# MS-7B98

ATX
Ver: 10

*Z390-A PRO*

## Coffeelake Platform

**CPU:** *Coffeelake S*

**PCH:** *Z390*

***SPI ROM : 128 MB***

**Memory:** *DDR4 * 4 (Dual Channel)*

### Power Solution:

*CPU : UP9521*
*VCCSA : RT8125E*
*VCCIO : SY8288RAC*
*DDR : RT8125E*
*PCH : RT8125E*

**ACPI:** *GS7133*

### Onboard Chip:

*LAN Intel I219*
*Codec:ALC892*
*SIO:NTC6797*
*Type C MUX:HD3SS3220*
*Clock Gen : --------*
*USB3.1 Host : --------*
*USB Charger : SLG55593A*
*USB3 Redrive : PERICOM/PI3EQX1004HEX*
*USB2 Redrive : --------*
*Flash BIOS : --------*
*GPIO : --------*

### Expansion Slots:

*PCI Express (X16) Slot * 1*
*PCI Express (X8) Slot *0*
*PCI Express (X4) Slot * 1*
*PCI Express (X1 ) Slot * 4*
*M.2 Slot (Socket 3 ) * 1*
*CNVi Slot (KEY E ) * 1*

### Rear I/O Connectors

*PS2+USB2.0x2*
*VGA+DVI*
*DP*
*RJ45 + USB3.1 Gen1x2*
*USB3.1 Gen2x2*
*Audio Jack 6 Port*

### Internal Connectors

*JOC1*1*
*Dual SATA * 3*
*FUSB3 Header * 2*
*FUSB2 Header * 2*
*Front Audio Header * 1*
*Front Panel Header * 2*
*SPI Header * 1*
*TPM Header * 1*
*CPU Fan * 1*
*PUMP_FAN * 1*
*System Fan * 5*

### LED

*Debug LED*

### Internal Pin Header

*JLED1*
*JCI1*
*JSPI1*
*JBAT1*
*JTPM1*



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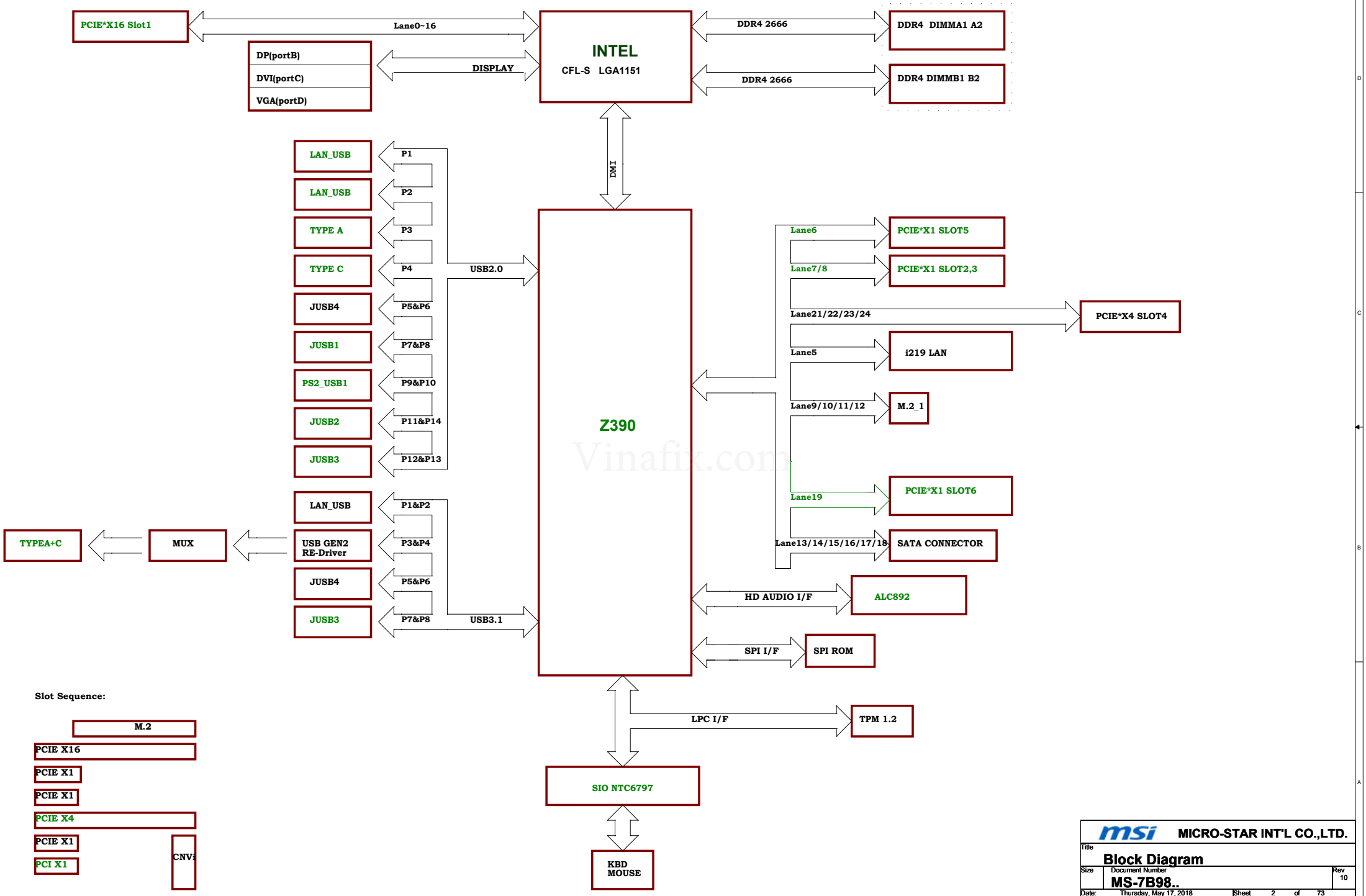
| | | |
|---|---|---|
| Title: Cover Sheet | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
| Date: Thursday, May 17, 2018 | Sheet 1 of 73 | |

# MS-7B98 Block Diagram



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Title: Block Diagram

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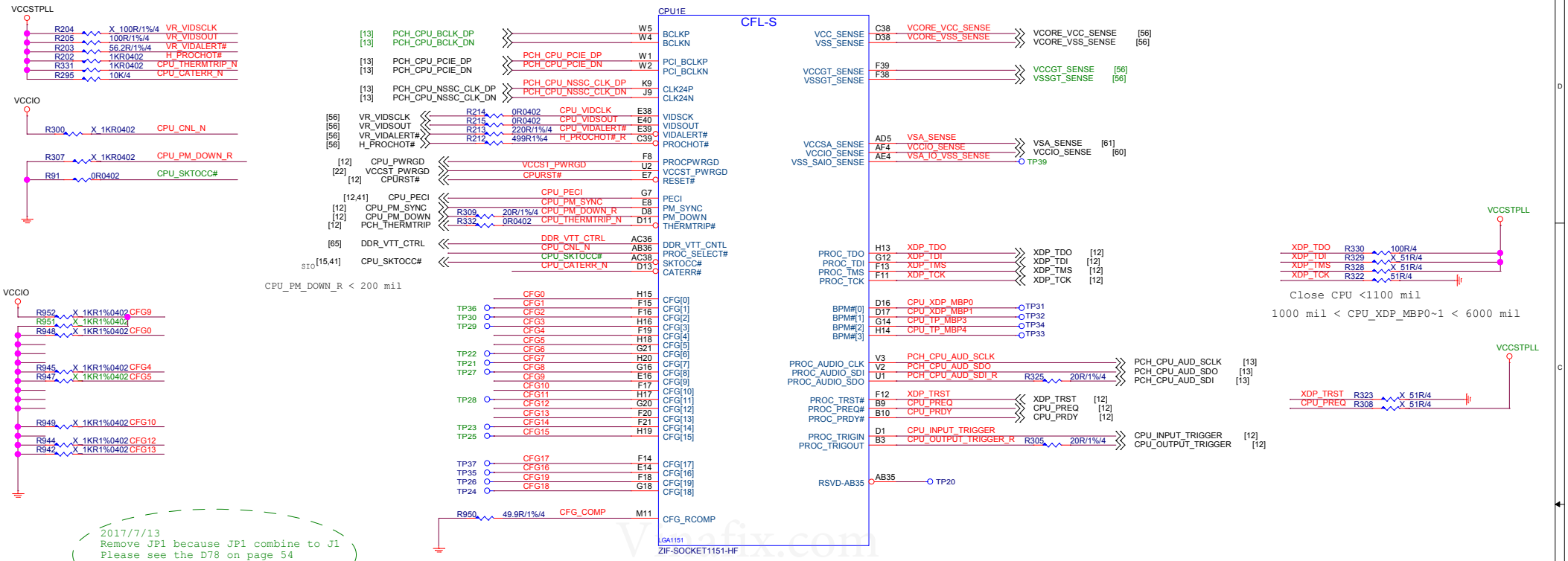
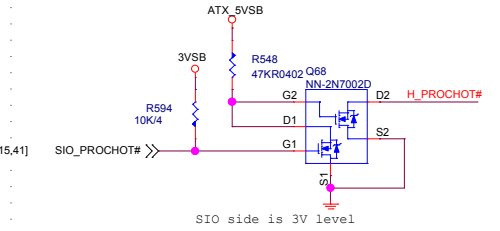



## CFG Strap

CFG Table

| | HIGH | LOW | DESCRIPTION |
|---|---|---|---|
| 0 | No Lock | Lock | PCU PLL lock |
| 1 | | | RSVD |
| 2 | NORM | REVERSE | PEG LANE REVERSAL |
| 3 | | | RSVD |
| 4 | DISABLE | ENABLE | eDP |
| 5 | DISABLE | ENABLE | PEG0CFGSEL[0] |
| 6 | DISABLE | ENABLE | PEG0CFGSEL[1] |
| 7 | RESET# | BIOS REQ | PEG DEFER TRAINING |
| 8 | | | RSVD |
| 9 | PRESENT | NO PRESENT | SVID PRESENT |
| 10 | | | RSVD |
| 11 | | | RSVD |
| 12 | | | RSVD |
| 13 | | | RSVD |
| 14 | | | RSVD |
| 15 | | | RSVD |
| 16 | | | RSVD |
| 17 | | | RSVD |
| 18 | | | RSVD |
| 19 | | | RSVD |

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Title: CPU-Control/MISC/CFG

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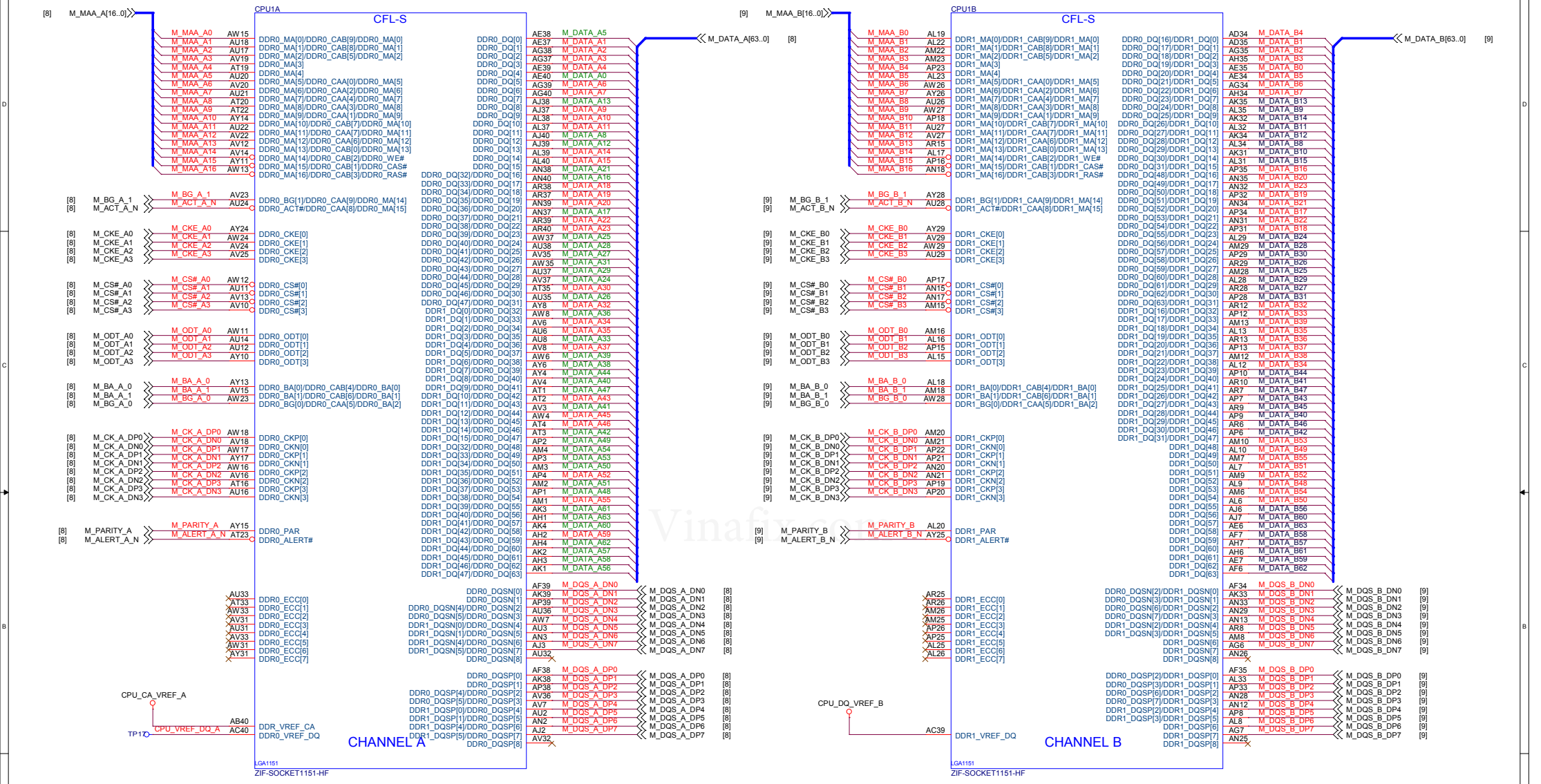
SOCKET PN N12-151A010-L06






| | | | |
|---|---|---|---|
| MSI | MICRO-STAR INT'L CO.,LTD. | | |
| Title | CPU-Memory | | |
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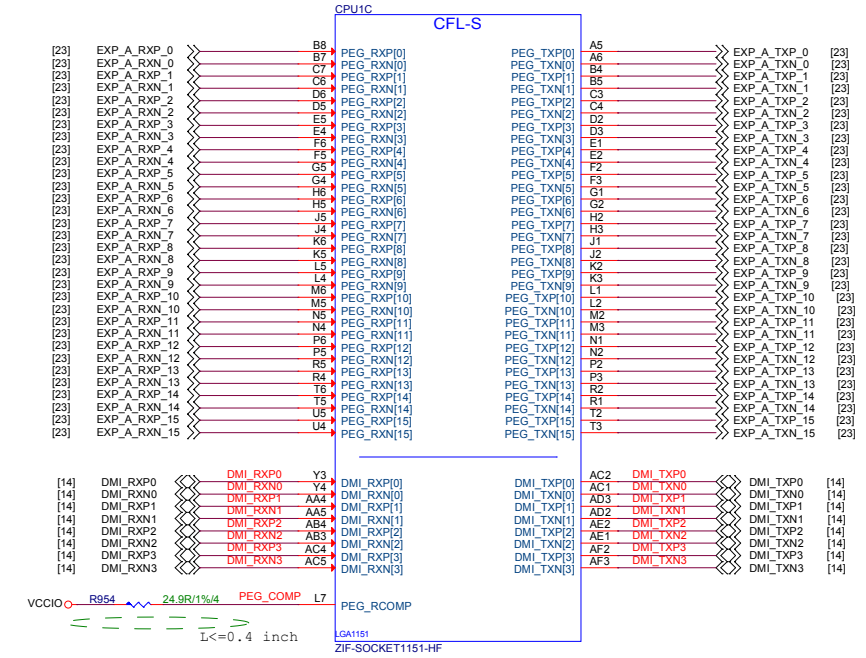
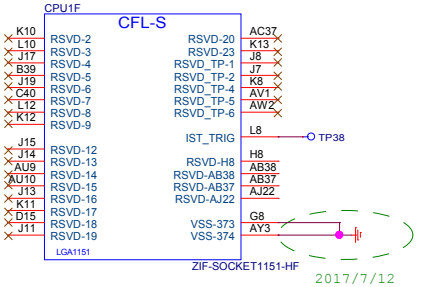
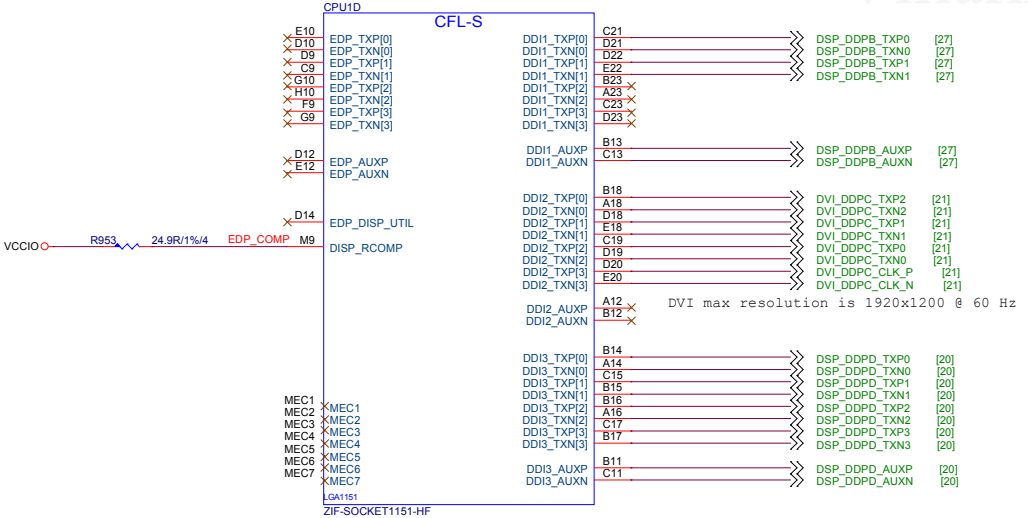



2017/7/12
G8 and AY3 can connect directly by CRB 1.0




DVI max resolution is 1920x1200 @ 60 Hz



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Title: CPU-PEG/Display/RSD

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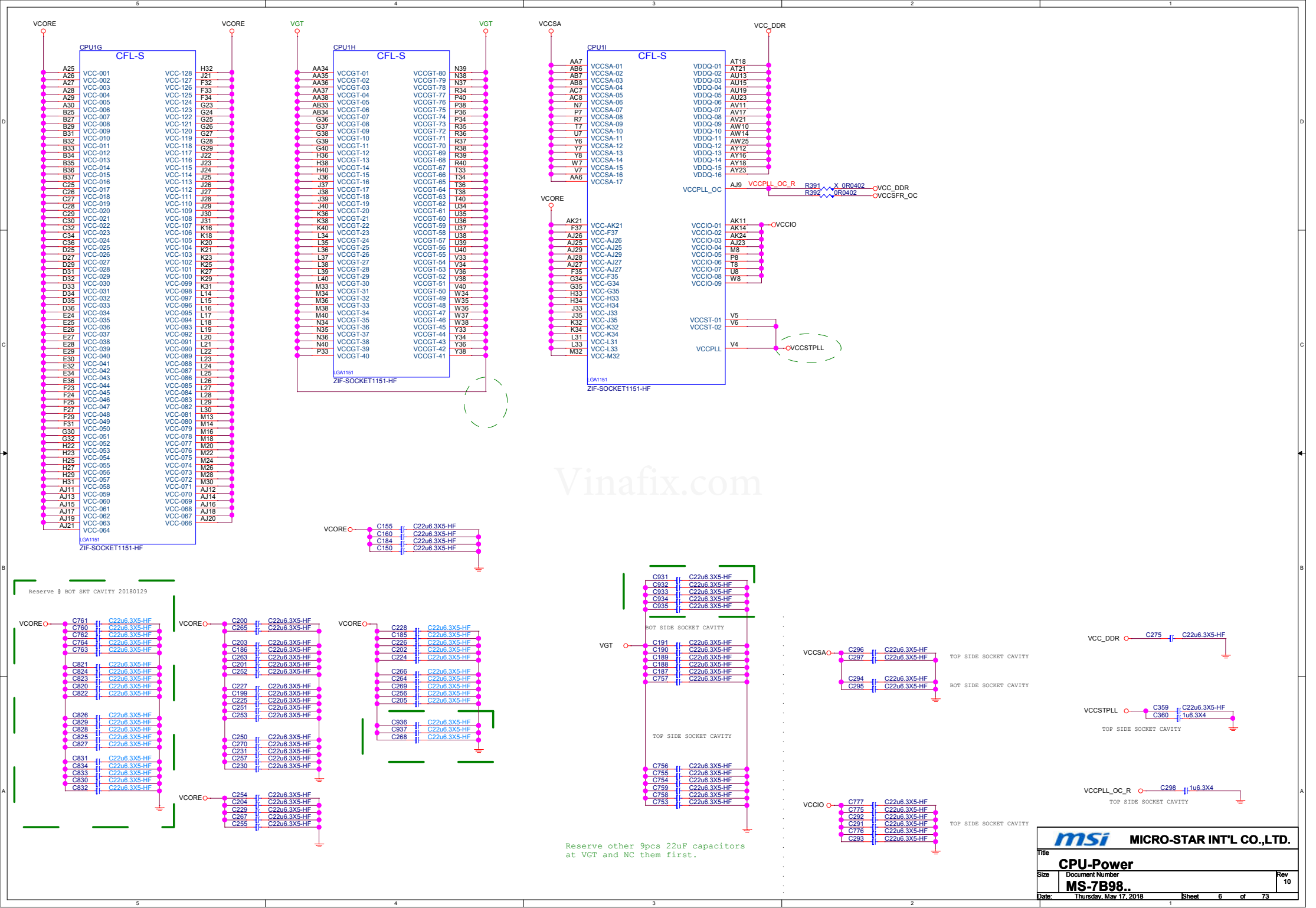
CPU1G
CFL-S
ZIF-SOCKET1151-HF
CPU1H
CFL-S
ZIF-SOCKET1151-HF
CPU1I
CFL-S
ZIF-SOCKET1151-HF
VCORE
VGT
VCCSA
VCC_DDR
VCCIO
VCCSTPLL
VCCPLL_OC_R
VCC_DDR
VCCSFR_OC
R391
R392
X 0R0402
0R0402
Reserve @ BOT SKT CAVITY 20180129
BOT SIDE SOCKET CAVITY
TOP SIDE SOCKET CAVITY
Reserve other 9pcs 22uF capacitors
at VGT and NC them first.
Vinafix.com
MICRO-STAR INT'L CO.,LTD.
CPU-Power
MS-7B98..
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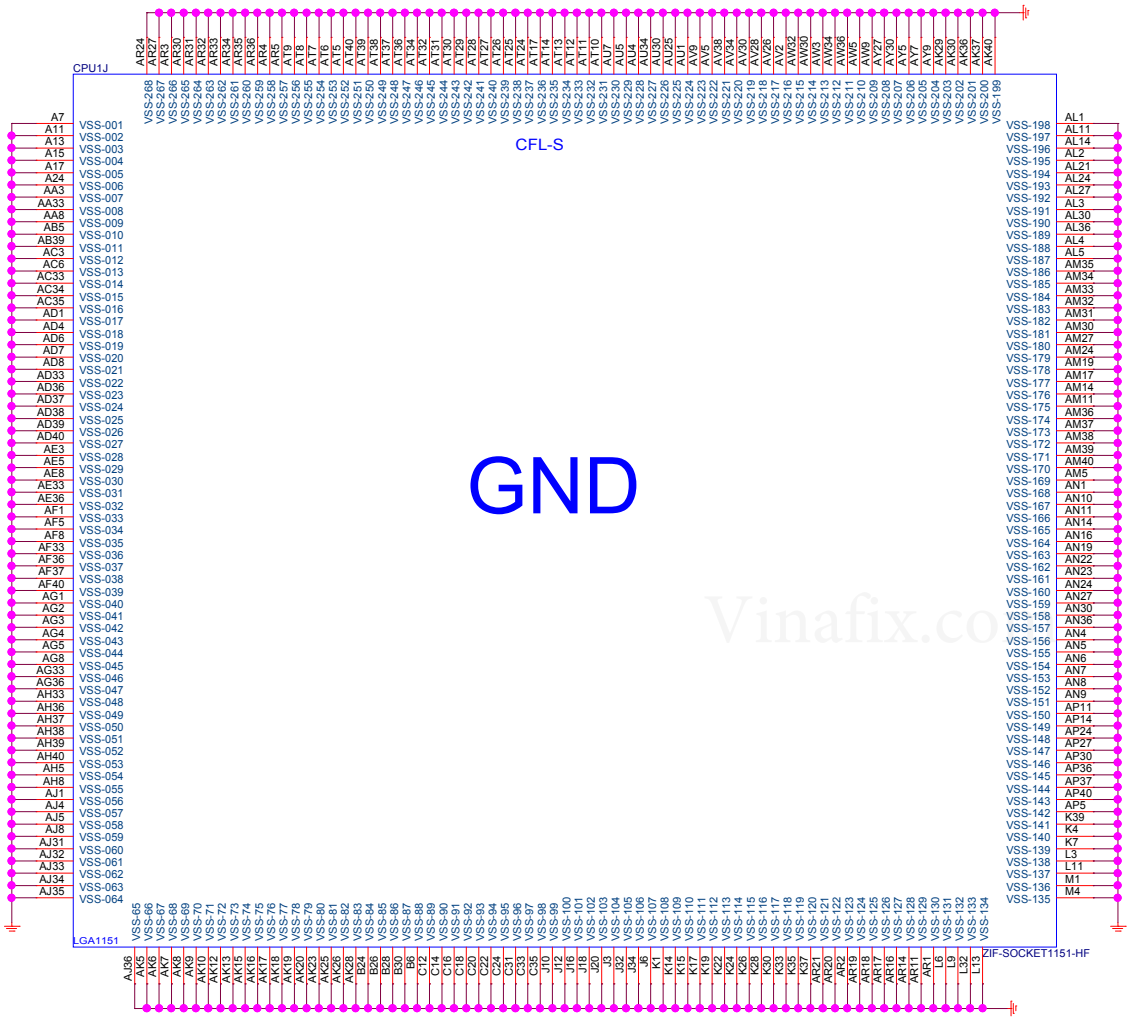


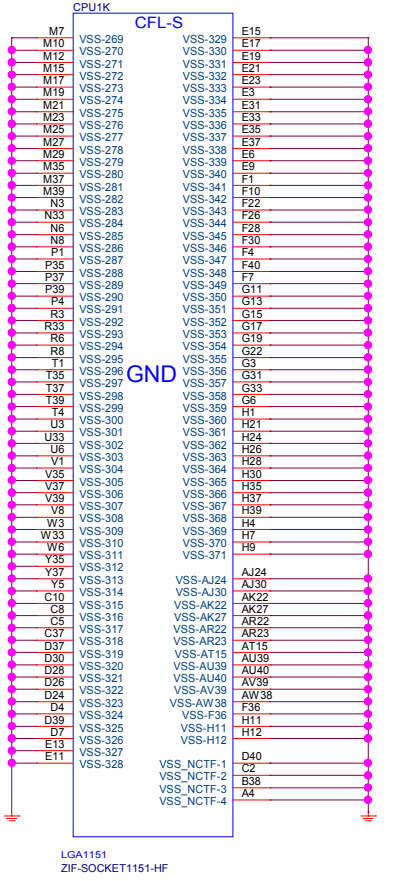




| | | | |
|---|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | | |
| Title: CPU-GND | | | |
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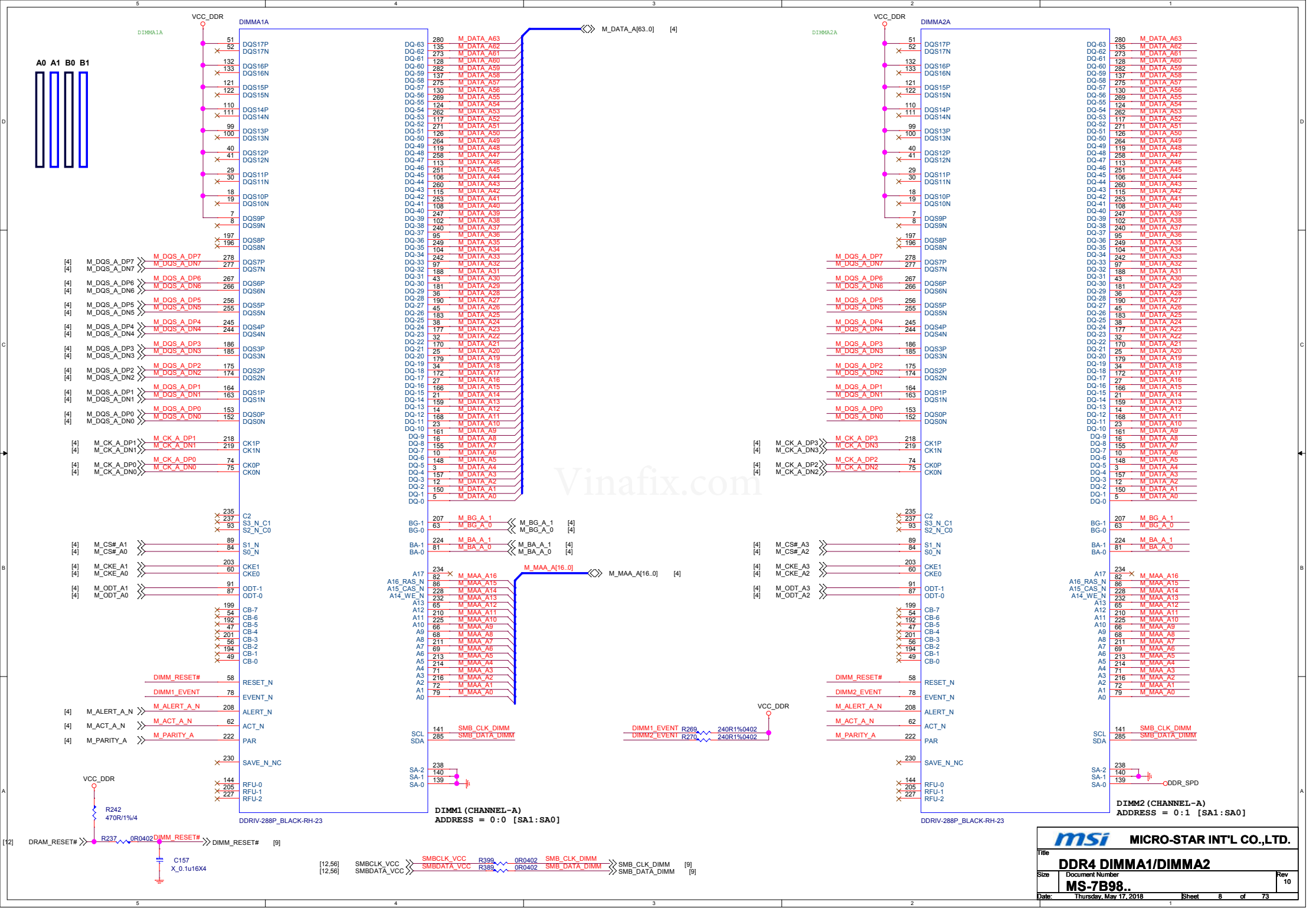
A0 A1 B0 B1
DIMMA1A
DIMMA2A
VCC_DDR
M_DATA_A[63..0]
M_MAA_A[16..0]
DQS17P
DQS17N
DQS16P
DQS16N
DQS15P
DQS15N
DQS14P
DQS14N
DQS13P
DQS13N
DQS12P
DQS12N
DQS11P
DQS11N
DQS10P
DQS10N
DQS9P
DQS9N
DQS8P
DQS8N
DQS7P
DQS7N
DQS6P
DQS6N
DQS5P
DQS5N
DQS4P
DQS4N
DQS3P
DQS3N
DQS2P
DQS2N
DQS1P
DQS1N
DQS0P
DQS0N
CK1P
CK1N
CK0P
CK0N
C2
S3_N_C1
S2_N_C0
S1_N
S0_N
CKE1
CKE0
ODT-1
ODT-0
CB-7
CB-6
CB-5
CB-4
CB-3
CB-2
CB-1
CB-0
RESET_N
EVENT_N
ALERT_N
ACT_N
PAR
SAVE_N_NC
RFU-0
RFU-1
RFU-2
SCL
SDA
SA-2
SA-1
SA-0
DDRIV-288P_BLACK-RH-23
DIMM1 (CHANNEL-A)
ADDRESS = 0:0 [SA1:SA0]
DIMM2 (CHANNEL-A)
ADDRESS = 0:1 [SA1:SA0]
DIMM_RESET#
DIMM1_EVENT
DIMM2_EVENT
M_ALERT_A_N
M_ACT_A_N
M_PARITY_A
SMB_CLK_DIMM
SMB_DATA_DIMM
DDR_SPD
R242
470R/1%/4
R237
0R0402
C157
X_0.1u16X4
DRAM_RESET#
R269
R270
240R1%0402
R399
R389
SMBCLK_VCC
SMBDATA_VCC
MICRO-STAR INT'L CO.,LTD.
DDR4 DIMMA1/DIMMA2
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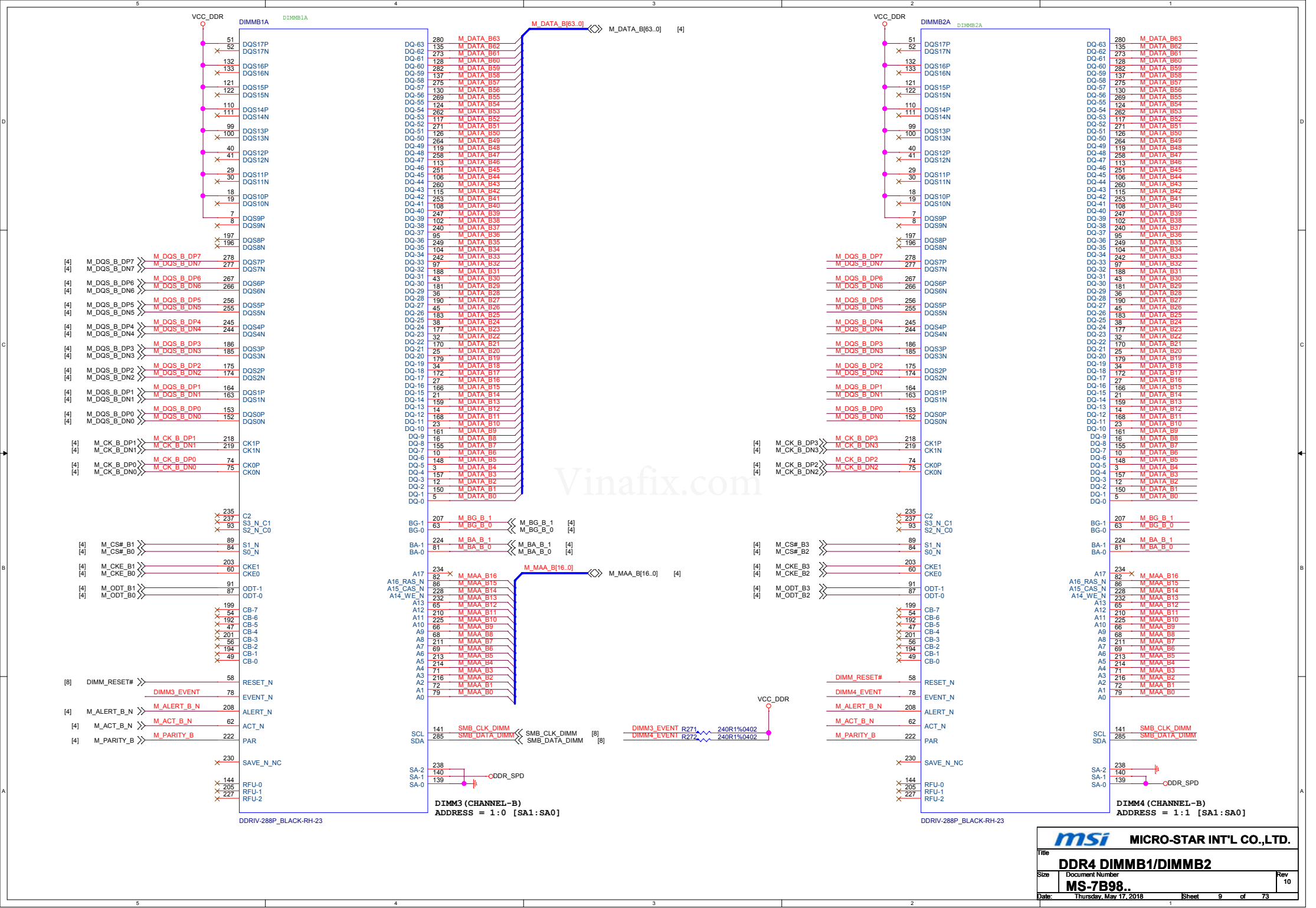




