Colour Television

Chassis

LC10.1A

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Service Manual

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PHILIPS

1. Revision List

Manual xxxx xxx xxxx.0

- First release.

2. Technical Specifications and Connections

Index of this chapter:

Notes:

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

2.1 Technical Specifications

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

Table 2-1 Described Model numbers

CTN	Styling	Published in:
32PFL5605/93	van Gogh	3122 785 18920
32PFL5605/98		
40PFL5605/93		
40PFL5605/98		
46PFL5605/67		
46PFL5605/93		
46PFL5605/98		

2.2 Directions for Use

You can download this information from the following websites:
http://www.philips.com/support
http://www.p4c.philips.com

2.3 Connections

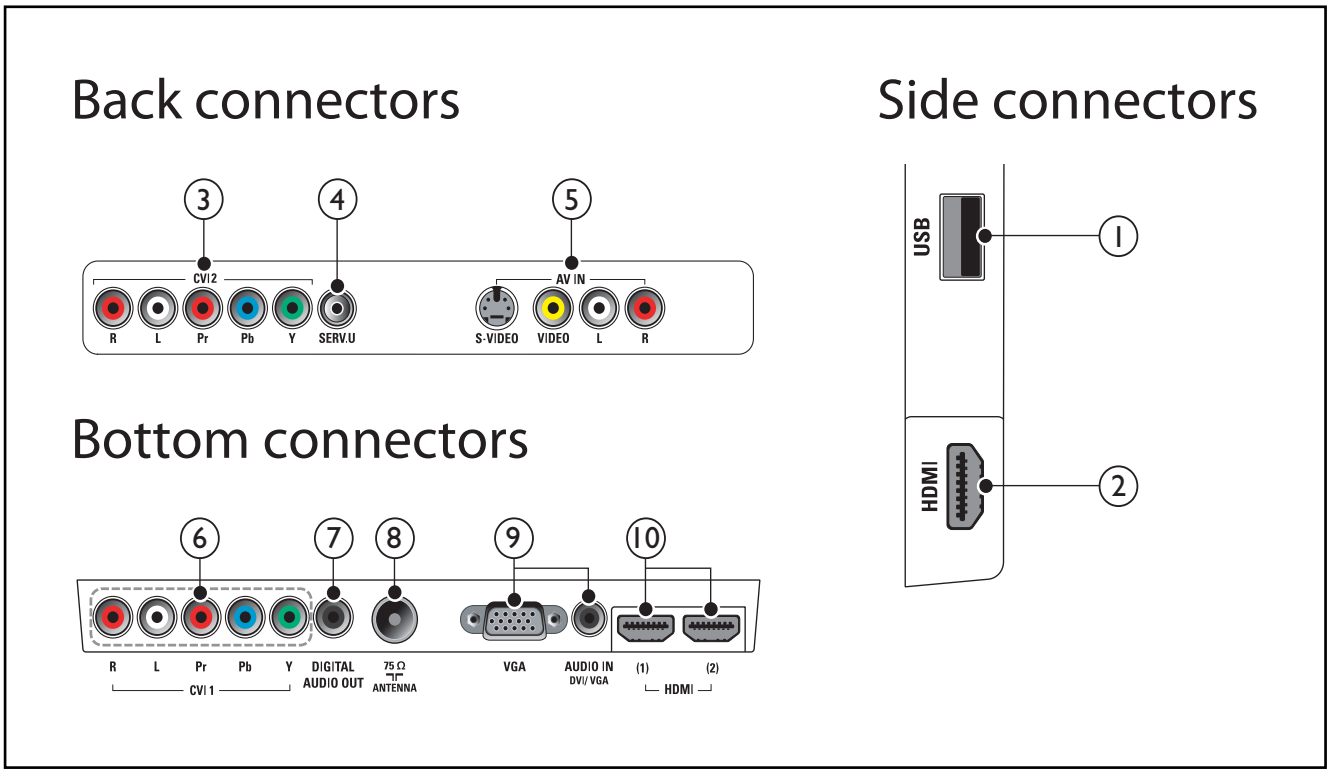

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Figure 2-1 Connection overview

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

2.3.1 Side Connections

1 - USB2.0

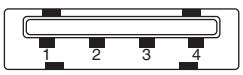

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Figure 2-2 USB (type A)

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

2 - HDMI: Digital Video, Digital Audio - In
(see HDMI 1 & 2)

2.3.2 Rear Connections

3 - CVI2: Cinch: Video YPbPr - In, Audio - In

Gn	- Video Y	1 V_{PP} / 75 Ω
Bu	- Video Pb	0.7 V_{PP} / 75 Ω
Rd	- Video Pr	0.7 V_{PP} / 75 Ω
Rd	- Audio - R	0.5 V_{RMS} / 10 kΩ
Wh	- Audio - L	0.5 V_{RMS} / 10 kΩ

4 - Service Connector (UART)

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

5 - AV IN: S-Video (Hosiden): Video Y/C - In

1	- Ground Y	Gnd
2	- Ground C	Gnd
3	- Video Y	1 V_{PP} / 75 Ω
4	- Video C	0.3 V_{PP} / 75 Ω

5 - AV IN: Cinch: Video CVBS - In, Audio - In

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

2.3.3 Bottom Connections

6 - CVI1: Cinch: Video YPbPr - In, Audio - In

Gn	- Video Y	1 V_{PP} / 75 Ω
Bu	- Video Pb	0.7 V_{PP} / 75 Ω
Rd	- Video Pr	0.7 V_{PP} / 75 Ω
Rd	- Audio - R	0.5 V_{RMS} / 10 kΩ
Wh	- Audio - L	0.5 V_{RMS} / 10 kΩ

7 - Cinch: S/PDIF - Out

Bk	- Coaxial	0.4 - 0.6V_{PP} / 75 ohm

8 - Aerial - In

-	- IEC-type (EU)	Coax, 75 Ω

9 - VGA: Video RGB - In

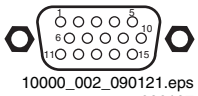

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Figure 2-3 VGA Connector

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	- n.c.		
12	- DDC_SDA	DDC data	⊕
13	- H-sync	0 - 5 V	⊕
14	- V-sync	0 - 5 V	⊕
15	- DDC_SCL	DDC clock	⊕

9 - Mini Jack: Audio - In

Bk	- Audio	0.5 V_{RMS} / 10 kΩ	⊕ 3.5mm

10 - HDMI 1 & 2: Digital Video, Digital Audio - In

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Figure 2-4 HDMI (type A) connector

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

3. Precautions, Notes, and Abbreviation List

Index of this chapter:

3.1 Safety Instructions

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

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

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

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

3.2 Warnings

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

3.3 Notes

3.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏚), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⊓) and without (⊼) aerial signal. Measure the voltages in the power supply section both in normal operation (⏻) and in stand-by (⏻). These values are indicated by means of the appropriate symbols.

3.3.2 Schematic Notes

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

3.3.3 Spare Parts

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

3.3.4 BGA (Ball Grid Array) ICs

Introduction

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

BGA Temperature Profiles

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

3.3.5 Lead-free Soldering

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

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

3.3.6 Alternative BOM identification

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

The **third digit** in the serial number (example: AG**2**B0335000001) 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: AG**1**B033500001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a "2" (example: AG**2**B0335000001), 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.

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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
DMSD	Digital Multi Standard Decoding
DNM	Digital Natural Motion
DNR	Digital Noise Reduction: noise reduction feature of the set
DRAM	Dynamic RAM
DRM	Digital Rights Management
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for service technicians
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
DVB-T	Digital Video Broadcast - Terrestrial
DVD	Digital Versatile Disc
DVI(-d)	Digital Visual Interface (d= digital only)
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.
EDID	Extended Display Identification Data (VESA standard)
EEPROM	Electrically Erasable and Programmable Read Only Memory
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)
FDW	Full Dual Window (same as FDS)
FLASH	FLASH memory
FM	Field Memory or Frequency Modulation
FPGA	Field-Programmable Gate Array
FTV	Flat TeleVision
Gb/s	Giga bits per second
G-TXT	Green TeleteXT
H	H_sync to the module
HD	High Definition
HDD	Hard Disk Drive
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.
HDMI	High Definition Multimedia Interface
HP	HeadPhone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I^2C	Inter IC bus
I^2D	Inter IC Data bus
I^2S	Inter IC Sound bus
IF	Intermediate Frequency
IR	Infra Red
IRQ	Interrupt Request
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. Uncompressed digital component or digital composite signals can be used. 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.
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
LATAM	Latin America
LCD	Liquid Crystal Display
LED	Light Emitting Diode
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
LPL	LG.Philips LCD (supplier)
LS	Loudspeaker
LVDS	Low Voltage Differential Signalling
Mbps	Mega bits per second
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
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
MIPS	Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor
MOP	Matrix Output Processor
MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device
MPEG	Motion Pictures Experts Group
MPIF	Multi Platform InterFace
MUTE	MUTE Line
MTV	Mainstream TV: TV-mode with Consumer TV features enabled (iTV)
NC	Not Connected
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
O/C	Open Circuit
OSD	On Screen Display
OAD	Over the Air Download. Method of software upgrade via RF transmission. Upgrade software is broadcasted in TS with TV channels.
OTC	On screen display Teletext and Control; also called Artistic (SAA5800)
P50	Project 50: communication protocol between TV and peripherals
PAL	Phase Alternating Line. Color system mainly used in West Europe (color carrier= 4.433619 MHz) and South America (color carrier PAL M=

	3.575612 MHz and PAL N= 3.582056 MHz)
PCB	Printed Circuit Board (same as “PWB”)
PCM	Pulse Code Modulation
PDP	Plasma Display Panel
PFC	Power Factor Corrector (or Pre-conditioner)
PIP	Picture In Picture
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
POD	Point Of Deployment: a removable CAM module, implementing the CA system for a host (e.g. a TV-set)
POR	Power On Reset, signal to reset the uP
PSDL	Power Supply for Direct view LED backlight with 2D-dimming
PSL	Power Supply with integrated LED drivers
PSLS	Power Supply with integrated LED drivers with added Scanning functionality
PTC	Positive Temperature Coefficient, non-linear resistor
PWB	Printed Wiring Board (same as “PCB”)
PWM	Pulse Width Modulation
QRC	Quasi Resonant Converter
QTNR	Quality Temporal Noise Reduction
QVCP	Quality Video Composition Processor
RAM	Random Access Memory
RGB	Red, Green, and Blue. The primary color signals for TV. By mixing levels of R, G, and B, all colors (Y/C) are reproduced.
RC	Remote Control
RC5 / RC6	Signal protocol from the remote control receiver
RESET	RESET signal
ROM	Read Only Memory
RSDS	Reduced Swing Differential Signalling data interface
R-TXT	Red TeleteXT
SAM	Service Alignment Mode
S/C	Short Circuit
SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs
SCL	Serial Clock I^2C
SCL-F	CLock Signal on Fast I^2C bus
SD	Standard Definition
SDA	Serial Data I^2C
SDA-F	DAta Signal on Fast I^2C bus
SDI	Serial Digital Interface, see “ITU-656”
SDRAM	Synchronous DRAM
SECAM	SEequence 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)
SVHS	Super Video Home System
SW	Software
SWAN	Spatial temporal Weighted Averaging Noise reduction
SXGA	1280 × 1024
TFT	Thin Film Transistor
THD	Total Harmonic Distortion
TMDS	Transmission Minimized Differential Signalling
TS	Transport Stream
TXT	TeleteXT
TXT-DW	Dual Window with TeleteXT
UI	User Interface
uP	Microprocessor
UXGA	1600 × 1200 (4:3)
V	V-sync to the module
VESA	Video Electronics Standards Association
VGA	640 × 480 (4:3)
VL	Variable Level out: processed audio output toward external amplifier
VSB	Vestigial Side Band; modulation method
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
WXGA	1280 × 768 (15:9)
XTAL	Quartz crystal
XGA	1024 × 768 (4:3)
Y	Luminance signal
Y/C	Luminance (Y) and Chrominance (C) signal
YPbPr	Component video. Luminance and scaled color difference signals (B-Y and R-Y)
YUV	Component video

4. Mechanical Instructions

Index of this chapter:

Notes:

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

4.1 Cable Dressing

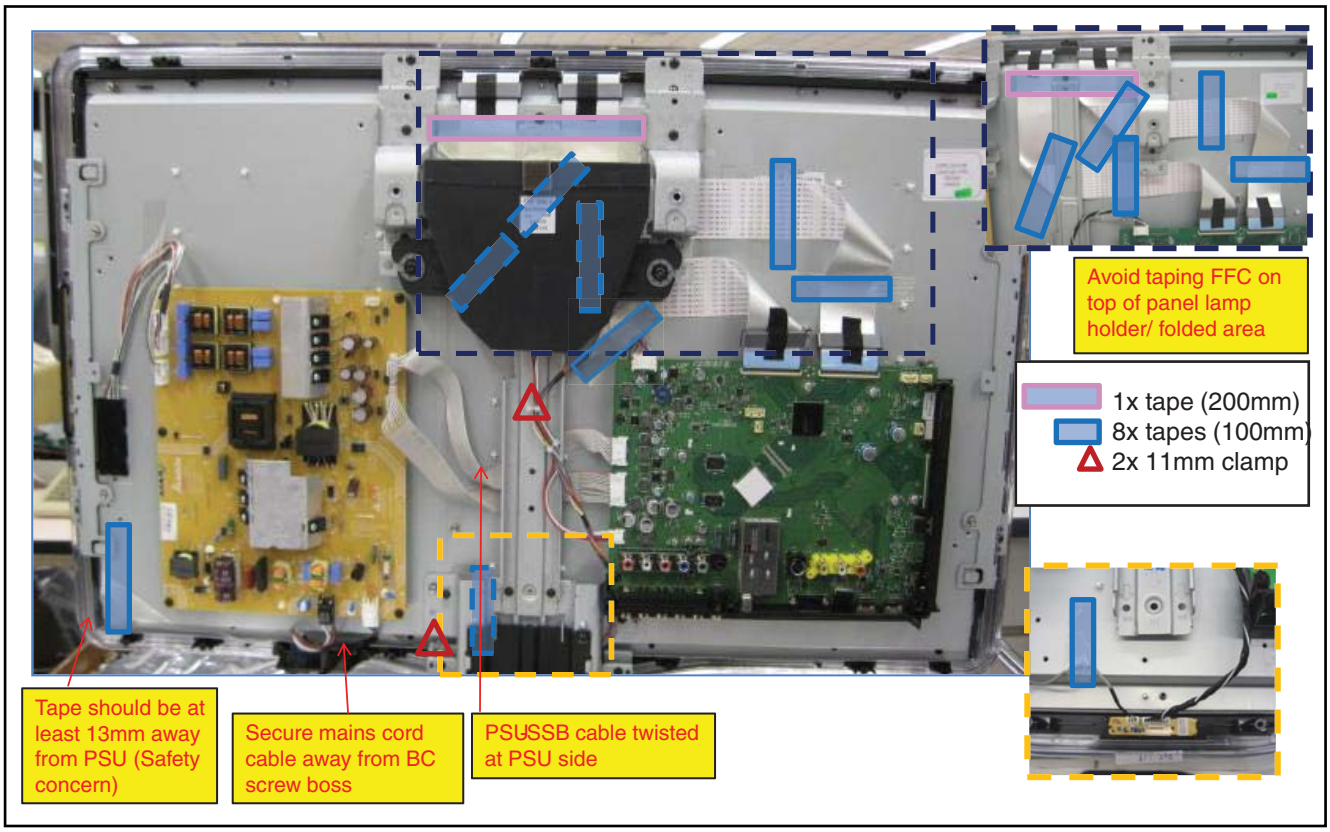

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Figure 4-1 Cable dressing 32"

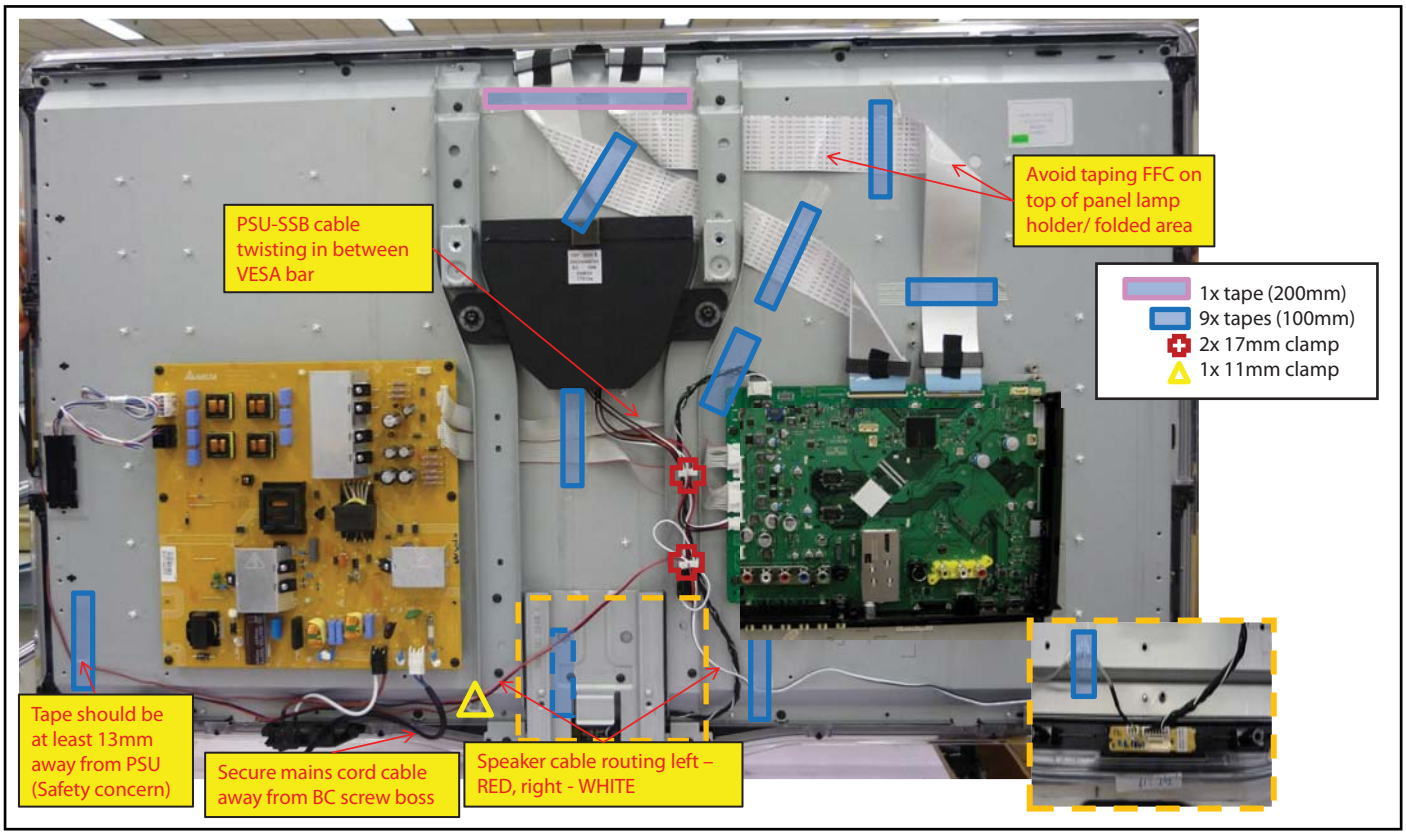

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Figure 4-2 Cable dressing 40"

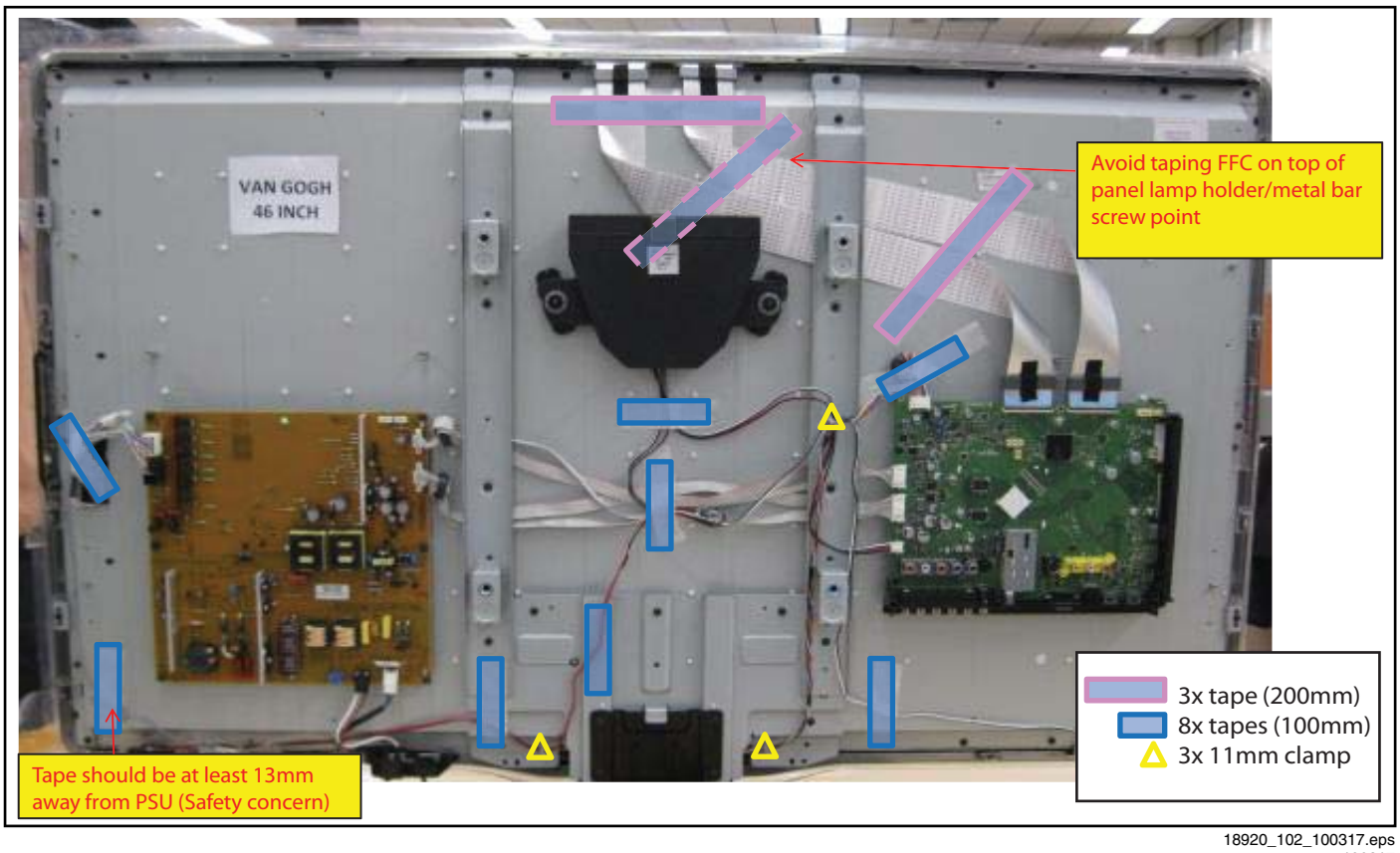

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Figure 4-3 Cable dressing 46"

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

Instructions below apply to the 32PFL5605/xx, but will be similar for other models.

4.3.1 Rear Cover

Warning: Disconnect the mains power cord before you remove the rear cover.
Note: it is **not** necessary to remove the stand while removing the rear cover.

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

Special note
Some models come with mechanical catches at top of the rear cover. To open them, please refer to Figure 4-4 to Figure 4-7 for details.

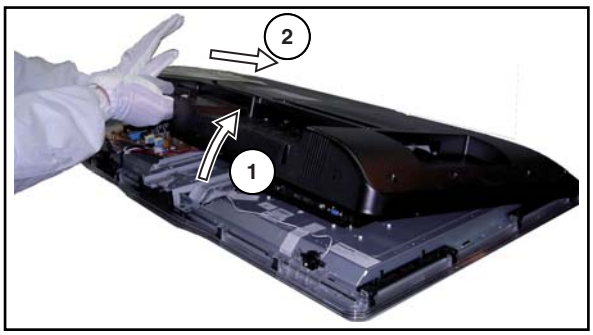

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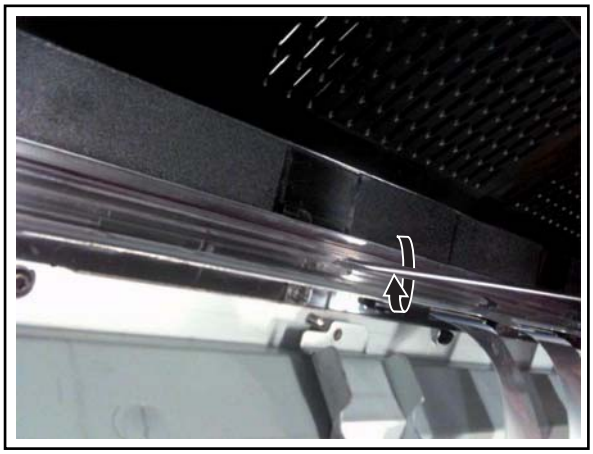
Figure 4-4 Rear cover -1-

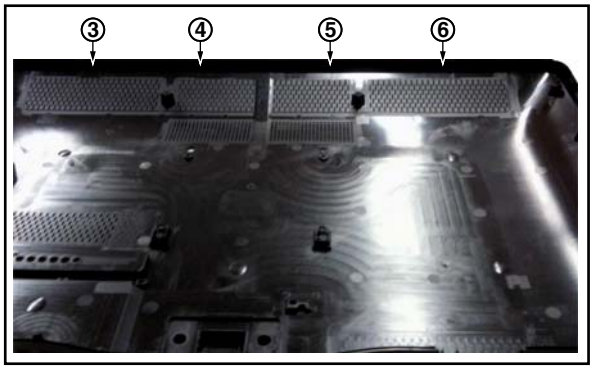


18770_151_100218.eps
100218

Figure 4-5 Rear cover -2-

18770_152_100218.eps
100218

Figure 4-6 Rear cover -3-



18770_153_100218.eps
100317

Figure 4-7 Rear cover -4-

1. Lift the rear cover on the bottom side [1].
2. Push the cover in direction [2] to unlock the catches.
3. If the rear cover catches still lock, place a flat screwdriver between flare and rear cover and turn it until the rear cover and the flare are disassembled from the catch.
4. The location of the catches are indicated with [3], [4], [5] and [6].

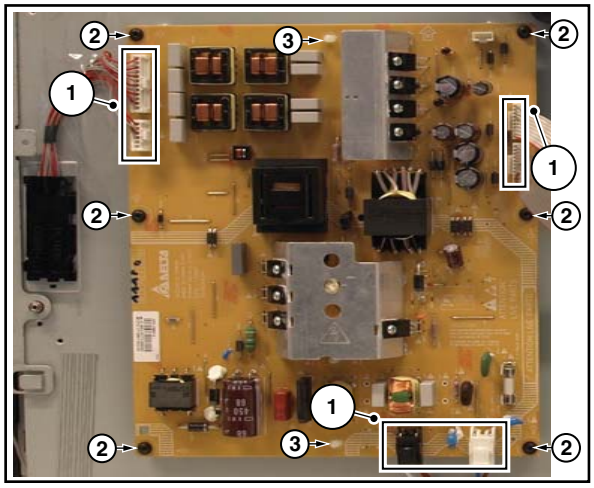
4.3.2 Speakers

Tweeters (when applicable)
Each tweeter unit is mounted with one screw.
When defective, replace the whole unit.

Loudspeaker/subwoofer
The loudspeaker/subwoofer is located in the centre of the set, and is fixed with two screws.
When defective, replace the whole unit.

4.3.3 Main Power Supply

Refer to Figure 4-8 for details.



18920_103_100317.eps
100317

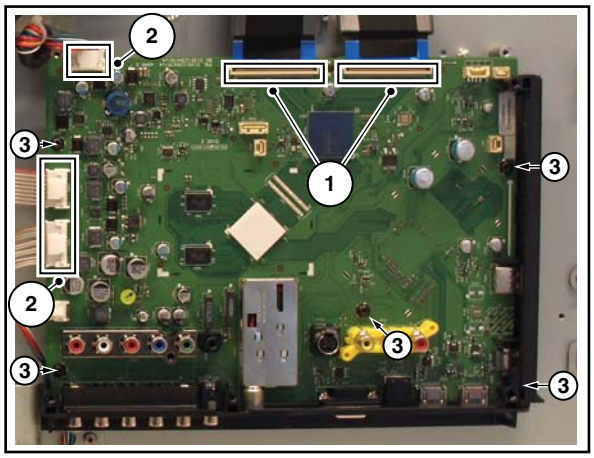
Figure 4-8 Main Power Supply

1. Unplug all connectors [1].
2. Remove the fixation screws [2].
3. Take the board out.

When defective, replace the whole unit.
Be aware to (re)place the spacers [3].

4.3.4 Small Signal Board (SSB)

Refer to Figure 4-9 for details.



18920_104_100317.eps
100317

Figure 4-9 SSB

1. Unplug all connectors [1] and [2].
2. Remove the fixation screws [3].
3. Take the board out.

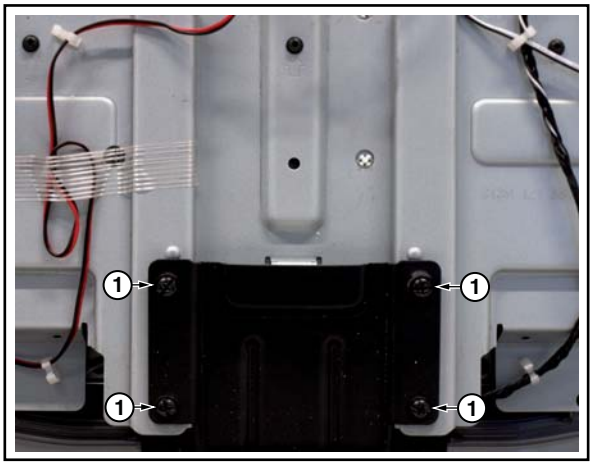
When defective, replace the whole unit.

4.3.5 Mains Switch

The mains switch assy is mounted below the PSU on the front bezel with two screws.
When replacing the switch, remove it from its bracket.

4.3.6 IR & LED Board

Refer to Figure 4-10, Figure 4-11 and Figure 4-12 for details.

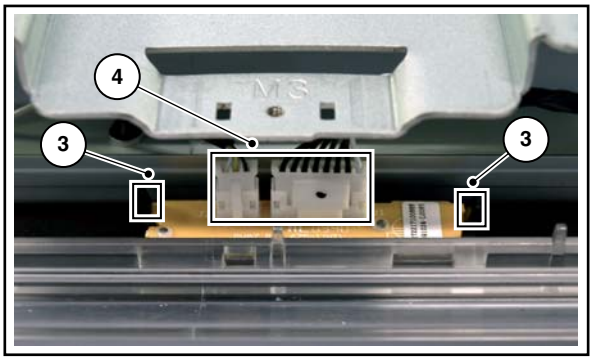


18770_142_100215.eps
100215

Figure 4-10 IR & LED Board -1-

18770_143_100215.eps
100215

Figure 4-11 IR & LED Board -2-



18770_144_100215.eps
100215

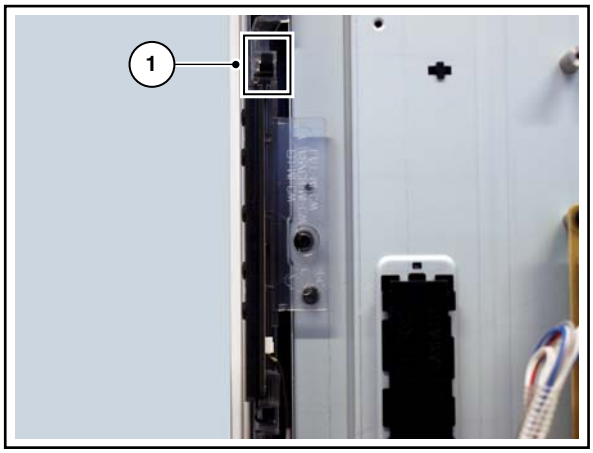
Figure 4-12 IR & LED Board -3-

1. Remove the stand [1].
2. Remove the IR & LED board cover [2].
3. Release the clips [3] that secure the IR & LED board.
4. Remove the connectors [4] on the IR/LED board.

4.3.7 Local Control Board

Refer to Figure 4-13 for details.
1. Unplug the connector on the IR & LED board that leads to the Local Control board as described earlier.
2. Release the cable from its clamps/tape.
3. Release the clip on top of the unit [1] and take the unit out.

When defective, replace the whole unit.



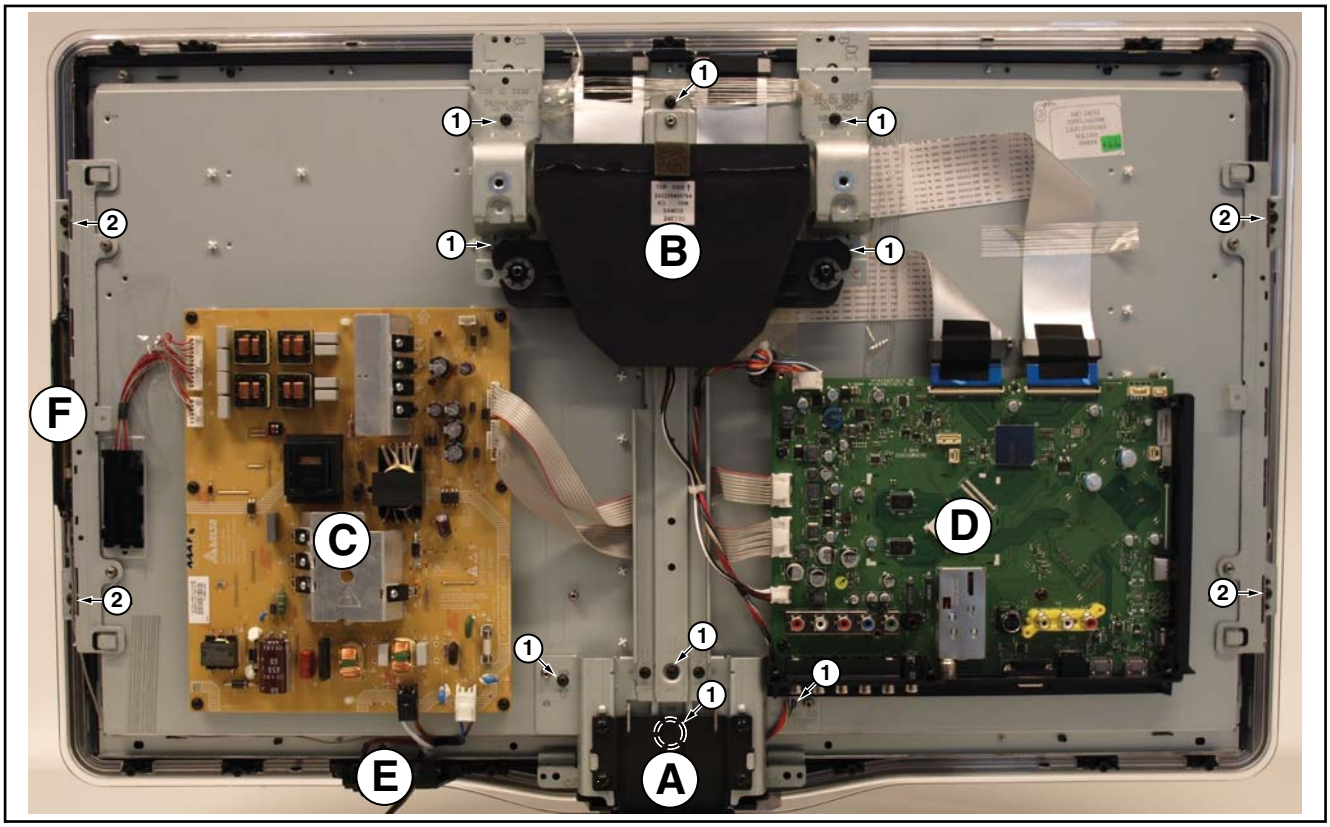
18770_145_100216.eps
100217

Figure 4-13 Keyboard Control board

4.3.8 LCD Panel

Refer to Figure 4-14 for details.
1. Remove the Stand and IR/LED board [A] as earlier described.
2. Remove the Speakers/Subwoofer [B] as earlier described.
3. Remove the PSU [C] and SSB [D] as earlier described.
4. Remove the Mains Switch [E] as earlier described.
5. Remove the Local Control board [F] as earlier described.
6. Remove the brackets [1].
7. Remove the clamps [2].
8. Remove the flare.

