

Service
Service
Service



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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

- Added "/60" models to [Table 6-3](#).

Manual xxxx xxx xxxx.2

- **Chapter 4:** added information on returning a defect LCD panel.
- **Chapter 6:** updated Option code overview.

2. Technical Specifications, 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).

2.2 Directions for Use

Directions for use can be downloaded from the following websites:

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

2.1 Technical Specifications

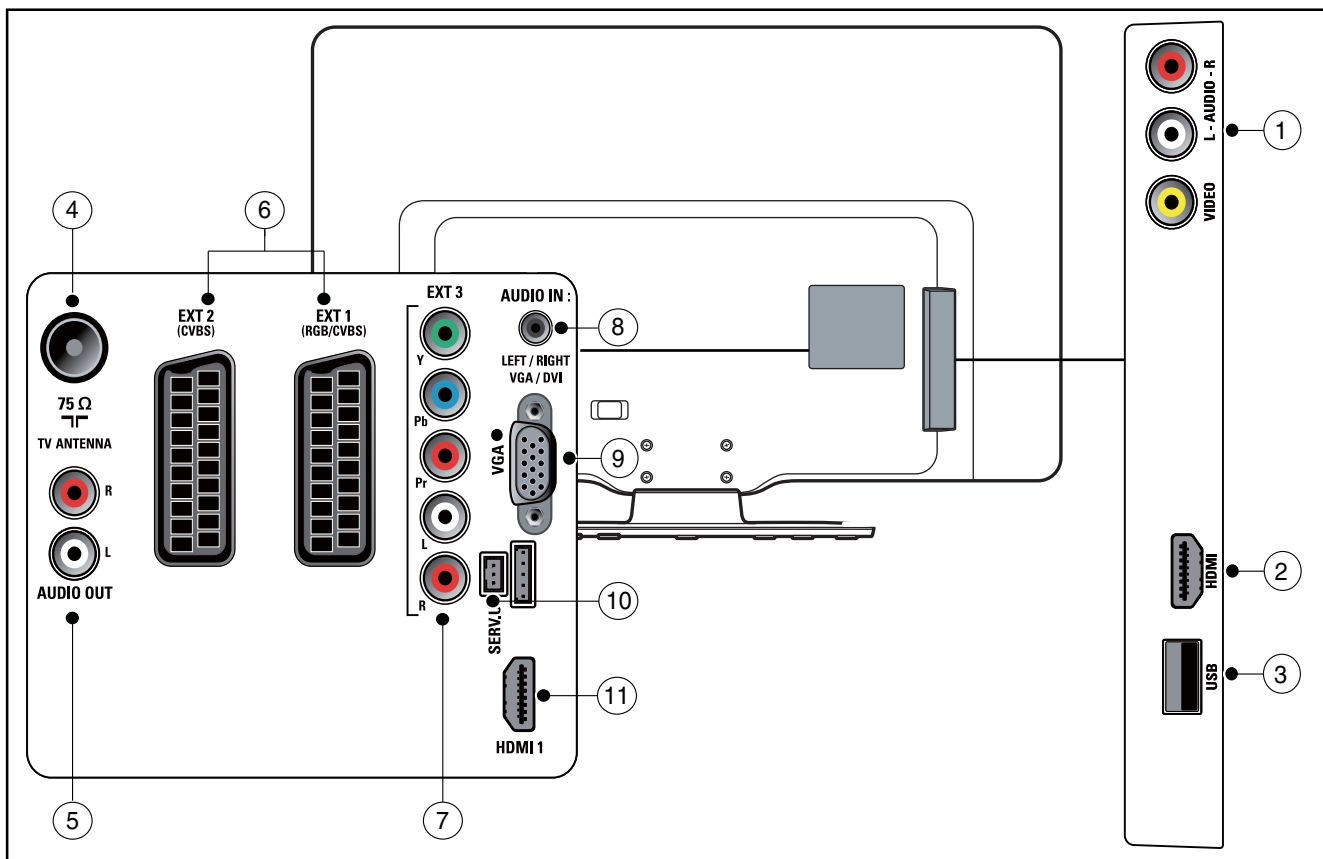
For on-line product support please use the links in. Here is product information available, as well as getting started, user manuals, frequently asked questions and software & drivers.

Table 2-1 Described Model Numbers:

Model Number	Styling	Published in
32PFL3605/12	Dali	3122 785 18870
32PFL3605/60	Dali	3122 785 18870
42PFL3605/12	Dali	3122 785 18870
42PFL3605/60	Dali	3122 785 18870

Note: The given Model Numbers are subject to change.

2.3 Connections



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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 - Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS 1 V_{PP} / 75 Ω
Rd - Audio R 0.5 V_{RMS} / 10 kΩ
Wh - Audio L 0.5 V_{RMS} / 10 kΩ



2 - HDMI: Digital Video, Digital Audio - In



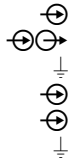
10000_017_090121.eps
090428

Figure 2-2 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 - n.c.
- 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



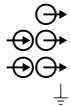
3 - USB2.0



10000_022_090121.eps
090121

Figure 2-3 USB (type A)

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



2.3.2 Rear Connections

4 - TV ANTENNA - In

Signal input from an antenna, cable or satellite.

5 - Audio - Out: Left / Right

Wh - Audio - L 0.5 V_{RMS} / 10 kΩ
Rd - Audio - R 0.5 V_{RMS} / 10 kΩ



6 - EXT1 - 2: Video RGB/YC - In, CVBS - In/Out, Audio - In/Out

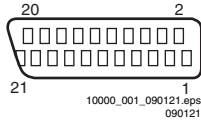


Figure 2-4 SCART connector

1 - Audio R	0.5 V _{RMS} / 1 kΩ	⊕→
2 - Audio R	0.5 V _{RMS} / 10 kΩ	⊕→
3 - Audio L	0.5 V _{RMS} / 1 kΩ	⊕→
4 - Ground Audio	Gnd	⊥
5 - Ground Blue	Gnd	⊥
6 - Audio L	0.5 V _{RMS} / 10 kΩ	⊕→
7 - Video Blue/C-out	0.7 V _{PP} / 75 Ω	⊕→
8 - Function Select	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	⊕→
9 - Ground Green	Gnd	⊥
10 - n.c.		
11 - Video Green	0.7 V _{PP} / 75 Ω	⊕→
12 - n.c.		
13 - Ground Red	Gnd	⊥
14 - Ground P50	Gnd	⊥
15 - Video Red/C	0.7 V _{PP} / 75 Ω	⊕→
16 - Status/FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 Ω	⊕→
17 - Ground Video	Gnd	⊥
18 - Ground FBL	Gnd	⊥
19 - Video CVBS	1 V _{PP} / 75 Ω	⊕→
20 - Video CVBS/Y	1 V _{PP} / 75 Ω	⊕→
21 - Shield	Gnd	⊥

7 - EXT3: 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	⊕→

8 - Audio - In: Left / Right, VGA

Gn - Audio L/R in	0.5 V _{RMS} / 10 kW	⊕→
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9 - PC IN:VGA

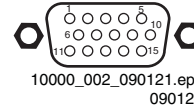


Figure 2-5 VGA connector

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

10 - Service / UART

1 - Ground	Gnd	⊥
2 - UART_TX	Transmit	⊕→
3 - UART_RX	Receive	⊕→

11 - HDMI 1: Digital Video, Digital Audio - In

See [2 - HDMI: Digital Video, Digital Audio - In.](#)

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: AG2B033500001) 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. 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

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

	3.575612 MHz and PAL N= 3.582056 MHz)	SVHS	Super Video Home System
PCB	Printed Circuit Board (same as "PWB")	SW	Software
PCM	Pulse Code Modulation	SWAN	Spatial temporal Weighted Averaging Noise reduction
PDP	Plasma Display Panel	SXGA	1280 × 1024
PFC	Power Factor Corrector (or Pre-conditioner)	TFT	Thin Film Transistor
PIP	Picture In Picture	THD	Total Harmonic Distortion
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency	TMDS	Transmission Minimized Differential Signalling
POD	Point Of Deployment: a removable CAM module, implementing the CA system for a host (e.g. a TV-set)	TS	Transport Stream
POR	Power On Reset, signal to reset the uP	TXT	Teletext
PSDL	Power Supply for Direct view LED backlight with 2D-dimming	TXT-DW	Dual Window with Teletext
PSL	Power Supply with integrated LED drivers	UI	User Interface
PSLS	Power Supply with integrated LED drivers with added Scanning functionality	uP	Microprocessor
PTC	Positive Temperature Coefficient, non-linear resistor	UXGA	1600 × 1200 (4:3)
PWB	Printed Wiring Board (same as "PCB")	V	V-sync to the module
PWM	Pulse Width Modulation	VESA	Video Electronics Standards Association
QRC	Quasi Resonant Converter	VGA	640 × 480 (4:3)
QTNR	Quality Temporal Noise Reduction	VL	Variable Level out: processed audio output toward external amplifier
QVCP	Quality Video Composition Processor	VSB	Vestigial Side Band; modulation method
RAM	Random Access Memory	WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
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.	WXGA	1280 × 768 (15:9)
RC	Remote Control	XTAL	Quartz crystal
RC5 / RC6	Signal protocol from the remote control receiver	XGA	1024 × 768 (4:3)
RESET	RESET signal	Y	Luminance signal
ROM	Read Only Memory	Y/C	Luminance (Y) and Chrominance (C) signal
RSDS	Reduced Swing Differential Signalling data interface	YPbPr	Component video. Luminance and scaled color difference signals (B-Y and R-Y)
R-TXT	Red Teletext	YUV	Component video
SAM	Service Alignment Mode		
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	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		
SSC	Spread Spectrum Clocking, used to reduce the effects of EMI		
STB	Set Top Box		
STBY	STand-BY		
SVGA	800 × 600 (4:3)		

4. Mechanical Instructions

Index of this chapter:

[4.1 Cable Dressing](#)

[4.2 Service Positions](#)

[4.3 Assy/Panel Removal 32"](#)

[4.4 Assembly/Panel Removal 42"](#)

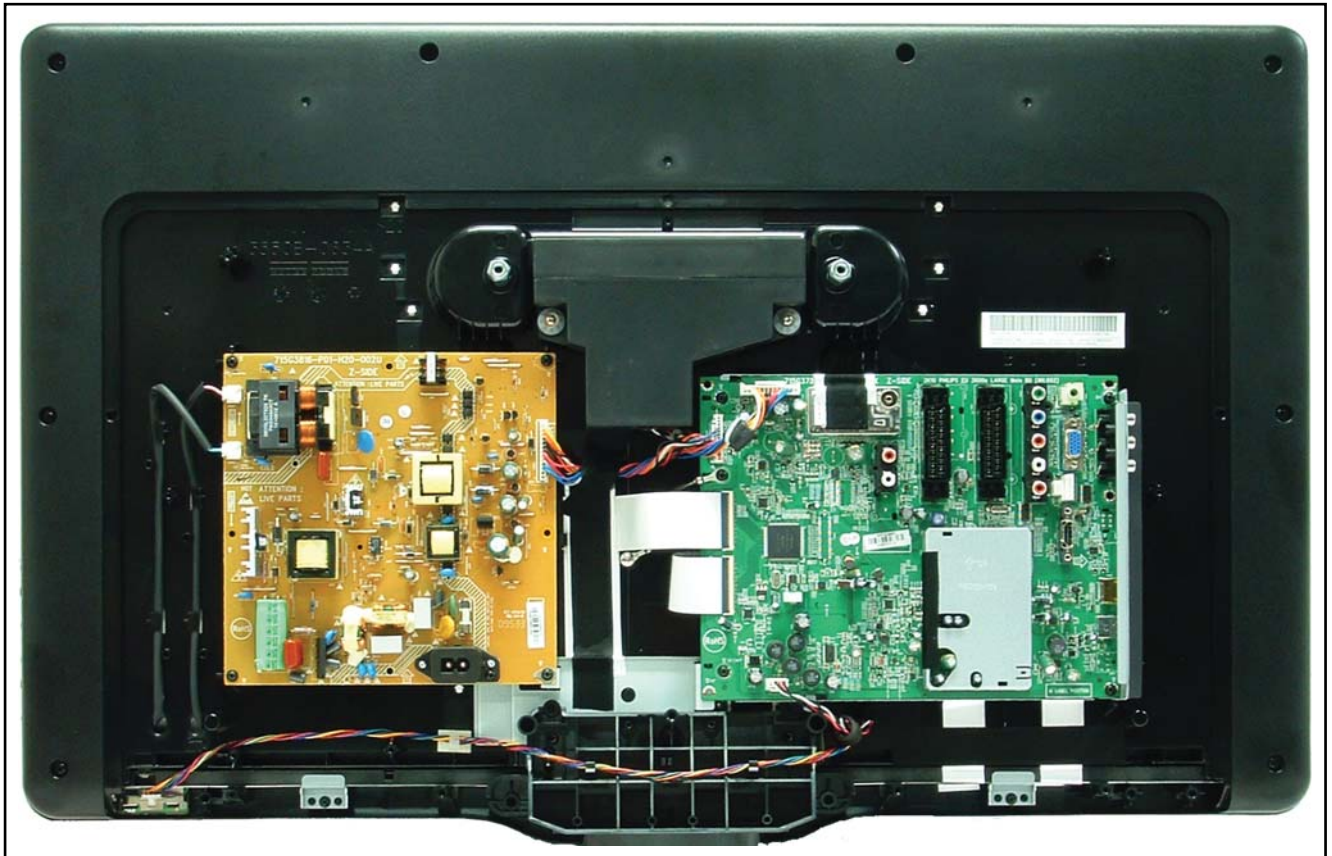
[4.5 Returning a defect LCD panel](#)

[4.6 Set Re-assembly](#)

Notes:

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

4.1 Cable Dressing



18870_101_100204.eps
100204

Figure 4-1 Cable dressing (32")



18870_100_100107.eps
100308

Figure 4-2 Cable dressing (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 Assy/Panel Removal 32"

4.3.1 Rear Cover

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

1. Remove the fixation screws that secure the rear cover.
2. Lift the rear cover from the TV. Make sure that wires and flat foils are not damaged while lifting the rear cover from the set.

4.3.2 Small Signal Board (SSB)

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 both the LVDS Flat Foil connectors.
Caution: be careful, as these are very fragile connectors! Take the flat foils out of their connectors.
2. Unplug all other connectors.
3. Release the tape near the bottom side of the set from the LCD panel.
4. Remove all other fixation screws from the SSB.

5. Take out the SSB together with its shielding.
6. Remove the screws near the HDMI and L/R audio connectors.
7. The SSB can now be shifted sideways away from the side connector cover and take out of the shielding.
Caution: be careful not to damage the thermal pad between the SSB and shielding.

4.3.3 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 power connector from the SSB.
2. Unplug all other connectors from the PSU.
3. Remove all fixation screws from the PSU.
4. The PSU can now be taken out of the set.

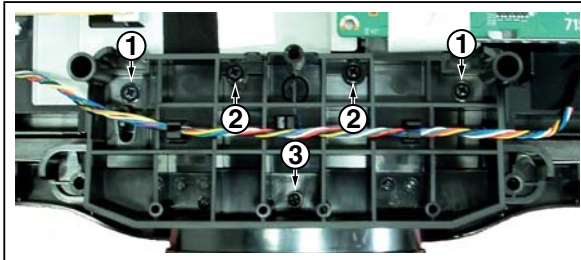
When defective, replace the whole unit.

4.3.4 Stand removal

See [Figure 4-3](#).

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 SSB as described earlier up till step 5 and including step 5.
2. Remove the fixation screws [1], (M3).
3. Remove the fixation screws [2], (M4).
4. Remove the fixation screws [3], (Parker).
5. Take out the stand.



18850_102_100203.eps
100203

Figure 4-3 Stand (32")

4.3.5 Speakers

1. Unplug the speaker connector from the SSB and remove the wire wrap from this cable.
 2. Remove the fixation screws from the speaker.
 3. Take the speaker out.
- When defective, replace the whole unit.

4.3.6 Stand support plate

1. Release the IR/LED/Keyboard Control cable from its clamps and put it aside.
2. Remove the SSB as described earlier.
3. Remove the PSU as described earlier.
4. Remove the Stand as described earlier.
5. Release the tape and take out of the set.

4.3.7 IR/LED Board

1. Release the IR/LED/Keyboard Control cable from its clamps.
2. Remove the fixation screw in the middle-bottom of the stand that secures the stand with the bezel, see [Figure 4-3](#) [3].
3. Remove the clips at the bottom that secure the LCD panel with the bezel.
4. Remove the fixation screws that secure the LCD panel with the bezel.
5. Remove the bezel from the set.
6. Unplug the connectors from the IR/LED board.
7. Release the clips that hold the board and take it from the bezel.

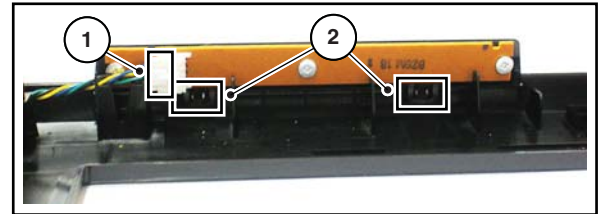
When defective, replace the whole unit.

4.3.8 Keyboard Control Panel

1. Release the IR/LED/Keyboard Control cable from its clamps.
2. Remove the fixation screw in the middle-bottom of the stand that secures the stand with the bezel, see [Figure 4-3](#) [3].
3. Remove the clips at the bottom that secure the LCD panel with the bezel.
4. Remove the fixation screws that secure the LCD panel with the bezel.

5. Remove the bezel from the set.
6. Unplug the connectors from the IR/LED board.
7. See [Figure 4-4](#), unplug the connector [1] from the Keyboard Control Panel.
8. Release the clips that secure the Keyboard Control Panel [2].

When defective, replace the whole unit.



18850_104_100203.eps
100203

Figure 4-4 Keyboard Control Panel (32")

4.3.9 LCD Panel

1. Remove the SSB as described earlier.
 2. Remove the PSU as described earlier.
 3. Remove the speaker as described earlier.
 4. Remove the stand as described earlier.
 5. Remove the Stand support as described earlier.
 6. Remove the clips at the bottom that secure the LCD panel with the bezel.
 7. Remove the fixation screws that secure the LCD panel with the bezel.
 8. Lift the LCD Panel from the bezel.
- When defective, replace the whole unit.

4.4 Assembly/Panel Removal 42"

4.4.1 Rear Cover

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

1. Remove the fixation screws that secure the rear cover.
2. Lift the rear cover from the TV. Make sure that wires and flat foils are not damaged while lifting the rear cover from the set.

4.4.2 Small Signal Board (SSB)

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 both the LVDS Flat Foil connectors.
Caution: be careful, as these are very fragile connectors! Take the flat foils out of their connectors.
2. Unplug all other connectors.
3. Release the tape near the tuner from the LCD panel.
4. Release the tape near the processor shielding from the LCD panel.
5. Remove the fixation screw that connects the ground cable.
6. Remove all other fixation screws from the SSB.
7. Take out the SSB together with its shielding.
8. Remove the screws near the HDMI and L/R audio connectors.
9. The SSB can now be shifted sideways away from the side connector cover and take out of the shielding.
Caution: be careful not to damage the thermal pad between the SSB and shielding.

4.4.3 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.

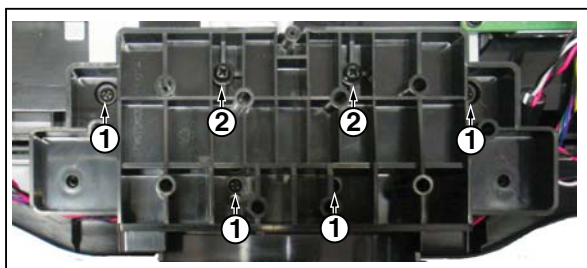
1. Unplug power connector from the SSB and take the cable out of the cable clamp.
 2. Unplug all other connectors from the PSU.
 3. Remove all fixation screws from the PSU.
 4. The PSU can now be taken out of the set.
- When defective, replace the whole unit.

4.4.4 Stand removal

See [Figure 4-5](#).

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 [1], (Parker).
2. Remove the fixation screws [2], (M4).
3. Take out the stand.



18850_105_100203.eps
100203

Figure 4-5 Stand (42")

4.4.5 Speakers

1. Unplug the speaker connector from the SSB.
 2. Remove the stand, as described earlier.
 3. Take the speakers out together with their casing.
- When defective, replace the whole unit.

4.4.6 Stand support plate

1. Remove the stand as described earlier.
2. Remove the SSB as described earlier.
3. Remove the PSU as described earlier.
4. Remove all fixation screws from the stand support plate and take it out of the set.

4.4.7 IR/LED Board

1. Remove the stand as described earlier.
2. Remove the speakers as described earlier.
3. Remove the SSB as described earlier.
4. Remove the clips at the bottom that secure the LCD panel with the bezel.
5. Remove the fixation screws that secure the LCD panel with the bezel.
6. Lift the LCD Panel from the bezel.
7. Unplug the connectors from the IR/LED board.
8. Release the clips that hold the board and take it from the bezel.

When defective, replace the whole unit.

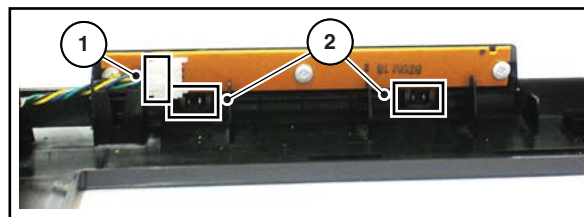
4.4.8 Keyboard Control Panel

See [Figure 4-6](#).

1. Remove the stand as described earlier.
2. Remove the speakers as described earlier.
3. Remove the SSB as described earlier.

4. Remove the clips that secure the LCD panel with the bezel.
5. Remove the fixation screws that secure the LCD panel with the bezel.
6. Lift the LCD Panel from the bezel.
7. Unplug the connector [1] from the Keyboard Control Panel.
8. Release the clips that secure the Keyboard Control Panel [2].

When defective, replace the whole unit.



18850_104_100203.eps
100203

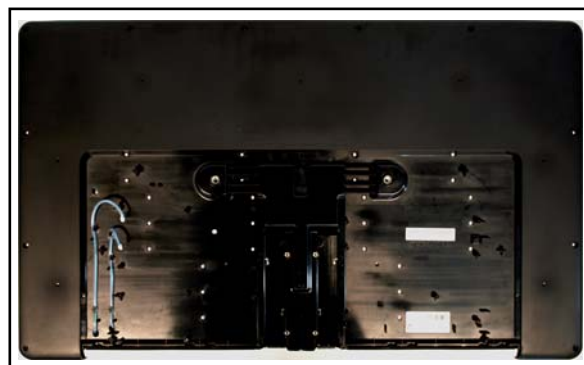
Figure 4-6 Keyboard Control Panel (42")

4.4.9 LCD Panel

1. Remove the stand as described earlier.
 2. Remove the speakers as described earlier.
 3. Remove the SSB as described earlier.
 4. Remove the PSU as described earlier.
 5. Remove the Stand support as described earlier.
 6. Remove the clips that secure the LCD panel with the bezel.
 7. Remove the fixation screws that secure the LCD panel with the bezel.
 8. Lift the LCD Panel from the bezel.
- When defective, replace the whole unit.

4.5 Returning a defect LCD panel

To return a defect LCD panel to the factory, all boards, cabling, mechanical supports, shieldings, clamps, spacers, the bezel and tapes have to be removed from the panel, see [Figure 4-7](#). Be sure to carefully pack the area's of the panel that are visible during normal use.



18931_100_100510.eps
100510

Figure 4-7 LCD panel

4.6 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](#) and [Figure 4-2](#).
- Pay special attention not to damage the EMC foams on the SSB shields. Ensure that EMC foams are mounted correctly.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

- [5.1 Service Modes](#)
- [5.2 Service Tools](#)
- [5.3 Software Upgrading](#)
- [5.4 Error Codes](#)
- [5.5 Fault Finding and Repair Tips](#)

5.1 Service Modes

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

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.

5.1.1 Customer Service Mode (CSM)

Purpose

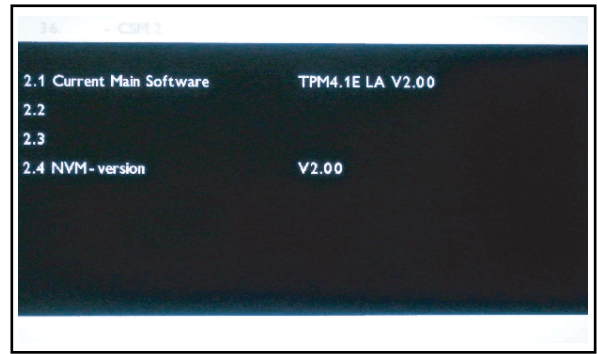
The Customer Service Mode shows error codes and information on the TV's operation settings. The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service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

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

How to Activate CSM

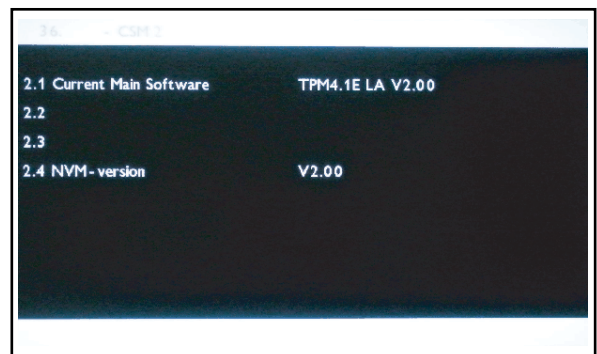
Key in the code "123654" via the standard RC transmitter.

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



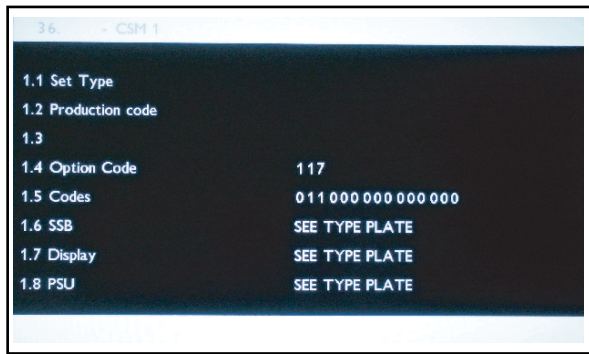
18870_211_100310.eps
100310

Figure 5-2 CSM Menu [2/3]



18870_211_100310.eps
100310

Figure 5-3 CSM Menu [3/3]



18870_201_100209.eps
100310

Figure 5-1 CSM Menu [1/3]

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.

General

- **1.1 Set Type** NVM read/write (max. 16 characters).
- **1.2 Production code** NVM read/write (max. 16 characters).
- **1.4 Option Code** Store in NVM (set feature grouping as option) panel code.
- **1.5 Codes** Error code Layer 2. Store in NVM. 10 error buffers: 000 = No problem, 011 = I²C bus error, 012 = tuner error, 013 = panel.
- **1.6 SSB** 12NC NVM read/write (12 characters).
- **1.7 Display** 12NC NVM read/write (12 characters).
- **1.8 PSU** 12NC NVM read/write (12 characters).
- **2.1 Current Main SW** Detects and displays software version.
- **2.4 NVM version** Detects and displays software version.
- **3.1 Signal Quality/Present** analog/digital signal strength.
- **3.2 TV lock** Detects and displays.
- **3.3 HDCP keys** Detects and displays.
- **3.6 HDMI audio format input stream** Per supported format e.g. Dolby TrueHD, DTS-HD Master Audio, MPCM.
- **3.7 HDMI video format input stream** Per Supported format. e.g. 576i 50 Hz, 576p 50 Hz, 720p 50 Hz, 1080i 50 Hz, 1080p 50 Hz

How to Exit CSM

Press "MENU" on the RC-transmitter.

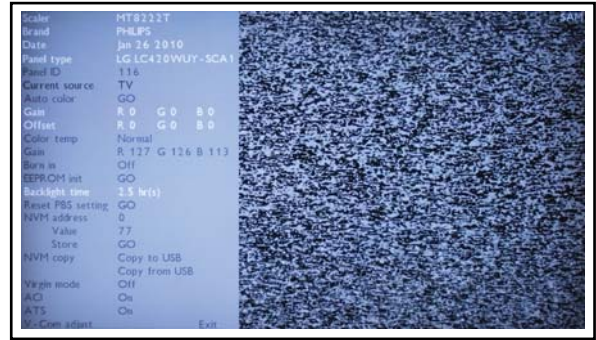
5.1.2 Service Alignment Mode (SAM)

How to enter

To enter the factory mode, use the following method:

- Press the following key sequence on the remote control transmitter: "062596" directly followed by the "INFO" button.

After entering the factory mode, the following screen is visible on the top and right of the panel.



18870_202_100209.eps
100209

Figure 5-4 Example of SAM

Table 5-1 Contents of SAM

Action Items	Range	Default Value		Description
		32"	42"	
Scaler		MT8222T	MT8222T	Scaler IC type
Brand		PHILIPS	PHILIPS	Set brand
Date		Jan 26 2010	Jan 26 2010	example of released Software date
Panel type		LG LC320WUY-SCA1	LG LC420WUY-SCA1	Panel type number
Panel ID		117	116	Panel ID identify
Current source		TV	TV	Selected source
Auto color		GO	GO	PC: any pattern has black and white YPbPr: SMPTE bar (colour bar), any timing.
Gain	0 - 255	R 0 G 0 B 0	R 0 G 0 B 0	Analogue to Digital Converter Gain for each colour, AutoColor affects this and it value is depends on the input
Offset	0 - 255	R 0 G 0 B 0	R 0 G 0 B 0	Analogue to Digital Converter Offset for each colour, AutoColor affects this and it value is depends on the input
Color temp		Normal	Normal	colour temperature settings, normal, cool, or warm
Gain	0 - 255	R 127 G 124 B 119	R 127 G 126 B 113	Back-End Scaler R G B Gain NVM hasYPbPr NORMAL, WARM, COOL, CUSTOMER four sets. Other source use offset with hardcoding
Burn in		Off	Off	Resets the set to manufacturer's mode
EEPROM init		GO	GO	Resets the EEPROM to initial mode
Backlight time		1 hr(s)	1 hr(s)	Setsthe backlight time
Reset PBS setting		GO	GO	Resets the PBS setting
NVM	address	0	0	Example of an NVM address
	value	77	77	Example of an NVM value
	store	GO	GO	Stores the NVM setting
NVM copy		Copy to USB	Copy to USB	Use this to copy the NVM data from the TV to the USB
		Copy from USB	Copy from USB	Use this to copy the NVM data from the USB to the TV
Virgin mode		Off	Off	Resets the set to its initial status
ACI		On	On	ACI "On" or "Off"
ATS		On	On	ATS "On" or "Off"
V - Com adjust	Press OK	V-Com adjust Pattren White GAM1 862 35E GMA2 821 335 GMA3 754 2F2 GMA4 638 27E GMA5 390 186 GMA6 270 10E GMA7 205 CD GMA8 162 A2 VCOM 455 1C7 Store Default init Yes Exit	V-Com adjust Pattren White GAM1 879 36F GMA2 834 342 GMA3 768 300 GMA4 649 289 GMA5 388 184 GMA6 261 105 GMA7 195 C3 GMA8 151 97 VCOM 417 1A1 Store Default init Yes Exit	Adjusts the V-Com setting
Exit	Press OK			Exit from factory mode

How to Navigate

With the up/down cursor keys can be used to navigate through the menu, while with the Left/Right cursor the values can be changed.

