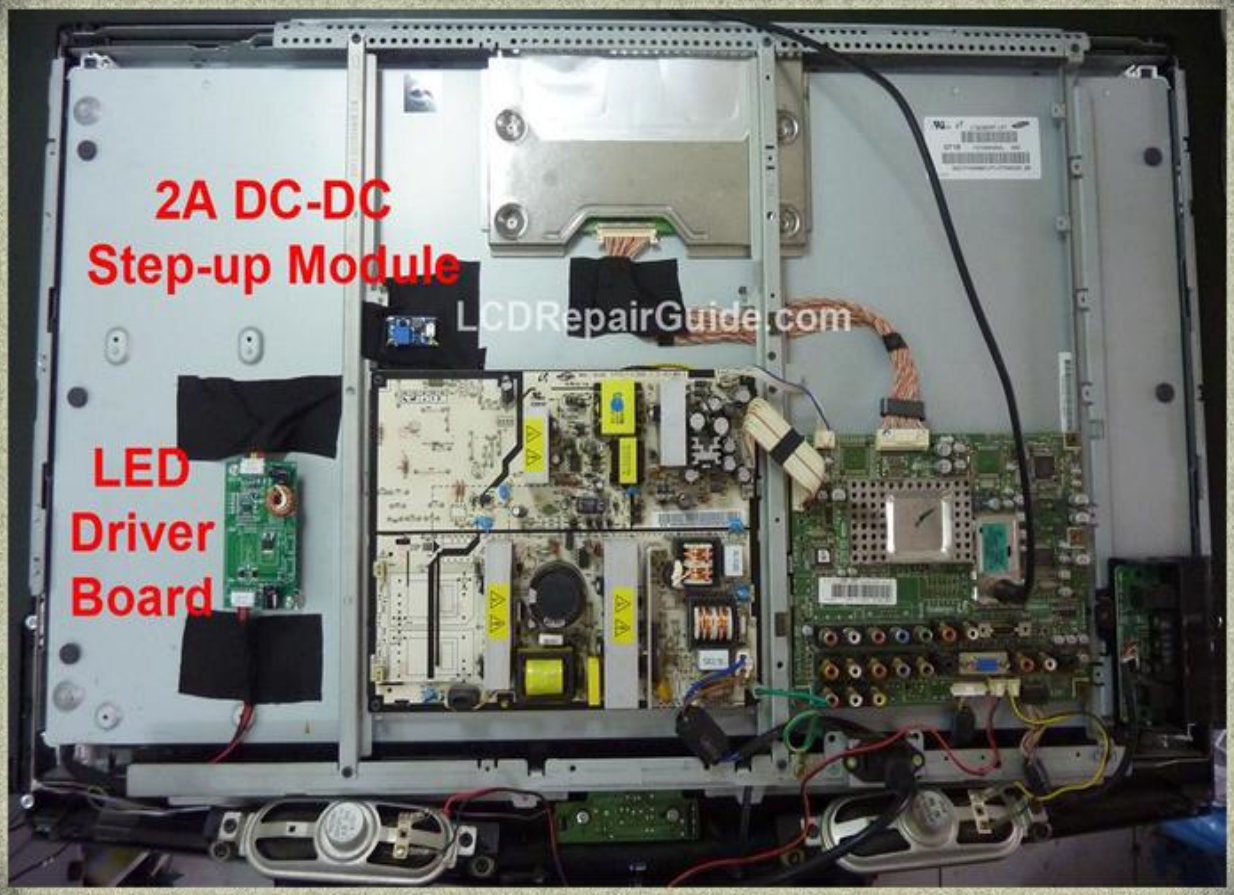
Collection of

V5.0

OLED/LED/LCD TV Repair Tips





by Kent Liew

http://www.LCDRepairGuide.com

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All these tools and equipments will help you in troubleshooting and repairing the electronics devices.

Thank You for Contribution

Here is to thank you to Mr. Ji Chun, Mr. Vladimir, Mr. Lei Yang, Mr. Jonathan, Mr. Ganesh and Mr. Huang. Because they had contributed the good repair information in part of this repair guides.

Table of Contents

How to Use This Repair Guide. 10

How to Modify and Upgrade LCD TV to LED Backlight with Step-by-Step 11

- Parts and Tools 12
- Learn How to Modify & Upgrade LCD TV to LED Backlight 17
- How to Connect from 4 x LED Strips to 6 x LED Strips. 40

How to Programming the LED/LCD TV Mainboard Correctly .. 47

- 3 Types of Programming Methods for LED/LCD TV Mainboard. ... 48
- How to Programming the LED/LCD TV Mainboard 51
- How to Programming the Universal TV Mainboard. 54
- Where to Find or Get the TV Firmware 55

A Superb Secret Revealed on How to Repair LCD/LED TV Mainboard. 56

- What's the Benefit of This TV Start-Up Log Help to Repairer 57
- How to Operate the TV Start-Up Log 57
- How to Read the TV Start-Up Log. 66

New PSU Self Test Method for Modern TV Power Supply. 72

- How to Build A PSU Self Test 3V-JIG 72
- Using the 3V-JIG for Testing the Power Supply (Test 1 of 2). 76
- Using the 3V-JIG for Testing the Backlight (Test 2 of 2) 78
- Using the 3V-JIG for Troubleshooting Backlight 79

Secret Revealed on How to Fast Check the Bad LED Light Bulb in LED TV Backlight. 81

Process to Troubleshooting and Repairing LED TV Backlight & LED Strip 83

How to Remove the LED Light Bulb from LED Strip Easily. 89

LCD/LED TV Power Supply Repair Tips 95

LCD & LED TV Repair Tips 100

BONUS-A: LG LED/LCD TV Interconnect Schematic Diagrams

29LN4510-Interconnect_2013……..117

42LB5800-Interconnect_2014……..119

42LN5300-Interconnect_2013……..124

47LB6000-Interconnect_2014……..132

47LN5750-Interconnect_2013……..139

49LF5500-Interconnect_2015……..147

49UB8500-Interconnect_2014……..155

50LB6500-Interconnect_2014……..168

55EA9800-Interconnect-OLED_2013……..177

55LA8600-Interconnect_2013……..184

55LA9700-UHD_Interconnect_2013……..……..193

55LB7200-Interconnect_2014……..202

Below Interconnect Models Move to BONUS-B Section

55LM6200-Interconnect_2012……..

55LM6700-Interconnect_2013…….

55LM8600-3D-Interconnect_2012……..

55LN5700-Interconnect_2014……..

55LS4500-Interconnect_2014……..

55UB9500-Interconnect_2014……..

55UF7600-SMPS_T-CON_Mainboard_Interconnect_2015

60LN5400-Interconnect_2013……..

65LB5200-Interconnect_2014……..

65UF9500-UHD_Interconnect_2015……

84UB9800-Interconnect_2014……..

OLED65G6P-Interconnect_2016……..……

BONUS-A: T-Con Board Schematic/Circuit Diagrams

AUO T546HF02-VO-CB_T-con Schematic Diagram ……210

Samsung ESP_C4LV0.4 LJ94-03842E T-Con Schematic Diagram..246

Sharp RUNTK0093FVZx_4K2K 120Hz_LC60UD20KN_T-con Schematic Diagram ……..…..…251

BONUS-B

(This bonus NOT listed in this Ebook, it's on the Download Page)

* Universal TV Mainboard Schematic Diagrams & Specification Sheets

* Samsung LCD & LED TV FastTrack Training

* LCD & LED TV Power Supply Schematic Diagrams

* LED TV –LED Driver/Drive Schematic Diagrams

* Panasonic 2010-2011-2012-2014-2015 LCD/LED TV Training

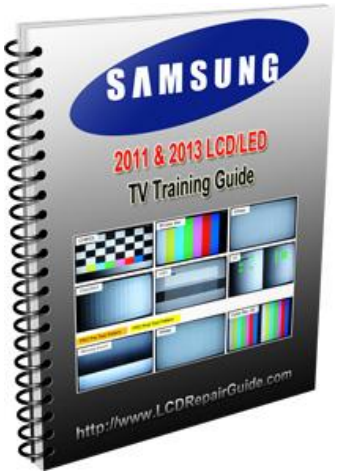
* Samsung 2011 & 2013 LCD-LED TV Training Guide

* Samsung 2012 LCD-LED TV Training Course

* Samsung 2013 LED TV Basic Troubleshooting Guide

* Samsung 2013 OLED TV Training Guide

All these Bonuses are inside the BONUS-B section:











Highly recommended other great related repair information for you:

With all these great repair information, it will help you in troubleshooting and repairing electronic and the other display devices: (Please click on the ebook cover to get more details)

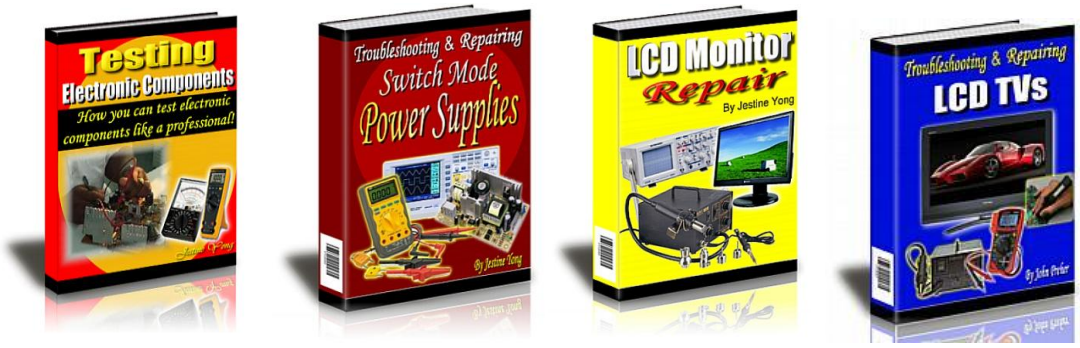
1) Flat Screen TV Troubleshooting & Repairing Ebooks:



http://www.LCDRepairGuide.com

http://www.LCD-Television-Repair.com

3) Other Great Electronic Repairing Ebooks:



How to Use This Repair Guide

1) Yes, this repair guide not only can save you time and money, it also can earn more profit from repairing LCD/LED TV. Because of LCD/LED TV has lots of the market now. And many of them are starting occur the problem now. If we can repair it, so the profit is quite high to earn.

2) Inside this repair guide, I will NOT or I will seldom to provide the repair case about the failure of "Bulged" or "Bad ESR" values of Electrolytic Capacitor/s. As a TV repairer it is a very first step to see and measure the PCB boards inside the TV. Because it is a very basic things as a repairer need to know or know how to measure it. I highly recommend using the Blue ESR tester to testing electrolytic capacitor.

3) You can choose the chapter you're interesting to read. For example you want to know learn the new PSU Self Test Method, you can directly go to that chapter and reading it.

4) Actually all the LCD & LED TV their structure are nearly same. So we can learn the LCD/LED TV repairing information from other brands of TV.

5) I like to use the LED Strip instead of LED Light Bar. Both of these words are the same thing and same meaning. Please do not confuse.

6) All the Programmer mention in this ebook is using the RT809F Universal Programmer. For Nand Flash it is using the RT809H Universal Programmer.

7) After you finished reading this V5.0 ebook, I believe that you can improve yourself and confident in repairing the TV Mainboard without guessing it. ☺

How to Modify and Upgrade the LCD TV to LED Backlight with Step-by-Step

This is a LED and OLED generation now. The benefit to change LCD TV backlight to LED Backlight is: The TV Power saves as high as 50%~70%! The TV will be lighter in weight. When we try to do this "Modify & Upgrade the LCD TV to LED Backlight", we can learnt more about how the LED backlight works.

This knowledge is better than just read from ebook or book. Because it is a practical experience to let us how the LCD backlight system can be change to a LED backlight system.

Before starting to do that, first we need to know:

1) How to do the PSU Self Test (old method & new method. The new method is in this ebook). You can refer to my V3.0 & V4.0 ebooks for more details.

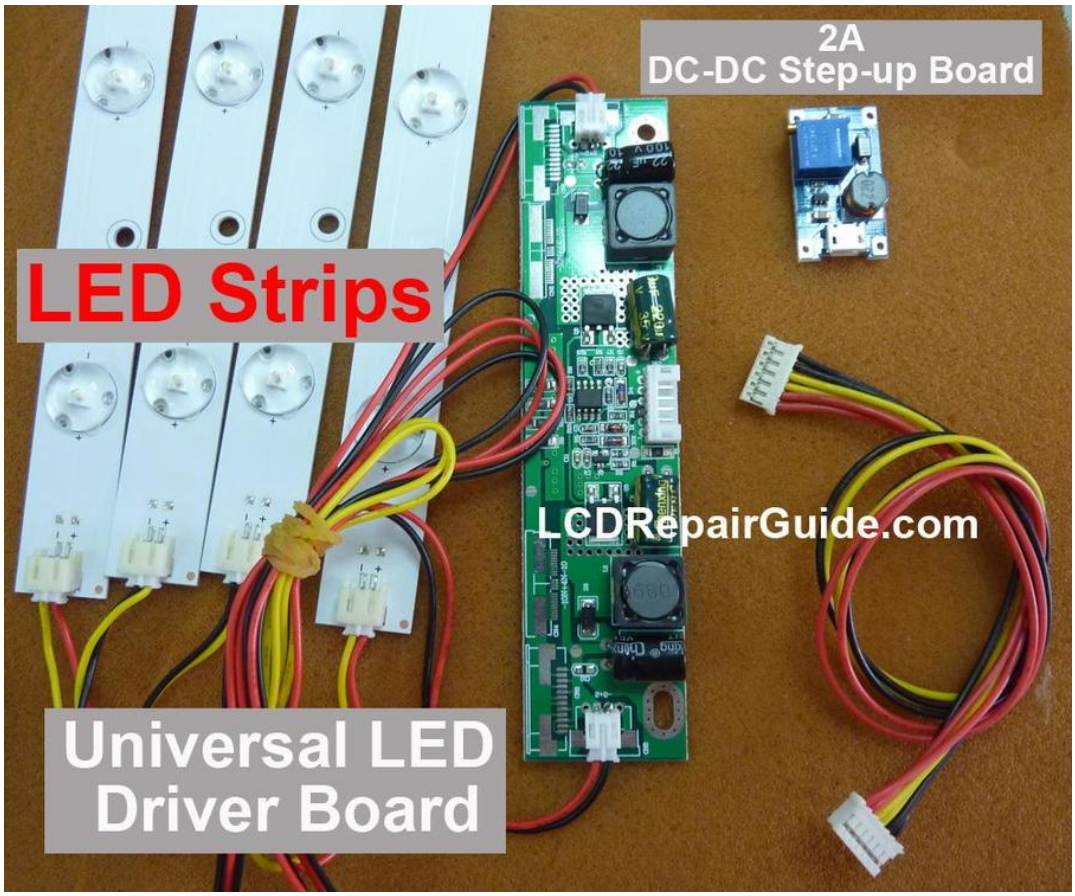
2) How to get the necessary spare parts of this project. I will recommend you go to Aliexpress or eBay.com to buy it. (**http://www.LCDRepairGuide.com/tools**)

3) The knowledge on how to modify and upgrade the LCD TV to LED Backlight. Yes this knowledge is in this chapter.



The Parts and Tools:

1) LED Strips, Universal LED Drive/Driver Board and their Cables to connect each other.



2) 3M Double Side Tape, Aluminum Tape and Cloth Tape



3) 2A DC-DC Step-up Module/Board (Optional)

Ampere Ioutput (max) = 2A (recommend use in between 1A)

Input voltage = 2V~24V

Output Voltage (max) = 28V (recommend use 26V or below)

This module can easily adjust output as: 9V, 12V, 15V, 18V and 24V.



4) Universal LED Driver Board for 10~42 inches LED TV (Optional)

Vin (Voltage Input) = 10.8V ~ 28V

Vout (Voltage Output) = 88V (max)

I out (Ampere output) = 480mA (typically)

Ampere output can be set in between = 10~1000mA

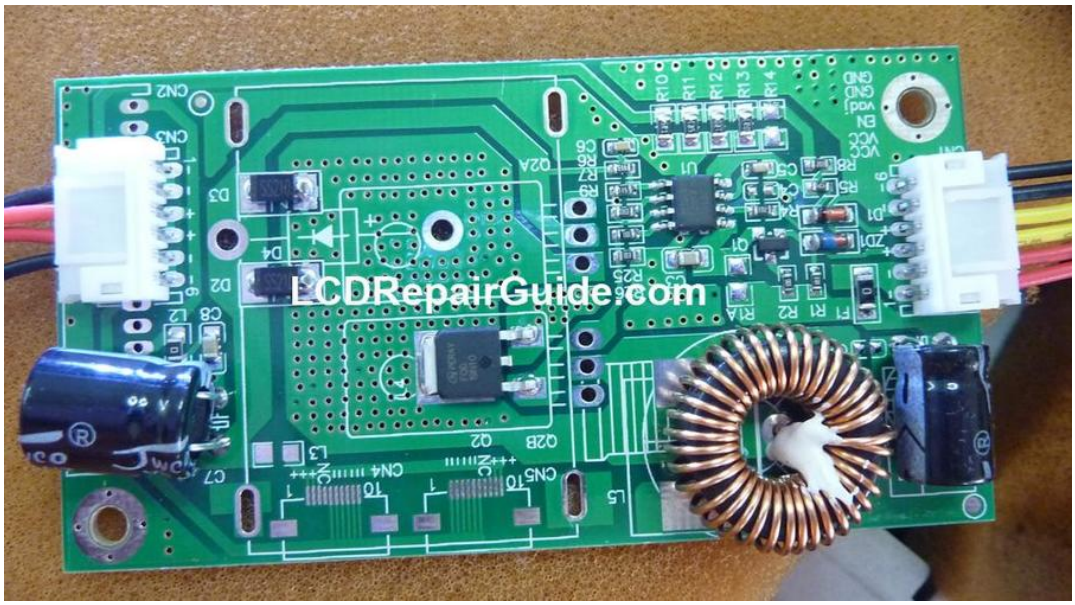
Notes: Be careful to all types of Universal LED Driver Board. Even this board wrote can support 10.8V ~24V input voltage, but their output ampere will difference as below:

When 24V input voltage (Vin): Vout= 75V, I out= 720mA (60W max)

When 12V input voltage (Vin): Vout= 75V, I out= 400mA (30W max)

* So it will affect the brightness of LED Light bulbs! That's why the PSU board if just has 12V or 13V output voltage to inverter section need to add in a 2A

DC-DC Step-up Module. But most of LCD inverter section is using 24V input. So it doesn't matter for this type of PSU board.



CN1 (input connector) = 1) Vcc, 2) Vcc, 3) EN (BL_ON), 4) Vadj (PWM), 5) & 6)= GND (Ground).

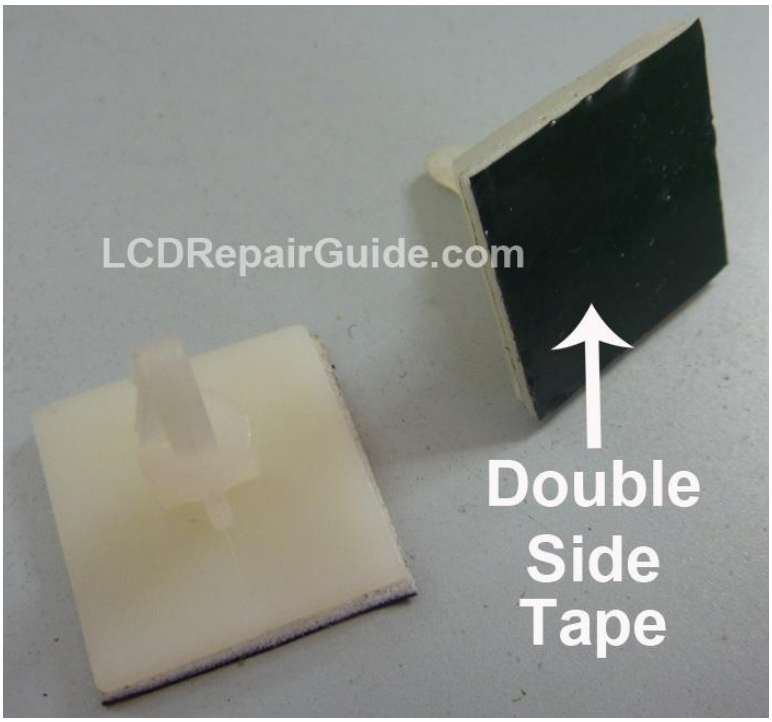
CN3 (output connector) = pin1, 2 is –ve (LED-)

= pin 3, 4 is +ve (LED+)

= pin 5,6 is –ve (LED-)

5) Accessories (Optional)

PCB Supporter or PCB Pillar => Use to support the PCB board.





6) LED Strips & LED Light Bulb Tester (A Must have tool if you repair LED TV)

This tool will let you easily testing the LED Light Bulb or LED Strip. Not only that, it will also show the voltage values of that LED light bulb or the LED Strip.





Learn How to Modify and Upgrade LCD TV to LED Backlight

For the CCFL or normal type EEFL LCD Backlight, just removed their CCFL or EEFL lamps and replace with LED Strips. Make sure that the LED Strip size or their length is suitable for your panel. For the small inches LCD TV or LCD Monitor, most of their LCD backlight is design using Edge Light type. You need to remove their CCFL lamps from metal shield/cover of that Edge light.

So when you buy the set of LED Strip with LED Driver board, make sure that you told the seller what's type of LCD Panel is and their types of design. So that you can buy the suitable set of LED Strip + LED Drive Board to modify and upgrade your LCD TV backlight.

In this article, I will use the hard to modify model TV to modify and upgrade their LCD backlight to LED backlight! If you know how to modify the hard one, then the easy to modify tv model will not a problem to do the modification & upgrade!

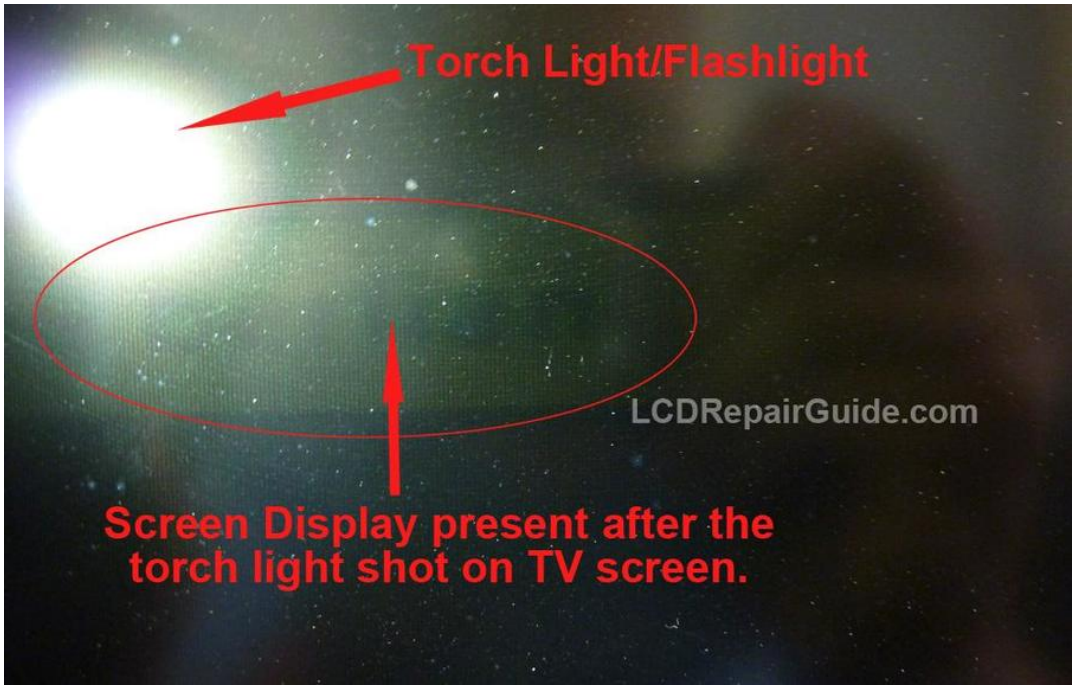
I will show you 2 Cases, one is Fail case and another one is Successful case. So it will let you learn some good experience on how to modify the LED backlight.

A Samsung LA32R71B LCD TV complaint the problem is No Display, but sound is normal. After check the TV, the TV screen can present a darkness display.

After testing their PSU Board (that's the IP Board, Inverter + Power Supply), found the board is Ok. So the problem is in their EEFL Lamp. Next step will be dismantling their LCD Panel to checking their EEFL Lamp.

Samsung LA32R71B LCD TV with No Display Problem:

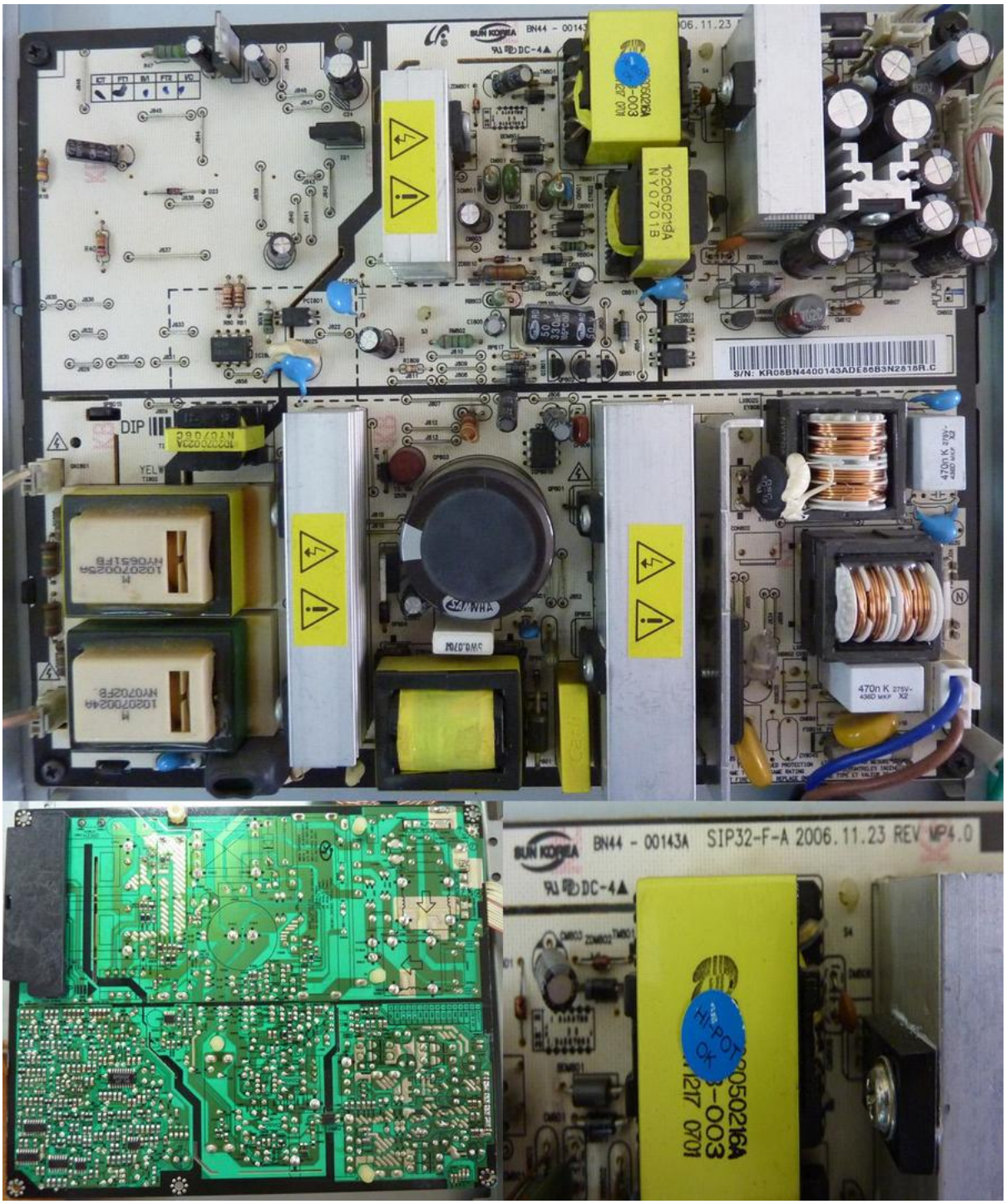




Samsung LA32R71B LCD TV rear side without the back cover:



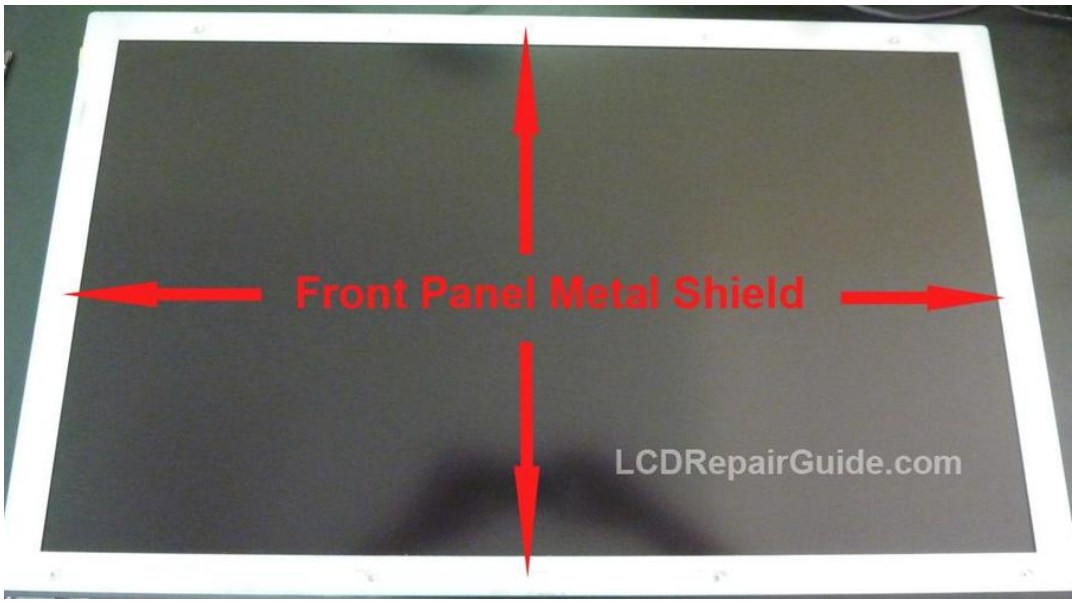
This LCD TV IP Board part number is: BN44-00143A



Removed all the PCB Board and dismantle the LCD Panel:



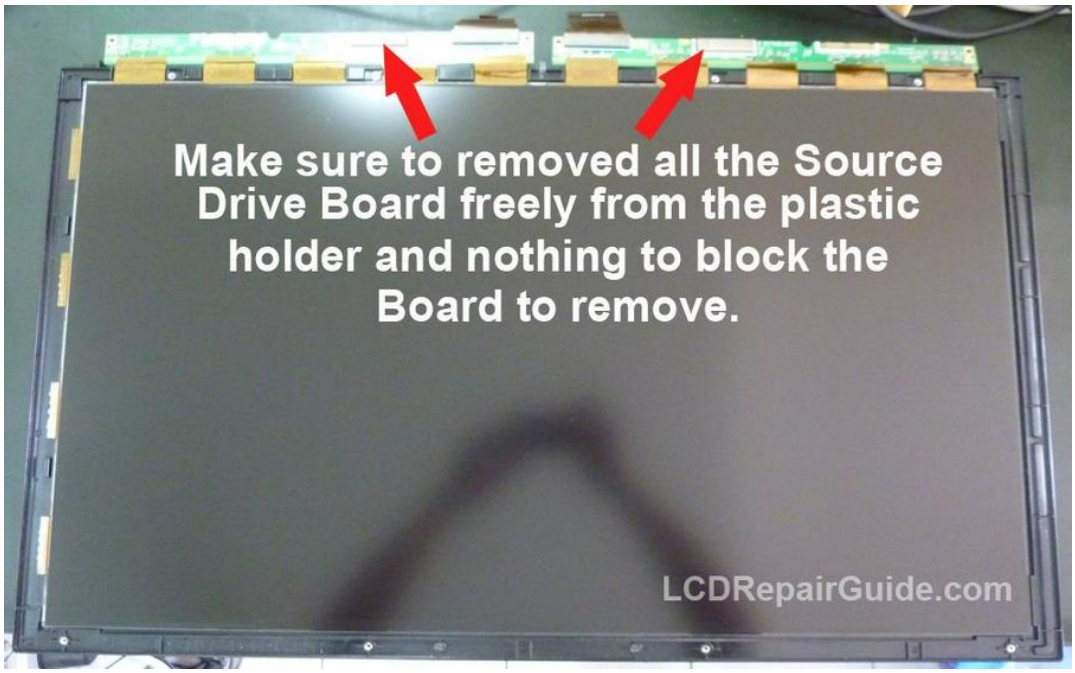
Removed the Front Metal Shield screws and then removed the metal shield carefully:



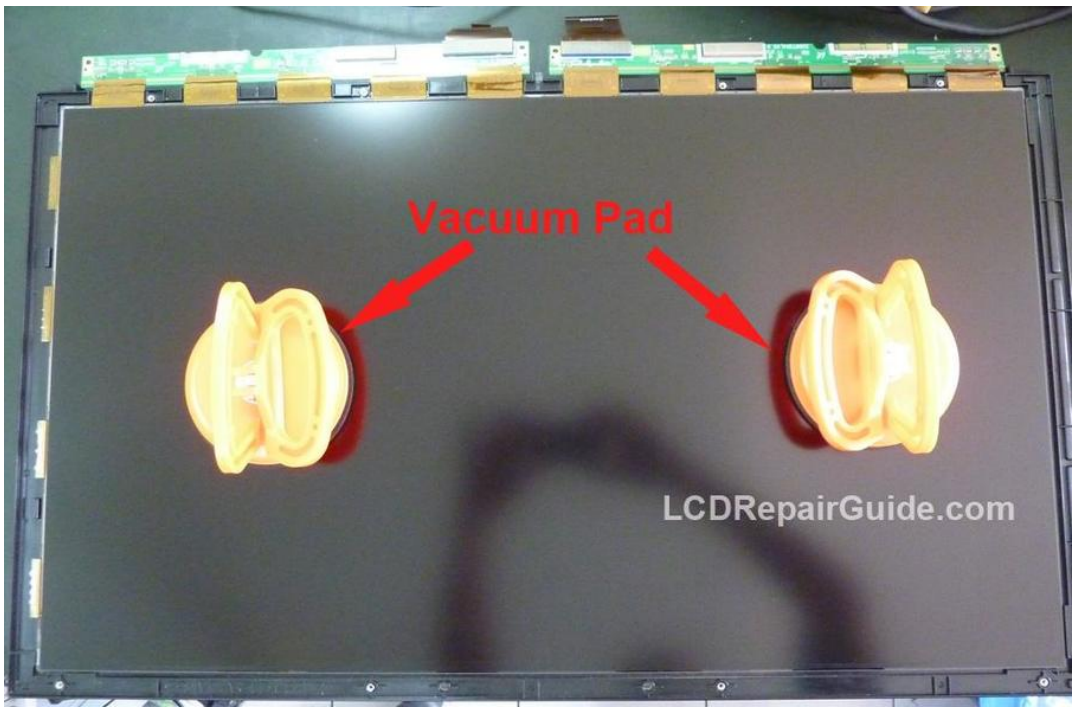
Panel Glass- After removed front metal shield:



This step is important. If not It will damage the LCD Panel and causing the LCD Panel show vertical lines/bars:



Use the Vacuum Pad to safely remove LCD Panel Glass:



After removed Panel Glass, their Reflector, Prism Sheet & etc appears like photo below:



Finally, after removed the Reflector and etc their EEFL lamp is appear now:



This is a seldom use EEFL Lamp type in LCD TV:



Notes: Because of this type of EEFL Lamp, so I decided to help him to modify and upgrade the LCD TV to LED Backlight! Important thing is the customer accepts my suggestion to modify the TV.

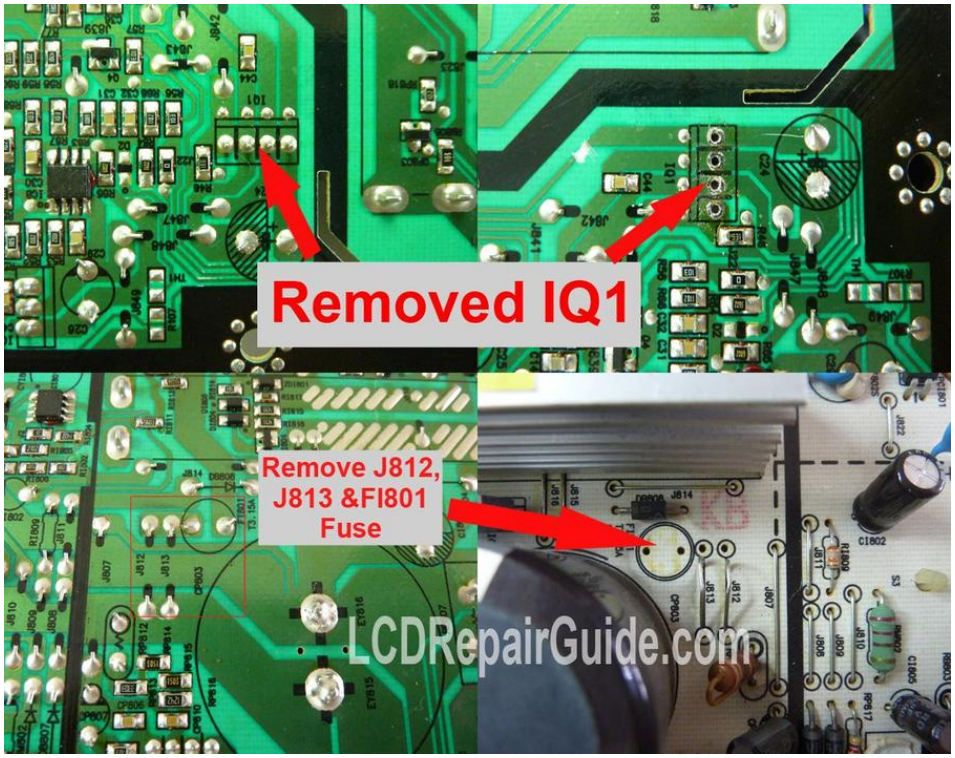
Modify Case A- Failed:

Before start to modify the LCD TV, make sure that all the parts and tools are ready to use. It will help us to do the job easily without any frustration.

Step-1:

To do the PSU Self Test first, make sure all the voltages are appears correctly. Because of this PSU board (IP Board, BN44-00143A) just output 5V, 12V and 13V only, no 24V. So its need to add in the 2A DC-DC Step-up Module to increase the 13V to 24V for LED Driver Board use. If not, the LED Backlight wills not working perfectly and their brightness is not enough.

For the IP Board, we need to bypass their inverter section first. This IP board design is supply the 13V to their IQ1 Regulator IC and supply to their inverter control circuit. And another way is supply from PFC voltage to their inverter section. So removed the IQ1, J812, J813 and FI801 (T3.15A 250V fuse), their inverter section will stop work.



Step-2:

The Universal LED Driver Board needs these voltage line and signal lines to operate. They are:

1) Vcc (Depend on the Universal LED Driver board their input voltage requirement)

2) GND

3) EN => same as BL_ON, SW and etc

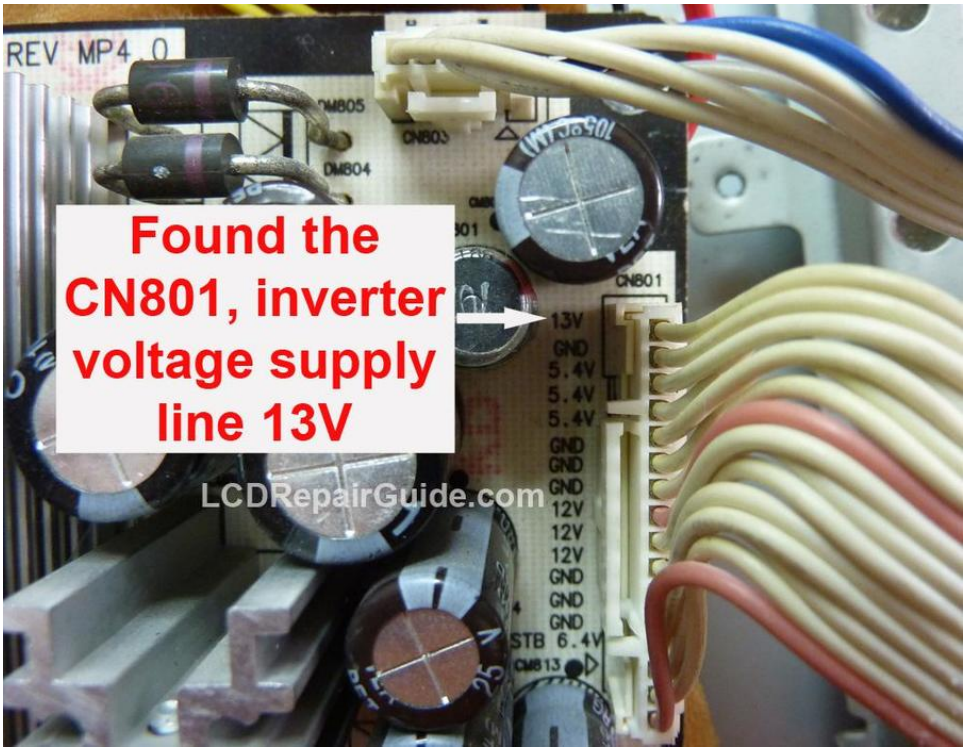
4) Vadj => same as PWM, P-DIM, ADJ and etc

So find out these lines from the original IP board like photo below:

Found PWM and SW pins:

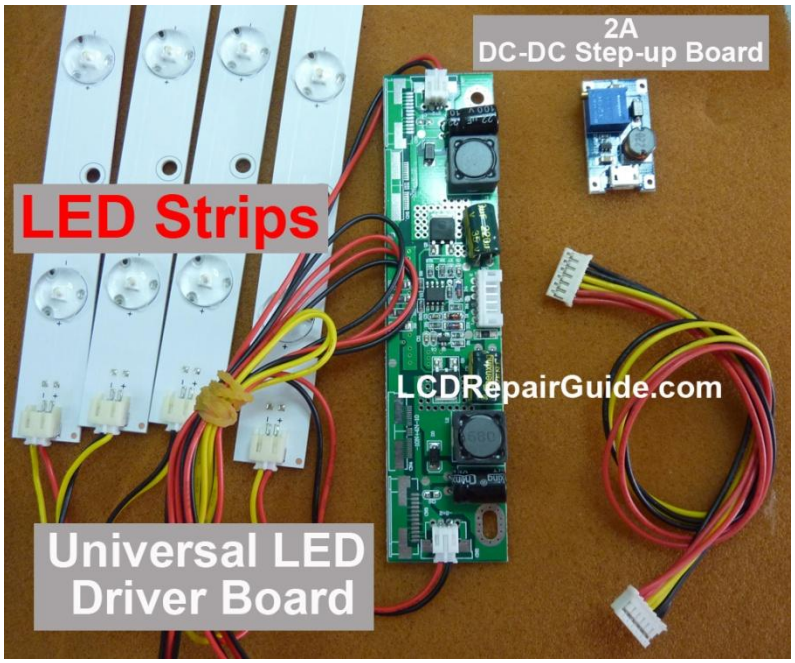


Found the Inverter supply voltage line-13V:



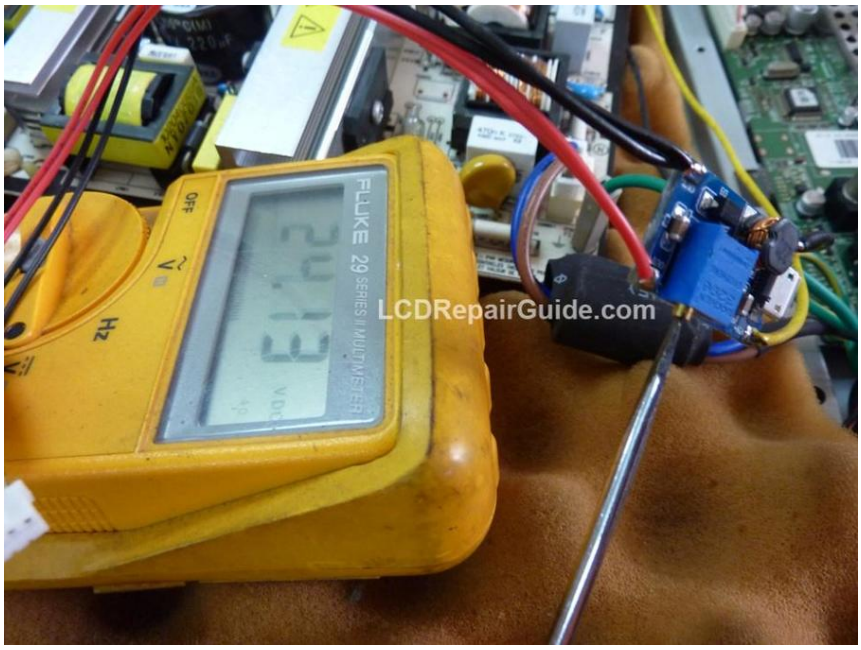
Step-3:

After found all these voltage and signal lines, we can start to modify the circuit now. Prepare the Universal LED Driver Board, LED Strips and the cables supply by the seller.



Also prepare the 2A DC-DC Step-up Module to set the output voltage to 24V. Connect the Module input voltage from IP board 13V supply. After that use a screw driver to adjust it until the voltage output reach 24V like photo below:





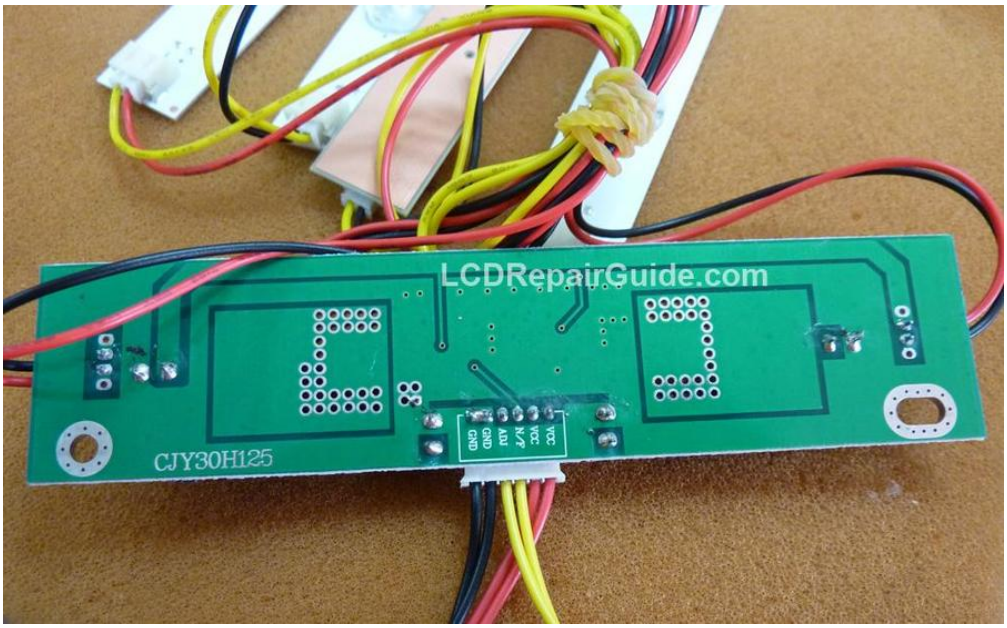
Connects the LED Driver board Vcc pin to 2A DC-DC Step-up Module OUTPUT+, GND connect to OUTPUT-.

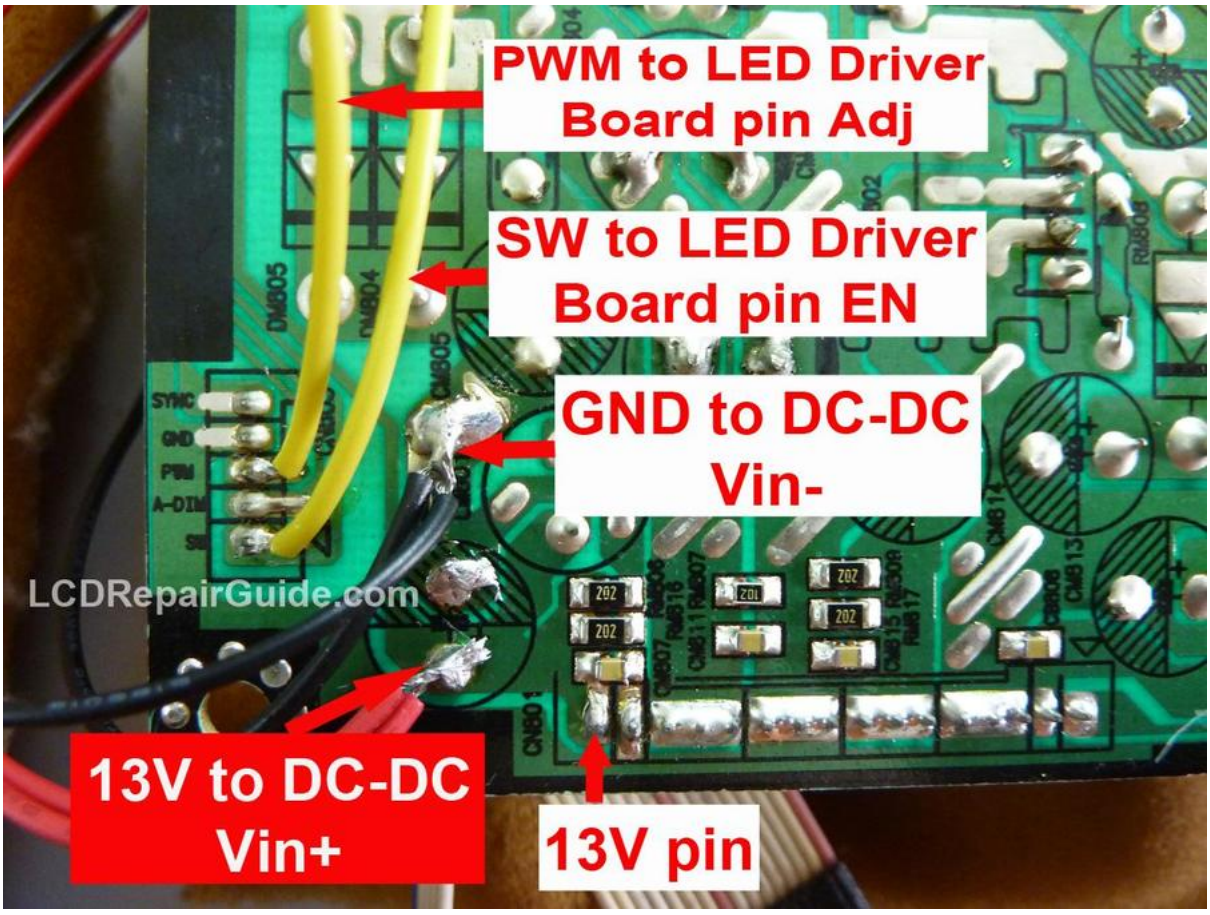
IP Board/PSU pin-13V supply connect to DC-DC Module Vin+, GND connect to Vin-.

IP Board pin SW connect to LED Driver Board pin N/F (or EN)

IP Board pin PWM connect to LED Driver Board pin ADJ (or Vadj)

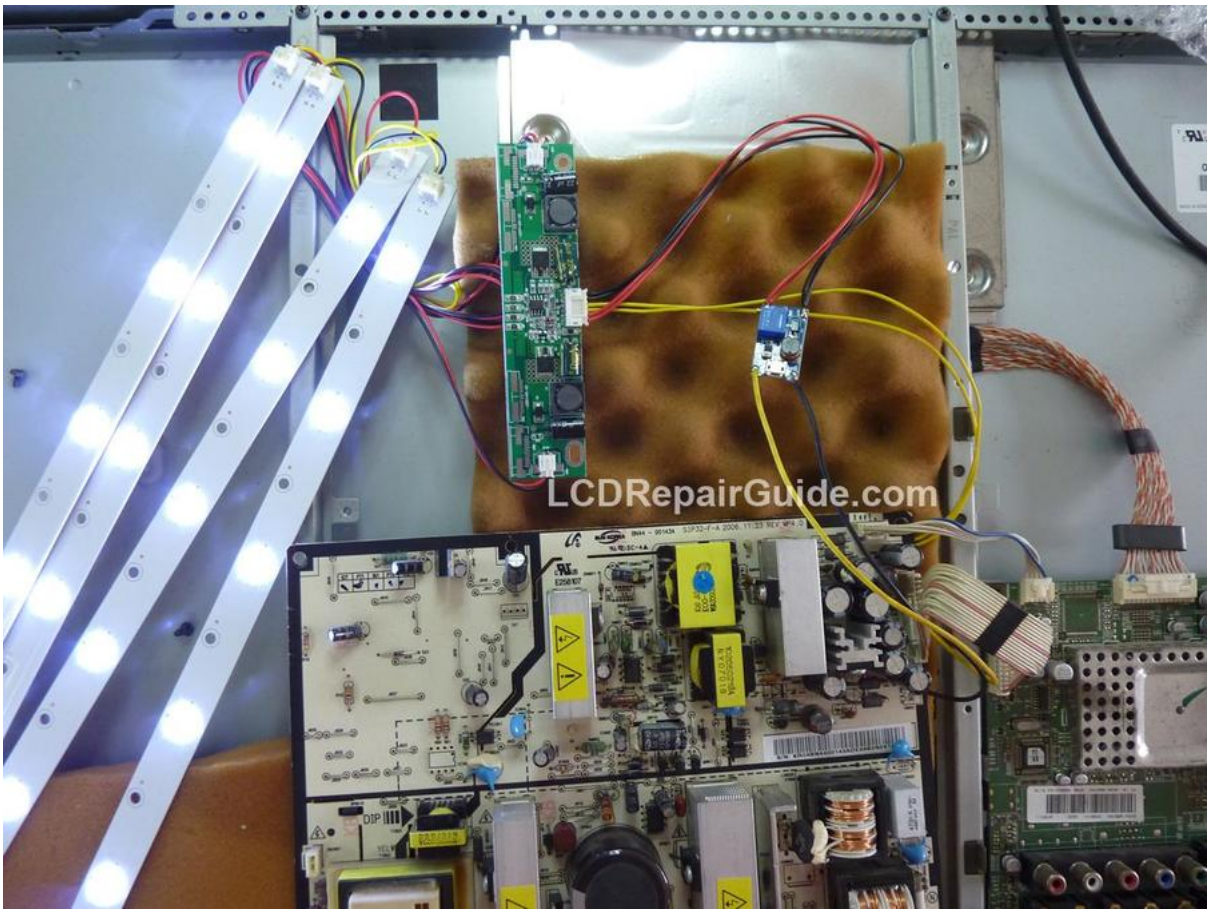
After that connect the LED Strips to LED Driver Board





* Please check all the connections are connected properly. Especially DON'T wrong connect their supply line! If not, it will damage the LED Drive Board or IP Board. Also make sure that DC-DC module is output 24V!

If everything is ok, then we can try to power on the TV and see the LED Strips working or not.



Yes, the LED Strips are all working now. So the next step to be put all the LED Strips x4 into the EEFL Lamp there.

Step-4:

This step is to think how to put all the LED Strip into EEFL Lamp there. Also their cables need to manage it too. Because the cable some is long and some is a bit shorted.

After saw the situation in Panel and the EEFL location, decided to put the LED Strips all above the old EEFL Lamp there. Because the Panel Pillar there have some space to put it in. So try to do it now.

Temporary put the LED Strip on EEFL Lamp and balance their distance in between the LED Strips:



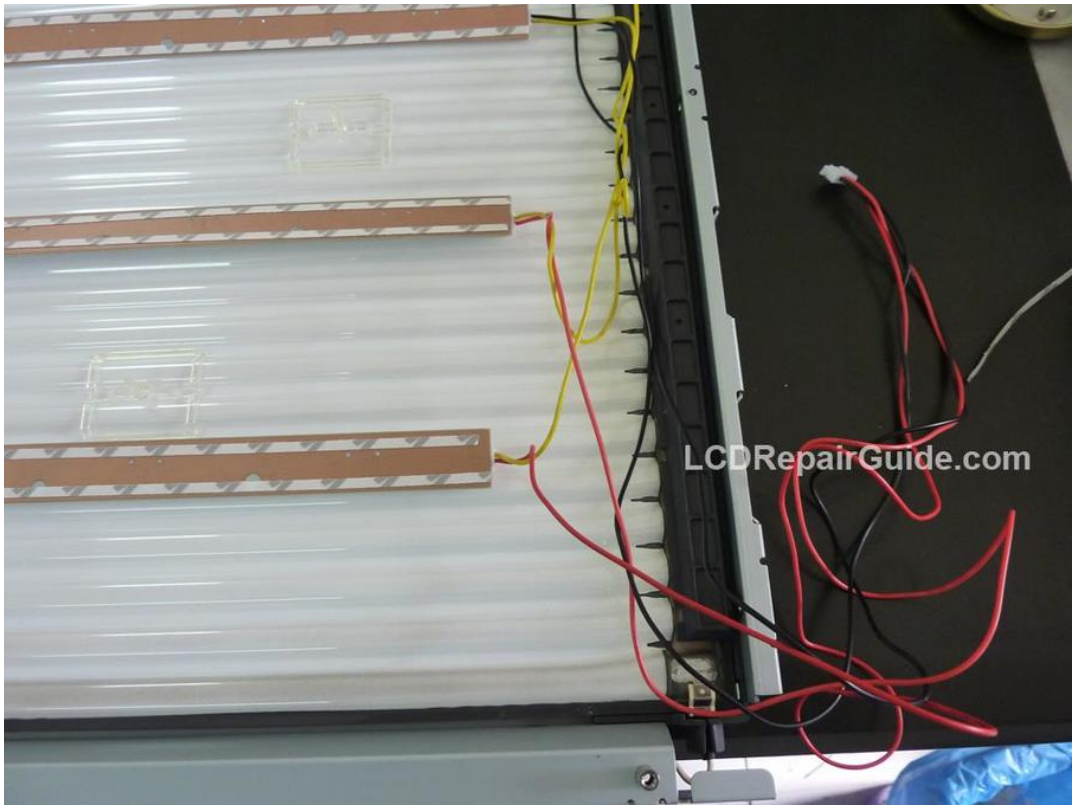


When everything is Ok, put the 3M Double Side tape below each LED Strips.





This is time to manage or tidy the wire now:



Use the Cloth tape to tidy wire like photo below:





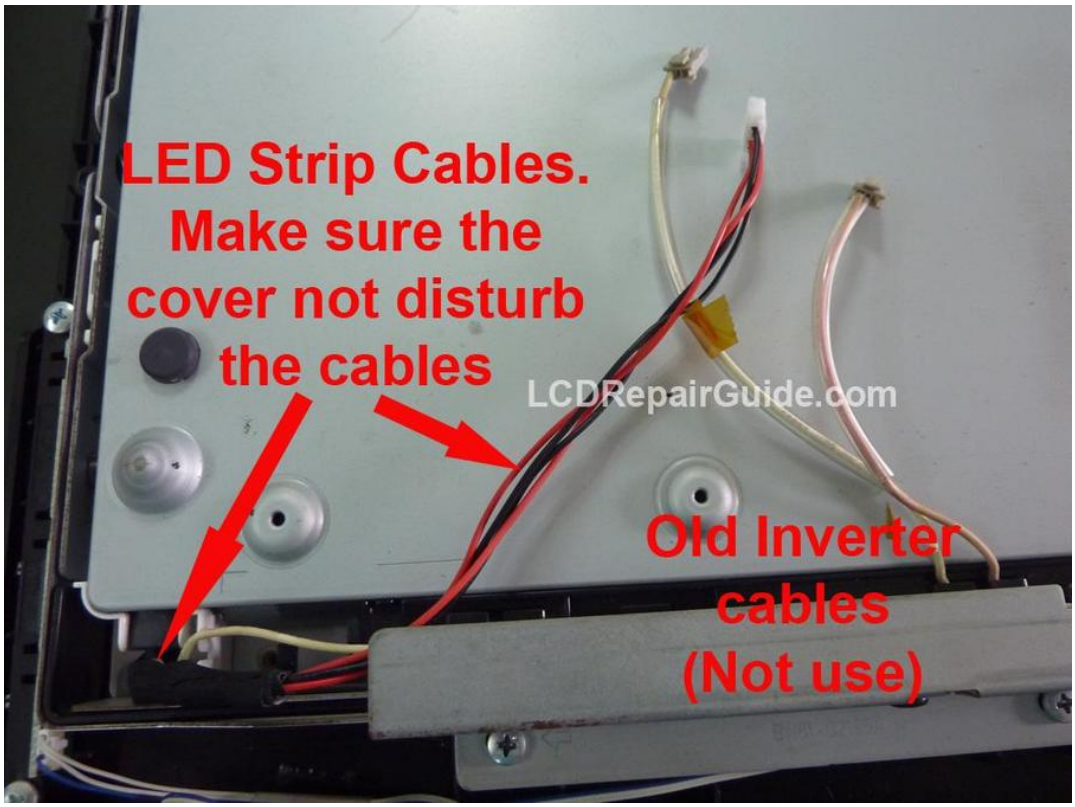
Notes: Please don't use too much cloth tape on the wire/cables. Because the space inside have limitation in between Panel and EEFL. So don't put too much tape until the plastic and front metal shield cannot close it properly.

Removed the 3M Double Side tape paper and stick it on the EEFL Lamp. Also use the aluminum tape to close all the cables:

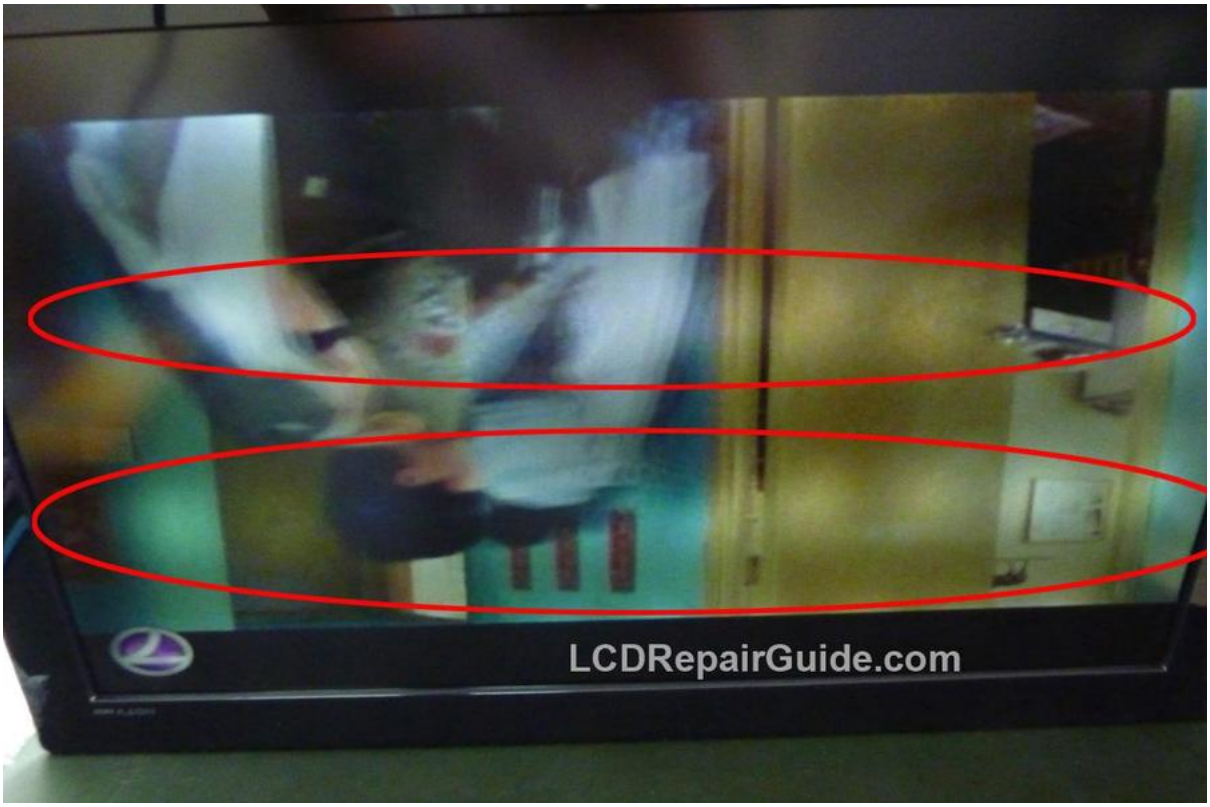


This is the time to put back all the Reflector, Prism Sheet Plastic cover and Front Metal Shield and etc. Make sure when close the plastic & metal cover not disturb the LED Strips cable.





Connect back all the PCBs to TV. Power on the TV now:





OMG! The result is failed!

Analysis the problem now:

1) Why the screen can saw all the LED light bulbs brightness?

Answer: It could be the LED Strip put too near the Panel Glass and causing this symptom on the screen.

2) Their total brightness for the screen it not good and bit darkness compare to the normal TV brightness?

Answer: The LED Driver Board and ADJ signals, also MENU setting for brightness and contrast also try already, but still same problem. Looks like the LED Driver Board cannot supply enough Ampere for the LED Strips to provide more brightness from it.

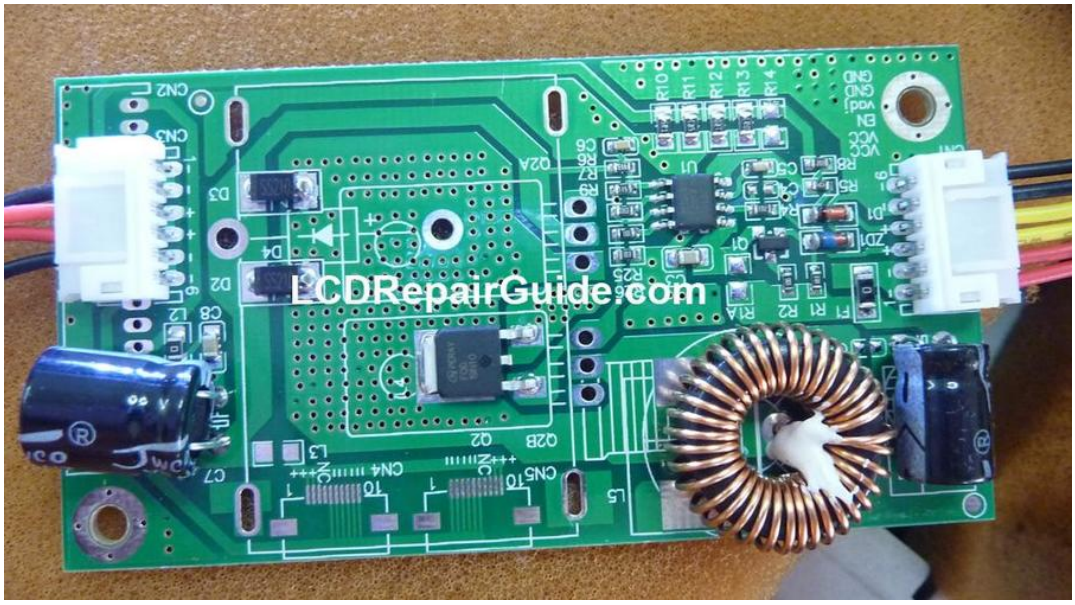
Solution:

1) Removed the old EEFL Lamp and other unnecessary parts inside the panel. So the LED Strips not to put too near the Panel Glass. One more thing, if the LED Strip put too near the Panel Glass, it will damage the LCD Panel Glass rear polarizer film on the future. It is because of the heat generated by the LED Strips!

2) The 4 x LED Strips is not enough to provide the good brightness to Panel. So will planning to put about 6 x LED Strips inside the Panel. The problem is that seller selling this LED Strips Kit set is just for 4 x LED Strips only and not support to 6 x LED Strips. So I will plan to replace another Universal LED Driver board to support 6 x LED Strips.

Modify Case B- Successful:

Follow by the Case A steps 1 to 3. Replace another LED Driver Board like photo below:



Remove the old EEFL Lamps and other unnecessary parts inside the Panel. Also add in total of 6 x LED Strips inside Panel. Please check the new LED Driver Board connector pins and then change it to suitable for this board. When everything is ok, power on the TV now:



Same as the previous steps on Case-A steps 1~4, but this time it will stick the Panel Back Metal Cover with Aluminum tape as photo below:





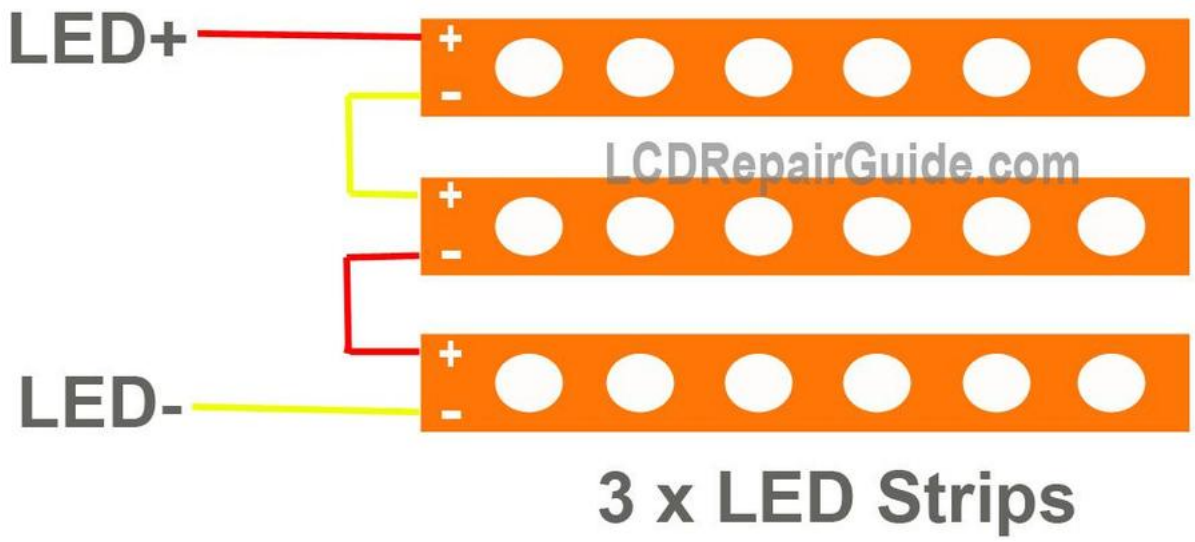
How to Connect from 4 x LED Strips to 6x LED Strips?

This is a good question! How to modification the LED Strip connection from 4 x LED Strips to 6x LED Strips.

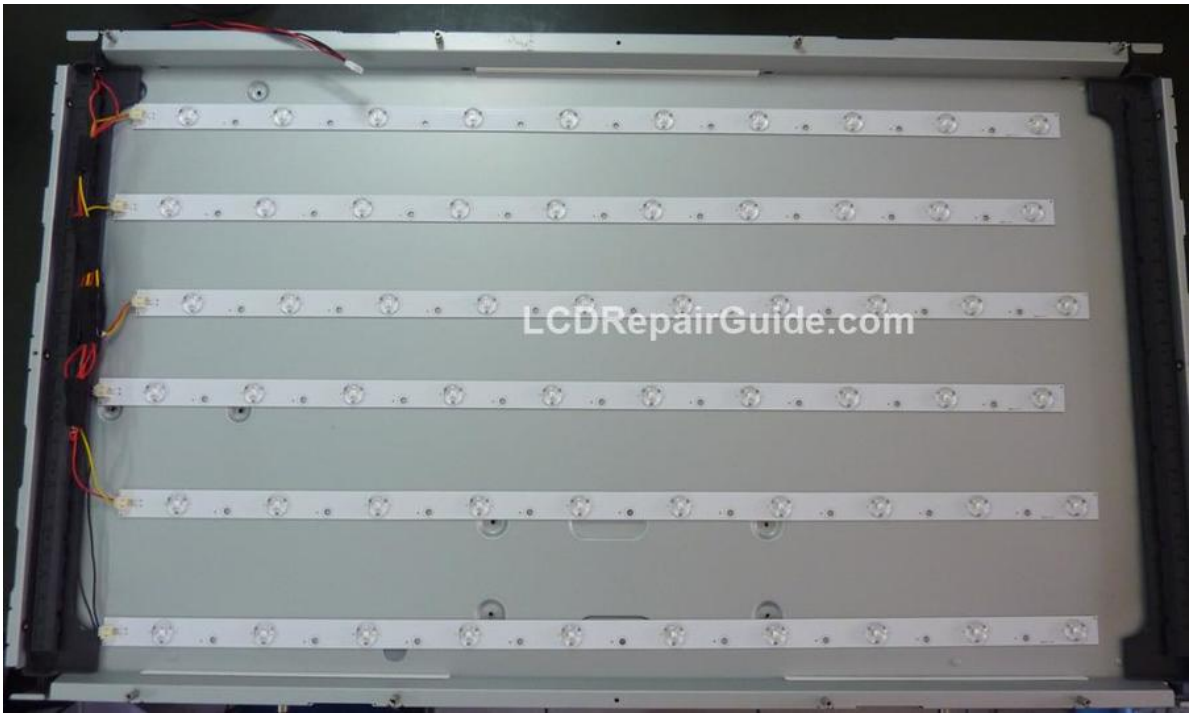
Because of this LED Driver board just supply 2 x LED+ Channel only. So their LED Driver Board specification is 88V (max), that's mean each Channel of LED Strip cannot reach or over 88V (but recommendation for this board is just 75V [max]). If we want to add in total 6 x LED Strips, that's one channel is 3 x LED Strips. And these 3 x LED Strips total loading voltage cannot exceed 75V!

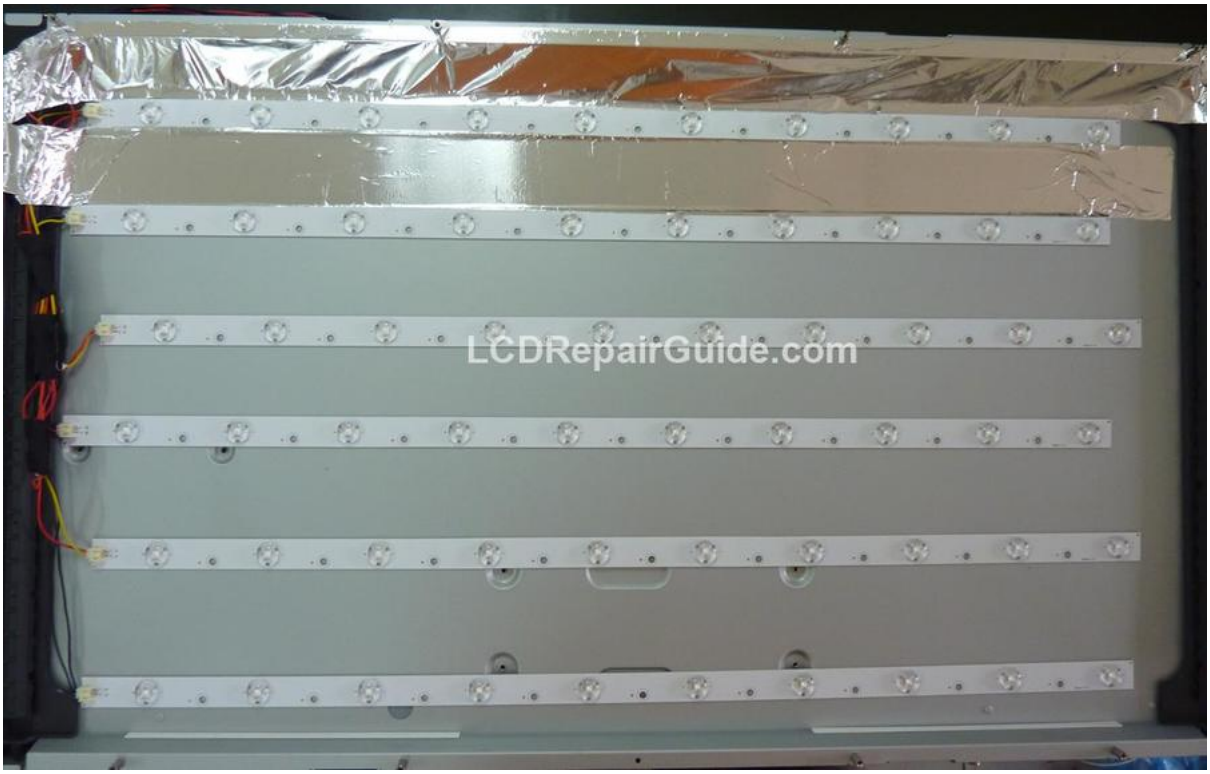
After connected the 3 x LED Strips, use the LED Tester I've shown on this ebook, measure their voltage. So you know that it is below 75V or exceeded. If below 75V, we can use this Universal LED Driver Board to use 6 x LED Strips!

The LED Strips connection from 2 to 3 x LED Strips is like below:



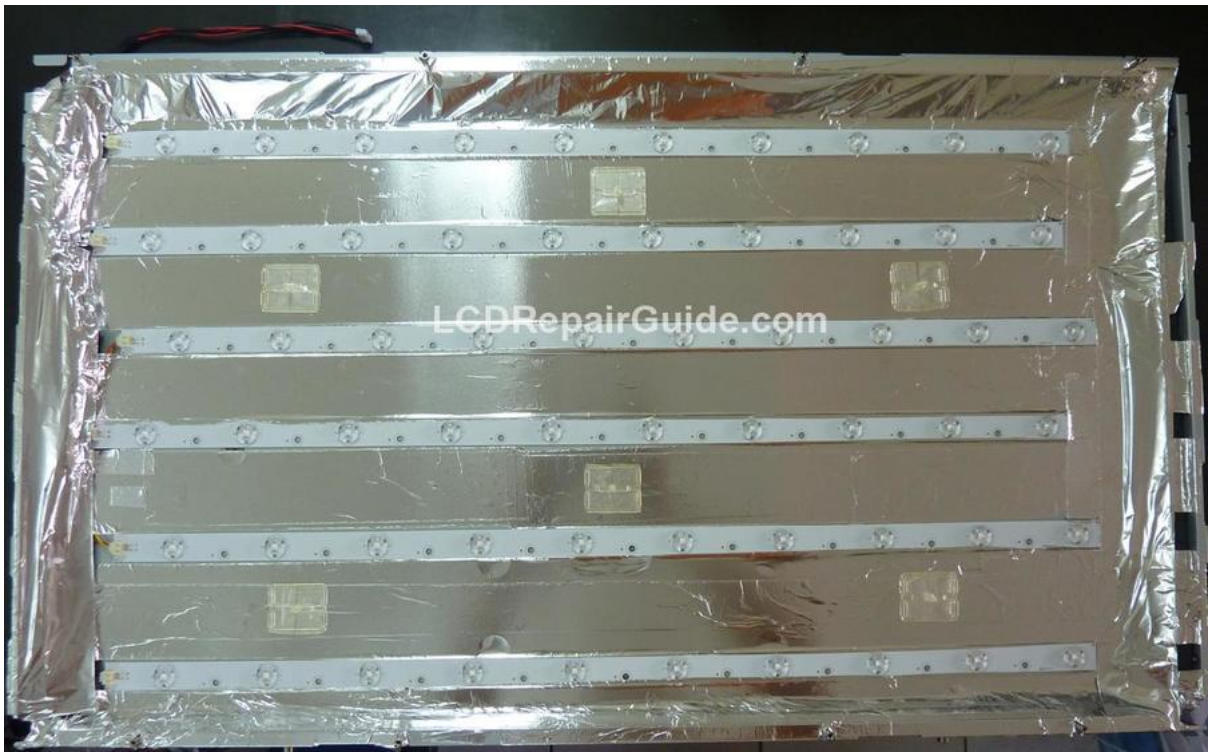
So one channel is 3 x LED Strips, 2 channels is 6 x LED Strips now.


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LCDRepairGuide.com



Make sure to put back the Panel Pillar in the Panel. Because it is help to support the Panel and also has a distance in between Panel Glass & LED Strips.



Put back all the Reflector, Prism Sheet, Plastic Cover, Metal Shield, PCBs & etc to the Panel.

Find a location to put the LED Driver Board and the 2A DC-DC Step-Up Module for TV:




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LCDRepairGuide.com

Finally, all the PCB boards are put back to the original place. The extra board like 2A DC-DC Step-up Board and LED Driver Board are fit like the photo below:



This is the time to testing the TV now! Check everything is ok and power on…



Yes, finally this TV is Ok to use now! The customer also happy to own an LED TV now! ☺



Notes:

Make sure to find a good seller can provide the correct information to you. Sometime they will help you to provide a good idea or info to help you modify the TV successfully.

When buy the LCD upgrade to LED Backlight Kit set, I will recommend to buy 2 sets. Because the new Universal LED Driver board sometimes will not work! I think it was because of their manufacturer QC issues. So just buy it with smart and enjoy the modification of your new LED TV! ☺

How to Programming the LED/LCD TV Mainboard Correctly

I've received lots of members email said they're hard to learn how to programming the TV Mainboard. So this article will let you learn some of the basic information on how to programming the LCD/LED TV Mainboard correctly.

IMPORTANT & WARNING!!!

Before to do the **Read/Write** memory IC or MCU, or I call it as "**Programming**" action to the Main Board or Memory IC, please **BACKUP** the old & original firmware/data first!!! This step is very important and serious thing. But most of the repairers are lazy to do that.

So when occurs the new programming problem in their TV Main Board or memory IC and they did not backup the original firmware, they will cry…Yes, this is not a joke, it is happened too often. No matter what brands or models of their Programmers, you must train yourself to do that first.

One more thing, please use the Programmer original supply cables (VGA & USB). Don't modify their length of the cables. It will affect the programming or Read/Write data in memory IC. Especially do the ISP Programming.

Not All the Memory IC or MCU Chip Can Support by the Programmer

Before you want to programming a memory IC or MCU (Micro-Controller Unit) chip, you must check your Programmer Supported IC List first. Yes, even the Programmer seller said it is a Universal Programmer, but it cannot support all types of memory IC and MCU Chip, it will depends on the model of that Programmer. So you need to check by yourself which Programmer is suitable to use in your jobs.

If you want to update the TV firmware version, just go to the TV Brand official website there to download their latest firmware and follow their instruction to update.

In this article and other chapters, I will use this Universal RT809F ISP Programmer (http://www.lcdrepairguide.com/tools/) for your reference.



3 Types of Programming Method for LED/LCD TV MainBoard

Actually they have 3 types of Programming Method for TV Mainboard. They are:

A) Online Programming

B) Offline Programming

C) USB Pendrive/Thumbdrive

Here is the description of these programming methods:

A) Online Programming

1) Online Programming also called as ISP Programming (ISP= In-System Programming).
2) This type of programming method must supply the voltage to TV Mainboard to be successful Read/Write their memory IC or MCU chip.

3) With Online Programming/ISP Programming, you can easy to read/write the TV Mainboard without to remove their IC or Chip from the Board.
4) Some of the Mainboard Design need to login to their Service Mode to open the ISP feature first. After that the programmer can do ISP Programming to their Mainboard. Especially the some of the MST Chip solution Mainboard using in Konka, TCL TV. For example the Konka LC32ES62 TV.
5) PROS & CONS for Online Programming: It is save time to do the Read/Write action to memory IC or MCU chip. Because we don't need to remove that IC/Chip from the Mainboard, after that need to solder it back to Mainboard too. But the CONS is their Read/Write data some time will not accurate! That's why I will recommend the repairer when using the ISP programming, need to do at least 2 times to Read or Write their data, after that compare their "Checksum" values is same or not. Be careful for the TV Main board design where their User Menu data will save in the flash memory there. So every time restart the TV, their Checksum values will difference.

B) Offline Programming

1) Offline Programming is to removed the memory IC or MCU Chip from TV Mainboard and put it in the Programmer Adapter to do the programming.
2) This type of programming no need to supply voltage to Mainboard.
3) All types of the Programmer can do this type of Programming.
4) PROS and CONS for Offline Programming is their Read/Write data is high reliability than Online Programming. When the memory IC/Chip damage, it can easily to detect it by Offline Programming method. But their CONS is too much trouble to remove the IC/Chip from Mainboard. After that need to re-solder it back to Mainboard. Some of the repairer because of this thing and damage the Mainboard circuit lines.
5) But the good news is it has a special tool to ignore to remove the IC from Mainboard. This tool is: IC Clip. But it is not for MCU Chip. The IC Clip like the photo below:



C) USB (PenDrive/ThumbDrive)

1) The TV can use USB Pendrive as a memory the Mainboard firmware. After that follow the instruction to insert it into the TV USB port to update their firmware.
2) This method just for add in new software features or correction some small problem through update their firmware by USB Pendrive.
3) This method need to supply voltage to their Mainboard to perform their firmware update.
4) If the TV or Mainboard not working, this USB method cannot be use.

How to Programming the LED/LCD TV Mainboard

Inside the LED/LCD TV Mainboard, they have several types of memory IC and MCU chip. Below are the types of memory IC in TV Mainboard:

1) 24 Series Memory IC (seldom use 93 Series Memory) use in:

=> EEPROM, HDCP EEPROM and EDID (DDC) EEPROM

You can use the RT809F doing Offline Programming to Read/Write their data into the memory IC.

2) 25 Series Memory IC use in:

=> Serial Flash Memory IC

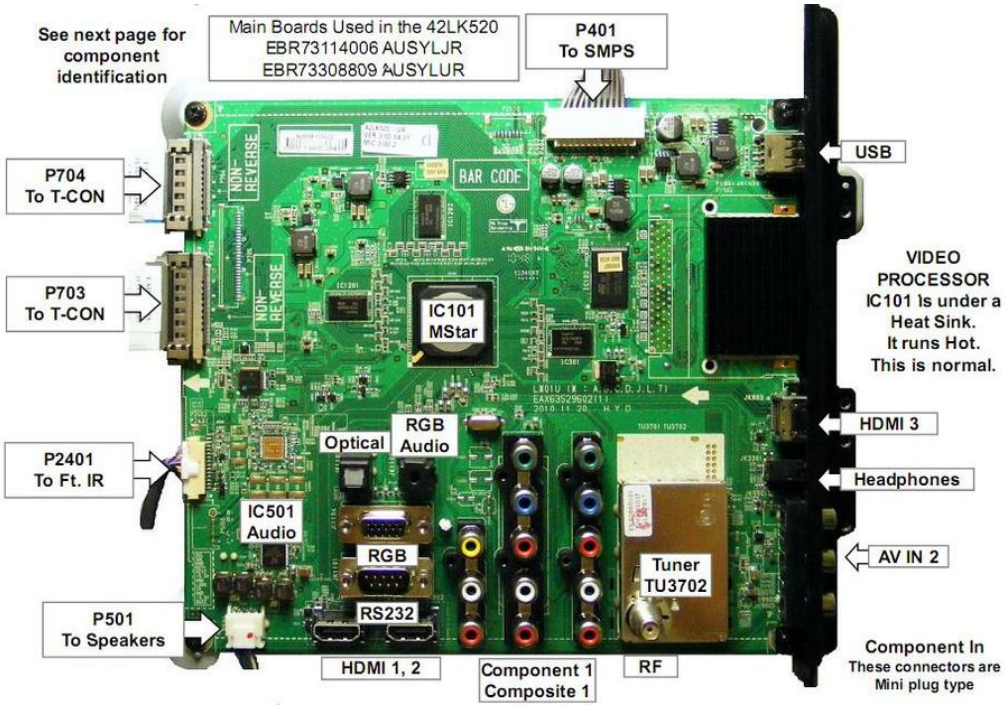
You can use the RT809F Programmer to do Offline Programming or Online Programming to Write/Read data into this Flash Memory IC.

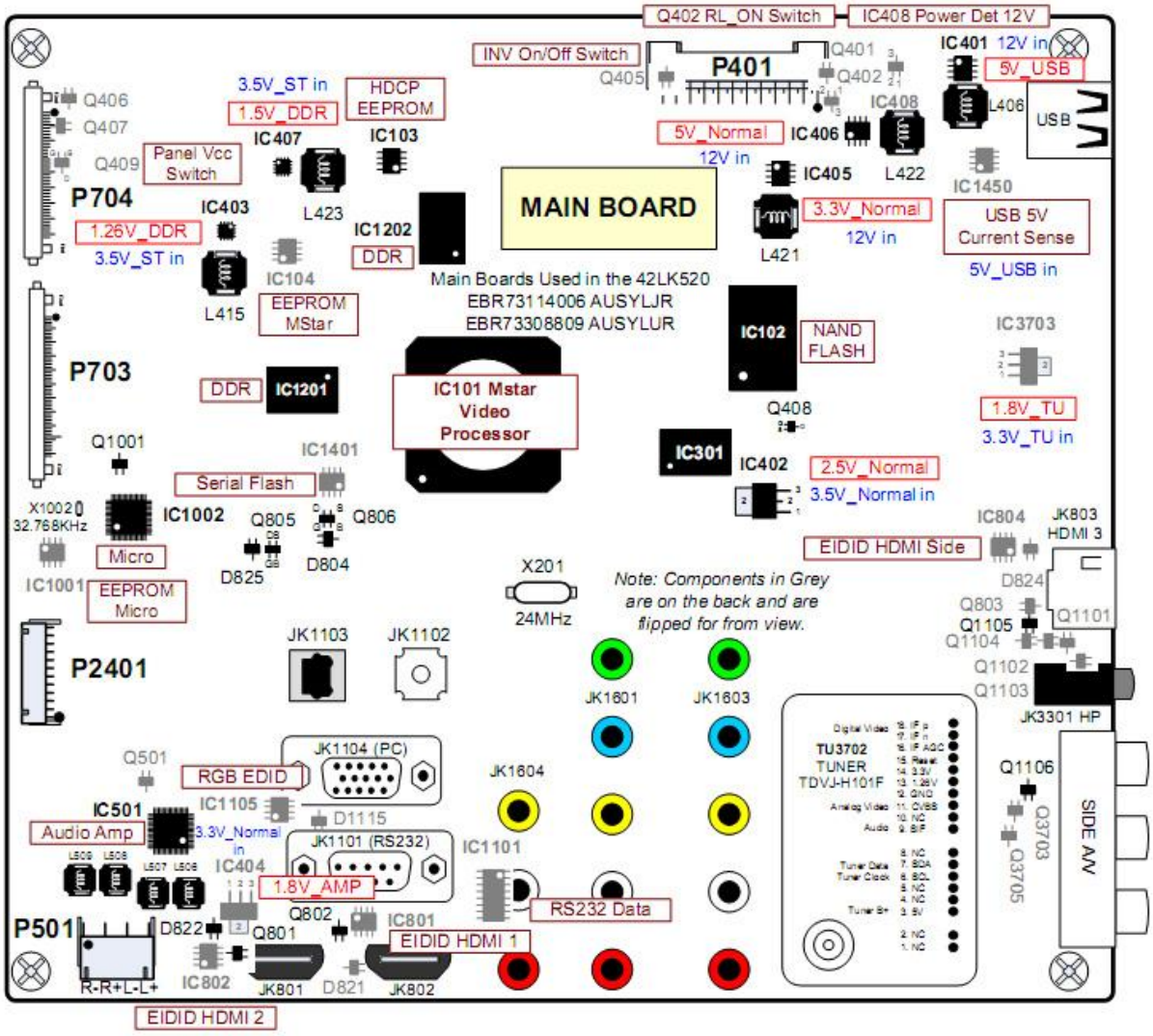
3) H27Uxxx, K9Fxxx, TC58NVGO & etc Series Memory IC use in:

=> NAND Flash Memory IC (some older TV will use NOR Flash & eMMC)

You can use the RT809H Programmer to do the Offline programming to Read/Write their data into the memory IC.

Below is LG 42LK520 LCD TV Mainboard Layout:


See next page for component identification
Main Boards Used in the 42LK520
EBR73114006 AUSYLJR
EBR73308809 AUSYLUR
P401
To SMPS
P704
To T-CON
P703
To T-CON
P2401
To Ft. IR
P501
To Speakers
USB
VIDEO PROCESSOR
IC101 Is under a Heat Sink.
It runs Hot.
This is normal.
IC101
MStar
HDMI 3
Headphones
AV IN 2
Optical
RGB Audio
IC501
Audio
RGB
RS232
Tuner
TU3702
HDMI 1, 2
Component 1
Composite 1
RF
Component In
These connectors are Mini plug type


Q402 RL_ON Switch
IC408 Power Det 12V
INV On/Off Switch
P401
IC401 12V in
5V_USB
USB
3.5V_ST in
1.5V_DDR
HDCP EEPROM
5V_Normal
12V in
IC408
IC406
L406
Panel Vcc Switch
IC407
IC103
IC405
L422
IC1450
P704
IC403
L423
IC1202
DDR
MAIN BOARD
3.3V_Normal
12V in
USB 5V Current Sense
5V_USB in
1.26V_DDR
3.5V_ST in
L421
IC104
EEPROM MStar
L415
Main Boards Used in the 42LK520
EBR73114006 AUSYLJR
EBR73308809 AUSYLUR
IC102
NAND FLASH
IC3703
P703
DDR
IC1201
IC101 Mstar Video Processor
Q408
1.8V_TU
3.3V_TU in
Q1001
IC1401
IC301
IC402
2.5V_Normal
3.5V_Normal in
Serial Flash
X1002 32.768KHz
IC1002
Micro
Q805
Q806
IC804
JK803 HDMI 3
EIDID HDMI Side
D825
D804
IC1001
EEPROM Micro
X201
24MHz
Note: Components in Grey are on the back and are flipped for from view.
D824
Q803
Q1101
Q1105
Q1104
Q1102
Q1103
JK3301 HP
P2401
JK1103
JK1102
JK1601
JK1603
Q501
JK1104 (PC)
RGB EDID
JK1604
TU3702 TUNER TDVJ-H101F
Q1106
IC501
Audio Amp
IC1105
3.3V_Normal in
D1115
JK1101 (RS232)
IC1101
IC404
1.8V_AMP
RS232 Data
Q3703
Q3705
SIDE A/V
P501
Q802
IC801
Q801
D822
EIDID HDMI 1
IC802
JK801
D821
JK802
R-R+L-L+
EIDID HDMI 2

Why you need to programming the TV Mainboard? Because the TV is can't start-up problem, so I want to try programming the Mainboard and solve the problem. Or I want to copy their firmware to prepare future use. These two answer is most of the TV repairer gave.

Q1: How to Programming the TV Main Board?

A1: Normally the Programmer when using the ISP (Online programming), it will go to detect their Flash memory. The flash memory is mean of the external 25 series Flash memory IC on Mainboard. So the Programmer software will shows like 25 xxx detected and prepare to Read or Write command.

Actually we can remove the 25 Series Flash Memory directly from Mainboard and to do the Offline Programming to Read (Copy) their firmware/data from the 25 series Flash Memory IC. And then save the firmware into the computer/laptop prepare for future use.

Q1: How to Copy the Firmware from Main Board?

A1: Like a said on the above, you can remove the 25 series Flash Memory IC from Mainboard and to do the Offline Programming. After click on the Programmer Software button "Read" (Copy) the firmware from 25 series Flash Memory IC, and then save it into the computer/laptop.

Notes: Most of the time (about 80%) to using Programmer on TV Mainboard is because of the TV Mainboard Can't Start-up the TV. Excluded the hardware problem in Mainboard (like regulator IC, crystal, reset circuit & etc, for more details, please do refer to my V3.0 & V4.0 ebooks), so the higher chances is their 25 series Flash Memory firmware corrupted or the 25 Flash IC defective.

Also don't forget their NAND Flash IC. It also can cause the TV can't start-up. If you want to programming the NAND Flash memory IC, please do carefully, because some of the NAND Flash IC need to programming their MBOOT or BootLoader first, after that is the main firmware for that NAND Flash Memory IC. Also for programming the NAND Flash, you need choose a Pro Programmer to support this type of memory IC.

How to Programming the Universal TV Mainboard



When we change a new Universal TV Mainboard to a TV, we need to change the firmware to suitable of the TV Panel model. If not, the TV will no display, funny color and display & etc occur.

So the Universal TV Mainboard has their own firmware list to suitable different Panel. If you buy a new Universal TV Mainboard, make sure to tell the seller your TV panel part number. After the correct version and panel types firmware is ready, just copy that file into the USB Pendrive and follow the instruction to update the firmware to the latest one to suitable the TV Panel.

Some of the Universal Mainboard is built-in the different Panel type firmware. Just follow some instruction to change the Panel type without using Programmer or USB update.

How about the Universal TV Mainboard firmware failure?

If this is the problem in this type of Mainboard, you need to use the programmer to do the offline programming to their flash memory IC. Most of the time, you can solved the problem easily if you've that Mainboard firmware.

Where to Find or Get the TV Firmware?

Before to programming the firmware, make sure these firmwares you get are same as your TV:

1) TV Model

2) Mainboard Part number (Important)

3) Panel Part Number (Important)

* For example: If the firmware same Mainboard Part number but not same the Panel Part number. If that Panel part number also show the same inches Panel, then you should give it a try. Make sure that you backup you old/original firmware first!

You can get the TV firmware from:

1) Forum website- Ask the member who have that model TV, Mainboard part number and Panel part number firmware.

2) ASP Site- If you're the Authorized Service Provider, you can get the firmware version from company.

3) Universal Board Seller- If you bought the Mainboard from them, you must ask them to provide such firmware to use.

4) Find Website Selling this Firmware- I found that some of the website they selling the TV firmware. But the model is not much to choose.

5) Ask Your Local Repairer/Friend- Normally the repairer they will backup some local TV model firmware to prepare future use.

6) Find a Working TV Mainboard and Copy the Firmware from it- You can try to find who/repair friend has this model of TV Mainboard and ask them to borrow the board to copy their working firmware.

A Superb Secret Revealed on How to Repair LCD/LED TV Mainboard

This is another good repair tips on repairing the LCD/LED TV Mainboard. The Mainboard repairing method for this article, I call it as:

"TV Start-Up Log"

Most of all modern LED/LCD TV has this "TV Start-up Log" inside their TV Mainboard. I think after the year of 2008 model TVs will have this info log inside the TV.

So what is the TV Start-Up Log? The TV Start-Up Log like the Laptop power-on sequence. But the TV Start-up Log is a TV Mainboard boot up sequence. All the process is operated by the TV Mainboard MCU (Micro-Controller Unit) Chip firmware.

When the TV power on, the MCU will first detect:

1) **DDR** (DDR SDRAM) version and in between DDR and the Main Chipset (CPU) communication lines is OK or not.

2) If the above device normal, it will pass and detect the next devices. The next device is to detect their **BootLoader** (U-Boot or MBOOT) version and their operation. If the detection found any error or can't detect the device, it will stop there and not running their TV Start-up Log.

3) Next will be their Main Program (Firmware) on **NAND Flash**. As usual it will detect their NAND Flash version and operation status. If ok, it will pass to next devices.

4) Finally will detect their **USB, Sound, Tuner & etc I^2C circuits' devices** (like EEPROMs).

* When the MCU pass all the above detection, finally the MCU will send out the Power On signal to start-up the Power Supply/PSU. So the TV can operate normally. If not pass the detection, it will stop on the device was detected not pass. So this TV symptom will looks like Can't Start-up TV!

What's the benefit of this TV Start-Up Log help to the repairer?

The modern LCD/LED TV Mainboard have lots of different types Memory IC. And their design is quite small size but the pins of IC are many! Not only that the Mainboard design at least double layer now. That's why, how repairer to repair the TV Mainboard in components level? If you don't know this TV Mainboard secret, I believe that you don't want to repair it, but just replace it.

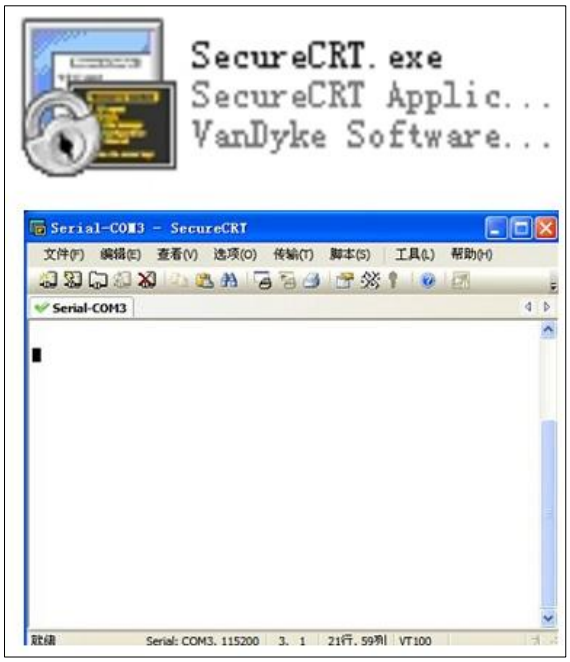
With this TV Start-up Log, you can easily to know what's wrong in TV. Like we learn from the previous V3.0 & V4.0 the Mainboard repair skills, plus this TV Start-up Log will increase the successful rate in TV Mainboard repair!

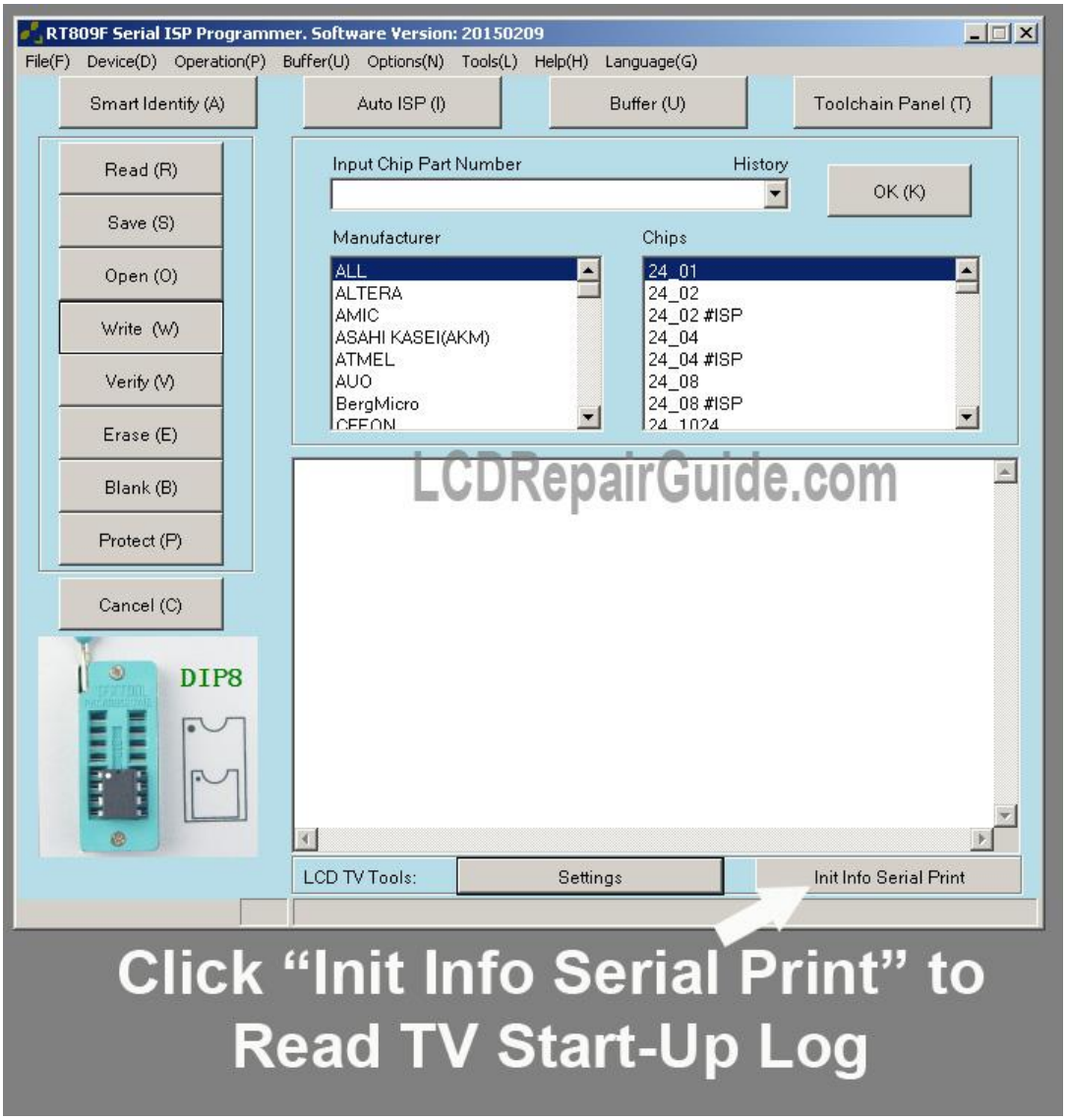
Again how this TV Start-up Log help to us? Ok for example, when a TV symptom is power LED light lit but TV can't start-up. So after check all the hardware on Mainboard like: voltage regulator IC, voltage input for Main Chip, reset circuit, crystal waveform and etc all Ok. So what can we do know?

So we can try to programming their 25 series Flash memory with the correct model and version firmware. Or we can do the TV Start-up Log first! After the TV Start-up Log appears, we can roughly know where or which device is defective. So we can directly go to that device section and checking it. So it will save lots of the time to guess what the problem in Mainboard if checking all hardware components in good condition.

How to Operate the TV Start-up Log?

The TV Start-up Log need to use a Programmer can support this feature. For example the RT809F Universal ISP Programmer. To run the TV Start-up Log, these two software can operate the TV Start-up Log. They are "**Init. Info Serial Print**" or "**SecureCRT**". You can use below software to see the TV Start-Up Log to learn more about the TV Mainboard info.

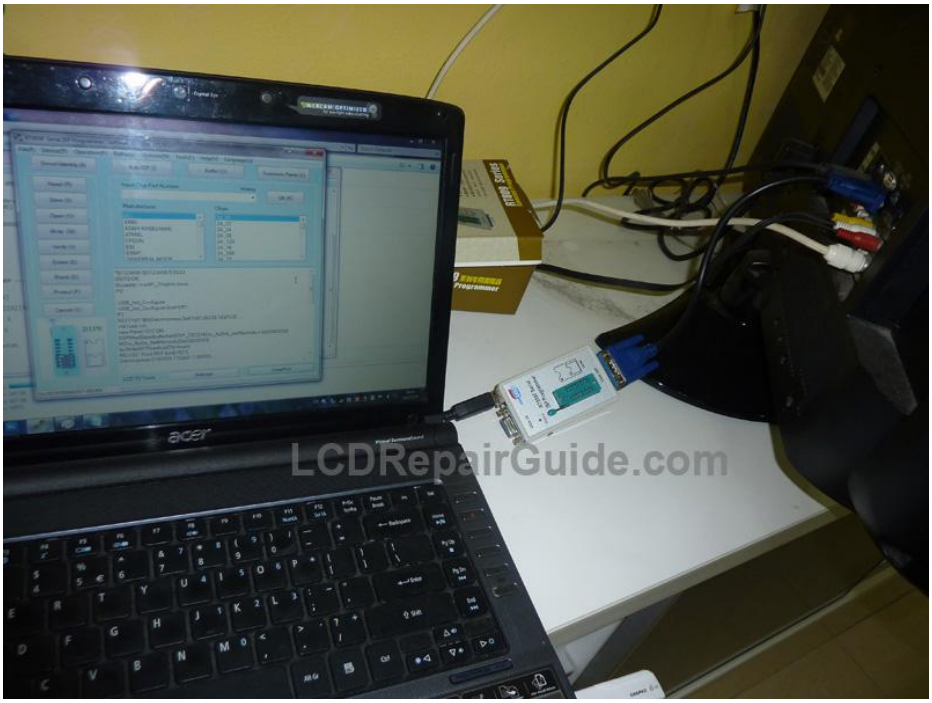

SecureCRT.exe
SecureCRT Applic...
VanDyke Software...
Serial-COM3 - SecureCRT
Serial-COM3


RT809F Serial ISP Programmer. Software Version: 20150209
File(F) Device(D) Operation(P) Buffer(U) Options(N) Tools(L) Help(H) Language(G)
Smart Identify (A)
Auto ISP (I)
Buffer (U)
Toolchain Panel (T)
Read (R)
Save (S)
Open (O)
Write (W)
Verify (V)
Erase (E)
Blank (B)
Protect (P)
Cancel (C)
Input Chip Part Number
History
OK (K)
Manufacturer
Chips
ALL
ALTERA
AMIC
ASAHI KASEI(AKM)
ATMEL
AUO
BergMicro
24_01
24_02
24_02 #ISP
24_04
24_04 #ISP
24_08
24_08 #ISP
LCDRepairGuide.com
DIP8
LCD TV Tools:
Settings
Init Info Serial Print
Click “Init Info Serial Print” to
Read TV Start-Up Log

How to Operate the LG 32LH25 LCD TV TV Start-up Log:

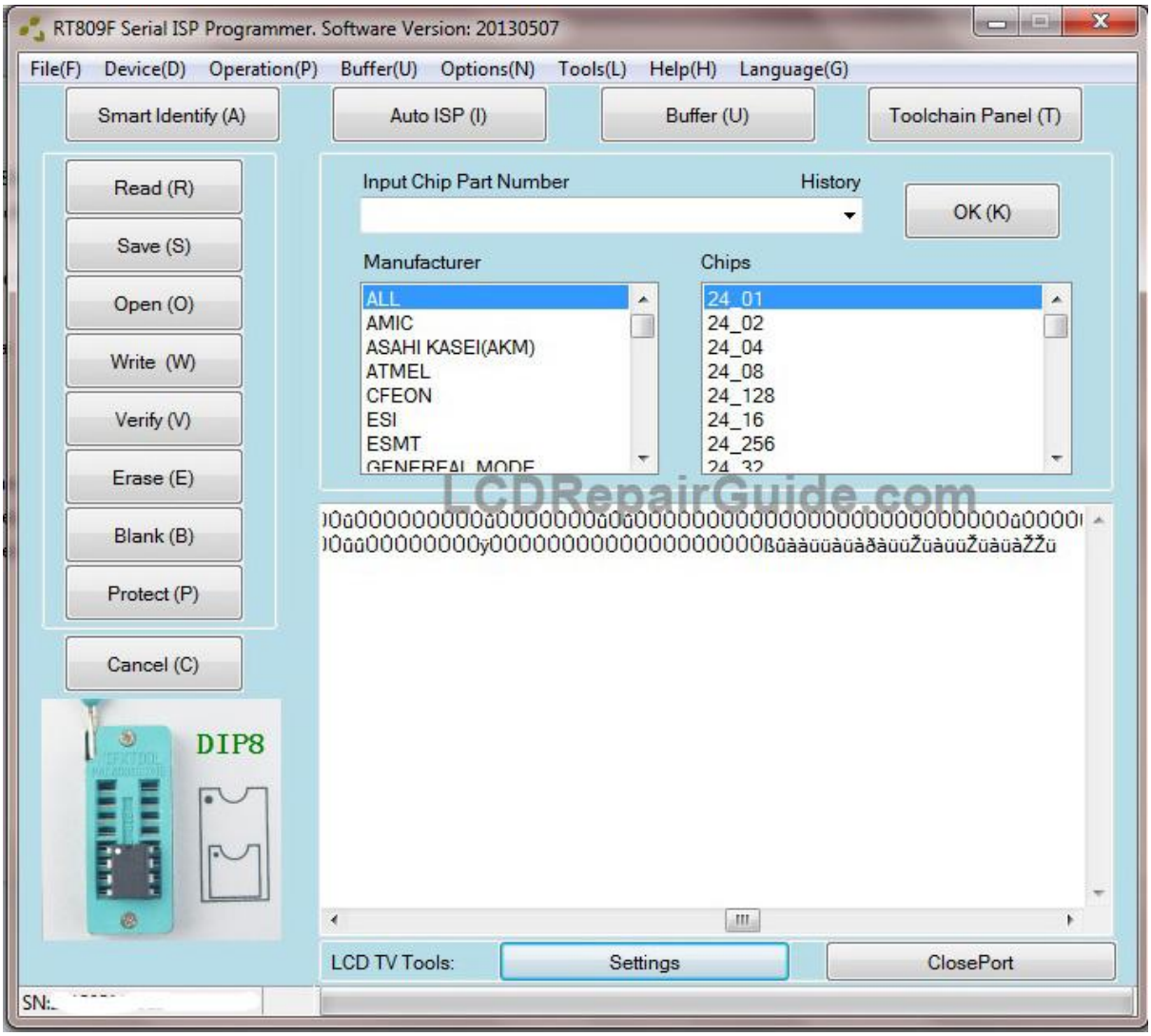
This is a working LG 32LH25 LCD TV. Use the RT809F programmer to read their TV Start-up Log. Here are the steps to do:

1) Connected Programmer to TV VGA 15 pin DSUB port. And the Programmer connects to Laptop/Computer.



