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## Service Manual

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# 1. Revision List

## Manual xxxx xxx xxxx.0

- First release.

## Manual xxxx xxx xxxx.1

- All chapters: added new model numbers, see [Table 2-1](#).
- Chapter 9: added a block diagram for sets with Sharp Forward Integration.
- Chapter 10: added schematic diagrams for sets with Sharp Forward Integration.

## Manual xxxx xxx xxxx.2

- All chapters: added new model number, see [Table 2-1](#).
- Chapter 2, [2.3.2 Rear Connections](#): added remark on availability of Audio/Video Out on SCART 1 and 2.
- Chapter 6: updated [Table 6-3](#) Option Code overview (for all screensizes).
- Chapter 9: added a block diagram for 37" sets with LGD Forward Integration.
- Chapter 10: added schematic diagrams for 37" sets with LGD Forward Integration.

# 2. Technical Specifications and Connections

## Index of this chapter:

[2.1 Technical Specifications](#)

[2.2 Directions for Use](#)

[2.3 Connections](#)

[2.4 Chassis Overview](#)

## Notes:

- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

## 2.1 Technical Specifications

For on-line product support please use the links in [Table 2-1](#). Here is product information available, as well as getting started, user manuals, frequently asked questions and software & drivers.

**Table 2-1 Described Model numbers**

CTN	Styling	Published in:
<a href="#">32PFL5604H/12</a> (LGD)	P & S	3122 785 18440
<a href="#">32PFL5604H/12</a> (Sharp)		3122 785 18441
<a href="#">32PFL5624H/12</a> (LGD)		3122 785 18441
<a href="#">32PFL5624H/12</a> (Sharp)		3122 785 18441
<a href="#">37PFL5604H/12</a> (LGD)		3122 785 18442
<a href="#">42PFL5604H/12</a> (LGD)		3122 785 18440
<a href="#">42PFL5624H/12</a> (LGD)		3122 785 18441

## 2.2 Directions for Use

You can download this information from the following websites:

<http://www.philips.com/support>

<http://www.p4c.philips.com>

## 2.3 Connections

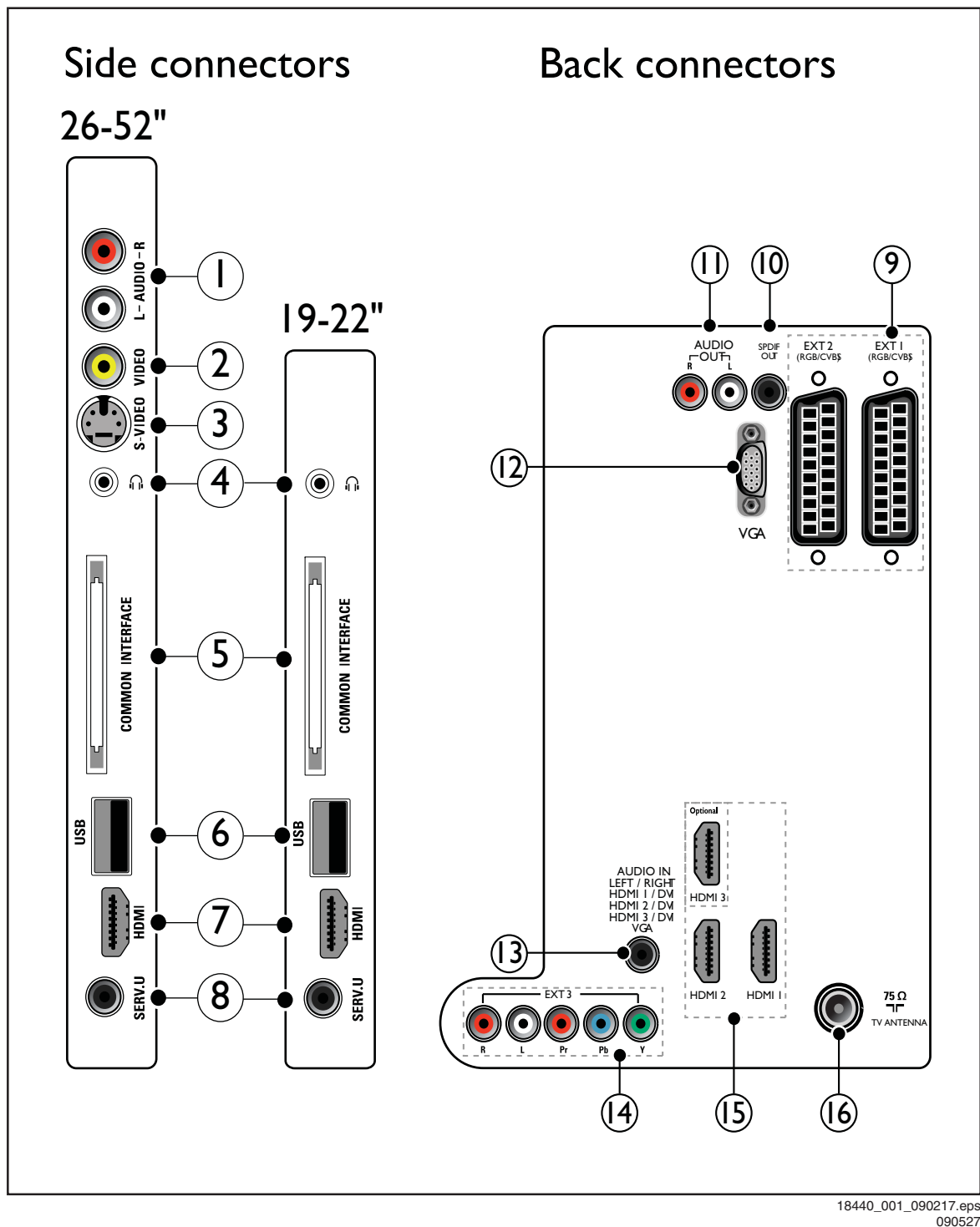


Figure 2-1 Connection overview

**Note:** The following connector colour abbreviations are used (according to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, Ye= Yellow.

### 2.3.1 Side Connections

#### 1 - Cinch: Audio - In

Rd - Audio R 0.5 V<sub>RMS</sub> / 10 kΩ  
Wh - Audio L 0.5 V<sub>RMS</sub> / 10 kΩ



#### 2 - Cinch: Video CVBS - In

Ye - Video CVBS 1 V<sub>PP</sub> / 75 Ω



#### 3 - S-Video (Hosiden): Video Y/C - In

1 - Ground Y Gnd  
2 - Ground C Gnd  
3 - Video Y 1 V<sub>PP</sub> / 75 Ω  
4 - Video C 0.3 V<sub>PP</sub> / 75 Ω



#### 4 - Head phone (Output)

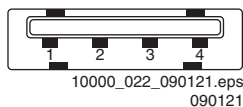
Bk - Head phone 32 - 600 Ω / 10 mW



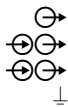
#### 5 - Common Interface

68p - See diagram B05C [SSB: PQMCIA](#)

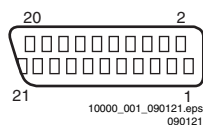


**6 - USB2.0****Figure 2-2 USB (type A)**

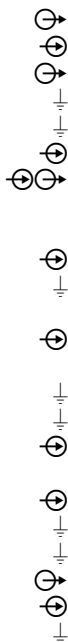
- |   |            |     |
|---|------------|-----|
| 1 | - +5V      |     |
| 2 | - Data (-) |     |
| 3 | - Data (+) |     |
| 4 | - Ground   | Gnd |

**7 - HDMI: Digital Video, Digital Audio - In (see connector 15)****8 - Service Connector (UART)**

- |   |           |          |
|---|-----------|----------|
| 1 | - Ground  | Gnd      |
| 2 | - UART_TX | Transmit |
| 3 | - UART_RX | Receive  |

**2.3.2 Rear Connections****9 - EXT1/2: Video RGB - In, CVBS - In/Out, Audio - In/Out (\*)****Figure 2-3 SCART connector**

- |    |                    |  |  |
|----|--------------------|--|--|
| 1  | - Audio R (*)      | 0.5 V <sub>RMS</sub> / 1 kΩ                                |  |
| 2  | - Audio R          | 0.5 V <sub>RMS</sub> / 10 kΩ                               |  |
| 3  | - Audio L (*)      | 0.5 V <sub>RMS</sub> / 1 kΩ                                |  |
| 4  | - Ground Audio     | Gnd  |  |
| 5  | - Ground Blue      | Gnd  |  |
| 6  | - Audio L          | 0.5 V <sub>RMS</sub> / 10 kΩ                               |  |
| 7  | - Video Blue       | 0.7 V <sub>PP</sub> / 75 Ω                                 |  |
| 8  | - Function Select  | 0 - 2 V: INT<br>4.5 - 7 V: EXT 16:9<br>9.5 - 12 V: EXT 4:3 |  |
| 9  | - Ground Green     | Gnd  |  |
| 10 | - n.c.             |  |  |
| 11 | - Video Green      | 0.7 V <sub>PP</sub> / 75 Ω                                 |  |
| 12 | - n.c.             |  |  |
| 13 | - Ground Red       | Gnd  |  |
| 14 | - Ground P50       | Gnd  |  |
| 15 | - Video Red        | 0.7 V <sub>PP</sub> / 75 Ω                                 |  |
| 16 | - Status/FBL       | 0 - 0.4 V: INT<br>1 - 3 V: EXT / 75 Ω                      |  |
| 17 | - Ground Video     | Gnd  |  |
| 18 | - Ground FBL       | Gnd  |  |
| 19 | - Video CVBS/Y (*) | 1 V <sub>PP</sub> / 75 Ω                                   |  |
| 20 | - Video CVBS       | 1 V <sub>PP</sub> / 75 Ω                                   |  |
| 21 | - Shield           | Gnd  |  |



(\*) **Note:** The AV output on SCART 1 or 2 will be enabled (SW controlled) for analogue RF channels only, if the decoder is turned "on" in the Menu: select Setup -> Installation -> Decoder -> Status: select SCART 1 or 2 -> Channel: select any analogue channel.

**10 - Cinch: S/PDIF - Out**

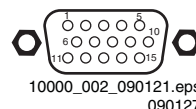
- |    |           |                                 |
|----|-----------|---------------------------------|
| Bk | - Coaxial | 0.4 - 0.6V <sub>PP</sub> / 75 Ω |
|----|-----------|---------------------------------|

**11 - Cinch: Audio - Out**

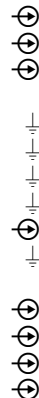
- |    |             |                              |
|----|-------------|------------------------------|
| Rd | - Audio - R | 0.5 V <sub>RMS</sub> / 10 kΩ |
|----|-------------|------------------------------|



Wh - Audio - L

0.5 V<sub>RMS</sub> / 10 kΩ**12 - VGA: Video RGB - In****Figure 2-4 VGA Connector**

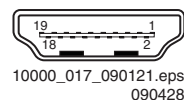
- |    |                     |                            |  |
|----|---------------------|----------------------------|--|
| 1  | - Video Red         | 0.7 V <sub>PP</sub> / 75 Ω |  |
| 2  | - Video Green       | 0.7 V <sub>PP</sub> / 75 Ω |  |
| 3  | - Video Blue        | 0.7 V <sub>PP</sub> / 75 Ω |  |
| 4  | - n.c.              |                            |  |
| 5  | - Ground            | Gnd                        |  |
| 6  | - Ground Red        | Gnd                        |  |
| 7  | - Ground Green      | Gnd                        |  |
| 8  | - Ground Blue       | Gnd                        |  |
| 9  | - +5V <sub>DC</sub> | +5 V                       |  |
| 10 | - Ground Sync       | Gnd                        |  |
| 11 | - n.c.              |                            |  |
| 12 | - DDC_SDA           | DDC data                   |  |
| 13 | - H-sync            | 0 - 5 V                    |  |
| 14 | - V-sync            | 0 - 5 V                    |  |
| 15 | - DDC_SCL           | DDC clock                  |  |

**13 - Mini Jack: Audio - In**

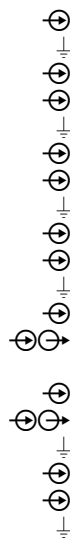
- |    |           |                              |
|----|-----------|------------------------------|
| Wh | - Audio L | 0.5 V <sub>RMS</sub> / 10 kΩ |
| Rd | - Audio R | 0.5 V <sub>RMS</sub> / 10 kΩ |

**14 - EXT3: Cinch: Video YPbPr - In, Audio - In**

- |    |             |                              |
|----|-------------|------------------------------|
| Gn | - Video Y   | 1 V <sub>PP</sub> / 75 Ω     |
| Bu | - Video Pb  | 0.7 V <sub>PP</sub> / 75 Ω   |
| Rd | - Video Pr  | 0.7 V <sub>PP</sub> / 75 Ω   |
| Rd | - Audio - R | 0.5 V <sub>RMS</sub> / 10 kΩ |
| Wh | - Audio - L | 0.5 V <sub>RMS</sub> / 10 kΩ |

**15 - HDMI 1, 2 & 3 Digital Video, Digital Audio - In****Figure 2-5 HDMI (type A) connector**

- |    |            |                 |  |
|----|------------|-----------------|--|
| 1  | - D2+      | Data channel    |  |
| 2  | - Shield   | Gnd             |  |
| 3  | - D2-      | Data channel    |  |
| 4  | - D1+      | Data channel    |  |
| 5  | - Shield   | Gnd             |  |
| 6  | - D1-      | Data channel    |  |
| 7  | - D0+      | Data channel    |  |
| 8  | - Shield   | Gnd             |  |
| 9  | - D0-      | Data channel    |  |
| 10 | - CLK+     | Data channel    |  |
| 11 | - Shield   | Gnd             |  |
| 12 | - CLK-     | Data channel    |  |
| 13 | - Easylink | Control channel |  |
| 14 | - n.c.     |                 |  |
| 15 | - DDC_SCL  | DDC clock       |  |
| 16 | - DDC_SDA  | DDC data        |  |
| 17 | - Ground   | Gnd             |  |
| 18 | - +5V      |                 |  |
| 19 | - HPD      | Hot Plug Detect |  |
| 20 | - Ground   | Gnd             |  |

**16 - Aerial - In**

- |   |                 |            |
|---|-----------------|------------|
| - | - IEC-type (EU) | Coax, 75 Ω |
|---|-----------------|------------|

**2.4 Chassis Overview**

Refer to chapter [9. Block Diagrams](#) for PWB/CBA locations.



## 3. Precautions, Notes, and Abbreviation List

### Index of this chapter:

[3.1 Safety Instructions](#)


[3.2 Warnings](#)

[3.3 Notes](#)

[3.4 Abbreviation List](#)

### 3.1 Safety Instructions


Safety regulations require the following **during** a repair:

- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard. Of de set ontploft!

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:



- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
  1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
  2. Set the Mains/AC Power switch to the "on" position (keep the Mains/AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
  4. Switch "off" the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

### 3.2 Warnings





- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ) . Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

### 3.3 Notes

#### 3.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground () , or hot ground () , depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and

picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).

- Where necessary, measure the waveforms and voltages with () and without () aerial signal. Measure the voltages in the power supply section both in normal operation () and in stand-by () . These values are indicated by means of the appropriate symbols.

#### 3.3.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kΩ).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 Ω).
- All capacitor values are given in micro-farads ( $\mu = \times 10^{-6}$ ), nano-farads ( $n = \times 10^{-9}$ ), or pico-farads ( $p = \times 10^{-12}$ ).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (\*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed on the Philips Spare Parts Web Portal.

#### 3.3.3 Spare Parts

For the latest spare part overview, consult your Philips Spare Part web portal.

#### 3.3.4 BGA (Ball Grid Array) ICs

##### Introduction

For more information on how to handle BGA devices, visit this URL: <http://www.atyourservice-magazine.com>. Select "Magazine", then go to "Repair downloads". Here you will find Information on how to deal with BGA-ICs.

##### BGA Temperature Profiles

For BGA-ICs, you **must** use the correct temperature-profile. Where applicable and available, this profile is added to the IC Data Sheet information section in this manual.

#### 3.3.5 Lead-free Soldering

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
  - To reach a solder-tip temperature of at least 400°C.
  - To stabilize the adjusted temperature at the solder-tip.
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilized at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch "off" unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly **to avoid mixed regimes**. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.

### 3.3.6 Alternative BOM identification

It should be noted that on the European Service website, "Alternative BOM" is referred to as "Design variant".

The **third digit** in the serial number (example: AG2B0335000001) indicates the number of the alternative B.O.M. (Bill Of Materials) that has been used for producing the specific TV set. In general, it is possible that the same TV model on the market is produced with e.g. two different types of displays, coming from two different suppliers. This will then result in sets which have the same CTN (Commercial Type Number; e.g. 28PW9515/12) but which have a different B.O.M. number.

By looking at the third digit of the serial number, one can identify which B.O.M. is used for the TV set he is working with. If the third digit of the serial number contains the number "1" (example: AG1B0335000001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a "2" (example: AG2B0335000001), then the set has been produced according to B.O.M. no. 2. This is important for ordering the correct spare parts!

For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26 = 35 different B.O.M.s can be indicated by the third digit of the serial number.

**Identification:** The bottom line of a type plate gives a 14-digit serial number. Digits 1 and 2 refer to the production centre (e.g. AG is Bruges), digit 3 refers to the B.O.M. code, digit 4 refers to the Service version change code, digits 5 and 6 refer to the production year, and digits 7 and 8 refer to production week (in example below it is 2006 week 17). The 6 last digits contain the serial number.



Figure 3-1 Serial number (example)

### 3.3.7 Board Level Repair (BLR) or Component Level Repair (CLR)

If a board is defective, consult your repair procedure to decide if the board has to be exchanged or if it should be repaired on component level.

If your repair procedure says the board should be exchanged completely, do not solder on the defective board. Otherwise, it cannot be returned to the O.E.M. supplier for back charging!

### 3.3.8 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

### 3.4 Abbreviation List

0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16 : 9 format, 12 = play 4 : 3 format
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeps the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars without discarding video information
ATSC	Advanced Television Systems Committee, the digital TV standard in the USA
ATV	See Auto TV
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way
AV	External Audio Video
AVC	Audio Video Controller
AVIP	Audio Video Input Processor
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BLR	Board-Level Repair
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries
B-TXT	Blue Teletext
C	Centre channel (audio)
CEC	Consumer Electronics Control bus: remote control bus on HDMI connections
CL	Constant Level: audio output to connect with an external amplifier
CLR	Component Level Repair
ComPair	Computer aided rePair
CP	Connected Planet / Copy Protection
CSM	Customer Service Mode
CTI	Color Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronization
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DDC	See "E-DDC"
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz
DFI	Dynamic Frame Insertion
DFU	Directions For Use: owner's manual
DMR	Digital Media Reader: card reader
DMSD	Digital Multi Standard Decoding
DNM	Digital Natural Motion

DNR	Digital Noise Reduction: noise reduction feature of the set		uses 8 bit or 10 bit data words, and has a maximum data rate of 270 Mbit/s, with a minimum bandwidth of 135 MHz.
DRAM	Dynamic RAM		
DRM	Digital Rights Management		
DSP	Digital Signal Processing	ITV	Institutional TeleVision; TV sets for hotels, hospitals etc.
DST	Dealer Service Tool: special remote control designed for service technicians	LS	Last Status; The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences
DTCP	Digital Transmission Content Protection; A protocol for protecting digital audio/video content that is traversing a high speed serial bus, such as IEEE-1394	LATAM	Latin America
DVB-C	Digital Video Broadcast - Cable	LCD	Liquid Crystal Display
DVB-T	Digital Video Broadcast - Terrestrial	LED	Light Emitting Diode
DVD	Digital Versatile Disc	L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
DVI(-d)	Digital Visual Interface (d= digital only)		LG.Philips LCD (supplier)
E-DDC	Enhanced Display Data Channel (VESA standard for communication channel and display). Using E-DDC, the video source can read the EDID information from the display.	LPL	Loudspeaker
		LS	Low Voltage Differential Signalling
		LVDS	Mega bits per second
EDID	Extended Display Identification Data (VESA standard)	Mbps	Monochrome TV system. Sound carrier distance is 4.5 MHz
		M/N	Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor
EEPROM	Electrically Erasable and Programmable Read Only Memory	MIPS	Matrix Output Processor
EMI	Electro Magnetic Interference		Metal Oxide Silicon Field Effect Transistor, switching device
EPLD	Erasable Programmable Logic Device	MOP	Motion Pictures Experts Group
EU	Europe	MOSFET	Multi Platform InterFace
EXT	EXTeRnal (source), entering the set by SCART or by cinches (jacks)		MUTE Line
		MPEG	Not Connected
FDS	Full Dual Screen (same as FDW)	MPIF	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
FDW	Full Dual Window (same as FDS)	MUTE	Negative Temperature Coefficient, non-linear resistor
FLASH	FLASH memory	NC	National Television Standard Committee. Color system mainly used in North America and Japan. Color carrier NTSC M/N= 3.579545 MHz, NTSC 4.43= 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
FM	Field Memory or Frequency Modulation	NICAM	Non-Volatile Memory: IC containing TV related data such as alignments
FPGA	Field-Programmable Gate Array		Open Circuit
FTV	Flat TeleVision		On Screen Display
Gb/s	Giga bits per second	NTC	On screen display Teletext and Control; also called Artistic (SAA5800)
G-TXT	Green TeleteXT	NTSC	Project 50: communication protocol between TV and peripherals
H	H_sync to the module		Phase Alternating Line. Color system mainly used in West Europe (color carrier= 4.433619 MHz) and South America (color carrier PAL M= 3.575612 MHz and PAL N= 3.582056 MHz)
HD	High Definition		Printed Circuit Board (same as "PWB")
HDD	Hard Disk Drive		Pulse Code Modulation
HDCP	High-bandwidth Digital Content Protection: A "key" encoded into the HDMI/DVI signal that prevents video data piracy. If a source is HDCP coded and connected via HDMI/DVI without the proper HDCP decoding, the picture is put into a "snow vision" mode or changed to a low resolution. For normal content distribution the source and the display device must be enabled for HDCP "software key" decoding.	NVM	Plasma Display Panel
		O/C	Power Factor Corrector (or Pre-conditioner)
		OSD	Picture In Picture
		OTC	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
		P50	Point Of Deployment: a removable CAM module, implementing the CA system for a host (e.g. a TV-set)
		PAL	Power On Reset, signal to reset the uP
HDMI	High Definition Multimedia Interface		Positive Temperature Coefficient, non-linear resistor
HP	HeadPhone		Printed Wiring Board (same as "PCB")
I	Monochrome TV system. Sound carrier distance is 6.0 MHz		
I <sup>2</sup> C	Inter IC bus	PCB	
I <sup>2</sup> D	Inter IC Data bus	PCM	
I <sup>2</sup> S	Inter IC Sound bus	PDP	
IF	Intermediate Frequency	PFC	
IR	Infra Red		
IRQ	Interrupt Request	PIP	
ITU-656	The ITU Radio communication Sector (ITU-R) is a standards body subcommittee of the International Telecommunication Union relating to radio communication. ITU-656 (a.k.a. SDI), is a digitized video format used for broadcast grade video.	PLL	
	Uncompressed digital component or digital composite signals can be used. The SDI signal is self-synchronizing,	POD	
		POR	
		PTC	
		PWB	

PWM	Pulse Width Modulation	Y	Luminance signal
QRC	Quasi Resonant Converter	Y/C	Luminance (Y) and Chrominance (C) signal
QTNR	Quality Temporal Noise Reduction		
QVCP	Quality Video Composition Processor	YPbPr	Component video. Luminance and scaled color difference signals (B-Y and R-Y)
RAM	Random Access Memory		
RGB	Red, Green, and Blue. The primary color signals for TV. By mixing levels of R, G, and B, all colors (Y/C) are reproduced.	YUV	Component video
RC	Remote Control		
RC5 / RC6	Signal protocol from the remote control receiver		
RESET	RESET signal		
ROM	Read Only Memory		
RSDS	Reduced Swing Differential Signalling data interface		
R-TXT	Red TeleteXT		
SAM	Service Alignment Mode		
S/C	Short Circuit		
SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs		
SCL	Serial Clock I <sup>2</sup> C		
SCL-F	CLock Signal on Fast I <sup>2</sup> C bus		
SD	Standard Definition		
SDA	Serial Data I <sup>2</sup> C		
SDA-F	DAta Signal on Fast I <sup>2</sup> C bus		
SDI	Serial Digital Interface, see "ITU-656"		
SDRAM	Synchronous DRAM		
SECAM	SEquence Couleur Avec Mémoire. Color system mainly used in France and East Europe. Color carriers= 4.406250 MHz and 4.250000 MHz		
SIF	Sound Intermediate Frequency		
SMPS	Switched Mode Power Supply		
SoC	System on Chip		
SOG	Sync On Green		
SOPS	Self Oscillating Power Supply		
SPI	Serial Peripheral Interface bus; a 4-wire synchronous serial data link standard		
S/PDIF	Sony Philips Digital InterFace		
SRAM	Static RAM		
SRP	Service Reference Protocol		
SSB	Small Signal Board		
STBY	STand-BY		
SVGA	800 × 600 (4:3)		
SVHS	Super Video Home System		
SW	Software		
SWAN	Spatial temporal Weighted Averaging Noise reduction		
SXGA	1280 × 1024		
TFT	Thin Film Transistor		
THD	Total Harmonic Distortion		
TMDS	Transmission Minimized Differential Signalling		
TXT	TeleteXT		
TXT-DW	Dual Window with TeleteXT		
UI	User Interface		
uP	Microprocessor		
UXGA	1600 × 1200 (4:3)		
V	V-sync to the module		
VESA	Video Electronics Standards Association		
VGA	640 × 480 (4:3)		
VL	Variable Level out: processed audio output toward external amplifier		
VSF	Vestigial Side Band; modulation method		
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound		
WXGA	1280 × 768 (15:9)		
XTAL	Quartz crystal		
XGA	1024 × 768 (4:3)		

## 4. Mechanical Instructions

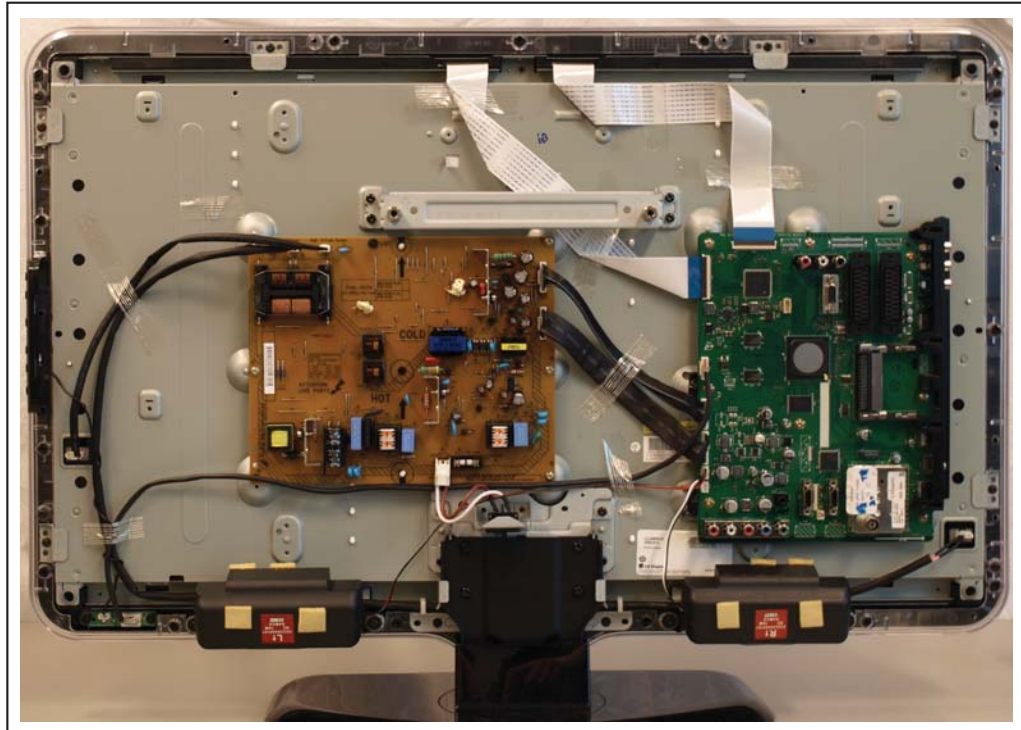
Index of this chapter:

- [4.1 Cable Dressing](#)
- [4.2 Service Positions](#)
- [4.3 Assy/Panel Removal](#)
- [4.4 Set Re-assembly](#)

Notes:

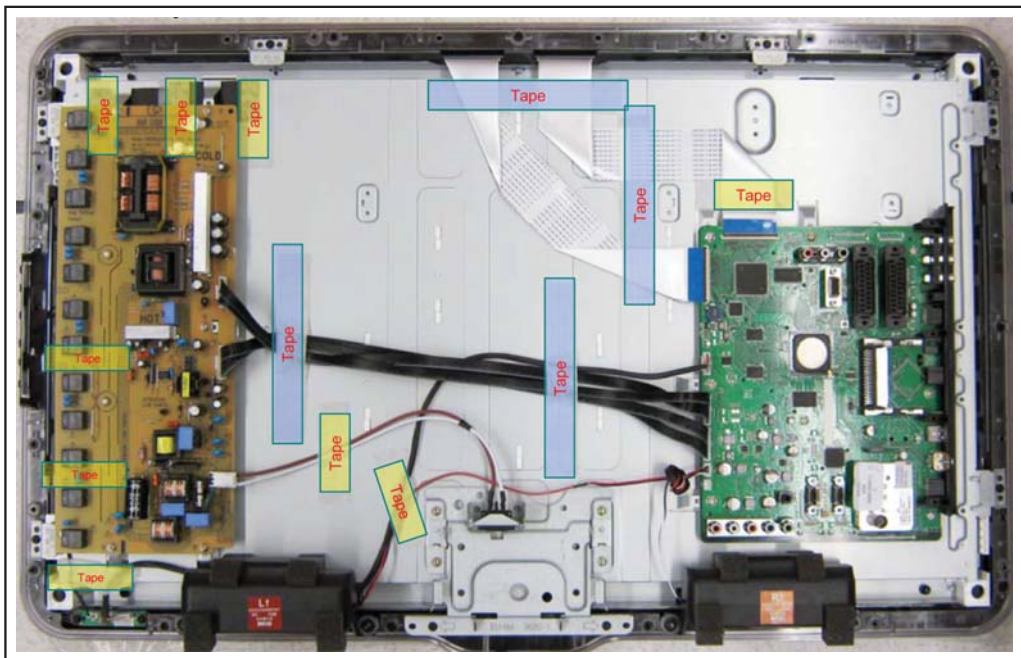
- Figures below can deviate slightly from the actual situation, due to the different set executions.

### 4.1 Cable Dressing



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Figure 4-1 Cable dressing 32" with LGD display







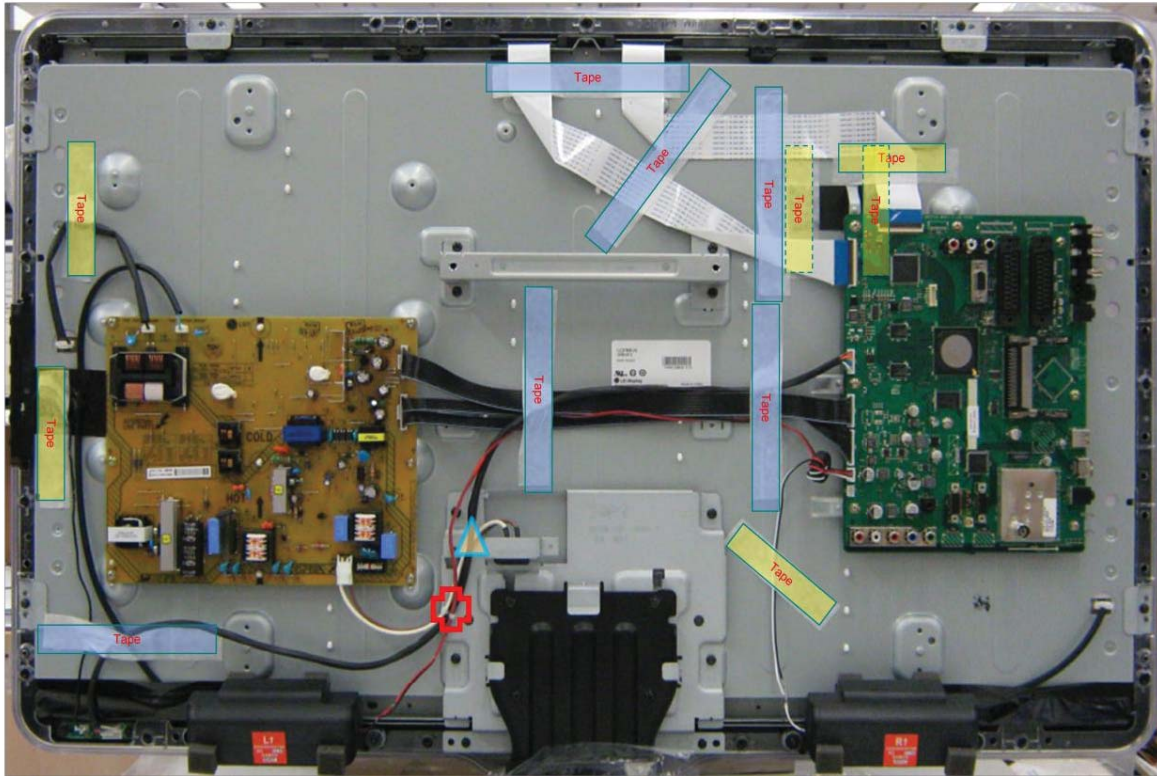
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Figure 4-2 Cable dressing 32" with Sharp display



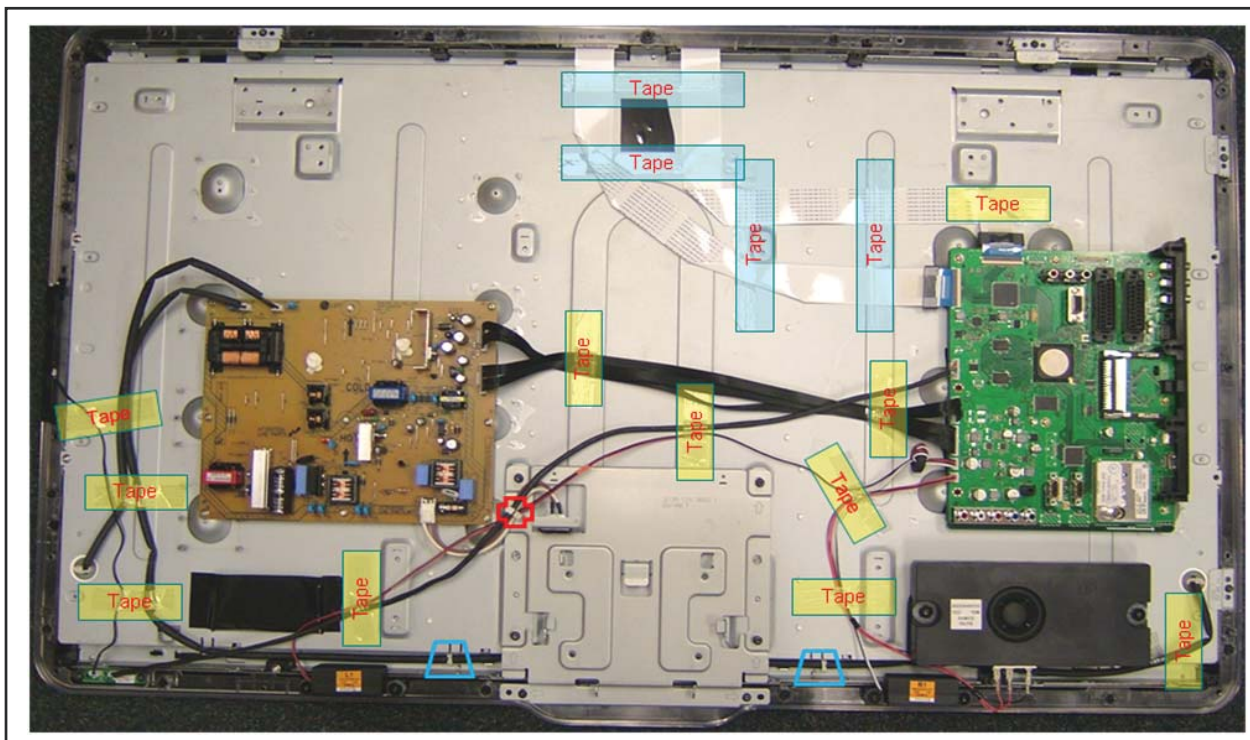
# FI LGD 37PFL5604H

	Tape (10cm) = 6x
	Tape (15cm) = 6x
	Saddle (S) = 1x
	Adhesive saddle = 1x



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Figure 4-3 Cable dressing 37" with LGD display



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Figure 4-4 Cable dressing 42" with LGD display

## 4.2 Service Positions

For easy servicing of this set, there are a few possibilities created:

- The buffers from the packaging.
- Foam bars (created for Service).

### 4.2.1 Foam Bars

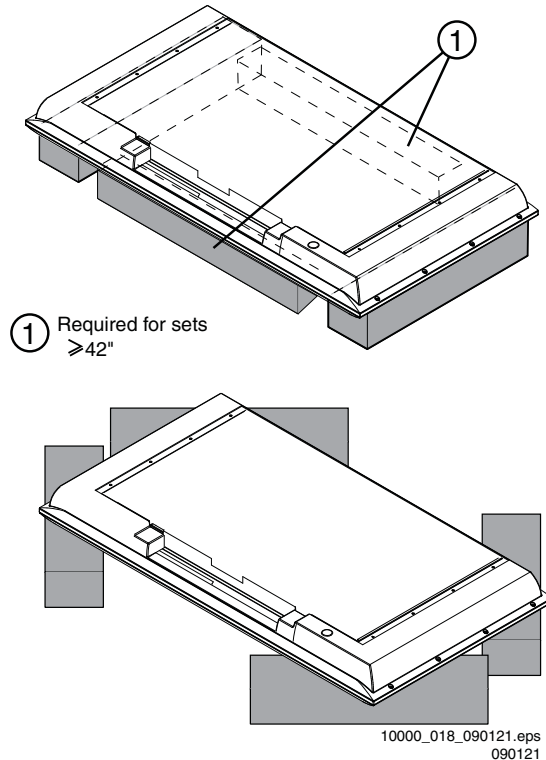


Figure 4-5 Foam bars

The foam bars (order code 3122 785 90580 for two pieces) can be used for all types and sizes of Flat TVs.

See figure [Figure 4-5](#) for details. Sets with a display of 42" and larger, require **four** foam bars [1]. Ensure that the foam bars are always supporting the cabinet and **never** only the display.

**Caution:** Failure to follow these guidelines can seriously damage the display!

By laying the TV face down on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By placing a mirror under the TV, you can monitor the screen.

## 4.3 Assy/Panel Removal

### 4.3.1 Rear Cover

**Warning:** Disconnect the mains power cord before you remove the rear cover.

**Note:** it is **not** necessary to remove the stand while removing the rear cover.

1. Remove all screws of the rear cover.
2. Lift the rear cover from the TV. Make sure that wires and flat coils are not damaged while lifting the rear cover from the set.

### 4.3.2 Speakers

Each speaker unit is mounted with two screws. A sticker on the the unit indicates if it is the right ("R") or left ("L") box, seen from the backside of the set, and a arrow points to the bottom of the set.

When defective, replace the whole unit.

### 4.3.3 IR & LED Board

1. Unplug the connectors leading to the SSB and IR & LED Board.
  2. Lift the board and take it out.
- When defective, replace the whole unit.

### 4.3.4 Key Board Control Panel

1. Unplug the key board connector from the IR & LED board.
  2. Release the clamp on the topside using a screwdriver.
  3. Lift the unit and take it out of the set.
- When defective, replace the whole unit.

### 4.3.5 Main Supply Panel

1. Unplug all connectors.
  2. Remove the fixation screws.
  3. Take the board out.
- When defective, replace the whole unit.

### 4.3.6 Small Signal Board (SSB)

**Caution:** It is mandatory to remount screws at their original position during re-assembly. Failure to do so may result in damaging the SSB.

Refer to [Figure 4-6](#) for details.

1. Release both LVDS foils. For each foil a clip must be turned downwards before the foil can be released. When remounting, make sure the cable fits correctly in the clamps of the connector [1].
2. Unplug all other connectors.
3. Remove all screws that hold the board.
4. The SSB can now be taken out of the set, together with the side cover.
5. To remove the side cover, push the clamp with a screwdriver in the middle of the cover and pull the cover sideways from the SSB.

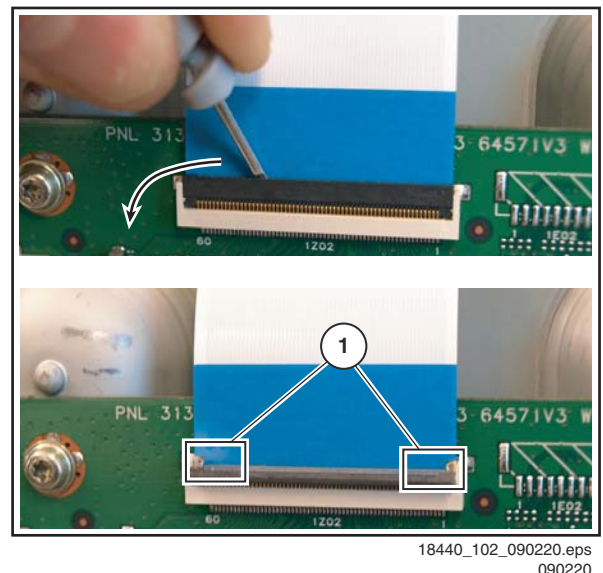


Figure 4-6 LVDS foil release



#### 4.3.7 LCD Panel

Refer to [Figure 4-7](#) for details. As every screen size has a (slightly) different mechanical construction (some have the boards directly mounted on the LCD display, others use brackets), we only describe one model. Disassembly method of other LCD panels is similar to the one described below.

1. Remove the Main Supply Panel and Small Signal Board as earlier described.
2. Unplug the connectors to and from the Speakers, IR & LED Board and Key Board Control Panel.
3. Remove the stand [1].
4. Release the subframe of the stand [2].
5. Remove the brackets [3] that secure the LCD Panel.
6. The LCD panel can now be lifted from the front cabinet.

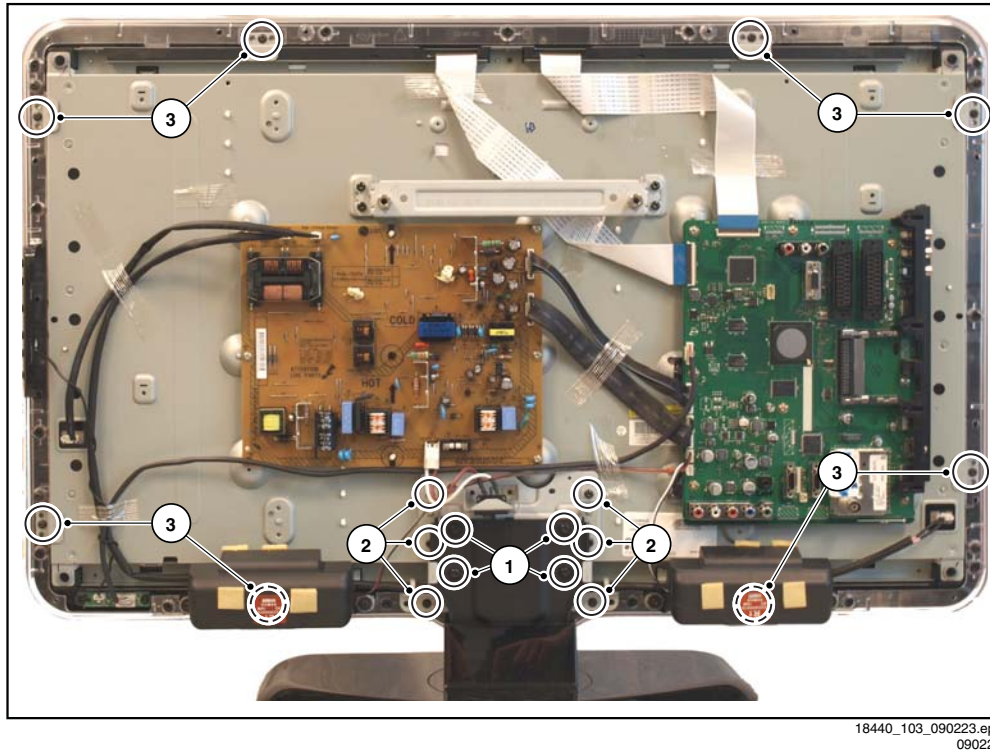


Figure 4-7 LCD Panel removal (sets with LGD display)

#### 4.4 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

##### Notes:

- While re-assembling, make sure that all cables are placed and connected in their original position.  
See also [4.1 Cable Dressing](#) and [Figure 4-8](#)

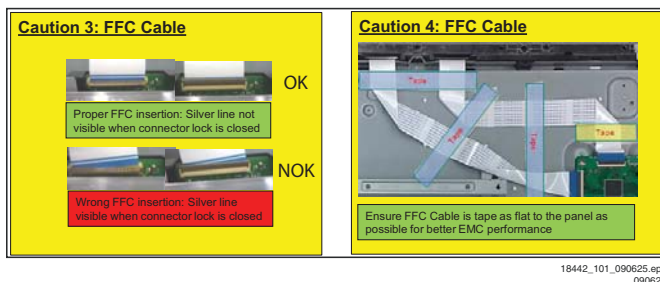


Figure 4-8 FFC cable insertion and taping

- Ensure that EMC foams (where present) are not damaged and are (re)mounted correctly.
- For 37" models:
  - After exchange of the LCD panel, a foam must be placed on the LCD panel. This foam is to support the pressure from top HDMI during connecting of a HDMI cable. See [Figure 4-9](#).
  - Please replace the tapes that prevent light leakage. See [Figure 4-10](#).

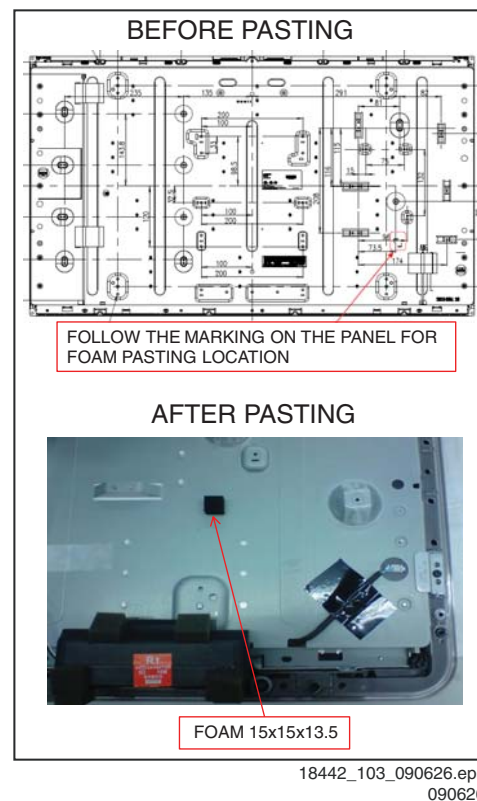
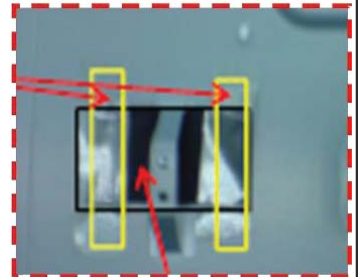
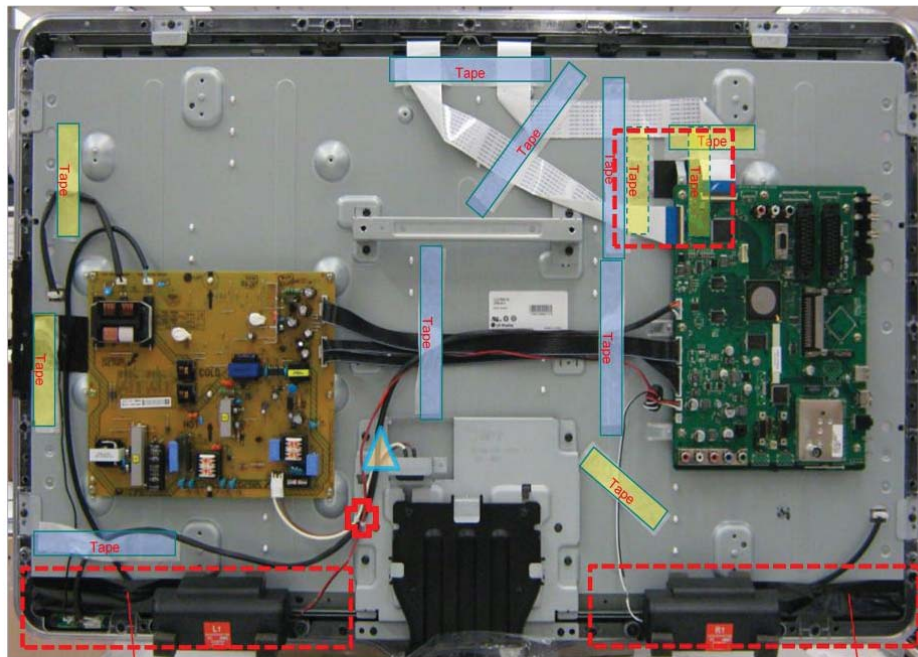


Figure 4-9 Foam pasting location (only for 37" model)



## Light Leakage Solution



2x tape (L100mm) to secure 1x PC sheet. Ensure PC sheet covers are below SSB rib as shown in the picture.



