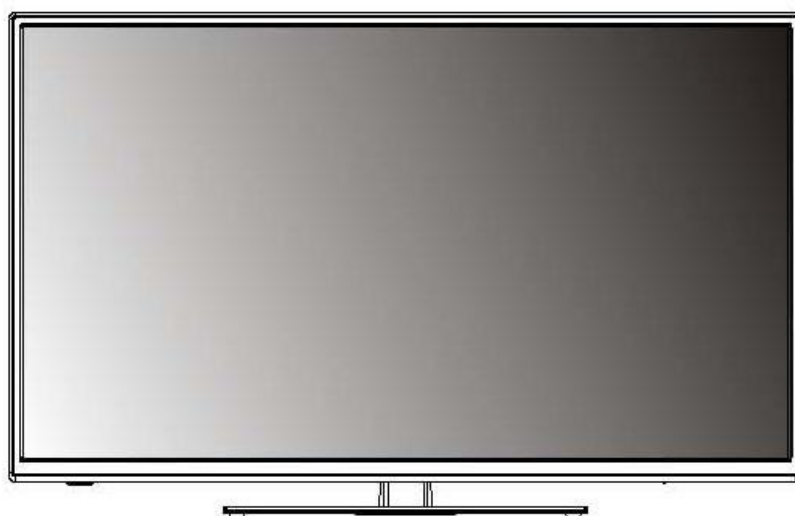


# SERVICE MANUAL



Design and specifications are subject to change without prior notice. (Only for Reference)

|                                          |
|------------------------------------------|
| <b>Description:</b> SERVICE MANUAL 9M32B |
|------------------------------------------|

|                           |
|---------------------------|
| <b>MODEL:</b> 9M32B-50Q20 |
|---------------------------|

|                              |                        |
|------------------------------|------------------------|
| <b>Prepared By:</b> Xuhuajie | <b>Date:</b> 2019/4/25 |
|------------------------------|------------------------|

|                    |              |
|--------------------|--------------|
| <b>Checked By:</b> | <b>Date:</b> |
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| <b>Approved By:</b> | <b>Date:</b> |
|---------------------|--------------|

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## 1. Technical Specification

|       |                             |                                            |                                                                               |
|-------|-----------------------------|--------------------------------------------|-------------------------------------------------------------------------------|
| 1     | Outlook                     |                                            |                                                                               |
|       | Please refer to the picture |                                            |                                                                               |
| 2     | Brief Information           |                                            |                                                                               |
| 2.1   |                             | Product Name                               | 9M32B-50Q20                                                                   |
| 2.2   |                             | Chassis Name                               | 9M32B                                                                         |
| 2.3   |                             | Solution                                   | MSD6886                                                                       |
| 2.4   |                             | Key functions                              | ISDB Netflix TV                                                               |
| 2.5   |                             | Target Market                              | 巴西、秘鲁、阿根廷、智利、委内瑞拉、厄瓜多尔、巴拉圭、哥斯达黎加、玻利维亚、尼加拉瓜、乌拉圭、伯利兹、洪都拉斯、危地马拉、特立尼达和多巴哥、圭亚那、菲律宾 |
| 2.6   |                             | Product Category                           | D-LED                                                                         |
| 2.7   |                             | Product Positioning                        | Middle End                                                                    |
| 2.8   |                             | Product size                               | 50"                                                                           |
| 3     | Panel Specification         |                                            |                                                                               |
| 3.1   | Model Number                | Model Number                               |                                                                               |
| 3.1.1 |                             | Panel Manufacturer                         | Skyworth                                                                      |
| 3.1.2 |                             | Model Number                               | INX V500DJ7-QE1                                                               |
| 3.2   | Mechanical                  | Mechanical                                 |                                                                               |
| 3.2.1 |                             | Panel Size                                 | 50inches                                                                      |
| 3.2.2 |                             | Dimension                                  | TBD                                                                           |
| 3.2.3 |                             | Pixel Format (H × V)                       | 3840 horiz. by 2160 vert. Pixels                                              |
| 3.2.4 |                             | Backlight Type                             | LED                                                                           |
| 3.2.5 |                             | Pixel Pitch (mm)                           | TBD                                                                           |
| 3.2.6 |                             | Visible Area (mm) : H x V                  | TBD                                                                           |
| 3.2.7 |                             | Diagonal Screen Size                       | TBD                                                                           |
| 3.3   | Electronic Parameter        | Electronic Parameter                       |                                                                               |
| 3.3.1 |                             | Brightness (cd/m <sup>2</sup> )(for panel) | 280                                                                           |
| 3.3.2 |                             | Power consumption(W, for panel)            | TBD                                                                           |

|        |                         |                                                         |                  |
|--------|-------------------------|---------------------------------------------------------|------------------|
| 3.3.3  |                         | Brightness (cd/m <sup>2</sup> )(for product)            | 250nit(min)      |
| 3.3.4  |                         | Dynamic Contrast Ratio                                  | No               |
| 3.3.5  |                         | Contrast Ratio                                          | 1100:1           |
| 3.3.6  |                         | Viewing Angle                                           | 178              |
| 3.3.7  |                         | Response Time (ms)                                      | 9ms              |
| 3.3.8  |                         | Back light Time (Hours)                                 | 30000            |
| 3.3.9  |                         | 120Hz(100Hz)/240Hz(200Hz)                               | No               |
| 4      | Signal Receiving System |                                                         |                  |
| 4.1    | ATV Receiving System    | ATV Receiving System                                    |                  |
| 4.1.1  |                         | PAL BG/I/DK/                                            | No               |
| 4.1.2  |                         | NTSC-M                                                  | No               |
| 4.1.3  |                         | PAL/SECAM BG/DK/I                                       | No               |
| 4.1.4  |                         | PAL M/N NTSC-M                                          | Yes              |
| 4.2    | DTV Receiving System    | DTV Receiving System                                    |                  |
| 4.2.1  |                         | ATSC                                                    | No               |
| 4.2.2  |                         | DVB-T                                                   | No               |
| 4.2.3  |                         | DVB-T with CI                                           | No               |
| 4.2.4  |                         | DVB-T2                                                  | No               |
| 4.2.5  |                         | DVB-T2 with CI+                                         | No               |
| 4.2.6  |                         | ISDB-T/SBTVD-T                                          | Yes              |
| 4.2.7  |                         | DTMB                                                    | No               |
| 4.2.8  |                         | DVB-C                                                   | No               |
| 4.2.9  |                         | ISDB-T/ISDB-S                                           | No               |
| 4.2.10 |                         | DVB-S                                                   | No               |
| 4.2.11 |                         | DVB-S/S2                                                | No               |
| 4.3    | Antenna input           | Antenna input                                           |                  |
| 4.3.1  |                         | Antenna Input port: 1 (1 for analogue)                  | No               |
| 4.3.2  |                         | Antenna Input port: 1 (1 for both analogue and digital) | Yes              |
| 4.3.3  |                         | Antenna Input port: 2 (1 air + 1 Cable)                 | No               |
| 4.3.4  |                         | Type of Antenna Input Port                              | IEC169-1 Male *1 |

|        |                                  |                                               |                                     |
|--------|----------------------------------|-----------------------------------------------|-------------------------------------|
| 4.3.5  |                                  | Receiving Frequency range (ATV)               | 54MHz~864MHz                        |
| 4.3.6  |                                  | Receiving Frequency range (DTV)               | VHF 177-213 MHz,<br>UHF 473-803 MHz |
| 4.4    | External Signal Receiving System |                                               |                                     |
| 4.4.1  | Composite Input                  | PAL 50Hz/60Hz                                 | Yes                                 |
| 4.4.2  |                                  | SECAM                                         | Yes                                 |
| 4.4.3  |                                  | NTSC 3.58                                     | Yes                                 |
| 4.4.4  |                                  | NTSC4.43                                      | Yes                                 |
| 4.4.5  | Component Input                  | 480i /480p/720p/1080i (60Hz)                  | No                                  |
| 4.4.6  |                                  | 576i /576p/720p/1080i (50Hz)                  | No                                  |
| 4.4.7  |                                  | 1080P 24Hz/25Hz/30Hz/50Hz/60Hz                | No                                  |
| 4.4.8  | PC Input                         | VGA (640 x 480)                               | No                                  |
| 4.4.9  |                                  | S-VGA (800 x 600)                             | No                                  |
| 4.4.10 |                                  | XGA (1024 x 768)                              | No                                  |
| 4.4.11 |                                  | W-XGA (1280 x 768)                            | No                                  |
| 4.4.12 |                                  | W-XGA (1360x768)                              | No                                  |
| 4.4.13 |                                  | S-XGA (1280 x 1024)                           | No                                  |
| 4.4.14 |                                  | UW-XGA 1920*1080                              | No                                  |
| 4.4.15 | HDMI Input                       | 480i /480p/720p/1080i (60Hz) (Video Format)   | Yes                                 |
| 4.4.16 |                                  | 576i /576p/720p/1080i (50Hz) (Video Format)   | Yes/Yes/Yes/Yes                     |
| 4.4.17 |                                  | 1080P 24Hz/25Hz/30Hz/50Hz/60Hz (Video Format) | Yes/Yes/Yes/Yes                     |
| 4.4.18 |                                  | 4K 24Hz/25Hz/30Hz/50Hz/60Hz (Video Format)    | Yes/Yes/Yes/Yes/Yes                 |
| 4.4.19 |                                  | VGA (640 x 480) (PC Format)                   | Yes                                 |
| 4.4.20 |                                  | S-VGA (800 x 600) (PC Format)                 | Yes                                 |
| 4.4.21 |                                  | XGA (1024 x 768) (PC Format)                  | Yes                                 |
| 4.4.22 |                                  | W-XGA (1280 x 768) (PC Format)                | Yes                                 |
| 4.4.23 |                                  | W-XGA (1360x768) (PC Format)                  | Yes                                 |
| 4.4.24 |                                  | S-XGA (1280 x 1024) (PC Format)               | Yes                                 |

|        |                    |                                       |                                        |
|--------|--------------------|---------------------------------------|----------------------------------------|
| 4.4.25 |                    | UW-XGA (1920*1080) (PC Format)        | Yes                                    |
| 4.4.26 | USB                | Media player formats                  | Refer to the attachment                |
| 5      | Features           |                                       |                                        |
| 5.1    | Picture            | Picture                               |                                        |
| 5.1.1  |                    | Picture Mode                          | Standard/Movie/User/Dynamic            |
| 5.1.2  |                    | Picture Display Size                  | Auto/4:3/16:9/Movie/Panorama/Just Scan |
| 5.1.3  |                    | Picture Freeze                        | No                                     |
| 5.1.4  |                    | Backlight Adjust                      | Yes                                    |
| 5.1.5  |                    | Auto Format                           | Yes                                    |
| 5.1.6  |                    | Noise Reduction                       | Yes                                    |
| 5.1.7  |                    | MPEG Reduction                        | Yes                                    |
| 5.1.8  |                    | Color temperature                     | Nature/Warm/User/Cool                  |
| 5.1.9  |                    | 3:2 Pull Down                         | No                                     |
| 5.1.10 |                    | 4:3 Stretch                           | NO                                     |
| 5.1.11 |                    | Comfilter                             | Yes                                    |
| 5.1.12 |                    | PIP(Single tuner)                     | No                                     |
| 5.2    | Sound              | Sound                                 |                                        |
| 5.2.1  |                    | Sound Mode                            | Standard/Music/Movie/Sport/User        |
| 5.2.2  |                    | For personal mode:Treble/Bass/Balance | Balance                                |
| 5.2.3  |                    | Surround                              | Yes                                    |
| 5.2.4  |                    | Equalizer                             | 120HZ/500HZ/1.5KHZ/5KHZ/10KHZ          |
| 5.2.5  |                    | Audio Output Power                    | 8W + 8W                                |
| 5.2.6  |                    | NICAM                                 | Yes                                    |
| 5.2.7  |                    | A2                                    | Yes                                    |
| 5.2.8  |                    | BTSC(MTS)                             | No                                     |
| 5.3    | Teletext           | Teletext                              |                                        |
| 5.3.1  |                    | FLOF/TOP                              | No                                     |
| 5.3.2  |                    | Memory Page                           | No                                     |
| 5.3.3  |                    | Character Language                    | No                                     |
| 5.3.4  |                    | Teletext Level                        | No                                     |
| 5.4    | Program Management | Program Management                    |                                        |
| 5.4.1  |                    | V-Chip                                | No                                     |

|        |                 |                            |                                          |
|--------|-----------------|----------------------------|------------------------------------------|
| 5.4.2  |                 | Parent Control(Child Lock) | Yes                                      |
| 5.4.3  |                 | Closed Caption             | No                                       |
| 5.4.4  |                 | Subtitle                   | Yes                                      |
| 5.4.5  |                 | EPG                        | Yes                                      |
| 5.4.6  |                 | Channel list               | Yes                                      |
| 5.4.7  |                 | Favourite Channel List     | Yes                                      |
| 5.4.8  |                 | Channel Editor             | Yes                                      |
| 5.4.9  |                 | On/Off timer               | No                                       |
| 5.4.10 |                 | Sleep timer                | Yes                                      |
| 5.4.11 |                 | Channel Swap timer         | No                                       |
| 5.4.12 |                 | Blue Screen                | No                                       |
| 5.5    | AC Input        | AC Input                   |                                          |
| 5.5.1  |                 | AC Input Range             | 110~240V                                 |
| 5.5.2  |                 | AC Plug Type               | Chile_Bolivia:VDE;Peru:UL;Argentina:IRAM |
| 5.5.3  |                 | AC Cable Length            | 1.5m                                     |
| 5.5.4  |                 | Power Consumption          | TBD                                      |
| 5.5.5  |                 | Standby Power Consumption  | 普通待机小于 0.5W，网络待机小于 2W                    |
| 5.6    | HDMI            | HDMI                       |                                          |
| 5.6.1  |                 | CEC                        | Yes                                      |
| 5.6.2  |                 | ARC                        | Yes                                      |
| 5.7    | Software Update | Software Update            |                                          |
| 5.7.1  |                 | By USB                     | Yes                                      |
| 5.7.2  |                 | By Internet                | Yes                                      |
| 5.7.3  |                 | Internet Auto search       | No                                       |
| 5.7.4  |                 | By Over-Air                | No                                       |
| 5.7.5  |                 | By other Service Port      | No                                       |
| 5.8    | PVR             | PVR                        |                                          |
| 5.8.1  |                 | By External USB or HDD     | Yes                                      |
| 5.8.2  |                 | Built in HDD               | No                                       |
| 5.8.3  |                 | Time Shift                 | Yes                                      |
| 5.9    | OSD Language    | OSD Language               |                                          |