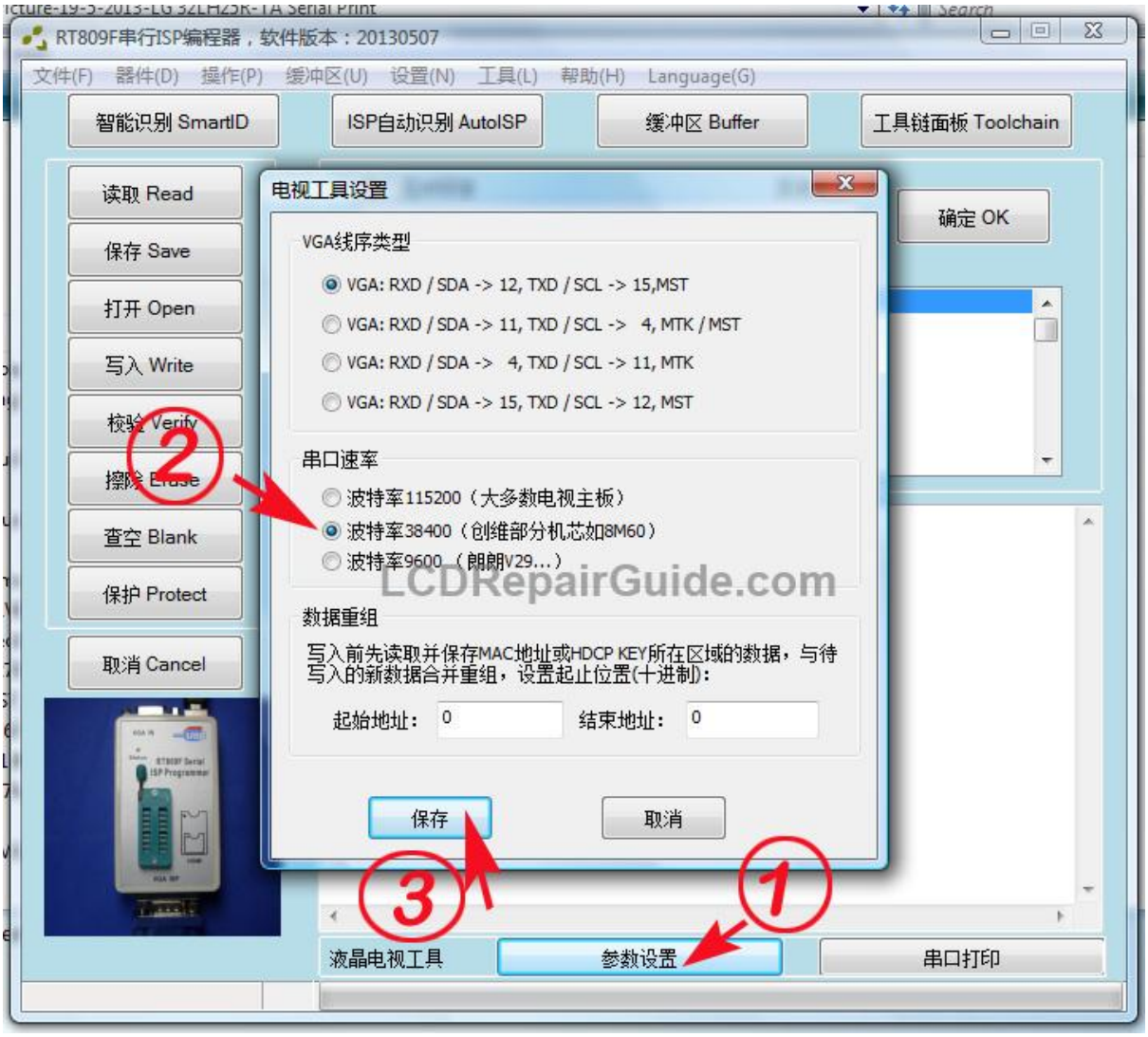


2) Run the RT809F Programmer software and then click on the “Init. Info Serial Print”. After that press TV power on. The TV Start-up Log will appear.

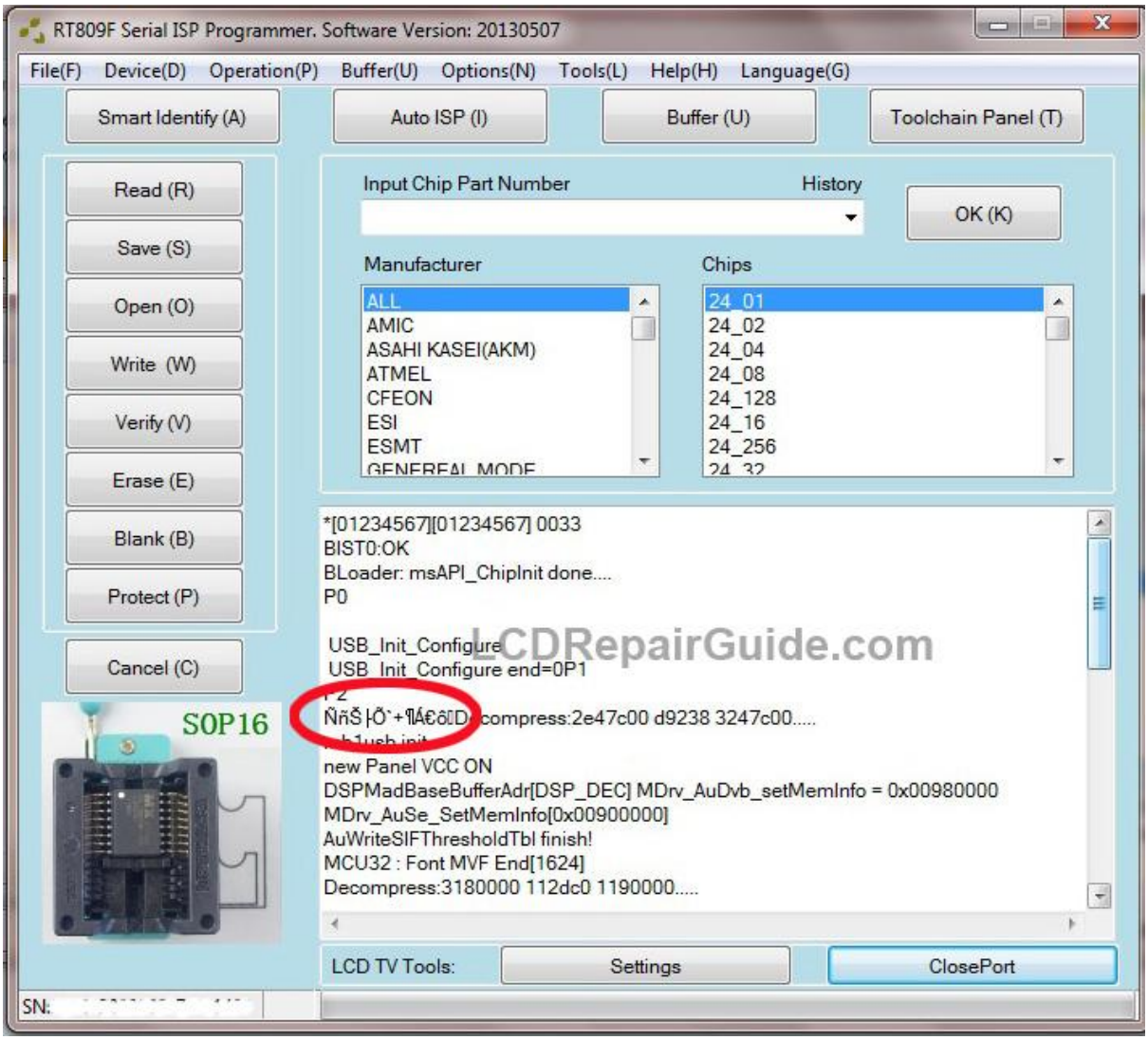


Unfortunately the result is just showing the funny or strange characters. This is because of their UART speeds select incorrect.

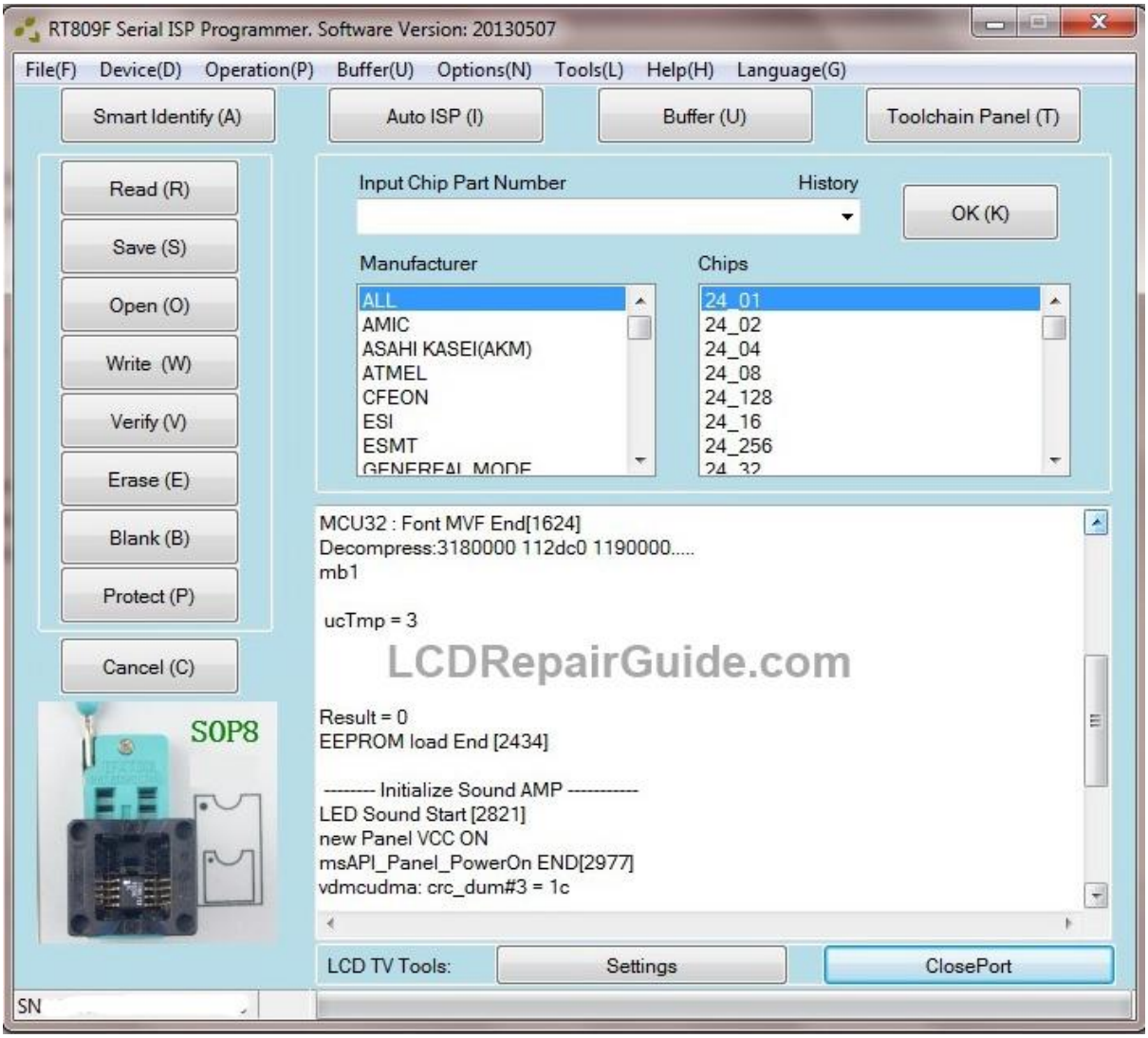
3) Press the (1) Setting and go to (2) Baud Rate speed and select another speed 38400. After that, press to the (3) to save the baud rate setting.



4) To to re-run the Init Info Serial Print. Yes this time the TV Start-up Log is better than just now. But still has a little strange character there. Again go to the setting and change their baud rate to 9600 speed and save the setting.



5) Finally the complete TV Start-up Log information appears perfectly.



Here is the complete of LG 32LH25R-TH LCD TV-TV Start-up Log info:

---

*[01234567][01234567] 0033

BIST0:OK

BLoader: msAPI_ChipInit done....

P0

USB_Init_Configure

USB_Init_Configure end=0P1

P2

Ñà*ƒ*H! å[ÃÃõyDecompress:2e47c00 d9238 3247c00. ...

mb1usb init..

new Panel VCC ON

DSPMadBaseBufferAdr[DSP_DEC] MDrv_AuDvb_setMemInfo = 0x00980000

MDrv_AuSe_SetMemInfo[0x00900000]

AuWriteSIFThresholdTbl finish!

MCU32 : Font MVF End[1621] Decom

press:3180000 112dc0 1190000. .....

mb1

ucTmp = 3

Result = 0

EEPROM load End [2431]

-------- Initialize Sound AMP ----------

LED Sound Start [2818]

new Panel VCC ON

msAPI_Panel_PowerOn END[2974]

vdmcudma: crc_dum#3 = 1c

[msAPI_OCP_LoadBitmap] [775][0][5106728]

new Panel Backlight VCC ON

Enter enUiInputSourceType = 1

enUiInputSourceType = 1

Result enInputSourceType = 1

MDrv_PowerSaveExecution

MDrv_PowerSaveExecution finish

SIG_PAL

Þ

How to Read the TV Start-Up Log?

For your information, the BIST0, BIST1 is DDR1 and DDR2. U-Boot or MBoot is the Bootloader. Flash : normally is their 25 series flash memory. NAND is their NAND Flash memory. For more info, please read the example below:

Below is an example of Skyworth TV -TV Start-up Log:

1) Stage 1:

```
>> reset UART_115200
BIST0-OK
BIST1-OK
[456789ABCD][456789ABCD]-88
[456789ABC][56789ABC]-88
-U
```

Baud Rate 115200

DDR1 detection OK

DDR2 detection OK

DDR1 data detection OK

DDR2 data detection OK

2) Stage 2:

Hello U-Boot (U-Boot Code)

U-Boot 1.1.6(Jun 18 2011-10:24:15) (BOOT version info)

Board: MSTAR JANUS2 (CPU Speed 600 MHz) (CPU info and speed)

DRAM: 128MBytes (DDR memory is128MB)

U-Boot is running at DRAM 0x87600000 (BOOT is running in DDR Address)

3) Stage 3:

LOGO、ENV=SERIAL (Environment)

Flash is detected(0x0906,0x1c,0x31,0x15) (Detected Flash)

MDrv_SERFLASH_GetInfo() (Flash types and brand)

u32AccessWidth = 1 (Access width)

u32TotalSize= 2097152 (Flash capacity)

//u32BlkNum= 32 (Block number)

/u32BlkSize= 65536 (Block size)

>>> **nand:AUTO CE/WP** (NAND：Auto Chip Enable/Write Protect)

Example of Skyworth 8M/S Series TV Normal Log:

A good sample TV Start-Up Log:

Serial-COM5040917

BIST OK

BIST OK

ALL BIST OK!!

[3456789A][456789A][456789AB][56789ABC] 6778

[0123456789ABCDEF][0123456789ABCDEF][456789A][456789AB] 7777

U-Boot 2011.06 (Aug 31 2012 - 13:35:16)

.....

Starting kernel ...

Uncompressing Linux... done, booting the kernel.

Example Problem TV Start-up Log:

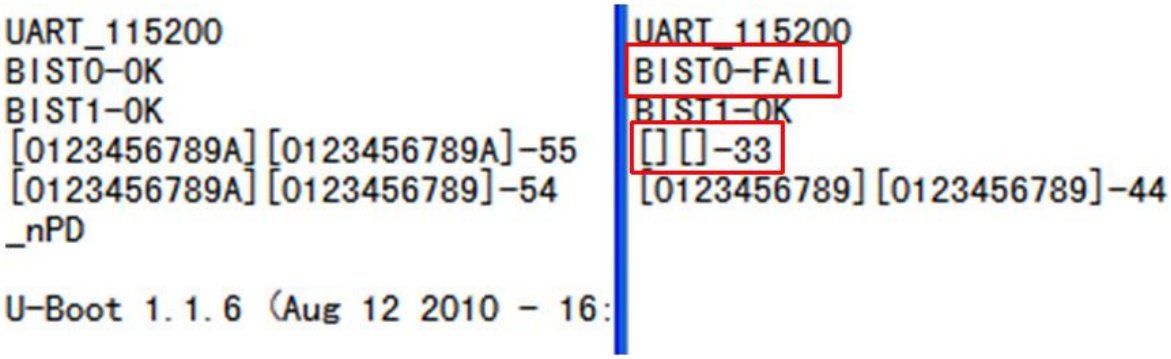
Good vs Bad values.

1) 8M/S Series DDR Abnormal 1:



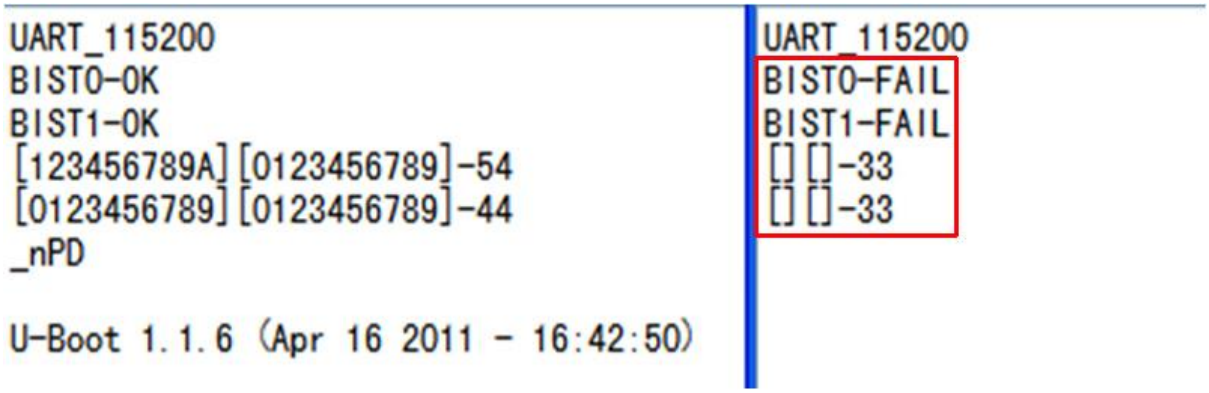
The TV Start-up Log shows that 2 x DDR detection normal. But the row-4 shows that detection data error in between the Main Chip with DDR. That position is for DDR1. That's mean the problem is on the DDR1 damage or dry join of DDR1. (After repair this TV, confirm is their U12 DD1 dry join only).

2) 8M/S Series DDR Abnormal 2:



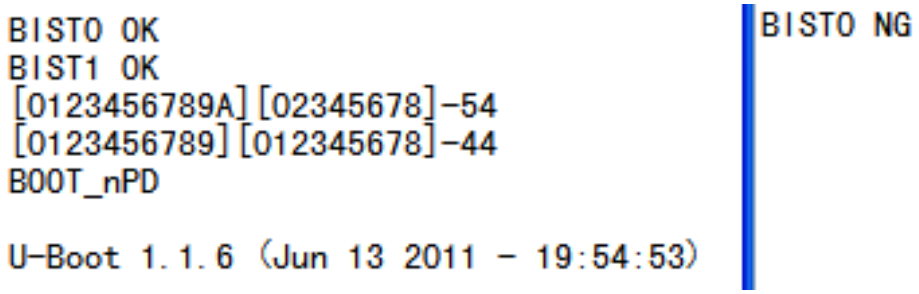
DDR1 detected clock checksum error. On the row-4 detection, found that Main Chip through DDR input info is nothing, it could be the Main Chip damage or dry join. Or it may be the DDR1 dry join too. After repair, confirm that's the Main Chip dry join only. Just re-flow with BGA is Ok now.

3) 8M/S Series DDR Abnormal 3:



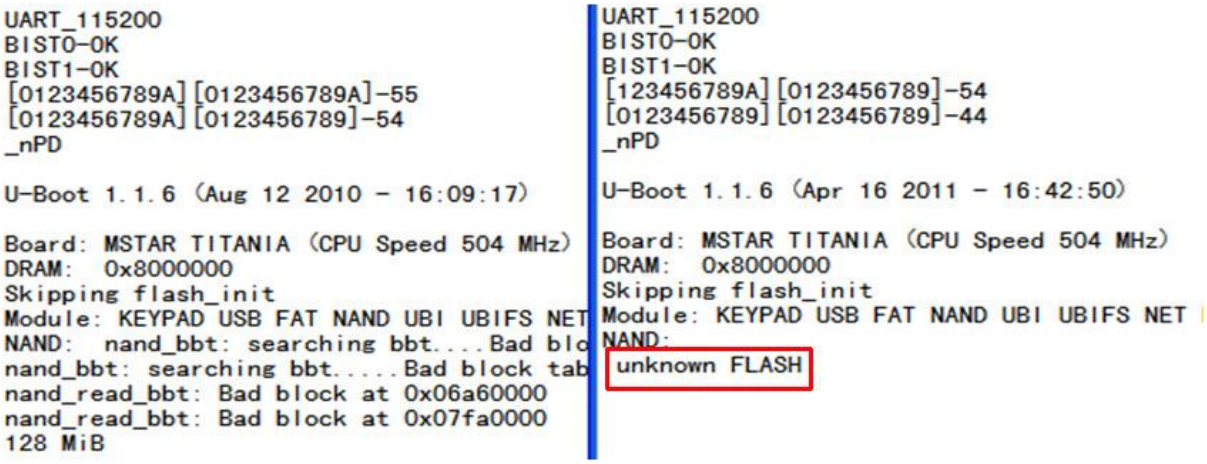
The row2 and 3 show both DDR detection failed. And the row 4and 5 show that DDR cannot receive the data from Main Chip. Check the DDR supply voltage pins is normal. So it could be the Main Chip abnormal or dry join. After repair, confirm that's the Main Chip damage. (Sometimes when DDR supply voltage pins are open, it also can cause this type of error message).

4) 8M/S Series DDR Abnormal 4:



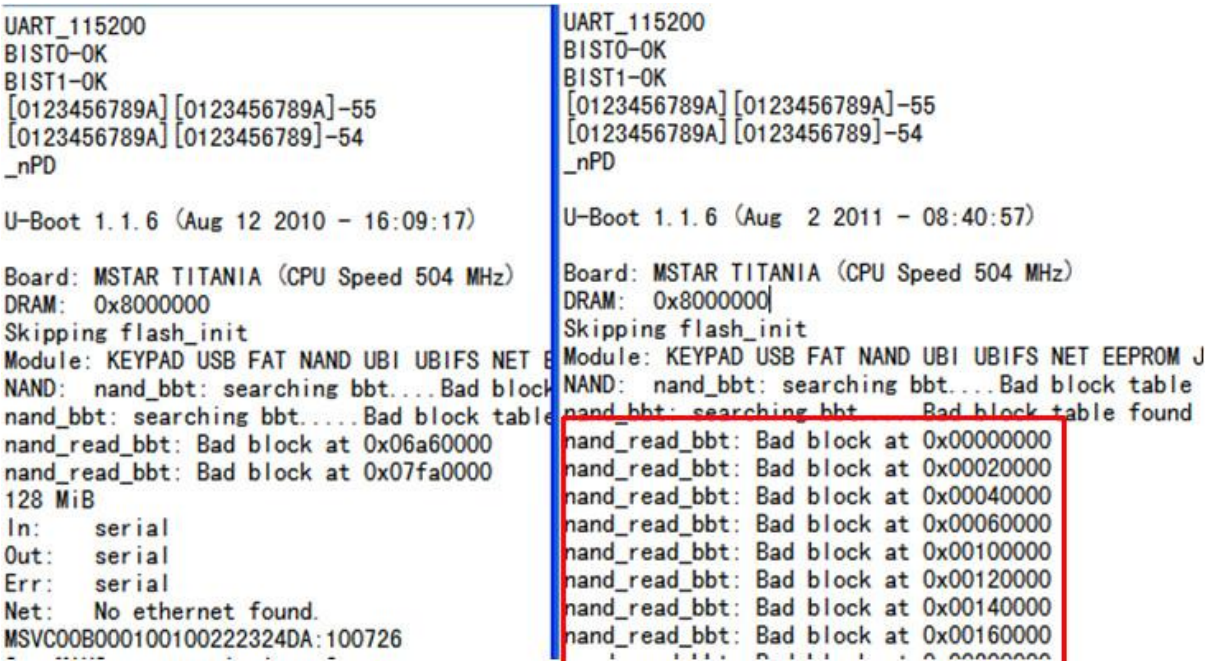
First DDR detection failed. So it could be the first DDR damage or Main Chip (CPU) and first DDR in between the network resistors is dry join. But mostly is the Main Chip damage. How to know Main Chip damage? Just measure the Main Chip core voltage supply LDO output and the Ground ohm values, normally is just 60 ohm. Or use the finger to touch the Main Chip temperature, when just power on TV, if their temperature increase quickly, that's mean their Main Chip is damage.

5) 8M/S Series Flash Abnormal 1:



The TV Start-up Log shows that DDR and U-BOOT is pass detection. When running till the NAND, it cannot identify the Flash and cannot read their data. Normally this type of problem just using the Programmer to programming their main firmware is ok. If failed to do the programming to NAND, please replace a NAND Flash.

6) 8M/S Series Flash Abnormal 2:



The error code shows that the NAND Flash have Bad Block and need to replace it.

7) 8M/S Series Flash Abnormal 3:

```
RPC: Registered udp transport module.
RPC: Registered tcp transport module.
ieee80211: 802.11 data/management/control stack, git-1.1.13
ieee80211: Copyright (C) 2004-2005 Intel Corporation <jketreno@linux.intel.com>
udev->speed: 3
UBIFS error (pid 1): ubifs_scan: corrupt empty space at LEB 3:4221
UBIFS error (pid 1): ubifs_scanned_corruption: corruption at LEB 3:4221
UBIFS error (pid 1): ubifs_scan: LEB 3 scanning failed
UBIFS error (pid 1): ubifs_recover_leb: corrupt empty space LEB 3:2048, corruptic
UBIFS error (pid 1): ubifs_scanned_corruption: corruption at LEB 3:2173
UBIFS error (pid 1): ubifs_recover_leb: LEB 3 scanning failed
VFS: Cannot open root device "ubi:RFS" or unknown-block(0,0)
Please append a correct "root=" boot option; here are the available partitions:
1f00              128 mtdblock0 (driver?)
1f01             1024 mtdblock1 (driver?)
1f02             1024 mtdblock2 (driver?)
1f03           115200 mtdblock3 (driver?)
1f04            13696 mtdblock4 (driver?)
Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-block(0,0)
```

Cannot load root, the flash have unrecognized area. Normally this problem is their NAND or EMMC damage and need to replace.

8) 8M/S Main Firmware Abnormal log:

```
80200000: 5a5aa5ff    ..ZZ
.ndata_1[7fa]--->:ff
2.defatult_set is:165
3.*ucp is:255
keypad_pressed_1 is:0
keypad_pressed_2 is:1

1.MSAPI_WDT_Start
3.MSAPI_WDT_StopCheck USB port[0]:
??? Waiting for Peripheral Connecting Fail...
1.usb init failed
Error, couldn't init Lowlevel part
Check USB port[1]:
Host type:2
scanning bus for devices... Wait for hub reset....
1 USB Device(s) found
       scanning bus for storage devices... 0 Storage Device(s) found

3.MSAPI_WDT_Stop<< MStar >>#
```

The BOOT normal, but the Main Firmware is missing. Need to re-programming their Main Firmware and TV is ok now.

Notes: The higher failure rate is their Main Chip and DDR (also included the lines in between both of them). But most of the time is their resistor network or Main Chip dry join! If even check with the TV Start-up Log also can't help, we can try to re-programming their BOOT and Main Firmware of NAND Flash. This method can solve lots of TV Mainboard problem!

New PSU Self Test Method for Modern TV

Nowadays, new design LED/LCD TV is using different standby voltages. Normally the older models of LCD/LED TV their power supply unit (PSU) is generated 3.3V or 5V standby voltages. But the latest models of LED/LCD TVs is using 8V (7.8V) now or more! For example the LG 2015/2016 LCD/LED TVs that use 13.2V as Standby voltage. For 2016 LCD/LED TV Models that use 8V Standby voltage when it start-up/run is 18V! If you use the old PSU Self Test method, it could be damage the PSU board.

A new method or a tool called it as "**PSU Self Test 3V-JIG**".

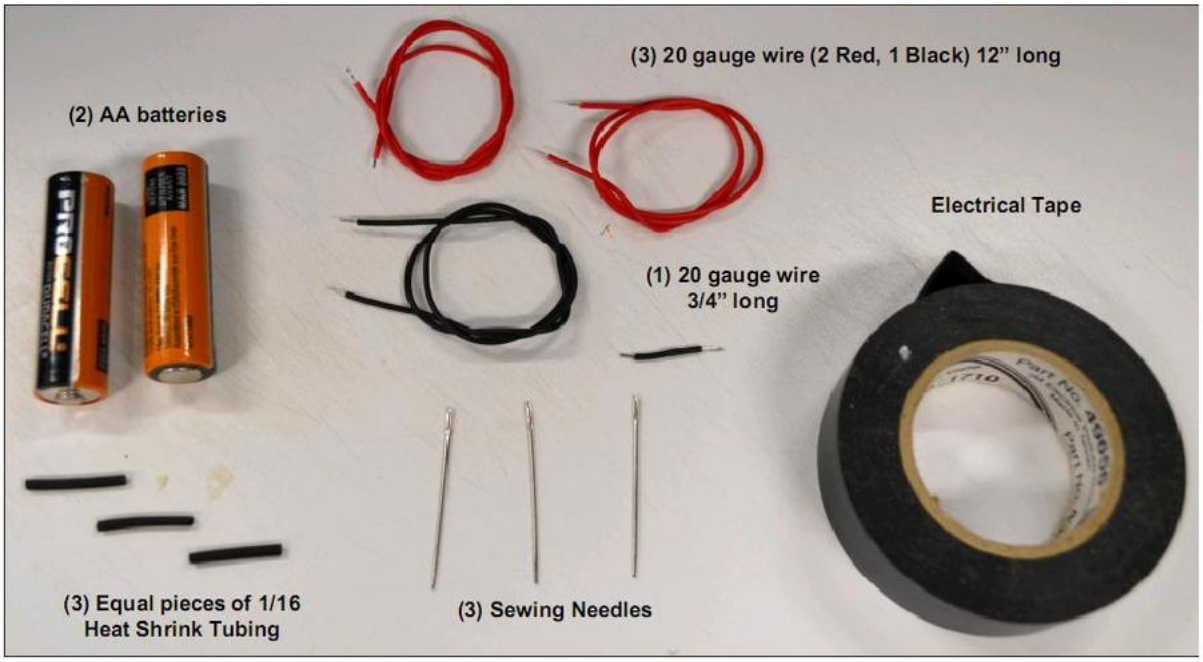
With this 3V-Jig you can use it on old or new models LED/LCD TV without risk to damage the PSU board. So this simple 3V-Jig can use to troubleshoot suspected power supply (PSU/SMPS) and/or backlight (LED/LCD) issues. This 3V-Jig can also work on any LCD/LED/OLED TV no matter the Standby Voltage output!

How to Build a PSU Self Test 3V-JIG

The following items will be required to build the 3V Simple Jig:

- AA size 1.5V Batteries x 2 units
- 20 Gauge wire, 3 each, at least 12" long (2 Red and 1 Black)
- 20 Gauge wire , 1 each, ¾" long (Black)
- Heat Shrink, 3 each, 1/16" DIA x ¾" L
- Sewing Needles. 3 each, 0.04" DIA x 1.5" L
- Electrical Tape

3V Simple JIG Required Supplies:



Steps to Making the 3V-JIG

WARNING: Do not let the Jig leads touch positive (+) to negative (-) at any time as this will cause battery to overheat creating a potential fire or explosion hazard.

Procedure:

1) Place the two batteries side with the (+) of one at the same end as the (-) of the other and wrap two turns of Electrical Tape to hold them together.

2) Strip 1/8" from each end of the ¾" wire and solder to the (+) and (-) ends of the batteries.

3) Cover the soldered end of the batteries with Electrical tape.

4) Strip 1/8" from each end of the 12" wires and prepare each end with solder paste.



AA Batteries
Taped Together
+/- ends



3/4" Wire, Prepared



AA Batteries: +/-
Soldered Together



Batteries +/- ends
Covered by Tape

Caution: Use caution when handling sewing needles as these are sharp and may cause personal injury.

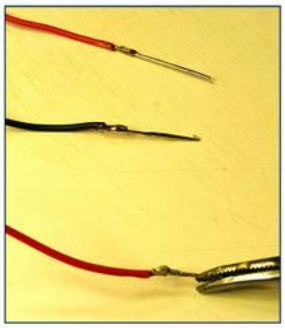
5) Cut the sewing needles to ¾" in length and solder black and red wires to the needle eye ends.

6) Solder the black wire to the exposed Negative (-) terminal of the battery.

7) Solder both red wires to the exposed Positive (+) terminal of the battery.



12" Wires; Prepared



Sewing Needles
Soldered to Wires

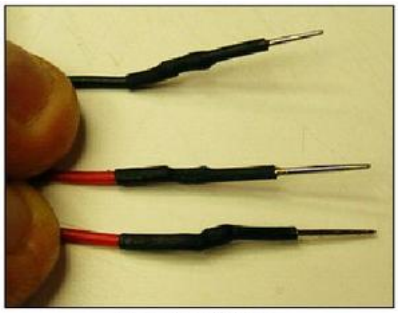


12" Wires Soldered to the +/– Battery
Terminals

8) Apply heat shrink to each solder joint of sewing needles; cover exposed bare wire and solder points leaving ½" of needle exposed.

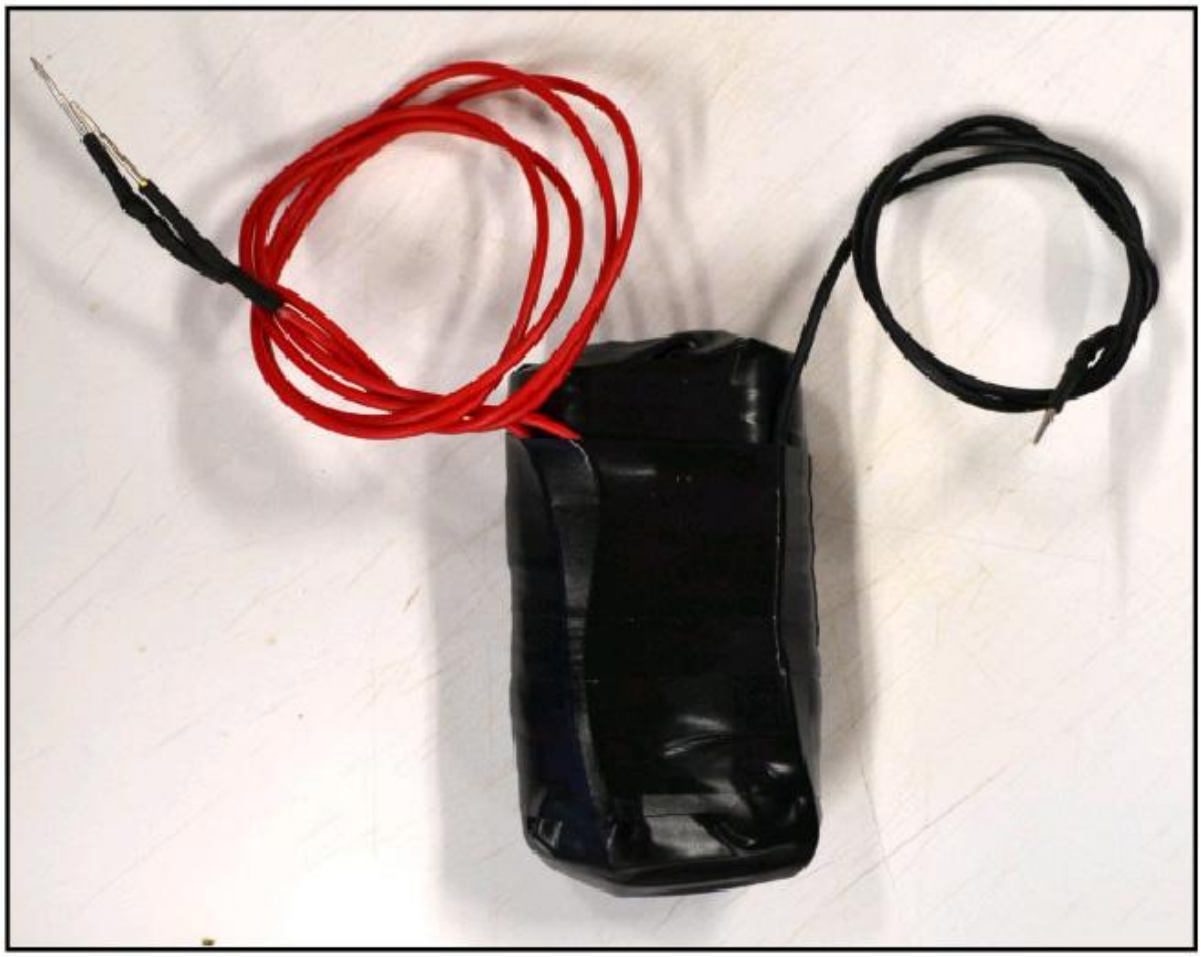
9) Apply electrical tape covering any exposed terminals and solder connection points to completed Jig.


Heat Shrink Tubing


Completed Wiring


Completed 3V Simple Jig

Completed PSU Self Test 3V-JIG

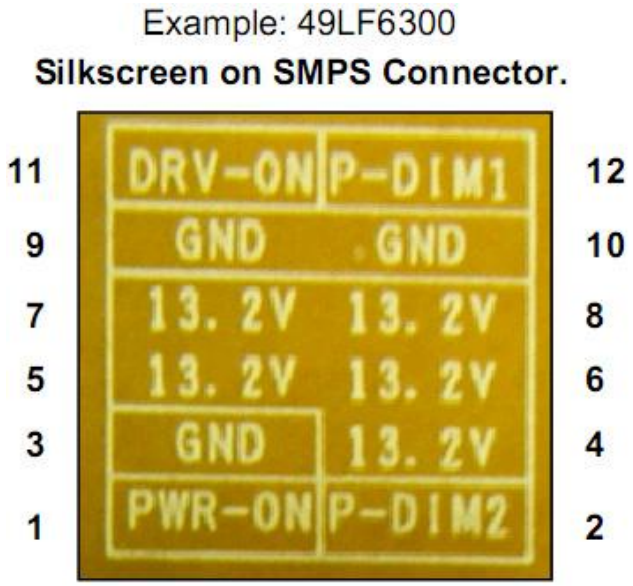


WARNING: Do not to let the Jig leads touch positive (+) to negative (-) at any time as this will cause battery to overheat creating a potential fire or explosion hazard.

Using the 3V-JIG for Testing the PSU (Test 1 of 2)

How to Identify You Need to Use this JIG:

Look on the Power Supply (PSU) for the Voltage Label for the connector that goes to the Main Board, example LG 49LF6300 PSU connector shown on below:



Note that the output power from the SMPS/PSU to the Mainboard during Stand-By or Run is approximately 13V. (Standby: Approx. 12.5V; Test Pin-1 Condition: 13.2V)

Preparing the TV for Test-1:

AC is not applied. “Unplug the Mainboard” connector that comes from the PSU. On the Mainboard, unplugged connector end, push in the following needles as described below. (Use the Mainboard unplugged connector to insert the needles from the 3V-JIG.

Procedure:

1) Push one (+) Red wire needle into PWR_ON pin 1. Push one (-) Black wire needle into Ground pin-3. (You can also use Chassis Ground).

2) Apple AC power. This turns on the Power Supply. Test the 13.2V that go to the Mainboard. Pin 4 through pin 8. (STBY: Approx. 12.5V, Test-1 Condition: 13.2V)

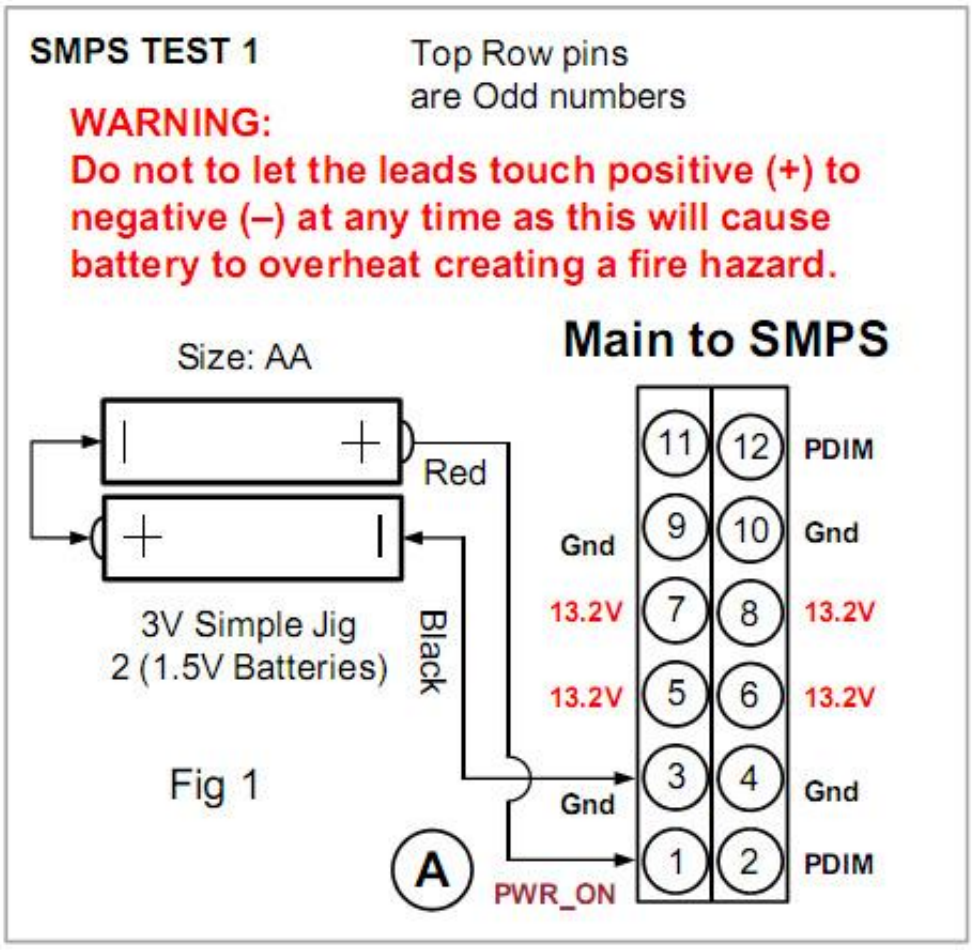
3) If Power Supply fails to come on or start-up, that's mean the Power Supply is defective and need to replace. Or you can concentrate to do the components level repair.

4) If troubleshooting TV for "No Turn On" symptom, and the Power Supply now test good, that's mean the problem is on the Mainboard. So you can concentrate to check and repair the Mainboard or replace it.

Notes:

A) Highly recommend to power off the TV SMPS board, and connect the Standby line 13.2V pin/s with a 24V 5~10Watt DC light bulb as a loading to testing it again to make sure that SMPS board is working properly.

B) If the Power Supply board is not producing Standby voltage 13V with the Mainboard disconnected (pins-4~12), replace the Power Supply or you can concentrate to check their standby circuit on PSU board.



Using the 3V-Jig for Testing the Backlight (Test 2 of 2)

Backlight Testing Procedure:

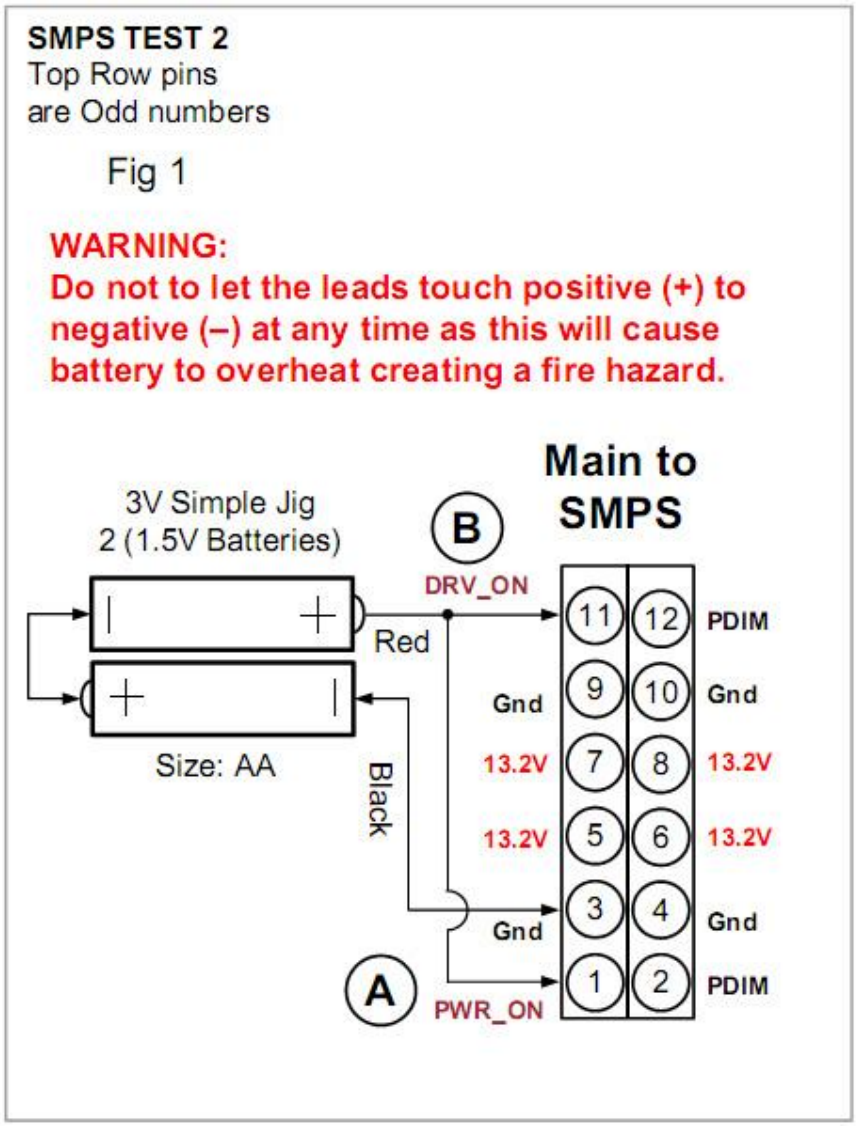
5) Remain the Power Supply Testing connection. Push one (+) Red wire into DRV_ON pin-11.

6) Apply AC Power. This turns on the Backlights.

7) The Backlights should come on, (Check visually).

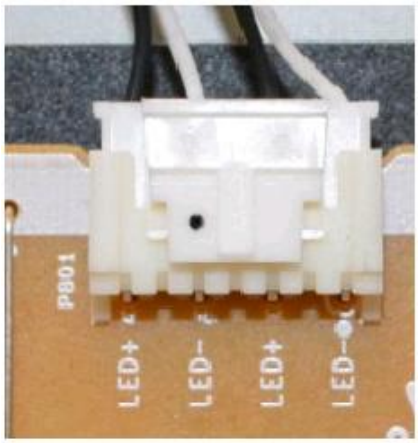
- Recheck all voltages from the SMPS to the Main. If Backlights are on, Backlight Power is OK.

- (See the next page for more details if Backlight fail to turn on).



Backlight Power Connector:

At the top of the Power Supply is a 4-pin connector going to the Backlight LEDs. The two labeled LED+ will be the Power pins. See silkscreen voltage output table for voltages. LED- is the grounding pulse feedback pin for the bank of Backlight LEDs.



Using the 3V-Jig for Troubleshooting Backlights

How to Identify the Power for Backlights:

Look for the Voltage Label on the Power Supply to know what the backlight voltage should be. As an example, on the below is from a 49 inches LG 49LF6300 TV. One pin (LED+) will have 175V and another one pin (LED+) will be 117V.

Silkscreen on SMPS (Voltage outputs)

INPUT	100V~240V~50/60Hz. 2.5A			
OUTPUT	13.2V = 3.0A			
	LG4760RI-15CH2	47	117V -- 230mA	117V -- 230mA
		49	175V -- 205mA	117V -- 205mA
		50	175V -- 205mA	117V -- 205mA
		55	210V -- 230mA	140V -- 230mA
		60	231V -- 180mA	231V -- 180mA
	LG49RID-15CH2	49	144V -- 170mA	144V -- 170mA
	LG55RID-15CH2	55	201V -- 155mA	201V -- 155mA

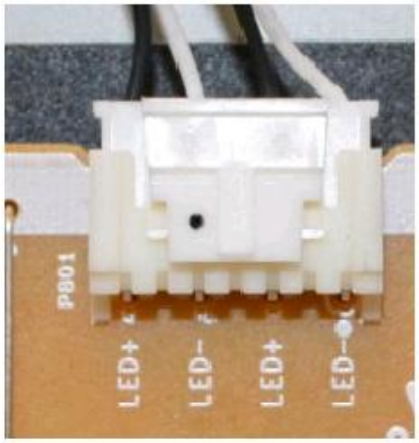
Troubleshooting the Backlight Connector (Backlight not lighting):

1) Check the voltage at the 2 Backlight LED power pins labeled (LED+), see chart. If Voltage is correct or goes high then drops down to about 50% to 75% of the correct voltage you can assume Power is OK. This may indicate an internal short in the backlights, for example the LED strip light bulb leakage. But wait until you complete Check 2 below.

2) Next Check the 2 Backlight (LED-) pins.

a) If LED- pins are 0V. Normally these pins should be (4V~10V). If they are 0V, it can be assumed the Backlight LEDs strip are open and need to repair/replace.

b) LED- pins are Hi (approx. 30V). This would indicate an open driver which is located on the Power Supply. Use a 100 ohm resistor and place one end on Chassis Ground. Place the other end on the High LED- pin. Apply power, if Backlights turn on, you are assured the Power Supply is defective.



Notes:

For older models of LCD/LED TV with 3.3V, 3.5V & 5V Stand-By voltage generate from Power Supply board, you can refer to my V3.0 & V4.0 PSU Self Test Method to testing it.

Secret Revealed on How to Fast Check the Bad LED Light Bulb in LED TV Backlight

Lots of the modern LED TV has a circuit protection design to protect their backlight system. When the system detects something wrong on LED strip (or LED light bulb/s) it will cause the LED Driver Board or PSU+ LED Driver shutdown the backlight. So the symptom will looks like LED TV Backlight on then shutdown within 1~2 seconds.

With this little time, even we have dismantled the LED Panel, but we still can't see which LED Strip/s or LED Light Bulb causing the Backlight system shutdown. Because of the backlight shutdown, so we can't use the volt meter to testing their LED Strip voltage to compare to each other.

So what can do now? If you don't know this method, I believe that you will measure the LED Light Bulbs one by one! It will waste the time to checking it. Sometimes, we can direct see the burn LED Light bulb on the LED Strip and know that LED Strip is bad. But most of the time is not. So we need to learn a new method to solve this problem!

The answer for this new method is: "**Using Your Mobile Phone Video Mode**"!!



Here are the steps of "How to use Mobile Phone/SmartPhone Video Mode" to find out the faulty LED Light Bulb/s from LED TV Backlight:

1) After dismantled the LED Panel, we can see the Full LED Backlight (not the Edge-Lit type LED Backlight).



2) Use the SmartPhone and open the Video App. After that the camera direction will shot on the Full LED Backlight like photo above. Click start to record video now, and then power on the TV. The LED Backlight will lit and shutoff very fast till like haven't lit before. Stop record the video now.

3) This is time to play back the video, 'Pause' the video when you saw their LED light bulbs lit. Actually that's the Infra-Red light not the LED light bulb full light. This is because when LED light bulb supply with the input voltage, instantly it will generate the Infra-Red first, after that the full LED light lit! That's why, when the LED Tv Backlight system protection too fast until we can't see it from our eyes, but the Mobile Phone/SmartPhone camera can "see" and record their Infra-Red light before it shutdown the backlight.

Just play back the video, and “Pause” it when the Infra-Red just generated. So you can saw which LED Strip is no lit or which LED light bulb is not working easily!

Process to Troubleshooting and Repairing LED TV Backlight & LED Strip

A Haier LE50A900K LED TV complaint problem was TV Backlight on then shutdown quickly within 1~2 seconds. But the TV sound is normal. Use torch light to check the screen and found the darkness display is present. So confirm the problem is on the backlight system.

This TV backlight LED Drive/Driver board is using L500H1-4EB. Use the LED Backlight Tester to testing their LED Connector LED+ and LED- channels. Found one of the channel LED Strip voltage a bit high than the other channels LED strips. Suspect this channel LED strip is abnormal and cause the LED Driver board start-up their backlight protection system to shutdown the backlight. So we need to dismantle the LED panel to check and repair it. Below is the process to dismantle LED Panel:

Steps:

1) Remove all the PCB board from TV. After that, flip the LED panel their LED screen glass was on the above and in front us now. Remove the Panel metal shield.

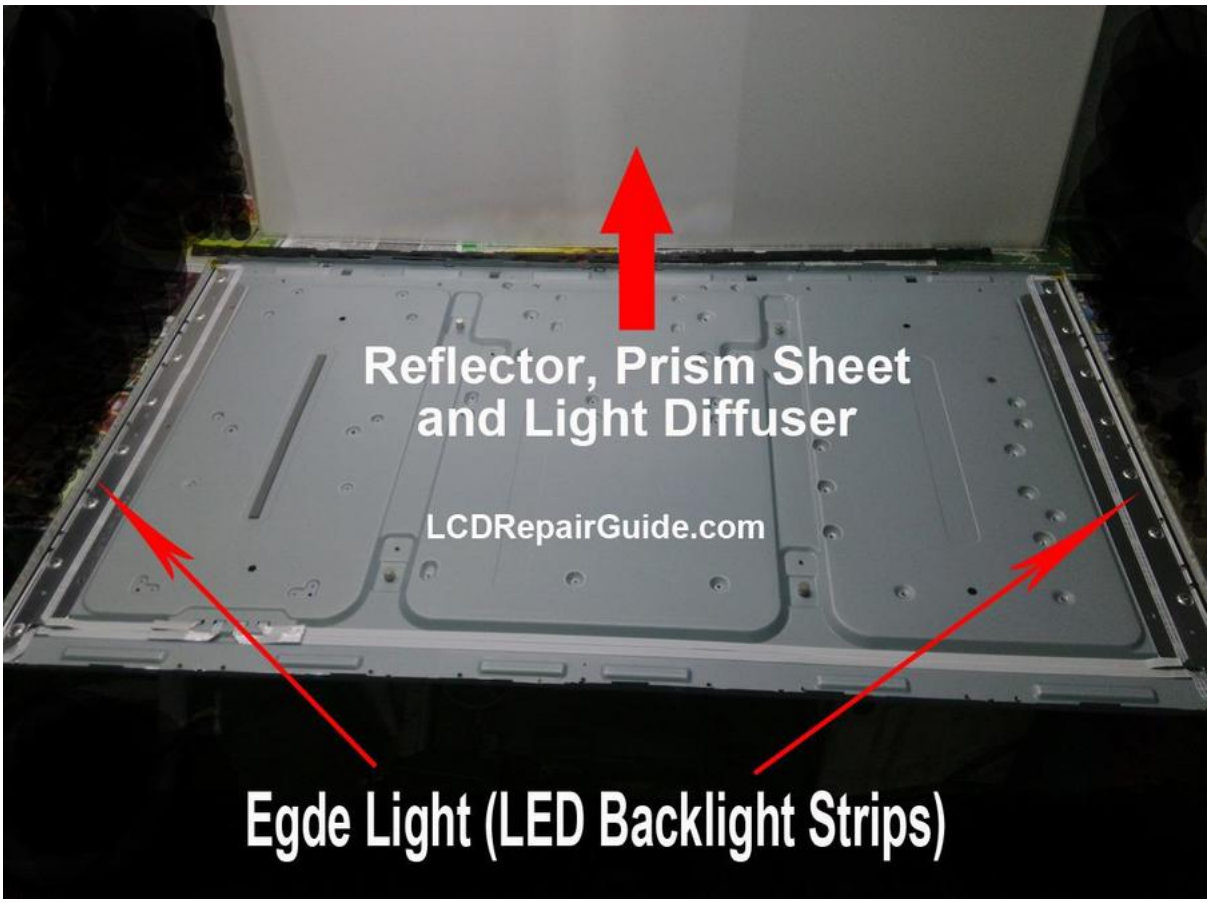


2) Release all the screws from T-con board, Source Driver board and etc. Remove all the cable/s and cable/s connected to Source Drive board. Make sure their Source Drive board, Gate COF IC and Panel Glass are freely now. If not you will easy damage their COF contact ACF glue and cause the screen display vertical lines/bars. After that using the Vacuum Pad to safety remove the Panel Glass and put it in a clean and safe place.





3) Before this step, make sure that your hands are clean now. Remove the Reflector, Prism Sheet, Light Diffuser and etc as photo below:



After removed their backlight sheets, you can see their LED strips was put on the left and right side, each got 2 LED strips.

4) Use the LED Backlight Tester (this Tester also can test LED strip and LED light bulb too) check all these LED Strips and found one of the LED Strip got one LED light bulb failed. This is the LED light bulb cause the backlight shutdown! This LED strip voltage is a bit high than the other LED Strips. Use the utility knife to remove double side tape of the LED Strip from its metal cover. So it will not bending the LED Strip with the utility knife.









5) Replace a new LED Strip (LED Strip part number: V500H1-LS5-TLEM4) into this LED Panel and this Haier LE50A900K LED TV is working perfectly now.



Notes:

If we don't have the LED Strip to replace, we can use the tool/s to remove defective LED light bulb/s to repair the LED Strip.

WARNING: Before proceed to dismantle the LED Panel, you must ask the permission from customer. Because it will take risk when dismantle LCD/LED Panel. Sometime after finish repair or replacement the LED strip, the LED screen will show vertical lines/bars or horizontal lines/bars on the screen. It was because when process to dismantle the LED Panel accidently impacts their COF/TAB IC/Driver. So you must tell the customer first, before dismantle the LED or LCD Panel. That's why we need to learn the correct process to dismantle LED Panel to lower down the risk and increase the successful rate.

How to Remove the LED Light Bulb from LED Strip Easily?

The LED TV has lots of faulty in their backlight system, especially the LED Strip and their LED light bulb/s. So we will facing many LED TV need to replace the new LED Strip. But the problem is, they have many types of the LED Strip design with different LED light bulbs. The LED light bulbs have different voltage types, normally use are 3V, 6V and the new one is using 12V now! So it will have different voltage input for the LED Strips and different sizes (or LED Light bulbs quantity in a LED Strip) of LED Strip.

So the spare part stock will difficult to store different types & models LED Strips. The solution to solve this problem is to just replace their LED Light bulb/s only! It will save money, time and space to store the spare parts.

The question is how to remove the LED light bulb from LED Strip? Can I use the soldering iron to remove it? Yes, some of the good soldering iron can do that, but not perfect and sometimes can damage the LED Strip circuit or that LED Light bulb/s.

Finally found some of the good solution to solving this problem. These 3 solutions can help to easily remove the LED Light bulb/s from the LED Strips!

Solution-1:



Use the Hot Air Rework Station to remove LED Light bulb/s.

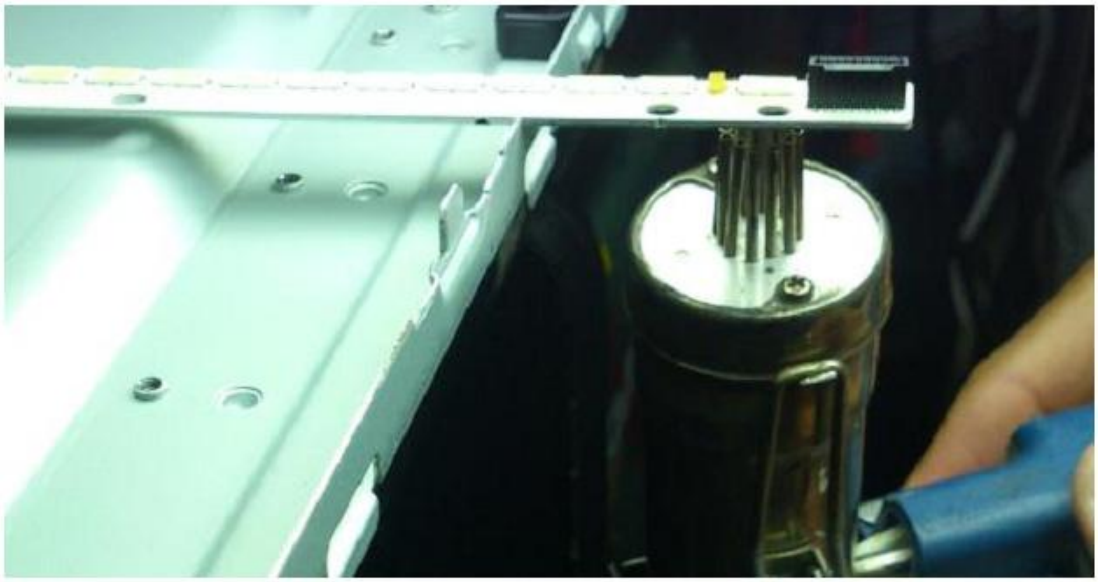


A suitable temperature to remove the LED Light Bulb from LED Strip is about 200°C ~ 280°C. Some will try until 350°C! So it will depend on your device performance. So starting with the lower temperature first! Because of each model and brands of Hot Air Rework Station their quality and accuracy is difference. Before using it to do the removing LED light bulb, so we need to use the bad or old LED Strip to testing that Hot Air Rework Station temperature first. So that we can find out the perfect temperature values for that Hot Air Rework Station to easily remove the LED light bulb and without damage to it.

Solution-2:

Use a Hot Air Gun to remove the LED Light Bulb like photo below:







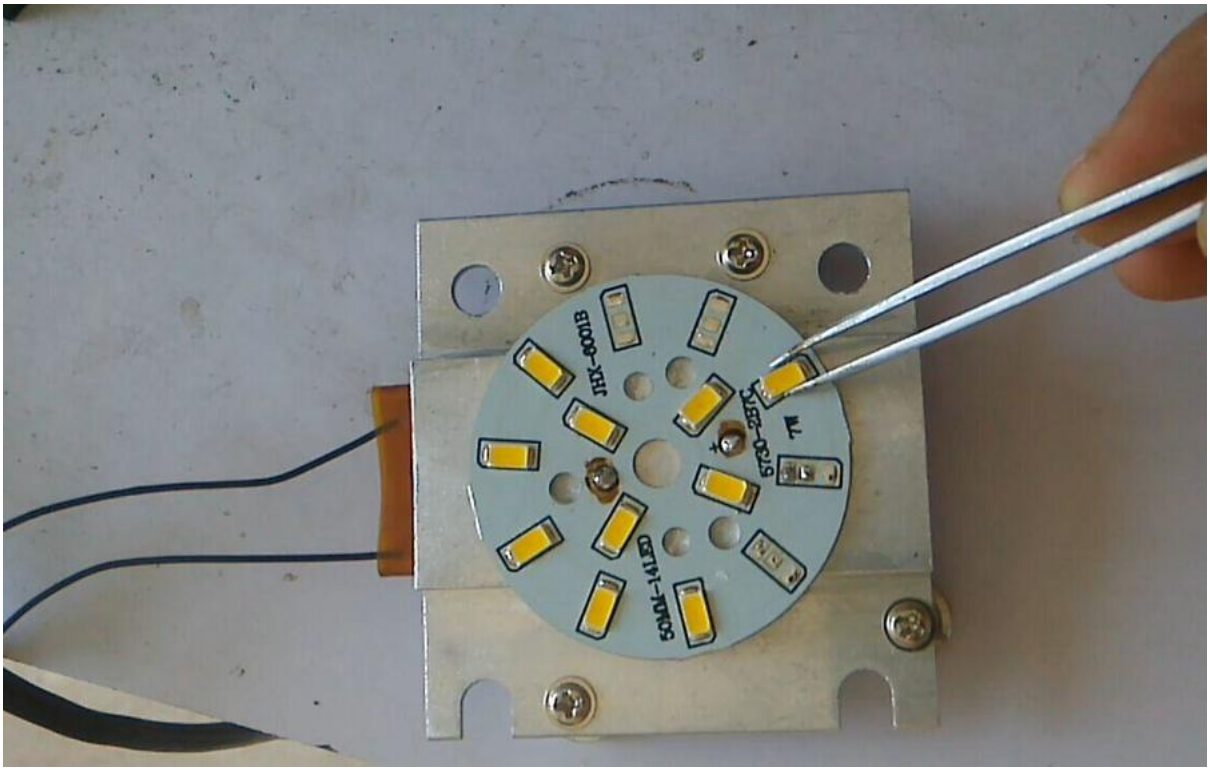
Solution-3:

This method is seldom repairer to using it. This is a PTC Heater. Yes, we can use a PTC Heater or PTC Thermistor to remove the LED Light Bulb! The PTC Heater just takes about 30 seconds to warm up, after that it can start to use. Its input voltage is: 220Vac, wide surface temperature is about 250°C (when input voltage is 220Vac) degree Celsius +/- 10°C. The PTC Heater is like photo below:





The above tool is call PTC Heater



This PTC Heater is easy to use, constant heating, automatic temperature control without any temperature-controlling system and the important thing is it is cheap! Just below $5 USD (2017) only. But the weakness point is their input voltage cable/s easy to break.

Some of the repairer also using this PTC Heater to remove the FPC connectors, the FPC connector is from T-con board or Mainboard. But it must look at the situation of that T-con board bottom side, that's no any SMD components on the bottom foil side.

Other Useful Accessibility Tools:

- ⇨ Flux
- ⇨ Solder
- ⇨ Solder Wick
- ⇨ Tweezers
- ⇨ PCB Holder for easy handle LED Strip and etc.

Conclusion:

The Solution-1 & 3 is better to use than Solution-2. But I will recommend using the Solution-3. Because it is easy to use and nothing to set (temperature setting), and important thing is its price cheap. If your budget is Ok, then you can buy a high price "Constant Temperature Pre-heater" like photo below:



This Constant Temperature Pre-heater normally using in Mobile Phone repair. But it can use to remove the LED Light Bulb easily. But the price is not cheap.

LCD/LED TV Power Supply Repair Tips

This Power Supply repair tips to let you learn what's the common part or components failure in PSU board. This Power Supply repair tips can apply to different brands and model PSU boards. Actually you're learning the "experience" on how to repair LCD/LED TV power supply NOT just follow by their PSU part number only.

Note: You can download some of the Power Supply Schematic Diagram from the Bonus-B section of V5.0-OLED/LED/LCD TV Repair Tips.

1) PSU Board: 5800-P46TTS-02 (46 & 47 inches TV)

No.	Symptoms	Faulty Components	Repair Solutions	Failure Rate
1.	No Power, No LED Light	RS05 (2.2K 1/6W) RS03 (2.2K 1/6W)	If components dry join, just re-solder it. If not just replace it.	15%
2.	No Power, No LED Light	T605 (061979-00)	If components dry join, just re-solder it. If not just replace it.	5%
3.	PSU can't start-up, but Power LED light lit	DS01, DS02, DS03, DS04	Components dry joins, causing no 12V & 24V output.	40%
4.	PSU can't start-up, but Power LED light lit	L607 (4.7uH, Inductor)	Component dry join, Intermittent no 24V output, sometime will cause sparking too	30%
5.	PSU can't start-up, but Power LED light lit	QS01, CS09	If components dry join, just re-solder it. If not just replace it.	10%
6.	PSU can't start-up, but Power LED light lit	IC601 (L6599D)	If components dry join, just re-solder it. If not just replace it.	10%

7.	Intermittent Can't Start-up PSU	CP37 (63V 0.068uF)	Replace this cap with 63V/0.1uF.	50%
8.	Intermittent Can't Start-up PSU	QP09 (2222A)	Replace this component. Can use C8050 as an equivalent component	50%

2) PSU Board: 5800-P40TOS-00

TV Model: Skyworth 42L01HF LCD TV (Chassis= 8M19)

a) Symptom: TV Can't Start-up

When TV power on, measure the PSU standby voltage has 5V output, but no 12V & 24V output. Using the PSU self test method, found the 24V line output voltage increase to 27V after that PSU cutoff. That's mean the PSU is overvoltage protection now. Check the 24V line voltage regulator circuit, all components normal. Direct replace IC604 (KA431) and IC607 (L6599) also same problem. Check IC607 corresponding components all looks good. Try to power on the PSU again, when check the PFC voltage and found it's very high till 460V! It is because of the PFC over voltage causing the 24V output increase?

Check the PFC feedback circuit now. Found their R621 (560K) was opened circuit. After replace R621, their PFC voltage back to normal range is about 390V now. The PSU is ok now and output the 12V & 24V.

Repair : R621 (560K ohm)

b) Symptom: No 24V output, but 12V is normal.

Power on TV, check IC607 (L6599D) voltage supply pin is normal. Power off the TV and check IC607 corresponding components is normal. Direct replace IC607 also same problem. Further check the Q612 & Q614 found Q614 when power on, it will instantly breakover/work. After analysis the problem, it could be on the primary side of transformer. First check their voltage feedback circuit, because when 12V &24V have normal outputs, their feedback optocoupler secondary side has 1V voltage there. So power on the TV and

check voltage feedback circuit optocoupler secondary side have voltage, but quickly drop to 0V. Try to remove the C669 (1000P) capacitor from circuit. Power on the TV, the PSU is working and output the 12V & 24V normally. Replace a new C669 capacitor, the PSU is working perfectly.

Repair : C669 (1000P = 1nF)

c) Symptom: TV Screen Flashing Randomly

This TV after working about half an hour's, the TV screen will start flashing and occur randomly. When the problem occur their PSU 24V line output drops to 21V only. But disconnect the loading of 24V line, the voltage will back to normal 24V. Check the 24V line corresponding components and their circuit line, found that the problem was because their 24V circuit line output D617 one of the pin circuit line is crack. Repair the crack line with just re-solder it, and the problem solved.

Repair : 24V circuit line nearby D617 pin circuit line crack. Just re-solder it problem solved.

Notes : For this PSU board, when the screen flashing problem occur, also need to check their R621 and R622 (both 560K). When these two resistor values drop to 500K ohm (normal 560K) it will cause the screen flashing too.

2) PSU Board: 168P-P42TTS-00

TV Model: Skyworth 42L01HF LCD TV (Chassis= 8M19)

a) Symptom: TV Can't Start-up but the Standby LED light is lit.

Use PSU self test method and found PSU board can generate standby 5V, but no 12V & 24V output. So the problem is in PSU board. Check PSU board PFC voltage is about 300V only (Normally it is about 380V at C523 +ve pin). That's mean their PFC circuit is not working. Check the PFC control IC IC609(NCP1653) pin-8 voltage supply input is 0V! Normally it is about 15V. Trace the voltage supply line to Q609 and ZD300, found ZD300 (15V) zener diode is damage. After replace ZD300, the PSU is ok now.

Repair : ZD300 (15V) zener diode

3) PSU Board: 5800-PLCD26-01 Common Faults

a) No Power: IC608 (P1014AP10)

b) PSU Standby voltage from 5V drop to 0V: R660 (2.5K ohm 1/8W) dry join or opened circuit.

c) Can't Start-up TV: Q608 (4401)

: Q602 (2222A), ZD600 (B18PH)

d) Can't Start-up TV or Screen Flashing: IC601 (5500A), Q601 (K3568), Q612 (4403)

e) Screen Flashing: IC F9222 pin-14 connected capacitor 2.7nF/50V.

4) PSU Board: 5800-P37T00-13 & 5800-P37TOK-01 Common Faults

a) No power: U3 (STR-A6159M)

b) Screen Flashing: R20, R21, R22

: C15 (101/50V)

c) Can't Start-up TV: ZD4 (B15PH), ZD3 (B27PH), D13 (1N4148)

5) PSU Board: 5800-P42TTS-10 Common Faults

a) No Power: IC608 (STR-A6159M)

b) Can't Start-up TV: Q605 (2222A), IC601 (PC817)

: R509 (3.3K 1/8W), R507 (1K 1/8W), R653 (220 ohm 1/8W) components dry solder join.

c) Can't Start-up TV, 12V & 24V output a bit high then slowly drop to 0V: IC607 (L6599D)

6) PSU Board: Samsung BN44-00427A PSU

a) Can't Start-up TV: DO803 & DP805

b) Can't Start-up TV: IC5801 & C5802

7) PSU Board: Samsung BN44-00427B PSU

a) No Power: RL801S

b) No Power: FP801S, CY801S

c) No Power, but Relay Clicking Sound appears: DM801 & DS804

d) Tv Can't Start-up, Standby voltage is normal: QP805

8) PSU Board: Samsung BN44-00503A PSU

a) Power Supply Try to Start-up but no voltage output: RS806 & ICS801

b) TV Can't Start-up, but LED light lit: RM807 & LCM801

c) Standby voltage appear then shutoff: ICP801S

LCD & LED TV Repair Tips

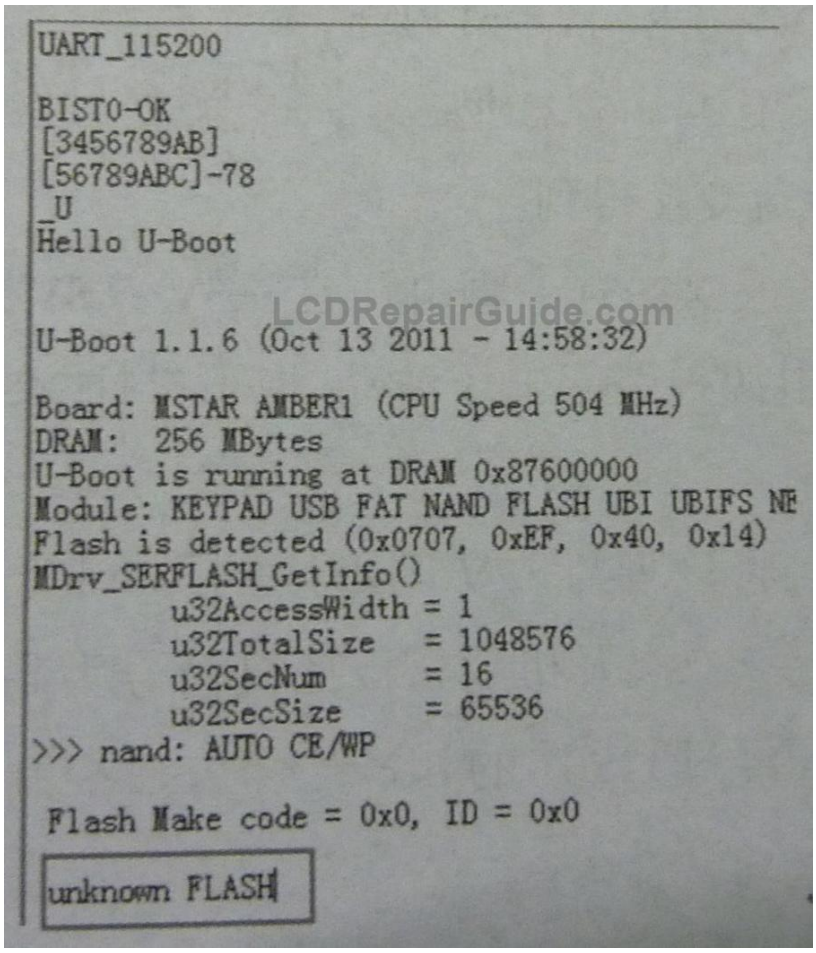
1) Model: KONKA LED42IS95D LED TV (Chassis: MSD6I8981)

Symptom: TV Can't Start-up, but power LED lit

Check MainBoard voltage supply 1.3V, 1.8V, 2.5V, 3.3V all normal. Check their reset circuit and crystal clock Ok.

Repair/Solution:

Connect this TV to a Programmer to read their TV Start-up Log. Shown photo below:



From the above TV Start-up Log, the DDR and BOOT firmware are normal. But detection for NAND main firmware is failed show "unknown FLASH". Check between the Main Chip N501 connections with N510 (K9F2G08U0C) is Ok. Replace the N510 NAND FLASH the problem solved!

2) Model: LG 2014 & 2015 Models TV

Symptom: SMPS LD701 Blink Rate Explained

There is an LED on the Power Supply - LD701- that should be off under normal conditions. If this LED is blinking, it indicates an error.

-From 2014 and previous models (1 through 8 blinks every 6 seconds).

-From 2015 models (1 through 9 blinks every 6 seconds).

Table indicates what the error "Blink Rate" means:

Abnormal Condition	Blinking LED Counts	Check Point
Driver IC NG Check Driver IC & MCU Communication Check	Once (1)	DRV_IC's Operation
DC/DC Voltage Check LED B+ Voltage Check	Twice (2)	DC/DC's Operation
Open LED Protection	Three (3)	LED Line open Condition
Short LED Protection	Four (4)	Led Line short Condition
Driver On Signal error	Five (5)	DRIVER-ON Signal
V-Sync Input signal error or P-DIM Input Error	Six (6)	V-Sync signal and P-DIM
Local dimming data error	Seven (7)	Local Dimming Error
MCU NG Check LED Driver IC_OTP	Eight (8)	MCU & LED IC Communication
DC-to-DC or LLC Start up Check	Nine (9)	LED B+ Initial Check

** V-Sync is a function utilized for Local Dimming timing.*

** Local Dimming Data includes MOSI or SIN, SCLK signals.*

** OTP: Over Thermal protect.*

Repair/Solution:

-

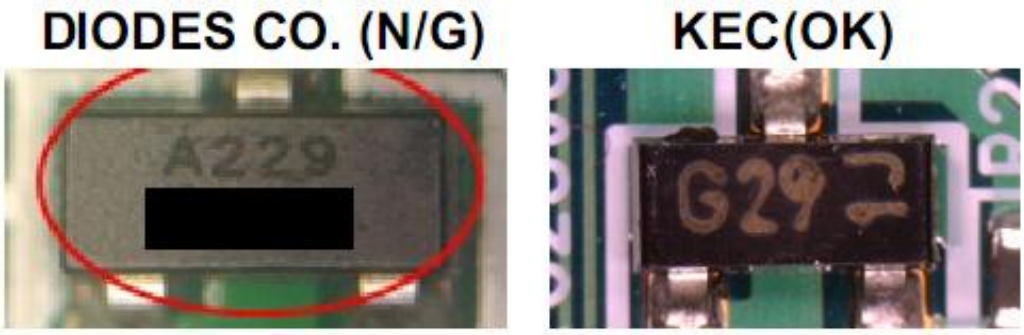
3) Model: LG OLED 65G6**, OLED77G6**, 65/60/55/49UH77** & UH87**, 55/49/43/32LH60/LH66** all series, 49/43LH57 & LH59**, 55/49/43LH57** & LH56** & LH58** LED TV

Symptom: TV Auto Turn-Off (Shut Off) while watching TV.

It was because of their RESET IC defect (DIODES Inc.)

Repair/Solution:

Check Power-Off History in the IN-START Menu. If there is "POWER_OFF_BY_5VMNT", replace the Reset IC with G29 (KEC).



Instart

Model Name :	70UH635T-TA
Serial Number :	604INZY4B605
S/W Version :	3.00.51.01
Micom Version :	V3.06.1
Boot Version :	1.01.18/1.01.18
UHD BE Version :	N/A
Chip Type :	RTD2999
Wi-Fi Channel :	1
Wi-Fi MAC :	C$:36:6C:C9:2B:A4
Wi-Fi Speed :	USB 2.0
MAC Address :	C8:08:E9:CE:97:56
IP Address :	0.0.0.0
SFU Key :	OK
Widevine :	LGTY16CRTK001155361
ESN Num. :	LGTV20163=31001115190
HDCP2(Miracast/HDMI) :	OK/NULL
RF Receiver Version :	1.3.4.113
Wi-Fi/Magic Search :	OK/OK
Camera Ver. :	NULL
Debug Status :	RELEASE
SIGN Key :	PRODKEY
Eye Check :	OK
Control Key :	OK
Access USB Status :	1/-1(T)/-1(C)
UTT :	34
APP History Version :	1921705 (deathvalley)
PQL DB :	LSHPW_EDG3_XXXX
Demo :	LCD_UHD_HDR_JA_02

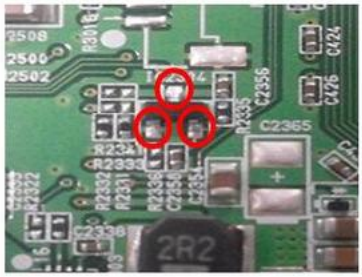
1. Adjust Check
2. ADC Data
3. **Power Off Status** ▶
4. System 1
5. System 2
6. System 3
7. Model Number D/L
8. Test Option
9. Spread Spectrum
10. Stable Count
11. SDP Server Selection
12. RF Remocon Test
13. Access Code

Power On/Off Status

0. POWER_ON_BY_REMOTE_KEY(0x20)
1. POWER_OFF_BY_INSTOP_KEY(0x15)
2. POWER_ON_BY_POWER_ONLY(0x25)
3. POWER_OFF_BY_LOCAL_KEY(0x1C)
4. POWER_ON_BY_LAST_POWERON(0x2B)
5. POWER_OFF_BY_5VMNT(0x05)
6. POWER_ON_BY_REMOTE_KEY(0x20)
7. POWER_OFF_BY_REMOTE_KEY1(0x10)
8. POWER_ON_BY_REMOTE_KEY(0x20)
9. POWER_OFF_BY_LOCAL_KEY(0x1C)
10. POWER_ON_BY_LOCAL_KEY(0x22)
11. POWER_OFF_BY_REMOTE_KEY(0x20)
12. POWER_ON_BY_LAST_POWERON(0x2B)
13. POWER_OFF_BY_ACDET(0x03)
14. POWER_ON_BY_LOCAL_KEY(0x22)
15. POWER_OFF_BY_LOCAL_KEY(0x1C)
16. POWER_ON_BY_LOCAL_KEY(0x22)
17. POWER_OFF_BY_LOCAL_KEY(0x1C)
18. POWER_ON_BY_LOCAL_KEY(0x22)
19. POWER_OFF_BY_REMOTE_KEY(0x20)
20. POWER_ON_BY_LAST_POWERON(0x2B)
21. POWER_OFF_BY_5VMNT(0x05)
22. POWER_ON_BY_LOCAL_KEY(0x22)
23. POWER_OFF_BY_ACDET(0x03)

Rework Guide:

Step 1. Add small amount of solder to all pins (3 Points) of Reset IC using soldering iron.



Step 2. Remove the Reset IC using 2 soldering irons.
Using two soldering irons at the same time like tweezers, remove the Reset IC by carefully lifting the IC off the board.

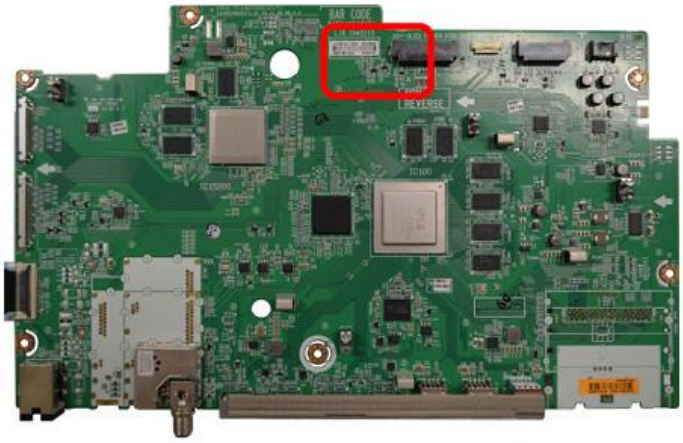


Step 3. Install the new KEC Reset IC using a soldering iron.

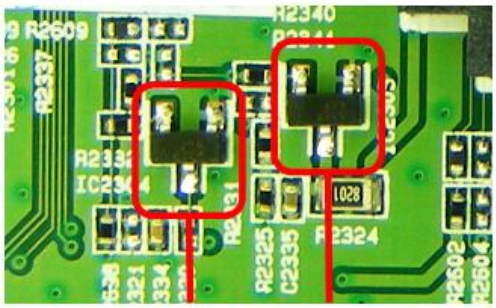
Reset IC Location:

a) Model: OLED65G6** & OLED77G6**, Marking Code: IC2304 & IC2305

IC Location



Detailed Picture

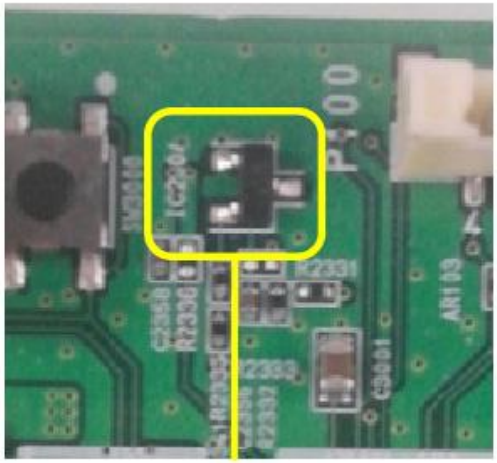


b) Model: 65/60/55/49UH77** & UH87** , Marking Code: IC2304

IC2304 IC Location



Detailed Picture



IC2304

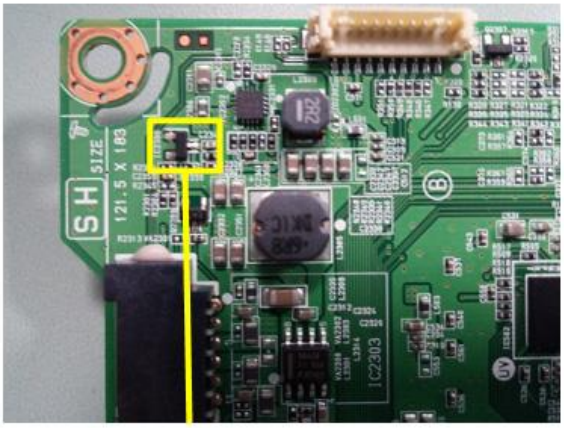
c) Model: 55/49/43/32LH60 & LH66** Series , Marking Code: IC2306

IC Location



IC2306

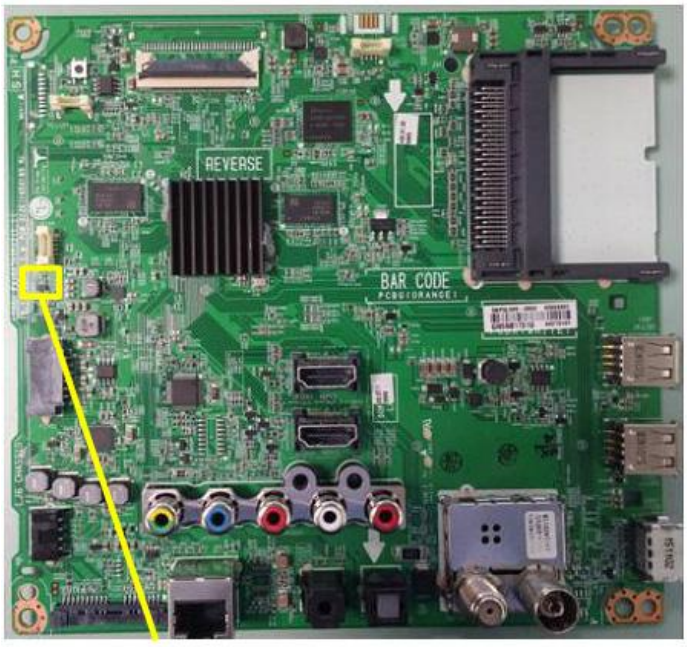
Detailed Picture



IC2306

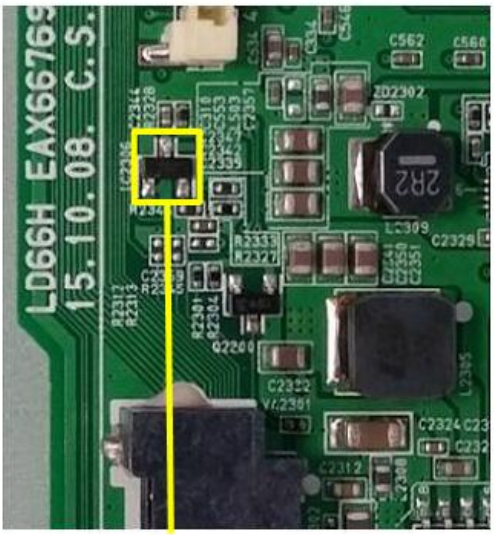
d) Model: 55/49/43/32LH60* , Marking Code: IC2306

IC Location



IC2306

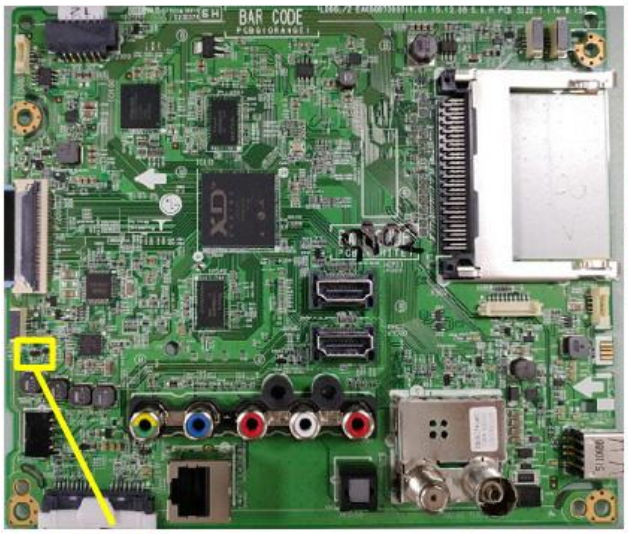
Detailed Picture



IC2306

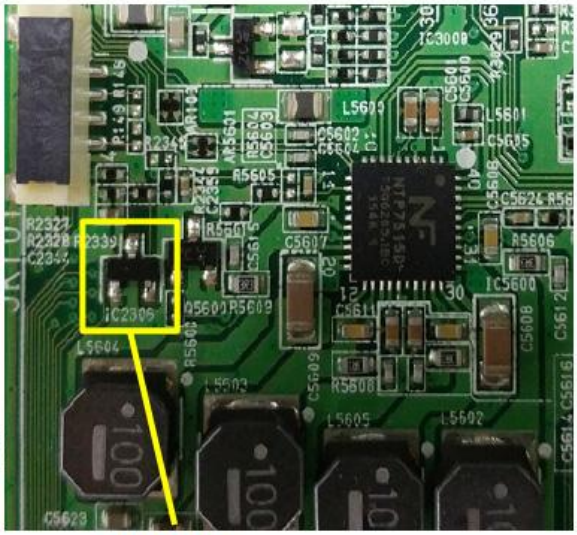
e) Model: 49/43LH57 & LH59**, 55/49/43LH59** , Marking Code: IC2306

IC Location



IC2306

Detailed Picture



IC2306

f) Model: 55/49/43LH56 & LH57 & 49/43LH58** , Marking Code: IC2306

IC Location



IC2306

Detailed Picture



IC2306

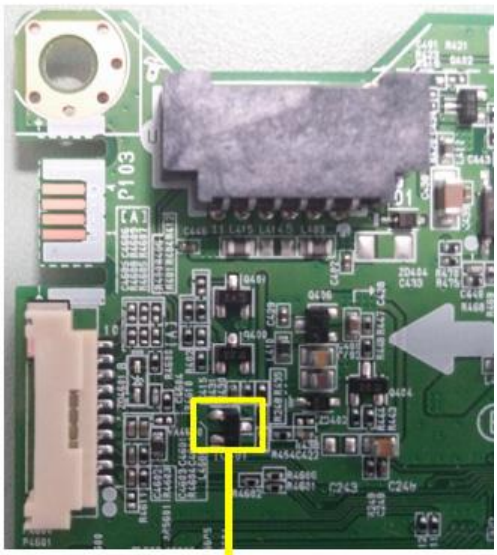
g) Model: 55/49/43LH58**-N, 55/49/43LH6420-N* , Marking Code: IC401

IC Location



IC401

Detailed Picture



IC401

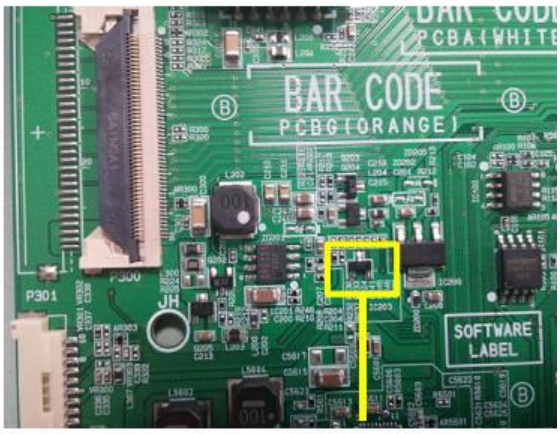
h) Model: 43/49LF5400-UE, 40LH5300-UA , Marking Code: IC203

IC Location



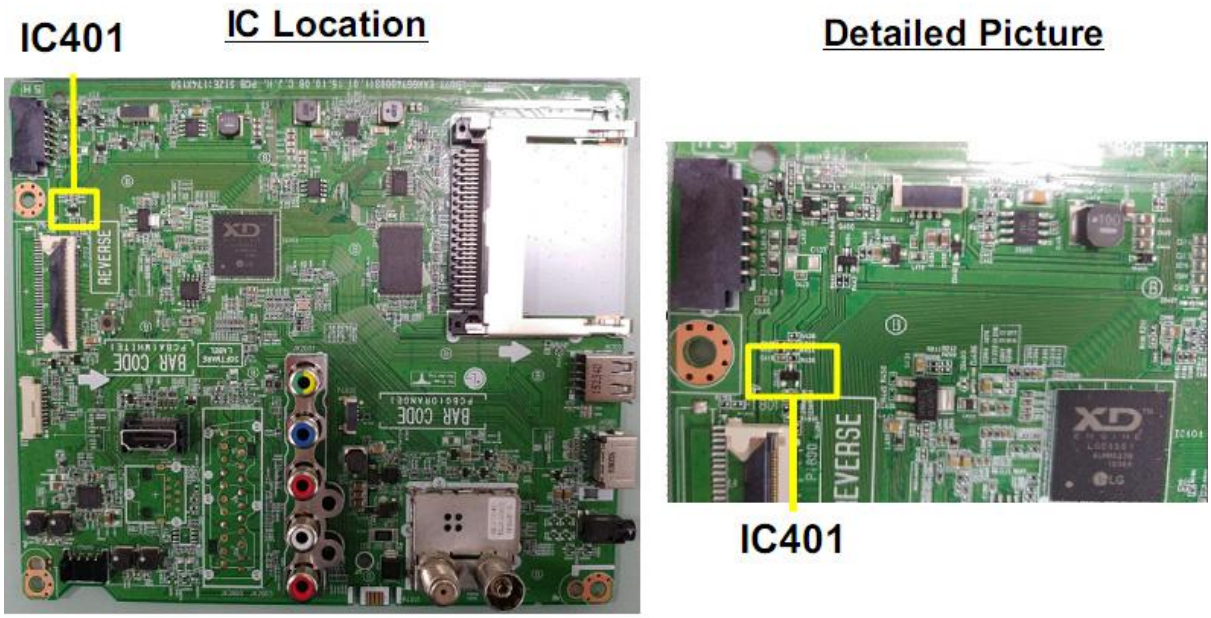
IC203

Detailed Picture



IC203

i) Model: **LH54*V-Z, 32LH53*V-Z , Marking Code: IC401



4) Model: Panasonic TC-32LX80LB & TC-37LX80LB LCD TV

Symptom: TV Can't Start-up, LED Blinking 2 Times

Repair/Solution:

The part Q1801 is supplied by STBY 3.3V and not supply MAIN 3.3V because a leakage in C1840 (1uF 10V). Replace the capacitor C1840.



PCB A



5) Model: Samsung UN40ES6150 LED TV

Symptom: TV Power Start-up then Shut Off and Change to Standby Mode

Repair/Solution:

Found their PSU Board (BN44-00502A) DM855 rectifies diode shorted. Also re-solder the PSU board, especially their TM8015 transformer and corresponding area had dry joint.

6) Model: Sharp LC39LE651K, LC39LE751K, LC50LE651K & 751K, LC60LE651K & LE751K LED TV

Symptom: TV Turn on (Blue LED), but No Display and No Error Code are Record.

Repair/Solution:

This is be the result of firmware corruption. To recover the unit, find the correct version of BOOT firmware and updated a follows:

a) Copy the BOOT firmware to a USB stick/Pendrive. The boot firmware should appear in a folder marked “boot”.

b) Unplug the TV from the mains outlet.

c) Insert the USB stick to one of the USB port on the TV.

d) Power on the TV.

e) When the front Panel LED becomes blue, keep pressing front panel “VOL-“.

f) Wait until the front panel LED becomes RED (Flashing), then release the front panel “VOL-“ key.

Note: If the LED does not flash RED, repeat steps ‘d’ to ‘f’. This may take several attempts.

g) The software upgrade operation will start, and the Red LED will blink as follows (1s Red, 1s OFF).

Note: If a different flashing sequence appears, refer to the chart below for more details of the error code.

h) Remove the power cord from the mains outlet, and then remove the USB memory stick.

Action performed	*Led flashing period*	*Meaning*
USB insertion without AC power	OFF	-
Power on the TV via AC cord	OFF	STM8 is starting up the FP2K controller
USB is being read and file containing the SW upgrade is identified	OFF	FP2K started and is able to perform USB connection and read from external device.
Writing process of FP2K starts	LED FLASHING: 1 second ON, 1 second OFF (RED LED). 	Software from USB is being downloaded to the nand-flash
Writing process of STM8 starts	LED FLASHING: 1 second ON, 1 second OFF (RED LED). 	FP2K downloads the software for STM8 via SWIM link.
Writing process stops successfully.	LED FLASHING: 1 second ON, 4 second OFF (RED LED) 	Writing process OK.
Writing process stops erroneously because FP2K is not well written.	LED FLASHING: 2 flashes ON, 1 second OFF (RED LED) 	FP2K writing failed
Writing process stops erroneously because STM8 is not well written.	LED FLASHING: 3 flashes ON, 1 second OFF (RED LED) 	STM8 writing failed
Writing process stops erroneously because USB is not detected.	LED FLASHING: 4 flashes ON, 1 second OFF (RED LED) 	USB connection failed

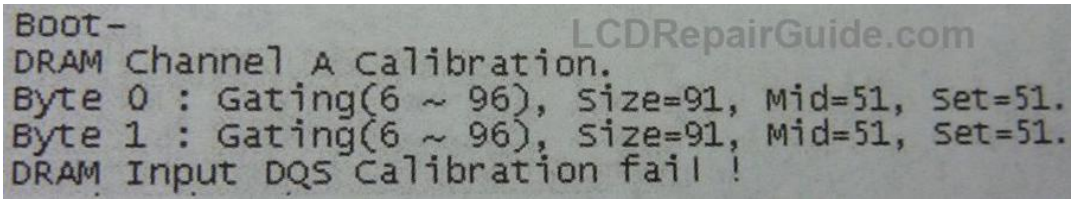
7) Model: Skyworth 55E550E (Chassis: 8K50) TV

Symptom: TV Can't Start-up.

Check MainBoard (5800-A8K500-0P40) voltage supply 1.3V, 1.8V, 2.5V, 3.3V all normal. Check their reset circuit and crystal clock Ok.

Repair/Solution:

Connect this TV to a Programmer to read their TV Start-up Log. Shown photo below:



From the above TV Start-up Log info shows that in between Main Chip and DDR is abnormal. Check DDR input voltage and other voltage normal. The DDR corresponding components and circuit lines are OK. Replace the DDR memory the TV problem solved.

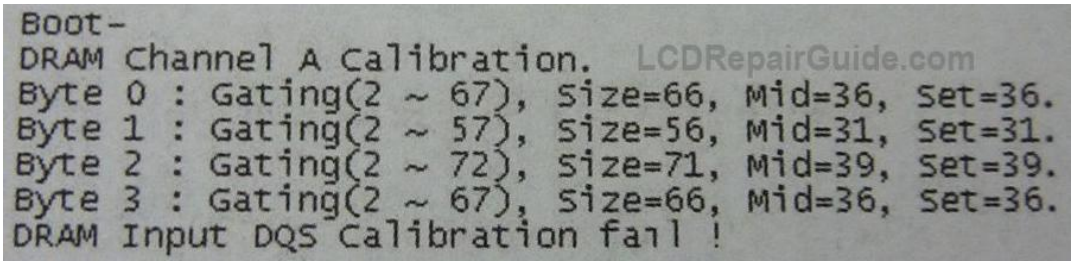
8) Model: Skyworth 32E680F (Chassis: 8K55) TV

Symptom: TV Can't Start-up.

Check MainBoard (5800-A8K560-0P40) voltage supplies are all normal. Check their reset circuit and crystal clock Ok.

Repair/Solution:

Connect this TV to a Programmer to read their TV Start-up Log. Shown photo below:



From the above TV Start-up Log info shows that in between Main Chip and DDR is abnormal. Check DDR input voltage and other voltage all normal. Try to apply some pressure on the Main Chip there and re-run the TV Start-up Log (the TV can start-up a bit then shut off), it can shows more info then shows failed too. Use BGA to reflow the Main Chip and problem solved.

9) Model: TCL L46E5200BE (Chassis: MS28) TV

Symptom: TV Hang After 1 Minutes.

When the watching the TV about one minutes, the display will hang or hold there.

Repair/Solution:

Try to use USB to update their firmware but still not success. Suspect their NAND Flash problem, so replace U601 (HY27UF082G2B). After replace U601 and update their firmware, the TV problem solved.

10) Model: TCL L46P21FBD (Chassis: MT01C) TV

Symptom: TV Auto Shutdown

Normally the TV auto shutdown is causing by the voltage supply not stable.

Repair/Solution:

When the problem appear, check their 12V, 24V are normal. But the 5V no output just 0V. Replace their U006 (RT8110), after that power on the TV, the RT8110 output 5V. But just after about 1~2 minutes, same problem again.

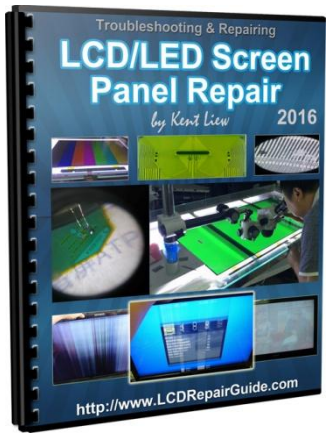
Check the U006 corresponding components and found the U006 pin-7 and C001 in between has a loophole there. Check the loophole ohm values it shows nearly 2Kohm! Looks like the loophole inside line break and causing no 5V output. Connect a wire to bypass this loophole. Finally this problem solved!

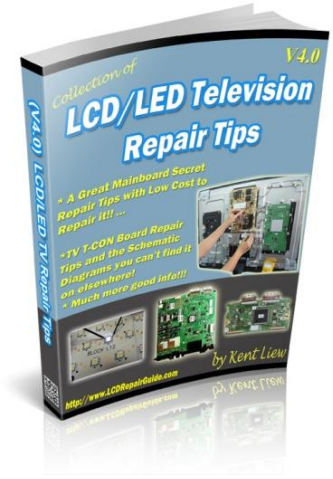
If you want to buy the Test Equipment, Tools and Spare Parts please visit to the page here:

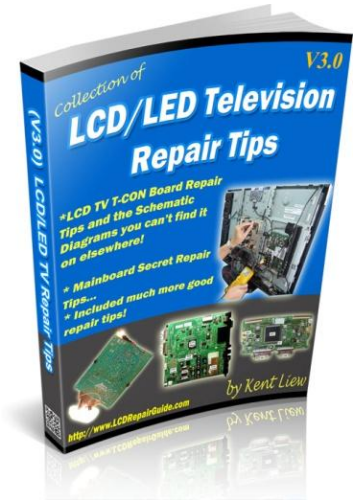
http://www.LCDRepairGuide.com/tools

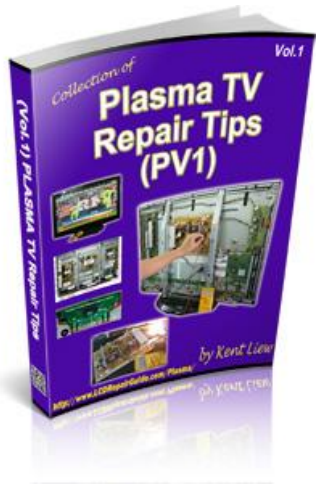
All these tools and equipment will help you in troubleshooting and repairing the electronics devices.

Completer Flat Screen TV Troubleshooting & Repairing Ebooks:









*For searching the training manuals, service manuals or schematic diagram, please join the LED/LCD Television repair membership, highly recommended:

Http://www.LCD-Television-Repair.com



Please visit the Resources Page to get more useful repairing information at:

http://www.lcd-television-repair.com/newsletter/Recommend.html

Bonus-A

LG LED/LCD TV Interconnect Schematic Diagrams

29LN4510-Interconnect_2013……..117

42LB5800-Interconnect_2014……..119

42LN5300-Interconnect_2013……..124

47LB6000-Interconnect_2014……..132

47LN5750-Interconnect_2013……..139

49LF5500-Interconnect_2015……..147

49UB8500-Interconnect_2014……..155

50LB6500-Interconnect_2014……..168

55EA9800-Interconnect-OLED_2013……..177

55LA8600-Interconnect_2013……..184

55LA9700-UHD_Interconnect_2013……..……..193

55LB7200-Interconnect_2014……..202

Below Models Interconnect Diagram Move to Bonus-B Section

55LM6200-Interconnect_2012……..

55LM6700-Interconnect_2013…….

55LM8600-3D-Interconnect_2012……..

55LN5700-Interconnect_2014……..

55LS4500-Interconnect_2014……..

55UB9500-Interconnect_2014……..

55UF7600-SMPS_T-CON_Mainboard_Interconnect_2015…

60LN5400-Interconnect_2013……..

65LB5200-Interconnect_2014……..

65UF9500-UHD_Interconnect_2015……

84UB9800-Interconnect_2014……..