Figure 4-10 Light leakage solution (only for 37" model)

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## 5. Service Modes, Error Codes, and Fault Finding

**Index of this chapter:**

- [5.1 Test Points](#)
- [5.2 Service Modes](#)
- [5.3 Step by step Start-up](#)
- [5.4 Service Tools](#)
- [5.5 Error Codes](#)
- [5.6 The Blinking LED Procedure](#)
- [5.7 Protections](#)
- [5.8 Fault Finding and Repair Tips](#)
- [5.9 Software Upgrading](#)

### 5.1 Test Points

As most signals are digital, it will be difficult to measure waveforms with a standard oscilloscope. However, several key ICs are capable of generating test patterns, which can be controlled via ComPair. In this way it is possible to determine which part is defective.

Perform measurements under the following conditions:

- Service Default Mode.
- Video: Colour bar signal.
- Audio: 3 kHz left, 1 kHz right.

### 5.2 Service Modes

Service Default mode (SDM) and Service Alignment Mode (SAM) offers several features for the service technician, while the Customer Service Mode (CSM) is used for communication between the call centre and the customer.

This chassis also offers the option of using ComPair, a hardware interface between a computer and the TV chassis. It offers the abilities of structured troubleshooting, error code reading, and software version read-out for all chassis. (see also section [5.4.1 ComPair](#)).

**Note:** For the new model range, a new remote control (RC) is used with some renamed buttons. This has an impact on the activation of the Service modes. For instance the old “MENU” button is now called “HOME” (or is indicated by a “house” icon).

#### 5.2.1 Service Default Mode (SDM)

**Purpose**

- To create a pre-defined setting, to get the same measurement results as given in this manual.
- To override SW protections detected by stand-by processor and make the TV start up to the step just before protection (a sort of automatic step by step start up). See section [5.3 Step by step Start-up](#).
- To start the blinking LED procedure where only layer 2 errors are displayed (see also section [5.5 Error Codes](#)).

**Specifications**

Table 5-1 SDM default settings

Region	Freq. (MHz)	Default system
Europe, AP(PAL/Multi)	475.25	PAL B/G
Europe, AP DVB-T	546.00 PID Video: 0B 06 PID PCR: 0B 06 PID Audio: 0B 07	DVB-T

- All picture settings at 50% (brightness, colour, contrast).
- All sound settings at 50%, except volume at 25%.

- All service-unfriendly modes (if present) are disabled, like:
  - (Sleep) timer.
  - Child/parental lock.
  - Picture mute (blue mute or black mute).
  - Automatic volume levelling (AVL).
  - Skip/blank of non-favourite pre-sets.

**How to Activate SDM**

For this chassis there are two kinds of SDM: an **analog SDM** and a **digital SDM**. Tuning will happen according to [Table 5-1](#).

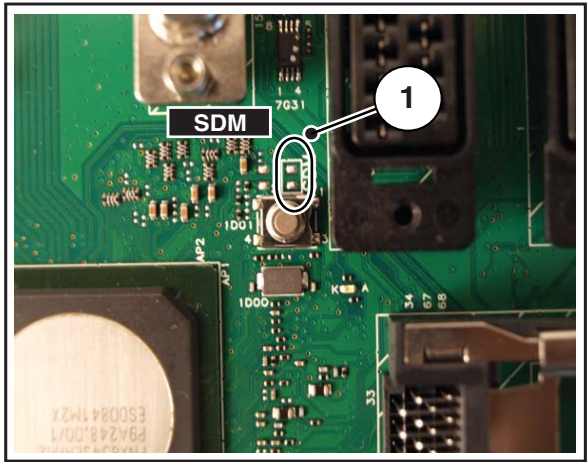
- **Analog SDM:** use the standard RC-transmitter and key in the code “062596”, directly followed by the “MENU” (or HOME) button.

**Note:** It is possible that, together with the SDM, the main menu will appear. To switch it “off”, push the “MENU” (or HOME) button again.

- **Digital SDM:** use the standard RC-transmitter and key in the code “062593”, directly followed by the “MENU” (or HOME) button.

**Note:** It is possible that, together with the SDM, the main menu will appear. To switch it “off”, push the “MENU” (or HOME) button again.

- **Analog SDM** can also be activated by, on the SSB, shorting for a moment the solder pads SDM [1] (see [Figure 5-1](#)).



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Figure 5-1 Service mode pads

After activating this mode, “SDM” will appear in the upper right corner of the screen (when a picture is available).

**How to Navigate**

When the “MENU” (or HOME) button is pressed on the RC transmitter, the set will toggle between the SDM and the normal user menu (with the SDM mode still active in the background).

**How to Exit SDM**

Use one of the following methods:

- Switch the set to STAND-BY via the RC-transmitter.
- Via a standard customer RC-transmitter: key in “00”-sequence.

## 5.2.2 Service Alignment Mode (SAM)

### Purpose

- To perform (software) alignments.
- To change option settings.
- To easily identify the used software version.
- To view operation hours.
- To display (or clear) the error code buffer.

### How to Activate SAM

Via a standard RC transmitter: key in the code "062596" directly followed by the "INFO" or "I+" button. After activating SAM with this method a service warning will appear on the screen, continue by pressing the red button on the RC.

### Contents of SAM (see also [Table 6-4](#)):

- **Hardware Information**
  - **A. SW Version.** Displays the software version of the main software (**example:** Q5431-0.26.2.0= AAAaB\_X.Y.W.Z).
    - **AAAA=** the chassis name, where "a" indicates the chip version: e.g. TV543/32= Q543, TV543/82= Q548, **Q543/92= Q549**.
    - **B=** the SW branch version. This is a sequential number (this is no longer the region indication, as the software is now multi-region).
    - **X.Y.W.Z=** the software version, where X is the main version number (different numbers are not compatible with one another) and Y.W.Z is the sub version number (a higher number is always compatible with a lower number).
  - **B. SBY PROC Version.** Displays the software version of the stand-by processor.
  - **C. Production Code.** Displays the production code of the TV, this is the serial number as printed on the back of the TV set. Note that if an NVM is replaced or is initialized after corruption, this production code has to be re-written to NVM. ComPair will foresee in a possibility to do this.
- **Operation Hours.** Displays the accumulated total of operation hours (not the stand-by hours). Every time the TV is switched "on/off", 0.5 hours is added to this number.
- **Errors** (followed by maximum 10 errors). The most recent error is displayed at the upper left (for an error explanation see section [5.5 Error Codes](#)).
- **Reset Error Buffer.** When "cursor right" (or the "OK" button) is pressed and then the "OK" button is pressed, the error buffer is reset.
- **Alignments.** This will activate the "ALIGNMENTS" sub-menu. See chapter [6. Alignments](#).
- **Dealer Options.** Extra features for the dealers. See [Table 6-4](#).
- **Options.** Extra features for Service. For more information regarding option codes, see chapter [6. Alignments](#). Note that if the option code numbers are changed, these have to be confirmed with pressing the "OK" button before the options are stored. Otherwise changes will be lost.
- **Initialize NVM.** The moment the processor recognizes a corrupted NVM, the "initialize NVM" line will be highlighted. Now, two things can be done (dependent of the service instructions at that moment):
  - Save the content of the NVM via ComPair for development analysis, **before** initializing. This will give the Service department an extra possibility for diagnosis (e.g. when Development asks for this).
  - Initialize the NVM.
- **Note:** When the NVM is corrupted, or replaced, there is a high possibility that no picture appears because the display code is not correct. So, before initializing the NVM via the SAM, a picture is necessary and therefore the correct display option has to be entered. Refer to chapter [6. Alignments](#) for details. To adapt this option, it's advised to use ComPair (the correct HEX values

for the options can be found in chapter 8 "Alignments") or a method via a standard RC (described below).

**Changing the display option via a standard RC:** Key in the code "062598" directly followed by the "MENU" (or HOME) button and "XXX" (where XXX is the 3 digit decimal display code as mentioned in [Table 6-3](#). Make sure to key in all three digits, also the leading zero's. If the above action is successful, the front LED will go out as an indication that the RC sequence was correct. After the display option is changed in the NVM, the TV will go to the Stand-by mode. If the NVM was corrupted or empty before this action, it will be initialized first (loaded with default values). This initializing can take up to 20 seconds.

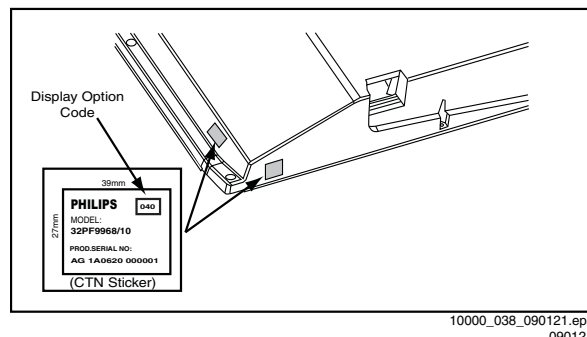


Figure 5-2 Location of Display Option Code sticker

- **Store - go right.** All options and alignments are stored when pressing "cursor right" (or the "OK" button) and then the "OK"-button.
- **SW Maintenance.**
  - **SW Events.** Not useful for Service purposes. In case of specific software problems, the development department can ask for this information.
  - **HW Events.** Not useful for Service purposes. In case of specific software problems, the development department can ask for this information.
- **Test settings.** For development purposes only.
- **Development file versions.** Not useful for Service purposes, this information is only used by the development department.
- **Upload to USB.** To upload several settings from the TV to an USB stick, which is connected to the SSB. The items are "Channel list", "Personal settings", "Option codes", "Display-related alignments" and "History list". **First a directory "repair" has to be created in the root of the USB stick.** To upload the settings select each item separately, press "cursor right" (or the "OK" button), confirm with "OK" and wait until "Done" appears. In case the download to the USB stick was not successful "Failure" will appear. In this case, check if the USB stick is connected properly and if the directory "repair" is present in the root of the USB stick. Now the settings are stored onto the USB stick and can be used to download onto another TV or other SSB. Uploading is of course only possible if the software is running and if a picture is available. This method is created to be able to save the customer's TV settings and to store them into another SSB.
- **Download from USB.** To download several settings from the USB stick to the TV. Same way of working as with uploading. To make sure that the download of the channel list from USB to the TV is executed properly, it is necessary to restart the TV and tune to a valid preset if necessary. **Note:** The "History list item" can not be downloaded from USB to the TV. This is a "read-only" item. In case of specific problems, the development department can ask for this information.

### How to Navigate

- In SAM, the menu items can be selected with the "CURSOR UP/DOWN" key (or the scroll wheel) on the RC-transmitter. The selected item will be highlighted. When not



all menu items fit on the screen, move the "CURSOR UP/DOWN" key to display the next/previous menu items.

- With the "CURSOR LEFT/RIGHT" keys (or the scroll wheel), it is possible to:
  - (De) activate the selected menu item.
  - (De) activate the selected sub menu.
- With the "OK" key, it is possible to activate the selected action.

#### How to Exit SAM

Use one of the following methods:

- Switch the set to STAND-BY via the RC-transmitter.
- Via a standard RC-transmitter, key in "00" sequence, or select the "BACK" key.

### 5.2.3 Customer Service Mode (CSM)

#### Purpose

When a customer is having problems with his TV-set, he can call his dealer or the Customer Helpdesk. The service technician can then ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severity of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer. The CSM is a read only mode; therefore, modifications in this mode are not possible.

When CSM is activated, the layer 1 error is displayed via blinking LED. Only the latest error is displayed. (see also section [5.5 Error Codes](#)).

When CSM is activated and there is a USB stick connected to the TV, the software will dump the complete CSM content to the USB stick. The file (Csm.txt) will be saved in the root of the USB stick. This information can be handy if no information is displayed.

#### Only for Q548.1:

When in the Q548.1 chassis CSM is activated, a test pattern will be displayed during 5 s.: 1 s. blue, 1 s. green, and 1 s. red, then again 1 s. blue and 1 s. green. This test pattern is generated by the PNX5100.

So if this test pattern is shown, it could be determined that the back end video chain (PNX5100, LVDS, and display) of the SSB is working.

For LED backlight TV sets, the test pattern is build as follows: 1 s. blue, 1 s. green, 1 s. red (generated by the PNX5100) and further on with 3 seconds RGB pattern from the LED Dimming Panel.

#### How to Activate CSM

Key in the code "123654" via the standard RC transmitter.

**Note:** Activation of the CSM is only possible if there is no (user) menu on the screen!

#### How to Navigate

By means of the "CURSOR-DOWN/UP" knob (or the scroll wheel) on the RC-transmitter, can be navigated through the menus.

#### Contents of CSM

The contents are displayed on three pages: General, Software versions, and Quality items. However, these group names itself are not shown anywhere in the CSM menu.

#### General

- **Set Type.** This information is very helpful for a helpdesk/workshop as reference for further diagnosis. In this way, it is not necessary for the customer to look at the rear of the TV-set. Note that if an NVM is replaced or is initialized after corruption, this set type has to be re-written to NVM. ComPair will foresee in a possibility to do this.

- **Production Code.** Displays the production code (the serial number) of the TV. Note that if an NVM is replaced or is initialized after corruption, this production code has to be re-written to NVM. ComPair will foresee in a possibility to do this.
- **Installed date.** Indicates the date of the first installation of the TV. This date is acquired via time extraction.
- **Options 1.** Gives the option codes of option group 1 as set in SAM (Service Alignment Mode).
- **Options 2.** Gives the option codes of option group 2 as set in SAM (Service Alignment Mode).
- **12NC SSB.** Gives an identification of the SSB as stored in NVM. Note that if an NVM is replaced or is initialized after corruption, this identification number has to be re-written to NVM. ComPair will foresee in a possibility to do this. This identification number is the 12nc number of the SSB. Remark: the content here can also be a part of the 12NC of the SSB in combination with the serial number.
- **12NC display.** Shows the 12NC of the display
- **12NC supply.** Shows the 12NC of the supply.
- **12NC "fan board".** Shows the 12NC of the "fan board"-module (for sets with LED backlight).
- **12NC "LED Dimming Panel".** Shows the 12NC of the LED dimming Panel (for sets with LED backlight).

#### Software versions

- **Current main SW.** Displays the built-in main software version. In case of field problems related to software, software can be upgraded. As this software is consumer upgradeable, it will also be published on the Internet. Example: Q5431E\_1.2.3.4.
- **Stand-by SW.** Displays the built-in stand-by processor software version. Upgrading this software will be possible via ComPair or via USB (see section [Software Upgrading](#)). Example: STDBY\_1.2.3.4.
- **MOP ambient light SW.** Displays the MOP ambient light EPLD SW.
- **MPEG4 software.** Displays the MPEG4 software (for sets with MPEG4).
- **PNX5100 boot NVM.** Displays the SW-version that is used in the PNX5100 boot NVM (for sets with PNX5100).
- **LED Dimming SW.** Displays the LED dimming EPLD SW (for sets with LED backlight).

#### Quality items

- **Signal quality.** Poor/average/good
- **Child lock.** Not active/active. This is a combined item for locks. If any lock (Preset lock, child lock, lock after or parental lock) is active, the item shall show "active".
- **HDMI HDCP key.** Indicates of the HDMI keys (or HDCP keys) are valid or not. In case these keys are not valid and the consumer wants to make use of the HDMI functionality, the SSB has to be replaced.
- **Ethernet MAC address.** Not applicable.
- **Wireless MAC address.** Not applicable.
- **BDS key.** Indicates if the "BDS level 1" key is valid or not.
- **CI slot present.** If the common interface module is detected the result will be "YES", else "NO".
- **HDMI input format.** The detected input format of the HDMI.
- **HDMI audio input stream.** The HDMI audio input stream is displayed: present / not present.
- **HDMI video input stream.** The HDMI video input stream is displayed: present / not present.

#### How to Exit CSM

Press the "MENU" (or HOME) button twice on the RC-transmitter.

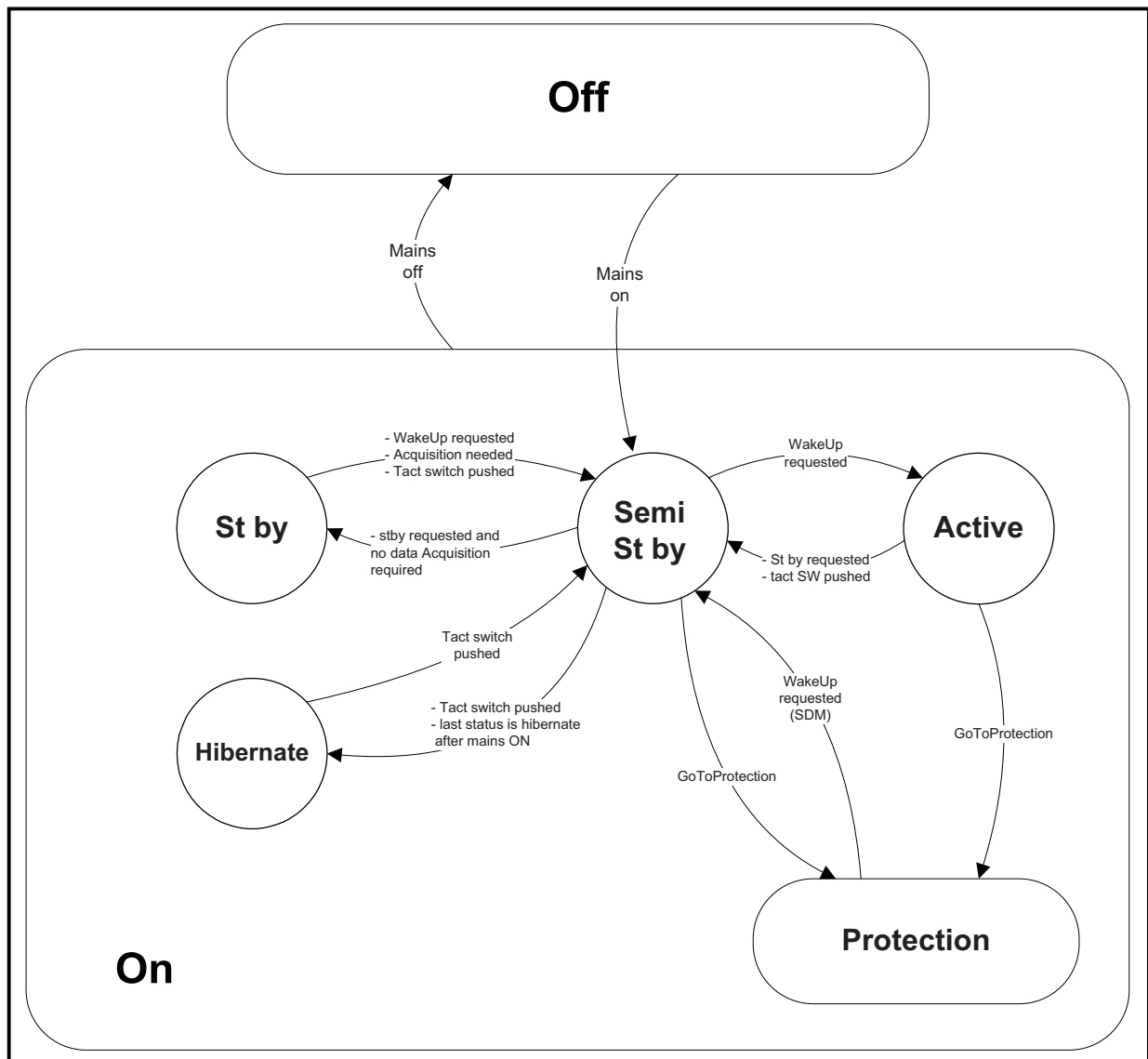
### 5.3 Step by step Start-up

When the TV is in a protection state due to an error detected by stand-by software (error blinking is displayed) **and** SDM is activated via short cutting the pins on the SSB, the TV starts up until it reaches the situation just before protection. So, this is a kind of automatic step by step start-up. In combination with the start-up diagrams below, it is shown which supplies are present at a certain moment. Important to know is, that if e.g. the 3V3 detection fails and thus layer 2 error = 18 is blinking while the TV is restarted via SDM, the Stand-by Processor will enable the 3V3, but the TV set will not go to protection now. The TV will stay in this situation until it is reset (Mains/AC Power supply interrupted).

**Caution:** in case the start-up in this mode with a faulty FET 7101-1 is done, all ICs supplied by the +3V3 could be destroyed, due to over voltage (12V on 3V3-line). It is recommended to measure first the FET 7101-1 or others FETs on short-circuit before activating SDM via the service pads.

The abbreviations "SP" and "MP" in the figures stand for:

- SP: protection or error detected by the **Stand-by Processor**.
- MP: protection or error detected by the **MIPS Main Processor**.



18440\_215\_090227.eps  
270209

Figure 5-3 Transition diagram

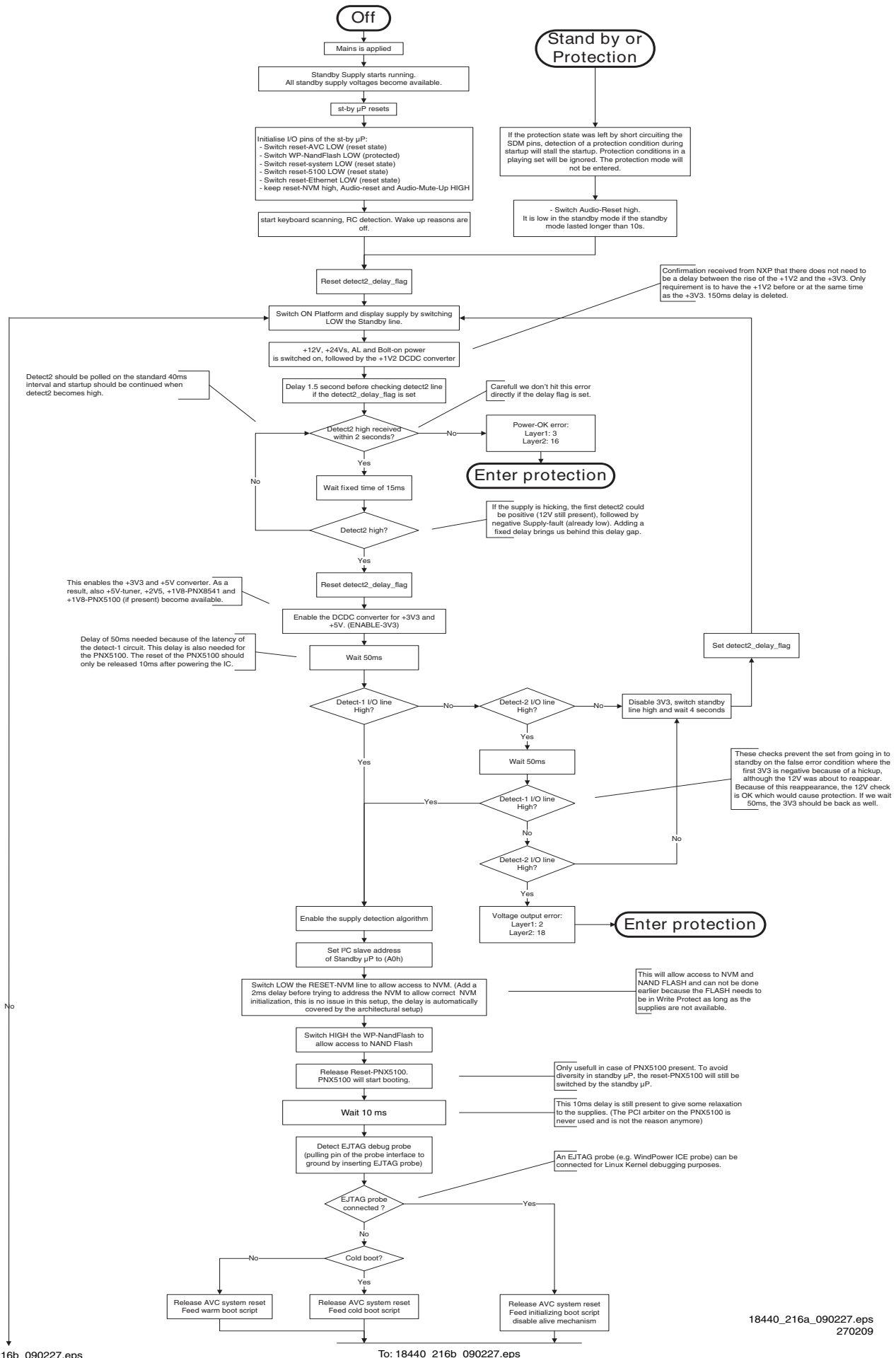


Figure 5-4 "Off/Stand-by" to "Semi Stand-by" flowchart (part 1)

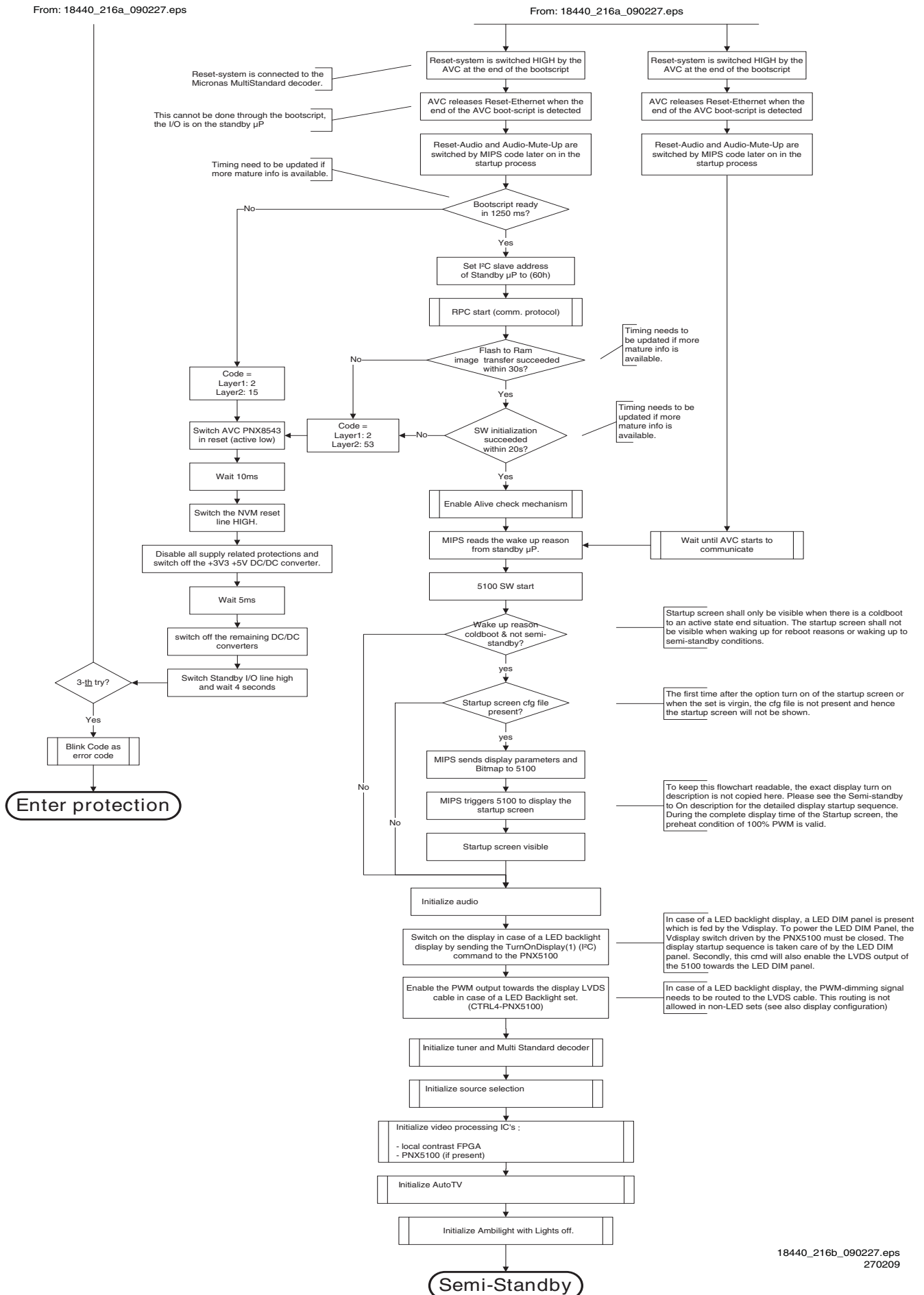


Figure 5-5 "Off/Stand-by" to "Semi Stand-by" flowchart (part 2)

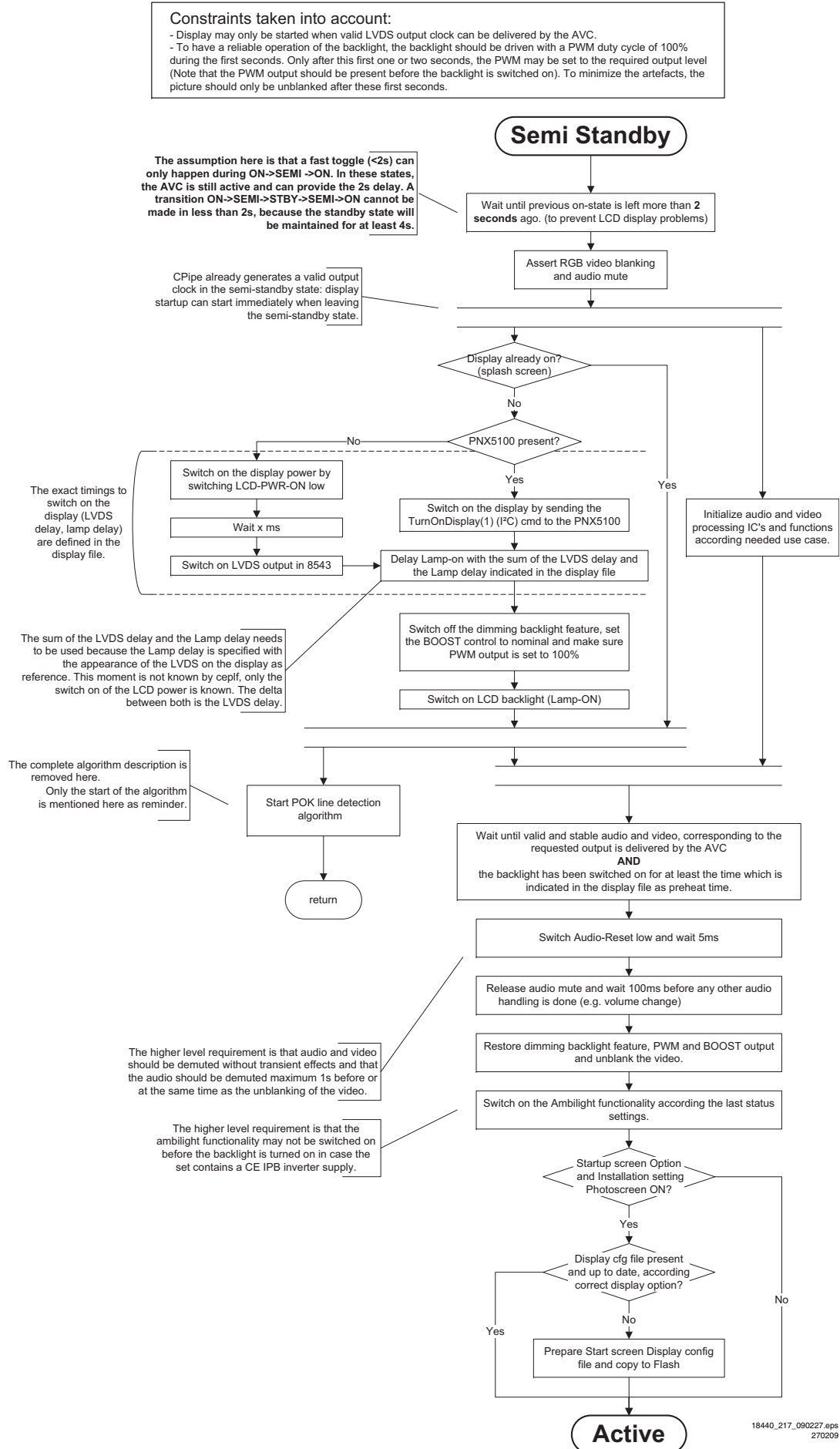


Figure 5-6 "Semi Stand-by" to "Active" flowchart



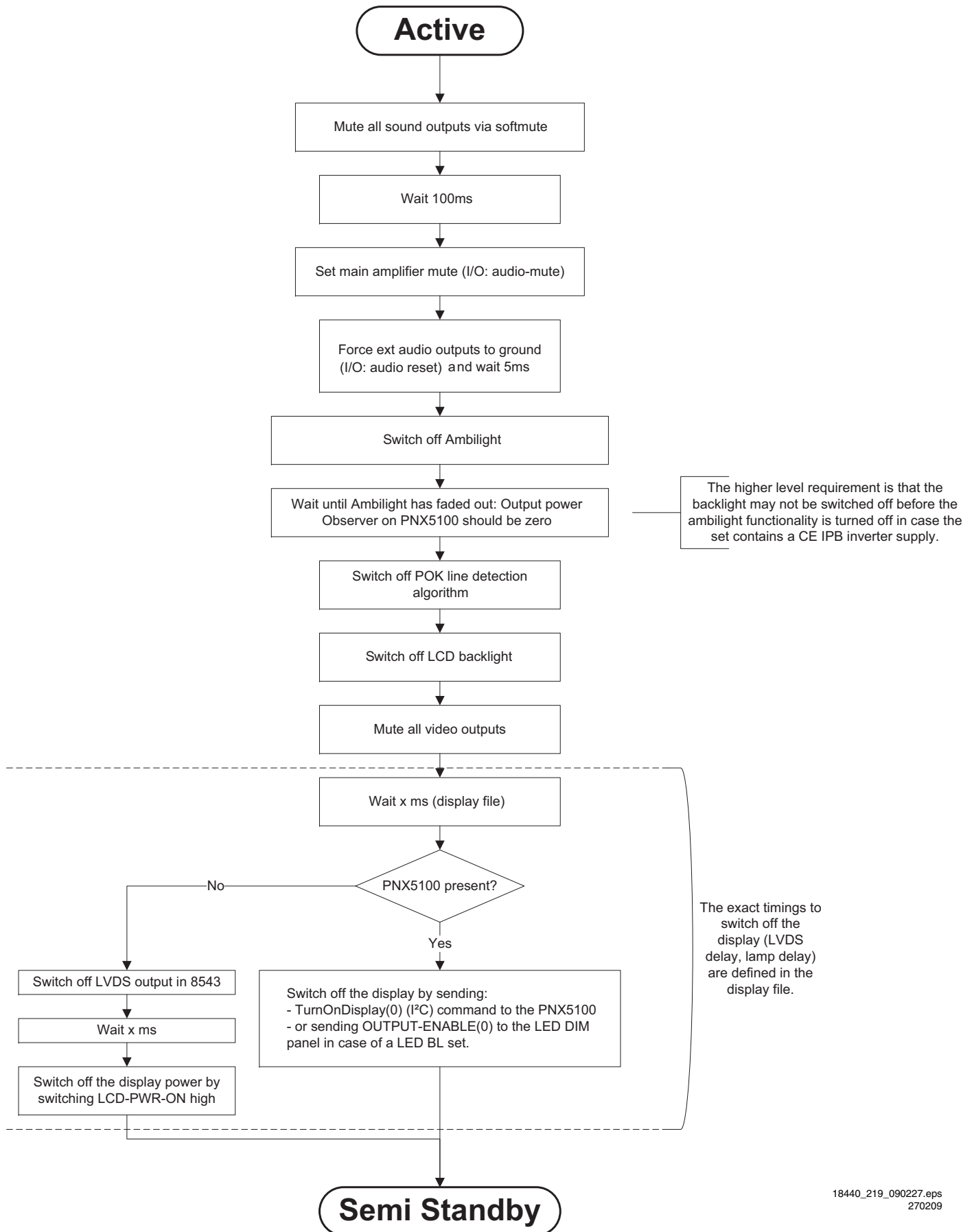


Figure 5-7 “Active” to “Semi Stand-by” flowchart

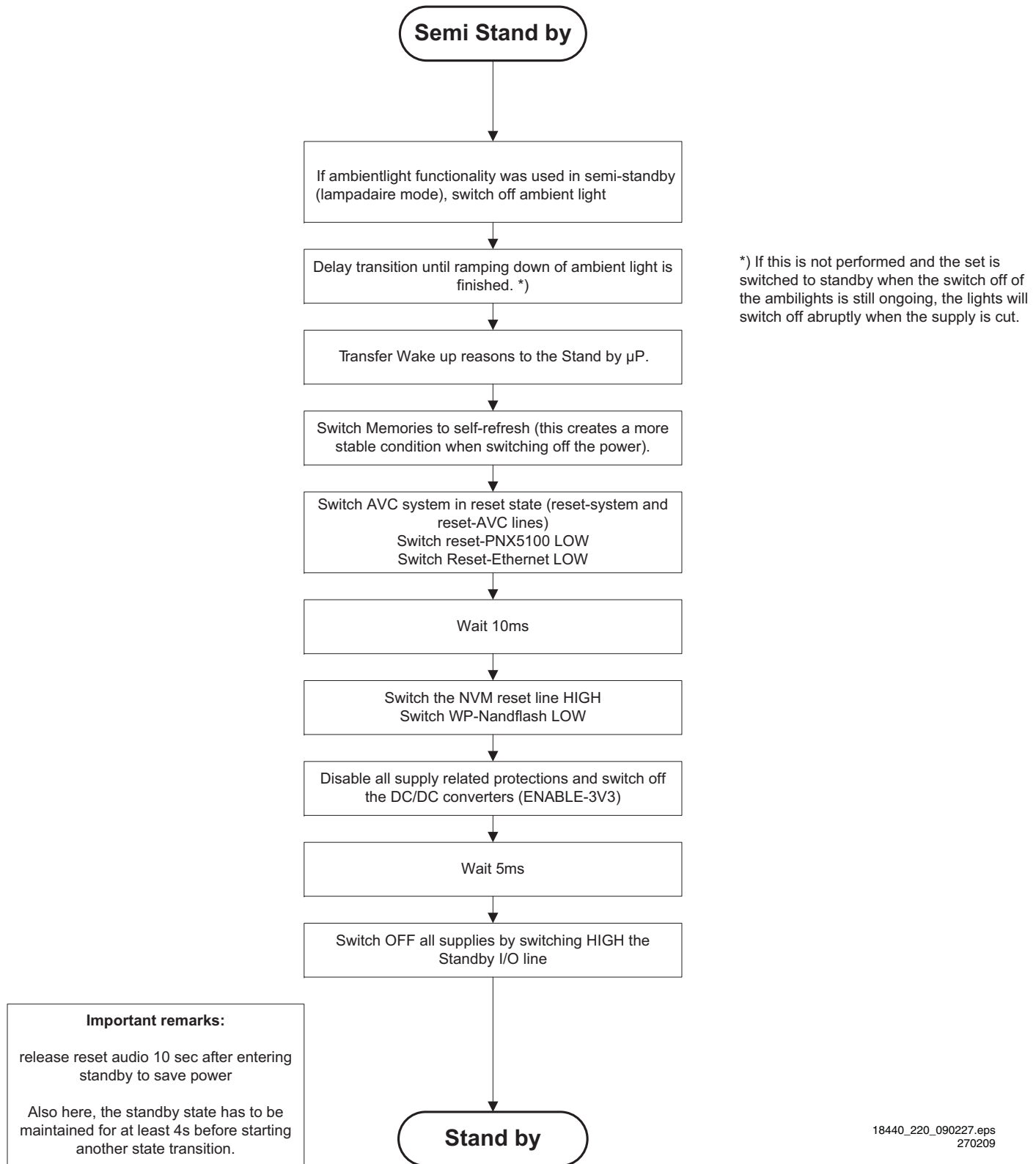


Figure 5-8 “Semi Stand-by” to “Stand-by” flowchart

## 5.4 Service Tools

### 5.4.1 ComPair

#### Introduction

ComPair (Computer Aided Repair) is a Service tool for Philips Consumer Electronics products, and offers the following:

1. ComPair helps to quickly get an understanding on how to repair the chassis in a short and effective way.
2. ComPair allows very detailed diagnostics and is therefore capable of accurately indicating problem areas. No knowledge on I<sup>2</sup>C or UART commands is necessary, because ComPair takes care of this.
3. ComPair speeds up the repair time since it can automatically communicate with the chassis (when the up is working) and all repair information is directly available.
4. ComPair features TV software up possibilities.

#### Specifications

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The ComPair II interface box is connected to the PC via a USB cable. For the TV chassis, the ComPair interface box and the TV communicate via a bi-directional cable via the service connector(s).

The ComPair fault finding program is able to determine the problem of the defective television, by a combination of automatic diagnostics and an interactive question/answer procedure.

#### How to Connect

This is described in the chassis fault finding database in ComPair.

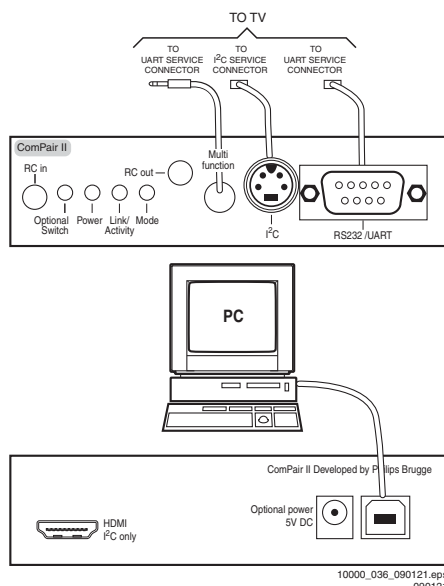


Figure 5-9 ComPair II interface connection

**Caution:** It is compulsory to connect the TV to the PC as shown in the picture above (with the ComPair interface in between), as the ComPair interface acts as a level shifter. If one connects the TV directly to the PC (via UART), ICs will be blown!

#### How to Order

ComPair II order codes:

- ComPair II interface: 3122 785 91020.
- Software is available via the Philips Service web portal.
- ComPair serial interface cable for Q52x.x. (using 3.5 mm Mini Jack connectors): 3138 188 75051.

**Note:** When having problems, please contact your local support desk.

## 5.5 Error Codes

### 5.5.1 Introduction

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right, new errors are logged at the left side, and all other errors shift one position to the right.

When an error occurs, it is added to the list of errors, provided the list is not full. When an error occurs and the error buffer is full, then the new error is not added, and the error buffer stays intact (history is maintained).

To prevent that an occasional error stays in the list forever, the error is removed from the list after more than 50 hrs. of operation.

When multiple errors occur (errors occurred within a short time span), there is a high probability that there is some relation between them.

New in this chassis is the way errors can be displayed:

There is a simple blinking LED procedure for board level repair (home repair) so called LAYER 1 errors next to the existing errors which are LAYER 2 errors (see [Table 5-3](#)).

- LAYER 1 errors are one digit errors
  - LAYER 2 errors are two digit errors.
  - In protection mode.
    - From consumer mode: **LAYER 1**.
    - From SDM mode: **LAYER 2**.
  - Fatal errors, if I<sup>2</sup>C bus is blocked and the set re-boots, CSM and SAM are not selectable.
    - From consumer mode: **LAYER 1**.
    - From SDM mode: **LAYER 2**.
- Important remark:  
For all errors detected by MIPS which are fatal => rebooting of the TV set (reboot starts after LAYER 1 error blinking), one should short the solder paths at start-up from the power OFF state by mains interruption and not via the power button to trigger the SDM via the hardware pins.
- In CSM mode
    - When entering CSM: error **LAYER 1** will be displayed by blinking LED. Only the latest error is shown.
  - In SDM mode
    - When SDM is entered via Remote Control code or the hardware pins, **LAYER 2** is displayed via blinking LED.
  - In the ON state
    - In "Display error mode", set with the RC commands "mute\_06250X\_OK" **LAYER 2** errors are displayed via blinking LED.
  - Error display on screen.
    - In CSM no error codes are displayed on screen.
    - In SAM the complete error list is shown.

Basically there are three kinds of errors:

- **Errors detected by the Stand-by software which lead to protection.** These errors will always lead to protection and an automatic start of the blinking LED LAYER 1 error. (see section [5.6 The Blinking LED Procedure](#)).
- **Errors detected by the Stand-by software which not lead to protection.** In this case the front LED should blink the involved error. See also section [Extra Information](#). Note that it can take up several minutes before the TV starts blinking the error (e.g. LAYER 1 error = 2, LAYER 2 error = 15 or 53).
- **Errors detected by main software (MIPS).** In this case the error will be logged into the error buffer and can be read out via ComPair, via blinking LED method LAYER 1-2 error, or in case picture is visible, via SAM.

### 5.5.2 How to Read the Error Buffer

Use one of the following methods:

- On screen via the SAM (only when a picture is visible).  
E.g.:
  - 00 00 00 00 00**: No errors detected
  - 23 00 00 00 00**: Error code 23 is the last and only detected error.
  - 37 23 00 00 00**: Error code 23 was first detected and error code 37 is the last detected error.
  - Note that no protection errors can be logged in the error buffer.
- Via the blinking LED procedure. See section [5.5.3 How to Clear the Error Buffer](#).
- Via ComPair.

### 5.5.3 How to Clear the Error Buffer

Use one of the following methods:

- By activation of the "RESET ERROR BUFFER" command in the SAM menu.
- With a normal RC, key in sequence "MUTE" followed by "062599" and "OK".
- If the content of the error buffer has not changed for 50+ hours, it resets automatically.

### 5.5.4 Error Buffer

In case of non-intermittent faults, clear the error buffer before starting to repair (**before** clearing the buffer, write down the

content, as this history can give significant information). This to ensure that old error codes are no longer present.

If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g. a fault in the protection detection circuitry can also lead to a protection).

There are several mechanisms of error detection:

- Via error bits in the status registers of ICs.
- Via polling on I/O pins going to the stand-by processor.
- Via sensing of analogue values on the stand-by processor or the PNX8543.
- Via a "not acknowledge" of an I<sup>2</sup>C communication.

Take notice that some errors need several minutes before they start blinking or before they will be logged. So in case of problems wait 2 minutes from start-up onwards, and then check if the front LED is blinking or if an error is logged.

