

Service
Service
Service

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Service Manual

Contents	Page
1. Revision List	2
2. Technical Specs. Diversity. and Connections	2
3. Precautions, Notes, and Abbreviation List	5
4. Mechanical Instructions	9
5. Service Modes and Fault Finding	14
6. Alignments	18
7. Circuit Descriptions	19
8. IC Data Sheets	25
9. Block Diagrams	
Wiring diagram 32" 3008 series	31
Wiring diagram 39" 3008 series	32
Wiring diagram 42" 3008 series	33
Block Diagram DVB T/C 3000 series	34
10. Circuit Diagrams and PWB Layouts	<i>Drawing PWB</i>
A01 715G5654 PSU for 32 " & 39 " 3008 series	35 37-38
A 715G5670 PSU series 42"	39 41-42
B 715G5740 DVB-T/C SSB (xxPFL3008)	43 52-53
J 715G5471 IR/LED 3008 series	54 55
E 715G5711 Keyboard control panel	56 57
O 715G5912 Option Board 32"	58 59
11. Styling Sheets	
3008 series 32"	60
3008 series 39"	61
3008 series 42"	62

Contents	Page
----------	------

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1. Revision List

Manual xxxx xxx xxxx.0

- First release.

Manual xxxx xxx xxxx.1

- Chapter 2: Updated table [2.1 Technical Specifications](#).

Manual xxxx xxx xxxx.2

- Chapter 5: Updated sections [5.1 Test Points](#), [5.2 Service Modes](#), [5.4 Software Upgrading](#) and [5.5 Fault Finding and Repair Tips](#).
- Chapter 6: Updated section [6.2 Reset of Repaired SSB](#).

2. Technical Specs, Diversity, 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 and Diversity

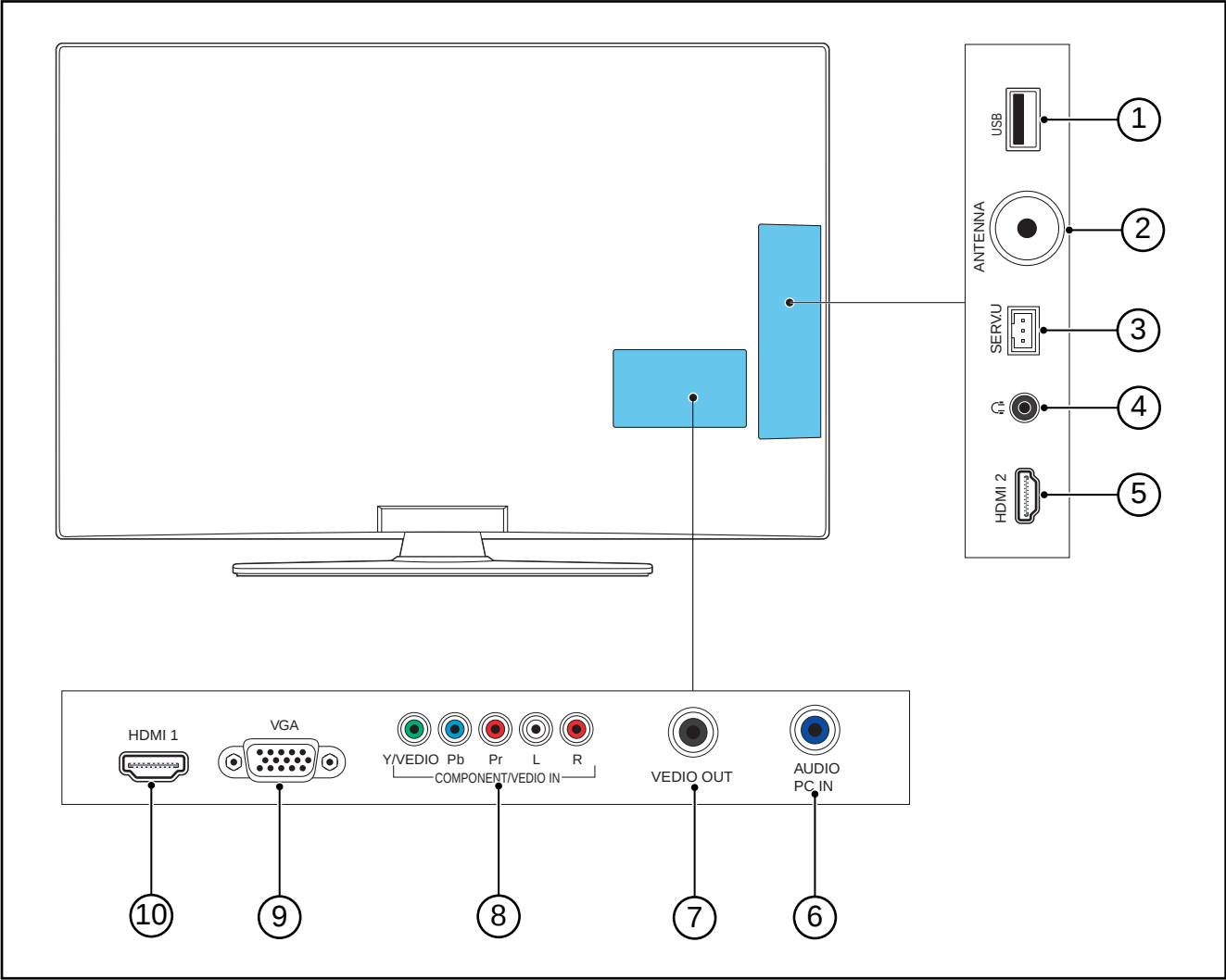
CTN	2	4			9		10						11
	Connection Overview	Mechanics			Block Diagrams		Schematics						Styling
		Wire Dressing	Rear Cover Removal	SSB Removal	Wiring Diagram	Block Diagram	Power Supply	SSB	J (I/P/LED)	E (Keyboard/Leading Edge)	ALC (AmbiLight control panel)		
32PFL3008/98	2-1	4-1	4-4	4-6	9.1	9.4	10.1	10.3	10.4	10.5	10.6	11.1	
32PFL3008/56	2-1	4-1	4-4	4-6	9.1	9.4	10.1	10.3	10.4	10.5	10.6	11.1	
39PFL3008/98	2-1	4-2	4-4	4-6	9.2	9.4	10.1	10.3	10.4	10.5	-	11.2	
39PFL3008/56	2-1	4-2	4-4	4-6	9.2	9.4	10.1	10.3	10.4	10.5	-	11.2	
42PFL3008/98	2-1	4-3	4-4	4-6	9.3	9.4	10.2	10.3	10.4	10.5	-	11.3	
42PFL3008/56	2-1	4-3	4-4	4-6	9.3	9.4	10.2	10.3	10.4	10.5	-	11.3	

2.2 Directions for Use

Directions for use can be downloaded from the following websites:

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

2.3 Connections



19450_001_130124.eps
130124

Figure 2-1 Connection overview

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

2.3.1 Side Connections

1 - USB2 2.0

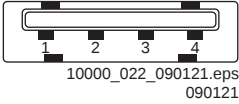
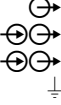


Figure 2-2 USB (type A)

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

2 - TV ANTENNA - In
Signal input from an antenna, cable or satellite.

- 3 - Service / UART**
- 1 - Ground
 - 2 - UART_TX Transmit
 - 3 - UART_RX Receive

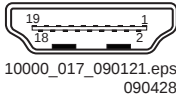


4 - Head phone (Output)

Bk - Head phone 80 - 600 W / 10 mW



5 - HDMI 2: Digital Video - In, Digital Audio with ARC - In/Out



10000_017_090121.eps
090428

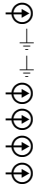
Figure 2-3 HDMI (type A) connector

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/CEC	Control channel	⊕
14	- ARC	Audio Return Channel	⊕
15	- DDC_SCL	DDC clock	⊕
16	- DDC_SDA	DDC data	⊕

17 - Ground	Gnd
18 - +5V	
19 - HPD	Hot Plug Detect
20 - Ground	Gnd



9 - +5V _{DC}	+5 V
10 - Ground Sync	Gnd
11 - Ground Red	Gnd
12 - DDC_SDA	DDC data
13 - H-sync	0 - 5 V
14 - V-sync	0 - 5 V
15 - DDC_SCL	DDC clock



2.3.2 Rear Connections

6 - Audio - In: Left / Right, VGA

Bu - Audio L/R in 0.5 V_{RMS} / 10 kW



7 - Cinch: Digital Audio - Out

BK - Coaxial 0.4 - 0.6V_{PP} / 75 W



8 - Cinch: Video YPbPr - In, Audio - In

Gn - Video - Y	1 V _{PP} / 75 W
Bu - Video - Pb	0.7 V _{PP} / 75 W
Rd - Video - Pr	0.7 V _{PP} / 75 W
Wh - Audio - L	0.5 V _{RMS} / 10 kW
Rd - Audio - R	0.5 V _{RMS} / 10 kW



9 - PC IN:VGA

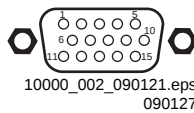


Figure 2-4 VGA connector

1 - Video Red	0.7 V _{PP} / 75 W
2 - Video Green	0.7 V _{PP} / 75 W
3 - Video Blue	0.7 V _{PP} / 75 W
4 - n.c.	
5 - Ground	Gnd
6 - Ground Red	Gnd
7 - Ground Green	Gnd
8 - Ground Blue	Gnd



10 - HDMI 1: Digital Video - In, Digital Audio with ARC - In/Out

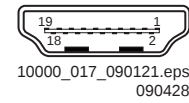


Figure 2-5 HDMI (type A) connector

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/CEC	Control channel
14 - ARC	Audio Return Channel
15 - DDC_SCL	DDC clock
16 - DDC_SDA	DDC data
17 - Ground	Gnd
18 - +5V	
19 - HPD	Hot Plug Detect
20 - Ground	Gnd



2.4 Chassis Overview

Refer to [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.

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: AG1B033500001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a "2" (example: AG2B033500001), 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. SN is Lysomice, RJ is Kobierzyce), 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 2010 week 10 / 2010 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
BDS	Business Display Solutions (iTV)
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
DCM	Data Communication Module. Also referred to as System Card or Smartcard (for iTV).
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
DSMD	Digital Multi Standard Decoding
DNM	Digital Natural Motion

DNR	Digital Noise Reduction: noise reduction feature of the set		The SDI signal is self-synchronizing, 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		
DST	Dealer Service Tool: special remote control designed for service technicians	iTV	Institutional TeleVision; TV sets for hotels, hospitals etc.
		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		
DVB-C	Digital Video Broadcast - Cable	LATAM	Latin America
DVB-T	Digital Video Broadcast - Terrestrial	LCD	Liquid Crystal Display
DVD	Digital Versatile Disc	LED	Light Emitting Diode
DVI(-d)	Digital Visual Interface (d= digital only)	L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
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	LG.Philips LCD (supplier)
		LS	Loudspeaker
		LVDS	Low Voltage Differential Signalling
EDID	Extended Display Identification Data (VESA standard)	Mbps	Mega bits per second
		M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
EEPROM	Electrically Erasable and Programmable Read Only Memory	MHEG	Part of a set of international standards related to the presentation of multimedia information, standardised by the Multimedia and Hypermedia Experts Group. It is commonly used as a language to describe interactive television services
EMI	Electro Magnetic Interference		
EPG	Electronic Program Guide		
EPLD	Erasable Programmable Logic Device		
EU	Europe		
EXT	EXternal (source), entering the set by SCART or by cinches (jacks)		
FDS	Full Dual Screen (same as FDW)	MIPS	Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor
FDW	Full Dual Window (same as FDS)		
FLASH	FLASH memory		
FM	Field Memory or Frequency Modulation	MOP	Matrix Output Processor
		MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device
FPGA	Field-Programmable Gate Array		
FTV	Flat TeleVision	MPEG	Motion Pictures Experts Group
Gb/s	Giga bits per second	MPIF	Multi Platform InterFace
G-TXT	Green TeleteXT	MUTE	MUTE Line
H	H_sync to the module	MTV	Mainstream TV: TV-mode with Consumer TV features enabled (iTV)
HD	High Definition		
HDD	Hard Disk Drive	NC	Not Connected
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.	NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
		NTC	Negative Temperature Coefficient, non-linear resistor
		NTSC	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)
		NVM	Non-Volatile Memory: IC containing TV related data such as alignments
HDMI	High Definition Multimedia Interface		
HP	HeadPhone	O/C	Open Circuit
I	Monochrome TV system. Sound carrier distance is 6.0 MHz	OSD	On Screen Display
		OAD	Over the Air Download. Method of software upgrade via RF transmission.
I ² C	Inter IC bus		
I ² D	Inter IC Data bus		
I ² S	Inter IC Sound bus		
IF	Intermediate Frequency	OTC	On screen display Teletext and Control; also called Artistic (SAA5800)
IR	Infra Red		
IRQ	Interrupt Request	P50	Project 50: communication protocol between TV and peripherals
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.	PAL	Phase Alternating Line. Color system mainly used in West Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
	Uncompressed digital component or digital composite signals can be used.	PCB	Printed Circuit Board (same as "PWB")
		PCM	Pulse Code Modulation

PDP	Plasma Display Panel	SWAN	Spatial temporal Weighted Averaging
PFC	Power Factor Corrector (or Pre-conditioner)	SXGA	Noise reduction 1280 × 1024
PIP	Picture In Picture	TFT	Thin Film Transistor
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency	THD	Total Harmonic Distortion
POD	Point Of Deployment: a removable CAM module, implementing the CA system for a host (e.g. a TV-set)	TMDs	Transmission Minimized Differential Signalling
POR	Power On Reset, signal to reset the uP	TS	Transport Stream
PSDL	Power Supply for Direct view LED backlight with 2D-dimming	TXT	TeleteXT
PSL	Power Supply with integrated LED drivers	TXT-DW	Dual Window with TeleteXT
PSLS	Power Supply with integrated LED drivers with added Scanning functionality	UI	User Interface
PTC	Positive Temperature Coefficient, non-linear resistor	uP	Microprocessor
PWB	Printed Wiring Board (same as "PCB")	UXGA	1600 × 1200 (4:3)
PWM	Pulse Width Modulation	V	V-sync to the module
QRC	Quasi Resonant Converter	VESA	Video Electronics Standards Association
QTNR	Quality Temporal Noise Reduction	VGA	640 × 480 (4:3)
QVCP	Quality Video Composition Processor	VL	Variable Level out: processed audio output toward external amplifier
RAM	Random Access Memory	VSB	Vestigial Side Band; modulation method
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.	WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
RC	Remote Control	WXGA	1280 × 768 (15:9)
RC5 / RC6	Signal protocol from the remote control receiver	XTAL	Quartz crystal
RESET	RESET signal	XGA	1024 × 768 (4:3)
ROM	Read Only Memory	Y	Luminance signal
RSDS	Reduced Swing Differential Signalling data interface	Y/C	Luminance (Y) and Chrominance (C) signal
R-TXT	Red TeleteXT	YPbPr	Component video. Luminance and scaled color difference signals (B-Y and R-Y)
SAM	Service Alignment Mode	YUV	Component video
S/C	Short Circuit		
SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs		
SCL	Serial Clock I ² C		
SCL-F	CLock Signal on Fast I ² C bus		
SD	Standard Definition		
SDA	Serial Data I ² C		
SDA-F	DAta Signal on Fast I ² C bus		
SDI	Serial Digital Interface, see "ITU-656"		
SDRAM	Synchronous DRAM		
SECAM	SEequence Couleur Avec Mémoire. Colour system mainly used in France and East Europe. Colour 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		
SSC	Spread Spectrum Clocking, used to reduce the effects of EMI		
STB	Set Top Box		
STBY	STand-BY		
SVGA	800 × 600 (4:3)		
SVHS	Super Video Home System		
SW	Software		

4. Mechanical Instructions

Index of this chapter:

[4.1 Cable Dressing](#)

[4.2 Service Positions](#)

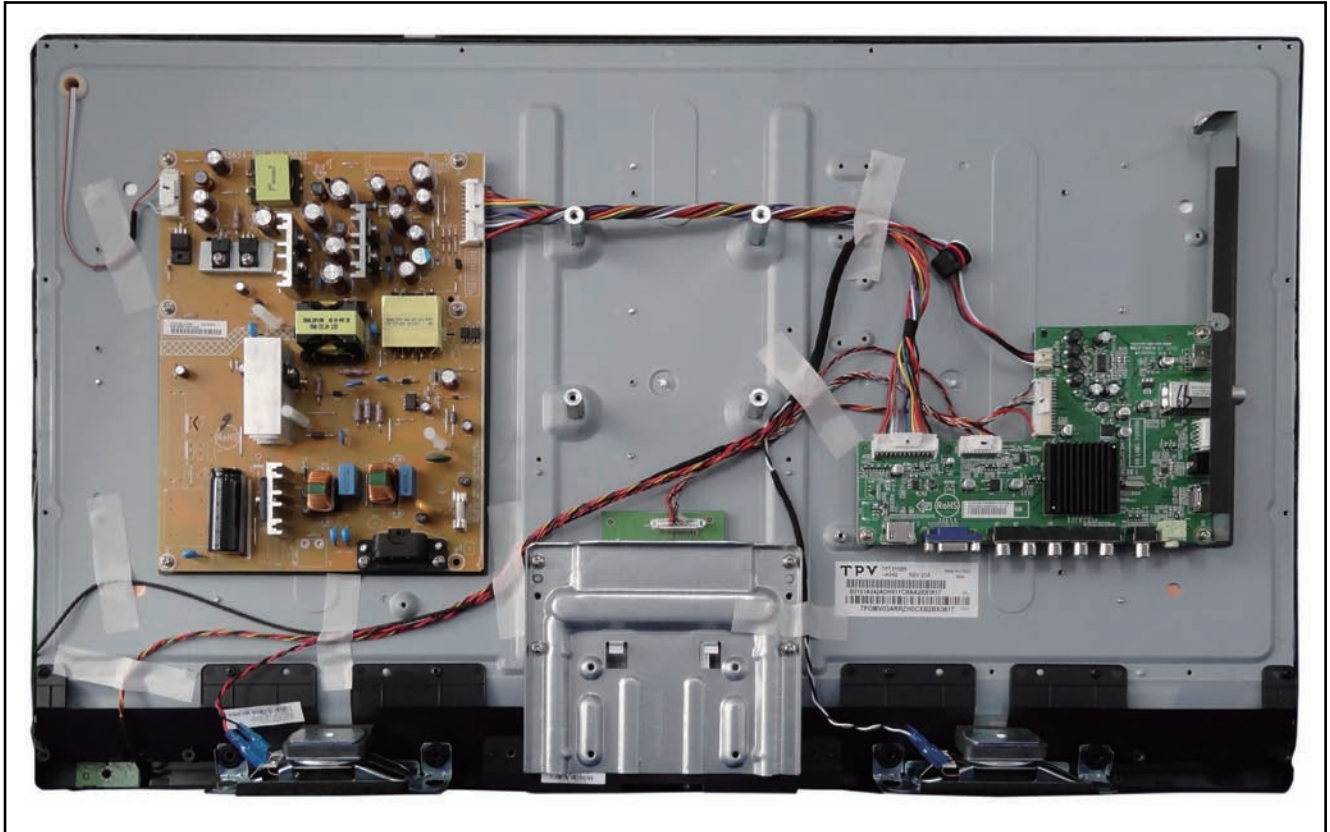
[4.3 Assembly/Panel Removal](#)

[4.4 Set Re-assembly](#)

Notes:

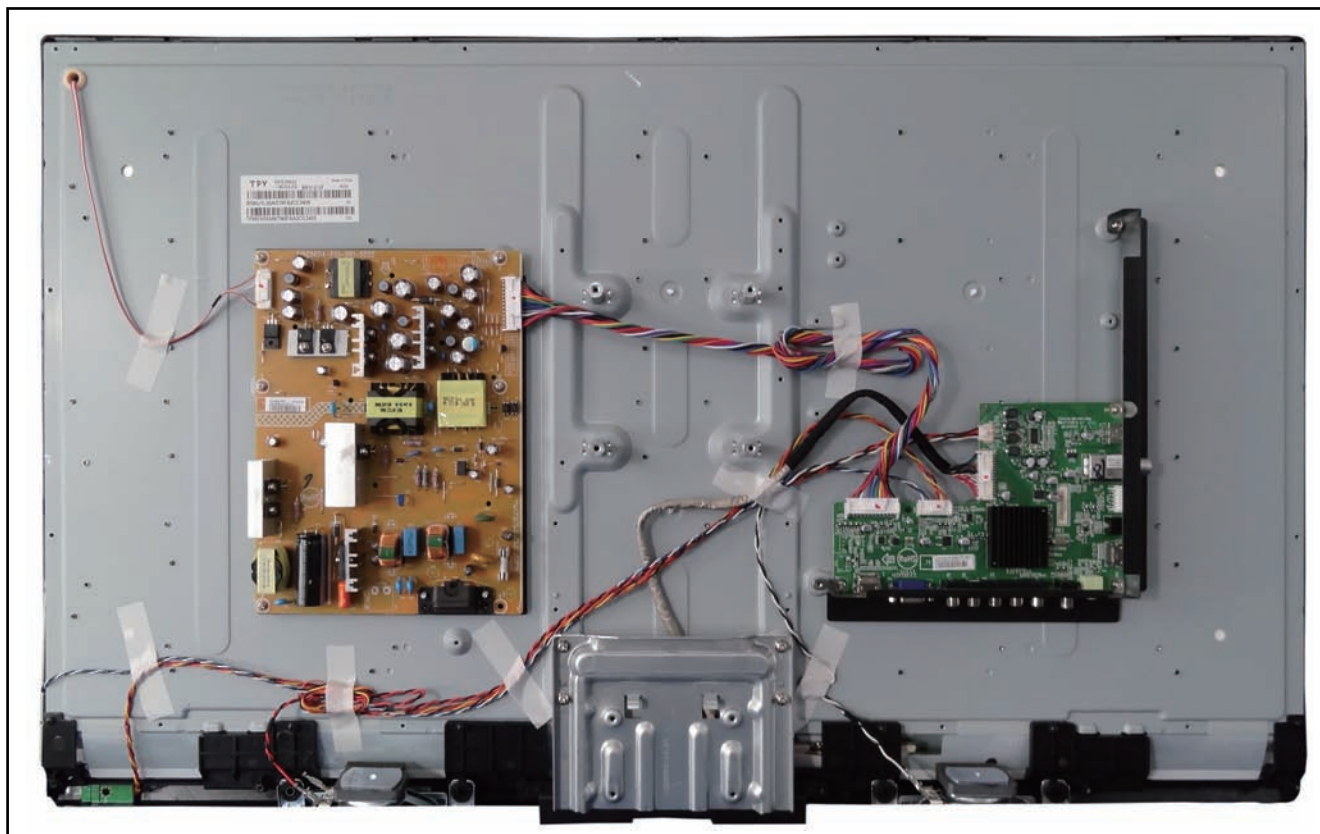
- Figures below can deviate slightly from the actual situation, due to the different set executions.