OLED65G6P-Interconnect_2016……..……

T-Con Board Schematic/Circuit Diagrams

BONUS-A: T-Con Board Schematic/Circuit Diagrams

AUO T546HF02-VO-CB_T-con Schematic Diagram ……210

Samsung ESP_C4LV0.4 LJ94-03842E T-Con Schematic Diagram..246

Sharp RUNTK0093FVZx_4K2K 120Hz_LC60UD20KN_T-con

Schematic Diagram ……...…..…251

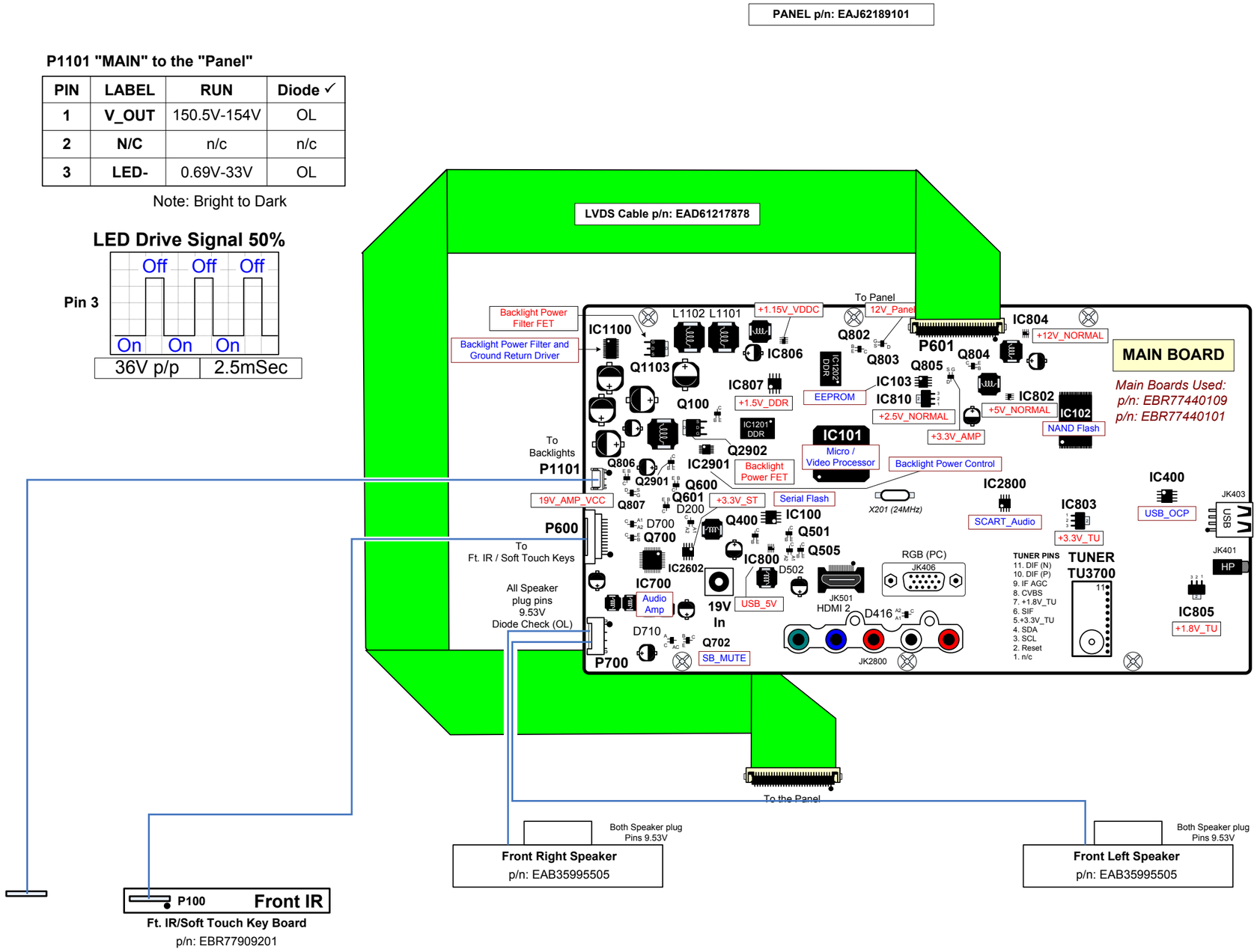
29LN4510 INTERCONNECT DIAGRAM

P1101 "MAIN" to the "Panel"

PIN	LABEL	RUN	Diode ✓
1	V_OUT	150.5V-154V	OL
2	N/C	n/c	n/c
3	LED-	0.69V-33V	OL

Note: Bright to Dark

LED Drive Signal 50%



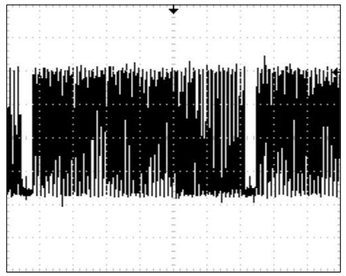
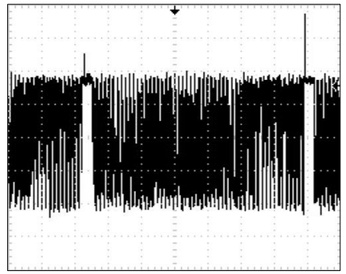
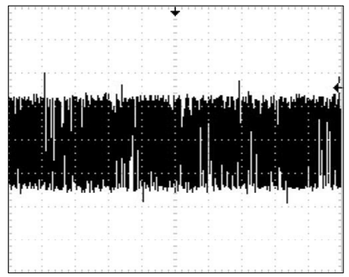
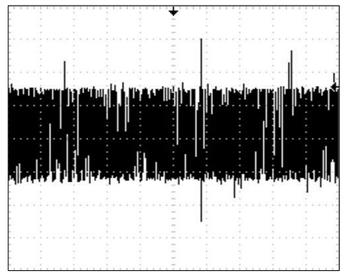
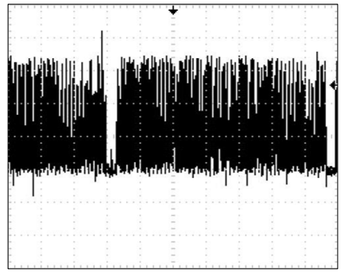
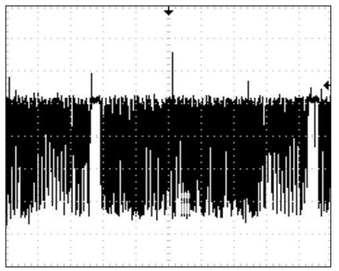
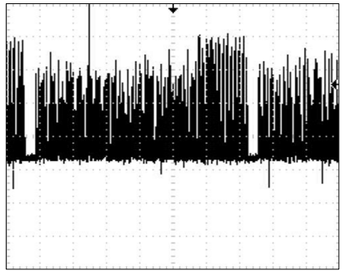
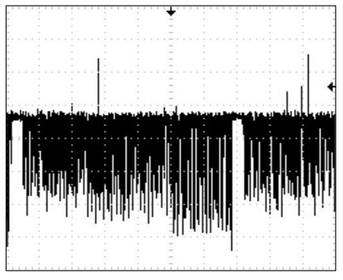
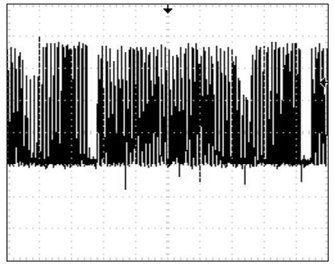
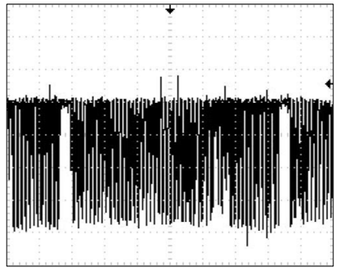
P601 "MAIN LVDS" to the "Panel"

PIN	LABEL	STBY	RUN	Diode Check
1	Gnd	Gnd	Gnd	Gnd
2-4	N/C	n/c	n/c	n/c
5	Gnd	Gnd	Gnd	Gnd
6	LVA_3P	0V	1.16V	1.34V
7	LVA_3N	0V	1.21V	1.34V
8	Gnd	Gnd	Gnd	Gnd
9	LVA_CKP	0V	1.22V	1.34V
10	LVA_CKN	0V	1.17V	1.34V
11	Gnd	Gnd	Gnd	Gnd
12	LVA_2P	0V	1.12V	1.34V
13	LVA_2N	0V	1.27V	1.34V
14	Gnd	Gnd	Gnd	Gnd
15	LVA_1P	0V	1.10V	1.34V
16	LVA_1N	0V	1.28V	1.34V
17	Gnd	Gnd	Gnd	Gnd
18	LVA_0P	0V	1.11V	1.34V
19	LVA_0N	0V	1.29V	1.34V
20	Gnd	Gnd	Gnd	Gnd
21-23	N/C	n/c	n/c	n/c
24-26	Gnd	Gnd	Gnd	Gnd
27-30	+12V_Panel_Power	0V	11.96V	OL

P600 "MAIN" to "Front IR Board" P100

PIN	LABEL	STBY	RUN	Diode Check
12	3.3V_ST	3.37V	3.37V	1.07V
11	IR	3.35V	3.34V	OL
10	LED_Amber	1.97V	1.97V	OL
9	LED_Red	0.12V	1.91V	OL
8	Amber_Led B+	3.37V	3.37V	1.35V
7	Red_Led B+	1.99V	3.37V	1.41V
6	Key_SDA	0V	3.33V	OL
5	Key_SCL	0V	3.33V	OL
4	Gnd	Gnd	Gnd	Gnd
3	Key1	3.37V	3.37V	OL
2	Key2	3.37V	3.37V	OL
1	3.3V_ST	3.37V	3.37V	1.07V

29LN4510 LVDS P601 Video Waveforms

LVDS P601 Pin 6 (LVA_3P)  448mV p/p	LVDS P601 Pin 7 (LVA_3M)  612mV p/p	LVDS P601 Pin 9 (LVA_CKP)  388mV p/p	LVDS P601 Pin 10 (LVA_CKM)  578mV p/p	LVDS P601 Pin 12 (LVA_2P)  500mV p/p	LVDS P601 Pin 13 (LVA_2N\M)  528mV p/p
LVDS P703 Pin 15 (LVA_1P)  560mV p/p	LVDS P703 Pin 16 (LVA_1M)  592mV p/p	LVDS P703 Pin 18 (LVA_0P)  476mV p/p	LVDS P703 Pin 19 (LVA_0M)  520mV p/p	SMPTE Color Bar input signal (Component) All signals taken at 2.5mSec per/div / 100mV per/div	

42LB5800 INTERCONNECT DIAGRAM

P201 "SMPS Board" to P2400 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode Check
17-18	Gnd	Gnd	Gnd	Gnd
16	N/C	n/c	n/c	n/c
13-15	12V	0V	11.09V	1.82V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	24.35V	2.06V
8	P-DIM#2	0V	0.15V~2.70V	OL
7	Gnd	Gnd	Gnd	Gnd
5-6	3.5V_ST	3.57V	3.53V	2.09V
4	P-DIM#1	0V	0.15V~2.70V	OL
3	3.5V_ST	3.57V	3.53V	2.09V
2	DRV_ON	0V	3.50V	OL
1	PWR_ON	0V	3.40V	1.17V

Dim to Bright

PWR-ON:
Starts 12V, 24V and 97.4V LED Power.
No Backlights.

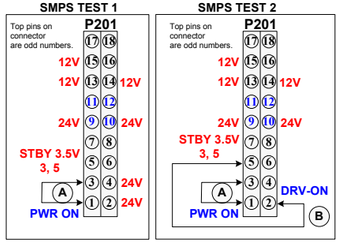
DRV-ON: Starts Backlights
LED Power goes to 217V.

(1) **PWM Pins 4 and 6:** can vary according to incoming video IRE level, OSD Backlight setting and then Intelligent Sensor (room light condition).
Output from the Video Processor.
Range 0.15V to 2.91V.

WARNING: Do not add or remove jumpers with Power Applied.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2400 on the Main board.
(A) Jump pin 3 or 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main and 97.4V to the Backlights. (No Backlights at this time).
LED Ground Return Line is (0V).
Remove AC power. Leave the jumper in place.

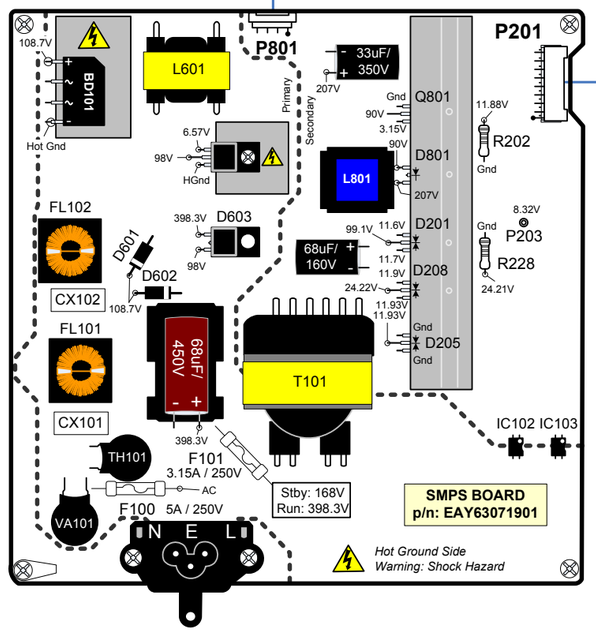
SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 3 or 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now jump to 209.5V
LED Ground Return Line is (0.70V).



Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect P801. When AC is reapplied, the Backlight power will start at 78V, rise to 162V then gradually fall back to 78V.

BACKLIGHT INFORMATION:
48 Total LEDs,
8 LEDs per/Board.
6 boards (rows).

To the Panel Backlights

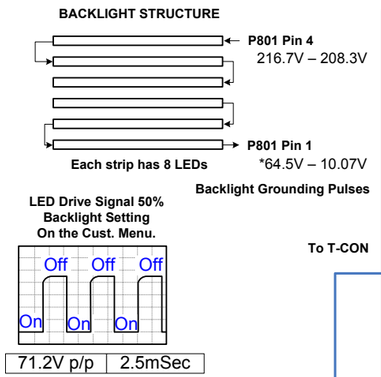


P801 "SMPS Board" To "Panel LEDs"

Pin	Label	Run	Diode Check
1	LED-	*64.5V – 10.07V	OL
2-3	N/C	n/c	n/c
4	LED+	216.7V – 208.3V	OL

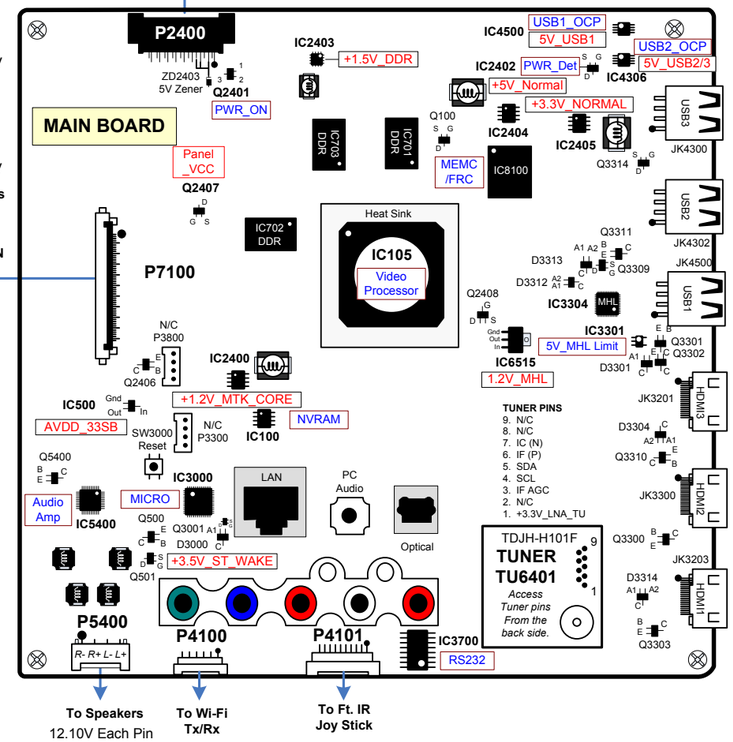
*Dim to Bright

No Local Dimming
In this Model.



Main Board
(AUSDLJR, BUSDLJR)
p/n: EBT62994406 p/n: EBT62994407
(AUSWLJR, BUSWLJR, BUSWLQR)
p/n: EBT62957007 p/n: EBT62957006

For DC voltages for Main board components see Page 2 of the Interconnect diagram.



P2400 "MAIN Board" To P201 "SMPS Board"

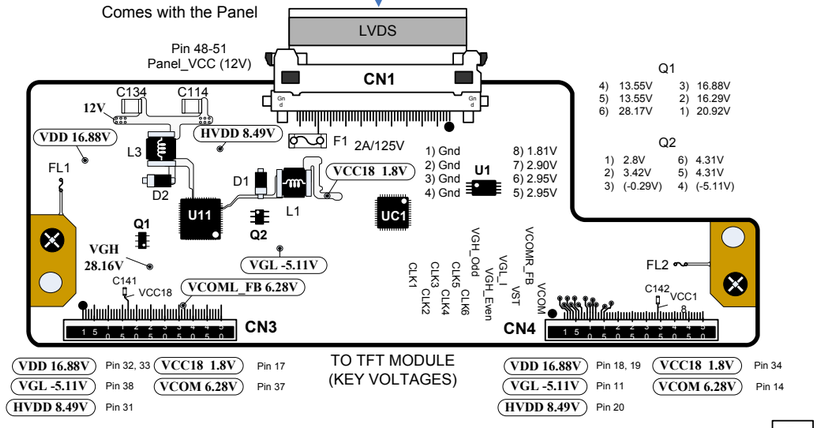
Pin	Diode
1	OL
2	1.63V
3	1.24V
4	0.87V
5-6	1.24V
7	Gnd
8	0.87V
9-10	OL
11-12	Gnd
13-15	OL
16	n/c
17-18	Gnd

For DC voltages See P201 Chart

For LVDS Waveforms see Page 4 of the Interconnect diagram.

T-CON BOARD

Comes with the Panel



TO TFT MODULE (KEY VOLTAGES)

VDD 16.88V	Pin 32, 33	VCC18 1.8V	Pin 17
VGL -5.11V	Pin 38	VCOM 6.28V	Pin 37
HVDD 8.49V	Pin 31		

VDD 16.88V	Pin 18, 19	VCC18 1.8V	Pin 34
VGL -5.11V	Pin 11	VCOM 6.28V	Pin 14
HVDD 8.49V	Pin 20		

CN3	OTHER VOLTAGES	CN4
Pin 8	VGH (U11 pin 42, 43) 28.14V	Pin 43
Pin 9	*VGH_ODD (U11 pin 47) -5.09V to 28.14V	Pin 42
Pin 10	*VGH_EVEN (U11 pin 46) -5.09V to 28.14V	Pin 41
Pin 12	VST (U11 pin 45) -5.09V	Pin 39
Pin 18-19	VDD (U11 pin 28) 16.88V	Pin 32-33

**VGH_ODD and *VGH_EVEN cycle between -5.09V to 28.14V every second.*

To Main P4101

Bottom Center of Set
p/n: EBR77970401

Joy Stick / Ft IR

Ft Righ SPK
p/n: EAB62972102
Ft Left SPK
p/n: EAB62972101

P4101 "MAIN" To "Joy Stick / IR"

PIN	LABEL	STBY	RUN	Diode Check
1	Gnd	Gnd	Gnd	Gnd
2	Key 2	3.56V	3.50V	1.98V
3	Key 1	3.56V	3.50V	1.98V
4	3.5V_ST	3.57V	3.50V	1.24V
5	Gnd	Gnd	Gnd	Gnd
6	LED_R	1.65V	0V	OL
7	IR	3.54V	3.47V	OL
8	Gnd	Gnd	Gnd	Gnd
9	Eye_SDA	3.57V	3.50V	1.98V
10	Eye_SCL	3.57V	3.50V	1.98V

IR Pulses 3.92V p/p
SDA/SCL (In Energy Savings "Auto") 3.64V p/p

P4100 "MAIN" To "WiFi Module

PIN	LABEL	RUN	Diode Check
1	+3.5V_ST_Wake	3.47V	1.10V
2	WiFi_DM	0.04V	1.04V
3	WiFi_DP	0.03V	0.76V
4	Gnd	Gnd	Gnd
5	WiFi_PWR_On	0.02V	1.90V
6	N/C	n/c	OL

No STBY Voltages

For DC voltages See P4100 Chart

"WiFi Module to P4100 "MAIN"

Pin	Diode
1	0.94V
2	0.86V
3	1.11V
4	Gnd
5	1.56V
6	OL

To Main P4100

Wi-Fi Tx/Rx

p/n: EAT61813801

PANEL PART NUBMERS

AUSDLJR, BUSDLJR
p/n: EAJ62572101
AUSWLJR, BUSWLJR, BUSWLQR
p/n: EAJ62649301
p/n: EAJ63008001

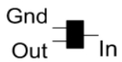
42LB5800 Main Board (ICs) Component Voltages

IC100



Pin	NVRAM (Non-Volitile)
[1]	n/c
[2]	Gnd
[3]	3.31V
[4]	Gnd
[5]	3.31V
[6]	3.31V
[7]	0V
[8]	3.31V (Vcc In)

IC500



Pin	AVDD_33SB Regulator
[1]	Gnd
[2]	3.34V (Out)
[3]	3.52V (Vcc In)

IC2400

Pin	+1.2V_MTK_CORE Regulator
[1]	Gnd
[2]	11.97V (Vcc In)
[3]	Gnd
[4]	0.8V
[5]	1.6V
[6]	3.49V
[7]	1.22V (Out)
[8]	1.22V (Out)

IC2402



Pin	PWR_Det +12V in
[1]	Gnd
[2]	3.66V (Out)
[3]	3.69V (In)

IC2403



Pin	+1.5V_DDR Regulator
[1]	3.52V (Vcc In)
[2]	3.52V (Vcc In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.68V
[8]	0.51V
[9]	1.85V
[10]	1.53V (Out)
[11]	1.53V (Out)
[12]	1.53V (Out)
[13]	5.06V
[14]	n/c
[15]	3.5V
[16]	3.52V (Vcc In)

IC2404



Pin	(+5V_NORMAL) Regulator
[1]	9.2V
[2]	0V (n/c)
[3]	0V (n/c)
[4]	1.22V
[5]	3.22V
[6]	Gnd
[7]	24.44V (Vcc In)
[8]	5.10V

IC2405



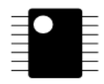
Pin	+3.3V_NORMAL Regulator
[1]	3.44V
[2]	0.77V
[3]	5.51V
[4]	5.32V
[5]	Gnd
[6]	3.32V (Out)
[7]	8.78V
[8]	11.98V (Vcc In)

IC3301



Pin	+5VMHL Regulator
[1]	0V
[2]	Gnd
[3]	0.07V
[4]	0V (MHL_Det)
[5]	5.10V (Vcc In)

IC3700



Pin	RS232 Data Buffer
[1]	3.31V (C1+)
[2]	5.52V (V+)
[3]	0V (C1-)
[4]	0V (C2+)
[5]	(-5.43V) (C2-)
[6]	(-5.46V) (V2-)
[7]	(n/c)
[8]	(n/c)
[9]	(n/c)
[10]	(n/c)
[11]	3.27V (DIN2)
[12]	3.3V (ROut1)
[13]	0V (RIn1)
[14]	(-5.46V) (DOut1)
[15]	0V (Gnd)
[16]	0V (In) +3.3V_ST

IC4306



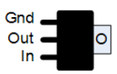
Pin	+5V_USB2/3 USB2/3 OCP
[1]	Gnd
[2]	5.10V (Vcc In)
[3]	3.3V
[4]	3.34V
[5]	3.31V
[6]	5.10V (Out USB2)
[7]	5.10V (Out USB3)
[8]	3.31V

IC4500



Pin	+5V_USB1 USB1 OCP
[1]	Gnd
[2]	5.10V (Vcc In)
[3]	5.10V (Vcc In)
[4]	3.3V
[5]	3.3V
[6]	5.10V (Out USB1)
[7]	5.10V (Out USB1)
[8]	5.10V (Out USB1)

IC6515



Pin	1.2V_MHL Regulator
[Gnd]	Gnd
[Out]	1.2V
[In]	3.3V

42LB5800 (Transistors and Large Flat Pack ICs) Voltages

Q100

Pin	OTP_Write Switch
[S]	3.31V
[G]	3.30V
[D]	0V

Q500

Pin	'+3.5V_ST_WAKE Switch Q501 CTRL
[B]	0.65V
[C]	0.05V
[E]	Gnd

Q501

Pin	'+3.5V_ST_WAKE Switch
[S]	0V
[G]	0.58V
[D]	3.52V

Q2401

Pin	PWR_On Switch
[1]	3.51V
[2]	2.83V
[3]	3.42V

Q2406

Pin	Panel VCC Switch (Q2407) Control
[B]	0.64V
[C]	0.06V
[E]	Gnd

Q2407

Pin	Panel_VCC Switch
[G]	1.8V
[S]	11.97V
[D]	11.96V

Q2408

Pin	VDD3V3_HDMI Switch
[G]	1.95V
[S]	3.31V
[D]	3.31V

ZD2403

Pin	Clamp for +3.5V_ST
C	3.5V
A	Gnd

Q3001

Pin	CEC (Consummer Electronic Control)
[G]	3.51V
[S]	3.59V
[D]	7.66V

Q3300

Pin	HDMI 2 Hot Swap
B	0V
C	0V
E	Gnd

Q3301

Pin	MHL_Det Switch Driver
[B]	0.53V
[C]	3.51V
[E]	0V

Q3302

Pin	MHL Detection Switch
[B]	3.52V
[C]	0V
[E]	3.51V

Q3303

Pin	HDMI1_Hot Swap
B	0V
C	0V
E	Gnd

Q3309

Pin	MHL_SDA/SCL 5V Pull-Up
[G]	5.09V
[S]	5.10V
[D]	2.46V

Q3310

Pin	MHL_Det Switch Changes to HDMI_Det
[B]	0V
[C]	5V
[E]	0V

IC3000 Micro Processor

Pin		Pin	
[1]	0.06V	[25]	0V
[2]	3.3V	[26]	0.04V
[3]	0.05V	[27]	3.5V
[4]	0.08V	[28]	0V
[5]	0.02V	[29]	0V
[6]	3.51V	[30]	0V
[7]	3.49V	[31]	3.51V
[8]	3.51V	[32]	3.51V
[9]	3.51V	[33]	3.51V
[10]	3.51V	[34]	3.51V
[11]	3.51V	[35]	0V
[12]	0.17V	[36]	0V
[13]	3.34V	[37]	0V
[14]	3.66V	[38]	1.06V
[15]	3.51V	[39]	3.51V
[16]	0V	[40]	3.51V
[17]	3.51V	[41]	0.64V
[18]	3.51V	[42]	0.12V
[19]	3.24V	[43]	0V
[20]	3.34V	[44]	0V (n/c)
[21]	0.08V	[45]	0V (n/c)
[22]	0V	[46]	2.09V
[23]	0V	[47]	Gnd
[24]	0V	[48]	3.51V (Vcc In)

Q3311

Pin	MHL_SDA/SCL 5V Q3309 Control
B	0V
C	5.09V
E	Gnd

Q3314

Pin	HDMI3 Hot Swap Load Pull-Up
[G]	0V
[S]	0V
[D]	11.98V

Q5400

Pin	Amp Mute Driver
[B]	0V
[C]	3.30V
[E]	Gnd

IC3304 HDMI4_MHL Processor

Pin		Pin	
[1]	Gnd	[21]	3.36V
[2]	1.2V	[22]	3.31V
[3]	Gnd	[23]	3.31V
[4]	3.3V	[24]	3.31V
[5]	0V	[25]	3.31V
[6]	0.05V	[26]	3.31V
[7]	4.83V	[27]	3.31V
[8]	5.09V	[28]	3.31V
[9]	0V	[29]	3.31V
[10]	5.10V	[30]	1.2V
[11]	0V	[31]	3.31V (Vcc In)
[12]	0V (n/c)	[32]	0.03V
[13]	0V (n/c)	[33]	0.03V
[14]	5V	[34]	0.03V
[15]	0V	[35]	0.03V
[16]	0V (n/c)	[36]	0.03V
[17]	3.29V	[37]	0.03V
[18]	3.28V	[38]	0.03V
[19]	3.37V	[39]	0.03V
[20]	1.02V	[40]	3.31V (Vcc In)

IC5400 Audio Amp

Pin		Pin	
[1]	Gnd	[21]	12.2V
[2]	Gnd	[22]	Gnd
[3]	Gnd	[23]	16.77V
[4]	Gnd	[24]	3.16V
[5]	0V	[25]	Gnd
[6]	1.2V	[26]	0V
[7]	0V	[27]	5.12V
[8]	1.63V	[28]	16.76V
[9]	1.62V	[29]	Gnd
[10]	3.31V	[30]	**12.2V**
[11]	3.31V	[31]	24.45V
[12]	3.31V	[32]	12.2V
[13]	3.25V	[33]	12.2V
[14]	1.65V	[34]	Gnd
[15]	1.65V	[35]	16.76V
[16]	16.77V	[36]	3.29V
[17]	Gnd	[37]	Gnd
[18]	12.2V	[38]	1.59V
[19]	24.45V	[39]	Gnd
[20]	24.45V	[40]	3.31V (Vcc In)

D3000

Pin	CEC Bias
[A1]	2.9V
[A2]	3.52V
[C]	3.5V

D3301

Pin	DDC_SCL_4_JACK Pull_Up
[A1]	3.51V
[A2]	5.10V
[C]	5V

D3304

Pin	DDC_SCL _MHL Routing
[A1]	3.51V
[A2]	5.10V
[C]	5V

D3312 DDC_SCL_MHL

Pin	Pull_Up
[A1]	0V
[A2]	2.49V
[C]	5.09V

D3313 DDC_SDA_MHL

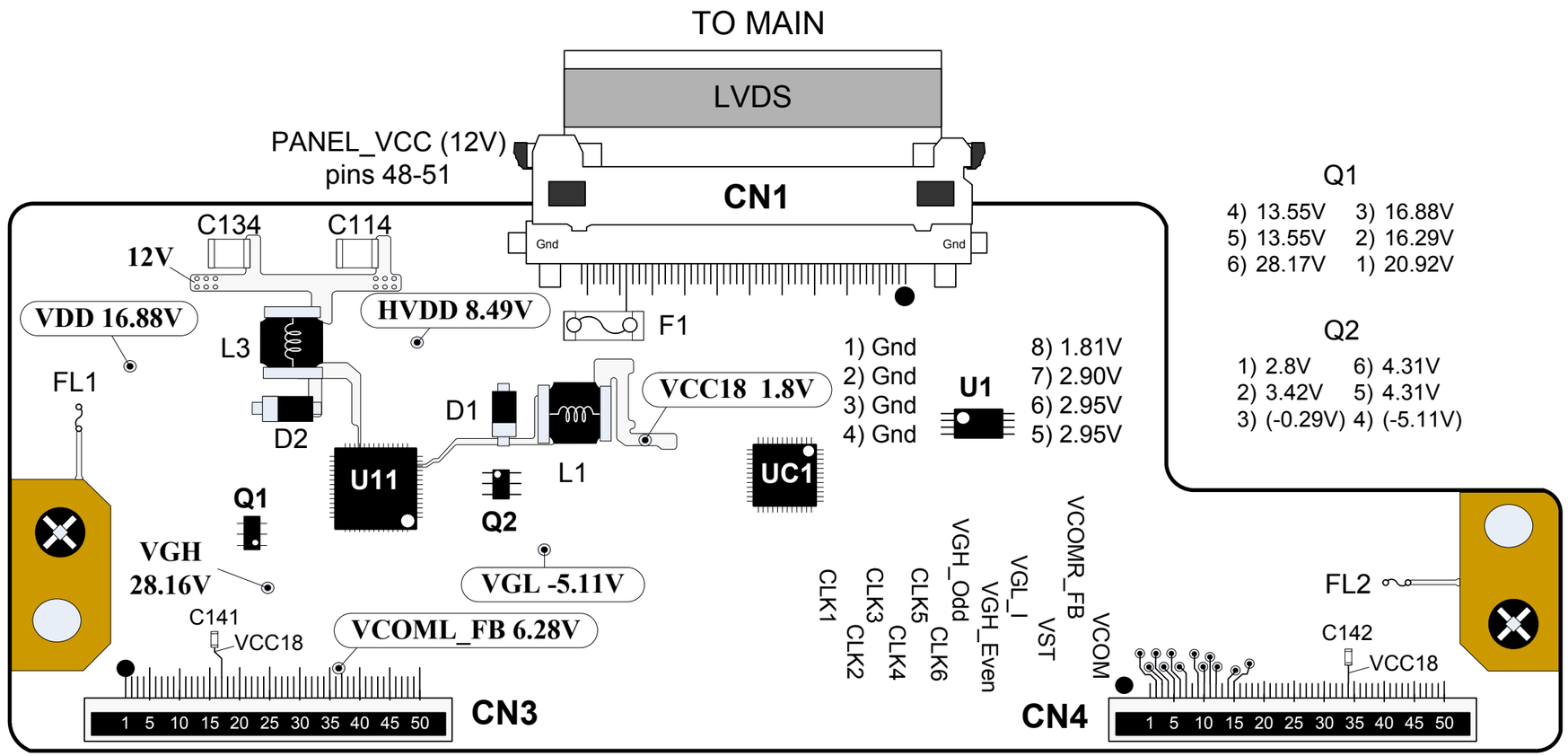
Pin	Pull_Up
[A1]	0V
[A2]	2.49V
[C]	4.83V

D3314 DDC_SDA_SCL

Pin	Pull_Up
[A1]	0V
[A2]	2.49V
[C]	4.83V

42LB5800 T-CON Board Component Voltages

Warning: T-Con Board under shield. Be sure to reinsert screws before operating set with shield removed.



TO TFT PANEL
(KEY VOLTAGES)

VDD 16.88V	Pin 32, 33	VCC18 1.8V	Pin 17
VGL -5.11V	Pin 38	VCOM 6.28V	Pin 37
HVDD 8.49V	Pin 31		

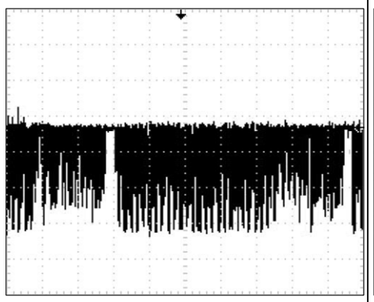
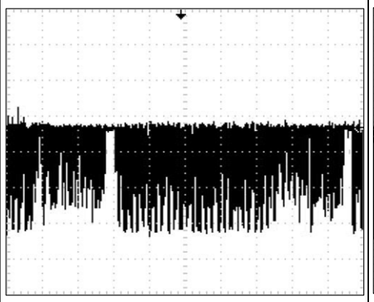
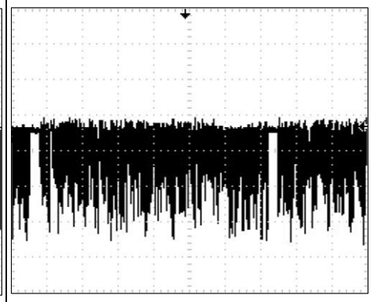
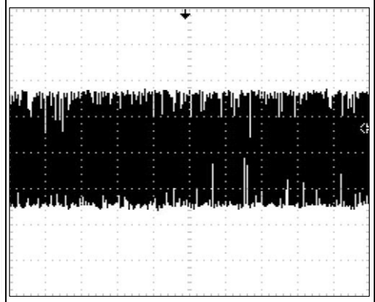
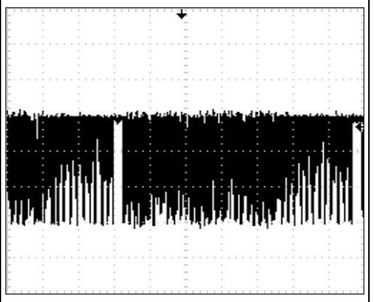
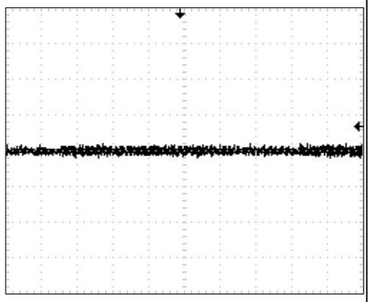
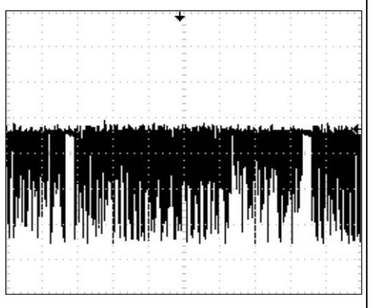
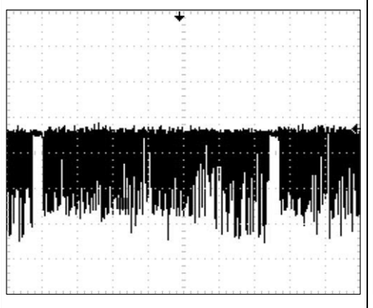
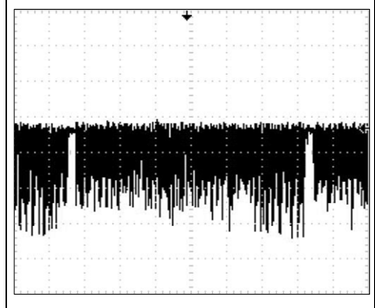
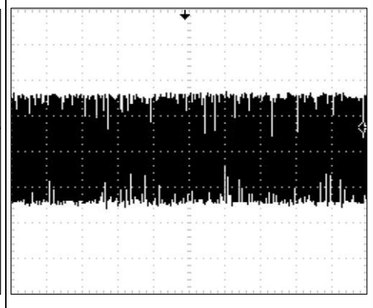
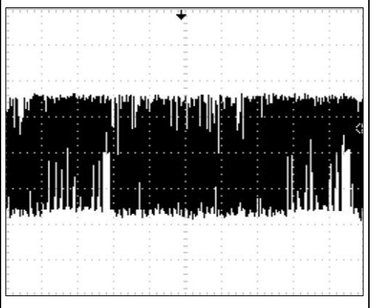
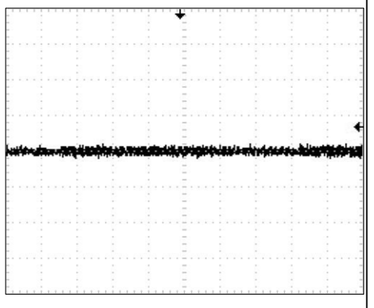
VDD 16.88V	Pin 18, 19	VCC18 1.8V	Pin 34
VGL -5.11V	Pin 11	VCOM 6.28V	Pin 14
HVDD 8.49V	Pin 20		

CN3	OTHER VOLTAGES	CN4
Pin 8	VGH (U11 pin 42, 43) 28.14V	**Pin 43**
Pin 9	*VGH_ODD (U11 pin 47) -5.09V to 28.14V	**Pin 42**
Pin 10	*VGH_EVEN (U11 pin 46) -5.09V to 28.14V	**Pin 41**
Pin 12	VST (U11 pin 45) -5.09V	**Pin 39**
Pin 18-19	VDD (U11 pin 28) 16.88V	**Pin 32-33**

**VGH_ODD and *VGH_EVEN cycle between -5.09V to 28.14V every second.*

42LB5800 P7100 LVDS Connector Video Waveforms

All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". The ones shown are the "Positive" signal of the pair. The Negative signal looks exactly the same but flipped 180^0.
Scope Settings are 100mV per/division, 2.5uSec per/division.

Pin 12 (TXA0N)	Pin 14 (TXA1N)	Pin 16 (TXA2N)	Pin 19 (TXACLKN)	Pin 22 (TXA3N)	Pin 24 (TXA4N)
					
360mV p/p	352mV p/p	356mV p/p	336mV p/p	332mV p/p	40mV p/p No Waveform
Pin 28 (TXB0N)	**Pin 30 (TXB1N)**	**Pin 32 (TXB2N)**	**Pin 35 (TXBCLKN)**	**Pin 38 (TXB3N)**	**Pin 40 (TXB4N)**
					
344mV p/p	336mV p/p	332mV p/p	328mV p/p	352mV p/p	44mV p/p No Waveform

42LN5300 INTERCONNECT DIAGRAM

Note: If a backlights are exhibiting a dim picture, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal.
If not,
1st: Check the P-DIM level, it should rise with the percentage shown on screen.
100% = 2.76V. Follow the P-DIM signal all the way to the SMPS.

DIM OR DARK PICTURE:
Turn the Brightness, Contrast and Backlights all the way up. Confirm 180V D801.
Confirm P-DIM is approx. 2.8V. Using a 220Ω resistor, jump backlight grounding pin on P801 (pin 1) while observing the picture. The Backlights should turn on maximum. If not, replace panel.

P201 "SMPS Board" To P401 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode
17-18	Gnd	Gnd	Gnd	Gnd
16	n/c	n/c	n/c	OL
13-15	12V	0V	11.95V	2.18V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	24.19V	1.96V
7-8	Gnd	Gnd	Gnd	Gnd
6	n/c	n/c	n/c	OL
5	3.5V_ST	3.42V	3.43V	OL
(3) 4	P_DIM	0V	*0.23V-2.76V	OL
3	3.5V_ST	3.42V	3.43V	OL
(2) 2	DRV_ON	0V	2.97V	OL
(1) 1	PWR_ON	0V	3.23V	1.15V

*0% to 100%

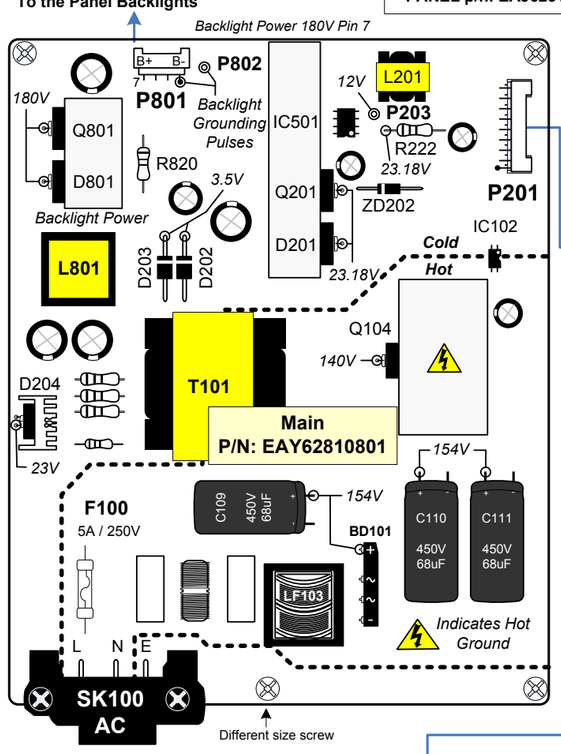
PWR-ON:
Starts 12V, 24V
No Backlight Power.
No Backlights.

DRV-ON: Starts
Backlights
LED Power goes to
180V.

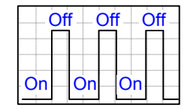
(1) **PWM Pins 4:** can vary according to incoming video IRE level, OSD Backlight setting and then Intelligent Sensor (room light condition).
Output from the Video Processor.
Range 0.23V to 2.76V.

To the Panel Backlights

PANEL p/n: EAJ62310701



LED Drive Signal 50% Backlight Setting On the Cust. Menu.



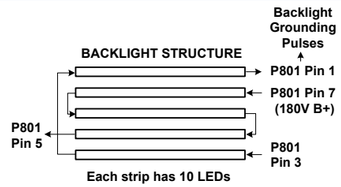
69.6V p/p	2.5mSec

P801 "SMPS Board" To "LED Backlights"

PIN	LABEL	RUN	Diode
1	BL-	66V~11V	OL
3	Jumper	113V~79V	OL
5	Jumper	113V~79V	OL
7	BL+	180V	OL

No Stand-By Voltages
Pins 2, 4, 6 are n/c.

No Local Dimming
In this Model.



For DC voltages for Main board components see Page 2 of the Interconnect diagram.

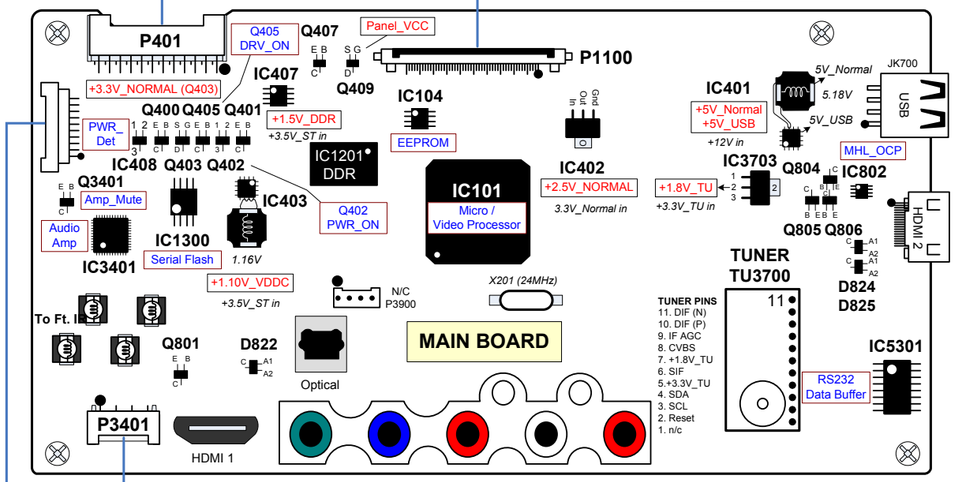
For DC voltages
See P201 Chart

P401 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2	1.82V
3	0.84V
4	n/c
5	0.84V
6	OL
7-8	Gnd
9-10	OL
11-12	Gnd
13-15	OL
16	OL
17-18	Gnd

For LVDS Waveforms see Page 4 of the Interconnect diagram.

To T-CON



To Speakers
1.05V
Each Pin
SPK p/n: EAB62849301

P600 "MAIN" to "Front IR Board" J1

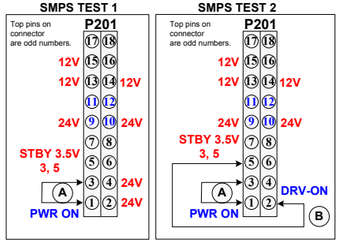
PIN	LABEL	STBY	RUN	Diode Check
10	EYE_SDA	0V	3.25V	1.24V
9	EYE_SCL	0V	3.25V	1.24V
8	Gnd	Gnd	Gnd	Gnd
7	IR	3.4V	3.29V	OL
6	LED_R	2.54V	0V	OL
5	Gnd	Gnd	Gnd	Gnd
4	3.5V_ST	3.41V	3.31V	0.84V
3	Key2	3.41V	3.31V	OL
2	Key1	3.41V	3.31V	OL
1	Gnd	Gnd	Gnd	Gnd

Main Boards Used:
UB.AUSYLJR / UB.BUSYLJR
p/n: EBT62359726
p/n: EBT62359722
UB.BUSDLJR
p/n: EBT62642004

WARNING: Do not add or remove jumpers with Power Applied.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P401 on the Main board.
(A) Jump pin 3 or 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main. (No Backlight power and the Backlights are not on at this time).
LED Ground Return Line is (0V).
Remove AC power. Leave the jumper in place.

SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 3 or 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now read to 180V.
LED Ground Return Line is (72V). P-DIM P201 (pin 4) pulls up to 4V.

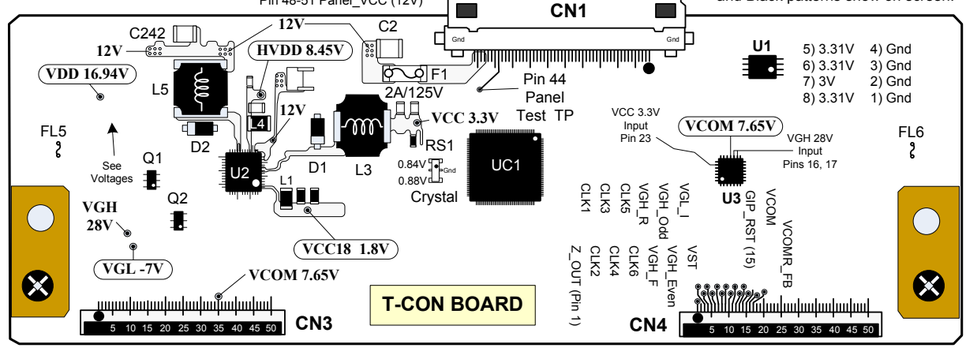


Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect P801. When AC is reapplied, the Backlight power will start at 108V, rise to 230V and stay there.

BACKLIGHT INFORMATION:
50 Total LEDs, 5 LEDs per/Board.
2 boards per/row. All LEDs are controlled by one ground return line.
Backlight power 180V.

WARNING:
Be sure to install the screws in the T-CON board before applying power. Damage to the board will occur.

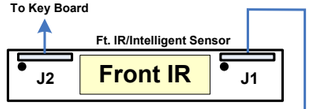
PANEL TEST
To run the T-CON "Panel Test", remove the LVDS cables. Jump 12V to the 12V fuse. Jump VCC 3.3V to pin 44 on CN1. White, Red, Blue, Green and Black patterns show on screen.



Additional Voltages from U3 to the Panel with no silk screen labels:

U3 pin 1 (7.76V) CN4 pin 48 CN5 pin 3
U3 pin 2 (7.74V) CN4 pin 47 CN5 pin 4
U3 pin 3 (7.75V) CN4 pin 46 CN5 pin 5
U3 pin 4 (7.74V) CN4 pin 45 CN5 pin 6
U3 pin 5 (7.76V) CN4 pin 44 CN5 pin 7
U3 pin 6 (7.74V) CN4 pin 43 CN5 pin 8
U3 pin 8 (27.9V) CN4 pin 42 CN5 pin 9
U3 pin 9 (-6.97V) CN4 pin 41 CN5 pin 10
U3 pin 10 (-6.95V to 27.9V) CN4 pin 40 CN5 pin 11
U3 pin 11 (-6.95V to 27.9V) CN4 pin 39 CN5 pin 12

Back Left of Set
Keyboard
p/n: EBR77104601
To Key Board



Bottom Center of Set
Front IR
p/n: EBR76405802

42LN5300 Main Board (ICs) Component Voltages

IC104



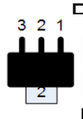
Pin	EEPROM Memory
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	**Gnd**
[5]	3.27V
[6]	3.27V
[7]	Gnd
[8]	3.27V

IC401



Pin	+5V+NORMAL Regulator
[1]	n/c
[2]	0.63V
[3]	6.26V
[4]	0.46V
[5]	3.27V
[6]	4.77V
[7]	Gnd
[8]	5.18V (5V_USB Out)
[9]	5.18V (5V_Normal Out)
[10]	0.8V
[11]	5.18V (5V_Normal Out)
[12]	11.32V
[13]	Gnd
[14]	11.93V (Vcc In)
[15]	6.28V
[16]	**6.86V**

IC402



Pin	+1.8V_TU Regulator
[1]	0V (Gnd)
[2]	2.5V (Out)
[3]	3.27V (In)

IC403



Pin	+1.1V_DDR Regulator
[1]	3.29V (Vcc In)
[2]	3.29V (Vcc In)
[3]	Gnd
[4]	**Gnd**
[5]	Gnd
[6]	0.83V
[7]	0.67V
[8]	0.51V
[9]	0.85V
[10]	1.17V (Out)
[11]	1.17V (Out)
[12]	1.17V (Out)
[13]	4.49V
[14]	n/c
[15]	3.23V
[16]	3.29V (Vcc In)

IC407



Pin	+1.5V_DDR Regulator
[1]	3.29V (Vcc In)
[2]	n/c
[3]	3.29V (Vcc In)
[4]	3.27V
[5]	Gnd
[6]	3.18V
[7]	0.8V
[8]	**1.53V (Out)**

IC408



Pin	PWR_Det +12V in
[1]	Gnd
[2]	3.3V (Out)
[3]	3.3V (In)

IC802



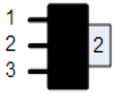
Pin	+5V_USB2/3 OCP
[1]	Gnd
[2]	5.18V (Vcc In)
[3]	5.18V (Vcc In)
[4]	**0V**
[5]	3.26V
[6]	5.10V (Out)
[7]	5.10V (Out)
[8]	5.10V (Out)

IC1300



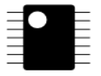
Pin	Serial FLASH Memory
[1]	3.29V
[2]	3.28V
[3]	0V
[4]	Gnd
[5]	0V
[6]	0V
[7]	3.29V (Vcc In)
[8]	3.29V (Vcc In)

IC3703



Pin	+1.8V_TU Regulator
[1]	0V (Gnd)
[2]	1.8V (Out)
[3]	3.27V (In)

IC5301



Pin	RS232 Data Buffer
[1]	3.31V (C1+)
[2]	5.52V (V+)
[3]	0V (C1-)
[4]	**0V (C2+)**
[5]	(-5.43V) (C2-)
[6]	(-5.46V) (V2-)
[7]	(n/c)
[8]	(n/c)
[9]	(n/c)
[10]	(n/c)
[11]	3.27V (DIN2)
[12]	3.3V (ROut1)
[13]	0V (RIn1)
[14]	(-5.46V) (DOut1)
[15]	0V (Gnd)
[16]	0V (In) +3.3V_ST

47LN5750 Main Board (Transistors and Large Flat Pack ICs) Component Voltages

Q400



Pin	Drives Q403
[B]	0.63V
[C]	0.04V
[E]	Gnd

Q401



Pin	Drives Q402
[B]	0.66V
[C]	0.05V
[E]	Gnd

Q402



Pin	PWR_On Switch
[1]	3.31V
[2]	2.62V
[3]	3.22V

Q403



Pin	+3.3V_NORMAL Switch
[G]	0.34V
[S]	3.31V
[D]	11.963.29

Q405



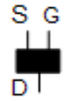
Pin	DRV_ON Switch
[B]	0.2V
[C]	2.99V
[E]	Gnd

Q407



Pin	Drives Q409
[B]	0.64V
[C]	0.04V
[E]	Gnd

Q409



Pin	Panel_VCC Switch
[G]	1.78V
[S]	11.93V
[D]	11.91V

Q801



Pin	HDMI Hot Swap
[B]	0V
[C]	0.07V
[E]	Gnd

Q804



Pin	MHL_EN Driver
[B]	1.365V
[C]	0V
[E]	0.07V

Q805



Pin	MHL_OCP_EN Driver
[B]	0.65V
[C]	0.03V
[E]	Gnd

Q806



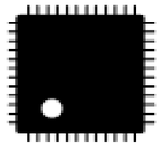
Pin	VBUS_EN Driver
[B]	0.68V
[C]	0.07V
[E]	Gnd

Q3401



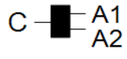
Pin	Amp Mute Driver
[B]	0.02V
[C]	3.31V
[E]	Gnd

IC3401



Pin	Audio Amp	Pin
[1]	24.13V	[25] n/c
[2]	20.88V	[26] n/c
[3]	1.06V	[27] n/c
[4]	Gnd	[28] 3.27V (Vcc In)
[5]	24.16V	[29] Gnd
[6]	1.06V	[30] n/c
[7]	1.06V	[31] n/c
[8]	24.16V	[32] n/c
[9]	Gnd	[33] n/c
[10]	1.07V	[34] 1.8V
[11]	3.28V	[35] Gnd
[12]	0V	[36] 1.4V
[13]	n/c	[37] 1.44V
[14]	n/c	[38] 1.64V
[15]	n/c	[39] 1.14V
[16]	n/c	[40] 3.27V
[17]	n/c	[41] 3.27V
[18]	n/c	[42] n/c
[19]	n/c	[43] 3.27V
[20]	n/c	[44] 3.27V
[21]	n/c	[45] Gnd
[22]	n/c	[46] Gnd
[23]	n/c	[47] Gnd
[24]	n/c	[48] 3.27V (Vcc In)

D822
D824
D825



Pin	DDC_SCL_2/4 Pull_Up	
[A1]	0V	[A1] 0.07V
[A2]	5.18V	[A2] 3.3V
[C]	4.92V	[C] 4.92V

42LN5300 T-CON Board Component Voltages

U3 DC-to-DC

Panel Power
Level Shifter

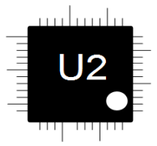


Pin		Pin	
[1]	7.76V (GCLK1)	[15]	(-6.97) (VGL)
[2]	**7.74V (GCLK2)**	**[16]**	**27.96V (VGH)**
[3]	7.75V (GCLK3)	[17]	27.96V (VGH)
[4]	7.74V (GCLK4)	[18]	7.65V (V_COM)
[5]	7.76V (GCLK5)	[19]	7.65V
[6]	7.74V (GCLK6)	[20]	7.62V
[7]	2.5V	[21]	16.9V
[8]	27.9V (VGH_R)	[22]	Gnd
[9]	(-6.97) (VGH_F)	[23]	3.3V (VCC)
[10]	*(-6.95V to 27.9V) (VGH_ODD)	[24]	0V
[11]	*(-6.95V to 27.9V) (VGH_EVEN)	[25]	0V
[12]	(-6.91) (VST)	[26]	0.7V
[13]	(-6.88) (GIP_RST)	[27]	1.27V
[14]	(-6.97)	[28]	3.24V

* EVERY Second

U2 DC-to-DC

T-CON and Panel Power
DC-to-DC Conv



Pin		Pin	
[1]	1.81V	[25]	4.95V
[2]	**1.86V**	**[26]**	**0.53V**
[3]	Gnd	[27]	3.3V
[4]	3.3V	[28]	3.3V
[5]	1.79V	[29]	4.99V
[6]	1.81V	[30]	1.3V
[7]	Gnd	[31]	16.4V
[8]	3.31V (VCC)	[32]	27.94V
[9]	3.31V (VCC)	[33]	5.69V
[10]	0V	[34]	8.21V
[11]	11.7V (Panel_VCC)	[35]	(-6.98V) (VGL_FB)
[12]	11.7V (Panel_VCC)	[36]	1.19V
[13]	11.7V (Panel_VCC)	[37]	13.86V
[14]	11.7V (Panel_VCC)	[38]	12.85V
[15]	8.45V (H_VDD)	[39]	10.91V
[16]	8.44V (H_VDD_FB)	[40]	6.55V
[17]	Gnd	[41]	4.6V
[18]	Gnd	[42]	3.5V
[19]	Gnd	[43]	7.65V
[20]	11.7V (Panel_VCC)	[44]	7.64V
[21]	11.7V (Panel_VCC)	[45]	7.63V
[22]	16.97V	[46]	7.61V (VCOM_RFB)
[23]	**16.97V (VDD)**	**[47]**	**1.61V**
[24]	Gnd	[48]	Gnd

U1 Buffer



Pin	
[1]	Gnd
[2]	Gnd
[3]	**Gnd**
[4]	Gnd
[5]	3.31V
[6]	3.31V
[7]	3.31V
[8]	3.31V

Q1 VDD Rectifier



Pin	
[1]	20.2V
[2]	16.38V
[3]	16.93V Output
[4]	12.98V
[5]	12.98V
[6]	12.95V

Q2 VGL Rectifier

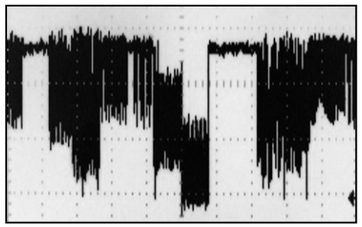
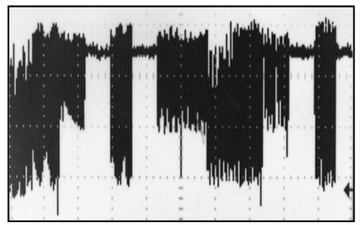
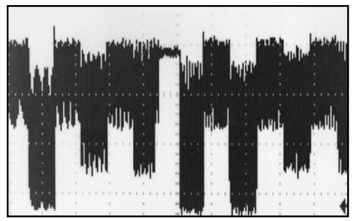
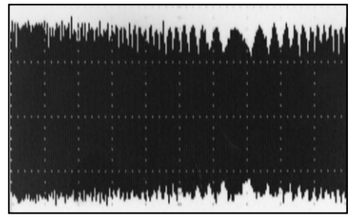
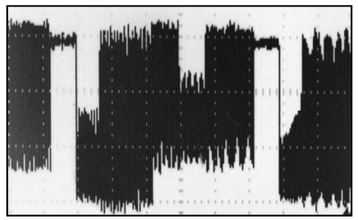
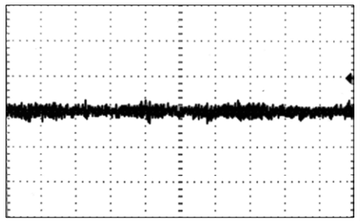
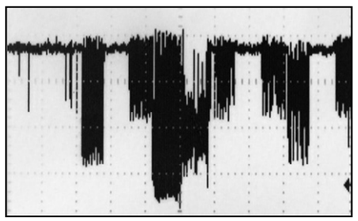
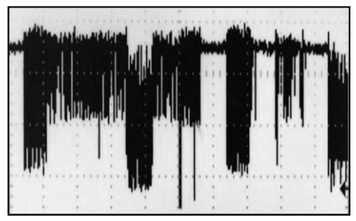
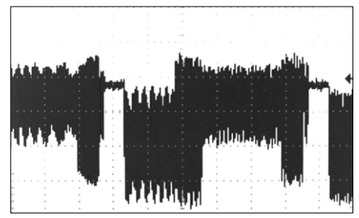
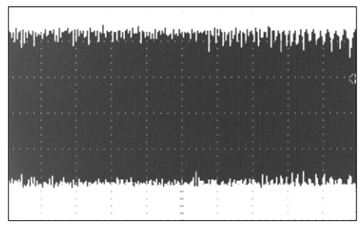
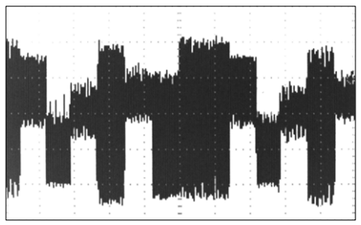
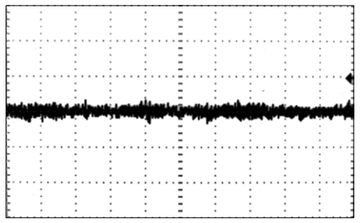


Pin	
[1]	0.56V
[2]	1.18V
[3]	(-2.9V)
[4]	**(-7V) Output**
[5]	2.97V
[6]	2.97V

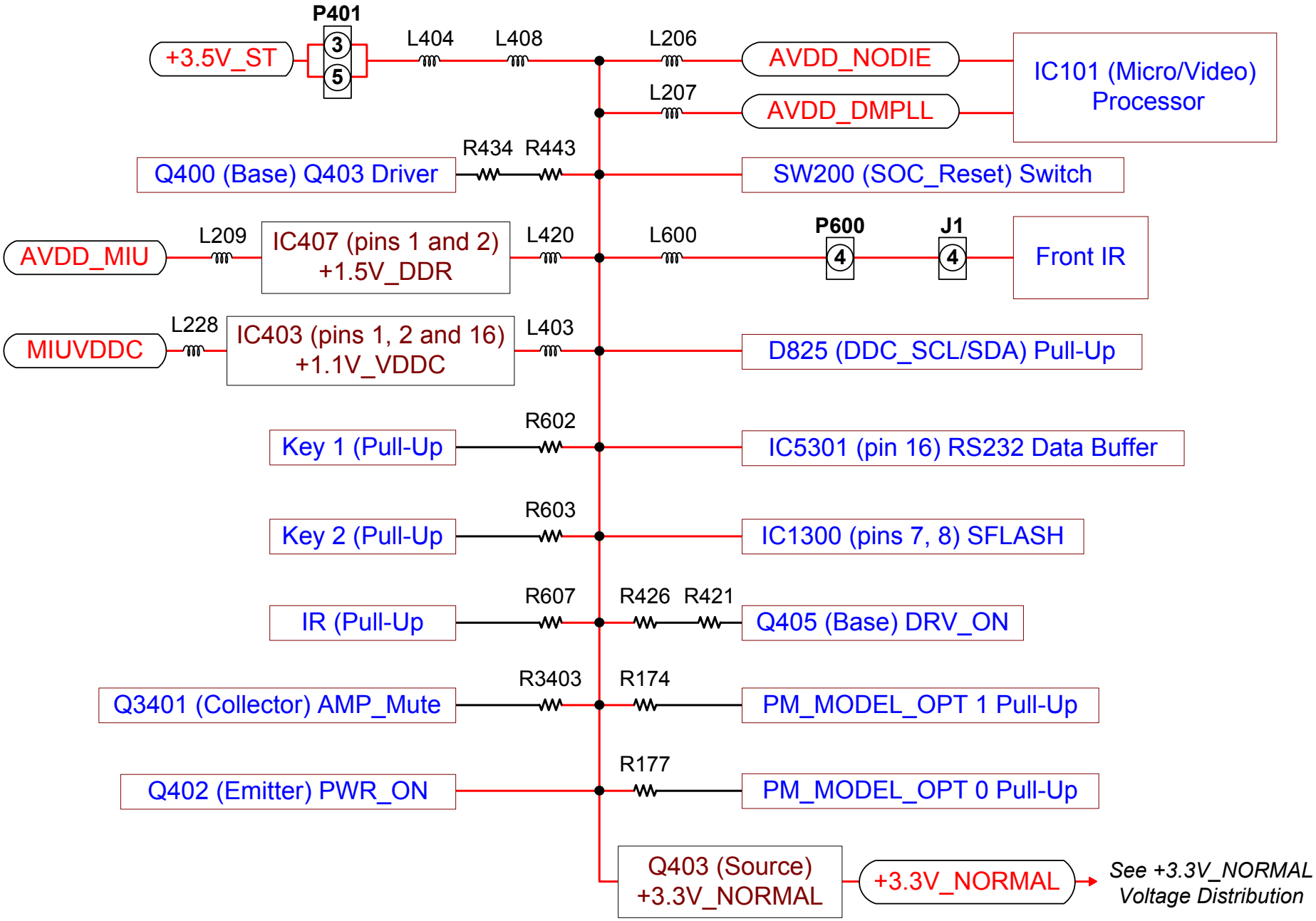
Interconnect page 3

42LN5300 P1100 LVDS Connector Video Waveforms

All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". The ones shown are the "Positive" signal of the pair. The Negative signal looks exactly the same but flipped 180^0.
Scope Settings are 100mV per/division, 2.5uSec per/division.

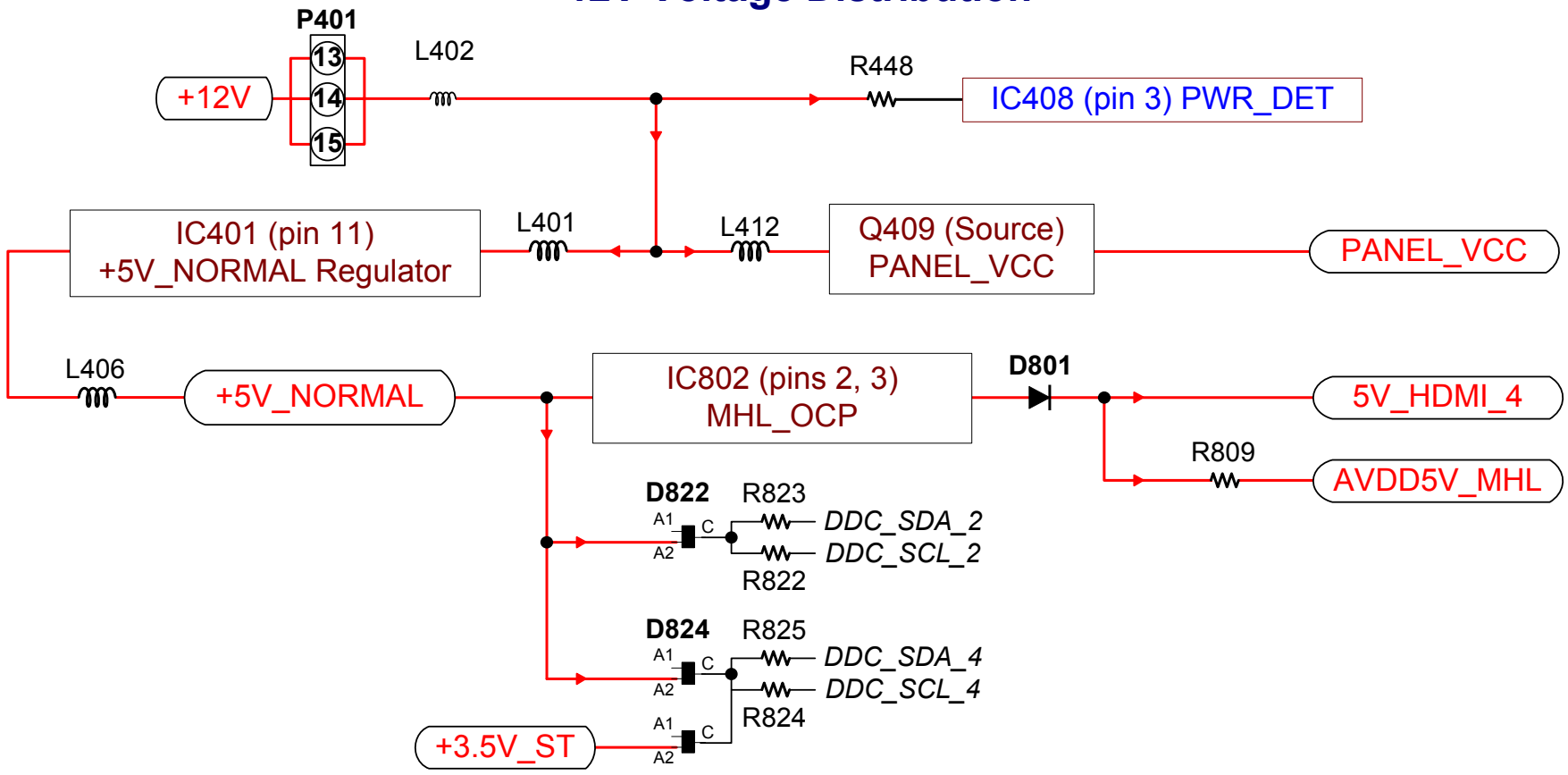
Pin 12	**Pin 14**	**Pin 16**	**Pin 19**	**Pin 22**	**Pin 24**
					
340mV p/p	**384mV p/p**	**380mV p/p**	**340mV p/p**	**348mV p/p**	**56mV p/p** **No Waveform**
Pin 28	**Pin 30**	**Pin 32**	**Pin 35**	**Pin 38**	**Pin 40**
					
384mV p/p	**356mV p/p**	**448mV p/p**	**340mV p/p**	**449mV p/p**	**64mV p/p** **No Waveform**

42LN5300 Main Board (+3.5V_ST) Voltage Distribution

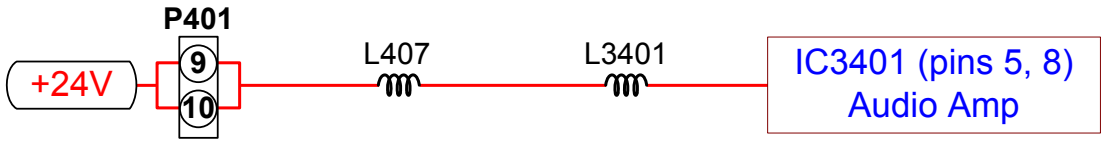


42LN5300 Main Board (+12V and +24V) Voltage Distribution

+12V Voltage Distribution

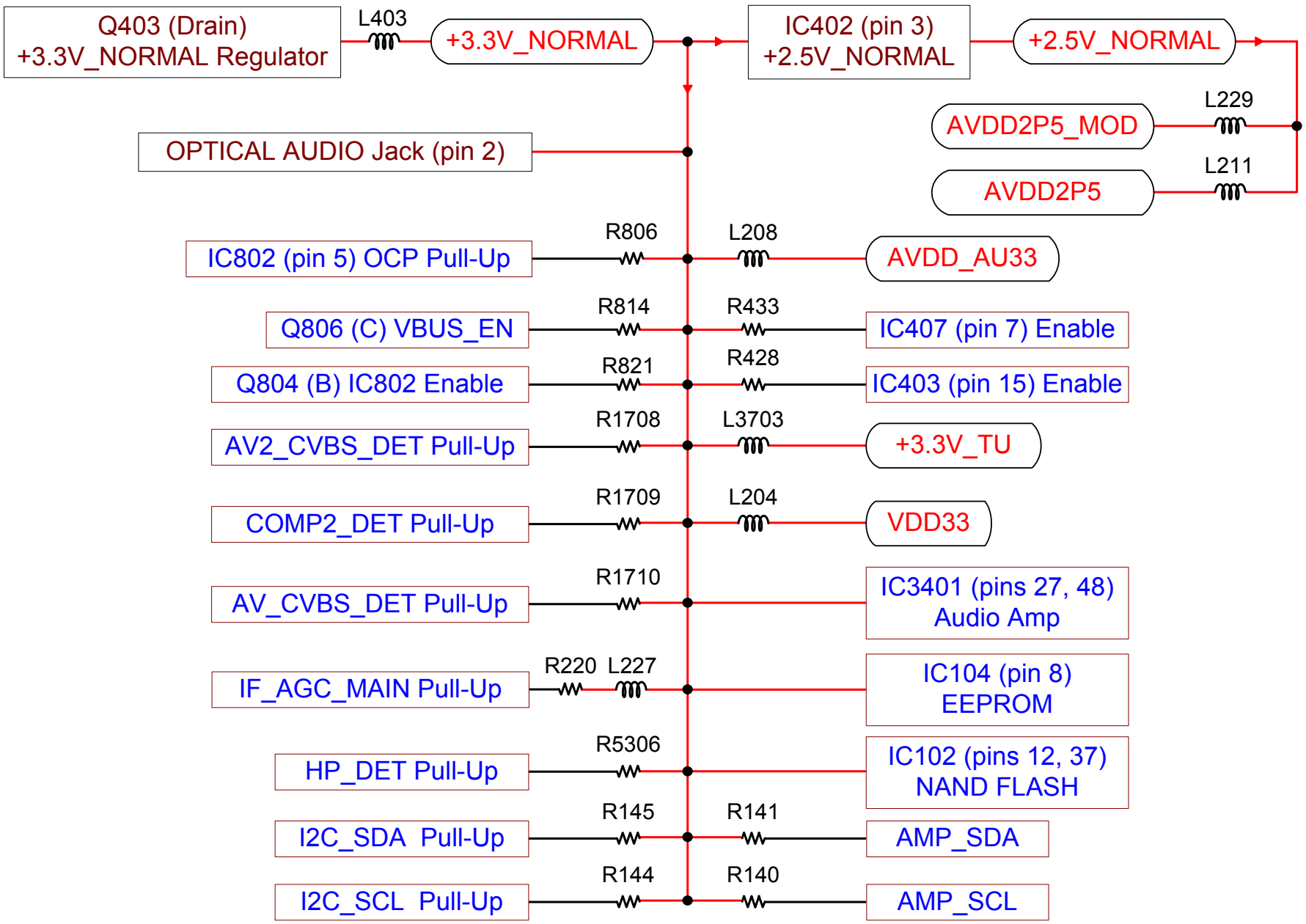


+24V Voltage Distribution



42LN5300 Main Board (+3.3V_NORMAL) Voltage Distribution

From +2.5V_ST Voltage Distribution



47LB6000 INTERCONNECT DIAGRAM

Note: If the top or bottom of the picture is exhibiting a dimmer backlight level than the other or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal.
If not, Check the P-DIM level, it should rise with the percentage shown on screen.

You can also test either the Top or Bottom blocks functionality by grounding the return path signal (using 1KΩ resistor).

LED TOP OR BOTTOM BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 116V on P801 pin 2 and pin 4.
Confirm P-DIM is approx. 3V. Using a 1KΩ resistor, (one end on ground), jump the block grounding pins on P801 (Top is controled by P801 pin 1 and the Bottom is controlled by P801 pin 3), while observing the picture. Each block should turn on brighter. (If No: Bad Panel, If Yes: Bad SMPS).

(1) PWR_ON turns on the 12V and 24V lines. It also turns on the backlight power, but it's 85.1V P801 pin 2 (85.6V P801 pin 4) Backlights are not on.

(2) DRV_ON (INV_ON from Main) turns on the Backlights. Backlight power is 116.4V P801 pin 2 (116.7V P801 pin 4).

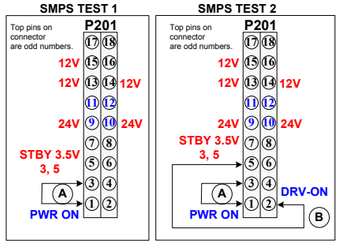
(3) P-DIM controls the backlight brightness. Controled by Cust. Menu, Video, Backlights. Range 0% to 100% directly proportional to DC voltage to Backlight brightness.
P-DIM is actually a PWM signal.

If P801 is disconnected, the backlight power P801 pin 2 or pin 4 will rise to 146.6V and fall to 130.5V repeatedly.

WARNING: Do not add or remove jumpers with Power Applied.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P401 on the Main board.
(A) Jump pin 3 or 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main. (85V Backlight power but the Backlights are not on at this time).
LED Ground Return Line is (7.41V).
Remove AC power. Leave the jumper in place.

SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 3 or 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now read to 116.4V.
LED Ground Return Line is (0.98V). P-DIM P201 (pin 4) pulls up to 3.4V.

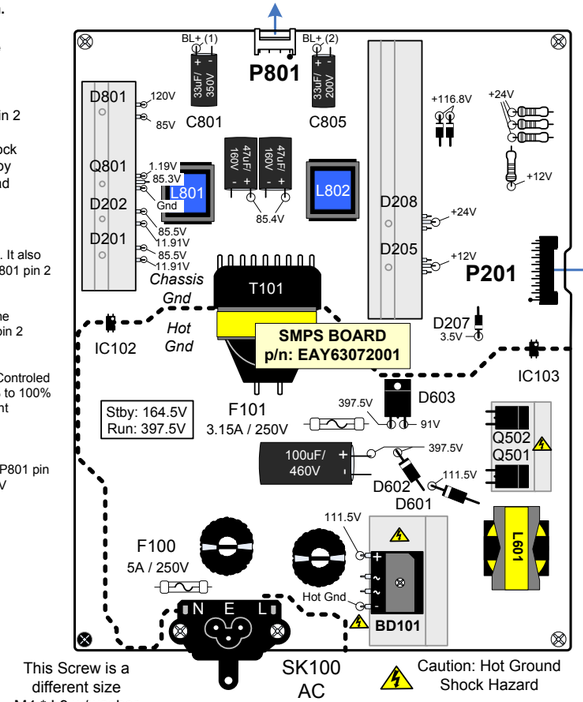


Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect P801. When AC is reapplied, the backlight power P801 pin 2 or pin 4 will rise to 146.6V and fall to 130.5V repeatedly.

36 Total LEDs, 9 LEDs per/Strip.
2 boards per/strip. (4 LEDs / 5 LEDs each) 4 Rows.
Top two rows are controlled by one driver.
Bottom two rows are controlled by another driver.

To the Panel Backlights

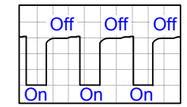
PANEL p/n: EAJ63007701



This Screw is a different size M4 * L9 w/washer

Caution: Hot Ground Shock Hazard

LED Drive 50% Backlights



40V p/p	2.5mSec

P801 Pin 1
or Pin 3

No Local Dimming
In this Model.

P801 "SMPS Board" To "LED Backlights"

PIN	LABEL	RUN	Diode
1	BL-(2)	38.34V-4.60V	OL
3	BL+(2)	122V-117.2V	OL
5	BL-(1)	38.2V-4.63V	OL
7	BL+(1)	122.6V-117.6V	OL

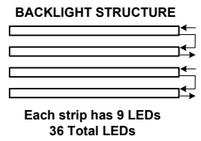
No Stand-By Voltages
Pins 2, 4, 6 are n/c.

For DC voltages
See P201 Chart

P401 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2	1.73V
3	0.62V
4	n/c
5-6	0.66V
7	Gnd
8	OL
9-10	OL
11-12	Gnd
13-15	OL
16	n/c
17-18	Gnd

BACKLIGHT STRUCTURE



Each strip has 9 LEDs
36 Total LEDs

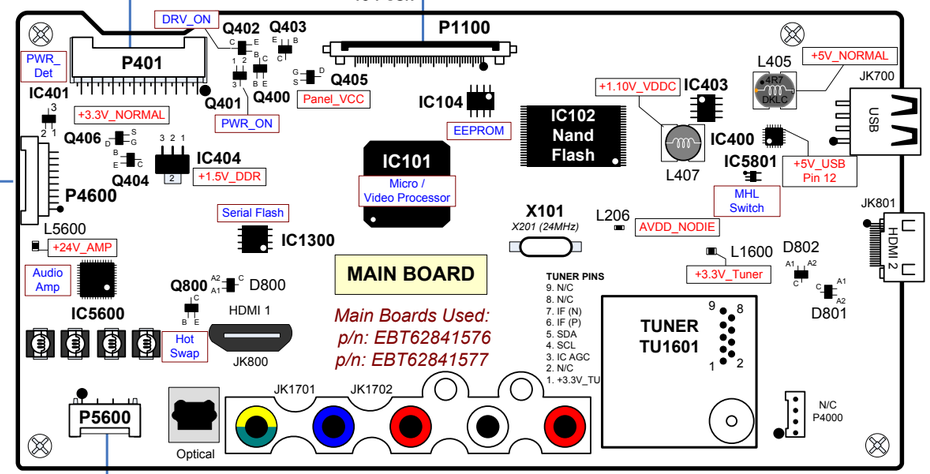
For DC voltages for Main board components see Page 2 of the Interconnect diagram.

For LVDS Waveforms see Page 4 of the Interconnect diagram.

LVDS CABLE

To T-CON

To Ft. IR



To Speakers

SPK Ft Right
p/n: EAB62972102

SPK Ft Left
p/n: EAB62972101

All Speaker plug pins
11.96V
Diode Check (OL)

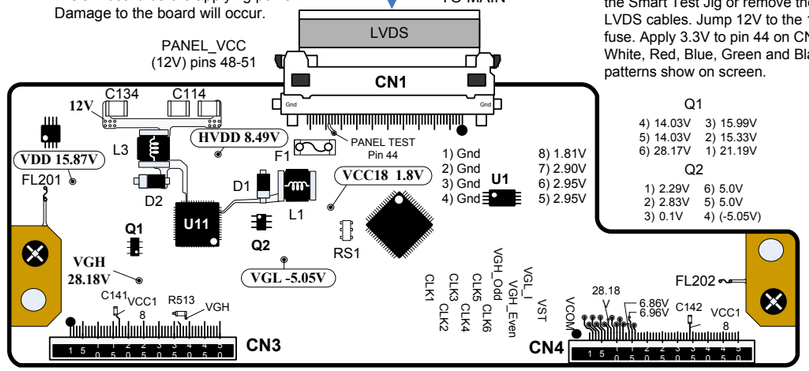
P4000 "MAIN" to "Front IR/Joy Stick Board"

PIN	LABEL	STBY	RUN	Diode Check
10	N/C	n/c	n/c	n/c
9	N/C	n/c	n/c	n/c
8	Gnd	Gnd	Gnd	Gnd
7	IR	3.51V	3.37V	1.89V
6	LED_R	2.76V	0V	OL
5	Gnd	Gnd	Gnd	Gnd
4	3.5V_ST	3.52V	3.38V	0.62V
3	Key2	3.51V	3.38V	OL
2	Key1	0.05V	3.38V	OL
1	Gnd	Gnd	Gnd	Gnd

IR 3.68V p/p

WARNING:
Be sure to install the screws in the T-CON board before applying power. Damage to the board will occur.

TO MAIN



PANEL TEST
To run the T-CON "Panel Test", Use the Smart Test Jig or remove the LVDS cables. Jump 12V to the 12V fuse. Apply 3.3V to pin 44 on CN1. White, Red, Blue, Green and Black patterns show on screen.

Q1
4) 14.03V 3) 15.99V
5) 14.03V 2) 15.33V
6) 28.17V 1) 21.19V

Q2
1) 2.29V 6) 5.0V
2) 2.83V 5) 5.0V
3) 0.1V 4) (-5.05V)

TO TFT PANEL
(KEY VOLTAGES)

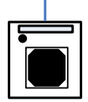
VDD 15.87V	Pin 32, 33	VCC18 1.8V	Pin 17
VGL -5.11V	Pin 38	VGH 28.18V	Pin 8
HVDD 8.49V	Pin 31		

VDD 15.87V	Pin 18, 19	VCC18 1.8V	Pin 34
VGL -5.11V	Pin 11	VGH 28.18V	Pin 43
HVDD 8.49V	Pin 20		

CN3	OTHER VOLTAGES	CN4
Pin 8	VGH (U11 pin 42, 43) 28.18V	Pin 43
Pin 9	*VGH_ODD (U11 pin 47) -5.09V to 28.14V	Pin 42
Pin 10	*VGH_EVEN (U11 pin 46) -5.09V to 28.14V	Pin 41
Pin 12	VST (U11 pin 45) -5.09V	Pin 39
Pin 18-19	VDD (U11 pin 28) 16.88V	Pin 32-33

**VGH_ODD and *VGH_EVEN cycle between -5.09V to 28.14V every second.*

Front IR/Joy Stick



Bottom Center of Set
Front IR
p/n: EBR77970402

47LB6000 Main Board IC Voltages

IC104



Pin	EEPROM Memory
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.33V
[6]	3.34V
[7]	Gnd
[8]	3.33V

IC400



Pin	+5V+NORMAL Regulator
[1]	6.8V (Enable)
[2]	0.57V
[3]	n/c
[4]	6.24V
[5]	0.0V (MHL_5V_En)
[6]	3.33V (USB1_CTL)
[7]	3.33V (MHL_OCP_Det)
[8]	3.33V (USB1_OCD)
[9]	0.0V (5V_HDMI_4)
[10]	0.45V
[11]	Gnd
[12]	5.18V (+5V_USB)
[13]	5.18V
[14]	5.18V
[15]	0.81V
[16]	5.18V(5V_Normal Out)
[17]	5.18V(5V_Normal Out)
[18]	11.11V
[19]	Gnd
[20]	Gnd
[21]	11.9V (Vcc In)
[22]	11.9V (Vcc In)
[23]	n/c
[24]	6.27V

IC401



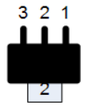
Pin	PWR_Det +12V in
[1]	3.45V
[2]	0V (Out)
[3]	3.66V (In)

IC403



Pin	+1.10V_VDDC Regulator
[1]	4.5V
[2]	3.37V (Vcc In)
[3]	1.17V (Out)
[4]	Gnd
[5]	0.81V
[6]	0.68V
[7]	3.31V (EN)
[8]	1.91V

IC404



Pin	+1.5V_DDR Regulator
[1]	Gnd
[2]	1.51V (Out)
[3]	3.33V (In)

IC1300



Pin	Serial FLASH Memory
[1]	0V
[2]	0V
[3]	0V (Flash_WP)
[4]	Gnd
[5]	0V
[6]	0V
[7]	3.38V (Vcc In)
[8]	3.38V (Vcc In)

IC5800



Pin	MHL Switch
[1]	0V
[2]	3.3V
[3]	Gnd
[4]	0V (MHL_5V_EN)
[5]	3.33V (Vcc In)

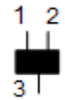
47LB6000 Transistors and Flat Pack IC Voltages

Q400



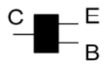
Pin	Drives Q401
[B]	0.66V
[C]	0.07V
[E]	Gnd

Q401



Pin	PWR_On Switch
[1]	3.38V (In)
[2]	2.68V
[3]	3.29V (Out)

Q402



Pin	DRV_On Switch
[B]	0.2V
[C]	3.22V (Out)
[E]	Gnd

Q403



Pin	Drives Q405
[B]	0.66V
[C]	0.06V
[E]	Gnd

Q404



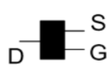
Pin	Drives Q409
[B]	0.62V
[C]	0.06V
[E]	Gnd

Q405



Pin	Panel_VCC Switch
[G]	3.21V
[S]	11.9V (In)
[D]	11.89V (Out)

Q406



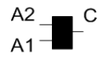
Pin	+3.3V_NORMAL Switch
[G]	0.37V
[S]	3.38V (In)
[D]	3.36V (Out)

Q800



Pin	HDMI Hot Swap
[B]	0V (HPD2)
[C]	0.07V
[E]	Gnd

D800



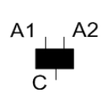
Pin	DDC_SCL_2 Pull_Up
[A1]	0.07V
[A2]	5.18V
[C]	4.90V

D801



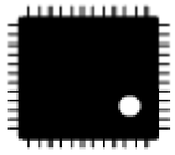
Pin	DDC_SCL_4 Pull_Up
[A1]	0.05V
[A2]	5.18V
[C]	4.87V

D802



Pin	DDC_SCL_4 Pull_Up
[A1]	0.1V
[A2]	3.37V
[C]	4.89V

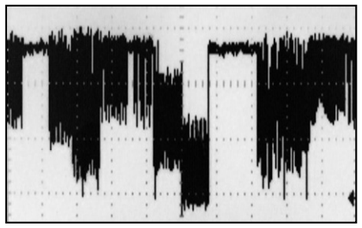
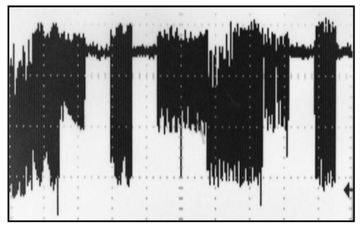
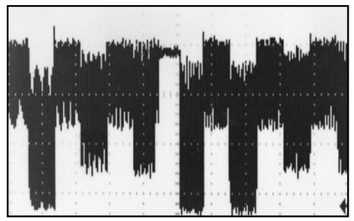
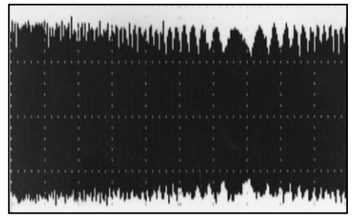
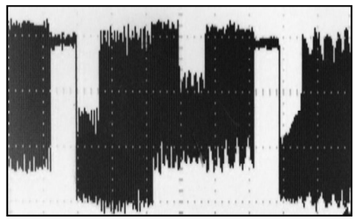
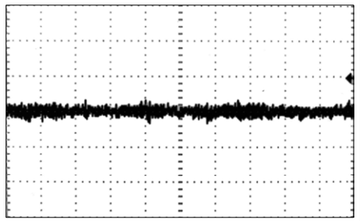
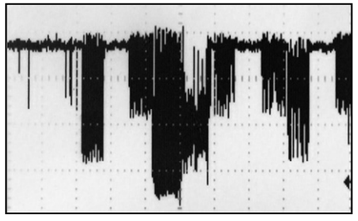
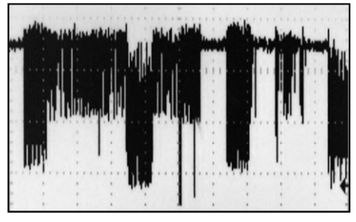
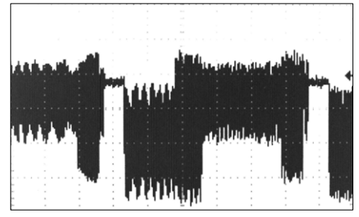
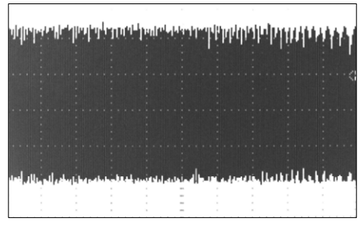
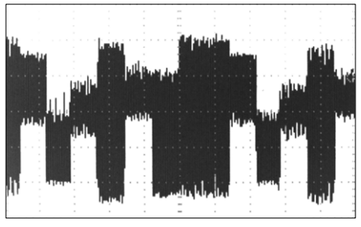
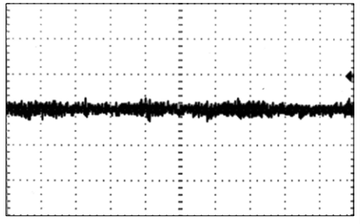
IC3401



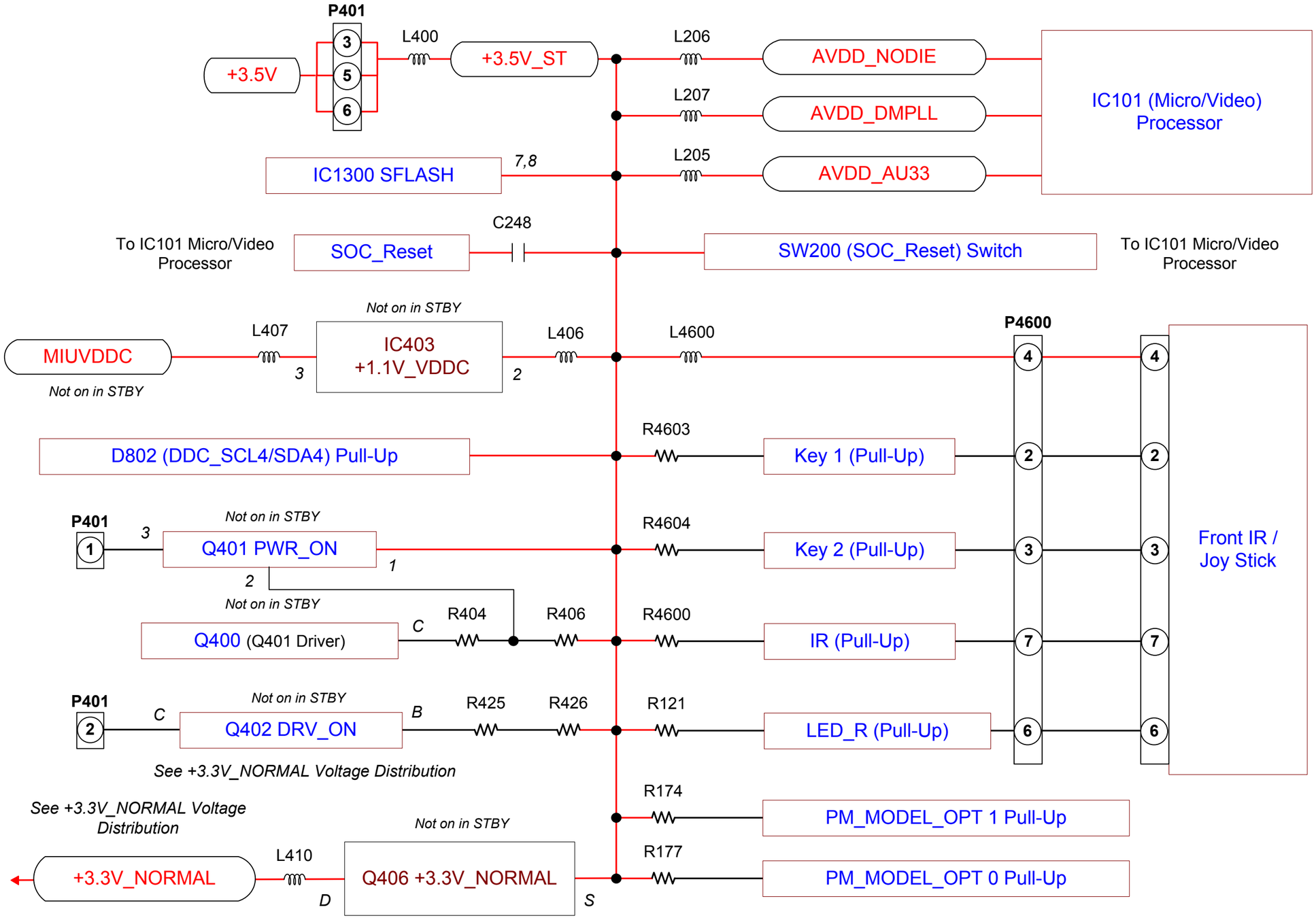
Pin	Audio Amp
[1]	11.96V (SPK_L+)
[2]	23.96V (Vcc In)
[3]	23.96V (Vcc In)
[4]	18.03V
[5]	n/c
[6]	3.31V
[7]	n/c
[8]	Gnd
[9]	0V
[10]	0.68V
[11]	1.05V
[12]	1.8V
[13]	3.32V
[14]	0.39V
[15]	1.67V
[16]	1.0V
[17]	Gnd
[18]	1.81V
[19]	3.32V
[20]	1.65V
[21]	1.65V
[22]	1.2V
[23]	3.31V
[24]	3.31V
[25]	3.3V
[26]	Gnd
[27]	3.32V
[28]	Gnd
[29]	Gnd
[30]	Gnd
[31]	3.32V
[32]	6.68V
[33]	17.96V
[34]	23.96V (Vcc In)
[35]	23.96V (Vcc In)
[36]	11.96V (SPK_R_)
[37]	Gnd
[38]	Gnd
[39]	11.96V (SPK_R+)
[40]	n/c
[41]	n/c
[42]	17.95V
[43]	17.95V
[44]	n/c
[45]	n/c
[46]	11.96V (SPK_L-)
[47]	Gnd
[48]	Gnd

47LB6000 P1100 LVDS Connector Video Waveforms

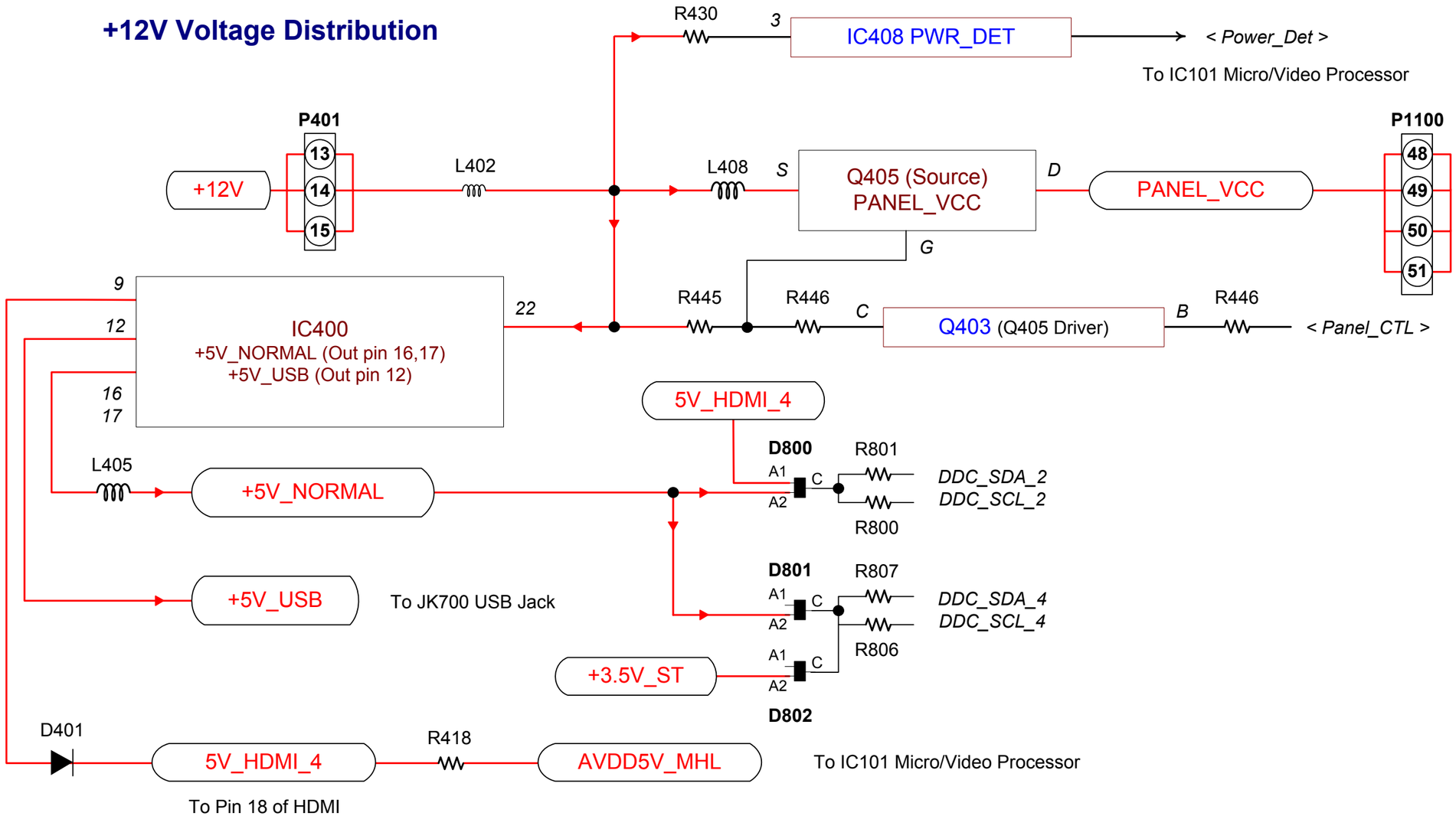
All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". The ones shown are the "Positive" signal of the pair. The Negative signal looks exactly the same but flipped 180^0.
Scope Settings are 100mV per/division, 2.5uSec per/division.

Pin 12	Pin 14	Pin 16	Pin 19	Pin 22	Pin 24
					
340mV p/p	384mV p/p	380mV p/p	340mV p/p	348mV p/p	56mV p/p No Waveform
Pin 28	**Pin 30**	**Pin 32**	**Pin 35**	**Pin 38**	**Pin 40**
					
384mV p/p	356mV p/p	448mV p/p	340mV p/p	449mV p/p	64mV p/p No Waveform

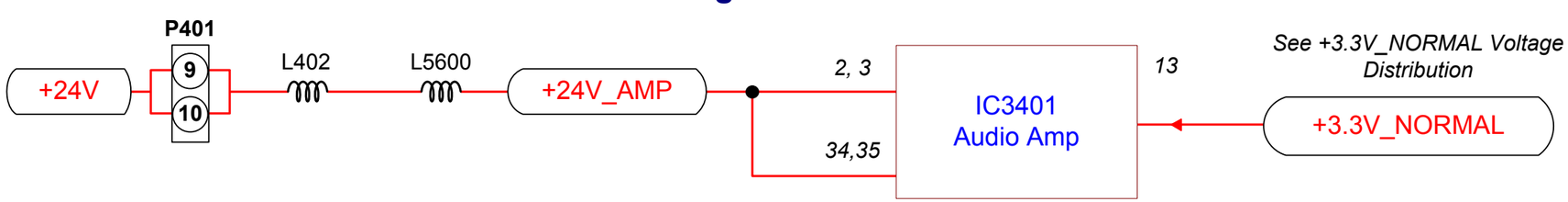
47LB6000 Main Board (+3.5V_ST) Voltage Distribution



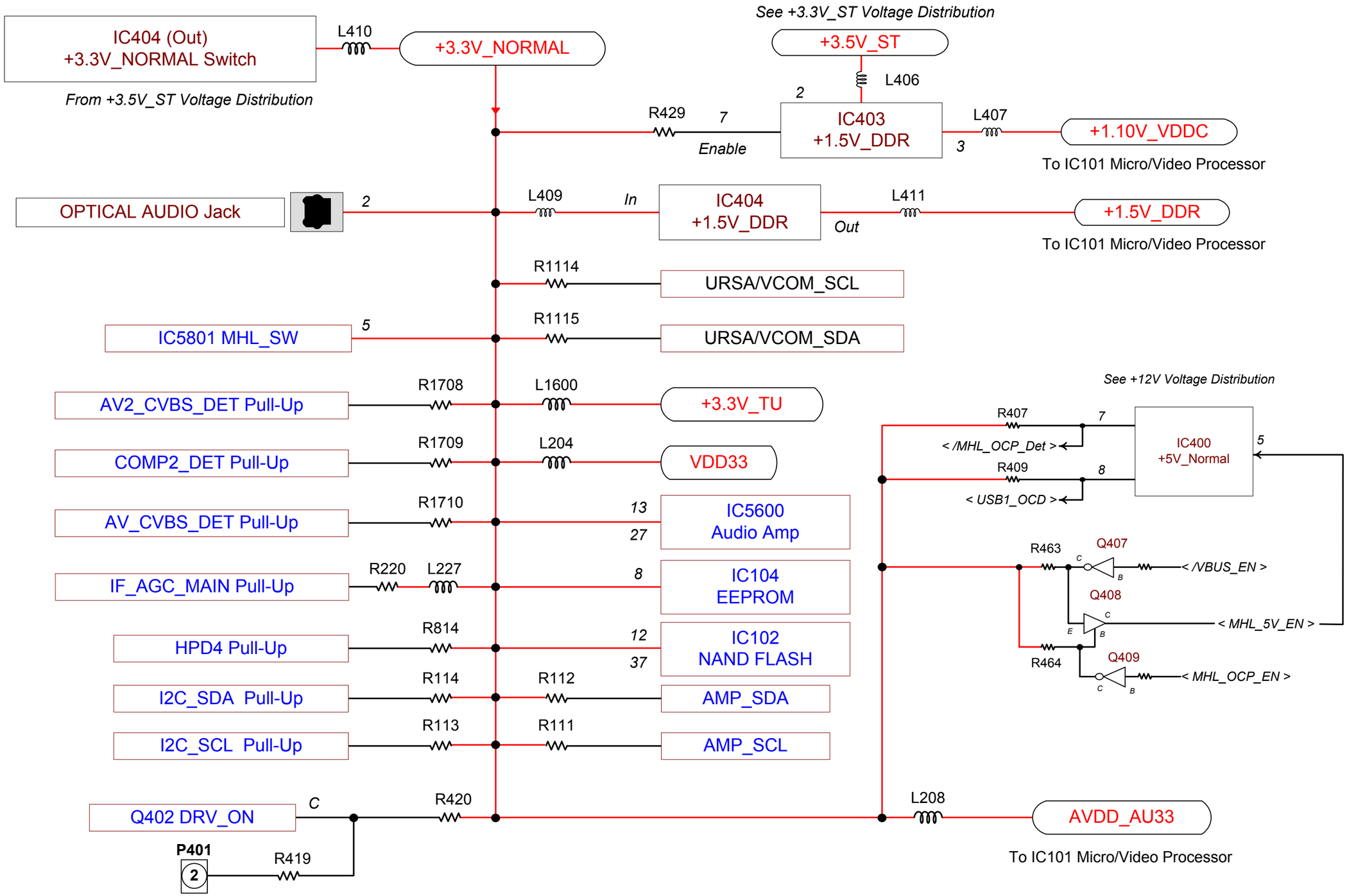
+12V Voltage Distribution



+24V Voltage Distribution



47LB6000 Main Board (+3.3V_NORMAL) Voltage Distribution



47LN5750 INTERCONNECT DIAGRAM

Note: If a particular area is exhibiting a dimmer backlight level than other areas or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not,
1st: Check the P-DIM level, it should rise with the percentage shown on screen.
100% = 2.91V. Follow the P-DIM signal all the way to the SMPS.

DIM OR DARK PICTURE AREA (LED SINGLE BLOCK TEST):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 99V D801 or D804.
Confirm P-DIM is approx. 3V. Using a 220Ω resistor, jump any of the blocks grounding pins on P801 (pins 1 or 3) while observing the picture and each block should turn on maximum.

P201 "SMPS Board" to P2400 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode Check
17-18	Gnd	Gnd	Gnd	Gnd
16	24V	0V	24.45V	OL
13-15	12V	0V	12.02V	1.37V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	24.45V	1.07V
7-8	Gnd	Gnd	Gnd	Gnd
6	P-DIM2	0V	0.16V~3.17V	OL
5	3.5V_ST	3.55V	3.56V	OL
4	P-DIM	0V	0.16V~3.17V	OL
3	3.5V_ST	3.58V	3.56V	OL
2	DRV_ON	0V	3.23V	OL
1	PWR_ON	0V	3.42V	1.16V

Note: Pin 2 (DRV_ON) is INV_ON from Main.
Note: Pin 16: Is Open. The voltage is loopback from the Main board.

PWR-ON: Starts 12V, 24V and 77.7V LED Power. No Backlights.

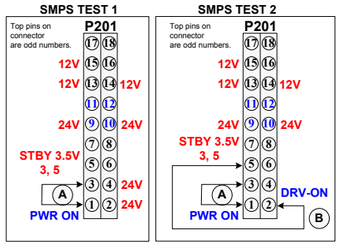
DRV-ON: Starts Backlights LED Power goes to 99V.

(1) PWM Pins 4 and 6: can vary according to incoming video IRE level, OSD Backlight setting and then Intelligent Sensor (room light condition). Output from the Video Processor. Range 0.15V to 2.91V.

WARNING: Do not add or remove jumpers with Power Applied.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2400 on the Main board.
(A) Jump pin 3 or 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main and 77.7V to the Backlights. (No Backlights at this time).
LED Ground Return Line is (17.5V).
Remove AC power. Leave the jumper in place.

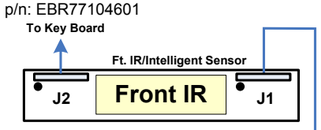
SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 3 or 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now jump to 99V.
LED Ground Return Line is (1.21V).



Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect P801. When AC is reapplied, the Backlight power will start at 78V, rise to 162V then gradually fall back to 78V.

BACKLIGHT INFORMATION:
54 Total LEDs, 9 LEDs per/Board.
2 boards per/row. One group consist of
3 rows consisting of 27 LEDs.
2 Groups make up the backlights.

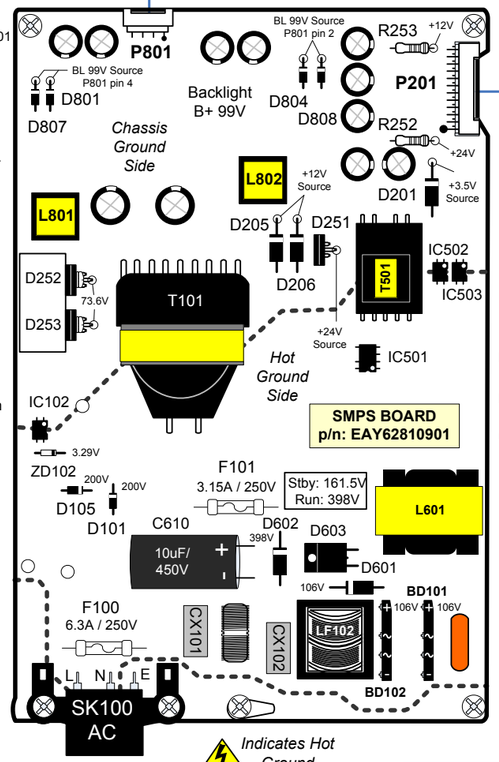
Back Left of Set
Keyboard
p/n: EBR77104601



Bottom Center of Set
Front IR
p/n: EBR76405802

To the Panel Backlights

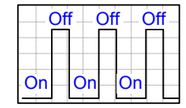
PANEL p/n: EAJ62310101



Indicates Hot Ground

No Local Dimming In this Model.

LED Drive Signal 50% Backlight Setting On the Cust. Menu.



44.8V p/p	2.5mSec

Either pin 1 or 3 P801 LED Block grounding pulse

P801 "SMPS Board" To "Panel LEDs"

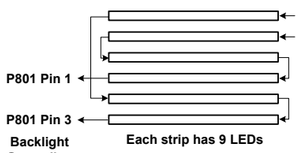
Pin	Label	Run	Diode Check
1	BL-	*43.93V – 1.78V	OL
2	BL+	99V	OL
3	BL-	*43.93V – 1.78V	OL
4	BL+	99V	OL

*Dim to Bright

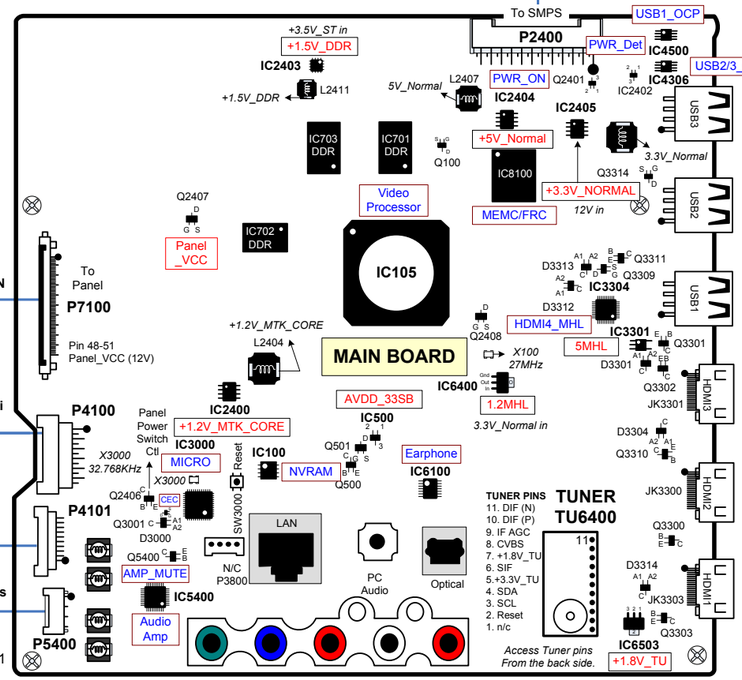
P4800 Connector "MAIN Board" To J1" Magic Remote

Pin	Label	STBY	Run	Diode Check
1	3.3V	0V	3.29V	0.56V
2	Gnd	Gnd	Gnd	Gnd
3	RX	0V	3.29V	0.98V
4	TX	0V	3.28V	1.08V
5	RESET	0V	0V	1.18V
6	DC	0V	0V	0.9V
7	DD	0V	0V	OL
8	Gnd	Gnd	Gnd	Gnd

BACKLIGHT STRUCTURE



For DC voltages for Main board components see Page 2 of the Interconnect diagram.