Now the LCD Panel can be lifted from the front cabinet.



18920_105_100317.eps
100319

Figure 4-14 LCD Panel removal (based on 32" model)

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.
- Pay special attention not to damage the EMC foams in the set. Ensure that EMC foams are mounted correctly.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Test Points

In the chassis schematics and layout overviews, the test points are mentioned. In the schematics, test points are indicated with “Fxxx” or “Ixxx”, in the layout overviews with a “half-moon” sign. As most signals are digital, it will be difficult to measure waveforms with a standard oscilloscope. Several key ICs are capable of generating test patterns, which can be controlled via ComPair. In this way it is possible to determine which part is defective.

Perform measurements under the following conditions:
- Service Default Mode.
- Video: Colour bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.2 Service Modes

The Service Mode feature is split into four parts:
- Service Default Mode (SDM).
- Service Alignment Mode (SAM).
- Customer Service Mode (CSM).
- Computer Aided Repair Mode (ComPair).

SDM and SAM offer features, which can be used by the Service engineer to repair/align a TV set. Some features are:
- A pre-defined situation to ensure measurements can be made under uniform conditions (SDM).
- Activates the blinking LED procedure for error identification when no picture is available (SDM).
- The possibility to overrule software protections when SDM is entered via the Service pins.
- Make alignments (e.g. White Tone), (de)select options, enter options codes, reset the error buffer (SAM).
- Display information (“SDM” or “SAM” indication in upper right corner of screen, error buffer, software version, operating hours, options and option codes, sub menus).

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.

ComPair Mode is used for communication between a computer and a TV on I2C /UART level and can be used by a Service engineer to quickly diagnose the TV set by reading out error codes, read and write in NVMs, communicate with ICs and the uP (PWM, registers, etc.), and by making use of a fault finding database. It will also be possible to up and download the software of the TV set via I2C with help of ComPair. To do this, ComPair has to be connected to the TV set via the ComPair connector, which will be accessible through the rear of the set (without removing the rear cover).

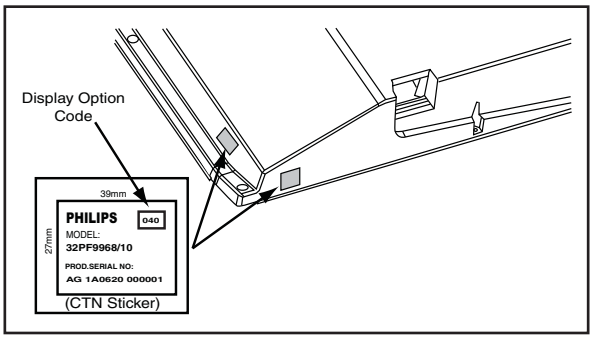
5.2.1 General

Some items are applicable to all Service Modes or are general. These are listed below.

Life Timer
During the life time cycle of the TV set, a timer is kept (called “Op. Hour”). It counts the normal operation hours (not the Stand-by hours). The actual value of the timer is displayed in SDM and SAM in a decimal value. Every two soft-resets increase the hour by +1. Standby hours are not counted.

Software Identification, Version, and Cluster
The software ID, version, and cluster will be shown in the main menu display of SDM, SAM, and CSM.
The screen will show: “**AAAAAB XX.YY**”, where:
- **AAAAA** is the chassis name: LC101.
- **B** is the region indication: E= Europe, A= AP/China, U= NAFTA, L= LATAM.
- **XX** is the main version number: this is updated with a major change of specification (incompatible with the previous software version). Numbering will go from 01 - 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.
- **YY** is the sub version number: this is updated with a minor change (backwards compatible with the previous versions) Numbering will go from 00 - 99.
  - If the sub version number changes, the new version number is written in the NVM.
  - If the NVM is fresh, the software identification, version, and cluster will be written to NVM.

Display Option Code Selection
When after an SSB or display exchange, the display option code is not set properly, it will result in a TV with “no display”. Therefore, **it is required** to set this display option code after such a repair.
To do so, press the following key sequence on a standard RC transmitter: “**062598**” directly followed by **MENU/HOME** and “**xxx**”, where “xxx” is a 3 digit decimal value of the panel type: see column “Display Code” in Table 6-5 , or see sticker on the side/bottom of the cabinet. When the value is accepted and stored in NVM, the set will switch to Stand-by, to indicate that the process has been completed.



10000_038_090121.eps
090819

Figure 5-1 Location of Display Option Code sticker

During this algorithm, the NVM-content must be filtered, because several items in the NVM are TV-related and not SSB-related (e.g. Model and Prod. S/N). Therefore, “Model” and “Prod. S/N” data is changed into “See Type Plate”.

In case a call centre or consumer reads “See Type Plate” in CSM mode, he needs to look to the side/bottom sticker to identify the set, for further actions.

5.2.2 Service Default Mode (SDM)

Purpose

Set the TV in SDM mode in order to be able to create a pre-defined setting for measurements to be made. In this platform, a simplified SDM is introduced (without protection override and without tuning to a frequency of 475.25 MHz).

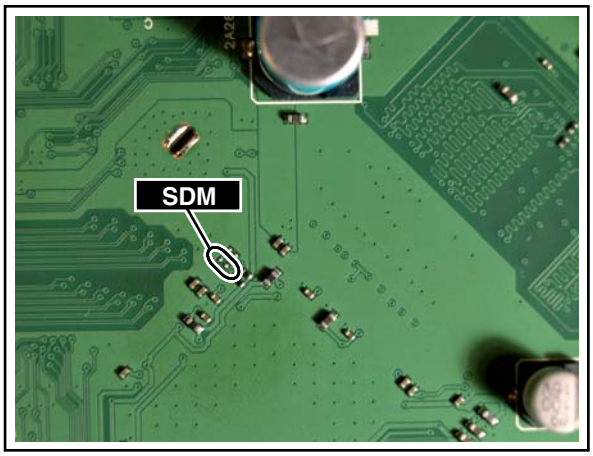
Specifications

- Set linear video and audio settings to 50%, but volume to 25%. Stored user settings are not affected.
- All service-unfriendly modes (if present) are disabled, since they interfere with diagnosing/repairing a set. These service unfriendly modes are:
  - (Sleep) timer.
  - Blue mute/Wall paper.
  - Auto switch “off” (when there is no “ident” signal).
  - Hotel or hospital mode.
  - Child lock or parental lock (manual or via V-chip).
  - Skipping, blanking of “Not favourite”, “Skipped” or “Locked” presets/channels.
  - Automatic storing of Personal Preset or Last Status settings.
  - Automatic user menu time-out (menu switches back/ OFF automatically.
  - Auto Volume levelling (AVL).

How to Activate

To activate SDM, use **one** of the following methods:

- Press the following key sequence on the remote control transmitter: “**062596**” directly followed by the **MENU** button (do not allow the display to time out between entries while keying the sequence).
- Short one of the “Service” pads on the TV board during cold start (see Figure 5-2). Then press the mains button (remove the short after start-up).
  Caution: When doing this, the service-technician must know exactly what he is doing, as it could damage the television set.



18920_201_100317.eps
100317

Figure 5-2 Service pads (SSB component side)

On Screen Menu

After activating SDM, the following items are displayed, with “SDM” in the upper right corner of the screen to indicate that the television is in Service Default Mode.
Menu items and explanation:

- **xx.x hrs**: Operating hours (in decimal).
- **AAAAAB XX.YY**: See paragraph Software Identification, Version, and Cluster for the SW name definition.
- **ERR**: Shows all errors detected since the last time the buffer was erased in format <xxx> <xxx> <xxx> <xxx> <xxx> (five errors possible).
- **OP**: Used to read-out the option bytes. See “Options” in the Alignments section for a detailed description. Ten codes (in two rows) are possible.

How to Navigate

As this mode is read only, there is not much to navigate. To switch to other modes, use one of the following methods:

- Command MENU from the user remote will enter the normal user menu (brightness, contrast, colour, etc...) with “SDM” OSD remaining, and pressing MENU key again will return to the last status of SDM again.
- To prevent the OSD from interfering with measurements in SDM, command “OSD” or “i+” (“STATUS” or “INFO” for NAFTA and LATAM) from the user remote will toggle the OSD “on/off” with “SDM” OSD remaining always “on”.
- Press the following key sequence on the remote control transmitter: “**062596**” directly followed by the **OSD/ STATUS/INFO/i+** button to switch to SAM (do not allow the display to time out between entries while keying the sequence).

How to Exit

Switch the set to STANDBY by pressing the mains button on the remote control transmitter or on the television set.
If you switch the television set “off” by removing the mains (i.e., unplugging the television), the television set will remain in SDM when mains is re-applied, and the error buffer is not cleared. The error buffer will only be cleared when the “clear” command is used in the SAM menu.

Note:

- If the TV is switched “off” by a power interrupt while in SDM, the TV will show up in the last status of SDM menu as soon as the power is supplied again. The error buffer will not be cleared.
- In case the set is accidentally in Factory mode (with an “F” displayed on the screen), pressing and holding “VOL-“ and “CH-” simultaneously should exit the Factory mode.

5.2.3 Service Alignment Mode (SAM)

Purpose

- To change option settings.
- To display / clear the error code buffer.
- To perform alignments.

Specifications

- Operation hours counter (maximum five digits displayed).
- Software version, error codes, and option settings display.
- Error buffer clearing.
- Option settings.
- Software alignments (White Tone).
- NVM Editor.
- Set screen mode to full screen (all content is visible).

How to Activate

To activate SAM, use one of the following methods:

- Press the following key sequence on the remote control transmitter: “**062596**” directly followed by the **OSD/ STATUS/INFO/i+** button (it depends on region which button is present on the RC). Do not allow the display to time out between entries while keying the sequence.
- Or via ComPair.

After entering SAM, the following items are displayed, with “SAM” in the upper right corner of the screen to indicate that the television is in Service Alignment Mode.

Menu items and explanation:

1. **System Inform.**
   - **Op Hour:** This represents the life timer. The timer counts normal operation hours, but does not count Stand-by hours.
   - **MAIN SW ID:** See paragraph Software Identification, Version, and Cluster for the SW name definition.
   - **ERR:** Shows all errors detected since the last time the buffer was erased. Five errors possible.
   - **OP1 / OP2:** Used to read-out the option bytes. See paragraph 6.5 Option Settings in the Alignments section for a detailed description. Ten codes are possible.
2. **Clear Codes.** Erases the contents of the error buffer. Select this menu item and press the MENU RIGHT key on the remote control. The content of the error buffer is cleared.
3. **Options.** To set the option bits. See paragraph 6.5 Option Settings in the "Alignments" chapter for a detailed description.
4. **RGB Alignment.** To align the White Tone. See White Tone Alignment: for a detailed description.
5. **NVM Editor.** To change the NVM data in the television set. See also paragraph 5.6 Fault Finding and Repair Tips.
6. **NVM Copy.** Gives the possibility to copy/load the NVM file to/from an USB stick. NVM data copied to a USB memory device is named "**NVM_COPY.BIN**". When copied back to a TV, the file first must have the same name.
7. **Tuner.**
   - **AGC Adjustment:** See paragraph 6.3.1 for instructions.
   - **Store:** To store the data.
8. **Auto ADC.** Refer to chapter 6. Alignments for detailed information.
9. **EDID Write Enable.** Enables EDID writing.

How to Navigate

- In the SAM menu, select menu items with the UP/DOWN keys on the remote control transmitter. The selected item will be indicated. When not all menu items fit on the screen, use the UP/DOWN keys to display the next / previous menu items.
- With the LEFT/RIGHT keys, it is possible to:
  - Activate the selected menu item.
  - Change the value of the selected menu item.
  - Activate the selected sub menu.
- When you press the MENU button twice while in top level SAM, the set will switch to the normal user menu (with the SAM mode still active in the background). To return to the SAM menu press the MENU button.
- The "**OSD/STATUS/INFO/i+**" key from the user remote will toggle the OSD "on/off" with "SAM" OSD remaining always "on".
- Press the following key sequence on the remote control transmitter: "**062596**" directly followed by the **MENU** button to switch to SDM (do not allow the display to time out between entries while keying the sequence).

How to Store SAM Settings

To store the settings changed in SAM mode (except the OPTIONS and RGB ALIGN settings), leave the top level SAM menu by using the POWER button on the remote control transmitter or the television set. The mentioned exceptions must be stored separately via the STORE button.

How to Exit

Switch the set to STANDBY by pressing the mains button on the remote control transmitter or the television set.

Note:

- When the TV is switched "off" by a power interrupt while in SAM, the TV will show up in "normal operation mode" as soon as the power is supplied again. The error buffer will not be cleared.
- In case the set is in Factory mode by accident (with "F" displayed on screen), by pressing and hold "VOL-" and "CH-" together should leave Factory mode.

5.2.4 Customer Service Mode (CSM)

Purpose

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

To activate CSM, press the following key sequence on a standard remote control transmitter: "**123654**" (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:

Menu Explanation CSM1

1. **Set Type.** Type number, e.g. 32PFL5605/93. (*)
2. **Production code.** Product serial no., e.g. BZ1A1008123456 (*). BZ= Production centre, 1= BOM code, A= Service version change code, 10= Production year, 08= Production week, 123456= Serial number.
3. not used
4. **- Option Code 1.** Option code information (group 1).
   - Option Code 2. Option code information (group 2).
5. **SSB.** Indication of the SSB factory ID (= 12nc). (*)
6. **Display.** Indication of the display ID (=12 nc). (*)
7. **PSU**. Indication of the PSU factory ID (= 12nc).

(*) If an NVM IC is replaced or initialized, these items must be re-written to the NVM. ComPair will foresee in a possibility to do this.

Menu Explanation CSM2

1. **Current Main SW.** Shows the main software version.
2. **Standby SW.** Shows the standby software version.
3. **MT8282 SW.** Shows the MT8282 software version.
4. **Bootloader ID.** Shows the Bootloader software ID.
5. **NVM Version.** The NVM software version no.
6. **Flash ID.** Shows the flash ID.

Menu Explanation CSM3

1. **Signal Quality.** Shows the signal quality (No Signal/ POOR/AVERAGE/GOOD).
2. not used
3. **Key (HDCP).** Indicates if the HDMI keys (or HDCP keys) are valid or not.
4. not used
5. not used
6. **HDMI audio format input stream.** Specification of HDMI audio input stream.
7. **HDMI video format input stream.** Specification of HDMI video input stream.

How to Exit
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.

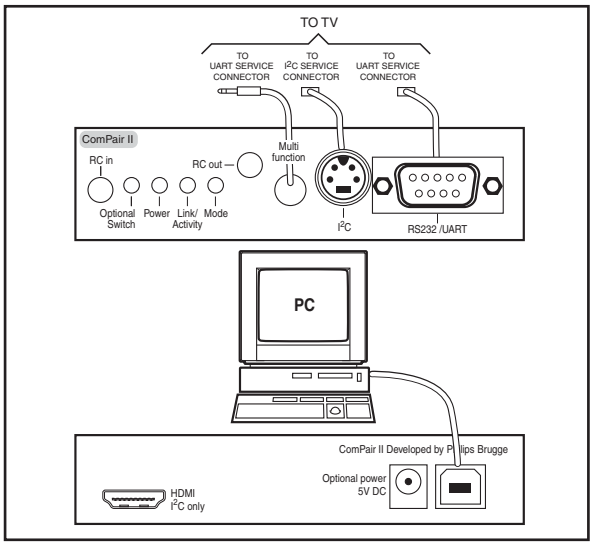
5.3 Service Tools

5.3.1 ComPair

Introduction
ComPair (Computer Aided Repair) is a Service tool for Philips Consumer Electronics products. and offers the following:
1. ComPair helps you 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. You do not have to know anything about I2C or UART commands yourself, because ComPair takes care of this.
3. ComPair speeds up the repair time since it can automatically communicate with the chassis (when the uP is working) and all repair information is directly available.
4. ComPair features TV software up possibilities.

Specifications
ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The (new) 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).

How to Connect
This is described in the ComPair chassis fault finding database.



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091118

Figure 5-3 ComPair II interface connection

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

How to Order
ComPair II order codes:
- ComPair II interface: 3122 785 91020.
- ComPair UART interface cable: 3138 188 75051.
- Program software can be downloaded from the Philips Service website.

Additional cables for VCOM Alignment
- ComPair/I²C interface cable: 3122 785 90004.
- ComPair/VGA adapter cable: 9965 100 09269.

Note: If you encounter any problems, contact your local support desk.

5.4 Error Codes

5.4.1 Introduction

Error codes are required to indicate failures in the TV set. In principle a unique error code is available for every:
- Activated (SW) protection.
- Failing I²C device.
- General I²C error.

The last five errors, stored in the NVM, are shown in the Service menu's. This is called the error buffer.
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.
An error will be added to the buffer if this error differs from any error in the buffer. The last found error is displayed on the left.
An error with a designated error code may **never** lead to a deadlock situation. This means that it must always be diagnosable (e.g. error buffer via OSD or blinking LED procedure, ComPair to read from the NVM).
In case a failure identified by an error code automatically results in other error codes (cause and effect), only the error code of the MAIN failure is displayed.

Example: In case of a failure of the I²C bus (CAUSE), the error code for a "General I²C failure" and "Protection errors" is displayed. The error codes for the single devices (EFFECT) is not displayed. All error codes are stored in the same error buffer (TV's NVM) except when the NVM itself is defective.

5.4.2 How to Read the Error Buffer

You can read the error buffer in 3 ways:
- On screen via the SAM/SDM/CSM (if you have a picture). Example:
  - **ERROR: 0 0 0 0 0** : No errors detected
  - **ERROR: 6 0 0 0 0** : Error code 6 is the last and only detected error
  - **ERROR: 9 6 0 0 0** : Error code 6 was detected first and error code 9 is the last detected (newest) error
- Via the blinking LED procedure (when you have no picture). See paragraph 5.5 The Blinking LED Procedure.
- Via ComPair.

5.4.3 Error codes

The "layer 1" error codes are pointing to the defective board. They are triggered by LED blinking when CSM is activated. In the LC10 platform, only two boards are present: the SSB and the PSU, meaning only three layer 1 errors are defined:
- 2: SSB
- 3: PSU
- 4: POK line defective.

The following "layer 2" errors have been assigned:
- 00: no error
- 11: DC protection of speakers; leads to "Protection"
- 16: +12V protection error (or 12V failure), PSU defective; leads to "Protection"
- 18: POK line error; leads to "Error"

- 21: Post video processing IC (MT8282); leads to “Error”
- 27: I²C bus error IF demodulator; leads to “Error”
- 34: Tuner I²C bus error; leads to “Error”
- 35: EEPROM I²C bus error (M24C16); leads to “Protection”

5.4.4 How to Clear the Error Buffer

The error code buffer is cleared in the following cases:
- By using the CLEAR command in the SAM menu:
- If the contents of the error buffer have not changed for 50 hours, the error buffer resets automatically.

Note: If you exit SAM by disconnecting the mains from the television set, the error buffer is not reset.

5.5 The Blinking LED Procedure

5.5.1 Introduction

The software is capable of identifying different kinds of errors. Because it is possible that more than one error can occur over time, an error buffer is available, which is capable of storing the last five errors that occurred. This is useful if the OSD is not working properly.

Errors can also be displayed by the blinking LED procedure. The method is to repeatedly let the front LED pulse with as many pulses as the error code number, followed by a period of 1.5 seconds in which the LED is “off”. Then this sequence is repeated.

Example (1): error code 4 will result in four times the sequence LED “on” for 0.25 seconds / LED “off” for 0.25 seconds. After this sequence, the LED will be “off” for 1.5 seconds. Any RC5 command terminates the sequence. Error code LED blinking is in red colour.

Example (2): the content of the error buffer is “**12 9 6 0 0**” After entering SDM, the following occurs:
- 1 long blink of 5 seconds to start the sequence,
- 12 short blinks followed by a pause of 1.5 seconds,
- 9 short blinks followed by a pause of 1.5 seconds,
- 6 short blinks followed by a pause of 1.5 seconds,
- 1 long blink of 1.5 seconds to finish the sequence,
- The sequence starts again with 12 short blinks.

5.5.2 Displaying the Entire Error Buffer

Additionally, the entire error buffer is displayed when Service Mode “SDM” is entered. In case the TV set is in protection or Stand-by: The blinking LED procedure sequence (as in SDM-mode in normal operation) must be triggered by the following RC sequence: “**MUTE” “062500” “OK**”.
In order to avoid confusion with RC5 signal reception blinking, this blinking procedure is terminated when a RC5 command is received.

5.6 Fault Finding and Repair Tips

Notes:
- 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.

5.6.1 NVM Editor

In some cases, it can be convenient if one directly can change the NVM contents. This can be done with the “NVM Editor” in SAM mode. With this option, single bytes can be changed.

Caution:
- **Do not change these, without understanding the function of each setting, because incorrect NVM settings may seriously hamper the correct functioning of the TV set!**
- Always write down the existing NVM settings, before changing the settings. This will enable you to return to the original settings, if the new settings turn out to be incorrect.

5.6.2 Load Default NVM Values

It is possible to download default values automatically into the NVM in case a blank NVM is placed or when the NVM first 20 address contents are “FF”. After the default values are downloaded, it is possible to start-up and to start aligning the TV set. To initiate a forced default download the following action has to be performed:
1. Switch “off” the TV set with the mains cord disconnected from the wall outlet (it does not matter if this is from “Stand-by” or “Off” situation).
2. Short-circuit the SDM pads on the SSB (keep short circuited, see Figure 5-2).
3. Press “P+” or “CH+” on the local keyboard (and keep it pressed).
4. Reconnect the mains supply to the wall outlet.
5. Release the “P+” or “CH+” when the set is started up and has entered SDM.

When the downloading has completed successfully, the set will perform a restart. After this, put the set to standby and remove the short-circuit on the SDM pads.

Alternative method:
It is also possible to upload the default values to the NVM with ComPair in case the SW is changed, the NVM is replaced with a new (empty) one, or when the NVM content is corrupted. After replacing an EEPROM (or with a defective/no EEPROM), default settings should be used to enable the set to start-up and allow the Service Default Mode and Service Alignment Mode to be accessed.

5.6.3 Fault finding tips Tuner Section

When there is no picture in analog RF mode:
- Check if supply voltages 5 V are present at test points F205, F206 and F231.
- Check whether picture is present in AV.
- Check if I²C lines are working properly (3.3 V).
- Store a known channel manually and check if there is an IF output signal at the tuner pin 12. If not, the tuner may be faulty.
- Feed-in a 105 dBuV signal at the tuner pin 12 and check whether there is an CVBS output signal from the IF demodulator. If not, the IF demodulator may be faulty. Check the components in this area.

5.6.4 Fault finding tips Audio Section

Perform following actions for trouble shooting in the Audio section. Also refer to Figure 5-4.

- Check presence of +24VAUDIO voltage on testpoint F121 in diagram B01.
- Check presence of +24VAUDIO voltage on pins 19/20 of the class-D amplifier or testpoint F300 in diagram B03.
- Check availability of audio input signal at pins 5 (L) and 6 (R) of the class-D amplifier in diagram B03.
- Check signal level on pin 4 (MUTE) of the class-D amplifier in diagram B03. The level should be LOW (0 V).
- Check signal level on pin 2 (SD) of the class-D amplifier in diagram B03. The level should be HIGH (3 V).

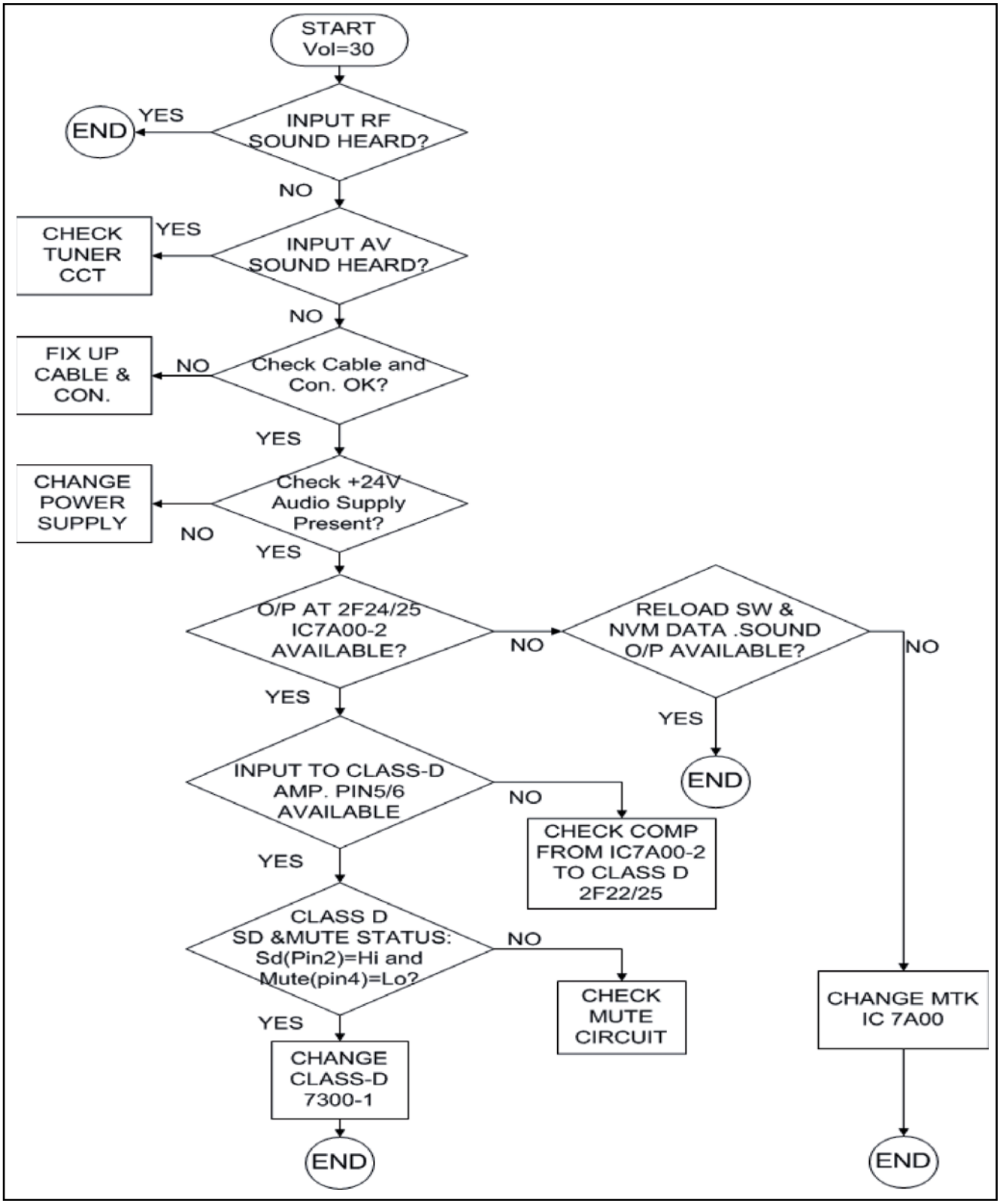

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Figure 5-4 Fault finding tree audio

5.7 Software Upgrading

5.7.1 Introduction

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.

5.7.2 Main Software Upgrade

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

How to upgrade:
1. Copy “autorun.upg” to the root of your USB stick.
2. Insert USB stick in the side I/O while the set is in “On” mode. The “Menu” icon will be prompted automatically. Go to the “Setup” menu for local updates. The TV will prompt the “upgrade” message; press “Acknowledge” to continue, after which the upgrading will start automatically. As soon as the programming is finished, the set will restart. In the “Setup” menu you can check if the latest software is running.

5.7.3 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_version.zip.** Contains the EDID content of the different EDID NVMs. See ComPair for further instructions.
- **FUS_clustername_version.zip.** Contains the “autorun.upg” 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.

5.7.4 How to Copy NVM Data to/from USB

Write NVM data to USB
1. Insert the USB stick into the USB slot while in SAM mode.
2. Execute the command "NVM Copy" > "NVM Copy to USB", to copy the NVM data to the USB stick. The NVM filename on the USB stick will be named "**NMLC101A.BIN**" (this takes a couple of seconds).

Write NVM data to TV
1. First, ensure (via a PC) that the filename on the USB stick has the correct format: "**NMLC101A.BIN**".
2. Insert the USB stick into the USB slot while in SAM mode.
3. Execute the command "NVM Copy" > "NVM Copy from USB" to copy the USB data to NVM (this takes about a minute to complete).

Important: The file must be located in the **root directory** of the USB stick.

6. Alignments

Index of this chapter:

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

General: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. 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 (depends on region):
  - AP-NTSC: 120 V_{AC} or 230 V_{AC} / 50 Hz (± 10%).
  - AP-PAL-multi: 120 - 230 V_{AC} / 50 Hz (± 10%).
  - EU: 230 V_{AC} / 50 Hz (± 10%).
  - LATAM-NTSC: 120 - 230 V_{AC} / 50 Hz (± 10%).
  - US: 120 V_{AC} / 60 Hz (± 10%).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 15 minutes.
- Measure voltages and waveforms in relation to correct ground (e.g. measure audio signals in relation to AUDIO_GND).
  Caution: It is not allowed to use heatsinks as ground.
- Test probe: Ri > 10 Mohm, Ci < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

6.2 Hardware Alignments

There are no hardware alignments foreseen for this chassis, but below find an overview of the most important DC voltages on the SSB. These can be used for checking proper functioning of the DC/DC converters.

Description	Test Point	Specifications (V)			Diagram
		Min.	Typ.	Max.	
+12VS	F118/ F119/F120	11.40	12.00	12.60	B01_DC-DC
+3V3_STBY	F113	3.20	3.30	3.40	B01_DC-DC
+3V3_SW	F131	3.14	3.3	3.46	B01_DC-DC
+1V1_SW	F126	1.18	1.25	1.31	B01_DC-DC
+5V_SW	F130	4.94	5.2	5.46	B01_DC-DC
+1V8_SW	F125	1.71	1.80	1.89	B01_DC-DC
+5V_HDMI	F130	4.94	5.2	5.46	B01_DC-DC
+12VDISP	F102	11.40	12.00	12.60	B01_DC-DC
+5VTUN	F205	4.94	5.2	5.46	B02_Tuner + DeMod
+5VS	F206	4.94	5.2	5.46	B02_Tuner + DeMod
+24VAUDIO	F121	21.6	24	26.4	B01_DC-DC
VLS_15V6	FKFD	tbd	15.6	tbd	B08B_TCON_DC-DC
VGH_35V	FKFA	34.0	35.0	36.0	B08B_TCON_DC-DC
VGL_-6V	FKFK	-7.0	-6.0	-5.0	B08B_TCON_DC-DC
VCC_3V3	FKFB	tbd	3.3	tbd	B08B_TCON_DC-DC
VCC_1V2	FKDD	1.1	1.2	1.3	B08A_TCON_CONTROL

6.3 Software Alignments

With the software alignments of the Service Alignment Mode (SAM) the Tuner and RGB settings can be aligned.

6.3.1 Tuner Adjustment (RF AGC Take Over Point)

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

The LC10.1A LA chassis comes with the VA1E8CD501 analogue tuner. No alignment is necessary, as the AGC alignment is done automatically (standard value: “18”). However in case of problems use the following method (use multimeter and RF generator):

- Apply a vision IF carrier of 38.9 MHz (105 dBuV = 178 mVrms) to injection point A210 (input via 50 ohm coaxial cable terminated with an RC network of series 10nF with 120 ohm to ground).
- Measure voltage on pin 3 of the tuner (test point F229).
- Adjust AGC (via SAM menu: TUNER -> AGC), until voltage on pin 3 is 3.3 +0.5/-1.0 V.
- Store settings and exit SAM.

6.3.2 RGB Alignment

Before alignment, choose “Setup” -> “Picture” and set:

- “Brightness” to “50”.
- “Colour” to “50”.
- “Contrast” to “100”.

White Tone Alignment:

- Activate SAM.
- Select “RGB Alignment“ and choose a colour temperature.
- Use a 100% white screen as input signal and set the following values:
  - All “White point” values initial to “256”.

In case you have a colour analyser:

- Measure with a calibrated (phosphor- independent) colour analyser (e.g. Minolta CA-210) in the centre of the screen. Consequently, the measurement needs to be done in a dark environment.
- Adjust the correct x,y coordinates (while holding one of the White point registers R, G or B on “256”) by means of decreasing the value of one or two other white points to the correct x,y coordinates (see Table 6-1 White D alignment values). Tolerance: dx: ± 0.004, dy: ± 0.004.
- Repeat this step for the other colour Temperatures that need to be aligned.
- When finished return to the SAM root menu and press STANDBY on the RC to store the aligned values to the NVM.

Table 6-1 White D alignment values

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

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

- Set the RED, GREEN and BLUE default values per temperature according to the values in the “Tint settings” table.

- When finished return to the SAM root menu and press STANDBY on the RC to store the aligned values to the NVM.

Table 6-2 Tint settings 32"

Colour Temp.	R	G	B
Cool	tbf	tbf	tbf
Normal	tbf	tbf	tbf
Warm	tbf	tbf	tbf

Table 6-3 Tint settings 40"

Colour Temp.	R	G	B
Cool	tbf	tbf	tbf
Normal	tbf	tbf	tbf
Warm	tbf	tbf	tbf

Table 6-4 Tint settings 46"

Colour Temp.	R	G	B
Cool	tbf	tbf	tbf
Normal	tbf	tbf	tbf
Warm	tbf	tbf	tbf

6.4 ADC gain adjustment

Use a Quantum Data Patters Generator 802BT and apply a "PgcWrgb" image ("dot, cross and colour bar mix pattern") according to Figure 6-1.

