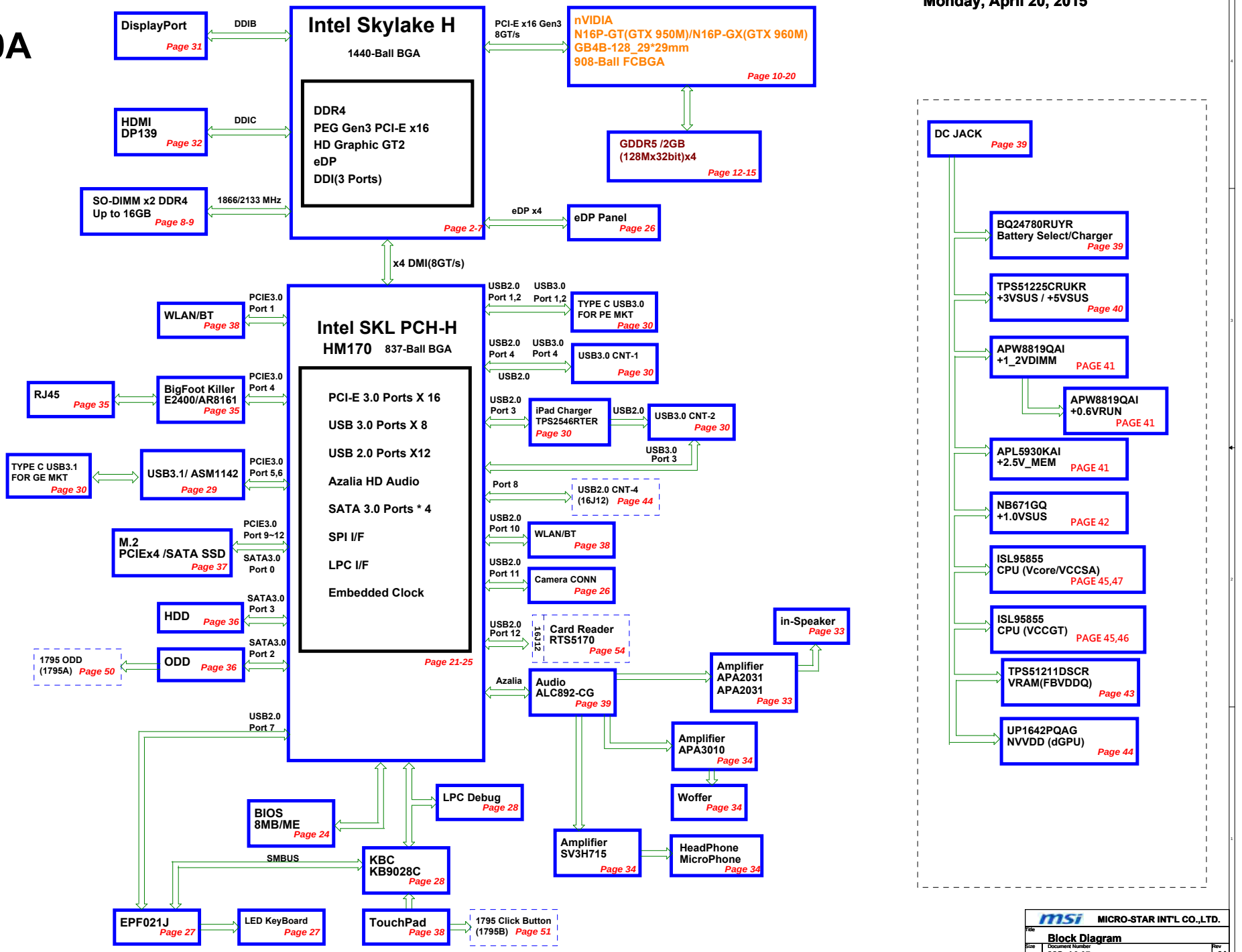
# MS-16J5/MS-1795

## Ver:0A

# Intel Skylake Mobile

Monday, April 20, 2015




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

Title: Block Diagram

Size | Document Number: MS-16J5 | Rev: 0A

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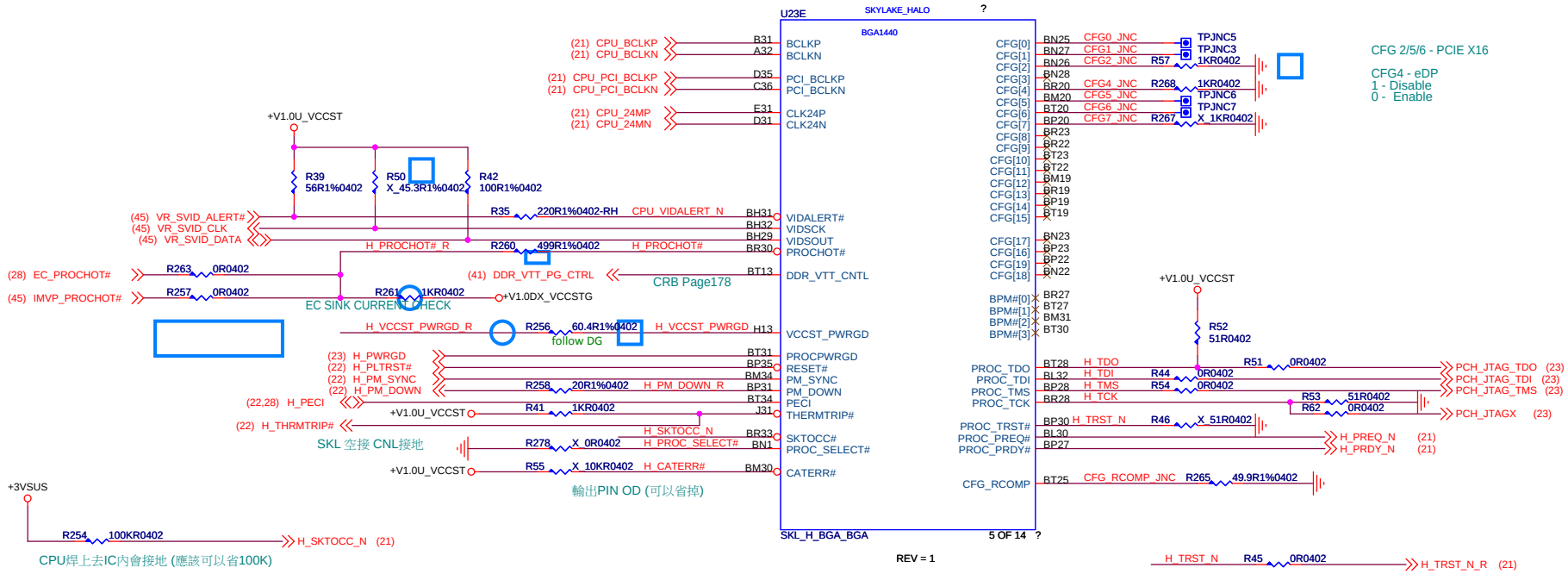



| MSR Privacy Bit Feature | |
|---|---|
| CFG3 | 1 = Debug capability is determined by IA32_Debug_Interface_MSR (0xC80) bit[0] setting<br>0 = IA32_Debug_Interface_MSR (0xC80) bit[0] default setting overridden |

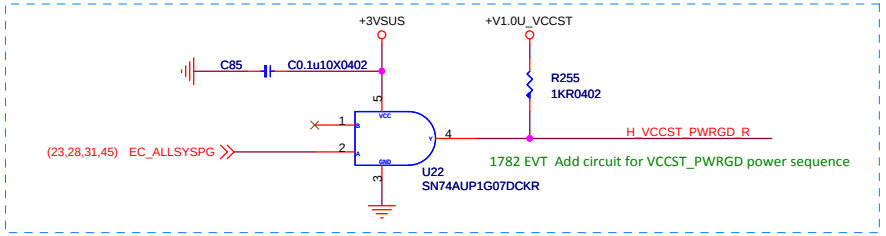
| eDP Enable | |
|---|---|
| CFG4 | 1 = Disabled<br>0 = Enabled |

| PEG DEFER TRAINING | |
|---|---|
| CFG7 | 1: (Default) PEG Train immediately following xxRESETB de assertion<br>0: PEG Wait for BIOS for training |

| PCIE Express * Static X16 Lane Numbering Reversal | |
|---|---|
| CFG2 | CFG[2]: PCI Express* Static x16 Lane Numbering Reversal.<br>1 = Normal operation<br>0 = Lane numbers reversed. |

| PCI Express* Bifurcation | |
|---|---|
| CFG[6:5] | 00 = 1 x8, 2 x4 PCI Express*<br>01 = reserved<br>10 = 2 x8 PCI Express*<br>11 = 1 x16 PCI Express* |

Intel 54492 Page 37,121



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Title: Skylake(HOST)

Size: A3 | Document Number: MS-16J5 | Rev: 0A

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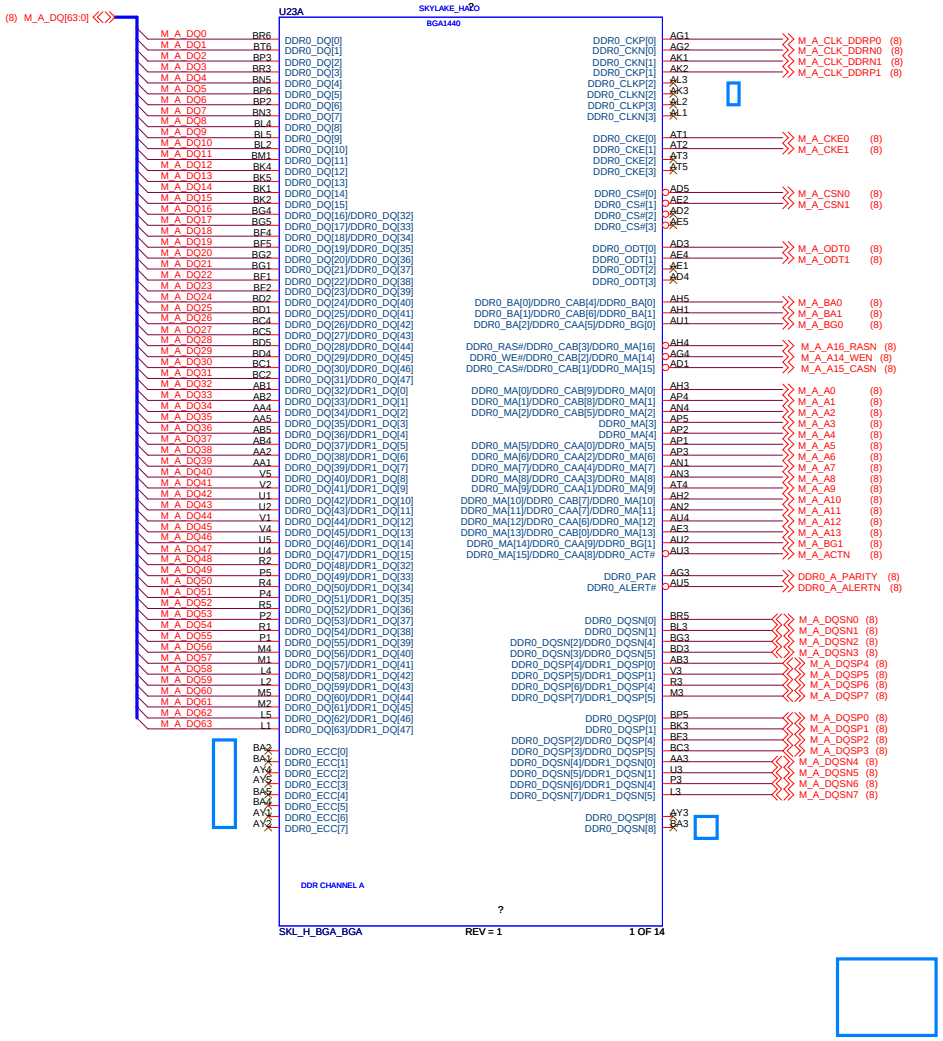
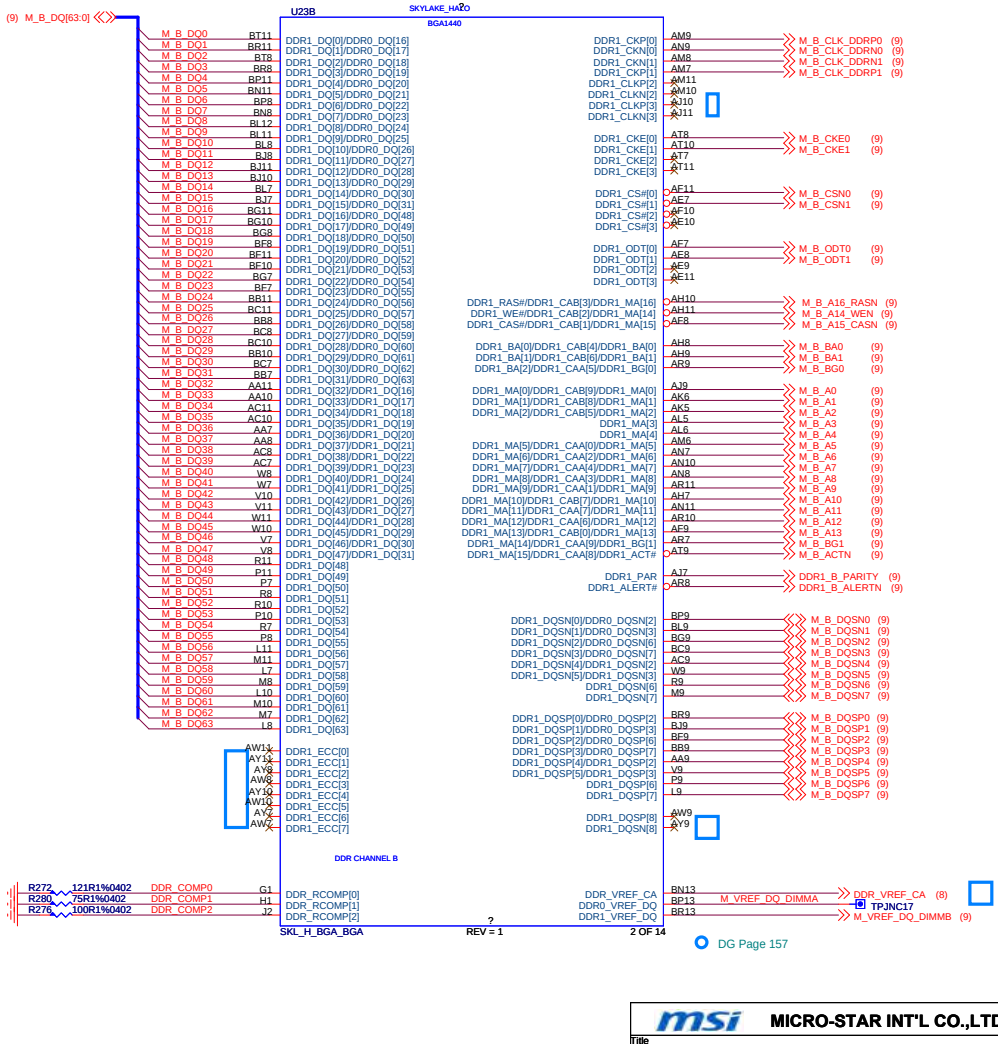
# DDR Channel A




# DDR Channel B




DG Page 157

| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: Skylake(DDR4) | | |
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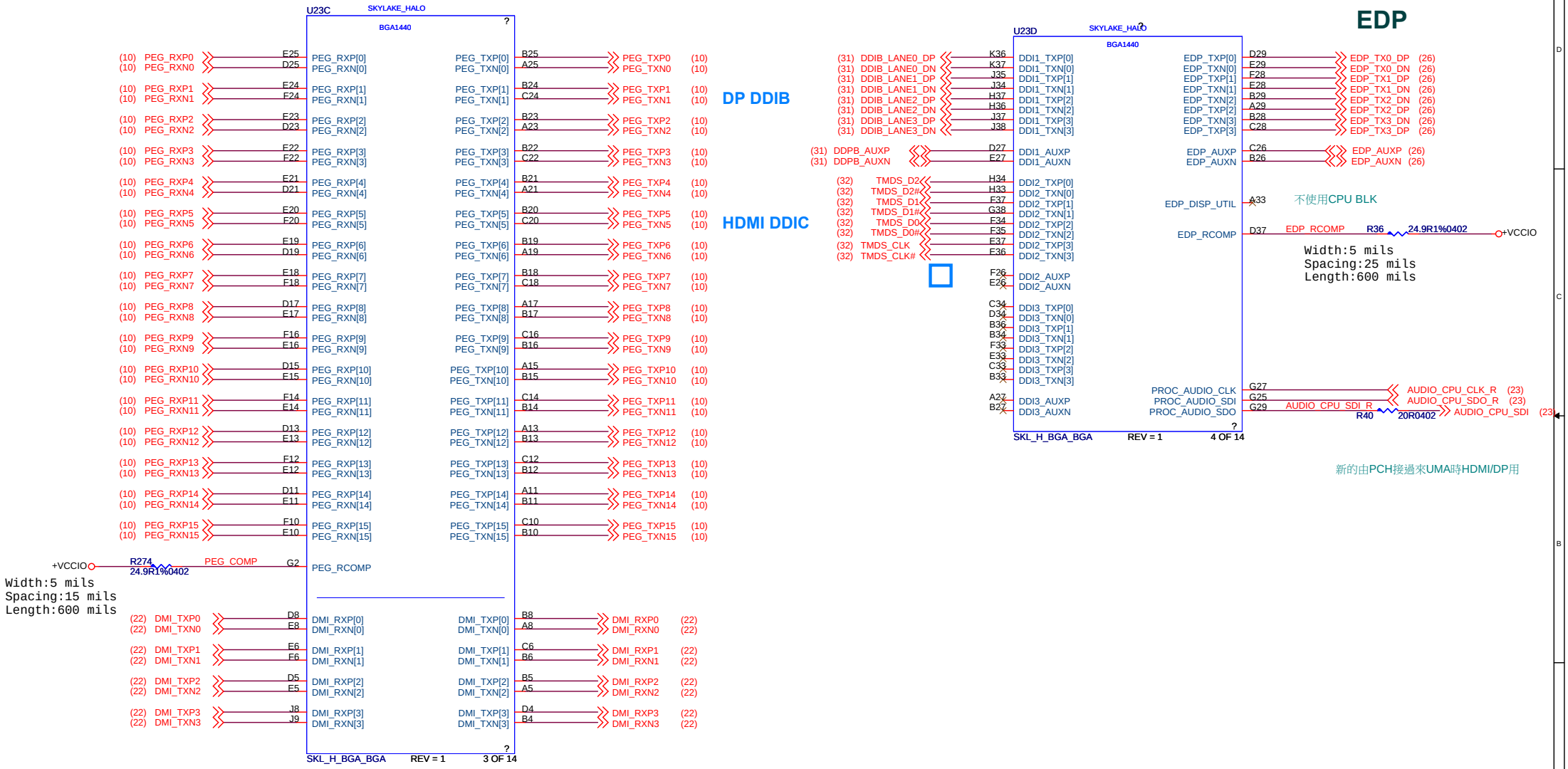
| Date: Tuesday, April 21, 2015 | Sheet 3 of 55 | |

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Title: Skylake(DMI/Display)

Size: B | Document Number: MS-16J5 | Rev: 0A

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Title: Skylake(Power1)

Size: A3 | Document Number: MS-16J5 | Rev: 0A

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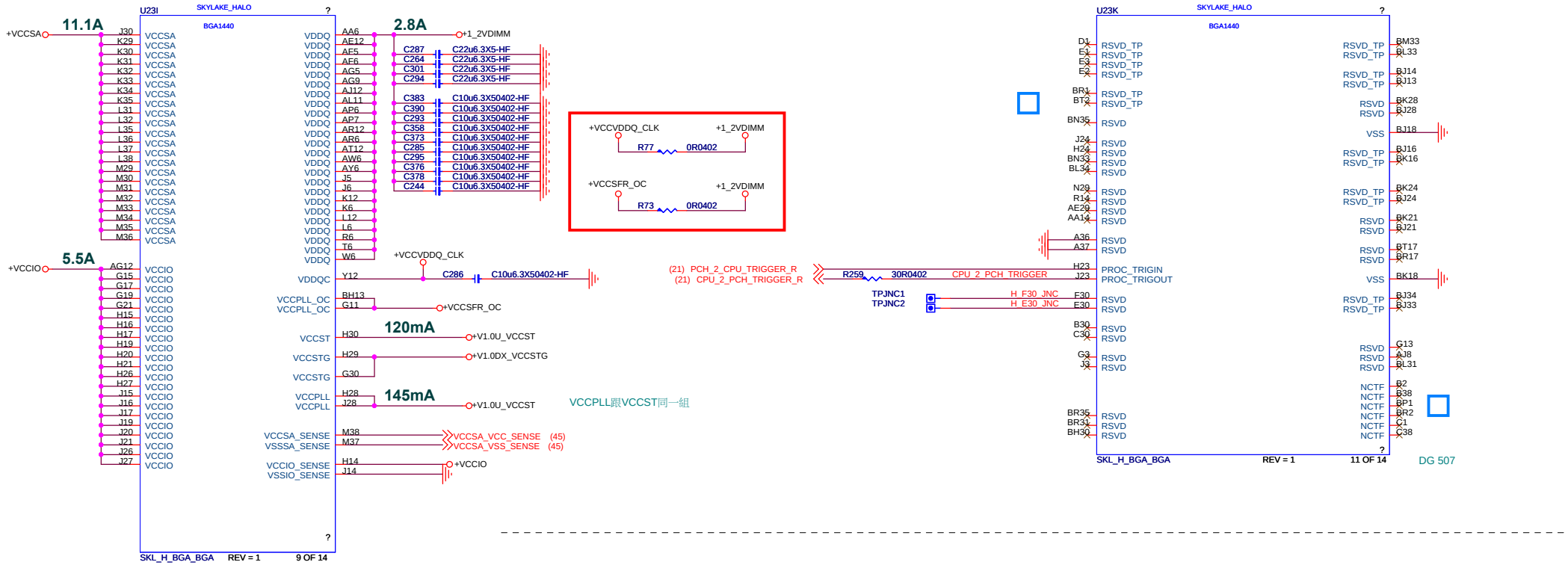


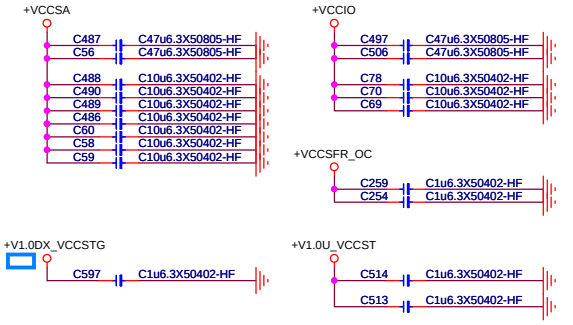


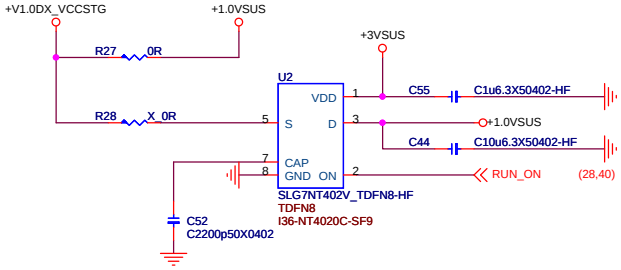


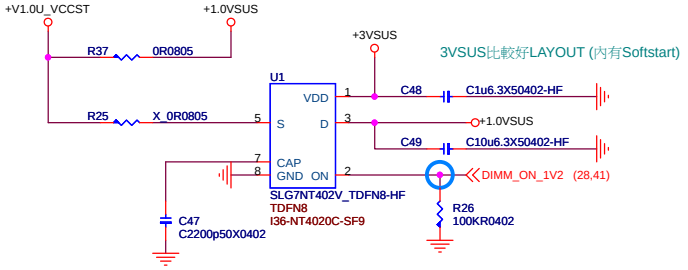


MICRO-STAR INT'L CO.,LTD.

Title: Skylake(Power2)

Size: Custom | Document Number: MS-16J5 | Rev: 0A

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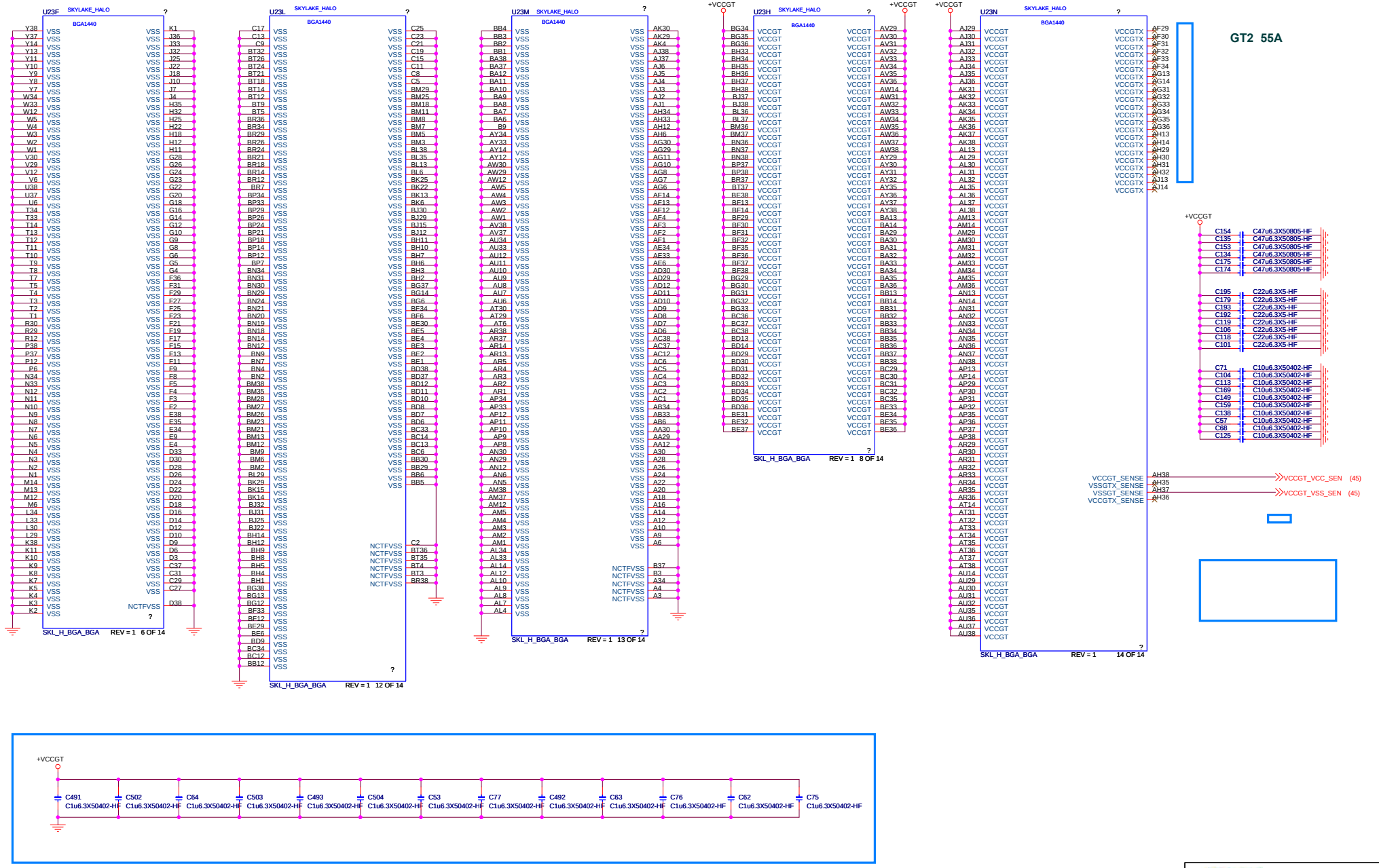


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Title: Skylake(Power3)

Size: Custom | Document Number: MS-16J5 | Rev: 0A

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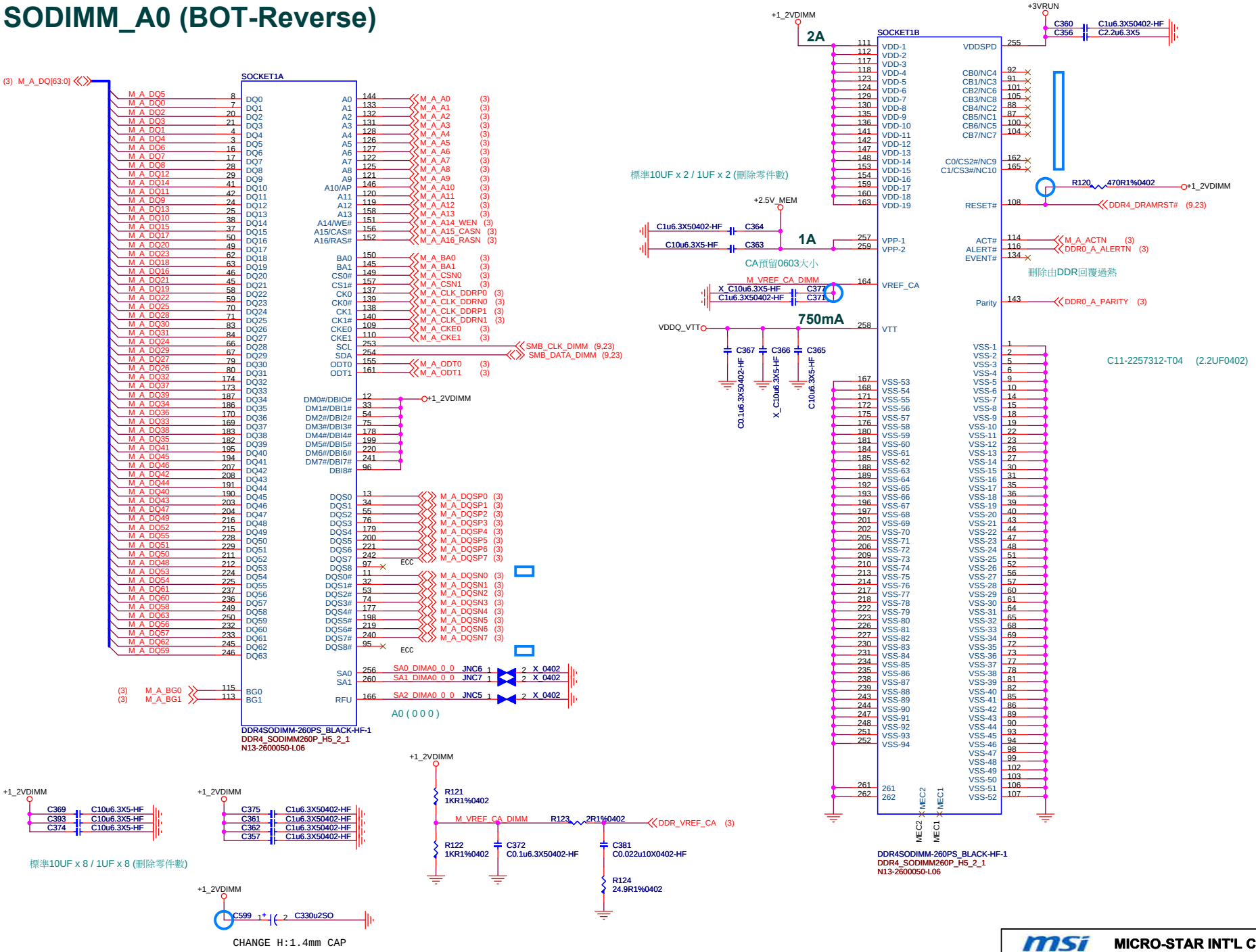
# SODIMM_A0 (BOT-Reverse)



