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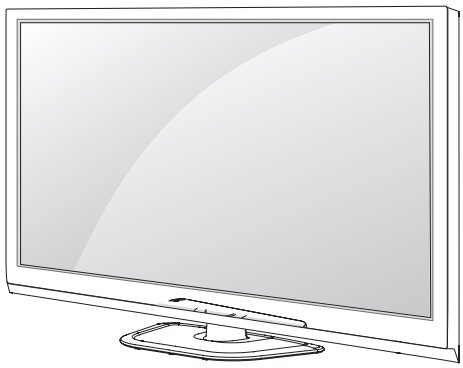
Life's Good

# 液晶电视机
# 维修手册

系列 :LC41U

型号名： 55UB8800-CE

注意：
维修电视机以前请仔细阅读本维修手册



P/NO ：MFL68084509 (1404-REV00)

中国印刷

# 目 录

目录 ..... 2

安全预防措施 ..... 3

规格性能 ..... 6

软件升级 ..... 15

方框图 ..... 17

分解图 ..... 30

电路图 . ..... 31

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仅限LG 电子内部使用

# 安全预防措施

## 重要安全警告

显示器内有对安全很重要的特殊元件，在原理图中这些元件用 ⚠ 标出。
必须用制造商指定的文件来替代这些重要部品以防止X辐射、电击、火灾或其它危害是必不可少的。
没有制造商的允许，不要更改原始设计。

## 一般说明

在底盘与AC电压线接触的接收器使用时常常会用到隔离变压器。使用适当额定电压的变压器可保护技术人员免受电击的伤害。
它也可以保护接收器及其零件免被击穿，这样还可以防止意外操作导致短路。
如果TV接收机里的任何保险丝(或易熔电阻)被烧断，请用同样规格的部品替换。
当替换大功率电阻(金属氧化膜电阻,大于1W)时，使电阻远离PCB 10mm。
使电线远离高压和高温部品。

## 将电视交给用户之前

检查金属帽、天线、接线端等的金属暴露的地方的交流电压的漏电情况，确保对其进行操作时不会受到电击。

## 漏电流常温检查（天线常温检查）

把电视机的电源插头从交流电源插座中拔下来，用导线将交流插头的两端连接。置交流开关于接通位置，将欧姆表的一根引线接到交流插头的端头后拧在一起，并用欧姆表的另一根引线依次点触裸露的金属件，诸如天线端头，耳机插孔等等。
当裸露的金属件与机壳构成回路时，则测得的电阻应在1MΩ和5.2MΩ之间。
当裸露的金属件与机壳没有构成回路时，其读数应是无穷大。
在将电视机交给用户之前，如存在异常情况，必须进行修复。

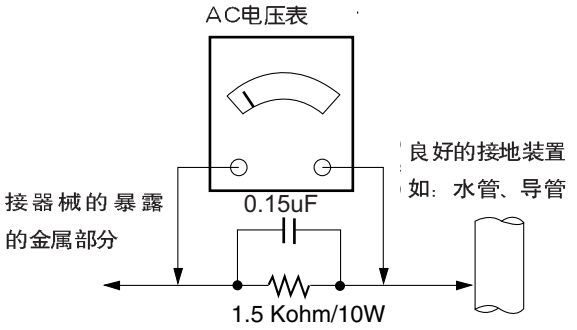
## 漏电流高温检查（见下图）

把交流电线直接插在交流电源插座上。

## 在检查时请勿使用绝缘变压器

在好的接地物(水管、导管等)和裸露的金属物的两端并联上一个 1.5 K / 10 的电容和一个 0.15 uF 的电容。
通过使用敏感度为 1000 ohms/volt 或更高敏感度的交流电压表测量电阻两端的电压来测定交流电压。
把AC电线反向插入AC插座中，重新测量每个裸露的金属部分的AC电压。每个测得的电压都不能超过0.75 volt RMS (对应于0.5mA)
如果测量值超过了规定值,就会有电击的危险。所以在将电视机交给用户之前必须检查和修理。

## 漏电流高温检查电路




当良好的接地装置和接器械的暴露的金属部分的电流为25A保持1秒钟的时候，阻抗必须小于0.1Ω

# 设备维护

**警告:**在进行本手册及其附件所包含的范围内的服务时,阅读本手册并遵照本刊物的第三页的安全预防措施进行。

**注意:** 如果意外情况造成以下服务指南与本手册中第三页的任何安全预防措施相抵触,请遵照安全预防措施。记住:安全第一。

## 一般的服务指南

1. 在把 AC 电源接收器插头从 AC 电源上拔下来之前:
   a. 移开或重新安装所有的零件,电路板模具和其它的接收器。
   b. 断开或重新连接任何接收机的插头或其他的电连接。
   c. 在接收机中连接一个与电解电容器并联的试验品。
   **注意:** 电解电容器的替代部品错误或者安装极性不正确都可能引起爆炸。
2. 仅仅通过配备适当的高电压的仪表或其它装有适当的高电压探测仪的电压测定装置 (DVM,FETVOM 等等)。
   不要"画圆弧"试验高电压。
3. 不要在接收器和它的装配零件上或者附近喷射化学剂。
4. 除非在这服务手册中被特别指定,清洁带电部件只可以使用以下混合物配合管状洁具、棉签或者无研磨剂的可用物:10%(体积)丙酮和 90%(体积)异丙基酒精 (90%–99%强度)
   **注意:**这是一个可燃性混合物。
   除非在这本手册中有特别说明, 否则不可以使用接触性润滑油。
5. 不要损坏任何插头/插座的 $B^+$电压联动装置,该手册中提到的接收器和该联动装置都将被包装。
6. 除非全部固体物理装置的热洗涤槽都正确地被安装,否则不要把 AC 电源加载到这个器械和/或着它的任何带电装置。
7. 在连接测试接收器的正极之前,请先把测试接收器的地线连接到接收器的接地底座。
   总是最后除掉试验接收机的地线。
8. 只可以使用在服务手册中特别说明的测试固定装置配合接收器使用。
   **注意:** 不要把试验固定物接地线连接到这接收机中的任何洗涤槽上。

## 静电感应(ES)装置

一些(固态)半导体装置很容易受静电的损害。这样的组成部分通常被叫做静电感应(ES)装置。典型的 ES 装置是集成电路和一些场效应晶体管和半导体 "芯片" 组成部分。下列技术应该被用来帮助减少静电对零件的组成部分损害的发生率。

1. 在使用任何半导体组成部分或装有半导体的部件之前,通过触摸地面释放加在你身体的静电。 可能的话通过佩戴静电手腕,它可以通过把电传给某单元来防止可能的电击。
2. 在除掉备有 ES 装置的电部件之后,把部件放到类似铝箔的传导性的表面上防止部件的静电加强或曝露。
3. 只可以使用接地焊铁焊接或分离 ES 装置。
4. 只可以使用抗静电的焊铁排除装置。一些焊铁排除装置不是典型的"抗静电"装置产生的静电完全能够损害 ES 装置。
5. 不要使用含氟里昂的化学制品。这些产生的静电完全能够损害 ES 装置。
6. 在准备安装 ES 装置之前不要从其保护性的包中立即除掉替换 ES 装置 (大多数被替换 ES 装置包装的传导性的泡沫,铝箔或传导性的材料被一起短路了)。
7. 在从替换 ES 装置中除掉保护性的材料之前,使保护性的材料接触到装置将被安装的底盘或电路部件。
   **注意:**确保底盘和电路部件上没有加载电压,并注意其它安全预防措施。
8. 当搬运未包装的替换 ES 装置的时候,把身体的运动减少到最小。(其它的无害的运动如来自铺地毯的地板和衣服之间的摩擦产生的静电完全能够损害 ES 装置。)

## 一般焊接指南

1. 使用接地的低功率焊铁和适当尺寸和形状的焊条尖部将维持尖端的温度在 500℉到 600℉的范围内。
2. 使用由 60%的锡和 40%的石墨组成的 RMA 核心为树脂的焊料测量表。
3. 保持焊铁尖端清洁和涂层完好。
4. 彻底地清洁被焊接的表面。使用有金属把柄的钢丝刷 (0.5 英寸,或者 1.25cm)。
   不要使用含氟里昂的喷射式清洁器。
5. 使用以下排除技术
   a. 允许焊铁尖端的正常温度范围为 500℉到 600℉。
   b. 把组成部分先加热直到锡焊融化。
   c. 迅速地用反静力,吸入–型的锡焊排除装置或者锡焊网提取融化的锡焊。
   **注意:** 工作时为了避免印刷了箔的电路板过热需动作迅速。
6. 使用以下焊接技术
   a. 允许焊铁尖端的正常温度范围为 500℉到 600℉。
   b. 首先,握住锡焊的尖端,使焊针对着组成部分的导线直到锡焊融化为止。
   c. 迅速地沿着组成部分的导线与印刷过的电路板的箔的连接处移动进行焊接, 停住直到锡焊在那里流出并且充满组成部分的导线和箔。
   **注意:** 工作时为了避免印刷了箔的电路板过热需动作迅速。
   d. 仔细检查焊接区域,用钢丝刷除去所有过量或者泼溅的锡焊。

### IC的除去/更换

一些底盘电路板有狭槽洞（长方形),IC 导线穿过这个洞插入,然后折弯在电路板上。当洞是狭槽型的时候,下列技术应该被用来除掉或者代替 IC。如果是熟悉的圆形洞,按上面段落 5 和 6 中略述的那样使用标准技术。

### 除去

1. 操作中当焊料融化时通过用焊铁轻轻地撬开导线除去并且弄直每根 IC 导线。
2. 用反静力的吸入–型的锡焊排除装置(或者锡焊网)除去融化的锡焊。

### 更换

1. 小心地把更换 IC 插入电路板。
2. 小心地把 IC 导线弄弯在电路箔板上,然后焊接。
3. 使用小钢丝刷清洁焊接区域(不需要再次用丙烯酸涂抹)。

### “小信号”离散晶体管的除去/更换

1. 通过尽可能地剪去其组成部分导线除掉损坏的晶体管。
2. 把残留在电路板上的三根导线的接头弯成“U”形。
3. 把更换的晶体管的导线弯成“U”形。
4. 把替换晶体管的导线接在从电路板扩展的对应的导线上,再用长鼻子老虎钳弯成“U”形使金属与金属接触,然后用锡焊联接每个接点。

### 电源输出,晶体管设备的除去/更换

1. 把晶体管导线周围的焊料加热并除去。
2. 除掉冷却安装螺丝(已经安装)。
3. 小心地从电路板地冷却装置上除去晶体管。
4. 在电路板上插入新的晶体管。
5. 焊接每个晶体管,然后剪掉多余的导线。
6. 更换冷却装置。

### 二极管的除去/更换

1. 通过尽可能地剪去其组成部分导线除掉损坏的二极管。
2. 把残留在电路板上的两根导线的接头弯到电路板上。
3. 观察二极管极性,把每个新二极管的导线与电路板上的相应的导线缠在一起。
4. 安全地卷曲每个连接处,再用锡焊联接。
5. 检查(电路板有铜的一侧)“最初的”导线的锡焊接合处。如果它们不光滑,把他们重新加热,并且如果必要,应用补充性的锡焊。

### 保险丝和普通电阻的除去/更换

1. 在电路板的空洞的凸起处裁剪每个保险丝或电阻器的导线。
2. 安全地卷曲凸起顶端的槽口周围的替换组成部分的导线。
3. 焊接连接处。

   **注意:**为了预防组成部分的温度过高,要维持代替组成部分、临近的组成部分和电路板之间的最初的间隔。

### 电路板箔的修理

对任何印制电路板的铜箔过度的加热都将削弱粘合剂(使箔粘在电路板上)的粘性,导致箔从电路板上脱落。无论遇到什么情况只要按照下列指导和步骤进行就可以了。

### 在 IC 连接处

在 IC 连接处修理损坏的铜使用以下方法来把跳线安装在电路板有铜的一侧上。(这仅仅适用于在 IC 处的连接)。

1. 慎重地用锋利的刀除掉损坏的铜箔。(尽可能的把所有的铜除去)。
2. 慎重地从剩下的铜的边缘开始刮去锡焊防腐剂和涂抹的丙烯酸(被使用)。
3. 把小的标准尺寸跳线的一末端弯成小的“U”形,小心地把它绕在 IC 脚上。用锡焊联接 IC 连接处。
4. 沿外边铜铺设跳线,使它与好铜箔的以前刮擦的边缘重叠。焊接重叠区域并剪去多余的跳线。

### 在其它连接处

使用以下技术来在 IC 脚外的其它连接处修理铜箔。这技术包括在电路板侧面的组成部件上安装跳线。

1. 慎重地用锋利的刀除掉损坏的铜箔。

   除掉至少 1/4 英寸的铜以保证即使跳线破开也不会存在危险。
2. 从破裂的铜的两面铺设铜,在直接接在受影响的铜上的零件安装在最近的地方。
3. 在最接近破裂的一边的部件的导线与另一边的最近的部件的导线之间连接绝缘的 20–标准尺寸的跳线。

   慎重地修剪和焊接联接处。

   **注意:**确认绝缘跳线的包装完好,使不会触摸到组成部分或锋利的刀刃。

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# 规格性能

## 1. 适用范围.

此规格仅适用于 LC41U 基板的 LG 液晶电视机

| Chassis | Model Name | Market Place | Brand | Remarks |
|---|---|---|---|---|
| LC41U/V | 65/79/84/98UB9800-CA<br>55/65UB9500-CA<br>49/55UB8800-CE<br>49/55UB8500-CA | China<br>(PAL/DTMB Market) | LGE | 3D & SMART |

## 2. 规格

**无特殊要求各个部品 按照如下方法测试**

**2.1温度 : 25±5℃ (77±9℉), CST : 40±5℃**

**2.2湿度: 65±10%**

**电压 标准输入电压(100~220V@ 50/60Hz), *每个型号的标准输入电压都在产品上有标注**

**2.1每个产品部品的规格和性能都与 BOM 中相应的 P/NO 的图纸和性能相同**

**2.2调整前, 接收器必须先操作 5 分钟**

## 3. 测试方法

3.1 性能:根据 LGE TV 测试标准

3.2 其它规格要求

安全: CE, IEC 规格

EMC : CE, IEC

| Model | Market | Appliance | Remarks |
|---|---|---|---|
| 65/79/84UB9800-CA<br>49/55UB8800-CE<br>49/55UB8500-CA | China/Hongkong<br>(PAL/DTMB Market) | Safety : IEC/EN60065<br>EMI : EN55013 (not for HONGKONG) | |

## 4. 产品规格

| No | Item | Specification | Measurement | Result | Remark |
|---|---|---|---|---|---|
| 1. | Market | China (PAL/DTMB Market) / Hong Kong | | | **DTV & Analog** |
| 2. | Broadcasting system | 1) PAL-I<br>2) PAL-DK<br>3) NTSC-M<br>4) DTMB<br>5) DVB-C(CHINA Only) | | | DTMB : DMB-T (Multi Carrier) + ADTB-T (Single Carrier) |

| No | Item | Specification | Measurement | Result | Remark |
|---|---|---|---|---|---|
| 3. | Program coverage | **FOR CHINA**<br>1)PAL-DK:VHF/UHF 1~62,<br>Cable:1~41<br>2). PAL-I: VHF/UHF 1~69<br>Cable:1~47<br>3). NTSC M: VHF/UHF 2~78<br>Cable:1~71<br>4). DTMB:1~62<br>5).DVB-C:52.5Mhz~866MShz | | | **FOR HONGKONG**<br>1)PAL-DK:VHF/UHF 1~69,<br>Cable:1~47<br>2). PAL-I: VHF/UHF 1~69<br>Cable:1~47<br>3). NTSC M: VHF/UHF 2~78<br>Cable:1~71<br>4). DTMB:21~69 |
| 4. | Receiving system | Analog : Upper Heterodyne<br>Digital : COFDM, QAM | | | ▶ **DTMB**<br>(Carrier, Code Rate, Constellation, Frame Header, Interleaving)<br>※China<br>- MODE1 : 3780, 0.4, 16QAM, PN945, 720, 9.626Mbps<br>- MODE2 : 1, 0.8, 4QAM, PN595, 720, 10.396Mbps<br>- MODE3 : 3780, 0.6, 16QAM, PN945, 720, 14.438Mbps<br>- MODE4 : 1, 0.8, 16QAM, PN595, 720, 20.791Mbps<br>- MODE5 : 3780, 0.8, 16QAM, PN420, 720, 21.658Mbps<br>- MODE6 : 3780, 0.6, 64QAM, PN420, 720, 24.365Mbps<br>- MODE7 : 1, 0.8, 32QAM, PN595, 720, 25.989Mbps<br>※ Hong Kong<br>- 3780, 0.4/0.6, 4/16/64QAM, PN945, 720<br>▶ **DVB-C**<br>- Symbolrate :<br>4.0Msymbols/s to 7.2Msymbols/s<br>- Modulation :<br>16QAM, 32-QAM, 64-QAM, 128-QAM and 256-QAM |
| 5. | Video Input (1EA) | PAL, NTSC | | | 4 System : PAL, SECAM, NTSC, PAL60<br>Rear (gender) |
| 6. | Component Input (1EA) | Y/Cb/Cr, Y/ Pb/Pr | | | Rear (gender) |
| 8. | HDMI Input (3EA) | PC(HDMI version 1.3) / DTV format, Support HDCP<br>HDMI1-ARC, HDMI2, HDMI3-MHL | | | Side |
| 9. | Audio Input(1EA) | Component, AV, DVI | | | Rear (AV Gender)<br>Component, AV and DVI use same jack. |
| 10 | SPDIF out(1EA) | Optical Audio out | | | Rear (1EA), |
| 11 | Analog audio out(1EA) | Headphone and External speaker out | | | Rear( 1EA) |
| 12 | USB Input(3EA) | EMF, DivX HD, For SVC (download) | | | Side JPEG, MP3, DivX HD<br>(USB 3.0 : 1EA, USB 2.0 : 2EA) |
| 13 | Ethernet | Lan Jack | | | |
| 14 | RGB Input | RGB-PC -> Spec Out | | | Analog(D-SUB 9Pin), only Debug |

## 5. 外部输入模式

分量输入 **(Y, PB, PR)**

| No | Resolution | H-freq.(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | Measurement | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1. | 720*480i | 15.73 | 59.94 | 13.500 | SDTV, DVD 480I(525I) | | | |
| 2 | 720*480i | 15.73 | 60.00 | 13.514 | SDTV, DVD 480I(525I) | | | |
| 3. | 720*576i | 15.625 | 50.00 | 13.500 | SDTV, DVD 576I(625I) 50Hz | | | |
| 4 | 720*480p | 31.47 | 59.94 | 27.000 | SDTV 480P | | | |
| 5 | 720*480p | 31.50 | 60.00 | 27.027 | SDTV 480P | | | |
| 6 | 720*576p | 31.25 | 50.00 | 27.000 | SDTV 576P 50Hz | | | |
| 7 | 1280*720 | 44.96 | 59.94 | 74.176 | HDTV 720P | | | |
| 8 | 1280*720 | 45.00 | 60.00 | 74.250 | HDTV 720P | | | |
| 9 | 1280*720 | 45.00 | 50.00 | 74.250 | HDTV 720P 50Hz | | | |
| 10 | 1920*1080 | 28.125 | 50.00 | 74.250 | HDTV 1080I 50Hz, | | | |
| 11 | 1920*1080 | 33.72 | 59.94 | 74.176 | HDTV 1080I | | | |
| 12 | 1920*1080 | 33.75 | 60.00 | 74.25 | HDTV 1080I | | | |
| 13 | 1920*1080 | 56.25 | 50 | 148.5 | HDTV 1080P | | | |
| 14 | 1920*1080 | 67.5 | 60.00 | 148.5 | HDTV 1080P | | | |

## 1. HDMI 输入

DTV 模式

| No | Resolution | H-freq.(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | Measurement | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 640*480 | 31.469 | 59.94 | 25.125 | SDTV 480P | | | |
| 2 | 640*480 | 31.5 | 60.00 | 25.125 | SDTV 480P | | | |
| 3 | 720*480 | 15.73 | 59.94 | 13.500 | SDTV, DVD 480I(525I) | | | |
| 4 | 720*480 | 15.75 | 60.00 | 13.514 | SDTV, DVD 480I(525I) | | | Spec. out but display |
| 5 | 720*576 | 15.625 | 50.00 | 13.500 | SDTV, DVD 576I(625I) 50Hz | | | |
| 6 | 720*480 | 31.47 | 59.94 | 27 | SDTV 480P | | | |
| 7 | 720*480 | 31.5 | 60.00 | 27.027 | SDTV 480P | | | |
| 8 | 720*576 | 31.25 | 50.00 | 27 | SDTV 576P | | | |
| 9 | 1280*720 | 44.96 | 59.94 | 74.176 | HDTV 720P | | | |
| 10 | 1280*720 | 45 | 60.00 | 74.25 | HDTV 720P | | | |
| 11 | 1280*720 | 37.5 | 50.00 | 74.25 | HDTV 720P | | | |
| 12 | 1920*1080 | 28.125 | 50.00 | 74.25 | HDTV 1080I | | | |
| 13 | 1920*1080 | 33.72 | 59.94 | 74.176 | HDTV 1080I | | | |
| 14 | 1920*1080 | 33.75 | 60.00 | 74.25 | HDTV 1080I | | | |
| 15 | 1920*1080 | 26.97 | 23.976 | 63.296 | HDTV 1080P | | | |
| 16 | 1920*1080 | 27.00 | 24.000 | 63.36 | HDTV 1080P | | | |
| 17 | 1920*1080 | 33.71 | 29.97 | 79.120 | HDTV 1080P | | | |
| 18 | 1920*1080 | 33.75 | 30.00 | 79.20 | HDTV 1080P | | | |
| 19 | 1920*1080 | 56.25 | 50.00 | 148.5 | HDTV 1080P | | | |
| 20 | 1920*1080 | 67.432 | 59.94 | 148.350 | HDTV 1080P | | | |
| 21 | 1920*1080 | 67.5 | 60.00 | 148.50 | HDTV 1080P | | | |
| 22 | 3840*2160 | 53.95 | 23.98 | 296.703 | UDTV 2160P | | | Only UD Model |
| 23 | 3840*2160 | 54 | 24.00 | 297.00 | UDTV 2160P | | | Only UD Model |
| 24 | 3840*2160 | 56.25 | 25.00 | 297.00 | UDTV 2160P | | | Only UD Model |

| No | Resolution | H-freq.(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | Measurement | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| 25 | 3840*2160 | 61.43 | 29.97 | 296.703 | UDTV 2160P | | | Only UD Model |
| 26 | 3840*2160 | 67.5 | 30.00 | 297.00 | UDTV 2160P | | | Only UD Model |
| 27 | 3840*2160 | 112.5 | 50.00 | 594 | UDTV 2160P | | | Only UD Model, Port3 |
| 28 | 3840*2160 | 135 | 59.94 | 593.407 | UDTV 2160P | | | Only UD Model, Port3 |
| 29 | 3840*2160 | 135 | 60.00 | 594 | UDTV 2160P | | | Only UD Model, Port3 |
| 30 | 4096*2160 | 53.95 | 23.98 | 296.703 | UDTV 2160P | | | Only UD Model |
| 31 | 4096*2160 | 54 | 24.00 | 297 | UDTV 2160P | | | Only UD Model |
| 32 | 4096*2160 | 56.25 | 25.00 | 297 | UDTV 2160P | | | Only UD Model |
| 33 | 4096*2160 | 61.43 | 29.97 | 296.703 | UDTV 2160P | | | Only UD Model |
| 34 | 4096*2160 | 67.5 | 30.00 | 297 | UDTV 2160P | | | Only UD Model |
| 35 | 4096*2160 | 112.5 | 50.00 | 594 | UDTV 2160P | | | Only UD Model, Port3 |
| 36 | 4096*2160 | 135 | 59.94 | 593.407 | UDTV 2160P | | | Only UD Model, Port3 |
| 37 | 4096*2160 | 135 | 60.00 | 594 | UDTV 2160P | | | Only UD Model, Port3 |

### PC 模式

| No | Resolution | H-freq.(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | Measurement | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 640*350 | 31.468 | 70.09 | 25.17 | EGA | | | |
| 2 | 720*400 | 31.469 | 70.08 | 28.32 | DOS | | | |
| 3 | 640*480 | 31.469 | 59.94 | 25.17 | VESA(VGA) | | | |
| 4 | 800*600 | 37.879 | 60.31 | 40 | VESA(SVGA) | | | |
| 5 | 1024*768 | 48.363 | 60.00 | 65 | VESA(XGA) | | | |
| 6 | 1360*768 | 47.712 | 60.015 | 84.75 | VESA(WXGA) | | | |
| 7 | 1152*864 | 54.348 | 60.053 | 80 | VESA | | | |
| 8 | 1280*1024 | 63.981 | 60.020 | 109.00 | SXGA | | | Support to HDMI-PC |
| 9 | 1920*1080 | 67.5 | 60 | 158.40 | WUXGA(Reduced Blanking) | | | |
| 10 | 3840*2160 | 54 | 24.00 | 297.00 | UDTV 2160P | | | Only UD Model |
| 11 | 3840*2160 | 56.25 | 25.00 | 297.00 | UDTV 2160P | | | Only UD Model |
| 12 | 3840*2160 | 67.5 | 30.00 | 297.00 | UDTV 2160P | | | Only UD Model |
| 13 | 4096*2160 | 53.95 | 23.97 | 296.703 | UDTV 2160P | | | Only UD Model |
| 14 | 4096*2160 | 54 | 24 | 297 | UDTV 2160P | | | Only UD Model |

## 3D 模式– DTV/HDMI/USB

### RF 输入

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | 3D input proposed mode |
|---|---|---|---|---|---|---|
| 1 | 1280*720 | 37.500 | 50 | 74.25 | HDTV 720P | 2D to 3D, Side by Side, Top & Bottom |

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | 3D input proposed mode |
|---|---|---|---|---|---|---|
| 2 | 1920*1080 | 28.125 | 50 | 74.25 | HDTV 1080I | 2D to 3D, Side by Side, Top & Bottom |

**HDMI 输入**

**(3D 手动支持模式)**

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | 3D input proposed mode |
|---|---|---|---|---|---|---|
| 1 | 720*480 | 31.5 | 60 | 27.03 | SDTV 480P | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Frame Sequential, Row Interleaving, Column Interleaving |
| 2 | 720*576 | 31.25 | 50 | 27 | SDTV 576P | |
| 3 | 1280*720 | 45.00 | 60.00 | 74.25 | HDTV 720P | |
| | | 37.500 | 50 | 74.25 | HDTV 720P | |
| 4 | 1920*1080 | 33.75 | 60.00 | 74.25 | HDTV 1080I | 2D to 3D, Side by Side(Half), Top & Bottom |
| | | 28.125 | 50.00 | 74.25 | HDTV 1080I | |
| 5 | 1920*1080 | 27.00 | 24.00 | 74.25 | HDTV 1080P | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Row Interleaving, Column Interleaving |
| | | 28.12 | 25 | 74.25 | HDTV 1080P | |
| | | 33.75 | 30.00 | 74.25 | HDTV 1080P | |
| | | 67.50 | 60.00 | 148.5 | HDTV 1080P | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Single Frame Sequential, Row Interleaving, Column Interleaving |
| | | 56.250 | 50 | 148.5 | HDTV 1080P | |
| 6 | 3840*2160 4096*2160 | 53.95 | 23.976 | 296.703 | HDTV 2160P | 2D to 3D, Top & Bottom(half), Side by Side(half), |
| | | 54 | 24.00 | 297.00 | | |
| | | 56.25 | 25.00 | 297.00 | | |
| | | 61.43 | 29.970 | 296.703 | | |
| | | 67.5 | 30.00 | 297.00 | | |
| 7 | 3840*2160 4096*2160 | 112.5 | 50 | 594 | HDTV 2160P HDTV 2160P | 2D to 3D, Top & Bottom(half), Side by Side(half), Port3 Only |
| 8 | | 135 | 60 | | | |

| | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | VIC | 3D input proposed mode | Proposed |
|---|---|---|---|---|---|---|---|
| 1 | 640*480 | 31.469 / 31.5 | 59.94/ 60 | 25.125/25.2 | 1 | Top-and-Bottom Side-by-side(half) | Secondary(SDTV 480P) Secondary(SDTV 480P) |
| | | 31.469 / 31.5 | 59.94/ 60 | 50.35/50.4 | 1 | Side-by-side(Full) | (SDTV 480P) |
| | | 62.938/63 | 59.94/ 60 | 50.35/50.4 | 1 | Frame packing Line alternative | Secondary(SDTV 480P) (SDTV 480P) |
| 2 | 720*480 | 31.469 / 31.5 | 59.94 / 60 | 27.00/27.03 | 2,3 | Top-and-Bottom Side-by-side(half) | Secondary(SDTV 480P) Secondary(SDTV 480P) |
| | | 31.469 / 31.5 | 59.94 / 60 | 54/54.06 | 2,3 | Side-by-side(Full) | (SDTV 480P) |

| | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | VIC | 3D input proposed mode | Proposed |
|---|---|---|---|---|---|---|---|
| | | 62.938/63 | 59.94 / 60 | 54/54.06 | 2,3 | Frame packing<br>Line alternative | Secondary(SDTV 480P)<br>(SDTV 480P) |
| 3 | 720*576 | 31.25 | 50 | 27 | 17,18 | Top-and-Bottom<br>Side-by-side(half) | Secondary(SDTV 576P)<br>Secondary(SDTV 576P) |
| | | 31.25 | 50 | 54 | 17,18 | Side-by-side(Full) | (SDTV 576P) |
| | | 62.5 | 50 | 54 | 17,18 | Frame packing<br>Line alternative | Secondary(SDTV 576P)<br>(SDTV 576P) |
| 4 | 720*576 | 15.625 | 50 | 27 | 21 | Frame packing<br>Field alternative<br>Side-by-side(Full)<br>Top-and-Bottom<br>Side-by-side(half) | Secondary(SDTV 576I)<br>(SDTV 576I<br>(SDTV 576I<br>Secondary(SDTV 576I)<br>Secondary(SDTV 576I) |
| 5 | 1280*720 | 37.500 | 50 | 74.25 | 19 | Top-and-Bottom<br>Side-by-side(half) | Primary(HDTV 720P)<br>Primary(HDTV 720P) |
| | | 37.500 | 50 | 148.5 | 19 | Side-by-side(Full) | (HDTV 720P) |
| | | 44.96 / 45 | 59.94 / 60 | 74.17/74.25 | 4 | Top-and-Bottom<br>Side-by-side(half) | Primary(HDTV 720P)<br>Primary(HDTV 720P) |
| | | 44.96 / 45 | 59.94 / 60 | 148.35/148.5 | 4 | Side-by-side(Full) | (HDTV 720P) |
| | | 75 | 50 | 148.5 | 19 | Frame packing<br>Line alternative | Primary(HDTV 720P)<br>(HDTV 720P) |
| | | 89.91/90 | 59.94 / 60 | 148.35/148.5 | 4 | Frame packing<br>Line alternative | Primary(HDTV 720P)<br>(HDTV 720P) |
| 6 | 1920*1080 | 28.125 | 50.00 | 74.25 | 20 | Top-and-Bottom<br>Side-by-side(half) | Secondary(HDTV 1080I)<br>Primary(HDTV 1080I) |
| | | 28.125 | 50.00 | 148.5 | 20 | Side-by-side(Full) | (HDTV 1080I) |
| | | 33.72 / 33.75 | 59.94 / 60 | 74.17/74.25 | 5 | Top-and-Bottom<br>Side-by-side(half) | Secondary(HDTV 1080I)<br>Primary(HDTV 1080I) |
| | | 33.72 / 33.75 | 59.94 / 60 | 148.35/148.5 | 5 | Side-by-side(Full) | (HDTV 1080I) |

| | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | VIC | 3D input proposed mode | Proposed |
|---|---|---|---|---|---|---|---|
| | | 56.25 | 50.00 | 148.5 | 20 | Frame packing Field alternative | Primary(HDTV 1080I) (HDTV 1080I) |
| | | 67.432/67.50 | 59.94 / 60 | 148.35/148.5 | 5 | Frame packing Field alternative | Primary(HDTV 1080I) (HDTV 1080I) |
| 7 | 1920*1080 | 26.97 / 27 | 23.97 / 24 | 74.17/74.25 | 32 | Top-and-Bottom Side-by-side(half) | Primary(HDTV 1080P) Primary(HDTV 1080P) |
| | | 26.97 / 27 | 23.97 / 24 | 148.35/148.5 | 32 | Side-by-side(Full) | (HDTV 1080P) |
| | | 28.125 | 25 | 74.25 | 33 | Top-and-Bottom Side-by-side(half) | Secondary(HDTV 1080P) Secondary(HDTV 1080P) |
| | | 28.125 | 25 | 148.5 | 33 | Side-by-side(Full) | (HDTV 1080P) |
| | | 33.716 / 33.75 | 29.976 / 30.00 | 74.18/74.25 | 34 | Top-and-Bottom Side-by-side(half) | Primary(HDTV 1080P) Secondary(HDTV 1080P) |
| | | 33.716 / 33.75 | 29.976 / 30.00 | 148.35/148.5 | 34 | Side-by-side(Full) | (HDTV 1080P) |
| | | 43.94/54 | 23.97 / 24 | 148.35/148.5 | 32 | Frame packing Line alternative | Primary(HDTV 1080P) (HDTV 1080P) |
| | | 56.25 | 25 | 148.5 | 33 | Frame packing Line alternative | Secondary(HDTV 1080P) (HDTV 1080P) |
| | | 67.432 / 67.5 | 29.976 / 30.00 | 148.35/148.5 | 34 | Frame packing Line alternative | Primary(HDTV 1080P) (HDTV 1080P) |
| | | 56.250 | 50 | 148.5 | 31 | Top-and-Bottom Side-by-side(half) | Primary(HDTV 1080P) Secondary(HDTV 1080P) |
| | | 67.43 / 67.5 | 59.94 / 60 | 148.35/148.50 | 16 | Top-and-Bottom Side-by-side(half) | Primary(HDTV 1080P) Secondary(HDTV 1080P) |

**HDMI-PC 输入 (3D) (3D 手动支持模式)**

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | 3D input proposed mode |
|---|---|---|---|---|---|---|
| 1 | 1024*768 | 48.36 | 60 | 65 | HDTV 768P | 2D to 3D, Side by Side(half), Top & Bottom |

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | 3D input proposed mode |
|---|---|---|---|---|---|---|
| 2 | 1360*768 | 47.71 | 60 | 85.5 | HDTV 768P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 3 | 1920*1080 | 67.500 | 60 | 148.50 | HDTV 1080P | 2D to 3D,<br>Side by Side(half), Top & Bottom,<br>Checker Board, Single Frame Sequential,<br>Row Interleaving, Column Interleaving |
| 4 | 3840*2160 | 54 | 24.00 | 297.00 | HDTV 2160P | 2D to 3D,<br>Top & Bottom(half), Side by Side(half), |
| | | 56.25 | 25.00 | 297.00 | | |
| | | 67.5 | 30.00 | 297.00 | | |
| 5 | 4096*2160 | 54 | 24 | 297.00 | HDTV 2160P | 2D to 3D,<br>Top & Bottom(half), Side by Side(half), |
| 6 | Others | - | - | - | 640*350<br>720*400<br>640*480<br>800*600<br>1152*864 | 2D to 3D,<br>Side by Side(half), Top & Bottom |

