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| 9    | DDR4 SLOT-DIMM3/DIMM4        |
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| 11   | DDR4-POWER/GND-2             |
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| 20   | PCIE SLOT (X1)               |
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| 22   | DP to VGA - ITE6516          |
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| 24   | DISPLAY PORT CON             |
| 25   | M2_1 2242/2260/2280/22110    |
| 26   | NA                           |
| 27   | SATA Connector               |
| 28   | USB POWER-MP1495/UP7501      |
| 29   | Front JUSB1 / JUSB2 2.0      |
| 30   | Front JUSB3 3.0 / CHARGE     |
| 31   | Front JUSB4 3.0              |
| 32   | Rear PS2_USB1 3.0 / Redriver |
| 33   | Rear LAN_USB2 3.0 / VR       |
| 34   | USB3.1 - ASM2142             |
| 35   | USB3.1 TYPE A CON            |
| 36   | LAN - RTL8111H               |
| 37   | AUDIO ALC892                 |
| 38   | AUDIO De-POP                 |
| 39   | SIO-NTC6795D-1               |
| 40   | SIO-NTC6795D-2               |
| 41   | LED-BOT/AUD/LBAR             |
| 42   | LED-EZ DBG/DIMM/PCIE         |
| 43   | CPU FAN1 / PUMP_FAN1         |
| 44   | SYSTEM FAN 1/2               |
| 45   | SYSTEM FAN 3/4               |
| 46   | ACPI UPI POWER               |
| 47   | ATX Power/F_Panel/JTPM/JTBT  |
| 48   | OV-NCT3933                   |
| 49   | PWM-RT3606BC VCORE+VGT       |
| 50   | VCORE MOS-PHASE 1~3          |
| 51   | VGT MOS-PHASE 1~2            |
| 52   | PWR_12V OCP - UP6273A        |
| 53   | CPU_PWR_VCCIO - NB681G       |
| 54   | CPU_PWR_ST/PLL               |
| 55   | CPU_PWR_SA-RT8125E           |
| 56   | DDR4 Power-RT8125E           |
| 57   | DDR4 Power-VFP25             |
| 58   | PCH Core Power-RT8125E       |
| 59   | SPI ROM                      |
| 60   | Clear CMOS SLG4B41231V       |
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| 63   | GPIO MAP                     |
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| 65   | Power Sequence               |
| 66   | Revision History             |

## CPU:

*Kabylake-S*

## System Chipset:

*Z270*

## Onboard Chip:

*HD Audio Codec : ALC892*

*LAN : Realtek RTL8111H*

*SIO : Nuvoton 6795*

*Flash ROM : 16MB Z270*

*U3.1 Gen2 : ASM2142 (option)*

## Main Memory:

*DDRIV (800/1066/1333/1600/2133MHz)  
\* 4 (Dual Channel)*

## ACPI:

*NIKO/UPI*

## Expansion Slots:

*PCI Express (X16) Slot \*1*

*PCI Express (X4) Slot \* 1*

*PCI Express (X1) Slot \* 4*

*M2 M-Key \* 1*

## Display :

*DISPLAY PORT*

*DVI*

*VGA-ITE6516 DDI to D-SUB*

## PWM:

*RT3606BC*

## Other:

*SATA3.0 \*6*

*FRONT USB2.0 \*4*

*FRONT USB3.0 \*4*

*REAR USB3.0 GEN1 Z270 \*4*

*REAR USB3.1 GEN2 TYPE A \*2 (option)*

# MS-7A71

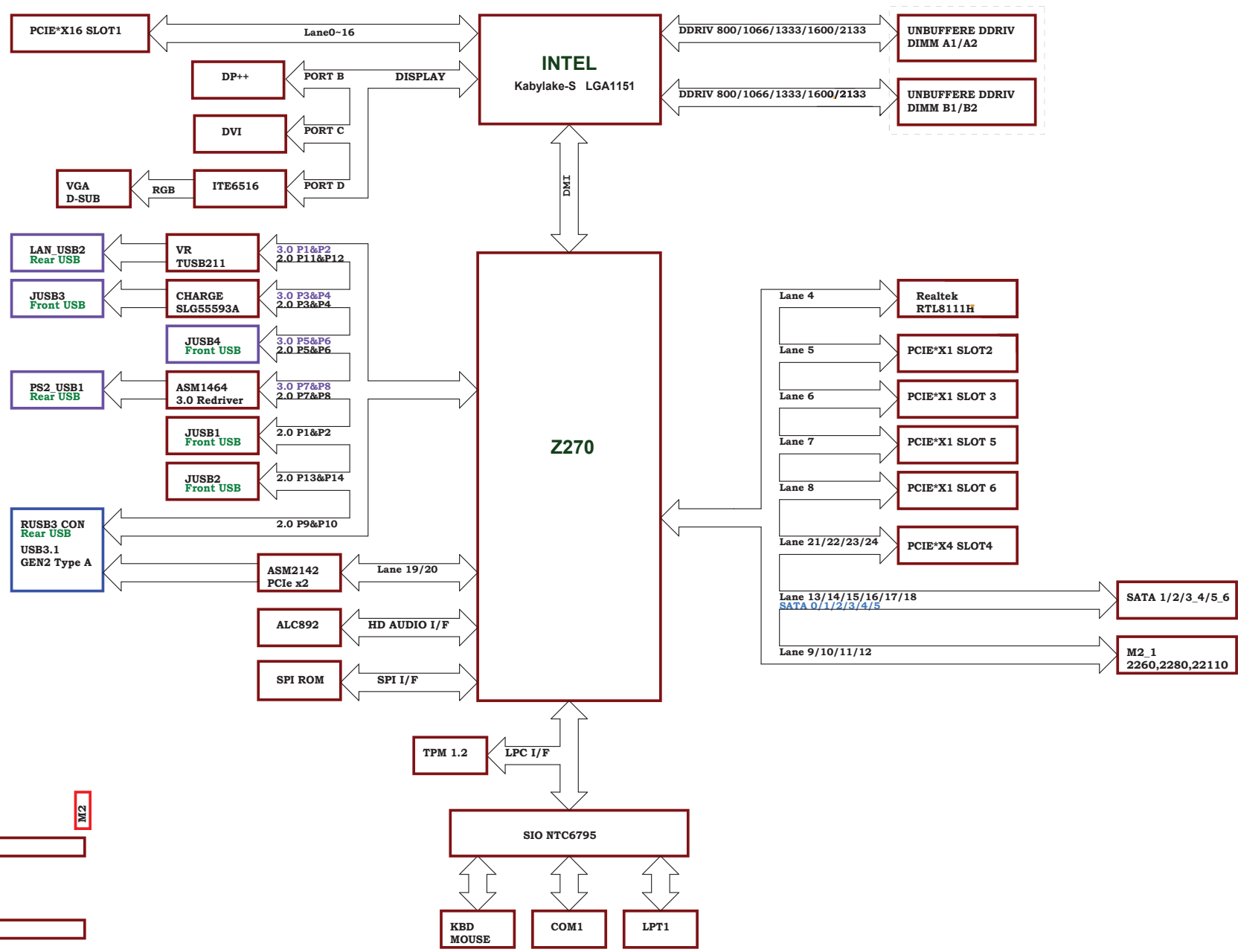
Ver: 1.2 ATX

PCB size : 304.8mm \* 225mm



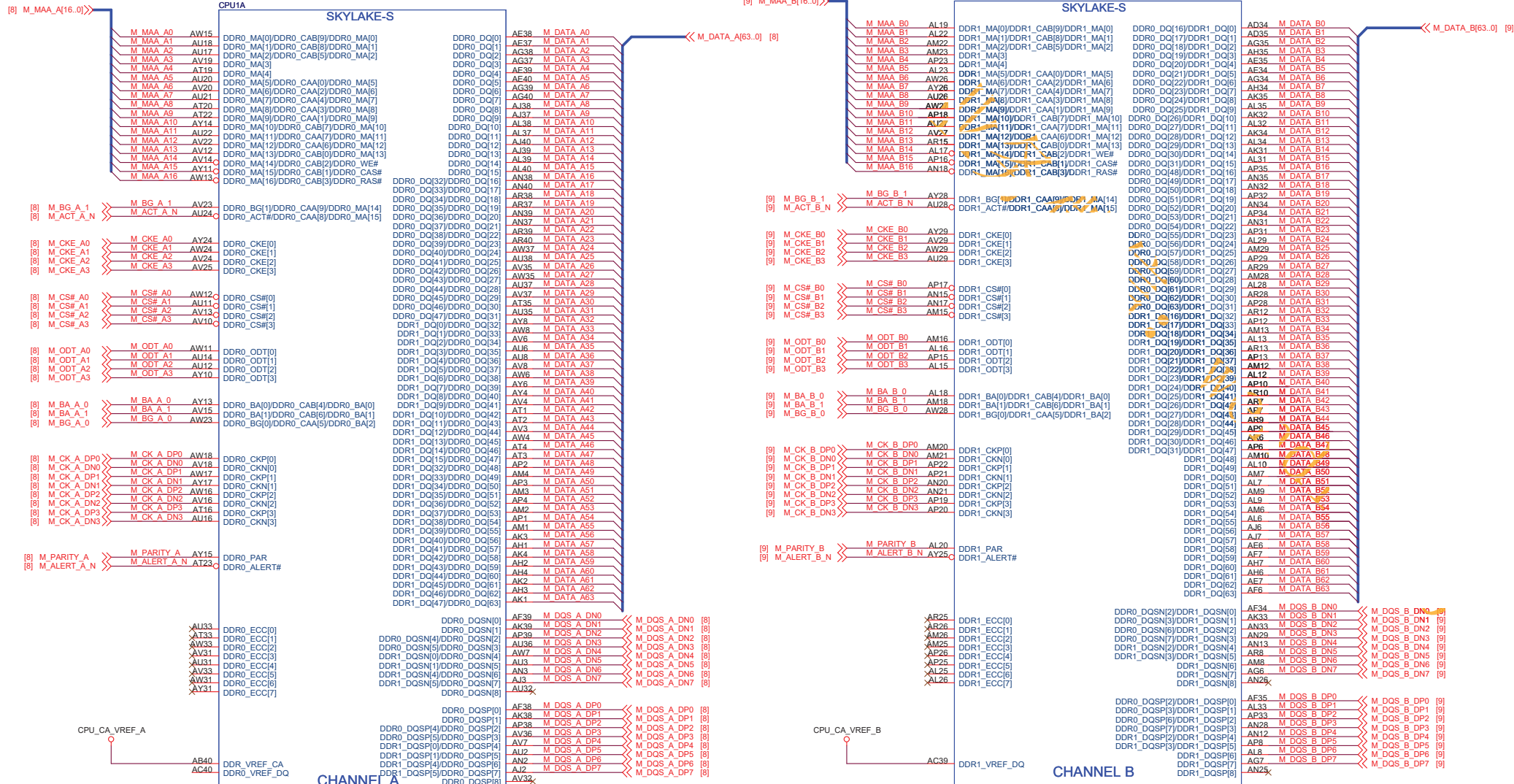
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| MS-7A71                          |                                     |            |  |
| Size<br>Custom                   | Document Description<br>Cover Sheet | Rev<br>1.2 |  |
| Date: Thursday, October 27, 2016 | Sheet 1 of 65                       |            |  |

MS-7A71 Block Diagram



Slot Sequence:

|         |              |    |
|---------|--------------|----|
| M2_1    | 22110        | M2 |
| PCie_E1 | CPU PCie X16 |    |
| PCie_E2 | PCie X1      |    |
| PCie_E3 | PCie X1      |    |
| PCie_E4 | PCie X4      |    |
| PCie_E5 | PCie X1      |    |
| PCie_E6 | PCie X1      |    |



LGA1151

ZIF-SOCKET1151-HF-1

N12-151A020-F02

AVL: N12-151A040-L06

LGA1151

ZIF-SOCKET1151-HF-1

N12-151A020-F02

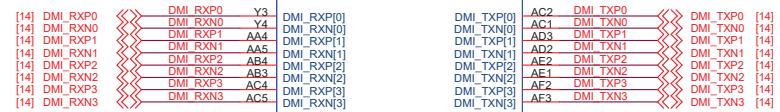
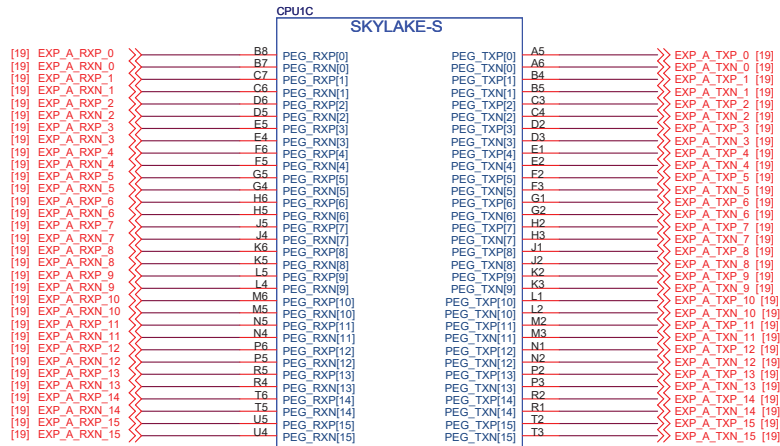


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MS-7A71

| Size                             | Document Description | Rev |
|----------------------------------|----------------------|-----|
| Custom                           | CPU-Memory           | 1.2 |
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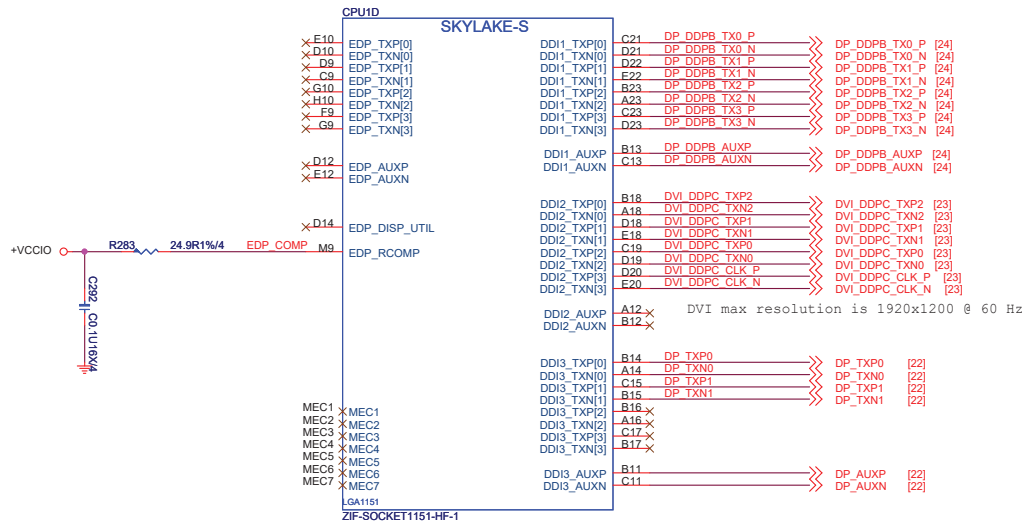


+VCCIO R282 24.9R1%/4 PEG\_COMP L7

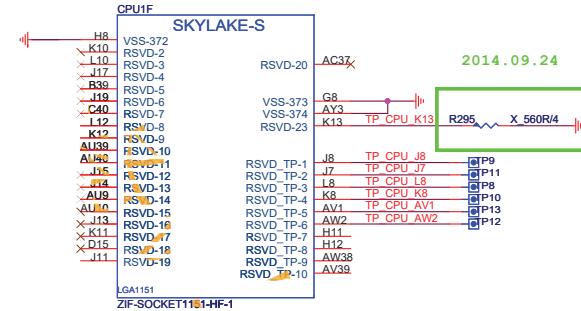
L<=0.4 inch

LGA1151  
ZIF-SOCKET1151-HF-1

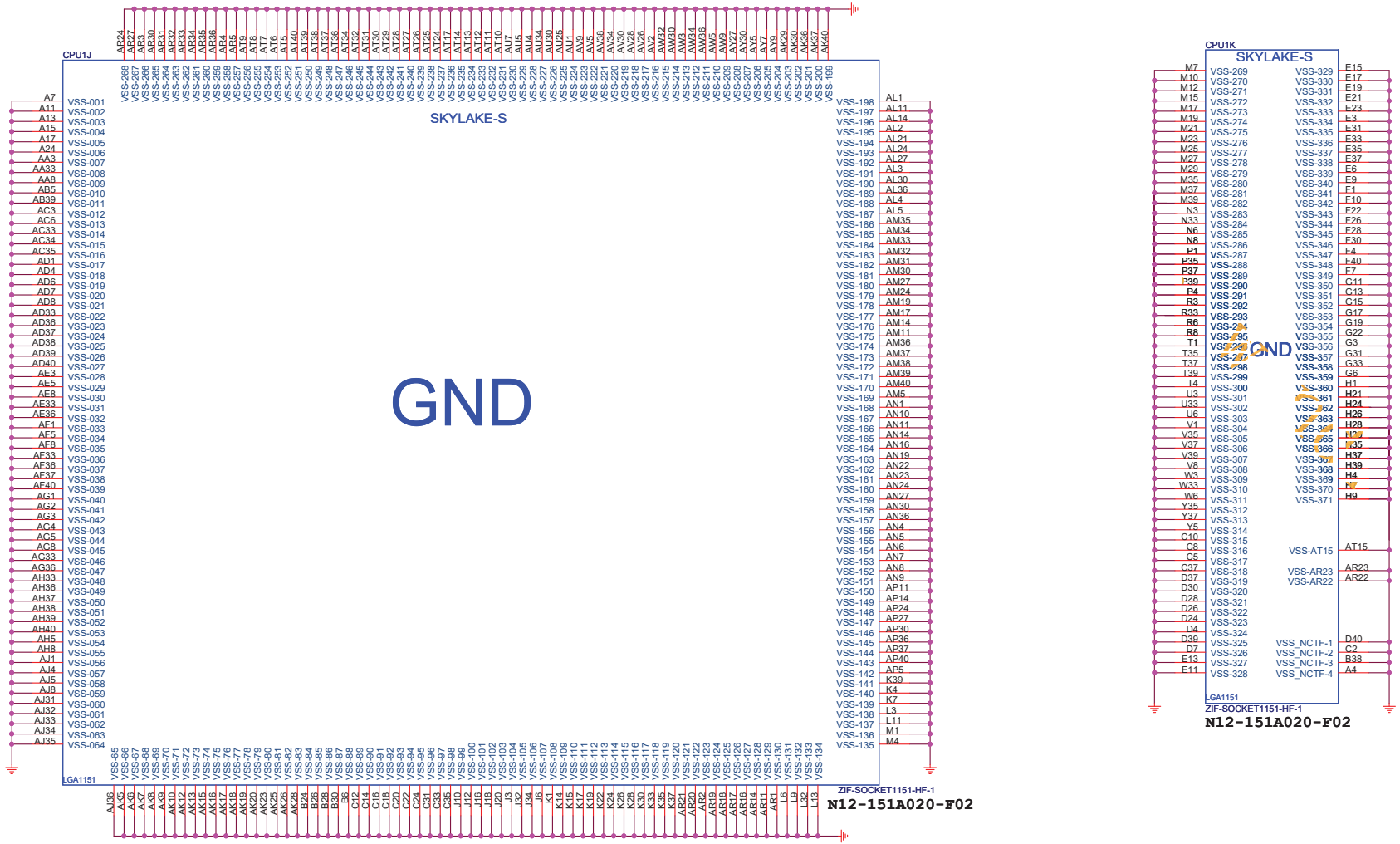
N12-151A020-F02

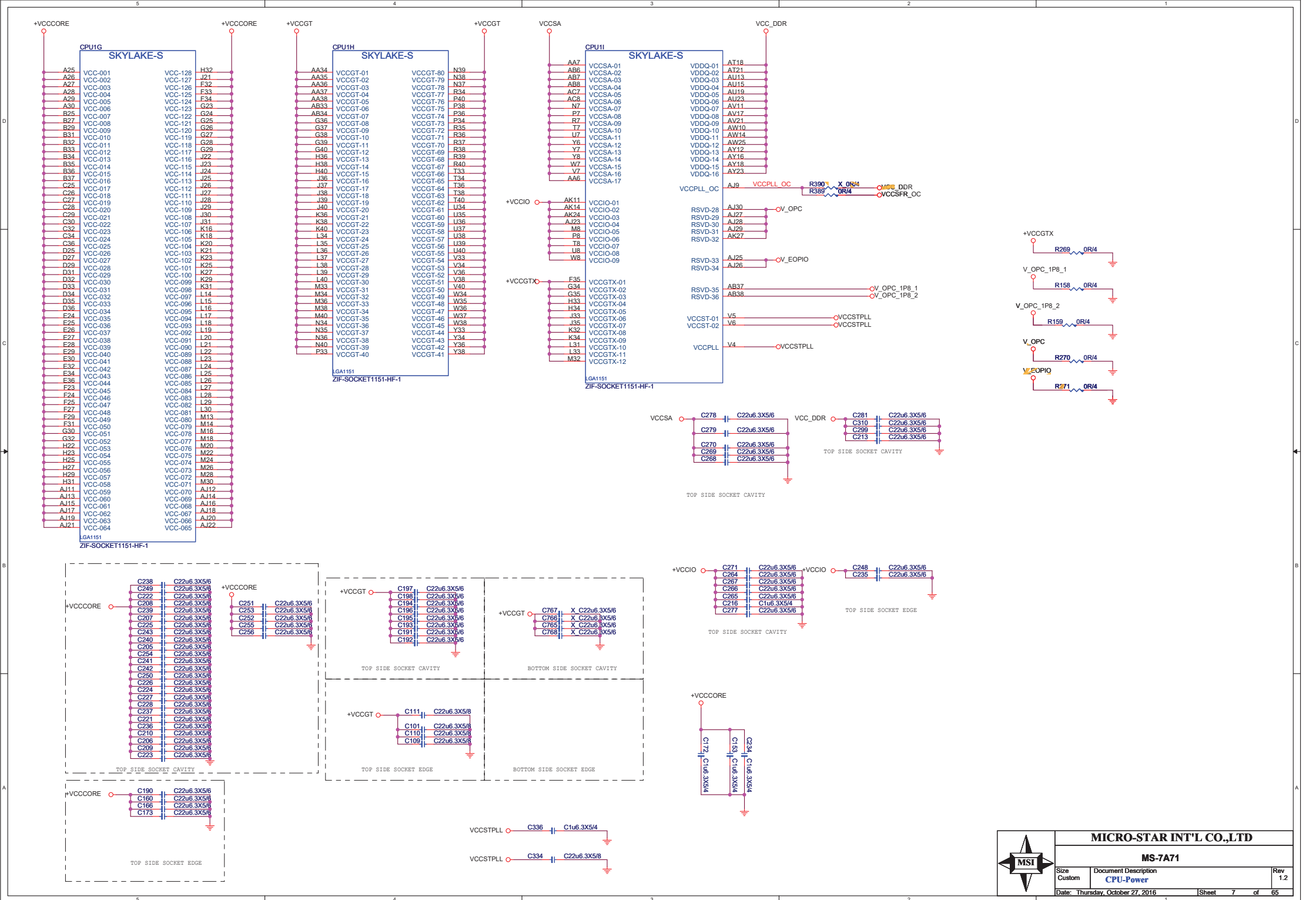


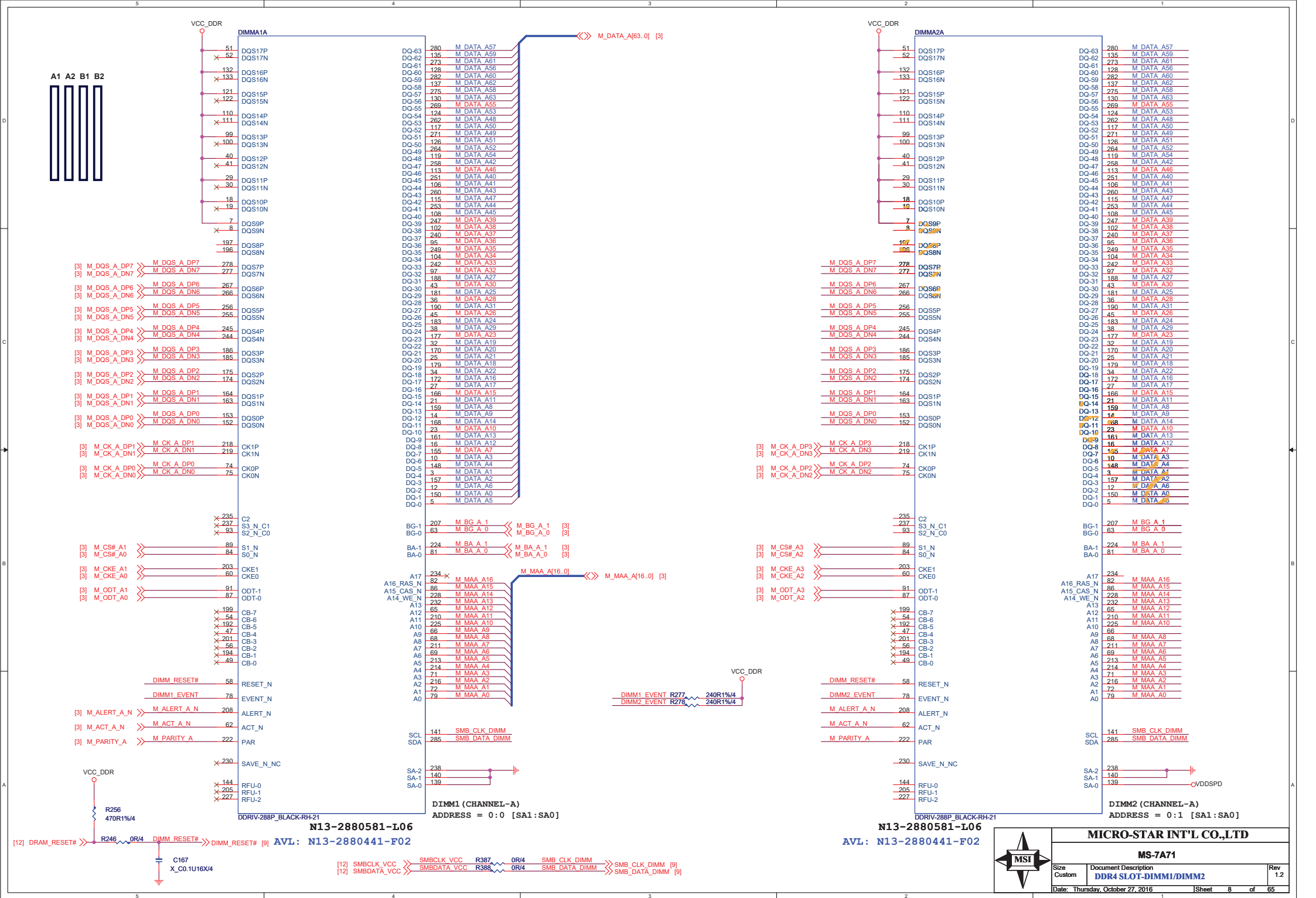
N12-151A020-F02

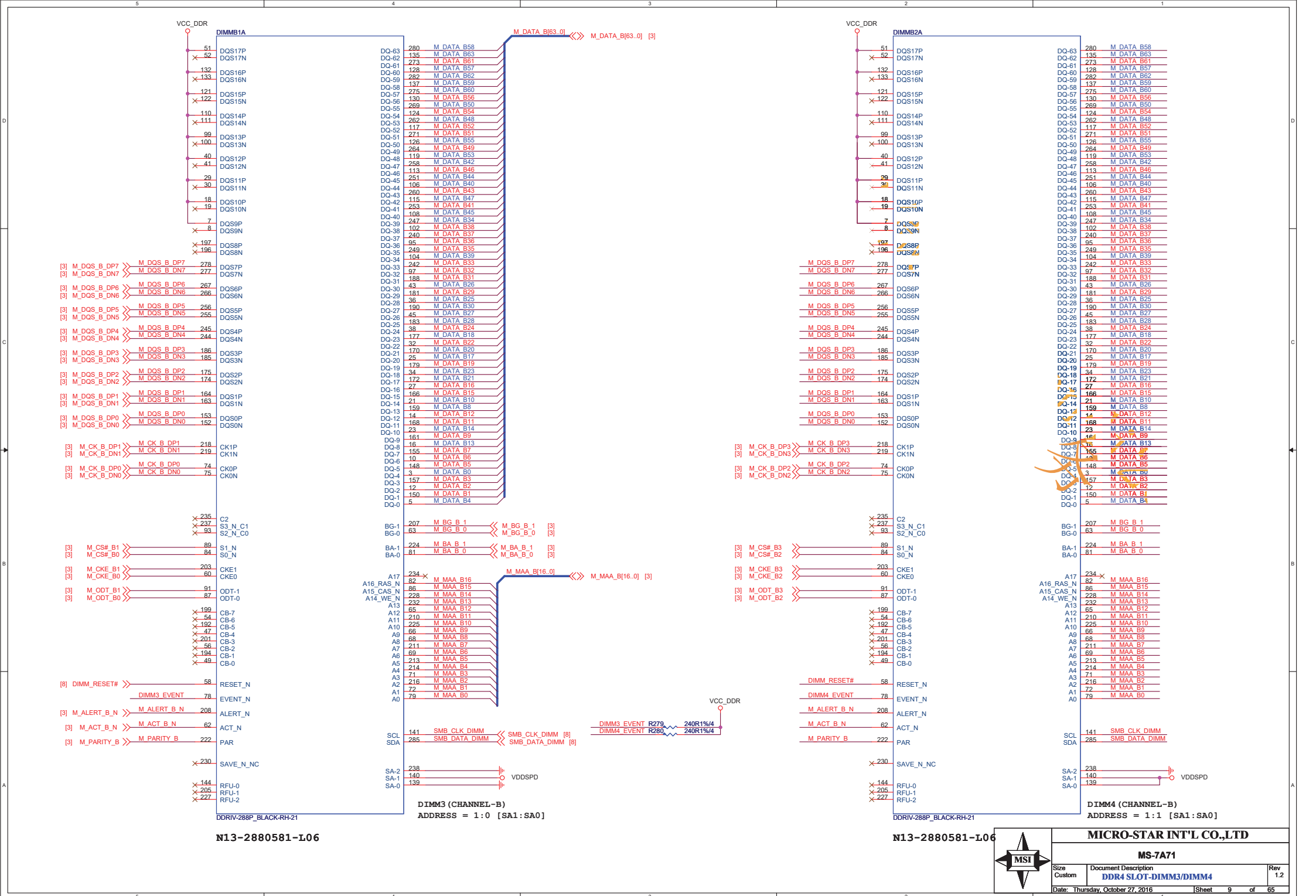


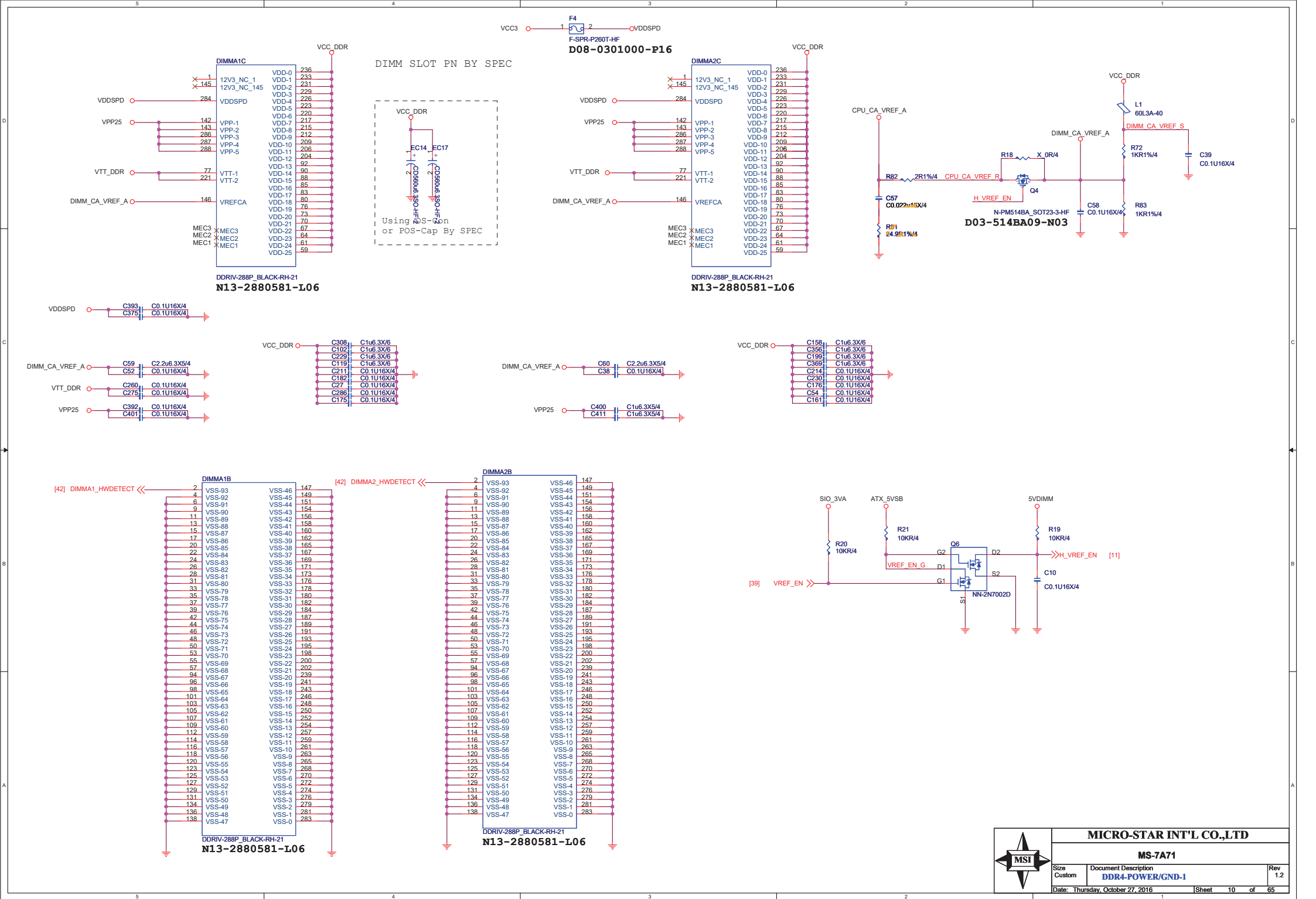
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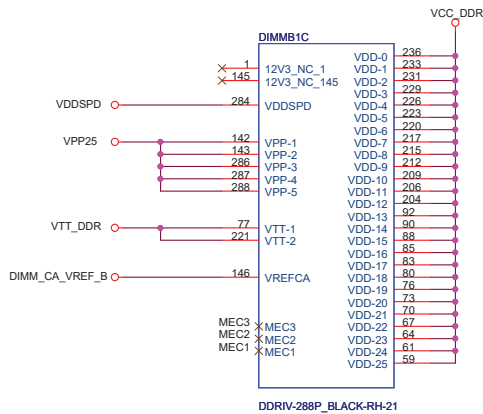