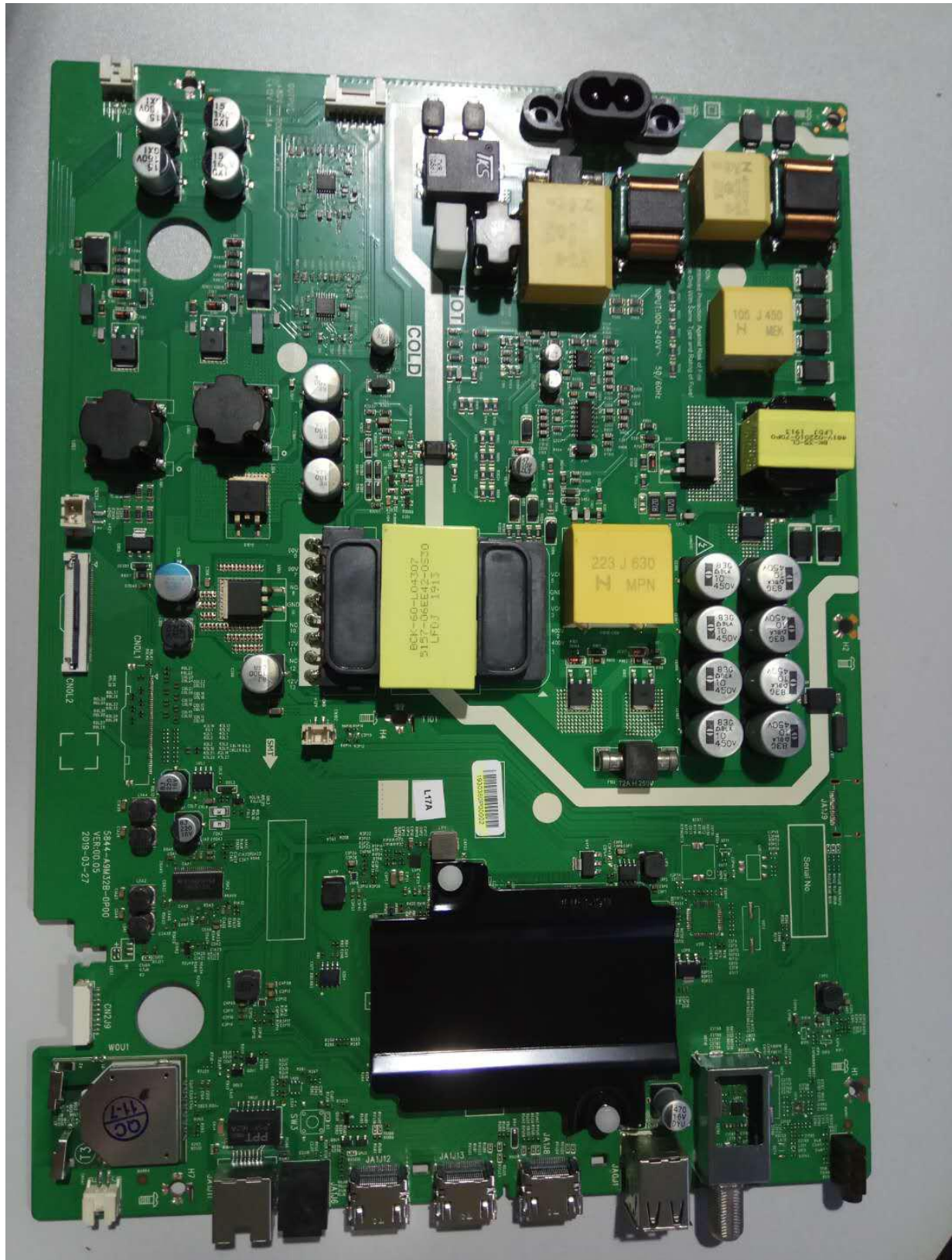
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|--------|------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 5.9.1  |                                                      | OSD Language                                                                      | English, Spanish, Portuguese                                                                    |
| 5.10   | USB File System                                      | USB File System                                                                   |                                                                                                 |
| 5.10.1 |                                                      | FAT16                                                                             | Yes                                                                                             |
| 5.10.2 |                                                      | FAT32                                                                             | Yes                                                                                             |
| 5.10.3 |                                                      | NTFS                                                                              | No                                                                                              |
| 5.11   | Middleware                                           | Middleware                                                                        |                                                                                                 |
| 5.11.1 |                                                      | MHEG5                                                                             | NO                                                                                              |
| 5.11.2 |                                                      | Ginga                                                                             | Yes                                                                                             |
| 5.11.3 |                                                      | MHP                                                                               | No                                                                                              |
| 5.11.4 |                                                      | Hbb TV                                                                            | NO                                                                                              |
| 5.12   | Wifi                                                 | Wifi                                                                              |                                                                                                 |
| 5.12.1 |                                                      | Wifi Dongle                                                                       | No                                                                                              |
| 5.12.2 |                                                      | Wifi Built in                                                                     | Yes                                                                                             |
| 5.13   | OS&Apps                                              | OS&Apps                                                                           |                                                                                                 |
| 5.13.1 |                                                      | Web OS                                                                            | No                                                                                              |
| 5.13.2 |                                                      | Preset Application                                                                | Yes                                                                                             |
| 5.13.3 |                                                      | HomePage Preset Application Content (Vietnam)<br>(Preset applications may change) | Netflix、YouTube、Yahoo Weather、Facebook、Twitter、Browser、globo play、ScreenCast、Mediaplayer、LiveTV |
| 5.13.4 |                                                      | HomePage Weather Content                                                          | /                                                                                               |
| 6      | Terminals Configuration                              |                                                                                   |                                                                                                 |
| 6.1    | Terminal Direction (Side and Bottom & Side and Rear) |                                                                                   | Side                                                                                            |
| 6.2    | Wifi                                                 | Wifi                                                                              | Built-in                                                                                        |
| 6.2.1  |                                                      | Tuner                                                                             | 1 Side                                                                                          |
| 6.2.2  |                                                      | Composite                                                                         | 1 Side                                                                                          |
| 6.2.3  |                                                      | Full Scart                                                                        | No                                                                                              |
| 6.2.4  |                                                      | Half Scart                                                                        | No                                                                                              |

|        |                                   |                                                      |                   |
|--------|-----------------------------------|------------------------------------------------------|-------------------|
| 6.2.5  |                                   | Component                                            | No                |
| 6.2.6  |                                   | PC input with 3.5mm mini jack audio input            | No                |
| 6.2.7  |                                   | HDMI                                                 | 3 Side            |
| 6.2.8  |                                   | USB                                                  | 2 Side            |
| 6.2.9  |                                   | LAN                                                  | 1 Side            |
| 6.2.10 |                                   | CI Slot                                              | No                |
| 6.2.11 |                                   | CA Slot                                              | No                |
| 6.3    | Output                            | Output                                               |                   |
| 6.3.1  |                                   | Video Output                                         | No                |
| 6.3.2  |                                   | Audio Output (Fixed & Variable)                      | No                |
| 6.3.3  |                                   | Digital Audio Output (Coaxial & Optical)             | 1 optical         |
| 6.3.4  |                                   | Earphone                                             | No                |
| 6.4    | Diagram of Terminal Configuration |                                                      | /                 |
| 7      | Mechanical Spec                   |                                                      |                   |
| 7.1    | Cabinet                           | Cabinet                                              |                   |
| 7.1.1  | Cabinet color                     | For front back stand                                 | /                 |
| 7.1.2  | Operation Keys / Touch sensor     |                                                      | Yes/No            |
| 7.1.3  | AC Power Switch                   | Mechanical power switch                              | No                |
| 7.1.4  | LED Indicator                     | Power on (Green)                                     | No                |
| 7.1.5  |                                   | Power on / Standby (Green / Red )                    | Yes (Green / Red) |
| 7.1.6  |                                   | Power on / Standby / Recording(Green / Red / Orange) | No                |
| 7.1.7  |                                   | Program Timer / Recoding (Green / Red)               | No                |
| 7.1.8  |                                   | On Timer or Program Timer(Green)                     | No                |
| 7.1.9  | Logo Style                        | Silk Printing / SUS Badge (inlet type)               | TBD               |
| 7.1.10 | Stand Type                        | Tilt / Swivel                                        | No                |
| 7.2    | Dimension & Stuffing              | Dimension & Stuffing                                 |                   |
| 7.2.1  |                                   | Size (with stand)( mm )                              | TBD               |
| 7.2.2  |                                   | Size (without stand) ( mm )                          | TBD               |

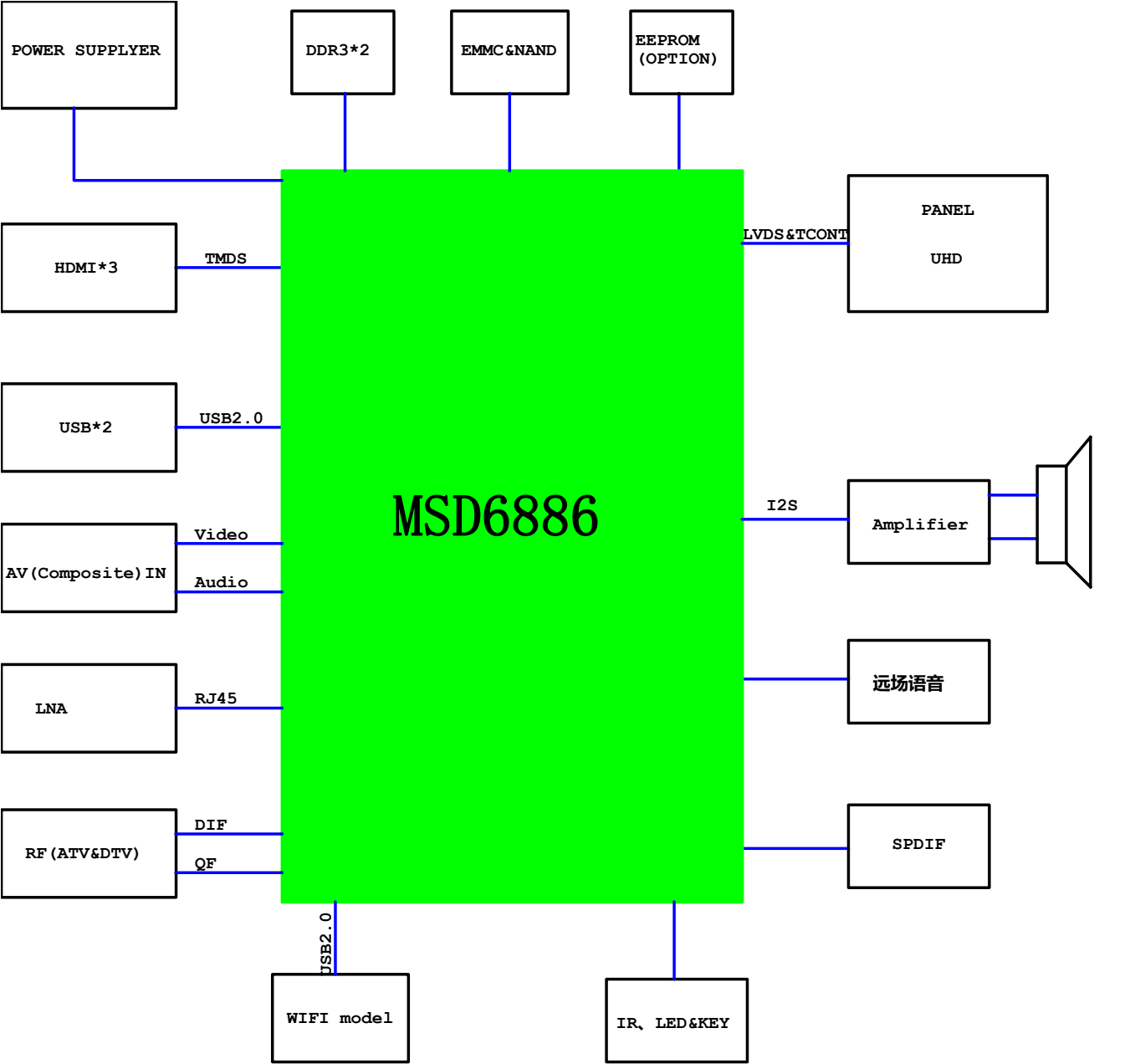
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|-------|-------------------------|--------------------------------------------------|-----|
| 7.2.3 |                         | Package Size (with stand)(mm)                    | TBD |
| 7.2.4 |                         | Net Weight(Kg)                                   | TBD |
| 7.2.5 |                         | Gross Weight                                     | TBD |
| 7.2.6 |                         | Loading quantity (20GP/40GP/40GP) with pallet    | TBD |
| 7.2.7 |                         | Loading quantity (20GP/40GP/40GP) without pallet | TBD |
| 7.2.8 |                         | Stand build in Packing Box                       | TBD |
| 8     | Requested Certification |                                                  |     |
| 8.1   | CB                      |                                                  | Yes |
| 8.2   | CE                      |                                                  | No  |
| 8.3   | UL                      |                                                  | No  |
| 8.4   | EMC                     |                                                  | Yes |
| 8.5   | FCC                     |                                                  | No  |
| 8.6   | HDMI                    |                                                  | Yes |
| 8.7   | USB                     |                                                  | No  |
| 8.8   | CI+                     |                                                  | No  |
| 8.9   | Dolby                   |                                                  | Yes |
| 8.10  | DOLBY +                 |                                                  | Yes |
| 8.11  | Dvix Hometheatre        |                                                  | No  |
| 8.12  | DviX HD                 |                                                  | No  |
| 8.13  | DviX+HD                 |                                                  | No  |
| 8.15  | CTS                     |                                                  | No  |
| 8.16  | Wifi                    |                                                  | No  |
| 8.17  | MPES                    |                                                  | No  |
| 8.18  | Energy Star             |                                                  | No  |
| 8.19  | DTS TruSurround         |                                                  | Yes |
| 8.20  | EWS                     |                                                  | No  |
| 8.21  | DTT                     |                                                  | No  |
| 8.22  | NBTC                    |                                                  | No  |
| 8.23  | CAST TV                 |                                                  | No  |
| 8.24  | Netflix                 |                                                  | Yes |
| 8.25  | Youtube                 |                                                  | Yes |

|        |                          |                                          |             |
|--------|--------------------------|------------------------------------------|-------------|
| 8.26   | MS12                     |                                          | Yes         |
| 8.27   | HbbTV                    |                                          | No          |
| 8.28   | RED                      |                                          | No          |
| 9      | Digital Right Management |                                          |             |
| 9.1.1  | DRM                      | Widewine                                 | YES         |
| 9.1.2  |                          | Playready                                | YES         |
| 10     | Accessories              |                                          |             |
| 10.1   | Remote Controller        | Remote Controller                        |             |
| 10.1.1 |                          | Type No.                                 | HS-6730J-00 |
| 10.1.2 |                          | Battery                                  | Yes         |
| 10.1.3 |                          | Q. Manual and Language(for Skyworth)     | TBD         |
| 10.2   | Instruction Manual       | Instruction Manual for ODM/OEM           |             |
| 10.2.1 |                          | Paper size                               | TBD         |
| 10.2.2 |                          | Printing Color                           | TBD         |
| 10.2.3 |                          | Languages (Refer to Sales Country Sheet) | TBD         |
| 10.2.4 |                          | Total Pages                              | TBD         |

