

LCD Color Television

**22AV733F**

Ver. 2.00

This model is classified as a green product (\*1), as indicated by the underlined serial number. This Service Manual describes replacement parts for the green product. When repairing this green product, use the part(s) described in this manual and lead-free solder (\*2). For (\*1) and (\*2), refer to **GREEN PRODUCT PROCUREMENT** and **LEAD-FREE SOLDER**.

## **IMPORTANT NOTICE**

**WARNING:**

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## IMPORTANT NOTICE

### User's Guide

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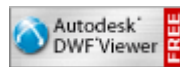
#### Contents:

- [Install Autodesk DWF Viewer](#)
- [Internet Explorer Settings](#)
- [Operating Environment](#)
- [Functions Provided on Each Drawing Page](#)
- [Using with Network](#)

### Install Autodesk DWF Viewer

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**Autodesk DWF Viewer** is necessary to view drawings and to activate the functions of this system. Please download and install.

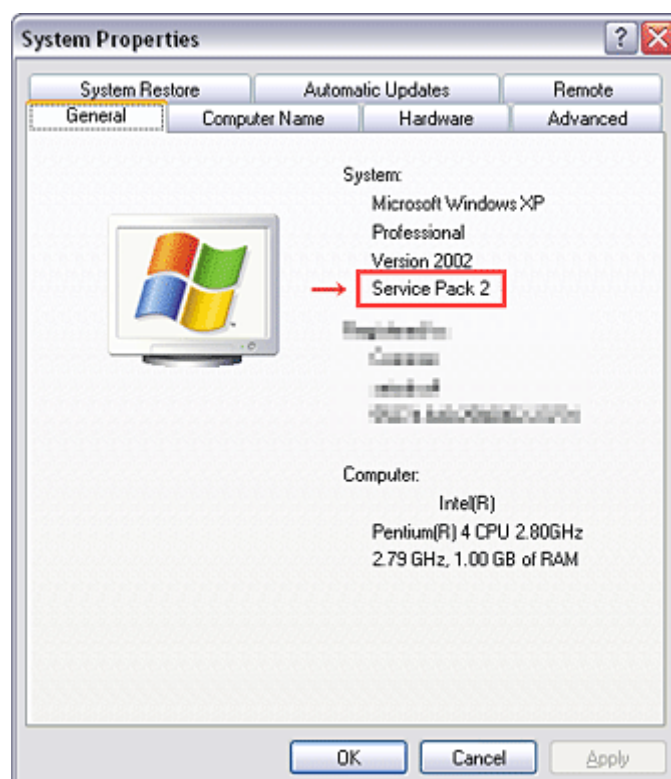


### Internet Explorer Settings

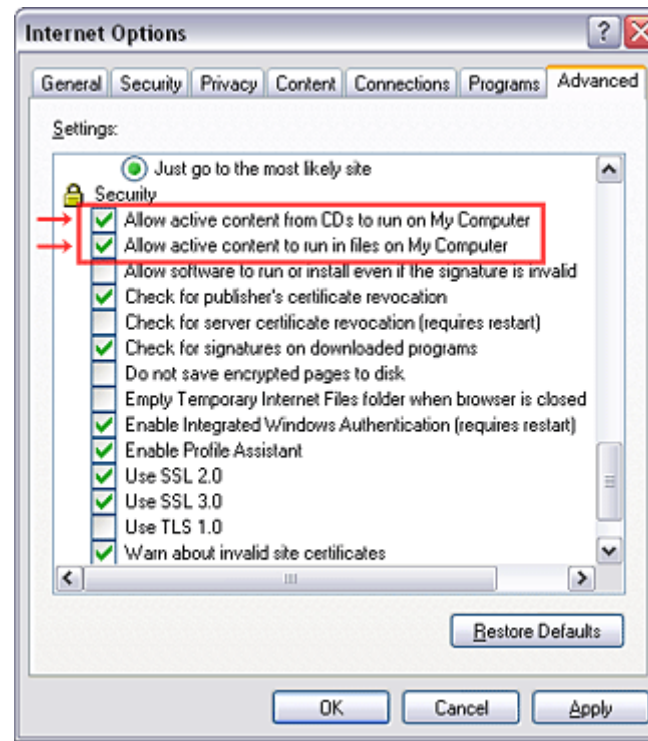
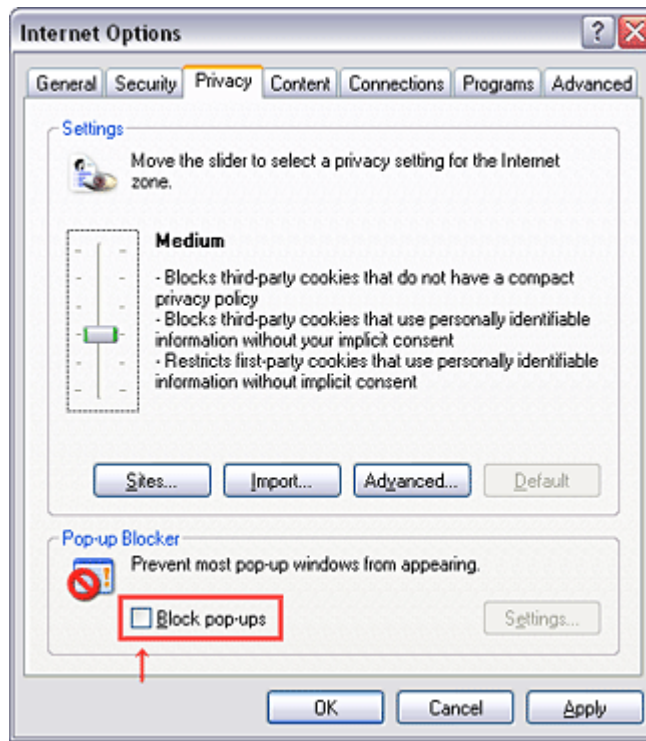
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When **Windows XP SP2** or **Windows Vista** is used, ActiveX control and pop-up windows are limited by the enhanced security function and this system may not work. In that case, perform the Internet Explorer setting using the following procedure to restore normal operation.

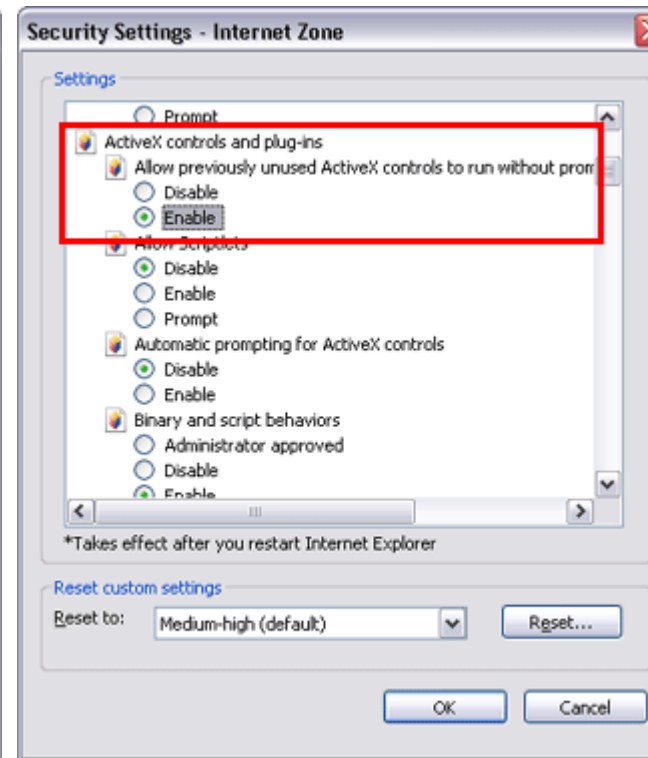
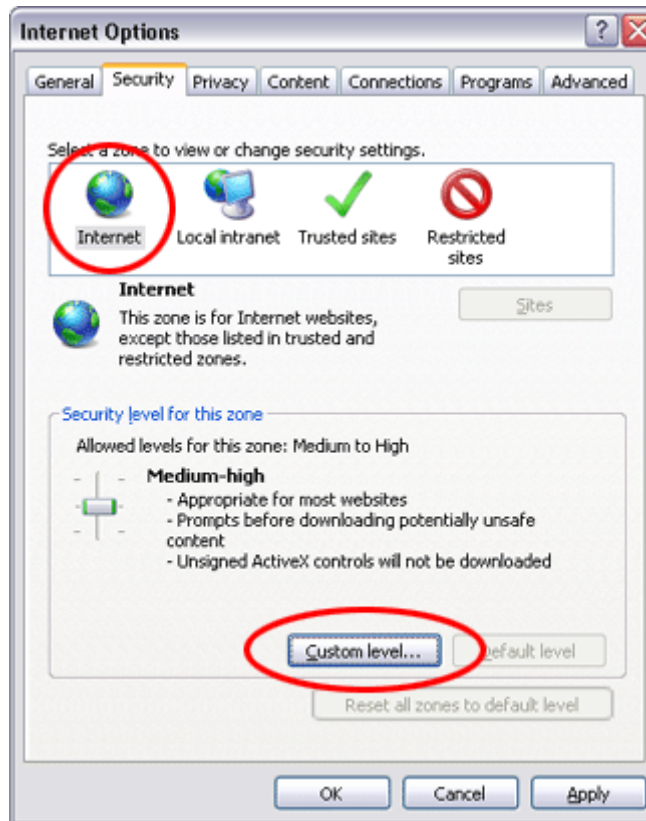
1. Windows version check  
[My Computer (right-click)] - [Properties]



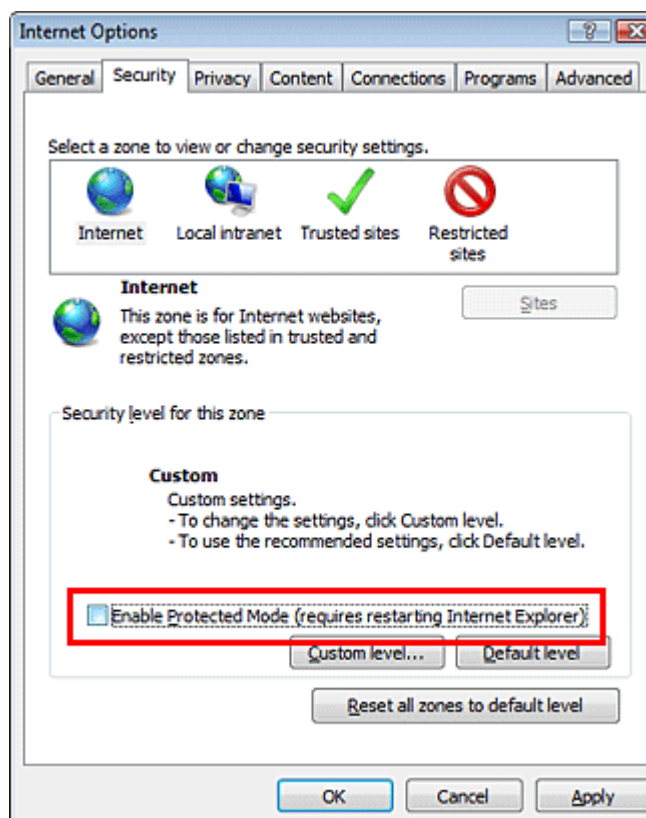
2. Internet Explorer setting  
[Tools] - [Internet Options]



for Internet Explorer 7



for Windows Vista



## Operating Environment

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PC	: Pentium III or higher recommended
Monitor	: 1024 x 768 or higher resolution recommended
Mouse	: A mouse with wheel recommended
OS	: Microsoft Windows 2000 SP4 / XP / Vista
Browser	: <a href="#">Microsoft Internet Explorer 6.0 / 7.0</a>
Drawing viewer	: Autodesk DWF Viewer 6.0 / 7.0

\* Use the software following respective license terms and conditions.

## Functions Provided on Each Drawing Page

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### Parts Information Reference Function

When the character string of a part on the drawing is clicked, its information is popped up at the location. You can get any parts information immediately on the screen without referring to the maintenance parts list.



### Parts Search Function

You can search any part within the displayed drawing or within the whole schematic diagram/board view by specifying a location number. The pop-up window displayed by clicking a part 's character string allows to search the part within the applicable schematic diagram, board view or spare parts list.

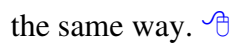


A circle appears when the part is found, showing the part's location within the drawing.

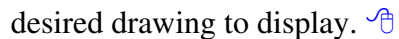


### Signal Line/Connector Destination Display Function

When a name at the end of a signal line in a divided schematic diagram is clicked, the destination of the signal is searched and the display changes to the destination. Connector destinations can also be searched in the same way.



When two or more search results are provided, their drawing names are displayed, allowing you to choose a desired drawing to display.



### Layer Display Changing Function

When any of the color buttons on the toolbar is clicked, it can be selected to display desired layer in its color or not to display each layer. This allows you to see the pattern layer only by setting other layers to "non-display".



### PC Board View Pattern Highlighting Function

When a pattern on a board view is clicked, it is highlighted in green. This allows easy pattern tracing.



### Specified Area Printing Function

The Autodesk DWF Viewer enables to print the displayed drawing region as it is on a printer. It also allows to print a large-sized drawing in multiple pieces (tile printing).



## Using with Network

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### PRECAUTION

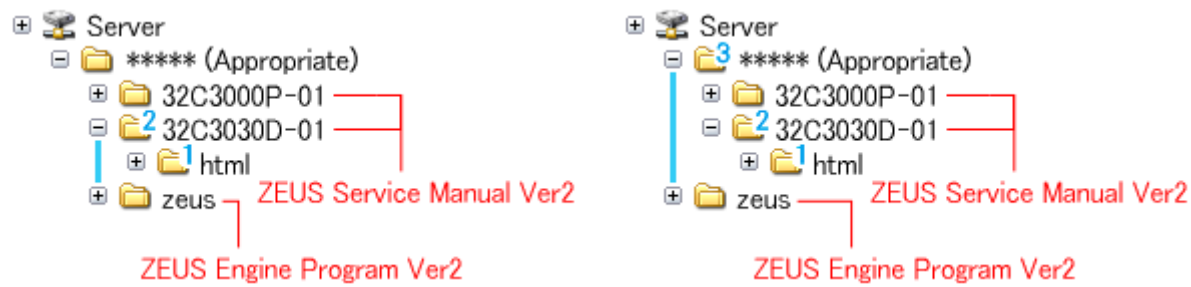
To use ZEUS Service Manual Ver.2 with network, the file-path names written on the source files of each

ZEUS Engine Program Ver.2 and ZEUS Service Manual Ver.2 are to be modified.  
Perform the procedure described below.

## Preparation

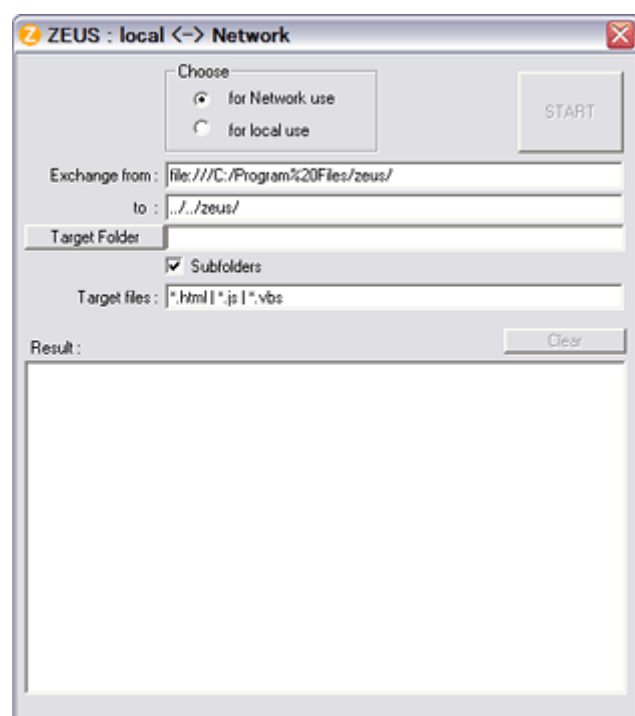
1. Run the program file zuesFPch.exe to install the program file for File-Path to the Local PC.  
  
-> [Download zeusFPch\\_setup.zip \(2.3MB\)](#)
2. Run the program file ZeusSetup\_v2.0.exe to install the ZEUS Engine Program in C:\Program Files\zeus of the local PC. This can be done by running the installer program provided.
3. Create the appropriate folder where the ZEUS Engine Program Ver.2 and the ZEUS Service Manual Ver.2 to be stored in the server.
4. Move the ZEUS Engine Program of step 2 to the folder created at step 3 in the Server.
5. Detach the ZEUS Service Manual Ver.2 to the folder created at step 3 in the Server.
6. Unzip the ZEUS Service Manual Ver.2 within the folder in the Server.

Example of folder



## Procedure of File-Path

The zeusFPch is the exclusive program to exchange the file-path names written in both source files of ZEUS Manual and ZEUS Engine program into those applicable to the network use.



1. Whenever changing the file-path of both ZEUS Engine Program and ZEUS Service Manual to use with network, pay the attention to set the "Exchange to" column that should have a proper relation between ZEUS Engine Program and ZEUS Service Manual with referring the following.

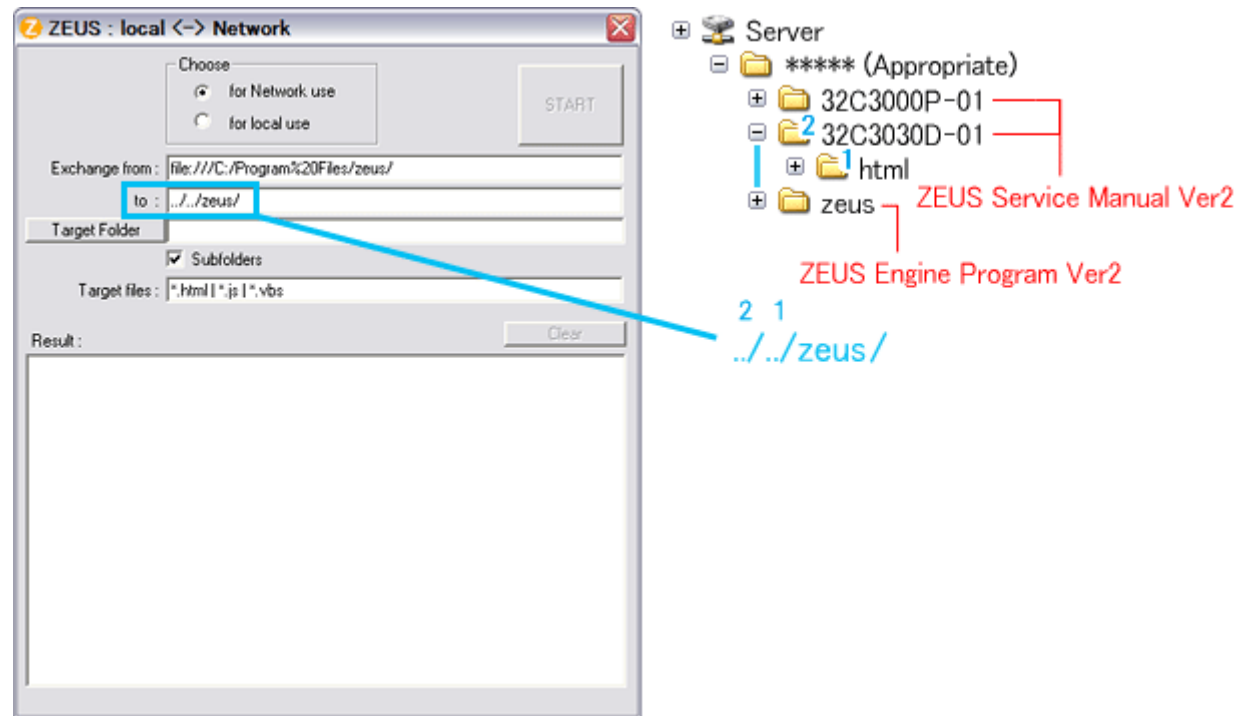
Run the zeusFPch and set "Exchange to" by referring to the examples below.

**Example 1 :**

In the "Exchange to" column shows the relation between ZEUS Service Manual and ZEUS Engine Program.

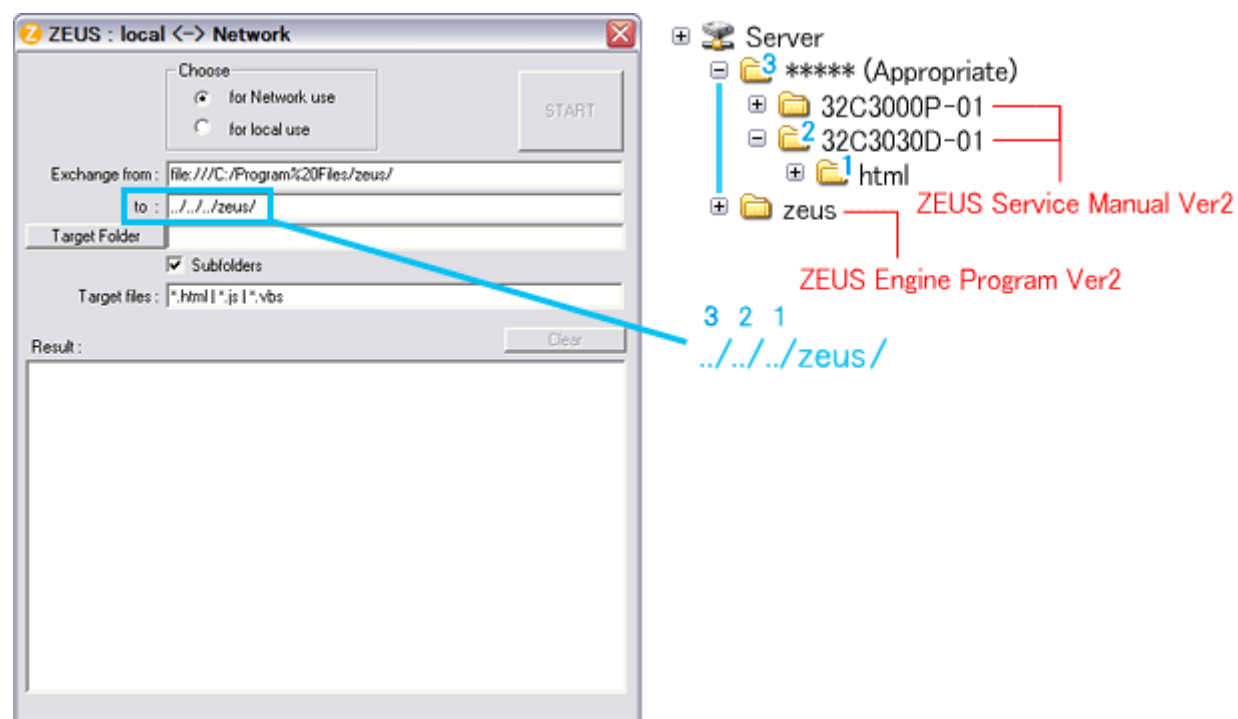
../ counts the relation between.

Thus in this case, it must be **../../zeus/** (2 counts).

