

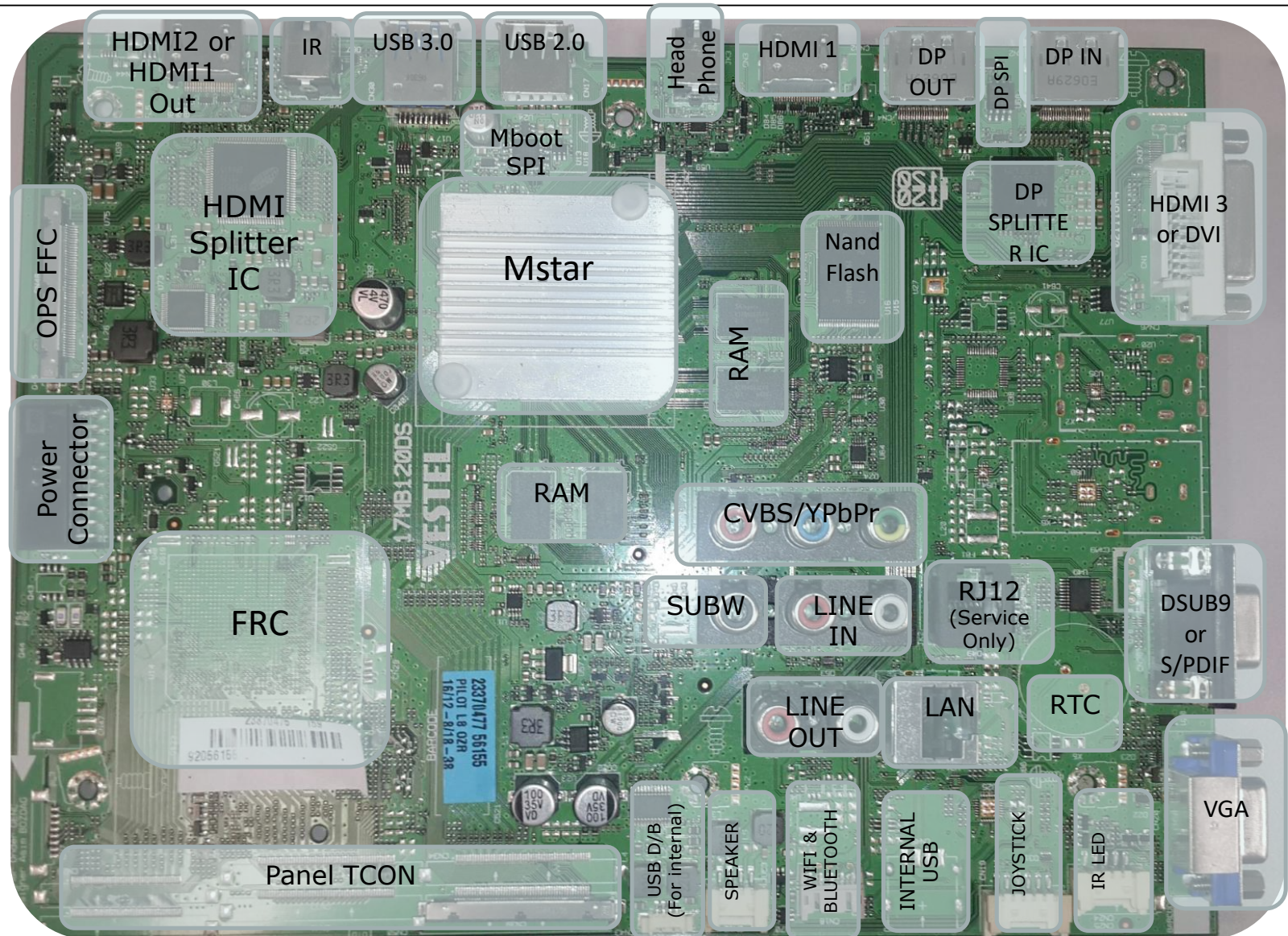
# MB120DS

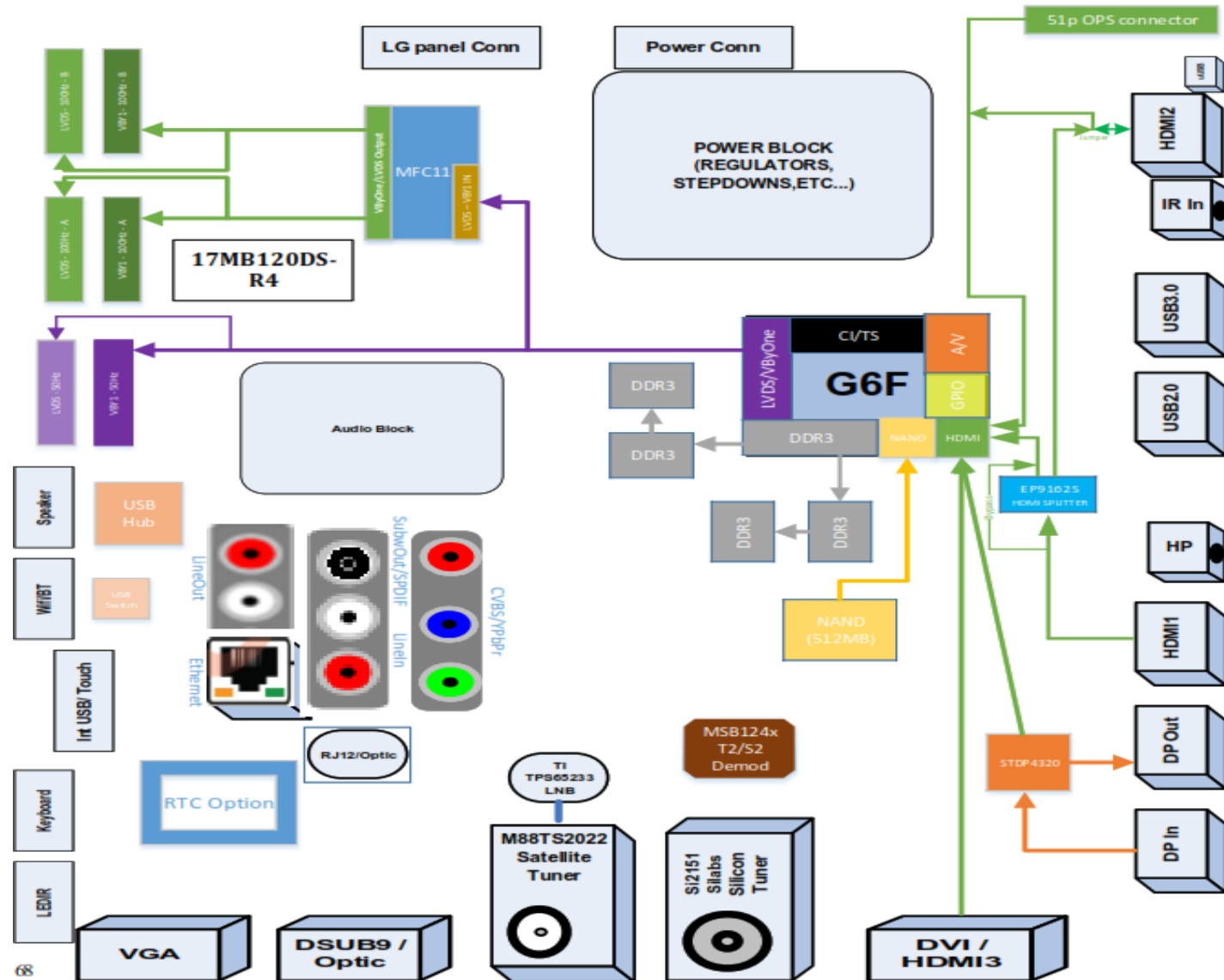
## Chasis Presentation



APRIL 2016

# MB120DS Chasis- Block Diagram - Top View





# MB120DS Chasis– Supported

## Key features includes:

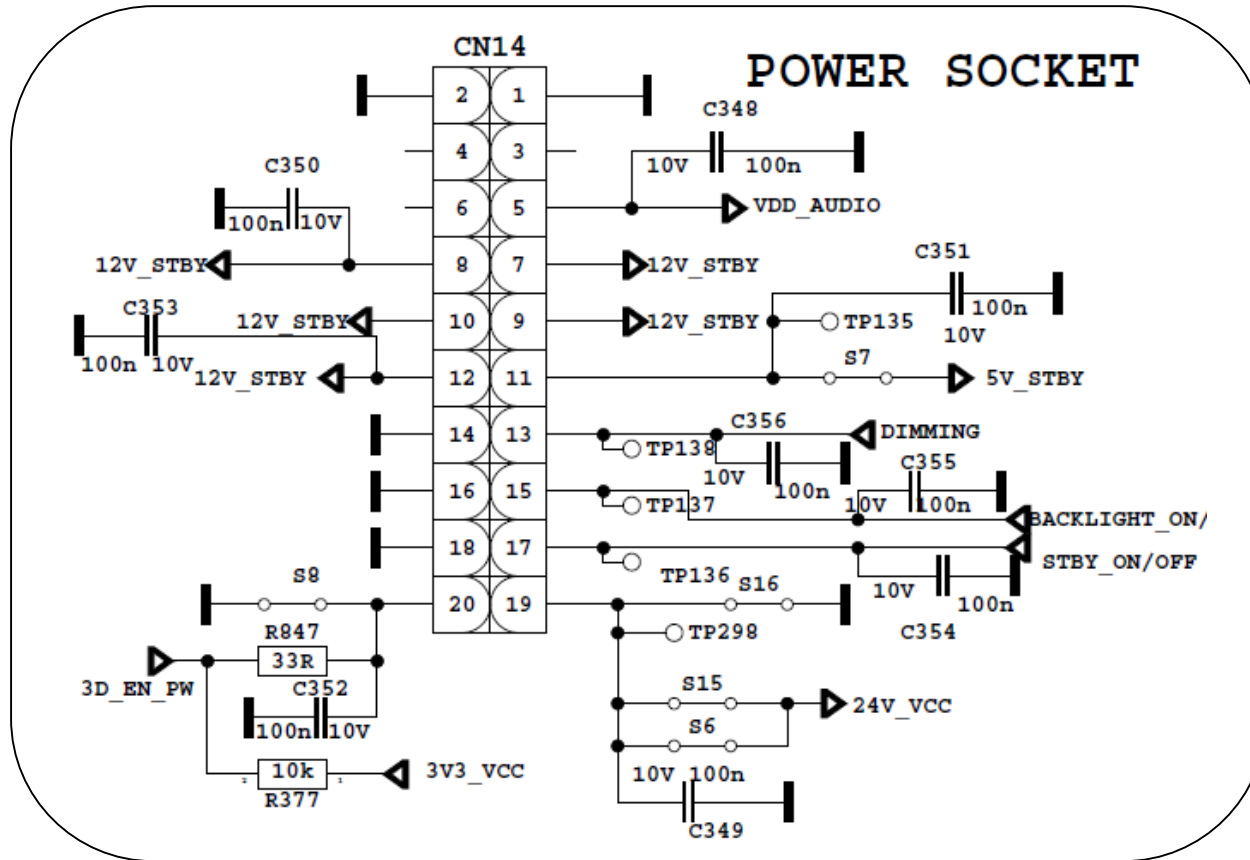
- ✓ Combo Front-End Demodulator
- ✓ A multi standart A/V format decoder
- ✓ The MACEpro video processor
- ✓ Home theatre sound processor
- ✓ Internet and Variety of Connectivity Support
- ✓ Dual-stream decoder for 3D contents
- ✓ Multi-purpose CPU for OS and multimedia
- ✓ Peripheral and power management

## Supported peripherals are:

- ✓ HDCP 2.2 / HDMI1.4 (FHD) input (1 HDMI default, 1 HDMI opt. with DVI, 1 HDMI opt with HDMI 1 Output , 1 HDMI opt. with OPS)
- ✓ HDCP 2.2 / HDMI2.0 (UHD) input (1 HDMI default, 1 HDMI opt. with DVI, 1 HDMI opt. with OPS)
- ✓ 1 Displayport1.2a input / 1 DP 1.2a output
- ✓ 1 PC (VGA) input
- ✓ 1 YPbPr / Back S-Video
- ✓ Line In/ Line out
- ✓ 1 Optic S/PDIF output
- ✓ 1 USB 3.0, 1 USB 2.0 port
- ✓ 1 USB2.0 for touchscreen (optional)
- ✓ 1 OPS interface (optional)
- ✓ 1 Extender IR
- ✓ 1 Dsub9 RS232
- ✓ 1 RJ45 10/100 Support Ethernet
- ✓ 1 RJ12 (for service only)
- ✓ Tuner ATV/DVB-T/T2/C (optional)
- ✓ 4K2K@ 50/100Hz Vby1, FHD@ 50/100Hz LVDS interface