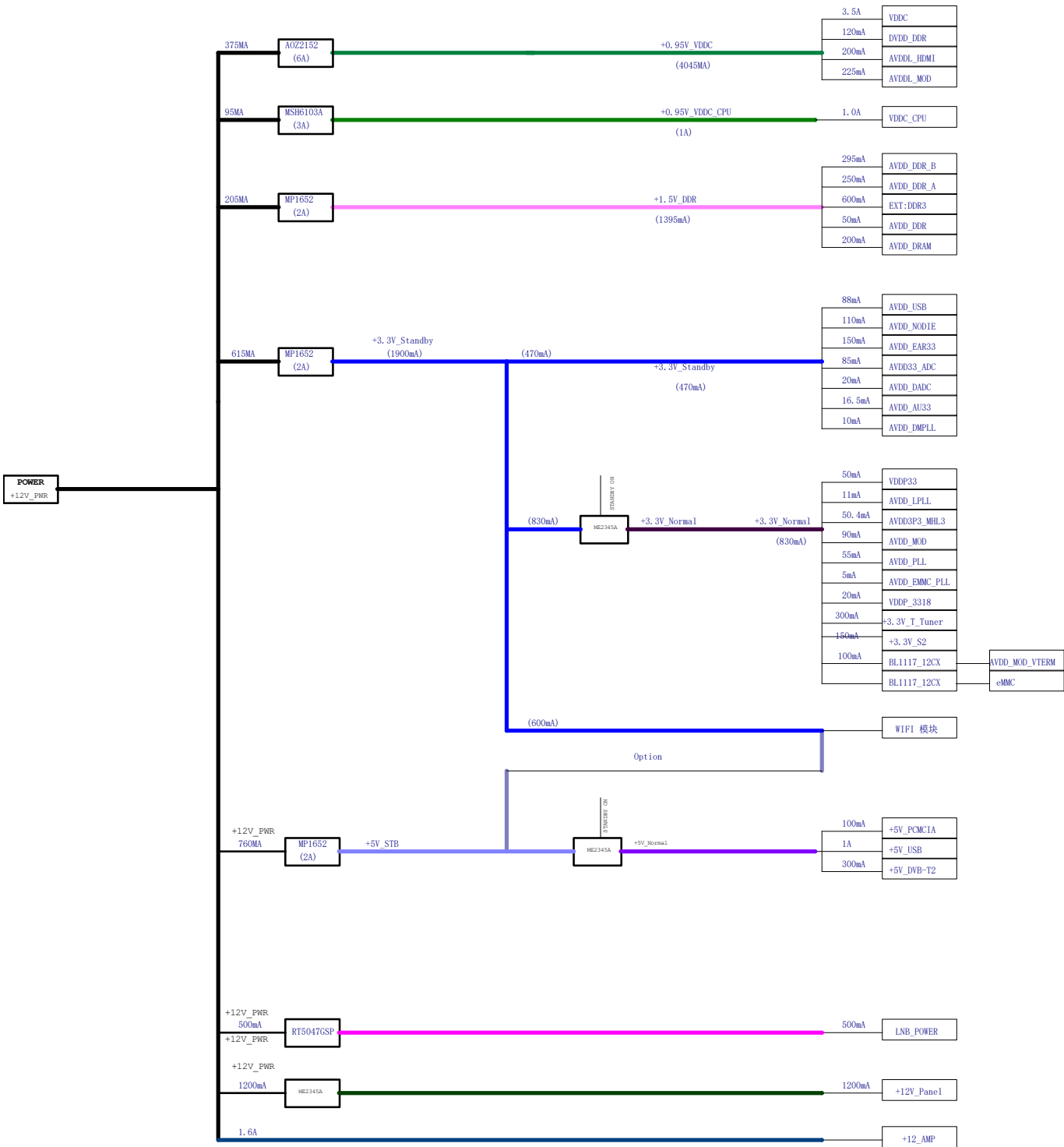
## 2. Overview of the terminals configuration



3. System Block and Power Tree



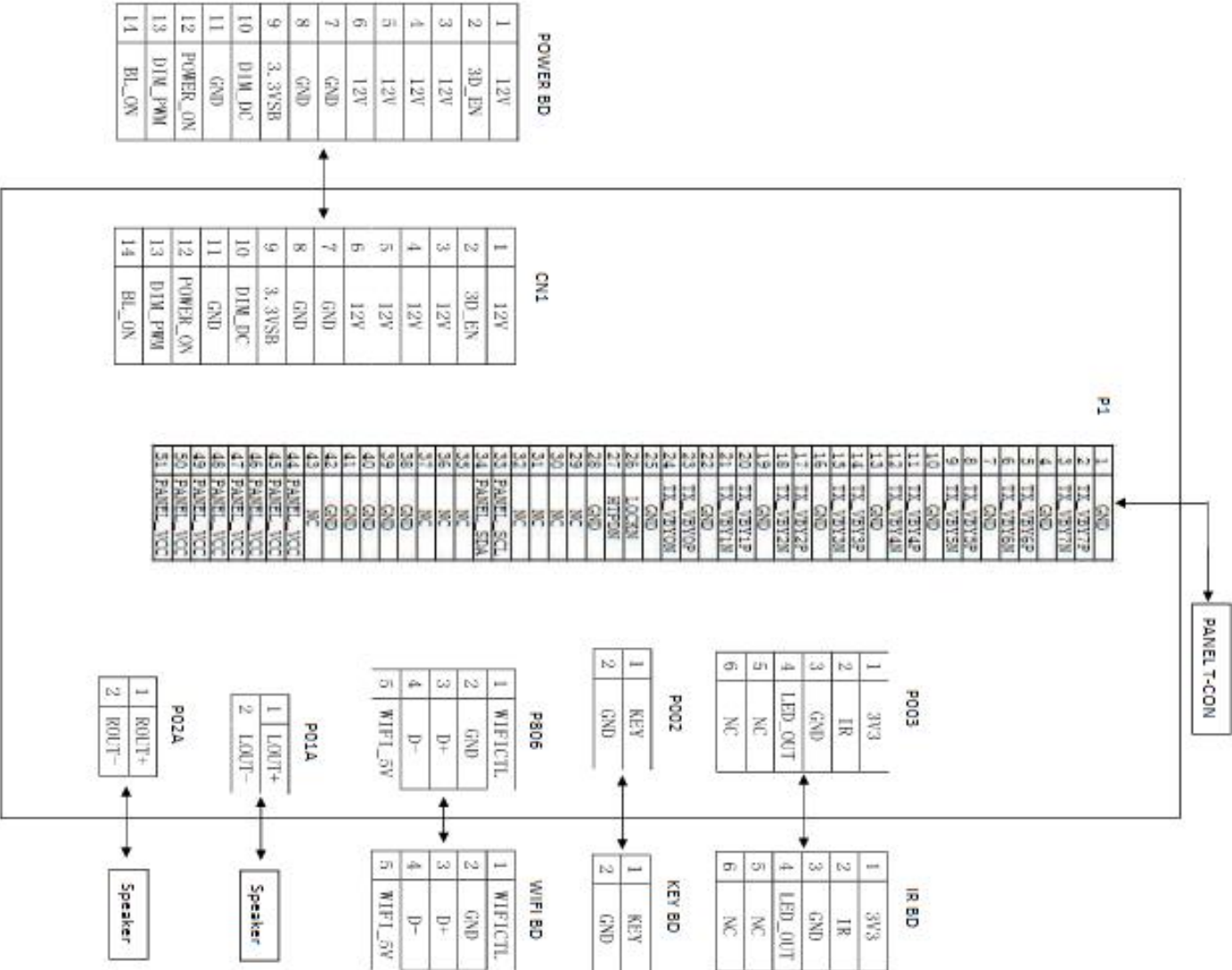
| MSD6883      |                 |     |     |
|--------------|-----------------|-----|-----|
| SYSTEM BLOCK |                 |     |     |
| Doc          | Document Number | Ta  |     |
| Rev          | Revision        | Ver | Ver |



(要求清晰，放大后能看清楚所有文字)

4. Wiring Diagram

(要求清晰，放大后能看清楚所有文字)



## 5. List of key parts

(三合一板需要加入电源部分关键器件)

| Supplier            | Description                         | Type/Model                     | Material Name   |
|---------------------|-------------------------------------|--------------------------------|-----------------|
| MPS                 | 2A 18V STEP DOWN CONVERTER          | MP1652GTF-Z                    | DC-DC Converter |
| MPS                 | 3A 17V STEP DOWN CONVERTER          | MP1653GTF-Z                    | DC-DC Converter |
| AOZ                 | 6A SYNCHRONOUS BUCK REGULATOR       | AOZ2152EQI-30                  | DC-DC Converter |
| MTK                 | POWER MANAGEMENT                    | MSH6103A                       | DC-DC Converter |
| JINGYANG            | 1A ADJUSTABLE LDO                   | JY1117EA                       | LDO             |
| BELLING             | 1V2/1A BIPOLAR REGULATOR            | BL1117C-12CX                   | LDO             |
| TOSHIBA             | 4GB EMMC FLASH                      | THGBMNG5D1LBAIL                | EMMC            |
| HYNIX               | 128M*16 DDR3-2133MHz                | H5TQ2G63GFR-TEC                | DDR3            |
| SILICON             | DIGITAL AND ANALOG TV TUNER         | SI2151-A10                     | Silicon tuner   |
| TEXAS               | DIGITAL INPUT AUDIO POWER AMPLIFIER | TAS5733LDCAR                   | AUDIO AMPLIFIER |
| MTK                 | DTV PROCESSOR                       | MSD6886NQHAT-8-00GN            | SOC             |
| FUDANWE             | 1.7V-5.5V 32K BIT EEPROM            | FM24C32D-SO-T-G                | EEPROM          |
| MATSUKI             | P-CHANNEL MOSFET                    | ME9435A                        | SWITCH          |
| ADVANCED            | -30V/-3.6A POWER MOSFET             | AP3P080N                       | POWER SWITCHES  |
| MTK                 | WIFI 2T2R SINGLE CHIP               | MT7603UN                       | WIFI CONTROLLER |
| xingqin             | POWER THERMISTOR 5 OHM              | SCK10054LBY502                 | THR             |
| NEW FUTUR<br>E      | VARISTOR 680V                       | NFC10D681K                     | TNR             |
| XC                  | FUSE                                | 3.15A/250V                     | FUSE            |
| XC                  | FUSE                                | 2A/250V                        | FUSE            |
| Lianfeng            | SWITCHING TRANSFORMER               | BCK-30-L02653                  | TRANSFORMER     |
| skyworth            | AC LINE FILTER                      | SKY-LCO-1408D                  | FILTER          |
| jingshi             | AC LINE FILTER                      | JLB10132                       | FILTER          |
| liuhe               | AC CAPACITOR 470NF AC275V           | CAP. 470NF AC275V              | AC CAPACITOR    |
| kunshanwans<br>heng | SAFETY CERAMIC CAP. 100PF AC250V    | CT7-Y1-250V-08B-B-101K<br>13BH | Y-CAP.          |
| O2                  | SMD IC 0Z9902DGN-A-0-TR             | 0Z9902DGN-A-0-TR               | Back light IC   |
| INFINEON            | SMD IC                              | IDP2308                        | AC-DC IC        |
| A1                  | SMD IC                              | AS431AHM                       | 431             |
| BRIGHT LED          | IC                                  | BPC-817C                       | PHOTOCOUPLER    |
| Jilin huawei        | SMD SCHOTTKY DIODE                  | MBR2045S 45V/20A               | DIODE           |
| GOODARK             | SMD SCHOTTKY DIODE                  | 150V/10                        | DIODE           |
| Jilin huawei        | SMD TRANSISTOR                      | 600V/15A                       | MOS             |

|     |                |         |     |
|-----|----------------|---------|-----|
| AOS | SMD TRANSISTOR | AOD9N50 | MOS |
| AOS | SMD TRANSISTOR | AOD256  | MOS |

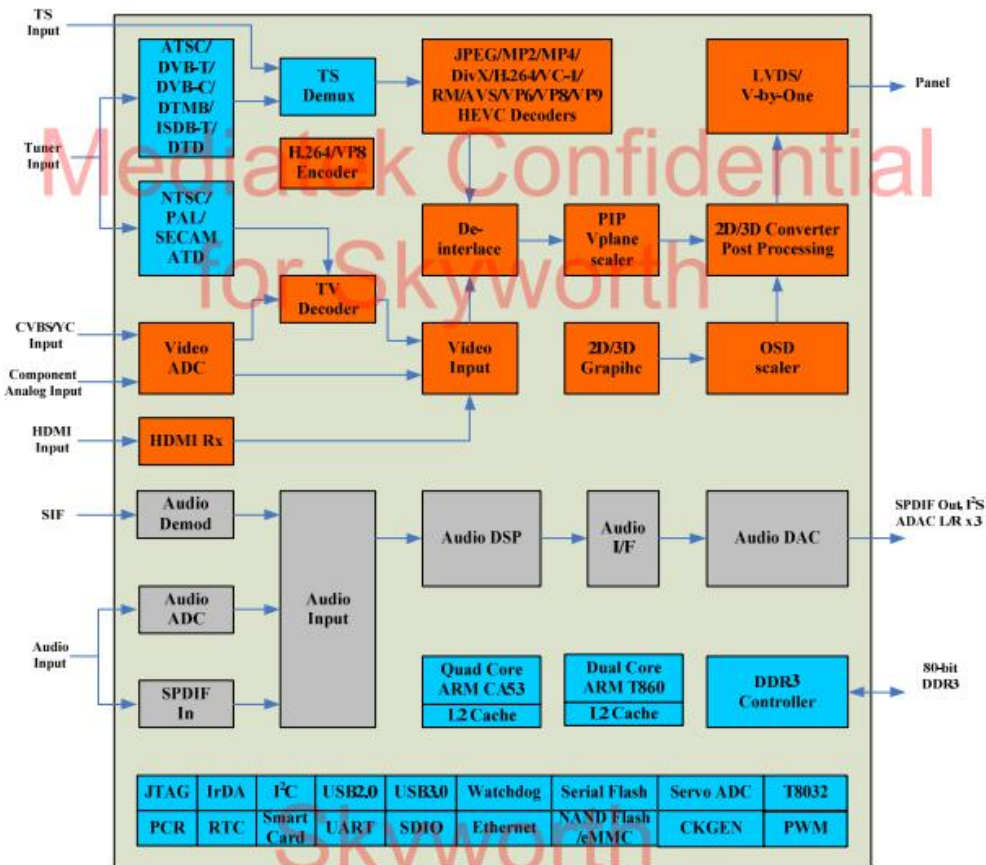
## 6. IC General Description

(选取部分对售后有帮助的 IC, 截取关键内容，不要整份规格书粘贴，截图要清晰，放大后能看清楚所有文字，三合一板需要加入电源 IC 和背光 IC 的介绍)