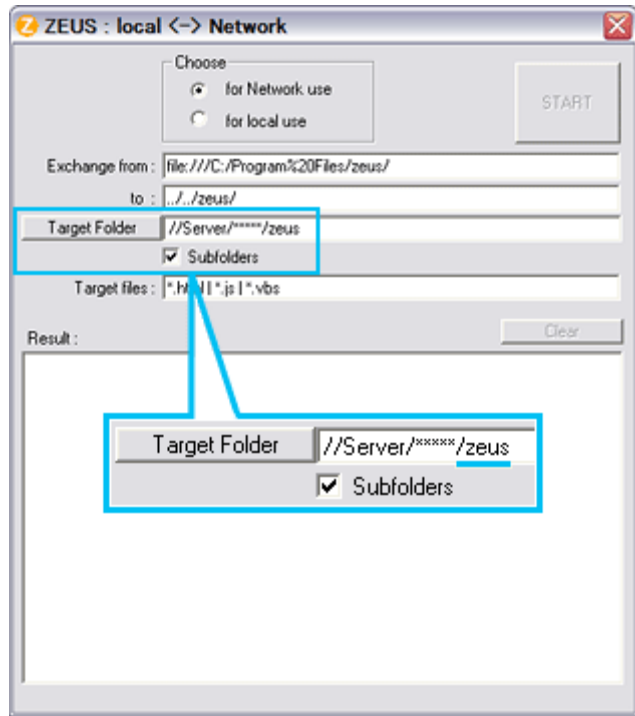


**Example 2 :**

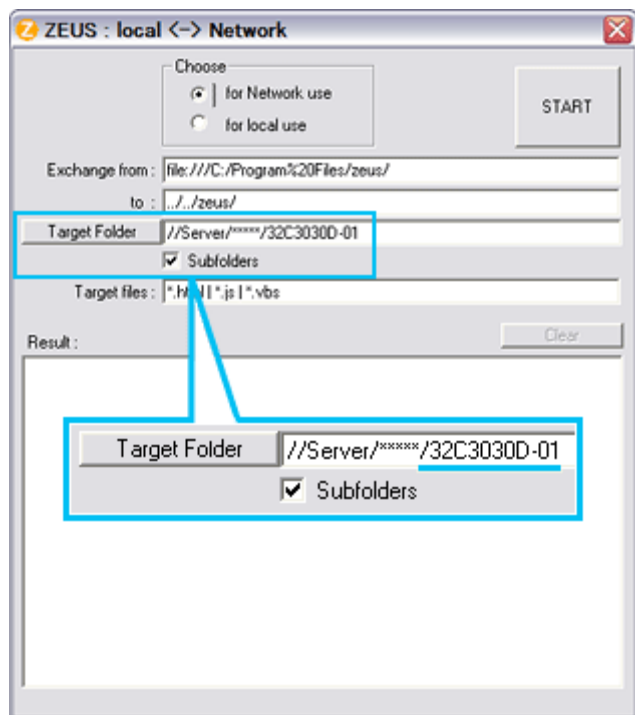
In this case, it must be **../../zeus/** (3 counts).



2. Run the zeusFPch to change the path in the ZEUS Engine Program Ver.2.
3. Set ZEUS Engine Program in the created folder in the server to the "Target Folder", and then press "START".  
(This procedure is one time only)



4. Run the ZeusFPch to change the path in the ZEUS Service Manual Ver2.
5. Set unzipped ZEUS Service Manual in the created folder in the server to the "Target Folder", and then press "START".  
(This procedure is required whenever placing service manual.)



### Confirmation

Confirm that service manual on the server can be operated normally by client PC.

### Note:

In case of accessing the ZEUS Manual through WEB site, the small pop-up window appears at the left bottom corner on the screen whenever searching the location links. This is not malfunction.



## IMPORTANT NOTICE

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### A Known Malfunction

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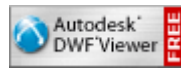
#### Autodesk® DWF™ Viewer version (Free software provided through WEB)

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Use Autodesk DWF Viewer ver. 6.0.

Through WEB, ver. 6.5 has been released but with it, the linking function in this manual may not work properly.

If ver. 6.5 has been installed, uninstall it and reinstall ver. 6.0.




To get ver. 6.0, click the icon, or contact to the nearest Toshiba Service Centre for further assistance.

#### Freezing windows opened (Cannot close the open windows)

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This may happen occasionally.

In case of encountering this, follow the procedure below.

1. Press [Ctrl], [Alt] and [Delete] keys at the same time to engage windows security windows.
2. Then, choose TASK manager and Application tab, and select TOSHIBA SERVICE MANUAL-Microsoft Internet Explorer. 
3. Click TASK-end.

#### Main Window back forwarded

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The real cause has not been found yet but with this condition, nothing disturbs the service manual operation.

Continue to use by operating the windows.

#### Precaution when opening the diagrams

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While opening the diagrams, the menu in the left frame changes its color to GRAY. This is an indication that the viewer is processing.

With this condition, the menu indication color may stick to the GRAY color or Windows may freeze if clicking other menu.

To avoid such things, do not operate any others while menu turns GRAY color.

If entering this, re-open the service manual or refresh the left frame.

## **GREEN PRODUCT PROCUREMENT**

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

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

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

## **LEAD-FREE SOLDER**

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

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

The melting temperature of lead-free solder is higher than that of leaded solder by 86°F to 104°F (30°C to 40°C). Use of a soldering iron designed for lead-based solders to repair product made with lead-free solder may result in damage to the component and or PCB being soldered. Great care should be made to ensure high-quality soldering when servicing this product especially when soldering large components, through-hole pins, and on PCBs as the level of heat required to melt lead-free solder is high.

## SAFETY INSTRUCTION

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

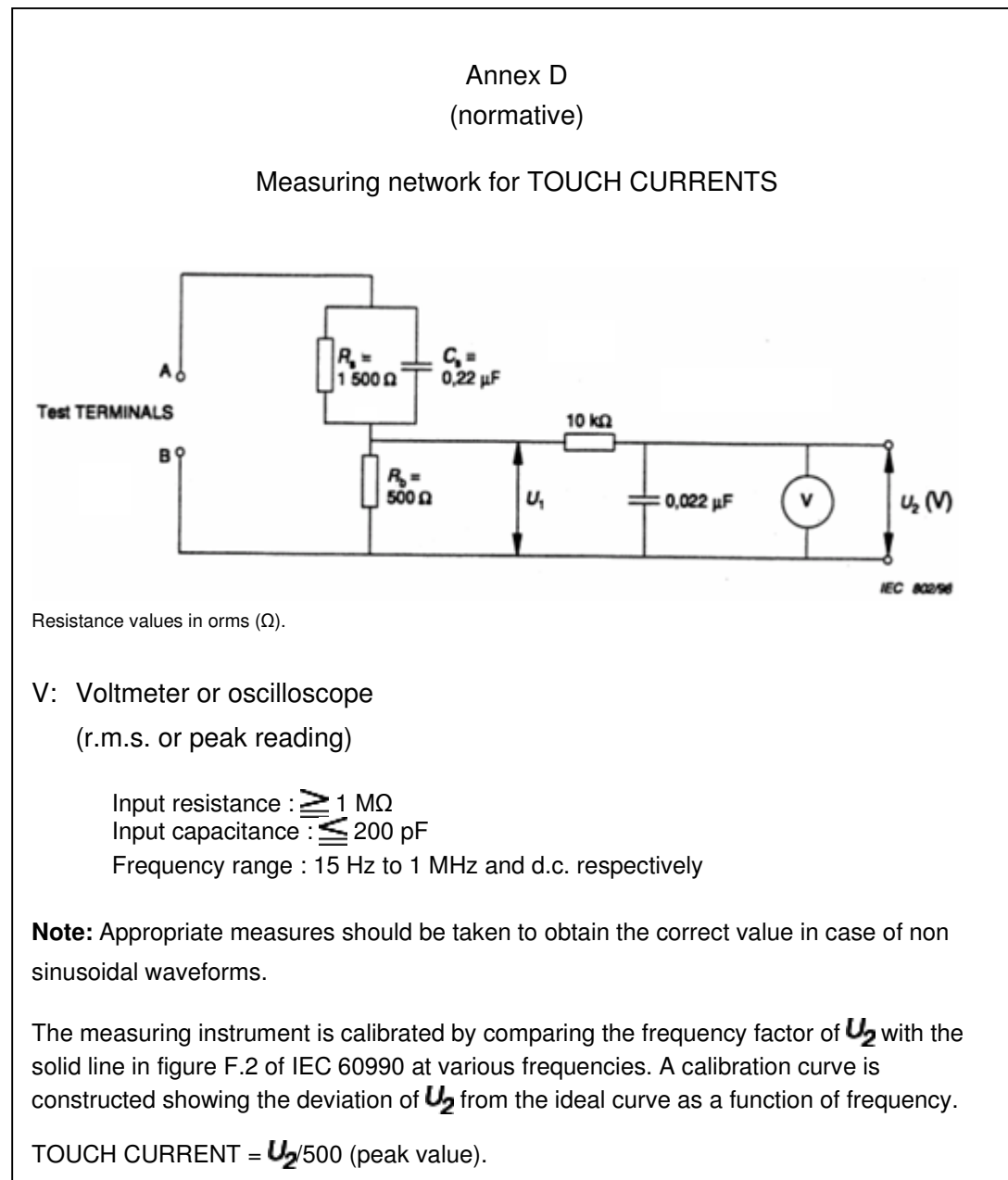
### Safety Precaution

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

1. An isolation transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Always disconnect the power plug before any disassembling of the product. It may result in electrical shock.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as nonmetallic control knobs, insulating covers, shields, isolation resistor-capacitor network, etc.
4. Always keep tools, components of the product, etc away from the children, These items may cause injury to children.
5. Depending on the model, use an isolation transformer or wear suitable gloves when servicing with the power on, and disconnect the power plug to avoid electrical shock when replacing parts. In some cases, alternating current is also impressed in the chassis, so electrical shock is possible if the chassis is contacted with the power on.
6. Always use the replacement parts specified for the particular model when making repairs. The parts used in products require special safety characteristics such as inflammability, voltage resistance, etc. therefore, use only replacement parts that have these same characteristics. Use only the specified parts when the ⚠ mark is indicated in the circuit diagram or parts list.
7. Parts mounting and routing dressing of wirings should be the same as that used originally. For safety purposes, insulating materials such as isolation tube or tape are sometimes used and printed circuit boards are sometimes mounted floating. Also make sure that wirings is routed and clamped to avoid parts that generate heat and which use high voltage. Always follow the manufactured wiring routes / dressings.
8. Always ensure that all internal wirings are in accordance before re-assembling the external casing after a repairing completed. Do not allow internal wiring to be pinched by cabinets, panels, etc. Any error in reassembly or wiring can result in electrical leakage, flame, etc., and may be hazardous.
9. NEVER remodel the product in any way. Remodeling can result in improper operation, malfunction, or electrical leakage and flame, which may be hazardous.

10. Touch current check. (After completing the work, measure touch current to prevent an electric shock.)

- Plug the AC cord directly into the AC outlet. Do NOT use an isolation transformer for this check.
- Connect a measuring network for touch currents between each exposed metallic part on the set and a good earth ground such as a water pipe.



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

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

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

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

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

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

## Product Safety Notice

Many electrical and mechanical parts in this chassis have special safety-related

characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create electrical shock, fire, or other hazards.

## SAFETY INSTRUCTION

### Handling the LCD Module

#### Safety Precaution

In the event that the screen is damaged or the liquid crystal (fluid) leaks, do not breathe in or drink this fluid.

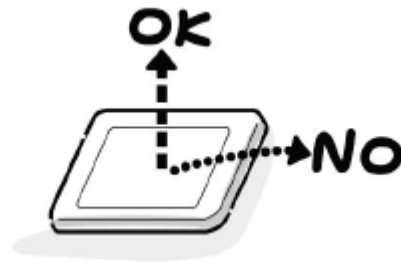
Also, never touch this fluid. Such actions could cause toxicity or skin irritation. If this fluid should enter the mouth, rinse the mouth thoroughly with water. If the fluid should contact the skin or clothing, wipe off with alcohol, etc., and rinse thoroughly with water. If the fluid should enter the eyes, immediately rinse the eyes thoroughly with running water.

#### Precautions for Handling the LCD Module

**CAUTION: The metal edges of the LCD module are sharp, handle it with care.**

The LCD module can easily be damaged during disassembly or reassembly; therefore, always observe the following precautions when handling the module.

1. When attaching the LCD module to the LCD cover, position it appropriately and fasten at the position where the display can be viewed most conveniently.



2. Carefully align the holes at all four corners of the LCD module with the corresponding holes in the LCD cover and fasten with screws. Do not strongly push on the module because any impact can adversely affect the performance. Also use caution when handling the polarized screen because it can easily be damaged.



3. If the panel surface becomes soiled, wipe with cotton or a soft cloth. If this does not remove the soiling, breathe on the surface and then wipe again. If the panel surface is extremely soiled, use a CRT cleaner as a cleaner. Wipe off the panel surface by drop the cleaner on the cloth. Do not drop the cleaner on the panel. Pay attention not to scratch the panel surface.



4. Leaving water or other fluids on the panel screen for an extended period of time can

result in discoloration or stripes. Immediately remove any type of fluid from the screen.



5. Glass is used in the panel, so do not drop or strike with hard objects. Such actions can damage the panel.



6. CMOS-LSI circuitry is used in the LCD module, so avoid damage due to static electricity. When handling the module, use a wrist ground or anchor ground.



7. Do not expose the LCD module to direct sunlight or strong ultraviolet rays for an extended period of time.



8. Do not store the LCD module below the temperature conditions described in the specifications. Failure to do so could result in freezing of the liquid crystal due to cold air or loss of resilience or other damage.



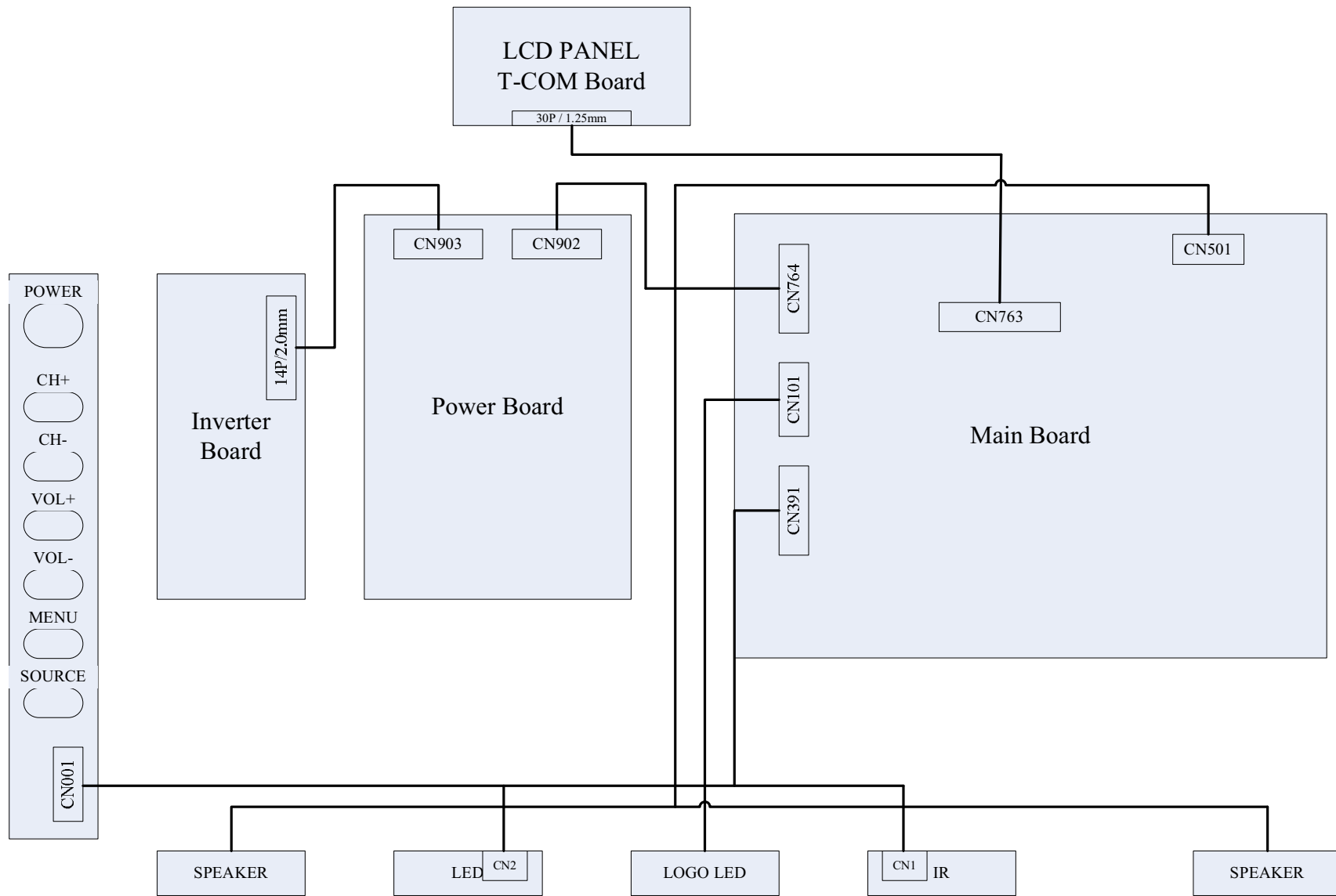
9. Do not disassemble the LCD module. Such actions could result in improper operation.



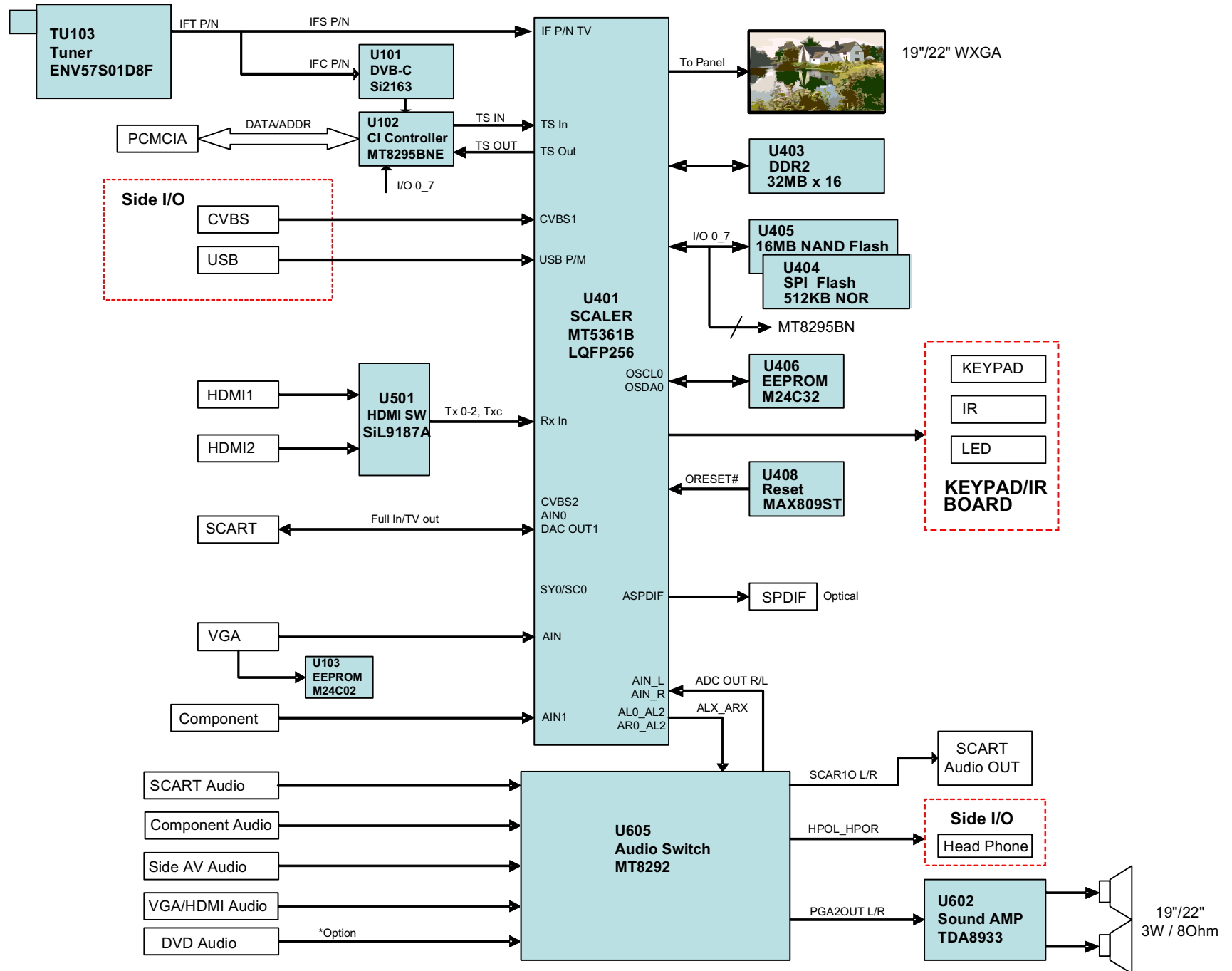


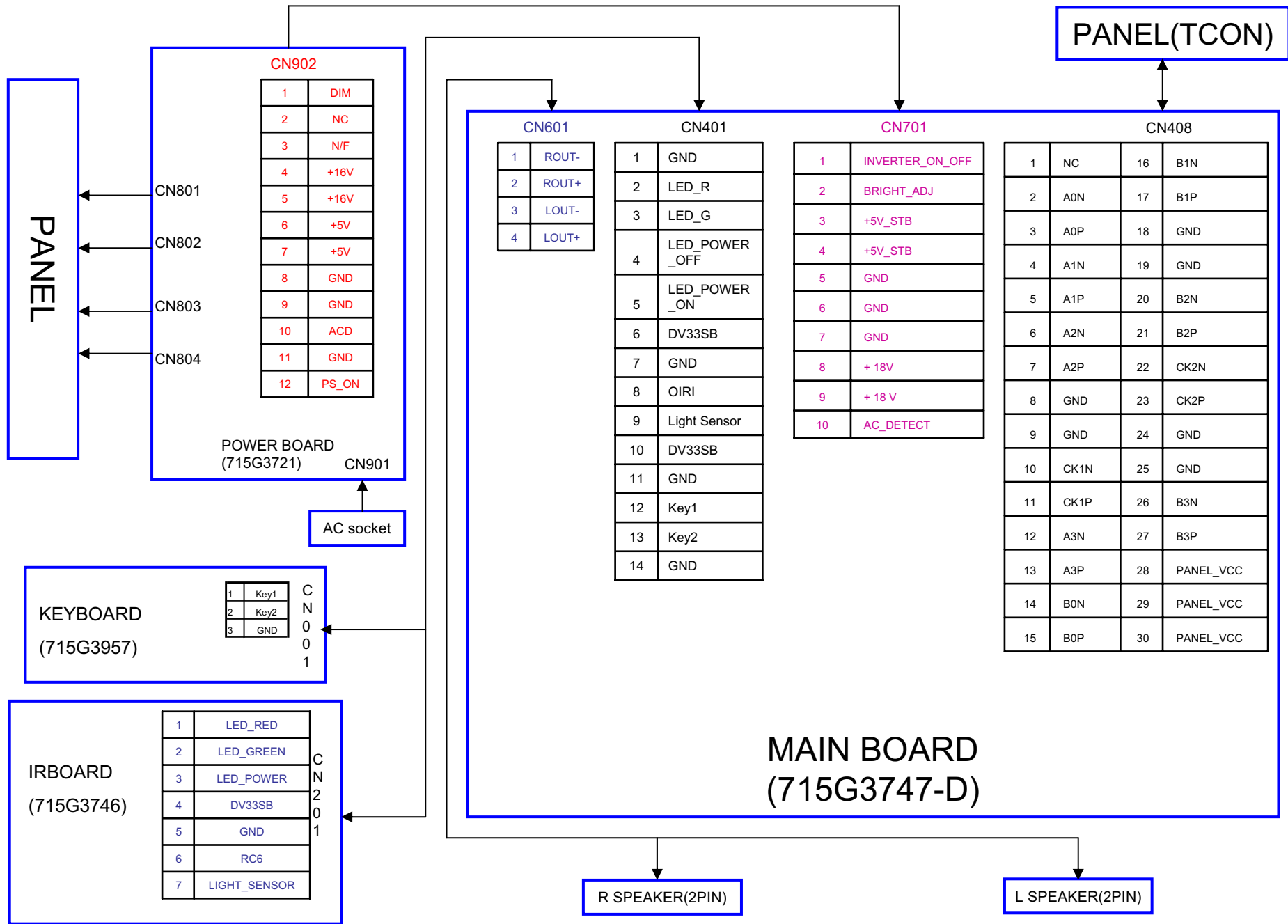
10. When transporting the LCD module, do not use packing containing epoxy resin (amine) or silicon resin (alcohol or oxim). The gas generated by these materials can cause loss of polarity.