4.1 Cable Dressing



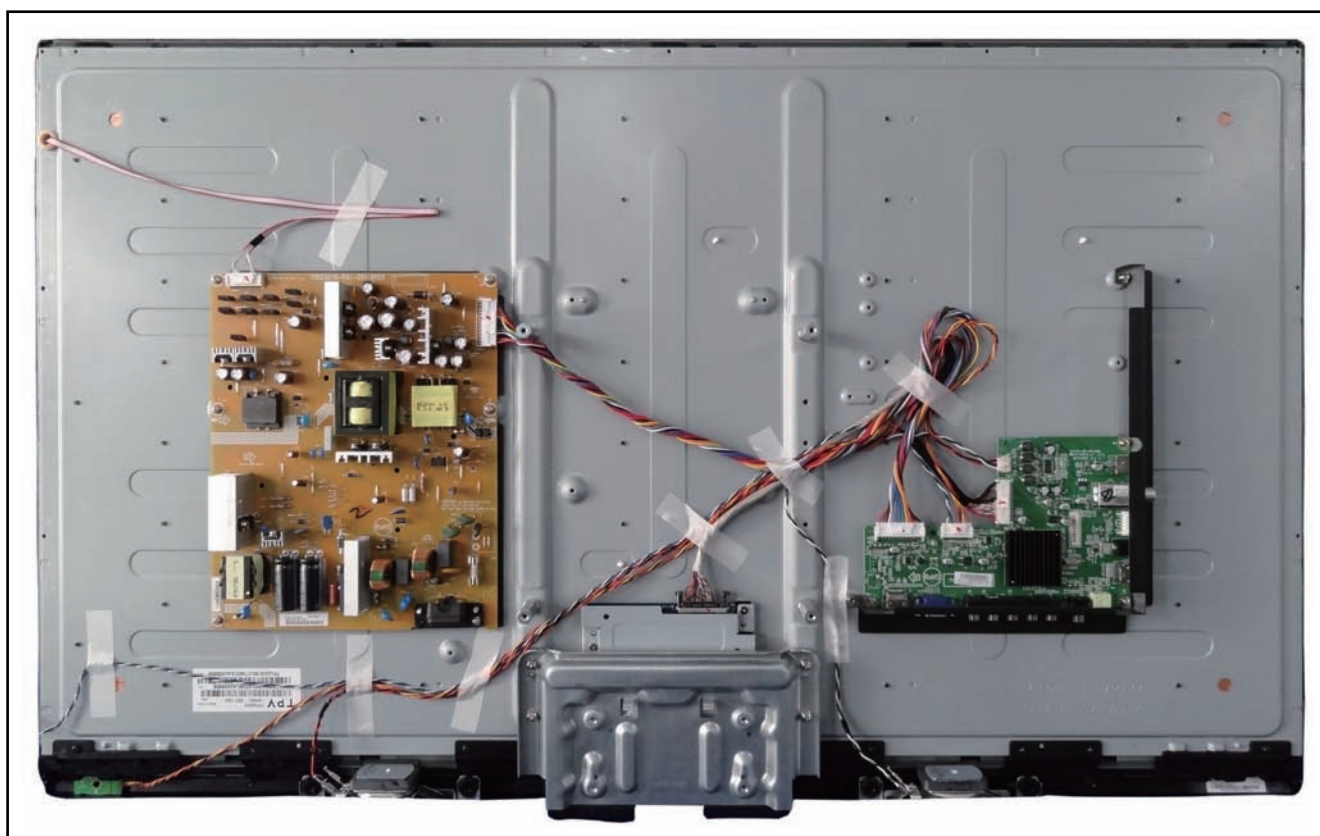
19450_100_130112.eps
130112

Figure 4-1 Cable dressing (3008 series 32'')



19450_101_130116.eps
130116

Figure 4-2 Cable dressing (3008 series 39")



19450_102_130116.eps
130116

Figure 4-3 Cable dressing (3008 series 42")

4.2 Service Positions

For easy servicing of a TV set, the set should be put face down on a soft flat surface, foam buffers or other specific workshop tools. Ensure that a stable situation is created to perform measurements and alignments. When using foam bars take care that these always support the cabinet and **never** only the display. **Caution:** Failure to follow these guidelines can seriously damage the display! Ensure that ESD safe measures are taken.

4.3 Assembly/Panel Removal

Instructions below apply to the 32PFL3008/98, but will be similar for other models.

4.3.1 Rear Cover

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

Warning: Disconnect the mains power cord before removing the rear cover.

1. Remove fixation screws [1] that secure the base assy, pull out the base assy from the set. Then remove the fixation screws [2], [3], [4] that secure the rear cover. Refer to [Figure 4-4](#) for details.
2. Lift the rear cover from the TV. Make sure that wires and cables are not damaged while lifting the rear cover from the set.



19450_103_130112.eps
130112

Figure 4-4 Rear cover removal

4.3.2 Keyboard control panel

Refer to [Figure 4-5](#) for details.

1. Gently release the tapes that secure the panel's cables.
2. Gently release the clips that hold the board and take it out from the bezel.
3. Unplug the connector[1] from the keyboard control panel.



19450_106_130112.eps
130112

Figure 4-5 Rear cover removal

4.3.3 Small Signal Board (SSB)

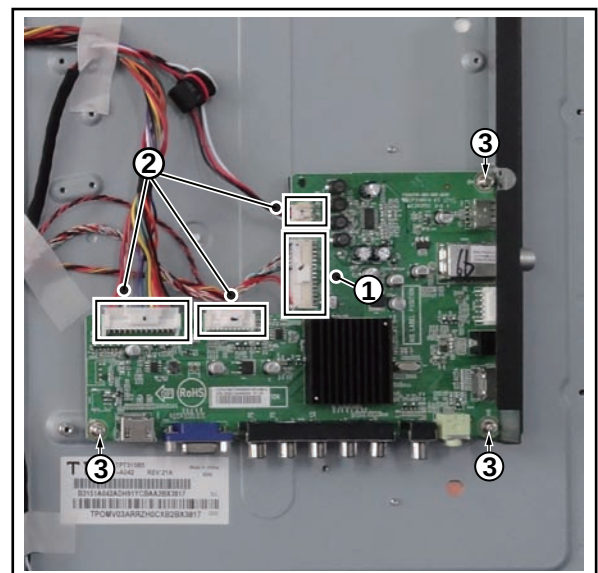
Refer to [Figure 4-6](#) for details.

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

1. Release the clips from the LVDS connector that connect with the SSB [1].

Caution: be careful, as these are very fragile connectors! Unplug the cable/flat foils connector.

2. Unplug all other connectors [2].
3. Remove all the fixation screws from the SSB [3].
4. Take out the SSB with I/O bracket.
5. The SSB can now be shifted away from side connector cover, then lifted and taken out of the I/O bracket. Refer to [Figure 4-6](#) for details.



19450_109_130116.eps
130130

Figure 4-6 SSB removal

4.3.4 Power Supply Unit (PSU)

Caution: it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the PSU.

1. Unplug all connectors from the PSU.
2. Remove all fixation screws from the PSU.
3. The PSU can be taken out of the set now.

4.3.5 Speakers

1. Gently release the tapes that secure the speaker cables.
 2. Unplug the speaker connector from the SSB.
 3. Take the speakers out.
- When defective, replace the both units.

4.3.6 Stand bracket removal

Caution: it is mandatory to remount all different screws at their original position during re-assembly. Be sure to put the set in the Service Position.

1. Remove the fixation screws.
2. Take the stand bracket out.

4.3.7 IR/LED Board

1. Remove the stand bracket as described earlier.
 2. Gently release the clips that hold the board and take it out from the bezel.
 3. Unplug both the connectors from the IR/LED board.
- When defective, replace the whole unit.

4.3.8 AmbiLight control panel

1. Unplug the connector from the AmbiLight control panel.
2. Gently release the clip that holds the panel and take it out from the set.

When defective, replace the whole unit.

4.3.9 LCD Panel

1. Remove the SSB as described earlier.
 2. Release the clips from the LVDS connector that connects with the LCD panel.
Caution: be careful, as these are very fragile connectors!
 3. Remove the PSU as described earlier.
 4. Remove the speakers as described earlier.
 5. Remove the keyboard control unit as described earlier.
 6. Remove the stand bracket as described earlier.
 7. Lift the LCD Panel from the bezel.
 8. Remove the fixation screws that secure the panel with the bezel.
 9. Lift the panel from the bezel.
- When defective, replace the whole unit.

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 [Figure 4-1](#) to [Figure 4-6](#).
- Pay special attention not to damage the EMC foams on the SSB shields. Ensure that EMC foams are mounted correctly.

5. Service Modes and Fault Finding

Index of this chapter:

- [5.1 Test Points](#)
- [5.2 Service Modes](#)
- [5.3 Stepwise Start-up](#)
- [5.4 Software Upgrading](#)
- [5.5 Fault Finding and Repair Tips](#)

5.1 Test Points

As most signals are digital, it will be difficult to measure waveforms with a standard oscilloscope.

Perform measurements under the following conditions:

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

5.2 Service Modes

The Service Mode feature is split into five parts:

- Factory Mode.
- Customer Service Mode (CSM).

The Factory mode offer features, which can be used by the Service engineer to repair/align a TV set. Some features are:

- Make alignments (e.g. White Tone), reset the error buffer (Factory Mode).

The CSM is a Service Mode that can be enabled by the consumer. The CSM displays diagnosis information, which the customer can forward to the dealer or call centre. In CSM mode, "CSM", is displayed in the top right corner of the screen. The information provided in CSM and the purpose of CSM is to:

- Increase the home repair hit rate.
- Decrease the number of nuisance calls.
- Solved customers' problem without home visit.

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 General

Next items are applicable to all Service Modes or are general.

Software Identification, Version, and Cluster

The software ID and version will be shown in the main menu display of CSM.

The screen will show: "AAAAB-X.YYY", where:

- AAAA is the chassis name: TPS1011A x.yyy.
- B is the region indication: E = Europe, A = AP/China, U = NAFTA, L = LATAM.
- X is the main version number: this is updated with a major change of specification (incompatible with the previous software version). Numbering will go from 1 - 99 and AA - ZZ.
 - If the main version number changes, the new version number is written in the NVM.
 - If the main version number changes, the default settings are loaded.
- YYY is the sub version number: this is updated with a minor change (backwards compatible with the previous versions). Numbering will go from 000 - 999.
 - If the sub version number changes, the new version number is written in the NVM.
 - If the NVM is refreshed, the software identification, version, and cluster will also be written to NVM.

5.2.2 Contents of the Factory mode:

Purpose

- To perform extended alignments.

Specifications

- Displaying and or changing Panel ID information.
- Various software alignment settings.
- Testpattern displaying.
- Public Broadcasting Service password Reset.
- etc.

How to Activate the Factory mode

To activate the Factory mode, use the following method:

- Press the following key sequence on the remote control transmitter: from the "Home screen" press "1999", directly followed by the "Back" button. Do not allow the display to time out between entries while keying the sequence.

After entering the Factory mode, the following items are displayed,

Table 5-1 Factory mode overview

Item	Item value	Default value			Description
		32"	39"	42"	
0	Main-MCU Ver	TPS1011A_2.01			Main-MCU Version
1	Bootloader Ver	V0.01			Bootloader Version
2	Sub-MCU Ver	V0.01			SUB-MCU Version
3	EEPROM Ver	V0.01			EEPROM Version
4	Date	Dec 20 2012			Software release date
5	ModelName	32PFL3008	39PFL3008	42PFL3008	Model name
6	Scaler	MST6931XP			Scaler model
7	Panel Type	TPT315B5-A042	TPT390J1_HJ1L02	TPT420H2_HVN01	Display model
8	Source	TV			Input source
9	Auto Color	GO			Only need to do automatic correction input source of effective,otherwise it is not action
10	W/B Pattern	OFF			W/B Pattern
11	SSC				SSC
12	Enable	OFF			Enable on/off
13	LVDS Span	35.0KHz			LVD Span
14	LVDS Step	2.00%			LVD Step
15	ADC	YPbPr(SD)			ADC
16	Gain	RGB	RGB	RGB	ADC Gain
17	Offset	RGB	RGB	RGB	Offset RGB
18	ColorTemp	Normal			The current set of color temperature
18	Scaler	MST6931XP			Scaler model

Item	Item value	Default value			Description
		32"	39"	42"	
20	Gain	RGB	RGB	RGB	ADC Gain
21	Offset	RGB	RGB	RGB	Offset RGB
22	Burn in	OFF			Turn on or turn off Burn in pattern
23	EEPROM Init				Initial all EEPROM except the HDCP key and product serial number
24	Bcak LIT Time	00003.4 Hrs Hrs	00000. 0Hrs Hrs	00000. 6Hrs Hrs	Bcaklight time
25	Total Time	00004.6 Hrs Hrs	00000. 0Hrs Hrs	00000. 6Hrs Hrs	Total time
26	BackLight	100			Set the brightness of the backlight
27	Language	English			Factory Lanuguage
28	System Reset				Reset the EEPROM data except the HDCP,product serial number,the factory menu ADC data,white balance set point,Black light,language and Energy Logo.
29	Exit				Exit

How to Exit the Factory mode

Use one of the following methods:

- Select EXIT_FACTORY from the menu and press the "OK" button.

Note: When the TV is switched "off" by a power interrupt, or normal switch to "stand-by" while in the factory mode, the TV will show up in "normal operation mode" as soon as the power is supplied again. The error buffer will not be cleared.

5.2.3 Customer Service Mode (CSM)

Purpose

The Customer Service Mode shows error codes and information on the TV's operation settings. The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service call.

The CSM is a read-only mode; therefore, modifications are not possible in this mode.

Specifications

- Ignore "Service unfriendly modes".
- Line number for every line (to make CSM language independent).
- Set the screen mode to full screen (all contents on screen is visible).
- After leaving the Customer Service Mode, the original settings are restored.
- Possibility to use "CH+" or "CH-" for channel surfing, or enter the specific channel number on the RC.

How to Activate CSM

To activate CSM, press the following key sequence on a standard remote control transmitter: "456987" (do not allow the display to time out between entries while keying the sequence). After entering the Customer Service Mode, the following items are displayed.

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

Contents of CSM

- **1.1 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.
- **1.2 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.
- **1.3 HDCP keys** Indicates the validity of the HDMI keys (or HDCP keys). In case these keys are not valid and the

customer wants to make use of the HDMI functionality, the SSB has to be replaced.

- **1.4 NVM name** Detects and displays NVM name.
- **1.5 Software Version** Displays the software version.
- **1.6 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. This identification number is the 12NC number of the SSB.
- **1.7 LCD display panel** 12NC NVM read/write.
- **1.8 PSU** 12NC NVM read/write.
- **1.9 RS232** Display RS232.
- **2.0 TV Region** Display TV region.

How to Exit CSM

To exit CSM, use one of the following methods.

- Press the MENU/HOME button on the remote control transmitter.
- Press the POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5.3 Stepwise Start-up

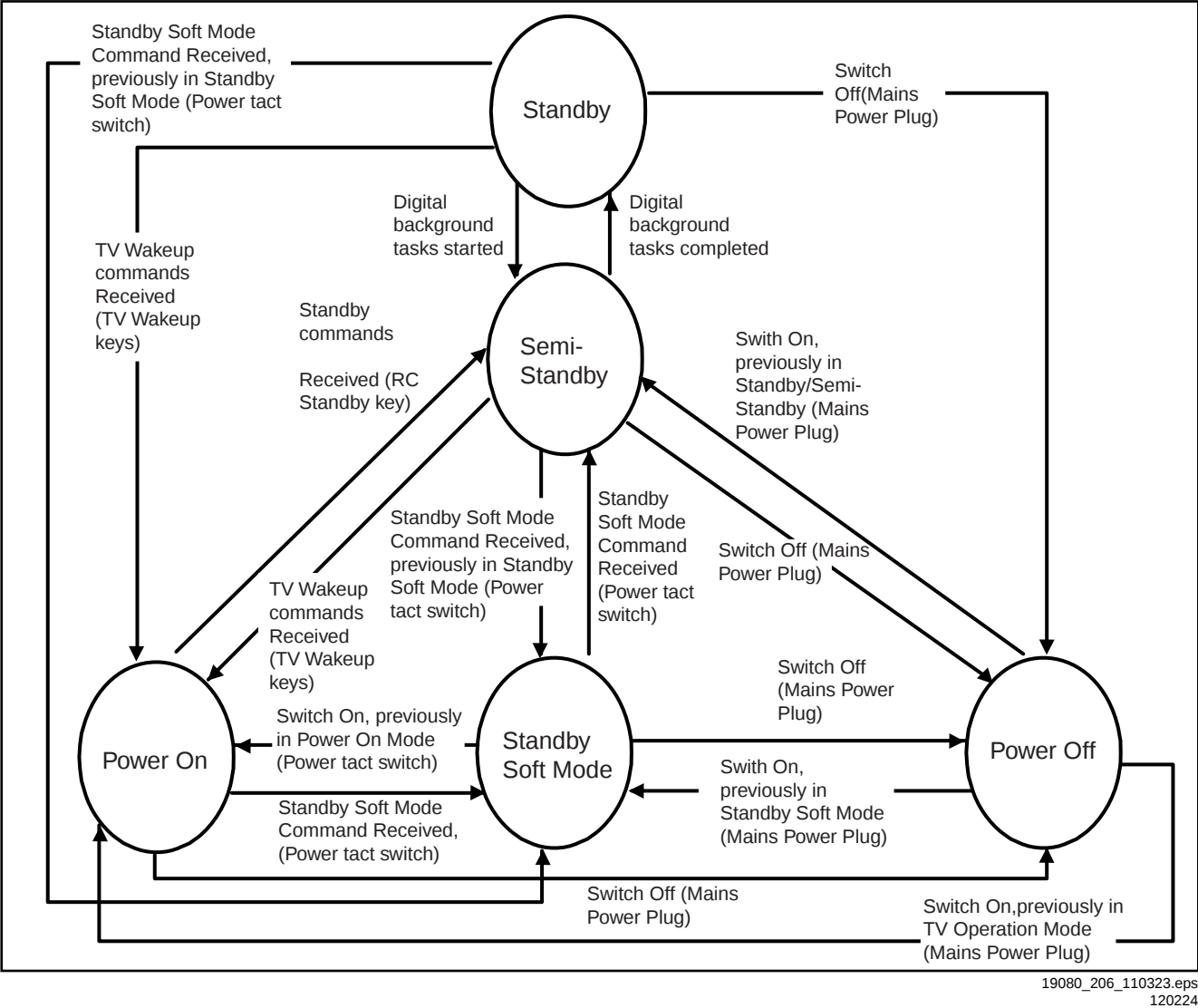


Figure 5-1 Stepwise Start-up

5.4 Software Upgrading

5.4.1 Description

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. A description on how to upgrade the main software can be found in the DFU or on the Philips website.

5.4.2 Introduction

Philips continuously tries to improve its products, and it's recommend that the TV software is updated when updates are available. Software update files can be obtained from the dealer or can be downloaded from the following websites:
<http://www.philips.com/support>

Preparing a portable memory for software upgrade

- The following requirements have to be met:
- 1. A personal computer connected to the internet.
 - 2. An archive utility that supports the ZIP-format (e.g. WinZip for Windows or Stuffit for Mac OS).
 - 3. A FAT formatted USB memory stick (preferably empty).

Note:

- 1. Only FAT/DOS-formatted memory sticks are supported.

- 2. Only use software update files that can be found on the <http://www.philips.com/support> web site.

5.4.3 Check the current TV software version

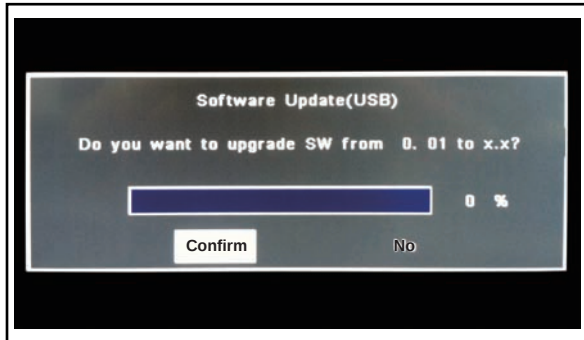
- Before starting the software upgrade procedure, it is advised to check that what the current TV software:
- 1. Press the "456987" button on the remote control to enter the CSM mode.
 - 2. Use the up/down cursor keys to select "Current Main Software".
- If the current software version of the TV is the same as the latest update file found on <http://www.philips.com/support>, it is not necessary to update the TV software.