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Title: DDR4_SODIMM_A0

Size: Custom | Document Number: MS-16J5 | Rev: 0A

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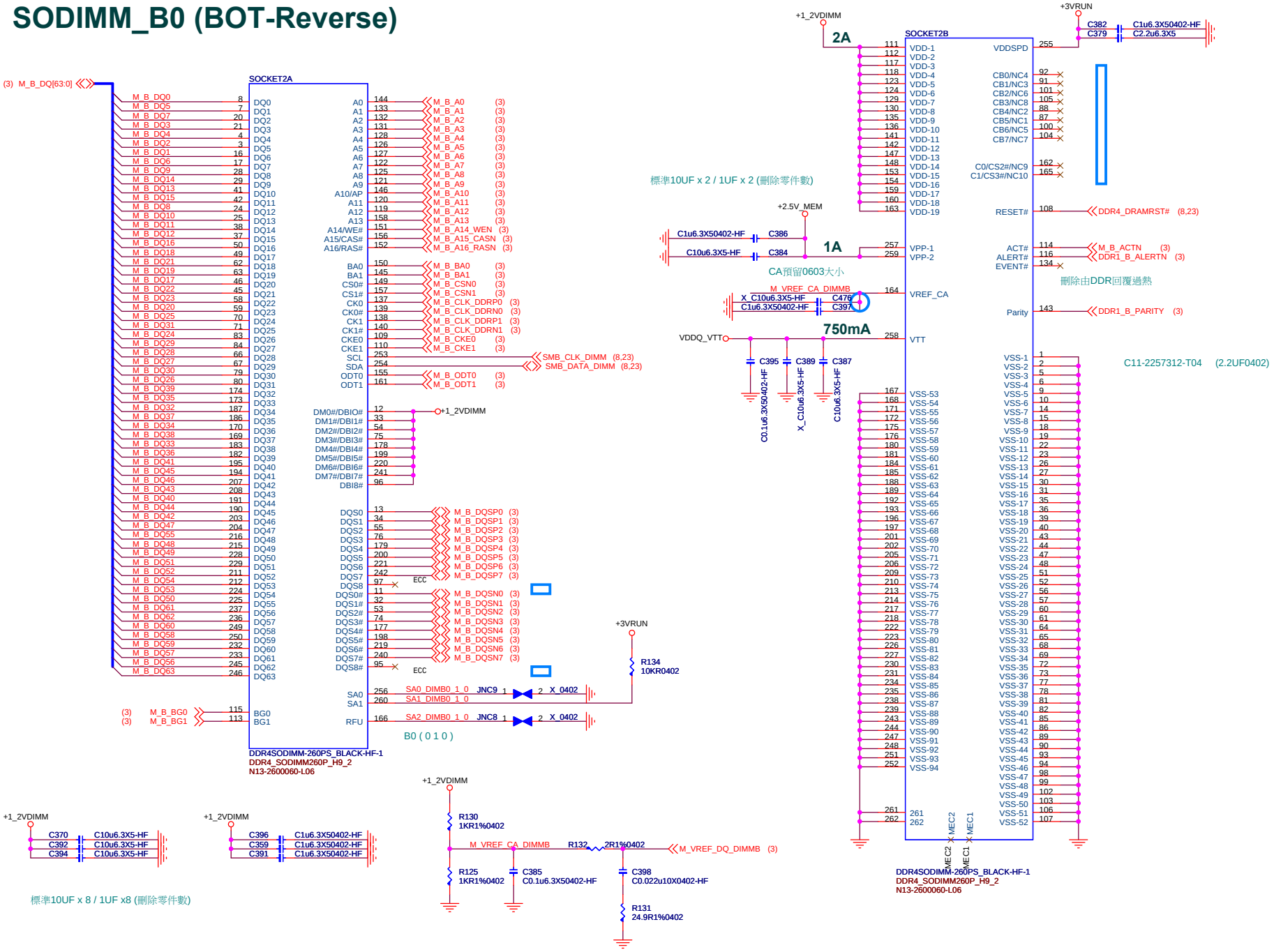
# SODIMM_B0 (BOT-Reverse)




| | | | |
|---|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | | |
| Title: DDR4_SODIMM_B0 | | | |
| Size: Custom | Document Number: MS-16J5 | | Rev: 0A |
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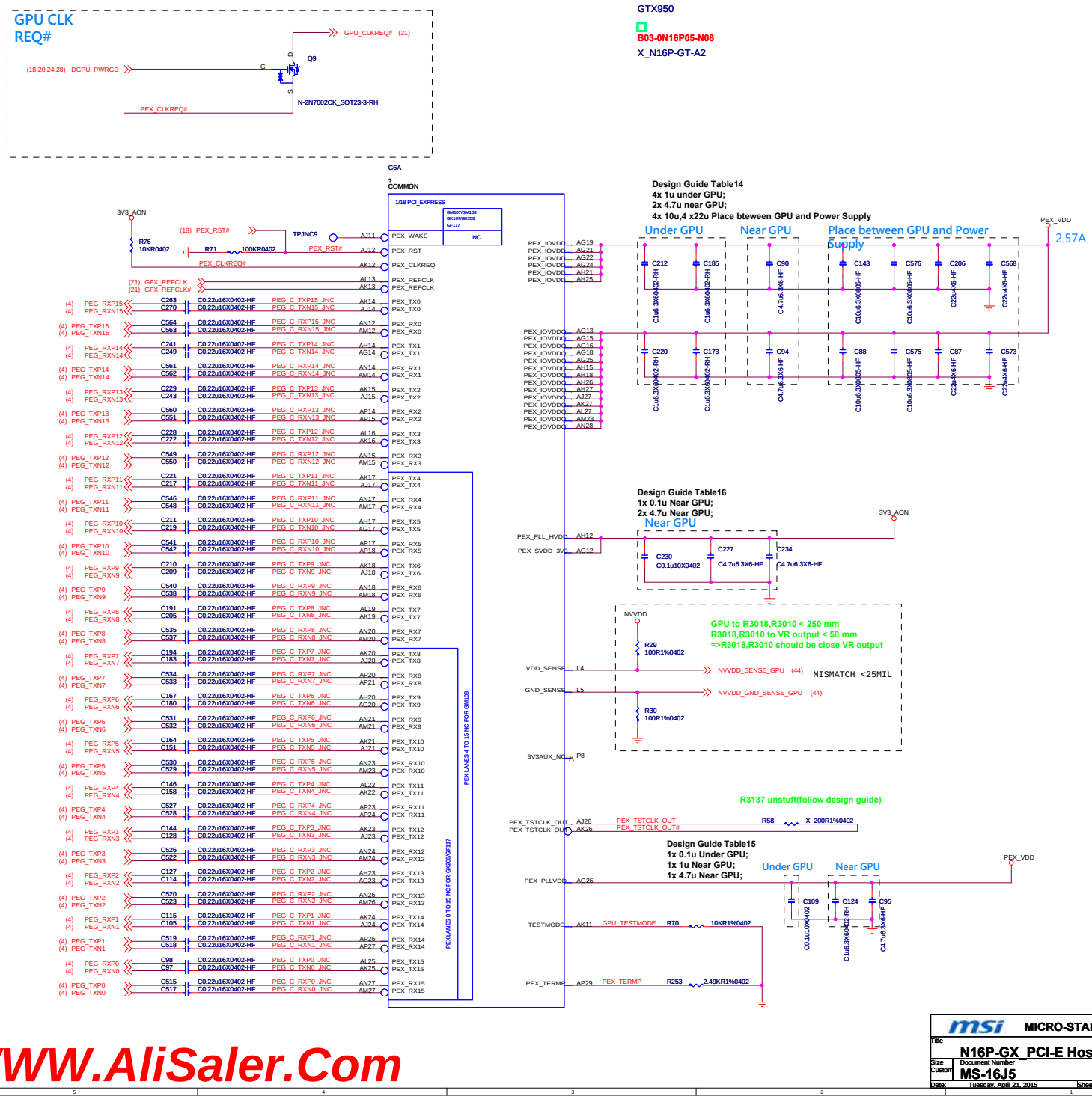
# N16P-GX( PCI-Express Gen3 x16 Interface)






| | | |
|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | |
| Title | N16P-GX_PCI-E Host | |
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# N16P-GX( Frame Buffer Interface )

GC6M is GC6 2.0 that it is for N15x or later GPU
So we use CRB GC6M design

G6B
? COMMON
2/18 FBA

G6C
? COMMON
3/18 FBB
ALL PINS NC FOR GM108/ GK208/GF117

GDDR5 CMD Mapping Mode H Table

| <0..31> | <32..63> | MEMORY |
|---|---|---|
| 12 | 28 | RAS* |
| 15 | 31 | CAS* |
| 5 | 21 | WE* |
| 0 | 16 | CS* |
| 8 | 24 | ABI* |
| 10 | 26 | A0_A10 |
| 11 | 27 | A1_A9 |
| 2 | 18 | A2_BA0 |
| 1 | 17 | A3_BA3 |
| 3 | 19 | A4_BA2 |
| 4 | 20 | A5_BA1 |
| 7 | 23 | A6_A11 |
| 6 | 22 | A7_A8 |
| 9 | 25 | A12_RFU |
| 14 | 30 | CKE* |
| 13 | 29 | RESET* |

FBA_DEBUG0
FBA_DEBUG1
NC
NC
GK107/GK208 GF117 | GM107/GM108

FBA_WCKBxx ARE RESERVED,NC ON: GM108/GM107 GK208/GF117
USED ONLY ON: GK107

FBB_WCKBxx ARE RESERVED,NC ON: GM108/GM107
USED ONLY ON: GK107

Under GPU
Near GPU

FBA CKE H → FBA_CMD30 → FBB CKE H → FBB_CMD30
FBA CKE L → FBA_CMD14 → FBB CKE L → FBB_CMD14
FBA RST H → FBA_CMD29 → FBB RST H → FBB_CMD29
FBA RST L → FBA_CMD13 → FBB RST L → FBB_CMD13

| Title | N16P-GX MEM IF A/B | |
|---|---|---|
| Size: Custom | Document Number: MS-16J5 | Rev: 0A |
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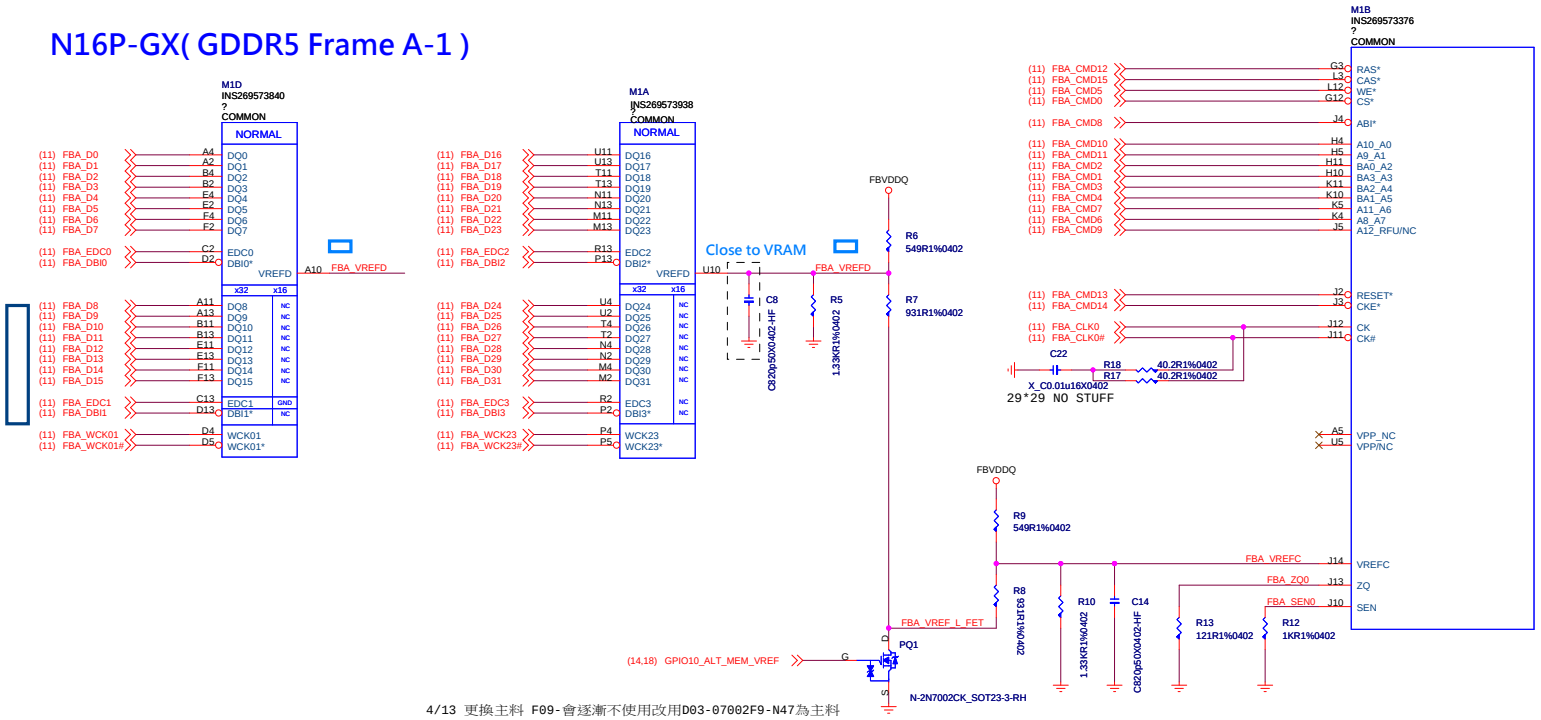
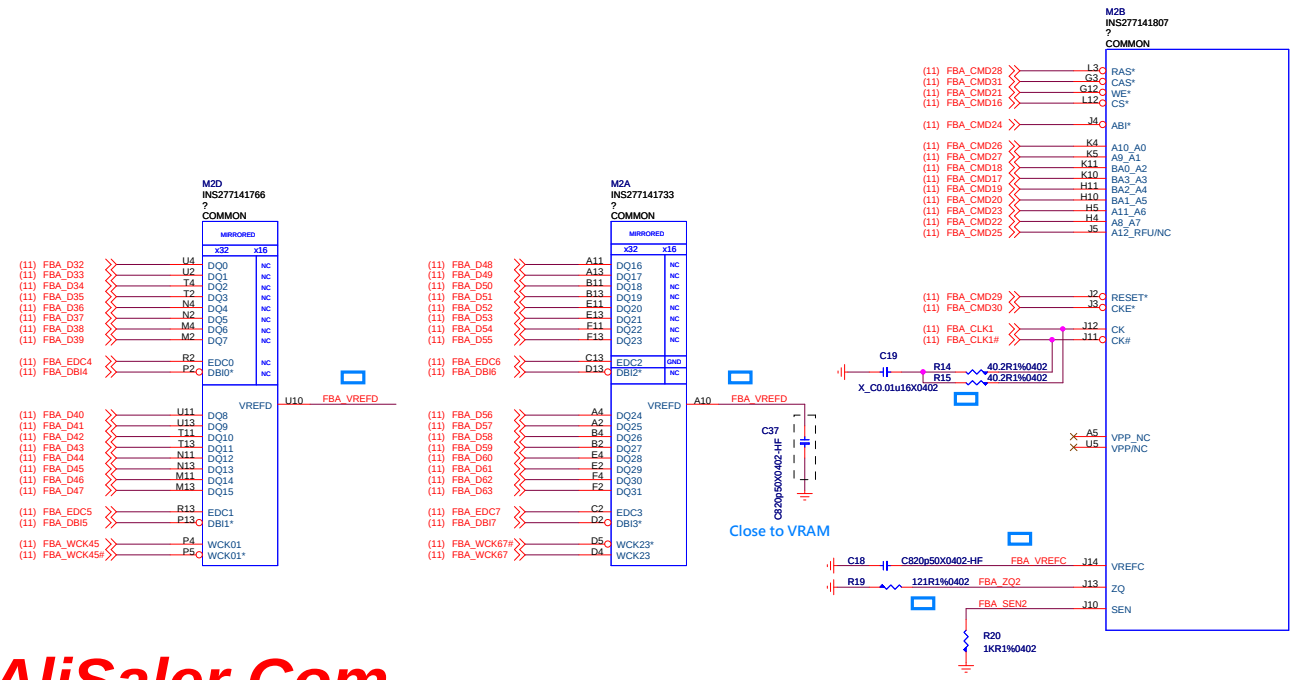
# N16P-GX( GDDR5 Frame A-1 )




4/13 更換主料 F09-會逐漸不使用改用D03-07002F9-N47為主料



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Title: N16P-GX_GDDR5 Frame A-1

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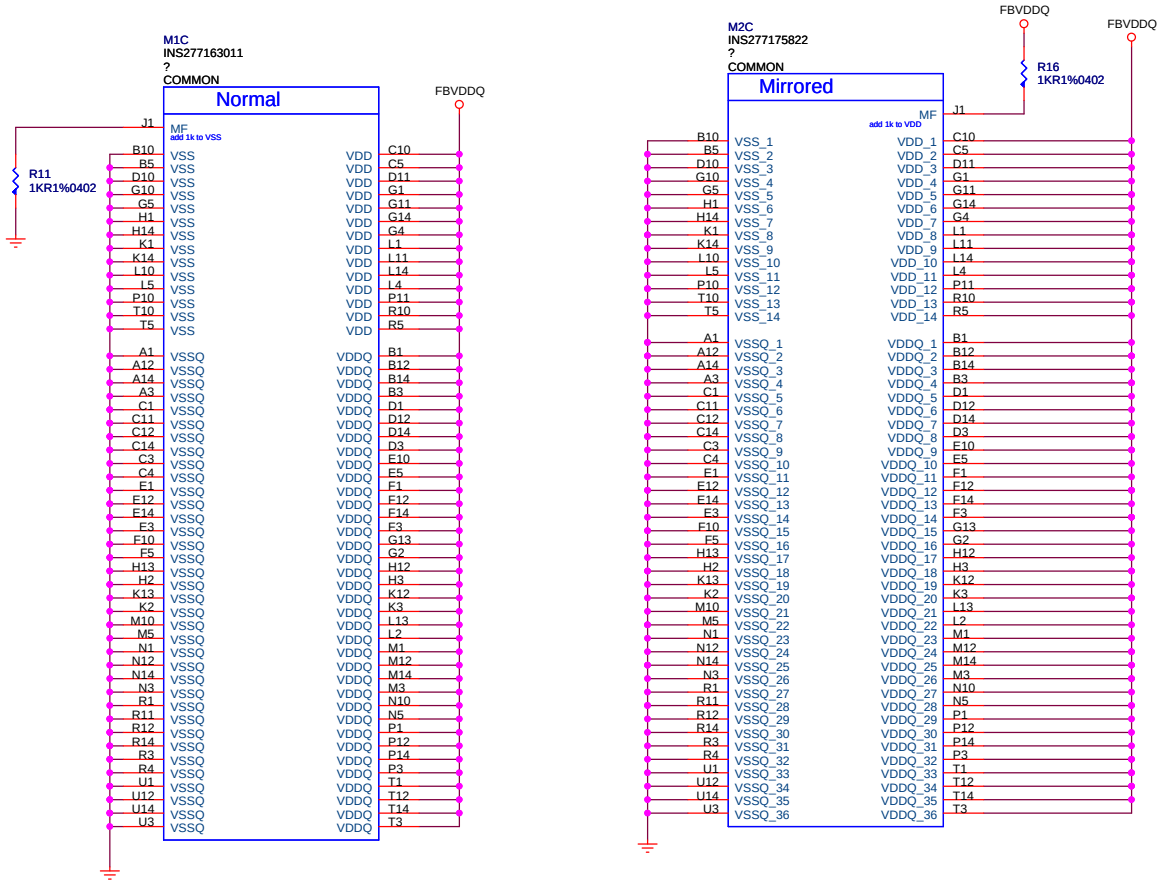
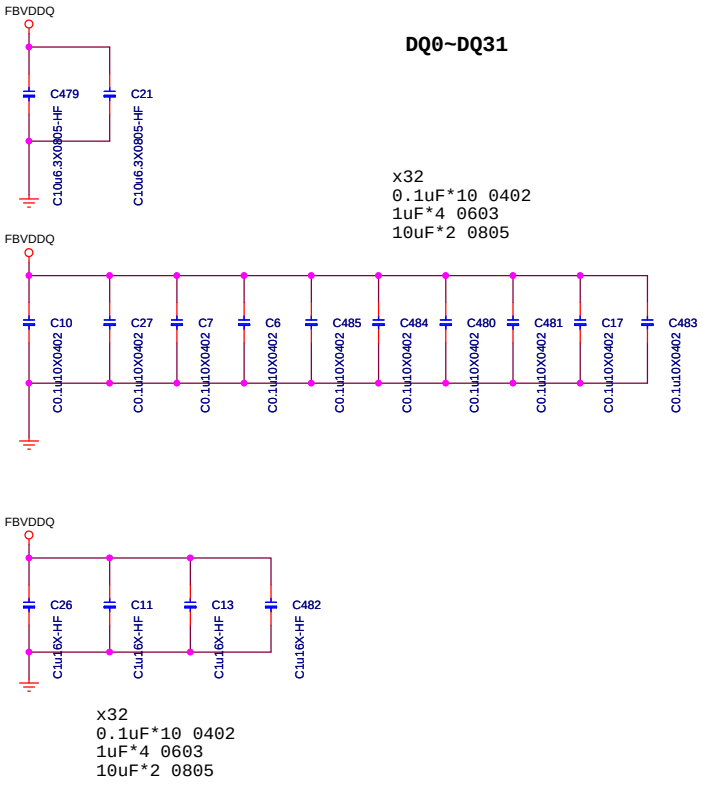
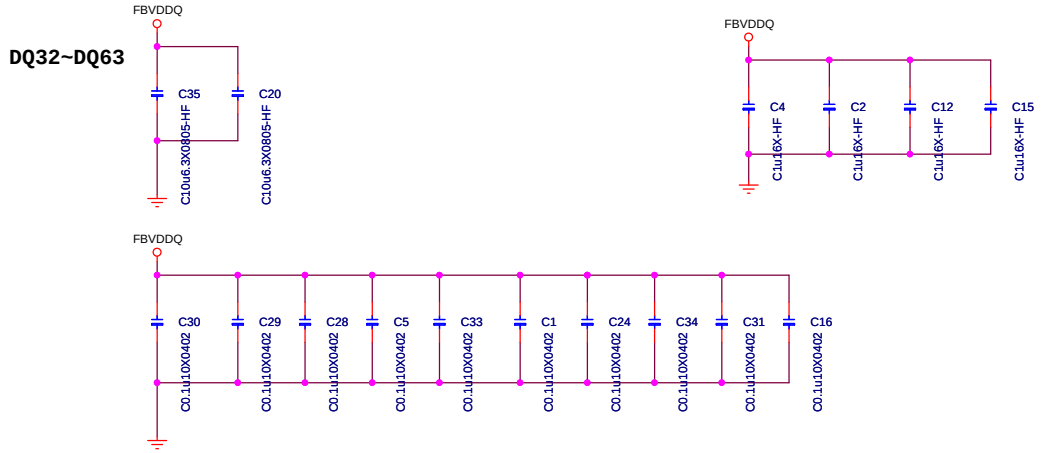
# N16P-GX( GDDR5 Frame A-2 )




| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: N16P-GX_GDDR5 Frame A-2 | | |
| Size: A3 | Document Number: MS-16J5 | Rev: 0A |
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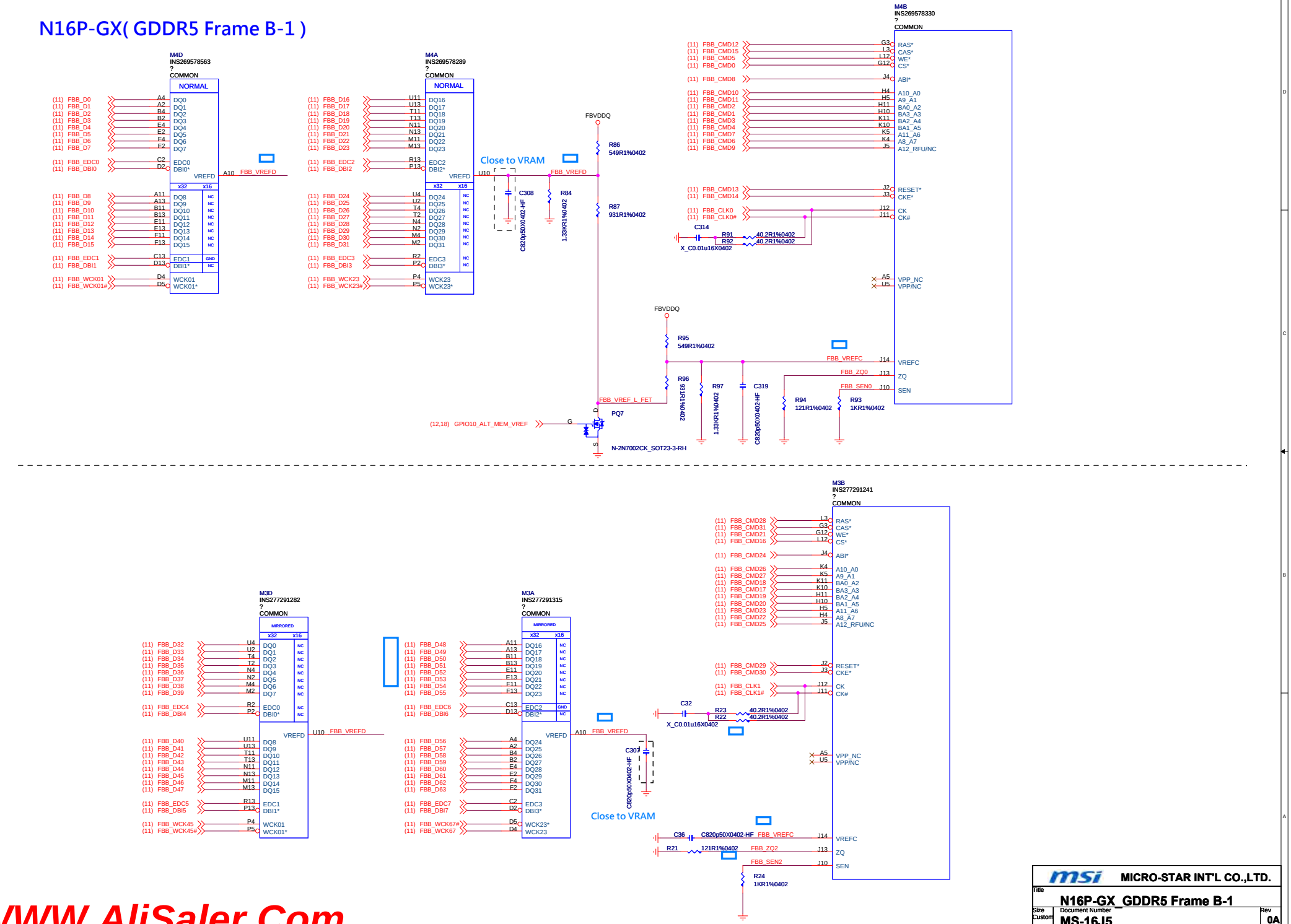
# N16P-GX( GDDR5 Frame B-1 )