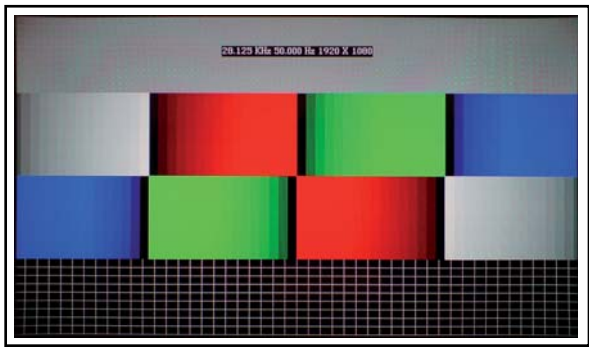

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Figure 6-1 "PgcWrgb" pattern

6.4.1 YPbPr

Following instructions result in correct alignment of ADC gain, offset and phase, related to YPbPr input signal. Apply a signal of format "1080i25".

- Apply following signals to the YPbPr input connectors:
  - Pr signal of 0.7 Vp-p[1] / 75 ohm to the red cinch connector
  - Y signal of 0.7 Vb-p[2] / 75 ohm with a sync pulse of 0.3 Vp-p[1] to the green cinch connector
  - Pb signal of 0.7 Vb-p[2] / 75 ohm to the blue cinch connector
- Select the input source to YPbPr input
- In SAM, initiate the ADC calibration command.

Upon appearance of the "Auto ADC Completed" message, the alignment is completed.

Notes:
1. peak-to-peak
2. black-to-peak.

6.4.2 PC VGA

Following instructions result in correct alignment of ADC gain, offset and phase, related to PC VGA input signal. Apply a signal of format "DMT1060".

- Apply following signals to the PC VGA input connector:
  - Red signal of 650 - 730 mV
  - Green signal of 650 - 730 mV
  - Blue signal of 650 - 730 mV
- Select the input source to PC VGA input
- In SAM, initiate the ADC calibration command.

Upon appearance of the "Auto ADC Completed" message, the alignment is completed.

6.5 Option Settings

6.5.1 Introduction

The microprocessor communicates with a large number of I^2C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence/absence of these specific ICs (or functions) is made known by the option codes.

Notes:
- After changing the option(s), save them with the STORE command.
- The new option setting becomes active after the TV is switched "off" and "on" again with the mains switch (the EAROM is then read again).

6.5.2 How To Set Option Codes

When the NVM is replaced, all options will require resetting. To be certain that the factory settings are reproduced exactly, you must set all option numbers. You can find the correct option numbers in Table 6-5.

How to Change Options Codes
An option code (or "option byte") represents eight different options (bits). When you change these numbers directly, you can set all options very quickly. All options are controlled via ten option bytes (OP1... OPA).
Activate SAM and select "Options". Now you can select the option byte (OP1 to OPA) with the CURSOR UP/ DOWN keys, and enter the new 3 digit (decimal) value. For the correct factory default settings, see Table 6-5 Option code overview. If an option is set (value "1"), it represents a certain decimal value.
When all the correct options (bits) are set, the sum of the decimal values of each Option Byte (OP) will give the option code.

Table 6-5 Option code overview

CTN	Option Code	Display Code
32PFL5605/93	016 029 239 191 056 000 000 000 000 002	233
32PFL5605/98	016 093 239 191 056 000 000 000 000 002	233
40PFL5605/93	016 029 239 191 056 000 000 000 000 001	234
40PFL5605/98	016 093 239 191 056 000 000 000 000 001	234
46PFL5605/67	016 093 239 191 056 000 000 000 000 001	236
46PFL5605/93	016 029 239 191 056 000 000 000 000 001	236
46PFL5605/98	016 093 239 191 056 000 000 000 000 001	236

7. Circuit Descriptions

Index of this chapter:

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 chapter 9. Block Diagrams and 10. Circuit Diagrams and PWB Layouts. Where necessary, you will find a separate drawing for clarification.

7.1 Introduction

The LC10.1A LA chassis is an analogue chassis using a Mediatek chipset. It covers screen sizes of 32" to 46" with a styling called “van Gogh”.

Main key components are the Mediatek MT8222 integrated “System On Chip” (SoC) that supports multimedia video/audio input, and the Mediatek MT8282 video frame interpolation IC that supports image enhancement.

Refer to Figure 7-1 for details.

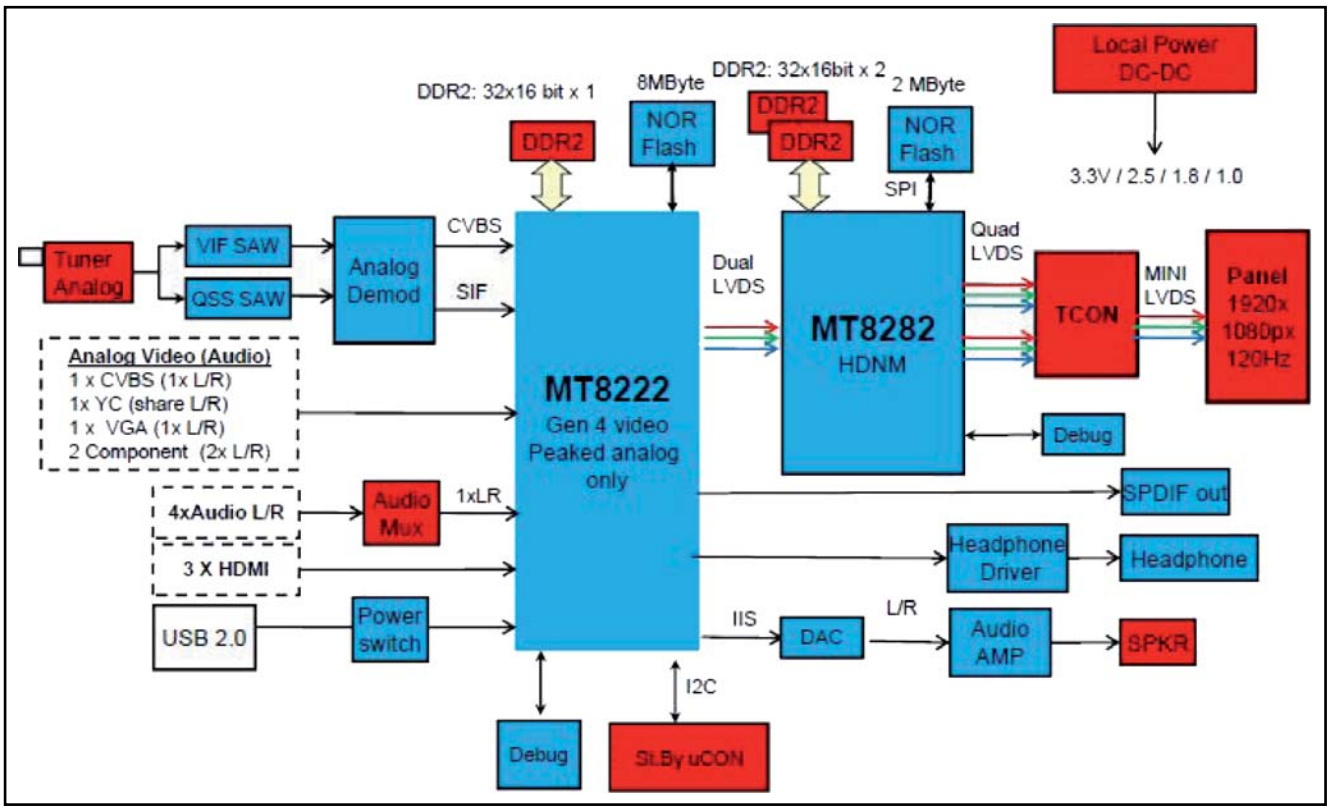

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Figure 7-1 LC10.1A LA Architecture

7.1.1 SSB Cell Layout

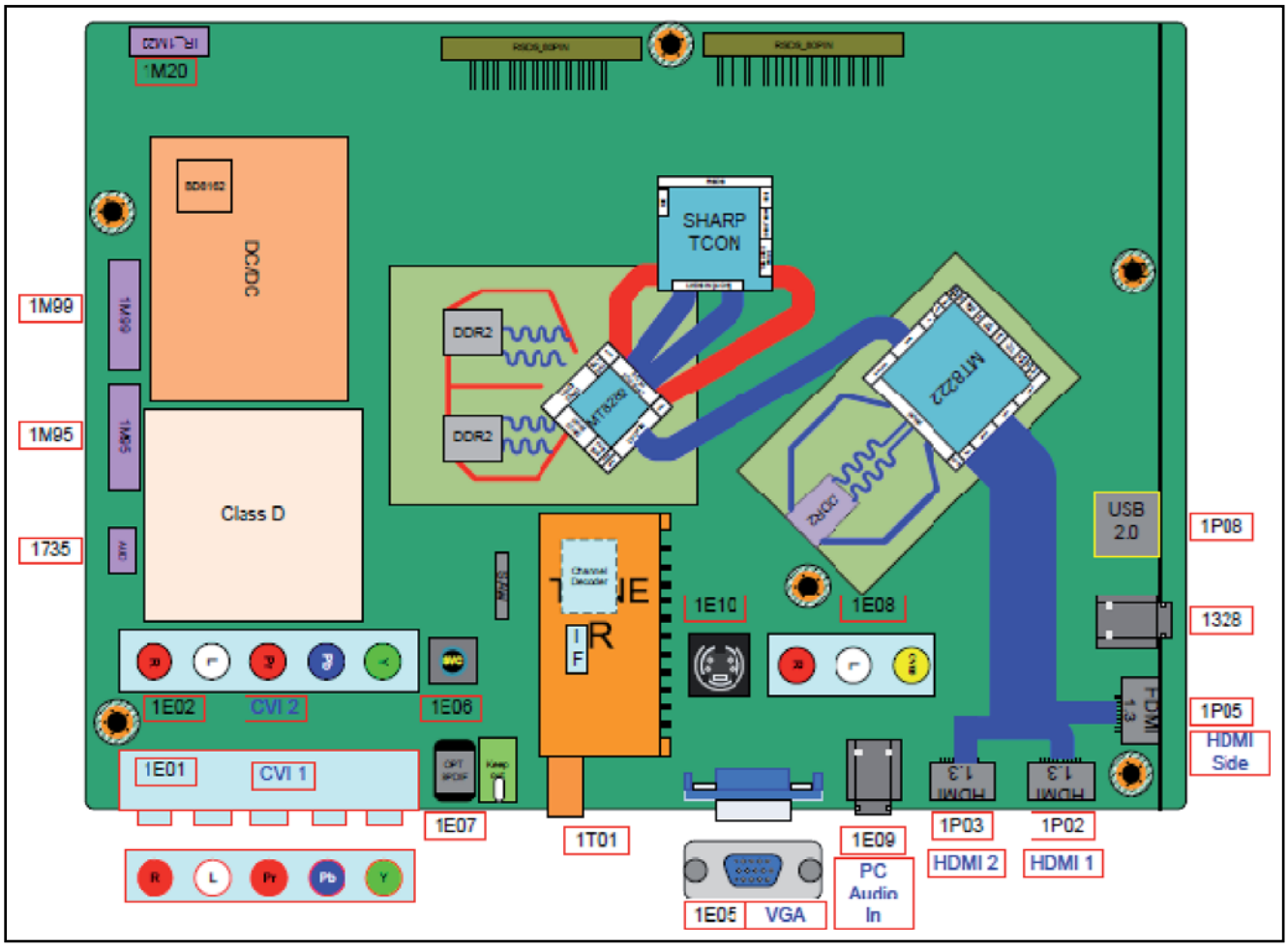

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Figure 7-2 SSB cell layout

7.2 LCD Power Supply

The Power Supply Unit (PSU) in this chassis is a buy-in and is a black-box for Service. When defective, a new panel must be ordered and the defective panel must be returned for repair, unless the main fuse of the unit is broken. Always replace the fuse with one with the correct specifications! This part is commonly available in the regular market.

Different PSUs are used in this chassis:

- 32" sets use a “Delta” PSU (DPS-138BP) Power Supply Unit
- 40" sets use an “Delta” PSU (DPS-206CP A) Power Supply Unit
- 46" sets use an “FSP” PSU (FSP173-3MS01) Power Supply Unit.

Refer to Figure 7-3 to Figure 7-5 for details.

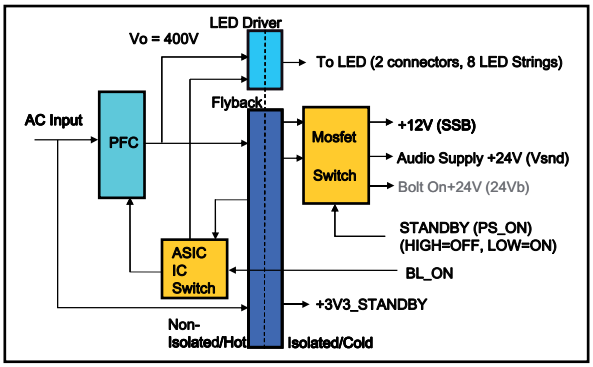

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Figure 7-3 Supply block diagram 32"

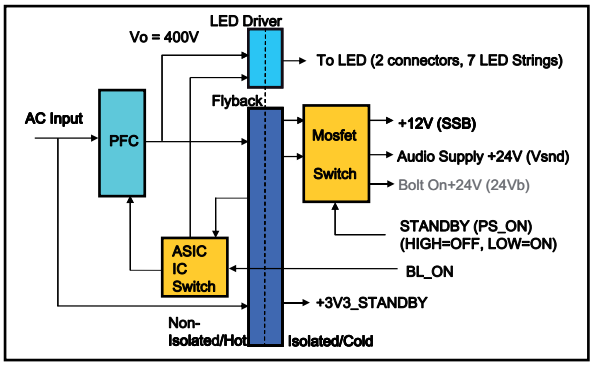

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Figure 7-4 Supply block diagram 40"

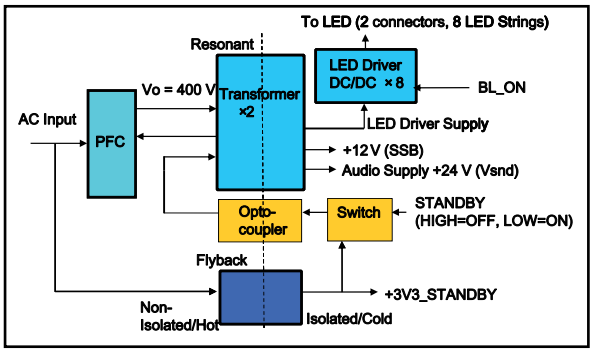

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Figure 7-5 Supply block diagram 46"

7.3 Front-End

Key components for the analogue tuner section (AP region) are:

- VA1E8CD501 tuner
- Video SAW filter
- Audio SAW filter
- TDA9885T analogue IF demodulator.

For trouble shooting info, refer to paragraph 5.6.3 Fault finding tips Tuner Section.

Table 7-1 Pin assignment analogue tuners

Pin number	Description	DC voltage (V)
1	n.c.	n.a.
2	n.c.	n.a.
3	RFC AGC	external RF-gain control voltage
4	n.c.	n.a.
5	AS	0 (Address Select: 0xC0)
6	SCL	0 to 3.3 V
7	SDA	0 to 3.3 V
8	supply voltage	5 V DC +/- 0.25 V
9	n.c.	n.a.
10	n.c.	n.a.
11	IF output	n.a. (asymmetrical IF signal output)

7.4 Audio Processing

In this chassis, audio processing is done by the following key components:

- TPA3123D2 class-D power amplifier
- TPA6111A2DGN headphone amplifier (optional)
- HEF4052BT 4-channel analogue multiplexer to select between 4 analogue inputs
- UDA1334BTS D/A converter.

For trouble shooting info, refer to paragraph 5.6.4 Fault finding tips Audio Section.

7.5 TCON

The Timing Controller is integrated in the SSB (“Forward Integration” concept). Refer to Figure 7-6 for the TCON system block diagram.

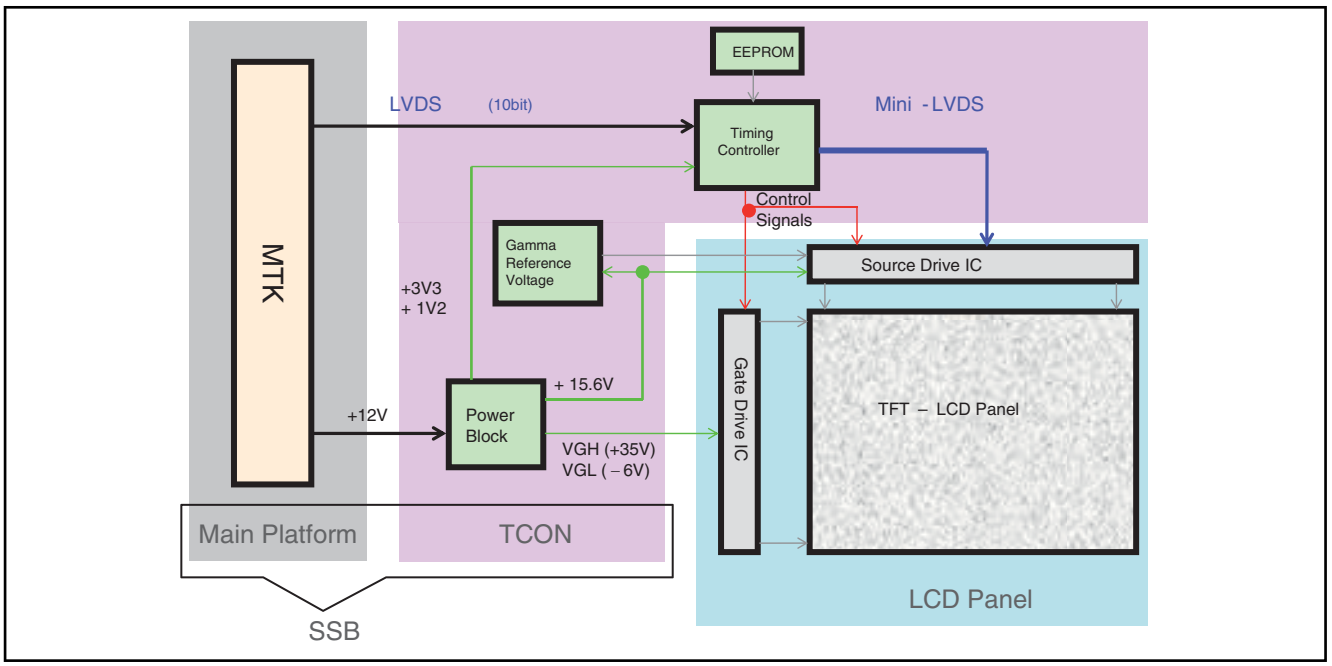

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Figure 7-6 TCON system block diagram

7.6 HDMI

7.6.1 Implementation

In this chassis, the main Mediatek MT8222 SoC has an on-chip HDMI multiplexer.
Refer to Figure 7-7 for the HDMI implementation.

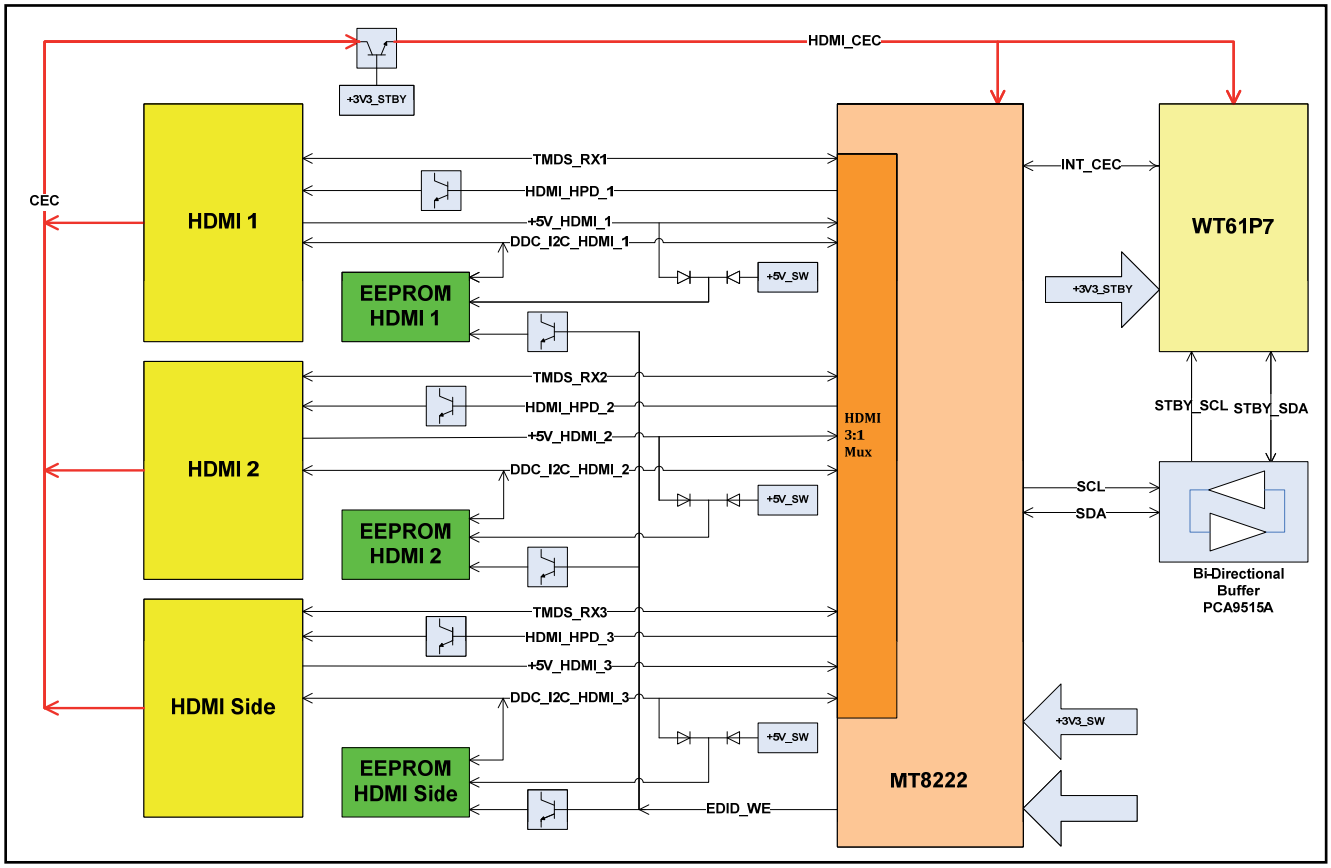

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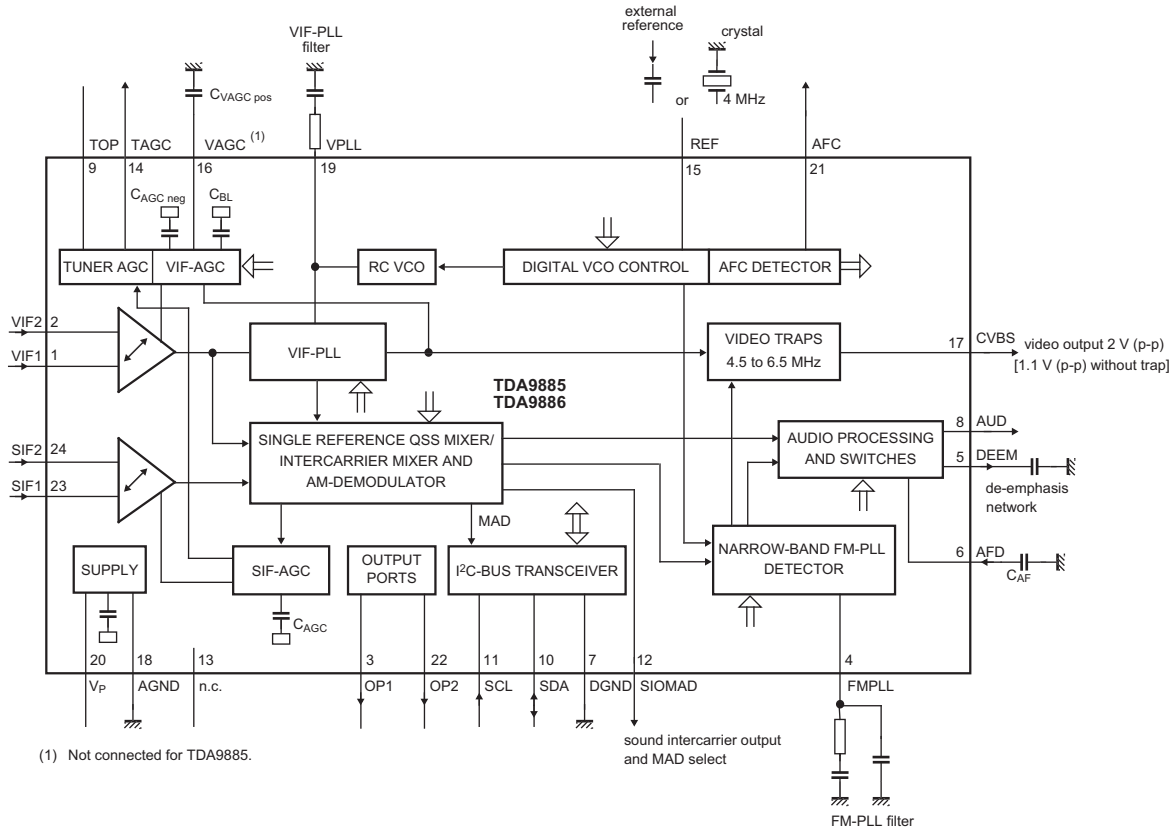
Figure 7-7 HDMI implementation

8. IC Data Sheets

This section shows the internal block diagrams and pin layouts of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

8.1 Diagram SSB: TUNER & Demodulator, Type TDA9886T (IC7212), Demodulator

Block diagram



Pinning information

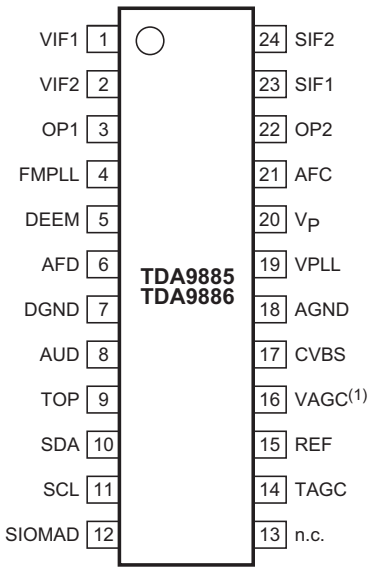


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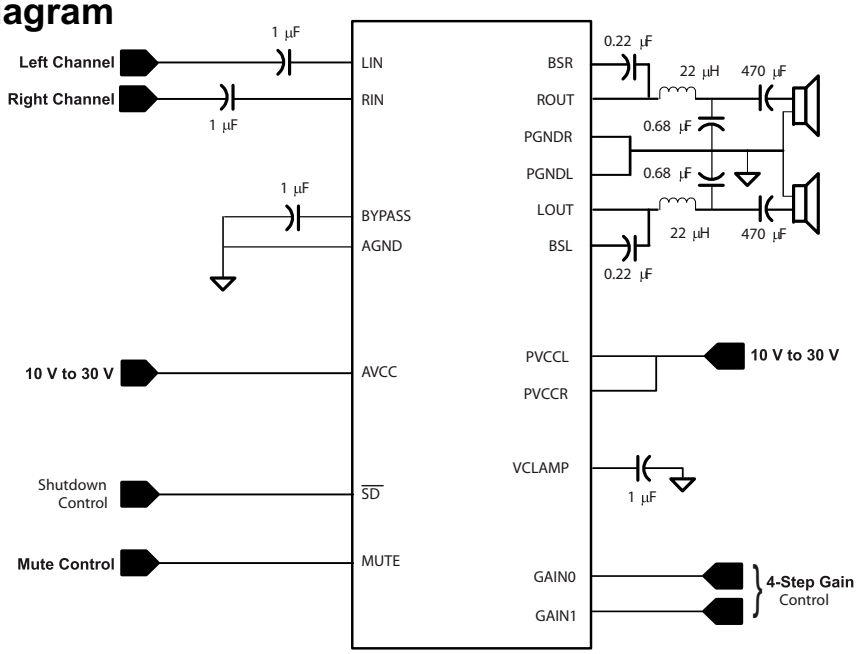
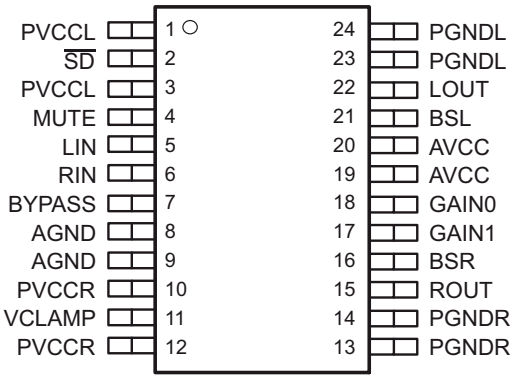
Figure 8-1 Internal block diagram and pin configuration

8.2 Diagram SSB: CLASS-D, Type TPA3123D2PWP (IC7300), Audio Amplifier

Block diagram



Pinning information



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

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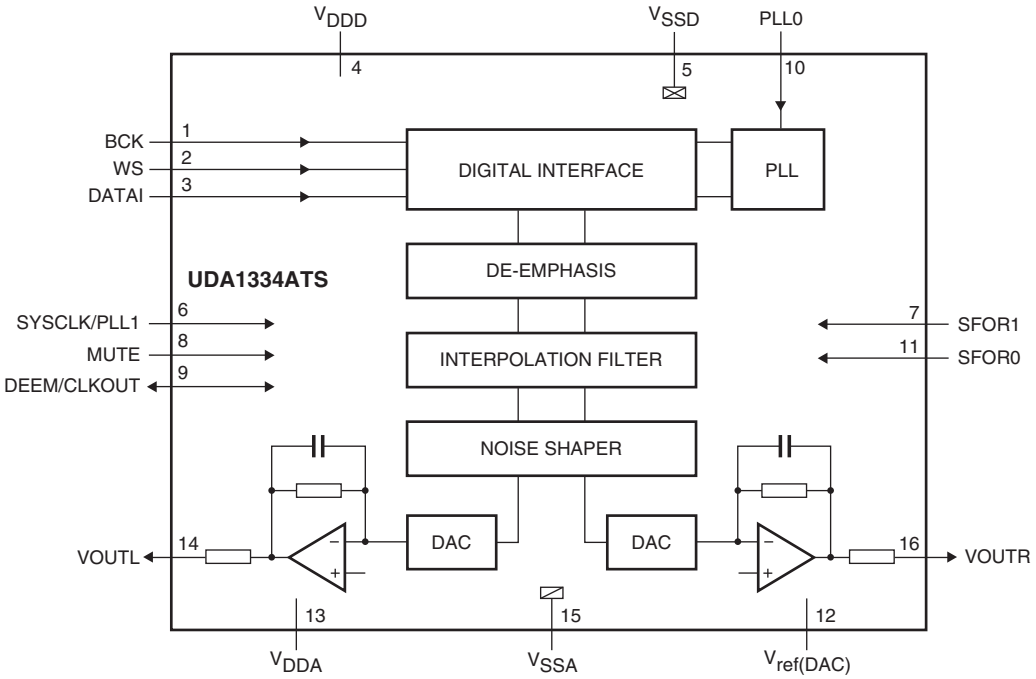
Figure 8-2 Internal block diagram and pin configuration

8.3 Diagram SSB: CLASS-D, Type UDA1334BTS (IC7302), Low Power Audio ADC

Block diagram



Pinning information

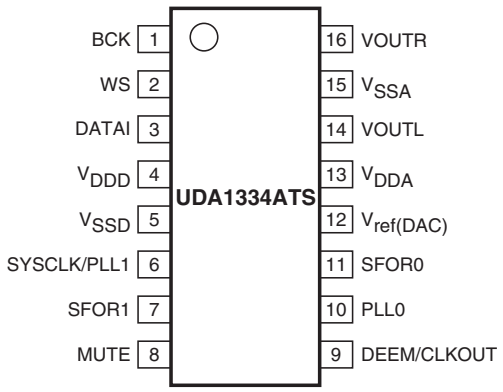


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Figure 8-3 Internal block diagram and pin configuration