**Table 5-2 Layer 1 code overview (multi chassis overview)**

LAYER 1 codes		
SSB	2	
Display supply	3	
Platform supply	4	Only for display option 196 and 197
Fan	7	
AmbiLight or DC/DC or 3D LED dim panel	8	

**Table 5-3 Error code overview (multi chassis overview)**

Description	LAYER 1 error	LAYER 2 error	Monitored	Medium	Error/Prot.	EB: in Error Buffer BL: Blinking LED	Device	Defective board	Special Remarks
Main NVM	2	0	MIPS	I <sup>2</sup> C1	E	x	STM24C128	SSB	TV shut down with red LED blinking 2.
Temp. protection	3	12	MIPS	I <sup>2</sup> C4	P	BL/EB		Supply	
I <sup>2</sup> C3	2	13	MIPS	I <sup>2</sup> C3	E	BL/EB	SSB	SSB	TV is rebooting endlessly with red LED blinking "2".
I <sup>2</sup> C2	2	14	MIPS	I <sup>2</sup> C2	E	BL/EB	SSB	SSB	
PNX does not boot (HW cause) PNX 5100 does not boot	2	15	St-by μP	I <sup>2</sup> C1	P	BL	SSB	SSB	TV is rebooting endlessly with red LED blinking "2"
12V	3	16	St-by μP	I/O	P	BL		Supply	TV shut down with red LED blinking "3".
12V	3	16	St-by μP	I/O	P	BL		Platform Supply	
Inverter or display supply	3	17	Mips	I/O	E	EB		Supply	TV still in normal operation mode, but without backlights. Enter CSM Layer 1 red LED blinking "3".
Only for display option 196 and 197	4	17	Mips	I/O	E	EB		Display Supply	
1V2, 1V2, 3V3, 5V to low	2	18	St-by μP	I/O	P	BL		SSB	TV shut down with red LED blinking "2".
PNX 5100	2	21	MIPS	I <sup>2</sup> C3	E	EB	PNX 5100	SSB	TV is rebooting endlessly, with red LED blinking "2" (shown every 20 second).
HDMI MUX	2	23	MIPS	I <sup>2</sup> C3	E	EB	TDA9996	SSB	Activate CSM red LED blinking "2".
I <sup>2</sup> C switch	2	24	Mips	I <sup>2</sup> C2	E	EB	PCA9540	SSB	
Boot-NVM PNX5100	2	25	MIPS	I <sup>2</sup> C3	E	EB	STM24C08	SSB	TV is rebooting endlessly, with red LED blinking "2" (shown every minute).
Multi Standard demodulator (Micronas IF)	2	27	MIPS	I <sup>2</sup> C3	E	EB	DRX3616K DRX3626K	SSB	TV is in normal operation but without video displayed (RF).
ARM (AL)	8	28	MIPS	I <sup>2</sup> C3	E	EB	NXP LPC2103	AL mod. or DC/DC	TV is in normal operation but without AMBILIGHT "on".
FPGA (Local contrast)	2	29	MIPS	I <sup>2</sup> C3	E	EB	Altera	SSB	
Tuner1	2	34	MIPS	I <sup>2</sup> C3	E	EB	UV1783S HD1816	SSB	TV is in normal operation but without video displayed (RF).
FAN I <sup>2</sup> C expander	7	41	MIPS	I <sup>2</sup> C2	E	EB	PCA 9533	FAN mod.	
Tx sensor	7	42	MIPS	I <sup>2</sup> C2	E	EB	LM 75	Txsensor	
FAN 1	7	43	MIPS	I <sup>2</sup> C2	E	EB		FAN	
FAN 2	7	44	MIPS	I <sup>2</sup> C2	E	EB		FAN	
MIPS does not boot (SW cause)	2	53	St-by μP	I <sup>2</sup> C1	P	BL	PNX8543	SSB	TV is rebooting endlessly with white LED blinking.
Display	5	64	MIPS	I <sup>2</sup> C2	E	BL/EB	Altera	Display	
FPGA LED dim 2D	2	65	MIPS	I <sup>2</sup> C3	E	EB	Xilinx	SSB	
FPGA LED dim 3D	8	65	MIPS	I <sup>2</sup> C2	E	EB	Altera	SSB	

**Extra Information**

- **Rebooting.** When a TV is constantly rebooting due to internal problems, most of the time no errors will be logged or blinked. This rebooting can be recognized via a ComPair interface and Hyperterminal (for Hyperterminal settings, see section [5.8.6 UART Logging](#)). It's shown that the loggings which are generated by the main software keep continuing. In this case diagnose has to be done via ComPair.
- **Main NVM.** When there is no I<sup>2</sup>C communication towards the main NVM, LAYER 1 error = "2" will be displayed via the blinking LED procedure. In SDM, LAYER 2 error can be "19". Check the logging for keywords like "I<sup>2</sup>C bus blocked".
- **Error 13 (I<sup>2</sup>C bus 3 blocked).** When this error occurs, the TV will constantly reboot due to the blocked bus. The best way for further diagnosis here, is to use ComPair.
- **Error 15 (PNX8543 doesn't boot).** Indicates that the main processor was not able to read his boot script. This error will point to a hardware problem around the PNX8543 (supplies not OK, PNX 8543 completely dead, I<sup>2</sup>C link between PNX and Stand-by Processor broken, etc....). When error 15 occurs it is also possible that I<sup>2</sup>C2 bus is blocked (NVM). I<sup>2</sup>C2 can be indicated in the schematics as follows: SCL-UP-MIPS, SDA-UP-MIPS, SCL-2 or SDA-2. Other root causes for this error can be due to hardware problems with: NVM PNX5100, PNX5100 itself, or DDRs.
- **Error 16 (12V).** This voltage is made in the power supply and results in protection (LAYER 1 error = "3"). When SDM is activated we see blinking LED LAYER 2 error = "16".
- **Error 17 (POK).** The display is switched "on" with the signal "Lamp On". If the inverter starts (or 24V display is OK) the POK line becomes "high". If the POK line is not "high", the set backlight will be switched "off" and "on" again for 3 times (start-up). If the set POK line becomes "high" after the retries, no error is logged; if the POK stays "low", error is logged: LAYER 1 error = "3", LAYER 2 error = "17". No protection is required, the start-up goes on.
- **Error 18 (1V2-3V3-5V too low).** All these supplies are generated by the DC/DC supply on the SSB. If one of these supplies is too low, protection occurs and blinking LED LAYER 1 error = "2" will be displayed automatically. In SDM this gives LAYER 2 error = "18".
- **Error 21 (PNX 5100).** When there is no I<sup>2</sup>C communication towards the PNX5100 after start-up (power "off" by disconnection of the mains cord), LAYER 2 error will blink continuously via the blinking LED procedure in SDM. (start-up the TV with the solder paths short to activate SDM).
- **Error 23 (HDMI).** When there is no I<sup>2</sup>C communication towards the HDMI multiplexer after start up, LAYER 2 error = "23" will be logged and displayed via the blinking LED procedure if SDM is switched "on".
- **Error 25 (Boot-NVM PNX5100).** When there is no I<sup>2</sup>C communication towards the PNX5100 NVM after start-up, TV is rebooting endlessly with blinking LAYER 1 error = 2 (shown every minute). When SDM is activated we see blinking LED LAYER 2 error = "25".
- **Error 27 (Multi Standard demodulator).** When there is no I<sup>2</sup>C communication towards the Multi Standard demodulator after start up, LAYER 2 error = "27" will be logged and displayed via the blinking LED procedure when SDM is switched "on".
- **Error 28 (FPGA ambilight).** When there is no I<sup>2</sup>C communication towards the FPGA ambilight after start up, LAYER 2 error = "28" will be logged and displayed via the blinking LED procedure if SDM is switched "on". Note that it can take up several minutes before the TV starts blinking LAYER 1 error = "2" in CSM or in SDM, LAYER 2 error = "28".
- **Error 34 (Tuner).** When there is no I<sup>2</sup>C communication towards the tuner after start up, LAYER 2 error = "34" will be logged and displayed via the blinking LED procedure when SDM is switched on.
- **Error 53.** This error will indicate that the PNX8543 has read his boot script (when this would have failed, error 15 would blink) but initialization was never completed because

of hardware problems (NAND flash,...) or software initialization problems. Possible cause could be that there is no valid software loaded (try to upgrade to the latest main software version). Note that it can take up to 2 minutes before the TV starts blinking LAYER 1 error = "2" or in SDM, LAYER 2 error = "53".

**5.6 The Blinking LED Procedure****5.6.1 Introduction**

The blinking LED procedure can be split up into two situations:

- **Blinking LED procedure LAYER 1 error.** In this case the error is automatically blinked when the TV is put in CSM. This will be only one digit error, namely the one that is referring to the defective board (see table [5-3 Error code overview \(multi chassis overview\)](#)) which causes the failure of the TV. This approach will especially be used for home repair and call centres. The aim here is to have service diagnosis from a distance.
- **Blinking LED procedure LAYER 2 error.** Via this procedure, the contents of the error buffer can be made visible via the front LED. In this case the error contains 2 digits (see table [5-3 Error code overview \(multi chassis overview\)](#)) and will be displayed when SDM (hardware pins) is activated. This is especially useful for fault finding and gives more details regarding the failure of the defective board.

**Important remark:**

For all errors detected by MIPS which are fatal (rebooting of the TV set, with reboot starts after LAYER 1 error blinking), one should short the SDM solder paths at start-up from the power OFF state by mains interruption and not via the power button, to trigger the SDM via the hardware pins.

When one of the blinking LED procedures is activated, the front LED will show (blink) the contents of the error-buffer. Error codes greater than 10 are shown as follows:

1. "n" long blinks (where "n" = 1 to 9) indicating decimal digit
2. A pause of 1.5 s
3. "n" short blinks (where "n" = 1 to 9)
4. A pause of approximately 3 s,
5. When all the error codes are displayed, the sequence finishes with a LED blink of 3 s
6. The sequence starts again.

**Example: Error 12 8 6 0 0.**

After activation of the SDM, the front LED will show:

1. One long blink of 750 ms (which is an indication of the decimal digit) followed by a pause of 1.5 s
2. Two short blinks of 250 ms followed by a pause of 3 s
3. Eight short blinks followed by a pause of 3 s
4. Six short blinks followed by a pause of 3 s
5. One long blink of 3 s to finish the sequence
6. The sequence starts again.

**5.6.2 How to Activate**

Use one of the following methods:

- **Activate the CSM.** The blinking front LED will show only the latest layer 1 error, this works in "normal operation" mode or automatically when the error/protection is monitored by the stand-by processor. At the time of this release, this layer 1 error blinking was not working as expected.  
In case no picture is shown and there is no LED blinking, read the logging to detect whether "error devices" are mentioned. (see section [5.8.6 UART Logging](#)).
- **Activate the SDM.** The blinking front LED will show the entire contents of the layer 2 error buffer, this works in "normal operation" mode or when SDM (via hardware pins) is activated when the tv set is in protection.

**Important remark:**

For all errors detected by MIPS which are fatal => rebooting of the TV set (reboot starts after LAYER 1 error blinking), one should short the solder paths at start-up from the power OFF state by mains interruption and not via the power button to trigger the SDM via the hardware pins.

- **Transmit the commands "MUTE" - "062500" - "OK" with a normal RC.** The complete error buffer is shown. Take notice that it takes some seconds before the blinking LED starts.
- **Transmit the commands "MUTE" - "06250x" - "OK" with a normal RC** (where "x" is a number between 1 and 5). When x = 1 the last detected error is shown, x = 2 the second last error, etc.... Take notice that it takes some seconds before the blinking LED starts.

## 5.7 Protections

### 5.7.1 Software Protections

Most of the protections and errors use either the stand-by microprocessor or the MIPS controller as detection device. Since in these cases, checking of observers, polling of ADCs, and filtering of input values are all heavily software based, these protections are referred to as software protections. There are several types of software related protections, solving a variety of fault conditions:

- **Protections related to supplies:** check of the 12V, +5V, +3V3 and 1V2.
- **Protections related to breakdown of the safety check mechanism.** E.g. since the protection detections are done by means of software, failing of the software will have to initiate a protection mode since safety cannot be guaranteed any more.

**Remark on the Supply Errors**

The detection of a supply dip or supply loss during the normal playing of the set does not lead to a protection, but to a cold reboot of the set. If the supply is still missing after the reboot, the TV will go to protection.

**Protections during Start-up**

During TV start-up, some voltages and IC observers are actively monitored to be able to optimise the start-up speed, and to assure good operation of all components. If these monitors do not respond in a defined way, this indicates a malfunction of the system and leads to a protection. As the observers are only used during start-up, they are described in the start-up flow in detail (see section [5.3 Step by step Start-up](#)).

### 5.7.2 Hardware Protections

The only real hardware protection in this chassis appears in case of an audio problem e.g. DC voltage on the speakers. The audio protection circuit pulls the "supply-fault" low and the tv set will blink LAYER 1 error = 2 or in SDM, LAYER 2 error = 19.

**Be very careful** to overrule this protection via SDM (not to cause damage to the Class D audio amplifier). Check audio part first before activating via SDM. **In case one of the speakers is not connected, the protection can also be triggered.**

**Repair Tips**

- It is also possible that the set has an audio DC protection because of an interruption in one or both speakers (the DC voltage that is still on the circuit cannot disappear through the speakers).  
**Caution:** (Dis)connecting the speakers during the ON state of the TV can damage the audio amplifier.

### 5.7.3 Important remark regarding the blinking LED indication

As for the blinking LED indication, the blinking LED of layer 1 error displaying can be switched "off" by pushing the power button on the keyboard.

This condition is not valid after the set was unpowered (via mains interruption). The blinking LED starts again and can only be switched "off" by unplugging the mains connection. This can be explained by the fact that the MIPS can not load the keyboard functionality from software during the start-up and does not recognise the keyboard commands at this time.

## 5.8 Fault Finding and Repair Tips

Read also section "[5.5 Error Codes](#), [5.5.4 Error Buffer](#), [Extra Information](#)".

### 5.8.1 Ambilight

Due to degeneration process of the AmbiLights, there can be a difference in the colour and/or light output of the spare ambilight module in comparison with the originals ones contained in the TV set. Via ComPair, the light output can be adjusted.

### 5.8.2 CSM

When CSM is activated and there is a USB stick connected to the TV, the software will dump the complete CSM content to the USB stick. The file (Csm.txt) will be saved in the root of the USB stick. If this mechanism works it can be concluded that a large part of the operating system is already working (MIPS, USB...)

### 5.8.3 Exit "Factory Mode"

When an "F" is displayed in the screen's right corner, this means the set is in "Factory" mode, and it normally happens after a new SSB is mounted. To exit this mode, push the "VOLUME minus" button on the TV's local keyboard for 10 seconds (this disables the continuous mode).

Then push the "SOURCE" button on the TV's local keyboard for 10 seconds until the "F" disappears from the screen.

### 5.8.4 DC/DC Converter

**Introduction**

- The best way to find a failure in the DC-DC converters is to check their starting-up sequence at "power-on via the mains cord", presuming that the stand-by microprocessor is operational.
- If the input voltage of DC-DC converters is around 12.7 V (measured on decoupling capacitors 2107 and 2123 and the enable signals are "low" (active), then the output voltages should have their normal values. The +12V and +5VPOD supplies start-up first (enabled by PODMODE signal from the stand-by microprocessor). There is a supplementary condition for 12V to start-up: if the +5V-POD does not start up due to a local defect, then +12V will not be available as well. The +5V-ON supply is enabled by the ONMODE signal (coming also from the stand-by microprocessor). The +1V2 supply starts up when the +12V appears, then at least 100 ms later, the +3V3 will be activated via the ENABLE-3V3 signal from the stand-by microprocessor. If the +12V value is less than 10 V, the last enumerated voltages will not show up due to the under-voltage detection circuit 7105-1 + 6101 and surrounding components. Furthermore, if the +12V is less than 8 V, then also the +1V2 will not be available. The +5V5-TUN generator 7202 (present only for the analogue version of China platforms) will start to operate as soon as the 12V (PSU) is present.



- The consumption of controller IC 7103 is around 19 mA (that means almost 200 mV drop voltage across resistor 3108).
- The current capability of DC-DC converters is quite high (short-circuit current is 7 to 10 A).
- The DETECT1 signal (active "low") is an internal protection (error 18) of the DC-DC convertor and will occur if the output voltage of any DC-DC convertor is out of limits (10% of the normal value).

#### Fault Finding

- **Symptom:** +1V2 not present (even for a short while ~10 ms)
  - Check 12 V availability (resistor 3108, MOS-FETs 7101 and 7102), value of +12 V, and surrounding components)
  - Check the voltage on pin 9 (1.5 V),
  - Check for +1V2 output voltage short-circuit to GND that can generate pulsed over-currents 7...10 A through coil 5103.
  - Check the over-current detection circuit (2106 or 3131 interrupted).
- **Symptom:** +1V2 present for about 100ms, +3V3 not rising.
  - Check the ENABLE-3V3 signal (active "low"),
  - Check the voltage on pin 8 (1.5 V),
  - Check the under-voltage detection circuit (the voltage on collector of transistor 7105-1 should be less than 0.8 V),
  - Check for output voltages short-circuits to GND (+3V3) that can generate pulsed over currents 7...10 A through coil 5101,
  - Check the over-current detection circuit (2105 or 3127 interrupted).
- **Symptom:** +1V2 OK, +3V3 present for about 100 ms.  
**Possible cause:** SUPPLY-FAULT line stays "low" even though the +3V3 and +1V2 is available - the stand-by microprocessor is detecting that and switching "off" all supply voltages.
  - Check the drop voltage across resistor 3108 (they could be too high, meaning a defective controller IC or MOS-FETs),
  - Check if the boost voltage on pin 4 of controller IC 7103 is less than 14 V (should be 19 V),
  - Check if +1V2 or +3V3 are higher than their normal values - that can be due to defective DC feedback of the respective DC-DC convertor (ex. 3152, 3144).
- **Symptom:** +1V2 and +3V3 show a high level of ripple voltage (audible noise can come from the filtering coils 5101, 5103). **Possible cause:** instability of the frequency and/or duty cycle of a DC-DC converter or stabiliser.
  - Check the resistor 3164, capacitors 2102 and 2103, input and output decoupling capacitors.
  - Check AC feedback circuits (2120, 2129, 3141, 3153, 2110, 2114 and 3135).
- **Symptom:** +1V2, +3V3 ok, no +5V5-TUN (analogue sets only). **Possible cause:** the "+5V5-TUN GENERATOR" circuit (7202 and surroundings components) is defective: check transistor 7202 (it has to have gate voltage pulses of about 10 V amplitude and drain voltage pulses of about 35 V amplitude) and surrounding components. A high consumption (more than 6 mA) from +5V5-TUN voltage can cause also +5V5-TUN voltage to be too low or zero.

**Note:** when a pair of power MOSFETs (7101 or 7102) becomes defective, the controller IC 7103 should be replaced as well

#### 5.8.5 Fan self test (only for sets with LED backlight)

In case fans are present, a software test can be done by pushing the red coloured button on the remote control while the TV set is in CSM. Exit CSM and check the status of the fans in the error buffer by entering SAM (062596 + info button on the RC). In case of failure (fully red screen) more detailed information is available in the error buffer (error 41, 42, 43, 44).

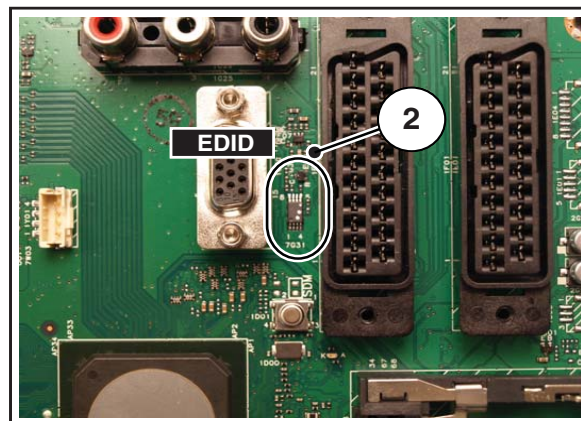
### 5.8.6 UART Logging

When something is wrong with the TV set (f.i. the set is rebooting) checking the UART logging using hyperterminal can be done to find more information. Hyperterminal is a standard Windows application. It can be found via Programs, Accessories, Communications, Hyperterminal. Connect a "ComPair UART"-cable (3138 188 75051) from the Service connector in the TV set, **via the ComPair interface (this is compulsory, otherwise ICs are blown in the PC)**, to the "COMx"-port of the PC. After start-up of Hyperterminal, fill in a name (f.i. "logging") in the "Connection Description" box, then apply the following settings:

1. COMx
2. Bits per second = 115200
3. Data bits = 8
4. Parity = none
5. Stop bits = 1
6. Flow control = none

During the start-up of the TV set, the logging will be displayed. This is also the case during rebooting of the TV set (the same logging appears time after time). Also available in the logging is the "Display Option Code" (useful when there is no picture), look for item "DisplayRawNumber" in the beginning of the logging.

**Tip:** When there is no picture available during reboot, it is possible to check for "error devices" in the logging (LAYER 2 error). This can be very helpful to determine the failure cause of the reboot. For protection state, there is no logging.



18440\_201\_090225.eps  
090306

Figure 5-10 VGA EDID NVM

### 5.8.7 Loudspeakers

Make sure that the volume is set to minimum during disconnecting the speakers in the "on" state of the TV. The audio amplifier can be damaged by disconnecting the speakers during "on" state of the set! Sometimes the set can go into protection, but that is not always the case.

### 5.8.8 Tuner

Attention: In case the tuner is replaced, always check the tuner options!

### 5.8.9 Display option code

Attention: In case the SSB is replaced, always check the display option code in SAM, even when picture is available. Performance with the incorrect display option code can lead to unwanted side-effects for certain conditions. See also [Table 6-3](#) for the code.

### 5.8.10 Upgrade HDMI EDID NVM

To upgrade the HDMI EDID, see ComPair for further instructions.

### 5.8.11 Upgrade VGA EDID NVM

To upgrade the VGA EDID NVM, pin 7 of the EDID NVM [2] has to be short circuited to ground. See ComPair for further instructions.



## 5.8.12 SSB Replacement

Follow the instructions in the flowchart in case a SSB has to be exchanged. See [Figure 5-11](#).

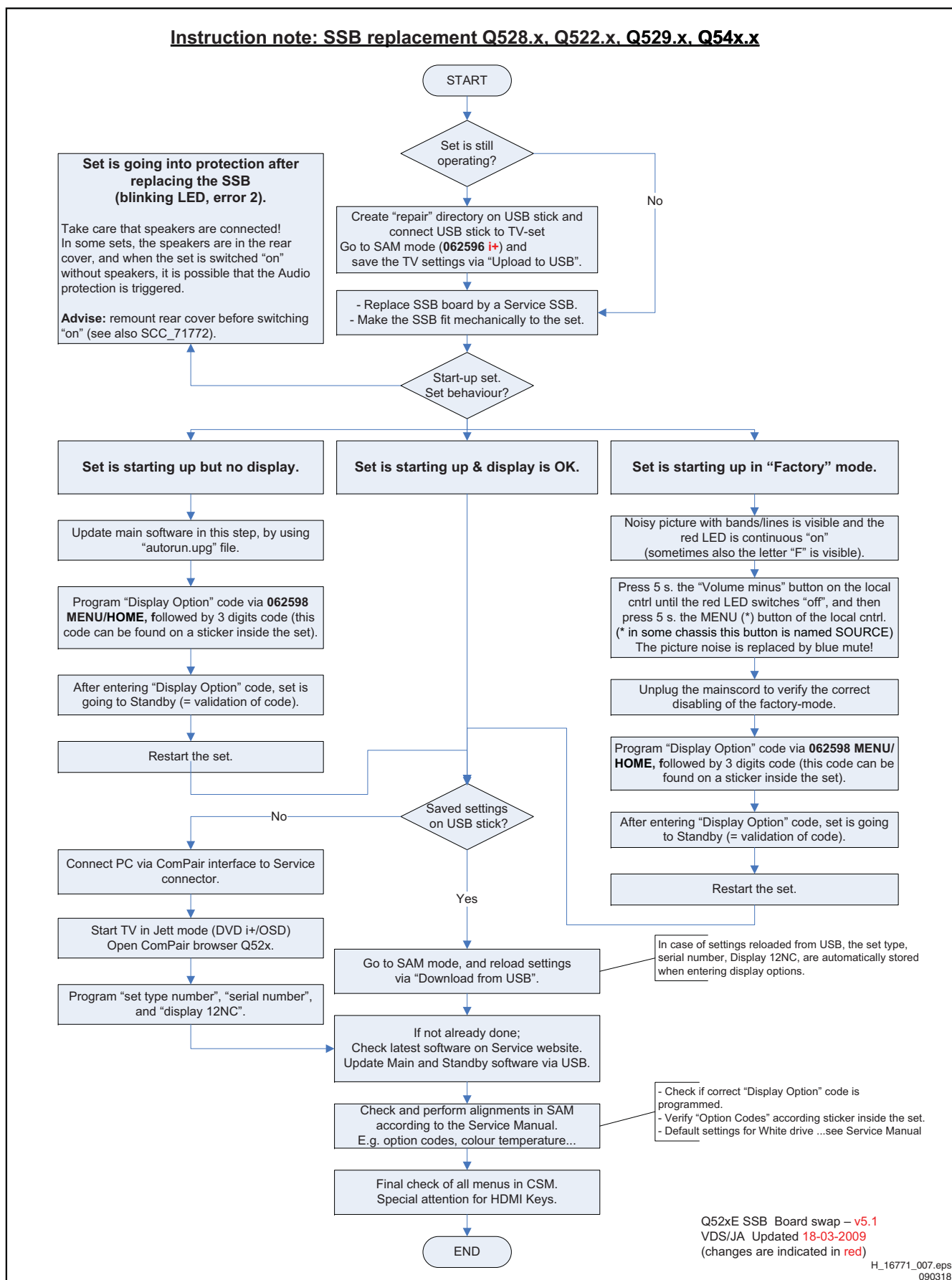


Figure 5-11 SSB replacement flowchart

5.9 Software Upgrading

5.9.1 Introduction

The set software and security keys are stored in a NAND-Flash, which is connected to the PNX8543 via the PCI bus.

It is possible **for the user** to upgrade the **main** software via the USB port. This allows replacement of a software image in a stand alone set, without the need of an E-JTAG debugger. A description on how to upgrade the main software can be found in the DFU.

**Important:** When the NAND-Flash must be replaced, a new SSB must be ordered, due to the presence of the security keys! (copy protection keys, MAC address, ...).

Perform the following actions after SSB replacement:

1. Set the correct option codes (see sticker inside the TV).
2. Update the TV software (see the DFU for instructions).
3. Perform the alignments as described in section [Reset of Repaired SSB](#).
4. Check in CSM if the HDMI keys are valid.

For the correct order number of a new SSB, always refer to the Spare Parts list, available on the Philips Spare Part web portal.

5.9.2 Main Software Upgrade

- The “UpgradeAll.upg” file is only used in the factory.
- The “FlashUtils.upg” file is only used by Service centres that are allowed to do component level repair on the SSB.

Automatic Software Upgrade

In “normal” conditions, so when there is no major problem with the TV, the main software and the default software upgrade application can be upgraded with the “AUTORUN.UPG” (FUS part of the one-zip file: e.g. FUS\_Q5431E\_1.25.5.0\_commercial.zip). This can also be done by the consumers themselves, but they will have to get their software from the commercial Philips website or via the Software Update Assistant in the user menu (see DFU). The “autorun.upg” file must be placed in the root of the USB stick.

How to upgrade:

1. Copy “AUTORUN.UPG” to the root of the USB stick.
2. Insert USB stick in the set while the set is in ON MODE. The set will restart and the upgrading will start automatically. As soon as the programming is finished, a message is shown to remove the USB stick and restart the set.

Manual Software Upgrade

In case that the software upgrade application does not start automatically, it can also be started manually.

How to start the software upgrade application manually:

1. Disconnect the TV from the Mains/AC Power.
2. Press the “OK” button on a Philips TV remote control or a Philips DVD RC-6 remote control (it is also possible to use a TV remote in “DVD” mode). Keep the “OK” button pressed while reconnecting the TV to the Mains/AC Power.
3. The software upgrade application will start.

Attention!

In case the download application has been started **manually**, the “autorun.upg” will maybe not be recognized.

What to do in this case:

1. Create a directory “UPGRADES” on the USB stick.
2. Rename the “autorun.upg” to something else, e.g. to “software.upg”. Do not use long or complicated names, keep it simple. Make sure that “AUTORUN.UPG” is no longer present in the root of the USB stick.
3. Copy the renamed “upg” file into this directory.
4. Insert USB stick into the TV.
5. The renamed “upg” file will be visible and selectable in the upgrade application.

Back-up Software Upgrade Application

If the default software upgrade application does not start (could be due to a corrupted boot 2 sector) via the above described method, try activating the “back-up software upgrade application”.

How to start the “back-up software upgrade application” manually:

1. Disconnect the TV from the Mains/AC Power.
2. Press the “INFO”-button on a Philips remote control or “CURSOR DOWN” button on a Philips DVD RC-6 remote control (it is also possible to use a TV remote in “DVD” mode). Keep the “INFO”-button (or “cursor down” button) pressed while reconnecting the TV to the Mains/AC Power.
3. The software upgrade application will start.

5.9.3 Stand-by Software Upgrade via USB

In this chassis it is possible to upgrade the Stand-by software via a USB stick. The method is similar to upgrading the main software via USB.

Use the following steps:

1. Create a directory “UPGRADES” on the USB stick.
2. Copy the Stand-by software (part of the one-zip file, e.g. StandbySW\_CFT69\_84.0.0.0.upg) into this directory.
3. Insert the USB stick into the TV.
4. Start the download application manually (see section [Manual Software Upgrade](#)).
5. Select the appropriate file and press the “red” button to upgrade.

5.9.4 Content and Usage of the One-Zip Software File

Below the content of the One-Zip file is explained, and instructions on how and when to use it.

File name	Description
907.5_PnSEsticker.zip	Contains the E-sticker data. Not to be used by Service technicians.
cabinet_TV543_x.x.x.x.zip	Contains acoustic parameters per cabinet. Not to be used by Service technicians.
ceisp2padll_P2PAD_x.x.x.x.zip	Not to be used by Service technicians. For ComPair development only.
display_TV543_x.x.x.x.zip	Not to be used by Service technicians.
EJTAGDownload_Q5431_x.x.x.x.zip	Only used by service centra which are allowed to do Component Level Repair.
Factory_Q5431_x.x.x.x.zip	Only for production purposes, not to be used by Service technicians.
FlashUtils_Q5431_x.x.x.x.zip	Not to be used by Service technicians.
FUS_Q5431_x.x.x.x.zip	Contains the “autorun.upg” which is needed to upgrade the TV main software and the software download application.
HDMI_FHD_EDID_Q5431_x.x.x.x.zip	Contains the EDID content of the different (FHD) HDMI NVM's. See ComPair for further instructions.
HDMI_HD_EDID_Q5431_x.x.x.x.zip	Contains the EDID content of the different (HD) HDMI NVM's. See ComPair for further instructions.
lightGuide_TV543_x.x.x.x.zip	Not to be used by Service technicians.
OAD_Q5431_x.x.x.x.zip	Not to be used by Service technicians.
Pgamma_xxxxxxx_Q5431_x.x.x.x.zip	Contains NVM data for the specific display control board. Not to be used by Service technicians.
PQ_Q5431_x.x.x.x.zip	Not to be used by Service technicians.
processNVM_Q5431_x.x.x.x.zip	Default NVM content. Must be programmed via ComPair.
StandbySW_CFT69_x.x.x.x.zip	Contains the Stand-by software in “upg” and “hex” format.  - The “StandbySW_XXXXX_prod.upg” file can be used to upgrade the Stand-by software via USB.  - The “StandbySW_XXXXX.hex” file can be used to upgrade the Stand-by software via ComPair.  - The files “StandbySW_XXXXX_exhex.hex” and “StandbySW_XXXXX_dev.upg” may not be used by Service technicians (only for development purposes).

File name	Description
Tcon_xxxxxxx_Q5431_x.x.x.x.zip	Contains NVM data for the specific display control board. Not to be used by Service technicians.
UpgradeAll_Q5431_x.x.x.x.zip	Only for production purposes, not to be used by Service technicians. Caution: <b>Never try to use this file, because it will overwrite the HDCP keys!</b>
UpgradeExe_Q5431_x.x.x.x.zip	Only for production purposes, not to be used by Service technicians.
VGA_FHD_EDID_TV543_x.x.x.x.zip	Contains the EDID content of the different (FHD) VGA NVM. See ComPair for further instructions.
VGA_HD_EDID_TV543_x.x.x.x.zip	Contains the EDID content of the different (HD) VGA NVM. See ComPair for further instructions.

## 6. Alignments

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- [6.1 General Alignment Conditions](#)
  - [6.2 Hardware Alignments](#)
  - [6.3 Software Alignments](#)
  - [6.4 Option Settings](#)
  - [6.5 Reset of Repaired SSB](#)
  - [6.6 Total Overview SAM modes](#)

### 6.1 General Alignment Conditions

- Perform all electrical adjustments under the following conditions:
- Power supply voltage (depends on region):
    - AP-NTSC:** 120 V<sub>AC</sub> or 230 V<sub>AC</sub> / 50 Hz (± 10%).
    - AP-PAL-multi:** 120 - 230 V<sub>AC</sub> / 50 Hz (± 10%).
    - EU:** 230 V<sub>AC</sub> / 50 Hz (± 10%).
    - LATAM-NTSC:** 120 - 230 V<sub>AC</sub> / 50 Hz (± 10%).
    - US:** 120 V<sub>AC</sub> / 60 Hz (± 10%).
  - Connect the set to the mains via an isolation transformer with low internal resistance.
  - Allow the set to warm up for approximately 15 minutes.
  - Measure voltages and waveforms in relation to correct ground (e.g. measure audio signals in relation to AUDIO\_GND).
  - Caution:** It is not allowed to use heat sinks as ground.
  - Test probe: R<sub>i</sub> > 10 MΩ, C<sub>i</sub> < 20 pF.
  - Use an isolated trimmer/screwdriver to perform alignments.

#### 6.1.1 Alignment Sequence

- First, set the correct options:
  - In SAM, select “Options”, and then “Option numbers”.
  - Fill in the option settings for “Group 1” and “Group 2” according to the set sticker (see also section [Option Settings](#)).
  - Press OK on the remote control before the cursor is moved to the left.
  - In submenu “Option numbers” select “Store” and press OK on the RC.
- OR:
  - In main menu, select “Store” again and press OK on the RC.
  - Switch the set to Stand-by.
- Warming up (>15 minutes).

### 6.2 Hardware Alignments

Not applicable.

### 6.3 Software Alignments

- Put the set in SAM mode (see chapter [5. Service Modes. Error Codes, and Fault Finding](#)). The SAM menu will now appear on the screen. Select ALIGNMENTS and go to one of the sub menus. The alignments are explained below.
- The following items can be aligned:
- Tuner AGC.
  - White point.

- To store the data:
- Press OK on the RC **before the cursor is moved to the left**.
  - In main menu select “Store” and press OK on the RC.
  - Press MENU on the RC to switch back to the main menu.
  - Switch the set to stand-by mode.

For the next alignments, supply the following test signals via a video generator to the RF input:

- EU/AP-PAL models:** a PAL B/G TV-signal with a signal strength of at least 1 mV and a frequency of 475.25 MHz
- US/AP-NTSC models:** an NTSC M/N TV-signal with a signal strength of at least 1 mV and a frequency of 61.25 MHz (channel 3).
- LATAM models:** an NTSC M TV-signal with a signal strength of at least 1 mV and a frequency of 61.25 MHz (channel 3).

#### 6.3.1 Tuner AGC (RF AGC Take Over Point Adjustment)

Purpose: To keep the tuner output signal constant as the input signal amplitude varies.

No alignment is necessary, as the AGC alignment is done automatically (standard value: “64”).

Store settings and exit SAM.

#### 6.3.2 White Point

- Set “Active control” to “Off”.
- Choose “TV menu”, “TV Settings” and then “Picture” and set picture settings as follows:

Picture Setting	
Dynamic backlight	Off
Dynamic Contrast	Off
Colour Enhancement	Off
Picture Format	Un scaled
Light Sensor	Off
Brightness	50
Colour	0
Contrast	100

- Go to the SAM and select “Alignments”-> “White point”.

##### White point alignment LCD screens:

- Use a 100% white screen as input signal and set the following values:
  - “Colour temperature”: “Normal”.
  - All “White point” values to: “127”.
  - “Red BL offset” values to “7”.
  - “Green BL offset” values to “7”.

##### In case you have a colour analyser:

- Measure with a calibrated contactless colour analyser in the centre of the screen. Consequently, the measurement needs to be done in a dark environment.
- Adjust the correct x, y coordinates (while holding one of the White point registers R, G or B on 127) by means of decreasing the value of one or two other white points to the correct x, y coordinates (see [Table 6-1](#)). Tolerance: dx: ± 0.004, dy: ± 0.004.
- Repeat this step for the other colour temperatures that need to be aligned.
- When finished press OK on the RC and then press STORE (in the SAM root menu) to store the aligned values to the NVM.
- Restore the initial picture settings after the alignments.

Table 6-1 White D alignment values

Colour Temperature	x	y
Cool (11000K)	0.276	0.282
Normal (9000K)	0.287	0.296
Warm (6500K)	0.313	0.329

If you do not have a colour analyser, you can use the default values. This is the next best solution. The default values are average values coming from production.

- Select a COLOUR TEMPERATURE (e.g. COOL, NORMAL, or WARM).
- Set the RED, GREEN and BLUE default values according to the values in [Table 6-2](#).
- When finished press OK on the RC, then press STORE (in the SAM root menu) to store the aligned values to the NVM.
- Restore the initial picture settings after the alignments.

**Table 6-2 White tone default settings**

White Tone	32"			37"			42"			Black level offset	
Colour Temp	R	G	B	R	G	B	R	G	B	R	G
Cool	127	105	122	127	102	85	122	122	127	7	7
Normal	127	103	102	127	107	105	127	122	112	7	7
Warm	127	94	68	127	91	51	127	111	70	7	7

### 6.3.3 LCD Panel Flicker Alignment

**Note:** This is only necessary for Forward Integration models (sets that have the LCD Timing Controller (TCON) located on the SSB).

See ComPair for further instructions.

## 6.4 Option Settings

### 6.4.1 Introduction

The microprocessor communicates with a large number of I<sup>2</sup>C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence / absence of these PNX5100 ICs (back-end advanced video picture improvement IC which offers motion estimation and compensation features (commercially called HDNM) plus integrated Ambilight control) is made known by the option codes.

#### Notes:

- After changing the option(s), save them by pressing the OK button on the RC before the cursor is moved to the left, select STORE in the SAM root menu and press OK on the RC.
- The new option setting is only active after the TV is switched "off" / "stand-by" and "on" again with the mains switch (the NVM is then read again).

### 6.4.2 Dealer Options

For dealer options, in SAM select "Dealer options". See [Table 6-4](#).

### 6.4.3 (Service) Options

Select the sub menu's to set the initialisation codes (options) of the model number via text menus. See [Table 6-4](#).

### 6.4.4 Opt. No. (Option numbers)

Select this sub menu to set all options at once (expressed in two long strings of numbers).

An option number (or "option byte") represents a number of different options. When you change these numbers directly, you can set all options very quickly. All options are controlled via eight option numbers.

When the NVM is replaced, all options will require resetting. To be certain that the factory settings are reproduced exactly, you must set both option number lines. You can find the correct option numbers on a sticker inside the TV set and in [Table 6-3](#).

**Example:** The options sticker gives the following option numbers:

- 08192 00133 01387 45160
- 12232 04256 00164 00000

The first line (group 1) indicates hardware options 1 to 4, the second line (group 2) indicate software options 5 to 8. Every 5-digit number represents 16 bits (so the maximum value will be 65536 if all options are set).

When all the correct options are set, the sum of the decimal values of each Option Byte (OB) will give the option number. See [Table 6-3](#) for the options.

#### Diversity

Not all sets with the same Commercial Type Number (CTN) necessarily have the same option code!

Use of Alternative BOM An alternative BOM number usually indicates the use of an alternative display or power supply. This results in another display code thus in another Option code. For the power supply there is no difference.

Refer to [3. Precautions, Notes, and Abbreviation List](#).

### 6.4.5 Option Code Overview

**Table 6-3 Option and display code overview**

CTN (Alt. BOM#)	Options Group 1	Options Group 2	Display code
32PFL5604H/12 (Alt. BOM 1)	08192 00133 01387 45160	14280 12448 00164 00000	200
32PFL5604H/12 (Alt. BOM 2)	08192 00133 01387 45160	14279 12448 00164 00000	199
32PFL5624H/12 (Alt. BOM 1)	08192 00134 01387 45160	14280 12448 00164 00000	200
32PFL5624H/12 (Alt. BOM 2)	08192 00134 01387 45160	14279 12448 00164 00000	199
37PFL5604H/12 (Alt. BOM 2)	08192 00133 01387 45160	14295 12448 00164 00000	215
42PFL5604H/12	08192 00135 01387 45160	14282 12448 00164 00000	202
42PFL5624H/12	08192 00136 01387 45160	14282 12448 00164 00000	202

**Important:** after having edited the option numbers as described above, you **must press OK** on the remote control **before the cursor is moved to the left!**

## 6.5 Reset of Repaired SSB

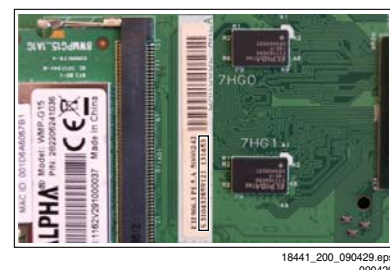
A very important issue towards a repaired SSB from a service repair shop implies the reset of the NVM on the SSB.

A repaired SSB in service should get the service Set type "00PF0000000000" and Production code "00000000000000". Also the virgin bit is to be set. To set all this, you can use the ComPair tool.

In case of a display replacement, reset the "Operation hours" to "0", or to the operation hours of the replacement display.

### 6.5.1 SSB identification

When ordering a new SSB, please use the correct ordering number. It can be found on a sticker on the SSB. The format is <12nc><serial number>. The ordering number of a "Service SSB" is the same as the ordering number of a "Factory SSB".



**Figure 6-1 SSB identification**

### 6.6 Total Overview SAM modes

Table 6-4 SAM mode overview

Main Menu	Sub-menu 1	Sub-menu 2	Sub-menu 3	Description
Hardware Information	A. SW VERSION	e.g. "Q5431_0.26.10.0"		Display TV & Stand-by SW version and CTN serial number.
	B. Stand-by processor version	e.g. "STDBY_84.69.0.0"		
	C. Production code	e.g. "See type plate"		
Operation hours				Displays the accumulated total of operation hours.TV switched "on/off" & every 0.5 hours is increase one
Error				Displayed the most recent error.
Reset error buffer				Clears all content in the error buffer.
Alignment	Tuner AGC			RF-AGC Take over point adjustment (AGC default value is 64)
	White point	Colour temperature	Normal	3 difference modes of colour temperature can be selected
			Warm	
			Cool	
		White point red		LCD White Point Alignment. For values, see <a href="#">Table 6-1</a> .
		White point green		
		White point blue		
		Red black level offset		
		Green black level offset		
Dealer options	Picture mute	Off/On		Select Picture mute On/Off. Picture is muted / not muted in case no input signal is detected at input connectors.
	Virgin mode	Off/On		Select Virgin mode On/Off. TV starts up / does not start up (once) with a language selection menu after the mains switch is turned "on" for the first time (virgin mode)
	E-sticker	Off/On		Select E-sticker On/Off (USP's on-screen)
	Auto store mode	None		Autostore mode disabled (not in installation menu)
		PDC/VPS		Autostore mode via ATS (PDC/VPS) enabled
		TXT page		Autostore mode via ACI enabled
		PDC/VPS/TXT		Autostore mode via ACI or ATS enabled
Options	Digital broadcast	DVB	Off/On	Select DVB On/Off
		DVB - T installation	Off/On or Country dependent	Select DVB T installation On/Off or by country
		DVB - T light	Off/On	Select DVB T light On/Off
		DVB - C	Off/On	Select DVB C On/Off
		DVB - C installation	Off/On or Country dependent	Select DVB C installation On/Off or by country
		Over the air download	Off/On or Country dependent	Select Over the air download On/Off or by country
		8 days EPG	Off/On	Select 8 day EPG On/Off
	Digital features	USB	Off/On	Select USB On/Off
		Ethernet	Off/On	Select Ethernet On/Off
		Wi-Fi	Off/On	Select Wi-Fi On/Off
		DLNA	Off/On	Select DLNA On/Off
		On-line service	Off	On-line service is Off
		PTP (Picture Transfer Protocol)	Off/On	Select PTP On/Off
		Update assistant	Off/On	Select Update assistant On/Off
		Internet software update	Off	Internet software update is Off
	Display	Screen	201 / LCD LGD WUE SBA1 37"	Displayed the panel code & type model.
		LightGuide	Off/On	Select LightGuide On/Off
		Display fans	Not present/Present	Select Display fans Present/Not present.
		Temperature sensor	No sensor	N.A
		Temperature LUT	0	N.A
		E-box & monitor	Off/On	Select E-box & monitor On/Off
	Video reproduction	Picture processing	None/PNX5100	Select Picture processing None/PNX5100 (Q543.xE chassis).
		MOP local contrast	Off/On	Select MOP local contrast On/Off
		Light sensor	Off/On	Select Light sensor On/Off
		Light sensor type	0/1/2/3	Select Light sensor type form 0 to 3 (for difference styling).
		Pixel Plus type	Pixel Plus HD	Select type of picture improvement.
			Perfect Pixel HD	
			Pixel Precise HD	
			Pixel Plus HD (used in Q543.xE)	
			Pixel Precise HD (used in Q548.1E)	
		Ambilight	None,	Select type of Ambilight modules use.
			2 sided 2/2	For 8400 series only
			2 sided 4/4	
			3 sided 2/3/2	
			3 sided 4/3/4	
			3 sided 4/5/4	
			4 sided 4/3/4/3	
		Ambilight technology	LED/Future use	Ambilight technology LED is in use.
		MOP ambilight	Off/On	Select MOP ambilight On/Off

Main Menu	Sub-menu 1	Sub-menu 2	Sub-menu 3	Description	
	Audio reproduction	Acoustic system		Cabinet design used for setting dynamic audio parameters.	
	Source selection	EXT1/AV1 type	SCART CBVS RGB LR	Select input source when connected with external equipment.	
			CVBS Y/C YPbPr LR		
			CVBS Y/C YPbPr HV LR		
			(CVBS) YPbPr LR		
		EXT2/AV2 type	SCART CBVS RGB LR	Select input source when connected with external equipment.	
			CVBS Y/C LR		
			(CVBS) YPbPr LR		
			CVBS Y/C LR		
		EXT3/AV3 type	None	Select input source when connected with external equipment.	
			CVBS		
			CVBS LR		
			YPbPr		
			YPbPr LR		
			YPbPr HV LR		
			VGA	Off/On	Select VGA On/Off
			SIDE I/O	Off/On	Select SIDE I/O On/Off
		HDMI 1	Off/On	Select HDMI 1 On/Off	
		HDMI 2	Off/On	Select HDMI 2 On/Off	
		HDMI 3	Off/On	Select HDMI 3 On/Off	
		HDMI 4	Off/On	Select HDMI 4 On/Off	
		HDMI side	Off/On	Select HDMI side On/Off	
		HDMI CEC	Off/On	Select HDMI CEC On/Off	
		HDMI CEC RC pass through	Off/On	Select HDMI CEC RC pass through On/Off	
		HDMI CEC Pixel Plus link	Off/On	Select Pixel Plus link On/Off	
	Miscellaneous	Region	Europe/AP-PAL-MULTI/Australia	Select Region/country.	
		Tuner type	HD1816-MK1/TD1716-MK4/ TD1716-MK3/HD1816-MK2	Select type of Tuner used.	
		System RC support	Off/On	Select System RC support On/Off.	
		Embedded user manual	Off/On	Select Embedded user manual On/Off.	
		Start-up screen	Off/On	Select Start-up screen On/Off.	
		Wallpaper	Off/On	Select Wallpaper On/Off.	
		Hotel mode	Off	Hotel mode is Off.	
Option number	Group 1	e.g. "08192.02181.01387.45160"		The first line (group 1) indicates hardware options 1 to 4.	
	Group 2	e.g. "10185.12448.00164.00000"		The second line (group 2) indicates software options 5 to 8.	
	Store			Store after changing.	
Initialise NVM				N.A	
Store				Select Store in the SAM root menu after making <b>any</b> changes.	
Software maintenance	Software events	Display		Display information is for development purposes.	
		Clear			
		Test reboot			
		Test reboot is to restart the TV.			
	Hardware events	Display		Display information is for development purposes.	
		Clear			
Operation hours display		0003		In case the display must be swapped for repair, you can reset the "Display operation hours" to "0". So, this one does keeps up the lifetime of the display itself (mainly to compensate the degeneration behaviour).	
Test setting	Digital information	QAM modulation: 64-QAM		Display information is for development purposes.	
		Symbol rate: 23:29			
		Original network ID: 12817			
		Network ID:12817			
		Transport stream ID: 2			
		Service ID: 3			
		Hierarchical modulation: 0			
		Selected video PID: 35			
		Selected main audio PID: 99			
		Selected 2nd audio PID: -1			
	Install start frequency	000		Install start frequency from 0 MHz	
	Install end frequency	999		Install end frequency as 999 MHz	
	Default install frequency				
	Installation	Digital only		Select Digital only or Digital + Analogue before installation.	
		Digital + Analogue			

Main Menu	Sub-menu 1	Sub-menu 2	Sub-menu 3	Description
Development file versions	Development 1 file version	Display parameters DISPT 4.0.8.11		Display information is for development purposes.
		Acoustics parameters ACSTS 3.0.6.1		
		PQF - Fixed settings 1 "4.54.34.32.34"		
		PQS - Profile set 1 "4.57.34.32.34"		
		PQU - User styles 1 "4.56.34.32.34"		
	Development 2 file version	12NC one zip software		Display information is for development purposes.
		Initial main software		
		NVM version Q5431_0.4.3.0		
		Flash units SW Q5431_0.16.48.24		
Upload to USB	Channel list			To upload several settings from the TV to an USB stick
	Personal settings			
	Option codes			
	Display-related alignment			
	History list			
Download from USB	Channel list			To download several settings from the USB stick to the TV.
	Personal settings			
	Option codes			
	Display-related alignment			



## 7. Circuit Descriptions

### Index of this chapter:

- [7.1 Introduction](#)
- [7.2 Power Supply](#)
- [7.3 DC-DC Converter](#)
- [7.4 Front-End](#)
- [7.5 HDMI](#)
- [7.6 Video and Audio Processing - PNX8543](#)
- [7.7 Back-End - On-board Timing Controller \(TCON\)](#)
- [7.8 Common Interface CI+](#)

### Notes:

- Only **new** circuits (circuits that are not published recently) are described.
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the wiring, block (see chapter [9. Block Diagrams](#)) and circuit diagrams (see chapter [10. Circuit Diagrams and PWB Layouts](#)). Where necessary, you will find a separate drawing for clarification.

Main difference with the previous platform is the presence of the Timing Controller (TCON) on the SSB instead of on the LCD Panel.

### 7.1.1 Implementation

Key components of this chassis are:

- PNX8543 Digital Colour Decoder
- R8J01070FT Timing Controller
- HD1816AF Hybrid Tuner
- DRX3926K Demodulator
- TDA9996 HDMI Switch
- TPA3123D2PWP Class D Power Amplifier.

### 7.1.2 TV543 Architecture Overview

- For details about the chassis block diagrams refer to chapter [9. Block Diagrams](#). An overview of the TV543 architecture can be found in [Figure 7-1](#).

## 7.1 Introduction

The Q543.3E LA chassis (platform name TV543/32) is a derivative from the Q522.2E LA chassis (platform TV522).

