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# MS-7817

Version : 61

mATX 174mm x 231mm

## Intel Sharkbay plamform H81

**CPU:**

INTEL-Haswell LGA1150

**System Chipset:**

H81

**Memory:**

DDRIII (1333/1666MHz) \* 2 (Dual Channel)

**PWM:**

VRD12 - ISL95812

**OnBoard Chipset:**

HD Audio Codec:ALC887

LAN-realtek8111G

SIO:NUVOTON 5533D

SPI ROM: 64 MB

**Expansion Slots:**

PCI Express (X16) Slot \* 1

PCI Express (X1) Slot \* 3

**Other:**

DVI\*1

VGA\*1

Display port\*1


SATA2\*2

SATA3\*2

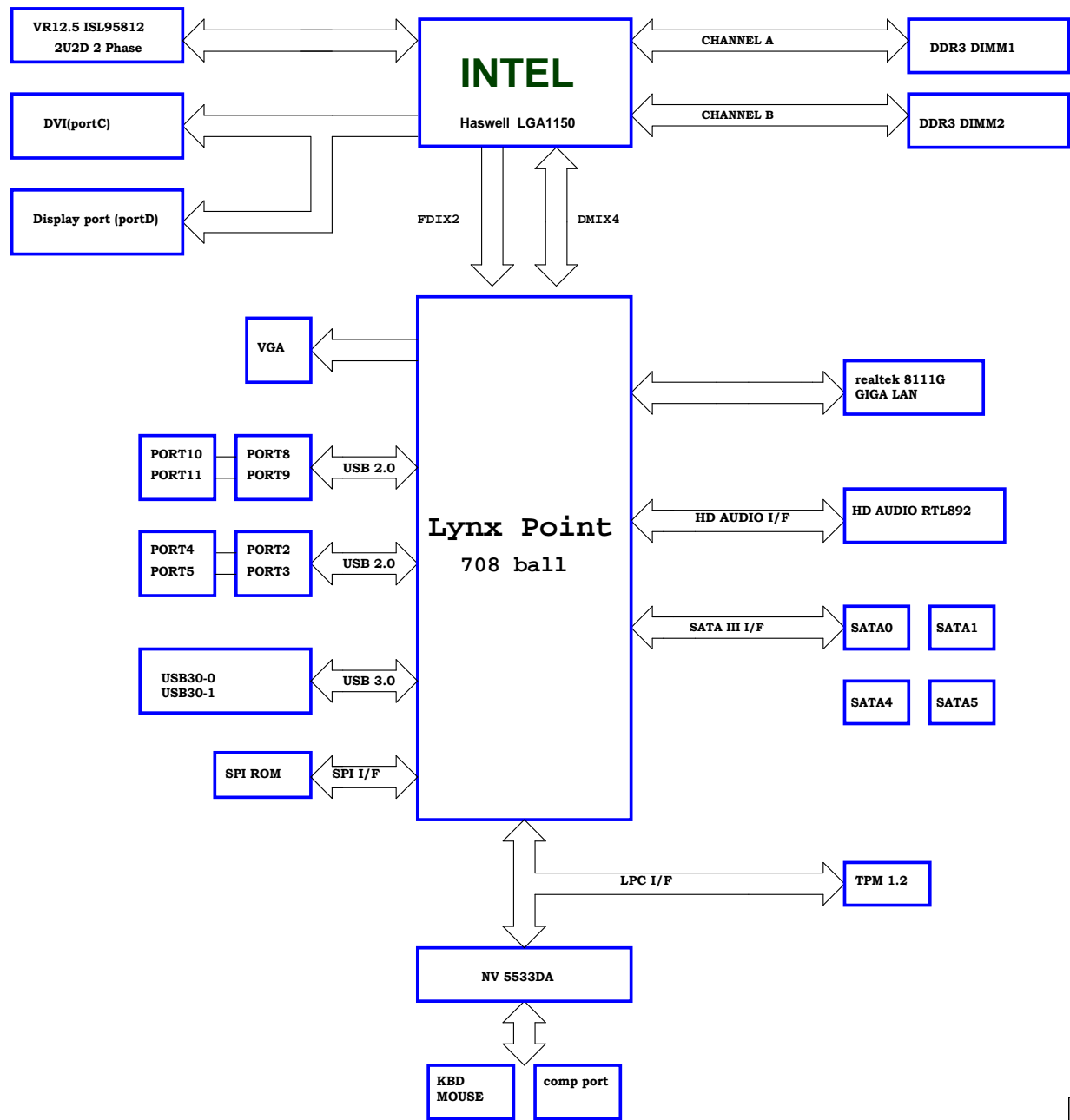
FRONT USB2.0 \*4

FRONT USB3.0 \*2

REAL USB2.0 \*4

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	MS-7817		
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MS-7817 Block Diagram










GND

GND

N12-150A010-L06



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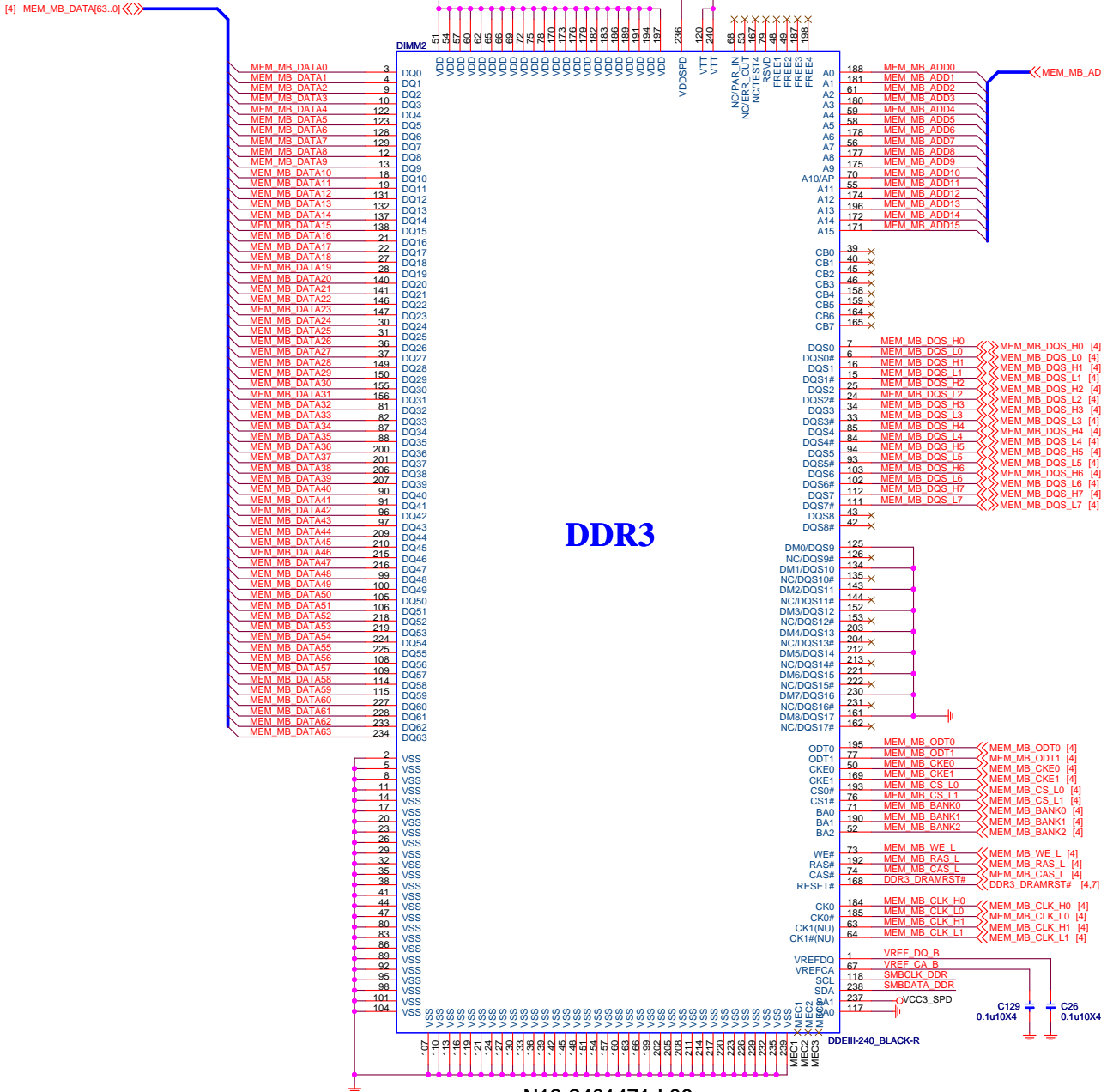
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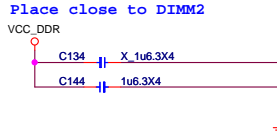


## DDRIII DIMM B0

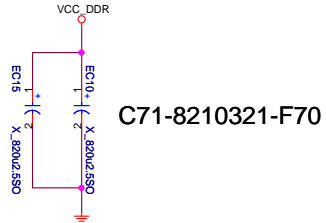
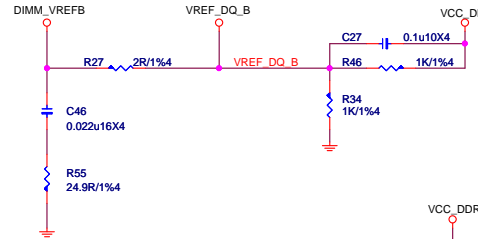
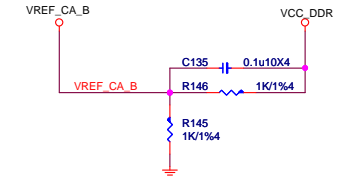
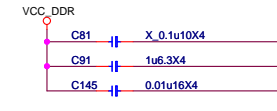


# DDR3

N13-2401471-L06



Place close to DIMM2



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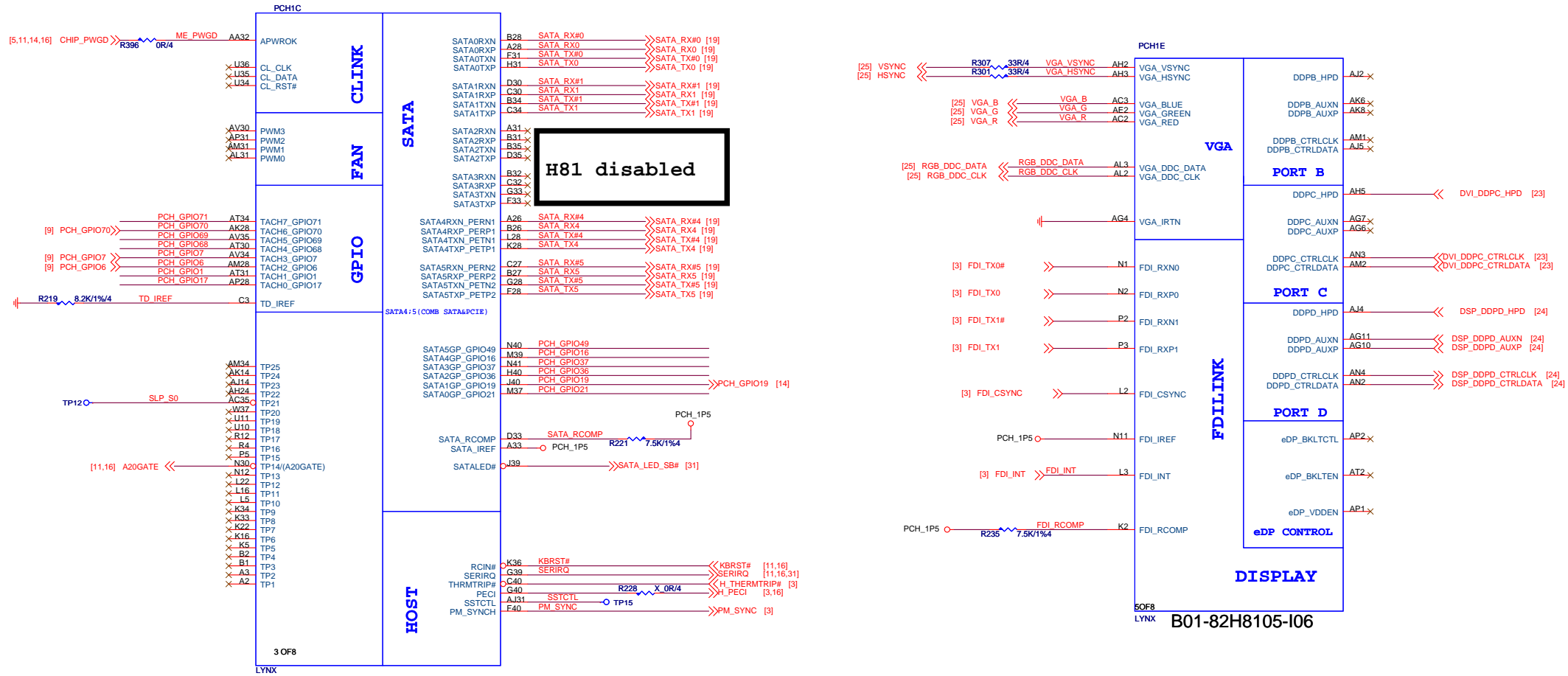
Size Custom	Document Description <b>DDR3 Chanel-B DIMM2</b>	Rev 61
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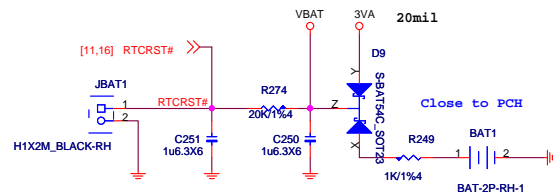
```
pcie port7,8 NA
```



SATA ports 2 and 3 are disabled on 4 port SKUs.  
SATA 6 Gb/s support on ports 0 and 1 only.