8.4 Diagram SSB: Power MT MT8222, Type MT8222 (IC7A00), Video/Audio System-on-Chip (SoC)

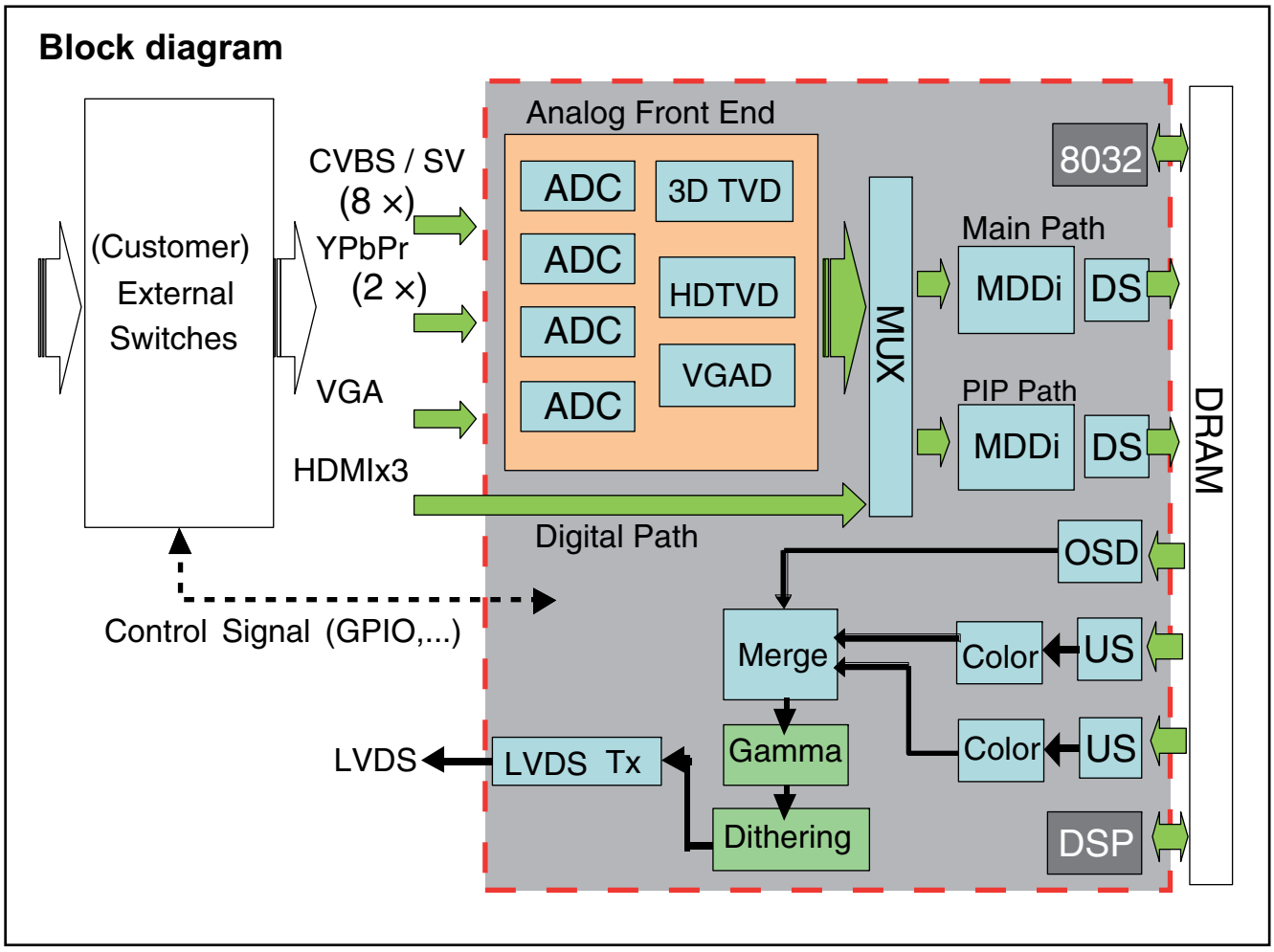

Figure 8-4 Internal block diagram

8.5 Diagram SSB: Power MT MT8222, Type MT8222 (IC7A00), Video/Audio System-on-Chip (SoC)

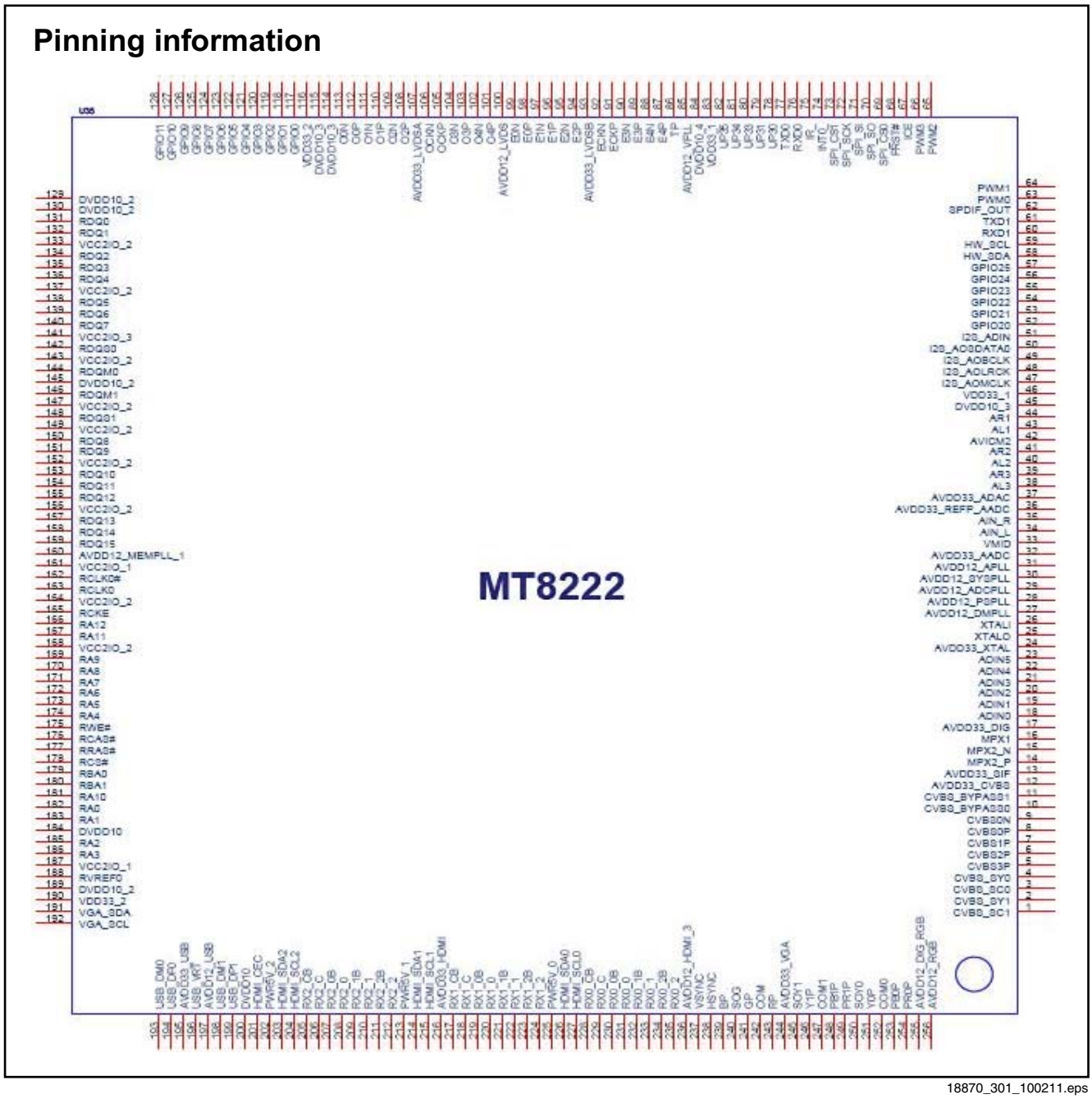

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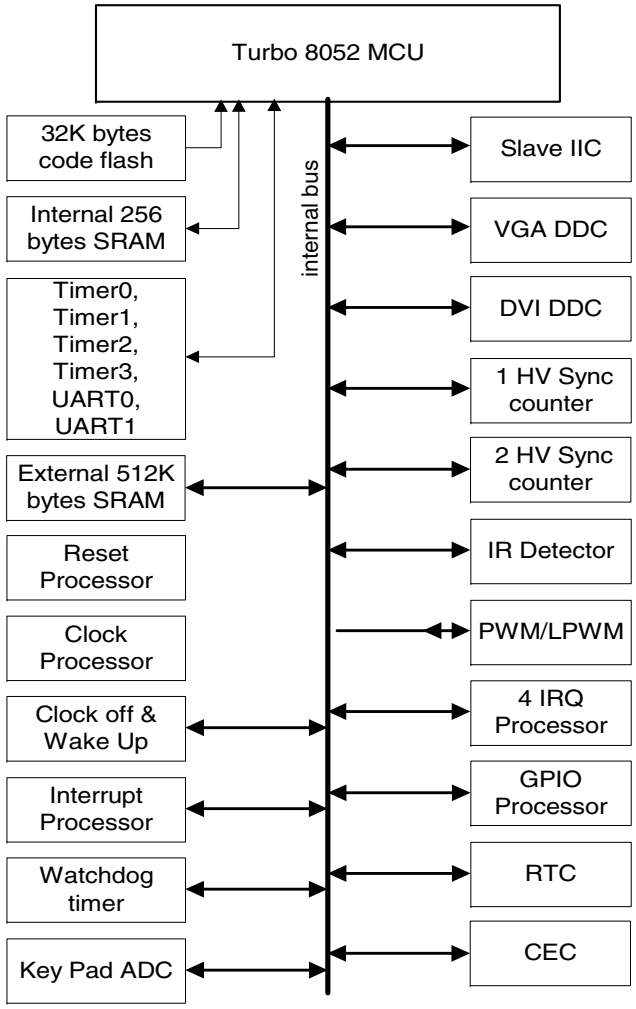
Figure 8-5 Pin configuration

8.6 Diagram SSB: Stand-by, Type WT61P7 (IC7D00), Standby Processor

Block diagram



Pinning information

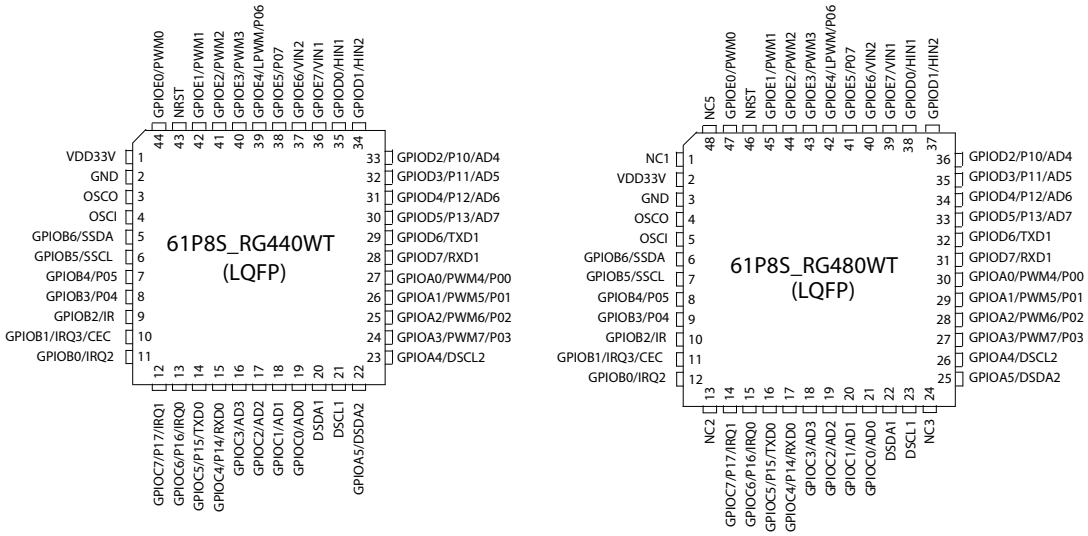


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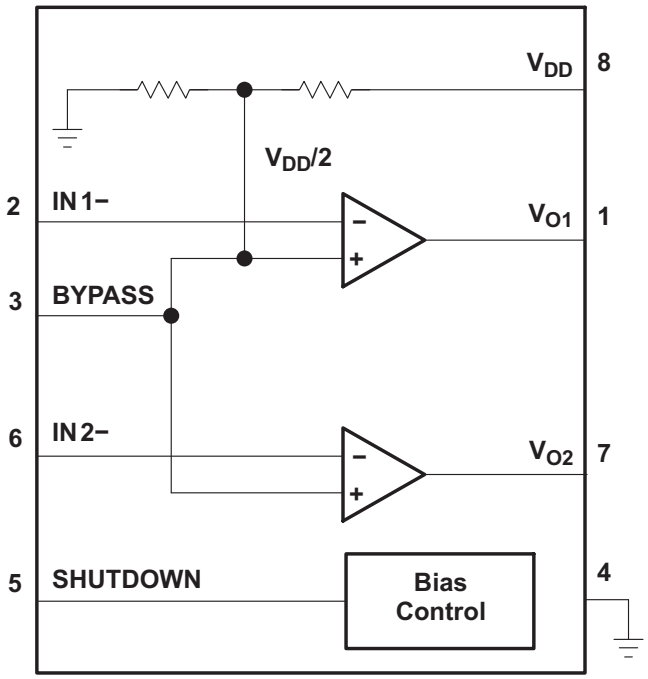
Figure 8-6 Internal block diagram and pin configuration

8.7 Diagram SSB: I/Os Audio, Type TPA6111A2DGN (IC7F00), Stereo Audio Power Amplifier

Block diagram



Pinning information

D OR DGN PACKAGE
(TOP VIEW)

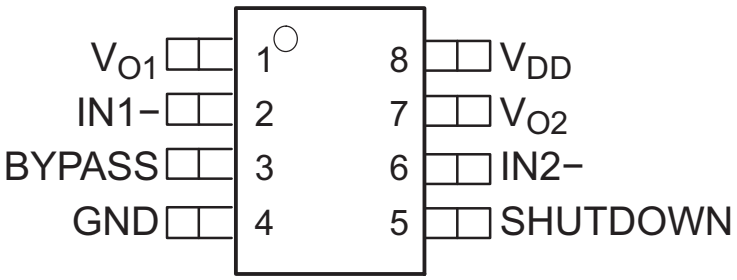


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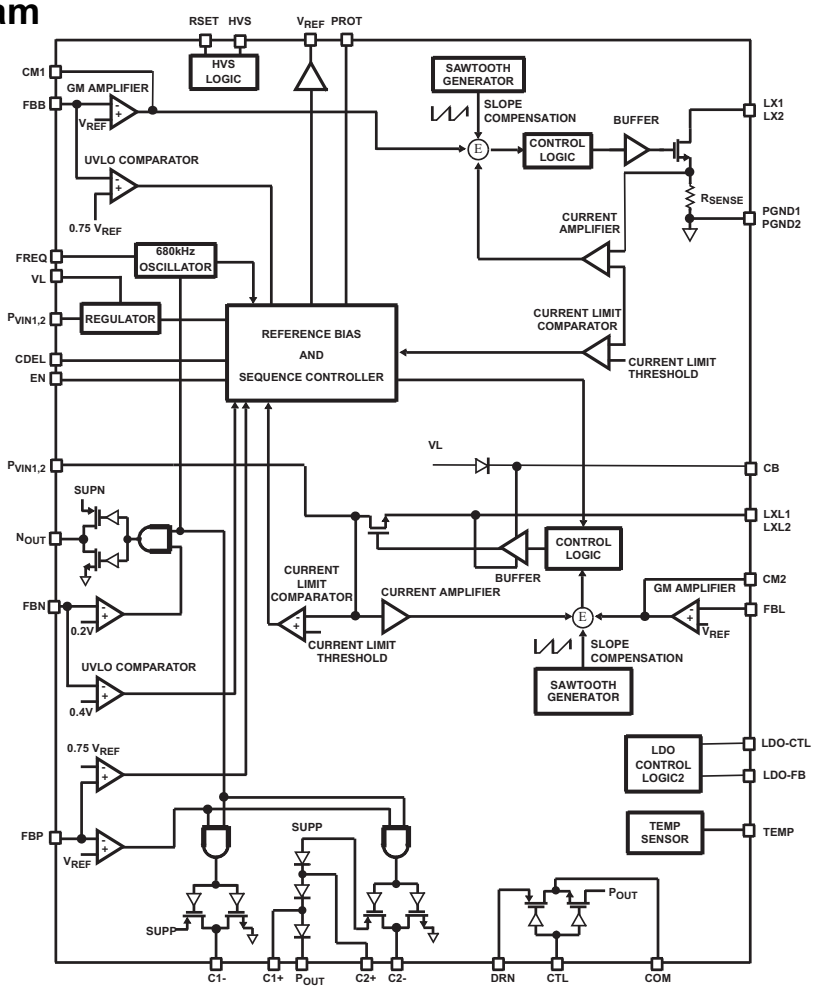
Figure 8-7 Internal block diagram and pin configuration

8.8 Diagram SSB: TCON DC/DC, Type ISL97653A (IC7KFA), 5-channel Integrated LCD Supply

Block diagram



Pinning information

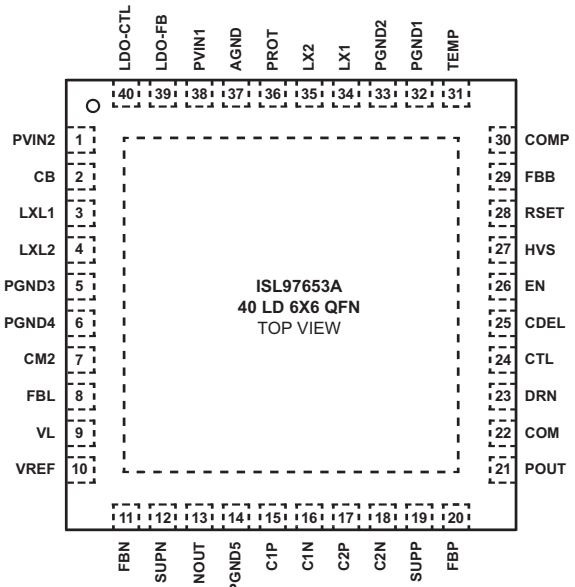


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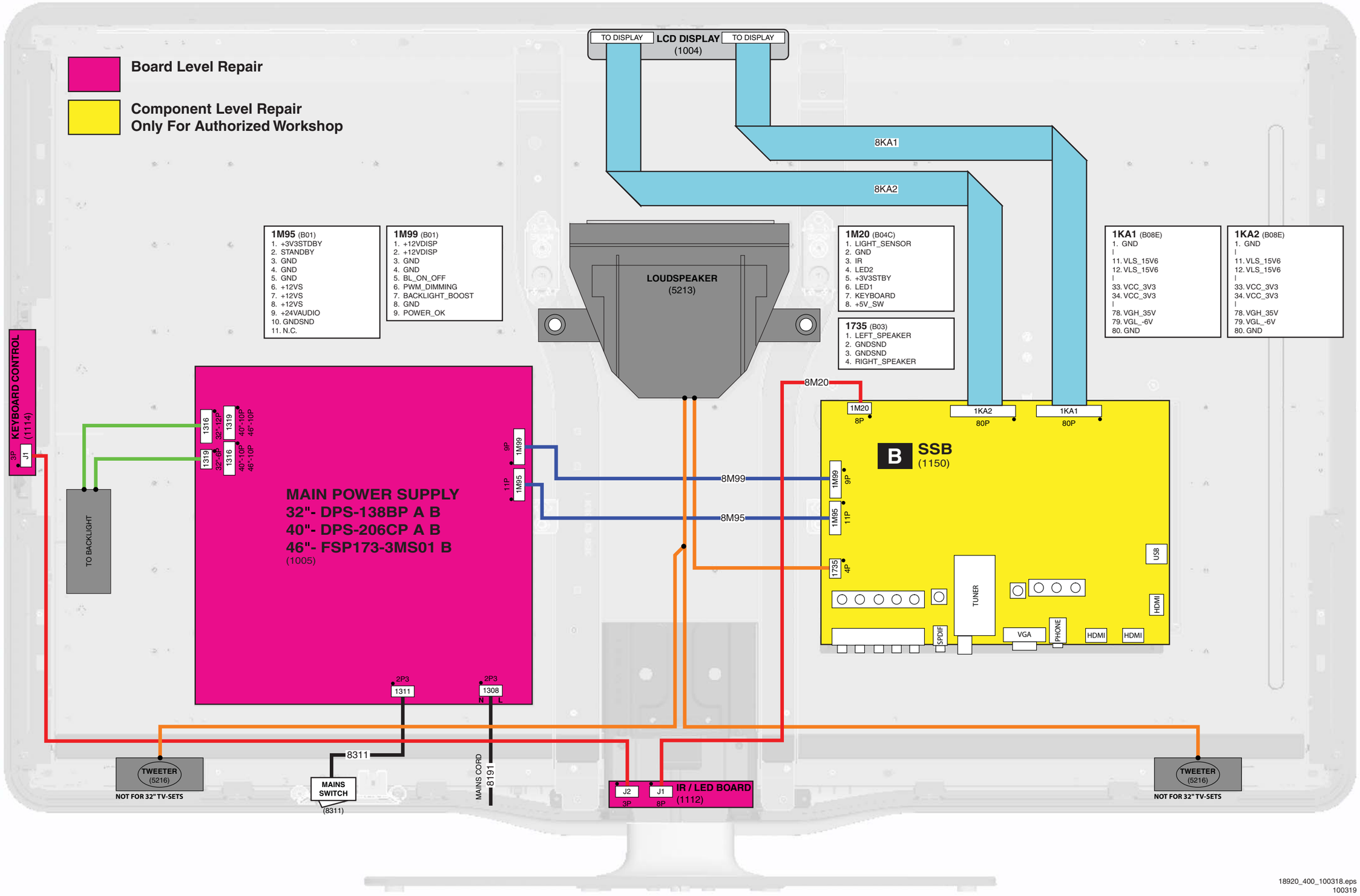
Figure 8-8 Internal block diagram and pin configuration

9. Block Diagrams

Wiring Diagram 42" - 46" (van Gogh)

WIRING DIAGRAM 32"- 46" VAN GOGH



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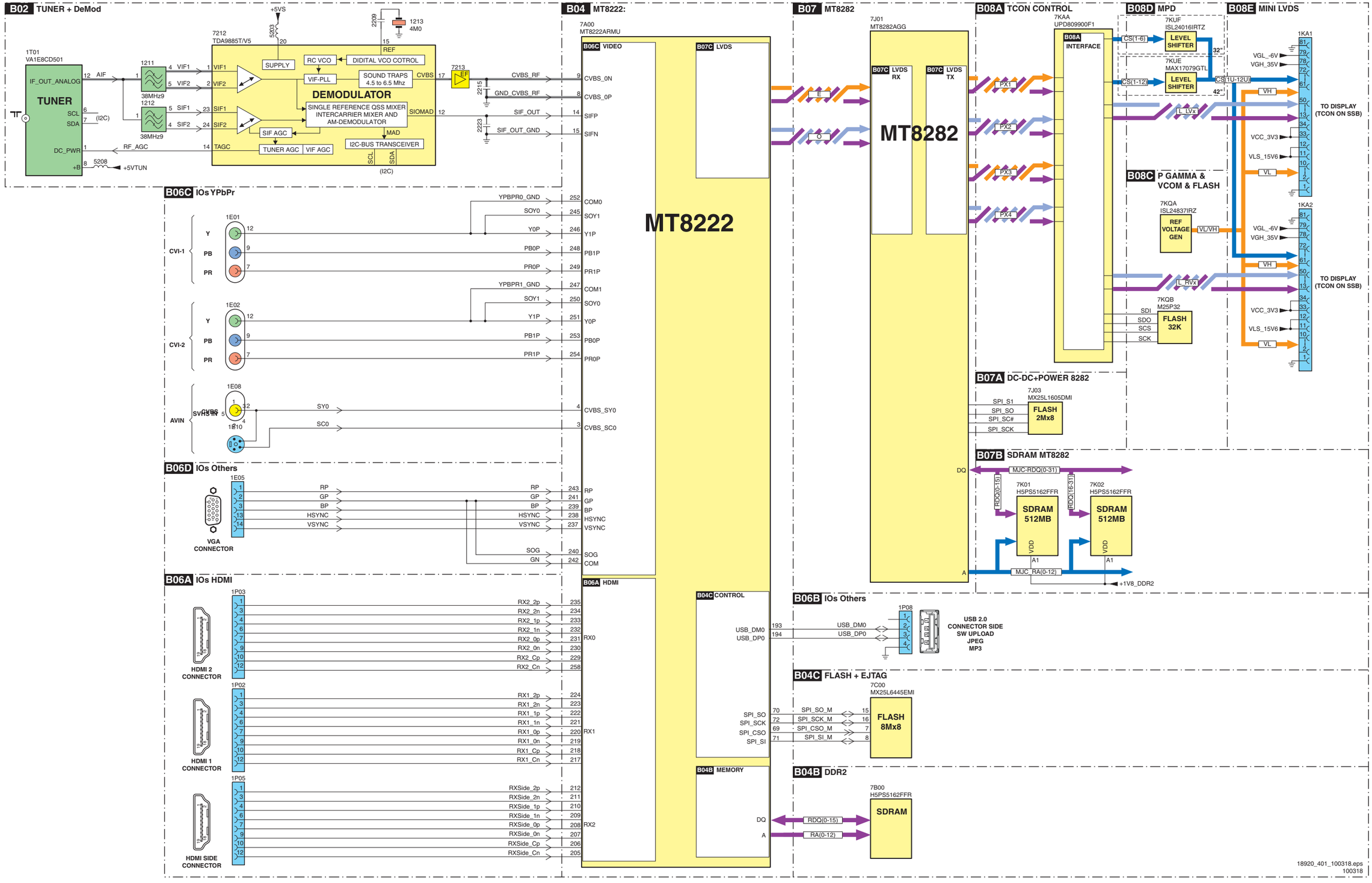
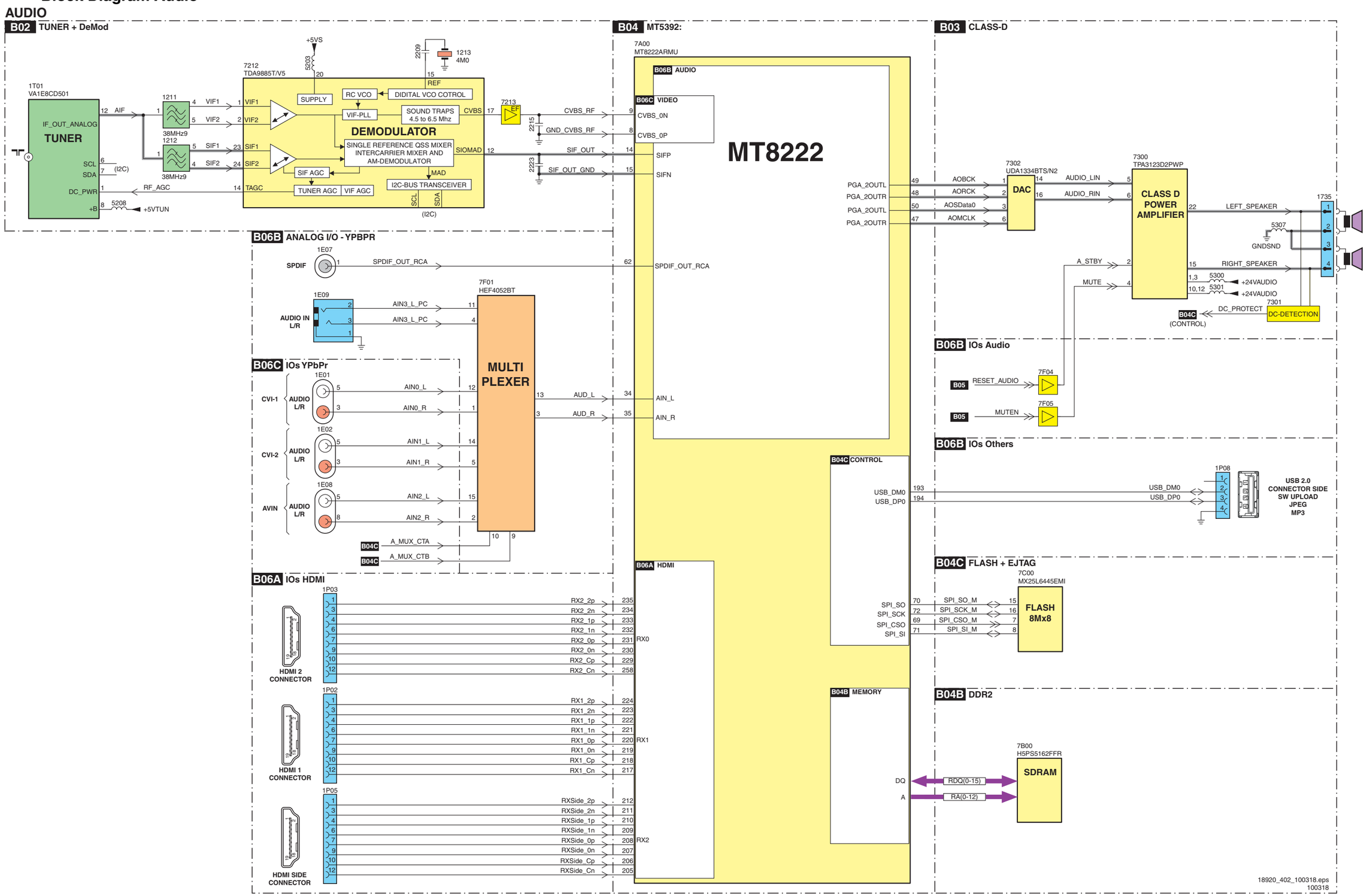
Block Diagram Video

VIDEO

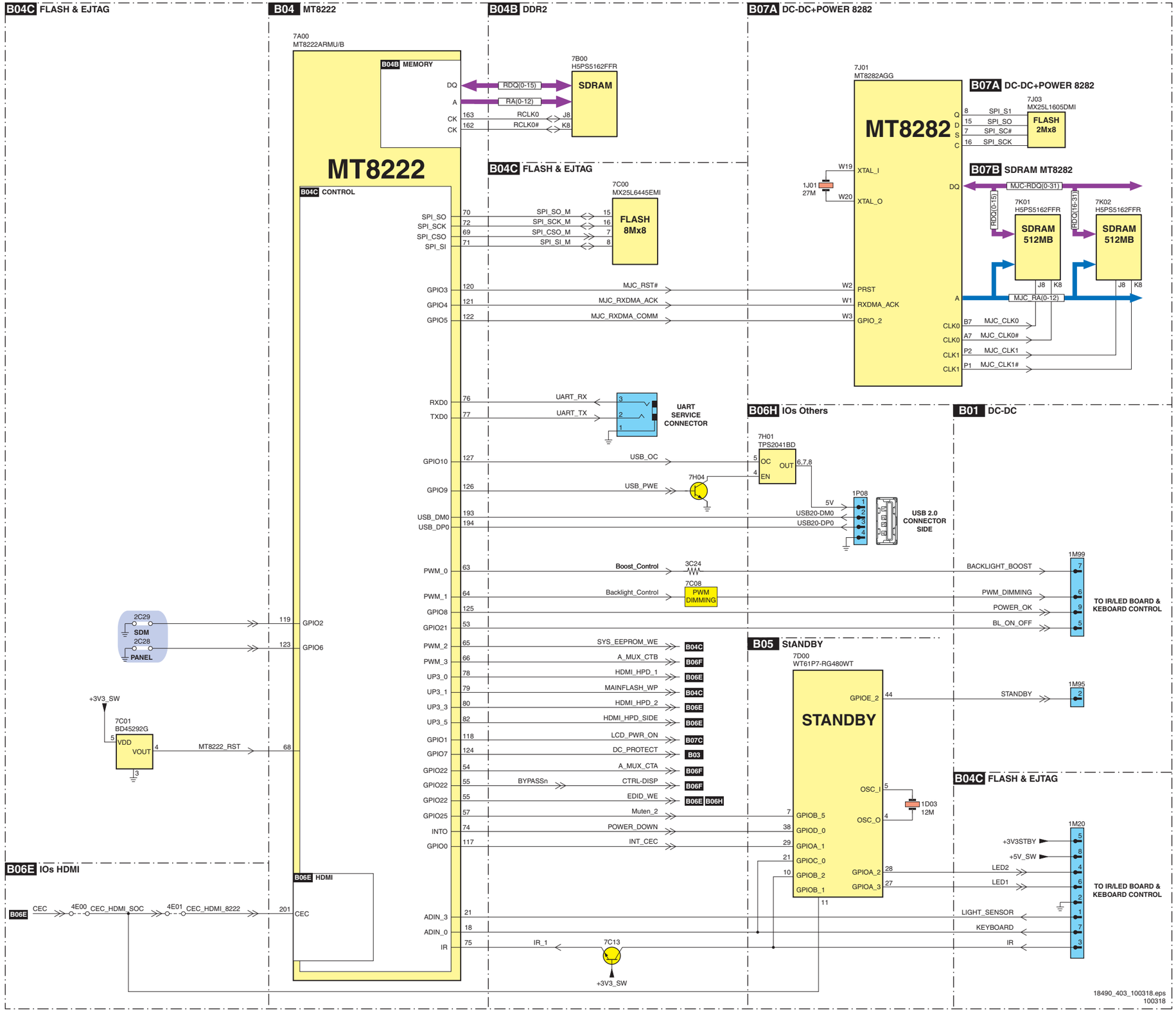


Block Diagram Audio



Block Diagram Control & Clock Signals

CONTROL + CLOCK SIGNALS



Block Diagram I²C

I²C

B04 FLASH + EJTAG

7A00
MT8222ARMU/B

B04C CONTROL

HW_SDA 58
HW_SCL 59
PWM_2 65
SPI_SO 70
SPI_SCK 72
SPI_CSO 69
SPI_SI 71
RXD1 60
TXD1 61
UA0RX 76
UA0TX 77

MT8222

B04C FLASH + EJTAG

+3V3_SW
3C62 3C61
SDA SCL
3C67 3C66
7C04 M24C64 EEPROM (NVM) ERR 35 MAIN NVM SW
SYS_EEPROM_WE 7C09
7C00 MX25L6445EMI FLASH 8Mx8 MAIN SW
SPI_SO_M 15
SPI_SCK_M 16
SPI_CSO_M 7
SPI_SI_M 8
U2RX
U2TX
+3V3STBY
3C35 3C36
3C01 3C02
UART_RX UART_TX
3C38 3C37
1E06
UART SERVICE CONNECTOR

B07A DC-DC + POWER 8282

3J15 3J14
U11 V11
7J01 MT8282AGG PHERIPHERAL ERR 21
RDQ(0-15)
RA(0-12)
7K01 H5PS5162FFR
7K02 H5PS5162FFR
SDRAM 512MB
SPI_S1
SPI_SO
SPI_SC#
SPI_SCK
7J03 MX25L1605DMI FLASH 2Mx8 MT8282 SW
3J13 V3
3J07 Y3
Y17 RXD0
W17 RXD0
1J04
RES DEBUG ONLY

B07B SDRAM MT8282

B05 HDMI & MUX

SDA SCL
4D04 4D03
STBY_SDA STBY_SCL
3D04 3D03
7D00 WT61P7 STANDBY

B02 TUNER + DeMod

+3V3_SW
3218 3219
7214 7215
TUNER_SDA TUNER_SCL
3213 3212
1T01 VA1E8CD501 MAIN TUNER ERR 34
7212 TDA9885T/V5 DEMODULATOR ERR 27

B04B MEMORY

DQ
A
7B00 H5PS5162FFR
SDRAM
RDQ(0-15)
RA(0-12)

B04B DDR2

B06A HDMI

HDMI_SDA0 226
HDMI_SCL0 227
HDMI_SDA1 214
HDMI_SCL1 215
HDMI_SDA2 203
HDMI_SCL2 204

B06A IOs HDMI

+5VHDMI_2
3E04 3E05
3E36 3E35
DDC_SDA_HDMI_2
DDC_SCL_HDMI_2
1P03 HDMI CONNECTOR 2
+5VHDMI_1
3E18 3E19
3E38 3E37
DDC_SDA_HDMI_1
DDC_SCL_HDMI_1
1P02 HDMI CONNECTOR 1
+5VHDMI_SIDE
3E30 3E31
3E40 3E39
DDC_SDA_SIDE
DDC_SCL_SIDE
1P05 HDMI CONNECTOR SIDE
3E01 3E02 3E14 3E15 3E25 3E26
7E00 M24C02 EEPROM EDID SW
7E01 M24C02 EEPROM EDID SW
7E02 M24C02 EEPROM EDID SW

B08A TCON CONTROL

E19 E20
7KAA UPD809900F1 CONTROL
K20 1
K21 2
7KAB LM75BDP TEMP SENSOR
SDI SDO SCS SCK
7KQB M25P32 FLASH 32K TCON SW

B08C P GAMMA & VCOM & FLASH

VCC_3V3
3KTU 3KTV
1KQB
SDA-TCON
SCL-TCON
BYPASS_MODE
RES DEBUG ONLY
7KQH PCA9540BDP I2C SWITCH
7KQA ISL24837IRZ VOLTAGE GENERATOR

B06D IOs Others

VGA CONNECTOR
1E05
DC_5V
3H29 3H30
4H03 4H02
VGA-SDA-EDID-TCON
VGA-SCL-EDID-TCON
7H02 M24C02 EEPROM EDID SW
B04C EDID_WE
7H03

