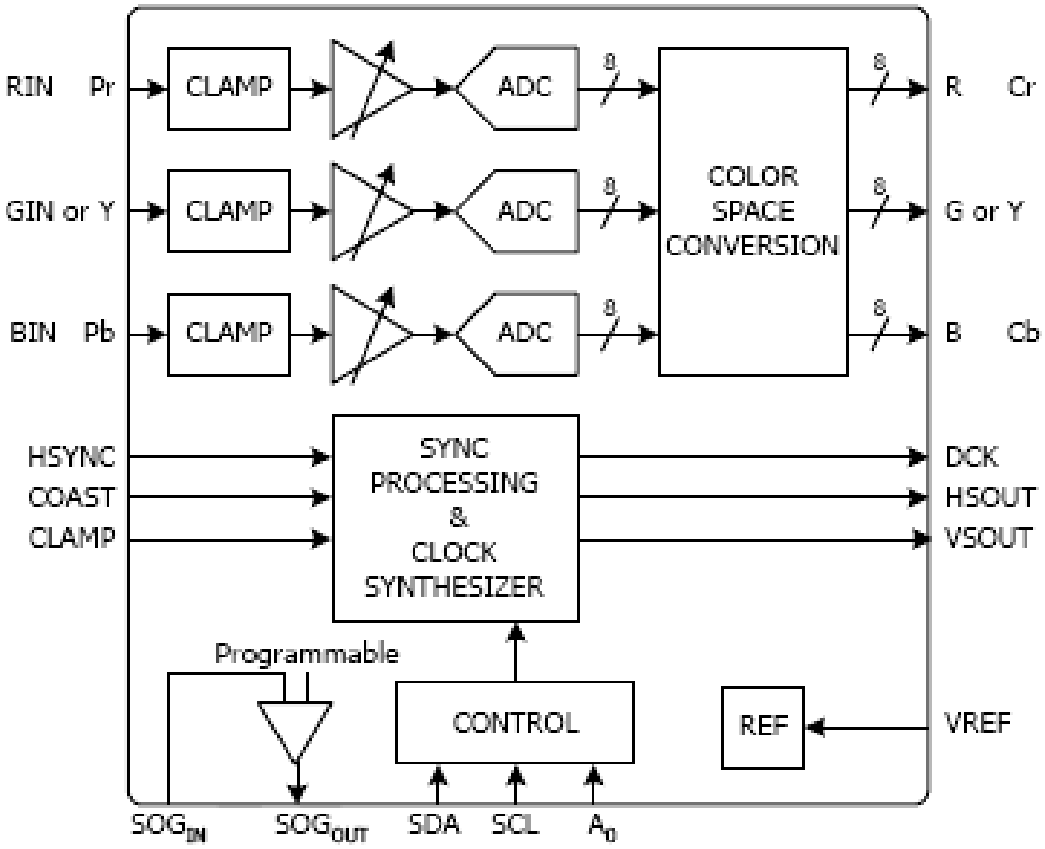
Features: *Triple ADC with 12 - 140 MHz Sampling Rate
*Integrated line locked PLL generates pixel clock from HSYNC
*Integrated 5-bit pixel clock phase adjustment for precise sample timing control
*Integrated clamp with timing generator
*Integrated Brightness & Contrast controls
*Integrated precision voltage reference
*Compatible with VGA through SXGA RGB graphics signals, and component TV, DTV and HDTV
*Pin Compatible with AD9883A
*Serial port programming interface
*Mid-Scale Clamping
*Fully Sync Processing
*4:2:2 and 4:4:4 Output Format Mode
*Color space conversion (RGB to YCbCr)
Internal pattern generator
Sawtooth vertical deflection signals for VSYNC input
BT656 output format mode
Black and mid-level precision clamp and calibration
*Please see MST9883C Application Note for details.RGB Graphics Processing
(A/D Converter).