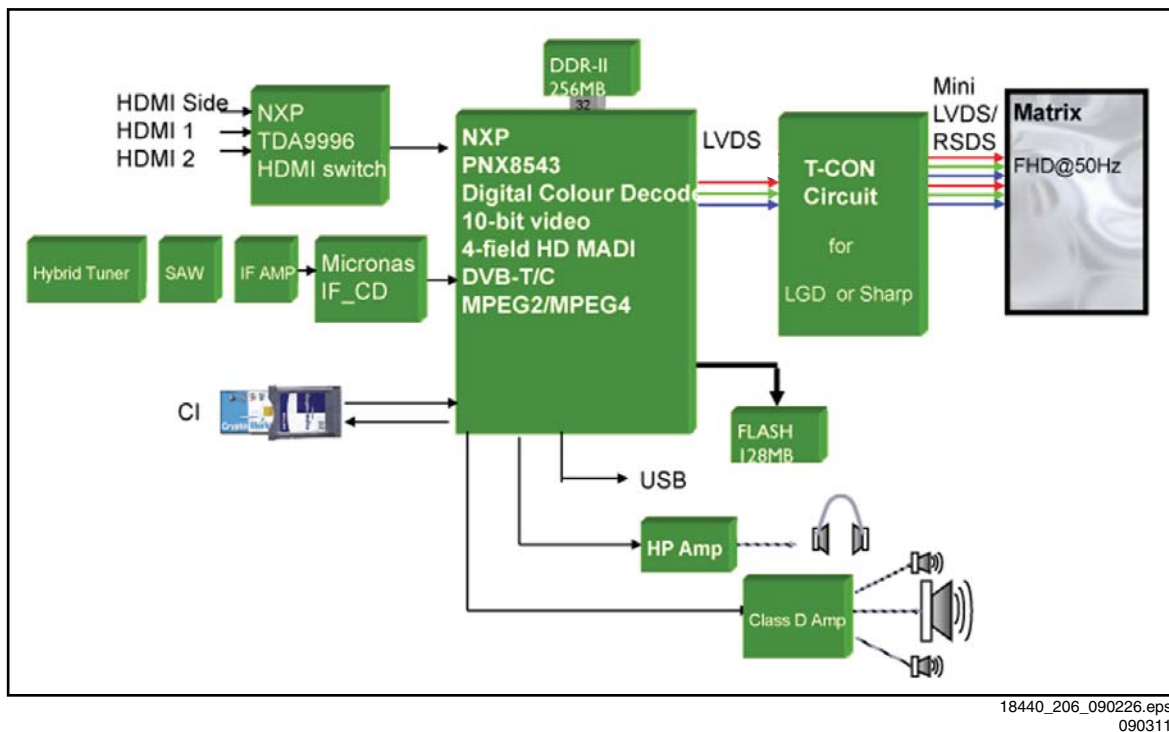
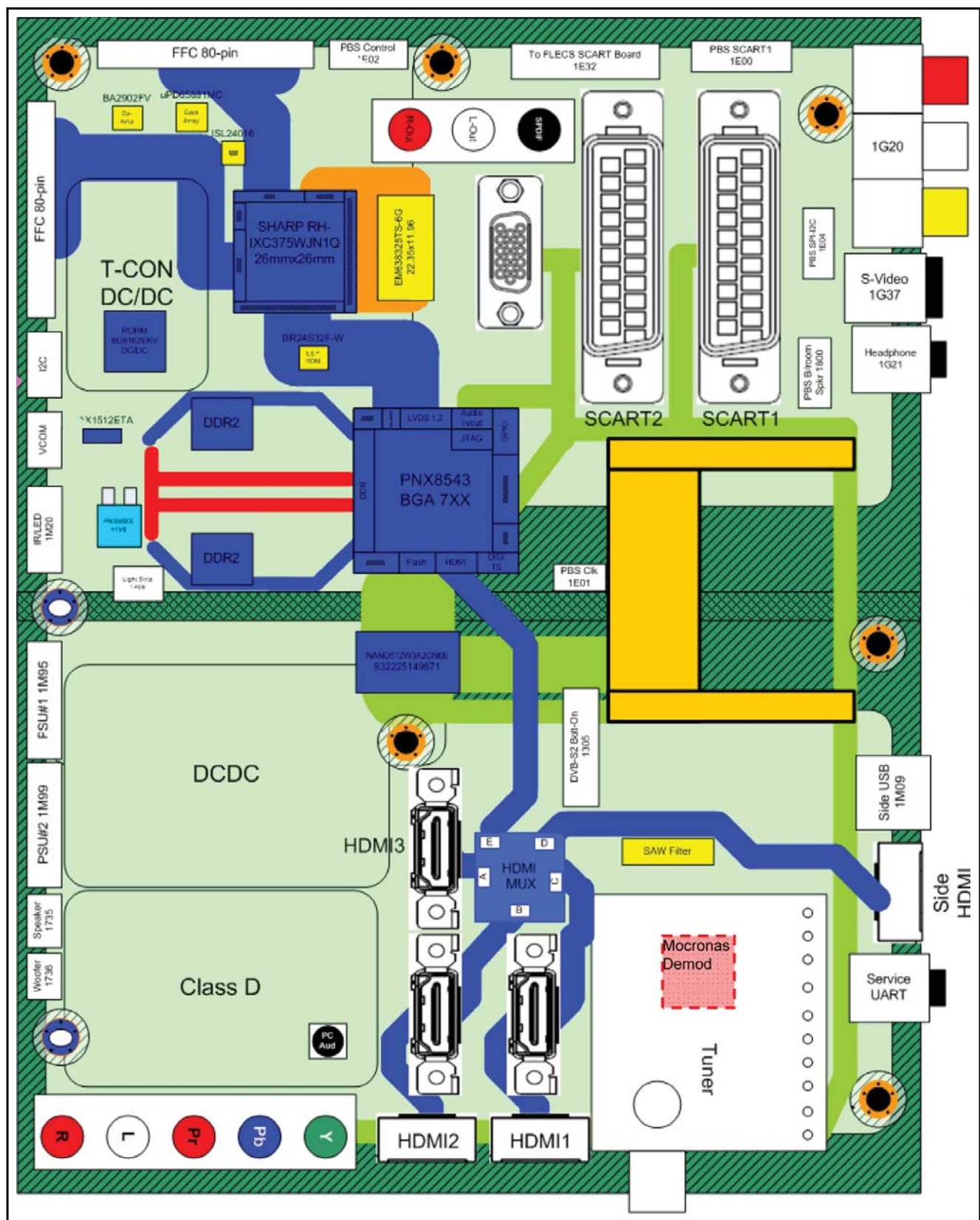


Figure 7-1 Architecture of TV543/32 Forward Integration platform

### 7.1.3 SSB Cell Layout



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Figure 7-2 SSB layout cells (top view)

## 7.2 Power Supply

All power supplies described below are a black box for Service. When defective, a new board must be ordered and the defective one must be returned, unless the main fuse of the board is broken. Always replace a defective fuse with one with the correct specifications! This part is available in the regular market.

Consult the Service Spare Parts website for the order codes of the boards.

### 7.2.1 Specifications

The only type of power supply used in the TV543 Forward Integration platform is the Integrated Power Board (IPB) - incl. inverter.

In this manual, no detailed information is available because of design protection issues.

### 7.2.2 Diversity

Below find an overview of the different PSUs that are used:

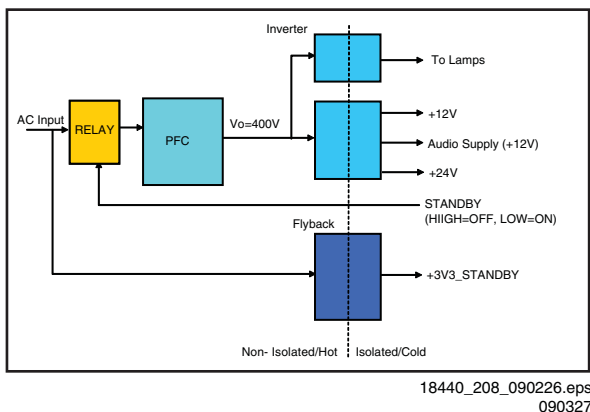
**Table 7-1 Supply diversity**

Supplier	PSU	Model	Input Voltage Range
LGIT	PLHL-T837A	32" LGD display	High Mains (198 to 265 V <sub>AC</sub> )
LGIT	PLHL-T813A	42" LGD display	High Mains (198 to 265 V <sub>AC</sub> )
LGIT	PLHL-T808A	32" Sharp display	High Mains (198 to 265 V <sub>AC</sub> )
tbd	tbd	42" Sharp display	tbd

It should be noted that for different display manufacturers, different PSUs are used. When ordering a new PSU, always check which LCD panel is used in the set, and order the correct PSU!

### 7.2.3 Application

An application diagram can be found below:

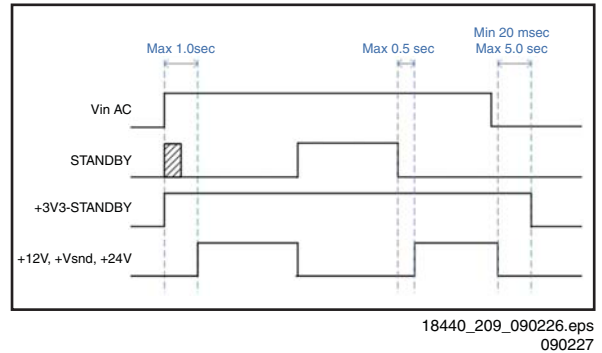


**Figure 7-3 Application Integrated Power Board**

### 7.2.4 Power Supply Timing

The STANDBY signal controls the on-mode voltages +12V, +V<sub>snd</sub> and +24V. During chassis cold start from AC mains, +12V can be expected to be stable within 1.0 seconds, while for a warm start, i.e. wake up from stand-by power state, this timing becomes 0.5 seconds maximum. During AC switch off, stand-by power +3V3-STANDBY decay is at least 20 ms but

not more than 5.0 seconds compared to +12V. Refer to [Figure 7-4](#):



**Figure 7-4 PSU Timing Diagram**

### 7.2.5 Power Supply Protection

Power supply protection is implemented via the stand-by controller of the PNX8543 via the following signals:

- POWER-OK: signal from PSU to indicate if the supply output from the IPB is normal
- DETECT1: signal to indicate if the +5V, +3V3 and +1V2 voltages on the chassis are present
- DETECT2: signal to indicate if the +12V voltage on the chassis is present.

## 7.3 DC-DC Converter

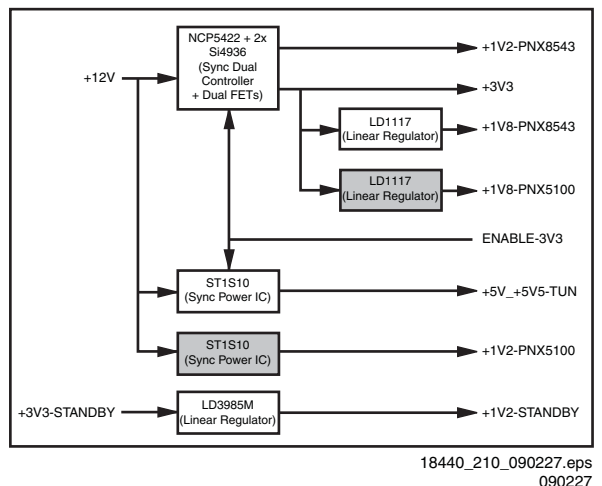
Input power is obtained from the IPB module via the following voltages:

- +3V3-STANDBY (stand-by-mode only)
- +12V (on-mode)
- +V<sub>snd</sub> (audio power) (on-mode)
- +24V (bolt-on power) (on-mode).

Control is achieved by the PNX8543 controller via the STANDBY signal.

Audio power is specifically for audio supply usage only and does not go through any DC conversion.

Below find a block diagram of the on-board DC-DC converters.



**Figure 7-5 DC-DC converters**

7.4 Front-End

The Front-End consist of the following key components:

- Tuner HD1816AF
- IF demodulator DRX3926K
- AGC amplifier UPC3221GV
- SAW filter 36M125.

Below find a block diagram of the front-end application.

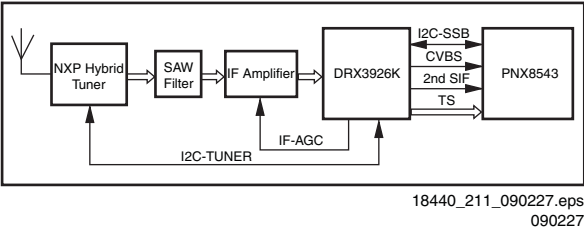


Figure 7-6 Front-End block diagram

The DRX3926K is a multi-standard demodulator supporting DVB-C, DVB-T and analogue standards. The demodulated digital stream is fed into the parallel transport stream data ports of the PNX8543. The demodulated analogue signal in the form of CVBS is connected to the analogue video CVBS/Y input channel, while the SIF is connected via the SSIF2 positive input port.

7.5 HDMI

In this platform, the TDA9996 HDMI multiplexer is implemented. The EDID contents are no longer stored in a separate EEPROM, but directly in the multiplexer. Each input has its own physical sub address: the first 253 bytes are common, where the last 3 bytes define the specific input. The EDID contents are, at +5V power-up, downloaded to RAM. The following figures show the HDMI input configuration and EDID control.

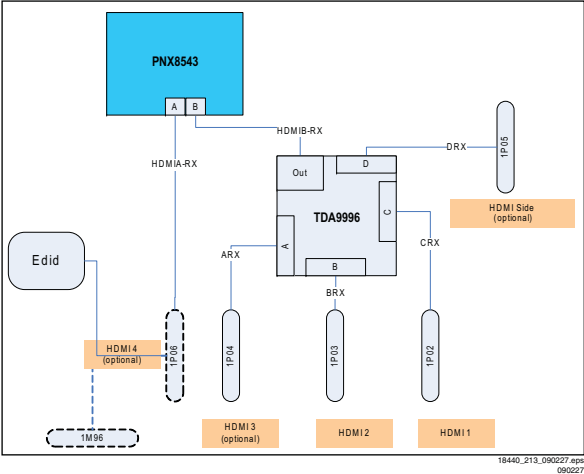


Figure 7-7 HDMI input configuration

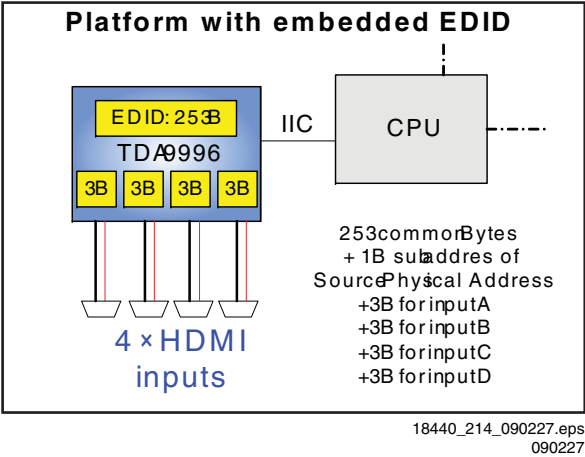


Figure 7-8 EDID control (embedded EDID)

- Some delta's w.r.t. TDA9996 compared to earlier chassis/ platforms are:
- +5V detection mechanism
  - stable clock detection mechanism
  - integrated EDID
  - RT control
  - HPD control
  - TMDS output control
  - CEC control
  - new hot-plug control for PNX8543 for 5th HDMI input
  - new EDID structure: EDID stored in TDA9996, therefore there are no EDID pins on the SSB. Only in the event of a 5th HDMI input, an additional EEPROM is foreseen, as was implemented in previous platforms.

- Some delta's with respect to PNX8543 compared to earlier chassis/platforms are:
- 2 HDMI inputs (A & B)
  - HDMI deep colour RGB/YCbCr 4:4:1 10/12 bit detection.

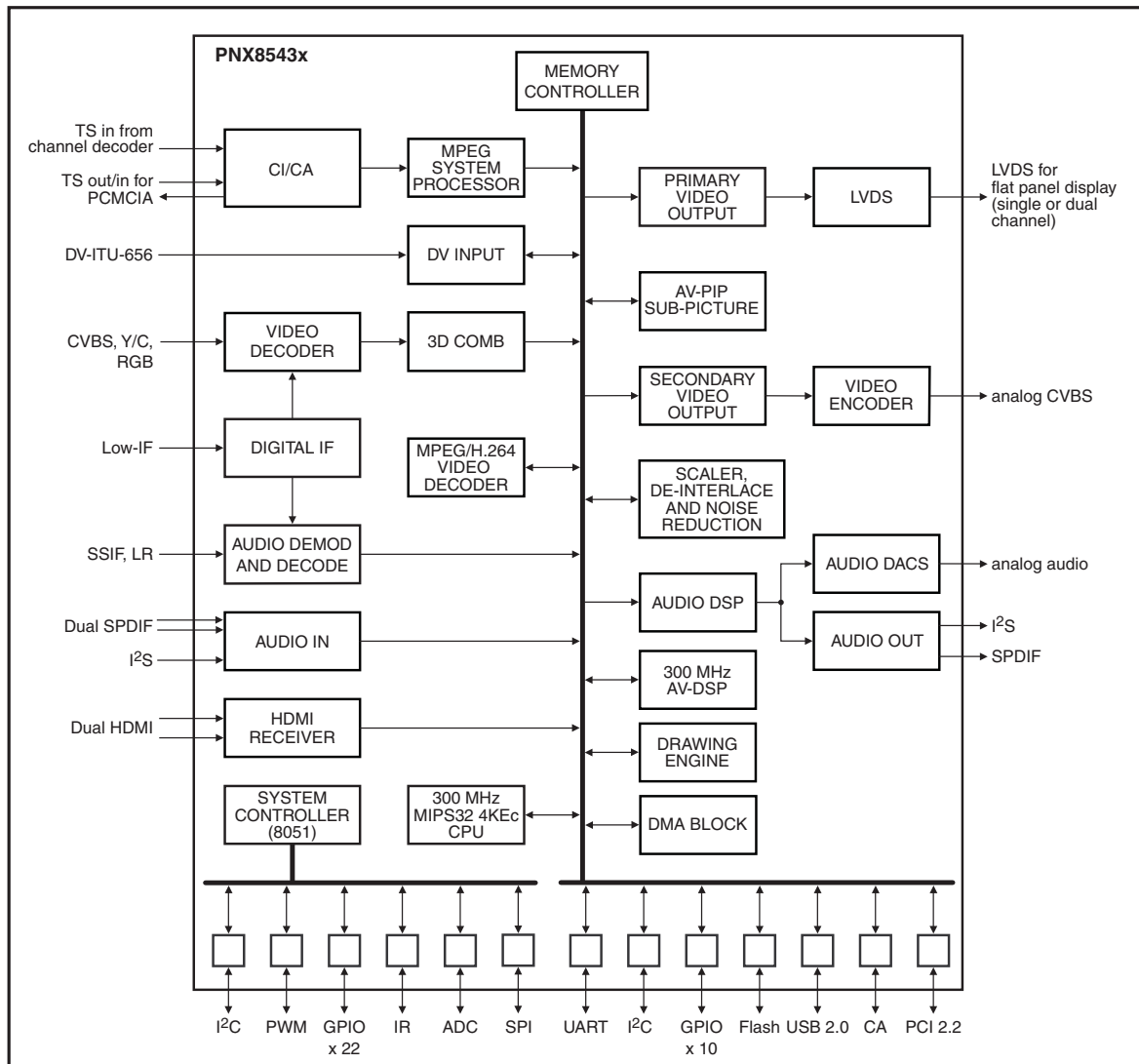
After replacement of the TDA9996 HDMI multiplexer, the default I<sup>2</sup>C address should be reprogrammed from C0 to CE, and the HDMI EDIDs should be reprogrammed as well. Both actions should be executed via ComPair.

## 7.6 Video and Audio Processing - PNX8543

The PNX8543 is the main audio and video processor (or System-on-Chip) for this platform. It is a member of the PNX85xx SoC family (described in earlier chassis) with the addition of the MPEG4 functionality; the separate STi710x MPEG4 decoder is no longer implemented in this platform.

The PNX8543 handles the digital and analogue audio- and video decoding and processing. The processor is a MIPS32 general purpose CPU and a 8051-based TV controller for power management and user event handling.

- For a functional diagram of the PNX8543, refer to [Figure 7-9](#).



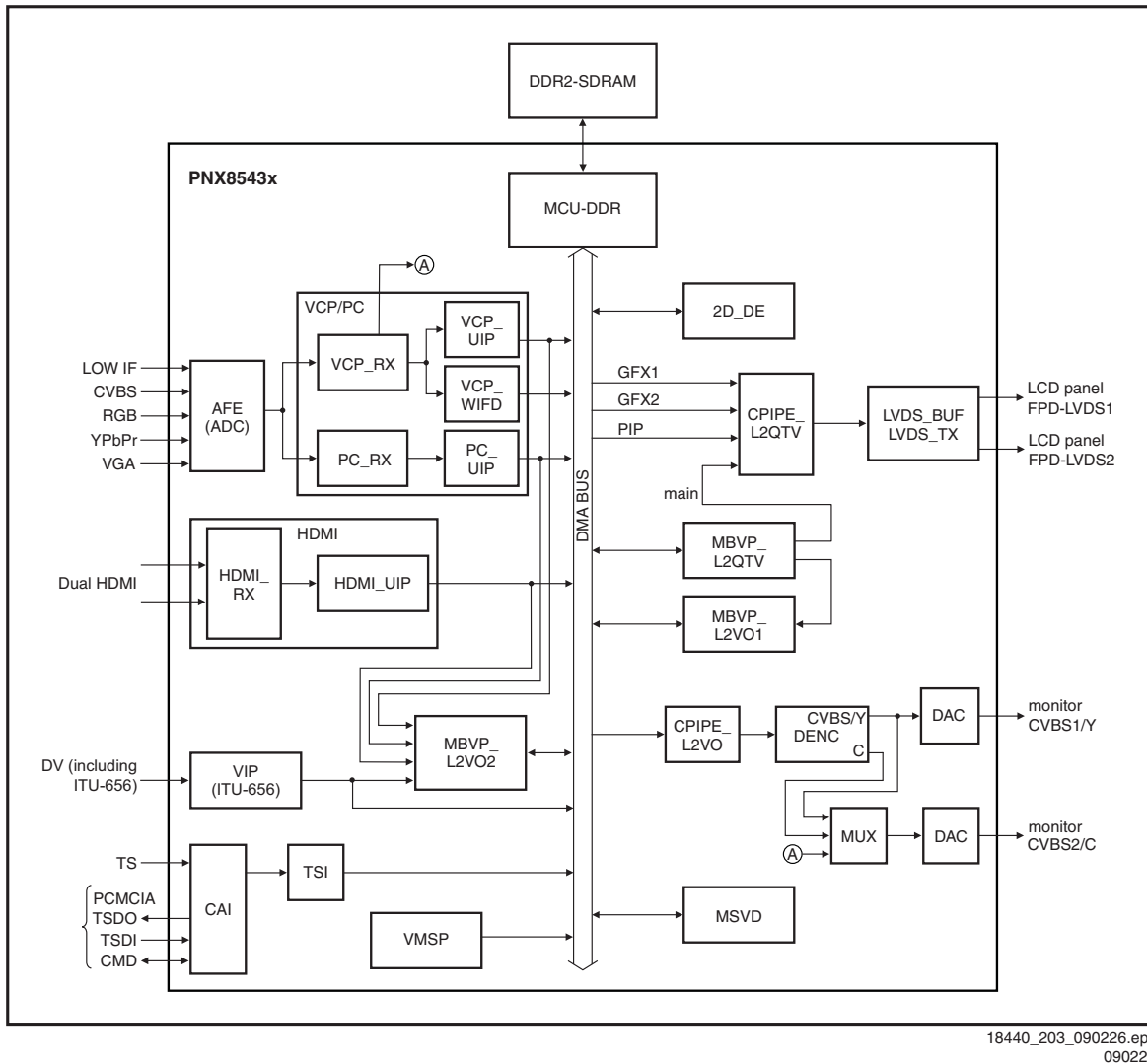
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Figure 7-9 PNX8543 functional diagram



### 7.6.1 Video Subsystem

Refer to [Figure 7-10](#) for the main video interfaces for the PNX8543 and the video signal flow between blocks and memory.



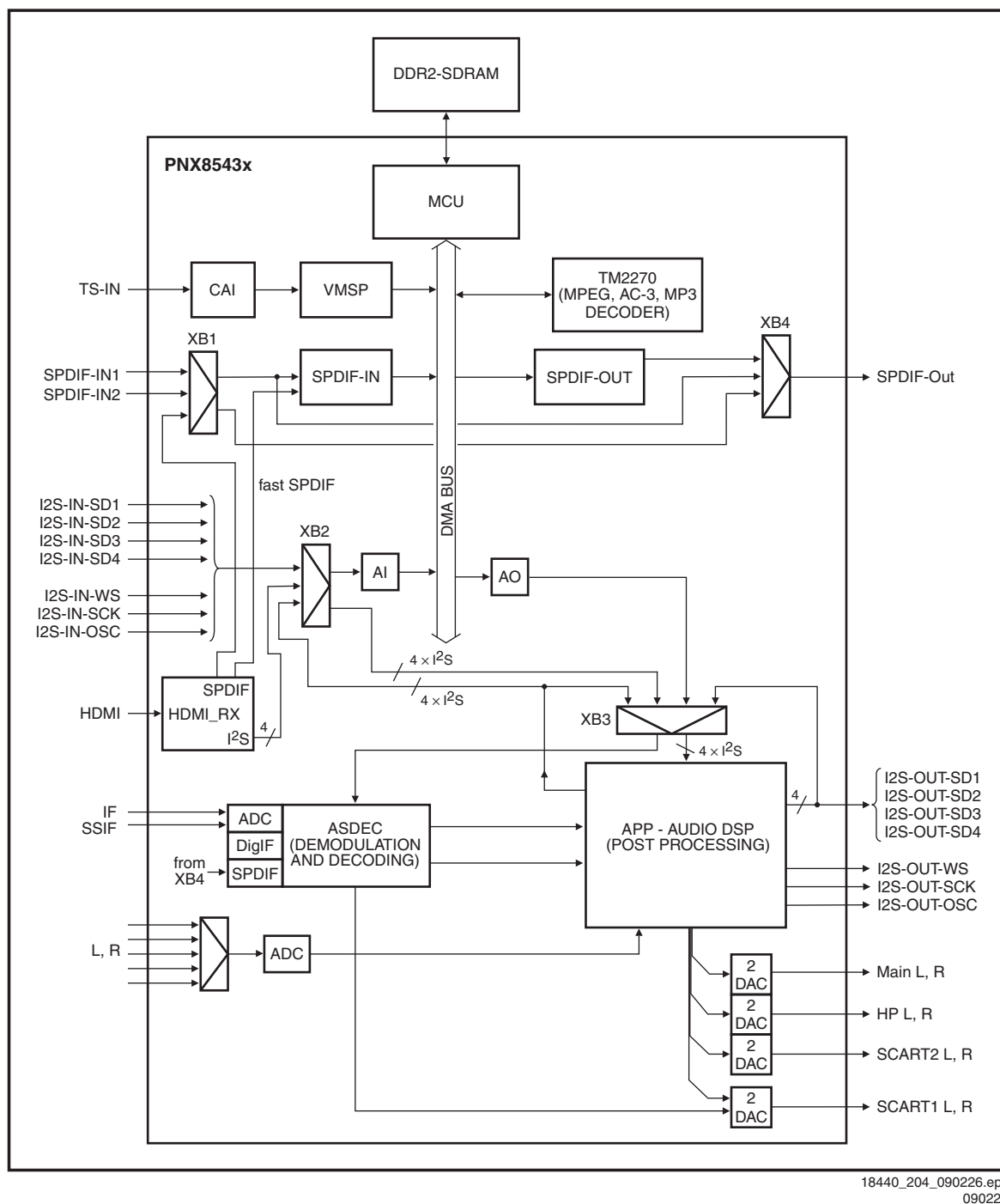
**Figure 7-10 PNx8543 video flow diagram**

The Video Subsystem consist of the following blocks:

- Analogue Front-End (AFE) block
- Video and PC Capture (VPC/PC) pipe
- HDMI Receiver interface
- Memory-Based Video Processor MBVP)
- Video Composition Pipe (CPIPE)
- Memory Based Video Processor (MBVP) VO-1
- Memory Based Video Processor (MBVP) VO-2
- Video Composition Pipe (CPIPE)
- Dual Flat Panel Display-LVDS (FPD-LVDS)
- Digital Encoder (DENC)
- Digital Video VIP
- 2D graphics block.

### 7.6.2 Audio Subsystem

Refer to [Figure 7-11](#) for the main audio interfaces for the PNX8543 and the audio signal flow between blocks and memory.



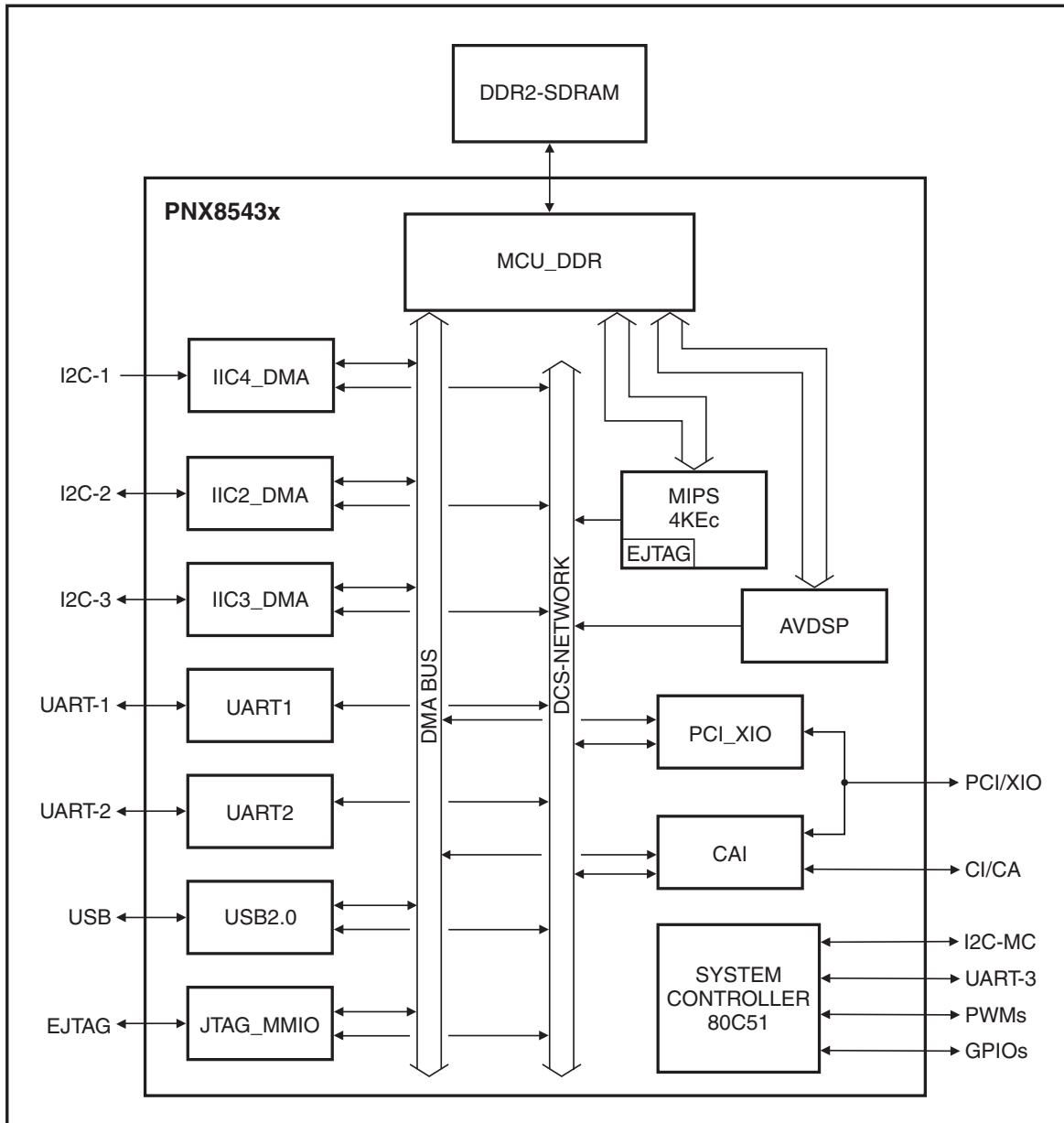
**Figure 7-11 PNX8543 audio flow diagram**

The Audio Subsystem consist of the following blocks:

- Analogue Audio Front End (AAFE) used to capture Baseband Audio Inputs and to sample Secondary Sound IF (SSIF) directly or via Low-IF input
- HDMI Receiver interface block
- SPDIF input block
- Audio Input (AI) block
- Audio Output (AO) block
- Demodulation & Decoding (ASDEC) DSP for decoding all analogue terrestrial TV sound standards
- Audio Post-Processing (APP) block
- Digital Audio decoder.

### 7.6.3 Connectivity and Compute Subsystem

Refer to [Figure 7-12](#) for the connectivity and compute subsystem.



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**Figure 7-12 PNX8543 connectivity and compute subsystem**

The Connectivity Subsystem consists of:

- PCI/XIO interface
- USB2.0 interface
- Three 2-wire UARTs
- Four Master/Slave I<sup>2</sup>C interfaces
- Common Interface/Conditional Access Interface.

The Computing Subsystem consists of:

- 32-bit MIPS RISC core
- Enhanced JTAG (EJTAG) block inside the MIPS
- JTAG\_MMIO blocks
- TV controller
- Audio/Video DSP (AV\_DSP)
- Memory Control Unit (MCU).

#### 7.6.4 Service Notice - FLASH RAM / PNX8543 exchange

The FLASH RAM (item 7M00) and/or PNX8543 (item 7600) can only be exchanged by an authorised central workshop with dedicated programming tools. Due to the presence of (CI+) keys in the components, **unauthorised exchange of these components will always result in a defective board.**

## 7.7 Back-End - On-board Timing Controller (TCON)

In this platform, the Timing Controller (TCON) does not come together with the LCD panel, but is integrated into the SSB. The following figure shows the generic block diagram.

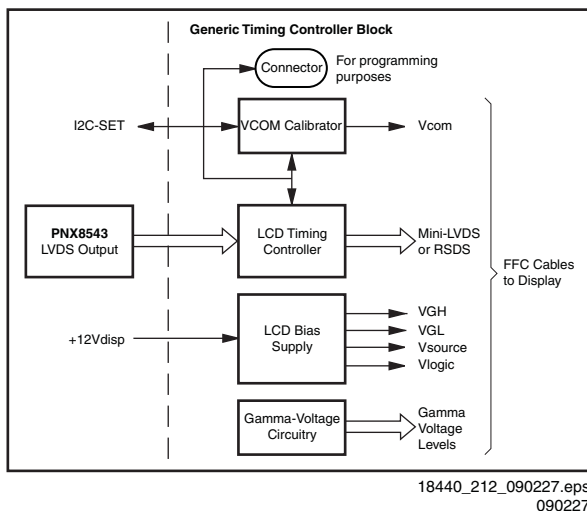


Figure 7-13 Block diagram Timing Controller

A Timing Controller is a key element in the “make-up” of an LCD module. It forms the control centre, where it routes and re-formats the data to column drivers on the LCD module.

Until now, the TCON was usually integrated into the LCD panel and implemented through the use of ASIC devices, which makes it impossible to re-use the TCON in other LCD panel designs. Along with TCONs, discrete LVDS devices, using the LVDS protocol, were also required for interface and control of the LCD module.

A “new generation” of (programmable) Timing Controllers has been designed which can be used on multiple LCD panel designs. They can support non-standard resolutions and different LCD panel configurations from various LCD manufacturers. These TCON offer higher levels of integration and, in addition, a new high-speed low voltage differential interface protocol between the TCON and Column Driver (CD) has been developed, called Reduced Swing Different Signalling (RSDS). The use of this protocol offers higher data transfer rates.

In this chassis, such a “new generation” programmable TCON has been implemented. The inputs to the TCON are the LVDS output from the PNX8543 and the +12V display supply. The TCON converts the LVDS signal into the required format:

- mini-LVDS signals for LGD LCD panels, or
- RSDS signals for Sharp LCD panels.

The LCD bias supply block generates the bias voltages  $V_{GH}$  and  $V_{GL}$ , as well as the source voltage  $V_{source}$  and logic voltage  $V_{logic}$  for the LCD panel.

The output signal of the VCOM Calibrator,  $V_{com}$ , is a reference voltage for Liquid Crystal Driving. This can be aligned to minimize flicker on the display resulting from non-symmetrical voltages that aligns the liquid crystals. Both Sharp and LGD TCONs use a programmable VCOM Calibrator IC for  $V_{com}$  adjustment. The adjusted VCOM data will be stored inside on-chip memory and will be automatically recalled during each power-up. For instructions on how to program the TCON and set the correct value of the reference voltage, refer to ComPair.

It should be noted that in this platform the use of the TCON is display-related: the use of a different branded LCD panel

automatically implies the use of another TCON, thus another SSB.

For trouble shooting, below find an overview of the DC voltages used on the TCON circuitry.

Table 7-2 DC voltages

Signal	Display		Destination
	LG	Sharp	
$V_{GH}$	+25 V	+35 V	to gate drivers (high voltage)
$V_{GL}$	-6 V	-6 V	to gate drivers (low voltage)
$V_{CC}$	+3.3 V	+3.3 V	timing controller IC supply voltage
$V_{CC}$	+1.2 V	+1.5 V	timing controller IC supply voltage
$V_{ref}$	+16 V	+15.2 V	gamma reference voltage
$V_{DD}$	+16 V	+15.6 V	source driver supply
$MV_{LS}$	-	+9 V	MPD IC supply voltage

## 7.8 Common Interface CI+

Together with this platform, an extension to the Common Interface (CI) Conditional Access system is added, called CI+.

CI+ or Common Interface Plus is a specification that extends the Common Interface (DVB-CI) as described in the digital broadcasting standard DVB.

The weakness of the conventional CI module used in a Conditional Access system was the absence of a Copy Protection mechanism, as decrypted content could be sent over the PCMCIA interface unscrambled. With the CI+ extension, a form of copy protection is established between the Conditional Access Module (CAM) and the Integrated Digital Television (IDTV). The security mechanisms in CI+ are derived/copied from POD (with the exception of Out Of Band (OOB) used in US CA systems). For more information about conventional CA systems using a CI module, refer to the BJ3.0E L/PA or BL2.xU Service Manual.

The CI+ standard is downwards compatible with the existing CI standard.

The following figure shows the implementation of the CI+ Conditional Access system in the TV543 platform.

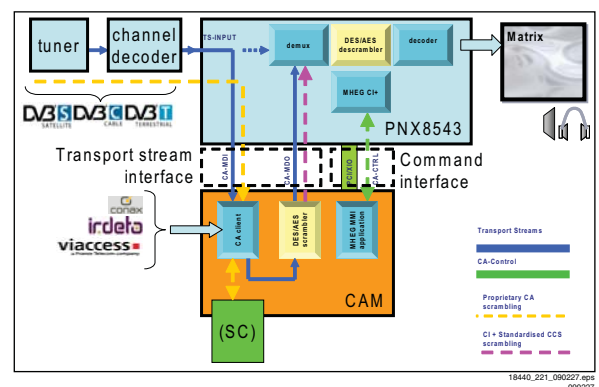


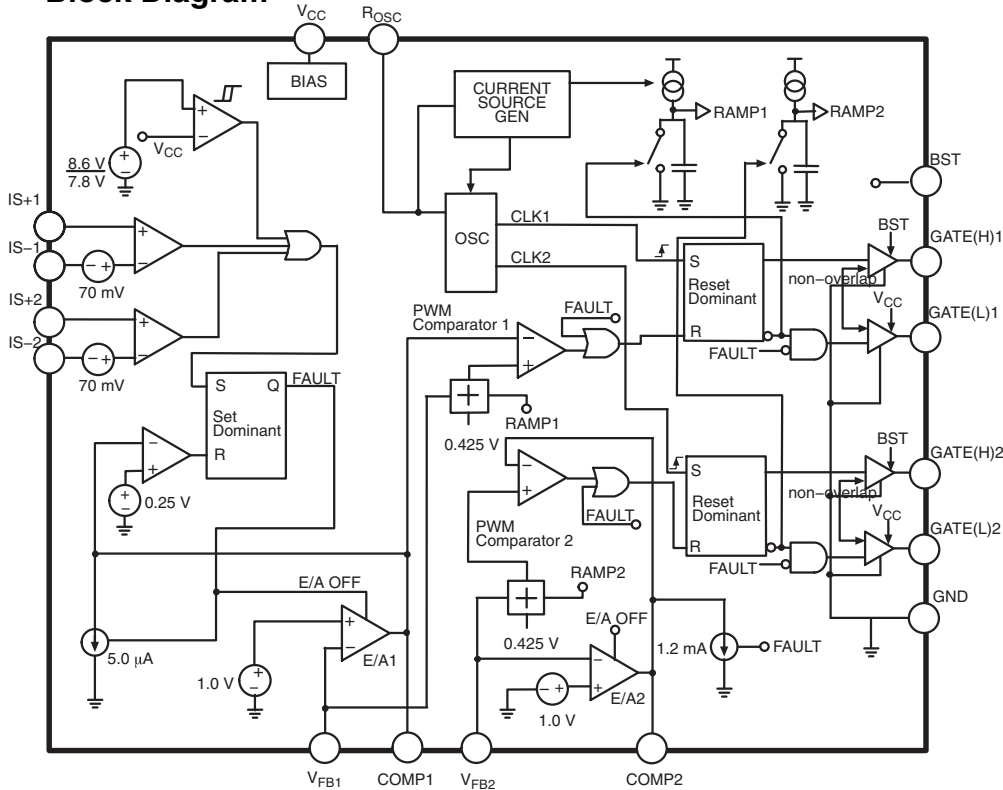
Figure 7-14 CI+ Conditional Access implementation

8. IC Data Sheets

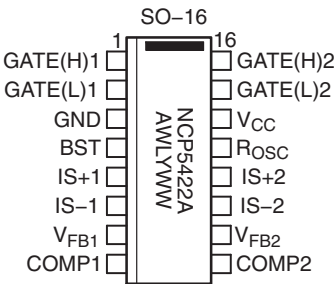
This chapter shows the internal block diagrams and pin configurations of ICs that are drawn as “black boxes” in the electrical diagrams (with the exception of “memory” and “logic” ICs).

8.1 Diagram [SSB: DC/DC +3V3 +1V2](#) B01A, NCP5422AD (IC 7103)

Block Diagram



Pin Configuration



A = Assembly Location  
WL = Wafer Lot  
Y = Year  
WW = Work Week

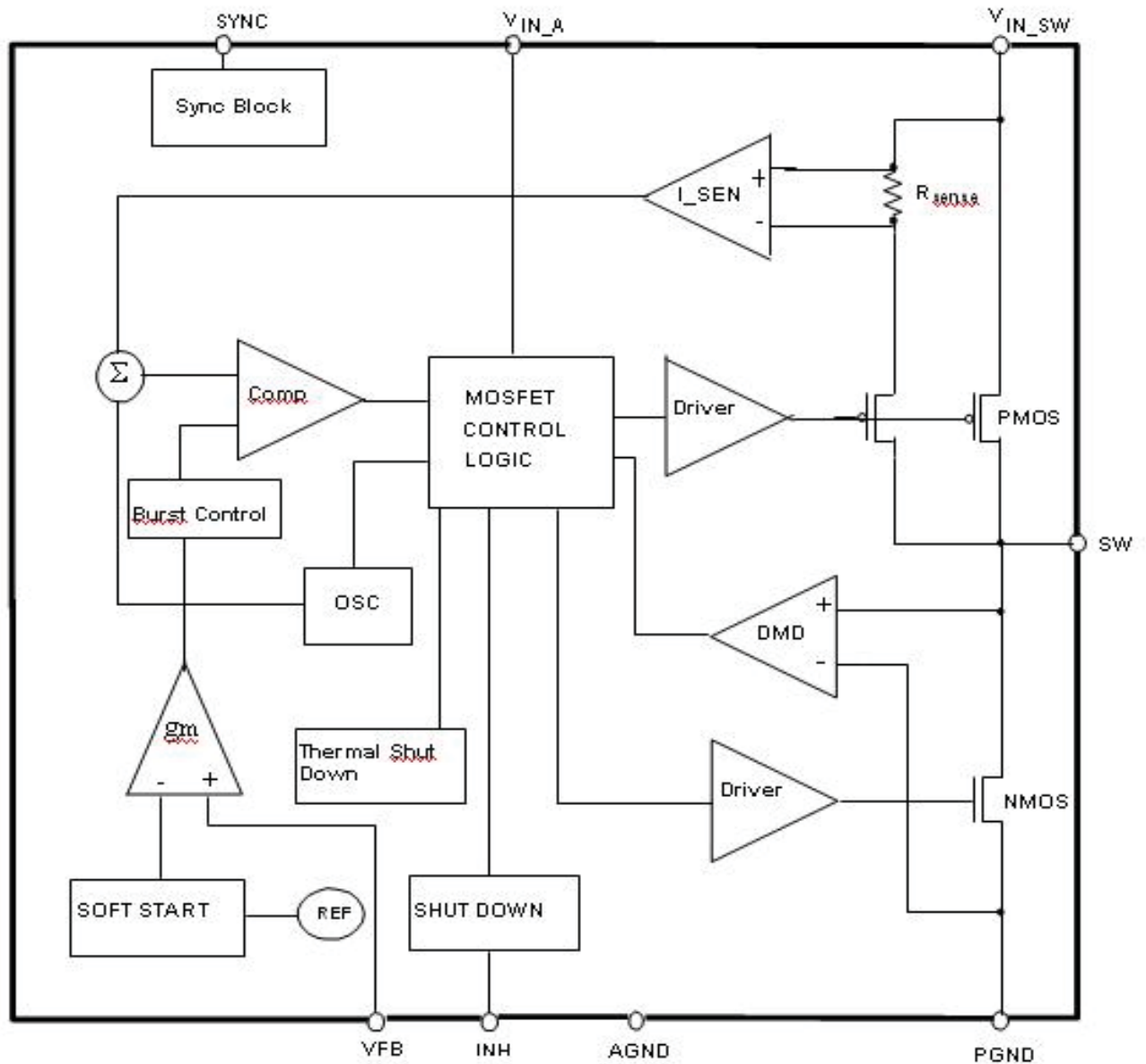
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Figure 8-1 Internal block diagram and pin configuration

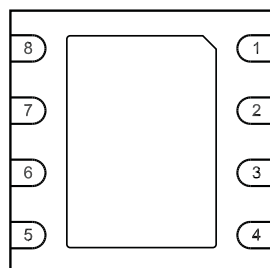


## 8.2 Diagram [SSB: DC/DC +3V3 +1V2 Stand-by](#) B01B, ST1S10PH (IC 7202/7222)

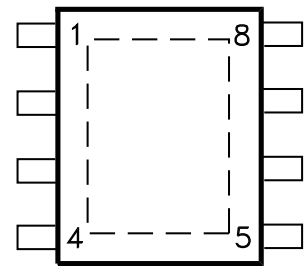
### Block Diagram



### Pin Configuration



DFN8 (4x4)



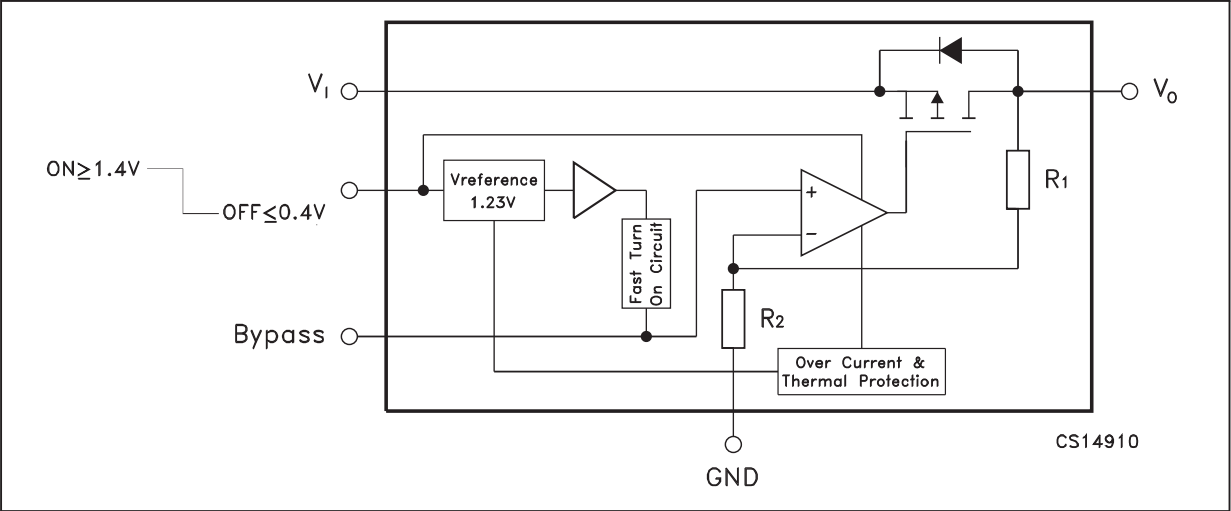
PowerSO-8

I\_18010\_083.eps  
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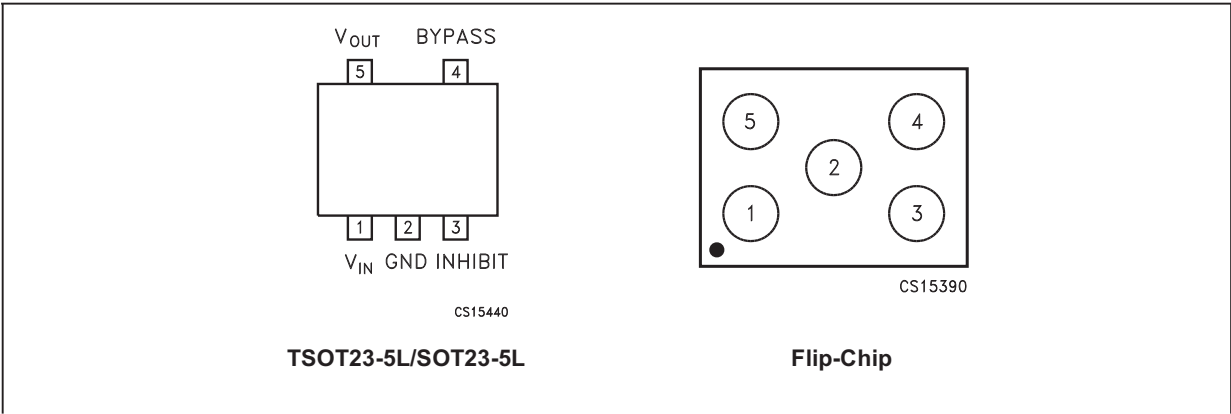
Figure 8-2 Internal block diagram and pin configuration

