

**BEEKO**  
**COLOUR TELEVISIONS**

**L6B TFT- LCD TV**  
**SERVICE MANUAL**

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# SAFETY PRECAUTIONS

## GENERAL GUIDELINES

1. It is advised to insert an isolation transformer in the AC supply before servicing a hot chassis.
2. Always use the manufacturer's replacement safety components. The critical safety components marked with  $\nabla$  on the schematics diagrams should not be by other substitutes. Other substitute may create the electrical shock, fire or other hazards. Take attention to replace the spacers with the originals. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
3. After servicing, see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.
4. When the receiver is not being used for a long time of period of time, unplug the power cord of the Adaptor from the AC outlet.

*Color TFT LCD Module is very sensitive both electrically and physically. Users, therefore, are requested to follow the "Guidance of handling color TFT LCD Module" on the followings.*

### 1 - Be careful not to make scratch on the polarizer.

Surface of polarizer is soft and can be physically damaged easily. Please do not touch, push or rub polarizer surface with materials over HB hardness.

### 2 - Keep clean the surface.

Please wear rubber glove when touch the surface of LCD screen. Please use soft and anti-static material as cleaner.

**3 - Keep out of water.** Water on/in the LCD may cause electrical short or corrosion. Please wipe out dry or water carefully.

**4 - Prevent swift Temperature & Humidity change.** Instantaneous temperature and/or humidity change can make dew or ice which cause nonconformance such as malfunction.

### 5 - High temperature & high humidity reduce the life-time.

LCD is not proper to be used at high temperature and high humidity. Please keep specified temperature and humidity condition.

**6 - Keep out of Corrosive Gas.** Corrosive gas effect the polarizer and the circuit chemically and cause defects accordingly.

### 7 - Electrostatic discharge can make Damage

There are electro-static sensitive components such as CMOS in LCD Module. Please earth human body when handle the LCD. In addition, please do not touch the interface connector pin with bare.

### 8 - Do not operate for a long time under the same pattern

Operating LCD for a long time under the same pattern can cause image persistence and can damage it. Please follow following guidance.

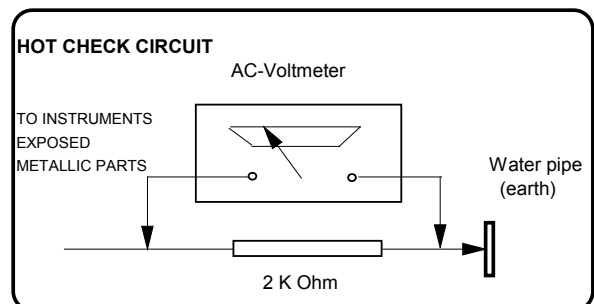
1. Turn the power off when do not use.
2. Change the pattern periodically.

## LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs of the plug.
2. Turn the receiver's power switch.
3. Measure the resistance value with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver. When the exposed metallic part a return path to the chassis the reading should be between 4Mohm and the 20Mohm. When the exposed metal does not have a return path to the chassis, the reading must be infinite.

## LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly in to the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 2Kohm 10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an AC voltmeter with high impedance to measure the potential across the resistor.
4. Check each exposed metallic part and check the voltage at the each point.
5. Reverse the AC plug at the outlet and repeat each of the above measurements.
6. The potential at the any point should not exceed 1.4 Vrms. In case a measurement is outside the limits specified, there is the possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

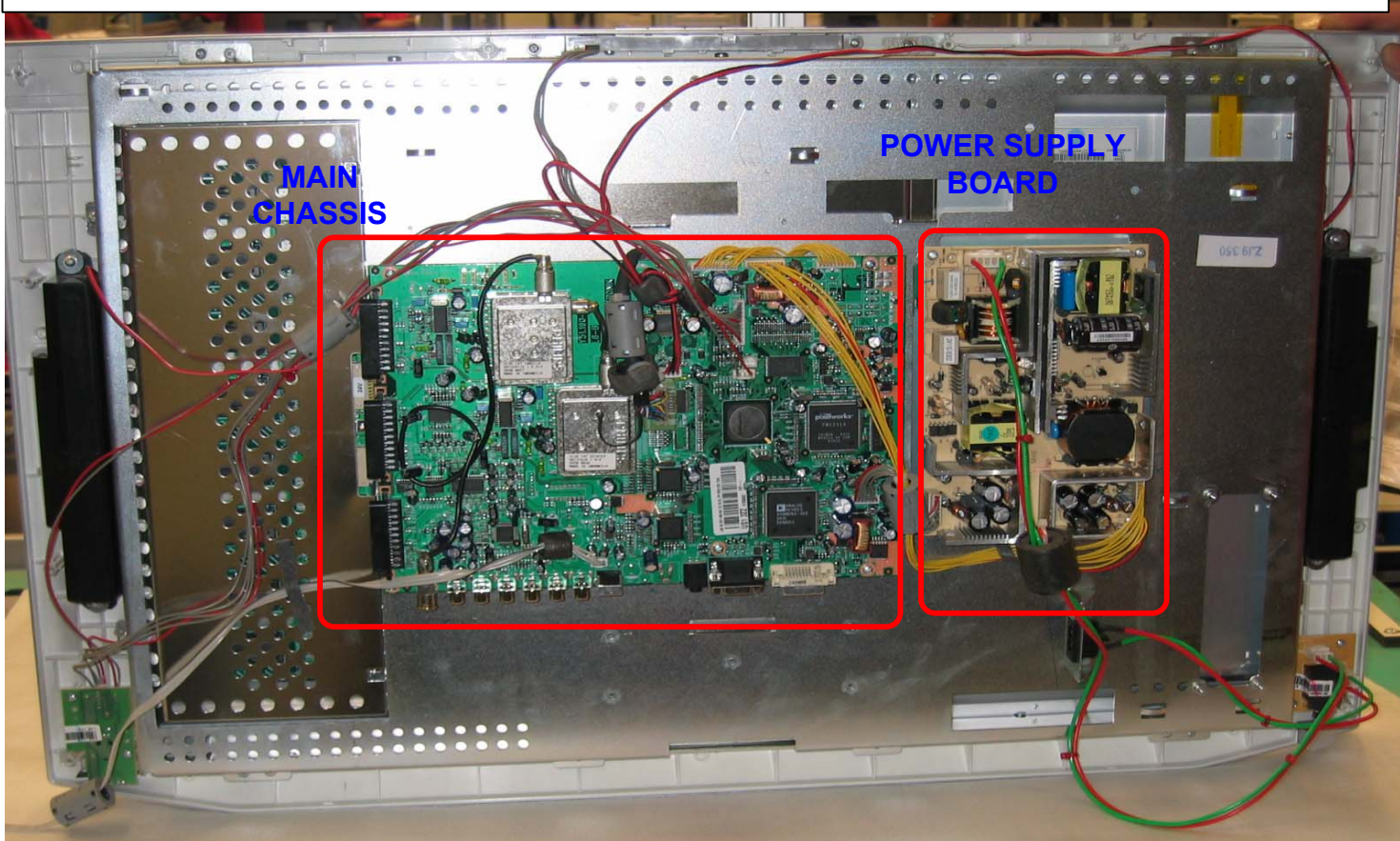
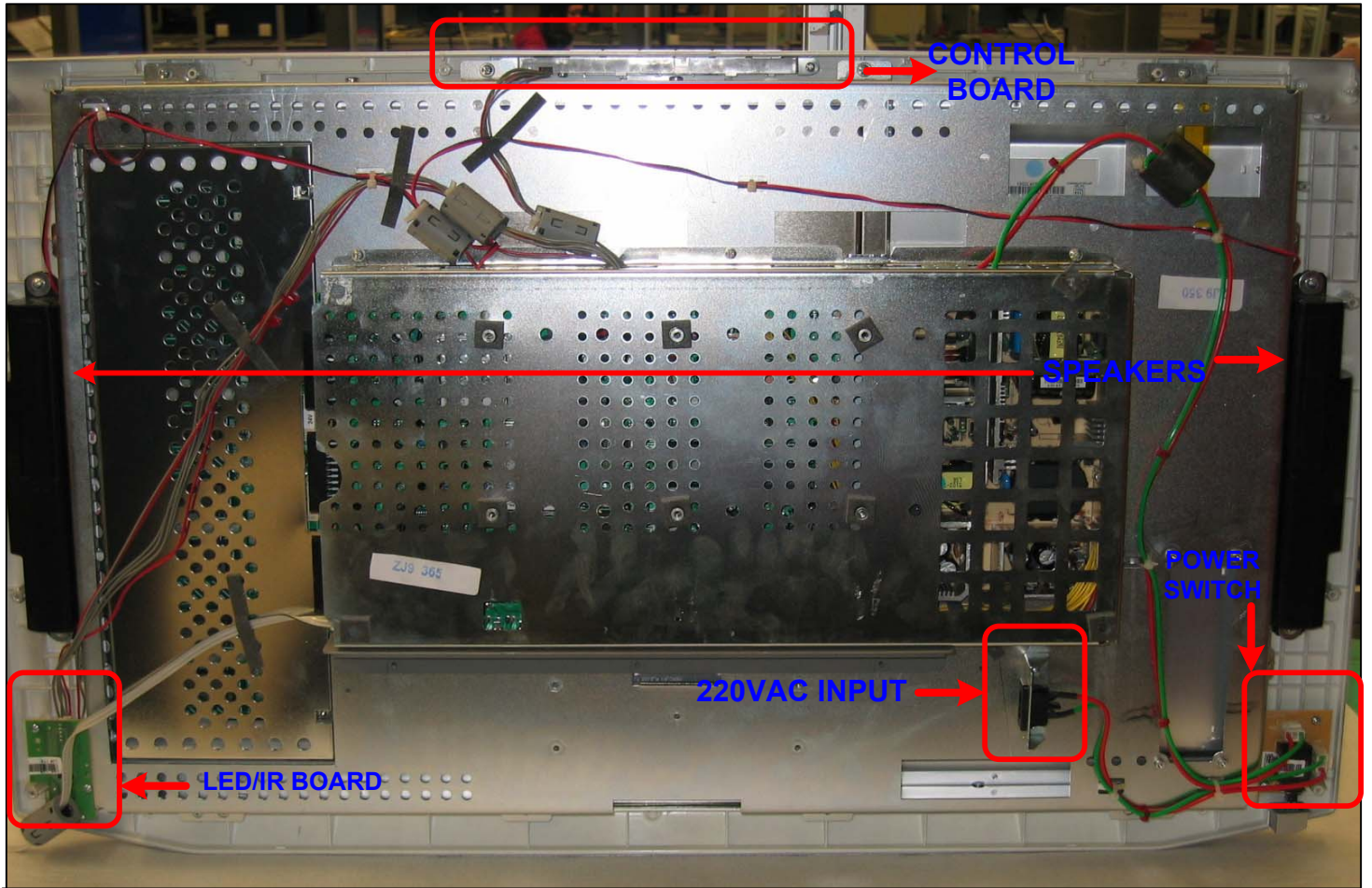