1) Description

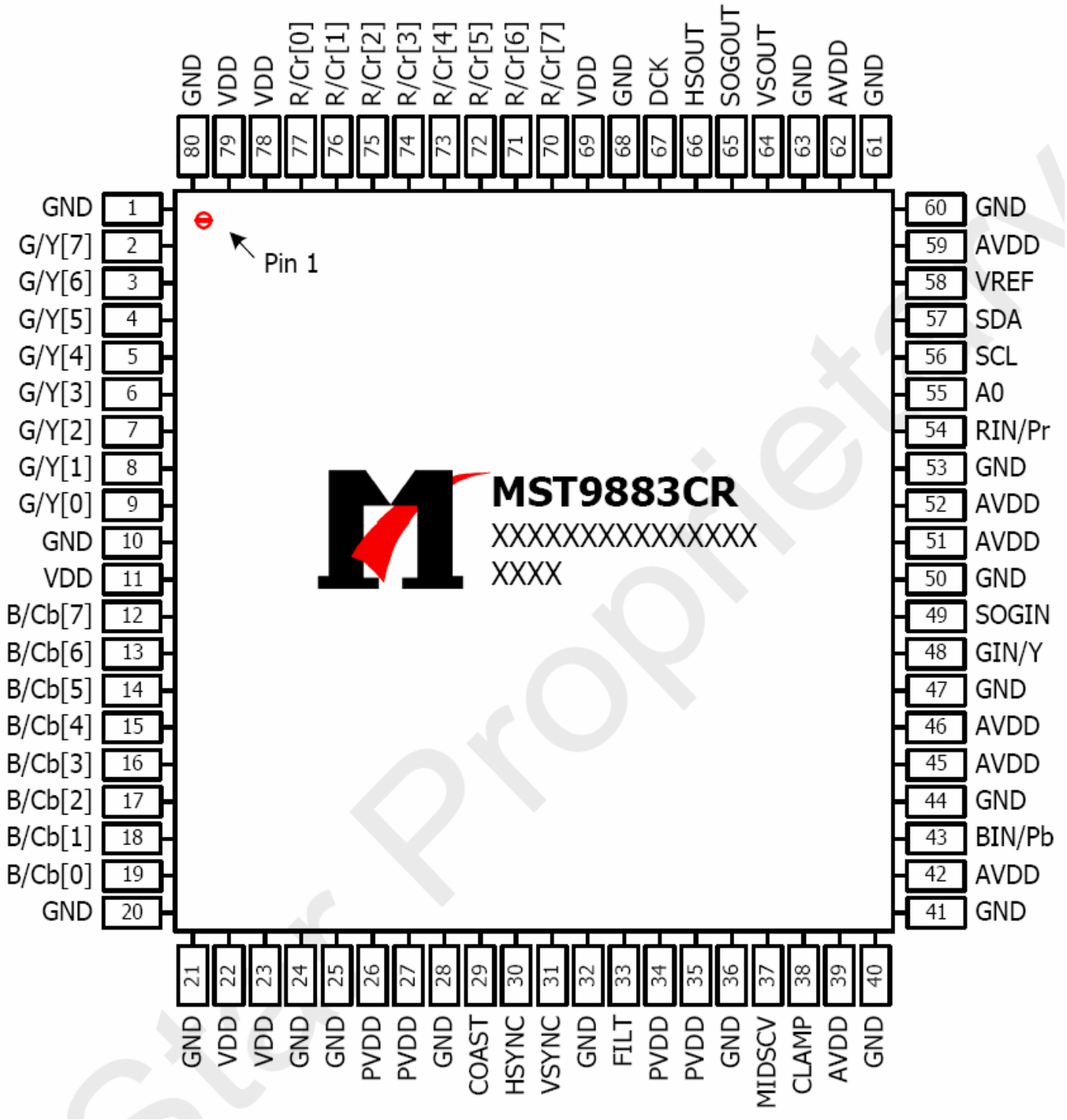
Most flat-panel monitors and projectors require a digital graphics input in order to accurately scale and display
graphics. The huge installed base of computers with analog video graphics interfaces necessitates the use of a
graphics digitizer to re-digitize the analog RGB signal before further processing.