How to EXIT

Choose "EXIT", and press the "OK" button.

5.2 Service Tools

5.2.1 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 I²C 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 upgrade 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 an 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.

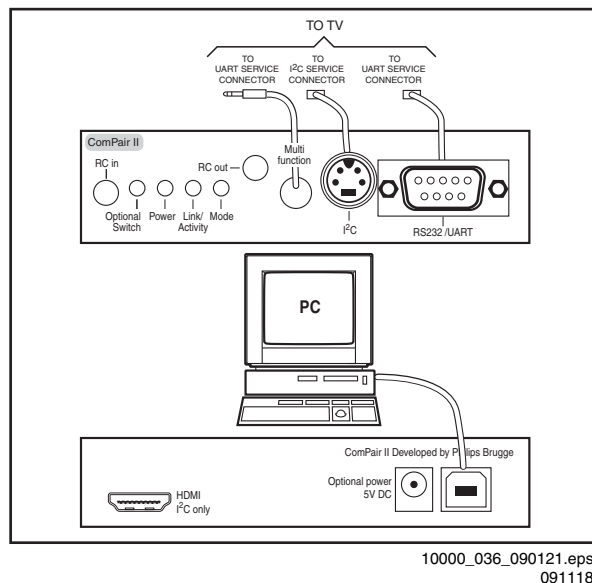


Figure 5-5 ComPair II interface connection

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 damaged!

How to Order

ComPair II order codes:

- ComPair II interface: 3122 785 91020.
- Programming software can be downloaded from the Philips Service portal.
- ComPair UART interface cable for TPM4.1x xx. 3122 785 90630.

Note: While having problems, contact the local support desk.

5.3 Software Upgrading

5.3.1 Introduction

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

Preparing a portable memory for software upgrade

You require the following:

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 USB flash drive (preferably empty).

Note:

1. Only FAT/DOS-formatted flash drives are supported.
2. Only use software update files that can be found on the <http://www.philips.com/support> web site.

5.3.2 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 "Menu" button on your remote control.
2. Select "Setup" and press "OK", then select [Software update] > [Current software].

If the current software version of your 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.

5.3.3 Download the latest software

1. Point your web browser to <http://www.philips.com/support>.
2. Find information and software related to your TV.
3. Select the latest software update file and download it to your PC.
4. Insert a USB flash drive into one of the USB ports of your PC.
5. Decompress the downloaded ZIP file and copy the "autorun.upg" to the root directory of the USB flash drive.

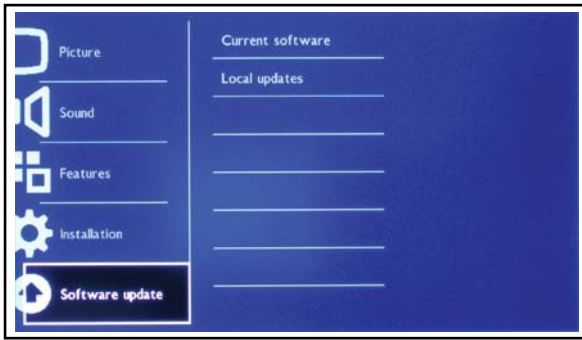
5.3.4 Update the TV software

1. Power off your TV and disconnect all memory devices.
2. Insert the USB flash drive that contains the software update file.
3. Switch on your TV, and TV will display the Main Menu upon detection of USB portable.
4. Select [Setup] and press OK. See [Figure 5-6](#).
Note: If the USB flash drive is not detected after power up, disconnect it and re-insert it.
5. Select [Software update] > [Local updates] and press OK. See [Figure 5-7](#) and [Figure 5-8](#).
6. When prompted, select [Cancel] or [OK] and press OK. See [Figure 5-9](#).
7. To proceed, In next menu select [Start] and press OK to start software updates. See [Figure 5-10](#).
8. Upgrading will now begins and the status of the updating progress will be displayed. See [Figure 5-11](#).
9. When the TV software is updated, the TV automatically restarts and the TV starts up with the new software.



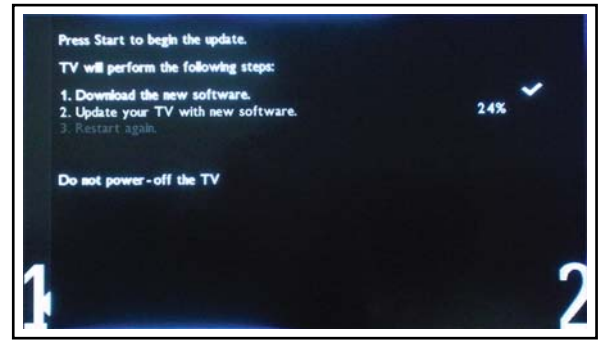
18870_203_100209.eps
100209

Figure 5-6 Update the TV software [1/6]



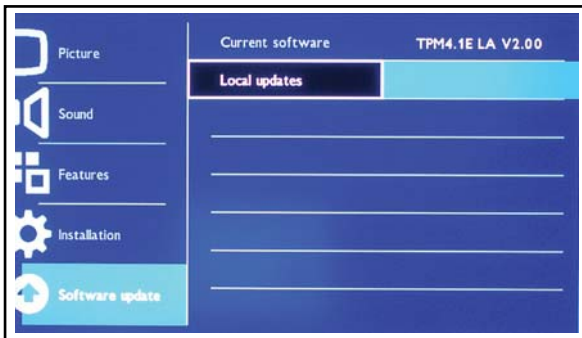
18870_204_100209.eps
100209

Figure 5-7 Update the TV software [2/6]



18870_208_100209.eps
100209

Figure 5-11 Update the TV software [6/6]



18870_205_100209.eps
100209

Figure 5-8 Update the TV software [3/6]



18870_206_100209.eps
100209

Figure 5-9 Update the TV software [4/6]



18870_207_100209.eps
100209

Figure 5-10 Update the TV software [5/6]

Notes:

- Do not remove the USB flash drive 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 power comes back.
- If an error occurs during the update retry the procedure or contact your dealer.
- We do not recommend downgrading to an older version.
- Once the upgrade is finished, use your PC to remove the TV software from your USB portable memory.

5.4 Error Codes

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

Basically there are three kinds of error codes:

Error Code	Event
000	No problem
011	I ² C bus error
012	Tuner error

5.5 Fault Finding and Repair Tips

5.5.1 Speakers

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!

5.5.2 Tuner

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

6. Alignments

Index of this chapter:

- [6.1 General Alignment Conditions](#)
- [6.2 Hardware Alignments](#)
- [6.3 TV Mode display adjust](#)
- [6.4 PC mode display adjustment](#)
- [6.5 Gamma upload and V-com adjustment](#)
- [6.6 Option Settings](#)
- [6.7 Serial Number Definition](#)

Note: The Service Alignment Mode (SAM) are described in chapter 5. [Service Modes, Error Codes, and Fault Finding](#). Menu navigation is done with the CURSOR UP, DOWN, LEFT or RIGHT keys of the remote control transmitter.

6.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 195 - 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.
- **Caution:** It is not allowed to use heatsinks as ground.
- Test probe: R_i > 10 MΩ, C_i < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

6.2 Hardware Alignments

Not applicable.

6.3 TV Mode display adjust

6.3.1 White balance adjustment

Equipment Requirements:

Quantum Data Pattern Generator 801GD or 802G or 802R; Apply 720P/60 at the pattern TVBAR100.

Alignment method:

Set Smart picture as “personal” (Brightness = 50, Contrast = 50, Video contrast = 50, Colour = 50); Access to SAM first, then to enable AUTO_COLOR to get HD ADC OFFSET and HD ADC GAIN. Check whether 32 gray scales are distinguishable.

6.3.2 Colour Temperature Alignment

Apply full white pattern, select smart setting to be Personal (Brightness = 50, Contrast = 50, Video contrast = 50, and Colour = 50). Adjust SCALER GAIN R G B to reach W/D and luminance in SAM mode as below. Select Color Temp in the SAM OSD. The 1931 CIE chromaticity (X, Y) coordinates must be adjusted according to [Table 6-1](#).

Table 6-1 Reading with Minolta CA-110

Picture Temp	x	y
Normal	0.287 ± 0.005	0.296 ± 0.005
Cool	0.276 ± 0.005	0.282 ± 0.005
Warm	0.313 ± 0.005	0.329 ± 0.005

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

Picture mode	Screen size	Colour temperature		
		Red	Green	Blue
Normal	32"	127	124	119
	42"	127	126	113
Cool	32"	119	114	127
	42"	125	121	127
Warm	32"	127	114	73
	42"	127	118	72

Luminance >400 cd/m² in the centre of the screen when “stand” picture at contrast 50, Video contrast 50 and brightness 100, with temp color “cool”.

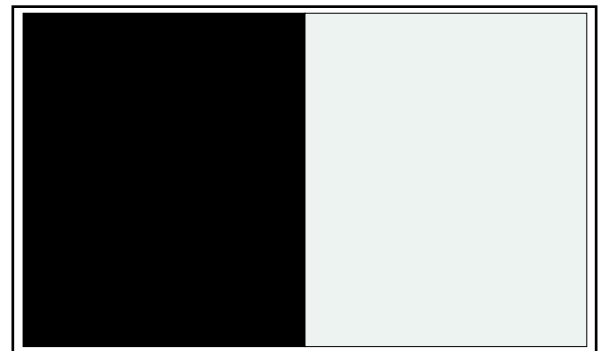
Note: This group setting about colour temp is also applied in TV/EX1/EX2/EXT3/VGA/HDMI/HDMI SIDE/AV SIDE. It means that TV/EX1/EX2/EXT3/VGA/HDMI/HDMI SIDE/ AV SIDE use one same setting.

6.4 PC mode display adjustment

6.4.1 AUTO colour adjustment

Set Brightness 100, Contrast 50, and apply 1024 × 768 @ 60Hz mode with 50 Black and 50 White pattern at the factory mode.

Activate AUTO-COLOR function for auto ADC offset and gain setup. See [Figure 6-1](#).



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100308

Figure 6-1 50-Black 50-White

6.5 Gamma upload and V-com adjustment

6.5.1 Gamma Upload

Press Remote control “123789+Info” Key, Gamma data will be load in IC MAX9668ETP by FW

6.5.2 V-com adjustment

Press Remote control “147852+info” Key, or press “062596+Info” for TV V-com adjustment, enter the V-com adjustment mode with a pattern (Green 2) as shown in [Figure 6-2](#).

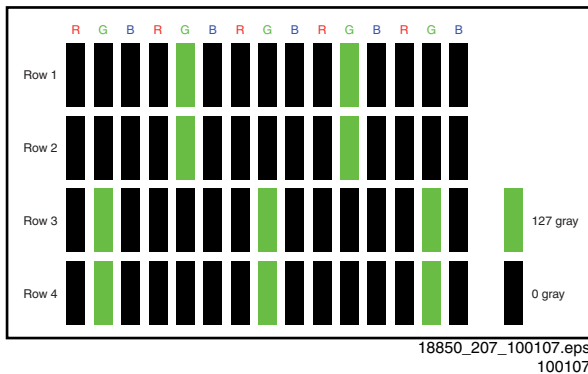


Figure 6-2 1920 × 1080 @ 60 Hz, Pixel ON/OFF pattern

Press up/down key of remote control to select V-com in the OSD. Press the right/left buttons on the remote control to fine-tune V-com until minimum or no flicker is detected. Press the “Store” key to save the aligned VCOM data into NVM.
Note: Make sure you get the optimum result before saving. This data is saved in the NVM of the IC MAX9668ETP (U7401).
This device can only be rewritten 100 times!

6.6 Option Settings

6.6.1 Reset Options

In SAM, after reset “Reset option code”, restart the set immediately.

6.6.2 Option Code Overview

Table 6-3 Option code overview

CTN_ALT BOM#	Panel Type	Panel ID
32PFL3605/12_1	LG LC320WUY-SCB1	117
42PFL3605/12_1	LG LC420WUY-SCB1	116
32PFL3605/60_1	LG LC320WUY-SCB1	117
42PFL3605/60_1	LG LC420WUY-SCB1	116

6.7 Serial Number Definition

Table 6-4 BOM Code

Panel Supplier	Code
AU	1
CPT	2
LPL (LG)	3
QDI	4
CMO	5
HSD	6
SVA	7

7. Circuit Descriptions

Index of this chapter:

- [7.1 Introduction](#)
- [7.2 Power Architecture](#)
- [7.3 T-CON Architecture](#)

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

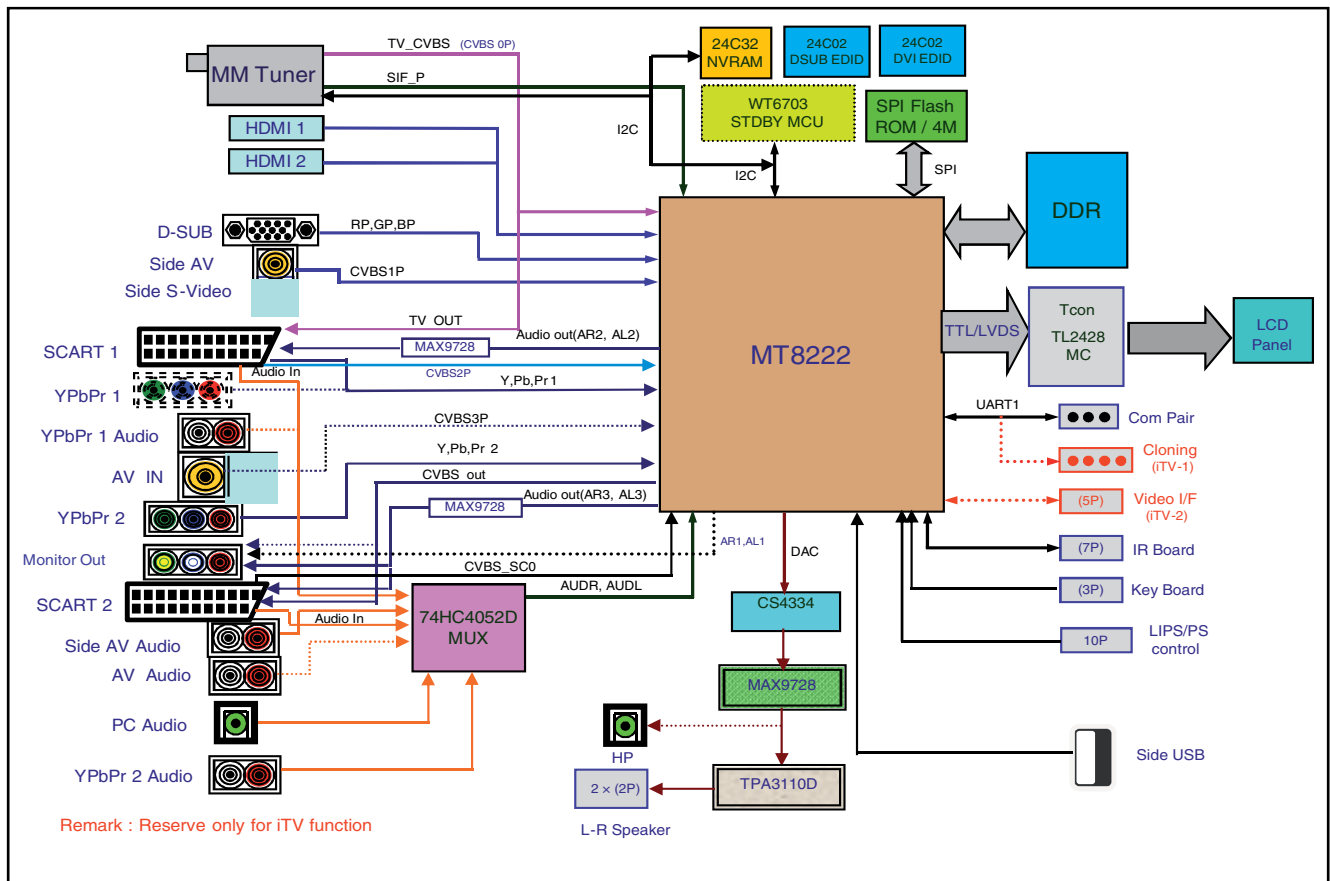
The TPM4.1E LA chassis is using the MT8222 for main processing.

7.1.1 Implementation

A key component of this chassis is the TCON TL2428MC

7.1.2 TPM4.1E LA Architecture Overview

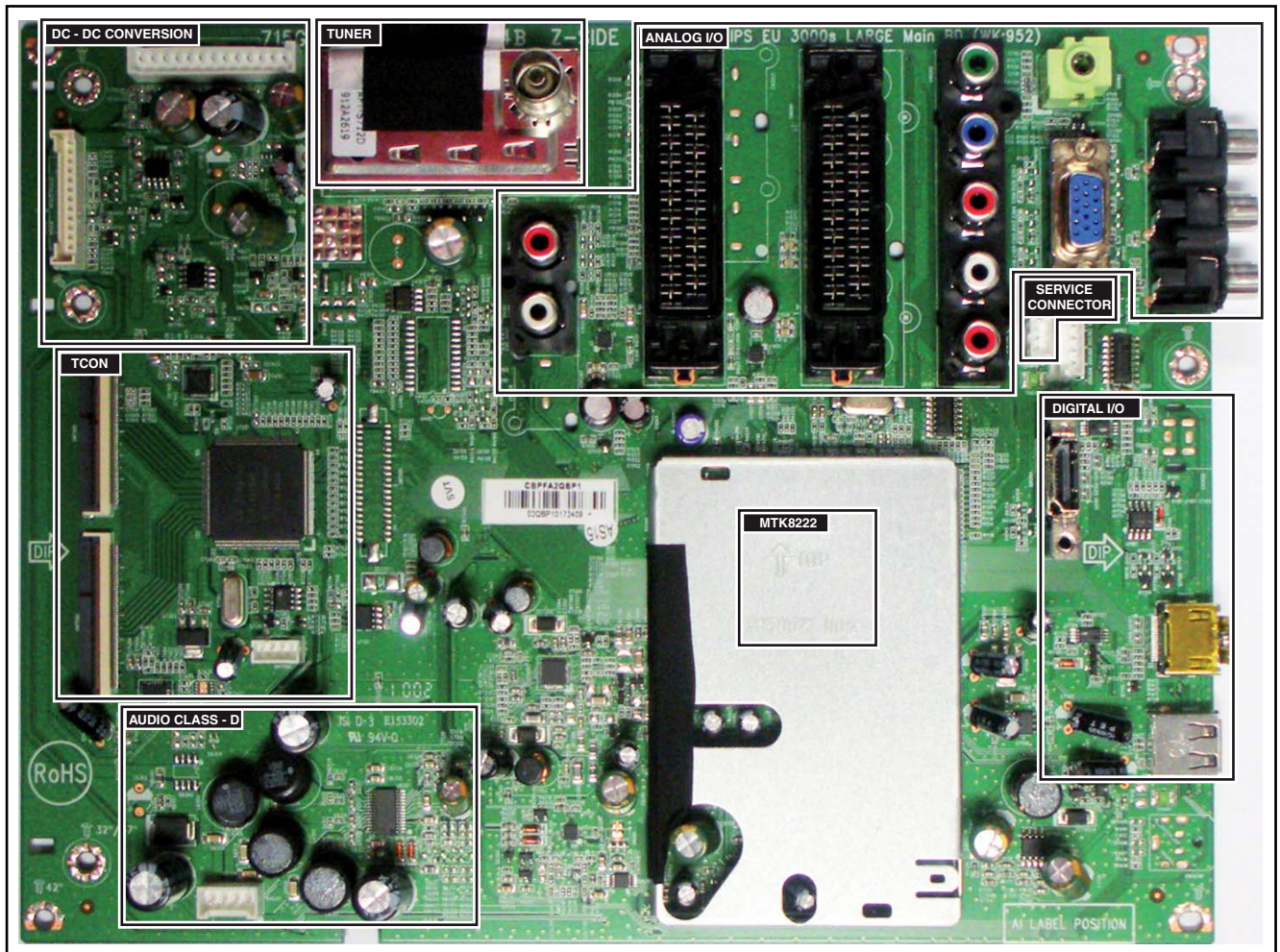
- For details about the chassis diagrams refer to chapter 10. Circuit Diagrams and PWB Layouts. An overview of the TPM4.1E LA architecture can be found in [Figure 7-1](#).



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Figure 7-1 Architecture of TPM4.1E LA

7.1.3 SSB Cell Layout

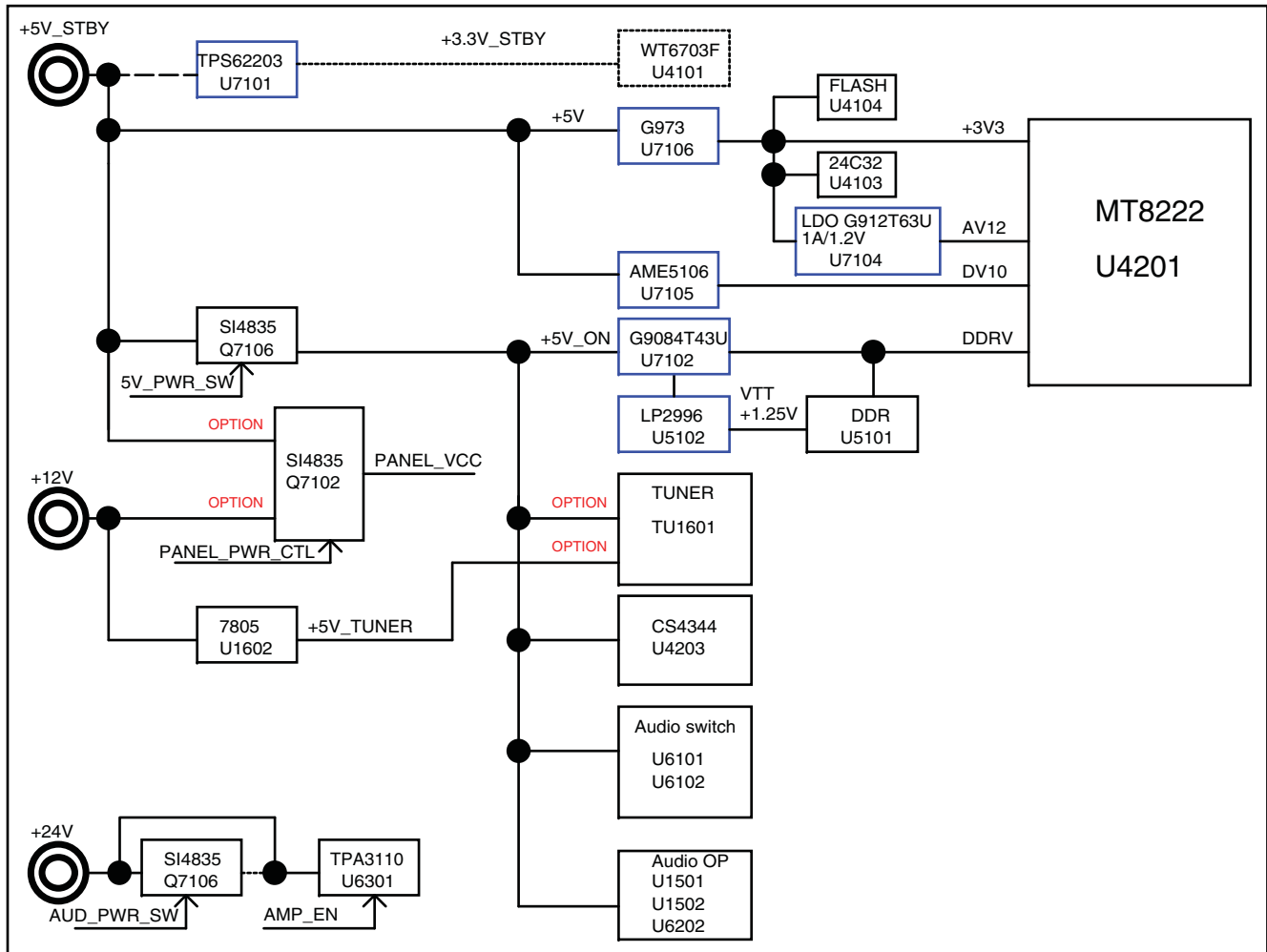


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Figure 7-2 SSB layout cells (top view)

7.2 Power Architecture

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



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100308

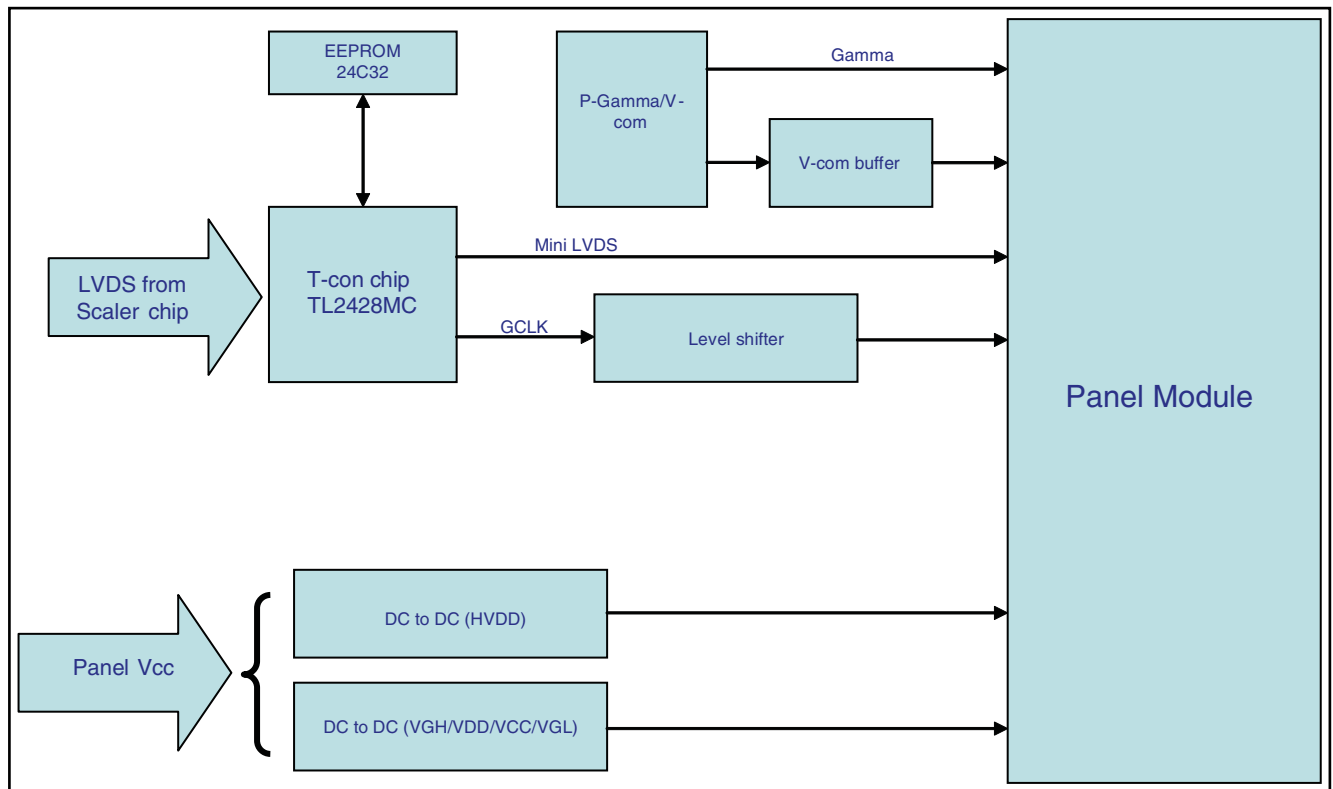
Figure 7-3 Power Architecture TPM4.1E LA platform

7.2.1 Power Supply Unit

1. +5V: It will transform 3.3V, DV 1.0V, 5V on.
2. 3.3V: it can't be controlled by MCU. It transform AV1.2 V for analog core power.
3. DV1.0V: It is digital core power.
4. 5V on: it can be controlled by MCU. It transform 2.6V V for DDR power.
5. 12V: it is for panel power, it can be controlled by MCU.
6. 24V: it is for audio power, it can be controlled by MCU.

7.3 T-CON Architecture

Refer to figure [Figure 7-4](#) for the power architecture of this platform.