## L6B TECHNICAL SPECIFICATION

Receiving System		PAL B/G+I+D/K SECAM L/L'
Comb Filter		Adaptive 4H2H
LTI, CTI Filters		+
DVI Receiver	DVI 1.0 Compliant	+
	Resolution	VGA to SXGA
	2 Pixel \ Clk Support	+
Gamma Correction		8 to 10-bit LUT
PIP\PAI\POPI\PAT		+
OSD		Graphics Based 8-bit\pixel
Teletext	Level (1.5, 2.5, Teleweb)	Teletext 1.5
	Type (Fast\Top\Simple)	Simple, Fast, Top
	Page Memory	800p
WSS		+
VPS\PDC		+
Picture Formats (4:3, 16:9, 14:9, Panorama, LetterBox, Subtitle)	4:3	+
	16:9	+
	14:9	+
	Panorama	+
	Letterbox	+
	Subtitle	+
	Zoom	+
WSS (Wide Screen Signalling)		+
ATS (Automatic Tuning System)		Frequency Search
Manual Search		Channel Table Search
Number of Program Storage		+
No Ident Timer		+
Picture Freeze		+
Equalizer		+
AVL (Automatic Volume Level)		+
Sound Status Memory		+
Picture Status Memory		+
Swap		+
Child Lock		+
Program Lock		+
Picture Format Switching Tru Pin 8		+
Auto RGB Detect Tru Pin 16		+
Timer	Off Timer (Sleep Timer)	+
	On Timer	+
Picture Smart (User, Soft, Natural, Rich)		+
Sound Smart (User, Music, Sports, Cinema, Speech)		+
Scart2 Out Selectable		+
S-Video Input Through Scart2		+
Audio Output Power RMS in Max at 10% THD)		2x5W for 22"W, 23"W 2x10W for 26"W 2x10W for 30"W
Stereo (German A2, Nicam, BTSC)		German A2, Nicam
S-video In (DIN)	1	
AV In (3 RCA)	1	
AV Out (3 RCA)	1	
PC Audio (L, R)	1	
D-Sub 15	1	
Headphone	1	
CVBS In	4	
Y\C In	1	
DVI In	YES	
CVBS Out	4	

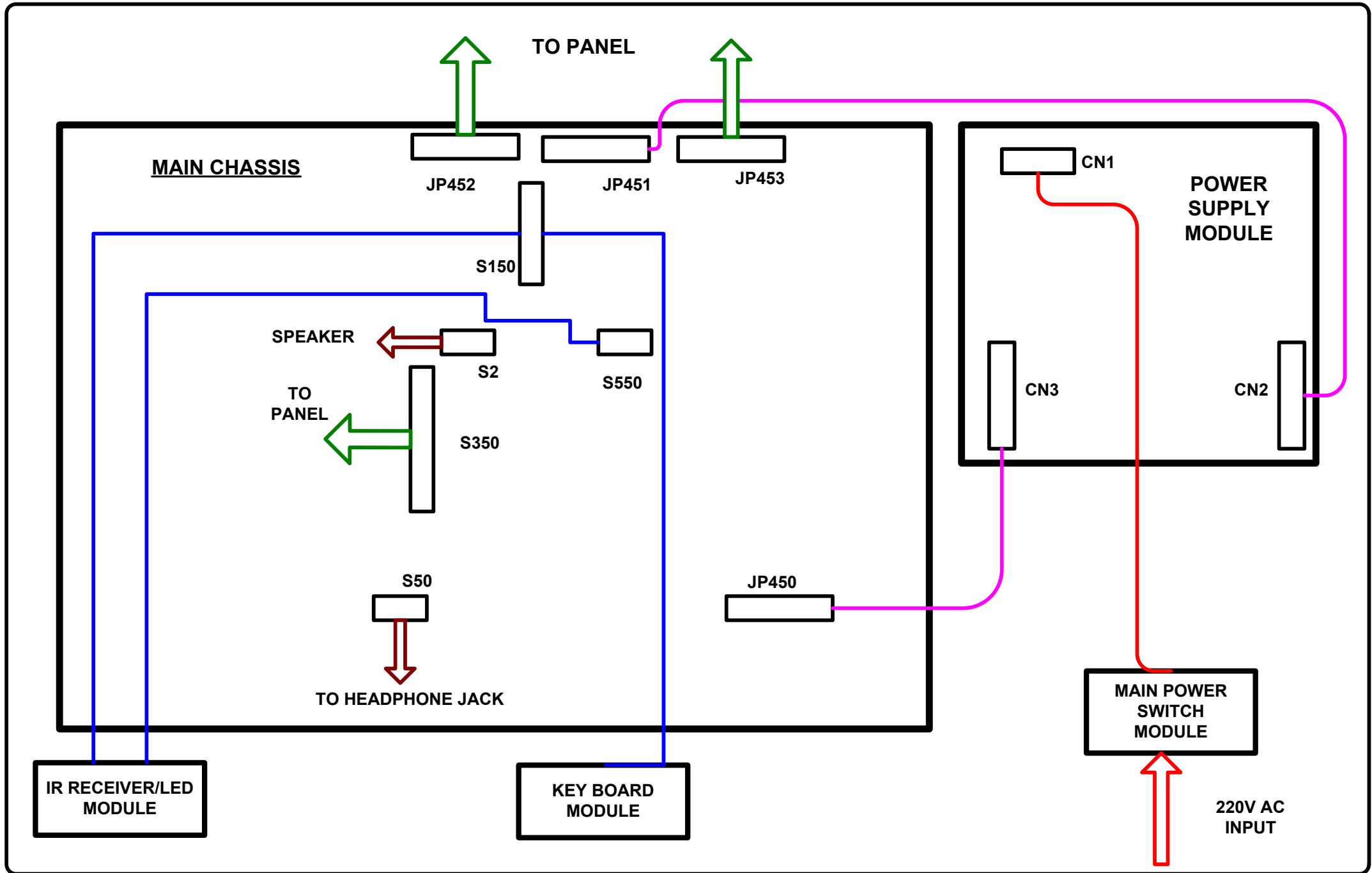


# BACK SIDE APPEARANCES

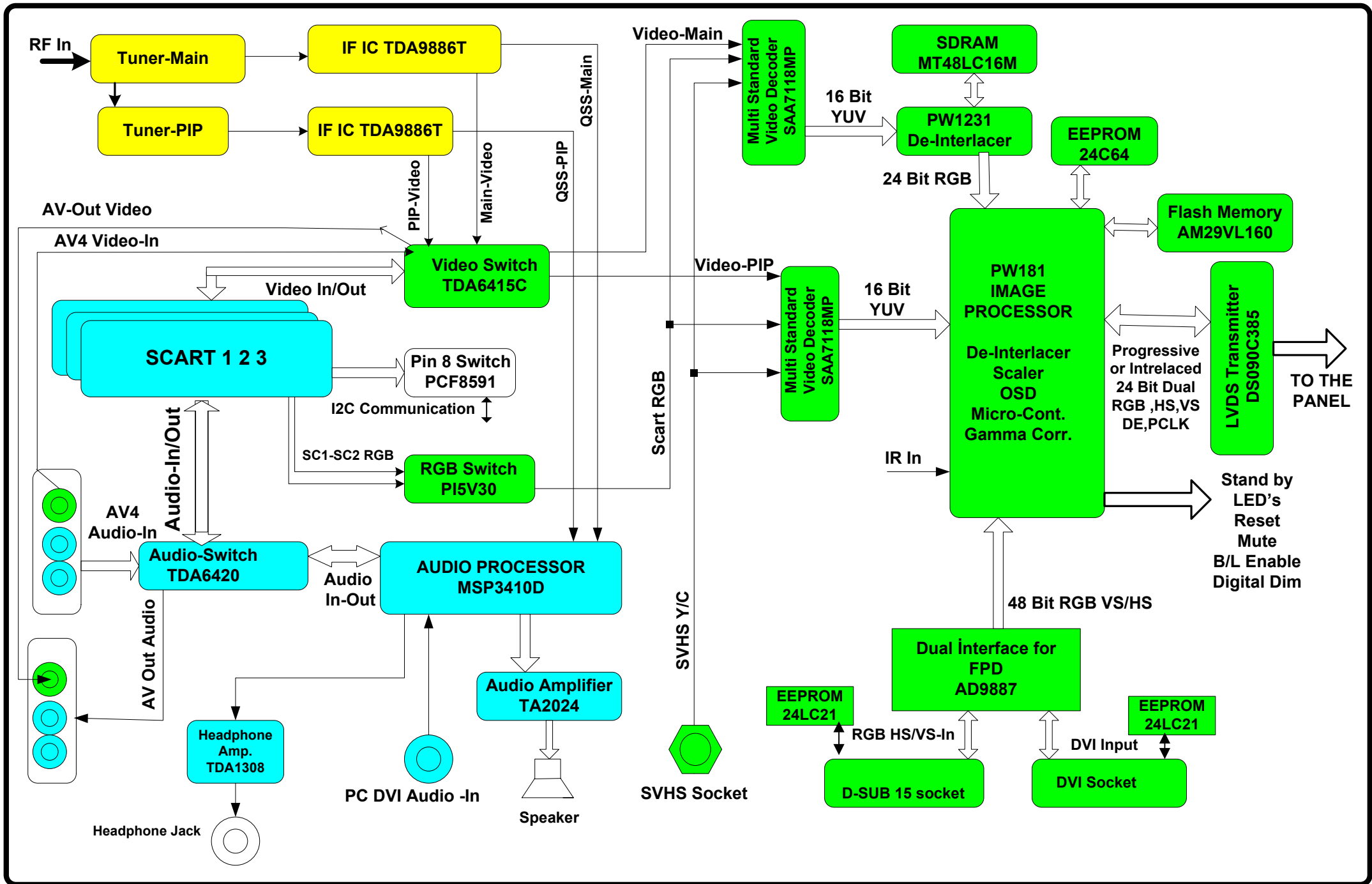


NOTE: LOCATION AND THE SHAPE OF IR /LED BAORD, CONTROL BOARD AND MAIN SWITCH BOARD MAY CHANGE ACCORDING TO THE COSMETIC OF THE TV AND SIZE