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Title: DDR4 DIMMB1/DIMMB2

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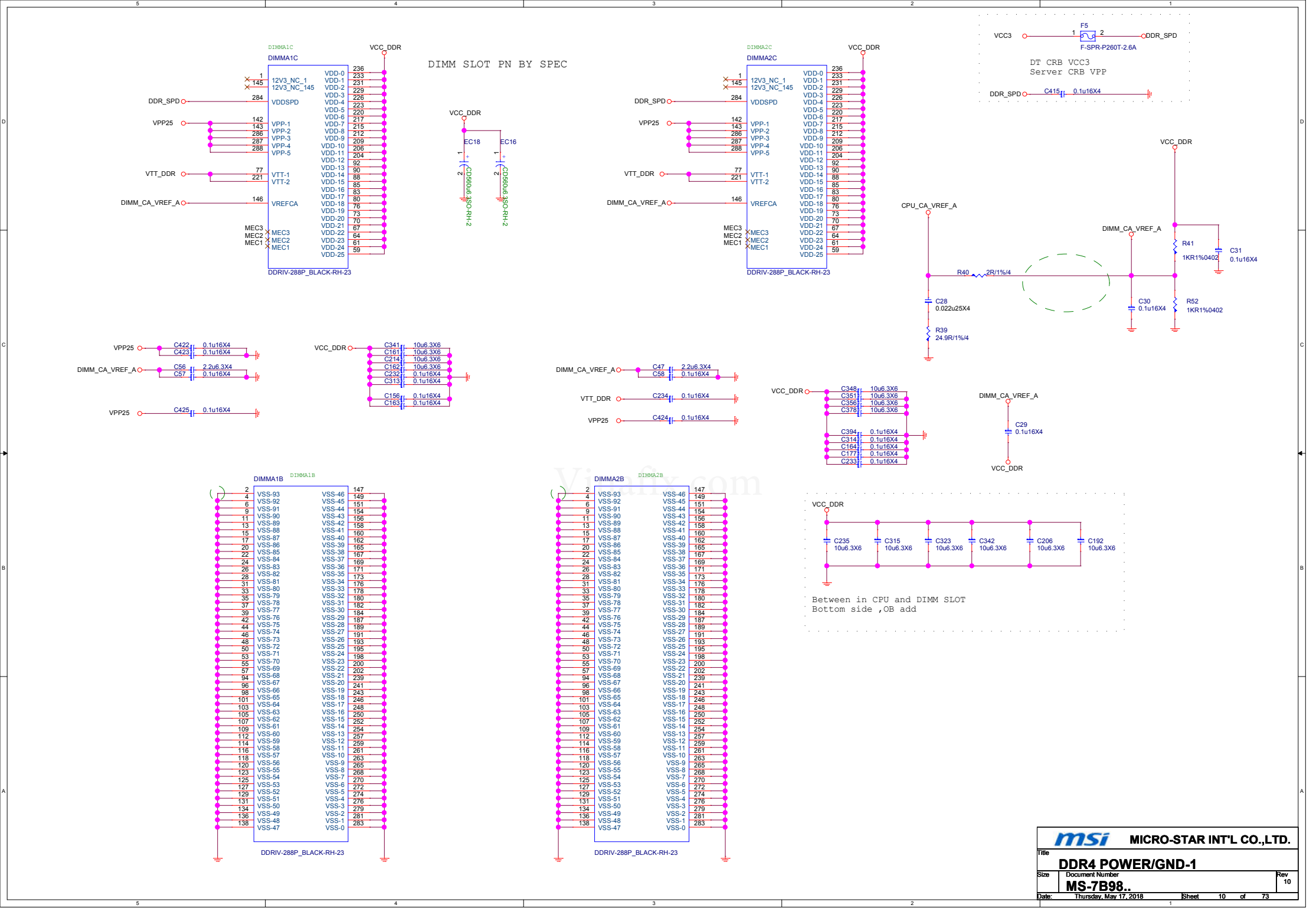




| | |
|---|---|
| Title | DDR4 POWER/GND-1 |
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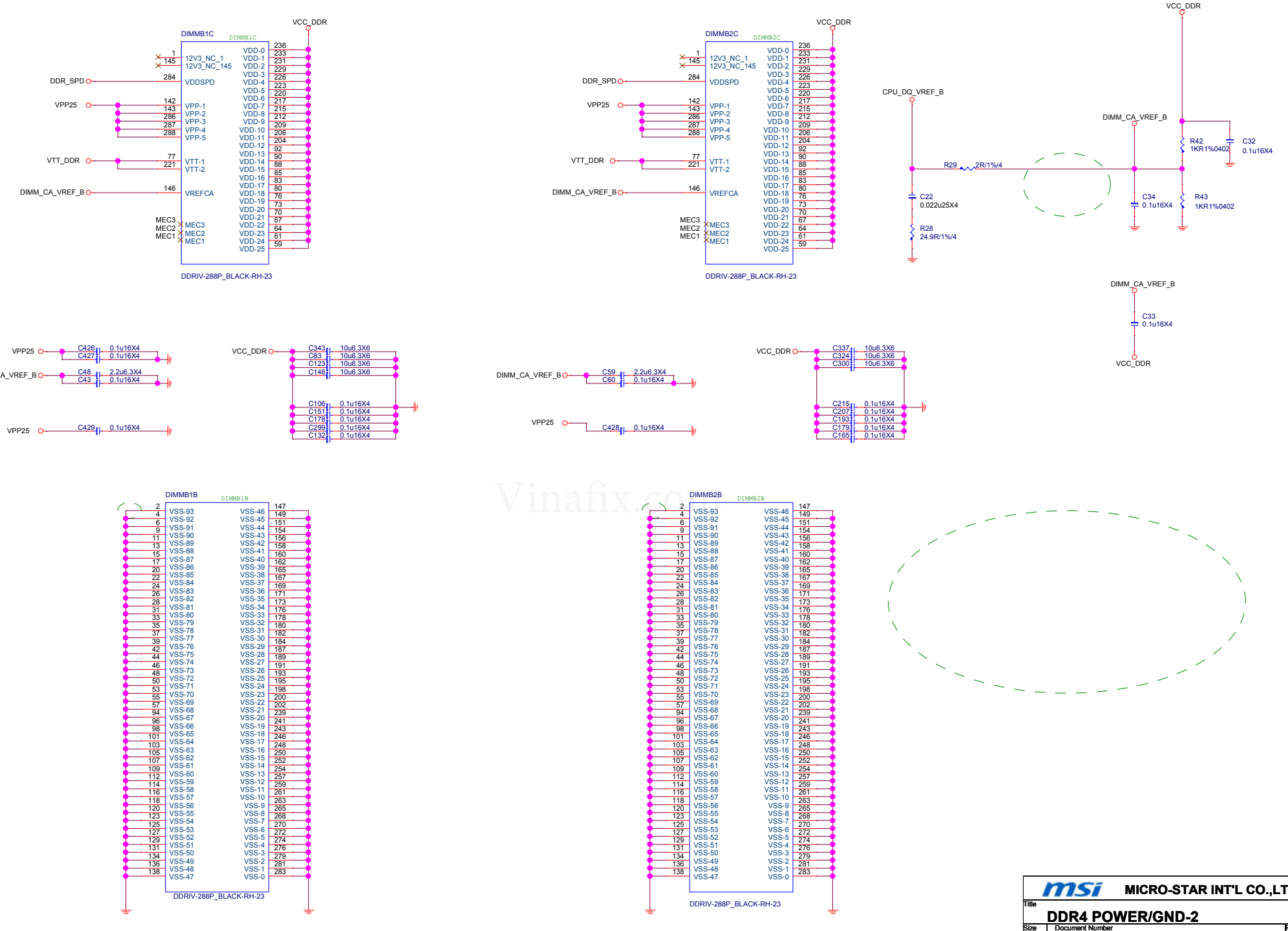
DIMMB1C
DIMMB1C
VCC_DDR
DDR_SPD
VPP25
VTT_DDR
DIMM_CA_VREF_B
12V3_NC_1
12V3_NC_145
VDDSPD
VPP-1
VPP-2
VPP-3
VPP-4
VPP-5
VTT-1
VTT-2
VREFCA
MEC3
MEC2
MEC1
VDD-0
VDD-1
VDD-2
VDD-3
VDD-4
VDD-5
VDD-6
VDD-7
VDD-8
VDD-9
VDD-10
VDD-11
VDD-12
VDD-13
VDD-14
VDD-15
VDD-16
VDD-17
VDD-18
VDD-19
VDD-20
VDD-21
VDD-22
VDD-23
VDD-24
VDD-25
DDRIV-288P_BLACK-RH-23
DIMMB2C
DIMMB2C
VCC_DDR
DDR_SPD
VPP25
VTT_DDR
DIMM_CA_VREF_B
DDRIV-288P_BLACK-RH-23
CPU_DQ_VREF_B
DIMM_CA_VREF_B
VCC_DDR
R29
2R/1%/4
C22
0.022u25X4
R28
24.9R/1%/4
R42
1KR1%0402
C32
0.1u16X4
C34
0.1u16X4
R43
1KR1%0402
DIMM_CA_VREF_B
C33
0.1u16X4
VCC_DDR
VPP25
C426
0.1u16X4
C427
0.1u16X4
DIMM_CA_VREF_B
C48
2.2u6.3X4
C43
0.1u16X4
VPP25
C429
0.1u16X4
VCC_DDR
C343
10u6.3X6
C83
10u6.3X6
C123
10u6.3X6
C148
10u6.3X6
C106
0.1u16X4
C151
0.1u16X4
C178
0.1u16X4
C299
0.1u16X4
C132
0.1u16X4
DIMM_CA_VREF_B
C59
2.2u6.3X4
C60
0.1u16X4
VPP25
C428
0.1u16X4
VCC_DDR
C337
10u6.3X6
C324
10u6.3X6
C300
10u6.3X6
C215
0.1u16X4
C207
0.1u16X4
C193
0.1u16X4
C179
0.1u16X4
C165
0.1u16X4
DIMMB1B
DIMMB1B
DDRIV-288P_BLACK-RH-23
DIMMB2B
DIMMB2B
DDRIV-288P_BLACK-RH-23
MICRO-STAR INT'L CO.,LTD.
Title
DDR4 POWER/GND-2
Size
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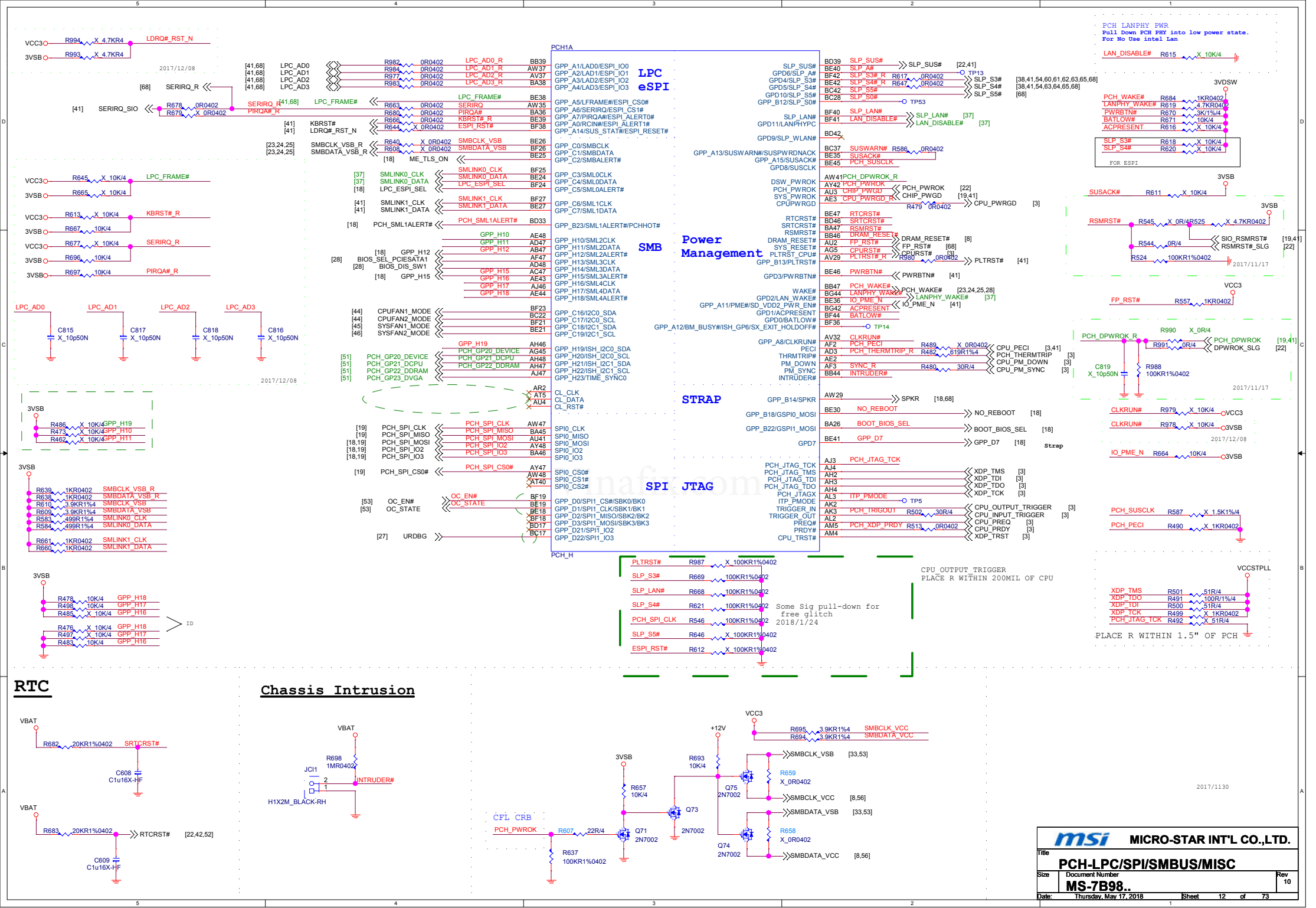
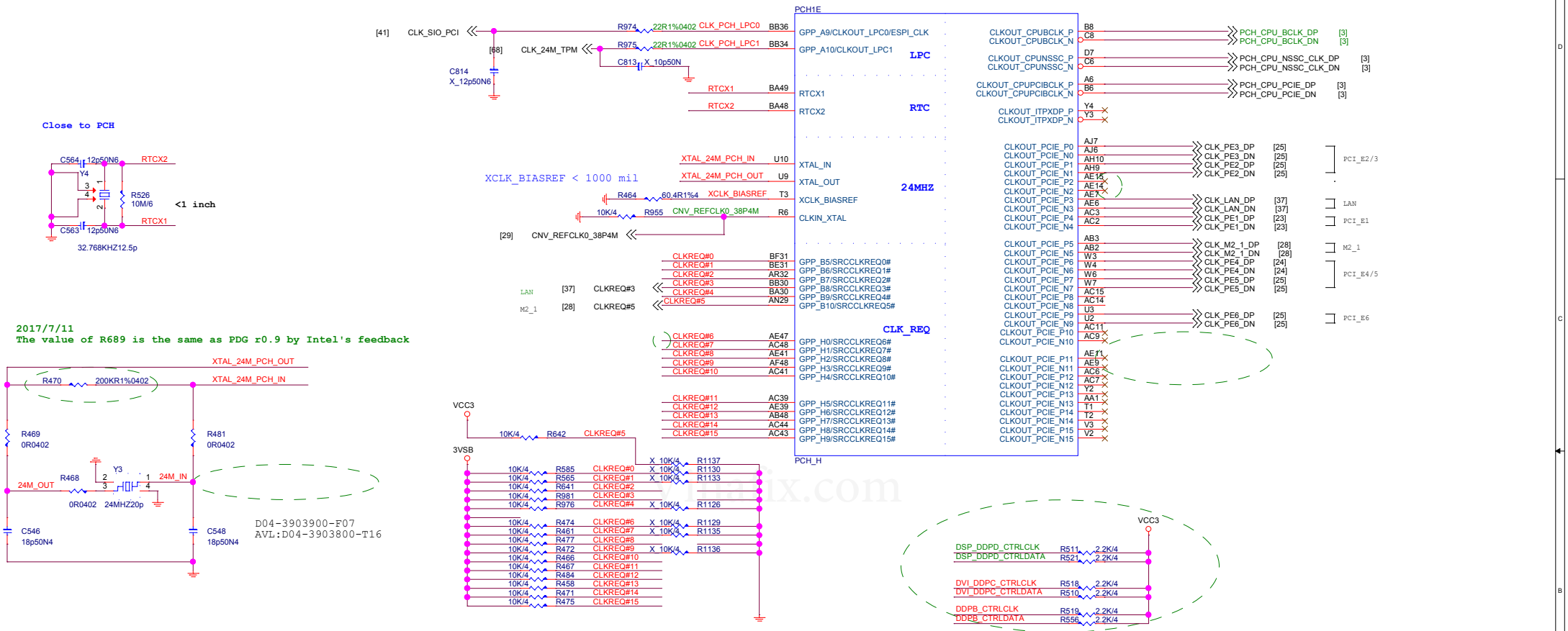

PCH1A
LPC eSPI
SMB
Power Management
STRAP
SPI JTAG
PCH_H
PCH LANPHY PWR
Pull Down PCH PHY into low power state.
For No Use intel Lan
RTC
Chassis Intrusion
CFL CRB
CPU_OUTPUT_TRIGGER
PLACE R WITHIN 200MIL OF CPU
Some Sig pull-down for free glitch 2018/1/24
PLACE R WITHIN 1.5" OF PCH
MICRO-STAR INT'L CO.,LTD.
PCH-LPC/SPI/SMBUS/MISC
MS-7B98..
Thursday, May 17, 2018

# PCH_CLK




2017/7/11
The value of R689 is the same as PDG r0.9 by Intel's feedback




D04-3903900-F07
AVL:D04-3903800-T16

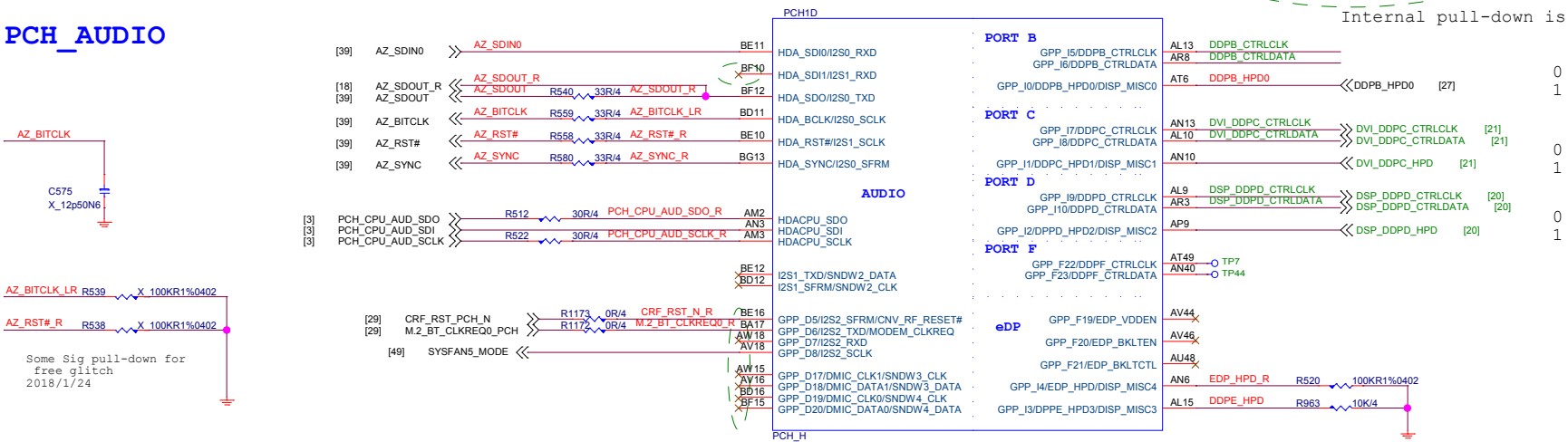






Internal pull-down is disabled after PCH_PWROK is high.

# PCH_AUDIO




0 : Port B is not detected.(Default)
1 : Port B is detected.

0 : Port C is not detected.(Default)
1 : Port C is detected.

0 : Port D is not detected.(Default)
1 : Port D is detected.

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Title: PCH-Clock/Audio

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DMI X4 for Consumer

PCH1B

DMI

PCIE

PCH_H

PCH1C

USB3

USB2

CRB:?

USB2_COMP <1000 mil

1.B360 don't support USB 2.0 port 12~13
2.USB 2.0 port 14 only if CNVi be supported

PCIECOMP_P
PCIECOMP_N
Length Match < 5mil

SATAXPCIE0-PE9
SATAXPCIE1-PE10
SATAXPCIE2-PE15
SATAXPCIE3-PE16
SATAXPCIE4-PE17
SATAXPCIE5-PE18
0--PCIE
1--SATA

KB CRB

| GFX SELECT TABLE | |
|---|---|
| | GFX STYLE |
| 0 | NORMAL GFX |
| 1 | CUSTOMER GFX |

| | |
|---|---|
| Title | PCH-DMI/PCIE/USB/SATA |
| Size | Document Number: MS-7B98.. Rev: 10 |
| Date: | Thursday, May 17, 2018 Sheet 14 of 73 |

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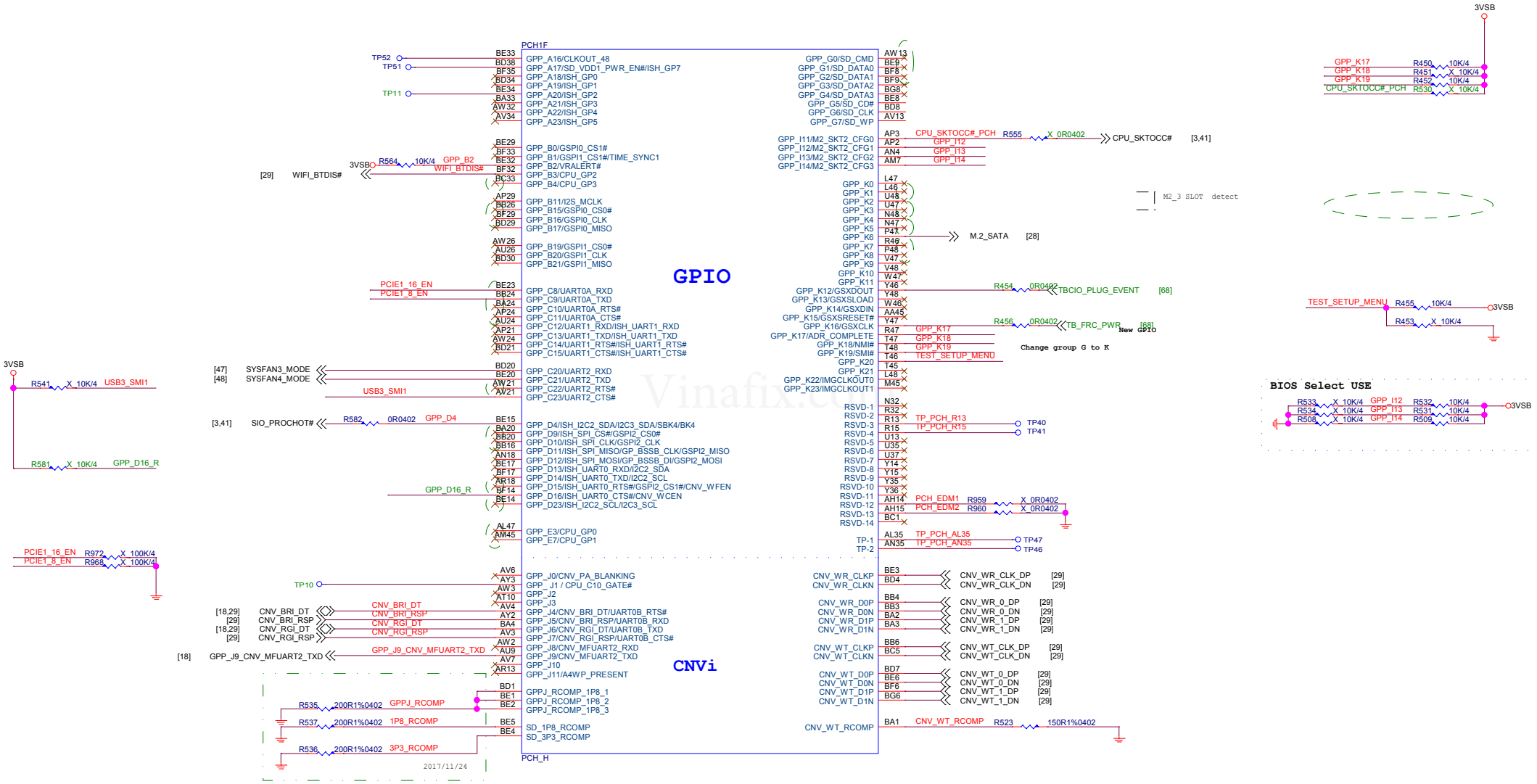
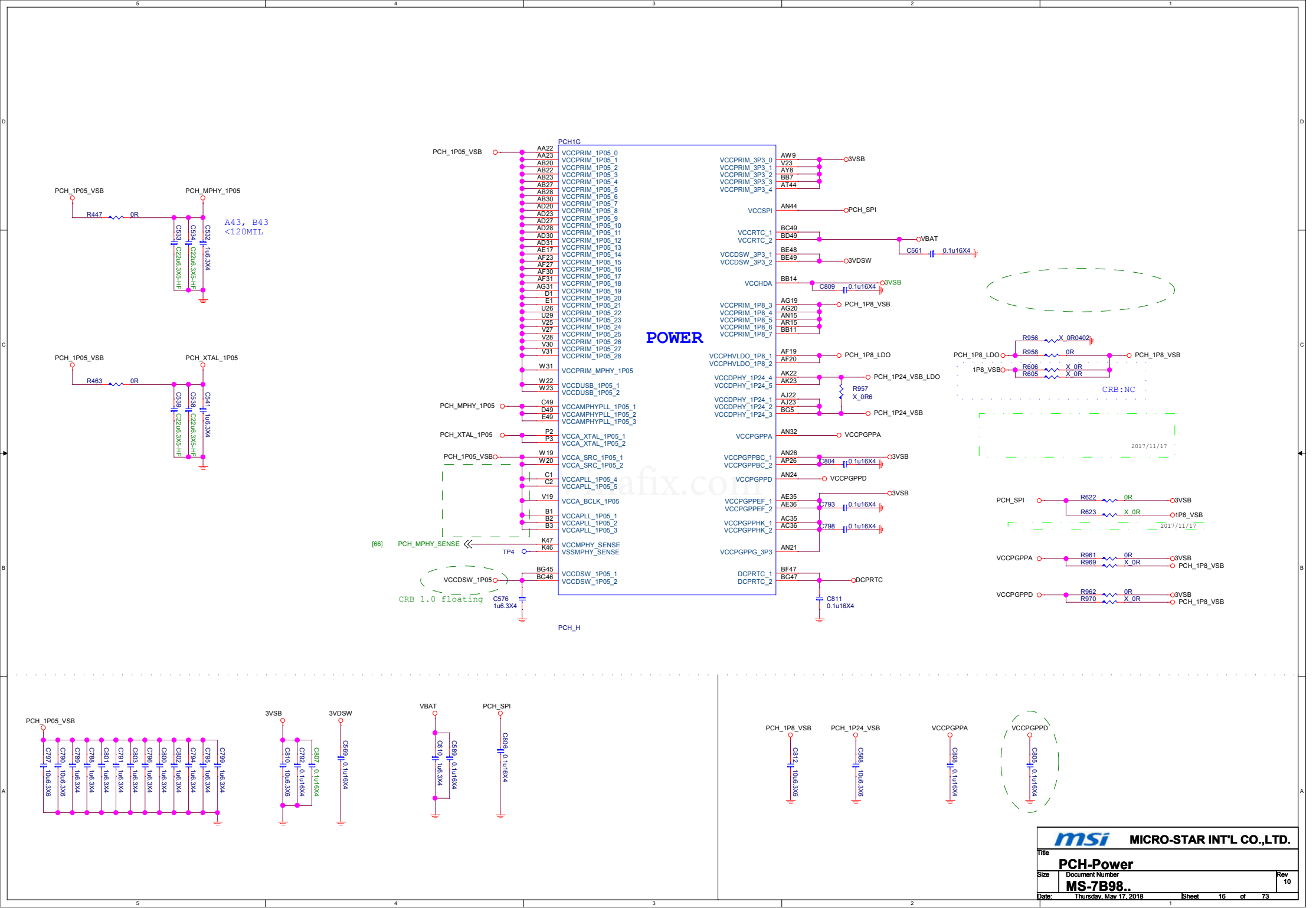
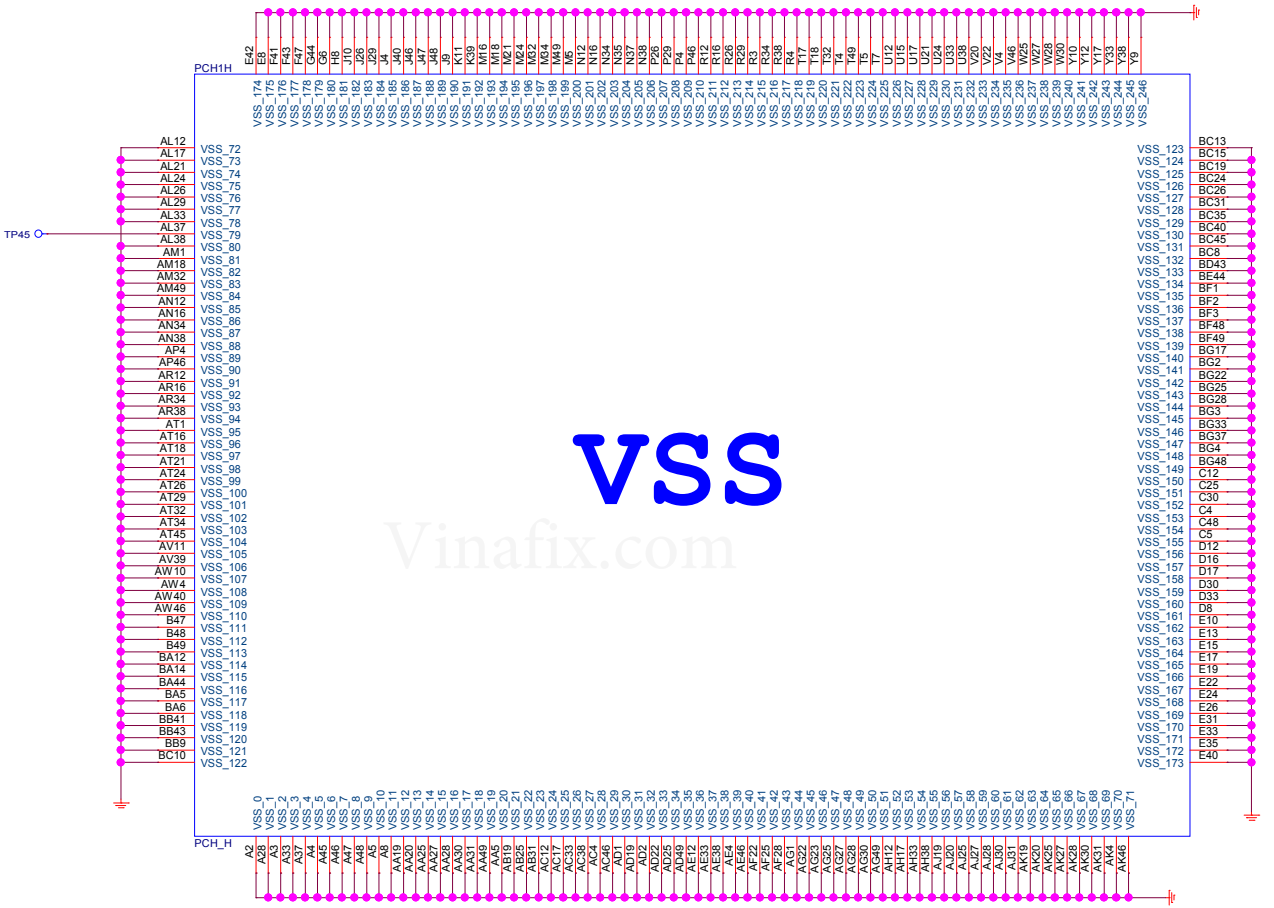



| | | |
|---|---|---|
| MSI | MICRO-STAR INT'L CO.,LTD. | |
| Title | PCH-GPIO/RSVD/CNVi | |
| Size | Document Number MS-7B98.. | Rev 10 |
| Date: Thursday, May 17, 2018 | Sheet 15 of 73 | |




| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title | PCH-Power | |
| Size | Document Number MS-7B98.. | Rev 10 |
| Date: Thursday, May 17, 2018 | Sheet 16 of 73 | |




| | |
|---|---|
| MSI | MICRO-STAR INT'L CO.,LTD. |
| Title | PCH-GND |
| Size | Document Number: MS-7B98.. Rev: 10 |
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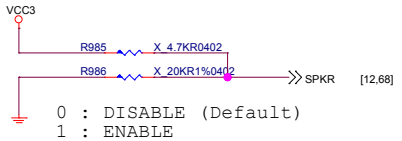
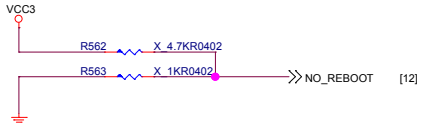
## TOP Swap




0 : DISABLE (Default)
1 : ENABLE

Internal pull-down is disabled after PCH_PWROK is high.

