

SERVICE MANUAL

LCD Color Television

40L54xxDx
(System Information)

CONTENTS

1. IMPORTANT NOTICE
2. GREEN PRODUCT PROCUREMENT
3. LEAD-FREE SOLDER
4. SAFETY INSTRUCTION
5. FIRMWARE UPDATING
6. INTERCONNECT
7. EXPLODED VIEW
8. HOTEL MODE / HOTEL CLONE
9. SCHEMATIC DIAGRAM

IMPORTANT NOTICE

WARNING:

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GREEN PRODUCT PROCUREMENT

The EC is actively promoting the WEEE & RoHS Directives that define standards for recycling and reuse of Waste Electrical and Electronic Equipment and for the Restriction of the use of certain Hazardous Substances. From July 1, 2006, the RoHS Directive will prohibit any marketing of new products containing the restricted substances.

Increasing attention is given to issues related to the global environmental. Toshiba Corporation recognizes environmental protection as a key management tasks, and is doing its utmost to enhance and improve the quality and scope of its environmental activities. In line with this, Toshiba proactively promotes Green Procurement, and seeks to purchase and use products, parts and materials that have low environmental impacts.

Green procurement of parts is not only confined to manufacture. The same green parts used in manufacture must also be used as replacement parts.

LEAD-FREE SOLDER

This product is manufactured using lead-free solder as a part of a movement within the consumer products industry at large to be environmentally responsible. Lead-free solder must be used in the servicing and repair of this product.

**WARNING: This product is manufactured using lead free solder.
DO NOT USE LEAD BASED SOLDER TO REPAIR THIS PRODUCT!**

The melting temperature of lead-free solder is higher than that of leaded solder by 30°C to 40°C (54°F to 72°F). Use of a soldering iron designed for lead-based solders to repair product made with lead-free solder may result in damage to the component and or PCB being soldered. Great care should be made to ensure high-quality soldering when servicing this product especially when soldering large components, through-hole pins, and on PCBs as the level of heat required to melt lead-free solder is high.

SAFETY INSTRUCTION

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

Safety Precaution

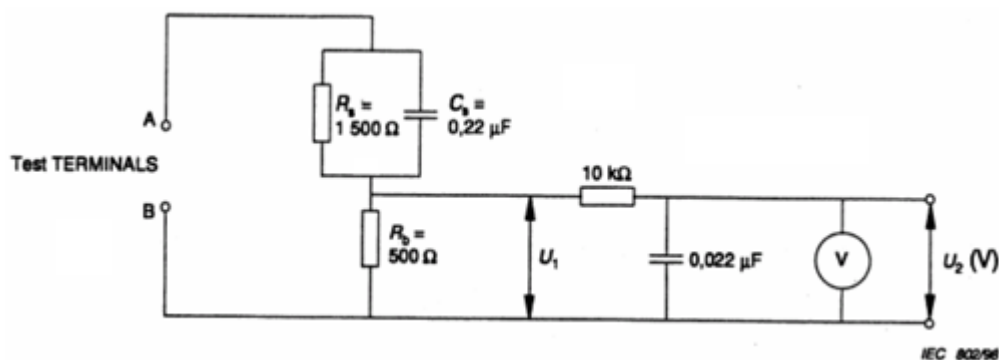
WARNING: SERVICING SHOULD NOT BE ATTEMPTED BY ANYONE UNFAMILIAR WITH THE NECESSARY PRECAUTIONS ON THIS RECEIVER. THE FOLLOWING ARE THE NECESSARY PRECAUTIONS TO BE OBSERVED BEFORE SERVICING THIS CHASSIS.

1. An isolation transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Always disconnect the power plug before any disassembling of the product. It may result in electrical shock.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as nonmetallic control knobs, insulating covers, shields, isolation resistor-capacitor network, etc.
4. Always keep tools, components of the product, etc away from the children, These items may cause injury to children.
5. Depending on the model, use an isolation transformer or wear suitable gloves when servicing with the power on, and disconnect the power plug to avoid electrical shock when replacing parts. In some cases, alternating current is also impressed in the chassis, so electrical shock is possible if the chassis is contacted with the power on.
6. Always use the replacement parts specified for the particular model when making repairs. The parts used in products require special safety characteristics such as inflammability, voltage resistance, etc. therefore, use only replacement parts that have these same characteristics. Use only the specified parts when the ⚠ mark is indicated in the circuit diagram or parts list.
7. Parts mounting and routing dressing of wirings should be the same as that used originally. For safety purposes, insulating materials such as isolation tube or tape are sometimes used and printed circuit boards are sometimes mounted floating. Also make sure that wirings is routed and clamped to avoid parts that generate heat and which use high voltage. Always follow the manufactured wiring routes / dressings.

8. Always ensure that all internal wirings are in accordance before re-assembling the external casing after a repairing completed. Do not allow internal wiring to be pinched by cabinets, panels, etc. Any error in reassembly or wiring can result in electrical leakage, flame, etc., and may be hazardous.
9. NEVER remodel the product in any way. Remodeling can result in improper operation, malfunction, or electrical leakage and flame, which may be hazardous.
10. Touch current check. (After completing the work, measure touch current to prevent an electric shock.)
 - Plug the AC cord directly into the AC outlet. Do NOT use an isolation transformer for this check.
 - Connect a measuring network for touch currents between each exposed metallic part on the set and a good earth ground such as a water pipe.

Annex D
(normative)

Measuring network for TOUCH CURRENTS



Resistance values in ohms (Ω).

V: Voltmeter or oscilloscope
(r.m.s. or peak reading)

Input resistance : $\geq 1 \text{ M}\Omega$

Input capacitance : $\leq 200 \text{ pF}$

Frequency range : 15 Hz to 1 MHz and d.c. respectively

Note: Appropriate measures should be taken to obtain the correct value in case of non

sinusoidal waveforms.

The measuring instrument is calibrated by comparing the frequency factor of U_2 with the solid line in figure F.2 of IEC 60990 at various frequencies. A calibration curve is constructed showing the deviation of U_2 from the ideal curve as a function of frequency.

TOUCH CURRENT = $U_2 / 500$ (peak value).

- The potential at any point (TOUCH CURRENT) expressed as voltage U_1 and U_2 does not exceed the following value:

The part or contact of a TERMINAL is not HAZARDOUS LIVE if:

- The open-circuit voltage should not exceed 35 V (peak) a.c. or 60 V d.c. or, if a) is not met.
- The measurement of the TOUCH CURRENT shall be carried out in accordance with IEC 60990, with the measuring network described in **Annex D** of this standard.

The TOUCH CURRENT expressed as voltages U_1 and U_2 , does not exceed the following values:

- for a.c. : $U_1 = 35$ V (peak) and $U_2 = 0.35$ V (peak);
- for d.c. : $U_1 = 1.0$ V

Note: The limit values of $U_2 = 0.35$ V (peak) for a.c. and $U_1 = 1.0$ V for d.c. correspond to the values 0.7 mA (peak) a.c. and 2.0 mA d.c.

FIRMWARE UPDATING PROCEDURE

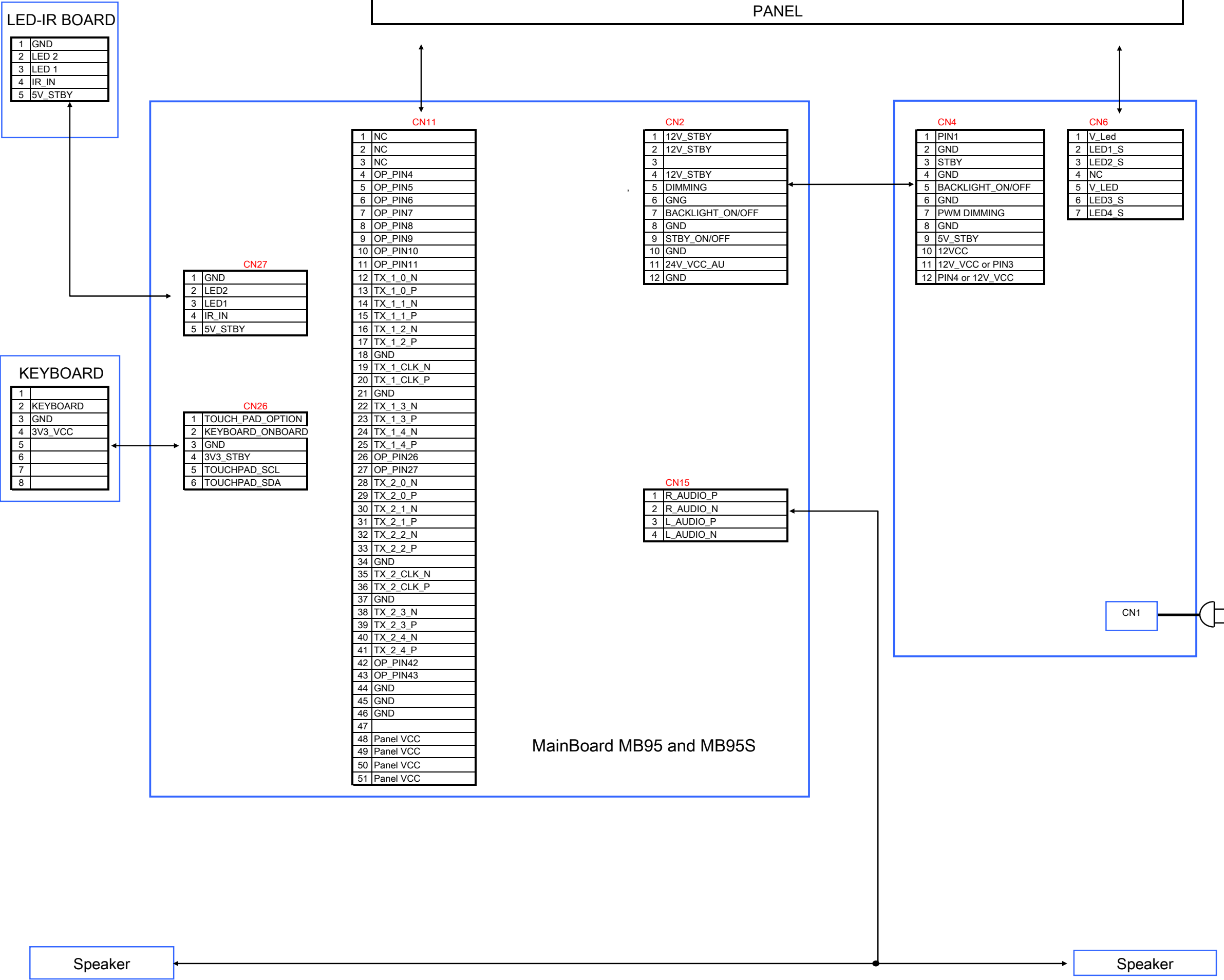
Analog - Digital SW update via USB

1. Please copy the files to USB device (root).
 - Mb95_en.bin
 - mboot.bin
 - usb_auto_update_T4.txt
2. Turn power to OFF by mechanical switch or removing AC plug and plug the USB to TV
3. Keep pressing and holding "OK" key from Toshiba remote controller and at the same time turn power to ON by mechanical SW and hold OK pressed until the standby led blinks very rapidly. Bul led blink time is longer than MB6X chassis
4. When the blinks of led is stopped, TV opens automatically.
5. Power OFF / ON TV set, then TV will be ready