# L6B CONNECTION DIAGRAM

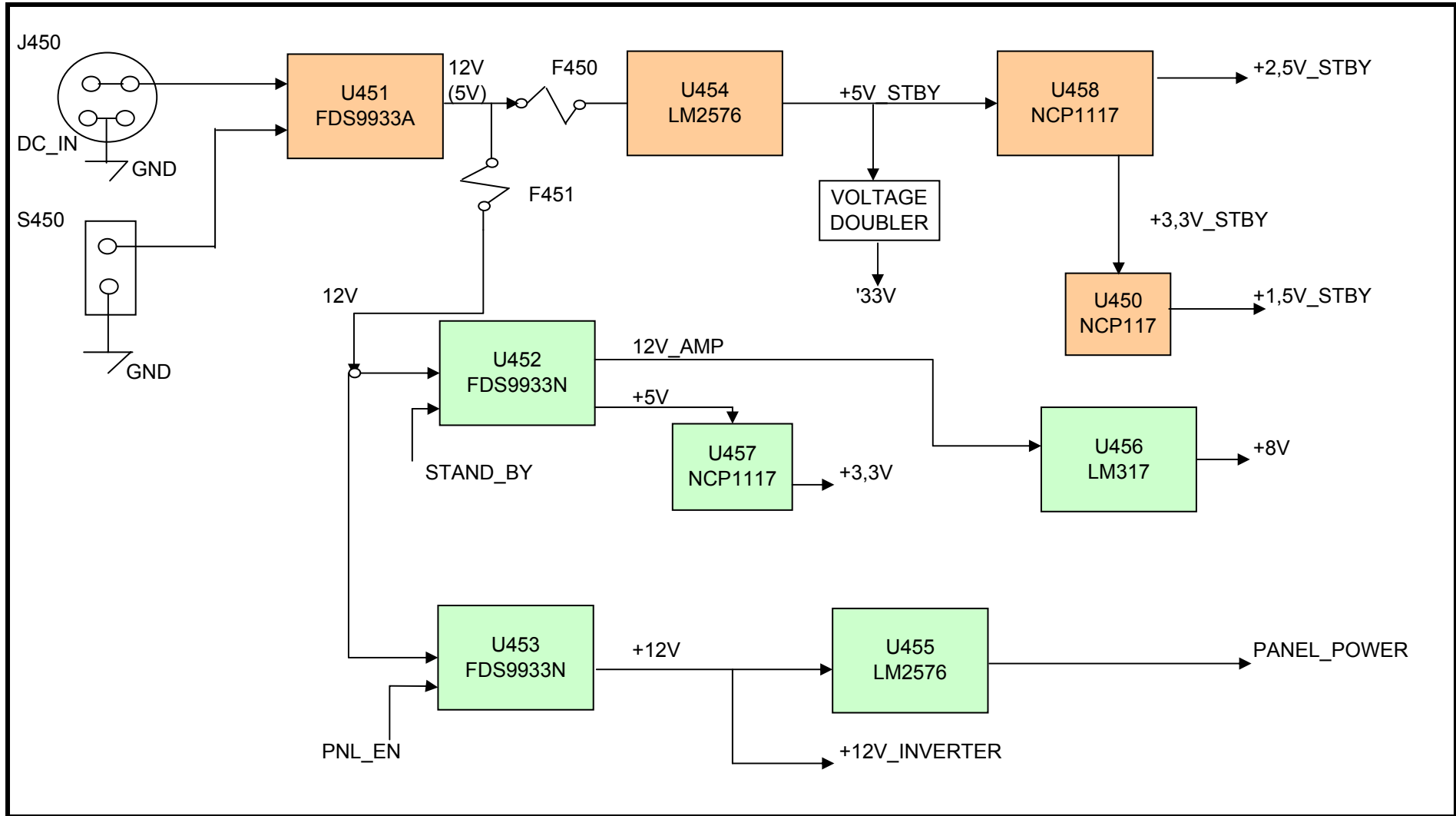


# L6B BLOCK DIAGRAM





### L6B POWER SUPPLY BLOCK DIAGRAM (MAIN CHASSIS)



# L6B SERVICE MENU

## 1. Activating the Service Menu

When the menu is on the screen press '9', '3', '0', '1' on the remote controller. This will activate the service menu.

## 2. Service Menu Structure

The service menu has three items: display, calibre and version

### 2.1 Display

Display item has seven options:

- a- Panel  
Panel option gives information about the current panel resolution. It is a read only option and can not be set.
- b- Power on time  
Power on time gives information about the last update time of the SW running. It is a read only option and can not be set.
- c- Backlight on time  
Backlight on time option reserved.
- d- Scart prescale  
Scart prescale option sets the prescale values for the input sounds entering the scart input of the MSP(Micronas Sound Processor). Changing this value you can adjust the level of the output sound going to loudspeakers for all the sources except the Tuners. The range is between 0 and 100.
- e- nicam prescale  
Nicam prescale option sets the prescale values for the Nicam standard sounds for tuner inputs. Changing this value you can adjust the level of the output sound going to loudspeakers for Nicam sounds entering the analog sound input of MSP. The range is between 0 and 100.
- f- fm/am prescale  
fm/am prescale option sets the prescale values for the FM/AM standard sounds for tuner inputs. Changing this value you can adjust the level of the output sound going to loudspeakers for FM/AM sounds entering the analog sound input of MSP. The range is between 0 and 100.
- g- Agc(Automatic Gain Control) adjust  
Agc adjust option sets the input voltage going to IF decoder AGC pin. Changing this value you can adjust this voltage for optimum Tuner performance. The range is between 0 and 31.
- h- R/G/B Brightness/Contrast: These are used for color bias adjustment. The range is Between 0 and 255

## 2.2 Calibre

Calibre item has nine options:

a- video format

Video format option force the video format to the desired format. Selectable formats are Auto, Pal, NTSC and SECAM.

b- colorspace

Colorspace option gives the information about the video input colorspace input to PW181 IC. Do not change this value unless an error occurred in the colors displayed.

c- test pattern

This option activates the internal pattern of PW181 IC. There are 3 choices: none, vert bars, solid color. None will deactivate the internal pattern. Vert bars choice activates the bar pattern for the selected color component. Solid color activates the solid pattern with one color selected in color component and also you can change the level of the color by solid field level.

d- Color components:

This option selects the color for the internal pattern of PW181 IC. There are 4 choices: all, red, green and blue. If you choose all, you can see the white pattern and if you choose one of the other choices you can see the test pattern with the selected color.

e- solid field level

This option will adjust the level of the colors for the test pattern. The range is between 1 and 64.

f- Initial ATS

This option will enable or disable the Initial setup for the TV. Setting this option to On, the TV will open from the Quick setup menu. Setting this option to Off will disable this option.

g- factory reset

Factory reset option executes a reset operation for the NVRAM. Pressing OK when this option is selected will erase the NVRAM and load default values to NVRAM.

h- dpms

This option selects the Power option for the TV. Setting this option to On the TV will switch to the last state for power on transition. Setting this to Off will disable this option and the TV will always switch to Stand-by state while power on transition.

i- osd timeout

This option sets the OSD timeout for the main menu structure. Selections are 5, 15 and 60 secs. The default is 60 sec.

## 2.3 Version

This item gives the information about the version of the software. Also you can see the last modified time for the GUI(graphical user interface).

## L6 CHASSIS SERVICE MODE ITEMS

### display menu

ITEM	TYPICAL VALUES/OPTIONS
panel	1280x768
power on time	03:39:45
back light time	03:39:45
scart prescale	25
nicam prescale	45
fm/am prescale	24
agc adjust	16
red brightness	128
red contrast	128
green brightness	128
green contrast	128
blue brightness	128
blue contrast	128

### calibre menu

ITEM	TYPICAL VALUES/OPTIONS
video format	auto
color space	RGB
test pattern	none
color components	all
solid field level	33
initial ats	on
factory reset	press <ok> to reset
dpms	on
osd time out	60 sec

### version

ITEM	TYPICAL VALUES/OPTIONS
Software	
	SL630T_CH1_T13 L6B 1.22 Chi30
GUI	
Project:	L6B Toshiba
Generated Date:	October 01,2004 at 22.42

**BUS-CONTROLLED VIDEO MATRIX SWITCH**

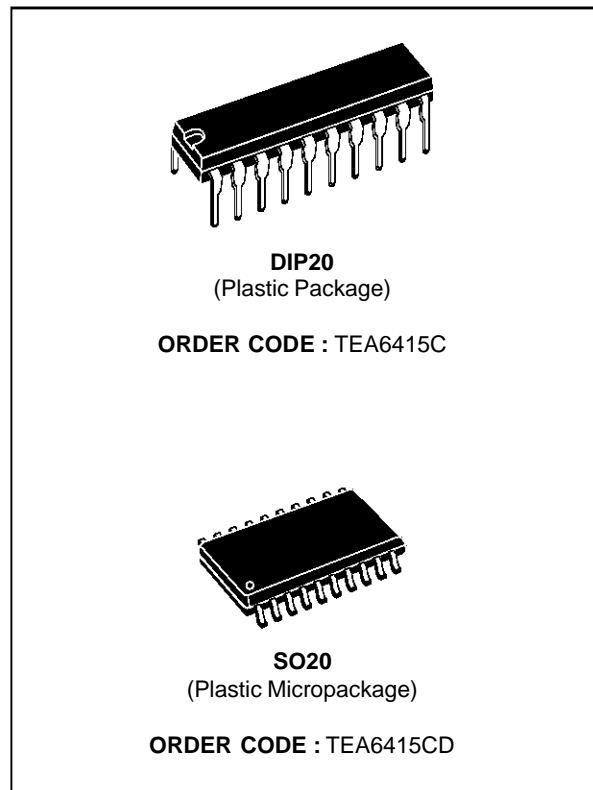
- 20MHz BANDWIDTH
- CASCADABLE WITH ANOTHER TEA6415C (INTERNAL ADDRESS CAN BE CHANGED BY PIN 7 VOLTAGE)
- 8 INPUTS (CVBS, RGB, MAC, CHROMA, ...)
- 6 OUTPUTS
- POSSIBILITY OF MAC OR CHROMA SIGNAL FOR EACH INPUT BY SWITCHING-OFF THE CLAMP WITH AN EXTERNAL RESISTOR BRIDGE
- BUS CONTROLLED
- 6.5dB GAIN BETWEEN ANY INPUT AND OUTPUT
- -55dB CROSSTALK AT 5MHz
- FULLY ESD PROTECTED