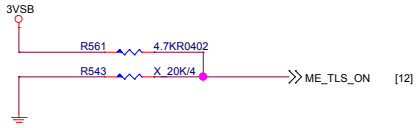
## No Reboot




0 : DISABLE (Default)
1 : ENABLE

Internal pull-down is disabled after PCH_PWROK is high.

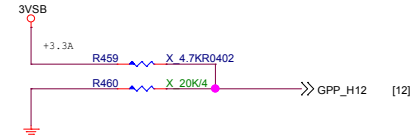
## TLS confidentiality




0 : DISABLE
1 : ENABLE (Default)

Internal pull-down is disabled after RSMRST# de-assert.

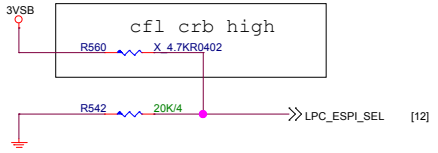
## ESPI FLASH SHARING MODE




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

Internal pull-down is disabled after RSMRST# de-assert.

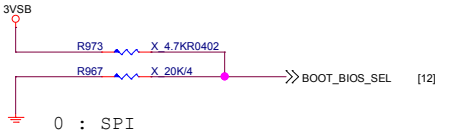
## LPC eSPI Mode




0 : LPC
1 : eSPI

Internal pull-down is disabled after RSMRST# de-assert.

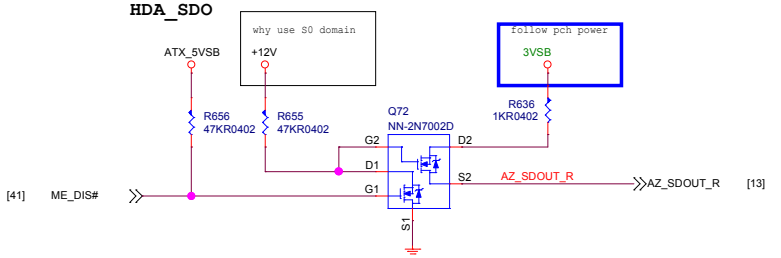
## Boot BIOS




0 : SPI
1 : LPC

Internal pull-down is disabled after PCH_PWROK is high.

## HDA_SDO




0 : Enable security measures defined in the Flash Descriptor. (Default)
1 : DISABLE:Flash Descritior Decurity(Override).

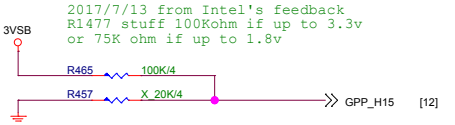
Internal pull-down is disabled after PCH_PWROK is high.

## DCI ENABLE


0 : DISABLE Intel DCI-OOB (Default)
1 : ENABLE Intel DCI-OOB

Internal pull-down is disabled after RSMRST# de-assert.

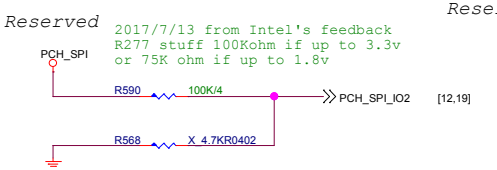
## ODT DISABLE



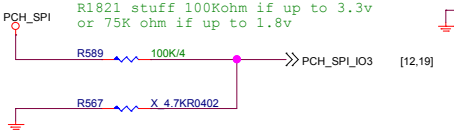

0 : JTAG ODT IS DISABLE IF LOW
1 :

Internal pull-down is disabled after RSMRST# de-assert.

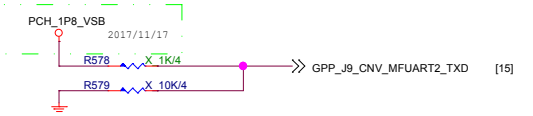
## Reserved




## Reserved



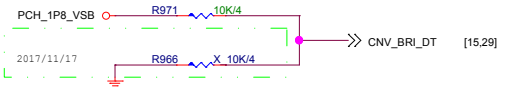

## SELECT THE SPI BIOS FLASH INTERFACE OPERATING VOLTAGE




0 = VCCPSPI IS CONNECTED TO 3.3V RAIL (DEFAULT)
1 = VCCPSPI IS CONNECTED TO 1.8V RAIL

PCH HAS INTERNAL 20K PD

## XTAL FREQUENCY SELECTION

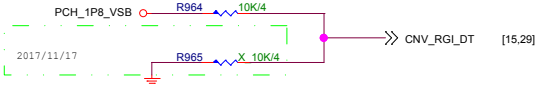



1 = 24MHZ (25MHZ WHEN XTAL FREQ DIVIDER NON ZERO
0 = 38.4/19.2MHZ

XTAL_SEL1 :Internal Pull down

## MODEM AND NFC REFERENCE CLOCK SOURCE SELECT

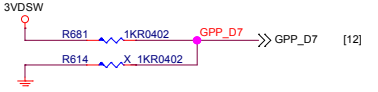
2017/7/12 from Intel's feedback
PU if the integrated CNVi is enabled
PD if the integrated CNVi is disabled




1 = CLKIN_XTAL_LCP
0 = XTAL_IN (CNP AND LCP SHARE XTAL)

XTAL_SEL2: Internal Pull High.

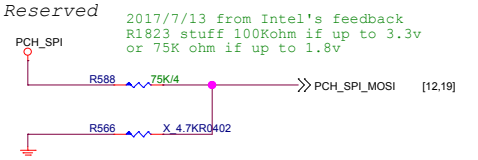
## XTAL INPUT MODE




1 = XTAL INPUT IS DIFFERENTIAL
0 = XTAL INPUT IS SINGLE-ENDED

PCH HAS INTERNAL 20K PD

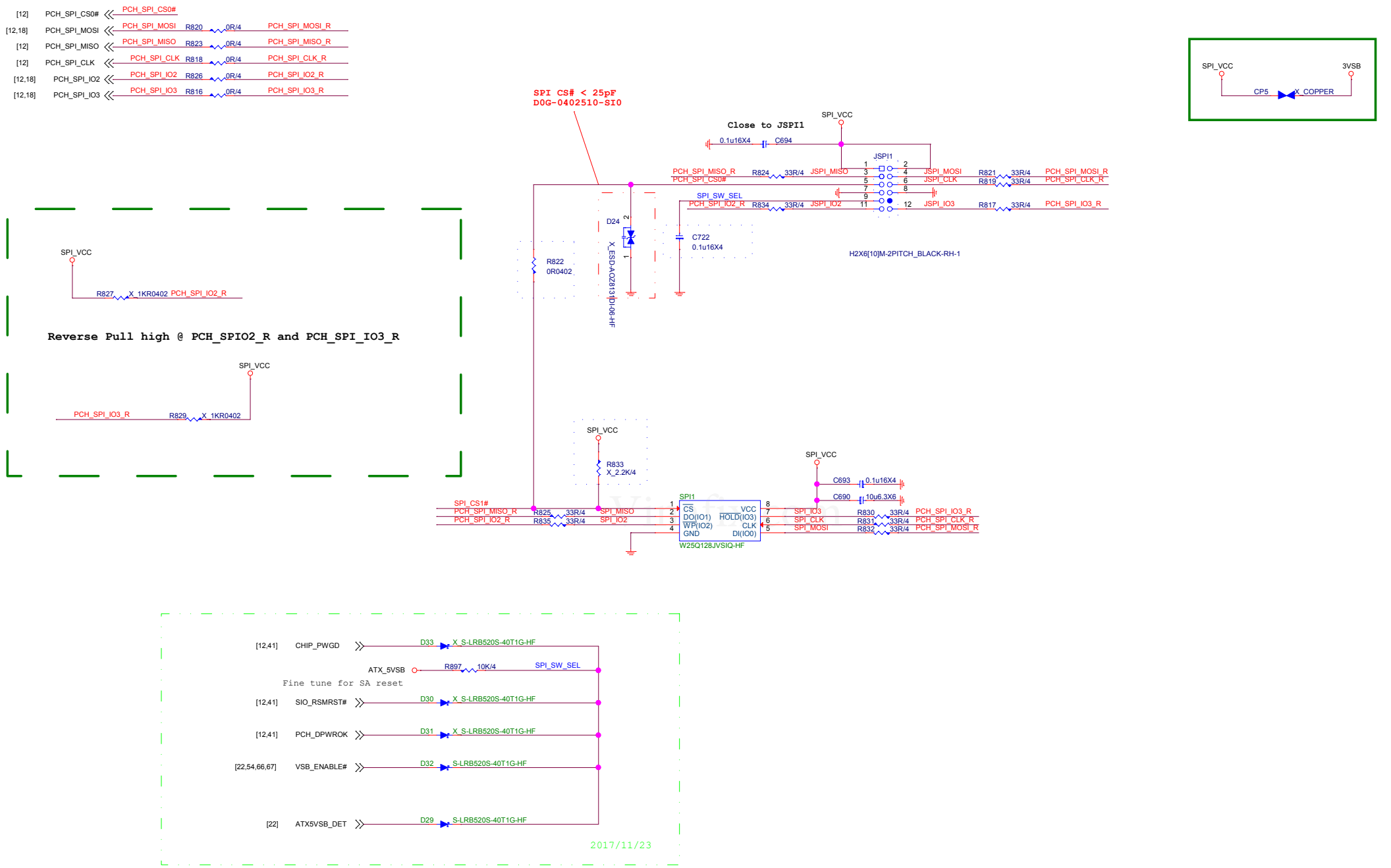
## Reserved






MICRO-STAR INT'L CO.,LTD.

Title: PCH-Strap
Size: Document Number: MS-7B98.. Rev: 10
Date: Thursday, May 17, 2018 Sheet 18 of 73



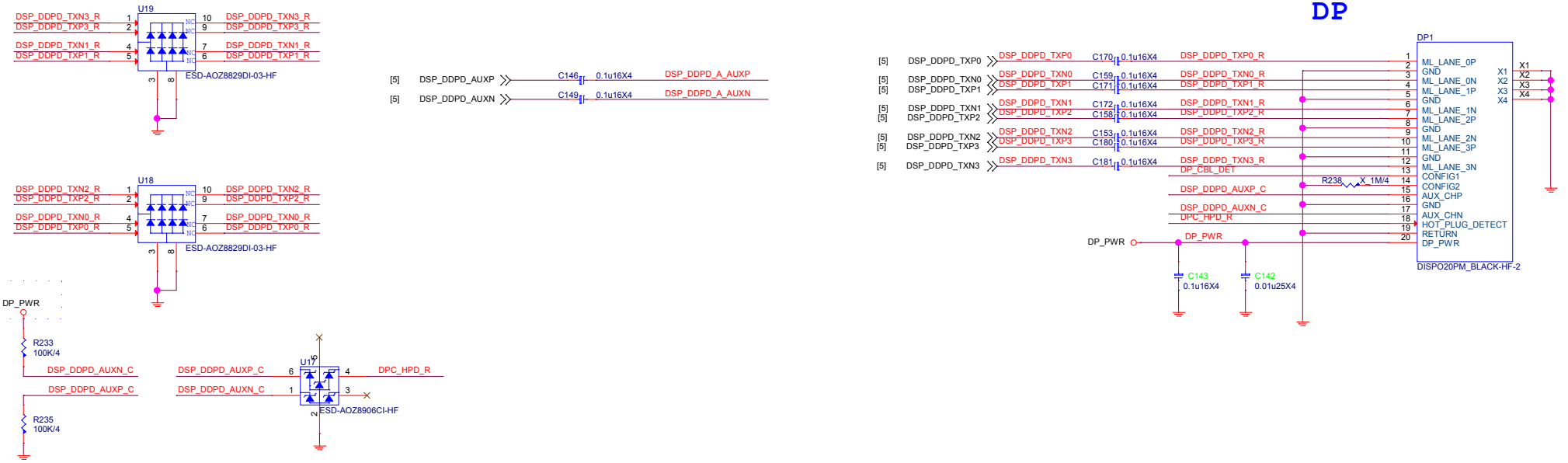

MICRO-STAR INT'L CO.,LTD.

Title: SPI ROM-BIOS

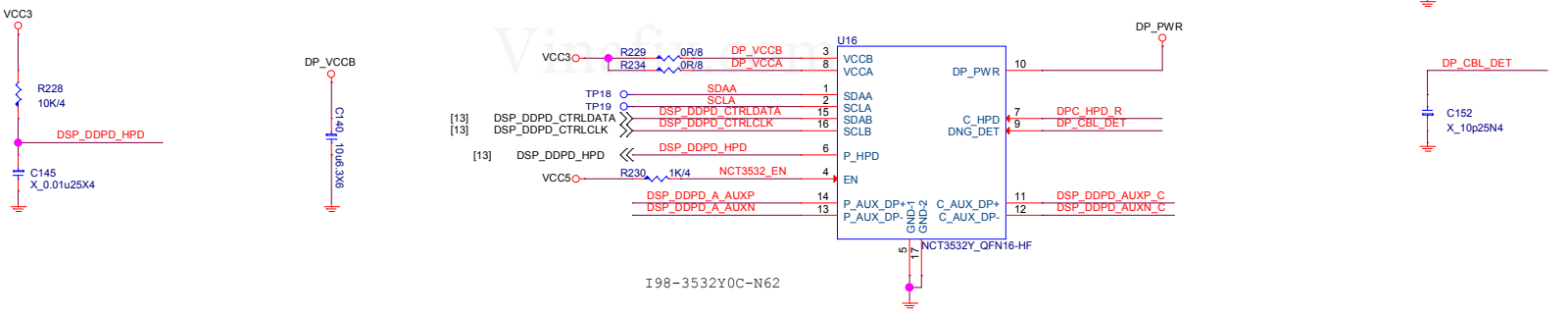
Size | Document Number: MS-7B98.. | Rev: 10

Date: Thursday, May 17, 2018 | Sheet 19 of 73

# DP




DP_VCCB trace don't less than 30 mil





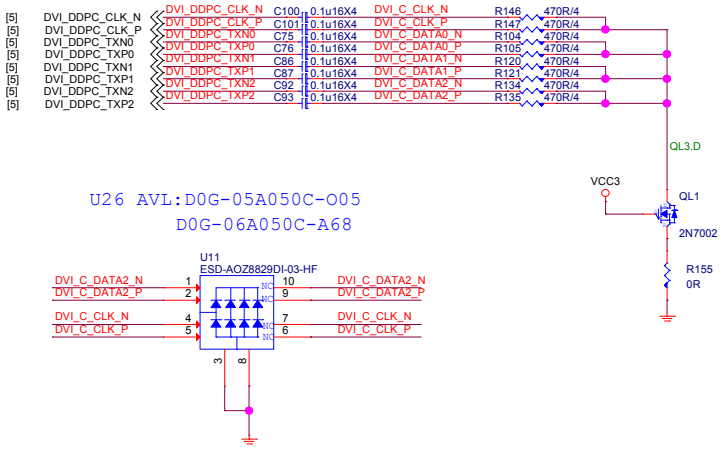

MICRO-STAR INT'L CO.,LTD.

Title: HDMI Connector

Size | Document Number: MS-7B98.. | Rev: 10

Date: Thursday, May 17, 2018 | Sheet 20 of 73

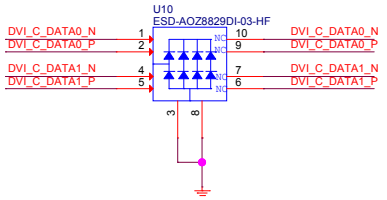
VGA: resolution of 2048x1536 pixels with 32-bit color at 75 Hz (4:3 QXGA)

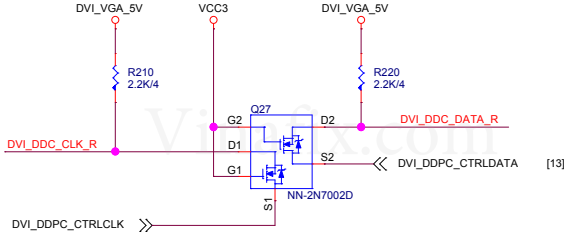


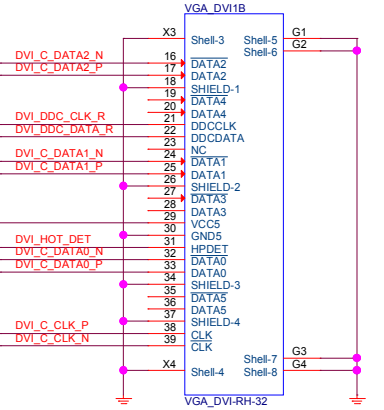

U26 AVL:D0G-05A050C-005
D0G-06A050C-A68

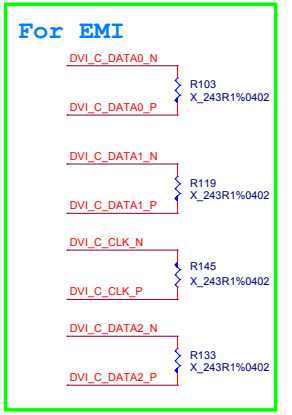


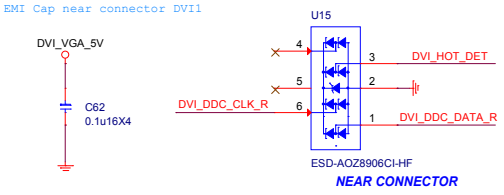

U27 AVL:D0G-05A050C-005
D0G-06A050C-A68

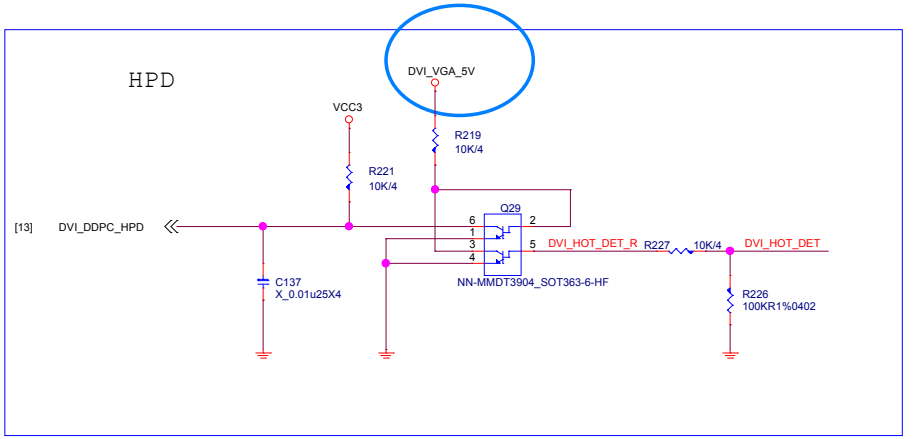


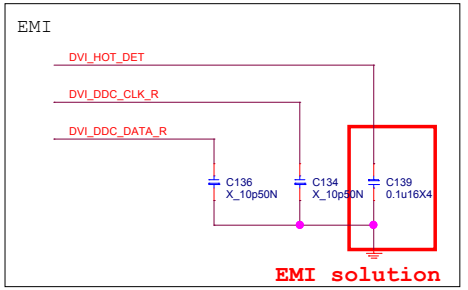




MICRO-STAR INT'L CO.,LTD.

Title: DVI Connector

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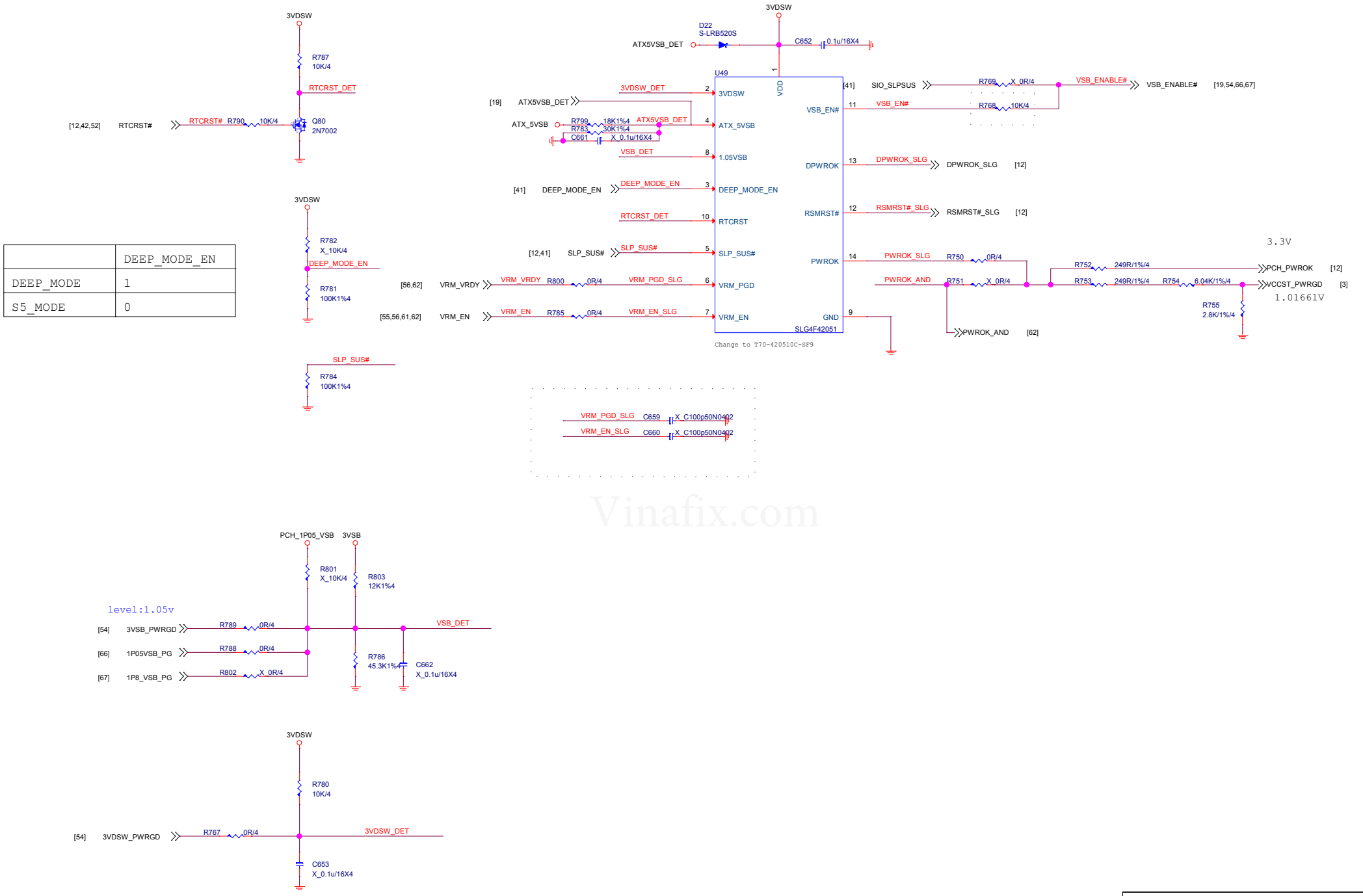
Date: Thursday, May 17, 2018 | Sheet 21 of 73




| | DEEP_MODE_EN |
|---|---|
| DEEP_MODE | 1 |
| S5_MODE | 0 |



MICRO-STAR INT'L CO.,LTD.

Title: SILEGO

Size | Document Number: MS-7B98.. | Rev: 10

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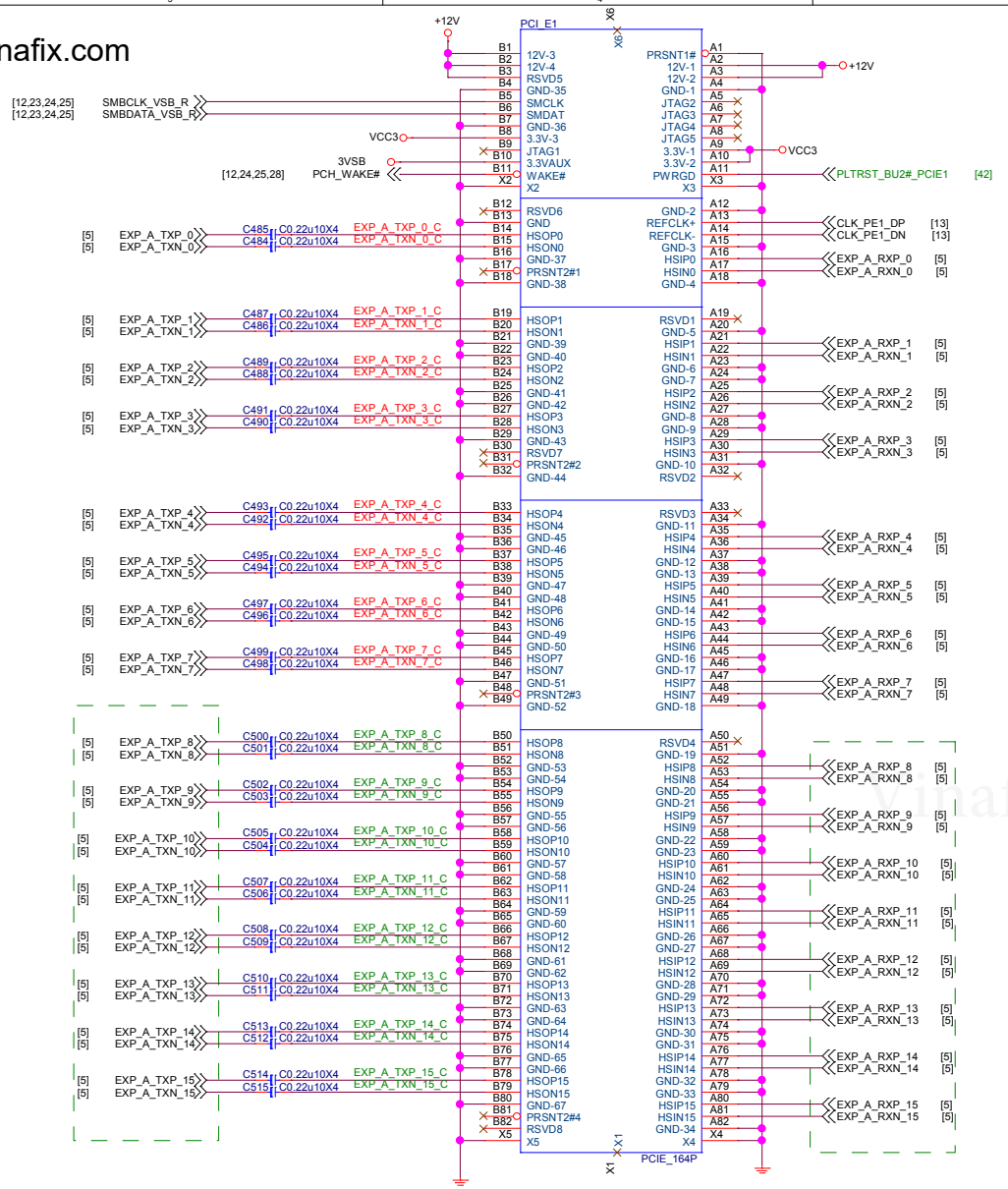
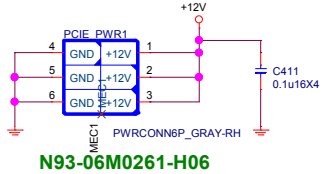
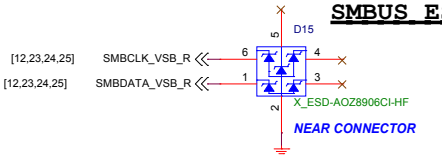
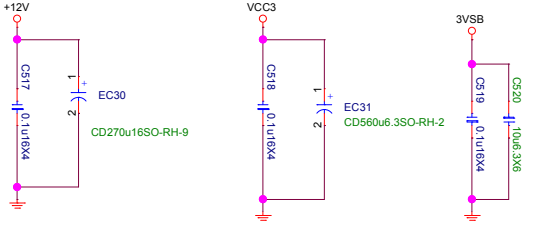
5.5A at +12V
3A at VCC3
375mA at 3VSB




N93-06M0261-H06




MICRO-STAR INT'L CO.,LTD.

Title: PCIE SLOT-CPU (X16)

Size | Document Number: MS-7B98.. | Rev: 10

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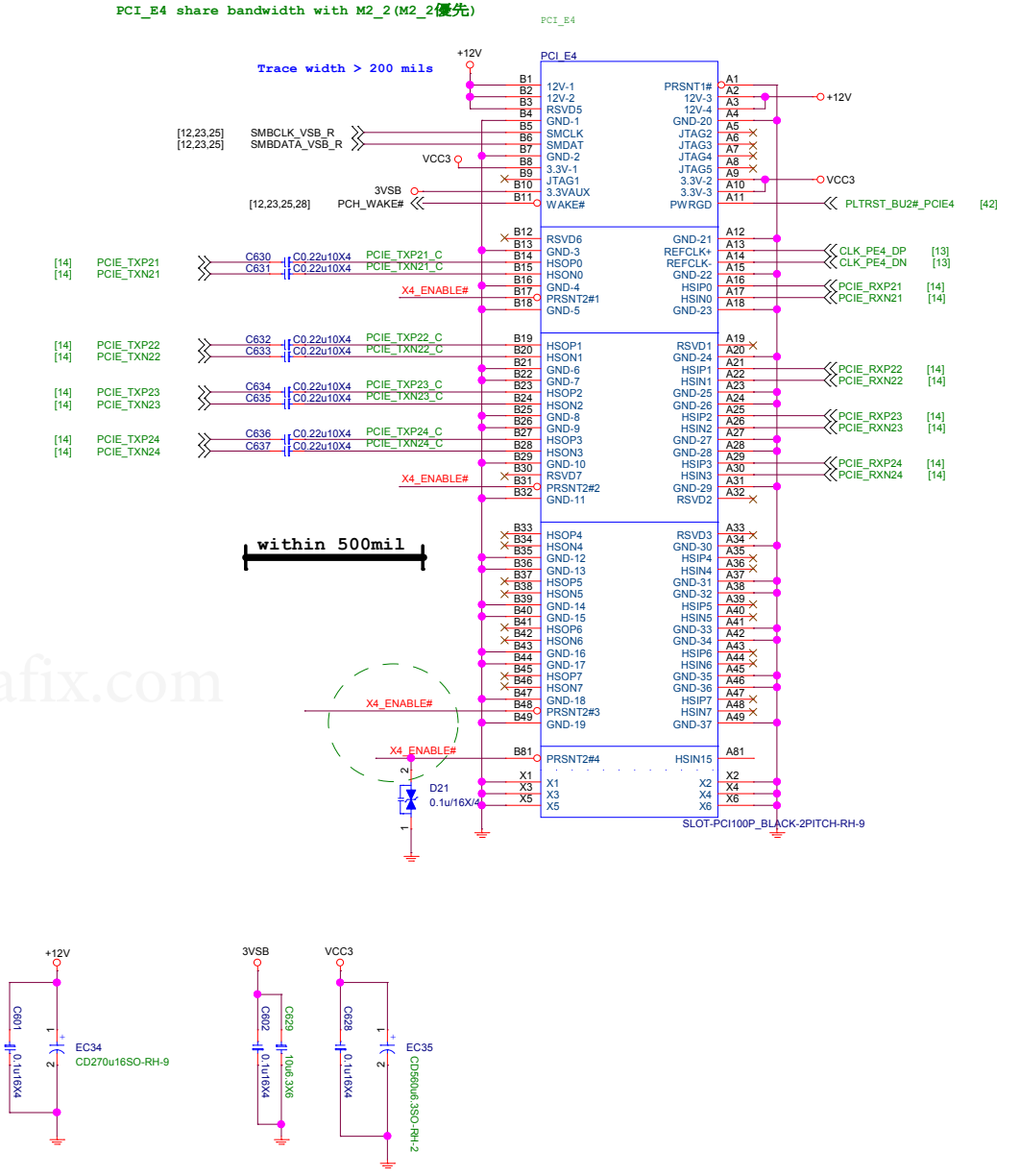
# PCI_Express X4 Slot

2.1A at +12V
3A at VCC3
375mA at 3VSB

PCI_E4 share bandwidth with M2_2(M2_2優先)






MICRO-STAR INT'L CO.,LTD.