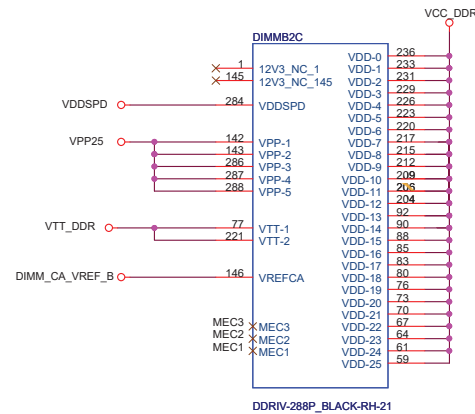
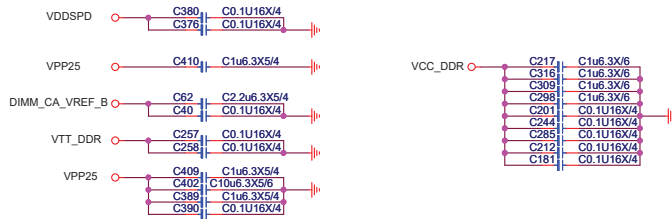




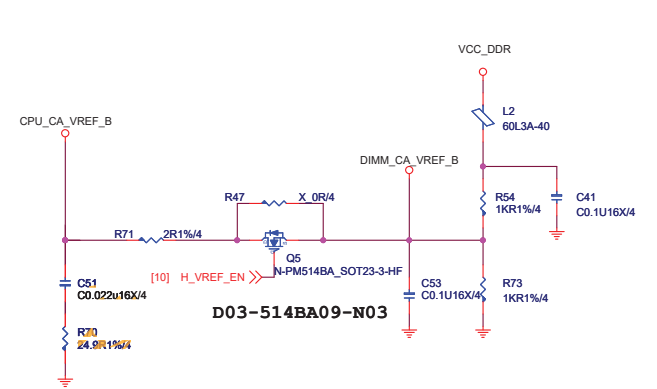




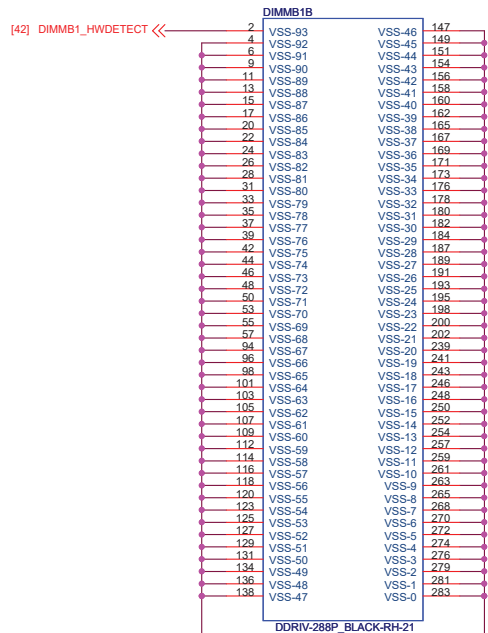
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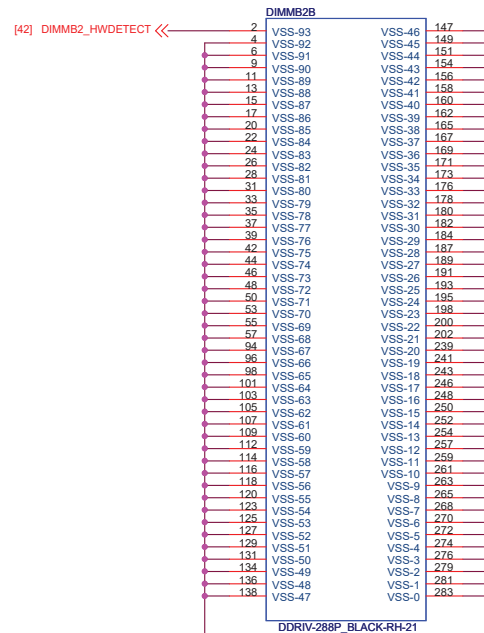
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D03-514BA09-N03



N13-2880581-L06



N13-2880581-L06



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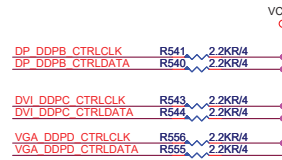
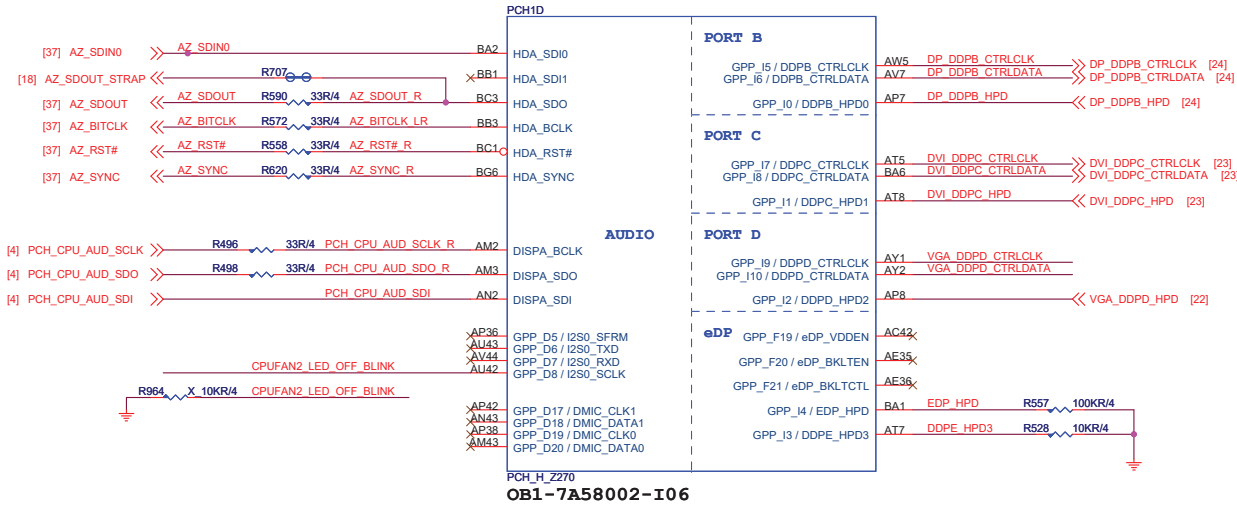
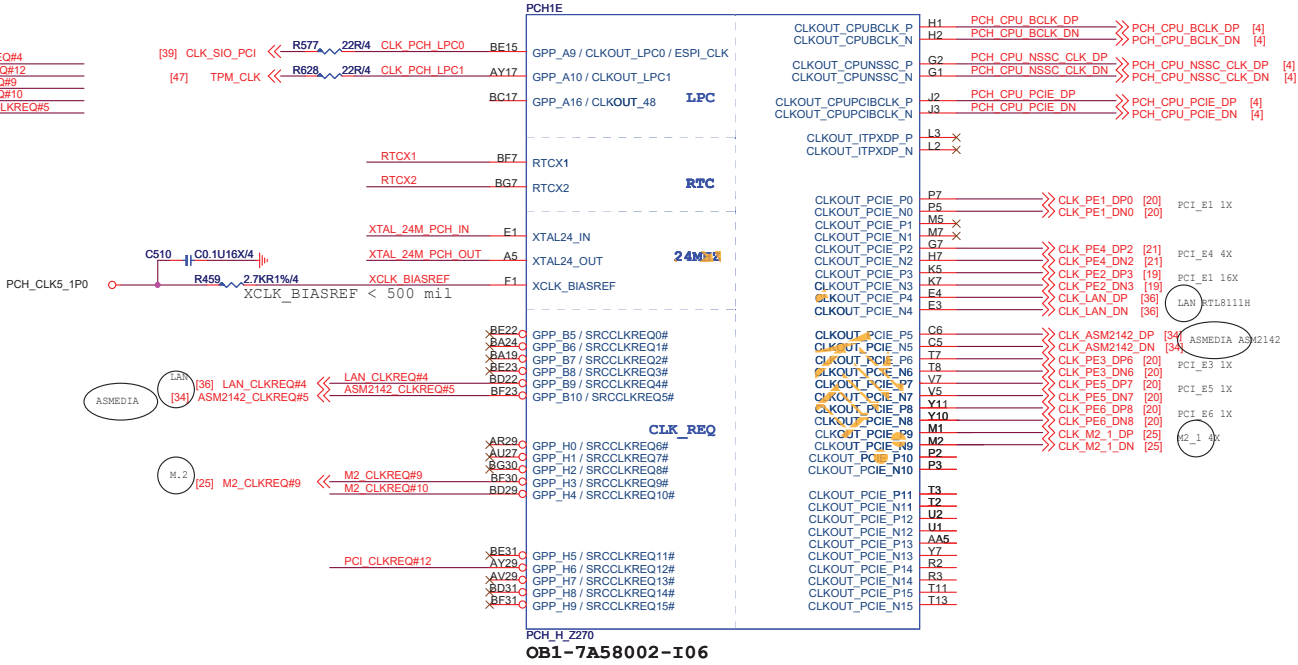
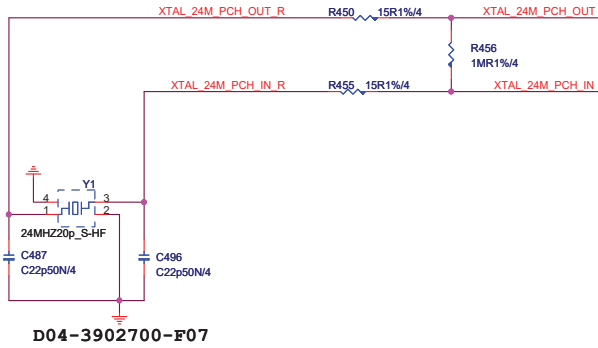
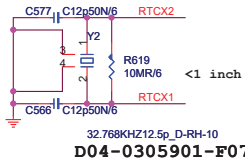
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|--------|----------------------------|----------------|
| Custom | DDR4-POWER/GND-2           | 1.2            |
| Date:  | Thursday, October 27, 2016 | Sheet 11 of 65 |

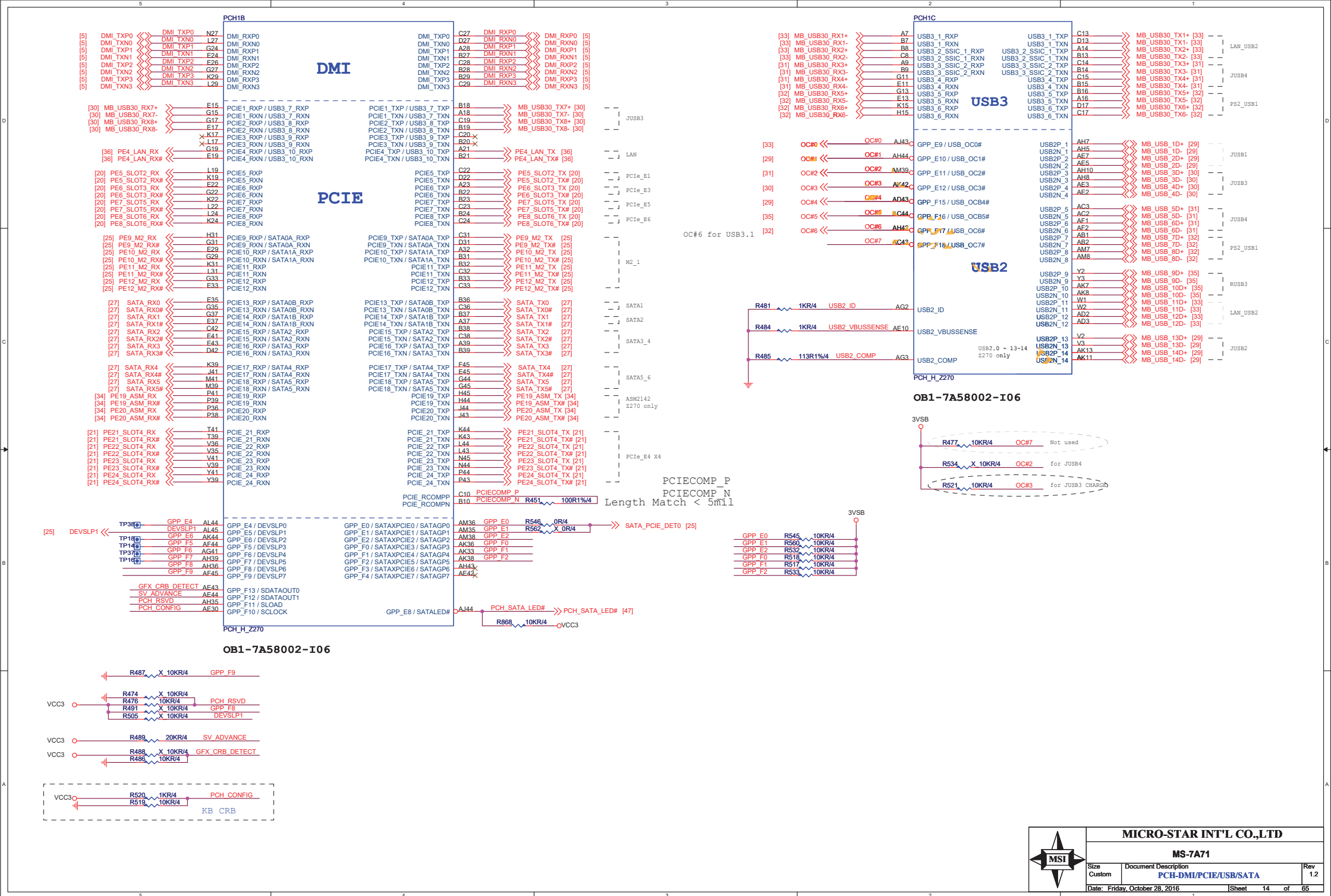


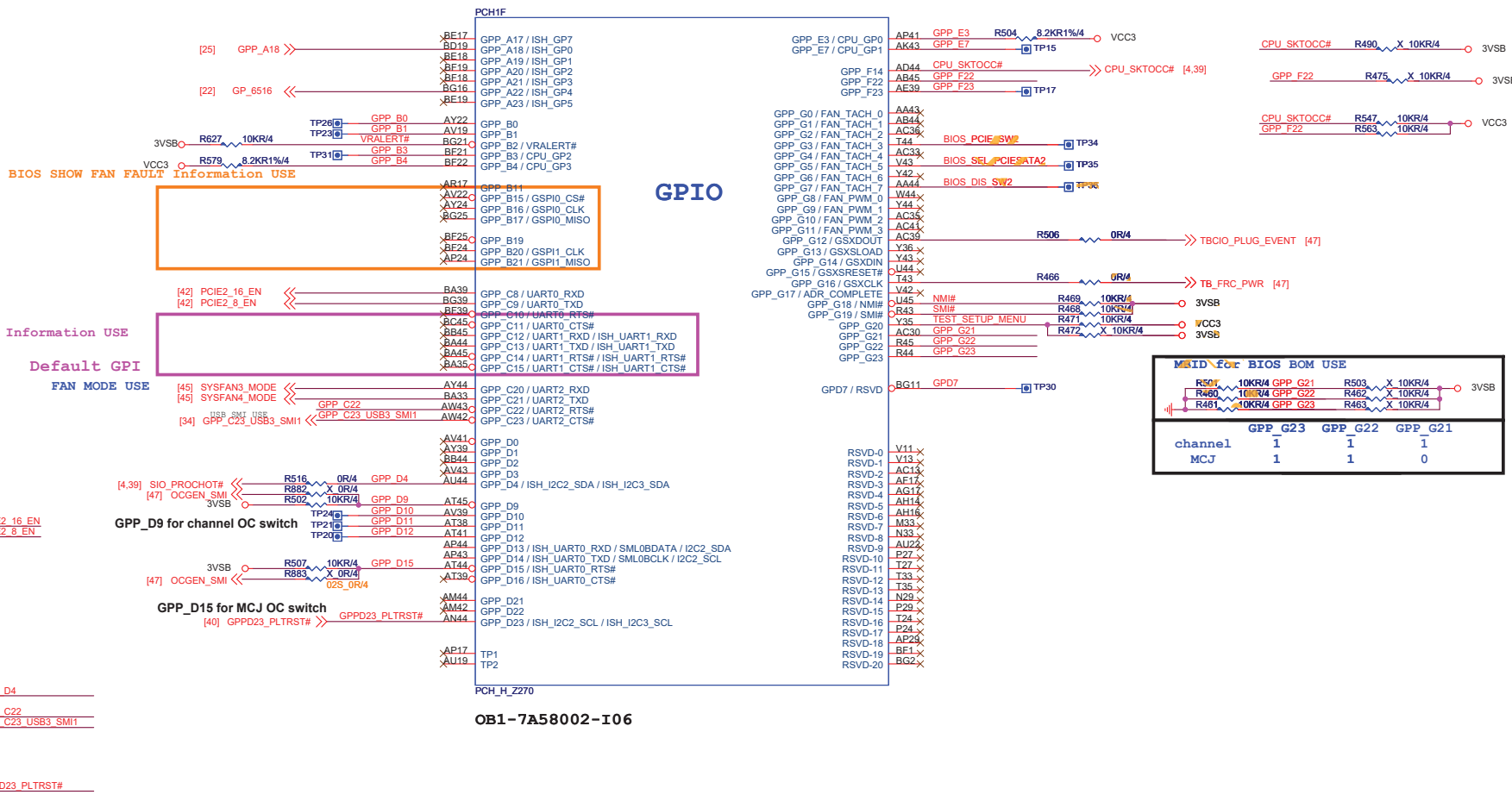
PCH\_CLK

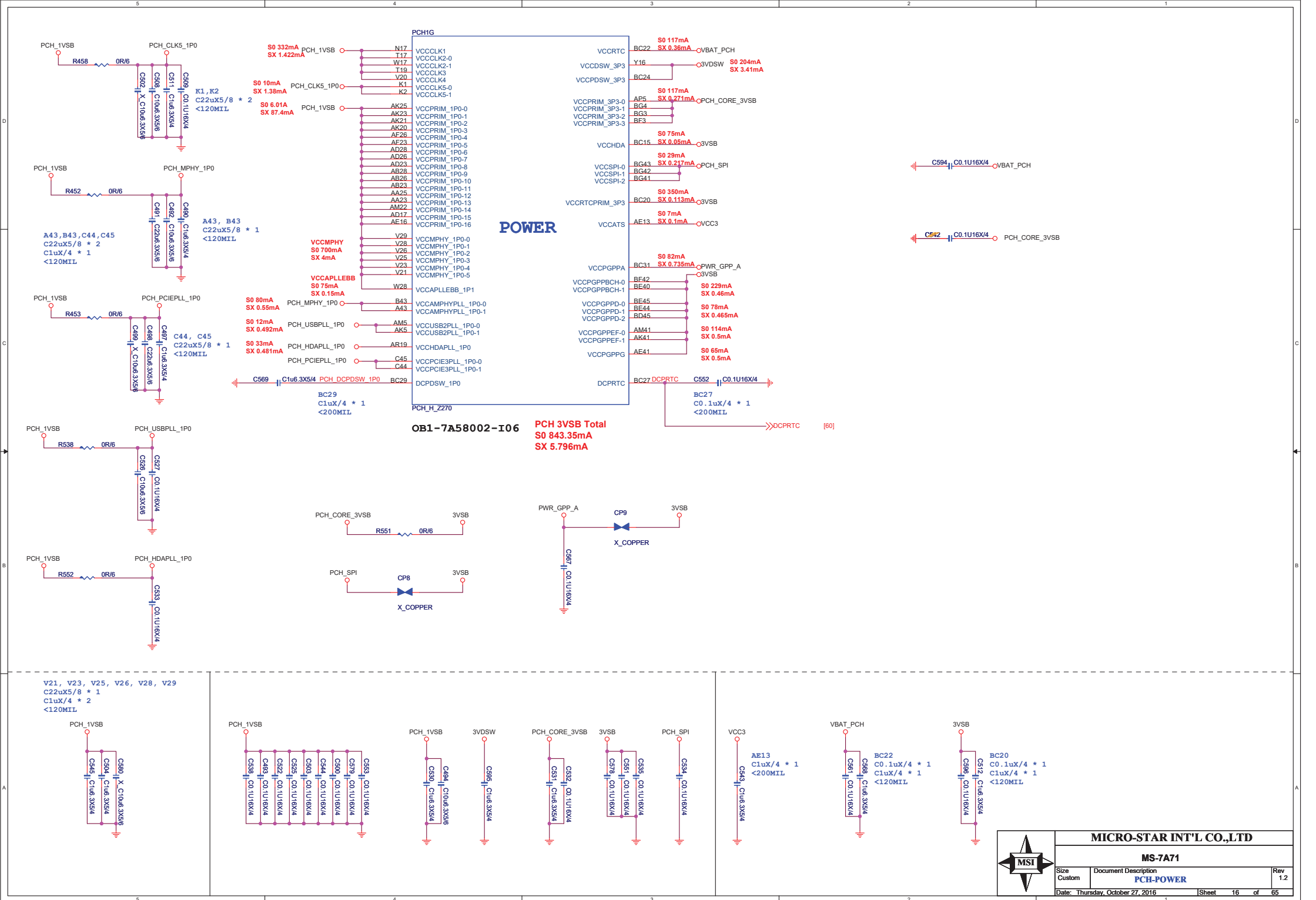
RTC Block

Close to PCH







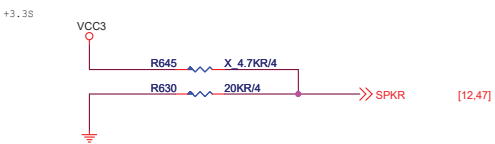


VSS

OB1-7A58002-I06

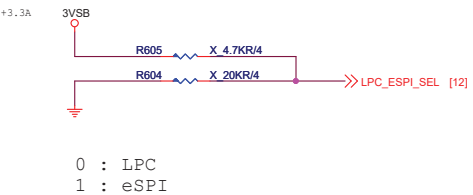
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|                                                                                       |                      |  | MS-7A71                  |          |
| Size                                                                                  | Document Description |  | Rev                      |          |
| Custom                                                                                | PCH-GND              |  | 1.2                      |          |
| Date: Thursday, October 27, 2016                                                      |                      |  | Sheet                    | 17 of 65 |

TOP Swap



Internal pull-down is disabled after PLTRST#

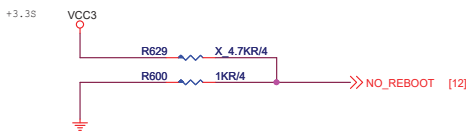
LPC eSPI Mode



0 : LPC  
1 : eSPI

Internal pull-down is disabled after RSMRST

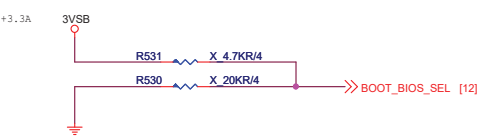
No Reboot



0 : DISABLE (Default)  
1 : ENABLE

Internal pull-down is disabled after PLTRST#

Boot BIOS



0 : SPI  
1 : LPC

Internal pull-down is disabled after PLTRST

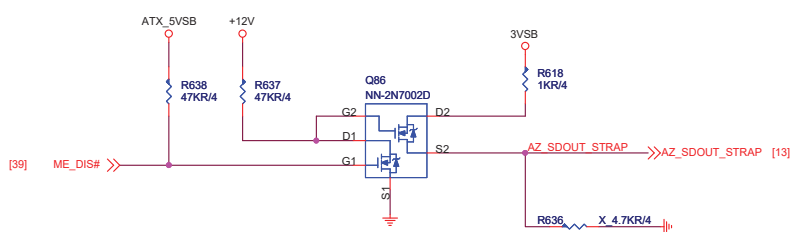
AMT and SBA with confidentiality



0 : DISABLE  
1 : ENABLE (Default)

Internal pull-down is disabled after RSMRST

HDA\_SDO



ESPI FLASH SHARING MODE



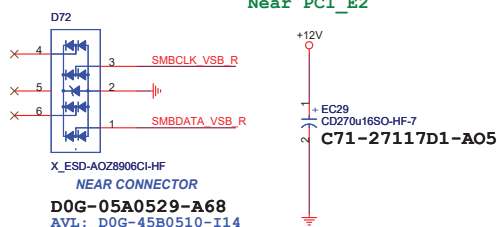
0 : MASTER ATTACHED FLASH SHARING  
1 : SLAVE ATTACHED FLASH SHARING

Internal pull-down is disabled after RSMRST

12V - 5.5A  
VCC3 - 3A  
3VSB - 375mA



2016.06.23  
Compatibility issue of 10G LAN Card and Gigabyte VGA Card  
0R and TVS reserved and not on the part



[12,20,21,25,34,36] SB\_WAKE# <<<



N11-1641221-L06

PCI\_E1 SPEC request :  
change used N11-1641491-L06 footprint  
SLOT\_PCIEEXP164\_13

01S : N11-1641221-L06  
02S : N11-1641491-L06

PCI E1 OPT1

Metal shell

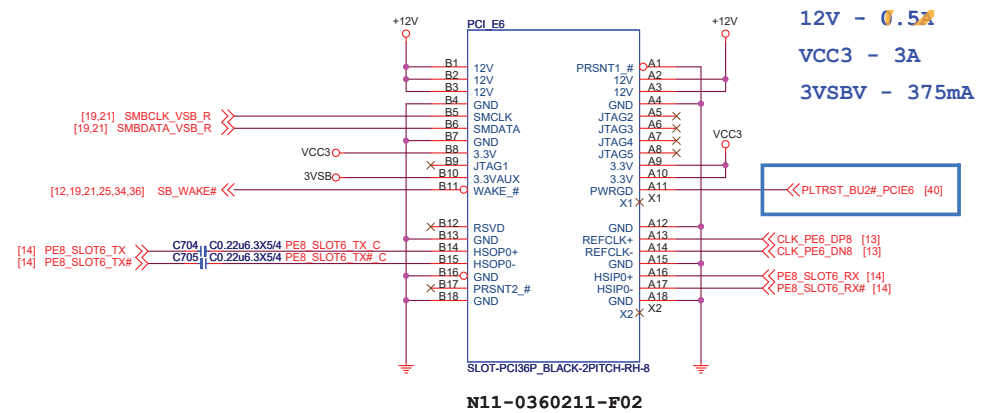
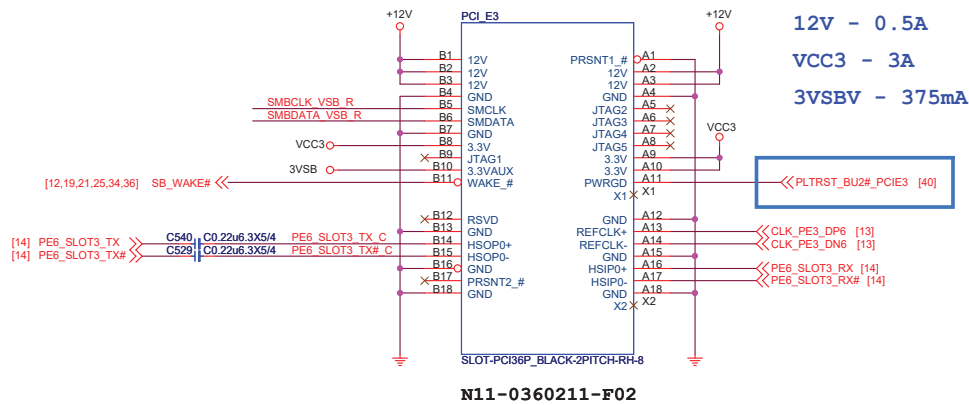
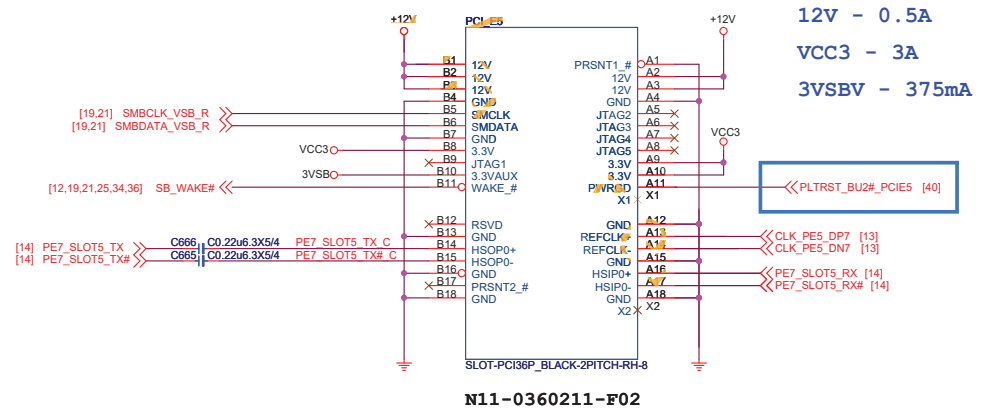
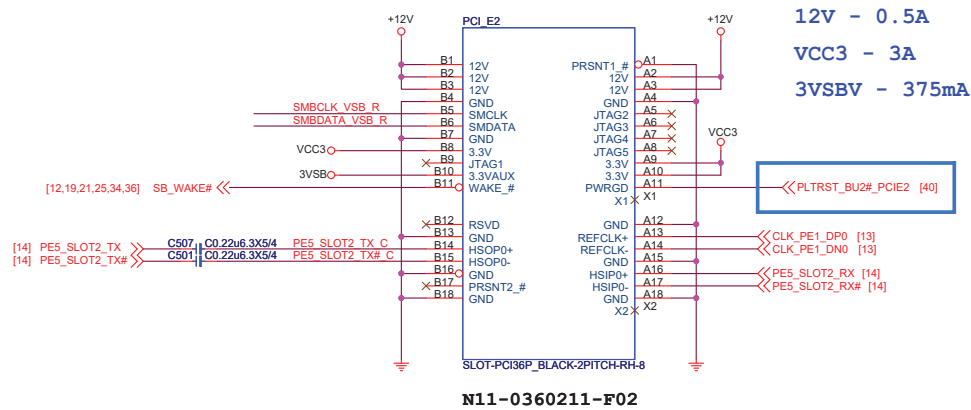
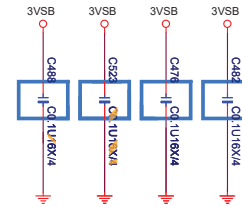
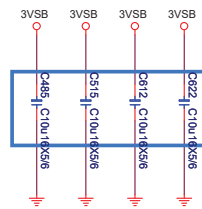
SLOT-PCI164P\_BLACK-2PITCH-RH-51  
N11-1641491-L06



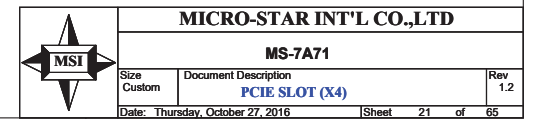
MICRO-STAR INT'L CO.,LTD

MS-7A71

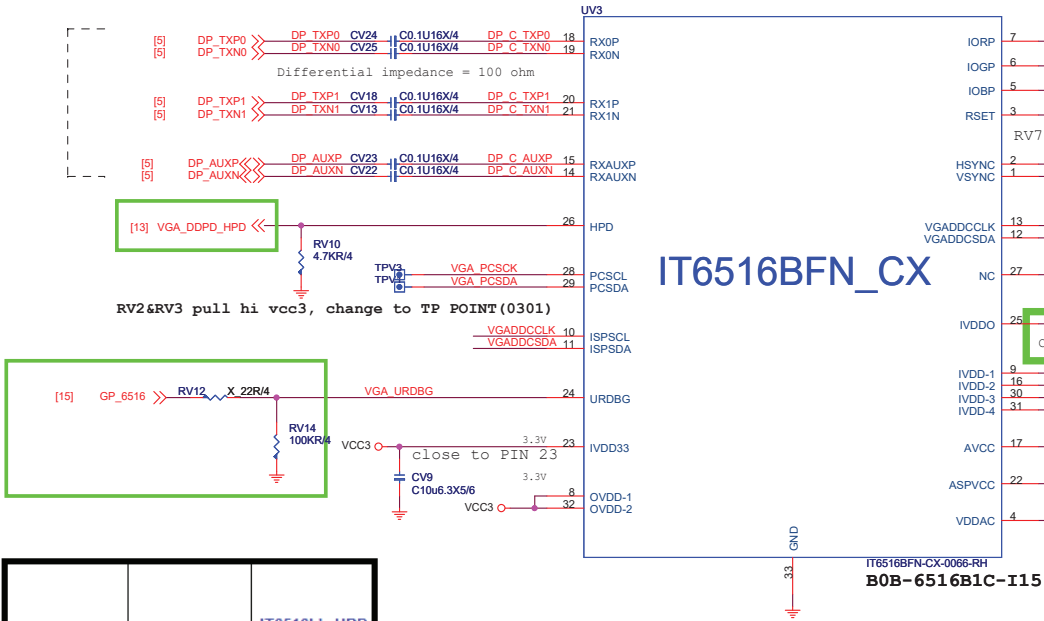
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|--------|----------------------------|----------------|
| Custom | PCIE SLOT (X16)            | 1.2            |
| Date:  | Thursday, October 27, 2016 | Sheet 19 of 65 |