**DESCRIPTION**

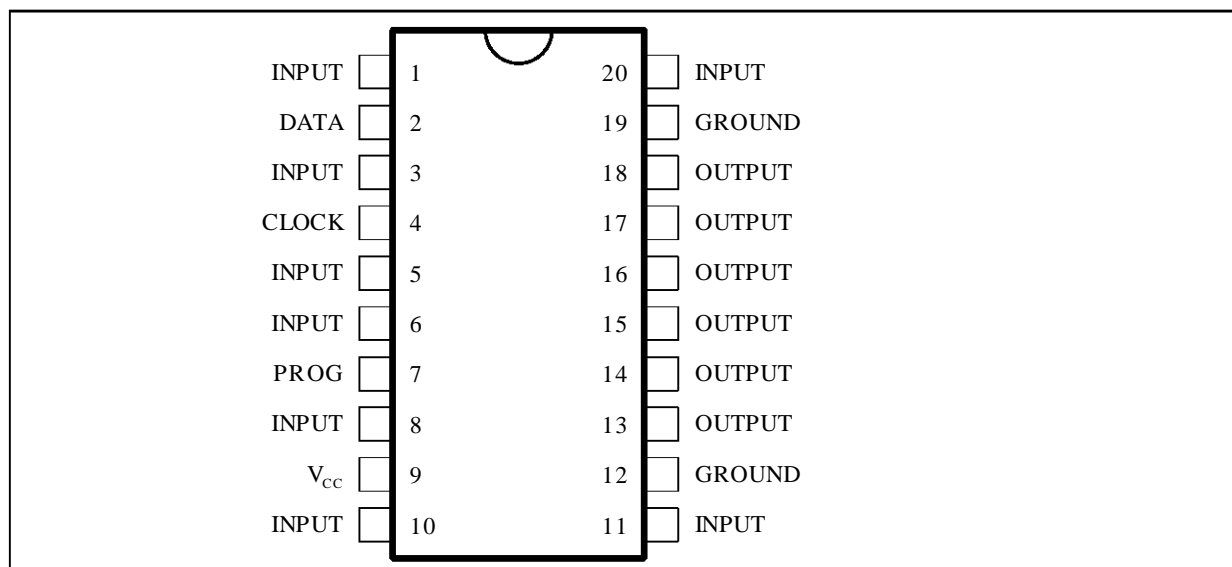
The main function of the TEA6415C is to switch 8 video input sources on the 6 outputs.

Each output can be switched to only one of the inputs whereas but any same input may be connected to several outputs.

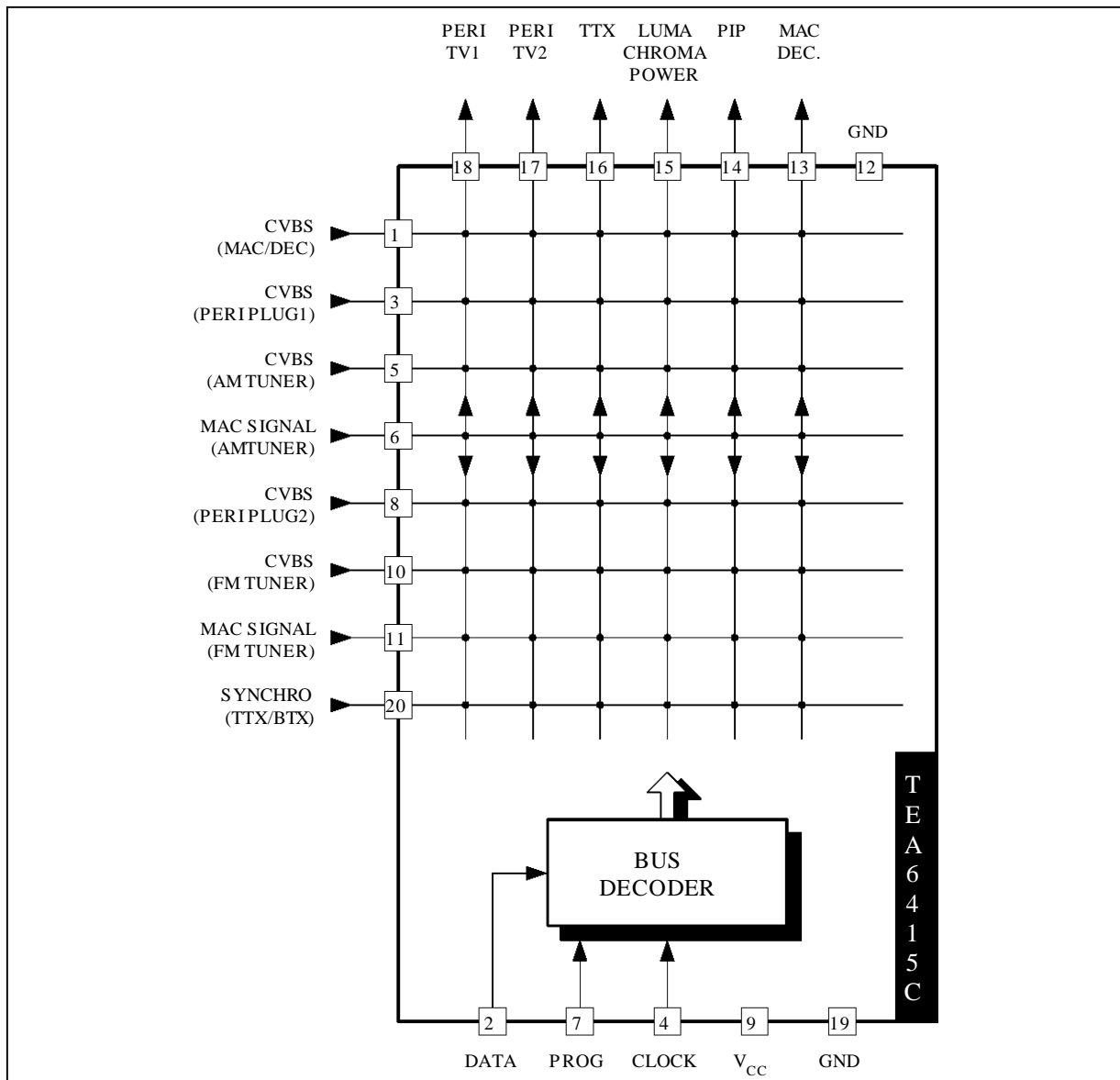
All the switching possibilities are controlled through the I<sup>2</sup>C bus.



**PIN CONNECTIONS**



**BLOCK DIAGRAM**



**GENERAL DESCRIPTION**

The main function of the IC is to switch 8 video input sources on 6 outputs.

Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of synch. top for CVBS or black level for RGB signals).

Each nominal gain between any input and output is 6.5dB. For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5 V<sub>DC</sub> on the input. Each input can be used as a normal input or as a MAC or Chroma

input (with external resistor bridge). All the switching possibilities are changed through the BUS.

Driving 75Ω load needs an external transistor.

It is possible to have the same input connected to several outputs.

The starting configuration upon power on (power supply : 0 to 10V) is undetermined.

In this case, 6 words of 16 bits are necessary to determine one configuration. In other case, 1 word of 16 bits is necessary to determine one configuration.

### 1 FEATURES

- 5 V supply voltage
- Gain controlled wide-band Vision Intermediate Frequency (VIF) amplifier, AC-coupled
- Multistandard true synchronous demodulation with active carrier regeneration: very linear demodulation, good intermodulation figures, reduced harmonics, and excellent pulse response
- Gated phase detector for L and L-accent standard
- Fully integrated VIF Voltage Controlled Oscillator (VCO), alignment-free, frequencies switchable for all negative and positive modulated standards via I<sup>2</sup>C-bus
- Digital acquisition help, VIF frequencies of 33.4, 33.9, 38.0, 38.9, 45.75, and 58.75 MHz
- 4 MHz reference frequency input: signal from Phase-Locked Loop (PLL) tuning system or operating as crystal oscillator
- VIF Automatic Gain Control (AGC) detector for gain control, operating as peak sync detector for negative modulated signals and as a peak white detector for positive modulated signals
- External AGC setting via pin OP1
- Precise fully digital Automatic Frequency Control (AFC) detector with 4-bit digital-to-analog converter, AFC bits readable via I<sup>2</sup>C-bus
- TakeOver Point (TOP) adjustable via I<sup>2</sup>C-bus or alternatively with potentiometer
- Fully integrated sound carrier trap for 4.5, 5.5, 6.0, and 6.5 MHz, controlled by FM-PLL oscillator
- Sound IF (SIF) input for single reference Quasi Split Sound (QSS) mode, PLL controlled



- SIF-AGC for gain controlled SIF amplifier, single reference QSS mixer able to operate in high performance single reference QSS mode and in intercarrier mode, switchable via I<sup>2</sup>C-bus
- AM demodulator without extra reference circuit
- Alignment-free selective FM-PLL demodulator with high linearity and low noise
- I<sup>2</sup>C-bus control for all functions
- I<sup>2</sup>C-bus transceiver with pin programmable Module Address (MAD)
- Four I<sup>2</sup>C-bus addresses via MAD.

### 2 GENERAL DESCRIPTION

The TDA9885 is an alignment-free multistandard (PAL and NTSC) vision and sound IF signal PLL demodulator for negative modulation only and FM processing.