Title: PCIE SLOT-PCH (X4)

Size | Document Number: MS-7B98.. | Rev: 10

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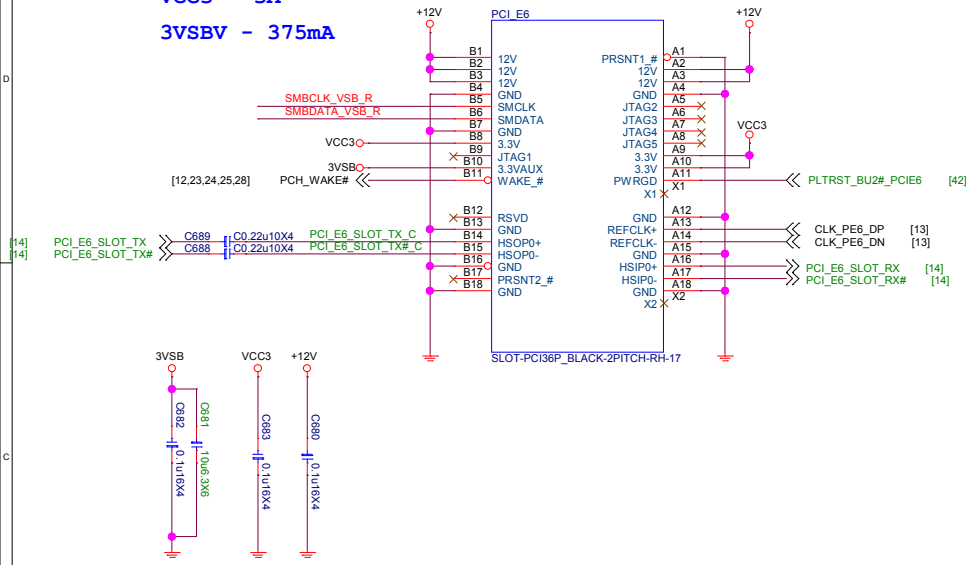
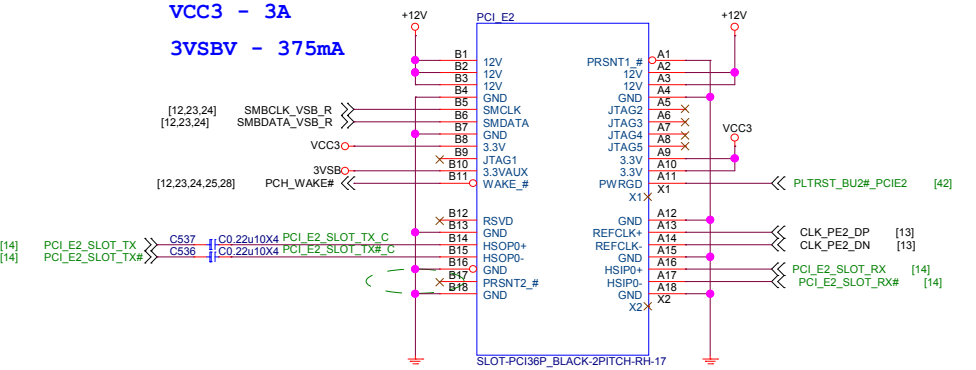
# PCH PCIE X1 Slot

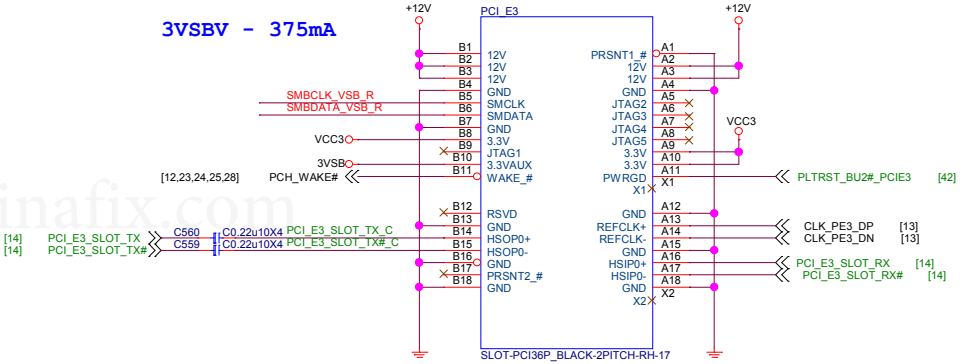
12V - 0.5A
VCC3 - 3A
3VSBV - 375mA



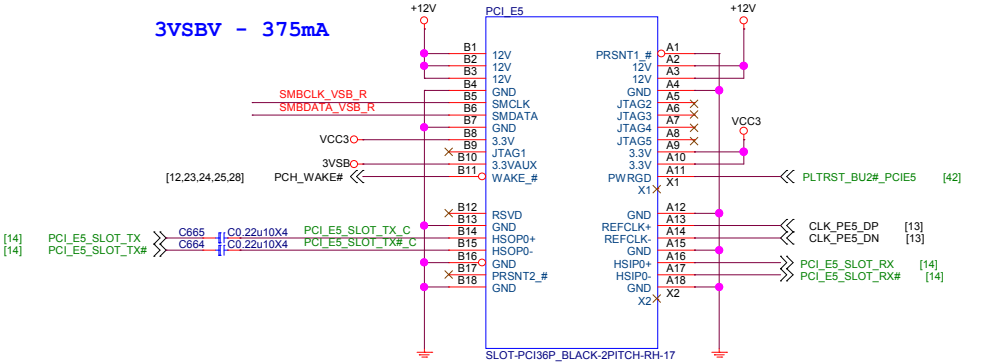

12V - 0.5A
VCC3 - 3A
3VSBV - 375mA




12V - 0.5A
VCC3 - 3A
3VSBV - 375mA




12V - 0.5A
VCC3 - 3A
3VSBV - 375mA






MICRO-STAR INT'L CO.,LTD.

Title: PCIE SLOT-PCH (X1)

Size | Document Number: MS-7B98.. | Rev: 10

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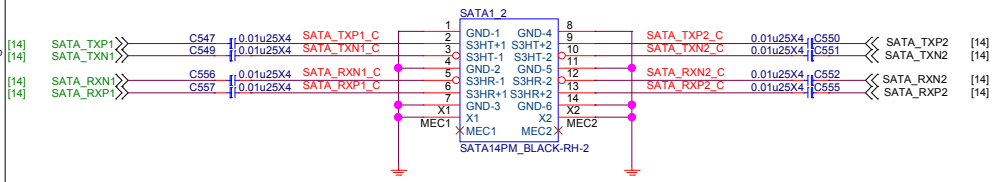
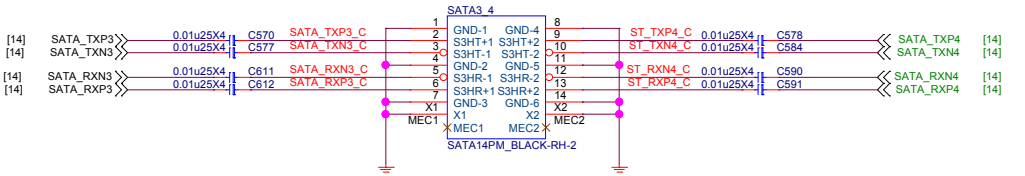
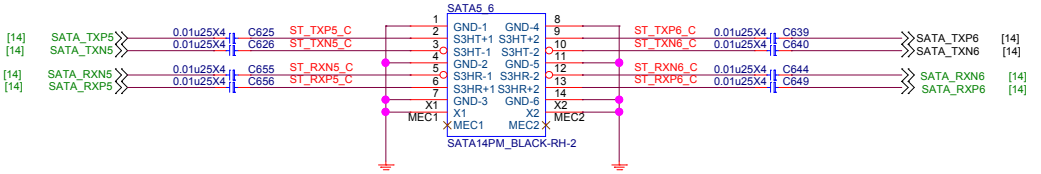
## SATA 6G PORT 1.2




## SATA 6G PORT 3.4




## SATA 6G PORT 5.6






MICRO-STAR INT'L CO.,LTD.

Title: SATA CNT

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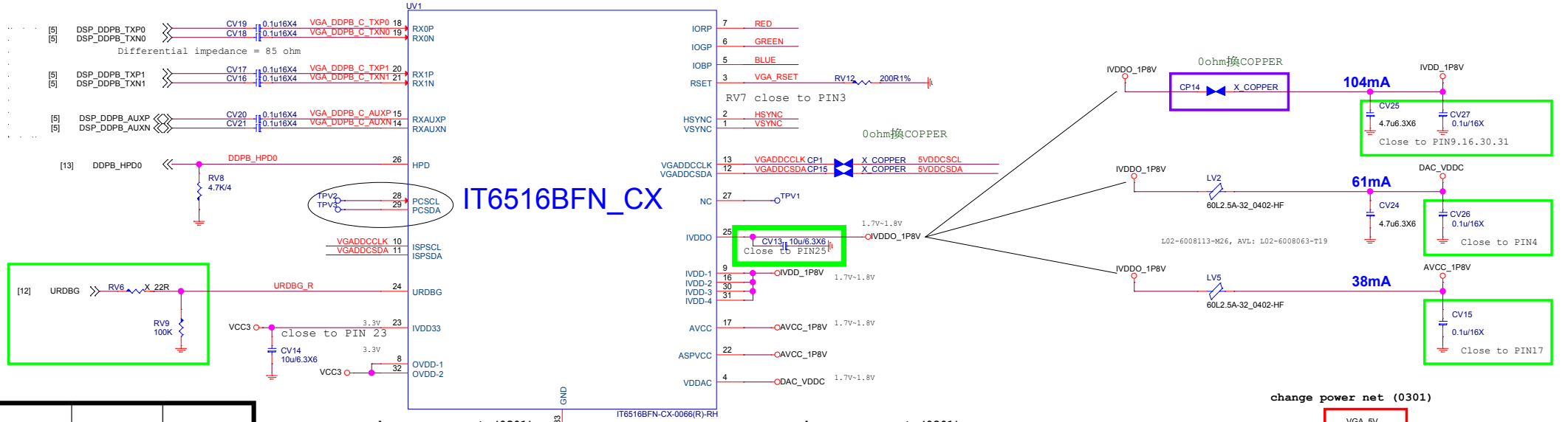
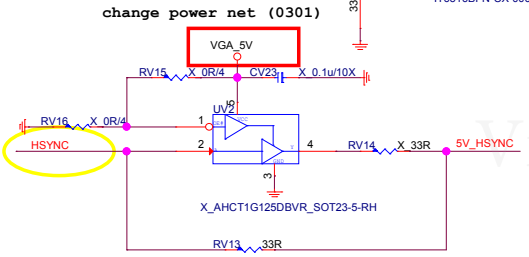
**Note:**

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

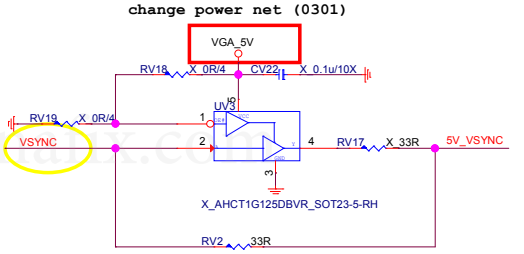



| System Status | GPIO | IT6516b's HPD |
|---|---|---|
| Legacy Mode (VBIOS) /DOS MOde | HIGH | Force HIGH |
| Windows /UEFI Mode (GOP) | LOW | Depend on VGA device's plug/unplug |

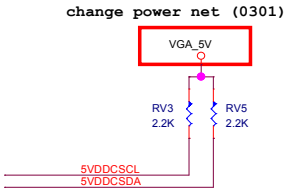
change power net (0301)




change power net (0301)

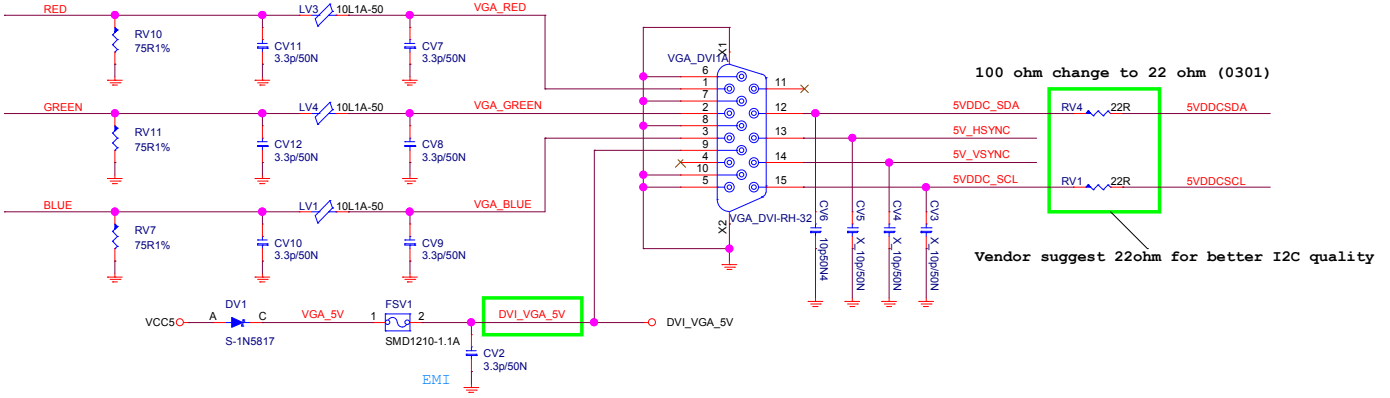



change power net (0301)

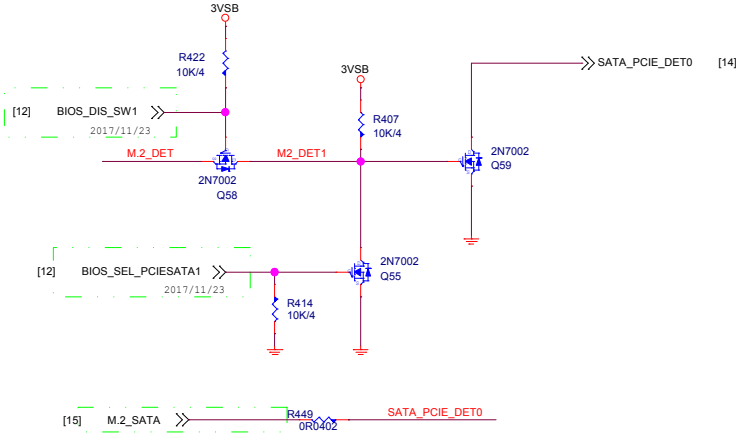


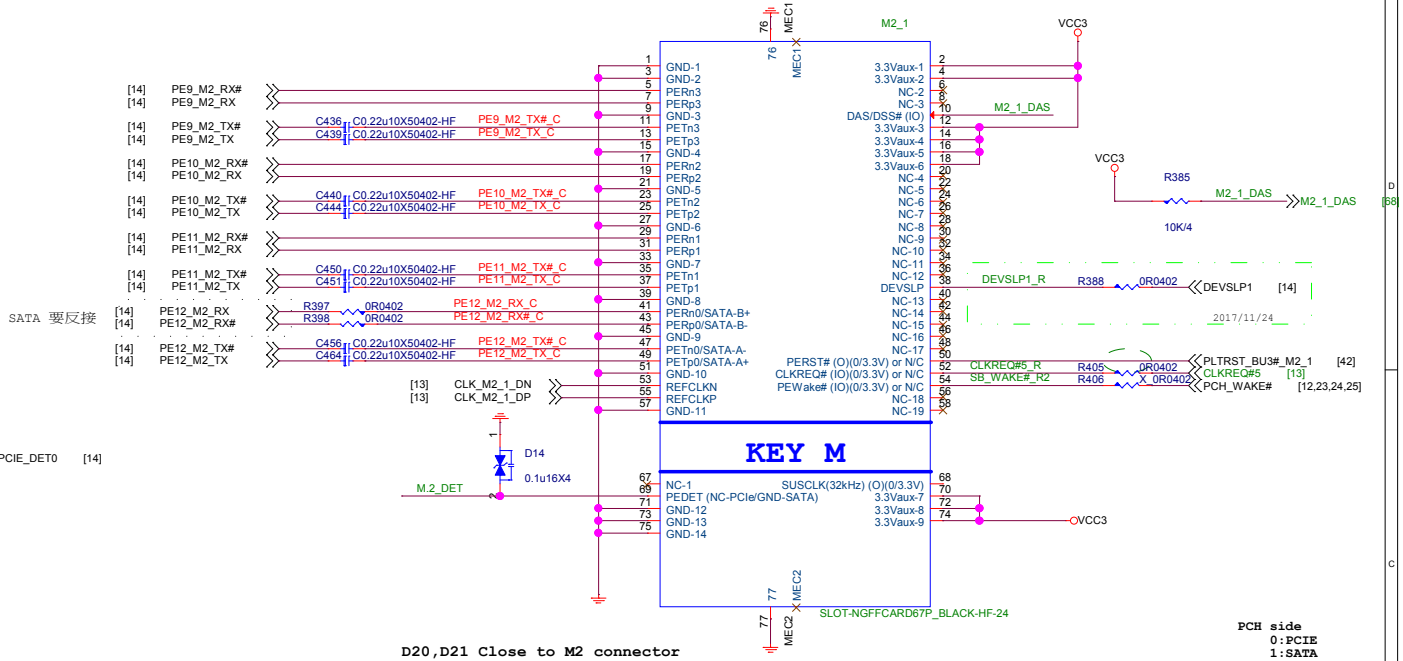

remove 3.3V-to-5V level shifter (0301)


modify DV2,DV5 library :library pin5 change to dummy, Avoid PIN5(Power PIN) short other same library
20180116



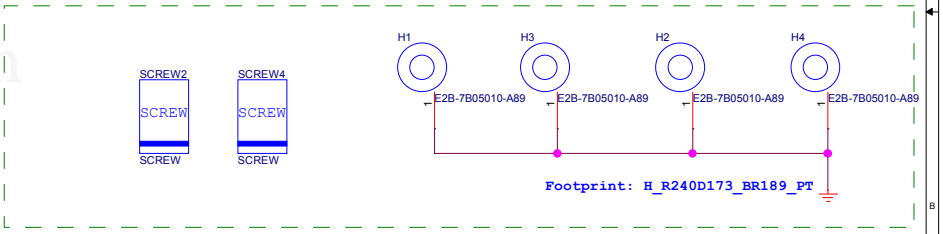

| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title | M.2-SLOT1 | |
| Size | Document Number MS-7B98.. | Rev 10 |
| Date: Thursday, May 17, 2018 | Sheet 27 of 73 | |

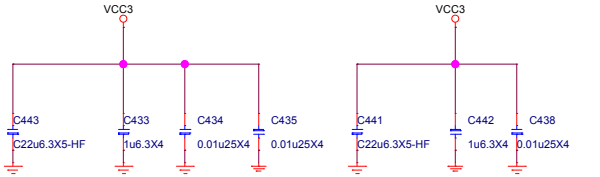


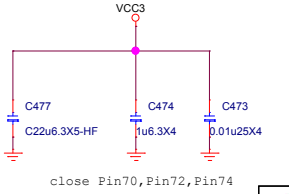




D20,D21 Close to M2 connector

PCH side
0:PCIE
1:SATA
M.2 side
0:SATA
NC:PCIE




***BIOS_MODE***

| *DIS_SW* | *M1_SEL_PCIESATA* | *Mode* |
|---|---|---|
| *0* | *1* | *M2-SATA* |
| *0* | *0* | *M2-PCIE* |
| *GPI* | *GPI* | *AUTO* |

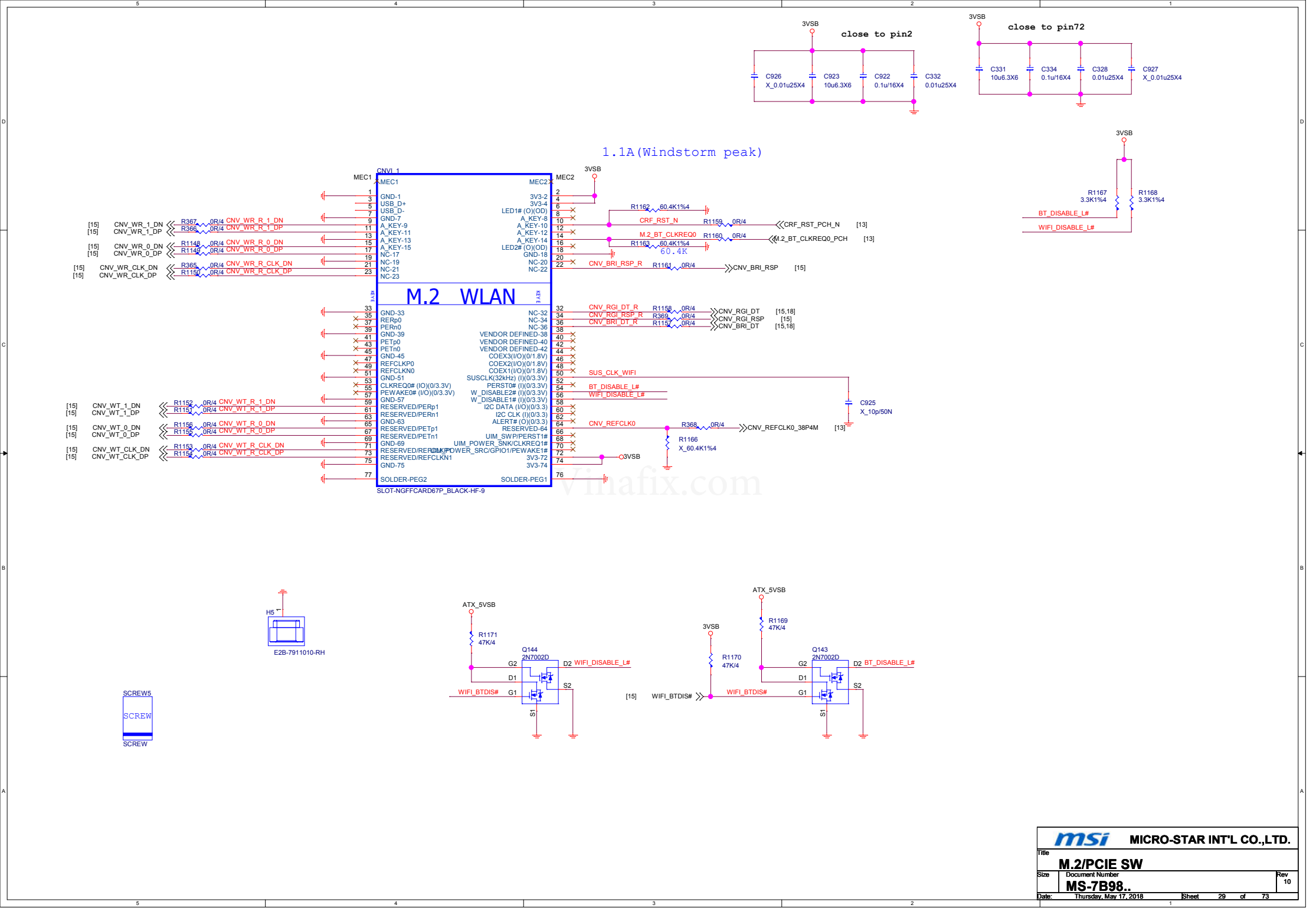


MICRO-STAR INT'L CO.,LTD.

Title: M.2-SLOT2

Size | Document Number: MS-7B98.. | Rev: 10

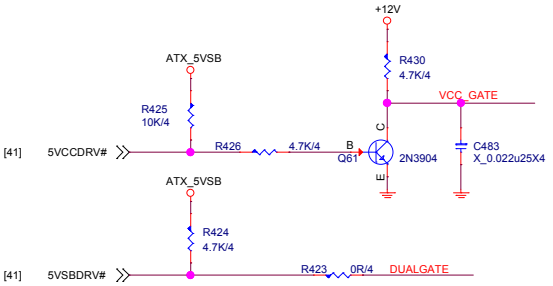
Date: Thursday, May 17, 2018 | Sheet 28 of 73

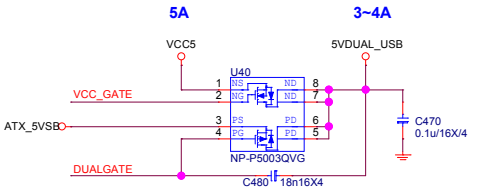




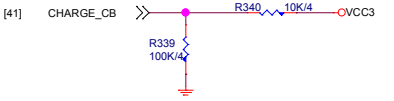

| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: M.2/PCIE SW | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
| Date: Thursday, May 17, 2018 | Sheet 29 of 73 | |

## 5VDUAL_USB

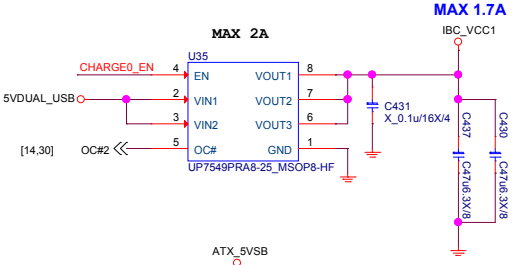


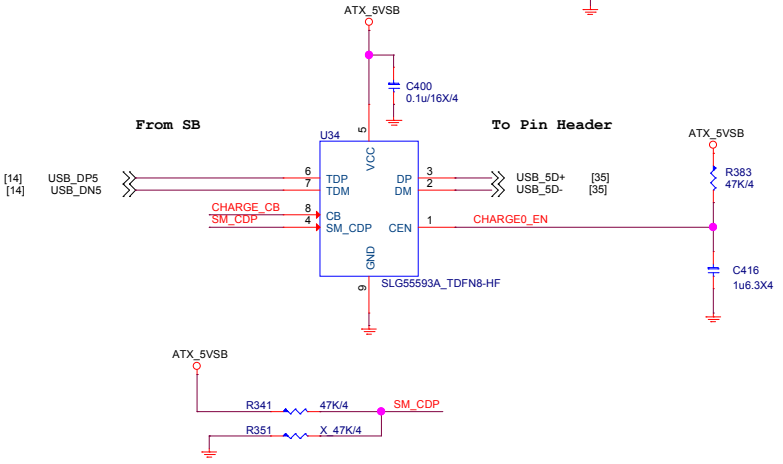




Pin power : I_3VSB
Register power : I_3VSB
Register reset : I_3VSB

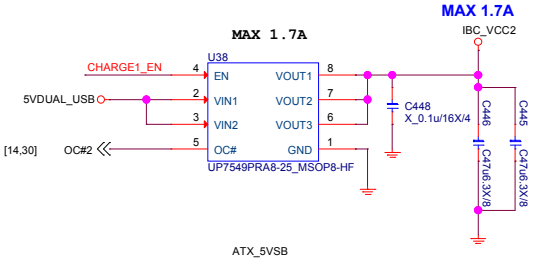


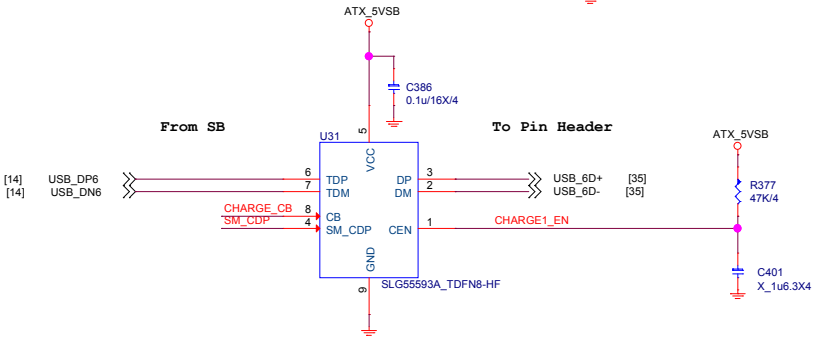

## USB POWER PORT 0 For USB Charging




## USB POWER PORT 1 For USB Charging






MICRO-STAR INT'L CO.,LTD.

Title: ASM1083 bri

Size | Document Number: MS-7B98.. | Rev: 10

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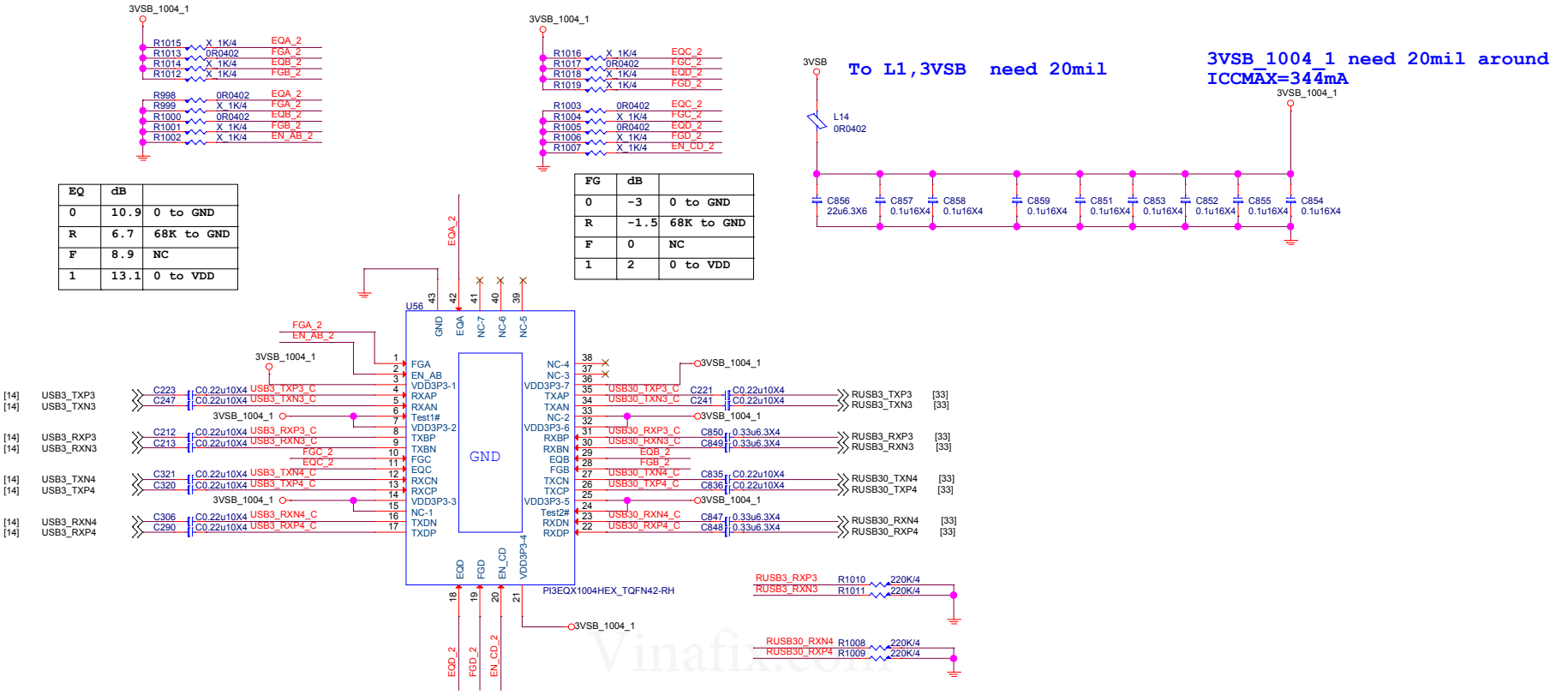
# Rear USB3.1 Redriver




| EQ | dB | |
|---|---|---|
| 0 | 10.9 | 0 to GND |
| R | 6.7 | 68K to GND |
| F | 8.9 | NC |
| 1 | 13.1 | 0 to VDD |

| FG | dB | |
|---|---|---|
| 0 | -3 | 0 to GND |
| R | -1.5 | 68K to GND |
| F | 0 | NC |
| 1 | 2 | 0 to VDD |



MICRO-STAR INT'L CO.,LTD.

Title: Rear USB31 redriver

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Date: Thursday, May 17, 2018 | Sheet 31 of 73

[14] USB_DP2
[14] USB_DN2

[14] USB_DP1
[14] USB_DN1

3VSB
C344 0.1u16X4
U25
USB_DP1 6 4 USB_DP2
USB_DN1 1 3 USB_DN2
5 2
ESD-AOZ8906CI-HF
NEAR CONNECTOR

U29
ESD-AOZ8829DI-03-HF
USB3_RXP2 1 10 USB3_RXP2
USB3_RXN2 2 9 USB3_RXN2
USB3_RXN1 4 7 USB3_RXN1
USB3_RXP1 5 6 USB3_RXP1
NC NC NC NC
3 8
NEAR CONNECTOR

U27
ESD-AOZ8829DI-03-HF
USB3_TXP2_C 1 10 USB3_TXP2_C
USB3_TXN2_C 2 9 USB3_TXN2_C
USB3_TXP1_C 4 7 USB3_TXP1_C
USB3_TXN1_C 5 6 USB3_TXN1_C
NC NC NC NC
3 8
NEAR CONNECTOR

2017/6/22
EC58 is changed from 470uF
to 560uF by buyer request

## LAN_USB1

5V_RUSB_2

[14] USB3_TXP2
[14] USB3_TXN2
C374 C0.22u10X4 USB3_TXP2_C
C375 C0.22u10X4 USB3_TXN2_C
[14] USB3_RXP2
[14] USB3_RXN2
USB3_RXP2
USB3_RXN2

[14] USB3_TXP1
[14] USB3_TXN1
C389 C0.22u10X4 USB3_TXP1_C
C390 C0.22u10X4 USB3_TXN1_C
[14] USB3_RXP1
[14] USB3_RXN1
USB3_RXP1
USB3_RXN1

LAN_USB1A
USB_DP2 12 D1+
USB_DN2 11 D1-
18 SSTX1+
17 SSTX1-
15 SSRX1+
14 SSRX1-
UP
USB_DP1 3 D0+
USB_DN1 2 D0-
9 SSTX0+
8 SSTX0-
6 SSRX0+
5 SSRX0-
DOWN
VBUS-2 10
GND_D-2 16
GND-6 13
GND-7 33
GND-8 34
GND-9 35
GND-10 36
VBUS-1 1
GND_D-1 7
GND-1 4
GND-2 37
GND-3 38
GND-4 39
GND-5 40
RJ45_USBX2_LEDX2_TX-RH-93

C326 0.1u16X4
C327 1uF6.3X4
EC26 CD560M6.3SO-RH-2
R285 10KR1%0402
OC#0 [14]
R286 15K1%4

Change to N58-32F0291-F02 20180426



MICRO-STAR INT'L CO.,LTD.