5.4.4 Download the latest software

- 1. Open the internet page <http://www.philips.com/support>.
- 2. Find information and software related to the TV.
- 3. Select the latest software update file and download it to the PC.
- 4. Insert the USB memory stick into one of the USB ports of the PC.
- 5. Decompress the downloaded ZIP file and copy it to the root directory of the USB flash drive.

5.4.5 Update the TV software

1. Turn the TV on and wait for it to boot completely.
2. Insert the USB memory stick that contains the software update files in one of the TV's USB ports.
3. The TV will detect the USB memory stick automatically. Then a window jumps out as [Figure 5-2](#).
Note: If the USB flash drive is not detected after power up, disconnect it and re-insert it. And no change the software name.
4. Select [Confirm] and press OK to start software updates. See [Figure 5-2](#).
5. Upgrading will now begins and the status of the updating progress will be displayed. See [Figure 5-3](#).
6. When the TV software is updated. Remove your USB flash drive, and the TV will turn on automatically.



19452_200_130902.eps
130902

Figure 5-2 Update the TV software [1/2]



19452_201_130902.eps
130902

Figure 5-3 Update the TV software [2/2]

Note:

- Do not remove the USB flash drive during the software update.
- Do not turn off the power during the software update.
- If a power failure occurs during the update, do not remove the USB flash drive from the TV. The TV will continue the software update as soon as the power comes up again.
- If an error occurs during the update retry the procedure or contact the dealer.
- We do not recommend downgrading to an older version.
- Once the upgrade is finished, use the PC to remove the TV software from the USB portable memory.

5.4.6 Content and Usage of the One-Zip Software File

Below you find a content explanation of the One-Zip file, and instructions on how and when to use it. Only files that are relevant for Service are mentioned here.

- **EDID_clustername.zip:** Contains the EDID content of the different EDID NVMs. See ComPair for further instructions.

- **FUS_clustername_version.zip:** Contains the "autorun.bin" which is needed to upgrade the TV main software and the software download application.
- **NVM_clustername_version.zip:** Default NVM content. Must be programmed via ComPair.

5.4.7 How to Copy NVM Data to/from USB

When copying data to and from a USB memory stick, the folder "repair" is used. When inserting an empty USB memory stick, and downloading data to the stick, the TV will create this folder. When sending data from a USB memory stick to a TV, the intended data must be available in the "repair" folder. Note that when copying EDID data to the TV, all necessary EDID files must be in this folder. Service mode overview for your reference.

5.5 Fault Finding and Repair Tips

Note:

- It is assumed that the components are mounted correctly with correct values and no bad solder joints.
- Before any fault finding actions, check if the correct options are set.

5.5.1 No Picture via HDMI input

Check if HDCP key is valid. This can be done in CSM.

5.5.2 TV Will Not Start-up from Stand-by

Possible Stand-by Controller failure. Re-flash the software.

5.5.3 Audio Amplifier

The Class D-IC U602 has a powerpad for cooling. When the IC is replaced it must be ensured that the powerpad is very well pushed to the PWB while the solder is still liquid. This is needed to insure that the cooling is guaranteed, otherwise the Class D-IC could break down in short time.

5.5.4 CSM

When CSM is activated and there is a USB memory stick connected to the TV, the software will dump the complete CSM content to the USB memory stick. The file (Csm.txt) will be saved in the root of the USB memory stick.

5.5.5 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!

5.5.6 Display option code

Attention: In case the SSB is replaced, always check the Panel Code in CSM, even when picture is available. Performance with the incorrect display option code can lead to unwanted side-effects for certain conditions.

6. Alignments

Index of this chapter:

[6.1 General Alignment Conditions](#)

[6.2 Reset of Repaired SSB](#)

[6.3 Cable position numbers](#)

6.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 90 - 264 V_{AC}, 50/ 60 ± 3 Hz.
- 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_i > 10 MΩ, C_i < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

6.2 Reset of Repaired SSB

A very important issue towards a repaired SSB from a Service repair shop (SSB repair on component level) implies the reset of the NVM on the SSB.

After a repaired SSB has been mounted in the set (set repair on board level), the type number (CTN) and production code of the TV has to be set according to the type plate of the set.

6.2.1 SSB Identification

SSB's of this chassis are identified by a "715" code on the SSB.
715Axxxx-Nnn-MMM-OOOO

- **715** main category, Printed Wiring Board
- **Axxxx** sub category, sequential coding number
- **Nnn** Version code
 - **N** Development number
 - **nn** Production number
- **MMM** Mounting variation code
- **OOOO** Optional variation code

Make sure when replacing an SSB the SSB identification codes match the replacement board.

6.3 Cable position numbers

In this chassis, the cable position numbers can be defined via the rule that the number is always starting with an "E" followed by the connector number of the current sourcing board. The order is always seen from where the power initiates from. So from PSU to SSB, from SSB to IR/LED panel, from IR/LED panel to keyboard control panel. For example, a cable from the PSU connector CN902 to the SSB connector CN701, will have the position number ECN902.

7. Circuit Descriptions

Index of this chapter:

- [7.1 Introduction](#)
- [7.2 Power Supply](#)
- [7.3 DC/DC Converters](#)
- [7.4 Front-End Analogue ATV reception](#)
- [7.5 HDMI](#)
- [7.6 Video and Audio Processing - MST6931XP](#)

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.

7.1 Introduction

The TPS10.1A LA is a new chassis launched in Asia-Pacific in 2013. The whole range is covered by MST6931. The major deltas versus its predecessor support ATV, with also multi-media, Subtitle functionality.

The TPS10.1A LA chassis comes with the following stylings:

- series xxPFL3008

7.1.1 Implementation

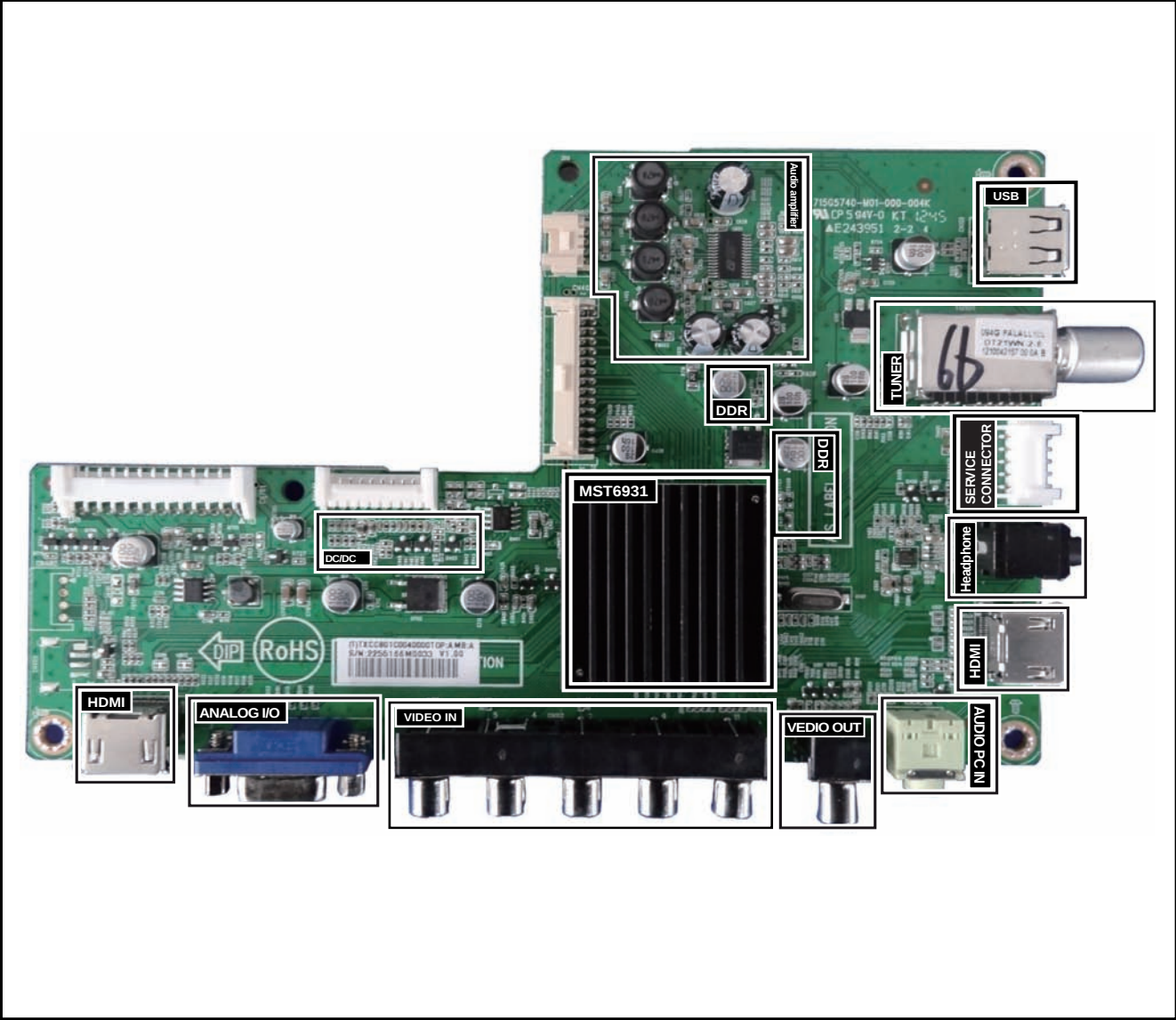
Key components of this chassis are:

- SCALER MST6931XP-Z1-VB EPLQFP-128
- TUNER China DT21WN-2-E
- AUDIO APA2176AQBTRG 0.27W TQFN3X3-16 AUDIO Amplifier

7.1.2 PHILIPS 3000 series Architecture Overview

For details about the chassis block diagrams refer to chapter [9. Block Diagrams](#). An overview of the PHILIPS AP 3000 architecture can be found in [Figure 9.4](#).

7.1.3 SSB Cell Layout xxPFL3008



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130112

Figure 7-1 xxPFL3008 SSB layout cells (top view)

7.1.4 SSB Cell Layout 42PFL3008

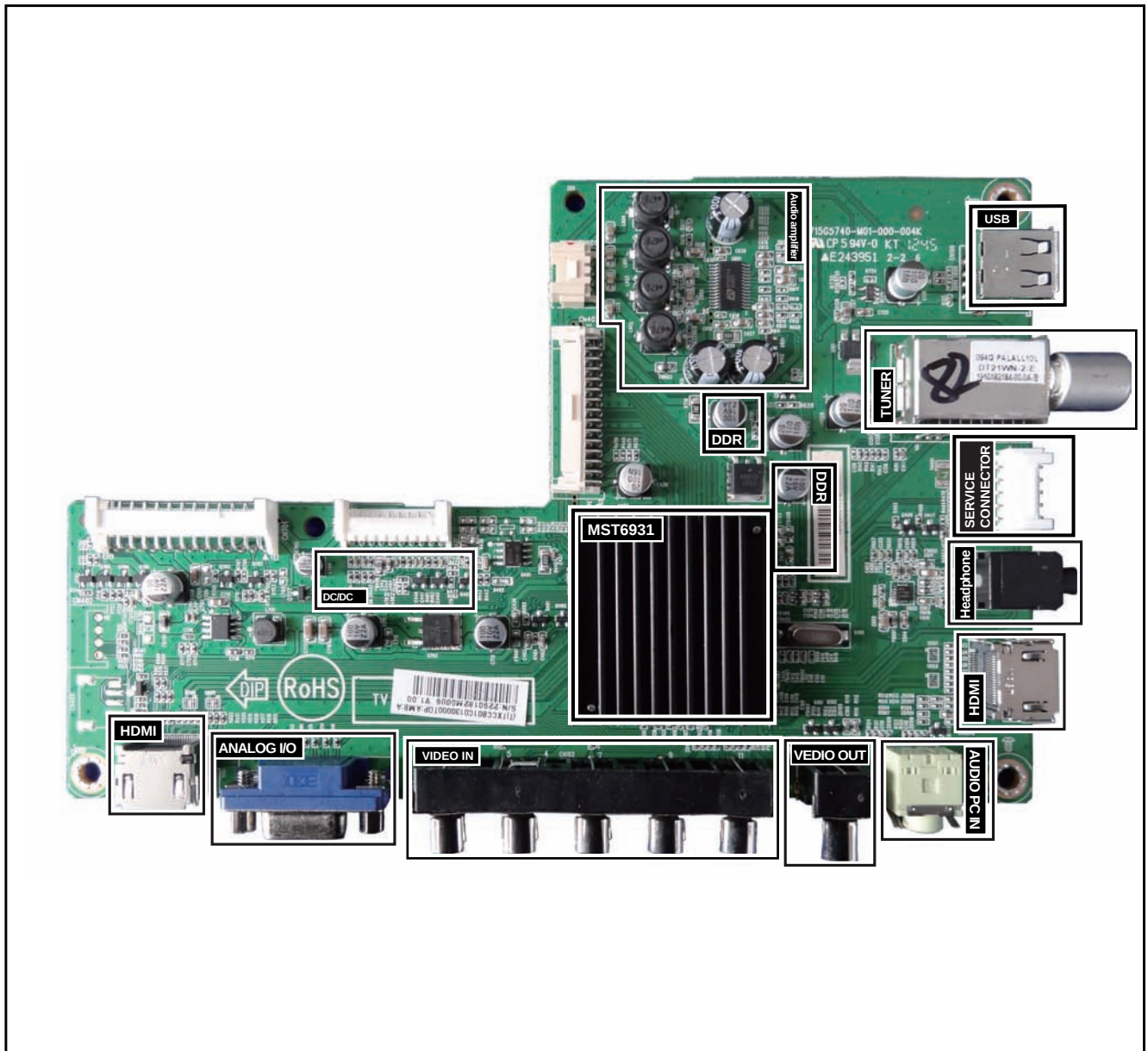
19450_201_130116.eps
130116

Figure 7-2 42PFL3008 SSB layout cells (top view)

7.2 Power Supply

Refer to figure [Figure 7-3](#) for the power architecture of this platform.

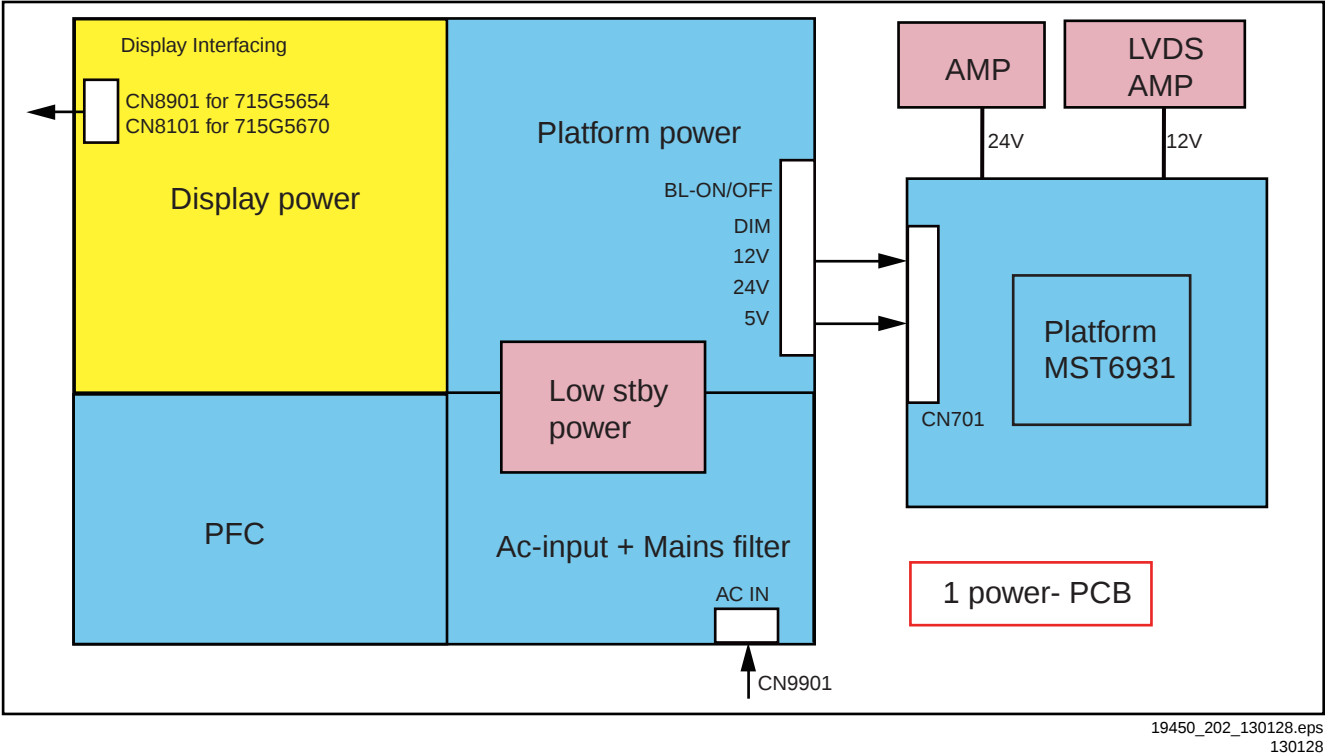


Figure 7-3 Power Architecture

7.2.1 Power Supply Unit

All power supplies are a block box for Service. When defective, a new board must be ordered and 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 Philips Service web portal for the order codes of the boards.

- Important delta's with the AP 3000 series platform are:
- New power architecture for LED backlight
 - “Boost” signal is now a PWM-signal + continuous variable.

- The control signals are:
- Stand-by
 - Lamp “on/off”
 - DIM (PWM) (not for PSDL)

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

- The output voltages to the chassis are:
- +3V3-STANDBY (Stand-by mode only)
 - +12V (on-mode)
 - +Vsnd (+24V) (audio power) (on-mode)
 - +24V (bolt-on power) (on-mode)
 - Output to the display; in case of
 - IPB: High voltage to the LCD panel
 - PSL and PSLs (LED-driver outputs)
 - PSDL (high frequent) AC-current.

7.2.2 Diversity

The diversity in power supply units is mainly determined by the diversity in displays.

- The following displays can be distinguished:
- CCFL/EEFL backlight: power board is conventional IPB
 - LED backlight:
 - side-view LED without scanning: PSL power board
 - side-view LED with scanning: PSLs power board
 - direct-view LED without 2D-dimming: PSL power board
 - direct-view LED with 2D-dimming: PSDL power board.

PSL stands for **P**ower **S**upply with integrated **L**ED-drivers.
PSLS stands for a **P**ower **S**upply with integrated **L**ED-drivers with added **S**canning functionality (added microcontroller).
PSDL stands for a **P**ower **S**upply for **D**irect-view **L**ED backlight with 2D-dimming.