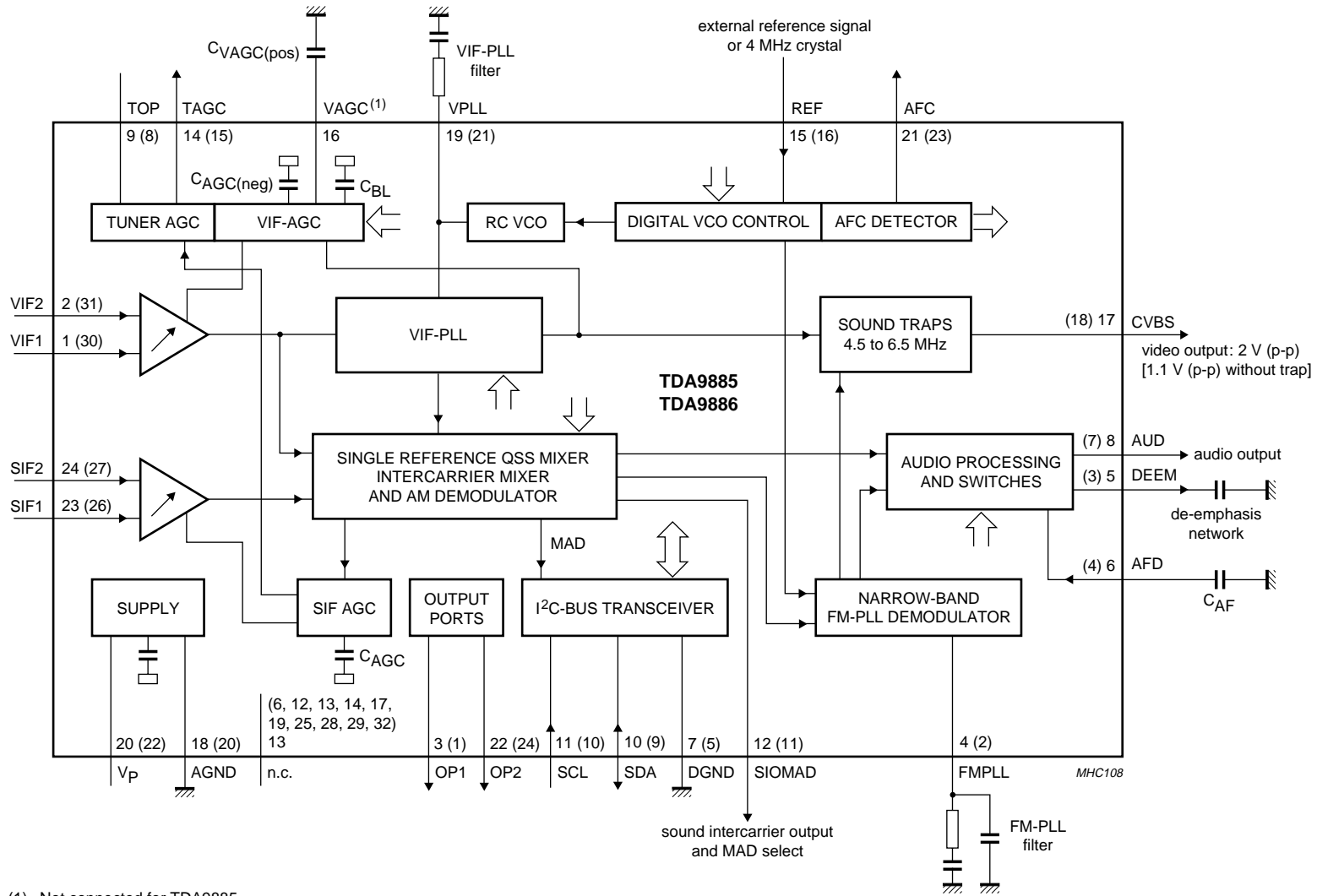
The TDA9886 is an alignment-free multistandard (PAL, SECAM and NTSC) vision and sound IF signal PLL demodulator for positive and negative modulation, including sound AM and FM processing.

### 3 APPLICATIONS

- TV, VTR, PC and STB applications.

### 4 ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
TDA9885T/V3	SO24	plastic small outline package; 24 leads; body width 7.5 mm	SOT137-1
TDA9885TS/V3	SSOP24	plastic shrink small outline package; 24 leads; body width 5.3 mm	SOT340-1
TDA9885HN/V3	HVQFN32	plastic, heatsink very thin quad flat package; no leads; 32 terminals; body 5 × 5 × 0.85 mm	SOT617-1
TDA9886T/V3	SO24	plastic small outline package; 24 leads; body width 7.5 mm	SOT137-1
TDA9886TS/V3	SSOP24	plastic shrink small outline package; 24 leads; body width 5.3 mm	SOT340-1



(1) Not connected for TDA9885.  
Pin numbers for TDA9885HN in parenthesis.

Fig.1 Block diagram.



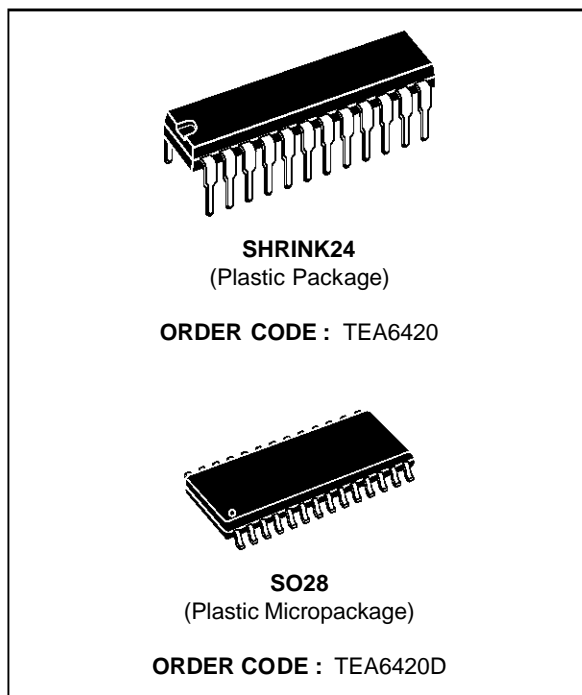
**BUS-CONTROLLED AUDIO MATRIX**

- 5 STEREO INPUTS
- 4 STEREO OUPUTS
- GAIN CONTROL 0/2/4/6dB/MUTE FOR EACH OUTPUT
- CASCADABLE (2 different addresses)
- SERIAL BUS CONTROLLED
- VERY LOW NOISE
- VERY LOW DISTORSION

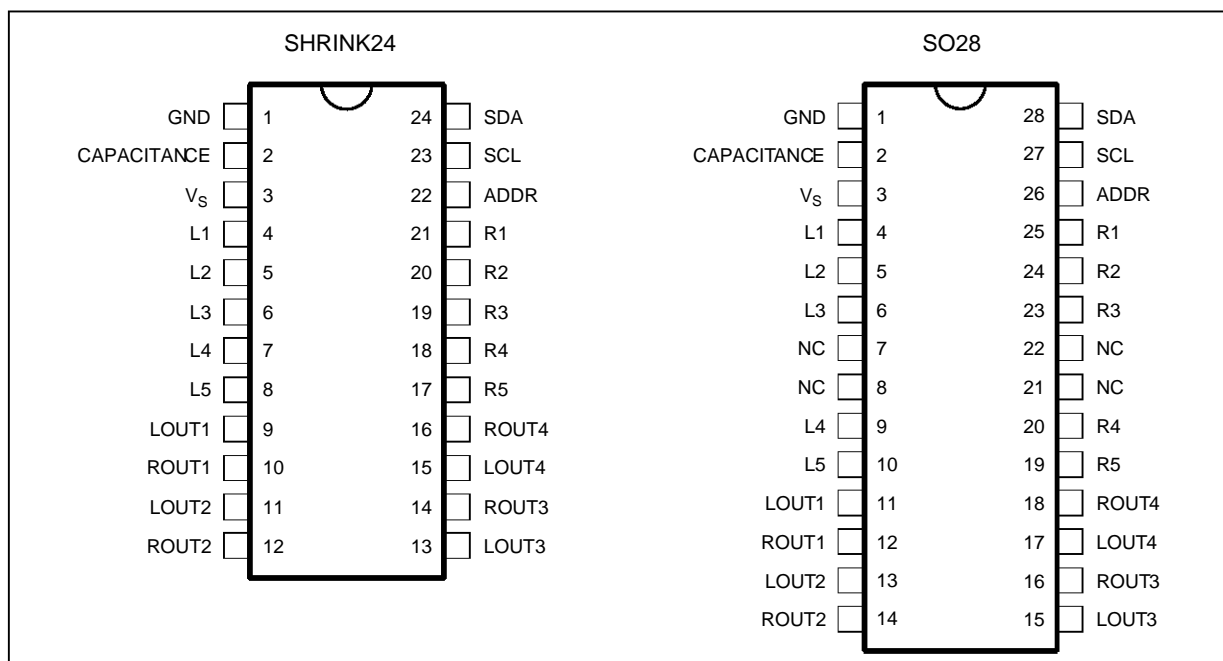
**DESCRIPTION**

The TEA6420 switches 5 stereo audio inputs on 4 stereo outputs.

All the switching possibilities are changed through the I<sup>2</sup>C bus.

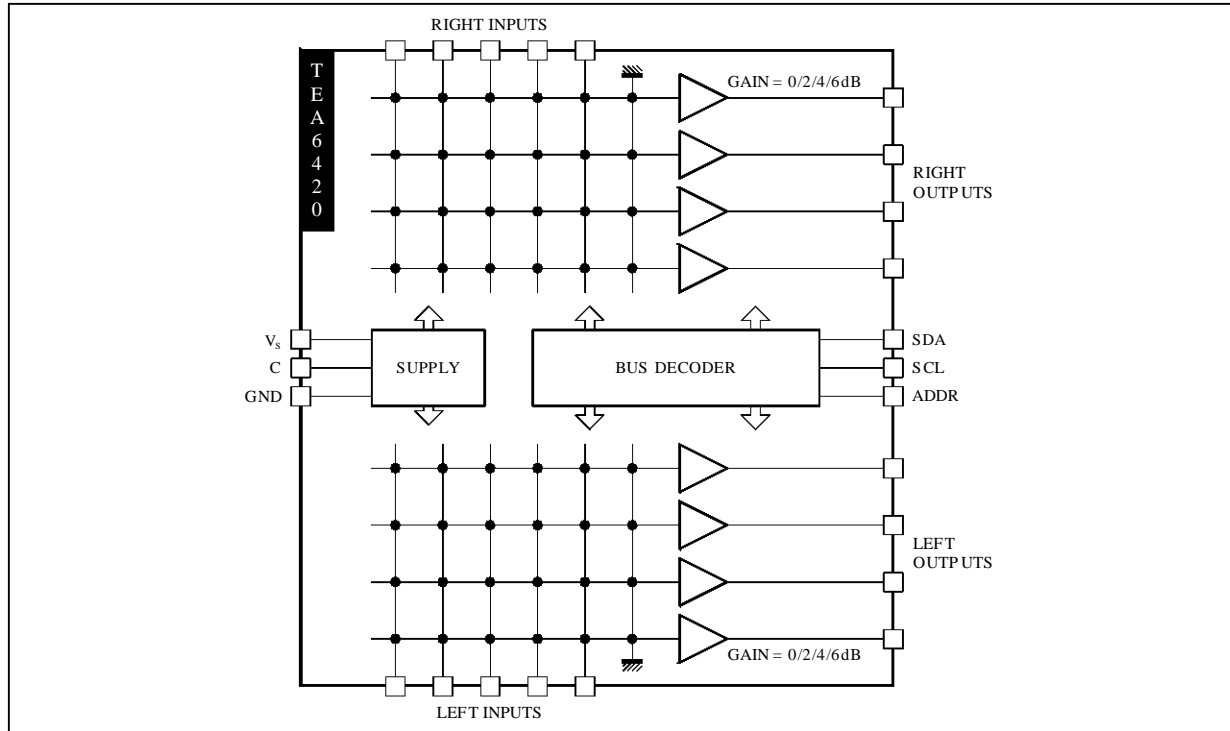


**PIN CONNECTIONS**



# TEA6420

## BLOCK DIAGRAM



6420-03.EPS

## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Supply Voltage	10.2	V
T <sub>oper</sub>	Operating Ambient Temperature	0, + 70	°C
T <sub>stg</sub>	Storage Temperature	- 20, + 150	°C

