

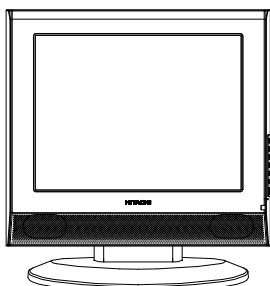
HITACHI

SERVICE MANUAL

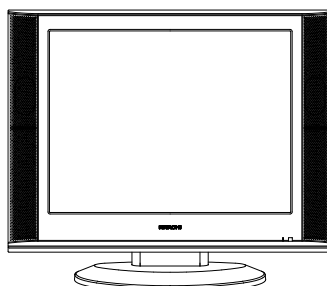
SC

No. 0013E

C15-LC880SNT
C20-LC880SNT



(15" model)



(20" model)

Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this Hitachi liquid crystal television/monitor. Be sure to read the cautionary items described in the manual to maintain safety before servicing.

Service Warning

1. The LCD Panel Module is made of glass. When handling broken LCD Panel Module, take special care not to be injured.
2. Replacement work should only start after the LCD Panel Module and the AC/DC Power Supply has become sufficiently cool.
3. Take special care of the LCD display panel and do not damage its surface.
4. Do not touch the LCD Panel Module with your bare hands and protect its surface from stains.
5. It is recommended to use clean soft gloves during servicing in order to protect the LCD display panel and the service personnel himself.

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SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

Liquid Crystal Display Television/Monitor

SAFETY NOTICE

Maintenance and repair of this LCD TV/monitor should be done by qualified service personnel only.

Critical parts that have special safety characteristics are identified by a  in the replacement parts list. Use of any substitute replacement part that does not have the same safety characteristics as the recommended replacement part in the parts list might create shock, fire and / or other hazards.

Read and comply with all caution and safety related notes on or inside the LCD/monitor cabinet, the printed circuit boards or the LCD Panel Module. Please note the following safety symbols indicated below.

 CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN 	TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
 This symbol indicates “dangerous voltage” inside the product that presents a risk of electric shock or personal injury.	 This symbol indicates important instructions accompanying the product.

DISPLAY MODES

15” Incoming display mode (input)				
Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)	Pixel Frequency (MHz)	Comment
640 x 480	31.47 (N)	60.00 (N)	25.18	DOS
800 x 600	37.88 (P)	60.32 (P)	40.00	VESA
1024 x 768	48.36 (N)	60.00 (N)	65.00	VESA

20” Incoming display mode (input)				
Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)	Pixel Frequency (MHz)	Comment
640 x 480	31.47 (N)	60.00 (N)	25.18	DOS
800 x 600	37.88 (P)	60.32 (P)	40.00	VESA

- * Modes, which are not listed in the above table, may not be supported. For an optimal picture it is recommended to choose a mode listed in the table.
- * For 15” model, there are 3 types of incoming display modes compatible with Windows as shown in the tables above.
- * For 20” model, there are 2 types of incoming display modes compatible with Windows as shown in the table above.
- * Sometimes, the image may be disrupted due to the frequency standard from the VGA card. However, this is not an error. You may improve this situation by activating the automatic adjustment or by manually changing the phase and the clock settings in the menu.
- * If you switch off the TV/monitor, interference lines may occur on your screen. Please note that this is normal.
- * To extend the service life of the product, we recommend that you use your computer’s power management function.

SPECIFICATIONS

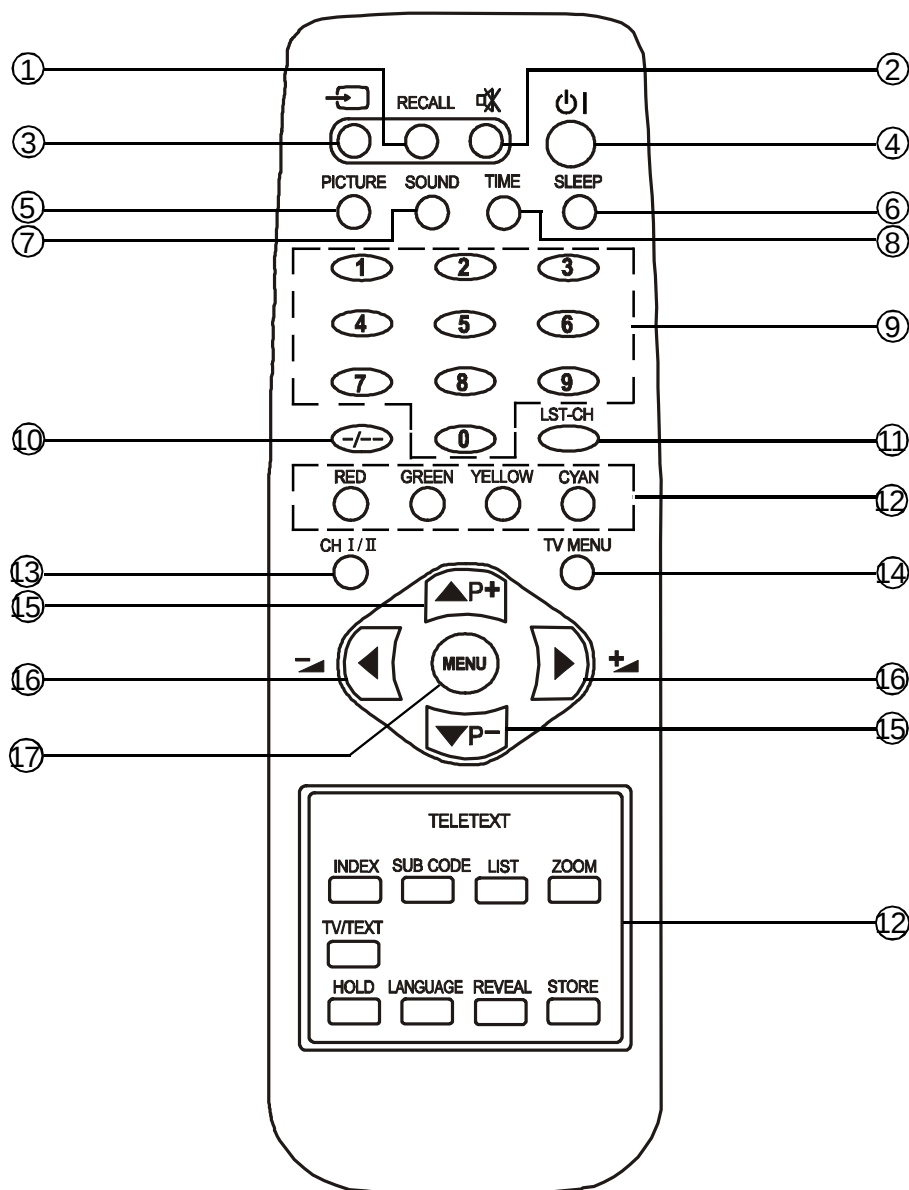
Model		C15-LC880SNT	C20-LC880SNT
Panel	Size Display Size Pixel Pitch Viewing Angle (H/V) Screen Tilt Angle	15.1" 304.1(H) X 228.1(V)mm 0.297(H) X 0.297(V)mm <140° / 125° Front 5° / Rear 15°	20.1" 408(H) X 306(V)mm 0.51(H) X 0.51(V)mm <160° / 140°
Frequency	Horizontal Vertical Contrast Ratio Brightness Display Color	30 ~ 70KHz 50 ~ 75Hz 400:1 400 cd/m ² 16.2Million	500 cd/m ² 16.7Million
Display Resolution	Optimum Mode Maximum Mode	1024 X 768 @ 70Hz 1024 X 768 @ 75Hz	800 X 600 @ 70Hz 800 X 600 @ 75Hz
Input Signal	Sync. Video Signal RGB Signal	H/V Separate, TTL, P. or N. H/V Composite, TTL, P. or N. Sync-on-green 0.3 Vp-p, N. 1 Vp-p @ 75 ohm 0.7Vp-p @ 75 ohm	
TV / Video	Color System Sound System Video Format	PAL / SECAM / NTSC DK / I / BG / M CVBS, S-VIDEO, Y/Pb/Pr	
Power Supply	Input Output (Adapter)	AC 100 - 240Vrms (50Hz / 60Hz) DC 12V / 4.5A	DC 12V / 5.2A
Power Consumption	Typical Power Saving	<54W <3W	<65W <3W
Dimensions (WxHxD) Weight		390 X 401 X 188mm 5.3Kg	552 X 460 X 188mm 8.4Kg
Environmental Considerations	Operating Temperature Operating Humidity Storage Temperature Storage Humidity	50°F to 104°F (10°C to 40°C) 10% to 80% 13°F to 113°F (-25°C to 45°C) 5% to 95%	
Audio Characteristics	Audio Input Frequency Response	RCA Jack Red(R) White(L), 0.5 ± 0.3Vrms RF: 100Hz ~ 12KHz (at ± 3dB) AV : 100Hz ~ 13KHz (at ± 3dB)	

Note:

- * Design and specifications are subject to change without notice.
- * Weight and dimensions shown are approximate values only.

LOCATION OF CONTROL

Remote Control



1. RECALL button

To display setup information of channel

2. MUTE button

To switch on/off sound mute

3. TV/VIDEO button

To select TV, AV1, AV2, S-Video, COMP, VGA or DVI mode

4. STANDBY button

To switch on the LCD TV/monitor when at standby mode or vice versa

5. PICTURE button

To select picture effect mode (Standard/Soft/Custom/Bright)

6. SLEEP button

To on/off sleep mode and set the sleep timer

LOCATION OF CONTROL

7. SOUND button

To select the sound effect mode (Custom/News/Cinema/MusicHall)

8. TIME button

To display the preset time

9. NUMBER buttons

To directly select program number

10. DIGIT button

To select one, two or three-digit program number input options

11. LST-CH button

To return to previously selected program number

12. TELETEXT buttons (OPTIONAL)

These buttons are used for certain models with Teletext functions only. For further details, refer to the “TELETEXT FUNCTION” section in this manual

13. CH I/II button

To switch between NICAM / A2 stereo and mono sound output

14. TV MENU button

To enter the TV menu directly to tune the programs

15. P-/+ (▼/▲) buttons

To select previous / next program and to operate the menu

16. ◀-/+ (◀/▶) buttons

To decrease / increase volume and to adjust the menu

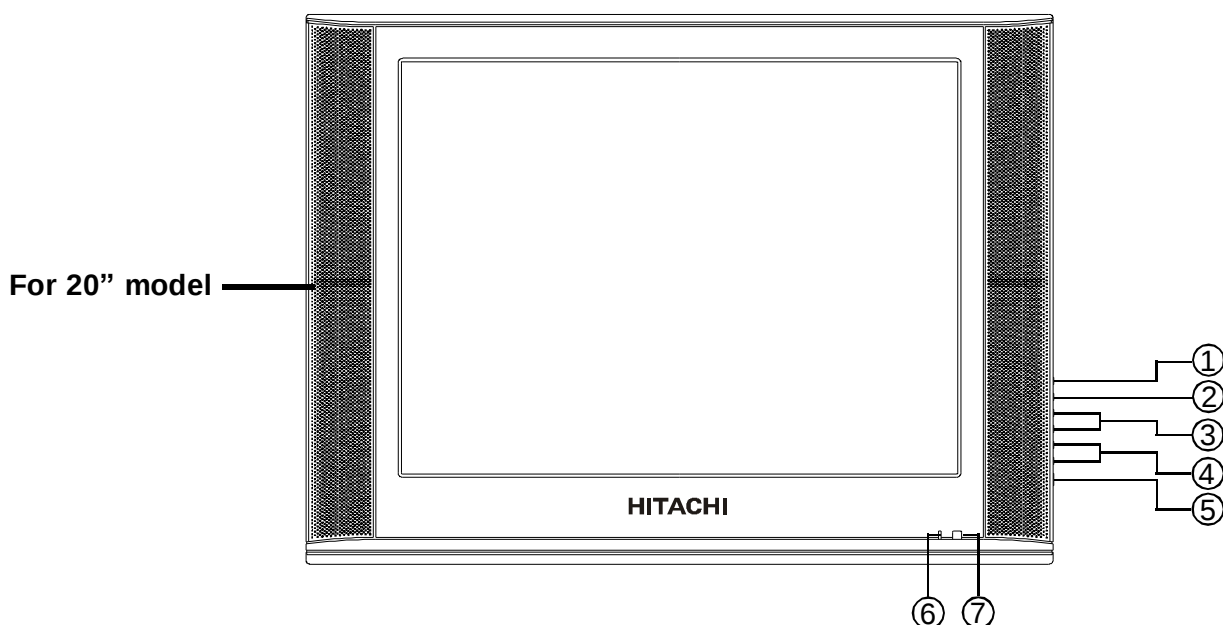
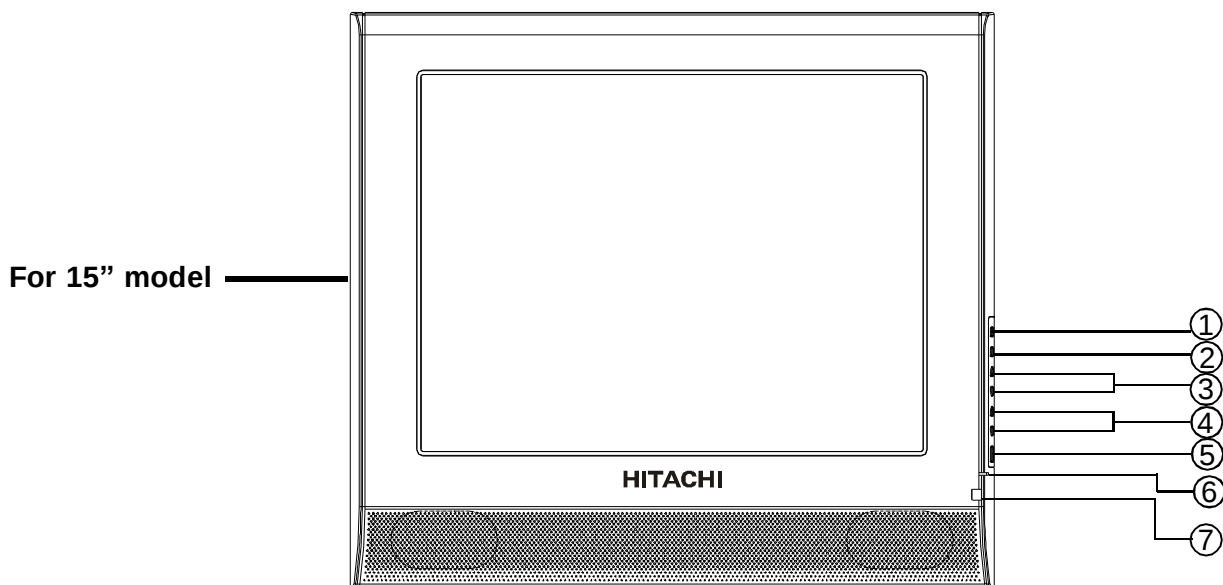
17. MENU button