SW Programmable via USB
SW Programmable via ComPair
SW Pre-programmed device

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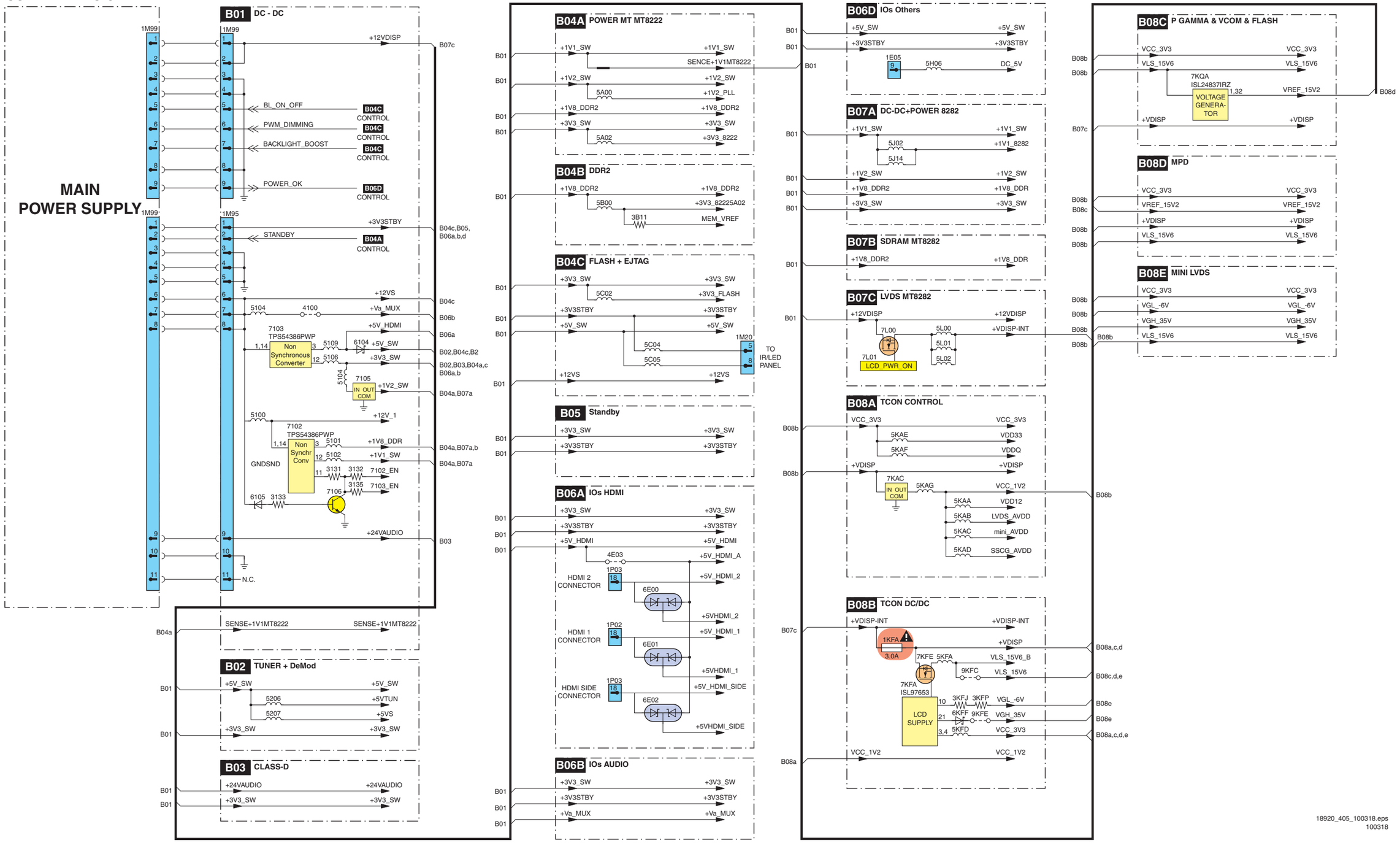
Supply Lines Overview

SUPPLY LINES OVERVIEW



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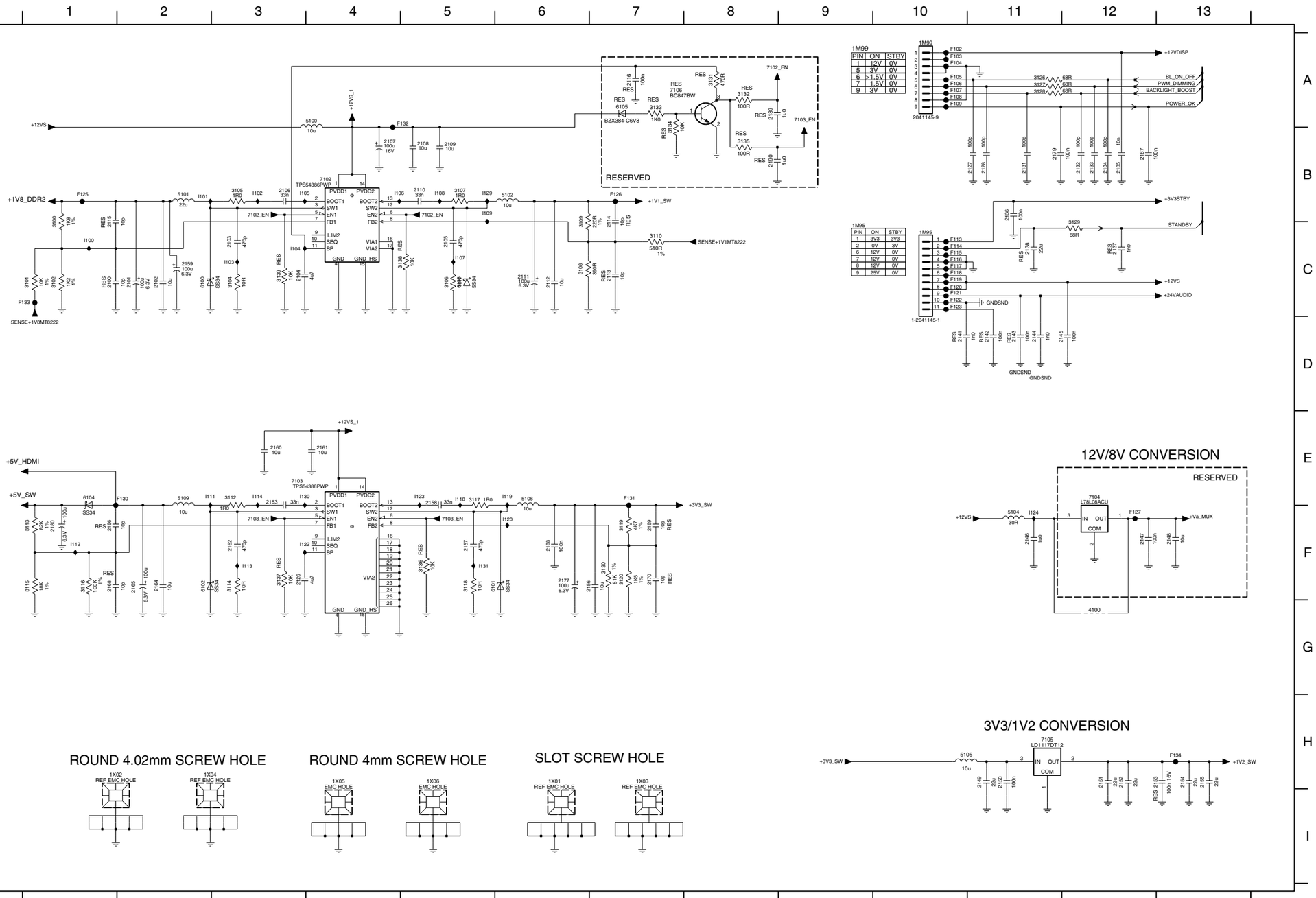
10. Circuit Diagrams and PWB Layouts

SSB: DC-DC

B01 DC-DC



B01

1M95 C10	3117 E5
1M99 A10	3118 F5
1X01 H6	3119 F7
1X02 H1	3120 F7
1X03 H7	3126 A11
1X04 H2	3127 A11
1X05 H4	3128 A11
1X06 H5	3129 C12
2100 C1	3130 F7
2101 C2	3131 A8
2102 C2	3132 A8
2103 C3	3133 A7
2104 C3	3134 A7
2105 C5	3135 B8
2106 B3	3136 F5
2107 B4	3137 F3
2108 B5	3138 C5
2109 B5	3139 C3
2110 B5	4100 G12
2111 C6	5100 A4
2112 C6	5101 B2
2113 C7	5102 B6
2114 B7	5104 F11
2115 B1	5105 H10
2126 F3	5106 E6
2127 B11	5109 E2
2128 B11	6100 C2
2131 B11	6101 F5
2132 B12	6102 F2
2133 B12	6103 C5
2134 B12	6104 E1
2135 B12	6105 A7
2136 B11	7102 B4
2137 C12	7103 E3
2138 C11	7104 E12
2141 D10	7105 H11
2142 D11	7106 A7
2143 D11	F102 A10
2144 D11	F103 A10
2145 D12	F104 A10
2146 F11	F105 A10
2147 F12	F106 A10
2148 F13	F107 A10
2149 H11	F108 A10
2150 H11	F109 A10
2151 H12	F113 C10
2152 H12	F114 C10
2153 H13	F115 C10
2154 H13	F116 C10
2155 H13	F117 C10
2156 F7	F118 C10
2157 F5	F119 C10
2158 E5	F120 C10
2159 C2	F121 C10
2160 E3	F122 C10
2161 E4	F123 C10
2162 F3	F125 B1
2163 E3	F126 B7
2164 F2	F127 F12
2165 F2	F130 E2
2166 F1	F131 E7
2168 F1	F132 A5
2169 F7	F133 C1
2170 F7	F134 H13
2177 F6	I100 C1
2179 B11	I101 B2
2180 F1	I102 B3
2187 B12	I103 C3
2188 F6	I104 C3
2189 A7	I105 B3
2189 A8	I106 B4
2190 B8	I107 C5
3100 B1	I108 B5
3101 C1	I109 B5
3102 C1	I111 E2
3104 C3	I112 F1
3105 B3	I113 F3
3106 C5	I114 E3
3107 B5	I118 E5
3108 C6	I119 E6
3109 B6	I120 F6
3110 C7	I122 F3
3112 E3	I123 E5
3113 F1	I124 F11
3114 F3	I129 B5
3115 F1	I130 E3
3116 F1	I131 F5

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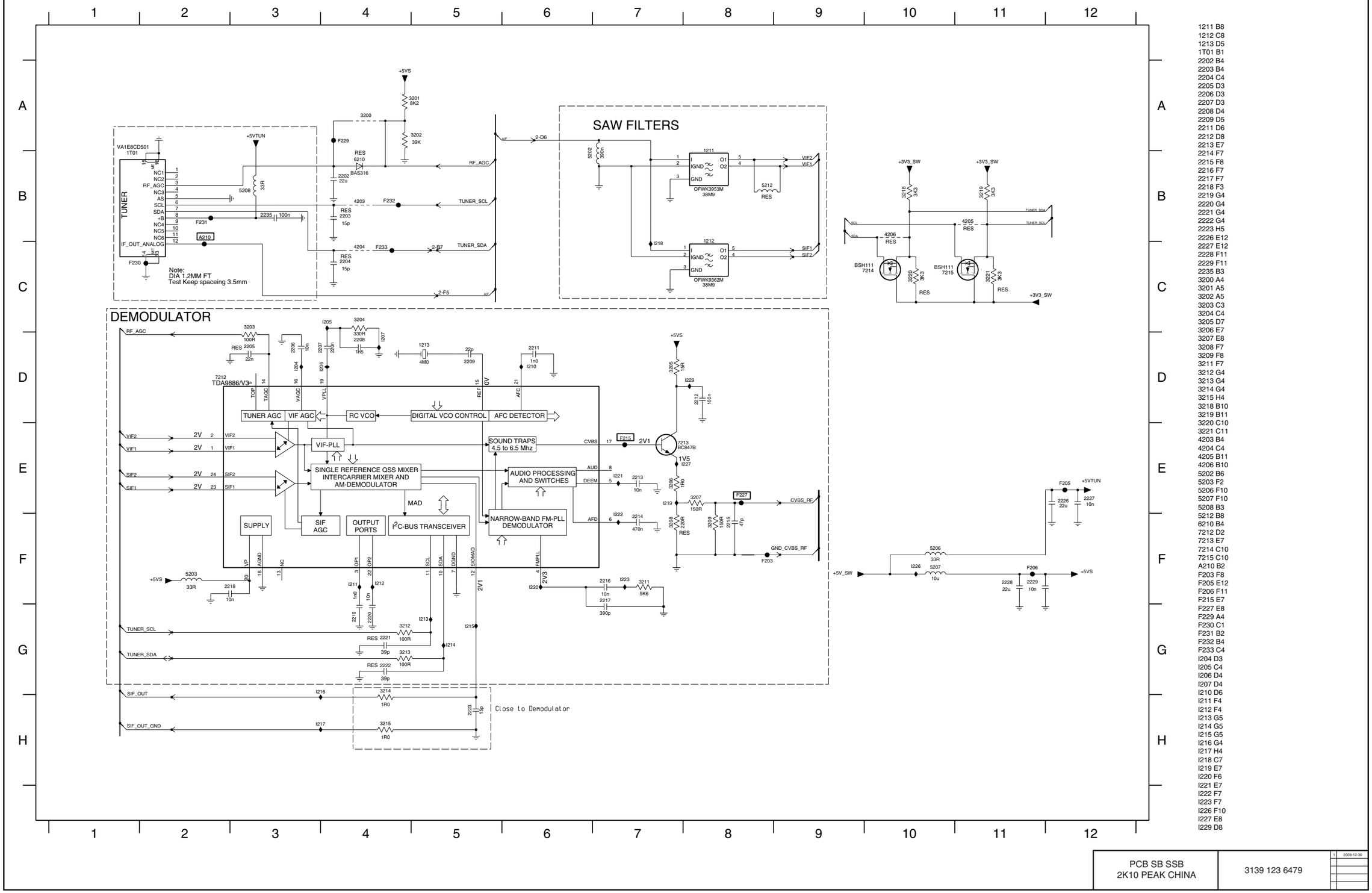
SSB: TUNER & Demodulator

B02 Tuner & Demodulator

B02



1211 B8
1212 C8
1213 D5
1T01 B1
2202 B4
2203 B4
2204 C4
2205 D3
2206 D3
2207 D3
2208 D4
2209 D5
2211 D6
2212 D8
2213 E7
2214 F7
2215 F8
2216 F7
2217 F7
2218 F3
2219 G4
2220 G4
2221 G4
2222 G4
2223 H5
2226 E12
2227 E12
2228 F11
2229 F11
2235 B3
3200 A4
3201 A5
3202 A5
3203 C3
3204 C4
3205 D7
3206 E7
3207 E8
3208 F7
3209 F8
3211 F7
3212 G4
3213 G4
3214 G4
3215 H4
3218 B10
3219 B11
3220 C10
3221 C11
4203 B4
4204 C4
4205 B11
4206 B10
5202 B6
5203 F2
5206 F10
5207 F10
5208 B3
5212 B8
6210 B4
7212 D2
7213 E7
7214 C10
7215 C10
A210 B2
F203 F8
F205 E12
F206 F11
F215 E7
F227 E8
F229 A4
F230 C1
F231 B2
F232 B4
F233 C4
I204 D3
I205 C4
I206 D4
I207 D4
I210 D6
I211 F4
I212 F4
I213 G5
I214 G5
I215 G5
I216 G4
I217 H4
I218 C7
I219 E7
I220 F6
I221 E7
I222 F7
I223 F7
I226 F10
I227 E8
I229 D8

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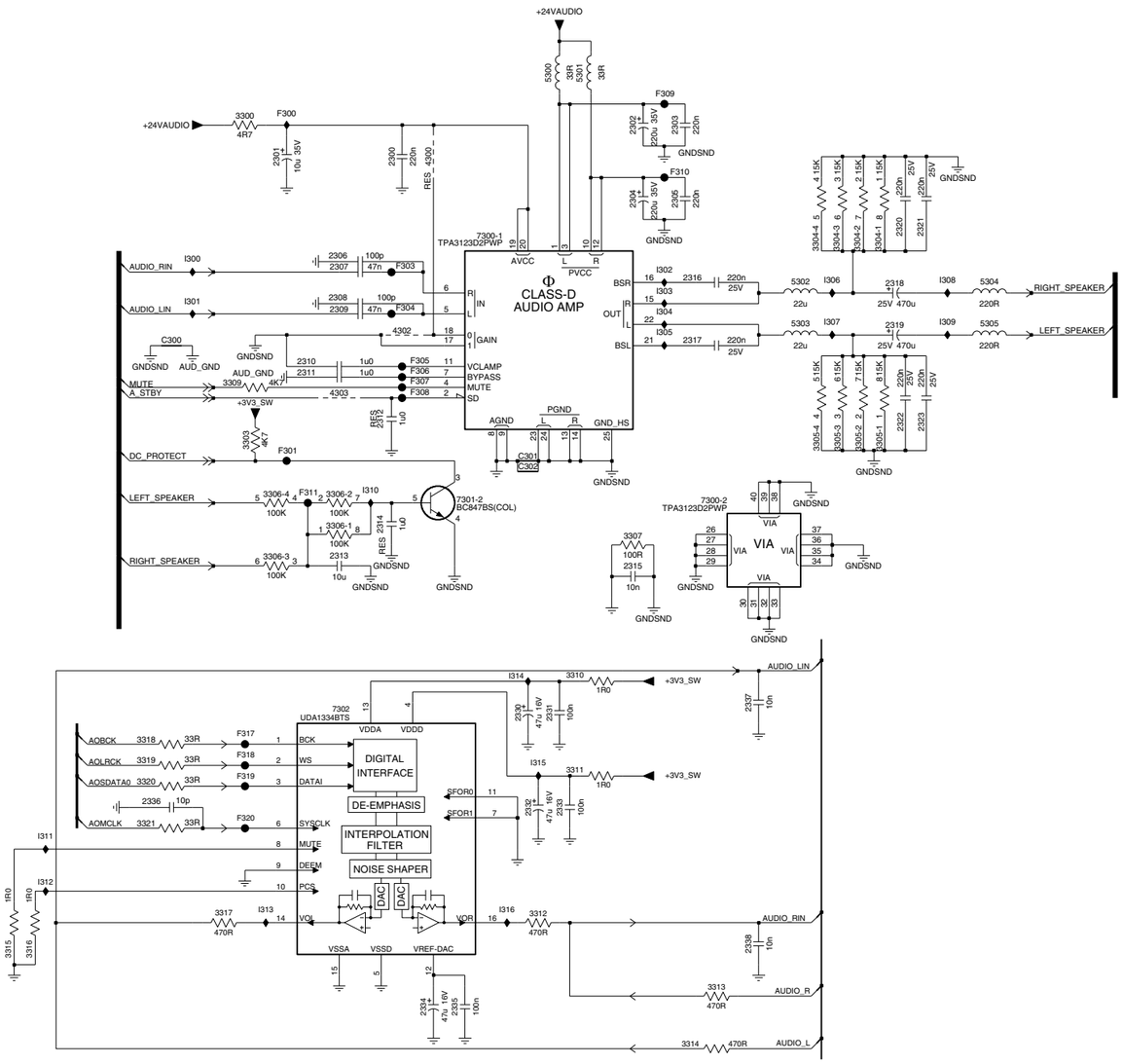
SSB: CLASS-D

B03 Class-D

B03



1302 F11	3312 G5
1303 F11	3313 G6
1304 E11	3314 H6
1735 E12	3315 G1
2300 B4	3316 G1
2301 B3	3317 G3
2302 A6	3318 F2
2303 A6	3319 F2
2304 B6	3320 F2
2305 B6	3321 F2
2306 B3	4300 B4
2307 B4	4302 C4
2308 C3	4303 C4
2309 C4	5300 A5
2310 C3	5301 A5
2311 C3	5302 C7
2312 C4	5303 C7
2313 D4	5304 C8
2314 D4	5305 C8
2315 D6	5307 F10
2316 C6	7300-1 B5
2317 C6	7300-2 D6
2318 C7	7301-2 D4
2319 C7	7302 E4
2320 B7	C300 C2
2321 B7	C301 D5
2322 C7	C302 D5
2323 C7	F300 A3
2327 E11	F301 D3
2328 F11	F303 B4
2329 F11	F304 C4
2330 E5	F305 C4
2331 E5	F306 C4
2332 F5	F307 C4
2333 F5	F308 C4
2334 G4	F309 A6
2335 G4	F310 B6
2336 F2	F311 D3
2337 E6	F314 F11
2338 G6	F315 F11
3300 A3	F316 F11
3303 D3	F317 F3
3304-1 B7	F318 F3
3304-2 B7	F319 F3
3304-3 B7	F320 F3
3304-4 B7	I300 B3
3305-1 D7	I301 C3
3305-2 D7	I302 B6
3305-3 D7	I303 C6
3305-4 D7	I304 C6
3306-1 D4	I305 C6
3306-2 D4	I306 C7
3306-3 D3	I307 C7
3306-4 D3	I308 C8
3307 D6	I309 C8
3308-1 F10	I310 D4
3308-2 F10	I311 F2
3308-3 E10	I312 G2
3308-4 E10	I313 G3
3309 C3	I314 E5
3310 E5	I315 F5
3311 F5	I316 G5

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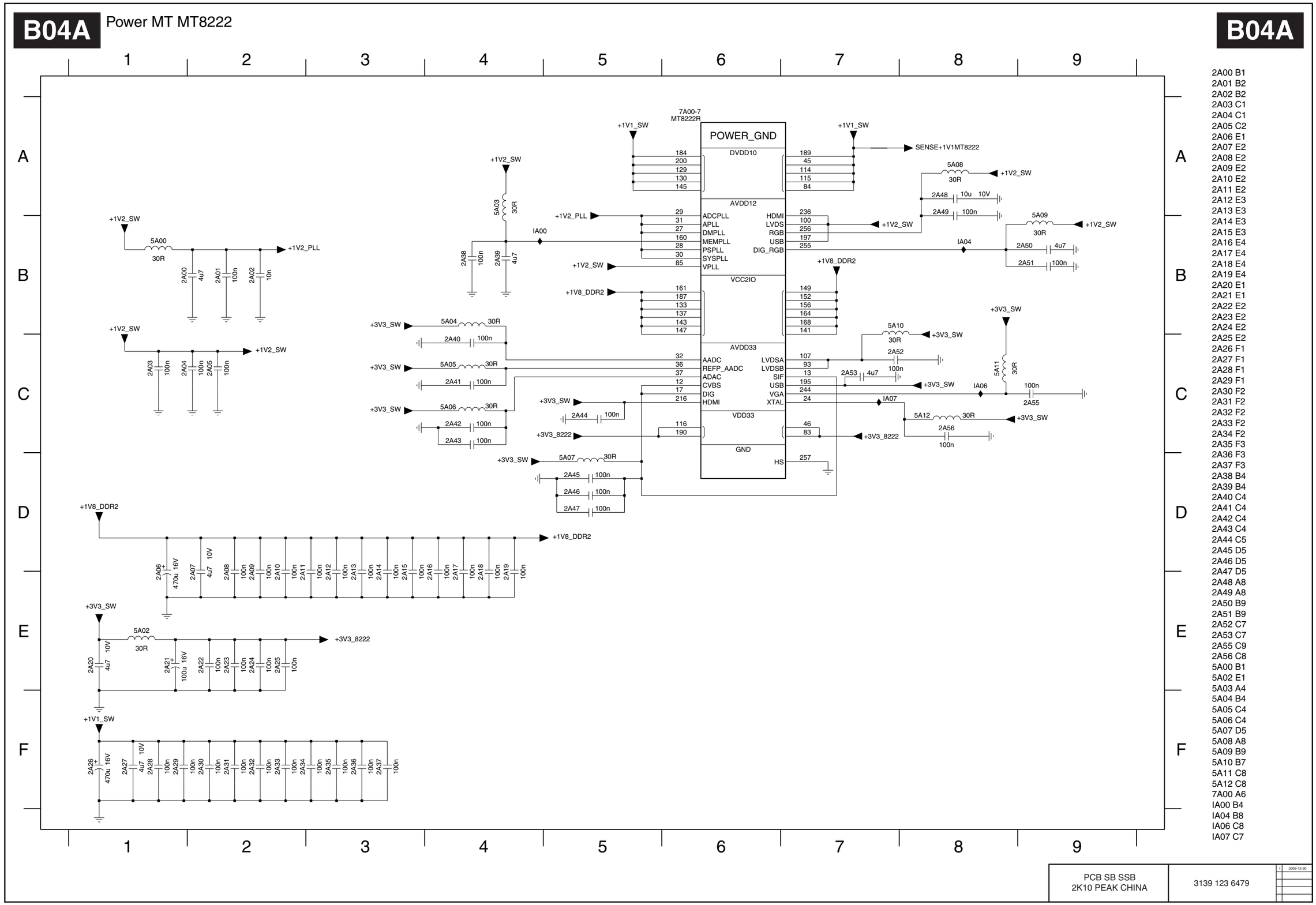
SSB: Power MT MT8222



2A00 B1
2A01 B2
2A02 B2
2A03 C1
2A04 C1
2A05 C2
2A06 E1
2A07 E2
2A08 E2
2A09 E2
2A10 E2
2A11 E2
2A12 E3
2A13 E3
2A14 E3
2A15 E3
2A16 E4
2A17 E4
2A18 E4
2A19 E4
2A20 E1
2A21 E1
2A22 E2
2A23 E2
2A24 E2
2A25 E2
2A26 F1
2A27 F1
2A28 F1
2A29 F1
2A30 F2
2A31 F2
2A32 F2
2A33 F2
2A34 F2
2A35 F3
2A36 F3
2A37 F3
2A38 B4
2A39 B4
2A40 C4
2A41 C4
2A42 C4
2A43 C4
2A44 C5
2A45 D5
2A46 D5
2A47 D5
2A48 A8
2A49 A8
2A50 B9
2A51 B9
2A52 C7
2A53 C7
2A55 C9
2A56 C8
5A00 B1
5A02 E1
5A03 A4
5A04 B4
5A05 C4
5A06 C4
5A07 D5
5A08 A8
5A09 B9
5A10 B7
5A11 C8
5A12 C8
7A00 A6
IA00 B4
IA04 B8
IA06 C8
IA07 C7

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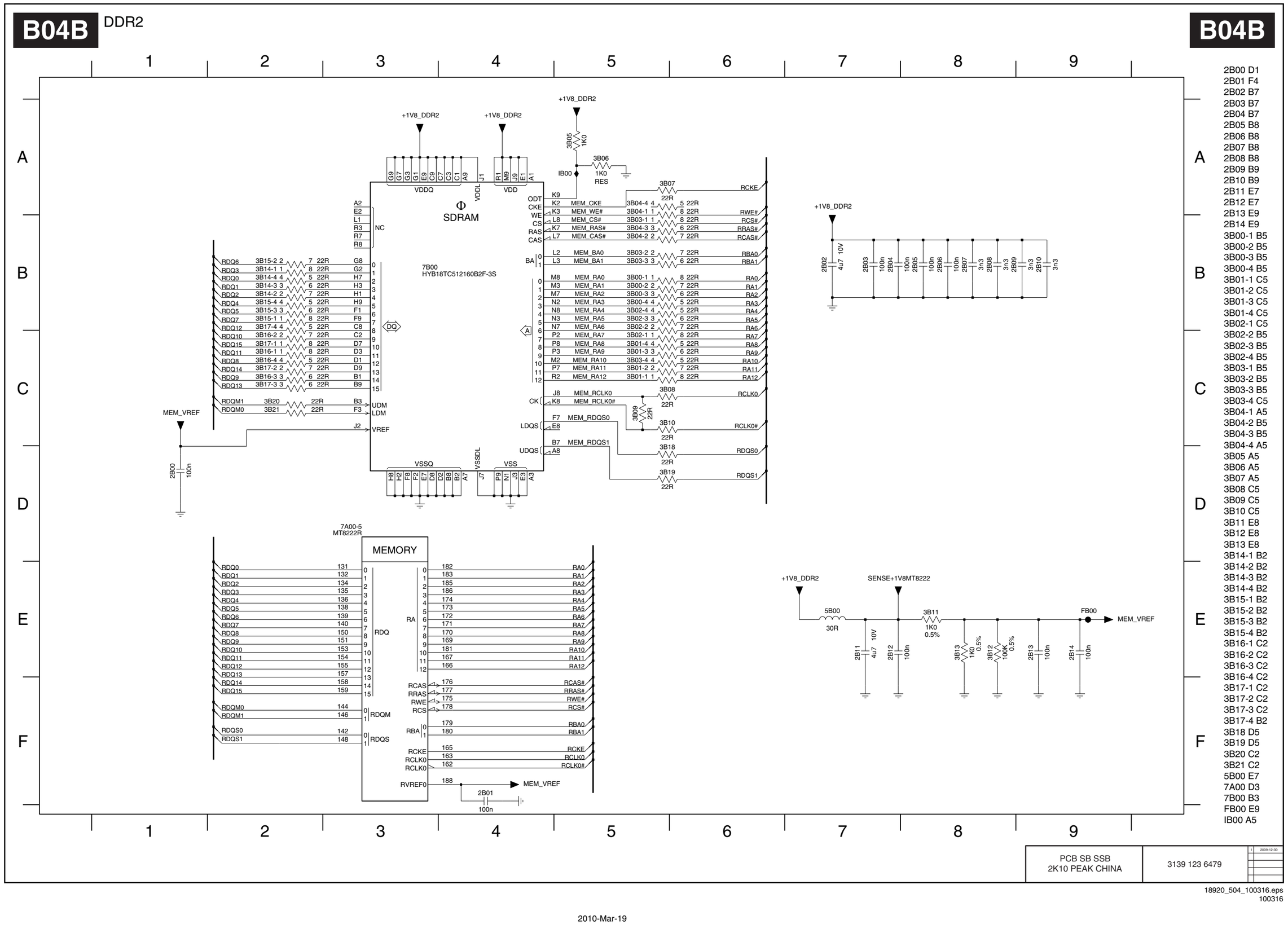
SSB: DDR2

B04B DDR2



2B00 D1
2B01 F4
2B02 B7
2B03 B7
2B04 B7
2B05 B8
2B06 B8
2B07 B8
2B08 B8
2B09 B9
2B10 B9
2B11 E7
2B12 E7
2B13 E9
2B14 E9
3B00-1 B5
3B00-2 B5
3B00-3 B5
3B00-4 B5
3B01-1 C5
3B01-2 C5
3B01-3 C5
3B01-4 C5
3B02-1 C5
3B02-2 B5
3B02-3 B5
3B02-4 B5
3B03-1 B5
3B03-2 B5
3B03-3 B5
3B03-4 C5
3B04-1 A5
3B04-2 B5
3B04-3 B5
3B04-4 A5
3B05 A5
3B06 A5
3B07 A5
3B08 C5
3B09 C5
3B10 C5
3B11 E8
3B12 E8
3B13 E8
3B14-1 B2
3B14-2 B2
3B14-3 B2
3B14-4 B2
3B15-1 B2
3B15-2 B2
3B15-3 B2
3B15-4 B2
3B16-1 C2
3B16-2 C2
3B16-3 C2
3B16-4 C2
3B17-1 C2
3B17-2 C2
3B17-3 C2
3B17-4 B2
3B18 D5
3B19 D5
3B20 C2
3B21 C2
5B00 E7
7A00 D3
7B00 B3
FB00 E9
IB00 A5

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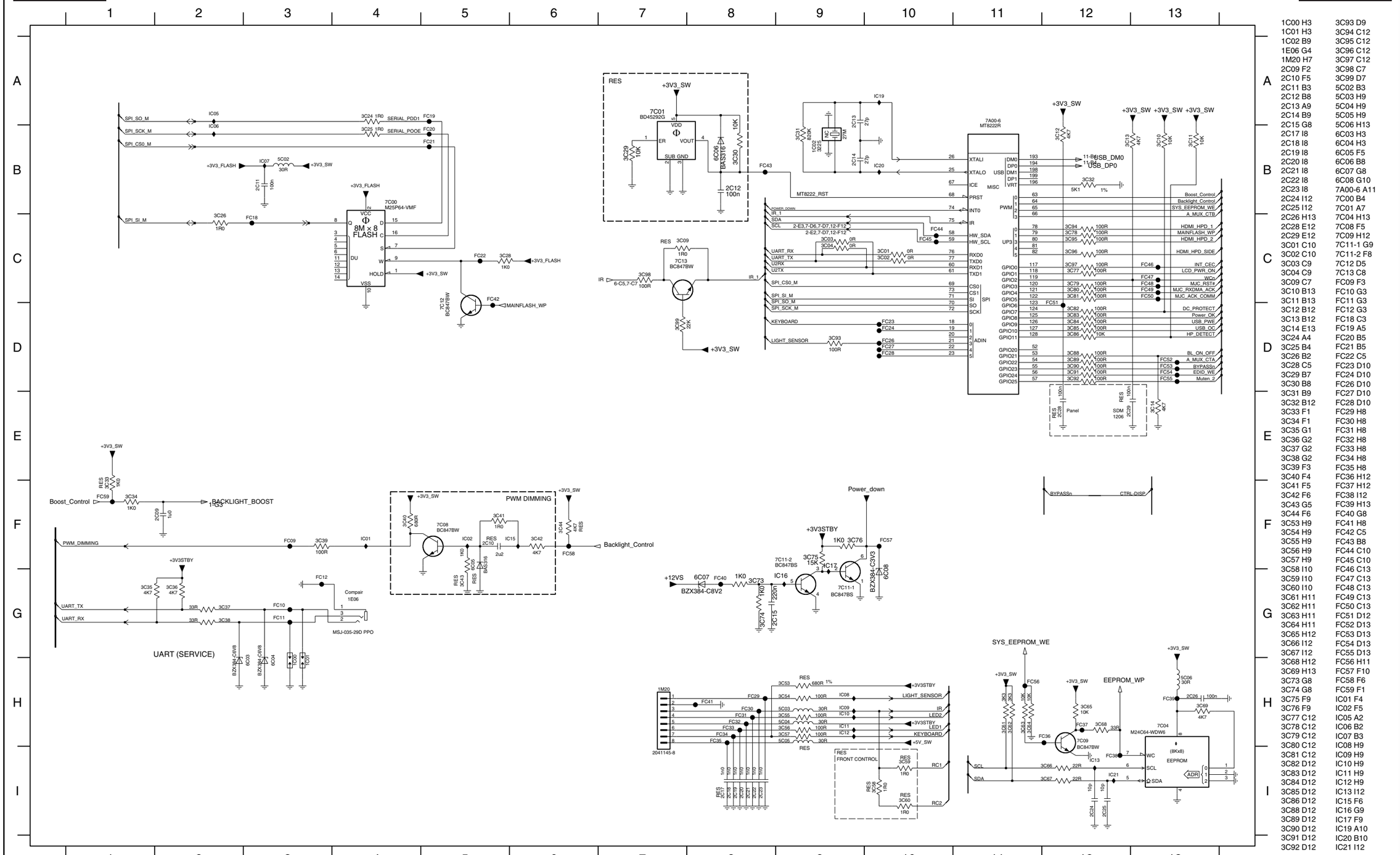
SSB: Flash and EJTAG