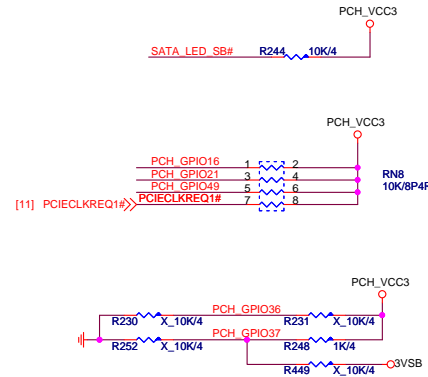
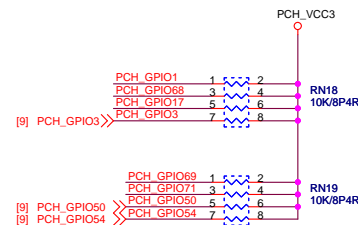


### RTC and CLR CMOS

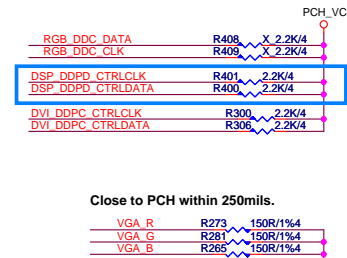


N31-1020151-H06

N91-01F0151-L06



### Enable VGA( CTRLCLK/DATA Pull High)



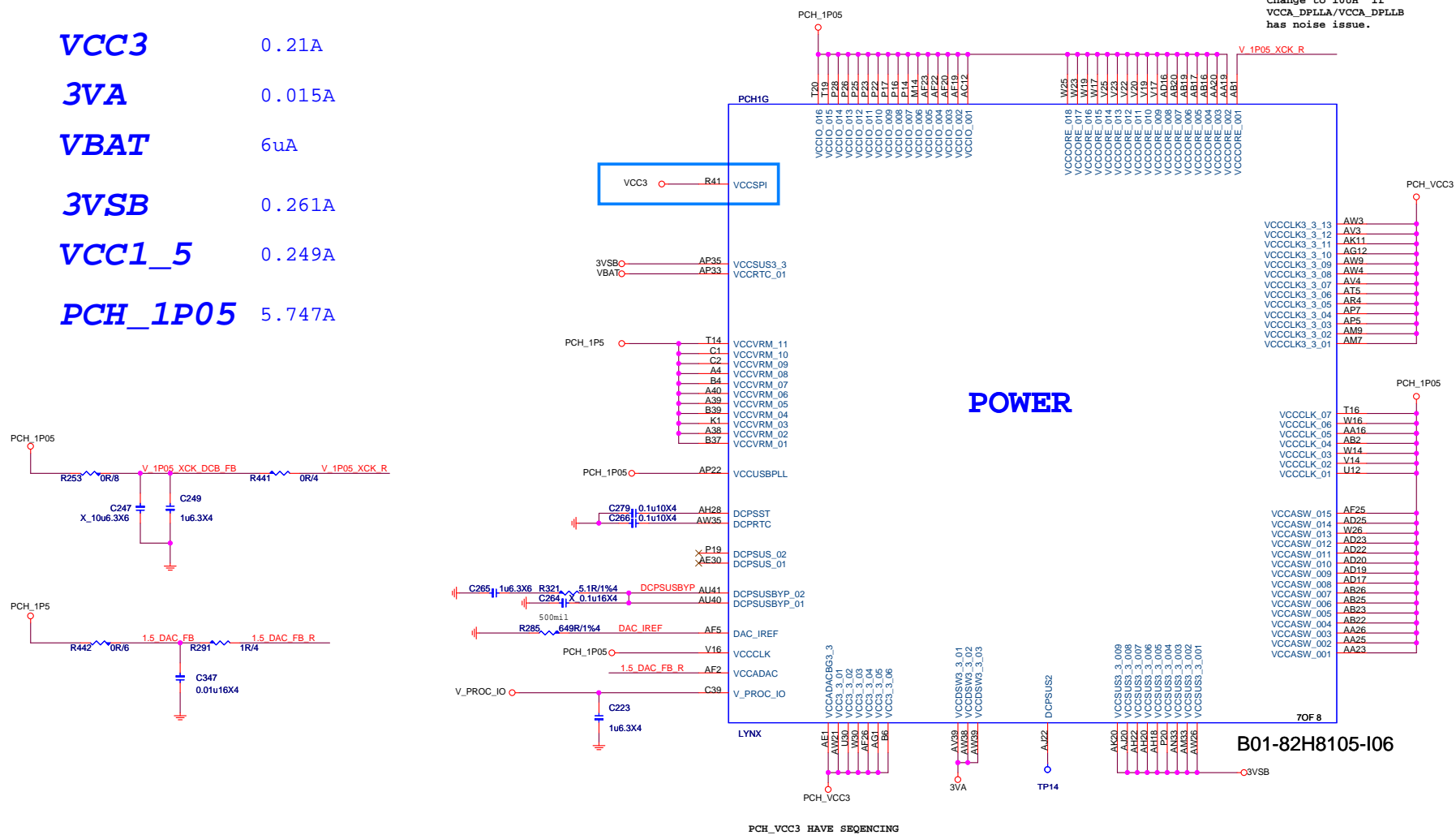
MICRO-STAR INT'L CO.,LTD

MS-7817

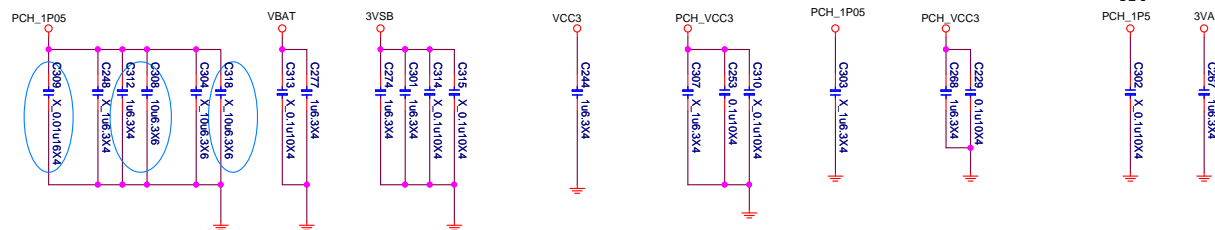
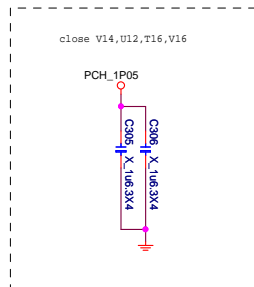
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<b><i>VCC3</i></b>	0.21A
<b><i>3VA</i></b>	0.015A
<b><i>VBAT</i></b>	6uA
<b><i>3VSB</i></b>	0.261A
<b><i>VCC1_5</i></b>	0.249A
<b><i>PCH_1P05</i></b>	5.747A



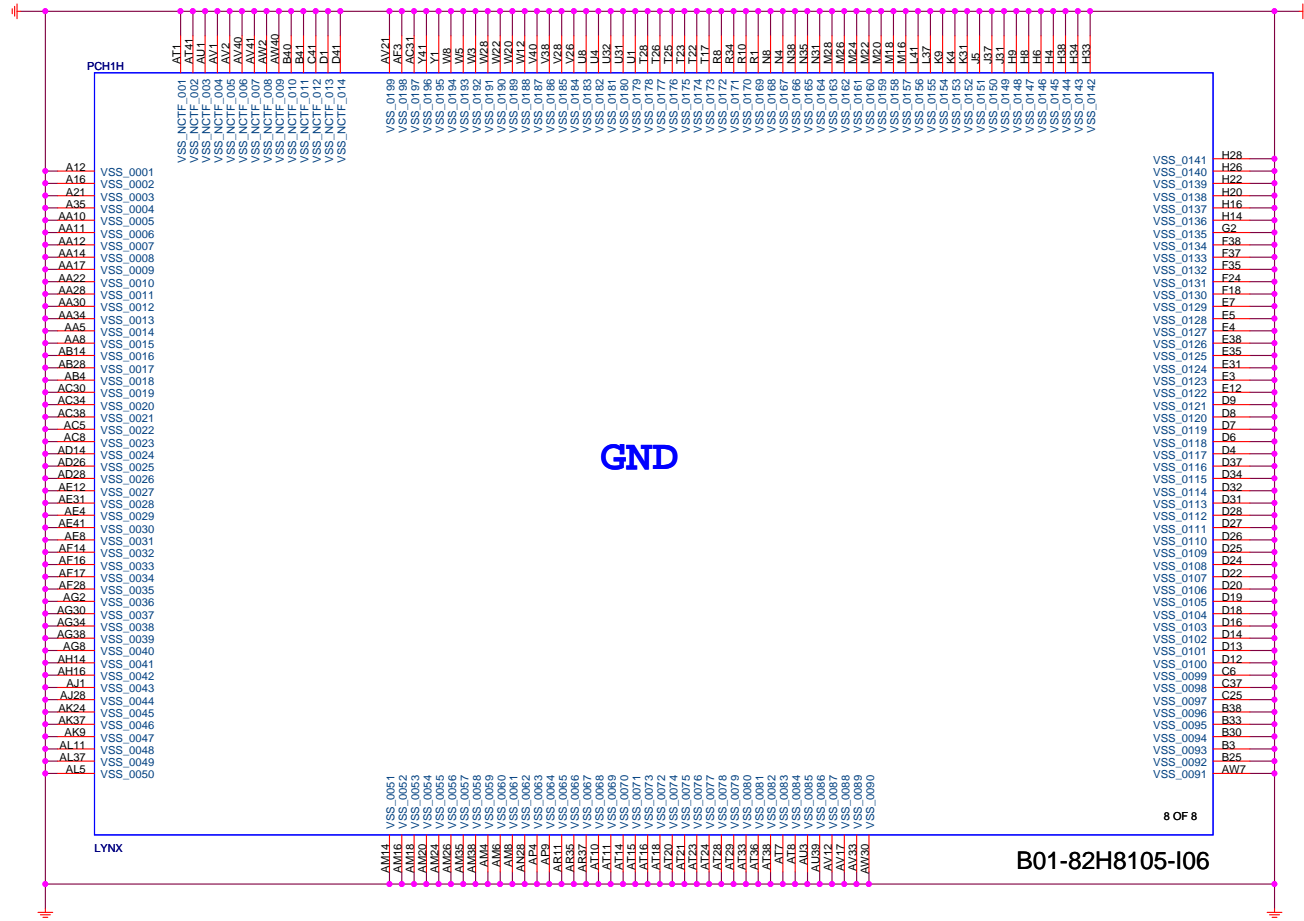
PCH decoupling cap



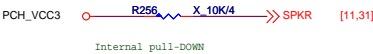
**MICRO-STAR INT'L CO.,LTD**

**MS-7817**

Size Custom	Document Description <b>LYNX -POWER PIN</b>	Rev 61
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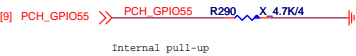


PCH Straps



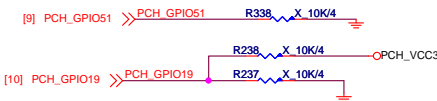
SPKR

Default Mode:  
Internal weak Pull-down.  
No Reboot Mode with TCO Disabled:  
Connect to Vcc3\_3 with 8.2k-10k Ohm weak pullup resistor.