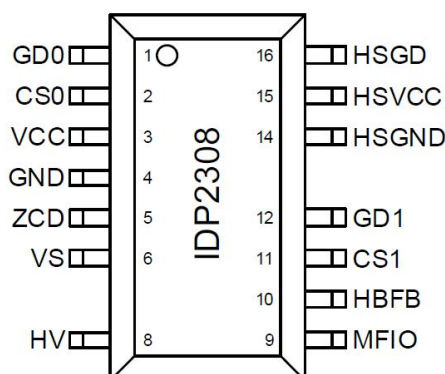
### 6.1 Main IC: MSD6886NQHAT-8-00GN

Key features includes,

- 1. High performance Multi-core CPU and GPU
- 2. 3D Formatter Engine
- 3. A Multi-Standard A/V Format Decoder
- 4. The MACE-PRO<sup>UC</sup> Video Processor
- 5. Home Theater Sound Processor
- 6. Internet and Variety of Connectivity Support
- 7. Peripheral and Power Management



### 6.2 POWR IC



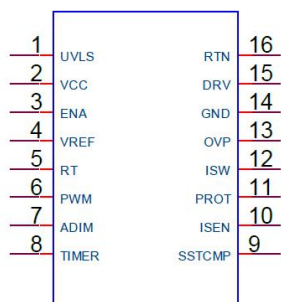
## Pin Function

Table 1 Pin Definitions and Functions

| Symbol         | Pin | Type | Function                                                                                                                                                                                                                                                                                                                                            |
|----------------|-----|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GD0<br>(PFCGD) | 1   | O    | Gate Driver Output 0 (PFC Gate Driver)<br>Output for directly driving the PFC PowerMOS. The default peak source current capability is 156 mA and the peak sink current capability is 800 mA.                                                                                                                                                        |
| CS0<br>(PFCFS) | 2   | I    | Current Sense 0 (PFC Current Sense)<br>Pin CS0 is connected to an external shunt resistor and the source of the PFC PowerMOS.                                                                                                                                                                                                                       |
| VCC            | 3   | P    | Positive Voltage Supply<br>IC power supply                                                                                                                                                                                                                                                                                                          |
| GND            | 4   | G    | Ground<br>IC ground                                                                                                                                                                                                                                                                                                                                 |
| ZCD            | 5   | I    | Zero Crossing Detection<br>Pin ZCD is connected to the auxiliary winding of the PFC choke.                                                                                                                                                                                                                                                          |
| VS             | 6   | I    | Voltage Sensing<br>Pin VS is connected to a high ohmic resistor divider for directly sensing the bus voltage.                                                                                                                                                                                                                                       |
| HV             | 8   | I    | High Voltage Input<br>Pin HV is connected to the AC input via an external resistor and 2 diodes. There is a 600 V HV startup-cell internally connected that is used for initial VCC charge. It is also used to discharge the x-capacitors of the EMI network. Furthermore sampled high voltage sensing is supported for brownin/brownout detection. |
| MFIO           | 9   | I    | MFIO<br>Pin MFIO provides a half duplex UART communication IO interface for parameter configuration. It also can be used for PFC output redundant over voltage protection. In that case it is mandatory to use a BSS127 transistor as shown in Figure 1 and the described in section 4.4.3.4.                                                       |
| HBFB           | 10  | I    | Half Bridge Feedback<br>Pin HBFB is connected to an optocoupler for the feedback path to control the LLC switching frequency.                                                                                                                                                                                                                       |

| Symbol        | Pin | Type | Function                                                                                                                                                                                                                                   |
|---------------|-----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CS1<br>(HBFS) | 11  | I    | Current Sense 1 (Half Bridge current Sense)<br>Pin CS1 is connected to an external shunt resistor and the source of the PowerMOS in the half-bridge stage.                                                                                 |
| GD1<br>(LSGD) | 12  | O    | Gate Driver Output 1 (Half Bridge Low Side Gate Driver)<br>Output for directly driving the lowside PowerMOS in the half-bridge. The peak source current capability is 120 mA and the peak sink current capability is 500 mA.               |
| HSGND         | 14  | G    | High side Ground<br>Ground for floating high side driver                                                                                                                                                                                   |
| HSVCC         | 15  | P    | High side VCC<br>Power supply of the high side floating driver, supplied via bootstrap                                                                                                                                                     |
| HSGD          | 16  | O    | High side floating Gate Driver<br>Output for directly driving the high side PowerMOS in the half-bridge. The peak source current capability is 0.52 A and the peak sink current capability is 1.3 A. Refer to item 4.4.9 for more details. |

## 6.2 back light IC

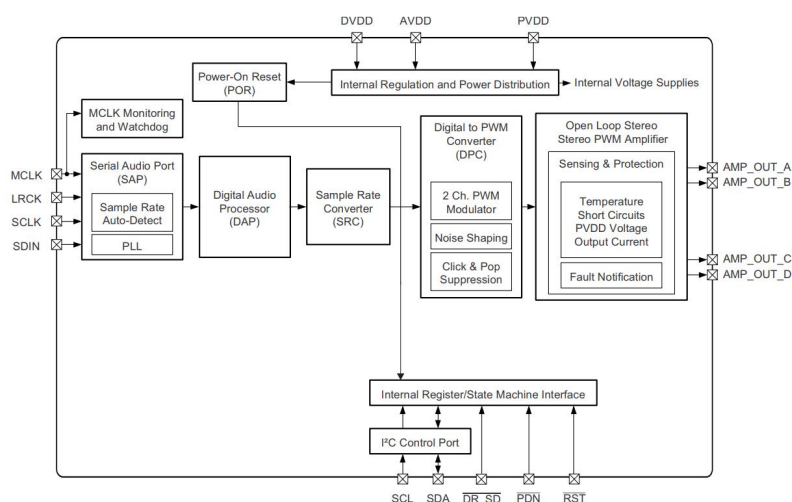


## Pin Function

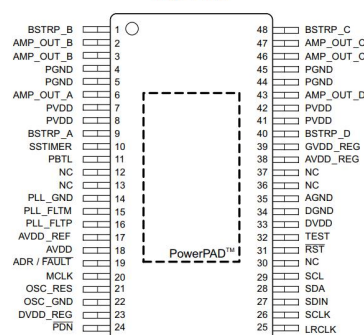
| Name   | Pin No. | I/O <sup>1</sup> | Description                                                       |
|--------|---------|------------------|-------------------------------------------------------------------|
| UVLS   | 1       | I                | Power line under-voltage lockout detection.                       |
| VCC    | 2       | ---              | Input power for controller and internal MOSFET driver.            |
| ENA    | 3       | I                | ON/OFF control for the controller                                 |
| VREF   | 4       | I/O              | Reference voltage                                                 |
| RT     | 5       | I/O              | Resistor to set operation frequency and master/slave mode         |
| PWM    | 6       | I                | PWM dimming control signal input                                  |
| ADIM   | 7       | I                | Analog dimming control for the controller                         |
| TIMER  | 8       | I/O              | Capacitor setting shutdown delay time                             |
| SSTCMP | 9       | I/O              | Connect resistor and capacitor to set soft start and compensation |
| ISEN   | 10      | I/O              | LED current sense input for channel                               |
| PROT   | 11      | I/O              | Gate of internal LED current switch                               |
| ISW    | 12      | I                | MOSFET current sense pin                                          |
| OVP    | 13      | I                | Output over-voltage protection sense                              |
| GND    | 14      | -                | Ground of IC                                                      |
| DRV    | 15      | O                | Power MOSFET Drive output of channel                              |
| RTN    | 16      | O                | Drain of internal LED current switch                              |

## 5.2 Amplifier: TAS5733LDCAR

## Simplified Block Diagram



DCA Package  
48-Pin HTSSOP With PowerPAD™  
Top View



## Pin Functions

| PIN       |     | TYPE <sup>(1)</sup> | DESCRIPTION                                                                                                                                                                                                                                                                                 |
|-----------|-----|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NAME      | NO. |                     |                                                                                                                                                                                                                                                                                             |
| ADR/FAULT | 19  | DI/DO               | Dual function terminal which sets the LSB of the I²C Address to 0 if pulled to GND, 1 if pulled to AVDD. Also, if configured to be a fault output by the methods described in the <a href="#">Fault Indication</a> section, this terminal will be pulled low when an internal fault occurs. |
| AGND      | 35  | P                   | Ground reference for analog circuitry (NOTE: This terminal should be connected to the system ground)                                                                                                                                                                                        |
| AMP_OUT_A | 6   | AO                  | Speaker amplifier outputs                                                                                                                                                                                                                                                                   |
| AMP_OUT_B | 2   |                     |                                                                                                                                                                                                                                                                                             |
| AMP_OUT_B | 3   |                     |                                                                                                                                                                                                                                                                                             |
| AMP_OUT_C | 46  |                     |                                                                                                                                                                                                                                                                                             |
| AMP_OUT_C | 47  |                     |                                                                                                                                                                                                                                                                                             |
| AMP_OUT_D | 43  |                     |                                                                                                                                                                                                                                                                                             |
| AVDD      | 18  | P                   | Power supply for internal analog circuitry                                                                                                                                                                                                                                                  |
| AVDD_REF  | 17  | P                   | Internal power supply (NOTE: This terminal is provided as a connection point for filtering capacitors for this supply and must not be used to power any external circuitry)                                                                                                                 |
| AVDD_REG  | 38  | P                   | Voltage regulator derived from AVDD supply (NOTE: This terminal is provided as a connection point for filtering capacitors for this supply and must not be used to power any external circuitry)                                                                                            |
| BSTRP_A   | 9   | P                   | Connection points to for the bootstrap capacitors, which are used to create a power supply for the gate drive for the high-side device                                                                                                                                                      |
| BSTRP_B   | 1   |                     |                                                                                                                                                                                                                                                                                             |
| BSTRP_C   | 48  |                     |                                                                                                                                                                                                                                                                                             |
| BSTRP_D   | 40  |                     |                                                                                                                                                                                                                                                                                             |
| DGND      | 34  | P                   | Ground reference for digital circuitry (NOTE: This terminal should be connected to the system ground)                                                                                                                                                                                       |
| DVDD      | 33  | P                   | Power supply for the internal digital circuitry                                                                                                                                                                                                                                             |
| DVDD_REG  | 23  | P                   | Voltage regulator derived from DVDD supply (NOTE: This terminal is provided as a connection point for filtering capacitors for this supply and must not be used to power any external circuitry)                                                                                            |
| GVDD_REG  | 39  | P                   | Voltage regulator derived from PVDD supply (NOTE: This terminal is provided as a connection point for filtering capacitors for this supply and must not be used to power any external circuitry)                                                                                            |
| LRCLK     | 25  | DI                  | Word select clock for the digital signal that is active on the input data line of the serial port                                                                                                                                                                                           |

(1) TYPE: A = analog; D = 3.3-V digital; P = power/ground/decoupling; I = input; O = output

Pin Functions (continued)

| PIN                     |     | TYPE <sup>(1)</sup> | DESCRIPTION                                                                                                                                                                                                                                                                                                    |
|-------------------------|-----|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NAME                    | NO. |                     |                                                                                                                                                                                                                                                                                                                |
| MCLK                    | 20  | DI                  | Master clock used for internal clock tree and sub-circuit/state machine clocking                                                                                                                                                                                                                               |
| NC <sup>(2)</sup>       | 12  | P                   | Not connected inside the device (all "no connect" terminals should be connected to system ground)                                                                                                                                                                                                              |
|                         | 13  |                     |                                                                                                                                                                                                                                                                                                                |
|                         | 30  |                     |                                                                                                                                                                                                                                                                                                                |
|                         | 36  |                     |                                                                                                                                                                                                                                                                                                                |
|                         | 37  |                     |                                                                                                                                                                                                                                                                                                                |
| OSC_GND                 | 22  | P                   | Ground reference for oscillator circuitry (NOTE: These terminals should be connected to the system ground)                                                                                                                                                                                                     |
| OSC_RES                 | 21  | AO                  | Connection point for precision resistor used by internal oscillator circuit. Details for this resistor are shown in the <a href="#">Typical Applications</a> section                                                                                                                                           |
| PBTL                    | 11  | DI                  | Places the power stage in BTL mode when pulled low, or in PBTL mode when pulled high                                                                                                                                                                                                                           |
| $\overline{\text{PDN}}$ | 24  | DI                  | Places the device in power down when pulled low                                                                                                                                                                                                                                                                |
| PGND                    | 4   | —                   | Ground reference for power device circuitry (NOTE: This terminal should be connected to the system ground)                                                                                                                                                                                                     |
|                         | 5   |                     |                                                                                                                                                                                                                                                                                                                |
|                         | 44  |                     |                                                                                                                                                                                                                                                                                                                |
|                         | 45  |                     |                                                                                                                                                                                                                                                                                                                |
| PLL_FLTM                | 15  | AO                  | Negative connection point for the PLL loop filter components                                                                                                                                                                                                                                                   |
| PLL_FLTP                | 16  | AO                  | Positive connection point for the PLL loop filter components                                                                                                                                                                                                                                                   |
| PLL_GND                 | 14  | P                   | Ground reference for PLL circuitry (NOTE: This terminal should be connected to the system ground)                                                                                                                                                                                                              |
| PVDD                    | 7   | P                   | Power supply for internal power circuitry                                                                                                                                                                                                                                                                      |
|                         | 8   |                     |                                                                                                                                                                                                                                                                                                                |
|                         | 41  |                     |                                                                                                                                                                                                                                                                                                                |
|                         | 42  |                     |                                                                                                                                                                                                                                                                                                                |
| $\overline{\text{RST}}$ | 31  | DI                  | Places the devices in reset when pulled low                                                                                                                                                                                                                                                                    |
| SCL                     | 29  | DI                  | I <sup>2</sup> C serial control port clock                                                                                                                                                                                                                                                                     |
| SCLK                    | 26  | DI                  | Bit clock for the digital signal that is active on the input data line of the serial data port                                                                                                                                                                                                                 |
| SDA                     | 28  | DI/DO               | I <sup>2</sup> C serial control port data                                                                                                                                                                                                                                                                      |
| SDIN                    | 27  | DI                  | Data line to the serial data port                                                                                                                                                                                                                                                                              |
| SSTIMER                 | 10  | AO                  | Connection point for the capacitor that is used by the ramp timing circuit, as described in the <a href="#">SSTIMER Pin Functionality</a> section                                                                                                                                                              |
| TEST                    | 32  | —                   | Used by TI for testing during device production (NOTE: This terminal should be connected to system ground)                                                                                                                                                                                                     |
| PowerPAD                | —   | P                   | Exposed metal pad on the underside of the device, which serves as an electrical connection point for ground as well as a heat conduction path from the device into the board (NOTE: This terminal should be connected to ground through a land pattern defined in the <a href="#">Mechanical Data</a> section) |

- (2) Although these pins are not connected internally, optimum thermal performance is realized when these pins are connected to the ground plane. Doing so allows copper on the PCB to fill up to and including these pins, providing a path for heat to conduct away from the device and into the surrounding PCB area.