To enter or exit from the MENU (TV/AV mode)

To accept your selection (PC mode)

LOCATION OF CONTROL

Front and Side Panels



1. TV/VIDEO button

To select TV, AV1, AV2, S-Video, COMP, VGA or DVI mode

2. MENU button

To enter or exit from the menu

3. PROGRAM buttons

To select previous/next program

4. VOLUME buttons

To decrease/increase volume

5. STANDBY button

To switch on when at standby mode or vice versa

6. POWER INDICATOR

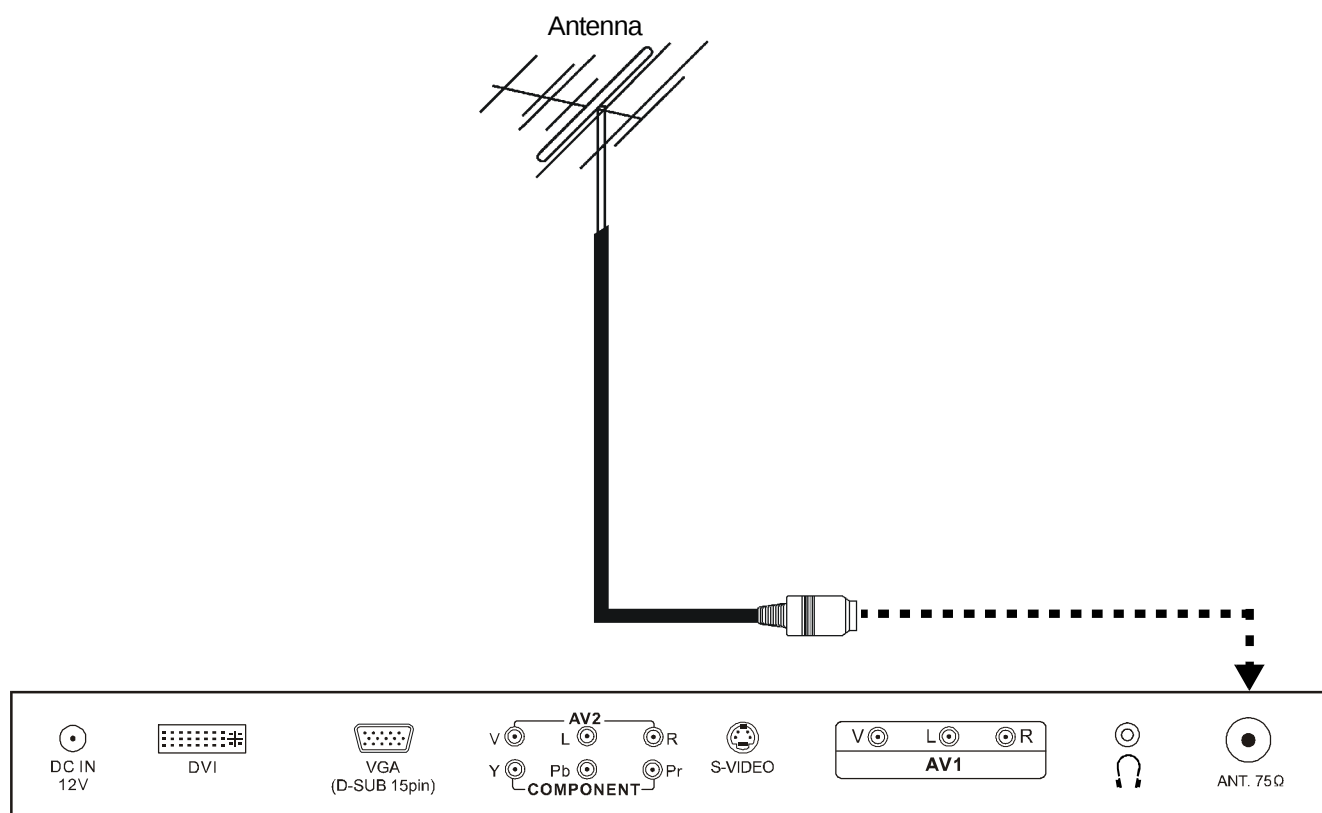
Lights up in red when the set is on standby; Lights up in green when the set is power on

7. REMOTE CONTROL SENSOR

Infrared sensor for the remote control

CONNECTIONS

Connecting The Antenna



Note:

- * Aerial connections: Standard-phono socket 75Ω or F connector.
- * Input impedance: 75Ω unbalanced.
- * For Australia only -Install an external aerial conforming to AS 1417.1 for safety purpose.

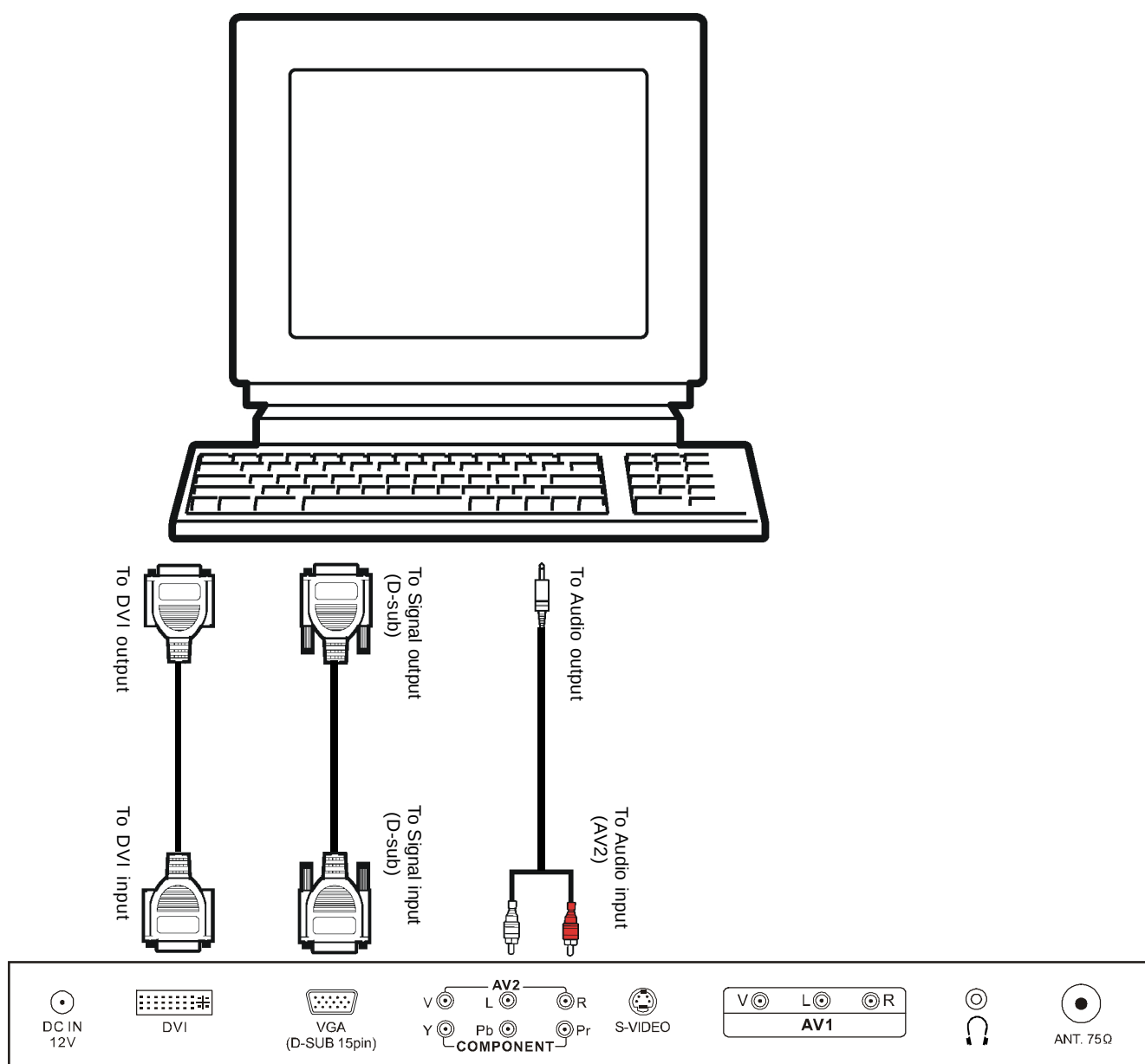
CONNECTIONS

Connecting The PC

STEPS:

1. Switch off all power supplies to the equipment and TV set before connection
2. Connect the signal and audio cables from the computer output terminal to the TV
3. Connect power cord
4. Switch on the TV first, then switch on the computer
5. If the TV still does not function properly, please refer to the troubleshooting section to diagnose the problem.

* Please do not open the cover of the TV



Note:

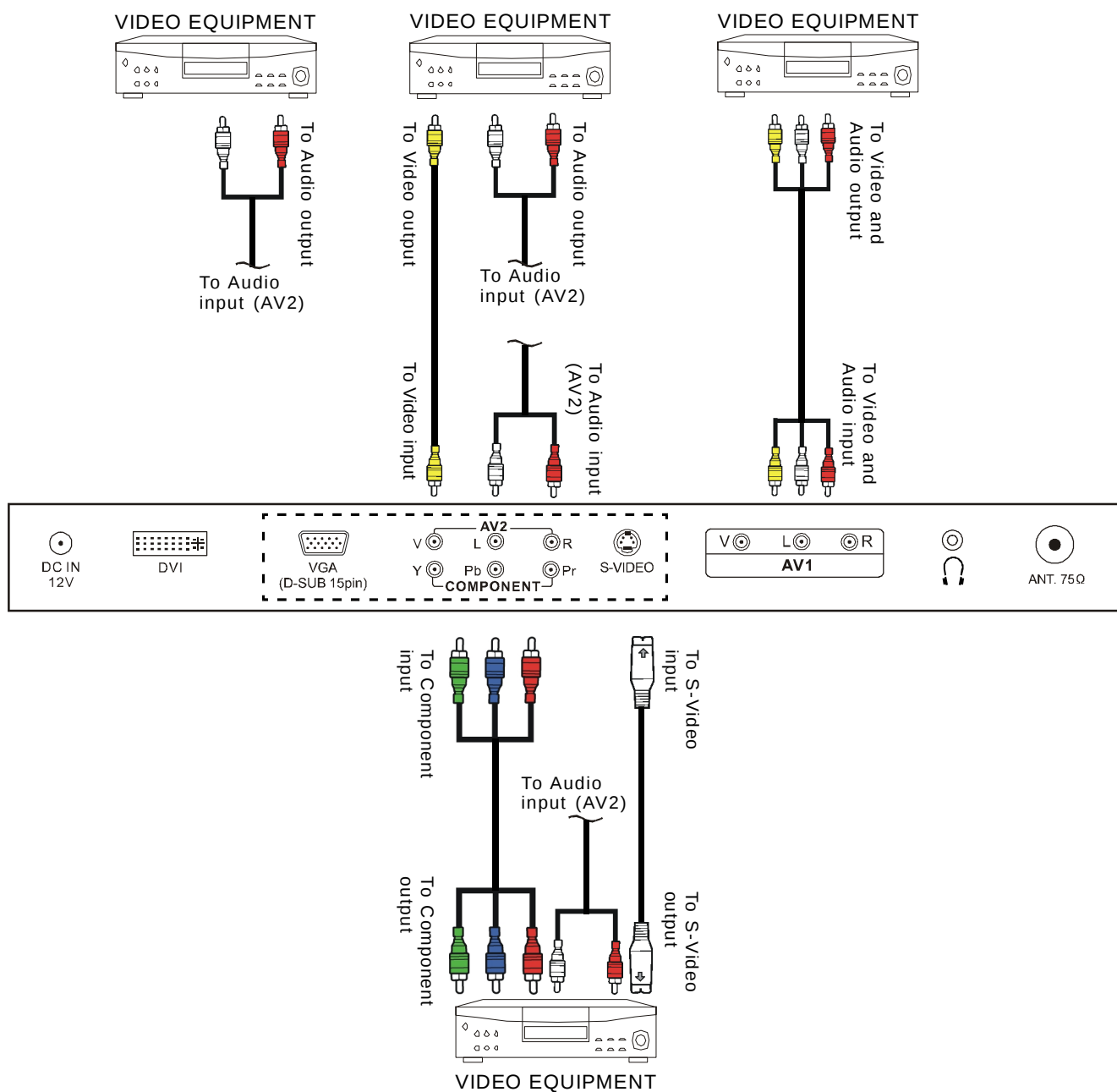
Do not pull the cables. When connecting and disconnecting the cables, do it with your hand holding the connector.

CONNECTIONS

Connecting AV Equipment

This TV set provides AV1, AV2 input terminals, S-Video and a group of Y/Pb/Pr terminal for connection to VCR, VCD, DVD or other video equipment.