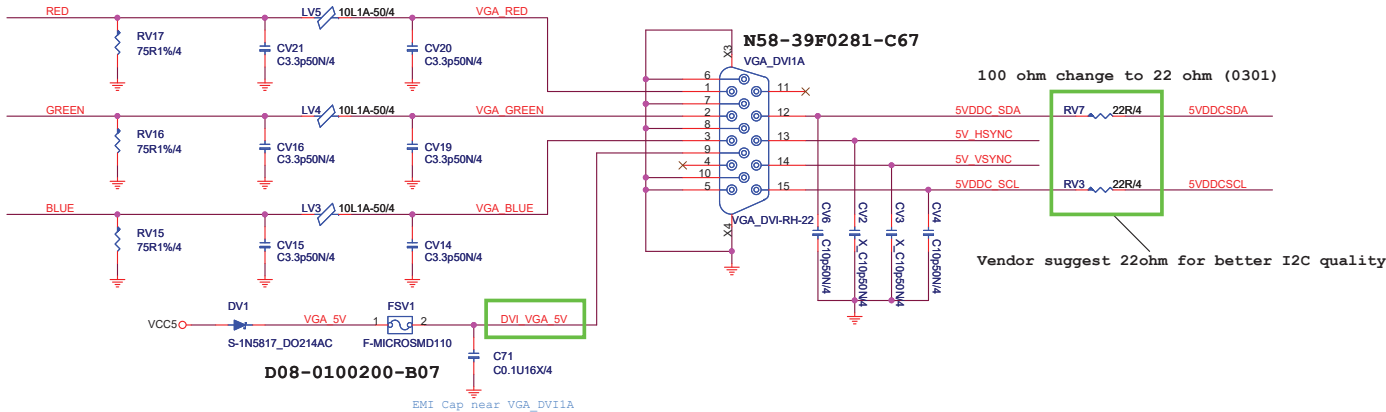
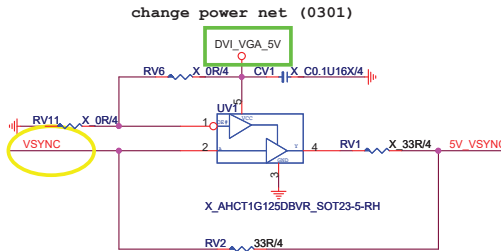
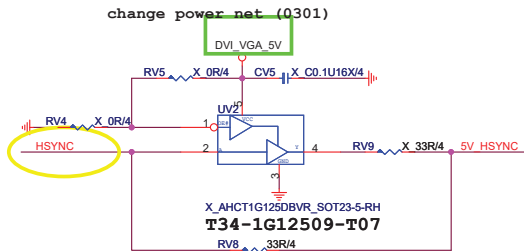
12V - 2.1A  
VCC3 - 3A  
3VSBV - 375mA



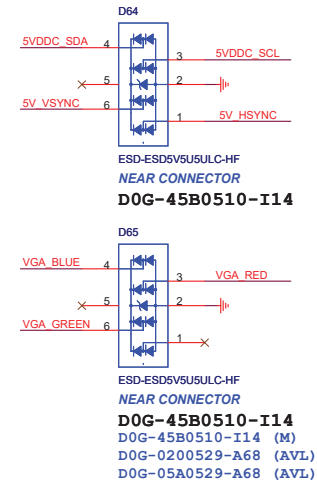
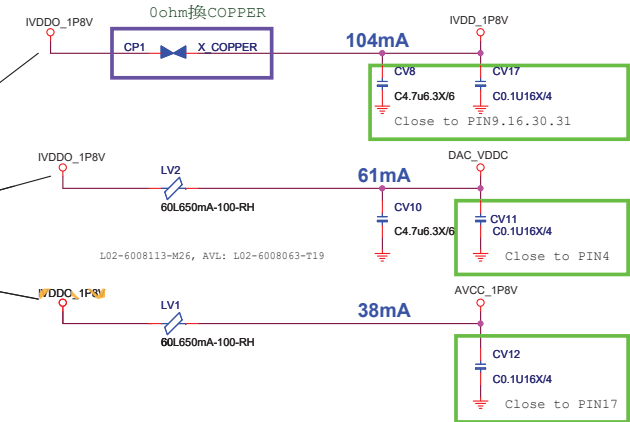
**Note:**  
If connect to eDP port,must confirm whether it support hot plug detection HPD and re-auxtraining



|                               |      |                                    |
|-------------------------------|------|------------------------------------|
| System Status                 | GPIO | IT6516b's HPD                      |
| Legacy Mode (VBIOS) /DOS Mode | HIGH | Force HIGH                         |
| Windows /UEFI Mode (GOP)      | LOW  | Depend on VGA device's plug/unplug |

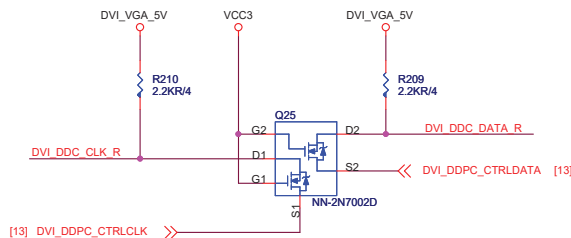
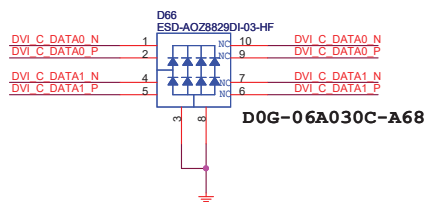
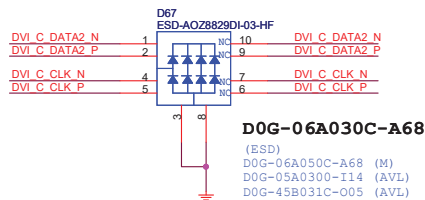
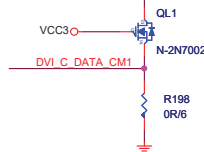
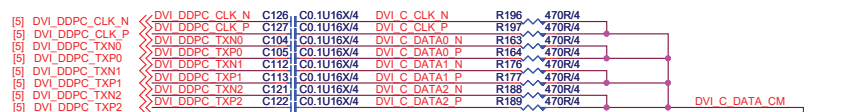


**add D-sub function 0225**

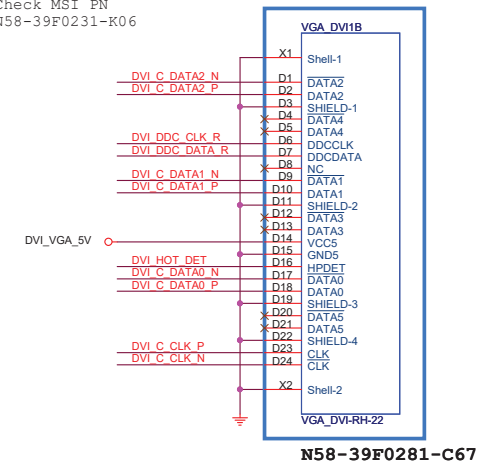
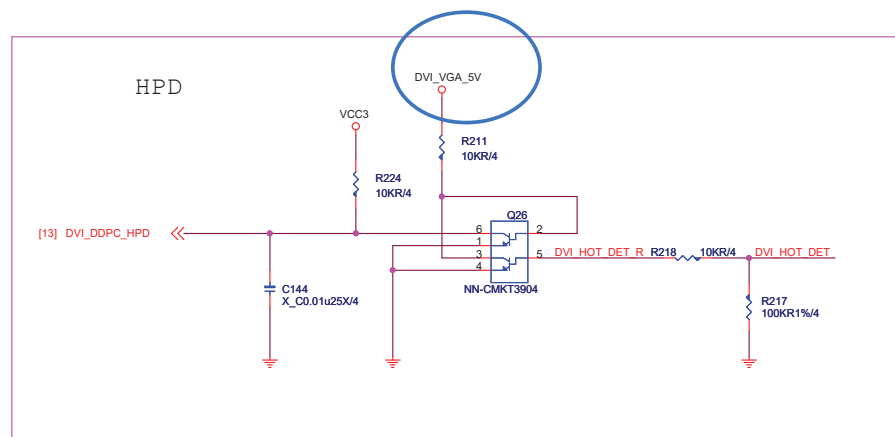
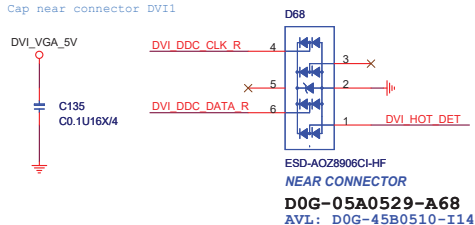


VGA: resolution of 2048x1536 pixels with 32-bit color at 75 Hz (4:3 QXGA)

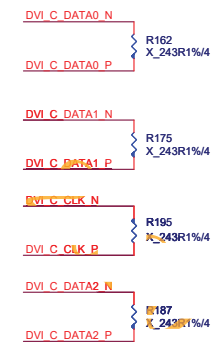
Check MSI PN  
N58-39F0231-K06



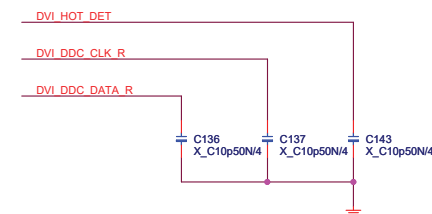
EMI Cap near connector DVI1



For EMI



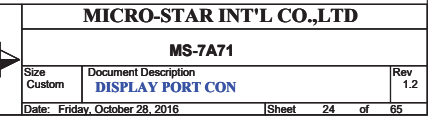
EMI



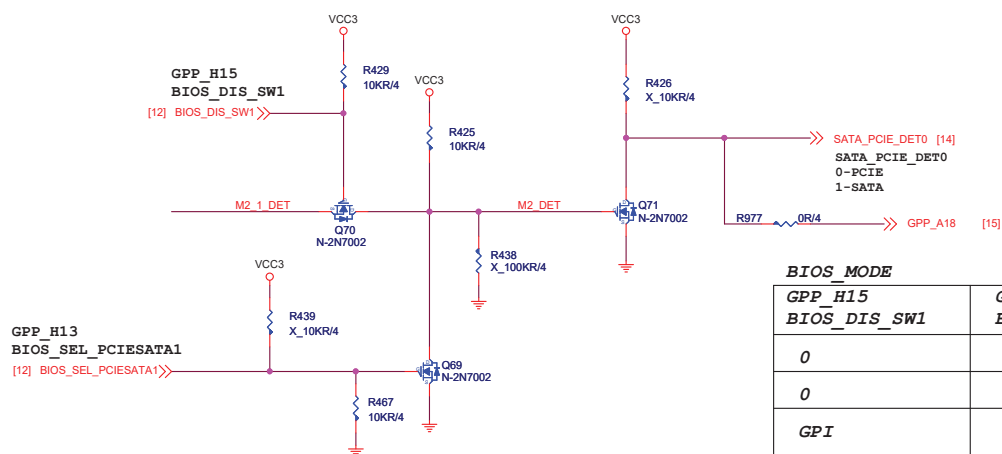
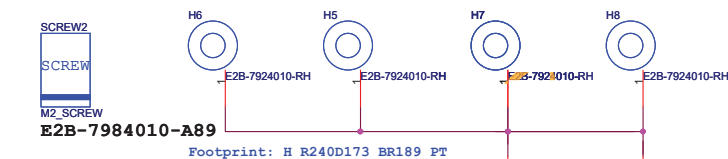
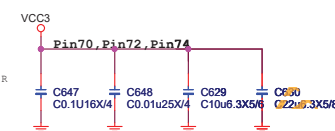
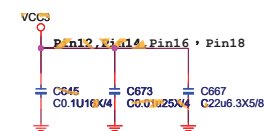
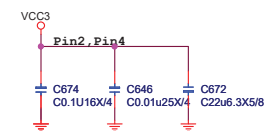
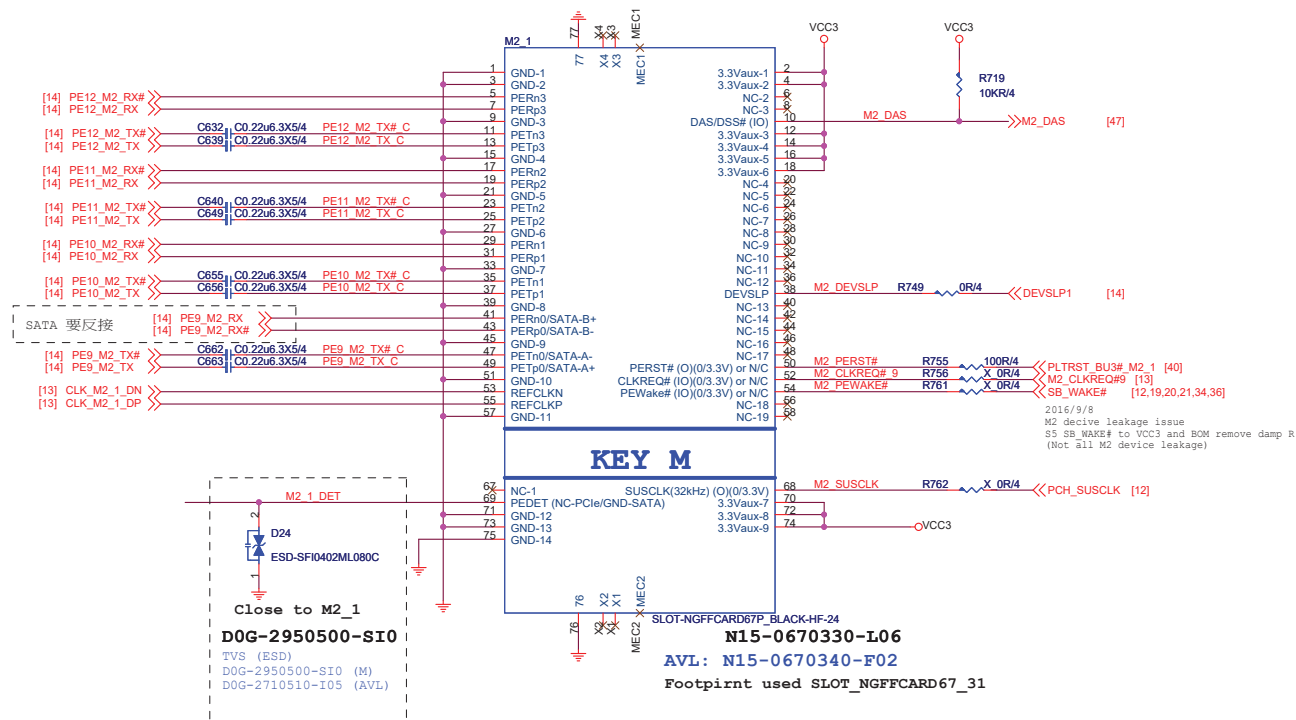
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MS-7A71

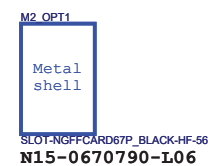
| Size                             | Document Description | Rev |
|----------------------------------|----------------------|-----|
| Custom                           | DVI Connector        | 1.2 |
| Date: Thursday, October 27, 2016 | Sheet 23 of 65       |     |



M2\_1 2242/2260/2280/22110  
(PCIeX4 mode and SATA mode)



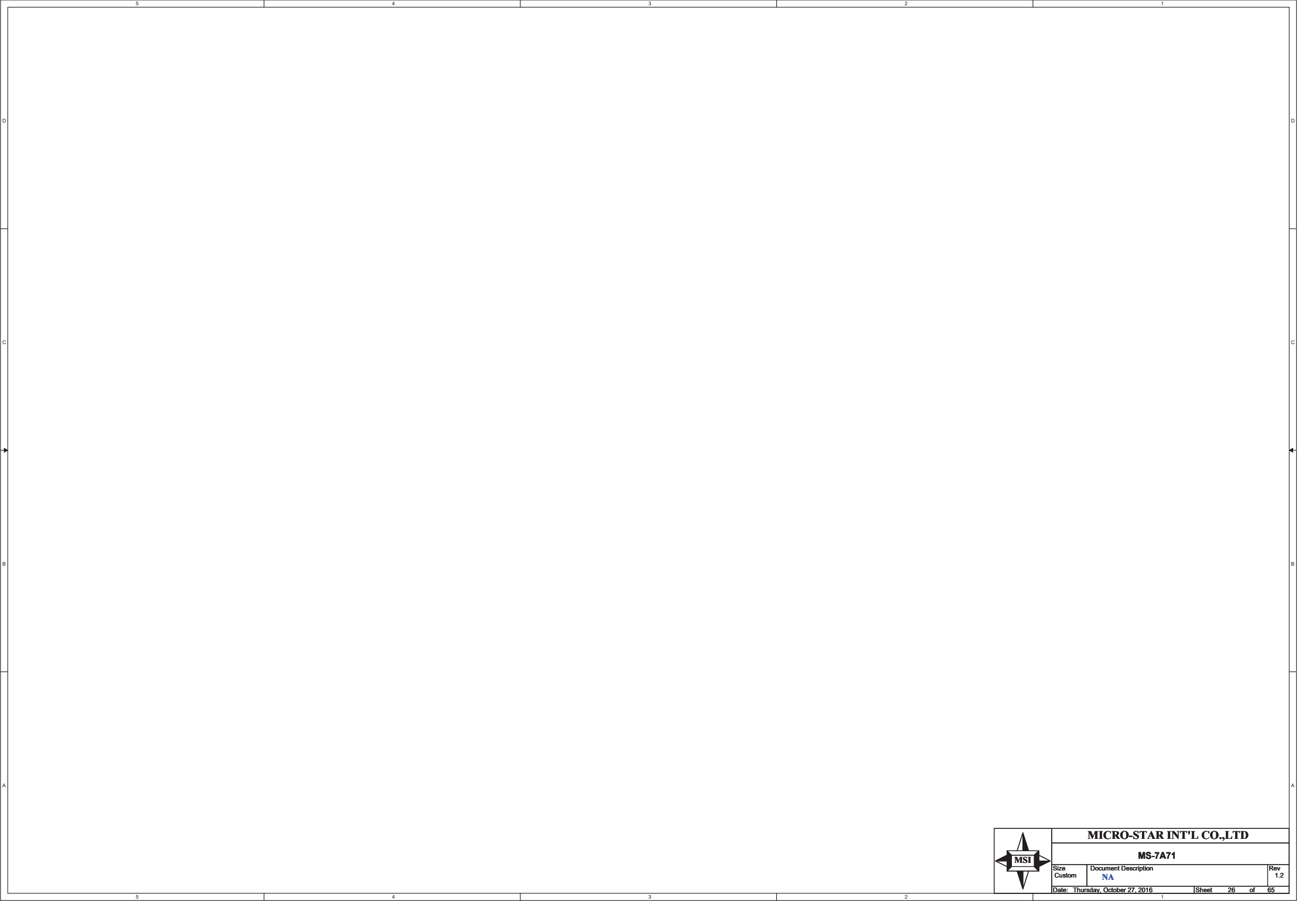
| BIOS_MODE               |                               |            |
|-------------------------|-------------------------------|------------|
| GPP_H15<br>BIOS_DIS_SW1 | GPP_H13<br>BIOS_SEL_PCIESATA1 |            |
| 0                       | 1                             | M2-SATA    |
| 0                       | 0                             | M2-PCIe X4 |
| GPI                     | GPI                           | AUTO       |



**MICRO-STAR INT'L CO.,LTD**

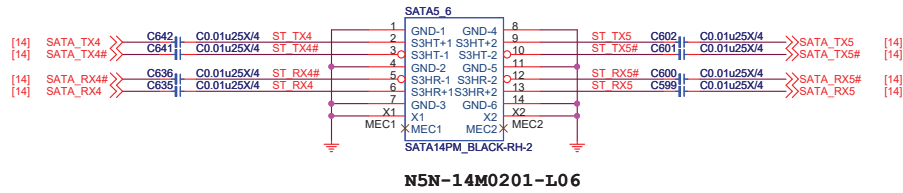
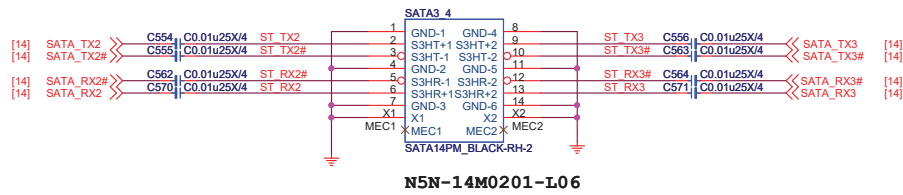
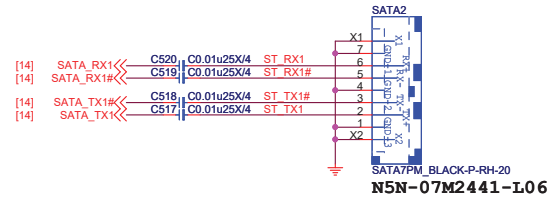
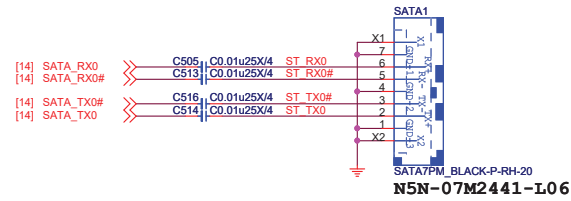
MS-7A71

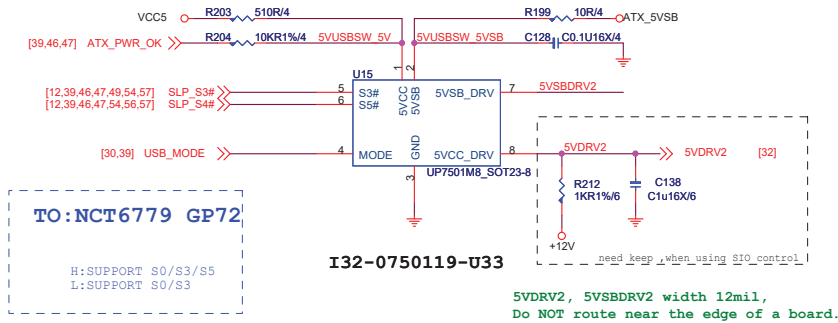
|                                |                                                    |                |
|--------------------------------|----------------------------------------------------|----------------|
| Size<br>Custom                 | Document Description<br><b>M2_1 2242/2260/2280</b> | Rev<br>1.2     |
| Date: Friday, October 28, 2016 |                                                    | Sheet 25 of 65 |



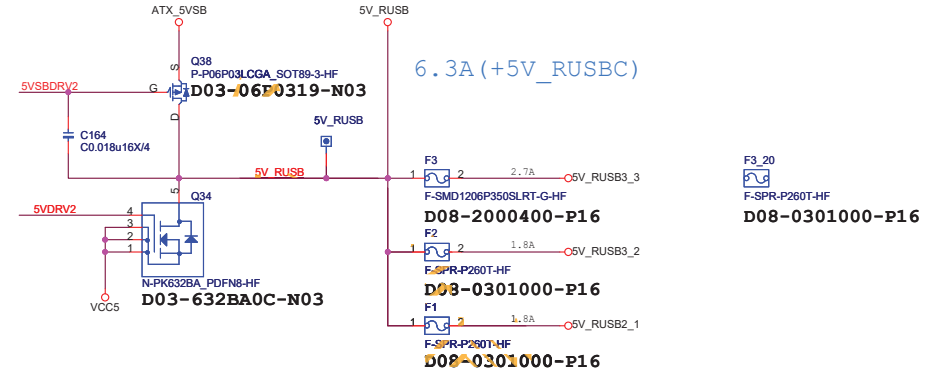


|                                  |                            |                |
|----------------------------------|----------------------------|----------------|
| MICRO-STAR INT'L CO.,LTD         |                            |                |
| MS-7A71                          |                            |                |
| Size<br>Custom                   | Document Description<br>NA | Rev<br>1.2     |
| Date: Thursday, October 27, 2016 |                            | Sheet 26 of 65 |

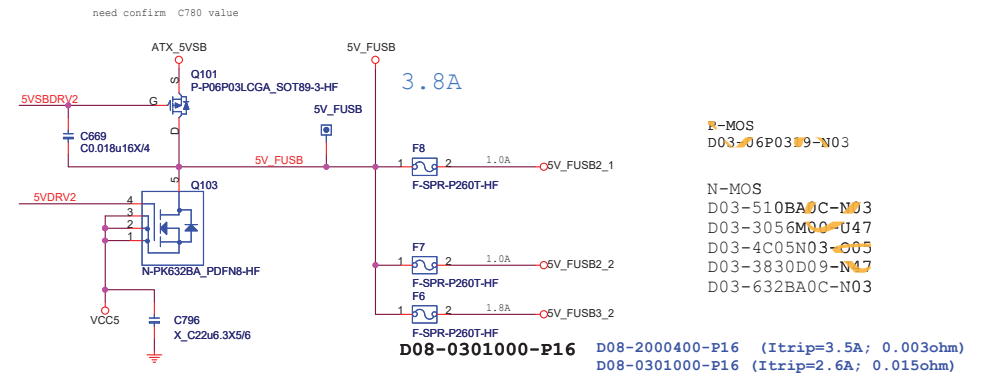




## REAR USB PORT POWER

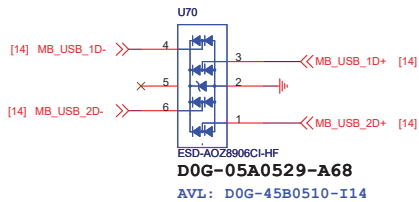
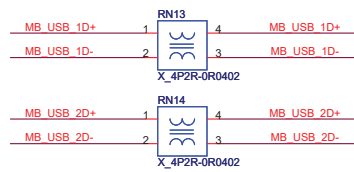


## FRONT USB PORT POWER



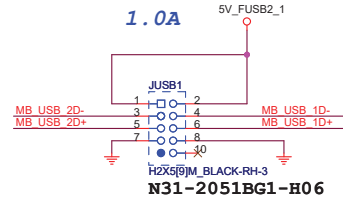
## FRONT USB2.0 PORT 3,4

ComChoke co-lay 4P2R-0R0402  
Footprint: FILTER\_S4\_RN4P2R\_COLAY  
Defaule ComChoke: L12-9008080-P01  
4P2R-0R0402: R3C-0000012-W08

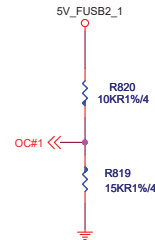
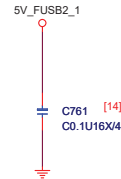


C71-47106K1-AO5

1.0A

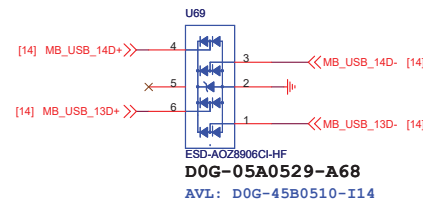
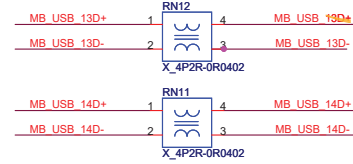


EMI Cap near JUSB1

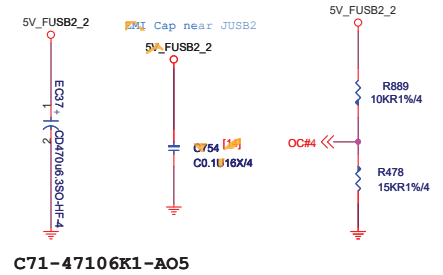
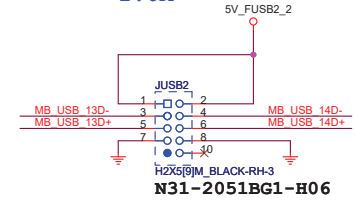


## FRONT USB2.0 PORT 5,6 (Z270 only)

ComChoke co-lay 4P2R-0R0402  
Footprint: FILTER\_S4\_RN4P2R\_COLAY  
Defaule ComChoke: L12-9008080-P01  
4P2R-0R0402: R3C-0000012-W08



1.0A



C71-47106K1-AO5

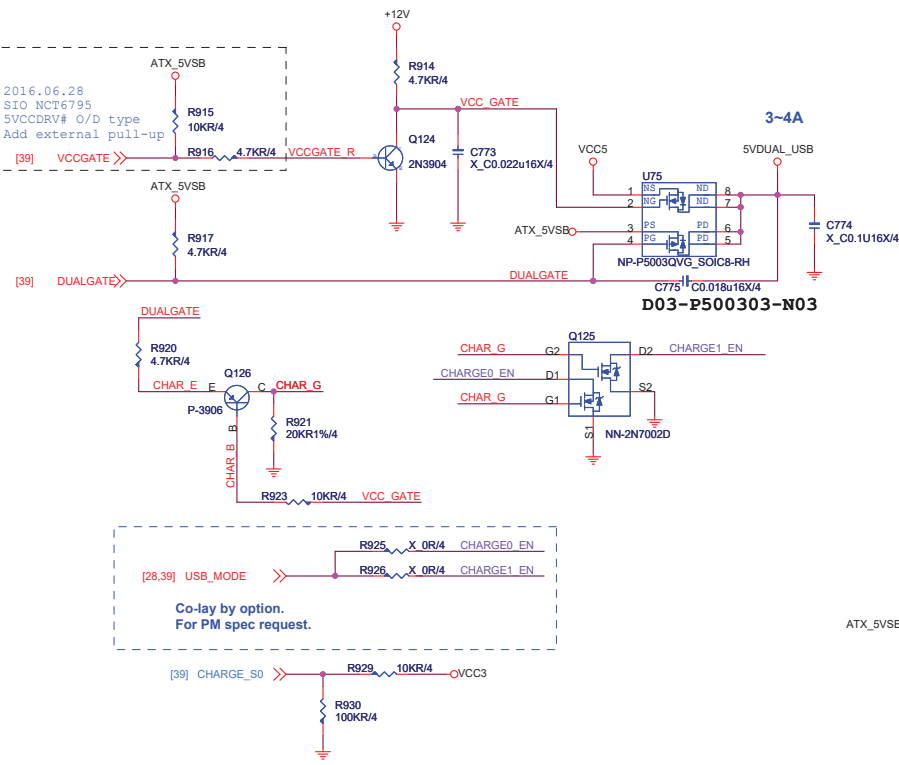


MICRO-STAR INT'L CO.,LTD

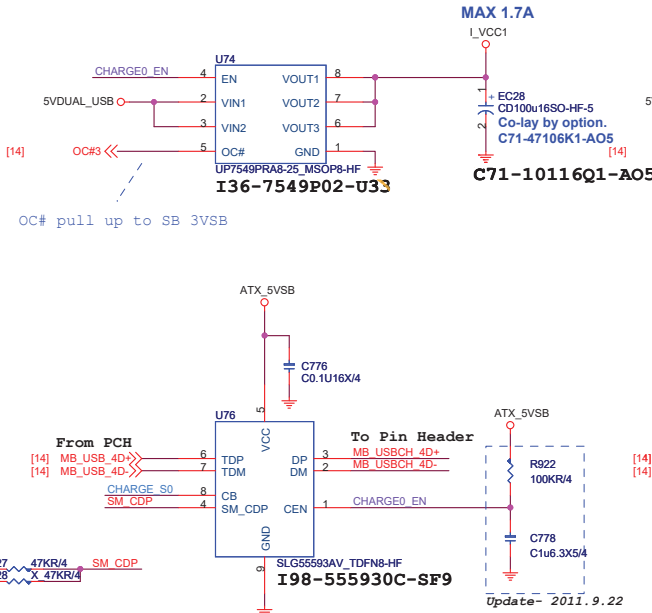
MS-7A71

| Size                             | Document Description | Rev |
|----------------------------------|----------------------|-----|
| Custom                           | Front USB2           | 1.2 |
| Date: Thursday, October 27, 2016 | Sheet 29 of 65       |     |