6420-01.TBL

## THERMAL DATA

Symbol	Parameter	Value	Unit
R <sub>th(j-a)</sub>	Junction Ambient Thermal Resistance	SHRINK24 SO28 75 75	°C/W

6420-02.TBL

## ELECTRICAL CHARACTERISTICS

T<sub>A</sub> = 25°C, V<sub>S</sub> = 10V, R<sub>L</sub> = 10kΩ, R<sub>G</sub> = 600Ω, f = 1kHz (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
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### SUPPLY

V <sub>S</sub>	Supply Voltage		8	9	10.2	V
I <sub>S</sub>	Supply Current			5	8	mA
SVR	Ripple Rejection	V <sub>IN</sub> = 500mV <sub>RMS</sub> , BW = 20 - 20kHz	70	80		dB

### MATRIX

V <sub>IN</sub>	Input DC Level		4.5	5	5.5	V
R <sub>I</sub>	Input Resistance		30	50	100	kΩ
C <sub>S</sub>	Channel Separation	V <sub>IN</sub> = 2V <sub>RMS</sub> f = 1kHz	Gain = 0dB Gain = 6dB	80 70	90 82	dB dB

6420-03.TBL

# PW1231

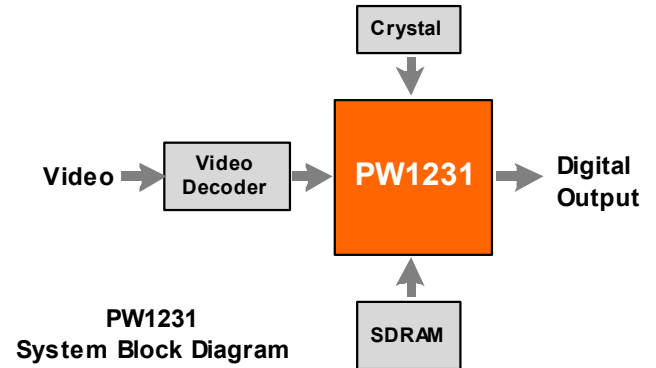
## Product Specification



### General

The PW1231 is a high-quality, digital video signal processor that incorporates Pixelworks' patented deinterlacing, scaling, and video enhancement algorithms. The PW1231 accepts industry-standard video formats and resolutions, and converts the input into any desired output format. The video algorithms are highly efficient, providing excellent quality video.

The PW1231 Video Signal Processor combines many functions into a single device, including memory controller, auto-configuration, and others. This high level of integration enables simple, flexible, cost-effective solutions featuring fewer required components.



### Features

- Built-In Memory Controller
- Motion-Adaptive Deinterlace Processor
- Intelligent Edge Deinterlacing
- Digital Color/Luminance Transient Improvement (DCTI/DLTI)
- Interlaced Video Input Options, including NTSC and PAL
- Independent horizontal and vertical scaling
- Copy Protection
- Two-Wire Serial Interface

### Applications: For use with Digital Displays

- Flat-Panel (LCD, DLP) TVs
- Rear Projection TVs
- Plasma Displays
- LCD Multimedia Monitors
- Multimedia Projectors

Device	Application	Package
PW1231 PW1231-L	Up to XGA	160-pin PQF

NOTE: "L" denotes lead (Pb) free

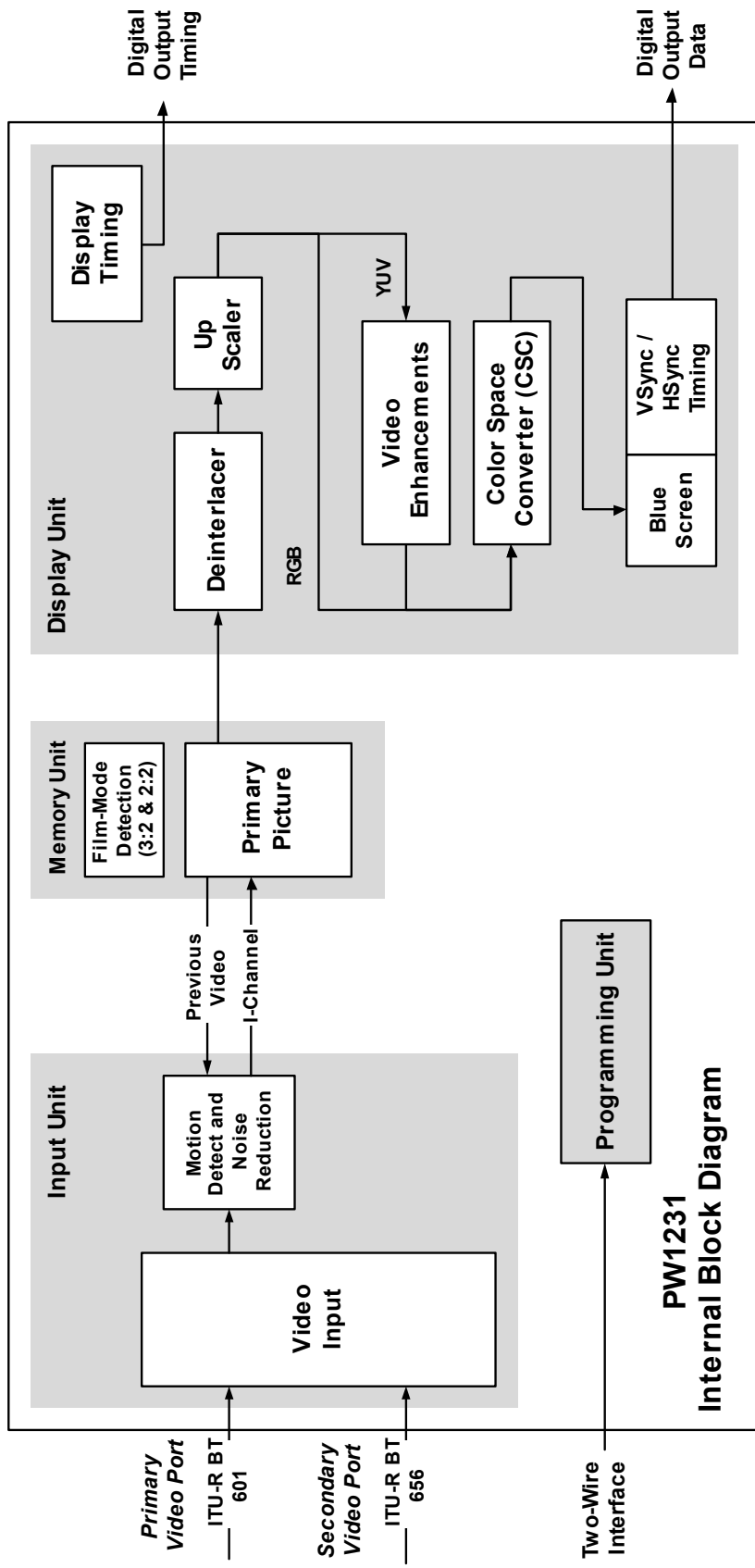


Figure 1-1 Internal Block Diagram

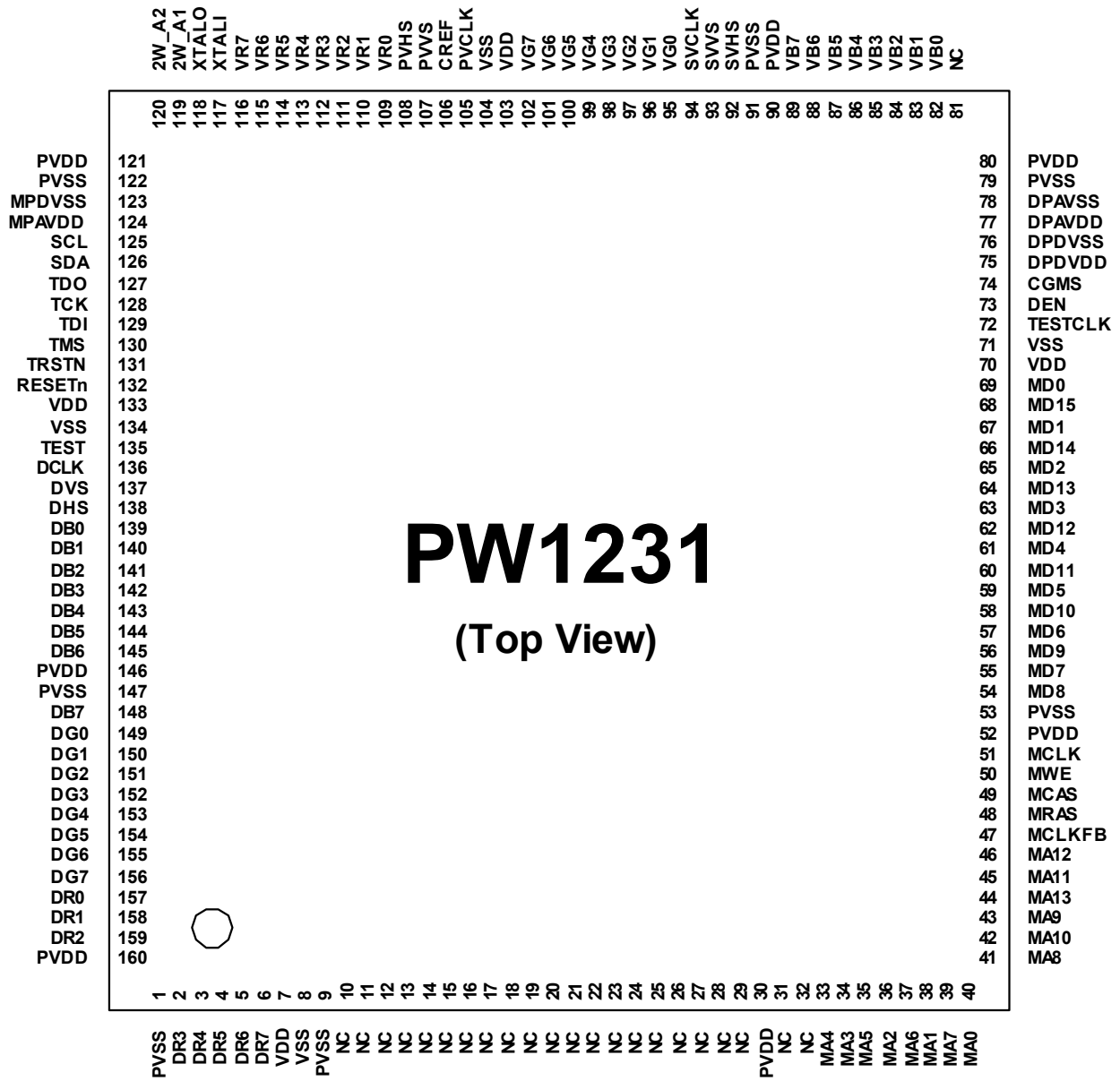


Figure 2-1 PW1231 Pin Layout

# PW181

## Product Specification



### General Description

The PW181 ImageProcessor is a highly integrated “system-on-a-chip” that interfaces computer graphics and video inputs in virtually any format to a fixed-frequency flat panel display.