### 5.3 RF controller: SI2151-A10

## Features

- **Worldwide hybrid TV tuner**
  - Analog TV: NTSC, PAL/SECAM
  - Digital TV: ATSC/QAM, DVB-T2/T/C2/C, ISDB-T/C, DTMB
  - 1.7 MHz, 6 MHz, 7 MHz, 8 MHz, and 10 MHz channel bandwidths
  - 42-1002 MHz frequency range
- **Industry-leading margin to A/74, NorDig, DTG, ARIB, EN55020, OpenCable™, DTMB**
- **Lowest BOM for a hybrid TV tuner**
  - No balun, SAW filters, or external inductors required
  - Increased ESD protection on 4 pins
- **Best-in-class real-world reception**
  - Lowest phase noise
  - High Wi-Fi and LTE immunity
- **Low power consumption**
  - 3.3 V and 1.8 V power supplies
  - Integrated 1.8 V LDO for 3.3 V single-supply operation
- **Integrated power-on reset circuit**
- **Standard CMOS process**
- **3x3 mm, 24-pin QFN package**
- **RoHS compliant**



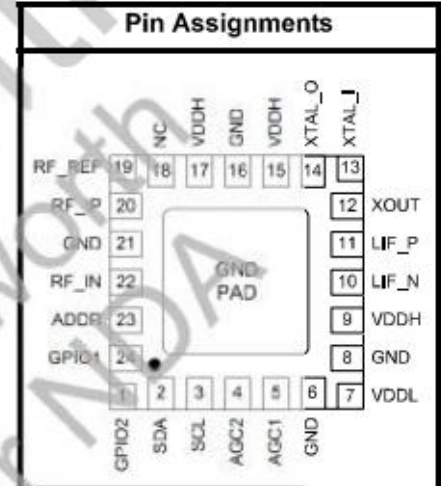
**Ordering Information:**  
See page 26.

## Applications

- Hybrid 1/2-NIM tuner module
- Hybrid PVR and BDR recorder
- IDTV (Integrated Digital TV)
- PC-TV accessories
- Hybrid terrestrial and cable STB

## Description

The Si2151 is Silicon Labs' sixth-generation hybrid TV tuner supporting all worldwide terrestrial and cable TV standards. Requiring no external balun, SAW filters, wirewound inductors or LNAs, the Si2151 offers the lowest-cost BOM for a hybrid TV tuner. Also included are an integrated power-on reset circuit and an option for single power supply operation. As with prior-generation Silicon Labs TV tuners, the Si2151 maintains very high linearity and low noise to deliver superior picture quality and a higher number of received stations when compared to other silicon tuners. The Si2151 offers increased immunity to Wi-Fi and LTE interference, eliminating the need for external filtering. For the best performance with next-generation digital TV standards, such as DVB-T2/C2, the Si2151 delivers industry-leading phase noise performance.



Patents pending

## Functional Block Diagram

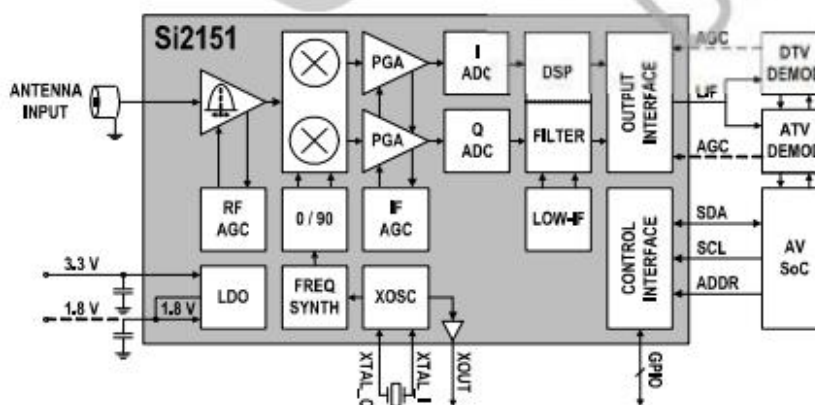


Table 13. Si2151 Pin Descriptions

| Pin Number(s) | Name   | I/O | Description                                                                             |
|---------------|--------|-----|-----------------------------------------------------------------------------------------|
| 1*            | GPIO2  | I/O | General purpose input/output #1                                                         |
| 2             | SDA    | I/O | I <sup>2</sup> C data input/output                                                      |
| 3             | SCL    | I   | I <sup>2</sup> C clock input                                                            |
| 4*            | AGC2   | I   | LIF output amplitude control input #2                                                   |
| 5*            | AGC1   | I   | LIF output amplitude control input #1                                                   |
| 6             | GND    | S   | Ground                                                                                  |
| 7             | VDDL   | S   | Low supply voltage, 1.8 V<br>(leave caps connected for single supply case)              |
| 8             | GND    | S   | Ground                                                                                  |
| 9             | VDDH   | S   | High supply voltage, 3.3 V                                                              |
| 10            | LIF_N  | O   | Negative LIF differential output to SoC or DTV/ATV demodulator                          |
| 11*           | LIF_P  | O   | Positive LIF differential output to SoC or DTV/ATV demodulator                          |
| 12            | XOUT   | O   | Output reference clock to secondary tuner or receiver                                   |
| 13            | XTAL_I | I   | Crystal pin 1 (or RCLK input driven by XOUT of another tuner or receiver)               |
| 14            | XTAL_O | O   | Crystal pin 2 (leave floating if XTAL_I is driven by XOUT of another tuner or receiver) |
| 15            | VDDH   | S   | High supply voltage, 3.3 V                                                              |
| 16            | GND    | S   | Ground                                                                                  |
| 17            | VDDH   | S   | High supply voltage, 3.3 V                                                              |
| 18*           | NC     | NC  | No connect                                                                              |

|     |        |     |                                 |
|-----|--------|-----|---------------------------------|
| 19  | RF_REF | O   | RF reference voltage output     |
| 20  | RF_IP  | I   | RF input (positive)             |
| 21  | GND    | S   | Ground                          |
| 22  | RF_IN  | I   | RF input (negative)             |
| 23  | ADDR   | I   | I <sup>2</sup> C address select |
| 24* | GPIO1  | I/O | General purpose input/output #1 |

\*Note: Pin should be left floating if unused.

## 5.4 DDR H5TQ2G63GFR-TEC

## Description

The H5TQ2G83GFR-xxC, H5TQ2G63GFR-xxC, H5TQ2G83GFR-xxI, H5TQ2G63GFR-xxI, H5TQ2G83GFR-xxL, H5TQ2G63GFR-xxL, H5TQ2G83GFR-xxJ, H5TQ2G63GFR-xxJ are a 2,147,483,648-bit CMOS Double Data Rate III (DDR3) Synchronous DRAM, ideally suited for the main memory applications which requires large memory density and high bandwidth. SK Hynix 2Gb DDR3 SDRAMs offer fully synchronous operations referenced to both rising and falling edges of the clock. While all addresses and control inputs are latched on the rising edges of the CK (falling edges of the CK), Data, Data strobes and Write data masks inputs are sampled on both rising and falling edges of it. The data paths are internally pipelined and 8-bit prefetched to achieve very high bandwidth.

## ORDERING INFORMATION

| Part No.         | Configuration | Power Consumption                    | Temperature | Package     |
|------------------|---------------|--------------------------------------|-------------|-------------|
| H5TQ2G83GFR-*xxC | 256M x 8      | Normal Consumption                   | Commercial  | 78ball FBGA |
| H5TQ2G83GFR-*xxI |               |                                      | Industrial  |             |
| H5TQ2G83GFR-*xxL |               | Low Power Consumption<br>(IDD6 Only) | Commercial  |             |
| H5TQ2G83GFR-*xxJ |               |                                      | Industrial  |             |
| H5TQ2G63GFR-*xxC | 128M x 16     | Normal Consumption                   | Commercial  | 96ball FBGA |
| H5TQ2G63GFR-*xxI |               |                                      | Industrial  |             |
| H5TQ2G63GFR-*xxL |               | Low Power Consumption<br>(IDD6 Only) | Commercial  |             |
| H5TQ2G63GFR-*xxJ |               |                                      | Industrial  |             |

\* xx means Speed Bin Grade

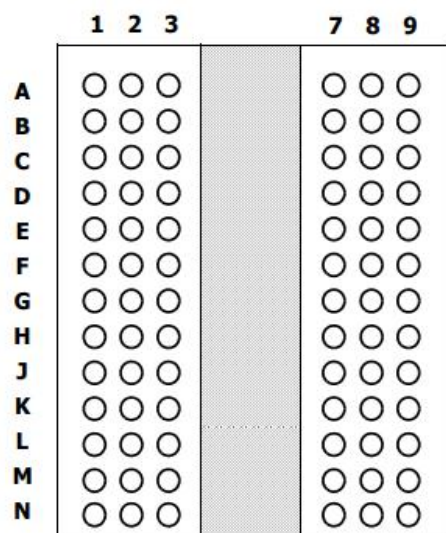
## OPERATING FREQUENCY

| Speed Grade<br>(Marking) | Frequency [Mbps] |     |      |      |      |      |      |      |      |      | Remark<br>(CL-tRCD-tRP) |
|--------------------------|------------------|-----|------|------|------|------|------|------|------|------|-------------------------|
|                          | CL5              | CL6 | CL7  | CL8  | CL9  | CL10 | CL11 | CL12 | CL13 | CL14 |                         |
| -H9                      | 667              | 800 | 1066 | 1066 | 1333 | 1333 |      |      |      |      | DDR3-1333 9-9-9         |
| -PB                      | 667              | 800 | 1066 | 1066 | 1333 | 1333 | 1600 |      |      |      | DDR3-1600 11-11-11      |
| -RD                      |                  | 800 | 1066 | 1066 | 1333 | 1333 | 1600 |      | 1866 |      | DDR3-1866 13-13-13      |
| -TE                      |                  | 800 | 1066 | 1066 | 1333 | 1333 | 1600 |      | 1866 | 2133 | DDR3-2133 14-14-14      |

\* **Note1:** In case of 1.5V P/N (H5TQ2G8(6)3GFR), -RDC covers Lower speed of -PBC and -H9C

### x8 Package Ball out (Top view): 78ball FBGA Package

|   | 1      | 2     | 3   | 4 | 5 | 6 | 7       | 8      | 9    |   |
|---|--------|-------|-----|---|---|---|---------|--------|------|---|
| A | VSS    | VDD   | NC  |   |   |   | NU/TDQS | VSS    | VDD  | A |
| B | VSS    | VSSQ  | DQ0 |   |   |   | DM/TDQS | VSSQ   | VDDQ | B |
| C | VDDQ   | DQ2   | DQS |   |   |   | DQ1     | DQ3    | VSSQ | C |
| D | VSSQ   | DQ6   | DQS |   |   |   | VDD     | VSS    | VSSQ | D |
| E | VREFDQ | VDDQ  | DQ4 |   |   |   | DQ7     | DQ5    | VDDQ | E |
| F | NC     | VSS   | RAS |   |   |   | CK      | VSS    | NC   | F |
| G | ODT    | VDD   | CAS |   |   |   | CK      | VDD    | CKE  | G |
| H | NC     | CS    | WE  |   |   |   | A10/AP  | ZQ     | NC   | H |
| J | VSS    | BA0   | BA2 |   |   |   | NC      | VREFCA | VSS  | J |
| K | VDD    | A3    | A0  |   |   |   | A12/BC  | BA1    | VDD  | K |
| L | VSS    | A5    | A2  |   |   |   | A1      | A4     | VSS  | L |
| M | VDD    | A7    | A9  |   |   |   | A11     | A6     | VDD  | M |
| N | VSS    | RESET | A13 |   |   |   | A14     | A8     | VSS  | N |
|   | 1      | 2     | 3   | 4 | 5 | 6 | 7       | 8      | 9    |   |



(Top View: See the balls through the Package)

- Populated ball
- + Ball not populated

## AC & DC Operating Conditions

### Recommended DC Operating Conditions

#### Recommended DC Operating Conditions

| Symbol | Parameter                 | Rating |       |       | Units | Notes |
|--------|---------------------------|--------|-------|-------|-------|-------|
|        |                           | Min.   | Typ.  | Max.  |       |       |
| VDD    | Supply Voltage            | 1.425  | 1.500 | 1.575 | V     | 1,2   |
| VDDQ   | Supply Voltage for Output | 1.425  | 1.500 | 1.575 | V     | 1,2   |

#### Notes:

- Under all conditions, VDDQ must be less than or equal to VDD.
- VDDQ tracks with VDD. AC parameters are measured with VDD and VDDQ tied together.

## 5.5 EMMC: THGBMNG5D1LBAIL

### 4GB THGBMNG5D1LBAIL

#### INTRODUCTION

THGBMNG5D1LBAIL is 4GB density of e-MMC Module product housed in 153 ball BGA package. This unit is utilized advanced TOSHIBA NAND flash device(s) and controller chip assembled as Multi Chip Module. THGBMNG5D1LBAIL has an industry standard MMC protocol for easy use.