7.2.3 Connector overview

Table 7-1 Connector overview

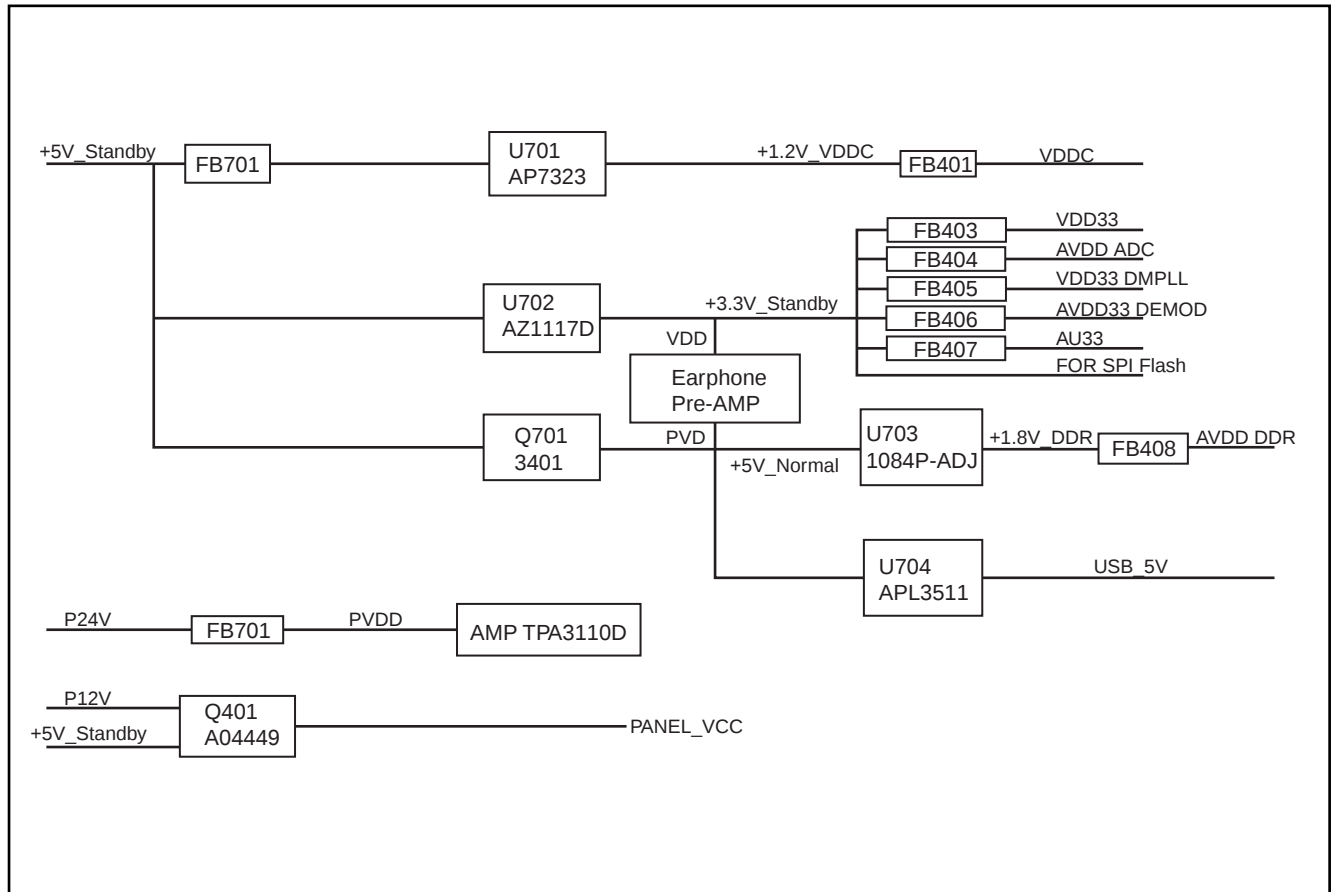
	Connector			
	32PFL3008/98/39PFL3008/98	42PFL3008/98		
no.	CN8901	CN9902	CN8101	CN9102
Descr.	to panel	to SSB	to panel	to SSB
Pin	CN8901	CN9902	CN8101	CN9102
1	LED-source	n.c.	VLED+	n.c.
2	n.c.	+5.2V	n.c.	+5V
3	LED-1	+5.2V	LED1	+5V
4	n.c.	PS_ON	LED2	PS_ON
5	n.c.	+24V	n.c.	+24V
6	n.c.	+24V	n.c.	+24V
7	n.c.	GND	n.c.	GND
8	n.c.	GND	n.c.	GND
9	n.c.	GND	LED4	GND
10	LED-1	+12V	LED3	+12V
11	n.c.	+12V	n.c.	+12V
12	LED-source	DIM	VLED+	PDIM
13	-	ON/OFF	-	ON/OFF

7.3 DC/DC Converters

The on-board DC/DC converters deliver the following voltages (depending on set execution):

- +5V-STANDBY, permanent voltage for the Stand-by controller, LED/IR receiver and controls
- +3V3-STANDBY, power supply for LED/IR receiver and controls
- +12V, input from the power supply for the panel common (active mode); connector CN403 pins 28, 29, 30.
- +24V, input from the power supply for audio amplifier; connector CN9902 pins 5 and 6.
- +1V2, from the power supply for the scaler IC MST6931.
- +1V8, supply voltage for DDR2 (diagram B03B)
- +3V3, general supply voltage
- +3.3V-TUN, supply voltage for tuner
- +5V, supply voltage for Headphone AMP
- +5V-USB, input intermediate supply voltage for USB
- +3V3 from the power supply for the scaler IC MST6931

Figures gives a graphical representation of the DC/DC converters with its current consumptions:



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130129

Figure 7-4 DC/DC converters

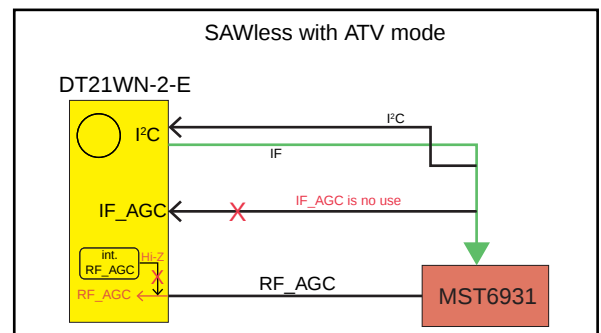
7.4 Front-End Analogue ATV reception

7.4.1 Front-End Analogue

The Front-End for the analogue tuner consist of the following key components:

- TUNER China DT21WN-2-E
- SCALER MST6931XP-Z1-VB EPLQFP-128

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



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130129

Figure 7-5 Front-End analogue block diagram

7.5 HDMI

Refer to figure [7-6 HDMI input configuration](#) for the application.

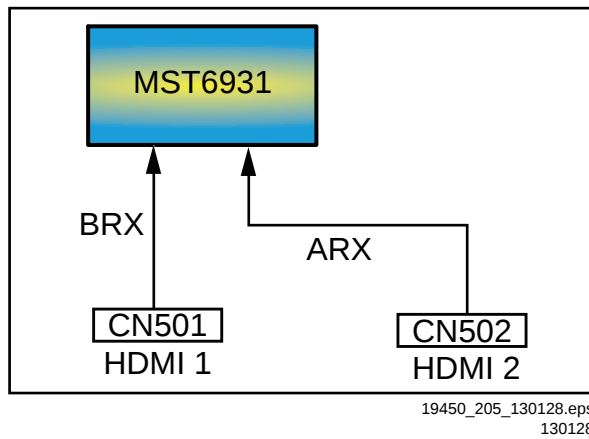


Figure 7-6 HDMI input configuration

The HDMI connector has the following specifications:

- +5V detection mechanism
- Stable clock detection mechanism
- Integrated EDID
- HPD control
- Sync detection
- TMDS output control
- CEC control

7.6 Video and Audio Processing - MST6931XP

The MST6931XP is the main audio and video processor (or System-on-Chip) for this platform. It has the following features:

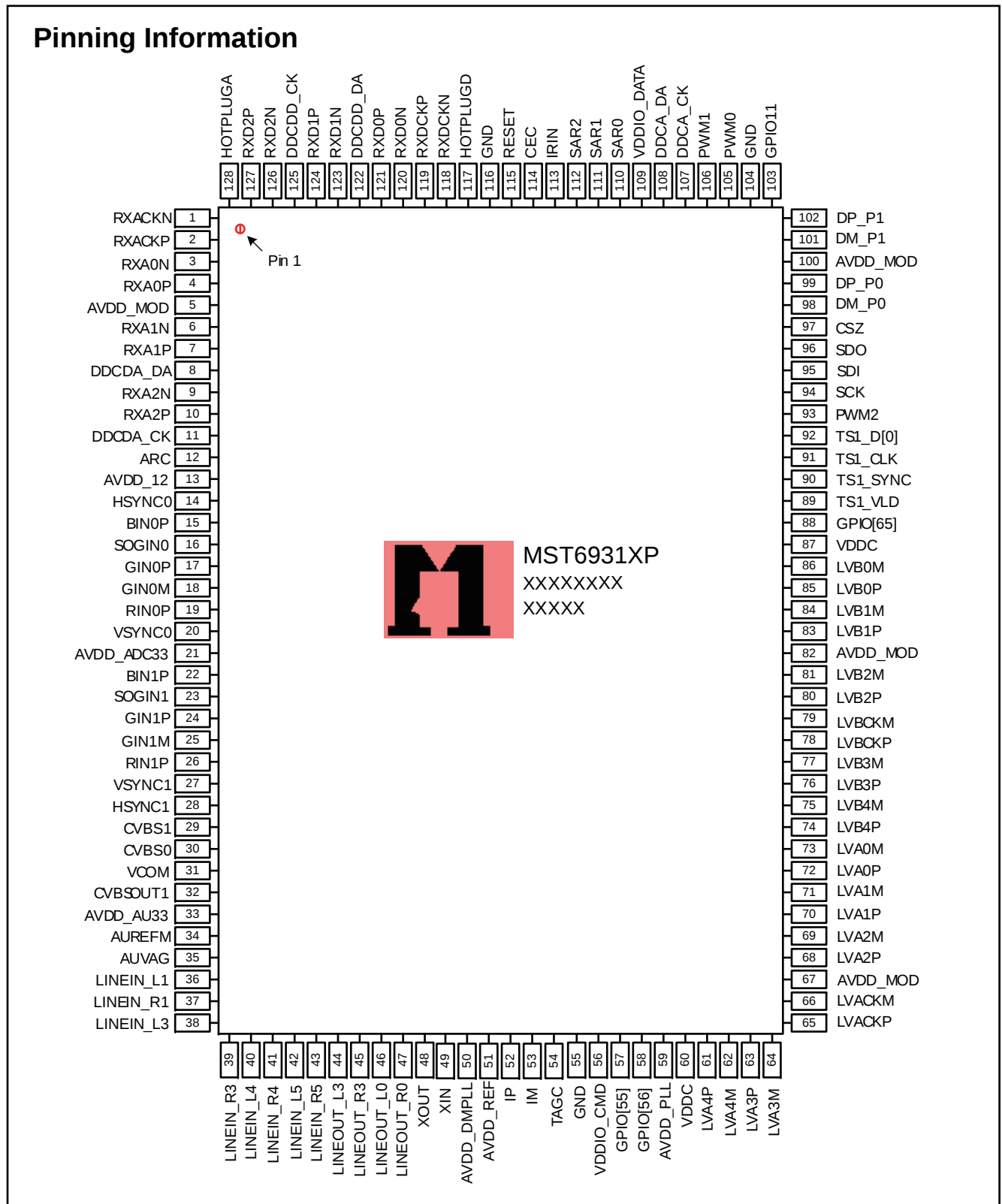
- Multi-standard digital video decoder (MPEG-2, H.264, MPEG-4)
- Integrated NTSC/PAL/SECAM Video decoder
- Integrated motion accurate picture processing
- High definition ME/MC
- Extended colour gamut and colour booster
- Integrated USB2.0 host controller
- Multi-standard TV Sound Processor
- High Performance Micro-processor
- RealMedia Decoder

The MST6931XP combines front-end video processing functions, such as NESC/PAL/SECAM Video Decoder, MPEG-2/H.264 decoding, analog video decode and HDMI reception, with advanced back-end video picture improvements. It also includes next generation Motion Accurate Picture Processong. High flat panel screen resolutions and refresh rates are supported with formats including 1280 × 720 @ 60Hz and 1920 × 1080 @ 60Hz. On top of that, optional support is available for 2D dimming in combination with LED backlights for optimum contrast and power savings up to 50%.

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).

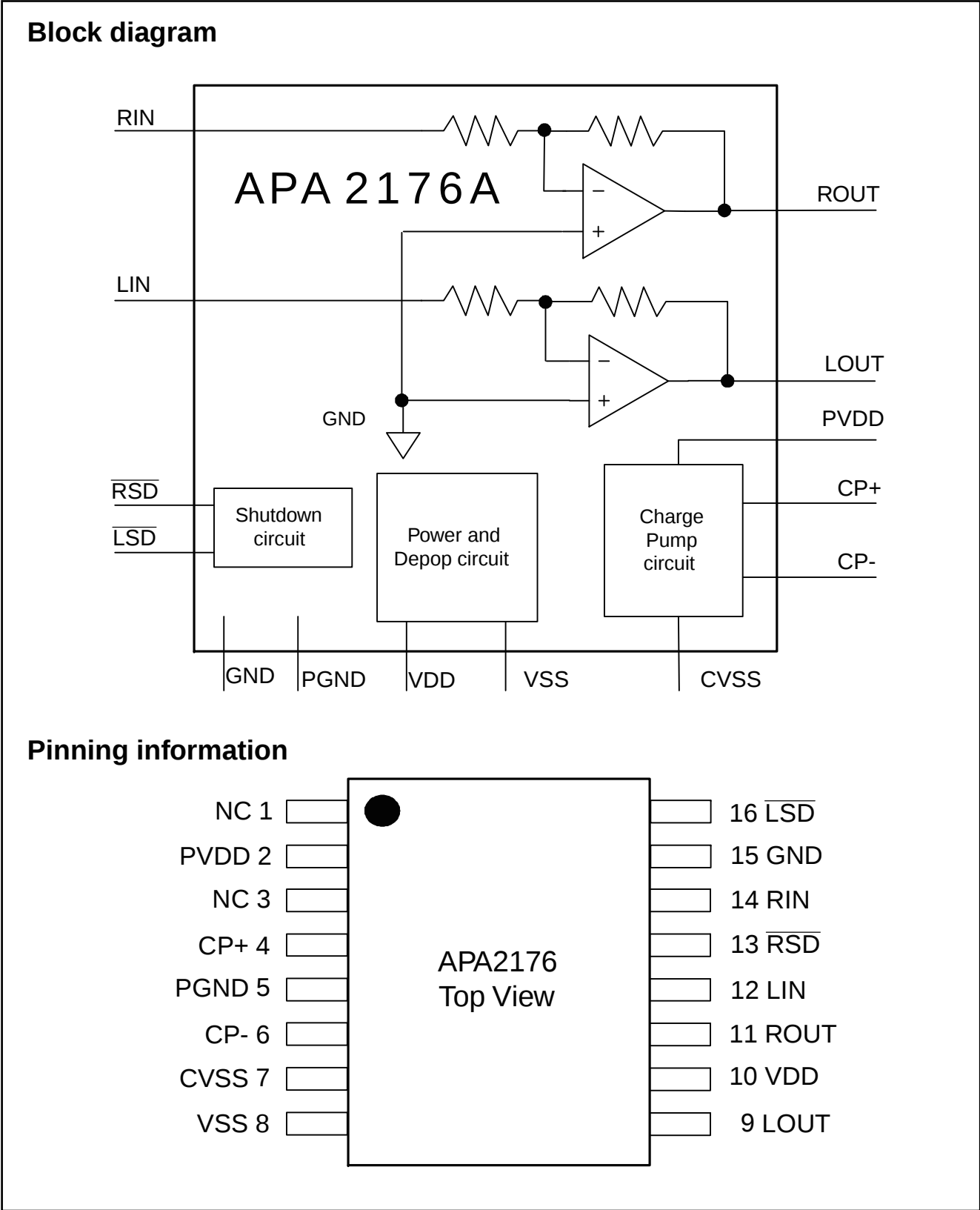
8.1 Diagram [10-3-2 MST6931XP/SP1 FLASH B02](#), MST6931XP (IC U401)



19450_300_130116.eps
130116

Figure 8-1 pin configuration

8.2
 Diagram
 [10-3-6 Earphone pre amplifier B06, APA2176A \(IC U602\)](#)

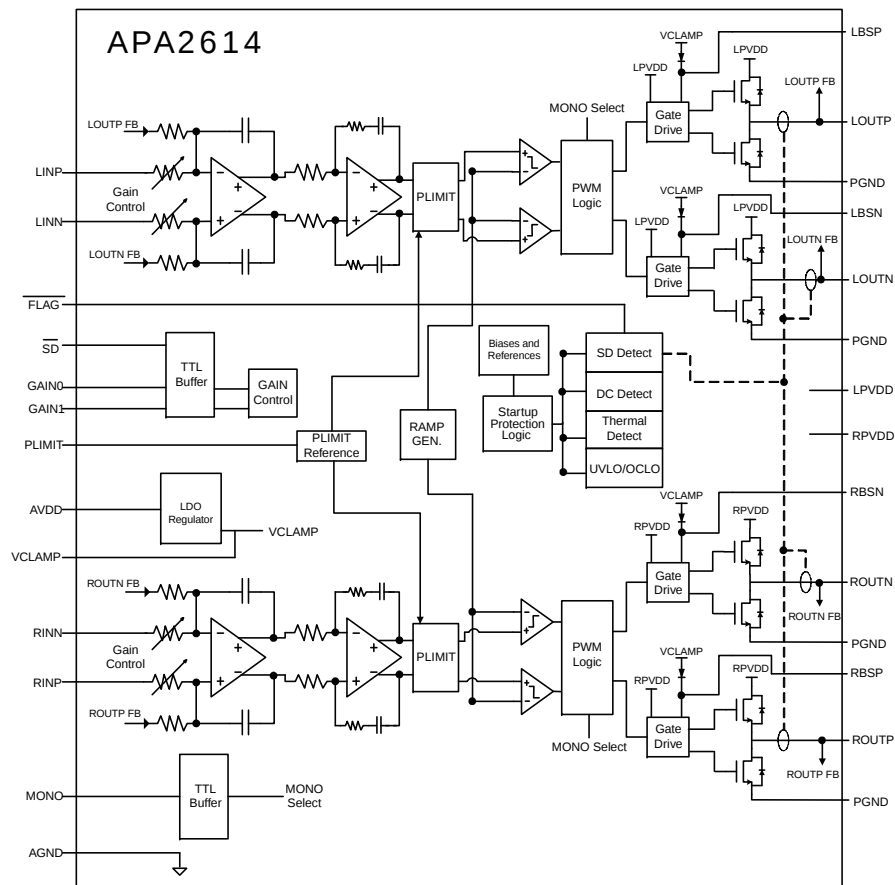


19450_301_130116.eps
 130116

Figure 8-2 Internal block diagram and pin configuration

8.3 Diagram [10-3-8 AUDIO Amplifier](#) B08, APA2614RI-TRG (IC U601)

Block diagram



Pinning information

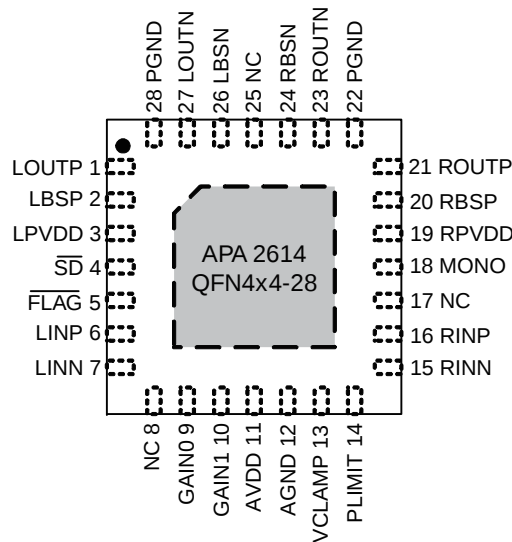
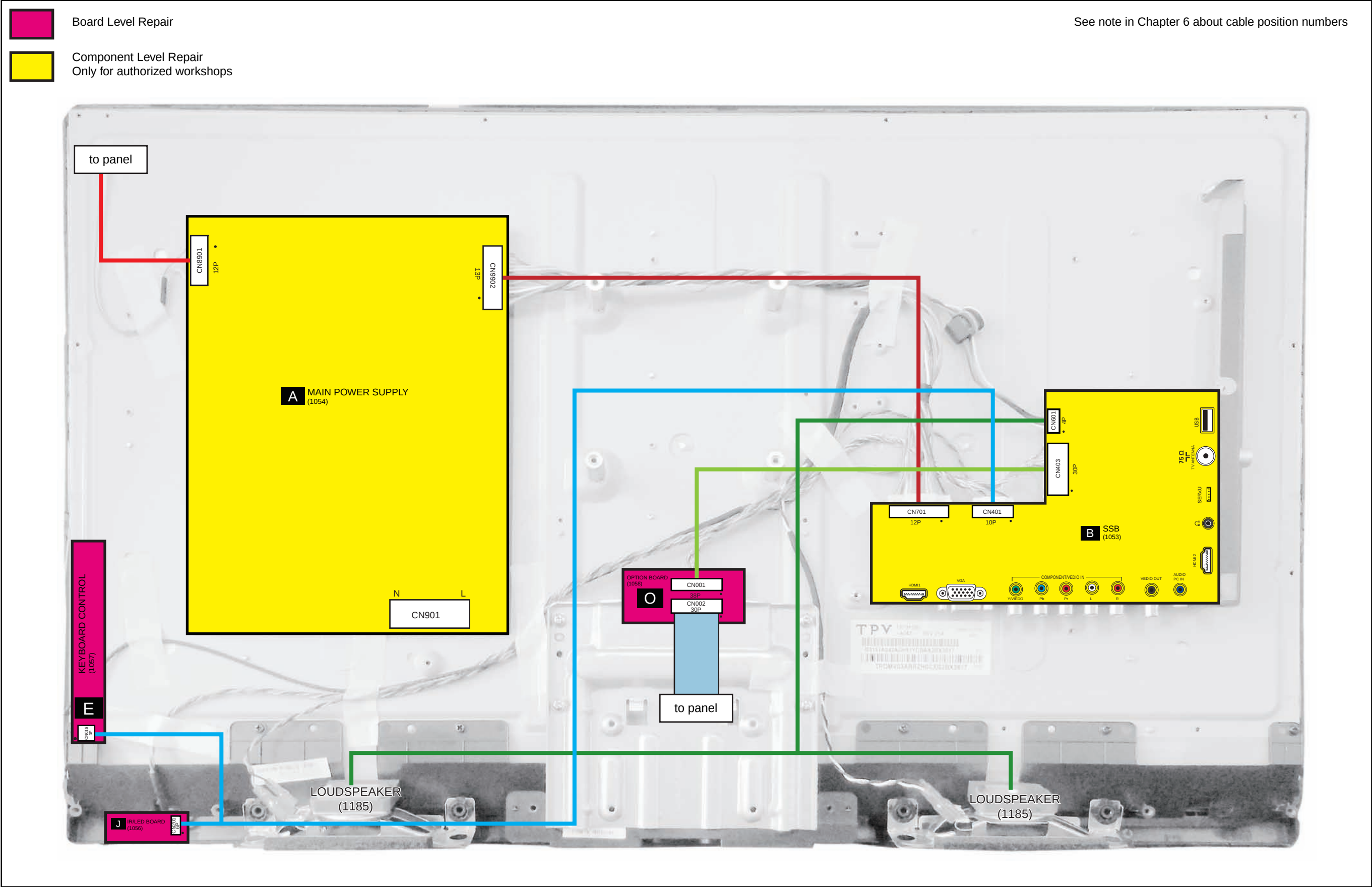
19450_302_130116.eps
130116