Computer and video images from NTSC/PAL to WUXGA at virtually any refresh rate can be resized to fit on a fixed-frequency target display device with any resolution up to WUXGA. Video data from 4:3 aspect ratio NTSC or PAL and 16:9 aspect ratio HDTV or SDTV is supported. Multi-region, nonlinear scaling allows these inputs to be resized optimally for the native resolution of the display.

Advanced scaling techniques are supported, such as format conversion using multiple programmable regions. Three independent image scalers coupled with frame locking circuitry and dual programmable color lookup tables create sharp images in multiple windows, without user intervention.

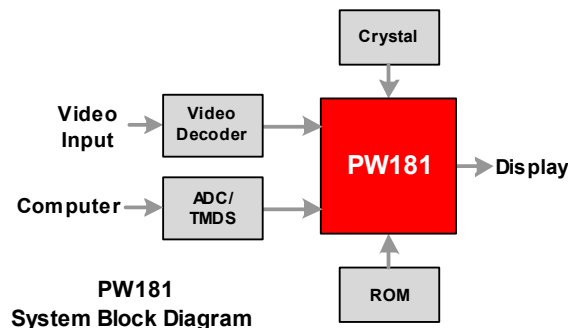
Embedded SDRAM frame buffers and memory controllers perform frame rate conversion and enhanced video processing completely on-chip. A separate memory is dedicated to storage of on-screen display images and CPU general purpose use.

Advanced video processing techniques are supported using the internal frame buffer, including motion adaptive, temporal deinterlacing with film mode detection. When used in combination with the new third-generation scaler, this advanced video processing technology delivers the highest quality video for advanced displays.

Both input ports support integrated DVI 1.0 content protection using standard DVI receivers.

A new advanced OSD Generator with more colors and larger sizes supports more demanding OSD applications, such as on-screen programming guides. When coupled with the new, faster, integrated microprocessor, this OSD Generator supports advanced OSD animation techniques.

Programmable features include the user interface, custom start-up screen, all automatic imaging features, and special screen effects.



### Features

- Third-generation, two-dimensional filtering techniques
- Third-generation, advanced scaling techniques
- Second-generation Automatic Image Optimization
- Frame rate conversion
- Video processing
- On-Screen Display (OSD)
- On-chip microprocessor
- JTAG debugger and boundary scan
- Picture-in-picture (PIP)
- Multi-region, non-linear scaling
- Hardware 2-wire serial bus support

### Applications

- Multimedia Displays
- Plasma Displays
- Digital Television

Device	Application	Package
PW181-10V	Up to XGA Displays	352 PBGA
PW181-20V	Up to UXGA Displays	
PW181-30V	Up to WUXGA Display	

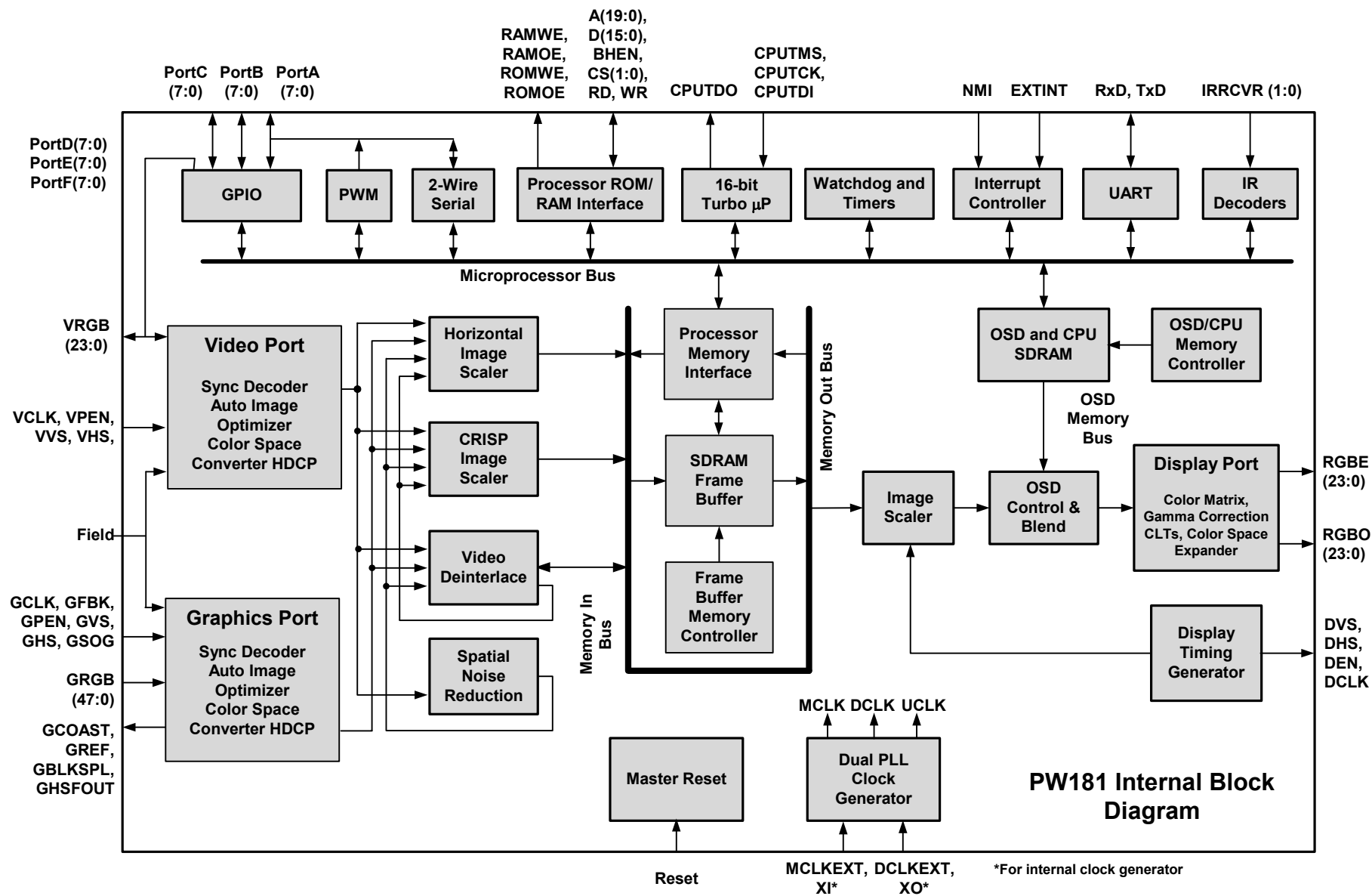


Figure 1-1 Internal Block Diagram

## L6B RECOMMENDED SPARE PARTS

POSITION	PART NUMBER	PART DESCRIPTION
	056T27-CH1	LCD CHIMEI V270W1-L04 (LCD TV)
	056T30-CH1	LCD CHI-MEI V296W1-L14 (LCD TV) 30"
	056W26-LP2	LCD LG-PHILIPS LC260W01-A5K6 (LCD TV)
	L38172	CU ASSY 30" L6B (ZR1192-21)
	L57172	CU ASSY 27" L6B (ZR1192-21)
	UR3110	L6B CHASIS 27"TOS MS/NX/3/SK/PIP/PEN/DVI
	US1110	L6B CHASIS TOS 30" M/NX/3/SK/PIP/PEN/DVI
	US1172	CU ASSY 30" L6BL38 TOSHIBA (ZR1191-20)
	Y23172	CU ASSY 26L6L43 L6B VER.(ZP9191-20)
	Y22172	CU ASSY 26L6BL44 (ZG5192-20)
	Y51120	L6 CHASIS DAUGHTER BOARD
	ZG4187F	RC L6B TOSHIBA GRI/SHINE SI.P.ED CT-870
	JX1187	R/C L6B REMOTE CONTROL JAECS SIL.GRUNDIG
	ZG4301	TERMINAL BATT.BOX(+-) R/C TOSHIBA
	ZJ9172	POWER SWITCH ASSY 27/30" L6B(ZJ9192-20)
	ZJ9205F	BACK COVER 30" L38 LCD TV SILVER L6B
	ZJ9206F	SCART BACK COVER 30L38 LCD TV SILVER
	ZJ9251F	FRONT COVER G.BL/BUR.SIL P.ED 30L38 TOS.
	ZJ9805	CUSHION LEFT 30" LCD TV
	ZJ9806	CUSHION RIGHT 30" LCD TV
	ZR1107-AS	SPEAKER 10W 4R PALSTIC CASE KAB MOUNTED
	ZR1172	CU ASSY 27" L6BL57 TOSHIBA (ZR1191-20)
	ZR1204F	LENS IR/LED 30"L38 LCD TV
	ZR1205F	BACK COVER 27" L57 LCD TV SILVER L6B
	ZR1208F	KNOB POWER 27"L57 LCD TV SILVER
	ZR1212F	KNOB PROGRAM/VOL. 27LCD TOSHIBA SILVER
	ZR1251F	FRONT COVER G.BL./BUR.SIL P.ED 27L57 TOS
	ZR1255	BACK COVER DARK GRAY P.ED 27L6BL57 LCD
	ZR1258	POWER KNOB BURNISH SILVER PAINTED 27"L57
	ZR1805	CUSHION LEFT 30" LCD TV
	ZR1806	CUSHION RIGHT 27" LCD TV
	ZR1910	ADAPTOR SPS 180W 24/5 12/5 PFC 2PIN(LISH
AV/TV	010844	TACT SWITCH 2 LEG (MTSB)
CN250	031383	CON.DVI 24+5POL JRX1-DV124+5
CN601	ZJ9512-AS	CABLE PANEL.INTERFACE 30"L6B CHI 30.LU
	303407	LED ROT LTL 4221N P6 GREEN
	303447	LED 3MM RED-BLUE LIGITEK LSRFSBK2092
F450	054290	FUSE 5.0A 250V ROUND
F451	054290	FUSE 5.0A 250V ROUND
IR1	452521-01	IR RECEIVER TSOP34838 SS1A
J19	031508	KONN. RF IEC TO RCA
J53	031477	KONN. CINCH .... WHITE HOR.12,5MM 30L6
J56	031478	KONN. CINCH ..... RED HOR.12,5MM 30L6
J57	031423	HEADPHONE JACK YKB21-5103
J832	031479	KONN. CINCH ... YELLOW HOR.12,5MM 30L6
J926	031795	KONN.S-VHS
MENU	010844	TACT SWITCH 2 LEG (MTSB)
P250	031358	CONN. VGA B10B
SAW825	056708	SAW FILTER OFW K3958M
SAW826	056708	SAW FILTER OFW K3958M
SAW827	056010	SAW FILTER OFW K9656M