8.3
 Diagram
 [SSB: DC/DC +3V3 +1V2 Stand-by](#)
 B01B, LD3985M (IC 7201)

Block Diagram



Pin Configuration

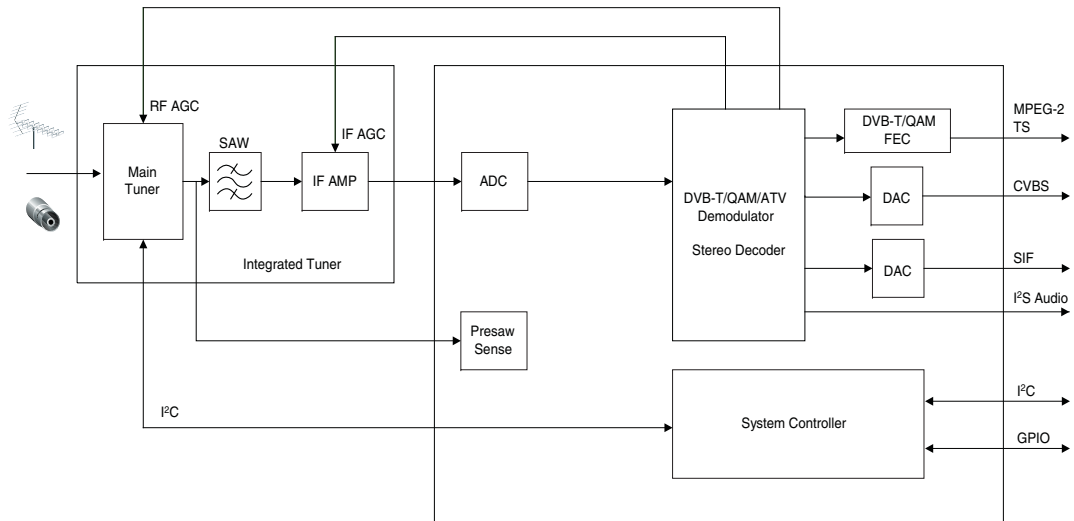


G\_16290\_084.eps  
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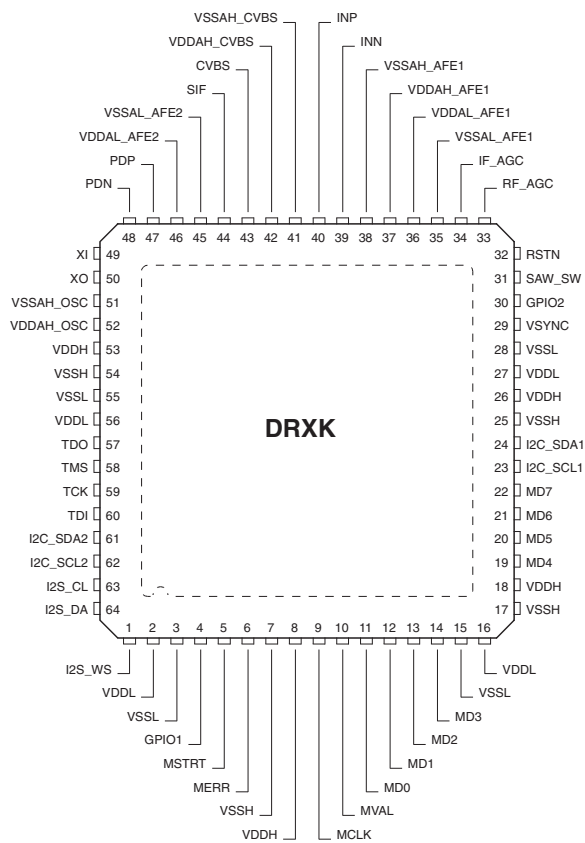
Figure 8-3 Internal block diagram and pin configuration

## 8.4 Diagram [SSB: Front End](#) B02A, DRX3926K (IC 7303)

### Block Diagram



### Pin Configuration

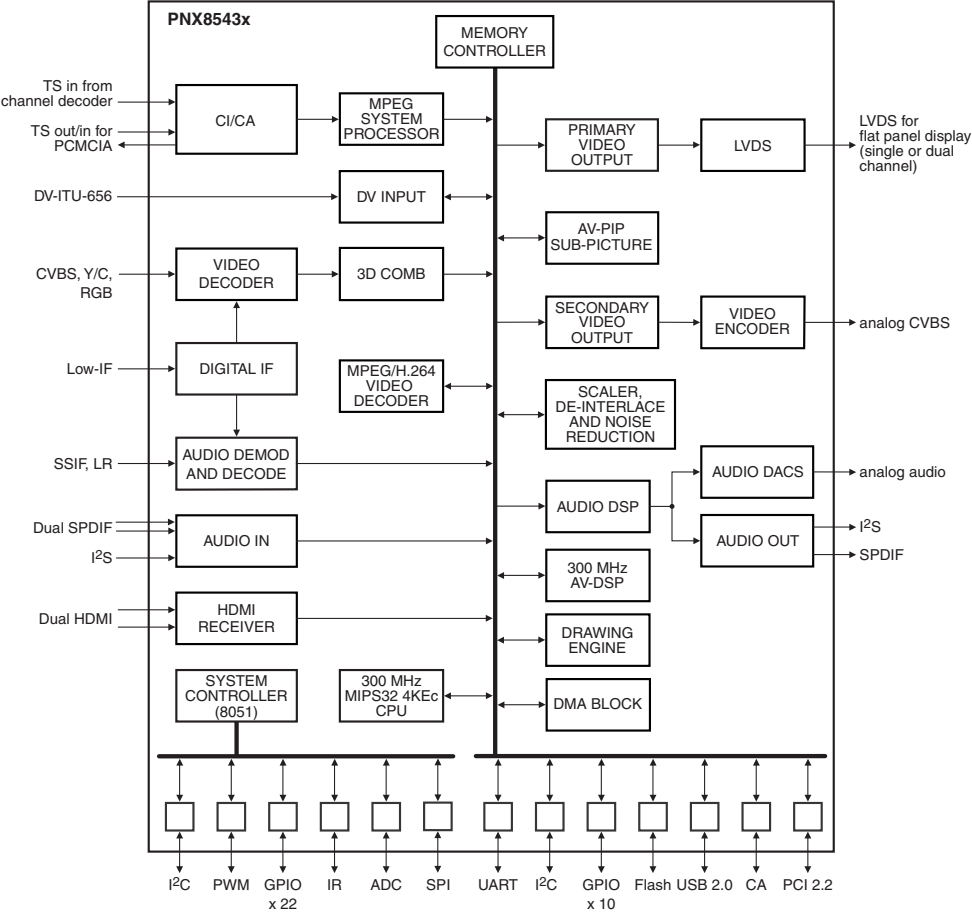


18440\_300\_090303.eps  
090303

Figure 8-4 Pin configuration

8.5 Diagram [SSB: PNX8543 Power B03A, PNX8543 \(IC7600\)](#)

Block Diagram



Pin Configuration

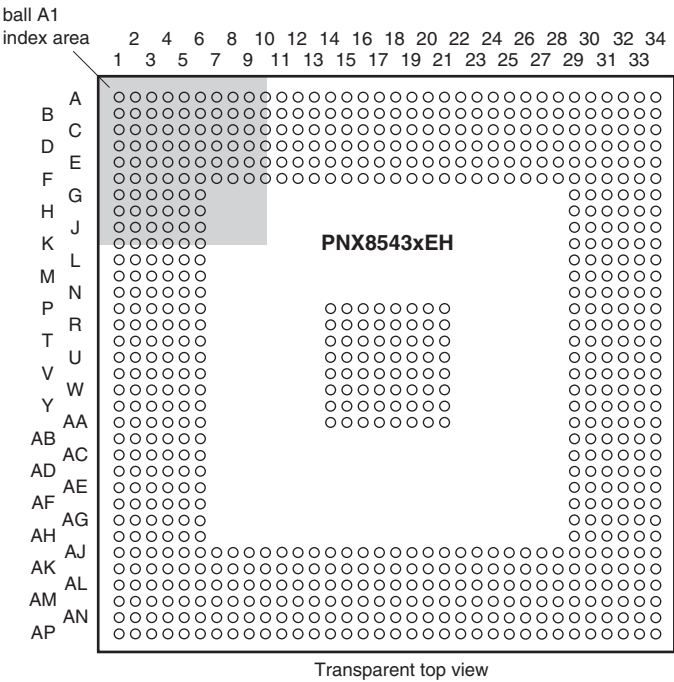
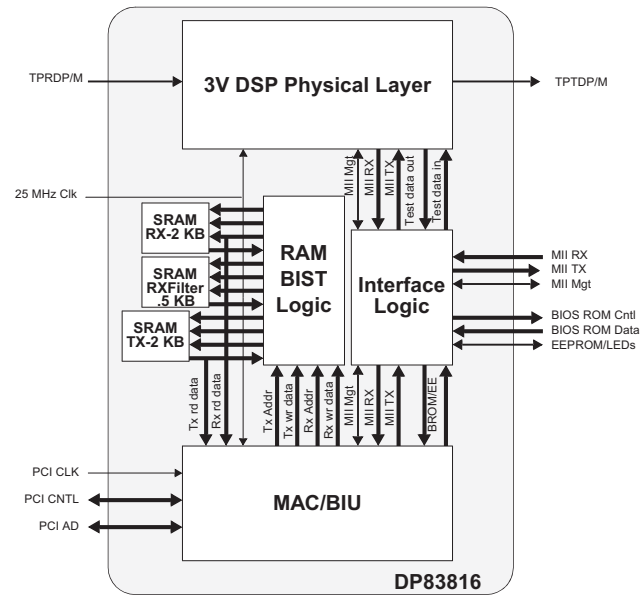


Figure 8-5 Internal block diagram and pin configuration

8.6 Diagram [SSB: Ethernet](#) B05B, DP83816 (IC7N04)

Block Diagram



Pin Configuration

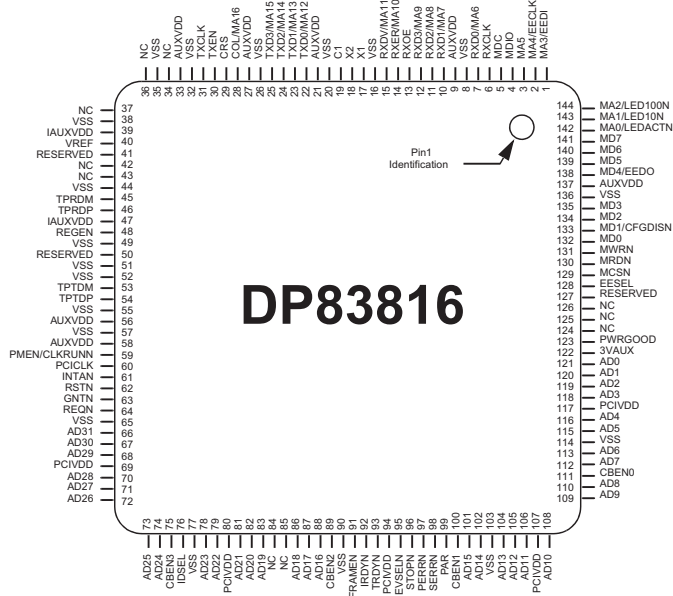
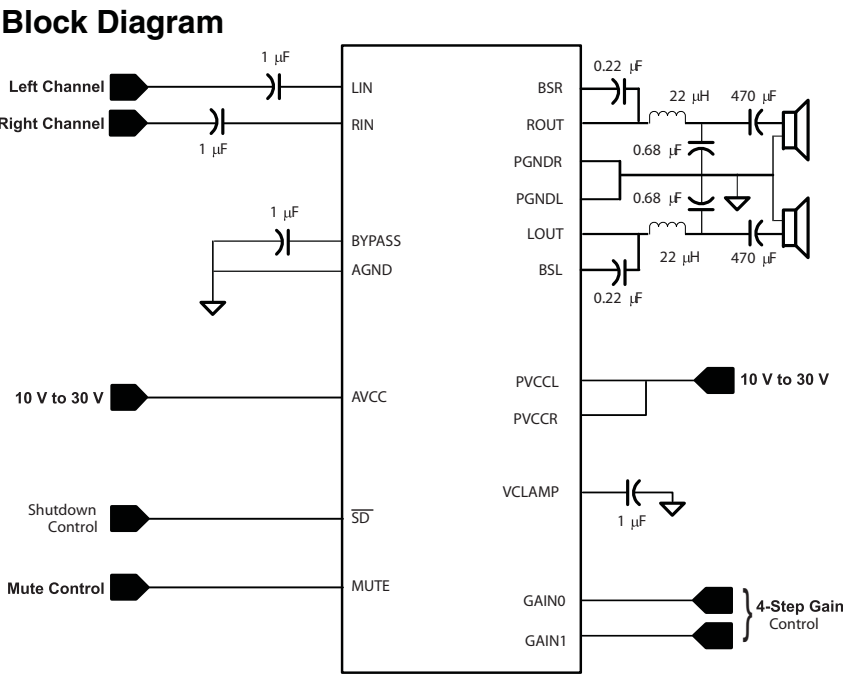


Figure 8-6 Internal block diagram and pin configuration

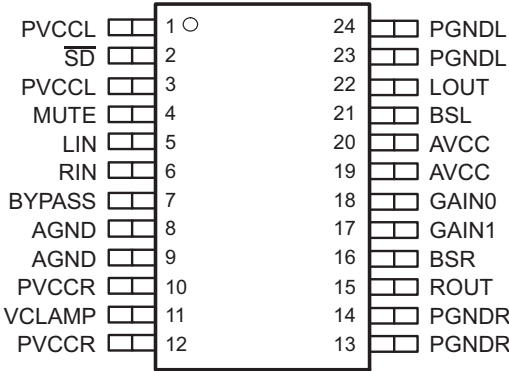
F\_15710\_167.eps  
230905



8.7 Diagram [SSB: Class-D](#) B06A, TPA3123D (IC 7L10)



**Pin Configuration**



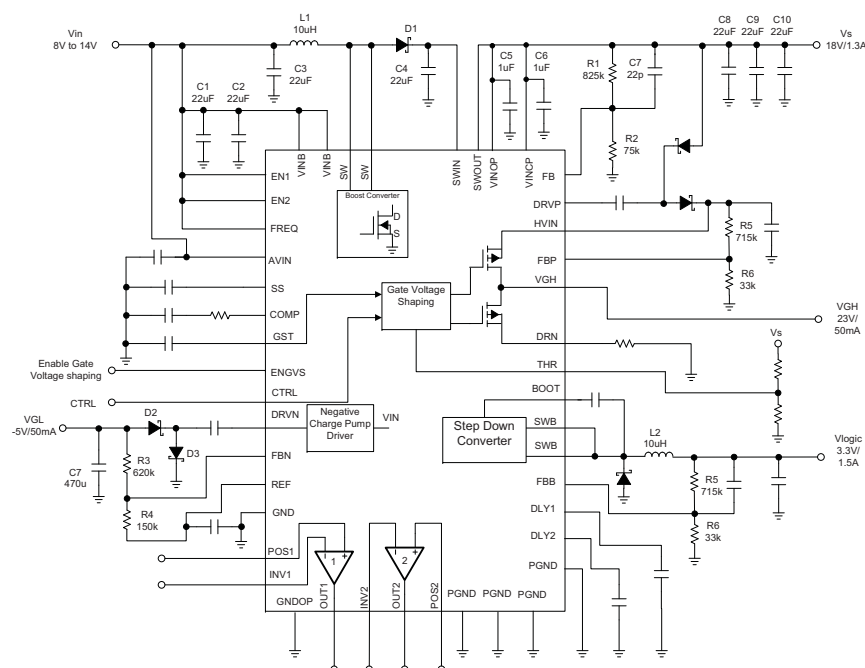
TERMINAL		I/O/P	DESCRIPTION
NAME	24-PIN (PWP)		
$\overline{SD}$	2	I	Shutdown signal for IC (low = disabled, high = operational). TTL logic levels with compliance to AVCC
RIN	6	I	Audio input for right channel
LIN	5	I	Audio input for left channel
GAIN0	18	I	Gain select least-significant bit. TTL logic levels with compliance to AVCC
GAIN1	17	I	Gain select most-significant bit. TTL logic levels with compliance to AVCC
MUTE	4	I	Mute signal for quick disable/enable of outputs (high = outputs switch at 50% duty cycle, low = outputs enabled). TTL logic levels with compliance to AVCC
BSL	21	I/O	Bootstrap I/O for left channel
PVCCCL	1, 3	P	Power supply for left-channel H-bridge, not internally connected to PVCCR or AVCC
LOUT	22	O	Class-D 1/2-H-bridge positive output for left channel
PGNDL	23, 24	P	Power ground for left-channel H-bridge
VCLAMP	11	P	Internally generated voltage supply for bootstrap capacitors
BSR	16	I/O	Bootstrap I/O for right channel
ROUT	15	O	Class-D 1/2-H-bridge negative output for right channel
PGNDR	13, 14	P	Power ground for right-channel H-bridge.
PVCCR	10, 12	P	Power supply for right-channel H-bridge, not connected to PVCCCL or AVCC
AGND	9	P	Analog ground for digital/analog cells in core
AGND	8	P	Analog ground for analog cells in core
BYPASS	7	O	Reference for preamplifier inputs. Nominally equal to AVCC/8. Also controls start-up time via external capacitor sizing.
AVCC	19, 20	P	High-voltage analog power supply. Not internally connected to PVCCR or PVCCCL
Thermal pad	Die pad	P	Connect to ground. Thermal pad should be soldered down on all applications to properly secure device to printed wiring board.

18440\_302\_090303.eps  
090303

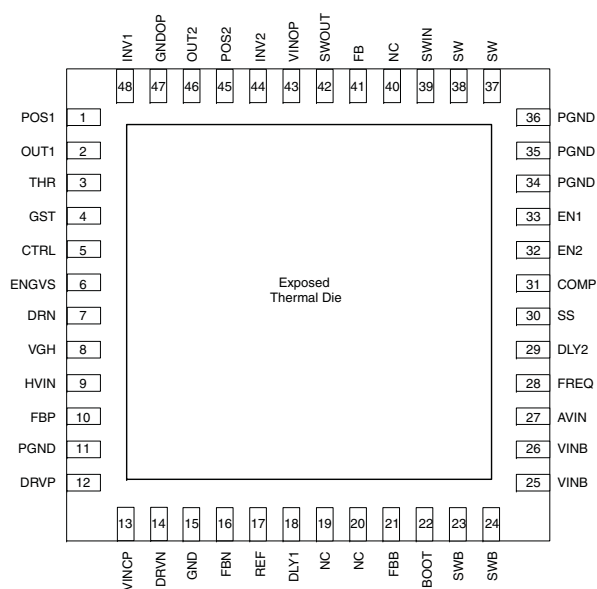
Figure 8-7 Internal block diagram and pin configuration

### 8.8 Diagram [SSB: T-Con DC/DC \(LGD panel\)](#) B09A, TPS65162RGZR (IC 7W02)

## Block Diagram



## Pin Configuration



Top View

**Note:** The thermally enhance Power Pad is connected to PGND

18440\_303\_090303.eps  
090303

**Figure 8-8 Typical application schematic and pin configuration**

8.9    Diagram [SSB: T-Con Control \(LGD panel\)](#) B09B, R8J01070FT (IC 7Y01)

Block Diagram

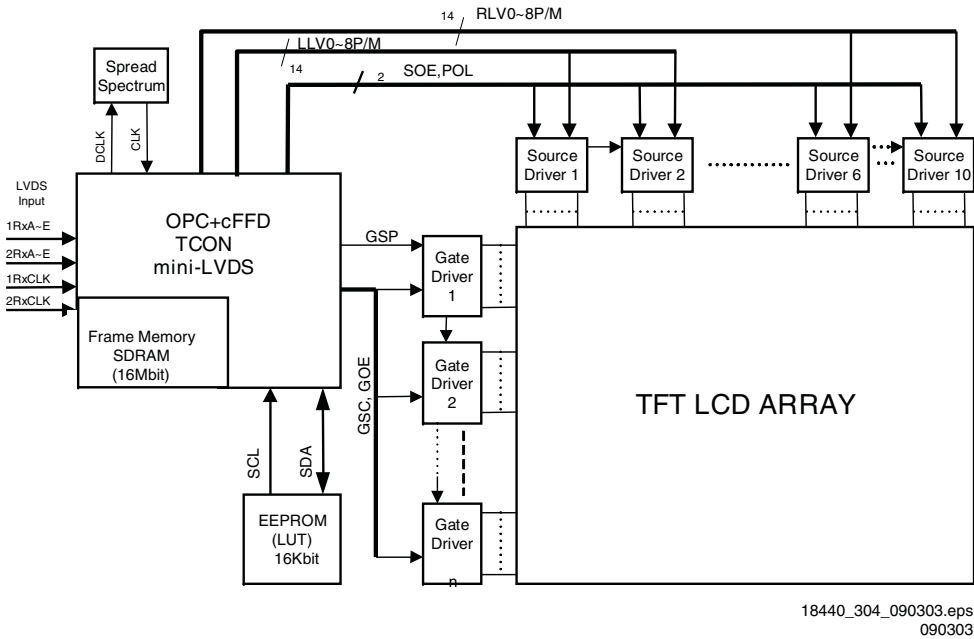
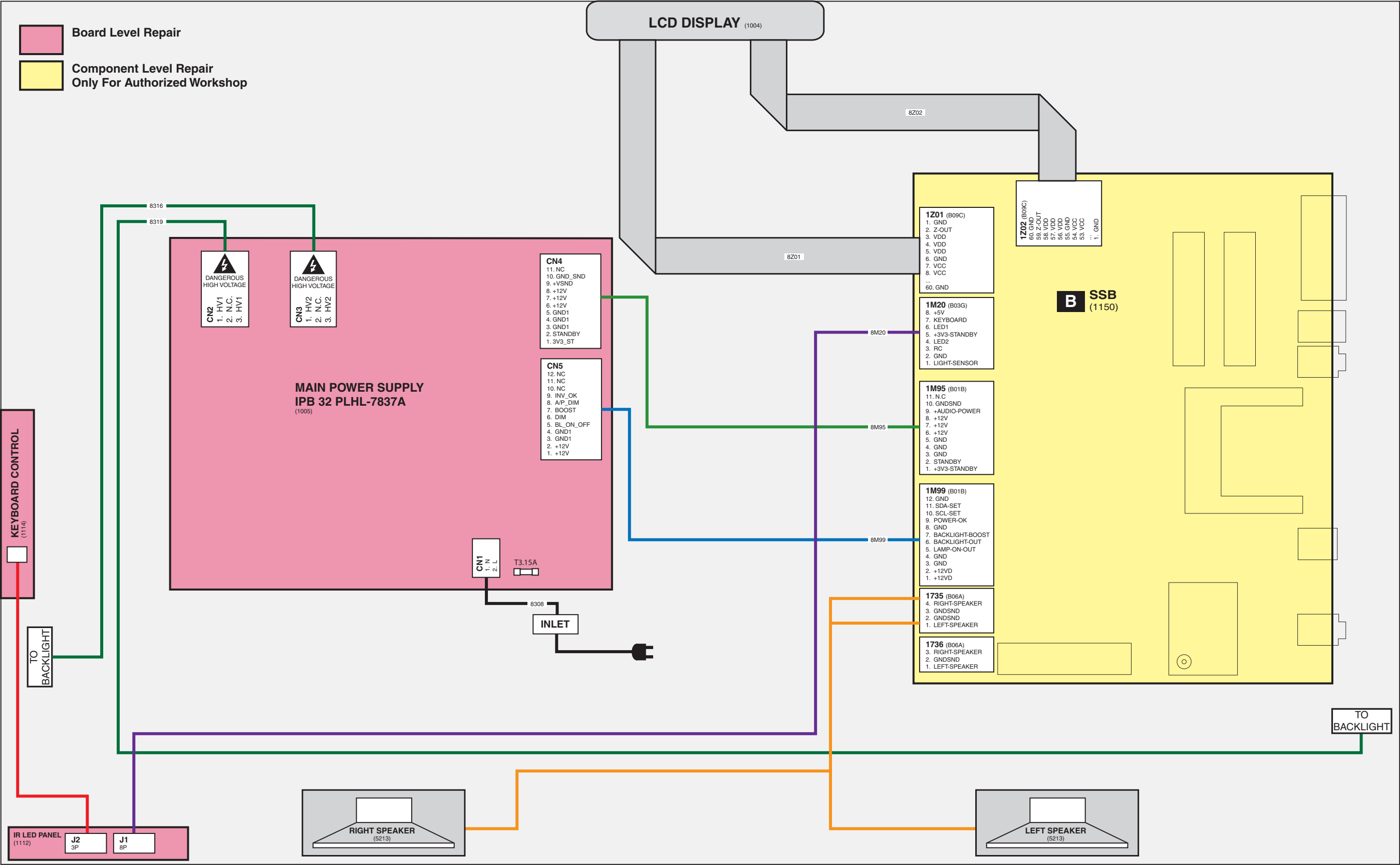


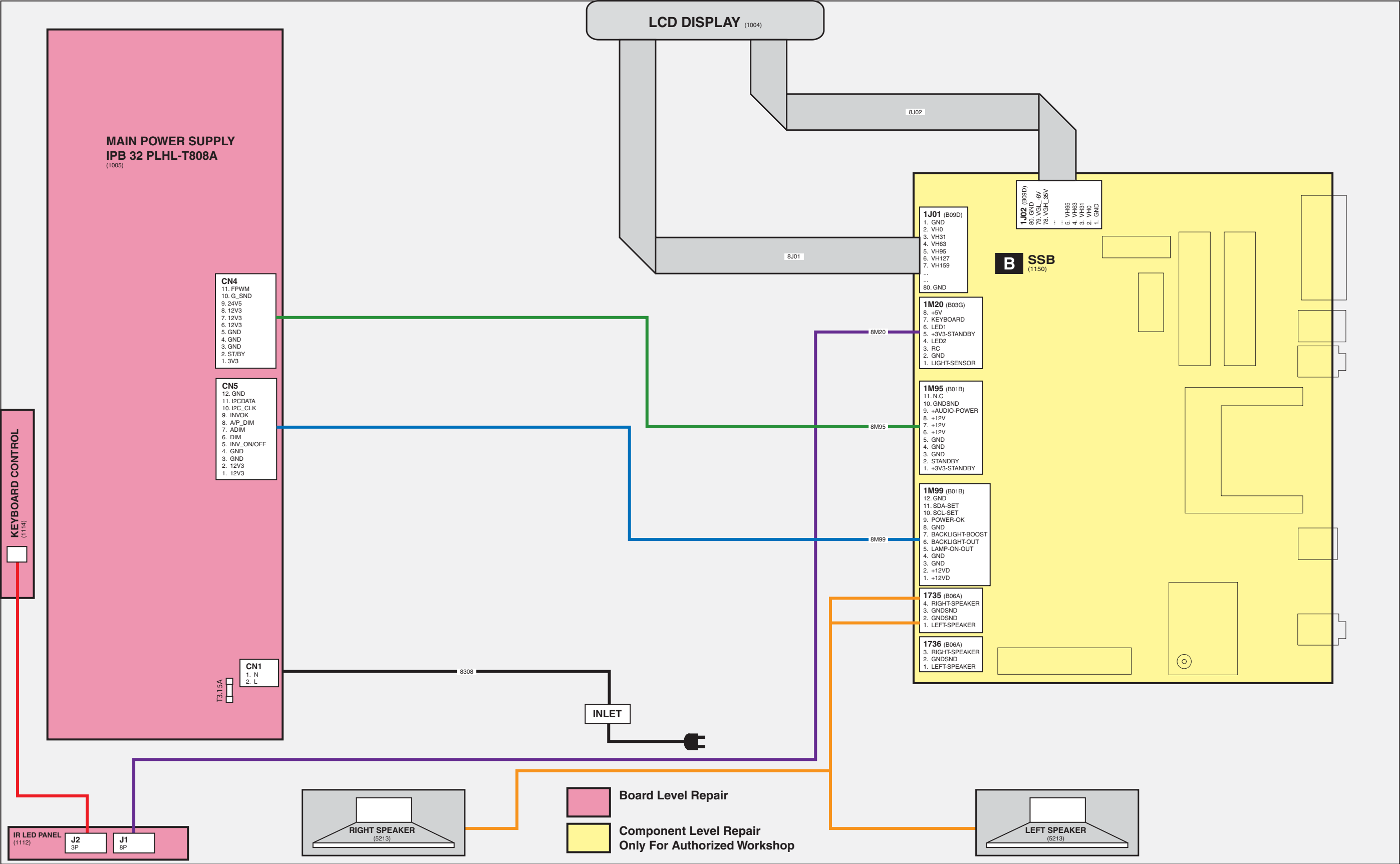
Figure 8-9 Internal block diagram

9. Block Diagrams

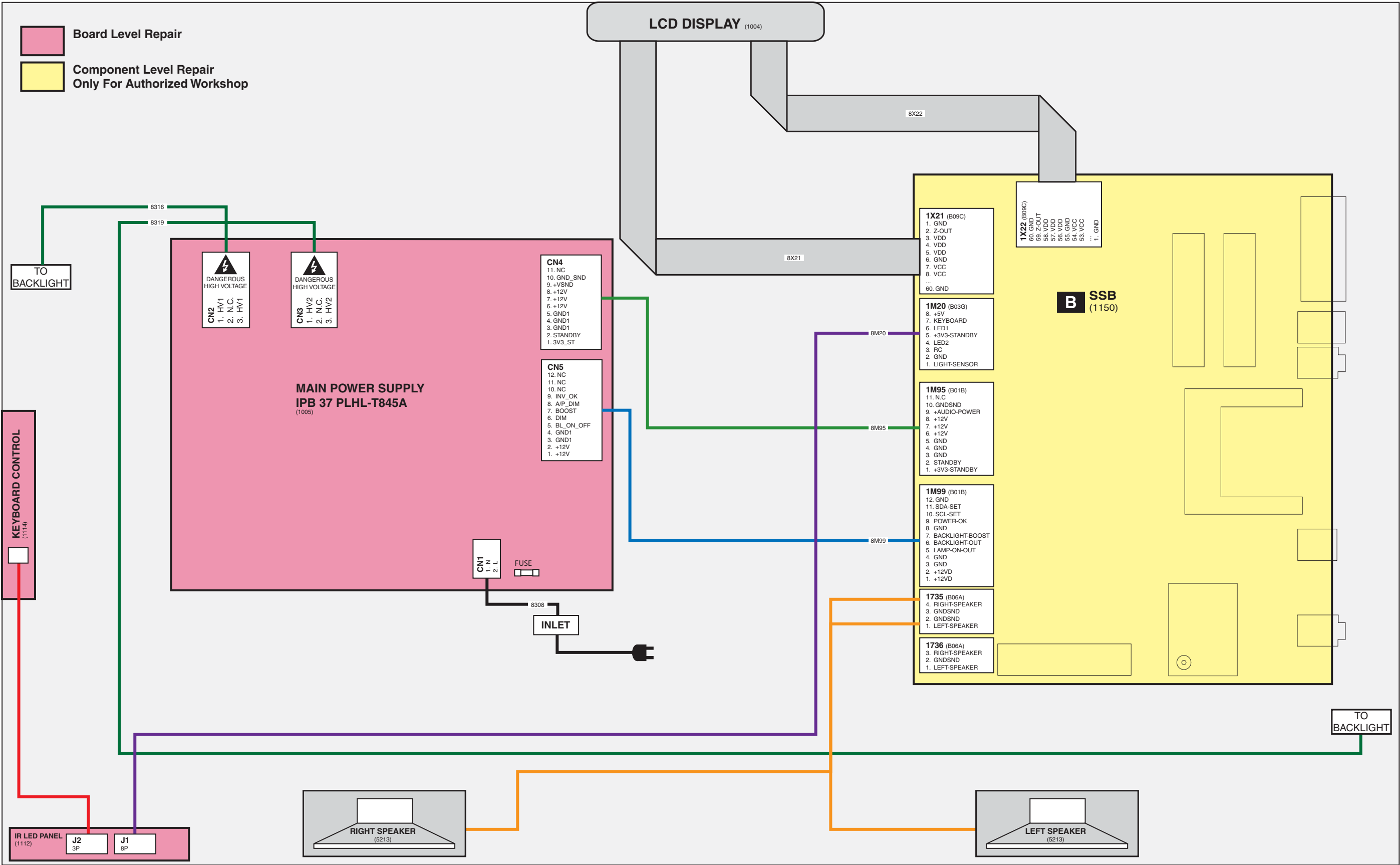
Wiring Diagram 32" LGD Forward Int. (P&S)  
WIRING DIAGRAM 32" LG FORWARD INTEGRATION (P&S)



Wiring Diagram 32" Sharp Forward Int. (P&S)  
WIRING DIAGRAM 32" SHARP FORWARD INTEGRATION (P&S)

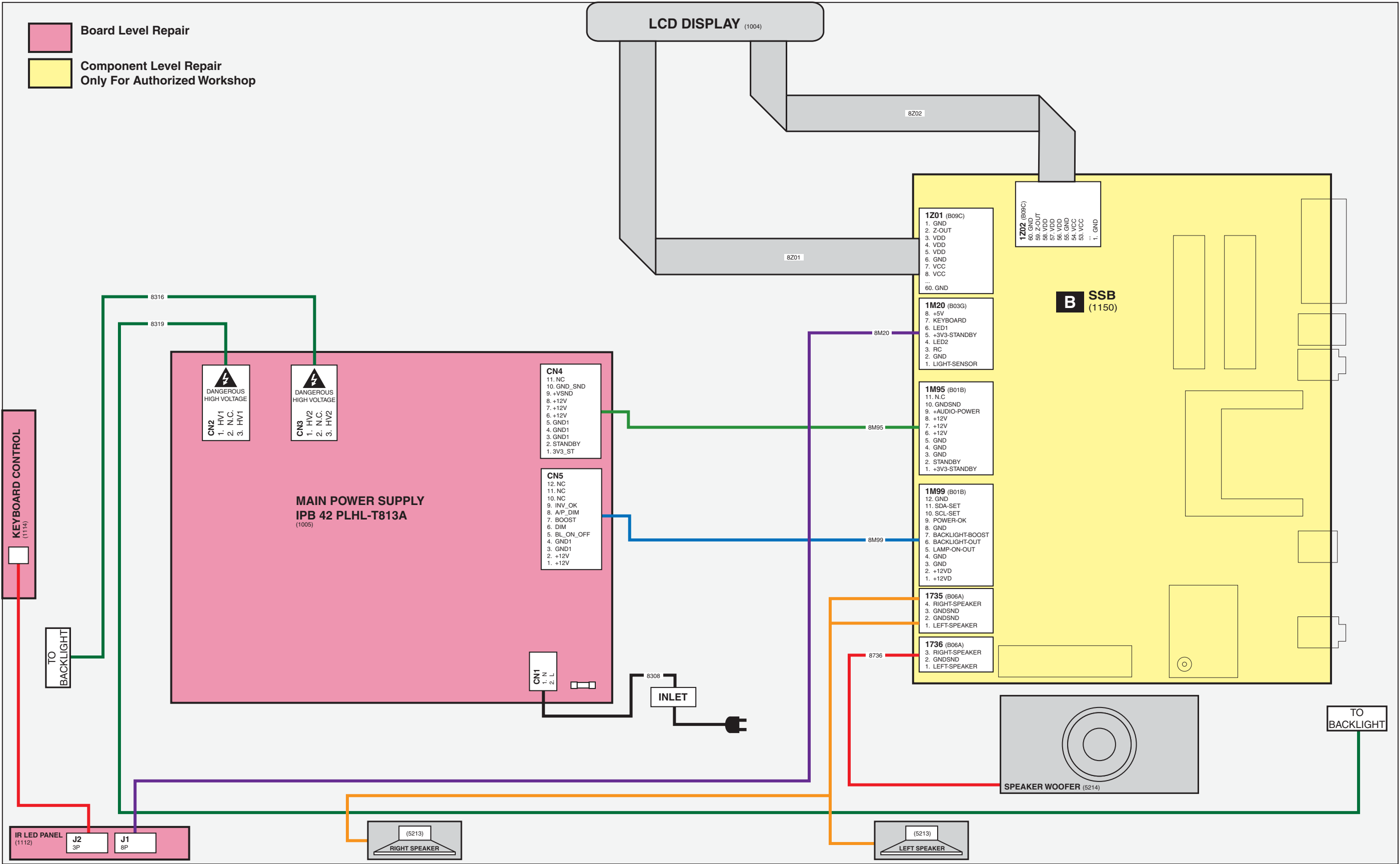


Wiring Diagram 37" LGD Forward Int. (P&S)  
WIRING DIAGRAM 37" LG FORWARD INTEGRATION (P&S)



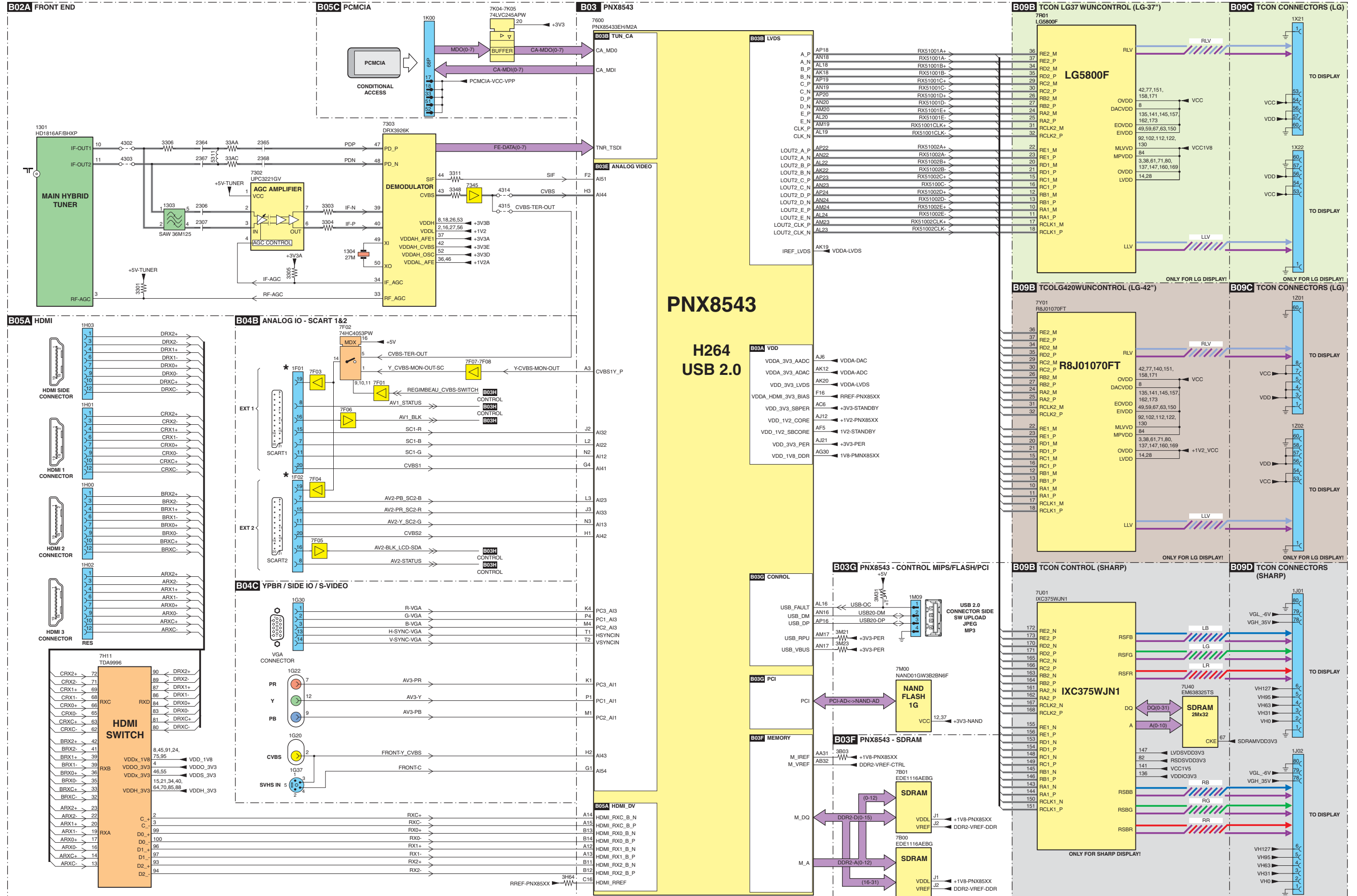


Wiring Diagram 42" LGD Forward Int. (P&S)  
WIRING DIAGRAM 42" LG FORWARD INTEGRATION (P&S)



## Block Diagram Video

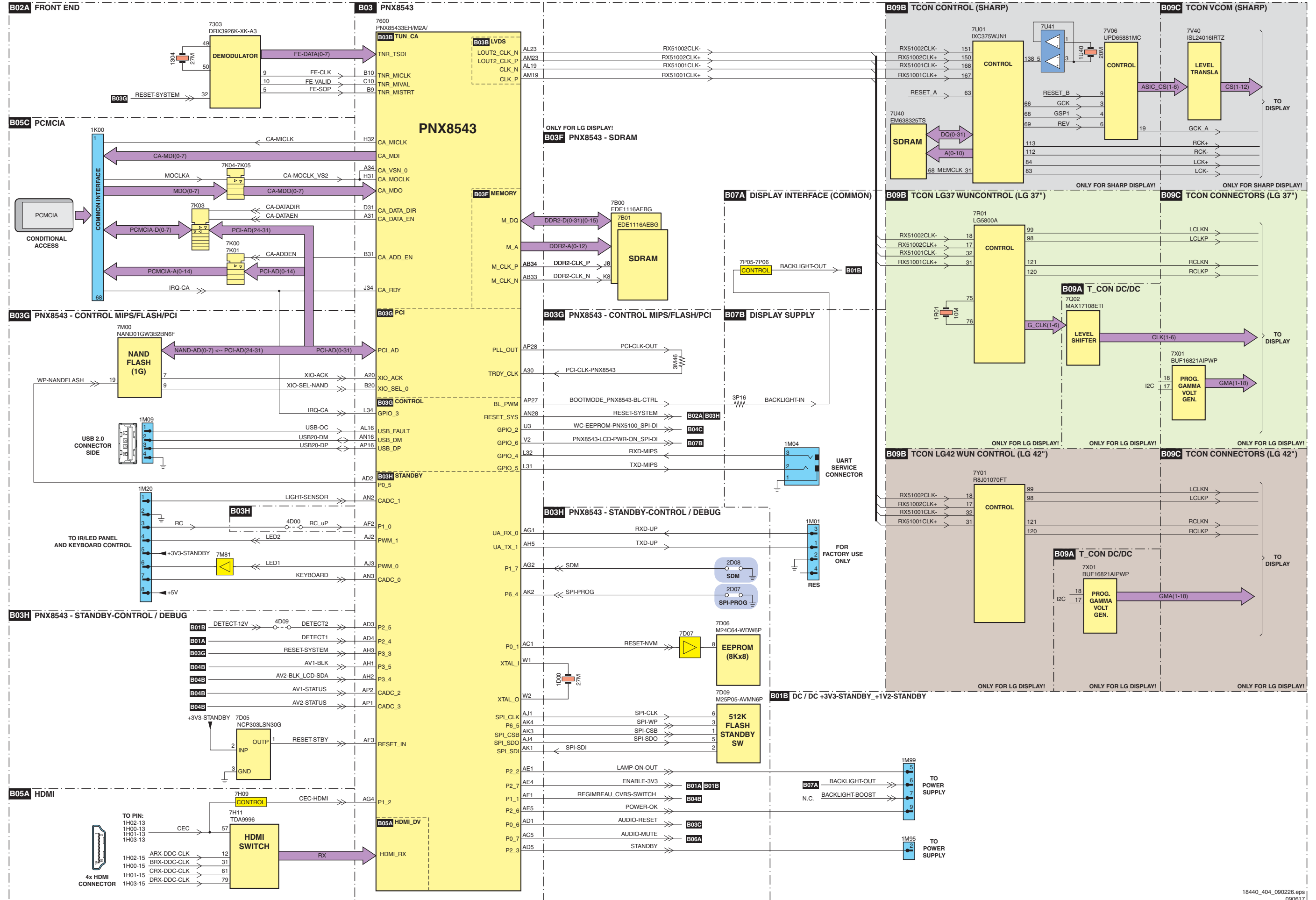
## VIDEO





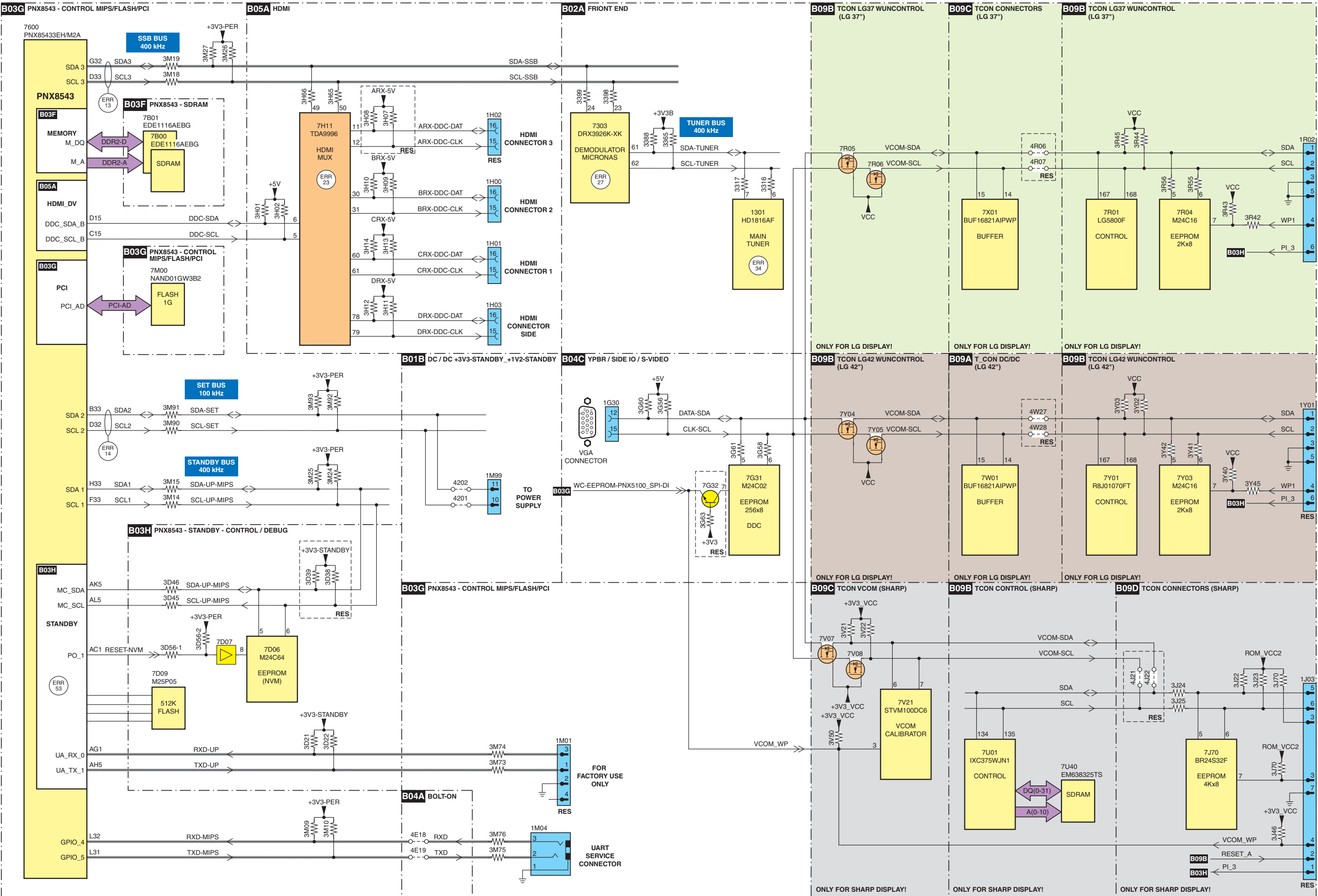
# Block Diagram Control & Clock Signals

## CONTROL + CLOCK SIGNALS



Block Diagram I<sup>2</sup>C

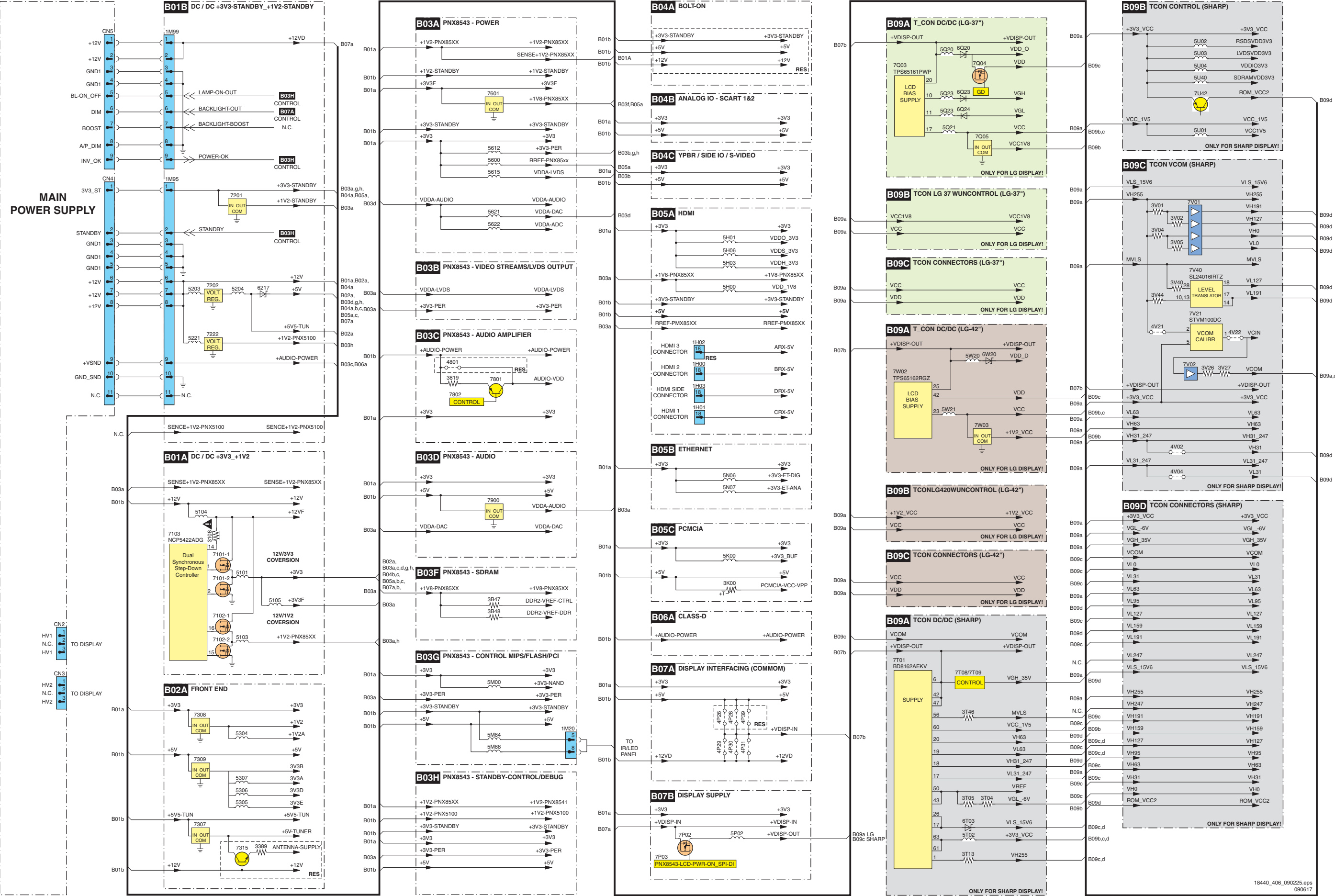
I<sup>2</sup>C





Supply Lines Overview

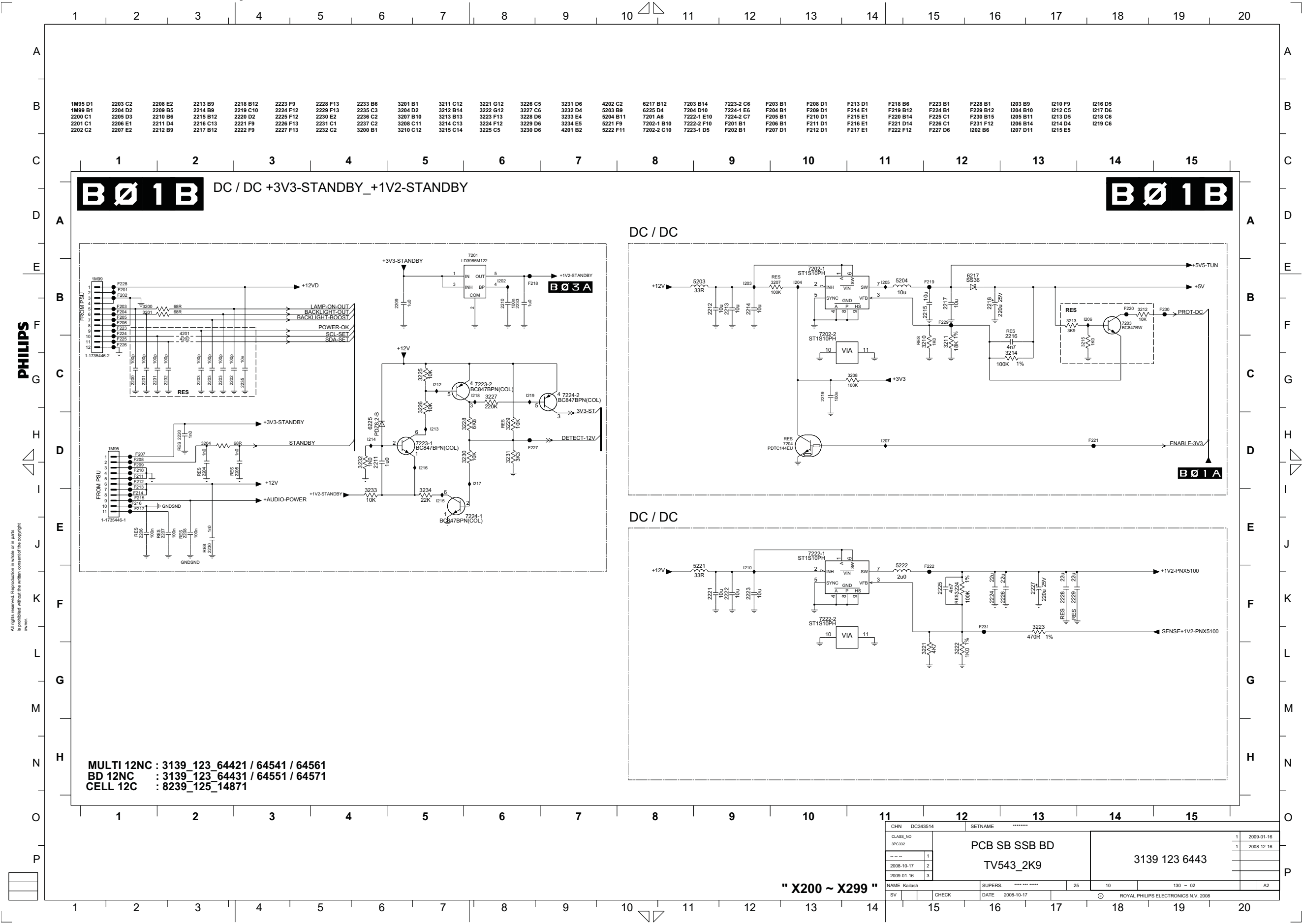
SUPPLY LINES OVERVIEW



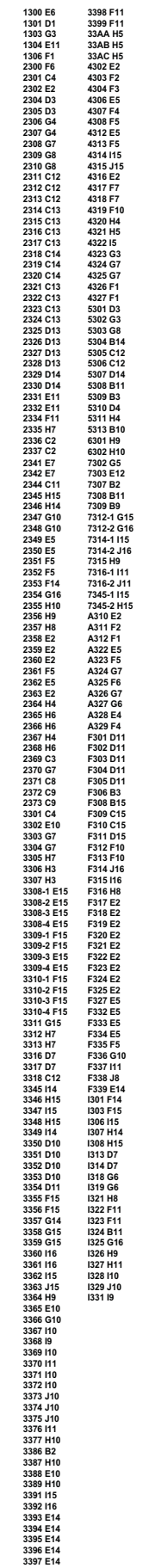




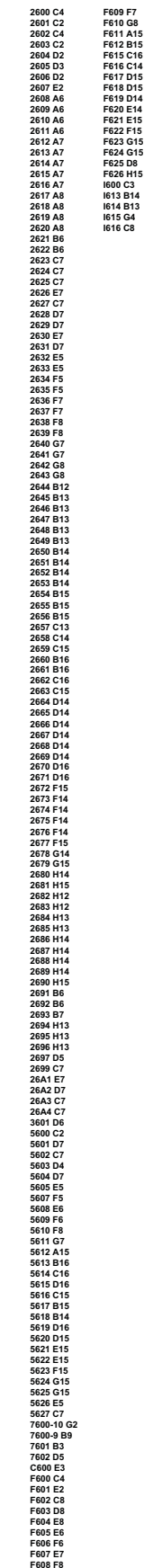
SSB: DC/DC +3V3 +1V2 Stand-by



## BØ2A



**PHILIPS**



**PHILIPS**

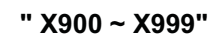


[illegible]