18870_404_100211.eps
100308

Figure 7-4 T-CON Architecture TPM4.1E platform

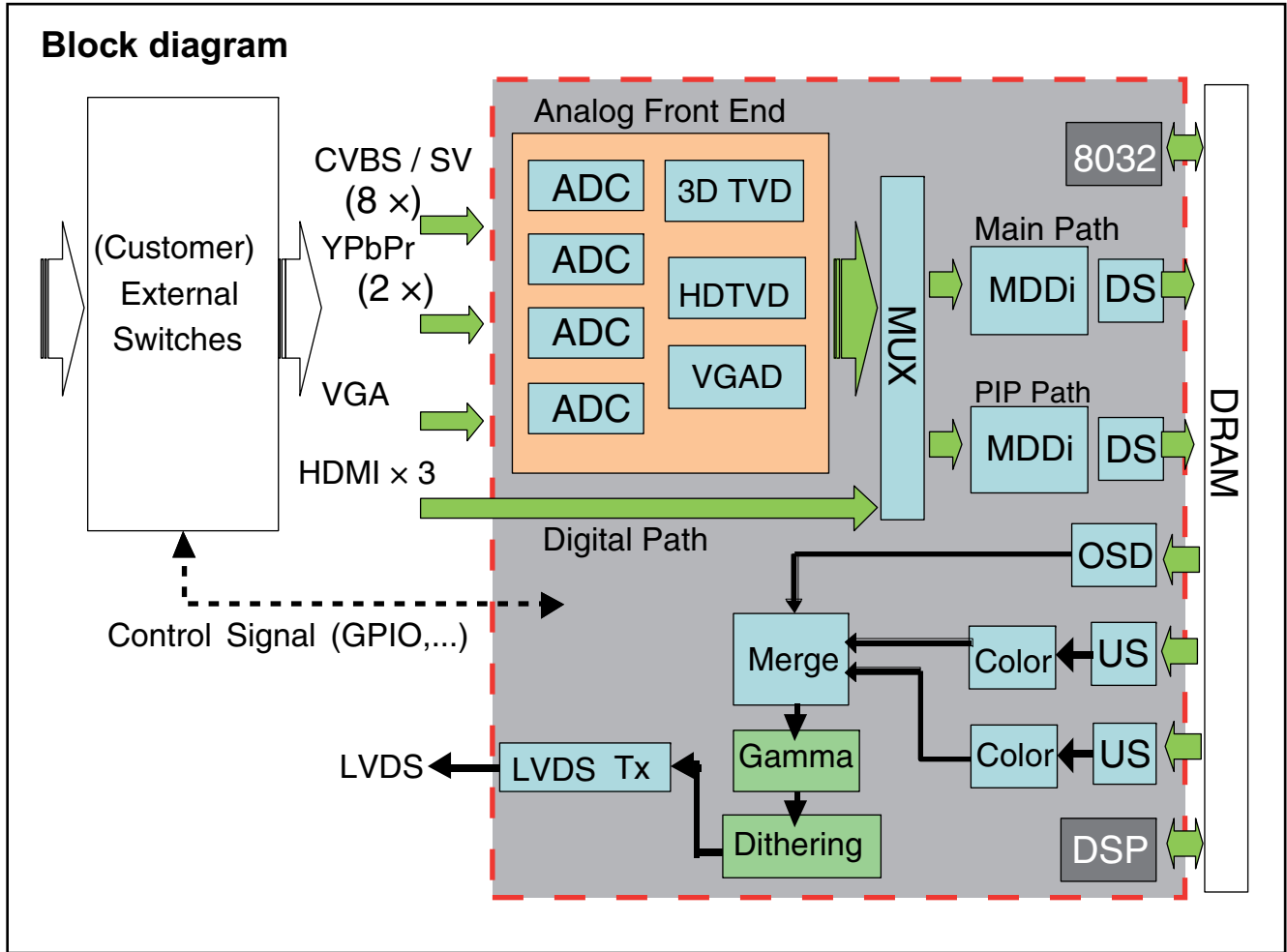
7.3.1 T-CON Unit

The T-CON section includes the T-CON IC, a Level shift IC, a DC to DC conversion IC and a correction Gamma IC. The T-CON IC will transform the LVDS signal into a mini-LVDS signal with a 6 pairs Level shifter IC. This is a 9 channel level-shifter intended for use in LCD display applications such as TVs and monitors. The device converts the logic-level signals generated by the Timing Controller (T-CON) to the high-level signals used by the display panel. The gamma IC outputs eight voltage references for gamma correction in TFT LCDs and one voltage reference for VCOM. Each gamma reference voltage has its own 10-bit digital-to-analog converter (DAC) and buffer to ensure a stable voltage. The VCOM reference voltage has its own 10-bit DAC and an amplifier to ensure a stable voltage when critical levels and patterns are displayed. The DC to DC IC multiple-output power-supply controller generates all the supply rails for thin-film transistor (TFT) liquid-crystal display (LCD) panels in TVs and monitors operating from a regulated 12 V input. It includes a step-down and a step-up regulator, a positive and a negative charge pump, a dual-mode logic controlled high-voltage switch control block, and an adjustable timing power-good output. The positive and negative charge-pump regulators provide the TFT gate driver supply voltages.

8. IC Data Sheets

This section 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 B09 SSB: MTK8222, MTK8222TMMU/B LQFP256 (IC U4201)



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100616

Figure 8-1 Internal block diagram

Pinning information

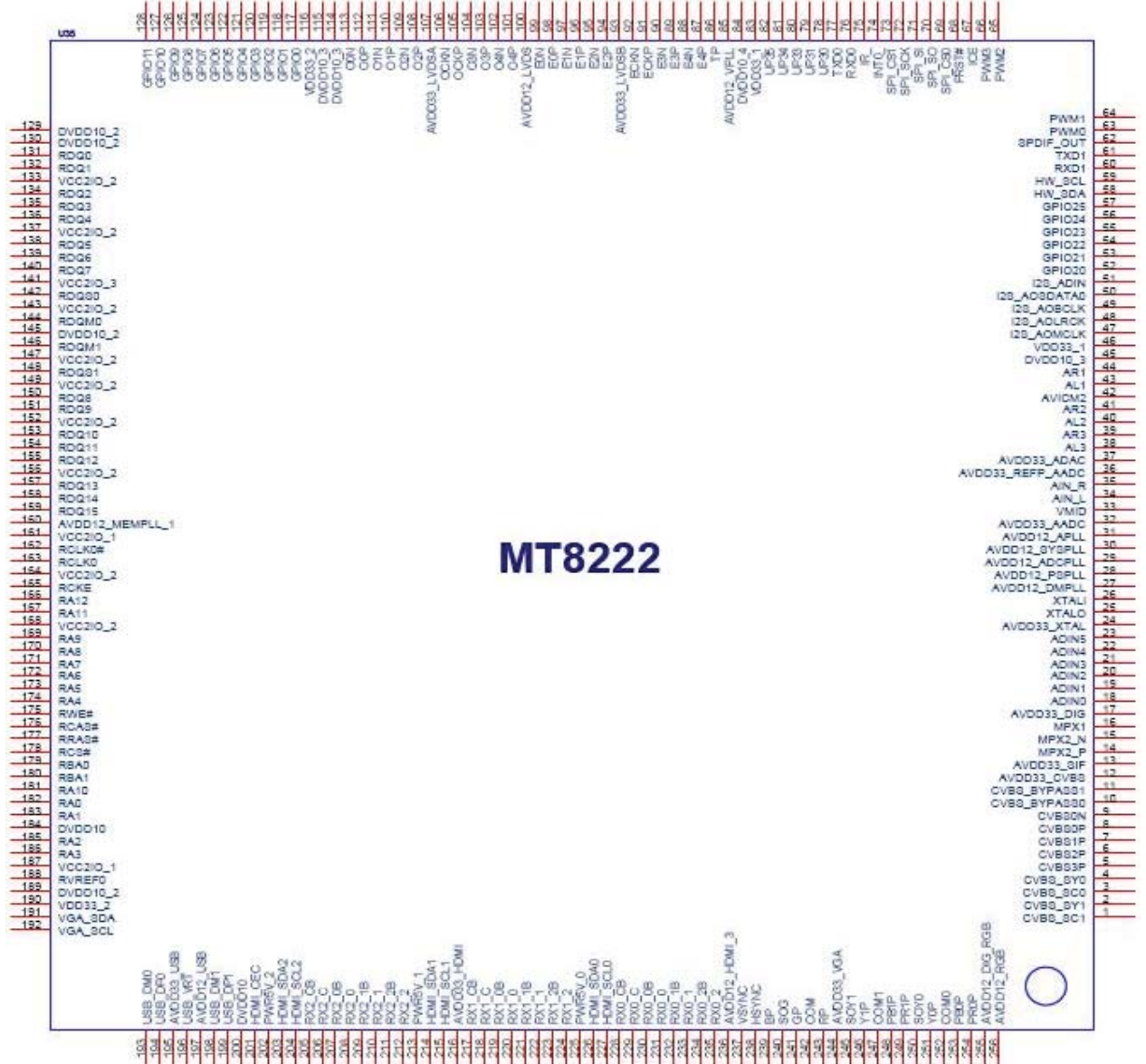


Figure 8-2 Pin configuration

18870_301_100211.eps
100305

8.2 Diagram B16 SSB: T-CON, LCD Panel I/F, TL2428MC LQPF-176 (IC U7201)

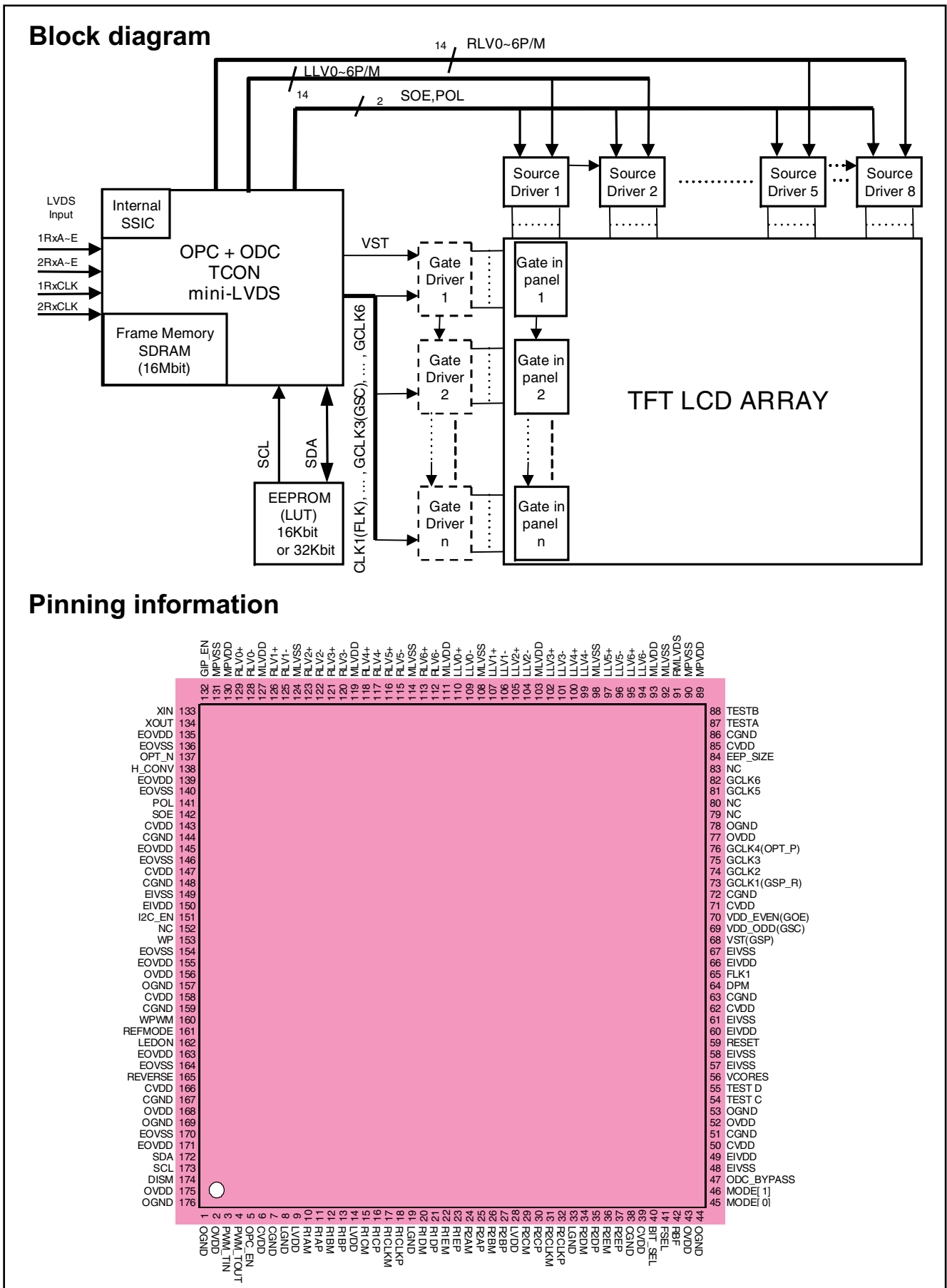
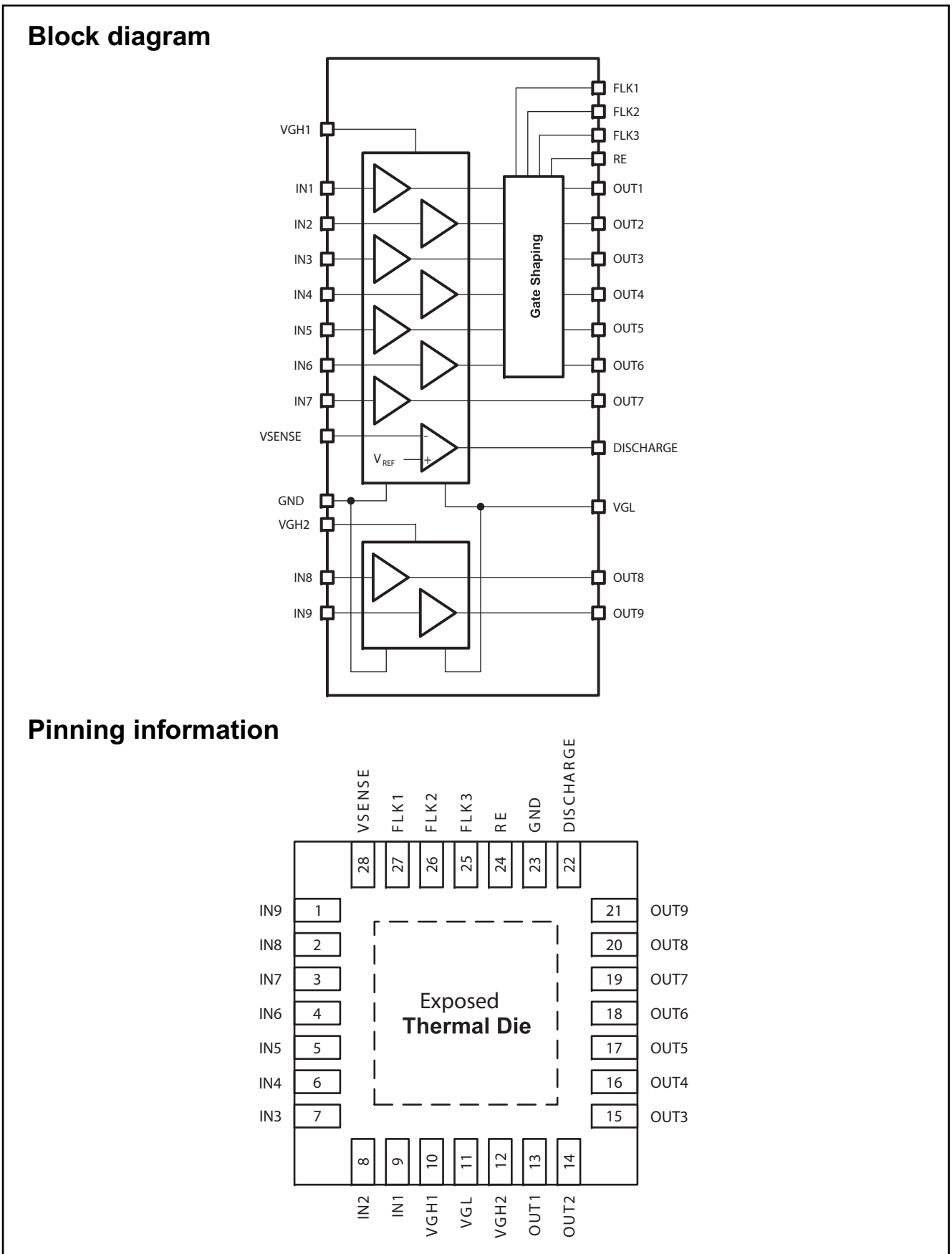


Figure 8-3 Internal block diagram and pin configuration

8.3 Diagram B17 SSB: T-CON DC/DC, TPS65192RHDR QFN-28 (IC U7402)

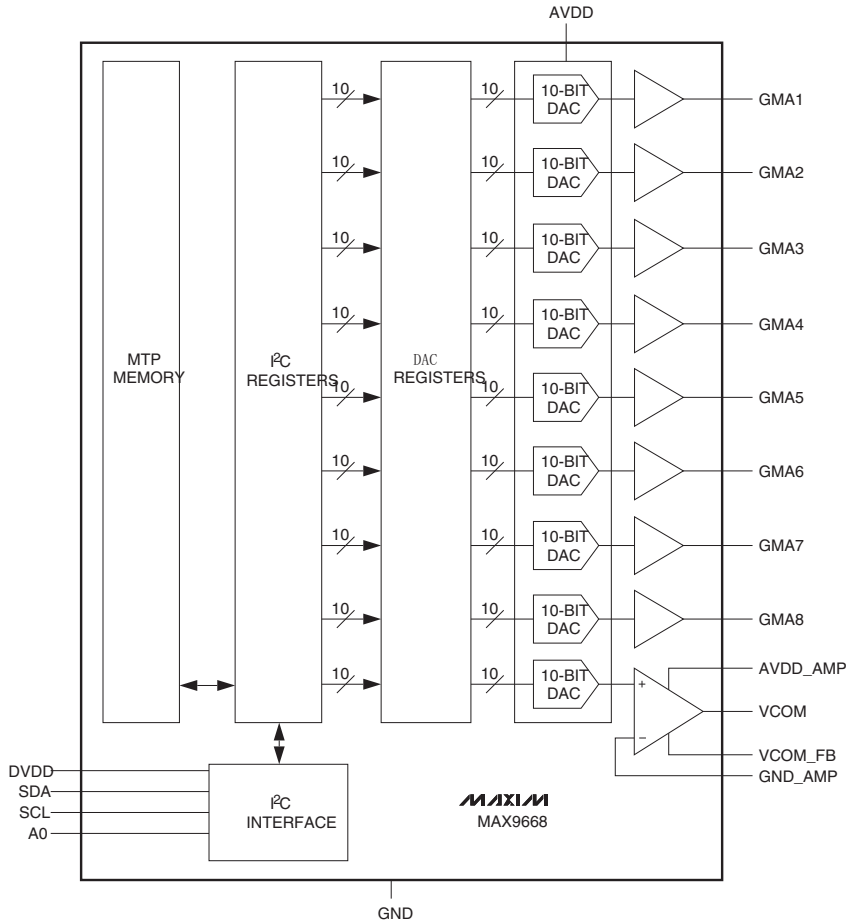


18850_306_100107.eps
100223

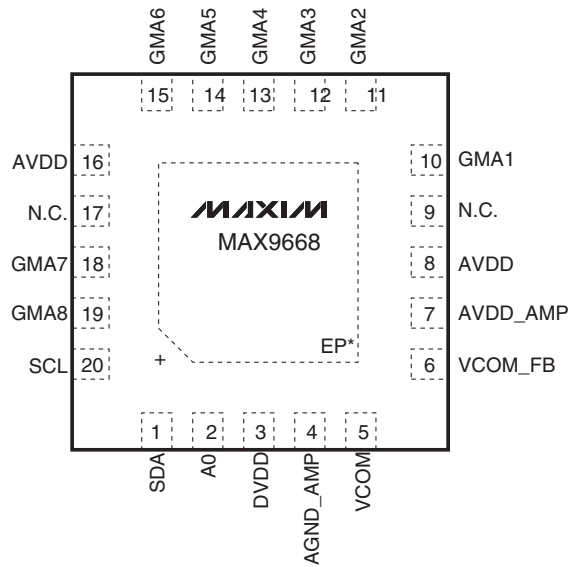
Figure 8-4 Internal block diagram and pin configuration

8.4 Diagram B17 SSB: T-CON DC/DC, MAX9668ETP+ TQFN-EP-20 (IC U7401)

Block diagram



Pinning information

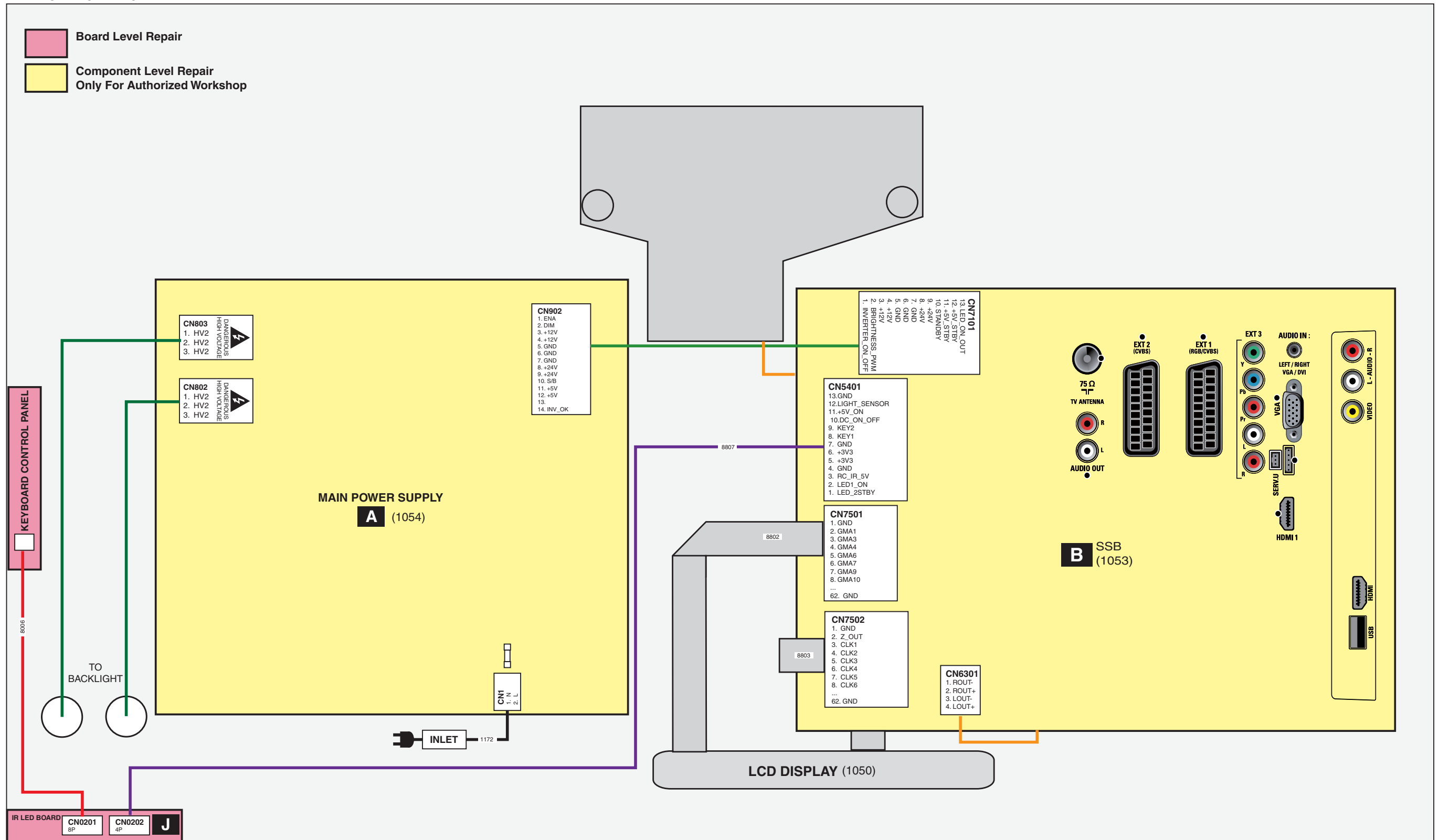


18850_307_100107.eps
100223

Figure 8-5 Internal block diagram and pin configuration

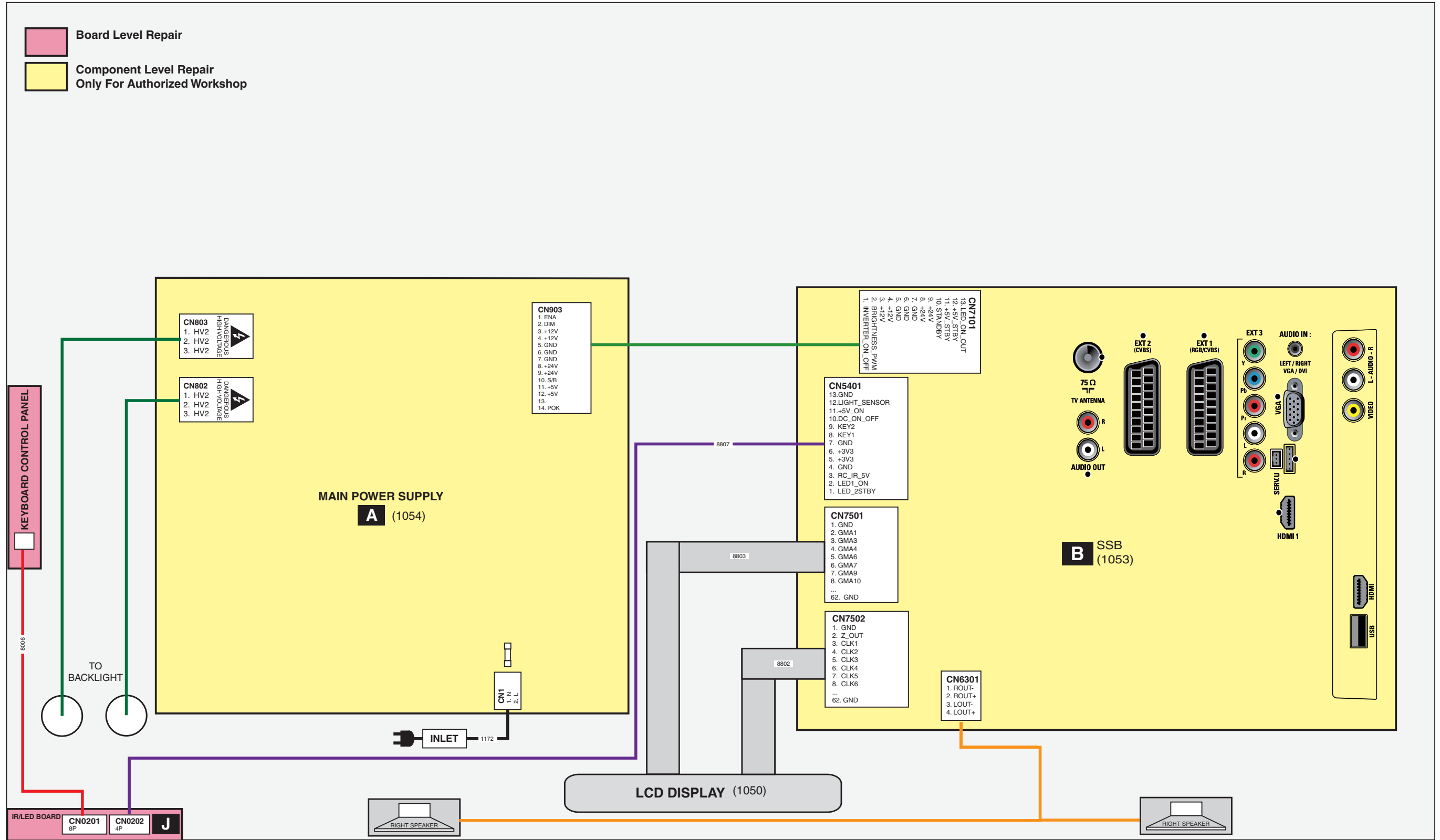
9. Block Diagrams

Wiring Diagram (32")
WIRING DIAGRAM 32"



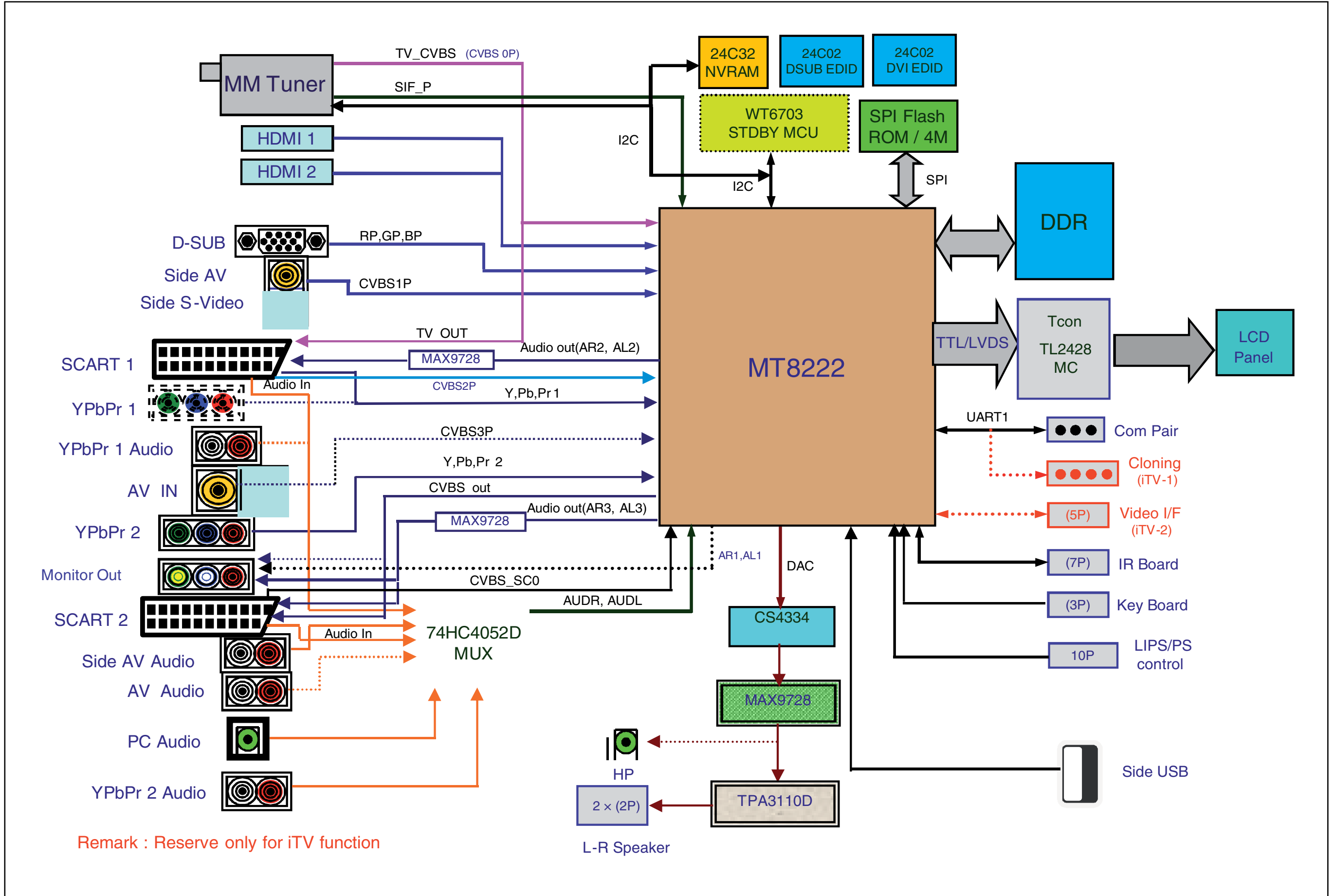
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100306

Wiring Diagram (42")
WIRING DIAGRAM 42"