| | | | |
|---|---|---|---|
| msi MICRO-STAR INT'L CO.,LTD. | | | |
| Title: N16P-GX_GDDR5 Frame B-1 | | | |
| Size: Custom | Document Number: MS-16J5 | | Rev: 0A |
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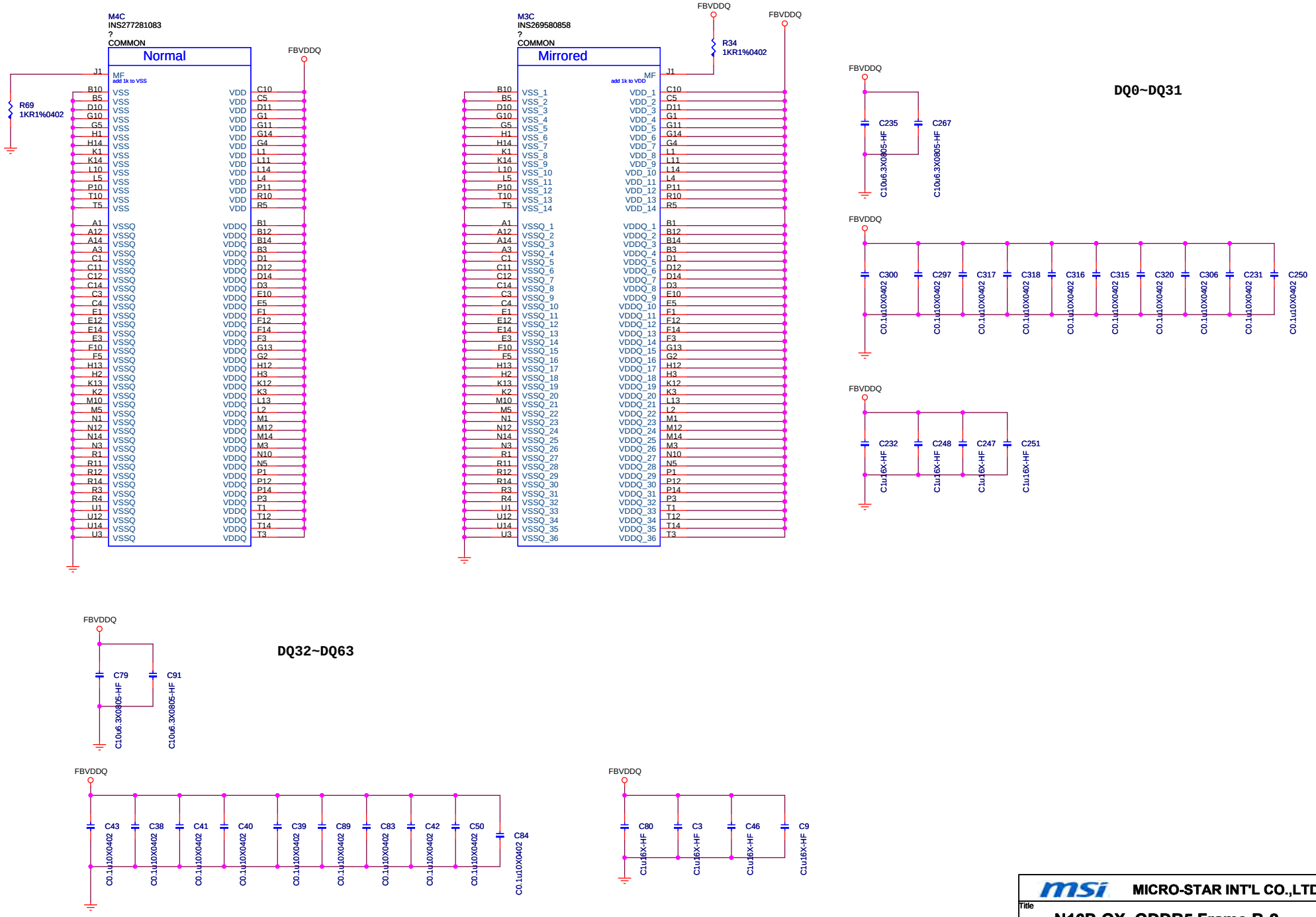
# N16P-GX( GDDR5 Frame B-2 )




| | | | |
|---|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | | |
| Title: N16P-GX_GDDR5 Frame B-2 | | | |
| Size: A3 | Document Number: MS-16J5 | | Rev: 0A |
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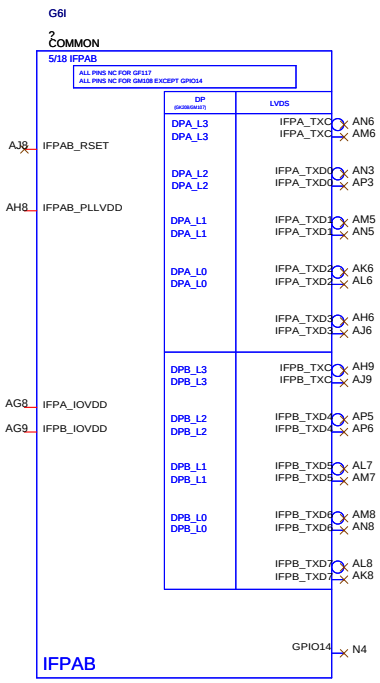
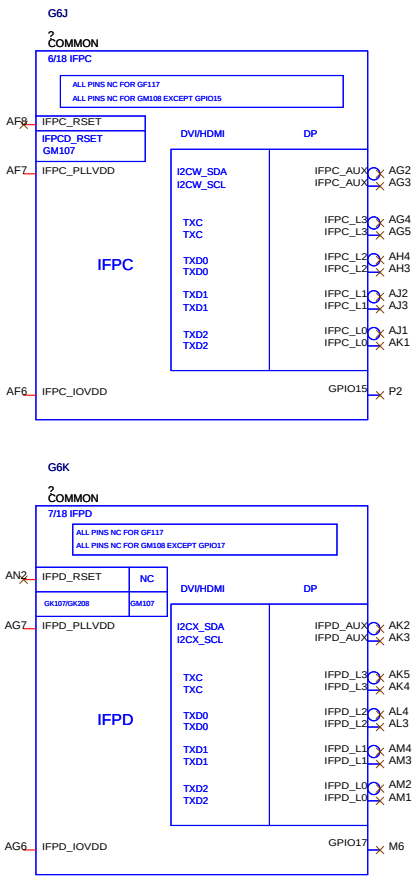
# N16P-GX( Display IF)

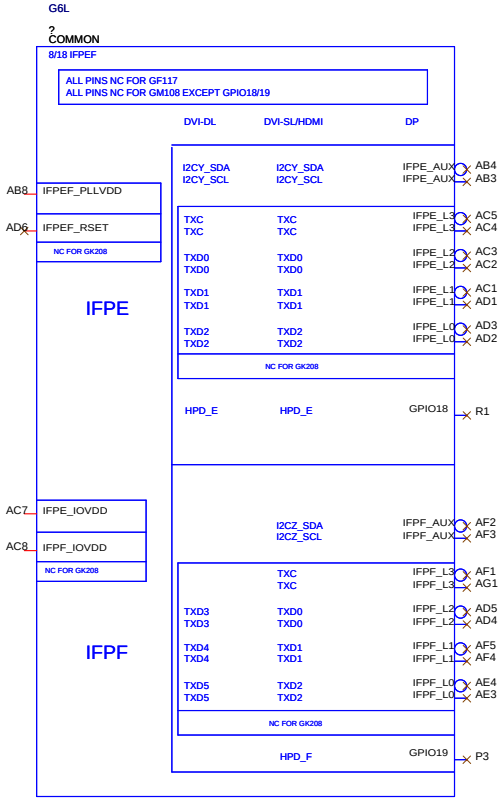
## IFP A/B LVDSDual Link



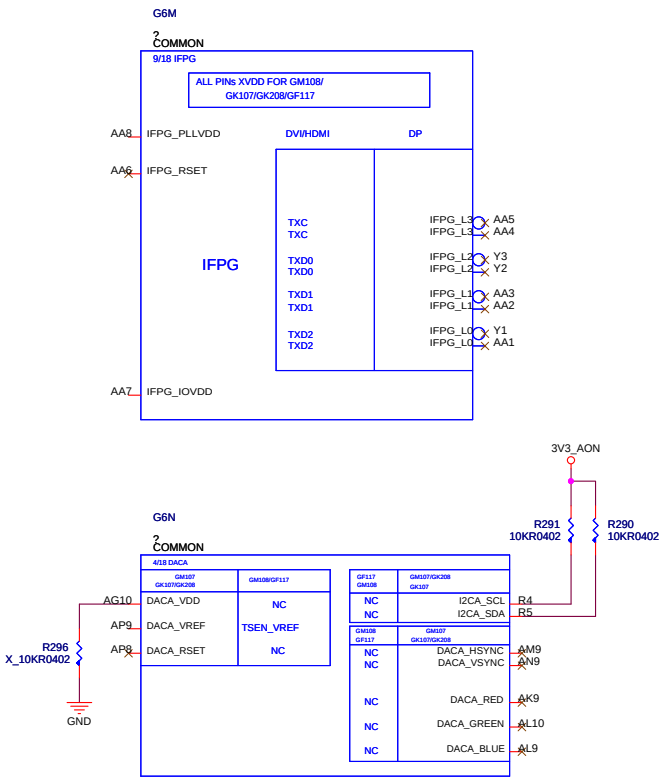

## IFP C Native HDMI OR DP




## IFP E/F Dual Link TMDS DVI-I




## DAC A VGA




| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: N16P-GX_Display IF | | |
| Size: Custom | Document Number: MS-16J5 | Rev: 0A |
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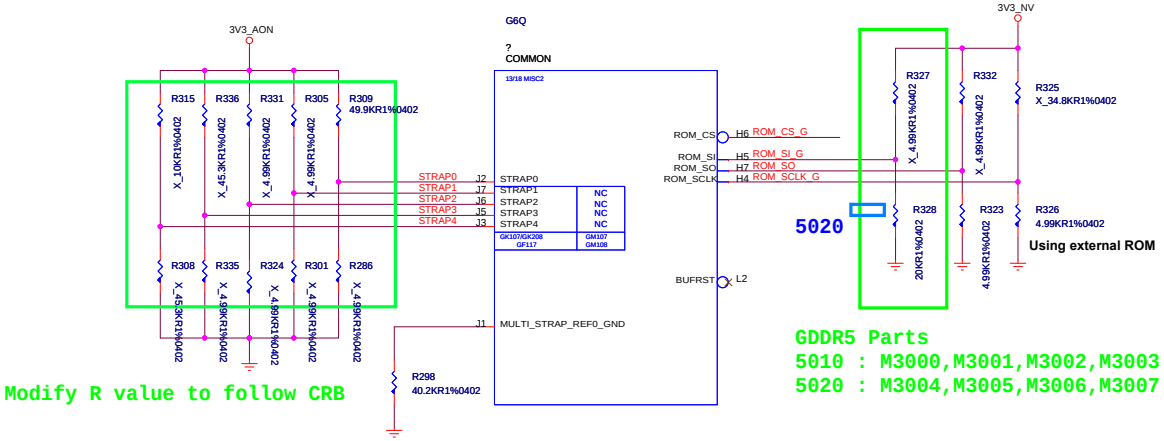
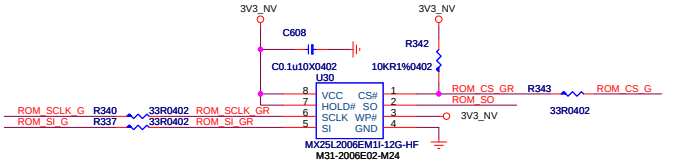
# ROM, MULTI-LEVEL STRAPS




Modify R value to follow CRB

GDDR5 Parts
5010 : M3000,M3001,M3002,M3003
5020 : M3004,M3005,M3006,M3007

## External EEPROM




M31-2006E02-M24

DEFAULT SETTING

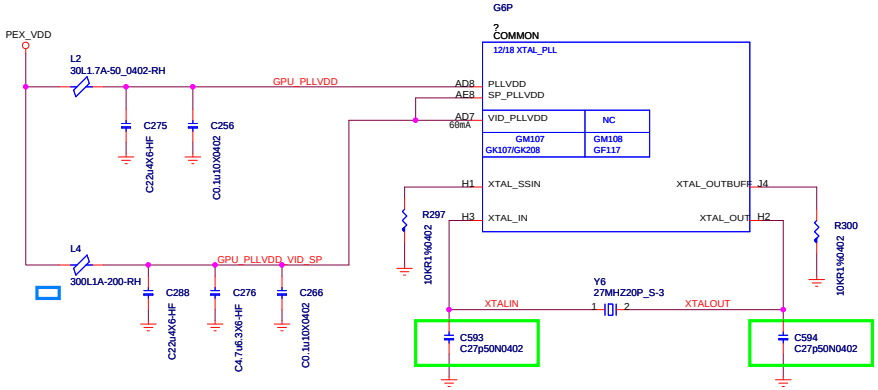
BOT 記得轉階層

| | | |
|---|---|---|
| ROM_S2 Samsung<br>128Mx32bit<br>R11-0203T12-W08<br>X_20KR1%0402 | | V_BOT5<br>5020<br>M12-4132525-S02<br>X_K4G41325FC-HC03 |
| ROM_H2 Hynix<br>128Mx32bit<br>R11-0153T12-W08<br>X_15KR1%0402 | | V_BOT4<br>5020<br>M12-5GC4H05-H23<br>X_H5GC4H24MFR-T2C |
| ROM_M2 Micron<br>128Mx32bit<br>R11-2492T12-W08<br>X_24.9KR1%0402 | | V_BOT6<br>5020<br>M12-4032B05-E59<br>X_EDW4032BABG-60-F-HF |
| ROM_H3 Hynix<br>128Mx32bit<br>R11-3482T12-W08<br>X_34.8KR1%0402 | | V_BOT7<br>5020<br>M12-5GC4H65-H23<br>X_H5GC4H24AJR-T2C |

ROM_SI RAM_CFG[3:0]

| | | |
|---|---|---|
| Micron GDDR5 : M12-4032B05-E59 | 0x4 25K PD | Micron 128Mx32bit |
| Samsung GDDR5 : M12-4132525-S02 V | 0x3 20K PD | Samsung 128Mx32bit |
| Hynix GDDR5 : M12-5GC4H05-H23 | 0x2 15K PD | Hynix 128Mx32bit |
| Hynix GDDR5 : H5GC4H24AJR-T2C V | 0x6 35K PD | |

| | | |
|---|---|---|
| ROM_SO | DEVID_SEL<br>PCIE_CFG<br>SMB_ALT_ADDR<br>VGADEVICE | 5K PD |
| ROM_SCLK | SOR_EXposed[3:0] | 5K PD |
| STRAP0 | | 50K PU 3V3_AON |
| STRAP1 | | Reserved |
| STRAP2 | | Reserved |
| STRAP3 | | Reserved |
| STRAP4 | | Reserved |




C3438 and C3439 change to 27pF for SA

| | GND | 3V3 |
|---|---|---|
| 5K | 0000 | 1000 |
| 10K | 0001 | 1001 |
| 15K | 0010 | 1010 |
| 20K | 0011 | 1011 |
| 25K | 0100 | 1100 |
| 30K | 0101 | 1101 |
| 35K | 0110 | 1110 |
| 45K | 0111 | 1111 |
| | PD | PU |

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Title: N16P-GX_ROM & HW Straps

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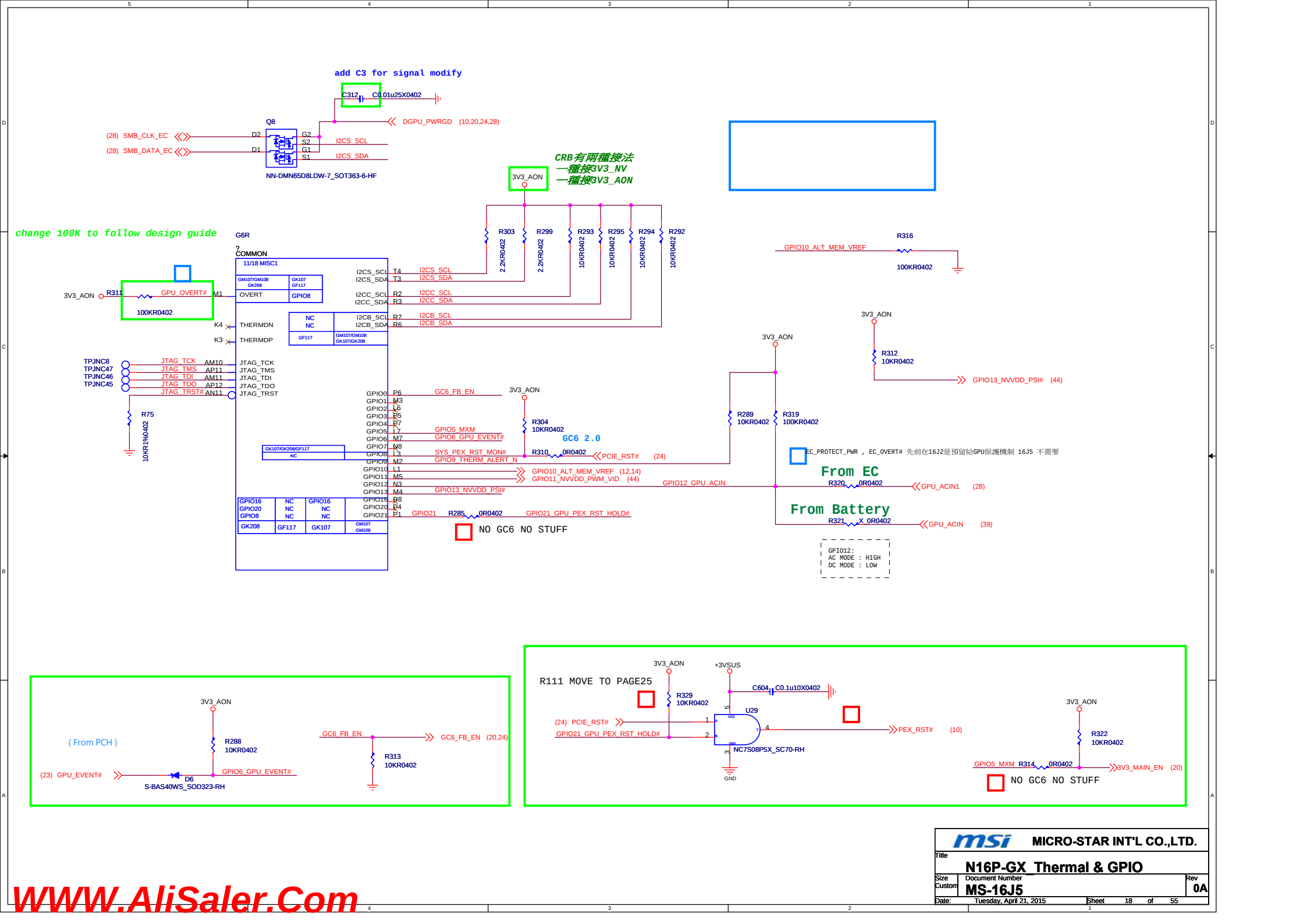


| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: N16P-GX_Thermal & GPIO | | |
| Size: Custom | Document Number: MS-16J5 | Rev: 0A |
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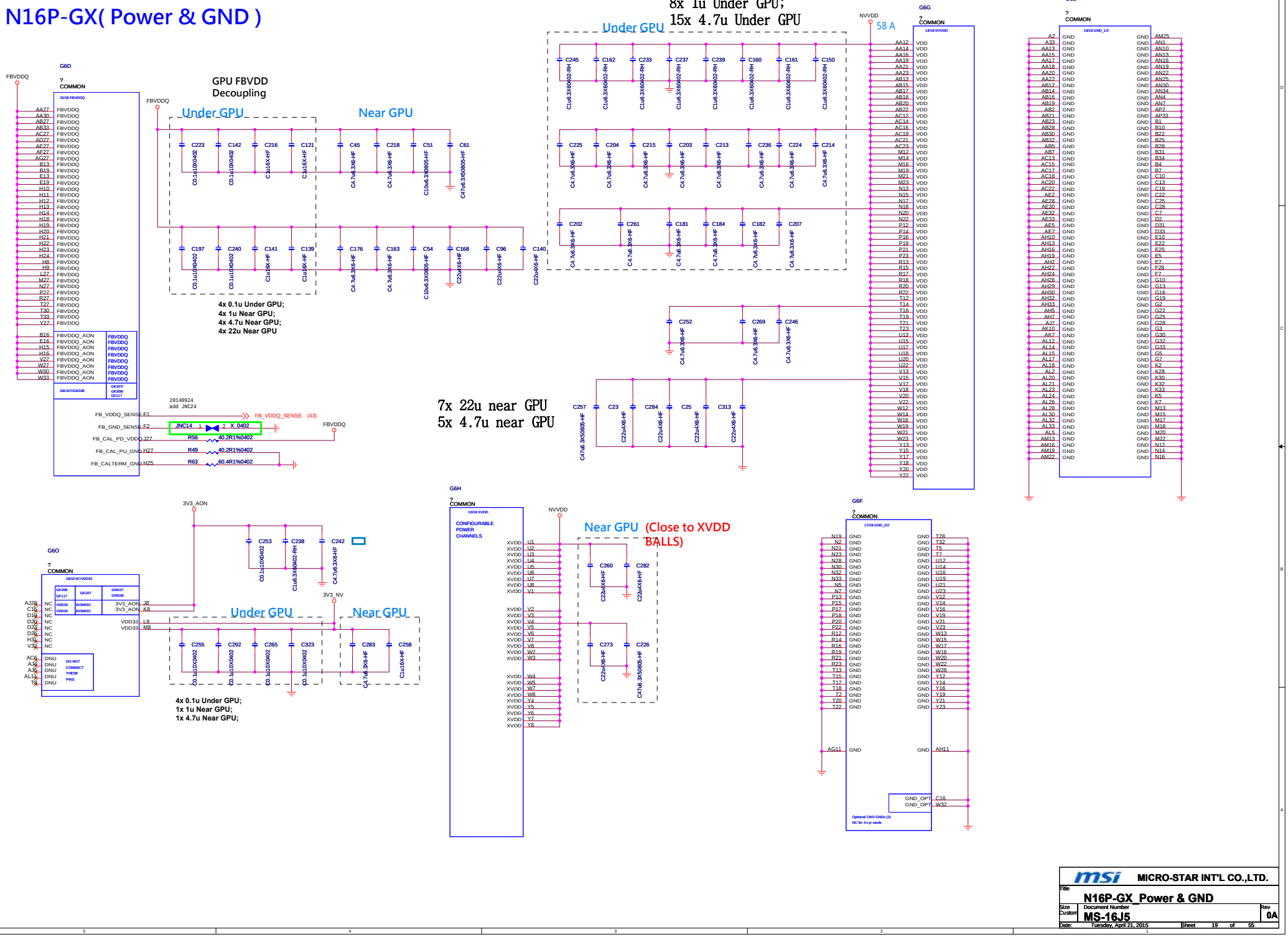
# N16P-GX( Power & GND )



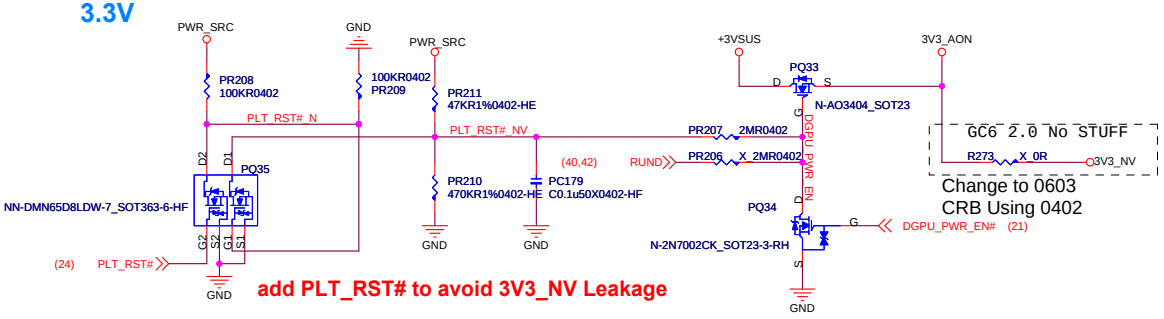

| | | | |
|---|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | | |
| Title | N16P-GX_Power & GND | | |
| Size Custom | Document Number MS-16J5 | Rev 0A | |
| Date: Tuesday, April 21, 2015 | Sheet 19 of 55 | | |

# N16P-GX( Power Control )

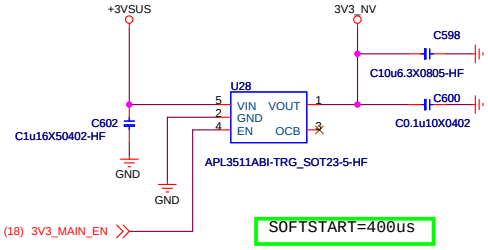
## nVIDIA Power Sequence Control

3V3_AON -> 3V3_NV -> NVVDD ->PEX_VDD -> FBVDDQ -> DGPUPWRGD

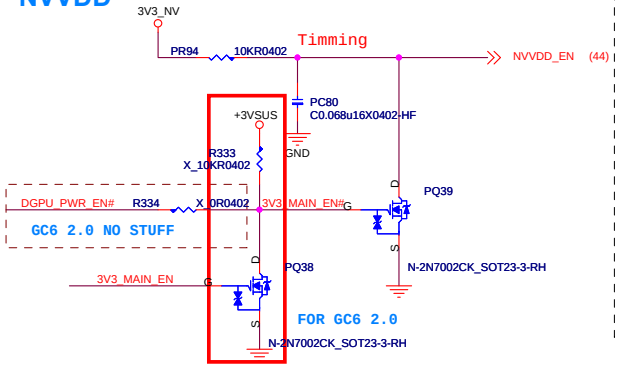
### 3.3V




### GC6 2.0 STUFF




### NVVDD

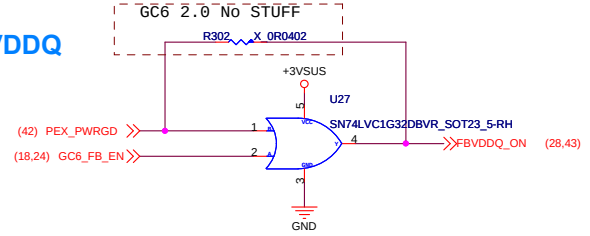



### PEX_VDD

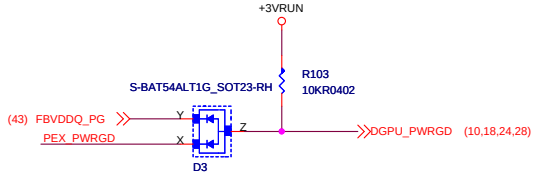
EDP Design Guide:
N16P-GX
NVVDD : 51.1A ; Peak 87A
3.3VRUN : 0.34A
PEX_VDD : 2.57A
FBVDDQ : 8.75A

EDP Design Guide:
N16P-GT
NVVDD : 30.2A ; Peak 53A
3.3VRUN : 0.34A
PEX_VDD : 2.57A
FBVDDQ : 8.75A

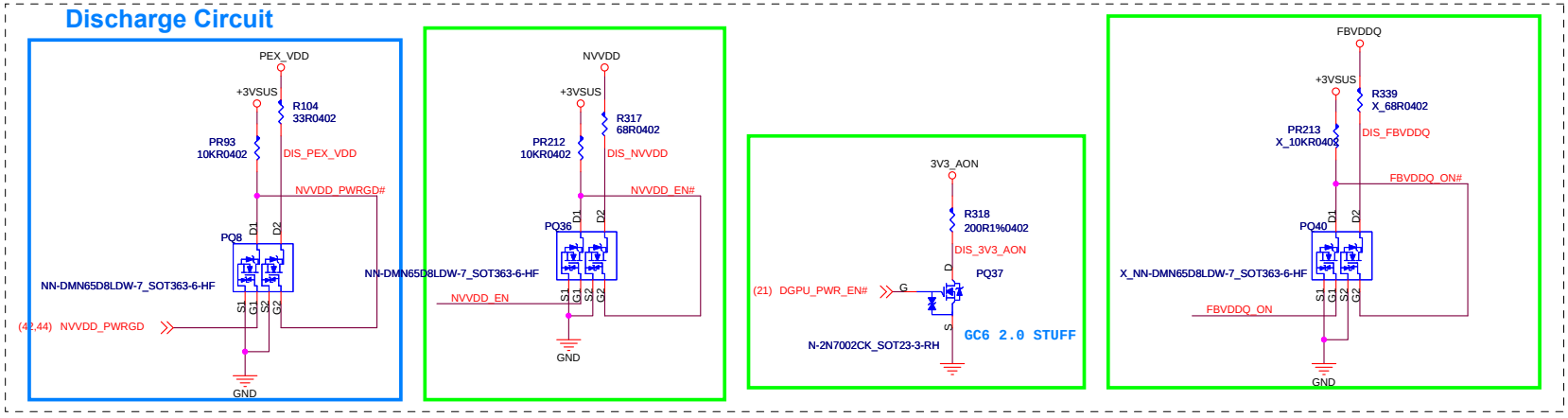
### FBVDDQ




### DGPU_PWRGD




### Discharge Circuit




4/13更換料號
D03-7002D10-D07 轉到 D03-65D8L09-D07

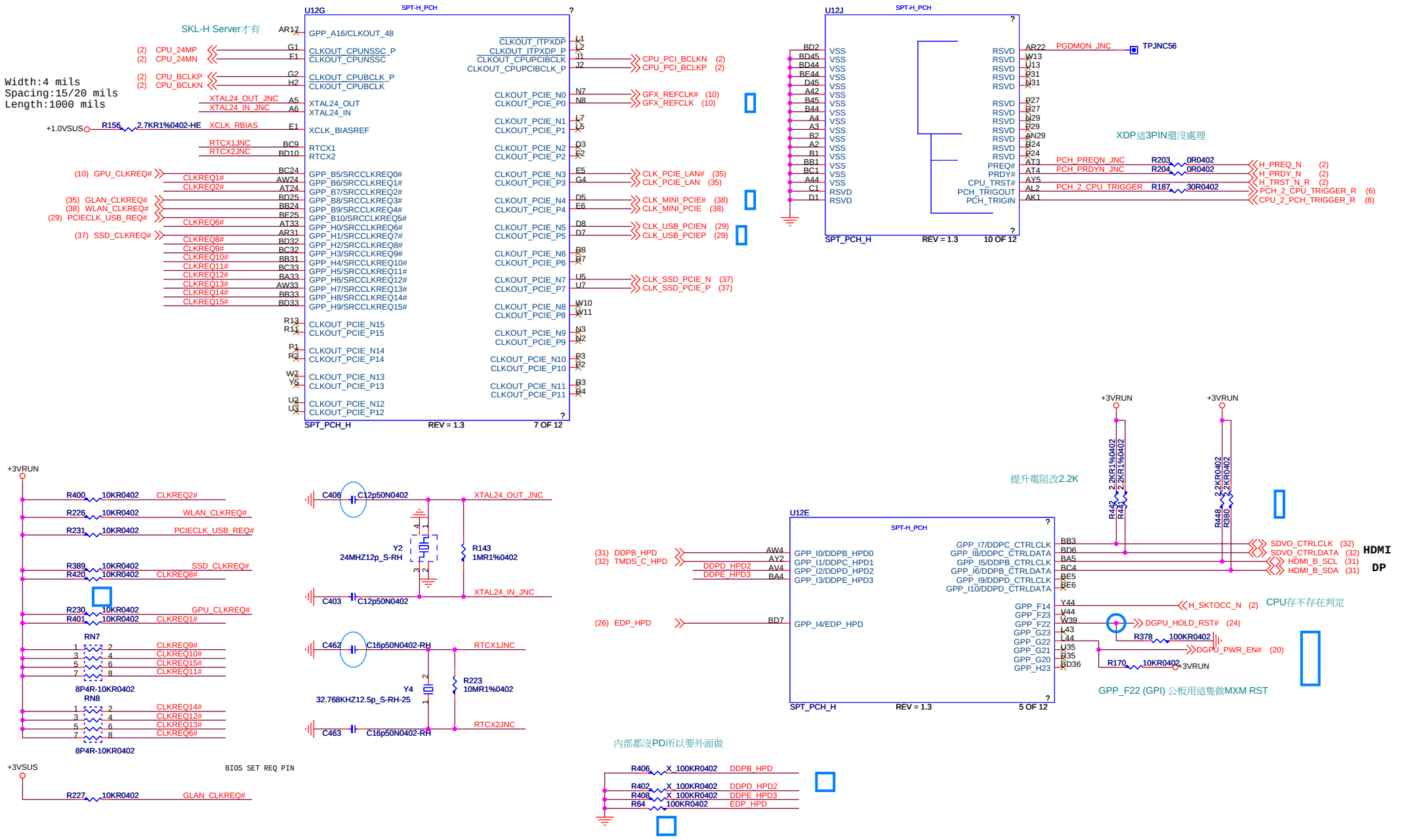


MICRO-STAR INT'L CO.,LTD.