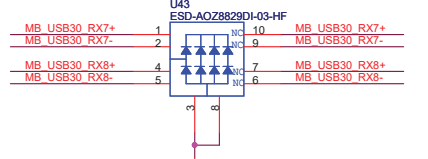
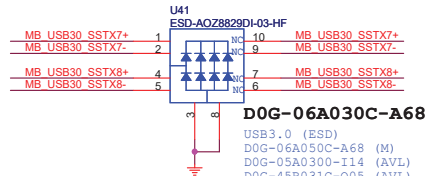
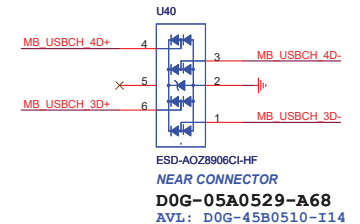
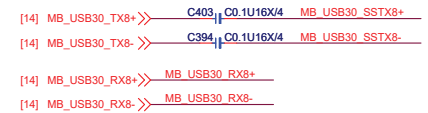
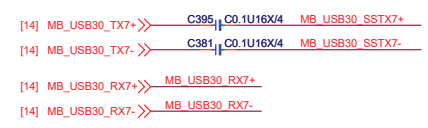
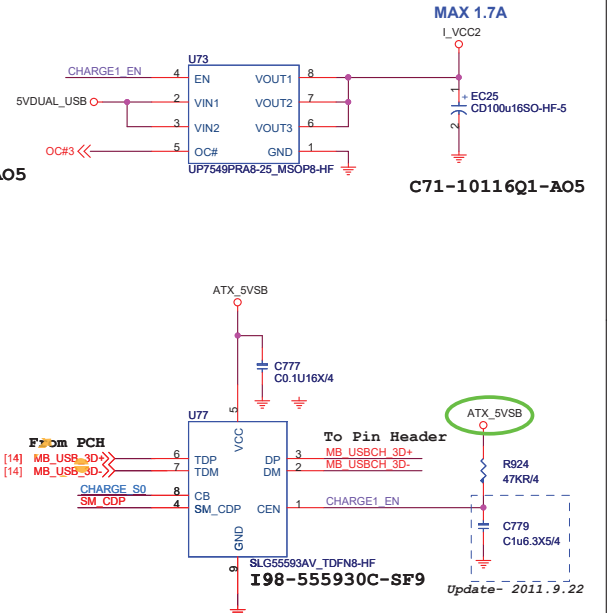
2016.06.28  
SIO NCT6795  
5VCCDRV# O/D type  
Add external pull-up



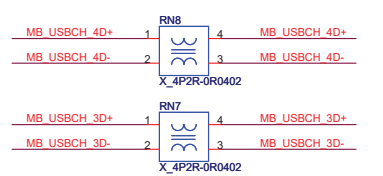
### USB POWER PORT 0 For USB Charging



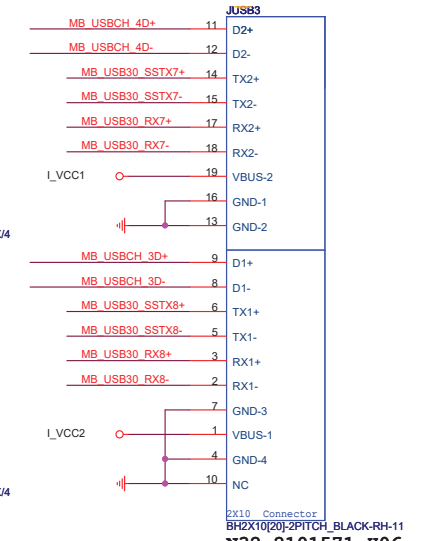
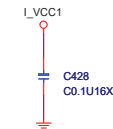
### USB POWER PORT 1 For USB Charging



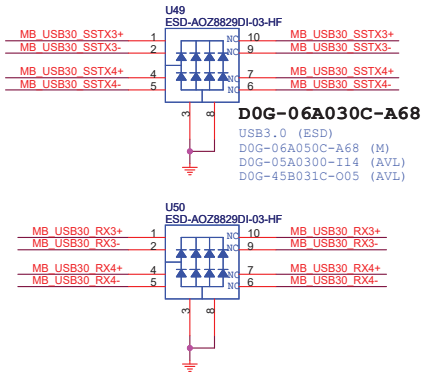
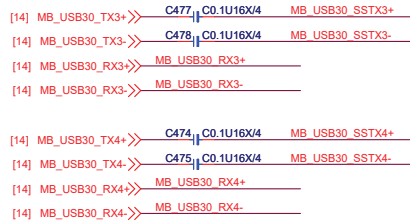
ComChoke co-lay 4P2R-0R0402  
Footprint: FILTER\_S4 RN4P2R COLAY  
Defaule ComChoke: L12-9008080-P01  
4P2R-0R0402: R3C-0000012-W08



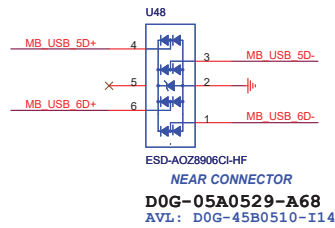
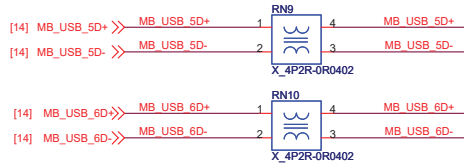
EMI Cap near JUSB3



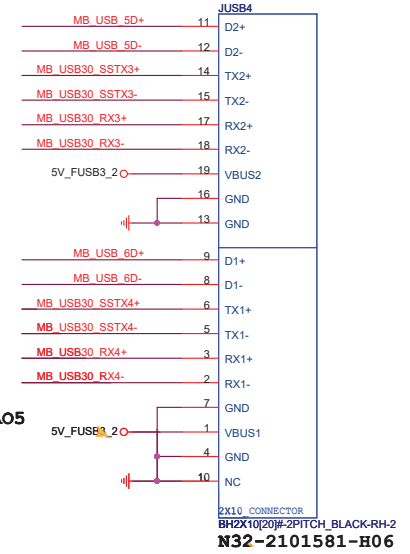
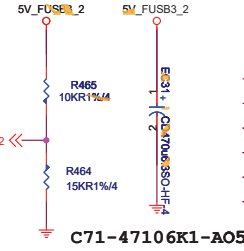
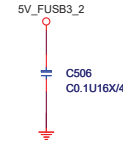
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|                                | MICRO-STAR INT'L CO.,LTD |                                          |         |
|                                | MS-7A71                  |                                          |         |
|                                | Size Custom              | Document Description Front USB3 / CHARGE | Rev 1.2 |
| Date: Friday, October 28, 2016 |                          | Sheet 30 of 65                           |         |



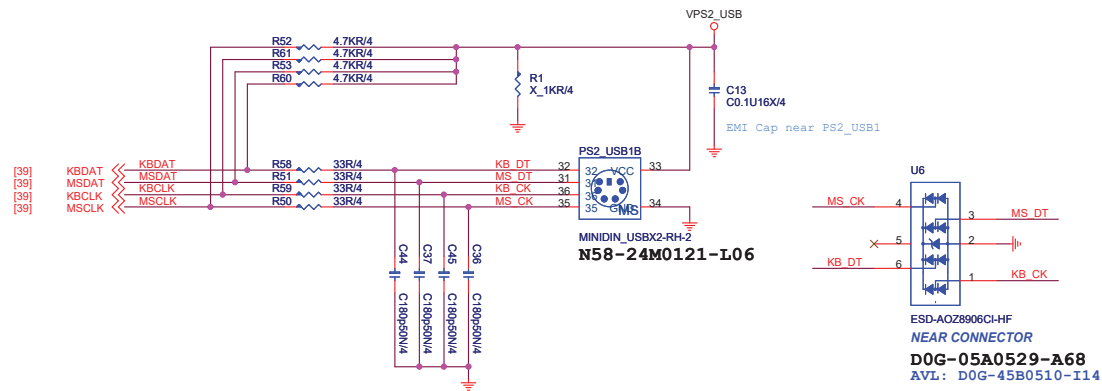
ComChoke co-lay 4P2R-0R0402  
Footprint: FILTER\_S4\_RN4P2R\_COLAY  
Defaule ComChoke: L12-9008080-P01  
4P2R-0R0402: R3C-0000012-W08



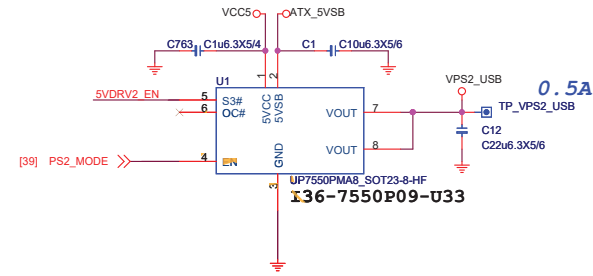
EMI Cap near JUSB4



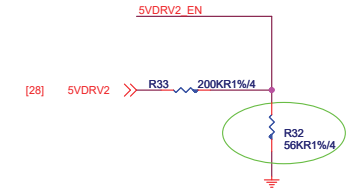
## PS2 KEYBOARD & MOUSE CONNECTOR



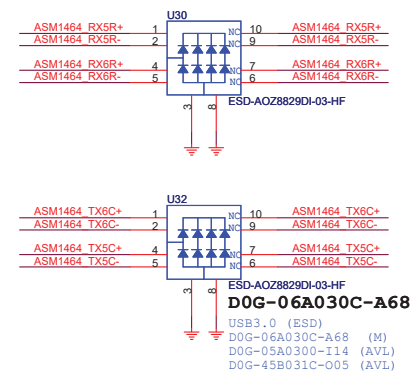
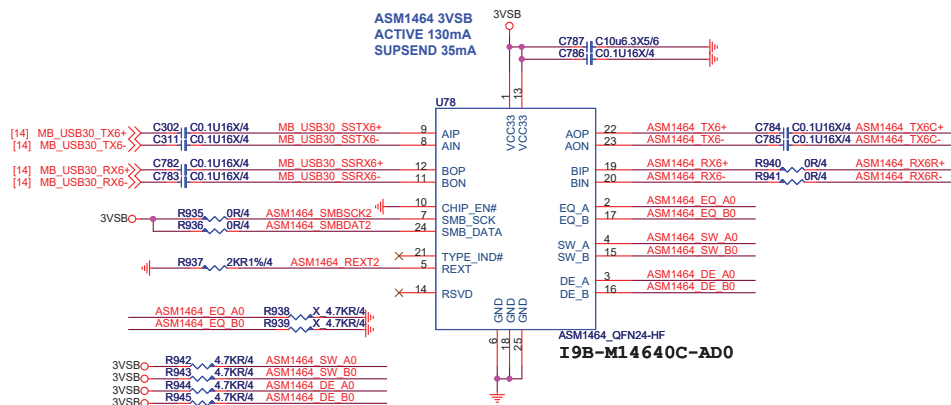
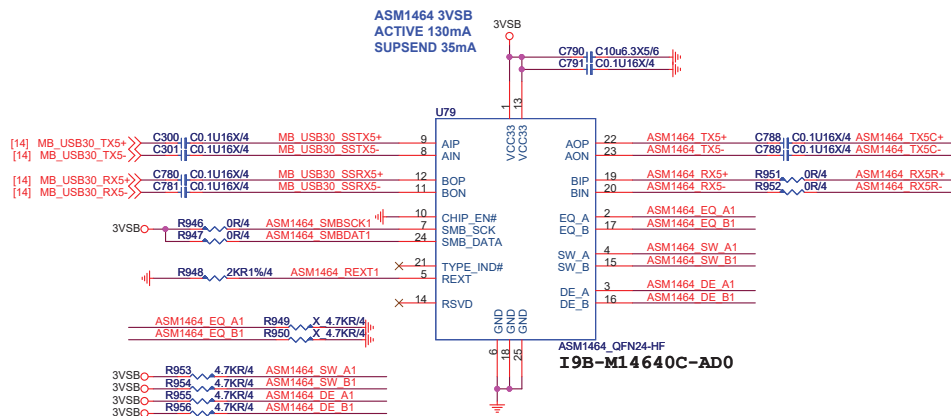
## PS2 Power



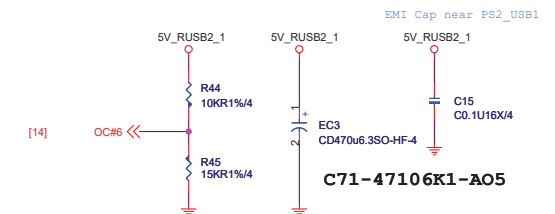
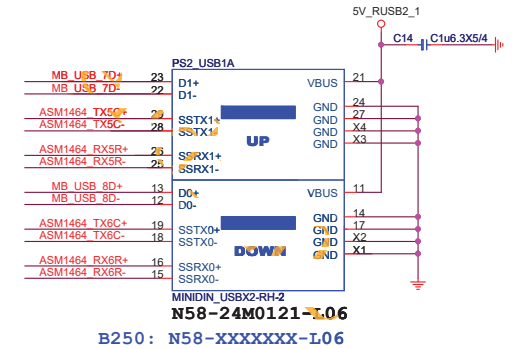
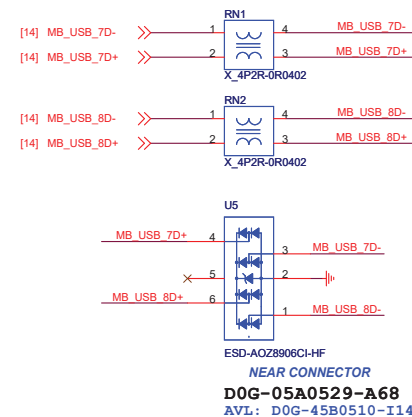
## USB MODE



**PS2\_USB USB3.0 Port 7,8**



```
ComChoke co-lay 4P2R-0R0402
Footprint: FILTER_S4_RN4P2R_COLAY
Defaule ComChoke: L12-9008080-P01
4P2R-0R0402: R3C-0000012-W08
```



**MICRO-STAR INT'L CO.,LTD**

MS-7A71

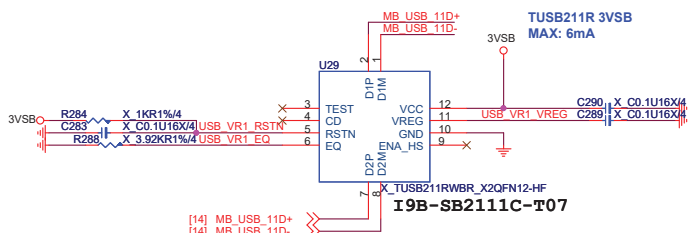
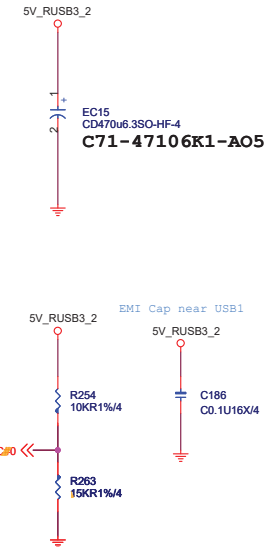
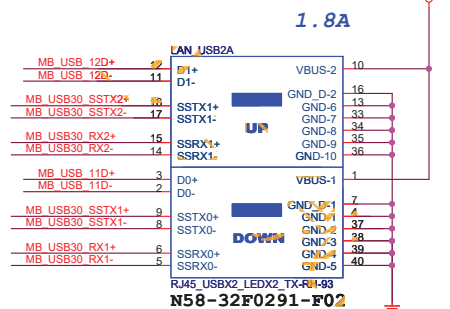
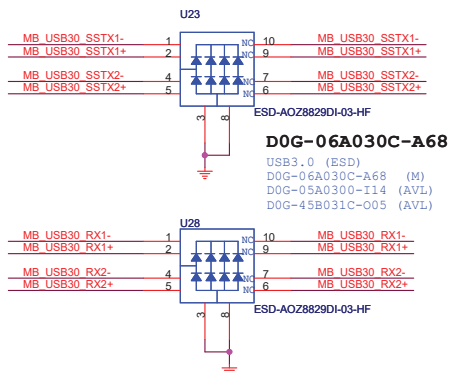
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|--------------------------------|-------------------------------------------------------------|----------------|
| Size<br>Custom                 | Document Description<br><b>Rear PS2 USB1 / 3.0 Redriver</b> | Rev<br>1.2     |
| Date: Friday, October 28, 2016 |                                                             | Sheet 32 of 65 |

[14] MB\_USB30\_TX1+>>> C187, C0.1U16X/4 MB\_USB30\_SSTX1+  
[14] MB\_USB30\_TX1->>> C188, C0.1U16X/4 MB\_USB30\_SSTX1-

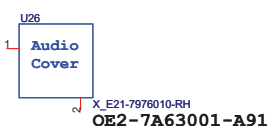
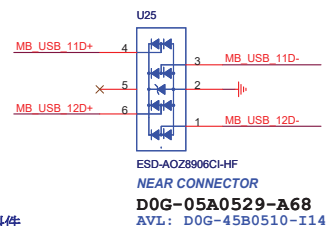
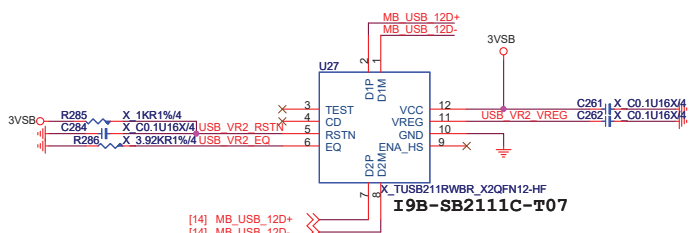
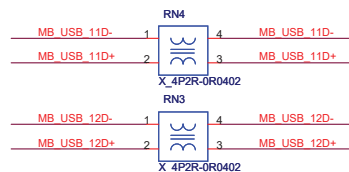
[14] MB\_USB30\_RX1+>>> MB\_USB30\_RX1+  
[14] MB\_USB30\_RX1->>> MB\_USB30\_RX1-

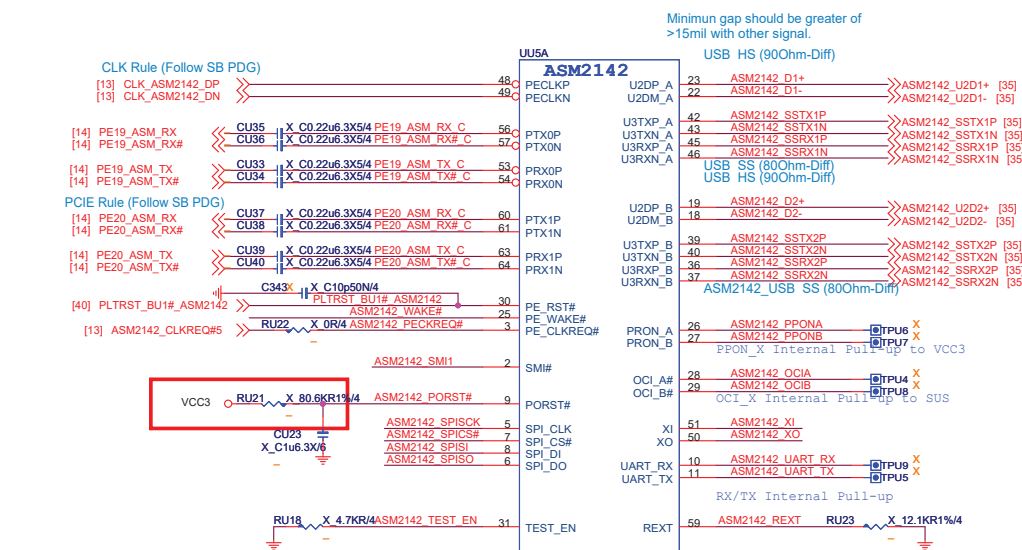
[14] MB\_USB30\_TX2+>>> C203, C0.1U16X/4 MB\_USB30\_SSTX2+  
[14] MB\_USB30\_TX2->>> C204, C0.1U16X/4 MB\_USB30\_SSTX2-

[14] MB\_USB30\_RX2+>>> MB\_USB30\_RX2+  
[14] MB\_USB30\_RX2->>> MB\_USB30\_RX2-

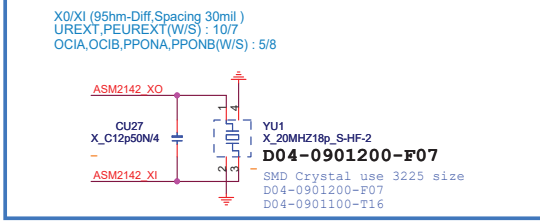
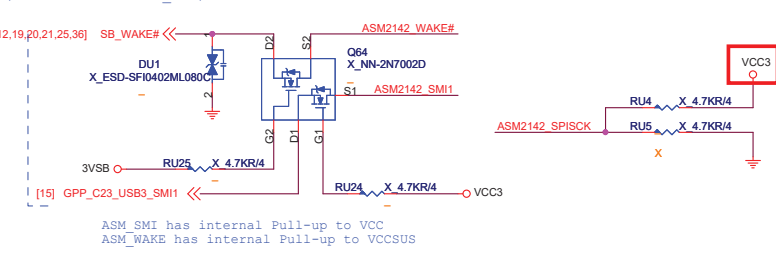


ComChoke co-lay 4P2R-0R0402  
Footprint: FILTER\_S4\_RN4P2R\_COLAY  
Defaule ComChoke: L12-9008080-P01  
4P2R-0R0402: R3C-0000012-W08

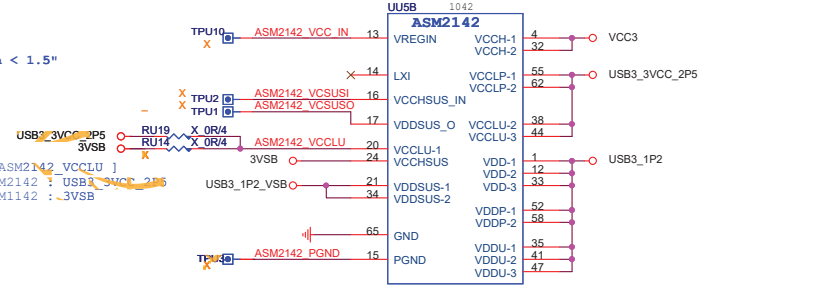




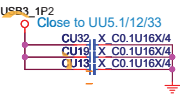
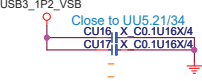
SMI connect to GPI which support smi function. SB side pull high 10K ohm to 3VSB. (Intel 8X & 9X series use GPIO10) (Intel SKL use GPP\_C23)



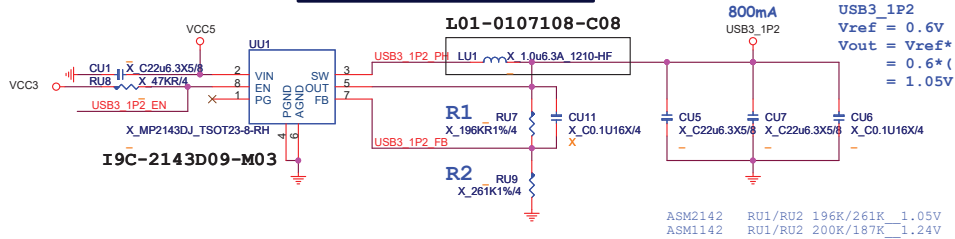
| Power Consumption | 3.3V  | 1.2V(1.05V) | 3.3VSUS | 1.05VSUS(1.2VSUS) | 2.5V  | Total Power |
|-------------------|-------|-------------|---------|-------------------|-------|-------------|
| ASM1142           | 245mA | 634mA       | 1mA     | 1mA               | NA    | 1573.8(mW)  |
| ASM2142           | 300mA | 800mA       | 100mA   | 50mA              | 300mA | TDP         |



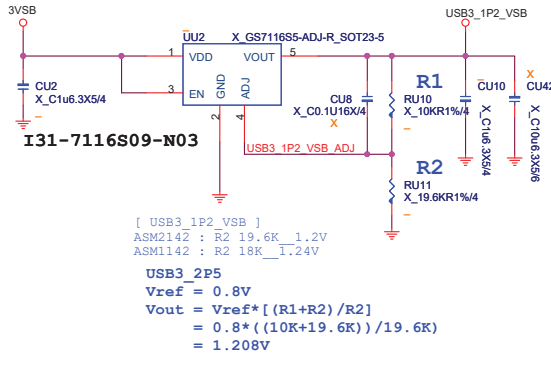
B02-021421C-AD0



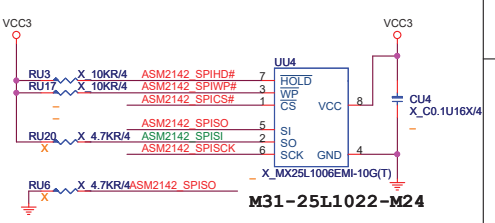
ASM1142 1.2 VCC Power



ASM2142 1.2 VSB Power



EEPROM



[ EEPROM ]  
ASM2142 : M31-25L1022-M24 (1M bit)  
ASM1142 : M31-2551222-M24 (512K bit)



MICRO-STAR INT'L CO.,LTD

MS-7A71

| Size   | Document Description       | Rev            |
|--------|----------------------------|----------------|
| Custom | USB3.1-ASM2142             | 1.2            |
| Date:  | Tuesday, November 01, 2016 | Sheet 34 of 65 |

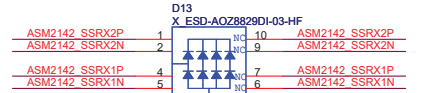
# ESD Protection NEAR CONNECTOR

[34] ASM2142\_SSTX1N >> C348 X C0.22u6.3X5/4 ASM2142\_SSTX1-  
[34] ASM2142\_SSTX1P >> C342 X C0.22u6.3X5/4 ASM2142\_SSTX1+

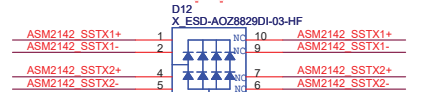
[34] ASM2142\_SSRX1N >>  
[34] ASM2142\_SSRX1P >>

[34] ASM2142\_SSTX2N >> C357 X C0.22u6.3X5/4 ASM2142\_SSTX2-  
[34] ASM2142\_SSTX2P >> C352 X C0.22u6.3X5/4 ASM2142\_SSTX2+

[34] ASM2142\_SSRX2N >>  
[34] ASM2142\_SSRX2P >>



**D0G-06A030C-A68**



**D0G-06A030C-A68**

USB3.0 (ESD)  
D0G-06A050C-A68 (M)  
D0G-05A0300-I14 (AVL)  
D0G-45B031C-O05 (AVL)

## NEAR UU5

Co-layer  
USB2.0 form ASM2142  
USB2.0 from PCH

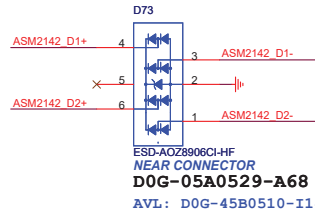
[34] ASM2142\_U2D1+ >> RN19 4 ASM2142\_D1+  
[34] ASM2142\_U2D1- >> 2 3 ASM2142\_D1-

[34] ASM2142\_U2D2+ >> RN18 4 ASM2142\_D2+  
[34] ASM2142\_U2D2- >> 2 3 ASM2142\_D2-

[14] MB\_USB\_9D+ >> RN5 4 ASM2142\_D1+  
[14] MB\_USB\_9D- >> 2 3 ASM2142\_D1-

[14] MB\_USB\_10D+ >> RN6 4 ASM2142\_D2+  
[14] MB\_USB\_10D- >> 2 3 ASM2142\_D2-

ComChoke co-lay 4P2R-0R0402  
Footprint: FILTER S4 RN4P2R COLAY  
Defaule ComChoke: L12-9008080-P01  
4P2R-0R0402: R3C-0000012-W08

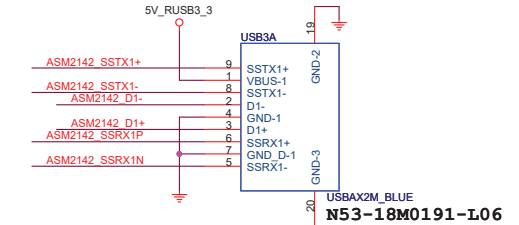


ESD-AOZ8906CI-HF  
**D0G-05A0529-A68**  
AVL: D0G-45B0510-I14

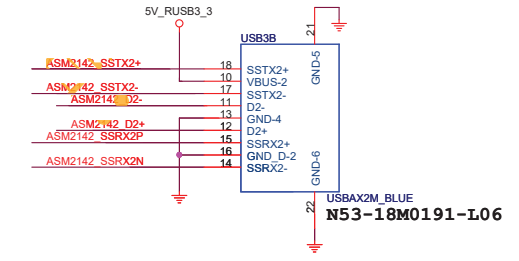
ComChoke co-lay 4P2R-0R0402  
Footprint: FILTER S4 RN4P2R COLAY  
Defaule ComChoke: L12-9008080-P01  
4P2R-0R0402: R3C-0000012-W08

ASM2142\_D1+ 1 4 ASM2142\_D1+  
ASM2142\_D1- 2 3 ASM2142\_D1-

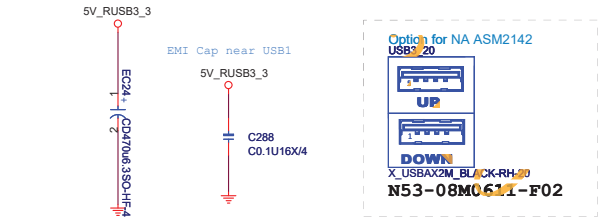
ASM2142\_D2+ 1 4 ASM2142\_D2+  
ASM2142\_D2- 2 3 ASM2142\_D2-



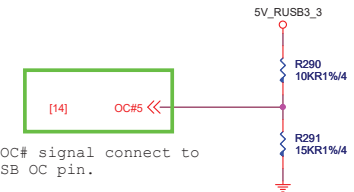
**N53-18M0191-L06**



**N53-18M0191-L06**



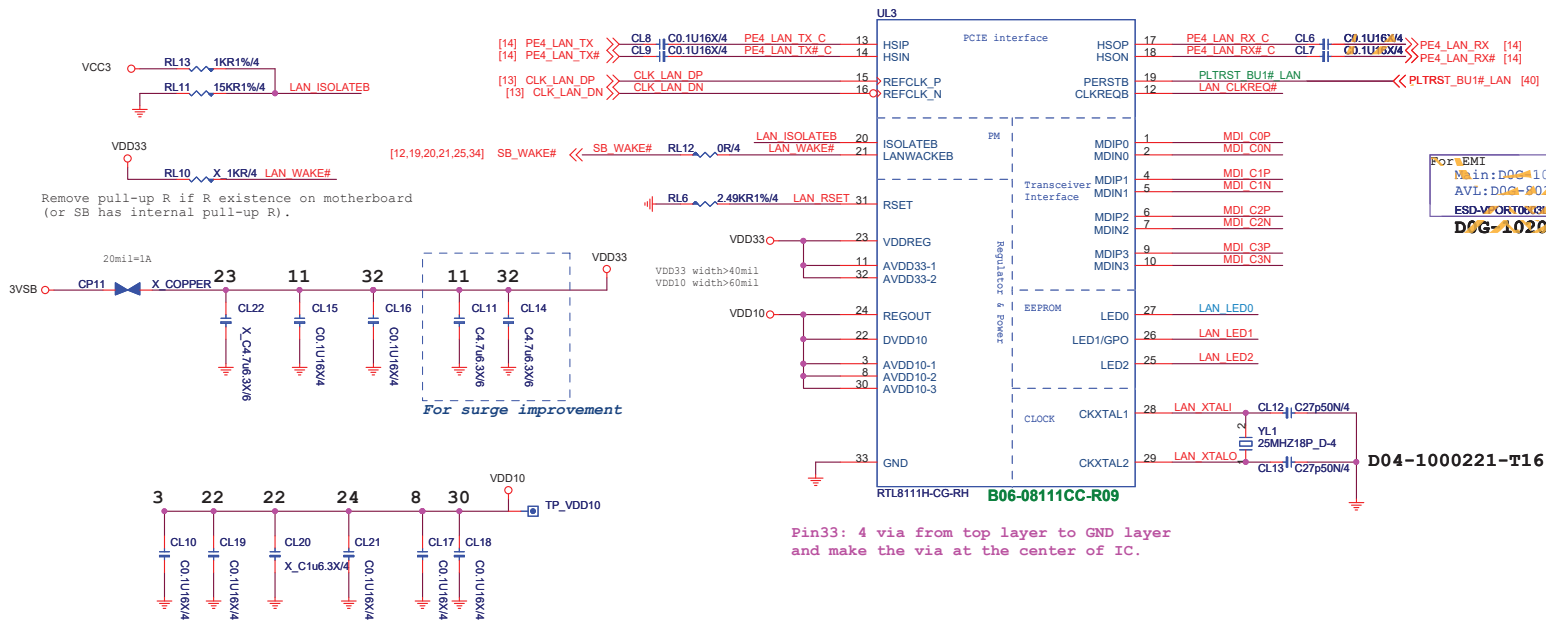
**C71-47106K1-A05**



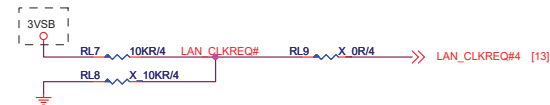
OC# signal connect to  
SB OC pin.

# RTL8111H Giga LAN

3.3V@177.57mA



Pull-up resistor RL9 required to either 3.3V suspend or core rail depending on the power well of the PCH input CLKREQ# buffer.