GPIO55

Default Mode:  
Internal pull-up.  
Top Block Swap Mode:  
Connect to ground with 4.7k Ohm weak pulldown resistor.



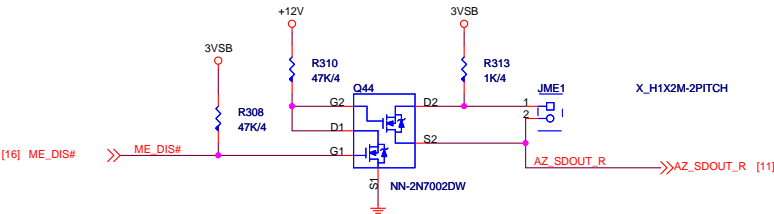
SATA1GF/GPIO19, GPIO51

Default (SPI):  
Left both SATA1GF/GPIO19 and GPIO51 floating.  
No pull up required.  
Boot from PCI:  
Connect SATA1GF/GPIO19 to ground with 1k Ohm pull-down resistor.  
Leave GPIO51 Floating.  
Boot from LPC:  
Connect both SATA1GF/GPIO19 and GPIO51 to ground with 1k Ohm pull-down resistor.



GPIO53

Do not pull low.  
Connect to ground with 1k Ohm pull-down resistor.



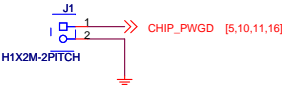
HDA\_SDO

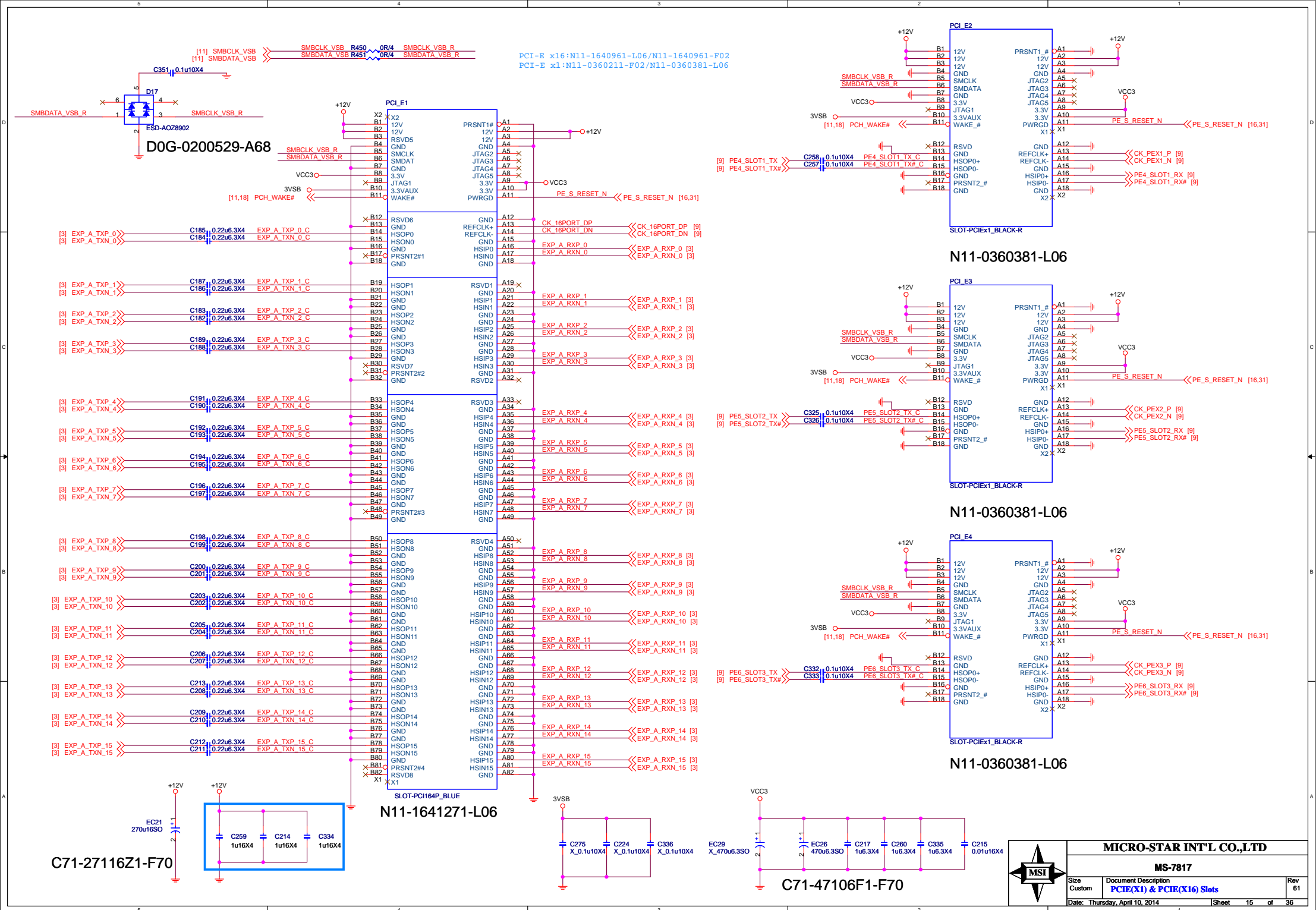
Default:  
Do not pull high.  
Disable ME in Manufacturing Mode:  
Connect to VccSusHDA with 1k Ohm pull-up resistor through a jumper.

GPIO37

Enable TLS:  
Pull up with 1k Ohm to VccSus3.3.  
Default (Disable TLS):  
Leave NC. Internal pull down.

For test cpu voltage

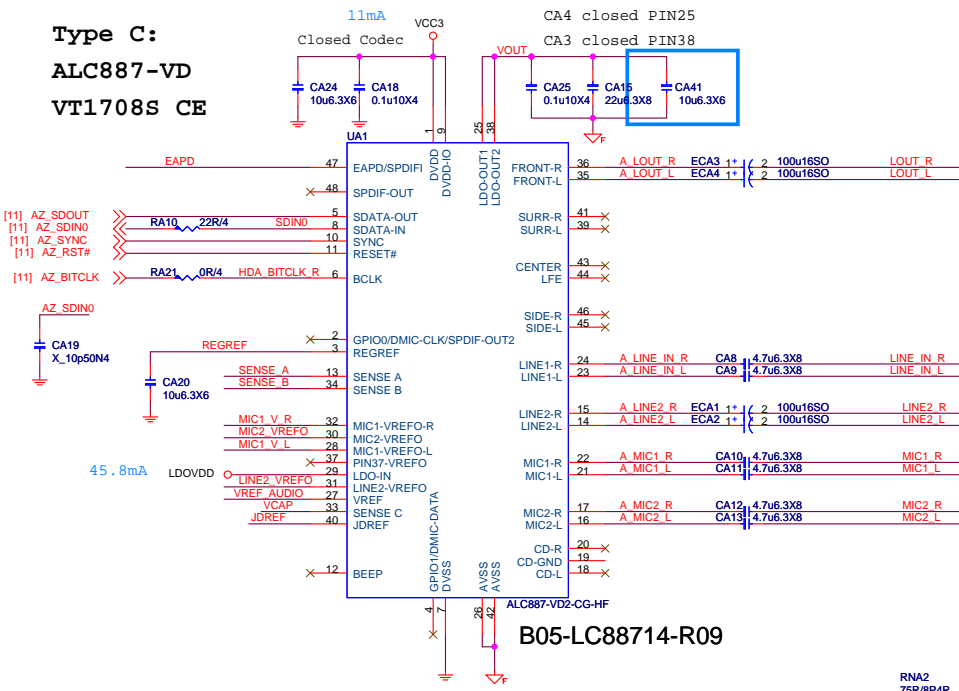




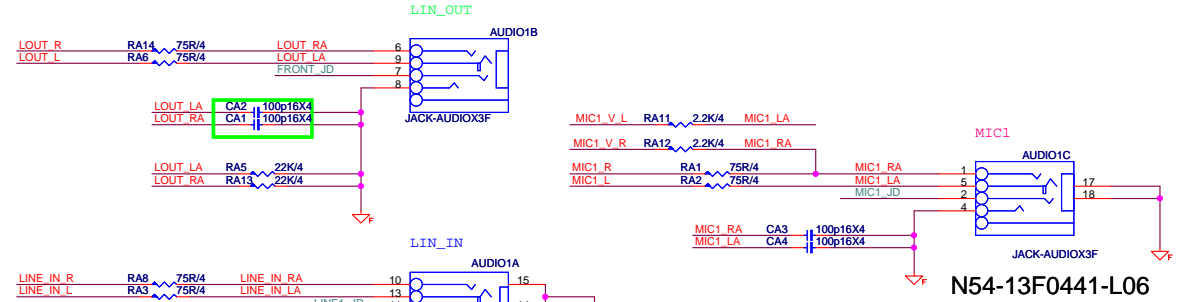
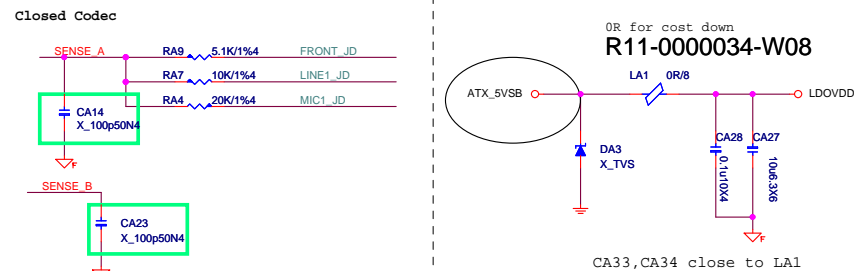
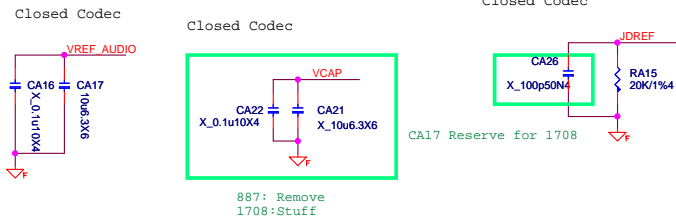




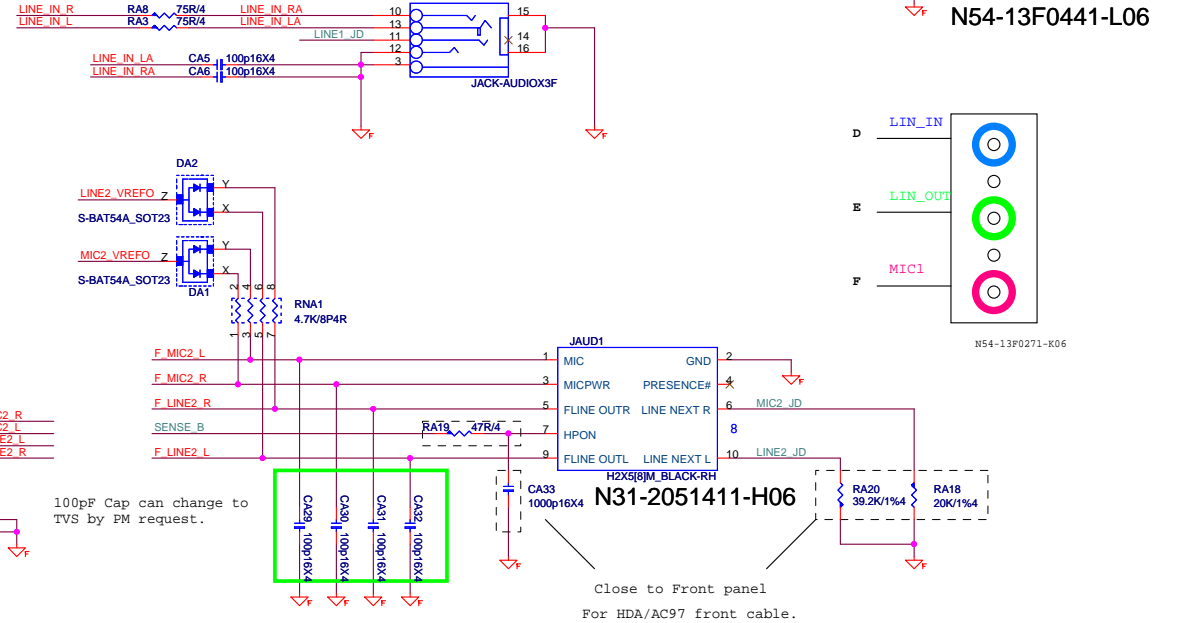
**Type C:**  
**ALC887-VD**  
**VT1708S CE**