Title: Rear LAN USB3.1 G2

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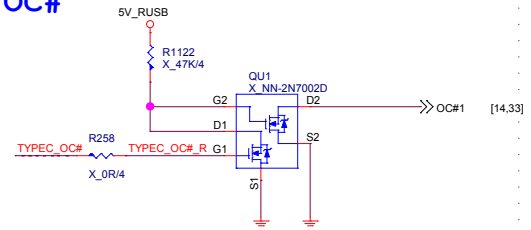
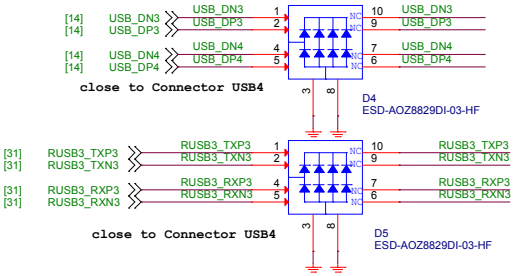
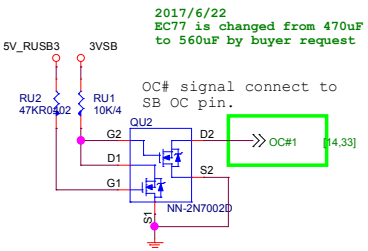
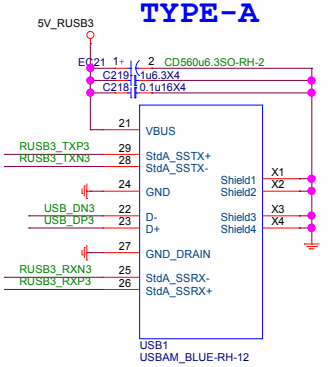
## VBUS OC#



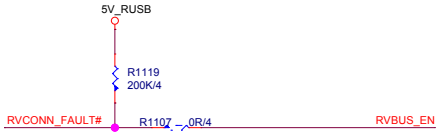




## TYPE-A



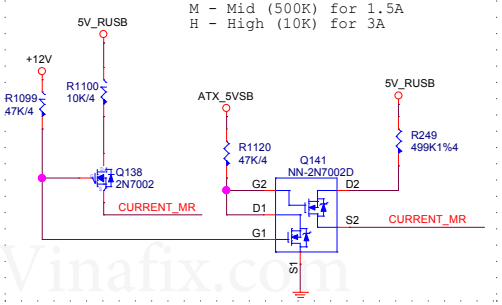

## VCONN OC#



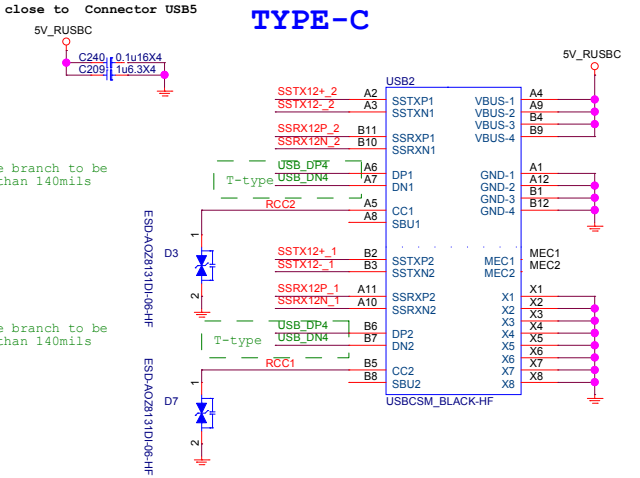

## Current Mode

*3A under S0 mode*
*1.5A under S3 mode*

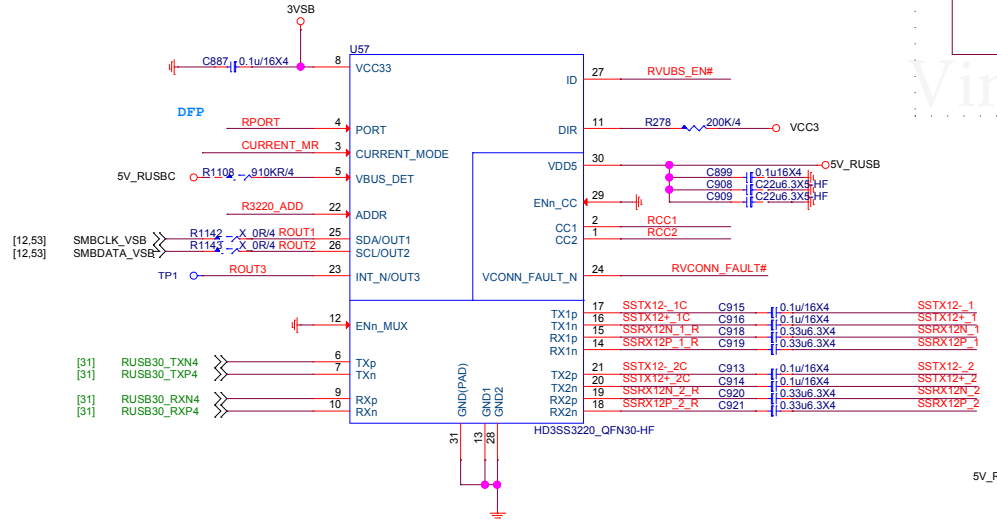
L - Default for 900mA
M - Mid (500K) for 1.5A
H - High (10K) for 3A




## TYPE-C

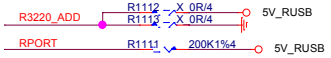


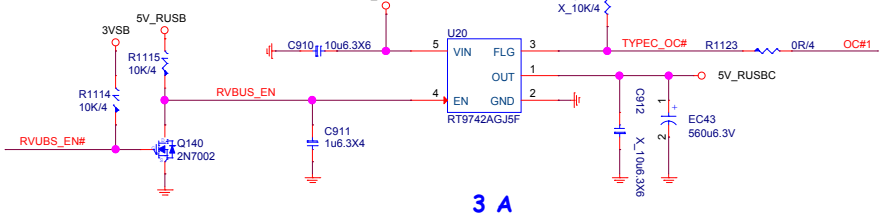

## USB Type-C MUX with Configuration Channel (CC)




Vinafix.com

| R3220_ ADD | High | Low | NC |
|---|---|---|---|
| RPORT | 0x67 | 0x47 | GPIO mode(V) |
| | DFP(V) | UFP | DRP |

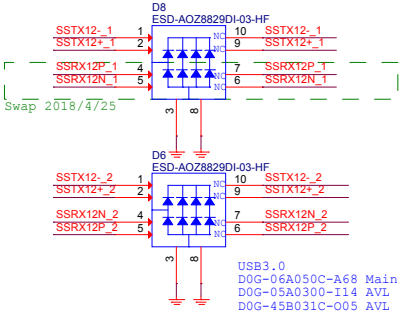



**3 A**
**min 80mil.**

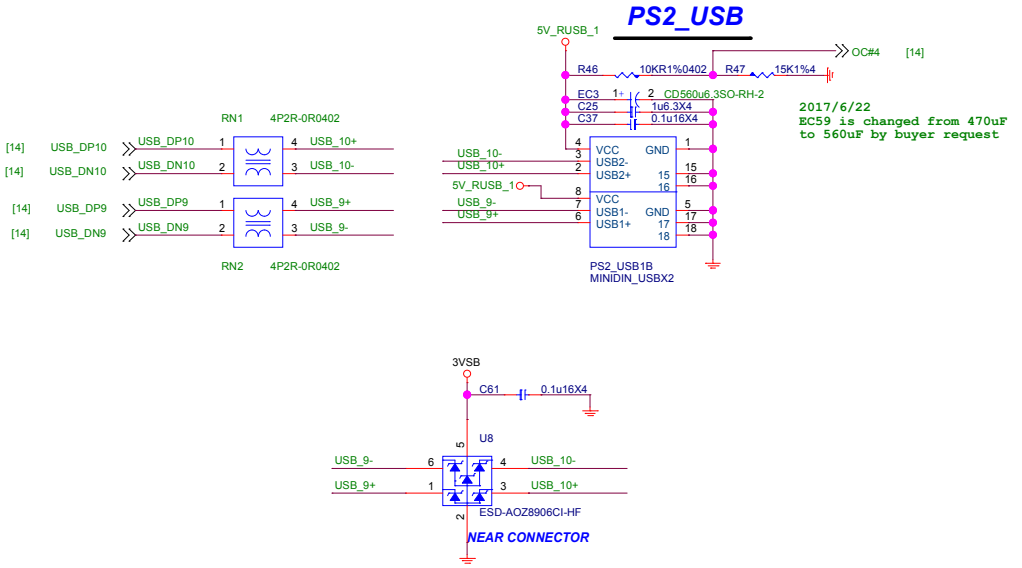
## ESD Protection

***NEAR AC CAP***




| MICRO-STAR INT'L CO.,LTD. | | |
|---|---|---|
| Title: RUSB 3.1 G2 A+C | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
| Date: Thursday, May 17, 2018 | Sheet 33 of 73 | |

# REAR USB2.0



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| | | |
|---|---|---|
| Title | Rear USB2.0 | |
| Size | Document Number MS-7B98.. | Rev 10 |
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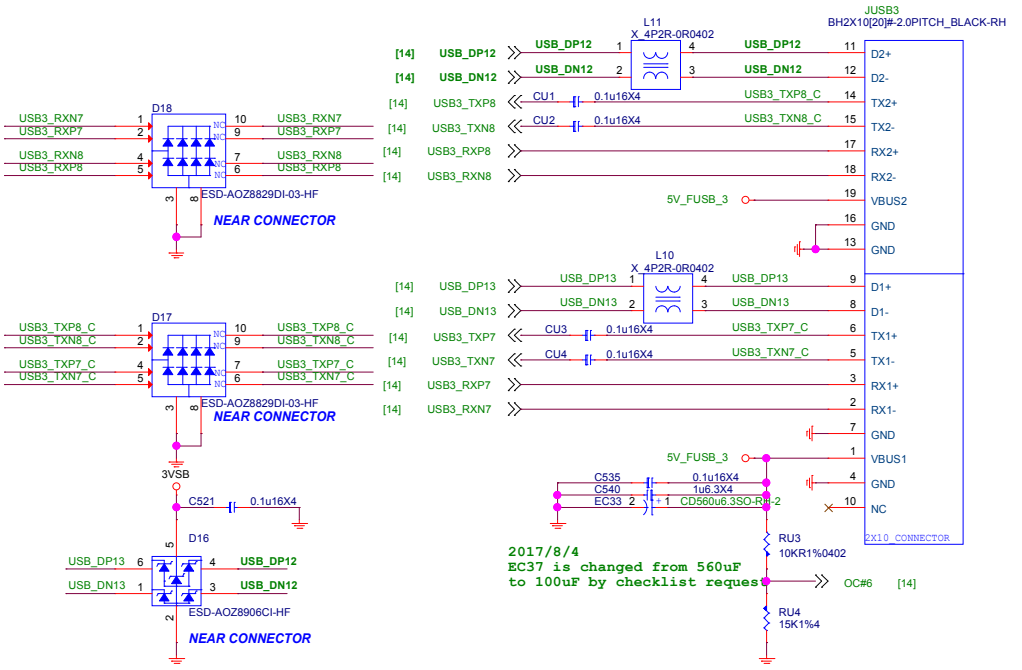
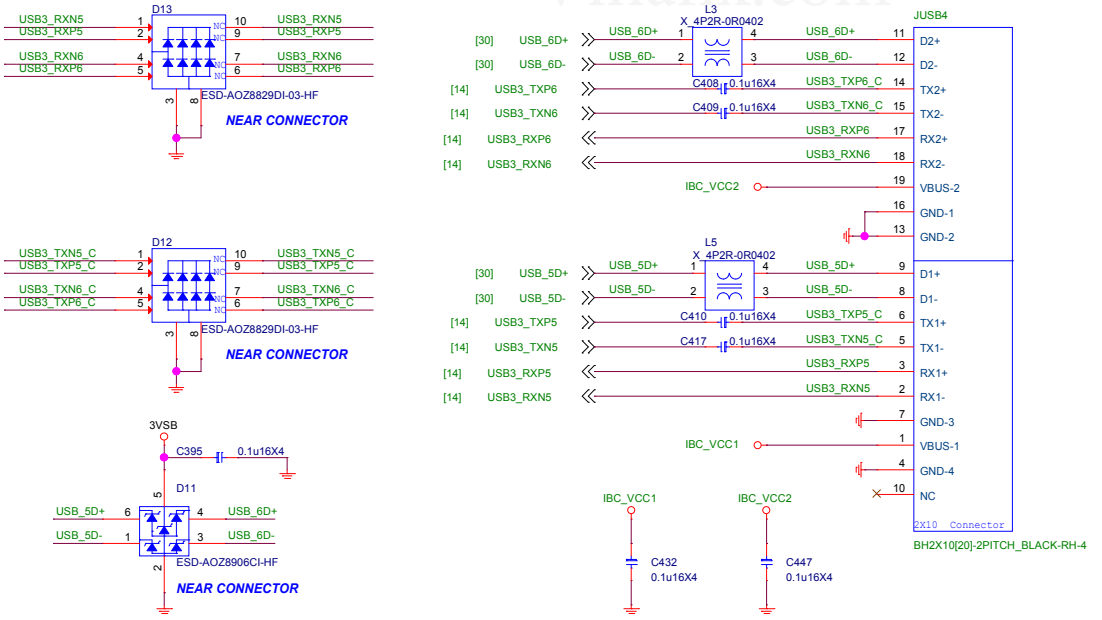
**FUSB5 90°**

**B SKU 不上件**




**FUSB3 180°**



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Title: **Front USB 3.1**

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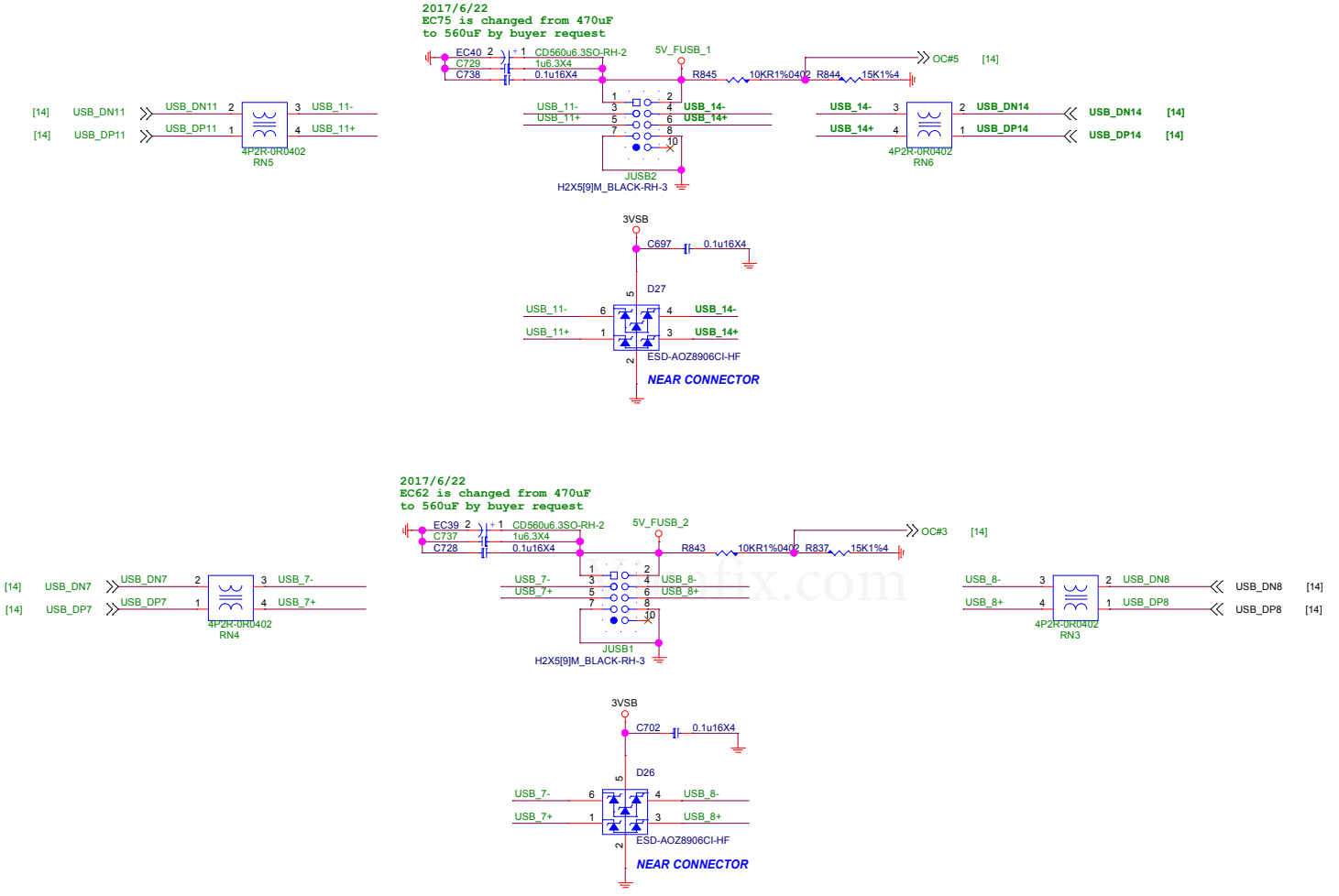
# FRONT USB2.0




MICRO-STAR INT'L CO.,LTD.

Title: Front USB 2.0

Size | Document Number: MS-7B98.. | Rev: 10

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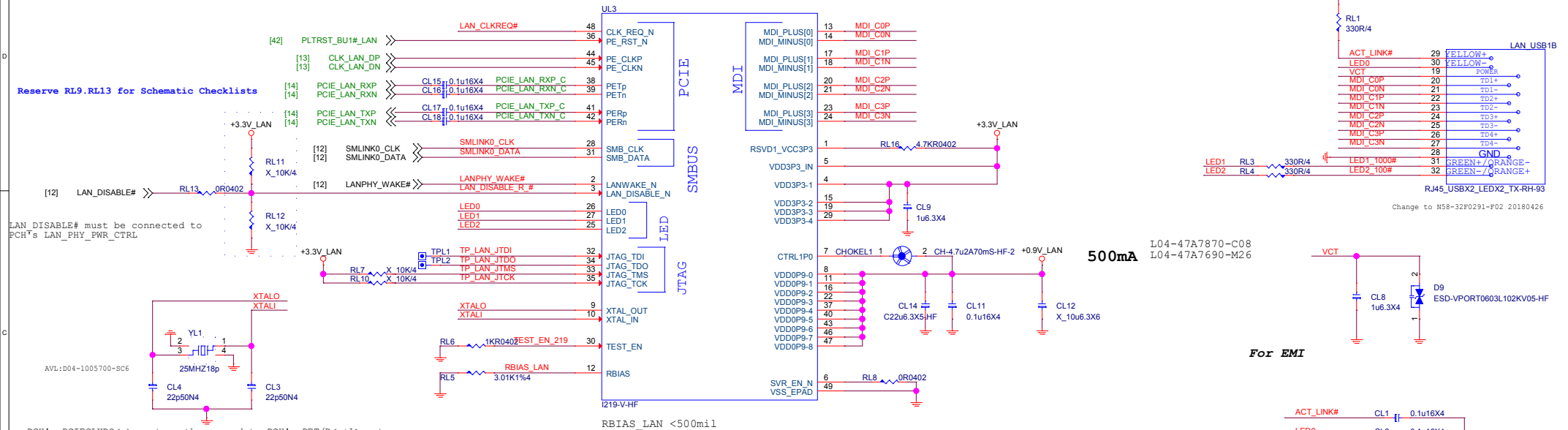
# Intel I219V / I218V PHY




**Reserve RL9.RL13 for Schematic Checklists**

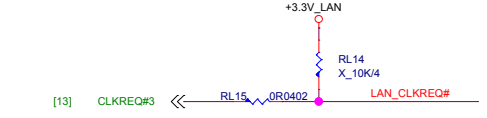
LAN_DISABLE# must be connected to PCH's LAN_PHY_PWR_CTRL

PCH's PCIECLKRQ<n> port mustbe mapped to PCH's PET/R<n+1>port.
If CLK_REQ_N is not used, pin48 is pulled up 10KR to 3.3V_LAN

RBIAS_LAN <500mil

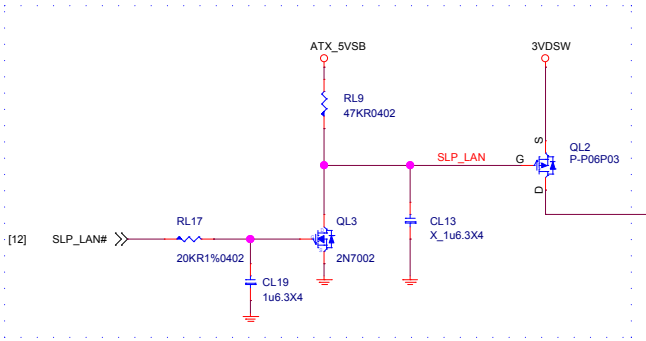
**500mA**

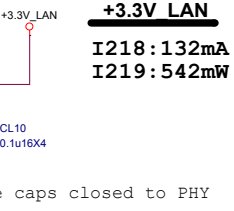
L04-47A7870-C08
L04-47A7690-M26




The 10Kohm pull-up resistor (RL18) of CLK_REQ_N is connected to 3.3V Suspend/Core/etc. power well, depending on the power well of PCH's input PCIECLKRQ<n> buffer.

**support WOL from Deep Sx:**
**Power source from 3VA (DSW power) & make sure MAX current is enough to support i218/i219.**

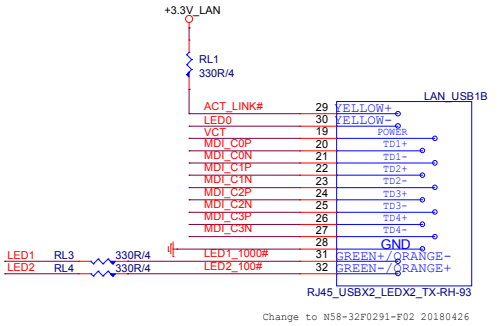



**+3.3V_LAN**

I218:132mA
I219:542mW

Note:These caps closed to PHY

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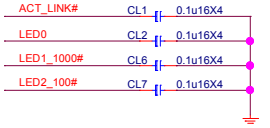
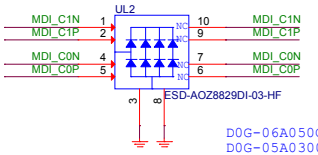
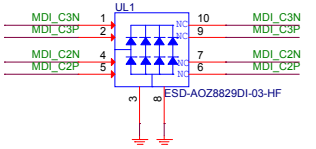
***For EMI***




UL2&UL3 close to connector




D0G-06A050C-A68
D0G-05A0300-I14



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Title: LAN-Intel i219

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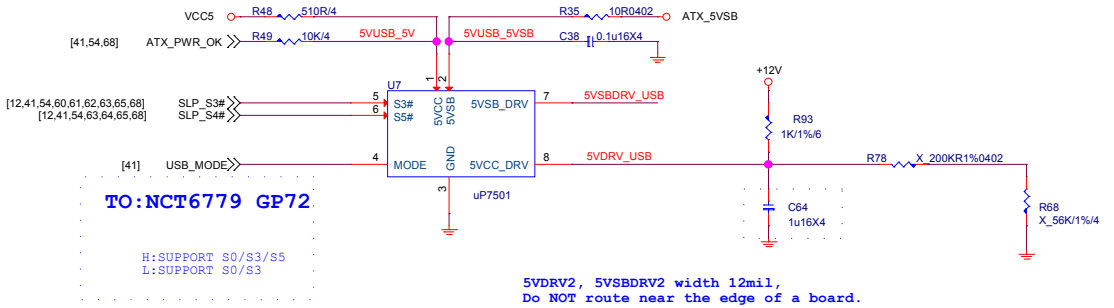
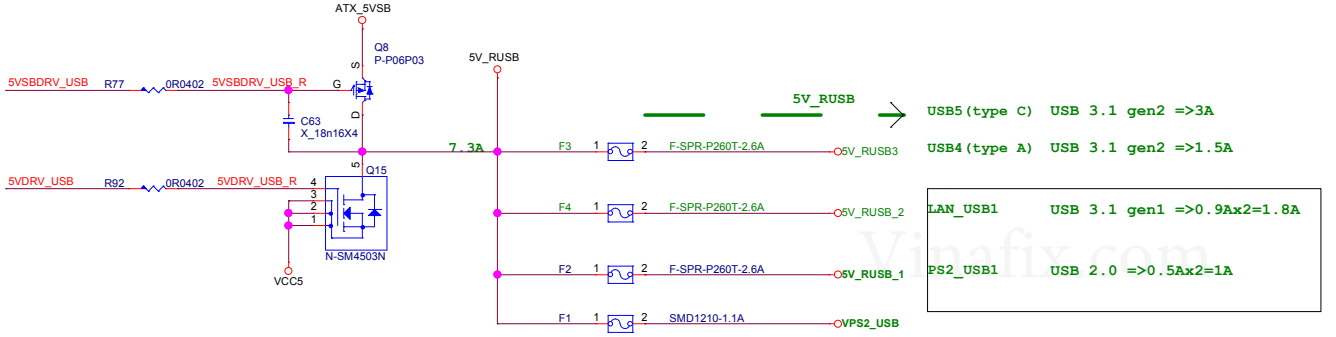
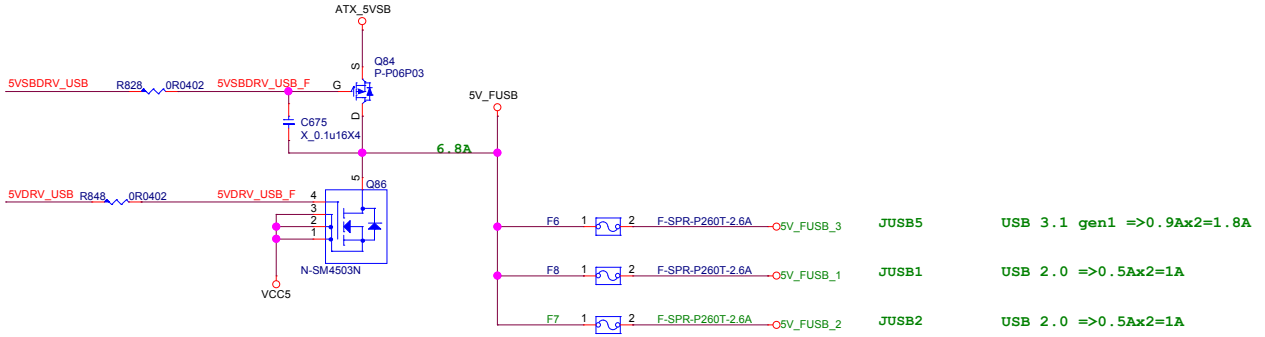
## USB POWER




## REAR USB PORT POWER




## FRONT USB PORT POWER




MICRO-STAR INT'L CO.,LTD.

Title: USB Power

Size | Document Number: MS-7B98.. | Rev: 10

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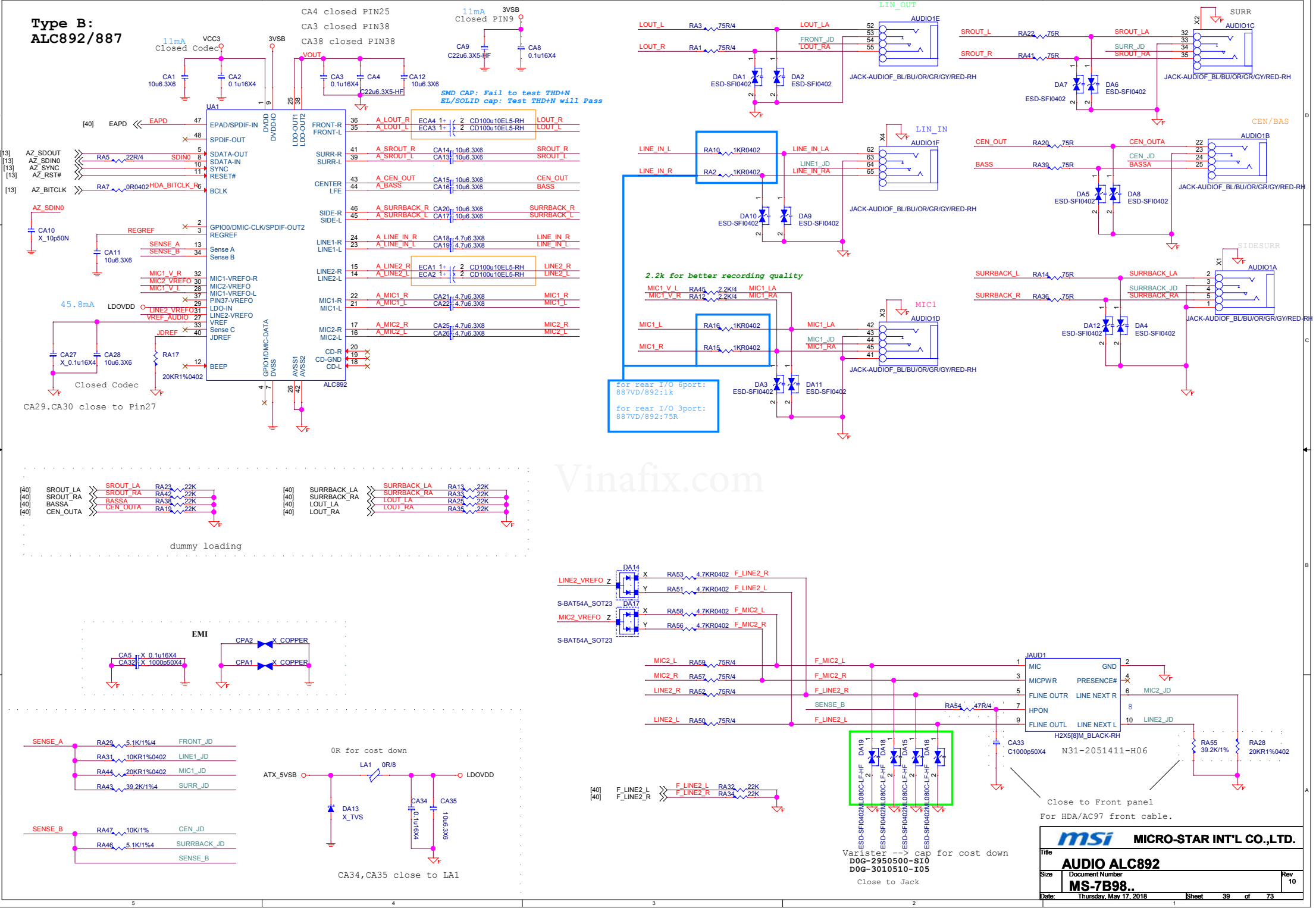
# Type B:
# ALC892/887






| | |
|---|---|
| Title | AUDIO ALC892 |
| Size | Document Number: MS-7B98.. |
| Rev | 10 |
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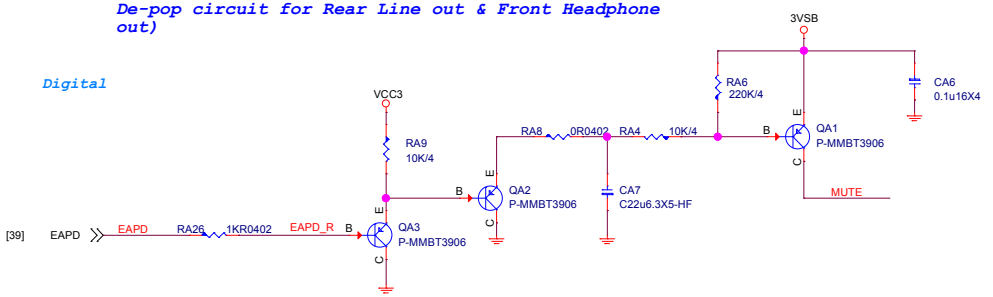
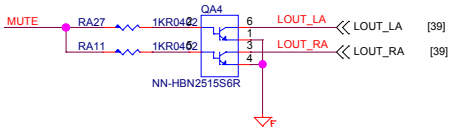
## Rear Line OUT De-POP circuit

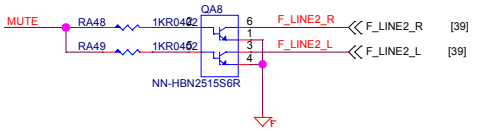
*De-pop circuit for Rear Line out & Front Headphone out)*

*Digital*

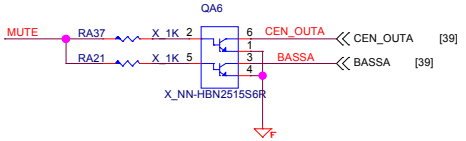


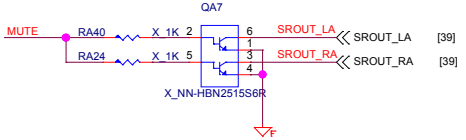

*Analog*

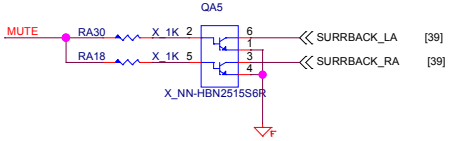



*(add de-pop circuit by PM spec or customer request,*
*NOTE: add de-pop circuit need to change CA5,CA11, CA12, CA13, CA21, CA22 to TVS)*






| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: De-pop circuit | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
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U47

LPC and ESPI co lay 6793 LPC function
6795 LPC or ESPI by HW strapping

LPC/ESPI Interface
DSW Interface
Printer mode
Port80 LED Control
UART SIR
Harddware Monitor
KBC Function
FAN Control
ACPI Function
Power Pin

SIO_INFOBTN# for 4 debug led

6797D-M

6795 use CLR_CMOS#
6797 change to GP72 or AUXFANIN4
Use 6795 R1706 stuff, R1707 unstuff.
Use 6797 R1706 unstuff, R1707 stuff.

## POWER ON STRAPPING PIN FOR NCT6797/6795

| PIN | 6793/6795 NAME | Circuit NAME | 0 | 1 | Strap Point |
|---|---|---|---|---|---|
| 9 | UARTA_P80_EN | RTSB# | DISABLE UARTA80 | ENABLE UARTA80 | LRESET |
| 10 | UARTB_P80_EN | DTRB# | DISABLE UARTB80 | ENABLE UARTB80 | LRESET |
| 12 | TESTMODE1_EN | TESTMODE1_EN | DISABLE TESTMODE1_EN | ENABLE TESTMODE1_EN | LRESET |
| 15 | DDR4_EN | DDR4_EN | Disable | Enable | |
| 27 | ESPI_EN | ESPI_EN | LPC | ESPI | |
| 31 | 2E_4E_SEL | RTSA# | I/O ADDRESS 2E | I/O ADDRESS 4E | LRESET |
| 32 | FANOUT_DEF_EN | DTRA# | default 50% | default 100% | INTERNAL PWROK |
| 34 | P80_EN | SOUTA | ENABLE Non_PORT80 | ENABLE PORT80 | LRESET |
| 69 | DSW_EN | DSW_EN | DISABLE INTEL DSW | ENABLE INTEL DSW | INTERNAL RSMRST |
| 96 | AMD_DDR4_EN | AMD_DDR4_EN | DISABLE AMD DDR4 PWR | ENABLE AMD DDR4 PWR | INTERNAL RSMRST |
| 103 | 6795 TESTMODE_EN 6797 GP40 | 6795 WDT# 6797 WDT# | 6795 DISABLE TESTMODE | 6795 ENABLE TESTMODE | INTERNAL RSMRST |

Note:
If PIN34 strapping low,BIOS must programming LPT or GPIO

LPC pull down/ESPI pull high

3V Analog Power

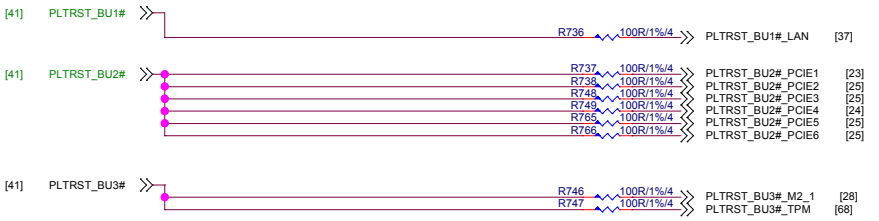
ESPI CONNECT PCH_1P8
LPC CONNECT VCC3 POWER

THERMAL

Closed PIN24,108
Closed PIN99
Closed PIN46,85

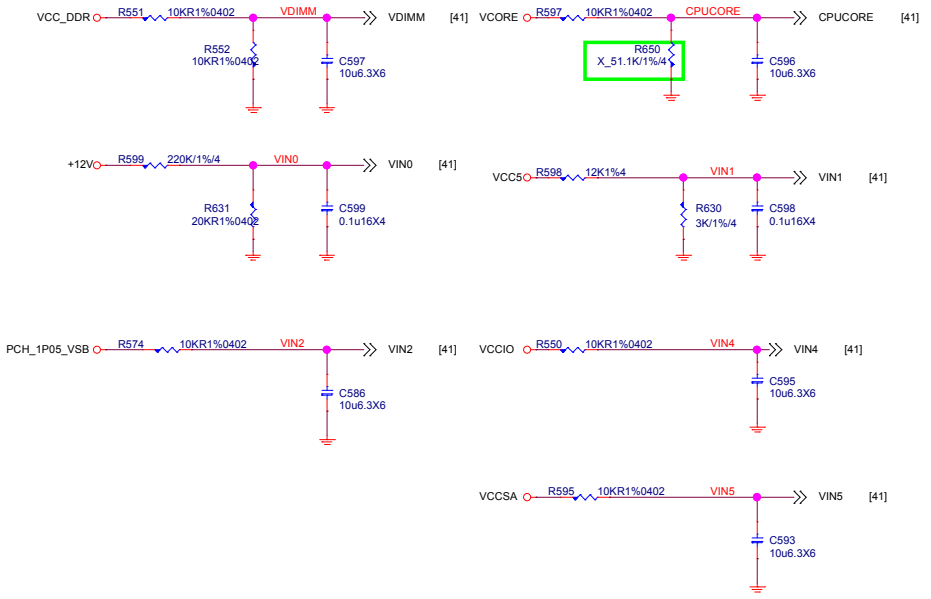
| | |
|---|---|
| Title | SIO-NCT6797D-1 |
| Size | Document Number MS-7B98.. Rev 10 |
| Date: | Thursday, May 17, 2018 Sheet 41 of 73 |

MICRO-STAR INT'L CO.,LTD.