# MB120DS Chasis- Power Stage

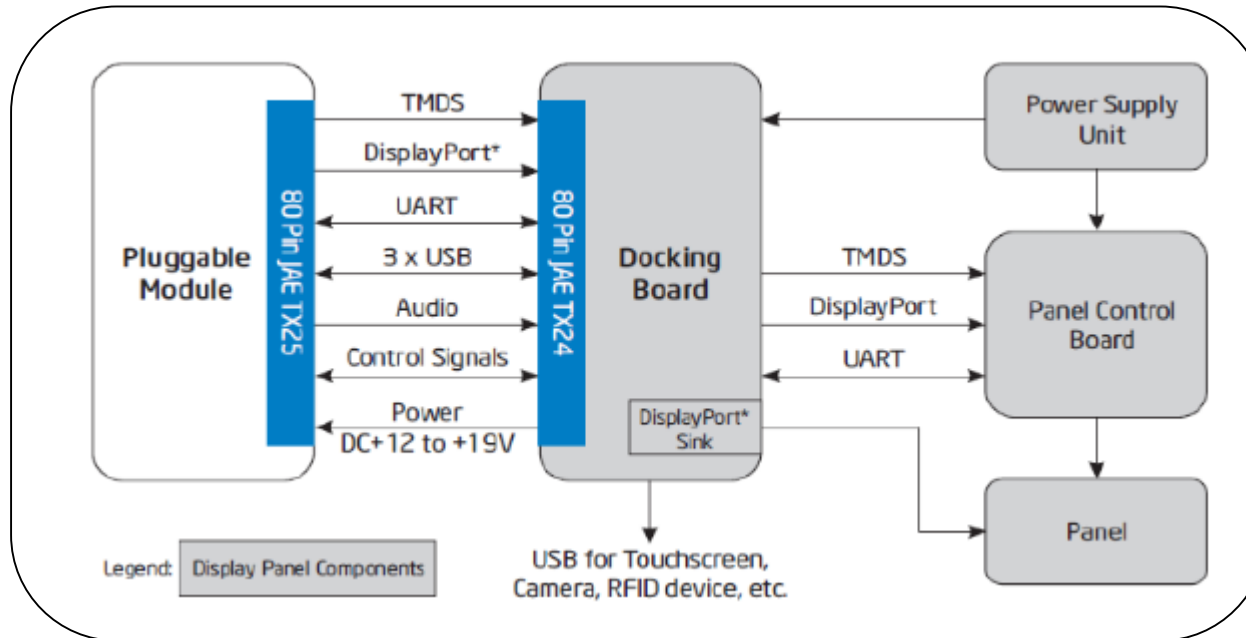


Power socket is used for taking voltages which are 12V, 5V and VDD\_Audio.

These voltages are produced in power board.

Also socket is used for giving dimming, backlight and standby signals with power board.

# MB120DS Chasis– OPS Functional Block Diagram

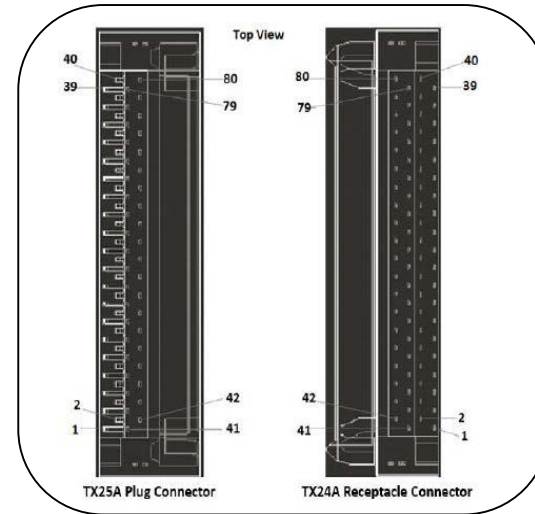


- ✓ **Power:** DC IN +12V~+19V @ 8A max
- ✓ **Display Interface:** DVI-D/TMDS and DisplayPort
- ✓ **Audio:** Left and Right Channel
- ✓ **USB:** 3\*USB 2.0 (when USB3.0 is not used) or 2\*USB 2.0 and 1\*USB 3.0
- ✓ **UART:** Serial communication (Tx and Rx only)
- ✓ **Control Signals:** Pluggable Module Power Status, Power ON via display panel, Pluggable Board Detect,
- ✓ **Consumer Electronics Control (CEC), and System Fan Control.**

# MB120DS Chasis- OPS Socket Pin Assignment

Pin No.	Signal	Description	I/O
40	+12V**+19V	Power	-
39	+12V**+19V	Power	-
38	+12V**+19V	Power	-
37	+12V**+19V	Power	-
36	+12V**+19V	Power	-
35	+12V**+19V	Power	-
34	+12V**+19V	Power	-
33	+12V**+19V	Power	-
32	GND	Ground	-
31	DVI_HPD	DVI-D	IN
30	DVI_DDC_CLK	DVI-D	I/O
29	DVI_DDC_DATA	DVI-D	I/O
28	GND	Ground	-
27	TMDS2+	DVI-D	OUT
26	TMDS2-	DVI-D	OUT
25	GND	Ground	-
24	TMDS1+	DVI-D	OUT
23	TMDS1-	DVI-D	OUT
22	GND	Ground	-
21	TMDS0+	DVI-D	OUT
20	TMDS0-	DVI-D	OUT
19	GND	Ground	-

Pin No.	Signal	Description	I/O
80	GND	Ground	-
79	GND	Ground	-
78	GND	Ground	-
77	GND	Ground	-
76	GND	Ground	-
75	GND	Ground	-
74	PWR_STATUS	PowerGood	OUT (OC)
73	PS_ON#	Pluggable Signal ON	IN
72	PB_DET	Pluggable Board Detect	OUT
71	CEC	Consumer Electronic Control	I/O
70	AZ_LINEOUT_R	Audio-Rch	OUT
69	AZ_LINEOUT_L	Audio-Lch	OUT
68	GND	Ground	-
67	USB_PP0	USB	I/O
66	USB_PN0	USB	I/O
65	GND	Ground	-
64	USB_PP1	USB	I/O
63	USB_PN1	USB	I/O
62	GND	Ground	-
61	USB_PP2	USB	I/O
60	USB_PN2	USB	I/O
59	GND	Ground	-



18	TMDS_CLK+	DVI-D	OUT
17	TMDS_CLK-	DVI-D	OUT
16	GND	Ground	-
15	DOP_HPD	DisplayPort	IN
14	DOP_AUXP	DisplayPort	I/O
13	DOP_AUXN	DisplayPort	I/O
12	GND	Ground	-
11	DOP_OP	DisplayPort	OUT
10	DOP_ON	DisplayPort	OUT
9	GND	Ground	-
8	DOP_1P	DisplayPort	OUT
7	DOP_1N	DisplayPort	OUT
6	GND	Ground	-
5	DOP_2P	DisplayPort	OUT
4	DOP_2N	DisplayPort	OUT
3	GND	Ground	-
2	DOP_3P	DisplayPort	OUT
1	DOP_3N	DisplayPort	OUT

38	StdA_SSTX+	USB3.0	OUT
37	StdA_SSTX-	USB3.0	OUT
36	GND	Ground	-
35	StdA_SSRX+	USB3.0	IN
34	StdA_SSRX-	USB3.0	IN
33	GND	Ground	-
32	UART_TXD	UART 3.3V	OUT
31	UART_RXD	UART 3.3V	IN
30	SYS_FAN	System Fan Control	OUT
29	RSVD	Reserved pins	-
28	RSVD	Reserved pins	-
27	RSVD	Reserved pins	-
26	RSVD	Reserved pins	-
25	RSVD	Reserved pins	-
24	RSVD	Reserved pins	-
23	RSVD	Reserved pins	-
22	RSVD	Reserved pins	-
21	RSVD	Reserved pins	-
20	RSVD	Reserved pins	-
19	RSVD	Reserved pins	-

Note 1: The I/O column definition is in reference to the pluggable board  
Note 2: OC= Open Collector