Figure 8-3 Internal block diagram and pin configuration

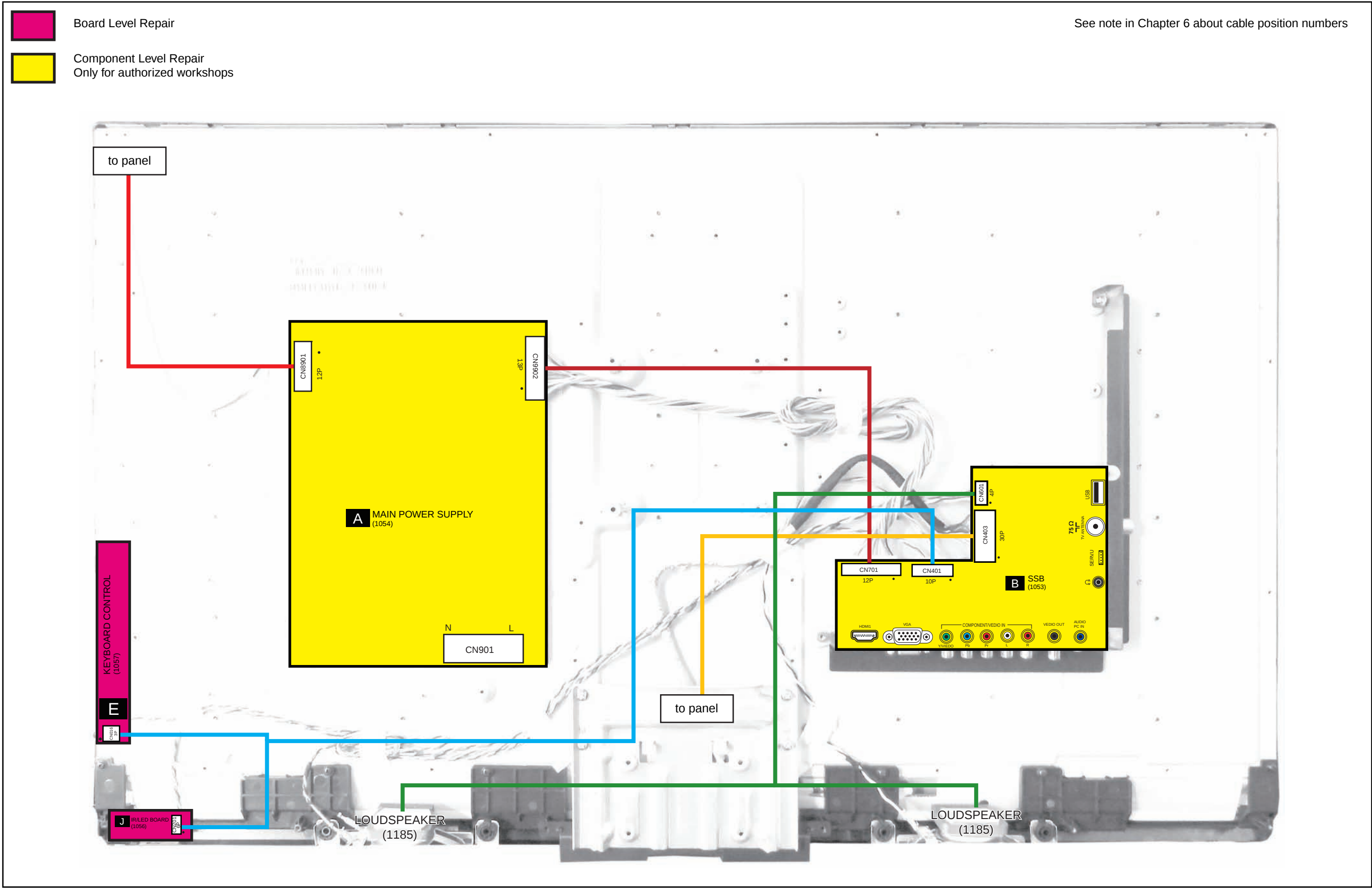
This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

9. Block Diagrams

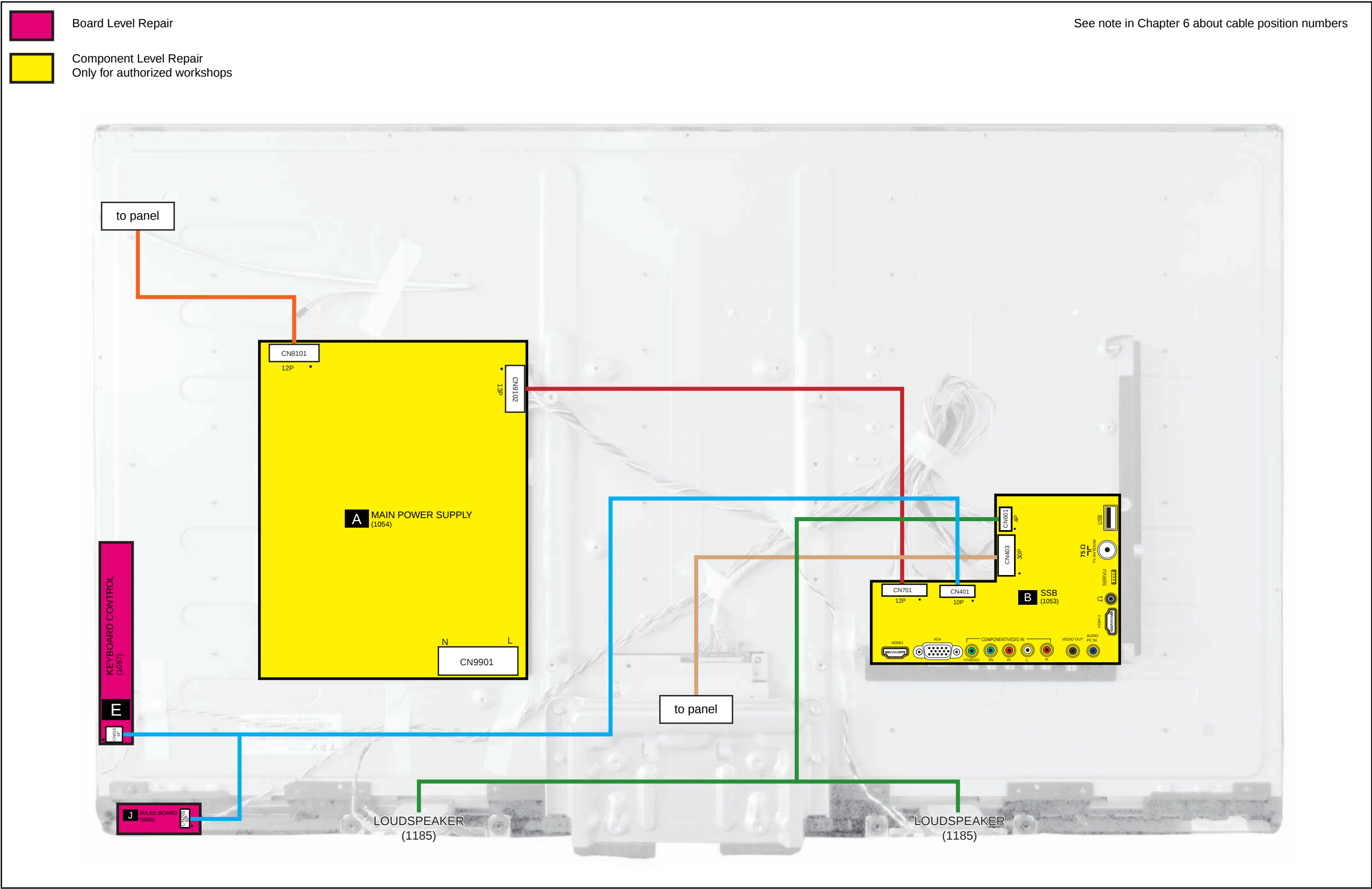
9.1 Wiring diagram 32" 3008 series
WIRING DIAGRAM 32" (3008 series)



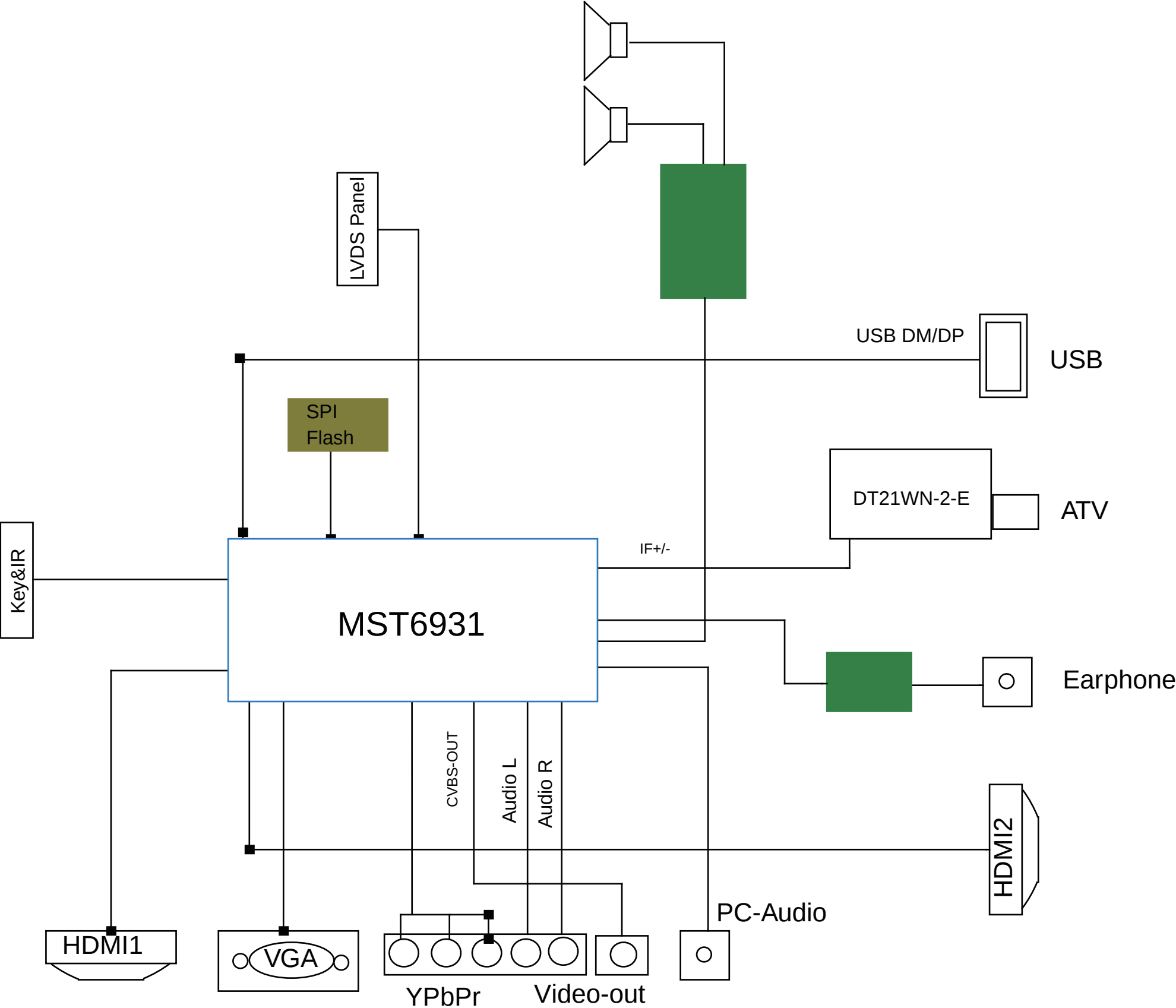
9.2 Wiring diagram 39" 3008 series
WIRING DIAGRAM 39" (3008 series)