**B05-LC88714-R09**



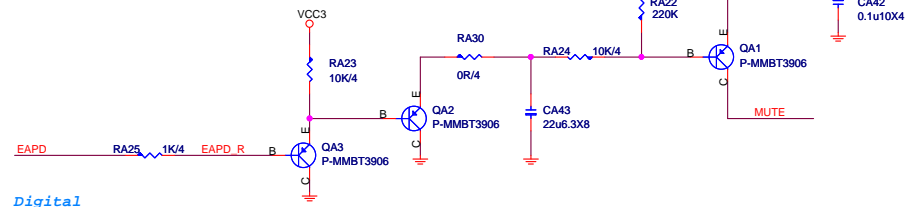
**N54-13F0441-L06**



**N31-2051411-H06**

**Rear Line OUT De-POP circuit**

(reserve de-pop circuit for Rear Line out & Front Headphone out)



**Digital**

**Analog**

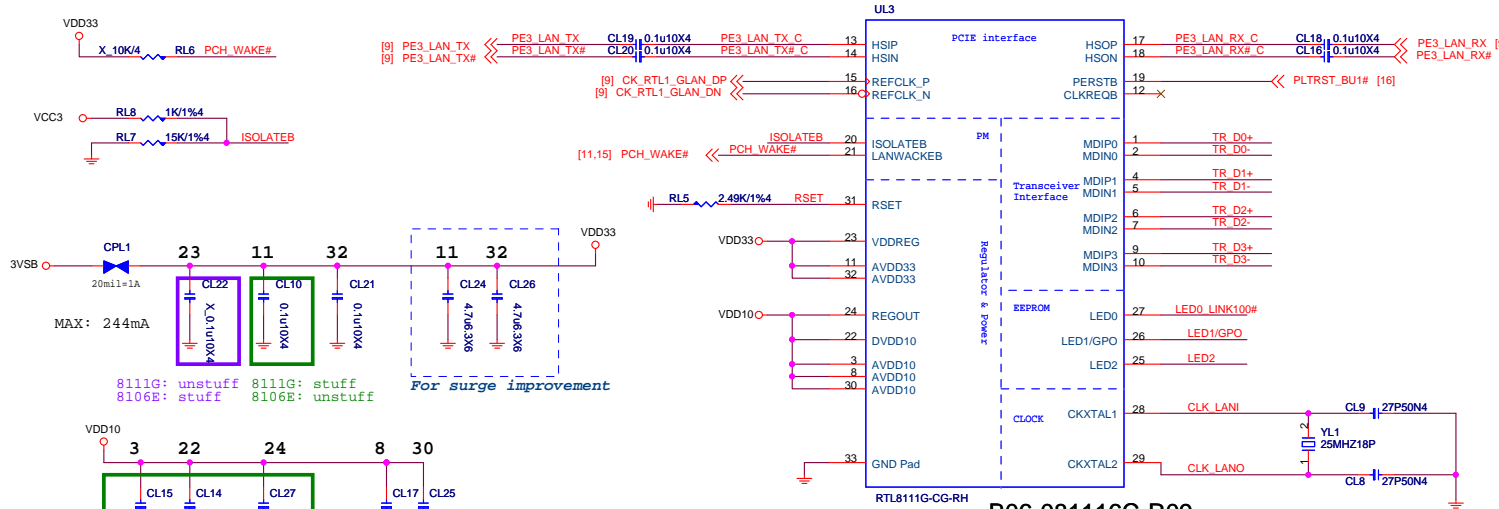


<b>MICRO-STAR INT'L CO.,LTD</b>		
<b>MS-7817</b>		
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# RTL8111G Giga LAN

## RTL8106E 10/100M LAN

### LAN Connector



B06-081116C-R09

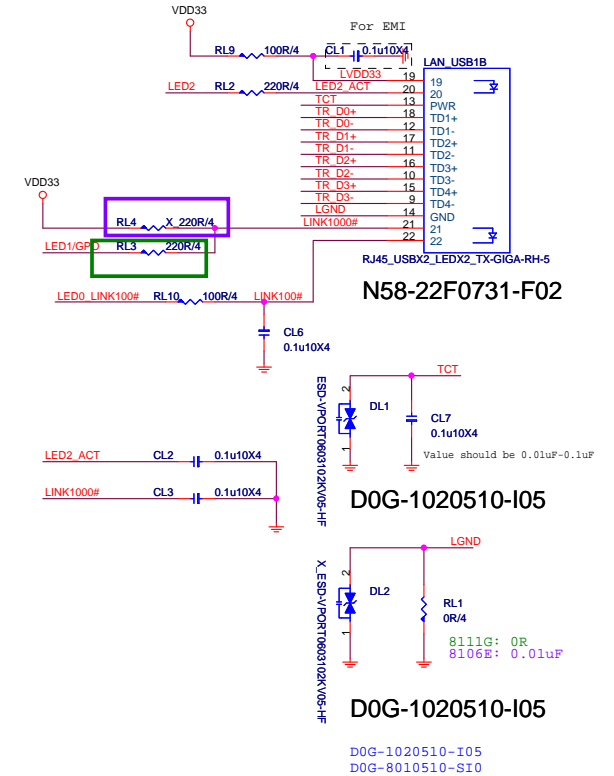
Pin33: 4 via from top layer to GND layer and make the via at the center of IC.

#### 8106E POWER Consumption

	3.3V @ mA	mW
10 M Idle/TxRx	15/94	49.5/310.2
100 M Idle/TxRx	52/105	171.6/346.5
S0 ALDPS	4	13.2

#### 8111G POWER Consumption

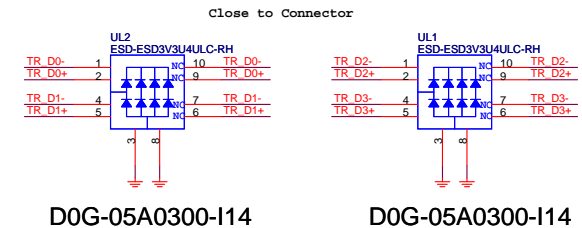
	3.3V @ mA	mW
10 M Idle/TxRx	17.15/116.7	56.6/385.1
100 M Idle/TxRx	71.45/129.5	235.8/427.4
Giga Idle/TxRx	179.1/243.9	591/804.9
ALDPS	6.41	21.15