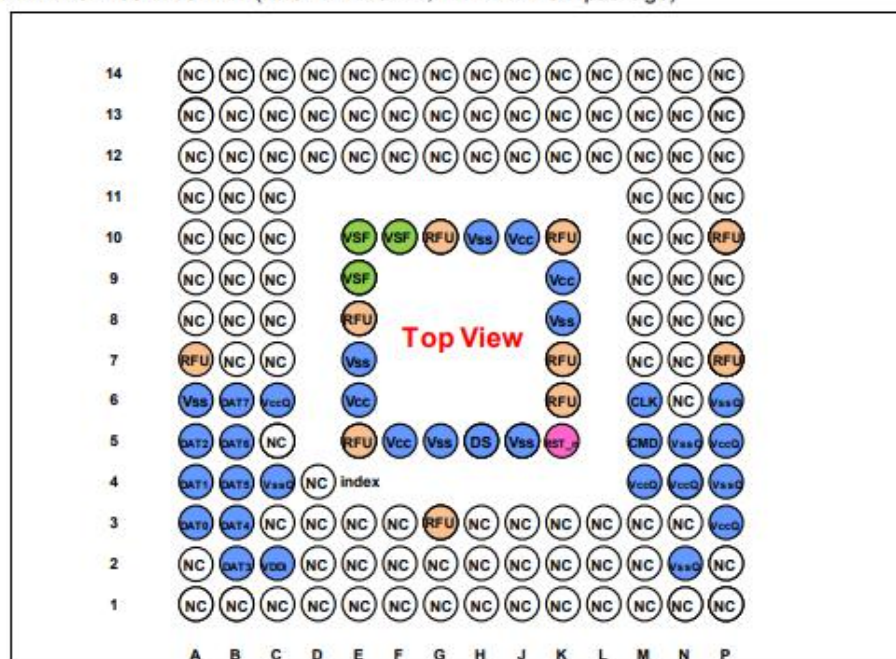
#### FEATURES

##### THGBMNG5D1LBAIL Interface

THGBMNG5D1LBAIL has the JEDEC/MMCA Version 5.0 interface with 1-I/O, 4-I/O and 8-I/O mode.

##### Pin Connection

P-WFBGA153-1113-0.50 (11.5mm x 13mm, H0.8mm max. package)



| Pin Number | Name | Pin Number | Name | Pin Number | Name  | Pin Number | Name |
|------------|------|------------|------|------------|-------|------------|------|
| A3         | DAT0 | C2         | VDDi | J5         | Vss   | N4         | VccQ |
| A4         | DAT1 | C4         | VssQ | J10        | Vcc   | N5         | VssQ |
| A5         | DAT2 | C6         | VccQ | K5         | RST_n | P3         | VccQ |
| A6         | Vss  | E6         | Vcc  | K8         | Vss   | P4         | VssQ |
| B2         | DAT3 | E7         | Vss  | K9         | Vcc   | P5         | VccQ |
| B3         | DAT4 | F5         | Vcc  | M4         | VccQ  | P6         | VssQ |
| B4         | DAT5 | G5         | Vss  | M5         | CMD   |            |      |
| B5         | DAT6 | H5         | DS   | M6         | CLK   |            |      |
| B6         | DAT7 | H10        | Vss  | N2         | VssQ  |            |      |

NC: No Connect, shall be connected to ground or left floating.

RFU: Reserved for Future Use, shall be left floating for future use.

VSF: Vendor Specific Function, shall be left floating.

## Part Numbers

### Available e-MMC Module Products – Part Numbers

| TOSHIBA Part Number | Density | Package Size               | NAND Flash Type | Weight    |
|---------------------|---------|----------------------------|-----------------|-----------|
| THGBMNG5D1LBAIL     | 4GB     | 11.5mm x 13mm x 0.8mm(max) | 1 x 32Gbit 15nm | 0.18g typ |

## Operating Temperature

-25°C to +85°C

## Storage Temperature

-40°C to +85°C

## Performance

X8 mode/ Sequential access

| TOSHIBA Part Number | Density | NAND Flash Type | Interleave Operation | Frequency /Mode | VccQ | Typ. Performance [MB/sec] |       |
|---------------------|---------|-----------------|----------------------|-----------------|------|---------------------------|-------|
|                     |         |                 |                      |                 |      | Read                      | Write |
| THGBMNG5D1LBAIL     | 4GB     | 1 x 32Gbit 15nm | Non Interleave       | 52MHz/SDR       | 1.8V | 46                        | 14    |
|                     |         |                 |                      |                 | 3.3V | 46                        | 14    |
|                     |         |                 |                      | 52MHz/DDR       | 1.8V | 88                        | 14    |
|                     |         |                 |                      |                 | 3.3V | 88                        | 14    |
|                     |         |                 |                      | HS200           | 1.8V | 152                       | 14    |
|                     |         |                 |                      | HS400           | 1.8V | 152                       | 14    |

## Power Supply

Vcc = 2.7V to 3.6V

VccQ = 1.7V to 1.95V / 2.7V to 3.6V

## 7. Software Upgrade

U 盘插在 AV 支架上的 USB 口， 遥控器操作 setup-->software update， 机器会重新开机显示蓝色进度条， 升级时间约 8 分钟左右， 耐心等待。。。。！

## 8. Setting Hotle Mode Menu

无

## 9. PCB Silkscreen

(只需显示元件外形及位号丝印, 隐藏走线)

### 9.1 Silkscreen top

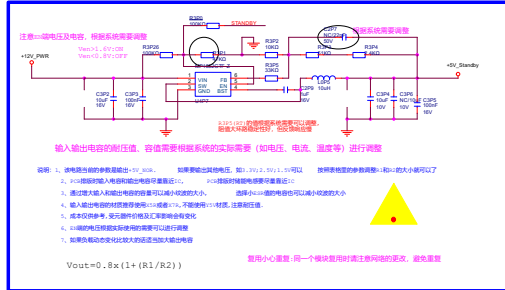
### 9.2 Silkscreen bottom

## 10. Schematic Circuit Diagram

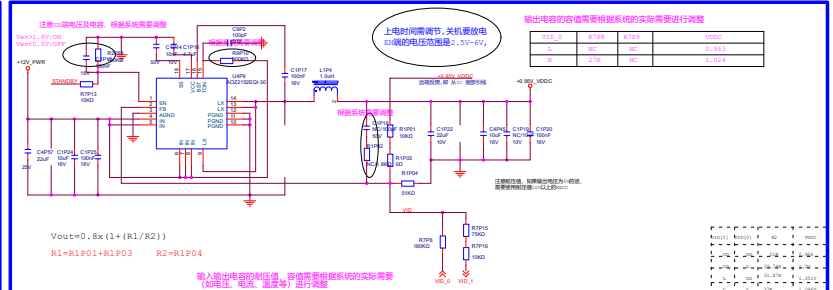
(要求清晰, 放大后能看清楚所有文字)

### Page1 Power Circuit

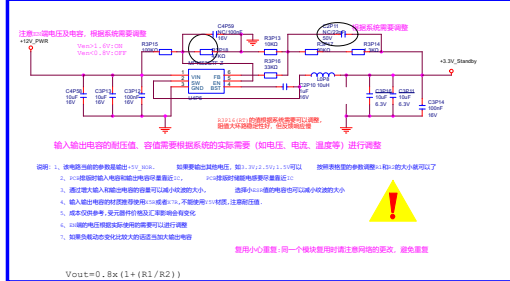
+12V\_NOR转+5V\_STB



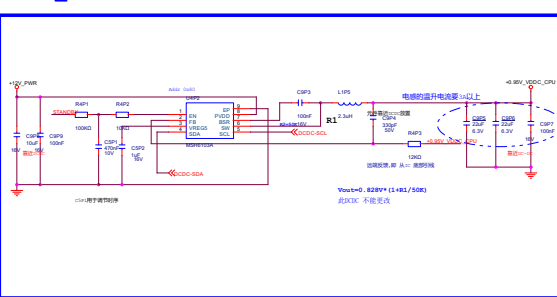
VDDC Power



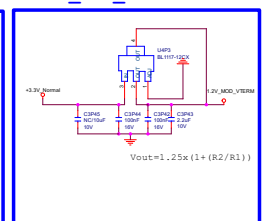
+12V\_NOR转+3.3V\_STB



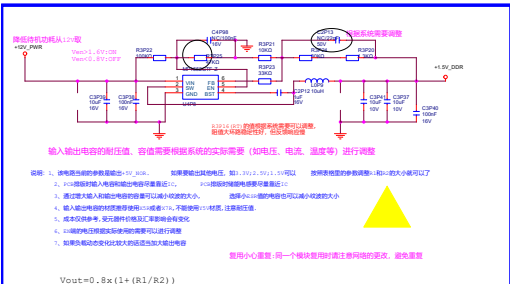
VDDC\_CPU



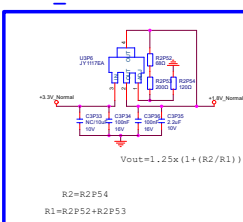
+1.2V\_MOD\_VTERM



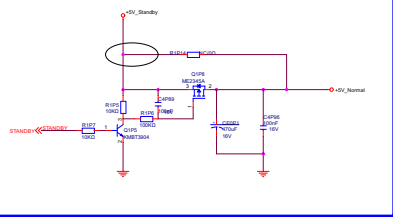
DDR Power



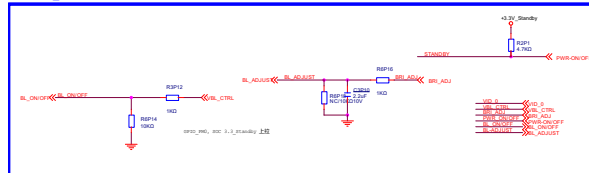
1.8V\_EMMC



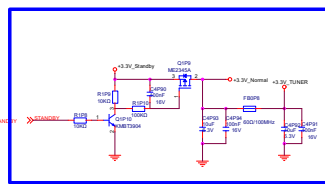
+5V\_Normal



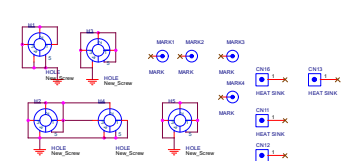
POWER\_CONNECT



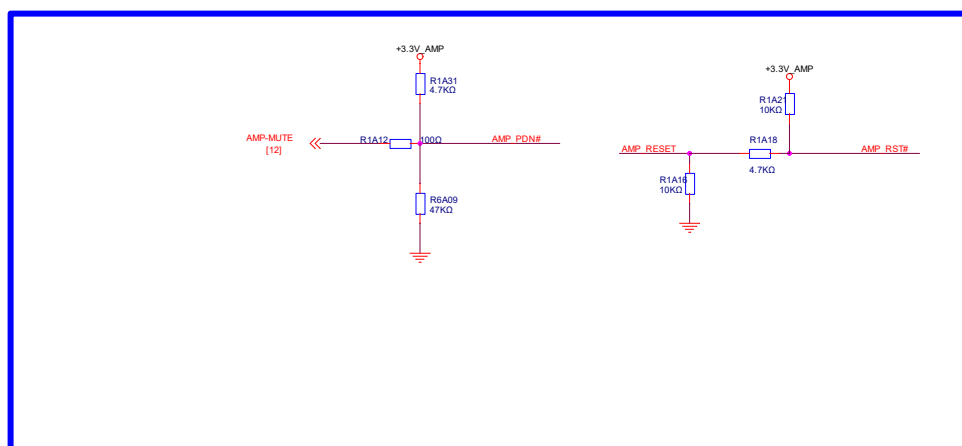
+3.3V\_Normal



Test Point & MARK

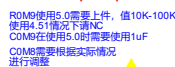


## Amplifier Circuits TAS5707



## Page3 Memory

## eMMC FLASH



特别说明: 对于Mstar的方案INF-D6只需要经过B5、C5两个点通过过孔出来, 其他点 (G1、F2、E3、D4请NC)

这四个点在Mstar方案上请NC



| Vendor  | Ver4.51 | Ver 5.0 |
|---------|---------|---------|
| SUMSANG | √       | √       |
| Toshiba | √       | √       |
| HYNIX   | √       | √       |

RFU: Reserved For future Use. 悬空  
注意: 由于原理图符号做了4.51与5.0的兼容  
以上四个引脚的定义请参照表格设计



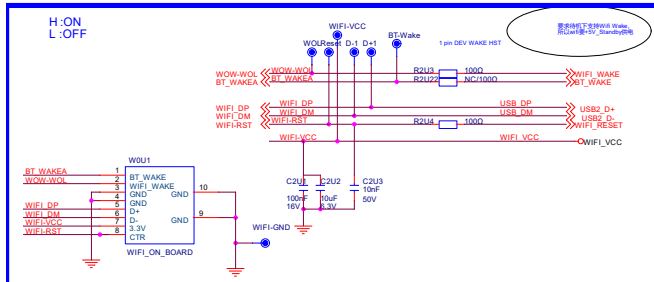
## POWER



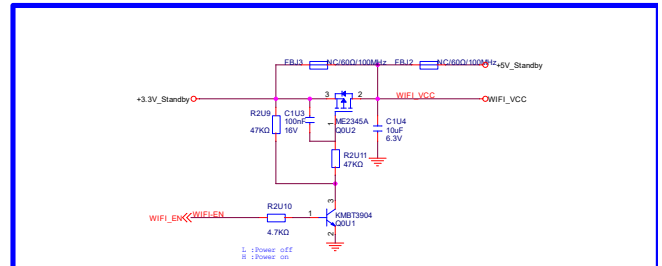
HS400向下兼容HS200，如要用HS模式，NF\_VDD\_IF请使用1.0V供电，不用HS模式，两个电源都用3.3V即可

## Page4 USB\_HUB

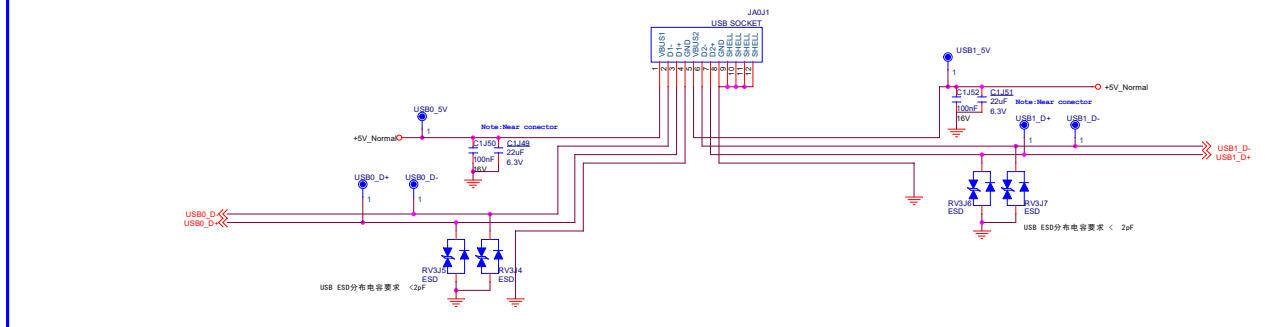
## WiFi



## WIFI POWER

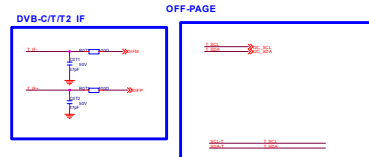
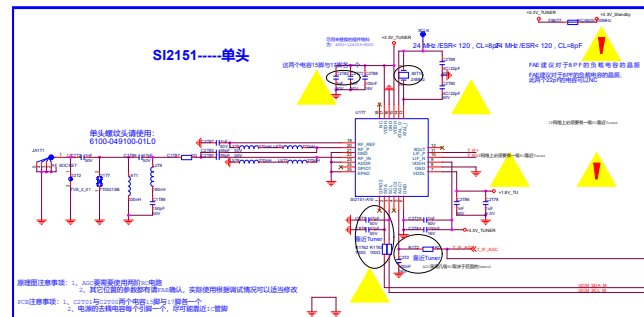