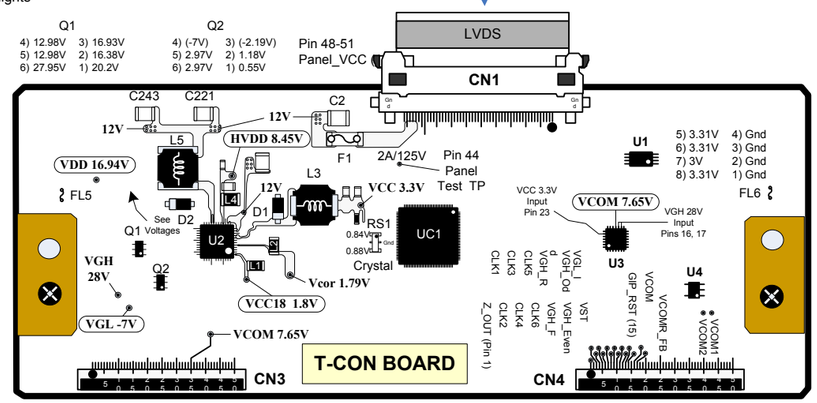


P2400 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2	1.6V
3	OL
4	1.6V
5	OL
6	0.84V
7-8	Gnd
9-10	OL
11-12	Gnd
13-15	OL
16	OL
17-18	Gnd

For DC voltages See P201 Chart

Main Board p/n: EBT62387749



VDD 16.94V	Pin 31, 32	VCC18 1.8V	Pin 17	VDD 16.94V	Pin 19, 20	VCC18 1.8V	Pin 34
VGL -7V	Pin 38	VCOM 7.65V	Pin 35	VGL -7V	Pin 13	VCOM 7.65V	Pin 11
HVDD 8.45V	Pin 30			HVDD 8.45V	Pin 21		

TO TFT MODULE (KEY VOLTAGES)

Additional Voltages from U3 to the Panel with no silk screen labels:

U3 pin 1 (7.76V) CN4 pin 48 CN5 pin 3
U3 pin 2 (7.74V) CN4 pin 47 CN5 pin 4
U3 pin 3 (7.75V) CN4 pin 46 CN5 pin 5
U3 pin 4 (7.74V) CN4 pin 45 CN5 pin 6
U3 pin 5 (7.76V) CN4 pin 44 CN5 pin 7
U3 pin 6 (7.74V) CN4 pin 43 CN5 pin 8
U3 pin 8 (27.9V) CN4 pin 42 CN5 pin 9
U3 pin 9 (-6.97V) CN4 pin 41 CN5 pin 10
U3 pin 10 (-6.95V to 27.9V) CN4 pin 40 CN5 pin 11
U3 pin 11 (-6.95V to 27.9V) CN4 pin 39 CN5 pin 12

PANEL TEST
To run the T-CON "Panel Test", remove the LVDS cables. Jump 12V to the 12V fuse. Jump VCC 3.3V to pin 44 on CN1. White, Red, Blue, Green and Black patterns show on screen.

P4101 "MAIN" to "Front IR Board" J1

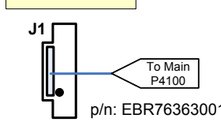
PIN	LABEL	STBY	RUN	DIODE
10	EYE_SDA	3.56V	3.53V	OL
9	EYE_SCL	3.56V	3.53V	OL
8	Gnd	Gnd	Gnd	Gnd
7	IR	3.54V	3.51V	OL
6	LED_R	1.64V	0V	OL
5	Gnd	Gnd	Gnd	Gnd
4	3.5V_ST	3.56V	3.53V	OL
3	Key2	3.56V	3.53V	OL
2	Key1	3.56V	3.53V	OL
1	Gnd	Gnd	Gnd	Gnd

P4100 "Main Board" to "WiFi and Motion Boards"

PIN	LABEL	RUN	DIODE	To What
1	+3.5V_ST_Wake	3.51V	0.83V	WiFi Tx/Rx
2	+3.3V_Normal	3.31V	0.55V	Magic Remote
3	WiFFi_DM	0.04V	1.02V	WiFi Tx/Rx
4	RTS	0V	1.18V	Magic Remote
5	WiFFi_DP	0.04V	1.02V	WiFi Tx/Rx
6	M_Remote_Rx	3.3V	OL	Magic Remote
7	Gnd	Gnd	Gnd	WiFi Tx/Rx
8	M_Remote_Tx	3.3V	OL	Magic Remote
9	WiFi_PWR_On	0.02V	OL	WiFi Tx/Rx
10	RF_Reset	3.34V	1.29V	Magic Remote
11	Gnd	Gnd	Gnd	Magic Remote
12	CTS	0V	1.18V	Magic Remote

No Stand_By Voltages

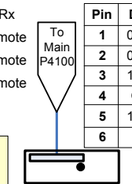
Magic Remote Tx/Rx



p/n: EBR76363001

Pin	Diode	P4100	Pin	Diode	P4100
1	OL	2	5	OL	10
2	OL	4	6	OL	12
3	OL	6	7	1.86V	n/c
4	OL	8	8	Gnd	11

Wi-Fi Tx/Rx



Pin	Diode	P4100
1	0.94V	1
2	0.86V	3
3	1.11V	5
4	Gnd	7
5	1.56V	9
6	OL	n/c

p/n: EAT61813801

47LN5750 Main Board (ICs) Component Voltages

IC100



Pin	NVRAM (Non-Volitile)
[1]	n/c
[2]	Gnd
[3]	3.31V
[4]	Gnd
[5]	3.31V
[6]	3.31V
[7]	0V
[8]	3.31V (Vcc In)

IC500



Pin	AVDD_33SB Regulator
[1]	Gnd
[2]	3.34V (Out)
[3]	3.52V (Vcc In)

IC2400



Pin	+1.2V_MTK_CORE Regulator
[1]	Gnd
[2]	11.97V (Vcc In)
[3]	Gnd
[4]	0.8V
[5]	1.6V
[6]	3.49V
[7]	1.22V (Out)
[8]	1.22V (Out)

IC2402



Pin	PWR_Det +12V in
[1]	Gnd
[2]	3.66V (Out)
[3]	3.69V (In)

IC2403



Pin	+1.5V_DDR Regulator
[1]	3.52V (Vcc In)
[2]	3.52V (Vcc In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.68V
[8]	0.51V
[9]	1.85V
[10]	1.53V (Out)
[11]	1.53V (Out)
[12]	1.53V (Out)
[13]	5.06V
[14]	n/c
[15]	3.5V
[16]	3.52V (Vcc In)

IC2404



Pin	(+5V_NORMAL) Regulator
[1]	9.2V
[2]	0V (n/c)
[3]	0V (n/c)
[4]	1.22V
[5]	3.22V
[6]	Gnd
[7]	24.44V (Vcc In)
[8]	5.10V

IC2405



Pin	+3.3V_NORMAL Regulator
[1]	3.44V
[2]	0.77V
[3]	5.51V
[4]	5.32V
[5]	Gnd
[6]	3.32V (Out)
[7]	8.78V
[8]	11.98V (Vcc In)

IC3301



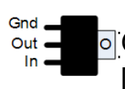
Pin	+5VMHL Regulator
[1]	0V
[2]	Gnd
[3]	0.07V
[4]	0V (MHL_Det)
[5]	5.10V (Vcc In)

IC4306



Pin	+5V_USB1 OCP
[1]	Gnd
[2]	5.10V (Vcc In)
[3]	3.3V
[4]	3.34V
[5]	3.31V
[6]	5.10V (Out USB2)
[7]	5.10V (Out USB3)
[8]	3.31V

IC6400



Pin	1.2V_MHL Regulator
[Gnd]	Gnd
[Out]	1.2V
[In]	3.3V

IC4500



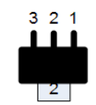
Pin	+5V_USB2/3 OCP
[1]	Gnd
[2]	5.10V (Vcc In)
[3]	5.10V (Vcc In)
[4]	3.3V
[5]	3.3V
[6]	5.10V (Out USB1)
[7]	5.10V (Out USB1)
[8]	5.10V (Out USB1)

IC6100



Pin	Earphone Amp
[1]	Gnd
[2]	0V (R In)
[3]	0V (R Out)
[4]	Gnd
[5]	3.5V (Mute)
[6]	(-3.24V)
[7]	(-1.62V)
[8]	1.66V
[9]	3.31V
[10]	Gnd
[11]	2.34V
[12]	0V (L Out)
[13]	0V (L In)
[14]	Gnd

IC6503



Pin	+1.8V_TU Regulator
[1]	0V (Gnd)
[2]	1.81V (Out)
[3]	3.3V (In)

47LN5750 Main Board (Transistors and Large Flat Pack ICs) Component Voltages

Q100



Pin	OTP_Write Switch
[S]	3.31V
[G]	3.30V
[D]	0V

Q500



Pin	'+3.5V_ST_WAKE Switch Q501 CTRL
[B]	0.65V
[C]	0.05V
[E]	Gnd

Q501



Pin	'+3.5V_ST_WAKE Switch
[S]	0V
[G]	0.58V
[D]	3.52V

Q2401



Pin	PWR_On Switch
[1]	3.53V
[2]	2.83V
[3]	3.42V

Q2406



Pin	Panel VCC Switch (Q2407) Control
[B]	0.64V
[C]	0.06V
[E]	Gnd

Q2407



Pin	Panel_VCC Switch
[G]	1.8V
[S]	11.97V
[D]	11.96V

Q2408



Pin	VDD3V3_HDMI Switch
[G]	1.95V
[S]	3.31V
[D]	3.31V

Q3001



Pin	CEC (Consummer Electronic Control)
[G]	3.53V
[S]	3.59V
[D]	7.66V

Q3300
Q3303



Pin	HDMI 1, 2 Hot Swap
B	0V
C	0V
E	Gnd

Q3301



Pin	MHL_Det Switch Driver
[B]	0.53V
[C]	3.53V
[E]	0V

Q3302



Pin	MHL Detection Switch
[B]	3.52V
[C]	0V
[E]	3.53V

Q3303



Pin	HDMI1_Hot Swap
B	0V
C	0V
E	Gnd

Q3309



Pin	MHL_SDA/SCL 5V Pull-Up
[G]	5.09V
[S]	5.10V
[D]	2.46V

Q3310



Pin	MHL_Det Switch Changes to HDMI_Det
[B]	0V
[C]	5V
[E]	0V

Q3311



Pin	MHL_SDA/SCL 5V Q3309 Control
B	0V
C	5.09V
E	Gnd

Q3314



Pin	HDMI3 Hot Swap Load Pull-Up
[G]	0V
[S]	0V
[D]	11.98V

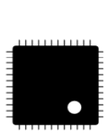
Q5400



Pin	Amp Mute Driver
[B]	0V
[C]	3.30V
[E]	Gnd

IC3000 Micro Processor

Pin		Pin	
[1]	0.06V	[25]	0V
[2]	3.3V	[26]	0.04V
[3]	0.05V	[27]	3.5V
[4]	0.08V	[28]	0V
[5]	0.02V	[29]	0V
[6]	3.51V	[30]	0V
[7]	3.49V	[31]	3.53V
[8]	3.53V	[32]	3.53V
[9]	3.53V	[33]	3.53V
[10]	3.53V	[34]	3.53V
[11]	3.53V	[35]	0V
[12]	0.17V	[36]	0V
[13]	3.34V	[37]	0V
[14]	3.66V	[38]	1.06V
[15]	3.53V	[39]	3.53V
[16]	0V	[40]	3.53V
[17]	3.51V	[41]	0.64V
[18]	3.53V	[42]	0.12V
[19]	3.24V	[43]	0V
[20]	3.34V	[44]	0V (n/c)
[21]	0.08V	[45]	0V (n/c)
[22]	0V	[46]	2.09V
[23]	0V	[47]	Gnd
[24]	0V	[48]	3.53V (Vcc In)



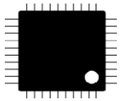
IC3304 HDMI4_MHL Processor

Pin		Pin	
[1]	Gnd	[21]	3.36V
[2]	1.2V	[22]	3.31V
[3]	Gnd	[23]	3.31V
[4]	3.3V	[24]	3.31V
[5]	0V	[25]	3.31V
[6]	0.05V	[26]	3.31V
[7]	4.83V	[27]	3.31V
[8]	5.09V	[28]	3.31V
[9]	0V	[29]	3.31V
[10]	5.10V	[30]	1.2V
[11]	0V	[31]	3.31V (Vcc In)
[12]	0V (n/c)	[32]	0.03V
[13]	0V (n/c)	[33]	0.03V
[14]	5V	[34]	0.03V
[15]	0V	[35]	0.03V
[16]	0V (n/c)	[36]	0.03V
[17]	3.29V	[37]	0.03V
[18]	3.28V	[38]	0.03V
[19]	3.37V	[39]	0.03V
[20]	1.02V	[40]	3.31V (Vcc In)



IC5400 Audio Amp

Pin		Pin	
[1]	Gnd	[21]	12.2V
[2]	Gnd	[22]	Gnd
[3]	Gnd	[23]	16.77V
[4]	Gnd	[24]	3.16V
[5]	0V	[25]	Gnd
[6]	1.2V	[26]	0V
[7]	0V	[27]	5.12V
[8]	1.63V	[28]	16.76V
[9]	1.62V	[29]	Gnd
[10]	3.31V	[30]	**12.2V**
[11]	3.31V	[31]	24.45V
[12]	3.31V	[32]	12.2V
[13]	3.25V	[33]	12.2V
[14]	1.65V	[34]	Gnd
[15]	1.65V	[35]	16.76V
[16]	16.77V	[36]	3.29V
[17]	Gnd	[37]	Gnd
[18]	12.2V	[38]	1.59V
[19]	24.45V	[39]	Gnd
[20]	24.45V	[40]	3.31V (Vcc In)



D3000



Pin	CEC Bias
[A1]	2.9V
[A2]	3.52V
[C]	3.5V

D3301



Pin	DDC_SCL_4_JACK Pull_Up
[A1]	3.53V
[A2]	5.10V
[C]	5V

D3304



Pin	DDC_SCL _MHL Routing
[A1]	3.53V
[A2]	5.10V
[C]	5V

D3312



Pin	DDC_SCL_MHL Pull_Up
[A1]	0V
[A2]	2.49V
[C]	5.09V

D3313



Pin	DDC_SDA_MHL Pull_Up
[A1]	0V
[A2]	2.49V
[C]	4.83V

D3314



Pin	DDC_SDA_SCL Pull_Up
[A1]	0V
[A2]	2.49V
[C]	4.83V

47LN5750 T-CON Board Component Voltages

U3 DC-to-DC

Panel Power
Level Shifter

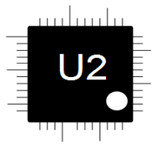


Pin		Pin	
[1]	7.76V (GCLK1)	[15]	(-6.97) (VGL)
[2]	**7.74V (GCLK2)**	**[16]**	**27.96V (VGH)**
[3]	7.75V (GCLK3)	[17]	27.96V (VGH)
[4]	7.74V (GCLK4)	[18]	7.65V (V_COM)
[5]	7.76V (GCLK5)	[19]	7.65V
[6]	7.74V (GCLK6)	[20]	7.62V
[7]	2.5V	[21]	16.9V
[8]	27.9V (VGH_R)	[22]	Gnd
[9]	(-6.97) (VGH_F)	[23]	3.3V (VCC)
[10]	*(-6.95V to 27.9V) (VGH_ODD)	[24]	0V
[11]	*(-6.95V to 27.9V) (VGH_EVEN)	[25]	0V
[12]	(-6.91) (VST)	[26]	0.7V
[13]	(-6.88) (GIP_RST)	[27]	1.27V
[14]	(-6.97)	[28]	3.24V

* EVERY Second

U2 DC-to-DC

T-CON and Panel Power
DC-to-DC Conv



Pin		Pin	
[1]	1.81V	[25]	4.95V
[2]	**1.86V**	**[26]**	**0.53V**
[3]	Gnd	[27]	3.3V
[4]	3.3V	[28]	3.3V
[5]	1.79V	[29]	4.99V
[6]	1.81V	[30]	1.3V
[7]	Gnd	[31]	16.4V
[8]	3.31V (VCC)	[32]	27.94V
[9]	3.31V (VCC)	[33]	5.69V
[10]	0V	[34]	8.21V
[11]	11.7V (Panel_VCC)	[35]	(-6.98V) (VGL_FB)
[12]	11.7V (Panel_VCC)	[36]	1.19V
[13]	11.7V (Panel_VCC)	[37]	13.86V
[14]	11.7V (Panel_VCC)	[38]	12.85V
[15]	8.45V (H_VDD)	[39]	10.91V
[16]	8.44V (H_VDD_FB)	[40]	6.55V
[17]	Gnd	[41]	4.6V
[18]	Gnd	[42]	3.5V
[19]	Gnd	[43]	7.65V
[20]	11.7V (Panel_VCC)	[44]	7.64V
[21]	11.7V (Panel_VCC)	[45]	7.63V
[22]	16.97V	[46]	7.61V (VCOM_RFB)
[23]	**16.97V (VDD)**	**[47]**	**1.61V**
[24]	Gnd	[48]	Gnd

U1 Buffer



Pin	
[1]	Gnd
[2]	Gnd
[3]	**Gnd**
[4]	Gnd
[5]	3.31V
[6]	3.31V
[7]	3.31V
[8]	3.31V

Q1 VDD Rectifier



Pin	
[1]	20.2V
[2]	16.38V
[3]	16.93V Output
[4]	12.98V
[5]	12.98V
[6]	12.95V

Q2 VGL Rectifier

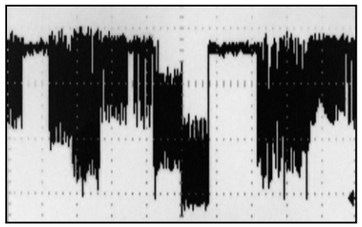
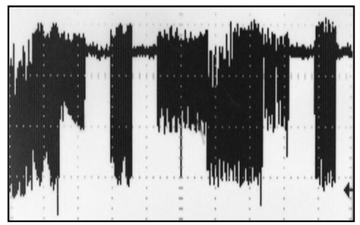
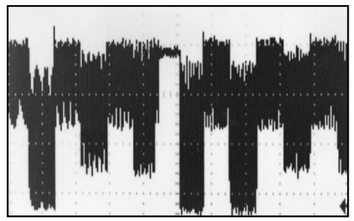
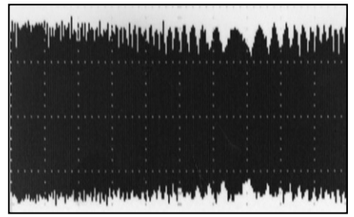
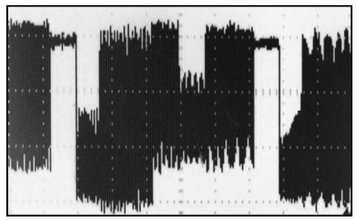
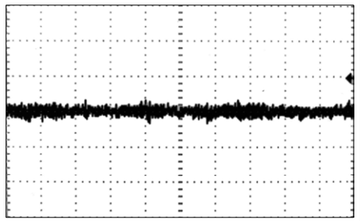
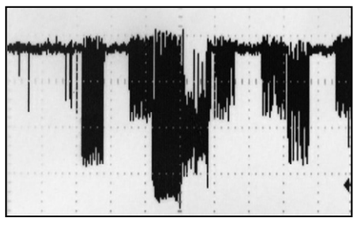
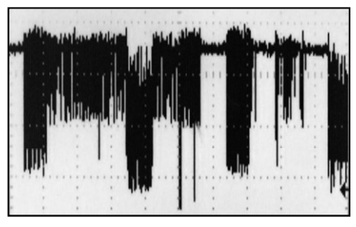
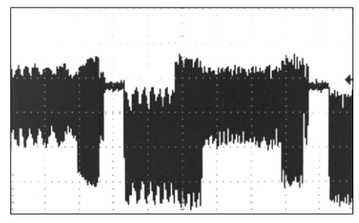
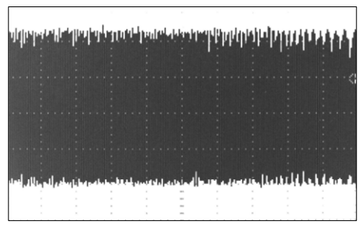
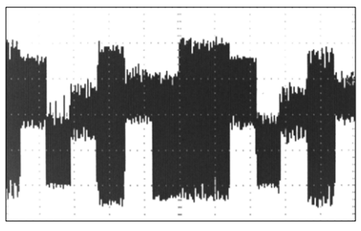
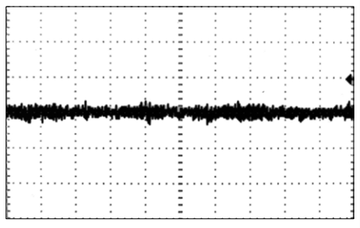


Pin	
[1]	0.56V
[2]	1.18V
[3]	(-2.9V)
[4]	**(-7V) Output**
[5]	2.97V
[6]	2.97V

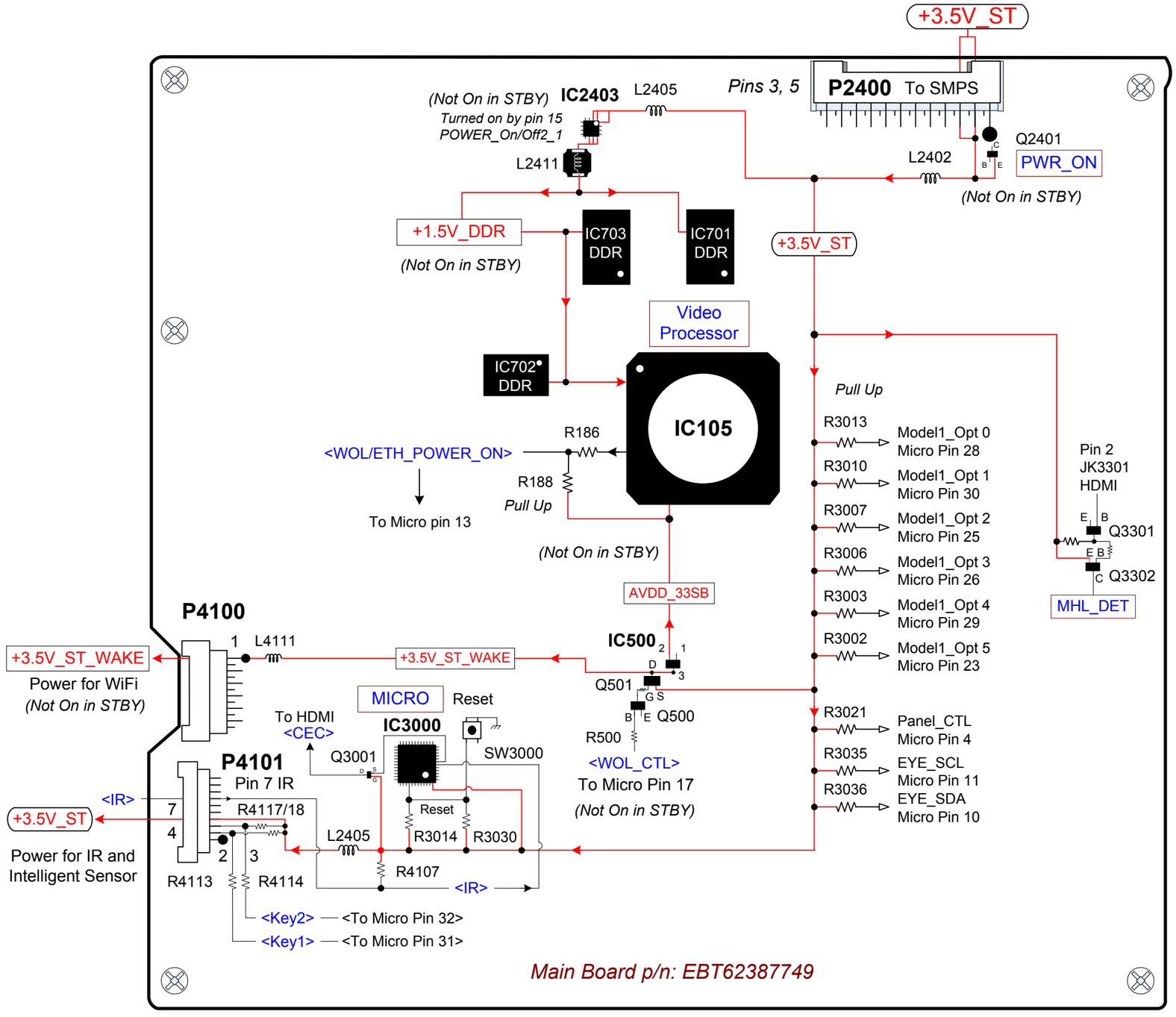
Interconnect page 3

47LN5750 P7100 LVDS Connector Video Waveforms

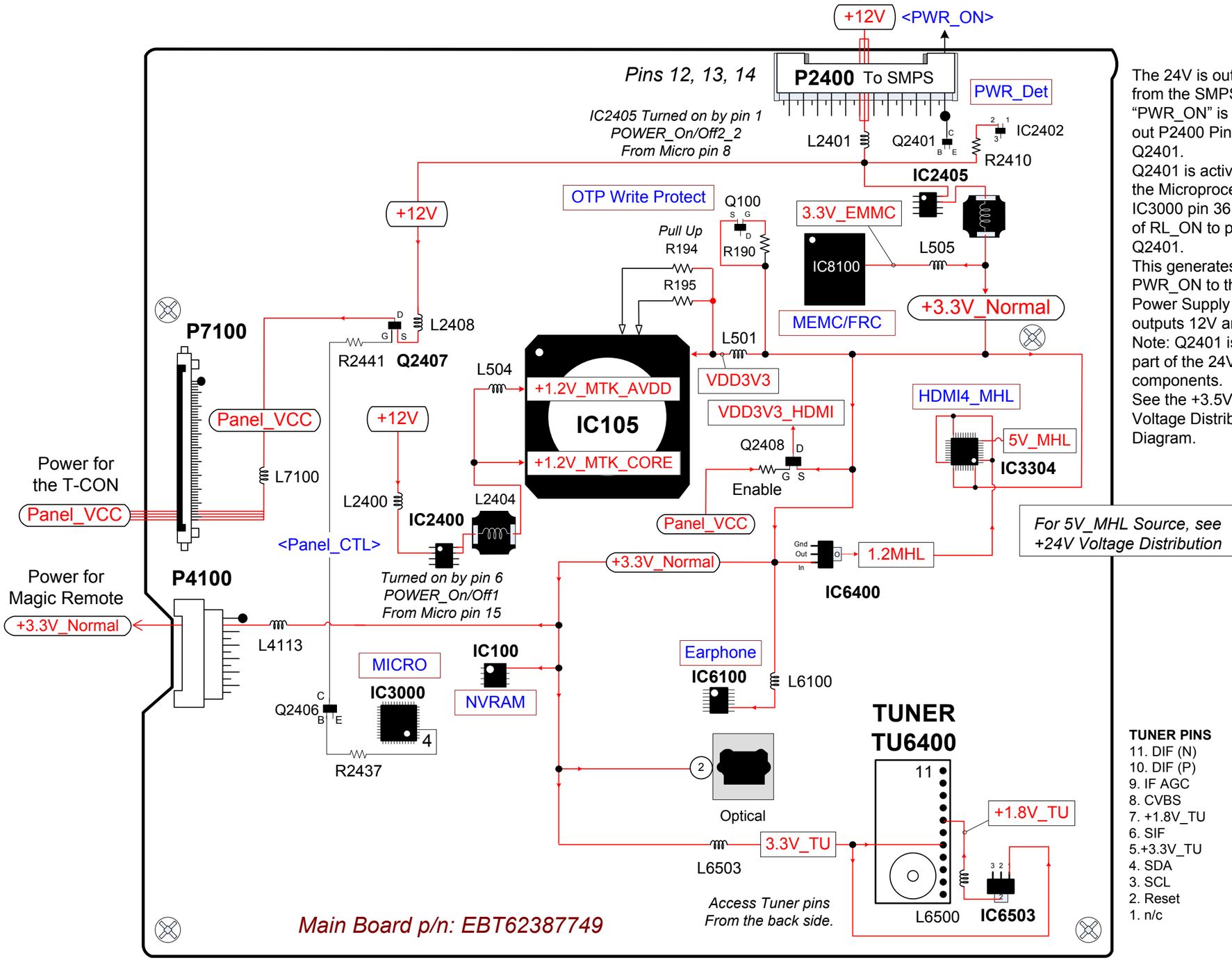
All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". The ones shown are the "Positive" signal of the pair. The Negative signal looks exactly the same but flipped 180^0.
Scope Settings are 100mV per/division, 2.5uSec per/division.

Pin 12	**Pin 14**	**Pin 16**	**Pin 19**	**Pin 22**	**Pin 24**
					
340mV p/p	**384mV p/p**	**380mV p/p**	**340mV p/p**	**348mV p/p**	**56mV p/p** **No Waveform**
Pin 28	**Pin 30**	**Pin 32**	**Pin 35**	**Pin 38**	**Pin 40**
					
384mV p/p	**356mV p/p**	**448mV p/p**	**340mV p/p**	**449mV p/p**	**64mV p/p** **No Waveform**

47LN5750 Main Board (+3.5V_ST) Voltage Distribution



47LN5750 Main Board (+12V) Voltage Distribution

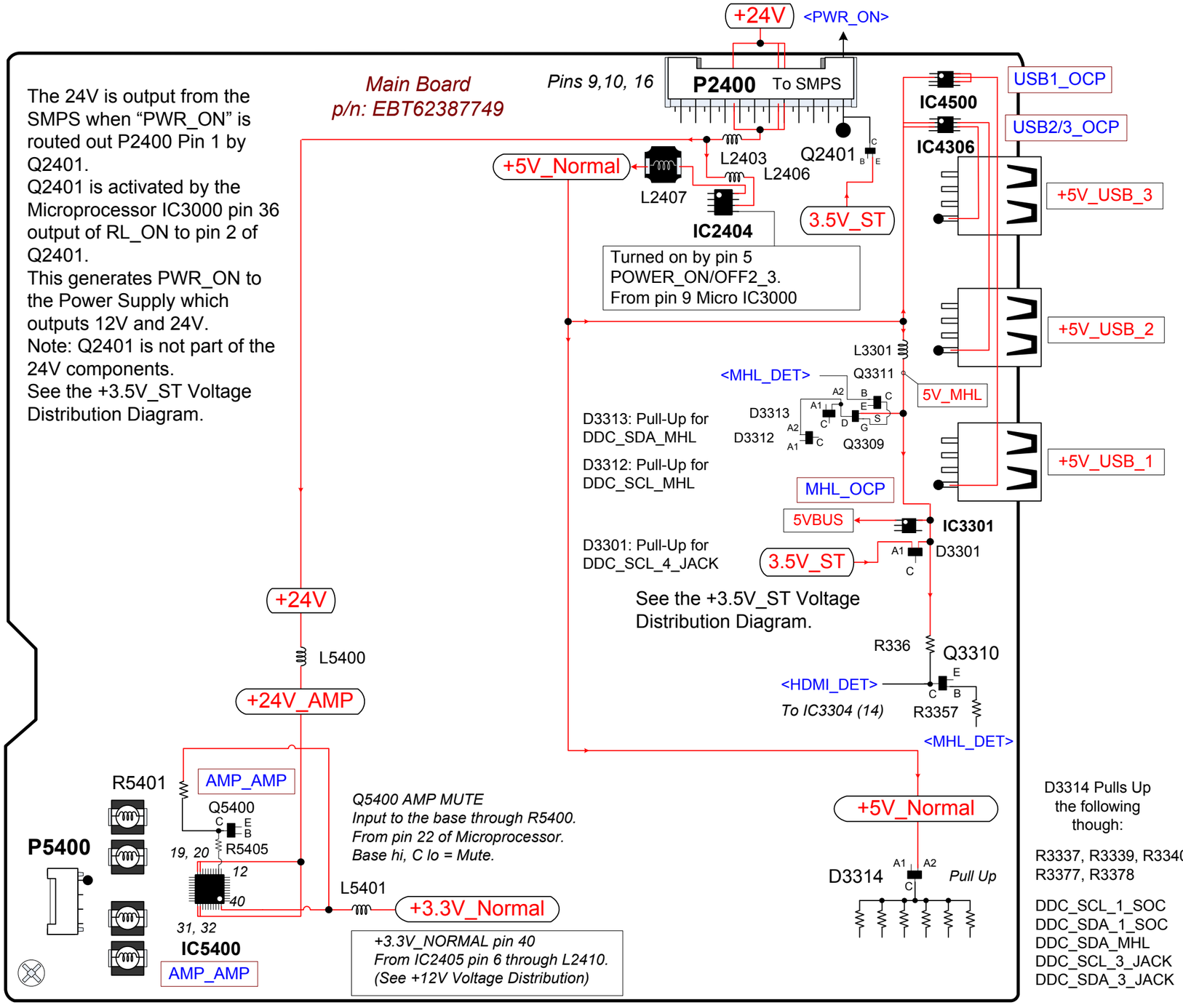


The 24V is output from the SMPS when "PWR_ON" is routed out P2400 Pin 1 by Q2401.
Q2401 is activated by the Microprocessor IC3000 pin 36 output of RL_ON to pin 2 of Q2401.
This generates PWR_ON to the Power Supply which outputs 12V and 24V.
Note: Q2401 is not part of the 24V components.
See the +3.5V_ST Voltage Distribution Diagram.

TUNER PINS
11. DIF (N)
10. DIF (P)
9. IF AGC
8. CVBS
7. +1.8V_TU
6. SIF
5.+3.3V_TU
4. SDA
3. SCL
2. Reset
1. n/c

47LN5750 Main Board (+24V) Voltage Distribution

The 24V is output from the SMPS when “PWR_ON” is routed out P2400 Pin 1 by Q2401.
Q2401 is activated by the Microprocessor IC3000 pin 36 output of RL_ON to pin 2 of Q2401.
This generates PWR_ON to the Power Supply which outputs 12V and 24V.
Note: Q2401 is not part of the 24V components.
See the +3.5V_ST Voltage Distribution Diagram.



49LF5500 INTERCONNECT DIAGRAM

Note: If the top or bottom of the picture is exhibiting a dimmer backlight level than the other or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal.
If not, Check the P-DIM level, it should rise with the percentage shown on screen.

You can also test either the Top or Bottom blocks functionality by grounding the return path signal (using 10KΩ resistor).

LED TOP OR BOTTOM BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 120V on P801 pin 3 and 180V on pin 7.
Confirm P-DIM is approx. 3V. Using a 10KΩ resistor, (one end on ground), jump the block grounding pins on P801 (Top is controlled by P801 pin 1 and the Bottom is controlled by P801 pin 5), while observing the picture. Each block should turn on brighter. (If No: Bad Panel, If Yes: Bad SMPS).

(1) **PWR-On Pin 1:** Turns on 13.2V to the Main. No backlight power at this time. Backlight Power is 86.9V.
(2) **DRV_On Pin 11:** Turns on the Backlights. Backlight power goes to 116V P801 Pin 3 (174.6B Pin 7).
(3) **P_DIM#1 Pin 12 and P_DIM#2 Pin 2:** Will vary according to incoming video IRE level and OSD Backlight setting Output from the Video Processor. It is then routed out P200 and sent to the LED Driver IC on the Back of the SMPS. Range 0.2V~2.60V.

P801 "SMPS Board" To "LED Backlights"

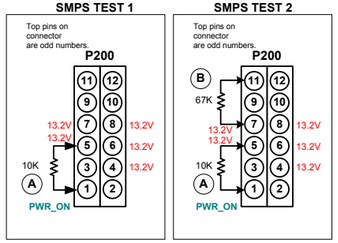
PIN	LABEL	RUN	Diode
1	BL-(2)	36.99V-8.25V	OL
3	BL+(2)	120.3V-116.7V	OL
5	BL-(1)	55.18V-11.81V	OL
7	BL+(1)	181.4V-175.8V	OL

No Stand-By Voltages
Pins 2, 4, 6 are n/c.

WARNING: Do not add or remove jumpers with Power Applied.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P200 on the Main board.
SMPS must be producing 13.2V (12V in STBY).
(A) Use a 10K resistor and jump pin 5 (13.2V) to pin 1. Test Voltage Outputs 13.2V to Main. (86.9V Backlight power but the Backlights are not on at this time).
LED Ground Return Line is (9.15V).
Remove AC power. Leave the jumper in place.

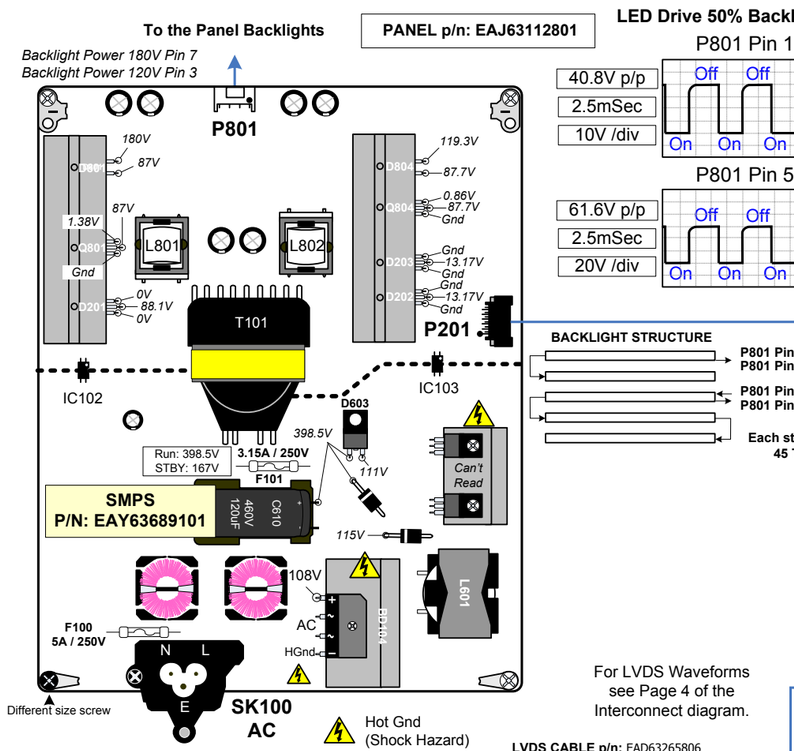
SMPS TEST 2: (Turning on the Backlights)
(B) Use a 67K resistor and Jump pin 7 (13.2V) to pin 11 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now read 116V P801 Pin 3 (174.6B Pin 7).
LED Ground Return Line is (0.96V). P-DIM P201 (pin 4) pulls up to 3.35V.

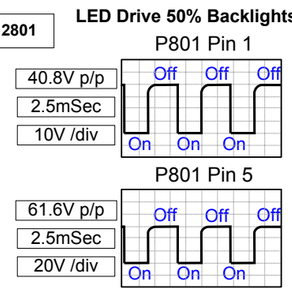


Warning: Failure to use the right value resistors may cause damage to the SMPS during these test.

If P801 is disconnected, the backlight power will be 86V rise to 260V and stay there.
Warning: Backlight power is slow to bleed down after power off, connected or disconnected.
Power remains to the Main board.

45 Total LEDs, 9 LEDs per/Row.
2 boards per/row, one with 4 and one with 5 LEDs.
Top group has 18 LEDs, Bottom group has 27 LEDs.



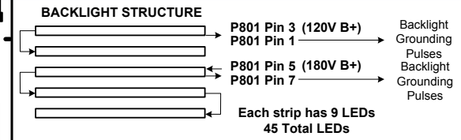


No Local Dimming
In this Model.

P201 "SMPS Board" To P200 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode
(3) 12	P_DIM#1	0V	*0.2V-2.60V	OL
(2) 11	DRV_ON	0V	2.98V	OL
9-10	Gnd	Gnd	Gnd	Gnd
4-8	13.2V	12V	13.16V	OL
3	Gnd	Gnd	Gnd	Gnd
(3) 2	P_DIM#2	0V	*0.2V-2.60V	OL
(1) 1	PWR_ON	0V	3.43V	1.19V

*0% to 100%



For DC voltages
See P201 Chart

P200 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2	OL
3	Gnd
4-8	OL
9-10	Gnd
11	1.86v
12	OL

For DC voltages for Main board components see Page 2 of the Interconnect diagram.

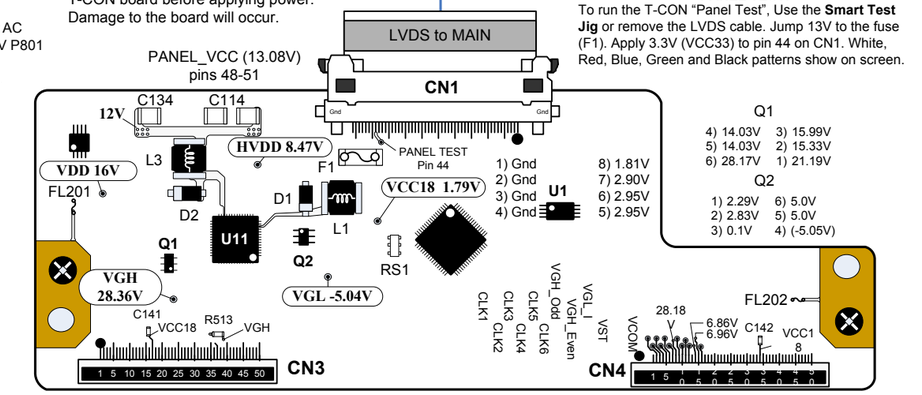
To T-CON

For LVDS Waveforms see Page 4 of the Interconnect diagram.

LVDS CABLE p/n: EAD63265806

WARNING:
Be sure to install the screws in the T-CON board before applying power. Damage to the board will occur.

PANEL TEST:
To run the T-CON "Panel Test", Use the **Smart Test Jig** or remove the LVDS cable. Jump 13V to the fuse (F1). Apply 3.3V (VCC33) to pin 44 on CN1. White, Red, Blue, Green and Black patterns show on screen.



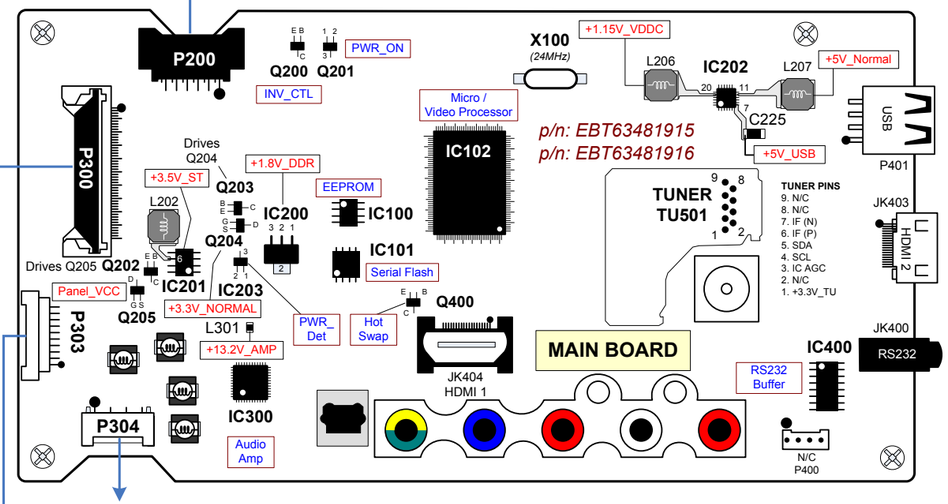
CN3

Pin 8	VGH (U11 pin 42, 43) 28.18V
Pin 9	*VGH_ODD (U11 pin 47) -5.09V to 28.14V
Pin 10	*VGH_EVEN (U11 pin 46) -5.09V to 28.14V
Pin 12	VST (U11 pin 45) -5.09V
Pin 18-19	VDD (U11 pin 28) 16.88V

CN4

Pin 43	
Pin 42	
Pin 41	
Pin 39	
Pin 32-33	

**VGH_ODD and *VGH_EVEN cycle between -5.09V to 28.14V every second.*

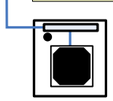


SPK Ft Right
p/n: EAB63650102

SPK Ft Left
p/n: EAB63650101

All Speaker plug pins
6.58V
Diode Check (OL)

Front IR/Joy Stick



Bottom Center of Set
Front IR
p/n: EBR78925201

P303 "MAIN" to "Front IR/Joy Stick Board"

PIN	LABEL	STBY	RUN	Diode Check
10	N/C	n/c	n/c	n/c
9	N/C	n/c	n/c	n/c
8	Gnd	Gnd	Gnd	Gnd
7	IR	3.22V	3.23V	OL
6	LED_R	2.84V	0V	OL
5	Gnd	Gnd	Gnd	Gnd
4	3.5V_ST	3.29V	3.31V	0.65V
3	Key2	3.29V	3.31V	OL
2	Key1	3.29V	3.31V	OL
1	Gnd	Gnd	Gnd	Gnd

IR 3.60V p/p

49LF5500 Main Board IC Voltages

IC100



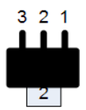
Pin	EEPROM Memory
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.21V
[6]	3.21V
[7]	Gnd
[8]	3.31V

IC101



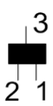
Pin	Serial FLASH Memory
[1]	3.29V
[2]	3.28V
[3]	0V (Flash_WP)
[4]	Gnd
[5]	0V
[6]	0V
[7]	3.31V (Vcc In)
[8]	3.31V (Vcc In)

IC200



Pin	+1.8V_DDR Regulator
[1]	0.59V
[2]	1.83V (Out)
[3]	3.37V (In)

IC203



Pin	PWR_Det Checks Panel_VCC
[1]	3.32V
[2]	0V (Out)
[3]	3.73V (In)

IC201



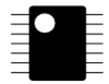
Pin	+3.5V_ST Regulator
[1]	3.25V (EN)
[2]	0.76V (FB)
[3]	5.23V
[4]	2.50V
[5]	Gnd
[6]	3.32V (Out)
[7]	8.37V
[8]	13.14V (Vcc In)

IC202



Pin	+5V_NORMAL / +5V_USB +1.5V_VDDC
[1]	1.99V (n/c)
[2]	3.31V (EN1)
[3]	3.31V (EN2)
[4]	3.17V
[5]	3.17V (USB1_CTL)
[6]	2.94V (USB1_OCD)
[7]	5.02V (+5V_USB)
[8]	5.02V
[9]	13.15V (Vcc In)
[10]	Gnd
[11]	5.02V (5V_Normal Out)
[12]	9.21V
[13]	0.34V
[14]	0.61V
[15]	0.49V
[16]	Gnd
[17]	0.60V
[18]	0.37V
[19]	7.48V
[20]	1.17V (1.15V_VDDC Out)
[21]	Gnd
[22]	13.15V (Vcc In)
[23]	6.29V
[24]	2.0V (n/c)

IC400



Pin	RS232 Data Buffer
[1]	3.31V (C1+)
[2]	5.52V (V+)
[3]	0V (C1-)
[4]	0V (C2+)
[5]	(-5.43V) (C2-)
[6]	(-5.46V) (V2-)
[7]	(n/c)
[8]	(n/c)
[9]	(n/c)
[10]	(n/c)
[11]	3.27V (DIN2)
[12]	3.3V (ROut1)
[13]	0V (RIn1)
[14]	(-5.46V) (DOut1)
[15]	0V (Gnd)
[16]	0V (In) +3.3V_ST

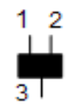
49LF5500 Transistors and Flat Pack IC Voltages

Q200



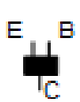
Pin	INV_CTL Switch
[B]	0.15V
[C]	3.14V (Out)
[E]	Gnd

Q201



Pin	PWR_On Switch
[1]	3.30V (In)
[2]	2.62V
[3]	3.20V (Out)

Q202



Pin	Drives Q205 (Panel_VCC)
[B]	0.62V
[C]	0.04V
[E]	Gnd

Q203



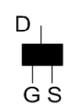
Pin	Drives Q204 (+3.3V_Normal)
[B]	0.63V
[C]	0.05V
[E]	Gnd

Q204



Pin	+3.3V_NORMAL Switch
[G]	0.49V
[S]	3.31V (In)
[D]	3.28V (Out)

Q205



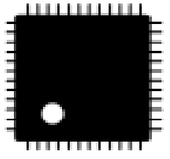
Pin	Panel_VCC Switch
[G]	10.29V
[S]	13.14V (In)
[D]	13.12V (Out)

Q400



Pin	HDMI Hot Swap
[B]	0V (HPD2)
[C]	0.07V
[E]	Gnd

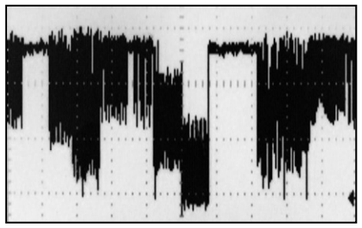
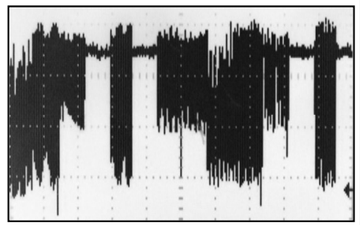
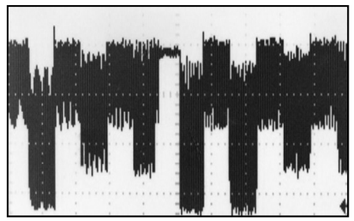
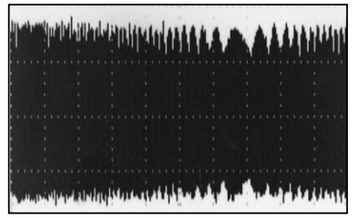
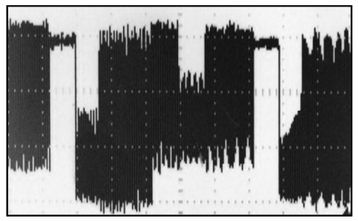
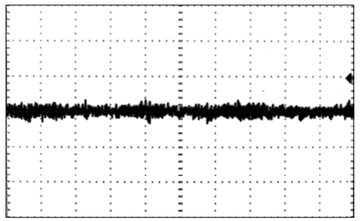
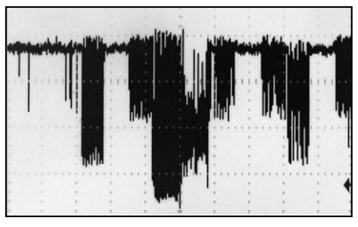
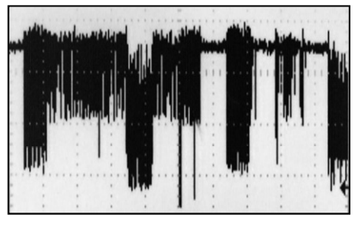
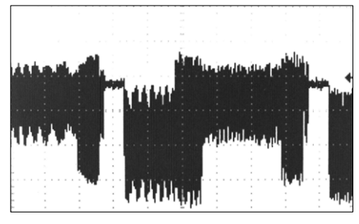
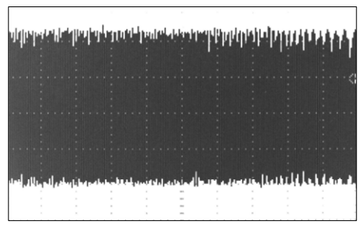
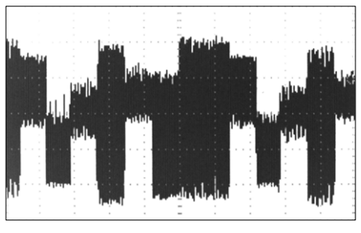
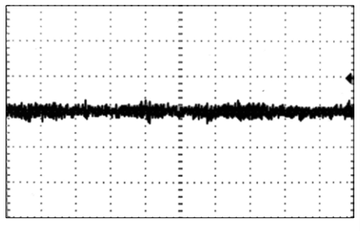
IC300



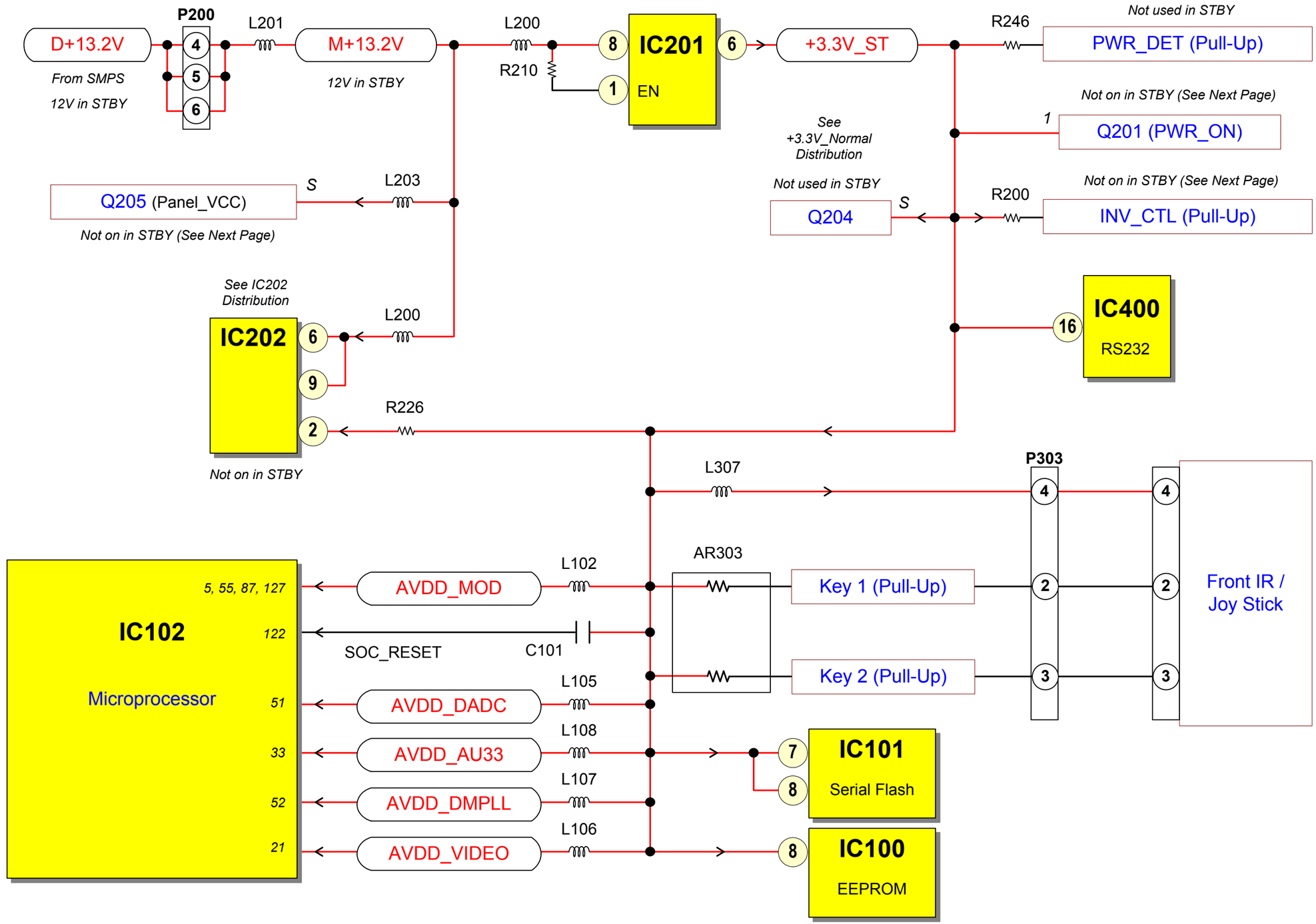
Pin	Audio Amp
[1]	6.58V (SPK_L+)
[2]	13.17V (Vcc In)
[3]	13.17V (Vcc In)
[4]	18.03V
[5]	n/c
[6]	3.31V
[7]	n/c
[8]	Gnd
[9]	0V
[10]	0.68V
[11]	1.05V
[12]	1.8V
[13]	3.32V
[14]	0.39V
[15]	1.67V
[16]	1.0V
[17]	Gnd
[18]	1.81V
[19]	3.32V
[20]	1.65V
[21]	1.65V
[22]	1.2V
[23]	3.31V
[24]	3.31V
[25]	3.3V
[26]	Gnd
[27]	3.32V
[28]	Gnd
[29]	Gnd
[30]	Gnd
[31]	3.32V
[32]	6.68V
[33]	17.96V
[34]	13.17V (Vcc In)
[35]	13.17V (Vcc In)
[36]	6.58V (SPK_R_)
[37]	Gnd
[38]	Gnd
[39]	6.58V (SPK_R+)
[40]	n/c
[41]	n/c
[42]	12.47V
[43]	12.47V
[44]	n/c
[45]	n/c
[46]	6.58V (SPK_L-)
[47]	Gnd
[48]	Gnd

49LF5500 P300 LVDS Connector Video Waveforms

All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". The ones shown are the "Positive" signal of the pair. The Negative signal looks exactly the same but flipped 180^0.
Scope Settings are 100mV per/division, 2.5uSec per/division.

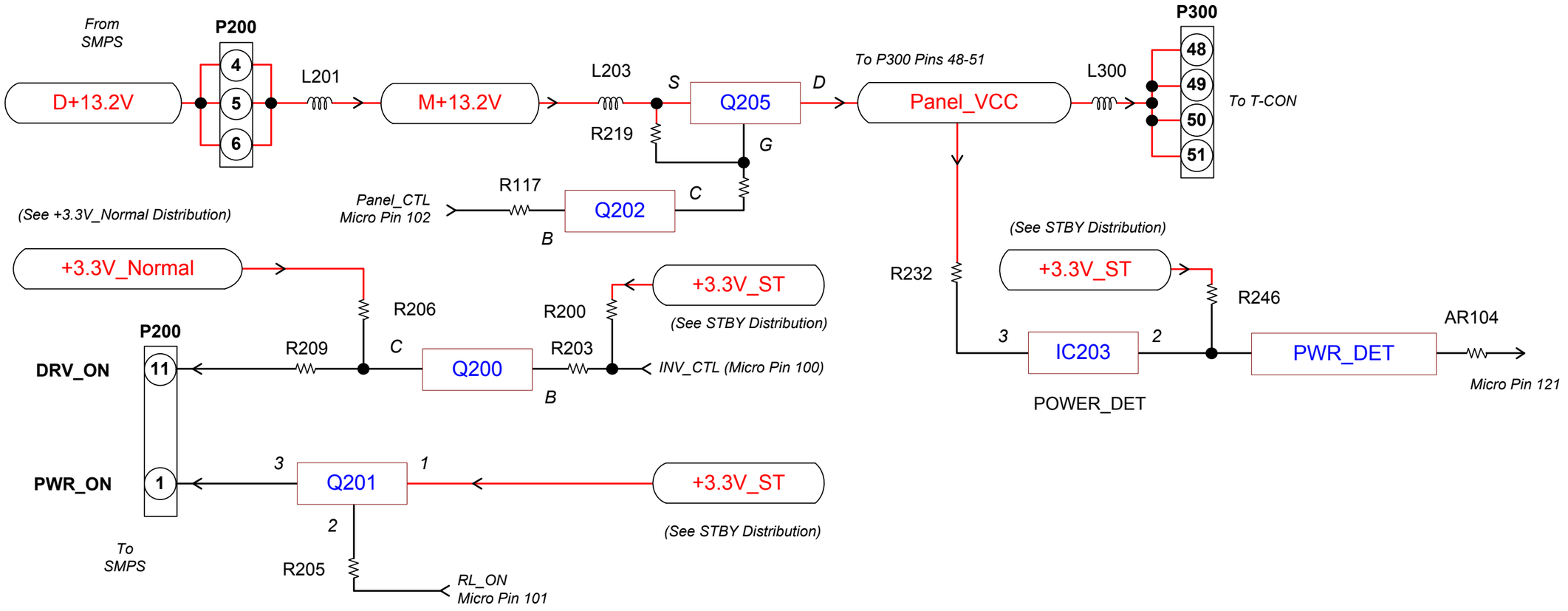
Pin 12	**Pin 14**	**Pin 16**	**Pin 19**	**Pin 22**	**Pin 24**
					
340mV p/p	**384mV p/p**	**380mV p/p**	**340mV p/p**	**348mV p/p**	**56mV p/p** **No Waveform**
Pin 28	**Pin 30**	**Pin 32**	**Pin 35**	**Pin 38**	**Pin 40**
					
384mV p/p	**356mV p/p**	**448mV p/p**	**340mV p/p**	**449mV p/p**	**64mV p/p** **No Waveform**

49LF5500 Main Board (Stand-By) Voltage Distribution

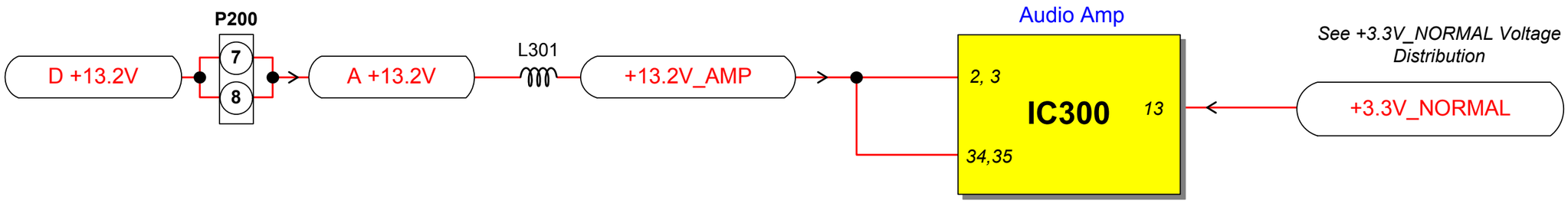


49LF5500 Main Board (PWR_ON and +13.2V_AMP) Voltage Distribution

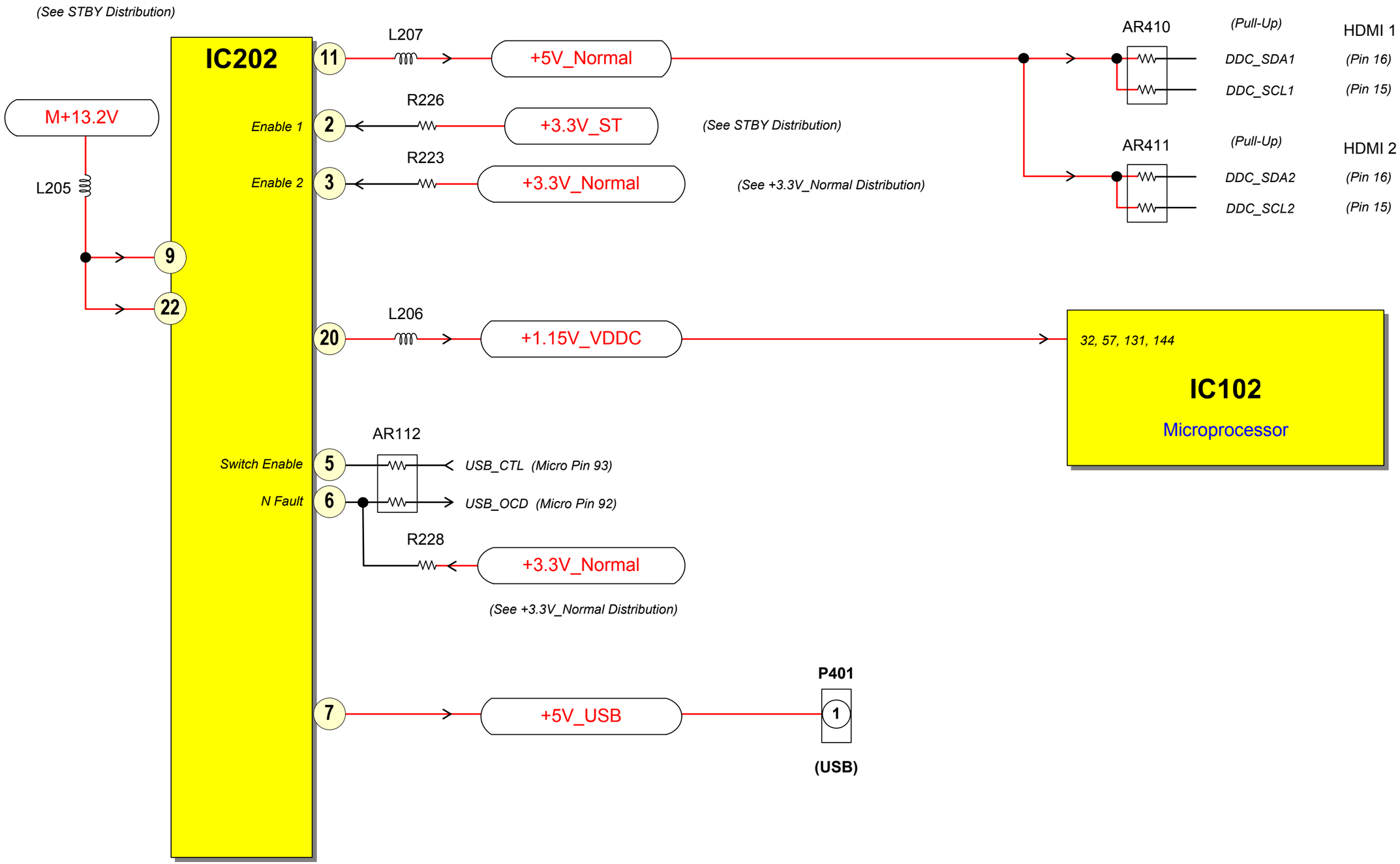
PWR_ON Voltage Distribution



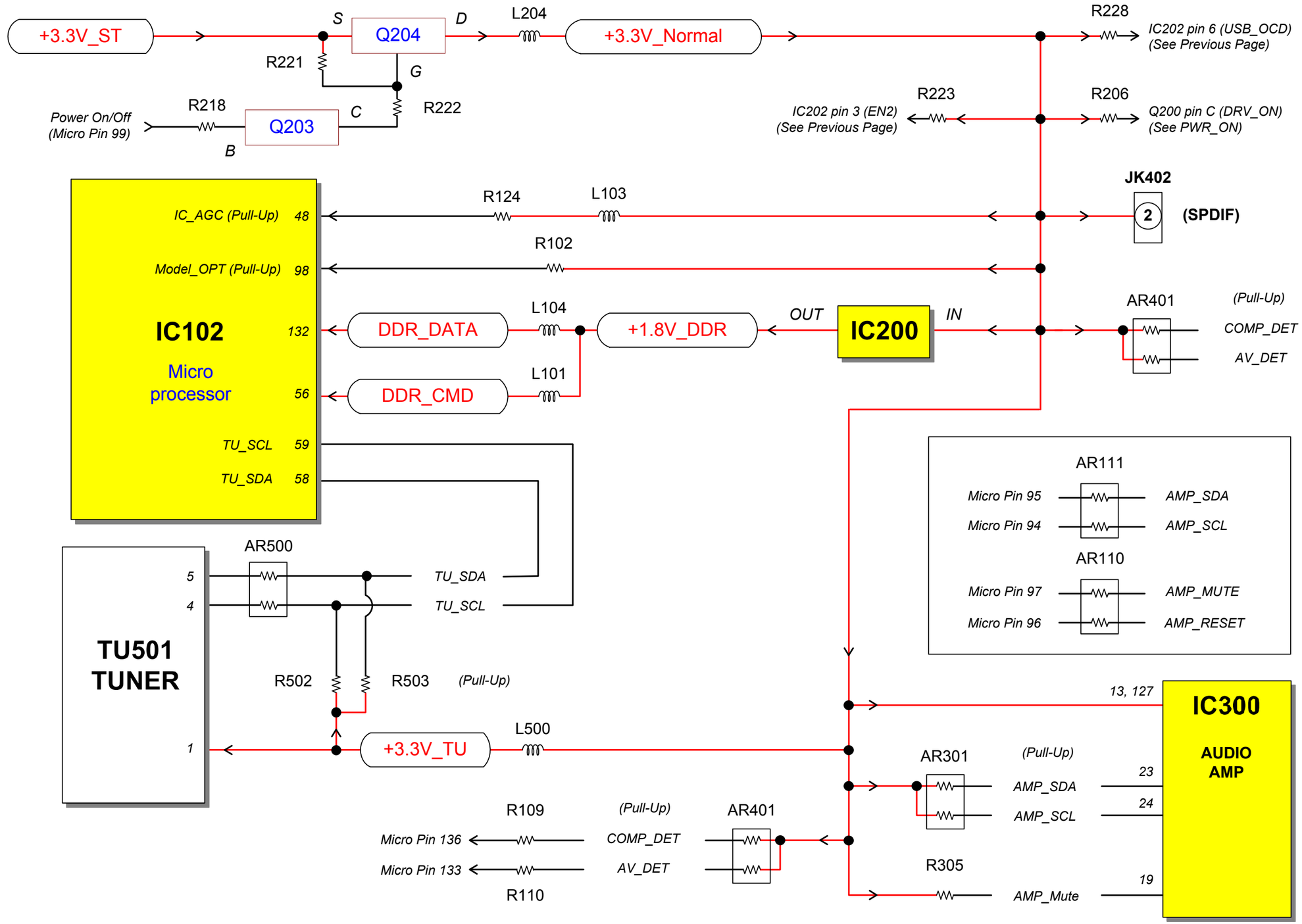
+13.2V_AMP Voltage Distribution



49LF5500 Main Board (IC202) Voltage Distribution



49LF5500 Main Board (+3.3V_NORMAL) Voltage Distribution



49UB8500 INTERCONNECT DIAGRAM

PANEL p/n: EAJ626883601

P801 Black "SMPS Board" to the "Backlights"

Pin	Label	Run	Diode Check	TP
1	VC_6	1.32V-13.14V	OL	EL85
2	VC_5	1.27V-12.99V	OL	EL84
3	VC_4	1.2V-13.31V	OL	EL86
4	VC_3	1.30V-13.35V	OL	EL83
5	VC_2	1.10V-13.59V	OL	EL87
6	VC_1	1.15V-13.54V	OL	EL82
7	N/C	n/c	n/c	
8	LED+	64.62V-64.49V	OL	P210

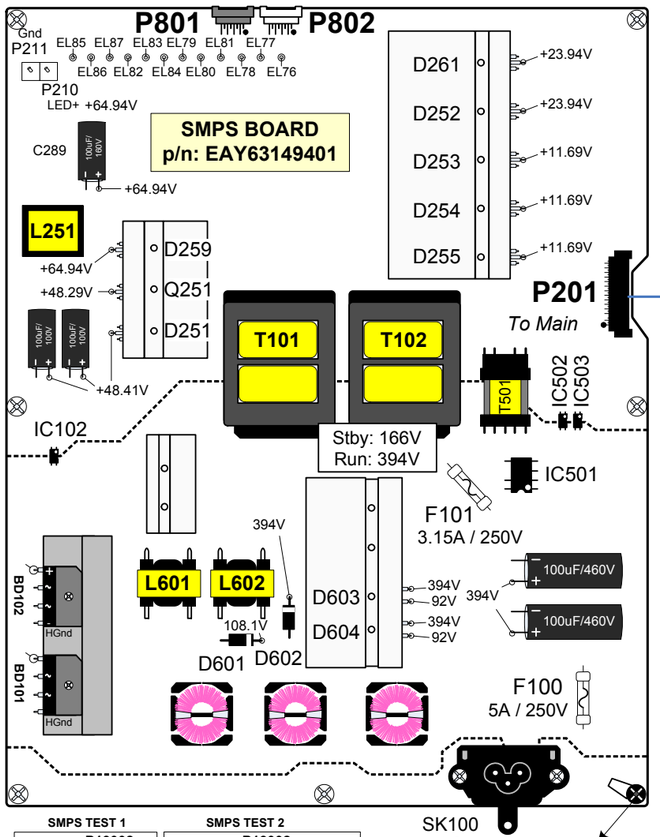
Bright (100%) to *Dim (0%)

P802 White "SMPS Board" to the "Backlights"

PIN	LABEL	RUN	Diode ✓	TP
1	LED+	64.94V	OL	P210
2	N/C	n/c	n/c	
3	VC_7	1.12V~12.91V	OL	EL79
4	VC_8	1.07V~13.05V	OL	EL76
5	VC_9	1.12V~13.22V	OL	EL80
6	VC_10	1.14V~13.35V	OL	EL77
7	VC_11	1.35V~13.11V	OL	EL81
8	VC_12	1.46V~13.24V	OL	EL78

Bright (100%) to *Dim (0%)

To Backlights



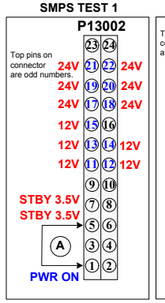
This Screw is a different size M4 * L9 w/washer

WARNING: Do not add or remove jumpers with Power Applied.

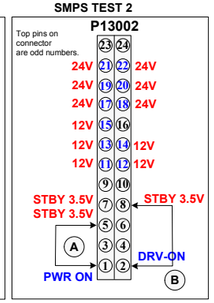
SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P13002 on the Main board.
(A) Jump pin 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main.
(47.34V Backlight power but the Backlights are not on at this time).
LED Ground Return Line is (0.62V).
Remove AC power. Leave the jumper in place.

SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 8 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now read to 64.68V.
LED Ground Return Line is (1.07-1.38V). P-DIM P201 (pin 4) reads 3.52V.

SMPS TEST 1



SMPS TEST 2



If P801 is disconnected, the backlight power will start at 49V, then jump to 69V and then fall back to 49V. Warning: Backlight power is slow to bleed down after power off, connected or disconnected.

132 Total LEDs, 66 LEDs per/Strip.
2 boards per/strip. (11 LEDs per/board) 12 columns.
6 on the left are controlled by P801
6 on the right are controlled by P802

P201 "SMPS Board" to "MAIN Board" P13002

Pin	Label	STBY	Run	Diode Check
28	*Vsync	0V	0.04V	OL
27	*SCLK	0V	0.01V	OL
26	*Gnd	Gnd	Gnd	Gnd
25	*SCLK	0V	0.07V	OL
23-24	Gnd	Gnd	Gnd	Gnd
18-22	24V	0V	23.83V	1.12V
16-17	Gnd	Gnd	Gnd	Gnd
11-15	12V	0V	11.66V	0.44V
9-10	Gnd	Gnd	Gnd	Gnd
7-8	3.5V	3.54V	3.52V	OL
6	Gnd	Gnd	Gnd	Gnd
5	3.5V	3.54V	3.52V	OL
4	(4) P-DIM2	0V	1.53V	OL
3	(3) P-DIM	0V	0.16V~3.25V	OL
2	(2) DRV-ON	0V	3.12V	1.66V
1	(1) PWR-ON	0V	3.41V	1.15V

* To the T-CON (3) Dim to Bright

Note: If a part of the picture is exhibiting a dimmer backlight level than the other or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not, Check the P-DIM level, it should rise with the percentage shown on screen.

You can also test any of the 12 blocks functionality by grounding the return path signal (using 1KΩ resistor).

LED TOP OR BOTTOM BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 64V on P210.
Confirm P-DIM is approx. 3V. You can turn on a Block of LEDs by using a 100 ohm resistor from any test point EL76 – EL87 to Ground.
The Power Supply must be producing the 64V for the Backlight B+.
Failure to use a resistor will damage the panels backlight and may also damage the power supply.

For DC voltages
See P201 Chart

P401 "MAIN Board" To P201 "SMPS Board"

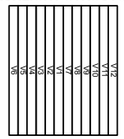
Pin	Diode
1	OL
2	1.52V
3	OL
4	OL
5	1.20V
6	Gnd
7-8	1.20V
9-10	Gnd
11-15	1375V
16-17	Gnd
18-22	OL
23-24	Gnd

(1) PWR_ON: turns on the 12V and 24V lines. Backlight power goes to 47V.

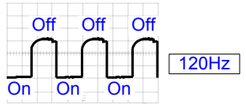
(2) DRV_ON: (INV_ON from Main) turns on the Backlights. Backlight power goes to 64V.

(3) P-DIM: controls the backlight brightness. Controlled via the Customer's Menu: Home ⬚ Settings ⬚ Picture ⬚ Backlights. Range 0% to 100% directly proportional to DC voltage to Backlight brightness. (0.16V~3.27V) P-DIM is actually a PWM signal.
(4) P_DIM2: Fixed Voltage

BACKLIGHT STRUCTURE



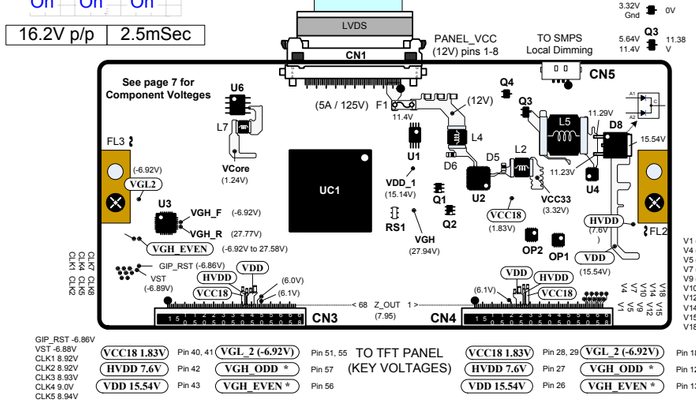
P801 (1-6) P802 (7-12)
Each strip has 11 LEDs
132 Total LEDs



16.2V p/p | 2.5mSec

LVDS CABLE

WARNING:
Be sure to install the screws in the T-CON board before applying power. Damage to the board will occur.

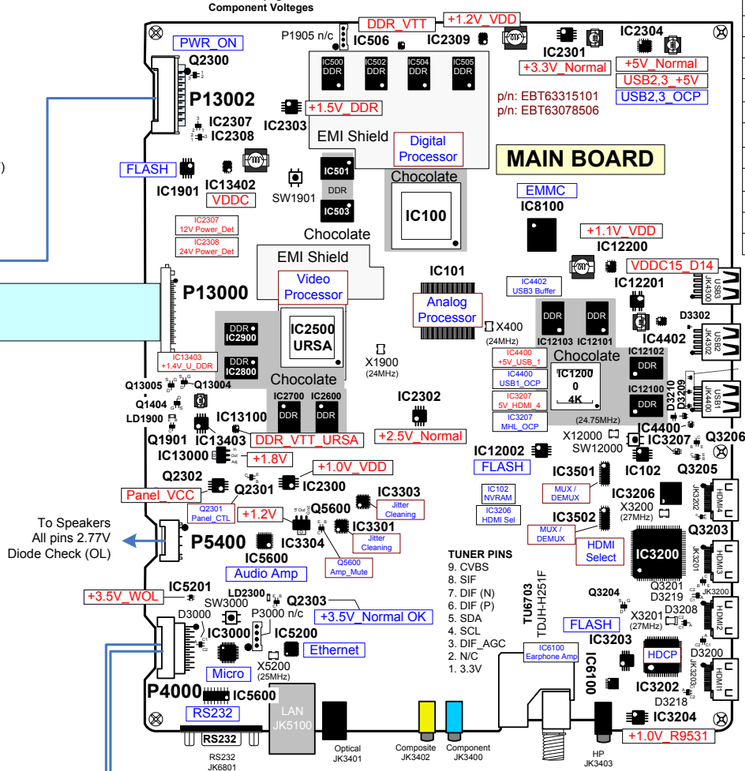


WiFi / M-Remote

Bottom Center of Set
Front IR
p/n: EAB63129202

Front IR/Joy Stick

Bottom Center of Set
Front IR
p/n: MAZ64123603



P4000 "Main" To "Joy Stick" & "M-Remote & WiFi Board" J1

Pin	Label	STBY	Run	Diode Check	
1	Gnd	Gnd	Gnd	Gnd	WiFi pin 1
2	3.5V_WOL	0V	3.51V	1.16V	WiFi pin 8
3	BT_RESET	2.34V	3.31V	OL	WiFi pin 2
4	WiFi_DM	0V	0V	1.20V	WiFi pin 7
5	N/C	n/c	n/c	n/c	WiFi pin 3
6	WiFi_DP	1.16V	0V	1.26V	WiFi pin 6
7	WOL (WiFi On)	0V	0V	1.94V	WiFi pin 4
8	Gnd	Gnd	Gnd	Gnd	WiFi pin 5
9	Eye_SDA	3.55V	3.54V	1.95V	Joy Stick pin 10
10	Gnd	Gnd	Gnd	Gnd	Joy Stick pin 1
11	Eye_SCL	3.55V	3.54V	1.95V	Joy Stick pin 9
12	Key 1	3.54V	3.54V	1.96V	Joy Stick pin 2
13	Gnd	Gnd	Gnd	Gnd	Joy Stick pin 8
14	Key 2	3.54V	3.54V	1.94V	Joy Stick pin 3
15	IR	3.52V	3.50V	1.85V	Joy Stick pin 7
16	3.5V_ST	3.55V	3.53V	1.20V	Joy Stick pin 4
17	LED_R	2.78V	0V	OL	Joy Stick pin 6
18	Gnd	Gnd	Gnd	Gnd	Joy Stick pin 5

IR 3.76V p/p

49UB8500 Main Board Component Voltages

IC102 — NVRAM Memory

Pin	
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.26V
[6]	3.27V
[7]	Gnd
[8]	3.28V

IC506 — DDR_VTT Regulator

Pin	
[1]	0.73V
[2]	**1.5V**
[3]	0.74V VTT (In)
[4]	Gnd
[5]	0.74V
[6]	0.74V
[7]	3.33V (Enable)
[8]	Gnd
[9]	n/c
[10]	3.33V VTT (Out)

IC1901 — SPI FLASH Memory

Pin	
[1]	3.27V
[2]	3.25V
[3]	0V
[4]	Gnd
[5]	**3.27V**
[6]	0V
[7]	3.27V
[8]	3.27V (In)

IC2300 — +1.0V_VDD Regulator

Pin	
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.45V
[4]	5.42V
[5]	Gnd
[6]	1.02V (Out)
[7]	6.41V
[8]	12V (In)

IC2301 — +3.3V_NORMAL Regulator

Pin	
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.46V
[4]	3.42V
[5]	Gnd
[6]	3.37V (Out)
[7]	8.79V
[8]	12V (In)

IC2302 — (+2.5V_NORMAL) Regulator

Pin	
[1]	3.35V (in)
[2]	n/c
[3]	5.12V (in)
[4]	3.53V (ctrl)
[5]	Gnd
[6]	4.92V
[7]	0.81V
[8]	2.56V (out)

IC2303 — +1.5V_DDR Regulator

Pin	
[1]	3.47V (Enable)
[2]	**3.77V**
[3]	5.22V
[4]	2.45V
[5]	Gnd
[6]	1.57V (Out)
[7]	6.5V
[8]	12V (+11.61V In)

IC2307 — PWR_Det 12V Sense

Pin	
[1]	Gnd
[2]	3.54V (Reset)
[3]	3.57V (In)

IC2308 — PWR_Det 20V Sense (Not Used)

Pin	
[1]	**Gnd**
[2]	0V (Reset)
[3]	0V (In)

IC3203 — FLASH Memory

Pin	
[1]	0V
[2]	0V
[3]	0V
[4]	Gnd
[5]	0V
[6]	0V
[7]	3.28V
[8]	3.28V (In)

IC3204 — +1.0V_R9531 Regulator

Pin	
[1]	n/c
[2]	3.23V
[3]	3.28V (In)
[4]	5.09V (Enable)
[5]	n/c
[6]	1.0V (Out)
[7]	0.6V
[8]	Gnd

IC3207 — +5V_HDMI_4 Regulator

Pin	
[1]	3.09V (In)
[2]	Gnd
[3]	0V (Enable)
[4]	0V (MHL_OCP)
[5]	0V
[6]	0.0V (Out)

IC3304 — +1.2V Regulator

Pin	
[Gnd]	0V (Gnd)
[Out]	1.2V (Out)
[In]	3.28V (In)

IC4400 — +5V_USB_1 Regulator

Pin	
[1]	5.09V (In)
[2]	Gnd
[3]	3.27V (Enable)
[4]	2.96V (USB_OCD1)
[5]	0.41V
[6]	5.09V (Out)

IC5201 — +3.5V_WOL Regulator

Pin	
[1]	3.52V (Out)
[2]	Gnd
[3]	0.01V n/c
[4]	3.51V (OCP Out)
[5]	**3.51V (Vcc In)**

IC6601 — RS232 Data

Pin	
[1]	3.52V
[2]	5.72V
[3]	0V
[4]	0.02V
[5]	(-5.63V)
[6]	(-5.66V)
[7]	n/c
[8]	n/c
[9]	n/c
[10]	n/c
[11]	3.29V
[12]	3.51V
[13]	**0V**
[14]	(-5.67V)
[15]	Gnd
[16]	3.52V (3.5V_ST In)

IC12002 — FLASH Memory

Pin	
[1]	3.28V
[2]	0V
[3]	2.46V
[4]	Gnd
[5]	0.11V
[6]	0V
[7]	3.28V
[8]	3.28V (In)

IC12201 — VDDC15_D14 Regulator

Pin	
[1]	3.47V (Enable)
[2]	**0.77V**
[3]	5.27V
[4]	2.51V
[5]	Gnd
[6]	1.53V (Out)
[7]	6.40V
[8]	11.57V (In)

IC13000 — +1.8V Regulator

Pin	
[Gnd]	0.55V (Adj)
[Out]	1.8V (Out)
[In]	3.28V (In)

IC13100 — DDR_VTT_URSA Regulator

Pin	
[1]	**0.73V**
[2]	1.53V
[3]	0.76V VTT (In)
[4]	Gnd
[5]	0.76V
[6]	0.76V
[7]	3.28V (Enable)
[8]	Gnd
[9]	n/c
[10]	3.28V VTT (Out)

IC13403 — VDDC15_D14 Regulator

Pin	
[1]	3.47V (Enable)
[2]	0.77V
[3]	5.26V
[4]	**2.51V**
[5]	Gnd
[6]	1.55V (Out)
[7]	6.51V
[8]	11.60V (In)

Q1404 — LockA_N Switch

Pin	
[G]	1.80V
[S]	0.56V
[D]	0.56V

Q1901 — Drives LD1900

Pin	
[E]	1.18V
[B]	0.56V
[C]	Gnd

Q2300 — PWR_On Switch

Pin	
[1]	3.52V
[2]	2.84V
[3]	3.41V

Q2301 — Panel_VCC CTRL Drives Q2302

Pin	
[B]	0.61V
[C]	0.03V
[E]	Gnd

Q2302 — Panel_VCC Switch

Pin	
[1]	11.56V (In)
[2]	11.56V (In)
[3]	11.56V (In)
[4]	(Enable)
[5]	**11.58V (Out)**
[6]	11.58V (Out)
[7]	11.58V (Out)
[8]	11.58V (Out)

Q12303 — Drives LD2300

Pin	
[E]	Gnd
[B]	0.64V
[C]	0.02V

Q3201 — HDMI3 Hot Swap

Pin	
[B]	0V
[C]	0V
[E]	Gnd

Q3203 — Reset_N Switch

Pin	
[B]	3.28V
[C]	3.46V
[E]	3.28V

Q3204 — HDMI_3.3V Switch

Pin	
[G]	5.09V (In)
[S]	3.28V (Enable)
[D]	3.29V (Out)

Q3205 — MHL Det

Pin	
[B]	0V
[C]	3.52V (Out)
[E]	0V

Q3206 — MHL Det

Pin	
[B]	**3.52V**
[C]	0V (Out)
[E]	3.52V

Q5600 — Amp Mute Driver

Pin	
[B]	0V
[C]	3.27V
[E]	Gnd

Q13004 — I2C_SCL1 Switch

Pin	
[G]	3.24V
[S]	3.31V
[D]	3.29V

Q13005 — I2C_SDA1 Switch

Pin	
[G]	3.29V
[S]	3.32V
[D]	3.29V

49UB8500 Main Board Component Voltages (Large ICs) Page 1 of 2

IC2304

+5V_Normal Regulator

Pin		Pin
[1] 24.68V (In)		[15] 5.04V (OCP2)
[2] 24.68V (In)		[16] 5.09V
[3] 24.68V (In)		[17] 5.09V
[4] Gnd		[18] 12.04V
[5] Gnd		[19] 5.09V (Out)
[6] Gnd		[20] 5.09V (Out)
[7] 6.25V		[21] 5.09V (Out)
[8] 6.25V		[22] 1.94V
[9] 3.53V (Enable)		[23] 0.60V
[10] 5.09V (Out USB2)		[24] 0.35V
[11] 5.09V (Out USB3)		[25] 1.24V
[12] 5.09V (USB2 Ctrl)		[26] 0.45V
[13] 5.09V (USB3 Ctrl)		[27] 0.45V
[14] 5.04V (OCP2)		[28] Gnd

IC2309

+5V_Normal Regulator

Pin		Pin
[1] 1.18V		[15] 11.59V (In)
[2] 5.18V		[16] 11.59V (In)
[3] 3.51V (Enable)		[17] 11.59V (In)
[4] 6.44V		[18] 11.59V (In)
[5] n/c		[19] 11.59V (In)
[6] 1.29V (Out)		**[20] 5.18V**
[7] 1.29V (Out)		[21] 5.18V
[8] 1.29V (Out)		[22] Gnd
[9] 1.29V (Out)		[23] 0.61V
[10] Gnd		[24] 1.26V
[11] Gnd		[25] 0.41V
[12] Gnd		[26] Gnd
[13] Gnd		[27] Gnd
[14] Gnd		[28] Gnd

IC3000

Micro Processor

Pin		Pin
[1] 3.28V		[25] 0V
[2] 3.28V		[26] 3.53V
[3] 0.0V		[27] 3.53V
[4] 2.09V		[28] 0.03V
[5] 0.06V		[29] 0.1V
[6] 3.5V		[30] 0V
[7] 3.49V		[31] 3.34V
[8] 3.53V		[32] 3.53V
[9] 0V		[33] 3.53V
[10] 3.53V		[34] 3.75V
[11] 3.53V		[35] 0V
[12] 0V		[36] 0V
[13] 3.51V		[37] 0.02V
[14] 3.68V		[38] 0V
[15] 3.53V		[39] 3.53V
[16] 0V		[40] 3.53V
[17] 3.48V		[41] 0.65V
[18] 3.53V		[42] 0.13V
[19] 3.29V		[43] 0V
[20] 3.32V		[44] 0V
[21] 3.53V		[45] 0V
[22] 0V		[46] 2.09V
[23] 0V		[47] Gnd
[24] 0.1V		[48] 3.53V

IC3301

Jitter Cleaner

Pin		Pin
[1] 2.99V (In)		[21] 3.27V
[2] 2.99V		[22] 3.27V
[3] n/c		[23] 0V
[4] 2.99V		[24] 3.27V
[5] 2.99V		[25] 3.27V
[6] 2.99V		[26] 3.27V
[7] 2.99V		[27] 3.27V
[8] 0V (Ctl_En)		[28] 5.06V
[9] 2.99V		[29] 3.27V
[10] 2.99V		[30] 3.27V
[11] 3.27V		[31] 1.2V (In)
[12] 1.2V		[32] n/c
[13] 3.09V		[33] n/c
[14] 0V		[34] 0V
[15] Gnd		[35] Gnd
[16] 0V		[36] n/c
[17] 0V		[37] 1.2V (In)
[18] 0.45V		[38] n/c
[19] 1.2V		[39] n/c
[20] 1.2V		[40] 1.2V (In)

IC3303

Jitter Cleaner

Pin		Pin
[1] 2.99V (In)		[21] 3.27V
[2] 2.99V		[22] 3.27V
[3] n/c		[23] 0V
[4] 2.99V		[24] 3.27V
[5] 2.99V		[25] 3.27V
[6] 2.99V		[26] 3.27V
[7] 2.99V		[27] 3.27V
[8] 0V (Ctl_En)		[28] 5.06V
[9] 2.99V		[29] 3.27V
[10] 2.99V		[30] 3.27V
[11] 3.27V		[31] 1.2V (In)
[12] 1.2V		[32] n/c
[13] 3.09V		[33] n/c
[14] 0V		[34] 0V
[15] Gnd		[35] Gnd
[16] 0V		[36] n/c
[17] 0V		[37] 1.2V (In)
[18] 0.45V		[38] n/c
[19] 1.2V		[39] n/c
[20] 1.2V		[40] 1.2V (In)

IC3501

MUX/ DEMUX

Pin		Pin
[1] 3.28V (In)		[22] 2.94V
[2] 3.28V		[23] 2.94V
[3] 4.88V		[24] 2.94V
[4] 4.88V		[25] 2.94V
[5] 2.98V		[26] 2.94V
[6] 2.98V		[27] 2.94V
[7] 2.98V		[28] 2.94V
[8] 2.98V		[29] 2.94V
[9] n/c		[30] n/c
[10] 2.98V		[31] 2.94V
[11] 2.98V		[32] 2.94V
[12] 2.98V		[33] 2.94V
[13] 2.98V		[34] 2.94V
[14] n/c		[35] 2.94V
[15] n/c		[36] 2.94V
[16] 3.28V		[37] 2.94V
[17] 3.28V		[38] 2.94V
[18] n/c		[39] 4.88V
[19] n/c		[40] 4.88V
[20] n/c		[41] 3.28V
[21] n/c		[42] 3.28V

IC3502

MUX/ DEMUX

Pin		Pin
[1] 3.28V (In)		[22] 2.94V
[2] 3.28V		[23] 2.94V
[3] 4.88V		[24] 2.94V
[4] 4.88V		[25] 2.94V
[5] 2.98V		[26] 2.94V
[6] 2.98V		[27] 2.94V
[7] 2.98V		[28] 2.94V
[8] 2.98V		[29] 2.94V
[9] n/c		[30] n/c
[10] 2.98V		[31] 2.94V
[11] 2.98V		[32] 2.94V
[12] 2.98V		[33] 2.94V
[13] 2.98V		[34] 2.94V
[14] n/c		[35] 2.94V
[15] n/c		[36] 2.94V
[16] 3.28V		[37] 2.94V
[17] 3.28V		[38] 2.94V
[18] n/c		[39] 4.88V
[19] n/c		[40] 4.88V
[20] n/c		[41] 3.28V
[21] n/c		[42] 3.28V

IC4402

USB 2-3 Processor

Pin		Pin	
[1]	n/c	[13]	3.3V (In)
[2]	n/c	[14]	0.08V
[3]	3.3V (In)	[15]	0V
[4]	3.3V	[16]	1.63V
[5]	**3.3V**	**[17]**	**3.23V**
[6]	n/c	[18]	n/c
[7]	3.27V	[19]	3.26V
[8]	3.27V	[20]	3.26V
[9]	Gnd	[21]	Gnd
[10]	1.45V	[22]	2.63V
[11]	1.45V	[23]	2.63V
[12]	Gnd	[24]	n/c

IC5200

Ethernet IC

Pin		Pin	
[1]	**0V**	**[17]**	**0V**
[2]	1.1V	[18]	n/c
[3]	1.1V	[19]	n/c
[4]	1.1V	[20]	0V
[5]	1.1V	[21]	3.26V
[6]	1.1V	[22]	1.23V
[7]	3.51V (In)	[23]	3.25V
[8]	0.03V	[24]	3.25V
[9]	0V	[25]	3.24V
[10]	0V	[26]	0V
[11]	0V	[27]	0V
[12]	0V	[28]	0V
[13]	n/c	[29]	1.08V
[14]	3.51V (In)	[30]	3.51V (In)
[15]	1.32V	[31]	0V
[16]	0V	[32]	0.58V

IC5600

Audio Amp

Pin		Pin	
[1]	n/c	[21]	(Out R-)
[2]	1.29V	[22]	Gnd
[3]	n/c	[23]	7.47V
[4]	Gnd	[24]	5.17V
[5]	**n/c**	**[25]**	**Gnd**
[6]	1.27V	[26]	n/c
[7]	1.14V	[27]	5.16V
[8]	1.63V	[28]	7.46V
[9]	1.63V	[29]	Gnd
[10]	0V	[30]	2.76V (Out L-)
[11]	3.09V	[31-32]	23.89V (L B+)
[12]	3.27V (Mute)	[33]	2.76V (Out L+)
[13]	n/c	[34]	Gnd
[14]	1.36V	[35]	7.45V
[15]	n/c	[36]	3.20V (Reset)
[16]	7.46V	[37]	Gnd
[17]	**Gnd**	**[38]**	**1.66V**
[18]	2.77V (Out R-)	[39]	Gnd
[19-20]	23.89V (R B+)	[40]	(In)

IC6100

Earphone IC

Pin		Pin	
[1]	Gnd	[8]	1.64V
[2]	0V (R-In)	[9]	3.28V (In)
[3]	0V (R-Out)	[10]	Gnd
[4]	**Gnd**	[11]	n/c
[5]	(Mute)	[12]	0V (L-Out)
[6]	(-3.16V)	[13]	0V (L-In)
[7]	(-1.57V)	[14]	Gnd

IC12200

+1.1V_VDD Regulator

Pin		Pin	
[1]	1.17V	[15]	11.62V (In)
[2]	5.13V	[16]	11.62V (In)
[3]	3.51V (Enable)	[17]	11.62V (In)
[4]	6.27V	[18]	11.62V (In)
[5]	**n/c**	**[19]**	**11.62V (In)**
[6]	1.2V (Out)	[20]	5.13V
[7]	1.2V (Out)	[21]	5.13V
[8]	1.2V (Out)	[22]	Gnd
[9]	1.2V (Out)	[23]	0.6V
[10]	Gnd	[24]	1.19V
[11]	Gnd	[25]	0.39V
[12]	Gnd	[26]	n/c
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

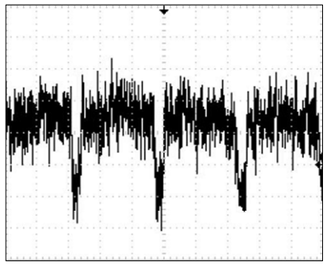
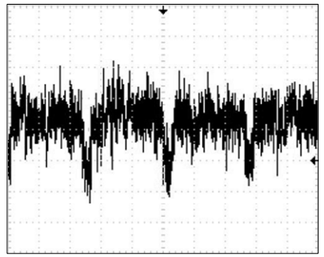
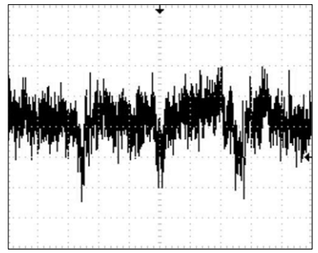
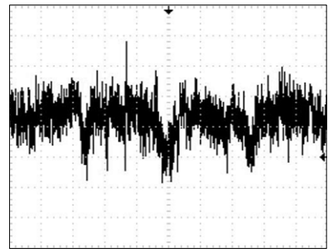
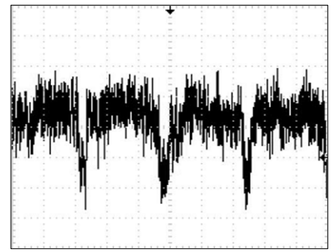
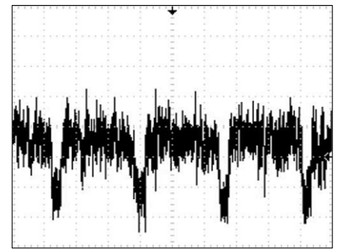
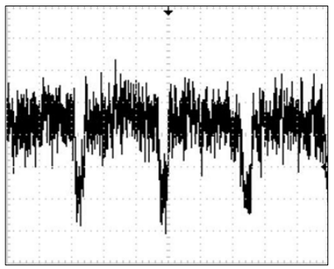
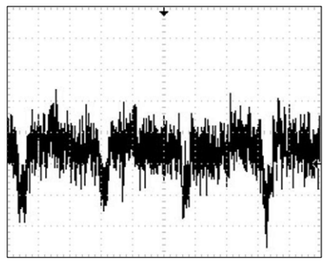
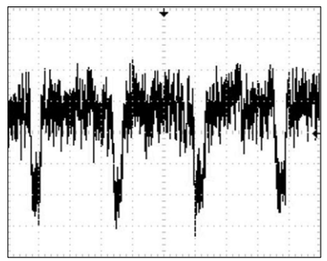
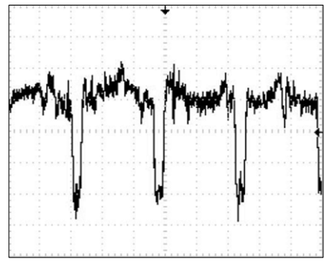
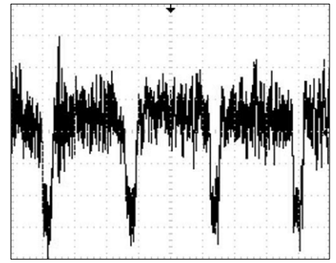
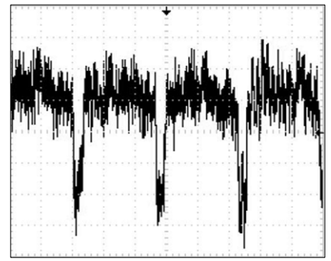
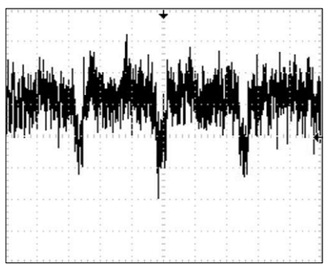
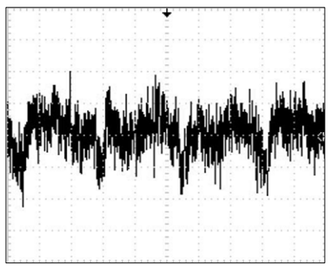
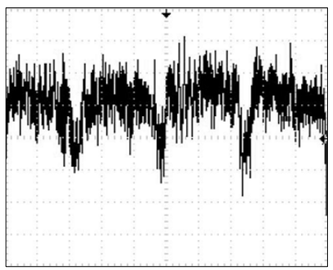
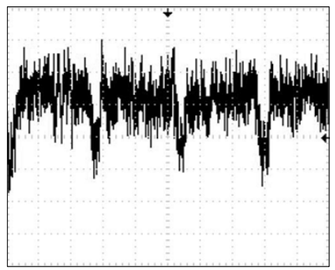
IC13402

VDDC Regulator

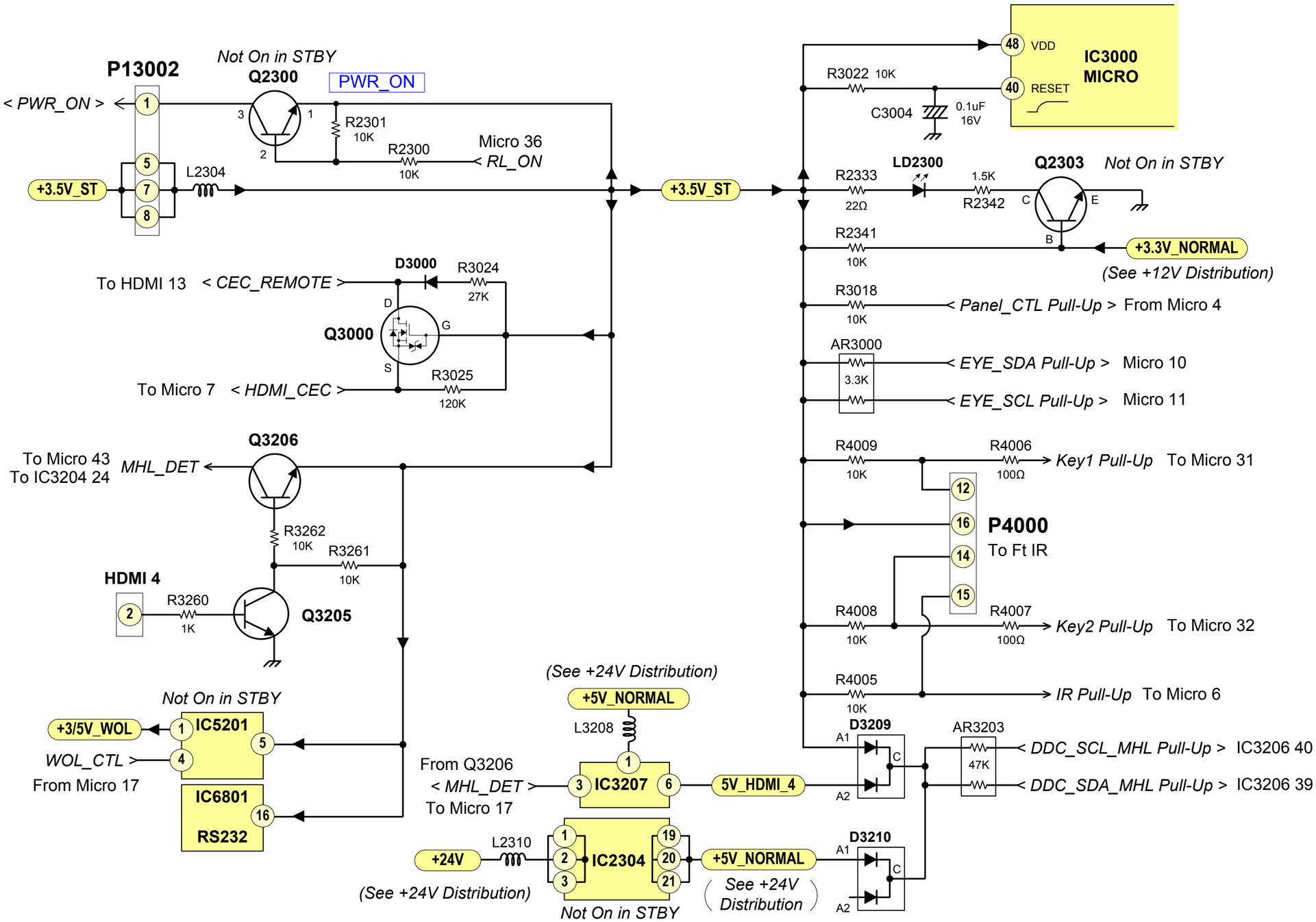
Pin		Pin	
[1]	1.19V	[15]	11.62V (In)
[2]	5.19V	[16]	11.62V (In)
[3]	3.51V (Enable)	[17]	11.62V (In)
[4]	6.34V	[18]	11.62V (In)
[5]	n/c	[19]	11.62V (In)
[6]	1.19V (Out)	[20]	5.20V
[7]	1.19V (Out)	[21]	5.20V
[8]	1.19V (Out)	[22]	Gnd
[9]	1.19V (Out)	[23]	0.6V
[10]	**Gnd**	**[24]**	**0.39V**
[11]	Gnd	[25]	0V
[12]	Gnd	[26]	Gnd
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

49UB5800 Main Board P13000 LVDS Connector Video Waveforms

All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are “Differential Pairs”.
Scope Settings are 5mV per/division, 100uSec per/division.