18870_401_100107.eps
100308

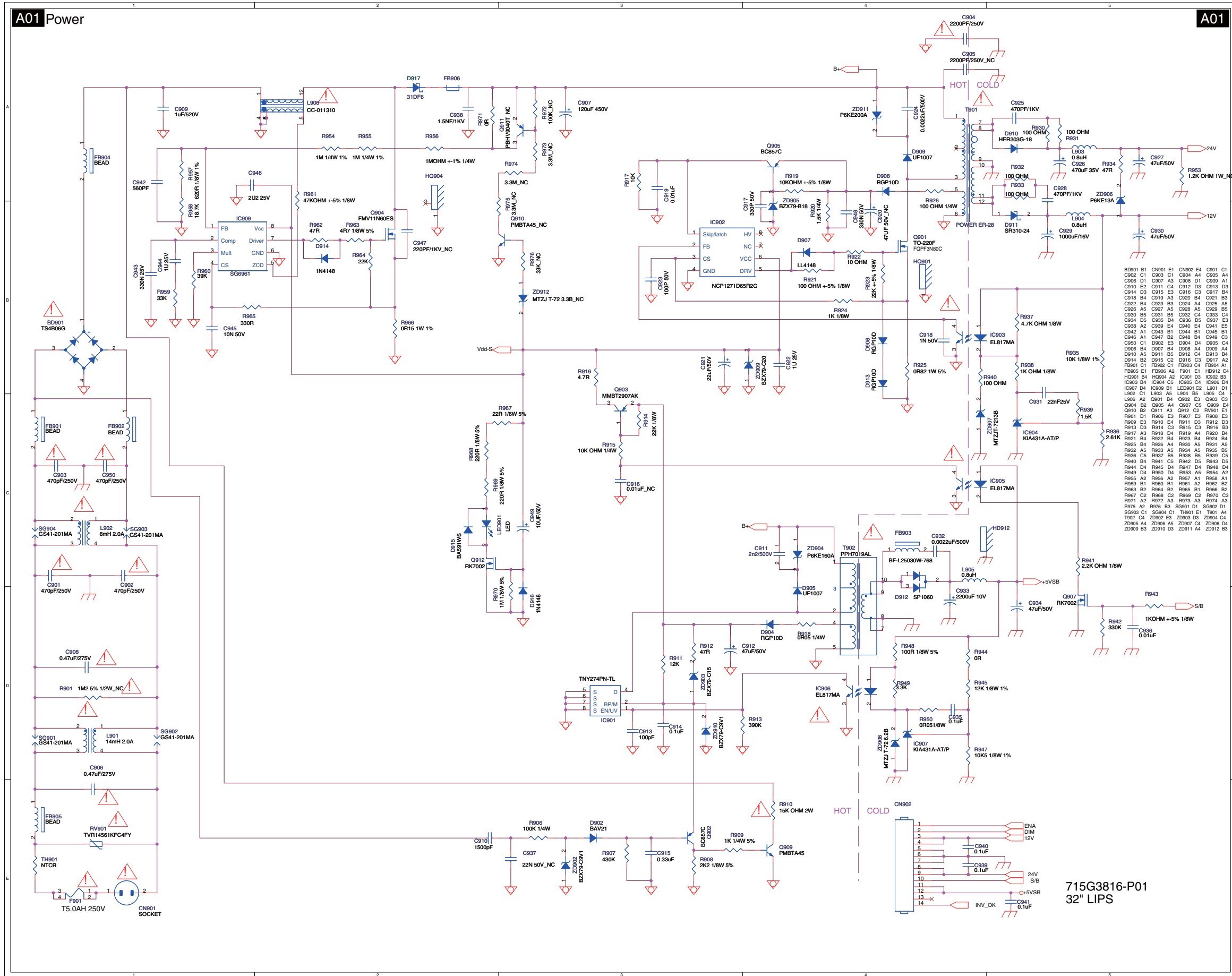
Block Diagram



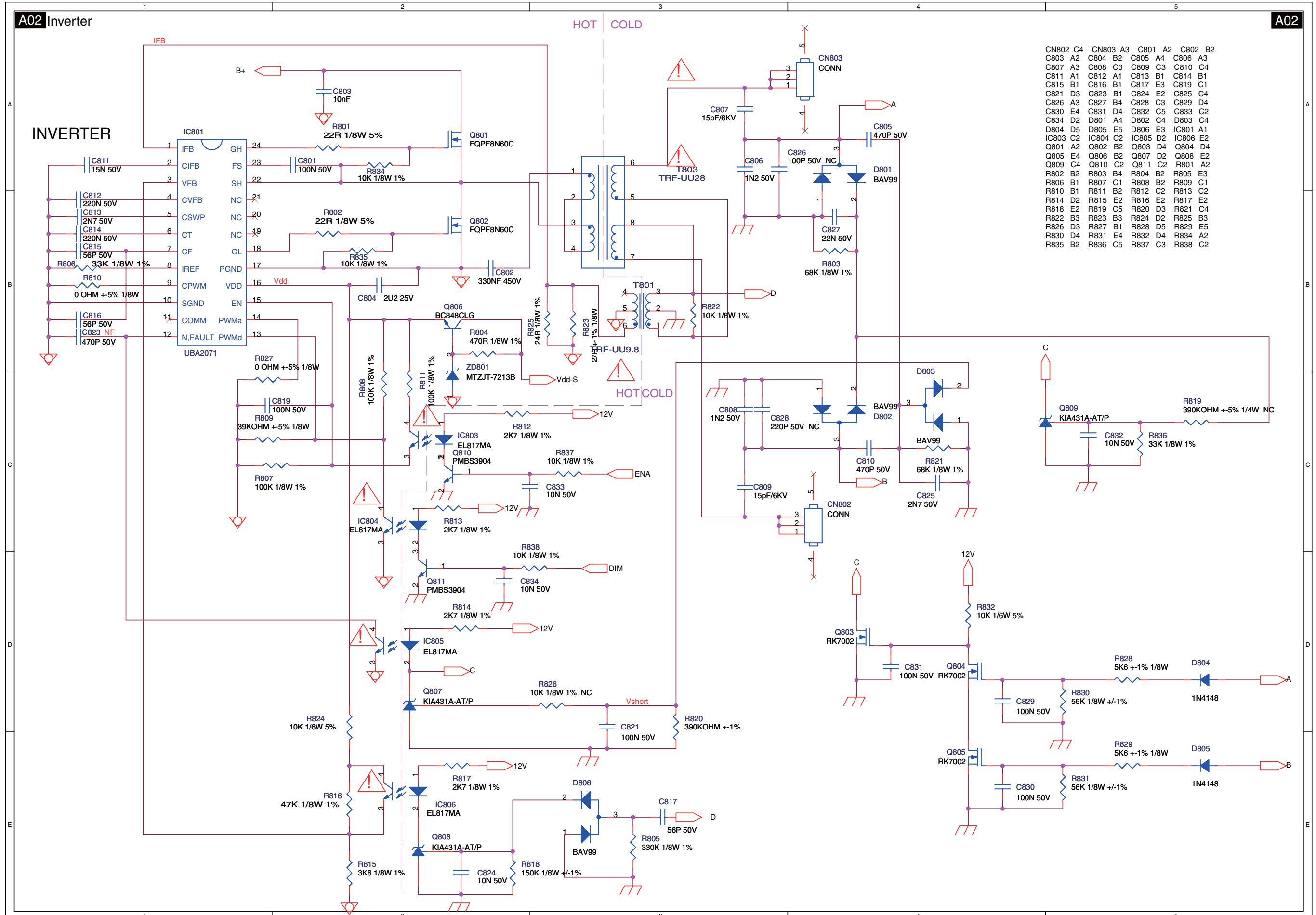
Remark : Reserve only for iTV function

10. Circuit Diagrams and PWB Layouts

Power Board: Power, 32"

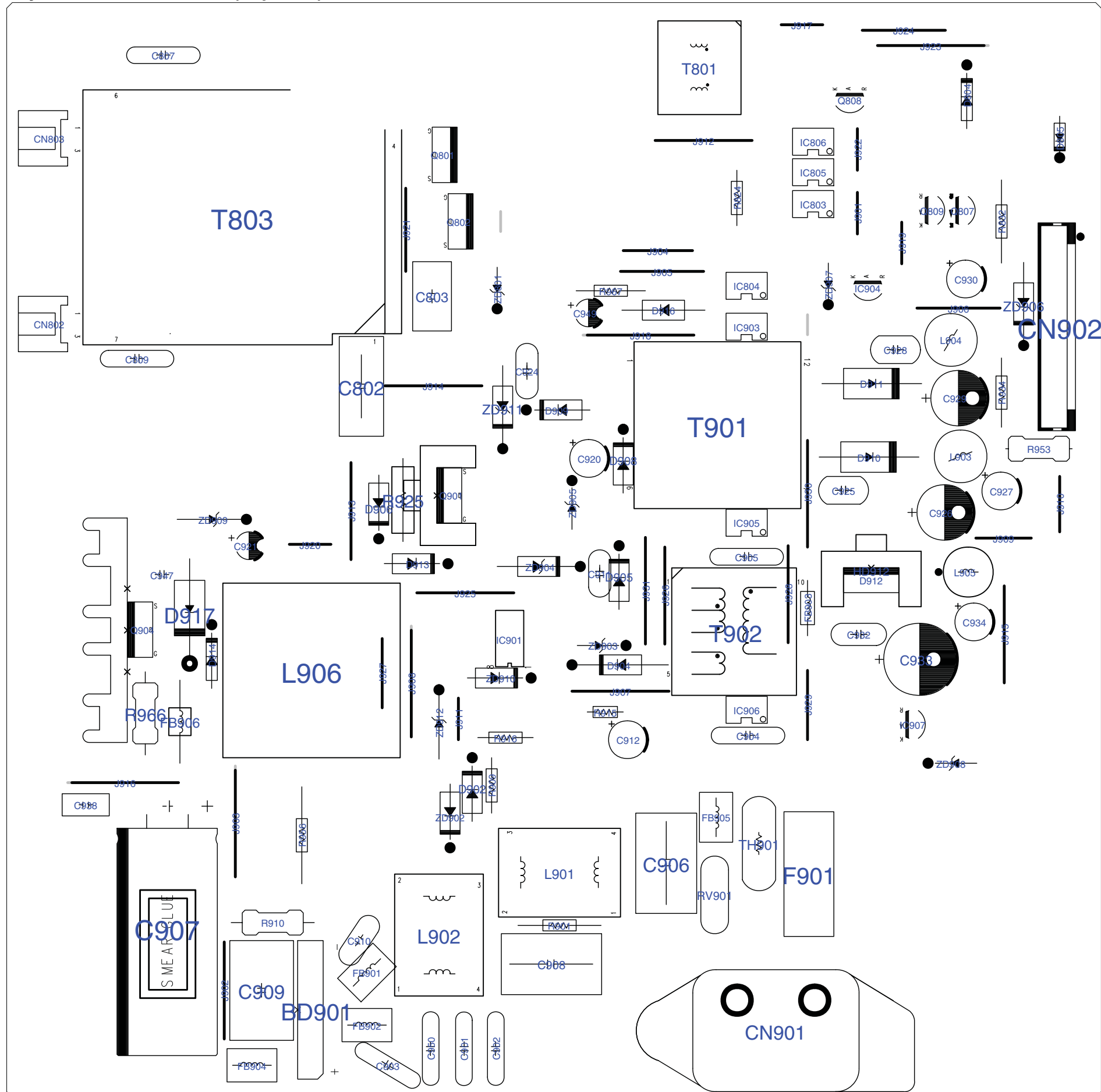


Power Board: Inverter, 32"



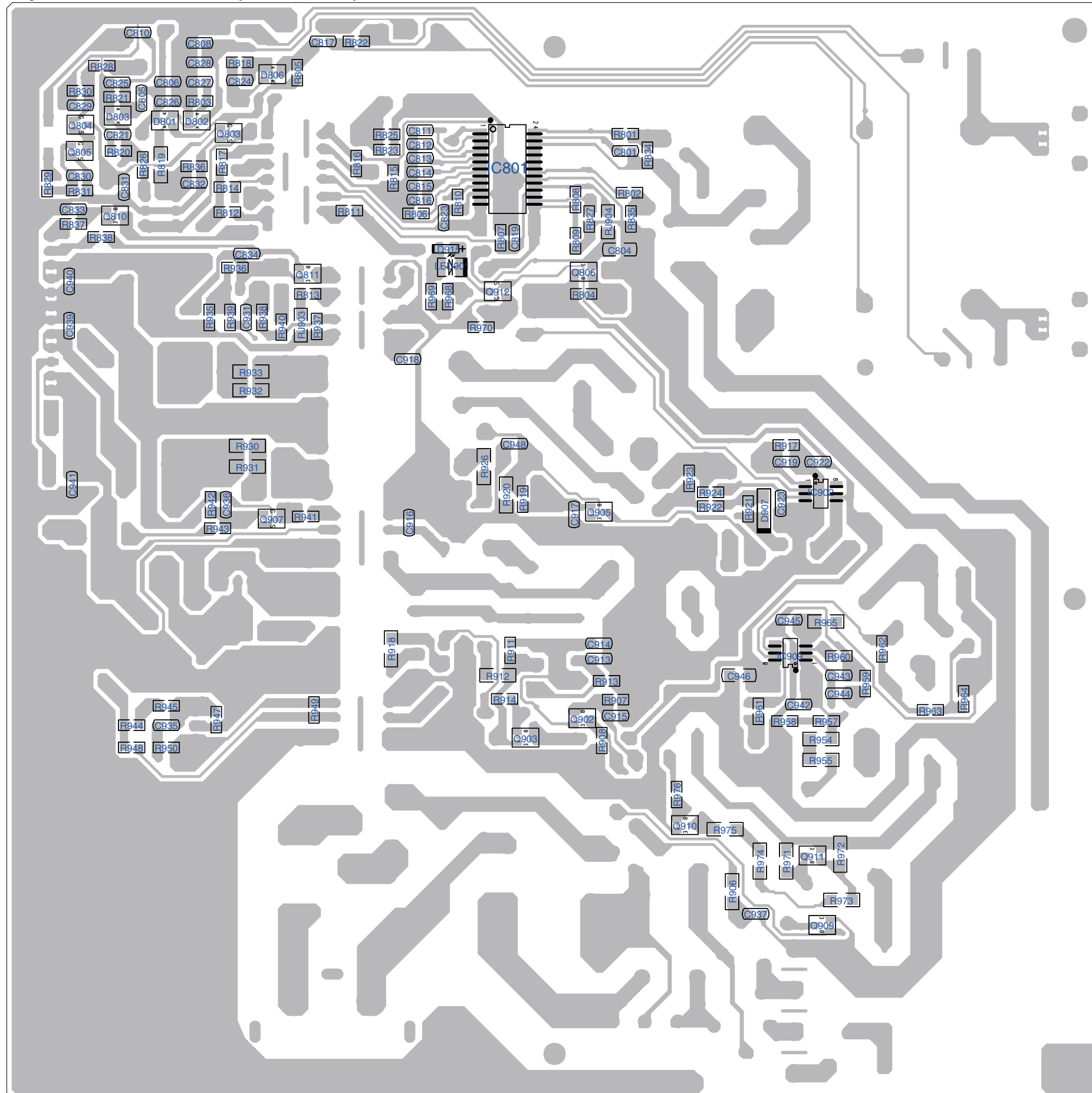
CN802	C4	CN803	A3	C801	A2	C802	B2
C803	A2	C804	B2	C805	A4	C806	A3
C807	A3	C808	C3	C809	C3	C810	C4
C811	A1	C812	A1	C813	B1	C814	B1
C815	B1	C816	B1	C817	E3	C818	C1
C821	D3	C823	B1	C824	E2	C825	C4
C826	A3	C827	B4	C828	C3	C829	D4
C830	E4	C831	D4	C832	C5	C833	C2
C834	D2	D801	A4	D802	C4	D803	C4
D804	D5	D805	E5	D806	E3	IC801	A1
IC803	C2	IC804	C2	IC805	D2	IC806	E2
Q801	A2	Q802	B2	Q803	D4	Q804	D4
Q805	E4	Q806	B2	Q807	D2	Q808	E2
Q809	C4	Q810	C2	Q811	C2	R801	A2
R802	B2	R803	B4	R804	B2	R805	E3
R806	B1	R807	C1	R808	B2	R809	C1
R810	B1	R811	B2	R812	C2	R813	C2
R814	D2	R815	E2	R816	E2	R817	E2
R818	E2	R819	C5	R820	D3	R821	C4
R822	B3	R823	B3	R824	D2	R825	B3
R826	D3	R827	B1	R828	D5	R829	E5
R830	D4	R831	E4	R832	D4	R834	A2
R835	B2	R836	C5	R837	C3	R838	C2

Layout Power Board, 32" (Top Side)

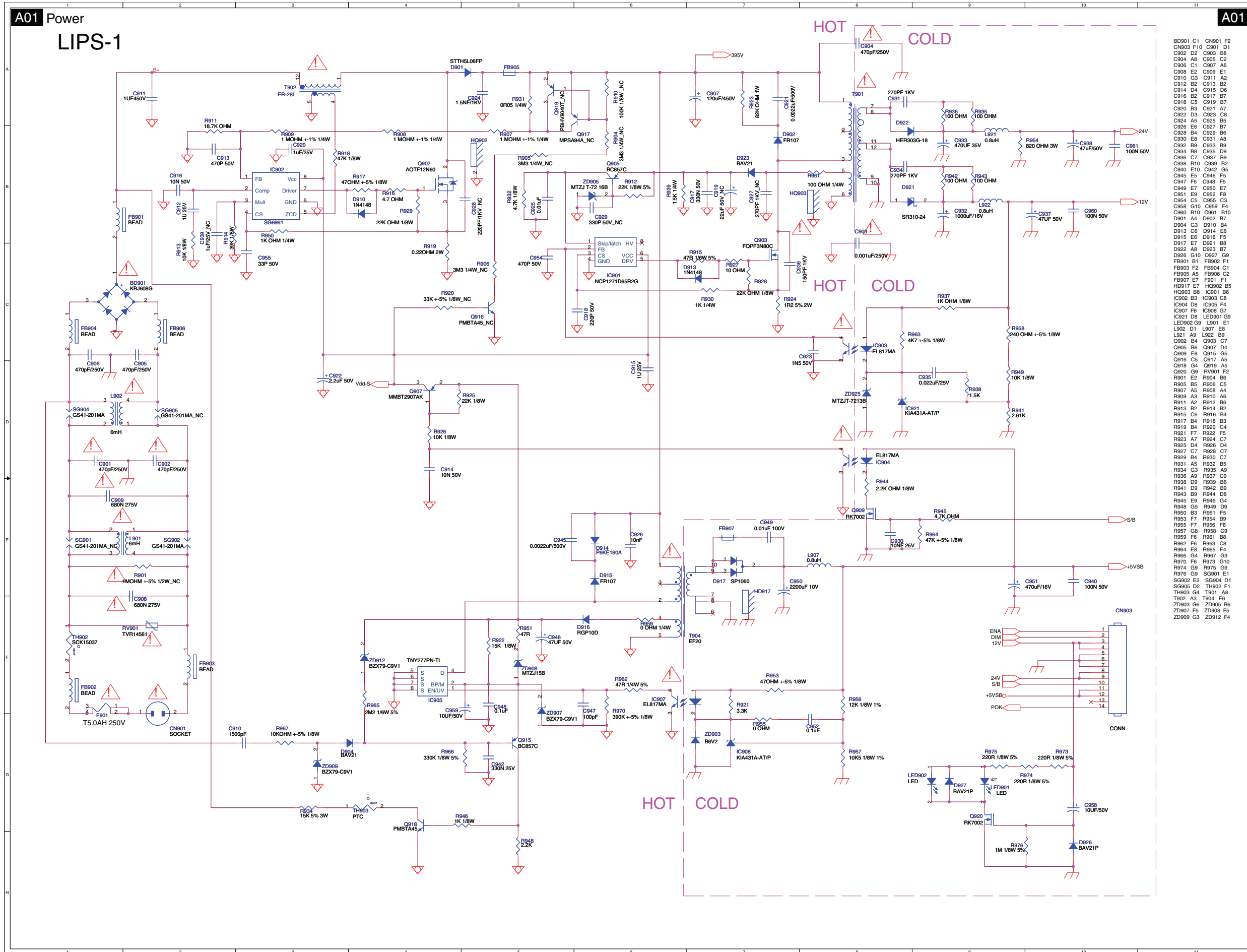


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100308

Layout Power Board, 32" (Bottom Side)



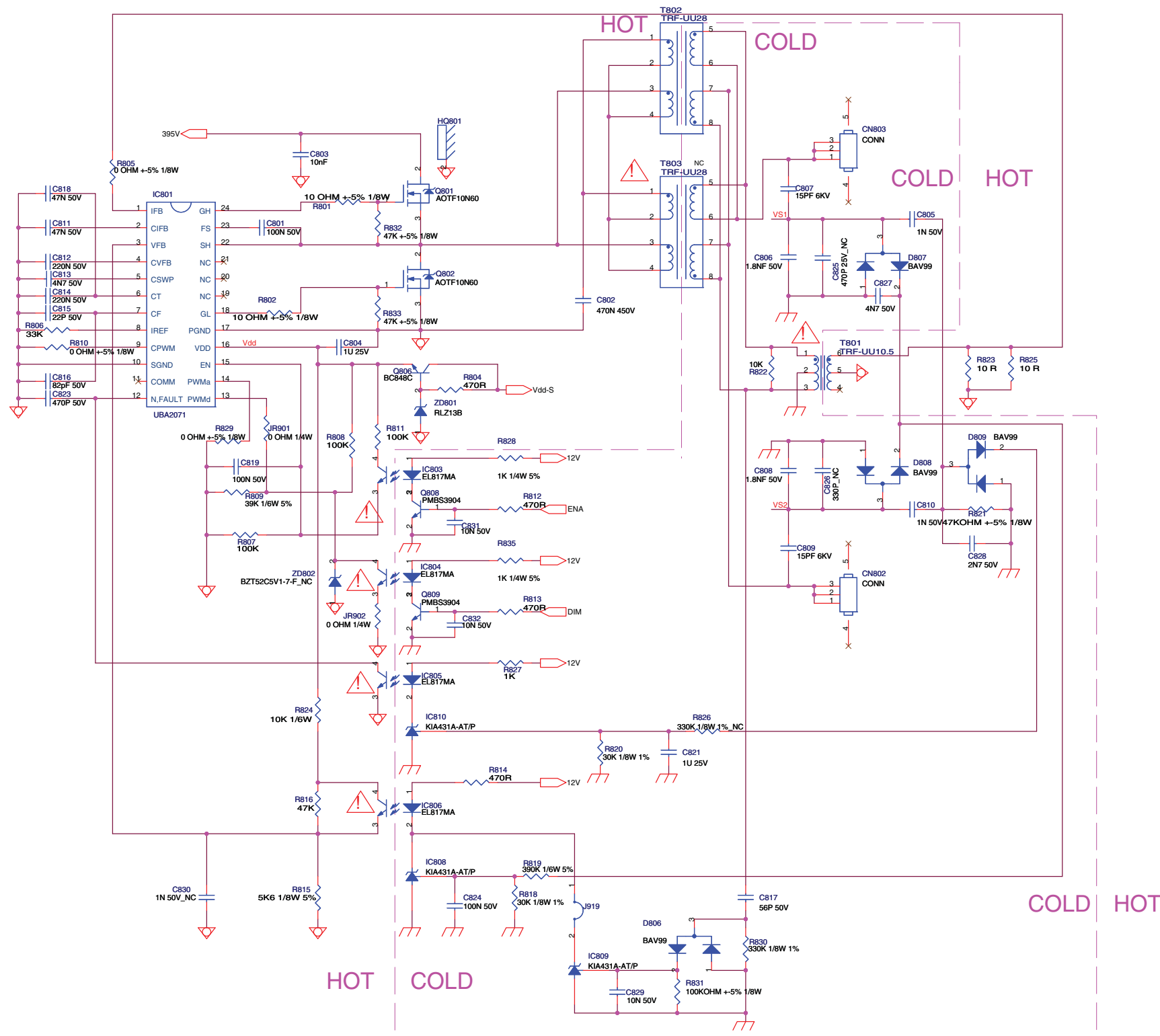
Power Board: Power, 42"



Power Board: Inverter, 42"

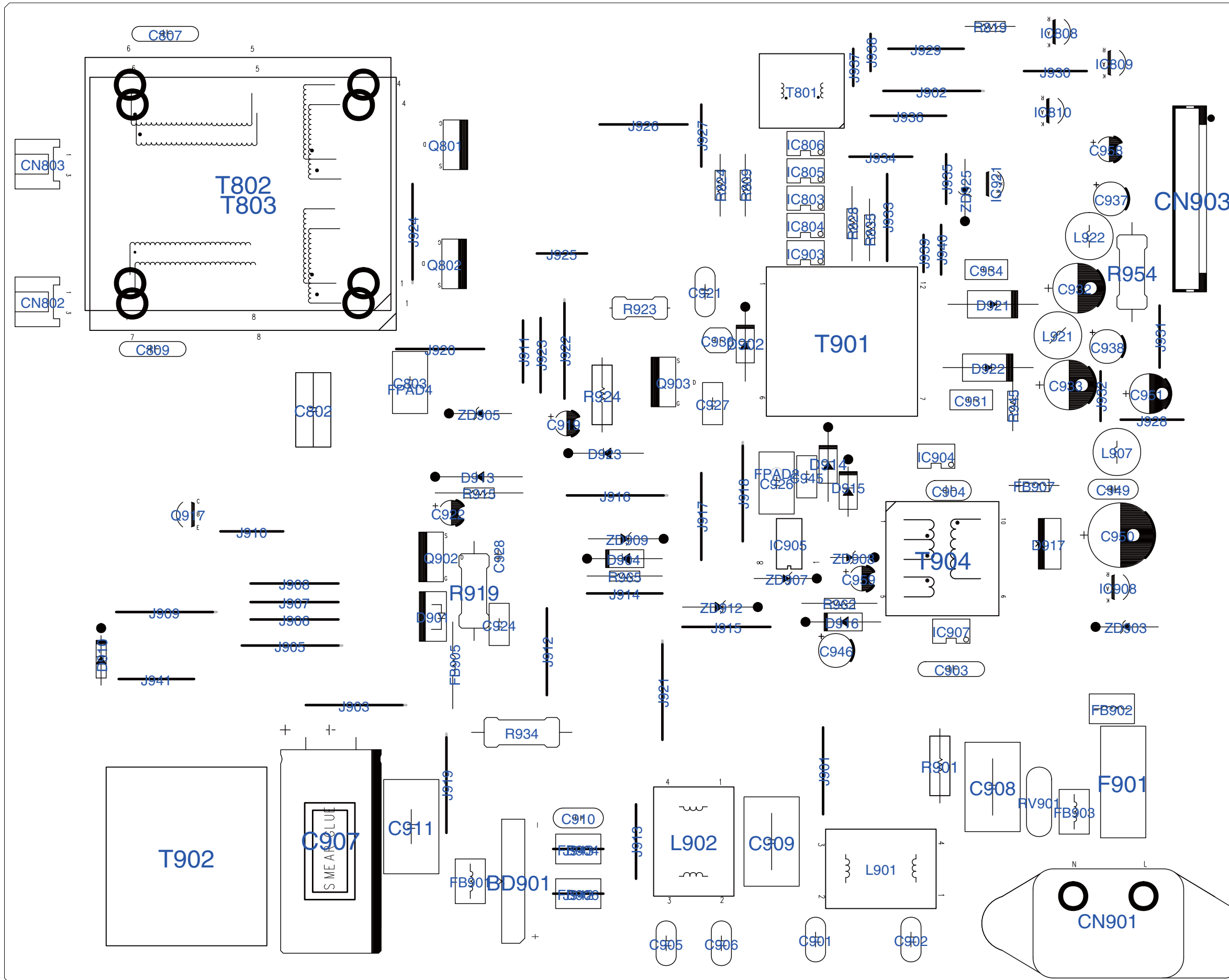
A02 Inverter

A02

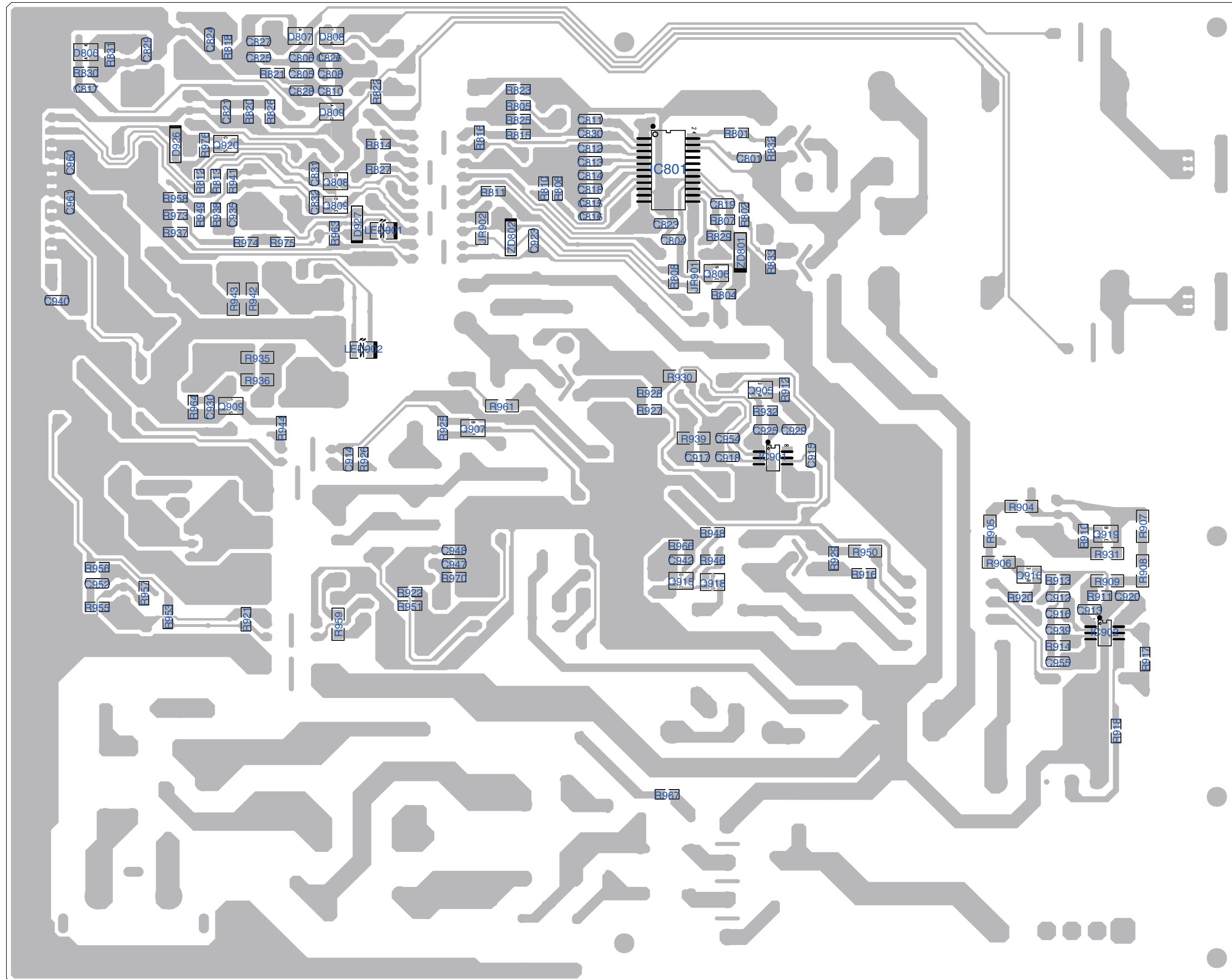


- CN802 D7 CN803 B7
- C801 B4 C802 C6
- C803 B4 C804 C4
- C805 B8 C806 B7
- C807 B7 C808 D7
- C809 D7 C810 D8
- C811 B2 C812 B2
- C813 B2 C814 C2
- C815 C2 C816 C2
- C817 F7 C818 S2
- C819 D4 C821 E6
- C823 C2 C824 F5
- C825 B7 C826 D7
- C827 C8 C828 D8
- C829 G6 C830 F3
- C831 D5 C832 E5
- D806 F6 D807 B8
- D808 D8 D809 C8
- HC801 D5 IC801 B3
- IC803 D5 IC804 D5
- IC805 E5 IC806 F5
- IC808 F5 IC809 G6
- IC810 E5 JF801 C4
- JR902 D4 J819 F6
- Q801 B5 Q802 B5
- Q806 C5 Q808 D5
- Q809 D5 R801 B4
- R802 C4 R804 C5
- R805 B3 R806 C2
- R807 D4 R808 C4
- R809 D4 R810 C2
- R811 C4 R812 D5
- R813 D5 R814 F5
- R815 F4 R816 F4
- R818 F5 R819 F5
- R820 E6 R821 D8
- R822 C7 R823 C8
- R824 E4 R825 C9
- R826 E7 R827 E5
- R828 D5 R829 C3
- R830 G7 R831 G6
- R832 B4 R833 C4
- R835 D5 T801 C7
- T802 A6 T803 B6
- ZD801 C5 ZD802 D4