## USB2.0\*2

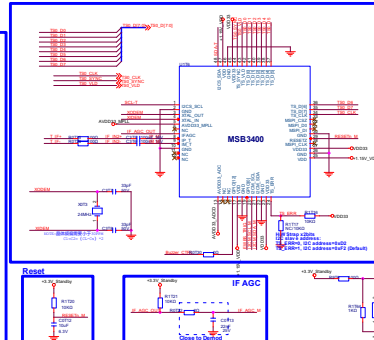
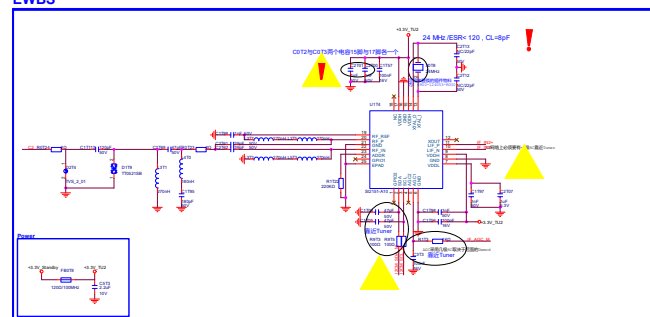


## Page5 Tuner

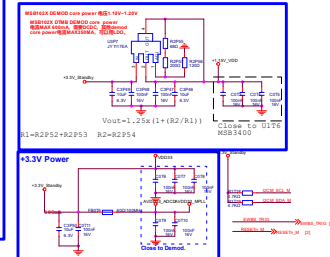
### SI2151-----双头



### EWBS



### 1.15V

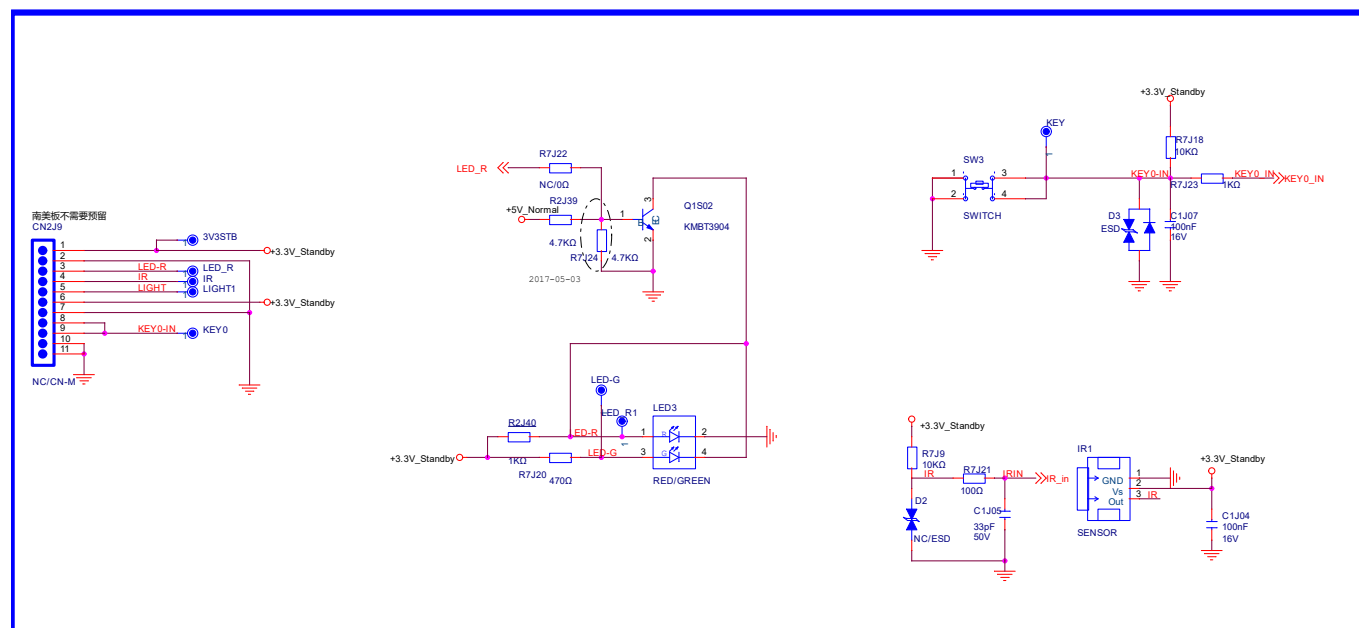


### +3.3V Power



## Page6 Connector Circuit

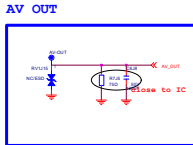
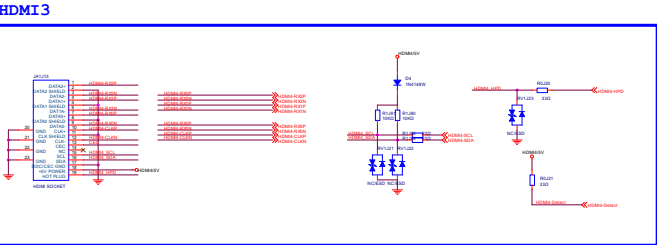
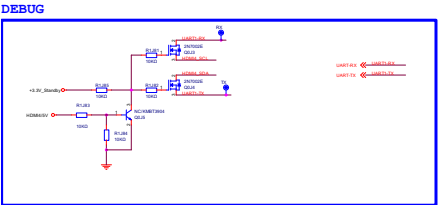
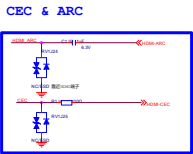
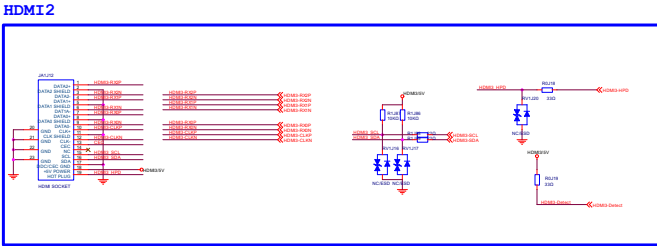
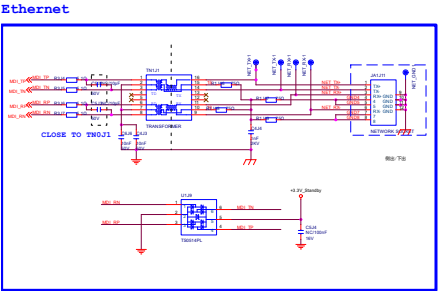
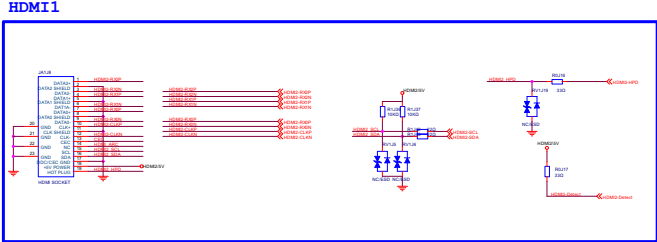
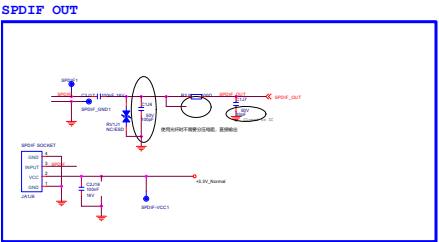
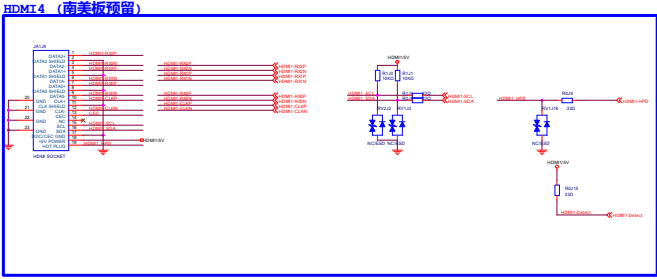
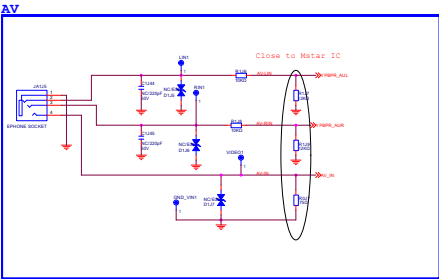
LED KEY&IR