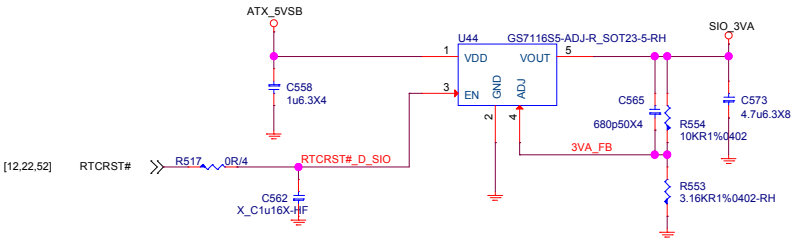

## HW Monitor - Voltage

SIO HM Voltage voer 2V will not detect





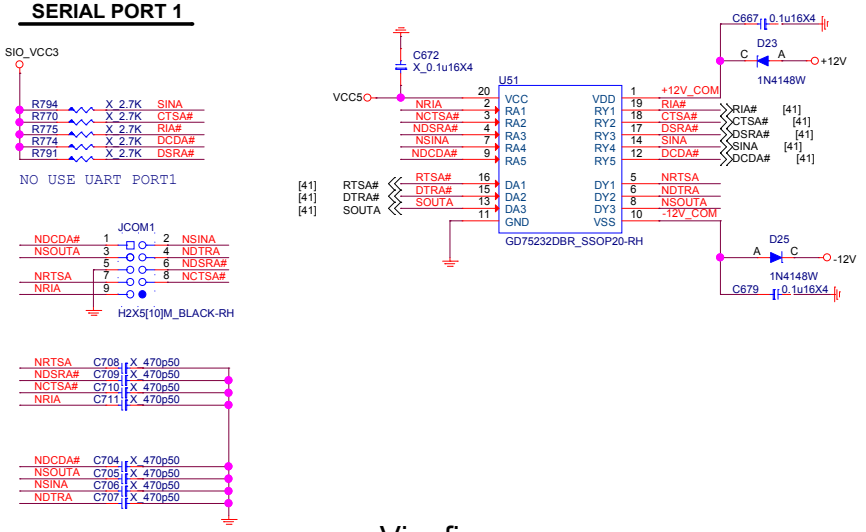

2017/11/23




MICRO-STAR INT'L CO.,LTD.

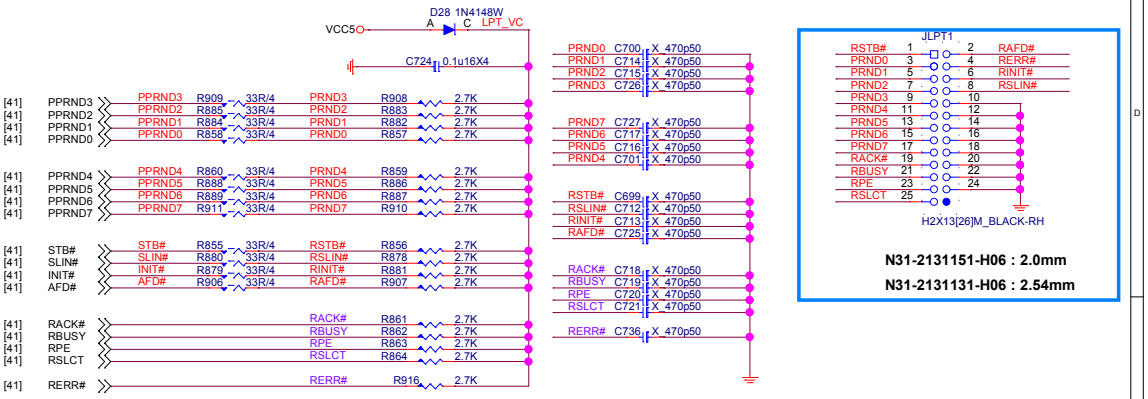
| | | |
|---|---|---|
| Title | SIO-NCT6797D-2 | |
| Size | Document Number MS-7B98.. | Rev 10 |
| Date: Thursday, May 17, 2018 | Sheet 42 of 73 | |

## SERIAL PORT 1




Vinafix.com

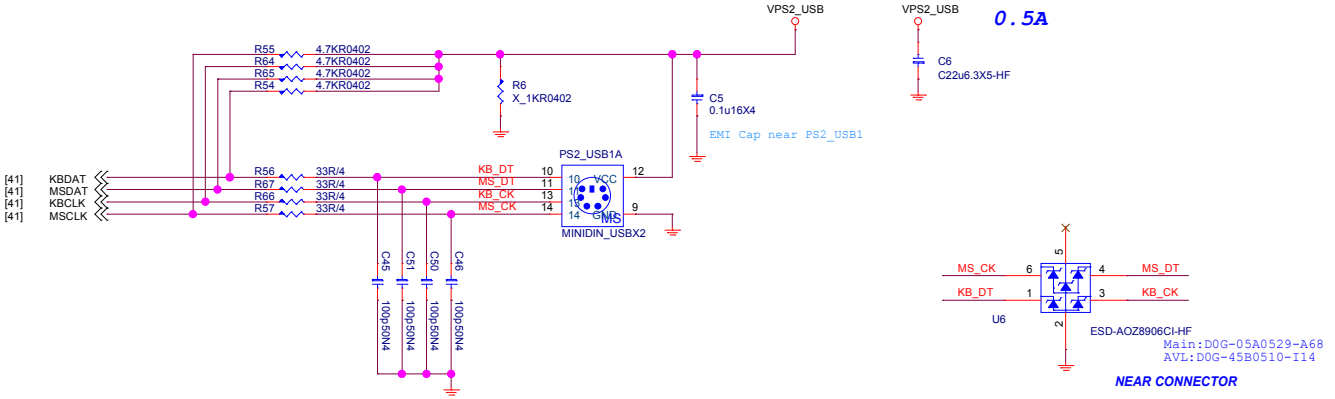
## PARALLAL PORT




Vinafix.com

## PS2 KEYBOARD & MOUSE CONNECTOR

## PS2 Power




MICRO-STAR INT'L CO.,LTD.

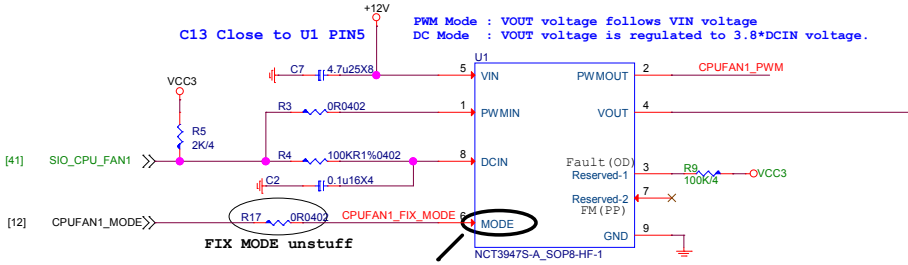
Title: COM/LPT/PS2

Size | Document Number: MS-7B98.. | Rev: 10

Date: Thursday, May 17, 2018 | Sheet 43 of 73

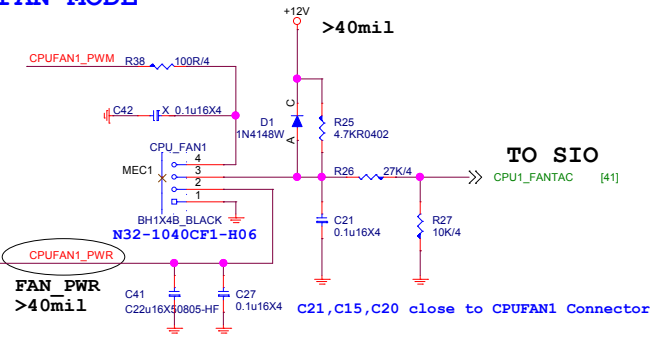
# TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

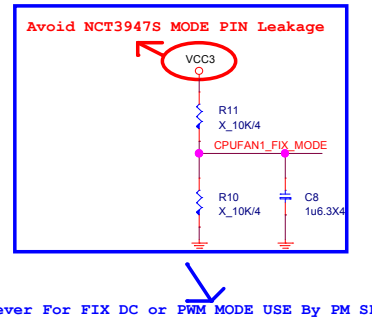
1.PWM/DC/OCP LED(現在是改成R/G/B3色LED)
2.GPIO可以由BIOS切換 PWM/DC MODE
3.OCP拉回GPIO給BIOS認
4.PWM OR DC FAN拉回GPIO給BIOS認
5.FAN轉速加快的時候由SOFTWARE 控制GPIO讓燈的變化



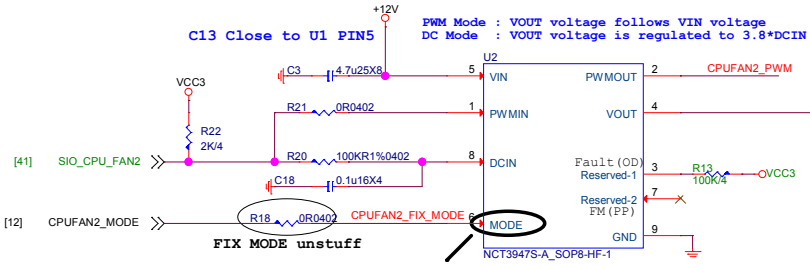

| | MODE(PIN7) |
|---|---|
| PWM MODE | HIGH |
| DC MODE | LOW |
| Default AUTO MODE | GPI(Floating) |

Internall pull up 1.65V



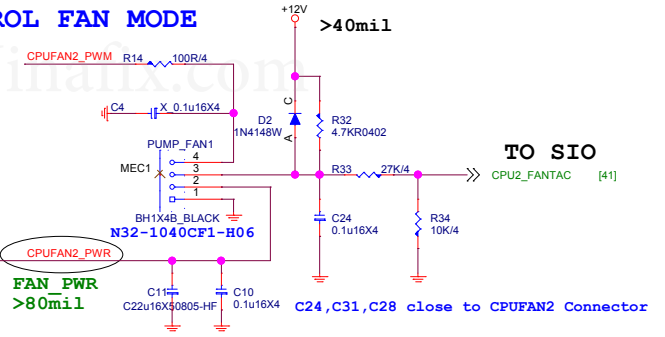



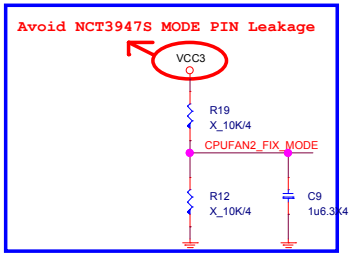

# TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE




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

Internall pull up 1.65V



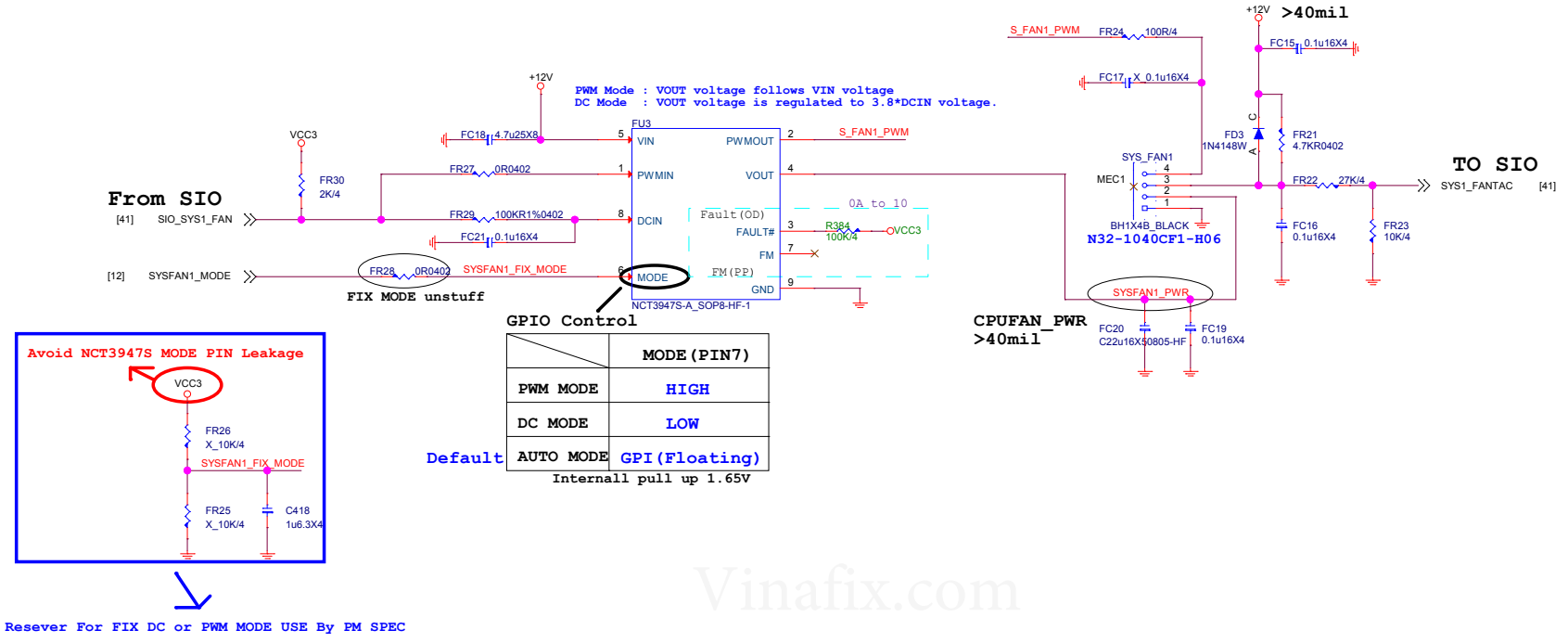




1.MODE : USE MODE PIN change FAN MODE(PWM or DC FAN)
2.FAULT : USE FAULT PIN Triger OVT/OCP Protection,LOW Atcive (Reserve NEW IC)
3.FM : USE FM PIN For BIOS USE to Detect PWM or DC FAN & Show information(Reserve NEW IC)

MICRO-STAR INT'L CO.,LTD.

Title: CPU FAN 1/2
Size: Document Number: MS-7B98.. Rev: 10
Date: Thursday, May 17, 2018 Sheet 44 of 73

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




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

Internall pull up 1.65V



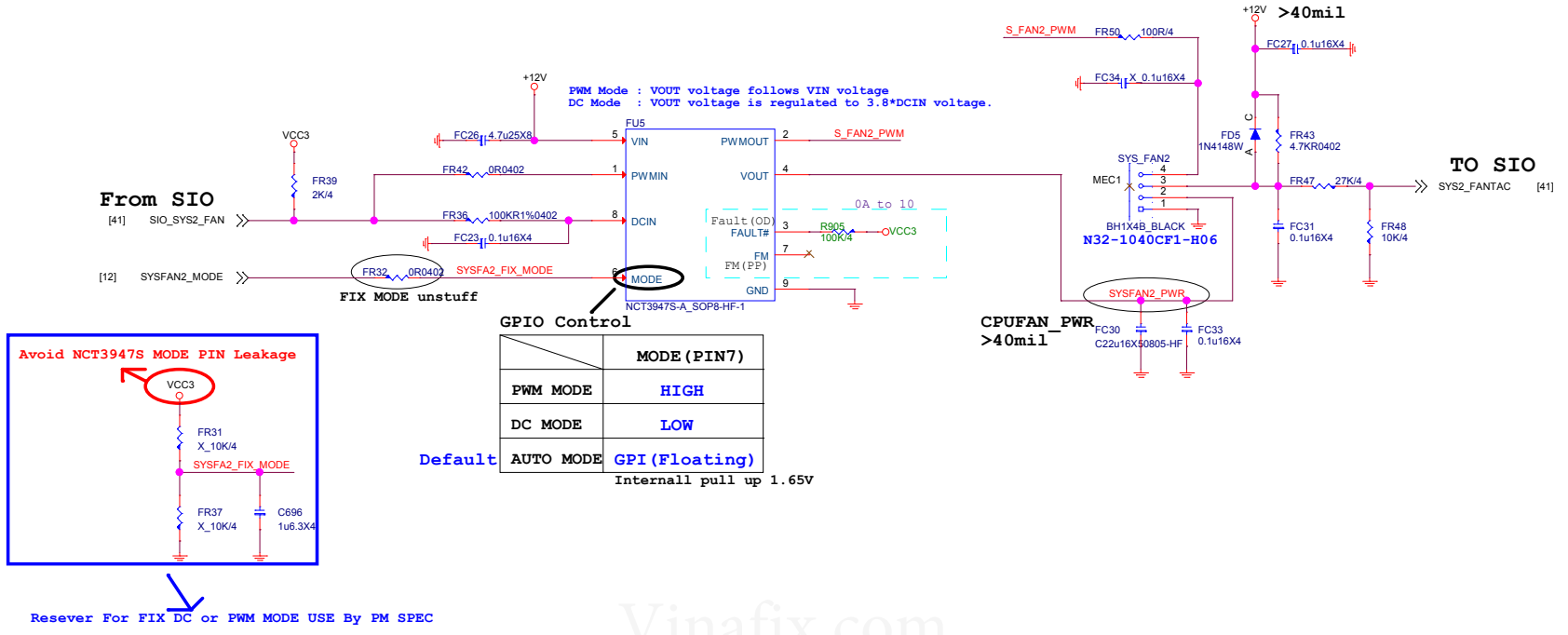
MICRO-STAR INT'L CO.,LTD.

Title: SYSTEM FAN1 Type K

Size | Document Number: MS-7B98.. | Rev: 10

Date: Thursday, May 17, 2018 | Sheet 45 of 73

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




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

Internall pull up 1.65V



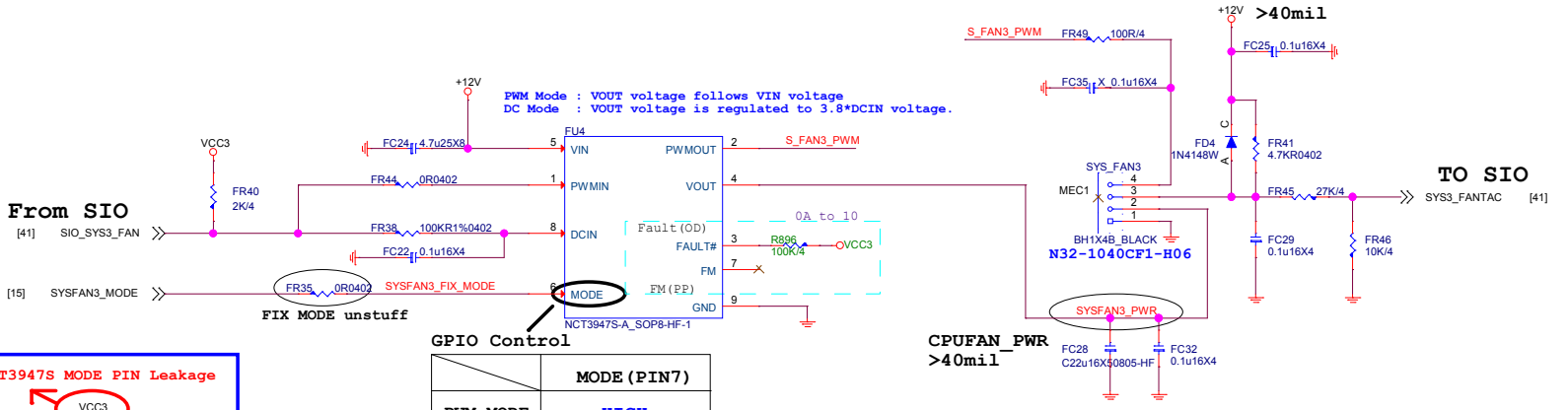
MICRO-STAR INT'L CO.,LTD.

Title: SYSTEM FAN2 Type K

Size | Document Number: MS-7B98.. | Rev: 10

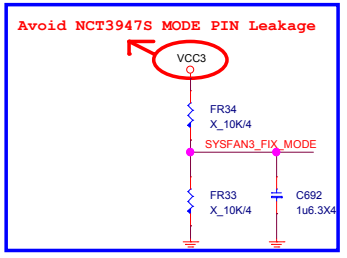
Date: Thursday, May 17, 2018 | Sheet 46 of 73

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




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

Internall pull up 1.65V




Resever For FIX DC or PWM MODE USE By PM SPEC



MICRO-STAR INT'L CO.,LTD.

Title: SYSTEM FAN3 Type K

Size | Document Number: MS-7B98.. | Rev: 10

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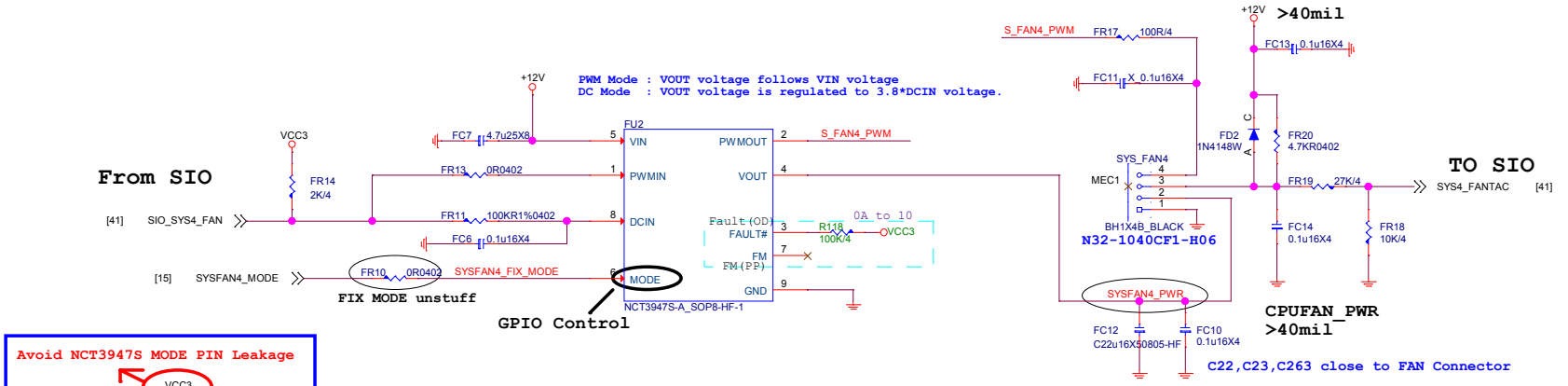
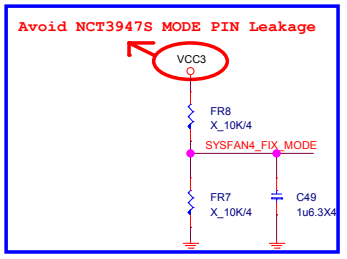
# TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

2.GPIO可以由BIOS切換 PWM/DC MODE




Resever For FIX DC or PWM MODE USE By PM SPEC

GPIO Control

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

Default

Internall pull up 1.65V



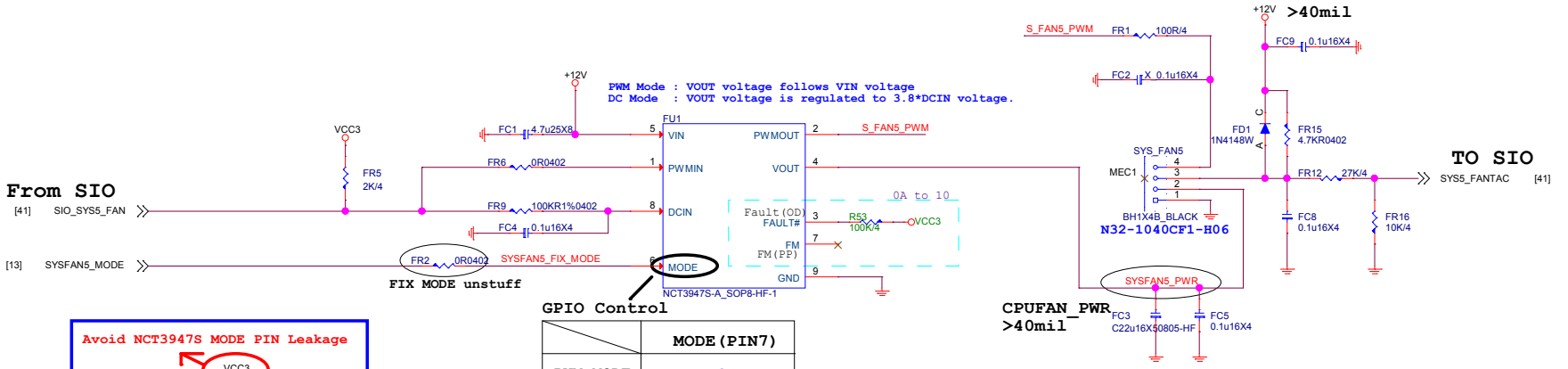
MICRO-STAR INT'L CO.,LTD.

Title: SYSTEM FAN4 Type K

Size | Document Number: MS-7B98.. | Rev: 10

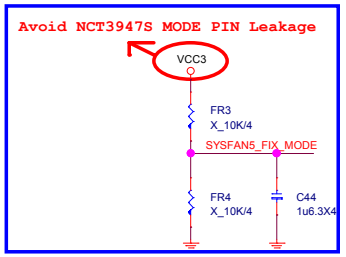
Date: Thursday, May 17, 2018 | Sheet 48 of 73

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




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

Internall pull up 1.65V




Resever For FIX DC or PWM MODE USE By PM SPEC



MICRO-STAR INT'L CO.,LTD.

Title: SYSTEM FAN5 Type K

Size | Document Number: MS-7B98.. | Rev: 10

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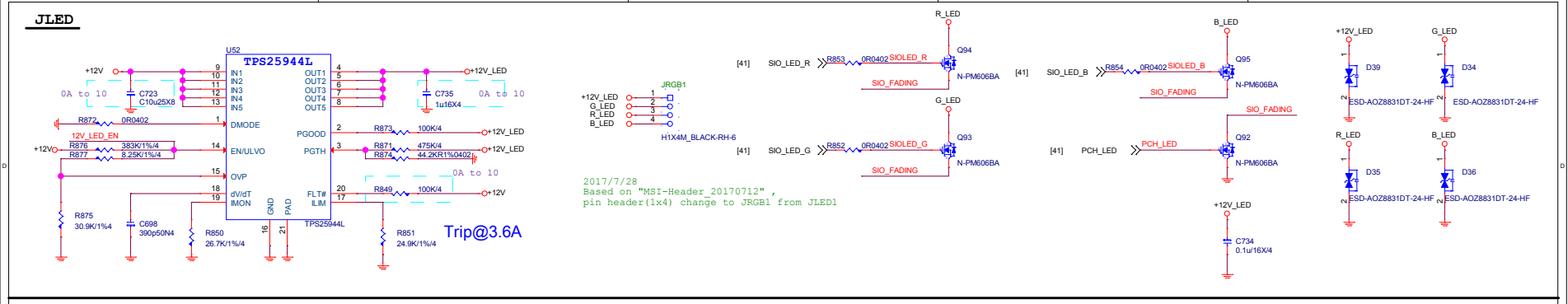
Delete ALL Audio LED BY Spec  Change 2018/4/19

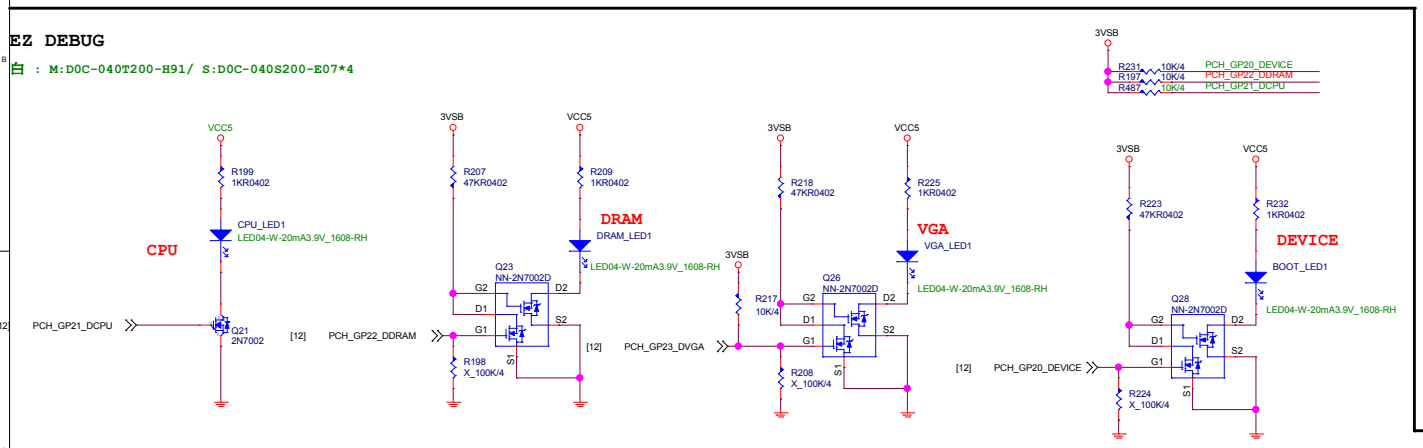


| | | |
|---|---|---|
| msi MICRO-STAR INT'L CO.,LTD. | | |
| Title: BOTTOM LED | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
| Date: Thursday, May 17, 2018 | Sheet 50 of 73 | |




**Delete ALL Audio LED BY Spec Change 2018/4/19**






| GPIO / LED | PCH_GP20 | PCH_GP21 | PCH_GP22 | PCH_GP23 |
|---|---|---|---|---|
| 亮 | NATIVE PULL HIGH | GPO PULL HIGH | GPO PULL HIGH | NATIVE PULL HIGH |
| 滅 | NATIVE LOW | GPO LOW (default LOW) | GPO LOW (default LOW) | GPO LOW (default LOW) |

關機斷電狀態下，4個LED先維持default全暗，開機通電後：
1.首先進行CPU check CPU LED 亮，check PASS後則CPU LED滅掉。
2.接著依序進行Memory /memory LED亮check PASS後則memory LED滅掉。
3.VGA的check/VGA LED亮，check PASS後則VGA LED滅掉。
4.因此最後正常順利開機後，三個LED燈都是滅掉的。
（系統重啟或其他原因造成系統重開機，則LED仍按上述行為動作）

MICRO-STAR INT'L CO.,LTD.

Title: RGB/AUDIO/EZ DEBUG LED

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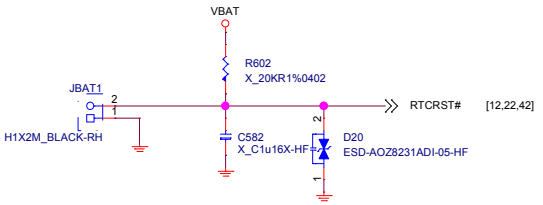
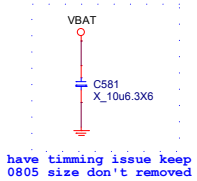
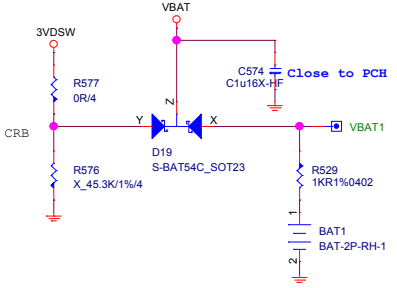
Date: Thursday, May 17, 2018 | Sheet 51 of 73






# VBAT




MICRO-STAR INT'L CO.,LTD.

Title: CLR COMS/CUT VBAT

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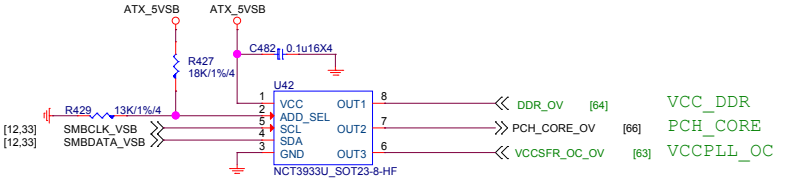
## UPI VOLTAGE CONSOLE

0x20:RH=10K,RL=OPEN

| 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% |

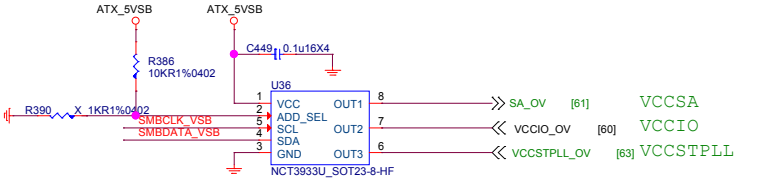
## UPI VOLTAGE CONSOLE

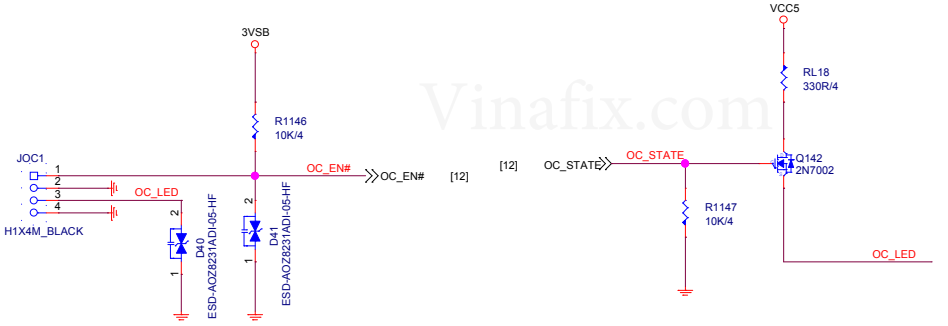
0x26:RH=18K,RL=13K




## UPI VOLTAGE CONSOLE

0x20:RH=10K,RL=OPEN






MICRO-STAR INT'L CO.,LTD.