When TV is ON

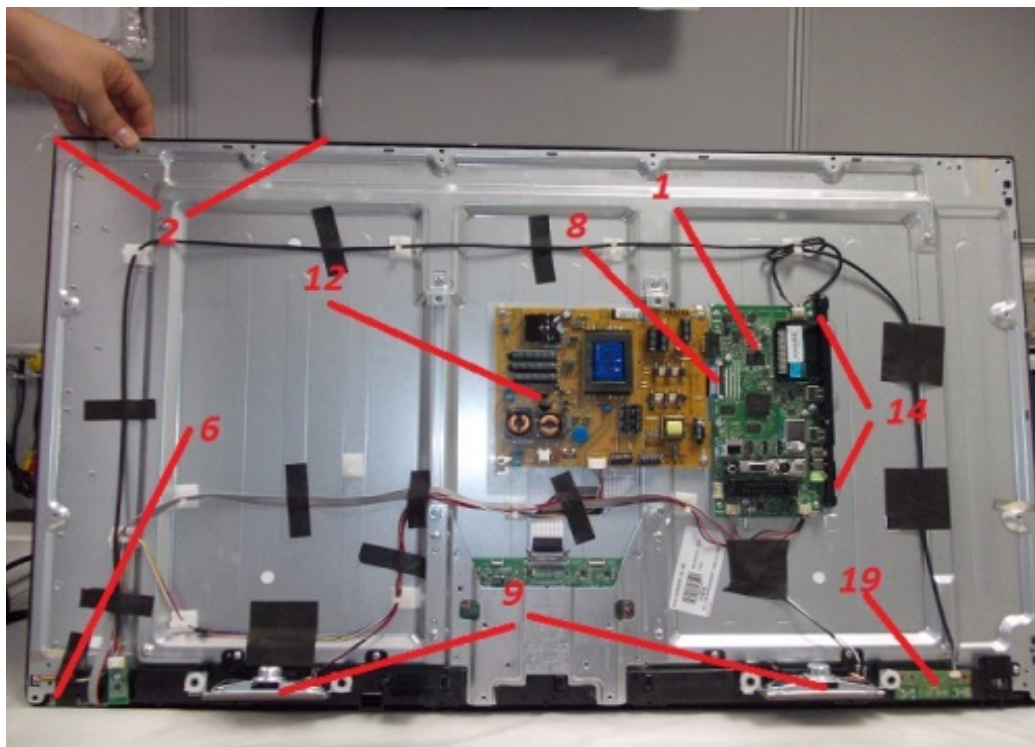
1. Software can be upgraded on Software Upgrade Mode.
2. To access Software Upgrade Mode, you will need to enter "1505 with your remote controller,
3. When main menu is on. On this mode, a simple yes/no screen appears which asks to upgrade the software.
4. In the USB Mass storage devices, there should be the binary whose name likes 'upgrade_mb95.bin'.
5. You will see a simple progress menu which shows the status of the upgrade,
6. This will be completed by restarting of the system

Wiring Diagram



Exploded View

These photographs are the examples of 40L5445DG.



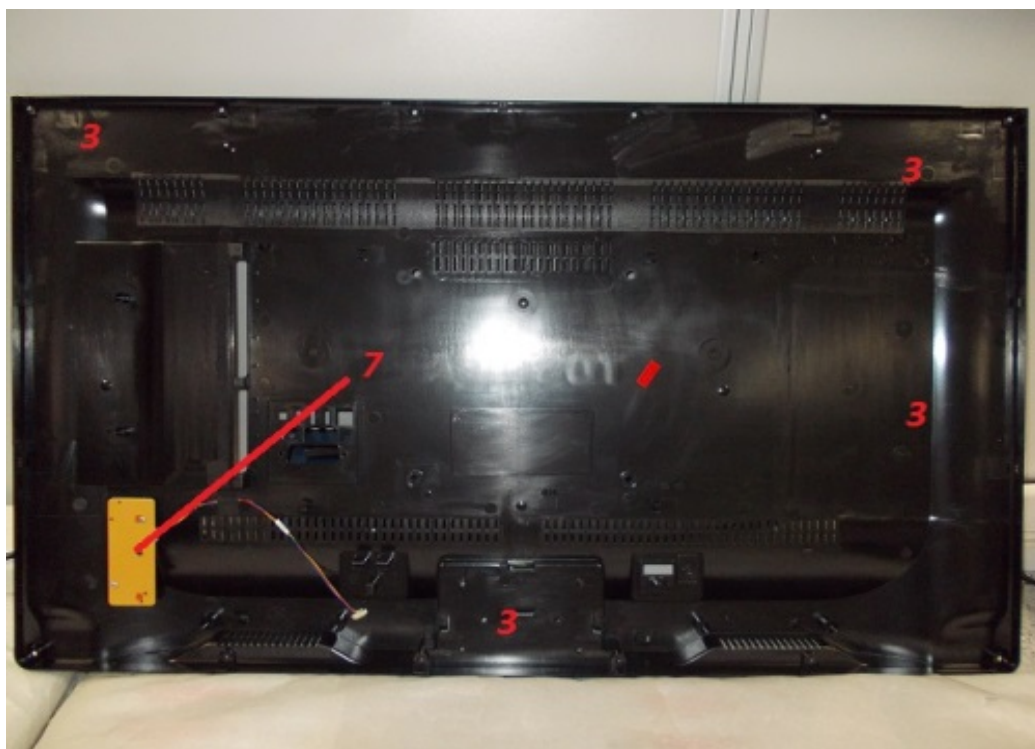
The parts (tuner etc.) on the main board vary according to the model.

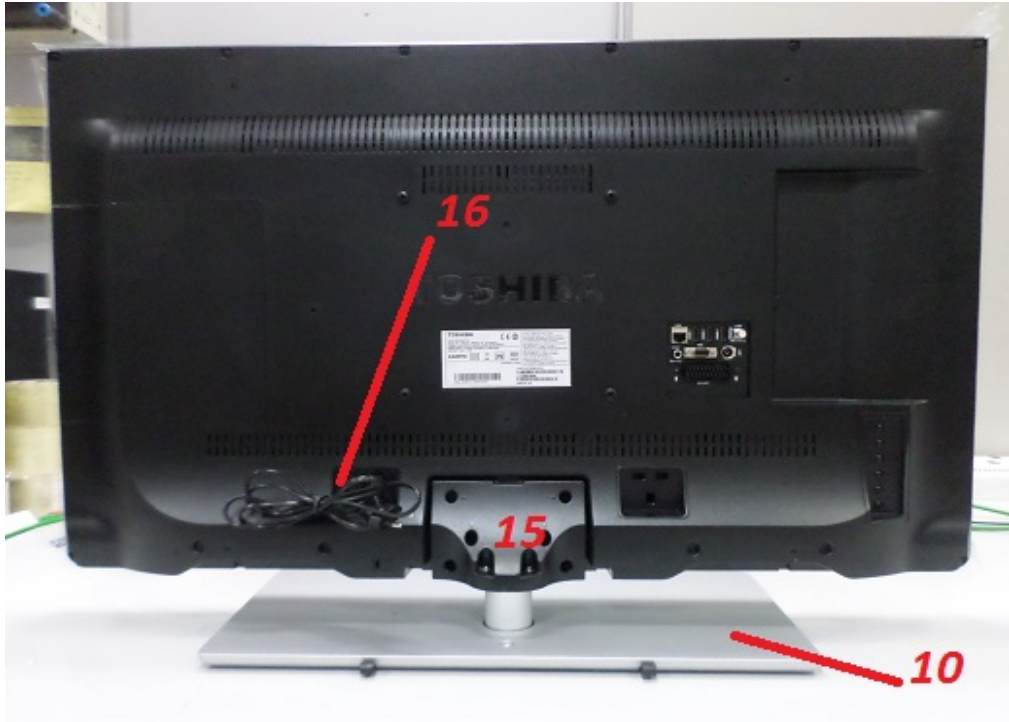
40L543x: Broadcast system DVB-T correspondence

40L544x: Broadcast system DVB-S correspondence

40L545x: Broadcast system DVB-T2 correspondence

40L546x: Broadcast system DVB-T2/S correspondence





Parts List

1	M/B
2	F-bezel
3	B-cover
	Lens
	cosmatic Lens
6	IR/B
7	Button Board
8	LVDS
9	SPK
10	Stand Assy
	P cord
12	P/B
	Carton
14	Side IO bezel
15	Foot Screw
16	Cover Gromet
19	WI-FI
	Panel

HOTEL MODE/HOTEL CLONE

HOTEL TV MENU:

To enter hotel menu, please open main menu by pressing MENU(M) button. When you code following password "7935", hidden hotel TV menu appears as below:



Figure: Hotel TV Menu

Hotel Mode

Setting "Hotel Mode" item 'On' activates hotel mode. In other words user can do only what he/she is allowed to do. Restriction level can be determined by using other items on menu namely Volume Limit, Panel Button, OSD Disable. In hotel mode, users can not reach channel table and install menu so they could not change any program information.

Last Status

Setting "Last Status" item to 'On' enable TV open with the closing status. Otherwise, if "Last Status" item is set 'Off' TV opens with *standby* status.

Volume Limit

Sets the maximum value the volume can have. "Volume Limit" can take values between 0-63.

Fixed Volume Enable

Enables (Fixed Volume Enable = On) or prohibits (Fixed Volume Enable = Off) the use of fixed volume value which is set by menu item "Fixed Volume Value". If Fixed Volume Enable is ON, volume cannot be set to a value other than the Fixed Volume Value.

Fixed Volume Value

Sets the fixed value the volume can have. If Fixed Volume Limit is ON, volume is set with the value here.

Headphone Direct Volume

Enables to could set via headphone volume dialog the headphone volume level.

If it is changed to enabled then V+/- keys will change HP volume and left/right option will change speaker volume unless there is any open osd. If it is disabled it will behave as normal.

Volume control and HP volume control are displayed by volume slider menu.



Figure: Hotel TV headphone slider bar

Panel Lock

Enables (Panel Lock = On) or prohibits (Panel Lock = Off) the use of front panel buttons.

OSD Disable

Disables either only INSTALL menu or all menus, both in analog and digital (IDTV) mode.

All Menus : All menus (MAIN, SOUND, PICTURE, SETTINGS, INSTALLATION) are invisible.

OSD Disable = Disable Setup Menus : Only SETUP menus are invisible.