B04C Flash and EJTAG

B04C



1C00 H3	3C93 D9
1C01 H3	3C94 C12
1C02 B9	3C95 C12
1E06 G4	3C96 C12
1M20 H7	3C97 C12
2C09 F2	3C98 C7
2C10 F5	3C99 D7
2C11 B3	5C02 B3
2C12 B8	5C03 H9
2C13 A9	5C04 H9
2C14 B9	5C05 H9
2C15 G8	5C06 H13
2C17 I8	6C03 H3
2C18 I8	6C04 H3
2C19 I8	6C05 F5
2C20 I8	6C06 B8
2C21 I8	6C07 G8
2C22 I8	6C08 G10
2C23 I8	7A00-6 A11
2C24 I12	7C00 B4
2C25 I12	7C01 A7
2C26 H13	7C04 H13
2C28 E12	7C08 F5
2C29 E12	7C09 H12
3C01 C10	7C11-1 G9
3C02 C10	7C11-2 F8
3C03 C9	7C12 D5
3C04 C9	7C13 C8
3C09 C7	FC09 F3
3C10 B13	FC10 G3
3C11 B13	FC11 G3
3C12 B12	FC12 G3
3C13 B12	FC18 C3
3C14 E13	FC19 A5
3C24 A4	FC20 B5
3C25 B4	FC21 B5
3C26 B2	FC22 C5
3C28 C5	FC23 D10
3C29 B7	FC24 D10
3C30 B8	FC26 D10
3C31 B9	FC27 D10
3C32 B12	FC28 D10
3C33 F1	FC29 H8
3C34 F1	FC30 H8
3C35 G1	FC31 H8
3C36 G2	FC32 H8
3C37 G2	FC33 H8
3C38 G2	FC34 H8
3C39 F3	FC35 H8
3C40 F4	FC36 H12
3C41 F5	FC37 H12
3C42 F6	FC38 I12
3C43 G5	FC39 H13
3C44 F6	FC40 G8
3C53 H9	FC41 H8
3C54 H9	FC42 C5
3C55 H9	FC43 B8
3C56 H9	FC44 C10
3C57 H9	FC45 C10
3C58 I10	FC46 C13
3C59 I10	FC47 C13
3C60 I10	FC48 C13
3C61 H11	FC49 C13
3C62 H11	FC50 C13
3C63 H11	FC51 D12
3C64 H11	FC52 D13
3C65 H12	FC53 D13
3C66 I12	FC54 D13
3C67 I12	FC55 D13
3C68 H12	FC56 H11
3C69 H13	FC57 F10
3C73 G8	FC58 F6
3C74 G8	FC59 F1
3C75 F9	IC01 F4
3C76 F9	IC02 F5
3C77 C12	IC05 A2
3C78 C12	IC06 B2
3C79 C12	IC07 B3
3C80 C12	IC08 H9
3C81 C12	IC09 H9
3C82 D12	IC10 H9
3C83 D12	IC11 H9
3C84 D12	IC12 H9
3C85 D12	IC13 I12
3C86 D12	IC15 F6
3C88 D12	IC16 G9
3C89 D12	IC17 F9
3C90 D12	IC19 A10
3C91 D12	IC20 B10
3C92 D12	IC21 I12

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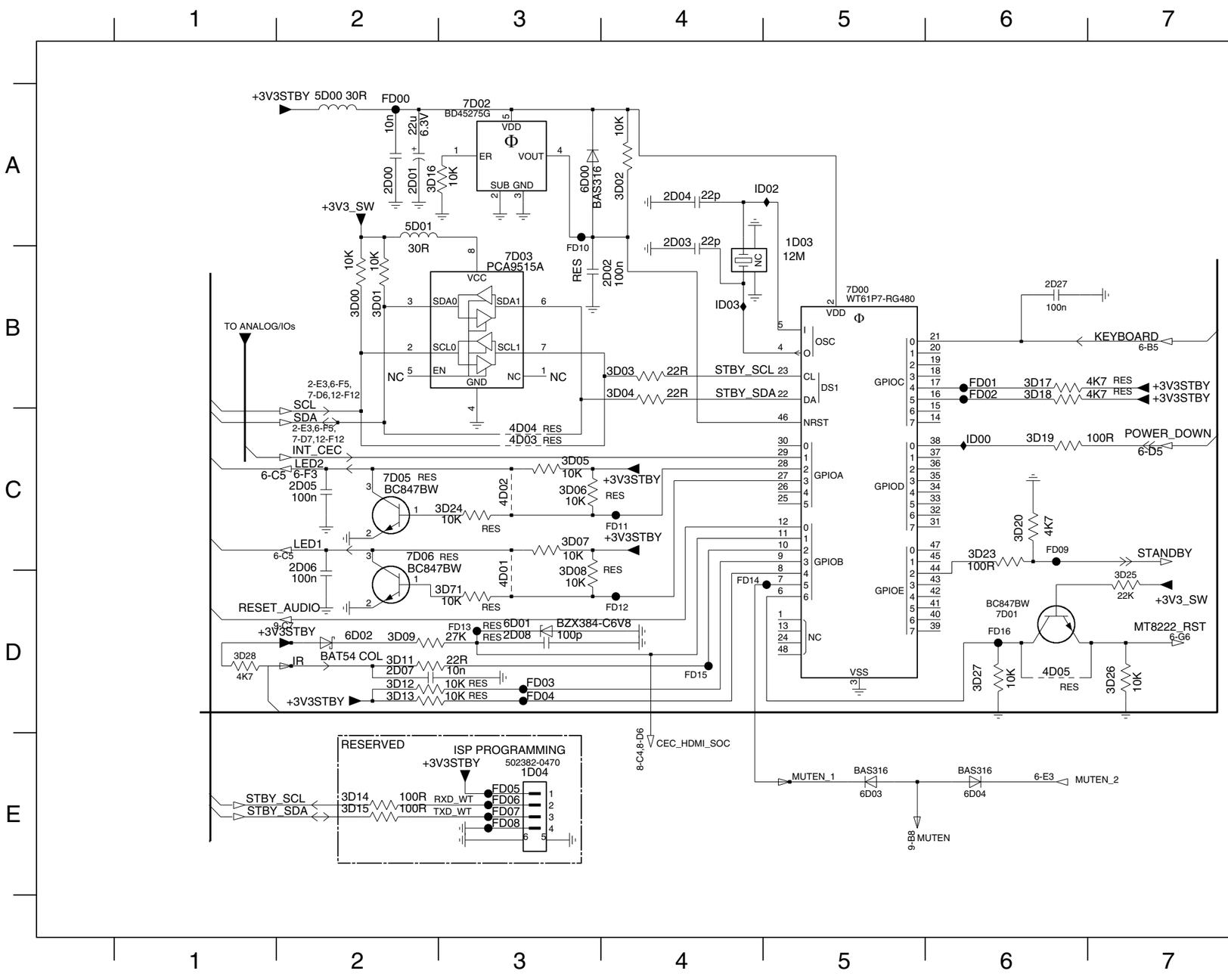
SSB: Stand-by

B05 Stand-by



1D03 B5	4D01 D3
1D04 E3	4D02 C3
2D00 A2	4D03 C3
2D01 A2	4D04 C3
2D02 B4	4D05 D6
2D03 B4	5D00 A2
2D04 A4	5D01 A2
2D05 C2	6D00 A3
2D06 D2	6D01 D3
2D07 D2	6D02 D2
2D08 D3	6D03 E5
2D27 B6	6D04 E6
3D00 B2	7D00 B5
3D01 B2	7D01 D6
3D02 A4	7D02 A3
3D03 B4	7D03 B3
3D04 B4	7D05 C2
3D05 C3	7D06 C2
3D06 C3	FD00 A2
3D07 C3	FD01 B6
3D08 C3	FD02 B6
3D09 D2	FD03 D3
3D11 D2	FD04 D3
3D12 D2	FD05 E3
3D13 D2	FD06 E3
3D14 E2	FD07 E3
3D15 E2	FD08 E3
3D16 A2	FD09 C6
3D17 B6	FD10 B3
3D18 B6	FD11 C4
3D19 C6	FD12 D4
3D20 C6	FD13 D3
3D23 C6	FD14 D4
3D24 C3	FD15 D4
3D25 D7	FD16 D6
3D26 D7	ID00 C6
3D27 D6	ID02 A5
3D28 D1	ID03 B4
3D71 D3	

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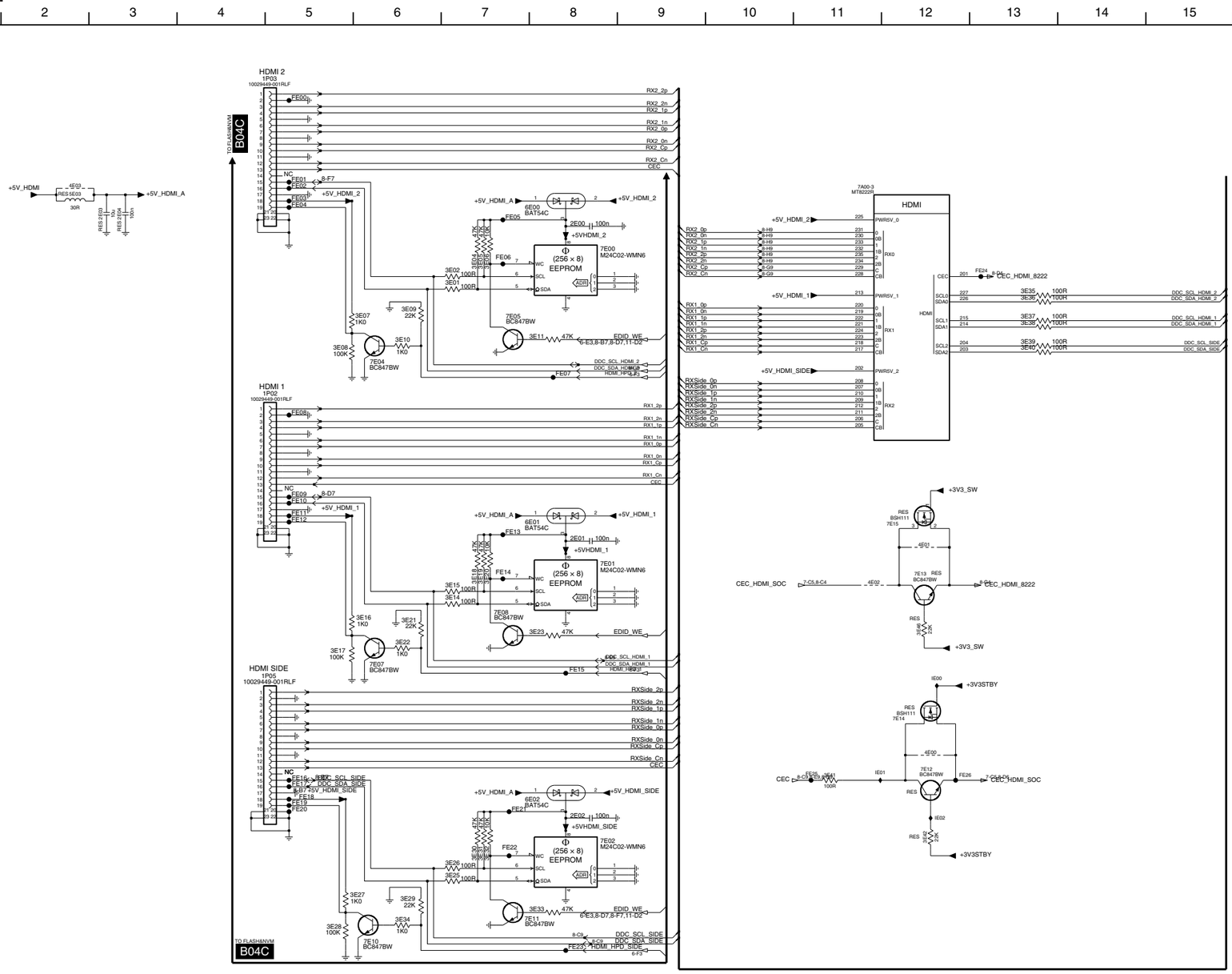
SSB: I/Os HDMI

B06A I/Os HDMI

B06A



PCB SB SSB 2K10 PEAK CHINA	3139 123 6479	1 2009-12-30

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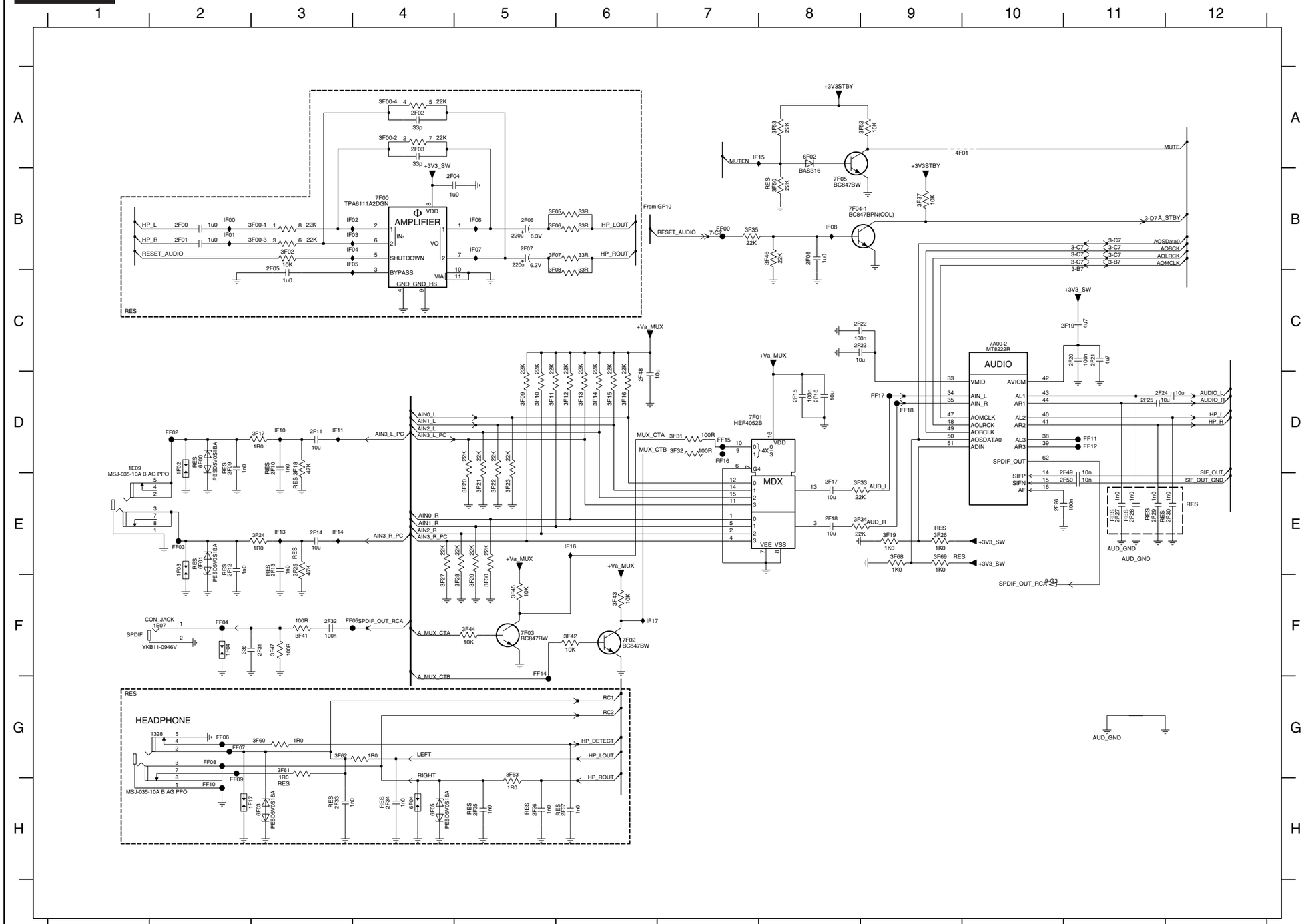
SSB: I/Os Audio

B06B I/Os Audio

B06B



1328 G2	3F26 E9
1E07 F2	3F27 F4
1E09 D1	3F28 F5
1F02 D2	3F29 F5
1F03 E2	3F30 F5
1F04 F2	3F31 D7
1F17 H2	3F32 D7
2F00 B2	3F33 E9
2F01 B2	3F34 E9
2F02 A4	3F35 B7
2F03 A4	3F37 B9
2F04 B4	3F41 F3
2F05 C3	3F42 F6
2F06 B5	3F43 F6
2F07 B5	3F44 F5
2F08 B8	3F45 F5
2F09 D2	3F46 B8
2F10 D3	3F47 F3
2F11 D3	3F50 B8
2F12 E2	3F52 A9
2F13 E3	3F53 A8
2F14 E3	3F60 G3
2F15 D8	3F61 G3
2F16 D8	3F62 G3
2F17 E8	3F63 G5
2F18 E8	3F68 E9
2F19 C11	3F69 E9
2F20 C11	4F01 A10
2F21 C11	6F00 D2
2F22 C9	6F01 E2
2F23 C9	6F02 A8
2F24 D11	6F03 H3
2F25 D11	6F04 H4
2F26 E10	6F05 H4
2F27 E11	7A00-2 C10
2F28 E11	7F00 B4
2F29 E11	7F01 D8
2F30 E12	7F02 F6
2F31 F3	7F03 F5
2F32 F3	7F04-1 B8
2F33 H3	7F05 B8
2F34 H4	FF00 B7
2F35 H5	FF02 D2
2F36 H5	FF03 E2
2F37 H6	FF04 F2
2F48 D6	FF05 F3
2F49 E11	FF06 G2
2F50 E11	FF07 G2
3F00-1 B3	FF08 G2
3F00-2 A4	FF09 H2
3F00-3 B3	FF10 H2
3F00-4 A4	FF11 D11
3F02 B3	FF12 D11
3F05 B5	FF14 F5
3F06 B5	FF15 D7
3F07 B5	FF16 D7
3F08 C5	FF17 D9
3F09 D5	FF18 D9
3F10 D5	IF00 B2
3F11 D5	IF01 B2
3F12 D6	IF02 B4
3F13 D6	IF03 B4
3F14 D6	IF04 B4
3F15 D6	IF05 B4
3F16 D6	IF06 B5
3F17 D3	IF07 B5
3F18 D3	IF08 B8
3F19 E9	IF10 D3
3F20 E5	IF11 D3
3F21 E5	IF13 E3
3F22 E5	IF14 E3
3F23 E5	IF15 A8
3F24 E3	IF16 E6
3F25 E3	IF17 F6

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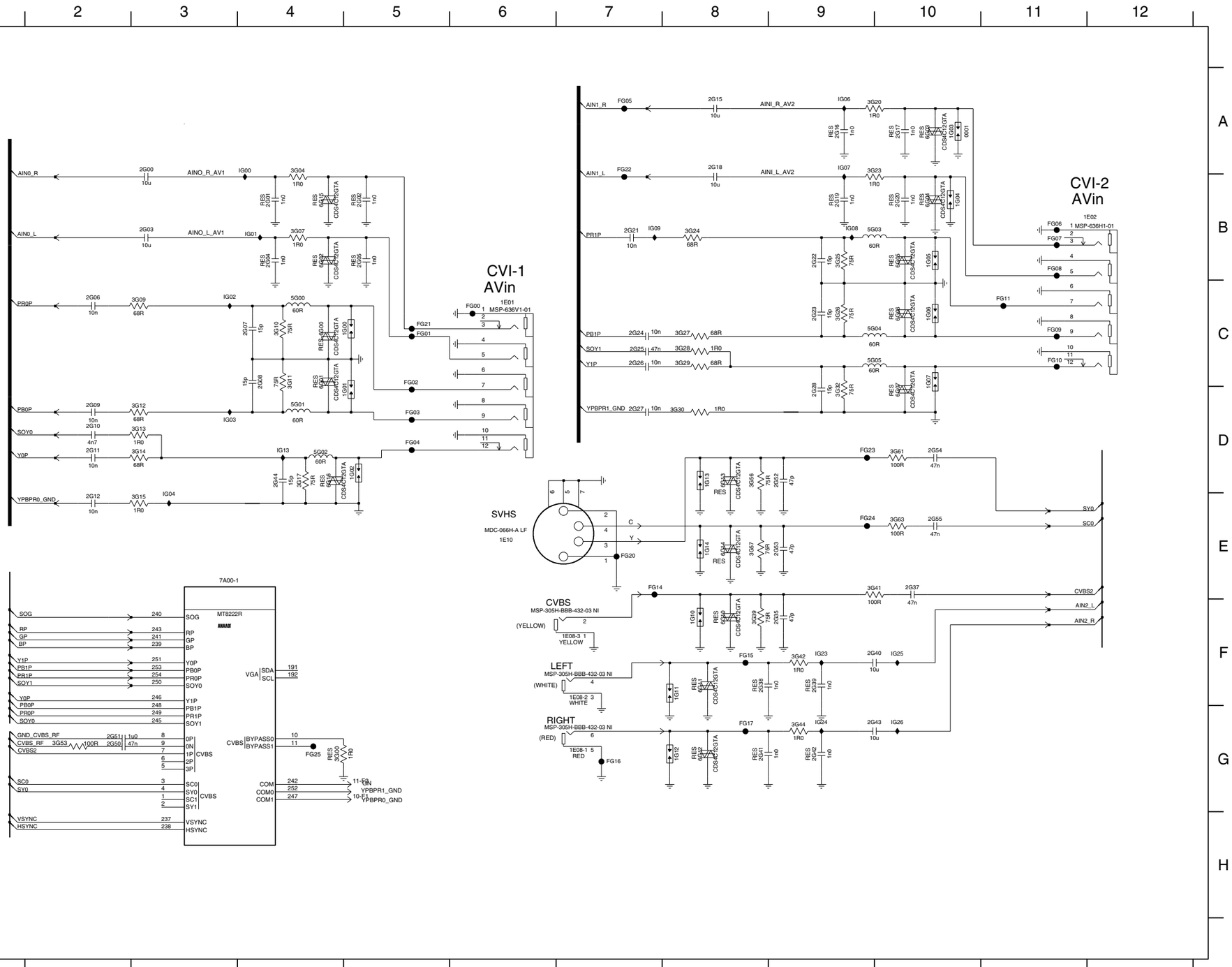
SSB: I/Os YPbPr

B06C I/Os YPbPr



1E01 C6	3G25 B9
1E02 B12	3G26 C9
1E08-1 G7	3G27 C8
1E08-2 F7	3G28 C8
1E08-3 F7	3G29 C8
1E10 E6	3G30 D8
1G00 C5	3G32 D9
1G01 D5	3G39 F8
1G02 D5	3G41 E10
1G03 A10	3G42 F9
1G04 B10	3G44 G9
1G05 B10	3G53 G2
1G06 C10	3G56 D8
1G07 C10	3G57 E8
1G10 F8	3G61 D10
1G11 F8	3G63 E10
1G12 G8	5G00 C4
1G13 D8	5G01 D4
1G14 E8	5G02 D4
2G00 A3	5G03 B10
2G01 B4	5G04 C10
2G02 B5	5G05 C9
2G03 B3	6G00 C4
2G04 B4	6G01 C4
2G05 B5	6G02 B4
2G06 C2	6G03 A10
2G07 C4	6G04 B10
2G08 C4	6G05 B10
2G09 D2	6G06 C10
2G10 D2	6G07 D10
2G11 D2	6G10 F8
2G12 E2	6G11 F8
2G15 A8	6G12 G8
2G16 A9	6G13 D8
2G17 A10	6G14 E8
2G18 A8	6G15 B4
2G19 B9	6G16 D4
2G20 B10	7A00 E3
2G21 B7	FG00 C6
2G22 B9	FG01 C5
2G23 C9	FG02 C5
2G24 C7	FG03 D5
2G25 C7	FG04 D5
2G26 C7	FG05 A7
2G27 D7	FG06 B11
2G28 D9	FG07 B11
2G35 F9	FG08 B11
2G37 E10	FG09 C11
2G38 F8	FG10 C11
2G39 F9	FG11 C11
2G40 F10	FG14 E7
2G41 G8	FG15 F8
2G42 G9	FG16 G7
2G43 G10	FG17 G8
2G44 D4	FG20 E7
2G50 G2	FG21 C5
2G51 G2	FG22 A7
2G52 D9	FG23 D9
2G53 E9	FG24 E9
2G54 D10	FG25 G4
2G55 E10	IG00 A4
3G00 G4	IG01 B4
3G04 A4	IG02 C3
3G07 B4	IG03 D3
3G09 C3	IG04 E3
3G10 C4	IG06 A9
3G11 C4	IG07 A9
3G12 D3	IG08 B9
3G13 D3	IG09 B7
3G14 D3	IG13 D4
3G15 E3	IG23 F9
3G17 D4	IG24 G9
3G20 A10	IG25 F10
3G23 A10	IG26 G10
3G24 B8	

PCB SB SSB 2K10 PEAK CHINA	3139 123 6479	1 2009-12-30

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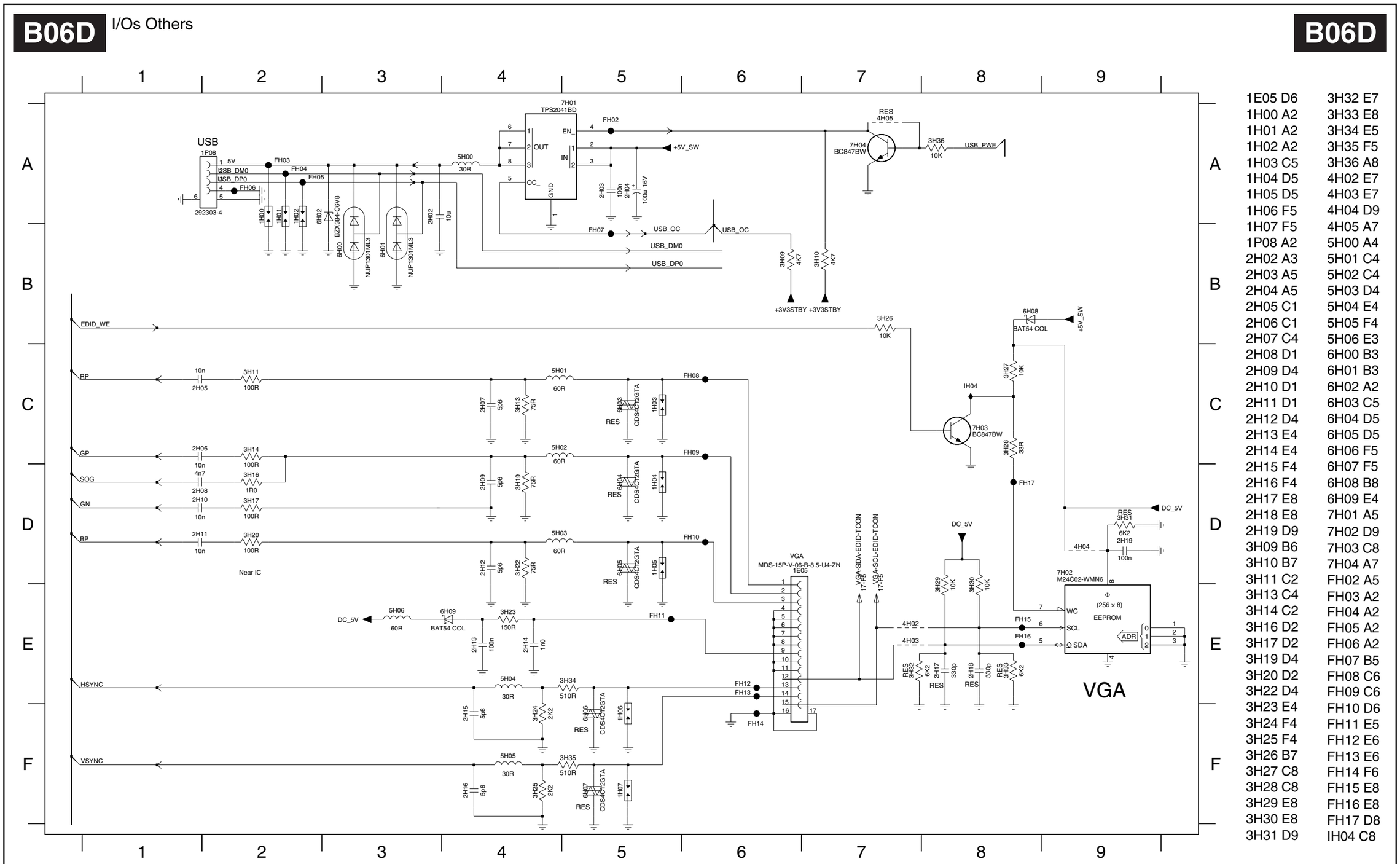
SSB: I/Os Others

B06D I/Os Others **B06D**



1E05 D6	3H32 E7
1H00 A2	3H33 E8
1H01 A2	3H34 E5
1H02 A2	3H35 F5
1H03 C5	3H36 A8
1H04 D5	4H02 E7
1H05 D5	4H03 E7
1H06 F5	4H04 D9
1H07 F5	4H05 A7
1P08 A2	5H00 A4
2H02 A3	5H01 C4
2H03 A5	5H02 C4
2H04 A5	5H03 D4
2H05 C1	5H04 E4
2H06 C1	5H05 F4
2H07 C4	5H06 E3
2H08 D1	6H00 B3
2H09 D4	6H01 B3
2H10 D1	6H02 A2
2H11 D1	6H03 C5
2H12 D4	6H04 D5
2H13 E4	6H05 D5
2H14 E4	6H06 F5
2H15 F4	6H07 F5
2H16 F4	6H08 B8
2H17 E8	6H09 E4
2H18 E8	7H01 A5
2H19 D9	7H02 D9
3H09 B6	7H03 C8
3H10 B7	7H04 A7
3H11 C2	FH02 A5
3H13 C4	FH03 A2
3H14 C2	FH04 A2
3H16 D2	FH05 A2
3H17 D2	FH06 A2
3H19 D4	FH07 B5
3H20 D2	FH08 C6
3H22 D4	FH09 C6
3H23 E4	FH10 D6
3H24 F4	FH11 E5
3H25 F4	FH12 E6
3H26 B7	FH13 E6
3H27 C8	FH14 F6
3H28 C8	FH15 E8
3H29 E8	FH16 E8
3H30 E8	FH17 D8
3H31 D9	IH04 C8

PCB SB SSB 2K10 PEAK CHINA	3139 123 6479	1 2009-12-30

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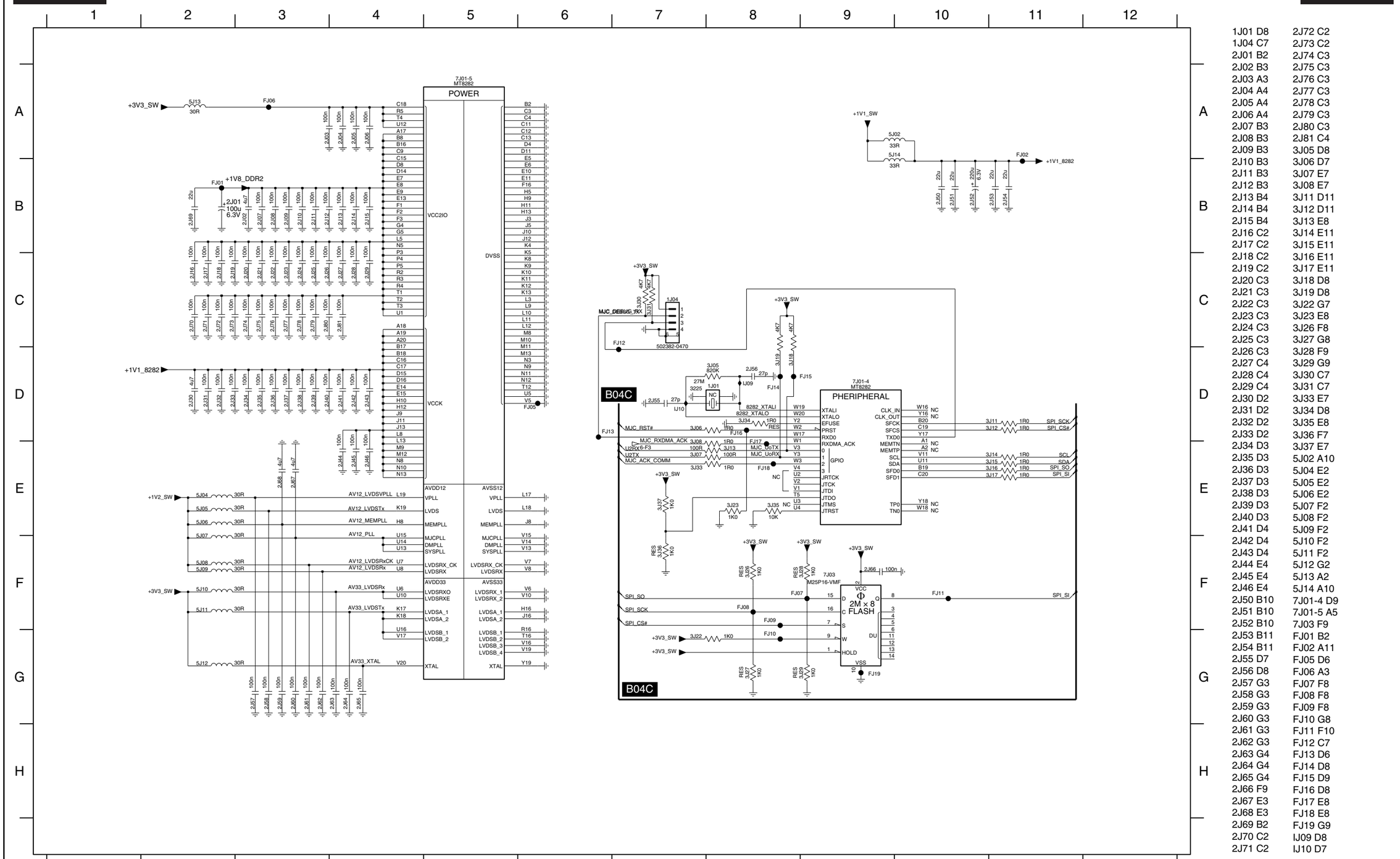
SSB: DC-DC & Power 8282

B07A DC-DC & Power MT8282



1J01 D8	2J72 C2
1J04 C7	2J73 C2
2J01 B2	2J74 C3
2J02 B3	2J75 C3
2J03 A3	2J76 C3
2J04 A4	2J77 C3
2J05 A4	2J78 C3
2J06 A4	2J79 C3
2J07 B3	2J80 C3
2J08 B3	2J81 C4
2J09 B3	3J05 D8
2J10 B3	3J06 D7
2J11 B3	3J07 E7
2J12 B3	3J08 E7
2J13 B4	3J11 D11
2J14 B4	3J12 D11
2J15 B4	3J13 E8
2J16 C2	3J14 E11
2J17 C2	3J15 E11
2J18 C2	3J16 E11
2J19 C2	3J17 E11
2J20 C3	3J18 D8
2J21 C3	3J19 D8
2J22 C3	3J22 G7
2J23 C3	3J23 E8
2J24 C3	3J26 F8
2J25 C3	3J27 G8
2J26 C3	3J28 F9
2J27 C4	3J29 G9
2J28 C4	3J30 C7
2J29 C4	3J31 C7
2J30 D2	3J33 E7
2J31 D2	3J34 D8
2J32 D2	3J35 E8
2J33 D2	3J36 F7
2J34 D3	3J37 E7
2J35 D3	5J02 A10
2J36 D3	5J04 E2
2J37 D3	5J05 E2
2J38 D3	5J06 E2
2J39 D3	5J07 F2
2J40 D3	5J08 F2
2J41 D4	5J09 F2
2J42 D4	5J10 F2
2J43 D4	5J11 F2
2J44 E4	5J12 G2
2J45 E4	5J13 A2
2J46 E4	5J14 A10
2J50 B10	7J01-4 D9
2J51 B10	7J01-5 A5
2J52 B10	7J03 F9
2J53 B11	FJ01 B2
2J54 B11	FJ02 A11
2J55 D7	FJ05 D6
2J56 D8	FJ06 A3
2J57 G3	FJ07 F8
2J58 G3	FJ08 F8
2J59 G3	FJ09 F8
2J60 G3	FJ10 G8
2J61 G3	FJ11 F10
2J62 G3	FJ12 C7
2J63 G4	FJ13 D6
2J64 G4	FJ14 D8
2J65 G4	FJ15 D9
2J66 F9	FJ16 D8
2J67 E3	FJ17 E8
2J68 E3	FJ18 E8
2J69 B2	FJ19 G9
2J70 C2	IJ09 D8
2J71 C2	IJ10 D7