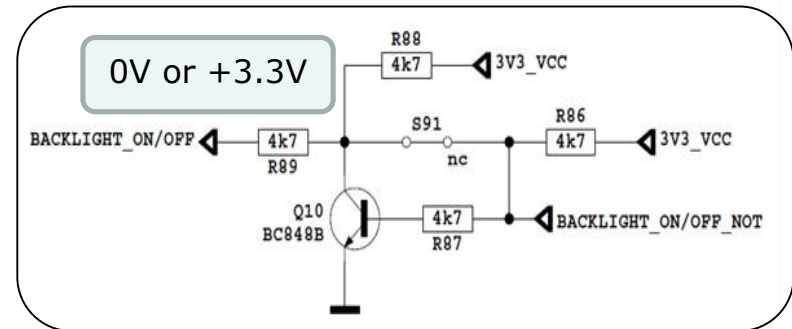
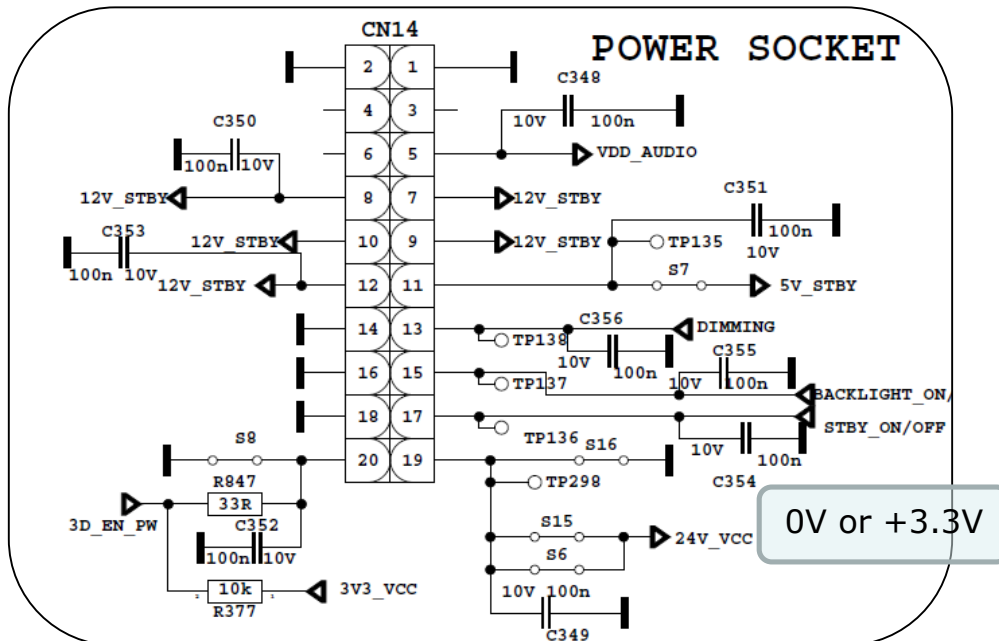
# MB120DS Chasis- TROUBLESHOOTING GUIDE

## NO BACKLIGHT PROBLEM

**Problem:** If product is working, led is normal and there is no picture and backlight on the panel.

**Possible causes:** Backlight pin, dimming pin, backlight supply, stby on/off pin

BACKLIGHT\_ON/OFF pin should be high when the backlight is ON. R89 must be low when the backlight is OFF. If it is a problem, please check Q10 and the panel cables. Also it can be tested in TP137 on main board



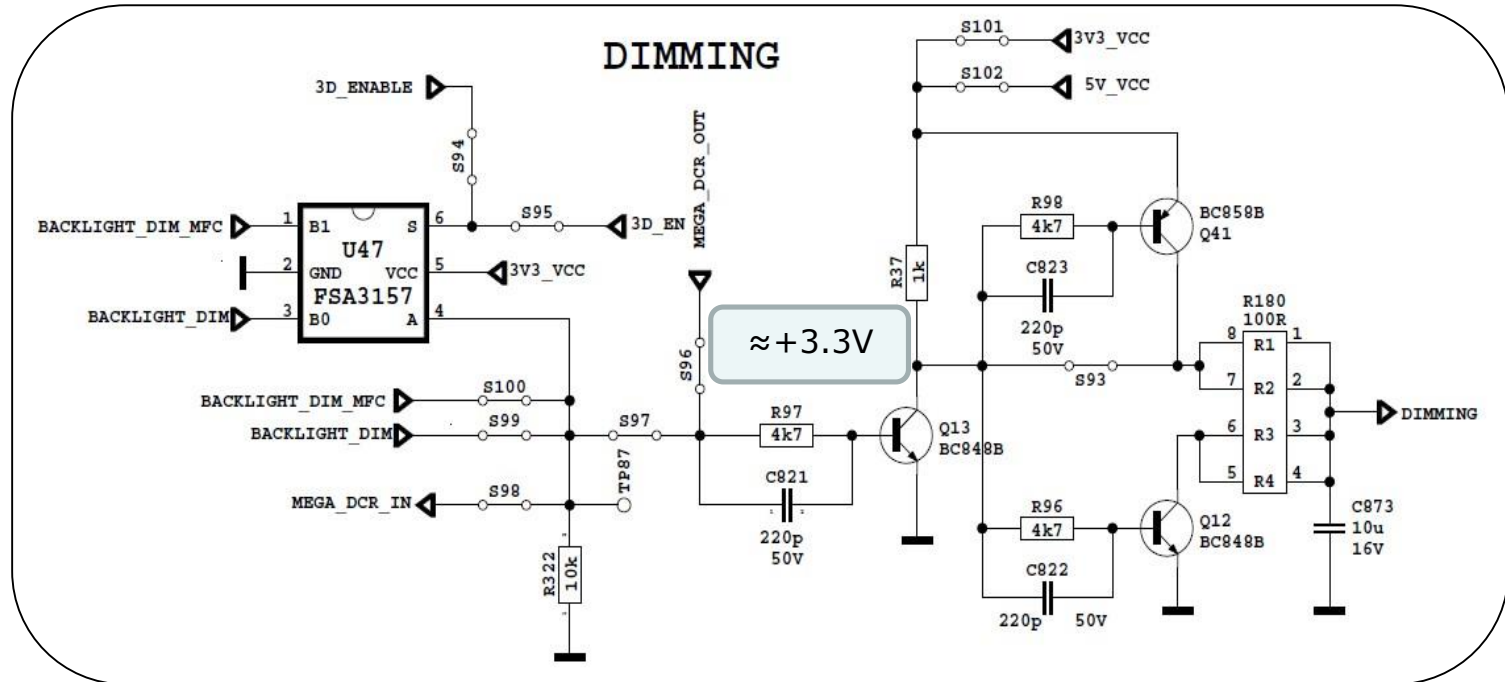


# MB120DS Chasis– TROUBLESHOOTING GUIDE

## NO BACKLIGHT PROBLEM

Dimming pin should be high or square wave in open position.