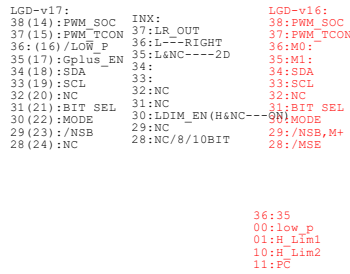
## WiFi



Page7 Standard Port



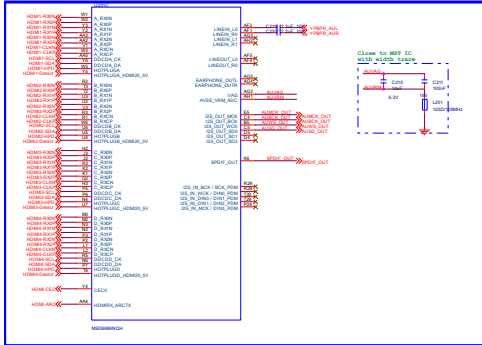
## PANEL接口



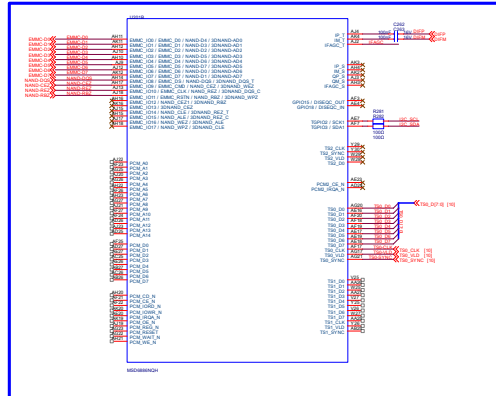
### A3M Need Larger TestPad

## Page9 Main\_Chip

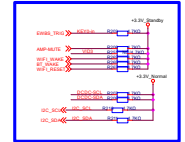
HDMI/Audio Block



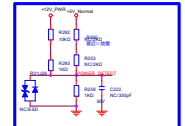
PCMCIA/TS/NAND/FE



GPIO Pull up



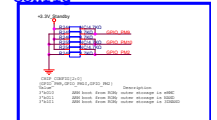
EMMC protect



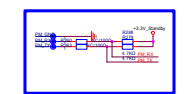
AGC



Config



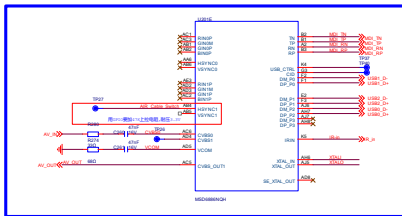
PM UART



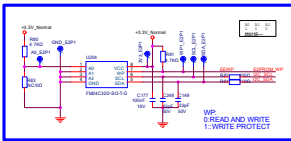
RESET



RGB/CVBS/PHY/USB Block



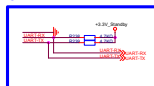
E2FROM



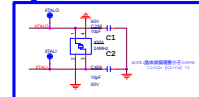
Heat Sink



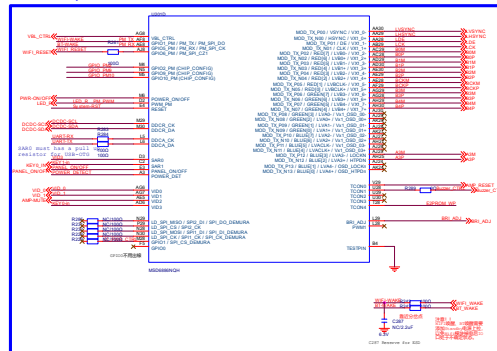
UART



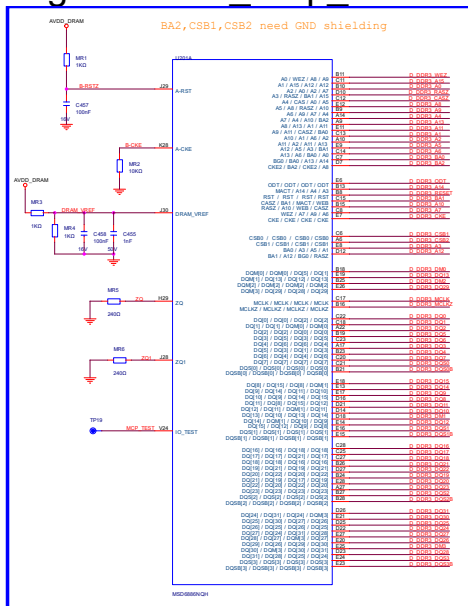
Crystal

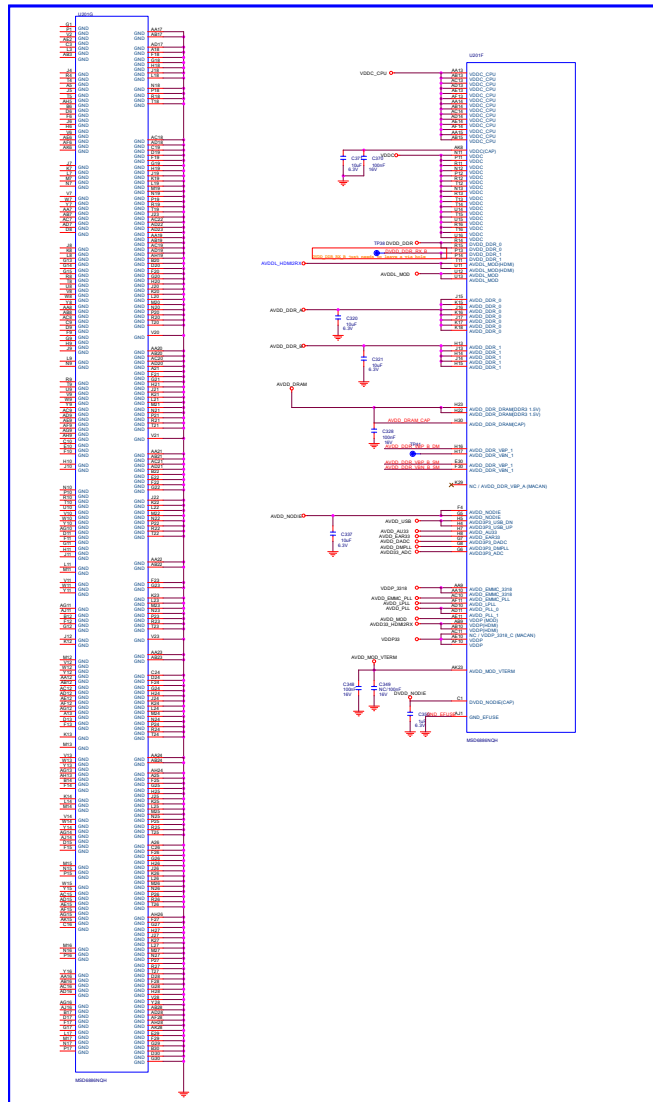


LVDS/GPIO

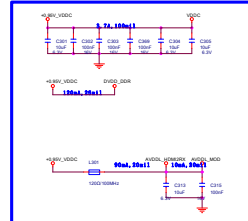


## Page10 Main\_Chip\_DDR

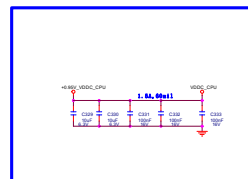




### CORE Power



## CPU Power

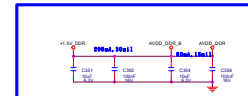


DDR

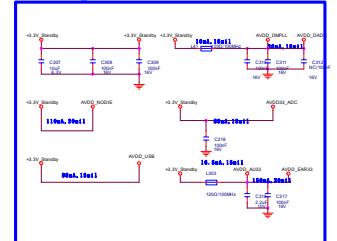
MCP:DDR3:1.5V



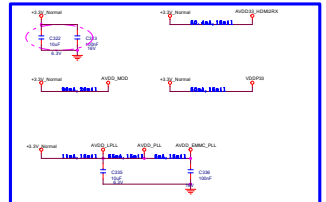
## EXT:DDR3 1.5V



### Standby Power 3.3V

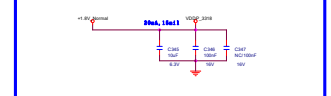


### Normal Power 3.3V

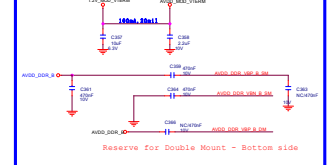


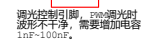
## eMMC/Nand Power

EMMC用1.8V

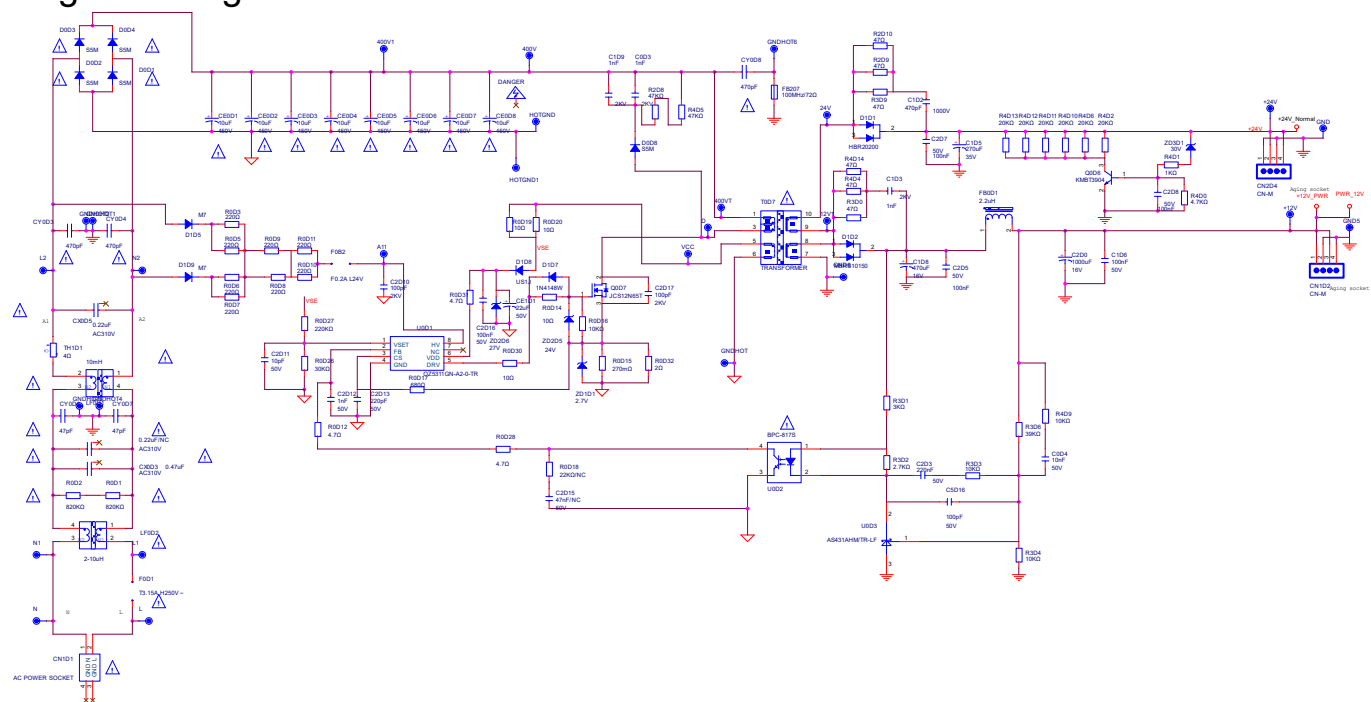


## MOD VTERM





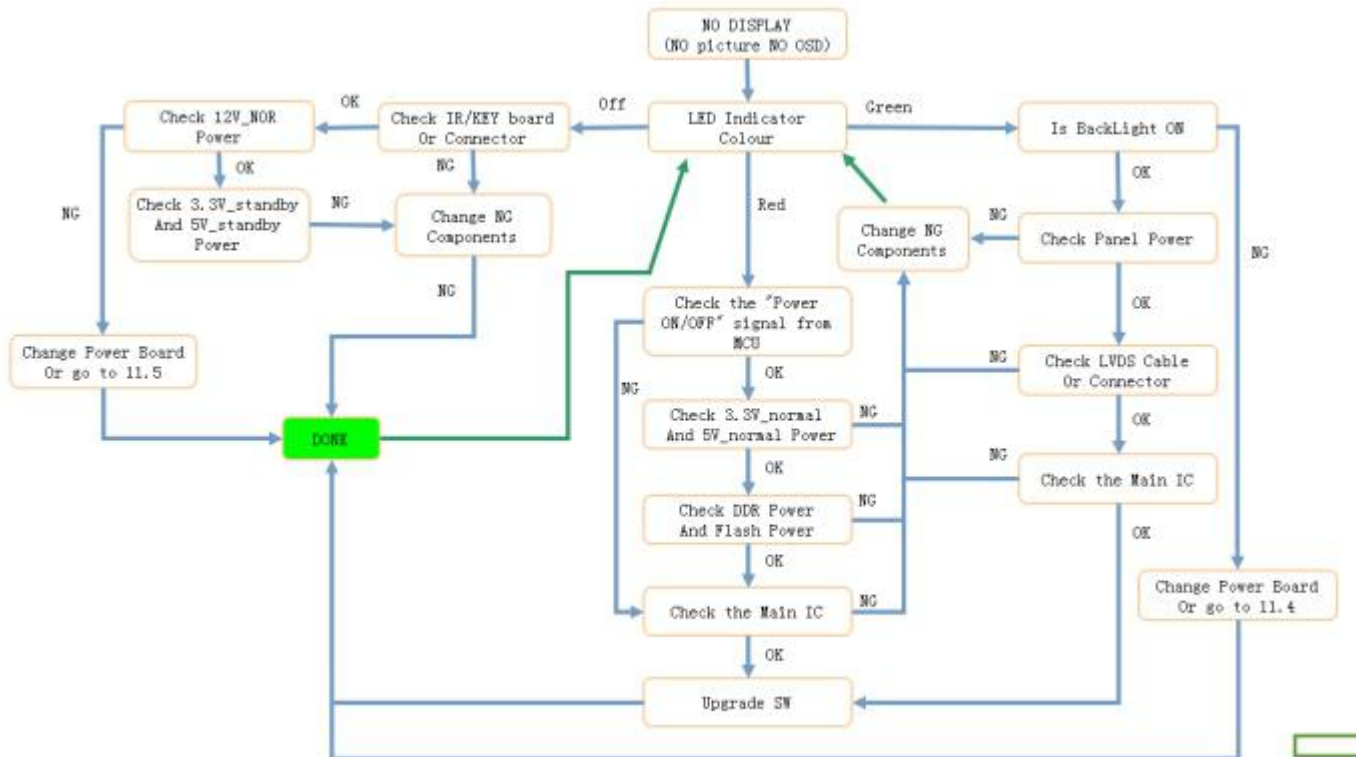
## Page14 Integrated Main Power



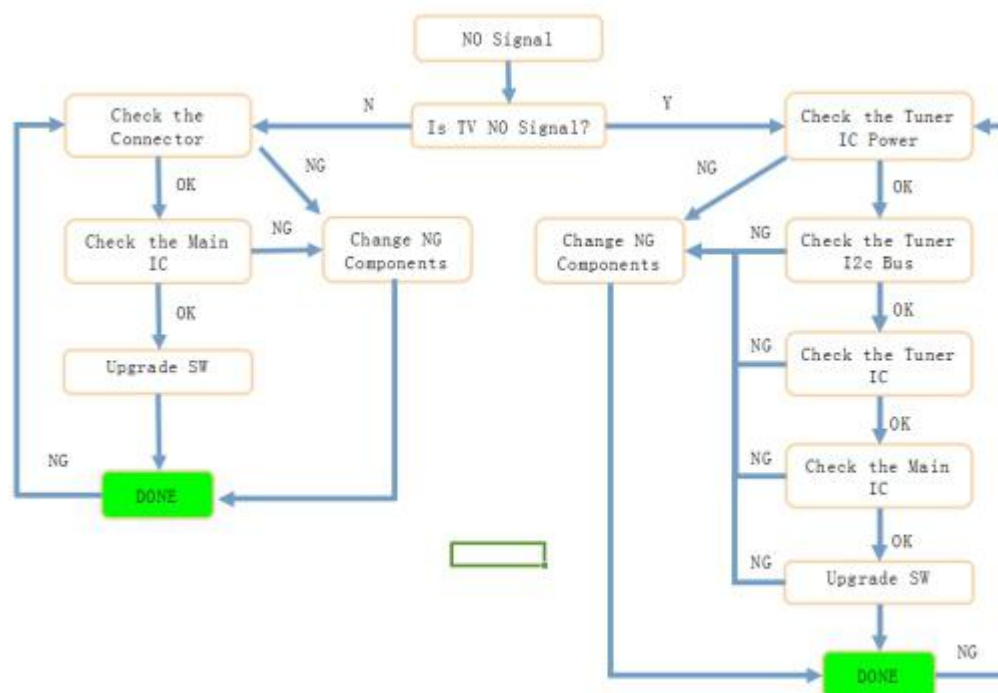
# 11.Trouble Shooting

(流程图要求清晰，放大后能看清楚所有文字)

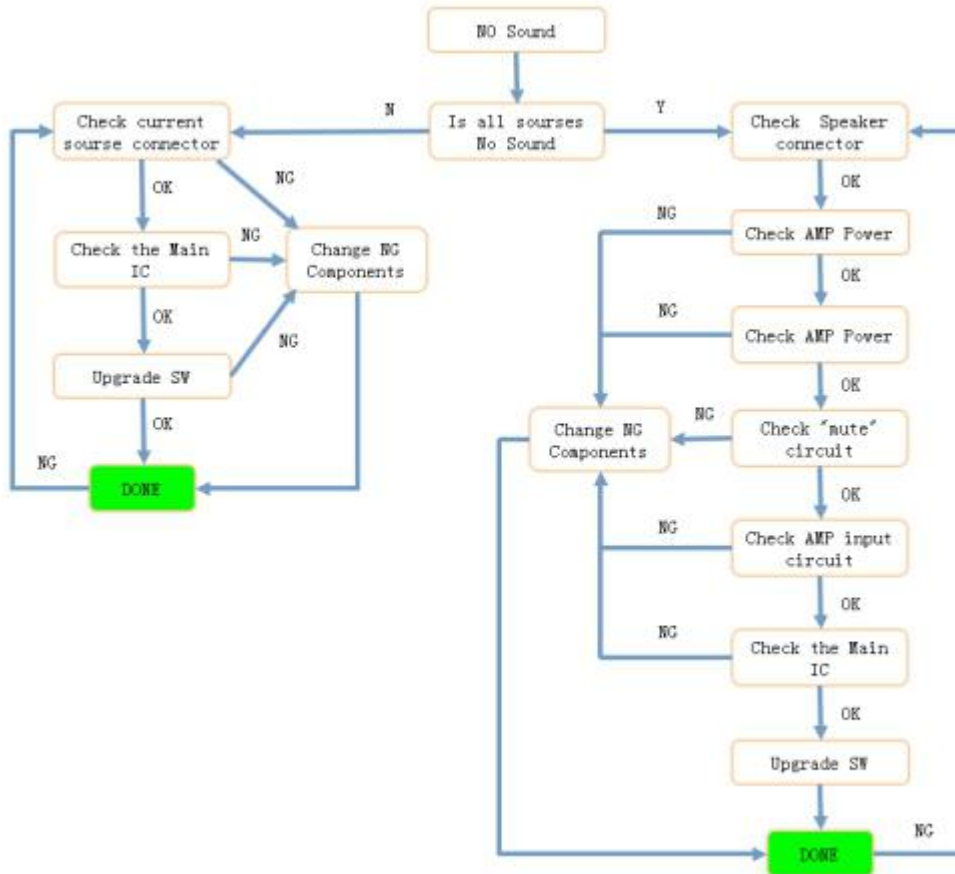
## 11.1 No display



## 11.2 Has BackLight but no Image



### 11.3 Has Video but no Sound



### 11.4 No main power (12V) (三合一板需要, 由电源设计师编写)

参考单独电源模块维修资料

### 12.4 Has main power but no bachlight (三合一板需要, 由电源设计师编写)

参考单独电源模块维修资料

以上电源两项合在一起, 详见下图