**分量输入 (3D) (3D 手动支持模式)**

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock | Proposed | 3D input proposed mode |
|---|---|---|---|---|---|---|
| 1 | 1280*720 | 37.5 | 50 | 74.25 | HDTV 720P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 2 | 1280*720 | 45.00 | 60.00 | 74.25 | HDTV 720P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 3 | 1280*720 | 44.96 | 59.94 | 74.176 | HDTV 720P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 4 | 1920*1080 | 33.75 | 60.00 | 74.25 | HDTV 1080I | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 5 | 1920*1080 | 33.72 | 59.94 | 74.176 | HDTV 1080I | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 6 | 1920*1080 | 28.12 | 50 | 74.25 | HDTV 1080I | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 7 | 1920*1080 | 67.500 | 60 | 148.50 | HDTV 1080P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 8 | 1920*1080 | 67.432 | 59.94 | 148.352 | HDTV 1080P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 9 | 1920*1080 | 27.000 | 24.000 | 74.25 | HDTV 1080P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 10 | 1920*1080 | 28.12 | 25 | 74.25 | HDTV 1080P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 11 | 1920*1080 | 56.25 | 50 | 74.25 | HDTV 1080P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 12 | 1920*1080 | 26.97 | 23.976 | 74.176 | HDTV 1080P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 13 | 1920*1080 | 33.75 | 30.000 | 74.25 | HDTV 1080P | 2D to 3D,<br>Side by Side(half), Top & Bottom |
| 14 | 1920*1080 | 33.71 | 29.97 | 74.176 | HDTV 1080P | 2D to 3D,<br>Side by Side(half), Top & Bottom |

**USB, DLNA – Movie (3D) (3D 手动支持模式)**

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | 3D input proposed mode |
|---|---|---|---|---|---|
| 1 | Under 704x480 | - | - | - | 2D to 3D |
| 2 | Over 704x480 Under 1080P interlaced | - | - | - | 2D to 3D, Side by Side(Half), Top & Bottom |
| 3 | Over 704x480 Under 1080P progressive | - | 50 / 60 | - | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Row Interleaving, Column Interleaving, Frame Sequential |
| 4 | | - | others | - | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Row Interleaving, Column Interleaving |
| 5 | Over 2160P | - | 24/25/30/50/60 | - | 2D to 3D, Side by Side(Half), Top & Bottom<br>USB Only |

**USB, DLNA -Photo (3D) (3D 手动支持模式)**

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | 3D input proposed mode |
|---|---|---|---|---|---|
| 1 | Under 320x240 | - | - | - | 2D to 3D |
| 2 | Over 320x240 | - | - | - | 2D to 3D, Side by Side(Half), Top & Bottom |

**USB, DLNA (3D) (3D 自动支持模式)**

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | 3D input proposed mode |
|---|---|---|---|---|---|
| 1 | 1080p | 33.75 | 30 | 74.25 | Side by Side(Half), Top & Bottom, Checker Board, |
| 2 | 2160p | 67.5 | 30 | 297 | MPO(Photo), JPS(Photo) |

**Miracast, Widi (3D 手动支持模式)**

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | 3D input proposed mode |
|---|---|---|---|---|---|
| 1 | 1024*768p | - | 30/60 | - | 2D to 3D, Side by Side(Half), Top & Bottom |
| 2 | 1280*720p | - | 30/60 | - | |
| 3 | 1920*1080p | - | 30/60 | - | |
| 4 | Others | - | - | - | 2D to 3D |

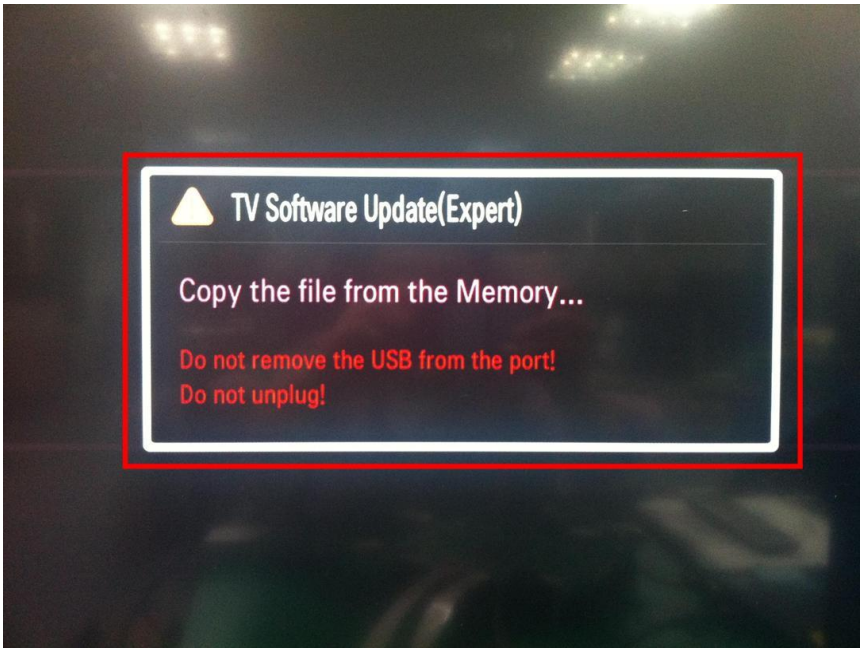
# 软件升级

*** USB 下载(*.epk 文件下载)**

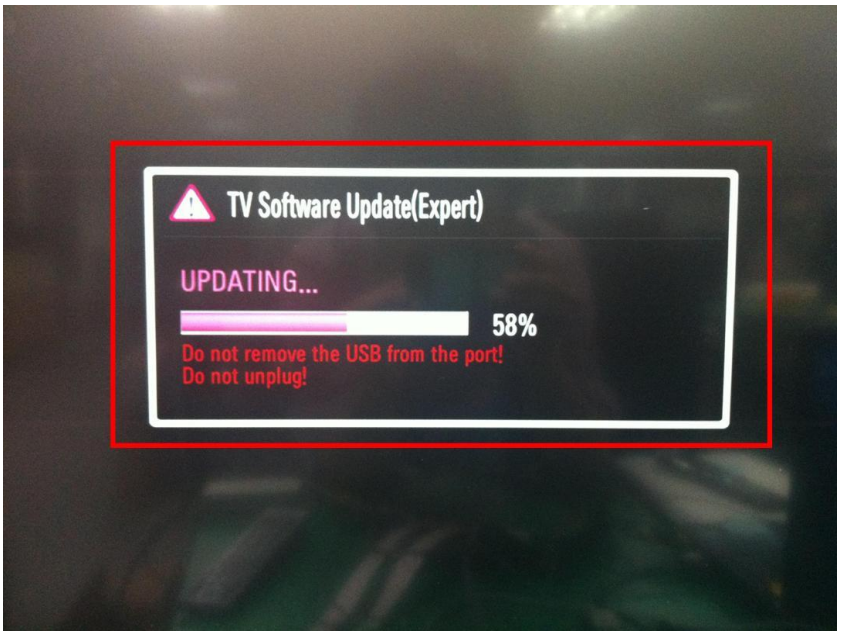
1. 插上存有新软件的USB
2. 自动检测到USB 中的软件升级

-如果USB 版本过低，将不能运行；如果高于现有版本，USB 数据就能自动检测到。

3. 显示消息如下，然后选择“Copying files from memory”




. 4. 软件开始更新




5. 更新结束后，电视将自动重启




6.电视机打开后，检查您的更新后的软件版本和Tool option. (下页将介绍Tool option)

*如果下载版本高于现有电视，电视会将原有的节目信息取消. 如果这样的话，您需要重新搜索节目频道。如果所有节目被清除，您不需要在生产线上进行DTV/ATV测试。

***下载结束后，您需要再调整TOOL OPTION.**

1. 按下工厂服务遥控器上的"IN-START"按键.
2. 选择"Tool Option 1" 然后按 "OK"按键.
3. 输入数字 (每个型号都有他们的数字.)

| Model | Module | Tool opt 1 | Tool opt 2 | Tool opt 3 | Tool opt 4 | Tool opt 5 | Tool opt 6 | Tool opt 7 | Area Code |
|---|---|---|---|---|---|---|---|---|---|
| 49UB8800-CE | LGD | 33796 | 62054 | 25259 | 64822 | 10406 | 2477 | 35467 | 13741 |
| 55UB8800-CE | LGD | 33798 | 62054 | 25259 | 64822 | 10406 | 2475 | 35467 | 13741 |

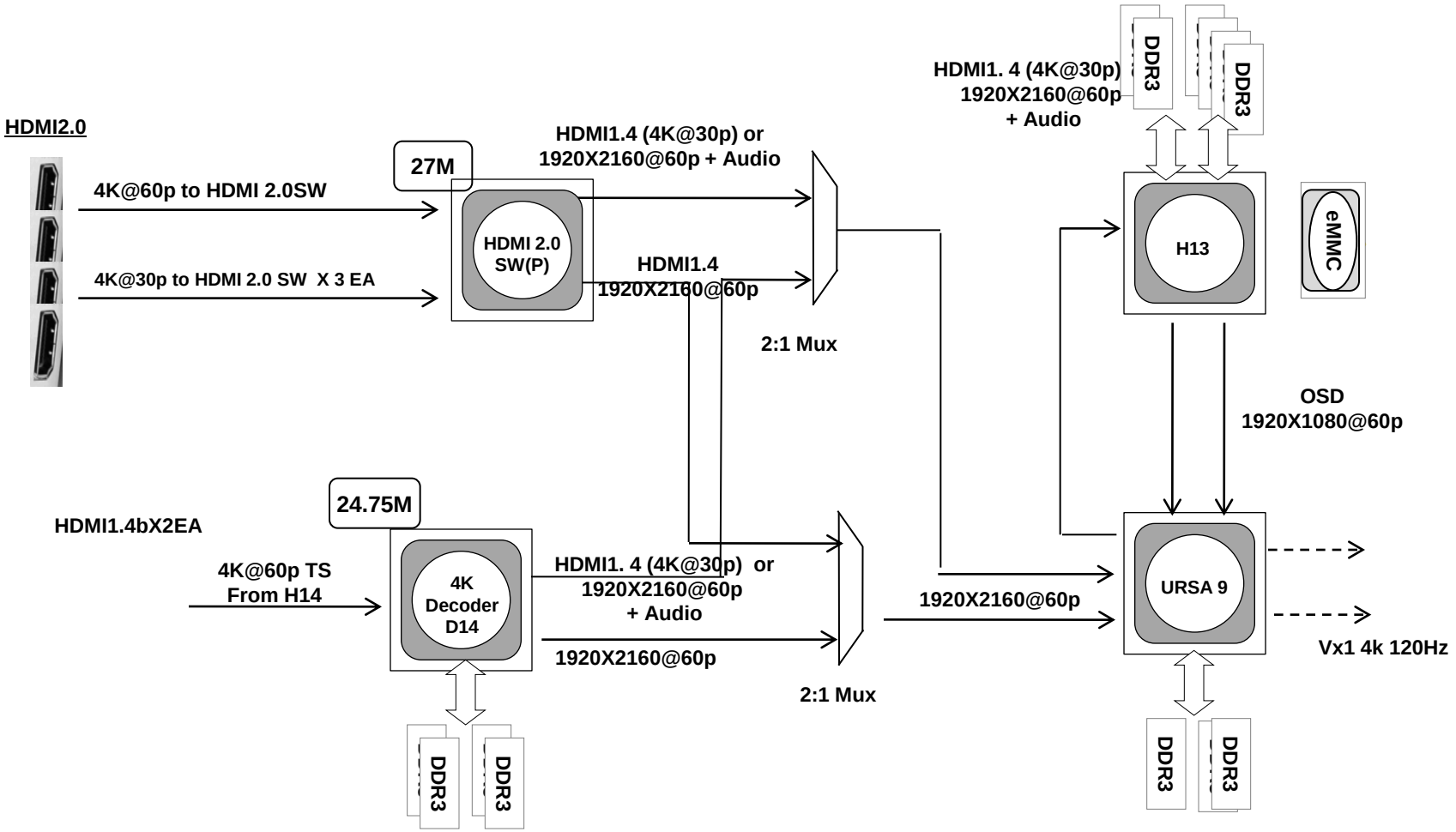
# 55UB8600-TA Block Diagram

## 목차


0. System Overview (Main External)
1. H13 Block Diagram (External)
2. H13 Block Diagram (Internal)
3. H13 Data Path Diagram
4. D14 Block Diagram (Internal)
5. B/E Block Diagram
6. Tuner
7. Video & Audio IN/OUT
8. Audio OUT
9. HDMI2.0
10. USB / Wi-Fi / M-REMOTE / UART
11. I2C Map (H13)

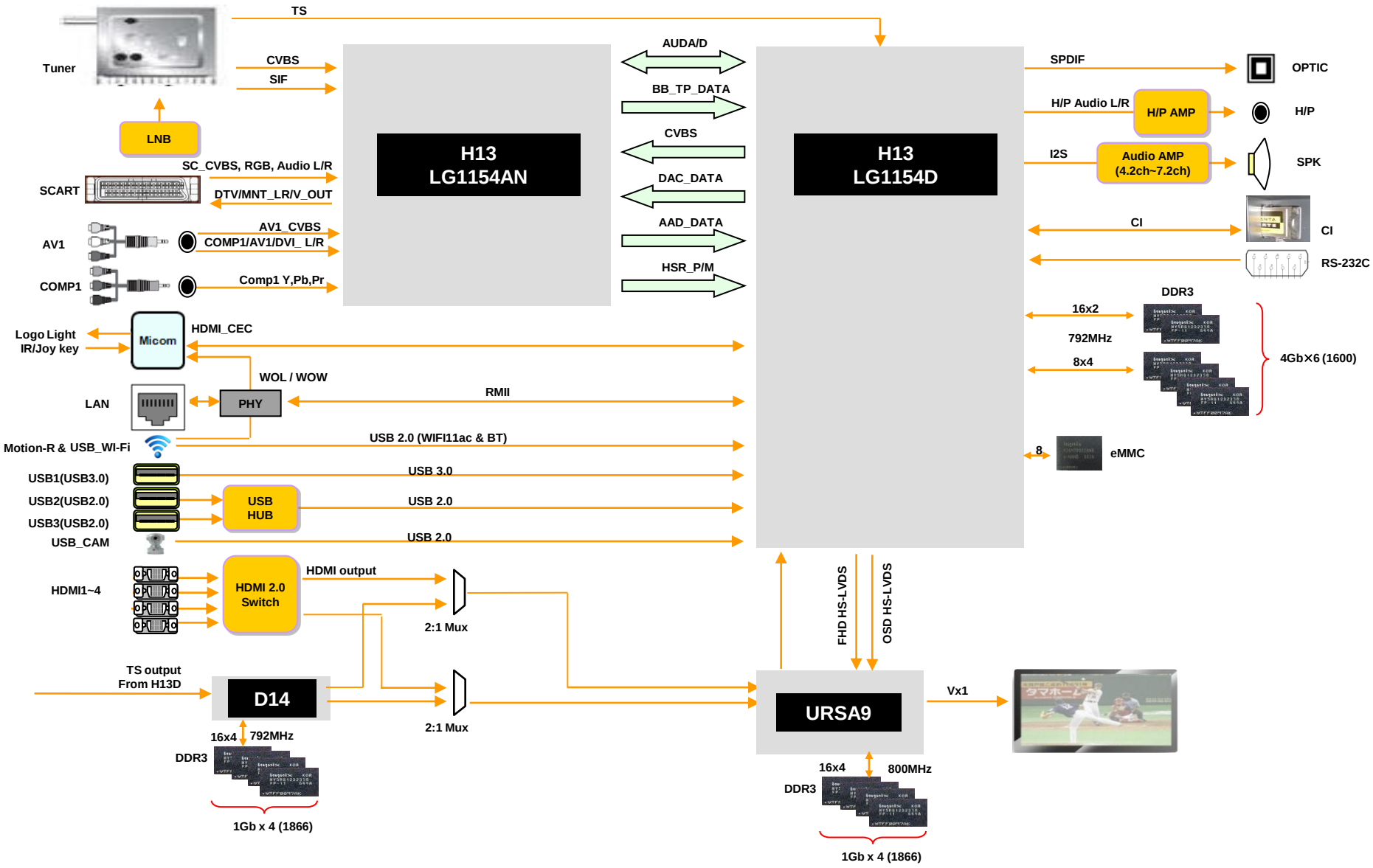
# 0. System Overview (Main External)

## ※ Main + Back-End 통합 보드 구성 (Back-End IC 1 chip 적용)

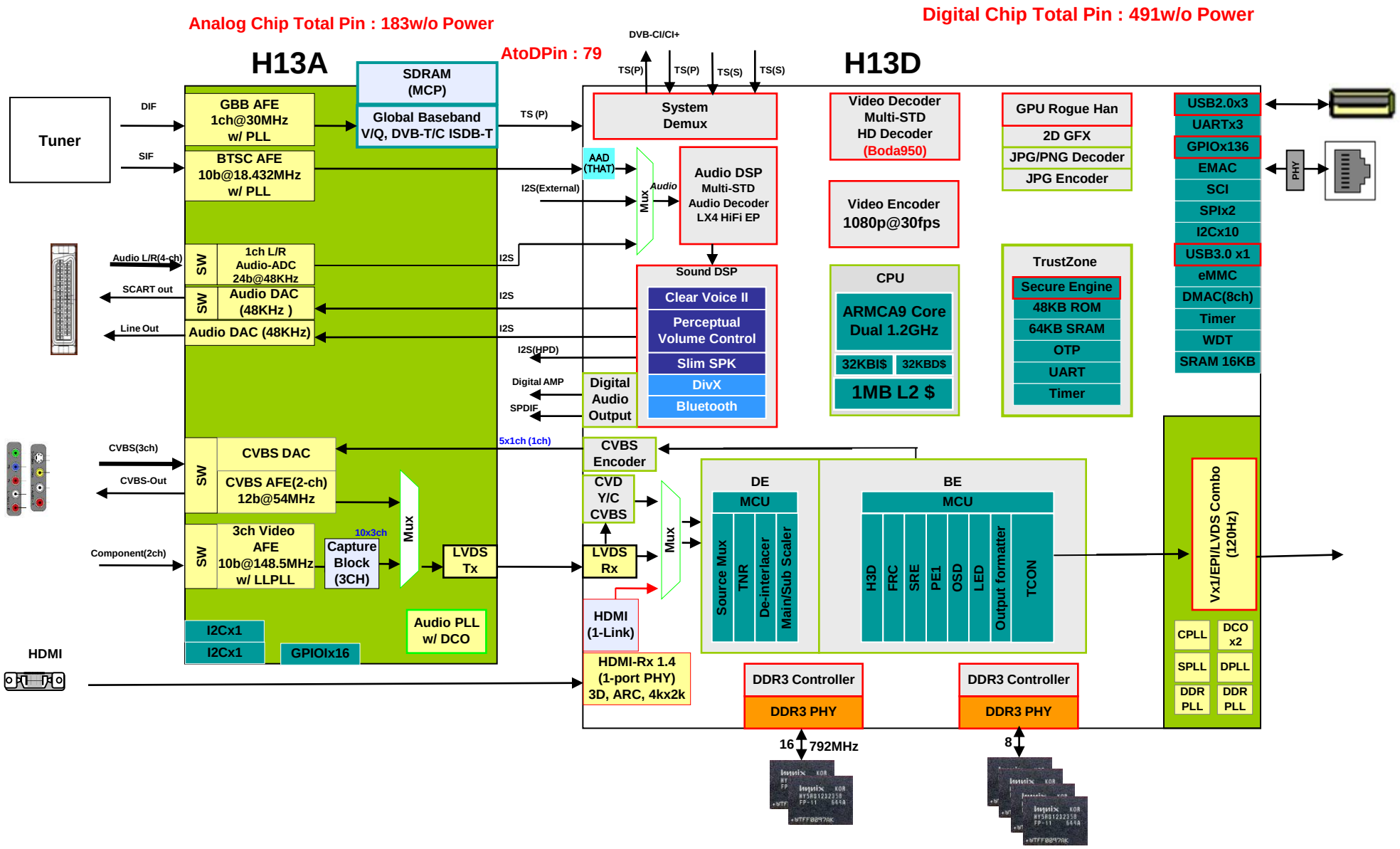



**Super Resolution**
**MEMC , 3D 등 기능 담당**

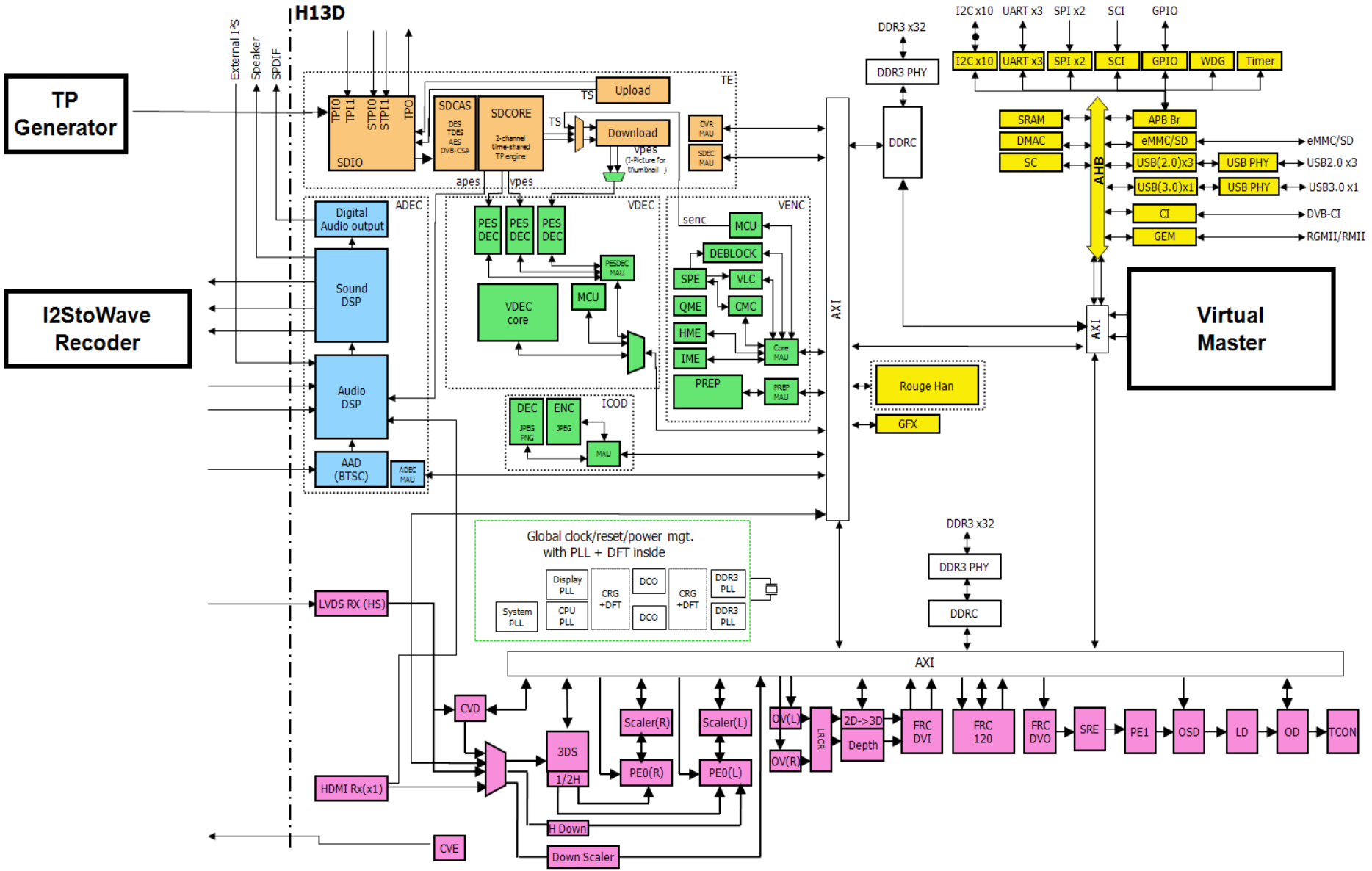
# 1. H13 UD Block Diagram (External)



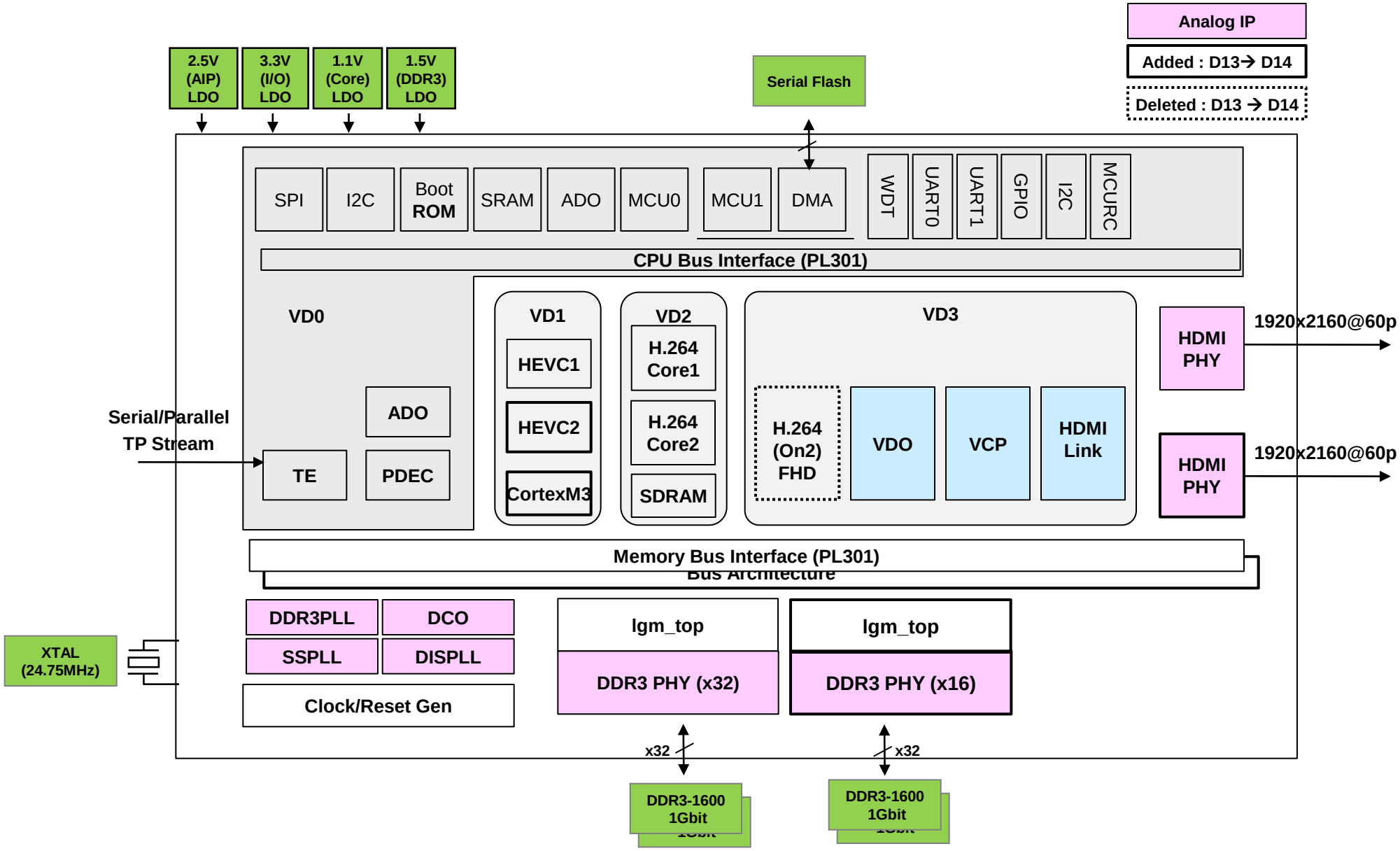
# 2. H13 UD Block Diagram (Internal)



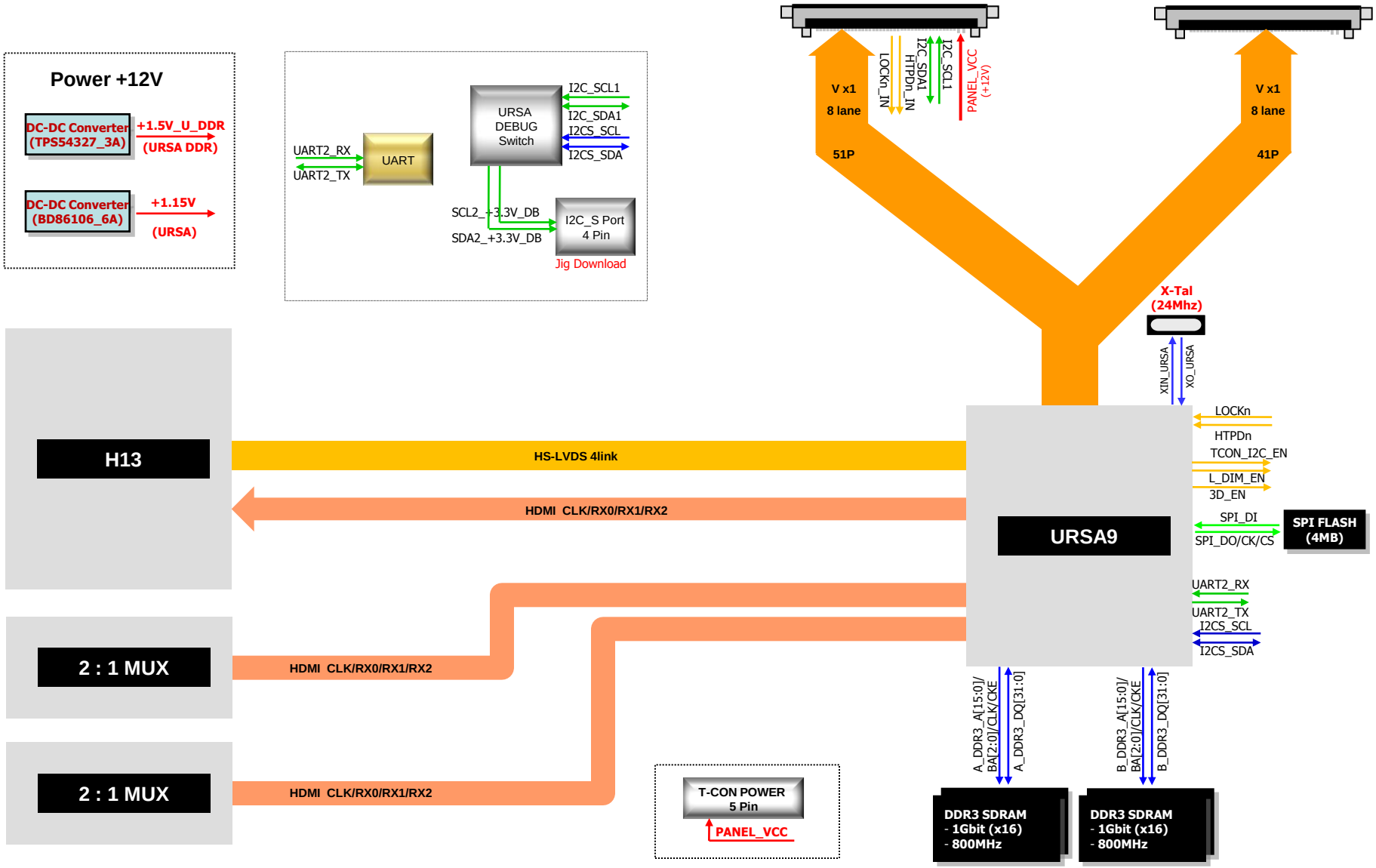
# 3. Data Path Diagram



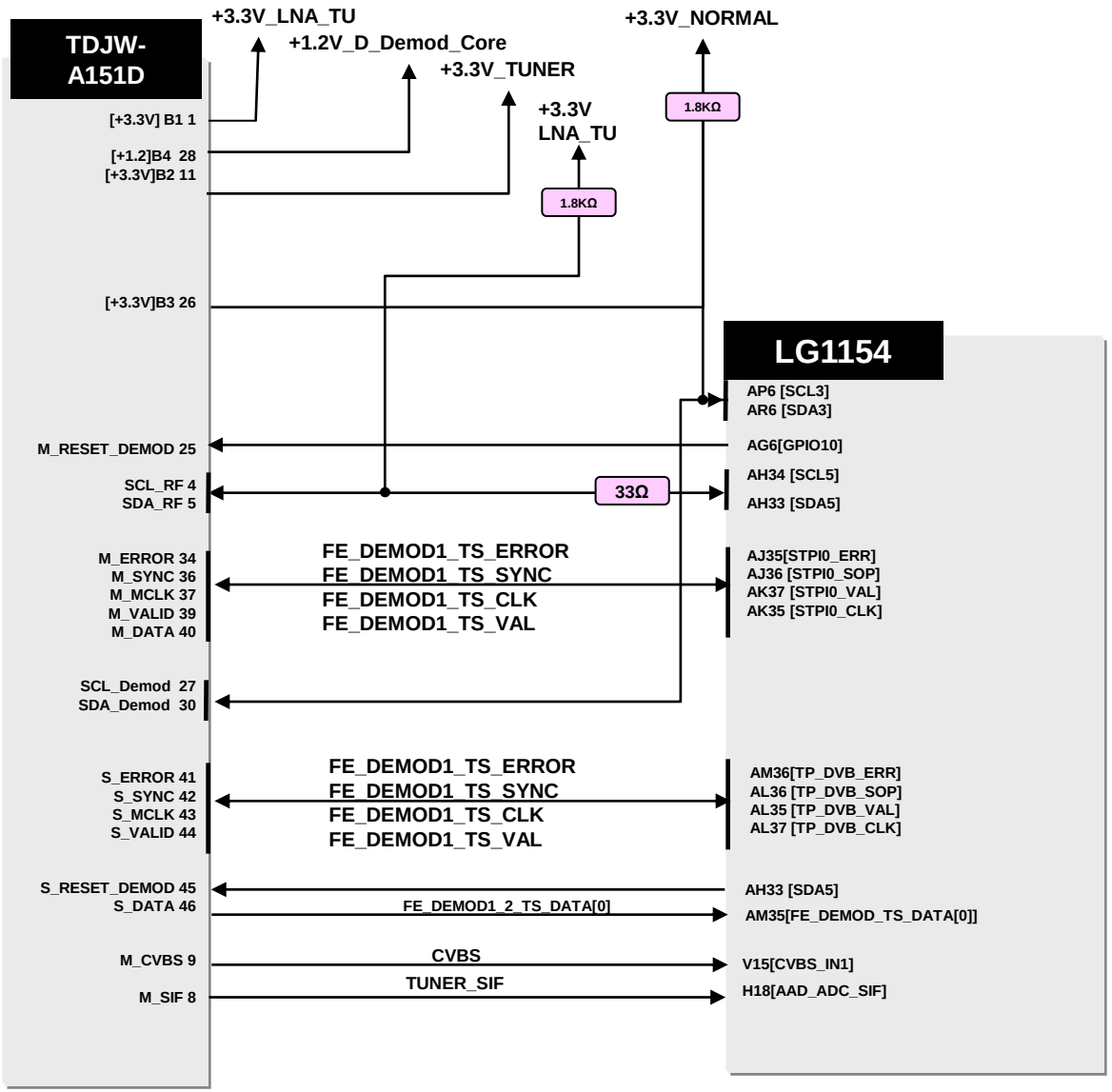
# 4. D14 Block Diagram (Internal)