If it is low, please check S97 for Mstar side and panel or power cables, connectors

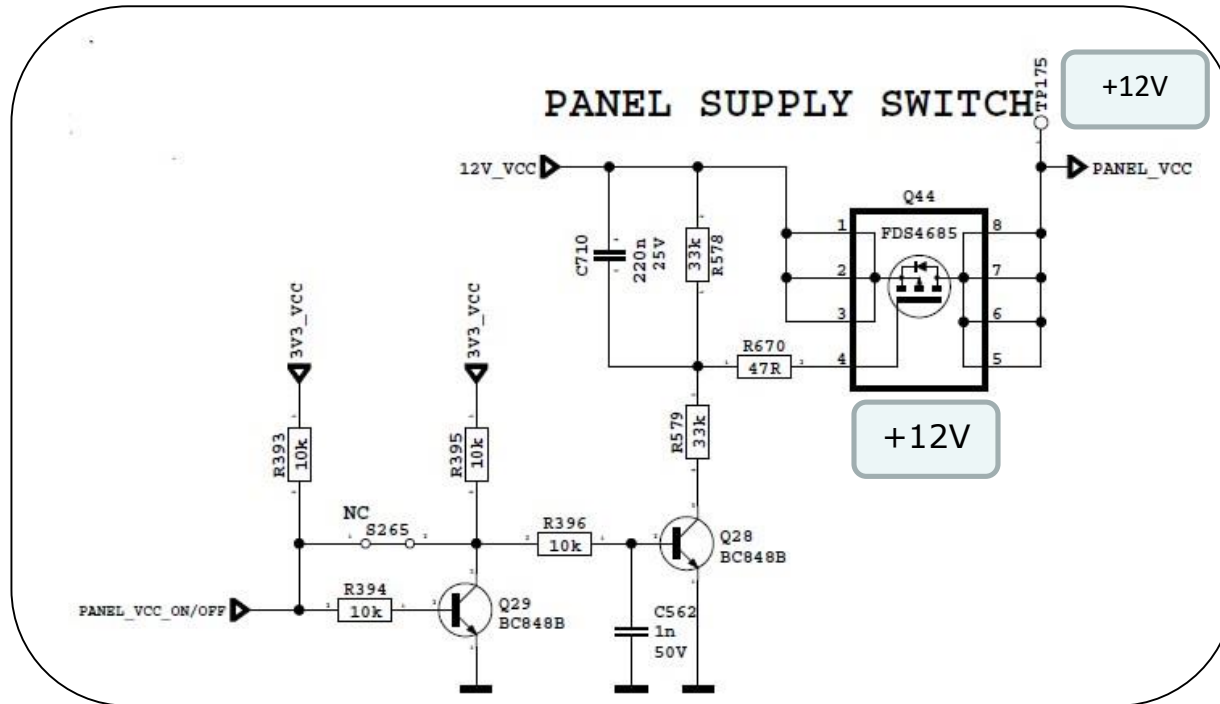


# MB120DS Chasis– TROUBLESHOOTING GUIDE

## NO BACKLIGHT PROBLEM

Backlight power supply should be in panel specs.

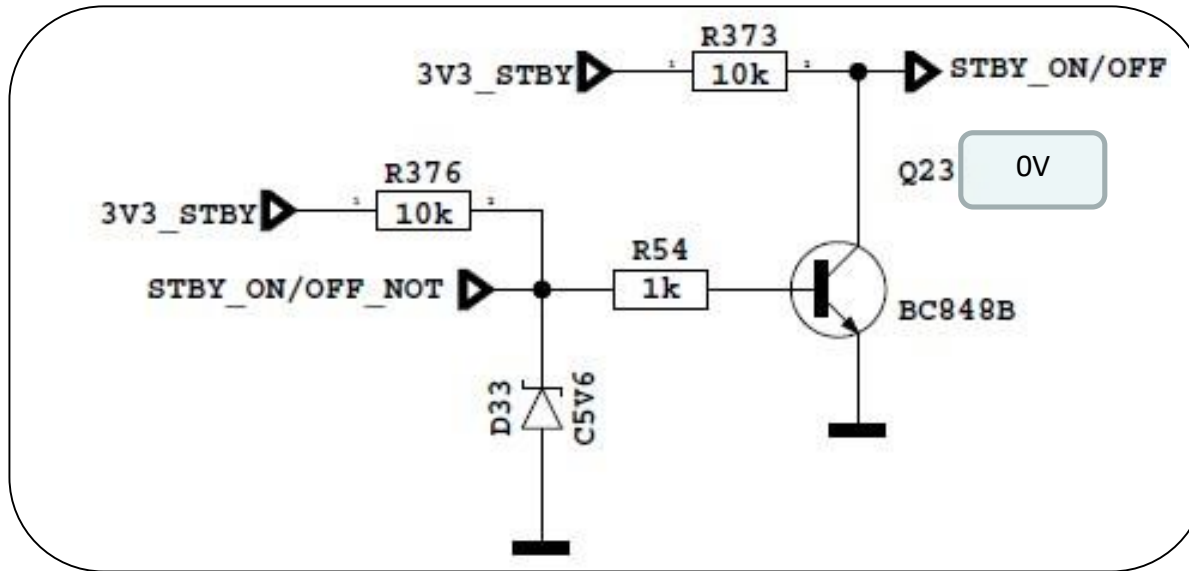