Only for 32"/37"/40"





## SCHEMATIC DIAGRAM

### Precaution

**WARNING:** BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION" FOR DIRECT VIEW CTV ONLY, "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" OF THIS MANUAL.

**CAUTION:** The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the SAFETY PRECAUTION and PRODUCT SAFETY NOTICE.

Do not degrade the safety of the receiver through improper servicing.

### Note:

#### 1. RESISTOR

Resistance is shown in ohm [K=1,000, M=1,000,000]. All resistors are 1/6 W and 5 % tolerance carbon resistor, unless otherwise noted as the following marks.

1/2R : Metal or Metal oxide of 1/2 watt

1/2S : Carbon composition of 1/2 watt

1RF : Fuse resistor of 1 watt

10 W : Cement of 10 watt

K : ±10 %


G : ±2 %

F : ±1 %

#### 2. CAPACITOR

Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in  $\mu\text{F}$ , and the values more than 1 in pF.

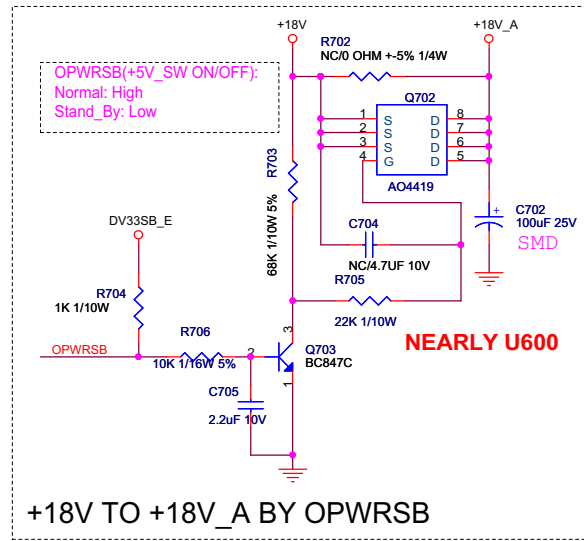
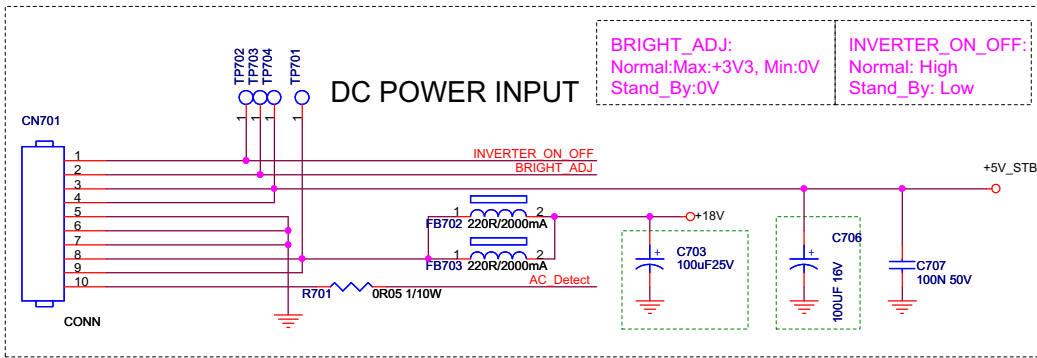
All capacitors are ceramic 50 V, unless otherwise noted as the following marks.

 = Electrolytic capacitor

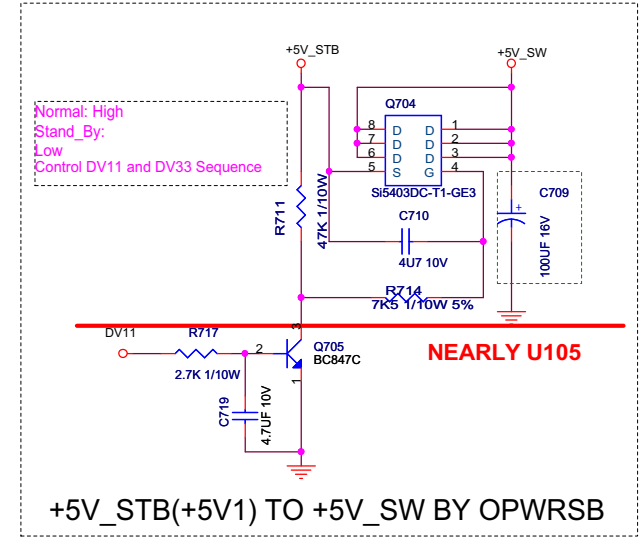
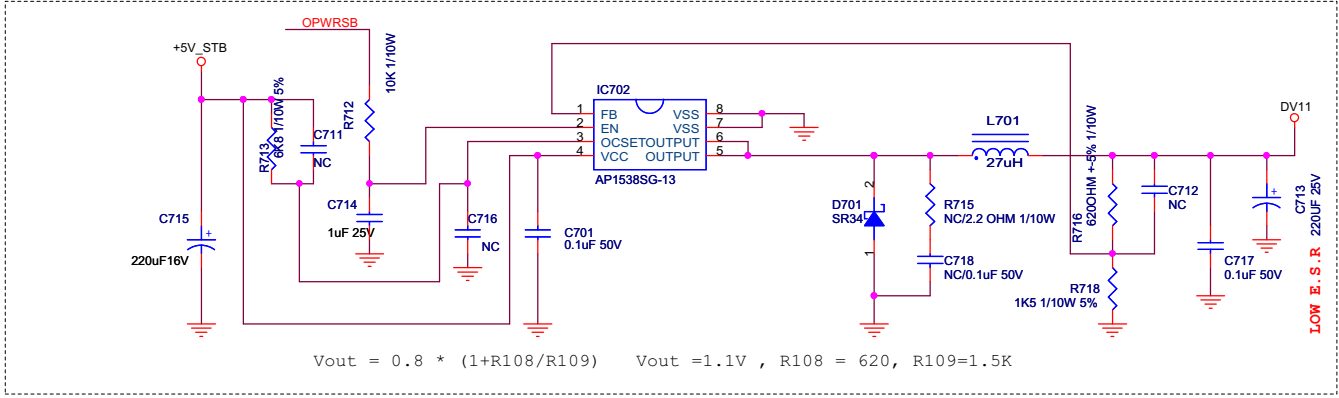
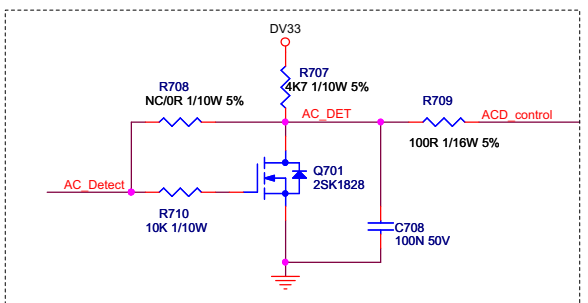
 = Mylar capacitor

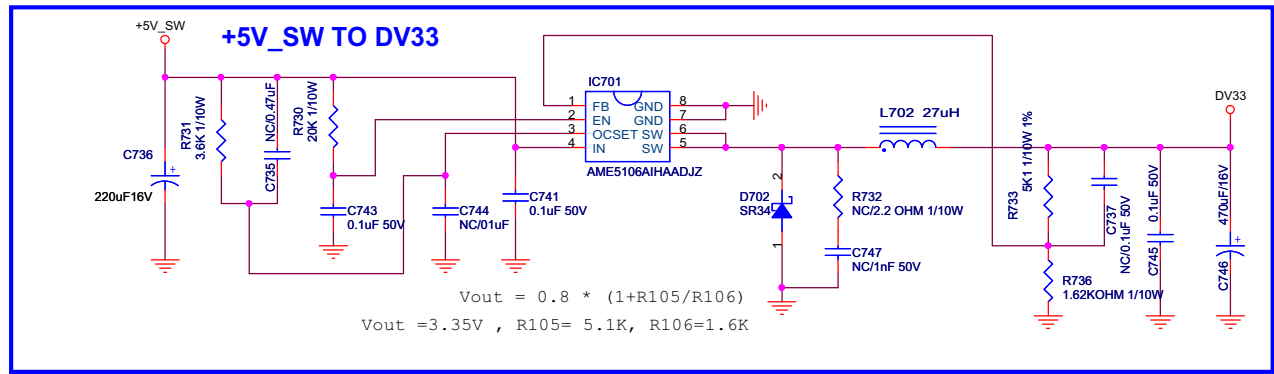
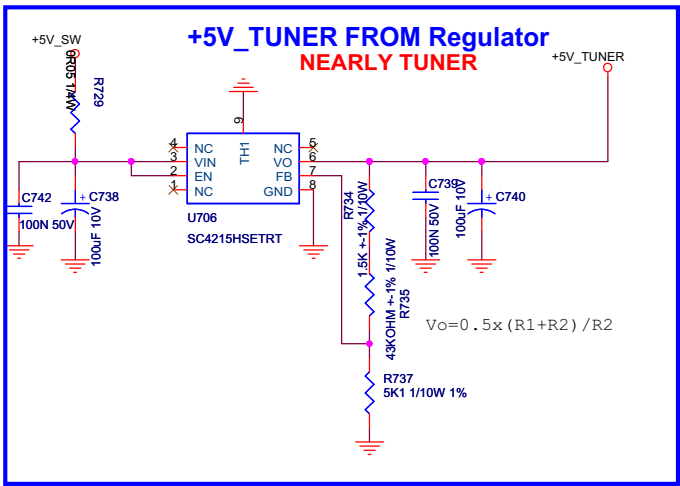
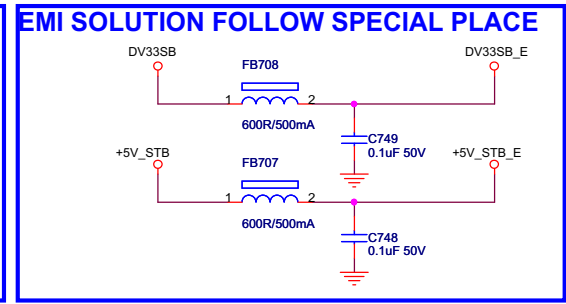
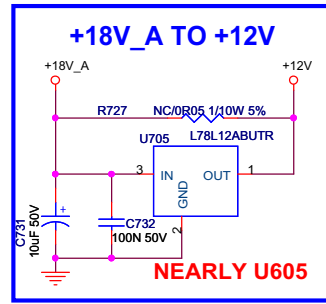
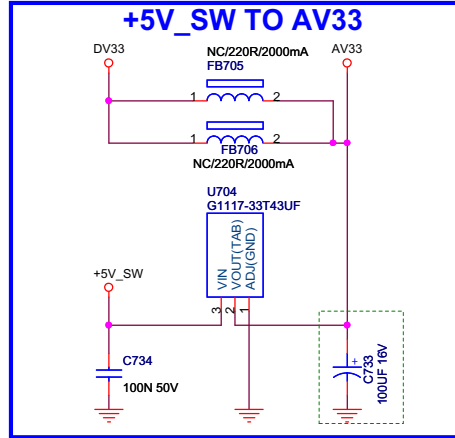
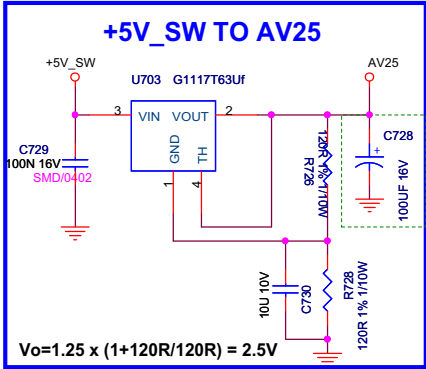
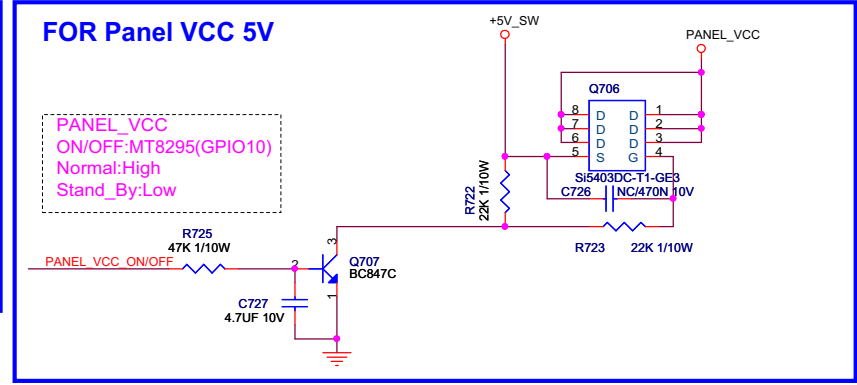
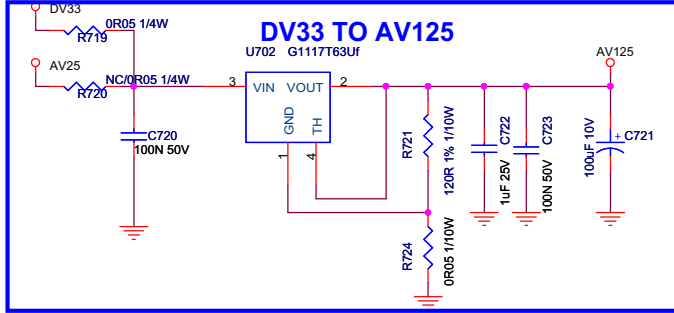
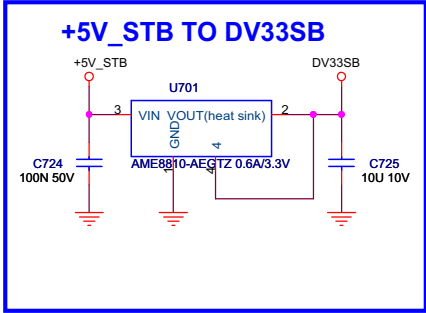
- The parts indicated with "⚠" have special characteristics, and should be replaced with identical parts only.
- Voltages read with DIGITAL MULTI-METER from point indicated to chassis ground, using a color bar signal with all controls at normal, line voltage at nominal AC volts.
- Waveforms are taken receiving color bar signal with enough sensitivity.
- Voltage reading shown are nominal values and may vary  $\pm 20\%$  except H.V.

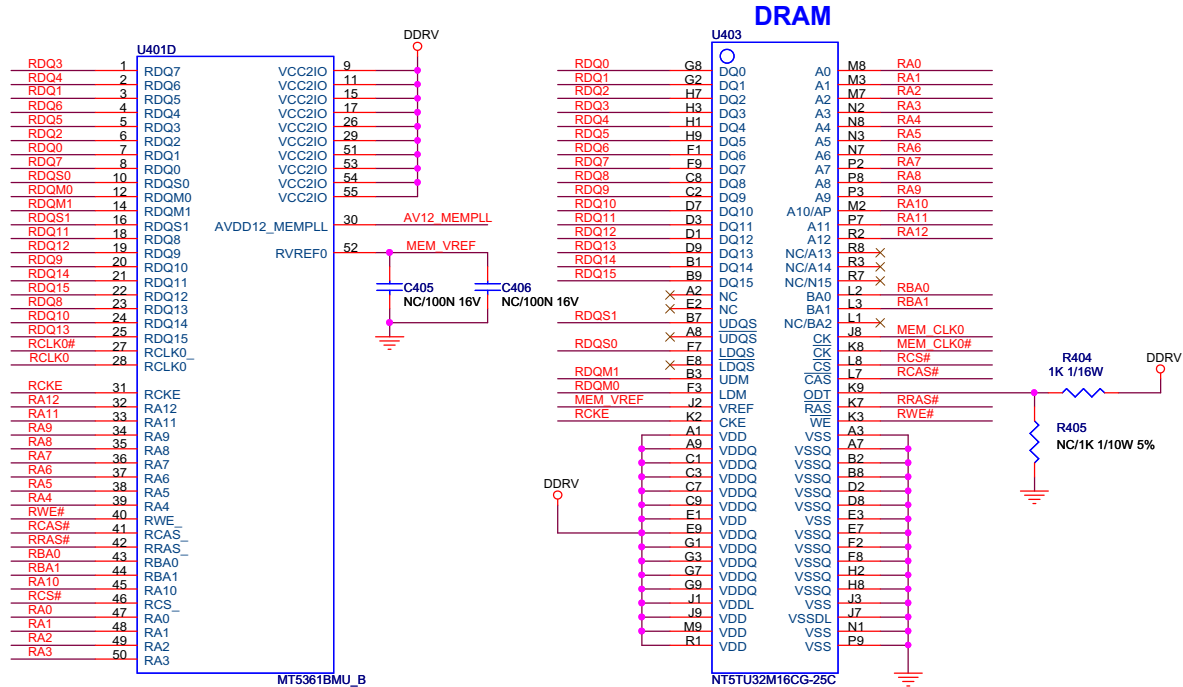
# 2K10 TOP BIG SERIAL MODEL MT5361 (LQFP) (DDR1) - 2 LAYERS



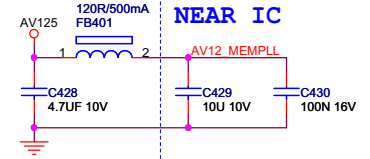
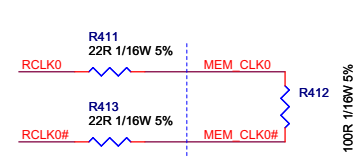
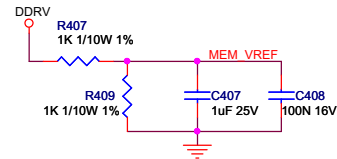
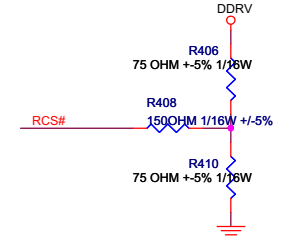
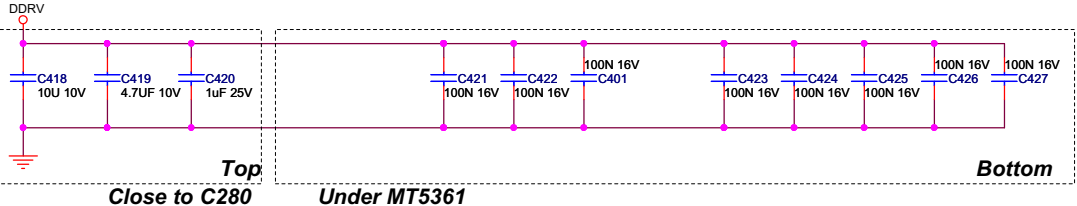
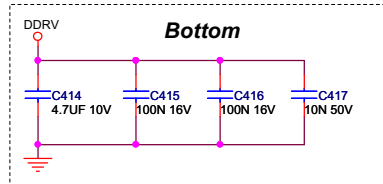
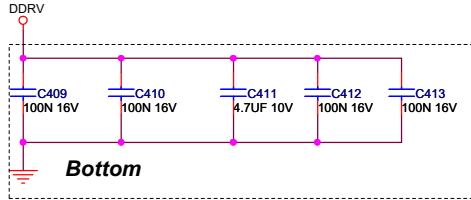
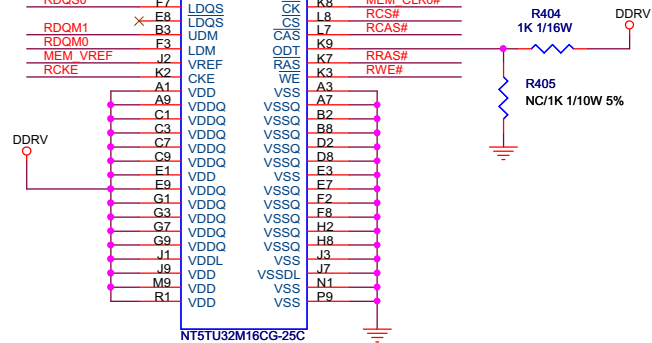
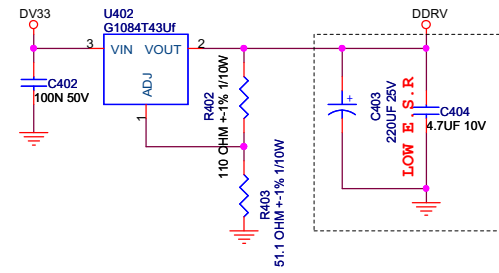
- 6 OPWRSB
- 6 ACD\_control
- 18 BRIGHT\_ADJ
- 18 INVERTER\_ON\_OFF







**DRAM Power**

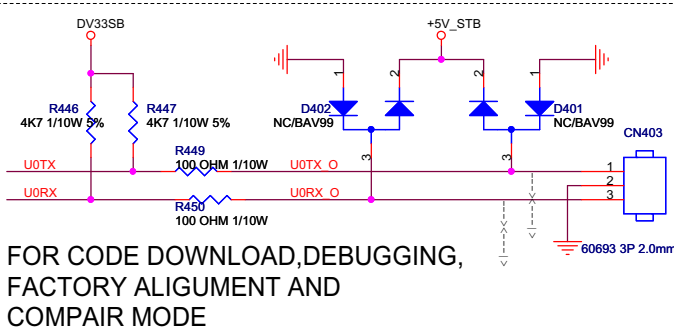


Component item from 2xx in this part.