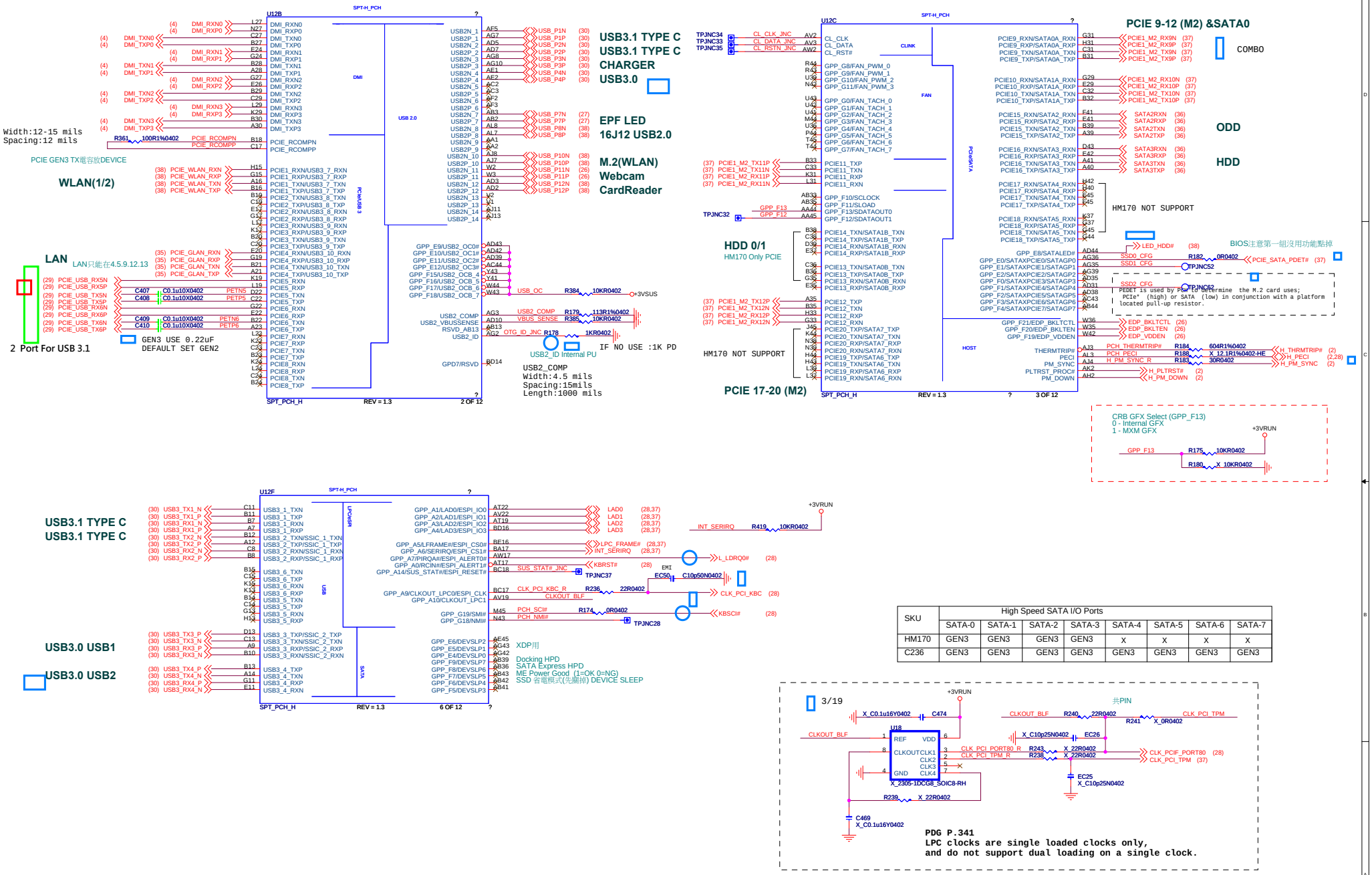
Title: N16P-GX_Power Control

Size: Custom | Document Number: MS-16J5 | Rev: 0A

Date: Tuesday, April 21, 2015 | Sheet 20 of 55




| | | | |
|---|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | | |
| Title: PCH_1(CLK/DDI) | | | |
| Size: A3 | Document Number: MS-16J5 | | Rev: 0A |
| Date: Tuesday, April 21, 2015 | Sheet 21 of 55 | | |




| SKU | High Speed SATA I/O Ports | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | SATA-0 | SATA-1 | SATA-2 | SATA-3 | SATA-4 | SATA-5 | SATA-6 | SATA-7 |
| HM170 | GEN3 | GEN3 | GEN3 | GEN3 | X | X | X | X |
| C236 | GEN3 | GEN3 | GEN3 | GEN3 | GEN3 | GEN3 | GEN3 | GEN3 |



| | |
|---|---|
| Title | PCH 2(USB/SATA/PCIE) |
| Size | C |
| Document Number | MS-16J5 |
| Rev | 0A |
| Date: | Tuesday, April 21, 2015 |
| Sheet | 22 of 55 |

MICRO-STAR INT'L CO.,LTD.

SMBALERT#
0 - Disable (Default Internal 20K PD)
1- Enable (AMT/SBA)

SML0ALERT#
0 - LPC (Default Internal 20K PD)
1- eSPI

PCH EDS Page 52

U12D

SPT-H_PCH

AUDIO

SMBUS

JTAG

SPT_PCH_H

REV = 1.3

4 OF 12

新的UMA HDMI/DP用

新的DDR由PCH做RESET

要查一下

GPU_EVENT# (18)

GPP_B11(GP0)

150K for DCI enable

應該不用上件

Add R715 pull high +3VSUS

0 - Enable TCO

連EC

連EC

檢討漏電流
PM_PCH_PWROK

NN-DMN65D8LDW-7_SOT363-6-HF

Q18

Q14

NN-DMN65D8LDW-7_SOT363-6-HF

選料注意切入電壓

CRB 30K? DG 20K

WIDTH:10MIL

30K?

待改

EC delay 100ms

60階

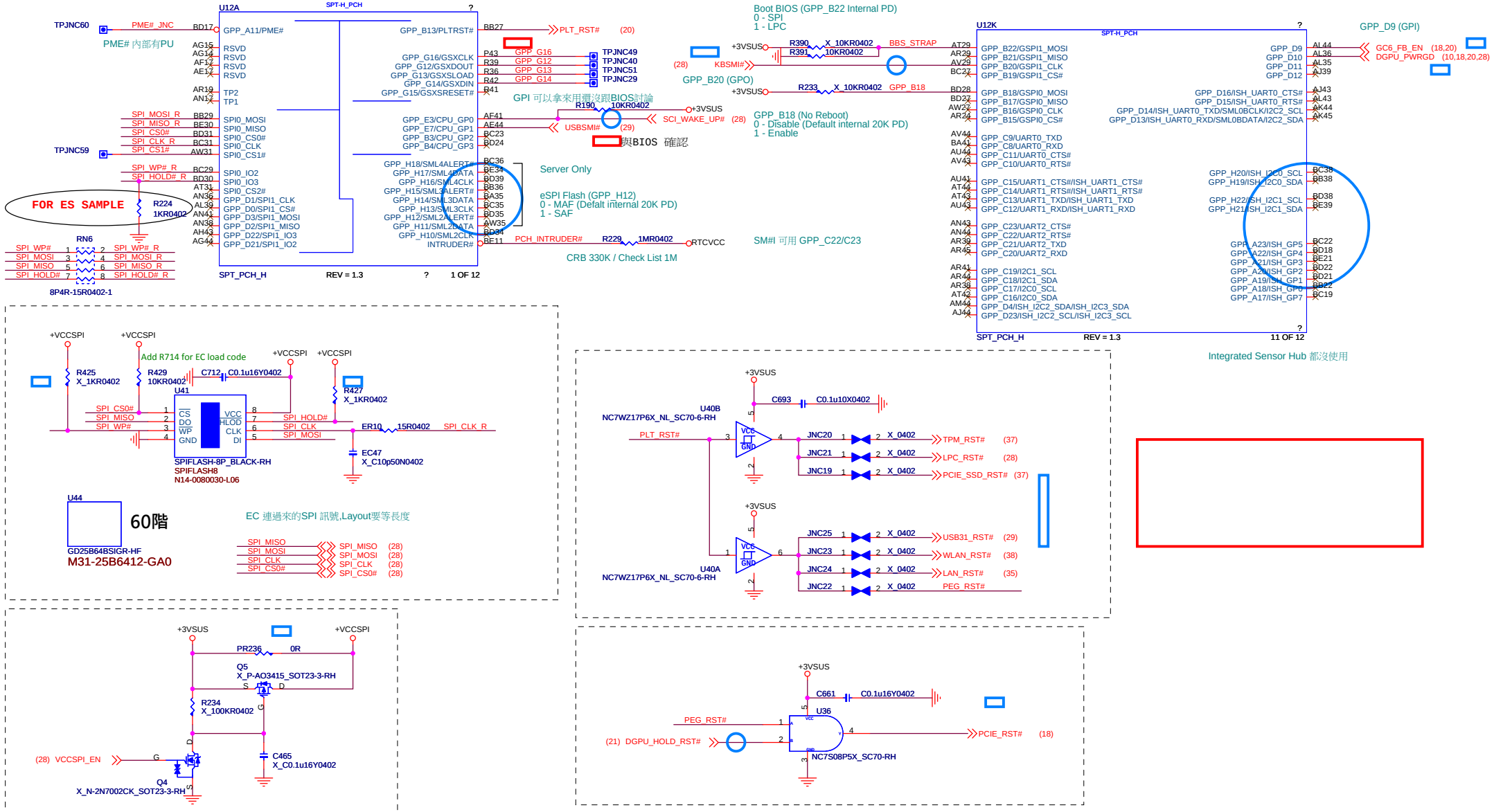
BAT2
BAT-BCR2032P-RH
D06-0100101-K26

BAT1
BAT2PS_BLACK-RH-1
BATHOLD_S2_2
N91-02F0060-L06

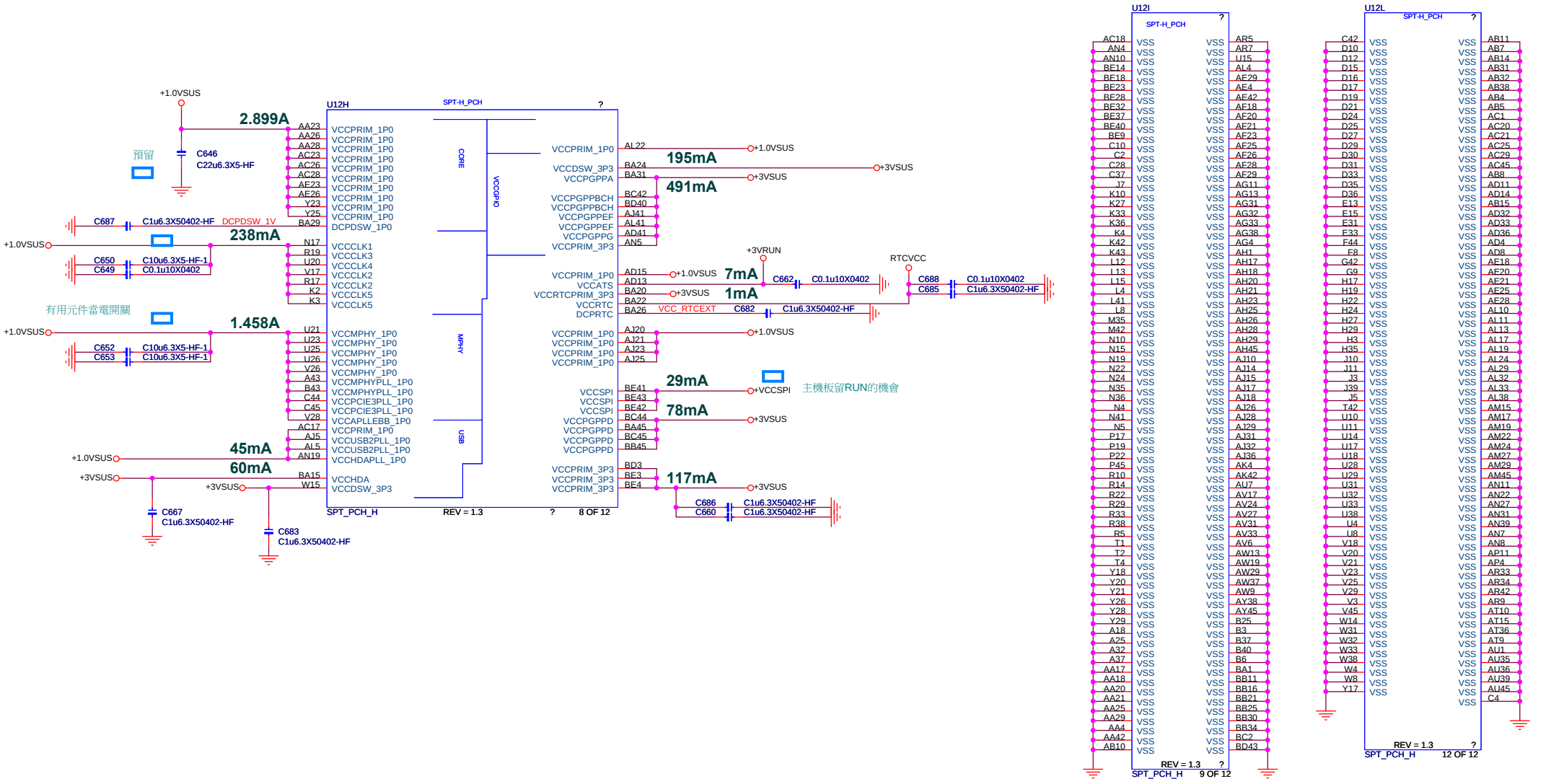
U14
NC7S08P5X_SC70-RH

U15
NC7S08P5X_SC70-RH

| | | | |
|---|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | | |
| Title | PCH_3(HDA/RTC/SMBUS) | | |
| Size: Custom | Document Number: MS-16J5 | | Rev: 0A |
| Date: Tuesday, April 21, 2015 | Sheet 23 of 55 | | |




| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: PCH_4(SPI/GPIO) | | |
| Size: Custom | Document Number: MS-16J5 | Rev: 0A |
| Date: Tuesday, April 21, 2015 | Sheet 24 of 55 | |




MICRO-STAR INT'L CO.,LTD.

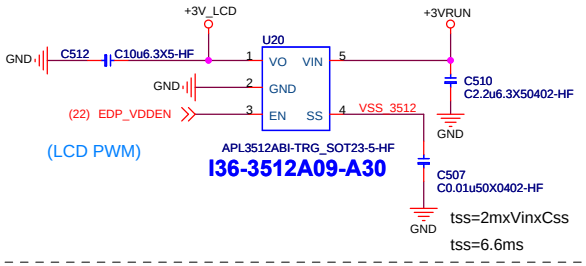
Title: PCH_5(Power1)

Size: Custom | Document Number: MS-16J5 | Rev: 0A

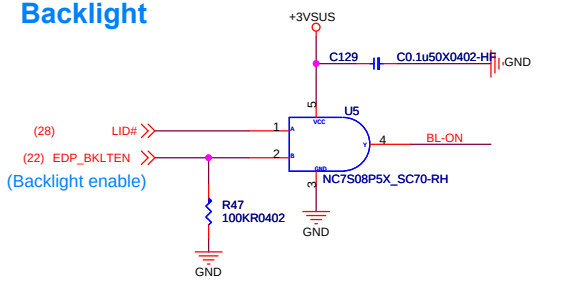
Date: Tuesday, April 21, 2015 | Sheet 25 of 55

# eDP

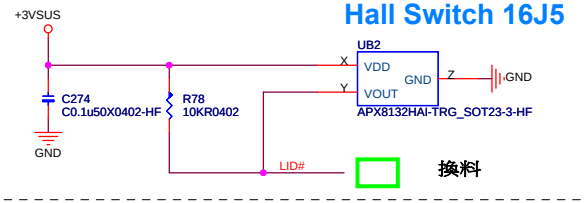
## Pannel Device Logic Power



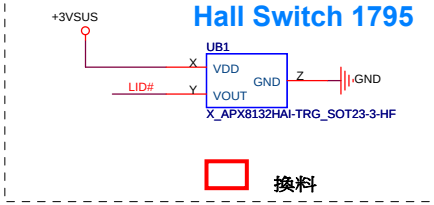

## Backlight



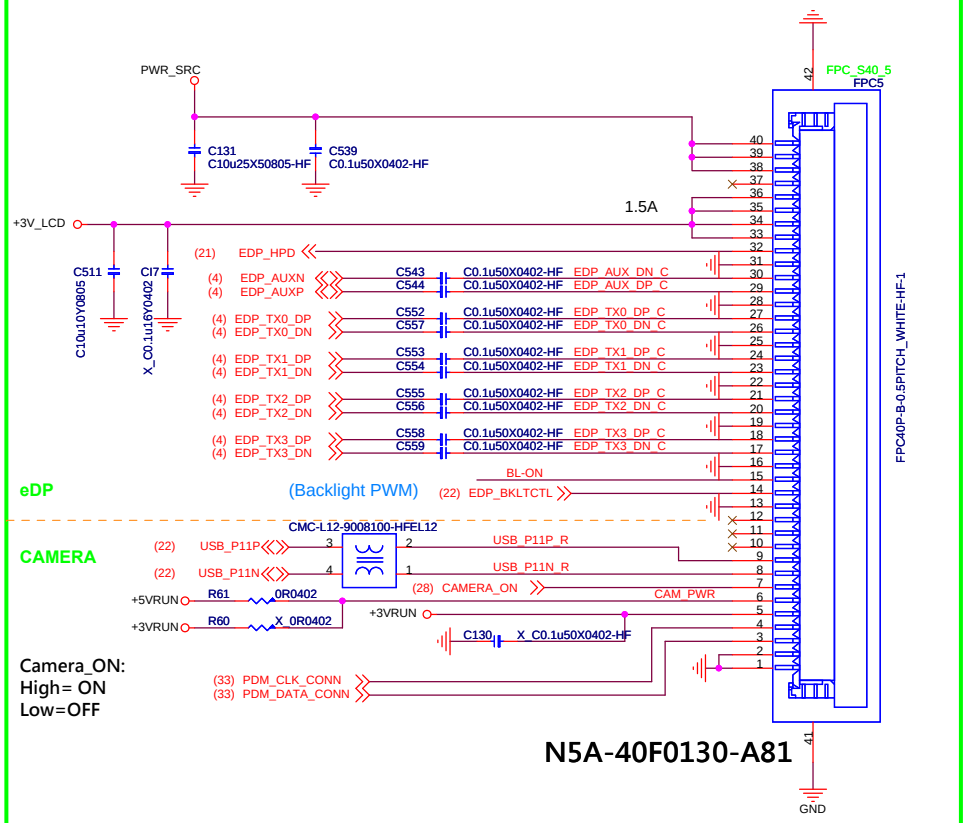

## Hall Switch 16J5

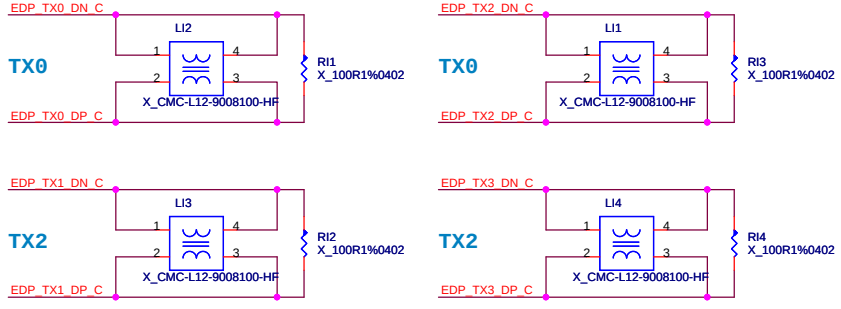



## Hall Switch 1795




## eDP CONN CAMERA




## LCD Module Pin Define

| Pin No | Symbol | Description |
|---|---|---|
| 1 | WP | EEPROM Write Protect(Keep open) |
| 2 | H_GND | High Speed Ground(0V) |
| 3 | eDP_Rx_3N | Complement Signal Link Lane 3 |
| 4 | eDP_Rx_3P | True Signal Link Lane 3 |
| 5 | H_GND | High Speed Ground(0V) |
| 6 | eDP_Rx_2N | Complement Signal Link Lane 2 |
| 7 | eDP_Rx_2P | True Signal Link Lane 2 |
| 8 | H_GND | H_GND |
| 9 | eDP_Rx_1N | Complement Signal Link Lane 1 |
| 10 | eDP_Rx_1P | True Signal Link Lane 1 |
| 11 | H_GND | H_GND |
| 12 | eDP_Rx_0N | Complement Signal Link Lane 0 |
| 13 | eDP_Rx_0P | True Signal Link Lane 0 |
| 14 | H_GND | H_GND |
| 15 | eDP_AUX_CH_P | True Signal Aux Channel |
| 16 | eDP_AUX_CH_N | Complement Signal Aux Channel |
| 17 | H_GND | H_GND |
| 18 | LCD_VCC | LCD logic and driver power |
| 19 | LCD_VCC | LCD logic and driver power |
| 20 | LCD_VCC | LCD logic and driver power |
| 21 | LCD_VCC | LCD logic and driver power |
| 22 | TEST | LCD Test Port |
| 23 | LCD_GND | LCD logic and driver ground(0V) |
| 24 | LCD_GND | LCD logic and driver ground(0V) |
| 25 | LCD_GND | LCD logic and driver ground(0V) |
| 26 | LCD_GND | LCD logic and driver ground(0V) |
| 27 | eDP_HPD | HPD signal pin |
| 28 | BL_GND | Backlight ground(0V) |
| 29 | BL_GND | Backlight ground(0V) |
| 30 | BL_GND | Backlight ground(0V) |
| 31 | BL_GND | Backlight ground(0V) |
| 32 | BL_ENABLE | Backlight enable |
| 33 | BL_PWM_DIM | System PWM signal input |
| 34 | SDA | I2C-bus Data |
| 35 | SCL | I2C-bus Clock |
| 36 | BL_PWR | Backlight power (5~21V) |
| 37 | BL_PWR | Backlight power (5~21V) |
| 38 | BL_PWR | Backlight power (5~21V) |
| 39 | BL_PWR | Backlight power (5~21V) |
| 40 | HSYNC | HSYNC output from Tcon |

MICRO-STAR INT'L CO.,LTD.

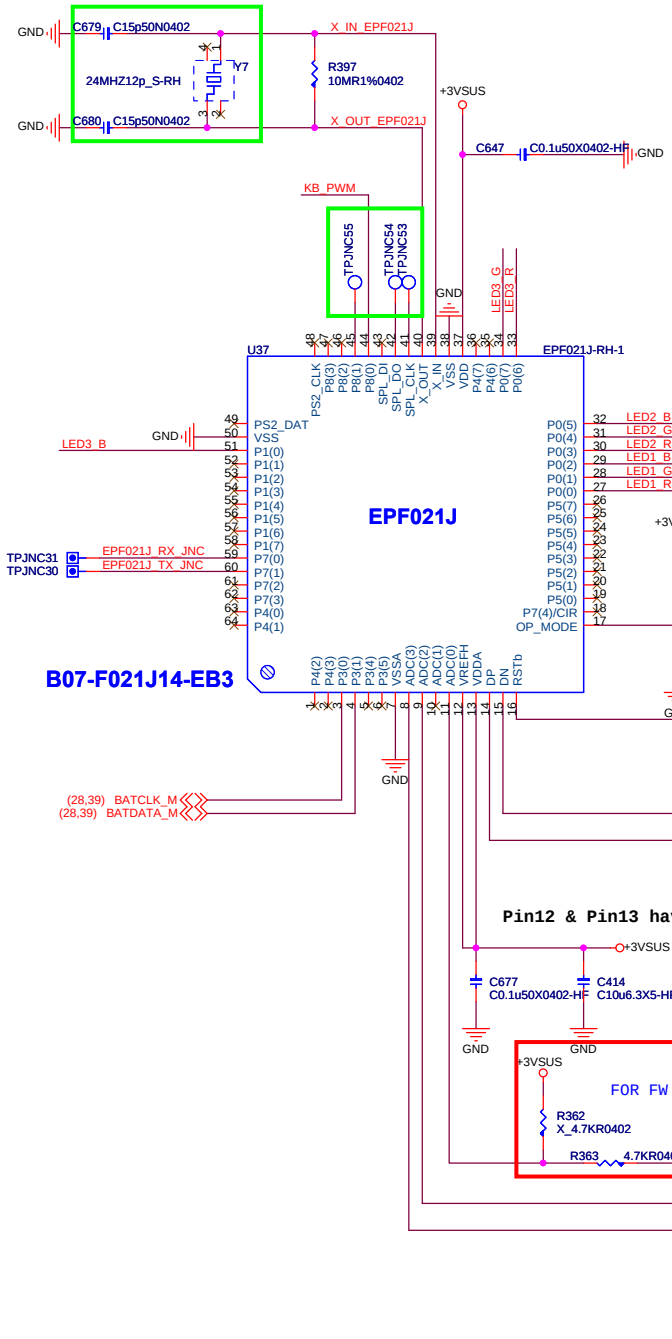
Title: eDP /Camera

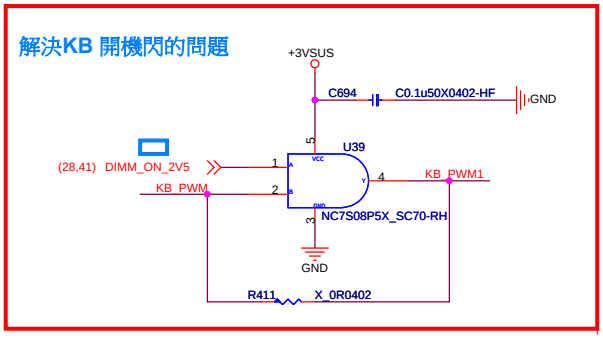
Size | Document Number: MS-16J5 | Rev: 0A

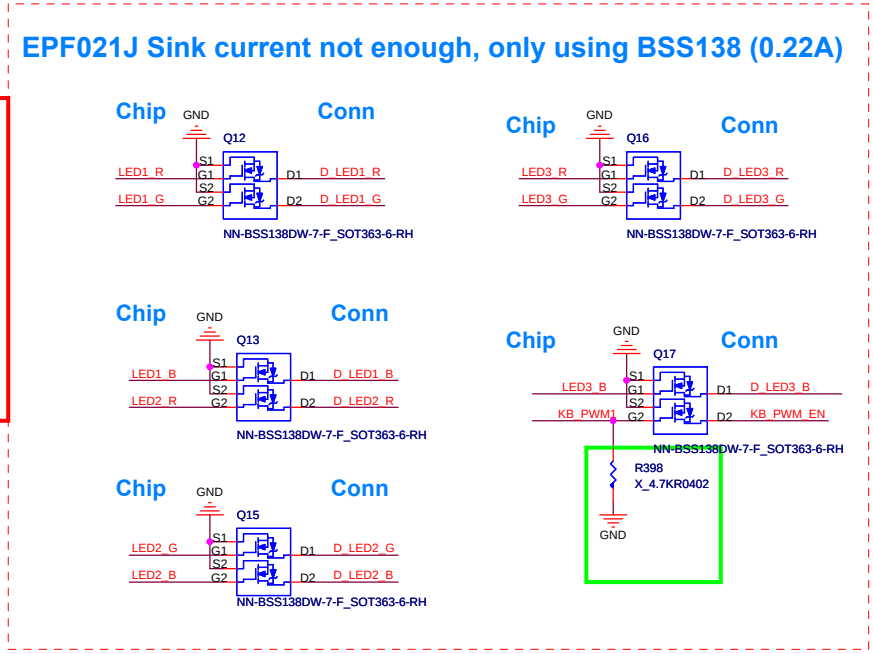
Date: Tuesday, April 21, 2015 | Sheet 26 of 55