Please check Q44, shown below; also it can be checked TP175.



# MB120DS Chasis– TROUBLESHOOTING GUIDE

## NO BACKLIGHT PROBLEM

STBY\_ON/OFF\_NOT should be low for DS on condition, please check Q23's collector.



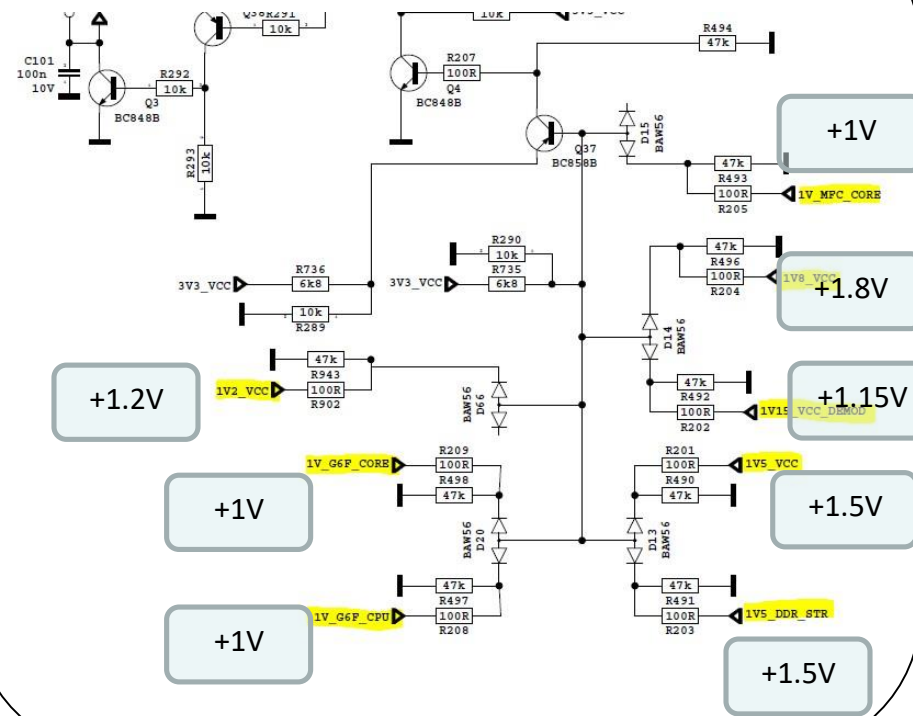
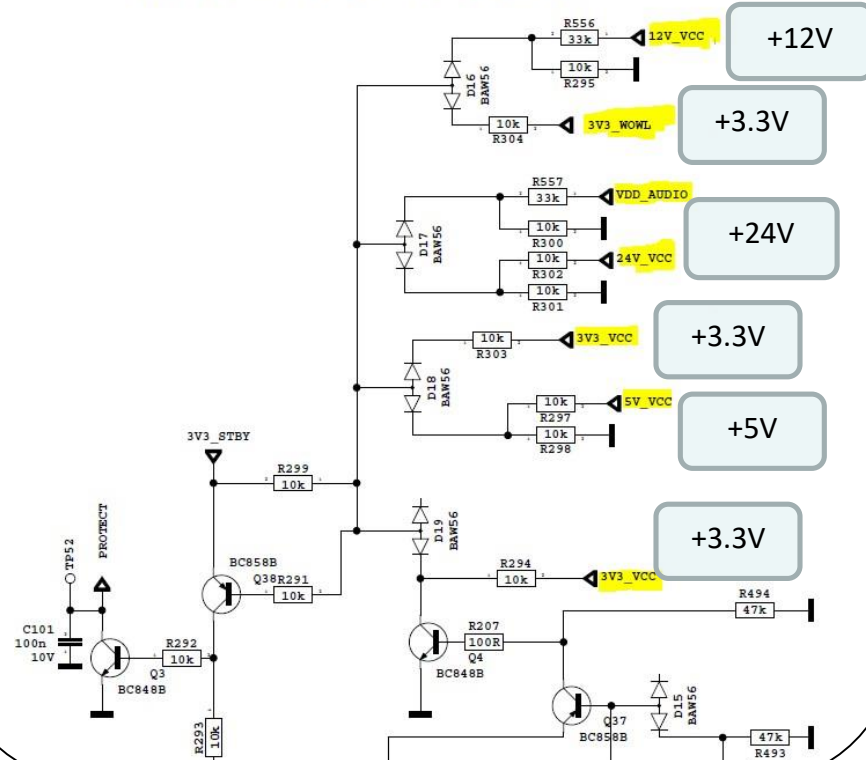
# MB120DS Chasis- TROUBLESHOOTING GUIDE