Title: OV-NCT3933/OV

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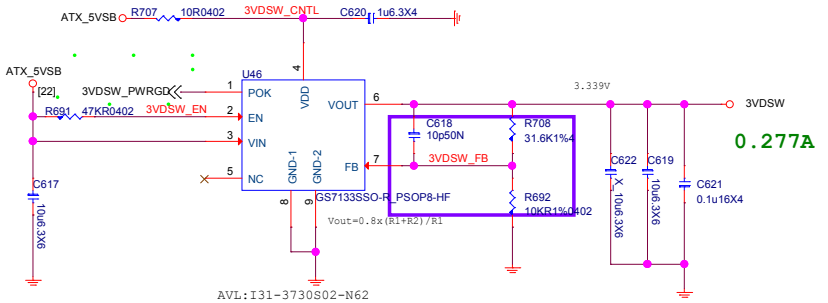
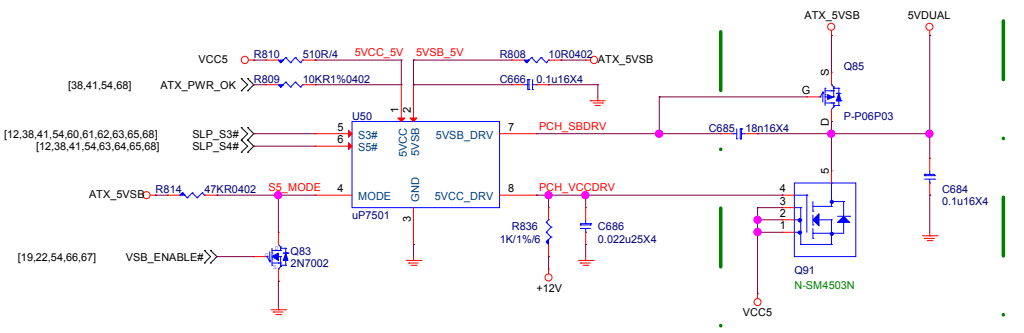
## 3VDSW




## 5VDUAL

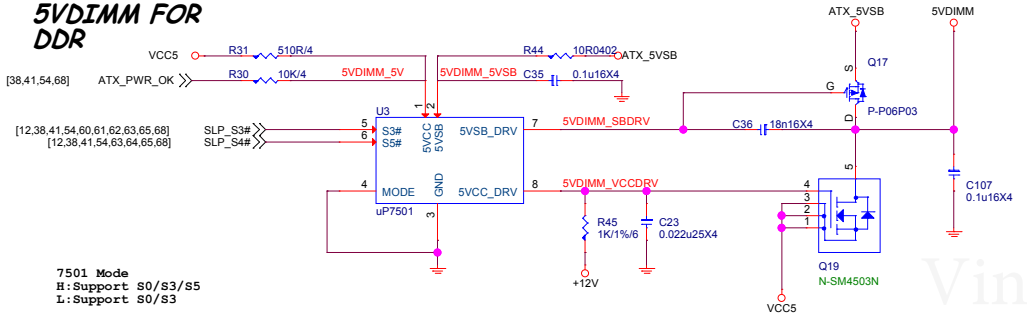
5VDUAL is power source of 1P0SB



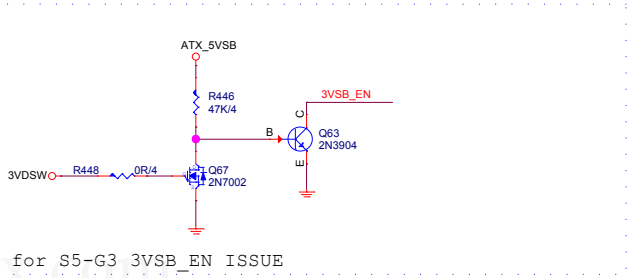

Change to discrete type
2018/1/18

## 5VDIMM FOR DDR

7.022A



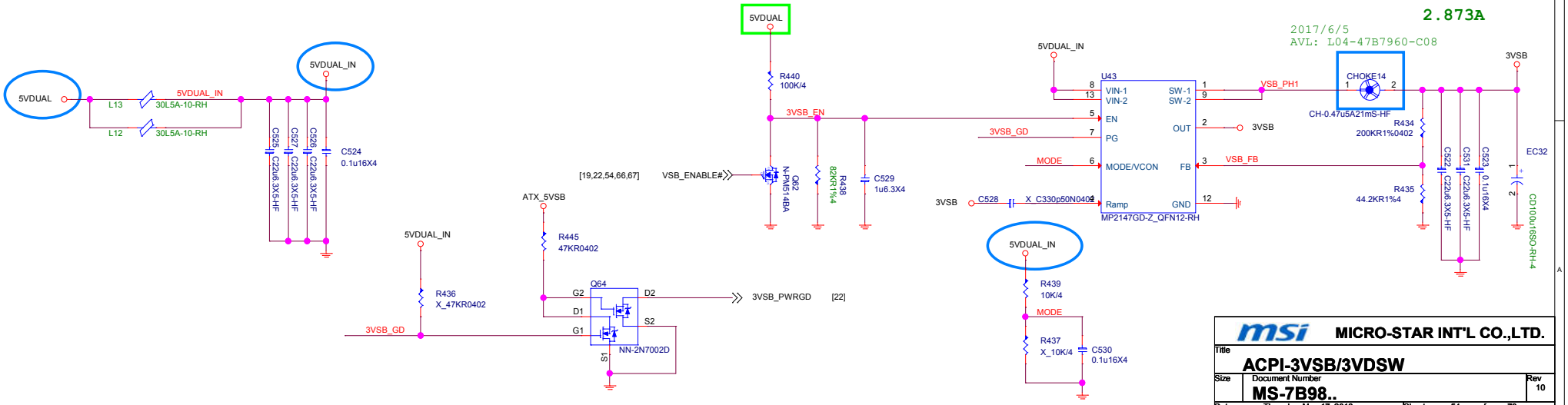

7501 Mode
H:Support S0/S3/S5
L:Support S0/S3



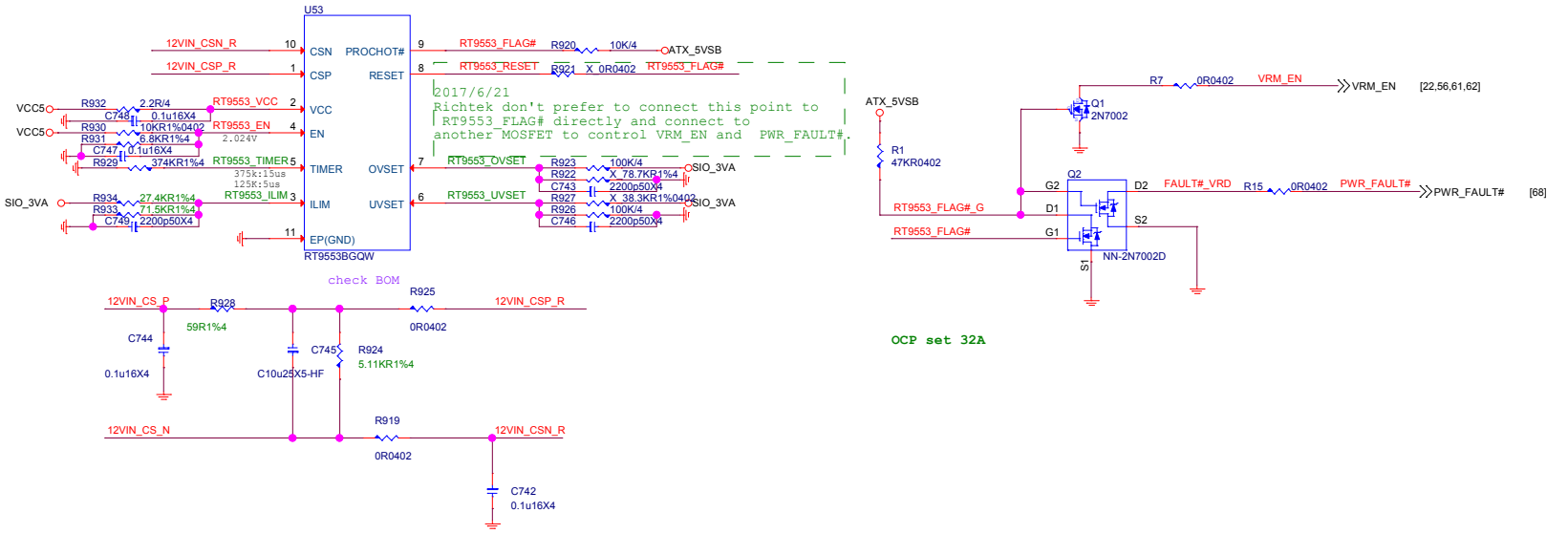



2.873A

2017/6/5
AVL: L04-47B7960-C08



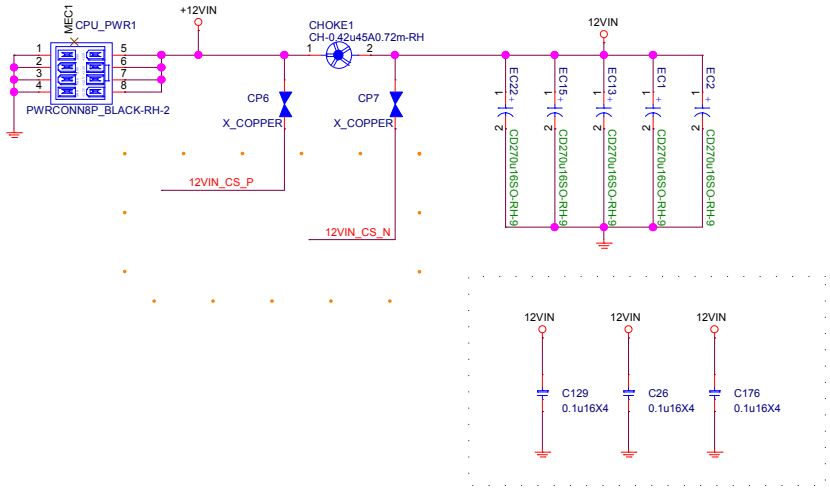

| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: ACPI-3VSB/3VDSW | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
| Date: Thursday, May 17, 2018 | Sheet 54 of 73 | |







OCP set 32A









MICRO-STAR INT'L CO.,LTD.

Title: CURRENT SENSE-RT9553B

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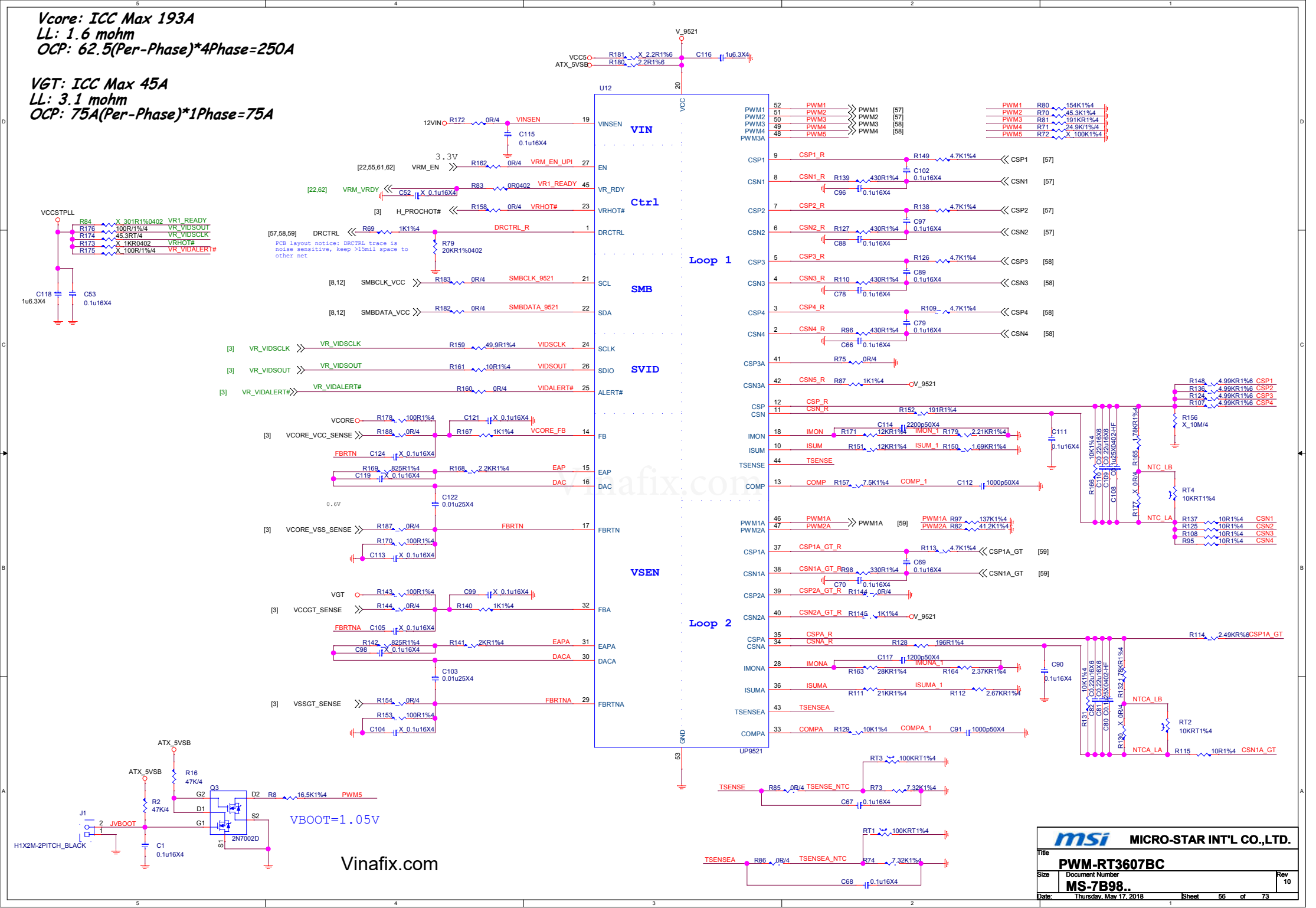
Date: Thursday, May 17, 2018 | Sheet 55 of 73

Vcore: ICC Max 193A
LL: 1.6 mohm
OCP: 62.5(Per-Phase)*4Phase=250A

VGT: ICC Max 45A
LL: 3.1 mohm
OCP: 75A(Per-Phase)*1Phase=75A






| | |
|---|---|
| Title | PWM-RT3607BC |
| Size | Document Number: MS-7B98.. |
| Rev | 10 |
| Date: | Thursday, May 17, 2018 |
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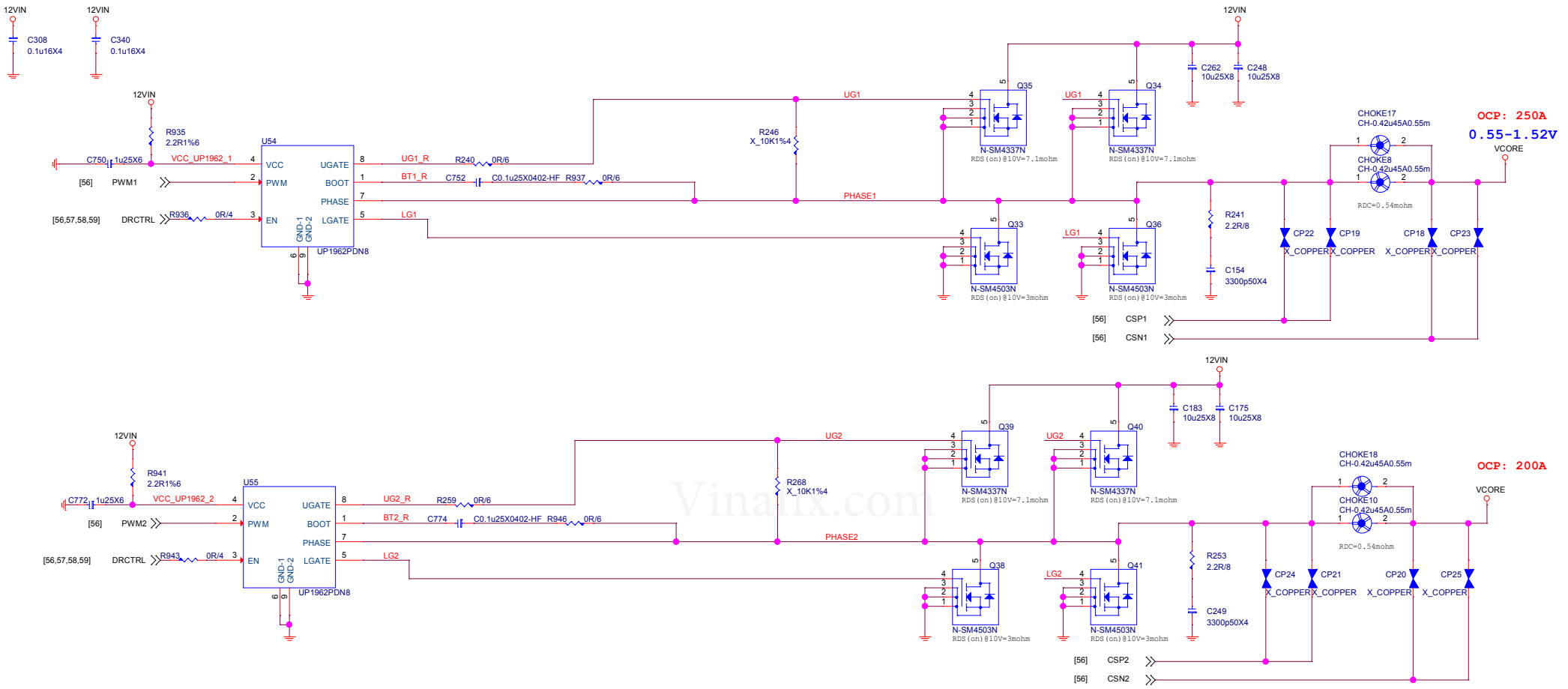
MICRO-STAR INT'L CO.,LTD.






MICRO-STAR INT'L CO.,LTD.

Title: VCORE MOS-PHASE 1~4

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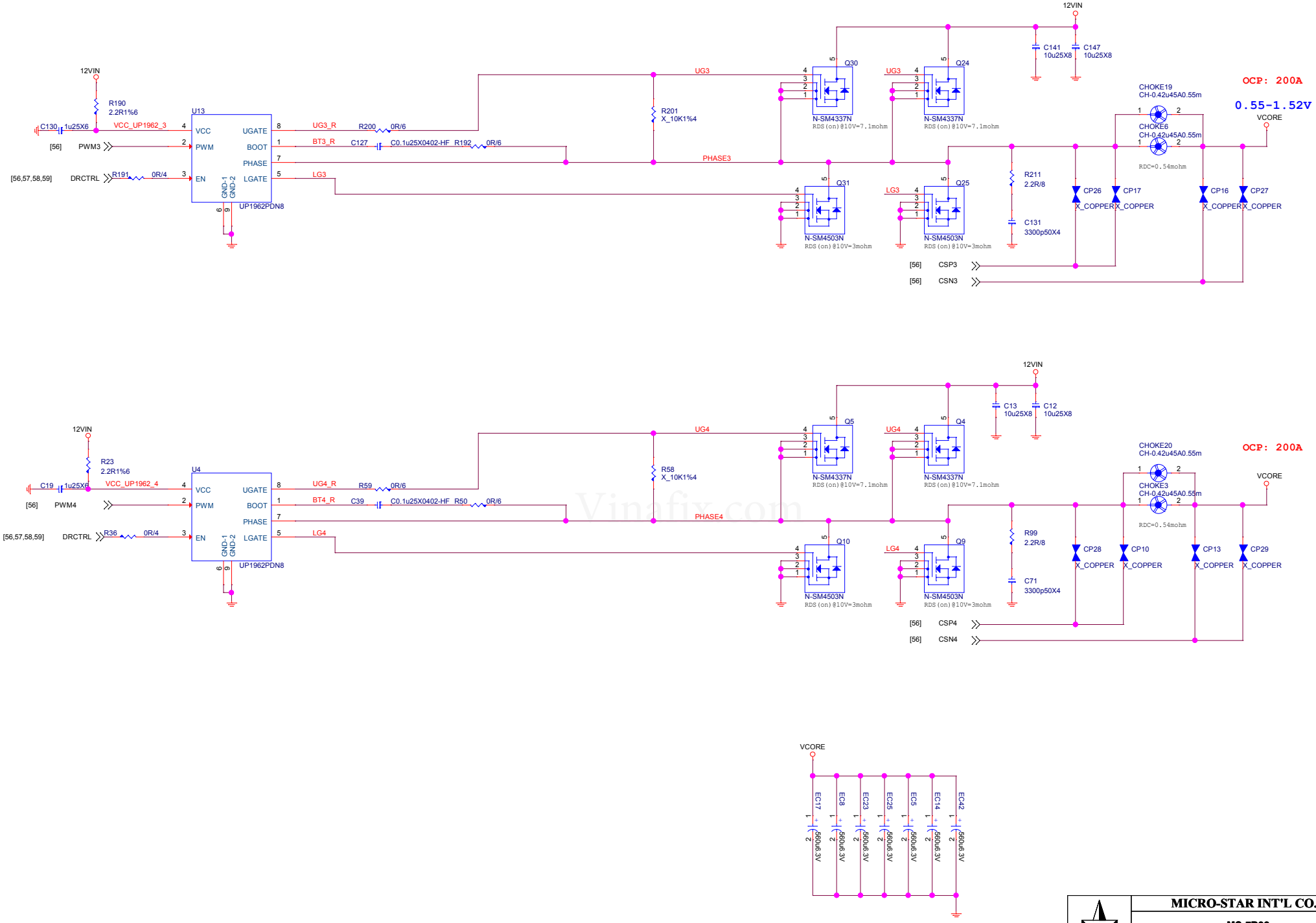
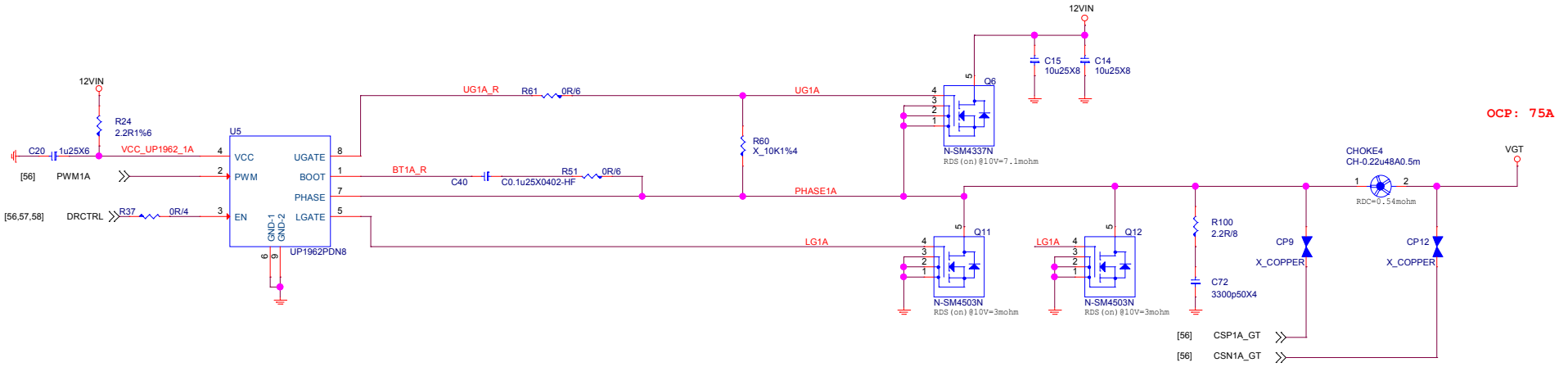
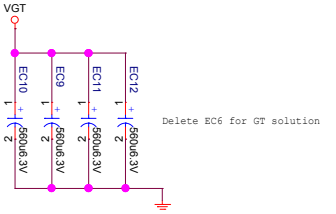

12VIN
R190
2.2R1%6
C130 1u25X6
VCC_UP1962_3
[56] PWM3
[56,57,58,59] DRCTRL
R191 0R/4
U13
VCC
PWM
EN
UGATE
BOOT
PHASE
LGATE
GND-1
GND-2
UP1962PDN8
UG3_R
R200 0R/6
BT3_R
C127 C0.1u25X0402-HF
R192 0R/6
LG3
UG3
PHASE3
R201
X_10K1%4
Q30
Q24
Q31
Q25
N-SM4337N
RDS(on)@10V=7.1mohm
N-SM4503N
RDS(on)@10V=3mohm
C141 10u25X8
C147 10u25X8
R211
2.2R/8
C131
3300p50X4
CHOKE19
CH-0.42u45A0.55m
CHOKE6
CH-0.42u45A0.55m
RDC=0.54mohm
CP26 CP17 CP16 CP27
X_COPPER
OCP: 200A
0.55-1.52V
VCORE
[56] CSP3
[56] CSN3
R23
2.2R1%6
C19 1u25X6
VCC_UP1962_4
[56] PWM4
[56,57,58,59] DRCTRL
R36 0R/4
U4
UG4_R
R59 0R/6
BT4_R
C39 C0.1u25X0402-HF
R50 0R/6
LG4
UG4
PHASE4
R58
X_10K1%4
Q5
Q4
Q10
Q9
C13 10u25X8
C12 10u25X8
R99
2.2R/8
C71
3300p50X4
CHOKE20
CH-0.42u45A0.55m
CHOKE3
CH-0.42u45A0.55m
CP28 CP10 CP13 CP29
[56] CSP4
[56] CSN4
EC17 EC8 EC23 EC25 EC5 EC14 EC42
560u6.3V
MICRO-STAR INT'L CO.,LTD
MS-7B98..
Size Custom
Document Description
VCORE MOS-PHASE 3-4
Rev 10
Date: Thursday, May 17, 2018
Sheet 58 of 73




Vinafix.com

***Delete VGT 1 Phase  20180425***

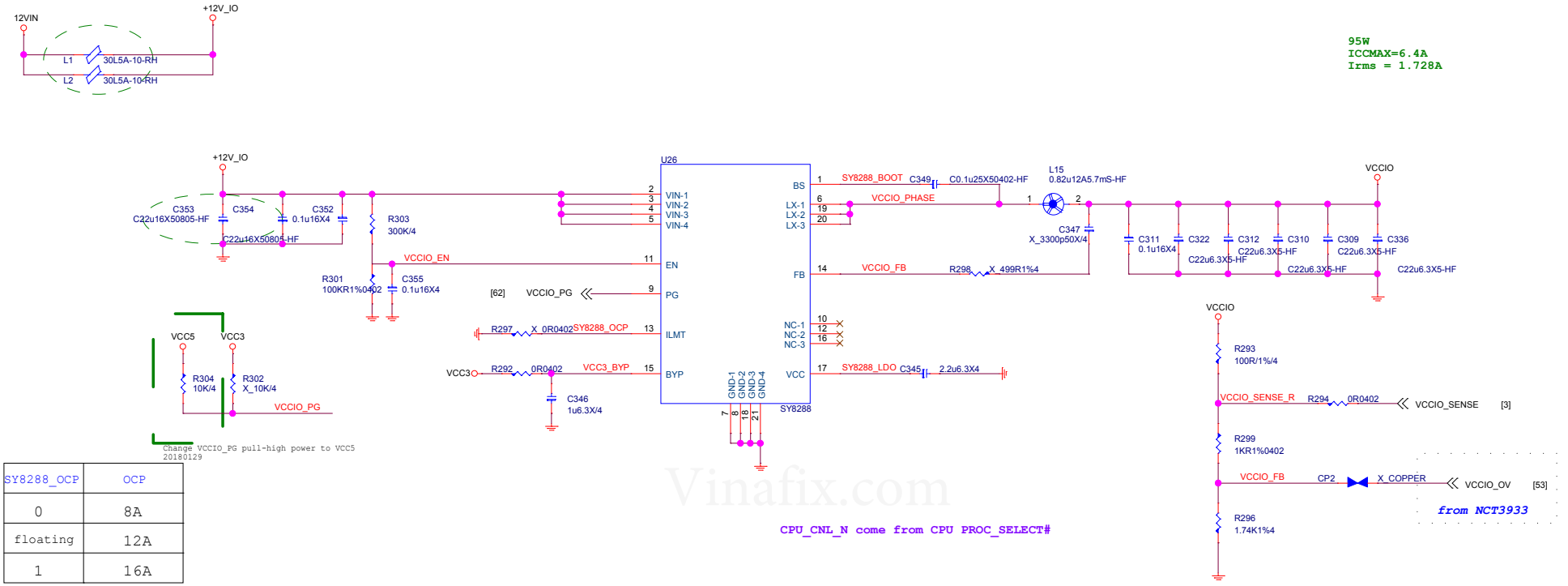



| | | |
|---|---|---|
| MSI MICRO-STAR INT'L CO.,LTD. | | |
| Title: VGT MOS-PHASE 1~3 | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
| Date: Thursday, May 17, 2018 | Sheet 59 of 73 | |

# IO Power:0.95V,6.4A

IMAX 10A
ILIMIT=10A~12A
IOC=ILIMIT+40%*IMAX/2=12A~14A.

95W
ICCMAX=6.4A
Irms = 1.728A




| SY8288_OCP | OCP |
|---|---|
| 0 | 8A |
| floating | 12A |
| 1 | 16A |



MICRO-STAR INT'L CO.,LTD.

Title: CPU PWR-VCCIO-SY8288

Size | Document Number: MS-7B98.. | Rev: 10

Date: Thursday, May 17, 2018 | Sheet 60 of 73

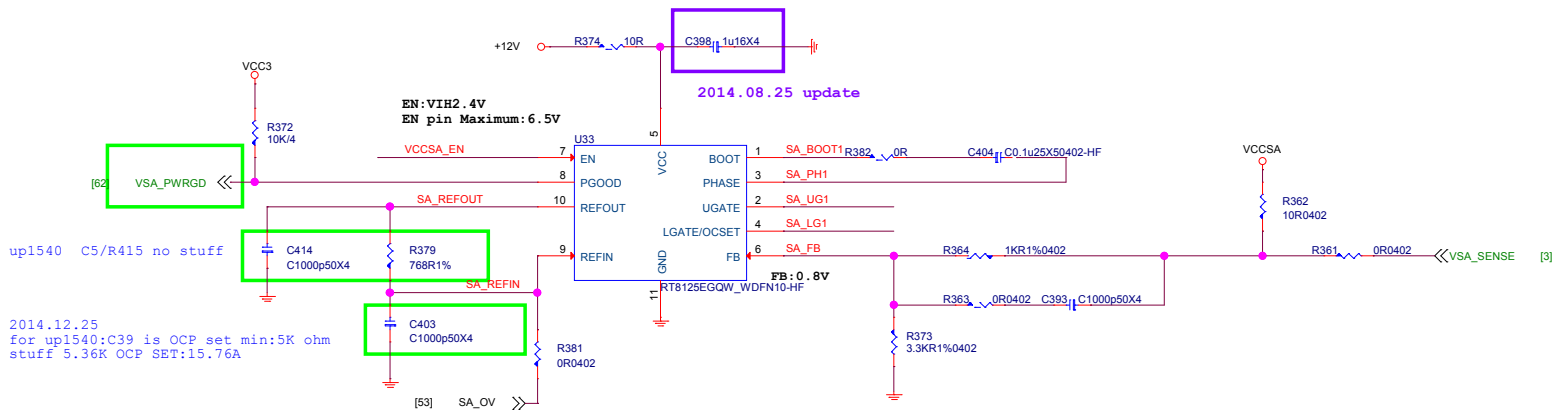
# SA Power:1.05V

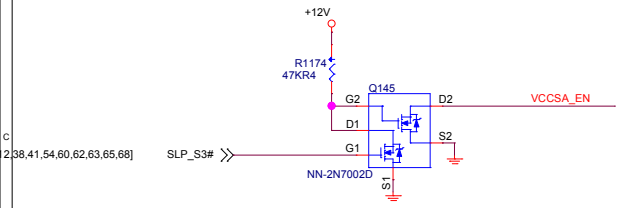
1.05V; 11.1A

OCP = 11.1*1.4=15.54A

Rocset = 1.4 * Imax * Rdson(low) / Iocset
= 1.4 * 11.1 * 3.3mohm / 10uA
= 5.12K (BOM 5.1K)

Rdson(low)10V
D03-4503N0C-ST8 : 3mohm

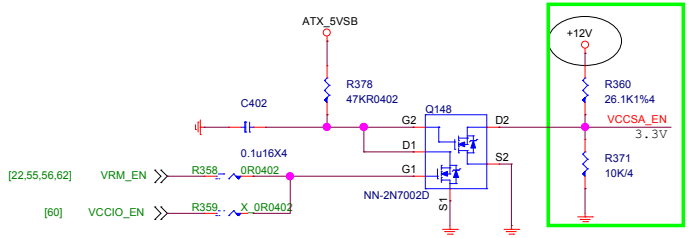


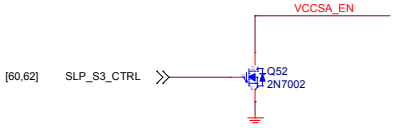




2014.08.21 update

Pull up by layout&Check level

Vinafix.com

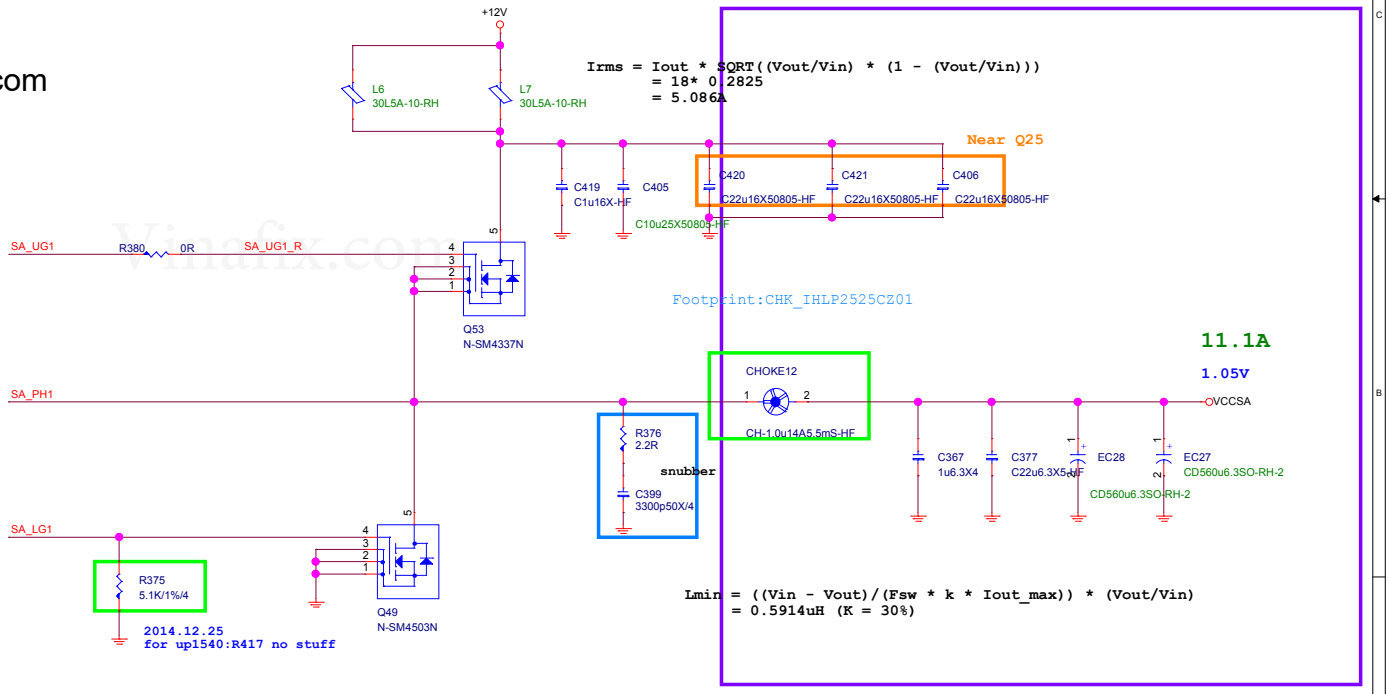



EN:VIH2.4V
EN pin Maximum:6.5V

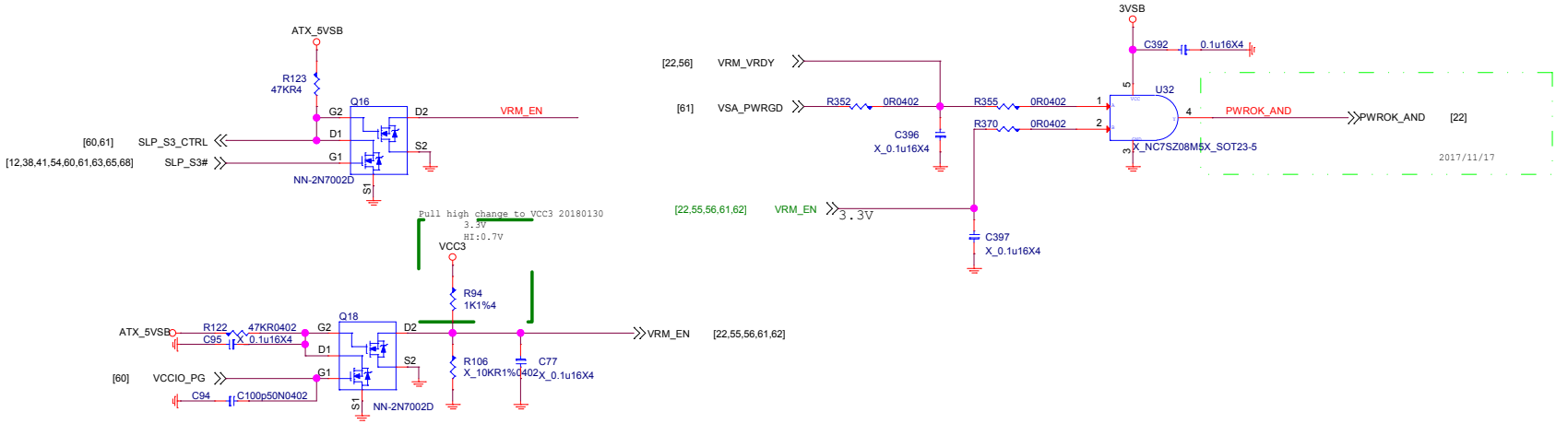
SLP_S3# assertion to VCC, VCCGT, VCCIO and VCCSA rails completely off.