9.3 Wiring diagram 42" 3008 series
WIRING DIAGRAM 42" (3008 series)

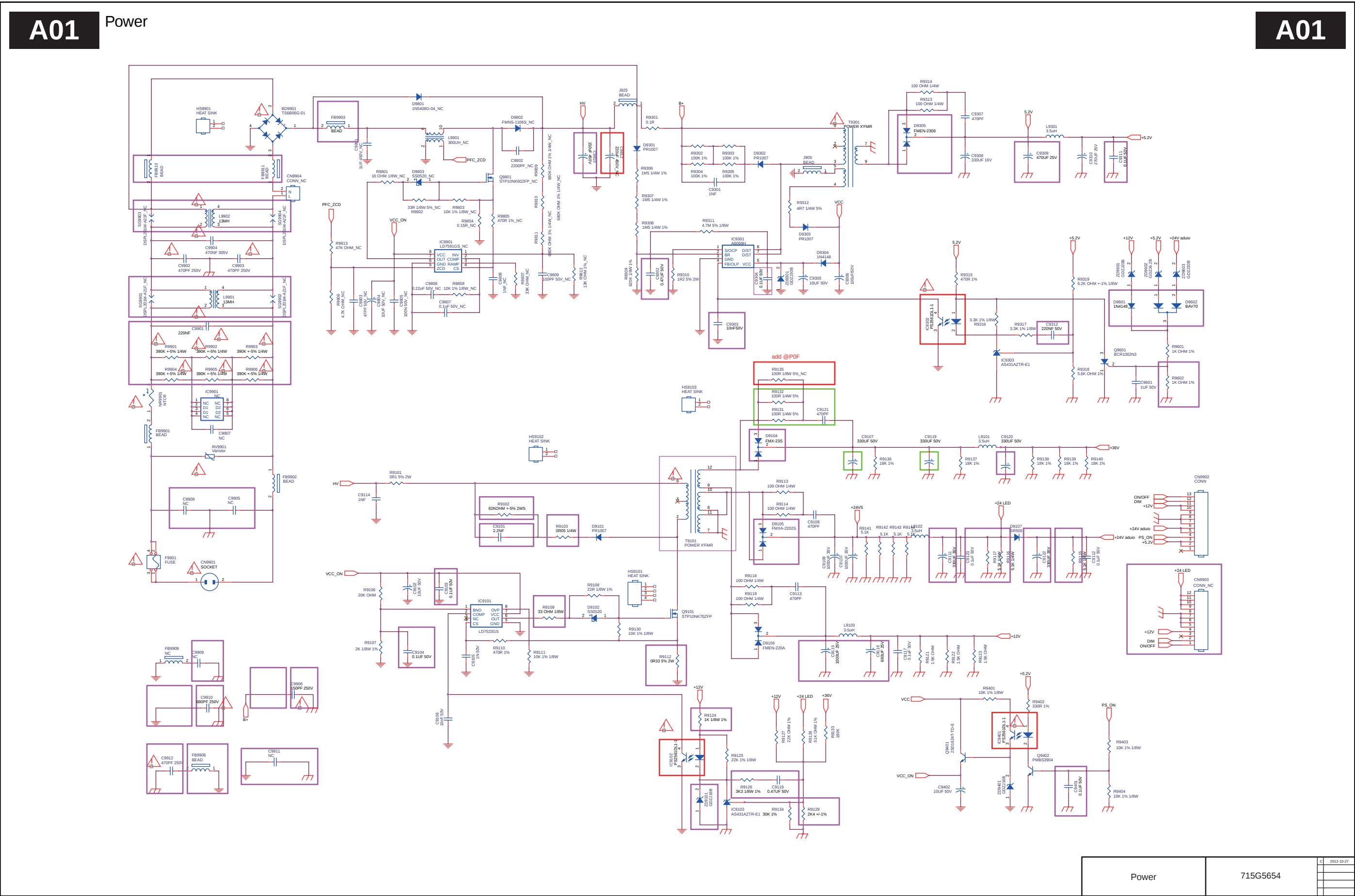


9.4 Block Diagram DVB T/C 3000 series



10. Circuit Diagrams and PWB Layouts

10.1 A01 715G5654 PSU for 32" & 39" 3008 series
10-1-1 Power

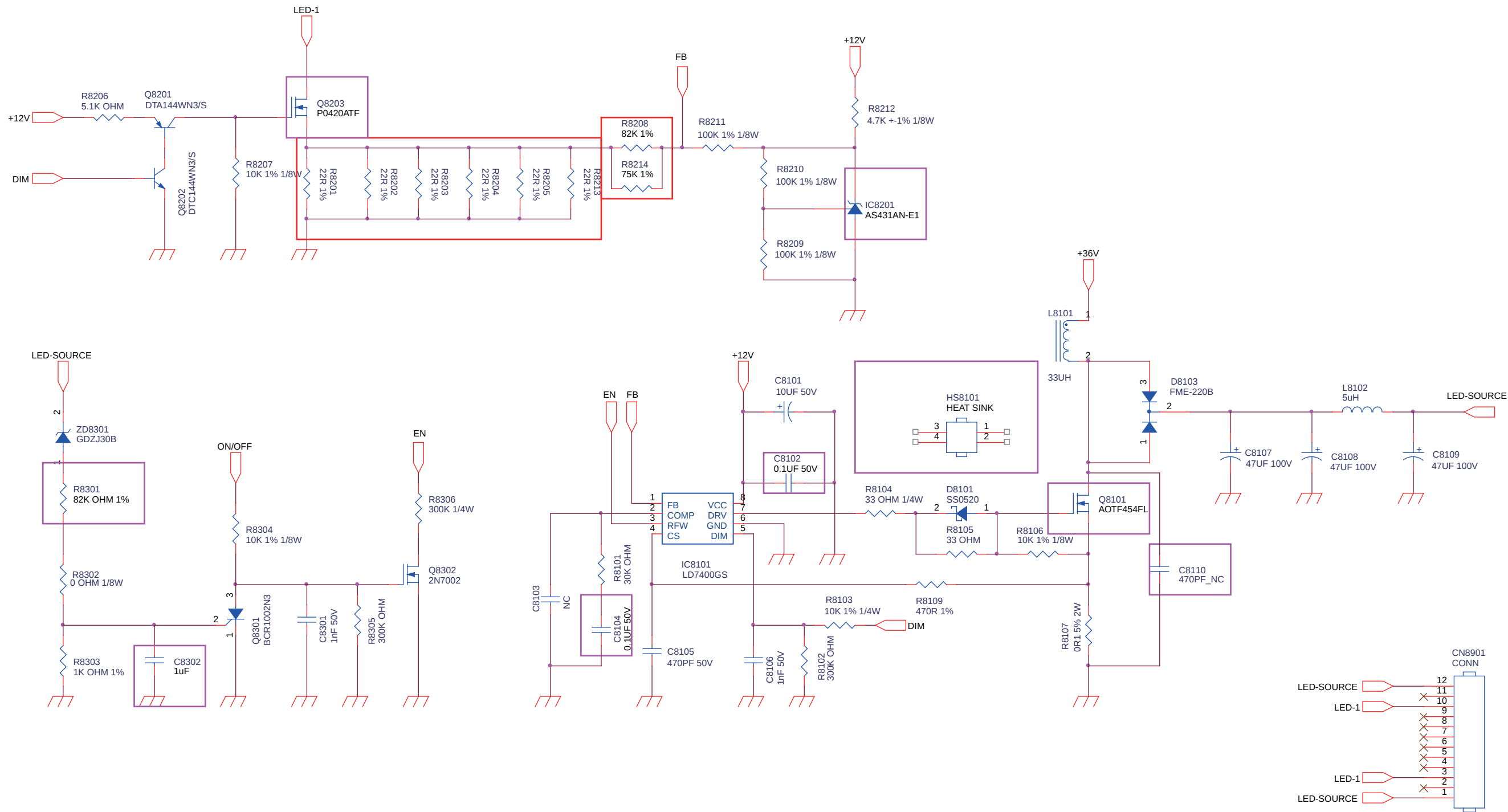


10-1-2 LED DRIVER

A02

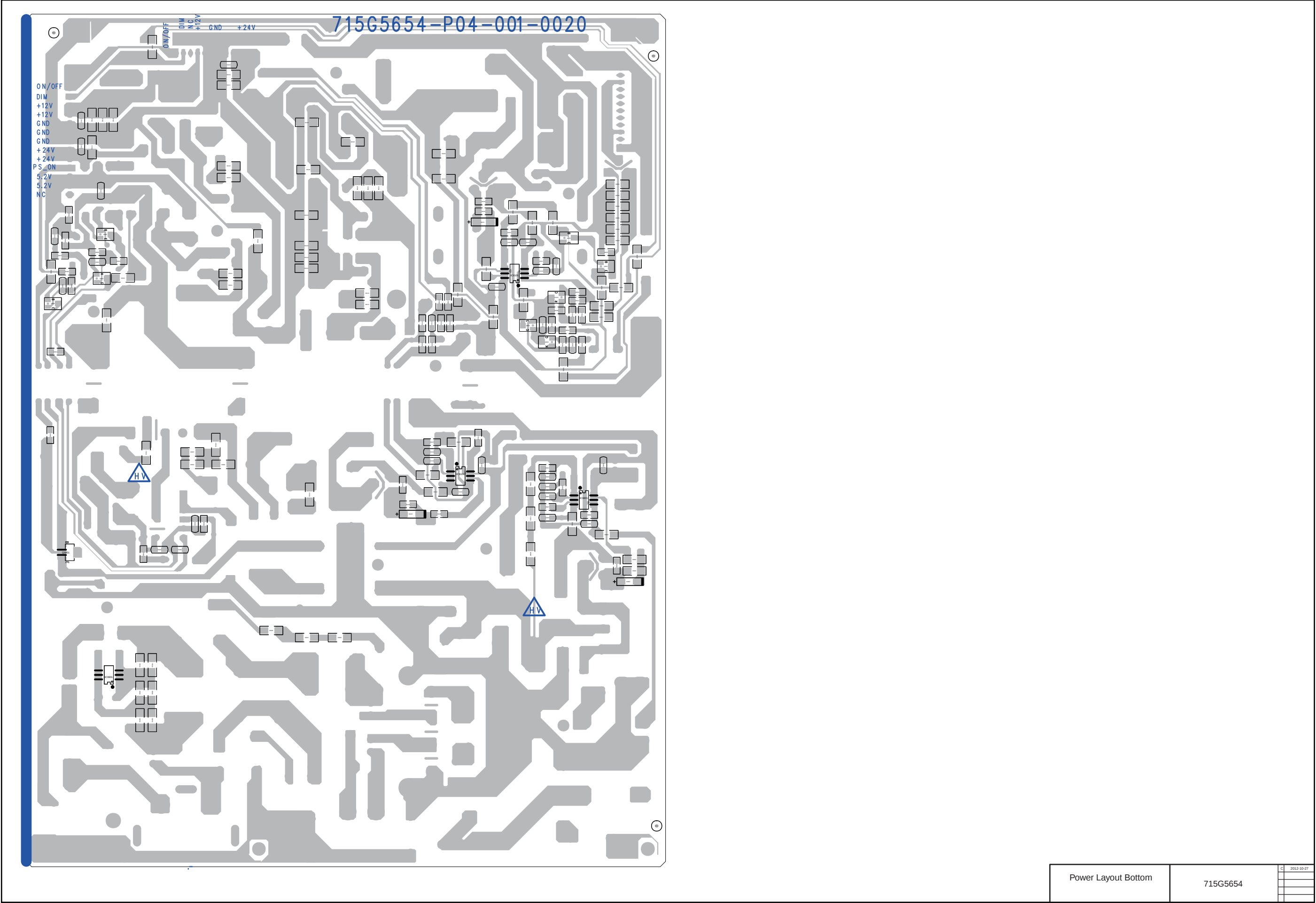
LED DRIVER

A02

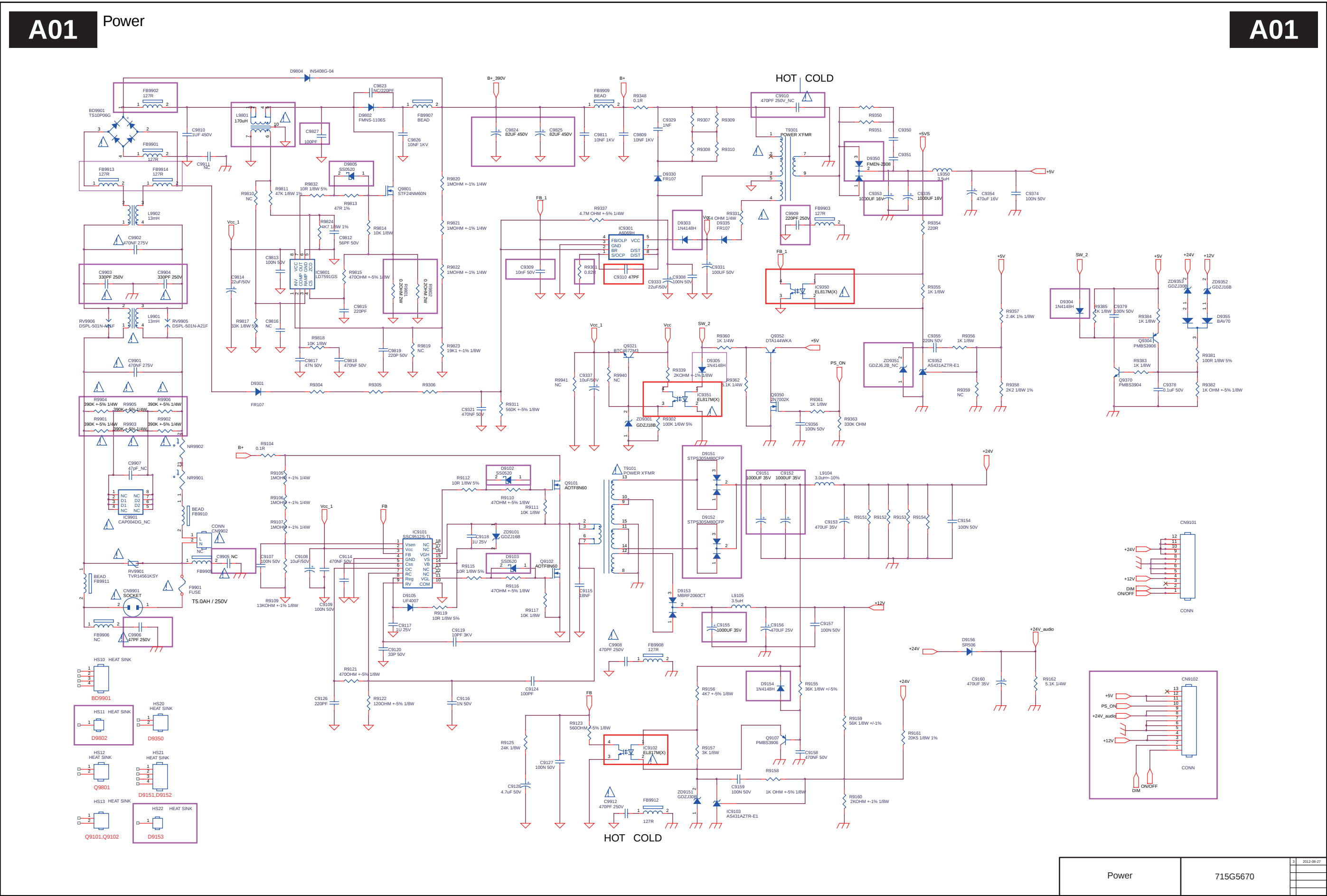


LED DRIVER	715G5654	c	2012-11-04

10-1-4 Power layout bottom



10.2 A 715G5670 PSU series 42"
10-2-1 Power

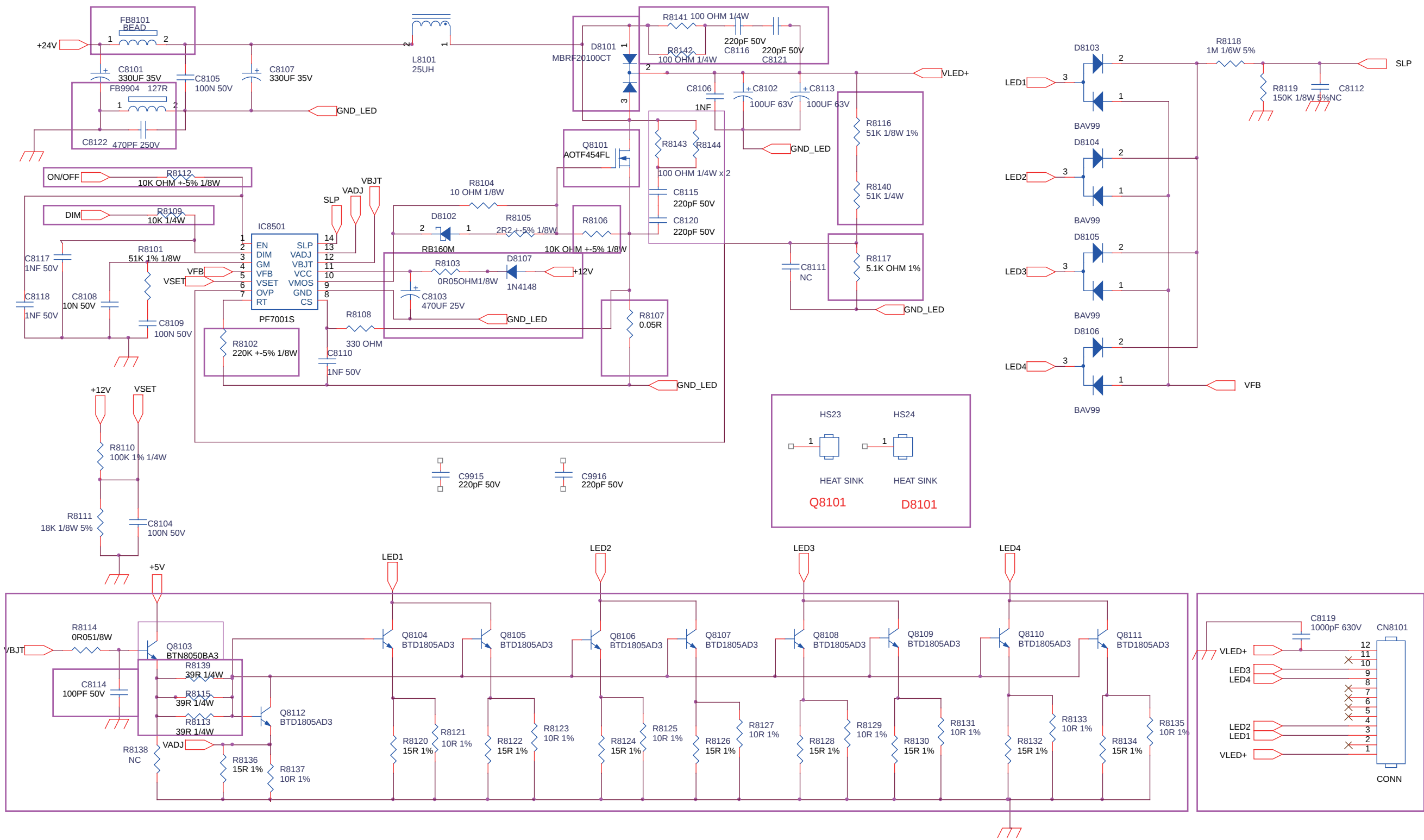


10-2-2 LED DRIVER

A02

LED DRIVER

A02

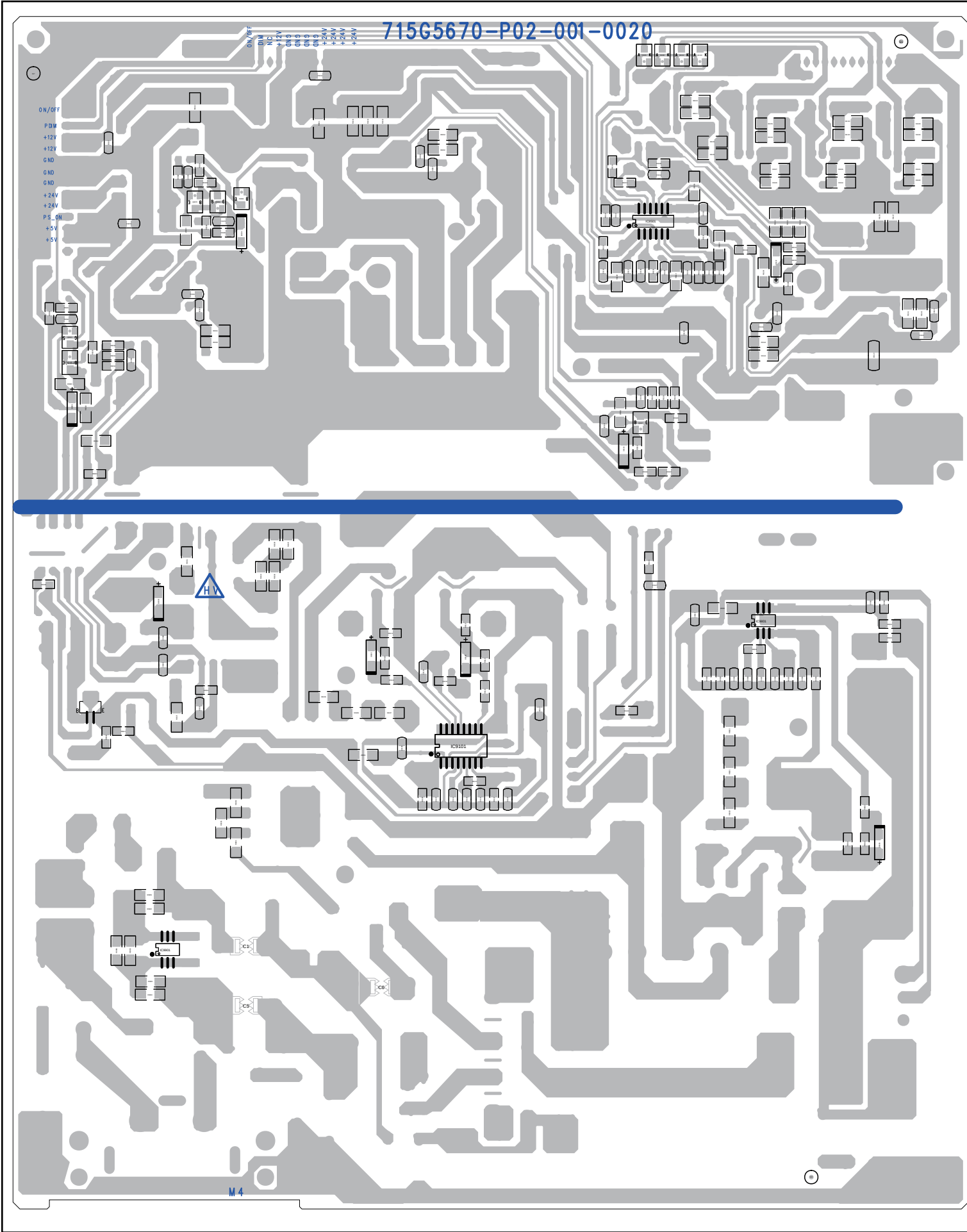


LED DRIVER

715G5670

C	2012-08-31

10-2-4 Power layout bottom

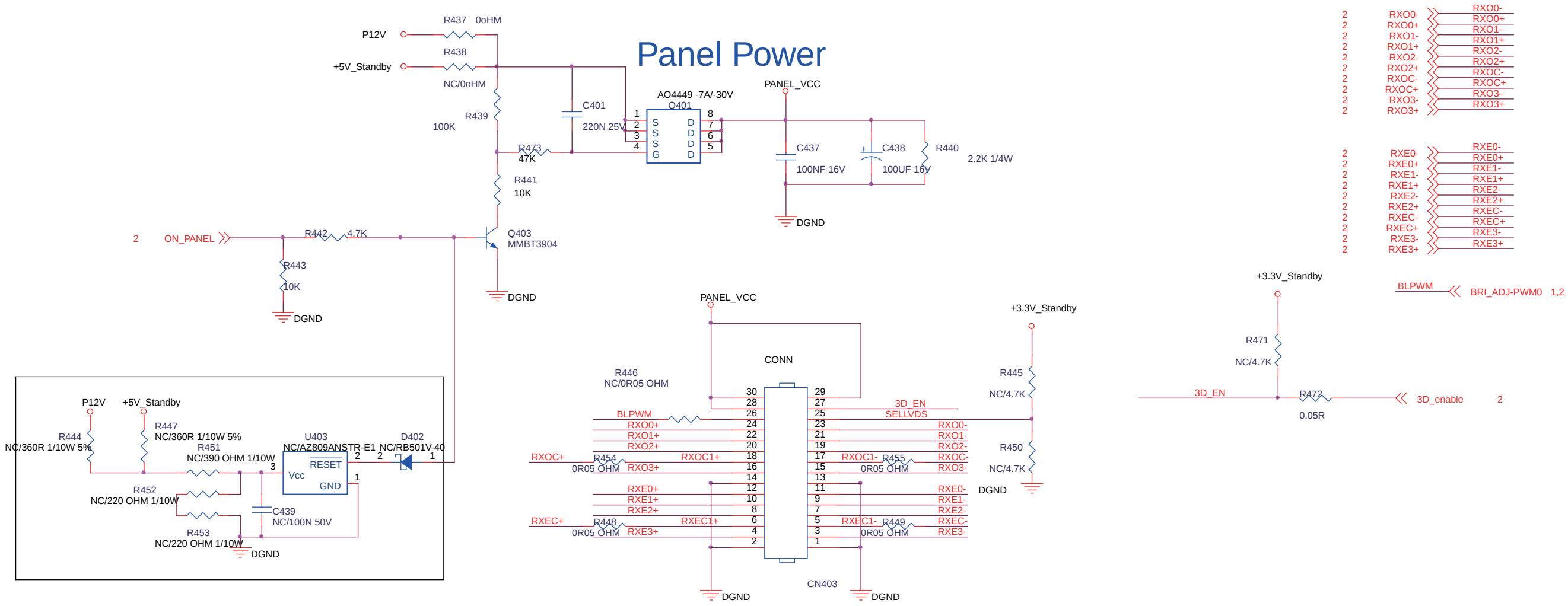


Power Layout Bottom	715G5670	C	2013-07-27

B03

LVDS

B03



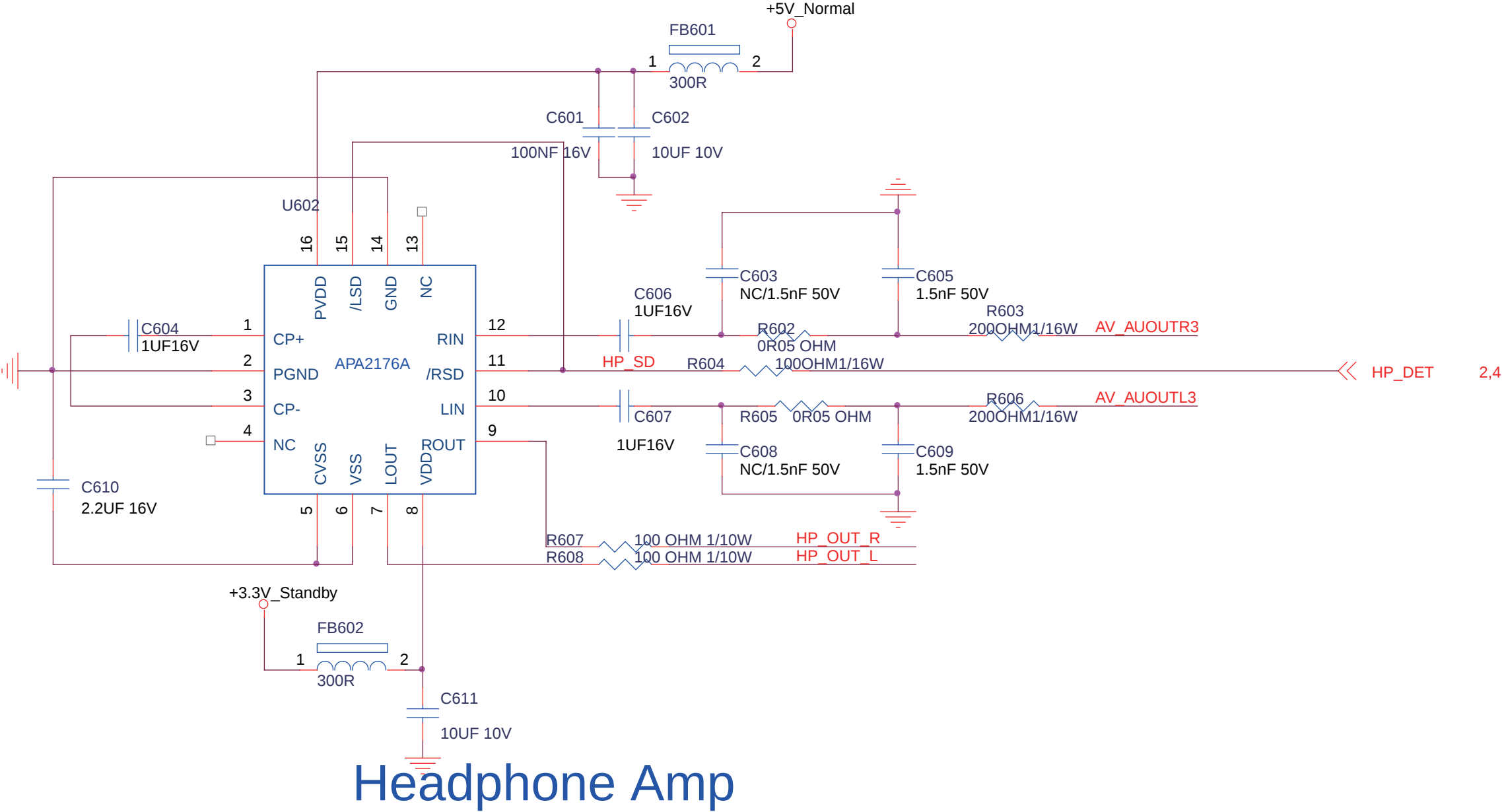
LVDS	715G5740	A	2012-09-24

B06 Earphone pre amplifier

B06

2 AV_AUOUTR3 >> AV_AUOUTR3