Invisabel Setup Menus are:

Main menu: Installation, Channel list

Settings menu: Language, parental, Sources, Other settings

-

Startup Position

Specifies the starting channel when TV is switched ON. May take one of following values:

 AUTO (Last channel when TV is turned off)

 TV (TV channel number 1)

 Other enabled external sources via service menu or config tool (EXT1, HDMI2, PC, FAV, SVHS etc.)

Teletext

Enables (Teletext = On) or prohibits (Teletext = Off) the use of teletext (or MHEG if available)

Copy To USB

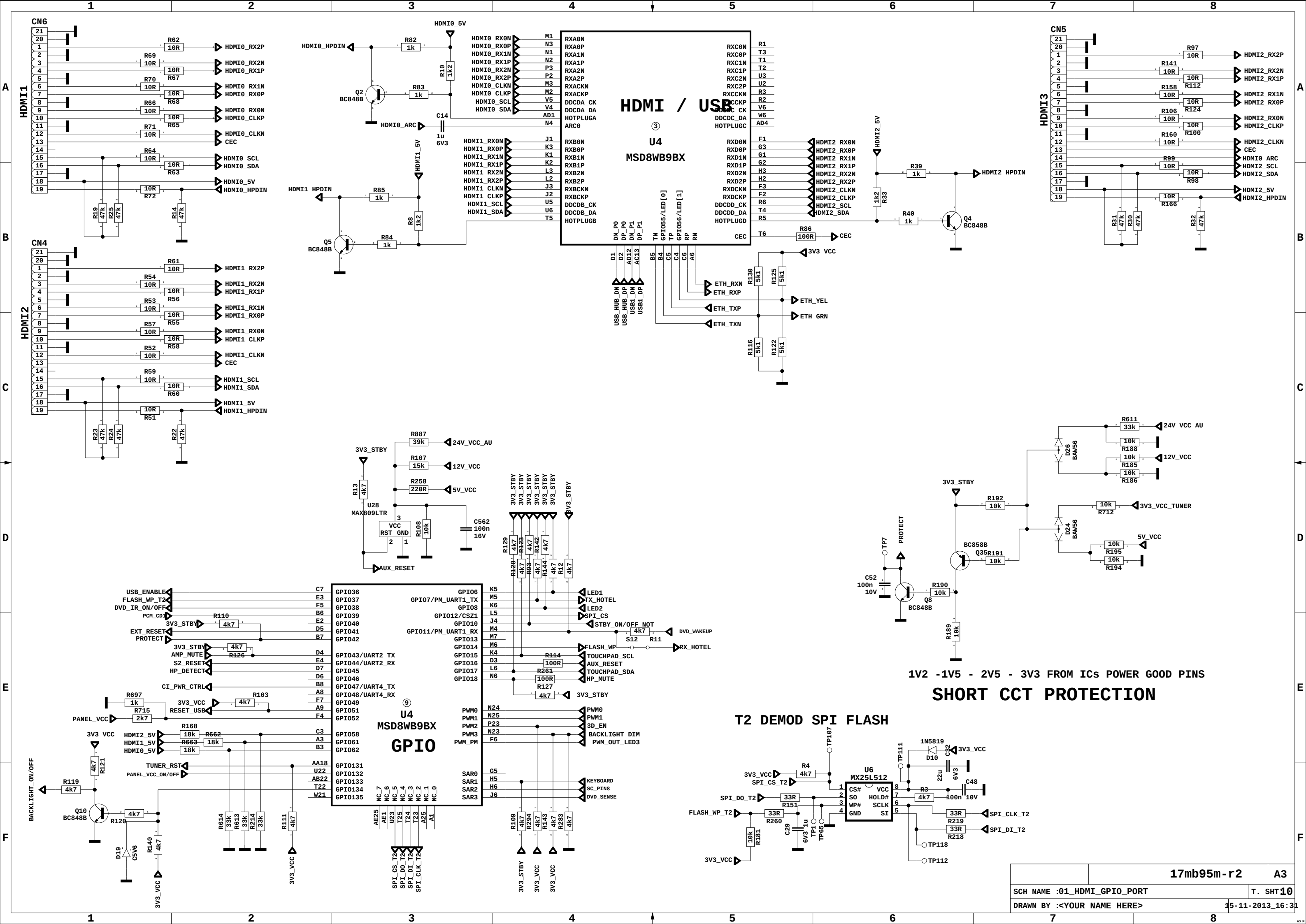
Copy NVRAM data (service list, preferences, etc.) to USB device. On MB61 and MB60 all nvram data is stored in 8x32KB Flash files named as Flash0.bin, Flash1.bin ... Flash7.bin. When Copy to USB is called, those files are copied from TV to USB. Then they can be used for various purposes testing on another TV or testing/debugging on observatory etc.

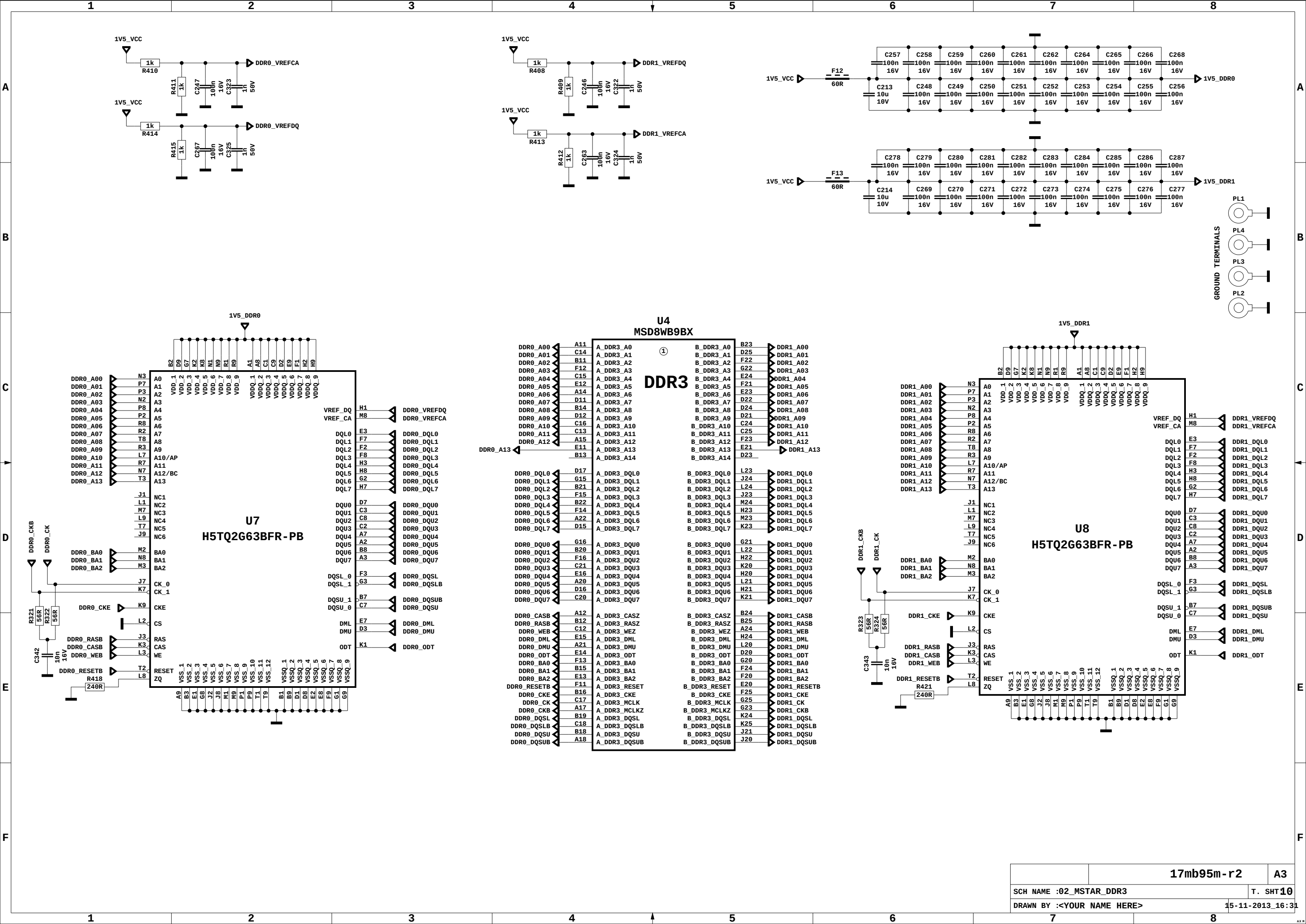
Note that USB should be plugged before this operation.