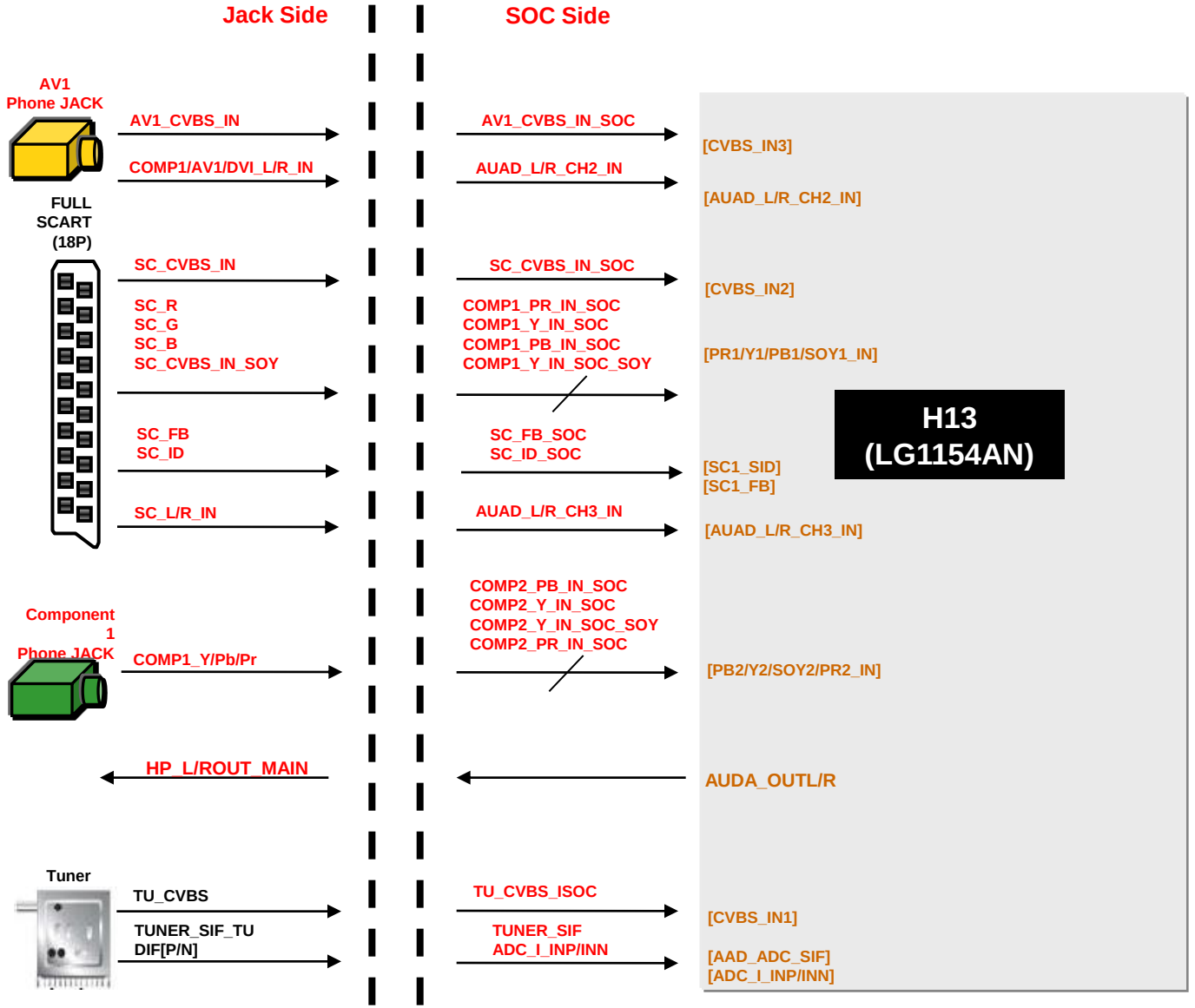
# 5. URSA9 B/E Board Block Diagram (EAX65684601 Rev1.0)



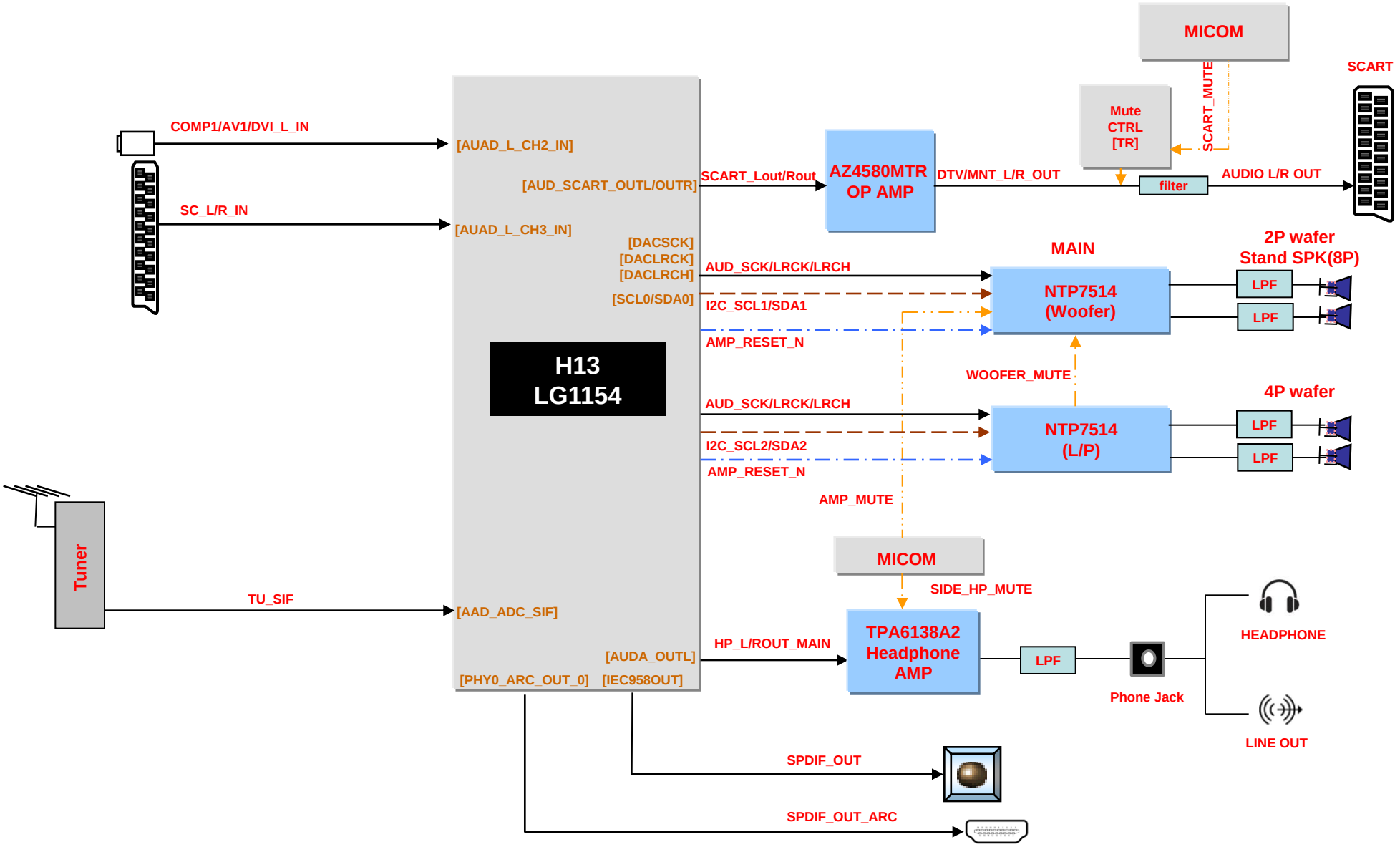
# 6. Tuner/CI Block Diagram



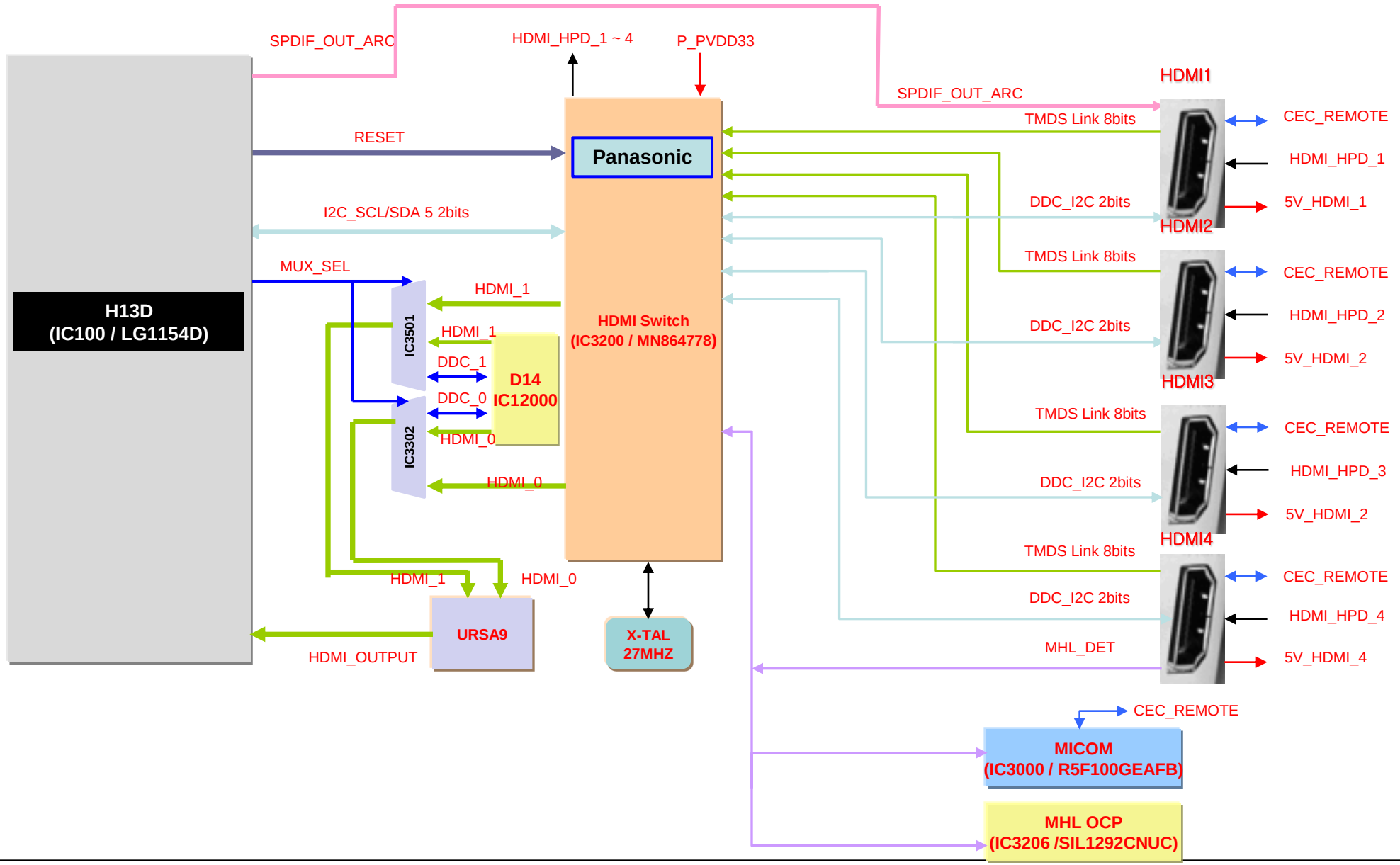
# 7. Video & Audio IN



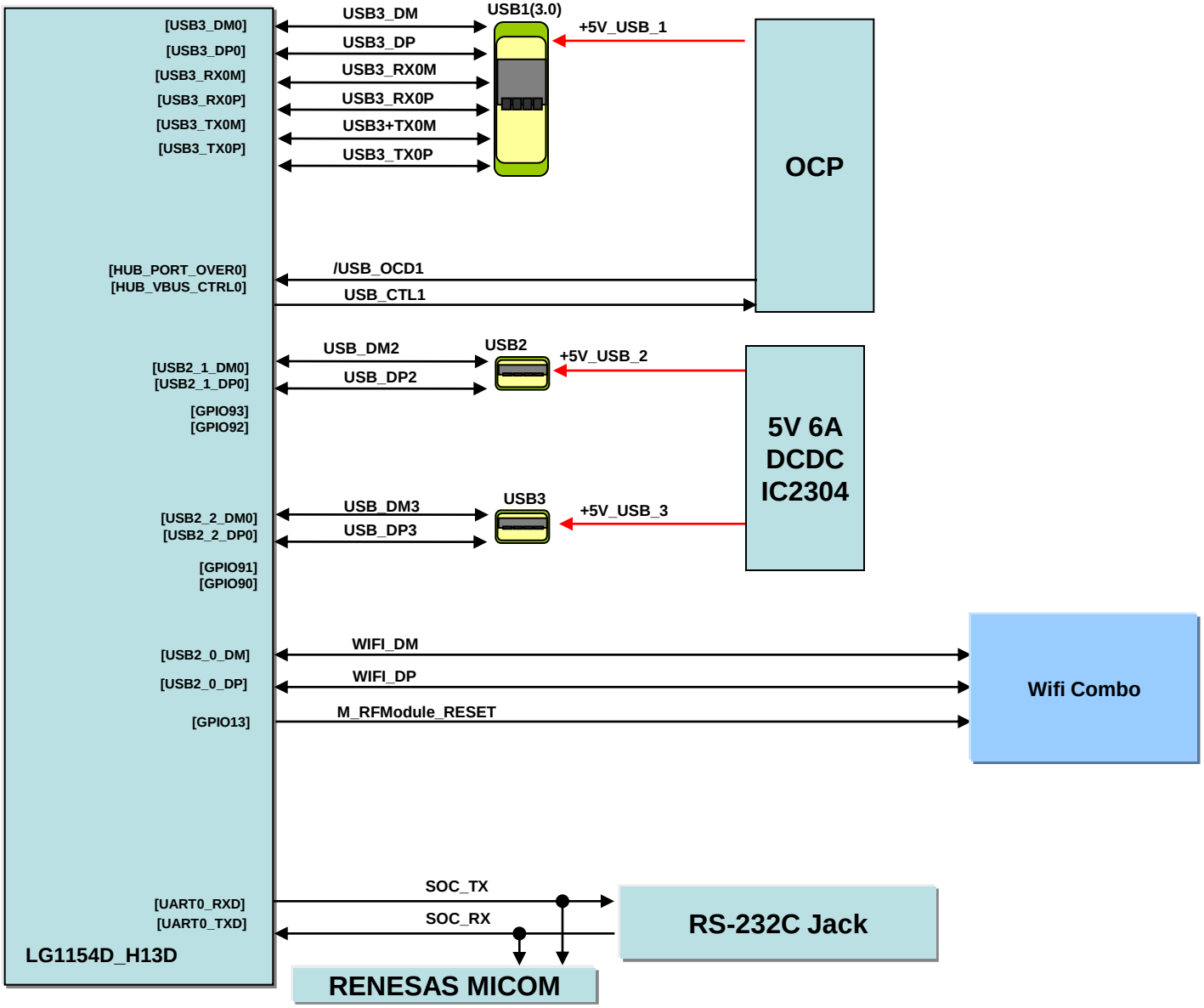
# 8. AUDIO OUT


MICOM
SCART_MUTE
SCART
Mute CTRL [TR]
COMP1/AV1/DVI_L_IN
[AUAD_L_CH2_IN]
[AUD_SCART_OUTL/OUTR]
SCART_Lout/Rout
AZ4580MTR OP AMP
DTV/MNT_L/R_OUT
filter
AUDIO L/R OUT
SC_L/R_IN
[AUAD_L_CH3_IN]
[DACSCK]
[DACLRCK]
[DACLRCH]
[SCL0/SDA0]
MAIN
2P wafer
Stand SPK(8P)
AUD_SCK/LRCK/LRCH
I2C_SCL1/SDA1
AMP_RESET_N
NTP7514 (Woofer)
LPF
LPF
H13
LG1154
WOOFER_MUTE
4P wafer
AUD_SCK/LRCK/LRCH
I2C_SCL2/SDA2
AMP_RESET_N
NTP7514 (L/P)
LPF
LPF
AMP_MUTE
MICOM
SIDE_HP_MUTE
Tuner
TU_SIF
[AAD_ADC_SIF]
HP_L/ROUT_MAIN
TPA6138A2 Headphone AMP
LPF
HEADPHONE
Phone Jack
LINE OUT
[AUDA_OUTL]
[PHY0_ARC_OUT_0]
[IEC958OUT]
SPDIF_OUT
SPDIF_OUT_ARC

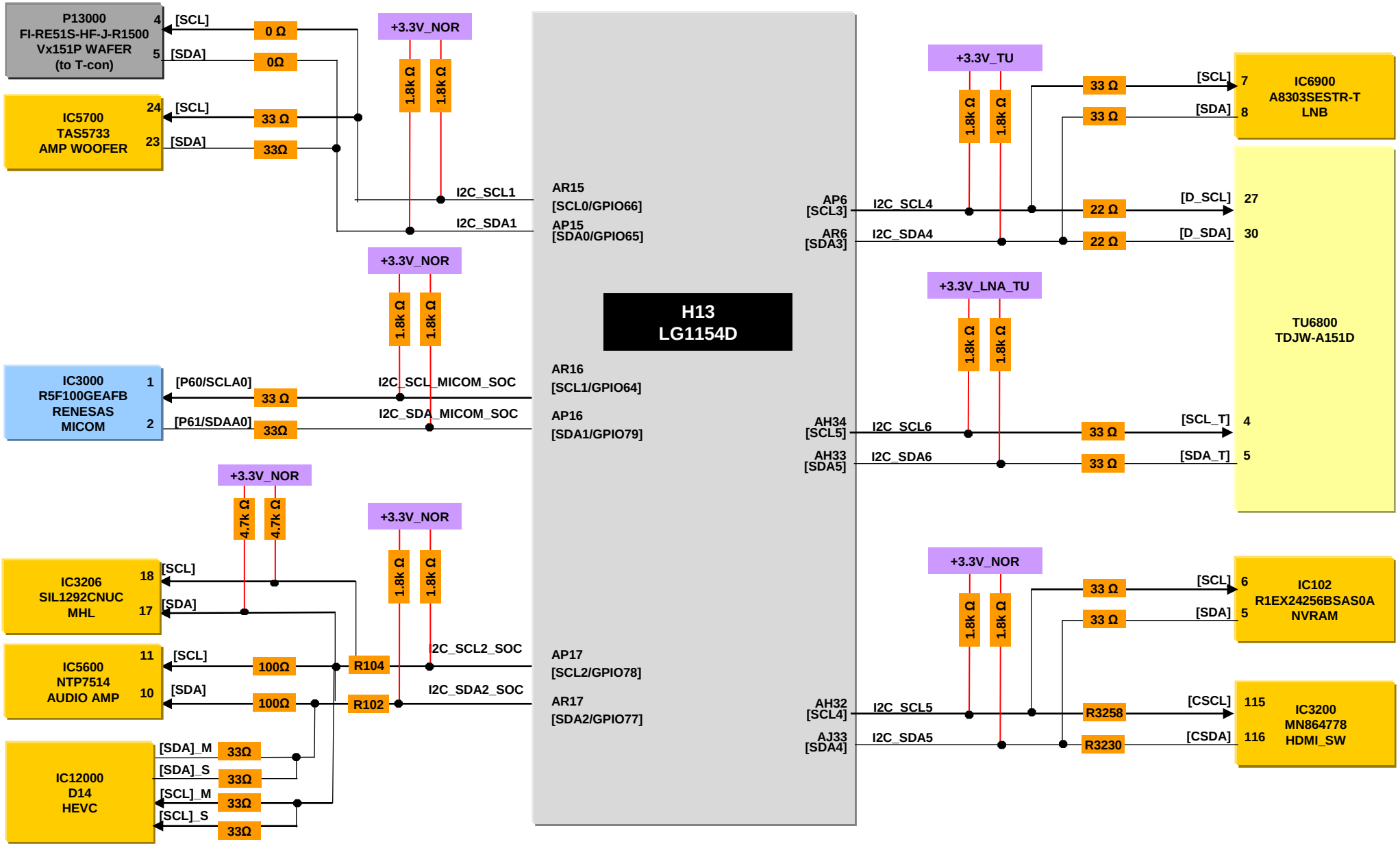
# 9. HDMI


SPDIF_OUT_ARC
HDMI_HPD_1 ~ 4
P_PVDD33
RESET
I2C_SCL/SDA 5 2bits
MUX_SEL
H13D
(IC100 / LG1154D)
Panasonic
HDMI Switch
(IC3200 / MN864778)
IC3501
IC3302
HDMI_1
HDMI_1
DDC_1
DDC_0
HDMI_0
HDMI_0
D14
IC12000
HDMI_1
HDMI_0
URSA9
HDMI_OUTPUT
X-TAL
27MHZ
HDMI1
SPDIF_OUT_ARC
TMDS Link 8bits
DDC_I2C 2bits
CEC_REMOTE
HDMI_HPD_1
5V_HDMI_1
HDMI2
TMDS Link 8bits
DDC_I2C 2bits
CEC_REMOTE
HDMI_HPD_2
5V_HDMI_2
HDMI3
TMDS Link 8bits
DDC_I2C 2bits
CEC_REMOTE
HDMI_HPD_3
5V_HDMI_2
HDMI4
TMDS Link 8bits
DDC_I2C 2bits
MHL_DET
CEC_REMOTE
HDMI_HPD_4
5V_HDMI_4
CEC_REMOTE
MICOM
(IC3000 / R5F100GEAFB)
MHL OCP
(IC3206 /SIL1292CNUC)

# 10. USB / WIFI / M-REMOTE / UART



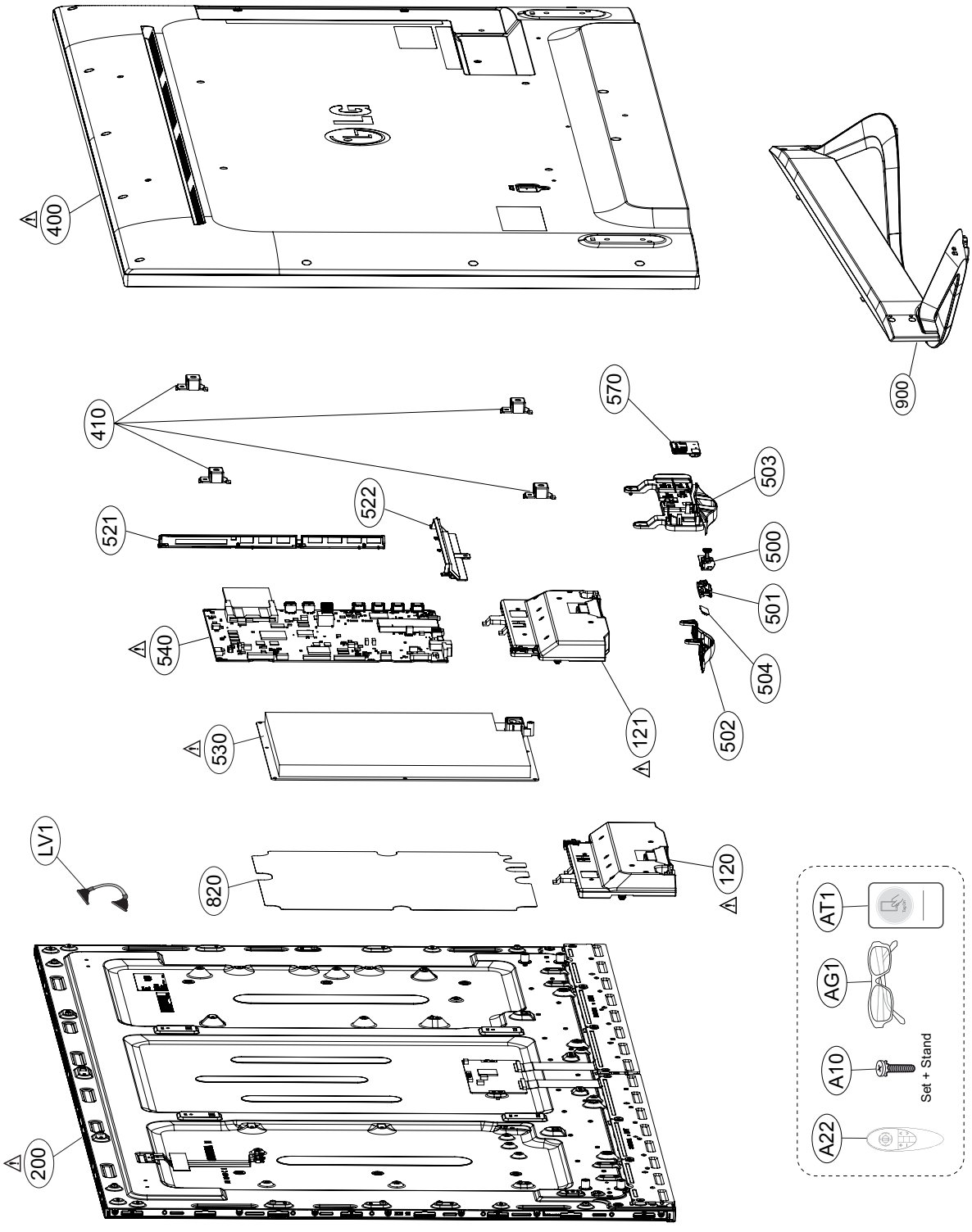
# 11. LG1154 I2C Map



# EXPLODED VIEW

**IMPORTANT SAFETY NOTICE**

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and EXPLODED VIEW.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

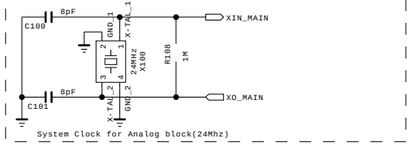


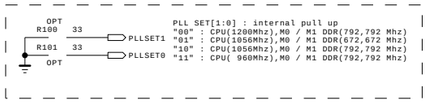

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LGE Internal Use Only

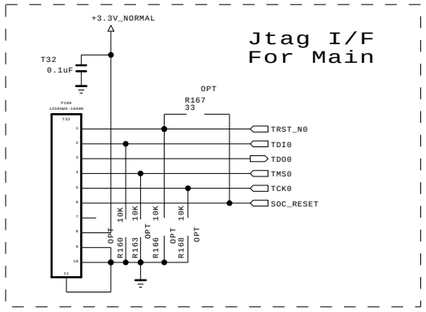
# System Configuration

## Clock for LG1154D

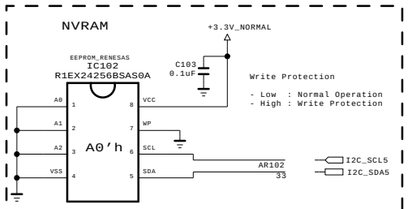


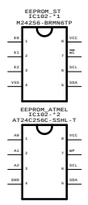



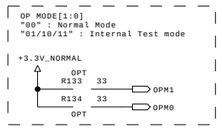

## Jtag I/F For Main

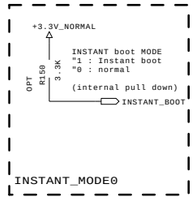


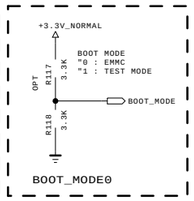

## NVRAM



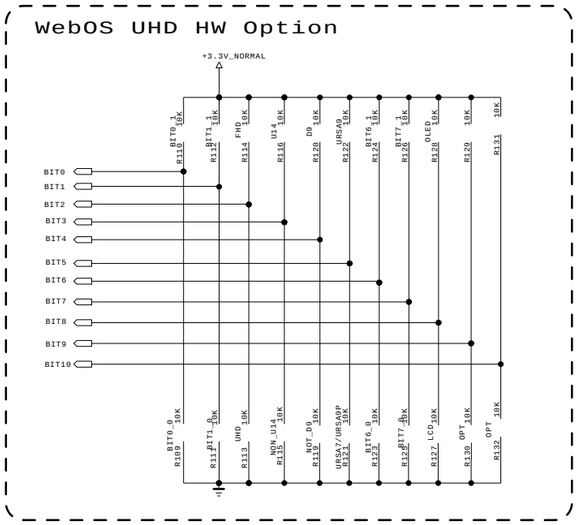




## WebOS UHD HW Option




20131016 version

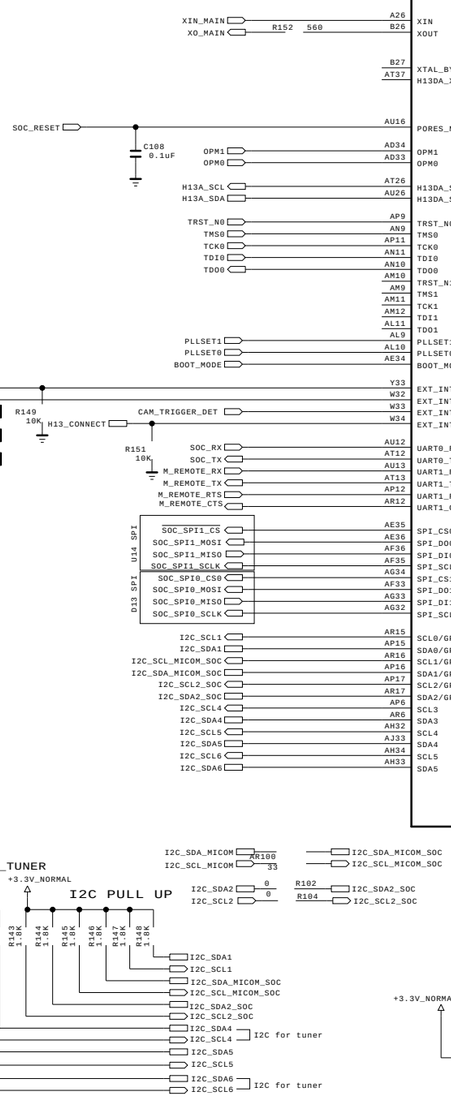
| BIT(0/1) | DVB | ATSC | JP |
|---|---|---|---|
| 00 | TW/COL | North.AM. | |
| 01 | CN/HK | KR | JP |
| 10 | EU | BR | |
| 11 | AJJA | | |

| | | High | Low |
|---|---|---|---|
| BIT2 | Resolution | FHD | UHD |
| BIT3 | Support U14 | U14 | Non_U14 |
| BIT4 | D9 Model | D9 | Non_D9 |
| BIT5 | URSA7/URSA9 | URSA9 | URSA7/URSA9P |

| BIT(6/7) | EU/CIS | AJJA | TW/COL | CN/HK | KR | North.AM | BR | JP |
|---|---|---|---|---|---|---|---|---|
| 00 | T/C | T/C | T/C | Default | ATSC_PIP | ATSC_PIP | ISDB_PIP | Default |
| 01 | T2/C/S2/ATV_EXT | T2/C_PIP | T2/C_PIP | | ATV_SOC | ATV_SOC | ISDB | |
| 10 | T2/C | T2/C | T2/C | | ATV_EXT | ATV_EXT | | |
| 11 | T2/C/S2/AT | T2/C/S2 | | | | | | |

| | | High | Low |
|---|---|---|---|
| BIT8 | Display | OLED | LCD |
| BIT9 | Reserved | | |
| BIT10 | Reserved | | |

# IC100 LG1154D_H13D




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

LG ELECTRONICS

BSD-14Y-UD-001-HD

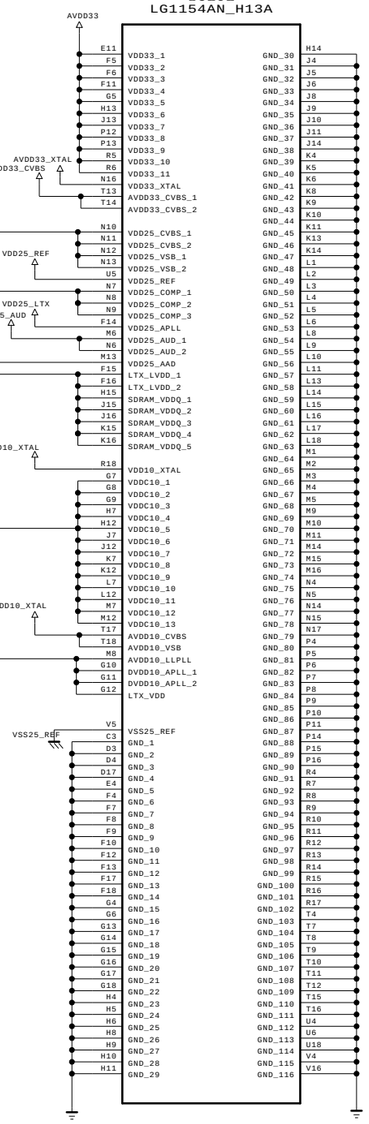
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|---|---|---|---|
| BLOCK | H13 D CHIP | SHEET | |

LG1154A LG1154D

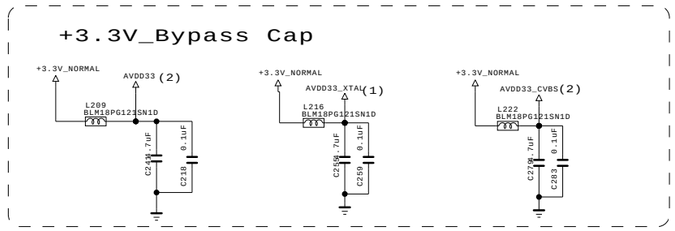
# LG1154A

## H13A_NON_BRAZIL

IC101
LG1154AN_H13A

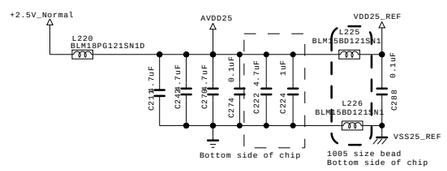


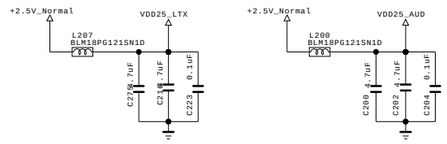

### +3.3V_Bypass Cap



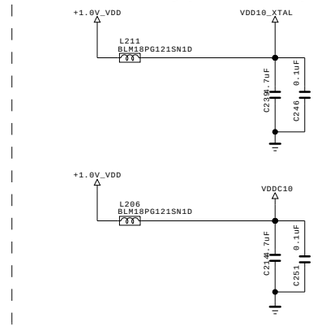

### +2.5V_Bypass Cap

AFE 3CH Power

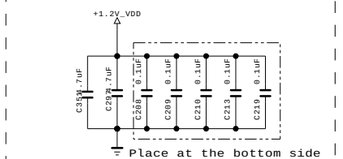


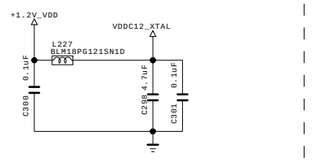



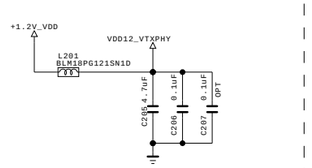

### +1.0V_Bypass Cap



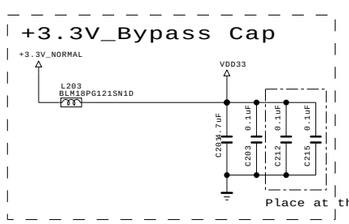

### +1.24V_Bypass Cap



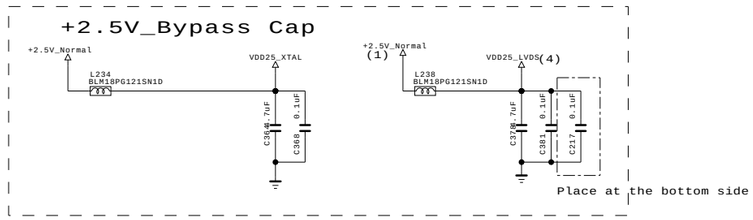



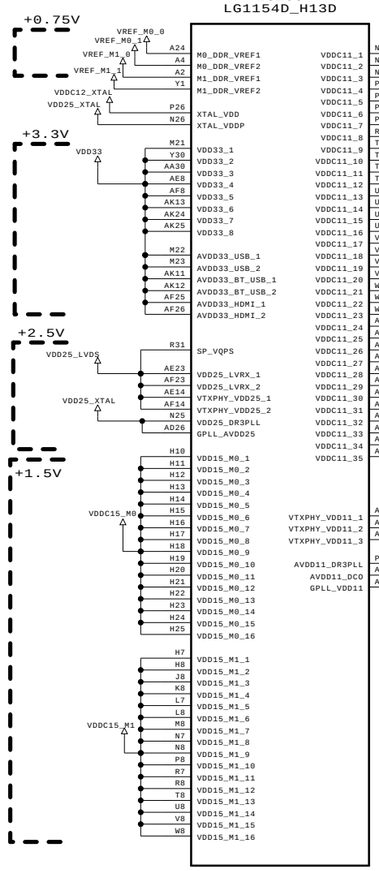

### +3.3V_Bypass Cap

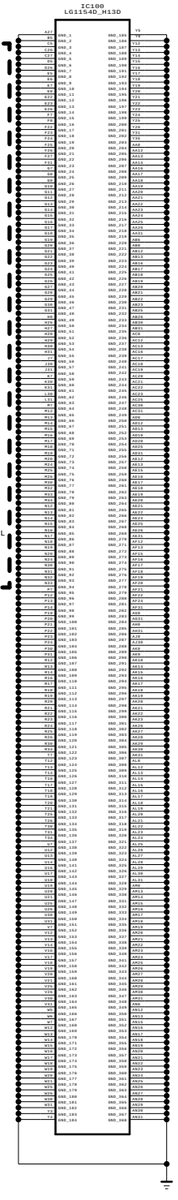


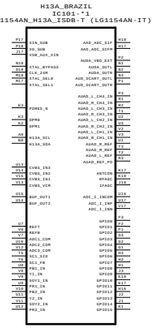

### +2.5V_Bypass Cap



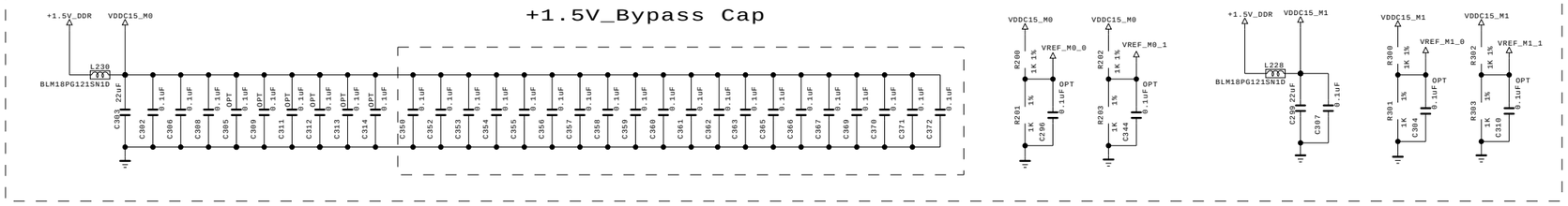

IC100
LG1154D_H13D



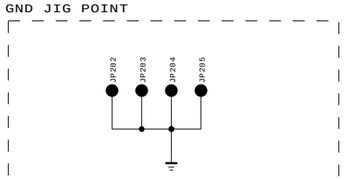



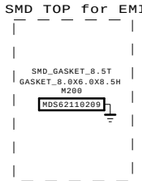

### +1.5V_Bypass Cap




GND JIG POINT




SMD TOP for EMI







THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

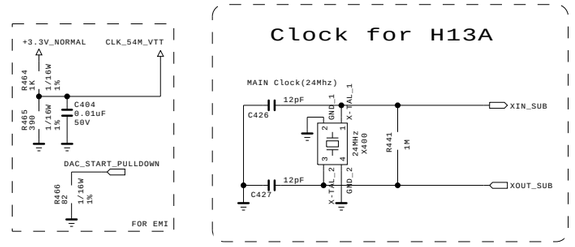
LG ELECTRONICS

BSD-14Y-UD-003-HD

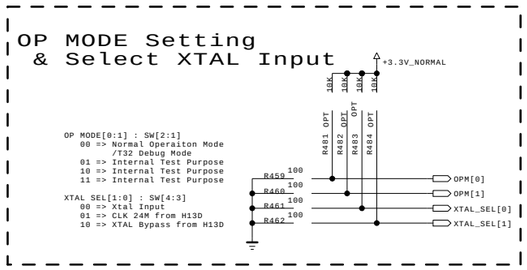
| MODEL | | DATE | 2013-12-17 |
|---|---|---|---|
| BLOCK | MAIN POWER | SHEET | / |