D0G-1020510-I05

D0G-1020510-I05

D0G-1020510-I05  
D0G-8010510-S10

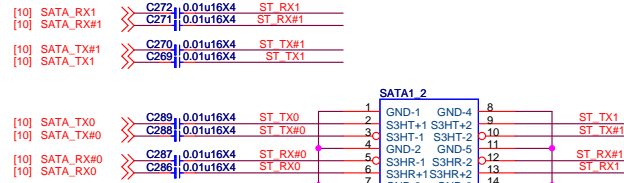


D0G-05A0300-I14

D0G-05A0300-I14

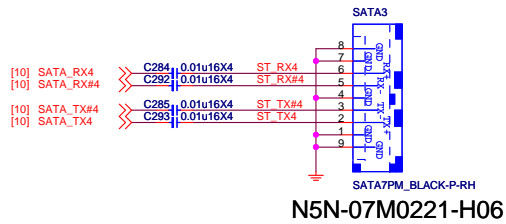
## SATA CONNECTOR

### SATA 6G PORT 0,1

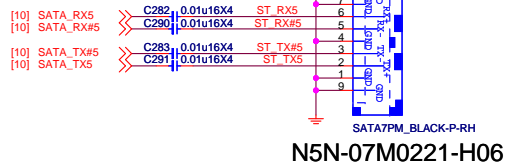


N5N-14M0201-L06

### SATA 3G PORT 4,5

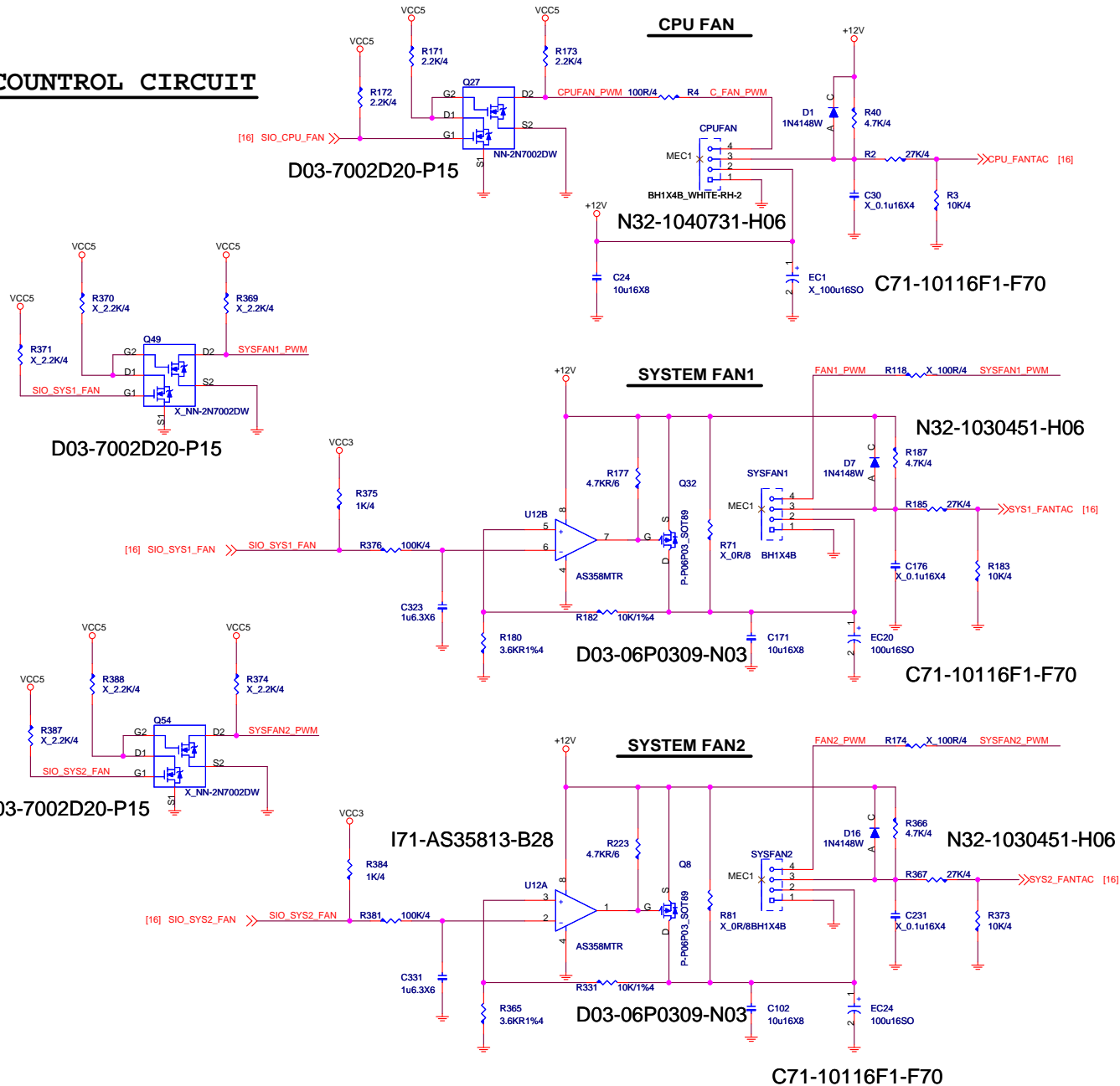


N5N-07M0221-H06

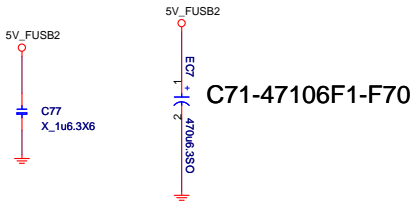
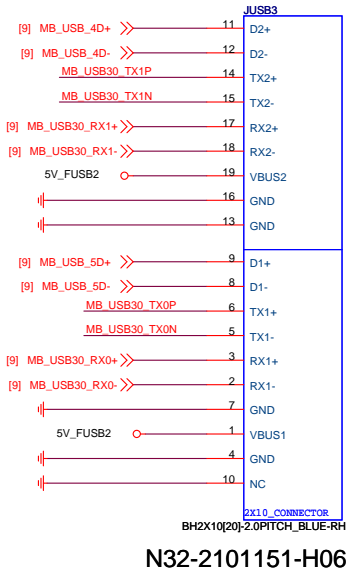
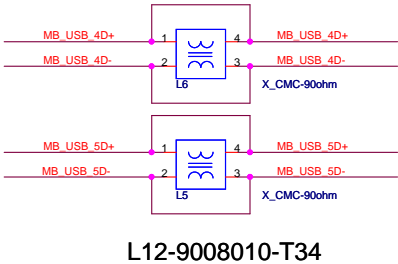
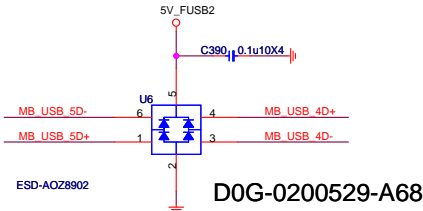
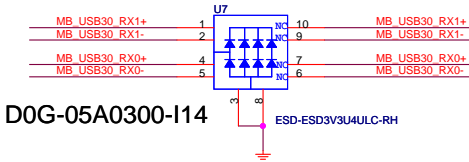
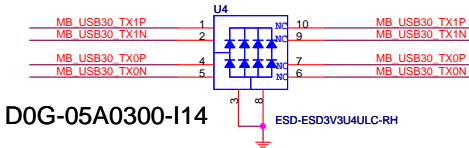
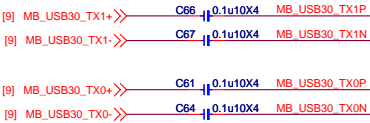


N5N-07M0221-H06

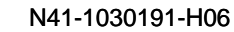
## FAN-CONTROL CIRCUIT



Front USB3.0 Connector

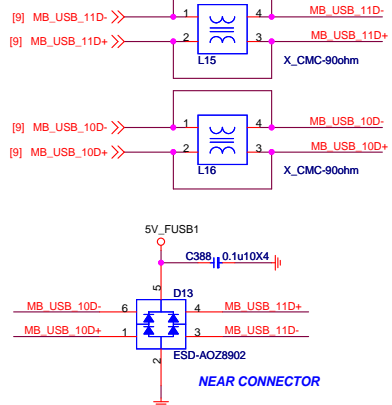


PCH/FCH side: OC# pull high to +3VSB

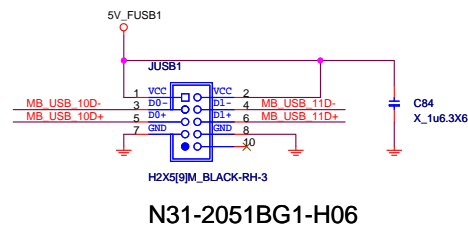


D08-2000300-P16 (Itrip=3.5A; 0.003ohm) support 6 USB ports (3A)  
D08-0300700-P16 (Itrip=2.6A; 0.015ohm) support 4 USB ports (2A)  
D08-0100110-P16 (Itrip=1.1A; 0.04ohm) support 2 usb 2.0 ports (1A)

### FRONT USB PORT 8,9

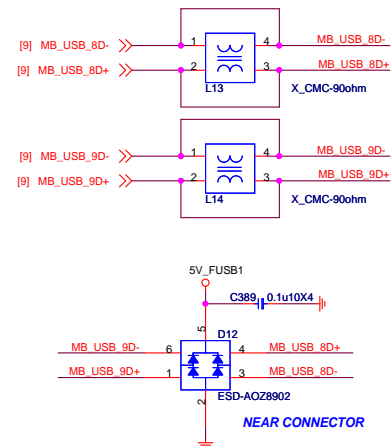


D0G-0200529-A68



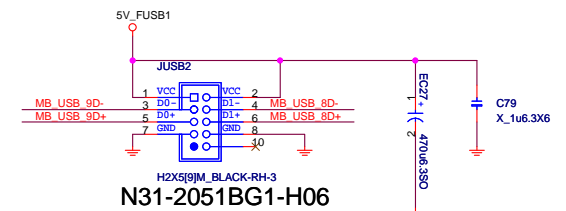
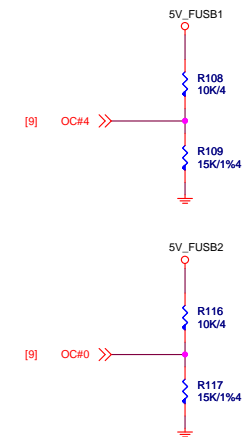
N31-2051BG1-H06

## FRONT USB PORT 10.11



D0G-0200529-A68

over current protect



C71-47106F1-F70



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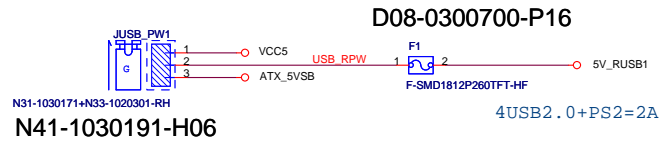
MS-7817

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## Type C: jumper +Fuse

PCH/FCH side: OC# pull high to +3VSB

Near Rear ==>

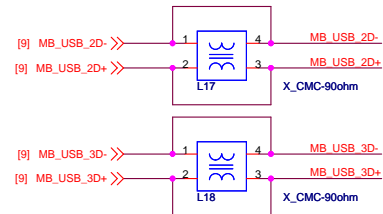
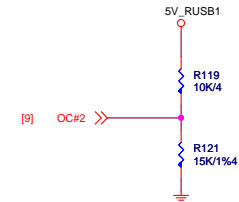


### Default VCC5 (PIN1-2)

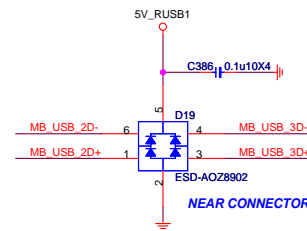
JUSB_FW	BIOS Menu	Wake up support
1-2	EUP Enable	Not support
	EUP Disable	Not support
2-3	EUP Enable	Not support
	EUP Disable	support

D08-2000300-P16 (Itrip=3.5A; 0.003ohm) support 6 USB ports (3A)  
D08-0300700-P16 (Itrip=2.6A; 0.015ohm) support 4 USB ports (2A)  
D08-0100110-P16 (Itrip=1.1A; 0.04ohm) support 2 usb 2.0 ports (1A)

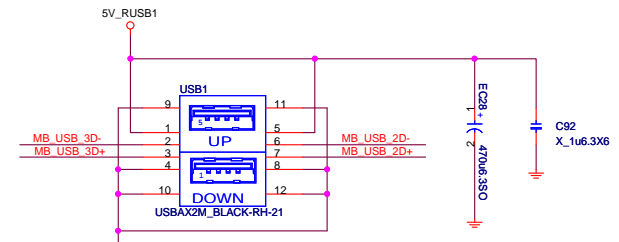
## over current protect



L12-9008010-T34

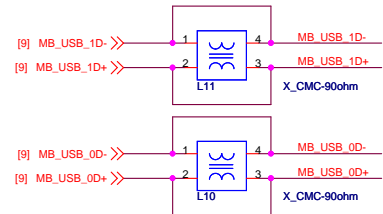


D0G-0200529-A68

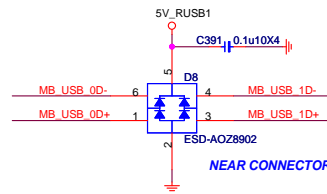


N53-08M0421-H06

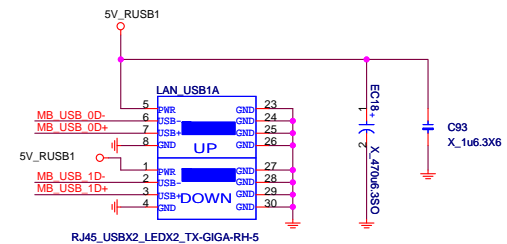
### FRONT USB PORT 4.5



L12-9008010-T34



D0G-0200529-A68



N58-22F0731-F02



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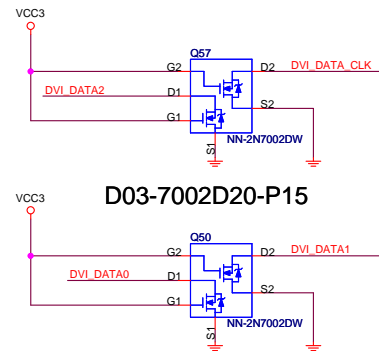
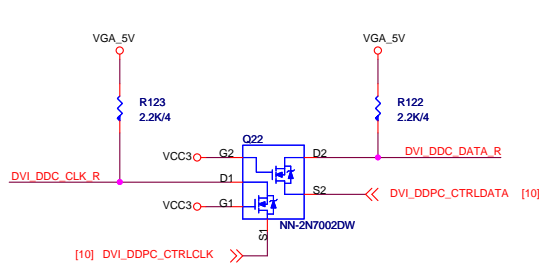
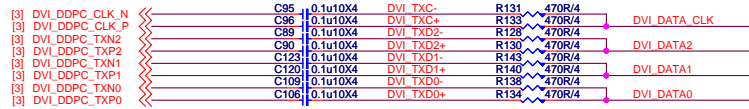
MS-7817

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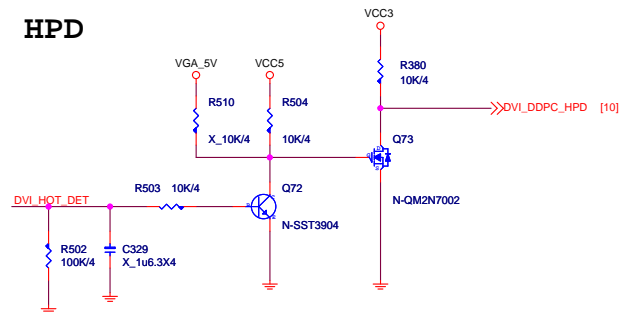


# DVI

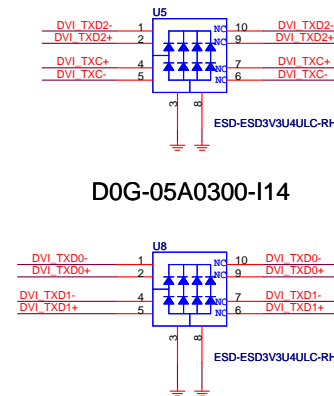
VGA: resolution of 2048x1536 pixels with 32-bit color at 75 Hz (4:3 QXGA)



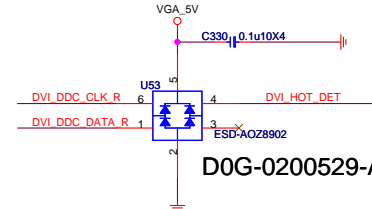
## HPD



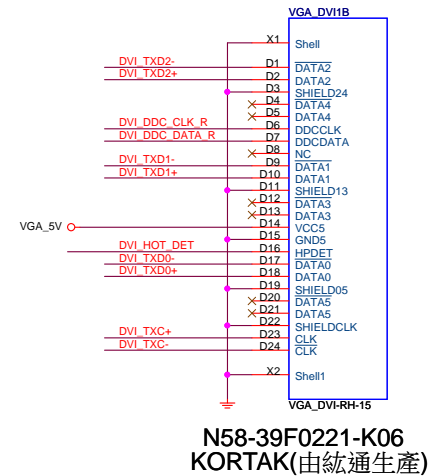
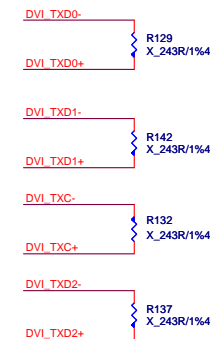
## D0G-05A0300-I14



## D0G-0200529-A68



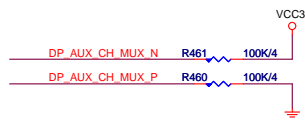
For EMI



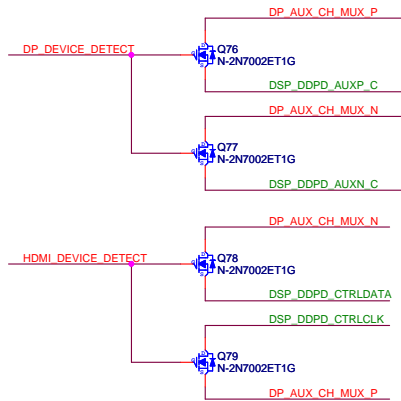
# DISPLAY PORT

[10] DSP\_DDPD\_AUXP >> DSP\_DDPD\_AUXP C367 0.1u10X4 DSP\_DDPD\_AUXP\_C  
[10] DSP\_DDPD\_AUXN >> DSP\_DDPD\_AUXN C368 0.1u10X4 DSP\_DDPD\_AUXN\_C

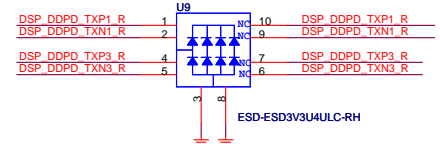
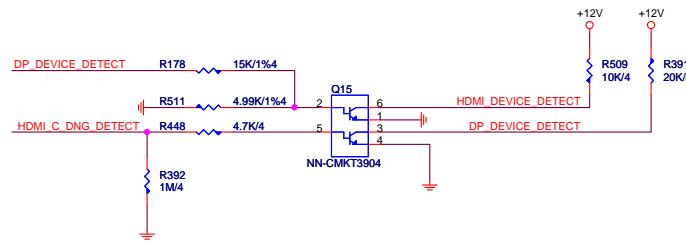
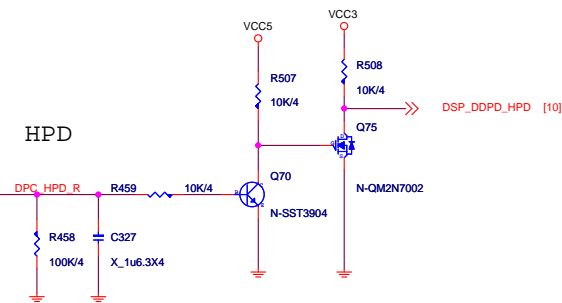
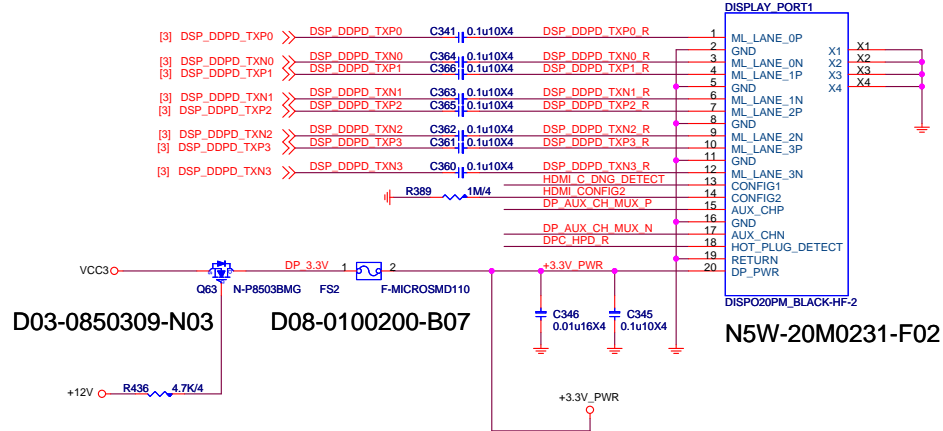
[10] DSP\_DDPD\_CTRLCLK >> DSP\_DDPD\_CTRLCLK  
[10] DSP\_DDPD\_CTRLDATA >> DSP\_DDPD\_CTRLDATA



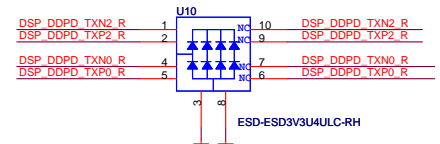
D03-7002E89-O05



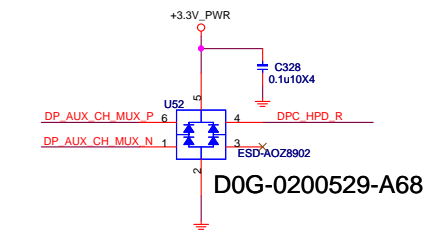
	DP	HDMI
HDMI_C_DNG_DETECT	L	H
DP_DEVICE_DETECT	H	L
HDMI_DEVICE_DETECT	L	H



D0G-05A0300-I14



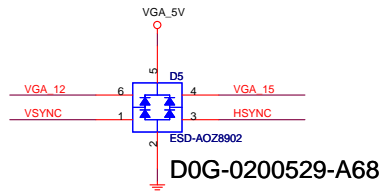
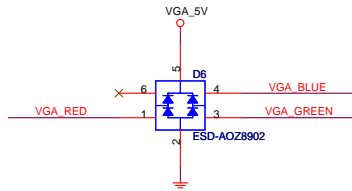
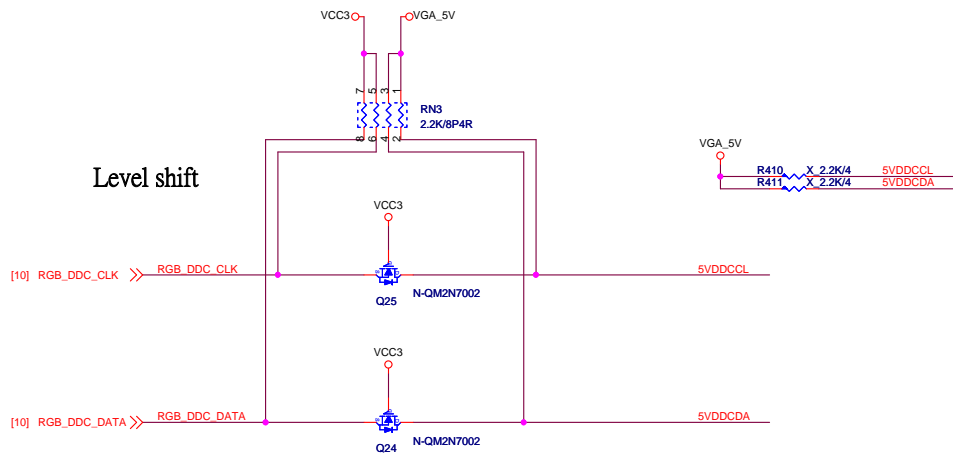
D0G-05A0300-I14



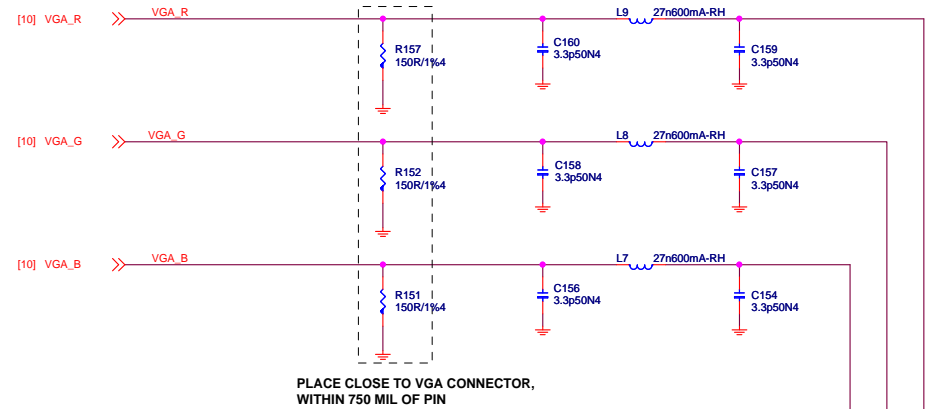
D0G-0200529-A68

# D-Sub

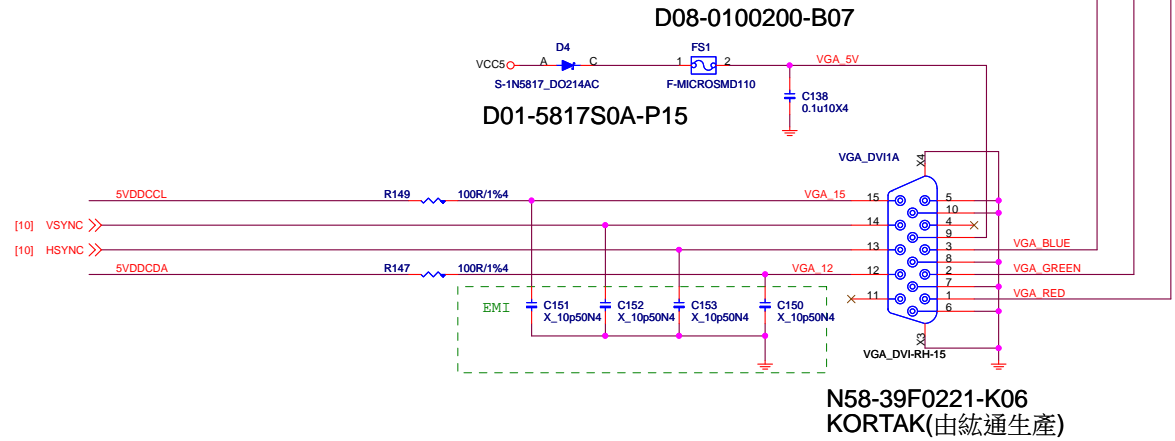
Level shift



D0G-0200529-A68

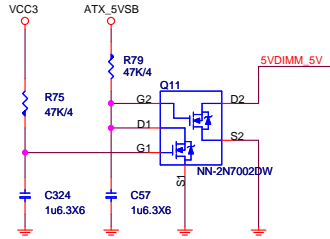


PLACE CLOSE TO VGA CONNECTOR,  
WITHIN 750 MIL OF PIN



N58-39F0221-K06  
KORTAK(由紘通生產)

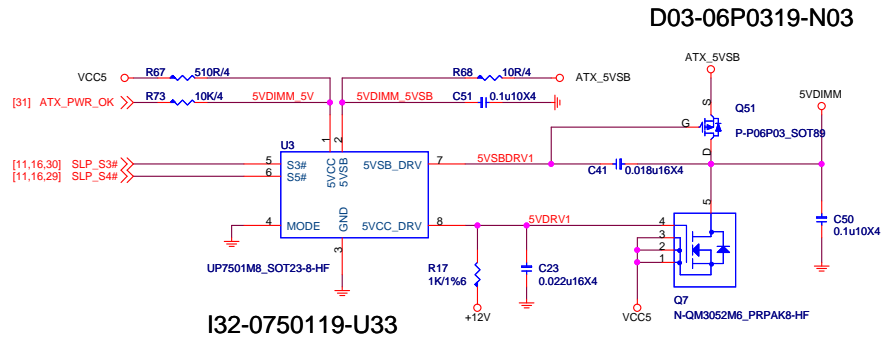
## 5VDIMM FOR DDR



Patch coolermaster 700w power sequence

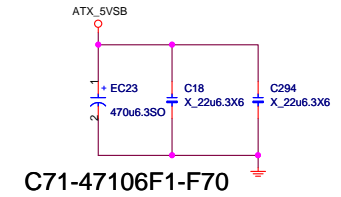
**D03-7002D20-P15**

For power 700W solution (only for uP7501+uP7506 for 3VSB solution)  
The power supply VCC3 delay 12ms after VCC5 assert.  
The chip U7501 5VDRV1 work when the VCC5 assert,  
(When VCC5 up to 4.2V and the 5VDRV1 delay 6ms assert), but  
VCC3 not ready and let the 3VSB sequence fail.