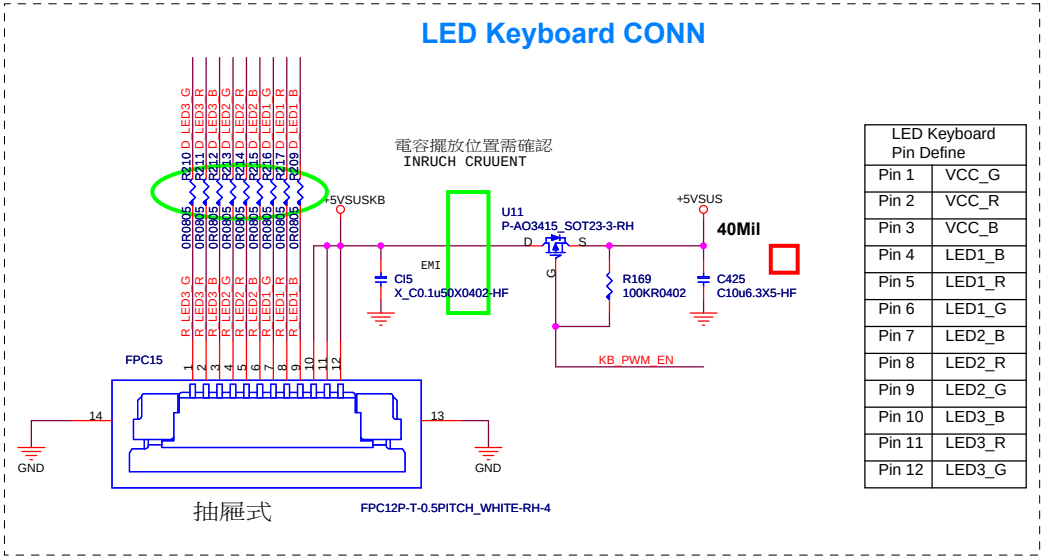
# LED 8051 Controller

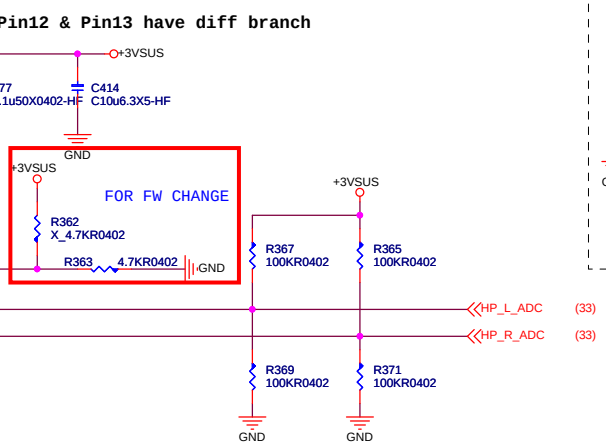
C749 and C750 change to 15pF for SA



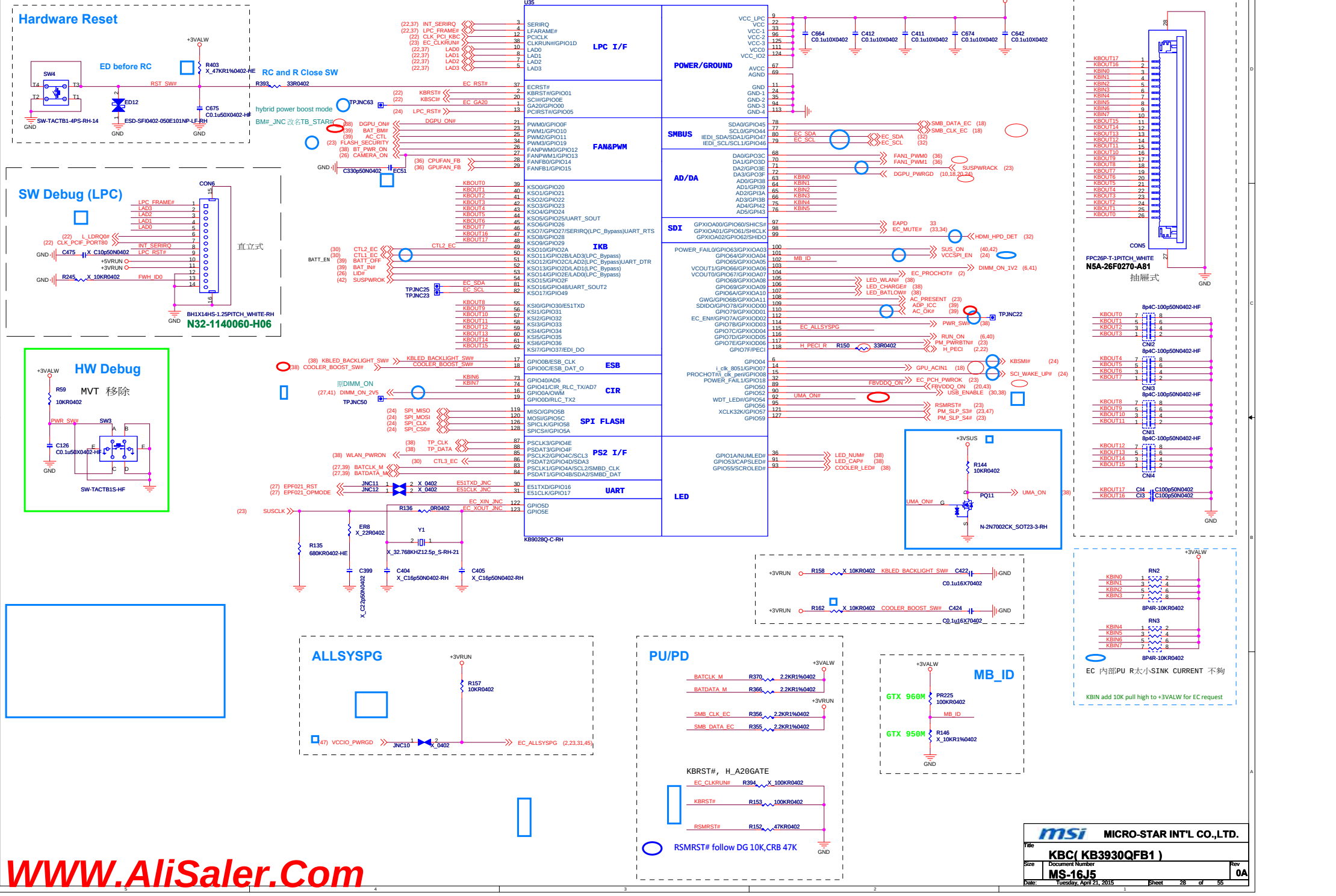




MICRO-STAR INT'L CO.,LTD.

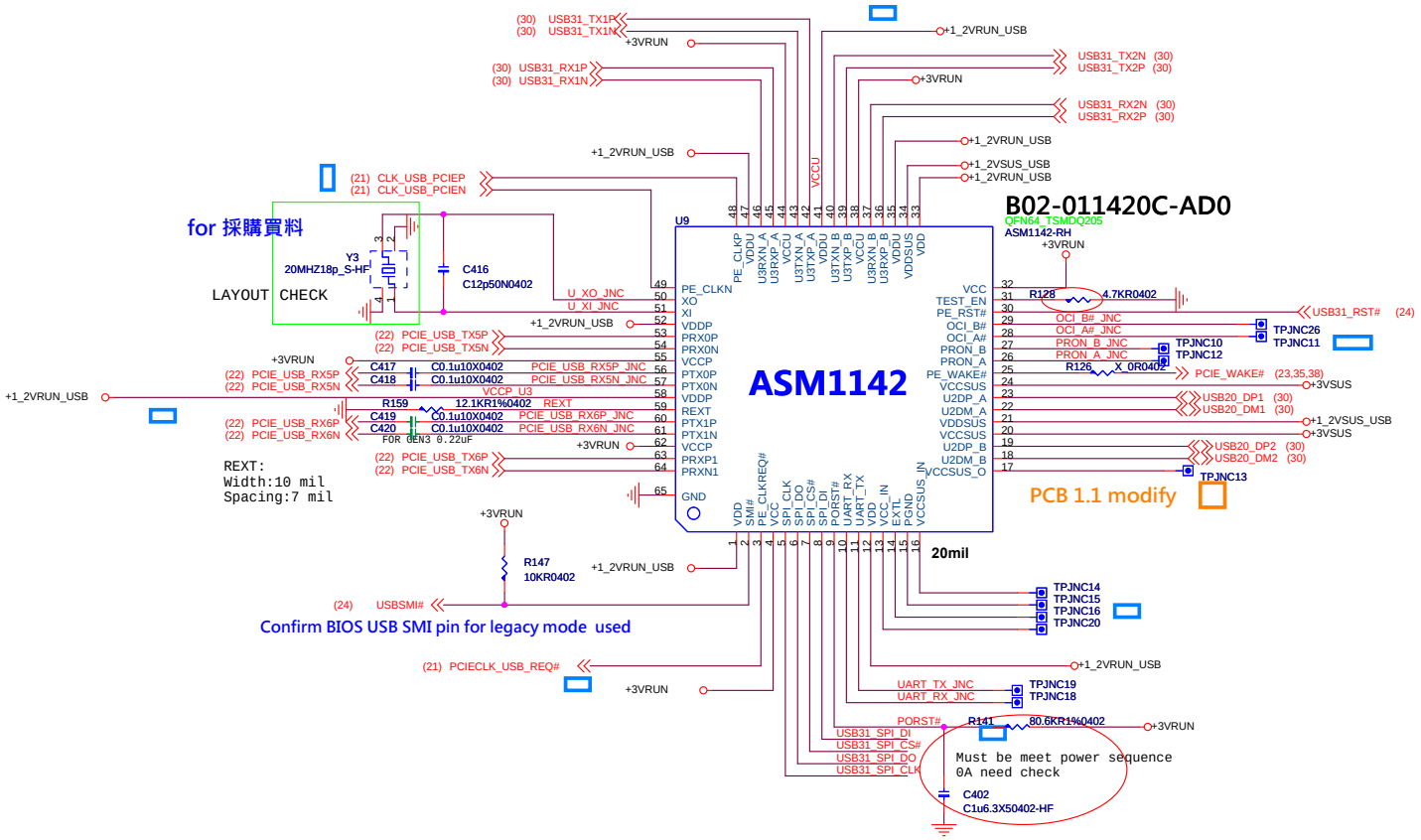
| | | |
|---|---|---|
| Title | LED_8051 | |
| Size | Document Number: MS-16J5 | Rev: 0A |
| Date: Tuesday, April 21, 2015 | Sheet 27 of 55 | |

# KBC/EC/uP (ENE9028)



# USB 3.0/ USB.3.1

# PCIE to USB 3.1




HW strap

PE_PWRDET fuction

USB31_SPI_CLK — R166 4.7KR0402 +3VRUN

R165 4.7KR0402

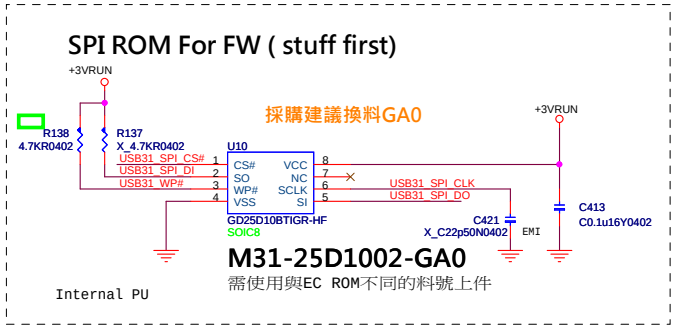
PU for D3cold (detect AUXpower)

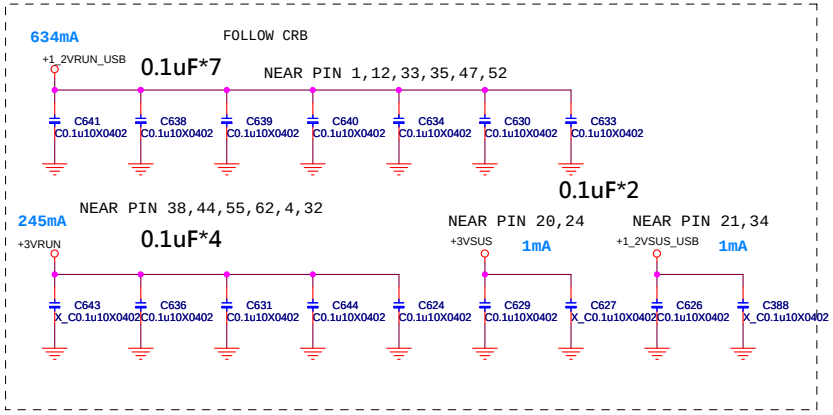
Internal PU

UART_TX_JNC

UART_RX_JNC

CSEL1(RX):CSEL0(TX) Clock select
11:External 20MHz Crystal
01:48MHz Clock Input
X0:Reserve for Test Mode




| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: USB 3.0 / USB 3.1 | | |
| Size | Document Number: MS-16J5 | Rev: 0A |
| Date: Tuesday, April 21, 2015 | Sheet 29 of 55 | |

# USB 3.0 Port 1

PCH ASM1142

(22) USB3_TX2_P R352 X 0R1%0402 USB31_TX2P_JNC R142 0R1%0402 USB31_TX2P (29)
(22) USB3_TX2_N R351 X 0R1%0402 USB31_TX2N_JNC R140 0R1%0402 USB31_TX2N (29)

(22) USB_P2N R358 X 0R1%0402 USB20_DM2_JNC R154 0R1%0402 USB20_DM2 (29)
(22) USB_P2P R360 X 0R1%0402 USB20_DP2_JNC R160 0R1%0402 USB20_DP2 (29)

(22) USB3_RX2_P R353 X 0R1%0402 USB31_RX2P_JNC R145 0R1%0402 USB31_RX2P (29)
(22) USB3_RX2_N R354 X 0R1%0402 USB31_RX2N_JNC R148 0R1%0402 USB31_RX2N (29)

# USB 3.0 Port 2

PCH ASM1142

(22) USB3_TX1_P R368 X 0R1%0402 USB31_TX1P_JNC R168 0R1%0402 USB31_TX1P (29)
(22) USB3_TX1_N R364 X 0R1%0402 USB31_TX1N_JNC R167 0R1%0402 USB31_TX1N (29)

(22) USB_P1N R357 X 0R1%0402 USB20_DM1_JNC R155 0R1%0402 USB20_DM1 (29)
(22) USB_P1P R359 X 0R1%0402 USB20_DP1_JNC R161 0R1%0402 USB20_DP1 (29)

(22) USB3_RX1_P R373 X 0R1%0402 USB31_RX1P_JNC R171 0R1%0402 USB31_RX1P (29)
(22) USB3_RX1_N R375 X 0R1%0402 USB31_RX1N_JNC R173 0R1%0402 USB31_RX1N (29)

# USB3.1 TYPE C

12/16 Asmeida 建議改0.22uF for 10GBps

60mil

USB31_TX2P_JNC C637 C0.22u16X50402-HF SSTX2P_C
USB31_TX2N_JNC C635 C0.22u16X50402-HF SSTX2N_C
EL15 X_CMC-L12-9008100-HF

USB20_DM2_JNC USB_PN2_R
USB20_DP2_JNC USB_PP2_R
EL18 CMC-L12-9008100-HF

USB31_RX2P_JNC
USB31_RX2N_JNC
EL16 X_CMC-L12-9008100-HF

USB31_TX1P_JNC C648 C0.22u16X50402-HF SSTX1P_C
USB31_TX1N_JNC C645 C0.22u16X50402-HF SSTX1N_C
EL19 X_CMC-L12-9008100-HF

USB20_DM1_JNC USB_PN1_R
USB20_DP1_JNC USB_PP1_R
EL17 CMC-L12-9008100-HF

USB31_RX1P_JNC
USB31_RX1N_JNC
EL10 X_CMC-L12-9008100-HF

for EMI

USB5V_PT2
C0.22u10X50201-HF C400
C0.22u10X50201-HF C401
TPJNC24
SSTX1P_C SSTX1N_C CC1 USB_PP1_R USB_PN1_R SBU1 USB31_RX2N_JNC USB31_RX2P_JNC
CON3 USBCMS_BLACK-HF
TPJNC27
USB31_RX1P_JNC USB31_RX1N_JNC USB_PN2_R USB_PP2_R SBU2 CC2 SSTX2N_C SSTX2P_C
C415 C0.22u10X50201-HF
C423 C0.22u10X50201-HF

+5VSUS
FAULT# R450 X 100KR0402
LD_DET# R451 100KR0402
UFP# R452 100KR0402
POL# R453 100KR0402
AUDIO# R454 100KR0402
DEBUG# R455 100KR0402

USB5V_PT2
C726 C100u6.3SO-HF-1
C725 X_C220p50N0402
C724 X_C10u10Y0805
+5VSUS
C625 C10u10Y0805
(28,38) USB_ENABLE
CHG CHG_HI REF
R412 100KR1%0402
U34 OI3-16J5001 TPS25810
IN1-1 IN1-2 IN2 AUX EN CHG CHG_HI REF GND-1 GND-2
OUT-1 OUT-2 CC1 CC2 FAULT# LD_DET# UFP# POL# AUDIO# DEBUG# PwrPAD
0.2A

| CHG | CHG_HI | CC |
|---|---|---|
| 0 | 0 | STD |
| 0 | 1 | STD |
| 1 | 0 | 1.5A |
| 1 | 1 | 3A |

CHG R444 10KR0402 +5VSUS
R445 X 10KR0402 GND
CHG_HI R446 10KR0402 +5VSUS
R447 X 10KR0402 GND

SSTX2P_C SSTX2N_C USB31_RX2P_JNC USB31_RX2N_JNC
ED10 ESD-AOZ8808DI-05-HF ESD_2_5X1 D0G-06A050C-A68
SSTX1N_C SSTX1P_C USB31_RX1N_JNC USB31_RX1P_JNC
ED11 ESD-AOZ8808DI-05-HF ESD_2_5X1 D0G-06A050C-A68
USB_PN1_R USB_PN2_R USB_PP1_R USB_PP2_R USB5V_PT2
ESD1 ESD-STSU0504F-HF SOT26 D0G-03A0509-SI0

# USB3.0 CNT-1

(22) USB3_TX4_P C380 C0.1u50X0402-HF
(22) USB3_TX4_N C368 C0.1u50X0402-HF
L6 X_CMC-L12-9008100-HF SSTX4P_C SSTX4N_C
CMC-L12-9008100-HF
(22) USB_P4N (22) USB_P4P USB_PN4_R USB_PP4_R
EL14 for EMI
L5 X_CMC-L12-9008100-HF
(22) USB3_RX4_P (22) USB3_RX4_N

USB5V_PT1
C622 X_C0.1u16X70402
USB_CON1 USBM_BLUE RVS Type-A
STDA_SSTX+ VBUS STDA_SSTX- D- GND D+ STDA_SSRX+ GND_DRAIN STDA_SSRX-
SHIELD1 SHIELD3 SHIELD2 SHIELD4 C1 C3 C2 C4
GND
USB3.0 0.9A
N53-09M0021-H06

USB5V_PT1
60mil
C621 C220p50N0402
C620 C100u6.3SO-HF-1
SWITCH>2A
U33 G547I1P81U_MSOP8-RH MSOP8_T
VOUT1 VOUT2 VOUT3 GND VIN1 VIN2 EN OC#
USB_ENABLE (28,38)
+5VSUS
C623 C10u10Y0805
I36-5478102-G07

SSTX4P_C SSTX4N_C USB3_RX4_P USB3_RX4_N
ED3 ESD-AOZ8808DI-05-HF ESD_2_5X1 D0G-06A050C-A68
USB_PN4_R USB_PP4_R USB5V_PT1
ED9 ESD-STSU0504F-HF SOT26 D0G-03A0509-SI0

# USB3.0 CNT-3

i-Charger

ILIM_HI R277 20KR1%0402 GND
ILIM_LO R275 20KR1%0402 GND
+5VSUS
60mil
C589 C10u6.3X5-HF
(22) USB_P3N (22) USB_P3P
R281 0R0402
U25 TPS2546RTER_QFN16-HF I36-S25460C-T07
TPAD ILIM_HI ILIM_LO GND FAULT# IN DM_OUT DP_OUT ILIM_SEL OUT DM_IN DP_IN STATUS# EN CTL1 CTL2 CTL3
60mil
USB_P3N_RR USB_P3P_RR
C566 C220p50N0402
C572 C100u6.3SO-HF-1
USB5V_PT3
All C Close Connector
(28,38) USB_ENABLE
CTL3_EC (28)
CTL2_EC (28)
CTL1_EC (28)

(22) USB3_TX3_P C272 C0.1u50X0402-HF
(22) USB3_TX3_N C271 C0.1u50X0402-HF
EL2 X_CMC-L12-9008100-HF SSTX3P_C SSTX3N_C
USB_P3N_RR USB_P3P_RR
EL11 CMC-L12-9008100-HF
USB_P3N_R USB_P3P_R
EL1 X_CMC-L12-9008100-HF
(22) USB3_RX3_P (22) USB3_RX3_N

USB5V_PT3
60mil
C107 X_C0.1u50X0402-HF
USB_CON3 USBM_BLUE RVS Type-A
STDA_SSTX+ VBUS STDA_SSTX- D- GND D+ STDA_SSRX+ GND_DRAIN STDA_SSRX-
SHIELD1 SHIELD3 SHIELD2 SHIELD4 C1 C3 C2 C4
GND
USB3.0 0.9A
N53-09M0021-H06

USB_PN3_R USB_PP3_R USB5V_PT3
ED8 ESD-STSU0504F-HF SOT26 D0G-03A0509-SI0
SSTX3P_C SSTX3N_C USB3_RX3_P USB3_RX3_N
ED1 ESD-AOZ8808DI-05-HF ESD_2_5X1 D0G-06A050C-A68

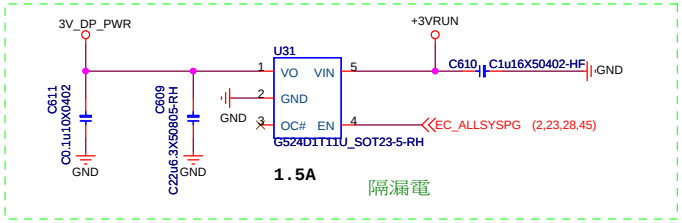


MICRO-STAR INT'L CO.,LTD.

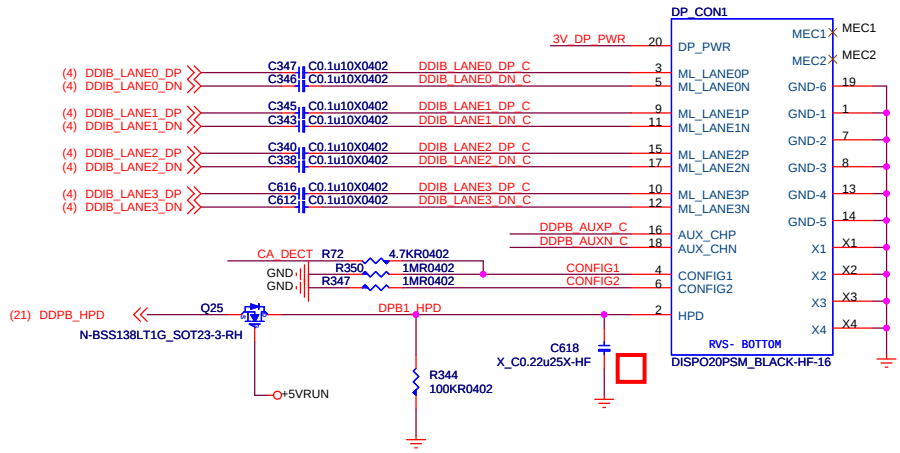
Title: USB 3.0 /iCharger
Size: Document Number: MS-16J5 Rev: 0A
Date: Tuesday, April 21, 2015 Sheet 30 of 55

# Display Port

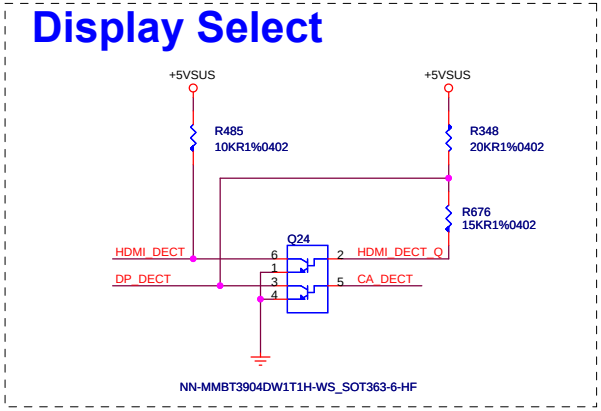
The preset trip limit must not exceed 3A at the Upstream device connector DP_PWR pin and 1.5A at the Downstream device connector DP_PWR pin.



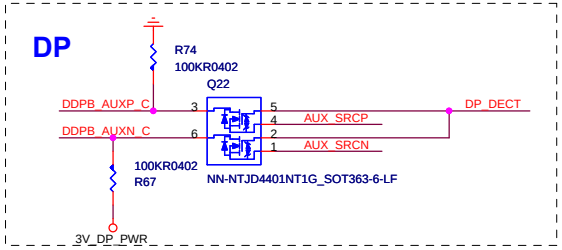

ESD Contact ± 5 KV & Air ± 15 KV



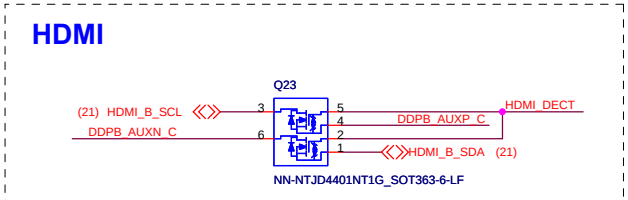

## Display Select

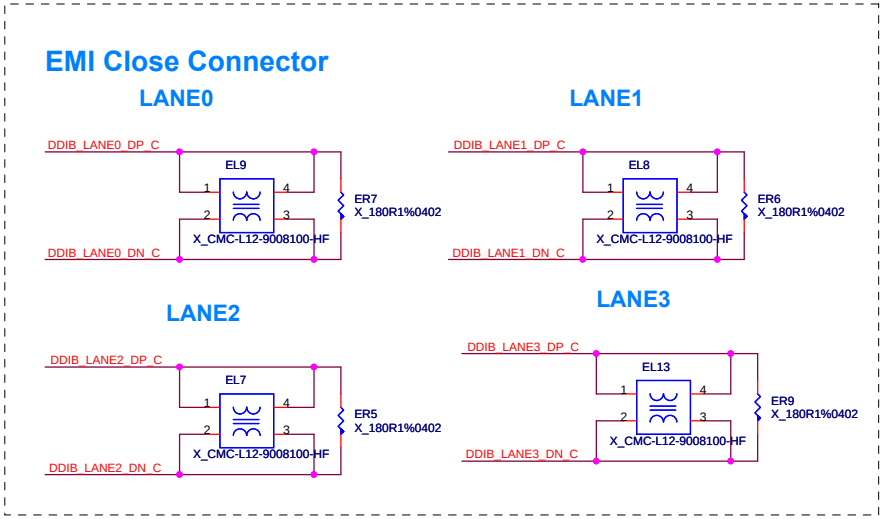



## Dual Mode Switch








MICRO-STAR INT'L CO.,LTD.

| | | |
|---|---|---|
| Title | DP | |
| Size | Document Number MS-16J5 | Rev 0A |
| Date: Tuesday, April 21, 2015 | Sheet 31 of 55 | |

# HDMI Level Shifter

HP_DET
PLUGGED 5V
UNPLUGGED 0V

HPD_SNK Internal PD 130kohm ESD 10KV

V1.0 reserved for AOC TV issue.