11/05/31

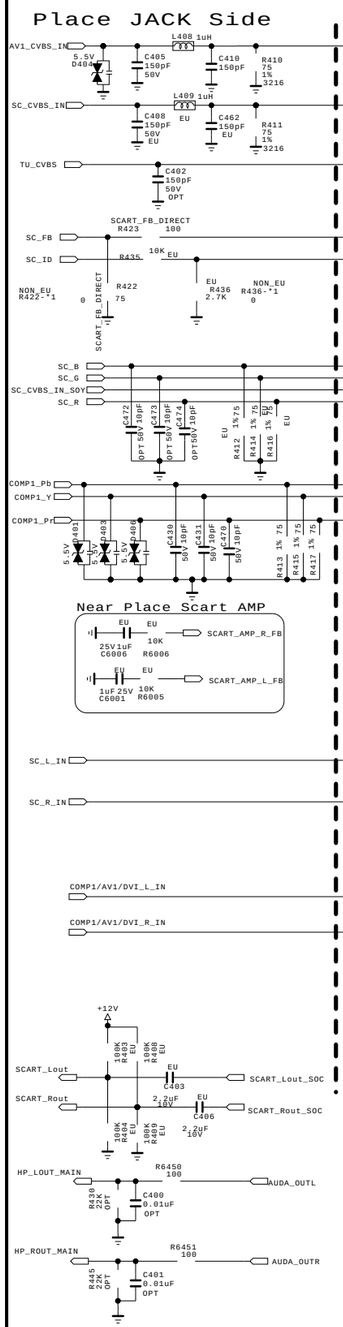
## Clock for H13A



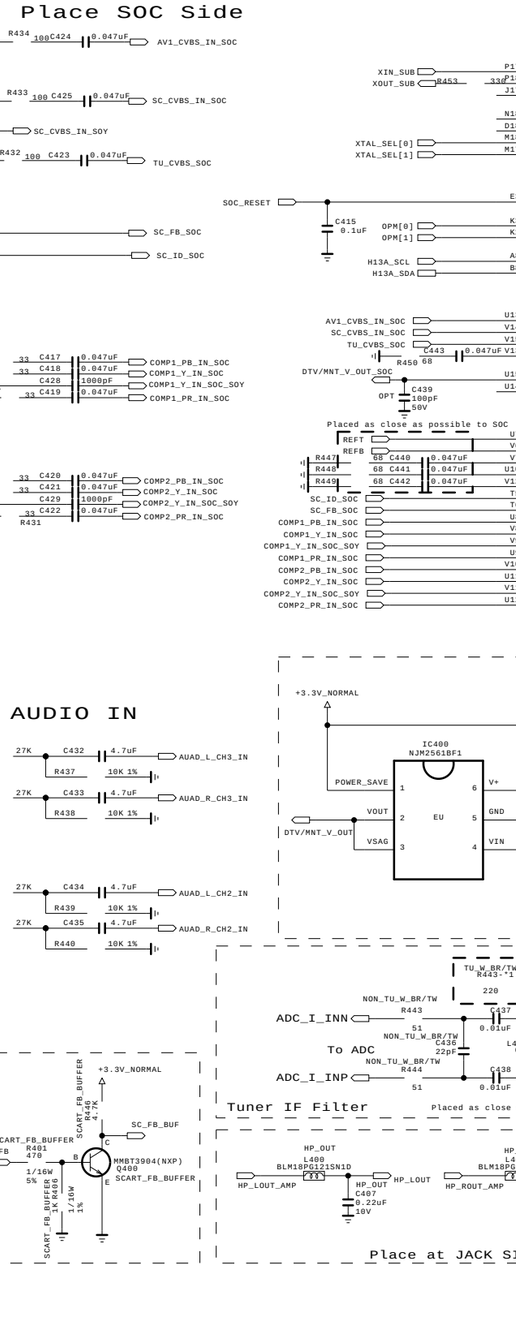

## OP MODE Setting & Select XTAL Input



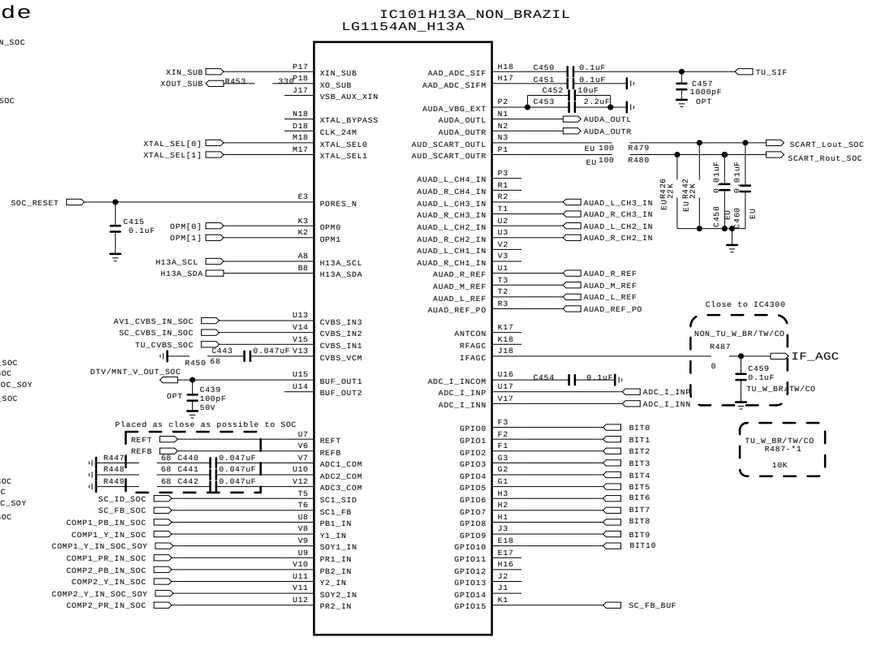

## Place JACK Side



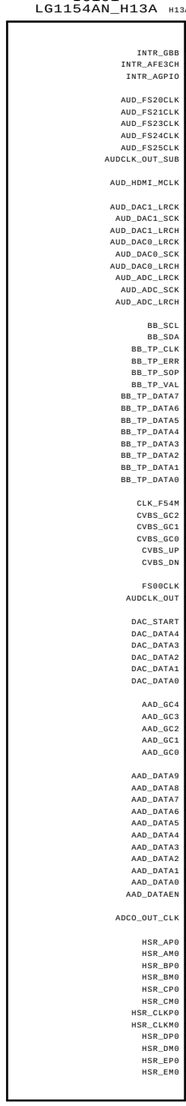

## Place SOC Side



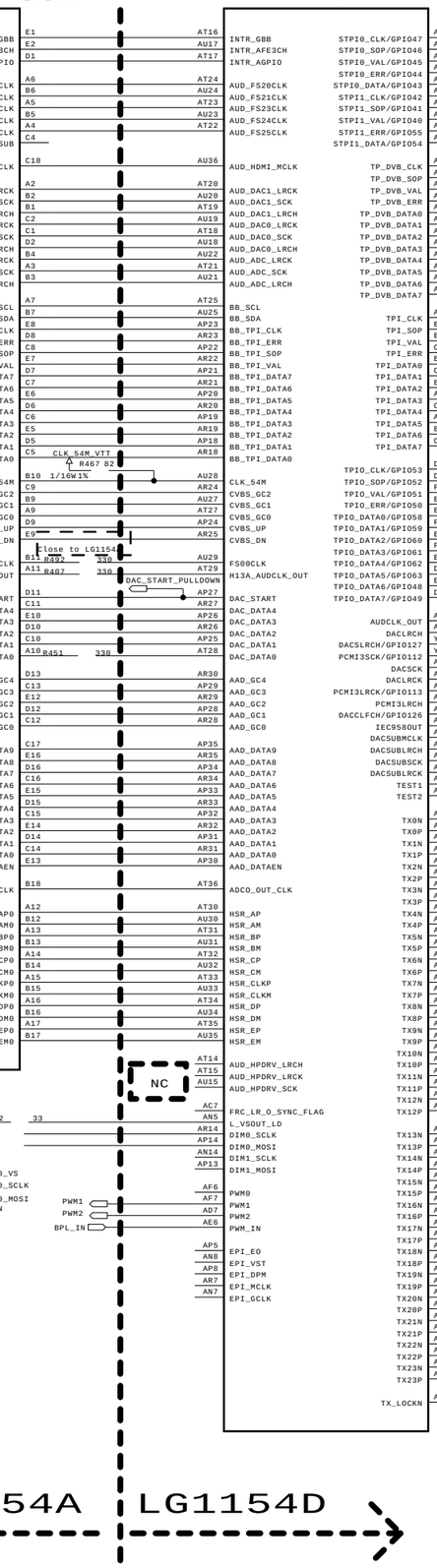

## IC101H13A_NON_BRAZIL LG1154AN_H13A




## IC101 LG1154AN_H13A




## IC100 LG1154D_H13D




## AUDIO IN




## Near Place Scart AMP




## Tuner IF Filter



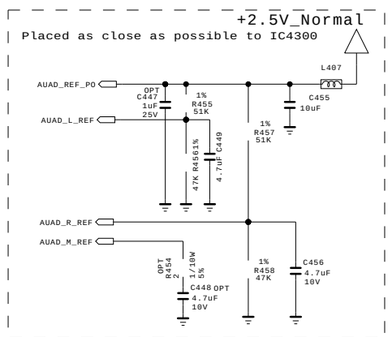

## Place at JACK SIDE



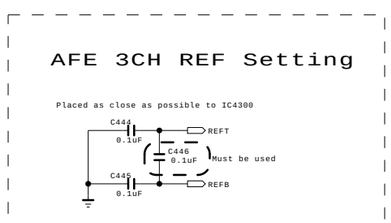

## IC400 NJM2561BF1



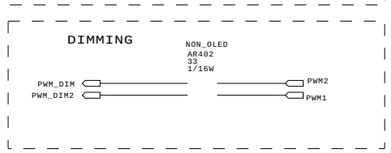

## +2.5V_Normal




## AFE 3CH REF Setting




## DIMMING




## LG1154A LG1154D




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

LG ELECTRONICS

BSD-14Y-UD-004-HD

| MODEL | | DATE | 2013-12-17 |
|---|---|---|---|
| BLOCK | MAIN AUDIO/VIDEO | SHEET | / |

IC100
LG1154D_H13D

IC500
H5TQ4G83AFR-PBC
DDR3 4Gbit

IC502
H5TQ4G83AFR-PBC
DDR3 4Gbit

IC504
H5TQ4G83AFR-PBC
DDR3 4Gbit

IC505
H5TQ4G83AFR-PBC
DDR3 4Gbit

DDR_SAMSUNG
IC501
K4B4G1646B-HCK0
DDR3 4Gbit (x16)

DDR_SAMSUNG
IC503
K4B4G1646B-HCK0
DDR3 4Gbit (x16)

Real USE : 1Gbit
H5TQ1G63DFR-PBC(x16)
1Gbit : T7(NC_6)
4Gbit : T7(A14)

DDR_VTT

* DDR_VTT

DDR3 1.5V bypass Cap - Place these caps near Memory

Place at the bottom side

IC506
TPS51200DRCR

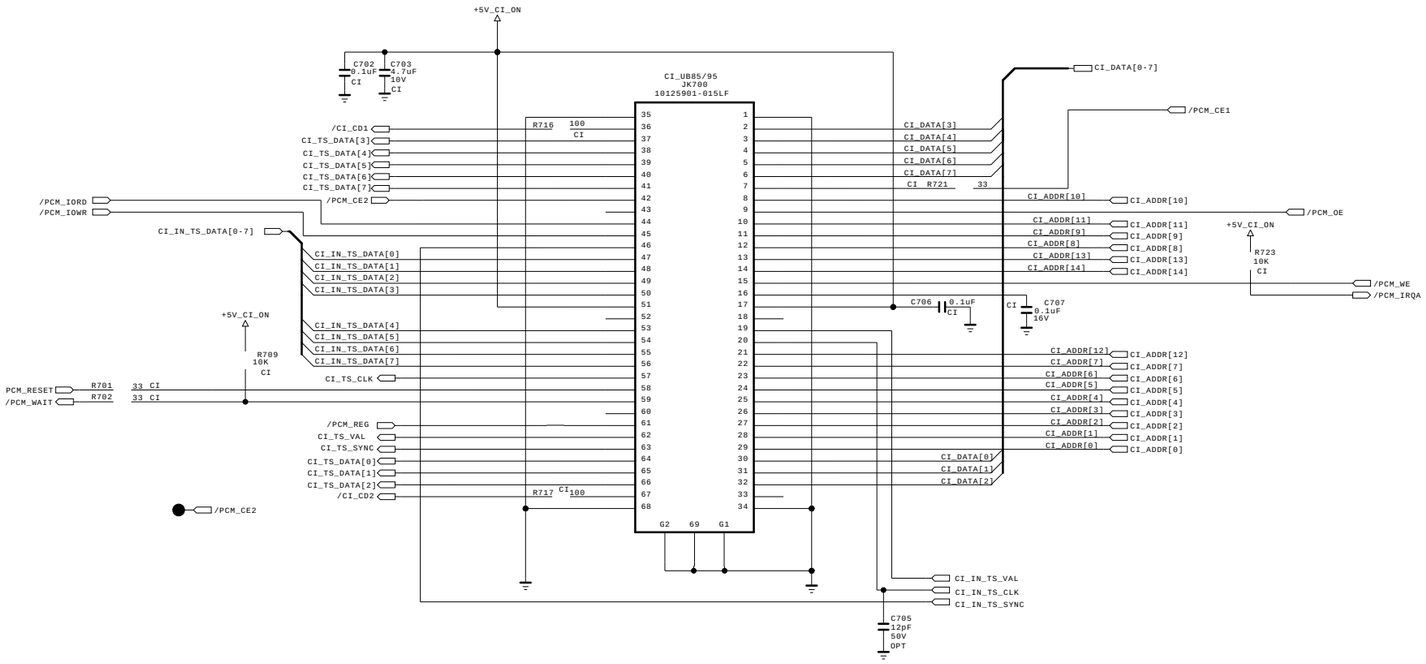
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

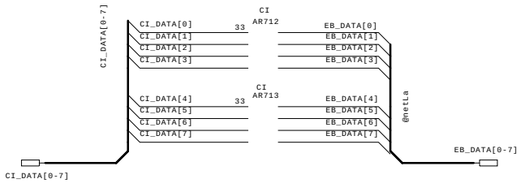
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LGElectronics

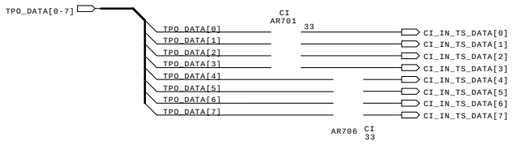
LG ELECTRONICS

BSD-14Y-UD-005-HD

| MODEL | | DATE | 2013-12-17 |
|---|---|---|---|
| BLOCK | MAIN DDR | SHEET | |



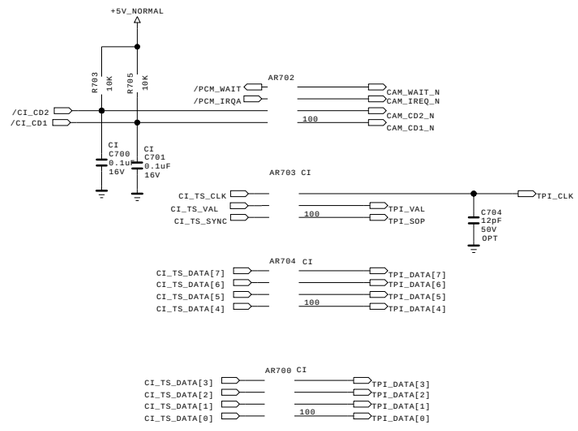


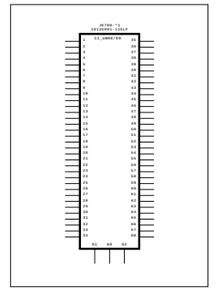




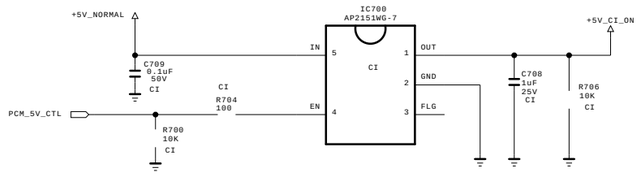







## CI POWER ENABLE CONTROL




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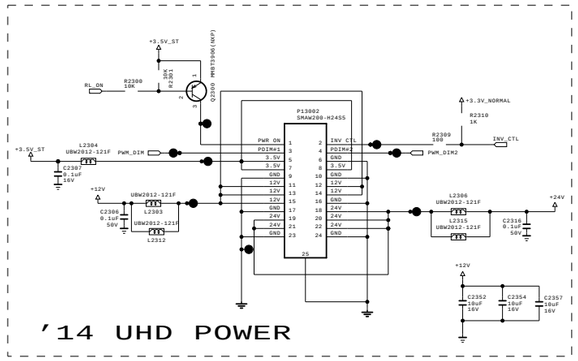
SECRET

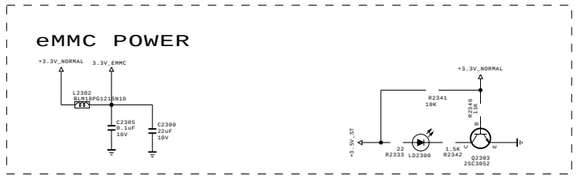
LGElectronics

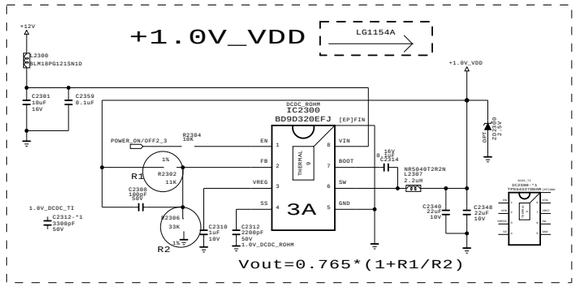
LG ELECTRONICS

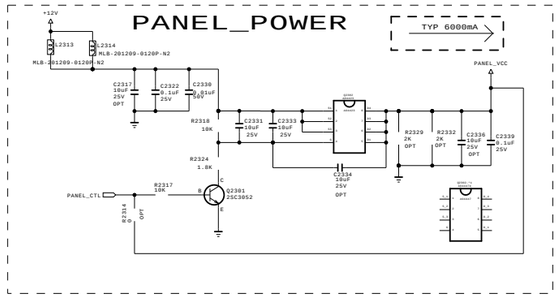
BSD-14Y-UD-007-HD

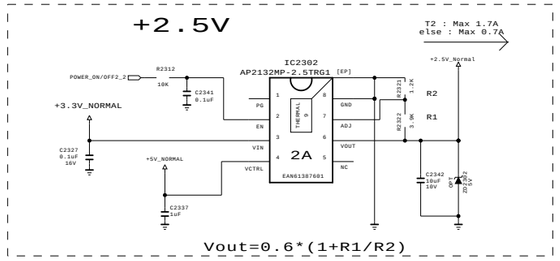
| MODEL | | DATE | 2013-12-17 |
|---|---|---|---|
| BLOCK | PCMCIA | SHEET | / |

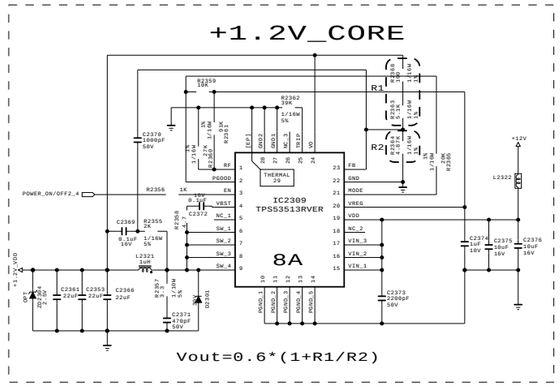


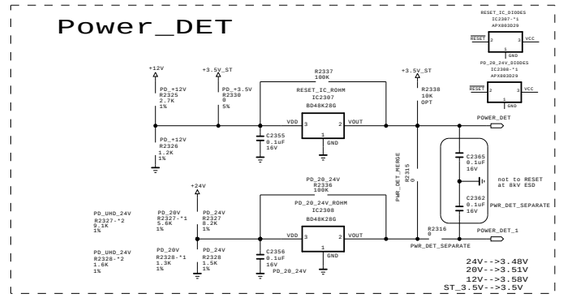



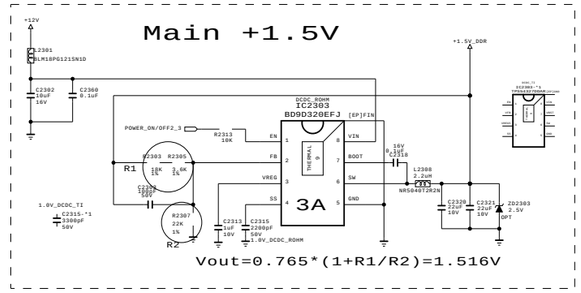



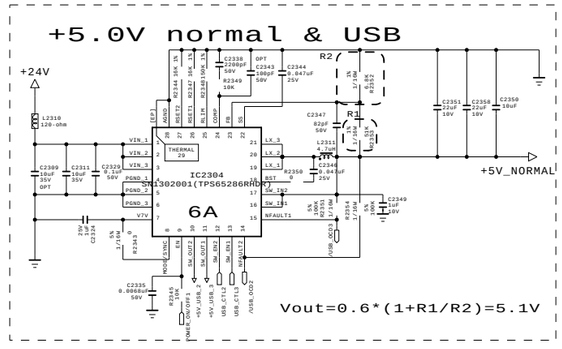




POWER UP SEQUENCE

5V/3.3V->2.5V->1.5V/1.1V->1.0V

LG1154D : 3.3V->2.5V->1.5V->1.1V

LG1154AN : 3.3V->2.5V->1.0V

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SECRET

LGElectronics

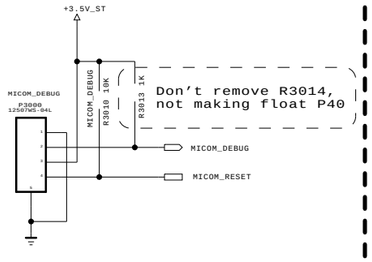
LG ELECTRONICS

BSD-14Y-UD-023-HD

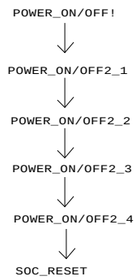
| MODEL | | DATE | 2013-12-17 |
|---|---|---|---|
| BLOCK | POWER | SHEET | / |

# Renesas MICOM

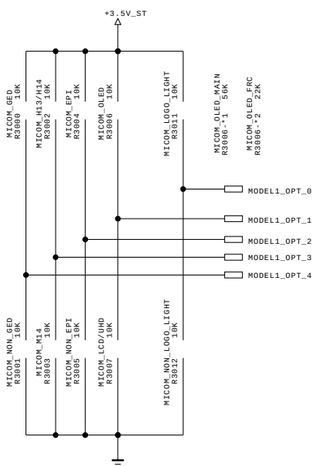
## For Debug




## GP4 High/MID Power SEQUENCE



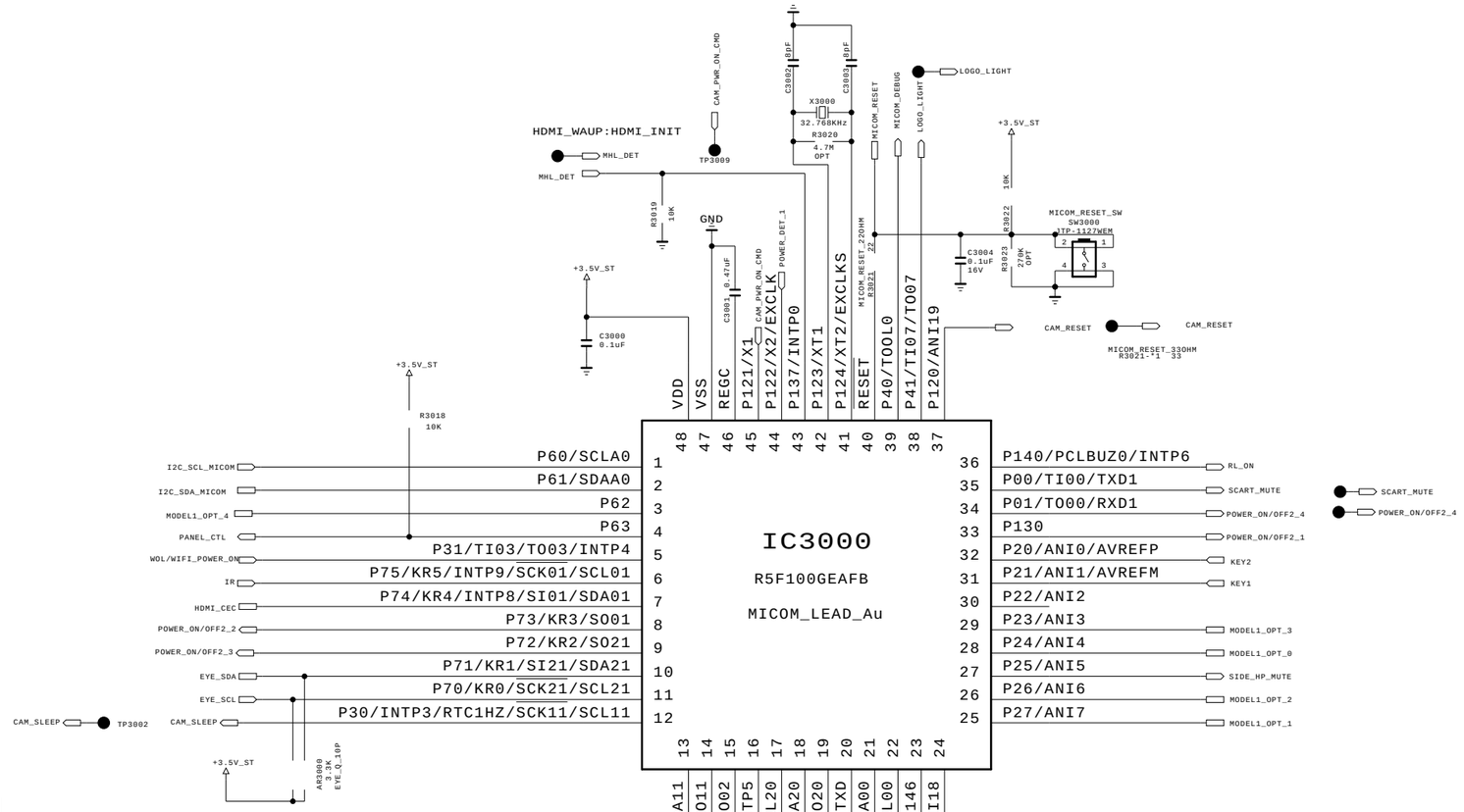

## MICOM MODEL OPTION

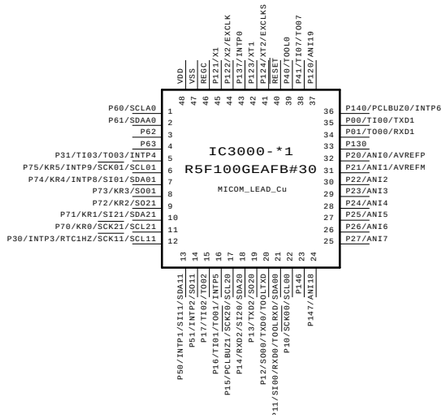



## MICOM MODEL OPTION

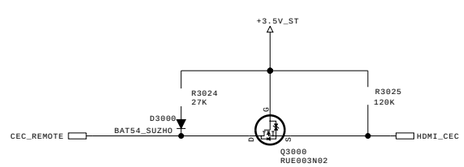
| | 0 | 1 | |
|---|---|---|---|
| MODEL_OPT_0 | NON LOGO | LOGO | For LOGO LIGHT |
| MODEL_OPT_1 | LCD / UHD | OLED | Need to Assign ADC port |
| MODEL_OPT_2 | NON_EPI | EPI | |
| MODEL_OPT_3 | M14 | H13 / H14 | |
| MODEL_OPT_4 | NON_GED | GED | |
| | | | |
| | | | |

| | MODEL_OPT_1 | MODEL_OPT_3 |
|---|---|---|
| M14 FHD LCD | 0 | 0 |
| M14 FHD OLED | 1 | 0 |
| H13/H14 UHD LCD | 0 | 1 |
| H13/H14 UHD OLED | 1 | 1 |




## For CEC



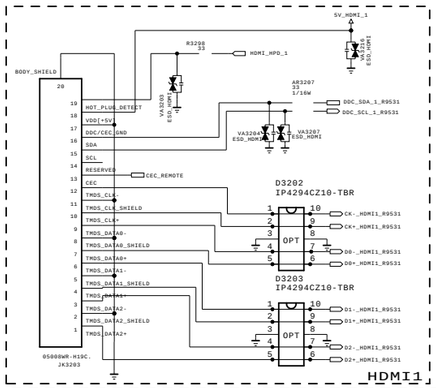

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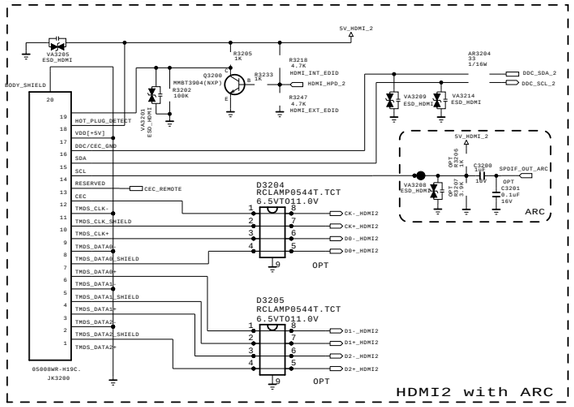
SECRET
LGElectronics

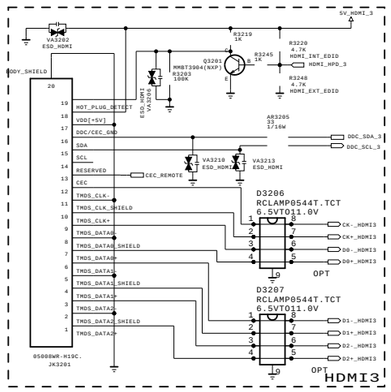
LG ELECTRONICS

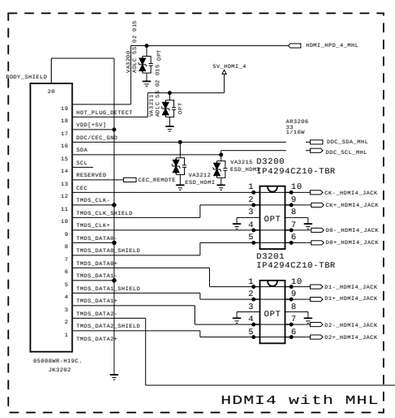
BSD-14Y-UD-030-HD

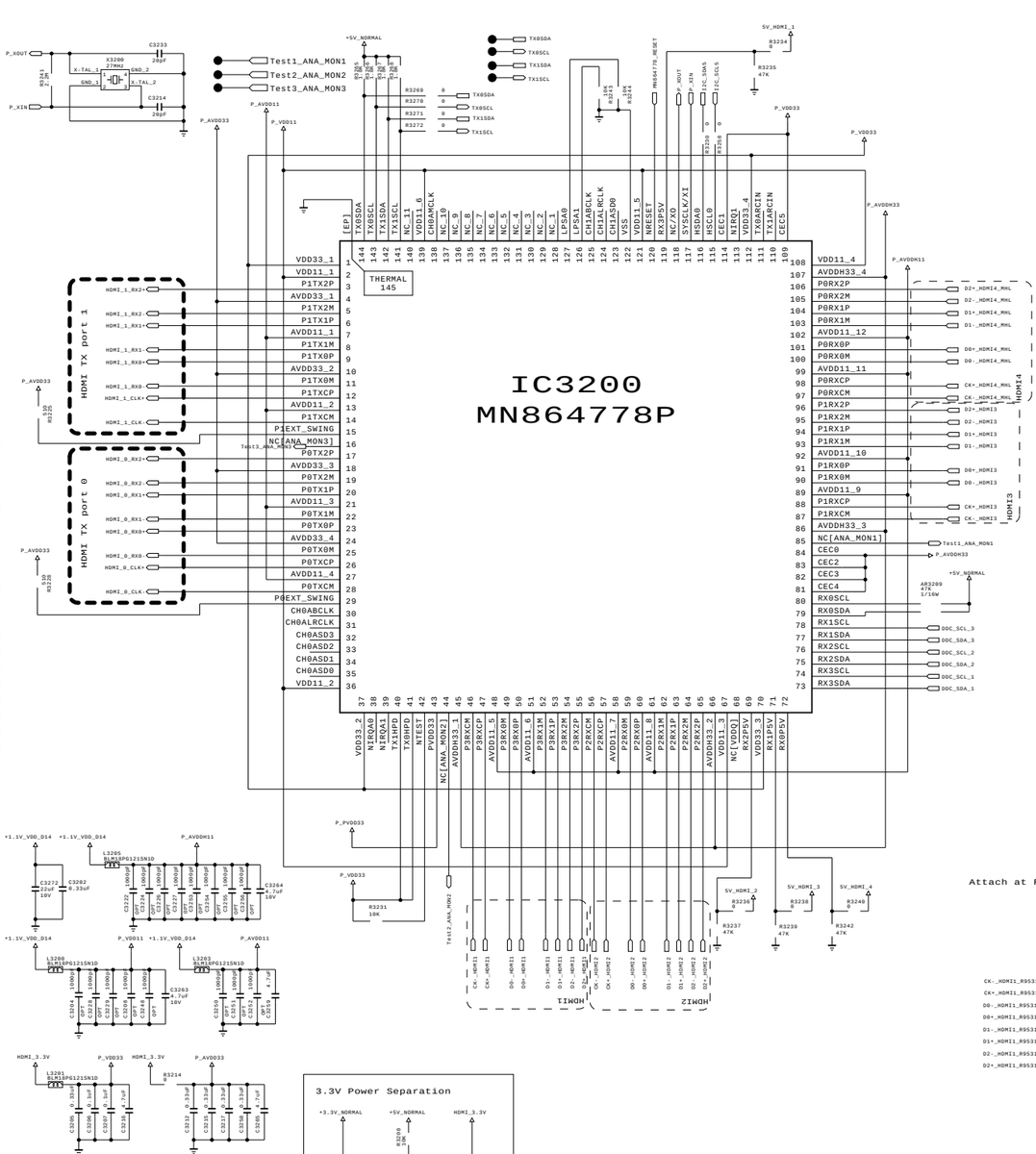
| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | MICOM | SHEET | 30 |