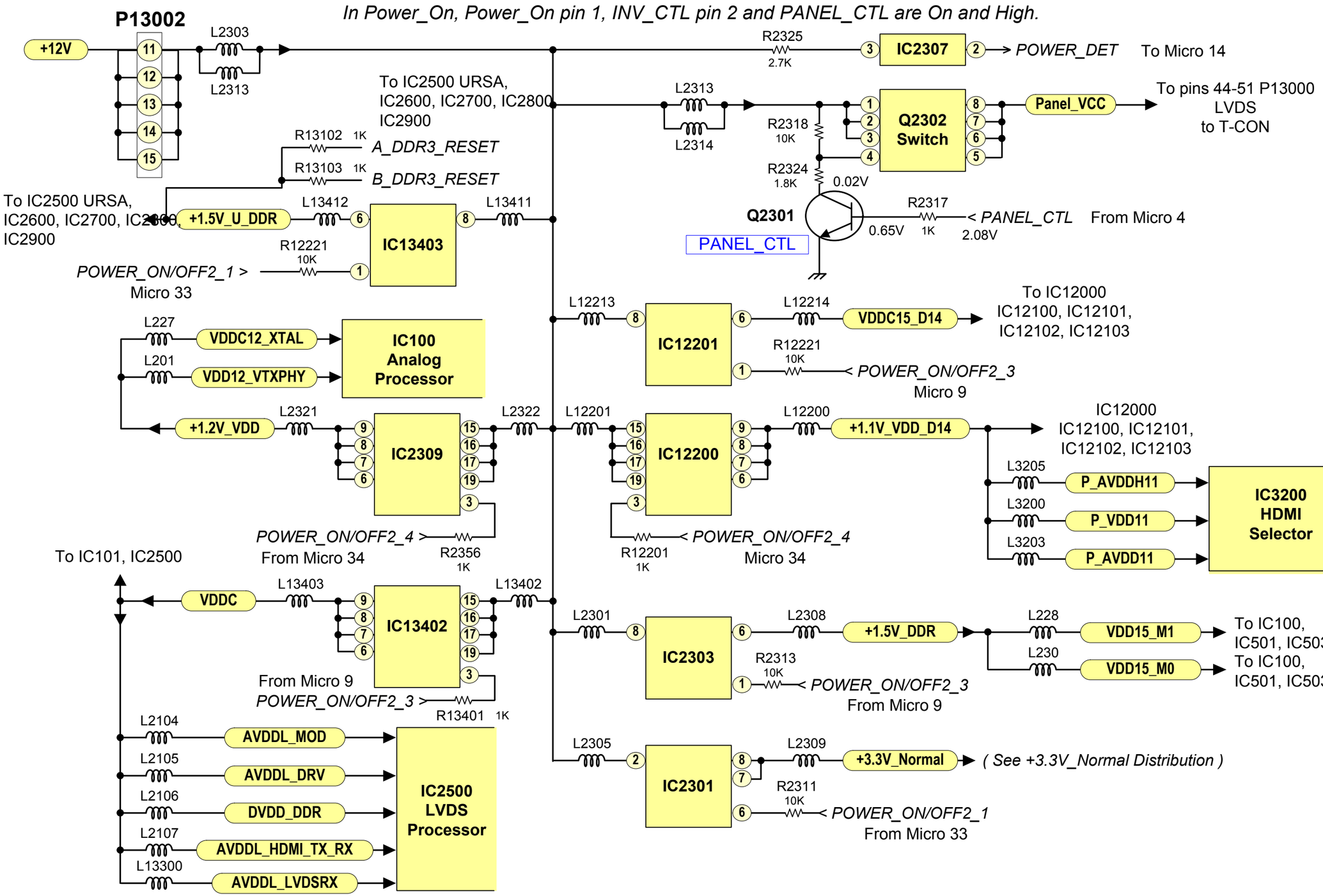
Pin 2  **27mV p/p**	**Pin 3**  **22.8mV p/p**	**Pin 5**  **22.2mV p/p**	**Pin 6**  **23.2mV p/p**	**Pin 8**  **23.2mV p/p**	**Pin 9**  **23.6mV p/p**
Pin 11  **19.4mV p/p**	**Pin 12**  **25.2mV p/p**	**Pin 14**  **428.2mV p/p**	**Pin 15**  **25.4mV p/p**	**Pin 17**  **34.8mV p/p**	**Pin 18**  **33.2mV p/p**
Pin 20  **25.8mV p/p**	**Pin 21**  **21.2mV p/p**	**Pin 23**  **27.6mV p/p**	**Pin 24**  **23.6mV p/p**		

49UB8500 +3.5V_ST Voltage Distribution (In Stand-By)



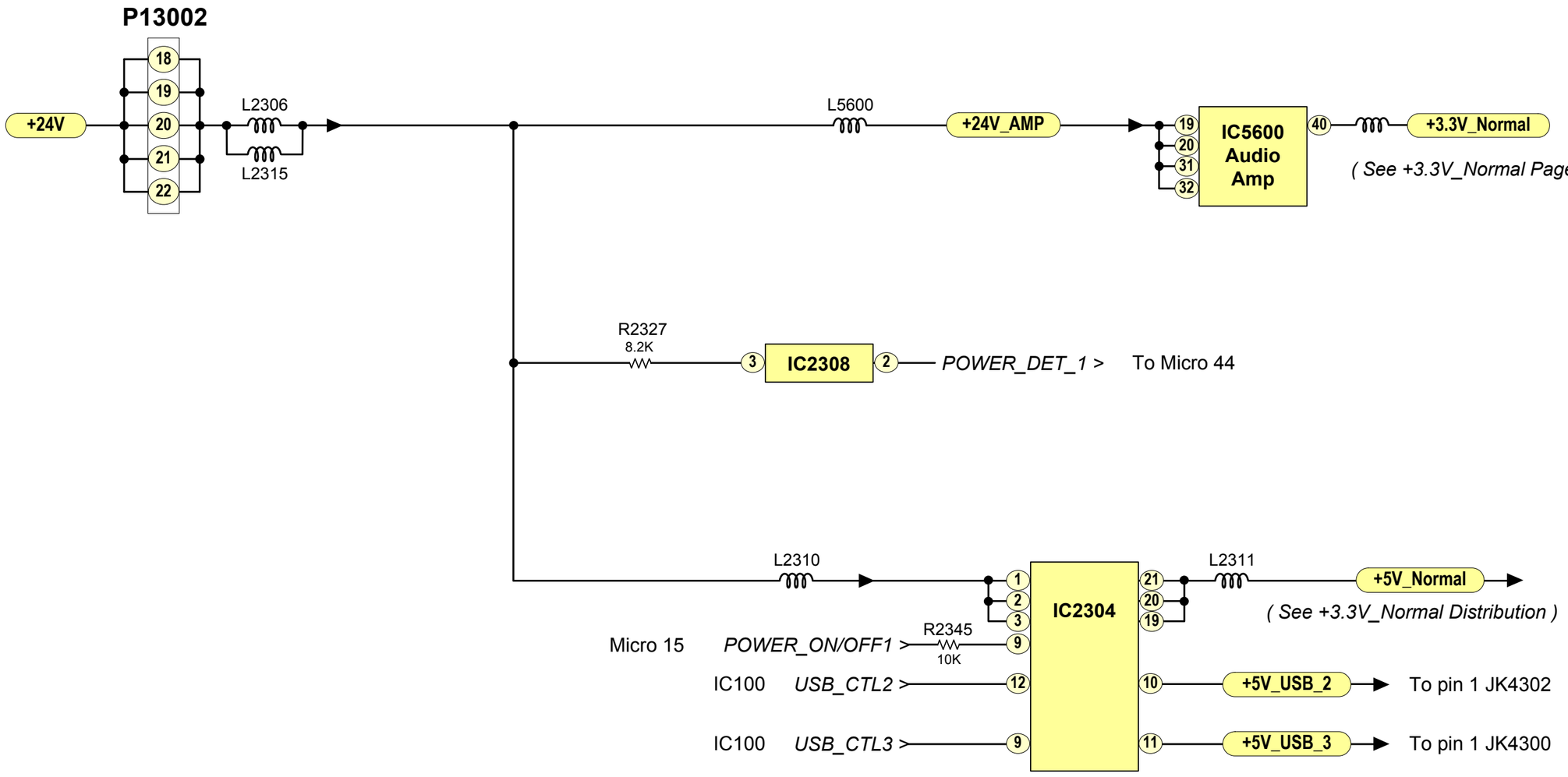
49UB8500 +12V Voltage Distribution (Power On)

In Power_On, Power_On pin 1, INV_CTL pin 2 and PANEL_CTL are On and High.

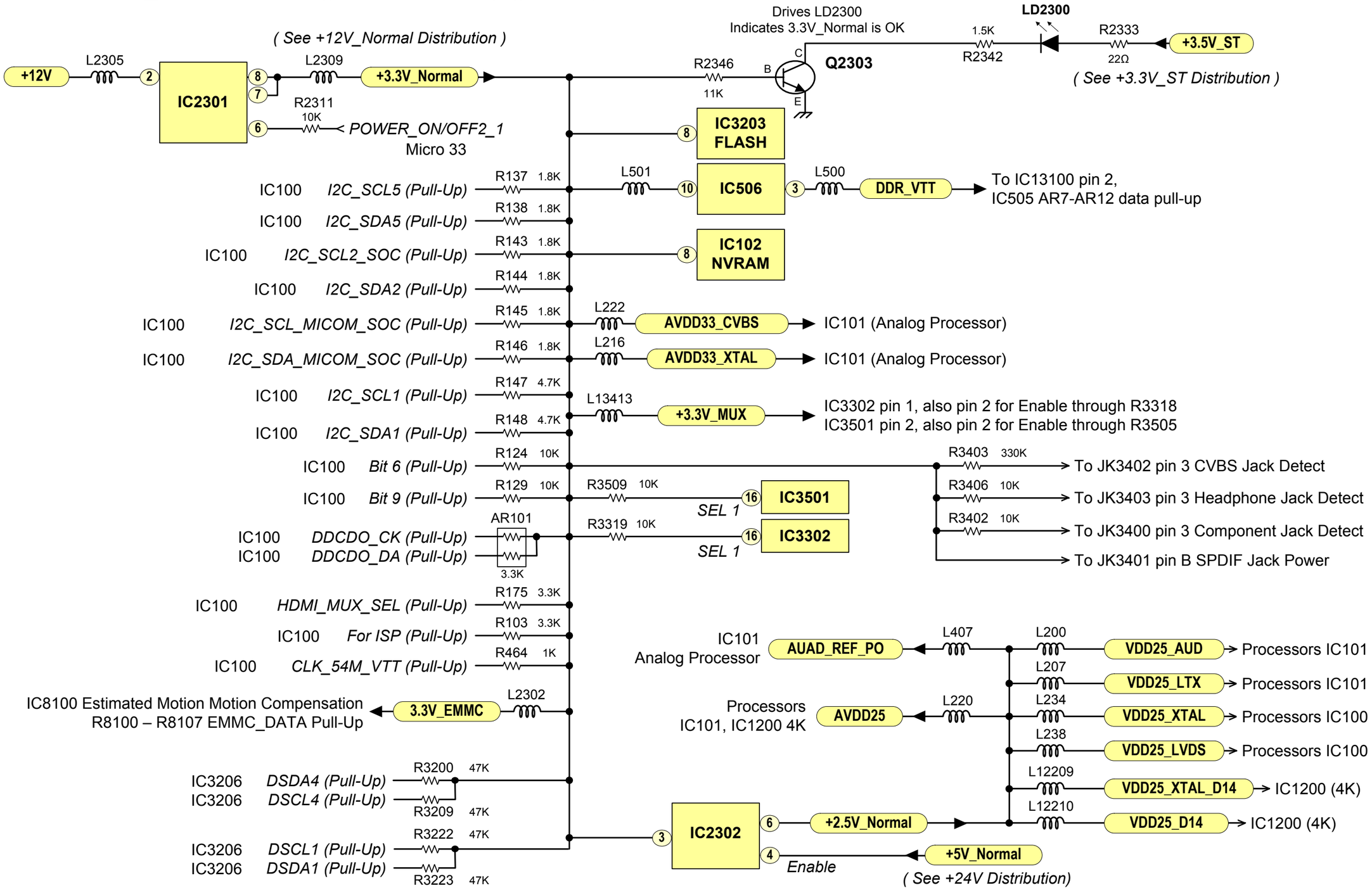


49UB8500 +24V Voltage Distribution (Power On)

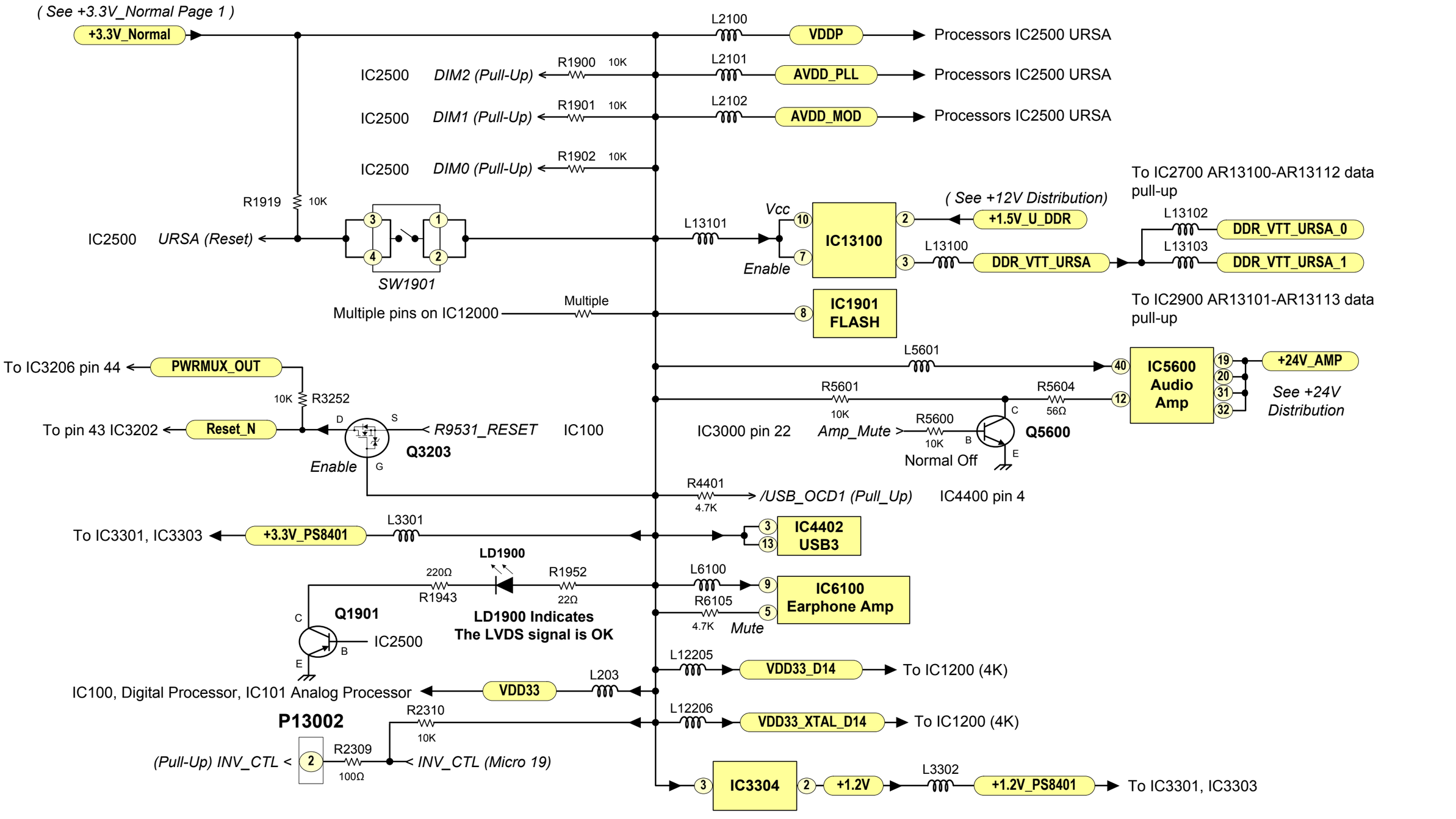
In Power_On, Power_On pin 1, INV_CTL pin 2 and PANEL_CTL are On and High.



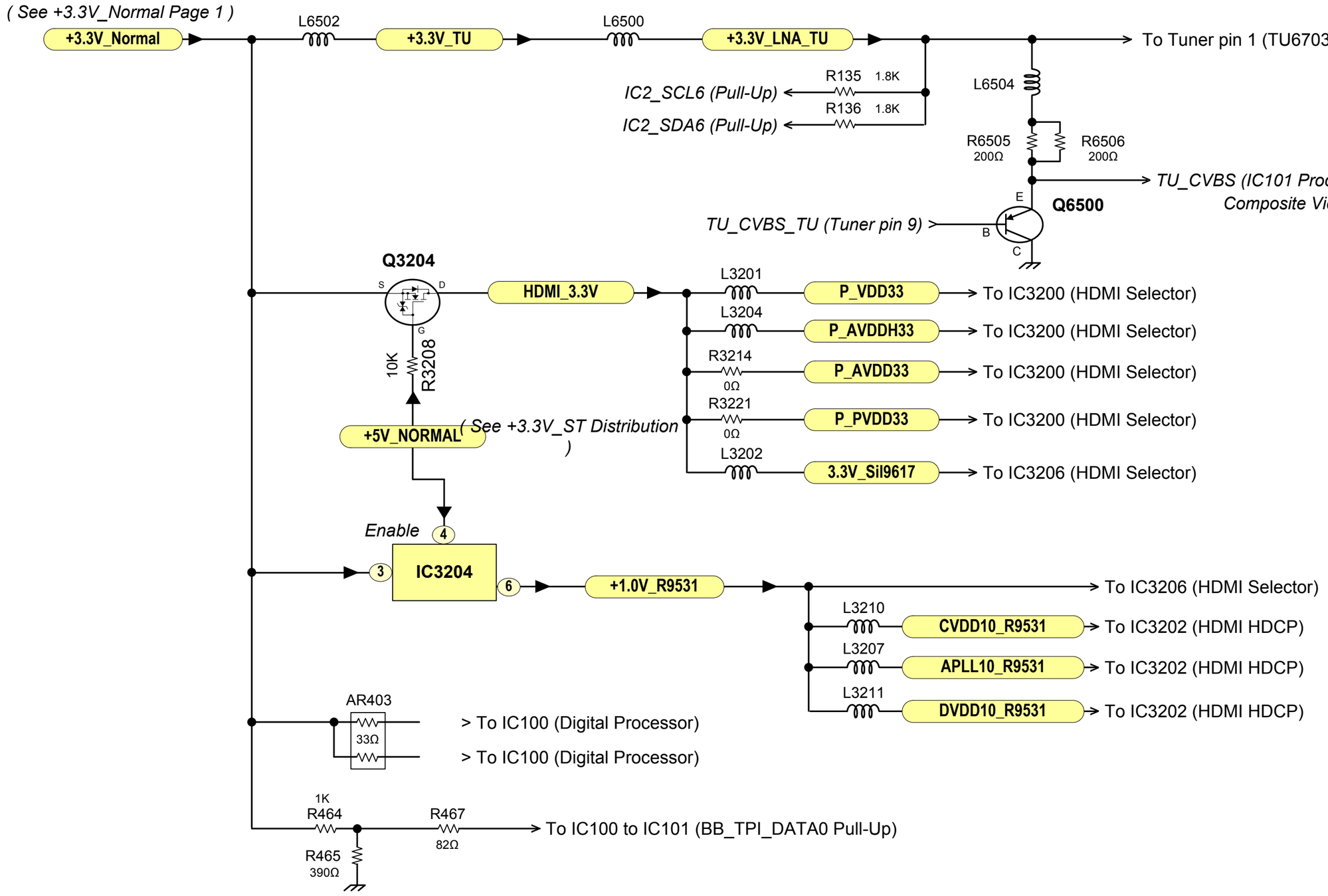
49UB8500 +3.3V_NORMAL Voltage Distribution (Pg 1 of 3)



49UB8500 +3.3V_NORMAL Voltage Distribution (Pg 2 of 3)



49UB8500 +3.3V_NORMAL Voltage Distribution (Pg 3 of 3)



49UB8500 +5V_NORMAL Voltage Distribution (Power On)

(See +24V Distribution)

+5V_Normal

D3208

5V_HDMI_2

JK3203 pin 18

AR3200 47K → *DDC_SDA_2 (Pull-Up)*, *DCL_SDA_2 (Pull-Up)*

D3218

5V_HDMI_1

JK3200 pin 18

AR3200 47K → *DDC_SDA_1_R9531 (Pull-Up)*, *DDC_SCL_1_R9531 (Pull-Up)*

D3219

5V_HDMI_3

JK3201 pin 18

AR3200 47K → *DDC_SDA_3 (Pull-Up)*, *DDC_SCL_3 (Pull-Up)*

D3210

AR3200 47K → *DDC_SDA_MHL (Pull-Up)*, *DDC_SCL_MHL (Pull-Up)*

D3218

+3.5V_ST *(See +3.5V_ST Distribution)*

To IC3206 (HDMI Selector) ← R3249 10Ω

To IC3206 (HDMI Selector) ← R3224 47K

To IC3206 (HDMI Selector) ← R3226 47K

To IC3206 (HDMI Selector) ← R3229 47K

To IC3206 (HDMI Selector) ← R3246 47K

To IC3202 (HDMI Selector) ←

To IC3200 (HDMI Selector) ← R3265 1.8K

To IC3200 (HDMI Selector) ← R3266 1.8K

To IC3200 (HDMI Selector) ← R3267 1.8K

To IC3200 (HDMI Selector) ← R3268 1.8K

To IC3200 (HDMI Selector) ← AR3209 47K

To IC3200 (HDMI Selector) ←

To IC3301 (Jitter Cleaner) 28 ← R3353 1K

To IC3303 (Jitter Cleaner) 28 ← R3334 1K

R3208 10K → **Q3204** Gate *(See +3.3V_Normal Page 3)*

R3285 4.7K → **IC3202 HDMI HDCP** pin 69 TX_HPD0

R3293 1.8K → pin 68 DDC_SDA_1

R3296 1.8K → pin 67 DDC_SCL_1

L3208 → **5V_MHL** → **IC3207** pin 1

MHL_DET > pin 3 EN

R3914 → **5V_HDMI_4**

Increases Current when Cell Phone MHL is used

IC4400 pin 1

USB_CTL1 > pin 3 EN

pin 6 → **+5V_USB_1** → To JK4400 pin 1

R3240 0Ω → To IC3200 (HDMI Selector)

R3251 10Ω → To IC3206 (HDMI Selector)

To JK3202 (HDMI 4 pin 18)

See +3.3V_Normal Page 3 → **IC3204** pin 4 *Enable*

+1.0V_R9531 Regulator

See +3.3V_Normal Page 1 → **IC2302** pin 4 *Enable*

+2.5V_Normal Regulator

49UB8500 T-CON Component Voltages

U3 DC-to-DC (TPS6169)

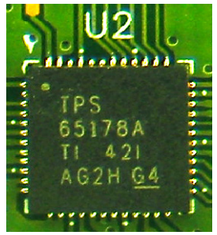
Pin	Label	DC
1	VGL_2	(-6.92V)
2	n/c	n/c
3	VGH1	27.80V
4	VGH2	27.92V
5	*VGH_ODD	(-6.92V to 27.58V)
6	*VGH_EVEN	(-6.92V to 27.58V)
7	CLK1	8.92V
8	CLK2	8.92V
9	CLK3	8.93V
10	CLK4	9.0V
11	CLK5	8.94V
12	CLK6	8.93V
13	CLK7	8.93V
14	CLK8	9.93V
15	Ref	1.08V
16	VGH_R	27.79V
17	VGH_F	(-6.92V)
18	VST	(-6.86V)
19	Reset	(-6.86V)
20	Discharge	(-6.92V)
21	Gnd	GND
22	V_Sense	3.21V
23	EO	0.03V
24	GST	0.04V
25	MCLK	0.09V
26	GCLK	1.90V
27	BI-SCAN	3.28V
28	Soft Start	10.66V

* EVERY Second



U2 DC-to-DC (TPS65178A)

Pin	DC
1	3.31V
2	n/c
3	3.31V
4	3.31V
5	1.82V
6	1.83V
7	Gnd
8	3.32V
9	3.32V
10	0V
11	11.42V
12	11.42V
13	11.42V
14	11.42V
15	7.59V
16	7.59V
17	Gnd
18	Gnd
19	Gnd
20	11.33V
21	11.33V
22	15.14V
23	15.14V
24	Gnd



U1

Pin	DC
1	11.30V
2	11.30V
3	15.53V
4	11.34V
5	n/c
6	1.33V
7	1.27V
8	3.11V
9	Gnd
10	Gnd

Pin	DC
25	11.33V
26	11.33V
27	15.14V
28	15.14V
29	3.0V
30	1.18V
31	14.47V
32	27.91V
33	7.32V
34	5.52V
35	(-6.95V)
36	0.65V
37	12.35V
38	11.28V
39	9.43V
40	5.54V
41	3.86V
42	2.88V
43	n/c
44	n/c
45	5.99V
46	n/c
47	Gnd
48	0.29V

U6

Pin	DC
1	1.76V
2	0.8V
3	5.51V
4	5.48V
5	0V
6	1.28V
7	6.75V
8	11.38V

OP1

Pin	DC
1	n/c
2	5.99V
3	6V
4	n/c
5	n/c
6	6.0V
7	15.13V
8	n/c

OP2

Pin	DC
1	n/c
2	5.99V
3	6V
4	n/c
5	n/c
6	6.0V
7	15.13V
8	n/c

Q1

Pin	DC
1	0.03V
2	0.66V
3	(-251V)
4	(-6.95V)
5	2.24V
6	2.21V

Q2

Pin	DC
1	21.20V
2	14.48V
3	15.13V
4	15.00V
5	15.00V
6	27.93V

50LB6500 INTERCONNECT DIAGRAM

Note: If the top or bottom of the picture is exhibiting a dimmer backlight level than the other or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal.
If not, Check the P-DIM level, it should rise with the percentage shown on screen.

You can also test either the Top or Bottom blocks functionality by grounding the return path signal (using 1KΩ resistor).

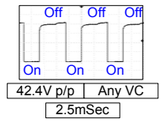
LED TOP OR BOTTOM BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 120V on P801 pin 2 and 178V on P801 pin 4. Confirm P-DIM is above 2V. Using a 1KΩ resistor, (one end on ground), jump the block grounding pins on P801 (Top is controlled by P801 pin 1 and the Bottom is controlled by P801 pin 3),. while observing the picture. Each block should turn on brighter. (If No: Bad Panel, If Yes: Bad SMPS).

P801 "SMPS Board" to the "Panel Backlights"

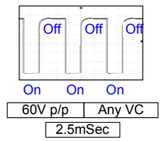
PIN	LABEL	RUN	Diode Check
1	BL- (2)	37.82V - 12.09V	OL
2	BL+ (2)	121.1V - 116.7V	OL
3	BL- (1)	54.85V - 17.01V	OL
4	BL+ (1)	181.7V - 174.9V	OL

PDIM 0% to 100%

LED Drive P801 pin 1
50% Backlights

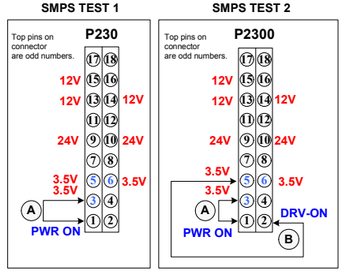


LED Drive P801 pin 3
50% Backlights



Note: LED POWER
85.1V P801 pin 4 (85V P801 pin 2)
when PWR_ON arrives, (no backlights).
173.4V P801 pin 1 (115.8V P801 pin 2) with DRV_ON
See chart above when DRV_ON arrives, Backlights On.

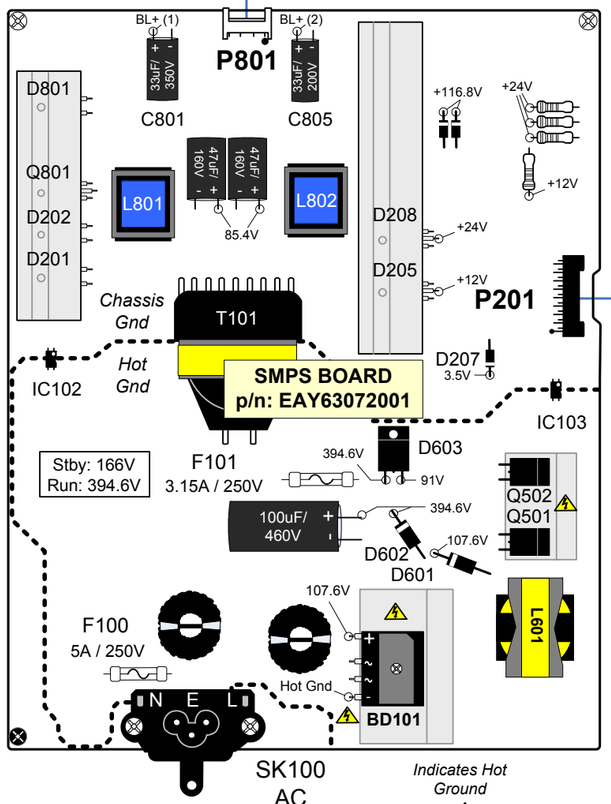
SMPS TEST 1 **SMPS TEST 2**



SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2300 on the Main board.
(A) Jump pin 3 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main, Note: Backlight power is 85V P801 pin 2 and 85.1V P801 pin 4. Remove AC power. No Backlights at this time.
LED Ground Return line: 7.83V P801 pin 1 and 0.04V P801 pin 3.

SMPS TEST 2:
(Turning on the Backlights)
Leave 1st jumper in place.
(B) Jump pin 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, Backlight Power (BL+) Backlight power is 115.8V P801 pin 2 and 173.4V P801 pin 4.
LED Ground Return line: 0.83V P801 pin 1 and 0.82V P801 pin 3.

To the Panel Backlights
At the top of the panel



This Screw is a different size M4 * L9 w/washer

SK100
AC

Indicates Hot Ground

(1) PWR_ON: turns on the 12V and 24V lines. It also turns on the backlight power, but it's 85V P801 pin 4 (85.1V P801 pin 2) Backlights are not on.

(2) DRV_ON: (INV_ON from Main) turns on the Backlights. Backlight power is 173.4V P801 pin 4 (115.8V P801 pin 2).

(3) P-DIM: controls the backlight brightness. Controled by Cust. Menu, Video, Backlights. Range 0% to 100% directly proportional to DC voltage to Backlight brightness.
P-DIM is actually a PWM signal.

If P801 is disconnected, the backlight power P801 pin 2 will be 140V and stay there. P801 pin 4 will be 175V and stay there.

DC Voltages to the Panel developed by on the Main Board, Output from P7702 and P7703

P7702 P7703 "MAIN Board" To "The Panel"

Pin	Pin	Label	Voltage	Source
35	16	Vcore	1.1V	Q7702 Drain
34	17	VCC18	1.78V	IC7703 pin 18
20	31	H_VDD	7.81V	IC7703 pin 17
19	32	VDD	15.7V	IC7703 pin 28
18	33	VDD	15.7V	IC7703 pin 28
13	38	GIP_RST	(-4.86V)	IC7703 pin 45
12	39	VST	1.4V	IC7703 pin 46
11	40	VGL	(-5V)	IC7703 pin 7
10	41	VGH_EVEN	*28V - (-5V)	IC7703 pin 47
9	42	VGH_ODD	*28V - (-5V)	IC7703 pin 48
8	43	VGH	27.92V	Cathode D7704
1	50	Z-OUT	0V	P7702 pin 1

*Toggles every second

P201 "SMPS Board" to P2300 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode Check
17-18	Gnd	Gnd	Gnd	Gnd
16	N/C	n/c	n/c	n/c
13-15	12V	0V	11.89V	1.79V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	23.94V	1.10V
8	P-DIM2	0V	0.16V~2.29V	OL
7	Gnd	Gnd	Gnd	Gnd
5-6	3.5V	3.55V	3.56V	OL
4	P-DIM1	0V	0.16V~2.29V	OL
3	3.5V	3.55V	3.56V	OL
2	DRV_ON	0V	3.51V	OL
1	PWR_ON	0V	3.43V	1.15V

P4000 "MAIN" To "Joy Stick" & "M-Remote & WiFi Board"

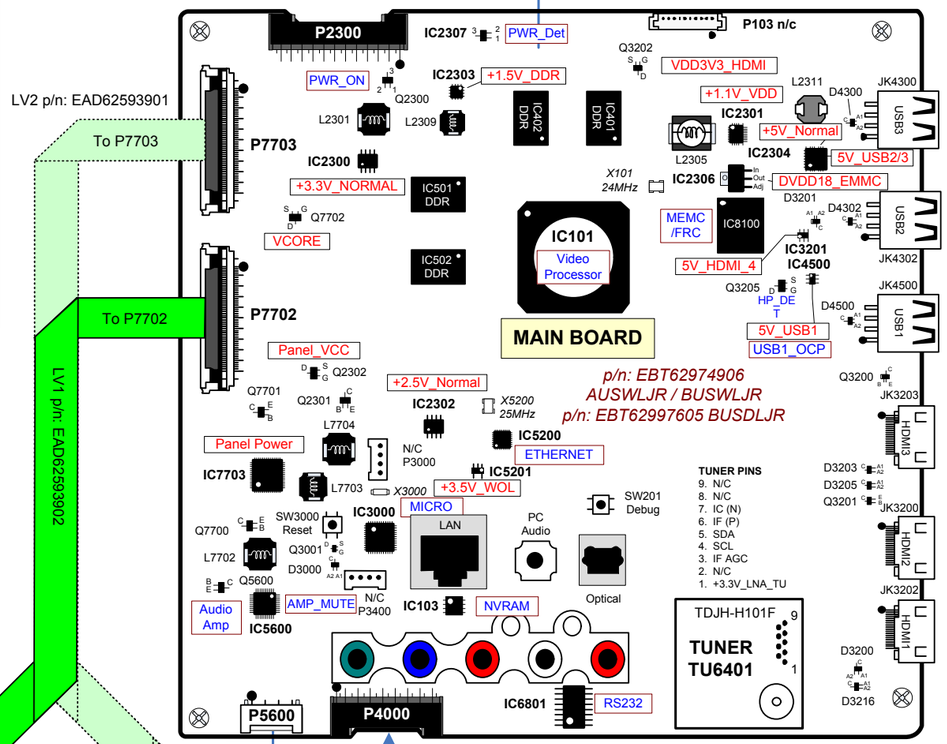
PIN	LABEL	STBY	RUN	Diode Check
1	Gnd	Gnd	Gnd	Gnd
2	3.5V_WOL	0V	3.51V	1.2V
3	BT_Reset	0.06V	3.28V	OL
4	WiFi_DM	0V	0V	1.24V
5	N/C	n/c	n/c	n/c
6	WiFi_DP	0V	0V	OL
7	WOL	0V	0V	1.97V
8	Gnd	Gnd	Gnd	Gnd
9	Eye_SDA	3.58V	3.54V	1.98V
10	Gnd	Gnd	Gnd	Gnd
11	Eye_SCL	3.58V	3.54V	1.98V
12	Key 1	3.58V	3.54V	1.97V
13	Gnd	Gnd	Gnd	Gnd
14	Key 2	3.58V	3.54V	1.98V
15	IR	3.55V	3.51V	1.89V
16	3.5V_ST	3.58V	3.55V	1.24V
17	LED_R	2.68V	0V	OL
18	Gnd	Gnd	Gnd	Gnd

P2300 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2	1.70V
3	1.24V
4	OL
5-6	1.24V
7	Gnd
8	OL
9-10	OL
11-12	Gnd
13-15	OL
16	n/c
17-18	Gnd

For voltages See P201

LV2 p/n: EAD62593901



For DC voltages for Main board components see Page 2 of the Interconnect diagram.

All Speaker plug pins
11.94V
Diode Check (OL)

To Wi-Fi / Magic Remote Tx/Rx and Joy Stick

TFT (IPS) PANEL

p/n: EAJ62548101 AUSWLJR / BUSWLJR
p/n: EAJ62630101 BUSDLJR

p/n: EBR77970405
p/n: EBR77970401
Joy Stick / IR

Video Signal Levels: p/p:
Approx: 480 - 540mV

To the Panel

Video (TXB) pins 22, 23, 28, 29, 31, 32
Video Clock (TXBCLK) 25, 26

Video (TXD) pins 19, 20, 25, 26, 28, 29
Video Clock (TXDCLK) 22, 23

P1
p/n: EAT62093301
Wi-Fi / Magic Remote Tx/Rx

50LB6500 Main Board IC Voltages

IC103



Pin	NVRAM (Non-Volitile)
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.32V
[6]	3.32V
[7]	Gnd
[8]	3.32V (Vcc In)

IC2300



Pin	+3.3V_NORMAL Regulator
[1]	3.48V (Enable)
[2]	0.77V
[3]	5.22V
[4]	2.52V
[5]	Gnd
[6]	3.33V (Out)
[7]	8.28V
[8]	12.07V (Vcc In)

IC2302



Pin	+2.5V_NORMAL Regulator
[1]	3.32V (In)
[2]	n/c
[3]	5.09V (Vcc In)
[4]	3.53V (Enable)
[5]	Gnd
[6]	4.24V
[7]	0.8V
[8]	2.5V (Out)

IC2306



Pin	DVDD18_EMMC 1.8V Regulator
[In]	3.23V
[Out]	1.81V
[Adj]	0.35V

IC2303



Pin	+1.5V_DDR Regulator
[1]	3.52V (Vcc In)
[2]	3.52V (Vcc In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.34V
[8]	0.0V
[9]	2.26V
[10]	1.53V (Out)
[11]	1.53V (Out)
[12]	1.53V (Out)
[13]	5.06V
[14]	n/c
[15]	3.49V
[16]	3.52V (Vcc In)

IC2307



Pin	PWR_Det +12V in
[1]	Gnd
[2]	3.68V (Out)
[3]	3.71V (In)

IC3201



Pin	5V_HDMI_4 (MHL) Regulator
[1]	5.09V (Vcc In)
[2]	Gnd
[3]	0V (Enable)
[4]	n/c
[5]	0V
[6]	0V (Out)

IC4500



Pin	+5V_USB1 OCP_USB1
[1]	5.09V (Vcc In)
[2]	Gnd
[3]	3.29V (Enable)
[4]	2.96V (OCP Out)
[5]	0.38V
[6]	5.09V (Out USB1)

IC5201



Pin	+3.5V_WOL Regulator
[1]	3.52V (Out)
[2]	Gnd
[3]	0.44V n/c
[4]	3.52V (OCP Out)
[5]	3.52V (Vcc In)

IC6801



Pin	RS232 Routing
[1]	3.53V
[2]	5.69V
[3]	0V
[4]	0V
[5]	(-5.60V)
[6]	(-5.63V)
[7]	n/c (5.64V)
[8]	n/c (0V)
[9]	n/c (3.49V)
[10]	n/c (0V)
[11]	3.34V
[12]	3.48V
[13]	0V
[14]	(-5.59V)
[15]	0V (Gnd)
[16]	3.5V (Vcc In)

IC2301 +1.1V_VDD Regulator



Pin		Pin	
[1]	1.16V	[15]	12.05V (In)
[2]	5.08V	[16]	12.05V (In)
[3]	3.52V (Enable)	[17]	12.05V (In)
[4]	6.2V	[18]	n/c
[5]	n/c	[19]	12.05V (In)
[6]	1.14V (Out)	[20]	5.07V
[7]	1.14V (Out)	[21]	5.07V
[8]	1.14V (Out)	[22]	Gnd
[9]	1.14V (Out)	[23]	0.61V
[10]	Gnd	[24]	1.12V
[11]	Gnd	[25]	0.41V
[12]	Gnd	[26]	n/c
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

IC2304 +5V_Normal Regulator



Pin		Pin	
[1]	24.68V (In)	[15]	5.04V (OCP2)
[2]	24.68V (In)	[16]	5.09V
[3]	24.68V (In)	[17]	5.09V
[4]	Gnd	[18]	12.04V
[5]	Gnd	[19]	5.09V (Out)
[6]	Gnd	[20]	5.09V (Out)
[7]	6.25V	[21]	5.09V (Out)
[8]	6.25V	[22]	1.94V
[9]	3.53V (Enable)	[23]	0.60V
[10]	5.09V (Out USB2	[24]	0.35V
[11]	5.09V (Out USB3	[25]	1.24V
[12]	5.09V (USB2 Ctrl	[26]	0.45V
[13]	5.09V (USB3 Ctrl	[27]	0.45V
[14]	5.04V (OCP2)	[28]	Gnd

55LB7200 Transistors and Flat Pack IC Voltages

IC3000 Microprocessor



Pin		Pin	
[1]	0.06V	[25]	0V
[2]	**3.3V**	**[26]**	**0.04V**
[3]	0.05V	[27]	3.5V
[4]	0.08V	[28]	0V
[5]	0.02V	[29]	0V
[6]	**3.51V**	**[30]**	**0V**
[7]	3.49V	[31]	3.53V
[8]	3.53V	[32]	3.53V
[9]	3.53V	[33]	3.53V
[10]	3.53V	[34]	3.53V
[11]	3.53V	[35]	0V
[12]	0.17V	[36]	0V
[13]	**3.34V**	**[37]**	**0V**
[14]	3.66V	[38]	1.06V
[15]	3.53V	[39]	3.53V
[16]	0V	[40]	3.53V
[17]	**3.51V**	**[41]**	**0.64V**
[18]	3.53V	[42]	0.12V
[19]	3.24V	[43]	0V
[20]	3.34V	[44]	0V (n/c)
[21]	**3.48V** (Enable)	**[45]**	**0V** (n/c)
[22]	0V	[46]	2.09V
[23]	5.22V	[47]	Gnd
[24]	2.52V	**[48]**	3.53V **(**Vcc In**)**

IC5200 Ethernet



Pin		Pin	
[1]	0.65V	[17]	0V
[2]	**1.09V**	**[18]**	**n/c**
[3]	1.09V	[19]	n/c
[4]	1.09V	[20]	0V
[5]	1.09V	[21]	3.31V
[6]	1.09V	[22]	1.66V
[7]	3.52V (In)	[23]	3.52V
[8]	0.05V	[24]	3.52V
[9]	**0V**	**[25]**	**0V**
[10]	0.05V	[26]	0V
[11]	n/c	[27]	0V
[12]	0V	[28]	0V
[13]	**n/c**	**[29]**	**1.08V**
[14]	3.52V (In)	[30]	3.52V (In)
[15]	1.78V	[31]	0.78V
[16]	0V	[32]	0.78V

IC5600 Audio Amp



Pin		Pin	
[1]	n/c	[21]	12.34V
[2]	**1.28V**	**[22]**	**Gnd**
[3]	n/c	[23]	17.02V
[4]	Gnd	[24]	5.23V
[5]	n/c	[25]	Gnd
[6]	**1.28V**	**[26]**	**n/c**
[7]	0V	[27]	5.22V
[8]	1.65V	[28]	17.01V
[9]	1.65V	[29]	Gnd
[10]	3.32V	[30]	12.32V
[11]	3.32V	[31]	24.71V (Vcc In)
[12]	3.31V (Mute)	[32]	24.71V (Vcc In)
[13]	**n/c**	**[33]**	**12.34V**
[14]	3.31V	[34]	Gnd
[15]	n/c	[35]	17.03V (Reset)
[16]	17.02V	[36]	3.32V
[17]	**Gnd**	**[37]**	**Gnd**
[18]	12.33V	[38]	1.66V
[19]	24.71V (Vcc In)	[39]	Gnd
[20]	24.71V (Vcc In)	[40]	3.32V (Vcc In)

Q2300 PWR_On Switch



Pin	
[1]	3.53V
[2]	2.85V
[3]	3.42V

Q2301 Q2302 Control



Pin	
[B]	0.62V
[C]	0.07V
[E]	**Gnd**

Q2302 Panel_VCC Switch



Pin	
[G]	1.8V
[S]	12.03V
[D]	12.00V

Q3001 CEC Bi-Directional



Pin	
[G]	3.53V
[S]	**3.49V**
[D]	3.49V

Q3200 Q3201 Control



Pin	
[B]	0.0V
[C]	3.53V
[E]	Gnd

Q3201 MHL Switch



Pin	
[B]	3.52V
[C]	0V
[E]	3.52V

Q3202 VDD3V3_HDMI Switch



Pin	
[S]	3.32V (VCC In)
[G]	12.01V
[D]	**3.32V (Out)**

Q3205 HP Detection



Pin	
[G]	0V
[S]	Gnd
[D]	12.05V

Q5600 Amp Mute Driver



Pin	
[B]	0V
[C]	**3.32V**
[E]	Gnd

Q7700 VGL Control



Pin	
[B]	0V
[C]	5V
[E]	0V

IC7703 Panel Power DC-to-DC Conv



Pin		Pin	
[1]	3.79V	[29]	4.93V
[2]	**1.67V**	**[30]**	**0.47V**
[3]	0.07V	[31]	14.86V
[4]	0.02V	[32]	11.73V
[5]	0V	[33]	8.14V
[6]	**Gnd**	**[34]**	**7.29V**
[7]	(-5.07V) VGL Out	[35]	3.97V
[8]	5.89V	[36]	0.81V
[9]	0.68V	[37]	Gnd
[10]	1.81V	[38]	6.73V
[11]	1.81V (VCC18 In)	[39]	6.73V
[12]	1.81V (VCC18 Out)	[40]	6.69V
[13]	**Gnd**	**[41]**	**15.0V**
[14]	12.03V (Vcc In)	[42]	7.69V
[15]	12.03V (Vcc In)	[43]	27.89V (VGH Ou
[16]	12.03V (Vcc In)	[44]	27.89V (VGH Ou
[17]	**7.81V (HVDD Out)**	**[45]**	**(-4.95V)**
[18]	7.81V	[46]	(-5.03V)
[19]	Gnd	[47]	(-5.06V) VGH_E
[20]	3.32V	[48]	27.86V (VGH_O
[21]	**3.32V**	**[49]**	n/c
[22]	4.98V (VL Out)	[50]	0.81V (CLK6)
[23]	1.31V	[51]	0V (CLK5)
[24]	Gnd	**[52]**	2.98V **(**CLK4**)**
[25]	12.03V (Vcc In)	[53]	3.97V (CLK3)
[26]	12.03V (Vcc In)	[54]	5.68V (CLK2)
[27]	15.73V	[55]	7.28V (CLK1)
[28]	15.70V (VDD Out)	[56]	6.08V

Q7701 VGH Control



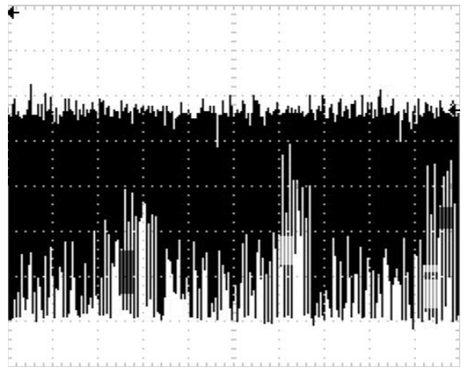
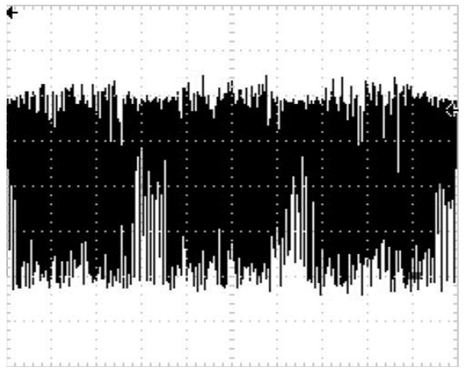
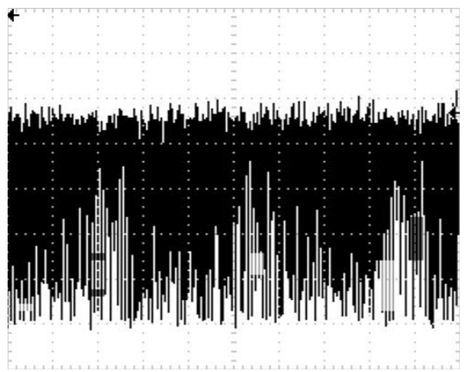
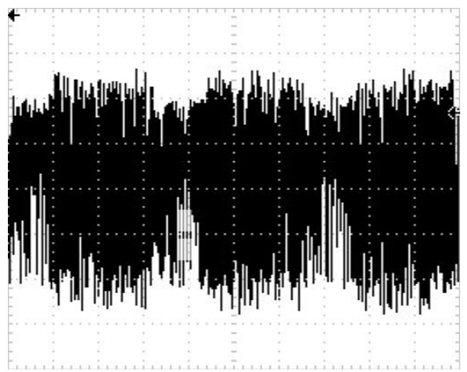
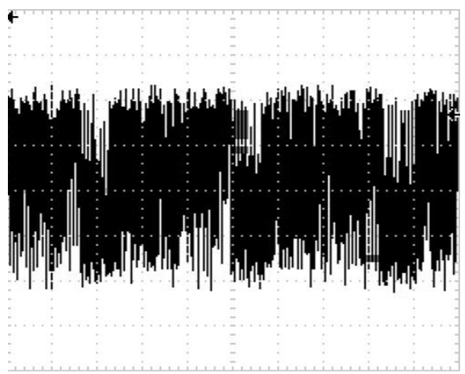
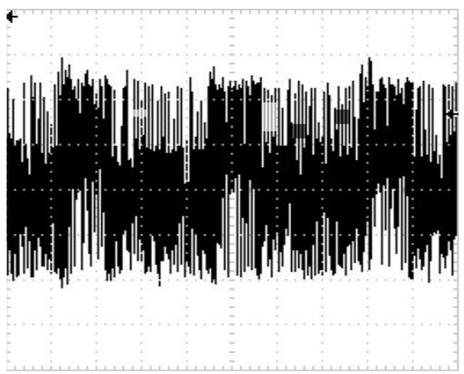
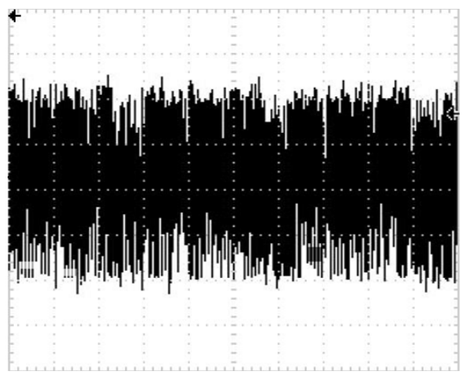
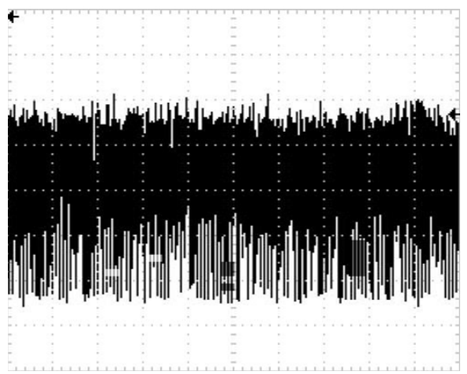
Pin	
[B]	15V
[C]	15.70V
[E]	14.14V

Q7702 VCORE Switch



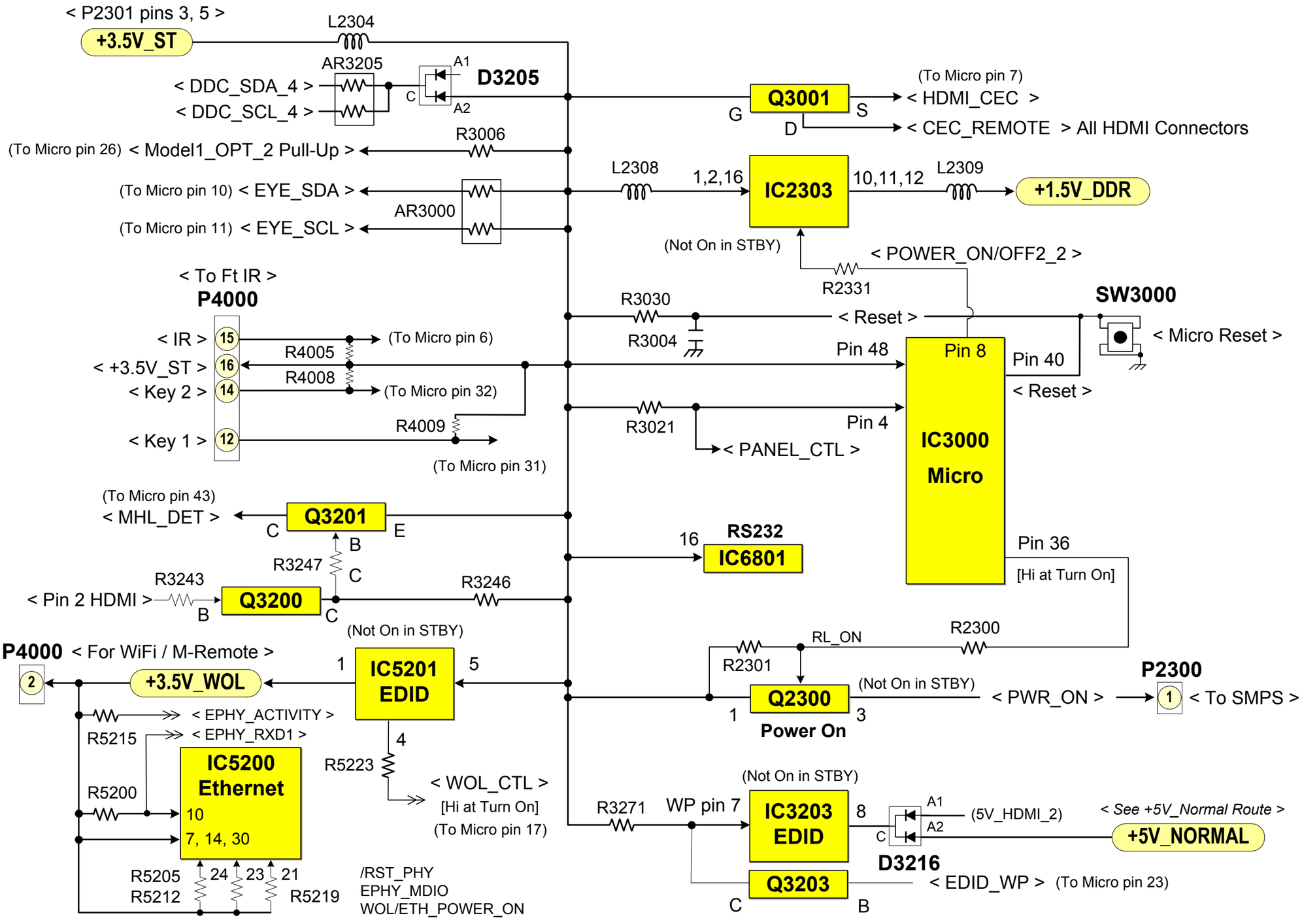
Pin	
[S]	1.11V (In)
[G]	**3.47V (Enable)**
[D]	1.11V (Out)

50LB6500 LVDS P7702 and P7703 Video Waveforms

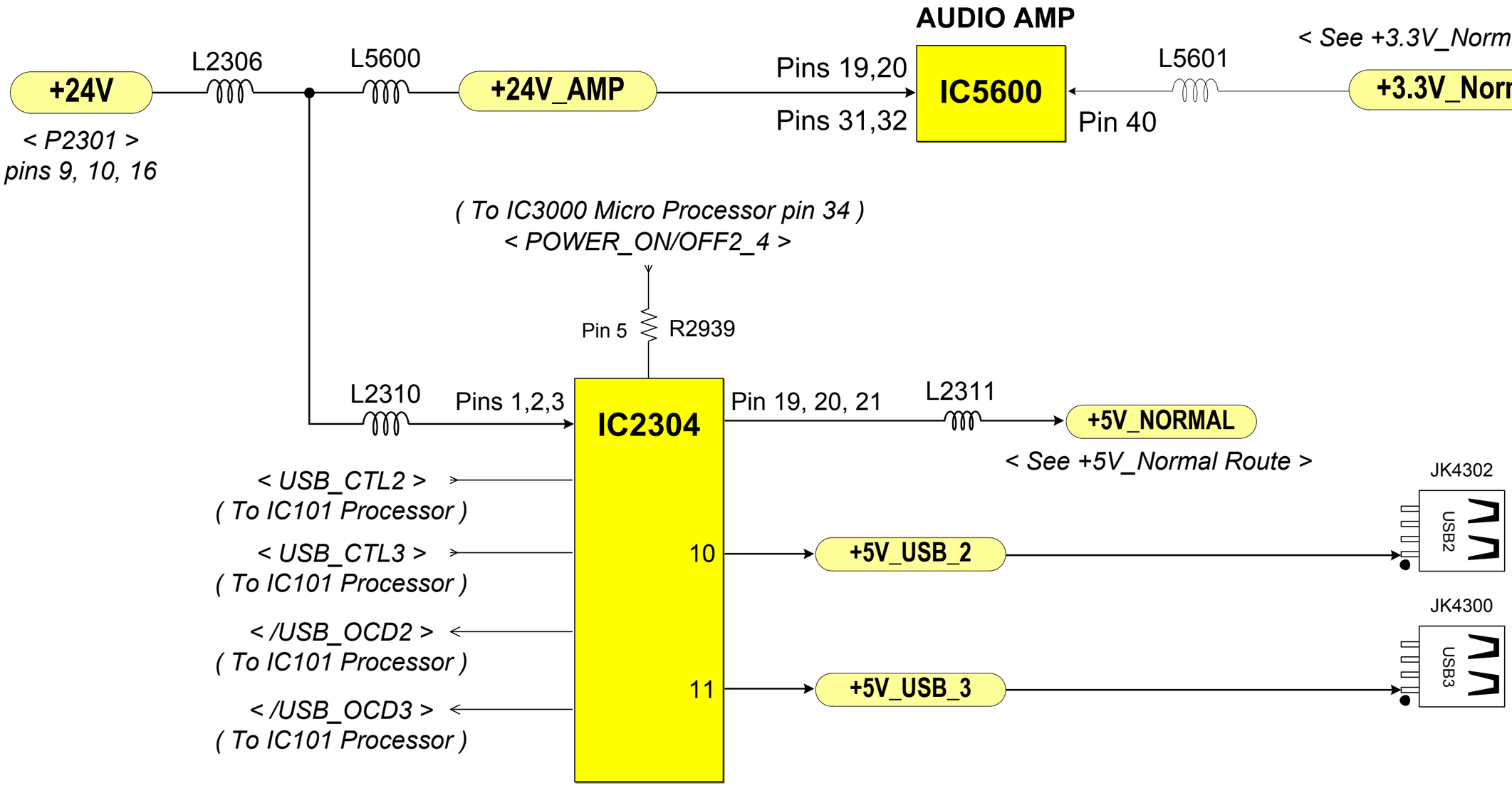
LVDS P7702 Pin 22 (TXB2N)	LVDS P7702 Pin 25 (TXBCLKN)	LVDS P7702 Pin 28 (TXB3N)	LVDS P7702 Pin 31 (TXBAN)
			
540mV p/p	484mV p/p	528mV p/p	540mV p/p
LVDS P7703 Pin 20 (TXD2N)	LVDS P7703 Pin 22 (TXDCLKN)	LVDS P7703 Pin 25 (TXD3N)	LVDS P7703 Pin 28 (TXD4N)
			
508mV p/p	456mV p/p	480mV p/p	468mV p/p

SMPTE Color Bar input signal (Component)
All signals taken at 2.5uSec per/sec / 100mV per/div

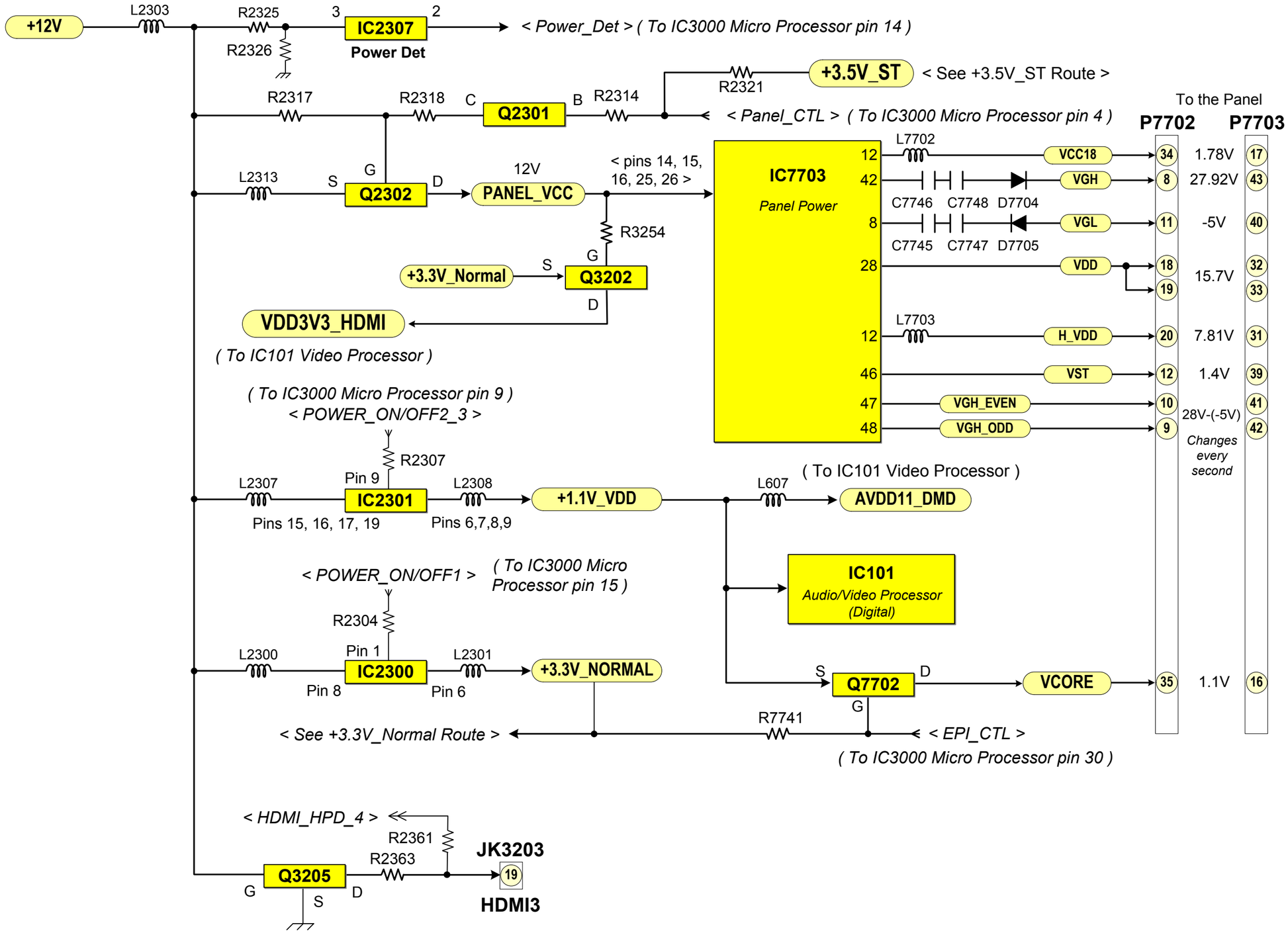
50LB6500 Main Board (+3.5V_ST) Voltage Routing



50LB6500 Main Board (+24V) Voltage Routing



50LB6500 Main Board (+12V) Voltage Routing



50LB6500 Main Board (+5V_Normal / +2.5V_Normal) Voltage Routing

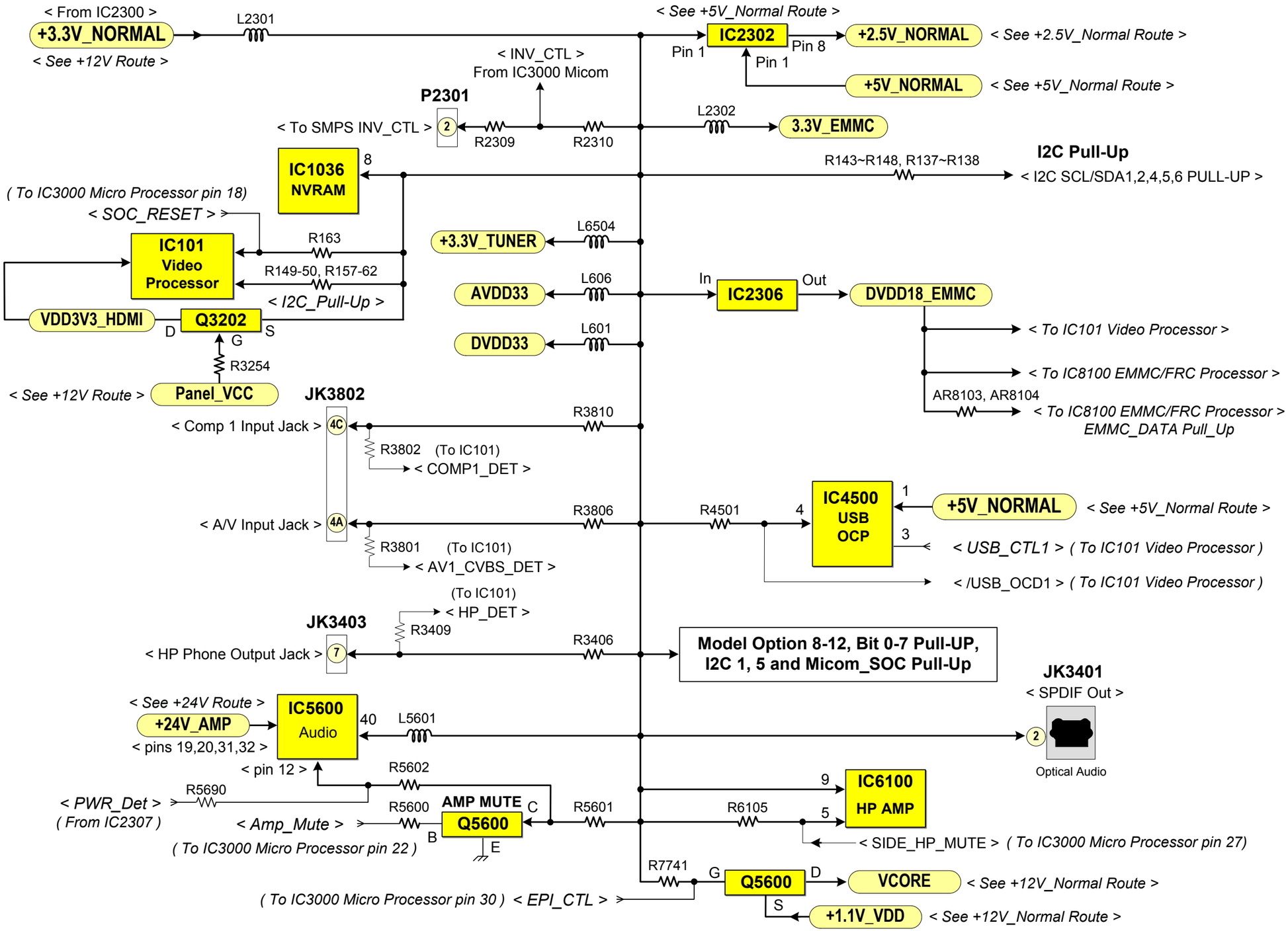
+5V_NORMAL VOLTAGE ROUTING

< See +24V Route >
+5V_NORMAL
< From IC2304 >
L2311
R3216
< FHD IC >
IC3201
49
20
88
R3204
Q3202
G
D
S
+3.3V_NORMAL
< See +3.3V_Normal Route >
D3200
D3203
Pull-Up
AR3204,05
< DDC_SDA_1,4 >
< DDC_SCL_1,4 >
A2
C
A1
+5V_HDMI_4
A1
C
A2
+3.5V_ST
D3205
< See +3.3V_ST Route >
< To IC3203 pin 8 See +3.5V_ST Route >
JK4500
USB1
IC4500
1
6
3
+5V_USB_1
< USB_CTL1 >
(To IC101 Video Processor)
< MHL_Det (Q2301 Collector) >
< MHL_On/Off (IC101) pin 43>
D3206
3
< To JK3203 pin 18 >
5V_HDMI_4
IC3201
6
1
+5V_NORMAL

+2.5V_NORMAL VOLTAGE ROUTING

+2.5V_NORMAL
Pin 8
IC2302
Pin 1
+3.3V_NORMAL
< See +3.3V_Normal Route >
Pin 3 (Enable)
< Power_On/Off2_1 > (To IC3000 Micro Processor pin 33)
L603
VDD25_AUD
< To IC101 >
< To IC101 >
L604
VDD25_C4TX
< To IC101 >
R380
AUAD_R_REF
< To IC101 >
R347
L307
L602
AUAD_L_REF
< To IC101 >
AVDD25

50LB6500 Main Board (+3.3V_Normal) Voltage Routing



55EA9800 INTERCONNECT DIAGRAM

PANEL p/n: EAJ62407601

P4200 "MAIN Board" To "Camera" USB Port

Pin	Label	STBY	Run	Diode ✓	Pin	Label	STBY	Run	Diode ✓
1	Camera_Slide_Det	0.12V	0.26V	OL	7	CAM_PWR_ON_CMD	Gnd	Gnd	OL
2	+3.5V_CAM	0V	5.12V	1.34V	8	ST_BY_DET_CAM	0V	3.32V	OL
3	AUD_LRCH	0V	1.18V	OL	9	Gnd	Gnd	Gnd	Gnd
4	AUD_LRCK	0.11V	1.65V	OL	10	USB_CAMERA_DP	0V	3.32V	0.93V
5	AUD_SCK	0.1V	1.65V	OL	11	USB_CAMERA_DM	Gnd	Gnd	OL
6	Gnd	Gnd	Gnd	Gnd	12	Gnd	Gnd	Gnd	Gnd

p/n: EBR76772101

Camera USB

To Main P4200

P202 "SMPS Board" to P2300 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode ✓
17-18	Gnd	Gnd	Gnd	Gnd
16	24V	0V	24.96V	1.07V
13-15	12V	0V	12.08V	1.44V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	24.96V	1.07V
7-8	Gnd	Gnd	Gnd	Gnd
6	N/C	n/c	1.12V	OL
5	3.5V_ST	3.56V	3.53V	OL
4	(3)20V	0V	20V	OL
3	3.5V_ST	3.56V	3.53V	OL
2	(2)DRV_ON	0V	*3.50V	OL
1	(1)PWR_ON	0V	3.40V	1.21V

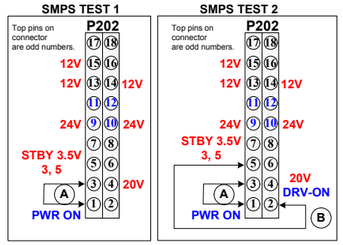
Note1 (Pin 1 PWR_ON): Turns on 12V and 24V. It does not turn on T-CON 20V. If the 12V is missing, the set will click on and then click back off. (Shows up as 5VMNT on the Power Off Status).
Note2 (Pin 2 DRV_ON): is (INV_ON) from Main. This turns on the Panel 20V, (which is also T-CON 20V P201).
Note3: (Pin 4 20V): It is only sent to the Panel_20V Det IC2308 PWR_On/Off2_4.
If missing, the set will click on and then click back off. (Shows up as 20V_Det on the Power Off Status).

For DC voltages See P201 Chart

P2300 to SMPS

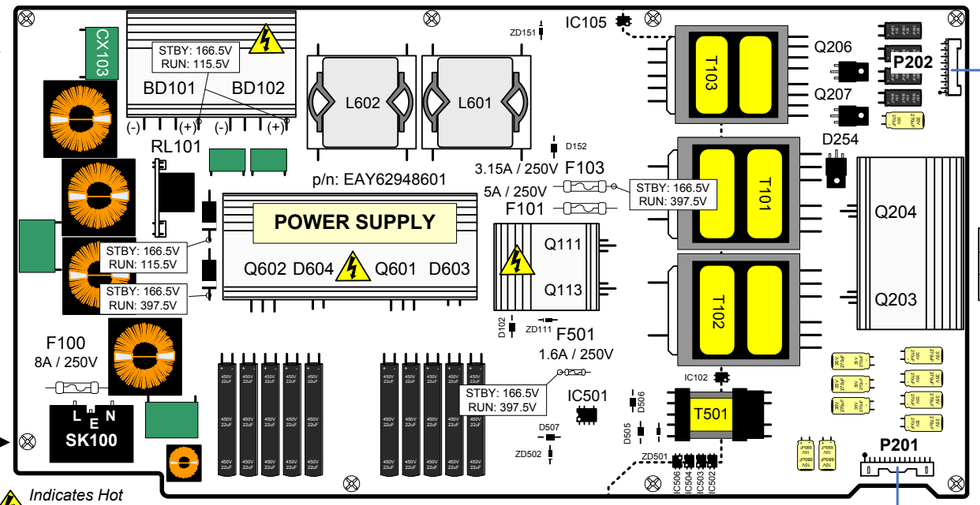
Pin	Diode Check
1	OL
2	1.45V
3	OL
4	OL
5	OL
6	OL
7-8	Gnd
9-10	OL
11-12	Gnd
13-15	OL
16	OL
17-18	Gnd

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2300 on the Main board.
(A) Jump pin 3 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main. Remove AC power. Leave the jumper in place.
SMPS TEST 2: (Turning on the Panel 20V)
Leave Test 1 jumper in place.
(B) Jump pin 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Panel 20V should turn on.



This Screw is Black and a Different Size and Length.

Indicates Hot Ground



T-CON PANEL CONNECTOR CHECKS

CN15 Connector

Pin 8: 6.54V	(From VGH-R)
Pins 10-11: -6.98V	(From VGL)
Pin 13: 3.3V	(From 3.3V)
Pins 24-38: 20V	(From 20V in.)
Pins 39-53: (0V) Not Used	(From ELVSS)
Pins 55-56: 1.8V	(From S_VCC)
Pins 58-61: 16V	(From VDD2)
n/a	(From VPRED L
Pins 63-65: 6.54V	(From VPRED R)
Pins 67-69: 1.9V	(From 1.9V L12)

CN12 Connector

n/a
Pins 85-86: -6.98V
Pin 84: 3.3V
Pins 59-72: 20V
Pins 43-57: (0V) Not Used
Pins 40-41: 1.8V
Pins 34-37: 16V
Pins 30-32: 7.99V
Pins 26-28: 1.9V

T-CON KEY VOLTAGE CHECKS

NAME:	VOLTS:
0.9V_Core	0.94V
1.5V	1.5V
1.9V	1.9V
2.5V	2.5V
3.3V	3.3V
ELVSS	(Not Used)
S_VCC	1.8V
UVREF1	0.39V
VCC	3.27V
VDD1	16.07V
VDD2	16V
VGH_L	22.96V
VGH_R	6.54V
VGL	(-6.98V)
VIN1	11.59V
VPRED L	7.99V
VPRED R	6.54V

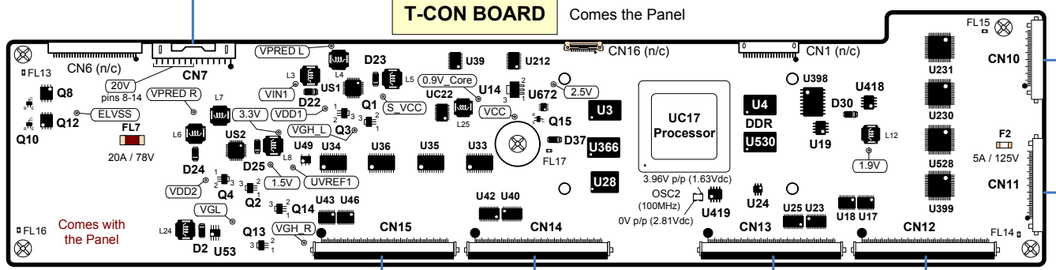
CN7 "T-CON" to "SMPS Board" P201

PIN	LABEL	RUN	Diode Check
1-7	Gnd	Gnd	Gnd
8-14	20V	20V	OL

P201 "SMPS Board" to "T-CON"

PIN	LABEL	RUN	Diode Check
1-7	Gnd	Gnd	Gnd
8-14	20V	20V	1.24V

T-CON BOARD Comes the Panel



Warning: Make sure screws are in place, damage to the board may occur if they are left out.
FI13 ~17 are ground protect EMI Filters.
Warning: Make sure before reassembling the cover and counter weights that the Heat Transfer materials "Chocolate" are replaced over UC17 and U33 – U36

To Left Panel board

To Right Panel board

To Ft L Spk
6.0V
Each Pin

To SMPS

To T-CON

12V in on Pins 48-51

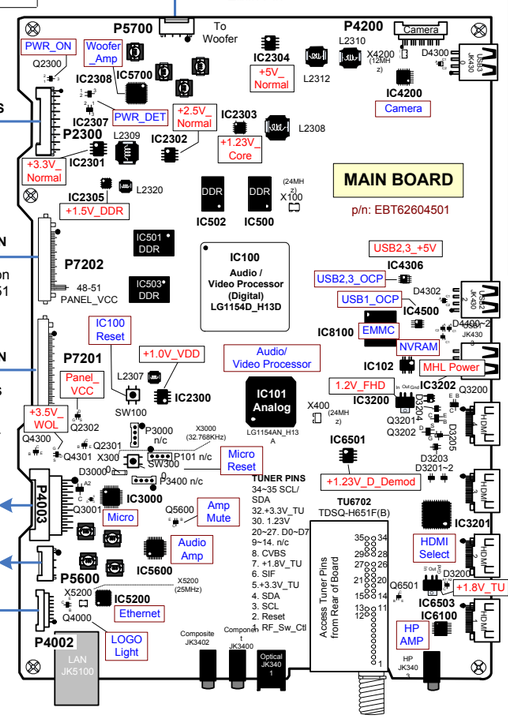
To T-CON

For LVDS Waveforms see Page 4 of the Interconnect diagram.

To M-Remote, WiFi and IR

To Ft L Spk
11.494V
Each Pin

To Smart Key



P4102 "Main" to "Smart Key Pad"

PIN	LABEL	STBY	RUN	Diode Check
8	OLED_EYE_SDA	3.54V	3.53V	OL
7	OLED_EYE_SCL	3.54V	3.53V	OL
6	Gnd	Gnd	Gnd	Gnd
5	n/a	n/a	n/a	n/a
4	3.5V_ST	3.56V	3.50V	OL
3	Gnd	Gnd	Gnd	Gnd
2	3.5V_ST	3.54V	3.53V	OL
1	Key2	3.33V	3.34V	OL

P4003 "MAIN Board" To "Wi-Fi, IR and Motion Board"

PIN	LABEL	RUN	Diode	To	Pin
1	+3.5V_WOL	3.48V	1.18V	WiFi	1
2	+3.5V_Normal	3.32V	0.38V	MRemote	1
3	WiFi_DM	0.03V	1.1V	WiFi	2
4	RTS	0V	OL	MRemote	2
5	WiFi_DP	0.03V	1.09V	WiFi	3
6	M_Remote_Rx	3.32V	OL	MRemote	3
7	Gnd	Gnd	Gnd	WiFi	4
8	M_Remote_Tx	3.32V	OL	MRemote	4
9	WiFi_PWR_On	0.02V	OL	WiFi	5
10	RF_Reset	3.32V	OL	MRemote	5
11	Gnd	Gnd	Gnd	MRemote	8
12	CTS	3.40V	OL	MRemote	6
13	N/C	n/c	n/c	n/c	7
14	+3.5V_ST	3.54V	OL	Ft IR	1
15	IR	3.50V	OL	Ft IR	2
16	Gnd	Gnd	Gnd	Ft IR	3
17	EYE_SCL	3.53V	OL	Ft IR	4
18	EYE_SDA	3.53V	OL	Ft IR	5

Magic Remote
To Main P4003
p/n: EBR76363001

Wi-Fi Tx/Rx
To Main P4003
p/n: EAT61813801

Front IR
J3
To Main P4003

LOGO Board
Glued to Bottom Cabinet

Smart Key Pad
Glued to Bottom Bracket

Tweeter
Part of Stand

Ft Right Speaker
p/n: EAB62908801

To Main P5700

To Main P5600

Ft Left Speaker
p/n: EAB62908901

Tweeter
Part of Stand

55EA9800 Main Board Component Voltages

IC3000 — Micro Processor

Pin		Pin	
[1]	3.28V	[25]	0V
[2]	3.28V	[26]	3.53V
[3]	0.0V	[27]	3.53V
[4]	2.09V	[28]	0.03V
[5]	0.06V	[29]	0.1V
[6]	3.5V	[30]	0V
[7]	3.49V	[31]	3.34V
[8]	3.53V	[32]	3.53V
[9]	0V	[33]	3.53V
[10]	3.53V	[34]	3.75V
[11]	3.53V	[35]	0V
[12]	0V	[36]	0V
[13]	3.51V	[37]	0.02V
[14]	**3.68V**	**[38]**	**0V**
[15]	3.53V	[39]	3.53V
[16]	0V	[40]	3.53V
[17]	3.48V	[41]	0.65V
[18]	3.53V	[42]	0.13V
[19]	3.29V	[43]	0V
[20]	3.32V	[44]	0V
[21]	3.53V	[45]	0V
[22]	0V	[46]	2.09V
[23]	0V	[47]	Gnd
[24]	0.1V	[48]	3.53V

IC5200 — Ethernet IC

Pin		Pin	
[1]	0V	[17]	0V
[2]	1.1V	[18]	n/c
[3]	1.1V	[19]	n/c
[4]	1.1V	[20]	0V
[5]	1.1V	[21]	3.26V
[6]	**1.1V**	**[22]**	**1.23V**
[7]	3.51V (In)	[23]	3.25V
[8]	0.03V	[24]	3.25V
[9]	0V	[25]	3.24V
[10]	0V	[26]	0V
[11]	0V	[27]	0V
[12]	0V	[28]	0V
[13]	n/c	[29]	1.08V
[14]	3.51V (In)	[30]	3.51V (In)
[15]	1.32V	[31]	0V
[16]	0V	[32]	0.58V

IC5600 — Audio Amp

Pin		Pin	
[1]	0V	[25]	3.3V
[2]	23.92V	[26]	Gnd
[3]	23.92V	[27]	3.32V
[4]	17.94V	[28]	Gnd
[5]	n/c	[29]	Gnd
[6]	3.31V	[30]	Gnd
[7]	n/c	[31]	3.32V
[8]	Gnd	[32]	6.68V
[9]	0V	[33]	17.96V
[10]	0.68V	[34]	23.92V
[11]	1.05V	[35]	23.92V
[12]	1.8V	[36]	11.94V
[13]	3.32V	[37]	Gnd
[14]	**0.39V**	**[38]**	**Gnd**
[15]	1.67V	[39]	11.94V
[16]	1.0V	[40]	n/c
[17]	Gnd	[41]	n/c
[18]	1.81V	[42]	17.95V
[19]	3.32V	[43]	17.95V
[20]	1.65V	[44]	n/c
[21]	1.65V	[45]	n/c
[22]	1.2V	[46]	11.94V
[23]	3.31V	[47]	Gnd
[24]	3.31V	[48]	Gnd

IC5700 — Woofer Audio Amp

Pin		Pin	
[1]	6V	[25]	3.31V
[2]	12.02V	[26]	Gnd
[3]	12.02V	[27]	3.35V
[4]	12.02V	[28]	Gnd
[5]	n/c	[29]	Gnd
[6]	**3.34V**	**[30]**	**Gnd**
[7]	n/c	[31]	3.34V
[8]	Gnd	[32]	6.71V
[9]	0V	[33]	12V
[10]	0.03V	[34]	12V
[11]	1.07V	[35]	12V
[12]	1.81V	[36]	6V
[13]	3.35V	[37]	Gnd
[14]	3.34V	[38]	Gnd
[15]	1.67V	[39]	6V
[16]	1.0V	[40]	n/c
[17]	Gnd	[41]	n/c
[18]	1.83V	[42]	12V
[19]	3.32V	[43]	12V
[20]	1.65V	[44]	n/c
[21]	1.65V	[45]	n/c
[22]	1.19V	[46]	6V
[23]	3.31V	[47]	Gnd
[24]	3.31V	[48]	Gnd

IC102 — NVRAM Memory

Pin	
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.32V
[6]	3.32V
[7]	Gnd
[8]	3.32V

IC2300 — +1.0V_VDD Regulator

Pin	
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.45V
[4]	**5.42V**
[5]	Gnd
[6]	1.02V (Out)
[7]	6.41V
[8]	12V (In)

IC2301 — +3.3V_NORMAL Regulator

Pin	
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.46V
[4]	3.42V
[5]	Gnd
[6]	3.37V (Out)
[7]	8.79V
[8]	12V (In)

IC2302 — (+2.5V_NORMAL) Regulator

Pin	
[1]	3.35V (in)
[2]	**n/c**
[3]	5.12V (in)
[4]	3.53V (ctrl)
[5]	Gnd
[6]	4.92V
[7]	0.81V
[8]	2.56V (out)

IC2303 — (+2.5V_NORMAL) Regulator

Pin	
[1]	0.49V
[2]	Gnd
[3]	Gnd
[4]	12V (In)
[5]	12V (In)
[6]	12V (In)
[7]	0.6V
[8]	0.45V
[9]	1.77V
[10]	3.53V (Enable)
[11]	1.27V (Out)
[12]	1.27V (Out)
[13]	8.13V
[14]	n/c

IC2304 — (+5V_NORMAL) Regulator

Pin	
[1]	8.74V
[2]	n/c
[3]	n/c
[4]	1.22V
[5]	3.23V (Enable)
[6]	Gnd
[7]	12V (In)
[8]	5.12V (Out)

IC2305 — +0.9V_DDR Regulator

Pin	
[1]	3.53V (In)
[2]	3.53V (In)
[3]	Gnd
[4]	**Gnd**
[5]	Gnd
[6]	0.83V
[7]	0.71V
[8]	0.51V
[9]	1.9V
[10]	1.54V (Out)
[11]	1.54V (Out)
[12]	1.54V (Out)
[13]	5.08V
[14]	n/c
[15]	3.5V (Enable)
[16]	3.53V (In)

IC3202 — MHL Power

Pin	
[1]	0V (Out)
[2]	Gnd
[3]	0V (Enable)
[4]	0V (Enable)
[5]	**5.12V (In)**

IC2307 — PWR_Det 12V Sense

Pin	
[1]	Gnd
[2]	3.68V (Reset)
[3]	3.71V (In)

IC2308 — PWR_Det 20V Sense

Pin	
[1]	Gnd
[2]	3.74V (Reset)
[3]	3.77V (In)

IC3200 — +1.2V_FHD Regulator

Pin	
[1]	Gnd
[2]	1.2V (Out)
[3]	3.33V (In)

D3000 — Bias for IC3001

Pin	
[A1]	0V
[A2]	3.52V
[C]	3.47V

D3200, D3201, D3202, D3203 — DDC_SDA/SCL_1-3 PULL_UP

[A1]	5.12V
[A2]	0V
[C]	5.06V

IC4200 — Camera Processor

Pin	
[1]	0V
[2]	0V
[3]	0V
[4]	0V
[5]	3.34V (In)
[6]	0V
[7]	0V
[8]	0.44V
[9]	3.34V (In)
[10]	1.45V
[11]	1.1V
[12]	n/c
[13]	n/c
[14]	3.34V (In)
[15]	**n/c**
[16]	n/c
[17]	3.32V
[18]	n/c
[19]	n/c
[20]	n/c
[21]	3.34V (In)
[22]	3.31V
[23]	3.34V (In)
[24]	0V
[25]	3.34V
[26]	n/c
[27]	n/c
[28]	3.34V (In)

IC4306 — 5V for USB 2/3 USB_OCP 2/3

Pin	
[1]	Gnd
[2]	5.12V (In)
[3]	3.32V
[4]	**3.32V**
[5]	3.33V
[6]	5.12V (In)
[7]	5.12V (In)
[8]	3.33V

IC4500 — 5V for USB 1 USB_OCP 2/3

Pin	
[1]	Gnd
[2]	5.12V (In)
[3]	5.12V (In)
[4]	3.32V (Enable)
[5]	2.56V
[6]	5.12V (Out)
[7]	5.12V (Out)
[8]	5.12V (Out)

D3204 — MHL_DET Routing

Pin	
[A1]	0V
[A2]	0V
[C]	0V

D3205 — DDC_SDA/SCL_4 PULL_UP

[A1]	0.68V
[A2]	3.54VV
[C]	5.04V

IC6100 — Head Phone Amp

Pin	
[1]	Gnd
[2]	0V
[3]	0V
[4]	Gnd
[5]	0.08V
[6]	(-3.23V)
[7]	(-1.61V)
[8]	1.65V
[9]	3.33V (In)
[10]	Gnd
[11]	n/c
[12]	0V
[13]	0V
[14]	Gnd

IC6501 — +1.23V_D_Demod Regulator

Pin	
[1]	n/c
[2]	5.04V
[3]	3.32V (In)
[4]	5.12V
[5]	n/c
[6]	1.24V (Out)
[7]	0.61V
[8]	Gnd

IC6503 — +1.8V_TU Switch

Pin	
[Gnd]	0V (Gnd)
[Out]	1.8V (Out)
[In]	3.31V (In)

Q2300 — PWR_On Switch

Pin	
[1]	**3.54V**
[2]	2.83V
[3]	3.42V

Q2301 — Panel_VCC CTRL Drives Q2302

Pin	
[B]	0.63V
[C]	0.08V
[E]	Gnd

Q2302 — Panel_VCC Switch

Pin	
[G]	1.78V
[S]	11.98V
[D]	11.94V

Q3001 — HDMI CEC FET

Pin	
[G]	3.53V
[S]	3.49V
[D]	3.47V

D4300 & 2 — USB DM/DP Clamp

Pin	
[C1]	0V
[C2]	0V
[A]	Gnd

Q3200 — Drives MHL Det Q3201

Pin	
[B]	0.06V
[C]	3.53V
[E]	Gnd

Q3201 — MHL Det

Pin	
[B]	3.53V
[C]	0V (Out)
[E]	3.53V

Q3202 — Switches 3.3V To IC3201

Pin	
[G]	5.12V
[S]	3.33V (In)
[D]	3.33V (Out)

Q4300 — Drives Q4301

Pin	
[B]	0.68V
[C]	0.03V
[E]	Gnd

Q4301 — +3.5V_WOL Switch

Pin	
[G]	0.33V
[S]	3.53V (In)
[D]	3.51V (Out)

Q4000 — LOGO Driver

Pin	
[B]	0V
[C]	1.32V
[E]	Gnd

Q5600 — Amp Mute Driver

Pin	
[B]	0V
[C]	3.32V
[E]	Gnd

Q6501 — TUNER_CVBS Buffer

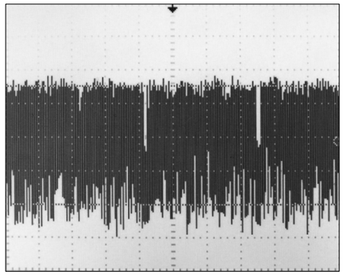
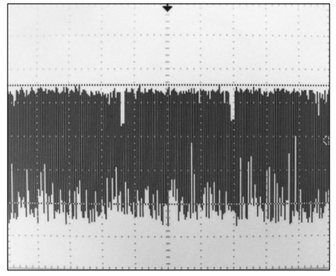
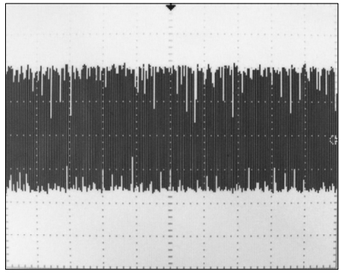
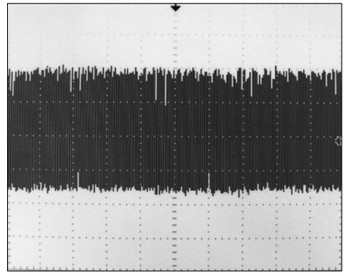
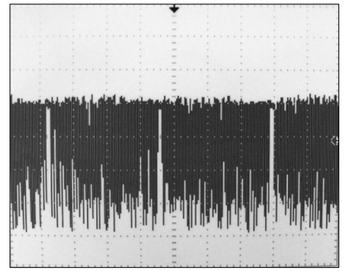
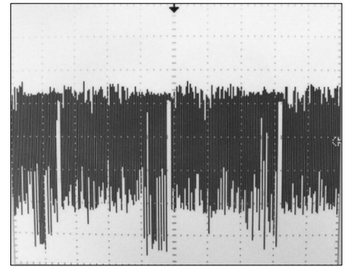
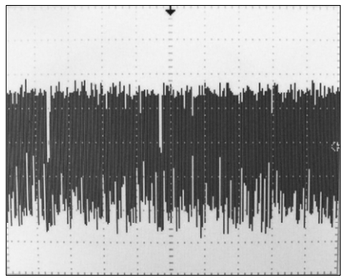
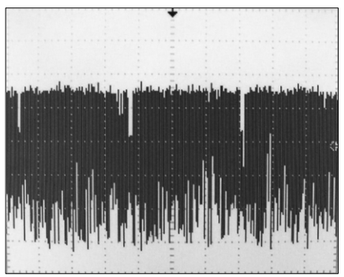
Pin	
[B]	1.46V
[C]	0V (Gnd)
[E]	2.16V

D4400~02 — USB3 DM/DP/RX/TX Clamp

[C1]	0V
[C2]	0V
[A]	Gnd

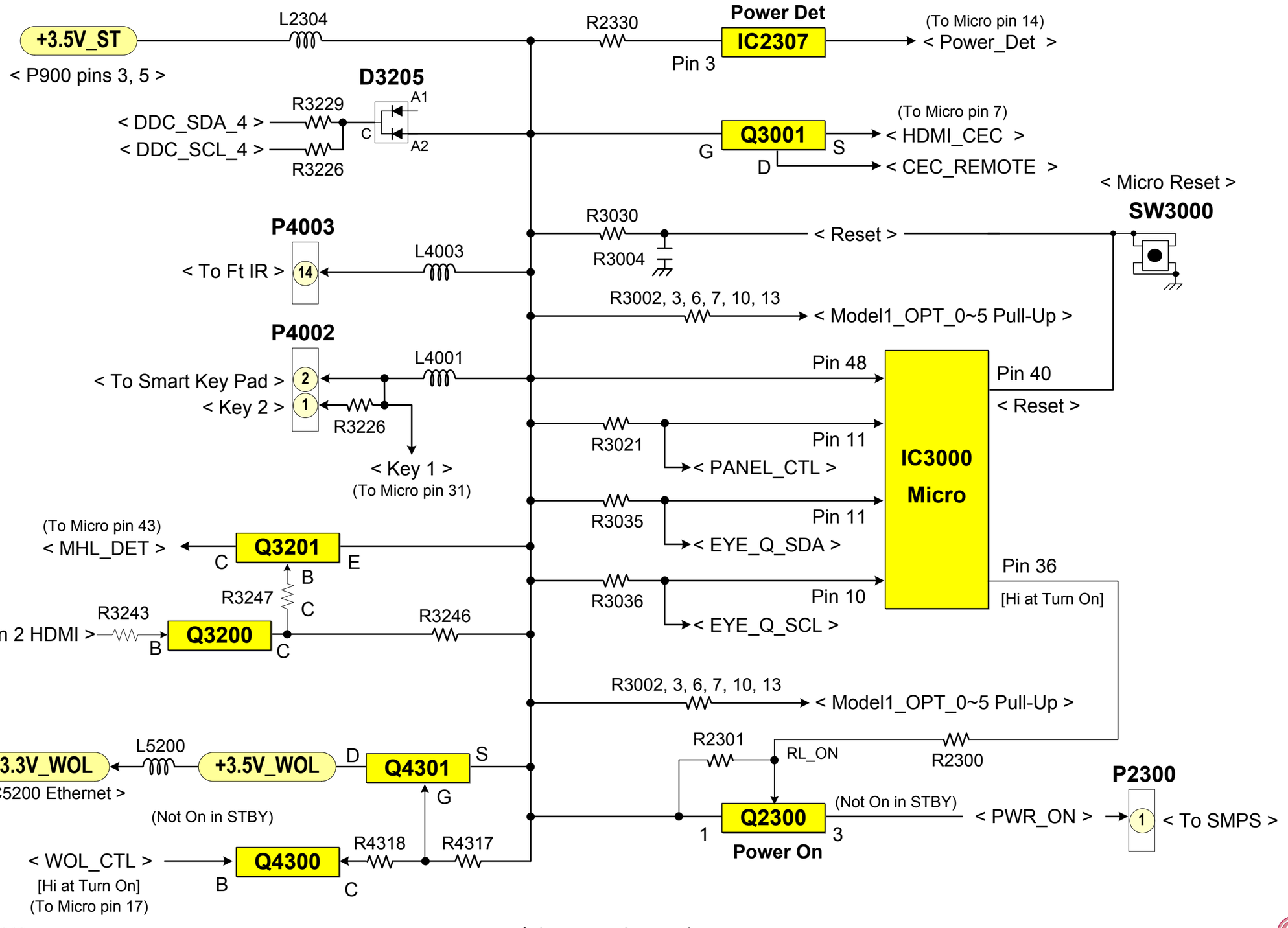
55EA9800 LVDS Signals P7201

The below waveforms are only the Negative signal of the differential pair. The Positive signal is identical only flipped upside down.
This represents only one of the two LVDS signals. P7202 signals also look very similar.

LVDS P7201 Pin 12 (TXA0N)  476mV p/p	LVDS P7201 Pin 14 (TXA1N)  416mV p/p	LVDS P7201 Pin 16 (TXA2N)  384mV p/p	LVDS P7201 Pin 19 (TXACLKN)  384mV p/p	LVDS P7201 Pin 22 (TXA3N)  416mV p/p	LVDS P7201 Pin 24 (TXA4N)  524mV p/p
LVDS P7201 Pin 28 (TXB0N)  468mV p/p	LVDS P7201 Pin 30 (TXB1N)  504mV p/p	LVDS P7201 Pin 32 (TXB2N) 436mV p/p	LVDS P7201 Pin 35 (TXBCLKN) 384mV p/p	LVDS P7201 Pin 38 (TXB3N) 516mV p/p	LVDS P7201 Pin 40 (TXB4N) 476mV p/p

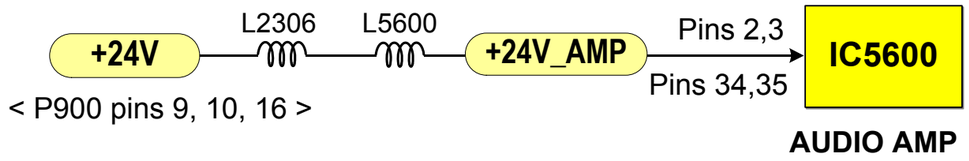
SMPTE Color Bar input signal (Component)
All signals taken at 2.5MSec per/sec / 100mV per/div

55EA9800 Main Board (+3.5V_ST) Voltage Routing

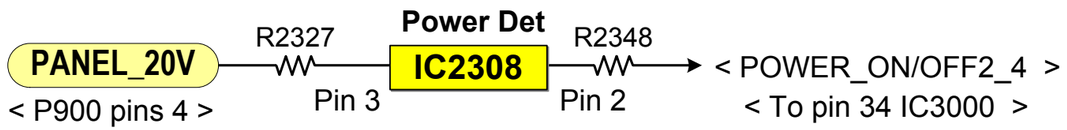


55EA9800 Main Board (+24V, +12V and +20V) Voltage Routing

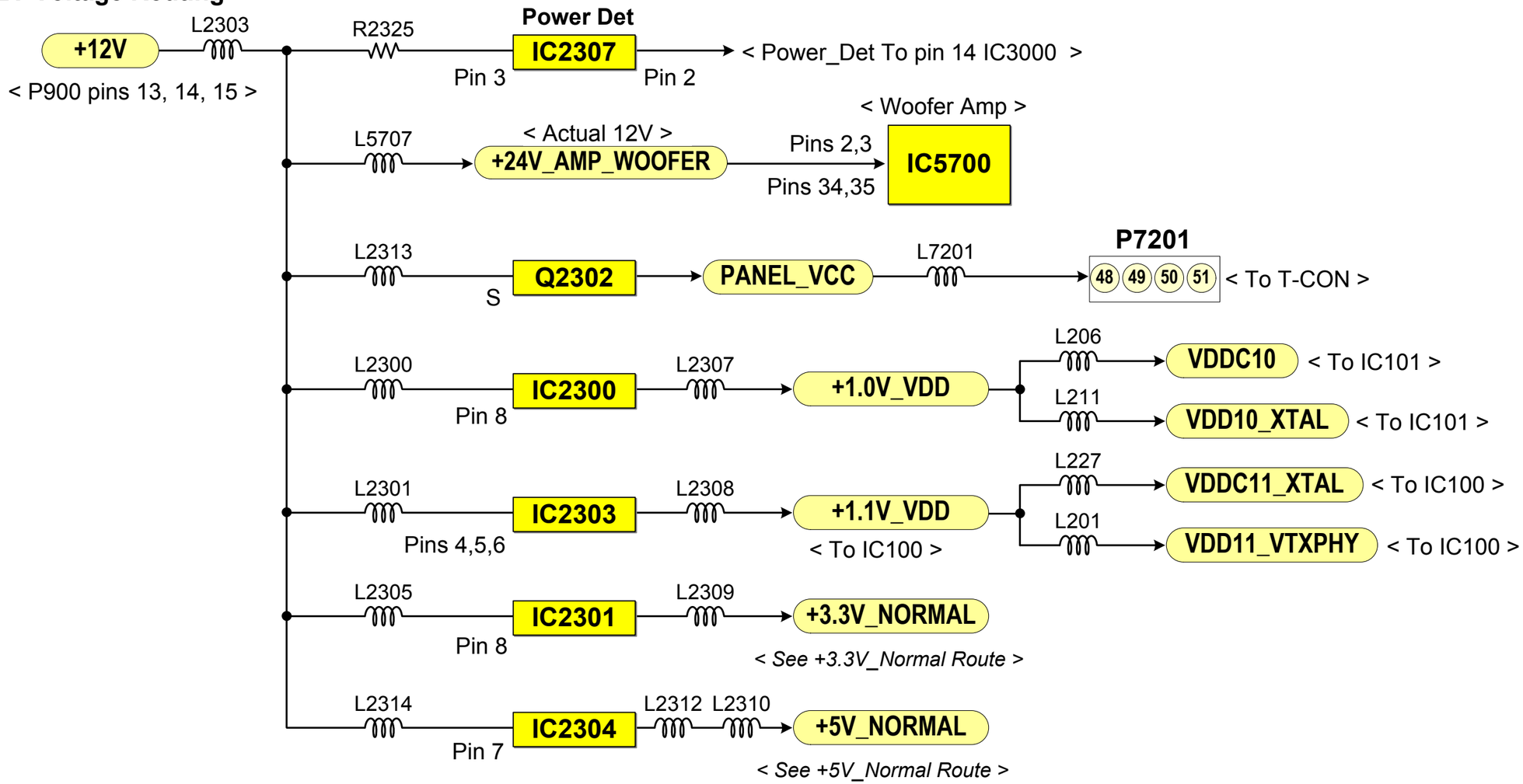
+24V Voltage Routing



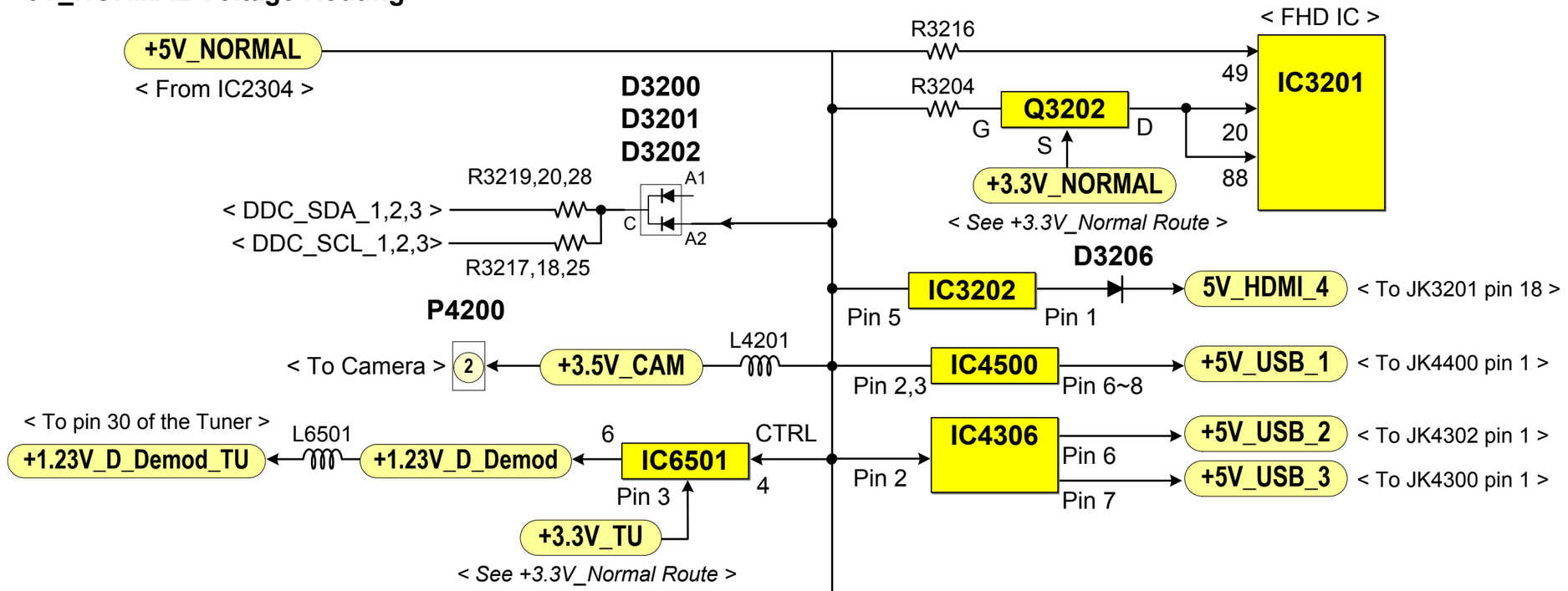
PANEL_20V Voltage Routing



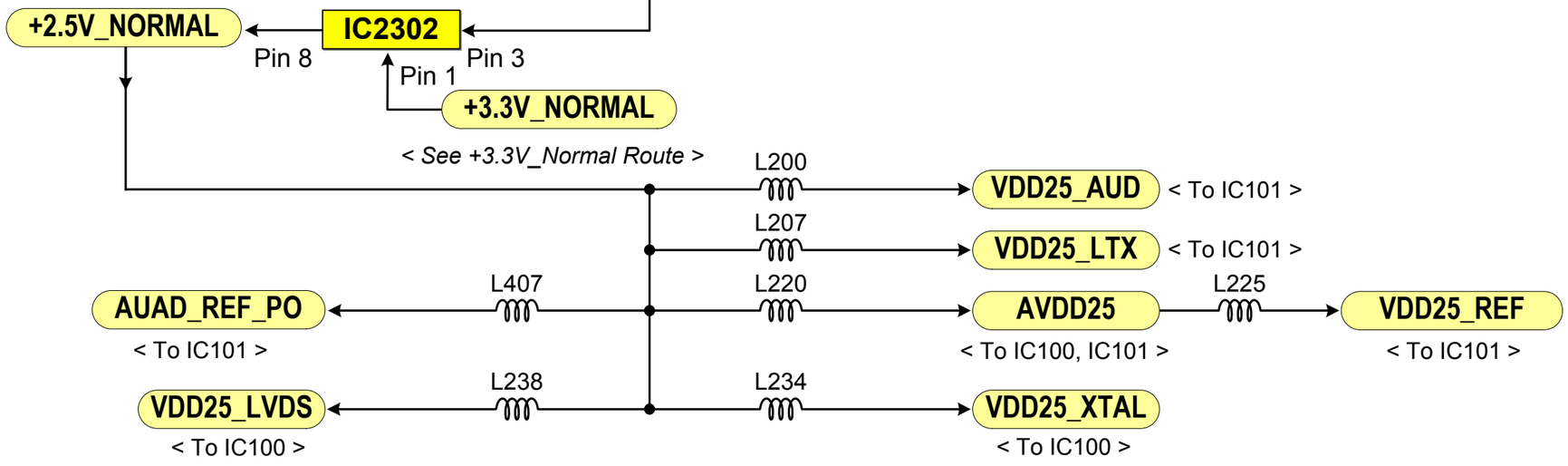
+12V Voltage Routing



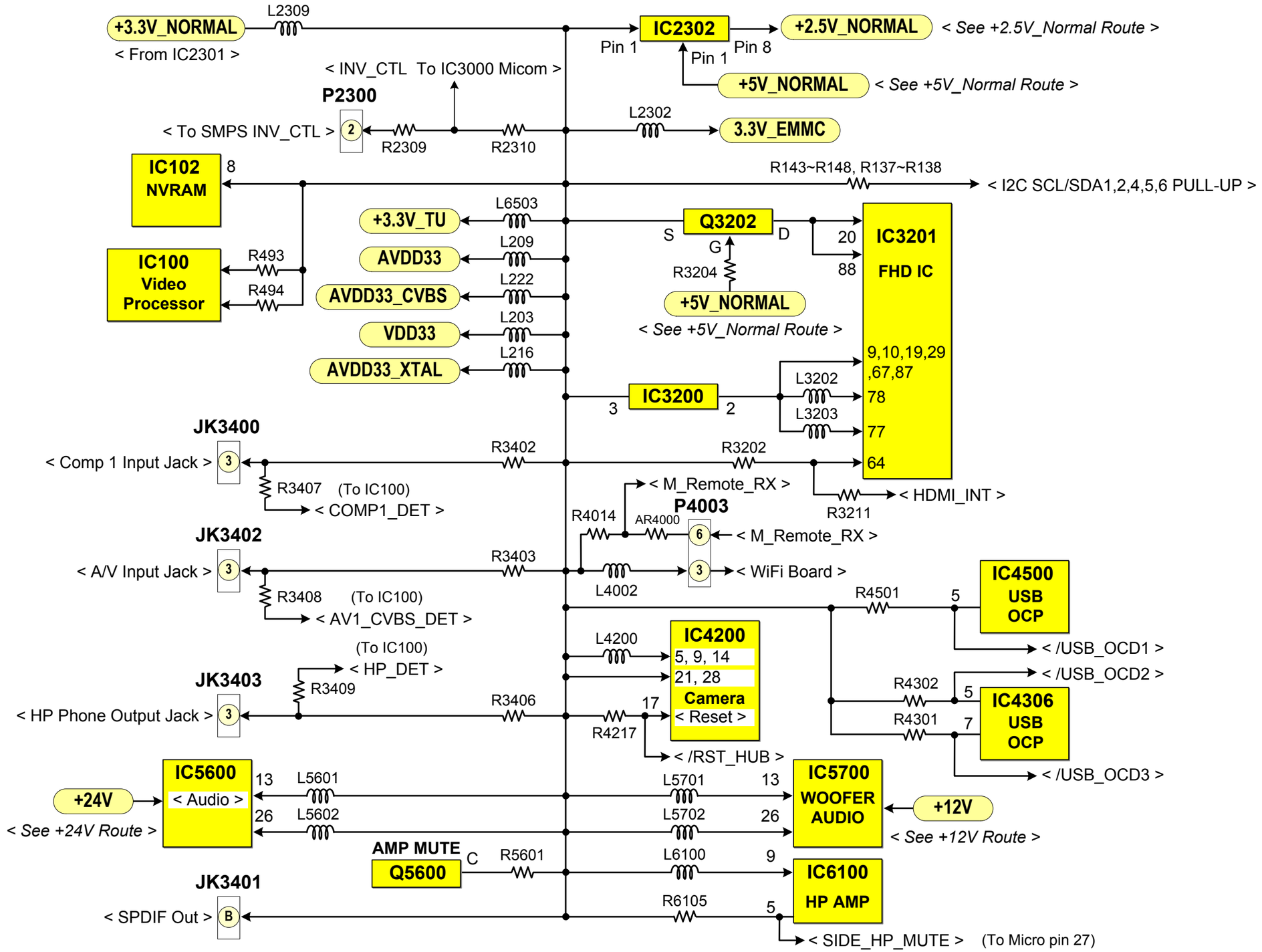
+5V_NORMAL Voltage Routing



+2.5V_NORMAL Voltage Routing



55EA9800 Main Board (+3.3V_Normal) Voltage Routing



55LA8600 INTERCONNECT DIAGRAM

Note: If a particular area is exhibiting a dimmer backlight level than other areas or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not,

1st: Check the P-DIM level, it should rise with the percentage shown on screen. 100% = 3.27V. Follow the P-DIM signal all the way to the SMPS.

2nd: Turn off Local Dimming in the Customers Menu. If the brightness returns to normal, examine the signals required for Local Dimming. (SIN, V-SYNC and SCLK). Suspect the Main Board.

You can also test each of the 6 blocks functionality by grounding the return path signal (using 220Ω resistor).

LED SINGLE BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 84V on TP P803. Confirm P-DIM is approx. 3V. Using a 220Ω resistor, jump any of the blocks grounding pin on P801 or P802 (VC1~VC6) while observing the picture and each block should turn on maximum. (No: Bad Panel, Yes: Bad SMPS).