## STAYING IN STAND-BY MODE

**Problem:** Staying in stand-by mode, no other operation

**Possible causes:** This problem indicates a short on Vcc voltages. Protect pin should be logic high while normal operation. When there is a short circuit protect pin will be logic low. If you detect logic low on protect pin, unplug the product set and control voltage points with a multimeter to find the shorted voltage to ground.

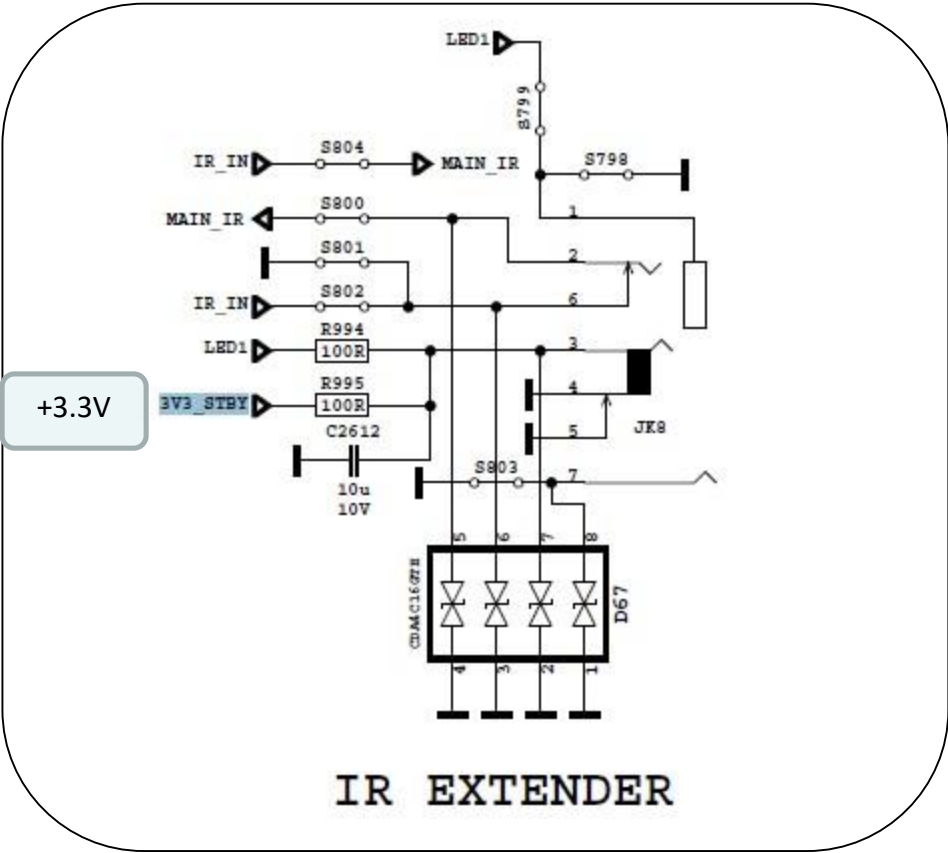
### SHORT CCT PROTECTION



## IR PROBLEM

## Problem: Extender LED or IR not working

**Possible causes:** Check Extender LED/IR card supply on 17MB120DS chasis.

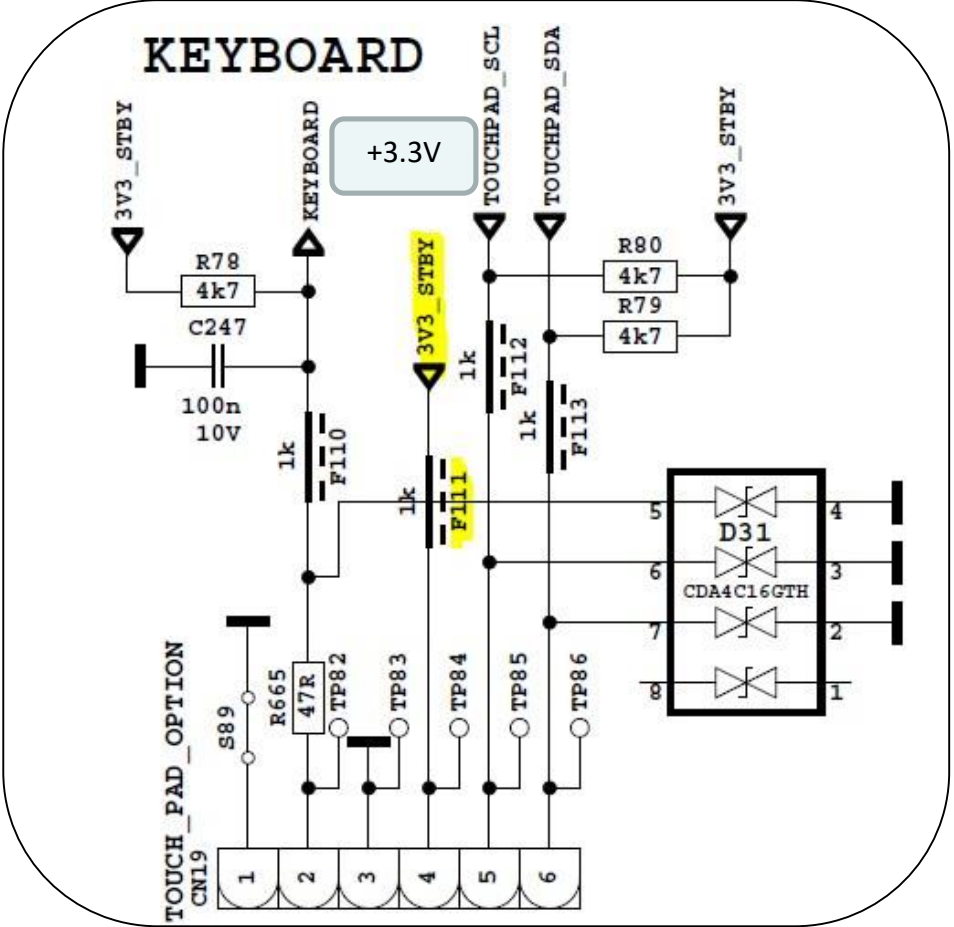




## KEYPAD TOUCHPAD PROBLEMS

## Problem: Keypad or Touchpad is not working

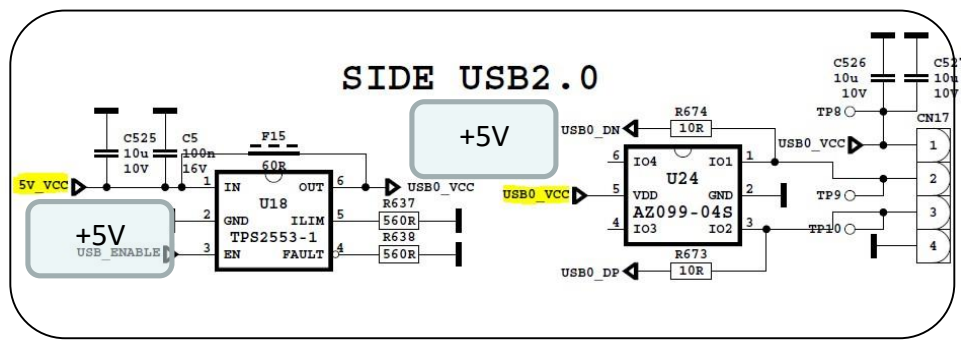
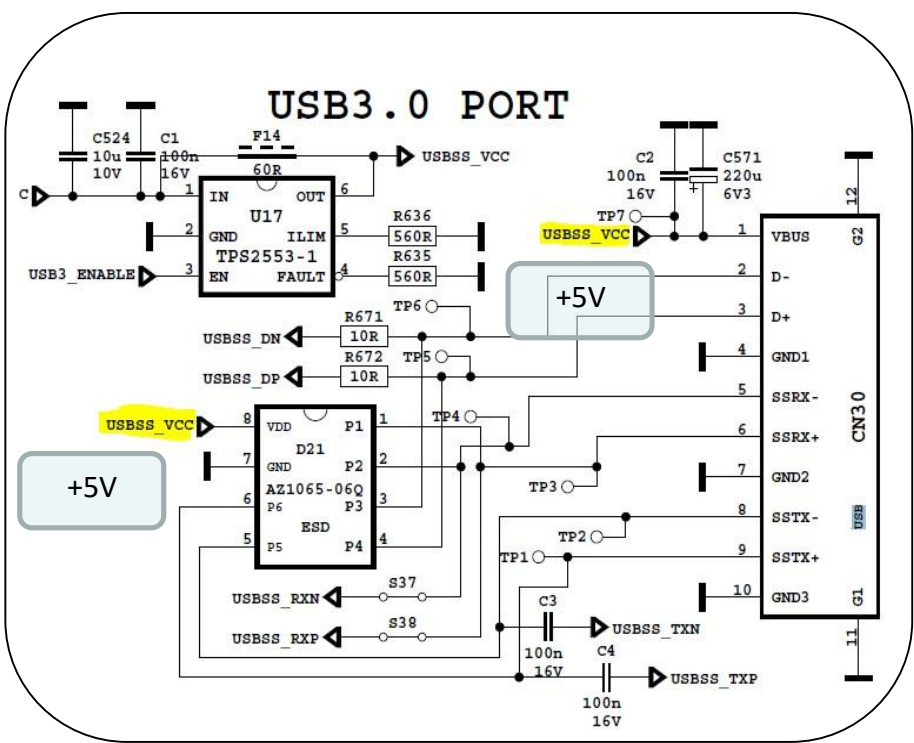
**Possible causes:** Check keypad supply on MB120.