Please refer to the instruction manual of the other equipment for more information on the connection to the TV.



Note:

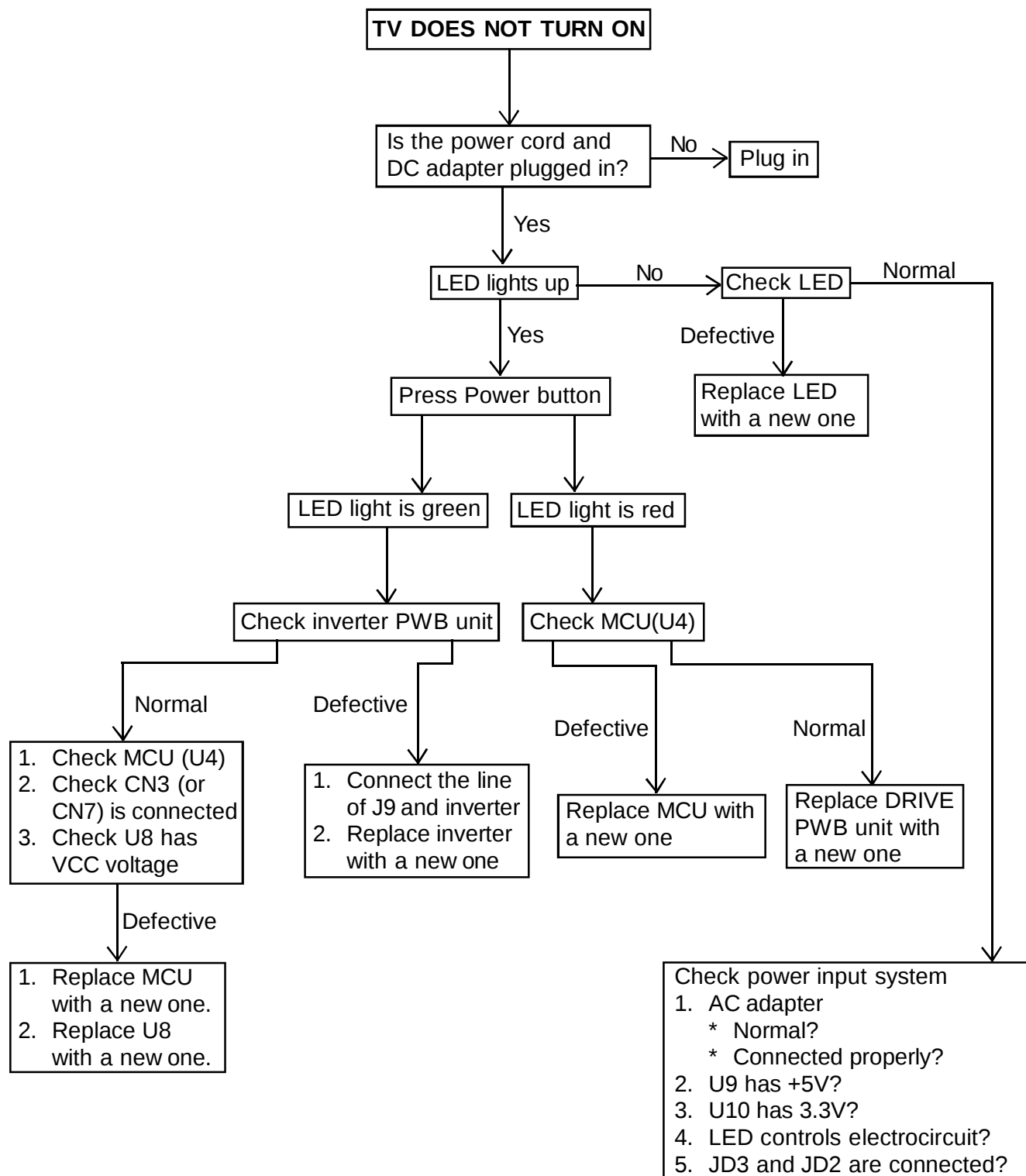
- * Please disconnect all the power supplies to the equipment and TV set before connection.
- * Do not pull the cables. When connecting and disconnecting the cables, do it with your hand holding the connector.
- * Only 1 set of audio cable is to be connected to Audio input terminals of AV2.

FACTORY SETTINGS

1. Press MENU button, then press 3210 using the number button on the remote control to enter into the factory setting.
2. The factory setting menu will be displayed on the screen. The following table is shown when in AV mode:

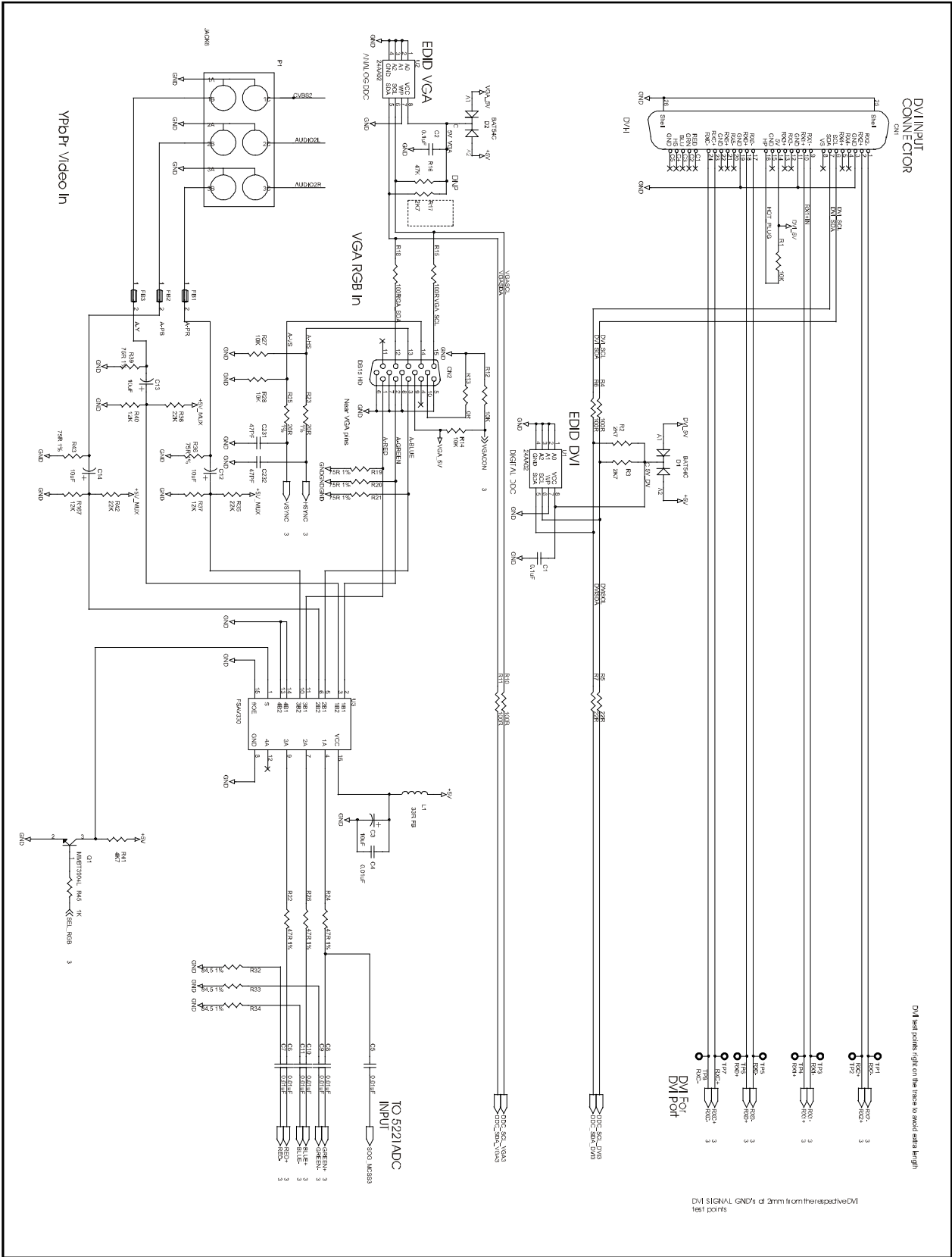
Item	Factory setting	C15-LC880SNT	C20-LC880SNT
1	Basic Setting	Backlight NVRAM Addr NVRAM Val	50
2	Color Setting	Auto Adjust Red Green Blue Red Offset Green Offset Blue Offset Min Volume Max Volume	0 0 0 0 0 0 0 0 68
3	Sound Setting	Dot1 X Pos Dot1 Y Pos Dot2 X Pos Dot2 Y Pos	31 69 62 81
4	4200K 5000K Warm	Brightness Contrast Red Green Blue	128 128 247 237 237
5	STANDARD	Brightness Contrast Red Green Blue	128 128 255 255 255
6	COOL	Brightness Contrast Red Green Blue	128 126 224 228 251
7	CUSTOM	Brightness Contrast Red Green Blue	128 128 255 255 255
8	Advanced Setting	Factory Mode Power Mode Panel Index Decder SatHue Enable Zoom Enable SCART P 1 Enable DVI Port Factory Reset	1 1 34 0 1 1 1 1
9	Version Info	V1.9-C15-LC880SNT ADDC:V8-L15GC1-A1D01 DDDC:V8-L15GC1-A1D02	V1.9-C20-LC880SNT ADDC:V8-L20GC1-A1D01 DDDC:V8-L20GC1-A1D02