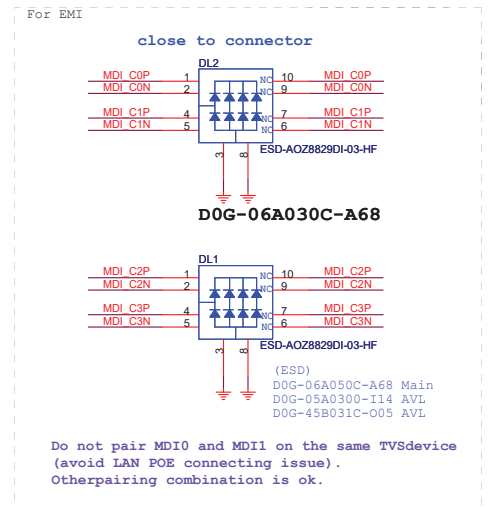
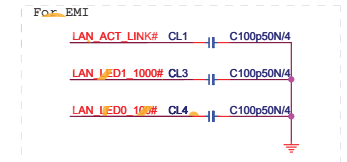
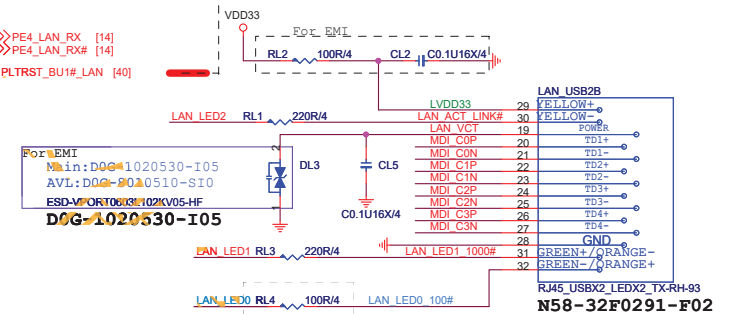


## 8111H POWER Consumption

|                 | 3.3V @ mA    | mW            |
|-----------------|--------------|---------------|
| 10 M Idle/TxRx  | 9.9/84.69    | 32.67/279.48  |
| 100 M Idle/TxRx | 48.11/92.44  | 158.76/305.05 |
| Giga Idle/TxRx  | 124.5/177.57 | 410.85/585.98 |
| ALDPS           | 5.50         | 18.15         |

PIN19:  
INTEL platform connect to PLT\_RST#,

## LAN Connector



Do not pair MDI0 and MDI1 on the same TVS device (avoid LAN POE connecting issue). Other pairing combination is ok.

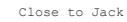
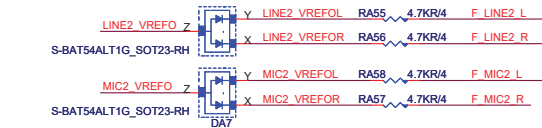
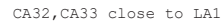
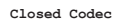
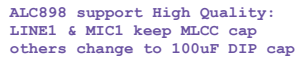


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MS-7A71

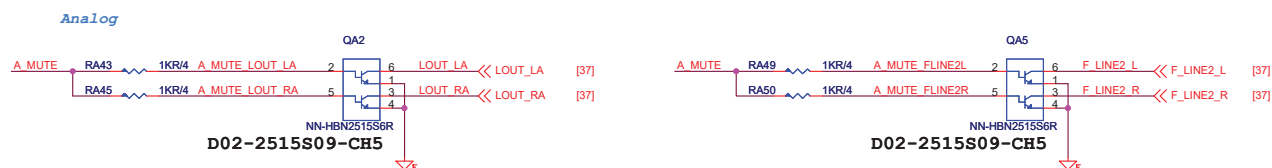
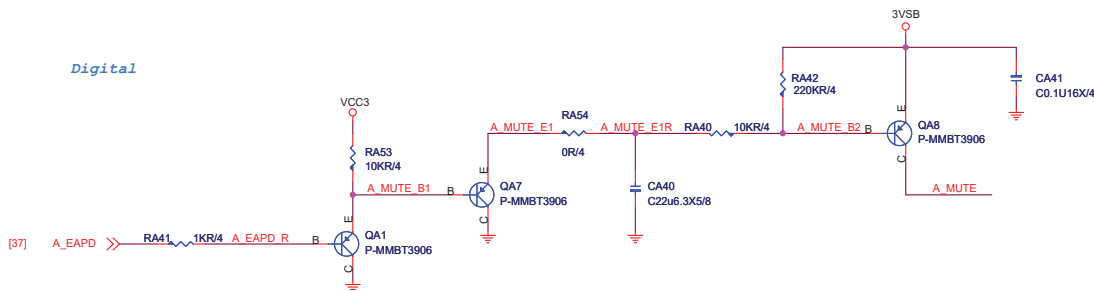
| Size                           | Document Description | Rev |
|--------------------------------|----------------------|-----|
| Custom                         | LAN-RTL8111H         | 1.2 |
| Date: Friday, October 28, 2016 | Sheet 36 of 65       |     |

follow PCH power well  
11mA  
VCC3

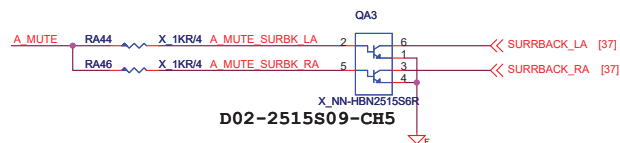
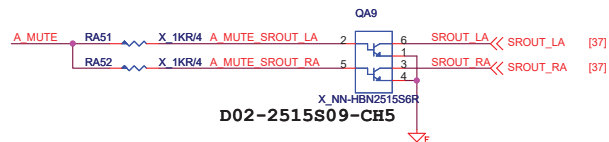
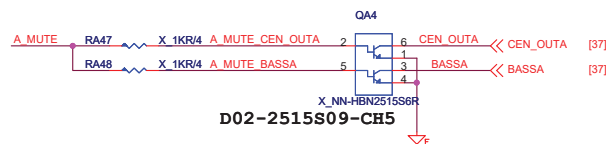


|                                  |                                             |                |            |
|----------------------------------|---------------------------------------------|----------------|------------|
| <b>MICRO-STAR INT'L CO.,LTD</b>  |                                             |                |            |
| <b>MS-7A71</b>                   |                                             |                |            |
| Size<br>Custom                   | Document Description<br><b>AUDIO ALC892</b> |                | Rev<br>1.2 |
| Date: Thursday, October 27, 2016 |                                             | Sheet 37 of 65 |            |

# **Rear Line OUT De-POP circuit** (De-pop circuit for Rear Line out & Front Headphone out)



(add de-pop circuit by PM spec or customer request,  
NOTE: add de-pop circuit need to change CA5,CA11, CA12, CA13, CA21, CA22 to TVS)

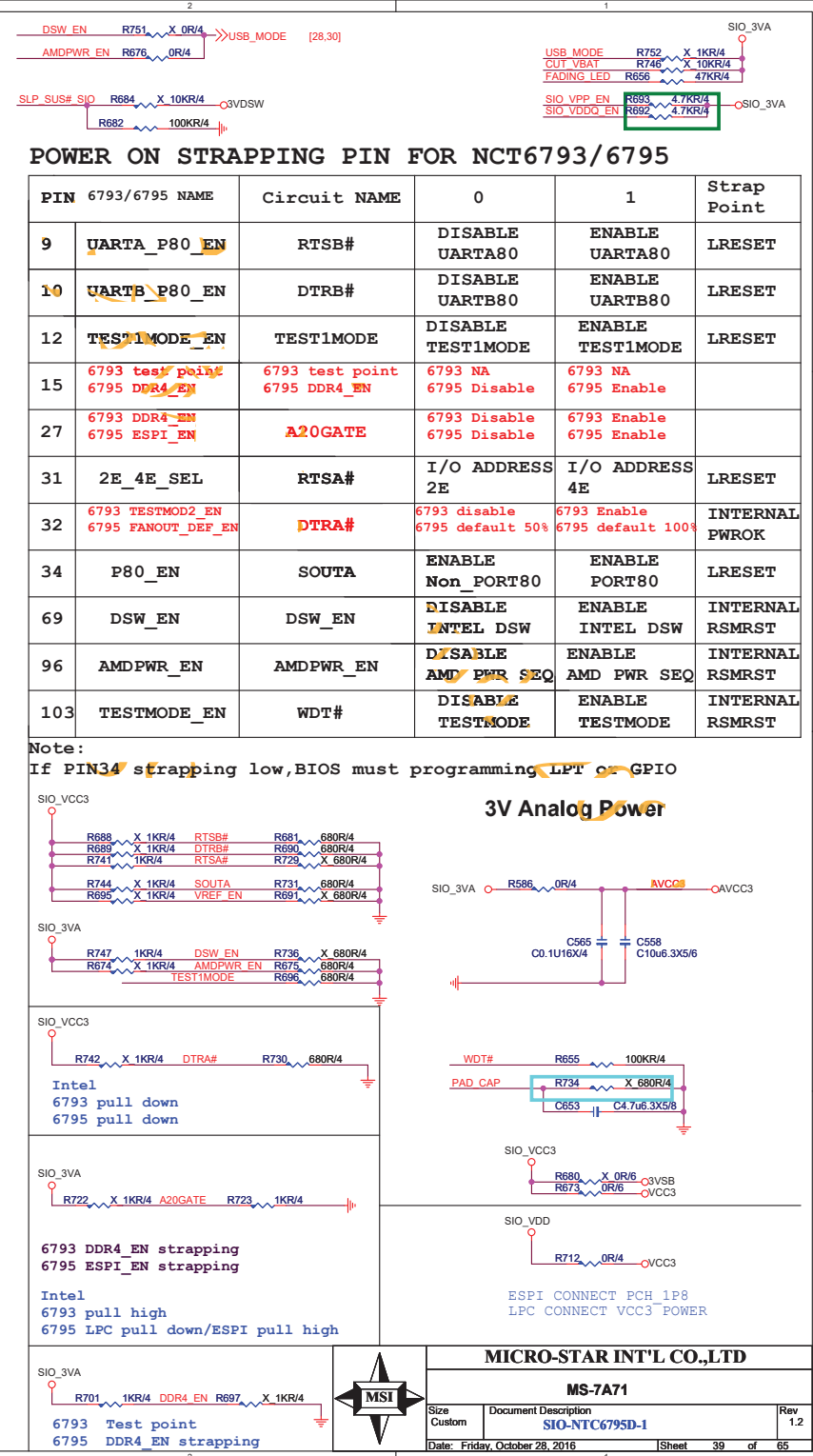


History:

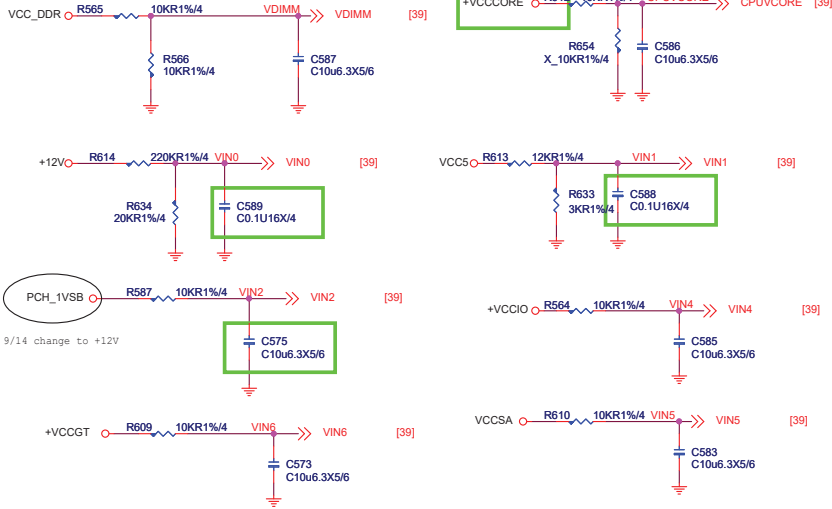
2014/02/13: stuff de-pop circuit of Line out & HP out.

2014/09/11:  
RNA1 change to  
RA55/RA56/RA58/RA57  
RNA2 change to  
RA59/RA60/RA61/RA62

2015/11/09:  
esd pin: DOG-2710510-I05; avl: DOG-2950500-SI0



SIO HM Voltage voer 2V will not detect



**D02-0390629-005**

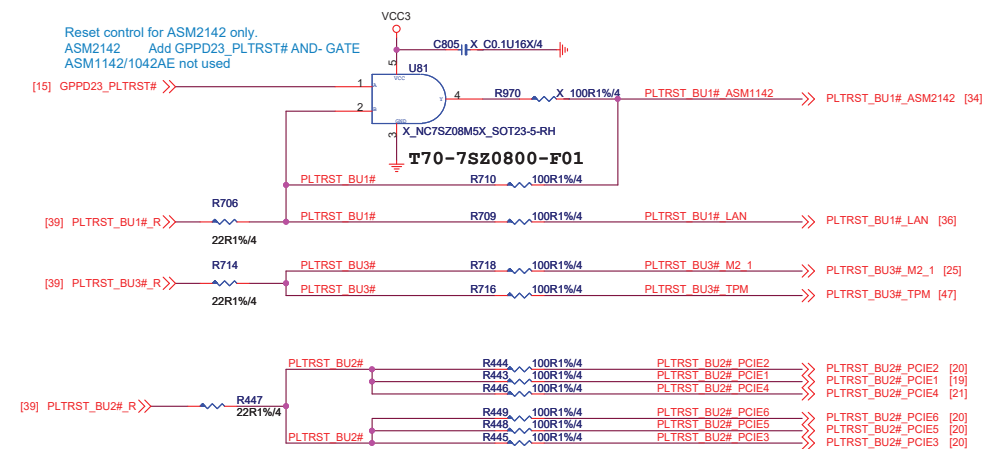
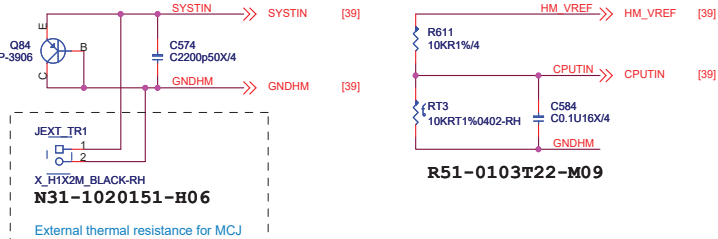
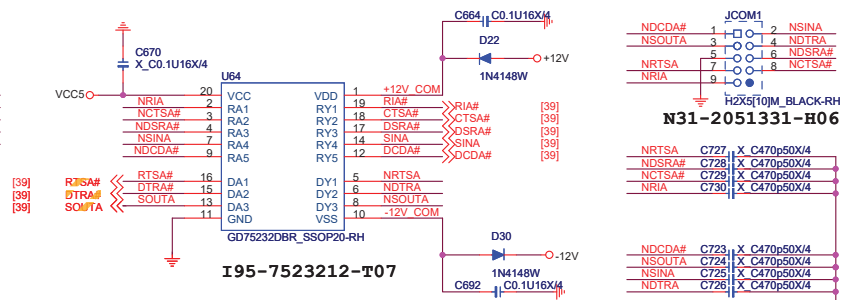


Diagram showing the pin configuration for SIO\_VCC3. The pins are connected to the following components:

| Pin  | Component       |
|------|-----------------|
| R743 | X 2.7KR/4 SINA  |
| R728 | X 2.7KR/4 CTSA# |
| R733 | X 2.7KR/4 RIA#  |
| R732 | X 2.7KR/4 DCDA# |
| R740 | X 2.7KR/4 DSRA# |

NO USE UART PORT1



**PARALLEL PORT**

VCC5 333 1N4148W LPT VC

C4747 C0.116X4

[39] PPRND3 R879 33R/4 PRND3 R878 2.7K/R/4

[39] PPRND2 R857 33R/4 PRND2 R855 2.7K/R/4

[39] PPRND1 R866 33R/4 PRND1 R854 2.7K/R/4

[39] PPRND0 R835 33R/4 PRND0 R834 2.7K/R/4

[39] PPRND4 R837 33R/4 PRND4 R836 2.7K/R/4

[39] PPRND5 R860 33R/4 PRND5 R858 2.7K/R/4

[39] PPRND6 R861 33R/4 PRND6 R859 2.7K/R/4

[39] PPRND7 R881 33R/4 PRND7 R880 2.7K/R/4

[39] STB# R832 33R/4 RSTB# R833 2.7K/R/4

[39] SLIN# R852 33R/4 RSLIN# R850 2.7K/R/4

[39] INIT# R851 33R/4 RINIT# R853 2.7K/R/4

[39] AFD# R876 33R/4 RAFD# R877 2.7K/R/4

[39] RACK# R838 2.7K/R/4

[39] RBUSY R839 2.7K/R/4

[39] RPE R840 2.7K/R/4

[39] RSLCT R841 2.7K/R/4

[39] RERR# R894 2.7K/R/4

PRND0 C716 X C470p50X/4

PRND1 C733 X C470p50X/4

PRND2 C734 X C470p50X/4

PRND3 C749 X C470p50X/4

PRND7 C750 X C470p50X/4

PRND6 C736 X C470p50X/4

PRND5 C735 X C470p50X/4

PRND4 C717 X C470p50X/4

RSTB# C715 X C470p50X/4

RSLIN# C731 X C470p50X/4

RINIT# C732 X C470p50X/4

RAFD# C748 X C470p50X/4

RACK# C737 X C470p50X/4

RBUSY C738 X C470p50X/4

RPE C739 X C470p50X/4

RSLCT C740 X C470p50X/4

RERR# C758 X C470p50X/4

JLPT1

RSTB# 1 0 2 RAFD#

PRND1 3 0 4 RERR#

PRND0 5 0 6 RINIT#

PRND2 7 0 8 RSLIN#

PRND3 9 0 10

PRND4 11 0 12

PRND5 13 0 14

PRND6 15 0 16

PRND7 17 0 18

RACK# 19 0 20

RBUSY 21 0 22

RPE 23 0 24

RSLCT 25 0 26

HX213126M1\_BLACK-RH

**N31-2131131-H06**

**N31-2131151-H06 : 2.0mm**

**N31-2131131-H06 : 2.54mm**

The schematic diagram illustrates the SLP\_SUS# signal path and the I31-7116S09-N03 component. The top section shows the SLP\_SUS# signal originating from a 3VDSW input, passing through a 4.7kΩ resistor (R457) and a 22kΩ resistor (R454) to the SLP\_SUS# pin of the I31-7116S09-N03 component. The signal is also connected to the SIO\_SLPSUS input of the component. The bottom section shows the I31-7116S09-N03 component, which is a 5V logic device. It features a VDD pin connected to ATX\_5VSB, a VOUT pin connected to SIO\_3VA, and an EN pin connected to SIO\_3VA. The component also has a 3V FB pin connected to SIO\_3VA. The component is powered by a 5V supply (ATX\_5VSB) and a 3V supply (SIO\_3VA). The component is labeled I31-7116S09-N03.



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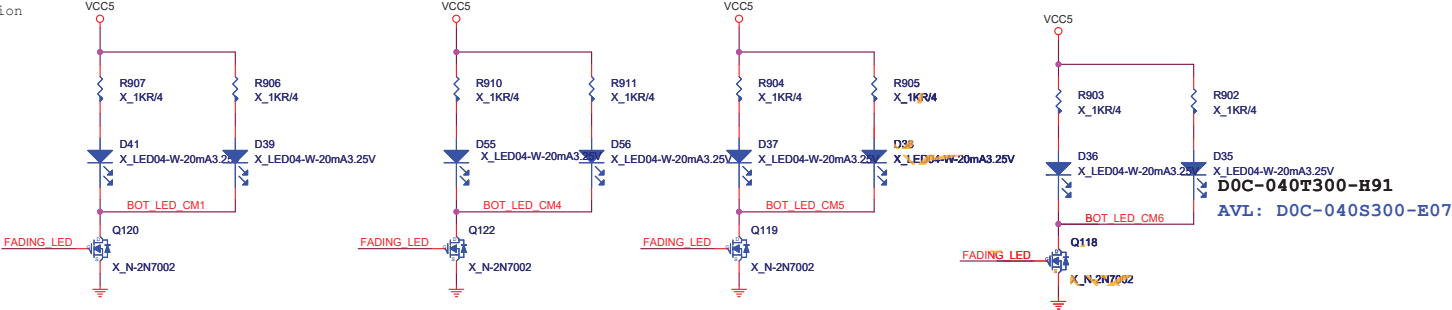
|                |                                               |
|----------------|-----------------------------------------------|
| Size<br>Custom | Document Description<br><b>SIO-NTC6795D-2</b> |
|----------------|-----------------------------------------------|

|                                |                |
|--------------------------------|----------------|
| Date: Monday, October 31, 2016 | Sheet 40 of 65 |
|--------------------------------|----------------|

BOTTOM LED

PCB bottom side Screw holes  
LED White : D0C-040T300-H91 \* 8pcs

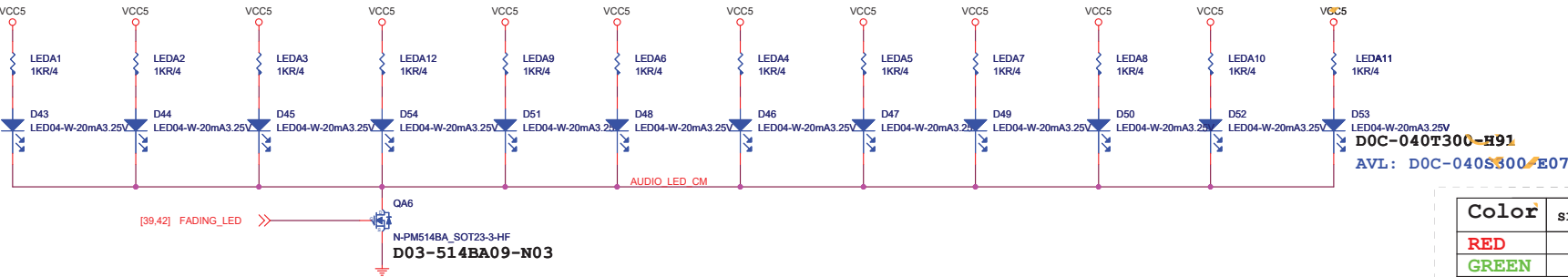
2016.08. 22 Remove Bottom LED function



AUDIO LED

Audio Moat Line LED Red :  
LED White : D0C-040T300-H91 \* 12pcs

Audio moat is transparent and width 40mil

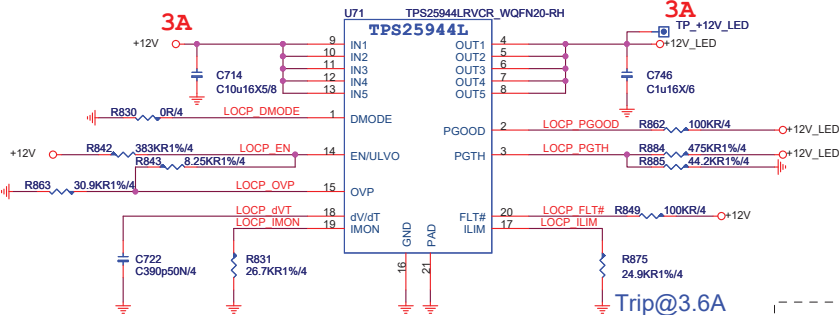


LED Light bar 3A OCP

2016.08.06 Use TPS25944L

I36-259440C-T07

TPS25944LRVCR\_WQFN20-RH



3A

TP\_+12V\_LED  
+12V\_LED

C746  
C1u16X6

R862  
100KR/4

R884  
475KR1%/4

R885  
44.2KR1%/4

R849  
100KR/4

R875  
24.9KR1%/4

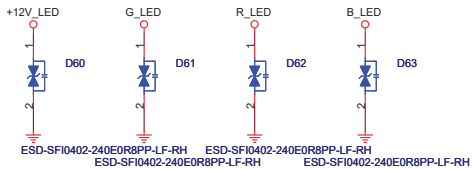
Trip@3.6A

2016.08.02

Add +12V\_LED 0.1uF

+12V\_LED

C795  
C0.1U16X4



D0G-0402200-SI0

2016.08.02 stuff ESD, ESD > 16V

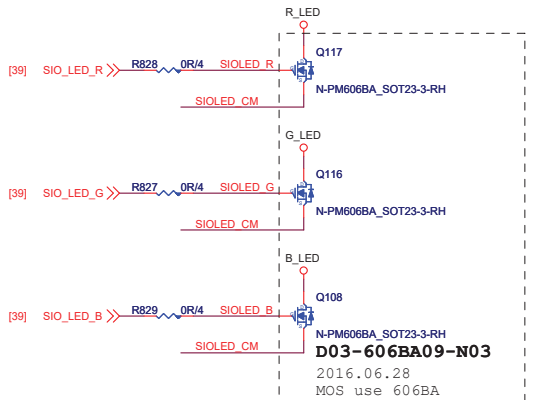
LED Light bar Control by SIO

| Color | SIO_LED_R | SIO_LED_G | SIO_LED_B |
|-------|-----------|-----------|-----------|
| RED   | 1         | 0         | 0         |
| GREEN | 0         | 1         | 0         |
| BLUE  | 0         | 0         | 1         |
| WHITE | 1         | 1         | 1         |

SIO\_3VA



2016.10.24 Default Red Color



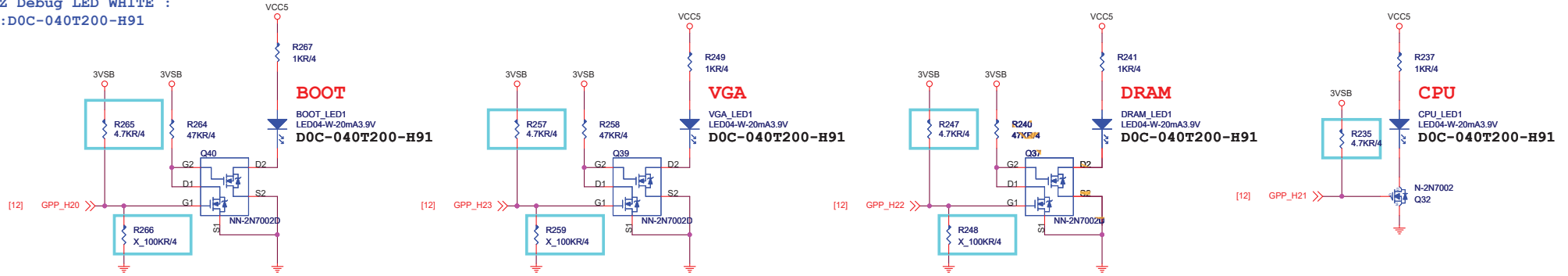
MICRO-STAR INT'L CO.,LTD

MS-7A71

| Size   | Document Description     | Rev            |
|--------|--------------------------|----------------|
| Custom | LED-BOT/AUD/LBAR         | 1.2            |
| Date:  | Friday, October 28, 2016 | Sheet 41 of 65 |

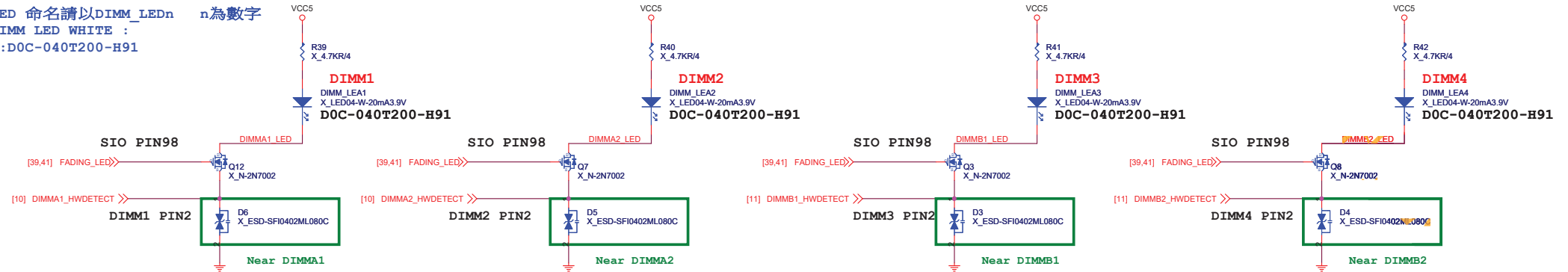
## EZ Debug

EZ Debug LED WHITE :  
M:D0C-040T200-H91



## DIMM

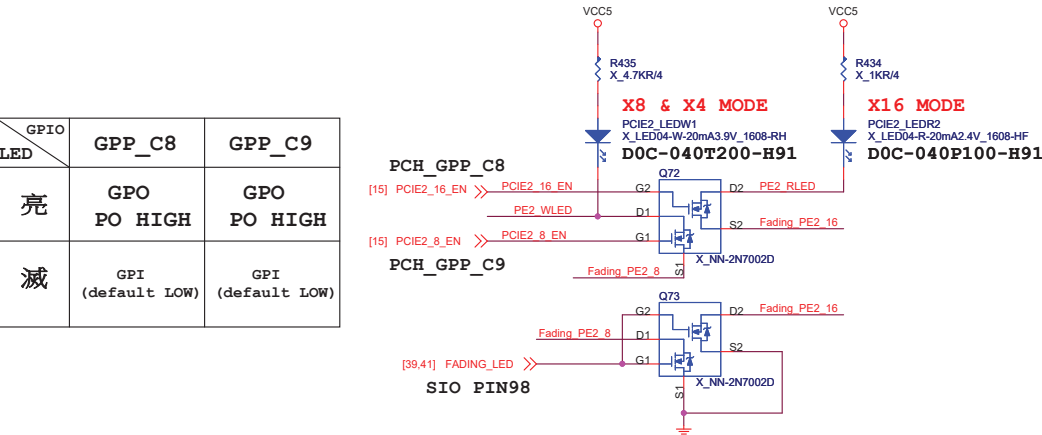
LED 命名請以DIMM\_LEDn n為數字  
DIMM LED WHITE :  
M:D0C-040T200-H91



## PCIE

### PCIE SLOT LED

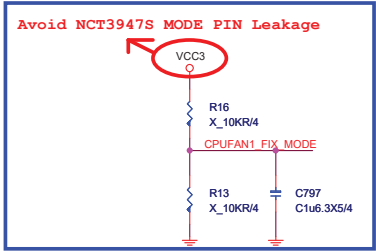
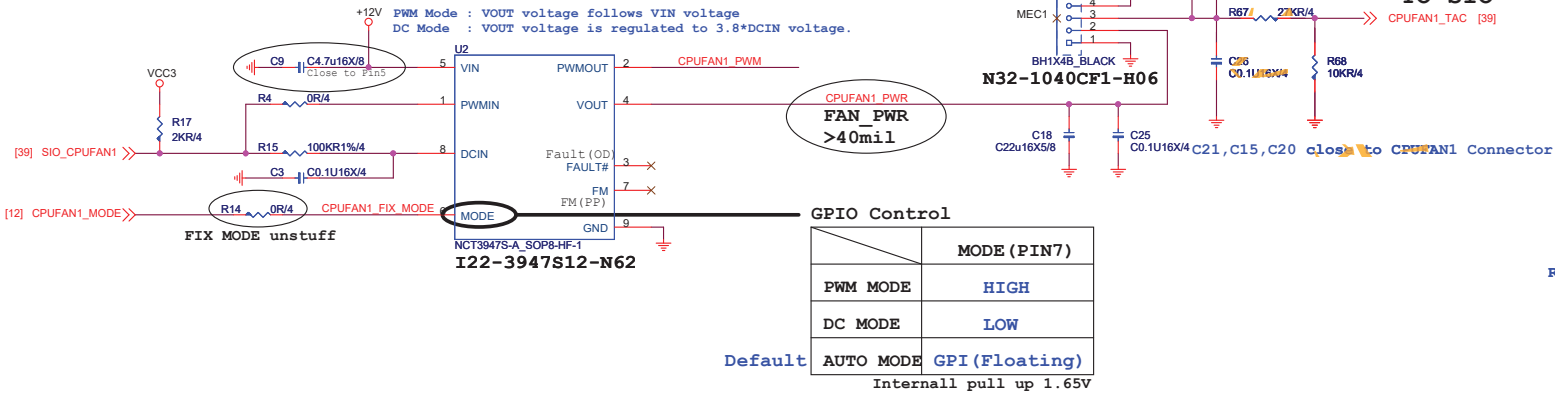
PCIE SLOT LED 命名請以PCIE\_LEDn n為數字  
PCIE x16 紅 : M:D0C-040P100-H91 / S:D0C-040S500-E07  
PCIE x4 白 : D0C-040T200-H91 / S:D0C-040S200-E07  
PCIE x1 白 : D0C-040T200-H91 / S:D0C-040S200-E07



| GPIO<br>LED | GPP_C8               | GPP_C9               |
|-------------|----------------------|----------------------|
| 亮           | GPO<br>PO HIGH       | GPO<br>PO HIGH       |
| 滅           | GPI<br>(default LOW) | GPI<br>(default LOW) |