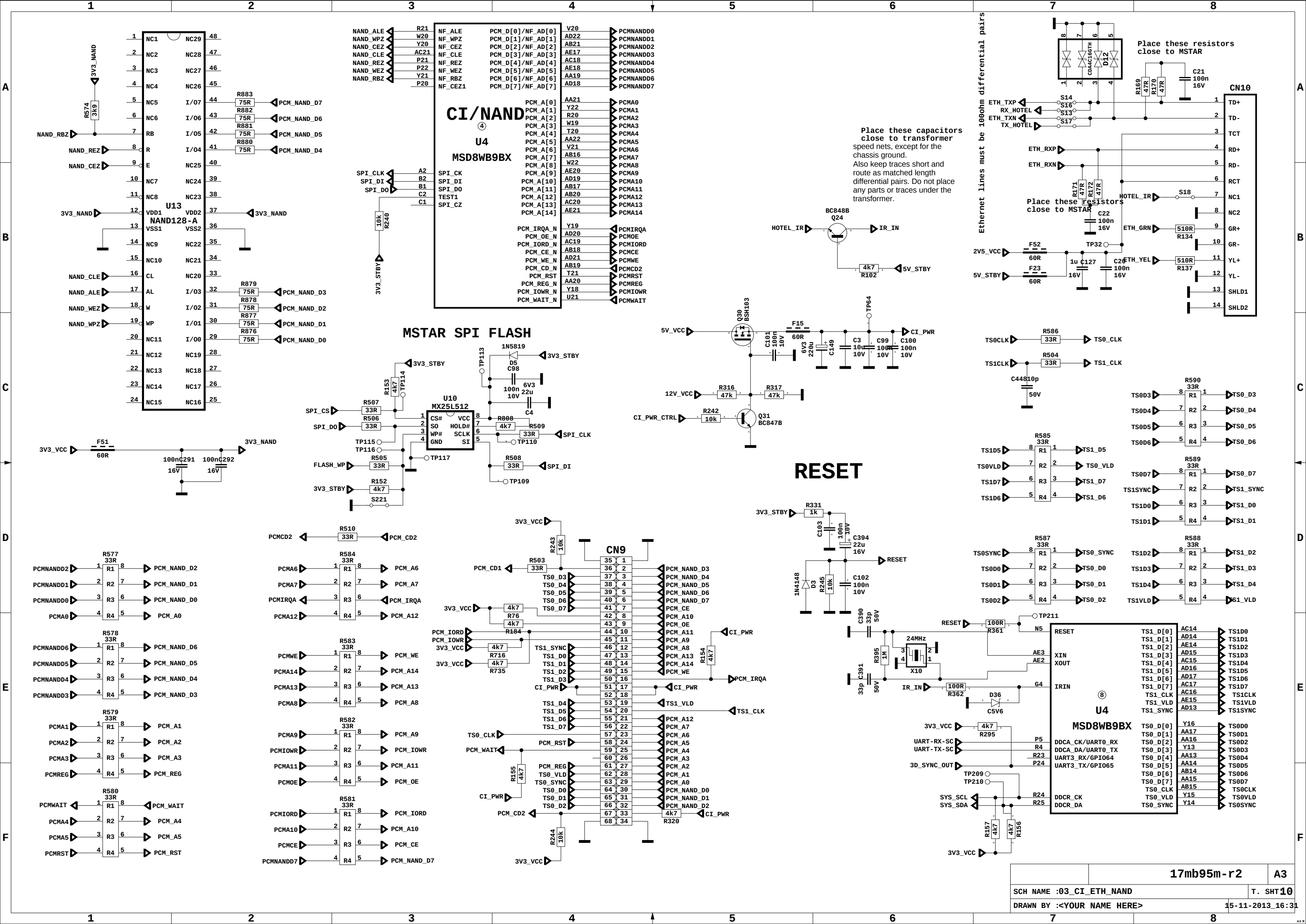
Copy From USB

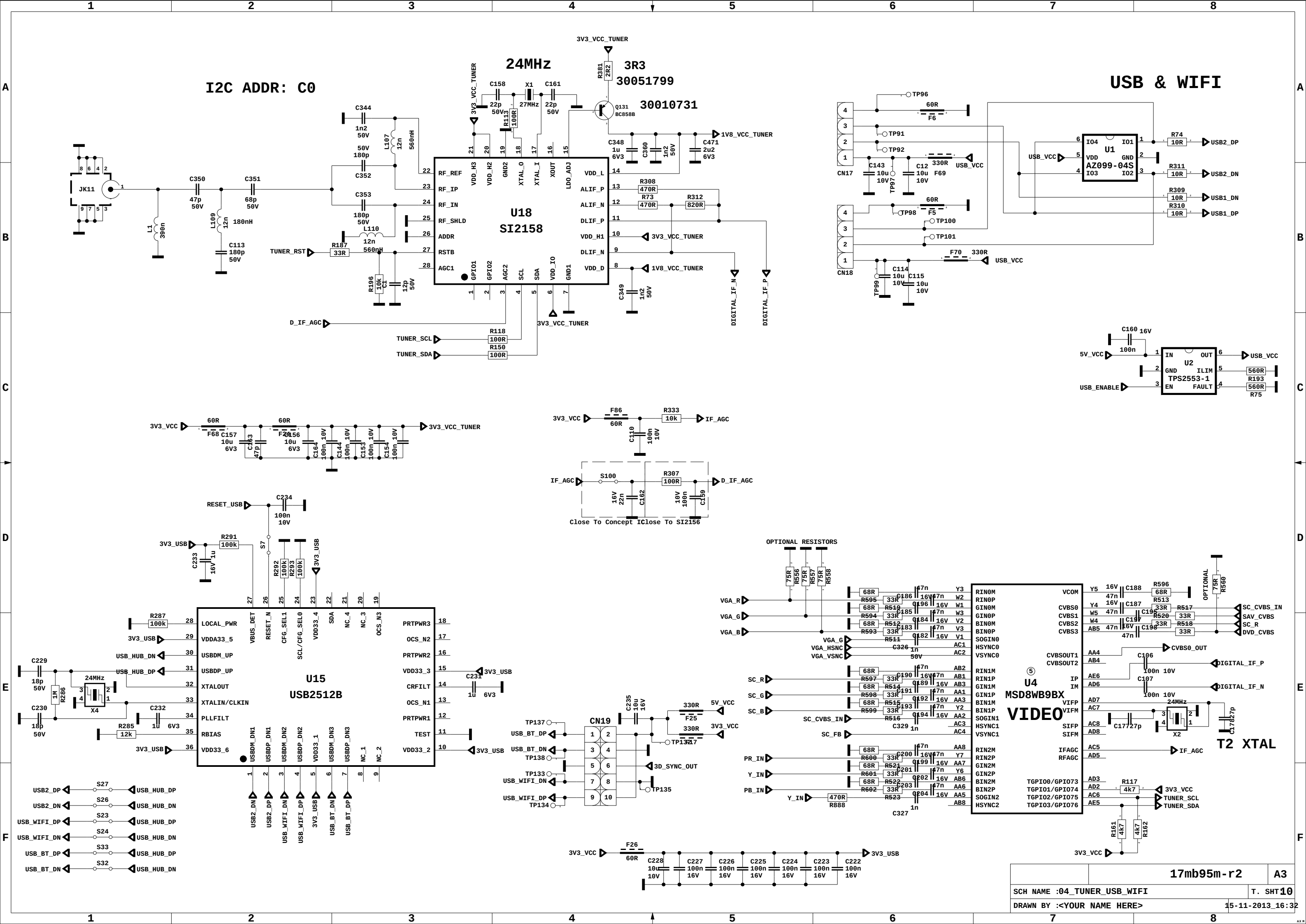
Copy from USB device data to NVRAM. Just the reverse operation done by copy to USB call.

Previously copied nvram files (Flashx.bin) are copied into TV. If there is no flash file or some of them are available on USB, the available ones are copied. If no USB is connected, nothing happens.