R100 2.2KR1%0402

U7 SN75DP139RSBR-RH

## HPD Level Shift 5V to 3V

Q7 SN-DMN65D8LDW-7_SOT363-6-HF

FOR DEBUG PORT

## HDMI Connector

HDMI1 HDMI19PM_BLACK-HF-7

D5 S-BAT54ALT1G_SOT23-RH

D4 X_BAV99LT1_SOT23

PF1 F-0805L075WR-HF

W>20mils

## EMI Close Connector

TX0 TX1 TX2 CLK

X_CMC-L12-9008100-HF

OE_N

Output Enable and power saving function for High Speed Differential level shifter path.
H: Power Saving OUT_Dx outputs = high impedance
L: Normal Mode OUT_Dx outputs = active

DDC I2C buffer offset select
H:Offset 1
L:Offset 2
Hi-Z:Offset 3

TMDS outputs rise and fall time select
H:Edge Rate:Slowest SRC =High adds ~60ps
L:Edge Rate: Slow SRC =Low adds ~30ps
Hi-Z:Edge Rate VCC/2

HPD_SOURCE Logic and Level Select
H:HPD Inversion HPD_SOURCE VOH =0.9V
L:HPD non-inversion HPD_SOURCE VOH =3.2V

Enables or Disables the DDC I2C buffer
H:DDC Buffer enabled
L:DDC Buffer disabled

| | |
|---|---|
| MICRO-STAR INT'L CO.,LTD. | |
| Title | HDMI DP139 |
| Size | Document Number MS-16J5 Rev 0A |
| Date: Tuesday, April 21, 2015 | Sheet 32 of 59 |

# Audio CODEC/Audio AMP

加跨MOAT 電阻或COOPER

JNC13 X_0603
C434 C0.1u50X0402-HF
C673 C0.1u50X0402-HF
C427 C0.1u50X0402-HF
C695 C0.1u50X0402-HF
C473 C0.1u50X0402-HF
EC45 X_C0.1u50X0402-HF
EC19 X_C0.1u50X0402-HF
JNC29 X_0603
JNC30 X_0603
GND AGND

JNC31 X_0603
C692 X_C0.1u50X0402-HF
GND AGND

CODEC_HDA_SDIN0
EC44 X_C10p50N0402
GND
EMI(RADIATION SOLUTION)

## DVDD
Close Codec

+3VSUS +3V_AUDIO
JNC17 X_0603
C676 C0.1u50X0402-HF
C429 C10u6.3X5-HF
C442 C10u6.3X5-HF
GND GND GND

## Close Pin25 / Close Pin38 / ALC898 add C945

CODEC_LDOOUT
C684 C10u6.3X5-HF
C681 C0.1u50X0402-HF
C659 C10u6.3X5-HF
C656 C0.1u50X0402-HF
C691 C47u6.3X50805-HF
AGND

## AVDD5V

AVDD5V 1A L12 180L1.5A-90 +5VSUS
C670 C0.1u50X0402-HF
C669 C10u6.3X5-HF
AGND AGND

## U38 ALC898-GR-RH LQFP48 B05-LC89804-R09

20mil 20mil

EAPD/SPDIFI EAPD (28)
SPDIF-OUT SPDIFO (34) R381 10R1%0402 SPDIFO_R
SDATA-OUT (23) CODEC_HDA_SDOUT
SDATA-IN (23) CODEC_HDA_SDIN0
SYNC (23) CODEC_HDA_SYNC
RESET# (23) CODEC_HDA_RST# R388 33R0402 HD_SDIN
BCLK (23) CODEC_HDA_BIT_CLK
GPIO0/DMIC-CLK/SPDIF-OUT2
REGREF C436 C10u6.3X5-HF
PDM_CLK REGREF
SENSE A (34) FRONT_JD R413 5.1KR1%0402 SENSEA
SENSE B (34) MIC_JD R414 20KR1%0402
MIC1-VREFO-R MIC-VREFO-R
MIC2-VREFO MIC1-VREFO-L
PIN37-VREFO A_VRP
LDO-IN VREF_ALC898 AVDD5V 40mil
LINE2-VREFO C100u6.3SO-HF-1 C426
VREF C678 C10u6.3X5-HF
GPIO2 JDREF R379 20KR1%0402 JDREF
BEEP
GPIO1/DMIC-DATA DVSS AVSS AVSS
PDM_DATA

can't use MLCC 100UF??
Close Codec
Close Codec

DVDD DVDD-IO LDO-OUT1 LDO-OUT2

FRONT-R FRONT-L: FRONT_OUT_R C430 C2.2u10X50402-HF, FRONT_OUT_L C437 C2.2u10X50402-HF → FRONT_OUTR (34) FRONT_OUTL (34) HP
改1uF?2.2uF
SURR-R SURR-L: SPK_R_F C657 C0.33u16X5-HF SPK_R; SPK_L_F C658 C0.33u16X5-HF SPK_L — SPK 2031
CENTER LFE
SIDE-R SIDE-L: HP_R_ADC_R C654 C1u25X50402-HF; HP_L_ADC_R C655 C1u25X50402-HF → HP_R_ADC (27) HP_L_ADC (27)
LINE1-R LINE1-L: WOOFER_R C689 C0.47u10X0402 WOOFER_R_C R417 0R0402; WOOFER_L C690 C0.47u10X0402 WOOFER_L_C R418 0R0402 → SUBWOOFER (34)
LINE2-R LINE2-L: FRONT_SPK_R_F C452 C0.33u16X5-HF FRONT_SPK_R; FRONT_SPK_L_F C453 C0.33u16X5-HF FRONT_SPK_L — SPK 2031
MIC1-R MIC1-L: MIC_R C443 C10u6.3X5-HF MIC_R_C R205 75R1%0402; MIC_L C440 C10u6.3X5-HF MIC_L_C R199 75R1%0402
R207 2.2KR1%0402 MIC-VREFO-R → MIC_IN_R (34)
R193 2.2KR1%0402 MIC-VREFO-L → MIC_IN_L (34)
MIC
MIC2-R MIC2-L
CD-R CD-GND CD-L

LINE1/MIC1-In input de-coupled cap. must be 10uF/X5R/0805/10V or 4.7uF DIP.

## EMI Close Codec / Internal Mic

PDM_CLK R387 220L300mA-350_0402-RH → PDM_CLK_CONN (26)
R386 220L300mA-350_0402-RH → PDM_DATA_CONN (26)
PDM_DATA
EC42 C10p50N0402
C668 C10p50N0402
GND GND

## U17 APA2031RI-TRL_TSSOP20-RH

WIDTH > 40 mils
+5VSUS
C451 C10u6.3X50805 AGND
FOR CNT 反向

PVDD PVDD VDD
LIN- RIN-
RIN+ LIN+
BYPASS
GAIN2 GAIN3
GAIN0 GAIN1
ROUT+ ROUT- → OUT_R+ OUT_R#
LOUT+ LOUT- → OUT_L+ OUT_L#
NC
SHUTDOWN → EC_MUTE# (28,34)
GND GND GND GND

FRONT_SPK_L FRONT_SPK_R
C456 C0.47u10X RIN+
C449 C0.47u10X LIN+
C445 C10u6.3X5-HF BYPASS2

R222 X_100KR0603 GAIN2
R219 100KR0603 GAIN3
R221 100KR0603 GAIN2
R218 X_100KR0603 GAIN3

For APA2031

| Av | GAIN0 | GAIN1 |
|---|---|---|
| 6dB | 0 | 0 |
| 10dB | 0 | 1 |
| 15.6dB | 1 | 0 |
| 21.6dB | 1 | 1 |
| 4.3dB | X | X |

## U13 APA2031RI-TRL_TSSOP20-RH

WIDTH > 40 mils
+5VSUS
C433 C10u10Y0805 AGND

PVDD PVDD VDD
LIN- RIN-
RIN+ LIN+
BYPASS
GAIN0 GAIN1
ROUT+ ROUT- → OUT2_R+ OUT2_R#
LOUT+ LOUT- → OUT2_L+ OUT2_L#
NC
SHUTDOWN → EC_MUTE#
GND GND GND GND

SPK_L SPK_R
C438 C0.47u10X RIN2+
C431 C0.47u10X LIN2+
C428 C10u6.3X5-HF BYPASS

R202 X_100KR0603 GAIN0
R192 100KR0603 GAIN1
R201 100KR0603 GAIN0
R191 X_100KR0603 GAIN1

For APA2031

| Av | GAIN0 | GAIN1 |
|---|---|---|
| 6dB | 0 | 0 |
| 10dB | 0 | 1 |
| 15.6dB | 1 | 0 |
| 21.6dB | 1 | 1 |
| 4.3dB | X | X |

## Internal Speaker Conn

J29 BH1X8#S-1.25PITCH_WHITE-RH-3
OUT_L# OUT_L+ OUT_R+ OUT_R# OUT2_L+ OUT2_L# OUT2_R# OUT2_R+
反向
C696 X_C680p50X0402-RH
C697 X_C680p50X0402-RH
C698 X_C680p50X0402-RH
C699 X_C680p50X0402-RH
C700 X_C680p50X0402-RH
C701 X_C680p50X0402-RH
C702 X_C680p50X0402-RH
C703 X_C680p50X0402-RH

| | CODEC | 喇叭 |
|---|---|---|
| L | - | - |
| L | + | + |
| R | + | + |
| R | - | - |
| L2 | + | + |
| L2 | - | - |
| R2 | - | - |
| R2 | + | + |

MICRO-STAR INT'L CO.,LTD.

Title: Audio CODEC/Audio AMP
Size: Document Number: MS-16J5 Rev: 0A
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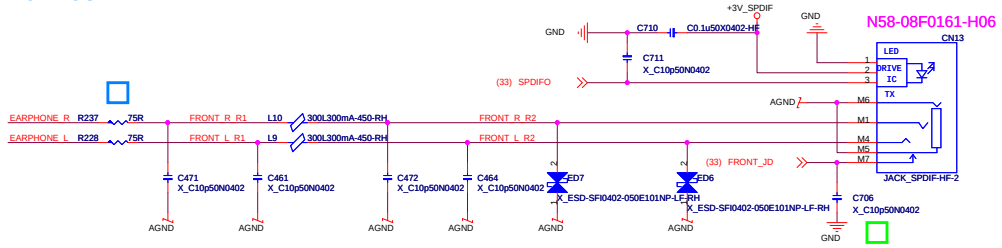
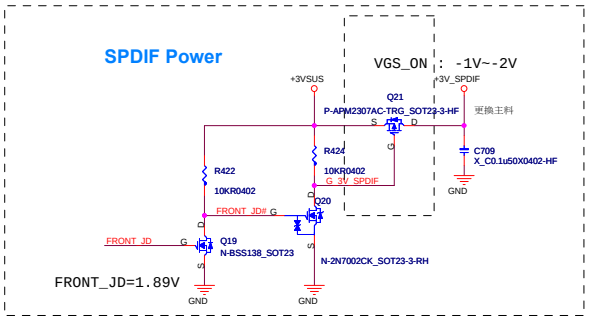
# Audio CONN /Woffer

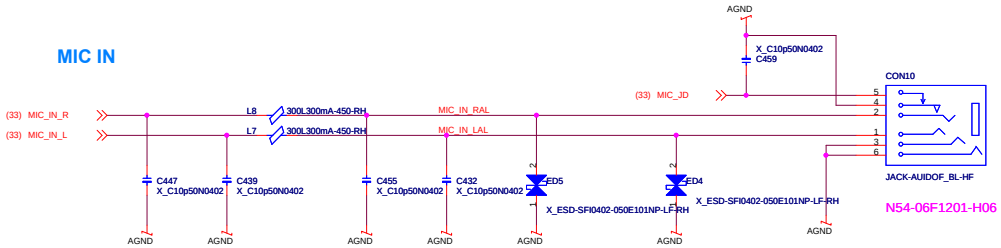
## FRONT OUT



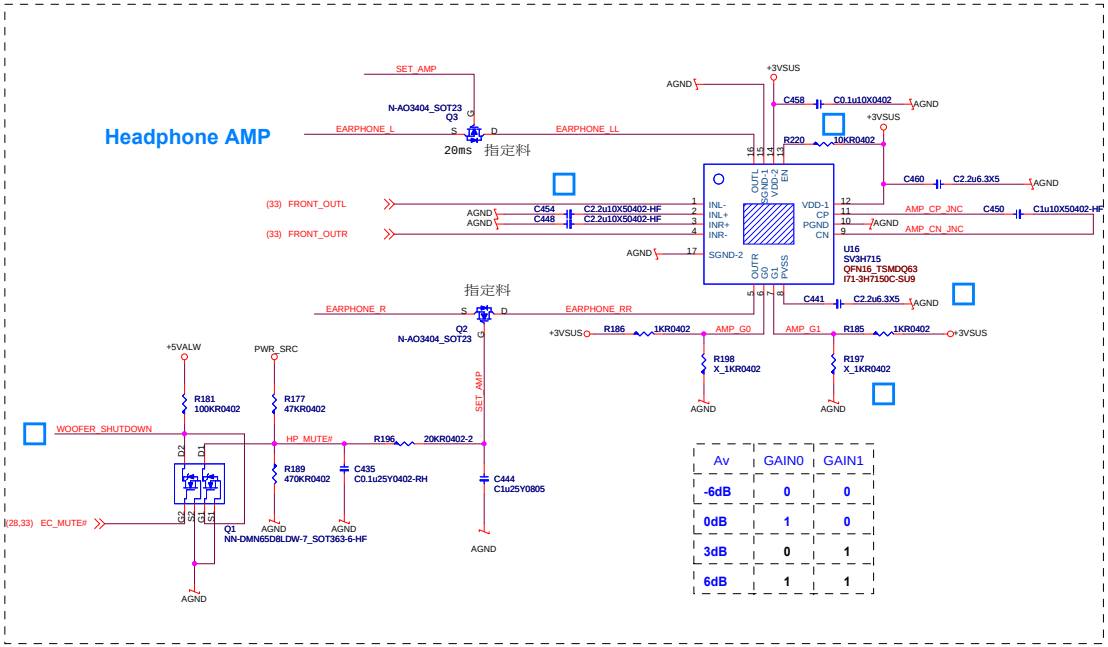

## SPDIF Power




## MIC IN




## Headphone AMP

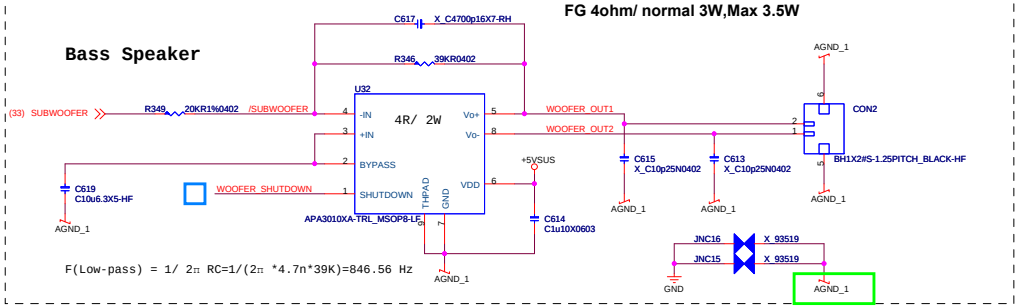



| Av | GAIN0 | GAIN1 |
|---|---|---|
| -6dB | 0 | 0 |
| 0dB | 1 | 0 |
| 3dB | 0 | 1 |
| 6dB | 1 | 1 |

ALC892 SPC MAX 為 1.2Vrms
gain= -2*(R370/R371)= -2*(40K/20K) = -4
Vout= 0.58Vrms *4 = 2.32Vrms , Po=(2.32*2.32)/3.8=1.42W

**Woofer SPEC**
**YG 3.8ohm / normal 3W,Max 3.5W**
**FG 4ohm/ normal 3W,Max 3.5W**

## Bass Speaker




WOOFER AMP 擺太遠獨立切AGND_1



| | |
|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. |
| Title | Audio / Woffer |
| Size | Document Number MS-16J5 Rev 0A |
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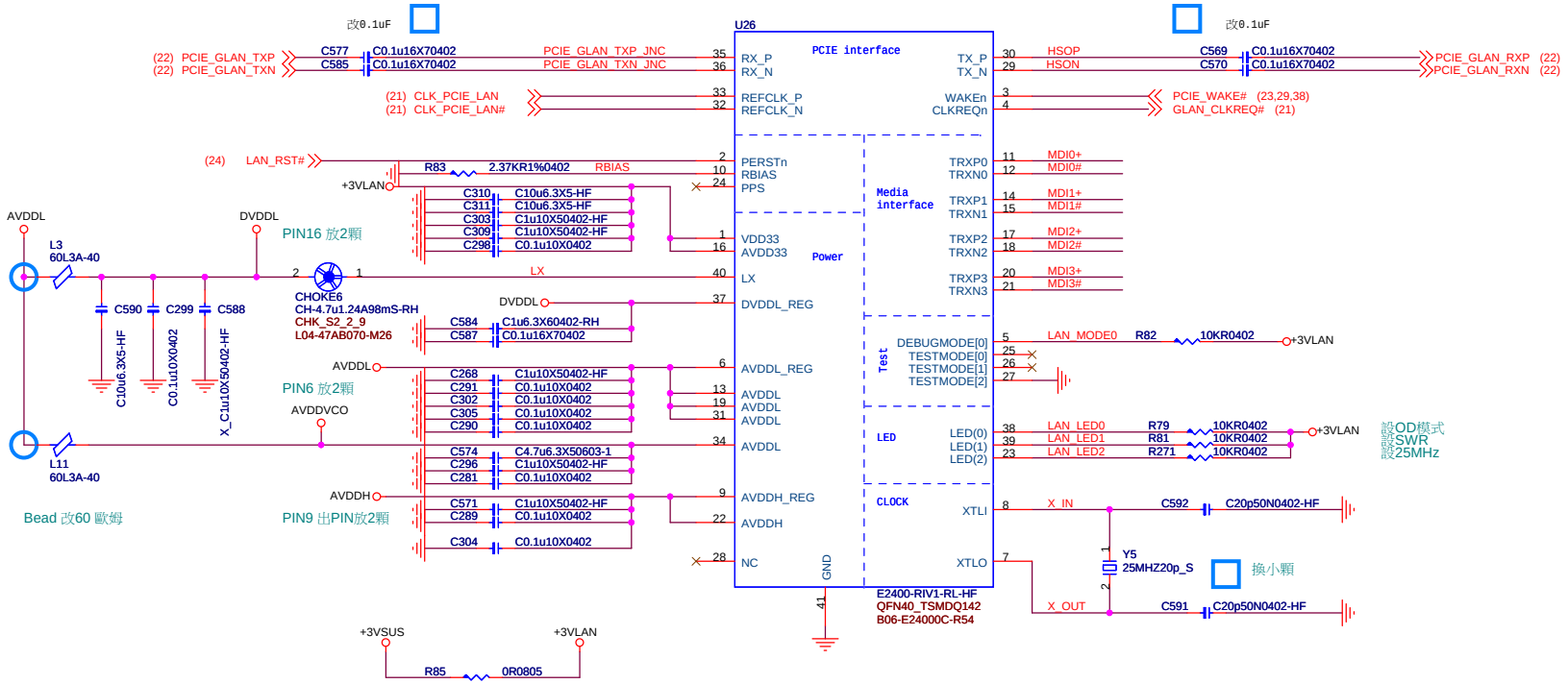
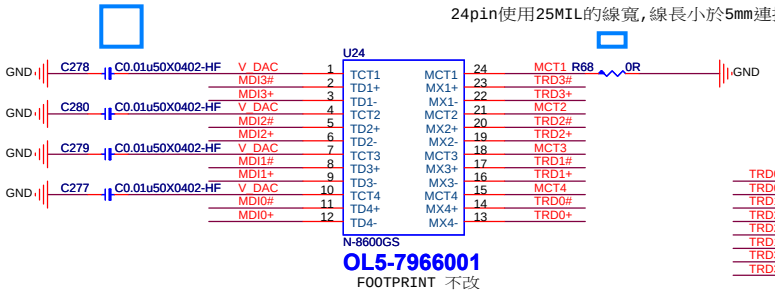
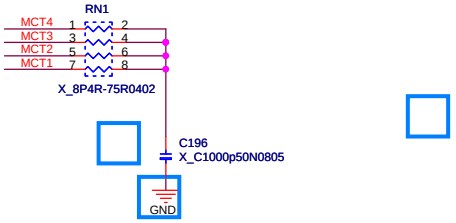
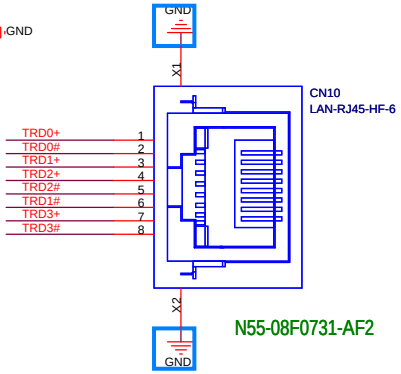
# GIGA LAN(BigFoot BFN2400B)

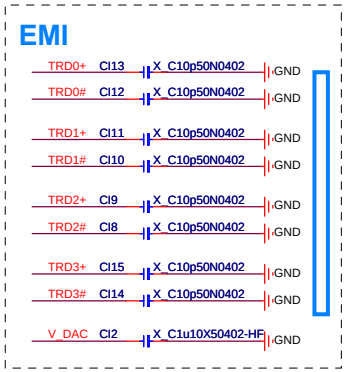



24pin使用25MIL的線寬,線長小於5mm連接GND



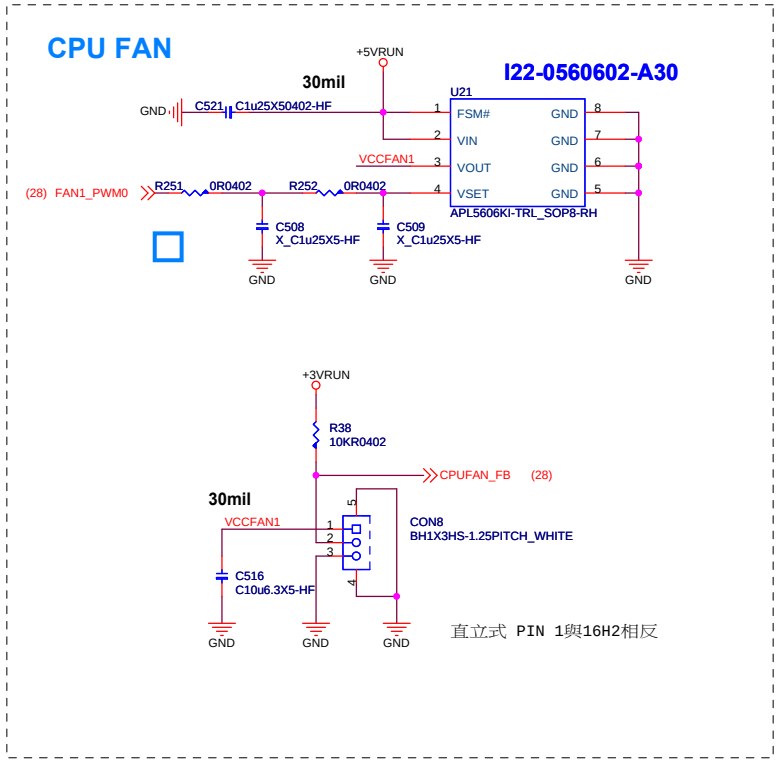



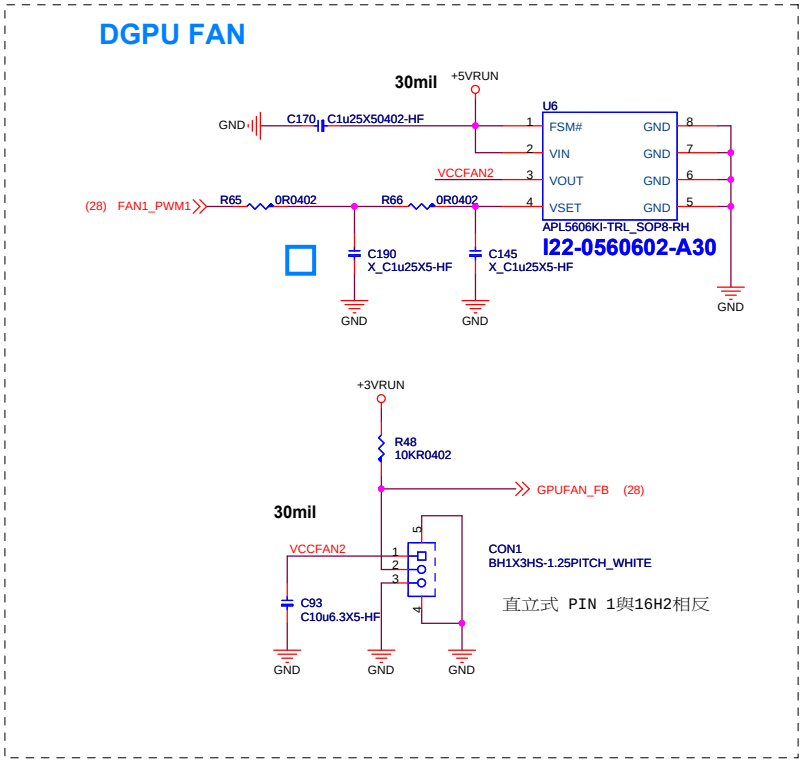

MICRO-STAR INT'L CO.,LTD.

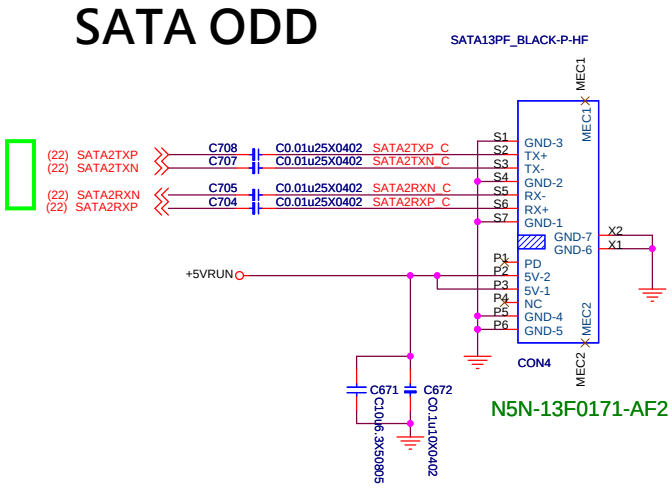
Title: GIGA LAN(BigFoot BFN2400/AR8161)

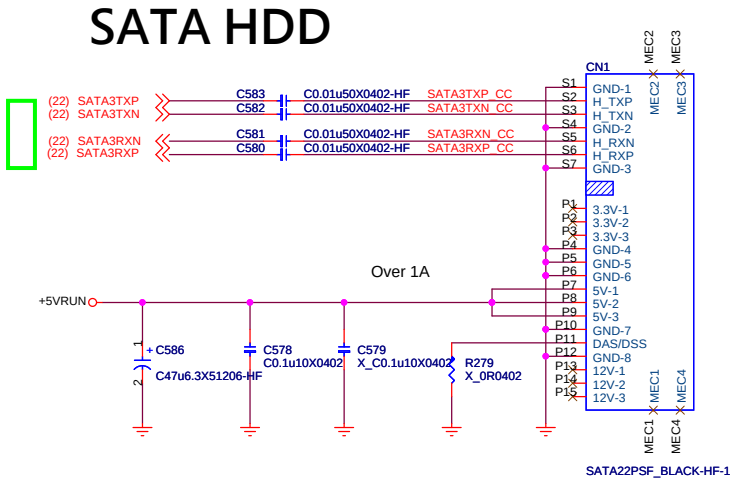
Size | Document Number: MS-16J5 | Rev: 0A

Date: Tuesday, April 21, 2015 | Sheet 35 of 55



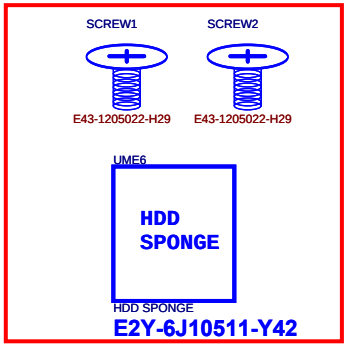




22.GND
21.TX
20.TX#
19.GND
18.RX#
17.RX
16.GND

15.V33
14.V33
13.V33
12.GND
11.GND
10.GND
9.V5
8.V5
7.V5
6.GND
5.Reserved
4.GND
3.V12
2.V12
1.V12




| | | |
|---|---|---|
| Title | ODD/HDD/FAN | |
| Size A3 | Document Number MS-16J5 | Rev 0A |
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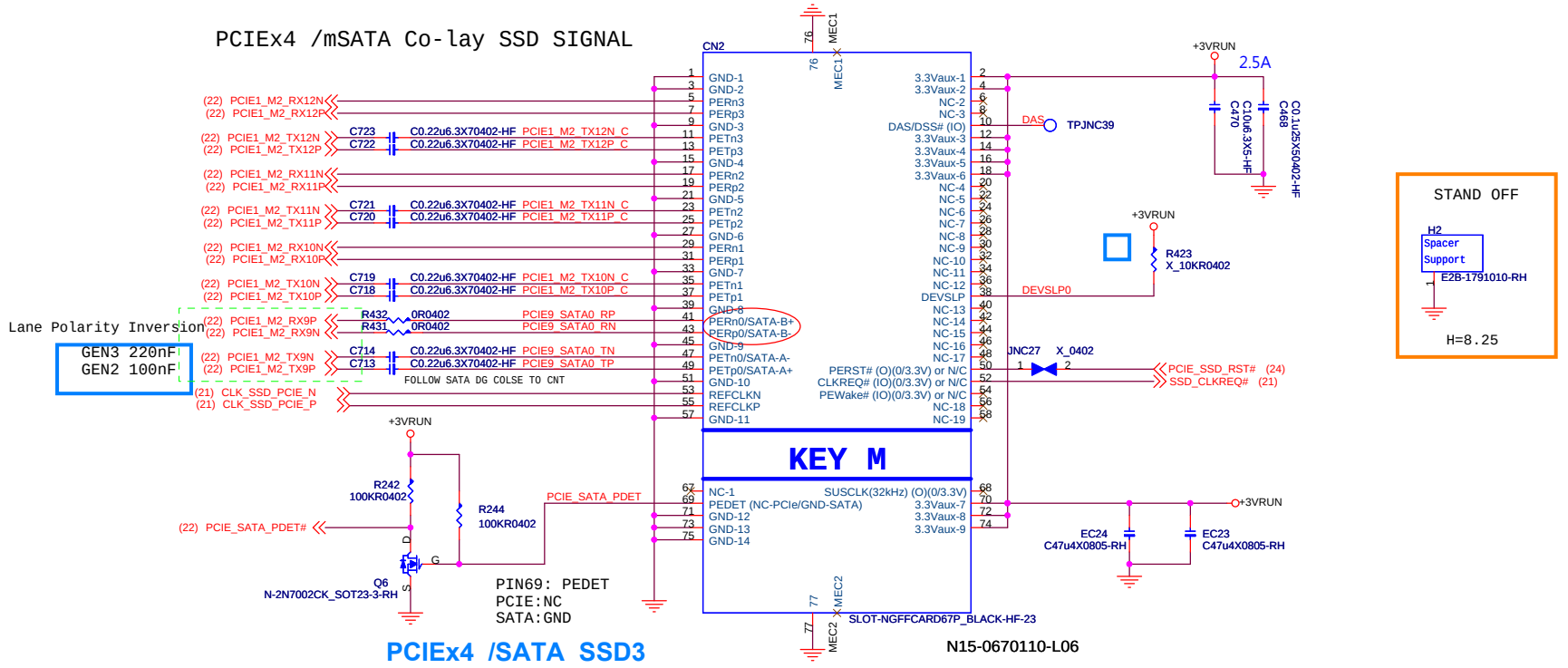