Layout Power Board, 42" (Top Side)



Layout Power Board, 42" (Bottom Side)

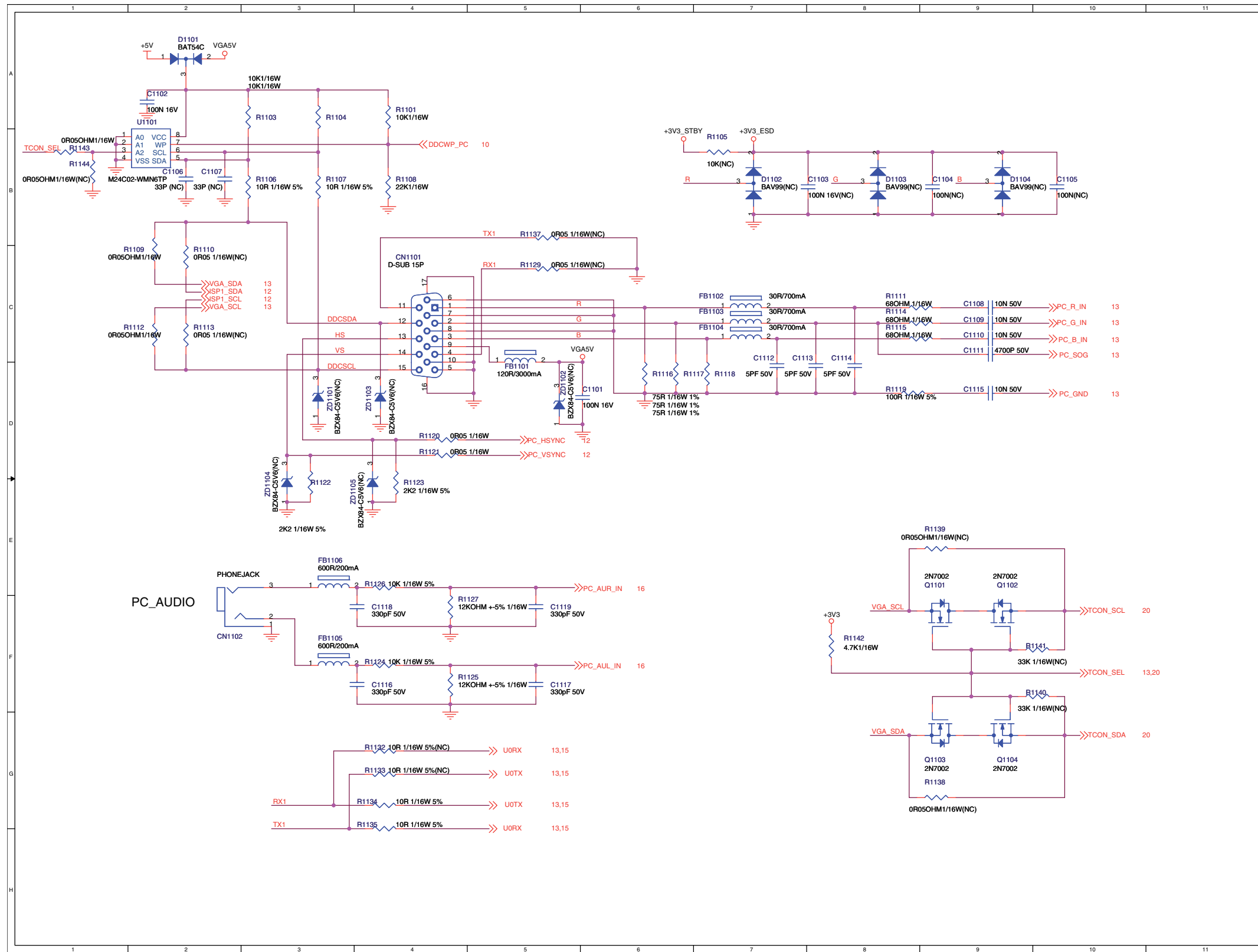


SSB: D-Sub Input

B01

D-Sub Input

B01



- CN1101 C4
- CN1102 E2
- C1101 D5
- C1102 A2
- C1103 B7
- C1104 B8
- C1105 B10
- C1106 B2
- C1107 B2
- C1108 C9
- C1109 C9
- C1110 C9
- C1111 C9
- C1112 C7
- C1113 C7
- C1114 C8
- C1115 D9
- C1116 F3
- C1117 F5
- C1118 E3
- C1119 E5
- D1101 A2
- D1102 B7
- D1103 B8
- D1104 B9
- FB1101 C5
- FB1102 C7
- FB1103 C7
- FB1104 C7
- FB1105 F3
- FB1106 E3
- Q1101 E8
- Q1102 E9
- Q1103 F8
- Q1104 F9
- R1101 A4
- R1103 A2
- R1104 A3
- R1105 B7
- R1106 B2
- R1107 B3
- R1108 B4
- R1109 B2
- R1110 B2
- R1111 C8
- R1112 C2
- R1113 C2
- R1114 C8
- R1115 C8
- R1116 C6
- R1117 C6
- R1118 C6
- R1119 D8
- R1120 D4
- R1121 D4
- R1122 D3
- R1123 D4
- R1124 F4
- R1125 F4
- R1126 E4
- R1127 E4
- R1129 C5
- R1132 G4
- R1133 G4
- R1134 G4
- R1135 G4
- R1137 B5
- R1138 G8
- R1139 E8
- R1140 F9
- R1141 F9
- R1142 F8
- R1143 B1
- R1144 B1
- U1101 A2
- ZD1101 D3
- ZD1102 D5
- ZD1103 D4
- ZD1104 D3
- ZD1105 D4

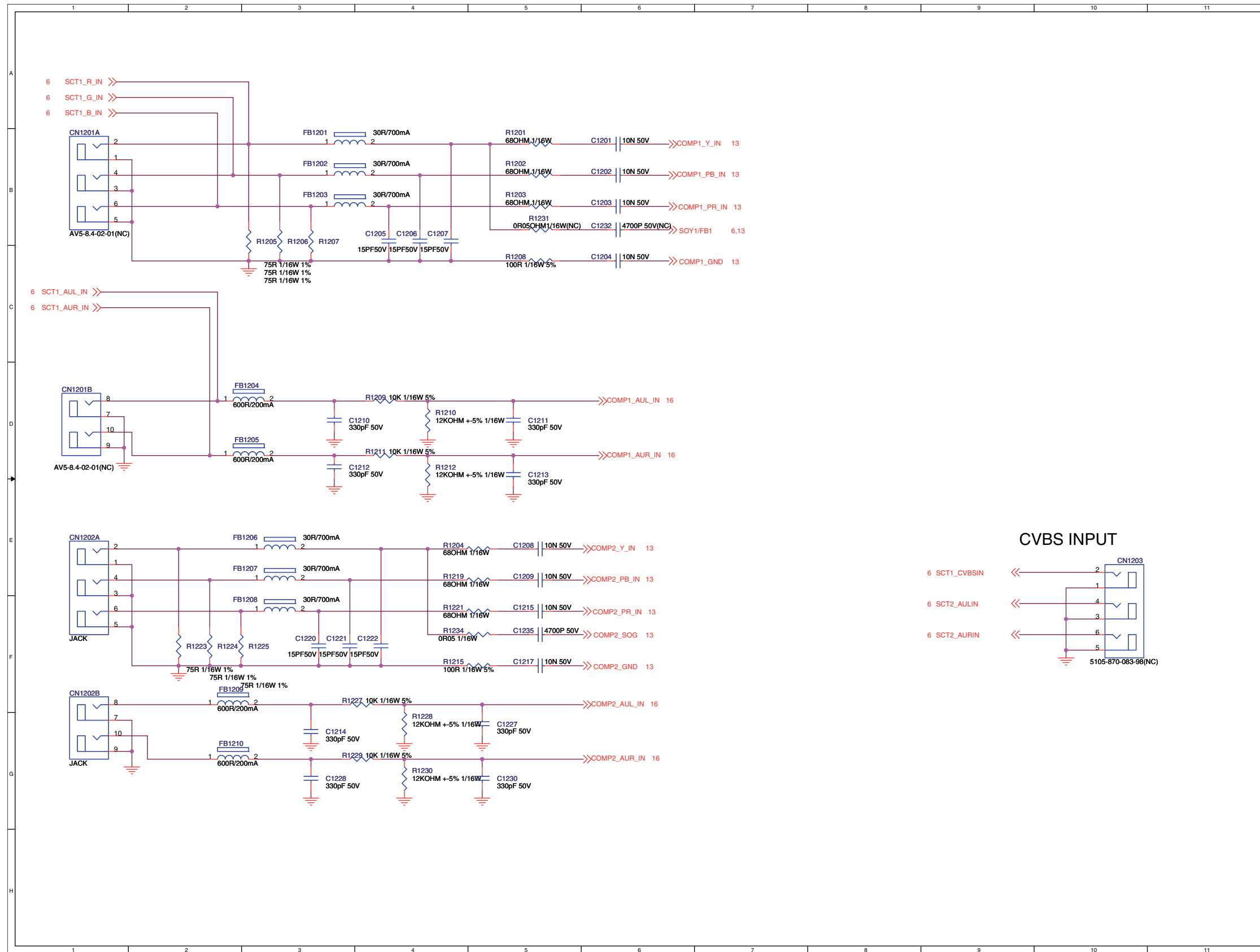
D-Sub Input	715G3786	cl	2019-01-14

SSB: REAR I/O

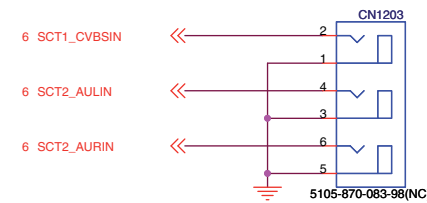
B02

Rear I/O

B02



CVBS INPUT



- N1201A B1
- N1201B D1
- N1202A E1
- N1202B F1
- CN1203 E10
- C1201 B6
- C1202 B6
- C1203 B6
- C1204 C6
- C1205 B4
- C1206 B4
- C1207 B4
- C1208 E5
- C1209 E5
- C1210 D3
- C1211 D5
- C1212 D3
- C1213 D5
- C1214 G3
- C1215 E5
- C1217 F5
- C1220 F3
- C1221 F3
- C1222 F4
- C1227 F5
- C1228 G3
- C1230 G5
- C1232 B6
- C1235 F5
- FB1201 A3
- FB1202 B3
- FB1203 B3
- FB1204 D2
- FB1205 D2
- FB1206 E3
- FB1207 E3
- FB1208 E3
- FB1209 F2
- FB1210 G2
- R1201 B5
- R1202 B5
- R1203 B5
- R1204 E4
- R1205 B2
- R1206 B3
- R1207 B3
- R1208 C5
- R1209 D4
- R1210 D4
- R1211 D4
- R1212 D4
- R1215 F4
- R1219 E4
- R1221 E4
- R1223 F2
- R1224 F2
- R1225 F2
- R1227 F3
- R1228 F4
- R1229 G3
- R1230 G4
- R1231 B5

Rear I/O

715G3786

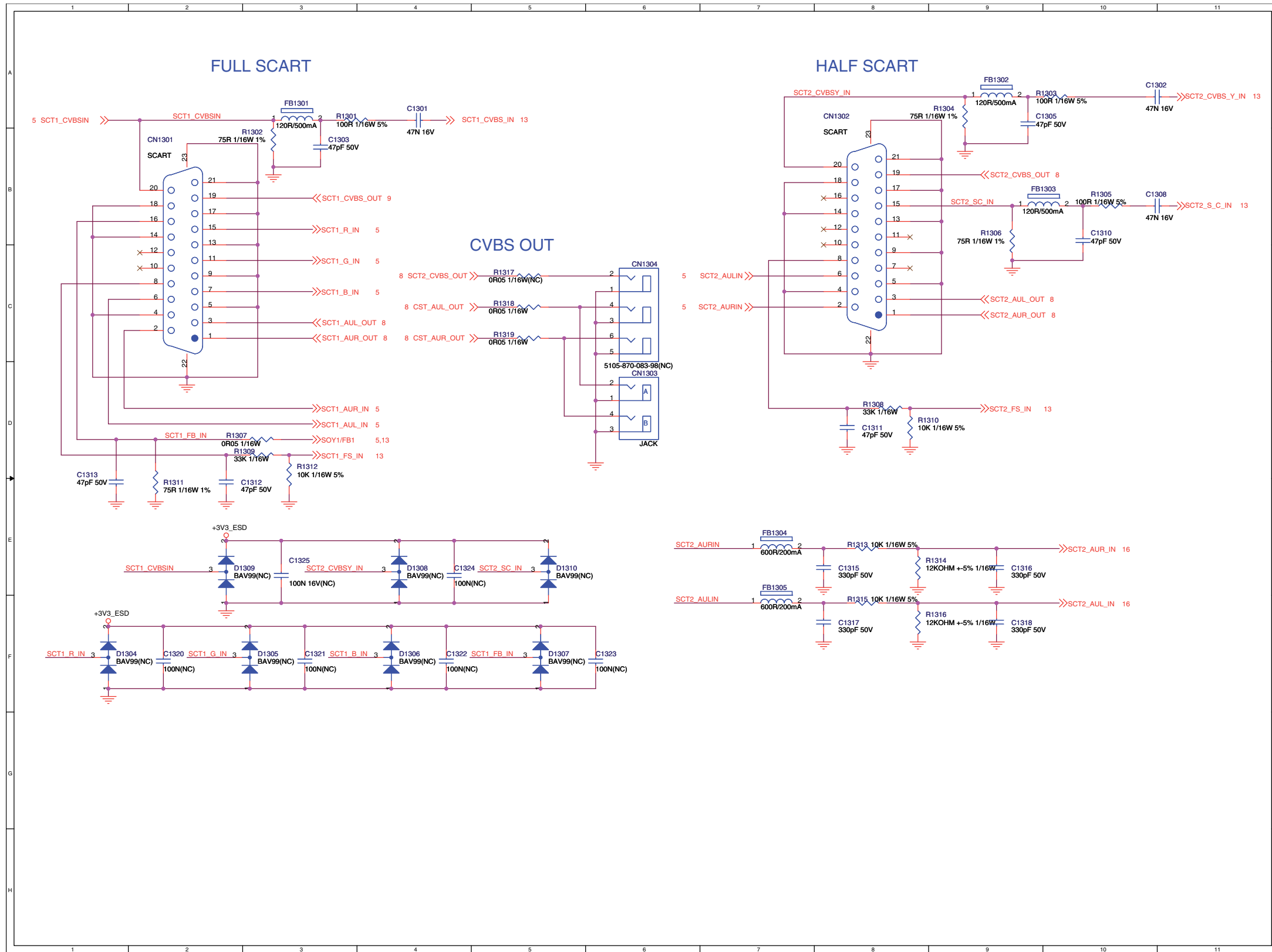
C	2010-01-14

SSB: Scart

B03

Scart

B03



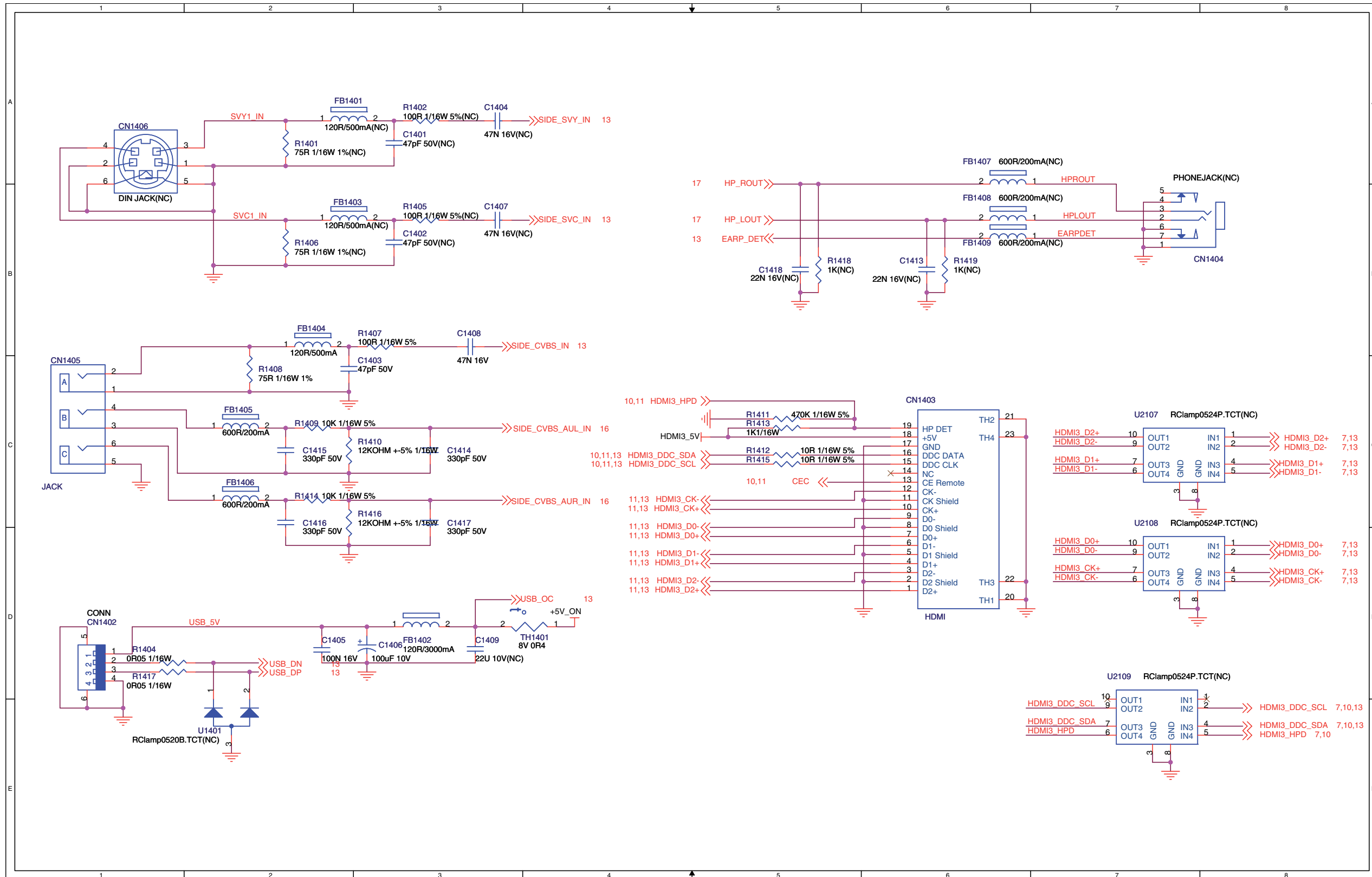
- CN1301 B2
- CN1302 B8
- CN1303 D6
- CN1304 C6
- C1301 A4
- C1302 A10
- C1303 B3
- C1305 A9
- C1308 B10
- C1310 B10
- C1311 D8
- C1312 D2
- C1313 D1
- C1315 E7
- C1316 E9
- C1317 F7
- C1318 F9
- C1320 F2
- C1321 F3
- C1322 F4
- C1323 F5
- C1324 E4
- C1325 E3
- D1304 F1
- D1305 F2
- D1306 F4
- D1307 F5
- D1308 E4
- D1309 E2
- D1310 E5
- FB1301 A3
- FB1302 A9
- FB1303 B9
- FB1304 E7
- FB1305 E7
- R1301 A3
- R1302 A3
- R1303 A9
- R1304 A9
- R1305 B10
- R1306 B9
- R1307 D3
- R1308 D8
- R1309 D3
- R1310 D8
- R1311 D2
- R1312 D3
- R1313 E8
- R1314 E8
- R1315 E8
- R1316 F8
- R1317 C5
- R1318 C5
- R1319 C5

Scart	715G3786	C	2010-01-14

SSB: SIDE Input

B04 Side Input

B04



- CN1402 D1
- CN1404 B7
- CN1406 A1
- C1402 B3
- C1404 A3
- C1406 D3
- C1408 B3
- C1413 B6
- C1415 C2
- C1417 C3
- FB1401 A2
- FB1403 B2
- FB1405 C2
- FB1407 A6
- FB1409 B6
- R1402 A3
- R1405 B3
- R1407 B3
- R1409 C2
- R1411 C5
- R1413 C5
- R1415 C5
- R1417 D1
- R1419 B6
- U1401 D2
- U2108 C7
- CN1403 C6
- CN1405 C1
- C1401 A3
- C1403 C2
- C1405 D2
- C1407 B3
- C1409 D3
- C1414 C3
- C1416 C2
- C1418 B5
- FB1402 D3
- FB1404 B2
- FB1406 C2
- FB1408 B6
- R1404 D1
- R1406 B2
- R1408 B2
- R1410 C2
- R1412 C5
- R1414 C2
- R1416 C2
- R1418 B5
- TH1401 D3
- U2107 C7
- U2109 D7

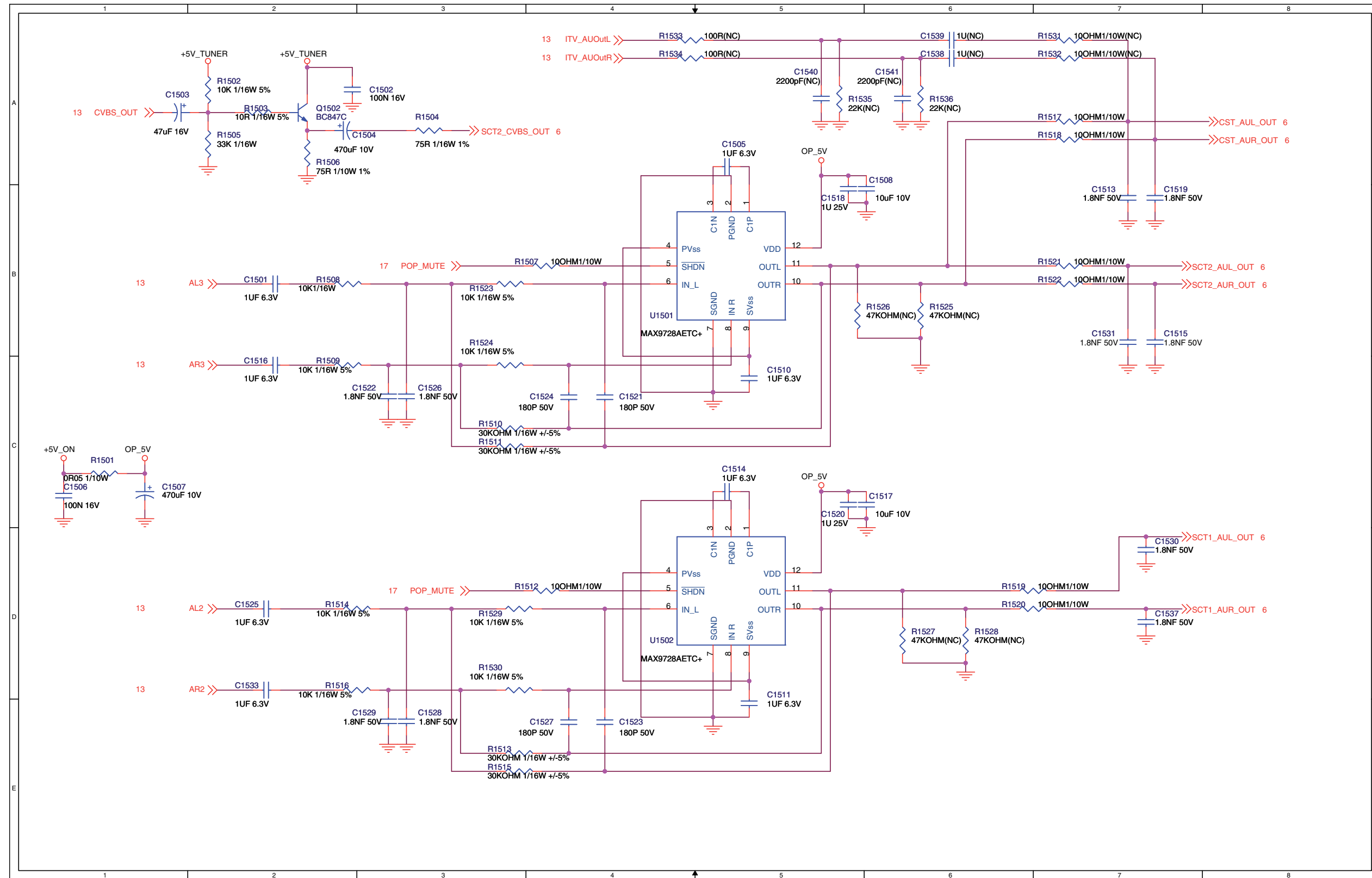
Side Input	715G3786	C 2010-01-14
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SSB: CVBS/ Audio Out

B05

CVBS/Audio Out

B05



- C1501 B2 C1502 A2
- C1503 A1 C1504 A2
- C1505 A5 C1506 C1
- C1507 C1 C1508 A5
- C1510 C5 C1511 D5
- C1513 B7 C1514 C5
- C1515 B7 C1516 B2
- C1517 C5 C1518 A5
- C1519 B7 C1520 C5
- C1521 C4 C1522 C3
- C1523 E4 C1524 C4
- C1525 D2 C1526 C3
- C1527 E4 C1528 E3
- C1529 E3 C1530 D7
- C1531 B7 C1533 D2
- C1537 D7 C1538 A6
- C1539 A6 C1540 A5
- C1541 A6 C1502 A2
- R1501 C1 R1502 A2
- R1503 A2 R1504 A3
- R1505 A2 R1506 B2
- R1507 B4 R1508 B2
- R1509 B2 R1510 C3
- R1511 C3 R1512 D4
- R1513 E3 R1514 D2
- R1515 E3 R1516 D2
- R1517 A7 R1518 A7
- R1519 D6 R1520 D6
- R1521 B7 R1522 B7
- R1523 B3 R1524 B3
- R1525 B6 R1526 B5
- R1527 D6 R1528 D6
- R1529 D3 R1530 D3
- R1531 A7 R1532 A7
- R1533 A4 R1534 A4
- R1535 A5 R1536 A6
- U1501 B4 U1502 C4

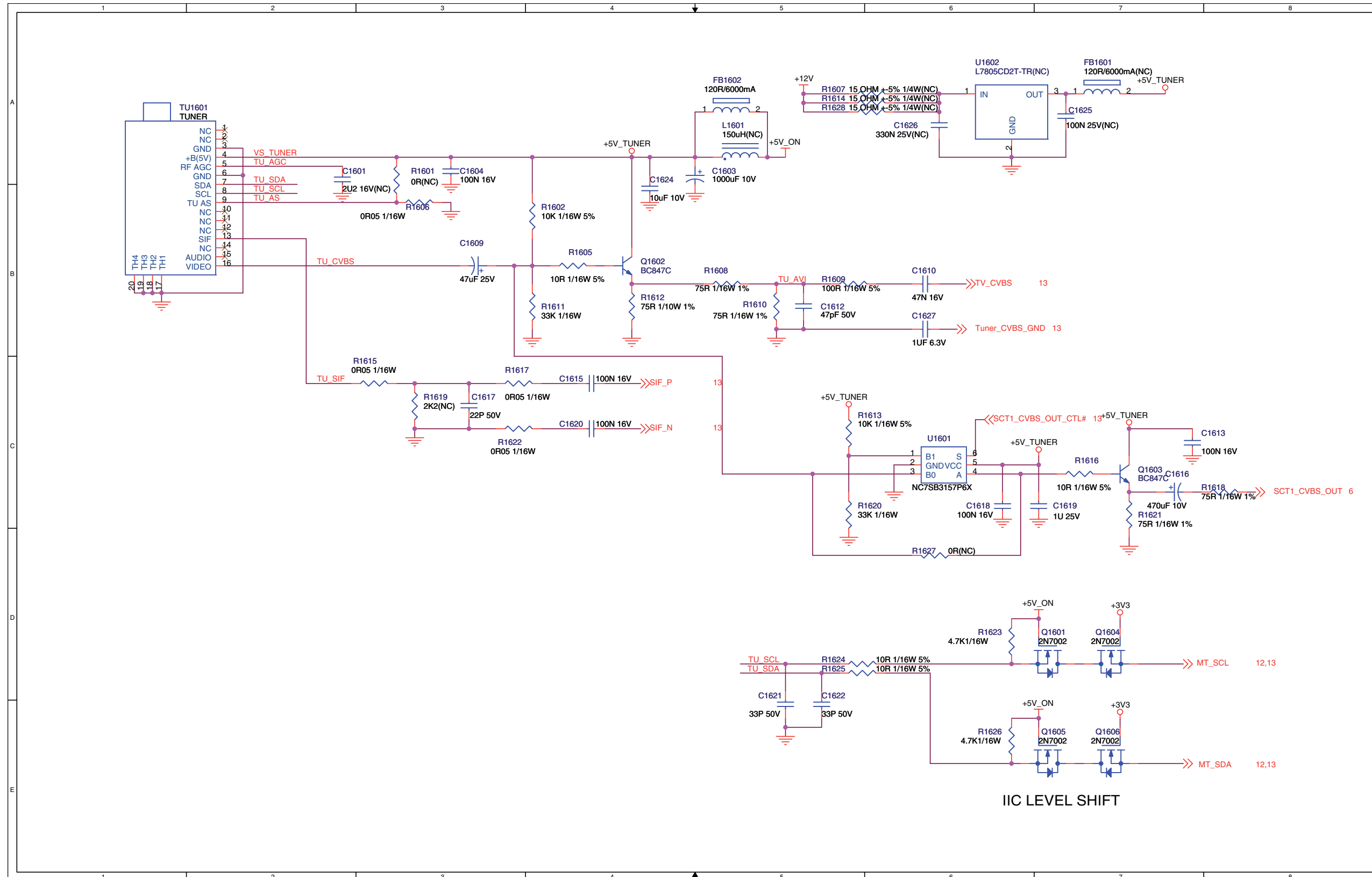
CVBS/Audio Out	715G3786	C	2010-01-14

SSB: Tuner

B06

Tuner

B06



- C1601 A2
- C1604 A3
- C1610 B6
- C1613 C7
- C1616 C7
- C1618 C6
- C1620 C4
- C1622 D5
- C1625 A7
- C1627 B6
- FB1602 A5
- Q1601 D6
- Q1603 C7
- Q1605 E6
- R1601 A3
- R1605 B4
- R1607 A5
- R1609 B5
- R1611 B3
- R1613 C5
- R1615 C3
- R1617 C3
- R1619 C3
- R1621 C7
- R1623 D6
- R1625 D5
- R1627 D6
- C1603 A4
- C1609 B3
- C1612 B5
- C1615 C4
- C1617 C3
- C1619 C6
- C1621 D5
- C1624 A4
- C1626 A6
- FB1601 A7
- L1601 A5
- Q1602 B4
- Q1604 D7
- Q1606 E7
- R1602 B3
- R1606 B3
- R1608 B5
- R1610 B5
- R1612 B4
- R1614 A5
- R1616 C7
- R1618 C7
- R1620 C5
- R1622 C3
- R1624 D5
- R1626 E6
- R1628 A5
- TU1601 A1
- U1601 C6

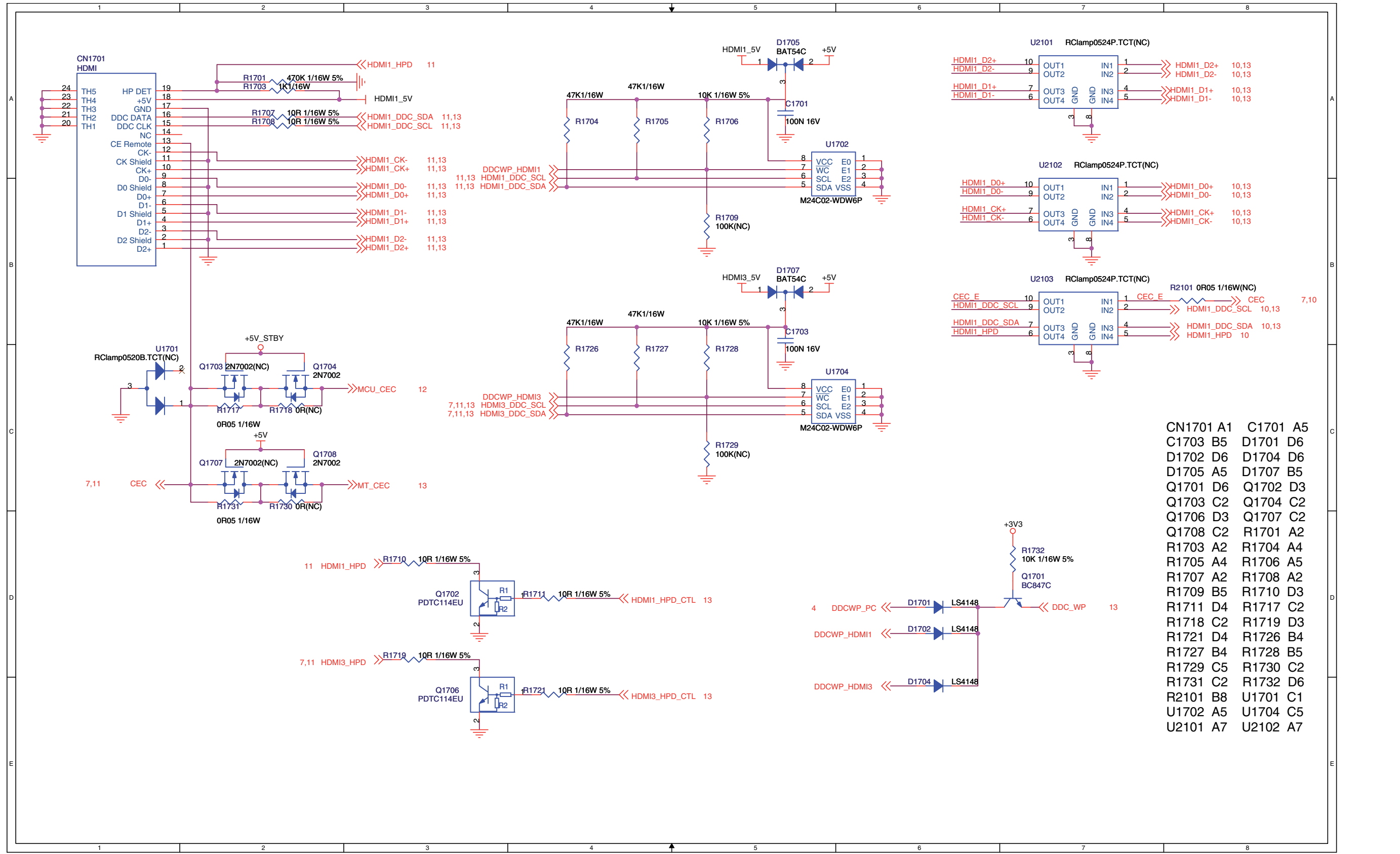
Tuner	715G3786
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SSB: HDMI Input

B07

HDMI Input

B07



CN1701	A1	C1701	A5
C1703	B5	D1701	D6
D1702	D6	D1704	D6
D1705	A5	D1707	B5
Q1701	D6	Q1702	D3
Q1703	C2	Q1704	C2
Q1706	D3	Q1707	C2
Q1708	C2	R1701	A2
R1703	A2	R1704	A4
R1705	A4	R1706	A5
R1707	A2	R1708	A2
R1709	B5	R1710	D3
R1711	D4	R1717	C2
R1718	C2	R1719	D3
R1721	D4	R1726	B4
R1727	B4	R1728	B5
R1729	C5	R1730	C2
R1731	C2	R1732	D6
R2101	B8	U1701	C1
U1702	A5	U1704	C5
U2101	A7	U2102	A7

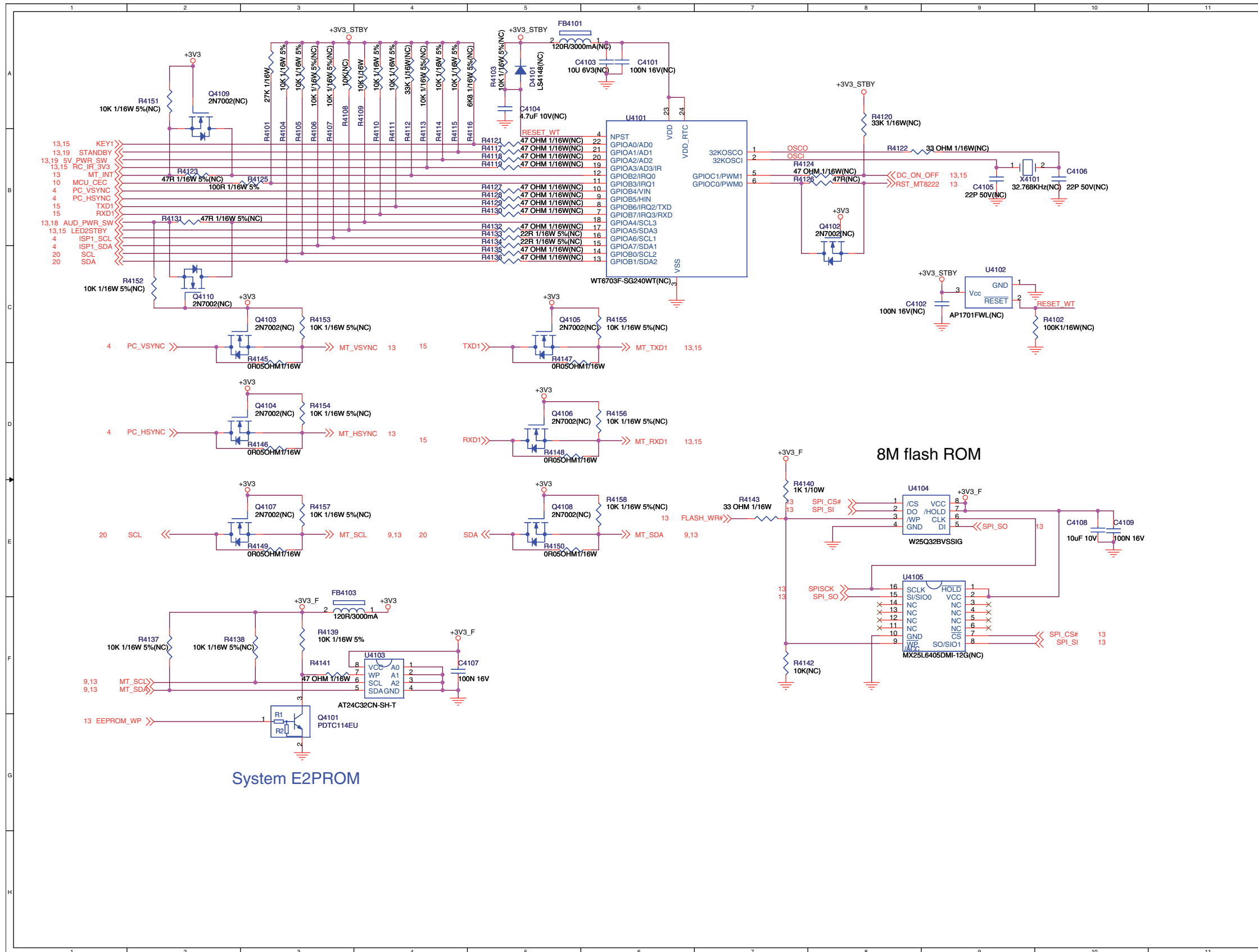
HDMI Input	715G3786
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SSB: WT6703F (Stand-by MCU)

B08

WT6703F (Stand-by MCU)

B08



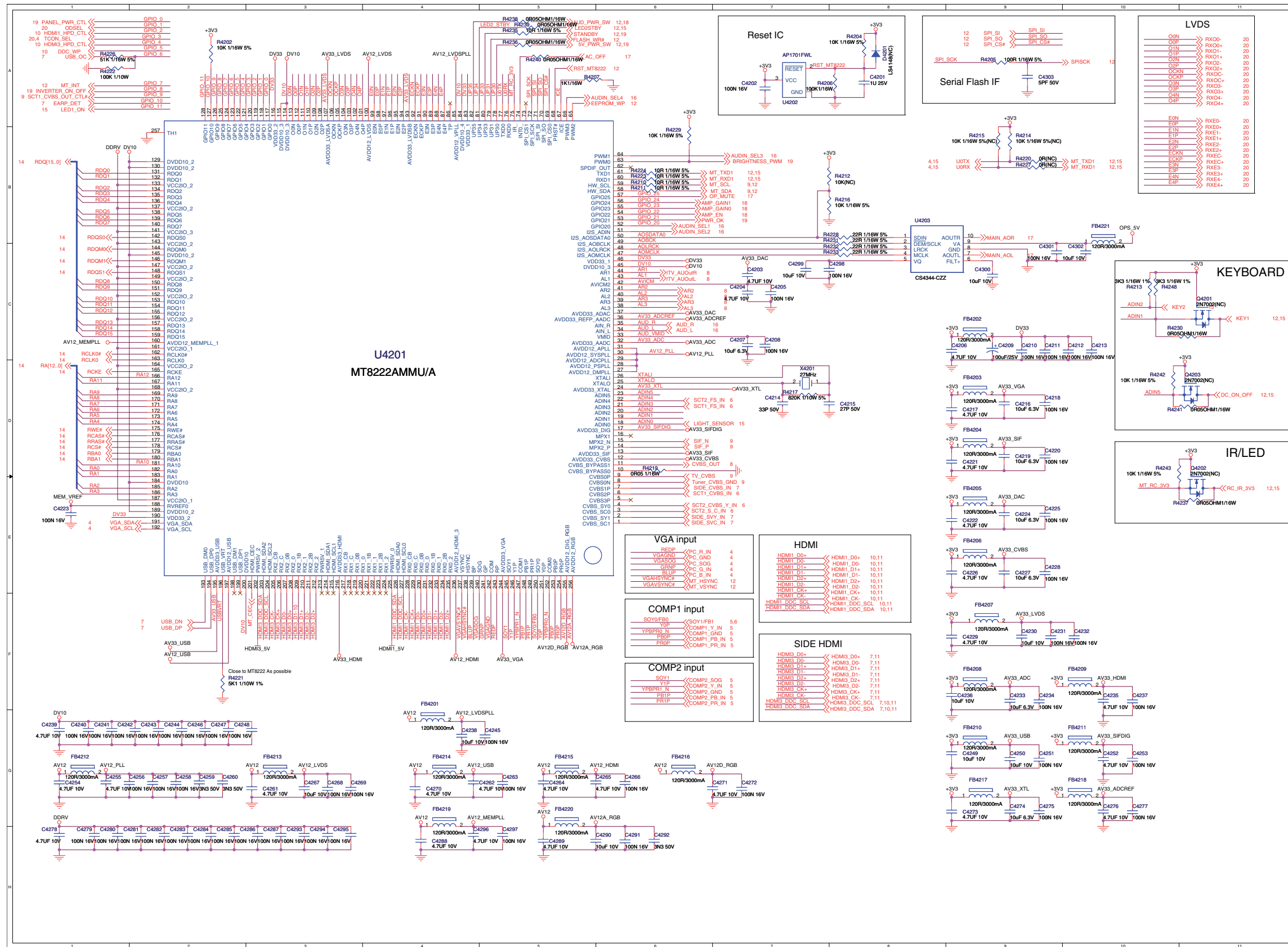
WT6703F (Stand-by MCU)	715G3786	C	2010-01-14

SSB: MTK8222

B09

MTK8222

B09



LVDS

00N	RX00-	20
00N	RX00+	20
00N	RX01-	20
00N	RX01+	20
00N	RX02-	20
00N	RX02+	20
00N	RX03-	20
00N	RX03+	20
00N	RX04-	20
00N	RX04+	20
00N	RX05-	20
00N	RX05+	20
00N	RX06-	20
00N	RX06+	20
00N	RX07-	20
00N	RX07+	20
00N	RX08-	20
00N	RX08+	20
00N	RX09-	20
00N	RX09+	20
00N	RX10-	20
00N	RX10+	20
00N	RX11-	20
00N	RX11+	20
00N	RX12-	20
00N	RX12+	20
00N	RX13-	20
00N	RX13+	20
00N	RX14-	20
00N	RX14+	20
00N	RX15-	20
00N	RX15+	20
00N	RX16-	20
00N	RX16+	20
00N	RX17-	20
00N	RX17+	20
00N	RX18-	20
00N	RX18+	20
00N	RX19-	20
00N	RX19+	20
00N	RX20-	20
00N	RX20+	20

C4201	A8	C4202	A7	C4203	C7	C4204	C7
C4205	C7	C4206	C8	C4207	C7	C4208	C7
C4209	C9	C4210	C9	C4211	C9	C4212	C9
C4213	C10	C4214	D7	C4215	D7	C4216	D9
C4217	D8	C4218	D9	C4219	D9	C4220	D9
C4221	D8	C4222	E8	C4223	E1	C4224	E9
C4225	E9	C4226	E8	C4227	E9	C4228	E9
C4229	F8	C4230	F9	C4231	F9	C4232	F8
C4233	F9	C4234	F9	C4235	F10	C4236	F8
C4237	F10	C4238	G4	C4239	G1	C4240	G1
C4241	G1	C4242	G1	C4243	G2	C4244	G2
C4245	G4	C4246	G2	C4247	G2	C4248	G2
C4249	G8	C4250	G9	C4251	G9	C4252	G10
C4253	G10	C4254	G1	C4255	G1	C4256	G1
C4257	G2	C4258	G2	C4259	G2	C4260	G2
C4261	G2	C4262	G4	C4263	G5	C4264	G5
C4265	G5	C4266	G6	C4267	G3	C4268	G3
C4269	G3	C4270	G4	C4271	G6	C4272	G7
C4273	G8	C4274	G9	C4275	G9	C4276	G10
C4277	G10	C4278	G1	C4279	G1	C4280	G1
C4281	G2	C4282	G2	C4283	G2	C4284	G2
C4285	G2	C4286	G3	C4287	G3	C4288	H4
C4289	H5	C4290	H5	C4291	H6	C4292	H6
C4293	G3	C4294	G3	C4295	G3	C4296	G4
C4297	G5	C4298	C7	C4299	C7	C4300	C9
C4301	C9	C4302	C10	C4303	A9	D4201	A8
FB4201	F4	FB4202	C9	FB4203	D9	FB4204	D9
FB4205	E9	FB4206	E9	FB4207	F9	FB4208	F9
FB4209	F9	FB4210	G9	FB4211	G9	FB4212	G1
FB4213	G3	FB4214	G4	FB4215	G5	FB4216	G5
FB4217	G9	FB4218	G9	FB4219	G4	FB4220	G5
FB4221	B10	Q4201	C11	Q4202	D10	Q4203	D10
R4202	A2	R4204	A8	R4205	A9	R4206	A7
R4207	A5	R4210	B6	R4211	B6	R4212	B7
R4213	C10	R4214	B9	R4215	B9	R4216	B7
R4217	D7	R4219	D6	R4220	B9	R4221	F2
R4222	A1	R4223	B6	R4224	B6	R4226	A1
R4227	B9	R4228	B7	R4229	A6	R4230	C10
R4231	B7	R4232	E7	R4233	C7	R4235	A5
R4236	A5	R4237	E10	R4238	A5	R4239	A5
R4240	A5	R4241	D10	R4242	D10	R4243	D10
R4248	C10	U4201	A2	U4202	A7	U4203	B8

MTK8222

715G3786

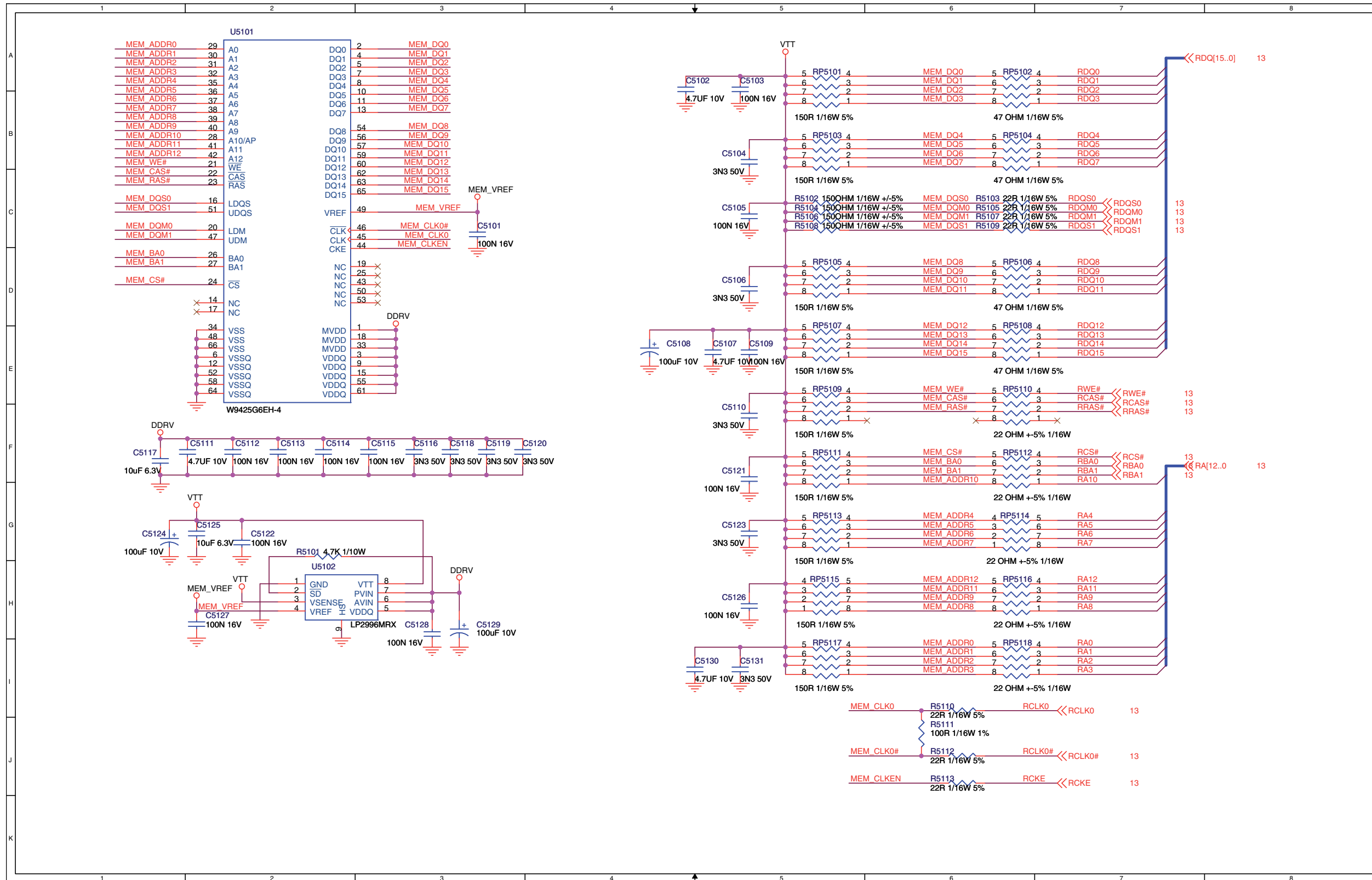
C	2010-01-14

SSB: DDR1 Memory

B10

DDR1 Memory

B10



- C5101 C3
- C5103 A5
- C5105 C5
- C5107 E5
- C5109 E5
- C5111 F1
- C5113 F2
- C5115 F3
- C5117 F1
- C5119 F3
- C5121 F5
- C5123 G5
- C5125 G2
- C5127 H2
- C5129 H3
- C5131 I5
- C5102 A4
- C5104 B5
- C5106 D5
- C5108 E4
- C5110 E5
- C5112 F2
- C5114 F2
- C5116 F3
- C5118 F3
- C5120 F3
- C5122 G1
- C5124 G1
- C5126 H5
- C5128 H3
- C5130 I4
- RP5101 A5
- RP5102 A6
- RP5103 B5
- RP5104 B6
- RP5105 D5
- RP5106 D6
- RP5107 D5
- RP5108 D6
- RP5109 E5
- RP5110 E6
- RP5111 F5
- RP5112 F6
- RP5113 G5
- RP5114 G6
- RP5115 H5
- RP5116 H6
- RP5117 H5
- RP5118 H6
- R5101 G2
- R5102 C5
- R5103 C6
- R5104 C5
- R5105 C6
- R5106 C5
- R5107 C6
- R5108 C5
- R5109 C6
- R5110 I6
- R5111 I6
- R5112 J6
- R5113 J6
- U5101 A2
- U5102 H2

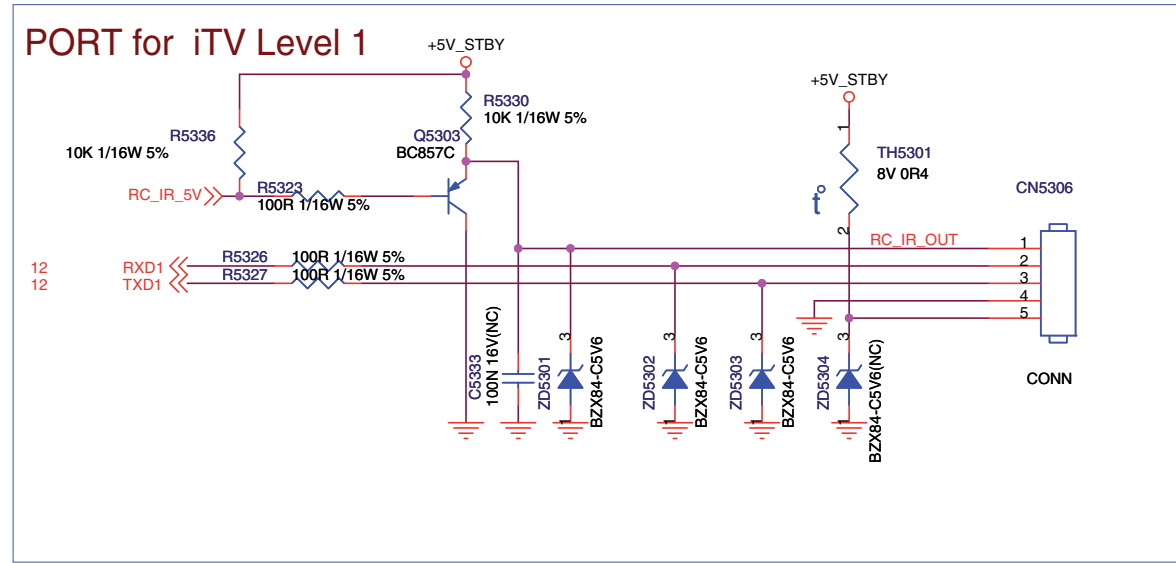
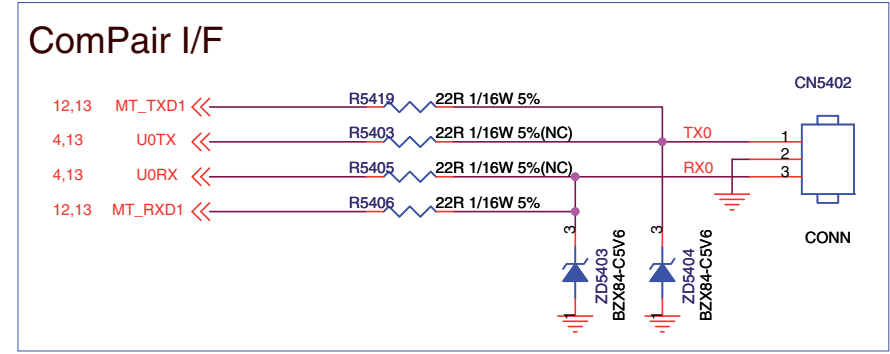
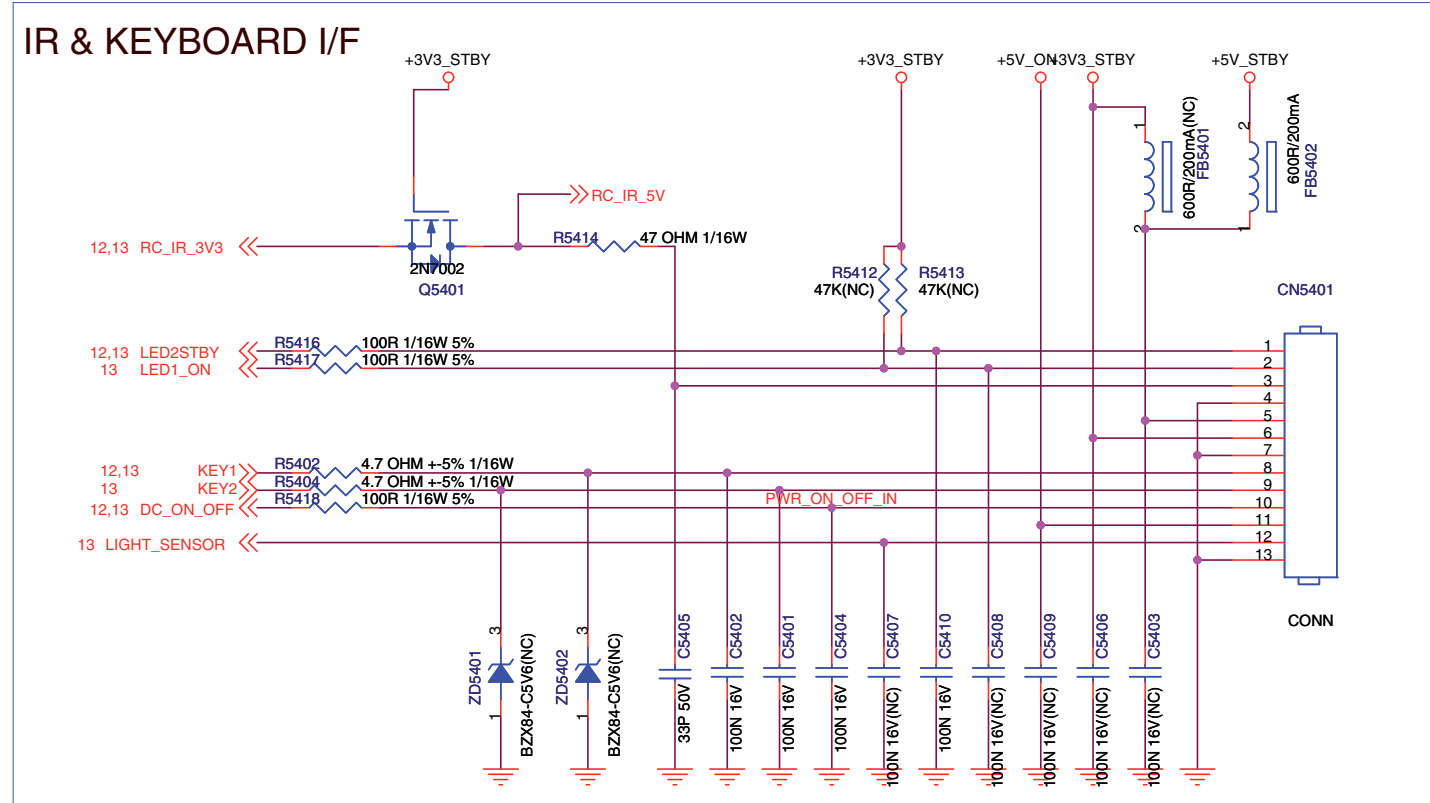
DDR1 Memory	715G3786	C 2010-01-14