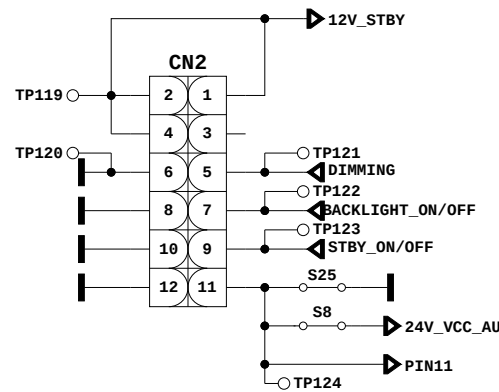




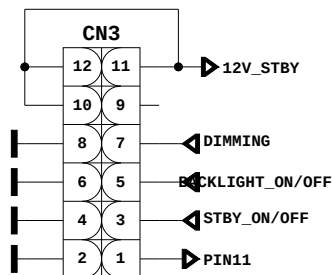




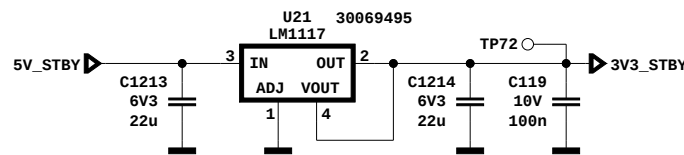
W/B2CABLE



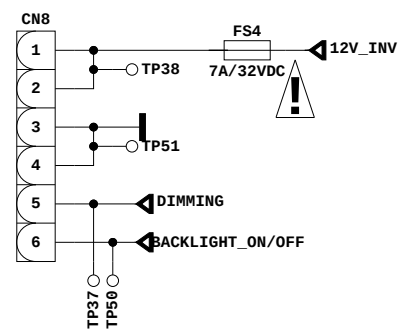
W/B2B



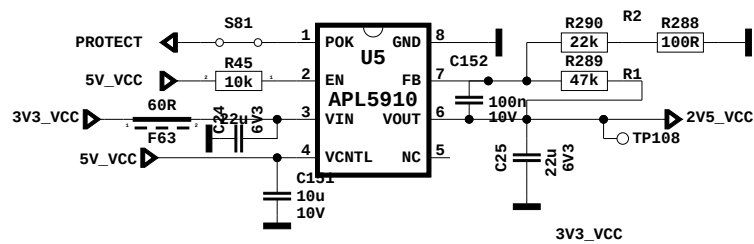
3V3_STBY LD01



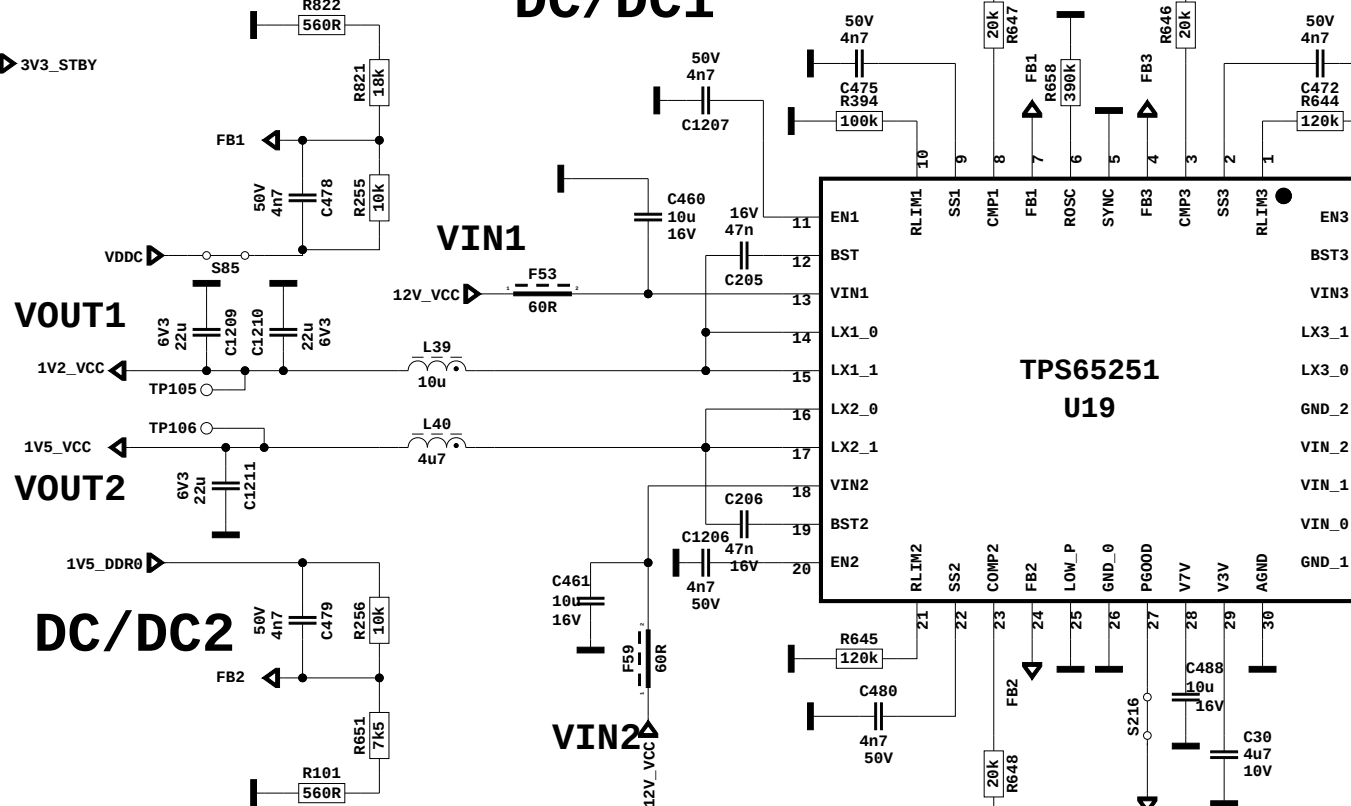
INVERTER SOCKET



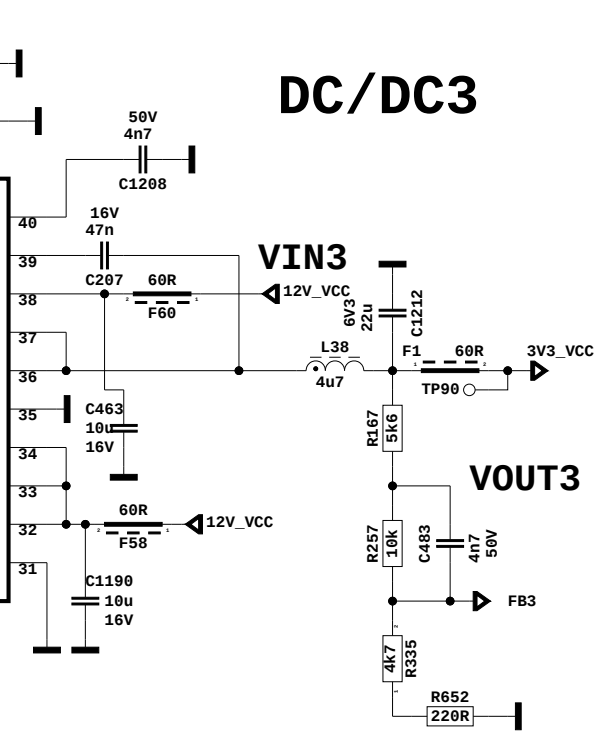
LD02 2V5_VCC



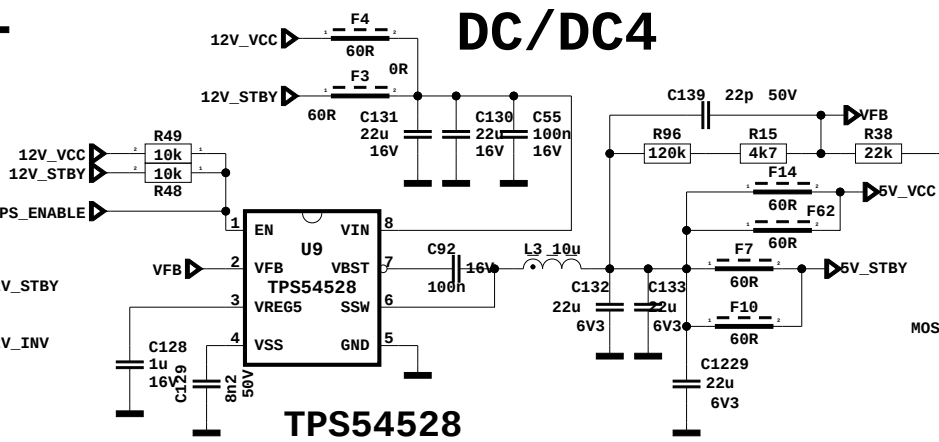
DC/DC1



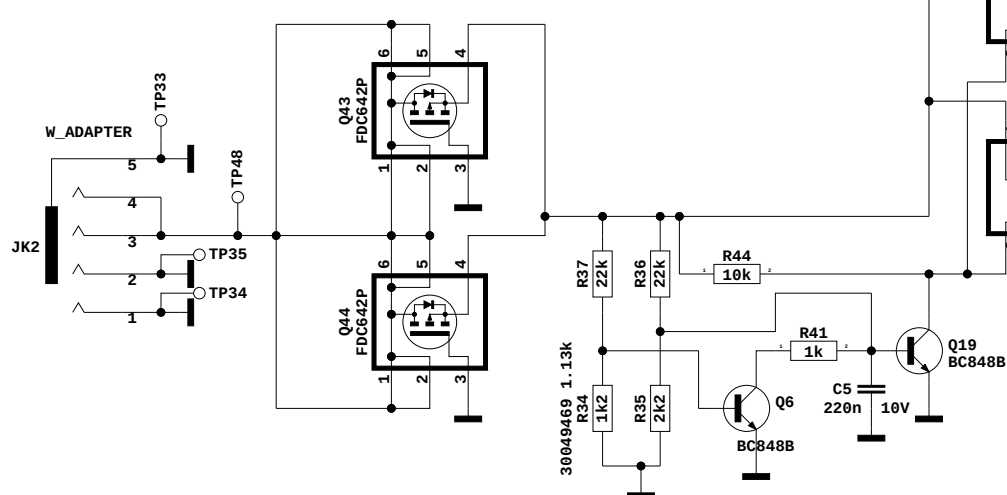