P801 Black Plug "SMPS Board" To "Panel LEDs"

Pin	Label	Run	Diode Check
1	VC-6	*1.68V~24V	OL
2	VC-5	*1.68V~24V	OL
3	VC-4	*1.68V~24V	OL
4	n/c	n/c	n/c
5	n/c	n/c	n/c
6	n/c	n/c	n/c
7	n/c	n/c	OL
8	LED+	84V	OL

*White to Black screen

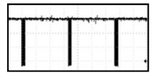
P802 White Plug "SMPS Board" To "Panel LEDs"

Pin	Label	Run	Diode Check
1	LED+	84V	OL
2	n/c	n/c	OL
3	n/c	n/c	n/c
4	n/c	n/c	n/c
5	n/c	n/c	n/c
6	VC-3	*1.68V~24V	OL
7	VC-2	*1.68V~24V	OL
8	VC-1	*1.68V~24V	OL

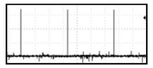
*White to Black screen



Pin 24 P201
3.8V p/p (SCLK)
Local Dimming On

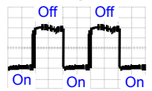


Pin 23 P201
3.68V p/p (SIN)
Local Dimming On



Pin 22 P201
3.8V p/p (Vsync)
Local Dimming On

LED Drive Signal 50 IRE



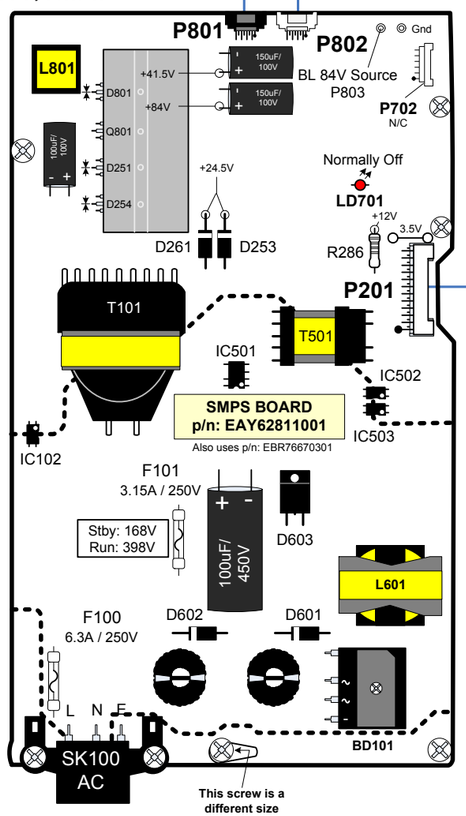
27V p/p | 2mSec

Any drive signal V1 through V12

Indicates Hot Ground

If P801 or P802 is disconnected, the Backlights come on, on the side that is still plugged in. Then the go back off. Error line goes high and LD701 blinks 3 times every 5 seconds.

To the Panel Backlights At the bottom of the panel



P201 "SMPS Board" to P2301 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode
24	SCLK	0V	0V	OL
23	SIN	0V	3.29V	OL
22	V_SYNC	0V	0V	OL
17-21	Gnd	Gnd	Gnd	Gnd
16	24V	0V	24.94V	OL
13-15	12V	0V	11.81V	0.49V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	24.94V	1.11V
7-8	Gnd	Gnd	Gnd	Gnd
6	P-DIM2	0V	0.19V~3.27V	OL
5	3.5V	3.57V	3.54V	OL
4	P-DIM	0V	0.19V~3.27V	OL
3	3.5V	3.57V	3.54V	OL
2	DRV_ON	0V	3.28V	OL
1	PWR_ON	0V	3.41V	1.2V

PWR_ON Pin 1: Turns on 12V and 24V (Also see Note 2)

DRV_ON Pin 2: Turns on Backlights. (Also see Note 2) DRV_ON is INV_ON from Main.

Note 1: Pin 16: Is Open on the SMPS. The voltage is loopback from the Main board.

Note 2: Backlight power is 62.6V with PWR_ON arrives, (no backlights) it goes to 84V when DRV_ON arrives, Backlights On).

Note 3: LD701 normal state is Off. If it is blinking, it indicates a problem. Missing DRV_ON, P-DIM, BL feedback error, etc.… Example: If either P801 or P802 is disconnected, LD701 blinks 5 times at start, then blinks 3 times every 5 seconds. If DRV_ON is missing, LD701 (after 1 minute), blinks 5 times every 5 seconds.

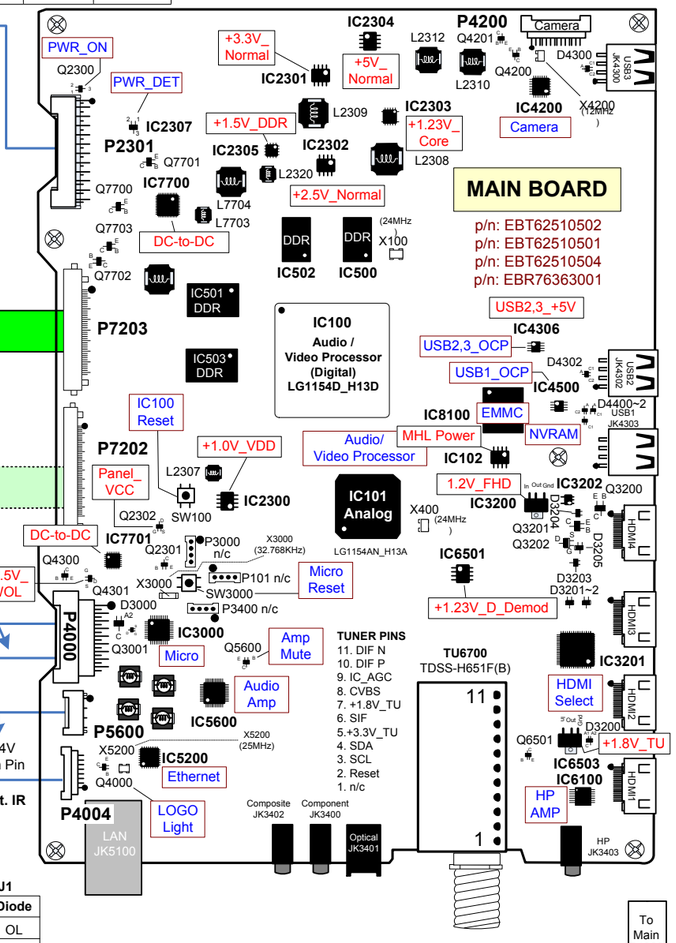
P4000 "MAIN Board" To "Wi-Fi and Motion Board"

Pin	Label	STBY	Run	Diode Check	To What
1	+3.5V_WOL	0V	3.51V	1.26V	WiFi Tx/Rx
2	+3.5V_Normal	0V	3.36V	0.6V	Magic Remote
3	WiFi_DM	0V	0.04V	1.4V	WiFi Tx/Rx
4	RTS	0V	0V	OL	Magic Remote
5	WiFi_DP	0V	0.04V	1.21V	WiFi Tx/Rx
6	M_Remote_Rx	0V	3.36V	OL	Magic Remote
7	Gnd	Gnd	Gnd	Gnd	WiFi Tx/Rx
8	M_Remote_Tx	0V	3.34V	OL	Magic Remote
9	WOL	0V	0.02V	OL	WiFi Tx/Rx
10	RF_Reset	0V	3.33V	OL	Magic Remote
11	Gnd	Gnd	Gnd	Gnd	Magic Remote
12	CTS	0V	0V	OL	Magic Remote

P4200 "MAIN Board" To "Camera"

Pin	Label	STBY	Run	Diode ✓
1	Camera_Slide_Det	0.12V	3.3V	OL
2	+3.5V_CAM	0V	3.51V	OL
3	AUD_LRCH	0V	0V	OL
4	AUD_LRCK	0.11V	0.9V	OL
5	AUD_SCK	0.1V	1.01V	OL
6	Gnd	Gnd	Gnd	Gnd
7	CAM_PWR_ON_CMD	Gnd	Gnd	OL
8	ST_BY_DET_CAM	0V	0V	OL
9	Gnd	Gnd	Gnd	Gnd
10	USB_CAMERA_DP	0V	0.08V	1.1V
11	USB_CAMERA_DM	0V	0.08V	1.1V
12	Gnd	Gnd	Gnd	Gnd

* Note: Pin 1 is Low with Camera down and Hi with Camera up.



P2301 "MAIN Board" To P201 "SMPS Board"

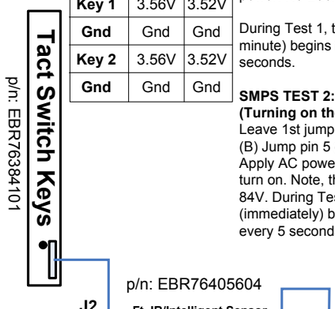
Pin	Diode
1	OL
2	1.65V
3	OL
4	OL
5	OL
6	OL
7-8	Gnd
9-10	OL
11-12	Gnd
13-15	OL
16	OL
17-21	Gnd
22	OL
23	OL
24	OL

For voltages See P201

For DC voltages for Main board components see Page 2 of the Interconnect diagram.

"Key Board" To J2 "Front IR"

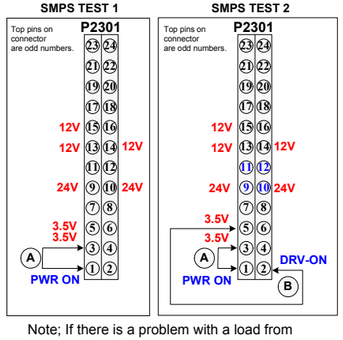
Label	STBY	Run
Key 1	3.56V	3.52V
Gnd	Gnd	Gnd
Key 2	3.56V	3.52V
Gnd	Gnd	Gnd



SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2301 on the Main board.
(A) Jump pin 3 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main and 62.6V Backlight power. Remove AC power. No Backlights at this time.

During Test 1, the Error LED (after 1 minute) begins to blink 5 times every 5 seconds.

SMPS TEST 2:
(Turning on the Backlights)
Leave 1st jumper in place.
(B) Jump pin 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now jump to 84V. During Test 2, the Error LED (immediately) begins to blink 6 times every 5 seconds.



Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect either P801 or P802. When AC is reapplied, the Backlight LEDs should turn on for about 4 seconds and then shut off.

DC Voltages to the Panel developed by on the Main Board, Output from P7703

VGH_R (IC7701 pin 8) to P7703 pin 42 (28V)
VGH_F (IC7701 pin 9) to P7703 pin 41 (-5V)
VGH_ODD (IC7701 pin 10) to P7703 pin 40 (toggles between -5V and 28V)
VGH_EVEN (IC7701 pin 11) to P7703 pin 39 (toggles between -5V and 28V)
VGL_I (IC7701 pin 1) → R7740 to P7703 pin 38 (-5V)
VST (IC7701 pin 12) to P7703 pin 37 (1.4V)
VCOM (IC7701 pin 18) to P7703 pin 34 (6.68V)
VDD (IC7700 pin 23) to P7703 pin 31, 32 (16.58V)
H_VDD (IC7700 pin 16) to P7703 pin 30 (8.29V)
VCC18V (IC7700 pin 1) to P7703 pin 17 (1.8V)

DC Voltages to the Panel developed by on the Main Board, Output from P7702

VGH_R (IC7701 pin 8) to P7702 pin 9 (28V)
VGH_F (IC7701 pin 9) to P7702 pin 10 (-5V)
VGH_ODD (IC7701 pin 10) to P7702 pin 11 (toggles between -5V and 28V)
VGH_EVEN (IC7701 pin 11) to P7702 pin 12 (toggles between -5V and 28V)
VGL_I (IC7701 pin 1) → R7740 to P7702 pin 13 (-5V)
VST (IC7701 pin 12) to P7702 pin 14 (1.4V)
VCOM (IC7701 pin 18) to P7702 pin 17 (6.68V)
VDD (IC7700 pin 23) to P7702 pin 19, 20 (16.58V)
H_VDD (IC7700 pin 16) to P7702 pin 21 (8.29V)
VCC18V (IC7700 pin 1) to P7702 pin 34 (1.8V)

To the Panel

Video Signal Levels: p/p: Approx: 500mV

p/n: EBR76363001

Motion Remote Tx/Rx J1

To Main P4000

Video (TXA) pins 19, 20, 27, 28
Video Clock (TXACLK) 23, 24

Video (TXB) pins 23, 24, 27, 28, 31, 32

PANEL p/n: EAJ62270501

P4004 "MAIN Board" to "IR Board" J1

Pin	Label	STBY	Run	Diode
10	EYE_SDA	3.55V	3.53V	OL
9	Eye_SCL	3.57V	3.53V	OL
8	Gnd	Gnd	Gnd	Gnd
7	IR	3.55V	3.51V	OL
6	LOGO	1.11V	0V	OL
5	Gnd	Gnd	Gnd	Gnd
4	3.5V_ST	3.56V	3.52V	OL
3	Key 2	3.56V	3.52V	OL
2	Key 1	3.56V	3.52V	OL
1	Gnd	Gnd	Gnd	Gnd

55LA8600 Main Board Component Voltages

IC102



Pin	NVRAM Memory
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.32V
[6]	3.32V
[7]	Gnd
[8]	3.32V

IC2300



Pin	+1.0V_VDD Regulator
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.45V
[4]	5.42V
[5]	Gnd
[6]	1.02V (Out)
[7]	6.41V
[8]	12V (In)

IC2301



Pin	+3.3V_NORMAL Regulator
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.46V
[4]	3.42V
[5]	Gnd
[6]	3.37V (Out)
[7]	8.79V
[8]	12V (In)

IC2302



Pin	(+2.5V_NORMAL) Regulator
[1]	3.35V (in)
[2]	n/c
[3]	5.12V (in)
[4]	3.53V (ctrl)
[5]	Gnd
[6]	4.92V
[7]	0.81V
[8]	2.56V (out)

IC2303



Pin	(+1.23V_CORE) Regulator
[1]	0.49V
[2]	Gnd
[3]	Gnd
[4]	**12V (In)**
[5]	12V (In)
[6]	12V (In)
[7]	0.6V
[8]	0.45V
[9]	1.77V
[10]	3.53V (Enable)
[11]	1.27V (Out)
[12]	1.27V (Out)
[13]	8.13V
[14]	n/c

IC2304



Pin	(+5V_NORMAL) Regulator
[1]	8.74V
[2]	n/c
[3]	n/c
[4]	1.22V
[5]	3.23V (Enable)
[6]	Gnd
[7]	12V (In)
[8]	5.12V (Out)

IC2305



Pin	+0.9V_DDR Regulator
[1]	3.53V (In)
[2]	3.53V (In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.71V
[8]	0.51V
[9]	1.9V
[10]	1.54V (Out)
[11]	1.54V (Out)
[12]	1.54V (Out)
[13]	5.08V
[14]	n/c
[15]	3.5V (Enable)
[16]	3.53V (In)

IC3202



Pin	MHL Power
[1]	**0V (Out)**
[2]	Gnd
[3]	0V (Enable)
[4]	0V (Enable)
[5]	5.12V (In)

IC2307



Pin	PWR_Det 12V Sense
[1]	Gnd
[2]	3.68V (Reset)
[3]	3.71V (In)

IC2308



Pin	PWR_Det 20V Sense
[1]	Gnd
[2]	3.74V (Reset)
[3]	3.77V (In)

IC3200



Pin	+1.2V_FHD Regulator
[1]	Gnd
[2]	1.2V (Out)
[3]	3.33V (In)

IC4306



Pin	5V for USB 2/3 USB_OCP 2/3
[1]	Gnd
[2]	5.12V (In)
[3]	3.32V
[4]	3.32V
[5]	3.33V
[6]	5.12V (In)
[7]	5.12V (In)
[8]	3.33V

IC4500



Pin	5V for USB 1 USB_OCP 2/3
[1]	Gnd
[2]	5.12V (In)
[3]	5.12V (In)
[4]	3.32V (Enable)
[5]	2.56V
[6]	5.12V (Out)
[7]	5.12V (Out)
[8]	5.12V (Out)

IC6100



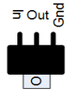
Pin	Head Phone Amp
[1]	Gnd
[2]	0V
[3]	0V
[4]	Gnd
[5]	0.08V
[6]	(-3.23V)
[7]	(-1.61V)
[8]	1.65V
[9]	**3.33V (In)**
[10]	Gnd
[11]	n/c
[12]	0V
[13]	0V
[14]	Gnd

IC6501



Pin	+1.23V_D_Demod Regulator
[1]	n/c
[2]	5.04V
[3]	3.32V (In)
[4]	5.12V
[5]	n/c
[6]	1.24V (Out)
[7]	0.61V
[8]	Gnd

IC6503



Pin	+1.8V_TU Switch
[Gnd]	0V (Gnd)
[Out]	1.8V (Out)
[In]	3.31V (In)

Q2300



Pin	PWR_On Switch
[1]	3.54V
[2]	2.83V
[3]	3.42V

Q2301



Pin	Panel_VCC CTRL Drives Q2302
[B]	0.63V
[C]	0.08V
[E]	Gnd

Q2302



Pin	Panel_VCC Switch
[G]	1.78V
[S]	11.98V
[D]	11.94V

Q3001



Pin	HDMI CEC FET
[G]	3.53V
[S]	3.49V
[D]	3.47V

Q3200



Pin	Drives MHL Det Q3201
[B]	0.06V
[C]	3.53V
[E]	Gnd

Q3201



Pin	MHL Det
[B]	**3.53V**
[C]	0V (Out)
[E]	3.53V

Q3202



Pin	Switches 3.3V To IC3201
[G]	5.12V
[S]	3.33V (In)
[D]	3.33V (Out)

Q4000



Pin	LOGO Driver
[B]	0V
[C]	1.32V
[E]	Gnd

Q4300



Pin	Drives **Q4301**
[B]	0.68V
[C]	0.03V
[E]	Gnd

Q4301



Pin	+3.5V_WOL Switch
[G]	0.33V
[S]	3.53V (In)
[D]	3.51V (Out)

Q5600



Pin	Amp Mute Driver
[B]	0V
[C]	3.32V
[E]	Gnd

Q6501



Pin	TUNER_CVBS Buffer
[B]	1.46V
[C]	**0V (Gnd)**
[E]	2.16V

D3000



Pin	Bias for Q3001
[A1]	0V
[A2]	3.52V
[C]	3.47V

D3200, D3201, D3202, D3203



Pin	DDC_SDA/SCL_1-3 PULL_UP
[A1]	5.12V
[A2]	0V
[C]	5.06V

D3204



Pin	MHL_DET Routing
[A1]	0V
[A2]	0V
[C]	0V

D3205



Pin	DDC_SDA/SCL_4 PULL_UP
[A1]	0.68V
[A2]	3.54VV
[C]	5.04V

D4300 & 2



Pin	USB DM/DP Clamp
[C1]	0V
[C2]	0V
[A]	Gnd

D4400~02



Pin	USB3 DM/DP/RX/TX Clamp
[C1]	0V
[C2]	0V
[A]	Gnd

55LA8600 Main Board Component Voltages (Large ICs)

IC3000

Micro Processor



Pin		Pin	
[1]	3.28V	[25]	0V
[2]	3.28V	[26]	3.53V
[3]	0.0V	[27]	3.53V
[4]	2.09V	[28]	0.03V
[5]	0.06V	[29]	0.1V
[6]	3.5V	[30]	0V
[7]	3.49V	[31]	3.34V
[8]	3.53V	[32]	3.53V
[9]	0V	[33]	3.53V
[10]	3.53V	[34]	3.75V
[11]	3.53V	[35]	0V
[12]	0V	[36]	0V
[13]	3.51V	[37]	0.02V
[14]	3.68V	[38]	0V
[15]	3.53V	[39]	3.53V
[16]	0V	[40]	3.53V
[17]	3.48V	[41]	0.65V
[18]	3.53V	[42]	0.13V
[19]	3.29V	[43]	0V
[20]	3.32V	[44]	0V
[21]	3.53V	[45]	0V
[22]	0V	[46]	2.09V
[23]	0V	[47]	Gnd
[24]	0.1V	[48]	3.53V

IC5600

Audio Amp



Pin		Pin	
[1]	0V	[25]	3.3V
[2]	23.92V	[26]	Gnd
[3]	23.92V	[27]	3.32V
[4]	17.94V	[28]	Gnd
[5]	n/c	[29]	Gnd
[6]	3.31V	[30]	Gnd
[7]	n/c	[31]	3.32V
[8]	Gnd	[32]	6.68V
[9]	0V	[33]	17.96V
[10]	0.68V	[34]	23.92V
[11]	1.05V	[35]	23.92V
[12]	1.8V	[36]	11.94V
[13]	3.32V	[37]	Gnd
[14]	0.39V	[38]	Gnd
[15]	1.67V	[39]	11.94V
[16]	1.0V	[40]	n/c
[17]	Gnd	[41]	n/c
[18]	1.81V	[42]	17.95V
[19]	3.32V	[43]	17.95V
[20]	1.65V	[44]	n/c
[21]	1.65V	[45]	n/c
[22]	1.2V	[46]	11.94V
[23]	3.31V	[47]	Gnd
[24]	3.31V	[48]	Gnd

IC7700

Panel Power DC-to-DC Conv



Pin		Pin	
[1]	1.89V	[25]	4.95V
[2]	1.89V	[26]	0.52V
[3]	3.4V	[27]	3.31V
[4]	3.4V	[28]	3.31V
[5]	1.2V	[29]	5V
[6]	1.2V	[30]	1.27V
[7]	Gnd	[31]	1.59V
[8]	3.4V	[32]	2.8V
[9]	3.4V	[33]	8.12V
[10]	0V	[34]	8.12V
[11]	11.75V	[35]	(-5V)
[12]	11.75V	[36]	0.67V
[13]	11.76V	[37]	13.56V
[14]	11.75V	[38]	12.38V
[15]	8.29V	[39]	10.42V
[16]	8.29V	[40]	5.97V
[17]	Gnd	[41]	5.95V
[18]	Gnd	[42]	2.85V
[19]	Gnd	[43]	6.7V
[20]	11.71V	[44]	6.7V
[21]	11.7V	[45]	6.69V
[22]	14.84V	[46]	6.69V
[23]	16V	[47]	Gnd
[24]	Gnd	[48]	Gnd

IC5200

Ethernet IC



Pin		Pin	
[1]	0V	[17]	0V
[2]	1.1V	[18]	n/c
[3]	1.1V	[19]	n/c
[4]	1.1V	[20]	0V
[5]	1.1V	[21]	3.26V
[6]	1.1V	[22]	1.23V
[7]	3.51V (In)	[23]	3.25V
[8]	0.03V	[24]	3.25V
[9]	0V	[25]	3.24V
[10]	0V	[26]	0V
[11]	0V	[27]	0V
[12]	0V	[28]	0V
[13]	n/c	[29]	1.08V
[14]	3.51V (In)	[30]	3.51V (In)
[15]	1.32V	[31]	0V
[16]	0V	[32]	0.58V

IC4200

Camera Processor



Pin		Pin	
[1]	0V	[15]	n/c
[2]	0V	[16]	n/c
[3]	0V	[17]	3.32V
[4]	0V	[18]	n/c
[5]	3.34V (In)	[19]	n/c
[6]	0V	[20]	n/c
[7]	0V	[21]	3.34V (In)
[8]	0.44V	[22]	3.31V
[9]	3.34V (In)	[23]	3.34V (In)
[10]	1.45V	[24]	0V
[11]	1.1V	[25]	3.34V
[12]	n/c	[26]	n/c
[13]	n/c	[27]	n/c
[14]	3.34V (In)	[28]	3.34V (In)

IC7701

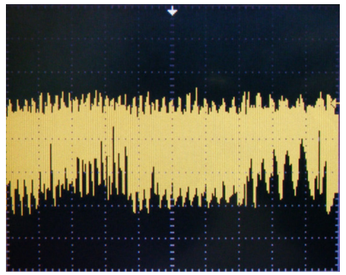
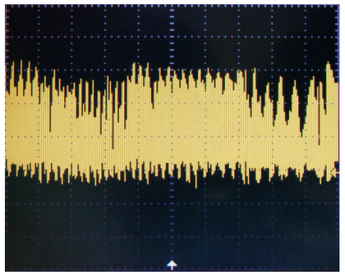
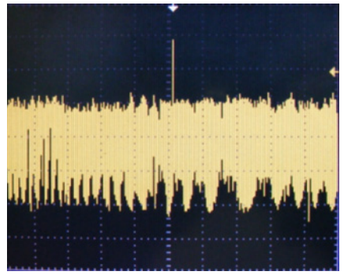
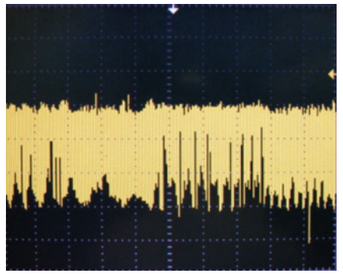
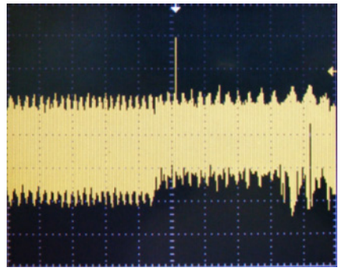
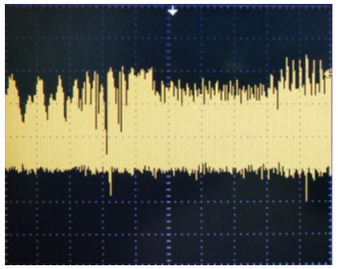
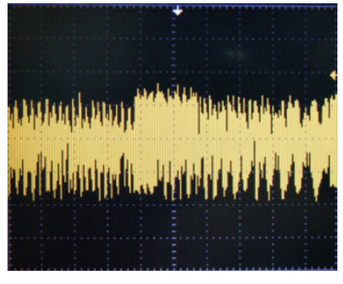
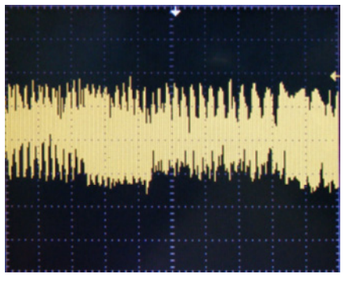
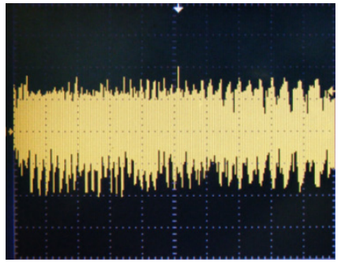
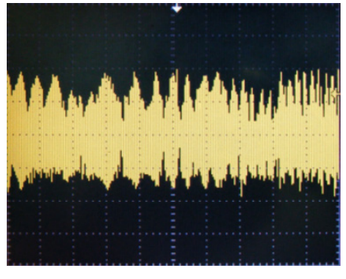
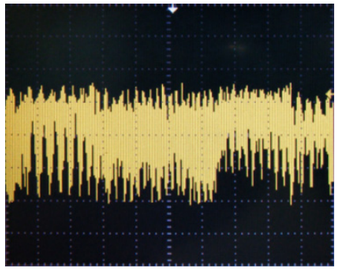
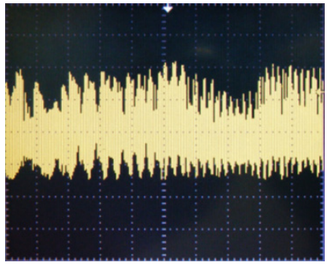
Panle Power Level Shifter



Pin		Pin	
[1]	8.33V	[15]	(-5V)
[2]	8.33V	[16]	28V
[3]	8.33V	[17]	28V
[4]	8.33V	[18]	6.7V
[5]	8.33V	[19]	6.7V
[6]	8.33V	[20]	6.7V
[7]	6.21V	[21]	16.58V
[8]	27.9V	[22]	Gnd
[9]	(-5V)	[23]	3.29V
[10]	*27.5V to -5V	[24]	0V
[11]	*27.5V to -5V	[25]	0V
[12]	(-5V)	[26]	0.07V
[13]	(-5V)	[27]	1.36V
[14]	(-4.9V)	[28]	3.37V

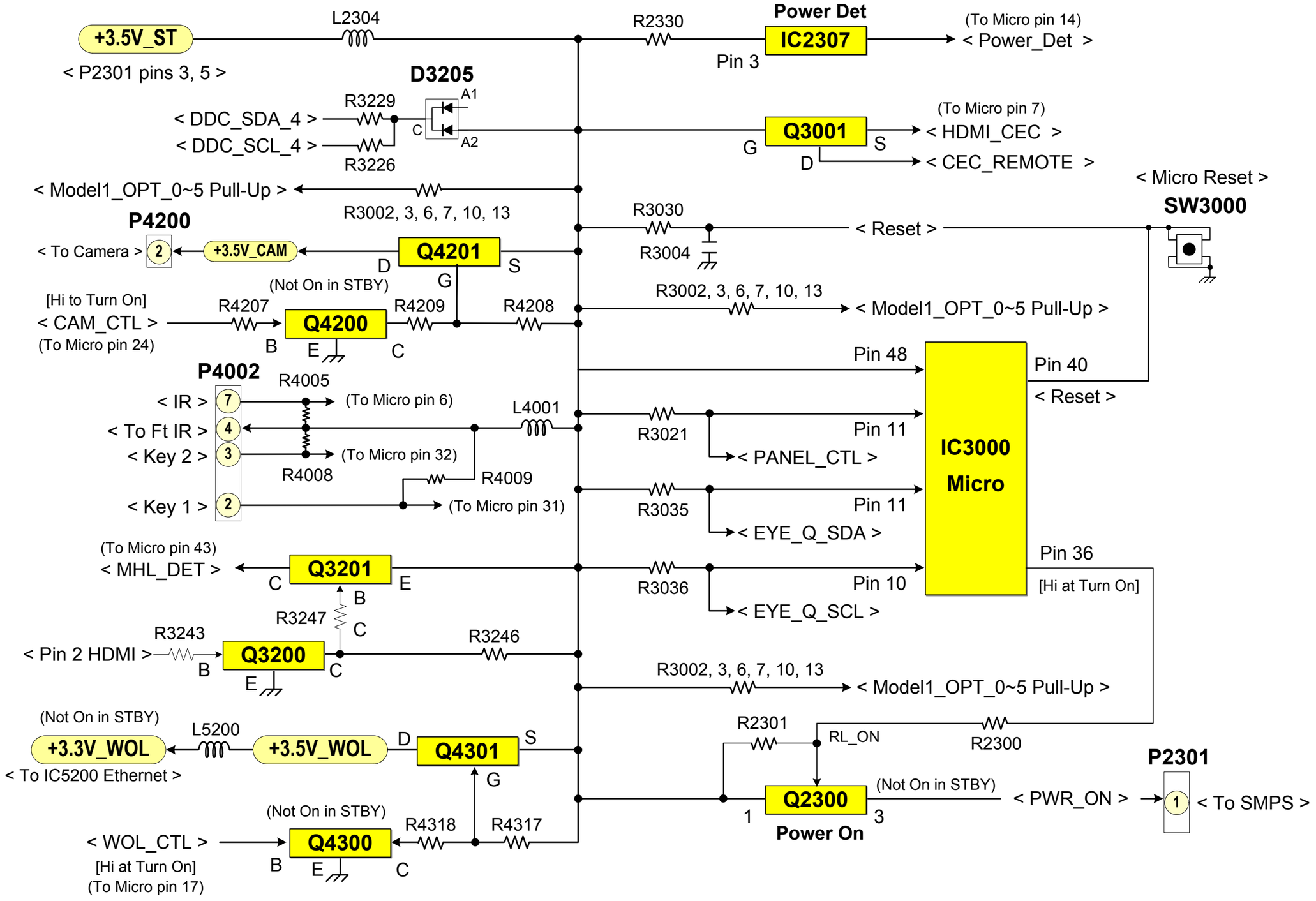
*Changes once a second

55LA8600 LVDS P7702 and P7703 Video Waveforms

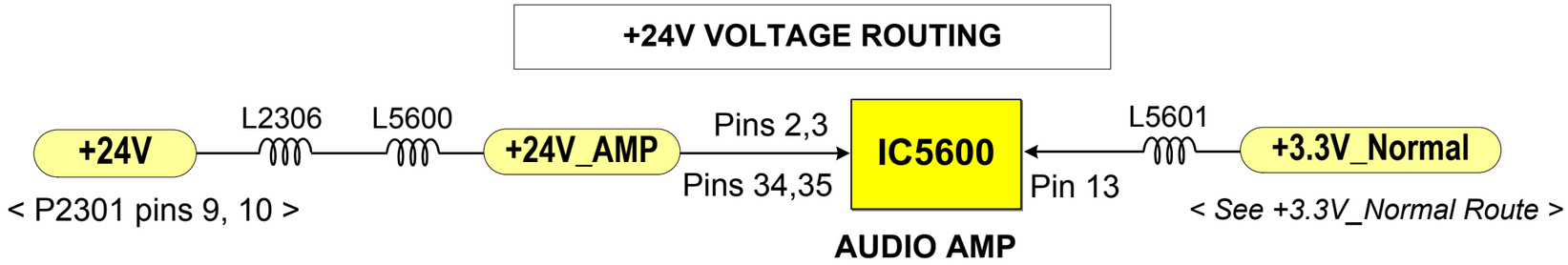
LVDS P7702 Pin 23 (TXB0N)	LVDS P7702 Pin 24 (TXB0P)	LVDS P7702 Pin 27 (TXB1N)	LVDS P7702 Pin 28 (TXB1P)	LVDS P7702 Pin 31 (TXB2N)	LVDS P7702 Pin 32 (TXB2P)
					
380mV p/p	440mV p/p	532mV p/p	444mV p/p	536mV p/p	448mV p/p
LVDS P7703 Pin 19 (TXA1N)	LVDS P7703 Pin 20 (TXA1P)	LVDS P7703 Pin 23 (TXACLKN)	LVDS P7703 Pin 24 (TXACLKP)	LVDS P7703 Pin 27 (TXA4N)	LVDS P7703 Pin 28 (TXA4P)
					
352mV p/p	348mV p/p	404mV p/p	380mV p/p	368mV p/p	360mV p/p

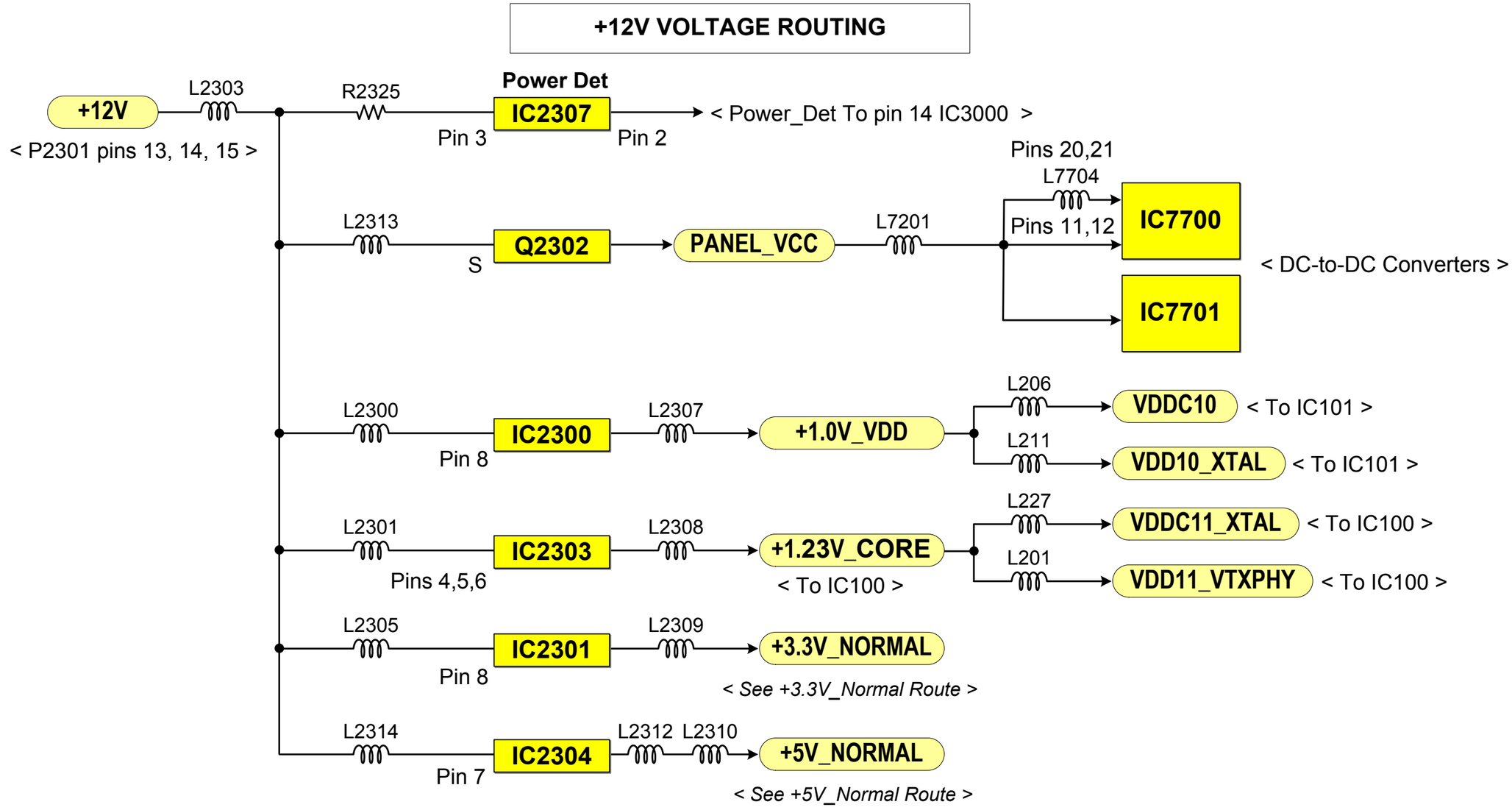
SMPTE Color Bar input signal (Component)
All signals taken at 2.5uSec per/sec / 100mV per/div

55LA8600 Main Board (+3.5V_ST) Voltage Routing



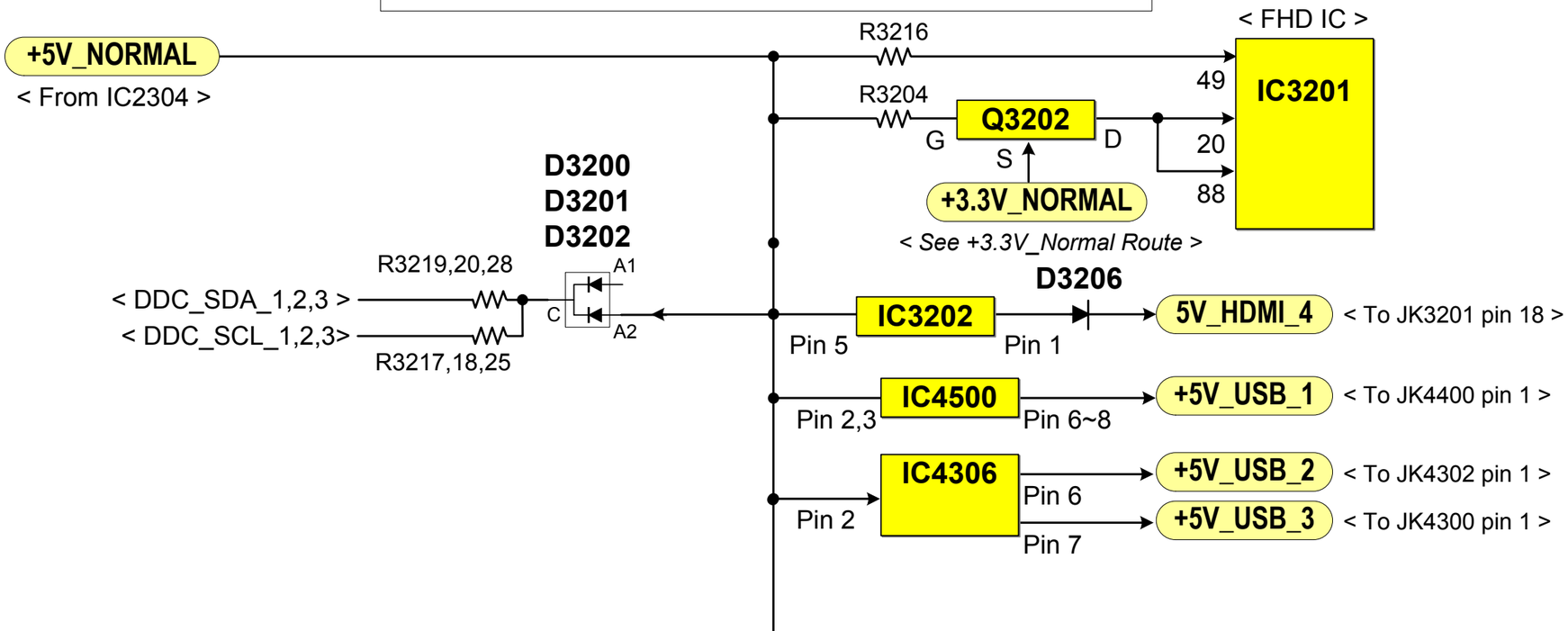
55LA8600 Main Board (+24V and +12V) Voltage Routing



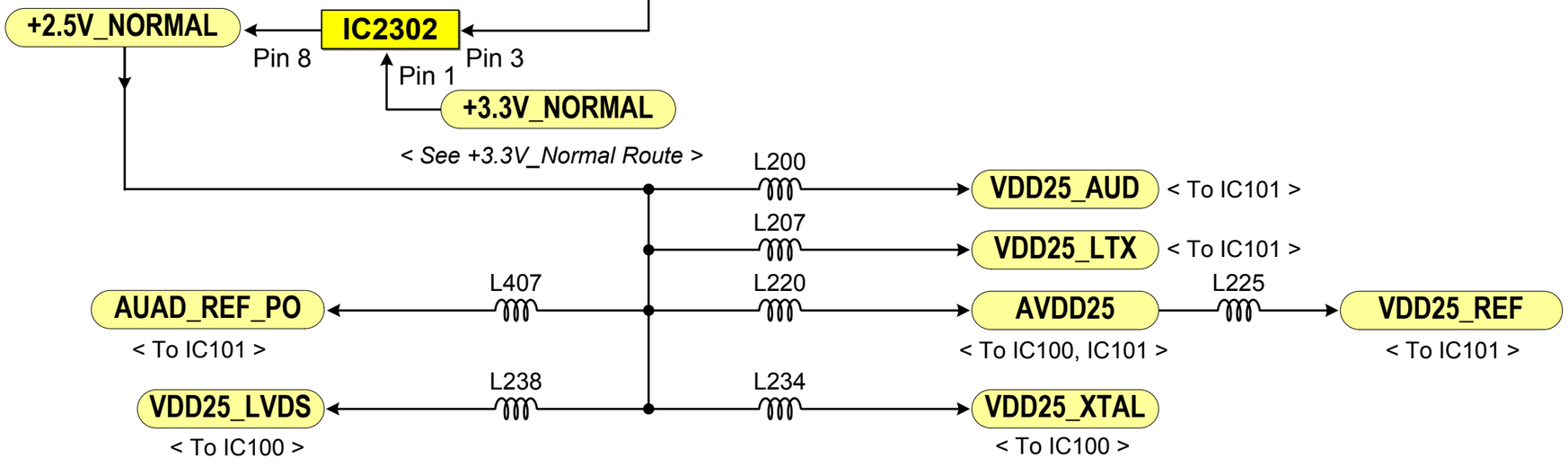


55LA8600 Main Board (+5V_Normal / +2.5V_Normal) Voltage Routing

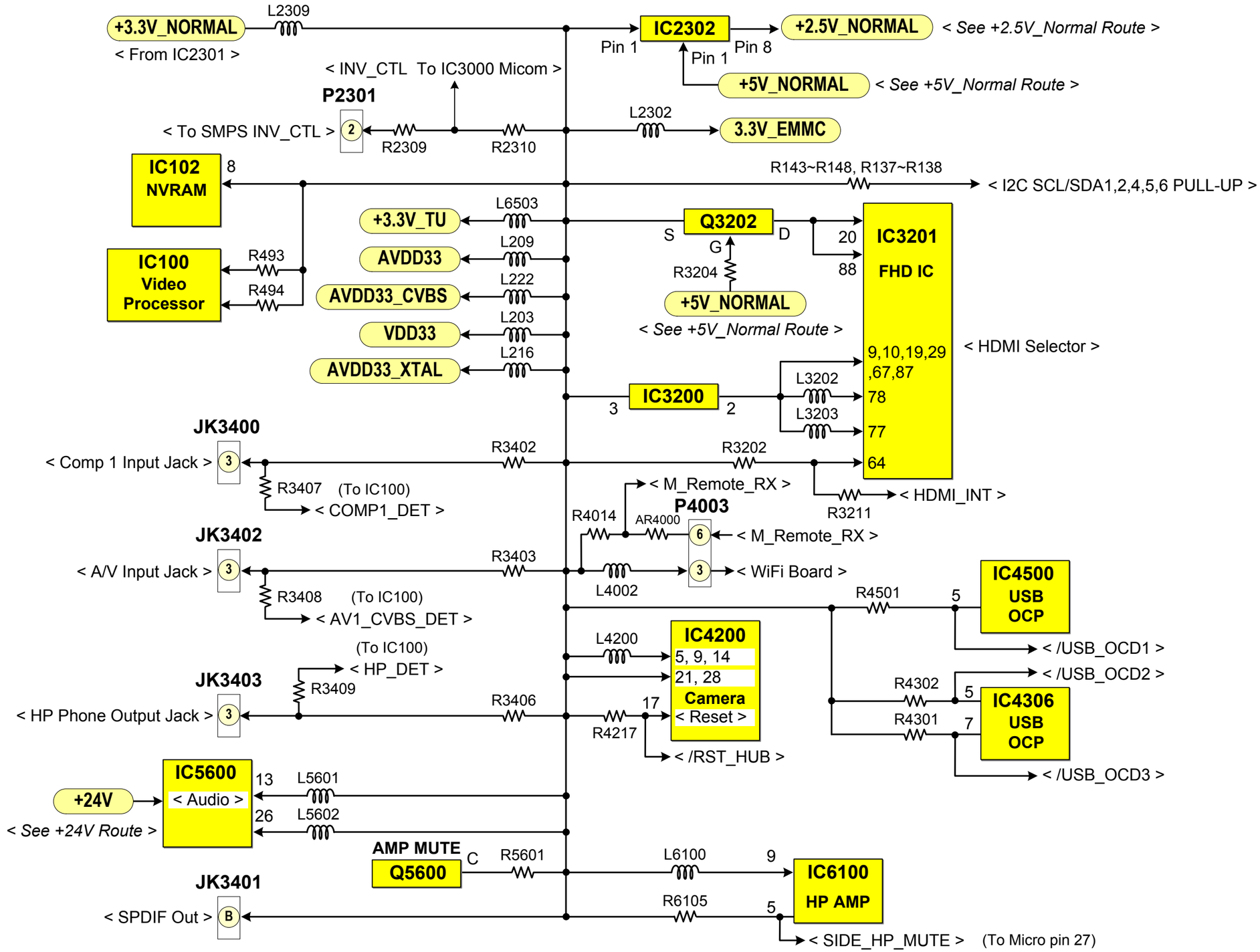
+5V_NORMAL VOLTAGE ROUTING



+2.5V_NORMAL VOLTAGE ROUTING



55LA8600 Main Board (+3.3V_Normal) Voltage Routing



55LA9700 INTERCONNECT DIAGRAM

Note: If a particular area is exhibiting a dimmer backlight level than other areas or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal.
If not,
1st: Check the P-DIM level, it should rise with the percentage shown on screen. 100% = 3.27V. Follow the P-DIM signal all the way to the SMPS.
2nd: Turn off Local Dimming in the Customers Menu or disconnect CN1002 and CN200.
If the brightness returns to normal, examine the signals required for Local Dimming. (SIN, V-SYNC and SCLK). Suspect the Main Board.

LED SINGLE BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 7V on M1-M4.
Confirm P-DIM is approx. 3V. Using a 220Ω resistor, jump any of the blocks grounding pins on Inverter Main or Secondary (V1~V100) while observing the picture and each block should turn on maximum. (If No: Bad Panel, If Yes: Bad Inverter board).

PWR_ON Pin 1: Turns on 12V and 24V. Also 12V to UHD and 24V to INV_Main.

DRV_ON Pin 2: Turns on Backlights. DRV_ON is INV_ON from Main. Routed out P202 pin 12 to Inverter Main. Routed out P202 pin 12 to Inverter Main.

PWM_DIM Pin 4: Leaves on P202 pin 14 to Inverter Main board CN1400. P_DIM controls the backlight brightness. Max voltage level is set by the by the (Customer's Menu --> Video --> Backlights). Range 0% to 100% directly proportional to DC voltage to Backlight brightness. (Voltage up Brightness down). P-DIM is actually a PWM signal. (P_DIM#1 from Main).

PWM-DIM2 Pin 6: (Same as A_DIM from Main) leaves P202 pin 13 is a fixed voltage and not used.

PANEL p/n: EAJ73589402

BACKLIGHT LOCAL DIMMING ZONES

Inverter Secondary CTRL — Inverter Main CTRL

V51			V55	V1				V5
V96			V100	V46				V50

Screen as viewed from the front

CN1100 "Inverter Main" to CN100 "Inverter Secondary"

PIN	LABEL	RUN	Diode
14	P-DIM	0.23V~3.27V	2.12V
13	N/C	n/c	n/c
12	DRV_ON	3.21V	OL
11	N/C	n/c	n/c
6-10	Gnd	Gnd	Gnd
1-5	24V	23.93V	OL

CN1400 "Inverter Main" To P202 "SMPS Board"

PIN	LABEL	Diode
14	P-DIM	2.12V
13	P-DIM2	OL
12	DRV_ON	OL
11	N/C	n/c
6-10	Gnd	Gnd
1-5	24V	OL

CN1200 "Inverter Main" to CN12 "T-CON"

PIN	LABEL	RUN	Diode
1-2	N/C	n/c	n/c
3	SPI_Data	0.07V	OL
4	SPI_CLK	1.0V	OL
5	Gnd	Gnd	Gnd
6	VSync	0.01V	OL

CAMERA P/N: EBX62809201

D1601 INV_Main and D601 INV_Secondary:
Normal blinks 3Hz. Abnormal blinks 1Hz.

Local Dimming

P1400 "UHD Board" to P203 "SMPS Board"

PIN	LABEL	RUN	Diode
1-5	12V	11.95V	2.09V
6-10	Gnd	Gnd	Gnd

P1401 "UHD Board" to CN10 "T-CON"

PIN	LABEL	RUN	Diode
1-2	Gnd	Gnd	Gnd
3-5	12V	11.95V	2.09V

LD200 (ON) indicated P200 and P201 are connected to the T-CON.

LD501, LD503 (ON) indicates IC100 and IC200 are functioning correctly.

Woofer
11.94V All Woofer Pins

CN100 "Inverter Secondary" to CN1100 "Inverter Main"

PIN	LABEL	RUN	Diode
1-5	24V	23.93V	OL
6-10	Gnd	Gnd	Gnd
11	N/C	n/c	n/c
12	DRV_ON	3.21V	OL
13	N/C	n/c	n/c
14	P-DIM	0.23V~3.27V	2.12V

CN1001, CN1002, CN1, CN2
Pins 1-4) M_Out (7V)
Pins 30-32) M_Out (7V)
Pins 5 – 29 Grounding Pulses
0.3V (Bright) to 3V (Dim)

LED Drive
V1-V100
50% Backlights
2.92V p/p 120Hz

CN200 "INV Secondary" to CN11 "T-CON"

PIN	LABEL	RUN	Diode
1	SPI_CLK	1.0V	OL
2	SPI_Data	0.07V	OL
3	Gnd	Gnd	Gnd
4	VSync	0.01V	OL

Local Dimming

CN1200 and CN200
3.8V p/p (SCLK)
3.68V p/p (SDATA)
3.8V p/p (Vsync)
Local Dimming

V51-V75 To Backlights
To Backlights **V76-V100**

V1 through V100
You can also test each of the 100 blocks functionality by grounding the return path signal (using 220Ω resistor).

P4200 "MAIN Board" To "Camera" *Open/Closed

Pin	Label	STBY	Run	Diode ✓
1	*Camera_Slide_Det	0.12V	0V-3.3V	OL
2	+3.5V_CAM	0V	3.47V	OL
3	AUD_LRCH	0V	0.64V	OL
4	AUD_LRCK	0.11V	0.89V	OL
5	AUD_SCK	0.1V	1.0V	OL
6	Gnd	Gnd	Gnd	Gnd
7	CAM_PWR_ON_CMD	Gnd	Gnd	OL
8	ST_BY_DET_CAM	0V	0V	OL
9	Gnd	Gnd	Gnd	Gnd
10	USB_CAMERA_DP	0V	0.66V	1.1V
11	USB_CAMERA_DM	0V	0.66V	1.1V
12	Gnd	Gnd	Gnd	Gnd

* Note: Pin 1 is Low with Camera down and Hi with Camera up.

P4002 "MAIN Board" to "IR Board" J1 and Key Board

Pin	Label	STBY	Run	Diode
8	Gnd	Gnd	Gnd	Gnd
7	IR	3.53V	3.47V	1.70V
6	LOGO	1.55V	0V	OL
5	Gnd	Gnd	Gnd	Gnd
4	3.5V_ST	3.55V	3.49V	1.05V
3	Key 2	3.55V	3.48V	1.80V
2	Key 1	3.55V	3.48V	2.10V
1	Gnd	Gnd	Gnd	Gnd

IR 3.92V p/p

"Key Board" To P4002 "Front IR"

Label	STBY	Run
Key 1	3.55V	3.48V
Gnd	Gnd	Gnd
Key 2	3.55V	3.48V
Gnd	Gnd	Gnd

Tact Switch Keys
p/n: EBR76363001

Stby: 167V
Run: 396V
F101
5A / 250V
BD101/2
+167V (Stby)
+110V (Run)
Stby: 167V
Run: 396V
F501
1.6A / 250V
Hot
Gnd
Side
F100
8A / 250V
Chassis Gnd Side
SMPS BOARD
p/n: EAY63069001
IC105
IC102
IC501
IC502
IC503
IC504
D201/2
3.5V
SK100
AC
L N
All other Screws are silver M3*L4

This screw is a different size with washer

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2300 on the Main board.
(A) Jump pin 3 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main and 12V to UHD, 24V to INV_Main. Remove AC power. LED Power (M1-M4) will be 7V. But, no Backlights at this time.

SMPS TEST 2:
(Turning on the Backlights)
Leave 1st jumper in place.
(B) Jump pin 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. During Test 2, the Error LEDs will blink 3 times every second.

Note: If there is a problem with a load from the Inverters, you can disconnect Inverter Secondary first, the Right side of the screen should light up.
To run Inverter Secondary without the Inverter Main, Disconnect CN1100 and CN1400. Using the unplugged connectors, Jump 24V from the plug CN1400 pin 1 to connector the plug CN1100 pin 1. Jump DRV_ON from the plug CN1400 pin 12 to the plug CN1100 pin 12. The Left Side of the Screen should light up.

P201 "SMPS Board" to P2301 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode
17-18	Gnd	Gnd	Gnd	Gnd
16	24V	0V	23.93V	OL
13-15	12V	0V	11.95V	0.49V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	23.93V	1.11V
7-8	Gnd	Gnd	Gnd	Gnd
6	P-DIM2	0V	0V	OL
5	3.5V	3.56V	3.56V	OL
4	P-DIM	0V	0.23V~3.27V	OL
3	3.5V	3.56V	3.52V	OL
2	DRV_ON	0V	3.21V	OL
1	PWR_ON	0V	3.39V	1.2V

P202 "SMPS Board" to CN1400 "Inverter Main"

PIN	LABEL	STBY	RUN	Diode
14	P-DIM	0V	0.23V~3.27V	OL
13	P-DIM2	0V	0V	OL
12	DRV_ON	0V	3.21V	OL
11	N/C	n/c	n/c	n/c
6-10	Gnd	Gnd	Gnd	Gnd
1-5	24V	0V	23.93V	1.11V

P203 "SMPS Board" to P1400 "UHD Board"

PIN	LABEL	STBY	RUN	Diode
6-10	Gnd	Gnd	Gnd	Gnd
1-5	12V	0V	11.95V	0.49V

CN11, CN12 Local Dimming

To the Panel

Pin 1 (-5.44V) VGL_L
Pin 3 (27.74V) 28V
Pin 39 (3.3V) VCC_L
Pin 41-43 (8.2V) 8V
Pin 45-50 (16V) VDD_L
Pin 12 (3.3V) VCC_R
Pin 8-10 (8.2V) 8V
Pin 1-6 (16V) VDD_R
Pin 48 (27.74V) 28V
Pin 50 (-5.44V) VGL_R
CN3, CN4, CN5 and CN6 to the Panel

P2300 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2	1.34V
3	1.05V
4	OL
5	1.05V
6	OL
7-8	Gnd
9-10	OL
11-12	Gnd
13-15	OL
16	OL
17-18	Gnd

For voltages See P201

Slide Speaker Motor Board
To Motor
Open/Close Sw
11.94V All Speaker Pins
Spk ft R
Spk ft L
Pin 8 CTRL_B
Pin 6 CTRL_D
13.5V p/p CTRL A, B, C or D

P4000 "MAIN Board" To "Wi-Fi and Motion Board"

Pin	Label	Run	Diode Check	To What
1	+3.5V_WOL	3.47V	1.06V	WiFi Tx/Rx
2	+3.5V_Normal	3.32V	0.56V	Magic Remote
3	WiFi_DM	0.03V	1.12V	WiFi Tx/Rx
4	RTS	0V	OL	Magic Remote
5	WiFi_DP	0.03V	1.20V	WiFi Tx/Rx
6	M_Remote_Rx	3.32V	OL	Magic Remote
7	Gnd	Gnd	Gnd	WiFi Tx/Rx
8	M_Remote_Tx	3.32V	OL	Magic Remote
9	WOL	0.04V	1.70V	WiFi Tx/Rx
10	RF_Reset	3.32V	OL	Magic Remote
11	Gnd	Gnd	Gnd	Magic Remote
12	CTS	0V	OL	Magic Remote

To Main P4000

Wi-Fi Tx/Rx
p/n: EAT61813801

Slide Speaker Assembly
p/n: ABA74589501
Includes Ft. Left and Right Full range speakers plus tweeters, Motor Driver Board, Motor all contained in one assembly in a metal case.

p/n: EBR76363001
Motion Remote Tx/Rx J1
To Main P4000

Front IR J1
p/n: EBR77493501

Key Board

Wi-Fi Motion Remote

55LA9700 Main Board Component Voltages

IC102



Pin	NVRAM Memory
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.32V
[6]	3.32V
[7]	Gnd
[8]	3.32V

IC506



Pin	DDR_VTT Regulator
[1]	0.73V
[2]	1.5V
[3]	0.74V VTT (In)
[4]	Gnd
[5]	0.74V
[6]	0.74V
[7]	3.33V (Enable)
[8]	Gnd
[9]	n/c
[10]	3.33V VTT (Out)

IC2300



Pin	+1.0V_VDD Regulator
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.45V
[4]	5.42V
[5]	Gnd
[6]	1.02V (Out)
[7]	6.41V
[8]	12V (In)

IC2301



Pin	+3.3V_NORMAL Regulator
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.46V
[4]	3.42V
[5]	Gnd
[6]	3.37V (Out)
[7]	8.79V
[8]	12V (In)

IC2302



Pin	(+2.5V_NORMAL) Regulator
[1]	3.35V (in)
[2]	n/c
[3]	5.12V (in)
[4]	3.53V (ctrl)
[5]	Gnd
[6]	4.92V
[7]	0.81V
[8]	2.56V (out)

IC2303



Pin	(+1.1V_CORE) Regulator
[1]	0.49V
[2]	Gnd
[3]	Gnd
[4]	11.89V (12V In)
[5]	11.89V (12V In)
[6]	11.89V (12V In)
[7]	0.6V
[8]	0.44V
[9]	1.77V
[10]	3.47V (Enable)
[11]	1.27V (Out)
[12]	1.27V (Out)
[13]	8.16V
[14]	n/c

IC2304



Pin	(+5V_NORMAL) Regulator
[1]	8.74V
[2]	n/c
[3]	n/c
[4]	1.22V
[5]	3.23V (Enable)
[6]	Gnd
[7]	12V (In)
[8]	5.12V (Out)

IC2305



Pin	+1.5V_DDR Regulator
[1]	3.47V (3.5V_ST In)
[2]	3.47V (3.5V_ST In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.69V
[8]	0.51V
[9]	1.86V
[10]	1.54V (Out)
[11]	1.54V (Out)
[12]	1.54V (Out)
[13]	5.04V
[14]	n/c
[15]	3.47V (Enable)
[16]	3.47V (3.5V_ST In)

IC2307



Pin	PWR_Det 12V Sense
[1]	Gnd
[2]	3.68V (Reset)
[3]	3.71V (In)

IC2308



Pin	PWR_Det 20V Sense
[1]	Gnd
[2]	3.74V (Reset)
[3]	3.77V (In)

IC3100



Pin	Spk Motor Control
[1-3]	0.08V (Motor_Ctrl_A)
[4-6]	0.08V (Motor_Ctrl_B)
[7]	n/c
[8]	Gnd
[9]	12V (In)
[10]	n/c
[11-13]	0.08V (CTRL_B)
[14-16]	0.08V (CTRL_A)

Control Lines are 1.48V during Movement

IC3101



Pin	Spk Motor Control
[1-3]	0.08V (Motor_Ctrl_C)
[4-6]	0.08V (Motor_Ctrl_D)
[7]	n/c
[8]	Gnd
[9]	12V (In)
[10]	n/c
[11-13]	0.08V (CTRL_C)
[14-16]	0.08V (CTRL_D)

Control Lines are 1.48V during Movement

IC3200



Pin	VDD_12V Regulator
[1]	Gnd
[2]	1.2V (VDD_12 Out)
[3]	3.33V (3.3V_Normal In)

IC3202



Pin	MHL Power
[1]	0V (5V_HDMI4_Out)
[2]	Gnd
[3]	0V (MHL_Det Enable)
[4]	0V (MHL_Det Enable)
[5]	5.12V (5V_Normal In)

IC4306



Pin	5V for USB 2/3 USB_OCP 2/3
[1]	Gnd
[2]	5.12V (5V_Normal In)
[3]	3.32V (USB_CTRL3)
[4]	3.32V (USB_CTRL2)
[5]	3.33V (USB_OCD2)
[6]	5.12V (5V_USB2_Out)
[7]	5.12V (5V_USB3_Out)
[8]	3.33V (USB_OCD3)

IC4500



Pin	5V for USB 1 USB_OCP 2/3
[1]	Gnd
[2-3]	5.12V (5V_Normal In)
[4]	3.32V (Enable)
[5]	2.56V
[6-8	5.12V (5V_USB1_Out)

IC6100



Pin	Head Phone Amp
[1]	Gnd
[2]	0V (R_In)
[3]	0V (R_Out)
[4]	Gnd
[5]	0.08V (Mute)
[6]	(-3.23V)
[7]	(-1.61V)
[8]	1.65V
[9]	3.33V (In)
[10]	Gnd
[11]	n/c
[12]	0V (L_Out)
[13]	0V (L_In)
[14]	Gnd

IC6501



Pin	+1.23V_D_Demod Regulator
[1]	n/c
[2]	5.04V
[3]	3.32V (In)
[4]	5.12V
[5]	n/c
[6]	1.24V (Out)
[7]	0.61V
[8]	Gnd

IC6503

Pin	+1.8V_TU Switch
[Gnd]	0V (Gnd)
[Out]	1.8V (Out)
[In]	3.31V (In)

IC6801



Pin	RS232 Data
[1]	3.49V
[2]	3.72V
[3]	0V
[4]	0.02V
[5]	(-5.04V)
[6]	(-5.68V)
[7]	n/c
[8]	n/c
[9]	n/c
[10]	n/c
[11]	3.32V
[12]	3.49V
[13]	0V
[14]	(-5.68V)
[15]	Gnd
[16]	3.49V (3.5V_ST In)

Q2300



Pin	PWR_On Switch
[1]	3.54V
[2]	2.83V
[3]	3.42V

Q2301



Pin	Panel_VCC CTRL Drives Q2302
[B]	0.63V
[C]	0.08V
[E]	Gnd

Q2302



Pin	Panel_VCC Switch
[G]	1.78V
[S]	11.98V
[D]	11.94V

Q3001



Pin	HDMI CEC FET
[G]	3.53V
[S]	3.49V
[D]	3.47V

Q3200



Pin	Drives MHL Det Q3201
[B]	0.06V
[C]	3.53V
[E]	Gnd

Q3201



Pin	MHL Det
[B]	3.53V
[C]	0V (Out)
[E]	3.53V

Q3202



Pin	Switches VDD33 To IC3201
[G]	5.12V
[S]	3.33V (In)
[D]	3.33V (Out)

Q4200



Pin	Q4201 Driver
[B]	0V
[C]	1.32V
[E]	Gnd

Q4201



Pin	Camera Power
[G]	0.34V
[S]	3.48V
[D]	3.47V

55LA9700 Main Board Component Voltages (Large ICs)

IC3000

Micro Processor



Pin		Pin	
[1]	3.28V	[25]	0V
[2]	3.28V	[26]	3.53V
[3]	0.0V	[27]	3.53V
[4]	2.09V	[28]	0.03V
[5]	0.06V	[29]	0.1V
[6]	3.5V	[30]	0V
[7]	3.49V	[31]	3.34V
[8]	3.53V	[32]	3.53V
[9]	0V	[33]	3.53V
[10]	3.53V	[34]	3.75V
[11]	3.53V	[35]	0V
[12]	0V	[36]	0V
[13]	3.51V	[37]	0.02V
[14]	3.68V	[38]	0V
[15]	3.53V	[39]	3.53V
[16]	0V	[40]	3.53V
[17]	3.48V	[41]	0.65V
[18]	3.53V	[42]	0.13V
[19]	3.29V	[43]	0V
[20]	3.32V	[44]	0V
[21]	3.53V	[45]	0V
[22]	0V	[46]	2.09V
[23]	0V	[47]	Gnd
[24]	0.1V	[48]	3.53V

IC4200

Camera Processor



Pin		Pin	
[1]	0V	[15]	n/c
[2]	0V	[16]	n/c
[3]	0V	[17]	3.32V
[4]	0V	[18]	n/c
[5]	3.34V (In)	[19]	n/c
[6]	0V	[20]	n/c
[7]	0V	[21]	3.34V (In)
[8]	0.44V	[22]	3.31V
[9]	3.34V (In)	[23]	3.34V (In)
[10]	1.45V	[24]	0V
[11]	1.1V	[25]	3.34V
[12]	n/c	[26]	n/c
[13]	n/c	[27]	n/c
[14]	3.34V (In)	[28]	3.34V (In)

IC5200

Ethernet IC



Pin		Pin	
[1]	0V	[17]	0V
[2]	1.1V	[18]	n/c
[3]	1.1V	[19]	n/c
[4]	1.1V	[20]	0V
[5]	1.1V	[21]	3.26V
[6]	1.1V	[22]	1.23V
[7]	3.51V (In)	[23]	3.25V
[8]	0.03V	[24]	3.25V
[9]	0V	[25]	3.24V
[10]	0V	[26]	0V
[11]	0V	[27]	0V
[12]	0V	[28]	0V
[13]	n/c	[29]	1.08V
[14]	3.51V (In)	[30]	3.51V (In)
[15]	1.32V	[31]	0V
[16]	0V	[32]	0.58V

IC5600

Audio Amp



Pin		Pin	
[1]	11.94V (Spk_L+)	[25]	3.3V
[2-3]	23.92V (24V_AMP In)	[26]	Gnd
[4]	17.94V	[27]	3.32V (3.3V_Norm
[5]	n/c	[28]	Gnd
[6]	3.31V	[29]	Gnd
[7]	n/c	[30]	Gnd
[8]	Gnd	[31]	3.32V
[9]	0V	[32]	6.68V
[10]	0.68V	[33]	17.96V
[11]	1.05V	34-35]	23.92V (24V_AMP
[12]	1.8V	[36]	11.94V (Spk_R-)
[13]	3.32V (3.3V_Normal I	[37]	Gnd
[14]	0.39V	[38]	Gnd
[15]	1.67V	[39]	11.94V (Spk_R+)
[16]	1.0V	[40]	n/c
[17]	Gnd	[41]	n/c
[18]	1.81V	[42]	17.95V
[19]	3.32V (Mute)	[43]	17.95V
[20]	1.65V	[44]	n/c
[21]	1.65V	[45]	n/c
[22]	1.2V	[46]	11.94V (Spk_L-+)
[23]	3.31V	47-48]	Gnd
[24]	3.31V		

IC5700

Woofer Audio Amp



Pin		Pin	
[1]	0V (Spk_Woofer_L+)	[25]	3.3V (Reset)
[2-3]	23.92V (24V_AMP_Woofer In)	[26]	Gnd
[4]	17.94V	[27]	3.32V (3.3V_Normal In)
[5]	n/c	[28]	Gnd
[6]	3.31V	[29]	Gnd
[7]	n/c	[30]	Gnd
[8]	Gnd	[31]	3.32V
[9]	0V	[32]	6.68V
[10]	0.68V	[33]	17.96V
[11]	1.05V	34-35]	23.92V (24V_AMP_Woofer In)
[12]	1.8V	[36]	11.94V (Spk_Woofer_R-)
[13]	3.32V (3.3V_Normal In)	[37]	Gnd
[14]	0.39V	[38]	Gnd
[15]	1.67V	[39]	11.94V (Spk_Woofer_R+)
[16]	1.0V	[40]	n/c
[17]	Gnd	[41]	n/c
[18]	1.81V	[42]	17.95V
[19]	3.32V (Mute)	[43]	17.95V
[20]	1.65V	[44]	n/c
[21]	1.65V	[45]	n/c
[22]	1.2V	[46]	11.94V (Spk_Woofer_L-)
[23]	3.31V	47-48]	Gnd
[24]	3.31V		

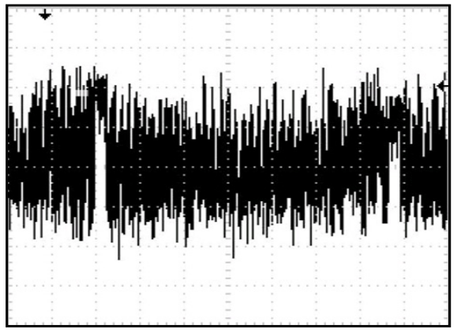
IC5800

Height Speaker Audio Amp



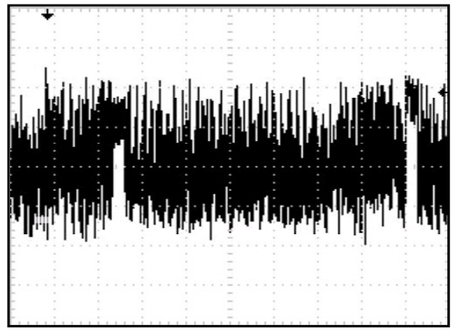
Pin		Pin	
[1]	0V (HSpk_L+)	[25]	3.3V (Reset)
[2-3]	23.92V (24V_UD_Amp In)	[26]	Gnd
[4]	17.94V	[27]	3.32V (3.3V_Normal In)
[5]	n/c	[28]	Gnd
[6]	3.31V	[29]	Gnd
[7]	n/c	[30]	Gnd
[8]	Gnd	[31]	3.32V
[9]	0V	[32]	6.68V
[10]	0.68V	[33]	17.96V
[11]	1.05V	34-35]	23.92V (24V_UD_AMP In)
[12]	1.8V	[36]	11.94V (HSpk_R-)
[13]	3.32V (3.3V_Normal In)	[37]	Gnd
[14]	0.39V	[38]	Gnd
[15]	1.67V	[39]	11.94V (HSpk_R+)
[16]	1.0V	[40]	n/c
[17]	Gnd	[41]	n/c
[18]	1.81V	[42]	17.95V

LVDS P7701 Pin 12
(TXA0N/TX11N)



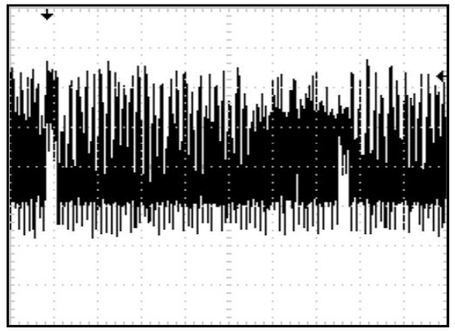
484mV p/p

LVDS P7701 Pin 14
(TXA1N/TX10N)



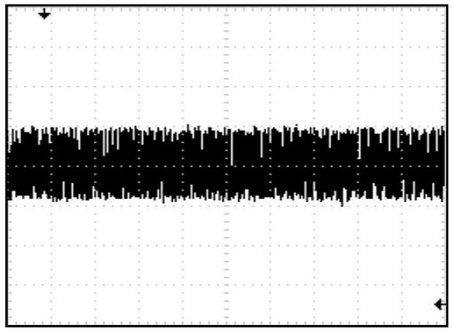
444mV p/p

LVDS P7701 Pin 16
(TXA2N/TX9N)



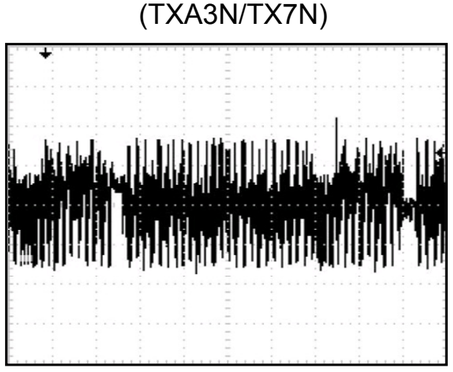
448mV p/p

LVDS P7701 Pin 19
(TXACLKN/TX8N)



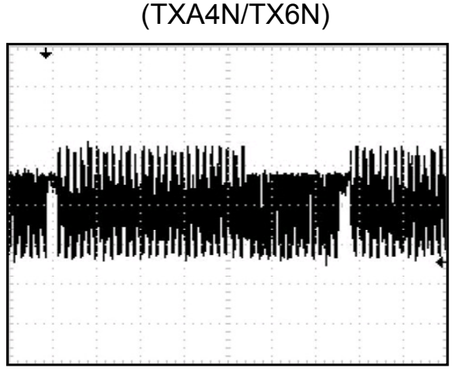
204mV p/p

LVDS P7701 Pin 22
(TXA3N/TX7N)



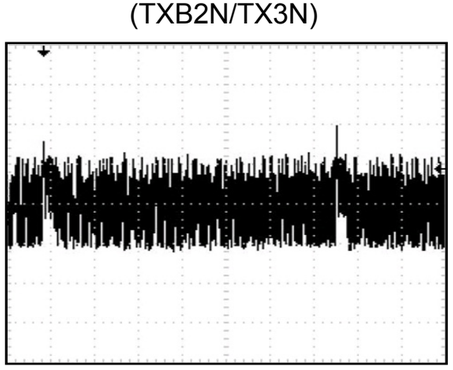
392mV p/p

LVDS P7701 Pin 24
(TXA4N/TX6N)



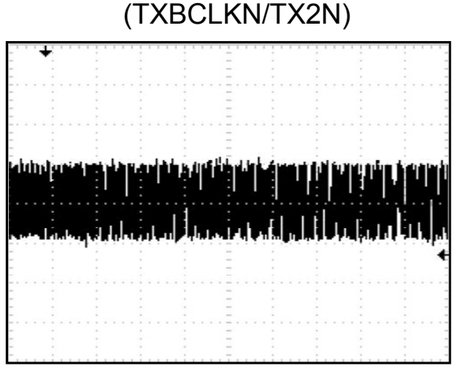
312mV p/p

LVDS P7701 Pin 32
(TXB2N/TX3N)



316mV p/p

LVDS P7701 Pin 35
(TXBCLKN/TX2N)



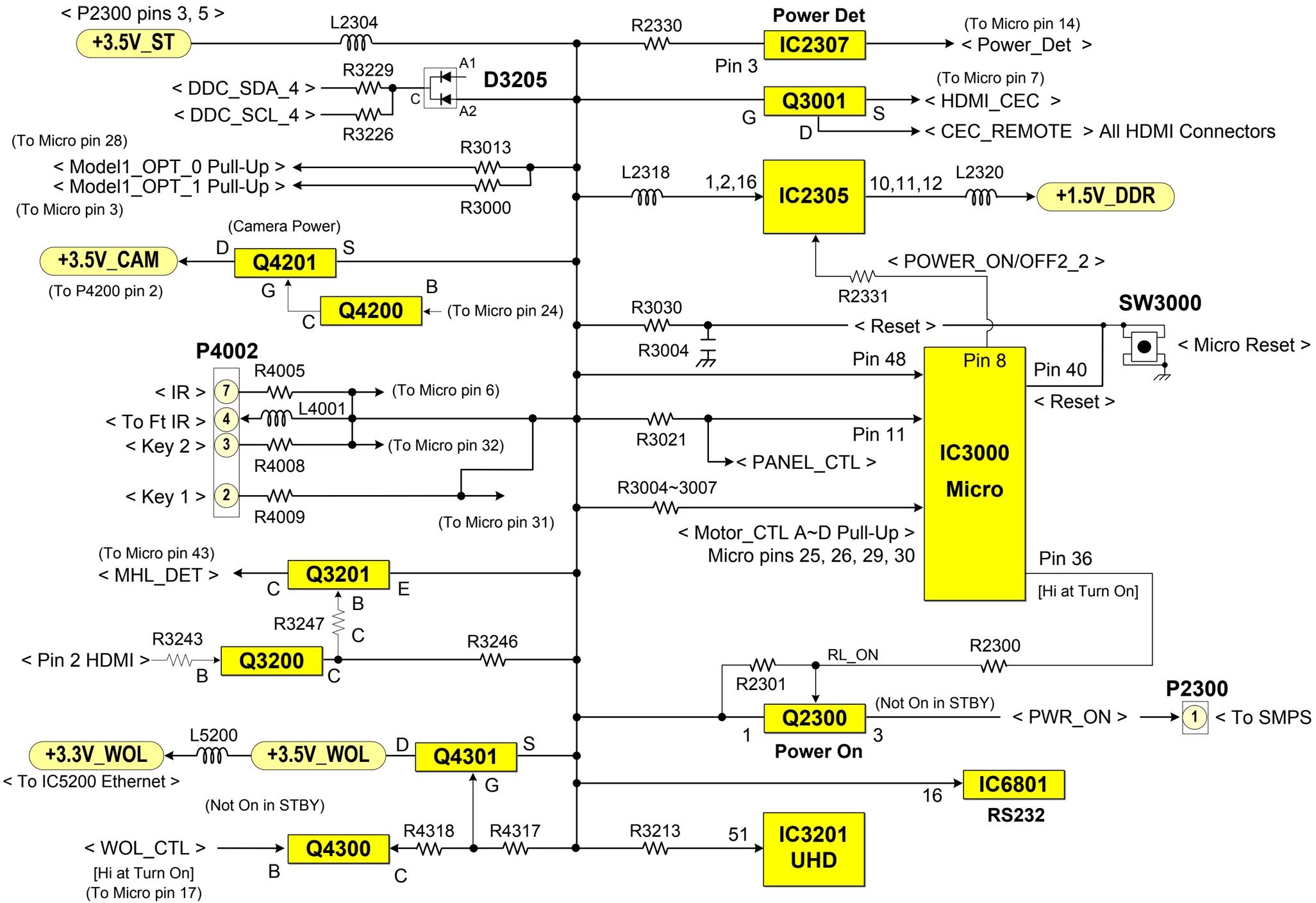
224mV p/p

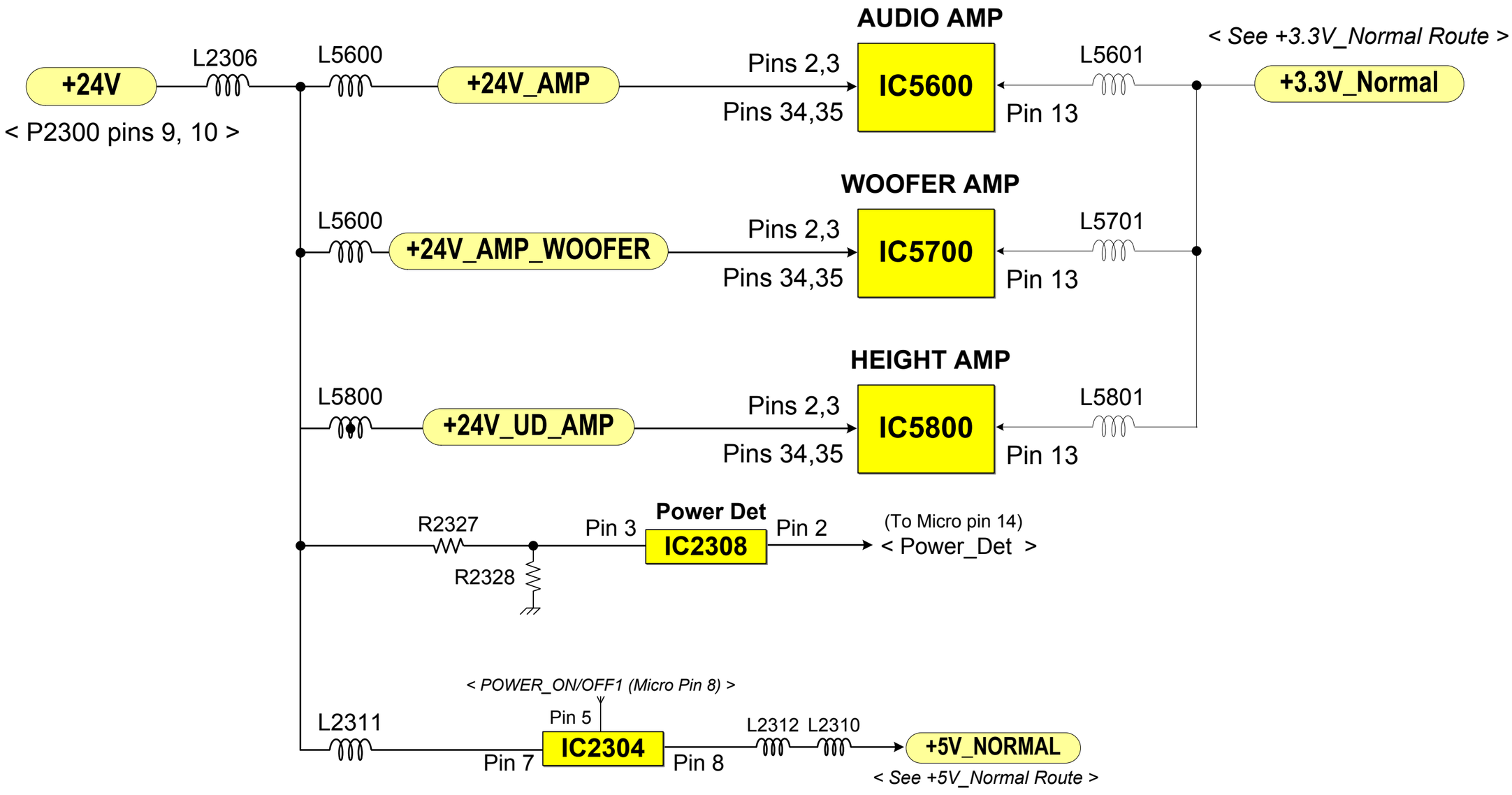
SMPTE Color Bar input signal (Component)
All signals taken at 2.5uSec per/sec / 100mV per/div

LVDS example signals taken from P7201. (These are just (+) side signals, (-) looks the same but inverted. P7702 signal are very similar, but are on Pins 10-15, 26-31, 36-398.
Clocks are on Pins 17-18 and 33-34. All signals taken with SMTPE Color bar input signal.
With an SMPTE Color Bar input signal, pins 28, 29, 30 and 31 do not have a signal.

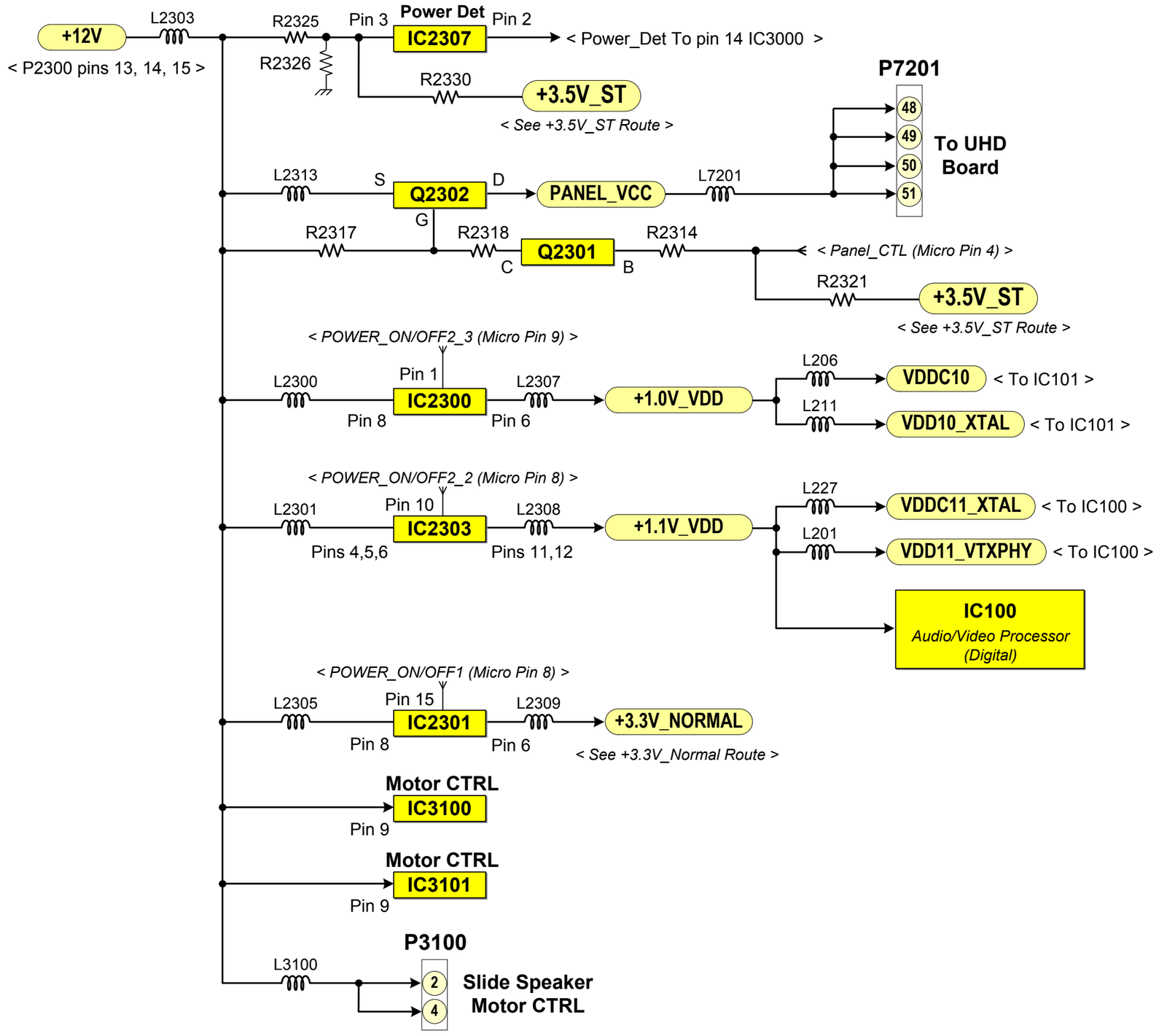
With an SMPTE Color Bar input signal, P7201 pins 28 – 31 and 40-41 and P7202 pins 10 - 13 do not have a signal.

55LA9700 Main Board (+3.5V_ST) Voltage Routing




AUDIO AMP
< See +3.3V_Normal Route >
L2306
L5600
L5601
+24V
+24V_AMP
Pins 2,3
IC5600
+3.3V_Normal
Pins 34,35
Pin 13
< P2300 pins 9, 10 >
WOOFER AMP
L5600
L5701
+24V_AMP_WOOFER
Pins 2,3
IC5700
Pins 34,35
Pin 13
HEIGHT AMP
L5800
L5801
+24V_UD_AMP
Pins 2,3
IC5800
Pins 34,35
Pin 13
Power Det
R2327
Pin 3
IC2308
Pin 2
(To Micro pin 14)
< Power_Det >
R2328
< POWER_ON/OFF1 (Micro Pin 8) >
Pin 5
L2311
L2312
L2310
IC2304
+5V_NORMAL
Pin 7
Pin 8
< See +5V_Normal Route >

55LA9700 Main Board (+12V) Voltage Routing



55LA9700 Main Board (+5V_Normal / +2.5V_Normal) Voltage Routing

+5V_NORMAL VOLTAGE ROUTING

< See +24V Route >
+5V_NORMAL
< From IC2304 >

R3216
< FHD IC >
IC3201
49
20
88

R3204
Q3202
G
D
S
+3.3V_NORMAL
< See +3.3V_Normal Route >

D3200
D3201
D3202
R3219,20,28
A1
< DDC_SDA_1,2,3 >
C
A2
< DDC_SCL_1,2,3>
R3217,18,25

P4200
< To Camera >
2
+3.5V_CAM
L4201

IC4500
Pin 2,3
Pin 6~8
+5V_USB_1
< To JK4400 pin 1 >

< MHL_Det (Q2301) >
< MHL_On/Off (IC101) >
IC4306
Pin 2
Pin 6
Pin 7
+5V_USB_2
< To JK4302 pin 1 >
+5V_USB_3
< To JK4300 pin 1 >

D3206
Pin 4
< To JK3203 pin 18 >
5V_HDMI_4
IC3202
Pin 1
Pin 5

+2.5V_NORMAL VOLTAGE ROUTING

+2.5V_NORMAL
IC2302
Pin 8
Pin 1
Pin 3
+3.3V_NORMAL
< See +3.3V_Normal Route >

L200
VDD25_AUD
< To IC101 >

L207
VDD25_LTX
< To IC101 >

L407
AUAD_REF_PO
< To IC101 >

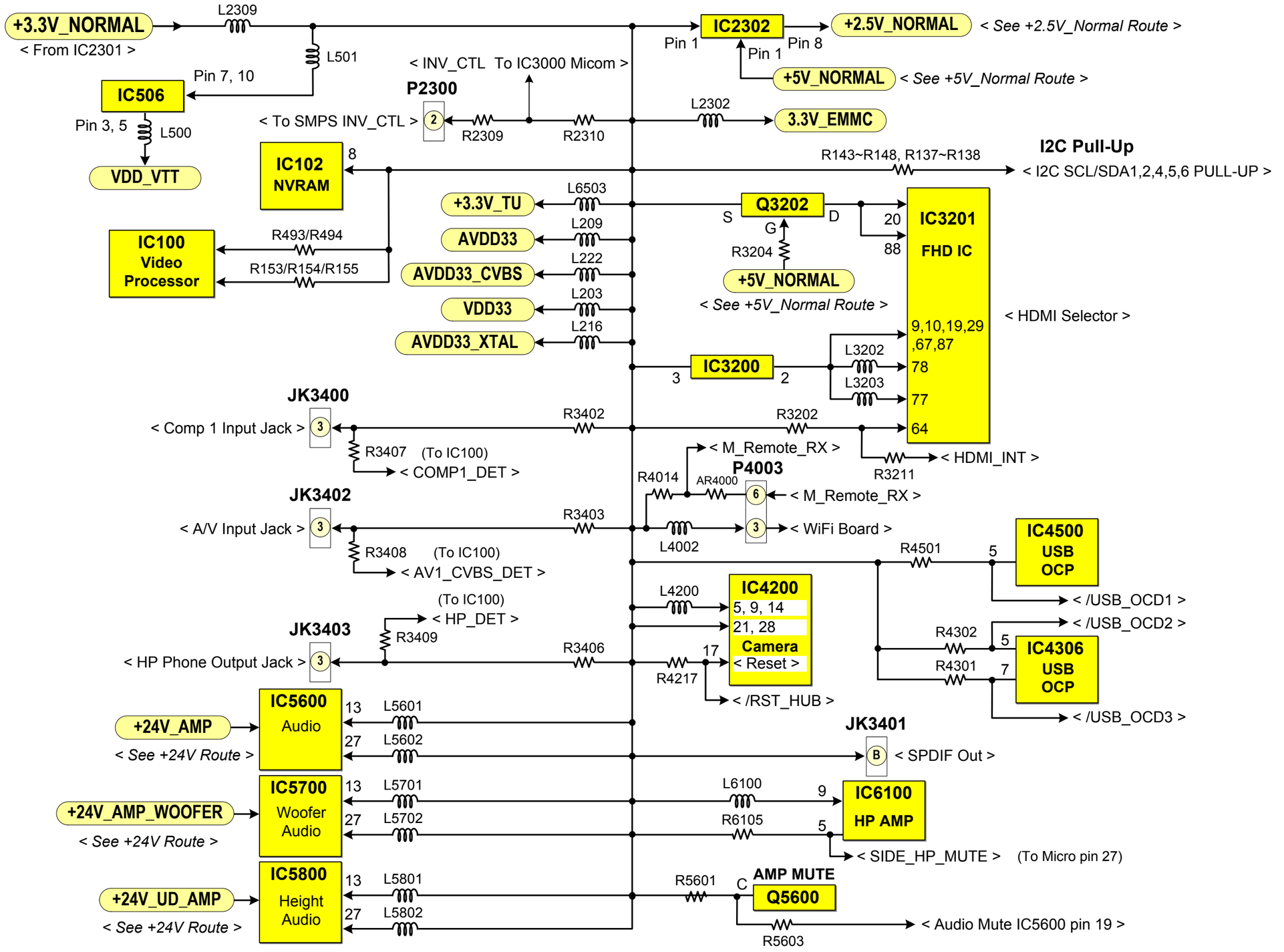
L220
AVDD25
< To IC100, IC101 >

L225
VDD25_REF
< To IC101 >

L238
VDD25_LVDS
< To IC100 >

L234
VDD25_XTAL
< To IC100 >

55LA9700 Main Board (+3.3V_Normal) Voltage Routing



55LB7200 INTERCONNECT DIAGRAM

Note: If a particular area is exhibiting a dimmer backlight level than other areas or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not,

1st: Check the P-DIM level, it should rise with the percentage shown on screen. 100% = 3.27V. Follow the P-DIM signal all the way to the SMPS.

2nd: Turn off Local Dimming in the Customers Menu. If the brightness returns to normal, examine the signals required for Local Dimming. (SIN, V-SYNC and SCLK). Suspect the Main Board.

You can also test each of the 12 blocks functionality by grounding the return path signal (using 220Ω resistor).

LED SINGLE BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 24V on TP P251. Confirm P-DIM is approx. 3V. Using a 220Ω resistor, (one end on ground), jump any of the blocks grounding pins on P801 or P802 (VC1~VC12) while observing the picture and each block should turn on maximum. (No: Bad Panel, Yes: Bad SMPS).

P801 Black "SMPS Board" to the "Backlights"

PIN	LABEL	RUN	Diode ✓	
1	LED+	24.87V-24.07V	1.33V	P251
2	VC3	0.96V~9.05V	OL	P805
3	VC6	0.96V~9.05V	OL	P808
4	LED+	24.87V-24.07V	1.33V	P251
5	VC1	0.96V~9.05V	OL	P803
6	VC2	0.96V~9.05V	OL	P804
7	VC3	n/c	n/c	
8	N/C	n/c	n/c	
9	N/C	n/c	n/c	
10	BL+	24.87V-24.07V	1.33V	P251
11	VC4	0.96V~9.05V	OL	P806
12	VC5	0.96V~9.05V	OL	P807
13	VC6	n/c	n/c	

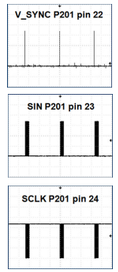
Bright (100%) to *Dim (0%)

P802 White "SMPS Board" to the "Backlights"

PIN	LABEL	RUN	Diode ✓	
1	LED+	24.87V-24.07V	1.33V	P251
2	VC7	0.96V~9.05V	OL	P809
3	VC8	0.96V~9.05V	OL	P810
4	VC9	n/c	n/c	
5	N/C	n/c	n/c	
6	N/C	n/c	n/c	
7	BL+	24.87V-24.07V	1.33V	P251
8	VC10	0.96V~9.05V	OL	EL70
9	VC11	0.96V~9.05V	OL	P813
10	VC12	n/c	n/c	
11	BL+	24.87V-24.07V	1.33V	P251
12	VC13	0.96V~9.05V	OL	P815
13	VC14	0.96V~9.05V	OL	P816
14	VC15	n/c	n/c	

Bright (100%) to *Dim (0%)

All 2.5mSec per/div

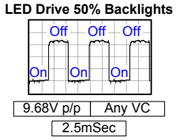


Pin 22 P201
3.56V p/p (Vsync)
Local Dimming On

Pin 23 P201
3.44V p/p (SIN)
Local Dimming On

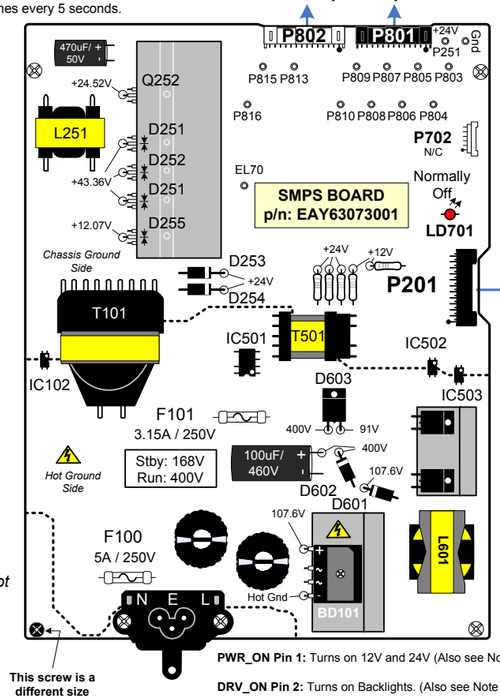
Pin 24 P201
3.44V p/p (SCLK)
Local Dimming On

LED Drive 50% Backlights



Indicates Hot Ground

If P801 or P802 is disconnected, the Backlights come on, on the side that is still plugged in. Then the go back off. Error line goes high and LD701 blinks 3 times every 5 seconds.



P201 "SMPS Board" to P2301 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode Check
24	SCLK	0V	0.14V	OL
23	SIN	0V	3.29V	OL
22	V_SYNC	0V	0.01V	OL
17-21	Gnd	Gnd	Gnd	Gnd
16	24V	0V	24.8V	1.12V
13-15	12V	0V	11.97V	0.48V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	24.8V	1.12V
8	P-DIM2	0V	0.16V~3.27V	OL (Not Used)
7	Gnd	Gnd	Gnd	Gnd
5-6	3.5V	3.55V	3.54V	OL
4	P-DIM	0V	0.16V~3.27V	OL
3	3.5V	3.55V	3.54V	OL
2	DRV_ON	0V	3.14V	1.68V
1	PWR_ON	0V	3.42V	1.16V

P4000 "MAIN" To "Joy Stick" & "M-Remote & WiFi Board" J1

PIN	LABEL	STBY	RUN	Diode Check
1	Gnd	Gnd	Gnd	Gnd
2	3.5V_WOL	0V	3.51V	OL
3	BT_Reset	2.34V	3.31V	OL
4	WiFi_DM	0V	0V	1.35V
5	N/C	n/c	n/c	n/c
6	WiFi_DP	1.16V	0V	1.35V
7	WOL	0V	0V	1.97V
8	Gnd	Gnd	Gnd	Gnd
9	Eye_SDA	3.55V	3.54V	1.97V
10	Gnd	Gnd	Gnd	Gnd
11	Eye_SCL	3.55V	3.54V	1.97V
12	Key 1	3.54V	3.54V	1.96V
13	Gnd	Gnd	Gnd	Gnd
14	Key 2	3.54V	3.54V	1.97V
15	IR	3.52V	3.50V	1.88V
16	3.5V_ST	3.55V	3.53V	OL
17	LDR_R	2.78V	0V	OL
18	Gnd	Gnd	Gnd	Gnd

P2301 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2	1.65V
3	OL
4	OL
5	OL
6	OL
7-8	Gnd
9-10	OL
11-12	Gnd
13-15	OL
16	OL
17-21	Gnd
22	OL
23	OL
24	OL

For voltages See P201

PWR_ON Pin 1: Turns on 12V and 24V (Also see Note 2)

DRV_ON Pin 2: Turns on Backlights. (Also see Note 2) DRV_ON is INV_ON from Main.

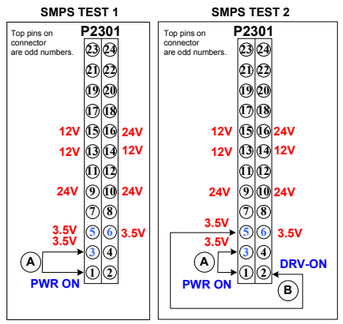
Note 1: Pin 16: Is Open on the SMPS. The voltage is loopback from the Main board.

Note 2: Backlight power is 0V with PWR_ON arrives, (no backlights) it goes to 24V when DRV_ON arrives, Backlights On).

Note 3: LD701 normal state is Off. If it is blinking, it indicates a problem. Missing DRV_ON, LED feedback error, Controller Error, etc….
Example: If either P801 or P802 is disconnected, backlights come on, then shut off, then LD701 blinks 3 times every 5 seconds.
If DRV_ON is missing, LD701 (after 1 minute), blinks 5 times every 5 seconds.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2301 on the Main board.
(A) Jump pin 3 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main, Note: Backlight power is 0V. Remove AC power.
No Backlights at this time.
During Test 1, the Error LED (after 1 minute) begins to blink 5 times every 5 seconds.

SMPS TEST 2:
(Turning on the Backlights)
Leave 1st jumper in place.
(B) Jump pin 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, Backlight Power (LED B+) will be 24V.
During Test 2, the Error LED does ot Blink.



Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect either P801 or P802. When AC is reapplied, the Backlight LEDs should turn on for about 4 seconds and then shut off.