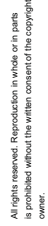
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CLASS_NO 3PC332		PCB SB SSB BD  TV543_2K9		3139 123 6443				1	2008-12-16
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2008-10-17						2			
2009-01-16						3			
NAME Hor Slow Lee		SUPERS. **** HH ****		25	10	130 -- 06		A2	
SV	CHECK	DATE	2008-10-17			ROYAL PHILIPS ELECTRONICS N.V. 2008			



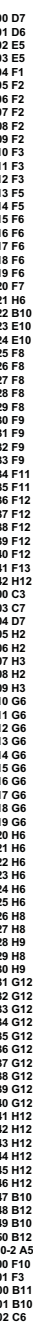
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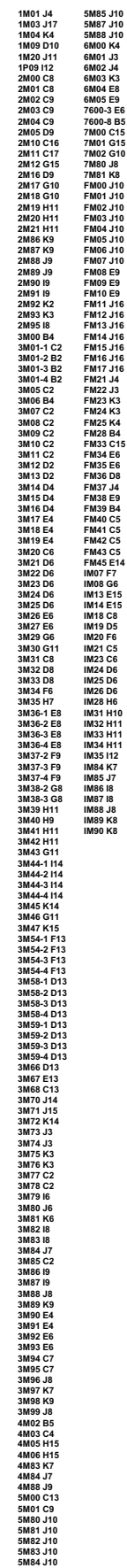
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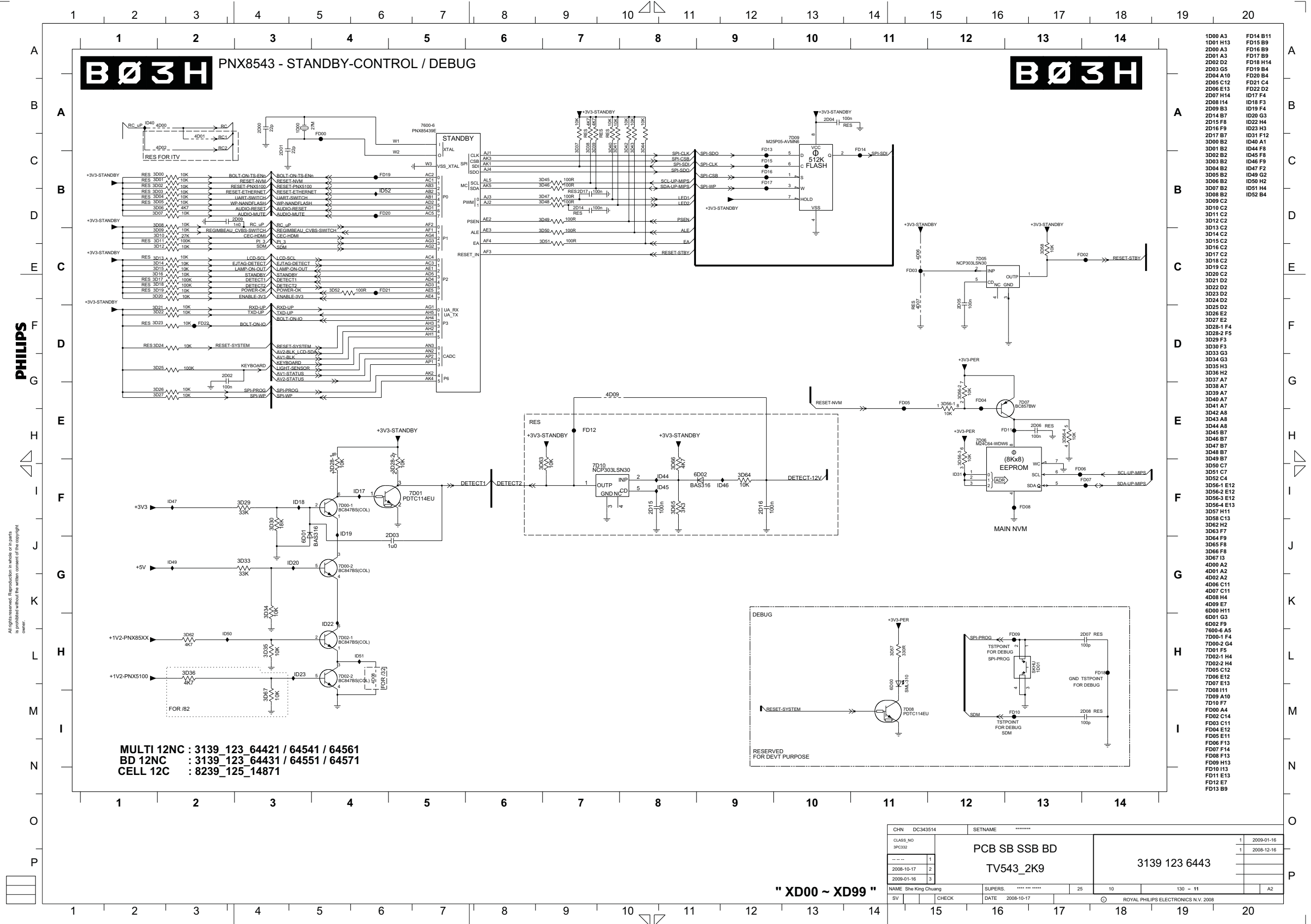
**PHILIPS**



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

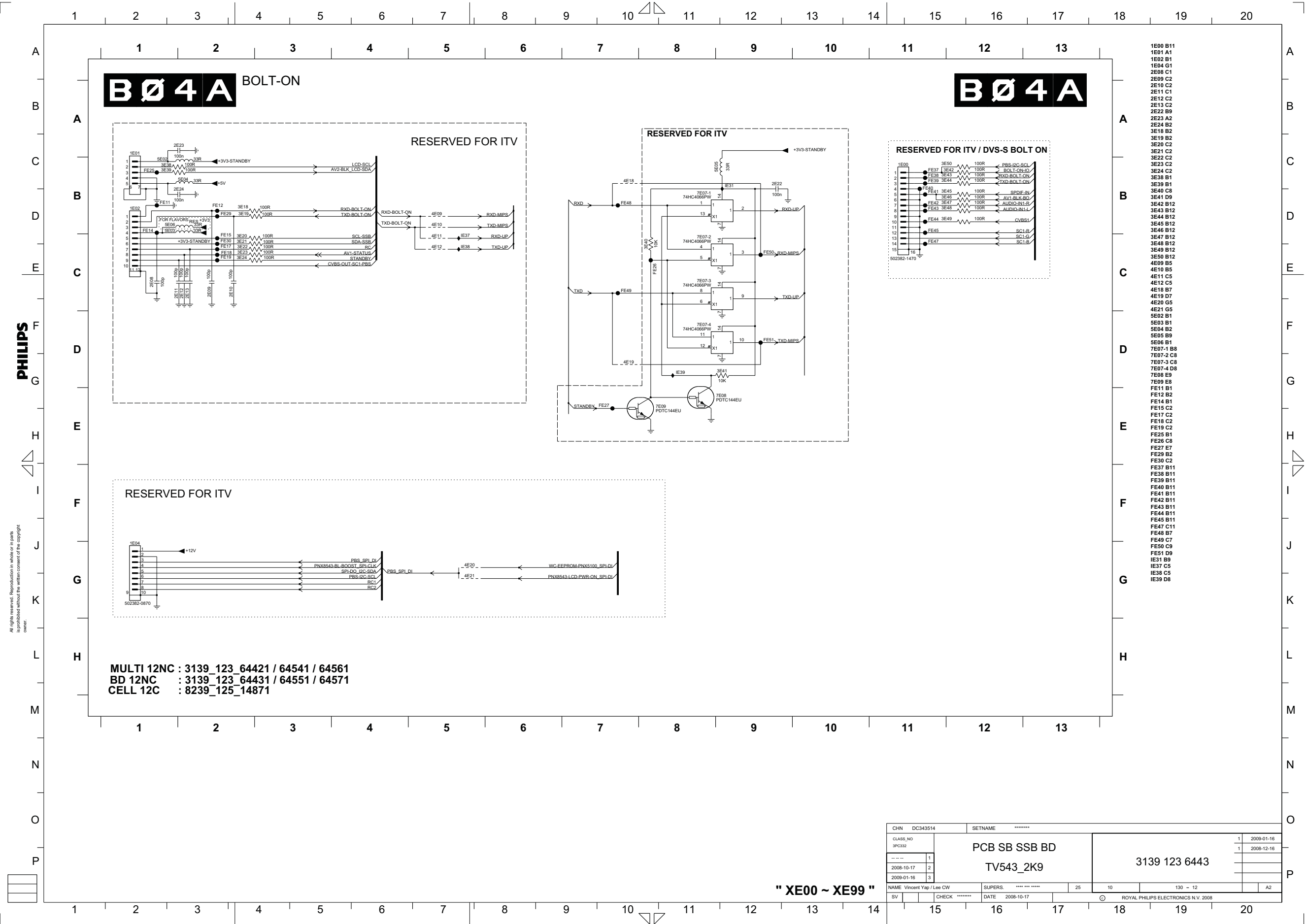


## SSB: PNx8543 Stand-by Control/Debug



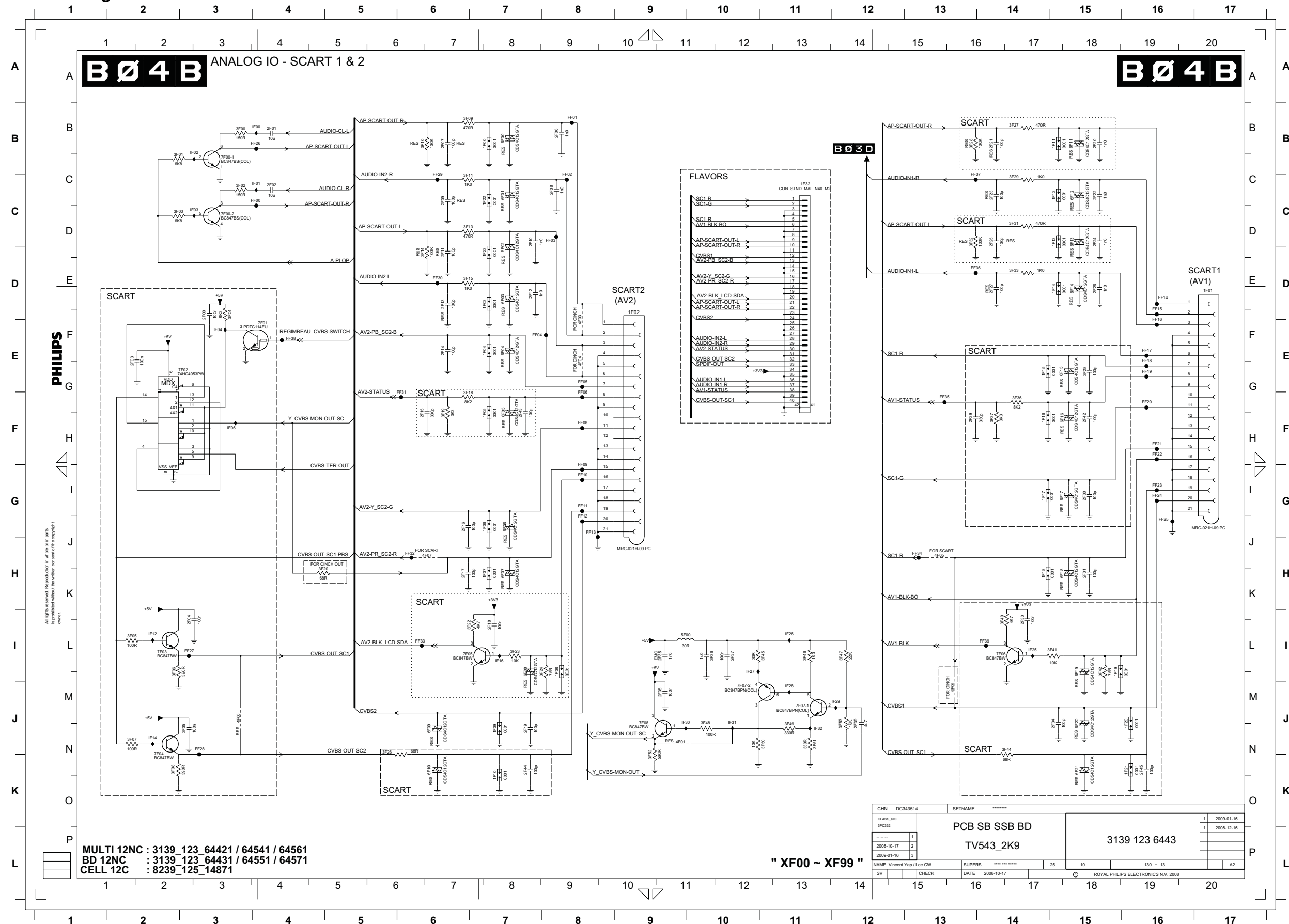


SSB: Bolt-on





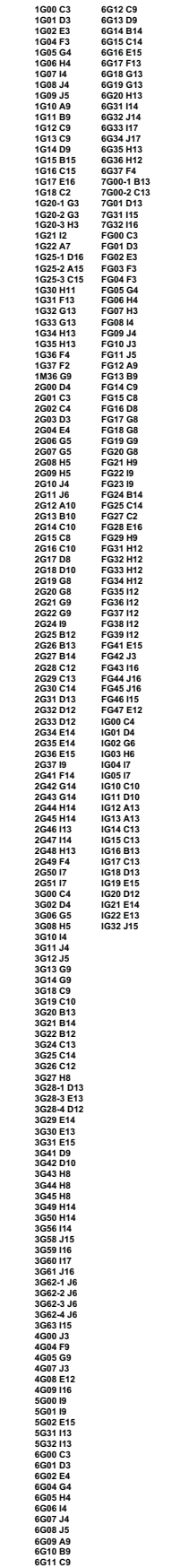
## SSB: Analog IO - SCART 1 &amp; 2



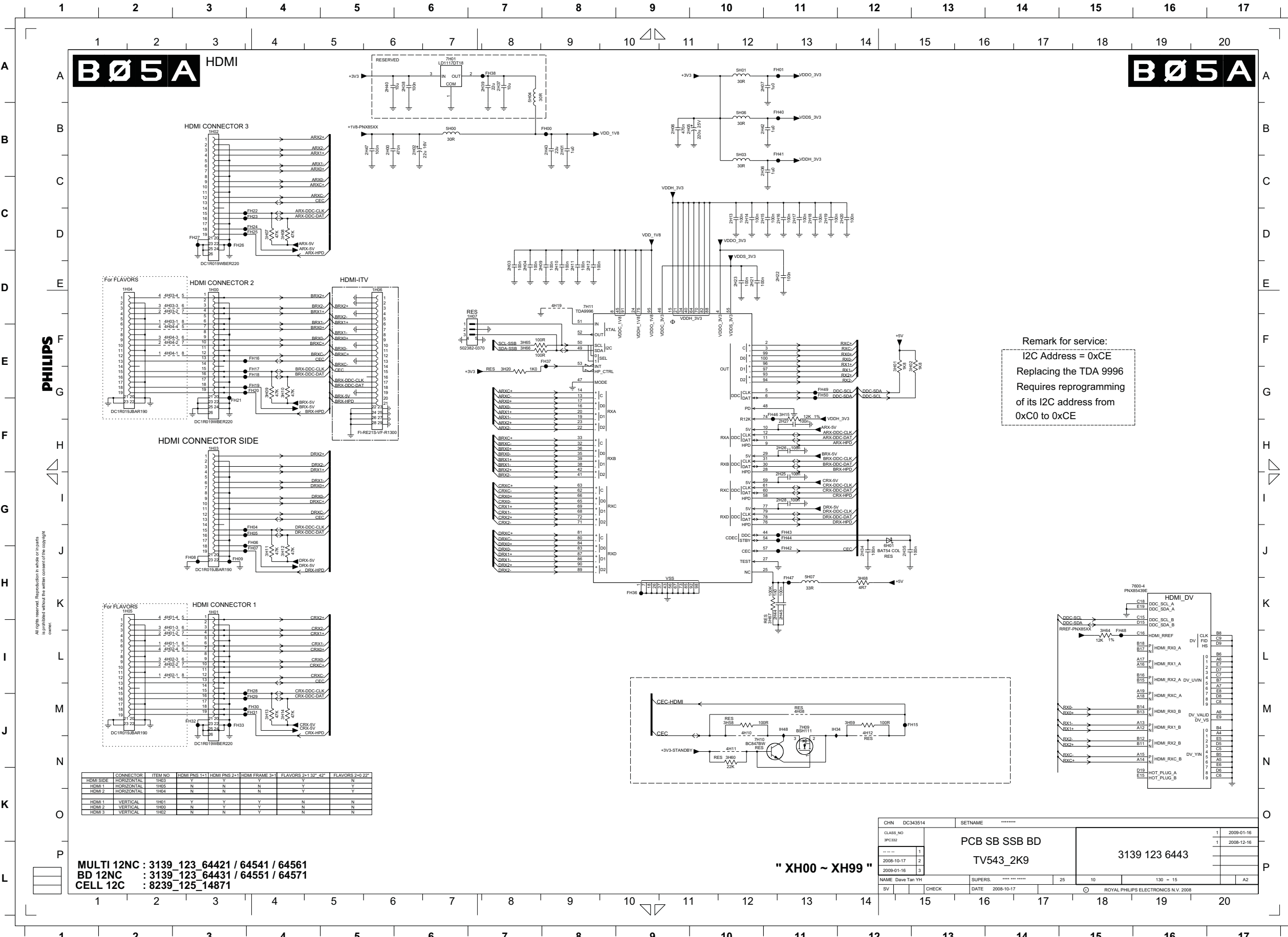
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1F05 F7  
1F06 G7  
1F07 H7  
1F08 I8  
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1F13 C15  
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6F03 D7  
6F04 E7  
6F05 F7  
6F06 G7  
6F07 H7  
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6F10 K6  
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6F17 G15  
6F18 H15  
6F19 I15  
6F20 J15  
6F21 K15  
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7F02 E2

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17



SSB: HDMI

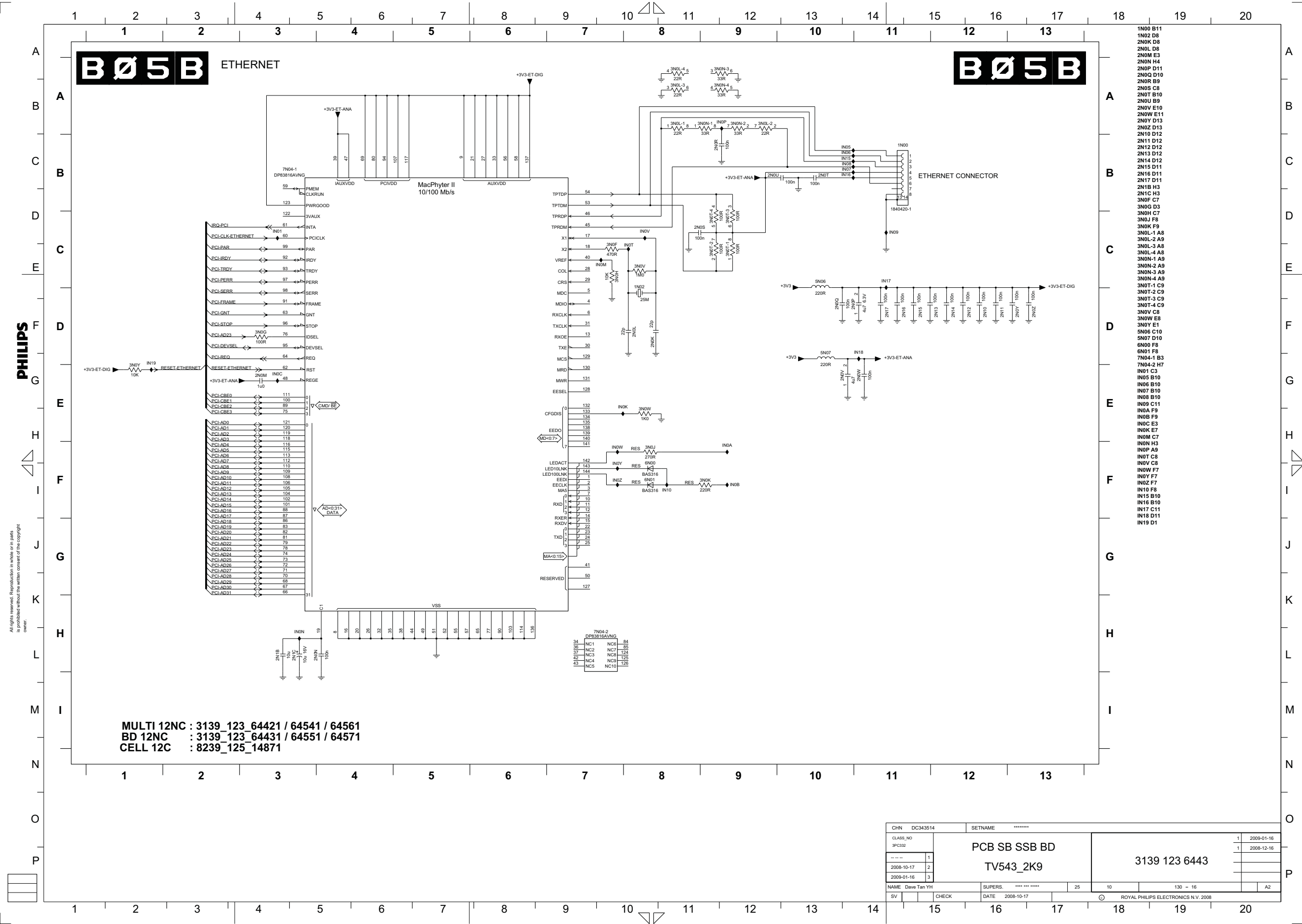


Remark for service:  
I2C Address = 0xC0  
Replacing the TDA 9996  
Requires reprogramming  
of its I2C address from  
0xC0 to 0xC0

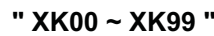
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- 2H00 B5
- 2H01 B8
- 2H02 B6
- 2H03 D7
- 2H04 D7
- 2H05 B10
- 2H06 B9
- 2H07 A11
- 2H08 D8
- 2H09 D8
- 2H10 D8
- 2H11 D8
- 2H12 D8
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- 2H20 C12
- 2H21 D10
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- FH06 G4
- FH07 G4
- FH08 G3
- FH09 G3
- FH15 J13
- FH16 D4
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- FH26 C3
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- FH28 I4
- FH32 I3
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- FH36 H9
- FH37 E8
- FH38 A7
- FH40 B11
- FH41 B11
- FH42 H11
- FH43 G11
- FH44 G11
- FH46 F11
- FH47 H11
- FH48 I15
- FH49 E11
- FH50 E11
- IH34 J11
- IH48 J11

CHN	DC343514	SETNAME	*****
CLASS, NO	3PC030	PCB SB SSB BD	
---	1	TV543_2K9	
---	2		
---	3		
NAME	Dave Tan YH	SUPERS.	****
SV	CHECK	DATE	2008-10-17
			25
			10
			130 - 15
			A2
			ROYAL PHILIPS ELECTRONICS N.V. 2008

SSB: Ethernet



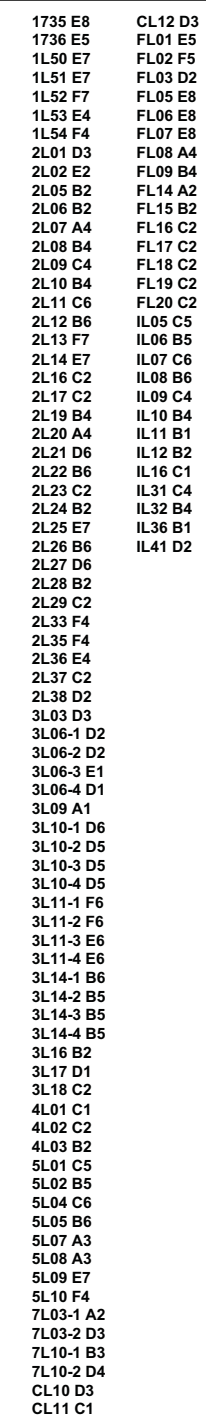
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CHN DC343514		SETNAME *****																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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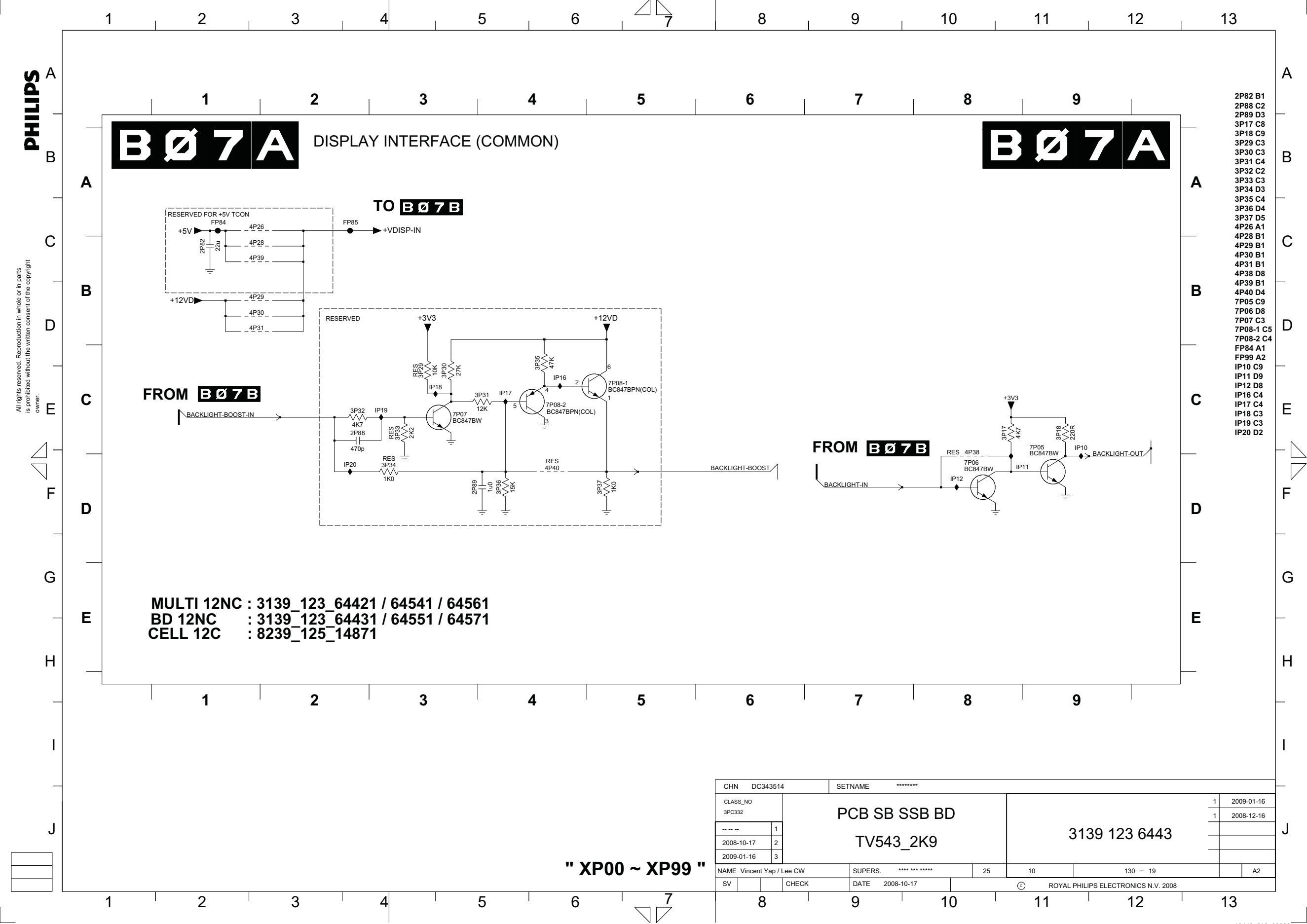


"XL00-XL99"

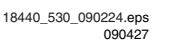
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CLASS_NO		PCB SB SSB BD		TV543_2K9		3139 123 6443		1	2009-01-16		
3PC332								1	2008-12-16		
-- --								1			
2008-10-17								2			
2009-01-16		3									
NAME Hor Siew Lee				SUPERS.		**** ** *****		25	10	130 - 18	A3
SV		CHECK		DATE 2008-10-17		ROYAL PHILIPS ELECTRONICS N.V. 2008					



SSB: Display Interface (Common)



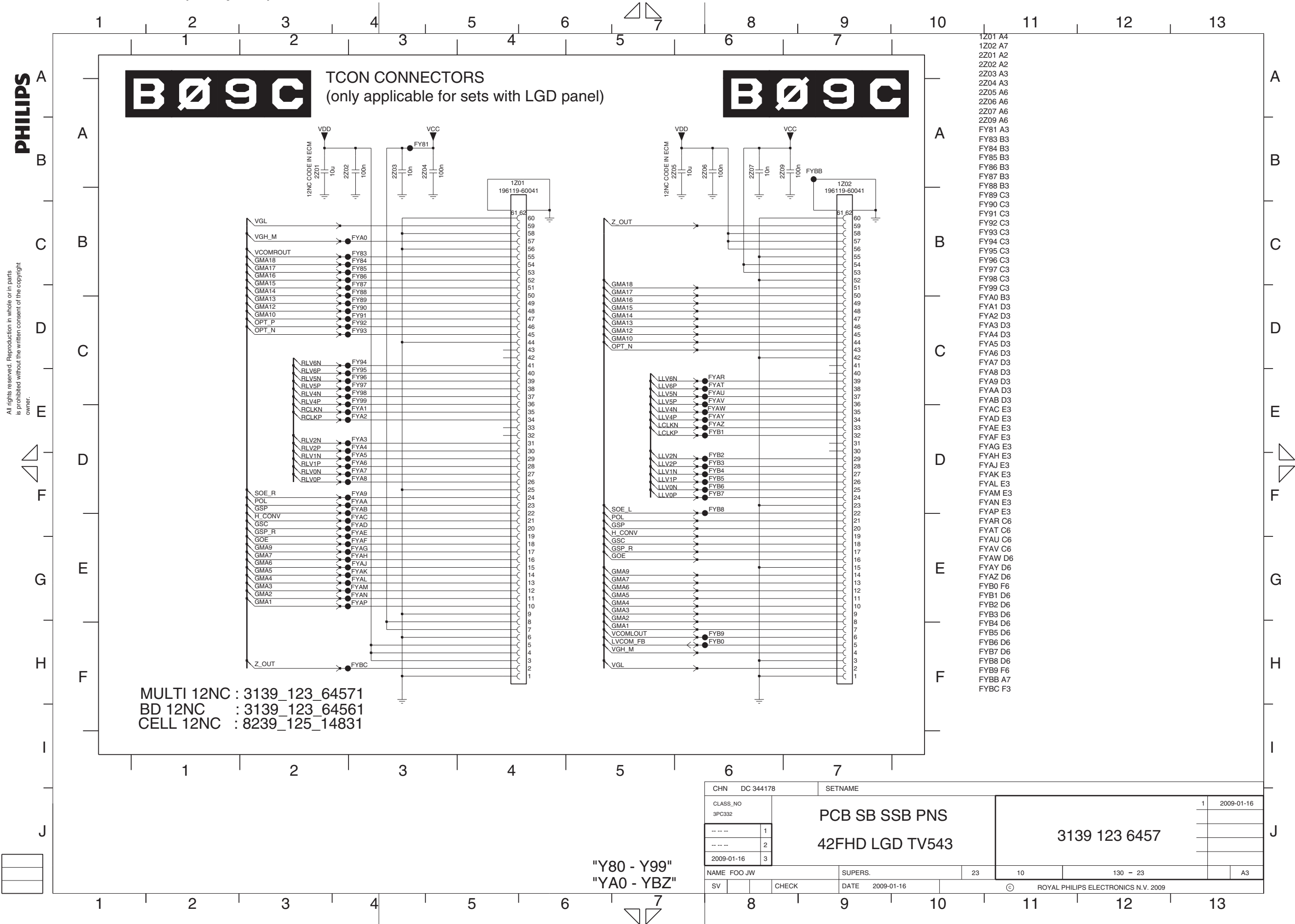
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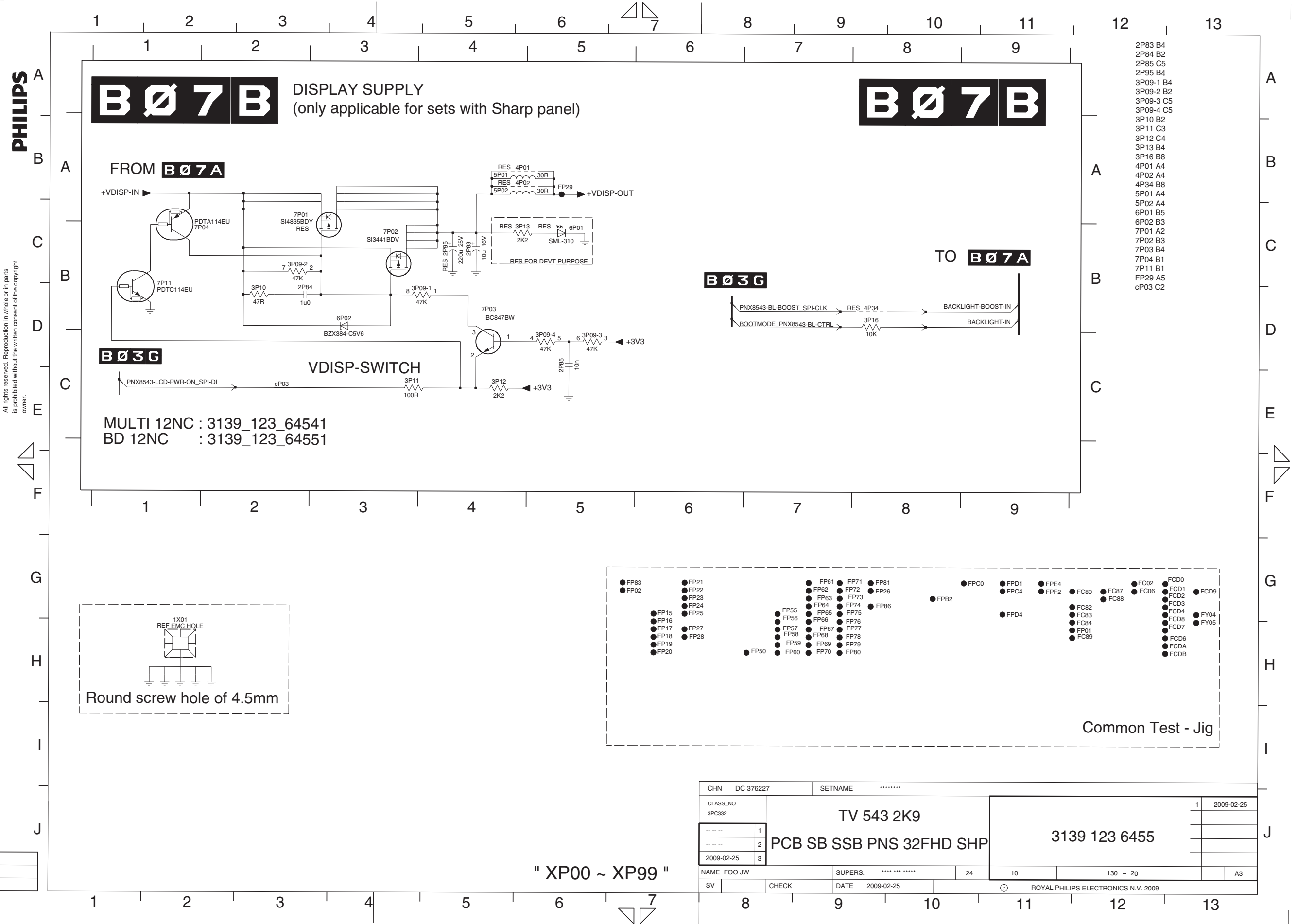


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

SSB: T-Con Connectors (LGD panel)

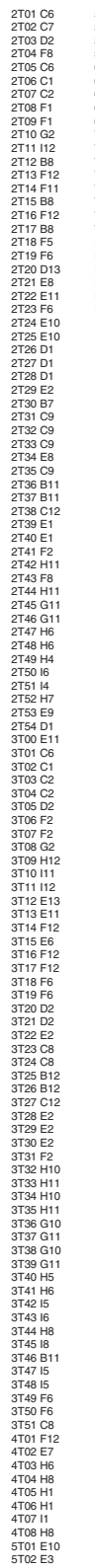


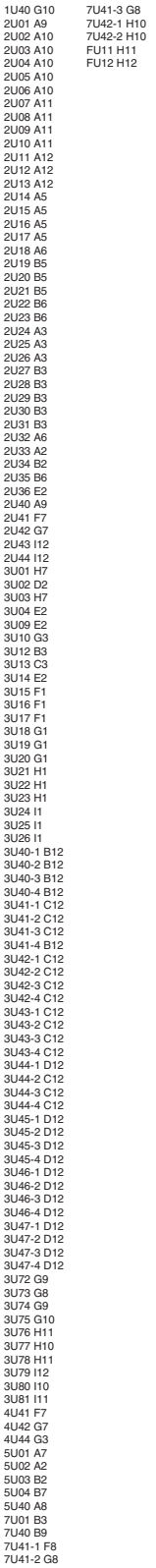
SSB: Display Supply (Sharp panel)





**PHILIPS**





PHILIPS

CHN DC 376227 SETNAME

CLASS NO 3PC332

TV 543 2K9

PCB SB SSB PNS 32FHD SHP

3139 123 6455

NAME FOOJW SUPERS. 24 130 ~ 23 A2

SV CHECK DATE 2009-02-25

ROYAL PHILIPS ELECTRONICS N.V. 2009

[illegible]

1,001 G1	4,445 C7	FJ96 G7
1,002 G7	4,446 C7	FJ97 A1
1,003 D9	4,447 C7	FJ98 A8
1,004 E2	4,448 C7	FJ99 E5
1,012 F3	4,449 C7	FJ A1 B11
2,070 B9	4,450 C7	FJ A2 C11
2,071 C11	4,451 C7	FJ A3 C11
2,072 C11	4,452 C7	FJ A4 B11
2,073 G3	4,453 C7	FJ A5 C4
2,074 G6	4,454 E7	
3,001 A5	4,455 E7	
3,002 A4	4,456 E7	
3,003 A5	7,070 B10	
3,004 A4	FJ01 B4	
3,005 B2	FJ02 B4	
3,006 B2	FJ03 B4	
3,007 B3	FJ04 B4	
3,008 B3	FJ05 B4	
3,009 B3	FJ06 B4	
3,101-2 D2	FJ07 B4	
3,101-2 D2	FJ08 B4	
3,101-3 D2	FJ09 B4	
3,111-1 D2	FJ10 B4	
3,111-1 D2	FJ11 B4	
3,111-2 D2	FJ12 B4	
3,111-3 D2	FJ13 C4	
3,111-4 D2	FJ14 C4	
3,112-1 D2	FJ15 C4	
3,112-2 D2	FJ16 C4	
3,112-4 D2	FJ17 C4	
3,113-1 E2	FJ18 C4	
3,113-2 D2	FJ21 C4	
3,113-3 E2	FJ22 C4	
3,113-4 E2	FJ23 C4	
3,114-1 F2	FJ24 C4	
3,114-2 F2	FJ25 C4	
3,114-3 F2	FJ26 C4	
3,114-4 F2	FJ27 D4	
3,115-1 F2	FJ28 D4	
3,115-2 F2	FJ29 D2	
3,115-3 F2	FJ30 D2	
3,115-4 F2	FJ31 D2	
3,116-1 D6	FJ32 D2	
3,116-2 D6	FJ33 D2	
3,116-3 D6	FJ34 D2	
3,116-4 D6	FJ35 D2	
3,117-1 D6	FJ36 D2	
3,117-2 D6	FJ37 D2	
3,117-3 D6	FJ38 D2	
3,118-1 D6	FJ39 E2	
3,118-2 D6	FJ40 E2	
3,118-3 E6	FJ41 E2	
3,118-4 E6	FJ42 E2	
3,118-5 E6	FJ43 E2	
3,119-2 E6	FJ44 E2	
3,119-3 E6	FJ45 E3	
3,119-4 E6	FJ46 E3	
3,200-1 F6	FJ47 E3	
3,200-2 F6	FJ48 E3	
3,200-3 F6	FJ49 E3	
3,200-4 F6	FJ50 F2	
3,201-1 F6	FJ51 F2	
3,201-2 F6	FJ52 F2	
3,201-3 F6	FJ53 F2	
3,201-4 F6	FJ54 F2	
3,202-1 F6	FJ55 F2	
3,202-2 F6	FJ56 F2	
3,203 A11	FJ57 F2	
3,204 D2	FJ58 F2	
3,205 C12	FJ59 H13	
3,400 B6	FJ61 G2	
3,401 B5	FJ62 G2	
3,402 B6	FJ63 G2	
3,403 B5	FJ64 G2	
3,404 B5	FJ65 G2	
3,406 D10	FJ66 G2	
3,700 A11	FJ67 G2	
3,701 B2	FJ68 G2	
4,002 B2	FJ69 G2	
4,003 B2	FJ70 D7	
4,004 B2	FJ71 D7	
4,005 B2	FJ72 D7	
4,006 B2	FJ73 D7	
4,007 C2	FJ74 D7	
4,008 C2	FJ75 D7	
4,010 C2	FJ76 D7	
4,011 C2	FJ77 D7	
4,012 C2	FJ79 D7	
4,013 C2	FJ80 E7	
4,014 C2	FJ81 E7	
4,015 E2	FJ82 E7	
4,016 E2	FJ83 E7	
4,017 E2	FJ84 F7	
4,018 A12	FJ85 F7	
4,019 B12	FJ86 F7	
4,020 B11	FJ87 F7	
4,021 C12	FJ88 E7	
4,022 C12	FJ89 E7	
4,023 D10	FJ90 F7	
4,400 B7	FJ91 F7	
4,401 B7	FJ92 F7	
4,402 B7	FJ93 F7	
4,403 B7	FJ94 F7	
4,404 B7	FJ95 F7	

CHN	DC 376227	SE NAME			
CLASS_NO 3PC32		TV 543 2K9		1	2009-02-25
1		PCB SB SSB PNS 32FHD SHP		3139 123 6455	
2					
2009-02-25					
3					
NAME: FOO JAW		SUPERS.		10	130 ~ 24
SV	MGR	CHECK *****	DATE 2009-02-25	24	A2
			⊙ ROYAL PHILIPS ELECTRONICS N.V. 2009		

SSB: Display Supply (37" LGD panel)

PHILIPS

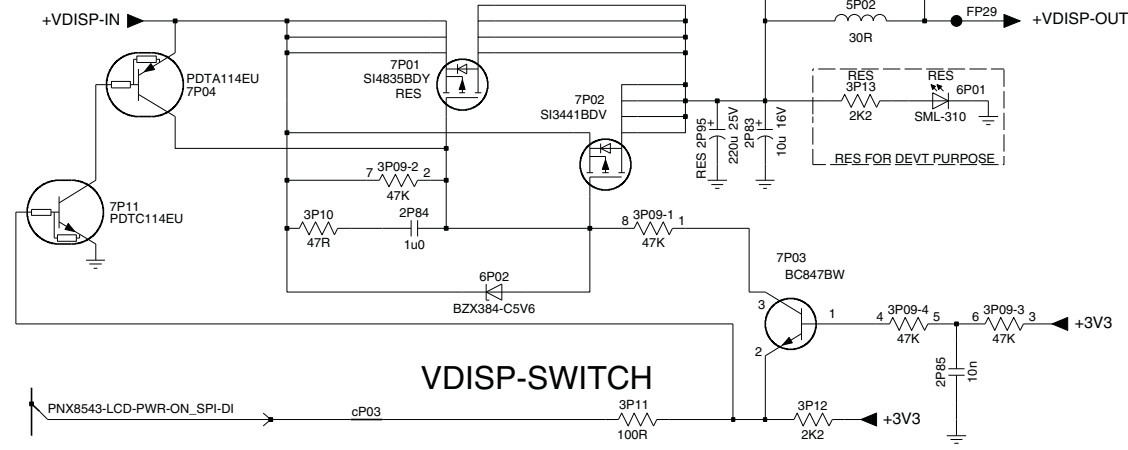
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B Ø 7 B

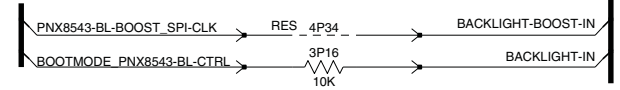
DISPLAY SUPPLY  
(only applicabile fro sets with 37" LGD panel)

B Ø 7 B

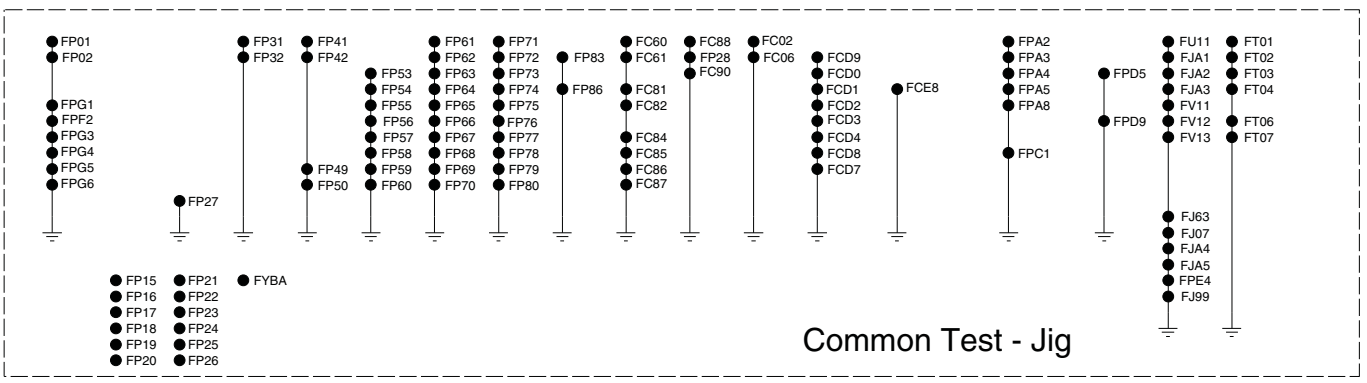
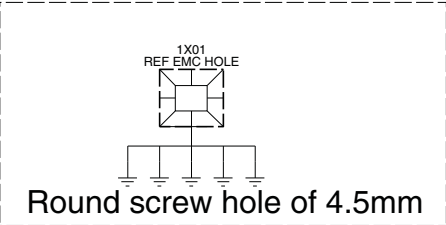
FROM B Ø 7 A



TO B Ø 7 A



MULTI 12NC : 3139\_123\_64721  
BD 12NC : 3139\_123\_64731  
CELL 12NC : 8239\_125\_14921

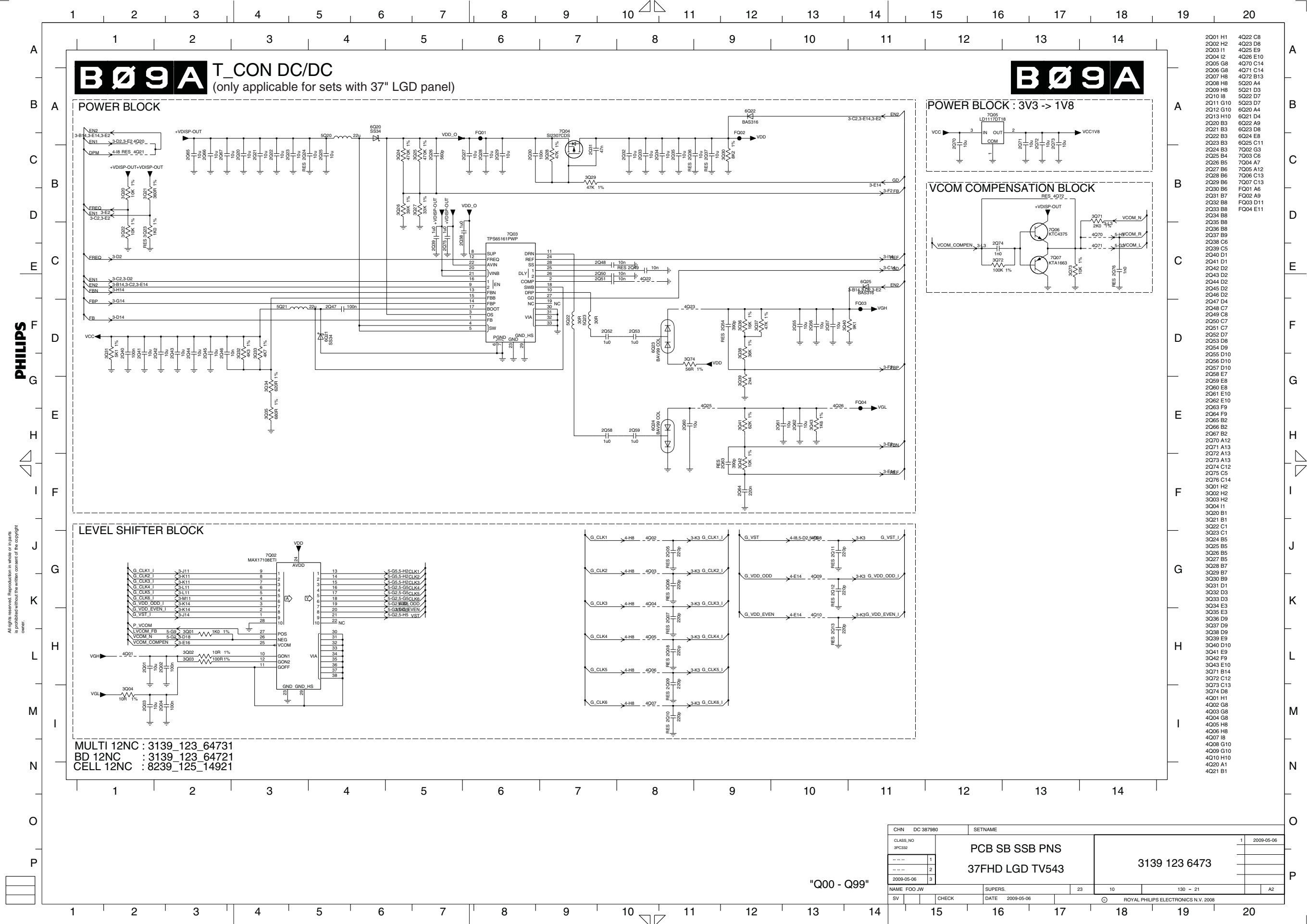


" XP00 ~ XP99 "

CHN	DC 387980	SETNAME	*****
CLASS_NO	3PC332	PCB SB SSB PNS	1 2009-05-06
---	1	37FHD LGD TV543	
---	2		
---	3		
2009-05-06		3139 123 6473	
NAME	FOO JW	SUPERS.	23 10 130 ~ 20 A3
SV	CHECK	DATE	2009-05-06
© ROYAL PHILIPS ELECTRONICS N.V. 2009			



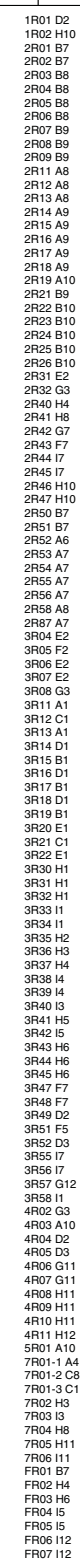
## SSB: T-Con DC/DC (37" LGD panel)





## B Ø 9 B

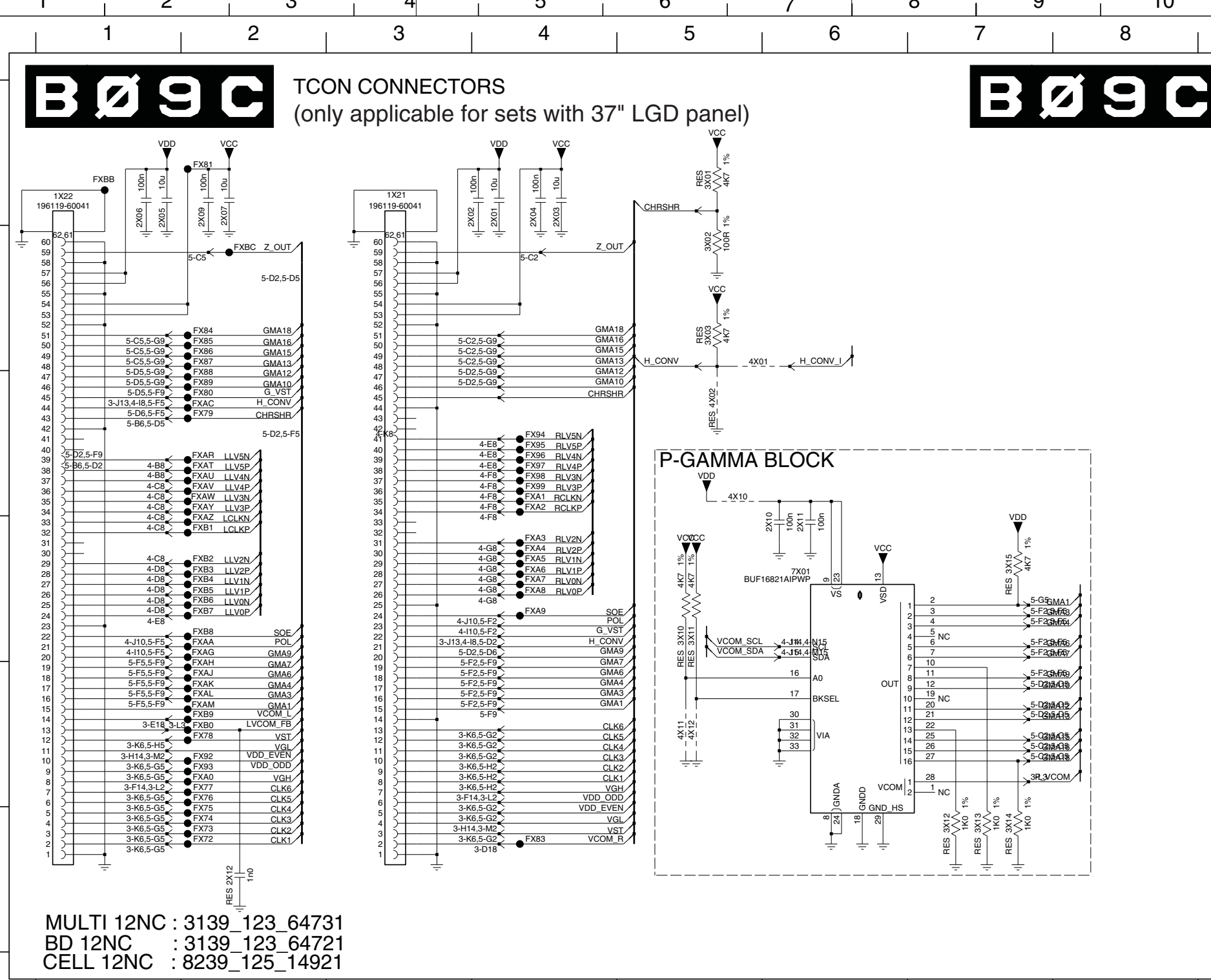
B Ø 9 B



SSB: T-Con Connectors (37" LGD panel)

PHILIPS

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- 1X21 A3
- 1X22 A1
- 2X01 A4
- 2X02 A3
- 2X03 A4
- 2X04 A4
- 2X05 A1
- 2X06 A1
- 2X07 A2
- 2X09 A2
- 2X10 D6
- 2X11 D6
- 2X12 F2
- 3X01 A5
- 3X02 B5
- 3X03 B5
- 3X10 D5
- 3X11 D5
- 3X12 F7
- 3X13 F7
- 3X14 F7
- 3X15 D7
- 4X01 B5
- 4X02 C5
- 4X10 C5
- 4X11 E5
- 4X12 E5
- 7X01 D6
- FX72 F2
- FX73 F2
- FX74 F2
- FX75 F2
- FX76 E2
- FX77 E2
- FX78 E2
- FX79 C2
- FX80 C2
- FX81 A2
- FX83 F4
- FX84 B2
- FX85 B2
- FX86 B2
- FX87 B2
- FX88 C2
- FX89 C2
- FX92 E2
- FX93 E2
- FX94 C4
- FX95 C4
- FX96 C4
- FX97 C4
- FX98 C4
- FX99 C4
- FXA0 E2
- FXA1 C4
- FXA2 C4
- FXA3 D4
- FXA4 D4
- FXA5 D4
- FXA6 D4
- FXA7 D4
- FXA8 D4
- FXA9 D2
- FXAA D2
- FXAC C2
- FXAG D2
- FXAH E2
- FXAJ E2
- FXAK E2
- FXAL E2
- FXAM E2
- FXAR C2
- FXAT C2
- FXAU C2
- FXAV C2
- FXAW C2
- FXAY C2
- FXAZ D2
- FXB0 E2
- FXB1 D2
- FXB2 D2
- FXB3 D2
- FXB4 D2
- FXB5 D2
- FXB6 D2
- FXB7 D2
- FXB8 D2
- FXB9 E2
- FXBB A1
- FXBC B2

CHN	DC 387980	SETNAME	
CLASS_NO	3PC332	PCB SB SSB PNS	1
		37FHD LGD TV543	2009-05-06
---	1		
---	2		
2009-05-06	3		
NAME	FOO JW	SUPERS.	23
SV	CHECK	DATE	2009-05-06
			10
			130 - 23
			A3
			ROYAL PHILIPS ELECTRONICS N.V. 2008

## SSB: SRP List Explanation

### Example

Net Name	Diagram
+12-15V	AP1 (4x)
+12-15V	AP4 (4x)
+12-15V	AP5 (12x)
+12-15V	AP6 (4x)
+12-15V	AP7 (8x)
+12V_NF	AP1 (4x)
+12V_NF	AP1 (2x)
+12VLP	AP1 (2x)
+25VLP	AP1 (4x)
+25VLP	AP2 (1x)
+3V3-STANDBY	AP5 (3x)
+400V-F	AP1 (2x)
+400V-F	AP2 (2x)
+400V-F	AP3 (2x)
+5V2	AP1 (6x)
+5V2	AP2 (1x)
+5V2-NF	AP1 (1x)
+5V2-NF	AP2 (1x)
+5V-SW	AP1 (6x)
+5V-SW	AP2 (1x)
+8V6	AP1 (3x)
+AUX	AP1 (2x)
+DC-F	AP2 (1x)
+DC-F	AP3 (2x)
+SUB-SPEAKER	AP5 (1x)
+SUB-SPEAKER	AP6 (2x)
-12-15V	AP1 (4x)
-12-15V	AP4 (6x)
-12-15V	AP5 (14x)
-12-15V	AP6 (6x)
-12-15V	AP7 (8x)
AL-OFF	AP1 (2x)
AUDIO-L	AP4 (1x)
AUDIO-L	AP5 (1x)
AUDIO-PROT	AP5 (3x)
AUDIO-R	AP4 (1x)
AUDIO-R	AP5 (1x)
AUDIO-SW	AP5 (1x)
AUDIO-SW	AP7 (1x)
BOOST	AP1 (2x)
CPROT	AP4 (2x)
CPROT	AP5 (1x)
CPROT-SW	AP5 (1x)
CPROT-SW	AP6 (2x)
-DC-F	AP1 (2x)
-DC-F	AP3 (2x)
DC-PROT	AP1 (1x)
DC-PROT	AP5 (2x)
DIM-CONTROL	AP1 (2x)
FEEDBACK+SW	AP1 (2x)
FEEDBACK-L	AP4 (2x)
FEEDBACK-R	AP4 (2x)
FEEDBACK-SW	AP6 (2x)
GND-AL	AP1 (2x)
GNDHA	AP1 (40x)
GNDHA	AP2 (20x)
GNDHA	AP3 (2x)
GNDHOT	AP2 (2x)
GND-L	AP1 (2x)
GND-L	AP4 (4x)
GND-L	AP5 (34x)
GND-LL	AP4 (7x)
GND-LS	AP5 (1x)
GND-LR	AP4 (7x)
GND-LR	AP5 (1x)
GND-LSW	AP5 (1x)
GND-LSW	AP6 (15x)
GND-S	AP1 (11x)
GND-SA	AP4 (8x)
GND-SA	AP5 (2x)
GND-SA	AP6 (8x)
GND-SA	AP7 (6x)
GNDScrow	AP3 (2x)
GNDScrow	AP5 (2x)
GND-SSB	AP5 (3x)
GND-SSP	AP1 (51x)
GND-SSP	AP2 (15x)
IN+SW	AP6 (2x)
IN-L	AP4 (2x)
IN-R	AP4 (2x)
IN-R	AP6 (2x)
INV-MUTE	AP4 (1x)
INV-MUTE	AP5 (1x)
INV-MUTE	AP6 (1x)
LEFT-SPEAKER	AP4 (1x)
LEFT-SPEAKER	AP5 (1x)
MUTE	AP4 (2x)
MUTE	AP5 (1x)
MUTE	AP6 (1x)
ON-OFF	AP1 (3x)
OUT	AP6 (1x)
OUT	AP7 (2x)
OUTN	AP6 (1x)
OUTN	AP7 (1x)
POWER-GOOD	AP1 (2x)
POWER-OK-PLATFORM	AP1 (2x)
RIGHT-SPEAKER	AP4 (1x)
RIGHT-SPEAKER	AP5 (1x)
SOUND-ENABLE	AP5 (3x)
STANDBY	AP1 (5x)
STANDBY	AP2 (1x)
-SUB-SPEAKER	AP5 (1x)
-SUB-SPEAKER	AP6 (2x)
V-CLAMP	AP1 (1x)
V-CLAMP	AP3 (2x)

## 1.1. Introduction

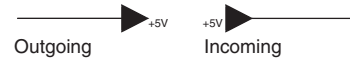
SRP (Service Reference Protocol) is a software tool that creates a list with all references to signal lines. The list contains references to the signals within all schematics of a PWB. It replaces the text references currently printed next to the signal names in the schematics. These printed references are created manually and are therefore not guaranteed to be 100% correct. In addition, in the current crowded schematics there is often none or very little place for these references. Some of the PWB schematics will use SRP while others will still use the manual references. Either there will be an SRP reference list for a schematic, or there will be printed references in the schematic.

## 1.2. Non-SRP Schematics

There are several different signals available in a schematic:

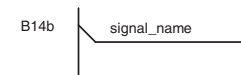
### 1.2.1. Power Supply Lines

All power supply lines are available in the supply line overview (see chapter 6). In the schematics (see chapter 7) is not indicated where supplies are coming from or going to.  
It is however indicated if a supply is incoming (created elsewhere), or outgoing (created or adapted in the current schematic).



### 1.2.2. Normal Signals

For normal signals, a schematic reference (e.g. B14b) is placed next to the signals.

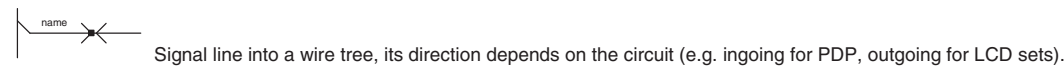
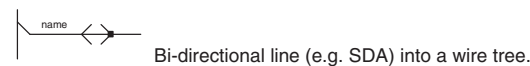
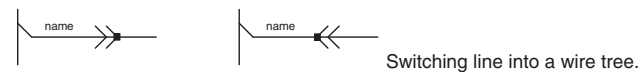
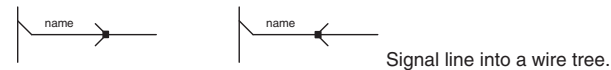
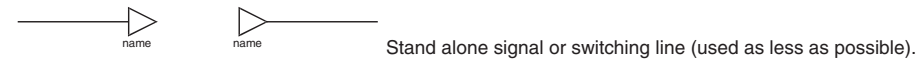


### 1.2.3. Grounds

For normal and special grounds (e.g. GNDHOT or GND3V3 etc.), nothing is indicated.

### 1.3. SRP Schematics

SRP is a tool, which automatically creates a list with signal references, indicating on which schematic the signals are used. A reference is created for all signals indicated with an SRP symbol, these symbols are:



## Remarks:

- When there is a black dot on the "signal direction arrow" it is an SRP symbol, so there will be a reference to the signal name in the SRP list.
- All references to normal grounds (Ground symbols without additional text) are not listed in the reference list, this to keep it concise.
- Signals that are not used in multiple schematics, but only once or several times in the same schematic, are included in the SRP reference list, but only with one reference.

**Additional Tip:**

When using the PDF service manual file, you can very easily search for signal names and follow the signal over all the schematics. In Adobe PDF reader:

- Select the signal name you want to search for, with the "Select text" tool.
- Copy and paste the signal name in the "Search PDF" tool.
- Search for all occurrences of the signal name.
- Now you can quickly jump between the different occurrences and follow the signal over all schematics. It is advised to "zoom in" to e.g. 150% to see clearly, which text is selected. Then you can zoom out, to get an overview of the complete schematic.

**PS.** It is recommended to use at least Adobe PDF (reader) version 6.x, due to better search possibilities in this version.

**Personal Notes:**

This image shows a full page of a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the page.



### SSB: SRP List Part 1 (LGD panel)

Netname	Diagram	ADAC(6)	B03C (1x)	BACKLIGHT-BOOST-IN	B07A (1x)	CA-WE	B05C (2x)	DDR2-DQM3	B03F (2x)	GMA17	B09A (1x)	LLV6N	B09C (1x)
		ADAC(6)	B03D (1x)	BACKLIGHT-BOOST-IN	B07B (1x)	CEC	B05A (6x)	DDR2-DQS0_N	B03F (2x)	GMA17	B09C (2x)	LLV6P	B09B (1x)
		ADAC(7)	B03C (1x)	BACKLIGHT-IN	B07A (1x)	CEC-HDMI	B03H (2x)	DDR2-DQS0_P	B03F (2x)	GMA18	B09A (1x)	LLV6P	B09C (1x)
+12V	B01A (1x)	ADAC(7)	B03D (3x)	BACKLIGHT-IN	B07B (1x)	CEC-HDMI	B05A (1x)	DDR2-DQS1_N	B03F (2x)	GMA18	B09C (2x)	LVCOM_FB	B09A (1x)
+12V	B01B (4x)	ADAC(8)	B03C (1x)	BACKLIGHT-OUT	B01B (1x)	CLK-SCL	B04C (1x)	DDR2-DQS1_P	B03F (2x)	GMA2	B09A (1x)	LVCOM_FB	B09C (1x)
+12V	B02A (3x)	ADAC(8)	B03D (3x)	BACKLIGHT-OUT	B07A (1x)	CLK-SCL	B09B (1x)	DDR2-DQS2_N	B03F (2x)	GMA2	B09C (2x)	MD00	B05C (4x)
+12V	B04A (1x)	ALE	B03H (1x)	BOLT-ON-IO	B03H (2x)	CRX0-	B05A (2x)	DDR2-DQS2_P	B03F (2x)	GMA3	B09A (1x)	MD01	B05C (4x)
+12VD	B01B (1x)	ANTENNA-CTRL	B02A (2x)	BOLT-ON-IO	B04A (1x)	CRX0+	B05A (2x)	DDR2-DQS3_N	B03F (2x)	GMA3	B09C (2x)	MD02	B05C (4x)
+12VD	B07A (2x)	ANTENNA-SUPPLY	B02A (2x)	BOLT-ON-TS-ENn	B03H (2x)	CRX1-	B05A (2x)	DDR2-DQS3_P	B03F (2x)	GMA4	B09A (1x)	MD03	B05C (4x)
+12VF	B01A (2x)	A-PLOP	B03C (1x)	BOOTMODE_PNX8543-BL-CTRL	B03G (1x)	CRX1+	B05A (2x)	DDR2-ODT	B03F (3x)	GMA4	B09C (2x)	MD04	B05C (4x)
+1V2	B02A (2x)	A-PLOP	B04B (1x)	BOOTMODE_PNX8543-BL-CTRL	B07B (1x)	CRX2-	B05A (2x)	DDR2-RAS	B03F (3x)	GMA5	B09A (1x)	MD05	B05C (4x)
+1V2_VCC	B09A (1x)	A-PLOP	B04C (2x)		B05A (2x)	CRX2+	B05A (2x)	DDR2-VREF-CTRL	B03F (2x)	GMA5	B09C (2x)	MD06	B05C (4x)
+1V2_VCC	B09B (4x)	AP-SCART-OUT-L	B04B (5x)		B05A (2x)	CRX-5V	B05A (3x)	DDR2-VREF-DDR	B03F (3x)	GMA6	B09A (1x)	MD07	B05C (4x)
+1V2A	B02A (2x)	AP-SCART-OUT-R	B04B (5x)		B05A (2x)	CRXC-	B05A (2x)	DDR2-WE	B03F (3x)	GMA6	B09C (2x)	MOCCLKA	B05C (4x)
+1V2-PNX5100	B01B (1x)	ARX0-	B05A (2x)		B05A (2x)	CRXC+	B05A (2x)	DETECT1	B01A (1x)	GMA7	B09A (1x)	MOSTRTA	B05C (4x)
+1V2-PNX5100	B03H (1x)	ARX0+	B05A (2x)		B05A (2x)	CRXC-	B05A (2x)	DETECT1	B03H (3x)	GMA7	B09C (2x)	MOVALA	B05C (4x)
+1V2-PNX85XX	B01A (2x)	ARX1-	B05A (2x)		B05A (2x)	CRX-DDC-CLK	B05A (2x)	DETECT12V	B01B (1x)	GMA9	B09A (1x)	MUTE	B06A (2x)
+1V2-PNX85XX	B02A (1x)	ARX1+	B05A (2x)		B05A (3x)	CRX-DDC-DAT	B05A (2x)	DETECT12V	B03H (1x)	GMA9	B09C (2x)	NAND-AD(0)	B06A (2x)
+1V2-PNX85XX	B03A (14x)	ARX2-	B05A (2x)		B05A (2x)	CRX-HPD	B05A (2x)	DETECT2	B03H (3x)	GND-SIG	B01A (12x)	NAND-AD(1)	B03G (2x)
+1V2-PNX85XX	B03H (1x)	ARX2+	B05A (2x)		B05A (2x)	CVBS	B02A (1x)	DISM	B09B (2x)	GNDSDND	B01B (2x)	NAND-AD(2)	B03G (2x)
+1V2-STANDBY	B01B (2x)	ARX-5V	B05A (3x)		B05A (2x)	CVBS1	B03E (1x)	DPM	B09A (2x)	GNDSDND	B06A (20x)	NAND-AD(3)	B03G (2x)
+1V2-STANDBY	B03A (1x)	ARXC-	B05A (2x)		B05A (2x)	CVBS1	B03E (1x)	DPM	B09B (1x)	GOE	B09B (1x)	NAND-AD(4)	B03G (2x)
+1V8-PNX85XX	B03A (3x)	ARXC+	B05A (2x)		B05A (2x)	BRX-HPD	B04B (2x)	DRX0-	B05A (2x)	GOE	B09C (2x)	NAND-AD(5)	B03G (2x)
+1V8-PNX85XX	B03F (5x)	ARX-DDC-CLK	B05A (2x)		B03E (1x)	B-VGA	B03E (1x)	DRX0+	B05A (2x)	GSC	B09B (1x)	NAND-AD(6)	B03G (2x)
+1V8-PNX85XX	B05A (1x)	ARX-DDC-DAT	B05A (2x)		B04C (1x)	B-VGA	B04B (2x)	DRX1-	B05A (2x)	GSC	B09C (2x)	NAND-AD(7)	B03G (2x)
+3V3	B01A (1x)	ARX-HPD	B05A (2x)		B09B (2x)	C10S8	B04B (3x)	DRX1+	B05A (2x)	GSP	B09B (1x)	NAND-ALE	B03G (2x)
+3V3	B01B (1x)	A-STBY	B03C (1x)	CA-ADDEN	B03B (1x)	CA-ADDEN	B04A (1x)	DRX2-	B05A (2x)	GSP	B09C (2x)	NAND-CLE	B03G (2x)
+3V3	B03A (14x)	A-STBY	B06A (2x)	CA-ADDEN	B05C (3x)	CA-ADDEN	B04B (1x)	DRX2+	B05A (2x)	GSP_R	B09B (1x)	NAND-REn	B03G (2x)
+3V3	B03C (1x)	AUD_GND	B03D (4x)	CA-CD1	B03B (1x)	CA-CD1	B04B (2x)	DRX-5V	B05A (3x)	GSP_R	B09C (2x)	NAND-WEn	B03G (2x)
+3V3	B03D (1x)	AUD_GND	B06A (2x)	CA-CD1	B05C (2x)	CA-CD1	B04C (1x)	DRXC+	B05A (2x)	G-VGA	B03E (1x)	OPC_EN	B09B (2x)
+3V3	B03G (11x)	AUDIO-CL-L	B03C (1x)	CA-CD2	B03B (1x)	CA-CD2	B02A (1x)	DRXC-	B05A (2x)	G-VGA	B04C (1x)	OPT_N	B09B (1x)
+3V3	B03H (1x)	AUDIO-CL-L	B04B (1x)	CA-CD2	B05C (2x)	CA-CD2	B04B (1x)	DRX-DDC-CLK	B05A (2x)	H_CONV	B09B (1x)	OPT_N	B09C (2x)
+3V3	B04A (1x)	AUDIO-CL-R	B03C (1x)	CA-CE1	B05C (2x)	CA-CE1	B04C (1x)	DRX-DDC-DAT	B05A (2x)	H_CONV	B09C (2x)	OPT_P	B09B (1x)
+3V3	B04B (3x)	AUDIO-CL-R	B04B (1x)	CA-CE2	B05C (2x)	CA-CE2	B09B (1x)	DRX-HPD	B05A (2x)	HP_LOUT	B03C (1x)	OPT_P	B09C (1x)
+3V3	B04C (2x)	AUDIO-IN1-L	B03D (1x)	CA-DATADIR	B03B (1x)	CA-DATADIR	B05A (3x)	EA	B03H (1x)	HP_LOUT	B04C (1x)	P_VCOM	B09A (3x)
+3V3	B04C (2x)	AUDIO-IN1-L	B04A (1x)	CA-DATADIR	B05C (1x)	CA-DATADIR	B05A (3x)	EJTAG-DETECT	B03G (1x)	HP_ROUT	B03C (1x)	PBS_SPI_DI	B04A (2x)
+3V3	B05A (3x)	AUDIO-IN1-L	B04B (2x)	CA-DATAEN	B03B (1x)	CA-DATAEN	B03F (3x)	EJTAG-DETECT	B03H (2x)	HP_ROUT	B04C (1x)	PBS-I2C-SCL	B03G (2x)
+3V3	B05B (2x)	AUDIO-IN1-L	B03D (1x)	CA-DATAEN	B05C (1x)	CA-DATAEN	B03F (3x)	EJTAG-TCK	B03G (3x)	H_SYNC-VGA	B03E (1x)	PBS-I2C-SCL	B04A (2x)
+3V3	B05C (3x)	AUDIO-IN1-R	B04A (1x)	CA-INPACK	B05C (2x)	CA-INPACK	B03F (3x)	EJTAG-TDI	B03G (3x)	H_SYNC-VGA	B04C (1x)	PCI-AD0	B03G (2x)
+3V3	B07A (2x)	AUDIO-IN1-R	B04B (2x)	CA-IORD	B05C (2x)	CA-IORD	B03F (3x)	EJTAG-TDO	B03G (3x)	I_GOE	B09B (2x)	PCI-AD0	B05B (1x)
+3V3	B07B (2x)	AUDIO-IN2-L	B03D (1x)	CA-IOWR	B05C (2x)	CA-IOWR	B03F (3x)	EJTAG-TMS	B03G (3x)	I_GSC	B09B (2x)	PCI-AD0	B05C (1x)
+3V3_BUF	B05C (5x)	AUDIO-IN2-L	B04B (2x)	CA-MDI0	B03B (1x)	CA-MDI0	B03F (3x)	EJTAG-TRSTN	B03G (3x)	I_GSP	B09B (2x)	PCI-AD1	B03G (2x)
+3V3A	B02A (3x)	AUDIO-IN2-R	B03D (1x)	CA-MDI0	B05C (1x)	CA-MDI0	B03F (3x)	ENABLE-3V3	B01A (1x)	I_GSP_R	B09B (2x)	PCI-AD1	B05B (1x)
+3V3B	B02A (6x)	AUDIO-IN2-R	B04B (2x)	CA-MDI1	B03B (1x)	CA-MDI1	B03F (3x)	ENABLE-3V3	B01B (1x)	I_POL	B09B (2x)	PCI-AD1	B05C (1x)
+3V3D	B02A (2x)	AUDIO-IN3-L	B03D (1x)	CA-MDI1	B05C (1x)	CA-MDI1	B03F (3x)	ENABLE-3V3	B03H (2x)	I_SOE	B09B (2x)	PCI-AD10	B03G (1x)
+3V3E	B02A (2x)	AUDIO-IN3-L	B04C (1x)	CA-MDI2	B03B (1x)	CA-MDI2	B03F (3x)	FB	B09A (1x)	IF-AGC	B02A (2x)	PCI-AD10	B05B (1x)
+3V3-ET-ANA	B05B (4x)	AUDIO-IN3-R	B03D (1x)	CA-MDI2	B05C (1x)	CA-MDI2	B03F (3x)	FBB	B09A (2x)	IF-N	B02A (2x)	PCI-AD10	B05C (1x)
+3V3-ET-DIG	B05B (3x)	AUDIO-IN3-R	B04C (1x)	CA-MDI3	B03B (1x)	CA-MDI3	B03F (3x)	FBN	B09A (2x)	IF-P	B02A (2x)	PCI-AD11	B03G (1x)
+3V3F	B01A (2x)	AUDIO-IN4-L	B03D (1x)	CA-MDI3	B05C (1x)	CA-MDI3	B03F (3x)	FE-CLK	B02A (1x)	IRQ-CA	B03B (1x)	PCI-AD11	B05B (1x)
+3V3F	B03A (1x)	AUDIO-IN4-L	B04C (1x)	CA-MDI4	B03B (1x)	CA-MDI4	B03F (3x)	FE-CLK	B03B (1x)	IRQ-CA	B03B (1x)	PCI-AD11	B05C (1x)
+3V3-NAND	B03G (5x)	AUDIO-IN4-R	B03D (1x)	CA-MDI4	B05C (1x)	CA-MDI4	B03F (3x)	FE-DATA(0)	B02A (1x)	IRQ-CA	B05C (2x)	PCI-AD12	B03G (1x)
+3V3-PER	B03A (2x)	AUDIO-IN4-R	B04C (1x)	CA-MDI5	B03B (1x)	CA-MDI5	B03F (3x)	FE-DATA(0)	B03B (1x)	IRQ-PCI	B03G (1x)	PCI-AD12	B05B (1x)
+3V3-PER	B03G (12x)	AUDIO-IN5-L	B03D (1x)	CA-MDI5	B05C (1x)	CA-MDI5	B03F (3x)	FE-DATA(1)	B02A (1x)	IRQ-PCI	B05B (1x)	PCI-AD12	B05C (1x)
+3V3-PER	B03H (3x)	AUDIO-IN5-L	B04C (2x)	CA-MDI6	B03B (1x)	CA-MDI6	B03F (3x)	FE-DATA(1)	B03B (1x)	KEYBOARD	B03G (1x)	PCI-AD13	B03G (1x)
+3V3-STANDBY	B01B (2x)	AUDIO-IN5-R	B03D (1x)	CA-MDI6	B05C (1x)	CA-MDI6	B03F (3x)	FE-DATA(2)	B02A (1x)	KEYBOARD	B03H (2x)	PCI-AD13	B05B (1x)
+3V3-STANDBY	B03A (1x)	AUDIO-IN5-R	B04C (2x)	CA-MDI7	B03B (1x)	CA-MDI7	B03F (3x)	FE-DATA(2)	B03B (1x)	LAMP-ON-OUT	B01B (1x)	PCI-AD13	B05C (1x)
+3V3-STANDBY	B03G (3x)	AUDIO-MUTE	B03H (2x)	CA-MDI7	B05C (1x)	CA-MDI7	B03F (3x)	FE-DATA(3)	B02A (1x)	LAMP-ON-OUT	B03H (2x)	PCI-AD14	B03G (1x)
+3V3-STANDBY	B03H (12x)	AUDIO-MUTE	B04C (3x)	CA-MDO(0)	B03B (1x)	CA-MDO(0)	B03F (2x)	FE-DATA(3)	B03B (1x)	LCD-SCL	B03H (2x)	PCI-AD14	B05B (1x)
+3V3-STANDBY	B04A (3x)	AUDIO-MUTE	B06A (1x)	CA-MDO(1)	B05C (1x)	CA-MDO(1)	B03F (2x)	FE-DATA(4)	B02A (1x)	LCD-SCL	B04A (1x)	PCI-AD14	B05C (1x)
+5V	B01B (1x)	AUDIO-OUT-L	B04C (1x)	CA-MDO(1)	B05C (1x)	CA-MDO(1)	B03F (2x)	FE-DATA(4)	B03B (1x)	LCD-SCL	B04C (1x)	PCI-AD15	B03G (1x)
+5V	B02A (2x)	AUDIO-OUT-R	B03C (1x)	CA-MDO(2)	B05C (1x)	CA-MDO(2)	B03F (2x)	FE-DATA(5)	B02A (1x)	LCLKN	B09B (1x)	PCI-AD15	B05B (1x)
+5V	B03D (1x)	AUDIO-OUT-R	B04C (1x)	CA-MDO(2)	B05C (1x)	CA-MDO(2)	B03F (2x)	FE-DATA(5)	B03B (1x)	LCLKN	B09C (1x)	PCI-AD16	B03G (1x)
+5V	B03G (4x)	AUDIO-RESET	B03C (2x)	CA-MDO(3)	B05C (1x)	CA-MDO(3)	B03F (2x)	FE-DATA(6)	B02A (1x)	LCLKP	B09B (1x)	PCI-AD16	B05B (1x)
+5V	B03H (1x)	AUDIO-RESET	B03H (2x)	CA-MDO(3)	B05C (1x)	CA-MDO(3)	B03F (2x)	FE-DATA(7)	B03B (1x)	LCLKP	B09C (1x)	PCI-AD16	B05C (1x)
+5V	B04A (1x)	AUDIO-VDD	B03C (7x)	CA-MDO(4)	B03B (1x)	CA-MDO(4)	B03F (2x)	FE-DATA(7)	B02A (1x)	LED1	B03G (2x)	PCI-AD17	B03G (1x)
+5V	B04B (6x)	AV1-BLK	B03H (1x)	CA-MDO(4)	B05C (1x)	CA-MDO(4)	B03F (2x)	FE-ERR	B03B (1x)	LED1	B03H (1x)	PCI-AD17	B05B (1x)
+5V	B04C (1x)	AV1-BLK	B04B (1x)	CA-MDO(5)	B03B (1x)	CA-MDO(5)	B03F (2x)	FE-SOP	B03B (2x)	LED2	B03G (2x)	PCI-AD17	B05C (1x)
+5V	B05A (2x)	AV1-BLK	B04B (1x)	CA-MDO(5)	B03B (1x)	CA-MDO(5)	B03F (2x)	FE-SOP	B02A (1x)	LED2	B03H (1x)	PCI-AD18	B03G (1x)
+5V	B05C (1x)	AV1-BLK-BO	B04A (1x)	CA-MDO(6)	B05C (1x)	CA-MDO(6)	B03F (2x)	FE-VALID	B03B (1x)	LEFT-SPEAKER	B06A (4x)	PCI-AD18	B05B (1x)
+5V	B07A (1x)	AV1-BLK-BO	B04B (2x)	CA-MDO(6)	B03B (1x)	CA-MDO(6)	B03F (2x)	FE-VALID	B02A (1x)	LIGHT-SENSOR	B03G (2x)	PCI-AD18	B05C (1x)
+5V5-TUN	B01B (1x)	AV1-STATUS	B03H (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FE-VALID	B03B (1x)	LIGHT-SENSOR	B03H (1x)	PCI-AD19	B03G (1x)
+5V5-TUN	B02A (1x)	AV1-STATUS	B04A (1x)	CA-MDO(7)	B03B (1x)	CA-MDO(7)	B03F (2x)	FGD_EN	B09B (2x)	LLVON	B09B (1x)	PCI-AD19	B05B (1x)
+5V-TUNER	B02A (10x)	AV2-BLK_LCD-SDA	B03H (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09A (1x)	LLVON	B09C (1x)	PCI-AD19	B05C (1x)
+AUDIO-POWER	B01B (1x)	AV2-BLK_LCD-SDA	B04B (2x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09B (1x)	PCI-AD20	B03G (1x)
+AUDIO-POWER	B03C (2x)	AV2-BLK_LCD-SDA	B03H (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B05B (1x)
+AUDIO-POWER	B06A (2x)	AV2-BLK_LCD-SDA	B04A (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B05C (1x)
+VDISP-IN	B07A (1x)	AV2-PB_SC2-B	B04B (2x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B05B (1x)
+VDISP-IN	B07B (1x)	AV2-PB_SC2-B	B03H (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B03G (1x)
+VDISP-OUT	B07B (1x)	AV2-PR_SC2-R	B04B (2x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B05B (1x)
+VDISP-OUT	B09A (4x)	AV2-STATUS	B03H (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B03G (1x)
3V3-ST	B01A (1x)	AV2-STATUS	B04B (2x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B05B (1x)
3V3-ST	B01B (1x)	AV2-STATUS	B03H (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B03G (1x)
ADAC(1)	B03D (2x)	AV2-Y_SC2-G	B03E (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B05C (1x)
ADAC(1)	B06A (1x)	AV2-Y_SC2-G	B04B (2x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B03G (1x)
ADAC(2)	B03D (2x)	AV3-PB	B03E (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B05B (2x)
ADAC(2)	B06A (1x)	AV3-PB	B04C (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1x)	PCI-AD20	B05C (1x)
ADAC(3)	B03C (2x)	AV3-PR	B03E (1x)	CA-MDO(7)	B05C (1x)	CA-MDO(7)	B03F (2x)	FLK	B09B (1x)	LLVON	B09C (1		

SSB: SRP List Part 2 (LGD panel)