TROUBLESHOOTING



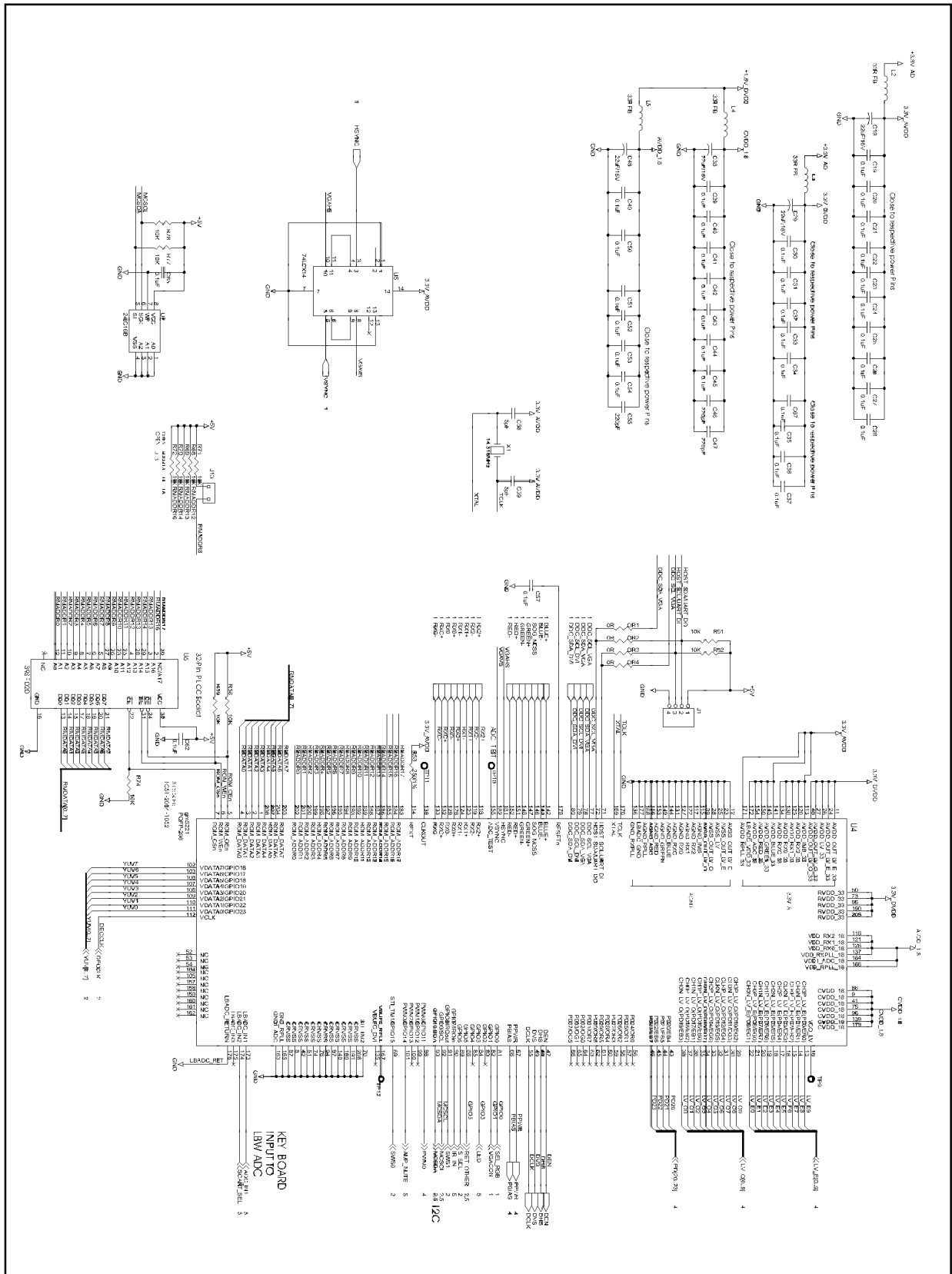
SCHEMATIC DIAGRAMS

Main Diagram-1



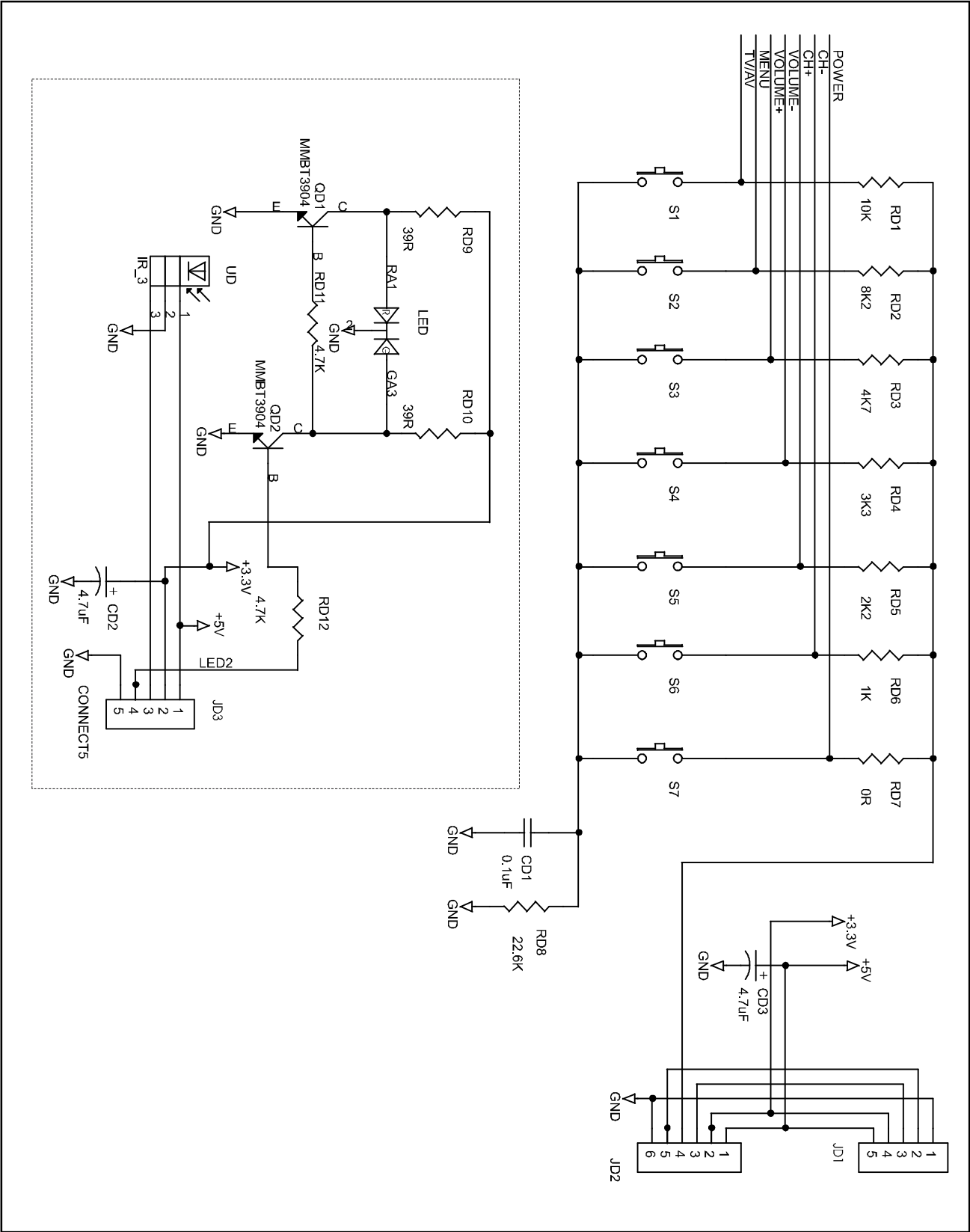
SCHEMATIC DIAGRAMS

Main Diagram-2



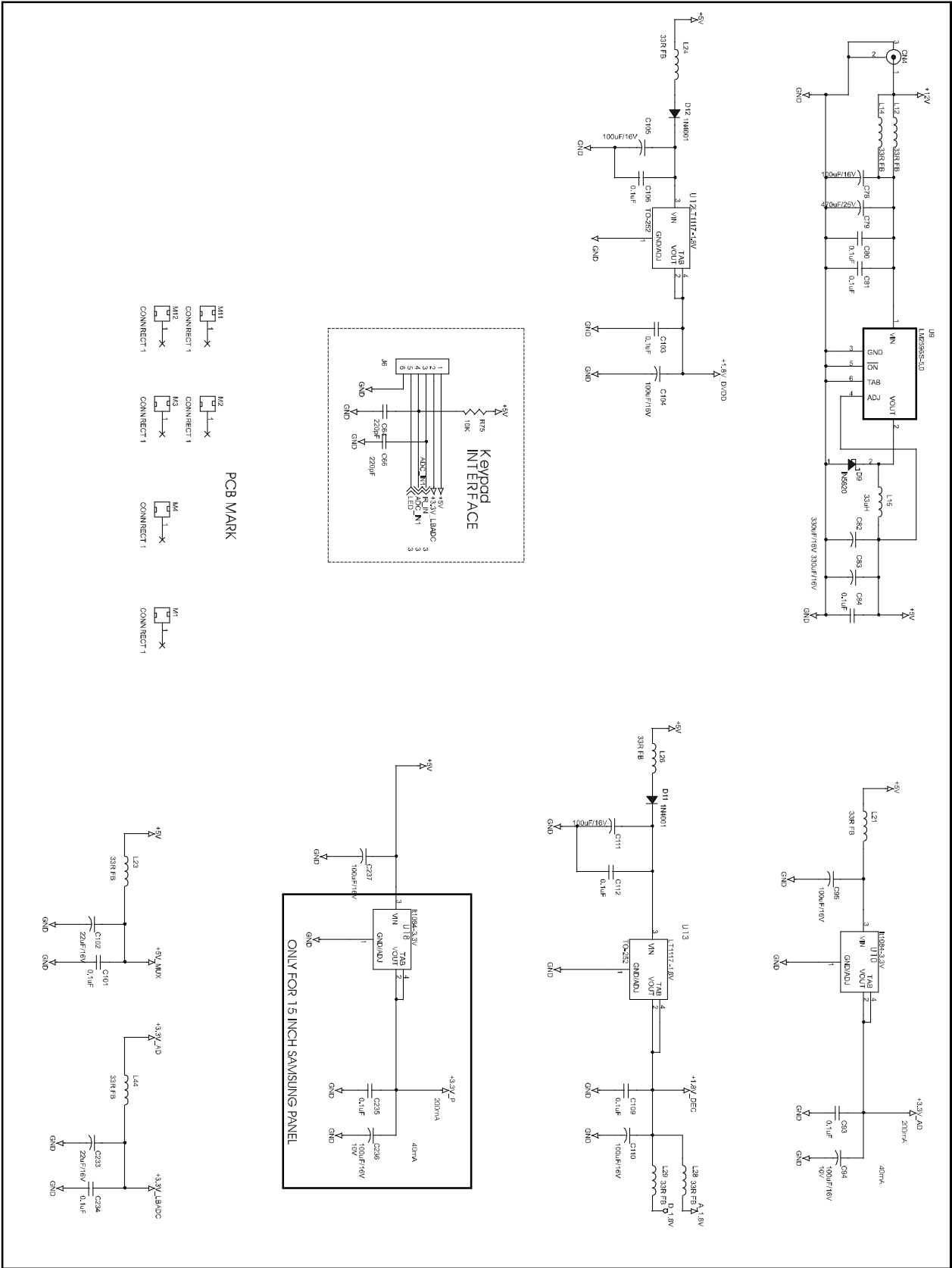
SCHEMATIC DIAGRAMS

Control Keys Diagram



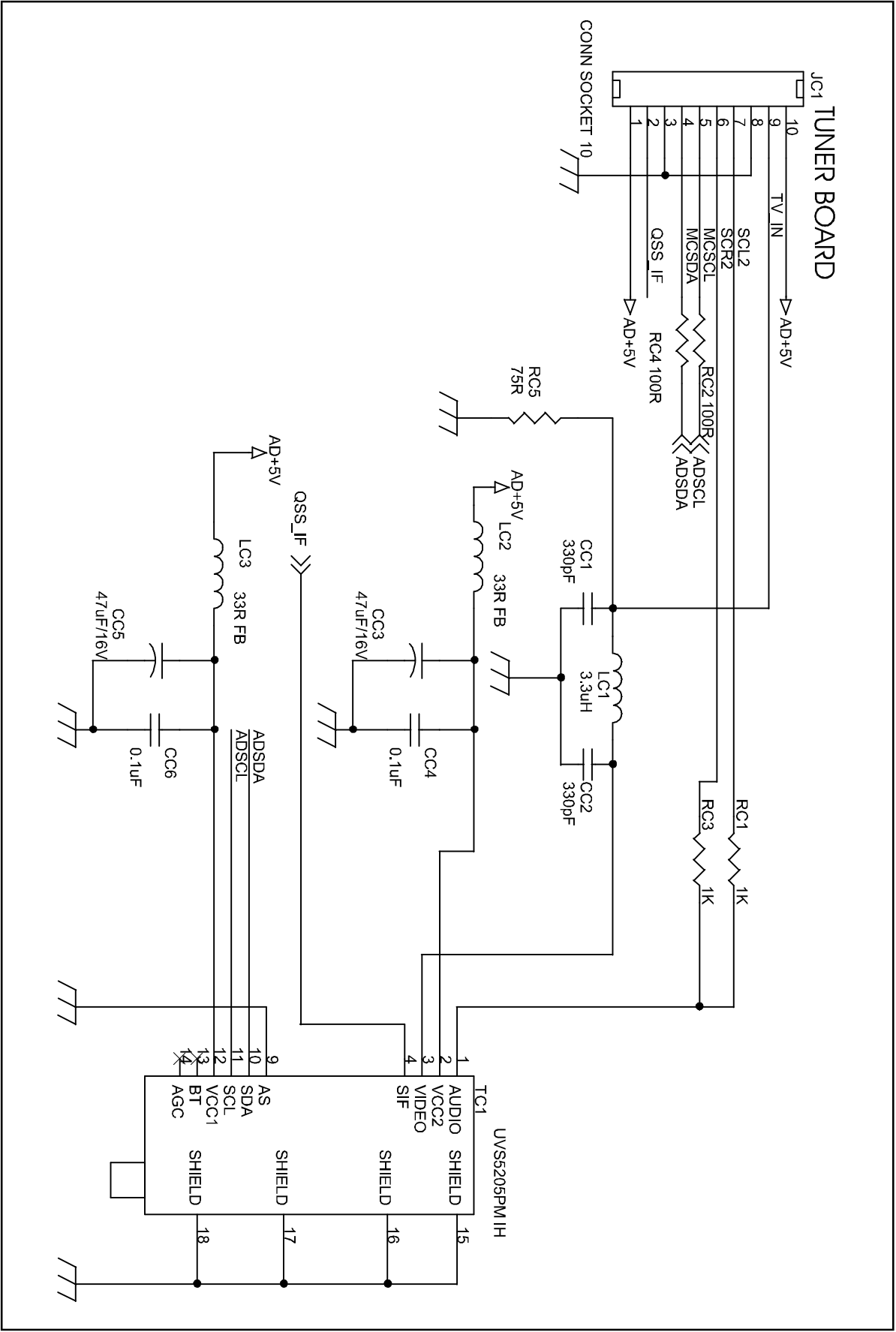
SCHEMATIC DIAGRAMS

Power Diagram



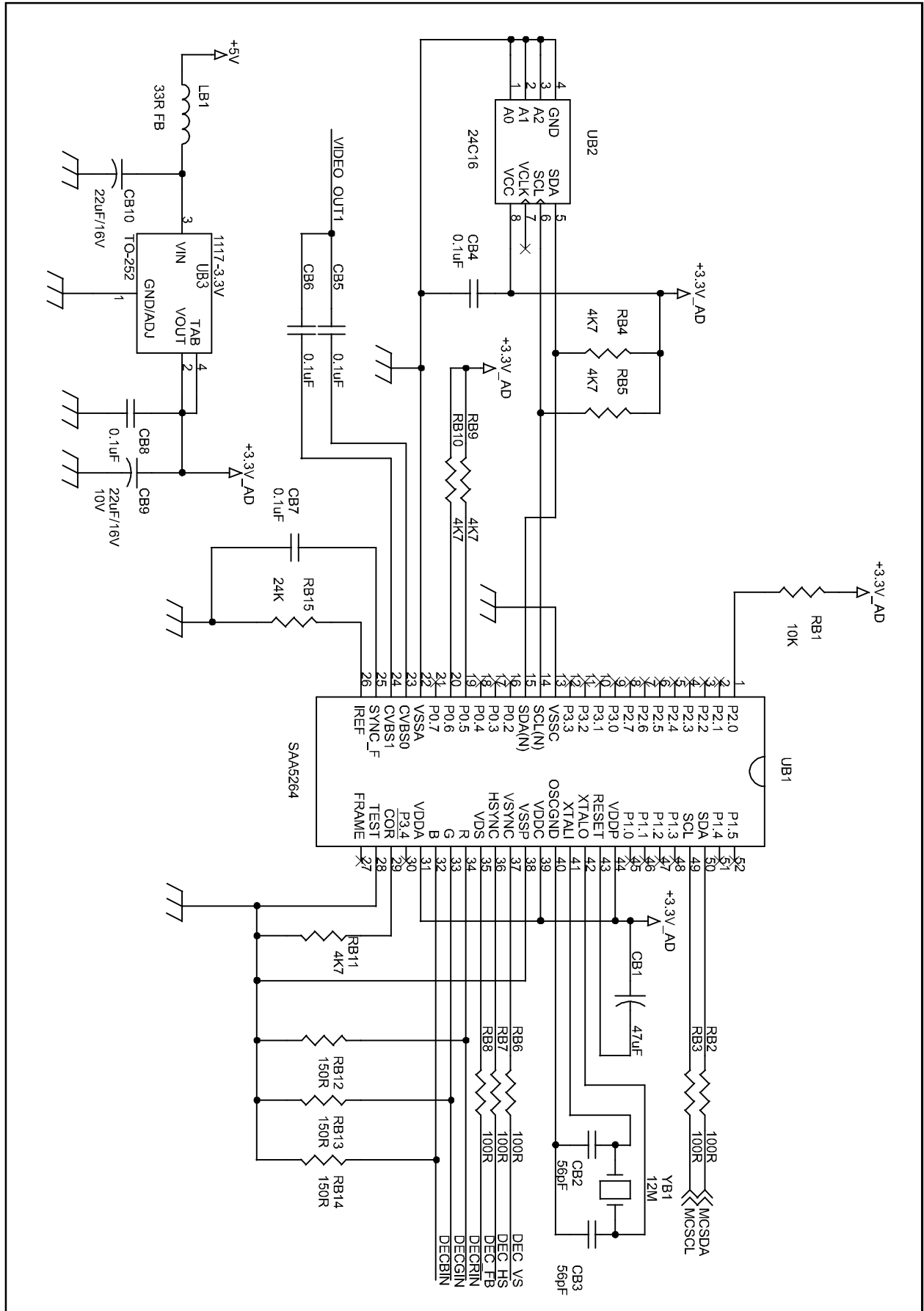
SCHEMATIC DIAGRAMS

Tuner Diagram

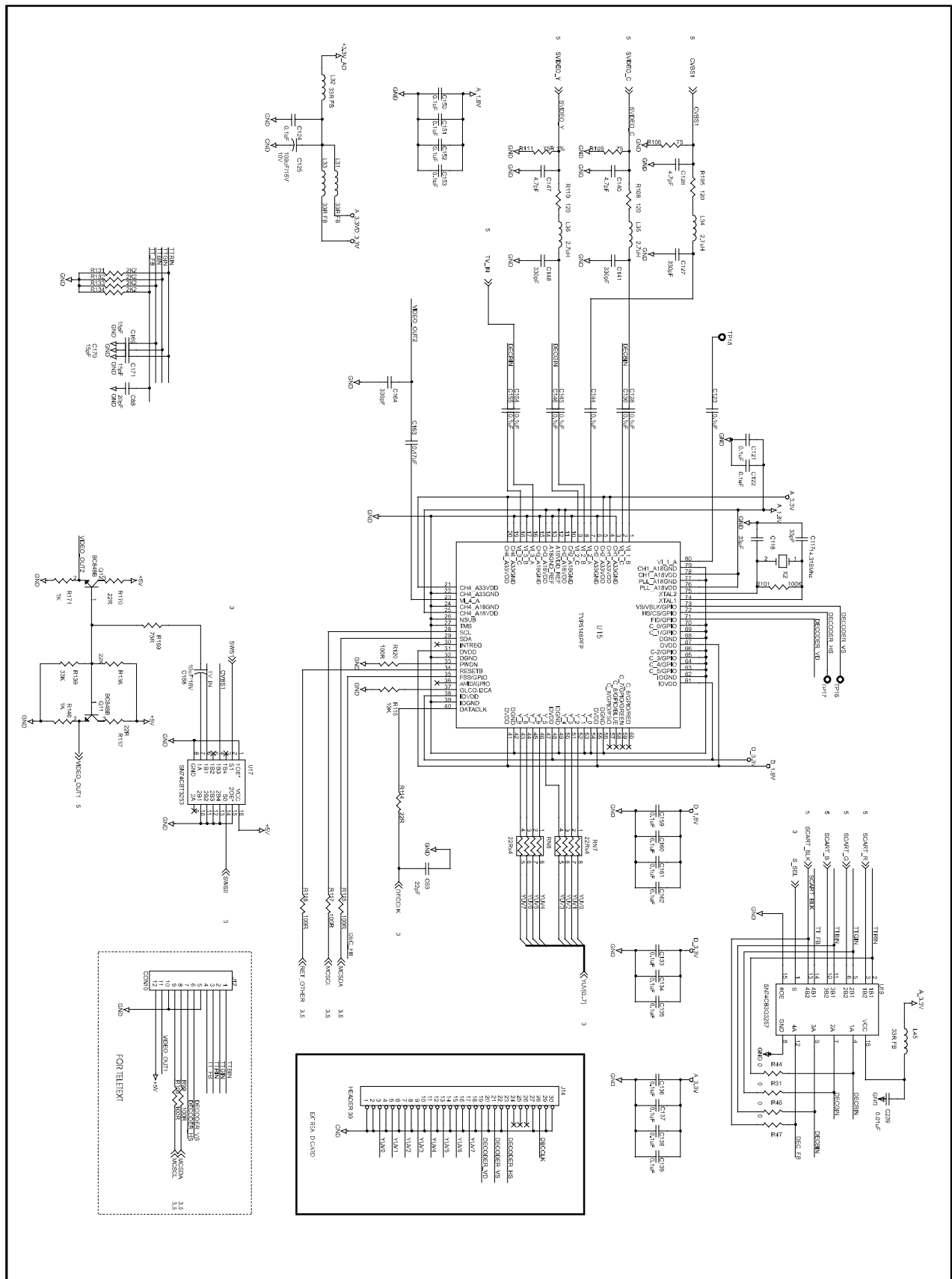


SCHEMATIC DIAGRAMS

Teletext Diagram

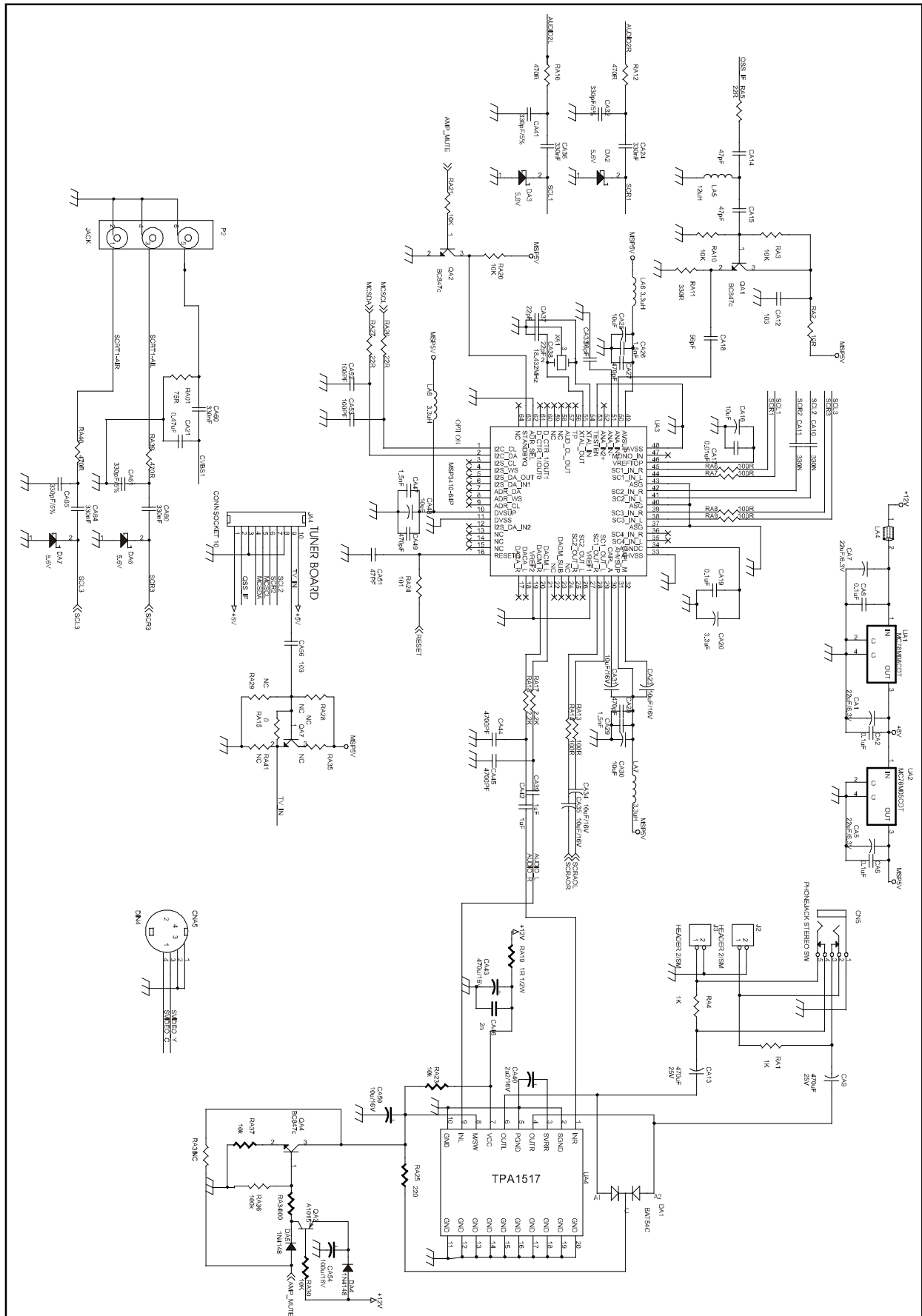


Video Decoder Diagram

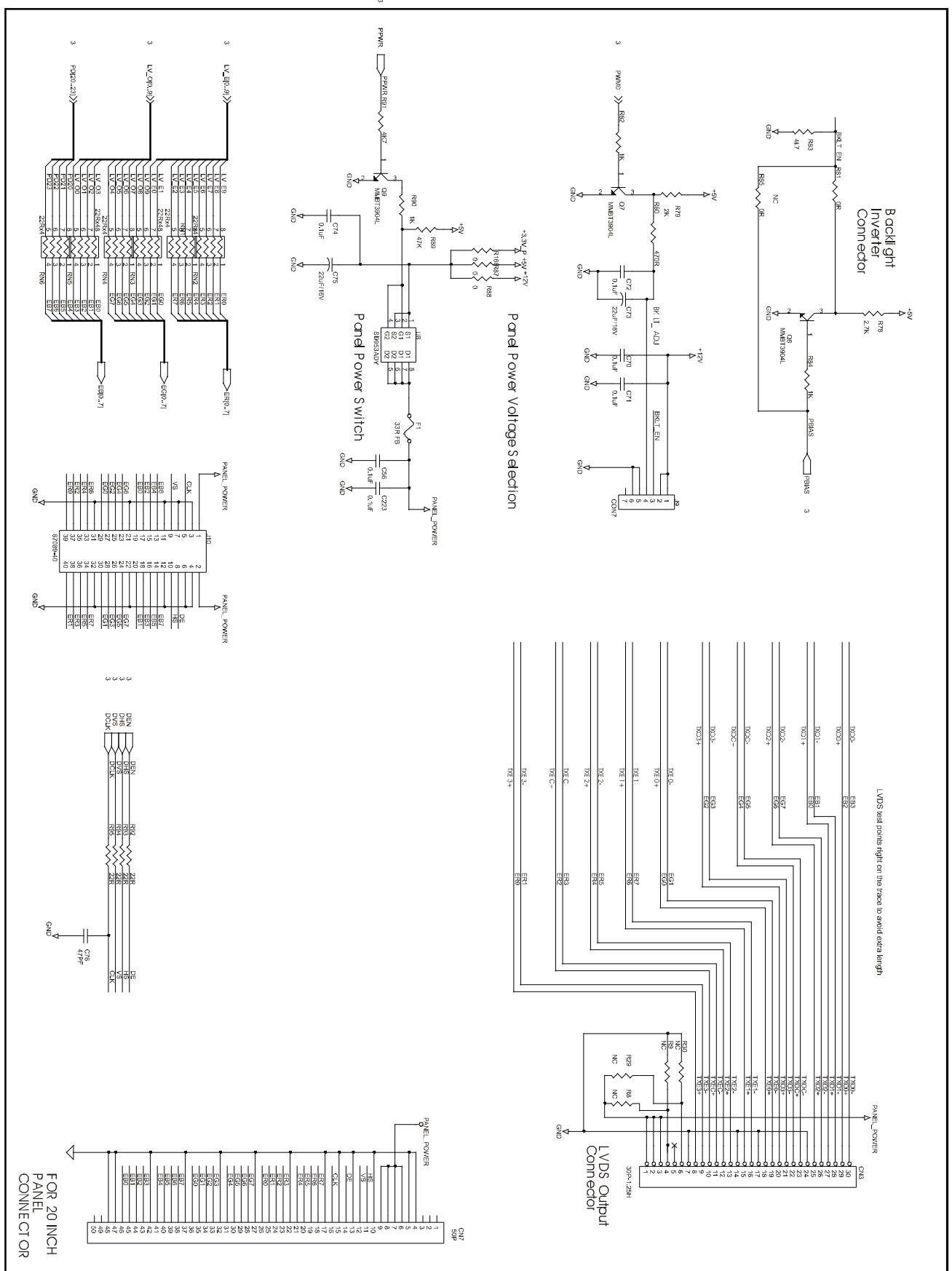


SCHEMATIC DIAGRAMS

Audio And CONN Diagram

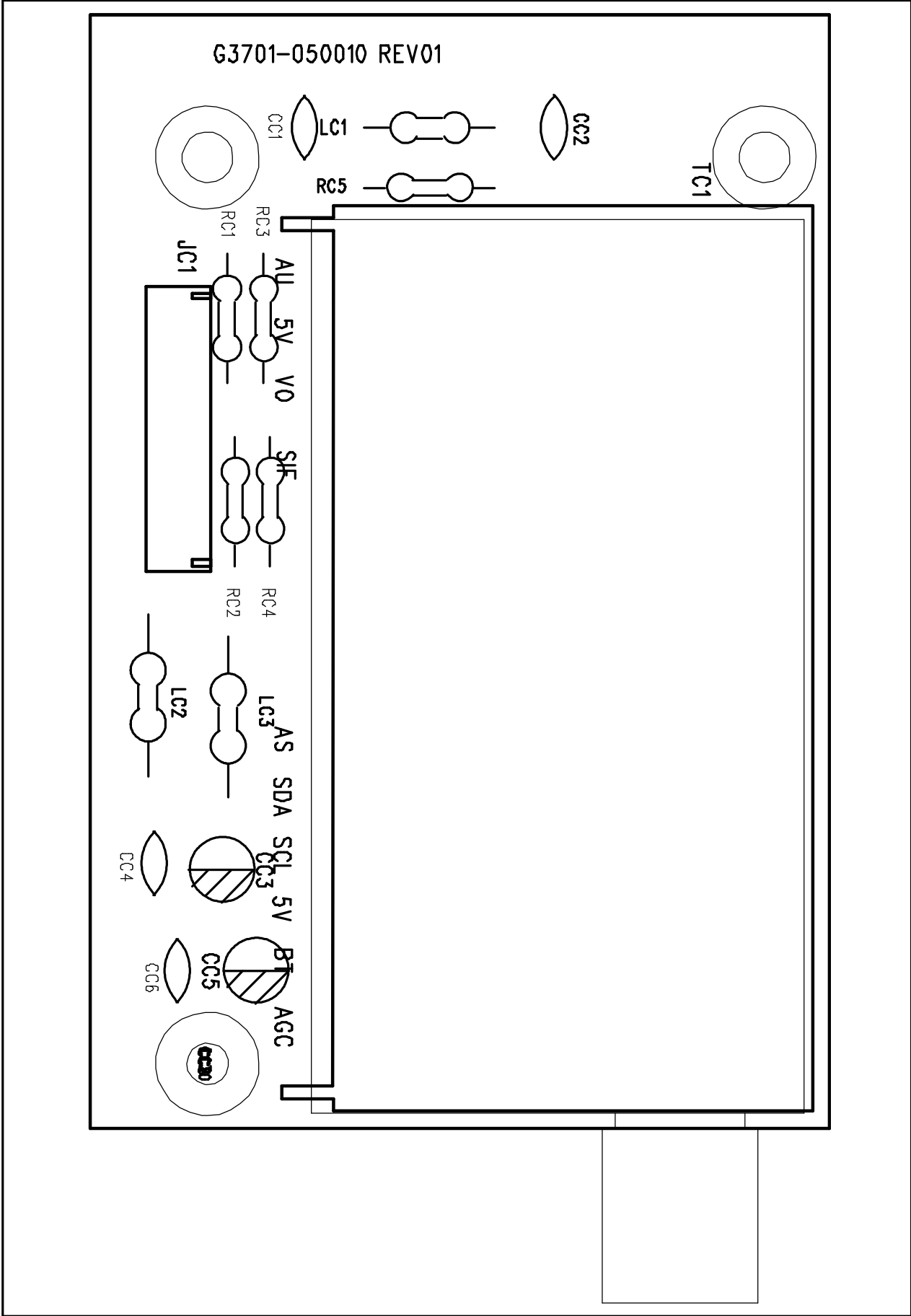


Lvds_ttl-out Diagram

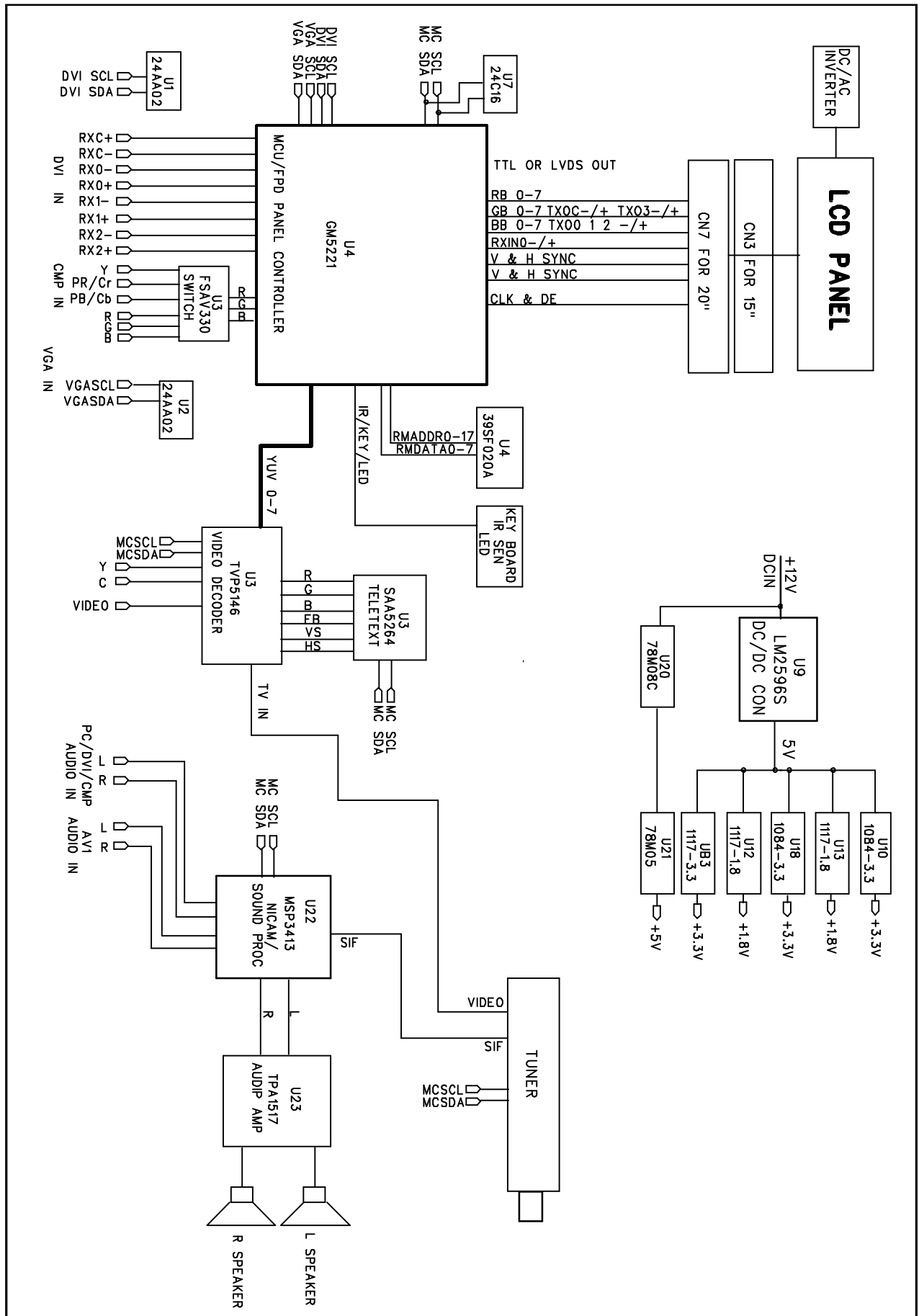


PRINTED CIRCUIT BOARD

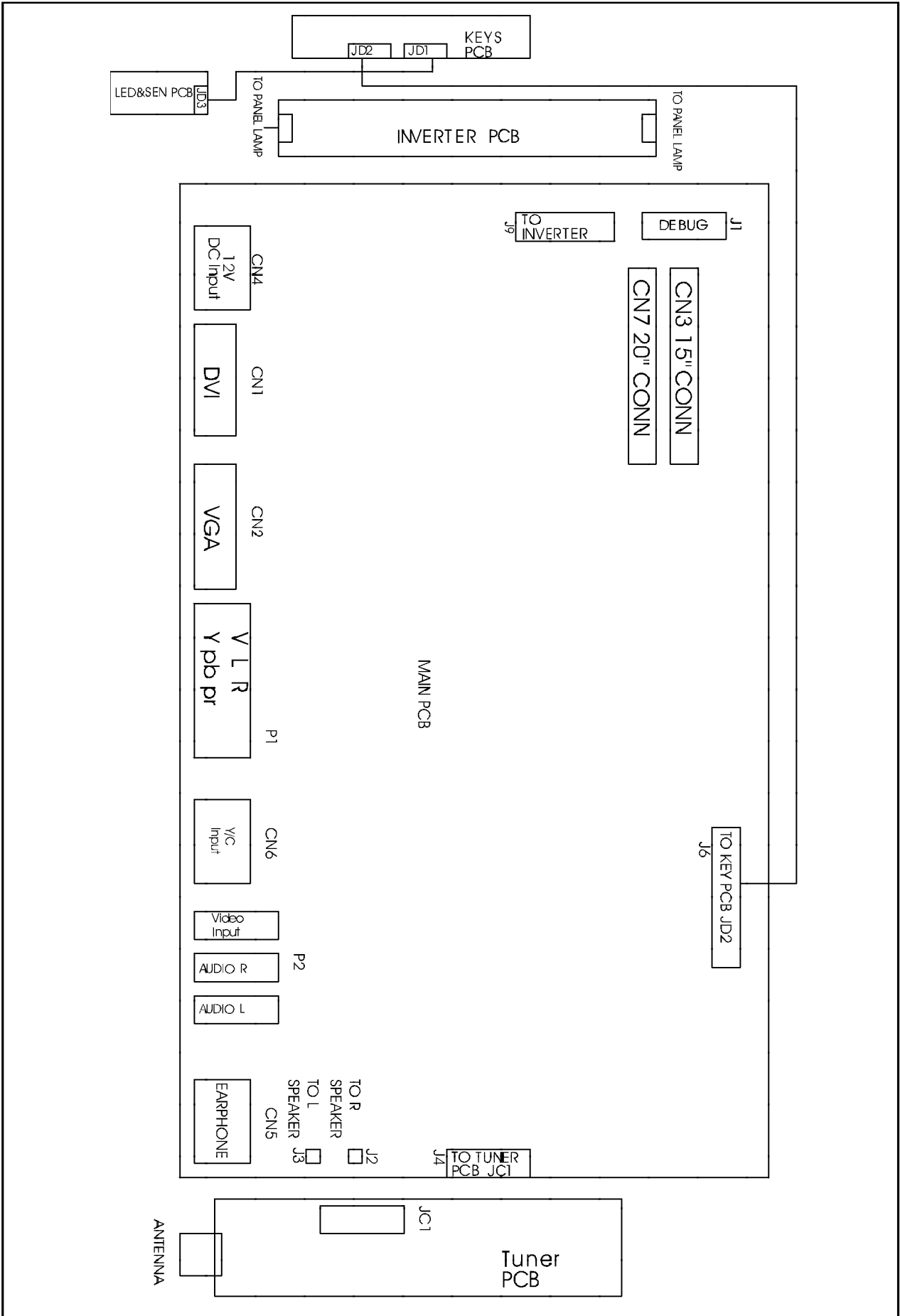
Tuner Board (Top Side)



BLOCK DIAGRAM



WIRING DIAGRAM



INFORMATION OF ICS

IC MC78M05 D-PAK

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	Input	Output Voltage	3	Output	Output Voltage
2	GND				

IC LM1117DTX-3.3 TO-252

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	Input	Output Voltage	3	Adi/GND	Output Voltage
2	Output				

IC LM1084ISX-3.3 TO263

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	Input	Output Voltage	3	Adi/GND	Output Voltage
2	Output				

IC LM2596S-5.0 TO-263

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	V _{IN}		4	Feed Back	
2	Output		5	ON/OFF	
3	Ground				

IC SN74CBT3253CDBQR SSOP16

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	1 $\overline{OE}$		9	2A	
2	S ₁		10	2B ₁	
3	1B ₄		11	2B ₂	
4	1B ₃		12	2B ₃	
5	1B ₂		13	2B ₄	
6	1B ₁		14	S ₀	
7	1A		15	2 $\overline{OE}$	
8	GND		16	V _{CC}	

IC24LC16BT SOIC08

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	A ₀		5	SDA	
2	A ₁		6	SCL	
3	A ₂		7	WP	
4	V _{SS}		8	V _{CC}	

IC FDS9933A SO-8

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	S ₁	Source Voltage	5	D ₂	Drain-Source Voltage
2	G ₁	Gate-Source Voltage	6	D ₂	Drain-Source Voltage
3	S ₂	Source Voltage	7	D ₁	Drain-Source Voltage
4	G ₂	Gate-Source Voltage	8	D ₁	Drain-Source Voltage

IC 24AA02 SOIC08

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	A ₀		5	SDA	
2	A ₁		6	SCL	
3	A ₂		7	WP	
4	V _{SS}		8	V _{CC}	

INFORMATION OF ICS

IC FSAV330 QS0P16

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	S		9	3A	
2	1B ₁		10	3B ₂	
3	1B ₂		11	3B ₁	
4	1A		12	4A	
5	2B ₁		13	4B ₂	
6	2B ₂		14	4B ₁	
7	2A		15	$\overline{OE}$	
8	GND		16	V _{CC}	

IC 74LCX14 S0IC14

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	I ₀	Inputs	8	$\overline{O}_3$	Outputs
2	$\overline{O}_0$	Outputs	9	I ₃	Inputs
3	I ₁	Inputs	10	$\overline{O}_4$	Outputs
4	$\overline{O}_1$	Outputs	11	I ₄	Inputs
5	I ₂	Inputs	12	$\overline{O}_5$	Outputs
6	$\overline{O}_2$	Outputs	13	I ₅	Inputs
7	GND	Inputs	14	V _{CC}	

IC SST39SF020A PLCC32

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	AMS ¹ - A ₀	Address Inputs	5	WE#	Write Enable
2	DQ ₇ -DQ ₀	Data Input/output	6	V _{DD}	Power Supply
3	CE#	Chip Enable	7	V _{SS}	Ground
4	OE#	Output Enable	8	NC	No Connection

IC GM5221 PQFP-208 (DVI Input Port)

Pin No.	Pin Name	Description
113	AVDD_IMB_3.3	Analog VDD(3.3V) for internal biasing circuits. Must be bypassed with capacitors
114	REXT	External termination resistor. A 1% 250 Ω , resistor should be connected from this pin to AVDD_IMB
115	AGND_IMB	Analog GND for internal biasing circuits. Must be connected directly to the ground plane.
116	VDD_RX2_1.8	VDD(1.8V) for TMDS input pair 2. Must be bypassed with external capacitor to GND_RX2.
117	AGND_RX2	Analog GND for TMDS input pair 2. Must be connected directly to the analog ground plane.
118	RX2+	TMDS input pair2
119	RX2-	TMDS input pair2
120	AVDD_RX2_3.3	Analog VDD(3.3V) for TMDS input pair 2. Must be bypassed with capacitor to AGND_RX2.
121	VDD_RX1_1.8	VDD(1.8V) for TMDS input pair 2. Must be bypassed with external capacitor to GND_RX1.
122	AGND_RX1	Analog GND for TMDS input pair 1. Must be connected directly to the analog ground plane.
123	RX1+	TMDS input pair 1
124	RX-	TMDS input pair 1
125	AVDD_RX1_3.3	Analog VDD (3.3V) for TMDS input pair 2. Must be bypassed with to AGND_RX1.

INFORMATION OF ICS

IC GM5221 PQFP-208 (DVI Input Port)

Pin No.	Pin Name	Description
126	VDD_RX0_1.8	VDD (1.8V) for TMDS input pair 2. Must be bypassed with external capacitor to GND_RX0
127	AGND_RX0	Analog GND for TMDS input pair 0. Must be connected directly to the analog ground plane.
128	RX0+	TMDS input pair 0
129	RX0-	TMDS input pair 0
130	AVDD_RX0_3.3	Analog VDD (3.3V) for TMDS input pair 2. Must be bypassed with capacitor to AGND_RX0
131	AGND_RXC	Analog GND for TMDS input clock pair. Must be connected directly to the analog ground plane.
132	RXC+	TMDS input clock pair
133	RXC-	TMDS input clock pair
134	AVDD_RXC_3.3	Analog VDD (3.3V) for TMDS input clock pair. Must be bypassed with 100pF capacitor to AGND_RXC.
136	GND_RXPLL	Analog GND for the TMDS receiver internal PLL. Must be connected directly to the analog ground plane.
137	VDD_RXPLL_1.8	Analog VDD (1.8V) for the TMDS receiver internal PLL. Must be bypassed with a capacitor to AGND_RXPLL.
138	CLK_OUT	Reserved, unconnected.

IC GM5221 PQFP-208 (RCLK PLL Pins)

Pin No.	Pin Name	Description
165	GND_RPLL	Digital GND for ADC clocking circuit. Must be directly connected to the digital system ground plane.
166	VDD_RPLL_1.8	Digital power (1.8V) for ADC digital logic. Must be bypassed with capacitor to GND1_ADC.
168	AGND_RPLL	Analog ground for the Reference DDS PLL. Must be directly connected to the analog system ground plane.
169	XTAL	Crystal oscillator output.
170	TCLK	Reference clock (TCLK) from the 14.3MHz crystal oscillator.
171	AVDD_RPLL_3.3	Analog VDD (3.3V)

IC GM5221 PQFP-208 (Input Video Port)

Pin No.	Pin Name	Description
112	VCLK	Video port data clock input. Up to 75Mhz [Input, 5V-tolerant]
111	GPIO23/VDATA0	Input YUV data in 8-bit BT656 or GPIO23:16 if VPORT is disabled. [Bi-Directional, 5V-tolerant]
110	GPIO22/VDATA1	
109	GPIO21/VDATA2	
108	GPIO20/VDATA3	
107	GPIO19/VDATA4	
106	GPIO18/VDATA5	
103	GPIO17/VDATA6	
102	GPIO16/VDATA7	

INFORMATION OF ICS

IC GM5221 PQFP-208 (Analog Input Port)

Pin No.	Pin Name	Description
141	AVDD_BLUE_3.3	Analog power (3.3V) for the blue channel. Must be bypassed with capacitor to AGND_BLUE pin on system board.
142	BLUE+	Positive analog input for Blue channel.
143	BLUE-	Negative analog input for Blue channel.
144	AGND_BLUE	Analog ground for the blue channel. Must be directly connected to the analog system ground plane.
145	AVDD_GREEN_3.3	Analog power (3.3V) for the green channel. Must be bypassed with capacitor to AGND_GREEN pin on system board.
146	SOG_MCSS	Dedicated Sync-on-Green pin. NOTE: This pin requires the same AC-couple capacitor (if applicable) like the regular RGB input pins.
147	GREEN+	Positive analog input for Green channel.
148	GREEN-	Negative analog input for Green channel. NOTE: For SOG support this pin should be pulled down to GND through a 1M Ω resistor.
149	AGND_GREEN	Analog ground for the green channel. Must be directly connected to the analog system ground plane.
150	AVDD_RED_3.3	Analog power (3.3V) for the red channel. Must be bypassed with capacitor to AGND_RED pin on system board.
151	RED+	Positive analog input for Red channel.
152	RED-	Negative analog input for Red channel.
153	AGND_RED	Analog ground for the red channel. Must be directly connected to the analog system ground plane.
154	AVDD_ADC_3.3	Analog power (3.3V) for ADC Analog blocks that are shared by all three channels. Includes bandgap reference, master biasing and full scale adjust. Must be bypassed with capacitor to AGND_ADC pin on system board.
156	AGND_ADC	Analog ground for ADC analog blocks that are shared by all three channels. Includes bandgap reference, master biasing and full scale adjust. Must be directly connected to analog system ground plane.
163	GND1_ADC	Digital GND for ADC clocking circuit. Must be directly connected to the digital system ground plane.
164	VDD1_ADC_1.8	Digital power (1.8V) for ADC encoding logic. Must be bypassed with capacitor to GND1_ADC pin on system board.
181	HSYNC/CSYNC	ADC input horizontal sync or composite sync input. [Input, Schmitt trigger with 1V hysteresis and 1.65V threshold. 5V-tolerant]
182	VSYNC	ADC input vertical sync. [Input, Schmitt trigger with 1V hysteresis and 1.65V threshold. 5V-tolerant]

INFORMATION OF ICS

IC GM5221 PQFP-208 (System Interface)

Pin No.	Pin Name	Description
81	GPIO0	General-purpose input/output signals [Bi-directional, Schmitt trigger, 5V-tolerant]
82	GPIO1	
83	GPIO2	
84	GPIO3	
85	GPIO4	
88	GPIO5	
89	GPIO6	
90	GPIO7/IRQin	General-purpose input/output signals [Bi-directional, Schmitt trigger, 5V-tolerant] or OCM interrupt and chip status.
91	GPIO8/IRQout	
92	GPIO9/SCL	General-purpose input/output signals [Bi-directional, Schmitt trigger, 5V-tolerant] or master device on serial interface bus.
93	GPIO10/SDA	
98	GPIO11/PWM0	General-purpose input/output signals or PWM signals. [Bi-directional, Schmitt trigger, 5V-tolerant]
99	GPIO12/PWM1	
100	GPIO13/PWM2	
101	GPIO14/PWM3	
69	GPIO15	General-purpose input/output signals [Bi-directional, Schmitt trigger, 5V-tolerant]
77	DDC_SCL_VGA	DDC2Bi clock for VGA Port
78	DDC_SDA_VGA	DDC2Bi data for VGA Port [internal 10K Ω , pull-up resistor]
79	DDC_SCL_DVI	DDC2Bi and HDCP clock for DVI Port
80	DDC_SDA_DVD	DC2Bi and HDCP data for DVI Port [internal 10K Ω , pull-up resistor]
178	RESETn	Hardware Reset (active low) [Schmitt trigger, 5V-tolerant] Connect to ground with 0.01uF (or larger) capacitor. See section, Chip Initialization, for detail
172	LBADC_VDD_3.3	Analog 3.3V power supply for general-purpose ADC
173	LBADC_IN1	LBADC channel 1
174	LBADC_IN2	LBADC channel 2
175	LBADC_IN3	LBADC channel 3
176	LBADC_RETURN	Analog Ground (signal return path) for LBADC channels 1, 2 and 3
177	LBADC_GND	Ground
71	HOST_SCLUART_DI	Host input clock or 186 UART Data In or JTAG clock signal. [Input, Schmitt trigger, 5V-Tolerant]
72	HOST_SCLUART_DO	Host input data or 186 UART Data out or JTAG mode signal. [Bi-directional, Schmitt trigger, slew rate limited, 5V-Tolerant]
66	JTAG_TDI JTAG	Data input signal.
64	JTAG_TDO	JTAG data output signal.
56	JTAG_RESET	JTAG reset signal.

INFORMATION OF ICS

IC GM5221 PQFP-208 (LVDS Display Interface)

Pin No.	Pin Name	Description
11	AVDD_LV_E_3.3	Digital Power for LVDS outputs. Connect to digital 3.3V supply.
12	AVSS_LV_E	Ground for LVDS outputs.
13	CH3P_LV_E	
14	CH3N_LV_E	
15	CLKP_LV_E	
16	CLKN_LV_E	
17	CH2P_LV_E	
18	CH2N_LV_E	
19	CH1P_LV_E	
20	CH1N_LV_E	
21	CH0P_LV_E	
22	CH0N_LV_E	
23	AVSS_LV_E	Ground for LVDS outputs.
24	AVDD_LV_E_3.3	Digital Power for LVDS outputs. Connect to digital 3.3V supply.
25	AVSS_LV	Ground for LVDS outputs.
26	AVDD_LV_3.3	Analog Power for LVDS outputs. Connect to analog 3.3V supply.
27	AVDD_LV_O_3.3	Digital Power for LVDS outputs. Connect to digital 3.3V supply.
28	AVSS_LV_O	Ground for LVDS outputs.
29	CH3P_LV_O	
30	CH3N_LV_O	
31	CLKP_LV_O	
32	CLKN_LV_O	
33	CH2P_LV_O	
34	CH2N_LV_O	
35	CH1P_LV_O	
36	CH1N_LV_O	
37	CH0P_LV_O	
38	CH0N_LV_O	
39	AVSS_LV_O	Ground for LVDS outputs.
40	AVDD_LV_O_3.3	Digital Power for LVDS outputs. Connect to digital 3.3V supply.
67	PPWR	Panel Power Control [Tri-state output, 5V-tolerant]
68	PBIAS	PANEL Bias Control (backlight enable) [Tri-state output, 5V- tolerant]
43	RESERVED	Reserved, unconnected.
44	RESERVED	Reserved, unconnected.
45	RESERVED	Reserved, unconnected.
46	RESERVED	Reserved, unconnected.
47	RESERVED	Reserved, unconnected. (Display Enable for TTL interface)
48	RESERVED	Reserved, unconnected. (Display Horizontal Sync for TTL interface)
49	RESERVED	Reserved, unconnected. (Display Vertical Sync for TTL interface)

INFORMATION OF ICS

IC GM5221 PQFP-208 (TTL Display Interface)

Pin No.	Pin Name	Description
11	AVDD_LV_E_3.3	Analog Power for TTL outputs. Connect to analog 3.3V supply
12	AVSS_LV_E	Ground
13	ER0	Red channel bit 0 Not used.
14	ER1	Red channel bit 1 Not used.
15	ER2	Red channel bit 2 Red channel bit 0
16	ER3	Red channel bit 3 Red channel bit 1
17	ER4	Red channel bit 4 Red channel bit 2
18	ER5	Red channel bit 5 Red channel bit 3
19	ER6	Red channel bit 6 Red channel bit 4
20	ER7	Red channel bit 7 Red channel bit 5
21	EG0	Green channel bit 0 Not used.
22	EG1	Green channel bit 1 Not used.
23	AVSS_LV_E	Ground for TTL outputs.
24	AVDD_LV_E_3.3	Digital Power for TTL outputs. Connect to digital 3.3V supply.
25	AVSS_LV	Ground for TTL outputs.
26	AVDD_LV_3.3	Digital Power for TTL outputs. Connect to digital 3.3V supply.
27	AVDD_LV_O_3.3	Digital Power for TTL outputs. Connect to digital 3.3V supply.
28	AVSS_LV_O	Ground for TTL outputs.
29	EG2	Green channel bit 2 Green channel bit 0
30	EG3	Green channel bit 3 Green channel bit 1
31	EG4	Green channel bit 4 Green channel bit 2
32	EG5	Green channel bit 5 Green channel bit 3
33	EG6	Green channel bit 6 Green channel bit 4
34	EG7	Green channel bit 7 Green channel bit 5
35	EB0	Blue channel bit 0 Not used.
36	EB1	Blue channel bit 1 Not used.
37	EB2	Blue channel bit 2 Blue channel bit 0
38	EB3	Blue channel bit 3 Blue channel bit 1
39	AVSS_LV_O	Ground
40	AVDD_LV_O_3.3	Digital Power for TTL outputs. Connect to digital 3.3V supply.
43	EB4	Blue channel bit 4 Blue channel bit 2
44	EB5	Blue channel bit 5 Blue channel bit 3
45	EB6	Blue channel bit 6 Blue channel bit 4
46	EB7	Blue channel bit 7 Blue channel bit 5
47	DEN	Display Enable
48	DHS	Display Horizontal Sync.
49	DVS	Display Vertical Sync.
55	DCLK	Display Pixel Clock.
67	PPWR	Panel Power Control [Tri-state output, 5V-tolerant]
68	PBIAS	Panel Bias Control (backlight enable) [Tri-state output, 5V-tolerant]

INFORMATION OF ICS

IC GM5221 PQFP-208 (Miscellaneous)

Pin No.	Pin Name	Description
1	ROM-DATA3	External ROM DATA3
2	ROM-DATA2	External ROM DATA2
3	ROM-DATA1	External ROM DATA1
4	ROM-DATA0	External ROM DATA0
5	ROM-OEn	External ROM Output Enable
6	ROM-WEn	External ROM Write Enable
7	ROM-CSN	External ROM Chip Select Enable
8,42,51, 74,76,87, 94,97, 140,180	CRVss	Ground for cord power
9,41,75, 86,96, 139,179	CVDD_18 Cord	Digital power. Connect to digital 1.8V supply.
10,57,58, 59,60,61, 62,63,65, 70,135, 155,167	RESERVED	Reserved, unconnected
50,73,95	RVDD_33	Ring VDD power. Connect to digital 3.3V supply
52,53,54, 104,105, 157,158, 159,160, 161,162	N.C.	No connected

INFORMATION OF ICS

IC SAA5264PS/M3/0104 SDIP52

Pin No.	Pin Name	Description
1	PWM	Output for 14-bit high precision Pulse Width Modulator(PWM)
2	PWM0	Output for 6-bit PWMs 0 to 6
3	PWM1	
4	PWM2	
5	PWM3	
6	PWM4	
7	PWM5	
8	PWM6	
9	ADC0	Inputs for the software Analog-to-Digital-Converter(ADC) facility
10	ADC1	
11	ADC2	
12	ADC3	
13	V _{sc}	Core ground
14	SCL(NVRAM)	I ² C-bus Serial Clock input to Non-Volatile RAM
15	SDA(NVRAM)	I ² C-bus Serial Data input/output (Non-Volatile RAM)
16		Input/output for general use
17		Input/output for general use
18		Input/output for general use
19		8mA current sinking capability for direct drive of Light Emitting
20	Diodes (LEDs)	Input/output for general use
21		
22	V _{SSA}	Analog ground
23	CVBS0	Composite Video Baseband Signal(CVBS) input; a positive-going
24	CVBS1	1 V (peak-to peak) input is required; connected via a 100 nF capacitor
25	SYNC_FILTER	Sync-pulse-filter input for CVBS; this pin should be connected to V _{SSA} via a 100nF capacitor
26	IREF	Reference current input for analog circuits; for correct operation a 24k Ω resistor should be connected to V _{SSA}
27	FRAME	Frame de-interlace output synchronized with the VSYNC pulse to produce a non-interlaced display by adjustment of the vertical deflection circuits
28	TEST	Not available; connect this pin to V _{SSA}
29	COR	Contrast reduction:open-drain, active LOW output which allows selective contrast reduction of the TV picture to enhance a mixed mode display
30	PWM7	Output for 6-bit PWM7
31	V _{DDA}	Analog supply voltage (3.3V)
32	B	Blue colour information pixel rate output
33	G	Green colour information pixel rate output
34	R	Red colour information pixel rate output
35	VDS	Video/data switch push-pull output for pixel rate fast blanking
36	HSYNC	Horizontal sync pulse input: Schmitt triggered for a Transistor Transistor Lever(TTL) version; the polarity of this pulse is programmable by register bit TXT1.H POLARITY

INFORMATION OF ICS

IC SAA5264PS/M3/0104 SDIP52

Pin No.	Pin Name	Description
37	VSYNC	Vertical sync pulse input; Schmitt triggered for a TTL version; the polarity of this pulse is programmable by register bit TXT1. V POLARITY
38	VSSP	Periphery ground
39	VDDC	Core supply voltage (+3.3V)
40	OSCGND	Crystal oscillator ground
41	XTALIN	12 MHz crystal oscillator input
42	STALOUT	12 MHz crystal oscillator output
43	RESET	Reset input; if this pin is HIGH for at least 2 machine cycles (24 oscillator periods) while the oscillator is running, the device resets; this pin should be connected to VDDP via a capacitor
44	VDDP	Periphery supply voltage (+3.3V)
45		Input/output for general use
46		Input/output for general use
47		Input/output for general use
48		Input/output for general use
49	SCL	I ² C-bus Serial Clock input from application
50	SDA	I ² C-bus Serial Data input/output (application)
51		Input/output for general use
52		Input/output for general use

IC TPA1517NE DIP20

Pin No.	Pin Name	Description
1	IN1	IN1 is the audio input for channel 1.
2	SGND	SGND is the input signal ground reference.
3	SVRR	SVRR is the midrail bypass.
4	OUT1	OUT1 is the audio output for channel1.
5	PGND	PGND is the power ground reference.
6	OUT2	OUT2 is the audio output for channel 2.
7	Vcc	Vcc is the supply voltage input.
8	M/SB	M/SB is the mute/standby mode enable. When held at less than 2 V, this signal enables the TPA1517 for standby operation. When held between 3.5V and 8.2V, this signal enables the TPA1517 for mute operation. When held above 9.3V, the TPA1517 operates normally.
9	IN2	IN2 in the audio input for channel 2.
10-20	GND/HS	GND/HS are the ground and heatsink connections. All GND/HS terminals are connected directly to the mount pad for thermal-enhanced operation.

IC TVP5146PFP S-PQFP-G80 (Clock Signals)

Pin No.	Pin Name	Description
40	DATACLK	Line-locked data output clock.
74	XTAL1	External clock reference input. it may be connected to an external oscillator with a 1.8V compatible clock signal or a 14.31818-MHz crystal oscillator.
75	XTAL2	External clock reference output. Not connected if XTAL1 is driven by an external single-ended oscillator.

INFORMATION OF ICS

IC TVP5146PFP S-PQFP-G80 (Analog Video)

Pin No.	Pin Name	Description
80	VI_1_A	VI_1_x: Analog video input for CVBS/Pb/B/C VI_2_x: Analog video input for CVBS/Y/G VI_3_x: Analog video input for CVBS/Pr/R/C VI_4_x: Analog video input for CVBS/Y Up to 10 composite, 4 S-video, and 2 composite or 3 component video input(or a combination thereof) can be supported. The inputs must be ac-coupled. The recommended coupling capacitor is 0.1 μ F. The possible input configurations are listed in the input select register at I ² C subaddress 00h
1	VI_1_B	
2	VI_1_C	
7	VI_2_A	
8	VI_2_B	
9	VI_2_C	
16	VI_3_A	
17	VI_3_B	
18	VI_3_C	
23	VI_4_A	

IC TVP5146PFP S-PQFP-G80 (Digital Video)

Pin No.	Pin Name	Description
57,58 59,60, 63,64, 65,66, 69,70	C[9:0]/ GPIO[9:0]	Digital video output of CbCr, C[9] is MSB and C[0] is LSB. Unused outputs can be left unconnected. Also, these terminals can be programmable general-purpose I/O. For the 8-bit mode, the two LSBs are ignored.
58	D_BLUE	Digital BLUE input from overlay device.
59	D_GREEN	Digital GREEN input from overlay device.
60	D_RED	Digital RED input from overlay device.
57	FSO	Fast-switch overlay between digital RGB and any video.
43,44 45,46, 47,50, 51,52, 53,54	Y[9:0]	Digital video output of Y/YCbCr, Y[9] is MSB and Y[0] is LSB. For the 8-bit mode, the two LSBs are ignored. Unused outputs can be left unconnected.

IC TVP5146PFP S-PQFP-G80 (Miscellaneous Signals)

Pin No.	Pin Name	Description
35	FSS/GPIO	Fast-switch(blanking) input. Switching signal between the synchronous component video(YPbPr/RGB) and the composite video input. Programmable general-purpose I/O
37	GLCO/I2CA	Genlock control output(GLCO). Two Genlock data formats are available: TI format and real time control(RTC) format. During reset, this terminal is an input used to program the I ² C address LSB.
30	INTREQ	Interrupt request
33	PWDN	Power down input: 1=Power down 0=Normal mode
34	RESETB	Reset input, active low

IC TVP5146PFP S-PQFP-G80 (Host Interface)

Pin No.	Pin Name	Description
28	SCL	I ² C clock input
29	SDA	I ² C data bus

INFORMATION OF ICS

IC TVP5146PFP S-PQFP-G80 (Power Supply)

Pin No.	Pin Name	Description
26	AGND	Analog ground. Connect to analog ground.
13	A18GND_REF	Analog 1.8-V return
12	A18VDD_REF	Analog power for reference 1.8V
79 10 15 24	CH1_A18GND CH2_A18GND CH3_A18GND CH4_A18GND	Analog 1.8-V return
78 11 14 25	CH1_A18GND CH2_A18GND CH3_A18GND CH4_A18GND	Analog power. Connect to 1.8 V.
3 6 19 22	CH1_A33GND CH2_A33GND CH3_A33GND CH4_A33GND	Analog 3.3-V return
4 5 20 21	CH1_A33VDD CH2_A33VDD CH3_A33VDD CH4_A33VDD	Analog power. Connect to 3.3 V.
27,32,42 56,68	DGND	Digital return
31,41,55 67	DVDD	Digital power. Connect to 1.8 V.
39,49,62	IOGND	Digital power return
38, 48,61	IOVDD	Digital power. Connect to 3.3 V or less for reduced noise.
77	PLL_A18GND	Analog power return
76	PLL_A18VDD	Host Interfacewer. Connect to 1.8 V.

IC TVP5146PFP S-PQFP-G80 (Sync Signals)

Pin No.	Pin Name	Description
72	HS/CS/GPIO	Horizontal sync output or digital composite sync output Programmable general-purpose I/O
73	VS/VBLK/GPIO	Vertical sync output (for modes with dedicated VSYNC) or VBLK output Programmable general-purpose I/O
71	FID/GPIO	Odd/even field indicator output. This terminal needs a pulldown resistor. Programmable general-purpose I/O
36	AVID/GPIO	Active video indicator output Programmable general-purpose I/O

REPLACEMENT PARTS LIST

The following service parts list are available for purchase.
Serviceman may quote the components shown in this page for servicing purposes.

PRODUCT SAFETY NOTE : Critical parts that have special safety characteristics are identified by a Δ in the replacement parts list or the schematic diagrams. Use of any substitute replacement part that does not have the same safety characteristics as the recommended replacement part in the parts list might create shock, fire and/or other hazards.

Please do not degrade the safety of this TV through improper servicing.

Part No.	Description	Cxx-LC880SNT	
		15"	20"
PCB ASSEMBLY			
G771-15LB01-01	Control Keys PCB Ass'y	●	
G771-15LB02-01	15" Receiver PCB Ass'y	●	
G771-15LB03-01	Tuner PCB Ass'y	●	
G771-20LB01-01	Control Keys PCB Ass'y		●
G771-20LB02-01	20" Receiver PCB Ass'y		●
G771-20LB03-01	Tuner PCB Ass'y		●
G771E15LB01-01	Main PCB Ass'y	●	
G771E20LB01-01	Main PCB Ass'y		●
⚠G7801-001001	PCB Ass'y Power BL1504015-06A	●	
⚠G7801-002001	PCB Ass'y Power BL2006009-07		●
SUPPLIED ACCESSORIES			
⚠G7101-001001	AC Adaptor SAWA-01-451	●	
⚠G7101-002001	AC Adaptor SAWA-02-521		●
G7501-001001	Remote Control CLE-968	●	●
LCD PANEL			
⚠G6203-001001	Display LCD LTM150XH-L06	●	
⚠G6203-002001	Display LCD A20SN02-PV4		●

PARTS LIST (FOR REFERENCE ONLY)

The components shown in the remaining pages served as a reference only. It is not meant for ordering of components for servicing purposes. Do not quote any components from these lists.

MAIN PCB ASSEMBLY

Item	Part No.	Description	Circuit No.
1	G1102-001001	COIL FIX C 120K T04 0603	L47
2	G1102-001002	COIL FIX C 2R7K T04 0603	L34 L35 L36
3	G1102-002001	COIL FIX C 3R3K T08 1206	L48 L49 L50
4	G1107-001001	COIL FIX 33uH 16.5X9 24.5T	L15
5	G1301-001006	CAPACITOR EC V A SMA 220M 16DC T05 4X7	C102 C18 C233 C29 C38 C48 C73 C75 CA1 CA5 CA7 CB10 CB9
6	G1301-001018	CAPACITOR EC V A SMA 100M 16DC T05 4X7	C168 CA50
7	G1301-001019	CAPACITOR EC V A SMA 3R3M 50DC T05 4X7	CA20
8	G1301-001021	CAPACITOR EC V A SMA 2R2M 50DC T05 4X7	CA40
9	G1301-001024	CAPACITOR EC V A SMA 100M 25DC T05 4X7	C12 C13 C14 C3 CA16 CA23 CA25 CA30 CA31 CA34 CA35 CA48
10	G1301-001026	CAPACITOR EC V A SMA 101M 16DC T05 6X7	C104 C105 C110 C111 C125 C236 C237 C78 C94 C95 CA54
11	G1301-001031	CAPACITOR EC V A SMA 470M 16DC T05 5X7	CB1
12	G1301-001111	CAPACITOR EC V A SMA 331M 16DC T05 8X9	C82 C83
13	G1301-002015	CAPACITOR EC V A SAIL 471M 25DC T05 8X14	C79 CA13 CA43 CA9
14	G1323-001013	CAPACITOR CE C TC CG331J 50DC T04 0603	C127 C141 C148 C164 CA32 CA41 CA61 CA65
15	G1323-001024	CAPACITOR CE C TC CG150J 50DC T04 0603	C169 C170 C171
16	G1323-001026	CAPACITOR CE C TC CG330J 50DC T04 0603	C117 C118
17	G1323-001027	CAPACITOR CE C TC CG470J 50DC T04 0603	C229 C230 C231 C232 C76 CA14 CA15 CA51
18	G1323-001029	CAPACITOR CE C TC CG221J 50DC T04 0603	C46 C47 C55 C64 C66
19	G1323-001035	CAPACITOR CE C TC CG220J 50DC T04 0603	C88 CA37 CA38
20	G1323-001038	CAPACITOR CE C TC CG560J 50DC T04 0603	CA18 CA33 CB2 CB3
21	G1323-001083	CAPACITOR CE C TC CH5R0J 50DC T04 0603	C58 C59 CB4 CB5 CB6 CB7 CB8

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