DC/DC3



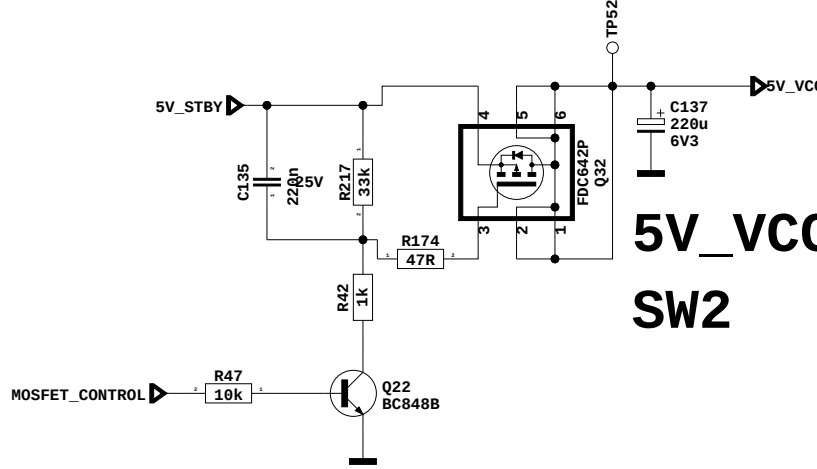
DC/DC4



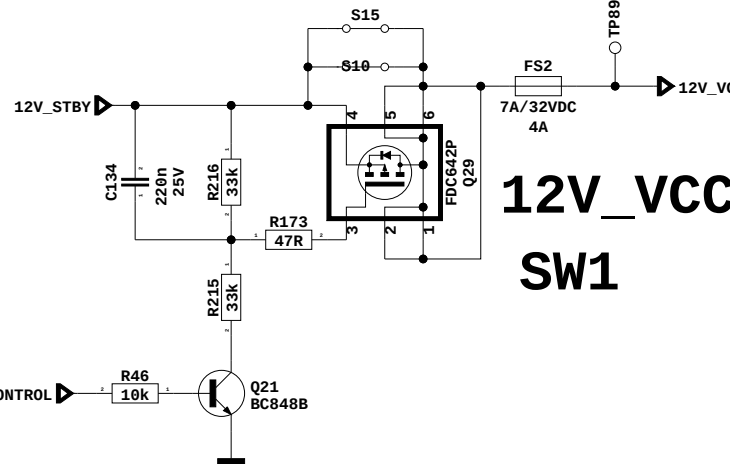
ADAPTER SOCKET



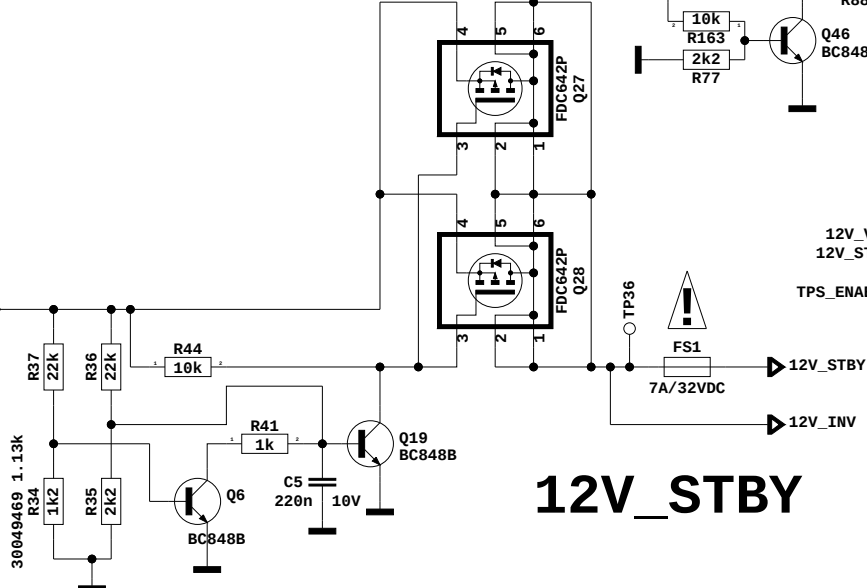
5V_VCC SW2



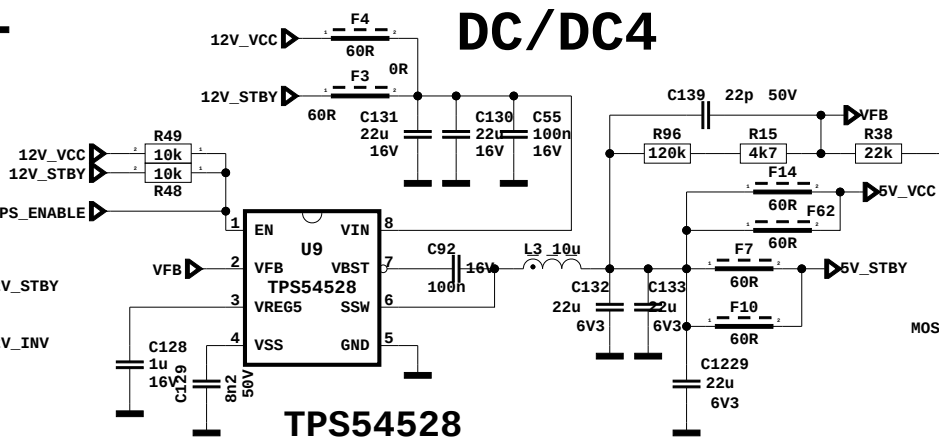
12V_VCC SW1

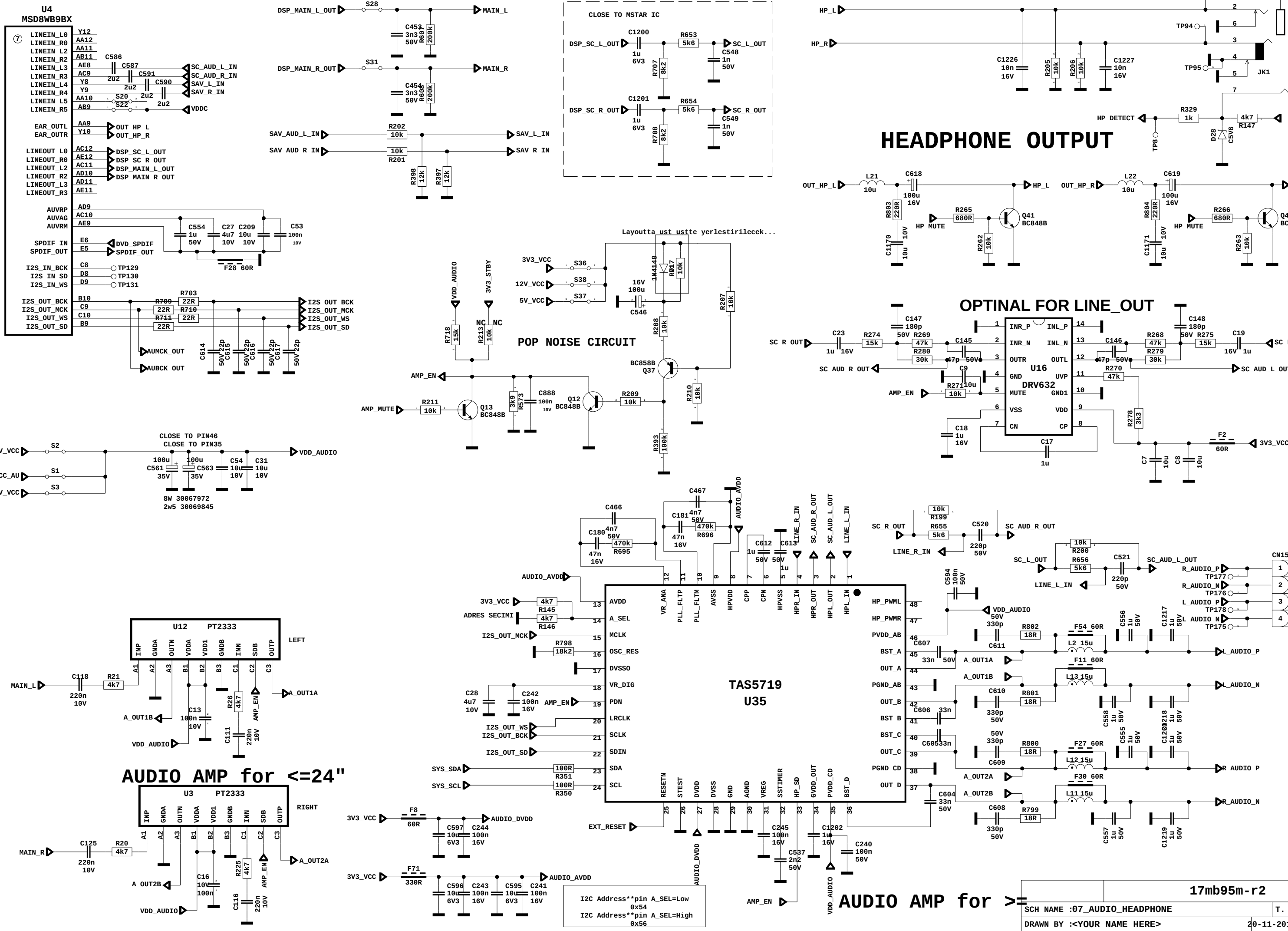


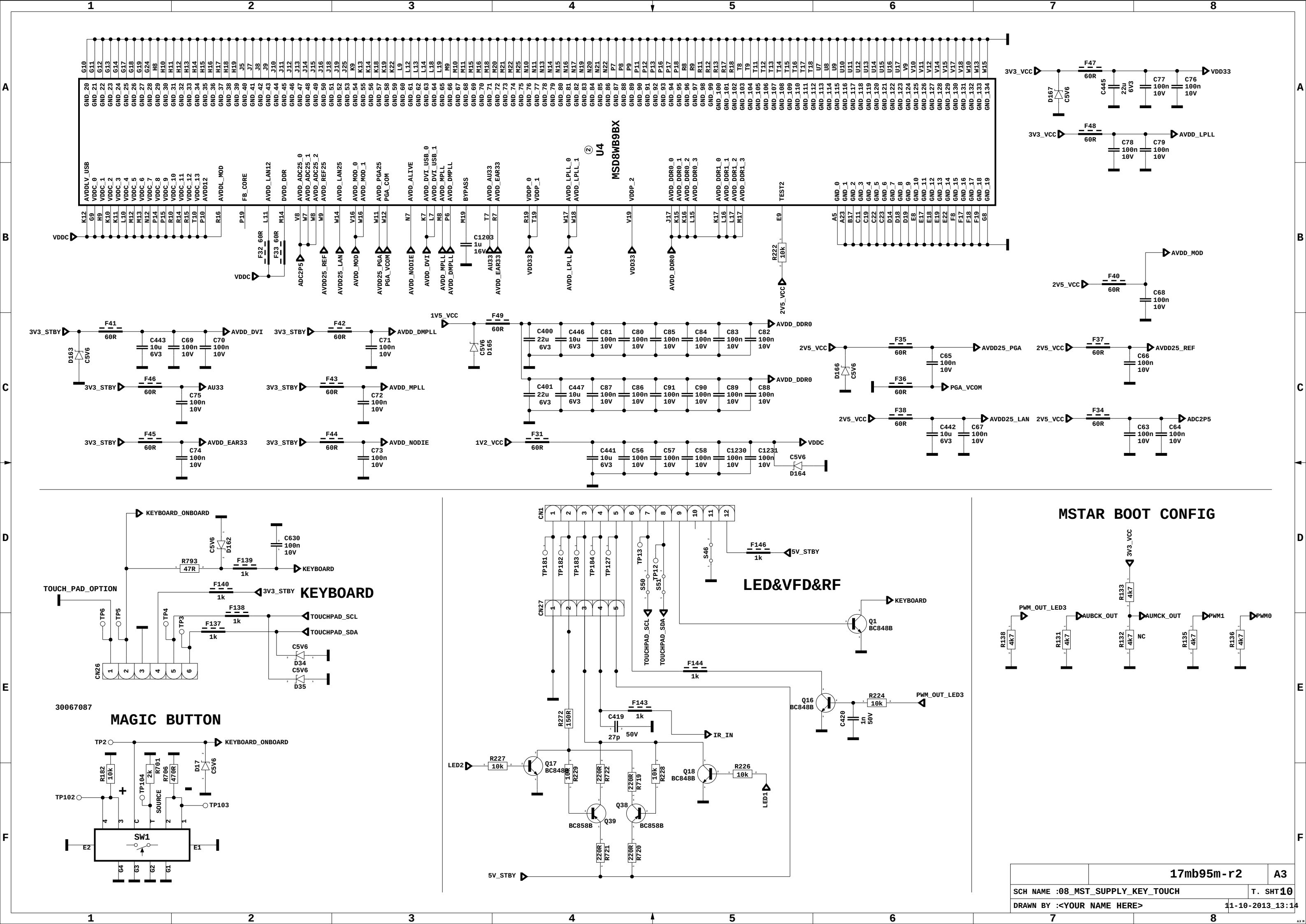
12V_STBY



TPS54528



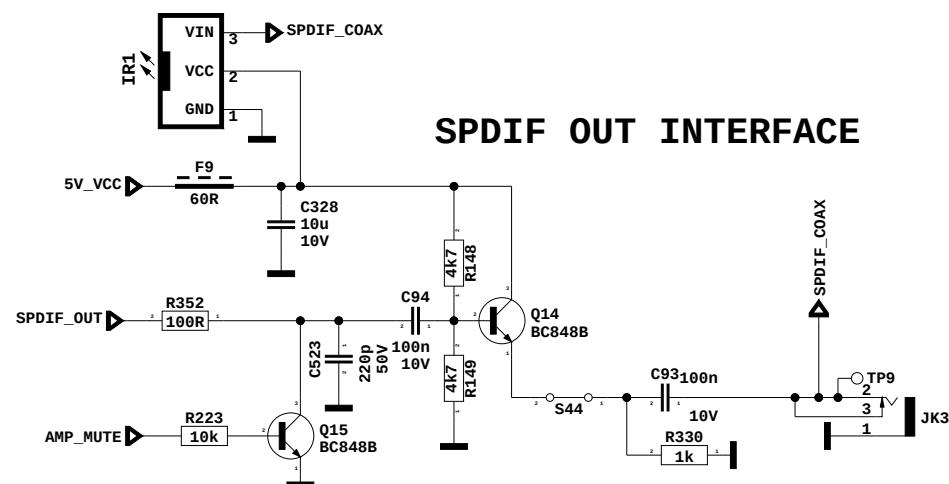
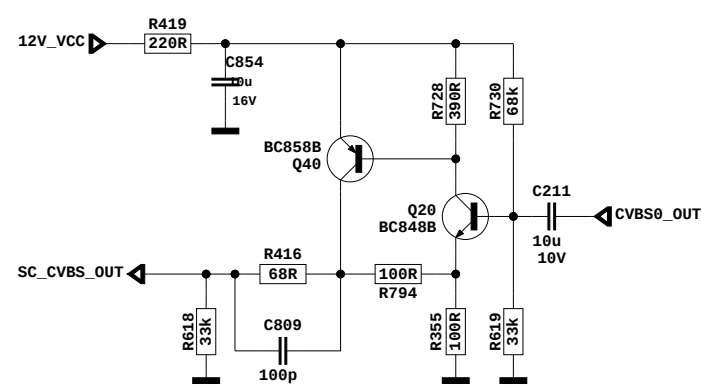