Netname	Diagram									
PCI-AD25	B05B (1x)	PCMCIA-A9	B05C (2x)	RX51001A-	B09B (1x)	SDA-SSB	B02A (1x)	WP-NANDFLASH	B03G (2x)	
PCI-AD25	B05C (1x)	PCMCIA-D0	B05C (2x)	RX51001A+	B03B (1x)	SDA-SSB	B03G (2x)	WP-NANDFLASH	B03H (2x)	
PCI-AD26	B03G (2x)	PCMCIA-D1	B05C (2x)	RX51001A+	B09B (1x)	SDA-SSB	B04A (1x)	XIO-ACK	B03G (3x)	
PCI-AD26	B05B (1x)	PCMCIA-D2	B05C (2x)	RX51001B-	B03B (1x)	SDA-SSB	B05A (1x)	XIO-SEL-NAND	B03G (3x)	
PCI-AD26	B05C (1x)	PCMCIA-D3	B05C (2x)	RX51001B-	B09B (1x)	SDA-TUNER	B02A (2x)	Y_CVBS-MON-OUT	B03E (1x)	
PCI-AD27	B03G (2x)	PCMCIA-D4	B05C (2x)	RX51001B+	B03B (1x)	SDA-UP-MIPS	B03G (3x)	Y_CVBS-MON-OUT	B04B (1x)	
PCI-AD27	B05B (1x)	PCMCIA-D5	B05C (2x)	RX51001B+	B09B (1x)	SDA-UP-MIPS	B03H (2x)	Y_CVBS-MON-OUT-SC	B04B (2x)	
PCI-AD27	B05C (1x)	PCMCIA-D6	B05C (2x)	RX51001C-	B03B (1x)	SDM	B03H (3x)	Z_OUT	B09C (2x)	
PCI-AD27	B05B (1x)	PCMCIA-D7	B05C (2x)	RX51001C-	B09B (1x)	SENSE+1V2-PNX5100	B01B (2x)			
PCI-AD27	B05C (1x)	PCMCIA-VCC-VPP	B05C (5x)	RX51001C+	B03B (1x)	SENSE+1V2-PNX85XX	B01A (1x)			
PCI-AD28	B03G (2x)	PDN	B02A (2x)	RX51001C+	B09B (1x)	SENSE+1V2-PNX85XX	B03A (1x)			
PCI-AD28	B05B (1x)	PDP	B02A (2x)	RX51001CLK-	B03B (1x)	SIF	B02A (1x)			
PCI-AD28	B05C (1x)	PI_3	B03H (2x)	RX51001CLK-	B09B (1x)	SIF	B03E (1x)			
PCI-AD29	B03G (2x)	PI_3	B09B (1x)	RX51001CLK+	B03B (1x)	SIF-GND	B02A (1x)			
PCI-AD29	B05B (1x)	PNX8543-BL-BOOST_SPI-CLK	B03G (2x)	RX51001CLK+	B09B (1x)	SIF-GND	B03E (2x)			
PCI-AD29	B05C (1x)	PNX8543-BL-BOOST_SPI-CLK	B04A (1x)	RX51001D-	B03B (1x)	SOE_L	B09B (1x)			
PCI-AD3	B03G (1x)	PNX8543-BL-BOOST_SPI-CLK	B07B (1x)	RX51001D-	B09B (1x)	SOE_L	B09C (1x)			
PCI-AD3	B05B (1x)	PNX8543-LCD-PWR-ON_SPI-DI	B03G (2x)	RX51001D+	B03B (1x)	SOE_R	B09B (1x)			
PCI-AD3	B05C (1x)	PNX8543-LCD-PWR-ON_SPI-DI	B04A (1x)	RX51001D+	B09B (1x)	SOE_R	B09C (1x)			
PCI-AD30	B03G (2x)	PNX8543-LCD-PWR-ON_SPI-DI	B07B (1x)	RX51001E-	B03B (1x)	SPDIF-IN	B03D (1x)			
PCI-AD30	B05B (1x)	POL	B09B (1x)	RX51001E-	B09B (1x)	SPDIF-IN	B04A (1x)			
PCI-AD30	B05C (1x)	POL	B09C (2x)	RX51001E+	B03B (1x)	SPDIF-OUT	B04B (1x)			
PCI-AD31	B03G (2x)	POWER-OK	B01B (1x)	RX51001E+	B09B (1x)	SPDIF-OUT	B04C (1x)			
PCI-AD31	B05B (1x)	POWER-OK	B03H (2x)	RX51002A-	B03B (1x)	SPDIF-OUT-1	B03D (1x)			
PCI-AD31	B05C (1x)	PROT-DC	B01A (1x)	RX51002A-	B09B (1x)	SPDIF-OUT-1	B04C (1x)			
PCI-AD4	B03G (1x)	PROT-DC	B01B (1x)	RX51002A+	B03B (1x)	SPI-CLK	B03H (2x)			
PCI-AD4	B05B (1x)	PSEN	B03H (1x)	RX51002A+	B09B (1x)	SPI-CSB	B03H (2x)			
PCI-AD4	B05C (1x)	RBF	B09B (1x)	RX51002B-	B03B (1x)	SPI-DO_I2C-SDA	B03G (2x)			
PCI-AD5	B03G (1x)	RC	B03G (1x)	RX51002B-	B09B (1x)	SPI-DO_I2C-SDA	B04A (1x)			
PCI-AD5	B05B (1x)	RC	B03H (1x)	RX51002B+	B03B (1x)	SPI-PROG	B03H (3x)			
PCI-AD5	B05C (1x)	RC	B04A (1x)	RX51002B+	B09B (1x)	SPI-SDI	B03H (2x)			
PCI-AD6	B03G (1x)	RC_uP	B03H (2x)	RX51002C-	B03B (1x)	SPI-SDO	B03H (2x)			
PCI-AD6	B05B (1x)	RC1	B03H (1x)	RX51002C-	B09B (1x)	SPI-WP	B03H (3x)			
PCI-AD6	B05C (1x)	RC1	B04A (1x)	RX51002C+	B03B (1x)	STANDBY	B01B (1x)			
PCI-AD7	B03G (1x)	RC1	B04C (1x)	RX51002C+	B09B (1x)	STANDBY	B03H (2x)			
PCI-AD7	B05B (1x)	RC2	B03H (1x)	RX51002CLK-	B03B (1x)	STANDBY	B04A (1x)			
PCI-AD7	B05C (1x)	RC2	B04A (1x)	RX51002CLK-	B09B (1x)	TXD	B03G (1x)			
PCI-AD8	B03G (1x)	RC2	B04C (1x)	RX51002CLK+	B03B (1x)	TXD	B04A (1x)			
PCI-AD8	B05B (1x)	RCLKN	B09B (1x)	RX51002CLK+	B09B (1x)	TXD-BOLT-ON	B04A (3x)			
PCI-AD8	B05C (1x)	RCLKN	B09C (1x)	RX51002D-	B03B (1x)	TXD-MIPS	B03G (2x)			
PCI-AD9	B03G (1x)	RCLKP	B09B (1x)	RX51002D-	B09B (1x)	TXD-MIPS	B04A (2x)			
PCI-AD9	B05B (1x)	RCLKP	B09C (1x)	RX51002D+	B03B (1x)	TXD-MIPS2	B03G (2x)			
PCI-AD9	B05C (1x)	REF	B09A (2x)	RX51002D+	B09B (1x)	TXD-UP	B03G (1x)			
PCI-CBE0	B03G (1x)	REGIMBEAU_CVBS-SWITCH	B03H (2x)	RX51002E-	B03B (1x)	TXD-UP	B03H (2x)			
PCI-CBE0	B05B (1x)	REGIMBEAU_CVBS-SWITCH	B04B (1x)	RX51002E-	B09B (1x)	TXD-UP	B04A (2x)			
PCI-CBE1	B03G (2x)	RESET	B09B (2x)	RX51002E+	B03B (1x)	UART-SWITCH	B03H (2x)			
PCI-CBE1	B05B (1x)	RESET-ETHERNET	B03H (2x)	RX51002E+	B09B (1x)	USB20-DM	B03G (2x)			
PCI-CBE1	B05C (1x)	RESET-ETHERNET	B05B (2x)	RXC-	B05A (2x)	USB20-DP	B03G (2x)			
PCI-CBE2	B03G (2x)	RESET-NVM	B03H (3x)	RXC+	B05A (2x)	USB-OC	B03G (2x)			
PCI-CBE2	B05B (1x)	RESET-PNX5100	B03H (2x)	RXD	B03G (1x)	VCC	B09A (3x)			
PCI-CBE2	B05C (1x)	RESET-STBY	B03H (2x)	RXD	B04A (1x)	VCC	B09B (20x)			
PCI-CBE3	B03G (1x)	RESET-SYSTEM	B02A (1x)	RXD-BOLT-ON	B04A (3x)	VCC	B09C (2x)			
PCI-CBE3	B05B (1x)	RESET-SYSTEM	B03G (1x)	RXD-MIPS	B03G (2x)	VCO	B09B (2x)			
PCI-CLK-ETHERNET	B03G (1x)	RESET-SYSTEM	B03H (3x)	RXD-MIPS	B04A (2x)	VCOM_SCL	B09A (2x)			
PCI-CLK-ETHERNET	B05B (1x)	REVERSE	B09B (2x)	RXD-MIPS2	B03G (2x)	VCOM_SCL	B09B (1x)			
PCI-CLK-OUT	B03G (2x)	RF-AGC	B02A (2x)	RXD-UP	B03G (1x)	VCOM_SDA	B09A (2x)			
PCI-CLK-PNX5100	B03G (1x)	RIGHT-SPEAKER	B06A (4x)	RXD-UP	B03H (2x)	VCOM_SDA	B09B (1x)			
PCI-CLK-PNX8543	B03G (2x)	RLV0N	B09B (1x)	RXD-UP	B04A (2x)	VCOML_OP	B09A (2x)			
PCI-DEVSEL	B03G (2x)	RLV0N	B09C (1x)	SC1-B	B03E (1x)	VCOMLOUT	B09A (1x)			
PCI-DEVSEL	B05B (1x)	RLV0P	B09B (1x)	SC1-B	B04A (1x)	VCOMLOUT	B09C (1x)			
PCI-FRAME	B03G (2x)	RLV0P	B09C (1x)	SC1-B	B04B (2x)	VCOMR_OP	B09A (2x)			
PCI-FRAME	B05B (1x)	RLV1N	B09B (1x)	SC1-G	B03E (1x)	VCOMROUT	B09A (1x)			
PCI-GNT	B03G (2x)	RLV1N	B09C (1x)	SC1-G	B04A (1x)	VCOMROUT	B09C (1x)			
PCI-GNT	B05B (1x)	RLV1P	B09B (1x)	SC1-G	B04B (2x)	VDD	B09A (4x)			
PCI-IRDY	B03G (2x)	RLV1P	B09C (1x)	SC1-R	B03E (1x)	VDD	B09C (2x)			
PCI-IRDY	B05B (1x)	RLV2N	B09B (1x)	SC1-R	B04A (1x)	VDD_1V8	B05A (2x)			
PCI-PAR	B03G (1x)	RLV2N	B09C (1x)	SC1-R	B04B (1x)	VDD_D	B09A (4x)			
PCI-PAR	B05B (1x)	RLV2P	B09B (1x)	SCL	B09A (1x)	VDDA-ADC	B03A (1x)			
PCI-PERR	B03G (2x)	RLV2P	B09C (1x)	SCL	B09B (3x)	VDDA-AUDIO	B03A (2x)			
PCI-PERR	B05B (1x)	RLV4N	B09B (1x)	SCL1	B03G (2x)	VDDA-AUDIO	B03D (4x)			
PCI-REQ	B03G (2x)	RLV4N	B09C (1x)	SCL2	B03G (3x)	VDDA-DAC	B03A (1x)			
PCI-REQ	B05B (1x)	RLV4P	B09B (1x)	SCL3	B03G (2x)	VDDA-DAC	B03D (1x)			
PCI-SERR	B03G (2x)	RLV4P	B09C (1x)	SCL-DISP	B03G (1x)	VDDA-LVDS	B03A (1x)			
PCI-SERR	B05B (1x)	RLV5N	B09B (1x)	SCL-DISP	B09B (1x)	VDDA-LVDS	B03B (1x)			
PCI-STOP	B03G (2x)	RLV5N	B09C (1x)	SCL-SET	B01B (1x)	VDDH_3V3	B05A (3x)			
PCI-STOP	B05B (1x)	RLV5P	B09B (1x)	SCL-SET	B03G (3x)	VDDO_3V3	B05A (2x)			
PCI-TRDY	B03G (2x)	RLV5P	B09C (1x)	SCL-SSB	B02A (1x)	VDDS_3V3	B05A (2x)			
PCI-TRDY	B05B (1x)	RLV6N	B09B (1x)	SCL-SSB	B03G (2x)	VGH	B09A (3x)			
PCMCIA-A0	B05C (2x)	RLV6N	B09C (1x)	SCL-SSB	B04A (1x)	VGH_M	B09A (1x)			
PCMCIA-A1	B05C (2x)	RLV6P	B09B (1x)	SCL-SSB	B05A (1x)	VGH_M	B09C (2x)			
PCMCIA-A10	B05C (2x)	RLV6P	B09C (1x)	SCL-TUNER	B02A (2x)	VGHM	B09A (2x)			
PCMCIA-A11	B05C (2x)	RREF-PNX85XX	B03A (2x)	SCL-UP-MIPS	B03G (3x)	VGL	B09A (1x)			
PCMCIA-A12	B05C (2x)	RREF-PNX85XX	B05A (1x)	SCL-UP-MIPS	B03H (2x)	VGL	B09C (2x)			
PCMCIA-A13	B05C (2x)	R-VGA	B03E (1x)	SDA	B09A (1x)	VON	B09A (1x)			
PCMCIA-A14	B05C (2x)	R-VGA	B04C (1x)	SDA	B09B (3x)	VSW	B01A (1x)			
PCMCIA-A2	B05C (2x)	RX0-	B05A (2x)	SDA1	B03G (2x)	V-SYNC-VGA	B03E (1x)			
PCMCIA-A3	B05C (2x)	RX0+	B05A (2x)	SDA2	B03G (3x)	V-SYNC-VGA	B04C (1x)			
PCMCIA-A4	B05C (2x)	RX1-	B05A (2x)	SDA3	B03G (2x)	WC-EEPROM-PNX5100_SPI-DI	B03G (1x)			
PCMCIA-A5	B05C (2x)	RX1+	B05A (2x)	SDA-DISP	B03G (1x)	WC-EEPROM-PNX5100_SPI-DI	B04A (1x)			
PCMCIA-A6	B05C (2x)	RX2-	B05A (2x)	SDA-DISP	B09B (1x)	WC-EEPROM-PNX5100_SPI-DI	B04C (1x)			
PCMCIA-A7	B05C (2x)	RX2+	B05A (2x)	SDA-SET	B01B (1x)	WP1	B09B (2x)			
PCMCIA-A8	B05C (2x)	RX51001A-	B03B (1x)	SDA-SET	B03G (3x)	WP2	B09B (2x)			
3139 123 6457.1										



## SSB: SRP List Part 1 (Sharp panel)

Netname	Diagram	A(0)	B09B (2x)	AUDIO-MUTE	B06A (1x)	CA-MDI5	B03B (1x)	CVBS	B02A (1x)	DDR2-VREF-CTRL	B03F (2x)	FE-DATA(7)	B02A (1x)
+12V	B01A (1x)	A(1)	B09B (2x)	AUDIO-OUT-L	B03C (1x)	CA-MDI5	B05C (1x)	CVBS	B03E (1x)	DDR2-VREF-DDR	B03F (3x)	FE-DATA(7)	B03B (1x)
+12V	B01B (4x)	A(10)	B09B (2x)	AUDIO-OUT-L	B04C (1x)	CA-MDI6	B03B (1x)	CVBS1	B03E (1x)	DDR2-WE	B03F (3x)	FE-ERR	B03B (2x)
+12V	B02A (3x)	A(2)	B09B (2x)	AUDIO-OUT-R	B03C (1x)	CA-MDI6	B05C (1x)	CVBS1	B04A (1x)	DETECT1	B01A (1x)	FE-SOP	B02A (1x)
+12V	B04A (1x)	A(3)	B09B (2x)	AUDIO-OUT-R	B04C (1x)	CA-MDI7	B03B (1x)	CVBS1	B04B (2x)	DETECT1	B03H (3x)	FE-SOP	B03B (1x)
+12VD	B01B (1x)	A(4)	B09B (2x)	AUDIO-RESET	B03C (2x)	CA-MDI7	B05C (1x)	CVBS2	B03E (1x)	DETECT-12V	B01B (1x)	FE-VALID	B02A (1x)
+12VD	B07A (2x)	A(5)	B09B (2x)	AUDIO-RESET	B03H (2x)	CA-MDO(0)	B03B (1x)	CVBS2	B04B (2x)	DETECT-12V	B03H (1x)	FE-VALID	B03B (1x)
+12VF	B01A (2x)	A(6)	B09B (2x)	AUDIO-VDD	B03C (7x)	CA-MDO(0)	B05C (1x)	CVBS-OUT-SC1	B04B (3x)	DETECT2	B03H (3x)	FRONT-C	B03E (1x)
+1V2	B02A (2x)	A(7)	B09B (2x)	AV1-BLK	B03H (1x)	CA-MDO(1)	B03B (1x)	CVBS-OUT-SC1-PBS	B04A (1x)	DQ(0)	B09B (2x)	FRONT-C	B04C (2x)
+1V2A	B02A (2x)	A(8)	B09B (2x)	AV1-BLK	B04B (1x)	CA-MDO(1)	B05C (1x)	CVBS-OUT-SC1-PBS	B04B (1x)	DQ(1)	B09B (2x)	FRONT-Y_CVBS	B03E (1x)
+1V2-PNX5100	B01B (1x)	A(9)	B09B (2x)	AV1-BLK-BO	B04A (1x)	CA-MDO(2)	B03B (1x)	CVBS-OUT-SC2	B04B (2x)	DQ(10)	B09B (2x)	FRONT-Y_CVBS	B04C (2x)
+1V2-PNX5100	B03H (1x)	ADAC(1)	B03D (2x)	AV1-BLK-BO	B04B (2x)	CA-MDO(2)	B05C (1x)	CVBS-OUT-SC2	B04C (1x)	DQ(11)	B09B (2x)	GCK	B09B (1x)
+1V2-PNX85XX	B01A (2x)	ADAC(1)	B06A (1x)	AV1-STATUS	B03H (1x)	CA-MDO(3)	B03B (1x)	CVBS-OUT-SC1-PBS	B02A (1x)	DQ(12)	B09B (2x)	GCK	B09C (1x)
+1V2-PNX85XX	B02A (1x)	ADAC(2)	B03D (2x)	AV1-STATUS	B04A (1x)	CA-MDO(3)	B05C (1x)	CVBS-TER-OUT	B04B (1x)	DQ(13)	B09B (2x)	GCK	B09D (2x)
+1V2-PNX85XX	B03A (14x)	ADAC(2)	B06A (1x)	AV1-STATUS	B04B (2x)	CA-MDO(4)	B03B (1x)	DATA-SDA	B04C (1x)	DQ(14)	B09B (2x)	GCK_A	B09C (1x)
+1V2-PNX85XX	B03H (1x)	ADAC(3)	B03C (2x)	AV2-BLK_LCD-SDA	B03H (1x)	CA-MDO(4)	B05C (1x)	DATA-SDA	B09C (1x)	DQ(15)	B09B (2x)	GCK_A	B09D (2x)
+1V2-STANDBY	B01B (2x)	ADAC(3)	B03D (2x)	AV2-BLK_LCD-SDA	B04A (1x)	CA-MDO(5)	B03B (1x)	DDC-SCL	B05A (3x)	DQ(16)	B09B (2x)	GND-SIG	B01A (12x)
+1V2-STANDBY	B03A (1x)	ADAC(4)	B03C (2x)	AV2-BLK_LCD-SDA	B04B (2x)	CA-MDO(5)	B05C (1x)	DDC-SDA	B05A (3x)	DQ(17)	B09B (2x)	GNDSND	B01B (2x)
+1V8-PNX85XX	B03A (3x)	ADAC(4)	B03D (2x)	AV2-PB_SC2-B	B03E (1x)	CA-MDO(6)	B03B (1x)	DDR2-A0	B03F (3x)	DQ(18)	B09B (2x)	GNDSND	B06A (20x)
+1V8-PNX85XX	B03F (5x)	ADAC(5)	B03C (1x)	AV2-PB_SC2-B	B04B (2x)	CA-MDO(6)	B05C (1x)	DDR2-A1	B03F (3x)	DQ(19)	B09B (2x)	GOE	B09B (1x)
+1V8-PNX85XX	B05A (1x)	ADAC(6)	B03D (1x)	AV2-PR_SC2-R	B03E (1x)	CA-MDO(7)	B03B (1x)	DDR2-A10	B03F (3x)	DQ(2)	B09B (2x)	GOE	B09D (2x)
+3V3	B01A (1x)	ADAC(7)	B03C (1x)	AV2-PR_SC2-R	B04B (2x)	CA-MDO(7)	B05C (1x)	DDR2-A11	B03F (3x)	DQ(20)	B09B (2x)	GSLOP	B09A (1x)
+3V3	B01B (1x)	ADAC(8)	B03D (1x)	AV2-STATUS	B03H (1x)	CA-MICLK	B03B (1x)	DDR2-A12	B03F (3x)	DQ(21)	B09B (2x)	GSLOP	B09B (1x)
+3V3	B02A (2x)	ADAC(7)	B03C (1x)	AV2-STATUS	B04B (2x)	CA-MICLK	B05C (1x)	DDR2-A2	B03F (3x)	DQ(22)	B09B (2x)	GSP1	B09B (1x)
+3V3	B03A (14x)	ADAC(8)	B03D (3x)	AV2-Y_SC2-G	B03E (1x)	CA-MISTR	B03B (1x)	DDR2-A3	B03F (3x)	DQ(23)	B09B (2x)	GSP1	B09C (1x)
+3V3	B03C (1x)	ADAC(8)	B03C (1x)	AV2-Y_SC2-G	B04B (2x)	CA-MISTR	B05C (1x)	DDR2-A4	B03F (3x)	DQ(24)	B09B (2x)	GSP1	B09D (2x)
+3V3	B03D (1x)	ALE	B03D (3x)	AV3-PB	B03E (1x)	CA-MIVAL	B03B (1x)	DDR2-A5	B03F (3x)	DQ(25)	B09B (2x)	G-VGA	B03E (1x)
+3V3	B03G (11x)	ANTENNA-CTRL	B03H (1x)	AV3-PB	B04C (1x)	CA-MIVAL	B05C (1x)	DDR2-A6	B03F (3x)	DQ(26)	B09B (2x)	G-VGA	B04C (1x)
+3V3	B03H (1x)	ANTENNA-SUPPLY	B02A (2x)	AV3-PR	B03E (1x)	CA-MOCLK_VS2	B03B (2x)	DDR2-A7	B03F (3x)	DQ(27)	B09B (2x)	HP_LOUT	B03C (1x)
+3V3	B04A (1x)	A-PLOP	B02A (2x)	AV3-PR	B04C (1x)	CA-MOCLK_VS2	B05C (1x)	DDR2-A8	B03F (3x)	DQ(28)	B09B (2x)	HP_LOUT	B04C (1x)
+3V3	B04B (3x)	A-PLOP	B03C (1x)	AV3-Y	B03E (1x)	CA-MOSTRT	B03B (1x)	DDR2-A9	B03F (3x)	DQ(29)	B09B (2x)	HP_ROUT	B03C (1x)
+3V3	B04C (2x)	A-PLOP	B04B (1x)	AV3-Y	B04C (1x)	CA-MOSTRT	B05C (1x)	DDR2-BA0	B03F (3x)	DQ(3)	B09B (2x)	HP_ROUT	B04C (1x)
+3V3	B05A (3x)	AP-SCART-OUT-L	B04C (2x)	BA0	B09B (2x)	CA-MOVAL	B03B (1x)	DDR2-BA1	B03F (3x)	DQ(30)	B09B (2x)	H-SYNC-VGA	B03E (1x)
+3V3	B05B (2x)	AP-SCART-OUT-R	B04B (5x)	BACKLIGHT-BOOST	B01B (1x)	CA-MOVAL	B05C (1x)	DDR2-BA2	B03F (3x)	DQ(31)	B09B (2x)	H-SYNC-VGA	B04C (1x)
+3V3	B05C (3x)	ARX0-	B04B (5x)	BACKLIGHT-BOOST	B07A (1x)	CA-OE	B05C (2x)	DDR2-CAS	B03F (3x)	DQ(4)	B09B (2x)	IF-AGC	B02A (2x)
+3V3	B07A (2x)	ARX0+	B05A (2x)	BACKLIGHT-BOOST-IN	B07A (1x)	CA-REG	B05C (2x)	DDR2-CKE	B03F (3x)	DQ(5)	B09B (2x)	IF-N	B02A (2x)
+3V3	B07B (2x)	ARX1-	B05A (2x)	BACKLIGHT-BOOST-IN	B07B (1x)	CA-RST	B03B (1x)	DDR2-CLK_N	B03F (3x)	DQ(6)	B09B (2x)	IF-P	B02A (2x)
+3V3_BUF	B05C (5x)	ARX1+	B05A (2x)	BACKLIGHT-IN	B07A (1x)	CA-RST	B05C (1x)	DDR2-CLK_P	B03F (3x)	DQ(7)	B09B (2x)	IN-	B09A (2x)
+3V3_VCC	B09A (2x)	ARX2-	B05A (2x)	BACKLIGHT-IN	B07B (1x)	CAS	B09B (2x)	DDR2-CS	B03F (3x)	DQ(8)	B09B (2x)	IN+	B09A (2x)
+3V3_VCC	B09B (8x)	ARX2+	B05A (2x)	BACKLIGHT-OUT	B01B (1x)	CA-VS1	B03B (1x)	DDR2-D0	B03F (2x)	DQ(9)	B09B (2x)	IN1	B09A (1x)
+3V3_VCC	B09C (8x)	ARX-5V	B05A (2x)	BACKLIGHT-OUT	B07A (1x)	CA-VS1	B05C (2x)	DDR2-D1	B03F (2x)	DQM	B09B (2x)	IN1	B09C (1x)
+3V3_VCC	B09D (5x)	ARXC-	B05A (3x)	BOLT-ON-IO	B03H (2x)	CA-WAIT	B05C (3x)	DDR2-D10	B03F (2x)	DRX0-	B05A (2x)	IN2	B09A (1x)
+3V3A	B02A (3x)	ARXC+	B05A (2x)	BOLT-ON-IO	B04A (1x)	CA-WE	B05C (2x)	DDR2-D11	B03F (2x)	DRX0+	B05A (2x)	IN2	B09C (1x)
+3V3B	B02A (6x)	ARX-DDC-CLK	B05A (2x)	BOLT-ON-TS-ENn	B03H (2x)	CEC	B05A (6x)	DDR2-D12	B03F (2x)	DRX1-	B05A (2x)	IN3	B09A (1x)
+3V3D	B02A (2x)	ARX-DDC-DAT	B05A (2x)	BOOTMODE_PNX8543-BL-CTRL	B03G (1x)	CEC-HDMI	B03H (2x)	DDR2-D13	B03F (2x)	DRX1+	B05A (2x)	IN3	B09C (1x)
+3V3E	B02A (2x)	ARX-HPD	B05A (2x)	BOOTMODE_PNX8543-BL-CTRL	B07B (1x)	CEC-HDMI	B05A (1x)	DDR2-D14	B03F (2x)	DRX2-	B05A (2x)	IN4	B09A (1x)
+3V3-ET-ANA	B05B (4x)	ASIC_CS1	B05A (2x)	BRX0-	B05A (2x)	CLK-SCL	B04C (1x)	DDR2-D15	B03F (2x)	DRX2+	B05A (2x)	IN4	B09C (1x)
+3V3-ET-DIG	B05B (3x)	ASIC_CS2	B09C (2x)	BRX0+	B05A (2x)	CLK-SCL	B09C (1x)	DDR2-D16	B03F (2x)	DRX-5V	B05A (3x)	IRQ-CA	B03B (1x)
+3V3F	B01A (2x)	ASIC_CS3	B09C (2x)	BRX1-	B05A (2x)	CPFB1	B09A (3x)	DDR2-D17	B03F (2x)	DRXC-	B05A (2x)	IRQ-CA	B03G (2x)
+3V3F	B03A (1x)	ASIC_CS4	B09C (2x)	BRX1+	B05A (2x)	CRX0-	B05A (2x)	DDR2-D18	B03F (2x)	DRXC+	B05A (2x)	IRQ-CA	B05C (2x)
+3V3-NAND	B03G (5x)	ASIC_CS5	B09C (2x)	BRX2-	B05A (2x)	CRX0+	B05A (2x)	DDR2-D19	B03F (2x)	DRX-DDC-CLK	B05A (2x)	IRQ-PCI	B03G (1x)
+3V3-PER	B03A (2x)	ASIC_CS6	B09C (2x)	BRX2+	B05A (2x)	CRX1-	B05A (2x)	DDR2-D2	B03F (2x)	DRX-DDC-DAT	B05A (2x)	IRQ-PCI	B05B (1x)
+3V3-PER	B03G (12x)	A-STBY	B09C (2x)	BRX-5V	B05A (3x)	CRX1+	B05A (2x)	DDR2-D20	B03F (2x)	DRX-HPD	B05A (2x)	KEYBOARD	B03G (1x)
+3V3-PER	B03H (3x)	A-STBY	B03C (1x)	BRXC+	B05A (2x)	CRX2-	B05A (2x)	DDR2-D21	B03F (2x)	DTC1	B09A (2x)	KEYBOARD	B03H (2x)
+3V3-STANDBY	B01B (2x)	AUD_GND	B06A (2x)	BRXC+	B05A (2x)	CRX2+	B05A (2x)	DDR2-D22	B03F (2x)	DTC2	B09A (2x)	LAMP-ON-OUT	B01B (1x)
+3V3-STANDBY	B03A (1x)	AUD_GND	B03D (4x)	BRX-DDC-CLK	B05A (2x)	CRX-5V	B05A (3x)	DDR2-D23	B03F (2x)	DTC3	B09A (3x)	LAMP-ON-OUT	B03H (2x)
+3V3-STANDBY	B03G (3x)	AUDIO-CL-L	B06A (2x)	BRX-DDC-DAT	B05A (2x)	CRXC-	B05A (2x)	DDR2-D24	B03F (2x)	EA	B03H (1x)	LB0-	B09B (1x)
+3V3-STANDBY	B03H (12x)	AUDIO-CL-L	B03C (1x)	BRX-HPD	B05A (2x)	CRXC+	B05A (2x)	DDR2-D25	B03F (2x)	EJTAG-DETECT	B03G (1x)	LB0-	B09D (1x)
+3V3-STANDBY	B04A (3x)	AUDIO-CL-R	B04B (1x)	B-VGA	B03E (1x)	CRX-DDC-CLK	B05A (2x)	DDR2-D26	B03F (2x)	EJTAG-DETECT	B03H (2x)	LB0+	B09B (1x)
+3V3-STANDBY	B05A (1x)	AUDIO-CL-R	B03C (1x)	B-VGA	B04C (1x)	CRX-DDC-DAT	B05A (2x)	DDR2-D27	B03F (2x)	EJTAG-TCK	B03G (3x)	LB0+	B09D (1x)
+5V	B01B (1x)	AUDIO-IN1-L	B04B (1x)	CA-ADDEN	B03B (1x)	CRX-HPD	B05A (2x)	DDR2-D28	B03F (2x)	EJTAG-TDI	B03G (3x)	LB1-	B09B (1x)
+5V	B02A (2x)	AUDIO-IN1-L	B03D (1x)	CA-ADDEN	B05C (3x)	CS1	B09C (2x)	DDR2-D29	B03F (2x)	EJTAG-TDO	B03G (3x)	LB1-	B09D (1x)
+5V	B03D (1x)	AUDIO-IN1-L	B04A (1x)	CA-CD1	B03B (1x)	CS1	B09D (2x)	DDR2-D3	B03F (2x)	EJTAG-TMS	B03G (3x)	LB1+	B09B (1x)
+5V	B03G (4x)	AUDIO-IN1-R	B04B (2x)	CA-CD1	B05C (2x)	CS10	B09C (2x)	DDR2-D30	B03F (2x)	EJTAG-TRSTN	B03G (3x)	LB1+	B09D (1x)
+5V	B03H (1x)	AUDIO-IN1-R	B03D (1x)	CA-CD2	B03B (1x)	CS10	B09D (2x)	DDR2-D31	B03F (2x)	ENABLE-3V3	B01A (1x)	LB2-	B09B (1x)
+5V	B04A (1x)	AUDIO-IN1-R	B04A (1x)	CA-CD2	B05C (2x)	CS11	B09C (2x)	DDR2-D4	B03F (2x)	ENABLE-3V3	B01B (1x)	LB2-	B09D (1x)
+5V	B04B (6x)	AUDIO-IN2-L	B04B (2x)	CA-CE1	B05C (2x)	CS11	B09D (2x)	DDR2-D5	B03F (2x)	ENABLE-3V3	B03H (2x)	LB2+	B09B (1x)
+5V	B04C (1x)	AUDIO-IN2-L	B03D (1x)	CA-CE2	B05C (2x)	CS12	B09C (2x)	DDR2-D6	B03F (2x)	EXCLK	B09B (2x)	LB2+	B09D (1x)
+5V	B05A (2x)	AUDIO-IN2-R	B04B (2x)	CA-DATADIR	B03B (1x)	CS12	B09D (2x)	DDR2-D7	B03F (2x)	FB3	B09A (2x)	LB3-	B09B (1x)
+5V	B05C (1x)	AUDIO-IN2-R	B03D (1x)	CA-DATADIR	B05C (1x)	CS2	B09C (2x)	DDR2-D8	B03F (2x)	FE-CLK	B02A (1x)	LB3-	B09D (1x)
+5V	B07A (1x)	AUDIO-IN3-L	B04B (2x)	CA-DATAEN	B03B (1x)	CS2	B09D (2x)	DDR2-D9	B03F (2x)	FE-CLK	B03B (1x)	LB3+	B09B (1x)
+5V5-TUN	B01B (1x)	AUDIO-IN3-L	B03D (1x)	CA-DATAEN	B05C (1x)	CS3	B09C (2x)	DDR2-DQM0	B03F (2x)	FE-DATA(0)	B02A (1x)		
+5V5-TUN	B02A (1x)	AUDIO-IN3-R	B04C (1x)	CA-INPACK	B05C (2x)	CS3	B09D (2x)	DDR2-DQM1	B03F (2x)	FE-DATA(0)	B03B (1x)		
+5V-TUNER	B02A (10x)	AUDIO-IN3-R	B03D (1x)	CA-IORD	B05C (2x)	CS4	B09C (2x)	DDR2-DQM2	B03F (2x)	FE-DATA(1)	B02A (1x)		
+AUDIO-POWER	B01B (1x)	AUDIO-IN4-L	B04C (1x)	CA-IOWR	B05C (2x)	CS4	B09D (2x)	DDR2-DQM3	B03F (2x)	FE-DATA(1)	B03B (1x)		
+AUDIO-POWER	B03C (2x)	AUDIO-IN4-L	B04C (1x)	CA-MDI0	B03B (1x)	CS5	B09C (2x)	DDR2-DQS0_N	B03F (2x)	FE-DATA(2)	B02A (1x)		
+AUDIO-POWER	B06A (2x)	AUDIO-IN4-R	B04C (1x)	CA-MDI1	B05C (1x)	CS5	B09D (2x)	DDR2-DQS0_P	B03F (2x)	FE-DATA(2)	B03B (1x)		
+VDISP-IN	B07A (1x)	AUDIO-IN4-R	B03D (1x)	CA-MDI1	B03B (1x)	CS6	B09C (2x)	DDR2-DQS1_N	B03F (2x)	FE-DATA(3)	B02A (1x)		
+VDISP-IN	B07B (1x)	AUDIO-IN5-L	B04C (1x)	CA-MDI2	B05C (1x)	CS6	B09D (2x)	DDR2-DQS1_P	B03F (2x)	FE-DATA(3)	B03B (1x)		
+VDISP-OUT	B07B (1x)	AUDIO-IN5-L	B03D (1x)	CA-MDI2	B03B (1x)	CS7	B09C (2x)	DDR2-DQS2_N	B03F (2x)	FE-DATA(4)	B02A (1x)		
+VDISP-OUT	B09A (6x)	AUDIO-IN5-R	B04C (2x)	CA-MDI2	B05C (1x)	CS7	B09D (2x)	DDR2-DQS2_P	B03F (2x)	FE-DATA(4)	B03B (1x)		
+VDISP-OUT	B09C (1x)	AUDIO-IN5-R	B03D (1x)	CA-MDI3	B03B (1x)	CS8	B09C (2x)	DDR2-DQS3_N	B03F (2x)	FE-DATA(5)	B02A (1x)		
3V3-ST	B01A (1x)	AUDIO-MUTE	B04C (2x)	CA-MDI3	B05C (1x)	CS8	B09D (2x)	DDR2-DQS3_P	B03F (2x)	FE-DATA(5)	B03B (1x)		
3V3-ST	B01B (1x)	AUDIO-MUTE	B03H (2x)	CA-MDI4	B03B (1x)	CS9	B09C (2x)	DDR2-ODT	B03F (3x)	FE-DATA(6)	B02A (1x)		
			B04C (1x)	CA-MDI4	B05C (1x)	CS9	B09D (2x)	DDR2-RAS	B03F (3x)	FE-DATA(6)	B03B (1x)		

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Netname	Diagram	PCI-AD0	B03G (2x)	PCI-AD7	B05B (1x)	RAS	B09B (2x)	RREF-PNX85XX	B05A (1x)	SCL-SET	B01B (1x)	VDDA-ADC	B03A (1x)
		PCI-AD0	B05B (1x)	PCI-AD7	B05C (1x)	RB0-	B09B (1x)	RSDSVDD3V3	B09B (1x)	SCL-SET	B03G (3x)	VDDA-AUDIO	B03A (2x)
LB3+	B09D (1x)	PCI-AD0	B03G (2x)	PCI-AD8	B05B (1x)	RB0-	B09D (1x)	R-VGA	B03E (1x)	SCL-SSB	B02A (1x)	VDDA-AUDIO	B03D (4x)
LCD-SCL	B03H (2x)	PCI-AD1	B05B (1x)	PCI-AD8	B05C (1x)	RB0+	B09B (1x)	R-VGA	B03G (2x)	SCL-SSB	B03G (2x)	VDDA-DAC	B03A (1x)
LCD-SCL	B04A (1x)	PCI-AD1	B05C (1x)	PCI-AD8	B03G (1x)	RB0+	B09D (1x)	RX0-	B05A (2x)	SCL-SSB	B04A (1x)	VDDA-DAC	B03D (1x)
LCD-SCL	B04C (1x)	PCI-AD1	B03G (1x)	PCI-AD9	B05B (1x)	RB1-	B09B (1x)	RX0+	B05A (2x)	SCL-SSB	B05A (1x)	VDDA-LVDS	B03A (1x)
LCDTL3	B09A (3x)	PCI-AD10	B05C (1x)	PCI-AD9	B05B (1x)	RB1-	B09D (1x)	RX1-	B05A (2x)	SCL-TUNER	B02A (2x)	VDDA-LVDS	B03B (1x)
LCK-	B09B (1x)	PCI-AD10	B05C (1x)	PCI-AD9	B05C (1x)	RB1+	B09B (1x)	RX1+	B05A (2x)	SCL-UP-MIPS	B03G (3x)	VDDH_3V3	B05A (3x)
LCK-	B09D (1x)	PCI-AD10	B03G (1x)	PCI-CBE0	B05C (1x)	RB1+	B09D (1x)	RX2-	B05A (2x)	SCL-UP-MIPS	B03H (2x)	VDDIO3V3	B09B (3x)
LCK+	B09B (1x)	PCI-AD11	B03G (1x)	PCI-CBE0	B05B (1x)	RB2-	B09B (1x)	RX2+	B05A (2x)	SDA	B09B (1x)	VDDO_3V3	B05A (2x)
LCK+	B09D (1x)	PCI-AD11	B05B (1x)	PCI-CBE1	B03G (2x)	RB2-	B09D (1x)	RX51001A-	B03B (1x)	SDA	B09D (1x)	VDDS_3V3	B05A (2x)
LED1	B03G (2x)	PCI-AD11	B05C (1x)	PCI-CBE1	B05B (1x)	RB2+	B09B (1x)	RX51001A-	B09B (2x)	SDA1	B03G (2x)	VGH_35V	B09A (1x)
LED1	B03H (1x)	PCI-AD12	B03G (1x)	PCI-CBE1	B05C (1x)	RB2+	B09D (1x)	RX51001A+	B03B (1x)	SDA2	B03G (3x)	VGH_35V	B09D (2x)
LED2	B03G (2x)	PCI-AD12	B05B (1x)	PCI-CBE2	B05B (1x)	RB3-	B09B (1x)	RX51001A+	B09B (2x)	SDA3	B03G (2x)	VGL_-6V	B09A (1x)
LED2	B03H (1x)	PCI-AD12	B05C (1x)	PCI-CBE2	B03G (1x)	RB3-	B09D (1x)	RX51001B-	B03B (1x)	SDA-DISP	B03G (1x)	VGL_-6V	B09D (2x)
LEFT-SPEAKER	B06A (4x)	PCI-AD13	B03G (1x)	PCI-CBE2	B05C (1x)	RB3+	B09B (1x)	RX51001B-	B09B (2x)	SDA-DISP	B09D (1x)	VH0	B09C (1x)
LG0-	B09B (1x)	PCI-AD13	B05B (1x)	PCI-CBE3	B03G (1x)	RB3+	B09D (1x)	RX51001B+	B03B (1x)	SDA-SET	B01B (1x)	VH0	B09D (2x)
LG0-	B09D (1x)	PCI-AD13	B05C (1x)	PCI-CBE3	B05B (1x)	RC	B03G (1x)	RX51001B+	B09B (2x)	SDA-SET	B03G (3x)	VH127	B09C (1x)
LG0+	B09B (1x)	PCI-AD14	B03G (1x)	PCI-CLK-ETHERNET	B03G (1x)	RC	B03H (1x)	RX51001C-	B03B (1x)	SDA-SSB	B02A (1x)	VH127	B09D (2x)
LG0+	B09D (1x)	PCI-AD14	B05B (1x)	PCI-CLK-ETHERNET	B05B (1x)	RC	B04A (1x)	RX51001C-	B09B (2x)	SDA-SSB	B03G (2x)	VH159	B09D (2x)
LG1-	B09B (1x)	PCI-AD14	B05C (1x)	PCI-CLK-OUT	B03G (2x)	RC_uP	B03H (2x)	RX51001C+	B03B (1x)	SDA-SSB	B04A (1x)	VH191	B09C (1x)
LG1+	B09D (1x)	PCI-AD15	B03G (1x)	PCI-CLK-PNX5100	B03G (1x)	RC1	B03H (1x)	RX51001C+	B09B (2x)	SDA-SSB	B05A (1x)	VH191	B09D (2x)
LG1+	B09B (1x)	PCI-AD15	B05B (1x)	PCI-CLK-PNX8543	B03G (2x)	RC1	B04A (1x)	RX51001CLK-	B03B (1x)	SDA-TUNER	B02A (2x)	VH247	B09C (1x)
LG1+	B09D (1x)	PCI-AD16	B03G (2x)	PCI-DEVSEL	B03G (2x)	RC1	B04C (1x)	RX51001CLK-	B09B (2x)	SDA-UP-MIPS	B03G (3x)	VH247	B09D (2x)
LG2-	B09B (1x)	PCI-AD16	B05B (1x)	PCI-DEVSEL	B05B (1x)	RC2	B03H (1x)	RX51001CLK+	B03B (1x)	SDA-UP-MIPS	B03H (2x)	VH255	B09A (1x)
LG2-	B09D (1x)	PCI-AD16	B05C (1x)	PCI-FRAME	B03G (2x)	RC2	B04A (1x)	RX51001CLK+	B09B (2x)	SDM	B03H (3x)	VH255	B09C (7x)
LG2+	B09B (1x)	PCI-AD17	B03G (1x)	PCI-FRAME	B05B (1x)	RC2	B04C (1x)	RX51001D-	B03B (1x)	SDRAMVDD3V3	B09B (1x)	VH255	B09D (2x)
LG2+	B09D (1x)	PCI-AD17	B05B (1x)	PCI-GNT	B03G (2x)	RCK-	B09B (1x)	RX51001D-	B09B (2x)	SELLVDS	B09B (2x)	VH31	B09C (1x)
LG3-	B09B (1x)	PCI-AD17	B05C (1x)	PCI-GNT	B05B (1x)	RCK-	B09D (1x)	RX51001D+	B03B (1x)	SEN			

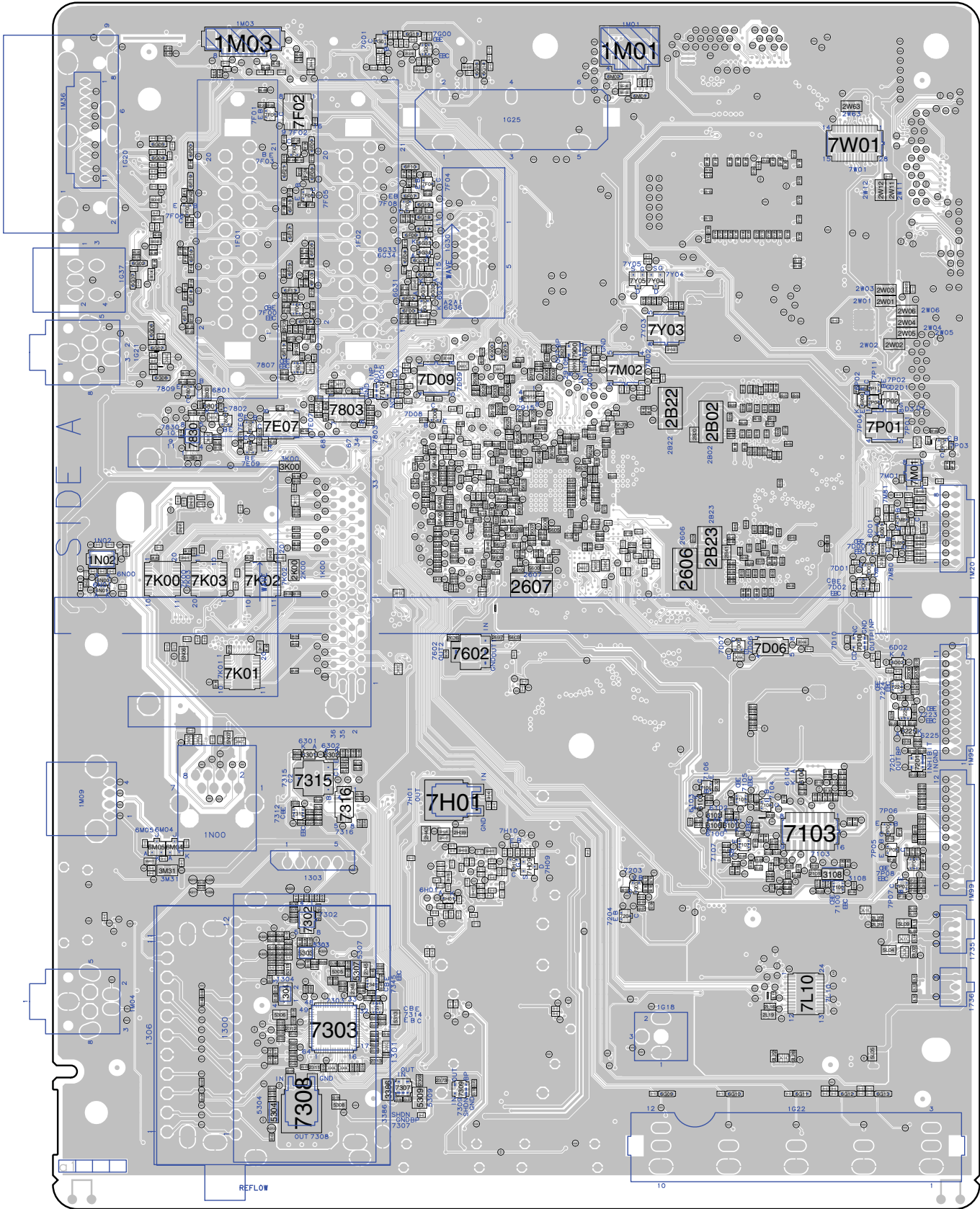
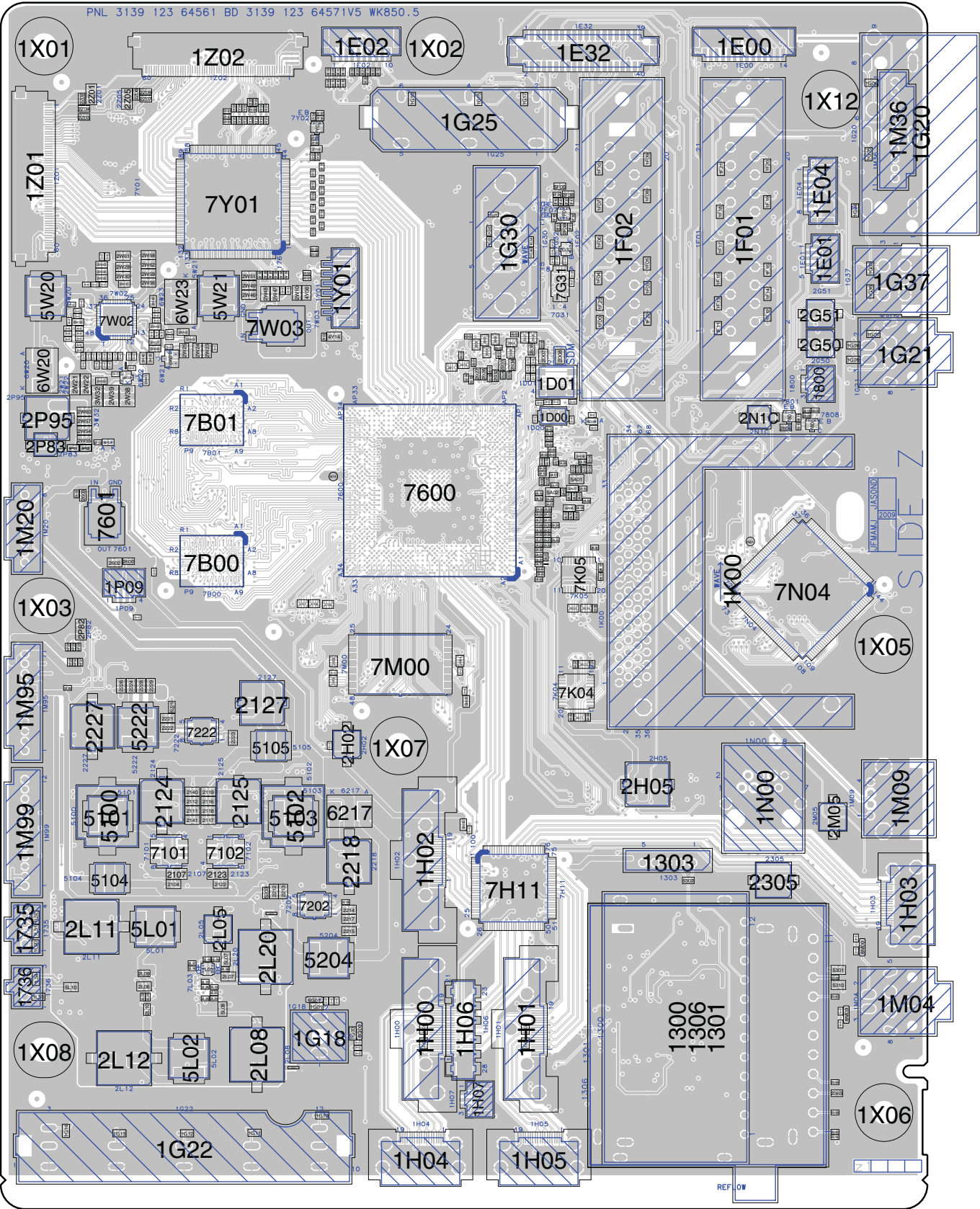
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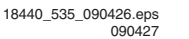


Layout Small Signal Board (LGD panel)



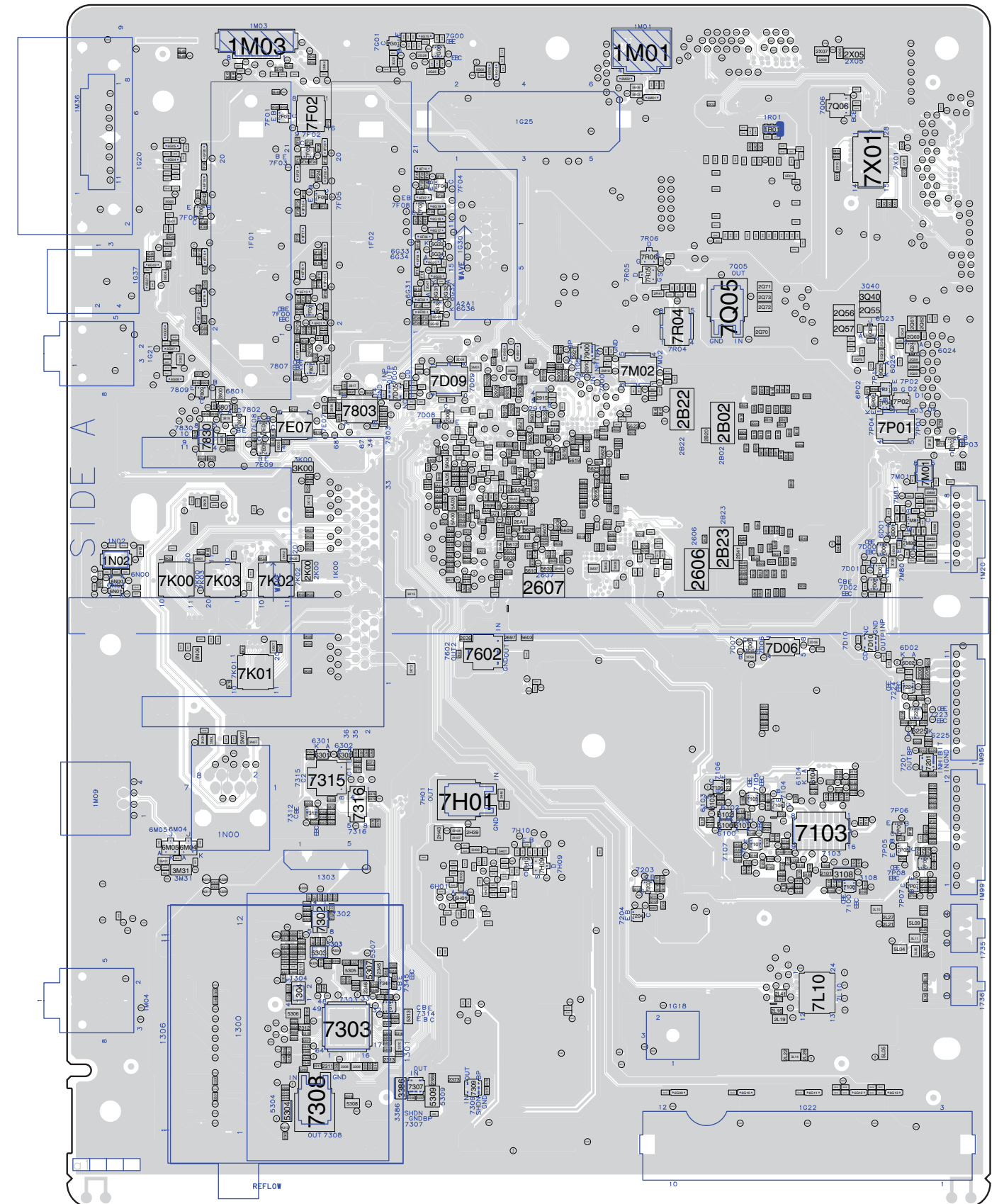


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## PNL 3139 123 64721 BD 3139 123 64731V2 WK911.3 LGD 37FHD



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