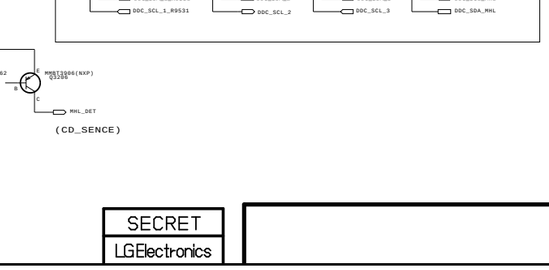



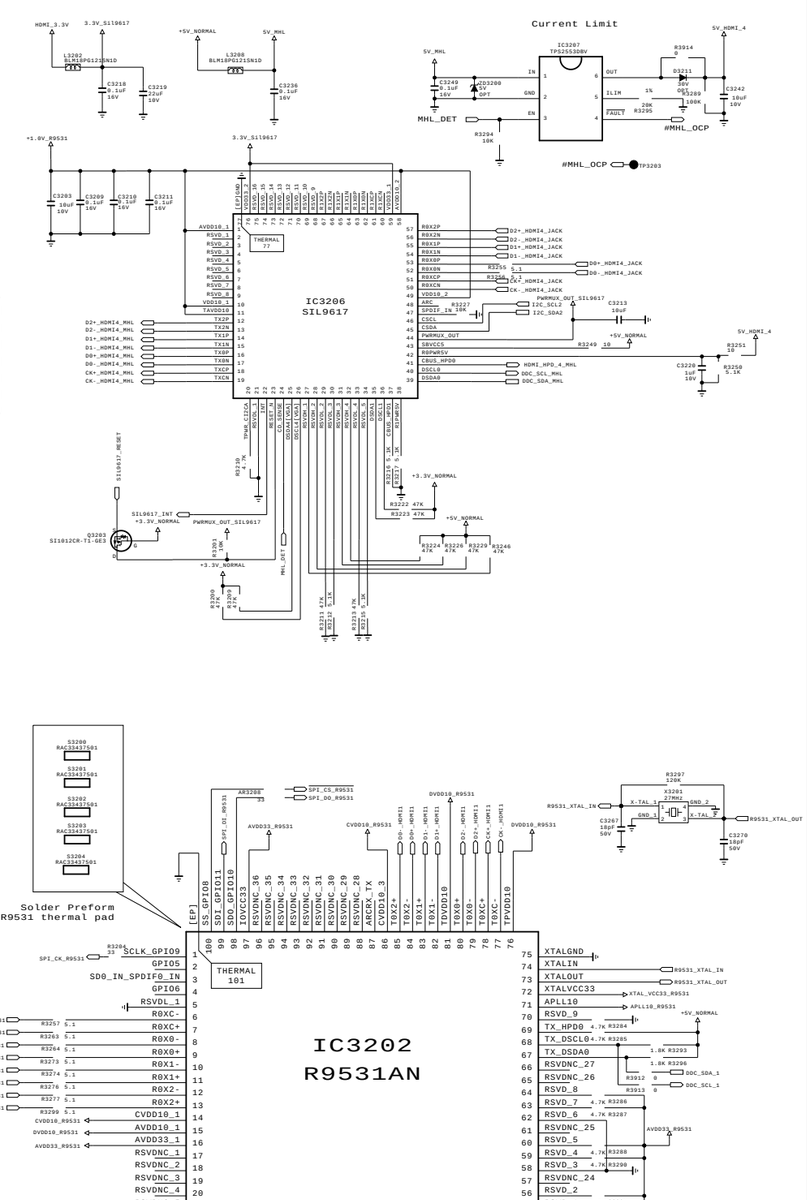



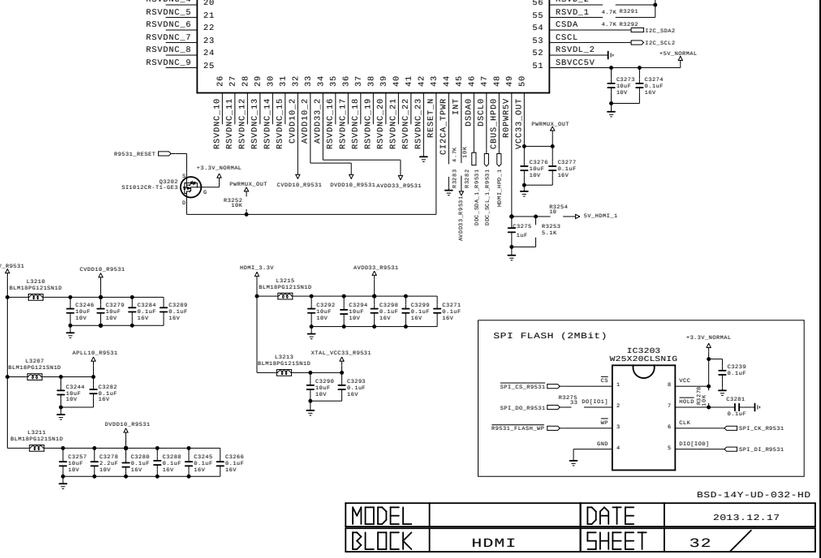










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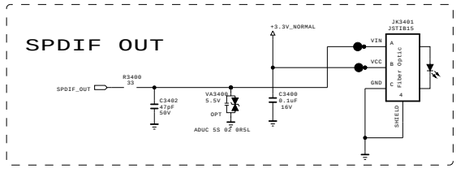
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LGElectronics

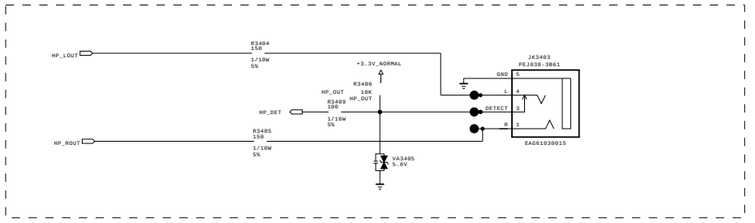
LG ELECTRONICS

BSD-14Y-UD-032-HD

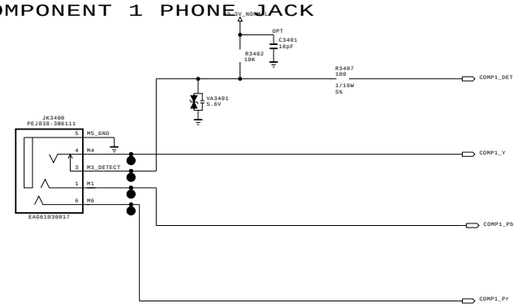
| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | HDMI | SHEET | 32 |

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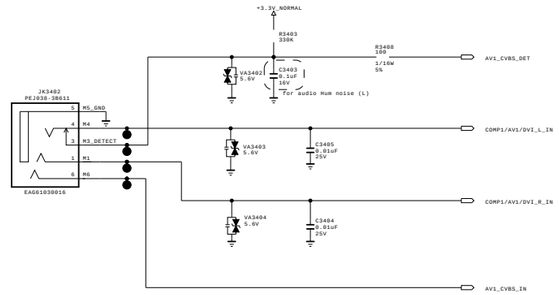



## COMPONENT 1 PHONE JACK




## CVBS 1 PHONE JACK




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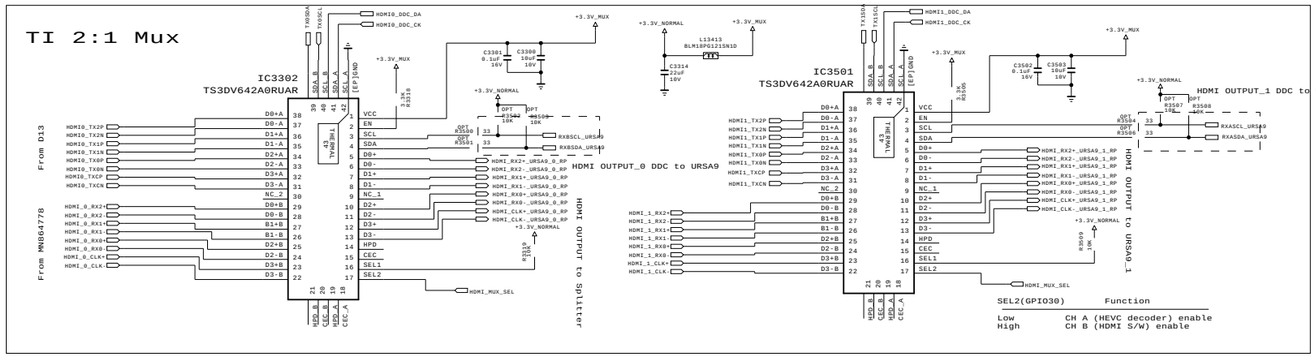
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LGElectronics

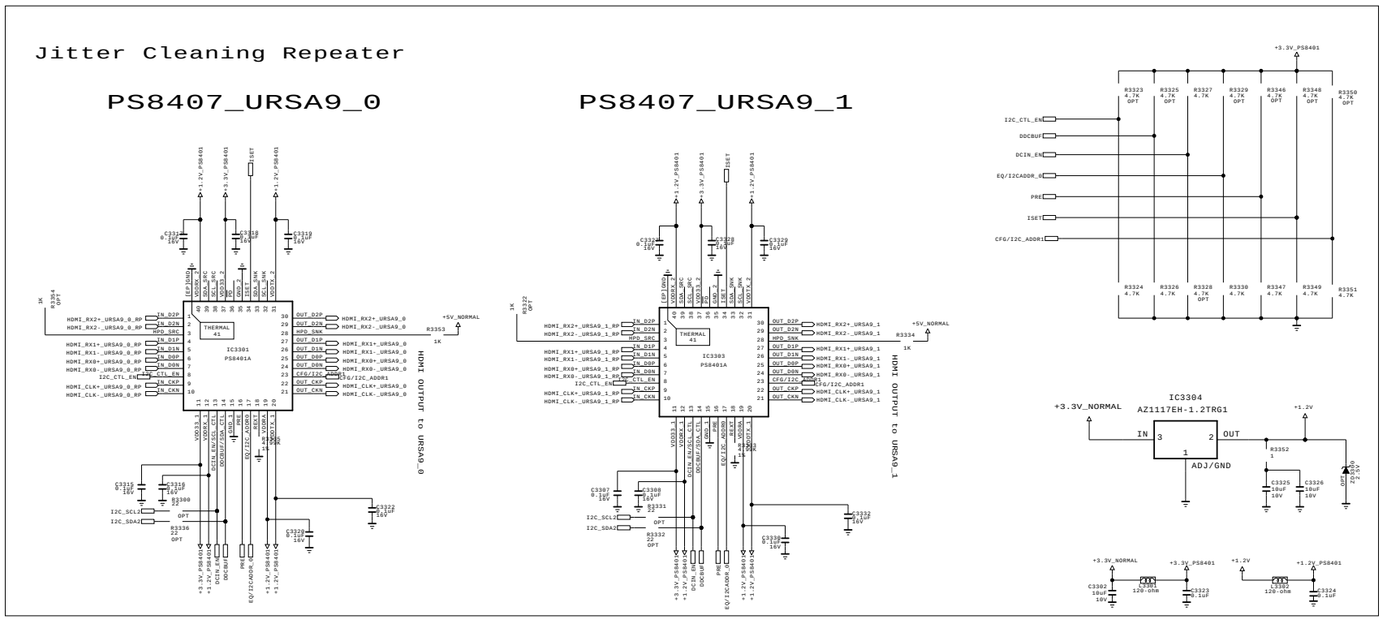
LG ELECTRONICS

BSD-14Y-UD-034-HD

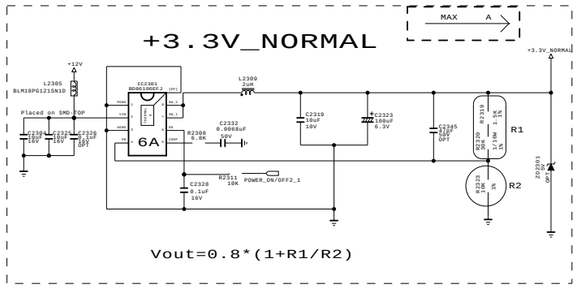
| MODEL | JACK HIGH/MID | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | / |

# UB85/95/UC97 only

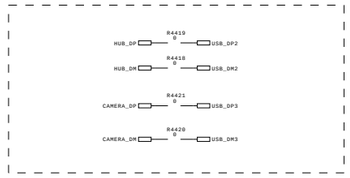


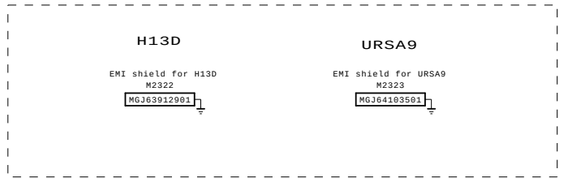

## Separation of +3.3_NORMAL (For CST)

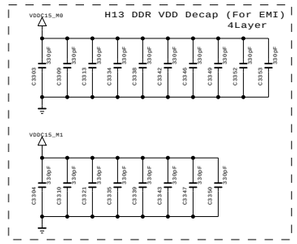


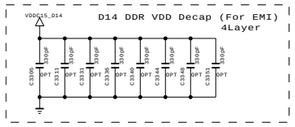

## USB NET Change: UB85/95/UC97

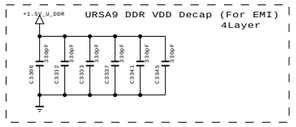



## EMI Shield for H13D / URSA9

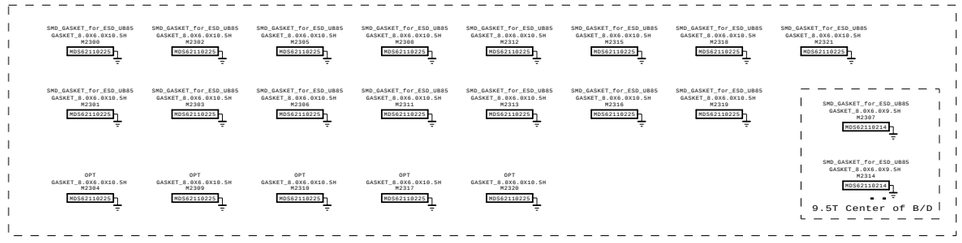


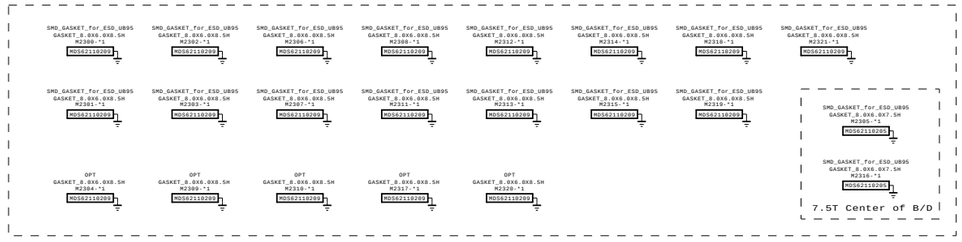



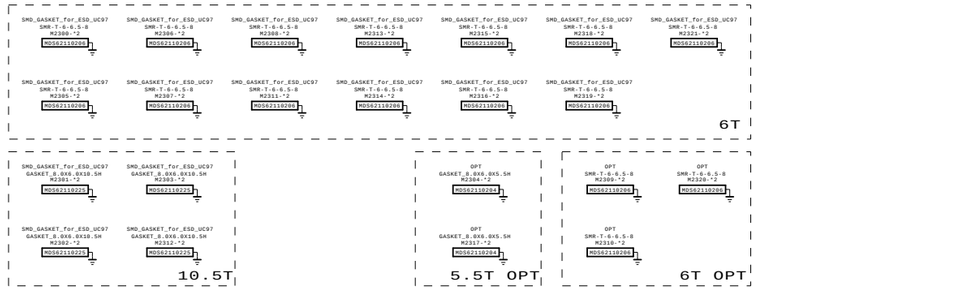

## SMD bottom for ESD_UB85 10.5T




## SMD bottom for ESD_UB95 8.5T

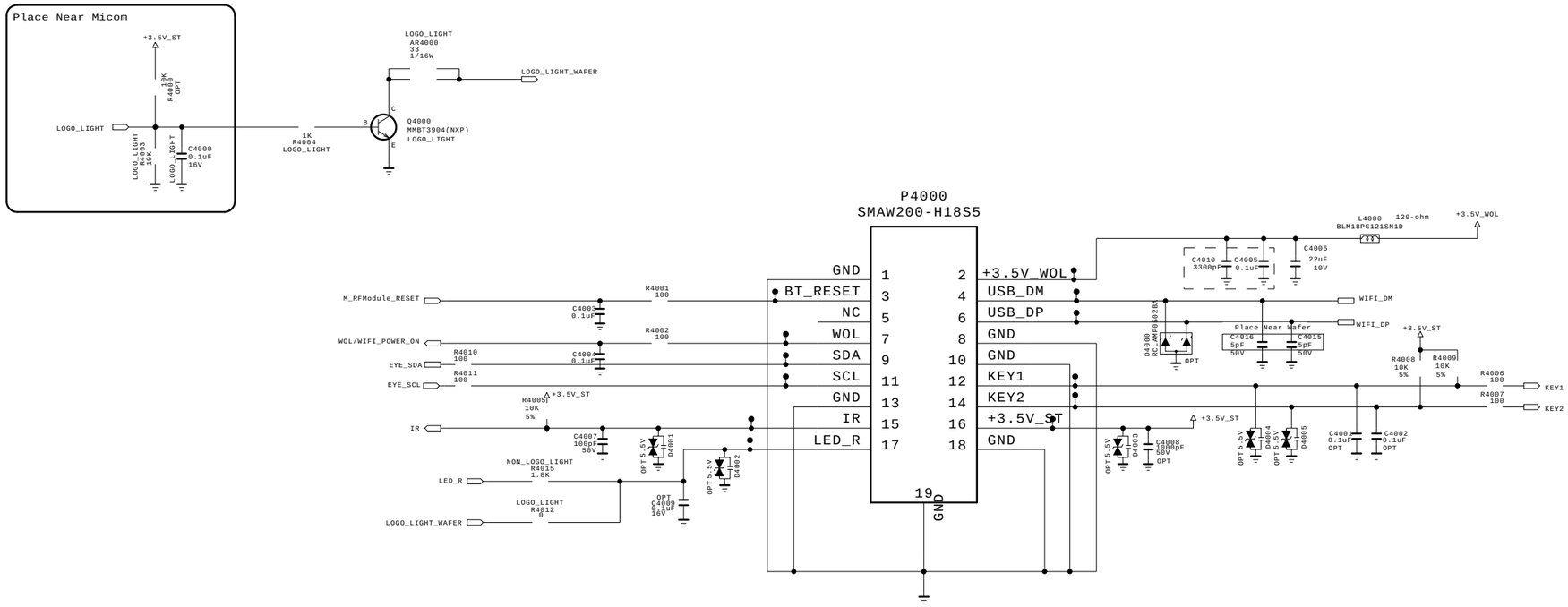



## SMD bottom for ESD_UC97 10.5T/6T/5.5T




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# UB85/95/UC97 only




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SECRET

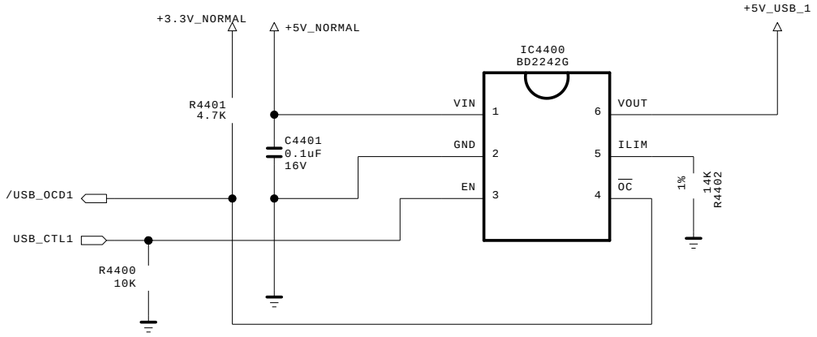
LGElectronics

LG ELECTRONICS

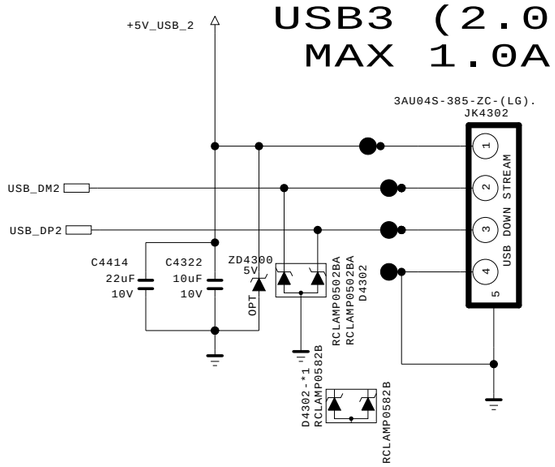
BSD-14Y-UD-040_02-HD

| MODEL | IR / KEY | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | / |

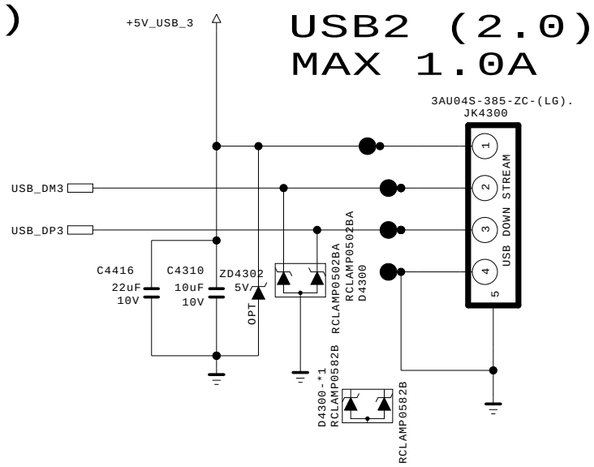
# OCP USB1




# USB3 (2.0) MAX 1.0A

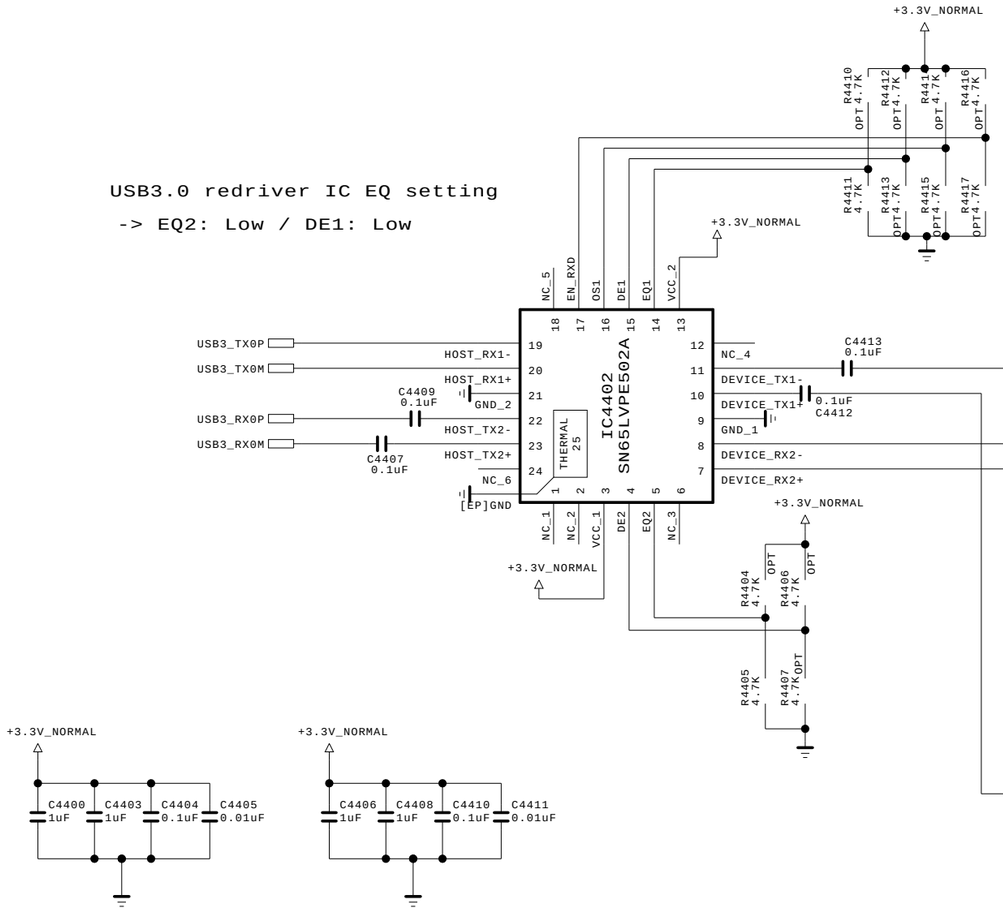



# USB2 (2.0) MAX 1.0A

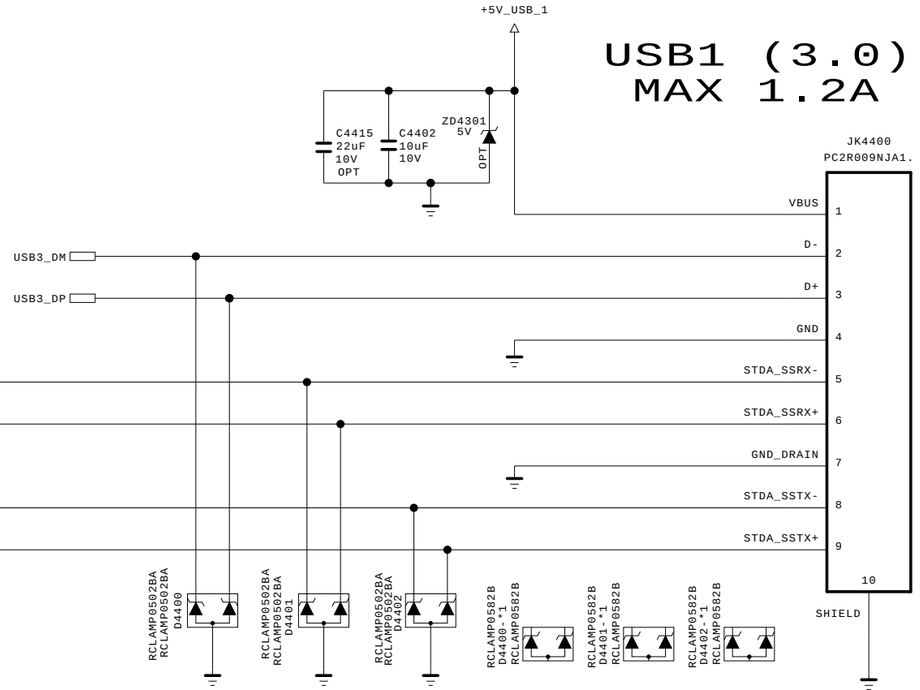



USB3.0 redriver IC EQ setting

-> EQ2: Low / DE1: Low




# USB1 (3.0) MAX 1.2A




Place under DUT Near SN65LVPE502CP PIN VCC

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

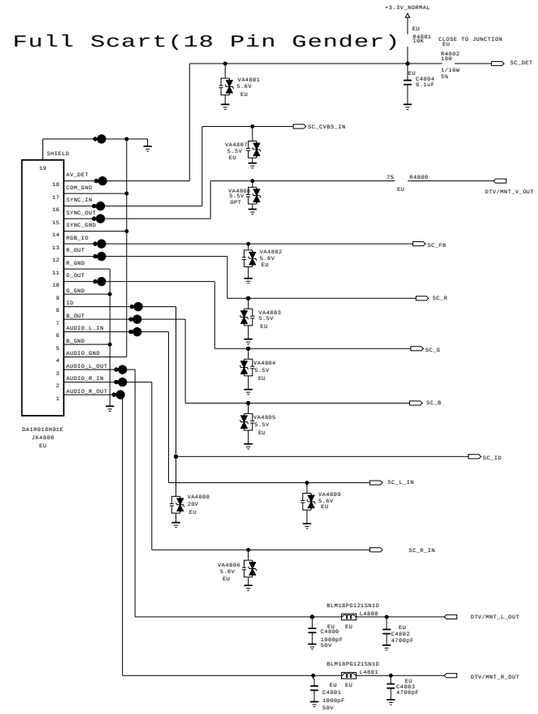
LGElectronics

LG ELECTRONICS

BSD-14Y-UD-044-HD

| MODEL | | DATE | 2013-12-17 |
|---|---|---|---|
| BLOCK | USB JACK | SHEET | / |

# Full Scart(18 Pin Gender)




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

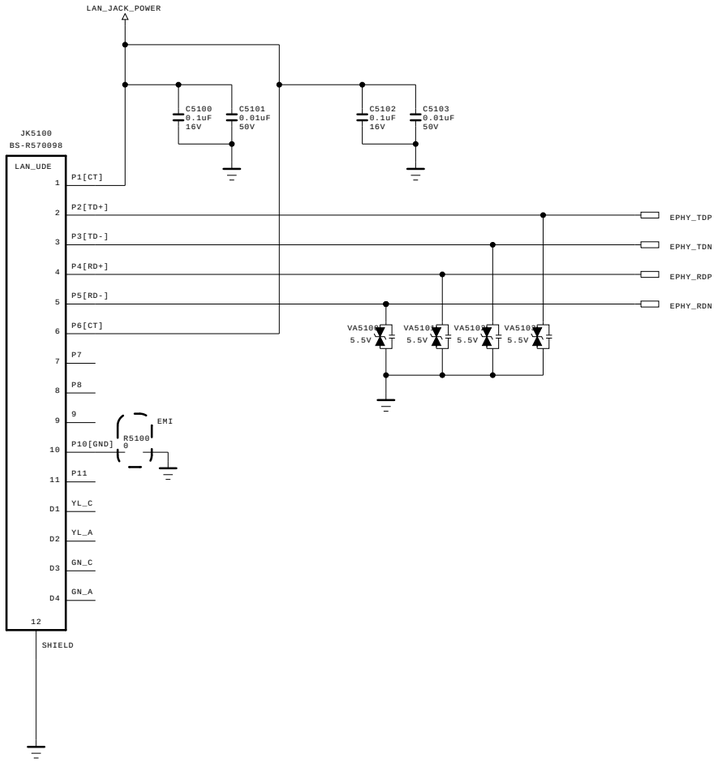
SECRET
LGElectronics

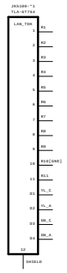
LG ELECTRONICS

BSD-14Y-UD-048-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | SCART GENDER | SHEET | / |

# Ethernet Block



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

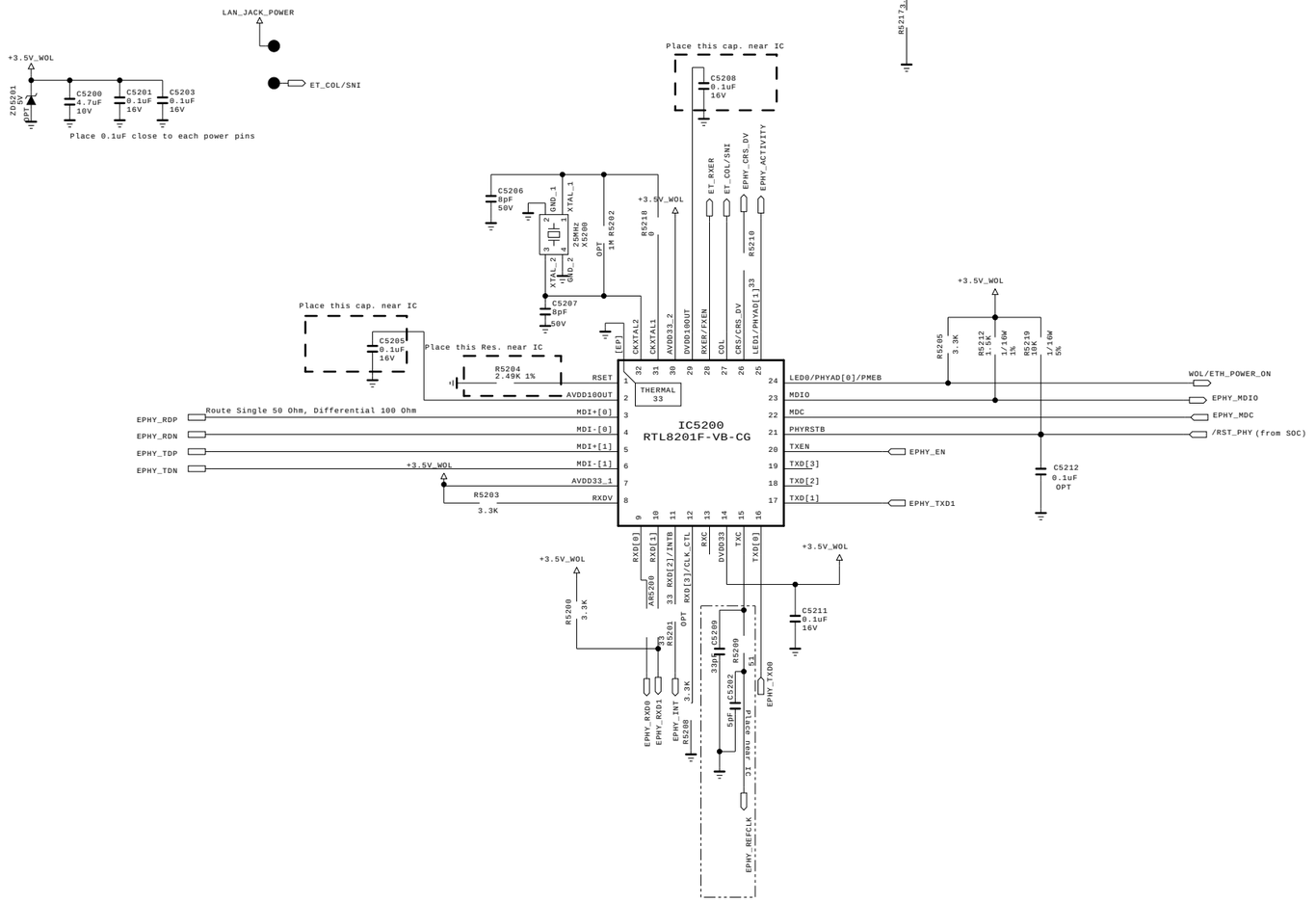
LGElectronics

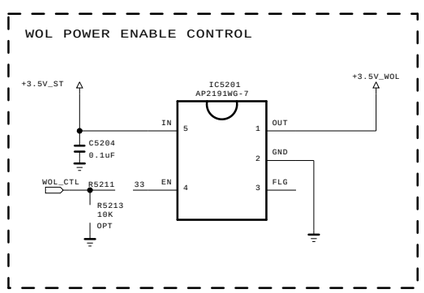
LG ELECTRONICS

BSD-14Y-UD-051-HD

| MODEL | LAN_VERTICAL | DATE | 2012.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | 51 |