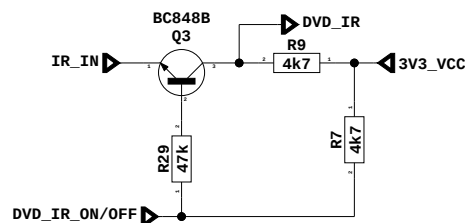
SCART 1



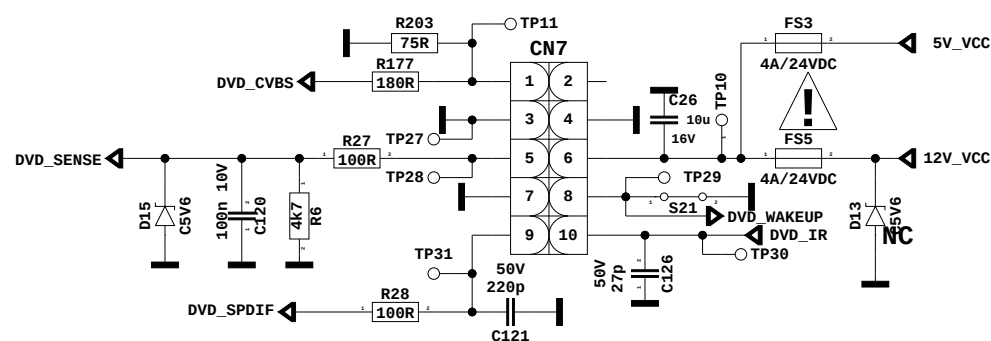
INDIA OPTION



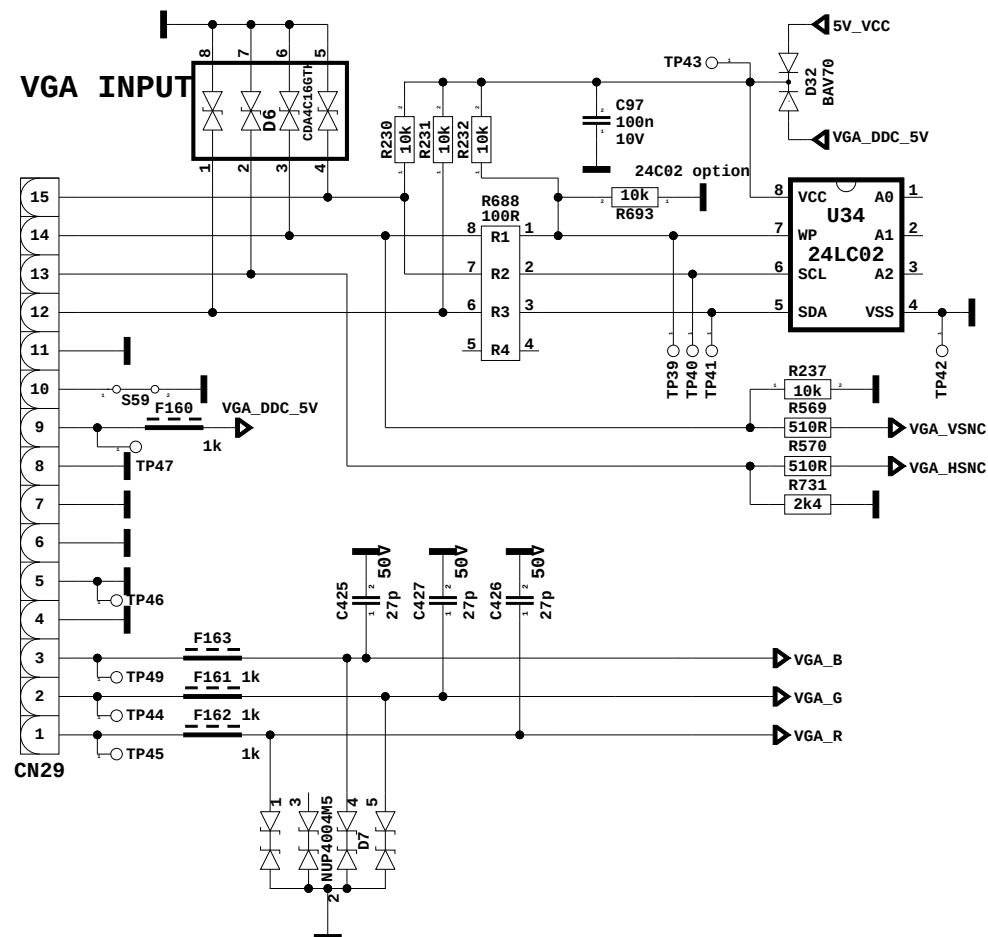
SPDIF OUT INTERFACE



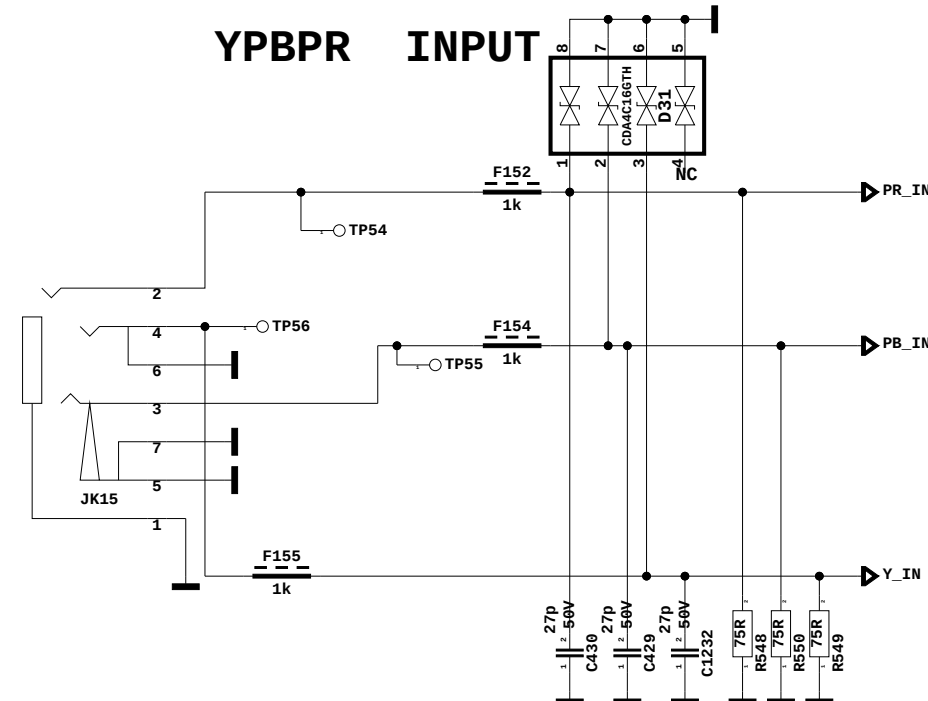
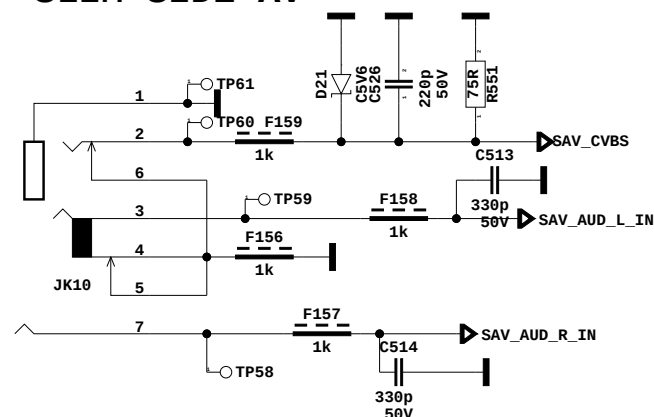
DVD CONNECTION