SSB: KEYBOARD, IR/LED & ComPair I/F

B11

KEYBOARD, IR/LED & ComPair I/F

B11



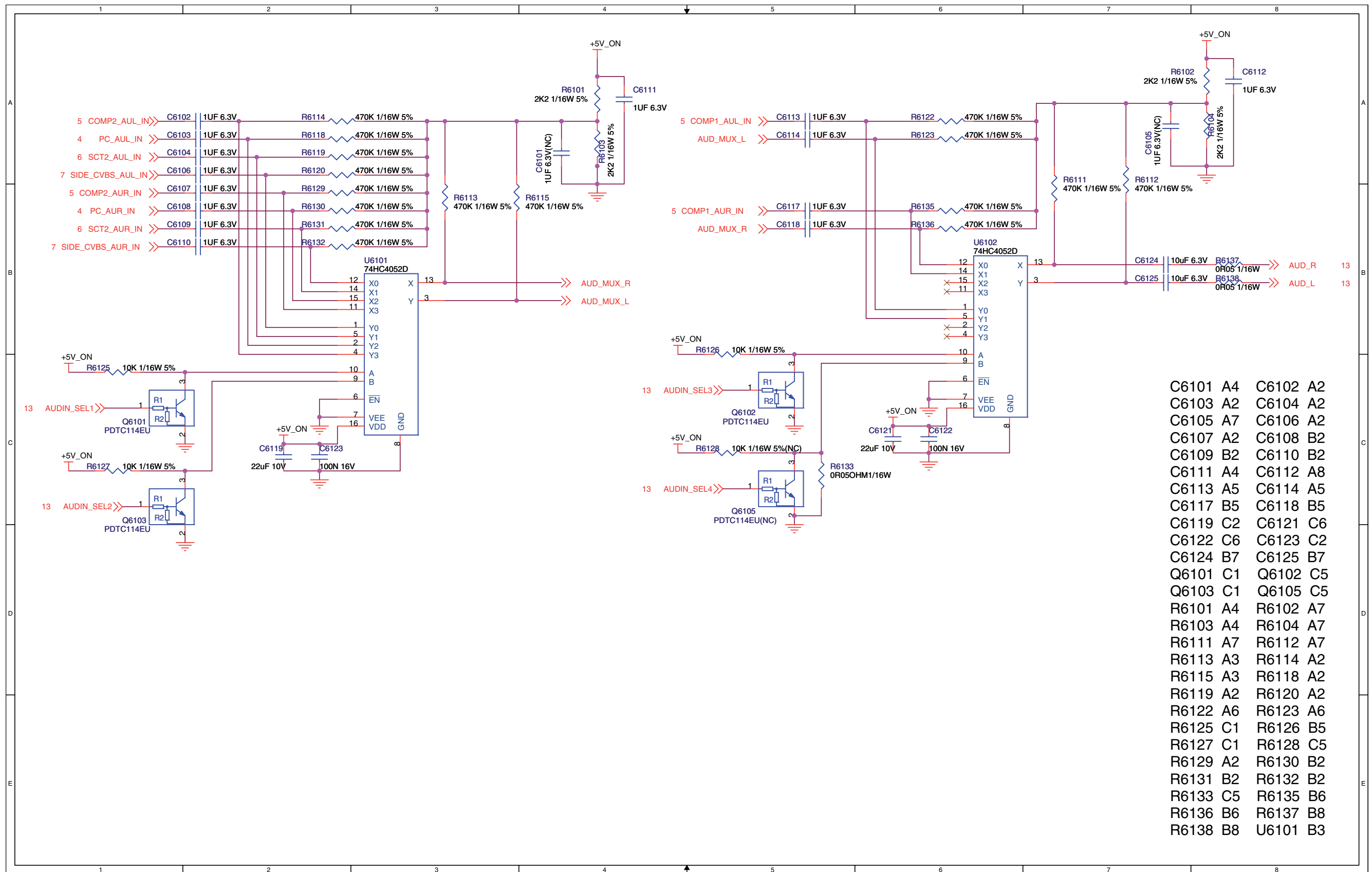
- CN5306 D4
- CN5402 A8
- C5401 C3
- C5403 C4
- C5405 C3
- C5407 C4
- C5409 C4
- FB5401 A4
- Q5303 D2
- R5323 D2
- R5327 D2
- R5336 D2
- R5403 A7
- R5405 A7
- R5412 B4
- R5414 A3
- R5417 B2
- R5419 A7
- ZD5301 D3
- ZD5303 D3
- ZD5401 C2
- ZD5403 B7
- CN5401 B5
- C5333 D2
- C5402 C3
- C5404 C3
- C5406 C4
- C5408 C4
- C5410 C4
- FB5402 A5
- Q5401 A2
- R5326 D2
- R5330 D2
- R5402 B2
- R5404 B2
- R5406 A7
- R5406 A7
- R5413 B4
- R5416 B2
- R5418 B2
- TH5301 D3
- ZD5302 D3
- ZD5304 D3
- ZD5402 C3
- ZD5404 B7

Key, IR/LED & ComPair I/F	715G3786	C	2010-01-14

SSB: Audio Switch

B12 Audio Switch

B12



C6101	A4	C6102	A2
C6103	A2	C6104	A2
C6105	A7	C6106	A2
C6107	A2	C6108	B2
C6109	B2	C6110	B2
C6111	A4	C6112	A8
C6113	A5	C6114	A5
C6117	B5	C6118	B5
C6119	C2	C6121	C6
C6122	C6	C6123	C2
C6124	B7	C6125	B7
Q6101	C1	Q6102	C5
Q6103	C1	Q6105	C5
R6101	A4	R6102	A7
R6103	A4	R6104	A7
R6111	A7	R6112	A7
R6113	A3	R6114	A2
R6115	A3	R6118	A2
R6119	A2	R6120	A2
R6122	A6	R6123	A6
R6125	C1	R6126	B5
R6127	C1	R6128	C5
R6129	A2	R6130	B2
R6131	B2	R6132	B2
R6133	C5	R6135	B6
R6136	B6	R6137	B8
R6138	B8	U6101	B3

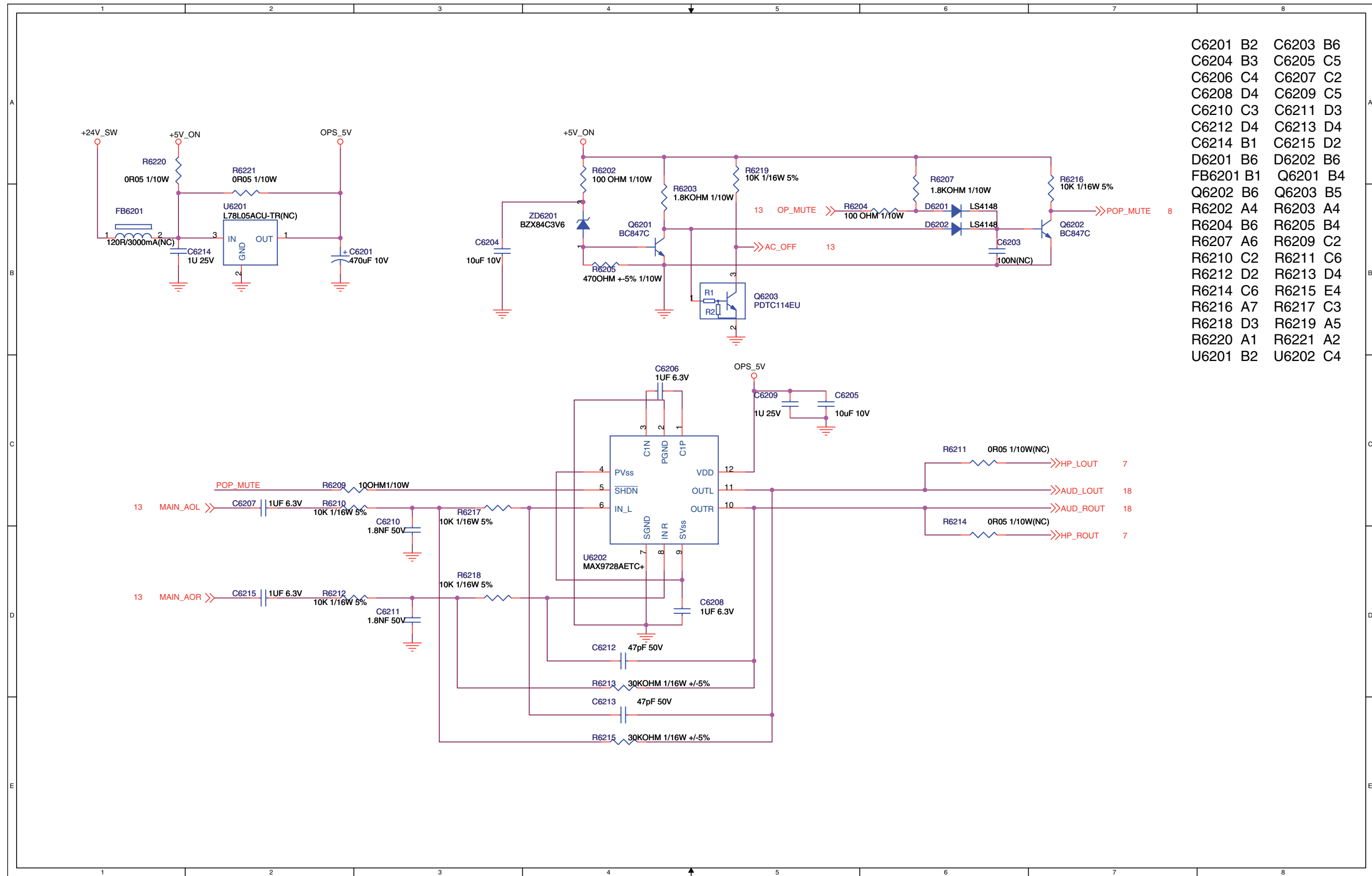
Audio Switch	715G3786

SSB: AUDIO Preamplifier

B13

Audio Preamplifier

B13



C6201	B2	C6203	B6
C6204	B3	C6205	C5
C6206	C4	C6207	C2
C6208	D4	C6209	C5
C6210	C3	C6211	D3
C6212	D4	C6213	D4
C6214	B1	C6215	D2
D6201	B6	D6202	B6
FB6201	B1	Q6201	B4
Q6202	B6	Q6203	B5
R6202	A4	R6203	A4
R6204	B6	R6205	B4
R6207	A6	R6209	C2
R6210	C2	R6211	C6
R6212	D2	R6213	D4
R6214	C6	R6215	E4
R6216	A7	R6217	C3
R6218	D3	R6219	A5
R6220	A1	R6221	A2
U6201	B2	U6202	C4

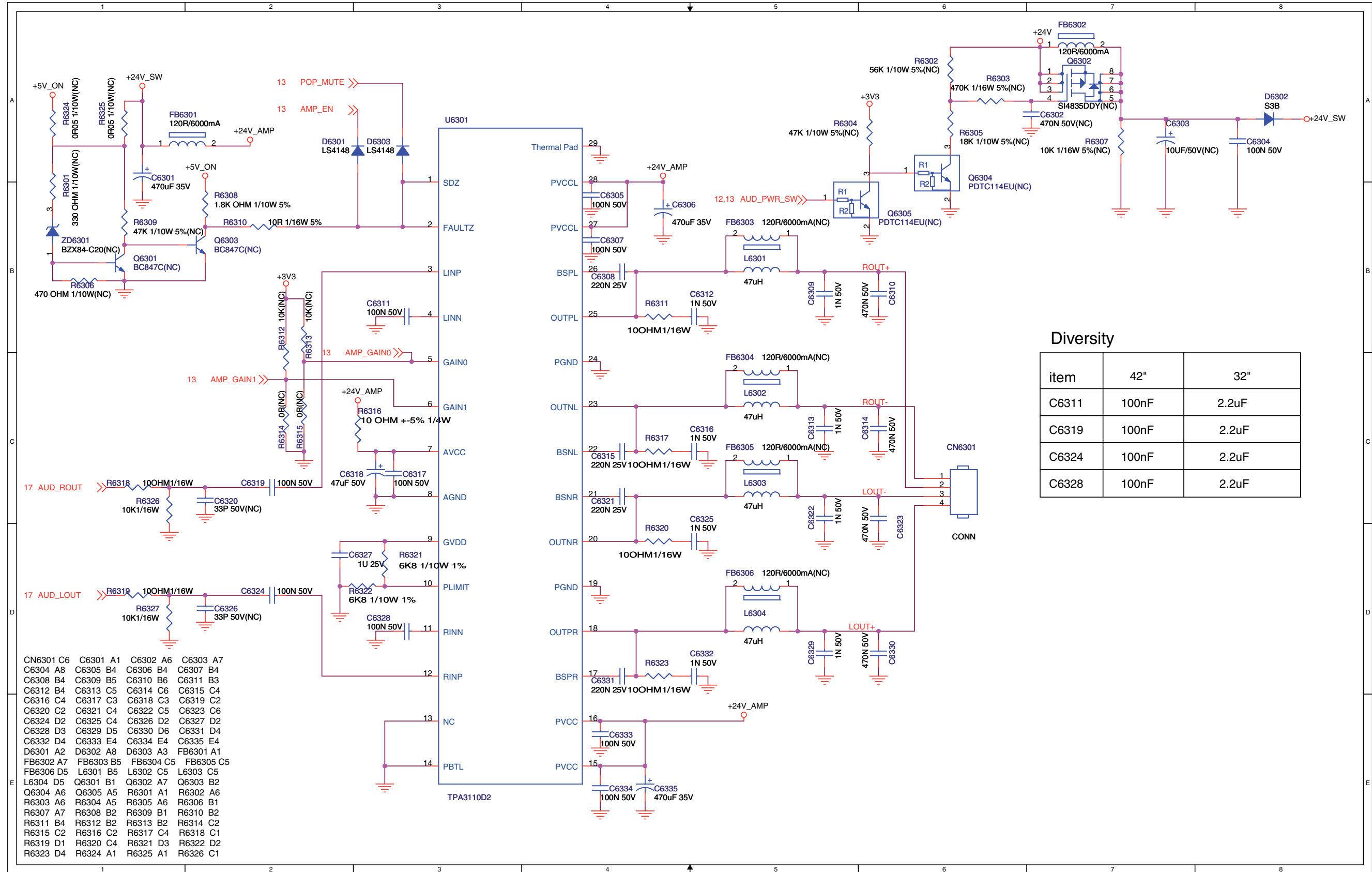
Audio Preamplifier	715G3786

SSB: Audio Amplifier

B14

Audio Amplifier

B14



Diversity

item	42"	32"
C6311	100nF	2.2uF
C6319	100nF	2.2uF
C6324	100nF	2.2uF
C6328	100nF	2.2uF

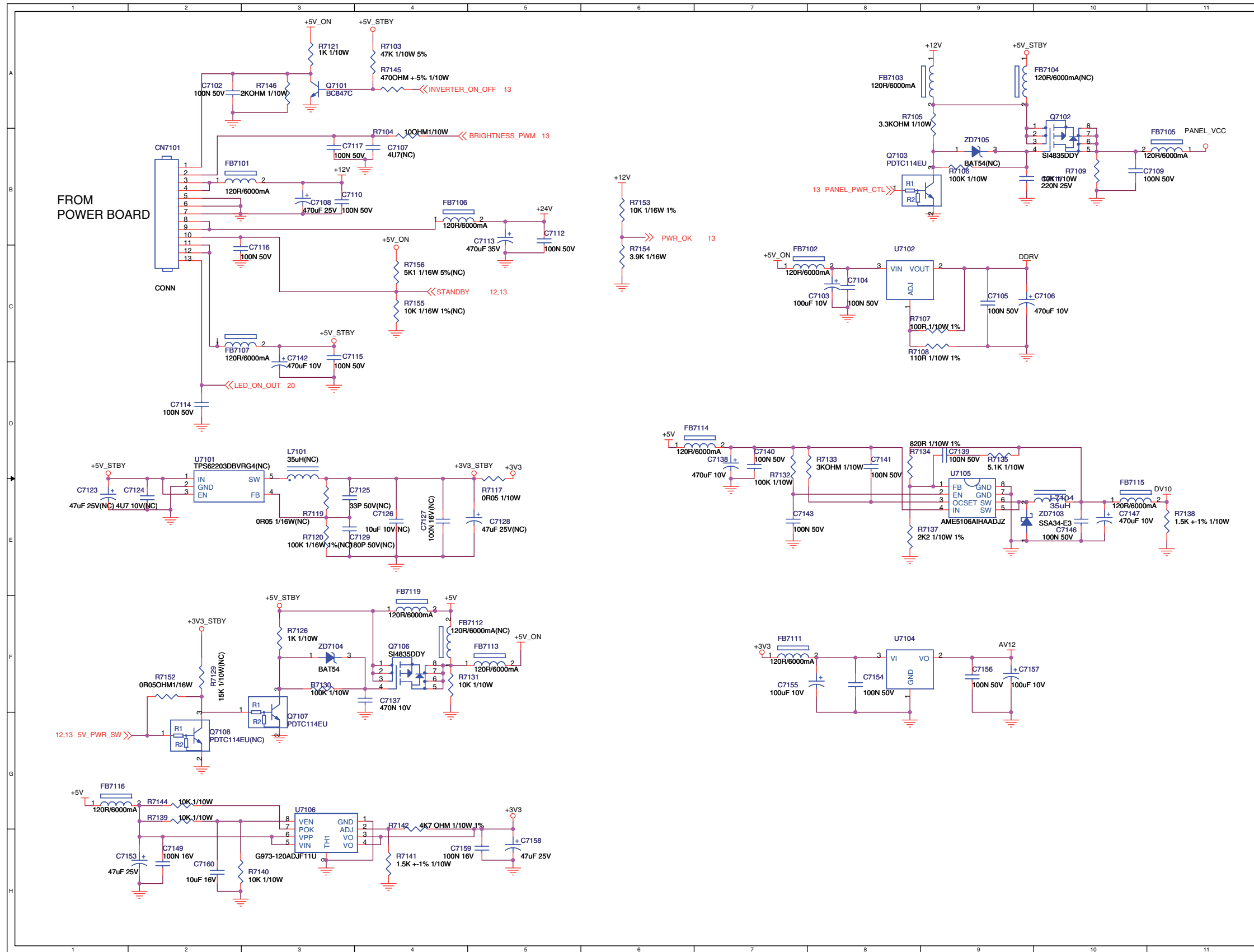
- CN6301 C6
- C6304 A8
- C6312 B4
- C6316 C4
- C6320 C2
- C6324 D2
- C6328 D3
- C6332 D4
- D6301 A2
- FB6302 A7
- FB6306 D5
- L6304 D5
- Q6304 A6
- R6303 A6
- R6307 A7
- R6311 B4
- R6315 C2
- R6319 D1
- R6323 D4
- C6301 A1
- C6305 B4
- C6313 C5
- C6317 C3
- C6321 C4
- C6325 C4
- C6329 D5
- C6333 E4
- D6302 A8
- FB6303 B5
- L6301 B5
- Q6301 B1
- R6304 A5
- R6308 B2
- R6312 B2
- R6316 C2
- R6320 C4
- R6324 A1
- C6302 A6
- C6306 B4
- C6314 C6
- C6318 C3
- C6322 C5
- C6326 D2
- C6330 D6
- D6303 A3
- FB6304 C5
- L6302 C5
- Q6302 A7
- R6301 A1
- R6305 A6
- R6309 B1
- R6313 B2
- R6317 C4
- R6321 D3
- R6325 A1
- C6303 A7
- C6307 B4
- C6311 B3
- C6315 C4
- C6319 C2
- C6323 C6
- C6327 D2
- C6331 D4
- C6335 E4
- FB6301 A1
- L6303 C5
- Q6303 B2
- R6302 A6
- R6306 B1
- R6310 B2
- R6314 C2
- R6318 C1
- R6322 D2
- R6326 C1

SSB: DC/DC Power

B15

DC/DC Power

B15



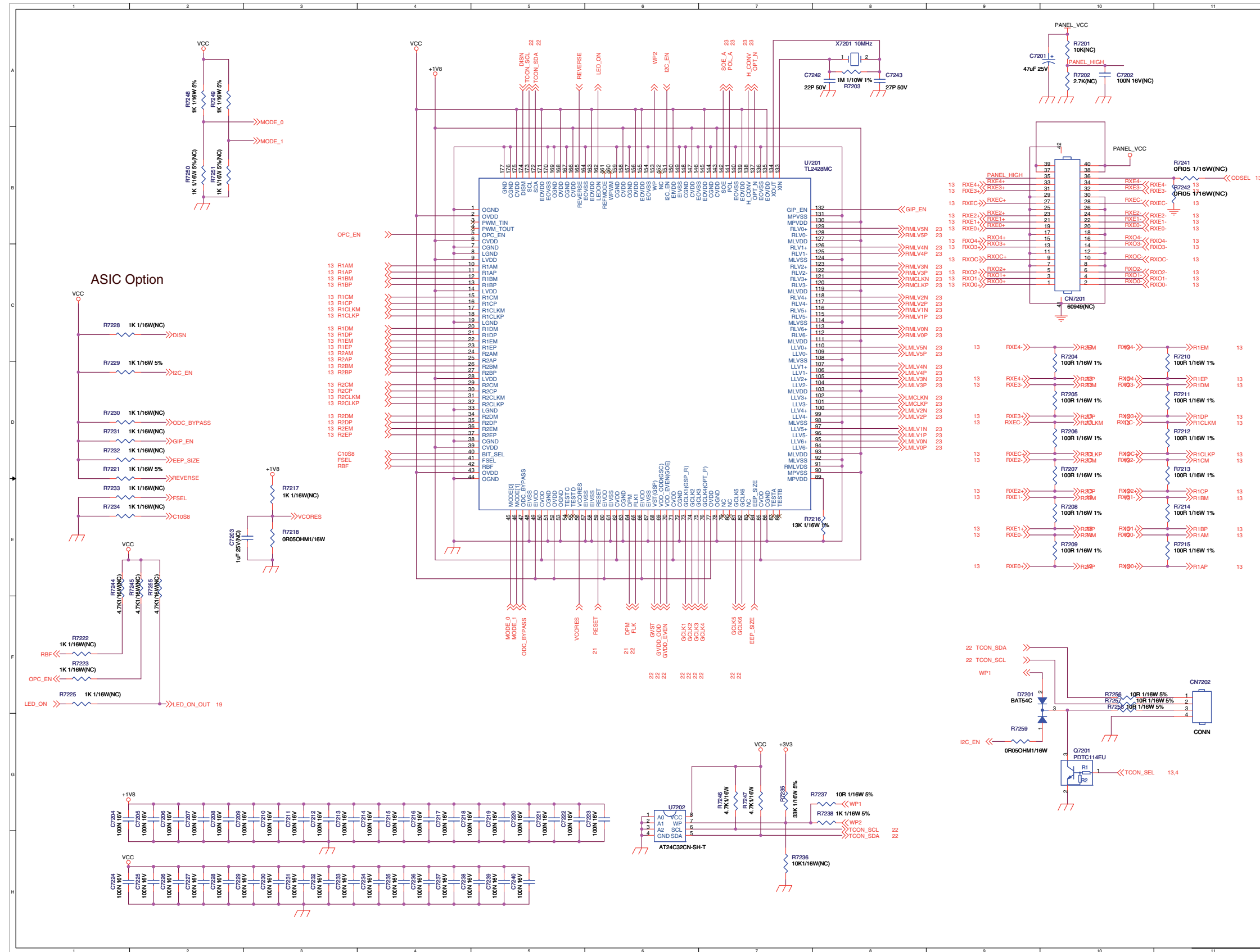
DC/DC Power	715G3786
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SSB: T-CON, LCD Panel I/F

B16

TCON, LCD Panel I/F

B16



CN7201 B10	CN7202 F11	C7201 A9	C7202 A10
C7203 E2	C7204 G1	C7205 G2	C7206 G2
C7207 G2	C7208 G2	C7209 G3	C7210 G3
C7211 G3	C7212 G3	C7213 G3	C7214 G4
C7215 G4	C7216 G4	C7217 G4	C7218 G4
C7219 G5	C7220 G5	C7221 G5	C7222 G5
C7223 G6	C7224 H1	C7225 H2	C7226 H2
C7227 H2	C7228 H2	C7229 H2	C7230 H3
C7231 H3	C7232 H3	C7233 H3	C7234 H4
C7235 H4	C7236 H4	C7237 H4	C7238 H4
C7239 H5	C7240 H5	C7241 A8	C7242 A8
D7201 F9	Q7201 G10	R7201 A10	R7202 A10
R7203 A8	R7204 C9	R7205 D9	R7206 D9
R7207 D9	R7208 E9	R7209 E9	R7210 C10
R7211 D10	R7212 D10	R7213 D10	R7214 E10
R7215 E10	R7216 E7	R7217 E3	R7218 E3
R7221 D1	R7222 F1	R7223 F1	R7225 F1
R7228 C1	R7229 D1	R7230 D1	R7231 D1
R7232 D1	R7233 E1	R7234 E1	R7235 G7
R7236 H7	R7237 G7	R7238 G7	R7241 B11
R7242 B11	R7244 E1	R7245 E2	R7246 G7
R7247 G7	R7248 A2	R7249 A2	R7250 B2
R7251 B2	R7255 E2	R7256 F10	R7257 F10
R7258 F10	R7259 G9	U7201 B5	U7202 G6

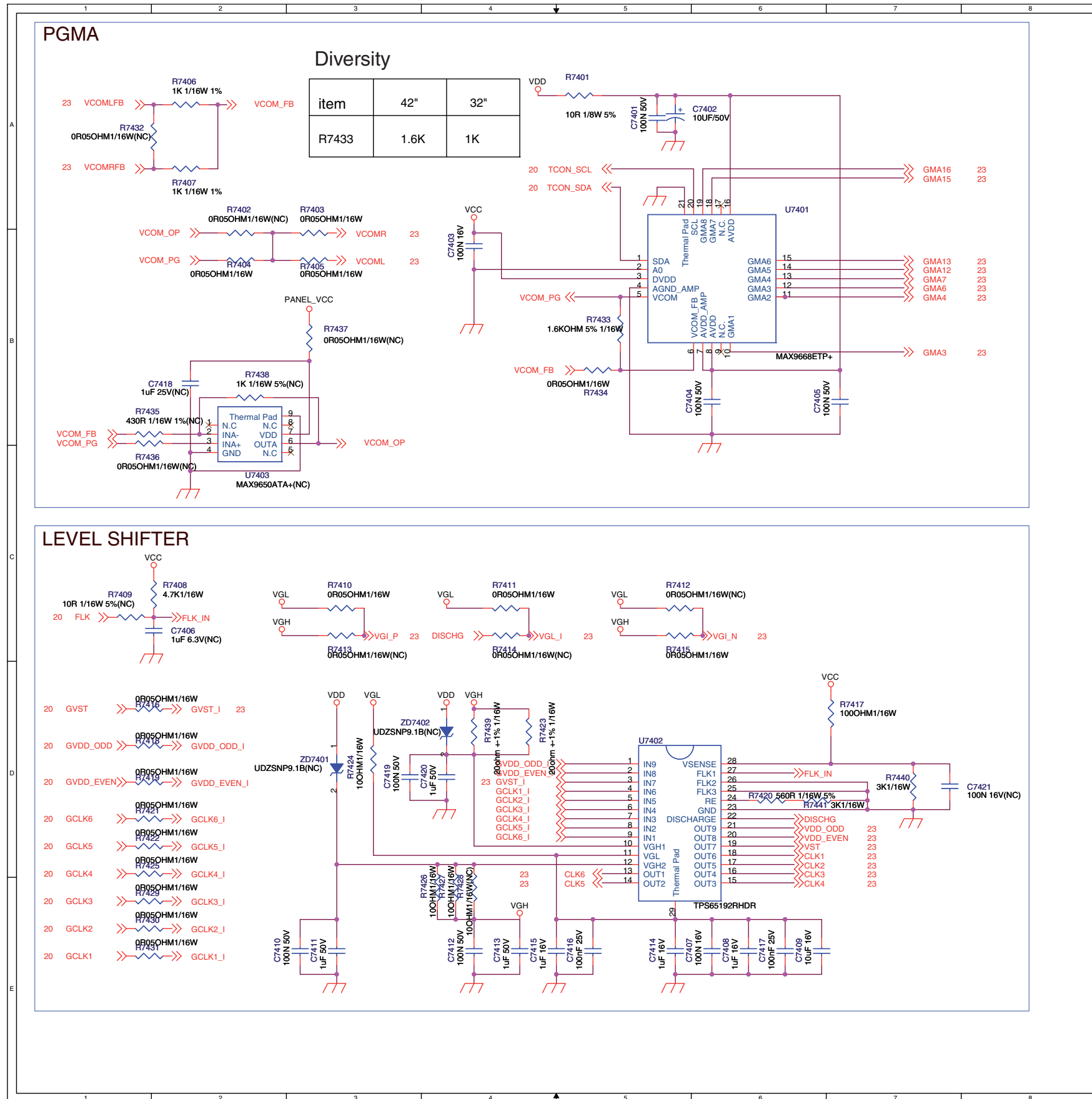
TCON, LCD Panel I/F	715G3786
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SSB: T-CON DC/DC

B17

TCON DC/DC

B17



- C7401 A5
- C7402 A5
- C7403 B4
- C7404 B6
- C7405 B6
- C7406 C1
- C7407 E6
- C7408 E6
- C7409 E6
- C7410 E3
- C7411 E3
- C7412 E4
- C7413 E4
- C7414 E5
- C7415 E4
- C7416 E5
- C7417 E6
- C7418 B2
- C7419 D3
- C7420 D4
- C7421 D7
- R7401 A5
- R7402 A2
- R7403 A3
- R7404 B2
- R7405 B3
- R7406 A2
- R7407 A2
- R7408 C1
- R7409 C1
- R7410 C3
- R7411 C4
- R7412 C5
- R7413 C3
- R7414 C4
- R7415 C5
- R7416 D1
- R7417 D6
- R7418 D1
- R7419 D1
- R7420 D6
- R7421 D1
- R7422 D1
- R7423 D4
- R7424 D3
- R7425 D1
- R7426 D4
- R7427 D4
- R7428 D4
- R7429 E1
- R7430 E1
- R7431 E1
- R7432 A1
- R7433 B5
- R7434 B5
- R7435 B1
- R7436 B1
- R7437 B3
- R7438 B2
- R7439 D4
- R7440 D7
- R7441 D6
- U7401 A5
- U7402 D5
- U7403 B2
- ZD7401 D3
- ZD7402 D4

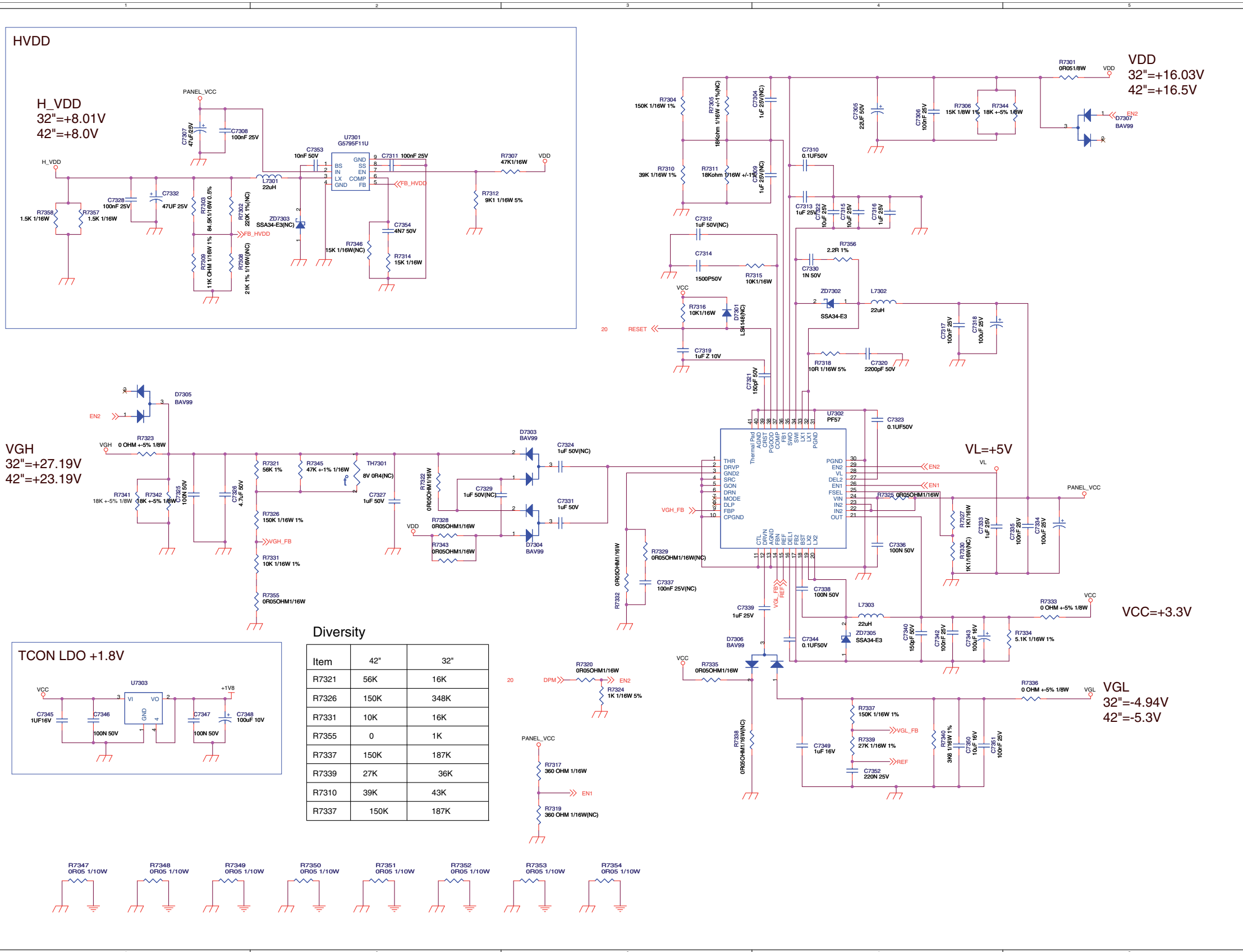
TCON DC/DC	715G3786	C	2010-01-14

SSB: T-CON TGMA , Level-Shifter

B18

TCON TGMA, Level-shifter

B18



HVDD

H_VDD
32"=+8.01V
42"=+8.0V

VGH
32"=+27.19V
42"=+23.19V

TCON LDO +1.8V

Diversity

Item	42"	32"
R7321	56K	16K
R7326	150K	348K
R7331	10K	16K
R7355	0	1K
R7337	150K	187K
R7339	27K	36K
R7310	39K	43K
R7337	150K	187K

VDD
32"=+16.03V
42"=+16.5V

VL=+5V

VCC=+3.3V

VGL
32"=-4.94V
42"=-5.3V

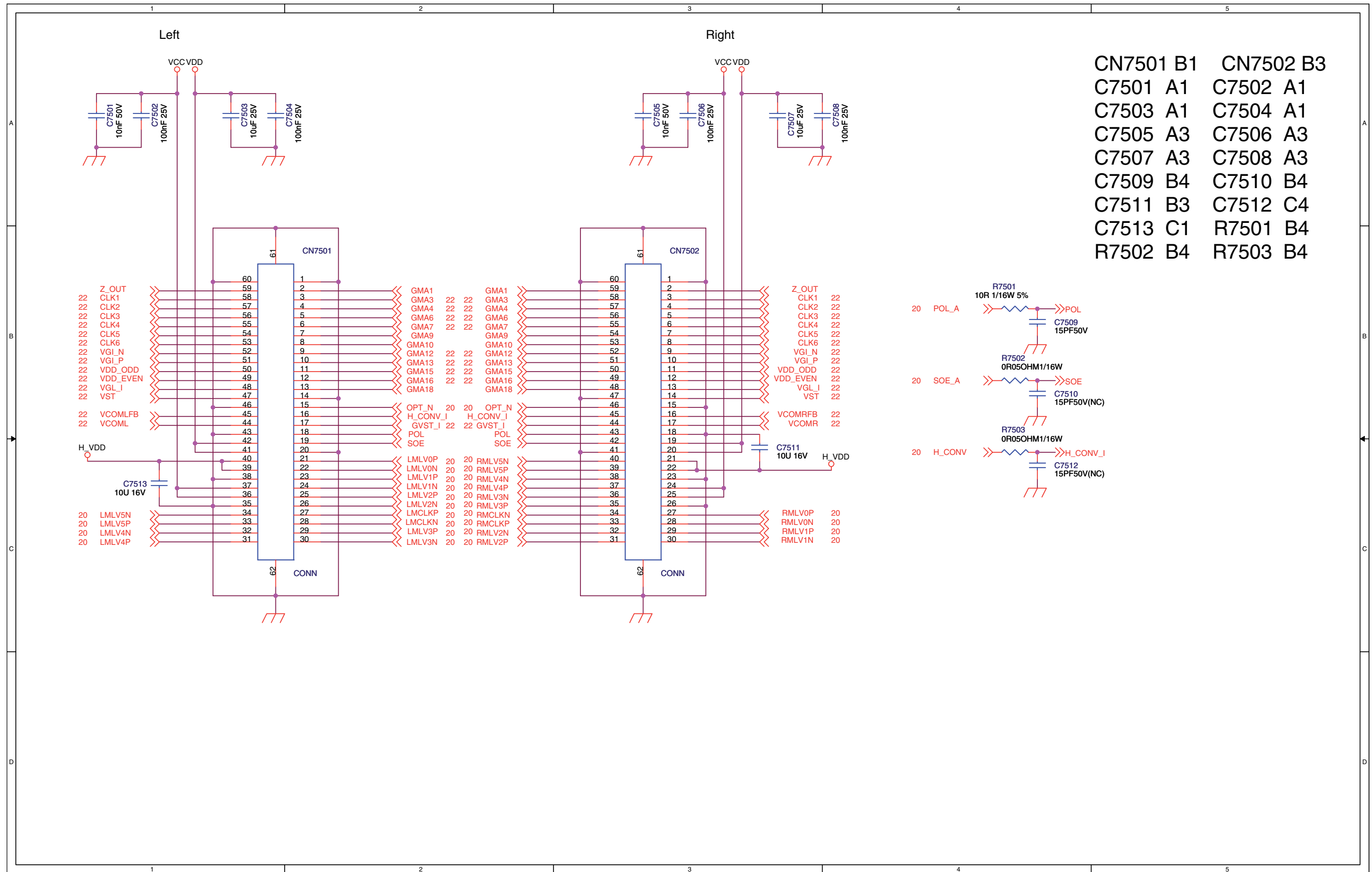
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- C7320 B4
- C7322 A4
- C7324 B3
- C7326 C1
- C7328 A1
- C7330 B4
- C7332 A1
- C7334 C5
- C7336 C4
- C7338 C4
- C7340 C4
- C7342 C4
- C7344 C4
- C7345 C1
- C7347 C1
- C7349 D4
- C7351 D4
- C7353 A2
- D7301 B3
- D7303 B3
- D7304 C3
- D7306 C3
- L7301 A2
- L7303 C4
- R7302 A1
- R7304 A3
- R7306 A4
- R7308 B1
- R7310 A1
- R7312 A2
- R7315 B3
- R7317 D3
- R7319 D3
- R7321 B1
- R7323 B1
- R7325 C4
- R7327 C4
- R7329 C3
- R7331 C1
- R7333 C5
- R7335 C3
- R7337 C4
- R7339 D4
- R7341 C1
- R7343 C2
- R7345 B2
- R7347 D1
- R7349 D1
- R7351 D2
- R7353 D3
- R7355 C1
- R7357 A1
- TH7301 B2
- U7302 B3
- ZD7302 B4
- C7305 A4
- C7307 A1
- C7309 A4
- C7311 A2
- C7313 A4
- C7315 A4
- C7317 B4
- C7319 B3
- C7321 B3
- C7323 B4
- C7325 C1
- C7327 C2
- C7329 C2
- C7331 C3
- C7333 C4
- C7335 C5
- C7337 C3
- C7339 C3
- C7341 C4
- C7343 C4
- C7345 C1
- C7347 C1
- C7349 D4
- C7351 D4
- C7352 D4
- C7354 A2
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- D7307 A5
- L7302 B4
- R7301 A1
- R7303 A1
- R7305 A3
- R7307 A2
- R7309 B1
- R7311 A3
- R7314 B2
- R7316 B3
- R7318 B4
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- R7324 C3
- R7326 C1
- R7328 C2
- R7330 C4
- R7332 C3
- R7334 C4
- R7336 C5
- R7338 D3
- R7340 D4
- R7342 C1
- R7344 A4
- R7346 A2
- R7348 D1
- R7350 D2
- R7352 D2
- R7354 D3
- R7356 B4
- R7358 A1
- U7303 C1
- ZD7303 A2

SSB: T-CON Mini-LVDS I/F

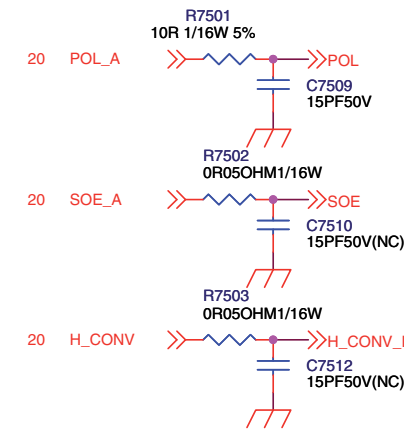
B19

TCON Mini-LVDS I/F

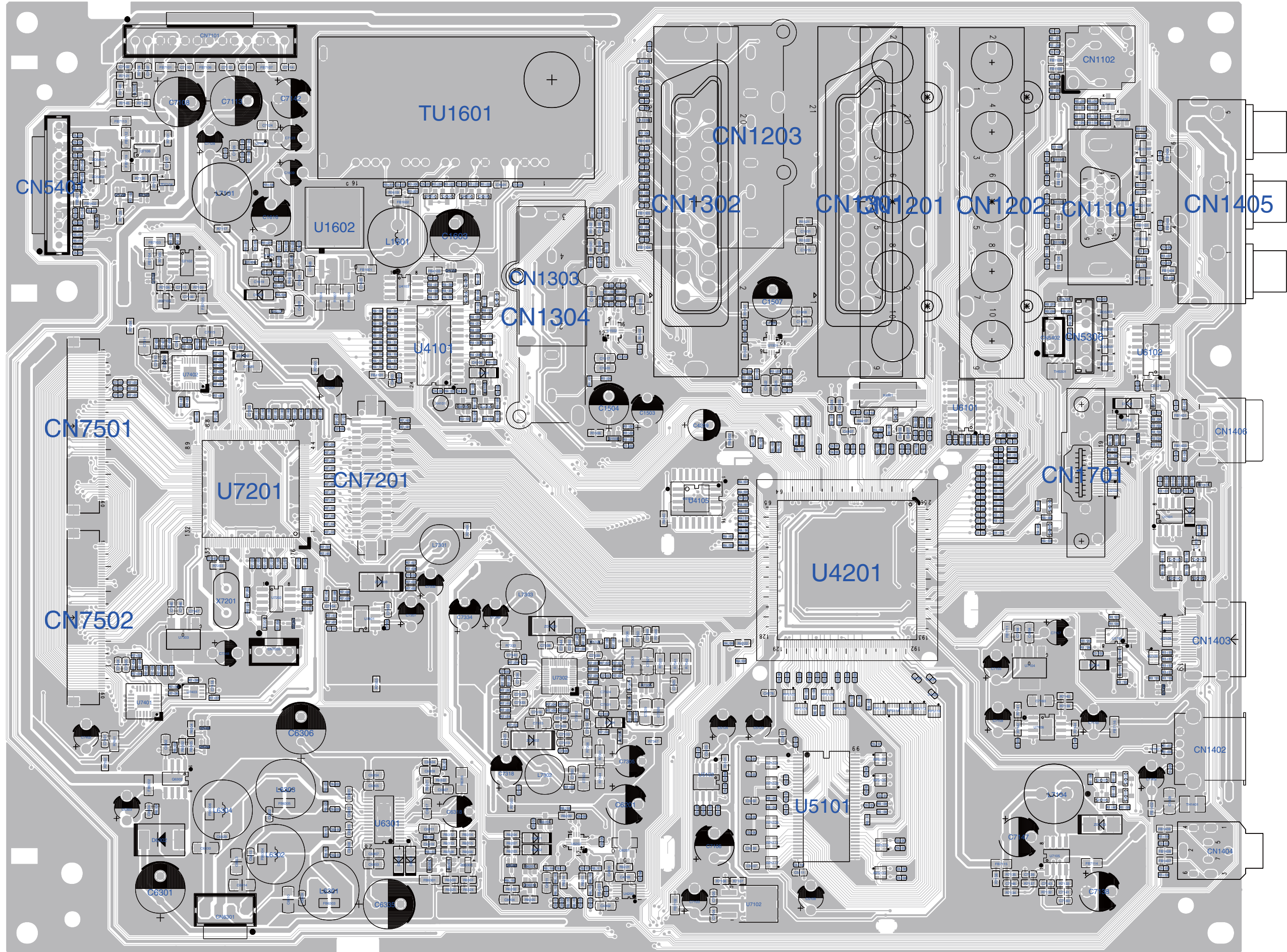
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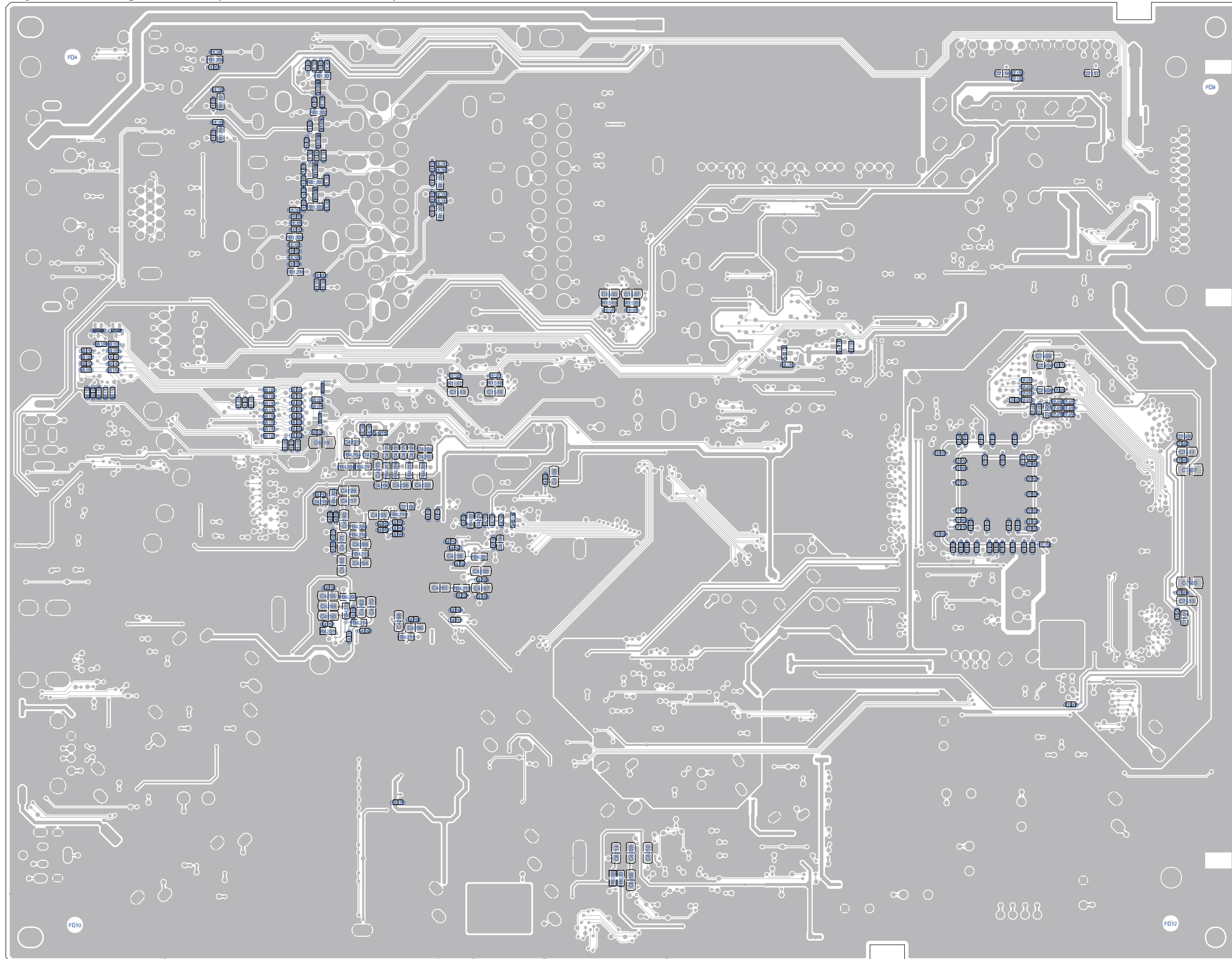
CN7501	B1	CN7502	B3
C7501	A1	C7502	A1
C7503	A1	C7504	A1
C7505	A3	C7506	A3
C7507	A3	C7508	A3
C7509	B4	C7510	B4
C7511	B3	C7512	C4
C7513	C1	R7501	B4
R7502	B4	R7503	B4



Layout Small Signal Board (Overview Top Side)



Layout Small Signal Board (Overview Bottom Side)

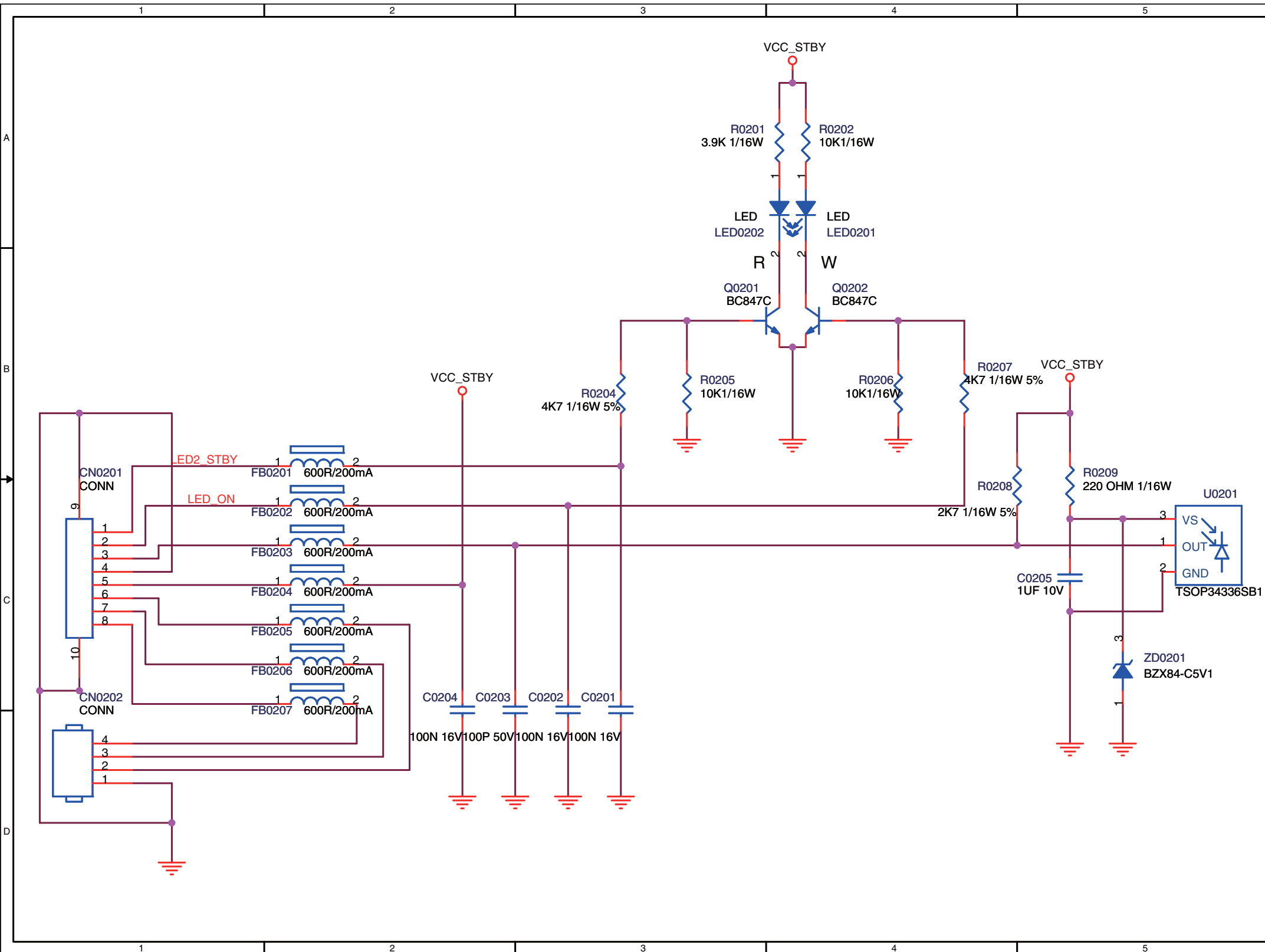


IR/LED Board

J01

IR/LED Board

J01

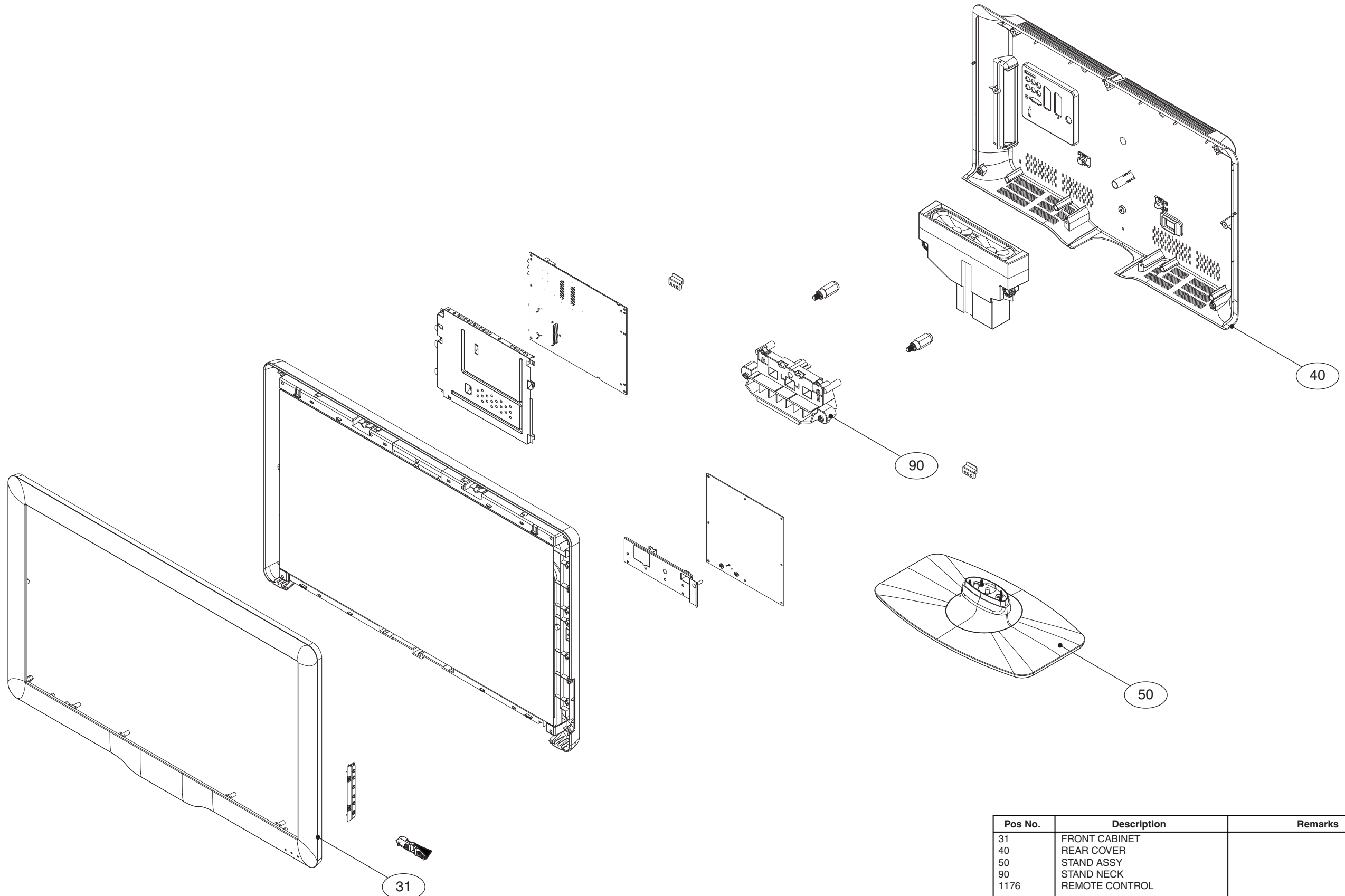


CN0201	C1	CN0202	C1
C0201	C3	C0202	C3
C0203	C2	C0204	C2
C0205	C5	FB0201	B2
FB0202	B2	FB0203	C2
FB0204	C2	FB0205	C2
FB0206	C2	FB0207	C2
ED0201	A4	ED0202	A3
Q0201	B3	Q0202	B4
R0201	A3	R0202	A4
R0204	B3	R0205	B3
R0206	B4	R0207	B4
R0208	B4	R0209	B5
U0201	C5	ZD0201	C5

11. Styling Sheets

Styling Sheet 32"

DALI 32"

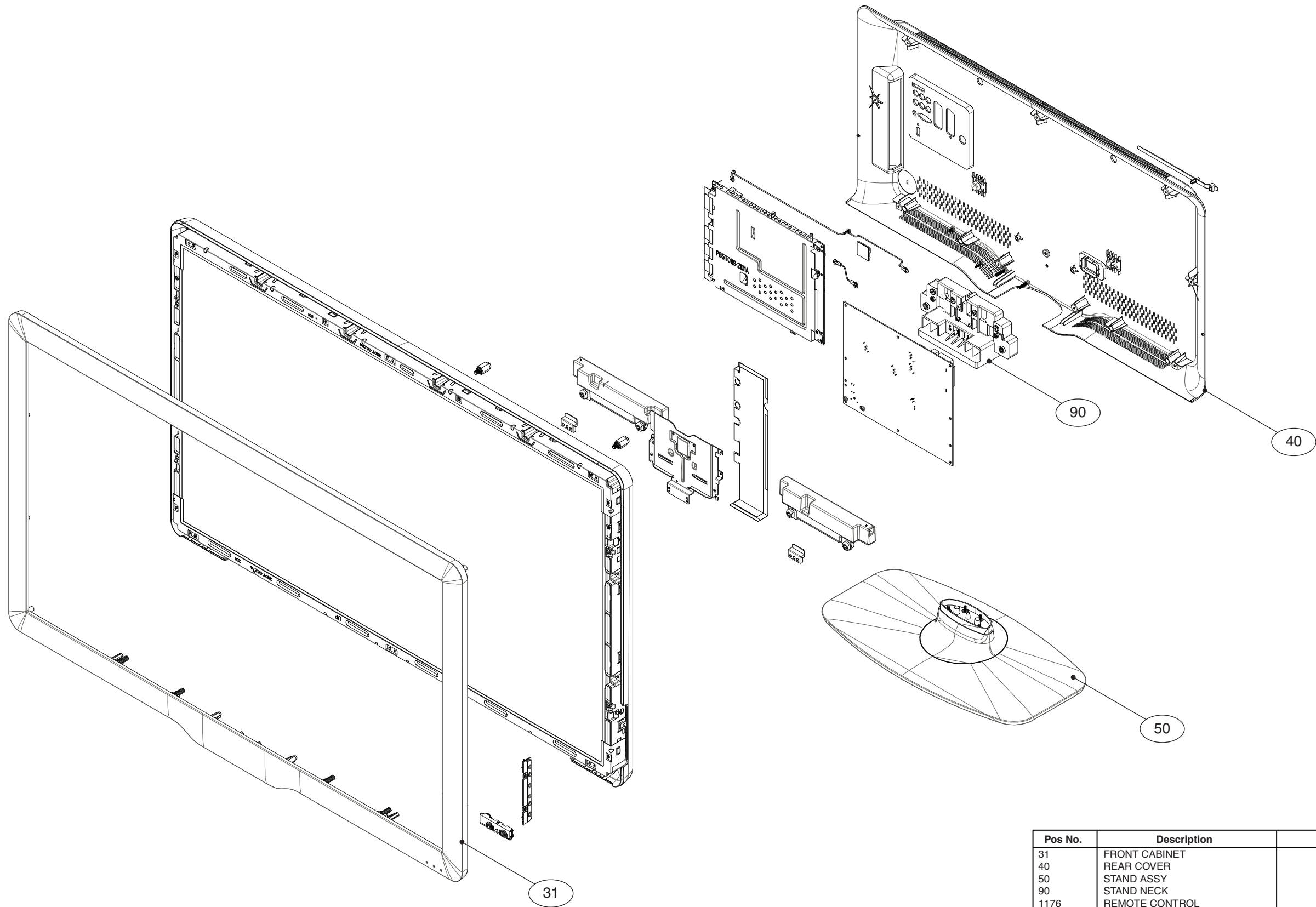


Pos No.	Description	Remarks
31	FRONT CABINET	
40	REAR COVER	
50	STAND ASSY	
90	STAND NECK	
1176	REMOTE CONTROL	

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9

Styling Sheet 42"

DALI 42"



Pos No.	Description	Remarks
31	FRONT CABINET	
40	REAR COVER	
50	STAND ASSY	
90	STAND NECK	
1176	REMOTE CONTROL	

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9