SLP_S3# assertion to VR disabled
max:lus




| | | |
|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | |
| Title | CPU PWR-VCCSA-RT8125E | |
| Size | Document Number MS-7B98.. | Rev 10 |
| Date: Thursday, May 17, 2018 | Sheet 61 of 73 | |

# Sequence



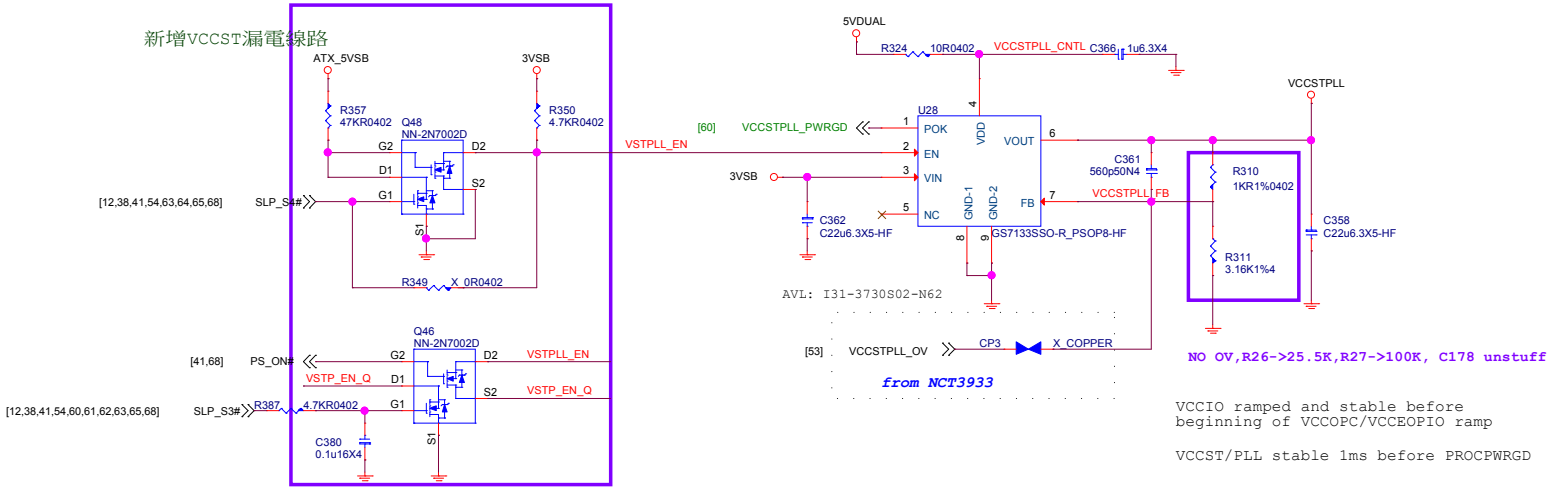



| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: CPU VRM-Seqence/VCCAPLL | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
| Date: Thursday, May 17, 2018 | Sheet 62 of 73 | |

# VCCSTPLL

**1.05V; 230mA**

**For Cost down VCCST&VCCPLL merge**



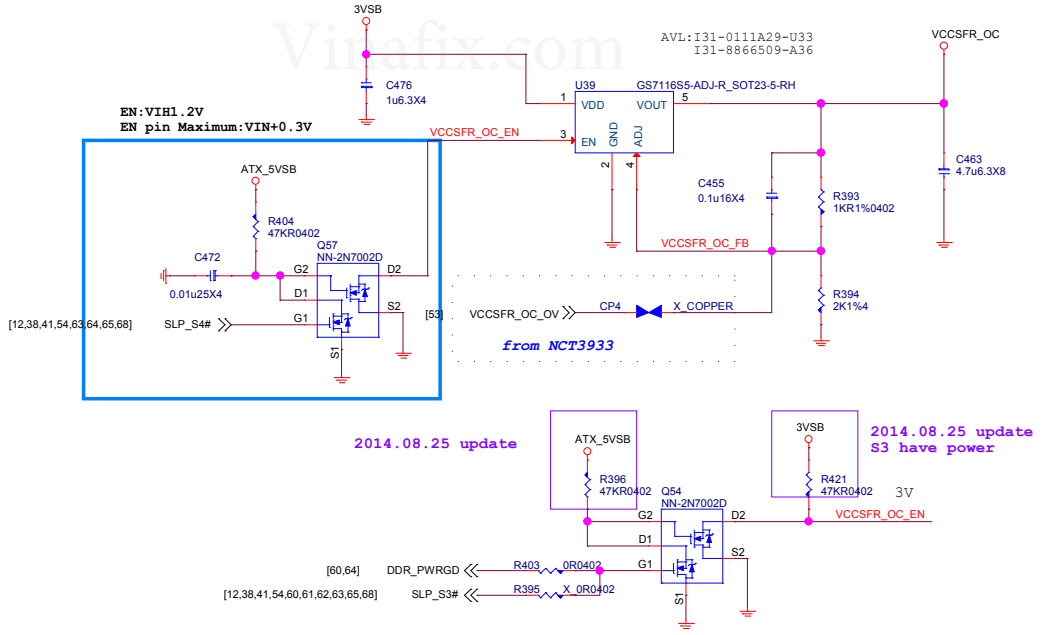

VCCIO ramped and stable before
beginning of VCCOPC/VCCEOPIO ramp

VCCST/PLL stable 1ms before PROCPWRGD

# VCCPLL_OC

**1.2V; 130mA**

**2014.08.21 update**






MICRO-STAR INT'L CO.,LTD.

Title: CPU PWR-VCCST/PLL

Size | Document Number: MS-7B98.. | Rev: 10

Date: Thursday, May 17, 2018 | Sheet 63 of 73

DDR4_1.2V 19.5A

OCP 27.58

3.3A FOR CPU

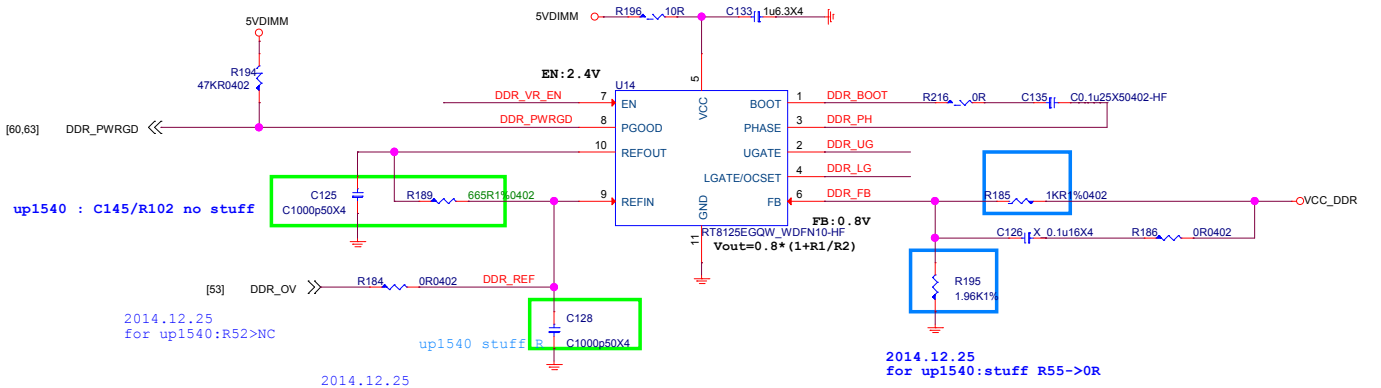
15.7A FOR 4DIMM

0.5A FOR DDR VTT

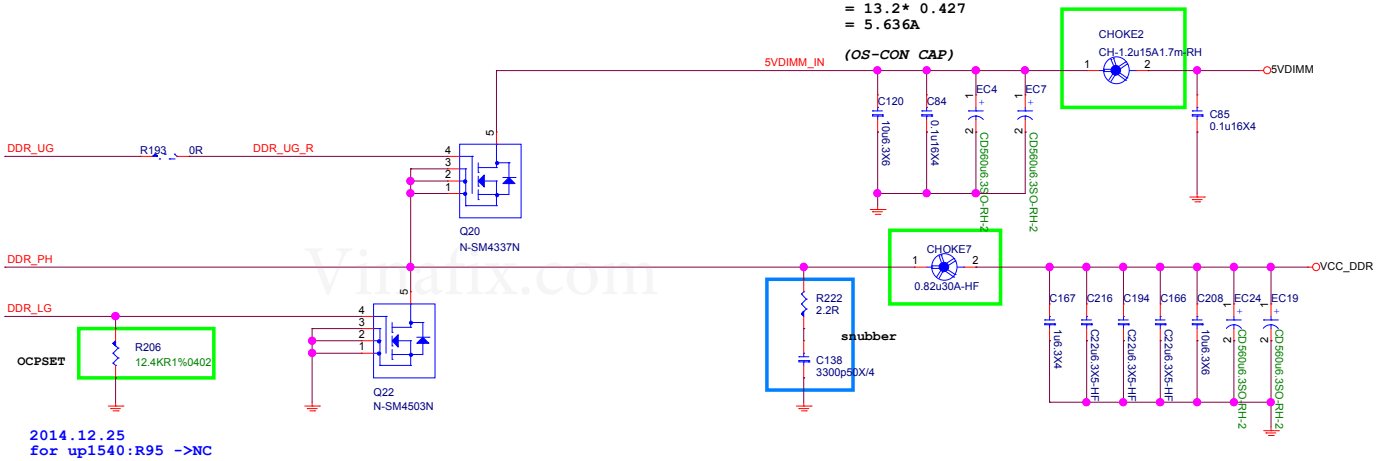
OCP = 19.7*1.4=27.58A

Rocset = 1.4 * Imax * Rdson(low) / Iocset
= 1.4 * 19.5 * 4.6mohm / 10uA
= 12.6K (BOM 12.4K)





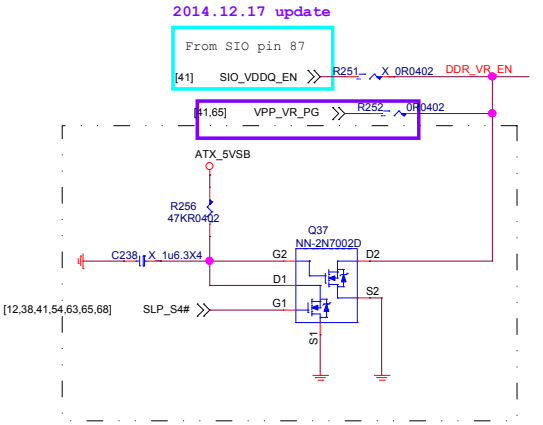

Irms = Iout * SQRT{(Vout/Vin) * [1 - (Vout/Vin)]}
= 13.2* 0.427
= 5.636A




Datasheet
Lmin = ((Vin - 1.2V)/(Fsw * k * Iout_max)) * (Vout/Vin)
= 0.7677uH (K = 30%)

CAP ESR ,0.2432uH L 1.2897uH

2014.12.17 update




MICRO-STAR INT'L CO.,LTD.

Title: DDR PWR-RT8125EGQW

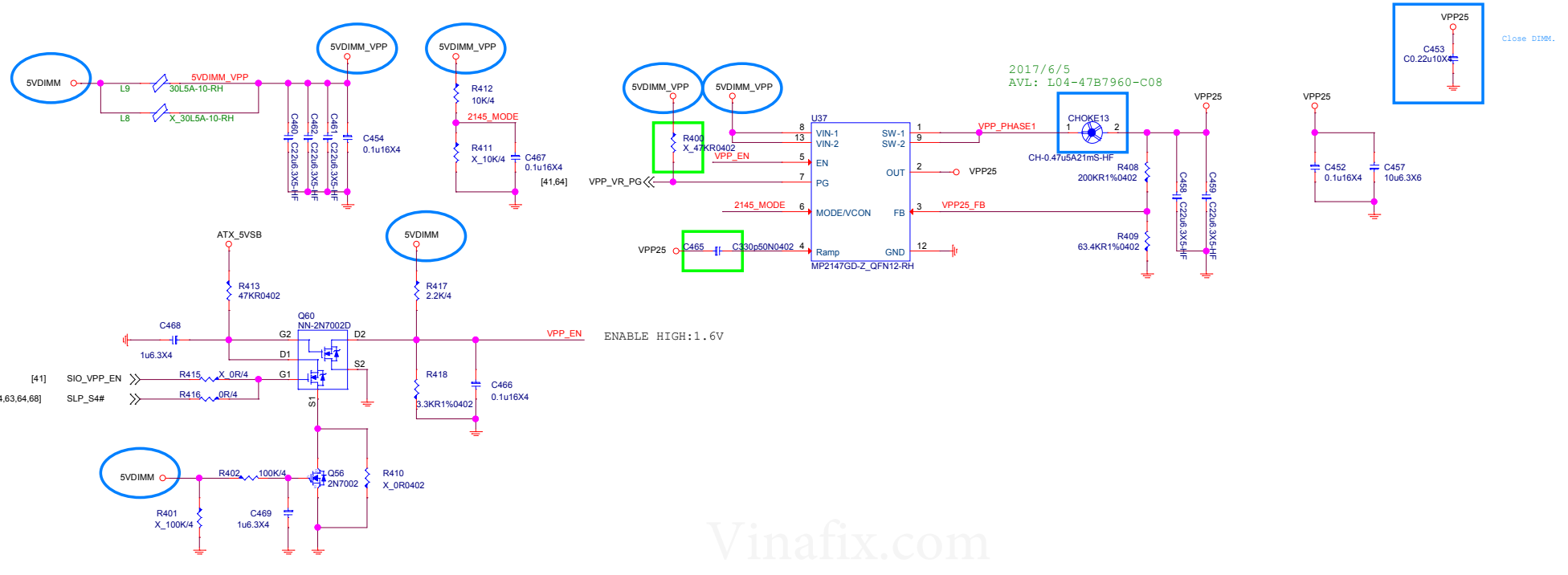
Size: Document Number: MS-7B98.. Rev: 10

Date: Thursday, May 17, 2018 Sheet 64 of 73

4DIMM :2.24A FOR
DDR VPP2.5V

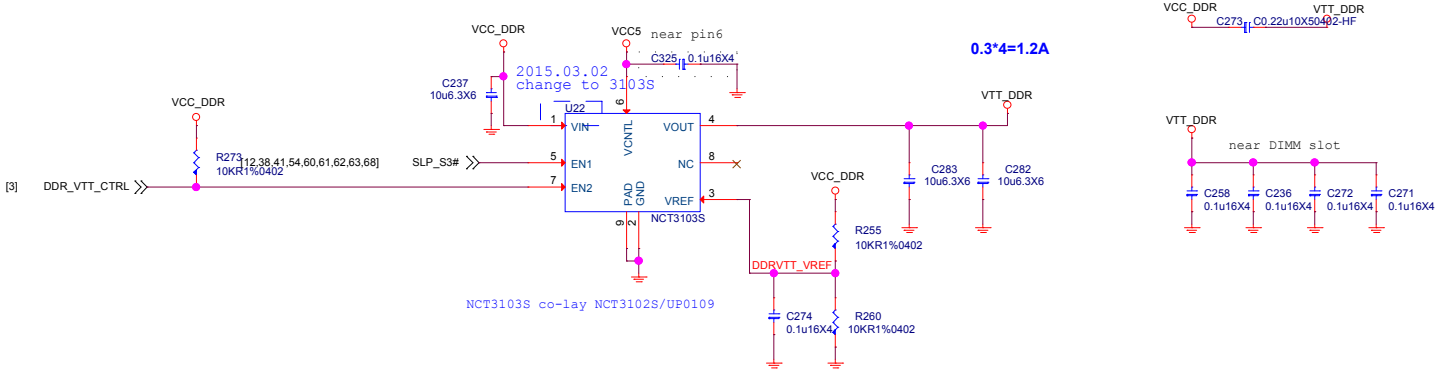
## VPP25 Power

2.5V; 2.24A




To make sure VPP EN after 5VDIMM stable

## DDR VTT Power






MICRO-STAR INT'L CO.,LTD.

Title: DDR PWR VPP25-MP2147/VTT

Size | Document Number: MS-7B98.. | Rev: 10

Date: Thursday, May 17, 2018 | Sheet 65 of 73

# PCH_1VSB

1.05V; 13.36A

Rdson(low)4.5V

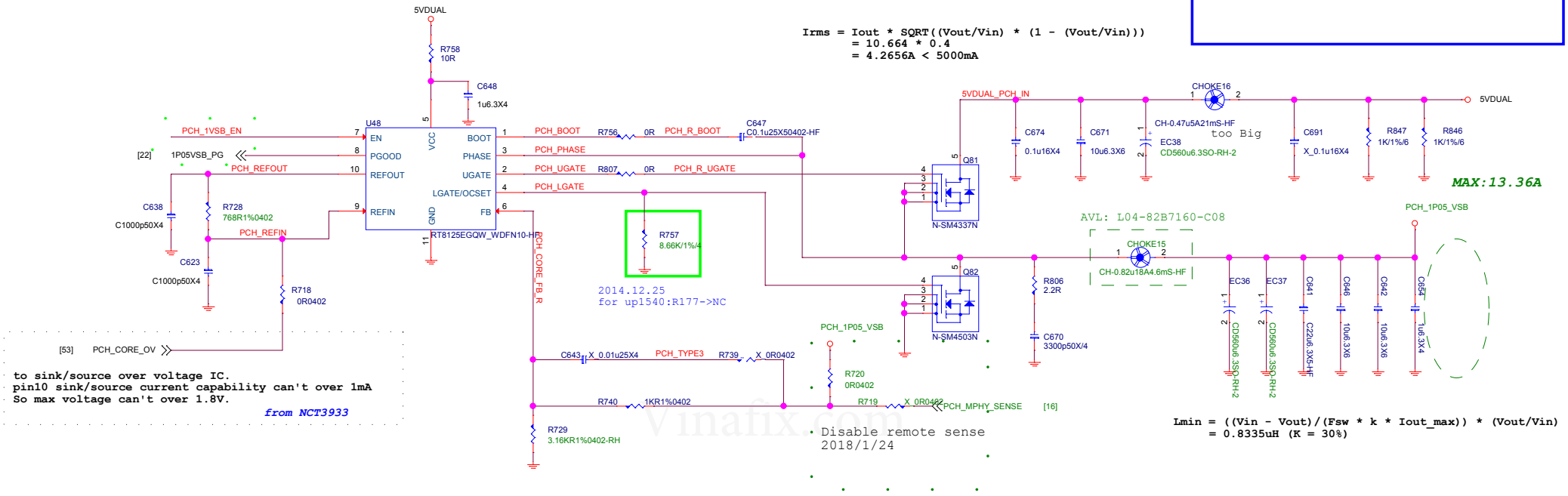
D03-3116M00-U47 : 3.6 mohm
D03-632BA0C-N03 : 4.6mohm
D03-3056M00-U47 : 6.2mohm

OCP = 13.36*1.4=18.704A

Rocset = 1.4 * Imax * Rdson(low) / Iocset
= 1.4 * 13.36 * 4.6mohm / 10uA
= 8.6K (BOM 8.66K)

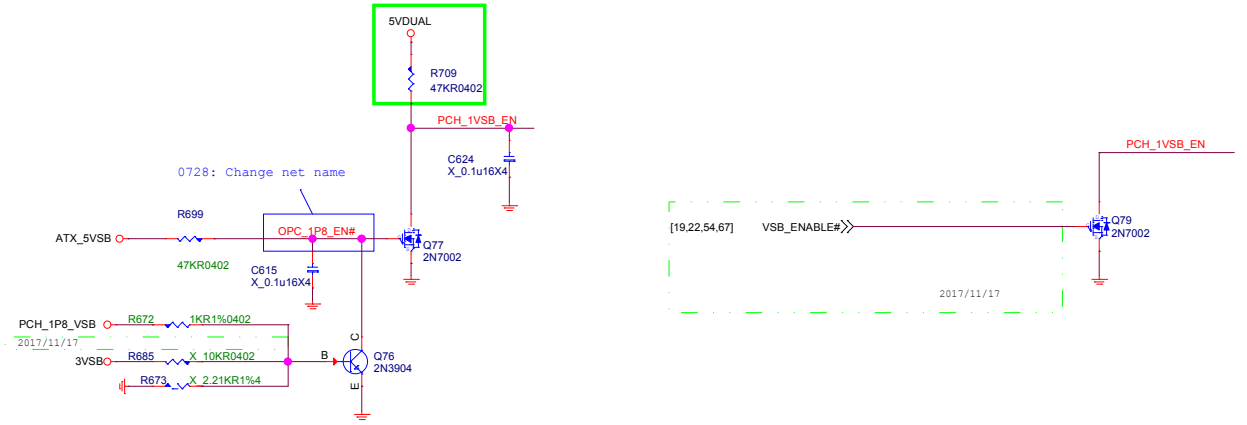
Change to Choke (L04-47B7930-M26) form bead

Irms = Iout * SQRT((Vout/Vin) * (1 - (Vout/Vin)))
= 10.664 * 0.4
= 4.2656A < 5000mA

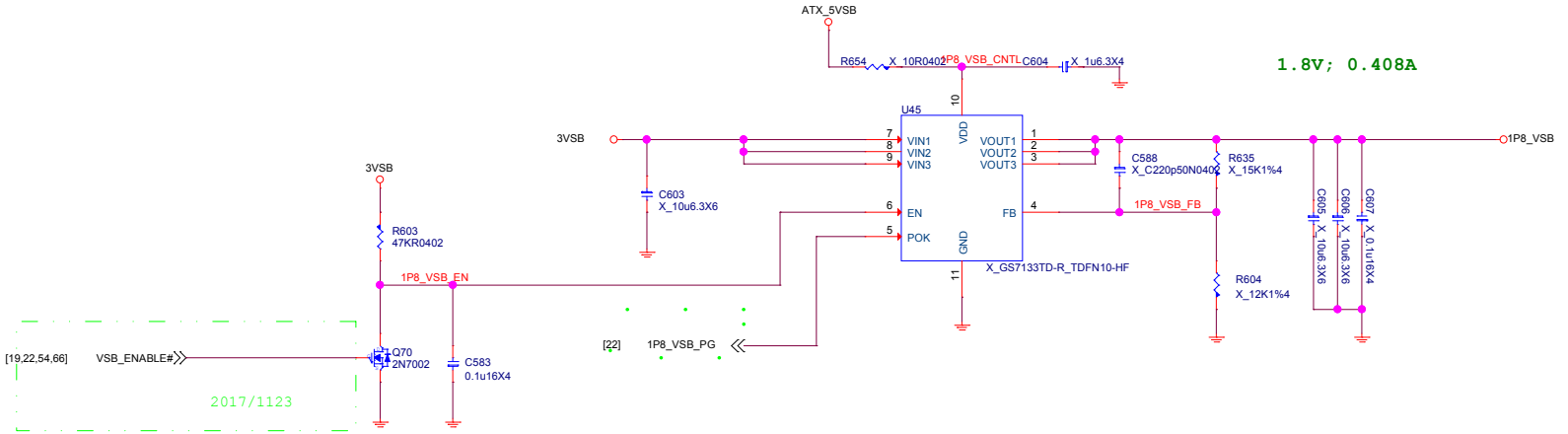



Lmin = ((Vin - Vout)/(Fsw * k * Iout_max)) * (Vout/Vin)
= 0.8335uH (K = 30%)






| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: PCH POWER-RT8125E | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
| Date: Thursday, May 17, 2018 | Sheet 66 of 73 | |



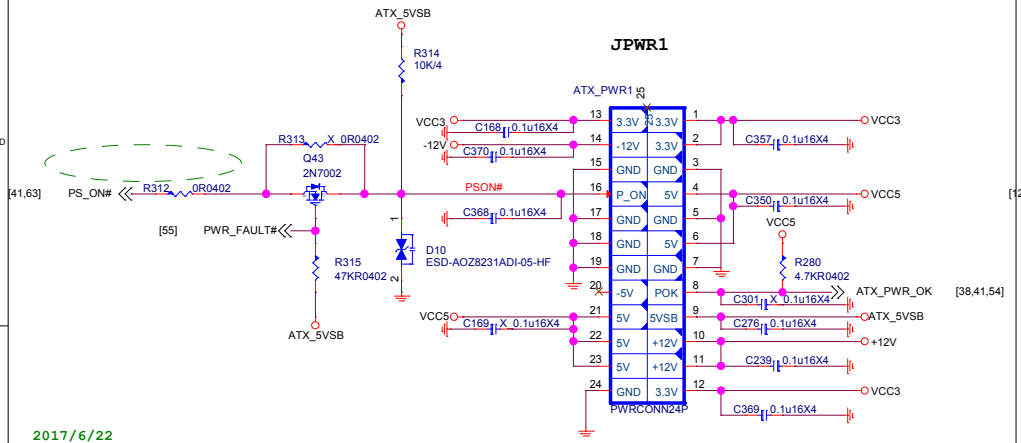

Delete due to USB retimer use external DC to DC schematic
2018/01/17



ASM_1P8_VSB Delete ,due to drop ASM 1562

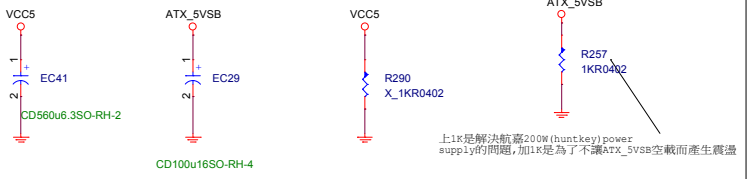
| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: PCH POWER-1P8V/1P24V | | |
| Size | Document Number: MS-7B98.. | Rev: 10 |
| Date: Thursday, May 17, 2018 | Sheet 67 of 73 | |

## ATX POWER CONNECTOR



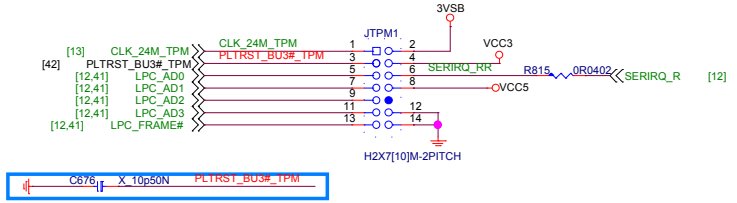

2017/6/22
EC34, EC36 are changed from 470uF to 560uF by buyer request

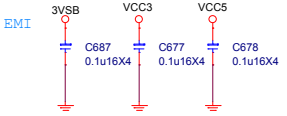
2017/7/6
EC36 move to PCI1



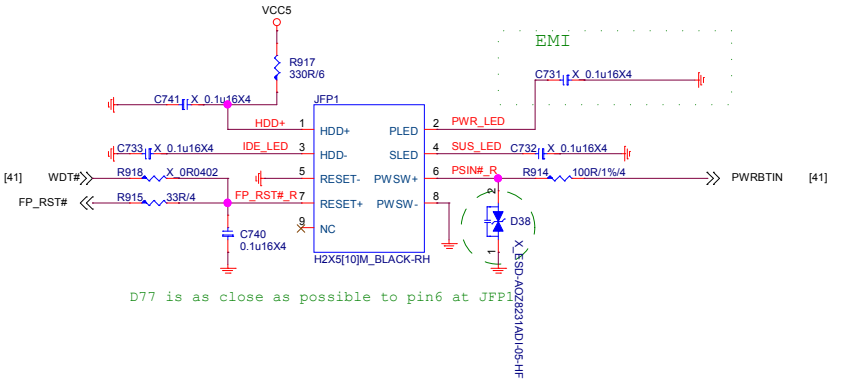


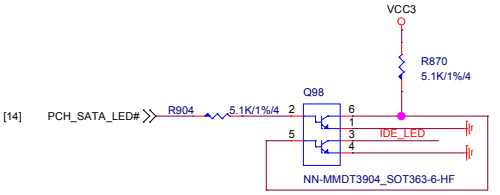
## TPM Pin Header

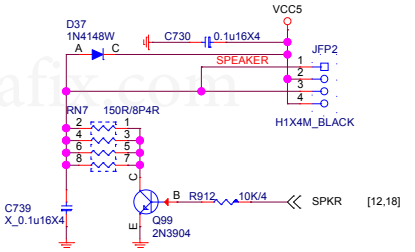


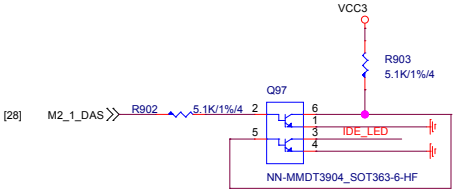




## FRONT PANNEL

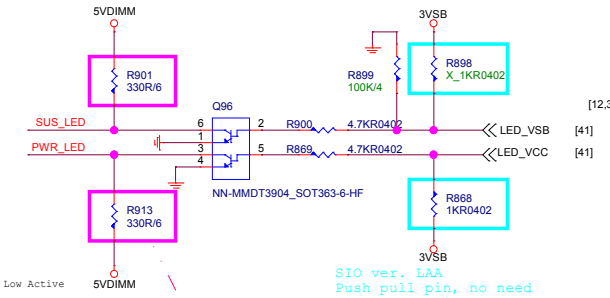


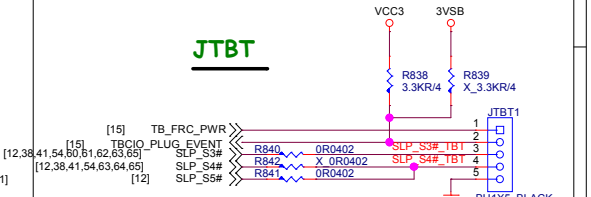




## Front Panel LED




## JTBT




| | | |
|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | |
| Title | ATX Connector/F_Panel | |
| Size | Document Number MS-7B98.. | Rev 10 |
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PCB1

7B98-0A

PK0-07B980A-G37,精成-深圳,23,寶安恩斯邁廠(MSIS)
PK0-07B980A-E48,競華,23,寶安恩斯邁廠(MSIS)

VIRTU_LA1
Label
VIRTU
AMI

TMOS_HS1
MOS
HS
T_MOS_HS1

LMOS_HS1
MOS
HS
L_MOS_HS1

CPU_H1
CPU
鐵座
CPU_H1

BAT1_X1
BAT-BCR2032P-RH

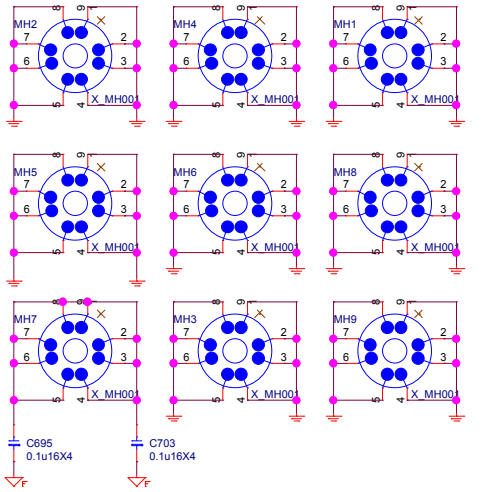
MK_LABLE1
Market
Lable
H370

CFOS_LA1
LABEL
CFOS_LABEL

PCH_HS1
PCH
HS
HS-0409230-RH

LED001
LED
RED
X_LED04-R-20mA2.4V

## Mounting Holes

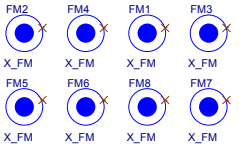



## Simulation

SIM1
SIM1
X_PIN1*2

SIM2
VCC3
SIM2
X_PIN1*2

## Optical Fiducial Marks-120




## Vcheck

| | |
|---|---|
| VCORE | VCORE |
| VGT | VGT |
| VCC_DDR | VCC_DDR |
| VCCSA | VCCSA |
| VCCIO | VCCIO |
| PCH_1P05_VSB | PCH_1P05_VSB |
| VCCSTPLL | VCCST |
| VCCSFR_OC | VCCSFR |
| VTT_DDR | VTT_DDR |
| VPP25 | VPP25 |



MICRO-STAR INT'L CO.,LTD.

Title: Manual Parts

Size | Document Number: MS-7B98.. | Rev: 10

Date: Thursday, May 17, 2018 | Sheet 69 of 73