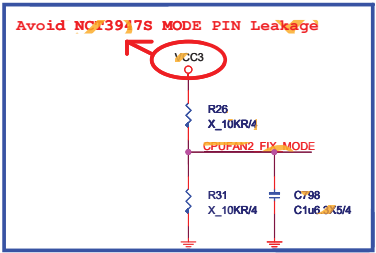
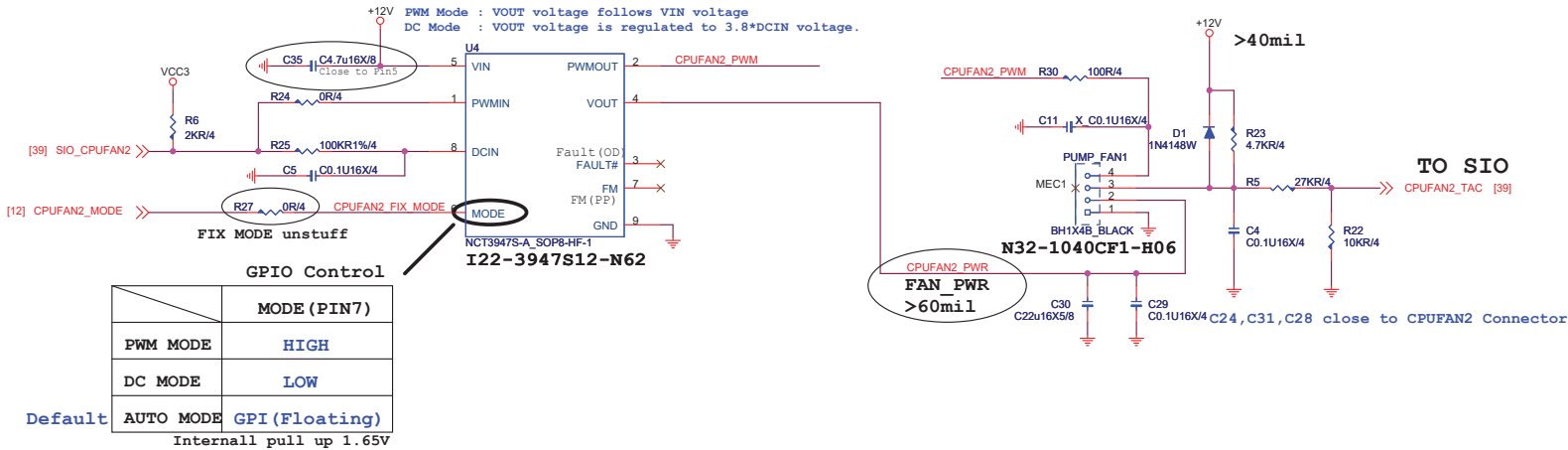
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

- 1. PWM/DC/OCF LED (現在是改成R/G/B3色LED)
- 2. GPIO可以由BIOS切換 PWM/DC MODE
- 3. OCP拉回GPIO給BIOS認
- 4. PWM OR DC FAN拉回GPIO給BIOS認
- 5. FAN轉速加快的時候由SOFTWARE 控制GPIO讓燈的變化



Resever For FIX DC or PWM MODE USE By PM SPEC

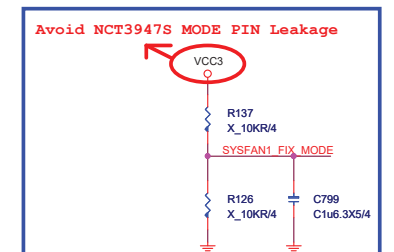
TYPEK : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE (2A pump FAN)



Resever For FIX DC or PWM MODE USE By PM SPEC

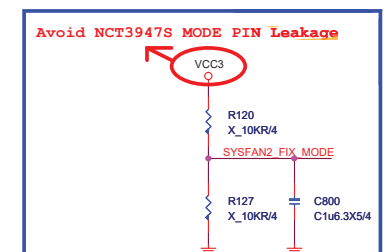
- 1. MODE : USE MODE PIN change FAN MODE (PWM or DC FAN)
- 2. FAULT : USE FAULT PIN Triger OVT/OCF Protection, LOW Atcive (Reserve NEW IC)
- 3. FM : USE FM PIN For BIOS USE to Detect PWM or DC FAN & Show information (Reserve NEW IC)

```
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE
```



Resever For FIX DC or PWM MODE USE By PM SPEC

|                         |           |                |
|-------------------------|-----------|----------------|
| Default                 | AUTO MODE | GPI (Floating) |
| Internall pull up 1.65V |           |                |

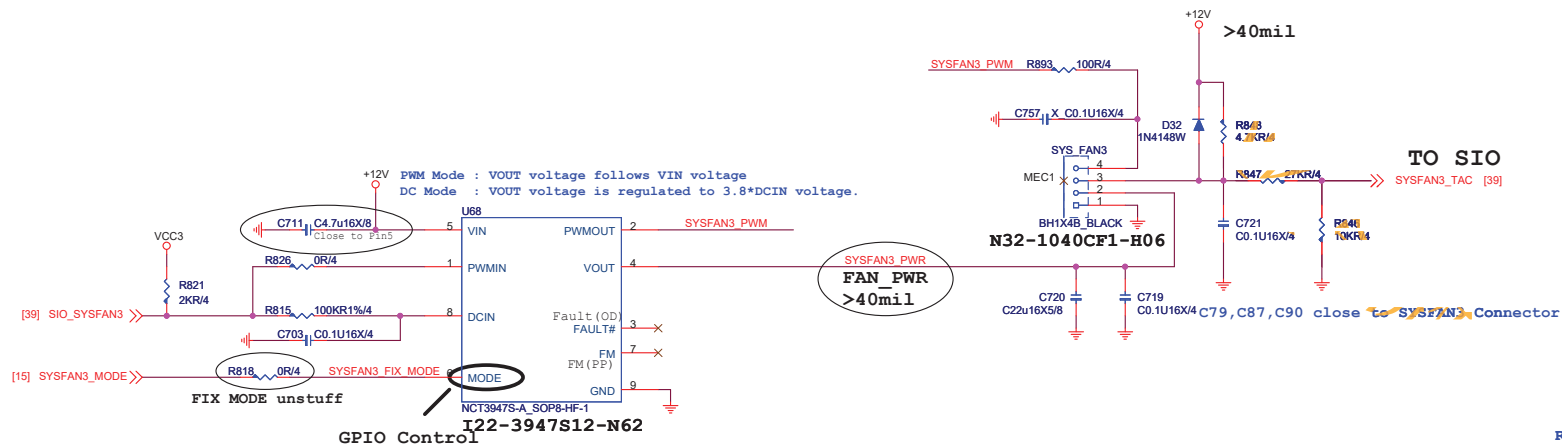


Resever For FIX DC or PWM MODE USE By PM SPEC

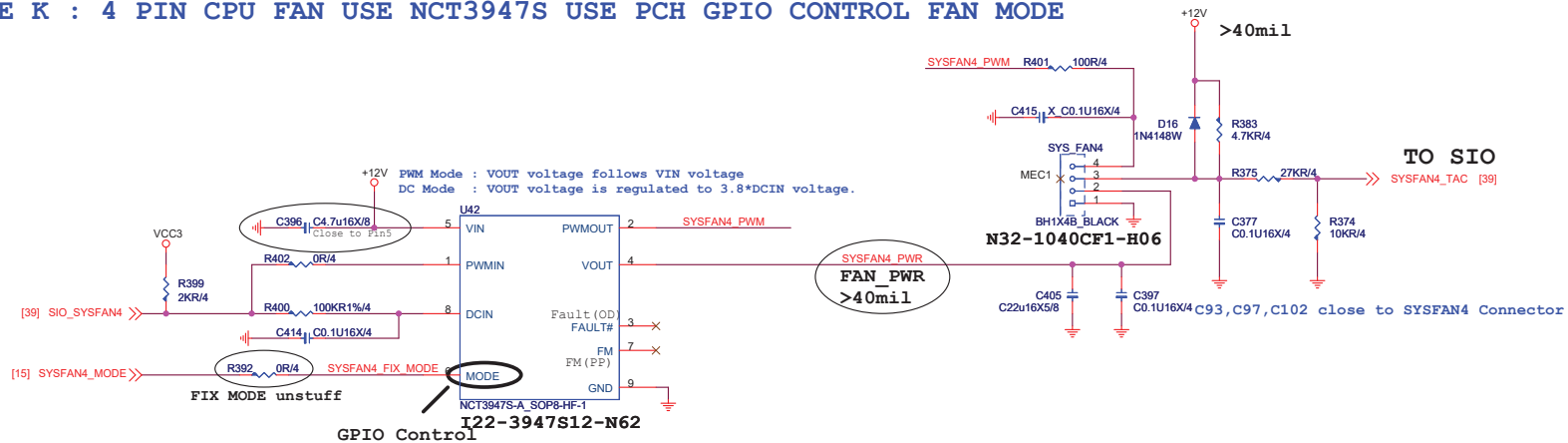
|           |               |
|-----------|---------------|
|           | MODE (PIN7)   |
| PWM MODE  | HIGH          |
| DC MODE   | LOW           |
| AUTO MODE | GPI(Floating) |

Internall pull up 1.65V

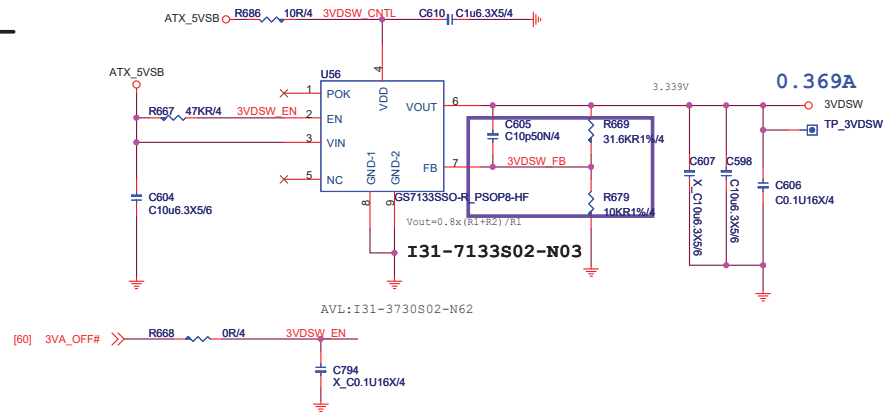
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

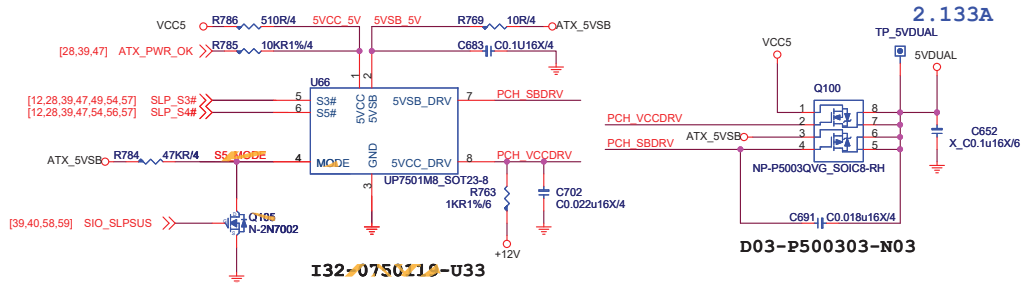


## 3VDSW

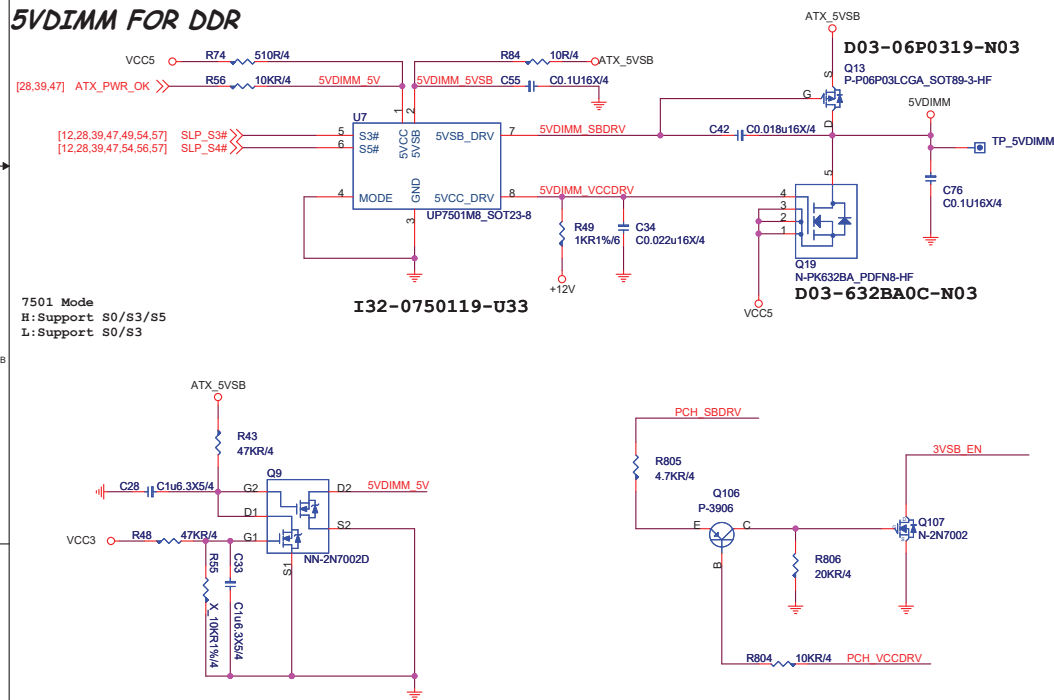


## 5VDUAL

5VDUAL is power source of LP0SB

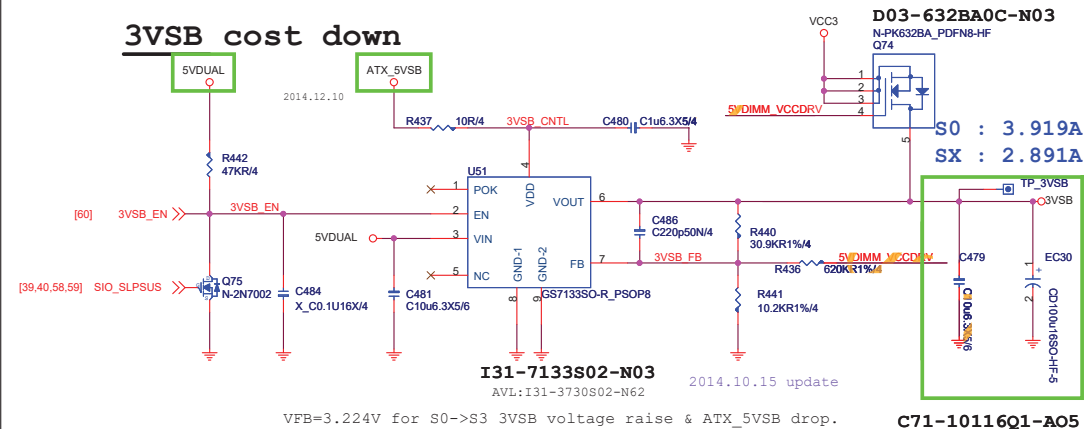


## 5VDIMM FOR DDR



防G3-->S5底下5VSBDRV2瞬間有電變沒電,使得下一級電壓爬升有drop

## 3VSB cost down

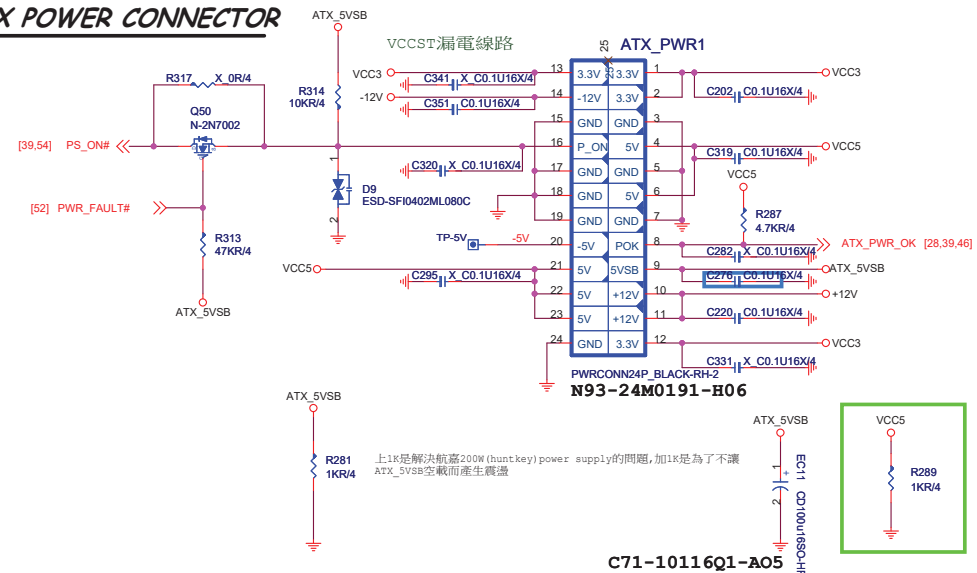


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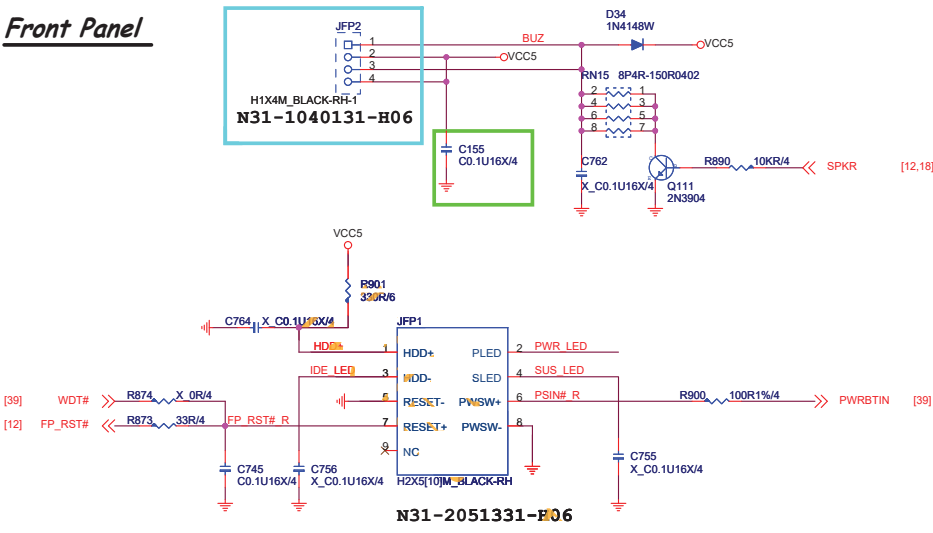
MS-7A71

| Size                           | Document Description | Rev |
|--------------------------------|----------------------|-----|
| Custom                         | ACPI UPI POWER       | 1.2 |
| Date: Friday, October 28, 2016 | Sheet 46 of 65       |     |

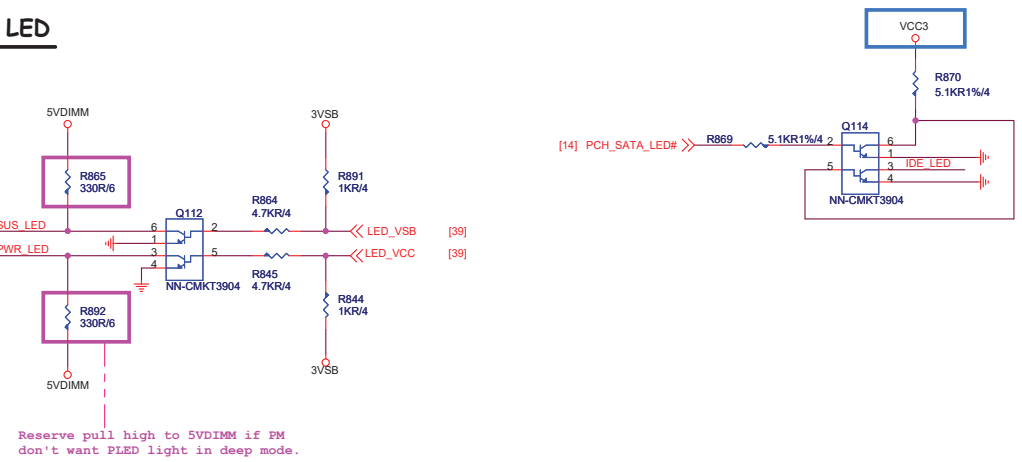
ATX POWER CONNECTOR



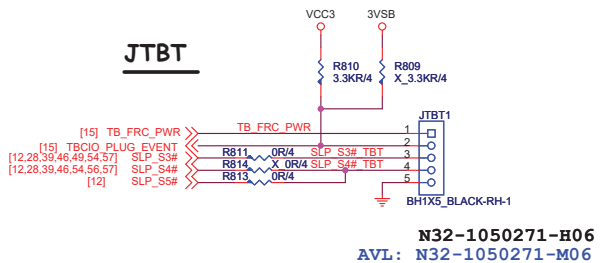
Front Panel



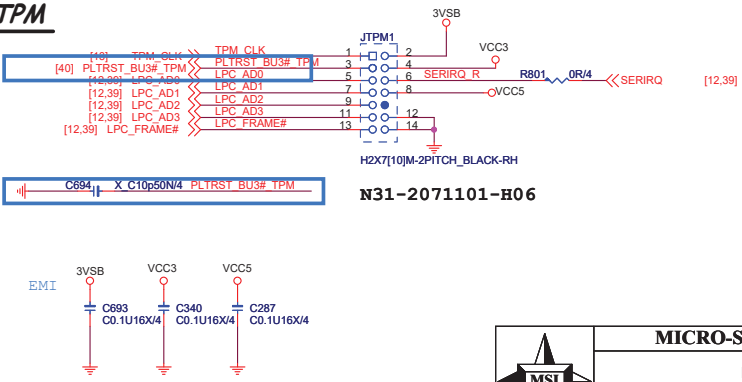
LED



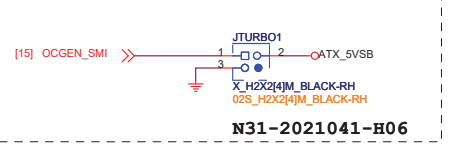
JTBT



TPM



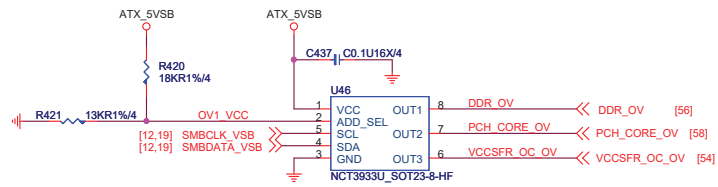
External Turbo switch pin header



Remove Cut Power.

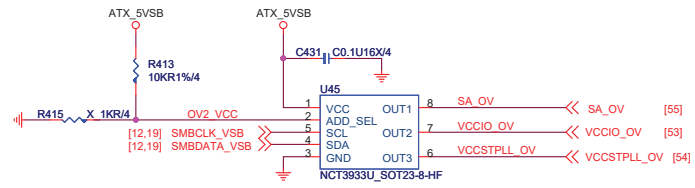
### UPI VOLTAGE CONSOLE

0x26: RH=18K, RL=13K



I34-3933U09-N62

0x20: RH=10K, RL=OPEN



I34-3933U09-N62

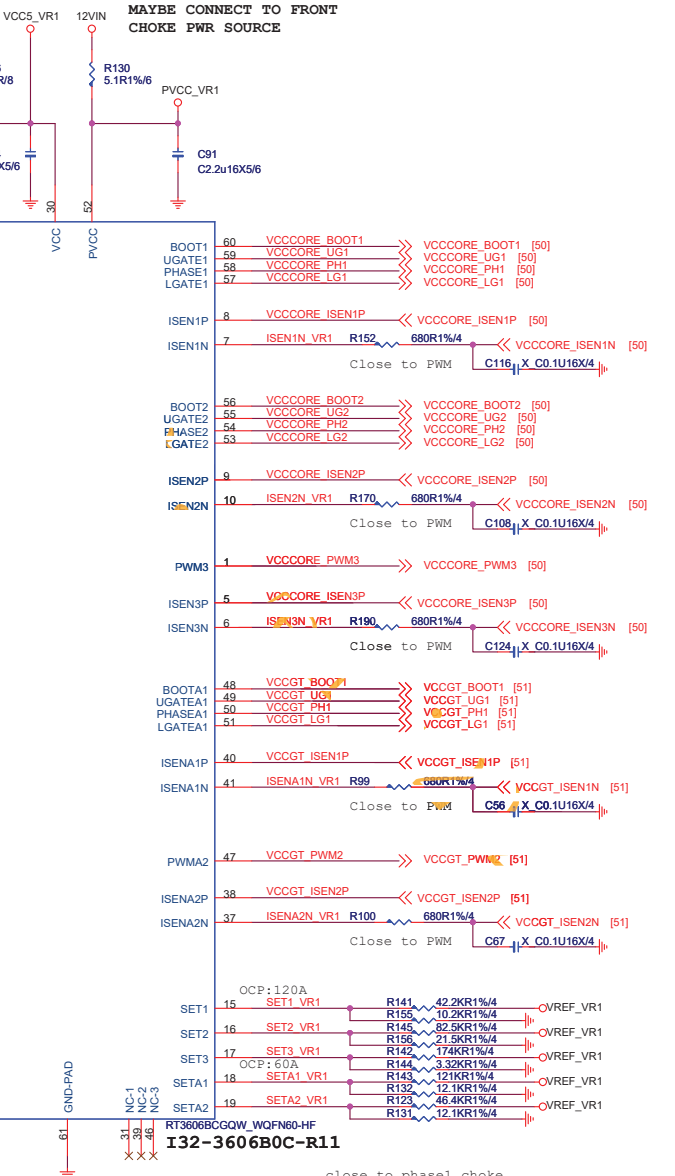
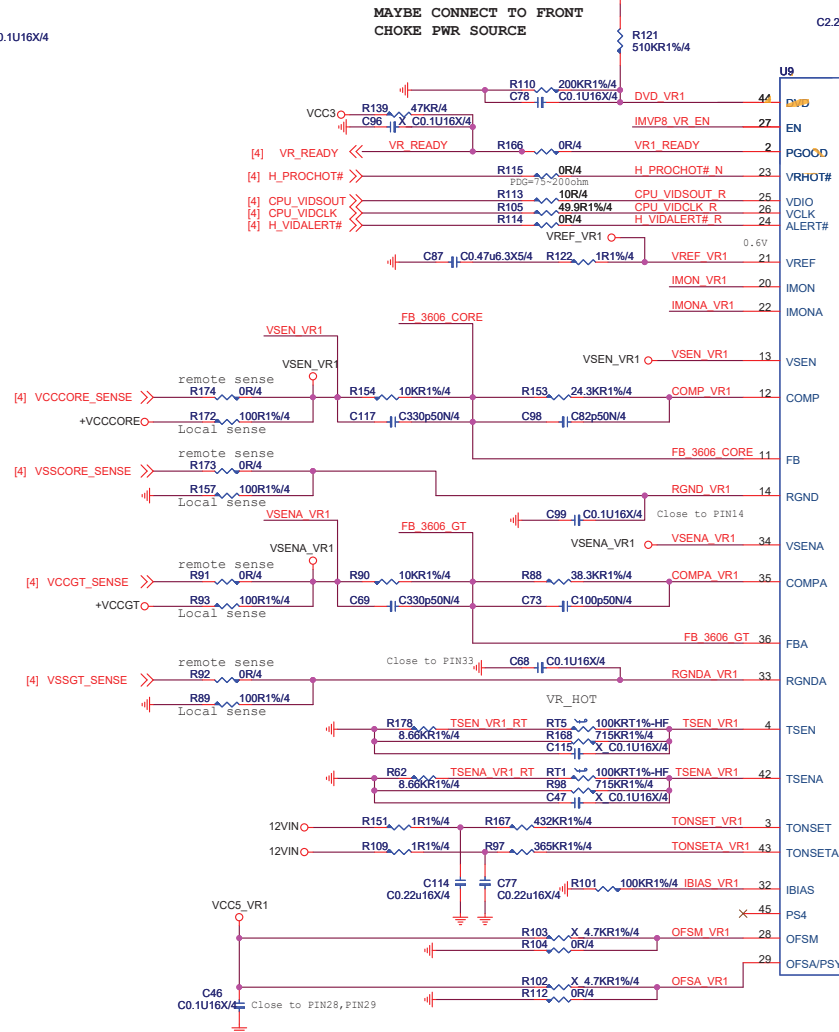
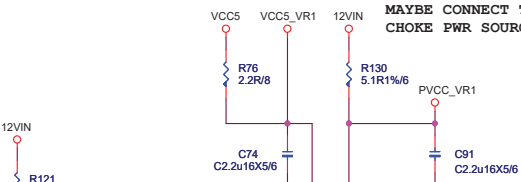
| ADDRESS   | 0x2A | 0x28 | 0x26 | 0x24 | 0x22 | 0x20 |
|-----------|------|------|------|------|------|------|
| RH (KOhm) | OPEN | 3.9  | 3    | 2.2  | 1.3  | 10   |
| RL (KOhm) | 10   | 1.3  | 2.3  | 3    | 3.9  | OPEN |
| BUS_SEL   | 0%   | 25%  | 40%  | 60%  | 75%  | 100% |



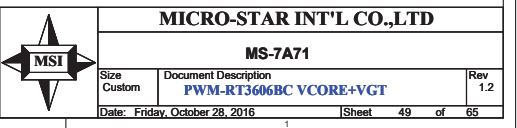
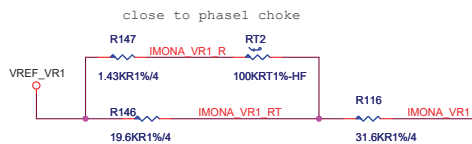
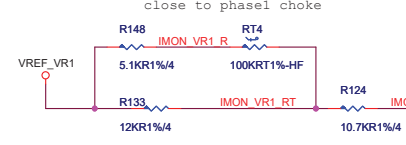
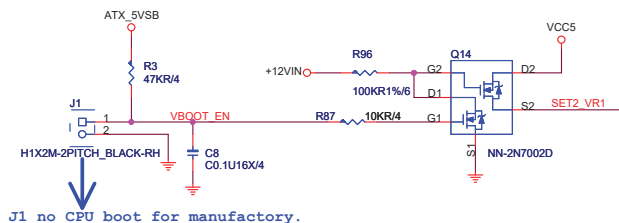
MICRO-STAR INT'L CO.,LTD

MS-7A71

|                                  |                                    |            |
|----------------------------------|------------------------------------|------------|
| Size<br>Custom                   | Document Description<br>OV-NCT3933 | Rev<br>1.2 |
| Date: Thursday, October 27, 2016 | Sheet 48 of 65                     |            |



```
016.10.27
core: R153 = 24.3K, R133 = 12K, R148 = 5.1K, R124 = 10.7K
R182 = R181 = R179 = 910R, R171 = R169 = R180 = NC
CCGT: R116 = 31.6K, R78 = R79 = 1K
```