## USB PROBLEMS

### Problem: USB is not working or no USB Detection.

**Possible causes:** Check USB Supply, It should be nearly 5V. Also USB Enable should be logic high.

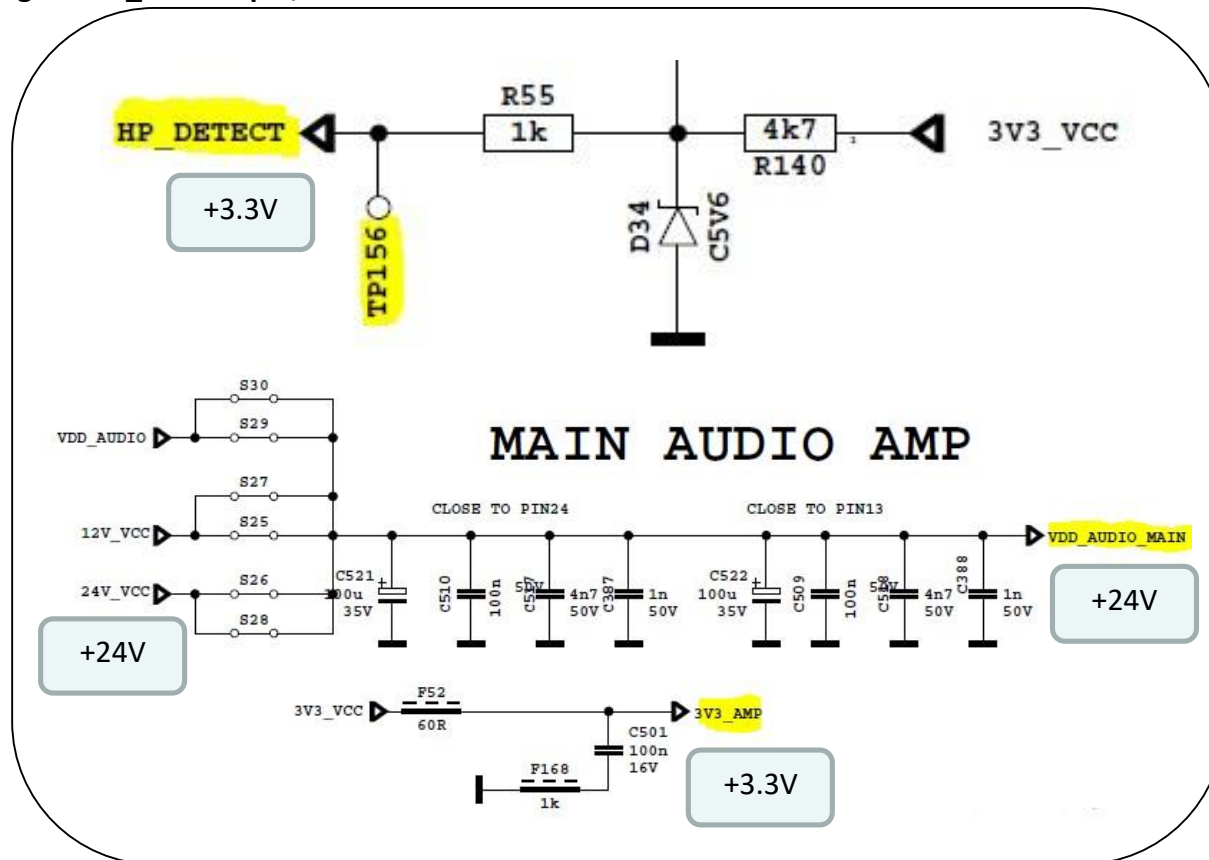


# MB120DS Chasis- TROUBLESHOOTING GUIDE

## NO SOUND PROBLEM

**Problem:** No audio at main DS speaker outputs.

**Possible causes:** Check supply voltages of 24V\_VCC, VDD\_AUDIO\_MAIN and 3.3V\_AMP with a voltage-meter. There may be a problem in headphone connector or headphone detect circuit (when headphone is connected, speakers are automatically muted). Measure voltage at HP\_DETECT pin, it should be 3.3v.



# MB120DS Chasis– TROUBLESHOOTING GUIDE

## STANDBY ON/OFF PROBLEM

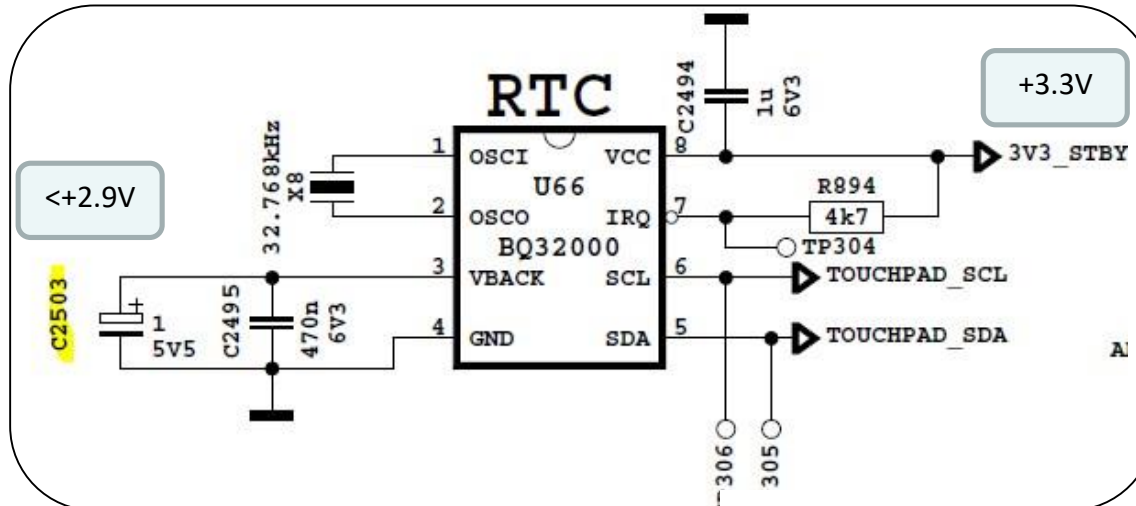
**Problem:** Device can not boot, DS hangs in standby mode.

**Possible causes:** There may be a problem about power supply. Check main supplies with a voltage-meter. Also there may be a problem about SW. Try to update DS with latest SW. Additionally it is good to check SW printouts via Teraterm. These printouts may give a clue about the problem. You can use RJ12 service socket for terraterm connection.

## REAL TIME CLOCK PROBLEM

**Problem:** Date/Time Failure

**Possible causes:** Check RTC supply voltage 3V3\_STBY. Also there may be a problem about backup supply. Please check voltage level of C2503.



# MB120DS Chasis– TROUBLESHOOTING GUIDE

## NO SIGNAL PROBLEM

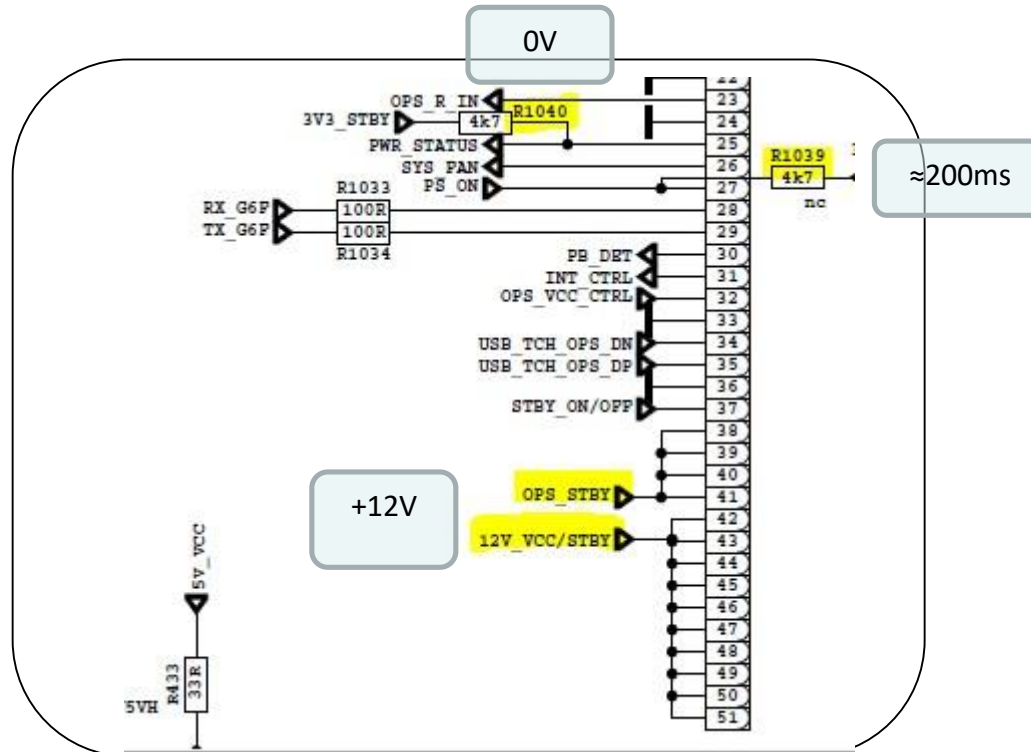
**Problem:** No signal in OPS mode.

**Possible causes:** Check OPS supply voltage 12V\_VCC/STBY and OPS\_STBY(according to power board).

Check PS\_ON signal(R1039) while OPS is being started. A pulse width present on the PS\_ON shall be detected and responded within 200 ms to ensure successful operation.

Check PWR\_STATUS signal (R1040); it must be low if Pluggable board is power on state.

There may be a SW problem, try to update product with latest SW.





# THANK YOU

Vestel Application Engineering Department

HBB - 2016