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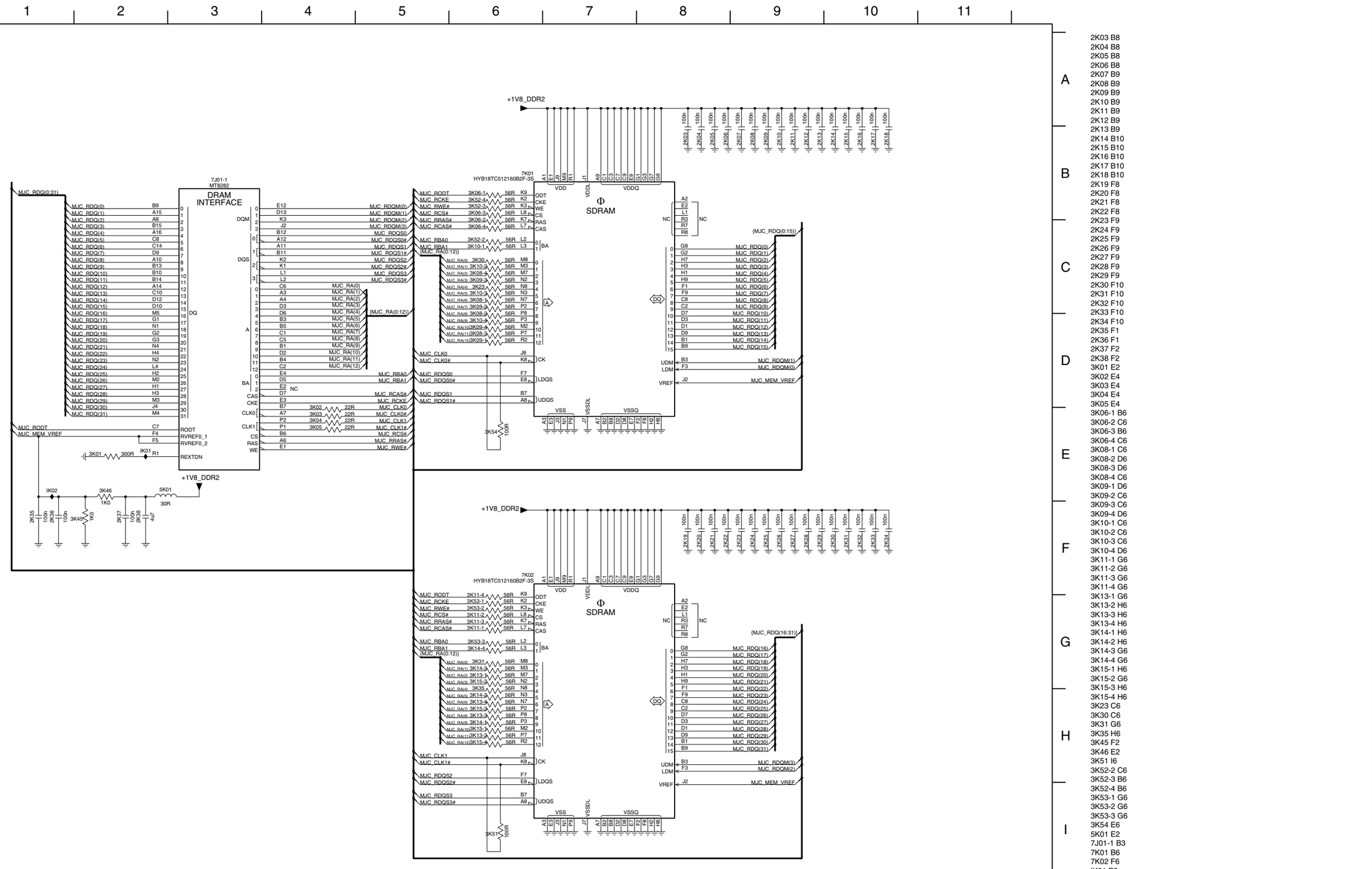
SSB: SDRAM MT8282

B07B SDRAM MT8282

B07B



2K03 B8
2K04 B8
2K05 B8
2K06 B8
2K07 B9
2K08 B9
2K09 B9
2K10 B9
2K11 B9
2K12 B9
2K13 B9
2K14 B10
2K15 B10
2K16 B10
2K17 B10
2K18 B10
2K19 F8
2K20 F8
2K21 F8
2K22 F8
2K23 F9
2K24 F9
2K25 F9
2K26 F9
2K27 F9
2K28 F9
2K29 F9
2K30 F10
2K31 F10
2K32 F10
2K33 F10
2K34 F10
2K35 F1
2K36 F1
2K37 F2
2K38 F2
3K01 E2
3K02 E4
3K03 E4
3K04 E4
3K05 E4
3K06-1 B6
3K06-2 C6
3K06-3 B6
3K06-4 C6
3K08-1 C6
3K08-2 D6
3K08-3 D6
3K08-4 C6
3K09-1 D6
3K09-2 C6
3K09-3 C6
3K09-4 D6
3K10-1 C6
3K10-2 C6
3K10-3 C6
3K10-4 D6
3K11-1 G6
3K11-2 G6
3K11-3 G6
3K11-4 G6
3K13-1 G6
3K13-2 H6
3K13-3 H6
3K13-4 H6
3K14-1 H6
3K14-2 H6
3K14-3 G6
3K14-4 G6
3K15-1 H6
3K15-2 G6
3K15-3 H6
3K15-4 H6
3K23 C6
3K30 C6
3K31 G6
3K35 H6
3K45 F2
3K46 E2
3K51 I6
3K52-2 C6
3K52-3 B6
3K52-4 B6
3K53-1 G6
3K53-2 G6
3K53-3 G6
3K54 E6
5K01 E2
7J01-1 B3
7K01 B6
7K02 F6
IK01 E2
IK02 E1

PCB SB SSB 2K10 PEAK CHINA	3139 123 6479	1 2009-12-30

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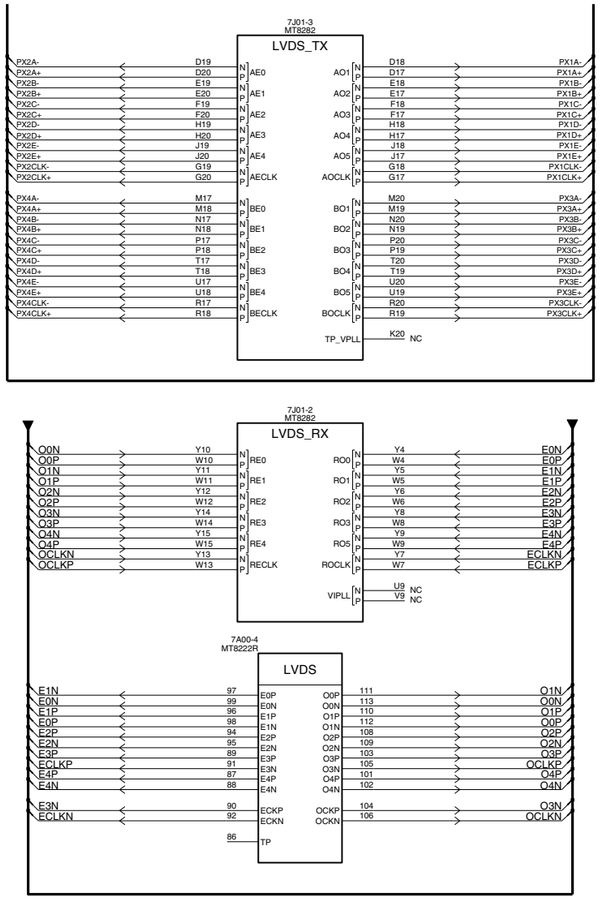
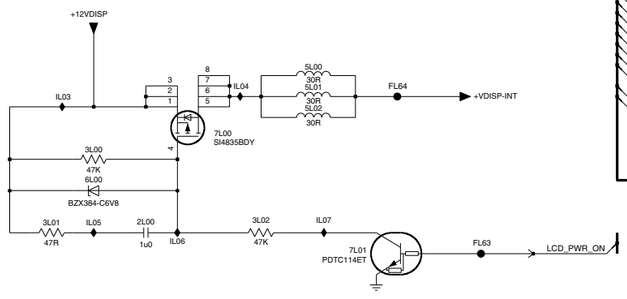
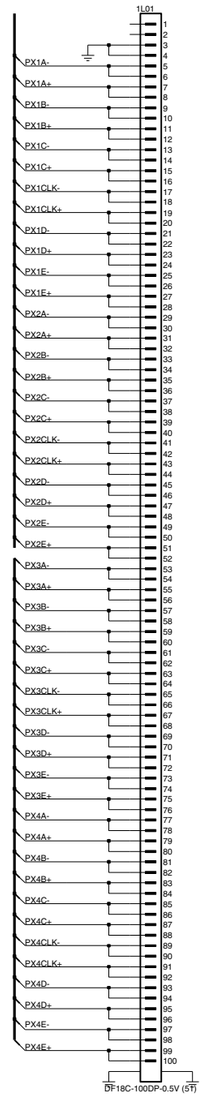
SSB: LVDS MT8282

B07C LVDS MT8282 **B07C**

1L01 A13
2L00 H2
3L00 G2
3L01 H1
3L02 H3
5L00 G3
5L01 G3
5L02 G3
6L00 G2
7A00-4 F7
7J01-2 D7
7J01-3 B7
7L00 G3
7L01 H4
FL63 H4
FL64 G4
IL03 G2
IL04 G3
IL05 H2
IL06 H2
IL07 H3







PCB SB SSB 2K10 PEAK CHINA	3139 123 6479	1 2009-12-30

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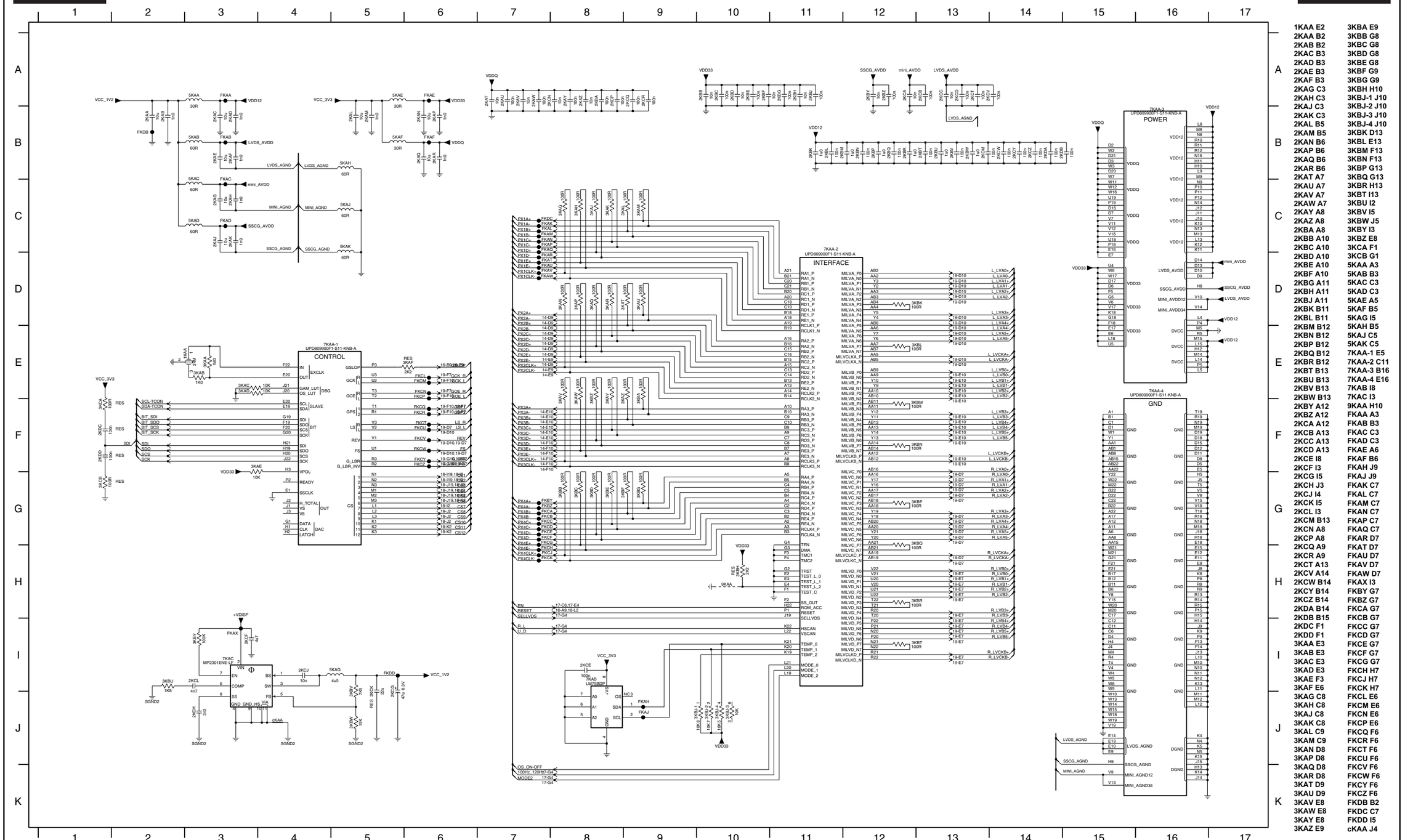
SSB: TCON Control

B08A TCON Control

B08A



1KAA E2	3KBA E9	3KAZ E9	
2KAA B2	3KBB G8		
2KAB B2	3KBC G8		
2KAC B3	3KBD G8		
2KAD B3	3KBE G8		
2KAE B3	3KBF G9		
2KAF B3	3KBG G9		
2KAG C3	3KBH H10		
2KAH C3	3KBJ-1 J10		
2KAJ C3	3KBJ-2 J10		
2KAK C3	3KBJ-3 J10		
2KAL B5	3KBJ-4 J10		
2KAM B5	3KBK D13		
2KAN B6	3KBL E13		
2KAP B6	3KBM F13		
2KAQ B6	3KBN F13		
2KAR B6	3KBP G13		
2KAT A7	3KBQ G13		
2KAU A7	3KBR H13		
2KAV A7	3KBT I13		
2KAW A7	3KBU I2		
2KAY A8	3KBV I5		
2KAZ A8	3KBW J5		
2KBA A8	3KBY I3		
2KBB A10	3KBZ E8		
2KBC A10	3KCA F1		
2KBD A10	3KCB G1		
2KBE A10	5KAA A3		
2KBF A10	5KAB B3		
2KBG A11	5KAC C3		
2KBH A11	5KAD C3		
2KBJ A11	5KAE A5		
2KBK B11	5KAF B5		
2KBL B11	5KAG I5		
2KBM B12	5KAH B5		
2KBN B12	5KAJ C5		
2KBP B12	5KAK C5		
2KBQ B12	7KAA-1 E5		
2KBR B12	7KAA-2 C11		
2KBT B13	7KAA-3 B16		
2KBU B13	7KAA-4 E16		
2KBV B13	7KAB I8		
2KBW B13	7KAC I3		
2KBY A12	9KAA H10		
2KBZ A12	FKAA A3		
2KCA A12	FKAB B3		
2KCB A13	FKAC C3		
2KCC A13	FKAD C3		
2KCD A13	FKAE A6		
2KCE I8	FKAF B6		
2KCF I3	FKAH J9		
2KCG I5	FKAJ J9		
2KCH J3	FKAK C7		
2KCJ I4	FKAL C7		
2KCK I5	FKAM C7		
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2KCM B13	FKAP C7		
2KCN A8	FKAQ C7		
2KCP A8	FKAR D7		
2KCQ A9	FKAT D7		
2KCR A9	FKAU D7		
2KCT A13	FKAV D7		
2KCV A14	FKAW D7		
2KCW B14	FKAX I3		
2KCY B14	FKBY G7		
2KCZ B14	FKBZ G7		
2KDA B14	FKCA G7		
2KDB B15	FKCB G7		
2KDC F1	FKCC G7		
2KDD F1	FKCD G7		
3KAA E3	FKCE G7		
3KAB E3	FKCF G7		
3KAC E3	FKCG G7		
3KAD E3	FKCH H7		
3KAE F3	FKCJ H7		
3KAF E6	FKCK H7		
3KAG C8	FKCL E6		
3KAH C8	FKCM E6		
3KAJ C8	FKCN E6		
3KAK C8	FKCP E6		
3KAL C9	FKCQ F6		
3KAM C9	FKCR F6		
3KAN D8	FKCT F6		
3KAP D8	FKCU F6		
3KAQ D8	FKCV F6		
3KAR D8	FKCW F6		
3KAT D9	FKCY F6		
3KAU D9	FKCZ F6		
3KAV E8	FKDB B2		
3KAW E8	FKDC C7		
3KAY E8	FKDD I5		

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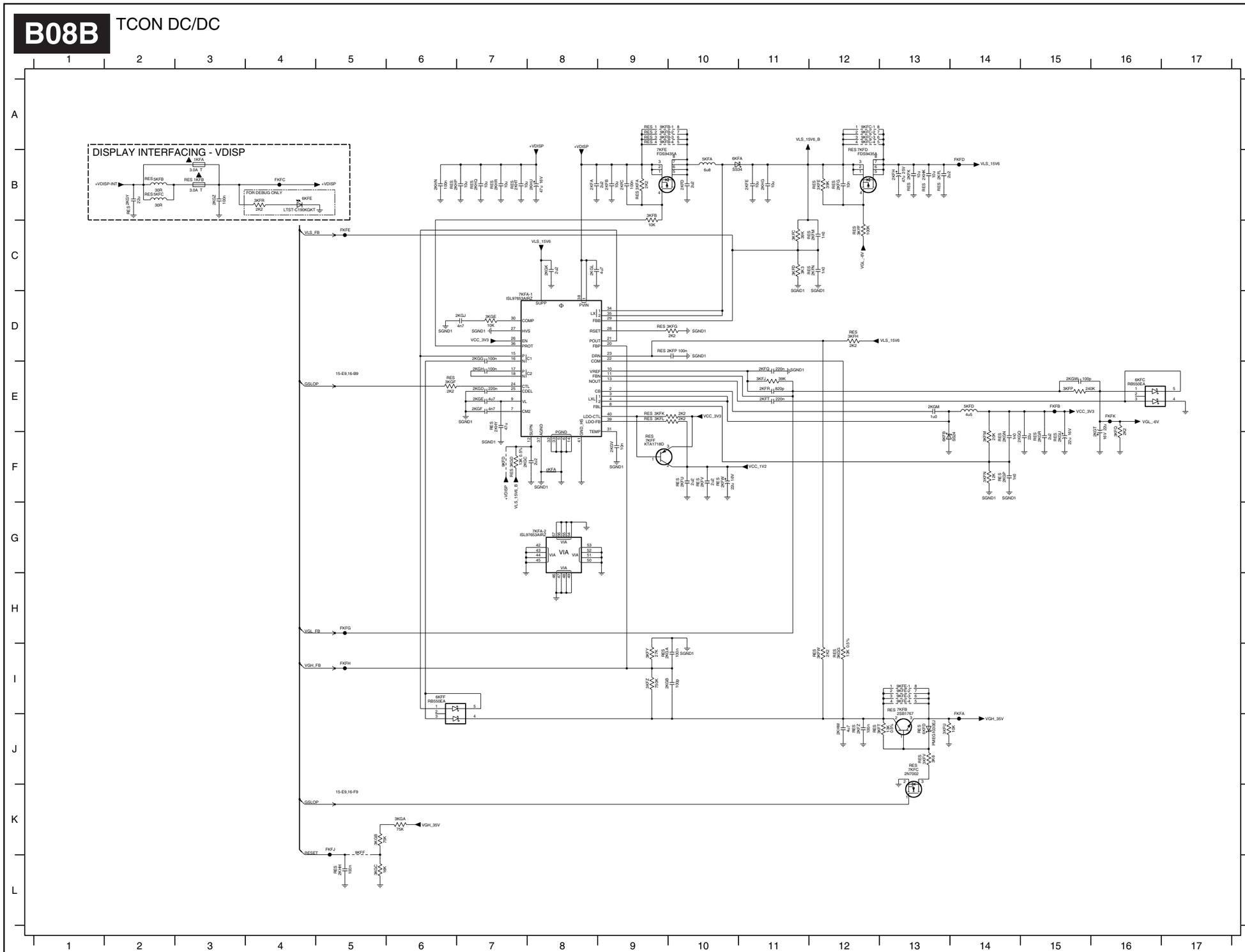
SSB: TCON DC/DC

B08B TCON DC/DC



	1KFA B3	3KFJ E11
	1KFB B3	3KFK E9
	2KFA B8	3KFL E9
	2KFB B9	3KFM F14
A	2KFC B9	3KFN F14
	2KFD B10	3KFP E15
	2KFE B11	3KFQ E16
	2KFG B12	3KFR B4
	2KFH B13	3KFT J13
	2KFK B13	3KFU J13
	2KFL B13	3KFV J13
B	2KFM C12	3KFW I12
	2KFN C12	3KFY I9
	2KFP D10	3KFZ I9
	2KFQ E11	3KGA K6
	2KFR E11	3KGB K5
	2KFT E11	3KGC L5
	2KFU F10	3KGD F7
C	2KFV F10	3KGE D7
	2KFW F10	3KGF E6
	2KFZ J12	3KGG I12
	2KGA I10	5KFA B10
	2KGB I10	5KFB B2
	2KGC F7	5KFC B2
	2KGD E7	5KFD E14
D	2KGE E7	6KFA B10
	2KGF E7	6KFB F13
	2KGG D7	6KFC E16
	2KGH E7	6KFD J13
	2KGJ D7	6KFE B4
	2KGK C8	6KFF I6
	2KGL C8	7KFA-1 D8
E	2KGM E13	7KFA-2 G8
	2KGN F14	7KFB I13
	2KGP F14	7KFC J13
	2KGQ F15	7KFD B12
	2KGR F15	7KFE B9
	2KGT E16	7KFF F9
	2KGU F15	9KFB-1 A9
F	2KGV F9	9KFB-2 A9
	2KGW E15	9KFB-3 A9
	2KGY B2	9KFB-4 A9
	2KGZ B3	9KFC-1 A12
	2KHG B11	9KFC-2 A12
	2KHH L5	9KFC-3 A12
	2KHK B13	9KFC-4 A12
G	2KHN B6	9KFD F7
	2KHP B7	9KFE-1 I13
	2KHQ B7	9KFE-2 I13
	2KHR B7	9KFE-3 I13
	2KHT B7	9KFE-4 I13
	2KHU B8	9KFF K5
	2KHW J12	FKFA J14
H	2KHY E7	FKFB E15
	3KFA B9	FKFC B4
	3KFB B9	FKFD B14
	3KFC C11	FKFE C5
	3KFD C11	FKFG H5
	3KFE B12	FKFH I5
	3KFF C12	FKFJ K5
I	3KFG D10	FKFK E16
	3KFH D12	cKFA F8

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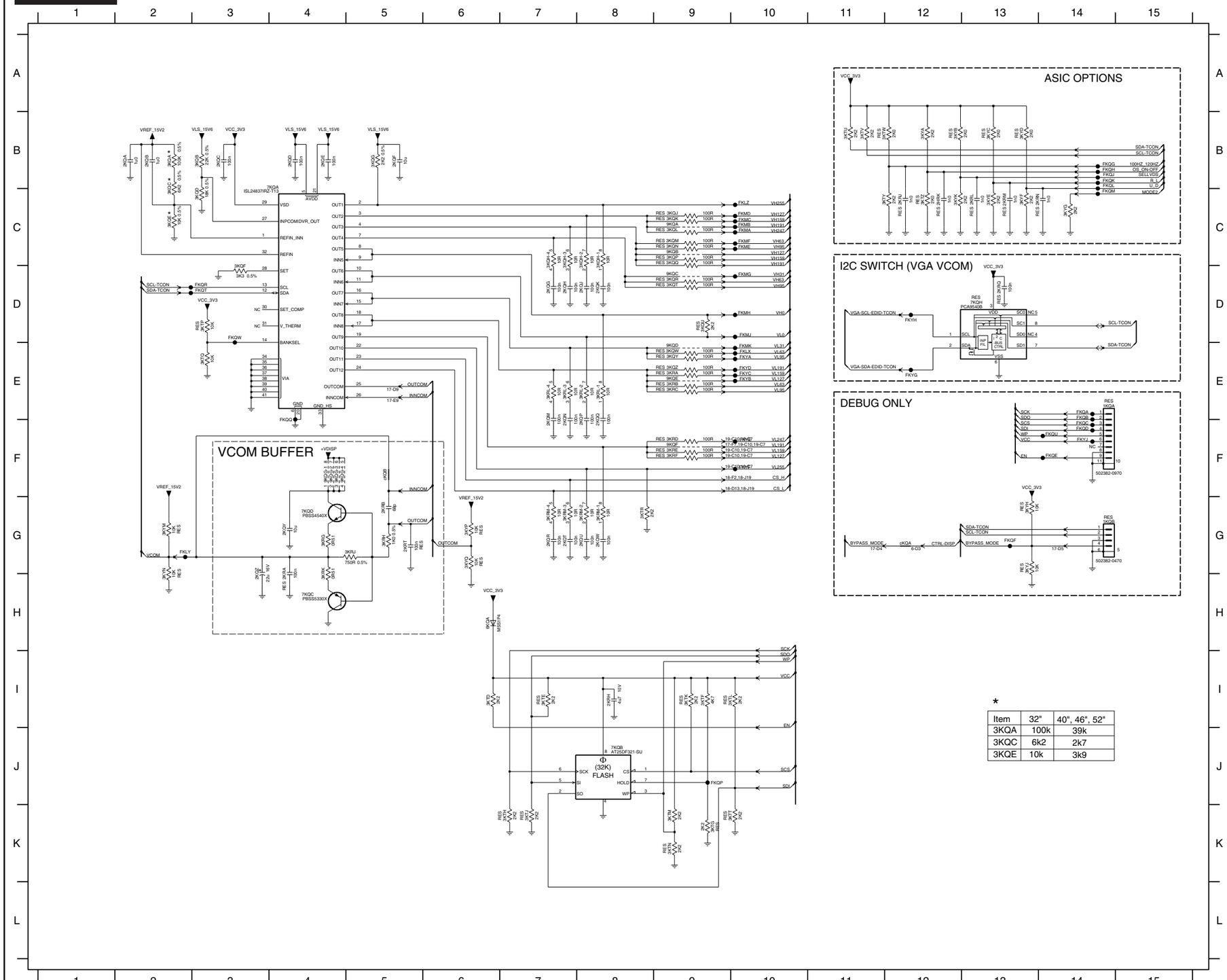
SSB: P Gamma & VCOM & Flash

B08C P Gamma & VCOM & Flash

B08C



*

Item	32"	40", 46", 52"
3KQA	100k	39k
3KQC	6k2	2k7
3KQE	10k	3k9

1KQA E14	3KTN K9
1KQB G14	3KTP D3
2HRK C12	3KTQ E3
2KQA B2	3KTR G8
2KQB B2	3KTT K10
2KQC B3	3KTU B11
2KQD B4	3KTV B11
2KQE B4	3KTW B12
2KQF B5	3KTY C12
2KQG D7	3KTZ C12
2KQH D7	3KYA B12
2KQJ D8	3KYB B12
2KQK D8	3KYC B13
2KQM E7	3KYD B13
2KQN E7	3KYE C13
2KQP E8	3KYF C13
2KQQ E8	3KYG C14
2KQR G7	3KYH G13
2KQT G7	3KYJ G13
2KQU G8	3KYK C12
2KQW G8	3KYM G2
2KQY G4	3KYN G2
2KQZ G3	3KYP G6
2KRA G4	3KYQ G6
2KRB G5	6KQA H6
2KRH I8	7KQA B4
2KRJ C12	7KQB J8
2KRL C13	7KQC H4
2KRM C13	7KQD G4
2KRN C14	7KQH D13
2KRQ D13	9KQA C9
2KRT G5	9KQB C9
3KQA B2	9KQC D9
3KQB B3	9KQD E9
3KQC B2	9KQE E9
3KQD C3	9KQF F9
3KQE C2	9KQG-1 F4
3KQF D3	9KQG-2 F4
3KQG B5	9KQG-3 F4
3KQH-1 C8	9KQG-4 F4
3KQH-2 C8	FKLX E10
3KQH-3 C7	FKLY G2
3KQH-4 C7	FKLZ C10
3KQJ C9	FKMA C10
3KQK C9	FKMB C10
3KQL C9	FKMC C10
3KQM C9	FKMD C10
3KQN C9	FKME C10
3KQP C9	FKMF C10
3KQQ C9	FKMG D10
3KQR D9	FKMH D10
3KQT D9	FKMJ D10
3KQU D9	FKMK E10
3KQW E9	FKQA E14
3KQY E9	FKQB E14
3KQZ E9	FKQC F14
3KRA E9	FKQD F14
3KRB E9	FKQE F14
3KRC E9	FKQF G13
3KRD F9	FKQG B14
3KRE F9	FKQH B14
3KRF F9	FKQJ B14
3KRG G4	FKQK B14
3KRH G5	FKQL B14
3KRJ G5	FKQM C14
3KRK G4	FKQP J9
3KRL-1 E8	FKQQ F4
3KRL-2 E8	FKQR D3
3KRL-3 E7	FKQT D3
3KRL-4 E7	FKQU F14
3KRM-1 G8	FKQW D3
3KRM-2 G8	FKYA E10
3KRM-3 G7	FKYB E10
3KRM-4 G7	FKYC E10
3KTD I6	FKYD E10
3KTE I7	FKYE F10
3KTF I9	FKYF F10
3KTG K9	FKYG E12
3KTH K7	FKYH D12
3KTJ K7	FKYJ F14
3KTK I9	cKQA G12
3KTL I10	cKQB F5
3KTM K9	

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SSB: MPD

B08D MPD

B08D

*		
Item	40	46/52
2KUA	-	4u7
2KUB	-	100n
2KUC	-	RES
2KUD	-	RES
2KUE	-	RES
2KUF	-	22u
2KUG	-	RES
2KUH	-	100n
2KUW	-	470n
2KUY	-	100n
2KUZ	-	RES
2KWA	-	22u
2KWB	-	RES
3KUA	-	91k
3KUB	-	56k
3KUC	-	1k
3KUD	-	39k
3KUE	-	RES
3KUM	-	RES
7KUA	-	MAX9650ATA
7KUD	-	MAX9650ATA
7KUE	MAX17079GTL	BD8142MUV

FOR 40" / 46" /52"

FOR 32"

2KUA C2
2KUB C2
2KUC C3
2KUD D5
2KUE C5
2KUF C5
2KUG C6
2KUH C6
2KUJ F5
2KUK E5
2KUL E6
2KUM E6
2KUN F6
2KUP E3
2KUQ C7
2KUR C8
2KUT C8
2KUU D9
2KUV B6
2KUW E10
2KUY E7
2KUZ E8
2KWA E8
2KWB F9
2KWC F7
2KWD F14
2KWE F15
2KWF F17
2KWG H15
2KWH H15
2KWJ K9
2KWK C10
2KWL K9
2KWM K9
2KWN K10
2KWP K10
2KWQ K10
2KWR K10
2KWT K11
2KWU K11
2KWW K11
2KWY K11
2KWZ K12
3KUA C3
3KUB C3
3KUC D3
3KUD D3
3KUE C5
3KUF E3
3KUG E3
3KUH E5
3KUJ C11
3KUK C11
3KUL C9
3KUM E9
3KUN-1 J10
3KUN-2 J9
3KUN-3 J9
3KUN-4 J9
3KUP-1 J11
3KUP-2 J10
3KUP-3 J10
3KUP-4 J10
3KUQ-1 J12
3KUQ-2 J11
3KUQ-3 J11
3KUQ-4 J11
3KUR F15
3KUT F15
3KUU E3
3KUW F17
3KUY F16
3KUZ F17
3KVA C10
7KUA-1 C4
7KUA-2 D4
7KUB-1 E4
7KUB-2 F4
7KUC-1 C10
7KUC-2 D10
7KUD-1 E10
7KUD-2 F10
7KUE G6
7KUF G14
7KUG F16
7KUH F14
FKUA G12
FKUB G12
FKUC G12
FKUD H12
FKUE H12
FKUF H12
FKUG H12
FKUH I12
FKUK I12
FKUL I12
FKUM J12
FKUN J12