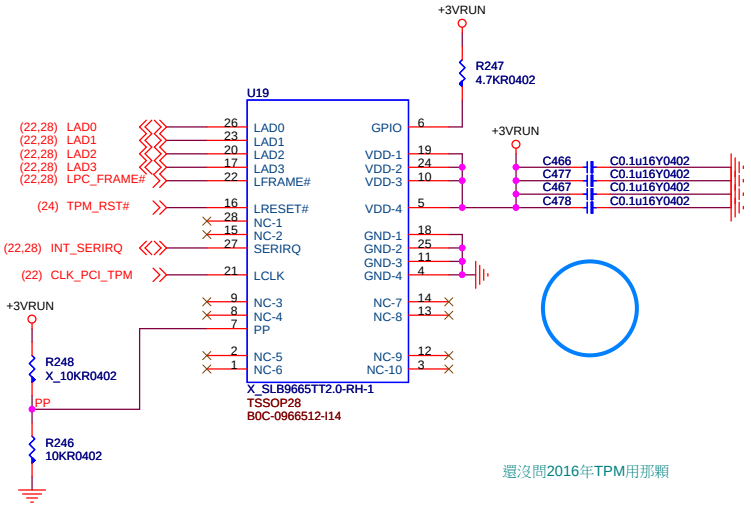


| | |
|---|---|
| MICRO-STAR INT'L CO.,LTD. | |
| Title | SSD |
| Size | Document Number: MS-16J5 |
| Rev | 0A |
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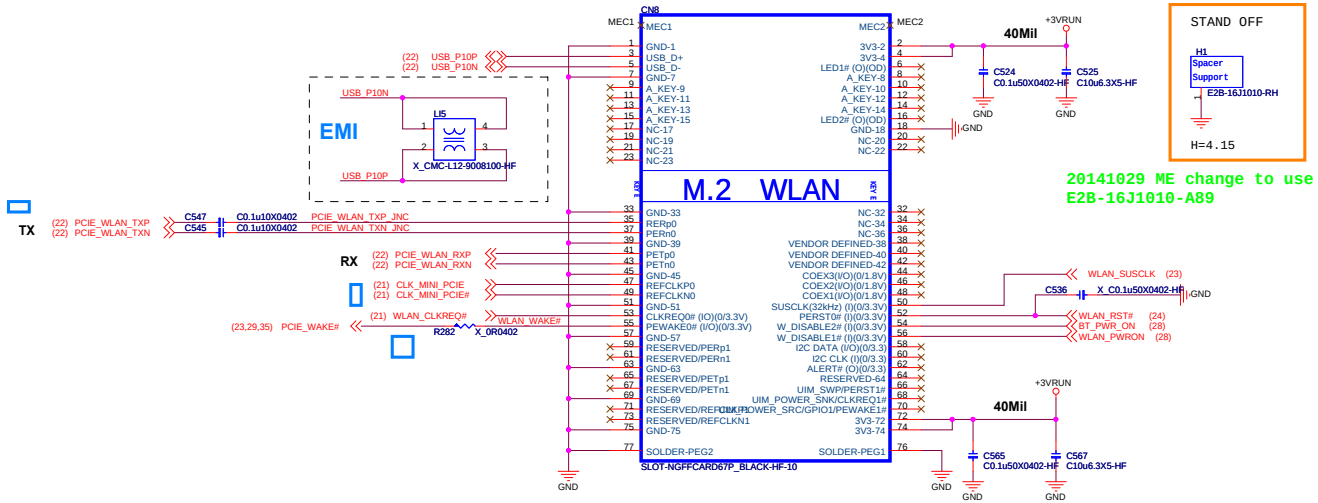
# WLAN

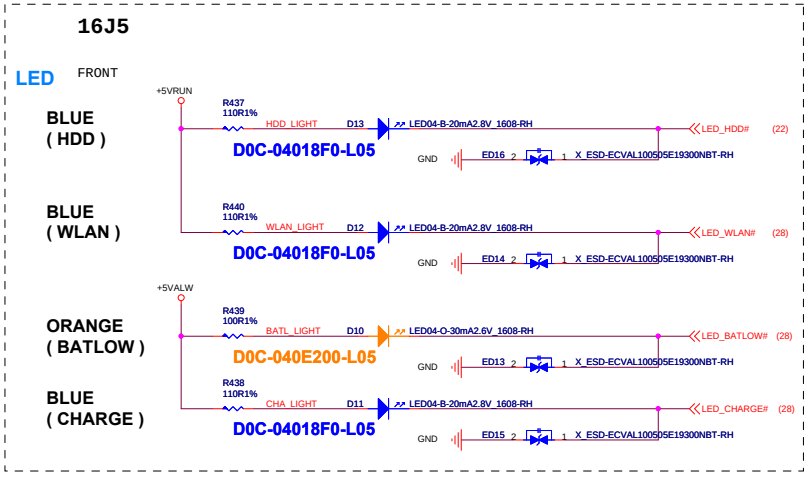
# WLAN/LED

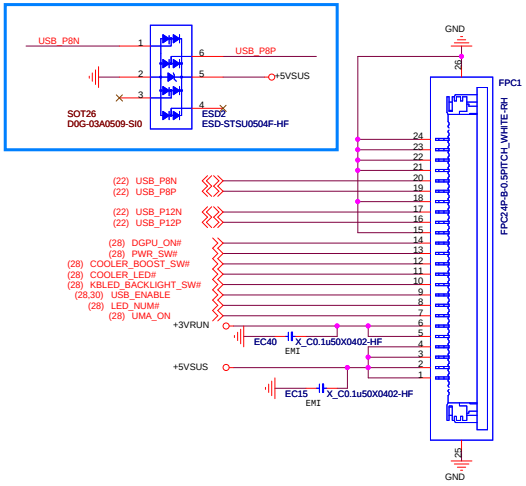
## E KEY



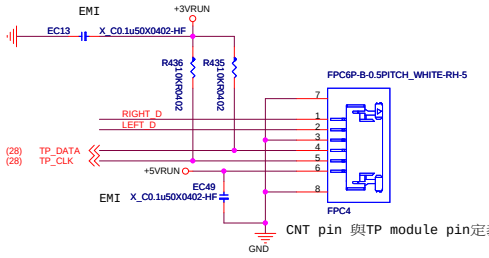

| | | | |
|---|---|---|---|
| Pin 1 | GND | | |
| Pin 3 | USB_D+ | Pin 2 | 3.3V |
| Pin 5 | USB_D- | Pin 4 | 3.3V |
| Pin 7 | GND | Pin 6 | LED1# |
| Pin 9 | Module Key | Pin 8 | Module Key |
| Pin 11 | Module Key | Pin 10 | Module Key |
| Pin 13 | Module Key | Pin 12 | Module Key |
| Pin 15 | Module Key | Pin 14 | Module Key |
| Pin 17 | N/C | Pin 16 | LED2# |
| Pin 19 | N/C | Pin 18 | GND |
| Pin 21 | N/C | Pin 20 | N/C |
| Pin 23 | N/C | Pin 22 | N/C |
| Pin 25 | Module Key | Pin 24 | Module Key |
| Pin 27 | Module Key | Pin 26 | Module Key |
| Pin 29 | Module Key | Pin 28 | Module Key |
| Pin 31 | Module Key | Pin 30 | Module Key |
| Pin 33 | GND | Pin 32 | N/C |
| Pin 35 | PERP0 | Pin 34 | N/C |
| Pin 37 | PERN0 | Pin 36 | N/C |
| Pin 39 | GND | Pin 38 | Clink Reset (I 3.3V) |
| Pin 41 | PETP0 | Pin 40 | N/C |
| Pin 43 | PETN0 | Pin 42 | N/C |
| Pin 45 | GND | Pin 44 | N/C |
| Pin 47 | REFCLKP0 | Pin 46 | N/C |
| Pin 49 | REFCLKN0 | Pin 48 | N/C |
| Pin 51 | GND | Pin 50 | N/C (SUSCLK (32kHz) for DSx) |
| Pin 53 | CLKREQ0# | Pin 52 | PERST0# |
| Pin 55 | PEWAKE0# | Pin 54 | BT_EN (W_DISABLE2#) |
| Pin 57 | GND | Pin 56 | WLAN_EN(W_DISABLE2#) |
| Pin 59 | N/C | Pin 58 | N/C |
| Pin 61 | N/C | Pin 60 | N/C |
| Pin 63 | GND | Pin 62 | N/C |
| Pin 65 | N/C | Pin 64 | Resever |
| Pin 67 | N/C | Pin 66 | N/C |
| Pin 69 | GND | Pin 68 | N/C |
| Pin 71 | N/C | Pin 70 | N/C |
| Pin 73 | N/C | Pin 72 | 3.3V |
| Pin 75 | GND | Pin 74 | 3.3V |

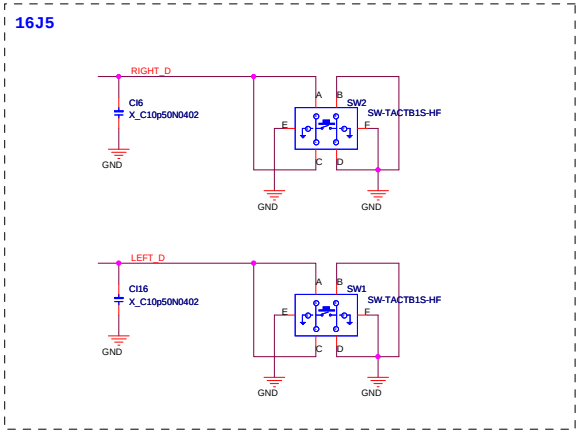
## 16J5

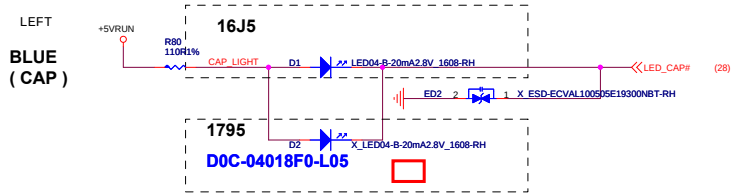


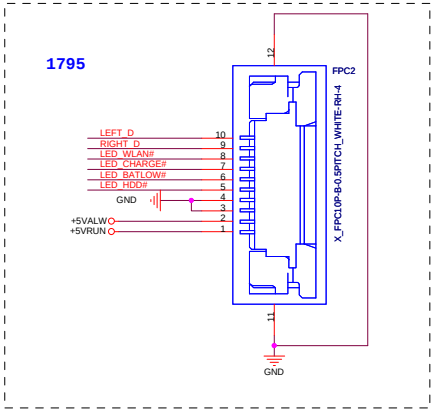




## Touch Pad



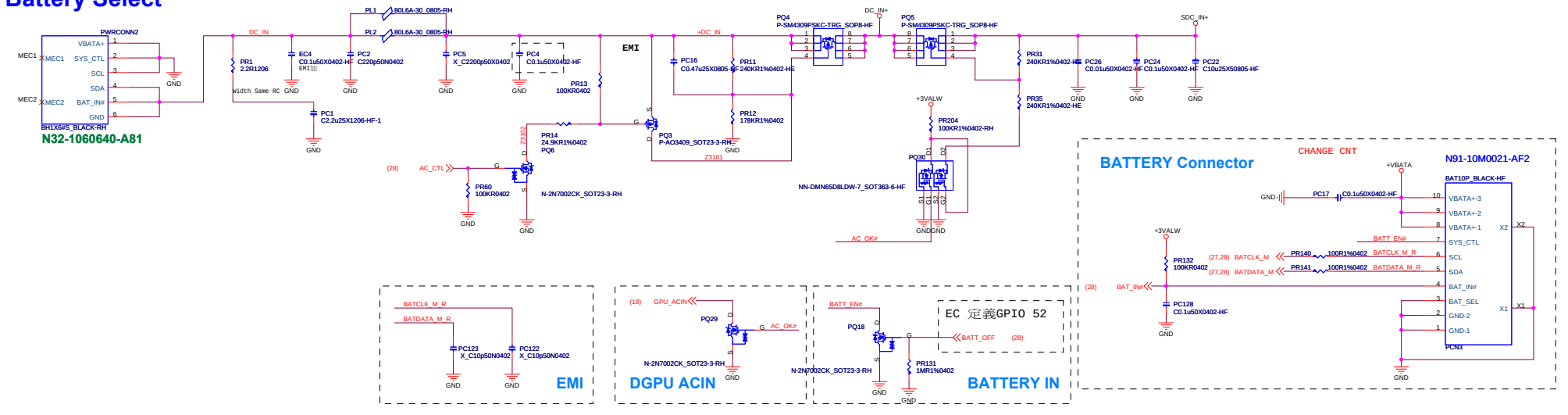





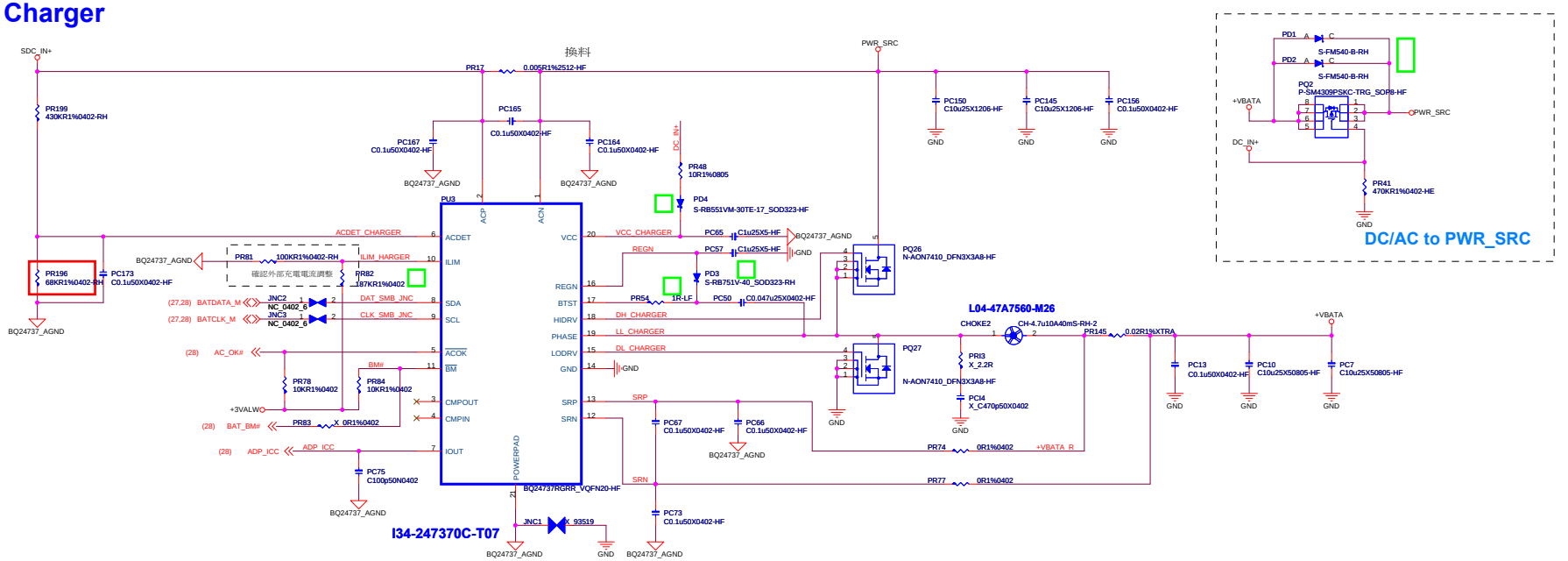

| | | | |
|---|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | | |
| Title | WLAN /LED/TP | | |
| Size | Document Number | Rev | |
| | MS-16J5 | 0A | |
| Date: | Tuesday, April 21, 2015 | Sheet | 38 of 55 |

# Battery Select/Charger

## Battery Select




## Battery Charger




| | | | |
|---|---|---|---|
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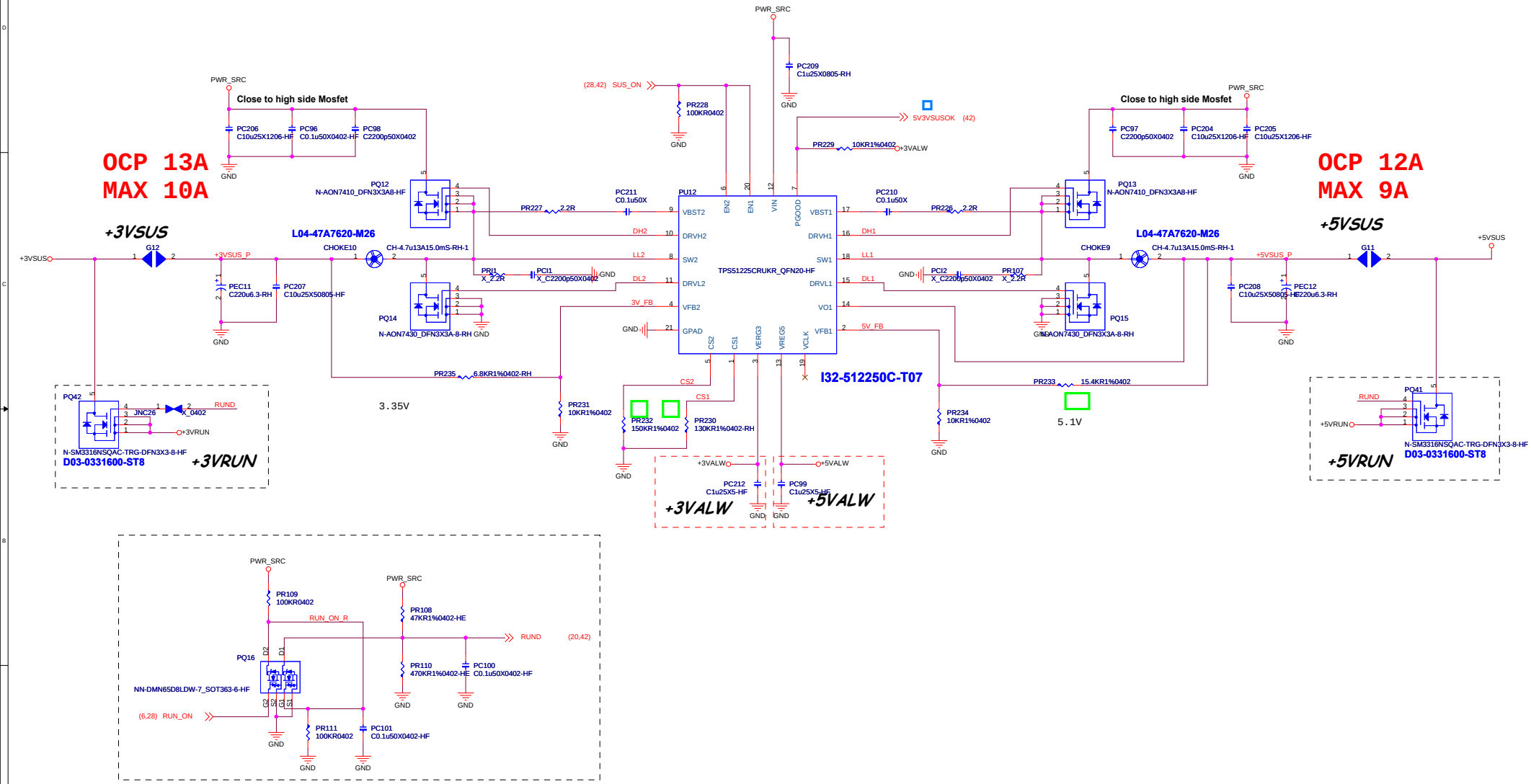
| Title: Battery Select/Charger | | | |
| Size | Document Number: MS-16J5 | | Rev: 0A |
| Date: Tuesday, April 21, 2015 | Sheet 39 of 55 | | |

# System Power




| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: System Power | | |
| Size | Document Number: MS-16J5 | Rev: 0A |
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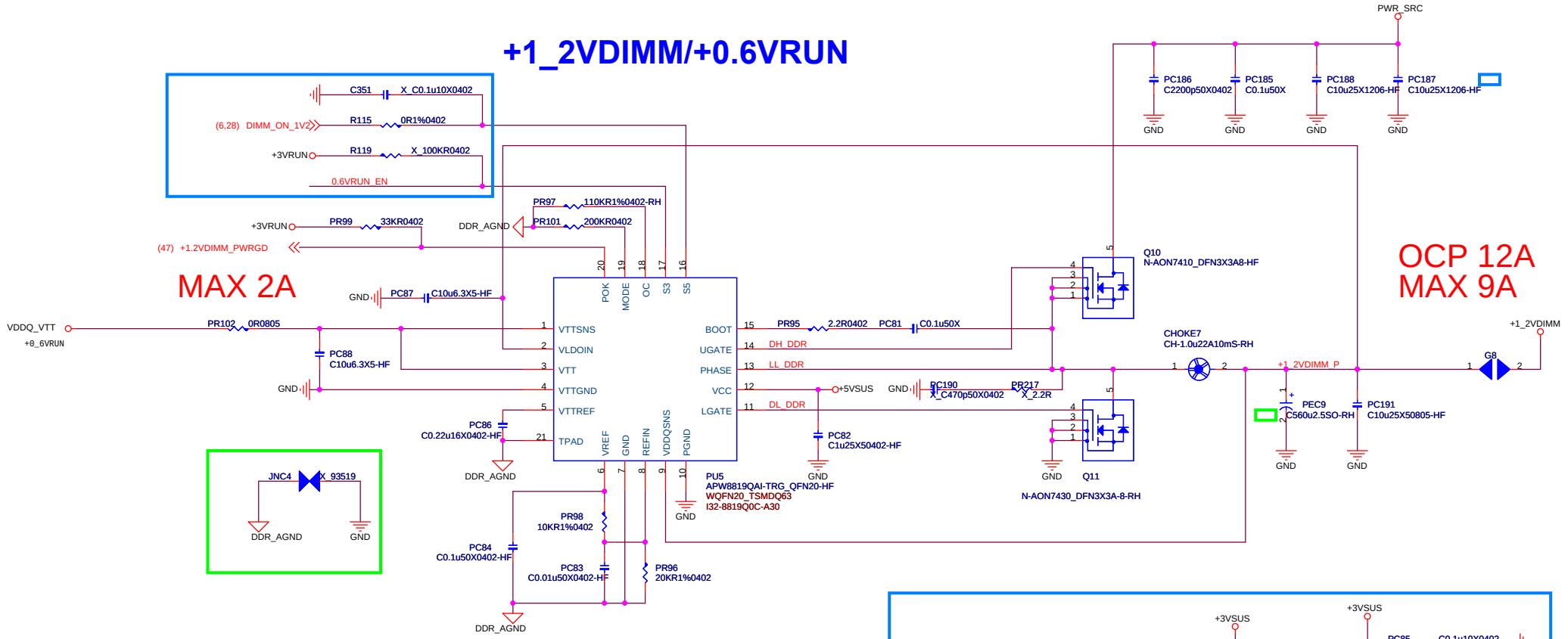
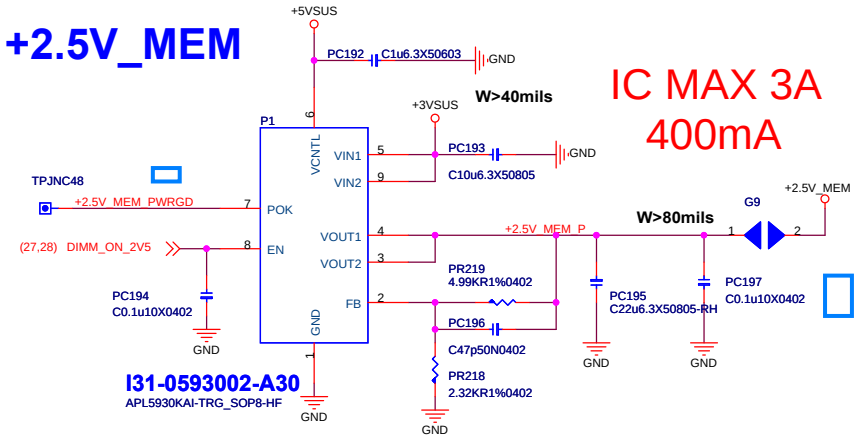
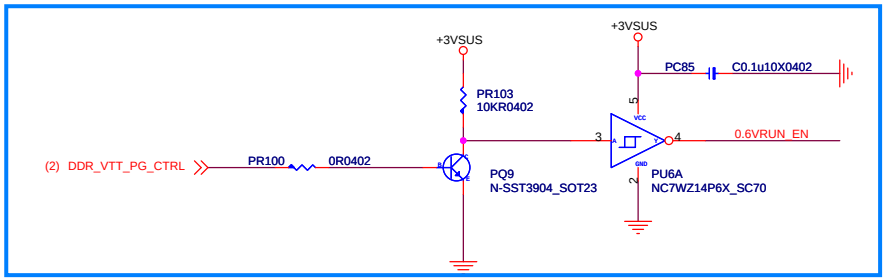
# +1_2VDIMM/+0.6VRUN




# +2.5V_MEM




| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: +1.2VDIMM/+0.6VRUN/+2.5VMEM | | |
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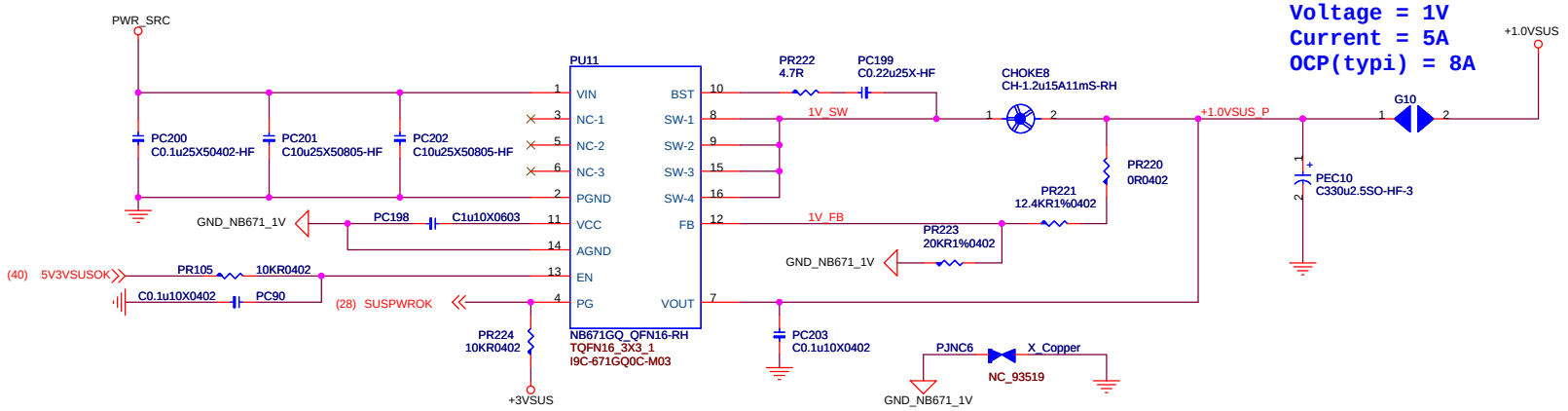
| Date: Tuesday, April 21, 2015 | Sheet 41 of 55 | |

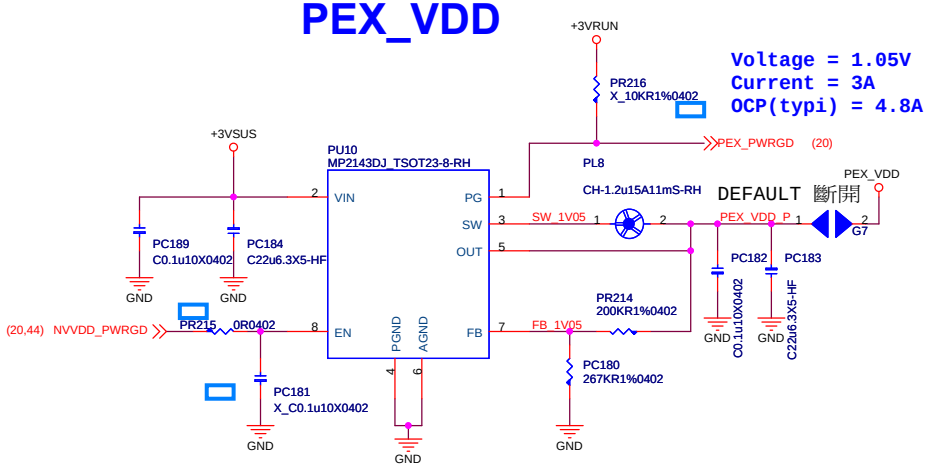
# +1VSUS




***+1.0VSUS***

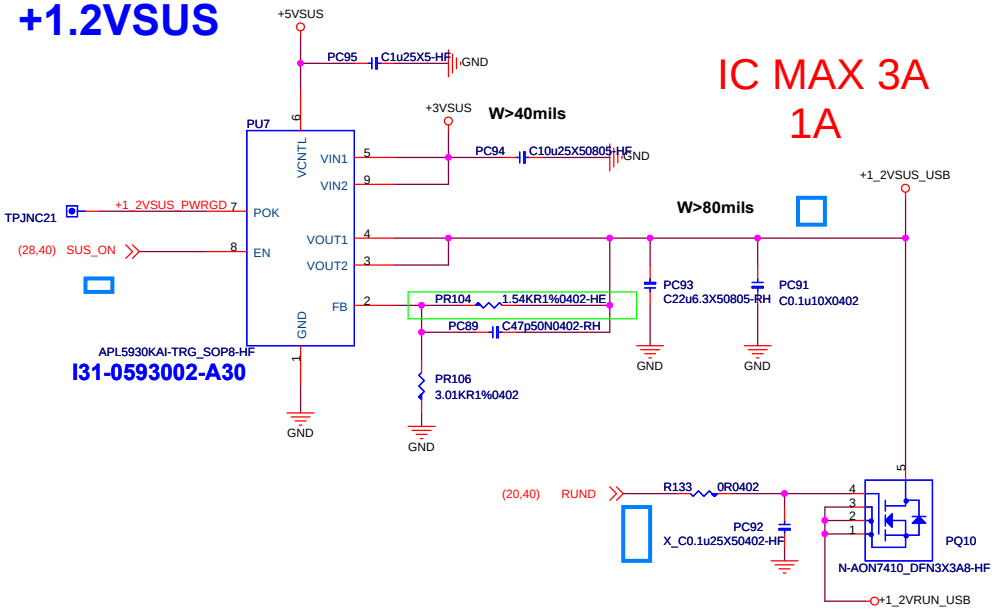
**Voltage = 1V**
**Current = 5A**
**OCP(typi) = 8A**