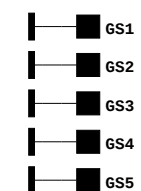
VGA INPUT

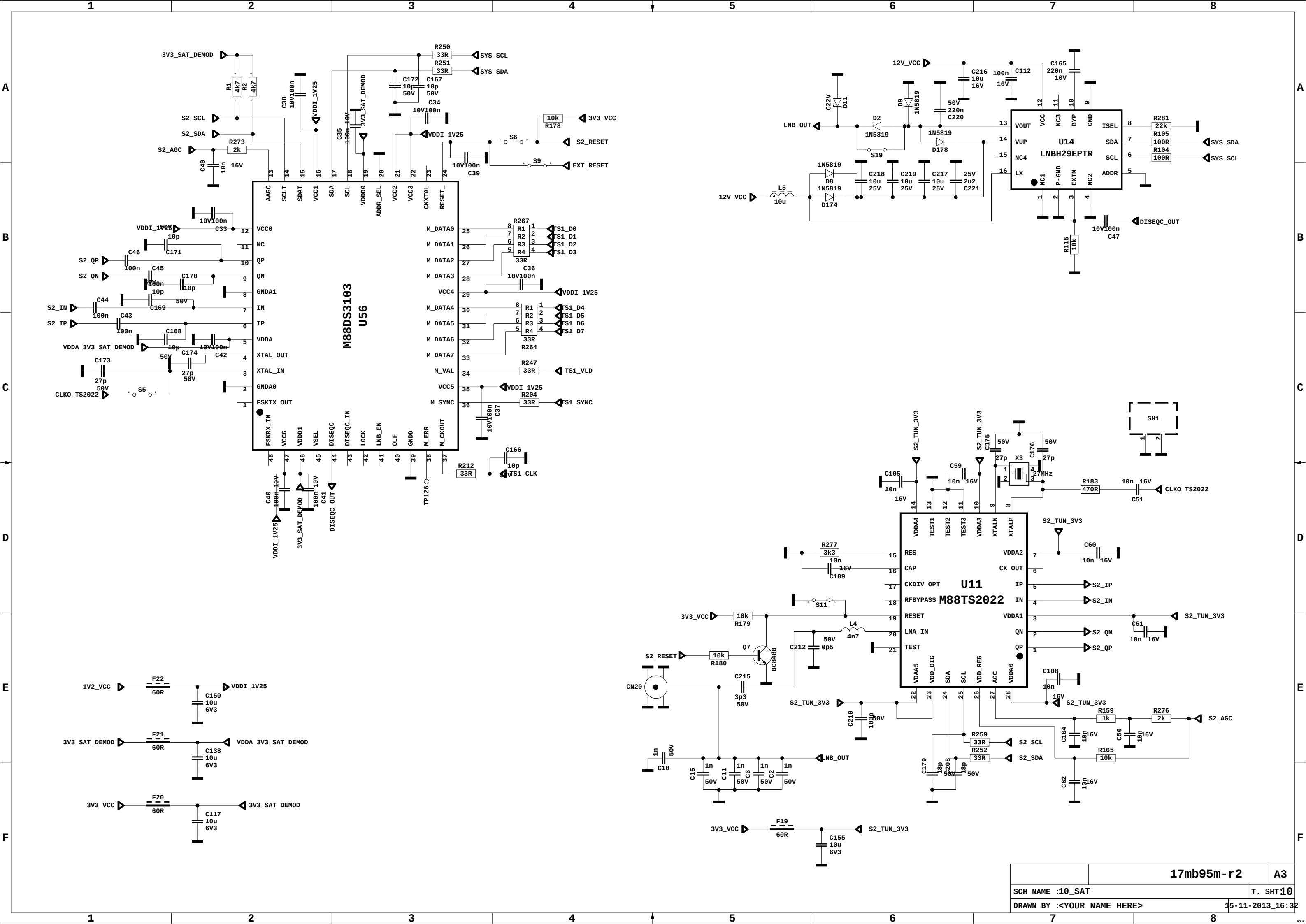


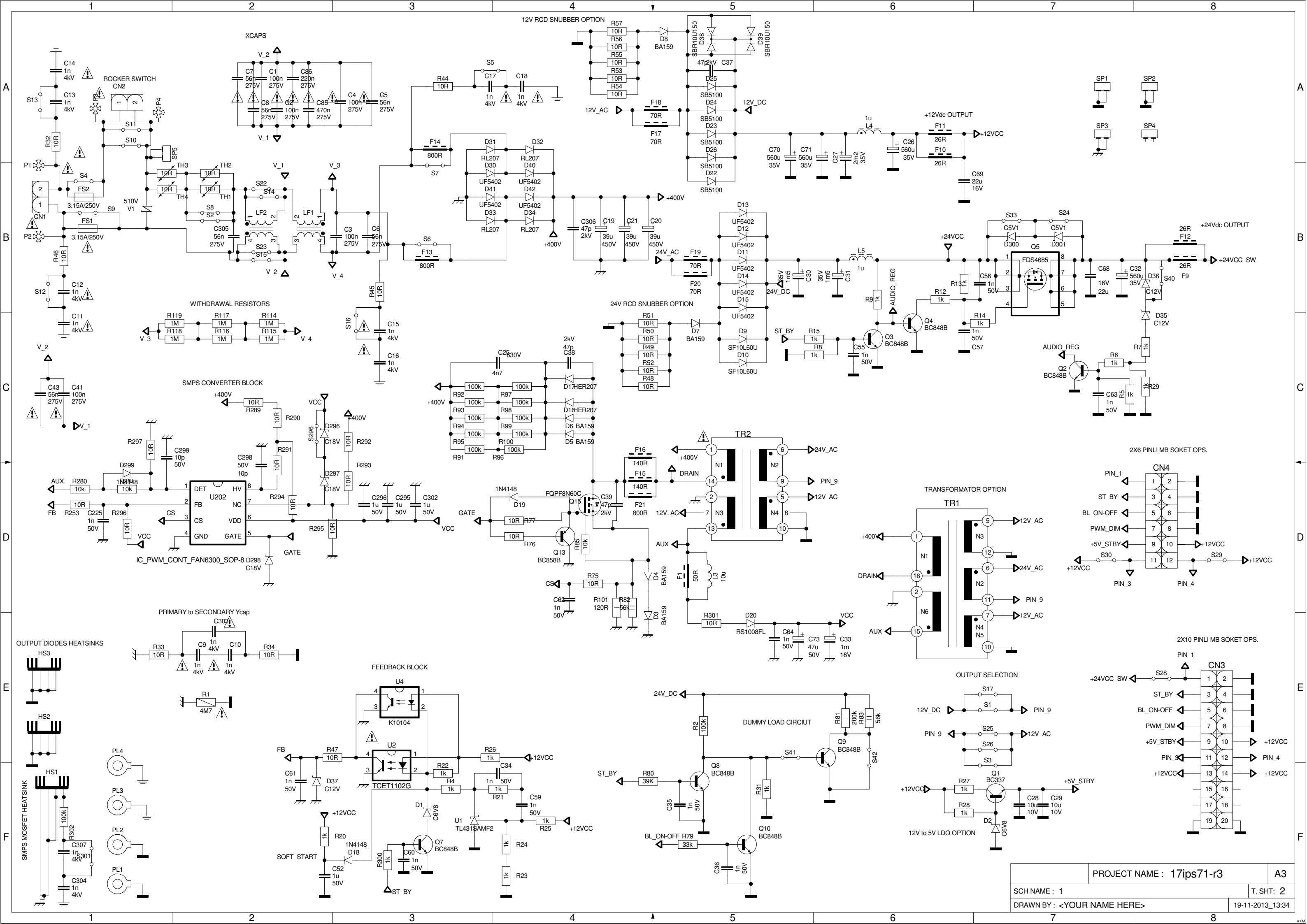
YPBPR INPUT

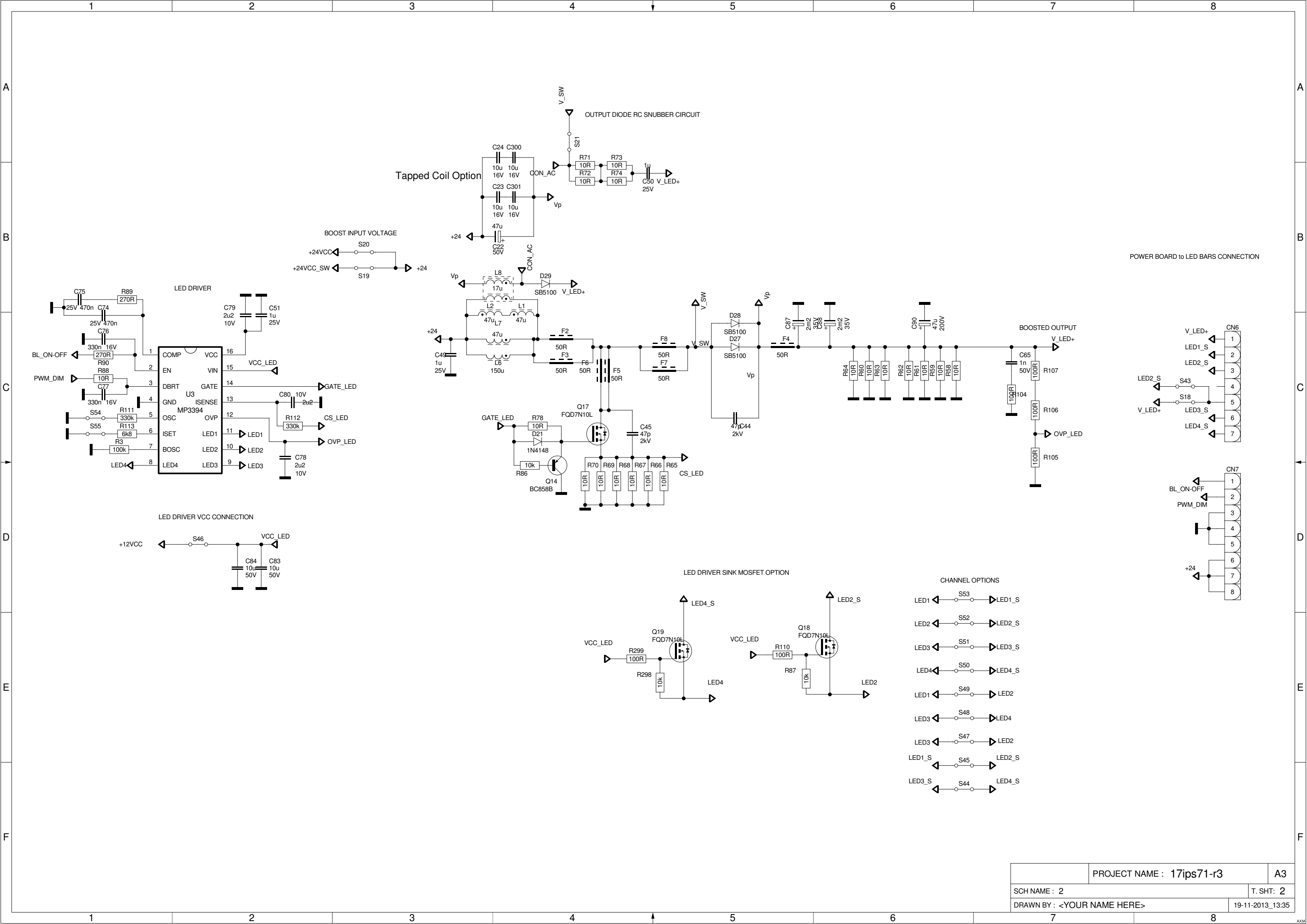
**SLIM SIDE AV**

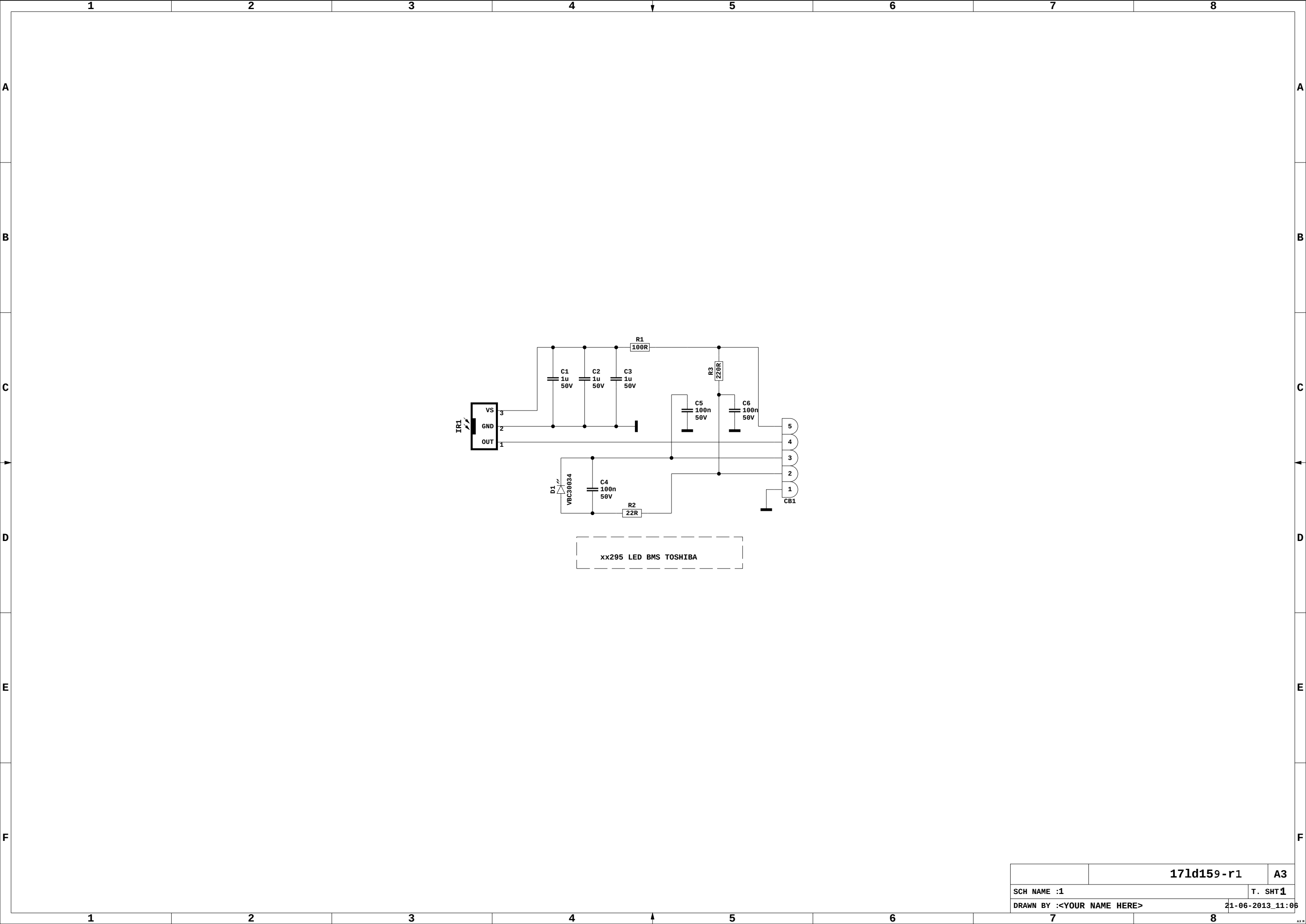
OPTIONAL GASGET POSITIONS











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REV. 00
Jun/23/2014