2 AV_AUOUTL3 >> AV_AUOUTL3

HP_OUT_R >> HP_OUT_R 4
HP_OUT_L >> HP_OUT_L 4

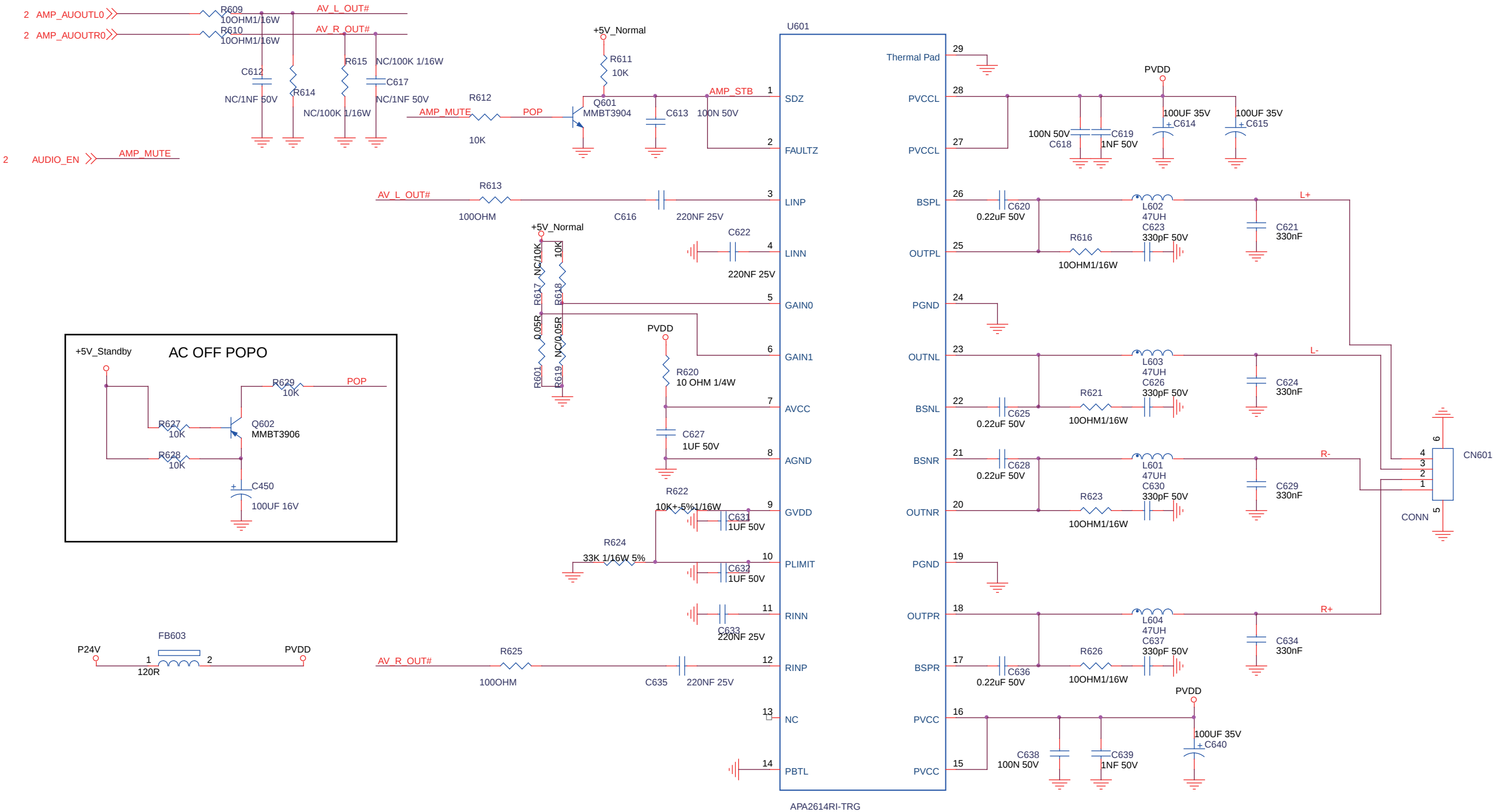


Earphone pre amplifier	715G5740	A	2012-09-24

B08

AUDIO Amplifier

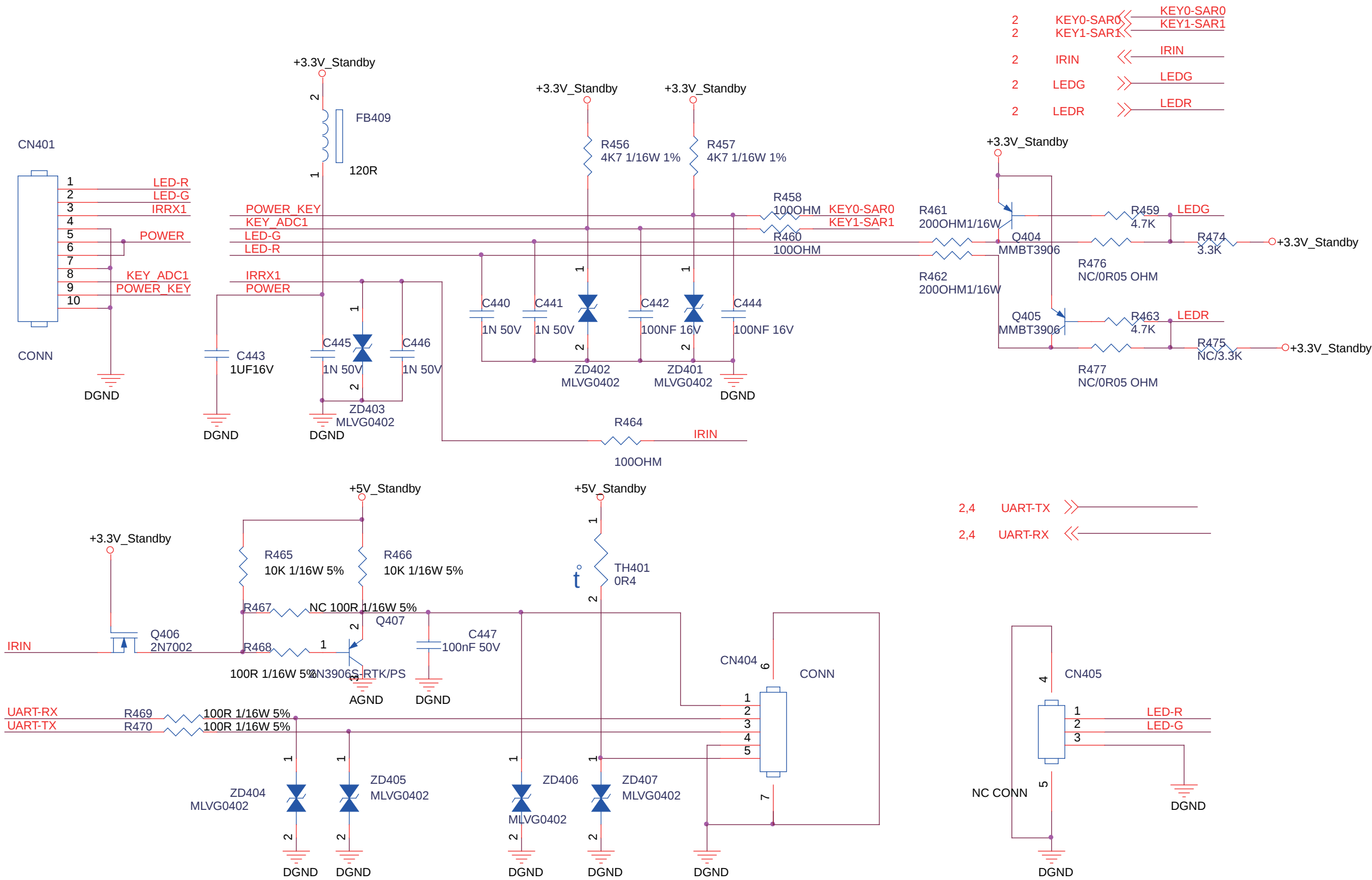
B08



B09

Keypad/IR

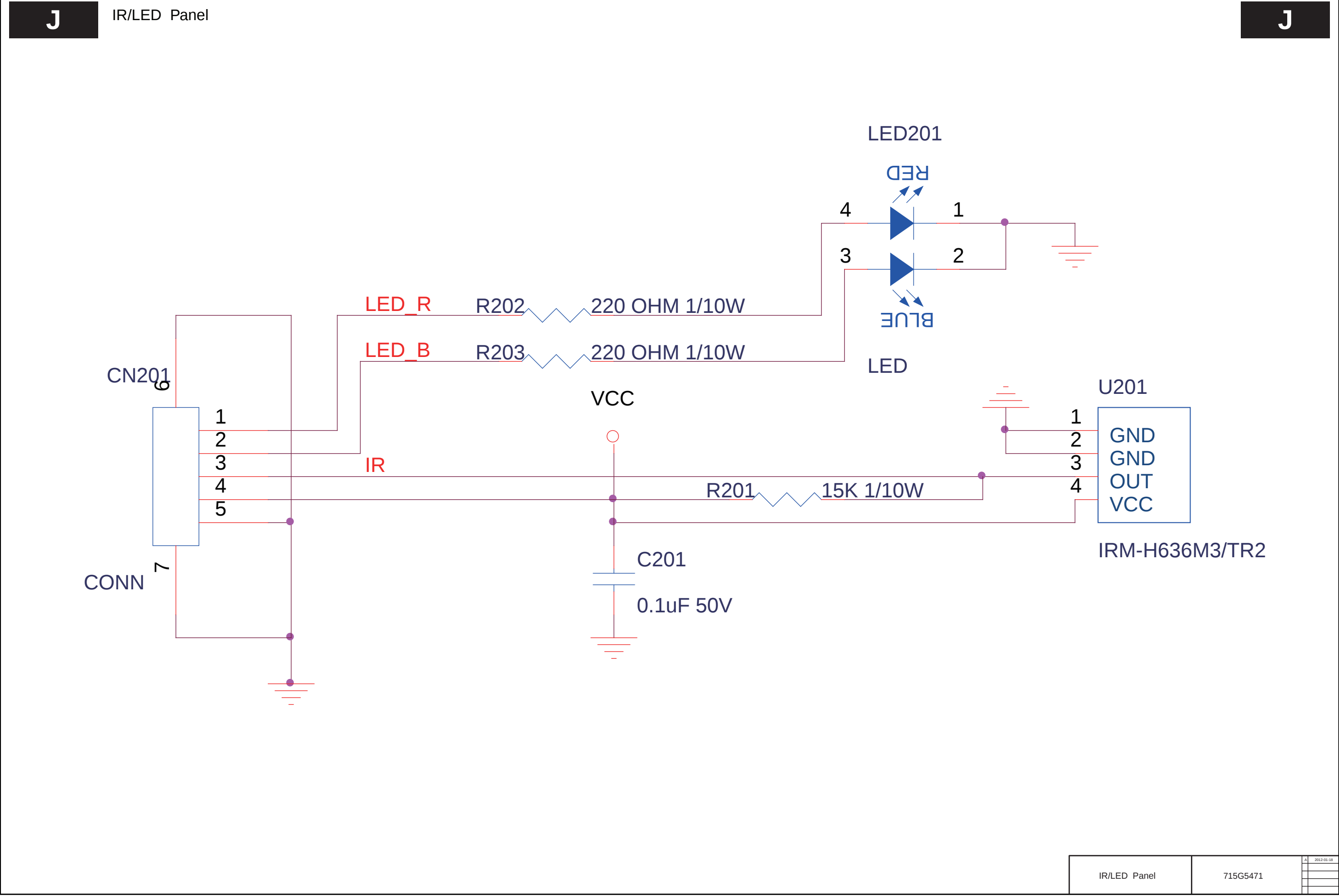
B09



Keypad/IR	715G5740	A	2012-09-24

19450_518_130111.eps
130111

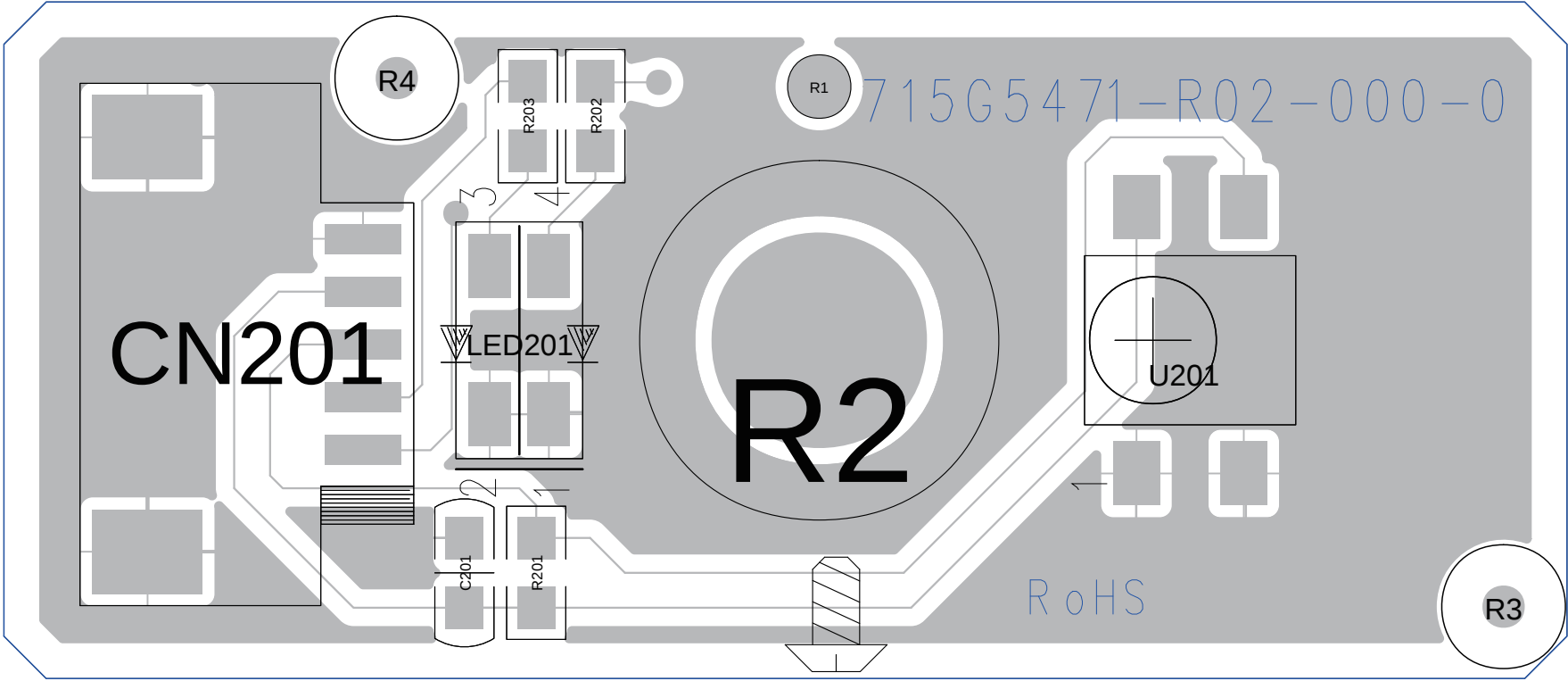
10.4 J 715G5471 IR/LED 3008 series
10-4-1 IR/LED Panel



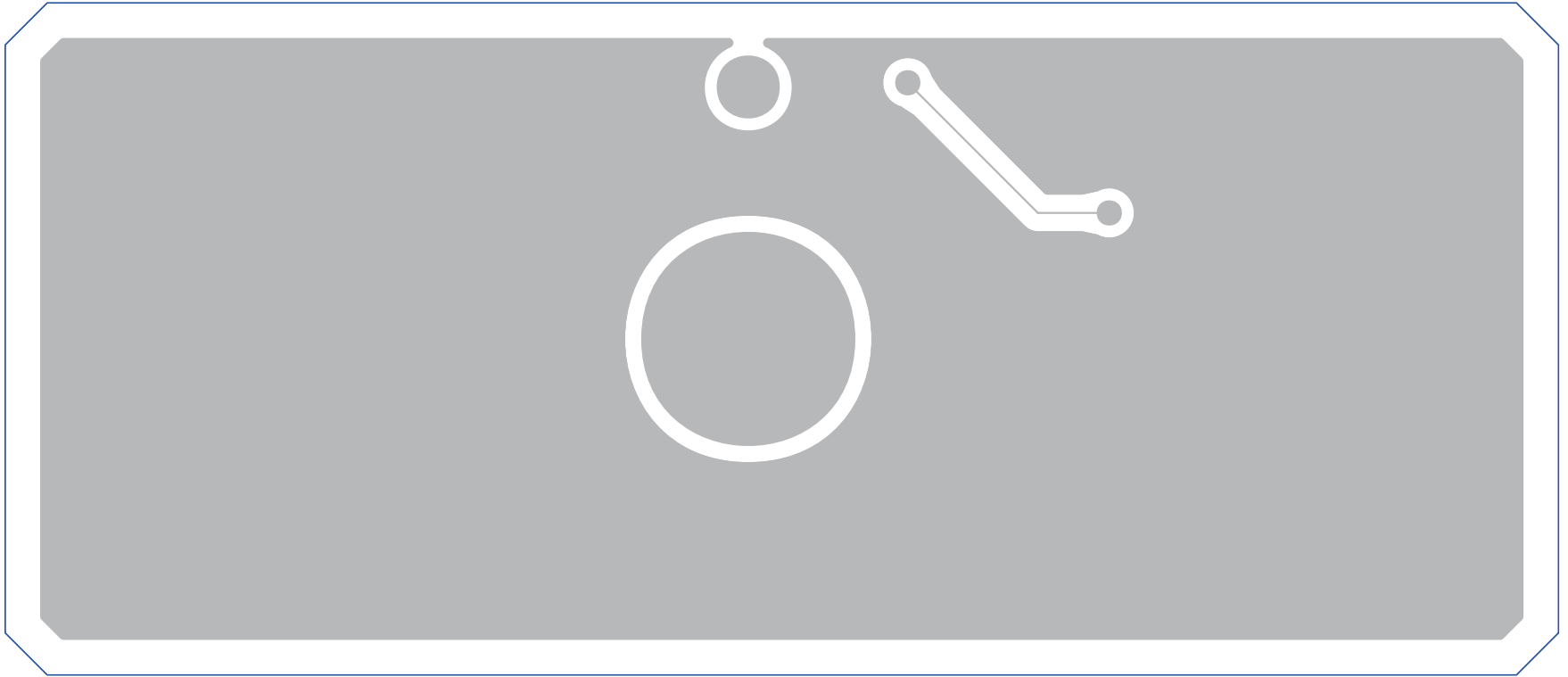
IR/LED Panel	715G5471	A	2012-01-18

10-4-2 IR/LED board layout

Layout IR/LED Board (Top Side)



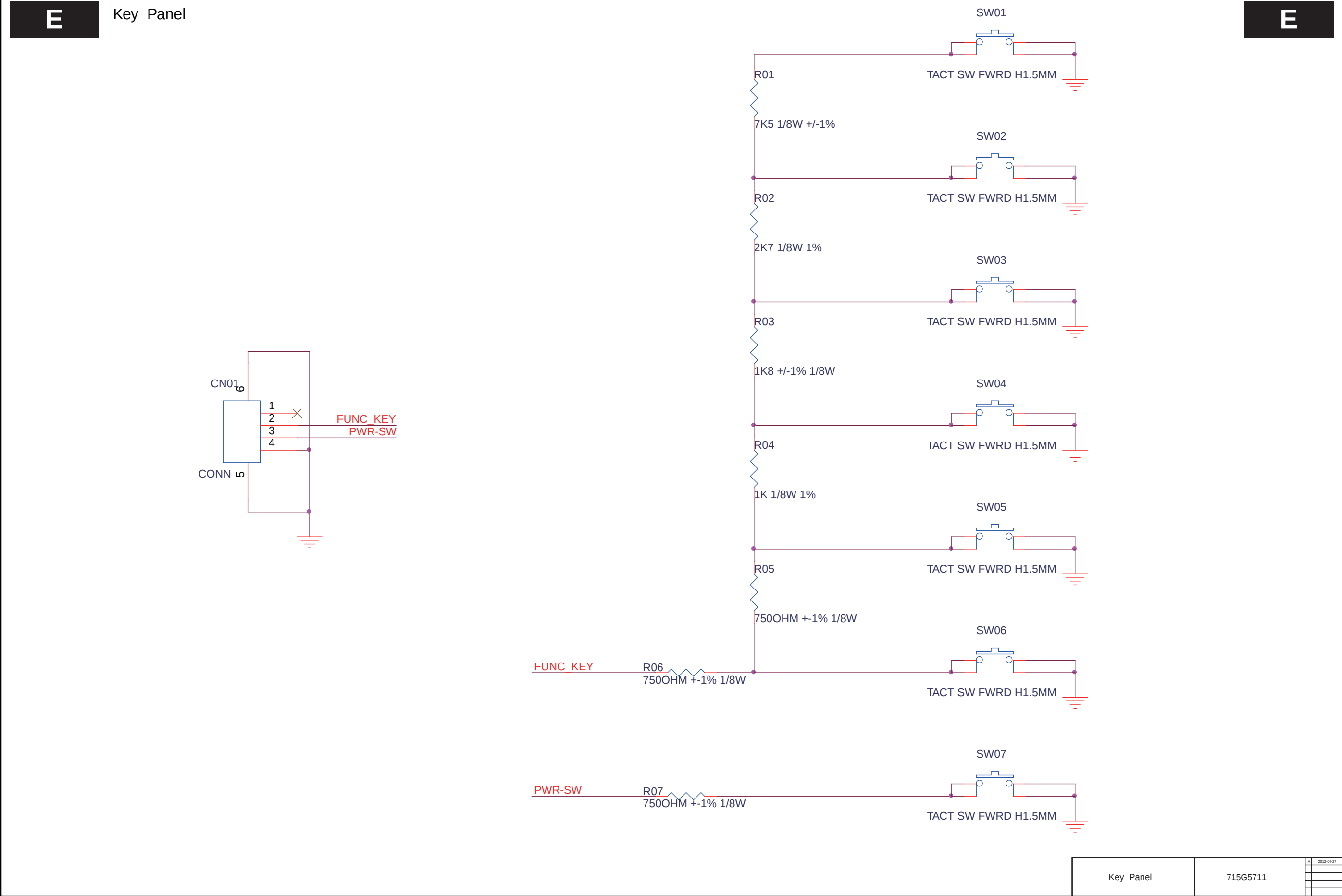
Layout IR/LED Board (Bottom Side)



IR/LED board layout top/bottom	715G5471	A	2013-05-18

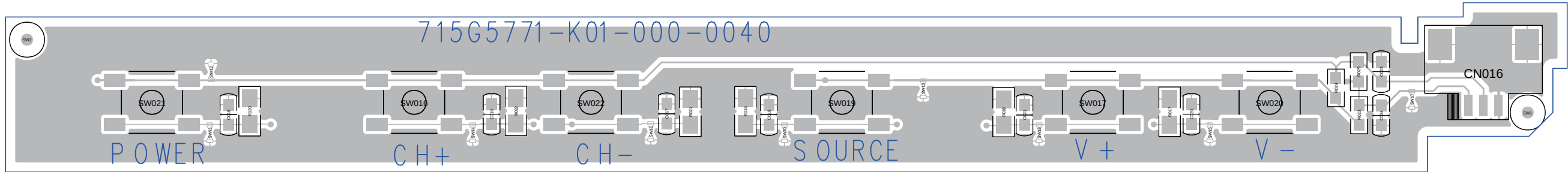
10.5 E 715G5711 Keyboard control panel

10-5-1 Key Panel

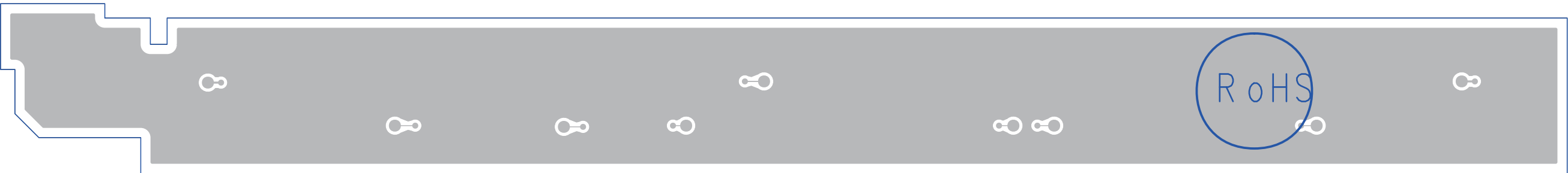


10-5-2 Key board layout

Layout Keyboard control panel (top side)



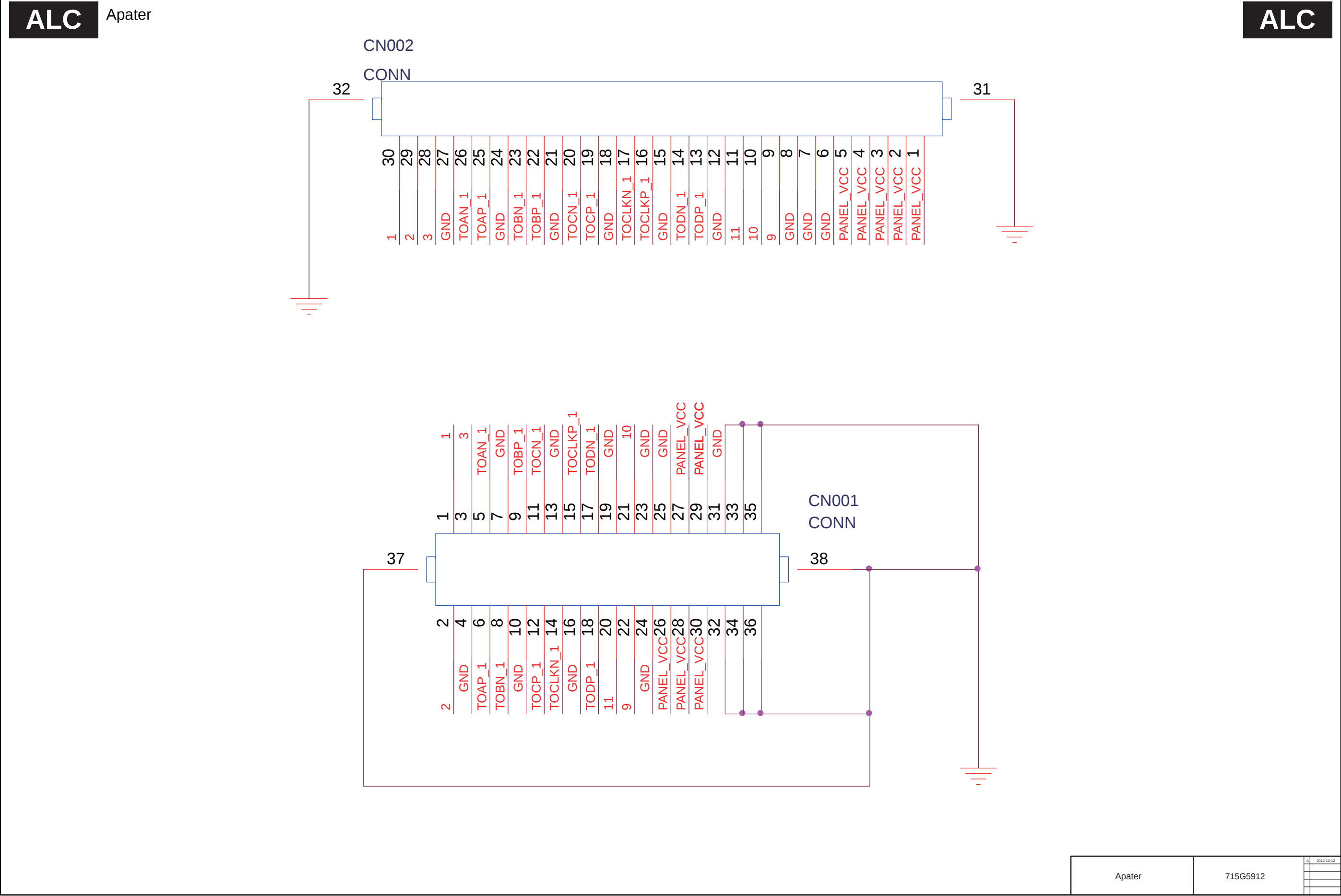
Layout Keyboard control panel (bottom side)



Keyboard control panel layout top/bottom	715G5711	A	2012-04-27

10.6 O 715G5912 Option Board 32”

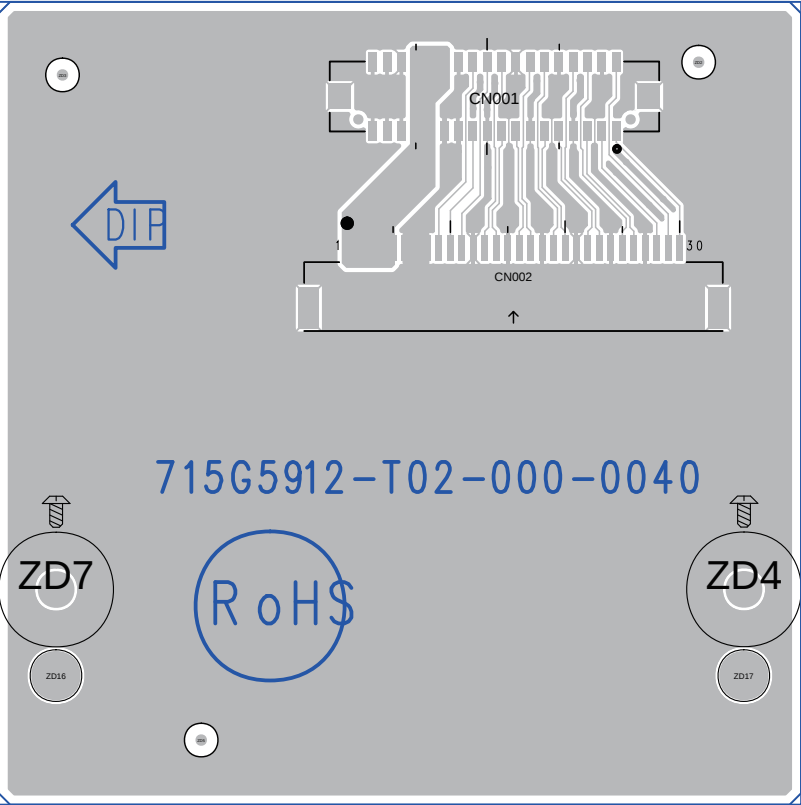
10-6-1 Apter



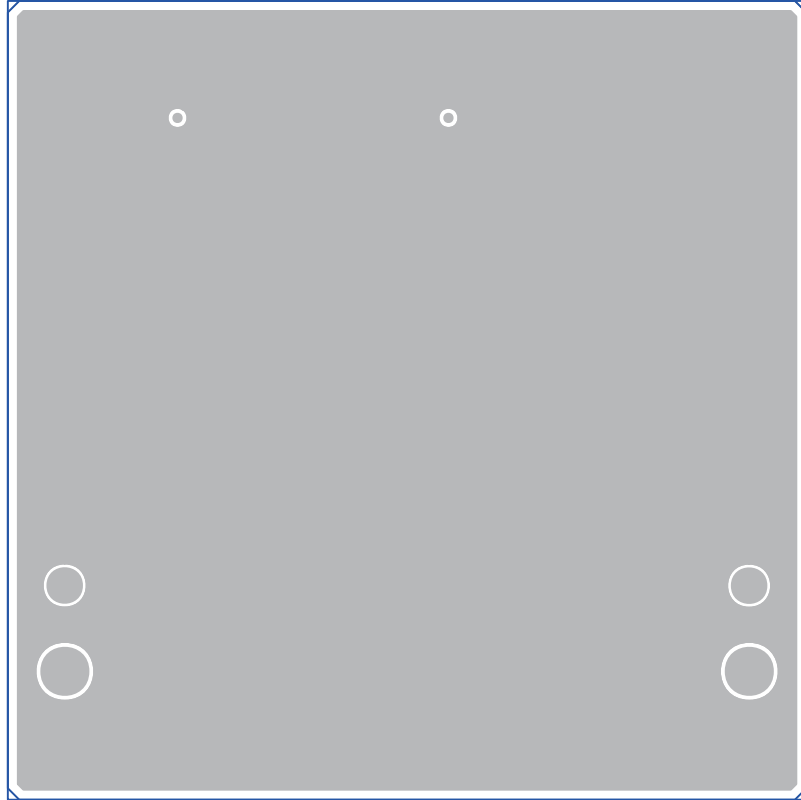
Apter	715G5912	A	2012-10-12

10-6-2 Option Board layout top/bottom

Layout AmbiLight control (top side)



Layout AmbiLight control (bottom side)

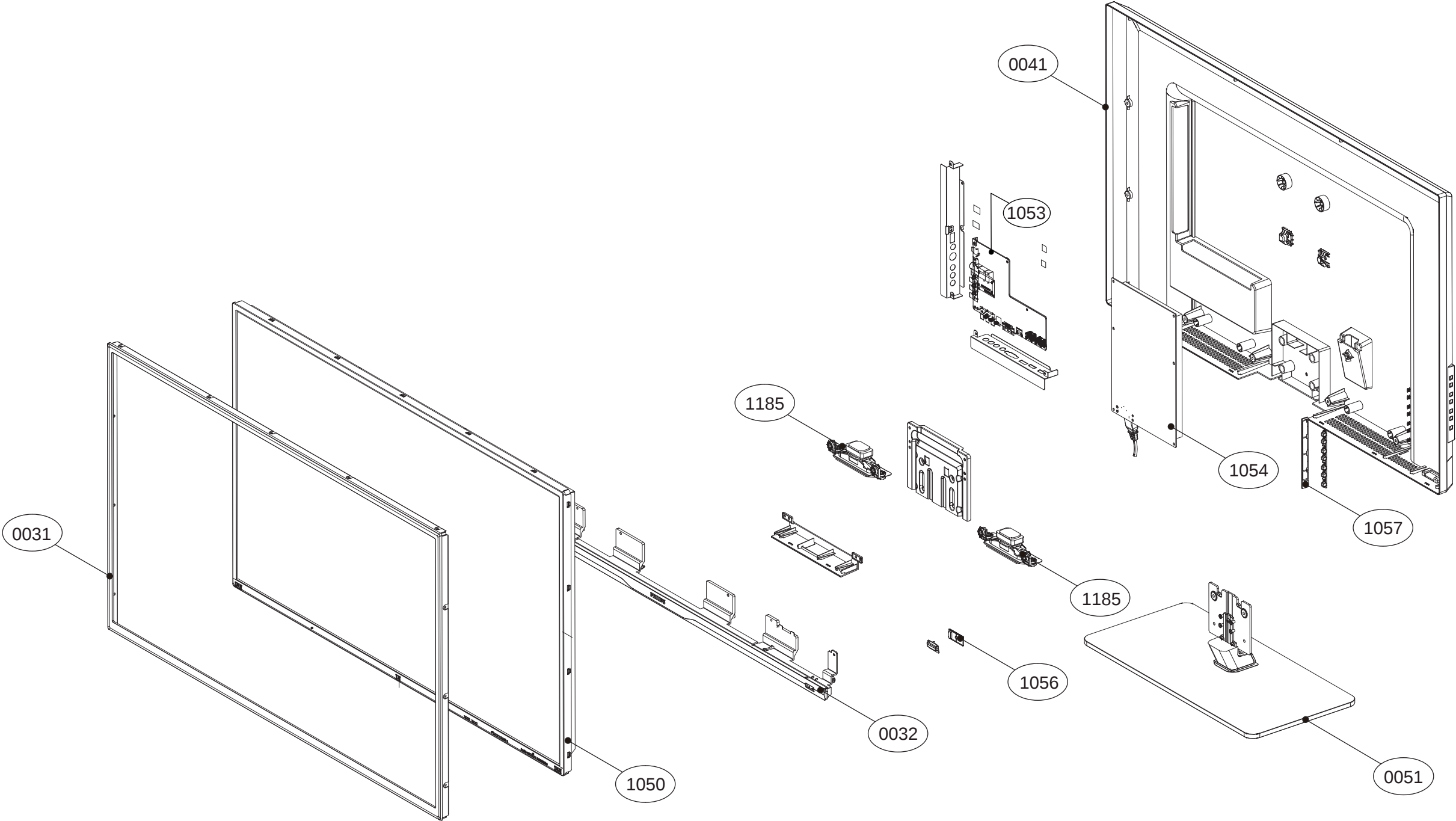


AmbiLight control layout top/bottom	715G5912	A	2013-10-18

11. Styling Sheets

11.1 3008 series 32"

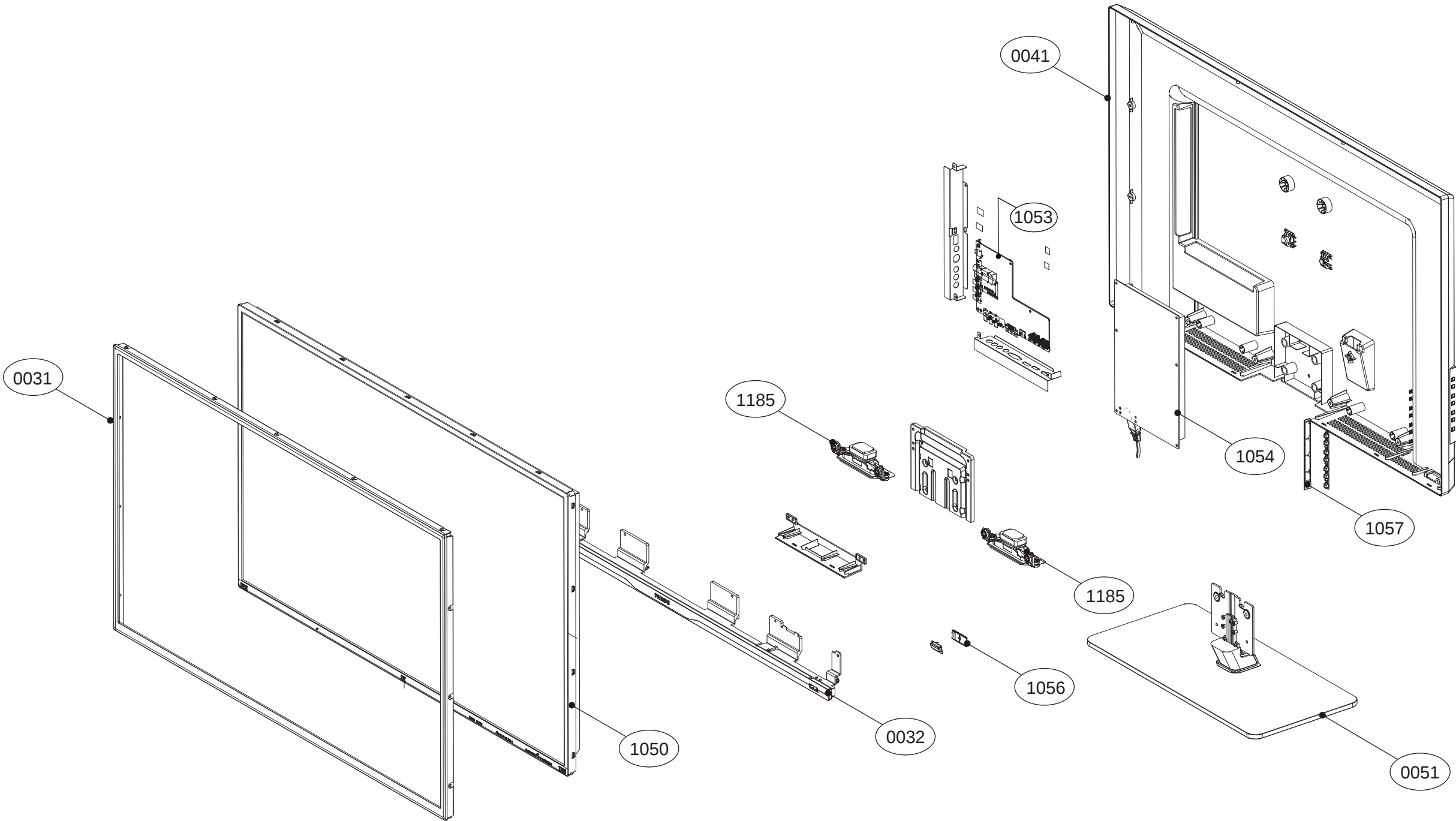
32PFL3008



Pos No.	Description	Remarks
0031	Bezel	
0032	Deco bezel	
0041	Rear cover	
0051	Base	
1050	Display panel	
1053	Panel SSB	
1054	Power Supply Unit	
1056	IR/LED panel	
1057	Keyboard panel control	
1176	Remote control	Not displayed
1185	Speakers	

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9

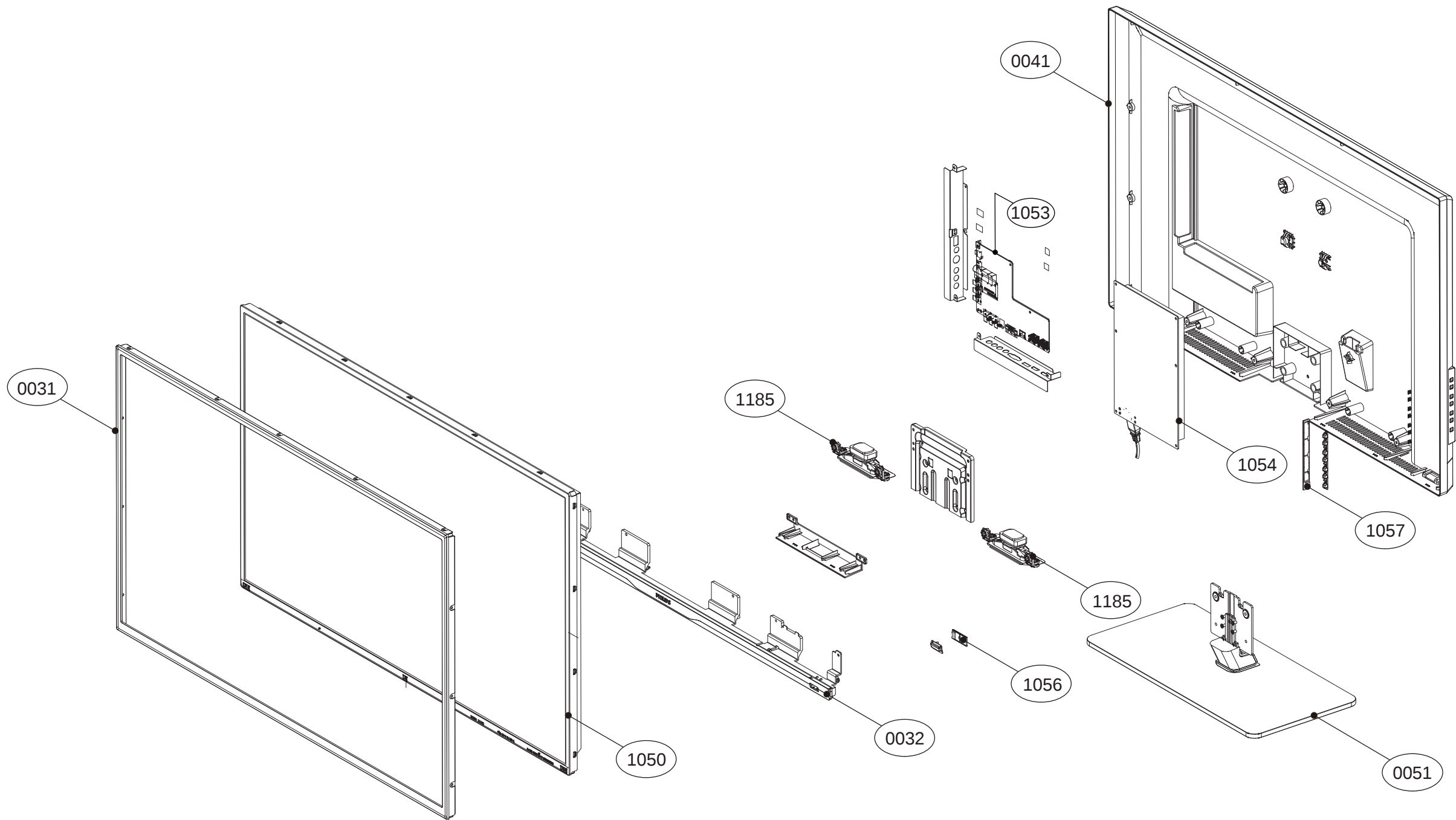
39PFL3008



Pos No.	Description	Remarks
0031	Bezel	
0032	Deco bezel	
0041	Rear cover	
0051	Base	
1050	Display panel	
1053	Panel SSB	
1054	Power Supply Unit	
1056	IR/LED panel	
1057	Keyboard panel control	
1176	Remote control	Not displayed
1185	Speakers	

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9

42PFL3008



Pos No.	Description	Remarks
0031	Bezel	
0032	Deco bezel	
0041	Rear cover	
0051	Base	
1050	Display panel	
1053	Panel SSB	
1054	Power Supply Unit	
1056	IR/LED panel	
1057	Keyboard panel control	
1176	Remote control	Not displayed
1185	Speakers	

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9