- The MST9883CR is a fully integrated analog interface for digitizing high-resolution RGB graphics signals from PC's and workstations. With a sampling rate capability of up to 140 MHz, it can accurately support display resolutions up to 1280x1024 (SXGA) at 75 Hz. The clamped input circuits provide sufficient band width to accurately digitize each pixel.
- The MST9883CR provides a high performance highly integrated solution to support the digitization process, including the ADC's, a voltage reference, a PLL to generate the pixel sampling clock from HSYNC, clamping circuits, and programmable offset and gain circuits to provide brightness and contrast controls.
- When the COAST signal is asserted, the PLL will maintain its output frequency when HSYNC pulses are absent, such as during the VSYNC period in some systems.
- A 32-step programmable phase adjustment control (0-360 deg) is provided for the pixel sampling clock to adjust for the difference between the HSYNC edge and RGB pixel edge timing.
- The MST9883CR can send output data through one 24-bit port at the pixel clock rate.
- The MST9883CR can also support RGB to YCbCr conversion.
- The MST9883CR has internal programmable pattern generator for testing.
- The MST9883CR can accept either standard TTL, CMOS levels or sawtooth vertical deflection signals for VSYNC input.

2) Block Diagram.



3) Pin configuration.



CIRCUIT DESCRIPTIONS

4-1) Analog Interface

Pin Name	Pin Type	Function	Pin
VSYNC	Digital CMOS Input (5V-tolerant)	Vertical SYNC Input	31
HSYNC	Digital CMOS Input (5V-tolerant)	Horizontal SYNC Input	30
SOGIN	Analog Input (0.5~1.0 V_{p-p})	Sync-on-Green analog input	49
RIN/Pr	Analog Input (0.5~1.0 V_{p-p})	Red/Pr analog input	54
GIN/Y	Analog Input (0.5~1.0 V_{p-p})	Green/Y analog input	48
BIN/Pb	Analog Input (0.5~1.0 V_{p-p})	Blue/Pb analog input	43
VREF	Reference	Internal reference bypass	58
CLAMP	Digital CMOS Input (5V-tolerant)	External clamp input	38
MIDSCV	Reference	Internal mid-scale voltage bypass	37
COAST	Digital CMOS Input (5V-tolerant)	Hold PLL frequency and do not track HSYNC	29

4-2) Misc. Interface

Pin Name	Pin Type	Function	Pin
SCL	Digital CMOS Input (5V-tolerant)	Serial interface clock	56
SDA	Digital CMOS Input/Output (5V-tolerant)	Serial interface data pin	57
A0	Digital CMOS Input (5V-tolerant)	Serial interface address pin	55
FILT		No connection	33

4-3) Output Interface

Pin Name	Pin Type	Function	Pin
R/Cr[7:0]	Digital CMOS 3-state Output (2.2~3.6V)	Red/Cr output data	70-77
G/Y[7:0]	Digital CMOS 3-state Output (2.2~3.6V)	Green/Y output data	2-9
B/Cb[7:0]	Digital CMOS 3-state Output (2.2~3.6V)	Blue/Cb output data	12-19
DCK	Digital CMOS 3-state Output (2.2~3.6V)	Output data clock	67
HSOUT	Digital CMOS 3-state Output (2.2~3.6V)	HSYNC output	66
VSOUT	Digital CMOS 3-state Output (2.2~3.6V)	VSYNC output	64
SOGOUT	Digital CMOS 3-state Output (2.2~3.6V)	SYNC-on-Green Slicer Output	65

4-4) Power Pins

Pin Name	Pin Type	Function	Pin
AVDD	3.3v Power (3.0~3.6V)	Analog power	39, 42, 45, 46, 51, 52, 59, 62
PVDD	3.3v Power (3.0~3.6V)	PLL power	26, 27, 34, 35
VDD	3.3v Power (2.2~3.6V)	Digital output power	11, 22, 23, 69, 78, 79
GND	System Ground	System ground	1, 10, 20, 21, 24, 25, 28, 32, 36, 40, 41, 44, 47, 50, 53, 60, 61, 63, 68, 80