Irms = 11.5A

ICCMAX = 100A

Total\_Irms = 24.1A

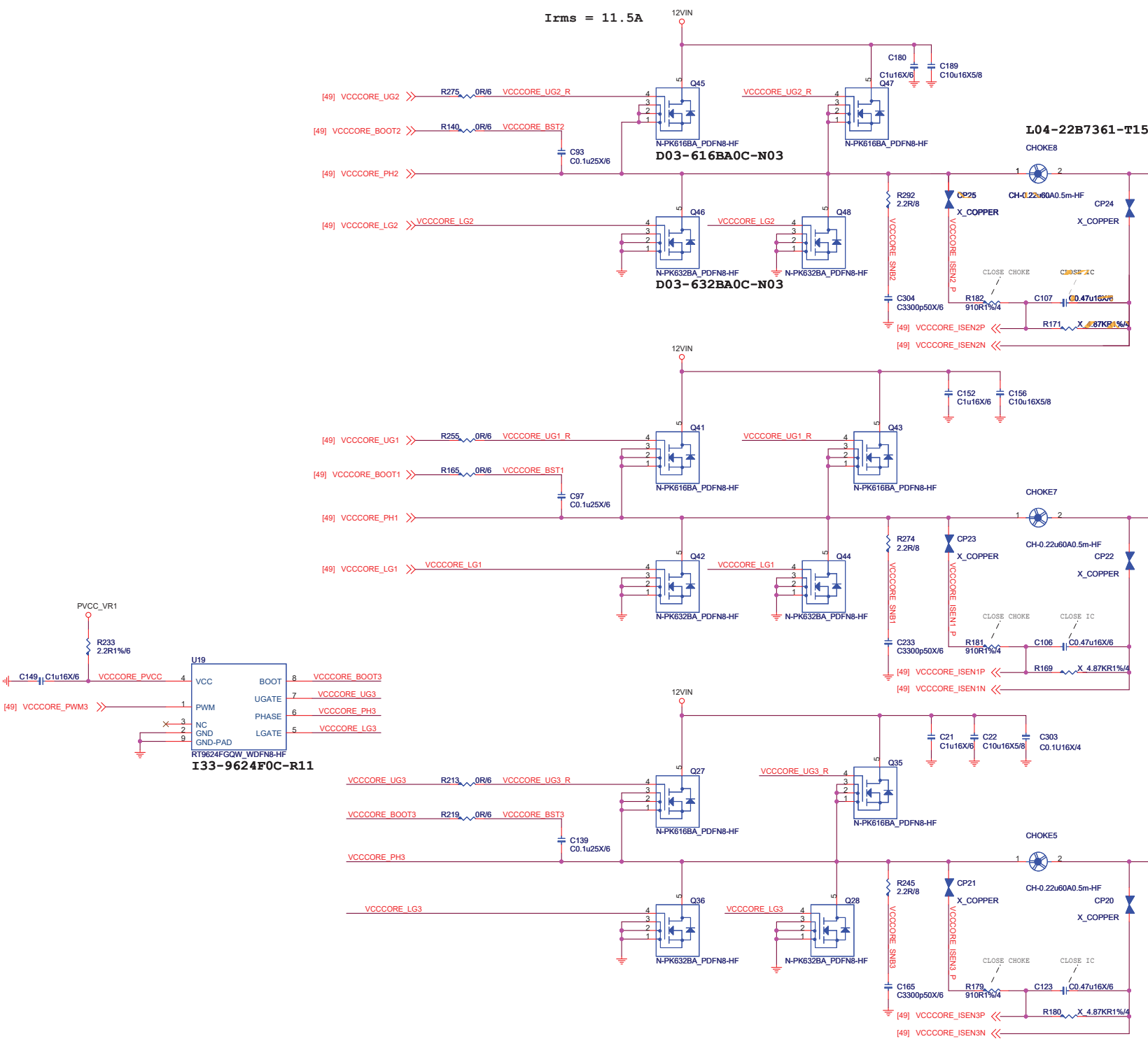
C71-56106F1-A05



MICRO-STAR INT'L CO.,LTD

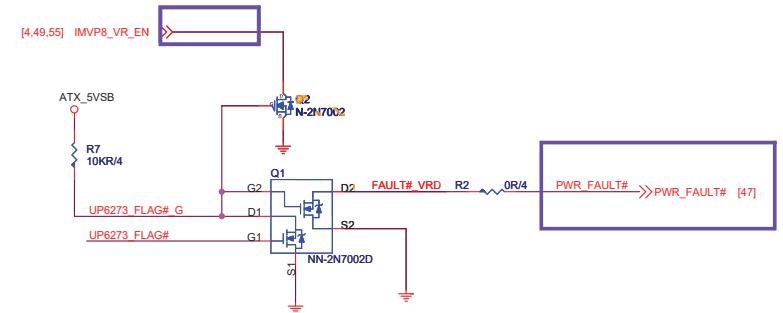
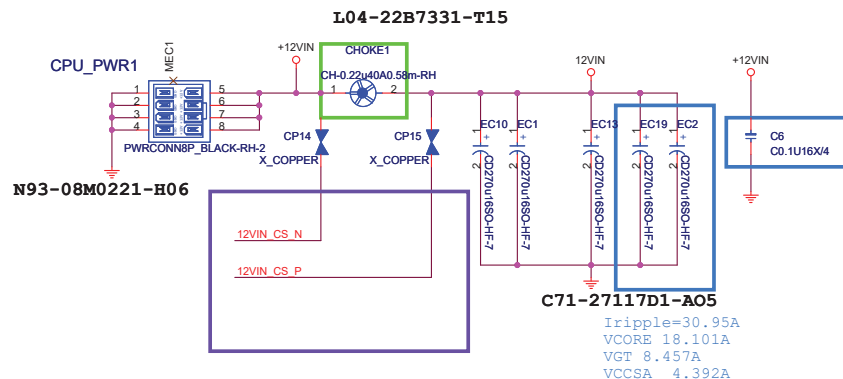
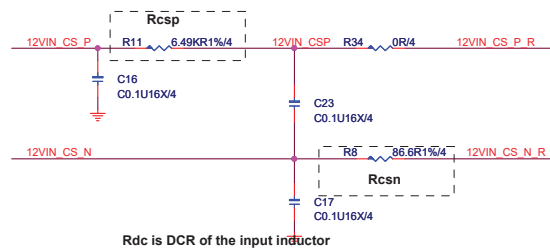
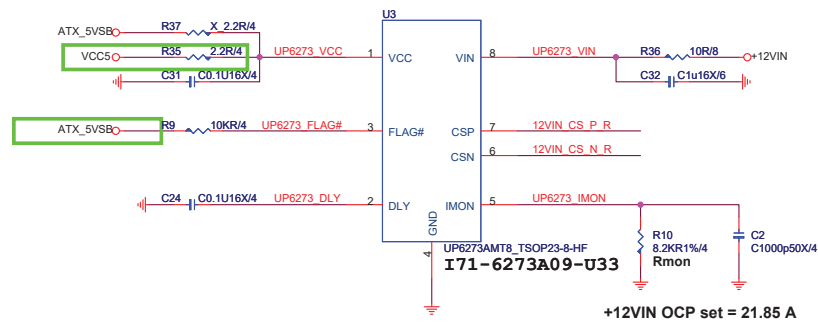
MS-7A71

|                                  |                      |                |
|----------------------------------|----------------------|----------------|
| Size                             | Document Description | Rev            |
| Custom                           | VCORE MOS-PHASE 1-3  | 1.2            |
| Date: Thursday, October 27, 2016 |                      | Sheet 50 of 65 |





2016.8.16  
Over Current Protection change used I71-6273A09-U33  
Pin3 FLAG# power change to ATX\_5VSB



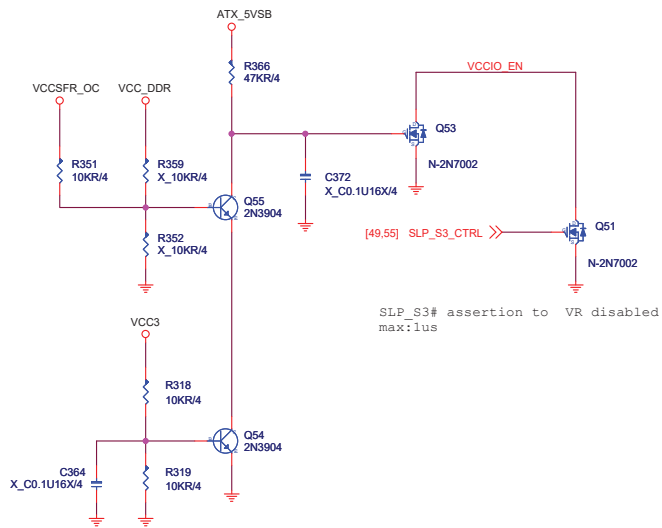
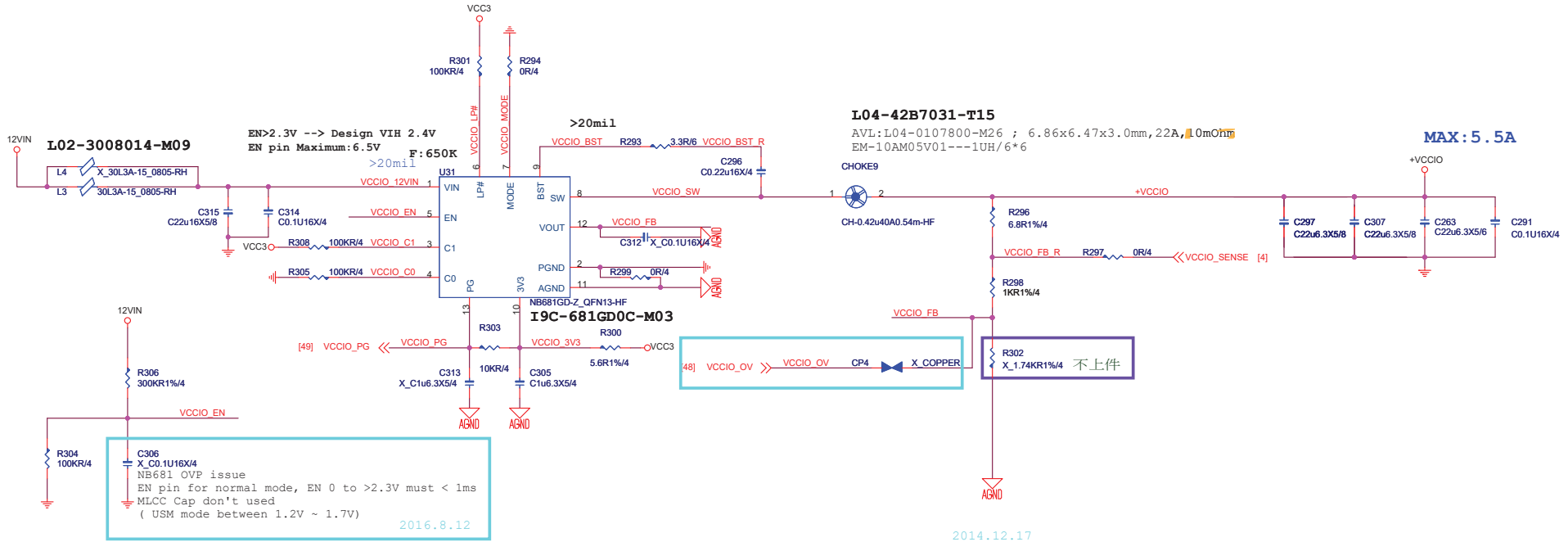
If OCP set  $I_{in} = 15A$   
When  $I_{sen} = 100\mu A$  the  $R_{csn} = ?$   
 $I_{sen} = (I_{in} \times R_{dc}) / R_{csn}$   
 $100\mu A = (15 \times 0.58m) / R_{csn}$   
-->  $R_{csn} = 86.6R$

$V_{mon} = (I_{in} \times R_{mon} \times R_{dc}) / R_{csn}$   
 $V_{mon} = 1.2V$ ,  $I_{in} = 15A$ ,  $R_{csn} = 86.6R$   
 $R_{dc} = 0.58m \text{ ohm (DCR of the input inductor)}$   
-->  $R_{mon} = 11.94KR$

$V_{mon} = 1.2V$ ,  $R_{csn} = 86.6R$ ,  $R_{dc} = 0.58m$   
1.  $R_{mon} = 11.8KR$   
 $I_{in} = (1.2 \times 86.6) / (11.8K \times 0.58m) = 15.18 A$   
2.  $R_{mon} = 8.2KR$   
 $I_{in} = (1.2 \times 86.6) / (8.2K \times 0.58m) = 21.85 A$

VCC10      *IMAX 6A*  
0.95V; 5.5A      *ILIMIT=8.5~9A*

|       | LP# | C1 | C0 | VOUT (V) |
|-------|-----|----|----|----------|
| VCCIO | 0   | X  | X  | 0        |
|       | 1   | 0  | 0  | 0.85     |
|       | 1   | 0  | 1  | 0.875    |
|       | 1   | 1  | 0  | 0.95     |
|       | 1   | 1  | 1  | 0.975    |



**MICRO-STAR INT'L CO.,LTD**

MS-7A71

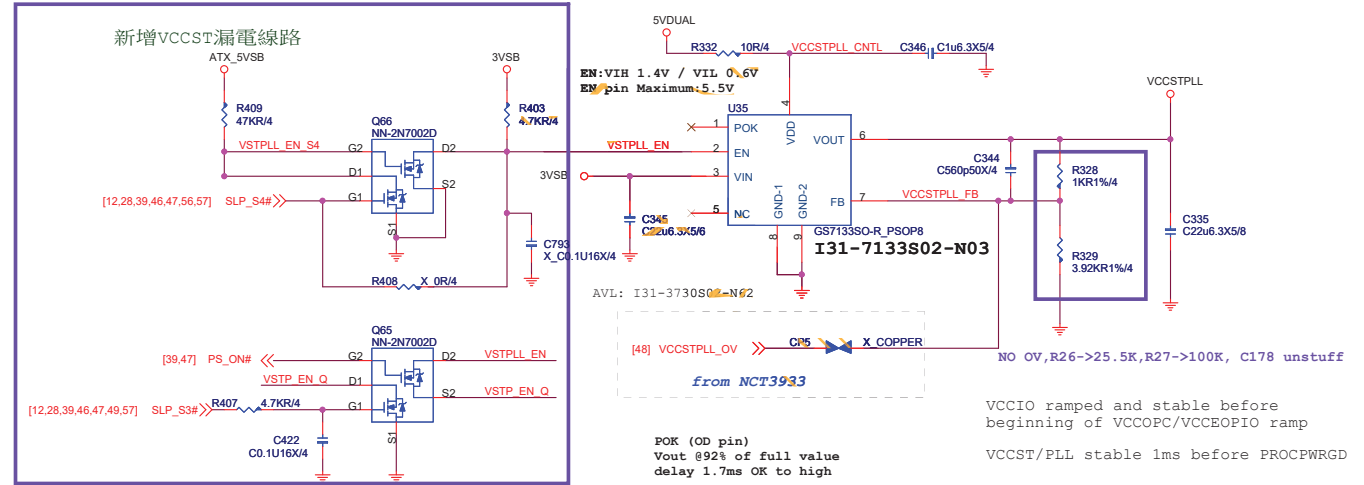
|                                  |                                                       |                |
|----------------------------------|-------------------------------------------------------|----------------|
| Size<br>Custom                   | Document Description<br><b>CPU PWR_VCCIO - NB681G</b> | Rev<br>1.2     |
| Date: Thursday, October 27, 2016 |                                                       | Sheet 53 of 65 |

# VCCSTPLL

1.0V; 250mA

For Cost down VCCST&VCCPLL merge

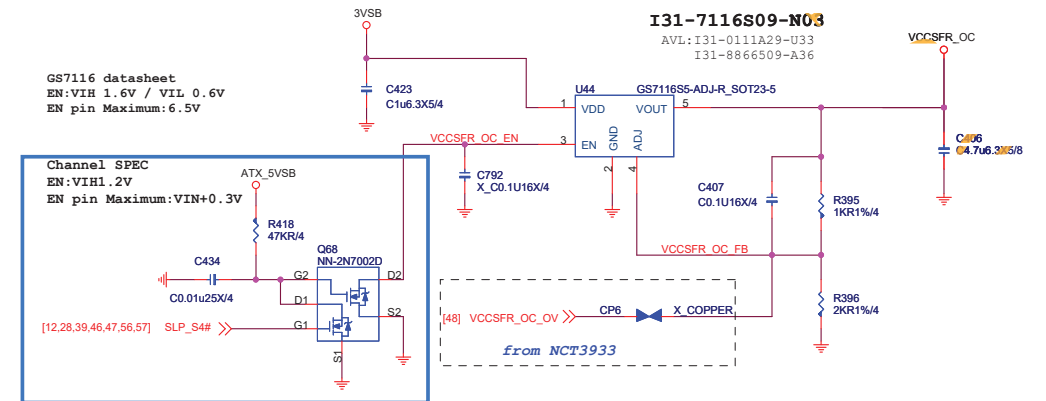
for Gaming3/5, Classic, ECO and H110



# VCCPLL OC

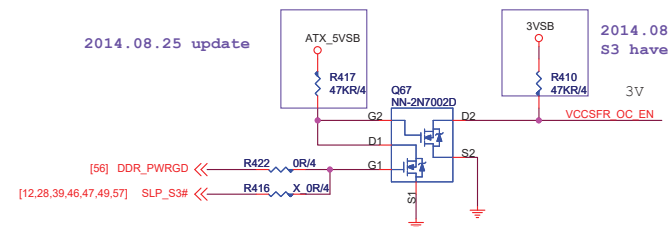
2014.08.21 update

1.2V; 110mA



2014.08.25 update

2014.08.25 update  
S3 have power



| MICRO-STAR INT'L CO.,LTD       |                      |     |  |
|--------------------------------|----------------------|-----|--|
| MS-7A71                        |                      |     |  |
| Size                           | Document Description | Rev |  |
| Custom                         | CPU PWR ST/PLL       | 1.2 |  |
| Date: Friday, October 28, 2016 | Sheet 54 of 65       |     |  |

# SA Power:1.05V,12.3A

Rocpset:5.49K

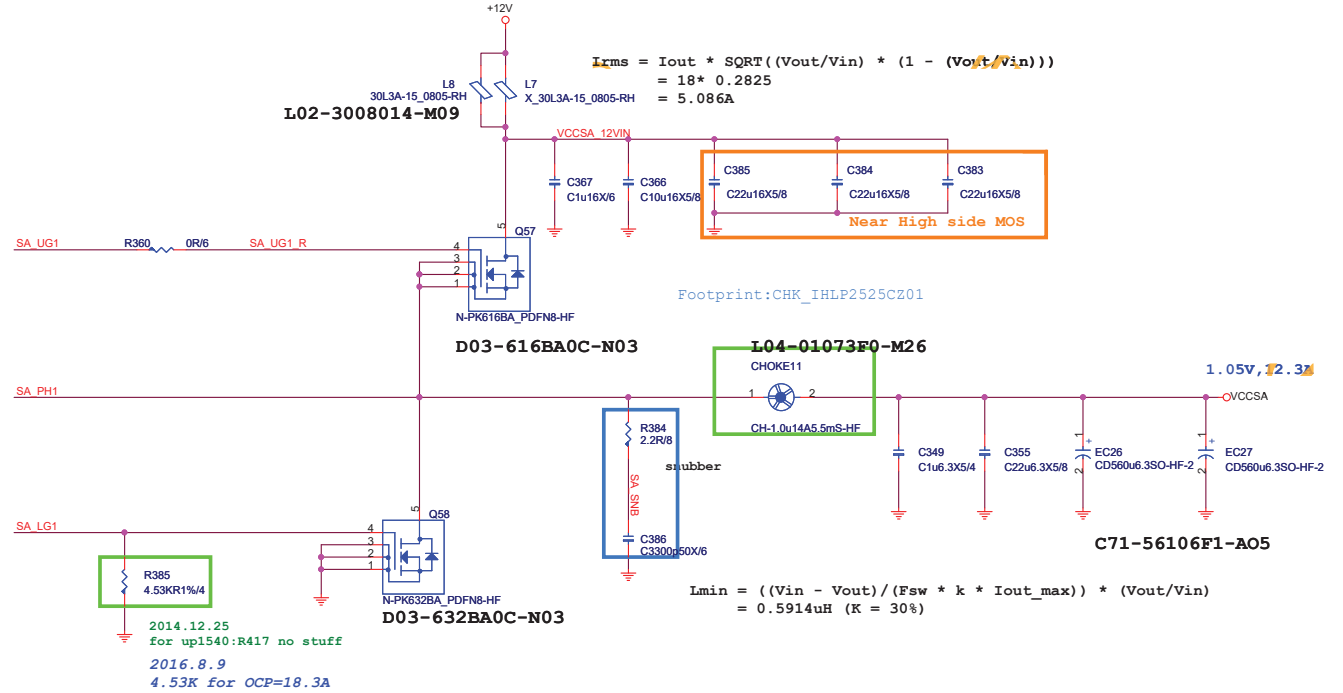
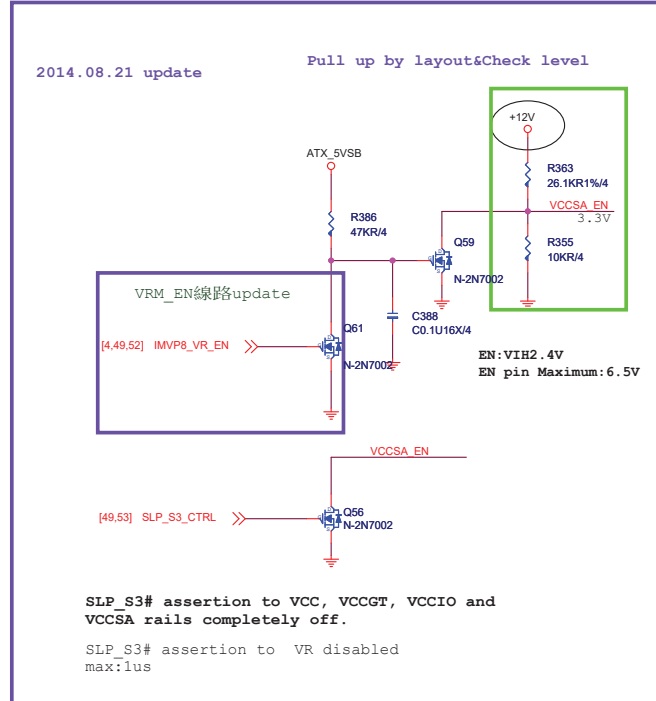
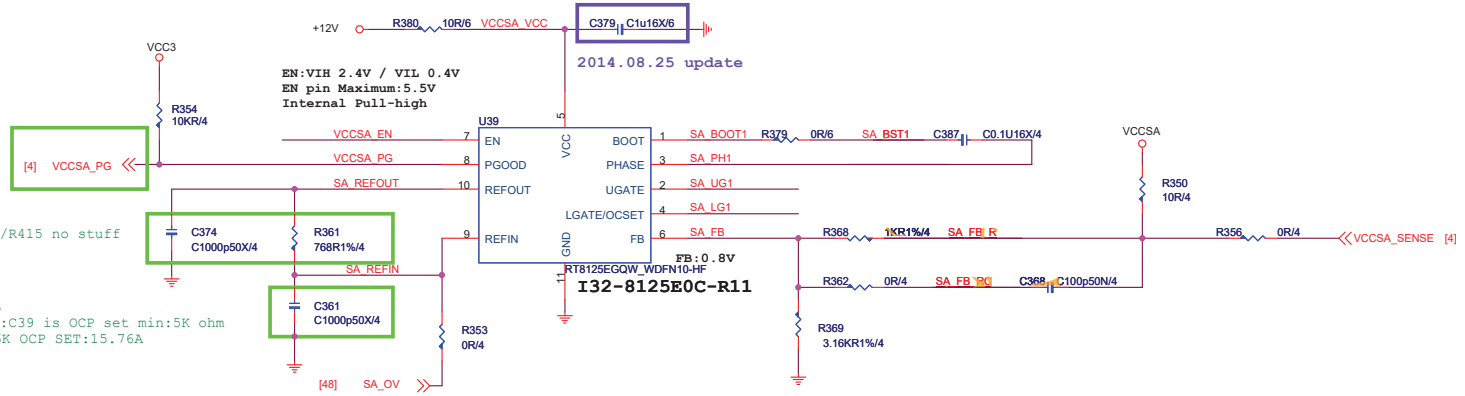
$OCP = Rocset * Rdson(Low\ side) / 10uA$   
 $= 7.32K * 2.5mohm / 10uA$   
 $= 18.3A$

Rocs:5.76K, OCP:  
D03-4C05N03-005 : 16.94A  
D03-632BA0C-N03 : 17.45A  
use UBIQ MOS need Check

Rdson (low) 10V  
D03-4C05N03-005 : 3.4mohm  
D03-632BA0C-N03 : 3.3mohm  
D03-3056M00-U47 : 4.2mohm

up1540L/C5/R415 no stuff

2014.12.25  
for up1540:C39 is OCP set min:5K ohm  
stuff 5.36K OCP SET:15.76A

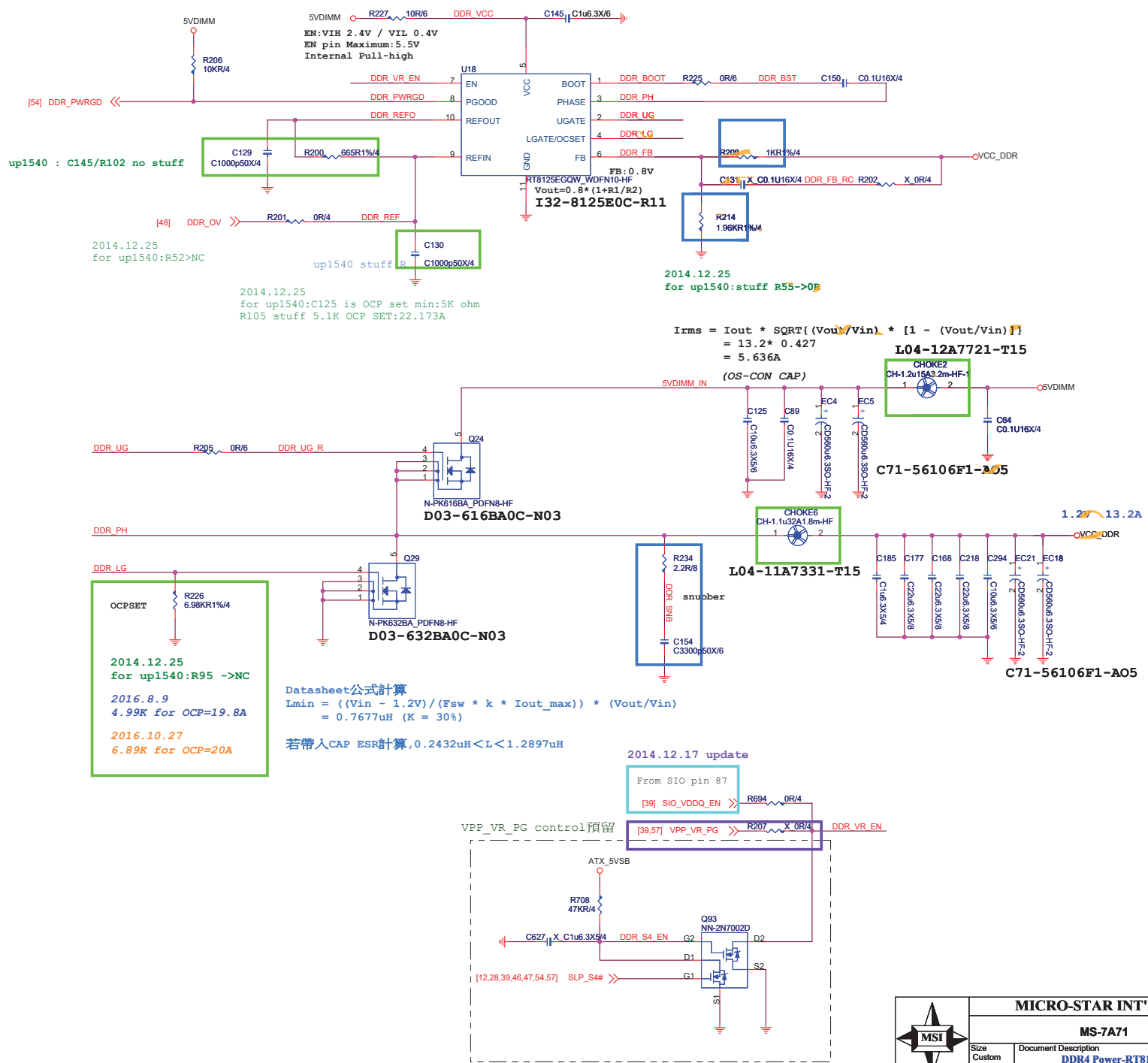


DDR4\_1.2V 2.5A+9.5A+1.2A=13.2A  
 2.5A FOR CPU  
 9.5A FOR 4DIMM  
 1.2A FOR DDR VTT

$OCP = 13.2A * 1.5 = 19.8A$   
 $Rocs(R3) = OCP * Rdson(Low side) / 2 / 10uA$   
 $= 19.8A * (4.6/2)mohm / 10uA$   
 $= 4.95Kohm < 5K ohm$

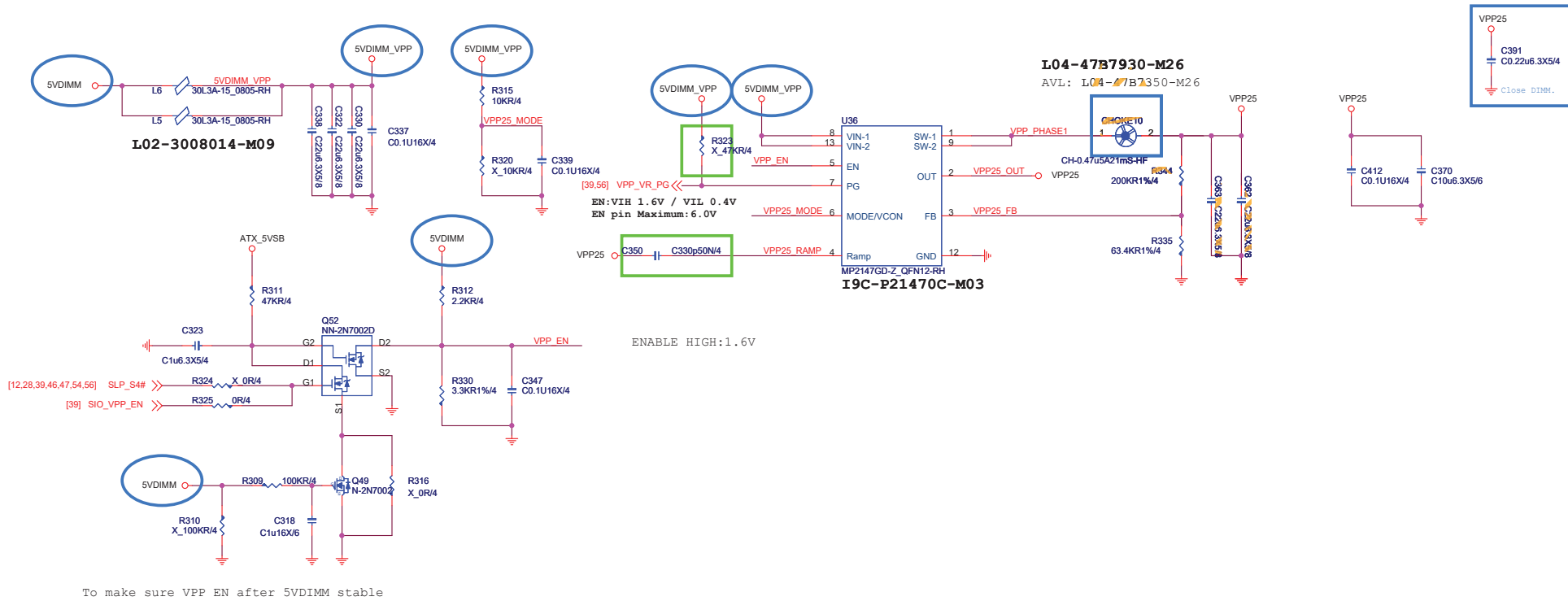
Rocpset: 4.3K  
 $OCP = Rocset * Rdson(Low side) / 10uA$   
 $= 4.75K * 4.6mohm / 10uA$   
 $= 21.85A$

Rdson(low) 4.5V  
 D03-4C05N03-005 : 5 mohm  
 D03-632BA0C-N03 : 4.6mohm  
 D03-3056M00-U47 : 6.2mohm

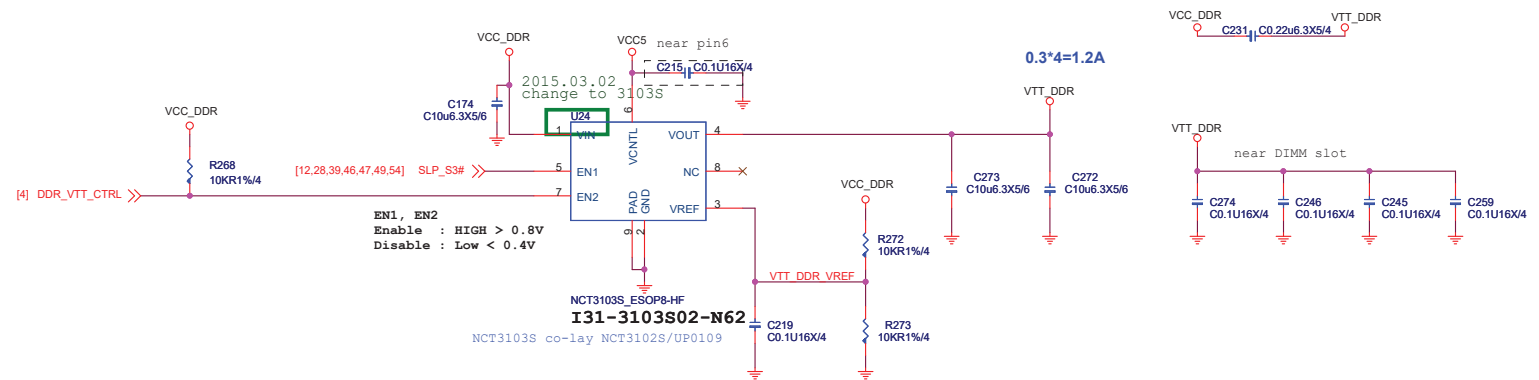


4DIMM :2.24A FOR DDR VPP2.5V

**VPP25 Power**  
2.5V; 2.24A



### DDR VTT Power



**MICRO-STAR INT'L CO.,LTD**

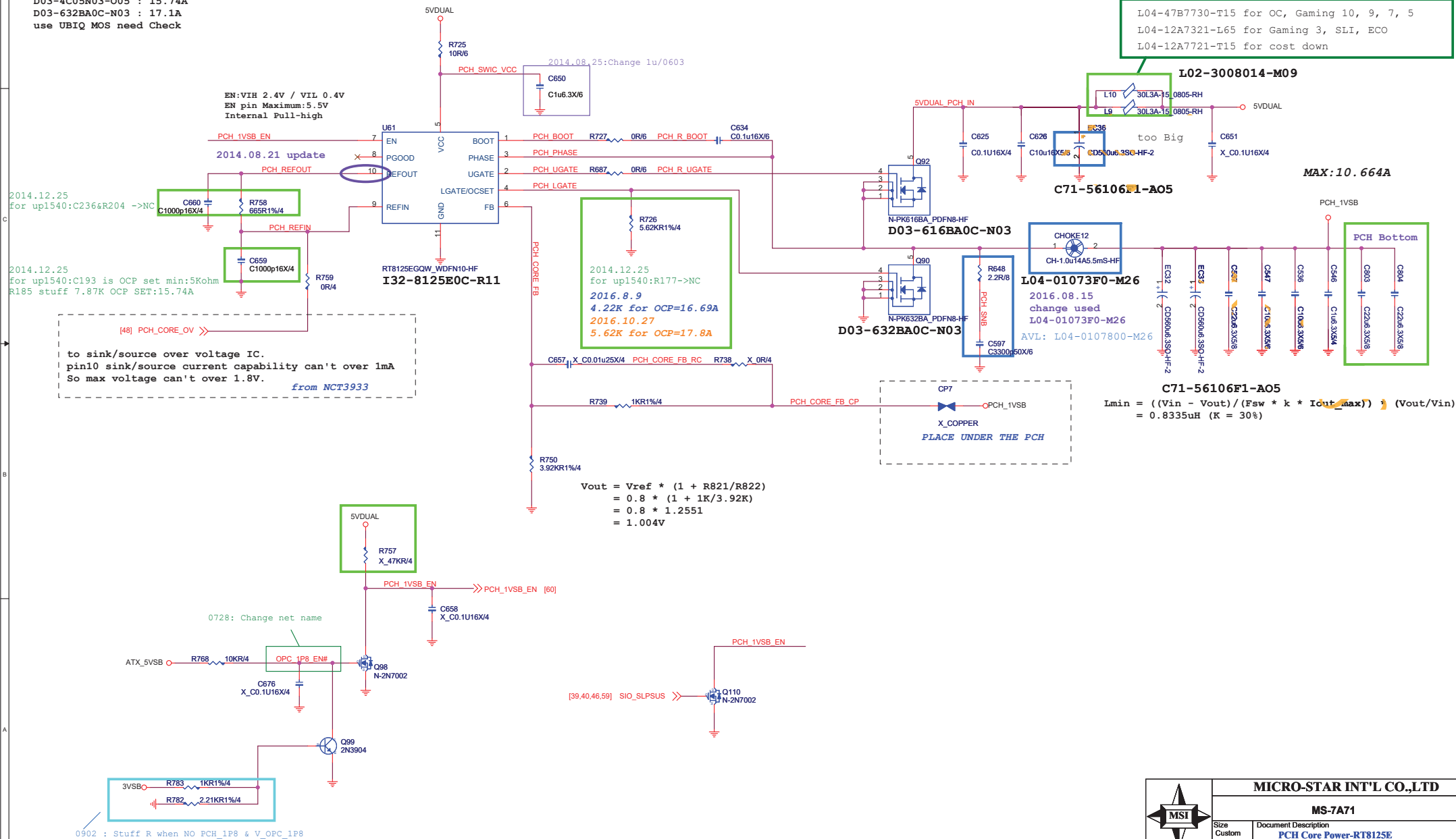
MS-7A71

|                                |                                                 |            |
|--------------------------------|-------------------------------------------------|------------|
| Size<br>Custom                 | Document Description<br><b>DDR4 Power-VPP25</b> | Rev<br>1.2 |
| Date: Friday, October 28, 2016 | Sheet 57 of 65                                  |            |

1.0V; 11A

Rocs:7.87K,OCP:  
D03-4C05N03-O05 : 15.74A  
D03-632BA0C-N03 : 17.1A  
use UBIQ MOS need Check

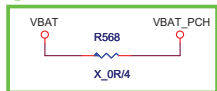
```
Rdson(low side mosfet) 4.5V
D03-3116M00-U47 : 3.6 mohm
D03-632BA0C-N03 : 4.6mohm
D03-3056M00-U47 : 6.2mohm
```



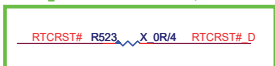


20160505

Co-Lay NOT U18 , Stuff R260



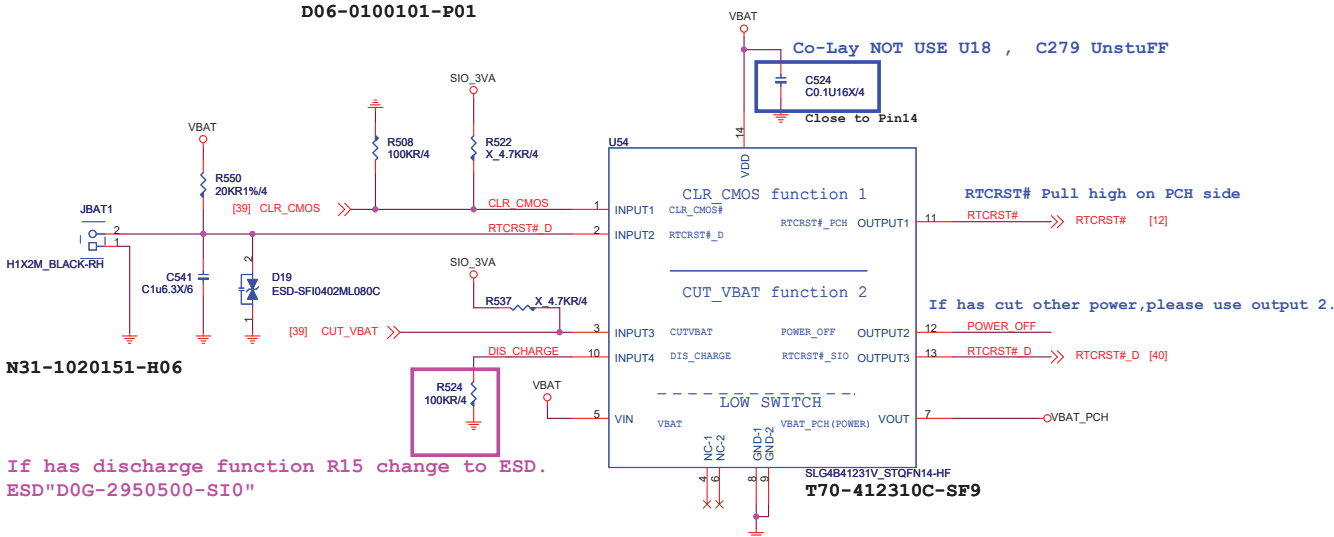
Co-Lay NOT USE U1 , R20 STUFF



N91-01F0151-L06

BAT1 BCR2032P-RH  
D06-0100101-P01

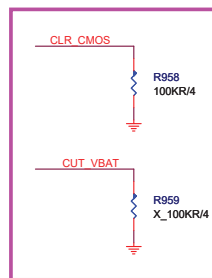
Co-Lay NOT USE U18 , C279 Unstuff



N31-1020151-H06

If has discharge function R15 change to ESD.  
ESD"D0G-2950500-SI0"

20160629



| Function 1 |        |         |
|------------|--------|---------|
| IN         |        | OUT     |
| INPUT1     | INPUT2 | OUTPUT1 |
| 0          | 1      | 1       |
| 1          | 0      | 0       |
| 1          | 1      | 0       |
| 0          | 0      | 0       |

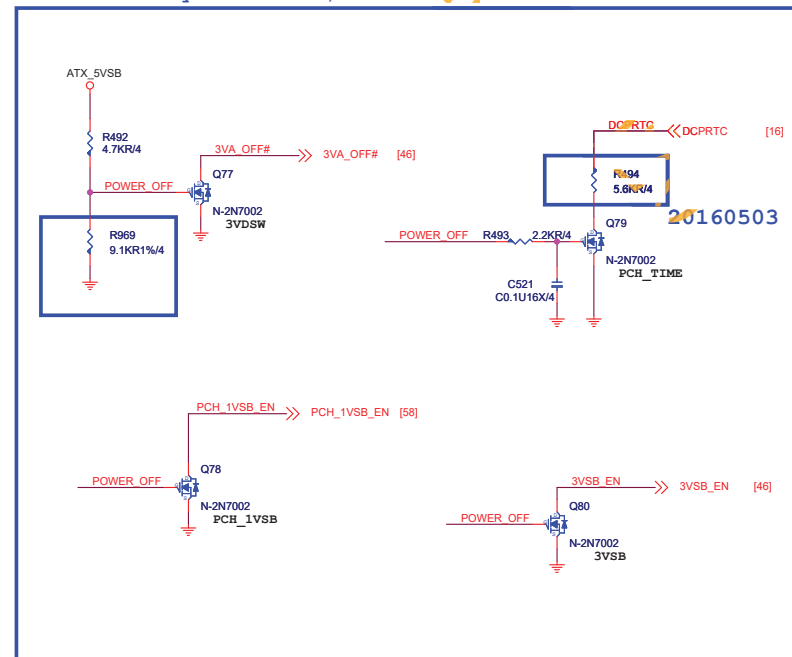
Default

| Function 2            |        |         |         |               |
|-----------------------|--------|---------|---------|---------------|
| IN                    |        | OUT     |         |               |
| INPUT3 & lowswitch EN | INPUT4 | OUTPUT2 | OUTPUT3 | VOUT          |
| 0                     | 0      | 0       | 1       | 1             |
| 1                     | 0      | 1       | 1       | 0 (discharge) |
| 0                     | 1      | 1       | 0       | 0 (discharge) |
| 1                     | 1      | 1       | 0       | 0 (discharge) |

Default

If STUFF R20 Please Check RTCRST# Double Pull High

Co-Lay NOT USE U1 , ALL UNSTUFF



MICRO-STAR INT'L CO.,LTD

MS-7A71

| Size   | Document Description       | Rev            |
|--------|----------------------------|----------------|
| Custom | Clear CMOS SLG4841231V     | 1.2            |
| Date:  | Thursday, October 27, 2016 | Sheet 60 of 65 |

## PCB



7A71\_1.1

PK0-07A7111-E48

PK0-07A7111-E48, 競華, 23, 寶安恩斯邁廠 (MSIS)

PK0-07A7111-G37, 精成-深圳, 23, 寶安恩斯邁廠 (MSIS)

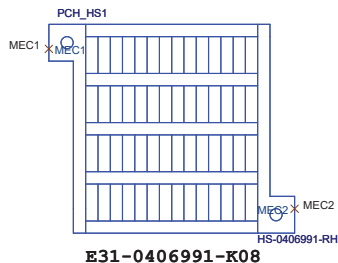
## CPU Socket metal sheet

CPU\_H1

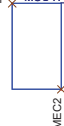


CPU\_H1 (PT44A34-641C)

E21-7869020-F02



MEC1 MOS-H HS1

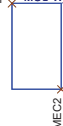


HS-0504200-HF

X\_HS-0504200-HF

E31-0504200-K08

MEC1 MOS-W HS1

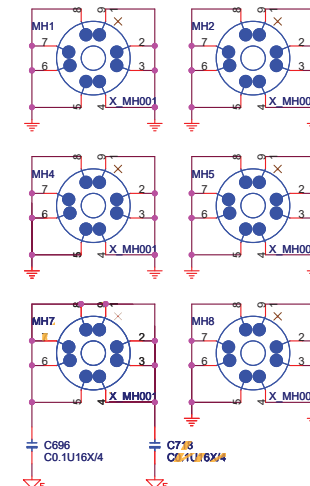


HS-0504220-HF

X\_HS-0504220-HF

E31-0504220-K08

## Mounting Holes



## BIOS Label

AMI\_LABEL



BIOS\_LABEL

G51-M1SPXXA-A09

## USB3.1 Label

LAB1E1



X\_USB3.1

G51-M1SPG42-Q13

## MARKET Label 1

Channel  
Z270-A PRO

MKT\_LABEL1



MKT\_Channel\_Z270-A PRO

G51-M1SPK62-Q13

## MARKET Label 2

MCJ  
Z270-S01

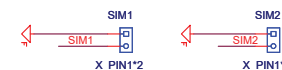
MKT\_LABEL2



MKT\_MCJ\_Z270-S01

G51-M1SPK63-Q13

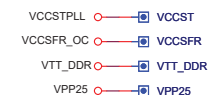
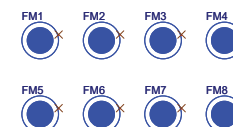
## Simulation



## Test point



## Optical Fiducial Marks-120

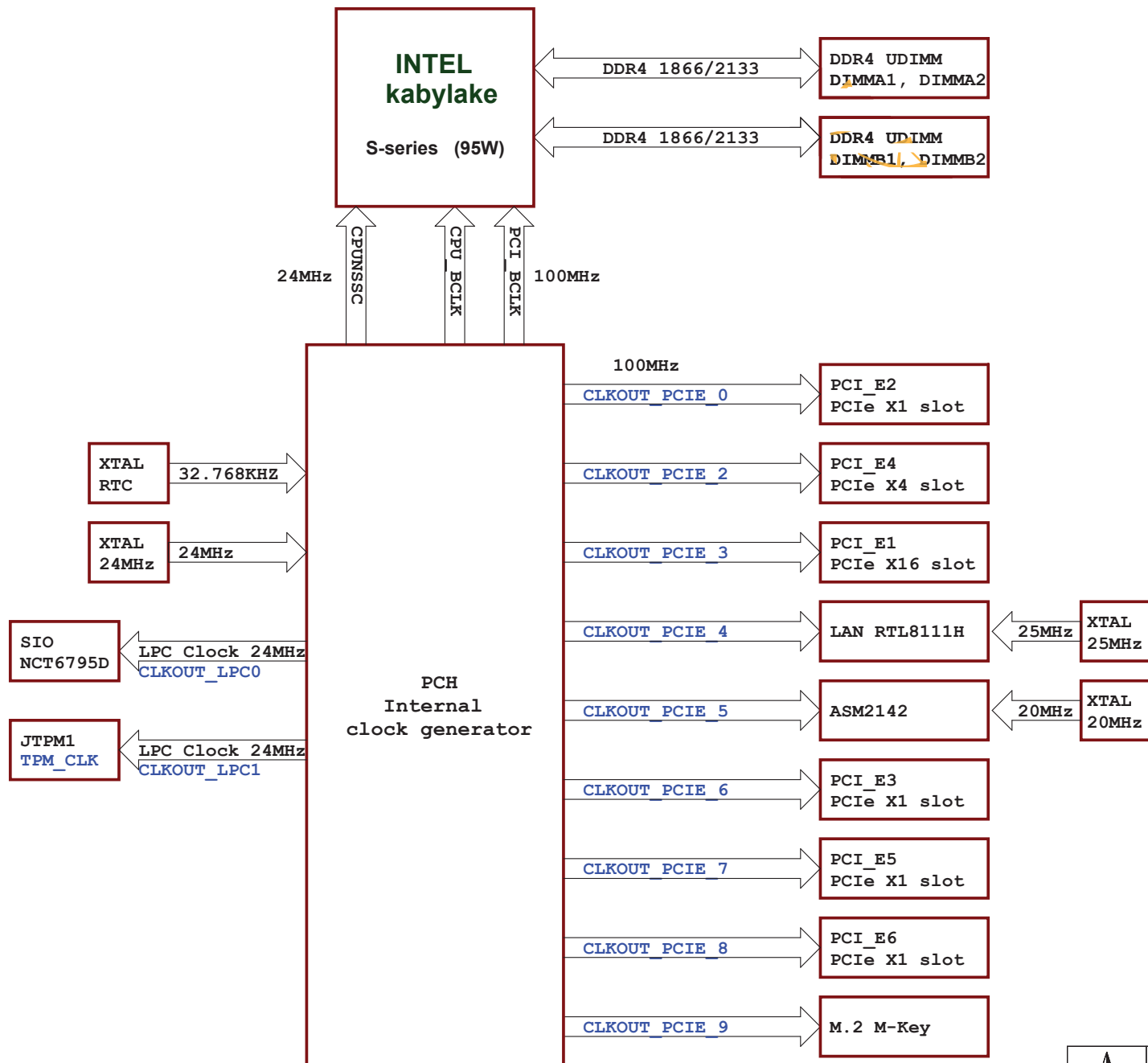


MICRO-STAR INT'L CO.,LTD

MS-7A71

|                                |                                      |            |
|--------------------------------|--------------------------------------|------------|
| Size<br>Custom                 | Document Description<br>Manual parts | Rev<br>1.2 |
| Date: Monday, October 31, 2016 | Sheet 61 of 65                       |            |

# CLOCK MAP



MICRO-STAR INT'L CO.,LTD

MS-7A71

|                                  |                                   |            |
|----------------------------------|-----------------------------------|------------|
| Size<br>Custom                   | Document Description<br>CLOCK MAP | Rev<br>1.1 |
| Date: Thursday, October 27, 2016 | Sheet 62 of 65                    |            |

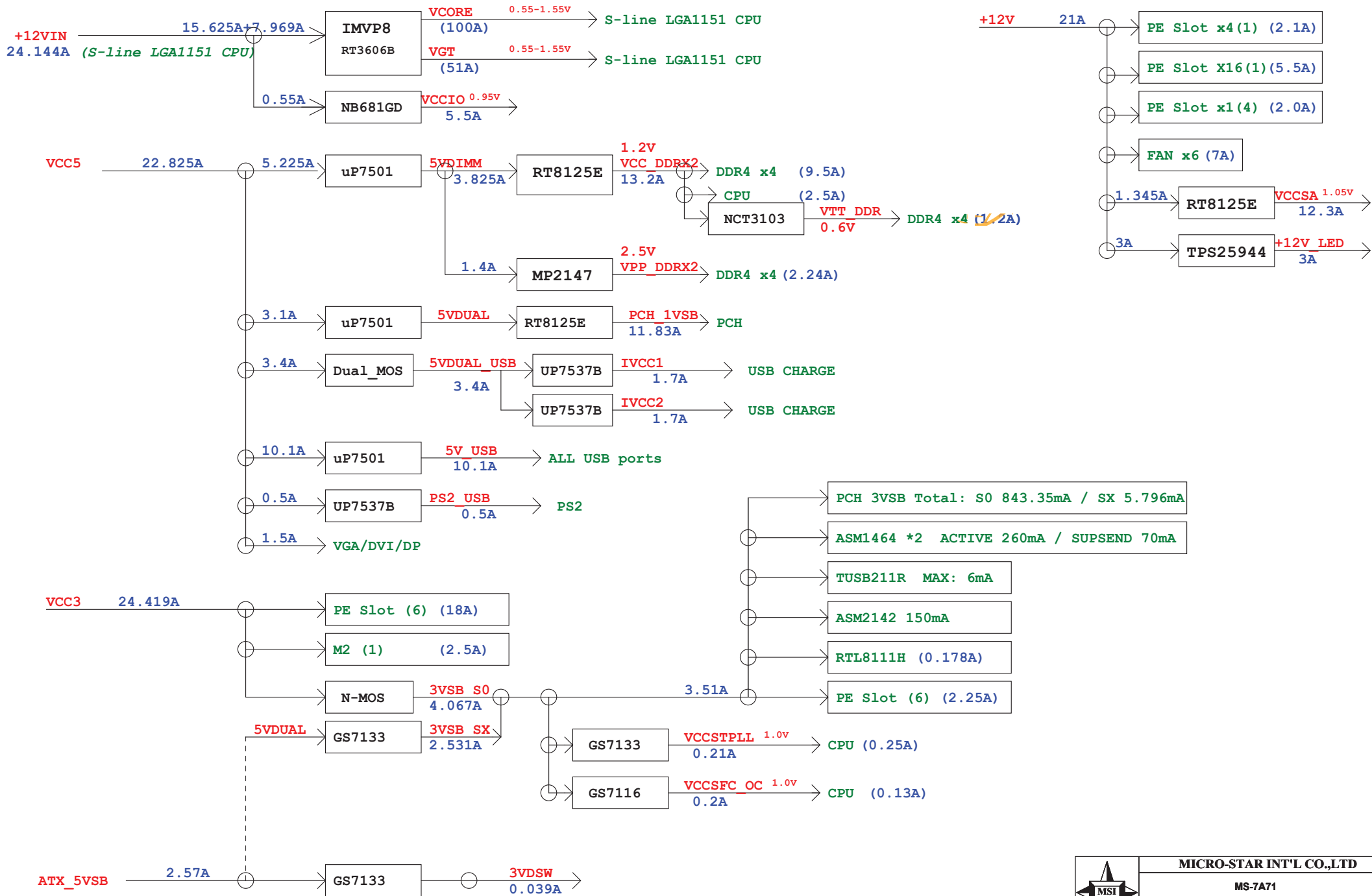
ALL GPIO SUPPORT SCI

| GPP_XX     | DEFUALT | NMI/SMI |
|------------|---------|---------|
| GPP_B14    | GPO     | Y       |
| GPP_B20    | GPI     | Y       |
| GPP_B23    | GPO     | Y       |
| GPP_C22~23 | GPI     | Y       |
| GPP_D0~4   | GPI     | Y       |
| GPP_E0~8   | GPI     | Y       |
| GPP_I0~3   | GPI     | Y       |

| 1.8V or 3.3V |
|--------------|
| GPP_A0~A23   |
| GPP_B0~B23   |
| GPP_C0~C23   |
| GPP_D0~D23   |
| GPP_E0~E12   |
| GPP_F0~F23   |
| GPP_G0~G23   |
| GPP_H0~H23   |

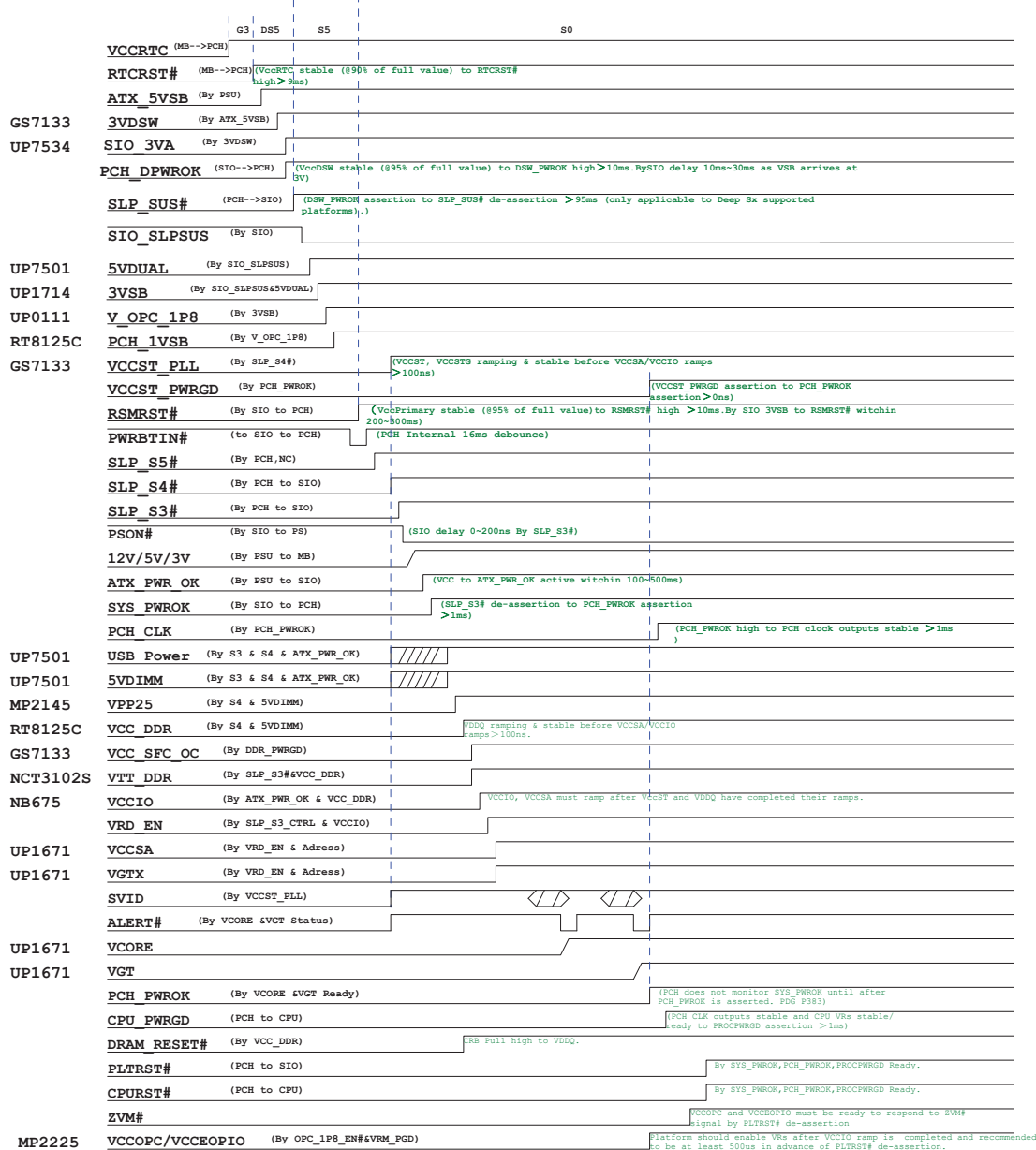
| 3.3V       |
|------------|
| GPP_I0~I10 |
| GPD0~11    |

# Power Delivery

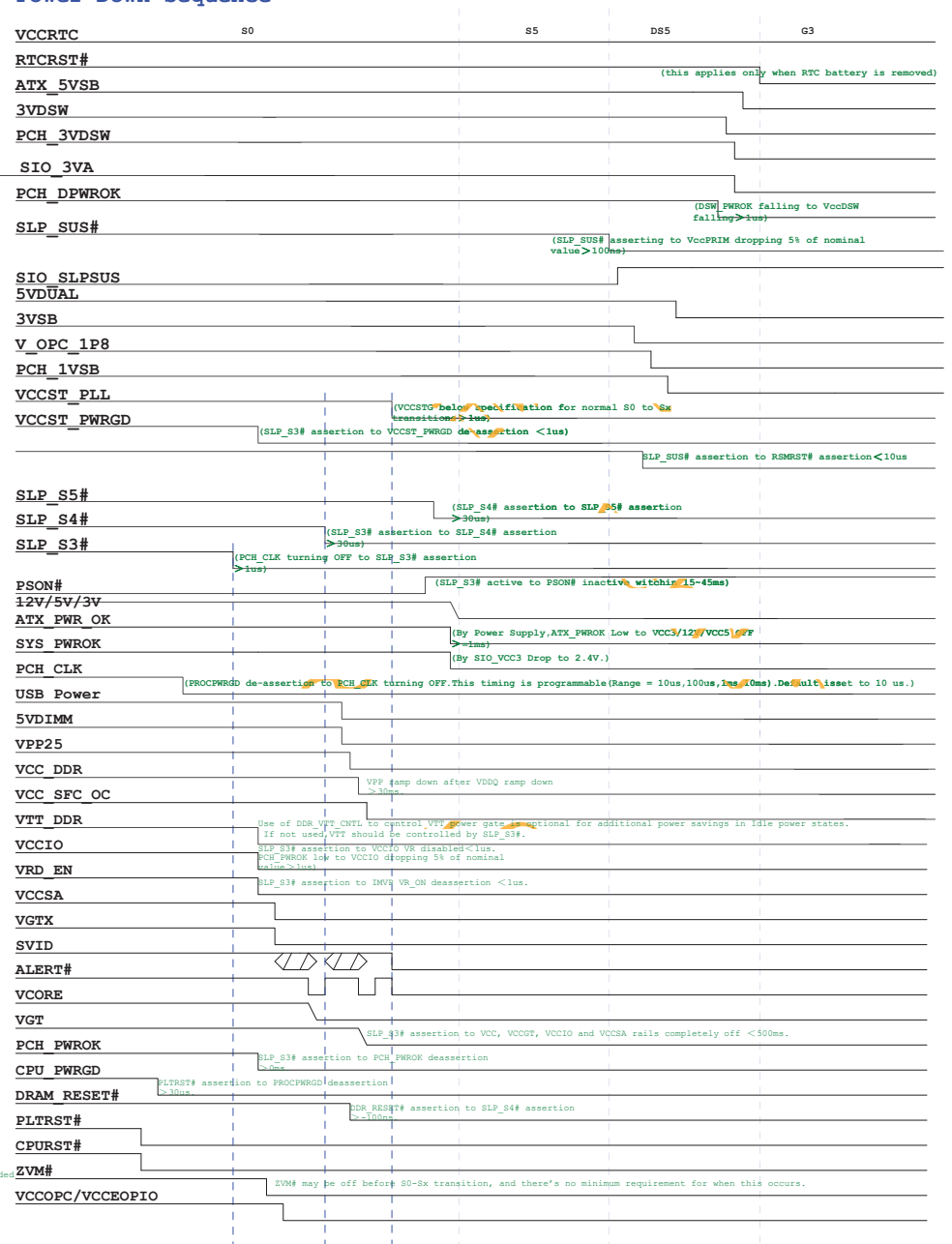


| MICRO-STAR INT'L CO.,LTD         |                                |         |
|----------------------------------|--------------------------------|---------|
| MS-7A71                          |                                |         |
| Size Custom                      | Document Description POWER MAP | Rev 1.1 |
| Date: Tuesday, November 01, 2016 | Sheet 64 of 65                 |         |

## Power On Sequence



## Power Down Sequence



MS-7A71 Revision History List

| Ver.                      | DATE                                             | Schematic Change List                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                      |
|---------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 0A                        | 2016.7.26<br>2016.9.8                            | MS-7A71 base-on MS-7A72-0A<br>MS-7A71-0A don't gerber out                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                      |
| 1.0                       | 2016.9.8<br>2016.9.13<br>2016.9.14               | MS-7A71-10 Gerber out.<br>No generation 7A71-1.0 NEW BOM, and revision                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                      |
| 1.1<br><br>(001)<br>(002) | 2016.9.19<br>2016.9.22<br>2016.9.23<br>2016.9.30 | SCH : LAN change used RTL8111H<br>MS-7A71-1.1 Gerber out.<br>Create 7A71-1.1 NEW BOM ( 01S, 02S, 03S )<br>BOM : JLED_OCP1 issue remove JLED_OCP1, Q123, R849, R965<br>BOM : +12VIN OCP set 21A, R10 change used 8.2KR1%0402<br>BOM : RT3603 LL disable remove<br>C75, C80, C88, C94, C100, C118, Q22, Q23, R107, R125, R134, R183<br>BOM : Remove R606 and add R658 10KR0402 for 03S ASM2142 new BIOS.                                                                                                                                                                                                                                                                                                                                                                                                                                            | Page. 36<br><br><br><br>Page. 41<br>Page. 52<br>Page. 49                                                             |
| (003)                     | 2016.10.11                                       | BOM : Add MOS heatsink MOS-H_HS1 E31-0504200-K08 and MOS-W_HS1 E31-0504220-K08<br>BOM : Add MKT Label G51-M1SPK62-Q13 for 01S and G51-M1SPK63-Q13 for 02S<br>BOM : 01S remove bottom LED function. Parts remove D35,D36,D37,D38,D39,D41,<br>D55,D56,Q118,Q119,Q120,Q122,R902,R903,R904,R905,R906,R907,R910,R911<br>BOM : 01S & 02S remove DIMM LED function. Parts remove D3,D4,D5,D6,<br>DIMM_LEA1,DIMM_LEA2,DIMM_LEA3,DIMM_LEA4,Q3,Q7,Q8,Q12,R39,R40,R41,R42<br>BOM : 01S & 02S remove PCIe LED function. Parts remove<br>PCIE2_LED R2,PCIE2_LED W1,PCIE4_LED4,Q72,Q73,Q88,R434,R435,R678<br>BOM : U58 P/N change used B02-6795D04-N62 and R609 change used R11-7681T12-W08<br>BOM : UU5 P/N change used B02-021421C-AD0<br>BOM: 80 port E18 issue, PCH PLL power<br>C491,C498 change used C11-2267313-T04 and C492 change used C11-1067313-W08 | Page. 12<br>Page. 61<br><br>Page. 41<br><br>Page. 42<br><br>Page. 42                                                 |
| (004)                     | 2016.10.12                                       | BOM : D64, D65 change used D0G-45B0510-I14<br>and add AVL D0G-0200529-A68, D0G-05A0529-A68<br>BOM : D12,D13,D66,D67,D69,D70,D71,DL1,DL2,U23,U28,U41,U43,U49,U50,U30,U32<br>change used D0G-06A030C-A68 and add AVL D0G-05A0300-I14, D0G-45B031C-O05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Page. 39<br>Page. 34<br>Page. 16                                                                                     |
| 1.2                       | 2016.10.24                                       | SCH : DP no display issue the net swap TX0 and TX2 of CPU side.<br>SCH : Audio issue LA1 source change to ATX_5VSB<br>SCH : UA1 pin9 , CA42, CA43 power change to 3VSB<br>SCH : M2_1 PCIe and SATA mode detect add R977 0R0402 link to GPP_A18<br>SCH : RT3606 LL disable circuit modify the add Q127, C806, C807<br>JLED<br>SCH : Delete circuit LOCP_FLTD# Q123, R965 and<br>SCH : Delete JLED_OCP1 LED and the R849 change used 100KR0402 link to LOCP_FLT#.<br>SCH : C746 change used C1u16X0603<br>SCH : Add LED default red color circuit the add R971, R972, R973, R974, R975, R976                                                                                                                                                                                                                                                        | Page. 5<br>Page. 37<br><br>Page. 15,25<br>Page. 49<br>Page. 41                                                       |
|                           | 2016.10.27                                       | BOM : 02S add R883 for JTURBO1 OC switch<br>BOM : 02S add Q84 and remove JEXT_TR1<br>BOM : 01S, 02S footprint size issue the F3 change used D08-2000400-P16<br>[Power solution BOM modify]<br>VCORE: R182, R181, R179 change to 910 ohm for RC match<br>Remove R171, R169, R180 to NC for IMON<br>R133 to 12K, R148 change to 5.1K, R124 to 10.7K for IMON<br>loadline R153 Change to 24.3k<br>VCCGT: R78, R79 Change to 1K for RC match<br>R116 Change to 31.6K for IMON<br>PCH: R726 change to 5.62K for OCP 17.8A<br>DDR: R226 change to 6.98K for OCP 20A                                                                                                                                                                                                                                                                                     | Page. 15<br>Page. 14<br>Page. 28<br><br>Page. 50<br><br>Page. 49<br><br>Page. 49<br>Page. 51<br>Page. 58<br>Page. 56 |

| Ver. | DATE | Schematic Change List |  |
|------|------|-----------------------|--|
|      |      |                       |  |
|      |      |                       |  |

MS-7A71 BOM List

| Schematic Cfg  | ERP NO.      | Remark                       |
|----------------|--------------|------------------------------|
| CFG-7A71Z-0A   | NA           | Do not gerber-out            |
| CFG-7A71Z-10   | NA           | Z270 for channel             |
| CFG-7A71Z-11   | 601-7A71-01S | Z270 for channel             |
| CFG-7A71Z-MCJ  | 601-7A71-02S | OPT:A Z270-S for MCJ         |
| CFG-7A71Z-FULL | 601-7A71-03S | OPT:B Z270 for full function |
| CFG-7A71Z-12   | NA           | Z270-Profor channel          |