# Ethernet Block



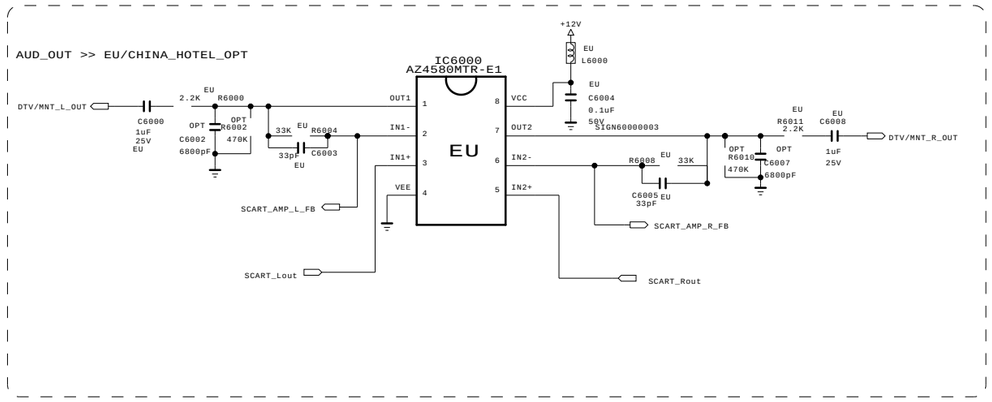

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

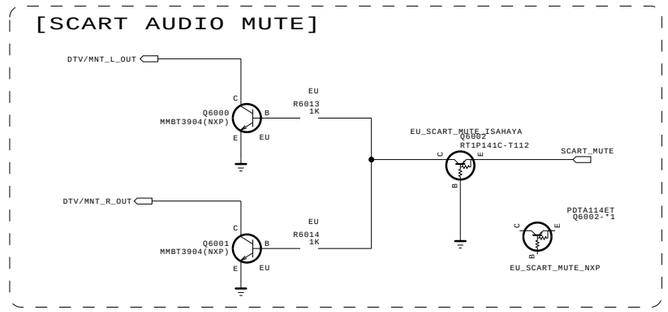
SECRET
LGElectronics

LG ELECTRONICS

BSD-14Y-UD-052-HD

| MODEL | | DATE | 2013-12-17 |
|---|---|---|---|
| BLOCK | ETHERNET | SHEET | / |




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

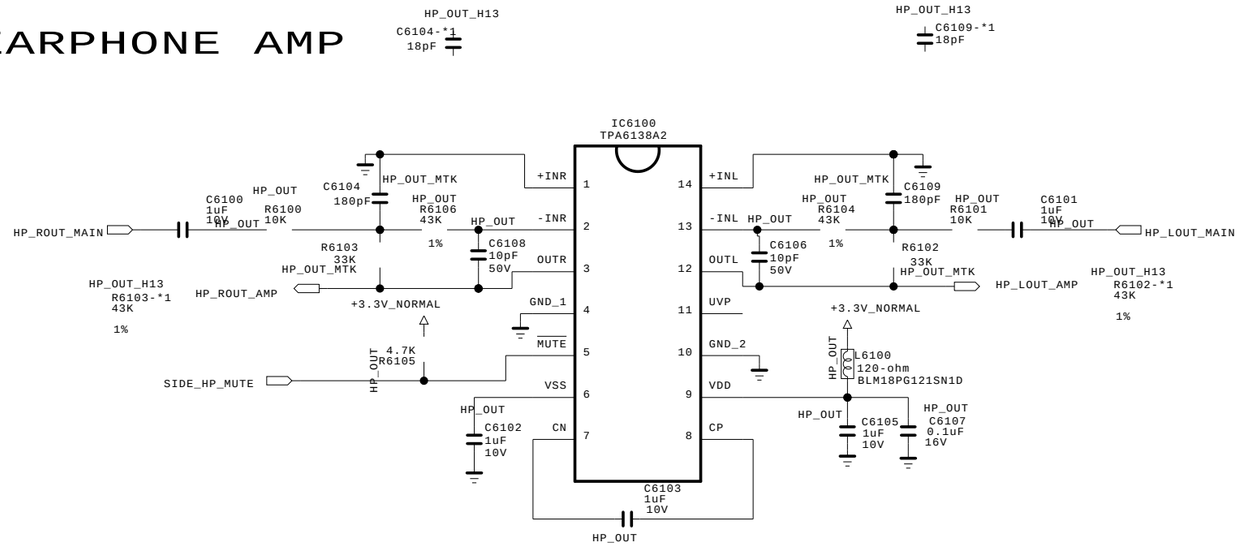
LGElectronics

LG ELECTRONICS

BSD-14Y-UD-060-HD

| MODEL | SCART AUDIO AMP | DATE | 2012.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | 60 |

# EARPHONE AMP



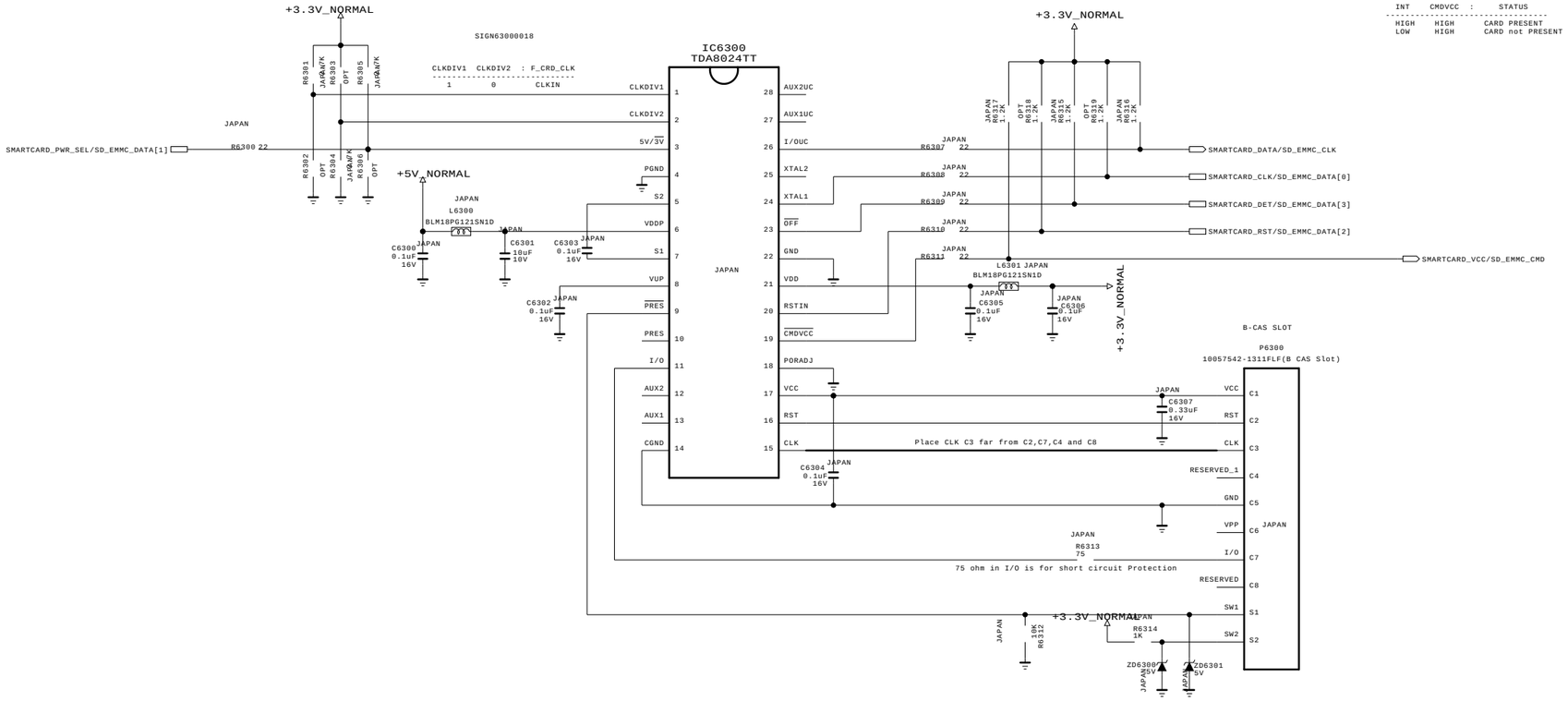

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

LG ELECTRONICS

# B-CAS (SMART CARD) INTERFACE




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

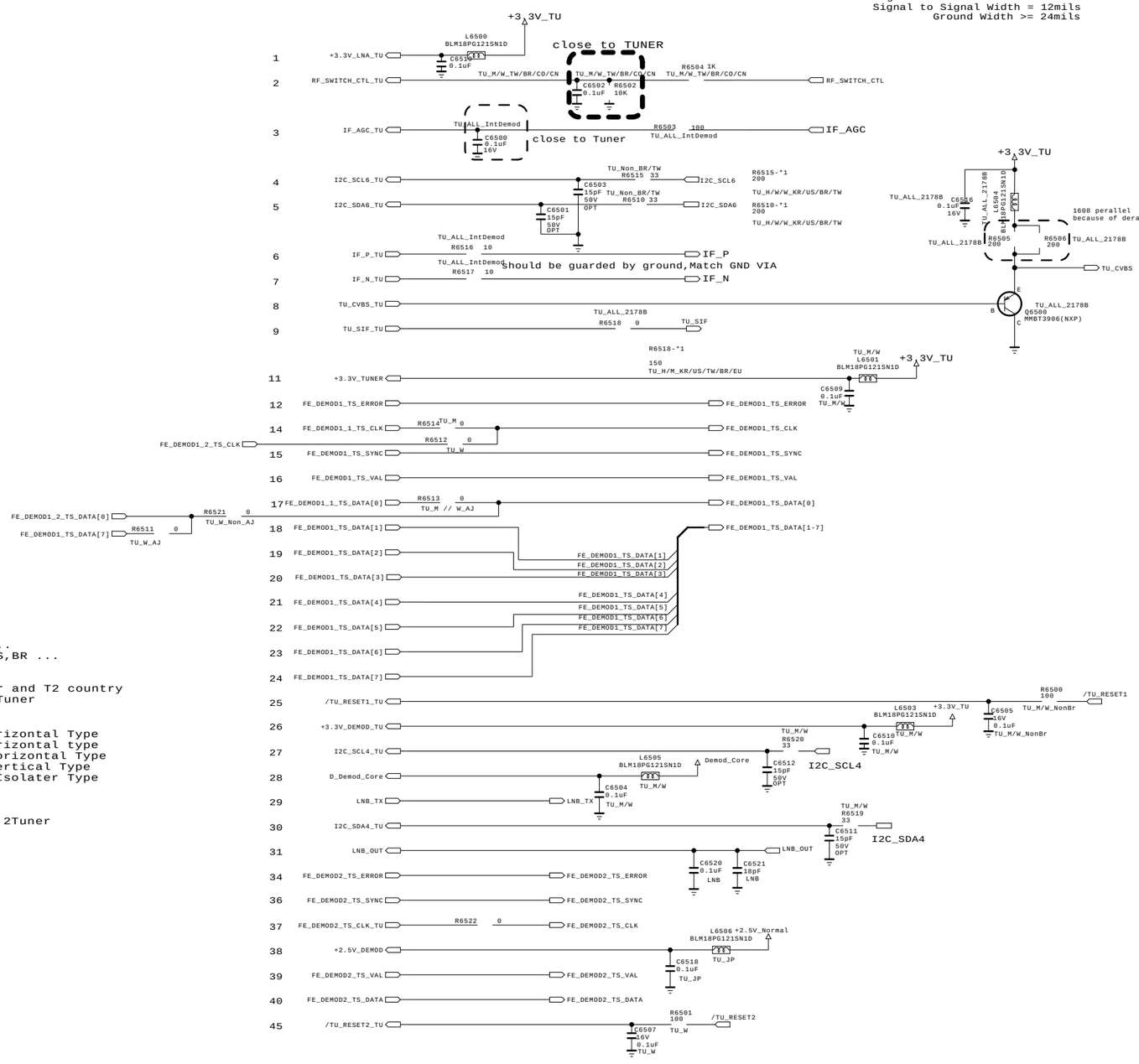
LGElectronics

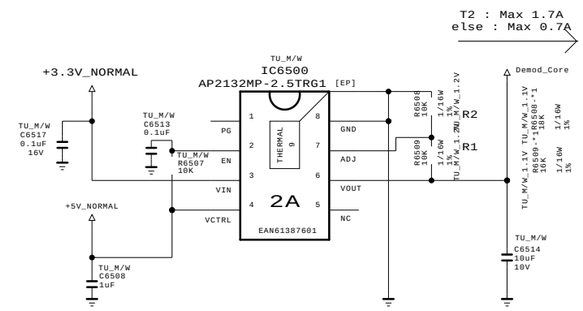
LG ELECTRONICS

BSD-14Y-UD-063-HD

| MODEL | | DATE | 2012.12.17 |
|---|---|---|---|
| BLOCK | JAPAN_BCAS | SHEET | 63 |

1. should be guarded by ground
2. No via on both of them
3. Signal Width >= 12mils
   Signal to Signal Width = 12mils
   Ground Width >= 24mils




Global F/E Option Name
1. TU
2. Tuner Name = TDS'S',TDS'Q'...
3. Country Name = T,T2,S2,KR,US,BR ...

Example of Option name
TU_Q_T2 = apply TDSQ type tuner and T2 country
TU_M/W = apply TDSM&TDSW Type Tuner

13' Tuner Type for Global
TDS'S'-G501D : T/C Half NIM Horizontal Type
TDS'Q'-G501D : T/C/S2 Combo Horizontal type
TDS'Q'-G601D : T2/C/S2 Combo Horizontal Type
TDS'Q'-G651D : T2/C/S2 Combo Vertical Type
TDS'M'-C601D : China NIM with Isolater Type
TDS'W'-J551F : Japan Dual NIM
TDS'W'-B651F : Brazil 2Tuner
TDS'W'-A651F : Taiwan 2Tuner
TDS'W'-K651F : Colombia DVB-T2 2Tuner

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

BSD-14Y-UD-065-HD

| MODEL | TUNER | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | 65 |

TDJW_A151D

## TU6800
## TDJW-A151D

| | |
|---|---|
| 1 | B1[+3.3V] |
| 2 | NC_1 |
| 3 | NC_2 |
| 4 | SCL_RF |
| 5 | SDA_RF |
| 6 | NC_3 |
| 7 | NC_4 |
| 8 | M_SIF |
| 9 | M_CVBS |
| 10 | NC_5 |
| 11 | B2[+3.3V] |
| 12 | NC_6 |
| 13 | GROUND_1 |
| 25 | M_RESET_DEMOD |
| 26 | B3[+3.3V] |
| 27 | SCL_DEMOD |
| 28 | B4[+1.2V] |
| 29 | NC_7 |
| 30 | SDA_DEMOD |
| 33 | NC_8 |
| 34 | M_ERROR |
| 35 | GROUND_2 |
| 36 | M_SYNC |
| 37 | M_MCLK |
| 38 | NC_9 |
| 39 | M_VALID |
| 40 | M_DATA |
| 41 | S_ERROR |
| 42 | S_SYNC |
| 43 | S_MCLK |
| 44 | S_VALID |
| 45 | S_RESET_DEMOD |
| 46 | S_DATA_7 |
| 47 | S_DATA_0 |
| 48 | S_DATA_1 |
| 49 | S_DATA_2 |
| 50 | S_DATA_3 |
| 51 | S_DATA_4 |
| 52 | S_DATA_5 |
| 53 | S_DATA_6 |

A1 A1 B1 B1 — 54 — SHIELD — TU_GND_A — TU_GND_B

FE_DEMOD1_1_TS_DATA[0]
FE_DEMOD1_TS_DATA[1]
FE_DEMOD1_TS_DATA[2]
FE_DEMOD1_TS_DATA[3]
FE_DEMOD1_TS_DATA[4]
FE_DEMOD1_TS_DATA[5]
FE_DEMOD1_TS_DATA[6]

TU_TDJW

## TU6700
## TDJW-J251F

| | |
|---|---|
| 1 | B1[+3.3V] |
| 2 | NC_1 |
| 3 | NC_2 |
| 4 | SCL_RF |
| 5 | SDA_RF |
| 6 | NC_3 |
| 7 | NC_4 |
| 8 | NC_5 |
| 9 | NC_6 |
| 10 | NC_7 |
| 11 | B2[+3.3V] |
| 12 | NC_8 |
| 13 | GND_1 |
| 25 | M_RESET_DEMOD |
| 26 | B3[+3.3V] |
| 27 | SCL_DEMOD |
| 28 | B4[+1.2V] |
| 29 | NC_9 |
| 30 | SDA_DEMOD |
| 31 | LNB |
| 32 | GND_2 |
| 33 | NC_10 |
| 34 | M_ERROR |
| 35 | GND_3 |
| 36 | M_SYNC |
| 37 | M_MCLK |
| 38 | B5[+2.5V] |
| 39 | M_VALID |
| 40 | M_DATA |
| 41 | S_ERROR |
| 42 | S_SYNC |
| 43 | S_MCLK |
| 44 | S_VALID |
| 45 | S_RESET_DEMOD |
| 46 | S_DATA |

A1 A1 B1 B1 — 47 — SHIELD — TU_GND_A — TU_GND_B

FE_DEMOD2_TS_ERROR
FE_DEMOD2_TS_SYNC
FE_DEMOD2_TS_CLK_TU
+2.5V_DEMOD
FE_DEMOD2_TS_VAL
FE_DEMOD2_TS_DATA
FE_DEMOD1_TS_ERROR
FE_DEMOD1_TS_SYNC
FE_DEMOD1_2_TS_CLK
FE_DEMOD1_TS_VAL
/TU_RESET2_TU
FE_DEMOD1_2_TS_DATA[0]

TDJM_G251D

## TU6707
## TDJM-G251D

| | |
|---|---|
| 1 | B1[+3.3V] |
| 2 | NC_1 |
| 3 | NC_2 |
| 4 | SCL_RF |
| 5 | SDA_RF |
| 6 | NC_3 |
| 7 | NC_4 |
| 8 | SIF |
| 9 | CVBS |
| 10 | NC_5 |
| 11 | B2[+3.3V] |
| 12 | ERROR |
| 13 | GND_1 |
| 14 | MCLK |
| 15 | SYNC |
| 16 | VAILD |
| 17 | D0 |
| 18 | D1 |
| 19 | D2 |
| 20 | D3 |
| 21 | D4 |
| 22 | D5 |
| 23 | D6 |
| 24 | D7 |
| 25 | RESET_DEMOD |
| 26 | B3[+3.3V] |
| 27 | SCL_DEMOD |
| 28 | B4[+1.1V] |
| 29 | F22_OUTPUT |
| 30 | SDA_DEMOD |
| 31 | LNB |
| 32 | GND_2 |

A1 A1 B1 B1 — 47 — SHIELD — TU_GND_A — TU_GND_B

TDJM_H151F

## TU6701
## TDJM-H151F

| | |
|---|---|
| 1 | B1[+3.3V] |
| 2 | NC_1 |
| 3 | M_DIF_AGC |
| 4 | SCL_RF |
| 5 | SDA_RF |
| 6 | M_DIF[P] |
| 7 | M_DIF[N] |
| 8 | S_SIF |
| 9 | S_CVBS |
| 10 | NC_2 |
| 11 | B2[+3.3V] |
| 12 | S_ERROR |
| 13 | GND_1 |
| 14 | S_MCLK |
| 15 | S_SYNC |
| 16 | S_VAILD |
| 17 | S_DATA |
| 18 | NC_3 |
| 19 | NC_4 |
| 20 | NC_5 |
| 21 | NC_6 |
| 22 | NC_7 |
| 23 | NC_8 |
| 24 | NC_9 |
| 25 | S_RESET_DEMOD |
| 26 | B3[+3.3V] |
| 27 | SCL_DEMOD |
| 28 | B4[+1.1V] |
| 29 | NC_10 |
| 30 | SDA_DEMOD |

A1 A1 B1 B1 — 47 — SHIELD — TU_GND_A — TU_GND_B

+3.3V_TUNER
FE_DEMOD1_TS_ERROR
FE_DEMOD1_1_TS_CLK
FE_DEMOD1_TS_SYNC
FE_DEMOD1_TS_VAL
FE_DEMOD1_1_TS_DATA[0]
FE_DEMOD1_TS_DATA[1]
FE_DEMOD1_TS_DATA[2]
FE_DEMOD1_TS_DATA[3]
FE_DEMOD1_TS_DATA[4]
FE_DEMOD1_TS_DATA[5]
FE_DEMOD1_TS_DATA[6]
FE_DEMOD1_TS_DATA[7]
/TU_RESET1_TU
+3.3V_DEMOD_TU
I2C_SCL4_TU
D_Demod_Core
LNB_TX
I2C_SDA4_TU
LNB_OUT

TDJH_H251F

## TU6703
## TDJH-H251F

| | |
|---|---|
| 1 | B1[+3.3V] |
| 2 | NC |
| 3 | DIF_AGC |
| 4 | SCL |
| 5 | SDA |
| 6 | DIF[P] |
| 7 | DIF[N] |
| 8 | SIF |
| 9 | CVBS |

A1 A1 B1 B1 — 47 — SHIELD — TU_GND_A — TU_GND_B

+3.3V_LNA_TU
RF_SWITCH_CTL_TU
IF_AGC_TU
I2C_SCL6_TU
I2C_SDA6_TU
IF_P_TU
IF_N_TU
TU_SIF_TU
TU_CVBS_TU

C6702 1000pF 630V TU_M_EU
C6700 1000pF 630V
C6700-*1 3300pF 630V TU_M/W_CN/HK/TW/BR/EU_3300pF
0 R6702 TU_M/W_CN/HK/TW/BR/EU_1000pF
0 R6703 TU_H/M_KR/US/JP/EU
TU_H/M_KR/US/JP/EU
TU_GND_A

C6701 1000pF 630V
C6703 1000pF 630V
C6705 0.022uF 630V TU_W_AJ_22nF
C6707 1000pF 630V TU_W_AJ_1nF
C6701-*1 3300pF 630V
C6707-*1 0.022uF 630V TU_W_AJ_22nF
TU_H/M/W_KR/US/CN/JP/TW/BR/EU/AJ_1000pF
TU_H/M/W_KR/US/CN/JP/TW/BR/EU/AJ_3300pF
TU_H/M/W_KR/US/CN/JP/TW/BR/EU/AJ
TU_GND_B
0 R6701
GND_3
for tuner EMS (S4) testing

TU6701-*1 TDJM-C351D
TU6800-*1 TDJW-K151F
TU6800-*2 TDJW-H151F
TU6800-*3 TDJW-B251F

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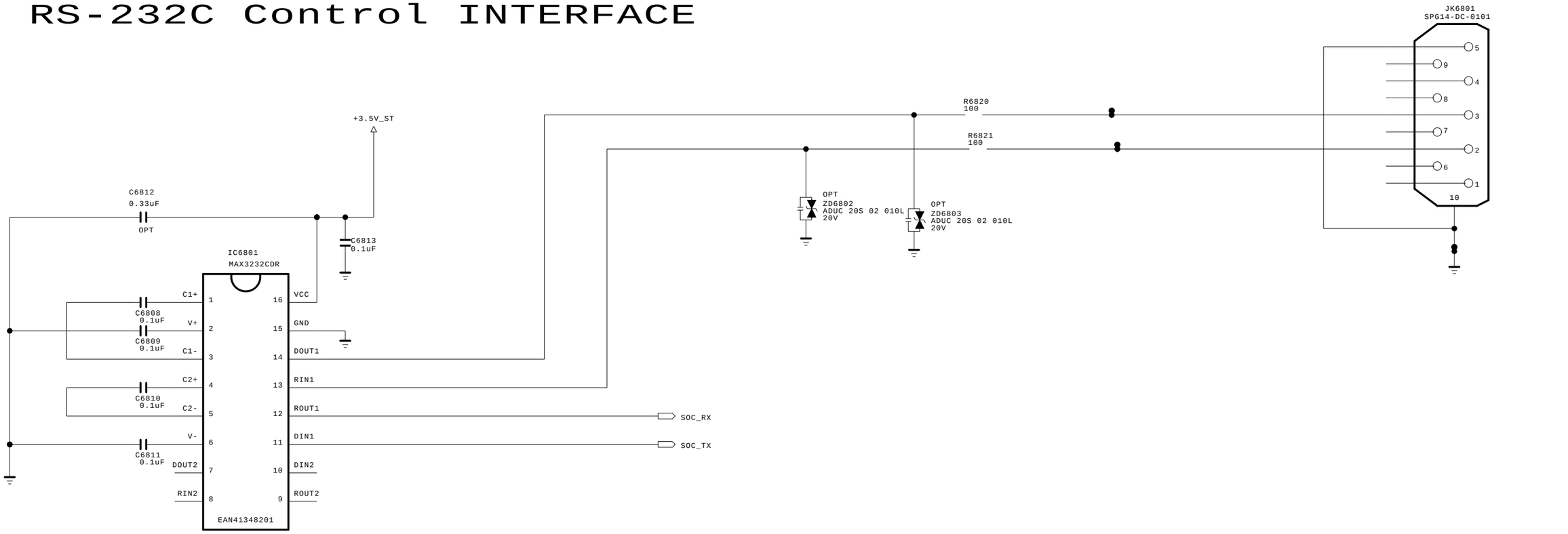
SECRET
LGElectronics

LG ELECTRONICS

BSD-14Y-UD-067-HD

| | | | |
|---|---|---|---|
| MODEL | TU_SYMBOL | DATE | 2013.12.17 |
| BLOCK | | SHEET | / |

# RS-232C Control INTERFACE




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

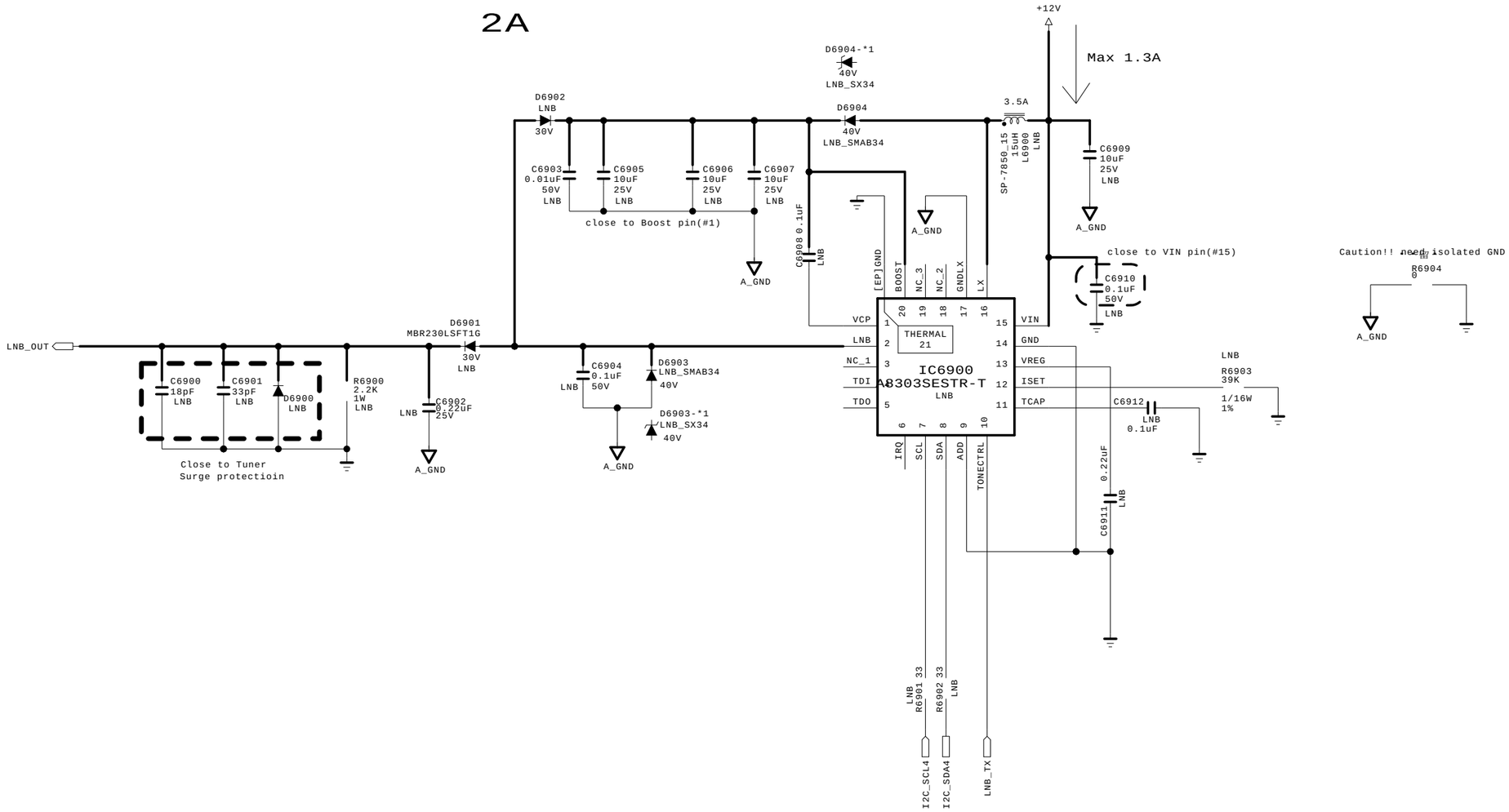
LG ELECTRONICS

# DVB-S2 LNB Part Allegro

(Option:LNB)

3A

Input trace widths should be sized to conduct at least 3A
Ouput trace widths should be sized to conduct at least 2A




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

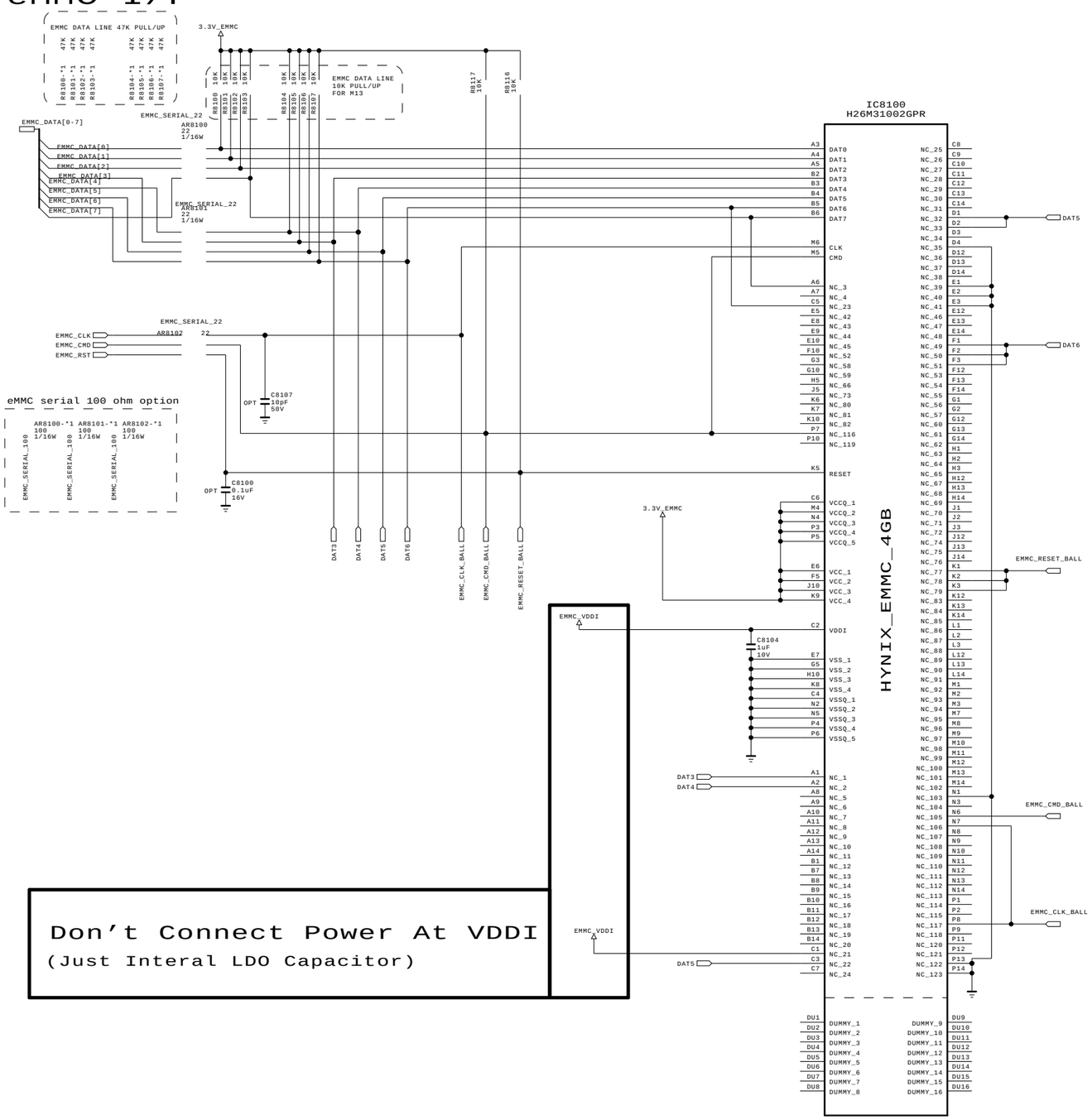
LGElectronics

LG ELECTRONICS

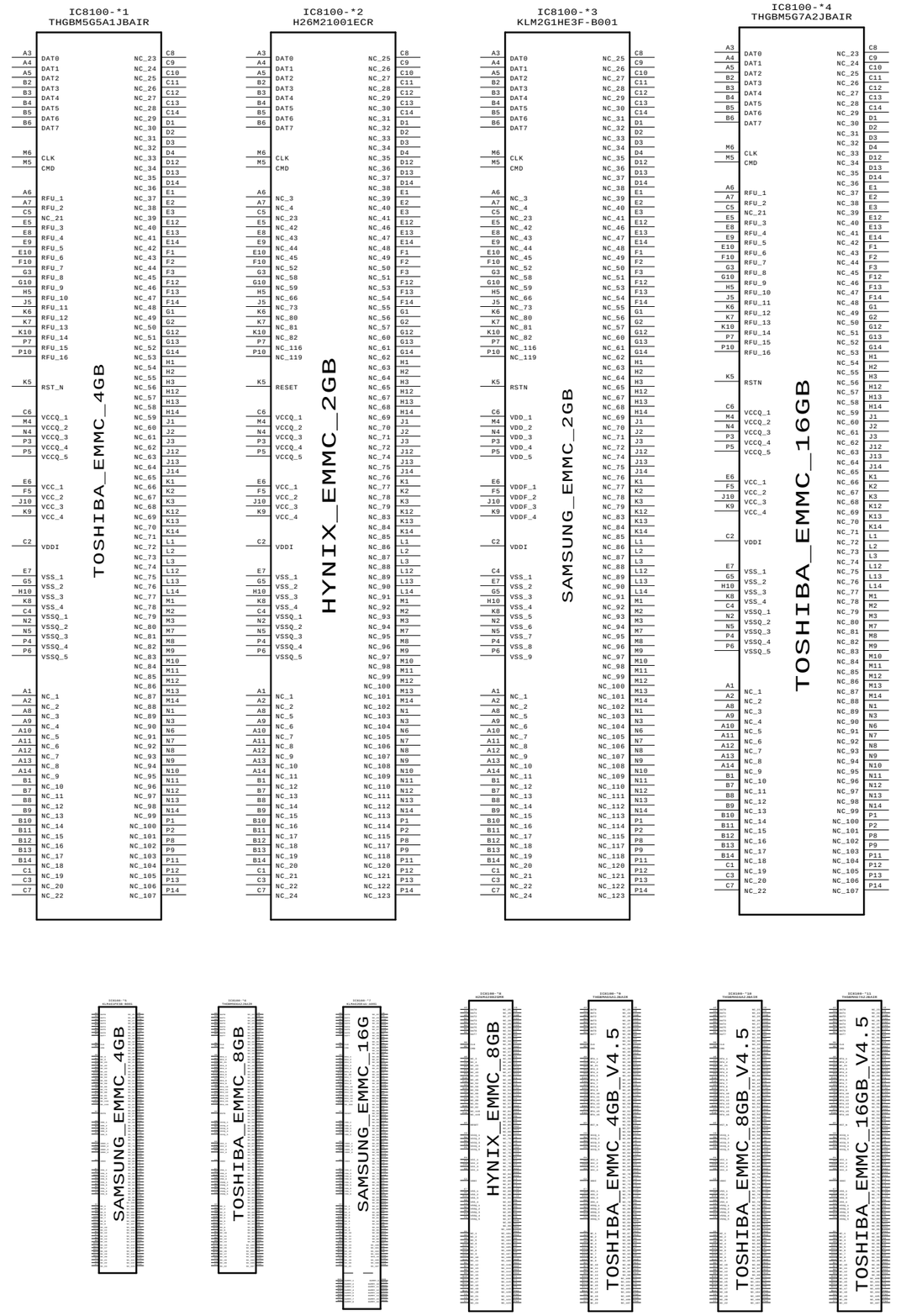
BSD-14Y-UD-069-HD

| MODEL | LNB | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | 69 |

# eMMC I/F




Don’t Connect Power At VDDI
(Just Interal LDO Capacitor)