SAW828	056010	SAW FILTER OFW K9656M
SW1	010861	ON/OFF SWITCH BK98
TU825	Y51136-PH1	TUNER PH UV1316T/SIGH-3 SPL ASIMTRK YAT
TU826	Y11136	TUNER HOR.PHILLIPS UV1316/A I H-4
U1	453124	IC-CHIP NCP1117DT33RK TO-252 PACKAGE
U150	453195	IC PI5V330W SOIC(W)
U151	453350	IC-CHIP PCF8591 /SO16
U2	453262	IC-CHIP AD9887KS-100- DUAL IN.FACE TRAY
U250	453261	IC-CHIP 24LC21A-I/SN-CMOS18K/2.5V SE.T&R
U251	453261	IC-CHIP 24LC21A-I/SN-CMOS18K/2.5V SE.T&R
U3	453494	IC-CHIP TRIPATH TA2024 STEREO CLAS-D T&R
U350	453921	IC-CHIP DS90C385A MTD56
U351	452997	IC LM358DR2 / S08
U400	453233	IC-CHIP AM29LV160DB-90EC (TRAY)TSOP48
U401	453263	IC-CHIP AT24C64N-10SI-2. - SO8 TAPE&REEL
U402	453349	IC-CHIP TLC7733 /SO8
U450	453095	IC-CHIP NCP1117DTARK (DPAK)(T&R) TO252
U452	401372	TRN FDS9933A
U454	453294	IC-CHIP LM2576D2TR4-005V 3A TO263 STPT&R
U455	453294	IC-CHIP LM2576D2TR4-005V 3A TO263 STPT&R
U456	453428	IC-CHIP LM317MDT VAR.VOLT.REG. TO-252
U457	453124	IC-CHIP NCP1117DT33RK TO-252 PACKAGE
U458	453124	IC-CHIP NCP1117DT33RK TO-252 PACKAGE
U50	452706	IC TDA1308T/N1 SO-G8 (T&R)
U51	453352	IC-CHIP MSP3410-MQFP64
U52	453351	IC TEA6420 /SO28
U650	453346	IC-CHIP PW1231A
U750	452863	IC MT48LC4M16A2-7E SDRAM 54PIN TSOP
U825	451569	IC-CHIP TDA9886T/V3 118(SO24) T&R
U826	451569	IC-CHIP TDA9886T/V3 118(SO24) T&R
U827	453271	IC-CHIP TEA6415CDT -VIDEO-MAT-SW.T&R
U925	453124	IC-CHIP NCP1117DT33RK TO-252 PACKAGE
X941	8R9185	HP JACK 17"LCD TV
Y300	056753	CRYSTALL 24.576MHZ 20PF 30PPM
Y50	056952	CRYSTAL 18.432MHZ +-30PPM
Y550	056119	CRYSTAL 14.31818MHZ CL=18PF30/30PPMH49U
Y650	056121	CRYSTAL 10 MHz / HC49U 20PF 30PPM
Y825	056013	CRYSTAL 4 MHZ HC49-U
Y826	056013	CRYSTAL 4 MHZ HC49-U
Y925	056753	CRYSTALL 24.576MHZ 20PF 30PPM

## FREQUENCY TABLE (MHz)

Channel	Number	BG	I	DK	L/L'
CH	1		49.75	49.75	47.75
CH	2	48.25	59.25	59.25	55.75
CH	3	55.25	77.25	77.25	60.50
CH	4	62.25	85.25	85.25	63.75
CH	5	175.25	93.25	93.25	176.00
CH	6	182.25	175.25	175.25	184.00
CH	7	189.25	183.25	183.25	192.00
CH	8	196.25	191.25	191.25	200.00
CH	9	203.25	199.25	199.25	208.00
CH	10	210.25	207.25	207.25	216.00
CH	11	217.25	215.25	215.25	189.25
CH	12	224.25	223.25	223.25	182.25
CH	13	53.75	45.75		196.25
CH	14	62.25	53.75		210.25
CH	15	82.25	61.75		
CH	16	175.25	69.75		
CH	17	183.25	95.25		
CH	18	192.25			
CH	19	201.25			
CH	20	210.25			
CH	21	471.25	471.25	471.25	471.25
CH	22	479.25	479.25	479.25	479.25
CH	23	487.25	487.25	487.25	487.25
CH	24	495.25	495.25	495.25	495.25
CH	25	503.25	503.25	503.25	503.25
CH	26	511.25	511.25	511.25	511.25
CH	27	519.25	519.25	519.25	519.25
CH	28	527.25	527.25	527.25	527.25
CH	29	535.25	535.25	535.25	535.25
CH	30	543.25	543.25	543.25	543.25
CH	31	551.25	551.25	551.25	551.25
CH	32	559.25	559.25	559.25	559.25
CH	33	567.25	567.25	567.25	567.25
CH	34	575.25	575.25	575.25	575.25
CH	35	583.25	583.25	583.25	583.25
CH	36	591.25	591.25	591.25	591.25
CH	37	599.25	599.25	599.25	599.25
CH	38	607.25	607.25	607.25	607.25
CH	39	615.25	615.25	615.25	615.25
CH	40	623.25	623.25	623.25	623.25
CH	41	631.25	631.25	631.25	631.25
CH	42	639.25	639.25	639.25	639.25
CH	43	647.25	647.25	647.25	647.25
CH	44	655.25	655.25	655.25	655.25

<b>Channel</b>	<b>Number</b>	<b>BG</b>	<b>I</b>	<b>DK</b>	<b>L/L'</b>
CH	45	663.25	663.25	663.25	663.25
CH	46	671.25	671.25	671.25	671.25
CH	47	679.25	679.25	679.25	679.25
CH	48	687.25	687.25	687.25	687.25
CH	49	695.25	695.25	695.25	695.25
CH	50	703.25	703.25	703.25	703.25
CH	51	711.25	711.25	711.25	711.25
CH	52	719.25	719.25	719.25	719.25
CH	53	727.25	727.25	727.25	727.25
CH	54	735.25	735.25	735.25	735.25
CH	55	743.25	743.25	743.25	743.25
CH	56	751.25	751.25	751.25	751.25
CH	57	759.25	759.25	759.25	759.25
CH	58	767.25	767.25	767.25	767.25
CH	59	775.25	775.25	775.25	775.25
CH	60	783.25	783.25	783.25	783.25
CH	61	791.25	791.25	791.25	791.25
CH	62	799.25	799.25	799.25	799.25
CH	63	807.25	807.25	807.25	807.25
CH	64	815.25	815.25	815.25	815.25
CH	65	823.25	823.25	823.25	823.25
CH	66	831.25	831.25	831.25	831.25
CH	67	839.25	839.25	839.25	839.25
CH	68	847.25	847.25	847.25	847.25
CH	69	855.25	855.25	855.25	855.25
CH	70		863,25		863.25
CH	71		871,25		
CH	72		879,25		
CH	73		887,25		160.00
CH	74	69.25			172.00
CH	75	76.25			220.00
CH	76	83.25			232.00
CH	77	90.25			244.00
CH	78	97.25			256.00
CH	79	59.25			268.00
CH	80	93.25			280.00
S	1	105.25	103.25	103.25	116.75
S	2	112.25	111.25	111.25	128.75
S	3	119.25	119.25	119.25	140.75
S	4	126.25	127.25	127.25	152.75
S	5	133.25	135.25	135.25	164.75
S	6	140.25	143.25	143.25	176.75
S	7	147.25	151.25	151.25	188.75
S	8	154.25	159.25	159.25	200.75
S	9	161.25	167.25	167.25	212.75
S	10	168.25	231.25	231.25	224.75
S	11	231.25	239.25	239.25	236.75
S	12	238.25	247.25	247.25	248.75
S	13	245.25	255.25	255.25	260.75
S	14	252.25	263.25	263.25	272.75

<b>Channel</b>	<b>Number</b>	<b>BG</b>	<b>I</b>	<b>DK</b>	<b>L/L'</b>
S	15	259.25	271.25	271.25	284.75
S	16	266.25	279.25	279.25	296.75
S	17	273.25	287.25	287.25	55.75
S	18	280.25	295.25	295.25	60.50
S	19	287.25	303.25	303.25	63.75
S	20	294.25			
S	21	303.25			303.25
S	22	311.25	311.25	311.25	311.25
S	23	319.25	319.25	319.25	319.25
S	24	327.25	327.25	327.25	327.25
S	25	335.25	335.25	335.25	335.25
S	26	343.25	343.25	343.25	343.25
S	27	351.25	351.25	351.25	351.25
S	28	359.25	359.25	359.25	359.25
S	29	367.25	367.25	367.25	367.25
S	30	375.25	375.25	375.25	375.25
S	31	383.25	383.25	383.25	383.25
S	32	391.25	391.25	391.25	391.25
S	33	399.25	399.25	399.25	399.25
S	34	407.25	407.25	407.25	407.25
S	35	415.25	415.25	415.25	415.25
S	36	423.25	423.25	423.25	423.25
S	37	431.25	431.25	431.25	431.25
S	38	439.25	439.25	439.25	439.25
S	39	447.25	447.25	447.25	447.25
S	40	455.25	455.25	455.25	455.25
S	41	463.25	463.25	463.25	463.25