TFT (IPS) PANEL p/n: EAJ62270501

DC Voltages to the Panel developed by on the Main Board, Output from P7702 and P7703

P7702 P7703 "MAIN Board" To "The Panel"

Pin	Pin	Label	Voltage	Source
35	16	Vcore	1.1V	Q7702 Drain
34	17	VCC18	1.78V	IC7703 pin 18
20	31	H_VDD	7.81V	IC7703 pin 17
19	32	VDD	15.7V	IC7703 pin 28
18	33	VDD	15.7V	IC7703 pin 28
13	38	GIP_RST	(-4.86V)	IC7703 pin 45
12	39	VST	1.4V	IC7703 pin 46
11	40	VGL	(-5V)	IC7703 pin 7
10	41	VGH_EVEN	*28V - (-5V)	IC7703 pin 47
9	42	VGH_ODD	*28V - (-5V)	IC7703 pin 48
8	43	VGH	27.92V	Cathode D7704
1	50	Z-OUT	0V	P7702 pin 1

*Toggles every second

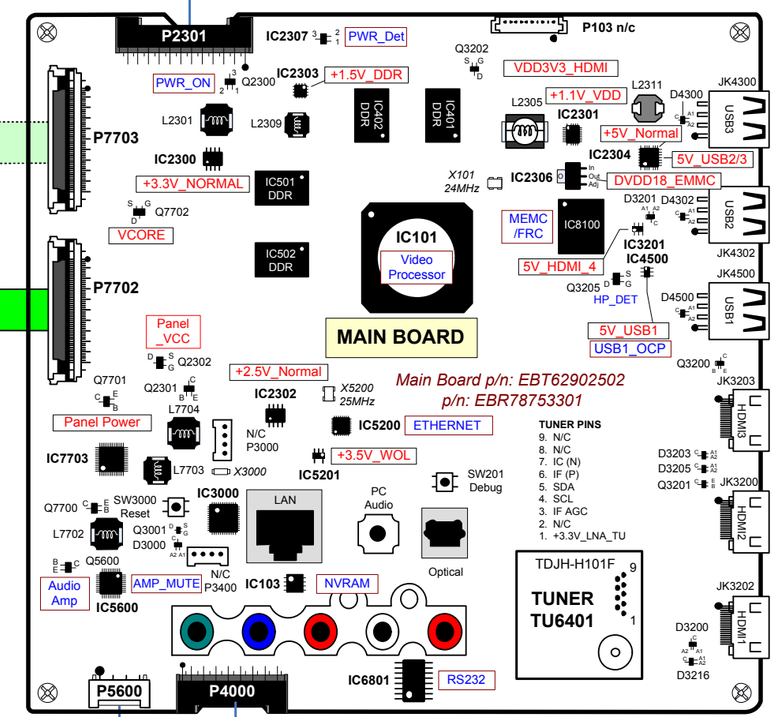
LV1 p/n: EAD62593902 — To P7702
LV2 p/n: EAD62593901 — To P7703

Video Signal Levels: p/p: Approx: 480 - 540mV

To the Panel

Video (TXB) pins 22, 23, 28, 29, 31, 32
Video Clock (TXBCLK) 25, 26

Video (TXD) pins 19, 20, 25, 26, 28, 29
Video Clock (TXDCLK) 22, 23



For DC voltages for Main board components see Page 2 of the Interconnect diagram.

p/n: EBR77970403
Joy Stick / IR

p/n: EAT62093301
P1
Wi-Fi / Magic Remote Tx/Rx

55LB7200 Main Board IC Voltages

IC103



Pin	NVRAM (Non-Volitile)
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.32V
[6]	3.32V
[7]	Gnd
[8]	3.32V (Vcc In)

IC2300



Pin	+3.3V_NORMAL Regulator
[1]	3.48V (Enable)
[2]	0.77V
[3]	5.22V
[4]	2.52V
[5]	Gnd
[6]	3.33V (Out)
[7]	8.28V
[8]	12.07V (Vcc In)

IC2302



Pin	+2.5V_NORMAL Regulator
[1]	3.32V (In)
[2]	n/c
[3]	5.09V (Vcc In)
[4]	3.53V (Enable)
[5]	Gnd
[6]	4.24V
[7]	0.8V
[8]	2.5V (Out)

IC2306



Pin	DVDD18_EMMC 1.8V Regulator
[In]	3.23V
[Out]	1.81V
[Adj]	0.35V

IC2303



Pin	+1.5V_DDR Regulator
[1]	3.52V (Vcc In)
[2]	3.52V (Vcc In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.34V
[8]	0.0V
[9]	2.26V
[10]	1.53V (Out)
[11]	1.53V (Out)
[12]	1.53V (Out)
[13]	5.06V
[14]	n/c
[15]	3.49V
[16]	3.52V (Vcc In)

IC2307



Pin	PWR_Det +12V in
[1]	Gnd
[2]	3.68V (Out)
[3]	3.71V (In)

IC3201



Pin	5V_HDMI_4 (MHL) Regulator
[1]	5.09V (Vcc In)
[2]	Gnd
[3]	0V (Enable)
[4]	n/c
[5]	0V
[6]	0V (Out)

IC4500



Pin	+5V_USB1 OCP_USB1
[1]	5.09V (Vcc In)
[2]	Gnd
[3]	3.29V (Enable)
[4]	2.96V (OCP Out)
[5]	0.38V
[6]	5.09V (Out USB1)

IC5201



Pin	+3.5V_WOL Regulator
[1]	3.52V (Out)
[2]	Gnd
[3]	0.44V n/c
[4]	3.52V (OCP Out)
[5]	3.52V (Vcc In)

IC6801



Pin	RS232 Routing
[1]	3.53V
[2]	5.69V
[3]	0V
[4]	0V
[5]	(-5.60V)
[6]	(-5.63V)
[7]	n/c (5.64V)
[8]	n/c (0V)
[9]	n/c (3.49V)
[10]	n/c (0V)
[11]	3.34V
[12]	3.48V
[13]	0V
[14]	(-5.59V)
[15]	0V (Gnd)
[16]	3.5V (Vcc In)

IC2301 +1.1V_VDD Regulator



Pin		Pin	
[1]	1.16V	[15]	12.05V (In)
[2]	5.08V	[16]	12.05V (In)
[3]	3.52V (Enable)	[17]	12.05V (In)
[4]	6.2V	[18]	n/c
[5]	n/c	[19]	12.05V (In)
[6]	1.14V (Out)	[20]	5.07V
[7]	1.14V (Out)	[21]	5.07V
[8]	1.14V (Out)	[22]	Gnd
[9]	1.14V (Out)	[23]	0.61V
[10]	Gnd	[24]	1.12V
[11]	Gnd	[25]	0.41V
[12]	Gnd	[26]	n/c
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

IC2304 +5V_Normal Regulator



Pin		Pin	
[1]	24.68V (In)	[15]	5.04V (OCP2)
[2]	24.68V (In)	[16]	5.09V
[3]	24.68V (In)	[17]	5.09V
[4]	Gnd	[18]	12.04V
[5]	Gnd	[19]	5.09V (Out)
[6]	Gnd	[20]	5.09V (Out)
[7]	6.25V	[21]	5.09V (Out)
[8]	6.25V	[22]	1.94V
[9]	3.53V (Enable)	[23]	0.60V
[10]	5.09V (Out USB2	[24]	0.35V
[11]	5.09V (Out USB3	[25]	1.24V
[12]	5.09V (USB2 Ctrl	[26]	0.45V
[13]	5.09V (USB3 Ctrl	[27]	0.45V
[14]	5.04V (OCP2)	[28]	Gnd

55LB7200 Transistors and Flat Pack IC Voltages

IC3000 Microprocessor



Pin		Pin	
[1]	0.06V	[25]	0V
[2]	**3.3V**	**[26]**	**0.04V**
[3]	0.05V	[27]	3.5V
[4]	0.08V	[28]	0V
[5]	0.02V	[29]	0V
[6]	**3.51V**	**[30]**	**0V**
[7]	3.49V	[31]	3.53V
[8]	3.53V	[32]	3.53V
[9]	3.53V	[33]	3.53V
[10]	3.53V	[34]	3.53V
[11]	3.53V	[35]	0V
[12]	0.17V	[36]	0V
[13]	**3.34V**	**[37]**	**0V**
[14]	3.66V	[38]	1.06V
[15]	3.53V	[39]	3.53V
[16]	0V	[40]	3.53V
[17]	**3.51V**	**[41]**	**0.64V**
[18]	3.53V	[42]	0.12V
[19]	3.24V	[43]	0V
[20]	3.34V	[44]	0V (n/c)
[21]	**3.48V** (Enable)	**[45]**	**0V** (n/c)
[22]	0V	[46]	2.09V
[23]	5.22V	[47]	Gnd
[24]	2.52V	**[48]**	3.53V **(**Vcc In**)**

IC5200 Ethernet



Pin		Pin	
[1]	0.65V	[17]	0V
[2]	**1.09V**	**[18]**	**n/c**
[3]	1.09V	[19]	n/c
[4]	1.09V	[20]	0V
[5]	1.09V	[21]	3.31V
[6]	1.09V	[22]	1.66V
[7]	3.52V (In)	[23]	3.52V
[8]	0.05V	[24]	3.52V
[9]	**0V**	**[25]**	**0V**
[10]	0.05V	[26]	0V
[11]	n/c	[27]	0V
[12]	0V	[28]	0V
[13]	**n/c**	**[29]**	**1.08V**
[14]	3.52V (In)	[30]	3.52V (In)
[15]	1.78V	[31]	0.78V
[16]	0V	[32]	0.78V

IC5600 Audio Amp



Pin		Pin	
[1]	n/c	[21]	12.34V
[2]	**1.28V**	**[22]**	**Gnd**
[3]	n/c	[23]	17.02V
[4]	Gnd	[24]	5.23V
[5]	n/c	[25]	Gnd
[6]	**1.28V**	**[26]**	**n/c**
[7]	0V	[27]	5.22V
[8]	1.65V	[28]	17.01V
[9]	1.65V	[29]	Gnd
[10]	3.32V	[30]	12.32V
[11]	3.32V	[31]	24.71V (Vcc In)
[12]	3.31V (Mute)	[32]	24.71V (Vcc In)
[13]	**n/c**	**[33]**	**12.34V**
[14]	3.31V	[34]	Gnd
[15]	n/c	[35]	17.03V (Reset)
[16]	17.02V	[36]	3.32V
[17]	**Gnd**	**[37]**	**Gnd**
[18]	12.33V	[38]	1.66V
[19]	24.71V (Vcc In)	[39]	Gnd
[20]	24.71V (Vcc In)	[40]	3.32V (Vcc In)

Q2300 PWR_On Switch



Pin	
[1]	3.53V
[2]	2.85V
[3]	3.42V

Q2301 Q2302 Control



Pin	
[B]	0.62V
[C]	0.07V
[E]	**Gnd**

Q2302 Panel_VCC Switch



Pin	
[G]	1.8V
[S]	12.03V
[D]	12.00V

Q3001 CEC Bi-Directional



Pin	
[G]	3.53V
[S]	**3.49V**
[D]	3.49V

Q3200 Q3201 Control



Pin	
[B]	0.0V
[C]	3.53V
[E]	Gnd

Q3201 MHL Switch



Pin	
[B]	3.52V
[C]	0V
[E]	3.52V

Q3202 VDD3V3_HDMI Switch



Pin	
[S]	3.32V (VCC In)
[G]	12.01V
[D]	**3.32V (Out)**

Q3205 HP Detection



Pin	
[G]	0V
[S]	Gnd
[D]	12.05V

Q5600 Amp Mute Driver



Pin	
[B]	0V
[C]	**3.32V**
[E]	Gnd

Q7700 VGL Control



Pin	
[B]	0V
[C]	5V
[E]	0V

IC7703 Panel Power DC-to-DC Conv



Pin		Pin	
[1]	3.79V	[29]	4.93V
[2]	**1.67V**	**[30]**	**0.47V**
[3]	0.07V	[31]	14.86V
[4]	0.02V	[32]	11.73V
[5]	0V	[33]	8.14V
[6]	**Gnd**	**[34]**	**7.29V**
[7]	(-5.07V) VGL Out	[35]	3.97V
[8]	5.89V	[36]	0.81V
[9]	0.68V	[37]	Gnd
[10]	1.81V	[38]	6.73V
[11]	1.81V (VCC18 In)	[39]	6.73V
[12]	1.81V (VCC18 Out)	[40]	6.69V
[13]	**Gnd**	**[41]**	**15.0V**
[14]	12.03V (Vcc In)	[42]	7.69V
[15]	12.03V (Vcc In)	[43]	27.89V (VGH Ou
[16]	12.03V (Vcc In)	[44]	27.89V (VGH Ou
[17]	**7.81V (HVDD Out)**	**[45]**	**(-4.95V)**
[18]	7.81V	[46]	(-5.03V)
[19]	Gnd	[47]	(-5.06V) VGH_E
[20]	3.32V	[48]	27.86V (VGH_O
[21]	**3.32V**	**[49]**	n/c
[22]	4.98V (VL Out)	[50]	0.81V (CLK6)
[23]	1.31V	[51]	0V (CLK5)
[24]	Gnd	**[52]**	2.98V **(**CLK4**)**
[25]	12.03V (Vcc In)	[53]	3.97V (CLK3)
[26]	12.03V (Vcc In)	[54]	5.68V (CLK2)
[27]	15.73V	[55]	7.28V (CLK1)
[28]	15.70V (VDD Out)	[56]	6.08V

Q7701 VGH Control



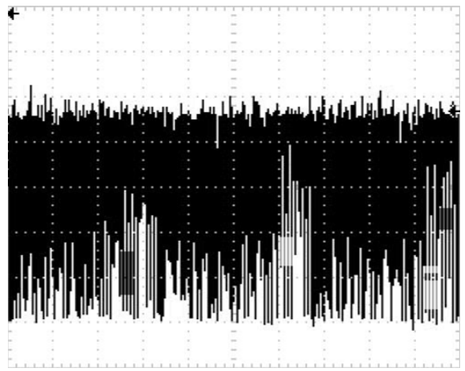
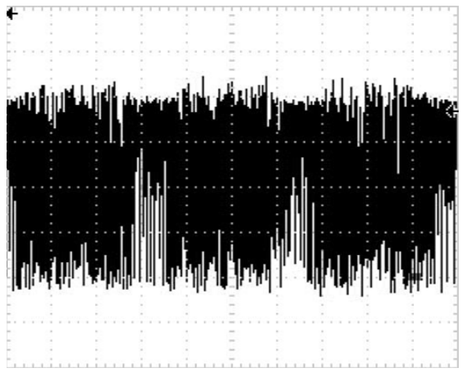
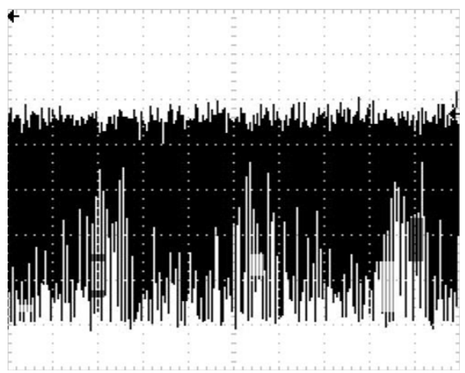
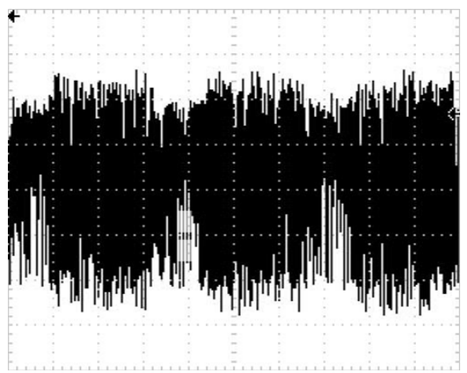
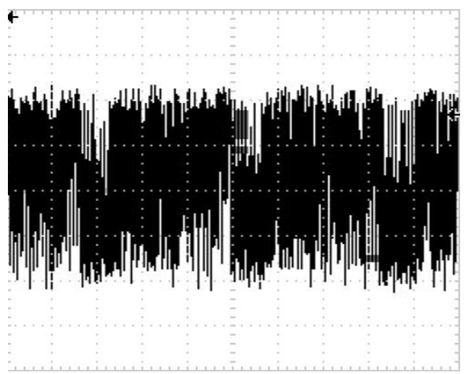
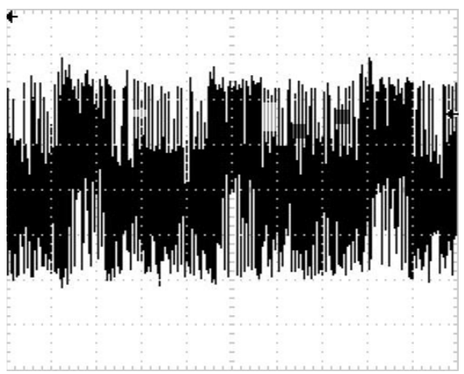
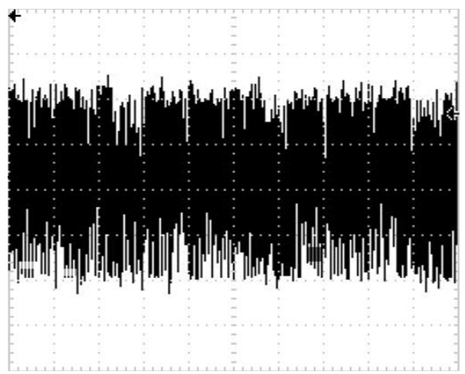
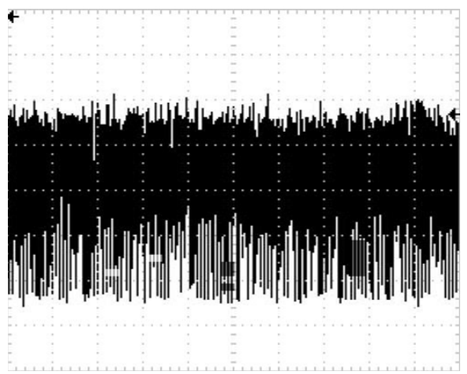
Pin	
[B]	15V
[C]	15.70V
[E]	14.14V

Q7702 VCORE Switch



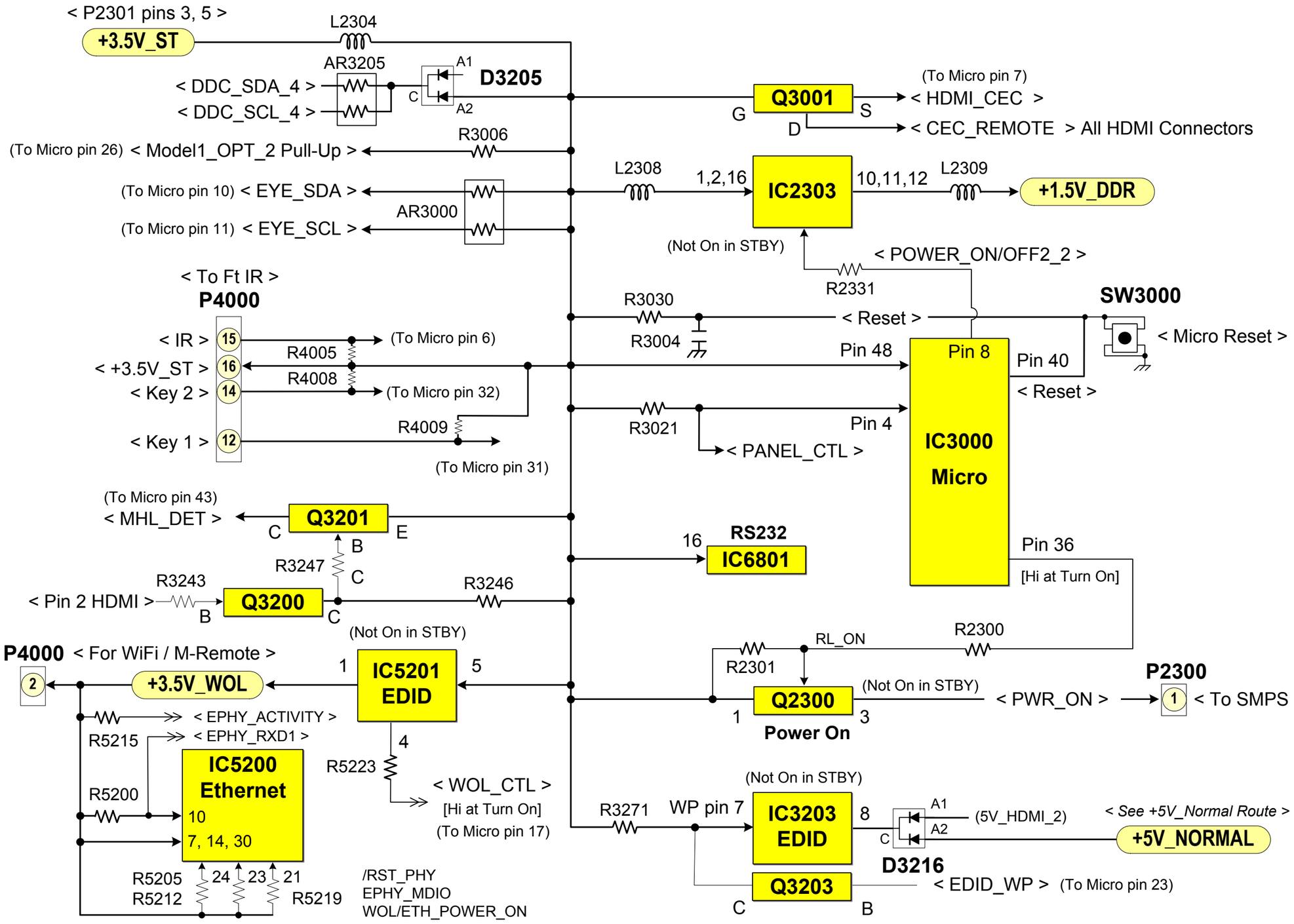
Pin	
[S]	1.11V (In)
[G]	**3.47V (Enable)**
[D]	1.11V (Out)

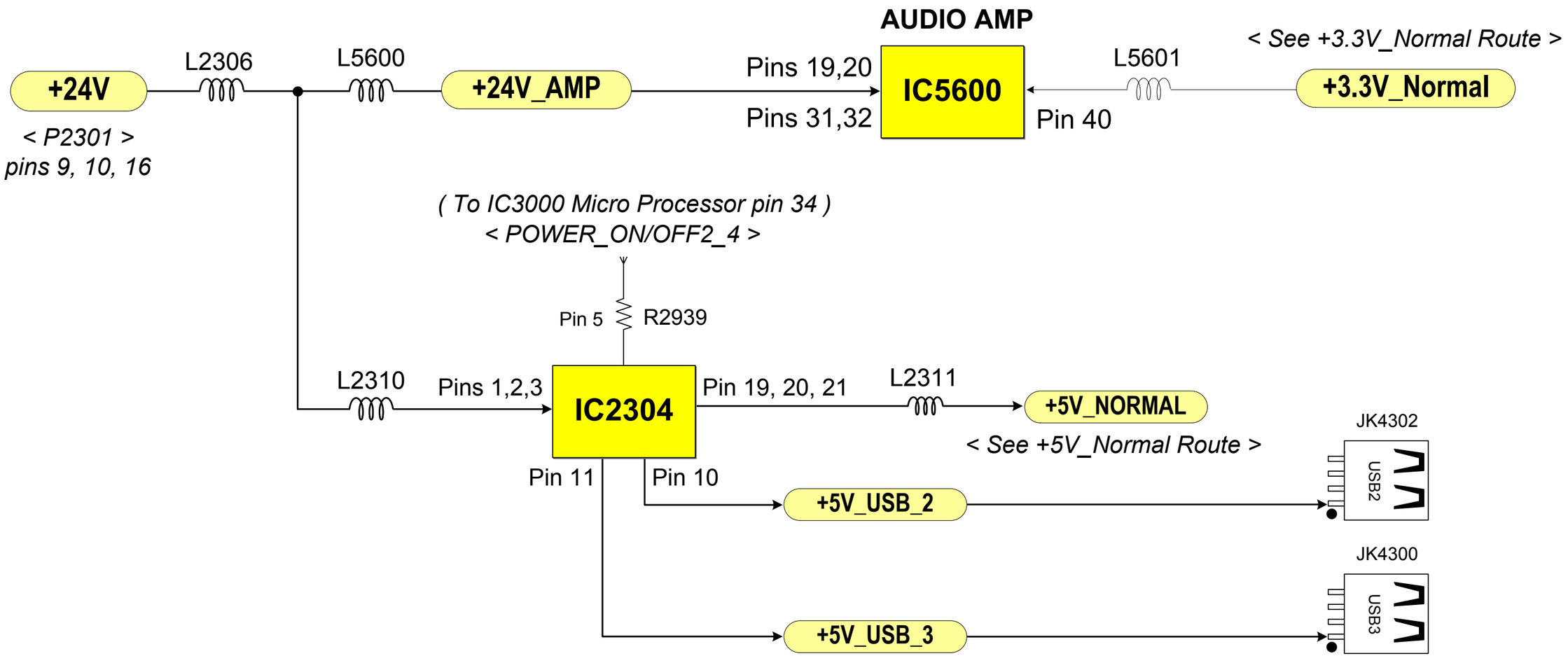
55LB7200 LVDS P7702 and P7703 Video Waveforms

LVDS P7702 Pin 22 (TXB2N)	LVDS P7702 Pin 25 (TXBCLKN)	LVDS P7702 Pin 28 (TXB3N)	LVDS P7702 Pin 31 (TXBAN)
			
540mV p/p	484mV p/p	528mV p/p	540mV p/p
LVDS P7703 Pin 20 (TXD2N)	LVDS P7703 Pin 22 (TXDCLKN)	LVDS P7703 Pin 25 (TXD3N)	LVDS P7703 Pin 28 (TXD4N)
			
508mV p/p	456mV p/p	480mV p/p	468mV p/p

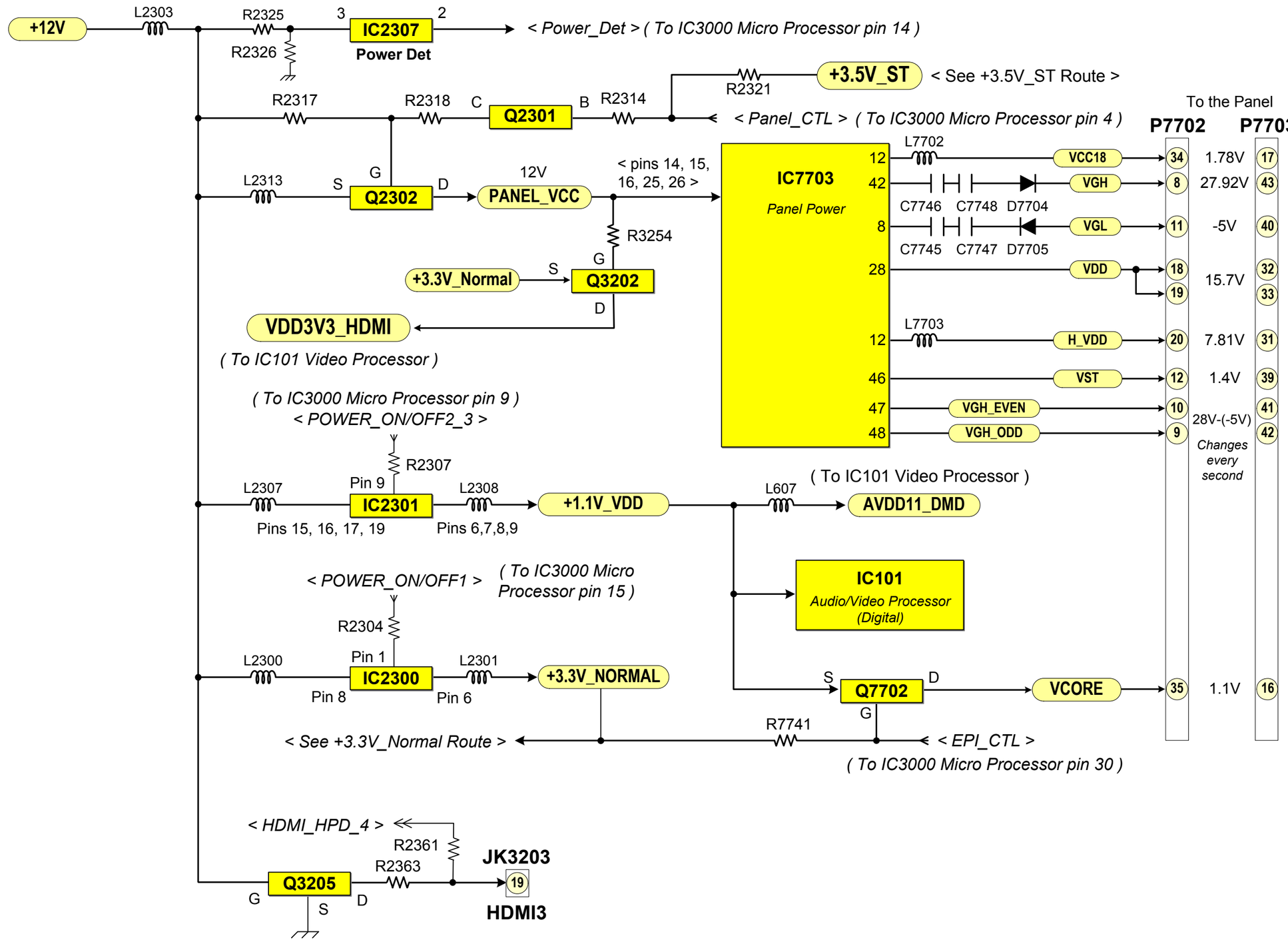
SMPTE Color Bar input signal (Component)
All signals taken at 2.5uSec per/sec / 100mV per/div

55LB7200 Main Board (+3.5V_ST) Voltage Routing




AUDIO AMP
< See +3.3V_Normal Route >
+24V
L2306
L5600
+24V_AMP
Pins 19,20
Pins 31,32
IC5600
L5601
Pin 40
+3.3V_Normal
< P2301 >
pins 9, 10, 16
(To IC3000 Micro Processor pin 34)
< POWER_ON/OFF2_4 >
Pin 5
R2939
L2310
Pins 1,2,3
IC2304
Pin 19, 20, 21
L2311
+5V_NORMAL
< See +5V_Normal Route >
JK4302
USB2
Pin 11
Pin 10
+5V_USB_2
JK4300
USB3
+5V_USB_3

55LB7200 Main Board (+12V) Voltage Routing



55LB7200 Main Board (+5V_Normal / +2.5V_Normal) Voltage Routing

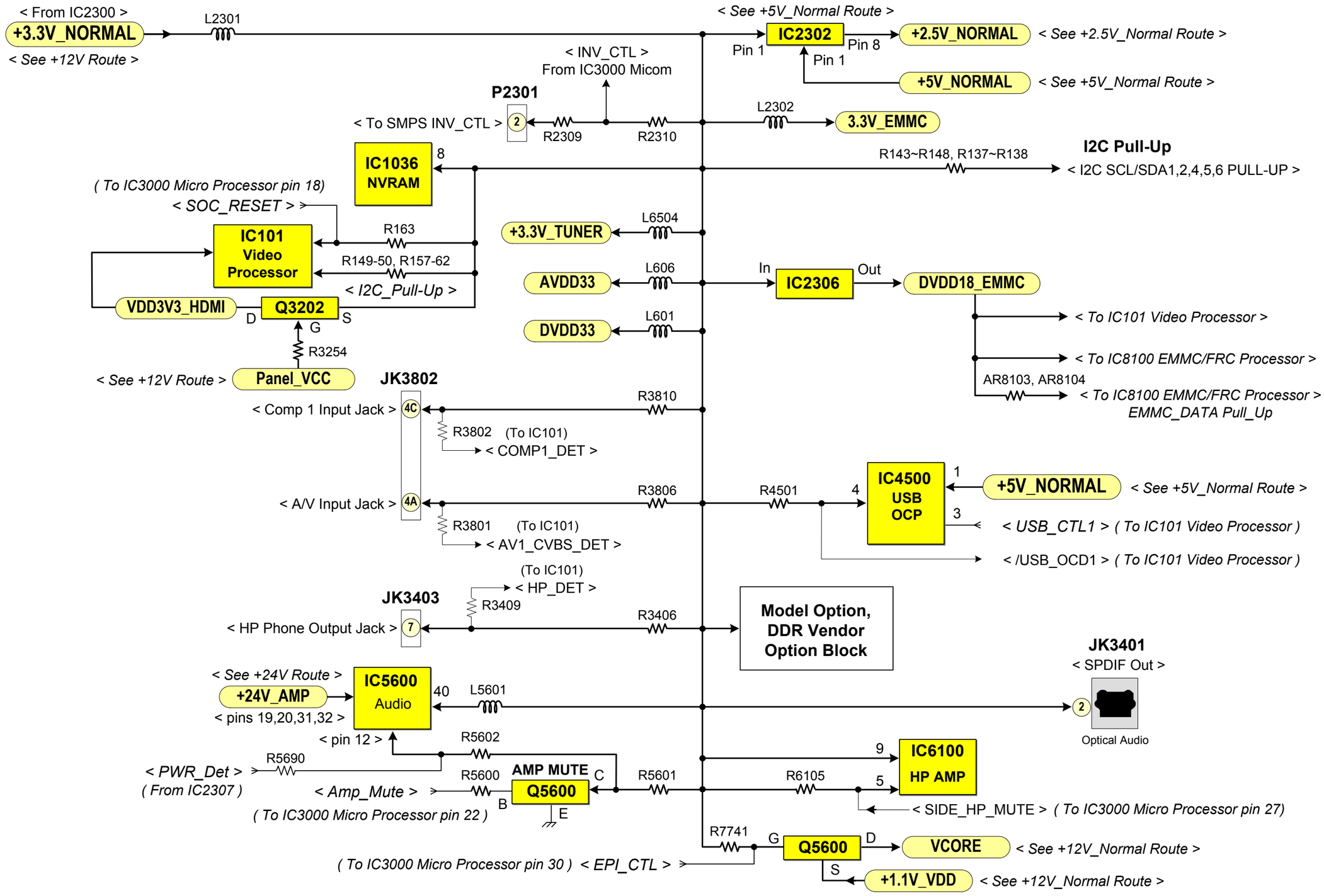
+5V_NORMAL VOLTAGE ROUTING

< See +24V Route >
+5V_NORMAL
< From IC2304 >
L2311
R3216
< FHD IC >
IC3201
49
20
88
R3204
Q3202
G
D
S
+3.3V_NORMAL
< See +3.3V_Normal Route >
D3200
D3203
Pull-Up
AR3204,05
A1
A2
C
< DDC_SDA_1,4 >
< DDC_SCL_1,4 >
< To IC3203 pin 8 See +3.5V_ST Route >
JK4500
USB1
< MHL_Det (Q2301 Collector) >
< MHL_On/Off (IC101) pin 43>
IC4500
1
3
6
+5V_USB_1
< USB_CTL1 > (To IC101 Video Processor)
D3206
5V_HDMI_4
IC3201
3
6
1

+2.5V_NORMAL VOLTAGE ROUTING

+5V_NORMAL
+2.5V_NORMAL
IC2302
Pin 1
Pin 8
+3.3V_NORMAL
< See +3.3V_Normal Route >
Pin 3 (Enable)
< Power_On/Off2_1 > (To IC3000 Micro Processor pin 33)
L603
VDD25_AUD
< To IC101 >
< To IC101 >
L604
VDD25_C4TX
< To IC101 >
R380
AUAD_R_REF
< To IC101 >
R347
L307
L602
AUAD_L_REF
AVDD25
< To IC101 >

55LB7200 Main Board (+3.3V_Normal) Voltage Routing



CONFIDENTIAL

SCHEMATIC DIAGRAMS

PRODUCT NAME Amoy T-CON/AITHER

UNIT NAME T-CON/AITHER BOARD

UNIT NO. PE0971

PWA NAME

PWA NO.

PWB NAME

PWB NO.

PAGE	FUNCTION		REV	PAGE	FUNCTION		REV	PAGE	FUNCTION	REV	PAGE	FUNCTION	REV
1	表紙-1	sh.001		26	3D GLASSES I/F(Ir)	sh.828		51			76		
2	表紙-2	sh.002		27	CONFIGURATION REGs.1	sh.831		52			77		
3	AITHER (SYSTM)	sh.800		28	CONFIGURATION REGs.2	sh.832		53			78		
4	AITHER [Back Light]	sh.801		29	T-CON LVDS E/H INPUT	sh.850		54			79		
5	AITHER [LVDS Input]	sh.802		30	T-CON LVDS A/D INPUT	sh.851		55			80		
6	AITHER [LVDS Output 1]	sh.803		31	T-CON	sh.852		56			81		
7	AITHER [LVDS Output 2]	sh.804		32	T-CON	sh.853		57			82		
8	AITHER [DDR3 I/F]	sh.805		33	T-CON	sh.854		58			83		
9	AITHER [POWER 1]	sh.806		34	T-CON	sh.856		59			84		
10	AITHER [POWER 2]	sh.807		35	TCON Placement	sh.857		60			85		
11	AITHER [POWER 3]	sh.808		36	TCON Circuit (TOP)	sh.858		61			86		
12	AITHER [POWER 4]	sh.809		37	POWER 1.5V	sh.891		62			87		
13	AITHER POWER Sep.	sh.810		38	POWER 1.2V	sh.892		63			88		
14	Clocks for Aither	sh.811		39	POWER 3.3V	sh.893		64			89		
15	DDR3 SDRAM 1 for AITHER	sh.812		40	L-CON PWR CONNECTOR	sh.894		65			90		
16	DDR3 SDRAM 2 for AITHER	sh.813		41				66			91		
17	DDR3 Termination Regs.	sh.814		42				67			92		
18	DDR3 VTT-REG	sh.815		43				68			93		
19	DDR3 DUMPING REGs.	sh.816		44				69			94		
20	EEP ROM1 for AITHER	sh.817		45				70			95		
21	EEP ROM2 for AITHER	sh.818		46				71			96		
22	EEP ROM3 for AITHER	sh.819		47				72			97		
23	EEP ROM4 for AITHER	sh.820		48				73			98		
24	LVDS Input Conn. 1	sh.821		49				74			99		
25	LVDS Input Conn. 2	sh.822		50				75			100		

APPROVED BY	CHECKED BY	DESIGNED BY	TITLE	TOTAL	PAGE NO.	REV.MARK	DRAWING.NO.
			CIRCUIT DIAGRAM	1	表紙-1	00	

2011.03.23 20:22

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REV. MARK	CONTENTS	APPROVED BY	REVISED BY	REGISTERED
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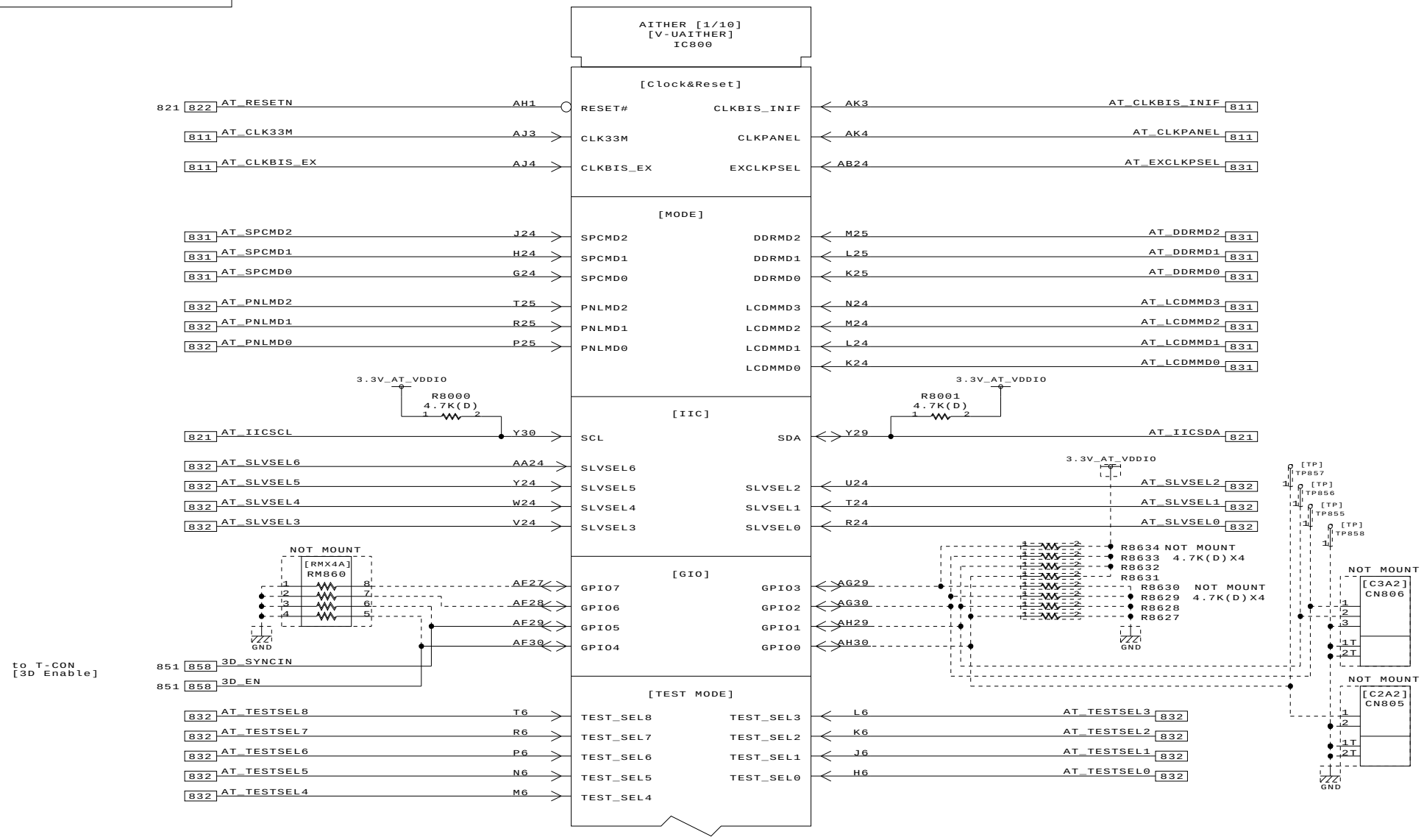
REV. MARK	CONTENTS	APPROVED BY	REVISED BY	REGISTERED

DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
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2011.03.23 20:23

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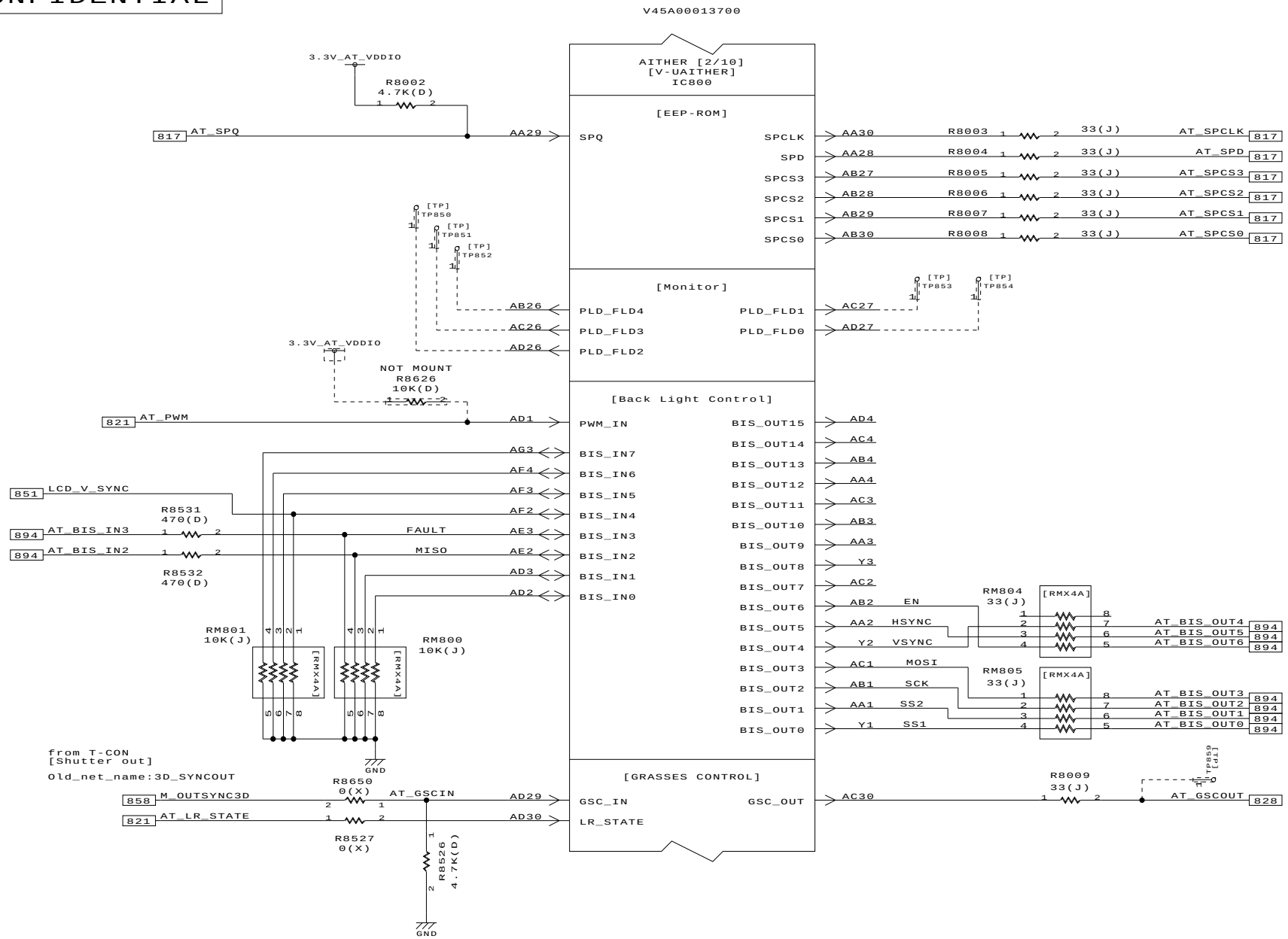


DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
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2011.03.23 20:23

TOSHIBA CORPORATION

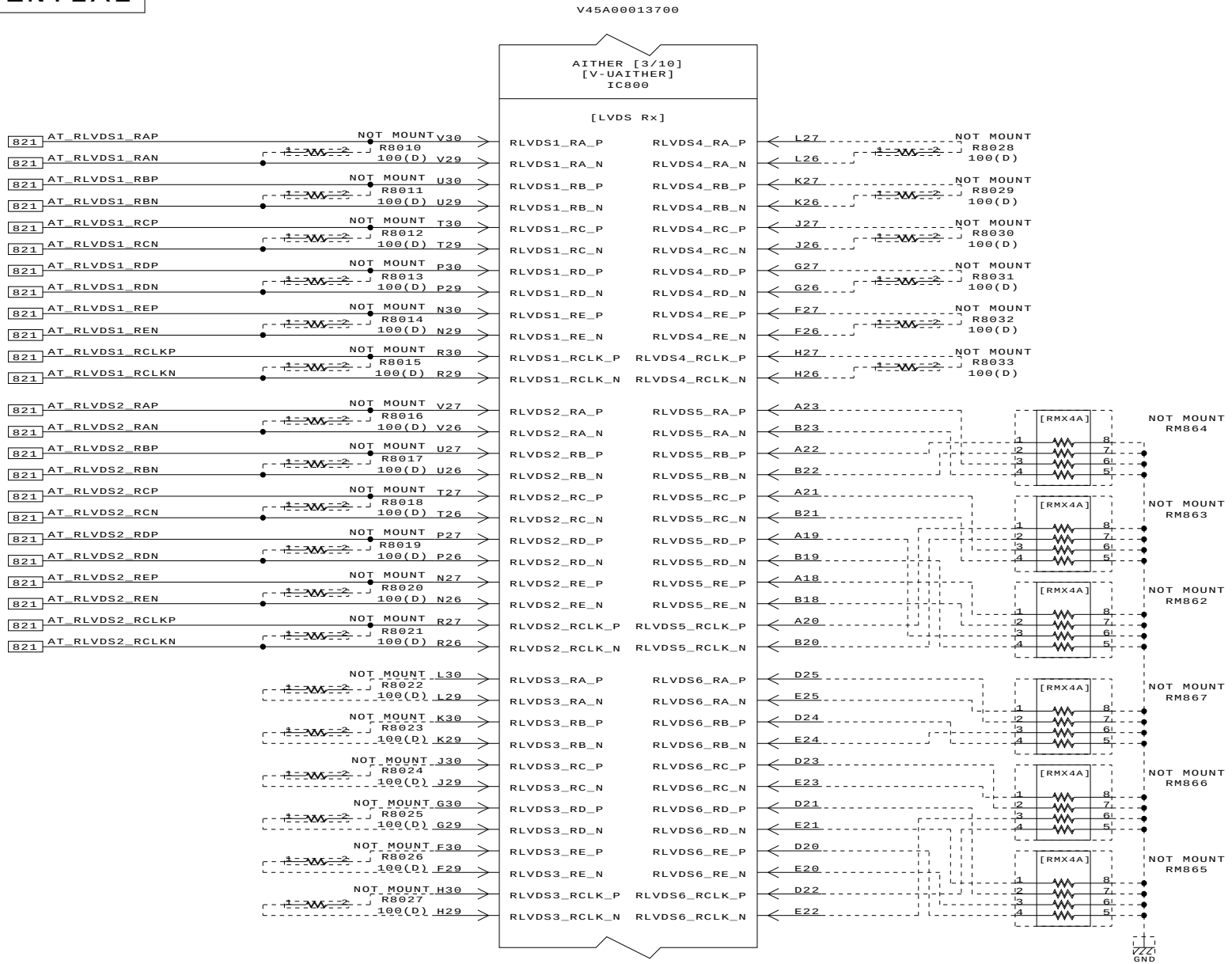
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	AITHER [Back Light]	801	4	00	1st

2011.03.23 20:23

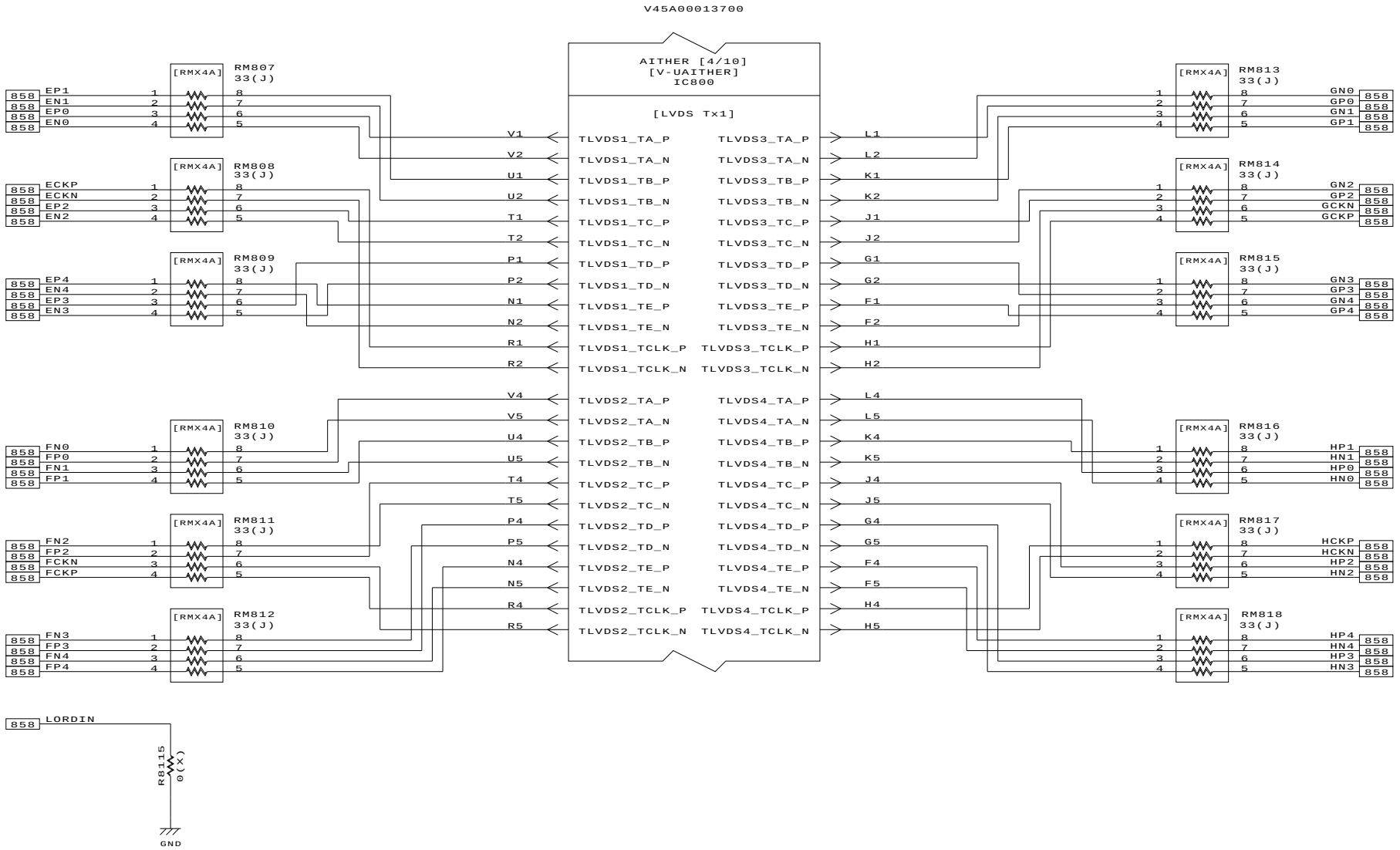
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
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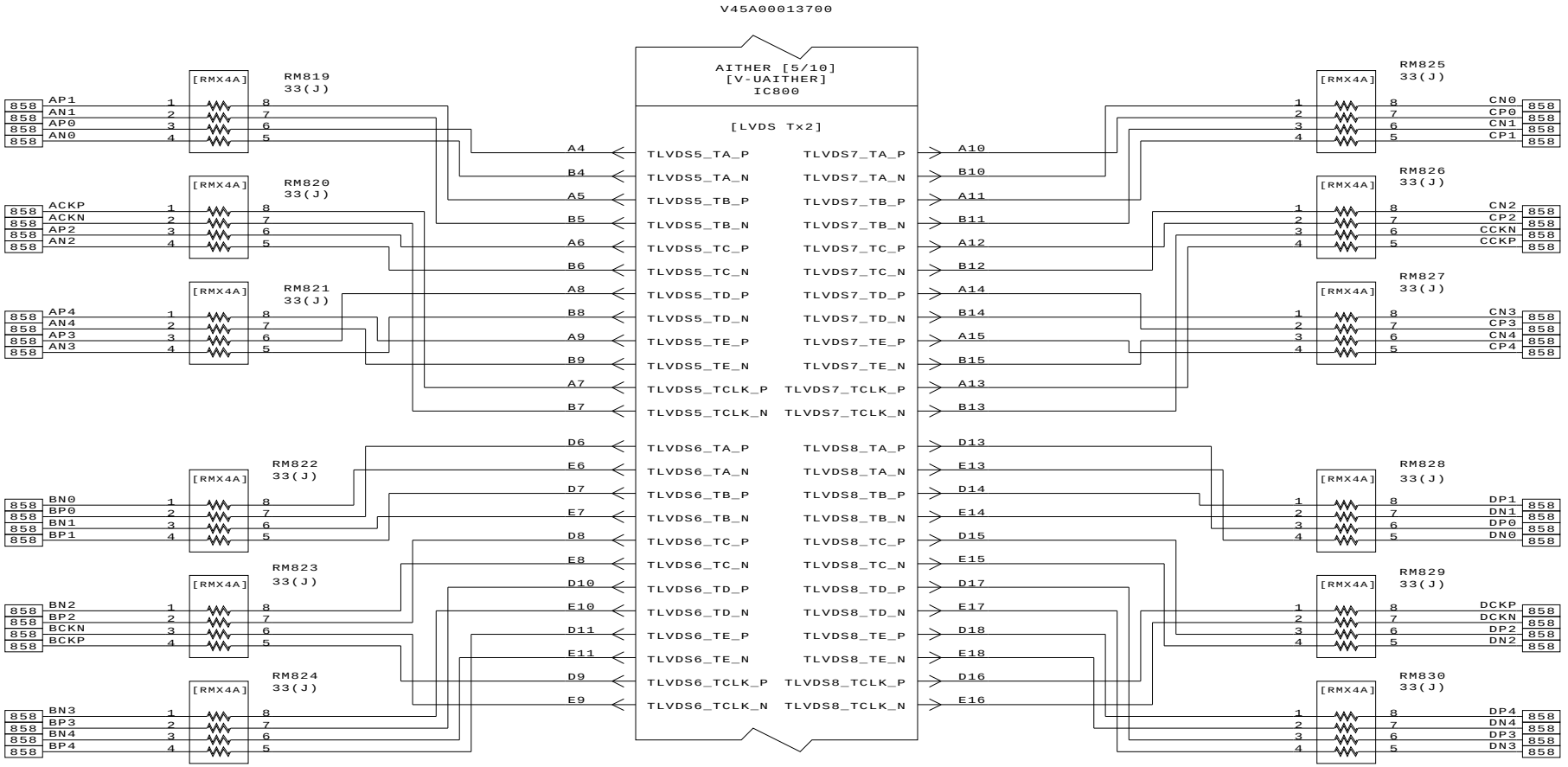
2011.03.23 20:23

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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	AITHER [LVDS Output 1]	803	6	00	1st

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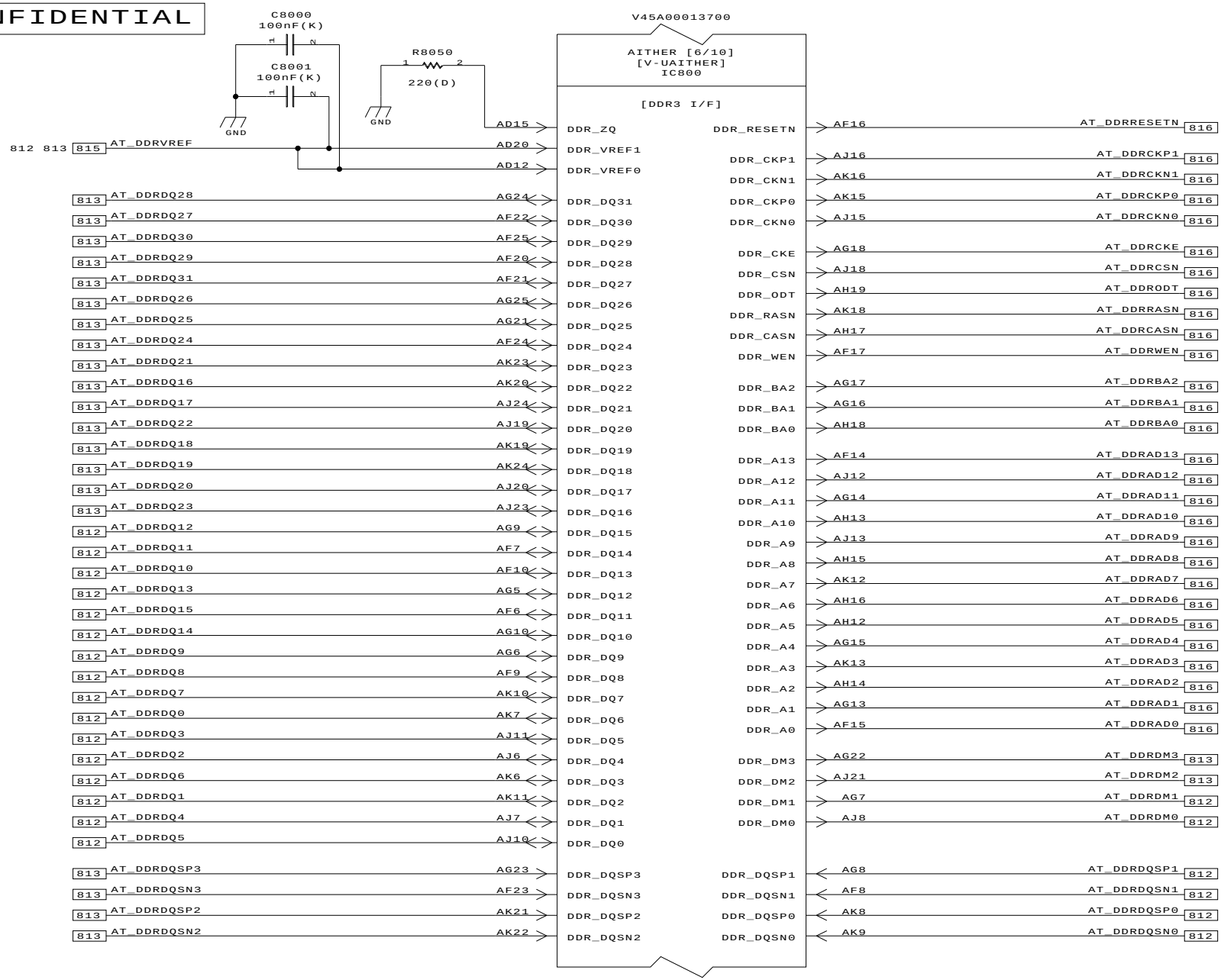


DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	AITHER [LVDS Output 2]	804	7	00	1st

2011.03.23 20:23

TOSHIBA CORPORATION

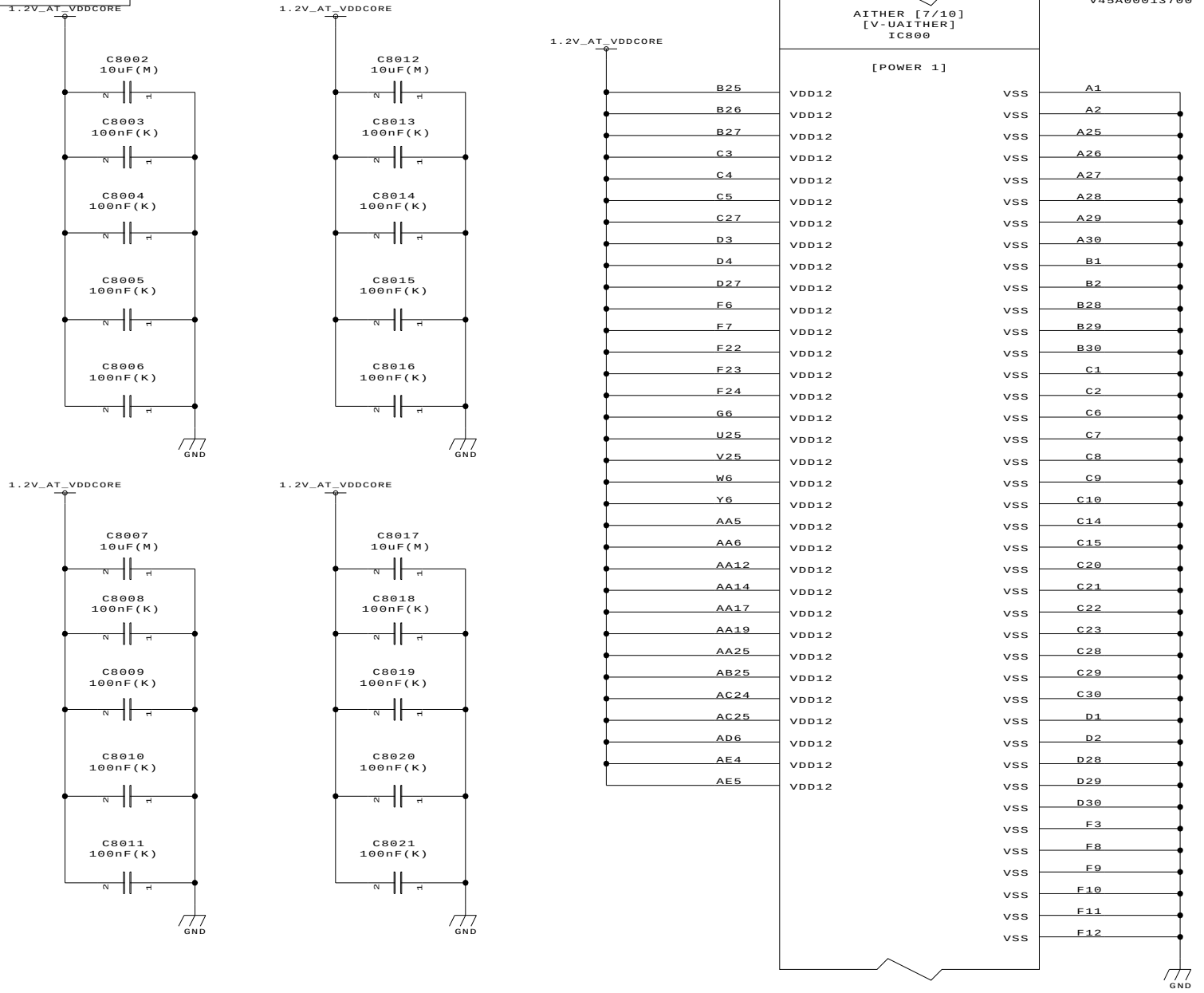
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	AITHER [DDR3 I/F]	805	8	00	1st

2011.03.23 20:23

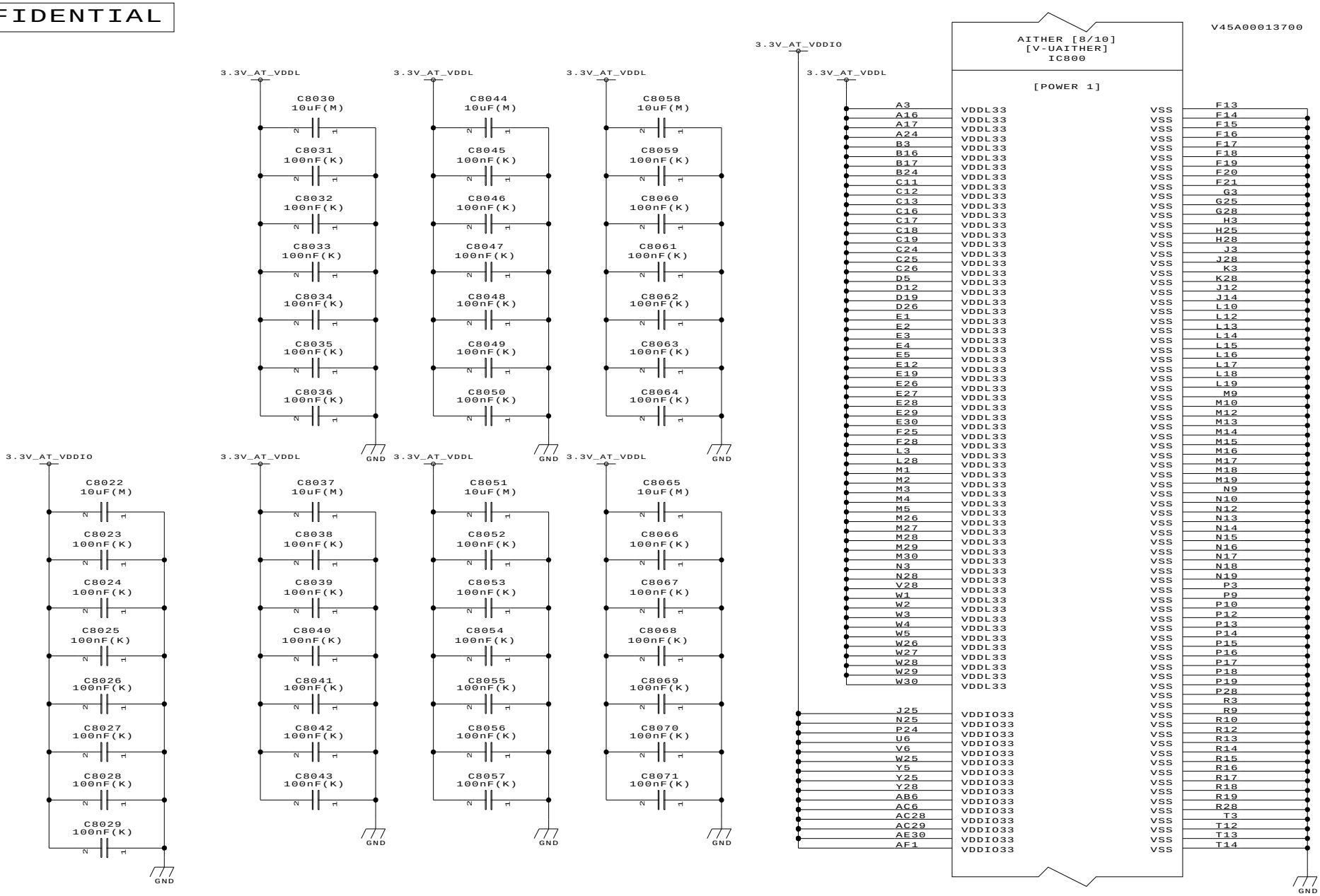
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Sekiguchi	AITHER	AITHER [POWER 1]	806	9	00	1st

2011.03.23 20:23

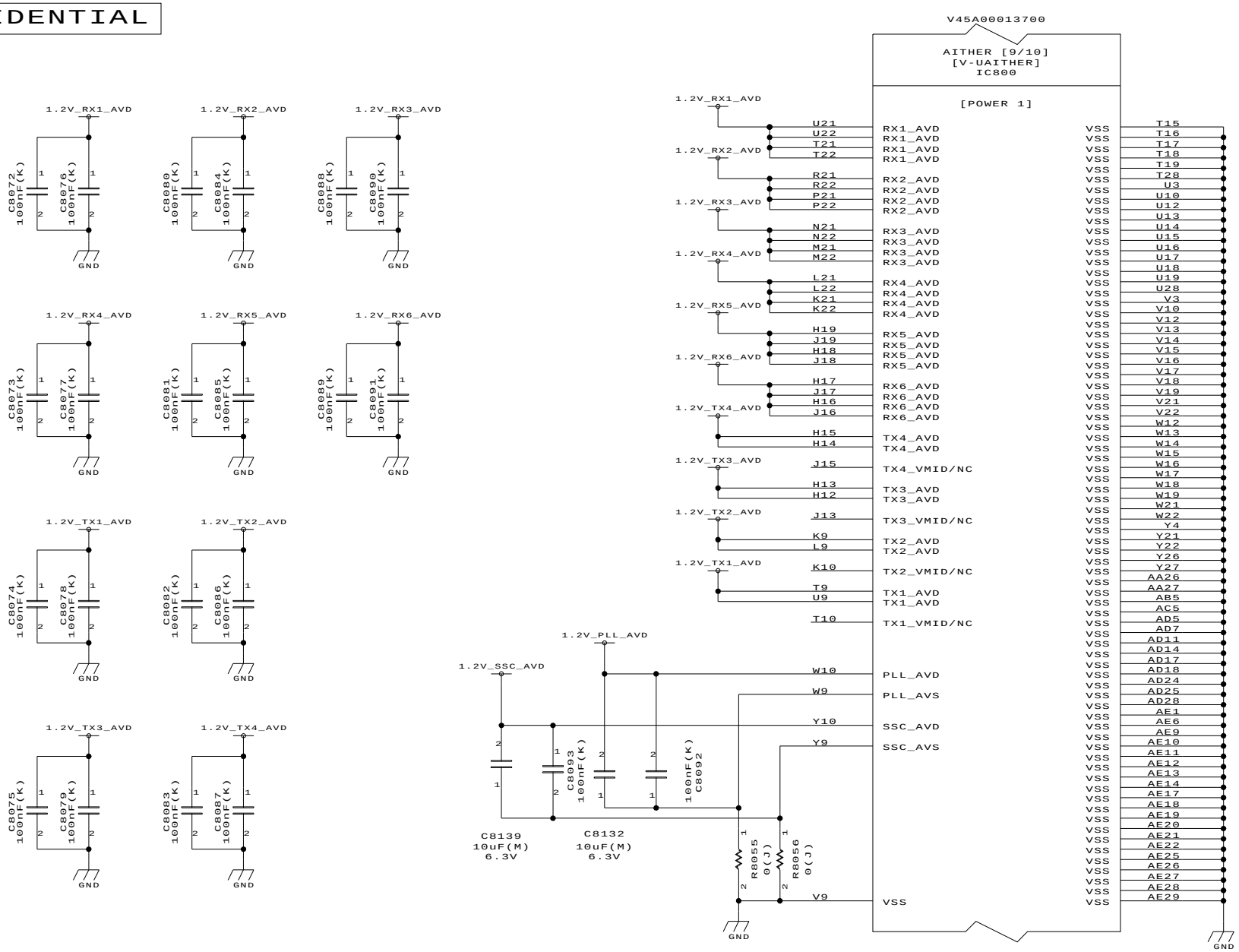
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
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2011.03.23 20:23

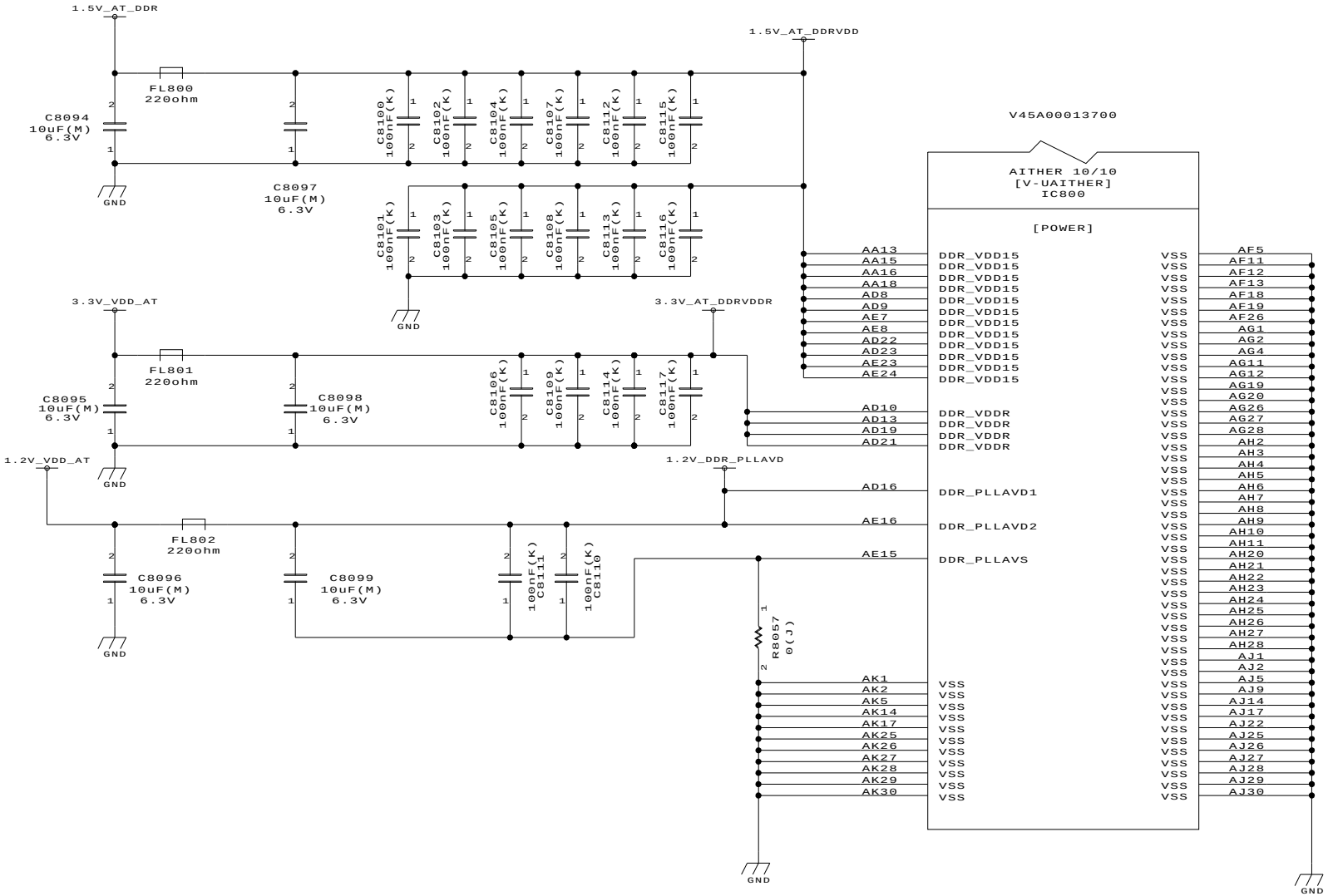
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
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2011.03.23 20:23

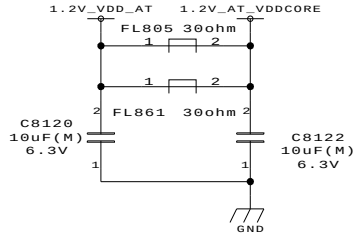
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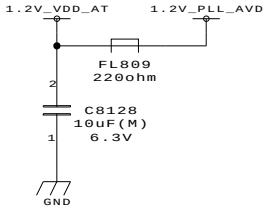


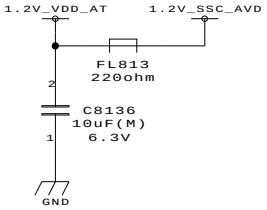
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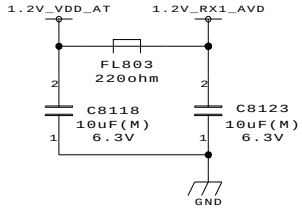
2011.03.23 20:23

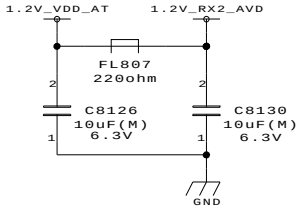
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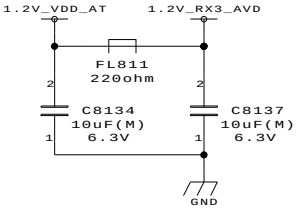


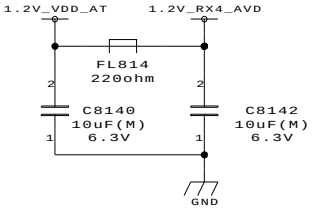


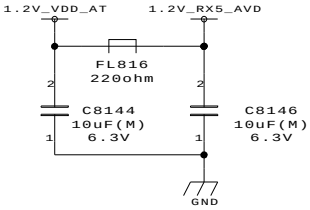


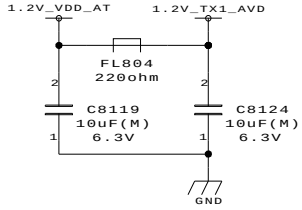


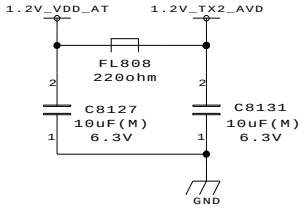


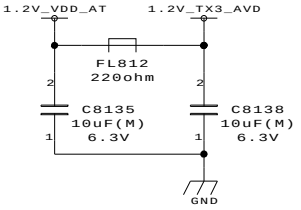


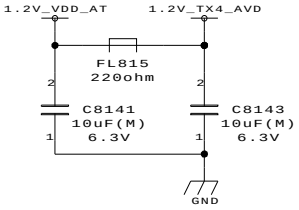


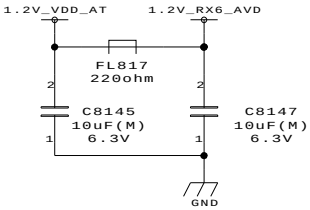


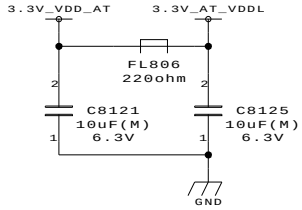


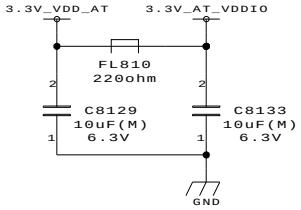








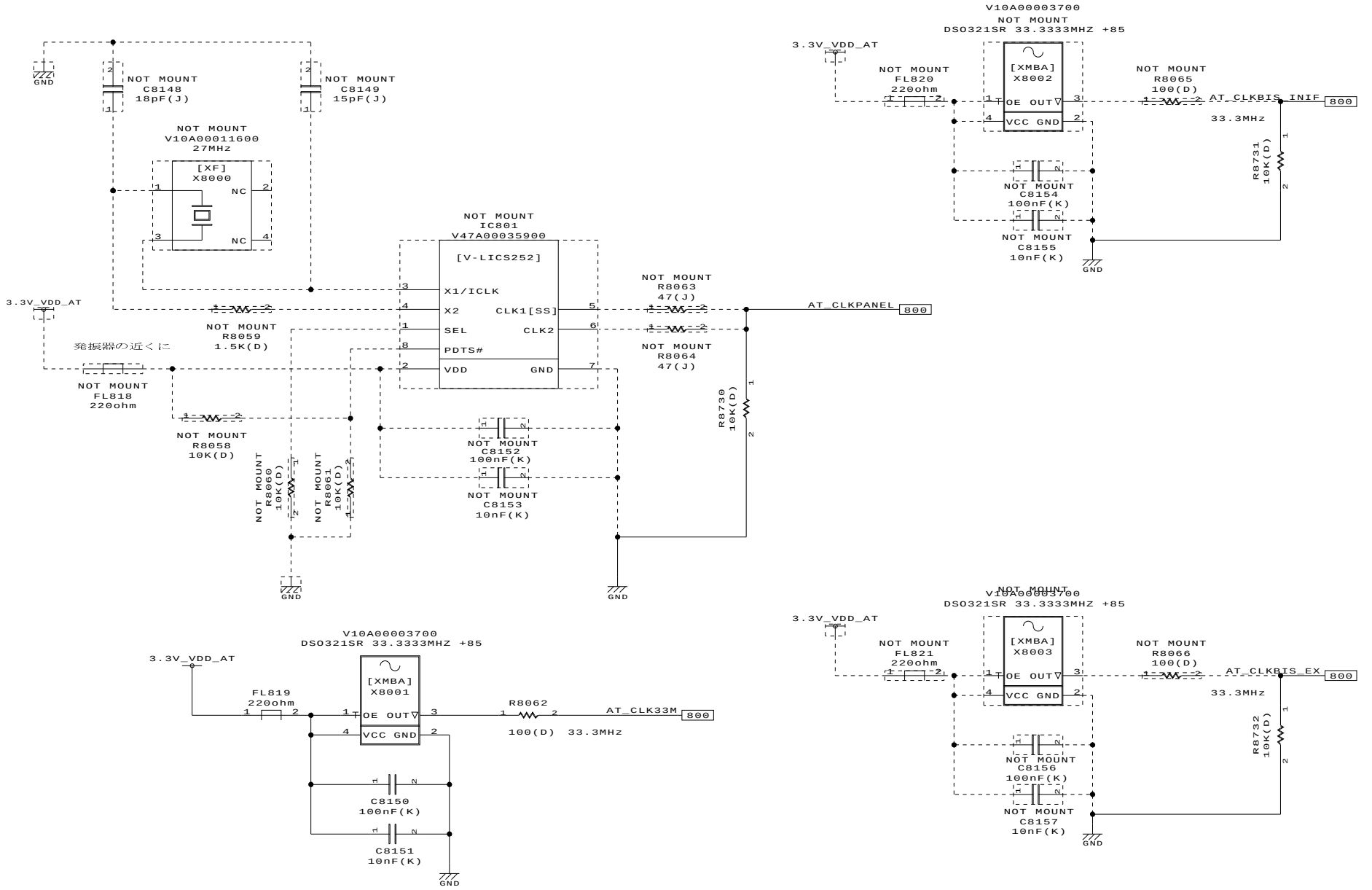




DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	AITHER POWER Sep.	810	13	00	1st

2011.03.23 20:23

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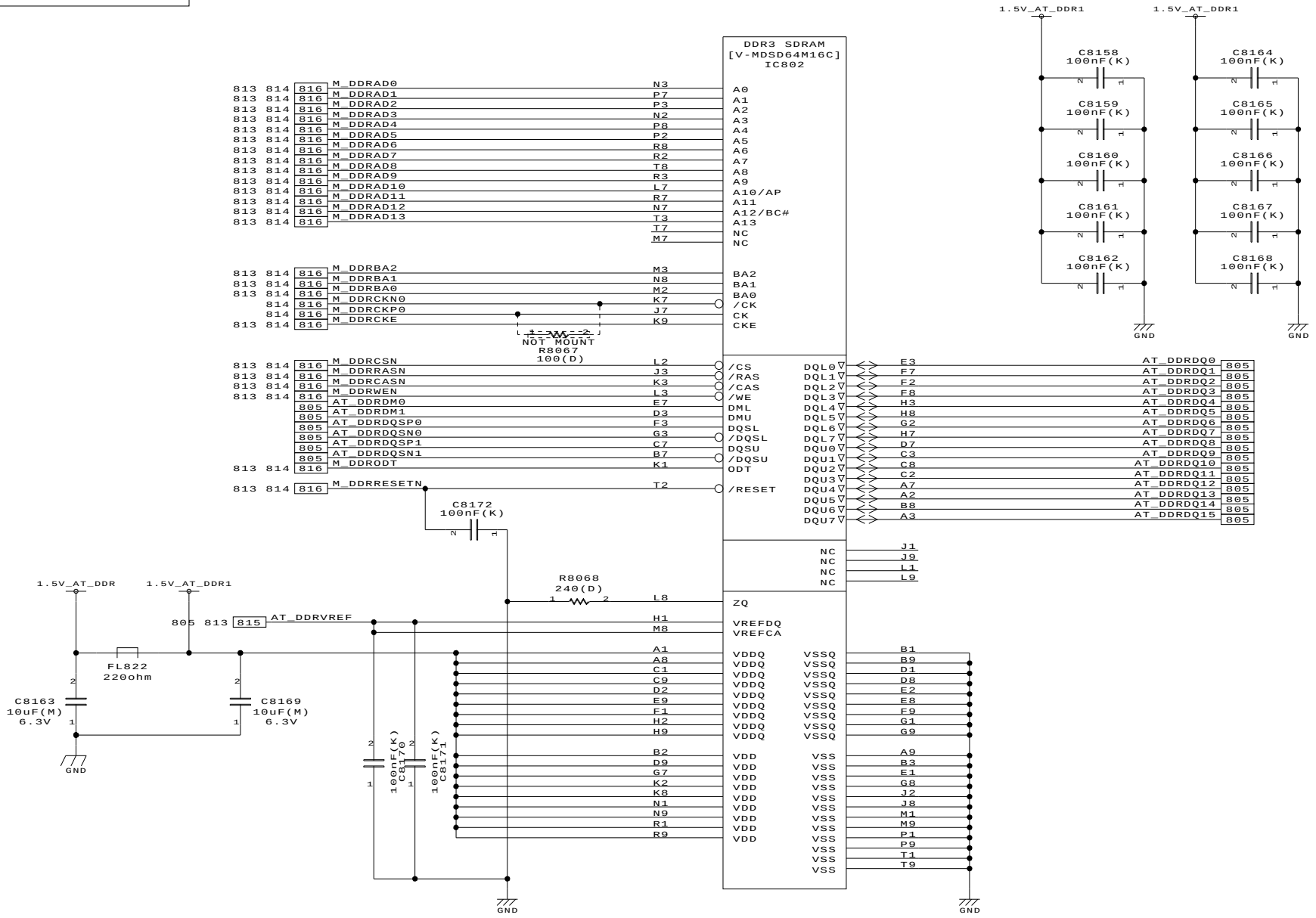


DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	Clocks for Aither	811	14	00	1st

2011.03.23 20:23

TOSHIBA CORPORATION

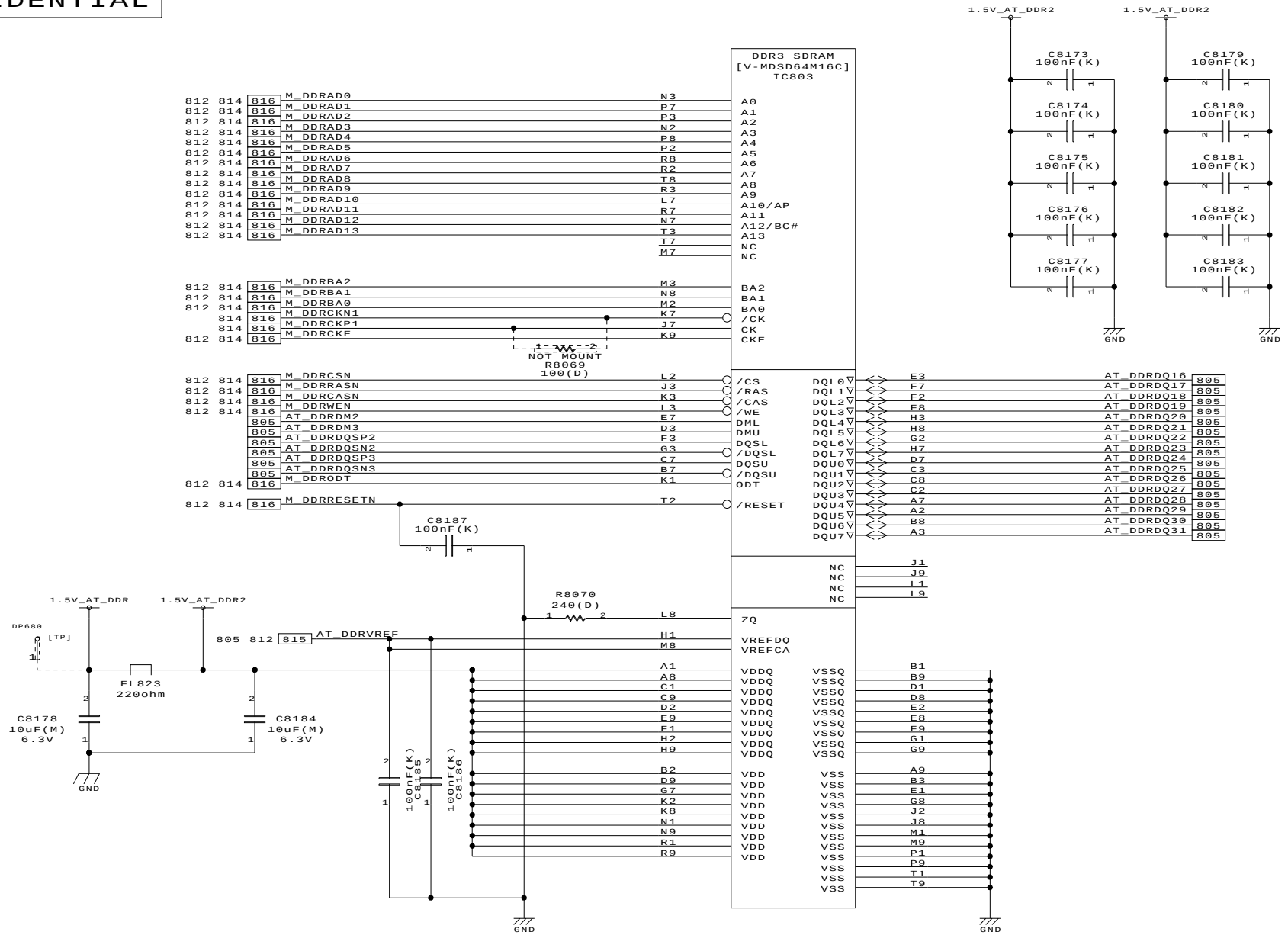
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
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2011.03.23 20:23

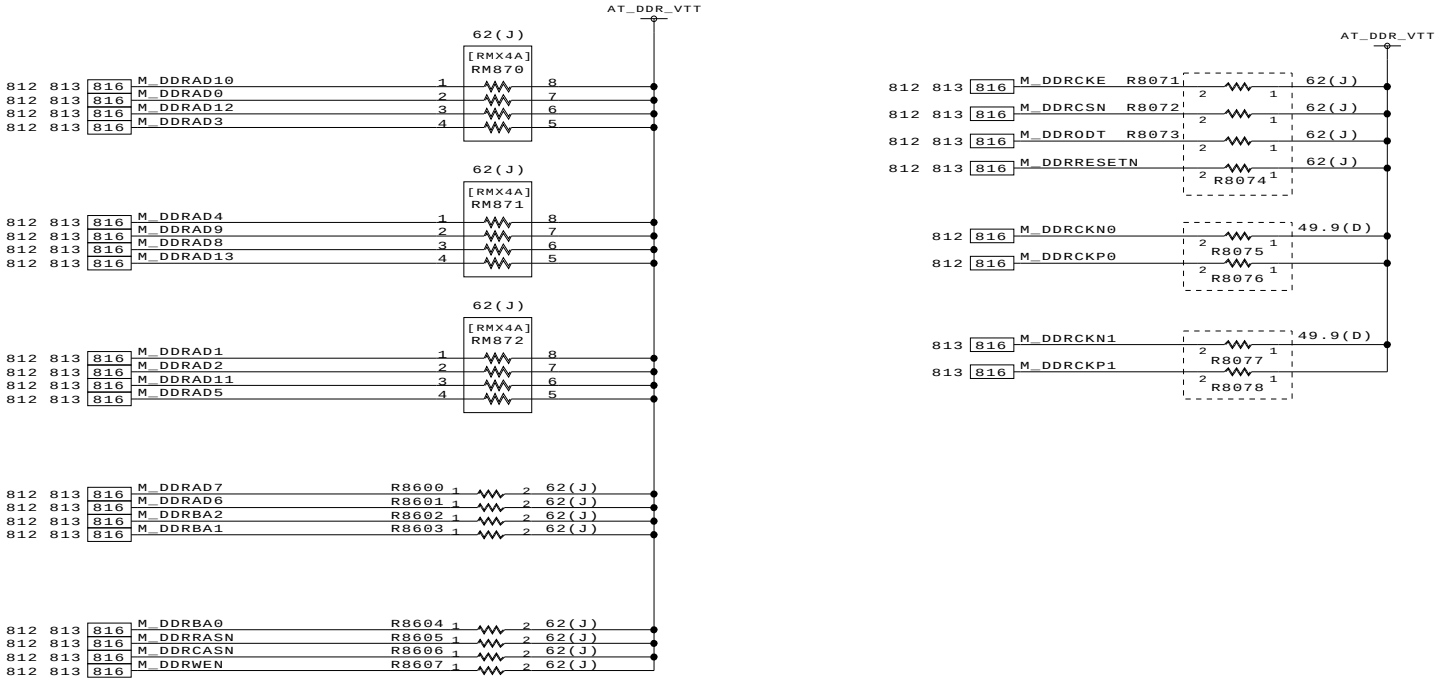
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	DDR3 SDRAM 2 for AITHER	813	16	00	1st

2011.03.23 20:23

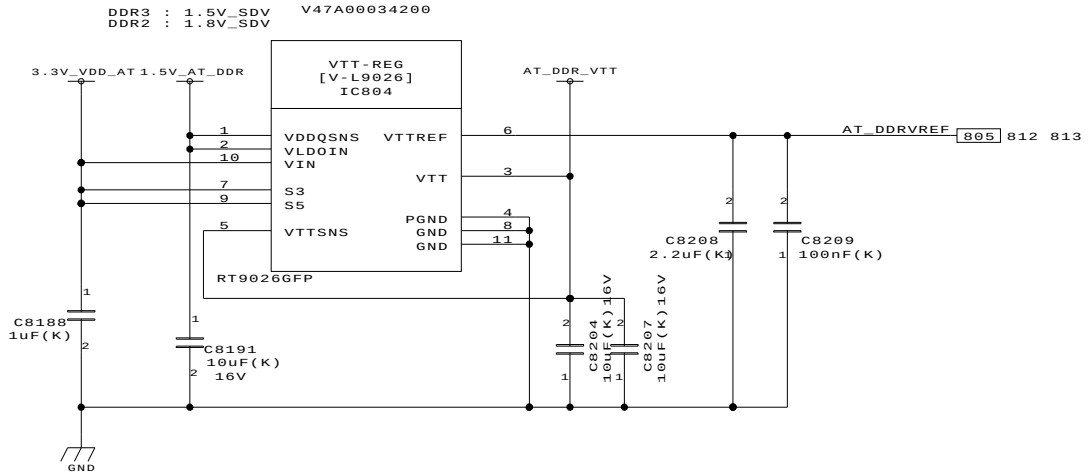
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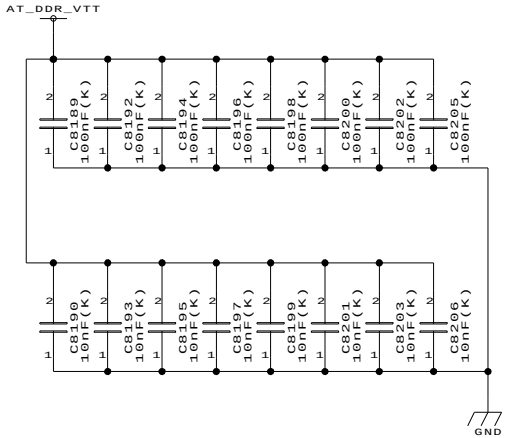


DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	DDR3 Termination Regs.	814	17	00	1st

2011.03.23 20:23

CONFIDENTIAL

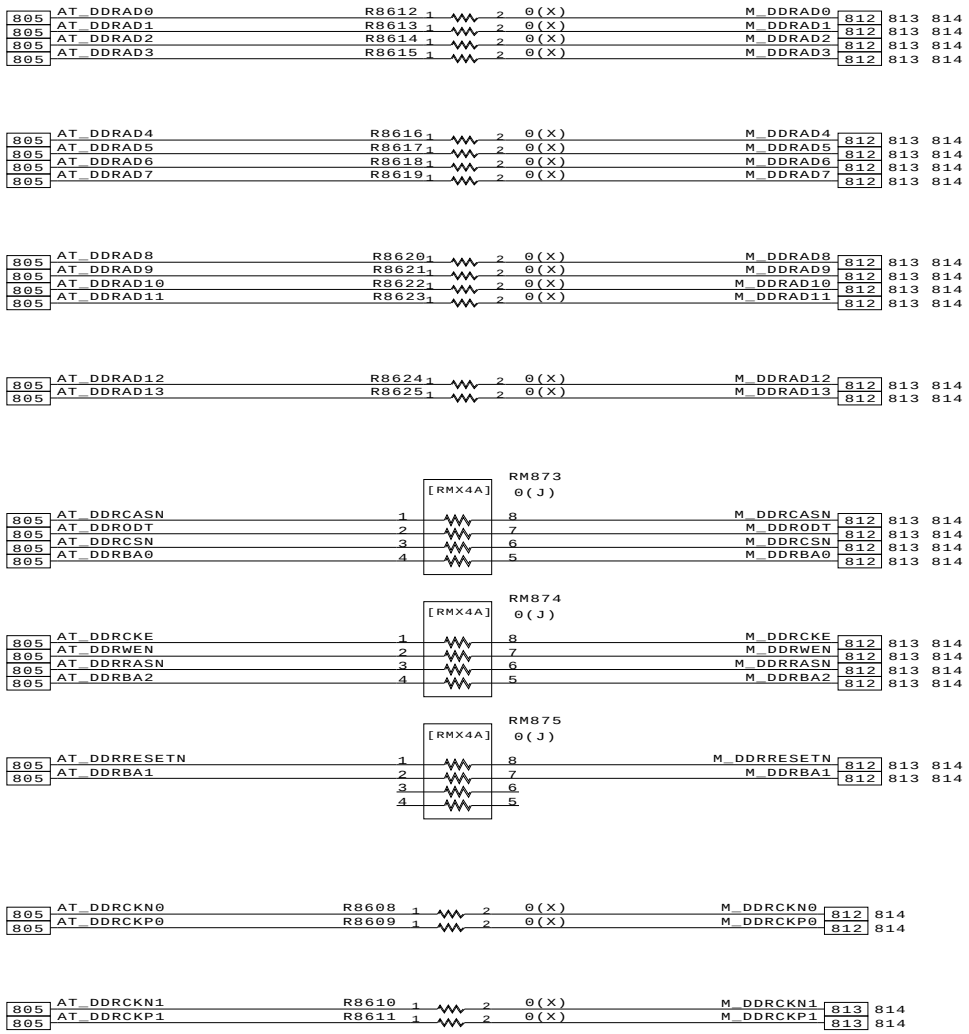




DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	DDR3 VTT-REG	815	18	00	1st

2011.03.23 20:23

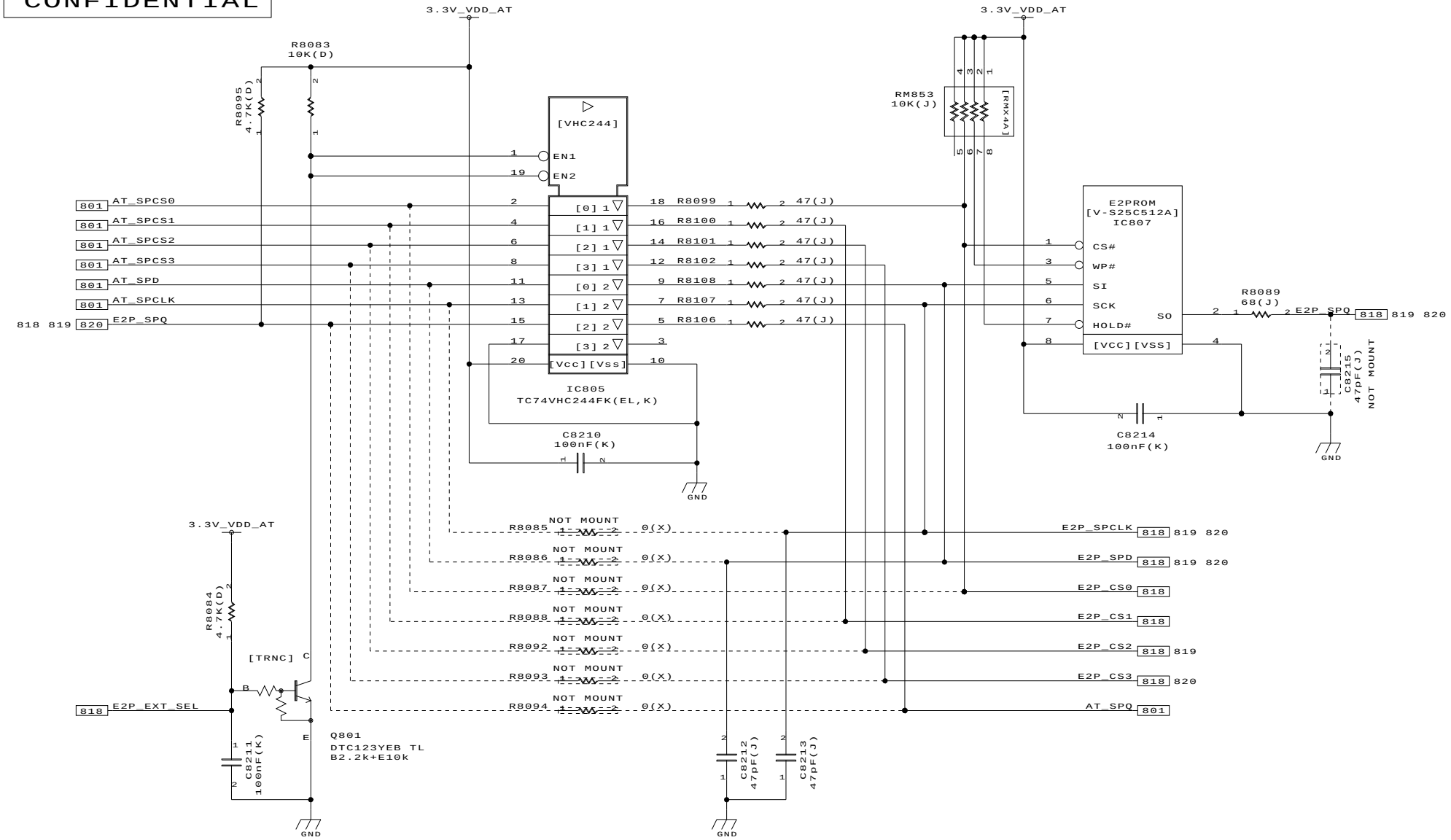
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	DDR3 DUMPING REGs.	816	19	00	1st

2011.03.23 20:23

CONFIDENTIAL

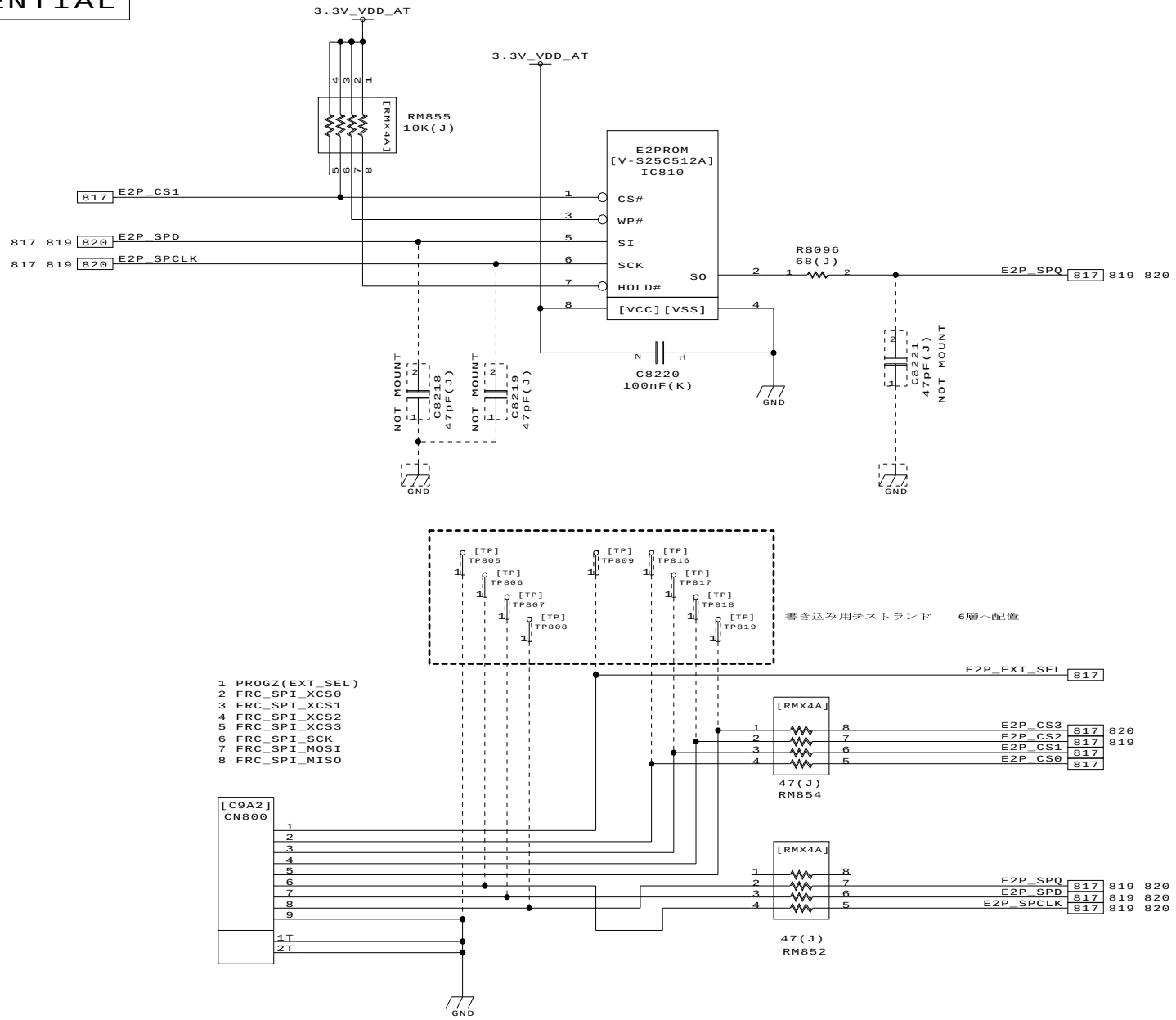


DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	EEP ROM1 for AITHER	817	20	00	1st

2011.03.23 20:23

TOSHIBA CORPORATION

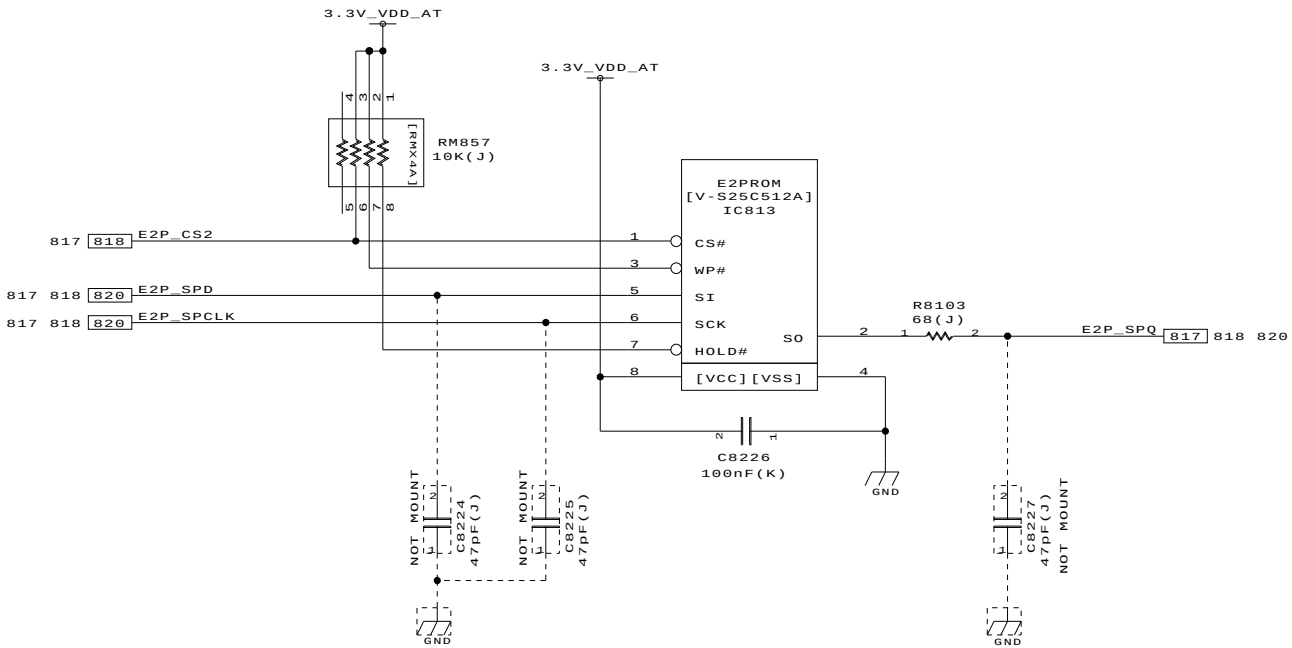
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	EEP ROM2 for AITHER	818	21	00	1st

2011.03.23　20:23

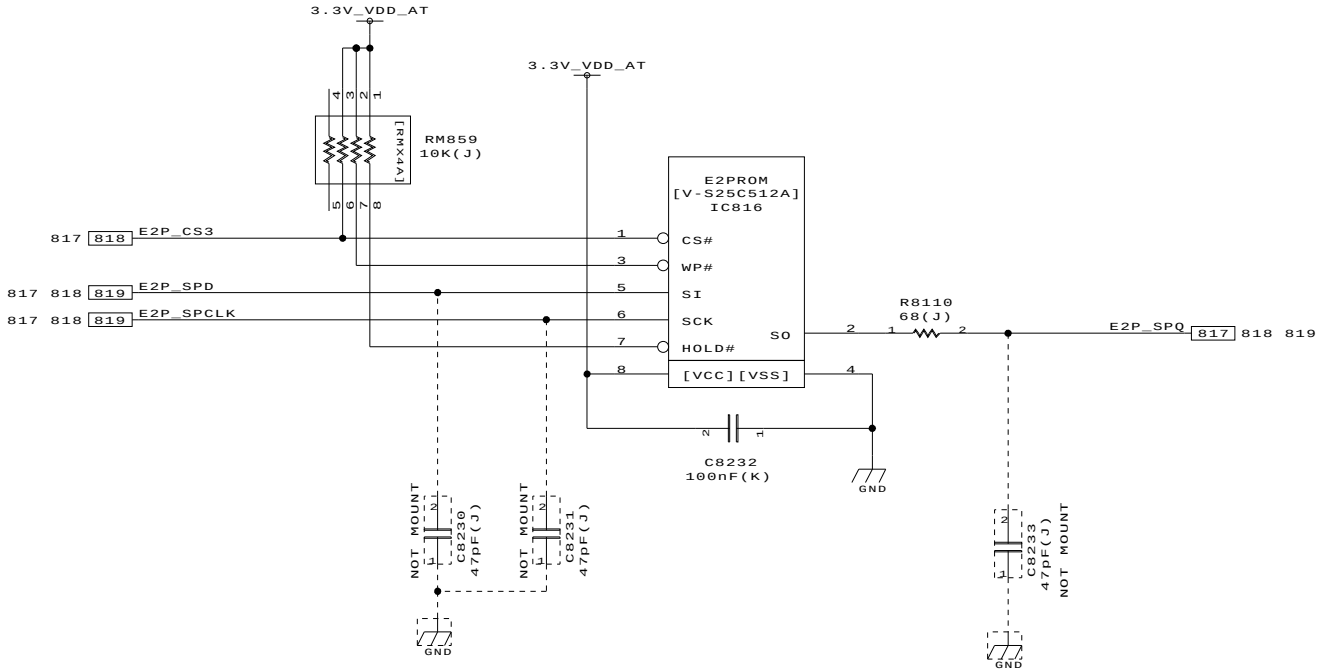
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	EEP ROM3 for AITHER	819	22	00	1st

2011.03.23 20:23

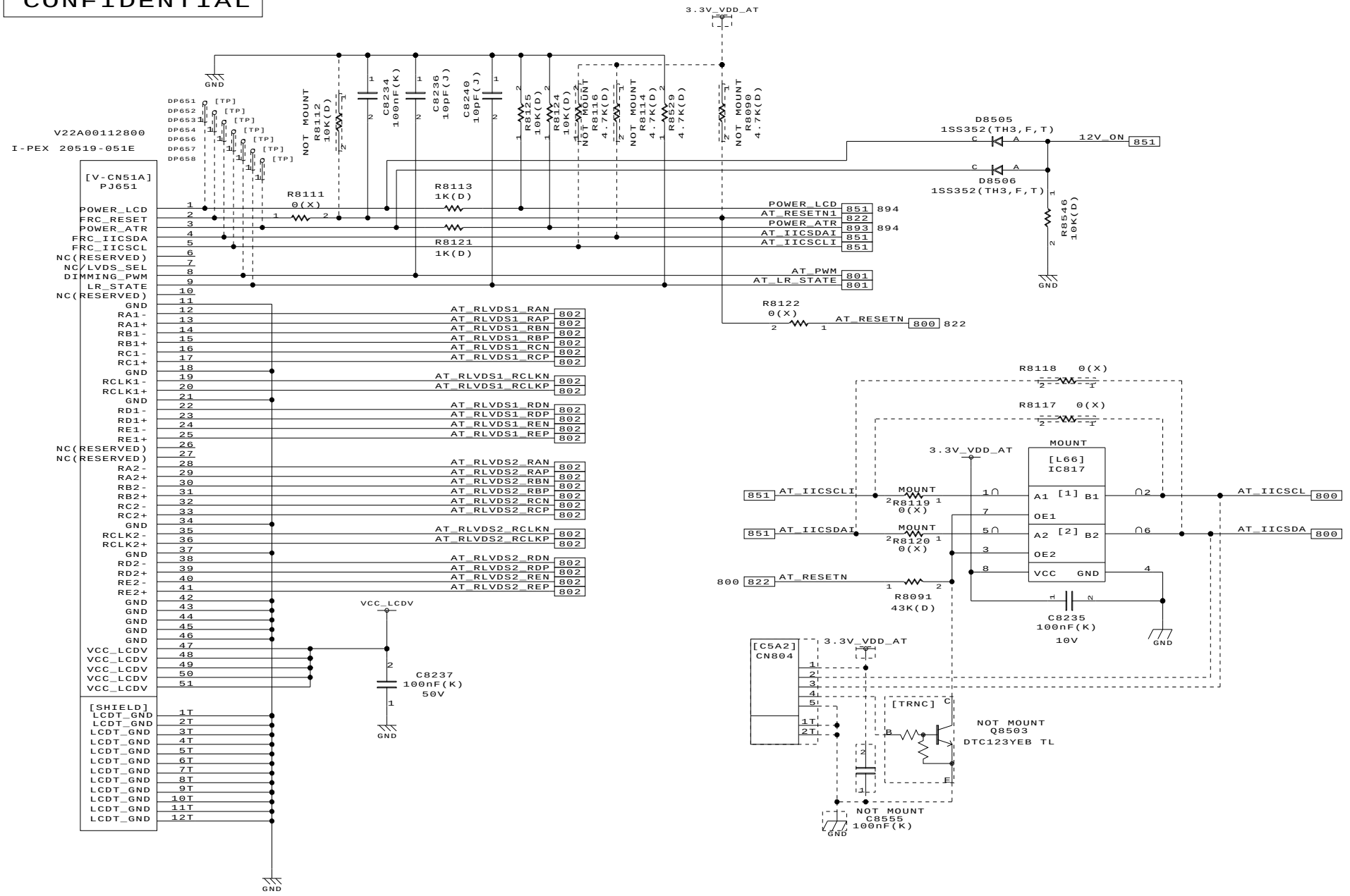
CONFIDENTIAL



DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	EEP ROM4 for AITHER	820	23	00	1st

2011.03.23 20:23

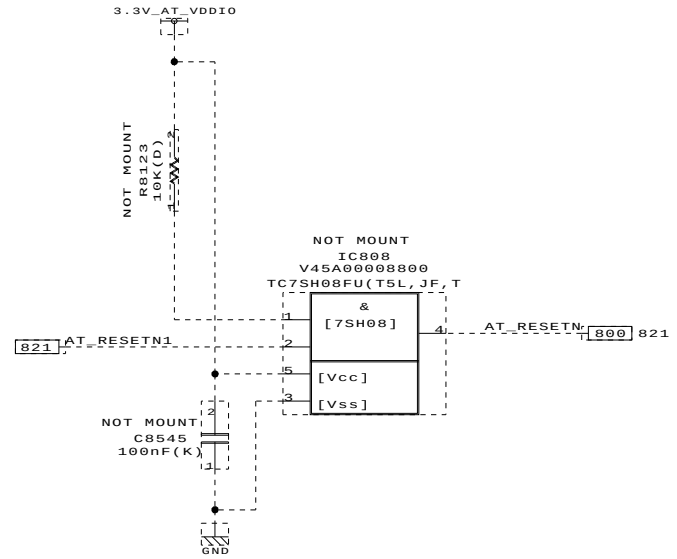
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DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	LVDS Input Conn. 1	821	24	00	1st