**I32-0750119-U33**

**D03-06P0319-N03**

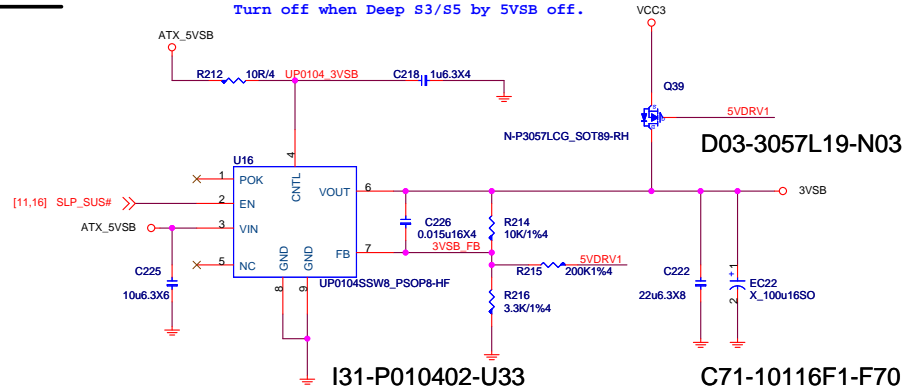


**C71-47106F1-F70**

**D03-3052M00-U47**

## 3VSB

3VSB supply to PCH and other device.  
Turn off when Deep S3/S5 by 5VSB off.



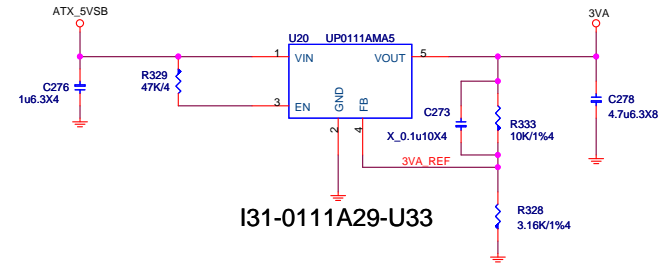
**I31-P010402-U33**

**C71-10116F1-F70**

**D03-3057L19-N03**

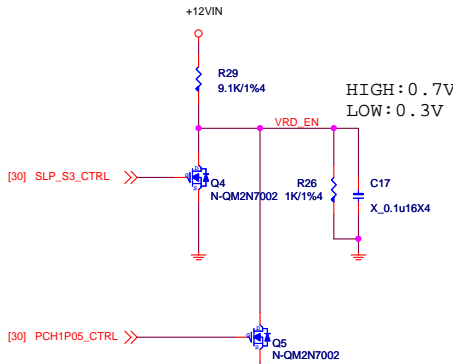
## 3VA

20mA



**I31-0111A29-U33**

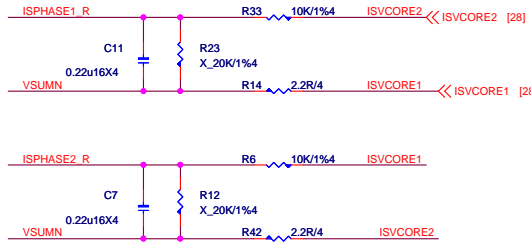
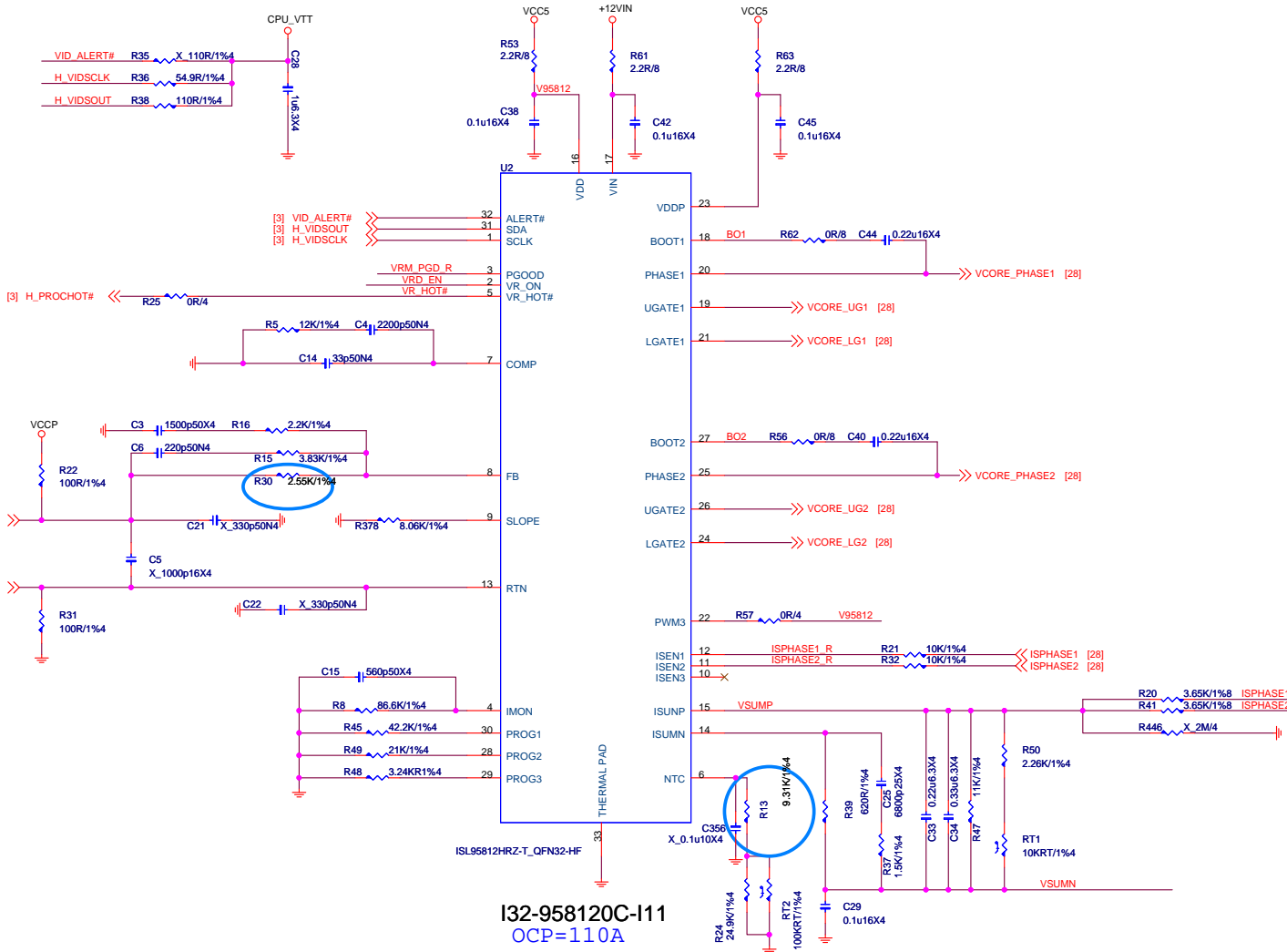
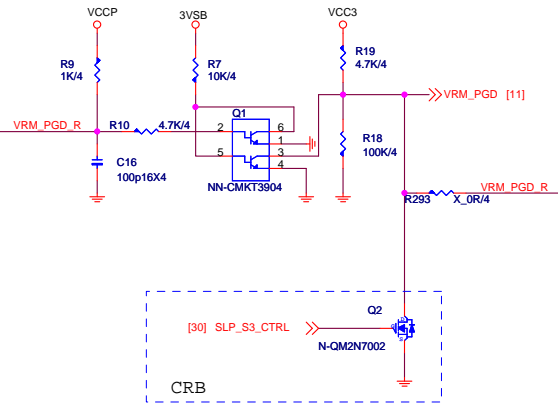
VCORE power on by s3 and 12v



CRB

HIGH:by PCH\_1P05V  
LOW:by S3

## VRMPWRGD LEVEL SHIFT



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

MS-781

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# VCCP POWER

VCORE ICC MAX70A ICCTDC:47A 65W  
LL:2.5m ohm

L04-47B9041-T15

C71-27116Z1-F70

JPWR2  
PWRCONN1P\_BLACK-RH-3  
N93-04M0441-H06

L04-47B9041-T15

C71-56106D1-F70

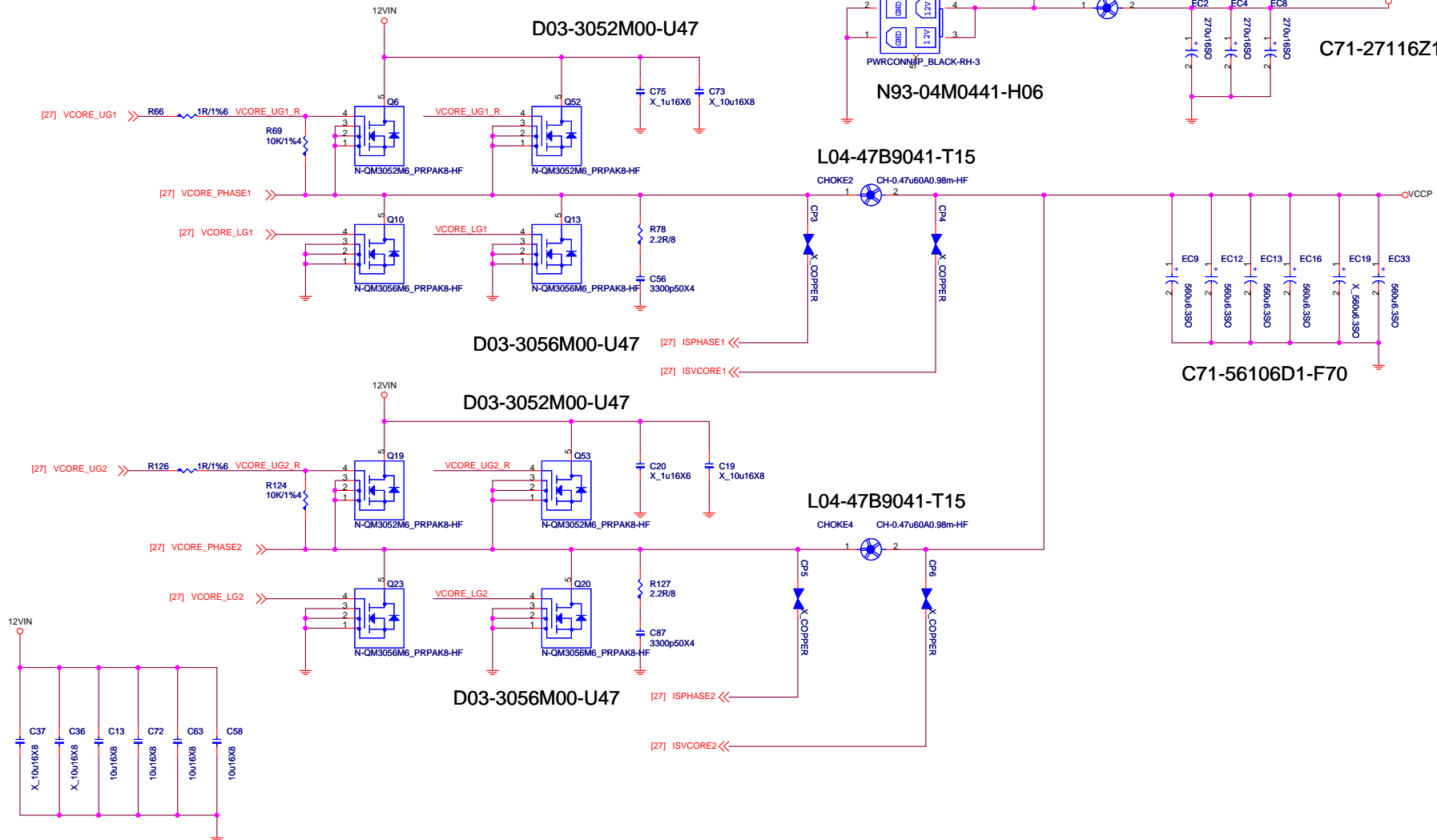
L04-47B9041-T15

D03-3052M00-U47

D03-3056M00-U47

D03-3052M00-U47

D03-3056M00-U47



MICRO-STAR INT'L CO.,LTD

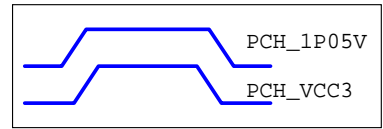
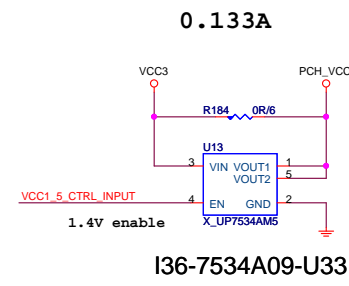
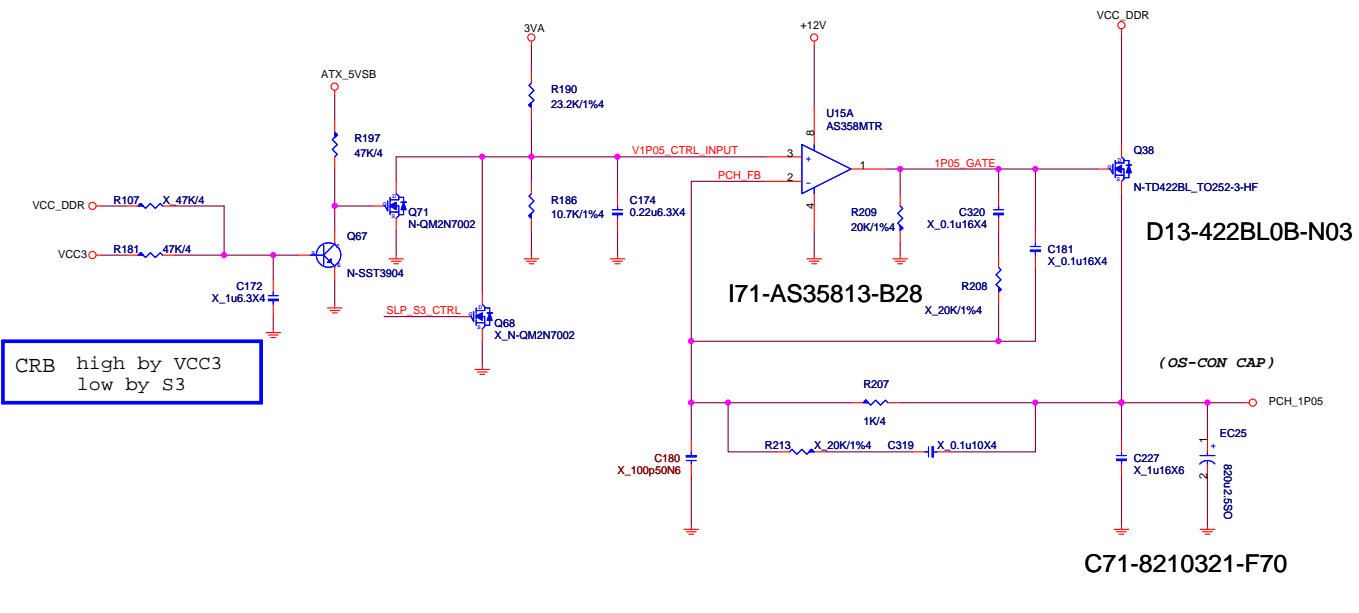
MS-7817

Size	Document Description	Rev
Custom	CPU Power - MOS	61
Date: Friday, March 28, 2014	Sheet 28 of 36	

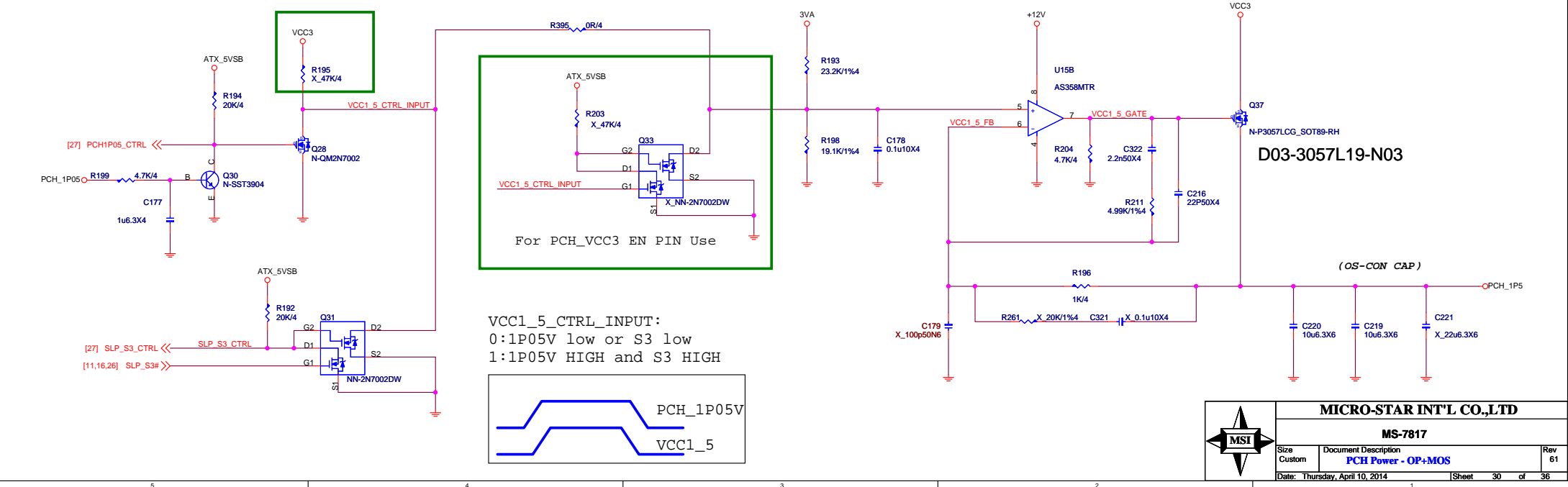




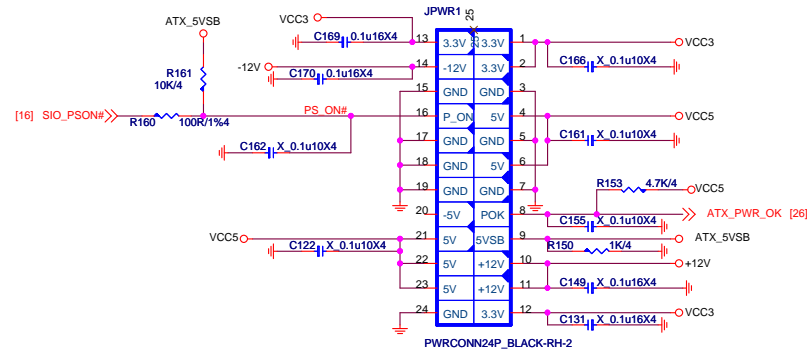
PCH Power:1.05V 5.747A



PCH Power:1.5V 0.183A

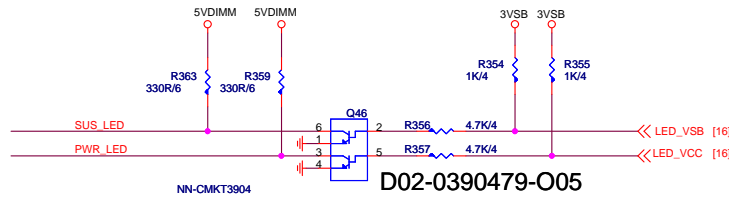


## ATX POWER CONNECTOR



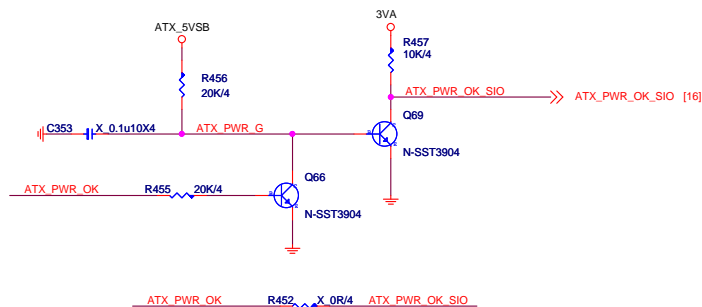
N93-24M0191-H06

## LED ( for NV5533)

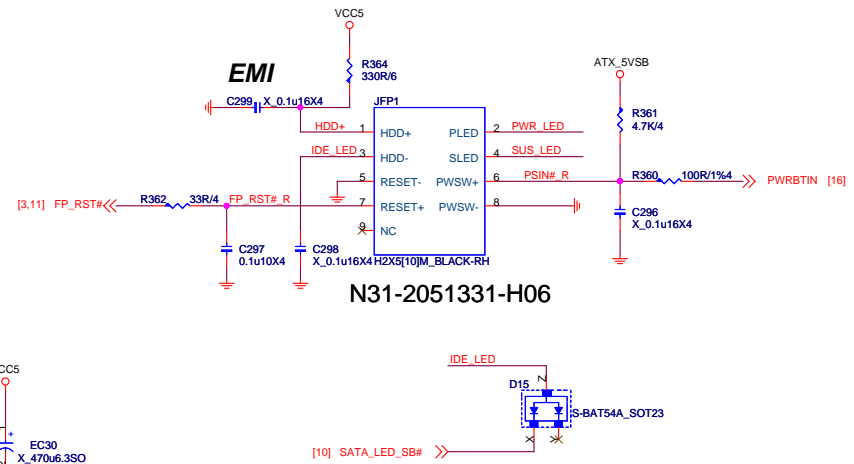


D02-0390479-O05

5VCC leakage from ATXPGD.(NCT6779 PIN80)  
(NCT5533 PIN36)

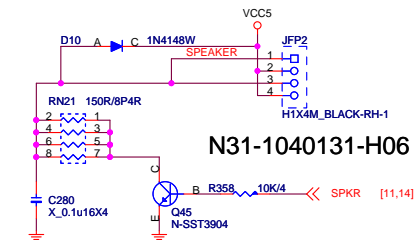


## FRONT PANNEL



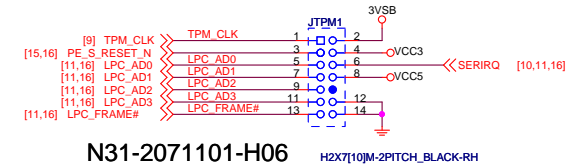
N31-2051331-H06

## Speaker Pin Header



N31-1040131-H06

## TPM/JLPC



N31-2071101-H06

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## LABEL

MARKET Name

LABEL1  
LABEL  
LABEL

H81-S04

G51-M1SPF69-Q13

Battery

BAT1\_X1  
BAT-BCR2032P-RH

D06-0100101-P01

CPU Socket

CPU\_H1  
CPU  
鐵座  
CPU\_H1

E21-7788020-F02

PCH Heatsink

HS\_PCH1  
MEC2  
MEC1  
HS-0406120-RH

E31-0406120-K08

AMI

LABEL3  
LABEL  
LABEL

G51-M1SPXXA-A09

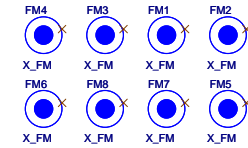


PK0-0781761-G37

PK0-0781761-E48

VCCP  
VCC\_DDR  
VTT\_DDR  
PCH\_1P05  
PCH\_1P5  
5VDIMM  
3VSB  
PCH\_VCC3  
3VA

## Optical Fiducial Marks-120



FM002

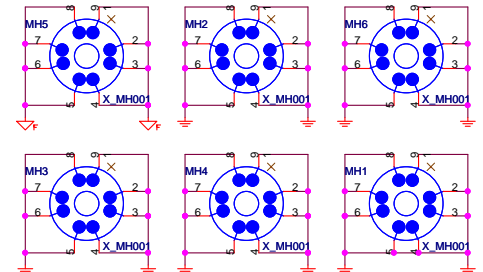
F\_PAD\_X

## Simulation



SINGLE\_SIP2

## Mounting Holes



MH001

HOLES\_4S

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