# PEX_VDD




**Voltage = 1.05V**
**Current = 3A**
**OCP(typi) = 4.8A**

# +1.2VSUS

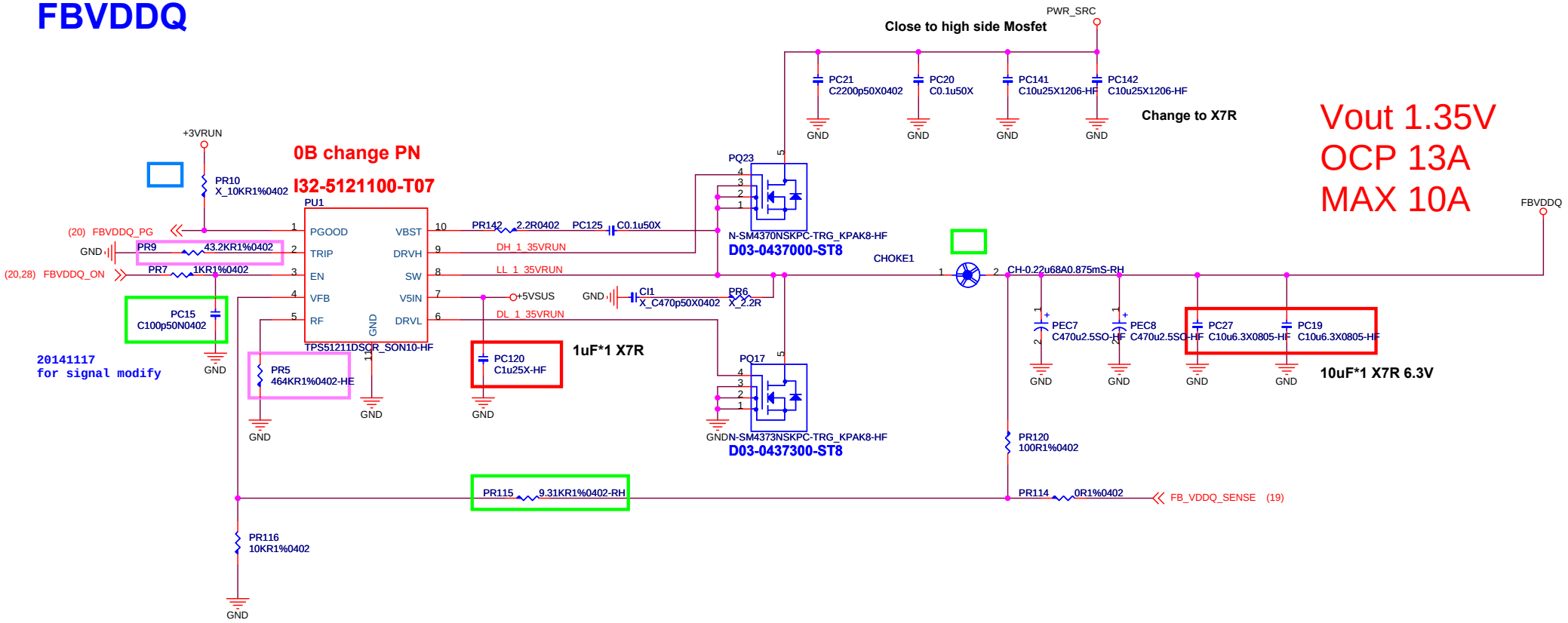



IC MAX 3A
1A

| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: 1VSUS /PEX_VDD/1.2VSUS | | |
| Size | Document Number: MS-16J5 | Rev: 0A |
| Date: Tuesday, April 21, 2015 | Sheet 42 of 55 | |

# DGPU POWER FBVDDQ

## FBVDDQ



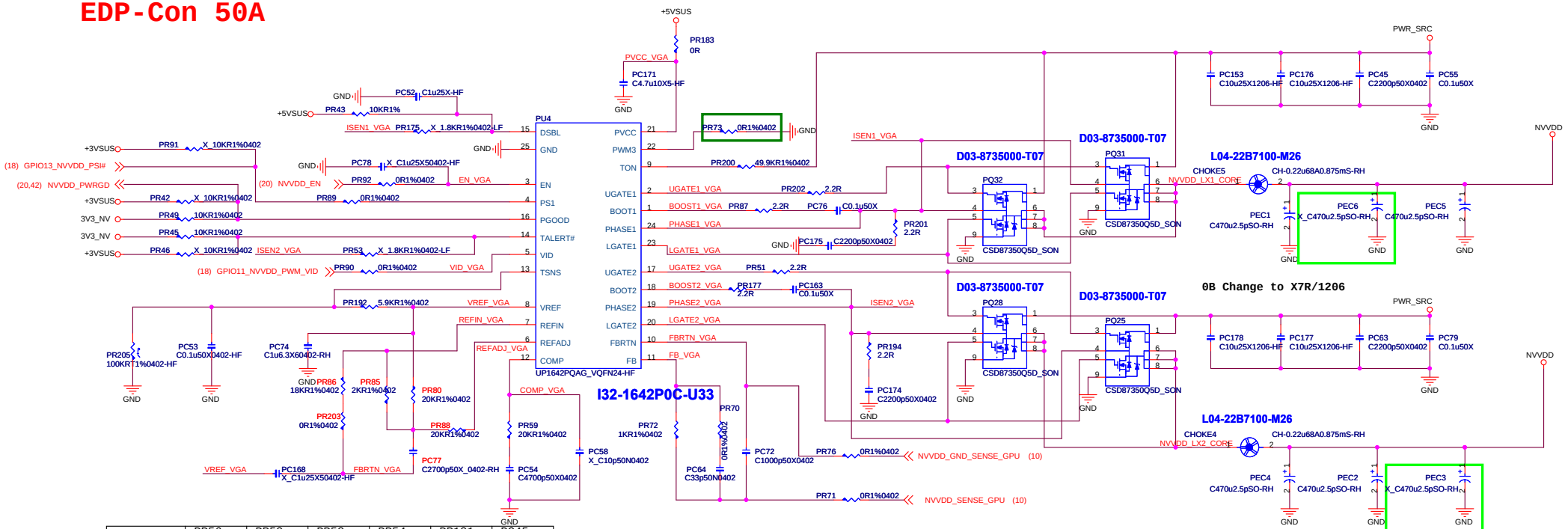

| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: DGPU POWER FBVDDQ | | |
| Size | Document Number: MS-16J5 | Rev: 0A |
| Date: Tuesday, April 21, 2015 | Sheet 43 of 55 | |

# DGPU POWER / UP1642PQAG

**EDP-Peak 87A**
**EDP-Con 50A**

# DGPU POWER NVVDD

**CONFIG A**
**VBoot:0.875V**
**Vmin:0.6V / Vmax:1.2V**

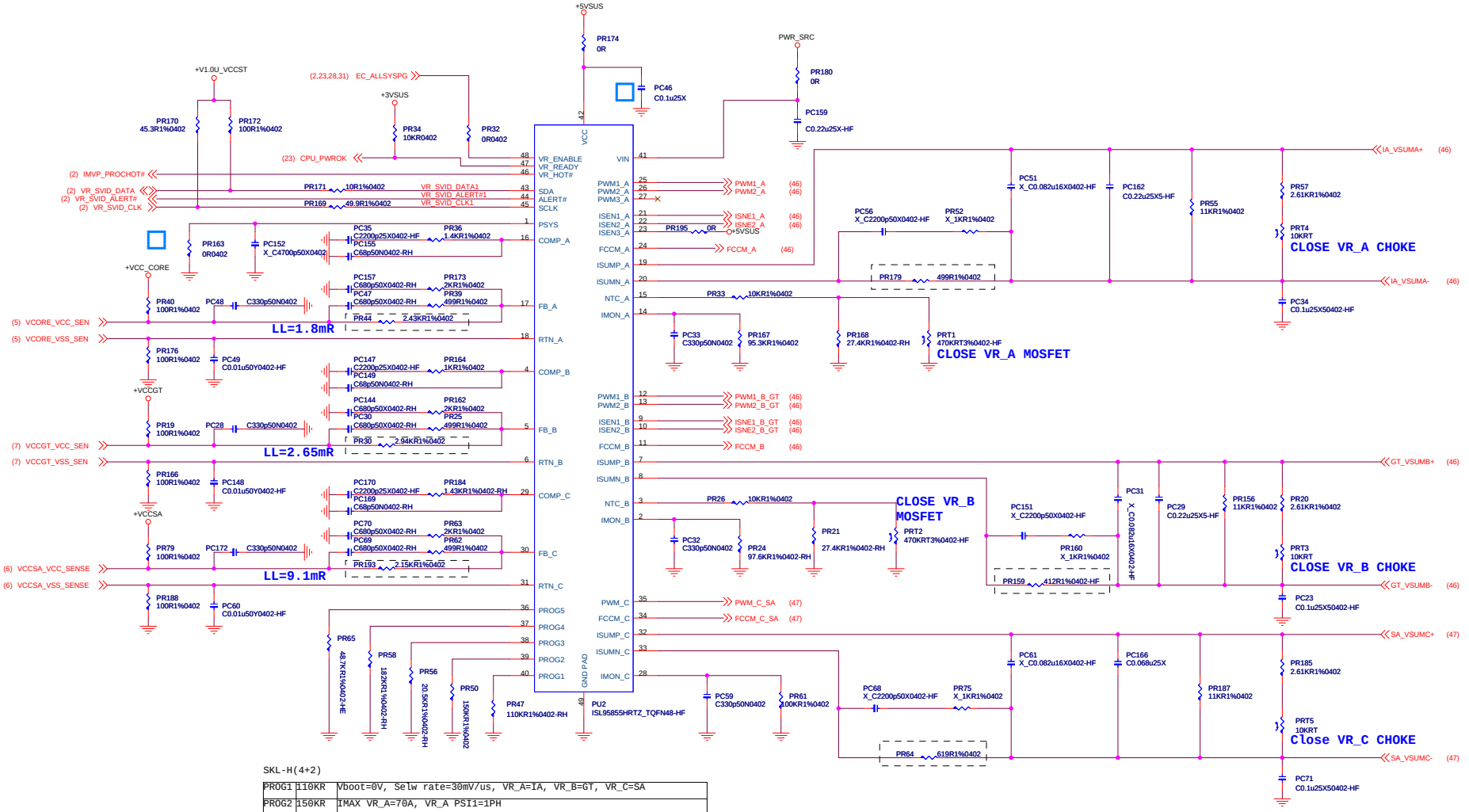



| | PR56 | PR52 | PR53 | PR54 | PR121 | PC45 |
|---|---|---|---|---|---|---|
| CONFIG | R1 | R2 | R3 | R4 | R5 | C |
| N16E-GT<br>N16P-GX-B | 20K | 20K | 2K | 18K | 0 | 2.7nF |

20141029 power modify for GPU power setting
PR52,PR56: 39K ohm to 20K ohm
PR53: 1.5K ohm to 2K ohm
PR54: 30K ohm to 18K ohm
PR121: 1.5K ohm to 0 ohm
PC45: 1.5nF to 2.7nF

| | | |
|---|---|---|
| MSI | MICRO-STAR INT'L CO.,LTD. | |
| Title | DGPU POWER NVVDD | |
| Size | Document Number: MS-16J5 | Rev: 0A |
| Date: Tuesday, April 21, 2015 | Sheet 44 of 55 | |

# Skylake H-line 42 45W ISL95855




SKL-H(4+2)

| | | |
|---|---|---|
| PROG1 | 110KR | Vboot=0V, Selw rate=30mV/us, VR_A=IA, VR_B=GT, VR_C=SA |
| PROG2 | 150KR | IMAX VR_A=70A, VR_A PSI1=1PH |
| PROG3 | 20.5KR | IMAX VR_B=60A, DROOP VR_B Active |
| PROG4 | 182KR | DROOP VR_A Active, DROOP VR_C Active, VR_A VR_B Frequency=750kHz |
| PROG5 | 48.7KR | IMAX VR_C=12A, Frequency=450kHz |

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Title: Skylake CPU Power

Size | Document Number: MS-16J5 | Rev: 0A

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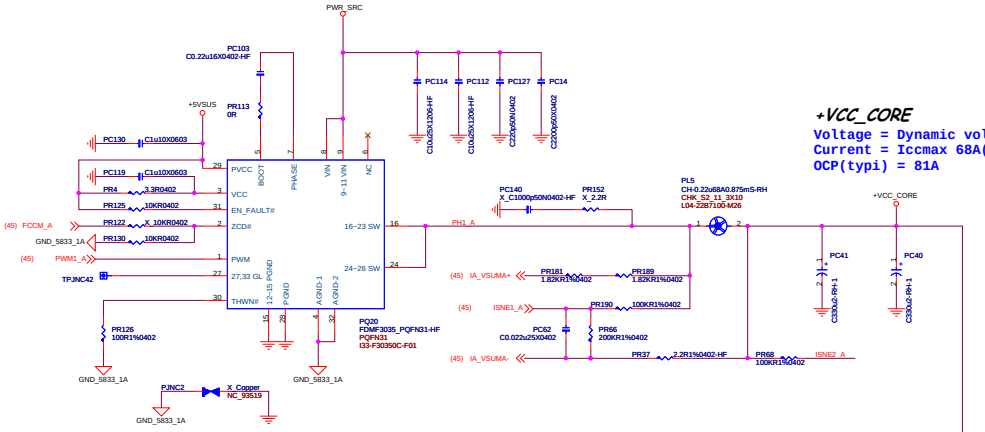
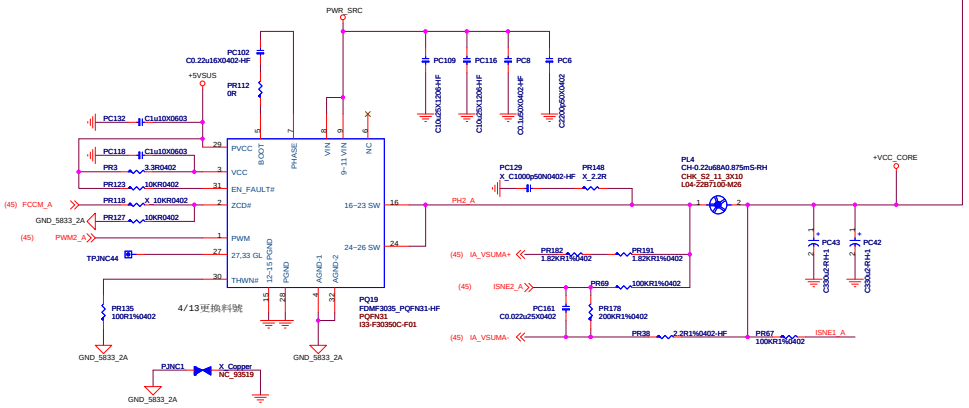
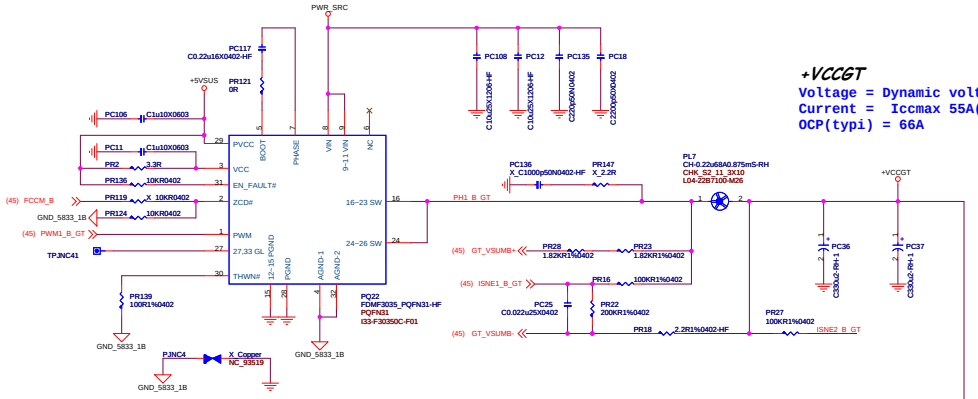
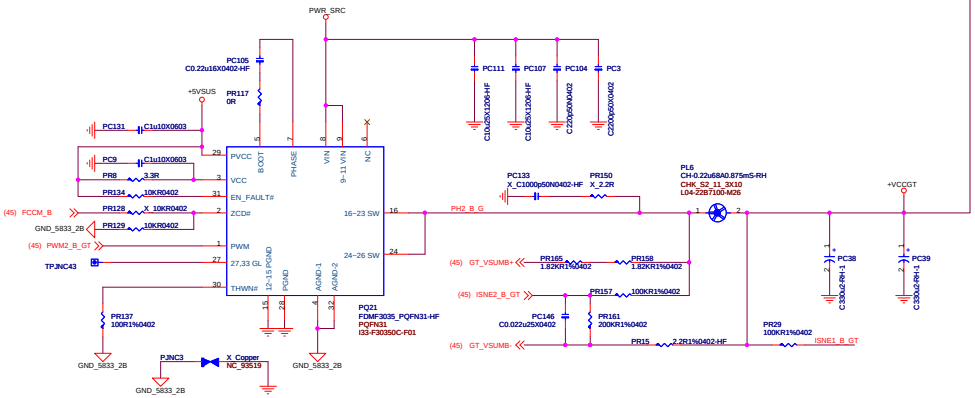



**+VCC_CORE**
Voltage = Dynamic voltage
Current = Iccmax 68A(<10mS)
OCP(typi) = 81A




**+VCCGT**
Voltage = Dynamic voltage
Current = Iccmax 55A(<10mS)
OCP(typi) = 66A




| | | |
|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | |
| Title | Skylake VCore/VCCGT | |
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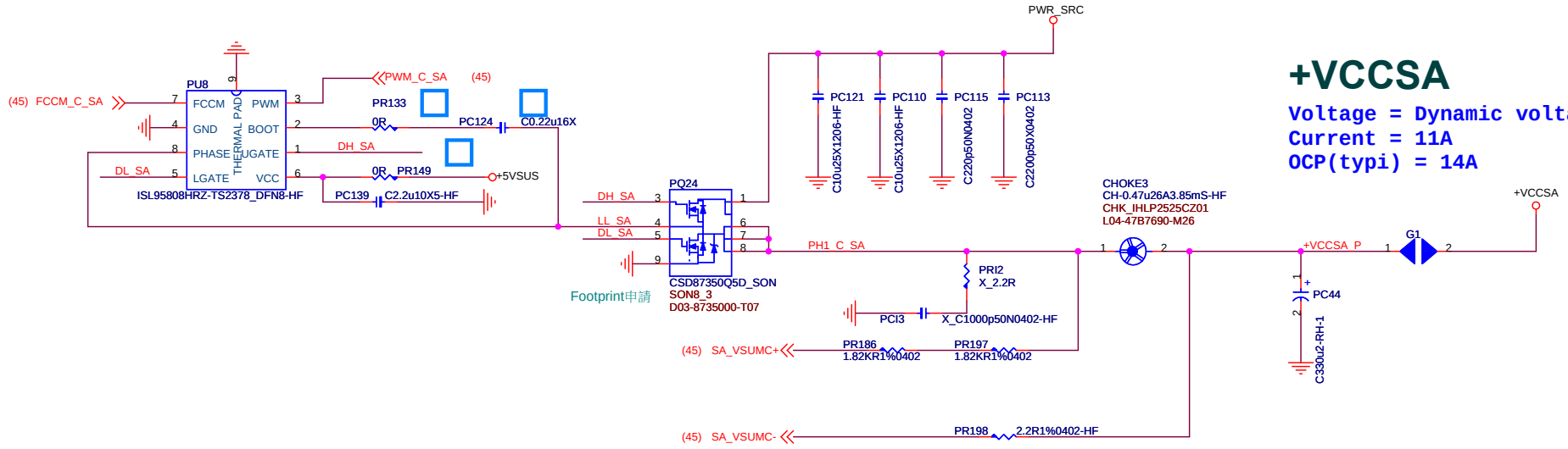
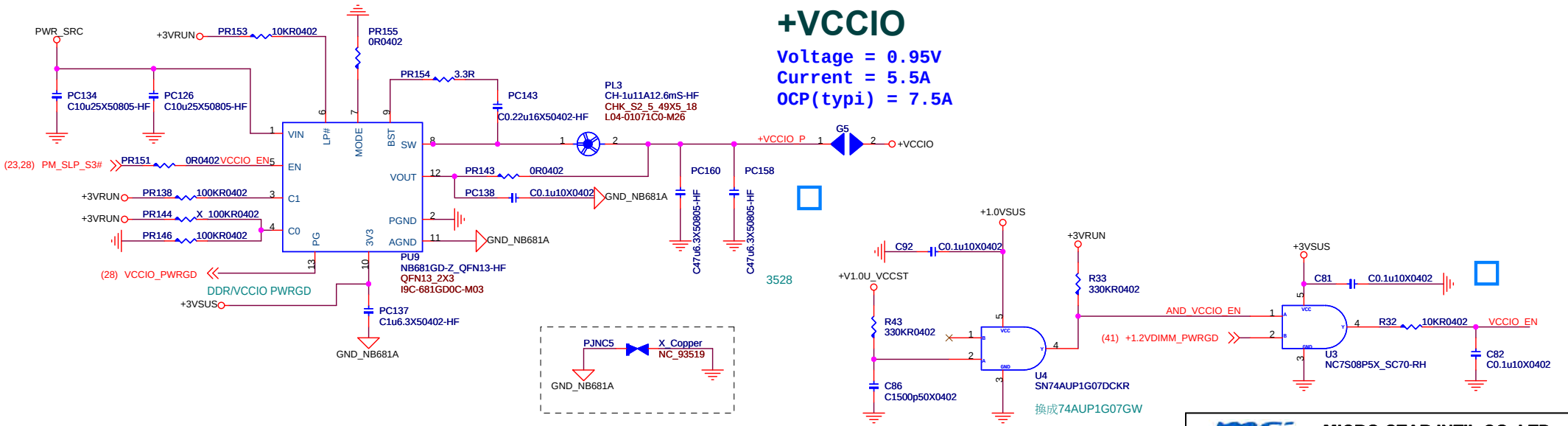



# +VCCSA

**Voltage = Dynamic voltage**
**Current = 11A**
**OCP(typi) = 14A**




# +VCCIO

**Voltage = 0.95V**
**Current = 5.5A**
**OCP(typi) = 7.5A**

| | | | |
|---|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | | |
| Title: Skylake VCCSA/VCCIO | | | |
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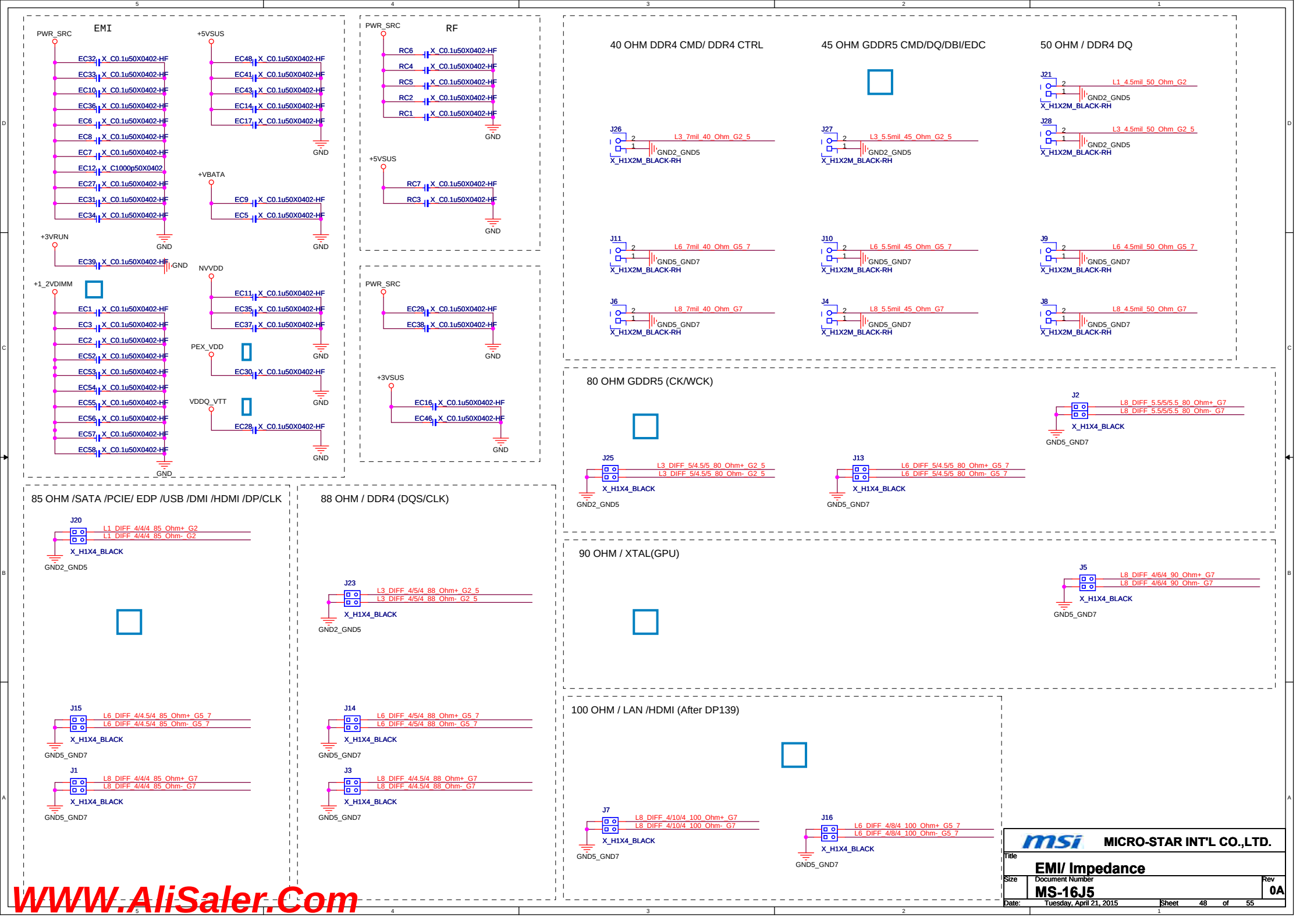

## CPU/GPU Holes

MCPU4 H_R276D169_PB — GND X_CPU_HOLE
MCPU2 H_R276D169_PB — GND X_CPU_HOLE
MCPU3 H_R276D169_PB — GND X_CPU_HOLE
MCPU1 H_R276D169_PB — GND X_CPU_HOLE
MGPU2 H_R276D169_PB — GND X_CPU_HOLE
MGPU4 H_R276D169_PB — GND X_CPU_HOLE
MGPU1 H_R276D169_PB — GND X_CPU_HOLE
MGPU3 H_R276D169_PB — GND X_CPU_HOLE

## OD 2.3

MH7 H_R197D118_PT X_ME_SCREW HOLE
MH4 H_R197D118_PT X_ME_SCREW HOLE
修改內徑3mm

MH9 H_R197D91 X_ME_SCREW HOLE
MH5 H_R197D91 X_ME_SCREW HOLE
MH6 H_R197D91 X_ME_SCREW HOLE

FM7 FM18 FM22 FM3 FM17 FM10 FM16 FM13
FM23 FM8 FM9 FM21 FM19 FM20 FM11 FM24
FM2 FM6 FM14 FM1 FM4 FM12 FM15 FM5
X_FM

FM25 FM26 FM27 FM31 FM32 FM33
FM28 FM29 FM30 FM34
X_FM
4/13 新增

Only 16J5

UME3 CPU BKT — CPU BKT — E2M-7810111-A89
UME4 GPU BKT — GPU BKT — 307-6H20211-C22
UME5 CPU MYLAR — CPU MYLAR — E2P-6J11211-Y42

UME7 LED SPONGE — LED SPONGE — E2Y-6J10611-Y42
UME8 LED SPONGE — LED SPONGE — E2Y-6J10611-Y42
UME17 ME_MYLAR — Hide Caps Lock LED_MYLAR — E2Y-6324111-Y42
UME11 HIDE_GAP_MYLAR — HIDE_GAP_MYLAR — E2P-6J11411-Y42

UME1 HDMI Lable — HDMI ROYALTY — Y01-RHDMI03-000
UME12 USB3_CON_MYLAR — MYLAR — E2M-3570611-Y42
UME14 HDMI/DP MYLAR — MYLAR — E2M-3570611-Y42

Only 1795

UME13 MB MYLAR — X_MB MYLAR — E2P-7910311-G40
UME15 SPONGE — X_SPONGE — E2Y-7910211-G40

UME2 BIOS Lable — X_BIOS_LABEL — G51-LA01678-A09
For MP

版邊 內3 / 外8

MH1 H_R197D118_PT X_ME_SCREW HOLE
HOLES_8X8_D3MM_VIA8 MH8 X_8x8
MH3 X_H_R197D118_PT_V3 H_R197D118_PT_V3 — GND
MH2 X_H_R197D118_PT_V3 H_R197D118_PT_V3 — GND

HOLE10 HOLE11 HOLE8 HOLE6 HOLE4 HOLE15 HOLE12 HOLE1
NPTH_80 X_NPTH_80 / npth_98 X_npth_98 / H_NR118D118_1 X_H_NR118D118_1
HOLE14 HOLE3 HOLE2 HOLE7 HOLE5 HOLE13 HOLE9
X_NPTH_80 NPTH_80

PCB1 P30-16J510A-H73
P30-16J510A-H73
Hannstar: P30-16J510A-H73
TRIPOD: P30-16J510A-T53

## Top Spring

PAD7 X_HS-MS1011-RH ATE_C006_106
E23-1011040-CA7
PAD3 X_HS-MS1011-RH ATE_C006_106
PAD2 X_HS-MS1011-RH ATE_C006_106
PAD8 X_HS-MS1011-RH ATE_C006_106
E23-1011040-CA7 E23-1011040-CA7 E23-1011040-CA7

## BOT Spring

PAD4 X_HS-MS1011-RH ATE_C006_106
PAD6 X_HS-MS1011-RH ATE_C006_106
E23-1011040-CA7 E23-1011040-CA7

MICRO-STAR INT'L CO.,LTD.
Title: Screw/ME
Size: Document Number: MS-16J5 Rev: 0A
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