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

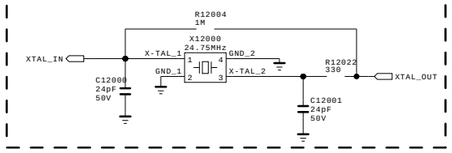
SECRET
LGElectronics

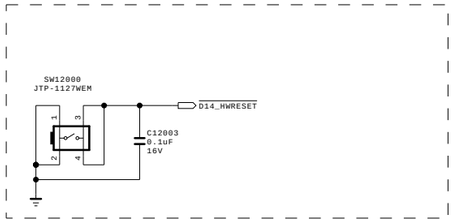
LG ELECTRONICS

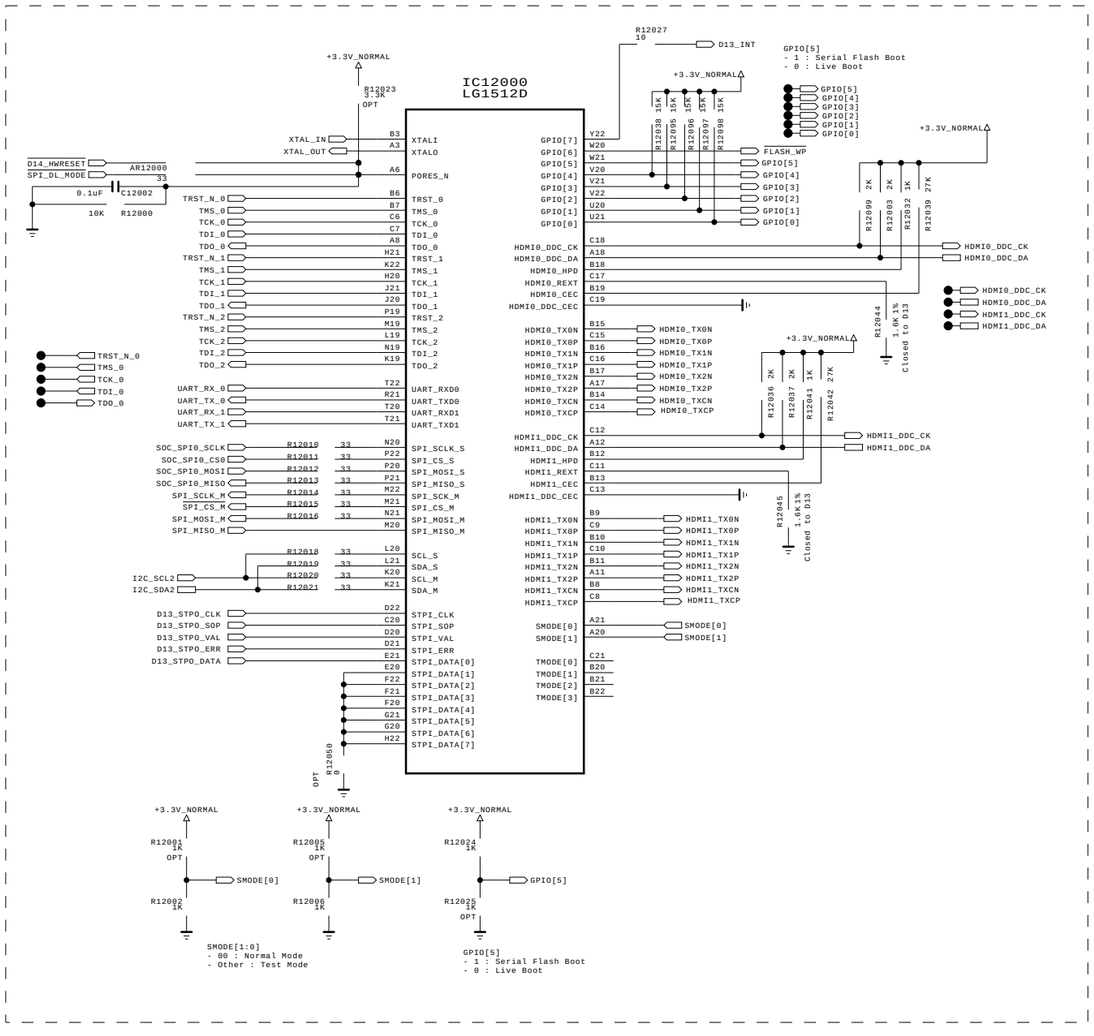
BSD-14Y-UD-081-HD

| MODEL | eMMC | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | 81 |

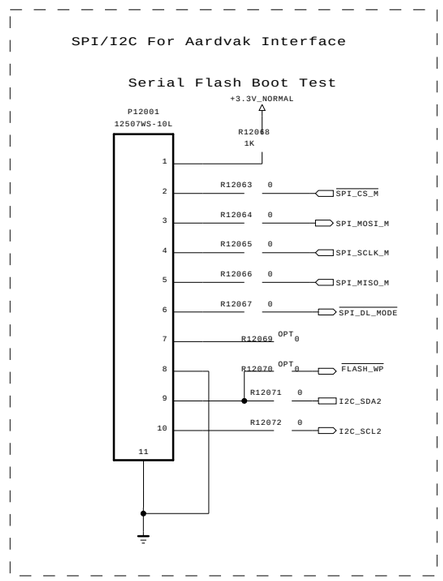
## XTAL(24.75MHz)



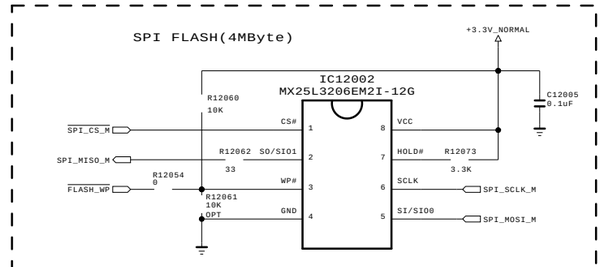



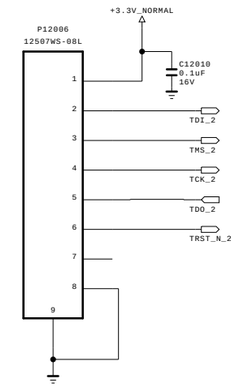

## SPI/I2C For Aardvak Interface



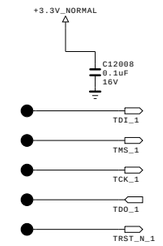

## SPI FLASH(4MByte)



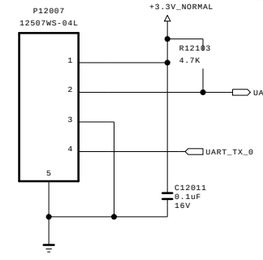

## JTAG1 for HEVC



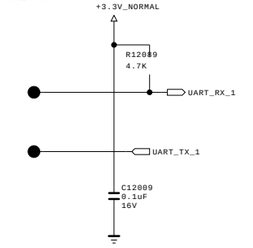

## JTAG2 for HEVC




## UART0 For system




## UART1 For HEVC




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

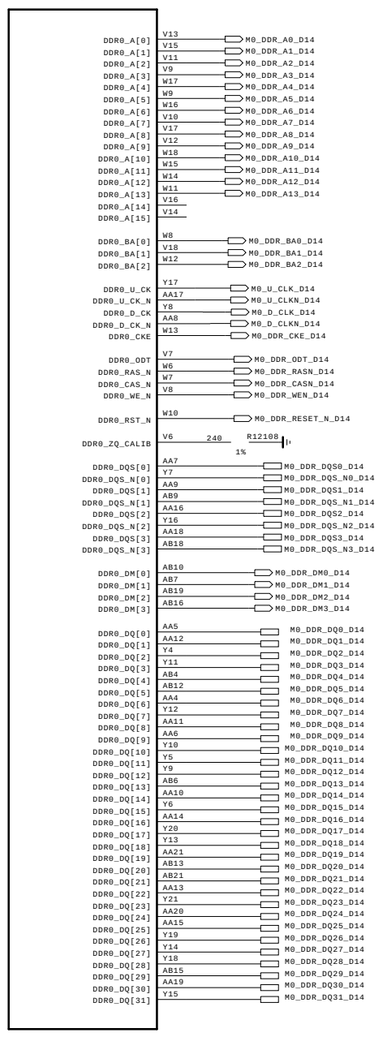
SECRET
LGElectronics

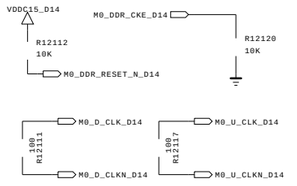
LG ELECTRONICS

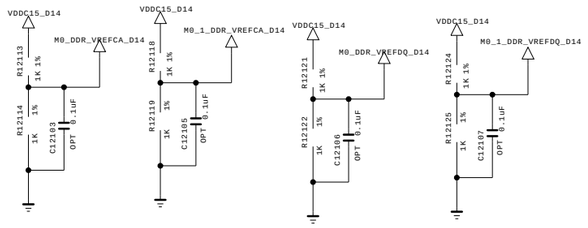
BSD-14Y-UD-119-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | |

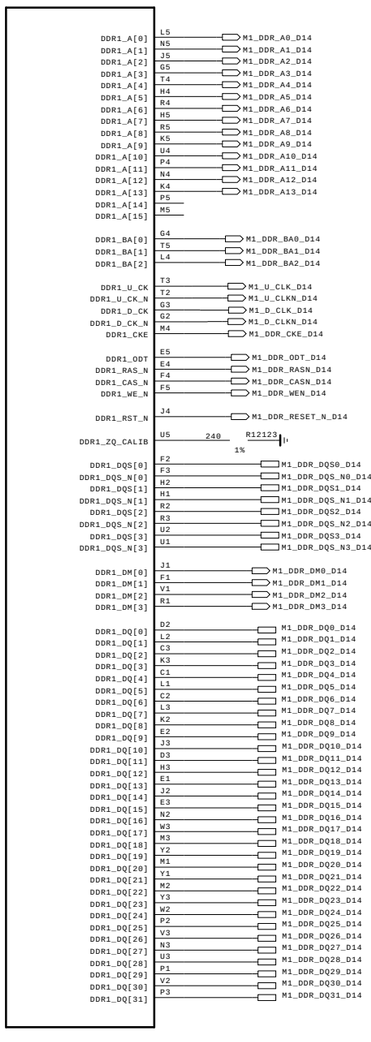
## IC12000 LG1512D

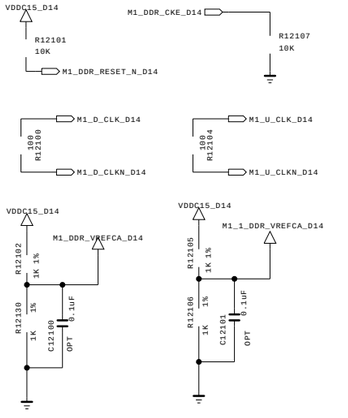


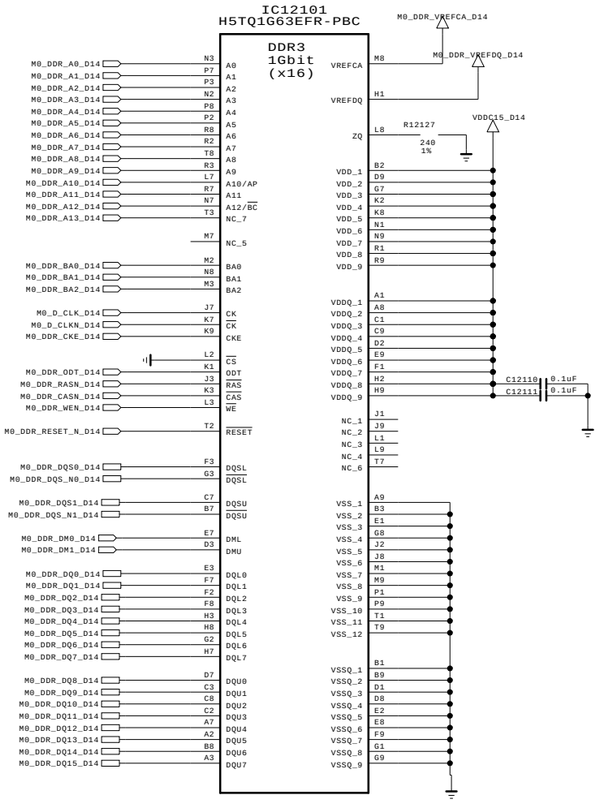




## IC12000 LG1512D

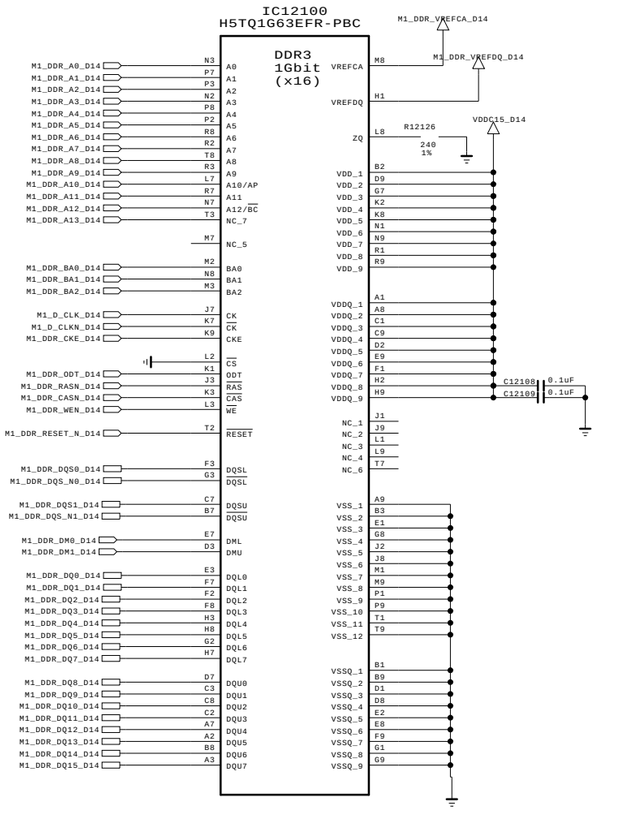


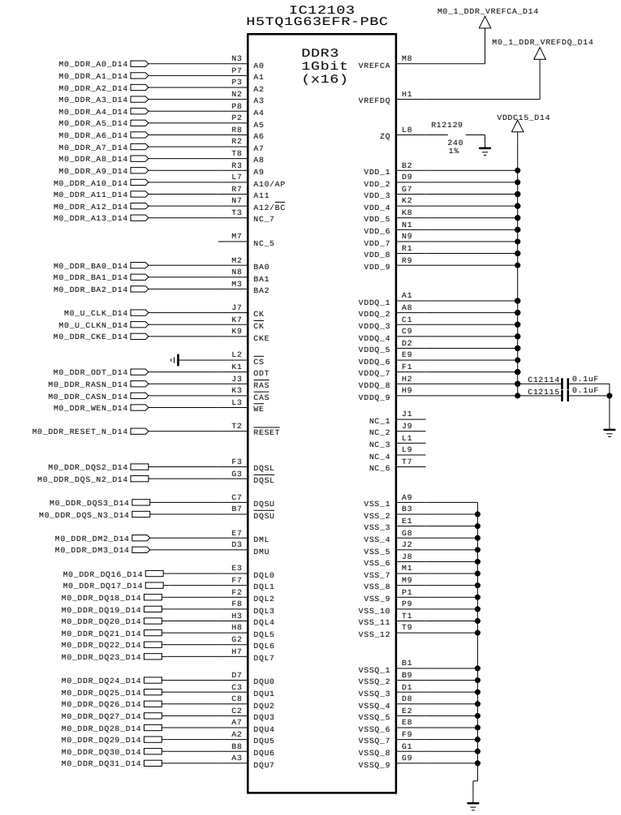

## IC12101 H5TQ1G63EFR-PBC



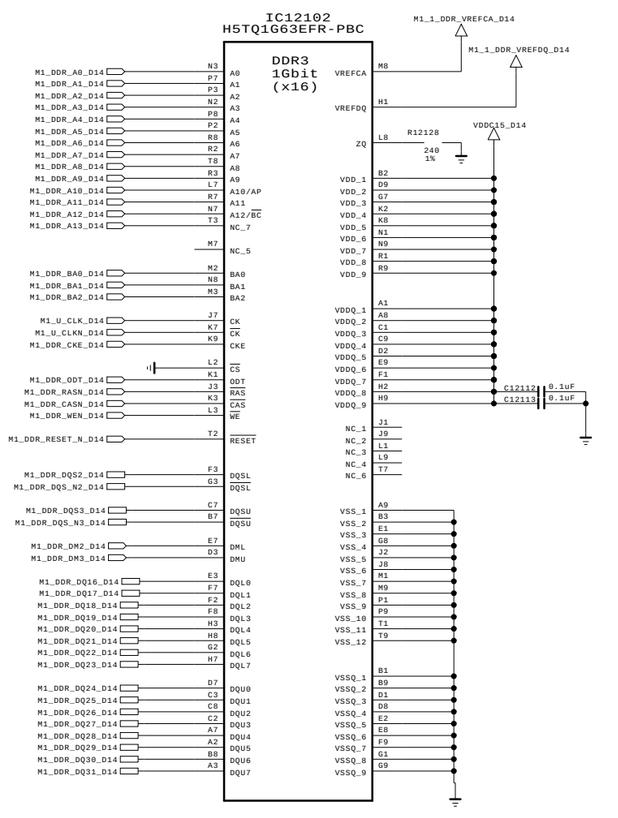

## IC12100 H5TQ1G63EFR-PBC




## IC12103 H5TQ1G63EFR-PBC




## IC12102 H5TQ1G63EFR-PBC




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

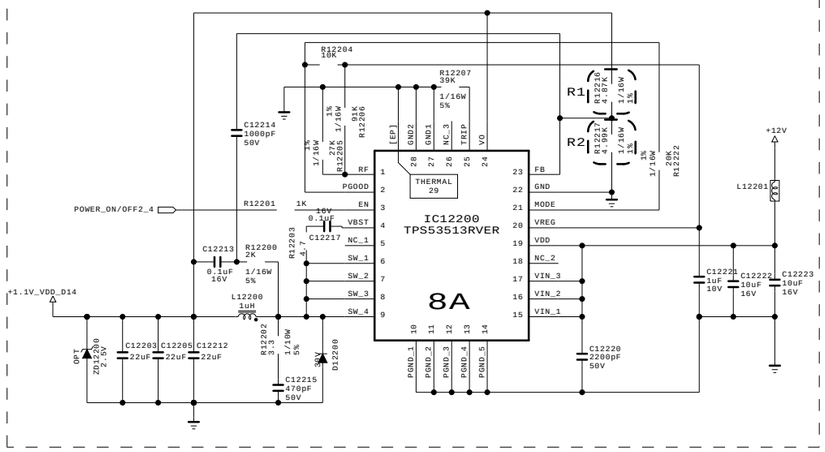
LGElectronics

LG ELECTRONICS

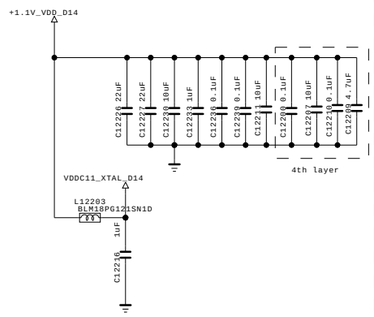
BSD-14Y-UD-121-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | D14_DDR | SHEET | |

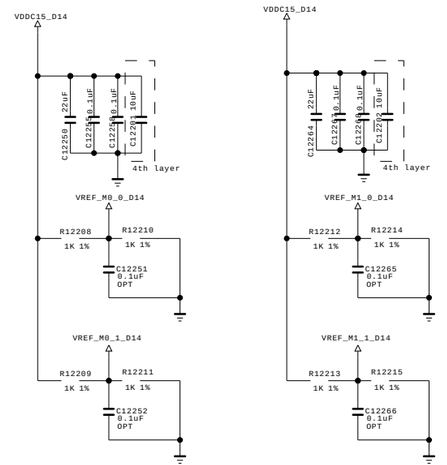
## +1.1V_VDD



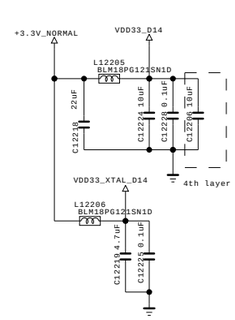

## +1.1V_Bypass Cap



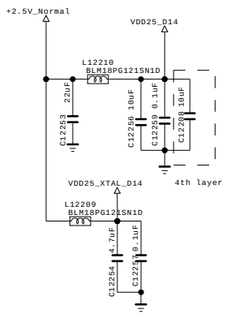

## +1.5V_Bypass Cap



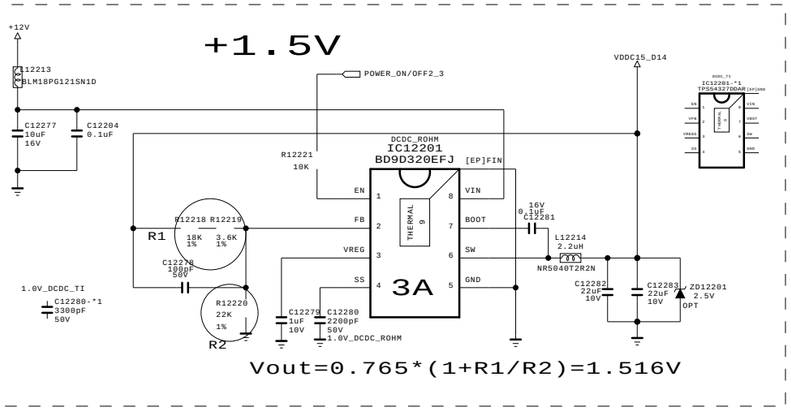

## +3.3V_Bypass Cap



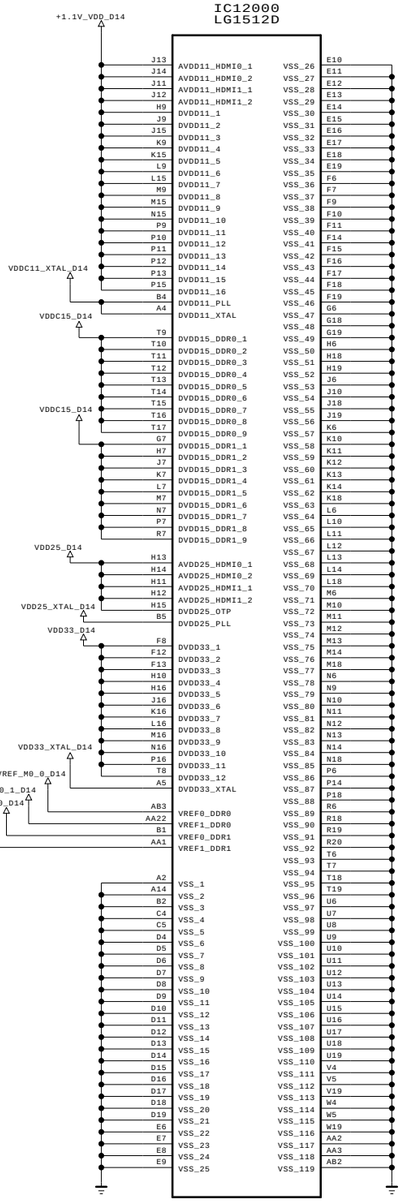

## +2.5V_Bypass Cap




## +1.5V




## IC12000 LG1512D




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

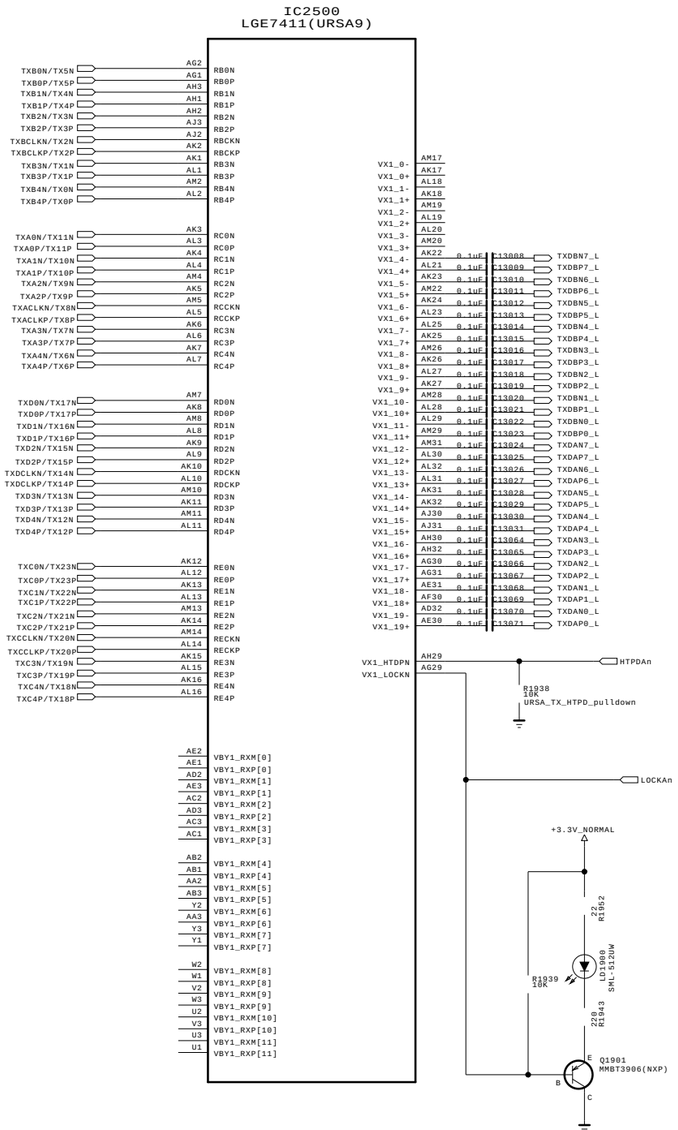
LGElectronics

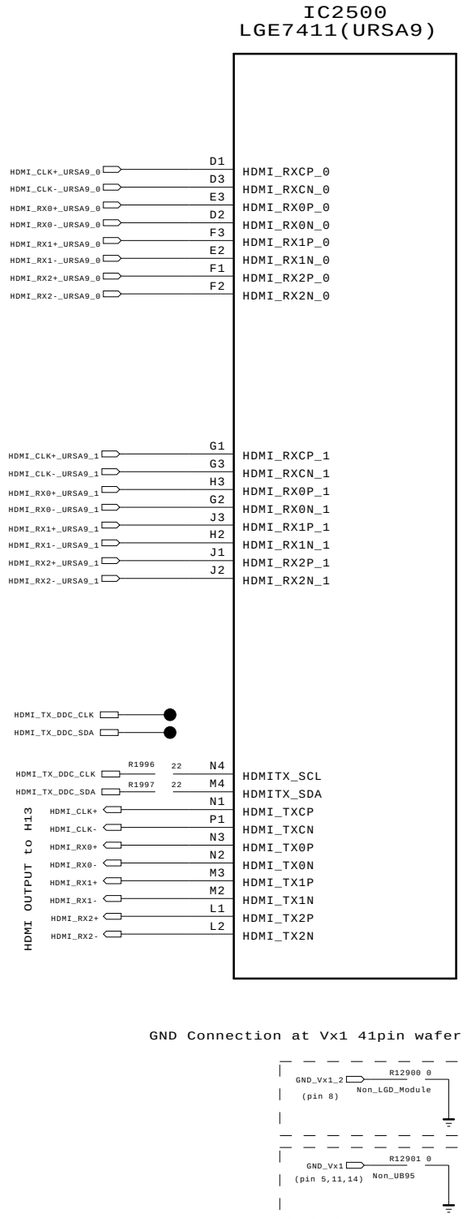
LG ELECTRONICS

BSD-14Y-UD-122-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | / |

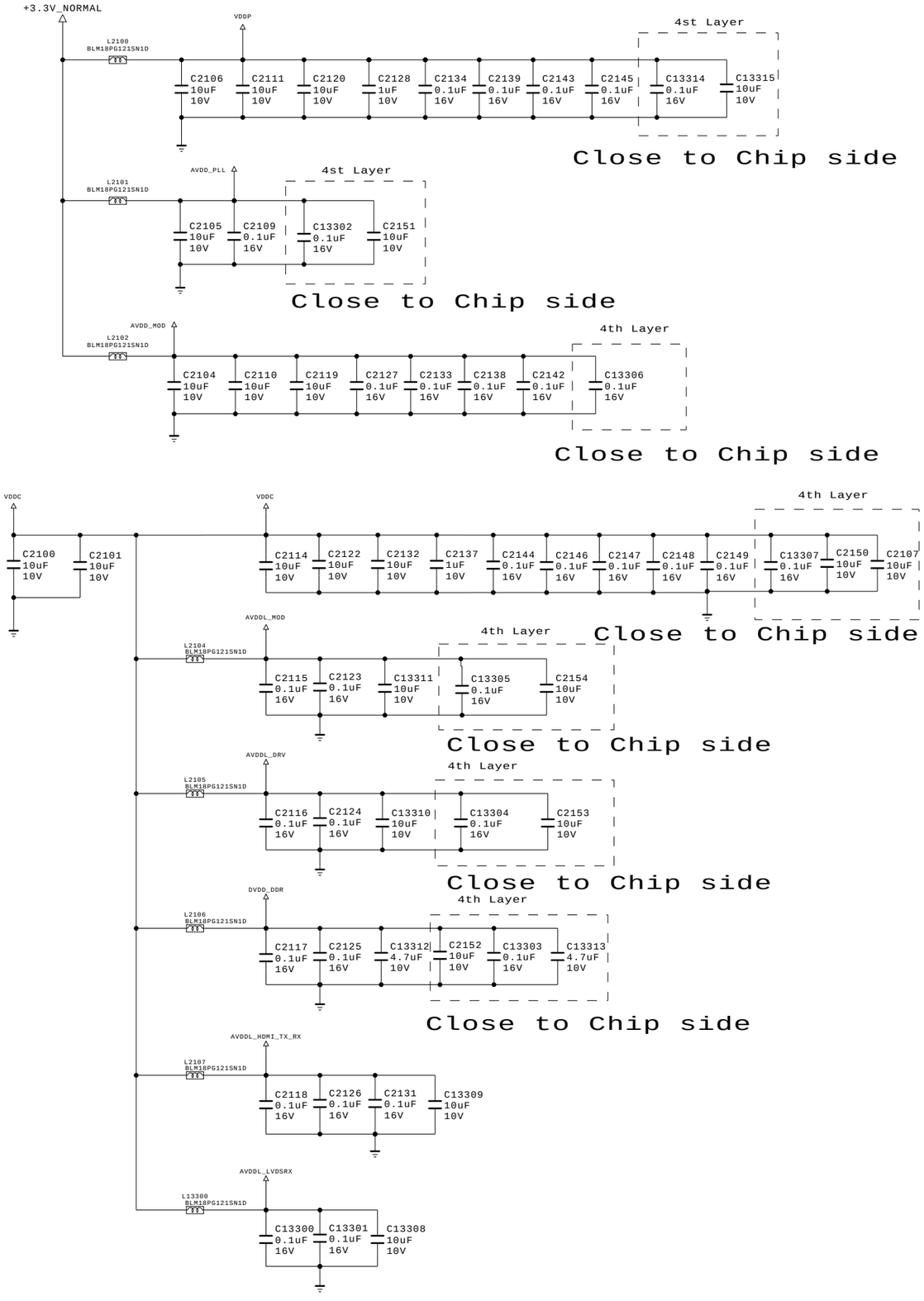
# UB85/95/UC89 only




GND Connection at Vx1 41pin wafer




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

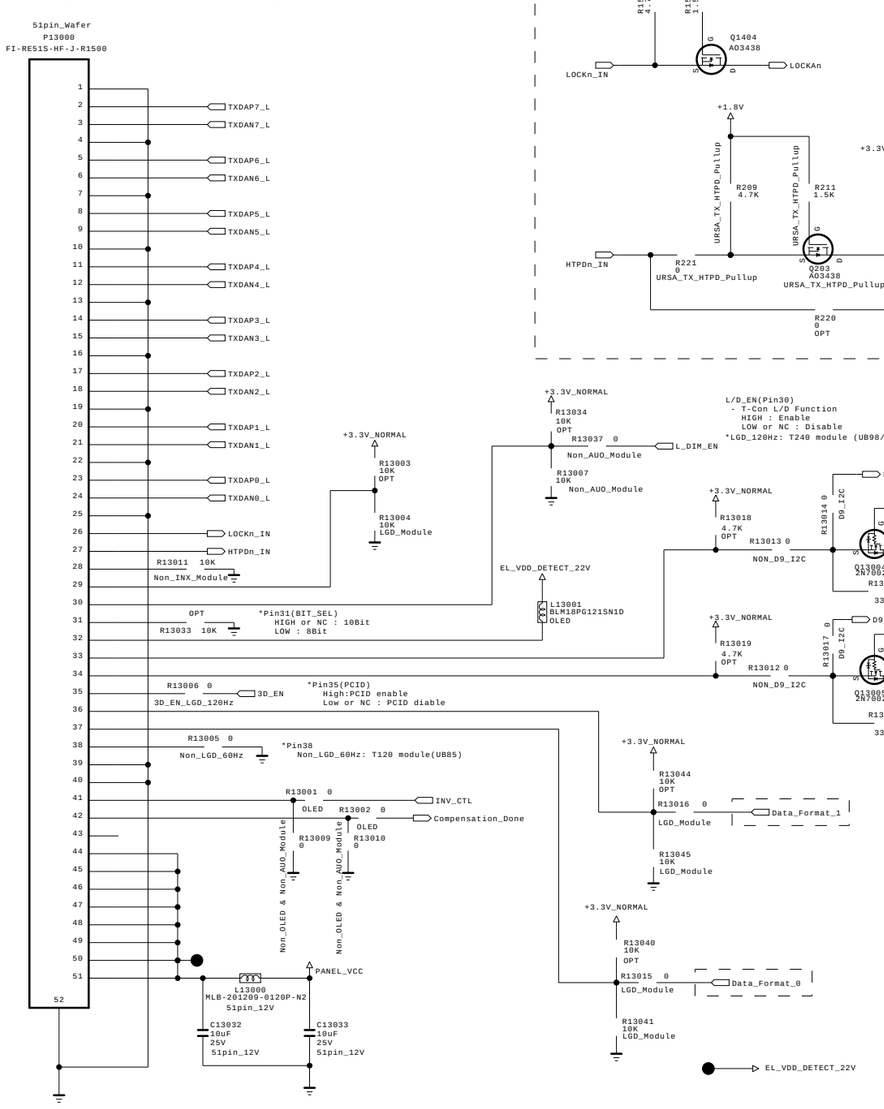
LGElectronics

LG ELECTRONICS

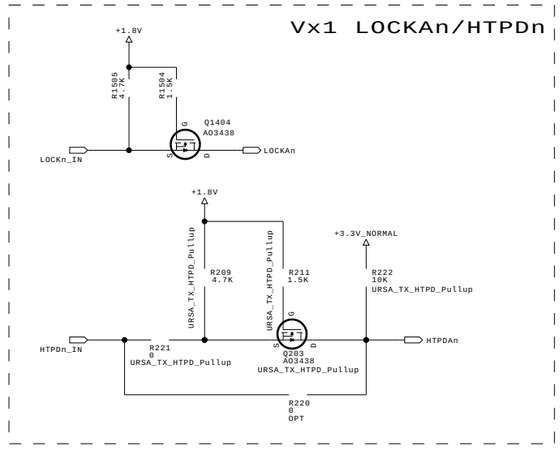
BSD-14Y-UD-128-02-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | U_LVDS INPUT | SHEET | / |