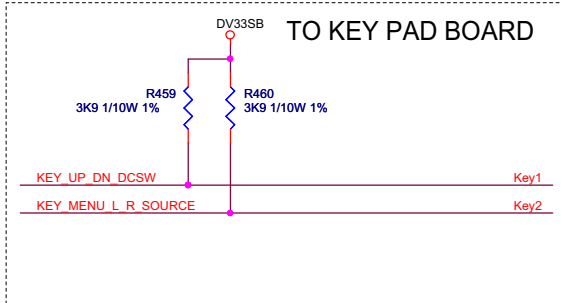
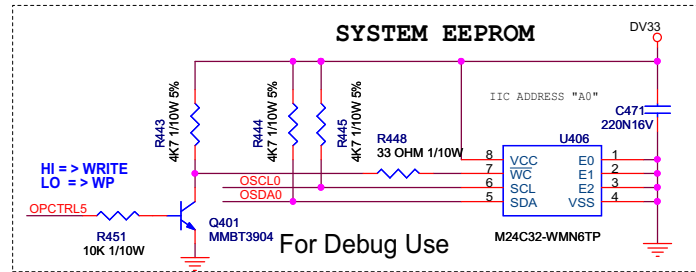
MAIN [5] DRAM



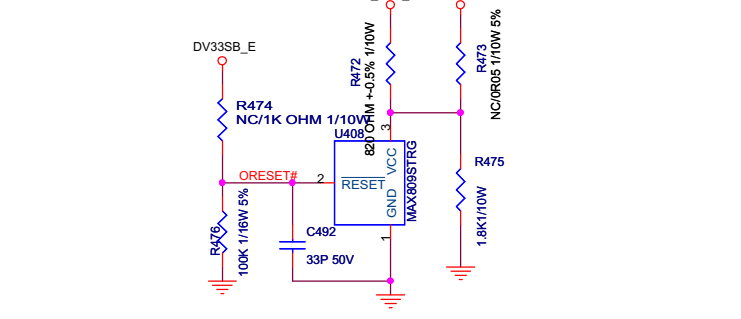
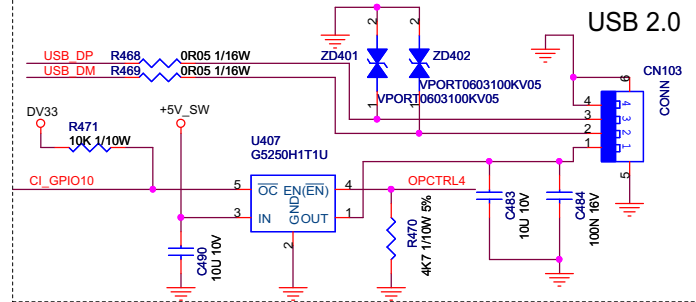
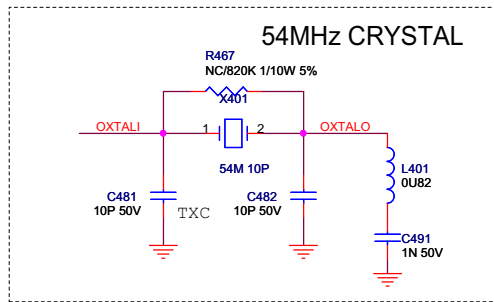
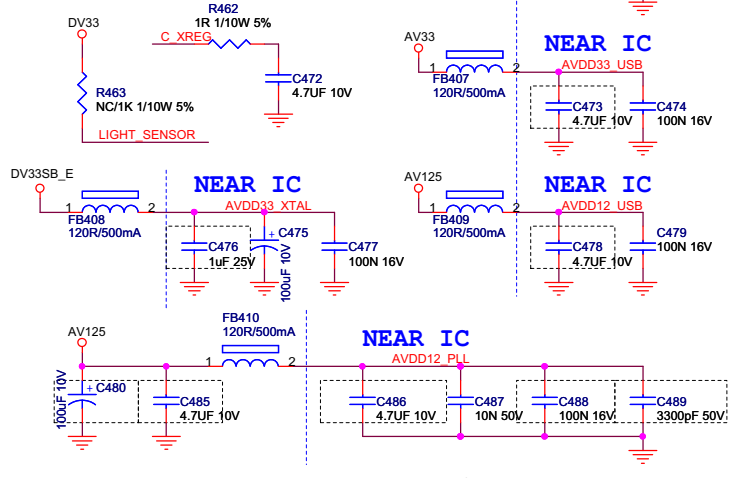
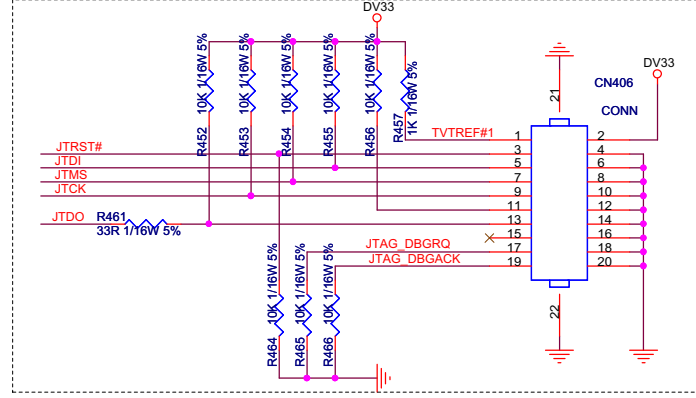
U4011		
JTMS	60	GPIO0
JTDI	61	GPIO1
JTDO	62	GPIO2
JTCK	63	GPIO3
JTRST#	64	GPIO4
USB_DM	78	GPIO5
USB_DP	79	GPIO6
AVDD33_USB	80	GPIO7
USB_VRT	82	OPWM0
AVDD12_USB	82	OPWM1
C_XREG	94	OPWM2
AVDD33_XTAL	151	OPWRSB
OXTALO	152	OPCTRL0
OXTALI	153	OPCTRL1
AVDD12_PLL160	160	OPCTRL2
AVDD12_PLL162	162	OPCTRL3
AVDD12_PLL163	163	OPCTRL4
AVDD12_PLL164	164	OPCTRL5
AVDD12_PLL165	165	U0RX
KEY_UP_DN_DCSW	150	U0TX
ADIN3	149	OSCL1
LIGHT_SENSOR	148	OSDA0
KEY MENU L R SOURCE	147	OSCL0
ACD_control	145	OSDA1
		OSDA1
		VCXO



FOR CODE DOWNLOAD,DEBUGGING,  
FACTORY ALIGMENT AND  
COMPAIR MODE

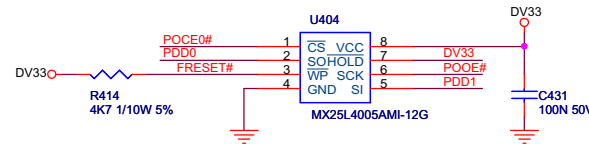
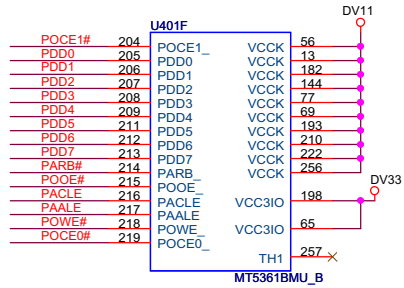


TO KEY PAD BOARD



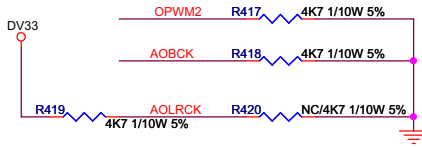
10 U0RX	<<>>	U0RX	17 GPIO_0	<<>>	GPIO_0
10 U0TX	<<>>	U0TX	13 GPIO_1	<<>>	GPIO_1
8,13 OSDA0	<<>>	OSDA0	13 GPIO_4	<<>>	GPIO_4
8,13 OSCL0	<<>>	OSCL0	17 GPIO_6	<<>>	GPIO_6
3 ACD_control	<<>>	ACD_control	17 GPIO_7	<<>>	GPIO_7
12 ADIN3	<<>>	ADIN3	17 CI_GPIO10	<<>>	CI_GPIO10
18 BKL_ON	<<>>	BKL_ON	7,12 LED_EPG_GREEN	<<>>	LED_EPG_GREEN
4 PANEL_VCC_ON/OFF	<<>>	PANEL_VCC_ON/OFF	12 LED_EPG_RED	<<>>	LED_EPG_RED
			12 LED_POWER_OFF	<<>>	LED_POWER_OFF
			12 LED_POWER_ON	<<>>	LED_POWER_ON
			12 LED_POWER_ON	<<>>	LED_POWER_ON
			12 OIRI	<<>>	OIRI
			12 Light_Sensor	<<>>	Light_Sensor
			12 Key1	<<>>	Key1
			12 Key2	<<>>	Key2
			7,18 OPWM1	<<>>	OPWM1
			7,18 OPWM2	<<>>	OPWM2
			3 OPWRSB	<<>>	OPWRSB
			7,12 OPCTRL2	<<>>	OPCTRL2
			7,10 OPCTRL3	<<>>	OPCTRL3
			7,10 OPCTRL4	<<>>	OPCTRL4
			7,10 OPCTRL5	<<>>	OPCTRL5
			11 OSDA1	<<>>	OSDA1
			11 OSCL1	<<>>	OSCL1

MAIN [6] REPIPERAL

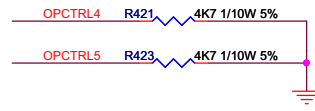


512KB Nor Flash for Boot Code

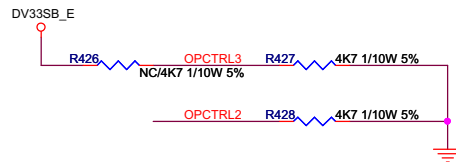
### MT5361 STRAPPING MODE



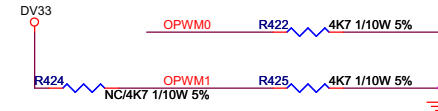
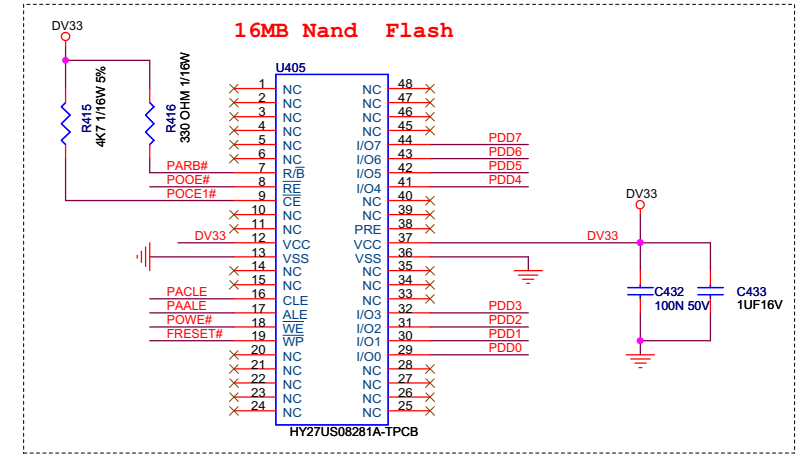
Strapping Mode	OPWM2	AOBCK	AOLRCK
Normal mode	0	0	0
ICE mode	0	0	1
CPU model mode	0	1	0



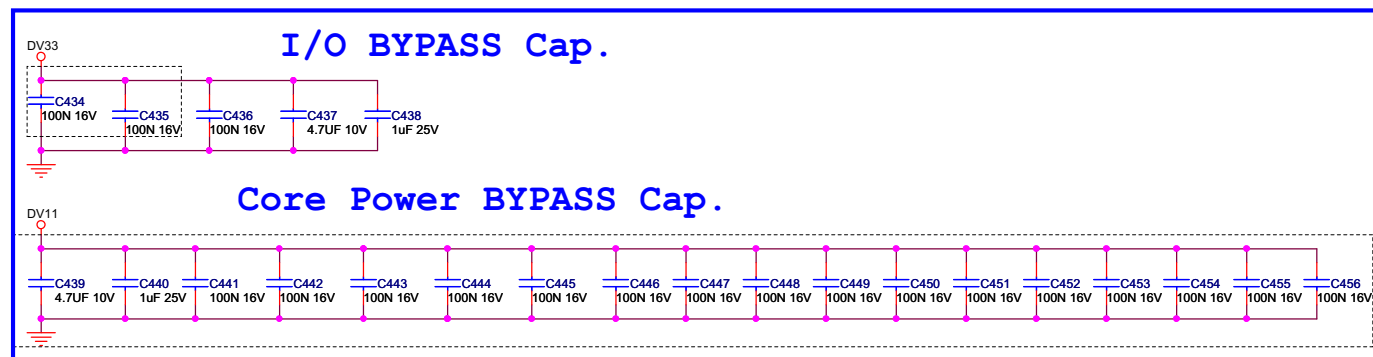
Trap Mode	OPCTRL5	OPCTRL4
Core Reset 1us	0	0
Core Reset 3.3V	0	1
SCAN mode	1	0
Core Reset 0.9V	1	1



Strapping Mode	OPCTRL3 (O)	OPCTRL2 (O)
XTAL 54MHz	0	0
XTAL 27MHz	1	0



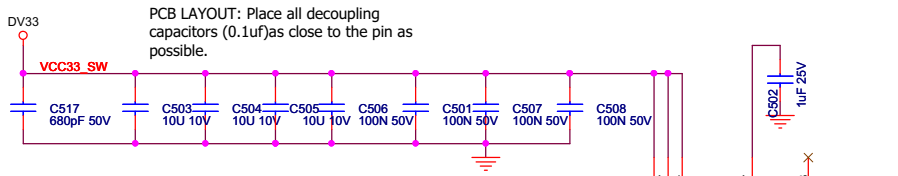
Strapping Mode	OPWM0 (O)	OPWM1 (O)
Nor Boot	0	0
NAND Boot	0	1
large NAND Boot	1	0



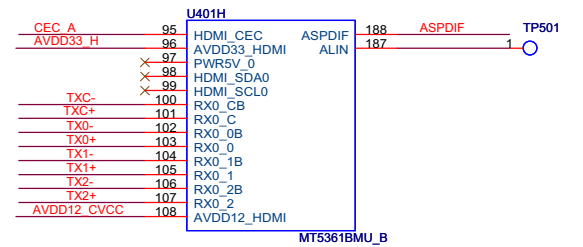
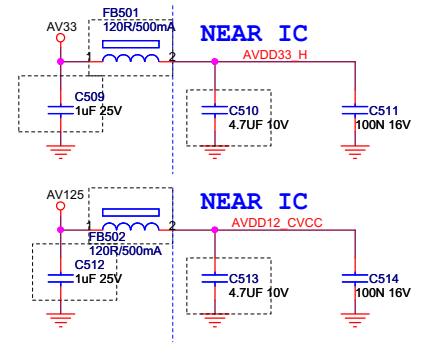
- 6 OPWM2 <<<> OPWM2
- 13 AOBCK <<<> AOBCK
- 13 AOLRCK <<<> AOLRCK
- 6 OPCTRL5 <<<> OPCTRL5
- 6 OPWM0 <<<> OPWM0
- 6,18 OPWM1 <<<> OPWM1
- 6,12 OPCTRL2 <<<> OPCTRL2
- 6,17 OPCTRL3 <<<> OPCTRL3
- 17 PDD0 <<<> PDD0
- 17 PDD1 <<<> PDD1
- 17 PDD2 <<<> PDD2
- 17 PDD3 <<<> PDD3
- 17 PDD4 <<<> PDD4
- 17 PDD5 <<<> PDD5
- 17 PDD6 <<<> PDD6
- 17 PDD7 <<<> PDD7
- 17 PARB# <<<> PARB#
- 17 POOE# <<<> POOE#
- 17 PAOLE# <<<> PAOLE#
- 17 PALE <<<> PALE
- 17 PALE <<<> PALE
- 17 PALE <<<> PALE
- 17 PALE <<<> PALE
- 17 PALE <<<> PALE
- 17 PALE <<<> PALE
- 6 OPCTRL4 <<<> OPCTRL4

Component item from 3xx in this part.

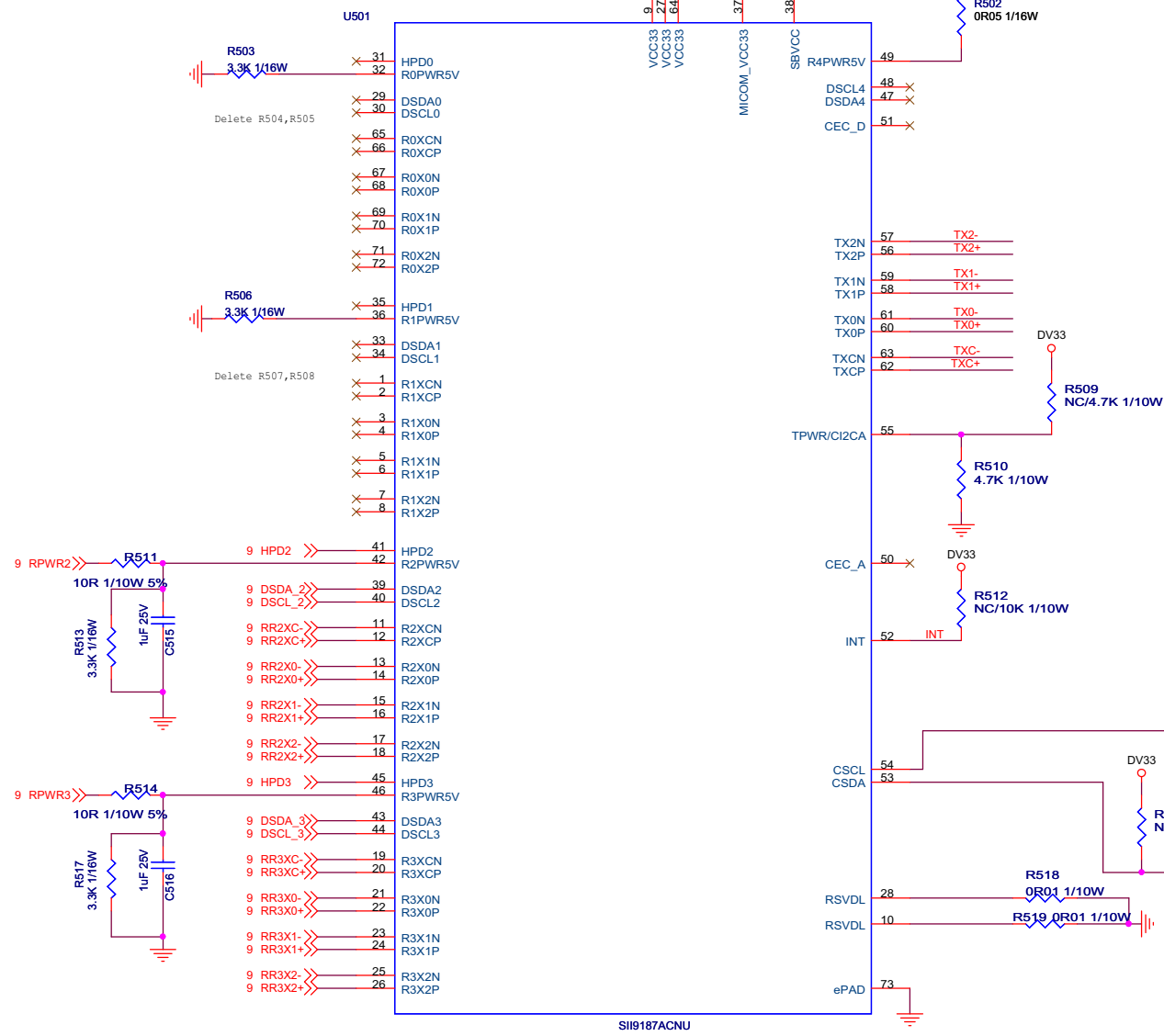
MAIN [7] FLASH/TRAP/BYPASS/FCI



### HDMI BYPASS CAP.



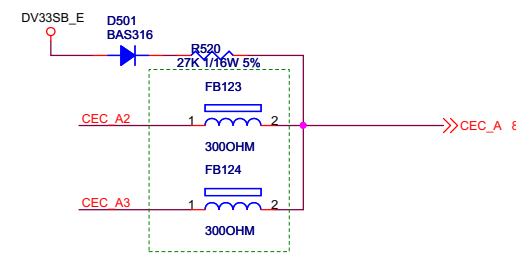
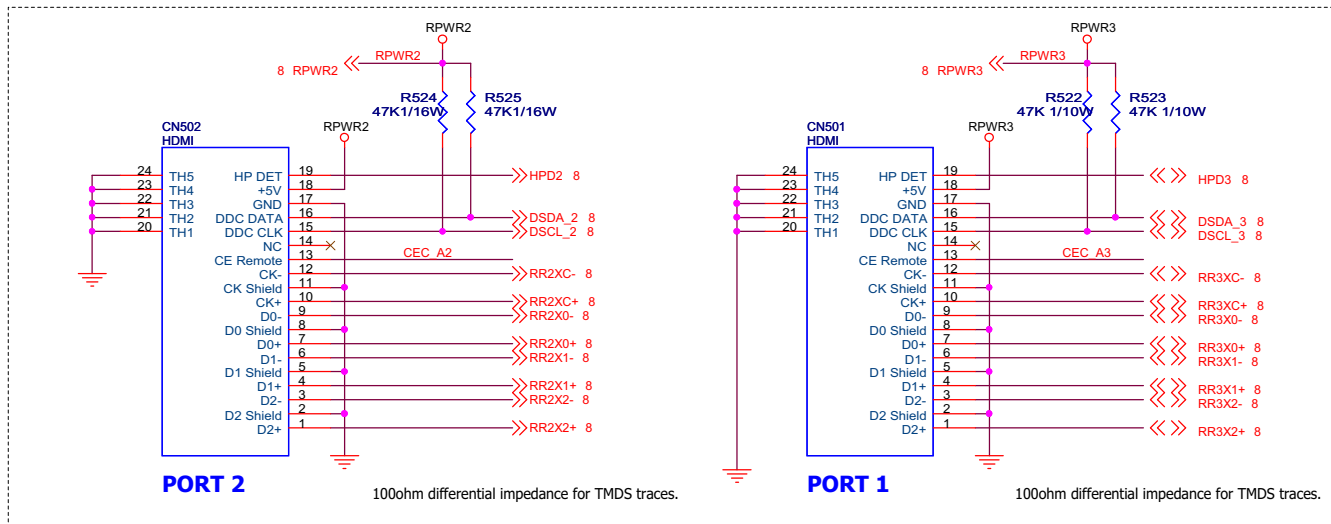
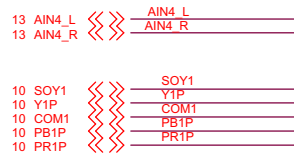
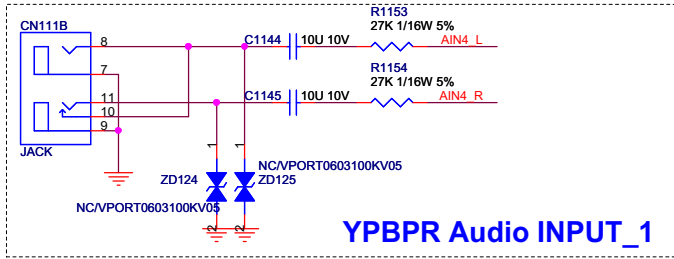
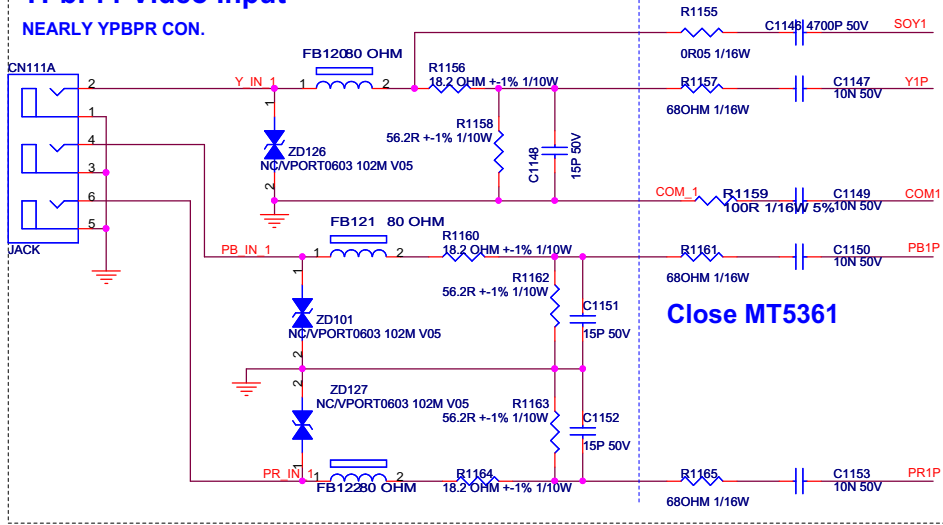
- 11 ASPDIF <<>> ASPDIF
- 9 CEC\_A <<>> CEC\_A
- 6,13 OSDA0 <<>> OSDA0
- 6,13 OSCL0 <<>> OSCL0
- 13 MGPIOS <<>> MGPIOS



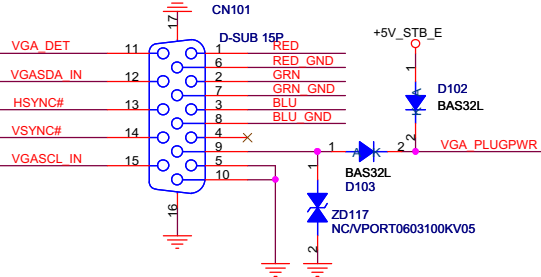
### MAIN [8] HDMI/SPDIF OUT/DVD IN

# YPbPr1 Video Input

NEARLY YPBPR CON.

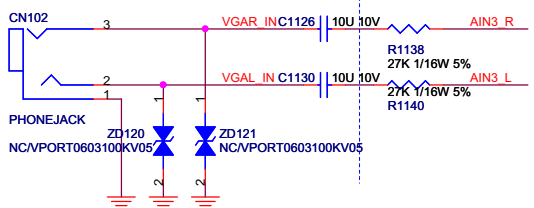


### VGA CONNECTOR

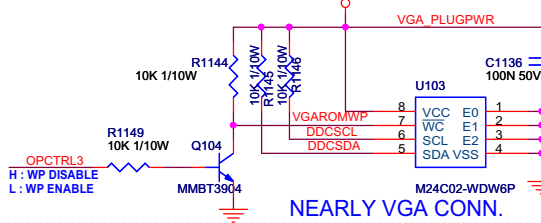


### VGA Audio IN

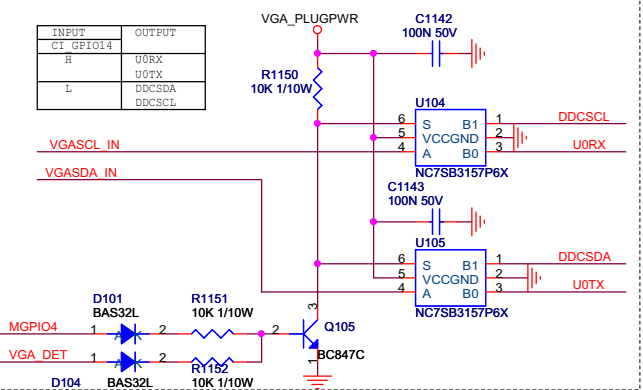
NEARLY CONN. Close MT5361



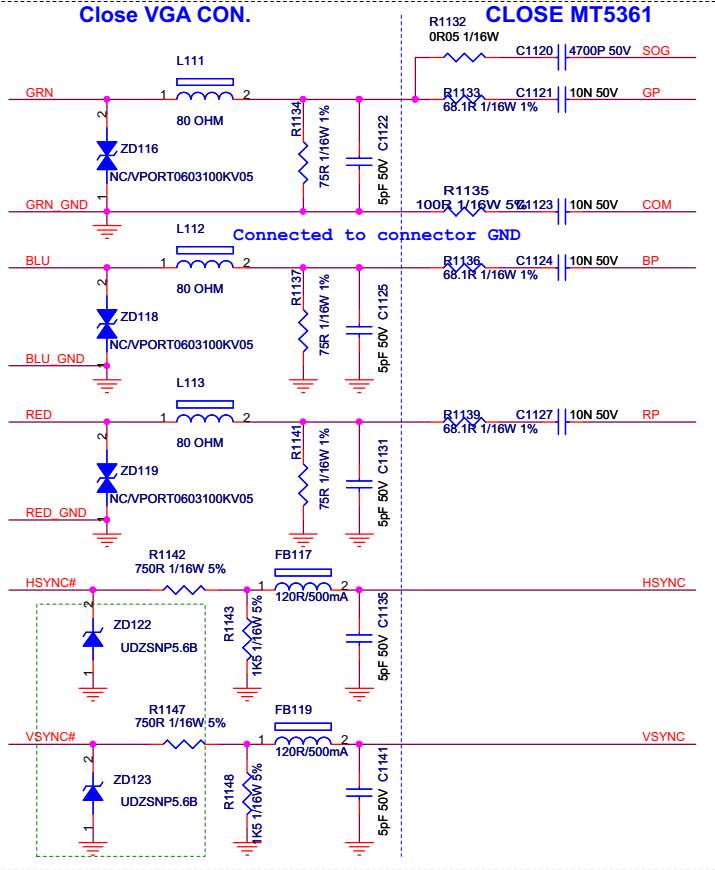
### VGA EEPROM



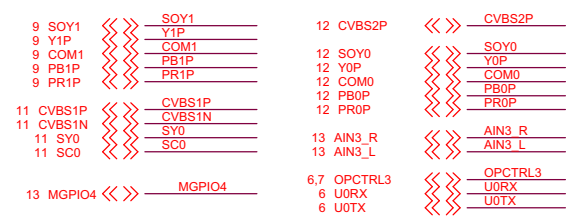
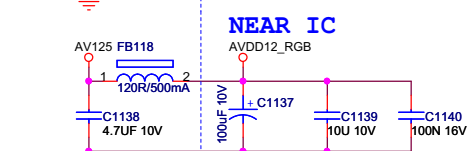
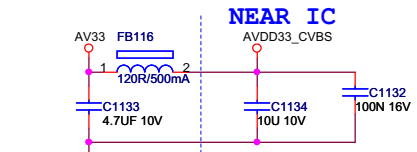
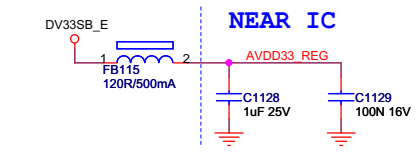
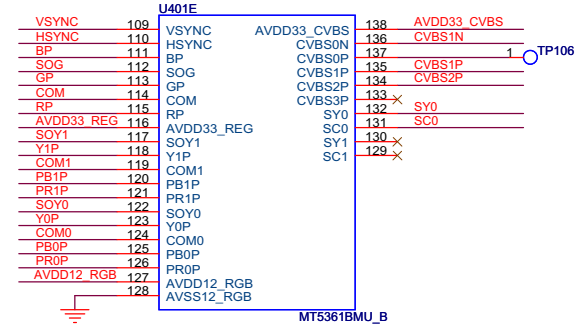
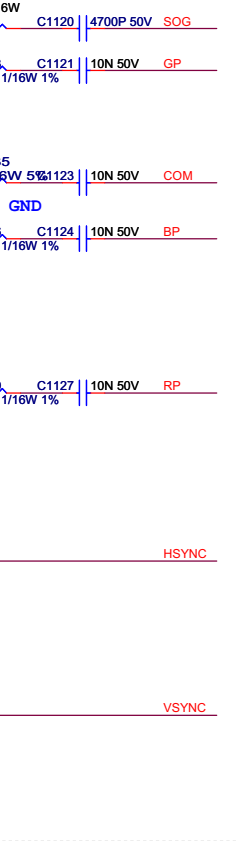
NEARLY VGA CONN.



### Close VGA CON.

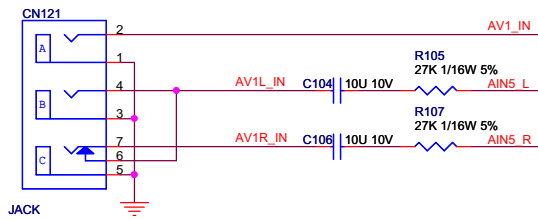


### CLOSE MT5361

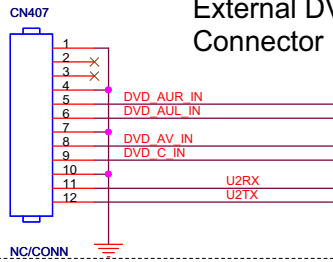


Component item from 4xx in this part.

MAIN [10] VIDEO/AUDIO INPUT

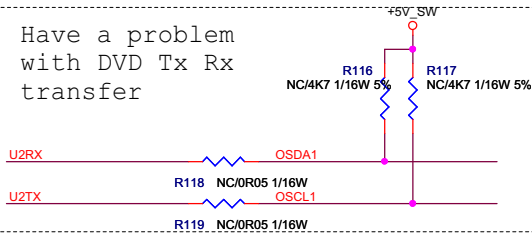


AV3(CVBS)\_Audio R/L

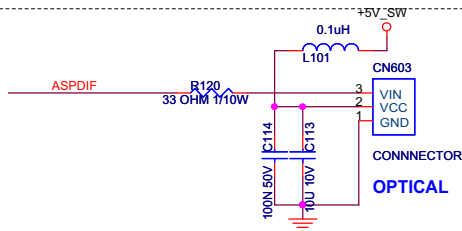


External DVD Connector

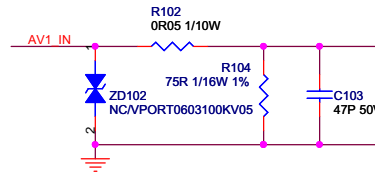
Have a problem with DVD Tx Rx transfer



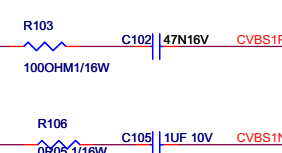
SPDIF OUT



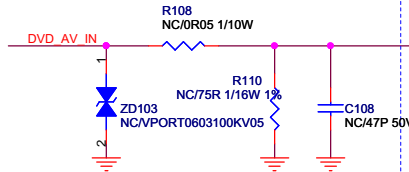
NEARLY AV/SV CON.



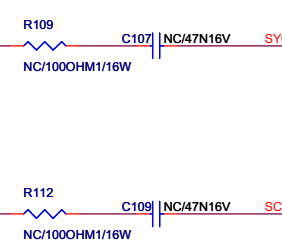
NEARLY IC



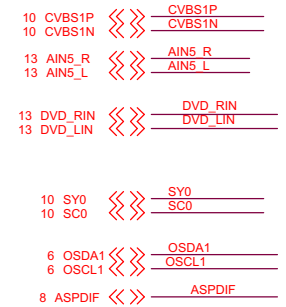
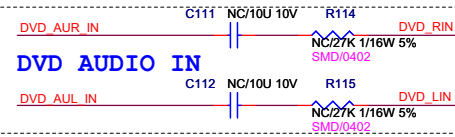
NEAR AV CONNECTOR

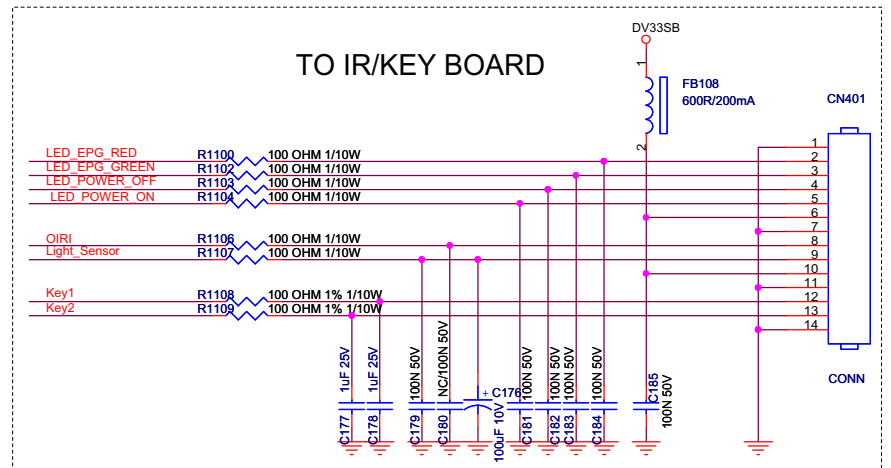
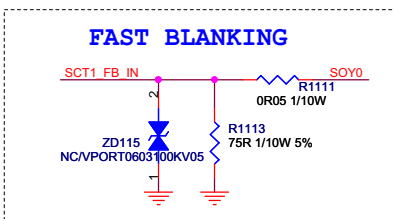
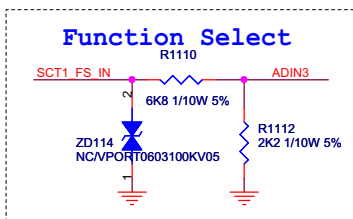
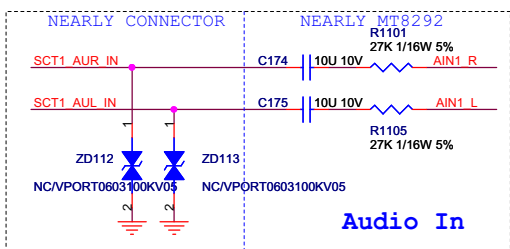
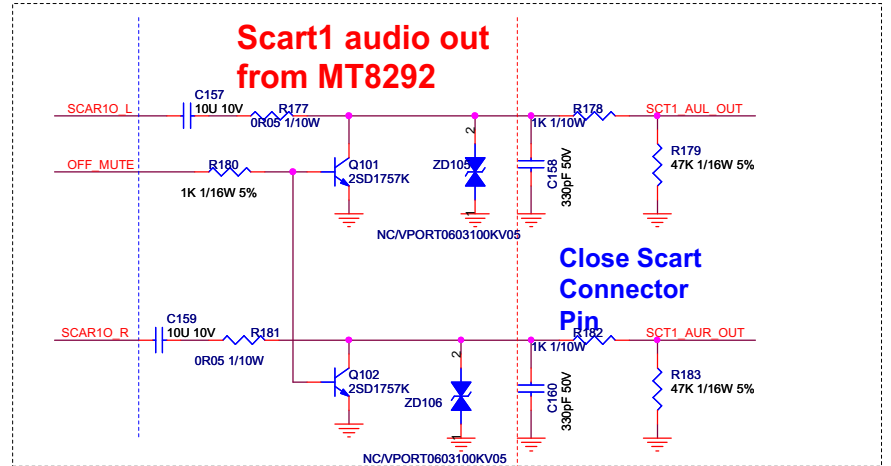
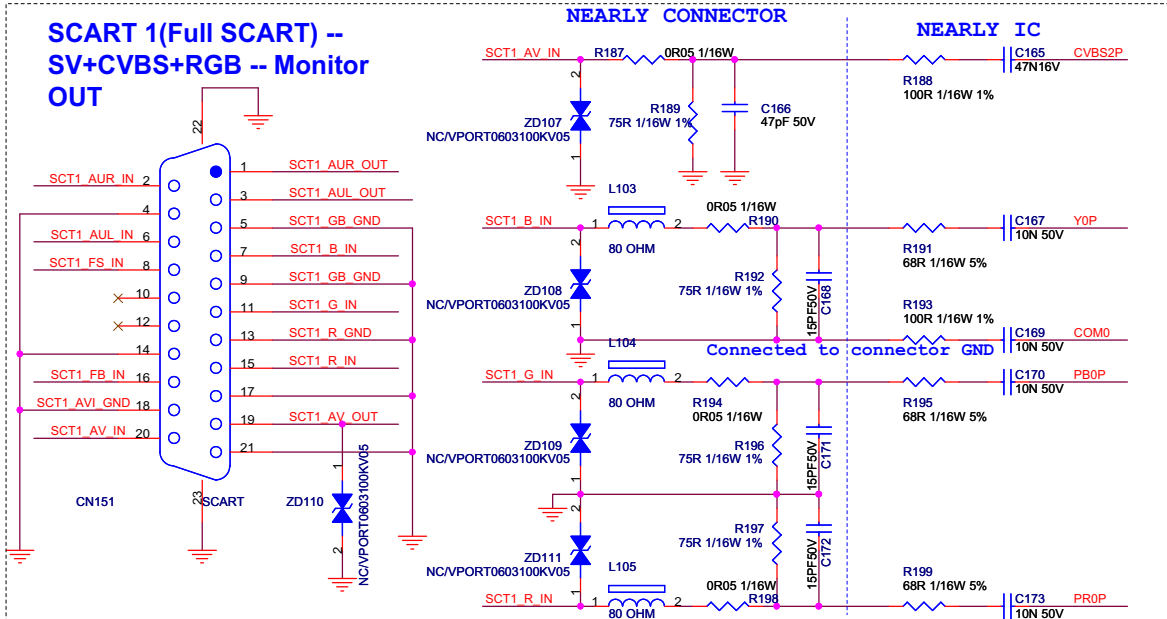
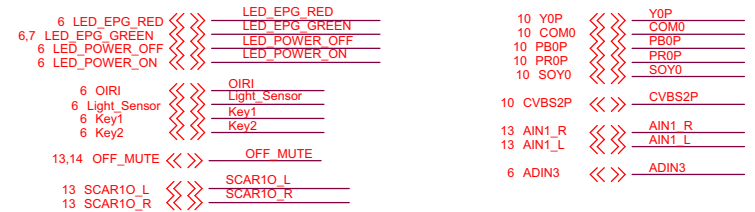
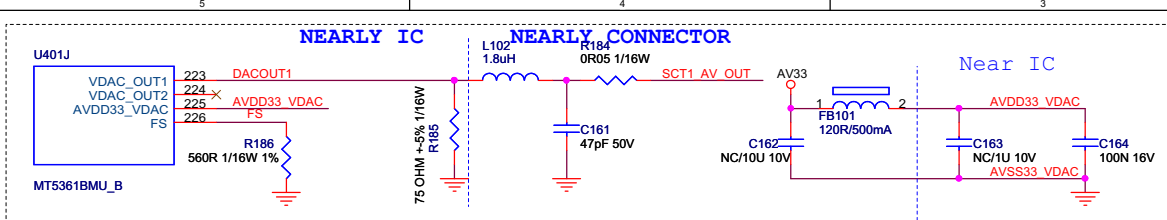


NEAR MT5361

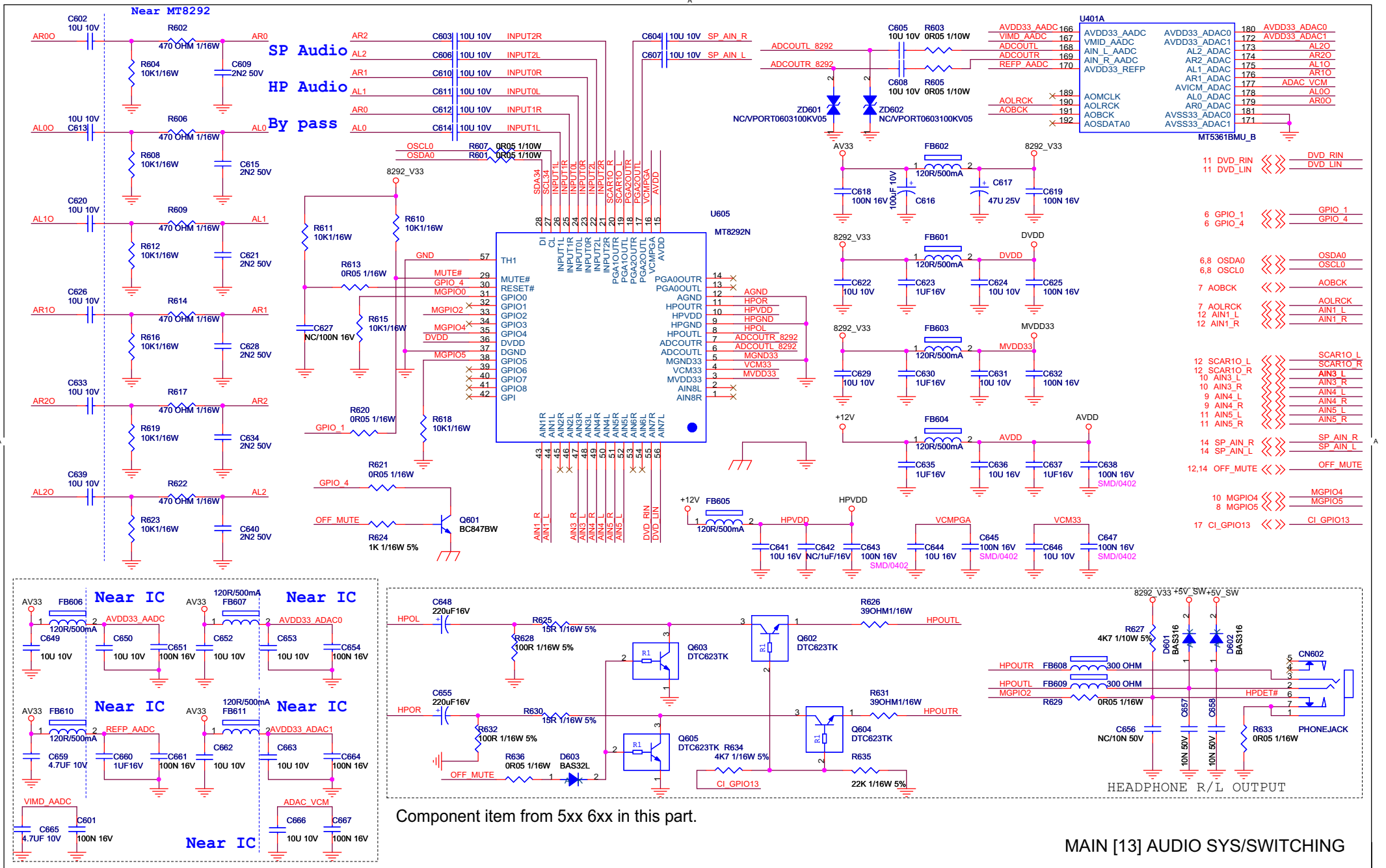


DVD AUDIO IN





MAIN [12] SCART and IR\_KEY



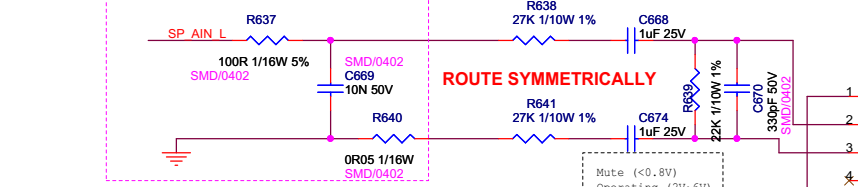
Component item from 5x 6xx in this part.

MAIN [13] AUDIO SYS/SWITCHING

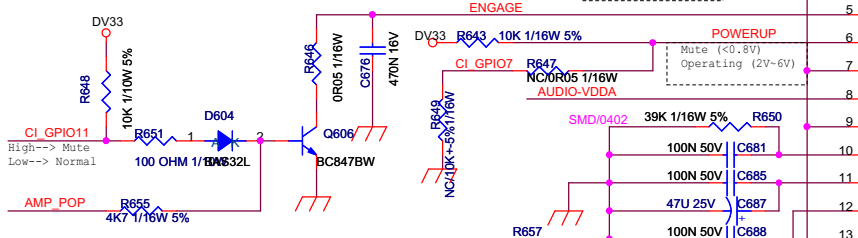


12,13 OFF\_MUTE <<<>>> OFF\_MUTE  
 17 CI\_GPIO<<<>>> CI\_GPIO7  
 17 CI\_GPIO11 <<<>>> CI\_GPIO11  
 13 SP\_AIN\_R <<<>>> SP\_AIN\_R  
 13 SP\_AIN\_L <<<>>> SP\_AIN\_L

**CLOSE TO MT8292**

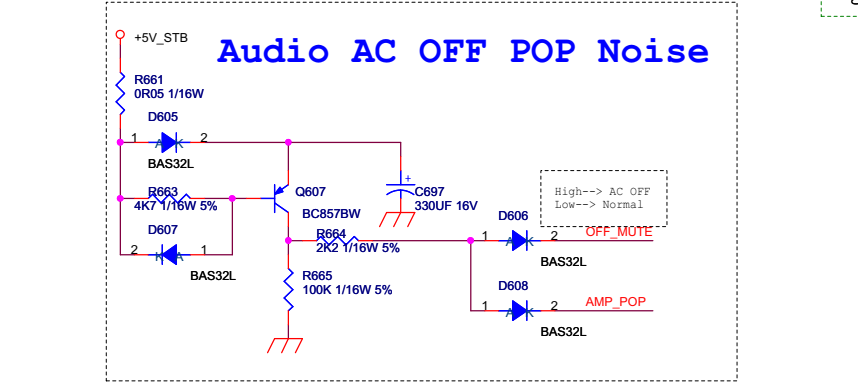


**ROUTE SYMMETRICALLY**

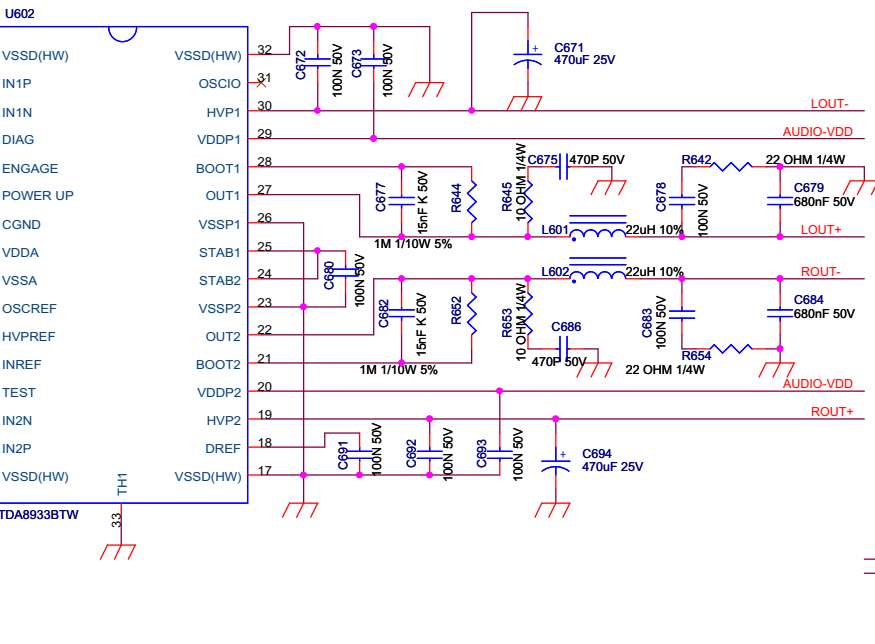


**ROUTE SYMMETRICALLY**

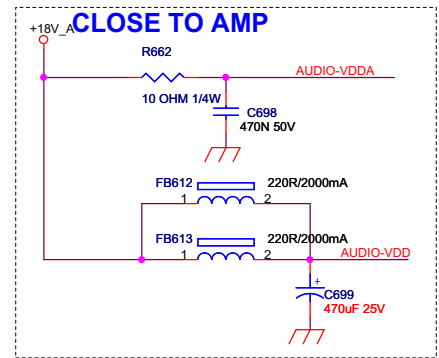
**CLOSE TO MT8292**



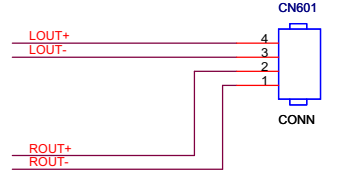
**Audio AC OFF POP Noise**

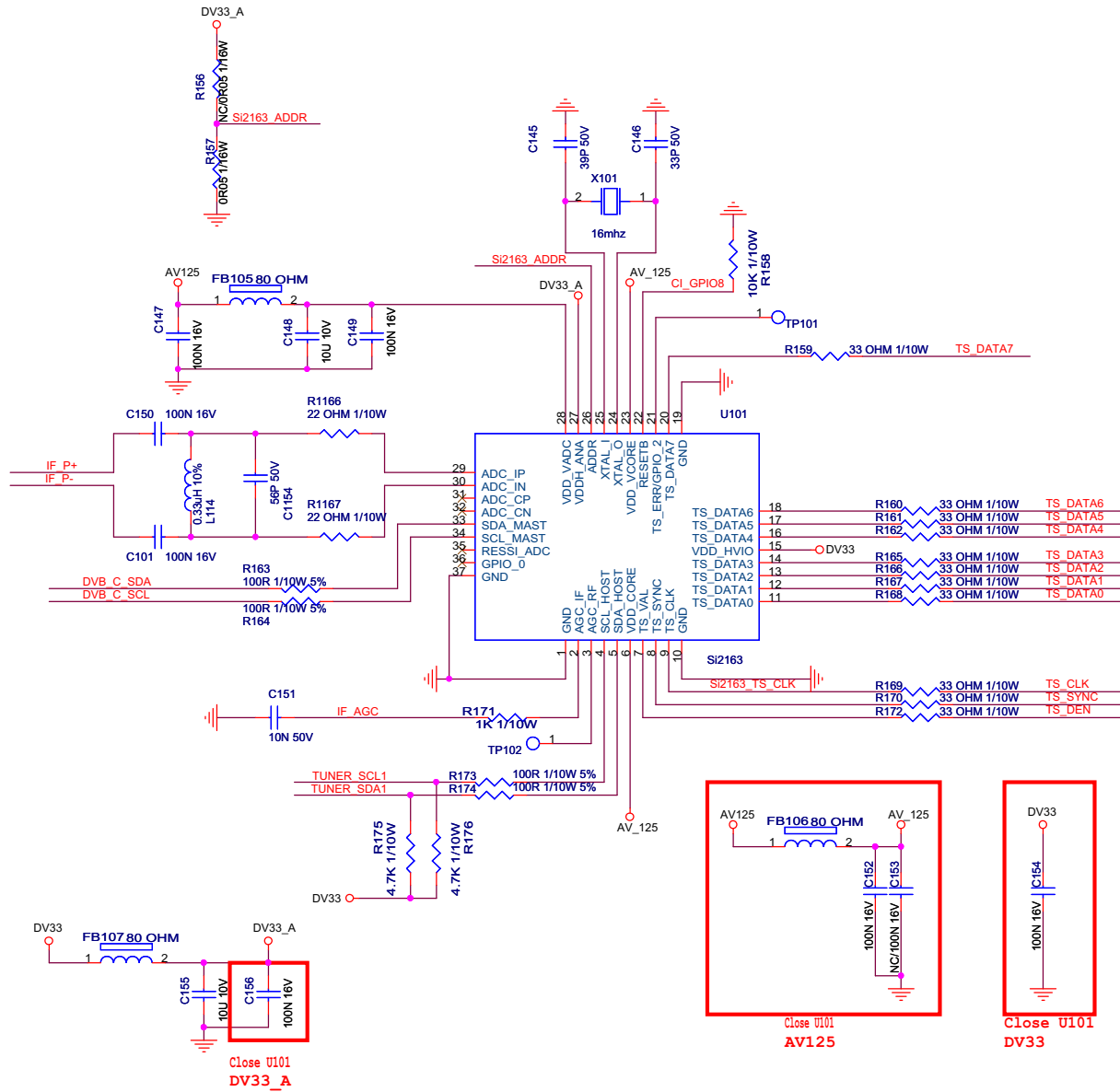


	R638	R641	R657	R660
10W	13K 1%	13K 1%	13K 1%	13K 1%
3W	27K 1%	27K 1%	27K 1%	27K 1%



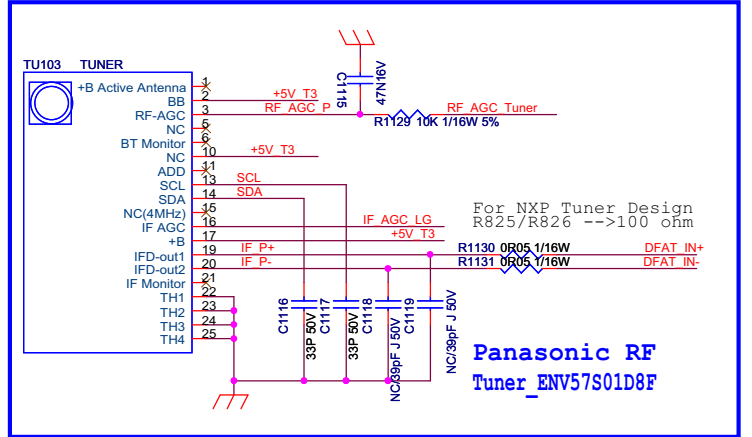
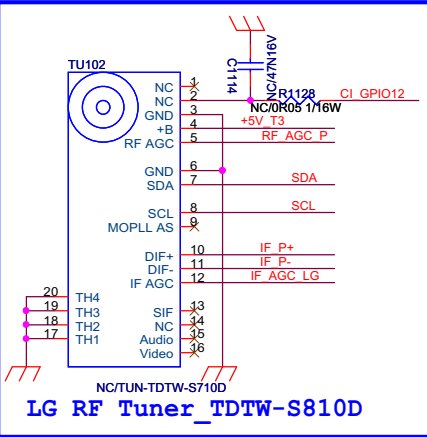
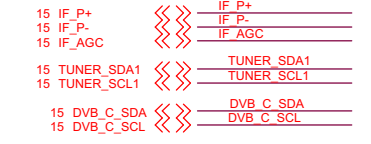
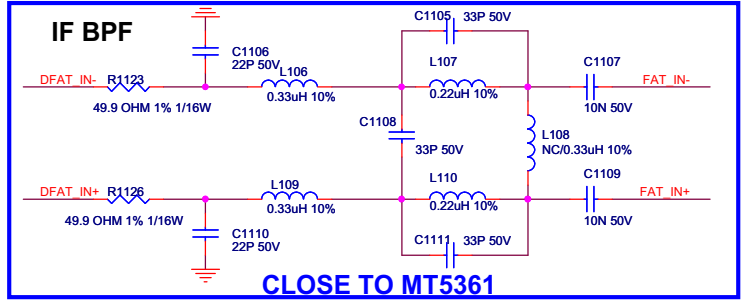
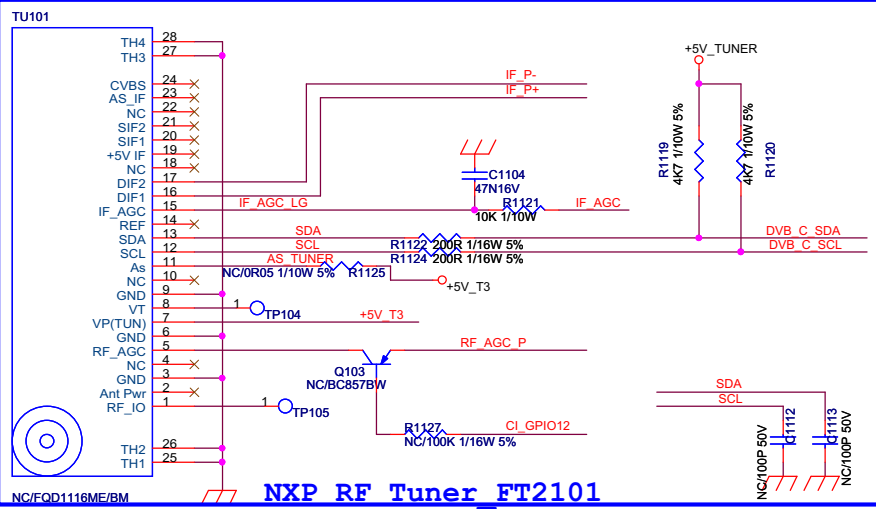
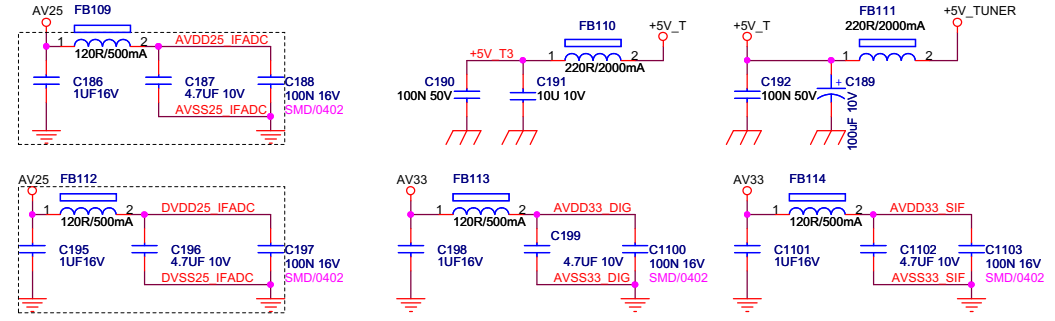
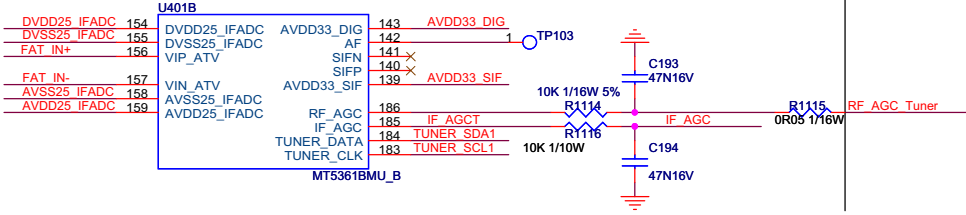
**CLOSE TO AMP**



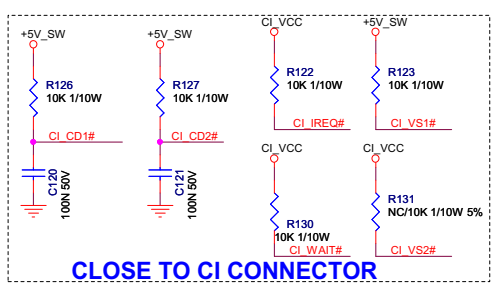


- 16 IF\_AGC <<>> IF\_AGC
- 17 CI\_GPIO8 <<>> CI\_GPIO8
- 16 IF\_P+ <<>> IF\_P+
- 16 IF\_P- <<>> IF\_P-
- 16 DVB\_C\_SDA <<>> DVB\_C\_SDA
- 16 DVB\_C\_SCL <<>> DVB\_C\_SCL
- 16 TUNER\_SDA1 <<>> TUNER\_SDA1
- 16 TUNER\_SCL1 <<>> TUNER\_SCL1
- 17 TS\_DATA0 <<>> TS\_DATA0
- 17 TS\_DATA1 <<>> TS\_DATA1
- 17 TS\_DATA2 <<>> TS\_DATA2
- 17 TS\_DATA3 <<>> TS\_DATA3
- 17 TS\_DATA4 <<>> TS\_DATA4
- 17 TS\_DATA5 <<>> TS\_DATA5
- 17 TS\_DATA6 <<>> TS\_DATA6
- 17 TS\_DATA7 <<>> TS\_DATA7
- 17 TS\_DEN <<>> TS\_DEN
- 17 TS\_CLK <<>> TS\_CLK
- 17 TS\_SYNC <<>> TS\_SYNC

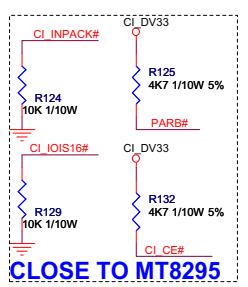
### Close MT5361



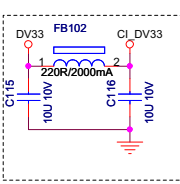
MAIN [16] Tuner



CLOSE TO CI CONNECTOR



CLOSE TO MT8295

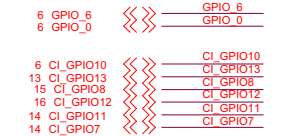


ADJUST CI\_VCC to +5V

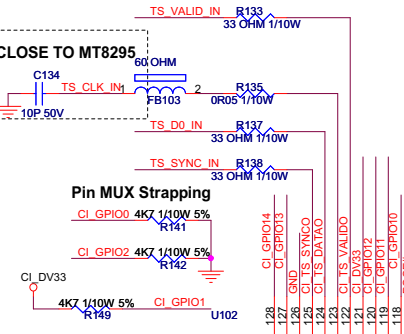
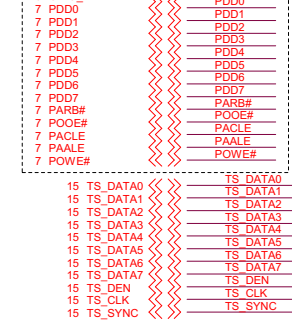
Near Connector

CLOSE TO MT8295

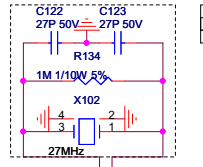
Internal LDO Cap



NAND FLASH INTERFACE WITH MT536X

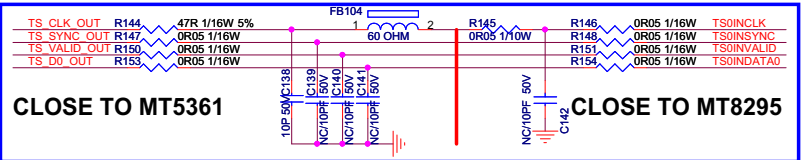


CLOSE TO MT8295



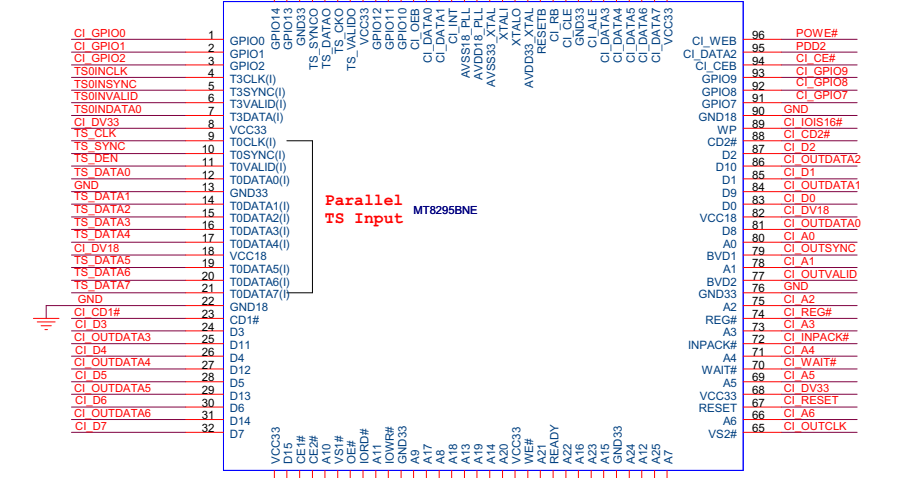
Strapping	R136	R140
Support CI	NS	4.7k
No Support CI	4.7k	NS

CLOSE TO MT5361

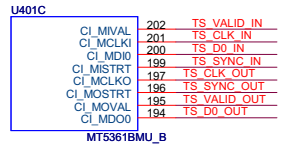


CLOSE TO MT5361

CLOSE TO MT8295

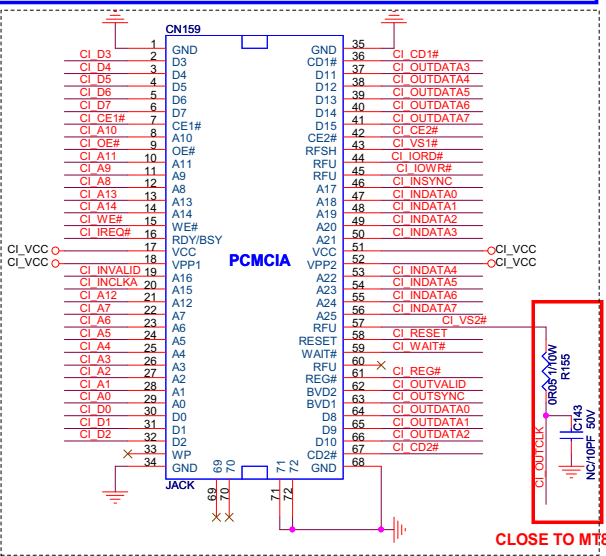


Parallel TS Input



U40IC

MT5361BMU\_B

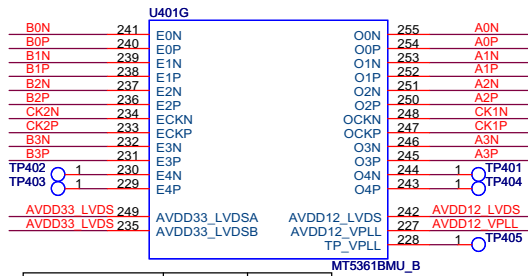


PCMCIA

CLOSE TO MT8295

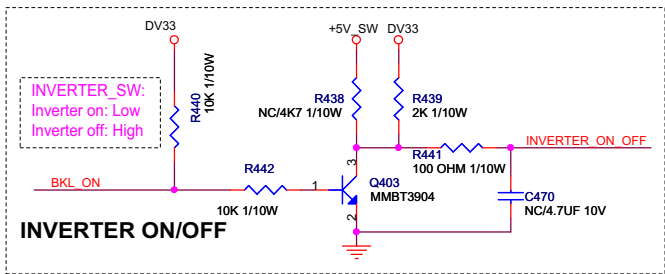
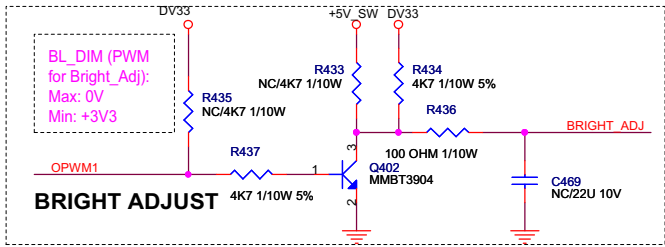
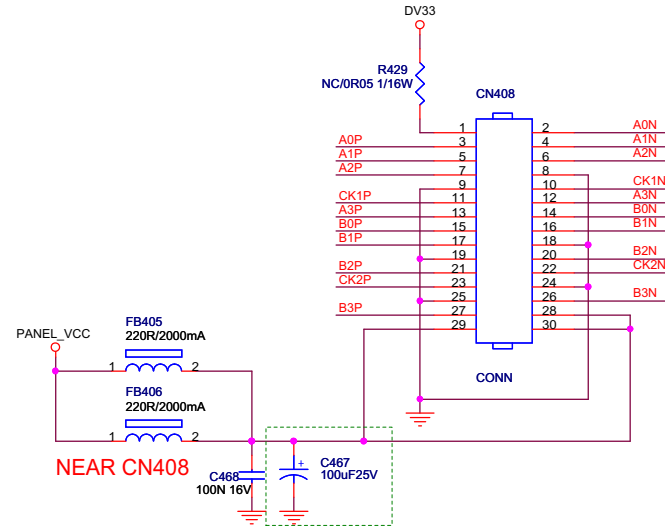
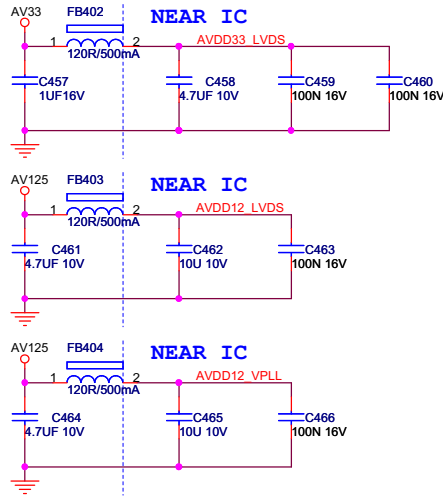


CLOSE TO MT8295



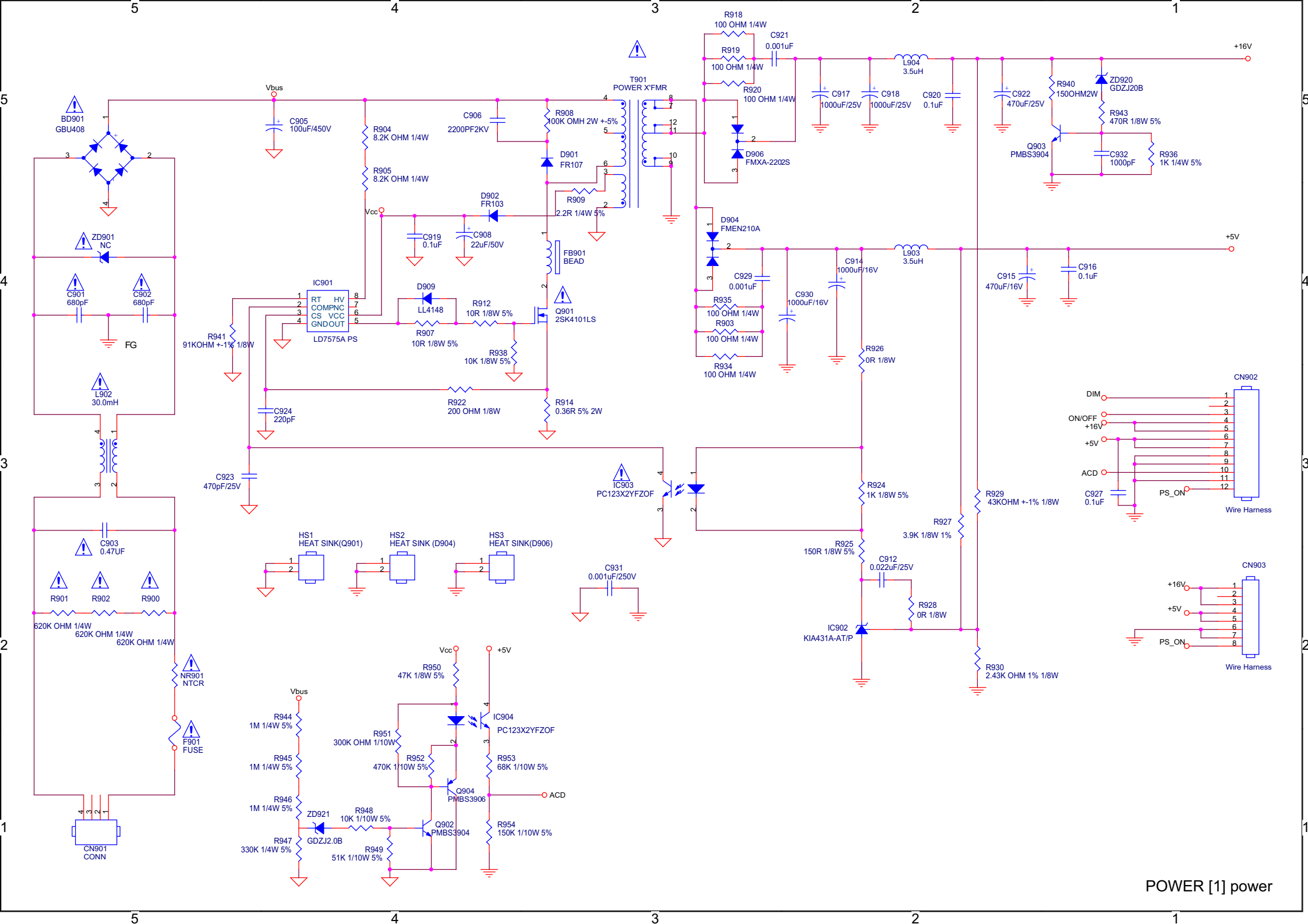
INVERTER ON/OFF	R438	R439
3V3	N/C	2K
5V	4K7	N/C

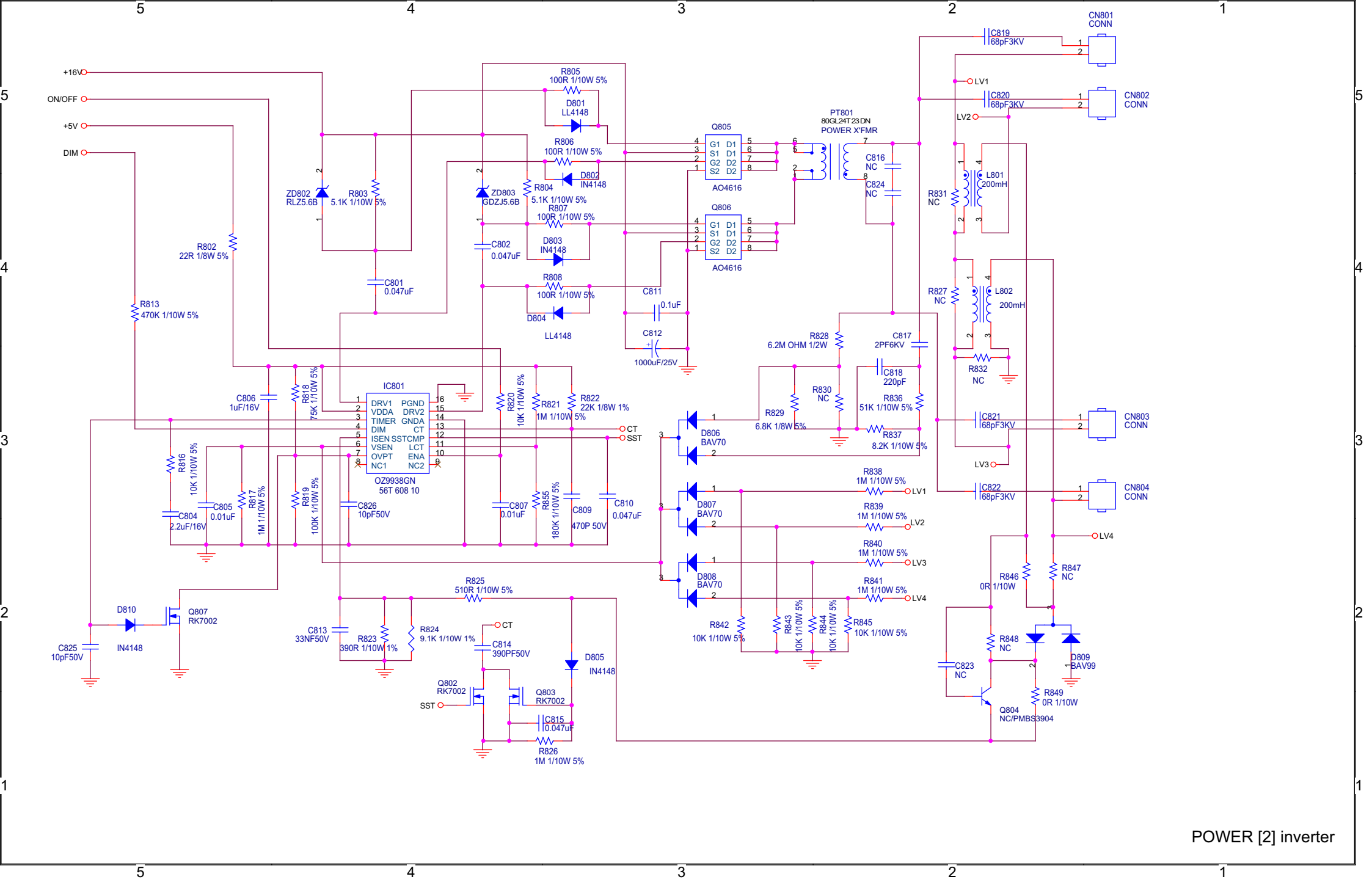
BL CONTROL	R436	R434	C469
PWM CONTROL	100R	4K7	N/C
DC CONTROL	5K6	1K	22U



MAIN [18] LVDS/MONITOR

Component item from 7xx in this part.





POWER [2] inverter

CN001

CONN

1  
2  
3

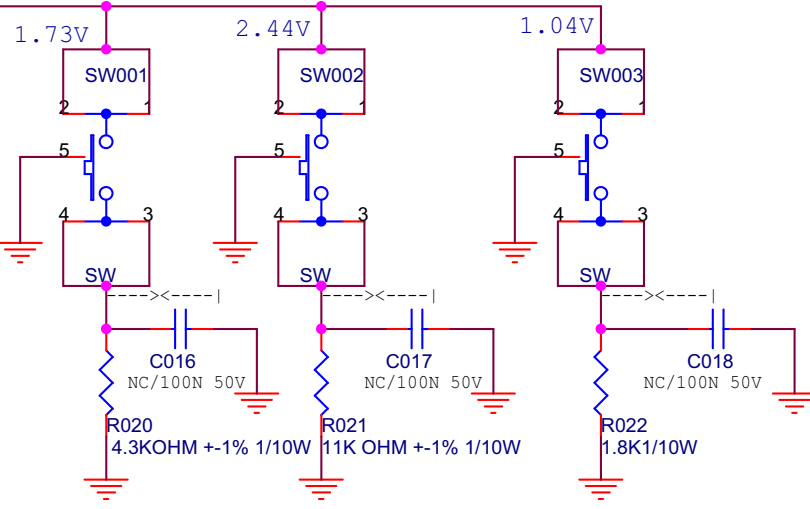
C024  
NC/100N 50V  
C023  
NC/100N 50V

Key1  
key2

CH+

CH-

POWER

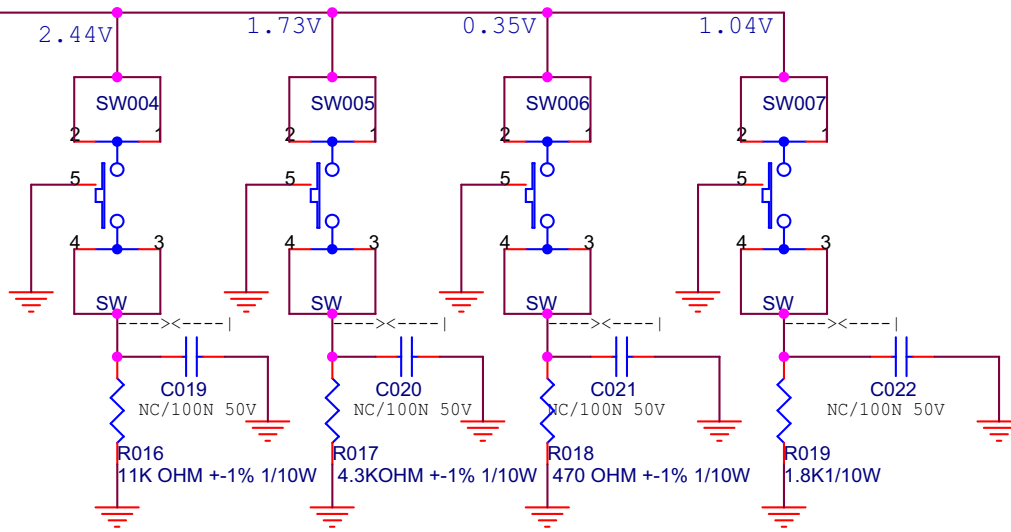


SOURCE

MENU

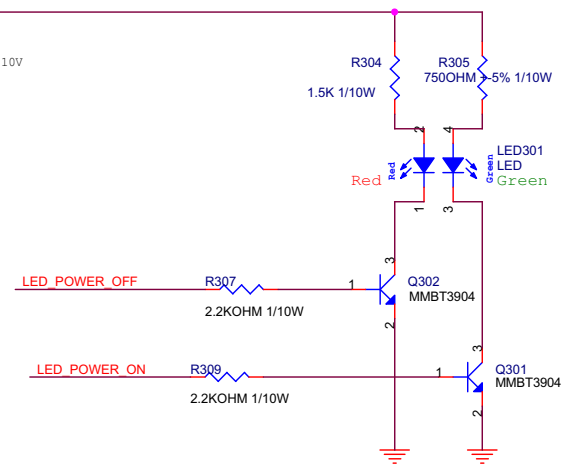
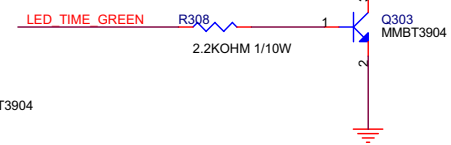
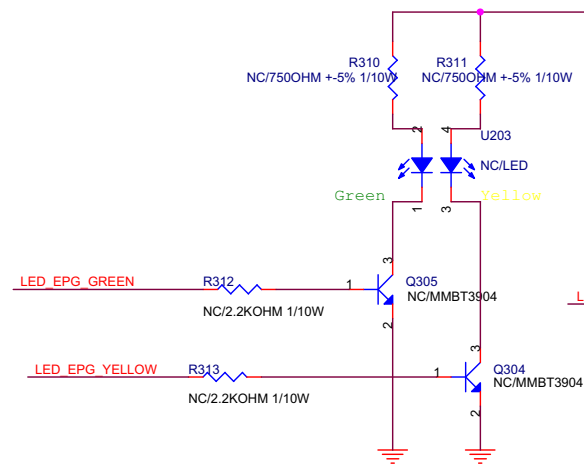
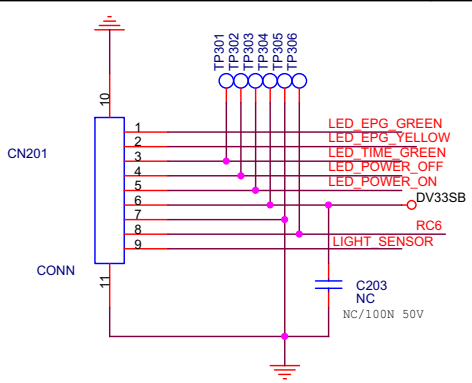
VOL-

VOL+

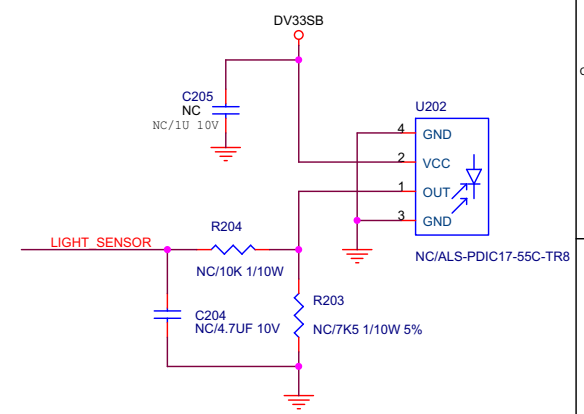
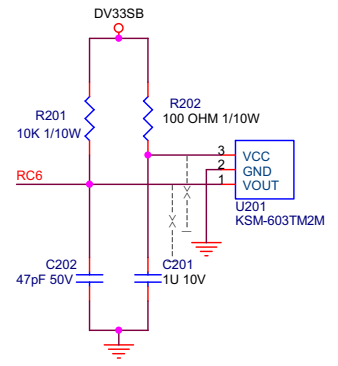


KEY [1] Keypad



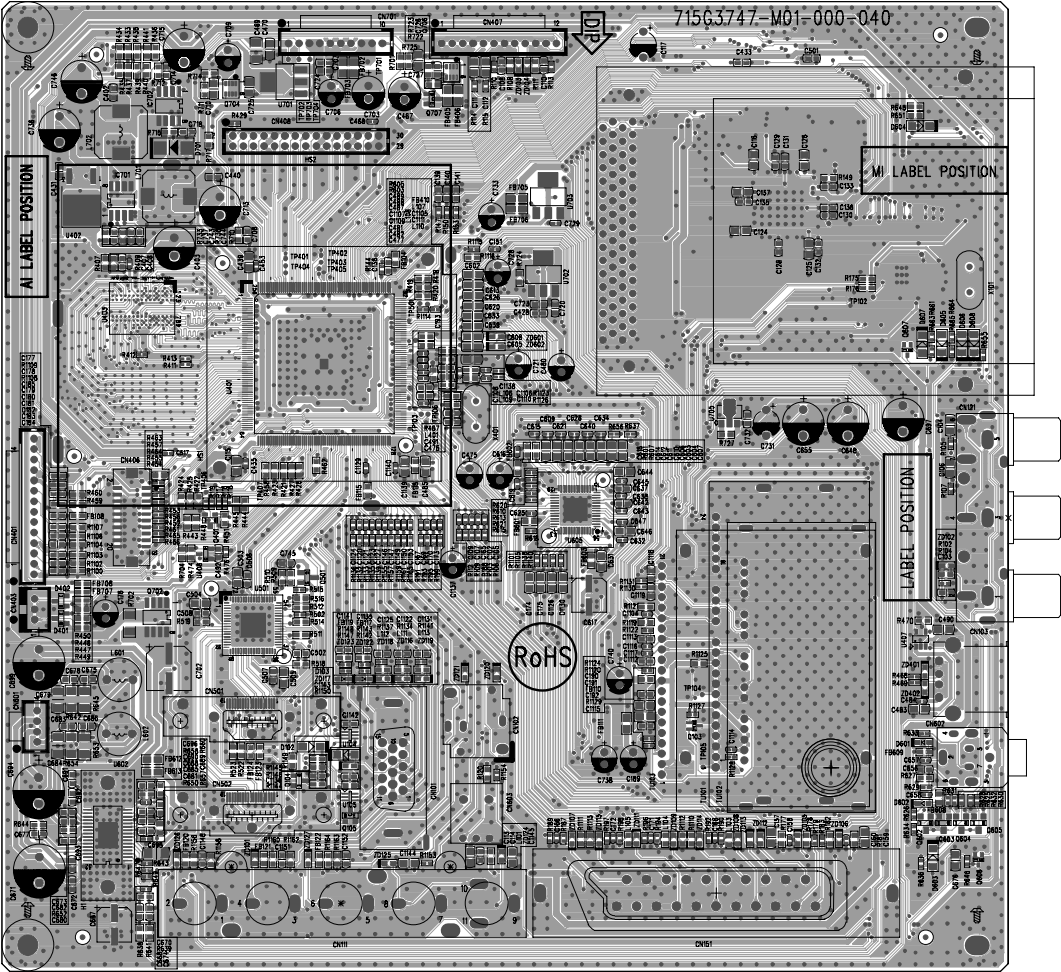


Function	LED 1		LED 2 Green	
	Red	Green	TIMER ON	LED_TIME_GREEN="H"
Standby		Power on	EPG ON	LED_TIME_GREEN="H"
Control method	LED_POWER_OFF="H"	LED_POWER_ON="H"	TIMER OFF	LED_TIME_GREEN="L"
	LED_POWER_ON="L"	LED_POWER_OFF="L"	EPG OFF	LED_TIME_GREEN="L"
Function	LED 3			
	Green	Yellow		
	LED_EPG_GREEN="H"	LED_EPG_YELLOW="H"		
	LED_EPG_YELLOW="L"	LED_EPG_GREEN="L"		

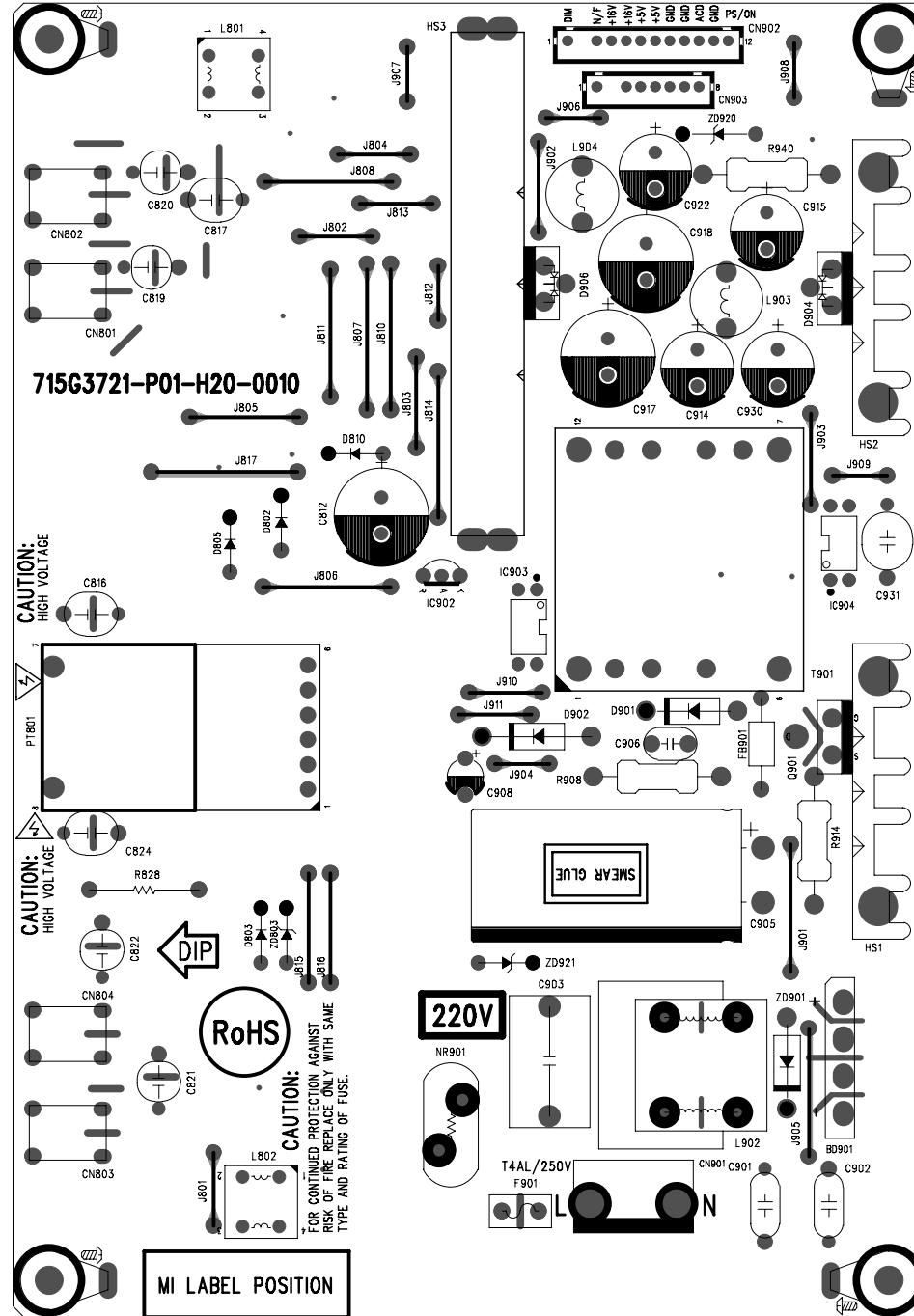


IR [1] IR&LED

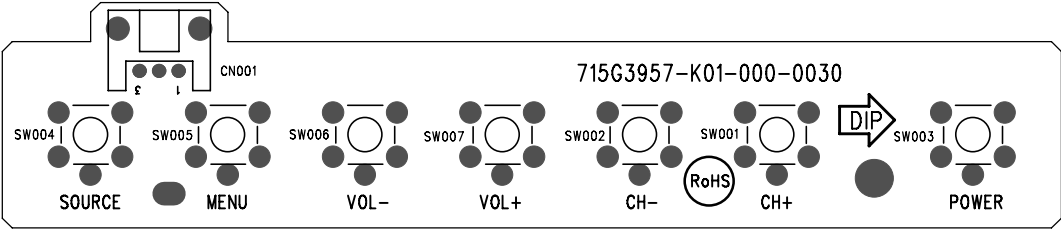
# MAIN [Top]



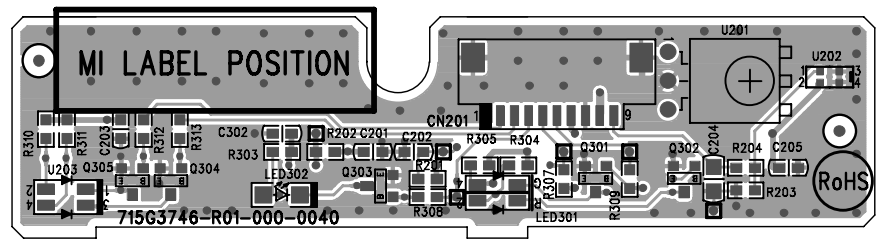
# POWER [Top]



**KEY [Top]**



# IR [Top]



## FIRMWARE UPDATING

### Software updating procedure (using USB Mass-storage device)

1. Copy APP code upgrade.pkg to USB flash disk (root folder).



Figure 1 USB Mass-storage device

2. Plug the USB device into the USB slot on the TV.



Figure 2 USB slot

3. Software updating wizard will be displayed. Select "YES" and press "OK" button on the remote control to start the updating.

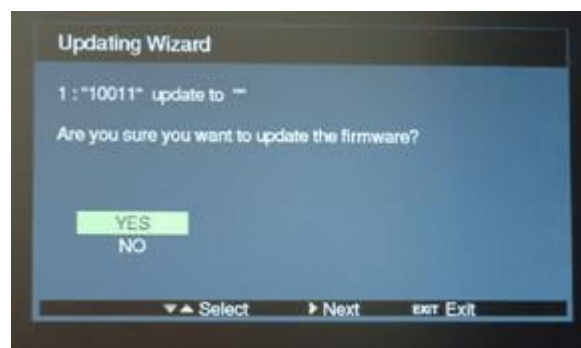


Figure 3 Updating wizard 1

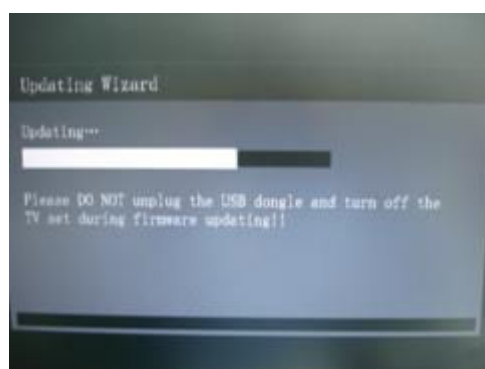


Figure 4 Updating wizard 2

4. Turn the TV off/on to install the software automatically.
5. Unplug USB flash disk and Turn the TV off/on again.



Figure 5 Unplug USB flash disk

6. Press "MENU" button, then press "0000" on the remote control to check the firmware version.



Figure 6 Software version checking display

# **TECHNICAL BULLETIN**

---

File Name Title issuing date





## **PARTS LIST**

### **Precaution**

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

**CAUTION:** The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the "SAFETY PRECAUTION" and "PRODUCT SAFETY NOTICE".

Do not degrade the safety of the receiver through improper servicing.

### **Note:**

- The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.
- The PC board assembly with \* mark is no longer available after the end of the production.

### **Abbreviations**

Capacitors CD : Ceramic Disk

Resistors CF : Carbon film  
OMF : Oxide Metal Film  
PF : Plastic Film  
CC : Carbon Composition  
VR : Variable Resistor  
EL : Electrolytic  
MF : Metal Film  
FR : Fusible Resistor

All CD and PF capacitors are  $\pm 5\%$ , 50 V and all resistor,  $\pm 5\%$ , 1/6 W unless otherwise noted.

## PARTS LIST

Block :



Location :   

Page :  / 1

Parts No. :   

# PARTS LIST

Block :

Block	Location	Parts No.	Description	AA	S	M	L	↑	↓
Electric Parts	E200	75018461	PC BOARD ASSY, MAIN WITH FW, CBPF94ABAE						
Electric Parts	 E250	75018439	PC BOARD ASSY, POWER, PWTV9C41MAAF						
Electric Parts	E260	75018420	PC BOARD ASSY, KEY, KEPF9AB3						
Electric Parts	E270	75018421	PC BOARD ASSY, IR, T2992-C-X-X-1-080428, IRPF9AB4						
Electric Parts	E300	75016438	LCD PANEL, V216B1-L02						
Electric Parts	E310	75018454	HARNESS, 30P-15*2P 100MM S-LVDSXTF9799, 095G801830X906						
Electric Parts	 E320	75018462	POWER CORD, 1800MM, 089G204A18N-LT						
Electric Parts	E330	75018455	SPEAKER, 8 OHM 3.5W 240/320MM 115X43MM, 078G0035--5--Y						
Electric Parts	E340	75018456	HARNESS, 14P-9P+3P 400MM S-LCDXTF9803, 095G801414X949						
Electric Parts	E350	75018397	HARNESS, AC INLET-4P 180MM 75427, 095G8021-4F908						
Accessory	E400	75014827	REMOCON HAND UNIT, CT-90326						
Accessory	E410	75018431	DFU ASSY, 705TZ94125A						
Cabinet	E100	75018460	FRONT BEZEL ASSY, 705TZA3447A						
Cabinet	E110	75018437	BACK COVER ASSY, 705TZ93430A						
Cabinet	E112	75018880	SCREW, (BC TO FB SCREW), 0G1T1030-10-47-CR3						
Cabinet	E114	75015193	SCREW, (BC TO FB SCREW TYPE 2), 0Q1T-330--8-47-CR3						
Cabinet	E116	75016017	SCREW, (BC TO FB SCREW TYPE 3), 0M1G-130--6-47-CR3						
Cabinet	E120	75018438	BASE ASSY, 705TZ93431A						
Cabinet	E125	75014951	SCREW, (BASE TO STAND), 0M1T1740-10-47-CR3						
Cabinet	E130	75018416	SIDE KEY ASSY, 705TZ93426A						
Cabinet	E140	75018417	COVER ASSY, SIDE-I/O, 705TZ93427A						
Cabinet	E150	75018418	COVER HIG ASSY, 705TZ93428A						
Packing	E500	75018457	CARTON BOX, FOR 22, Z44GC017939-1A						
Packing	E510	75018458	CUSHION-T, Z44GC008101						
Packing	E511	75018459	CUSHION-B, Z44GC008201						
Packing	E515	75017394	HANDLE ASSY, 19AV625D, 705GZ9SK120						
Packing	E520	75015091	PE BAG, (SET)(630*740), 22AV615DG, P45G9901002						

## PARTS LIST

Block :

Location :

Page :  / 1

Parts No. :

Block	Location	Parts No.	Description	AA	S	M	L		
Electric Parts	<a href="#">E200</a>	75018461	PC BOARD ASSY, MAIN WITH FW, CBPF94ABAE						
Electric Parts	<a href="#">E250</a>	75018439	PC BOARD ASSY, POWER, PWTV9C41MAAF						
Electric Parts	<a href="#">E260</a>	75018420	PC BOARD ASSY, KEY, KEPF9AB3						
Electric Parts	<a href="#">E270</a>	75018421	PC BOARD ASSY, IR, T2992-C-X-X-1-080428, IRPF9AB4						
Electric Parts	<a href="#">E300</a>	75016438	LCD PANEL, V216B1-L02						
Electric Parts	<a href="#">E310</a>	75018454	HARNESS, 30P-15*2P 100MM S-LVDSXTF9799, 095G801830X906						
Electric Parts	<a href="#">E320</a>	75018462	POWER CORD, 1800MM, 089G204A18N-LT						
Electric Parts	<a href="#">E330</a>	75018455	SPEAKER, 8 OHM 3.5W 240/320MM 115X43MM, 078G0035--5--Y						
Electric Parts	<a href="#">E340</a>	75018456	HARNESS, 14P-9P+3P 400MM S-LCDXXTF9803, 095G801414X949						
Electric Parts	<a href="#">E350</a>	75018397	HARNESS, AC INLET-4P 180MM 75427, 095G8021-4F908						



## PARTS LIST

Block :

Location :  Search 

Page :  / 1

Parts No. :  Search 

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Accessory	<a href="#">E400</a>	75014827	REMOCON HAND UNIT, CT-90326						
Accessory	<a href="#">E410</a>	75018431	DFU ASSY, 705TZ94125A						



## PARTS LIST

Block :

Location :   

Page :  / 1

Parts No. :   

Block	Location	Parts No.	Description	AA	S	M	L		
Cabinet	<a href="#">E100</a>	75018460	FRONT BEZEL ASSY, 705TZA3447A						
Cabinet	<a href="#">E110</a>	75018437	BACK COVER ASSY, 705TZ93430A						
Cabinet	<a href="#">E112</a>	75018880	SCREW, (BC TO FB SCREW), 0G1T1030-10-47-CR3						
Cabinet	<a href="#">E114</a>	75015193	SCREW, (BC TO FB SCREW TYPE 2), 0Q1T-330--8-47-CR3						
Cabinet	<a href="#">E116</a>	75016017	SCREW, (BC TO FB SCREW TYPE 3), 0M1G-130--6-47-CR3						
Cabinet	<a href="#">E120</a>	75018438	BASE ASSY, 705TZ93431A						
Cabinet	<a href="#">E125</a>	75014951	SCREW, (BASE TO STAND), 0M1T1740-10-47-CR3						
Cabinet	<a href="#">E130</a>	75018416	SIDE KEY ASSY, 705TZ93426A						
Cabinet	<a href="#">E140</a>	75018417	COVER ASSY, SIDE-I/O, 705TZ93427A						
Cabinet	<a href="#">E150</a>	75018418	COVER HIG ASSY, 705TZ93428A						



## PARTS LIST

Block :

Location :  Search 

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Parts No. :  Search 

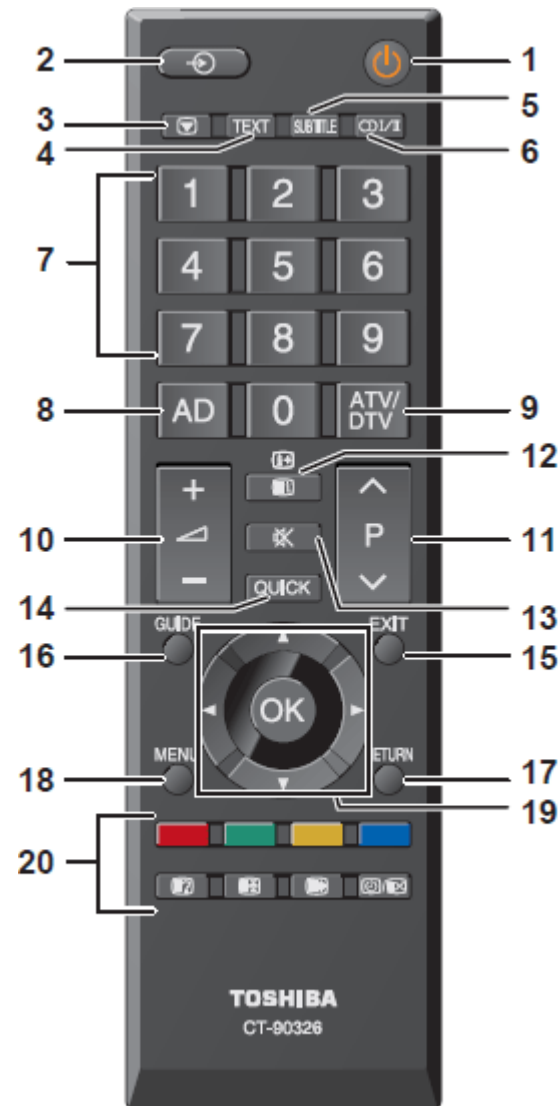
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Packing	<a href="#">E500</a>	75018457	CARTON BOX, FOR 22, Z44GC017939-1A						
Packing	<a href="#">E510</a>	75018458	CUSHION-T, Z44GC008101						
Packing	<a href="#">E511</a>	75018459	CUSHION-B, Z44GC008201						
Packing	<a href="#">E515</a>	75017394	HANDLE ASSY, 19AV625D, 705GZ9SK120						
Packing	<a href="#">E520</a>	75015091	PE BAG, (SET)(630*740), 22AV615DG, P45G9901002						








## FUNCTION AND OPERATION

### The Remote Control

Simple at-a-glance reference of your remote control.



- 1 For On/Standby mode
- 2 To select input from external sources
- 3 Still Picture
- 4 To call up text services in analogue mode and interactive services in digital mode
- 5 To turn the subtitle On/Off
- 6 Stereo/Bilingual transmissions
- 7 Number buttons
- 8 Switch the Audio Description On/Off
- 9 To toggle between ATV and DTV mode
- 10 To alter the volume
- 11 To change programme
- 12 In TV mode: To display on-screen information  
In Text mode: To access index page
- 13 To mute the sound
- 14 To display Quick access menu
- 15 To exit menus
- 16 To display the programme guide
- 17 To return to the previous level of the on-screen menu
- 18 To display the on-screen menu
- 19 ▲, ▼, ◀, ▶: To move up, down, left or right in the on-screen menu  
OK: To confirm the selection
- 20 Colour button: Text control buttons
  -  To reveal concealed text
  -  To hold a wanted page
  -  To enlarge text display size
  -  In normal picture mode: To display clock on TV screen
  -  In Teletext mode: To toggle between Teletext and normal picture mode

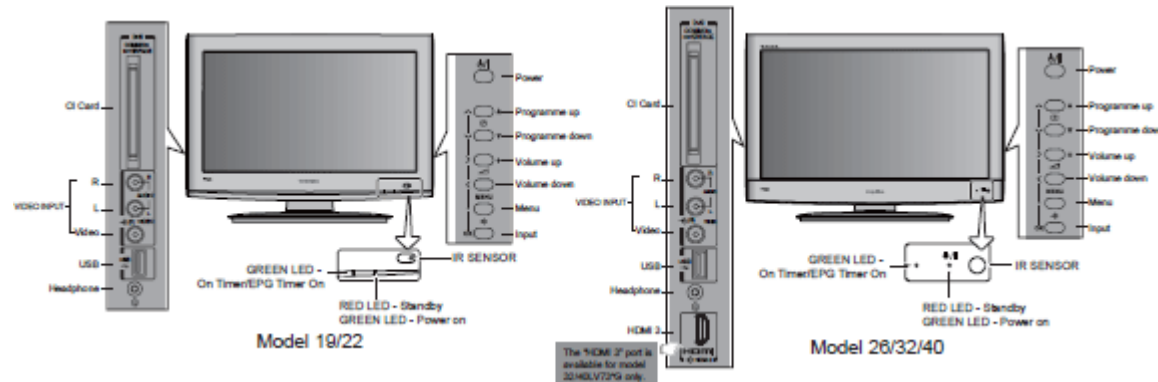
## FUNCTION AND OPERATION

### Using the Controls


While all the necessary adjustments and controls for the television are done using the remote control, the buttons on the television may be used for some functions.



**NOTE: COMMON INTERFACE (CI)**

The common interface is for a Conditional Access Module (CAM). Contact a service provider for details.






### Switching On






If the RED LED is unlit check that the mains plug is connected to the power supply. If the picture does not appear press  on the remote control, it may take a few moments.

To put the television into Standby press  on the remote control. To view the television press  again. The picture may take a few seconds to appear.



### Using the Remote Control



To set up the television you will now need to use the on screen menus. Press  on the remote control to see the menus.





The on-screen menu appears as a list of five topics. As each symbol is selected by pressing  or  on the navigation ring on the remote control, its respective options will appear below.


To use the options, press  or  on the navigation ring to move up and down through them and use ,  or  to select the required choice. Follow the on-screen instructions.

### Using the Side-panel Controls

To alter the volume, press  .

To alter the programme position press  **P** .

Press **MENU** and , ,  or  to control the sound and picture options. Press **MENU** to finish.

To select the external input, press  to move through the list until the appropriate input source is selected.

Please always refer to the owner's manual of the equipment to be connected for full details.



## Tuning the Television

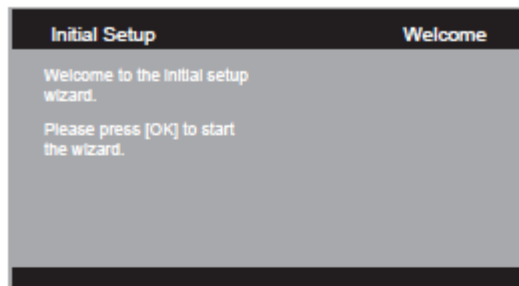
Before switching on the television, put your decoder and media recorder to **Standby** if they are connected.




Make sure to connect the aerial cable, and select TV as the input source.

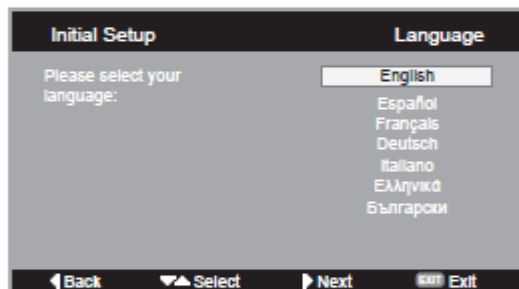
To set up the television, use the buttons on the remote control.




### Initial Setup

- 1 Connect the television to the main power and press the  button. The **Initial Setup** screen will appear at the first use. Press  to start the initial setup.

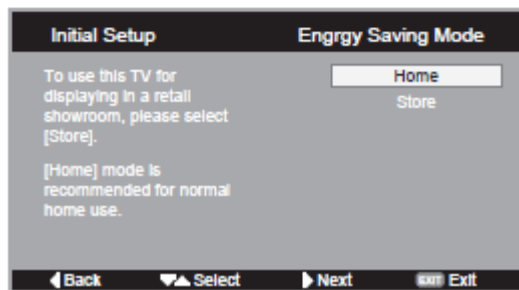


- 2 Using  or  to select your language, and then press .

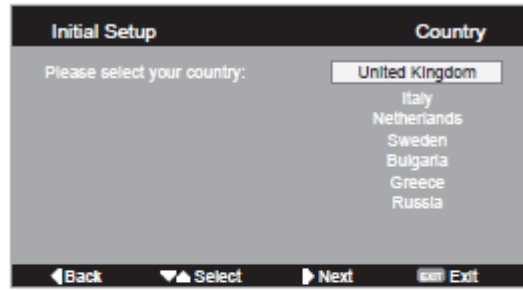


- 3 Using  or  to select between Home or Store mode (for normal home use, select Home), and then press .

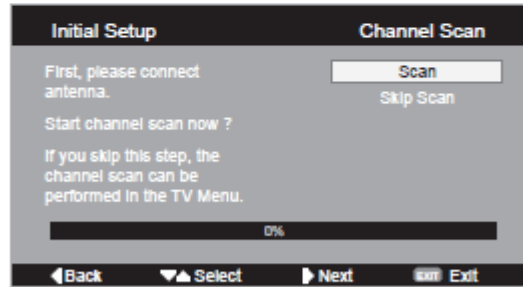
If Home mode is selected, the **Standard** picture mode will be selected.



- 4 Press ▲ or ▼ to select your country and press ► to the next step.

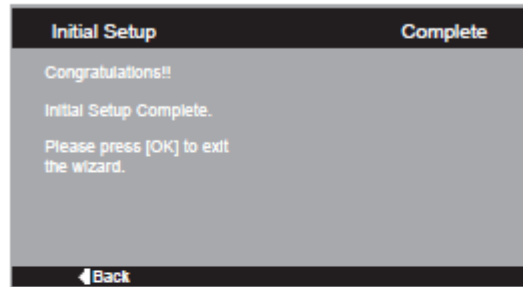


- 5 To start channel scan press ►.



The search will begin for all available stations. The slide bar will move along the line as the search progresses.

- 6 The initial setup is now complete. Press Ⓚ to exit the wizard.



*NOTE: If you skip this step, the channel scan can be performed in the TV Menu.*

*NOTE: The time will be set automatically using the broadcaster data but can be advanced or decreased by from -12 to +13 hours using Time Zone in Timer Setup.*

**PLEASE NOTE**

The **Factory Default** menu can also be accessed at any time in the Parental from the **FUNCTION** menu.

## SPECIFICATION

- This television complies with the specification listed below.
- Design and specifications are subject to change without notice.

DVB-T Broadcast systems/channels		Broadcast systems/channels	
UK	UHF 21-68	PAL-I	UHF UK21-UK68
France	VHF 05-10 (VHF 01-05) UHF 21-69	PAL-B/G	UHF E21-E69 VHF E2-E12, S1-S41
Germany	VHF 05-12 UHF 21-69	SECAM-L	UHF F21-F69 VHF F1-F10, B-Q
Austria	VHF 05-12 UHF 21-69	SECAM-D/K	UHF R21-R69 VHF R1-R12
Switzerland	VHF 05-12 UHF 21-69		
Italia	VHF 05-12 (D,E,F,G,H,H1,H2) UHF 21-69		
Spain	UHF 21-69		
Nederlands	VHF 05-12 UHF 21-69		
Sweden	VHF 05-12 UHF 21-69		
Finland	VHF 05-12 UHF 21-69		
Greece	VHF 05-12 UHF 21-69		
<b>Video Input</b> PAL, SECAM, NTSC 3.58/4.43			
<b>External connections</b>			
<b>Model 19/22</b>			
EXT1	Input	Phono jacks Phono jacks	Y, P <sub>y</sub> /C <sub>y</sub> , P <sub>r</sub> /C <sub>r</sub> Audio L + R
EXT2	Input	Phono jack Phono jacks	Vídeo Audio L + R
EXT3	nput/Output	21-pin SCART	Auto, Mixed, RGB, Composite, S-Vídeo / TV Out
PC	Input	D-sub	RGB
HDMI 1/2	Input	HDMI®	
PC/HDMI1 Audio		Phono jacks	Audio L + R
Component		Phono jack	Audio L + R
Digital Audio		Output (S/PDIF)	Optical
<b>Model 26/32/40</b>			
EXT1	Input	Phono jacks Phono jacks	Y, P <sub>y</sub> /C <sub>y</sub> , P <sub>r</sub> /C <sub>r</sub> Audio L + R
EXT2	Input	Phono jack Phono jacks	Vídeo Audio L + R
EXT3	Input/Output	21-pin SCART 1	Auto, Mixed, RGB, Composite, S-Vídeo / TV Out
EXT4	Input/Output	21-pin SCART 2	Auto, Mixed, RGB, Composite, S-Vídeo / TV Out
PC	Input	D-Sub	RGB
HDMI1/2/3	Input	HDMI®	
PC/HDMI1 Audio		3.5mm	Audio L + R
Component		Phono jacks	Audio L + R
Digital Audio	Output (S/PDIF)		Optical
USB Port	Interface version:	USB 2.0	
	USB Class:	Mass Storage	
	File system:	FAT12, FAT16 and FAT32	
<b>Stereo</b>		Nicam 2 carrier system	
<b>Visible Screen Size</b> (H x V mm)(approx.)	Model	19	409.80 x 230.40
		22	477.42 x 268.42
		26	575.77 x 323.71
		32	698.40 x 392.85
		40	885.60 x 498.15
<b>Display</b>		16:9	
<b>Sound output</b> (at 10% distortion)	Model	19	3.5W + 3.5W
		22	3.5W + 3.5W
		26	5W + 5W
		32	10W + 10W
		40	10W + 10W
<b>Power consumption</b> as specified in EN60085:2002	Model	19	40W
		22	55W
		26	90W
		32	105W
		40	160W

<b>Standby (approx.)</b>	Model	19	0.5W
		22	0.5W
		26	0.5W
		32	0.5W
		40	0.5W
<b>Dimensions</b> (H x W x D mm) (approx.)	Model	19	365.8 x 480.5 x 192.8
		22	408.7 x 555.3 x 212.0
		26	474.6 x 665.4 x 265.2
		32	578.2 x 798.9 x 271.4
		40	703.0 x 992.8 x 282.9
(Height dimension includes foot stand)			
<b>Weight (approx.)</b>	Model	19	5.0 kg
		22	5.5 kg
		26	9.0 kg
		32	12.5 kg
		40	18.5 kg
(weight includes foot stand)			
<b>Headphone socket</b>		R3.5mm stereo	
<b>Operating condition</b>		Temperature 5 °C - 35 °C (41 °F - 94 °F) Humidity : 20 - 80% (non-condensing)	