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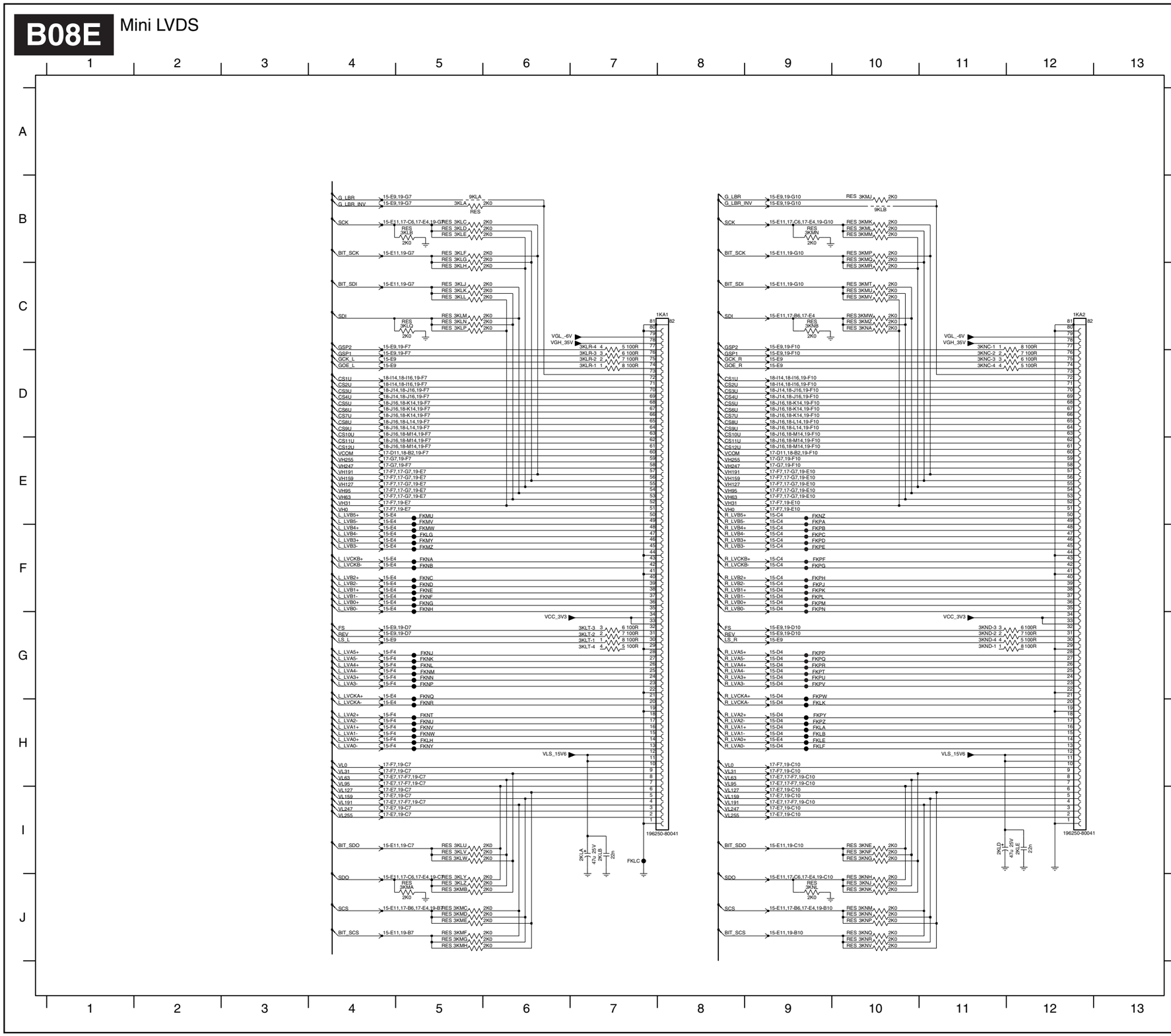
SSB: Mini LVDS

B08E Mini LVDS



1KA1 C8	3KNJ J10
1KA2 C12	3KNK J10
2KLA I7	3KNL J9
2KLB I7	3KNM J10
2KLD I11	3KNN J10
2KLE I12	3KNP J10
3KLA B5	3KNQ J10
3KLB B5	3KNR J10
3KLC B5	3KNV J10
3KLD B5	9KLA B5
3KLE B5	9KLB B10
3KLF B5	FKLA H9
3KLG B5	FKLB H9
3KLH C5	FKLC I7
3KLJ C5	FKLE H9
3KLK C5	FKLF H9
3KLL C5	FKLG F5
3KLM C5	FKLH H5
3KLN C5	FKLK H9
3KLP C5	FKMU E5
3KLQ C5	FKMV E5
3KLR-1 D7	FKMW F5
3KLR-2 D7	FKMY F5
3KLR-3 D7	FKMZ F5
3KLR-4 C7	FKNA F5
3KLT-1 G7	FKNB F5
3KLT-2 G7	FKNC F5
3KLT-3 G7	FKND F5
3KLT-4 G7	FKNE F5
3KLU I5	FKNF F5
3KLV I5	FKNG F5
3KLW I5	FKNH F5
3KLY J5	FKNJ G5
3KLZ J5	FKNK G5
3KMA J5	FKNL G5
3KMB J5	FKNM G5
3KMC J5	FKNN G5
3KMD J5	FKNP G5
3KME J5	FKNQ G5
3KMF J5	FKNR H5
3KMG J5	FKNT H5
3KMH J5	FKNU H5
3KMJ B10	FKNV H5
3KMK B10	FKNW H5
3KML B10	FKNY H5
3KMM B10	FKNZ E9
3KMN B9	FKPA E9
3KMP B10	FKPB F9
3KMQ B10	FKPC F9
3KMR C10	FKPD F9
3KMT C10	FKPE F9
3KMU C10	FKPF F9
3KMV C10	FKPG F9
3KMW C10	FKPH F9
3KMZ C10	FKPJ F9
3KNA C10	FKPK F9
3KNB C9	FKPL F9
3KNC-1 C11	FKPM F9
3KNC-2 D11	FKPN F9
3KNC-3 D11	FKPP G9
3KNC-4 D11	FKPQ G9
3KND-1 G11	FKPR G9
3KND-2 G11	FKPT G9
3KND-3 G11	FKPU G9
3KND-4 G11	FKPV G9
3KNE I10	FKPW G9
3KNF I10	FKPY H9
3KNG I10	FKPZ H9
3KNH J10	

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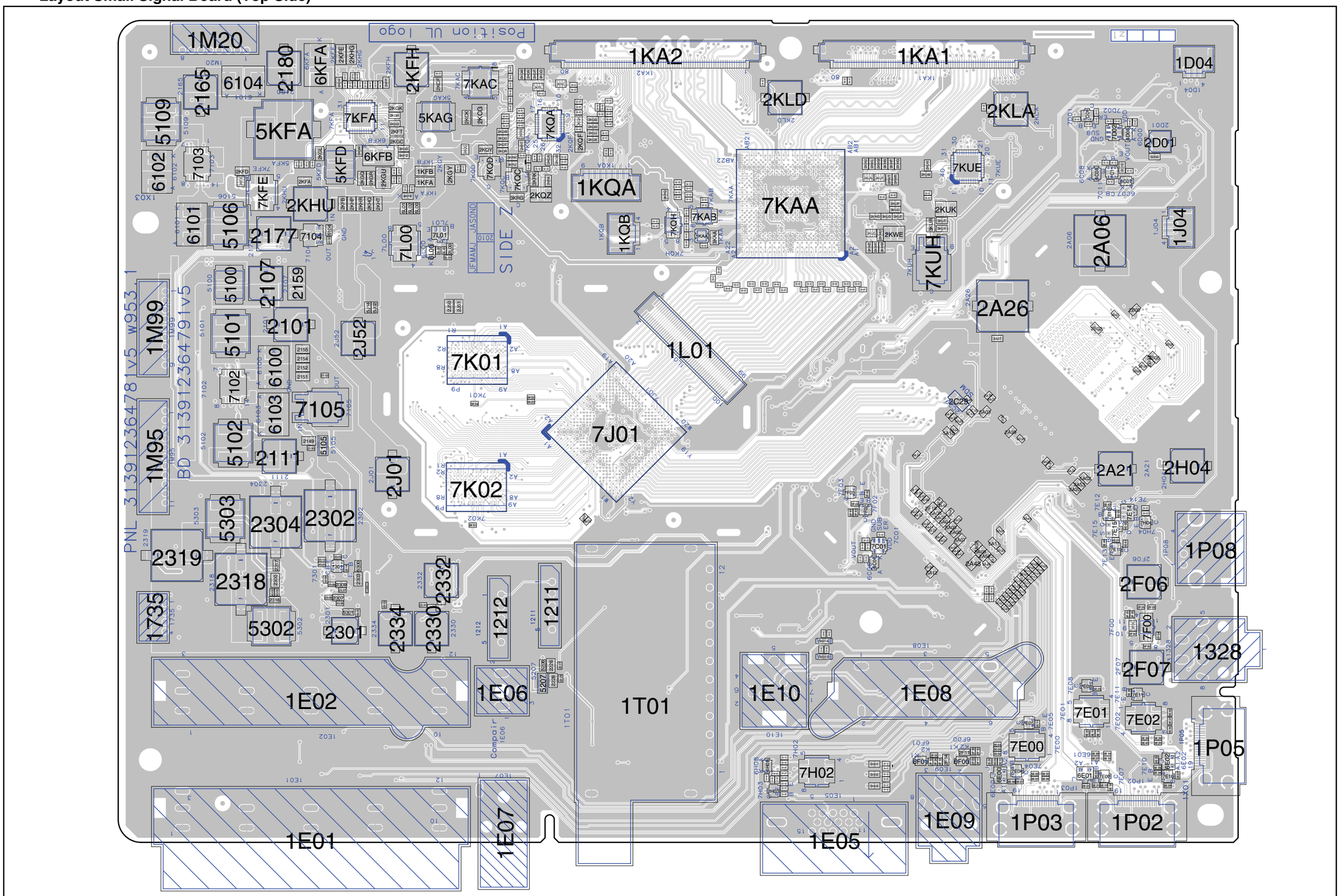
Layout Small Signal Board (Top Side)



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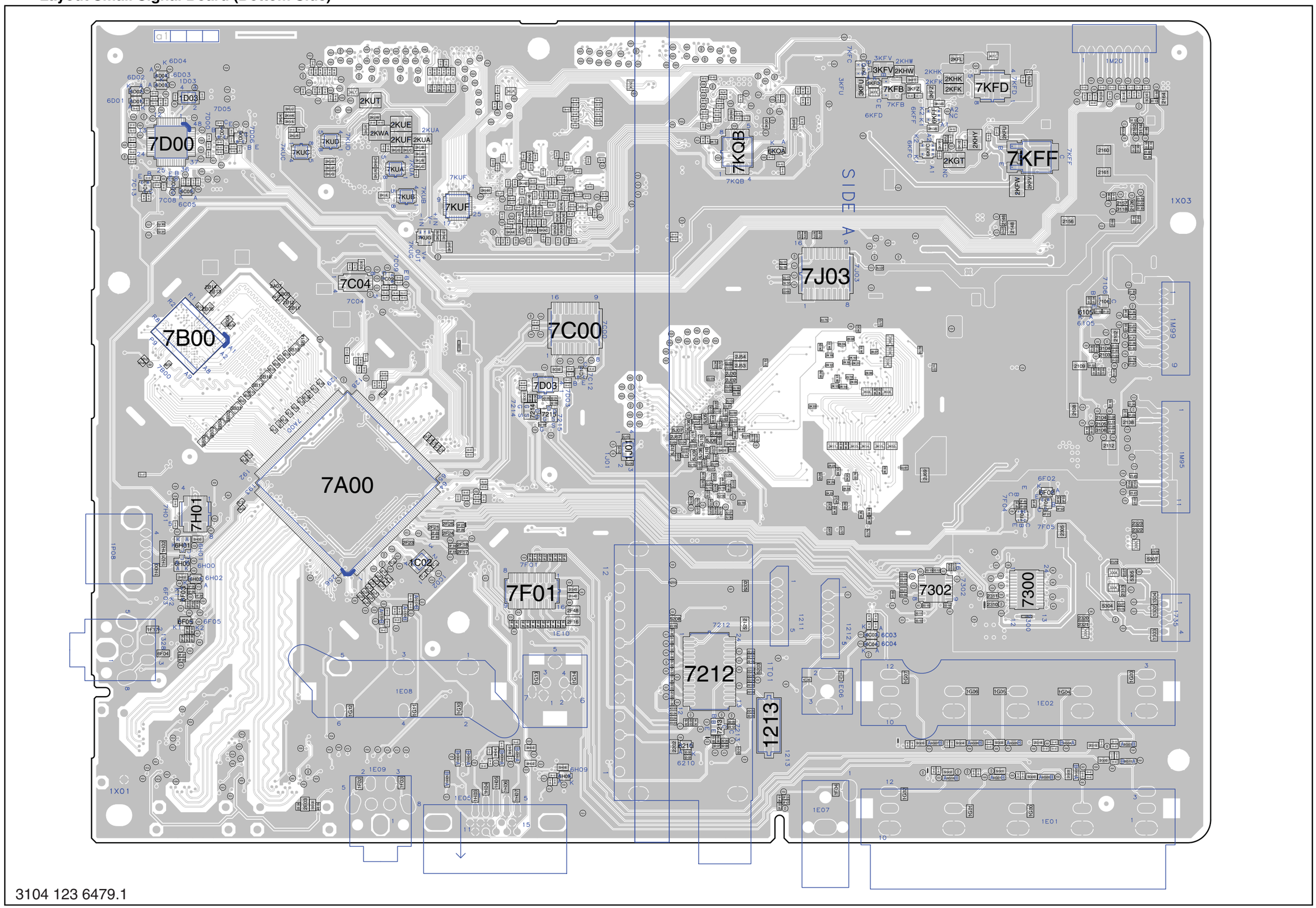
Layout Small Signal Board (Bottom Side)



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SSB: SRP List Explanation

Example

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

1.1. Introduction

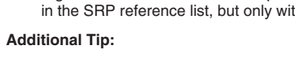
SRP (Service Reference Protocol) is a software tool that creates a list with all references to signal lines. The list contains references to the signals within all schematics of a PWB. It replaces the text references currently printed next to the signal names in the schematics. These printed references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

1.2. Non-SRP Schematics

There are several different signals available in a schematic:

1.2.1. Power Supply Lines

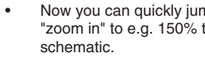
All power supply lines are available in the supply line overview (see chapter 6). In the schematics (see chapter 7) is not indicated where supplies are coming from or going to.
It is however indicated if a supply is incoming (created elsewhere), or outgoing (created or adapted in the current schematic).



Outgoing Incoming

1.2.2. Normal Signals

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



1.2.3. Grounds

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

1.3. SRP Schematics

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

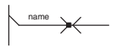
Power supply line.

Stand alone signal or switching line (used as less as possible).

Signal line into a wire tree.

Switching line into a wire tree.

Bi-directional line (e.g. SDA) into a wire tree.



Signal line into a wire tree, its direction depends on the circuit (e.g. ingoing for PDP, outgoing for LCD sets).

Remarks:

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

Additional Tip:

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

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

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

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Personal Notes:

SSB: SRP List

Netname	Diagram
+12VDISP	B02 (1 ×)
+12VDISP	B06B (1 ×)
+12VS	B02 (3 ×)
+12VS	B04B (2 ×)
+12VS	B06A (1 ×)
+12VS	B07A (2 ×)
+12VS	B08B (1 ×)
+12VS_1	B02 (2 ×)
+1V0_SW	B02 (1 ×)
+1V0_SW	B04C (1 ×)
+1V2_SW	B02 (1 ×)
+1V2_SW	B04A (2 ×)
+1V2_SW	B04C (2 ×)
+1V8_SW	B02 (1 ×)
+1V8_SW	B04C (1 ×)
+1V8_SW	B05 (5 ×)
+24VAUDIO	B02 (1 ×)
+24VAUDIO	B04B (2 ×)
+2V5_SW	B04A (3 ×)
+3V3_SW	B02 (1 ×)
+3V3_SW	B04A (5 ×)
+3V3_SW	B04C (3 ×)
+3V3_SW	B06A (25 ×)
+3V3_SW	B06D (2 ×)
+3V3_SW	B07A (2 ×)
+3V3STBY	B02 (1 ×)
+3V3STBY	B04B (3 ×)
+3V3STBY	B04C (2 ×)
+3V3STBY	B06A (10 ×)
+3V3STBY	B06B (1 ×)
+3V3STBY	B06C (2 ×)
+3V3STBY	B08B (1 ×)
+5V	B06A (1 ×)
+5V_SW	B02 (1 ×)
+5V_SW	B03 (1 ×)
+5V_SW	B04A (1 ×)
+5V_SW	B04B (1 ×)
+5V_SW	B06A (6 ×)
+5V_SW	B06B (1 ×)
+5V_SW	B06C (2 ×)
+5V_SW	B07C (1 ×)
+5V_SW	B08A (1 ×)
+5V_SW	B08B (1 ×)
+5V5_TUN	B02 (1 ×)
+5V5_TUN	B03 (1 ×)
+5VIF	B03 (4 ×)
+5VS	B03 (2 ×)
+5VTUN_DIGITAL	B03 (2 ×)
+VDISP	B08D (4 ×)
+VDISP	B08E (1 ×)
+VDISP-INT	B06B (2 ×)
+VDISP-INT	B08D (1 ×)
50Hz_60Hz	B08C (1 ×)
50Hz_60Hz	B08E (1 ×)
5V	B07C (1 ×)
A_STBY	B04B (1 ×)
AGND	B03 (46 ×)
AGND	B04A (17 ×)
AIN0_L	B07A (1 ×)
AIN0_L-AV1	B07A (1 ×)
AIN0_L-AV1	B07B (1 ×)
AIN0_R	B07A (1 ×)
AIN0_R-AV1	B07A (1 ×)
AIN0_R-AV1	B07B (1 ×)
AIN1_L	B07A (1 ×)
AIN1_L-AV2	B07A (1 ×)
AIN1_L-AV2	B07B (1 ×)
AIN1_R	B07A (1 ×)
AIN1_R-AV2	B07A (1 ×)
AIN1_R-AV2	B07B (1 ×)
AOUTL	B04B (2 ×)
AOUTL	B07A (1 ×)
AOUTR	B04B (2 ×)
AOUTR	B07A (1 ×)
ASIC_CS1	B08C (1 ×)
ASIC_CS11	B08C (1 ×)
ASIC_CS3	B08C (1 ×)
ASIC_CS5	B08C (1 ×)
ASIC_CS7	B08C (1 ×)
ASIC_CS9	B08C (1 ×)
ASPDIF_OUT	B07A (1 ×)
BACKLIGHT-BOOST	B02 (1 ×)
BACKLIGHT-BOOST	B06A (1 ×)
BACKLIGHT-PWM	B02 (1 ×)
BACKLIGHT-PWM	B06A (2 ×)
BP	B07A (1 ×)
BP	B08A (1 ×)
BYPASS_MODE	B06A (1 ×)
BYPASS_MODE	B08E (1 ×)
CS_L	B08E (1 ×)
CVBS_AV3	B07A (1 ×)
CVBS_AV3	B07B (1 ×)
CVBS_RF	B03 (1 ×)
CVBS_RF	B07A (1 ×)
DC_5V	B08A (4 ×)
DC_PROT	B04B (1 ×)
DC_PROT	B06A (1 ×)
DDC_RESET	B06A (1 ×)
DDC_RESET	B06C (1 ×)
DDR2VDD	B08C (4 ×)
DGND	B04A (32 ×)
DIF_N	B03 (1 ×)
DIF_N	B04A (1 ×)
DIF_P	B03 (1 ×)
DIF_P	B04A (1 ×)
DVI_AUL_IN	B07A (1 ×)
DVI_AUR_IN	B07A (1 ×)
EDID_WC	B06A (1 ×)
EDID_WC	B06C (1 ×)
EDID_WC	B08A (1 ×)
FE_SCL	B03 (1 ×)
FE_SCL	B04A (1 ×)
FE_SDA	B03 (1 ×)
FE_SDA	B04A (1 ×)
GCK	B08C (1 ×)
GN	B07A (1 ×)
GN	B08A (1 ×)
GND_CVBS	B07A (1 ×)
GND_CVBS	B07B (1 ×)
GND-AUDIO	B02 (4 ×)
GND-AUDIO	B04B (13 ×)
GOE	B08C (1 ×)
GP	B07A (1 ×)
GP	B08A (1 ×)
GSLOP	B08C (1 ×)
GSLOP	B08D (2 ×)
GSP1	B08C (1 ×)
GSP2	B08C (1 ×)
HDMI_CEC	B06A (1 ×)
HDMI_CEC	B06C (1 ×)
HDMI_PLUGPWR1	B06C (4 ×)
HDMI_PLUGPWR2	B06C (4 ×)
HP_DET	B06A (1 ×)
HP_DET	B06D (1 ×)
HP_DETECT	B06A (1 ×)
HP_LOUT	B04B (1 ×)
HP_LOUT	B06D (1 ×)
HP_ROUT	B04B (1 ×)
HP_ROUT	B06D (1 ×)
HPOUTL	B06D (1 ×)
HPOUTL	B07A (1 ×)
HPOUTR	B06D (1 ×)
HPOUTR	B07A (1 ×)
HSYNC	B07A (1 ×)
HSYNC	B08A (1 ×)
IF_AGC	B03 (1 ×)
IF_AGC	B04A (1 ×)
IF_AGC	B06A (1 ×)
IF_ATV	B03 (2 ×)
INNCOM	B08E (2 ×)
JTCK	B06A (2 ×)
JTDI	B06A (2 ×)
JTDO	B06A (2 ×)
JTMS	B06A (2 ×)
JTRST	B06A (2 ×)
KEYBOARD	B06A (2 ×)
LAMP-ON	B02 (1 ×)
LAMP-ON	B06A (1 ×)
LCD-PWR-ONn	B06A (1 ×)
LCD-PWR-ONn	B06B (1 ×)
LED-1	B06A (2 ×)
LED-2	B06A (1 ×)
LEFT_SPEAKER	B04B (2 ×)
LIGHT-SENSOR	B06A (2 ×)
LS	B08C (1 ×)
MUTE	B04B (1 ×)
MUTE	B06A (1 ×)
NAND_PALE	B06A (1 ×)
NAND_PARB	B06A (1 ×)
NAND_PCLE	B06A (1 ×)
NAND_PDD(0)	B06A (1 ×)
NAND_PDD(1)	B06A (1 ×)
NAND_PDD(2)	B06A (1 ×)
NAND_PDD(3)	B06A (1 ×)
NAND_PDD(4)	B06A (1 ×)
NAND_PDD(5)	B06A (1 ×)
NAND_PDD(6)	B06A (1 ×)
NAND_PDD(7)	B06A (1 ×)
NAND_POCE	B06A (1 ×)
NAND_POOE	B06A (1 ×)
NAND_POWE	B06A (1 ×)
OUTCOM	B08E (2 ×)
PB0P	B07A (1 ×)
PBS_HPL	B06D (1 ×)
PBS_HPL	B08B (1 ×)
PBS_HPR	B06D (1 ×)
PBS_HPR	B08B (1 ×)
PBS_SPI_CLK	B06A (1 ×)
PBS_SPI_CLK	B08B (1 ×)
PBS_SPI_DI	B06A (1 ×)
PBS_SPI_DI	B08B (1 ×)
POWER_DOWN	B06A (1 ×)
POWER-OK	B02 (1 ×)
POWER-OK	B06A (1 ×)
PR0P	B07A (1 ×)
PREAMPL	B07A (1 ×)
PREAMPR	B07A (1 ×)
PWR5V_1	B06C (1 ×)
PWR5V_2	B06C (1 ×)
PX1A-	B06B (1 ×)
PX1A-	B06C (1 ×)
PX1A-	B08C (1 ×)
PX1A+	B06B (1 ×)
PX1A+	B06C (1 ×)
PX1A+	B08C (1 ×)
PX1B-	B06B (1 ×)
PX1B-	B06C (1 ×)
PX1B-	B08C (1 ×)
PX1B+	B06B (1 ×)
PX1B+	B06C (1 ×)
PX1B+	B08C (1 ×)
PX1C-	B06B (1 ×)
PX1C-	B06C (1 ×)
PX1C-	B08C (1 ×)
PX1C+	B06B (1 ×)
PX1C+	B06C (1 ×)
PX1C+	B08C (1 ×)
PX1CLK-	B06B (1 ×)
PX1CLK-	B06C (1 ×)
PX1CLK-	B08C (1 ×)
PX1CLK+	B06B (1 ×)
PX1CLK+	B06C (1 ×)
PX1CLK+	B08C (1 ×)
PX1D-	B06B (1 ×)
PX1D-	B06C (2 ×)
PX1D-	B08C (1 ×)
PX1D+	B06B (1 ×)
PX1D+	B06C (1 ×)
PX1D+	B08C (1 ×)
PX1E-	B06B (1 ×)
PX1E-	B06C (1 ×)
PX1E-	B08C (1 ×)
PX1E+	B06B (1 ×)
PX1E+	B06C (1 ×)
PX1E+	B08C (1 ×)
PX2A-	B06B (1 ×)
PX2A-	B06C (1 ×)
PX2A-	B08C (1 ×)
PX2A+	B06B (1 ×)
PX2A+	B06C (1 ×)
PX2A+	B08C (1 ×)
PX2B-	B06B (1 ×)
PX2B-	B06C (1 ×)
PX2B-	B08C (1 ×)
PX2B+	B06B (1 ×)
PX2B+	B06C (1 ×)
PX2B+	B08C (1 ×)
PX2C-	B06B (1 ×)
PX2C-	B06C (1 ×)
PX2C-	B08C (1 ×)
PX2C+	B06B (1 ×)
PX2C+	B06C (1 ×)
PX2C+	B08C (1 ×)
PX2CLK-	B06B (1 ×)
PX2CLK-	B06C (1 ×)
PX2CLK-	B08C (1 ×)
PX2CLK+	B06B (1 ×)
PX2CLK+	B06C (1 ×)
PX2CLK+	B08C (1 ×)
PX2D-	B06B (1 ×)
PX2D-	B06C (2 ×)
PX2D-	B08C (1 ×)
PX2D+	B06B (1 ×)
PX2D+	B06C (1 ×)
PX2D+	B08C (1 ×)
PX2E-	B06B (1 ×)
PX2E-	B06C (1 ×)
PX2E-	B08C (1 ×)
PX2E+	B06B (1 ×)
PX2E+	B06C (1 ×)
PX2E+	B08C (1 ×)
R_L	B08C (1 ×)
R_L	B08E (1 ×)
RC	B06A (1 ×)
RC1	B06A (1 ×)
RC1	B06D (1 ×)
RC1	B08B (1 ×)
RC2	B06A (1 ×)
RC2	B06D (1 ×)
RC2	B08B (1 ×)
RESET_DEMOD	B04A (1 ×)
RESET_DEMOD	B06A (1 ×)
REV	B08C (1 ×)
RF_AGC	B03 (2 ×)
RF_AGC	B06A (1 ×)
RF_AGC_SW	B03 (1 ×)
RF_AGC_SW	B06A (1 ×)
RIGHT_SPEAKER	B04B (2 ×)
ROM_SCL	B08C (1 ×)
ROM_SCL	B08E (1 ×)
ROM_SDA	B08C (1 ×)
ROM_SDA	B08E (1 ×)
RP	B07A (1 ×)
RP	B08A (1 ×)
SAV_L_IN	B07A (1 ×)
SAV_L_IN	B07B (1 ×)
SAV_R_IN	B07A (1 ×)
SAV_R_IN	B07B (1 ×)
SCL_VGA	B08A (1 ×)
SCL_VGA	B08E (1 ×)
SCL-DISP	B06A (1 ×)
SCL-LCD	B06A (1 ×)
SCL-LCD	B08B (1 ×)
SCL-MAIN	B06A (4 ×)
SCL-MAIN1	B06A (1 ×)
SCL-MAIN1	B08B (1 ×)
SCL-TCON	B08C (1 ×)
SCL-TCON	B08E (4 ×)
SDA_VGA	B08A (1 ×)
SDA_VGA	B08E (1 ×)
SDA-DISP	B06A (1 ×)
SDA-LCD	B06A (1 ×)
SDA-LCD	B08B (1 ×)
SDA-MAIN	B06A (4 ×)
SDA-MAIN1	B06A (1 ×)
SDA-MAIN1	B08B (1 ×)
SDA-TCON	B08C (1 ×)
SDA-TCON	B08E (4 ×)
SELLVDS	B08C (1 ×)
SELLVDS	B08E (1 ×)
SENSE+1V0_MT5363	B02 (1 ×)
SENSE+1V0_MT5363	B04C (1 ×)
SGND1	B08D (15 ×)
SIF_OUT	B03 (1 ×)
SIF_OUT	B07A (1 ×)
SIF_OUT_GND	B03 (1 ×)
SIF_OUT_GND	B07A (1 ×)
SOG	B07A (1 ×)
SOG	B08A (1 ×)
SOY0	B07A (1 ×)
SPB0P	B07A (1 ×)
SPB0P	B07B (1 ×)
SPB1P	B07A (1 ×)
SPB1P	B07B (1 ×)
SPR0P	B07A (1 ×)
SPR0P	B07B (1 ×)
SPR1P	B07A (1 ×)
SPR1P	B07B (1 ×)
STANDBY	B02 (1 ×)
STANDBY	B06A (1 ×)
STANDBYn	B06A (1 ×)
SW_MUTE	B04B (1 ×)
SW_MUTE	B06A (1 ×)
SY0N	B07A (1 ×)
SY0N	B07B (1 ×)
SY0P	B07A (1 ×)
SY0P	B07B (1 ×)
SY1N	B07A (1 ×)
SY1N	B07B (1 ×)
SY1P	B07A (1 ×)
SY1P	B07B (1 ×)
TSO_CLK	B04A (1 ×)
TSO_CLK	B06A (1 ×)
TSO_DATA0	B04A (1 ×)
TSO_DATA0	B06A (1 ×)
TSO_SYNC	B04A (1 ×)
TSO_SYNC	B06A (1 ×)
TSO_VALID	B04A (1 ×)
TSO_VALID	B06A (1 ×)
TUNER_SCL	B03 (1 ×)
TUNER_SCL	B04A (1 ×)
TUNER_SCL	B06A (1 ×)
TUNER_SDA	B03 (1 ×)
TUNER_SDA	B04A (1 ×)
TUNER_SDA	B06A (1 ×)
U_D	B08C (1 ×)
U_D	B08E (1 ×)
U_D_INV	B08C (1 ×)
UART_RX	B06A (2 ×)
UART_TX	B06A (2 ×)
USB_DM	B06A (1 ×)
USB_DM	B07C (1 ×)
USB_DP	B06A (1 ×)
USB_DP	B07C (1 ×)
USB_OCP	B06A (1 ×)
USB_OCP	B07C (1 ×)
USB_PWR_EN	B06A (1 ×)
USB_PWR_EN	B07C (1 ×)
VCC_3V3	B08C (4 ×)
VCC_3V3	B08D (3 ×)
VCC_3V3	B08E (8 ×)
VCC1V8	B08C (4 ×)
VCC1V8	B08D (1 ×)
VCOM	B08E (1 ×)
VDD1V8	B08C (2 ×)
VDD1V8PLL	B08C (2 ×)
VDD3V3IO	B08C (2 ×)
VDD3V3LVRS	B08C (2 ×)
VGH_35V	B08C (1 ×)
VGH_35V	B08D (1 ×)
VGL_-6V	B08D (2 ×)
VH0	B08E (1 ×)
VH127	B08E (3 ×)
VH159	B08E (1 ×)
VH191	B08E (1 ×)
VH247	B08E (1 ×)
VH255	B08E (1 ×)
VH31	B08E (2 ×)
VH63	B08E (2 ×)
VH95	B08E (2 ×)
VIF1	B03 (2 ×)
VIF2	B03 (2 ×)
VL0	B08E (1 ×)
VL127	B08E (3 ×)
VL159	B08E (1 ×)
VL191	B08E (1 ×)
VL247	B08E (1 ×)
VL31	B08E (2 ×)
VL63	B08E (2 ×)
VL95	B08E (2 ×)
VLS_15V6	B08D (3 ×)
VLS_15V6	B08E (4 ×)
VLS_15V6_B	B08D (2 ×)
VREF_15V2	B08E (1 ×)
VSYNC	B07A (1 ×)
VSYNC	B08A (1 ×)
WP_TCON	B08E (1 ×)
Y0N	B07A (1 ×)
Y0P	B07A (1 ×)

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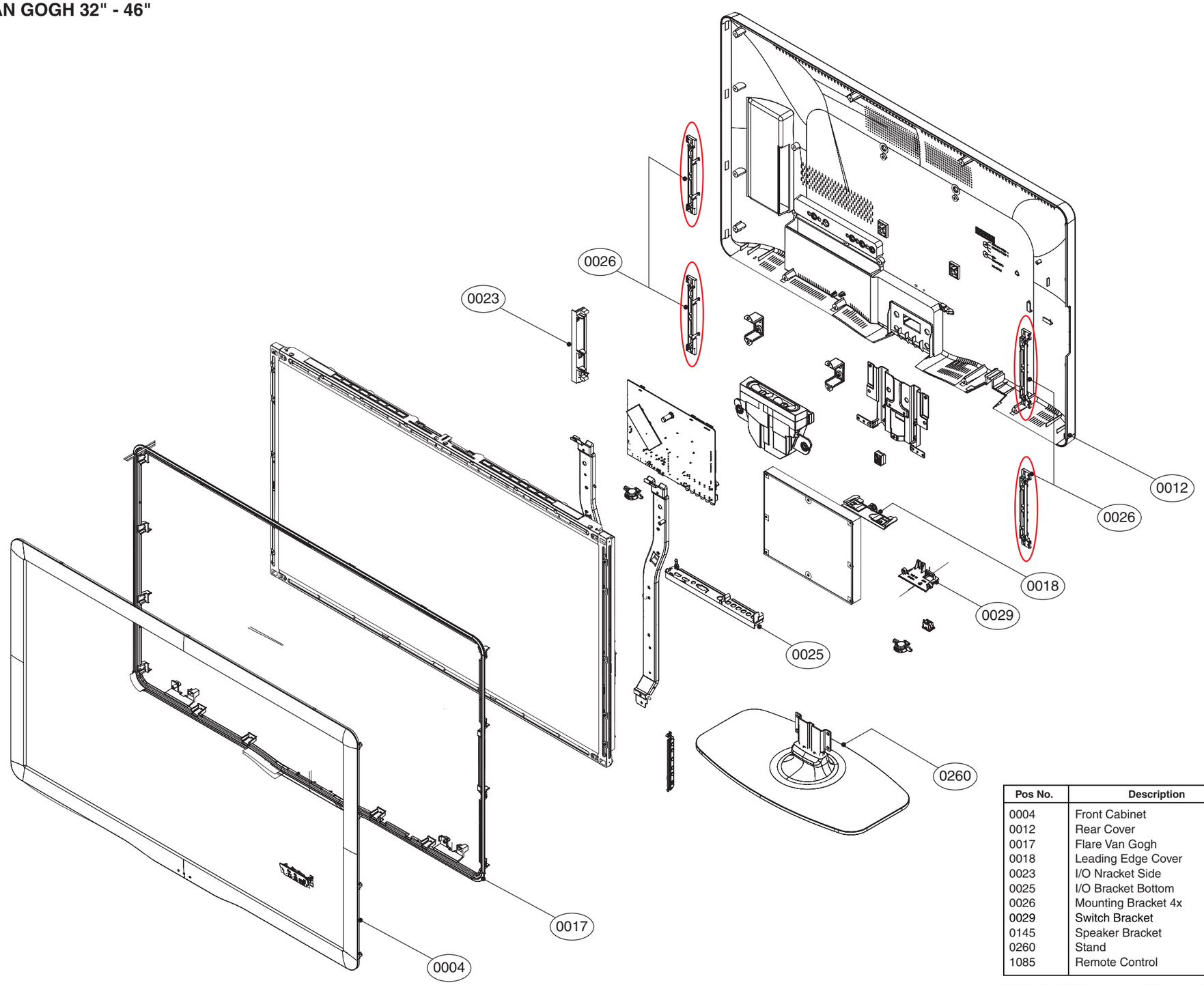
11. Styling Sheets

Styling Sheet 32" - 46"

VAN GOGH 32" - 46"



Pos No.	Description	Remarks
0004	Front Cabinet	
0012	Rear Cover	
0017	Flare Van Gogh	
0018	Leading Edge Cover	
0023	I/O Nracket Side	
0025	I/O Bracket Bottom	
0026	Mounting Bracket 4x	For sreen size 40" only
0029	Switch Bracket	
0145	Speaker Bracket	Not displayed. For screen size 46” & 52” only
0260	Stand	No stand for /93 models
1085	Remote Control	Not displayed

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9

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