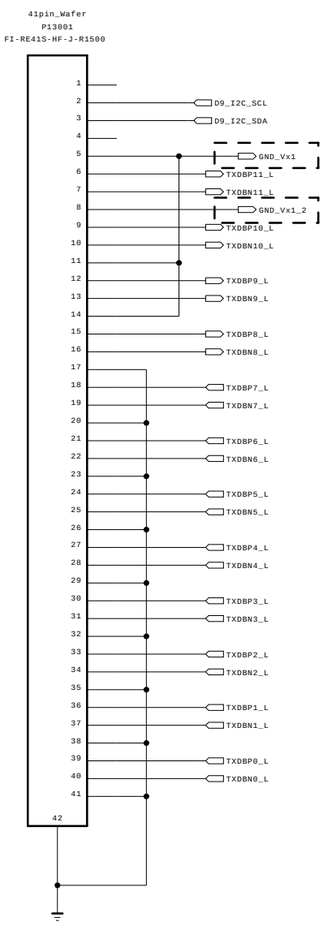
# [51P Vx1 output wafer]

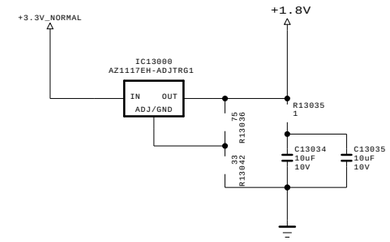



## Vx1 LOCKAn/HTPDn

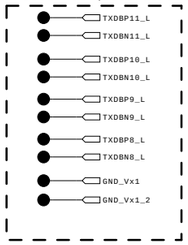



# [41P Vx1 output wafer]




Not Used Net (UB85/95/UC89)




**Data Input Format[1:0]**

*Mode 3 (4 Division)
- Data Format 0(Pin37) = Low
  Data Format 1(Pin36) = High

*Mode 2 (2 Division)
- Data Format 0(Pin37) = High
  Data Format 1(Pin36) = Low

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

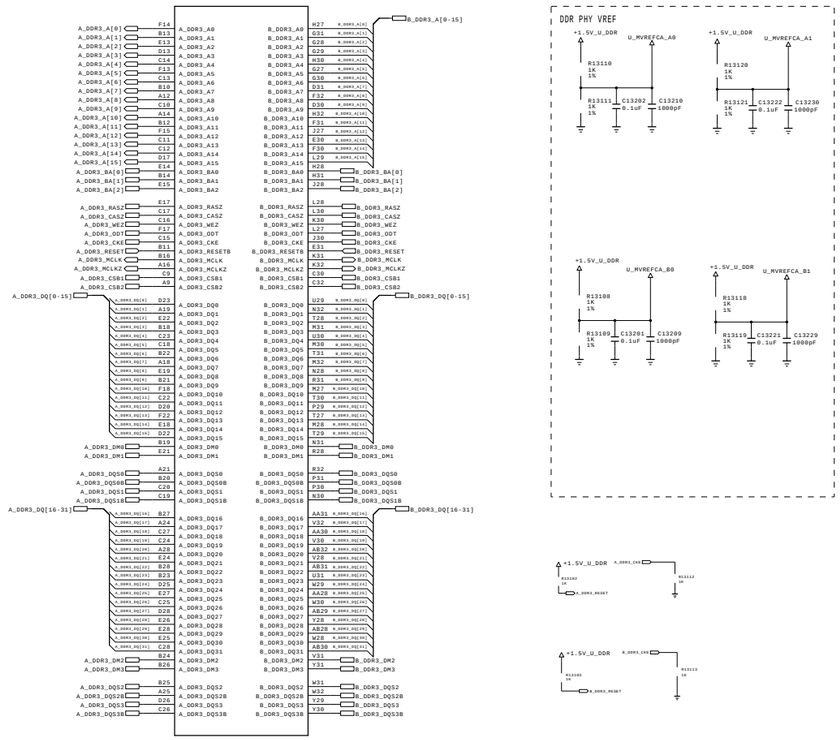
SECRET
LGElectronics

LG ELECTRONICS

BSD-14Y-UD-130-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | Output_wafer | SHEET | / |

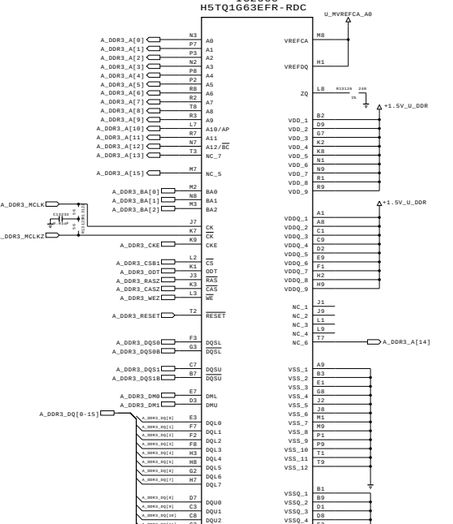
## IC2500
## LGE7411(URSA9)



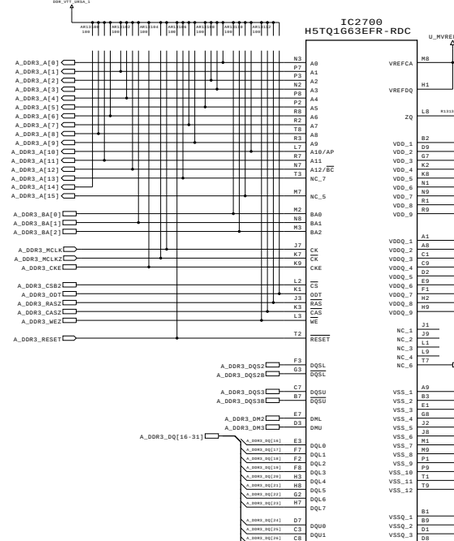

## DDR PHY VREF



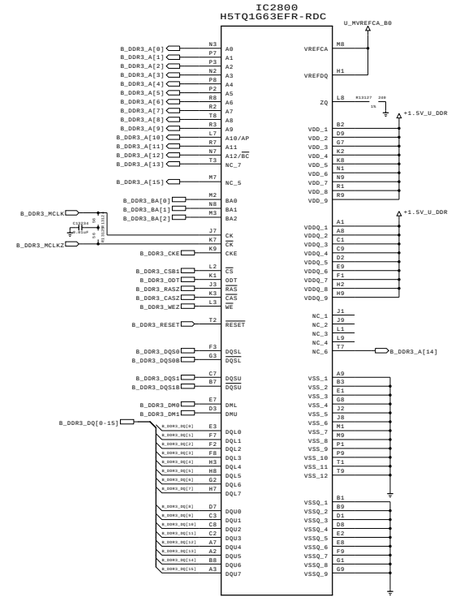

## IC2600
## H5TQ1G63EFR-RDC



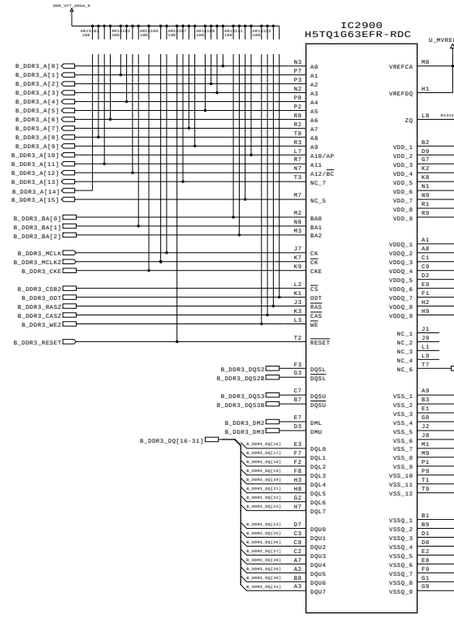

## IC2700
## H5TQ1G63EFR-RDC



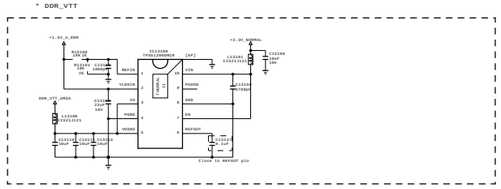

## IC2800
## H5TQ1G63EFR-RDC

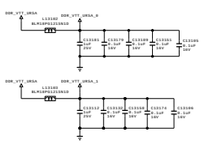



## IC2900
## H5TQ1G63EFR-RDC

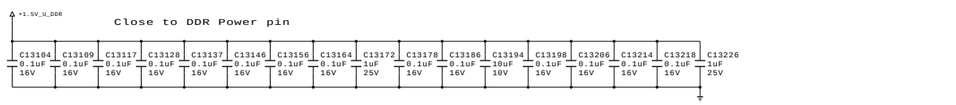


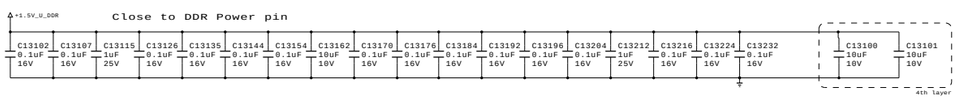

* DDR_VTT

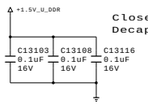



Decap removed







Close to DDR Power pin
Decap removed

BSD-14Y-UD-131-HD

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SECRET
LGElectronics

LG ELECTRONICS

| | | | |
|---|---|---|---|
| MODEL | | DATE | 2013.12.17 |
| BLOCK | URSA7_DDR | SHEET | |

## Clock for URSA9

Option Name
UB98/UC9_URSA9_crystalcap

C1903 5pF 50V
C1904 5pF 50V
X-TAL_1
X-TAL_2
GND_1
GND_2
24MHz X1900
R1925 1M
XIN_URSA
XO_URSA

Option Name
UB85/95/UC97_URSA9_crystalcap

C1904-*1 8pF 50V
C1903-*1 8pF 50V

## URSA Reset

+3.3V_NORMAL
SW1901 JTP-1127WEM
OPT C1902 22uF 10V
D1900 1N4148W
R1923 100V 10K
R1919 10K URSA9_RST_PULLUP
0 R1924
URSA_RESET
0 R1930
URSA_RESET_SoC

## URSA Option

+3.3V_NORMAL
URSA_OPT_0 — Rx Interface
URSA_OPT_1
URSA_BIT0 — Module Type
URSA_BIT1 — Tx Lane
URSA_BIT2
URSA_RX_LVDS R1920 10K
LGD_Module R1921 10K
URSA_BIT0_1 R1923 10K
URSA_BIT1_1 R1925 10K
URSA_BIT2_1 R1927 10K
URSA_RX_VX1 R1910 10K
OS_Module R1922 10K
URSA_BIT0_0 R1924 10K
URSA_BIT1_0 R1916 10K
URSA_BIT2_0 R1918 10K

| BIT [2/1/0] | Tx Lane |
|---|---|
| 0/0/0 | 4K@120 (16lane) |
| 0/0/1 | 4k@60 (8lane) |
| 0/1/0 | 5k@120 (20lane) |
| 0/1/1 | OLED ULTRA HD |
| 1/0/0 | FHD@120 (4lane) |
| 1/0/1 | FHD@60 (2lane) |
| 1/1/0 | Reserved |
| 1/1/1 | Reserved |

## SPI Flash

IC1901
MX25L3206EM2I-12G
SPI_4MB_MACRONIX
+3.3V_NORMAL
SPI_CZ — CS#
SPI_DO — R1904 33 — SO/SIO1
FLASH_WP_URSA — R1905 1K — WP#
FRC_FLASH_WP — R1932 1K — GND
U_SPI_WP_f_URSA
U_SPI_WP_f_SoC
HOLD# — 10K R1903
VCC — C1901 0.1uF 16V
SCLK — SPI_CK
SI/SIO0 — SPI_DI

IC1901-*1
W25Q32BVSSIG
SPI_4MB_Winbond
/CS, DO[IO1], /WP[IO2], GND, VCC, /HOLD[IO3], CLK, DI[IO0]

## IC2500
## LGE7411(URSA9)

| | | | |
|---|---|---|---|
| URSA_RESET | AF29 | RESET | |
| XIN_URSA | R3 | XTALO | |
| XO_URSA | R4 | XTALI | |
| I2CS_SDA (AR13201 33) | AJ24 | I2CS_SDA | I2C_HSC_SDA/VSYNC_LIKE2 |
| I2CS_SCL | AH24 | I2CS_SCL | I2C_HSC_SCL/VSYNC_LIKE3 |
| | AH26 | I2CM_SDA | SPI1_CK/PWM2/GPIO58 |
| | AG24 | I2CM_SCL/VSYNC_LIKE1 | SPI1_DI/PWM3/GPIO59 |
| | B4 | GPIO[0][UART2_TX] | SPI2_CK/PWM0/GPIO56 |
| | A4 | GPIO[1][UART2_RX] | SPI2_DI/PWM1/GPIO57 |
| | B5 | GPIO[2][UART1_TX] | SPI3_CK/DIM10/GPIO54 |
| | A5 | GPIO[3][UART1_RX] | SPI3_DI/DIM11/GPIO55 |
| | | | SPI4_CK/DIM8/GPIO52 |
| | | | SPI4_DI/DIM9/GPIO53 |
| | | | VSYNC_LIKE/PWM5/GPIO40 |
| | AD28 | SPI_CZ | |
| | AD30 | SPI_CK | |
| | AC31 | SPI_DI | |
| | AD29 | SPI_DO | |
| | AE28 | INT_R21/GPIO[41] | |
| | AE27 | INT_R20/GPIO[42] | |
| | C4 | IRE | |
| | AC27 | GND_1 | |
| | AD27 | GND_2 | |
| | A7 | NC_1 | |
| | B6 | NC_2 | |
| | B7 | NC_3 | |
| | C5 | NC_4 | |
| | C6 | NC_5 | |
| | C7 | NC_6 | |
| | D4 | NC_7 | |
| | D5 | NC_8 | |
| | D6 | NC_9 | |
| | D7 | NC_10 | |
| | E4 | NC_11 | |
| | E5 | NC_12 | |
| | E6 | NC_13 | |
| | E7 | NC_14 | |
| | F4 | NC_15 | |
| | F5 | NC_16 | |
| | M5 | NC_17 | |
| | M6 | NC_18 | |
| | M7 | NC_19 | |
| | N5 | NC_20 | |
| | R7 | NC_21 | |
| | P7 | NC_22 | |
| | N7 | NC_23 | |
| | N6 | NC_24 | |

| | | | |
|---|---|---|---|
| | AG25 | | |
| | AH25 | | |
| | AH28 | | |
| | AJ27 | OPT R13202 33 — URSA_OPT_0 | |
| | AJ29 | | |
| | AF27 | | |
| | AG28 | | |
| | AH27 | | |
| | AG27 | R1935 33 — 3D_EN (+3.3V_NORMAL OPT R1936 10K; R1937 10K) | |
| | AG26 | R1934 33 — L_DIM_EN | |
| | AF28 | OPT R13203 33 | |
| | AG23 | DIM0 | |
| | AG20 | DIM1 | |
| | AH23 | DIM2 | |
| | AH20 | (+3.3V_NORMAL OPT R13204 10K; R13205 10K) | |
| | AG21 | URSA_OPT_1 | |
| | AH22 | URSA_BIT0 | |
| | AG22 | URSA_BIT1 | |
| | AH21 | URSA_BIT2 | |
| | A3 | GPIO43/TCON0 | |
| | B3 | GPIO44/TCON1 | |
| | A2 | GPIO45/TCON2 | |
| | C3 | GPIO46/TCON3 | |
| | B2 | GPIO47/TCON4 | |
| | B1 | GPIO48/TCON5 | |
| | C2 | GPIO49/TCON6 | |
| | C1 | GPIO50/TCON7 | |
| | AG4 | GPIO[18]/TCON8 | |
| | AG5 | GPIO[19]/TCON9 | |
| | AH4 | GPIO[20]/TCON10 — RXASCL_URSA9 | |
| | AH5 | GPIO[21]/TCON11 — RXASDA_URSA9 | |
| | AH6 | GPIO[22]/TCON12 | |
| | AJ4 | GPIO[23]/TCON13 | |
| | AJ5 | GPIO24/TCON14 | |
| | AJ6 | GPIO25/TCON15 | |
| | AH16 | GPIO[4] — Data_Format_1 | |
| | AG16 | GPIO[5] — Data_Format_0 | |
| | Y5 | GPIO[6] — RXBSCL_URSA9 | |
| | Y4 | GPIO[7] — RXBSDA_URSA9 | |
| | AB4 | GPIO[8] | |
| | AB5 | GPIO[9] | |
| | AG17 | GPIO[10]/PWM_DIM_IN[0] (OPT R13207 33; R13206 100K; R13209 100K) | |
| | AH17 | GPIO[11]/PWM_DIM_IN[1] (OPT R13208 33) | |
| | AG18 | GPIO[12] (10K R13201) | |
| | AJ20 | GPIO[13] — URSA_RX_Vx1_HTPDn (10K R13200) | |
| | AH18 | GPIO[14] — URSA_RX_Vx1_HTPDn — URSA9_CONNECT | |
| | AG19 | GPIO[15] — URSA_LOCK_O | |
| | AH19 | GPIO[16] — URSA_LOCK_V | |
| | AJ21 | GPIO[17] — FLASH_WP_URSA | |

HDMI OUTPUT_1 DDC to URSA9
HDMI OUTPUT_0 DDC to URSA9
For DFT JIG
URSA9_Vx1_RX_HTPD_GPIO

Not Used Net (UB98/D9)
RXASCL_URSA9
RXASDA_URSA9
RXBSCL_URSA9
RXBSDA_URSA9

Not Used Net (UB85/95/UC89)
URSA9_CONNECT
URSA_LOCK_O
URSA_LOCK_V

Change pin from A5 to C4
URSA9 UART1_RX

+3.3V_NORMAL
1K R1954 OPT
TCON_I2C_EN — 33 R1981 — AE28
R1933 — AE27
10K OPT 33 R1955

## Chip Config

Debug/ISP ADDR
Slave (Debug Port:0XB4,ISP:0X98)
CHIP_CONF:{DIM2,DIM1,DIM0}
CHIP_CONF=3'd7:111:boot from SPI Flash

+3.3V_NORMAL
DIM0 — OPT 10K R1908 — 10K R1902
DIM1 — OPT 10K R1907 — 10K R1901
DIM2 — OPT 10K R1906 — 10K R1900

## Debugging for URSA9

I2C_S Port

P1905
12507WS-04L
WAFER-STRAIGHT
R1922 33 URSA_DEBUG — SCL2_+3.3V_DB
R1921 33 URSA_DEBUG — SDA2_+3.3V_DB

SW1902
JS2235S
I2C_SCL1 — R1958 0 URSA_MP — R1959 0 URSA_MP — I2C_SDA1
I2CS_SCL — R1960 0 OPT — R1961 0 OPT — I2CS_SDA
SCL2_+3.3V_DB — SDA2_+3.3V_DB
URSA_DEBUG

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

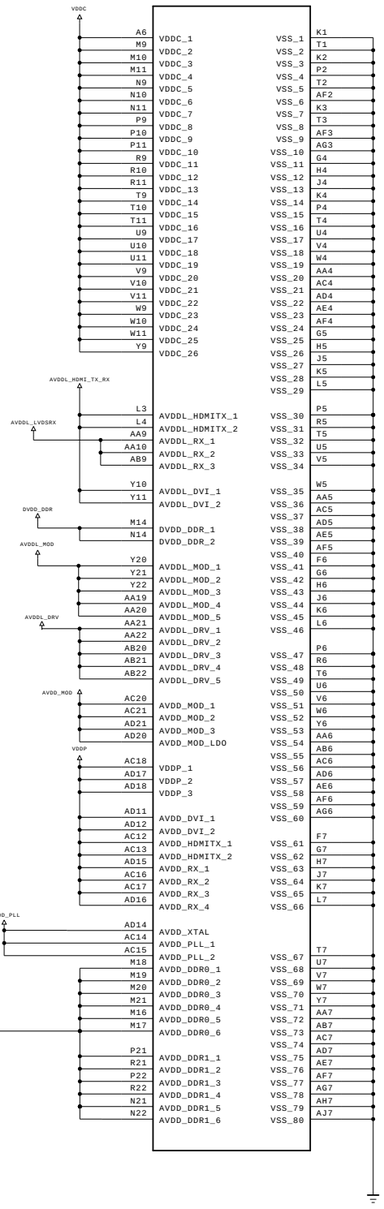
SECRET
LGElectronics

LG ELECTRONICS

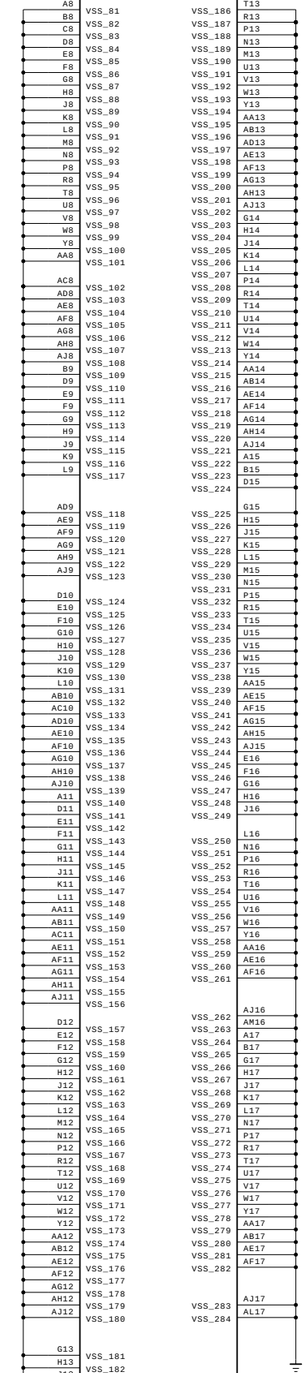
BSD-14Y-UD-132-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | |

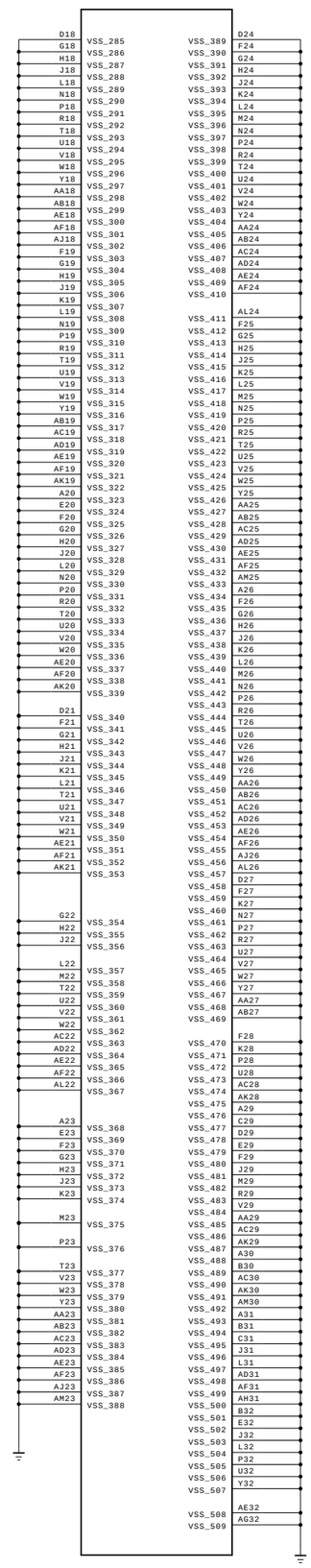
## IC2500 LGE7411(URSA9)




## IC2500 LGE7411(URSA9)




## IC2500 LGE7411(URSA9)




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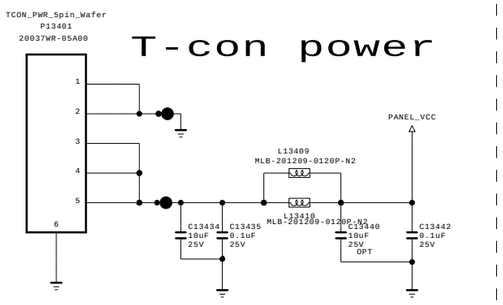
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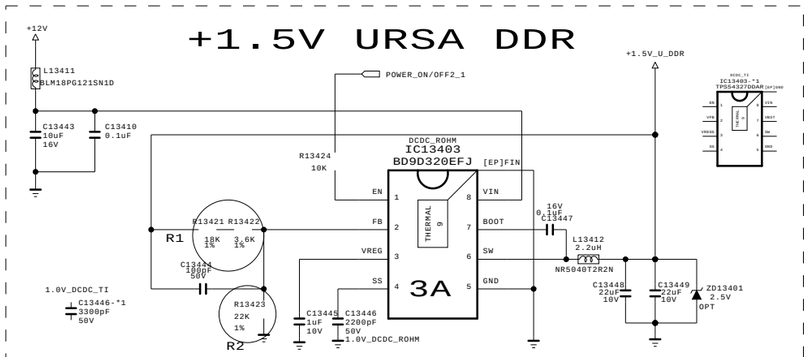
BSD-14Y-UD-133-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | U_Power | SHEET | / |

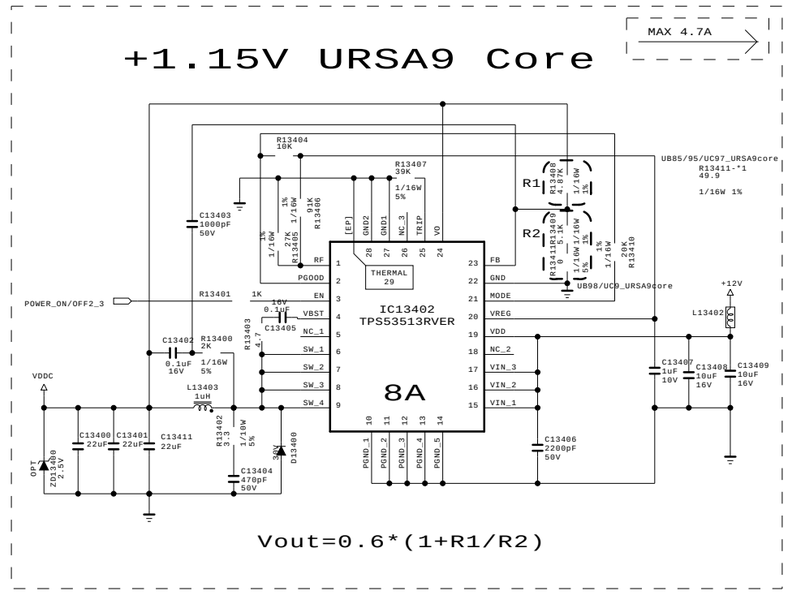
## T-con power




## +1.5V URSA DDR




## +1.15V URSA9 Core



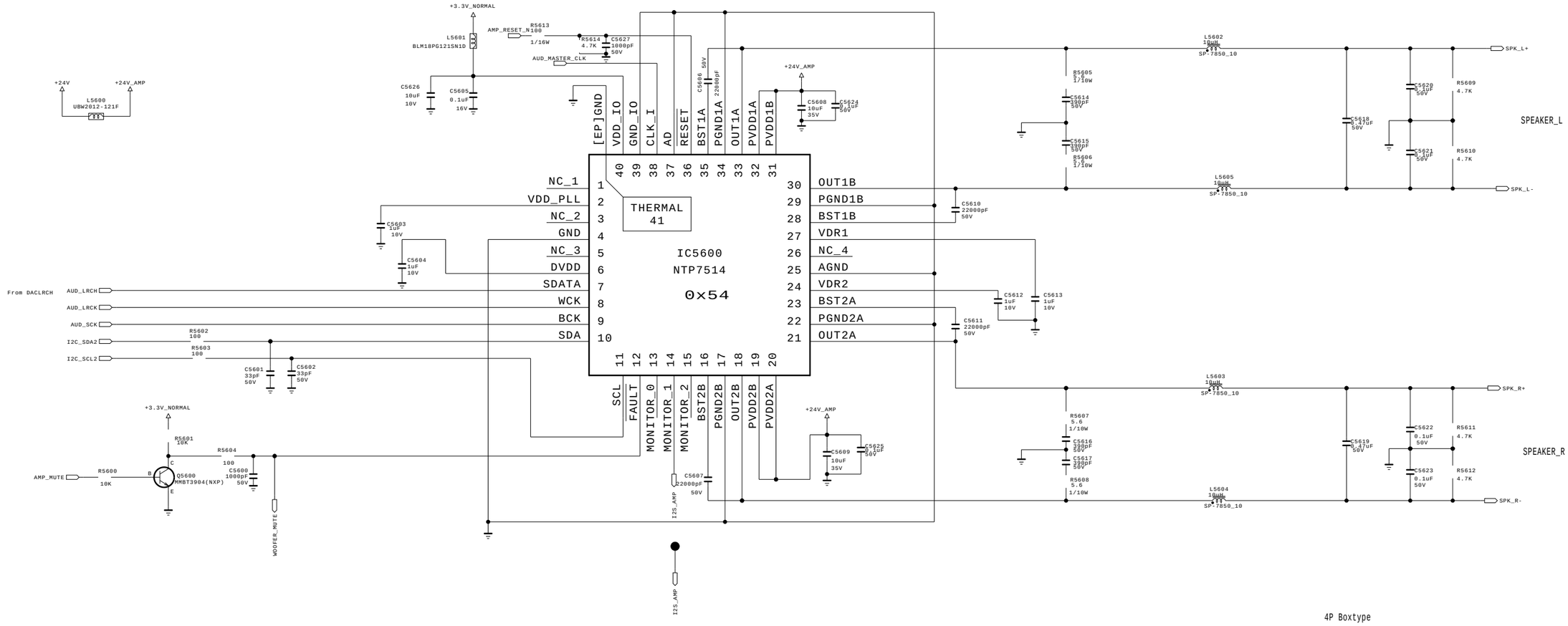

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# UB85/95/UC97 only

## Front speaker




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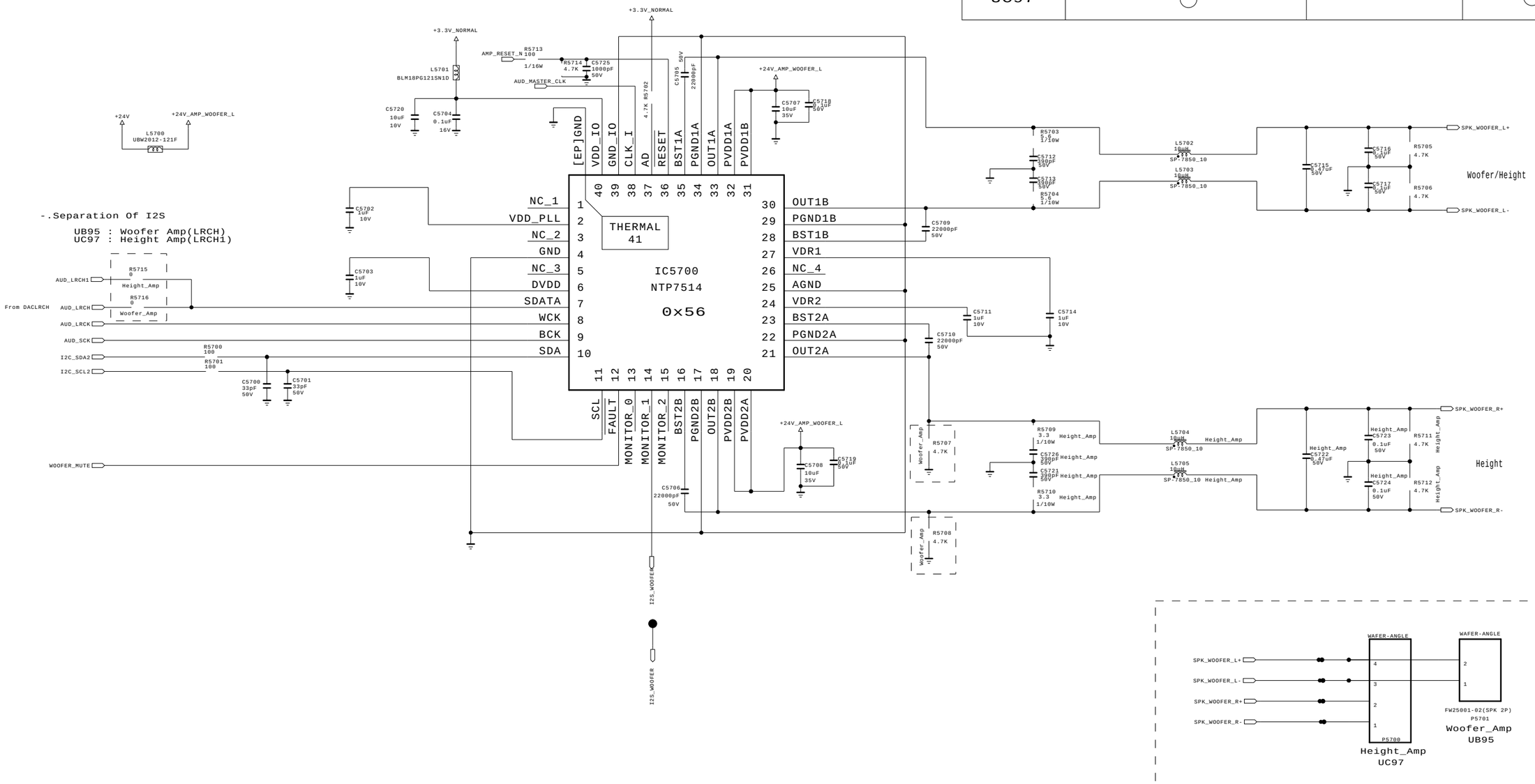
BSD-14Y-UD-056-02-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | / |

# UB85/95/UC97 only

# UB95 : Woofer Amp
# UC97 : Height Amp

| OPTION Selection | | | |
|---|---|---|---|
| | Woofer/Height_Amp | Woofer_Amp | Height_Amp |
| UB95 | ○ | ○ | |
| UC97 | ○ | | ○ |




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BSD-14Y-UD-057-02-HD

| MODEL | | DATE | 2013.12.17 |
|---|---|---|---|
| BLOCK | | SHEET | / |