2011.03.23 20:23

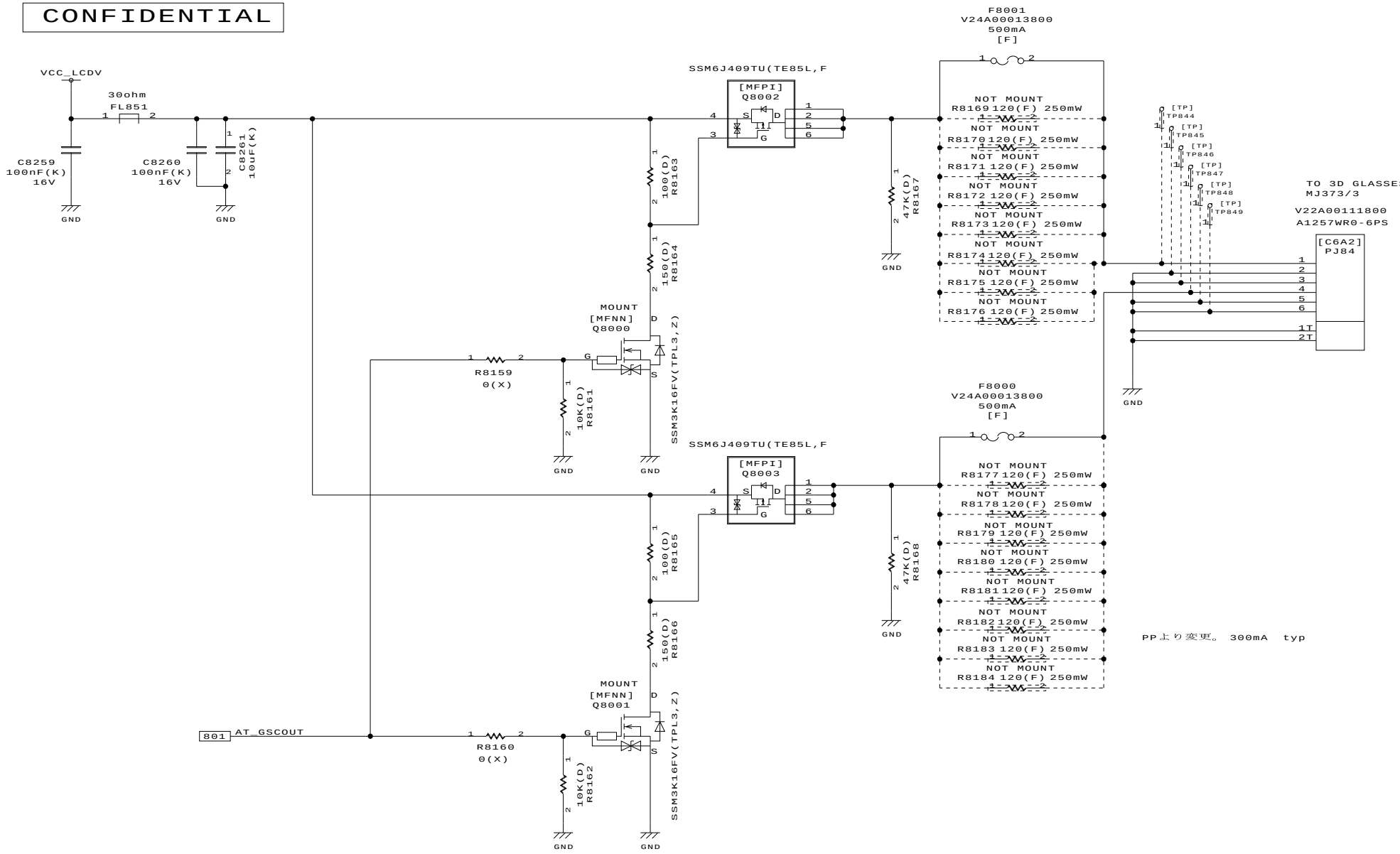
CONFIDENTIAL



DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	LVDS Input Conn. 2	822	25	00	1st

2011.03.23 20:23

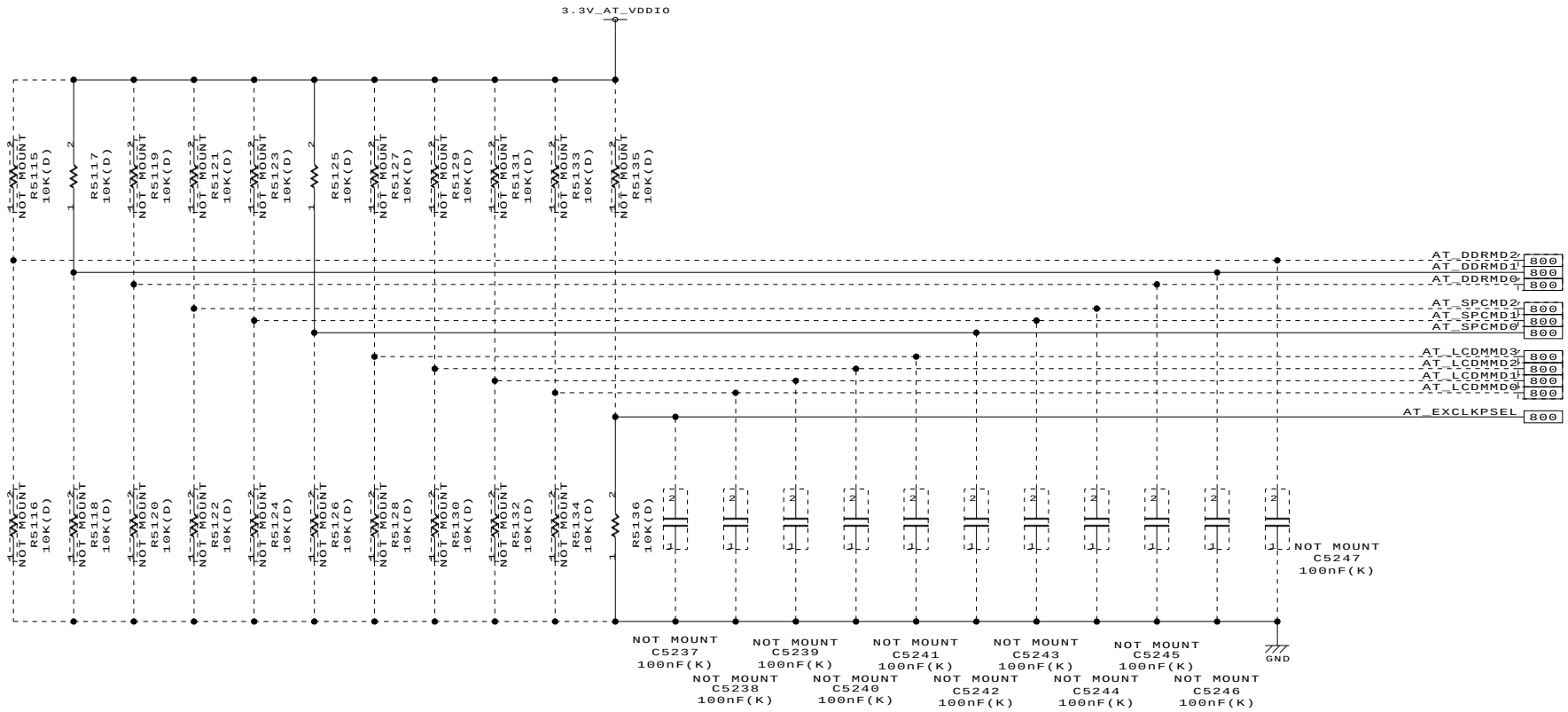
CONFIDENTIAL



DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	3D GLASSES I/F(Ir)	828	26	00	1st

2011.03.23 20:23

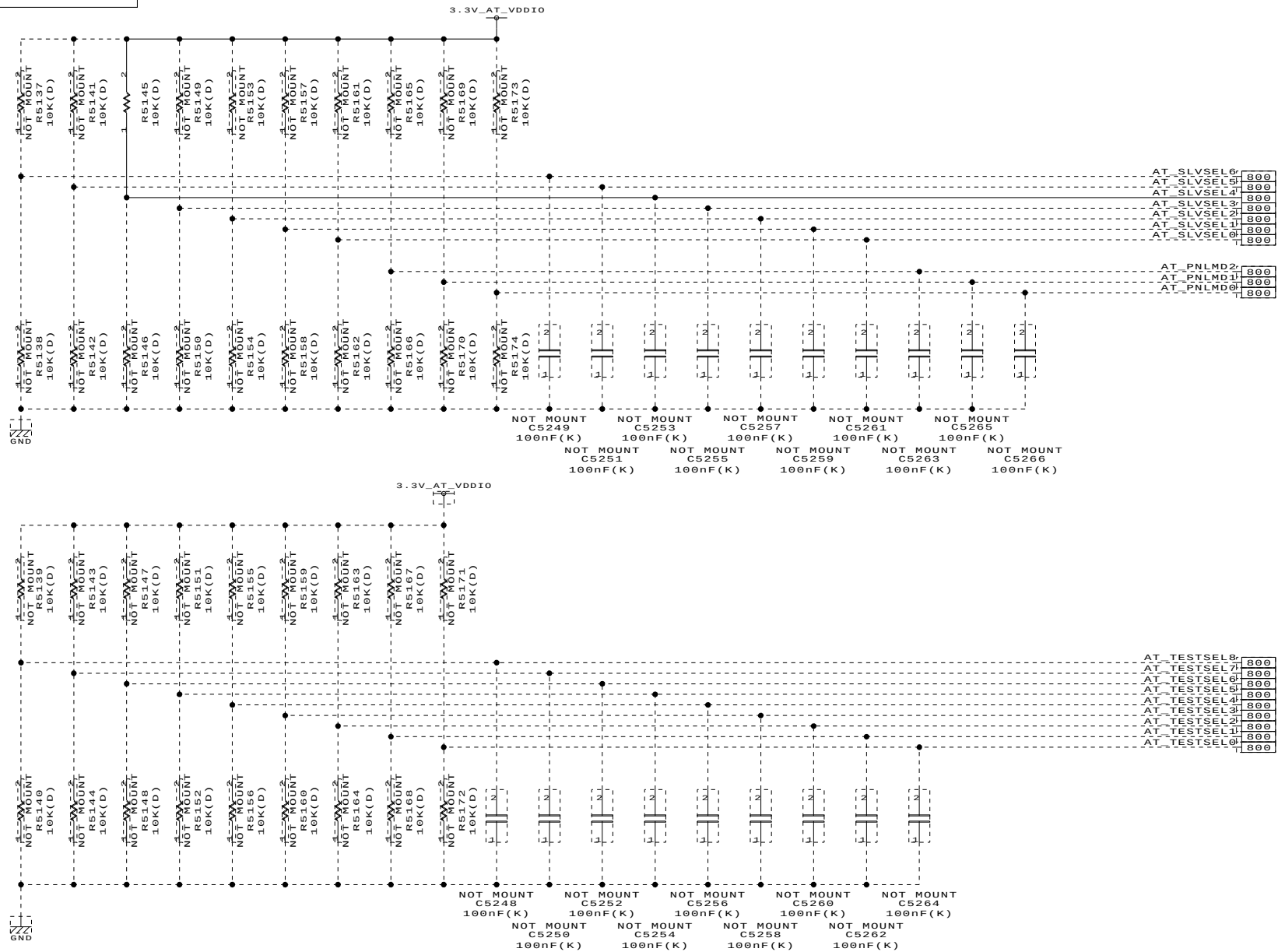
CONFIDENTIAL



DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Sekiguchi	AITHER	CONFIGURATION REGs. 1	831	27	00	1st

2011.03.23 20:23

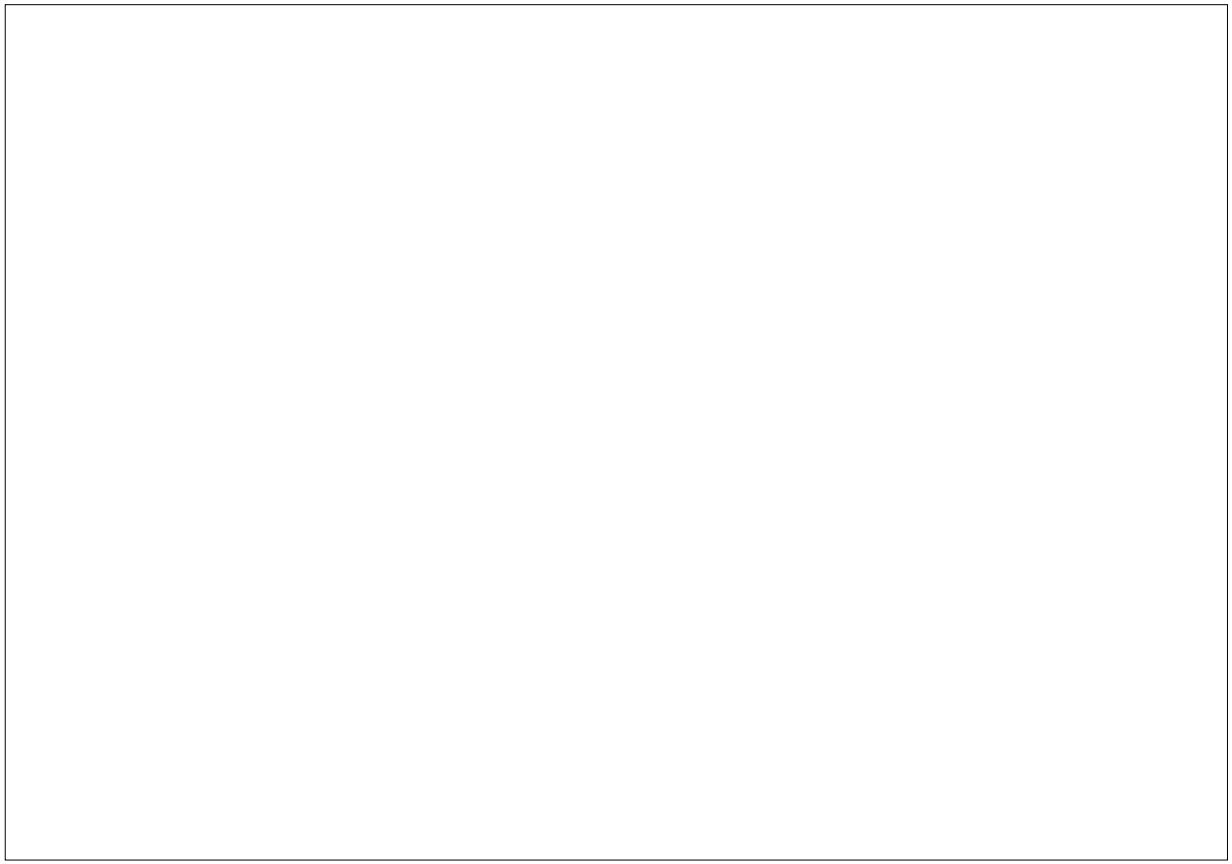
CONFIDENTIAL



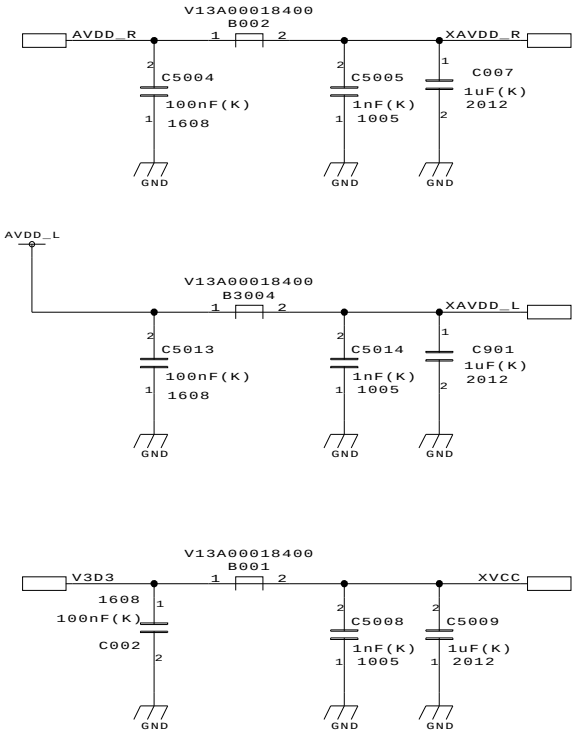
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Sekiguchi	AITHER	CONFIGURATION REGs. 2	832	28	00	1st

2011.03.23 20:23

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J1,J2はSheet 857のJ1,J2と同一。
シートコネクタは Sheet 857 J1,J2の同一Net名に接続。
Netを接続した上で J1,J2は削除してください。

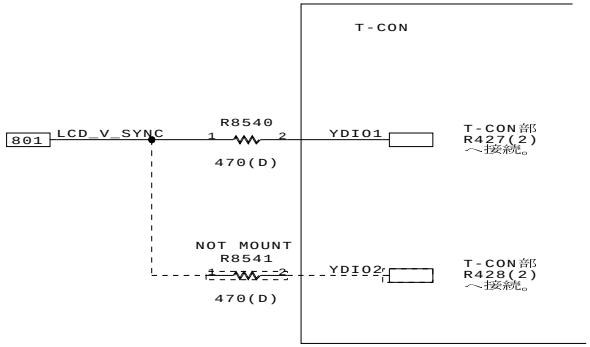


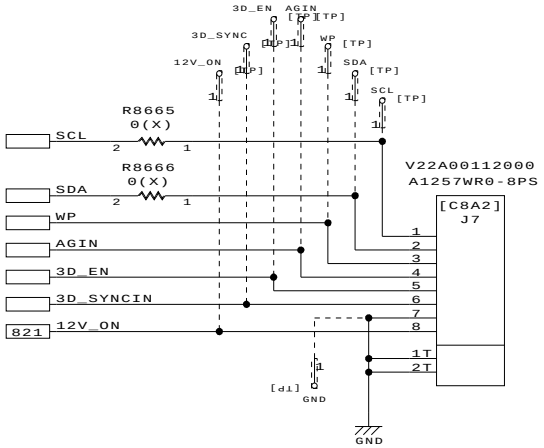
DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
OONO	T-CON	T-CON LVDS E/H INPUT	850	29	00	1st

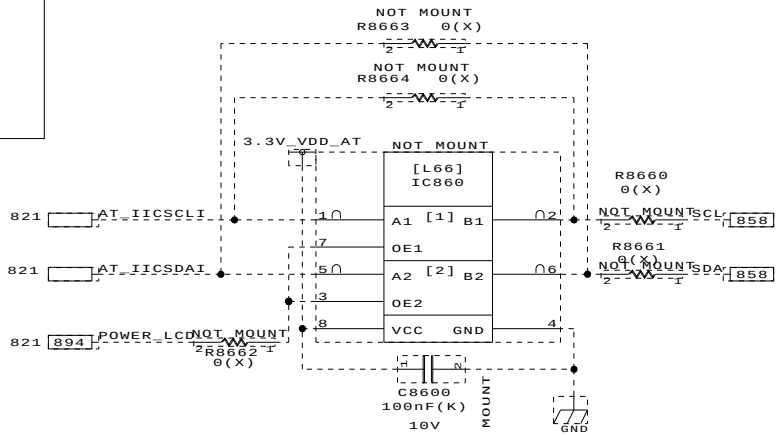
2011.03.23 20:23

TOSHIBA CORPORATION

CONFIDENTIAL



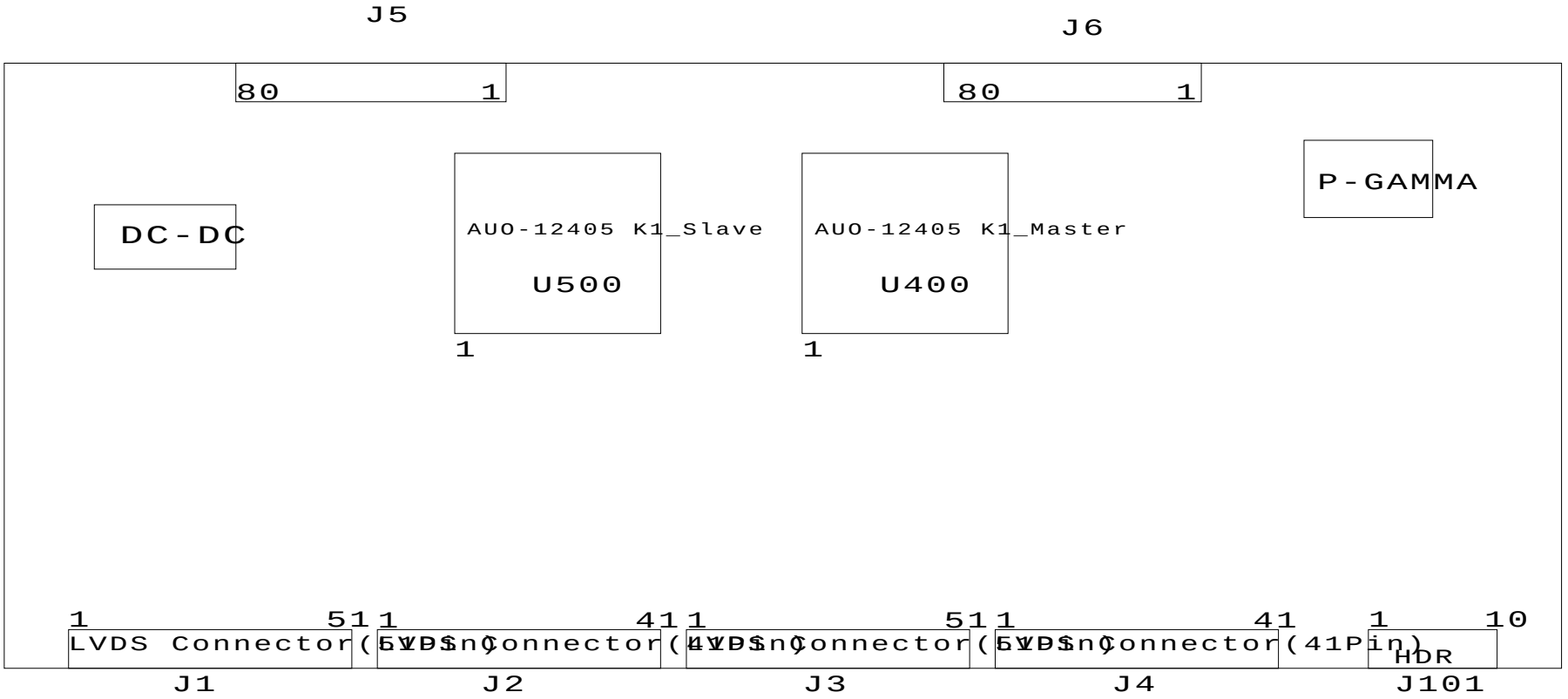




J3,J4はSheet 857のJ3,J4と同一。
シートコネクタは Sheet 857 J3,J4の同一Net名に接続。
Netを接続した上で J3,J4は削除してください。

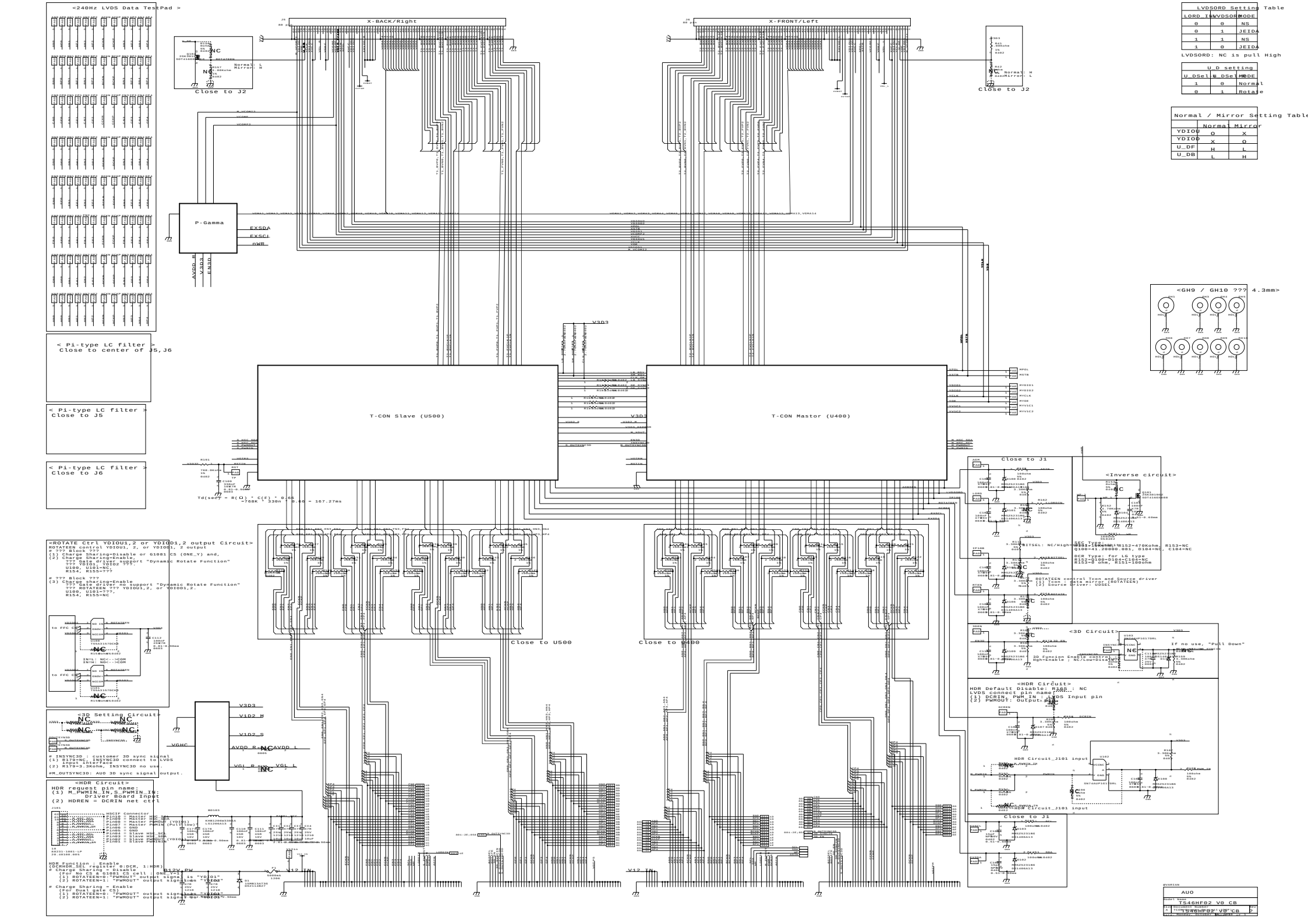
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OONO	T-CON	T-CON LVDS A/D INPUT	851	30	00	1st

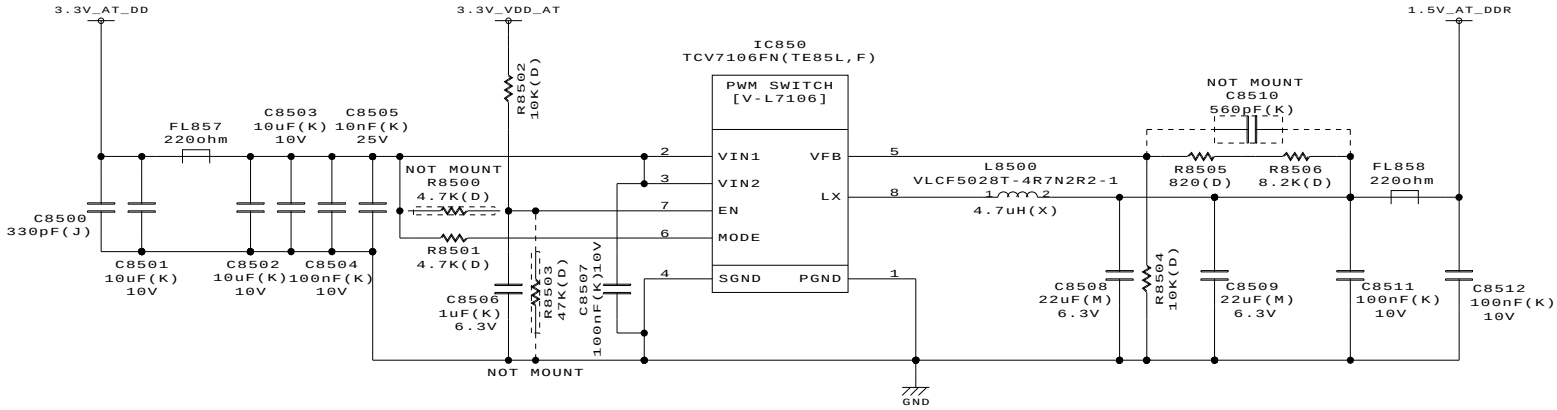
AUO Confidenti



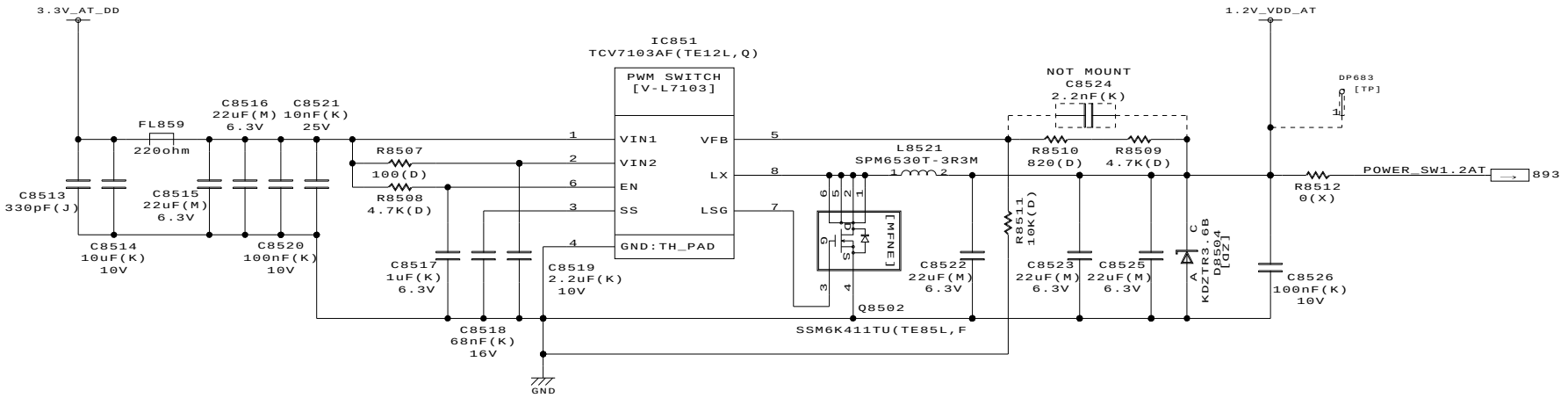
@VARIAN

AUO		
Model Name: T546HF02 V0 CB		
Placement		
Size: A	Document Number: T546HF02 V0 CB	Rev: ?
Date: Monday, October 18, 2010	Sheet 1 of 1	

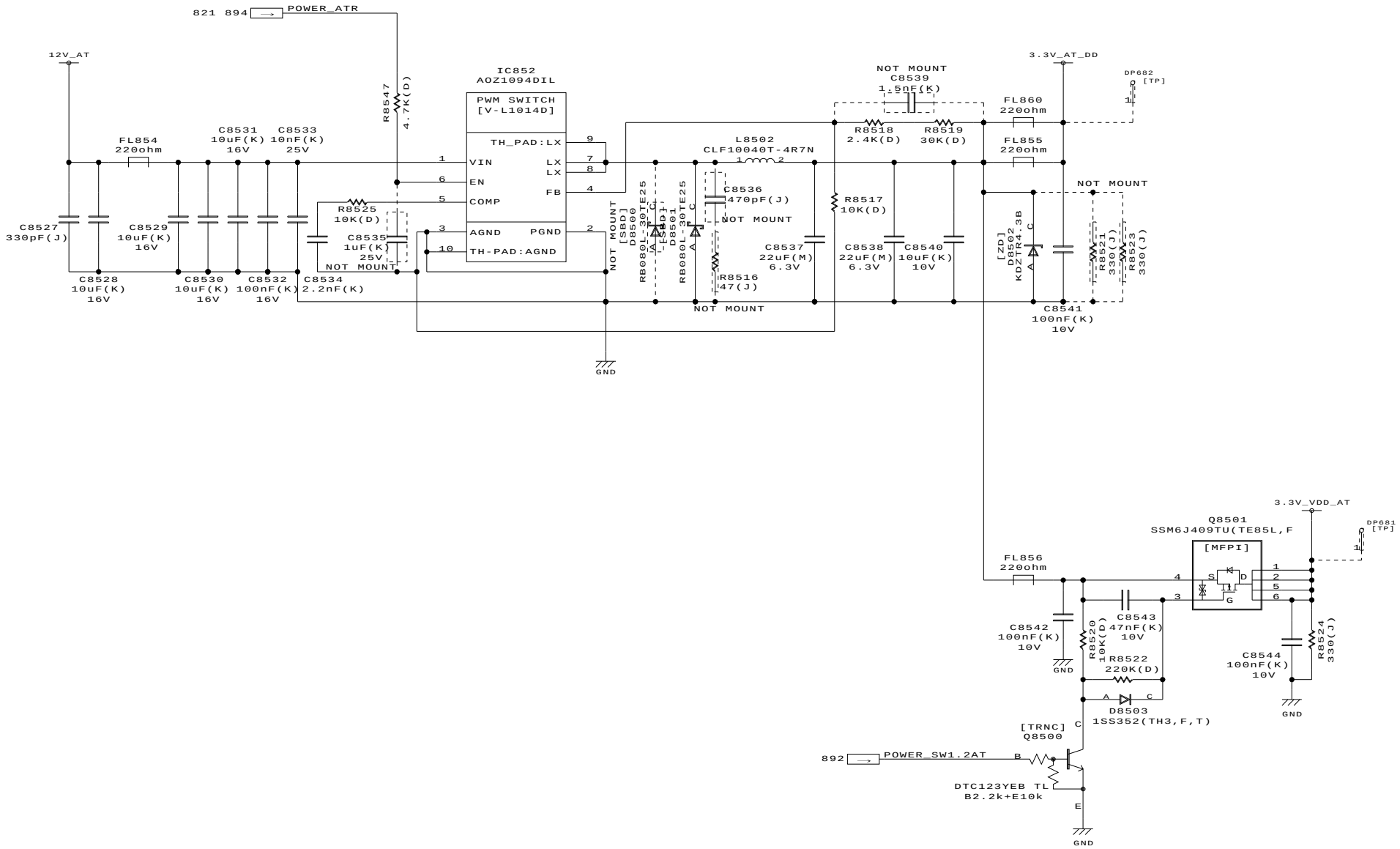

<240Hz LVDS Data TestPad >
X-BACK/Right
X-FRONT/Left
Close to J2
Close to J2
LVDSORD Setting Table
LORD_IN | LVDSORD | MODE
0 | 0 | NS
0 | 1 | JEIDA
1 | 1 | NS
1 | 0 | JEIDA
LVDSORD: NC is pull High
U_D setting
U_DSel | U_DSel | MODE
1 | 0 | Normal
0 | 1 | Rotate
Normal / Mirror Setting Table
Normal Mirror
YDIOU O X
YDIOD X O
U_DF H L
U_DB L H
P-Gamma
EXSDA
EXSCL
pWR
AVDD_R
V3D3
EN3D
< Pi-type LC filter >
Close to center of J5,J6
< Pi-type LC filter >
Close to J5
< Pi-type LC filter >
Close to J6
T-CON Slave (U500)
T-CON Mastor (U400)
V3D3
<GH9 / GH10 ??? 4.3mm>
Close to J1
<Inverse circuit>
Td(sec) = R(Ω) * C(F) * 0.69
=768K * 330n * 0.69 ~ 167.27ms
Close to U500
Close to U400
<ROTATE Ctrl YDIOU1,2 or YDIOD1,2 output Circuit>
<3D Circuit>
<3D Setting Circuit>
<HDR Circuit>
<HDR Circuit_J101 input
Close to J1
V3D3
V1D2_M
V1D2_S
VGHC
AVDD_R
AVDD_L
VGL_R
VGL_L
V12V_PW
V12V_TN
AUO
T546HF02 V0 CB



DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
2011/01/24 Nagaoka/Nakano	AITHER	POWER 1.5V	891	31	00	1st

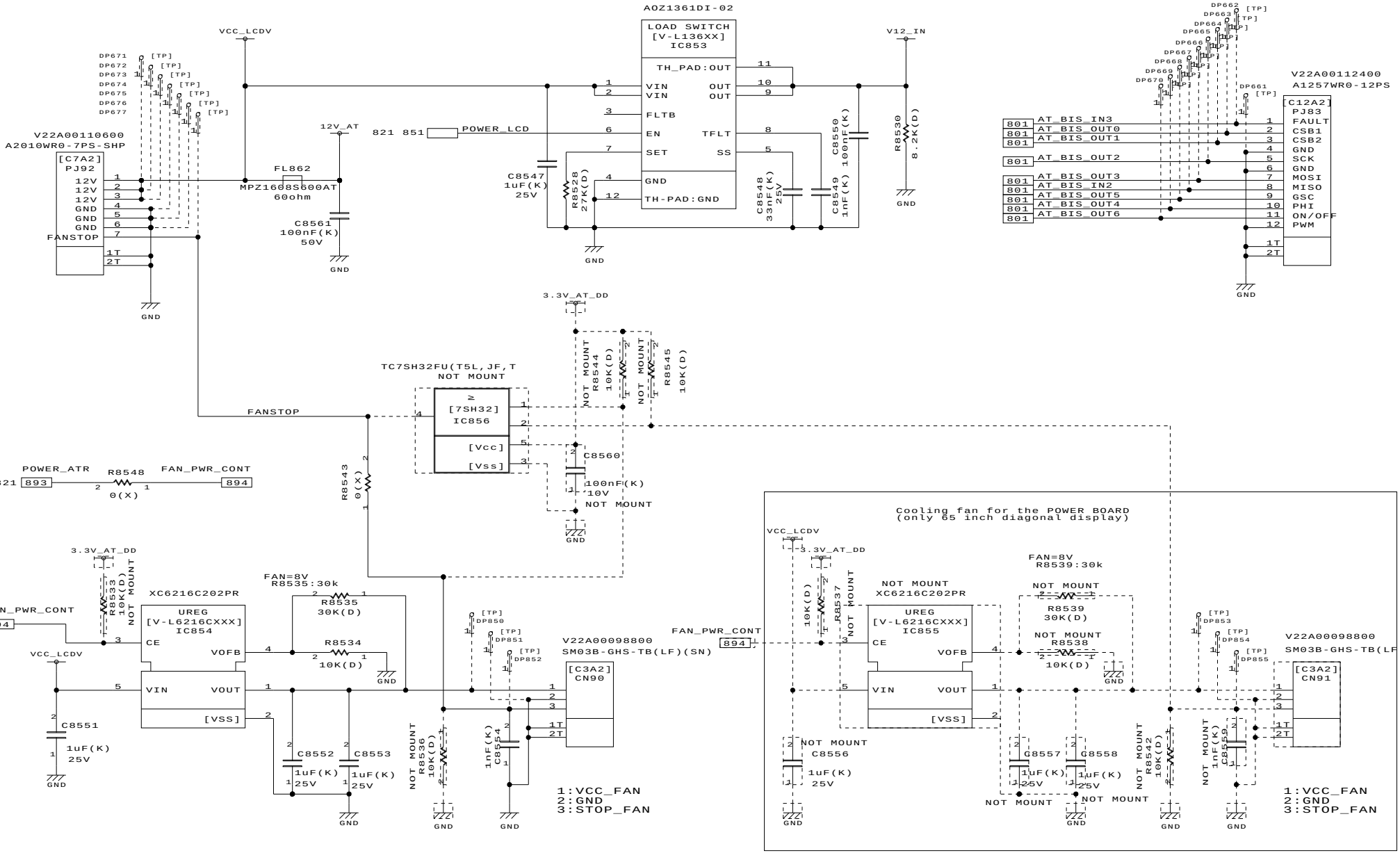


DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
2011/01/24 Nagaoka/Nakano	AITHER	POWER 1.2V	892	32	00	1st



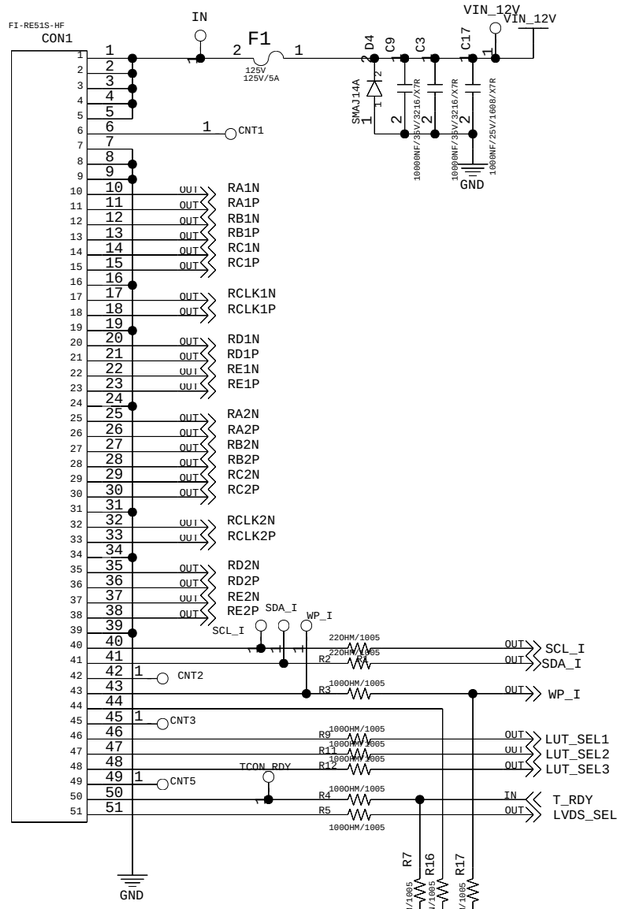
DESIGNED BY	2011/01/24	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
Nagaoka/Nakano		AITHER	POWER 3.3V	893	33	00	1st

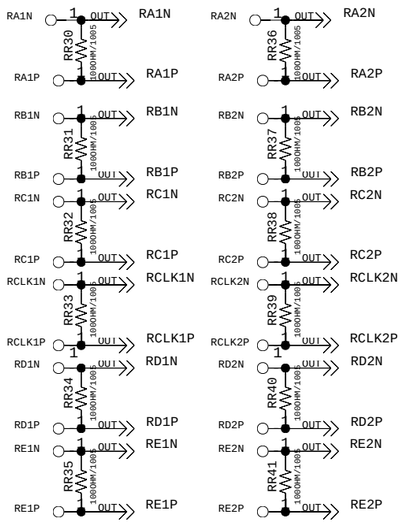
CONFIDENTIAL

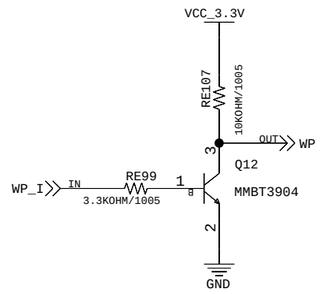


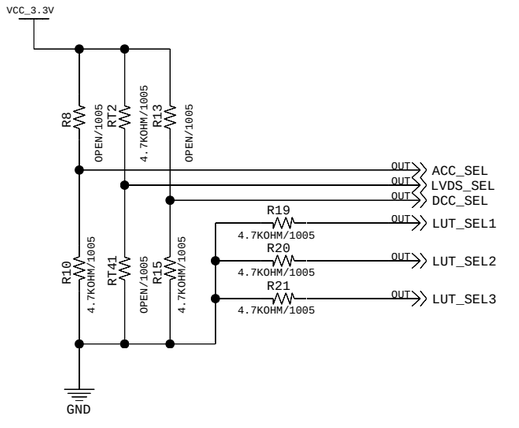
DESIGNED BY	TITLE	FUNCTION	SH.NO.	PAGE NO.	REV.MARK	DRAWING.NO.
OONO	AITHER	L-CON PWR CONNECTOR	894	34	00	1st

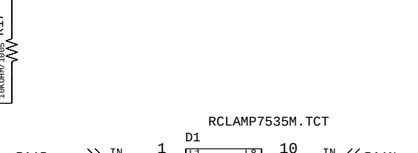
2011.03.23 20:23

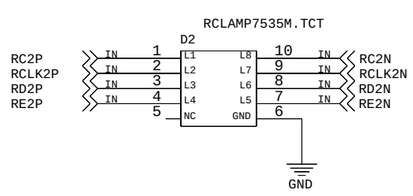


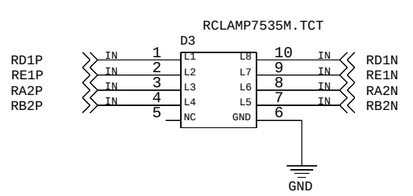


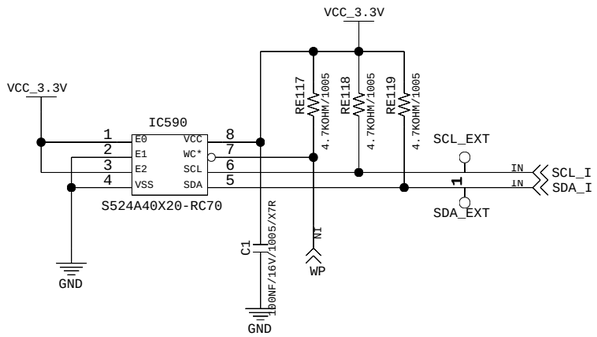


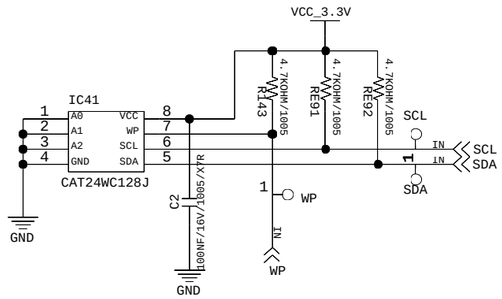










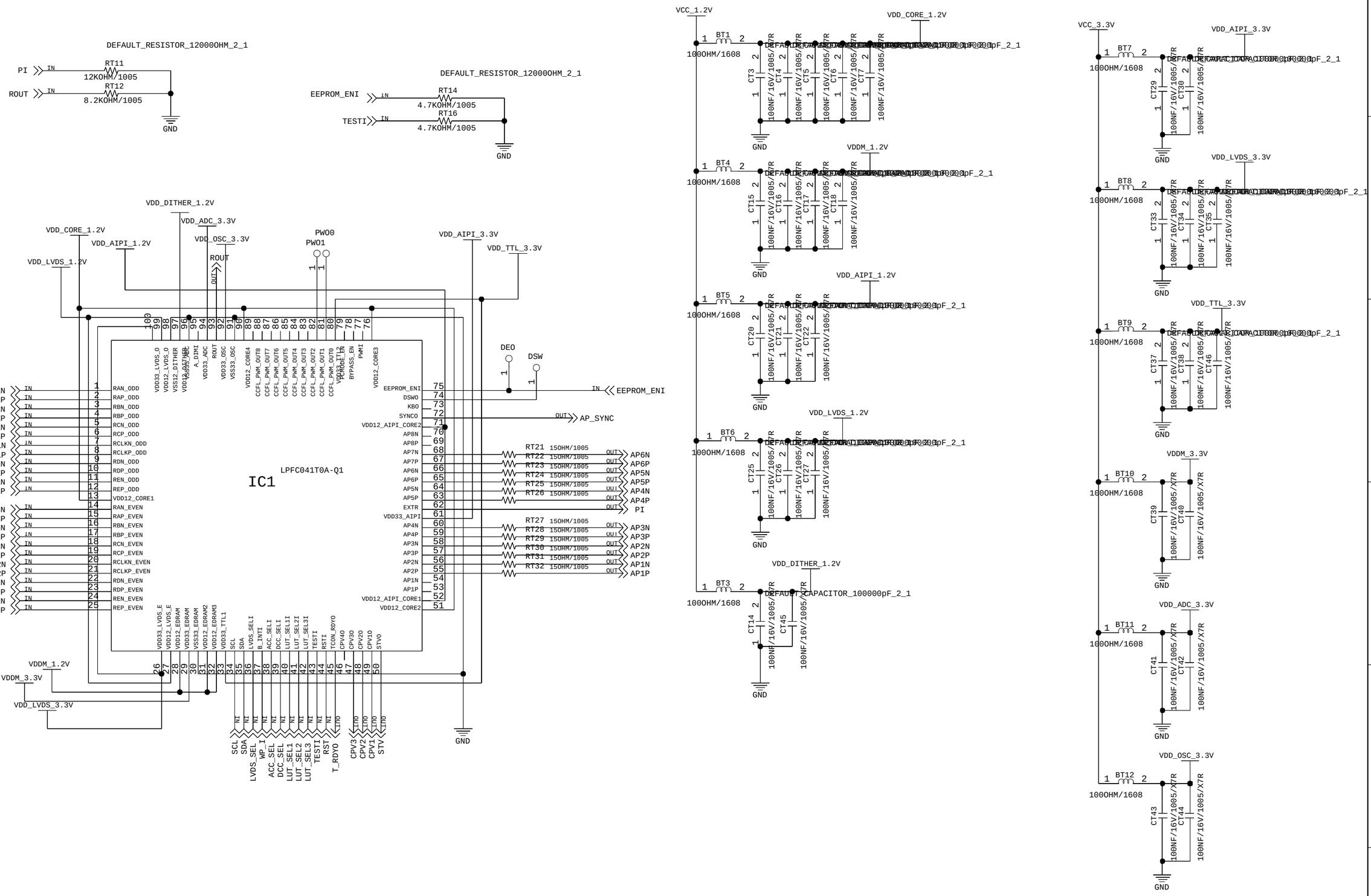


Changed by <CHANGED_BY>	Last Modified Wed Oct 06 13:35:28 2010	SPEC No.	TDS21213-000
		Part Name	ASSY PCB-CONTROL
Engineer GG SONG	Drawn by <DRAWN_BY> / R&D CHK	PBA Code	LJ94-03842E
		Sheet	1 / 5 [A3]

SAMSUNG ELECTRONICS

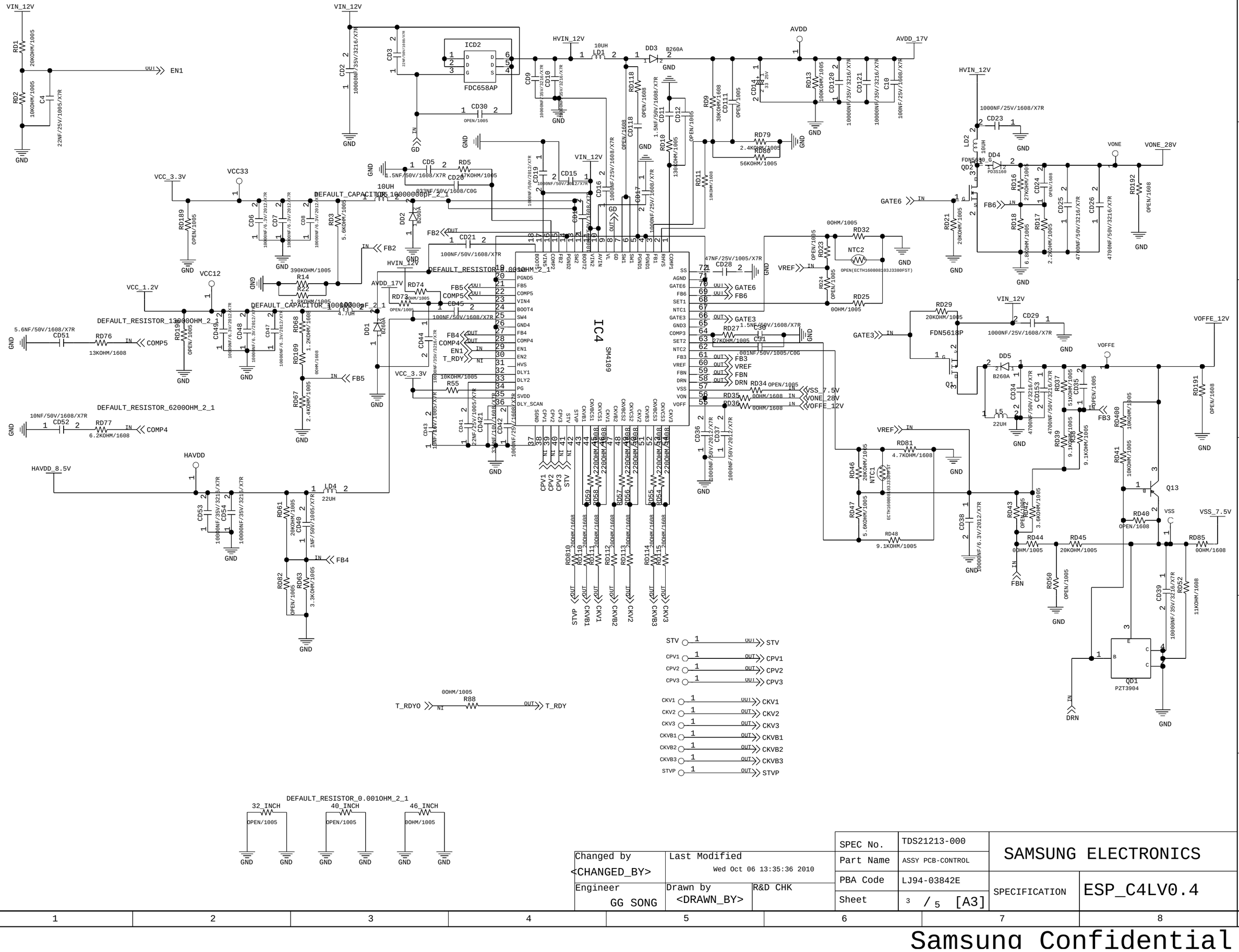
SPECIFICATION ESP_C4LV0.4

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Changed by	Last Modified		SPEC No.	TDS21213-000	SAMSUNG ELECTRONICS	
<CHANGED_BY>	Wed Oct 06 13:35:34 2010		Part Name	ASSY PCB-CONTROL		
Engineer	Drawn by	R&D CHK	PBA Code	LJ94-03842E		
GG SONG	<DRAWN_BY>		Sheet	2 / 5 [A3]	SPECIFICATION	ESP_C4LV0.4

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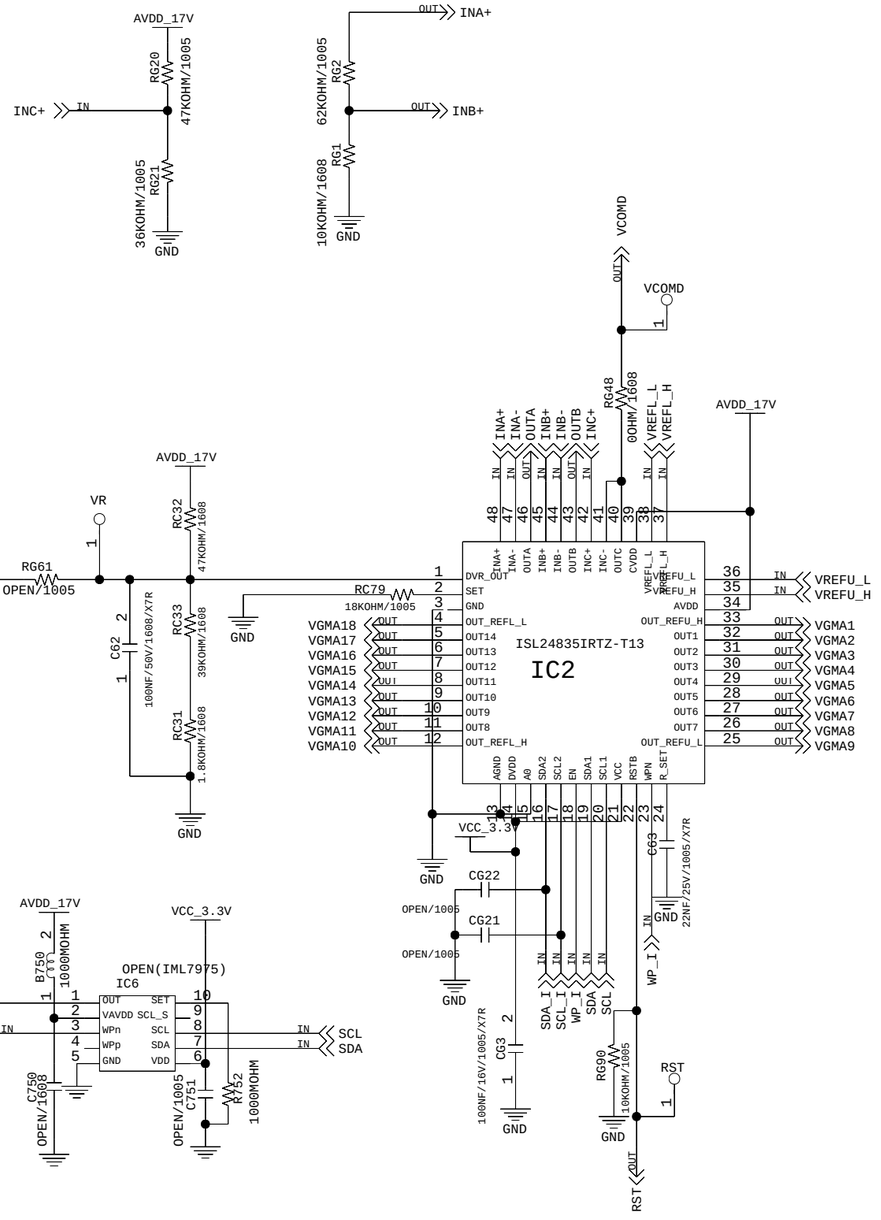


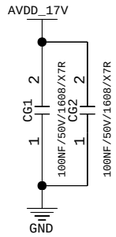
Changed by	Last Modified	SPEC No.	TDS21213-000
<CHANGED_BY>	Wed Oct 06 13:35:36 2010	Part Name	ASSY PCB-CONTROL
		PBA Code	LJ94-03842E
Engineer	Drawn by	R&D CHK	Sheet 3 / 5 [A3]
GG SONG	<DRAWN_BY>		

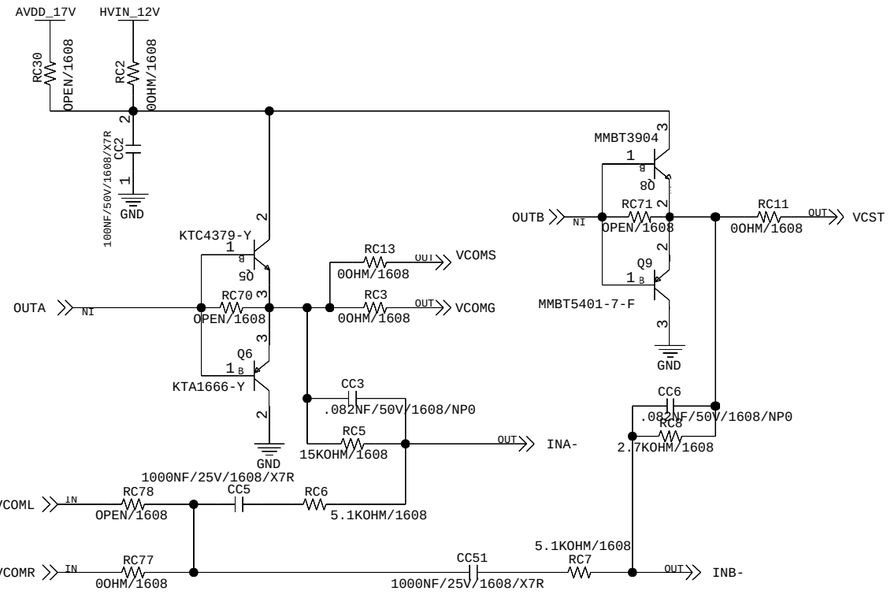
SAMSUNG ELECTRONICS

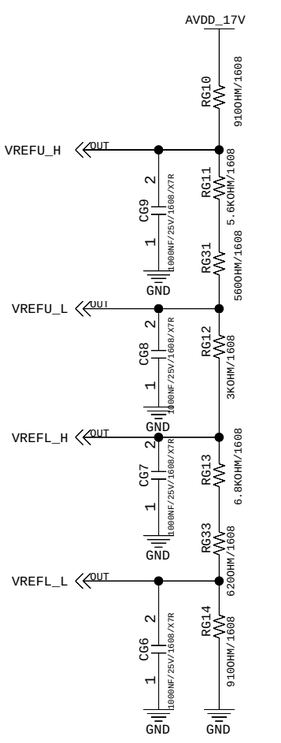
SPECIFICATION ESP_C4LV0.4

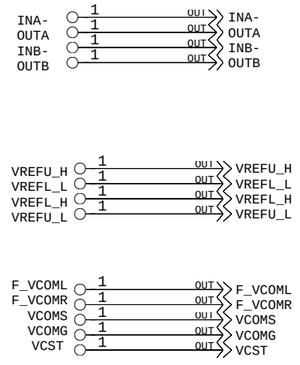
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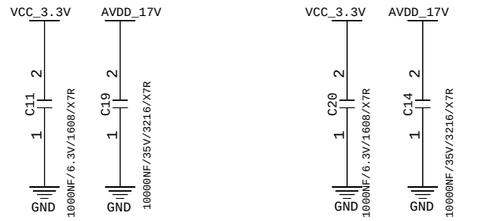


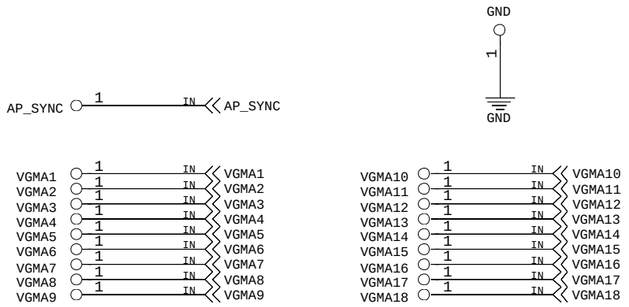


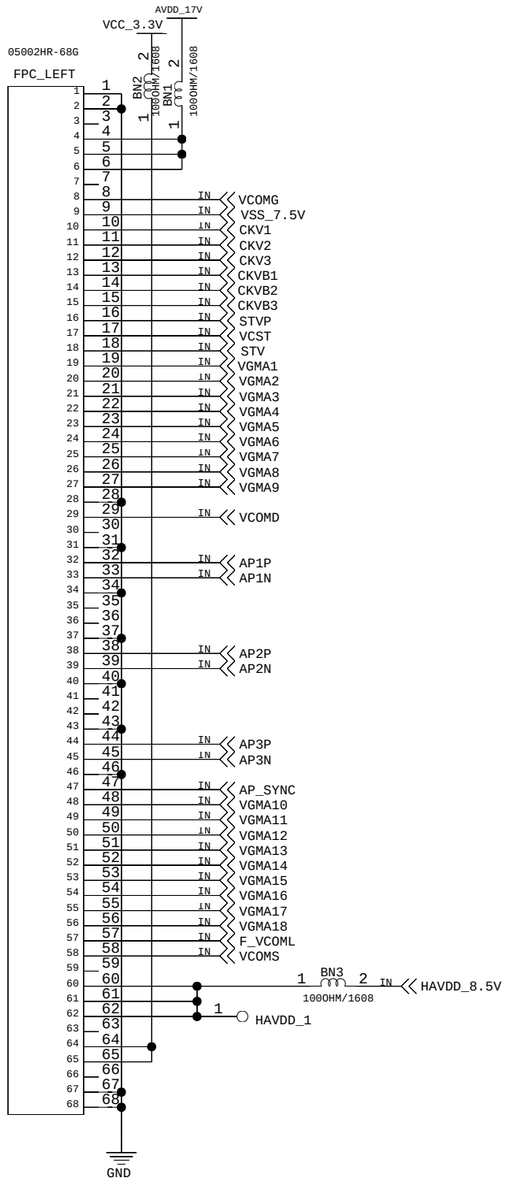
Changed by <CHANGED_BY>	Last Modified Wed Oct 06 13:35:39 2010		
Engineer GG SONG	Drawn by <DRAWN_BY>	R&D CHK	

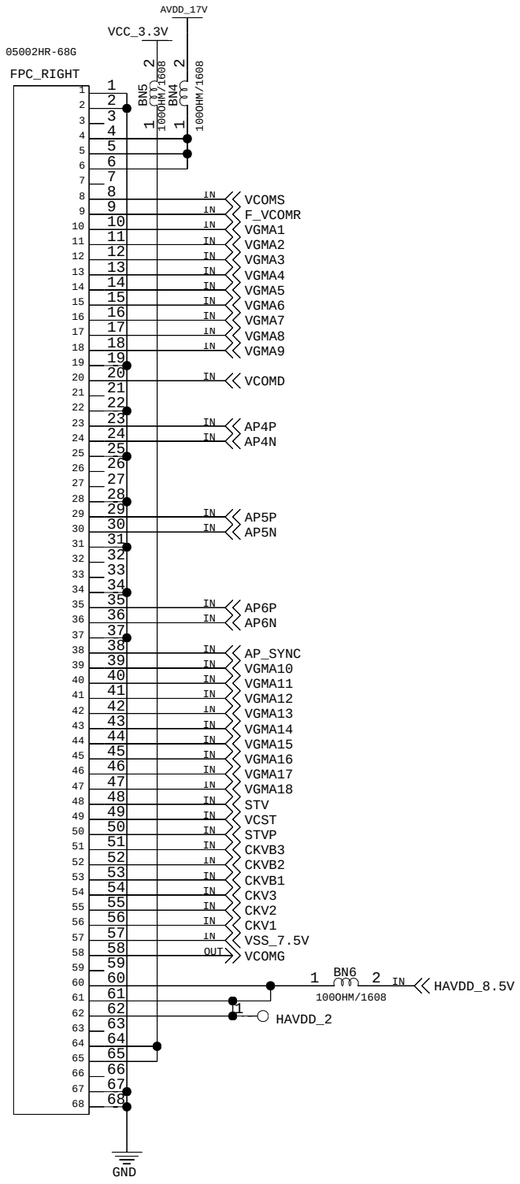
SPEC No.	TDS21213-000	SAMSUNG ELECTRONICS	
Part Name	ASSY PCB-CONTROL		
PBA Code	LJ94-03842E	SPECIFICATION	ESP_C4LV0.4
Sheet	4 / 5 [A3]		

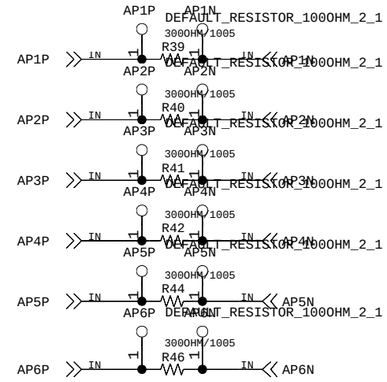
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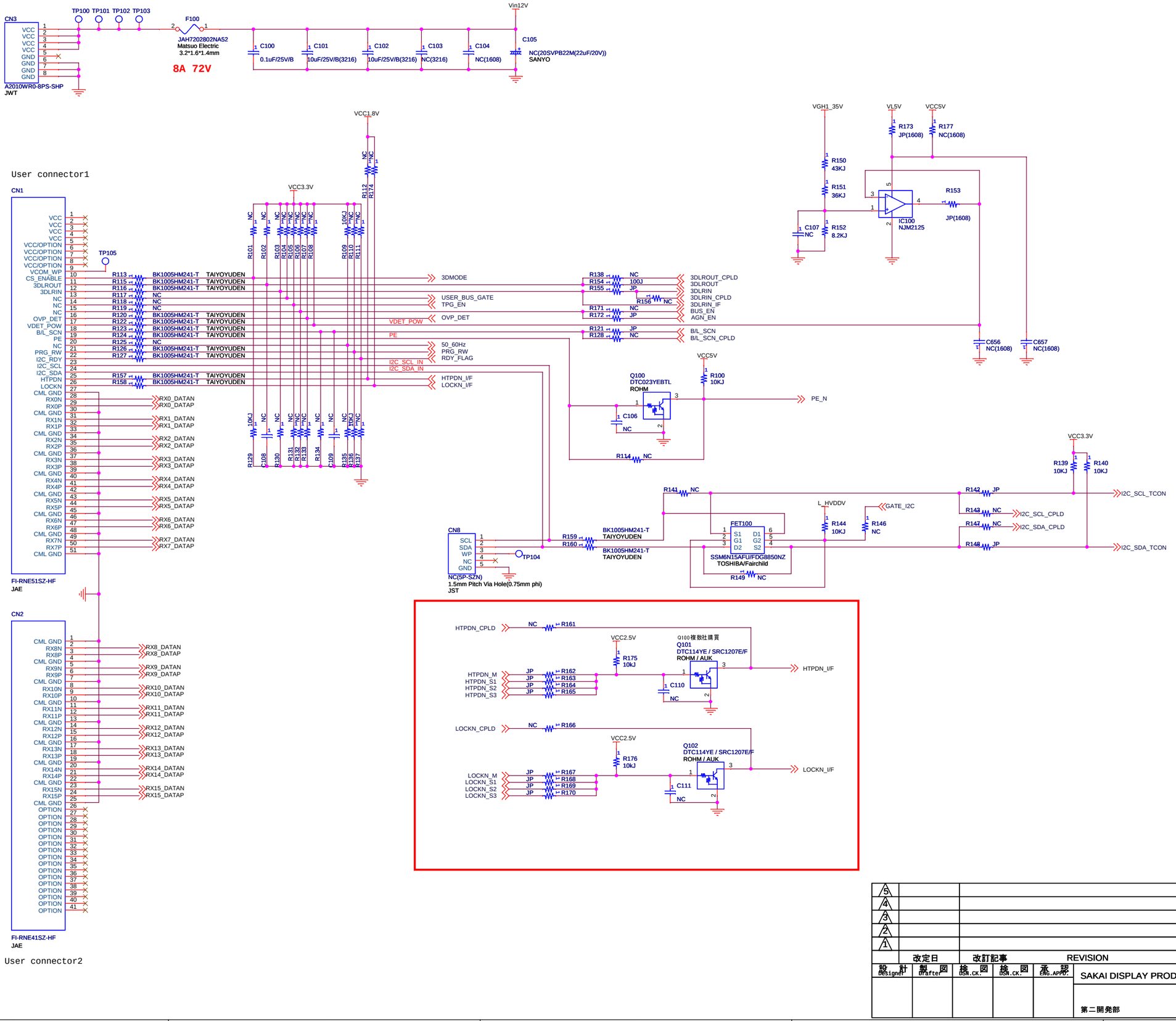


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		Part Name	ASSY PCB-CONTROL
		PBA Code	LJ94-03842E
Engineer GG SONG	Drawn by <DRAWN_BY> / R&D CHK	Sheet	5 / 5 [A3]

SAMSUNG ELECTRONICS

SPECIFICATION ESP_C4LV0.4

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5							ORIGINAL MODEL	4K2K 120Hz	
4							Material Finish	FR4, 4layers	
3							Date	2013.04.22	
2							Name	I/F	Sheet 1 of 11
1							Code	RUNTK0093FVZx	
	改定日	改訂記事	REVISION	担当			Drawing No.	KC-119-025	Rev 03
設計 Designer	製図 Drafter	検図 DSN.CK.	検図 DSN.CK.	承認 ENG.APPD.	SAKAI DISPLAY PRODUCTS				
					第二開発部				

Stockton Master (LL)

IC200
VPP1556BPG
IDT

TOP VIEW

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
B	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
C	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
D	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
F	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
G	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
J	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
L	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
P	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
R	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
T	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
U	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
V	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Calbricon 1.5GHz

5					ORIGINAL MODEL	4K2K 120Hz	
4					Material Finish	FR4, 4layers	
3					Date	2013.04.22	
2					Name	T-con(Master)	Sheet 2 of 11
1					Code	RUNTK0093FVZx	
	改定日	改訂記事	REVISION	担当	Drawing No.	KC-119-025	Rev 03

設計 Designer	製図 Drafter	検図 DSN.CK.	検図 DSN.CK.	承認 ENG.APPD.	SAKAI DISPLAY PRODUCTS
					第二開発部

VCC1.2V
B300 BLM18PG330SN1D
C300 10uF/6.3V/B(2012)
C301 1000pF/50V/CH
C302 10uF/6.3V/B(2012)
B302 BLM18PG330SN1D
C306 10uF/6.3V/B(2012)
B305 BLM18PG330SN1D
C313 10uF/6.3V/B(2012)
B306 BLM18PG330SN1D
C314 10uF/6.3V/B(2012)
C315 0.1uF/6.3V/B
VDD12_LR
VDDRX12_LR
VDDCDC12_LR
VDDA12_LR
VCC1.8V
B303 BLM18PG330SN1D
C307 10uF/6.3V/B(2012)
C308 1000pF/50V/CH
C309 10uF/6.3V/B(2012)
VDD18_LR
VDD25_LR
B304 BLM18PG330SN1D
C310 10uF/6.3V/B(2012)
C311 1000pF/50V/CH
C312 10uF/6.3V/B(2012)
VCC2.5V
VDD33_LR
B301 BLM18PG330SN1D
C303 10uF/6.3V/B(2012)
VCC3.3V
C304 1000pF/50V/CH
C305 10uF/6.3V/B(2012)

SCK_SPWB_LR
SCS_SPWB_LR
SDO_SPWB_LR
SDI_SPWB_LR
SCK_LR
SCS_LR
SDO_LR
SDI_LR

PROG_LL_LR
I2C_SCL_TCON
I2C_SDA_TCON
TEMP_SCL
TEMP_SDA
DACS_L_SCL
DACS_L_SDA
TO DAC

TP300 TP301 TP302

RX4_DATAN
RX4_DATAP
RX5_DATAN
RX5_DATAP
RX6_DATAN
RX6_DATAP
RX7_DATAN
RX7_DATAP
C360 C361 C364 C362 C365 C366 C367 C363 0.1uF/6.3V/B
TP306 TP307
HTPDN_S1
LOCKN_S1
A11 B11 A10 B10 A9 B9 A8 B8 C12 D12 A12 B12
VXRX0- VXRX0+ VXRX1- VXRX1+ VXRX2- VXRX2+ VXRX3- VXRX3+ VXTEST- VXTEST+ VXHTPDN VXLOCKN

IC300
VPP1556BPG
IDT

Stockton
Slave1
(LR)

TOP VIEW

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
B	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
C	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
D	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
F	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
G	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
J	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
L	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
P	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
R	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
T	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
U	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
V	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

GSP0 GSP1 GCK0 GCK1 GOE0 GOE1 UDB0 UDB1
N18 N17 L18 L17 K18 K17 M18 M17
GSP1_L GSP2_L GCK0_L
TP303 GOE0_L
TP304 GLBR_L GLBR_INV_L
GSLOPE P18 TP305

CS0 CS1 CS2 CS3 CS4 CS5 CS6 CS7 CS8 CS9 CS10 CS11
H18 G18 F18 E18 D18 C18 H17 G17 F17 E17 D17 C17
TP308 TP309 TP310 TP311 TP312 TP313 TP314 TP315 TP316 TP317 TP318 TP320

CDCK00- CDCK00+ CDAT00- CDAT00+ CDAT01- CDAT01+ CDAT02- CDAT02+ CDAT03- CDAT03+ CDAT04- CDAT04+ CDAT05- CDAT05+ CDAT06- CDAT06+ CDAT07- CDAT07+ CDCK01- CDCK01+ CDCK10- CDCK10+ CDAT10- CDAT10+ CDAT11- CDAT11+ CDAT12- CDAT12+ CDAT13- CDAT13+ CDAT14- CDAT14+ CDAT15- CDAT15+ CDAT16- CDAT16+ CDAT17- CDAT17+ CDCK11- CDCK11+
T18 T17 U18 U17 V18 V17 V16 U16 V15 U15 V14 U14 V13 U13 V12 U12 V11 U11 V10 U10 V9 U9 V8 U8 V7 U7 V6 U6 V5 U5 V4 U4 V3 U3 V1 V2 U1 U2 T1 T2
C368 C369 C370 C371 C372 C373 C374 C375 C376 C377 C378 C379 C380 C381 C382 C383 0.1uF/6.3V/B
CDC18_DATAN CDC18_DATAP CDC17_DATAN CDC17_DATAP CDC16_DATAN CDC16_DATAP CDC6_CLKN CDC6_CLKP CDC15_DATAN CDC15_DATAP CDC14_DATAN CDC14_DATAP CDC13_DATAN CDC13_DATAP CDC5_CLKN CDC5_CLKP

3DLROUT 3DLRIN
A4 B5
3DLROUT 3DLRIN
3DMODE 50_60Hz AGN_EN BUS_EN
R328 NC
A5 C5 A13 B13 B4
3DMODE 50_60HZ AGN_EN BUS_EN PRG_RW TPG_EN
PRG_RW PRG_RW_BU
R325 R326 JP NC
TPG_EN C13
TP319 J18 RDY_FLAG
VSYNC_S HSYNC_S REVSYNC LUTSYNC HSYNC_C VSYNC_C
B14 A14 B15 A15 A16 B16
VSYNC_S HSYNC_S REVSYNC LUTSYNC HSYNC_C VSYNC_C
FSAFEB C16 C6 FSAFEB XSEL
RESETB_S A1 J17 RESETB TST_FLAG
SSCG0- SSCG0+ SSCG1- SSCG1+
A17 B17 A18 B18
SSCG0- SSCG0+ SSCG1- SSCG1+
XIN A6
XOUT B6
XIO_EXT- A7
XIO_EXT+ B7
VCC2.5V R300 NC
VCC3.3V TP321 R302 NC
R301 JP
R303 10KJ
C385 1uF/6.3V/B
R304 JP
R305 NC
R306 JP
X300 NC(CSTCW27M0X51R-R0) murata
XTAL_EXT-
XTAL_EXT+

TEST0 TEST1 TEST2 TEST3
D5 D6 C14 D14
TESTCK TESTCKB TESTCKE TESTDQ TESTDQS TESTCMD
L16 M16 M15 G3 G4 L15
TP325 TP326 TP327 TP328 TP329 TP330

VCC3.3V
CN300
SCL SDO CS SDI WP VCC NC GND RESET
TP-CN10-1 TP-CN10-2 TP-CN10-3 TP-CN10-4 TP-CN10-5 TP-CN10-6 TP-CN10-7 TP-CN10-8
R318 NC
NC(9P-SZN)
1.5mm Pitch Via Hole(0.7mm phi)
JST
R312 2KJ
R313 NC R314 NC R315 2KJ
IC301
W25Q16CVSSIG
Winbond
CS VCC DO NC WP# CLK VSS DI
C384 1.0uF/6.3V/B(1608)
R316 4.7KJ R317 NC
R319 NC R320 NC R321 NC R322 NC R323 NC
RA300
NC(1005*4)
R324 NC
PROG_LL_LR
SCK_LR SDO_LR SCK_SPWB_LR SDO_SPWB_LR SCS_SPWB_LR SDI_SPWB_LR SCS_LR SDI_LR

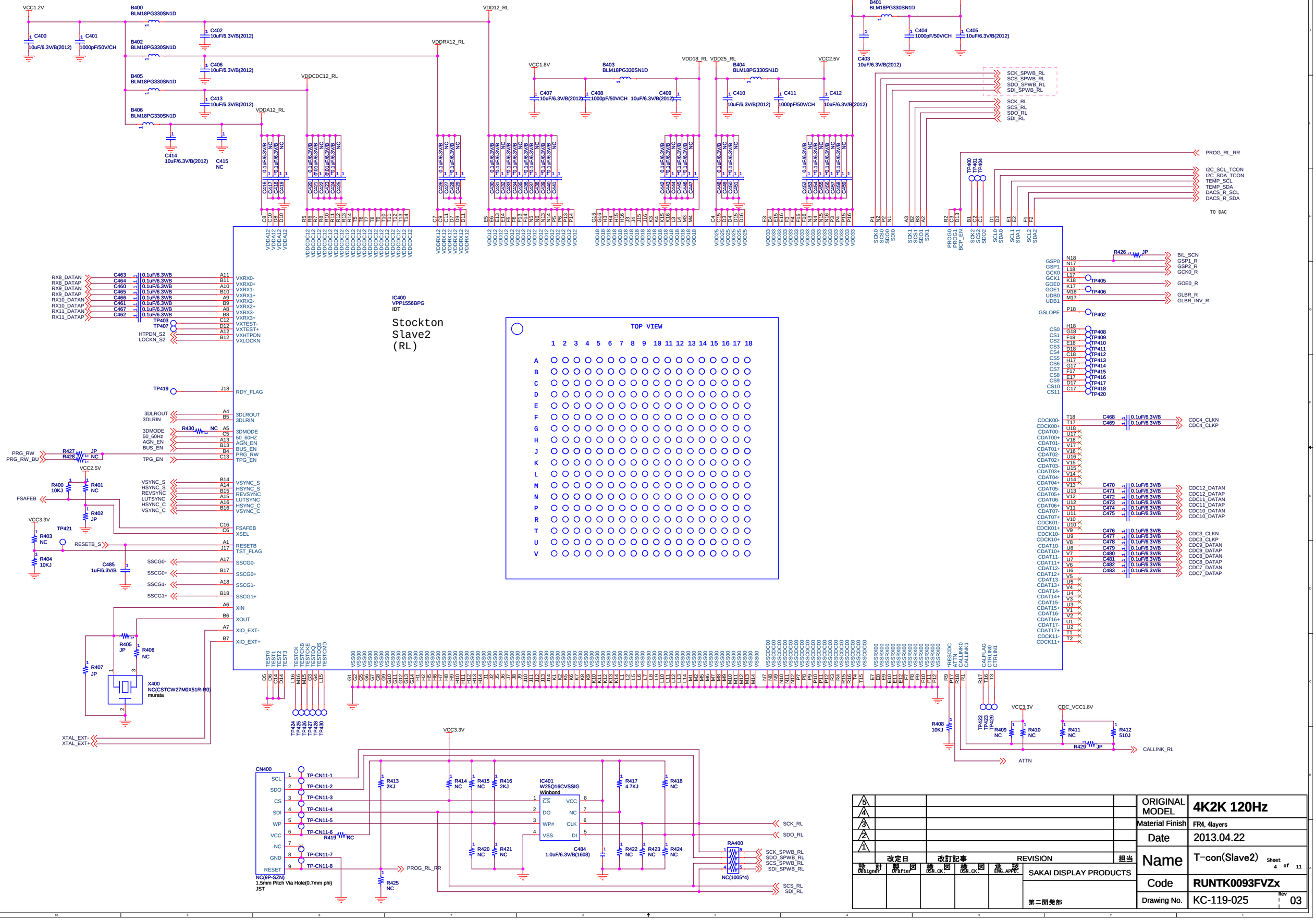
*RESCDC ATTN CALLINK0 CALLINK1
R9 P17 R18 R1
R307 10KJ
CALFLAG CTRLIN0 CTRLIN1
R17 T16 T3
TP322 TP323 TP324
ATTN
VCC3.3V
R308 NC R309 NC
CDC_VCC1.8V
R310 NC R311 510J
R327 JP
CALLINK_LR

	改定日	改訂記事	REVISION	担当
5				
4				
3				
2				
1				

設計 Designer	製図 Drafter	検図 DSN.CK.	検図 DSN.CK.	承認 ENG.APPR.

SAKAI DISPLAY PRODUCTS
第二開発部

ORIGINAL MODEL	4K2K 120Hz
Material Finish	FR4, 4layers
Date	2013.04.22
Name	T-con(Slave1) Sheet 3 of 11
Code	RUNTK0093FVZx
Drawing No.	KC-119-025 Rev 03



5						ORIGINAL MODEL	4K2K 120Hz
4						Material Finish	FR4, 4layers
3						Date	2013.04.22
2						Name	T-con(Slave2) Sheet 4 of 11
1						Code	RUNTK0093FVZx
	改定日	改訂記事	REVISION	担当		Drawing No.	KC-119-025 Rev 03
設計 Designer	製図 Drafter	検図 DSN.CK.	検図 DSN.CK.	承認 ENG.APPD.	SAKAI DISPLAY PRODUCTS 第二開発部		

Slave3 (RR)

IC502
VPP1556BPG
IDT

TOP VIEW

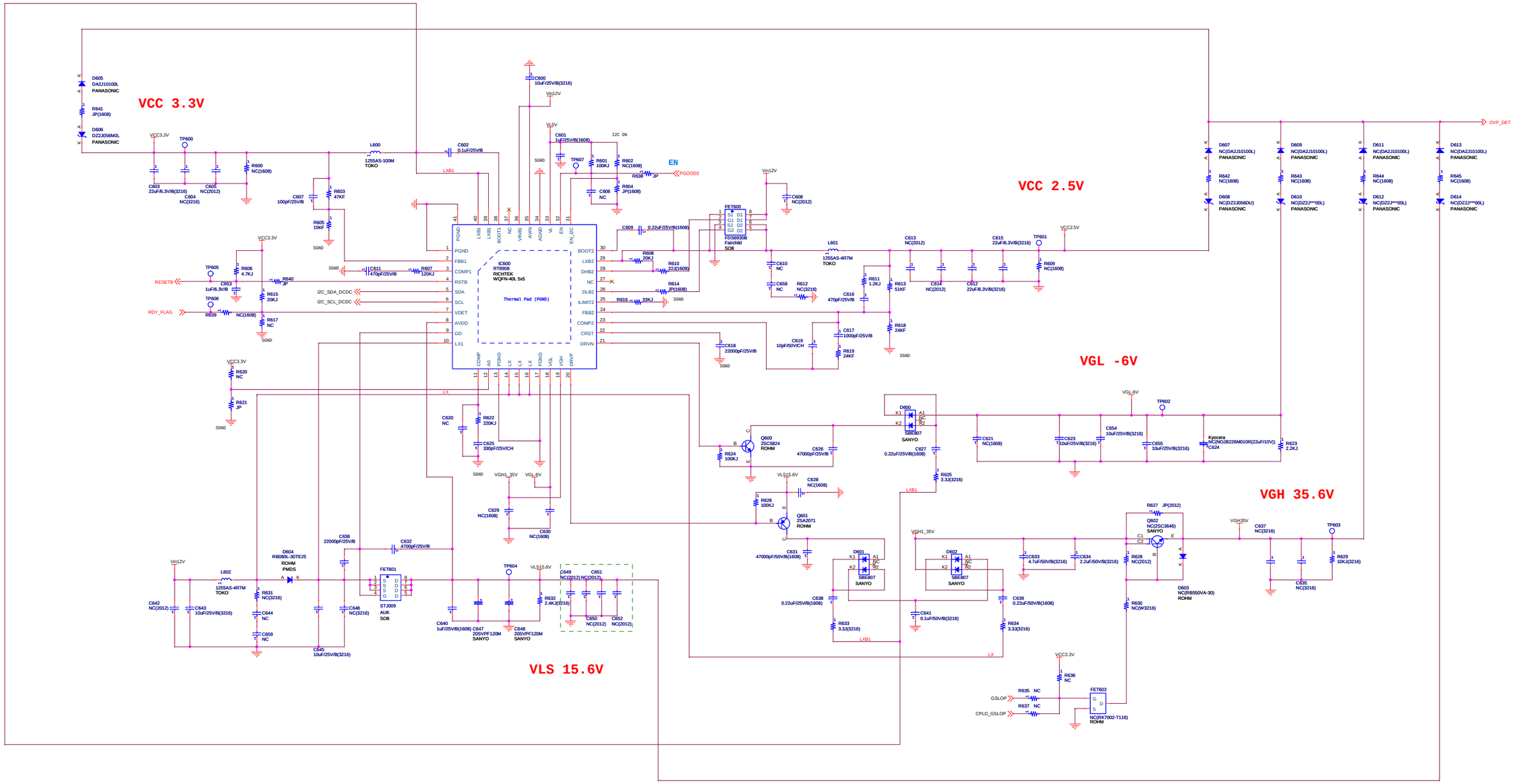
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
B	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
C	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
D	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
F	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
G	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
J	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
L	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
P	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
R	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
T	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
U	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
V	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

	改定日	改訂記事	REVISION	担当
5				
4				
3				
2				
1				

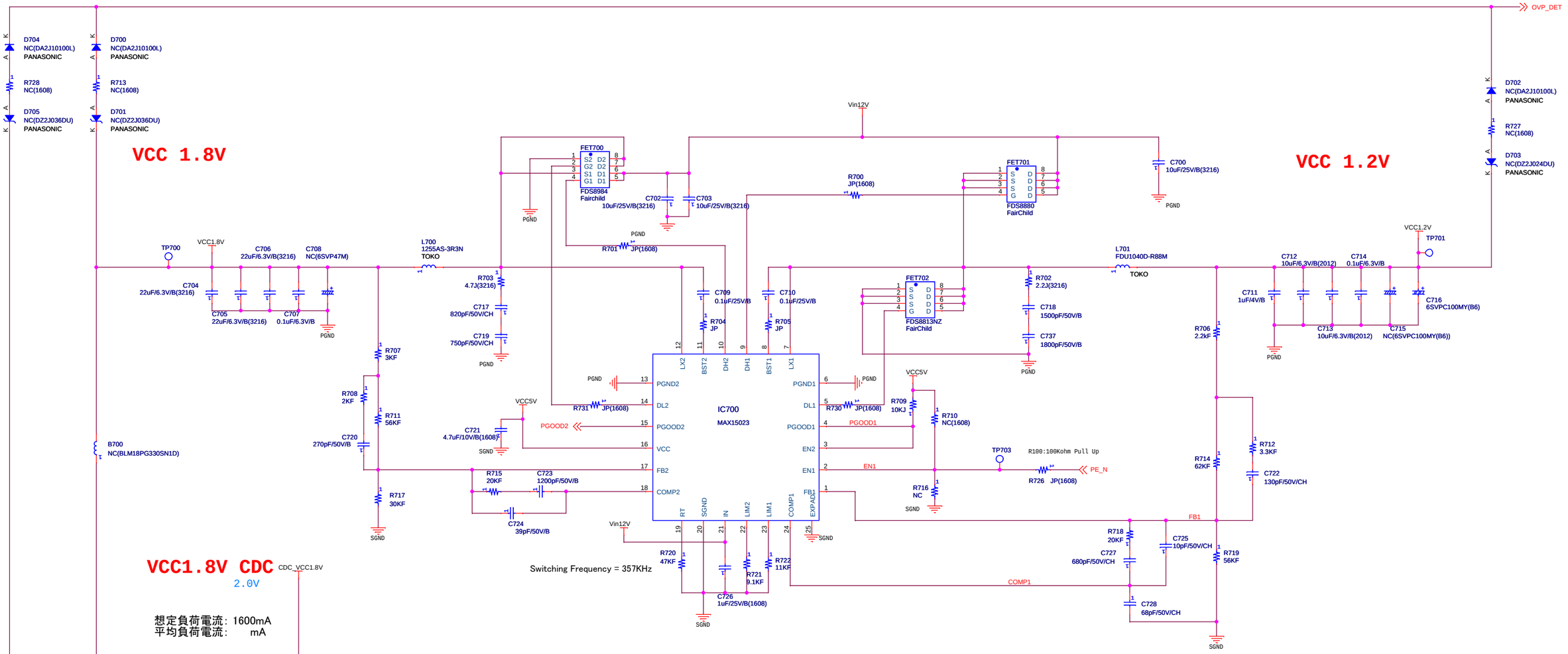
設計 Designer	製図 Drafter	検図 DSN.CK.	検図 DSN.CK.	承認 ENG.APPR.

SAKAI DISPLAY PRODUCTS
第二開発部

ORIGINAL MODEL	4K2K 120Hz
Material Finish	FR4, 4layers
Date	2013.04.22
Name	T-con(Slave3) Sheet 5 of 11
Code	RUNTK0093FVZx
Drawing No.	KC-119-025 Rev 03



5						ORIGINAL MODEL	4K2K 120Hz
4						Material Finish	
3						Date	2013.04.22
2						Name	POWER1 Sheet 6 of 11
1						Code	RUNTK0093FVZx
		REVISION				Drawing No.	KC-119-025 Rev 03
設計 Design	製図 Drafter	検図 Des.CK.	検図 TDK.CK.	承認 Eng.APP.	SAKAI DISPLAY PRODUCTS 液晶事業本部		



指示のない抵抗、コンデンサは、1005サイズです。

5				ORIGINAL MODEL	4K2K 120Hz		
4				Material Finish	FR4, 4layers		
3				Date	2013.04.22		
2				Name	POWER2	Sheet 7 of 11	
1				Code	RUNTK0093FVZx		
	改定日	改訂記事 REVISION	担当	Drawing No.	KC-119-025	Rev	03

設計 Designer	製図 Drafter	検図 DSN.CK.	検図 DSN.CK.	承認 ENG.APPD.	SAKAI DISPLAY PRODUCTS
					第二開発部

VCOM+CS

HVDD

VCOM

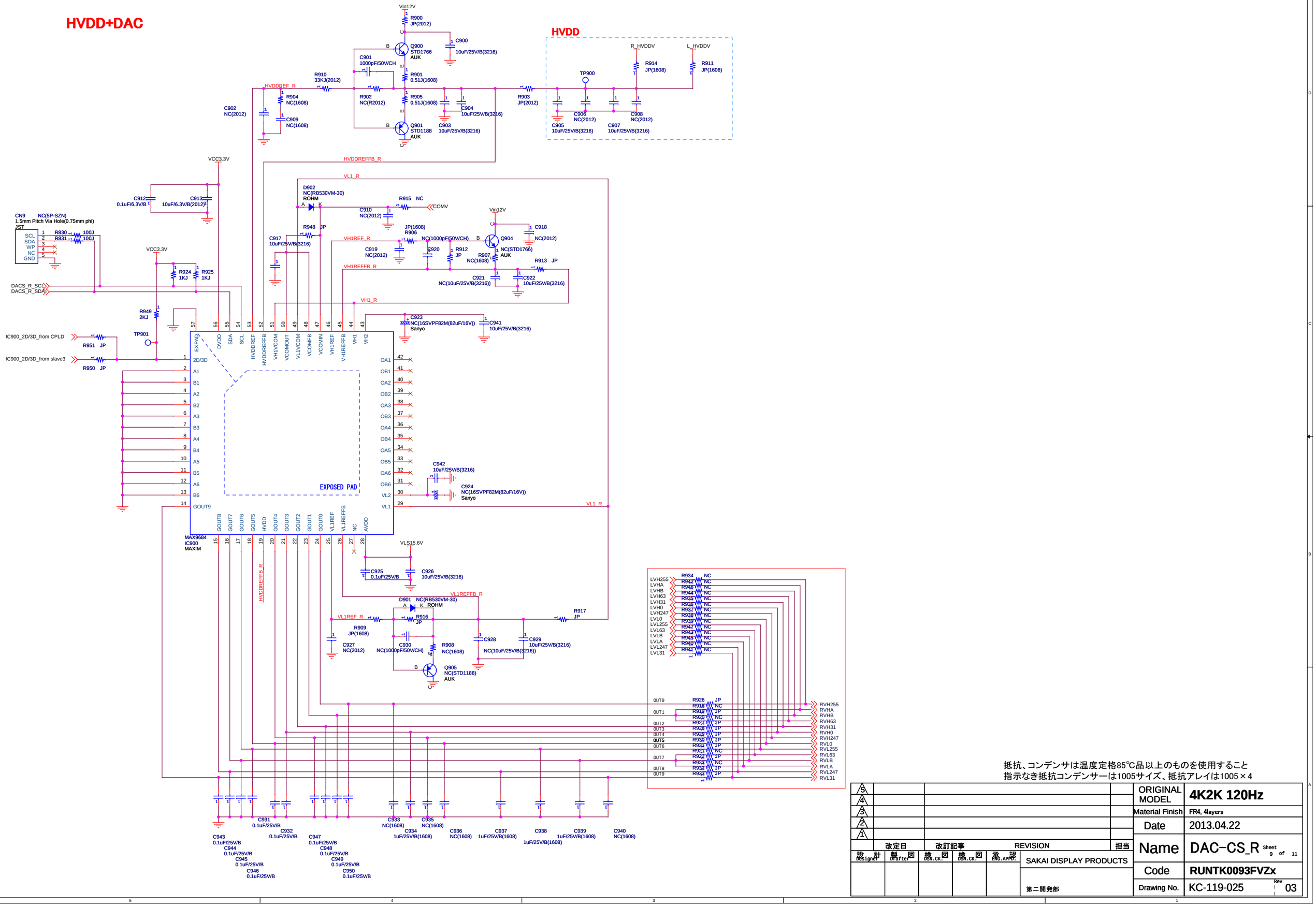
VCC3.3V
GPO_BUSSW
R815 10kJ
IC1103
TC7MBL6353S
I2C_SCL_TCON
I2C_SDA_TCON
DACS_R_SCL
DACS_R_SDA
C843 NC
TP803
R814 JP
Vin12V
R800 NC(2012)
Q800 NC(STD1766) AUK
C800 NC(10uF/25V/B(2012))
C801 NC(1000pF/50V/B)
R801 NC(1608)
R802 JP(R2012)
R805 NC(1608)
Q801 NC(STD1188) AUK
C804 10uF/25V/B(3216)
C803 NC(10uF/25V/B(3216))
C802 NC(2012)
HVDDREF_L
R804 NC(1608)
R836 JP(2012)
C809 NC(1608)
R803 NC(2012)
TP800
L_HVDDV
C806 NC(2012)
C808 NC(2012)
C805 NC(10uF/25V/B(3216))
C807 NC(10uF/25V/B(3216))
HVDDREFFB_L
VCOMOUT_L
VCOMFB_L
VL1_L
C814 NC(2012)
R837 33KJ(2012)
R810 NC(1608)
C817 NC(1608)
R806 JP(2012)
Q802 2SC5706 SANYO
C810 10uF/25V/B(3216)
C811 1000pF/50V/CH
R807 JP(1608)
R808 NC(2012)
R811 JP(1608)
Q803 2SA2126 SANYO
C815 NC(1608)
R809 1J(3216)
TP801
C816 NOJC686M010R(68uF/10V) Kyocera
COMV
C837 10uF/25V/B(3216)
C838 10uF/25V/B(3216)
C812 0.1uF/6.3V/B
C813 10uF/6.3V/B(2012)
D802 RB530VM-30 ROHM
R832 680J(1608)
C820 1000pF/50V/CH
Q804 STD1766 AUK
C818 NC(2012)
VH1REF_L
C819 NC(2012)
R812 1KJ
R833 JP(1608)
R813 JP
VH1REFFB_L
C821 10uF/25V/B(3216)
C822 10uF/25V/B(3216)
VH1_L
C823 16SVPF82M(82uF/16V) Sanyo
R824 10kJ
R825 10kJ
DACS_L_SCL
DACS_L_SDA
R828 100J
R829 100J
R819 2kJ
TP802
R820 JP
R818 JP
IC800_2D/3D_from CPLD
IC800_2D/3D_from slave3
R821 NC(1608)
PANASONIC NC(DZ2J056M0L) D804
C824 16SVPF82M(82uF/16V) Sanyo
VL1_L
MAX9684 IC800 MAXIM
EXPOSED PAD
IN_CS1
IN_CS7
IN_CS2
IN_CS8
IN_CS3
IN_CS9
IN_CS4
IN_CS10
IN_CS5
IN_CS11
IN_CS6
IN_CS12
RCS1
RCS2
RCS3
RCS4
RCS5
RCS6
RCS7
RCS8
RCS9
RCS10
RCS11
RCS12
VLS15.6V
C825 0.1uF/25V/B
C826 10uF/25V/B(3216)
VL1REFFB_L
D801 RB530VM-30 ROHM
R835 47J(1608)
R816 1KJ
R817 JP
VL1REF_L
C830 1000pF/50V/CH
R834 JP(1608)
Q805 STD1188 AUK
C827 NC(2012)
C828 10uF/25V/B(3216)
C829 10uF/25V/B(3216)
C831 NC(0.1uF/25V/B)
C832 NC(0.1uF/25V/B)
C833 NC(1608)
C834 NC(1uF/25V/B(1608))
C835 NC(1608)
C836 NC(1608)
C839 NC(1uF/25V/B(1608))
C840 NC(1uF/25V/B(1608))
C841 NC(1uF/25V/B(1608))
C842 NC(1608)
C844 NC(0.1uF/25V/B)
C845 NC(0.1uF/25V/B)
C846 NC(0.1uF/25V/B)
C847 NC(0.1uF/25V/B)
C848 NC(0.1uF/25V/B)
C849 NC(0.1uF/25V/B)
C850 NC(0.1uF/25V/B)
C851 NC(0.1uF/25V/B)
LVH255
LVHA
LVHB
LVH63
LVH31
LVH0
LVH247
LVL0
LVL255
LVL63
LVLB
LVLA
LVL247
LVL31

抵抗、コンデンサは温度定格85℃品以上のものを使用すること
指示なき抵抗コンデンサーは1005サイズ、抵抗アレイは1005×4

5				ORIGINAL MODEL	4K2K 120Hz
4				Material Finish	FR4, 4layers
3				Date	2013.04.22
2				Name	DAC−CS_L Sheet 8 of 11
1				Code	RUNTK0093FVZx
	改定日	改訂記事	REVISION 担当	Drawing No.	KC-119-025 Rev 03

設計 Designer	製図 Drafter	検図 DSN.CK.	検図 DSN.CK.	承認 ENG.APPV.	SAKAI DISPLAY PRODUCTS
					第二開発部

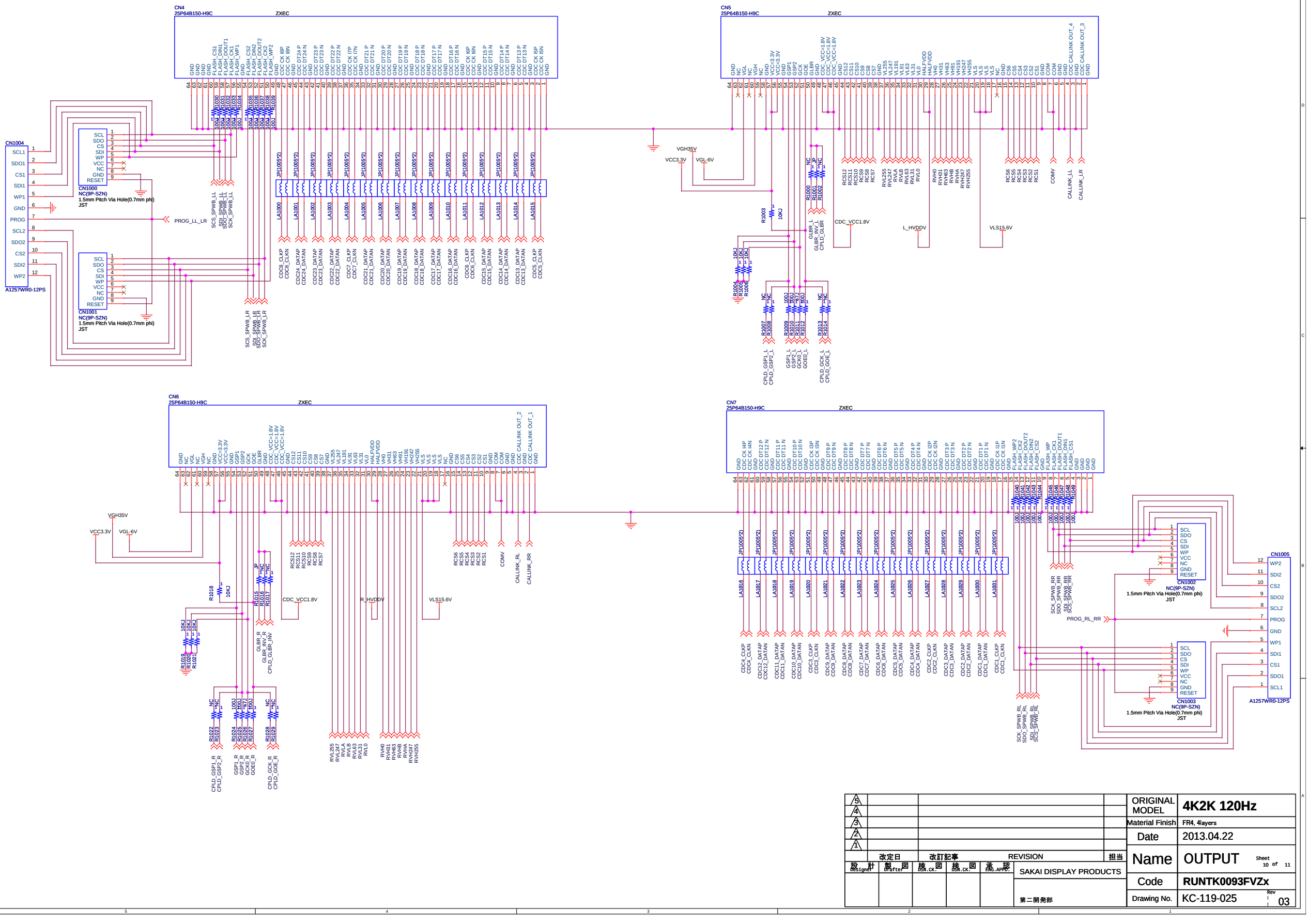
HVDD+DAC



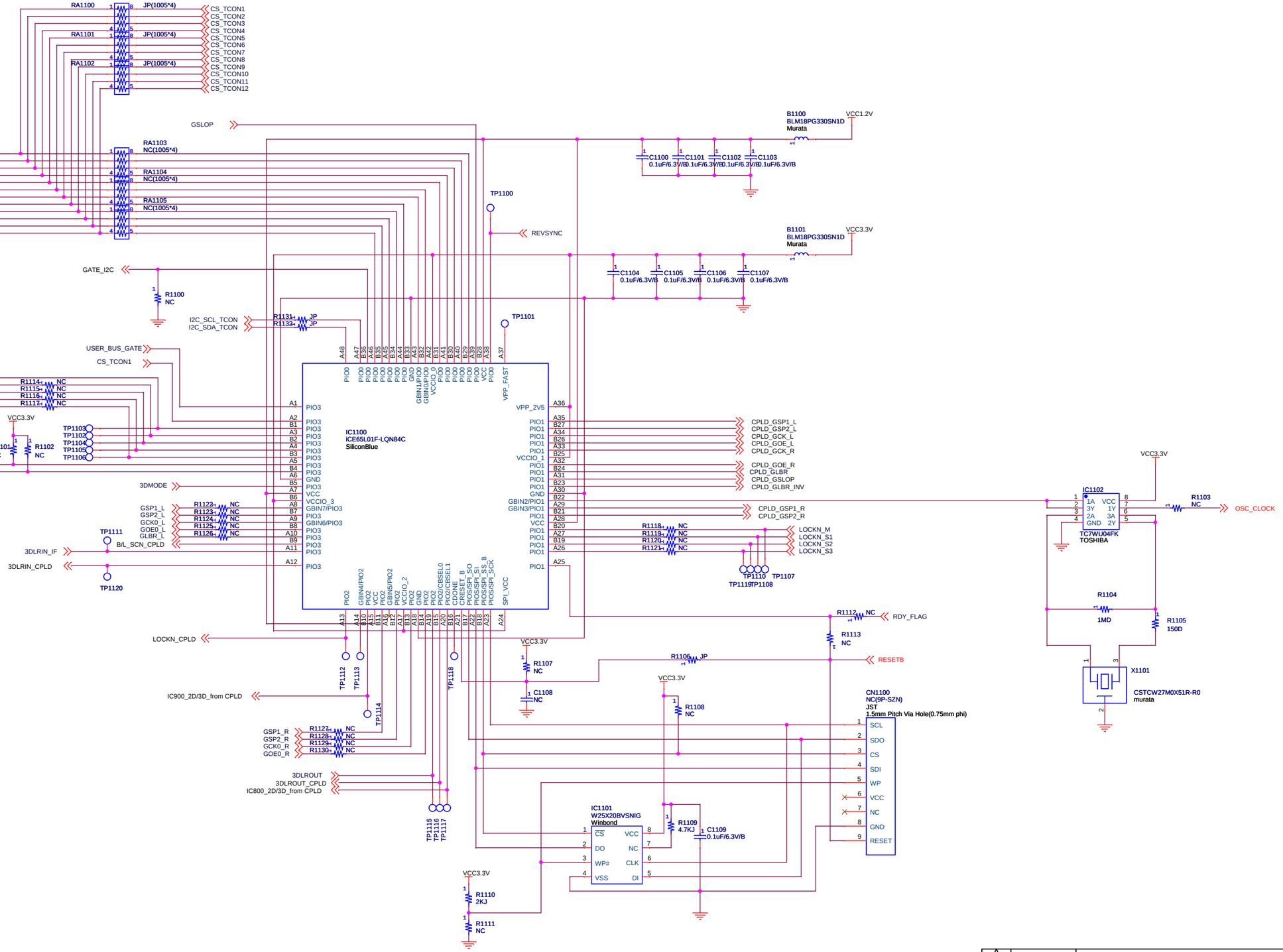
抵抗、コンデンサは温度定格85℃品以上のものを使用すること
指示なき抵抗コンデンサーは1005サイズ、抵抗アレイは1005×4

5				ORIGINAL MODEL	4K2K 120Hz
4				Material Finish	FR4, 4layers
3				Date	2013.04.22
2				Name	DAC-CS_R Sheet 9 of 11
1				Code	RUNTK0093FVZx
	改定日	改訂記事 REVISION	担当	Drawing No.	KC-119-025 Rev 03

設計 Designed	製図 Drafter	検図 DSN.CK	検図 DSN.CK	承認 ENG.APPV	SAKAI DISPLAY PRODUCTS
					第二開発部



5						ORIGINAL MODEL	4K2K 120Hz	
4						Material Finish	FR4, 4layers	
3						Date	2013.04.22	
2						Name	OUTPUT	Sheet 10 of 11
1						Code	RUNTK0093FVZx	
	改定日	改訂記事	REVISION		担当	Drawing No.	KC-119-025	Rev 03
設計 Designed	製図 Drafter	検図 DSN.CK.	検図 DSN.CK.	承認 ENG.APPD.	SAKAI DISPLAY PRODUCTS			
					第二開発部			

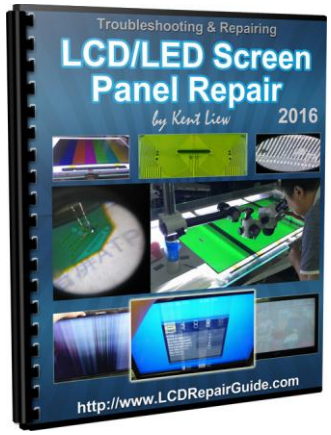


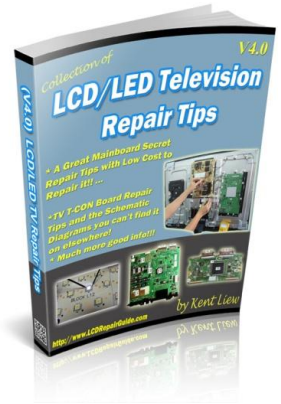
5				ORIGINAL MODEL	4K2K 120Hz
4				Material Finish	FR4, 4layers
3				Date	2013.04.22
2				Name	CPLD
1					Sheet 11 of 11
	改定日	改訂記事	REVISION 担当	Code	RUNTK0093FVZx
設計 Designer	製図 Drafter	検図 DSN.CK.	検図 DSN.CK.	承認 ENG.APPD.	SAKAI DISPLAY PRODUCTS
				Drawing No.	KC-119-025 Rev 03
					第二開発部

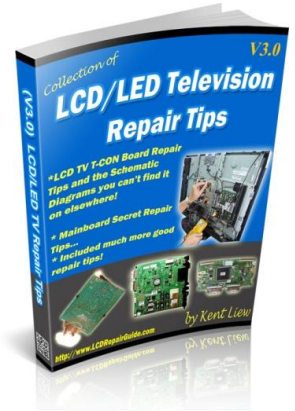
Highly recommended other great related repair information for you:

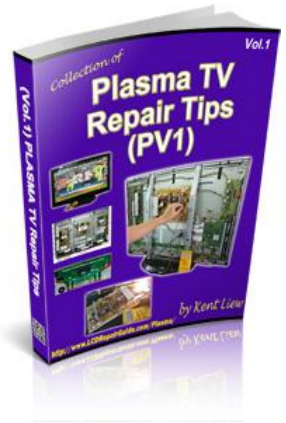
With all these great repair information, it will help you in troubleshooting and repairing electronic and the other display devices: (Please click on the ebook cover to get more details)

1) Best Selling Flat Screen TV Troubleshooting & Repairing Ebooks and Membership Sites:











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http://www.lcd-television-repair.com/newsletter/Recommend.html

3) Other Great Electronic Repairing Ebooks:



