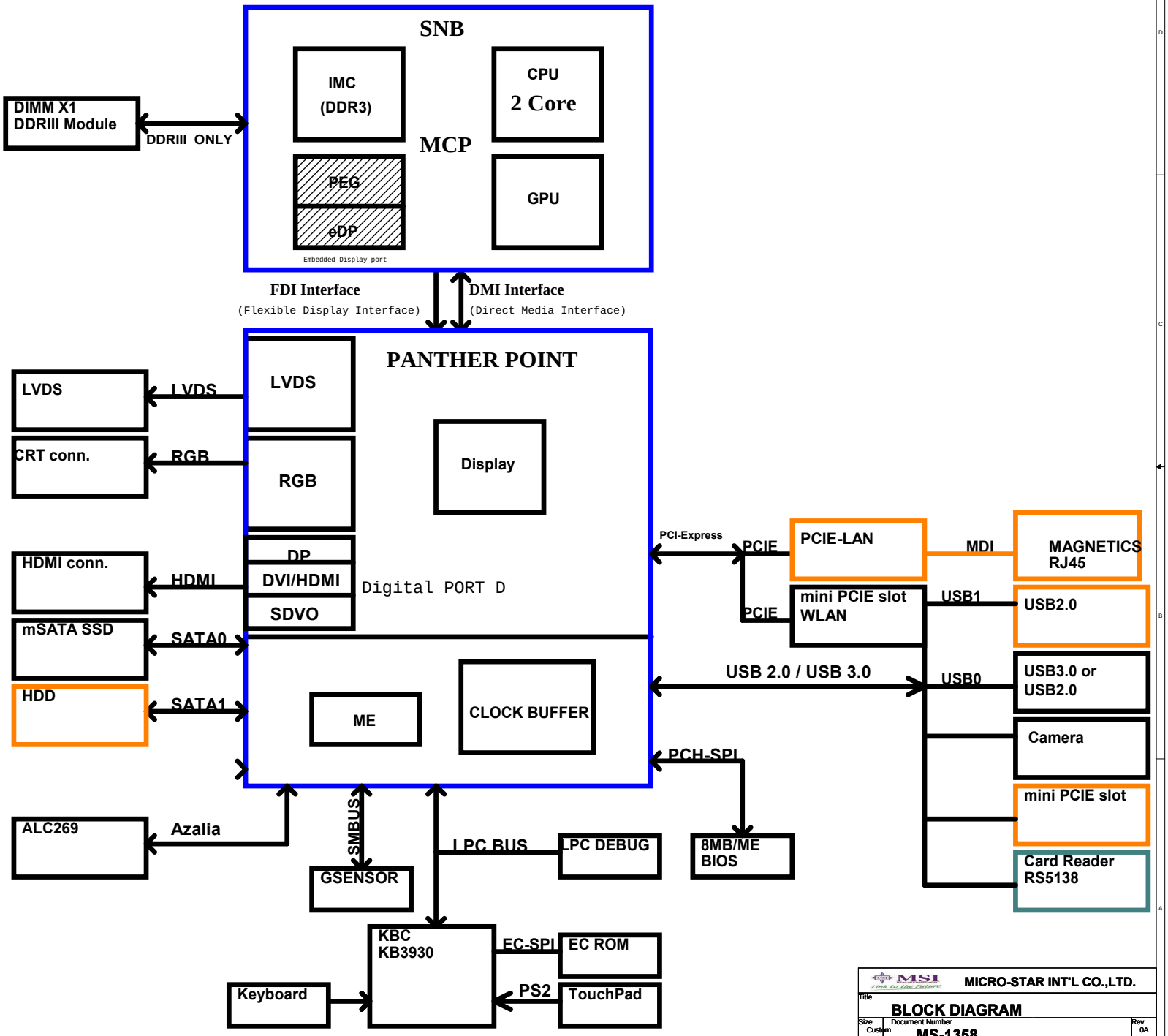
# 1358 VER :0A

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Title: BLOCK DIAGRAM

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| | |
|---|---|
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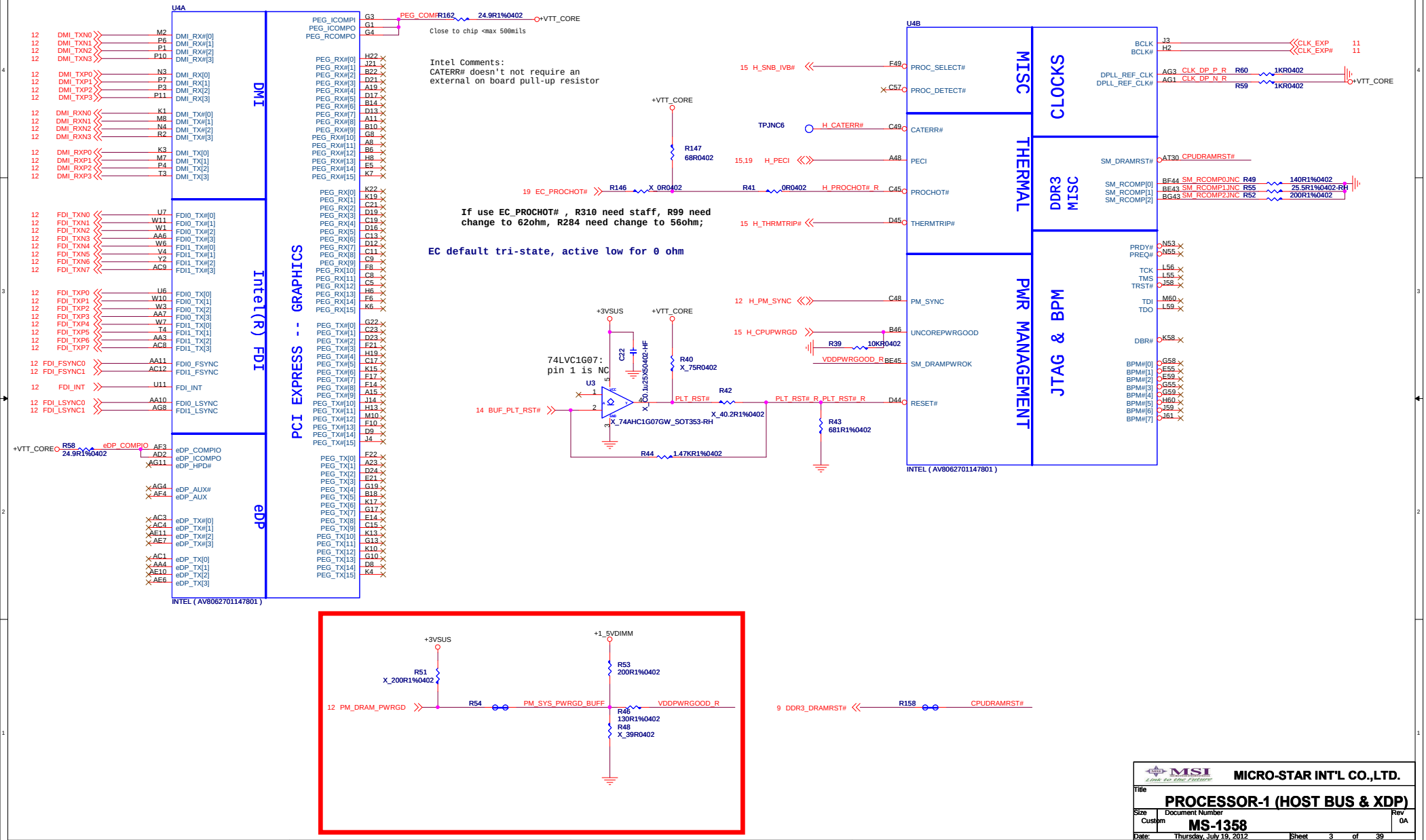
| Title | PLATFORM |
| Size: Custom | Document Number: MS-1358 |
| Rev: 0A | |
| Date: Thursday, July 19, 2012 | Sheet 2 of 39 |

# IVY BRIDGE 2C BGA PROCESSOR (DMI,DP,PEG,FDI)




| | |
|---|---|
| MICRO-STAR INT'L CO.,LTD. | |
| Title | PROCESSOR-1 (HOST BUS & XDP) |
| Size: Custom | Document Number: MS-1358 |
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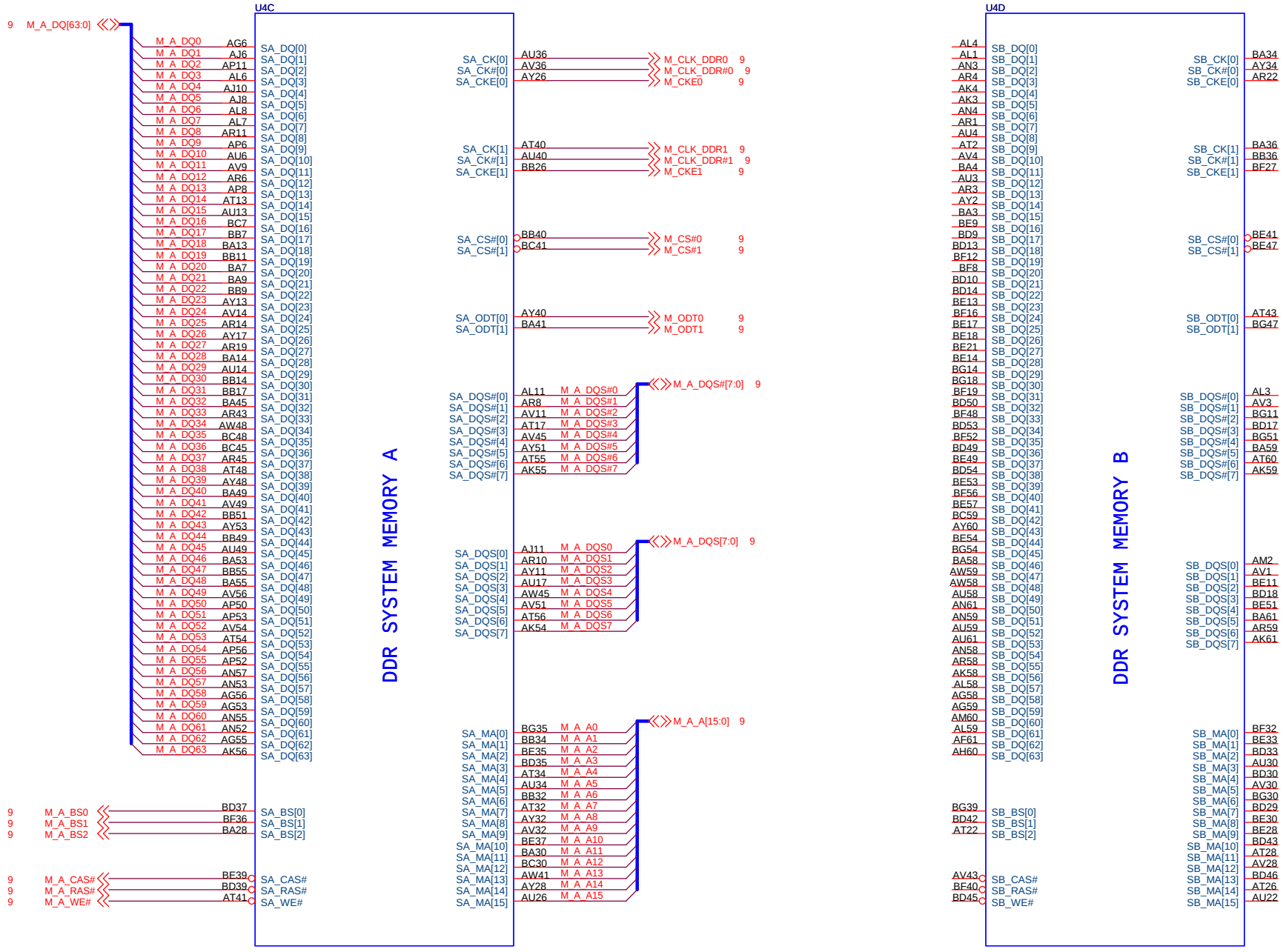
| Date: Thursday, July 19, 2012 | Sheet 3 of 39 |

# IVY BRIDGE 2C BGA PROCESSOR (DDR3)




MICRO-STAR INT'L CO.,LTD.

Title: PROCESSOR-2 (DDR3)

| Size | Document Number | Rev |
|---|---|---|
| Custom | MS-135X | 0A |

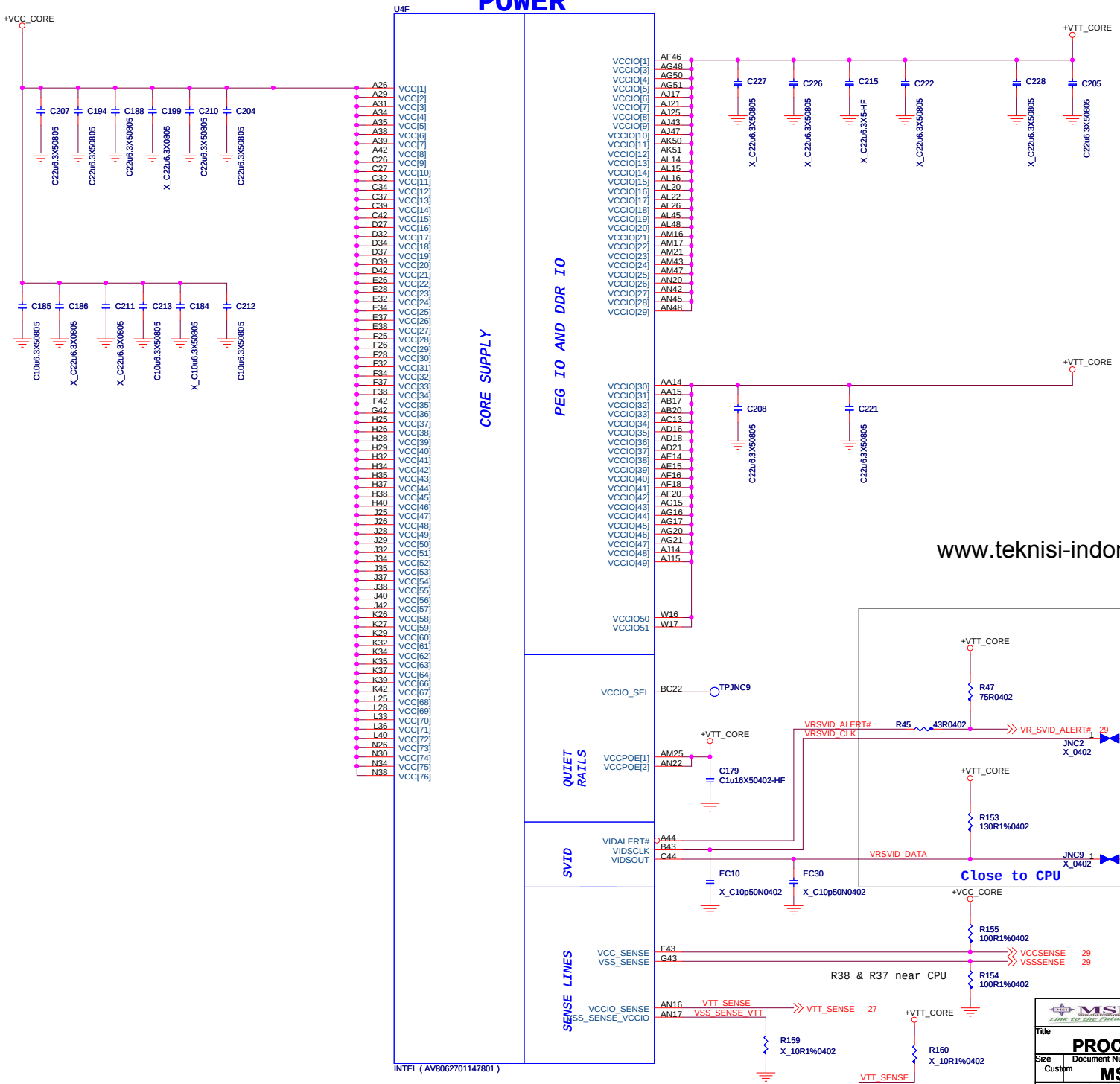
Date: Thursday, July 19, 2012 Sheet 4 of 39

25A

# IVY BRIDGE 2C BGA PROCESSOR (POWER)

For SV CPU

## POWER






MICRO-STAR INT'L CO.,LTD.

Title: PROCESSOR-3 (POWER)

Size: Custom | Document Number: MS-1358 | Rev: 0A

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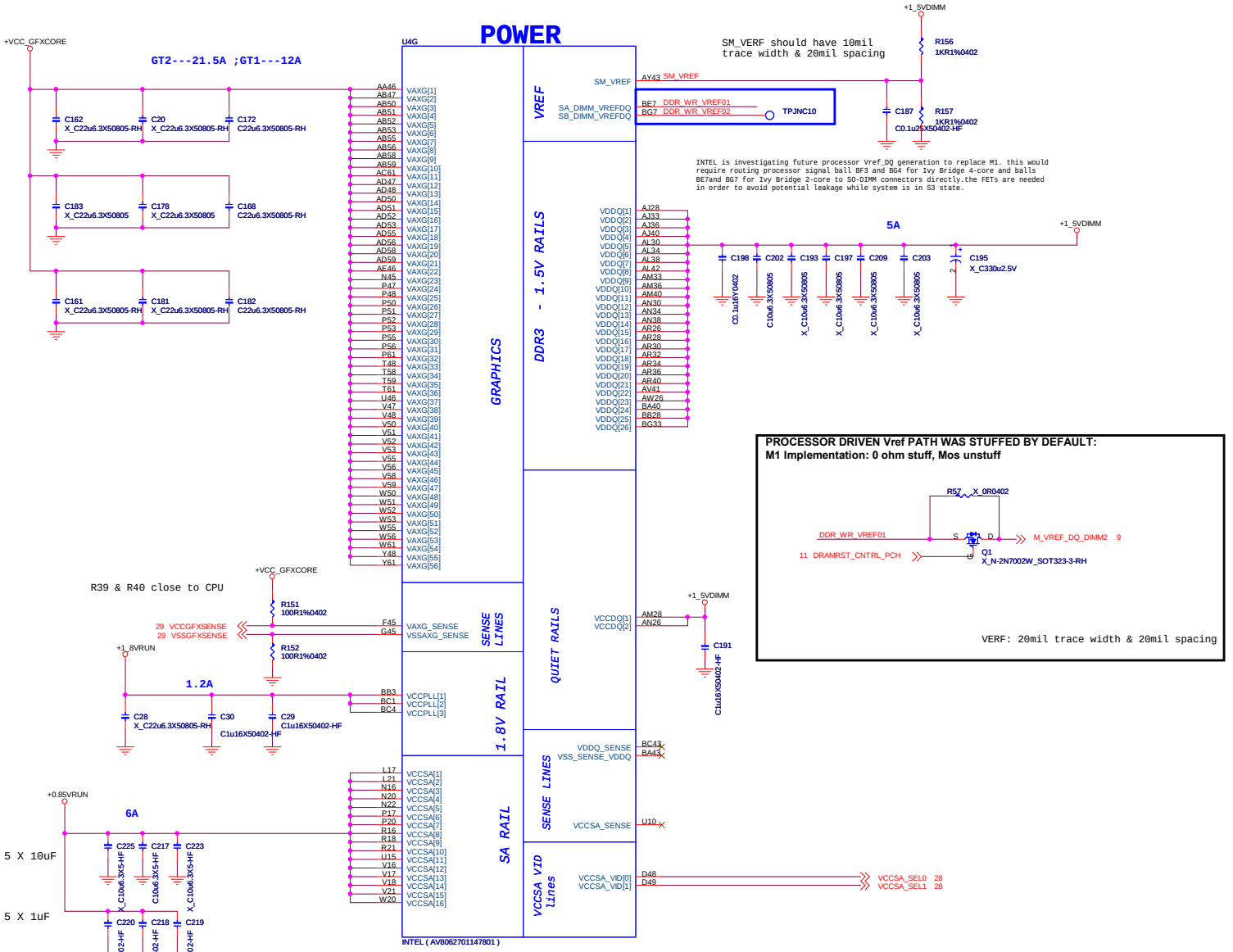
# IVY BRIDGE 2C BGA PROCESSOR (GRAPHICS POWER)




## VCCSA_SEL Voltage Selection Table

| VID[0] Pin C22 | VID[1] Pin C24 | VCCSA Vout | Required for 2011 processor | Required for 2012 processor |
|---|---|---|---|---|
| 0 | 0 | 0.90 V | Yes | Yes |
| 0 | 1 | 0.80 V | Yes | Yes |
| 1 | 0 | 0.725 V | No | Yes |
| 1 | 1 | 0.675 V | No | Yes |

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Title: PROCESSOR-4 (GRAPHICS POWER)

Size: Custom | Document Number: MS-1358 | Rev: 0A

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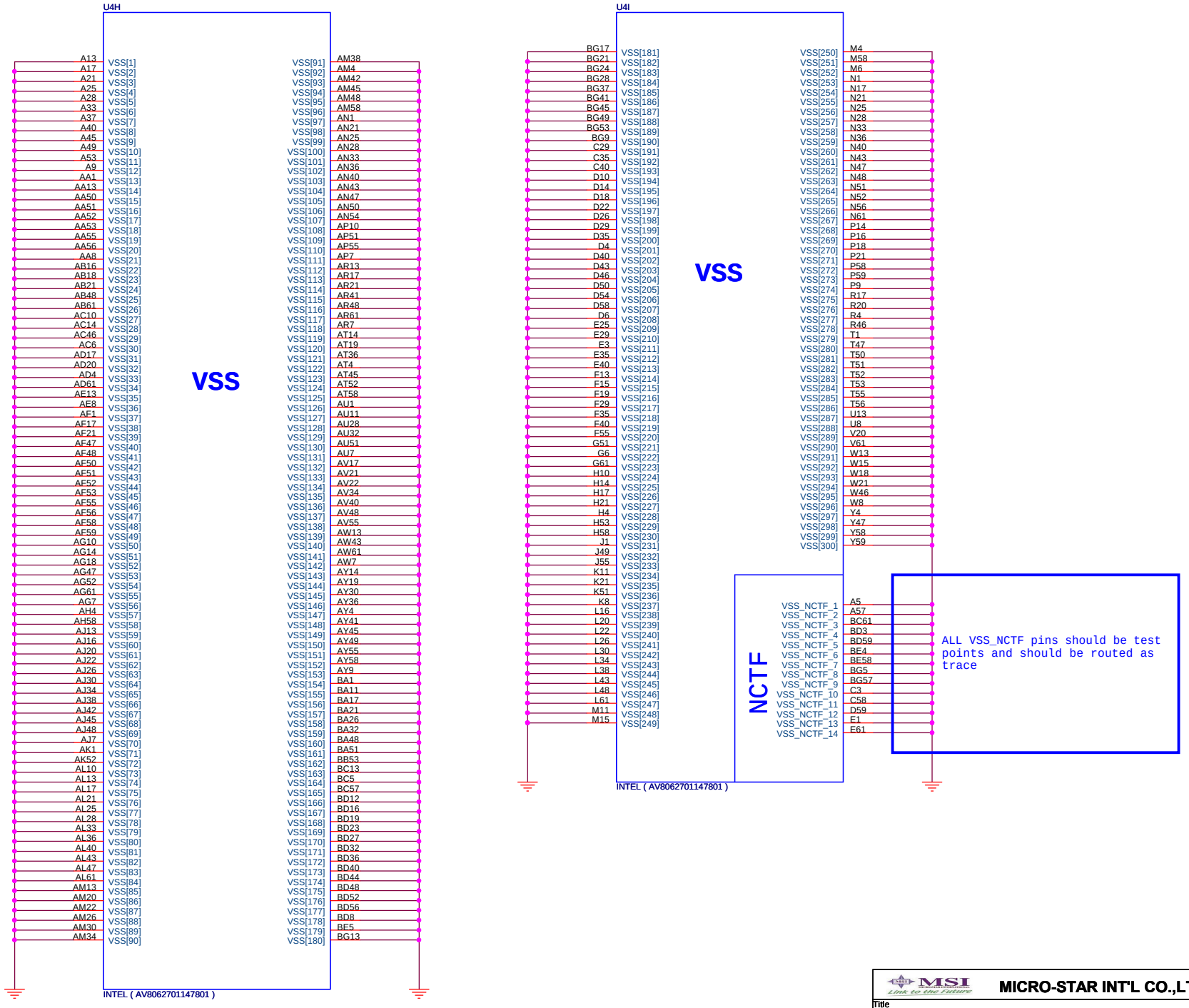
# IVY BRIDGE 2C BGA PROCESSOR (GND)




| | | |
|---|---|---|
| MSI Link to the Future | MICRO-STAR INT'L CO.,LTD. | |
| Title | PROCESSOR-5 (GND) | |
| Size: Custom | Document Number: MS-1358 | Rev: 0A |
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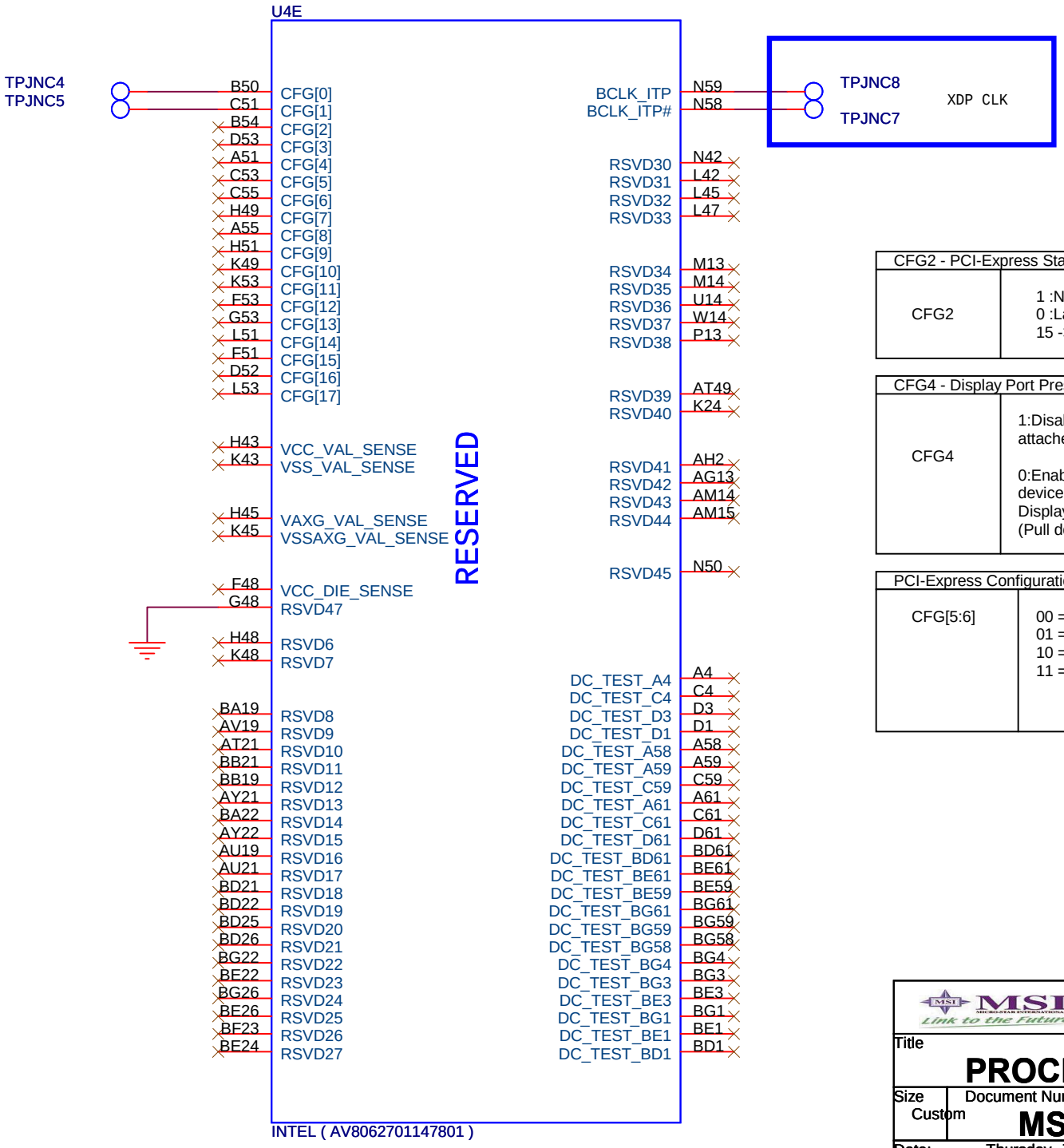
# IVY BRIDGE 2C BGA PROCESSOR (RESERVED)




| CFG2 - PCI-Express Static Lane Reversal | |
|---|---|
| CFG2 | 1 :Normal Operation<br>0 :Lane Numbers Reversed<br>15 -> 0, 14 -> 1, ... |

| CFG4 - Display Port Presence | |
|---|---|
| CFG4 | 1:Disabled; No Physical Display Port attached to Embedded Display Port (NC in DG)<br><br>0:Enabled; An external Display Port device is connected to the Embedded Display Port<br>(Pull down to GND through a 1K ± 5% resistor) |

| PCI-Express Configuration Select | |
|---|---|
| CFG[5:6] | 00 = 1 x 8, 2 x 4 PCI Express<br>01 = reserved<br>10 = 2 x 8 PCI Express<br>11 = 1 x 16 PCI Express (Default) |

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Title: PROCESSOR-6 (RESERVE)

| Size | Document Number | Rev |
|---|---|---|
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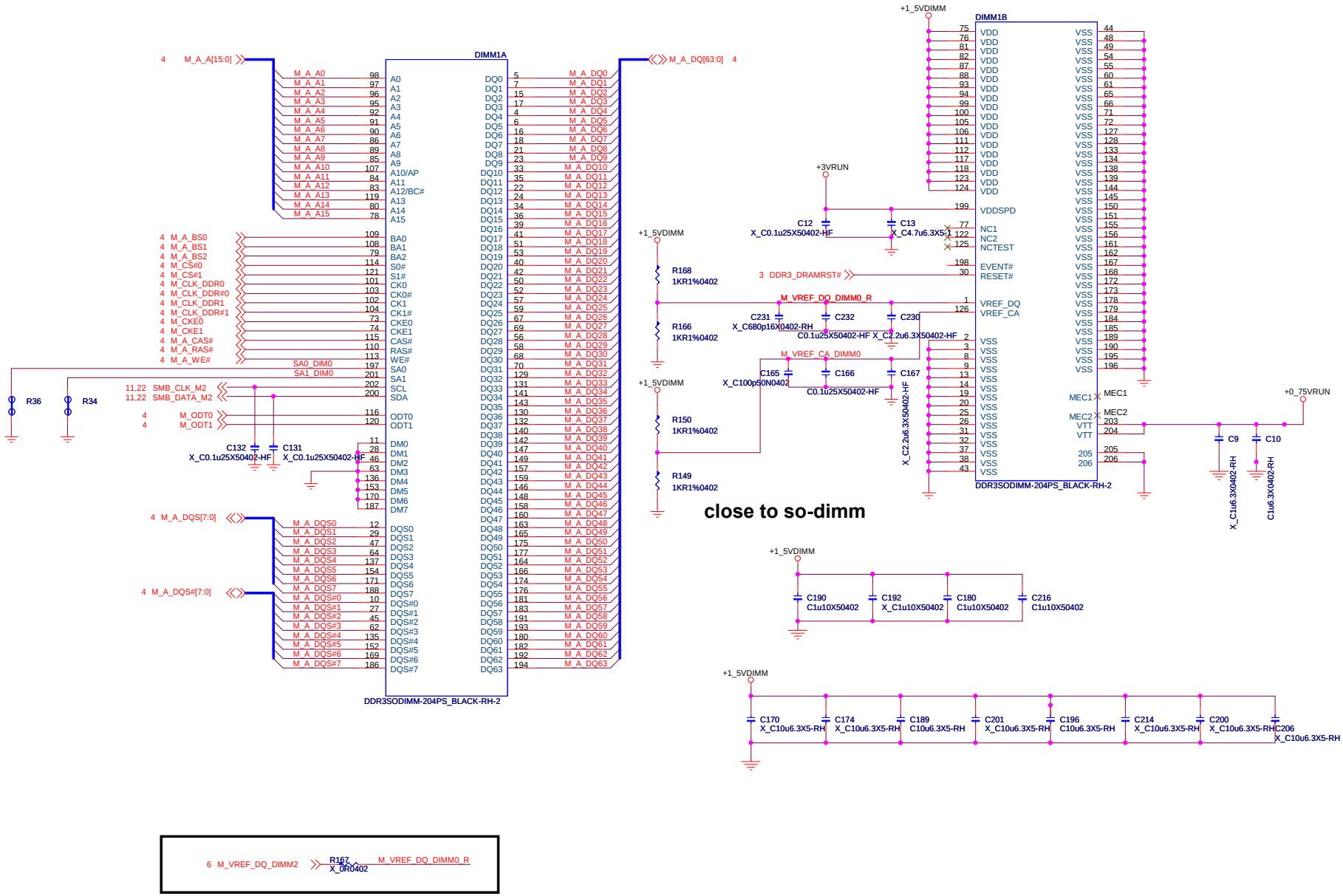
# SODIMM#A




6 M_VREF_DQ_DIMM2 → R167 X_0R0402 → M_VREF_DQ_DIMM0_R

| | |
|---|---|
| MICRO-STAR INT'L CO.,LTD. | |
| Title | DDR3 SODIMM0 |
| Size | A3 |
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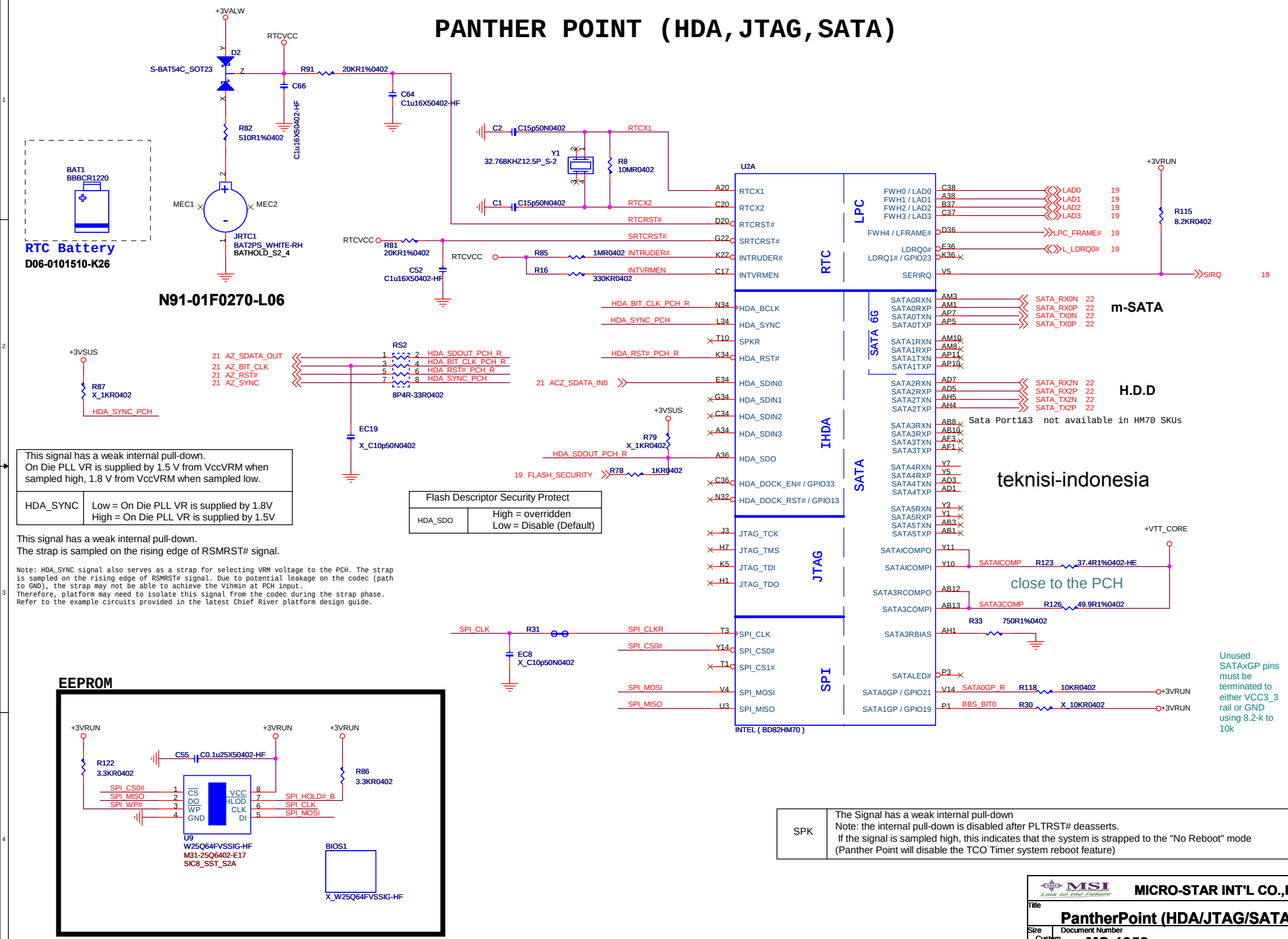
# PANTHER POINT (HDA,JTAG,SATA)




| This signal has a weak internal pull-down.<br>On Die PLL VR is supplied by 1.5 V from VccVRM when sampled high, 1.8 V from VccVRM when sampled low. | |
|---|---|
| HDA_SYNC | Low = On Die PLL VR is supplied by 1.8V<br>High = On Die PLL VR is supplied by 1.5V |

This signal has a weak internal pull-down.
The strap is sampled on the rising edge of RSMRST# signal.

Note: HDA_SYNC signal also serves as a strap for selecting VRM voltage to the PCH. The strap is sampled on the rising edge of RSMRST# signal. Due to potential leakage on the codec (path to GND), the strap may not be able to achieve the Vihmin at PCH input.
Therefore, platform may need to isolate this signal from the codec during the strap phase.
Refer to the example circuits provided in the latest Chief River platform design guide.

| Flash Descriptor Security Protect | |
|---|---|
| HDA_SDO | High = overridden<br>Low = Disable (Default) |

## EEPROM




| SPK | The Signal has a weak internal pull-down<br>Note: the internal pull-down is disabled after PLTRST# deasserts.<br>If the signal is sampled high, this indicates that the system is strapped to the "No Reboot" mode (Panther Point will disable the TCO Timer system reboot feature) |
|---|---|

MICRO-STAR INT'L CO.,LTD.

| Title | PantherPoint (HDA/JTAG/SATA) | |
|---|---|---|
| Size: Custom | Document Number: MS-1358 | Rev: 0A |
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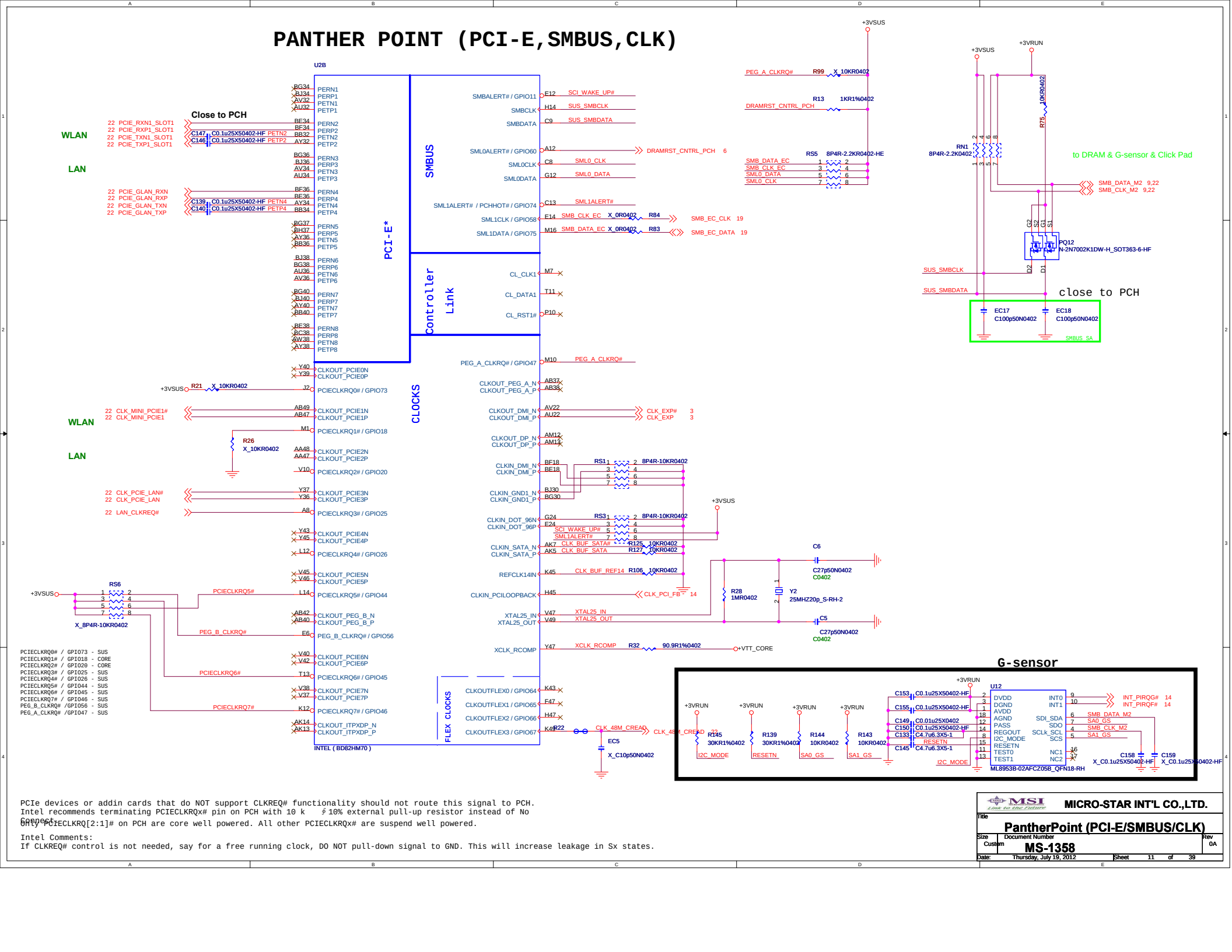
# PANTHER POINT (PCI-E,SMBUS,CLK)




PCIe devices or addin cards that do NOT support CLKREQ# functionality should not route this signal to PCH.
Intel recommends terminating PCIECLKRQx# pin on PCH with 10 k ± 10% external pull-up resistor instead of No Connect.
Only PCIECLKRQ[2:1]# on PCH are core well powered. All other PCIECLKRQx# are suspend well powered.

Intel Comments:
If CLKREQ# control is not needed, say for a free running clock, DO NOT pull-down signal to GND. This will increase leakage in Sx states.

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| | | |
|---|---|---|
| Title | PantherPoint (PCI-E/SMBUS/CLK) | |
| Size: Custom | Document Number: MS-1358 | Rev: 0A |
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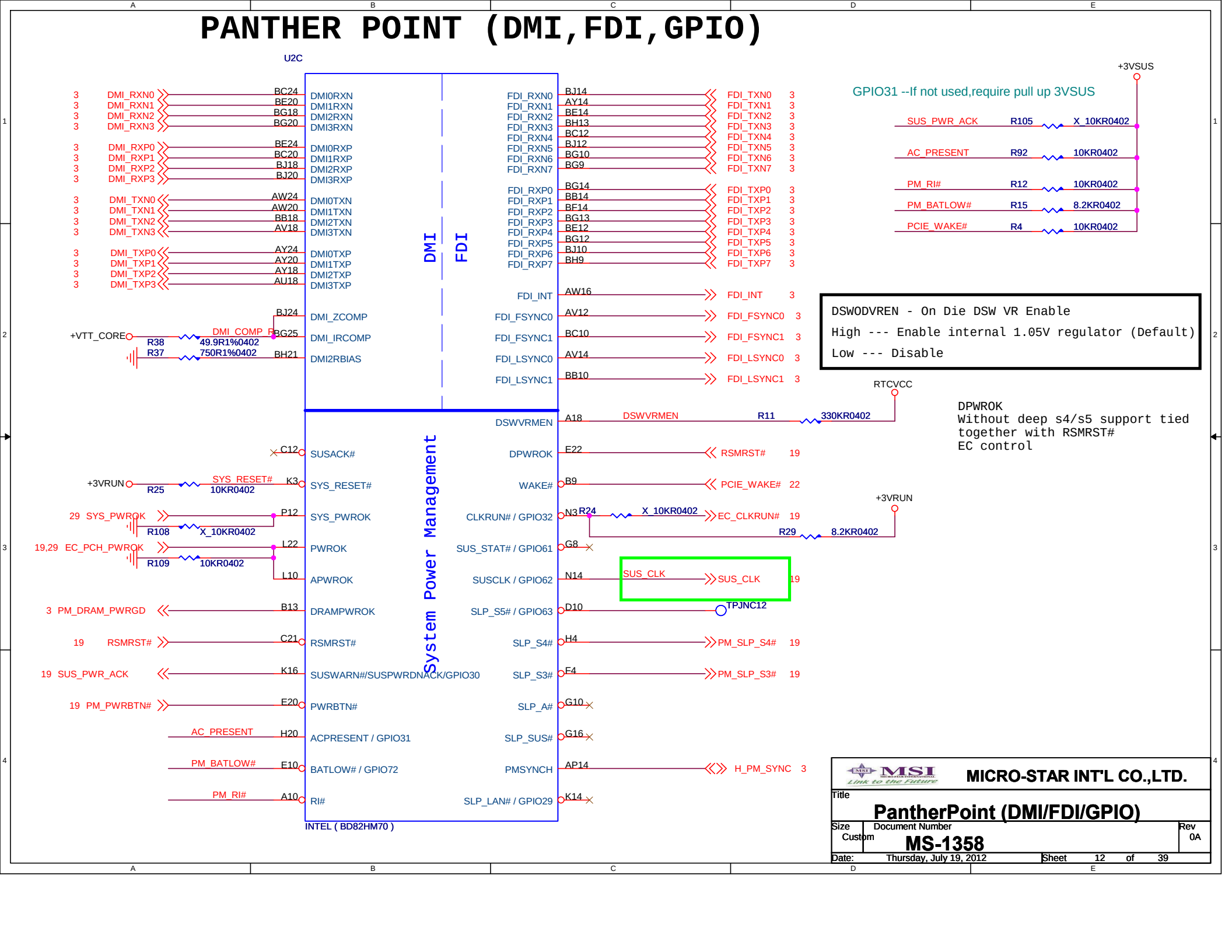
# PANTHER POINT (DMI,FDI,GPIO)




| | |
|---|---|
| Title | PantherPoint (DMI/FDI/GPIO) |
| Size | Custom |
| Document Number | MS-1358 |
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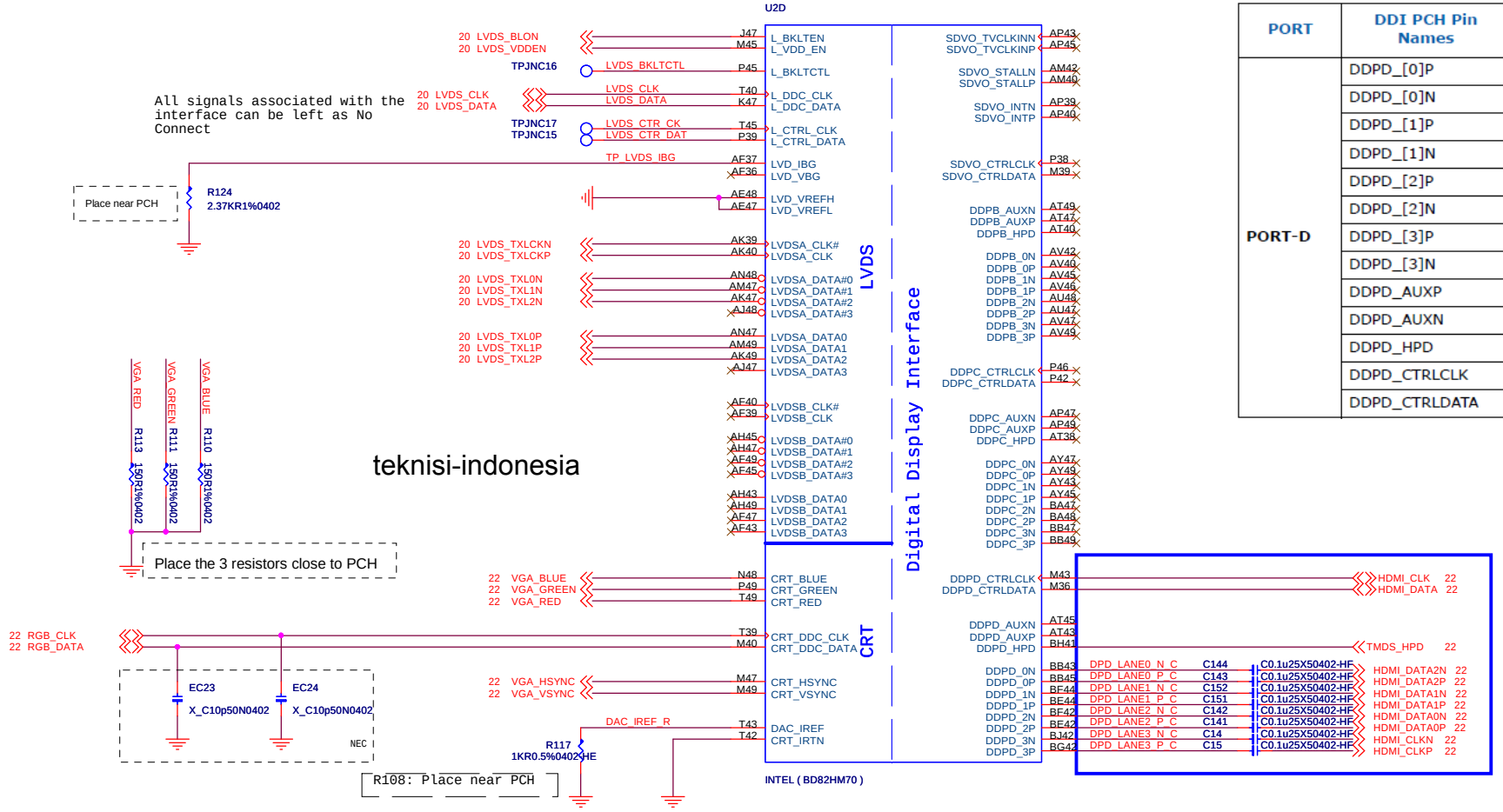
# PANTHER POINT (LVDS,DDI)




| PORT | DDI PCH Pin Names | HDMI/DVI Mapping |
|---|---|---|
| PORT-D | DDPD_[0]P | TMDSD_DATA2 |
| | DDPD_[0]N | TMDSD_DATA2# |
| | DDPD_[1]P | TMDSD_DATA1 |
| | DDPD_[1]N | TMDSD_DATA1# |
| | DDPD_[2]P | TMDSD_DATA0 |
| | DDPD_[2]N | TMDSD_DATA0# |
| | DDPD_[3]P | TMDSD_CLK |
| | DDPD_[3]N | TMDSD_CLK# |
| | DDPD_AUXP | NA |
| | DDPD_AUXN | NA |
| | DDPD_HPD | HDMID_HPD |
| | DDPD_CTRLCLK | HDMID_CTRLCLK |
| | DDPD_CTRLDATA | HDMID_CTRLDATA |

| | |
|---|---|
| MICRO-STAR INT'L CO.,LTD. | |
| Title | PantherPoint (LVDS/DDI) |
| Size: Custom | Document Number: MS-1358 |
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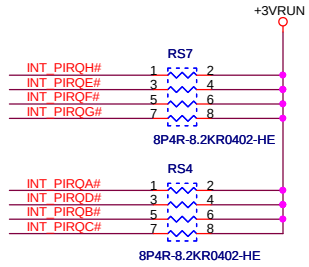
# PANTHER POINT (PCI,USB,NVRAM)

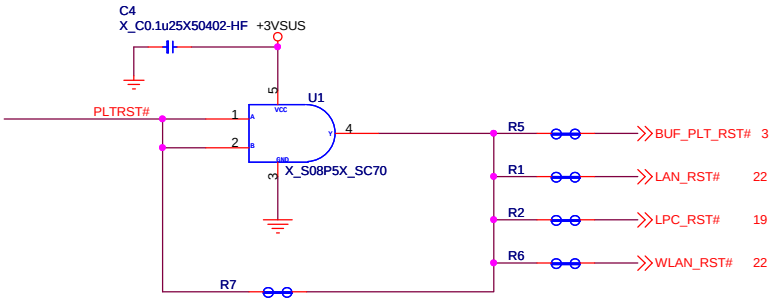


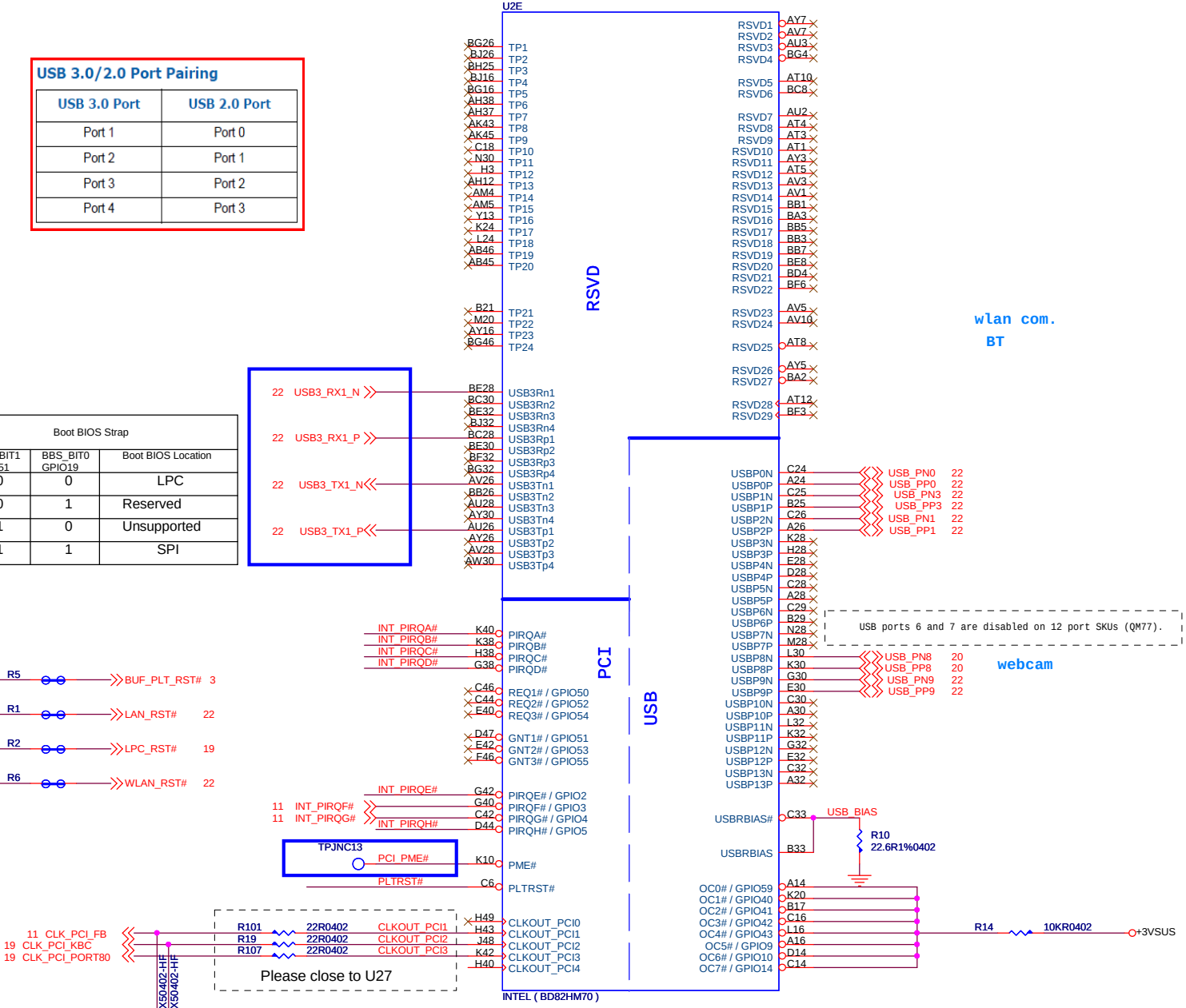

**USB 3.0/2.0 Port Pairing**

| USB 3.0 Port | USB 2.0 Port |
|---|---|
| Port 1 | Port 0 |
| Port 2 | Port 1 |
| Port 3 | Port 2 |
| Port 4 | Port 3 |

| A16 swap override Strap/Top-Block Swap Override jumper | |
|---|---|
| GNT#3 | Low = A16 swap override/Top-Block Swap Override enabled<br>High = Default |

| Boot BIOS Strap | | |
|---|---|---|
| BBS_BIT1 GPIO51 | BBS_BIT0 GPIO19 | Boot BIOS Location |
| 0 | 0 | LPC |
| 0 | 1 | Reserved |
| 1 | 0 | Unsupported |
| 1 | 1 | SPI |




| | | | |
|---|---|---|---|
| MSI Link to the Future | MICRO-STAR INT'L CO.,LTD. | | |
| Title | PantherPoint (PCI/USB/NVRAM) | | |
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# PANTHER POINT (GPIO,VSS_NCTF,RSVD)

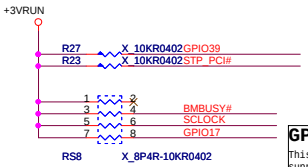
GPIO0 & 6 & 16 & 17 & 22 & 34 & 38 & 48 --If not used,require pull up 3VRUN

GPIO57 --If not used,require pull up 3VSUS

GPIO15--Not support AMT,Transport Layer Security Disable(High is support TLS,internal pull-down)

GPIO27 is deep S4 & S5 weak up event,internal pull high.

GPIO35 --Define to EDID Select (If not used,require pull down)




**GPIO15:**

This signal must be pulled up to support Intel RPAT and Intel AMT with TLS. Intel ME configuration parameters also need to be set correctly to enable TLS.

U2F

BMBUSY# / GPIO0 — T7
19 KBSMI# — TACH1 / GPIO1 — A42
TPJNC11 — TACH2 / GPIO6 — H36
19 KBSCI# — TACH3 / GPIO7 — E38
GPIO8 — C10
LAN_PHY_PWR_CTRL / GPIO12 — C4
+3VSUS R20 X_1KR0402 — GPIO15 — C2
TPJNC2 — SATA4GP / GPIO16 — U2
GPIO17 — TACH0 / GPIO17 — D40
SCLOCK — SCLOCK / GPIO22 — T5
GPIO24 — E8
+3VSUS R93 X_10KR0402 DSW_WAKE — GPIO27 — E16
GPIO28 — P8
STP_PCI# — STP_PCI# / GPIO34 — K1
TPJNC14 — GPIO35 — K4
GPIO36 — SATA2GP / GPIO36 — V8
GPIO37 — SATA3GP / GPIO37 — M5
TPJNC1 — SLOAD / GPIO38 — N2
GPIO39 — SDATAOUT0 / GPIO39 — M3
SDATAOUT1 / GPIO48 — V13
TPJNC3 — SATA5GP / GPIO49 / TEMP_ALERT# — V3
+3VSUS R95 X_10KR0402 — GPIO57 — D6

GPIO

TACH4 / GPIO68 — C40
B41 GPIO69 R9 X_10KR0402 +3VRUN — TACH5 / GPIO69
TACH6 / GPIO70 — C41
TACH7 / GPIO71 — A40

CPU/MISC

A20GATE — P4 — H_A20GATE 19
PECI — AU16 PECI R135 X_0R0402 — H_PECI 3,19
RCIN# — P5 — KBRST# 19
PROCPWRGD — AY11 — H_CPUPWRGD 3
THRMTRIP# — AY10 PCH_THRMTRIP#_R R136 390R1%0402 — H_THRMTRIP# 3
INIT3_3V# — T14
DF_TVS — AY1 NV_CLE R134 1KR0402 — H_SNB_IVB# 3

+1_8VRUN
R132 2.2KR0402

TS_VSS1 — AH8
TS_VSS2 — AK11
TS_VSS3 — AH10
TS_VSS4 — AK10
NC_1 — P37

VSS_NCTF_1 — A4
VSS_NCTF_2 — A44
VSS_NCTF_3 — A45
VSS_NCTF_4 — A46
VSS_NCTF_5 — A5
VSS_NCTF_6 — A6
VSS_NCTF_7 — B3
VSS_NCTF_8 — B47
VSS_NCTF_9 — BD1
VSS_NCTF_10 — BD49
VSS_NCTF_11 — BE1
VSS_NCTF_12 — BE49
VSS_NCTF_13 — BF1
VSS_NCTF_14 — BF49

NCTF

VSS_NCTF_15 — BG2
VSS_NCTF_16 — BG48
VSS_NCTF_17 — BH3
VSS_NCTF_18 — BH47
VSS_NCTF_19 — BJ4
VSS_NCTF_20 — BJ44
VSS_NCTF_21 — BJ45
VSS_NCTF_22 — BJ46
VSS_NCTF_23 — BJ5
VSS_NCTF_24 — BJ6
VSS_NCTF_25 — C2
VSS_NCTF_26 — C48
VSS_NCTF_27 — D1
VSS_NCTF_28 — D49
VSS_NCTF_29 — E1
VSS_NCTF_30 — E49
VSS_NCTF_31 — F1
VSS_NCTF_32 — F49

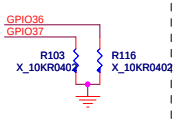
INTEL ( BD82HM70 )

For Ivy Bridge processor only implementation:
Connect DF_TVS signal of the PCH to PROC_SELECT# of the processor through a 1K ± 5% series resistor.
PROC_SELECT# also needs a 2.2K ± 5% pull up resistor to PCH VccDFTERM rail.

Intel Comments:
Reserve 0 ohm option in these pins
pins AH8, AK11, AH10 & AK10) to GND.

| DMI & FDI Termination Voltage | |
|---|---|
| NV_CLE | Set to VSS when LOW |
| | Set to VCC when High |

Since Pin has strap functionality that requires internal pull-down to be sampled at rising PWROK, following guidelines are required to be followed:
"When Used as SATA2GP/SATA3GP for Mechanical Presence detect - Use a weak external pull-up (150K-200 kOhms) to Vcc3_3 OR use 10K external pull-up that is enabled only after PLTRST# de-assertion.
"When Used as GP Input (Pin HW default) - Ensure GPI is not driven high during strap sampling window
"When Unused as GPIO or SATA*GP - Use 8.2K-10K pull-down to ground.

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Title: PantherPoint (GPIO/NCTF/RSVD)

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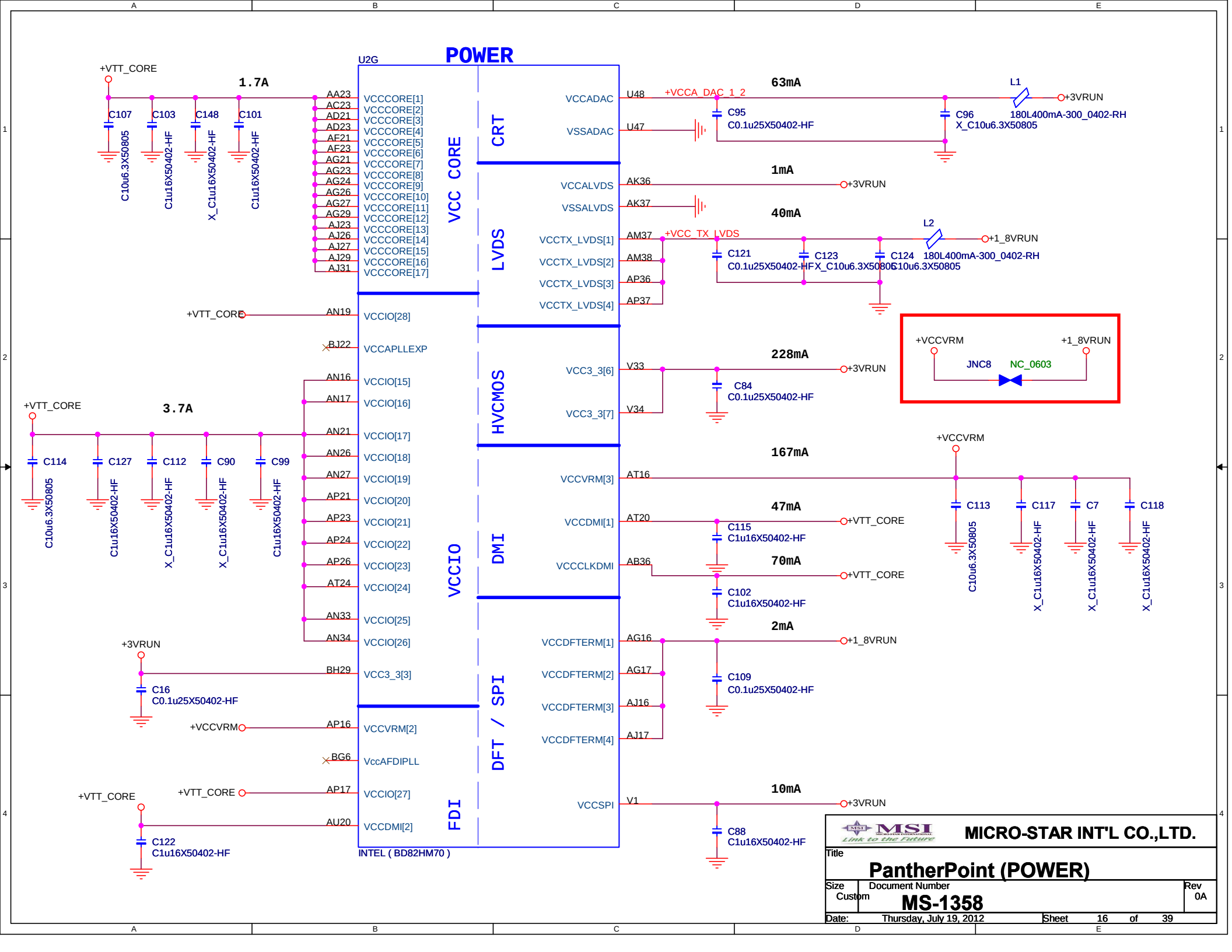
POWER
U2G
VCC CORE
LVDS
HVCMOS
VCCIO
DMI
DFT / SPI
FDI
CRT
INTEL ( BD82HM70 )
+VTT_CORE
1.7A
3.7A
63mA
1mA
40mA
228mA
167mA
47mA
70mA
2mA
10mA
+VCCA_DAC_1_2
+VCC_TX_LVDS
+VCCVRM
+1_8VRUN
+3VRUN
JNC8
NC_0603
L1
L2
180L400mA-300_0402-RH
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MS-1358
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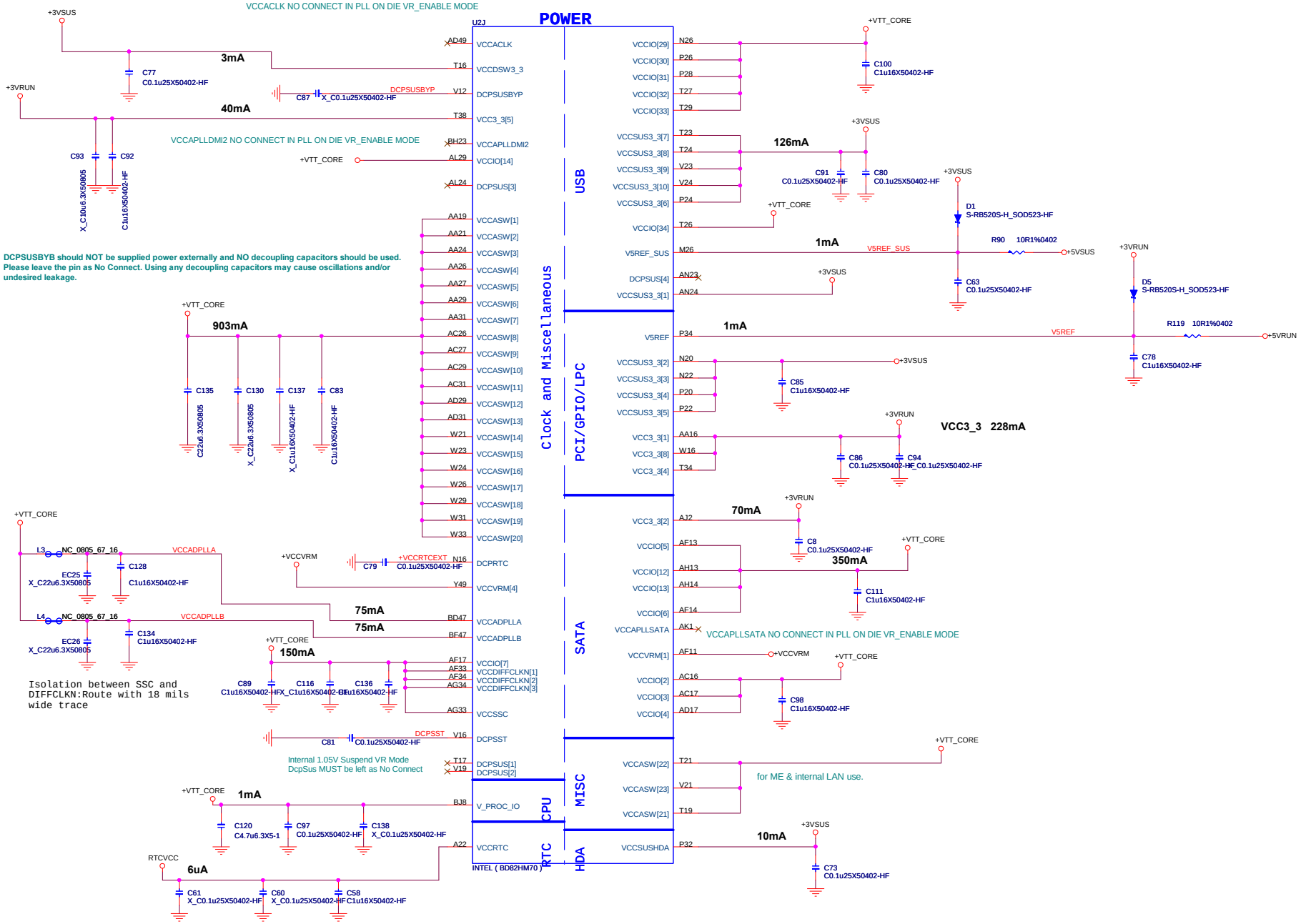
# PANTHER POINT (POWER)




| | |
|---|---|
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| Title | PantherPoint (POWER) |
| Size | Custom |
| Document Number | MS-1358 |
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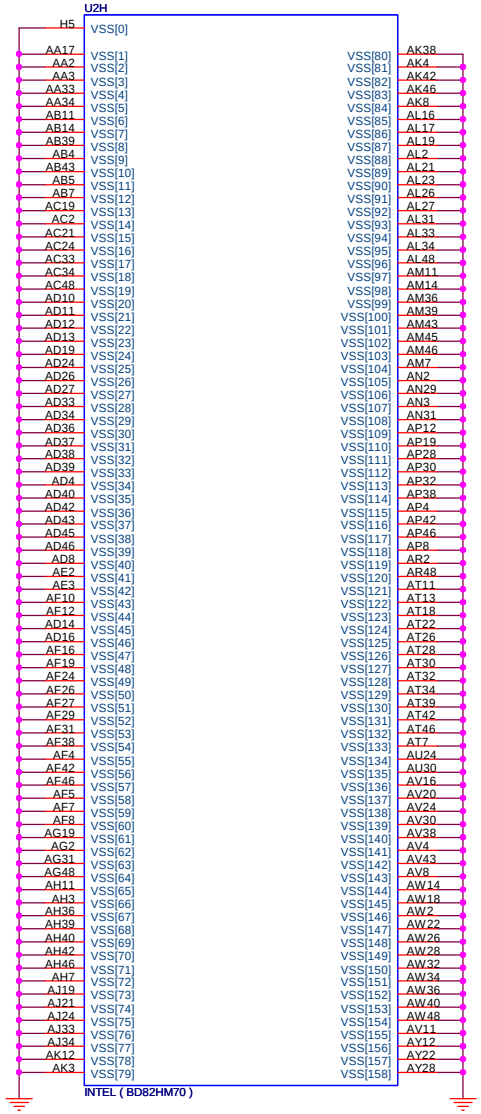
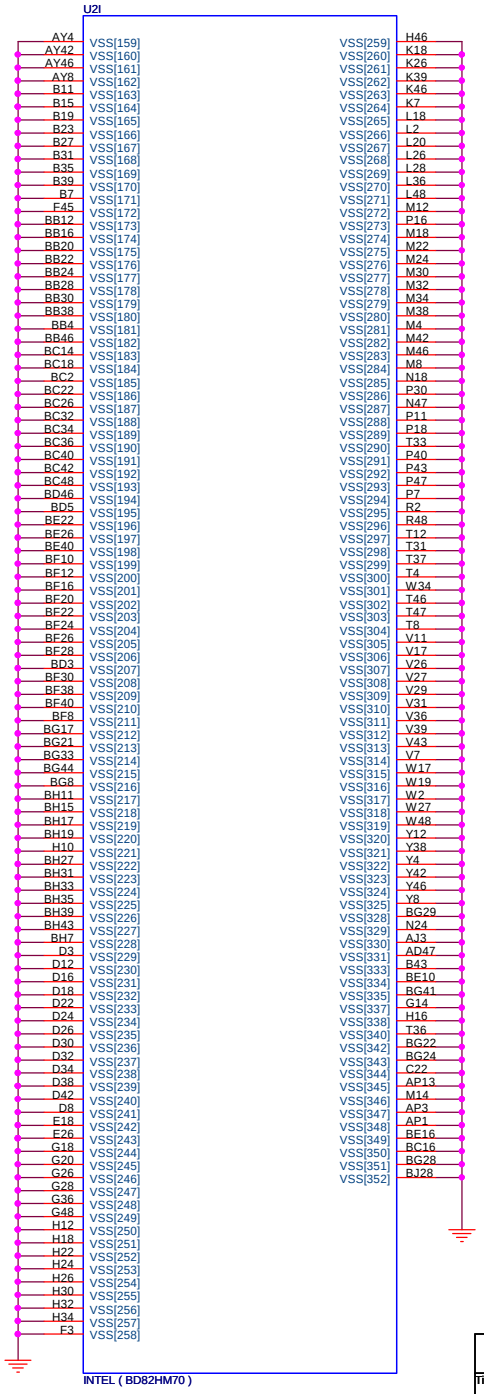
# PANTHER POINT (GND)

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Title: PantherPoint (GND)

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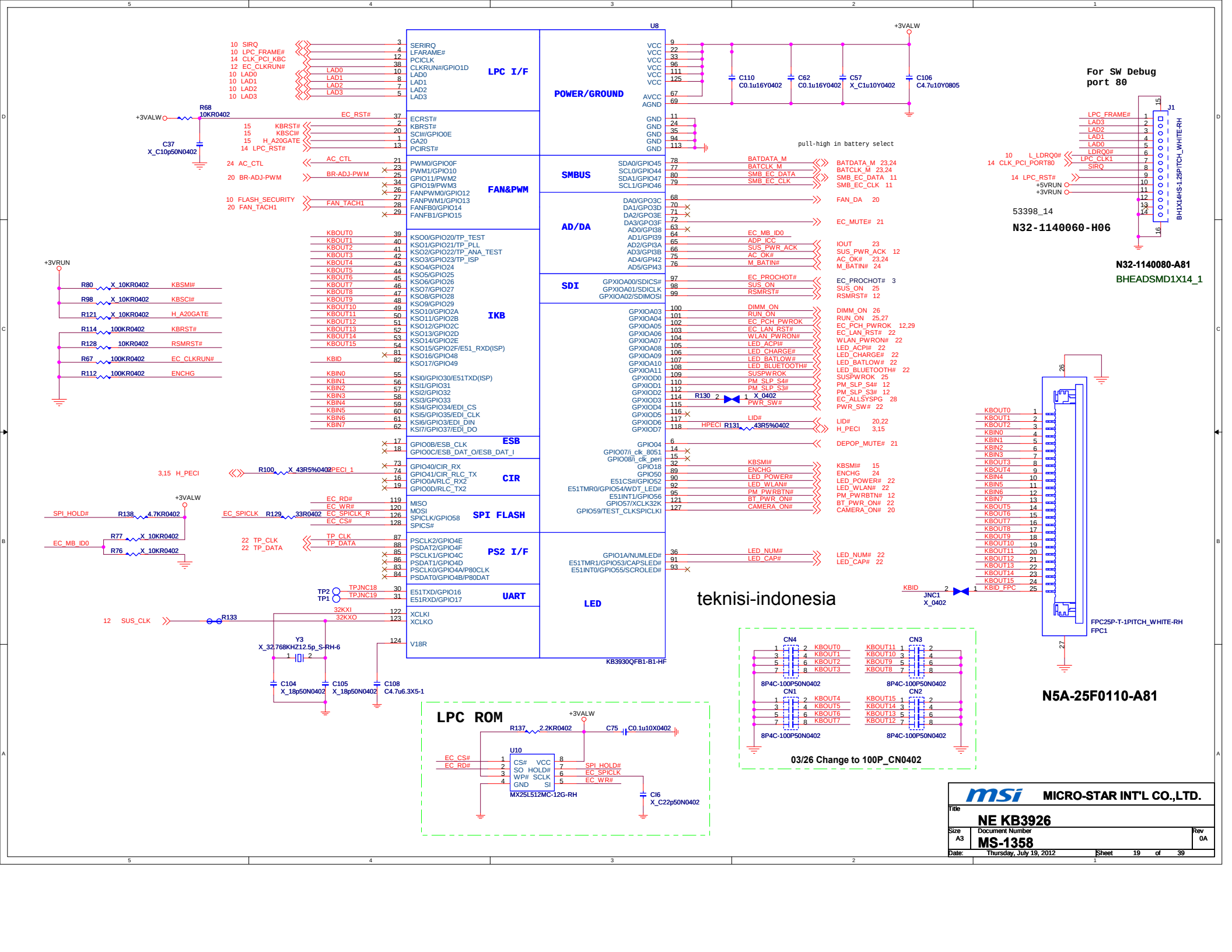
U8
LPC I/F
SERIRQ
LFRAME#
PCICLK
CLKRUN#/GPIO1D
LAD0
LAD1
LAD2
LAD3
POWER/GROUND
VCC
AVCC
AGND
GND
ECRST#
KBRST#
SCI#/GPIO0E
GA20
PCIRST#
FAN&PWM
PWM0/GPIO0F
PWM1/GPIO10
GIO11/PWM2
GIO19/PWM3
FANPWM0/GPIO12
FANPWM1/GPIO13
FANFB0/GPIO14
FANFB1/GPIO15
SMBUS
SDA0/GPIO45
SCL0/GPIO44
SDA1/GPIO47
SCL1/GPIO46
AD/DA
DA0/GPO3C
DA1/GPO3D
DA2/GPO3E
DA3/GPO3F
AD0/GPI38
AD1/GPI39
AD2/GPI3A
AD3/GPI3B
AD4/GPI42
AD5/GPI43
SDI
GPXIOA00/SDICS#
GPXIOA01/SDICLK
GPXIOA02/SDIMOSI
IKB
KSO0/GPIO20/TP_TEST
KSO1/GPIO21/TP_PLL
KSO2/GPIO22/TP_ANA_TEST
KSO3/GPIO23/TP_ISP
KSO4/GPIO24
KSO5/GPIO25
KSO6/GPIO26
KSO7/GPIO27
KSO8/GPIO28
KSO9/GPIO29
KSO10/GPIO2A
KSO11/GPIO2B
KSO12/GPIO2C
KSO13/GPIO2D
KSO14/GPIO2E
KSO15/GPIO2F/E51_RXD(ISP)
KSO16/GPIO48
KSO17/GPIO49
KSI0/GPIO30/E51TXD(ISP)
KSI1/GPIO31
KSI2/GPIO32
KSI3/GPIO33
KSI4/GPIO34/EDI_CS
KSI5/GPIO35/EDI_CLK
KSI6/GPIO3/EDI_DIN
KSI7/GPIO37/EDI_DO
ESB
GPIO0B/ESB_CLK
GPIO0C/ESB_DAT_O/ESB_DAT_I
CIR
GPIO40/CIR_RX
GPIO41/CIR_RLC_TX
GPIO0A/RLC_RX2
GPIO0D/RLC_TX2
SPI FLASH
MISO
MOSI
SPICLK/GPIO58
SPICS#
PS2 I/F
PSCLK2/GPIO4E
PSDAT2/GPIO4F
PSCLK1/GPIO4C
PSDAT1/GPIO4D
PSCLK0/GPIO4A/P80CLK
PSDAT0/GPIO4B/P80DAT
UART
E51TXD/GPIO16
E51RXD/GPIO17
XCLKI
XCLKO
V18R
LED
GPIO1A/NUMLED#
E51TMR1/GPIO53/CAPSLED#
E51INT0/GPIO55/SCROLED#
KB3930QFB1-B1-HF
+3VALW
+3VRUN
pull-high in battery select
C110 C0.1u16Y0402
C62 C0.1u16Y0402
C57 X_C1u10Y0402
C106 C4.7u10Y0805
C37 X_C10p50N0402
R68 10KR0402
For SW Debug port 80
J1
BH1X14HS-1.25PITCH_WHITE-RH
53398_14
N32-1140060-H06
N32-1140080-A81
BHEADSMD1X14_1
R80 X_10KR0402 KBSMI#
R98 X_10KR0402 KBSCI#
R121 X_10KR0402 H_A20GATE
R114 100KR0402 KBRST#
R128 10KR0402 RSMRST#
R67 100KR0402 EC_CLKRUN#
R112 100KR0402 ENCHG
R100 X_43R5%0402
R130 X_0402
R131 43R5%0402
JNC1 X_0402
FPC25P-T-1PITCH_WHITE-RH
FPC1
N5A-25F0110-A81
R138 4.7KR0402
R77 X_10KR0402
R76 X_10KR0402
R129 33R0402
R133
Y3 X_32.768KHZ12.5p_S-RH-6
C104 X_18p50N0402
C105 X_18p50N0402
C108 C4.7u6.3X5-1
TP2 TPJNC18
TP1 TPJNC19
LPC ROM
R137 2.2KR0402
C75 C0.1u10X0402
U10
MX25L512MC-12G-RH
CI6 X_C22p50N0402
CN4
CN3
CN1
CN2
8P4C-100P50N0402
03/26 Change to 100P_CN0402
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MICRO-STAR INT'L CO.,LTD.
Title
NE KB3926
Size A3
Document Number MS-1358
Rev 0A
Date: Thursday, July 19, 2012
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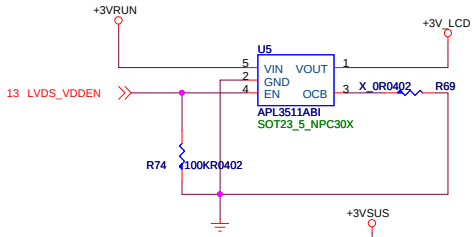
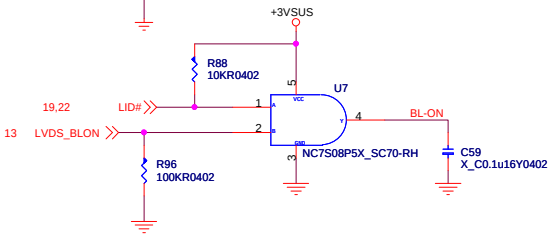
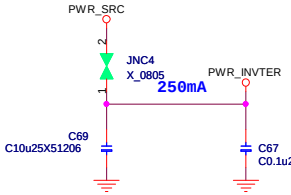
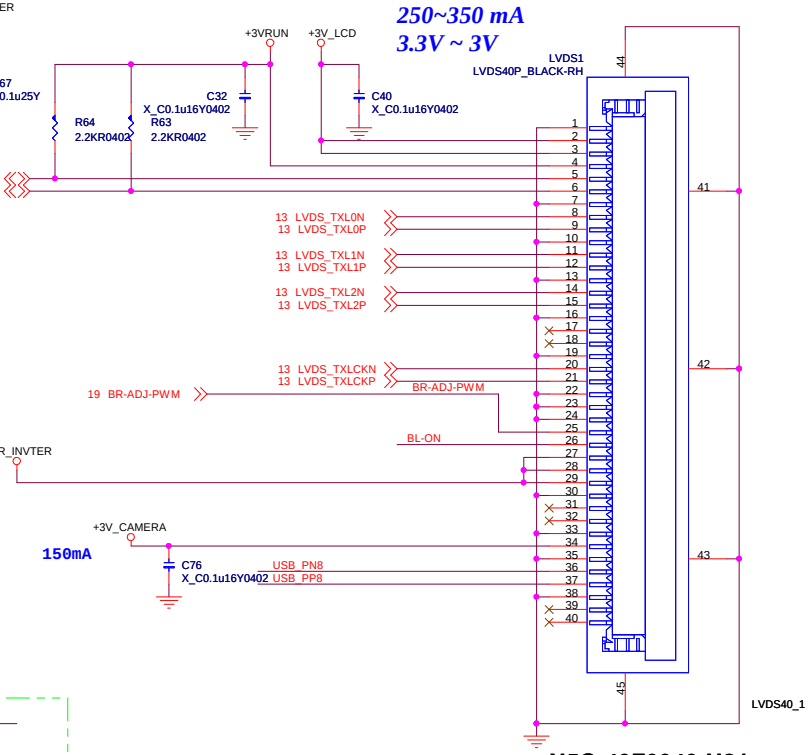
## LVDS POWER



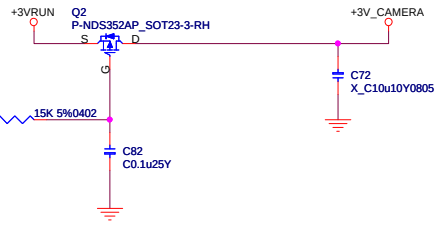



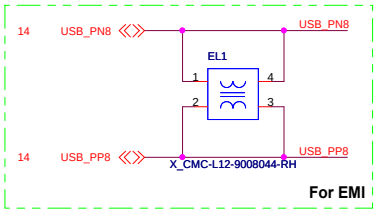



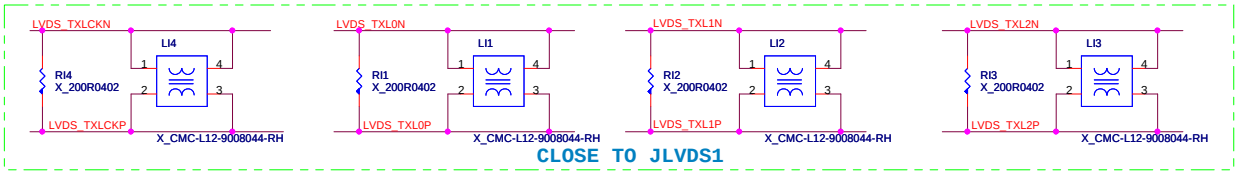




N5Q-40F0040-H21

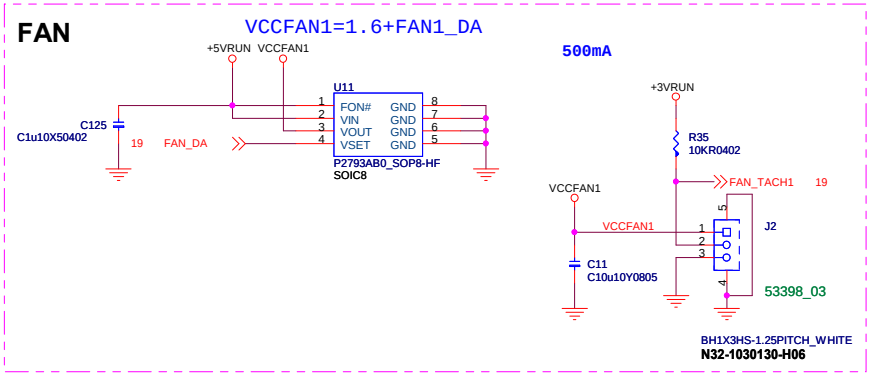
## CAMERA



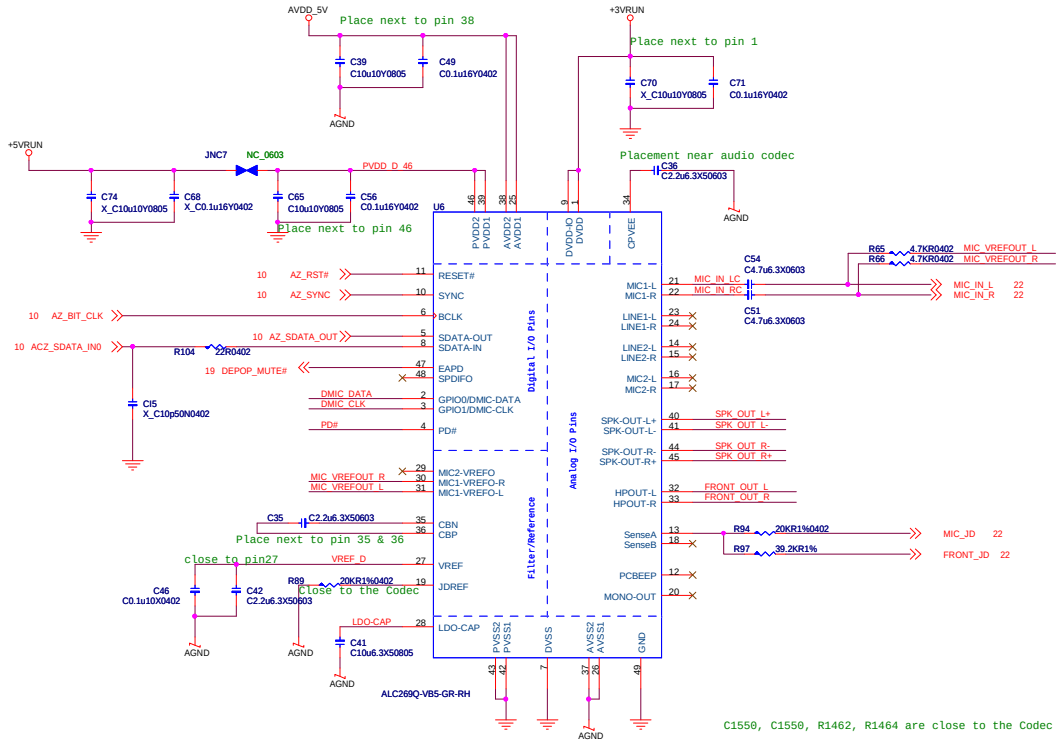



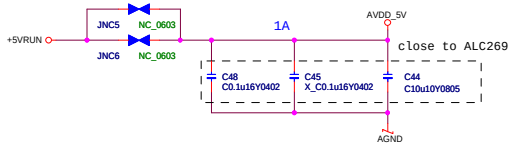

## FAN



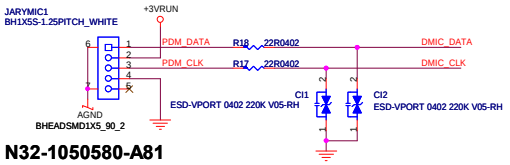

| | | |
|---|---|---|
| msi MICRO-STAR INT'L CO.,LTD. | | |
| Title: LVDS, Camera, BT, FAN | | |
| Size: A3 | Document Number: MS-1358 | Rev: 0A |
| Date: Thursday, July 19, 2012 | Sheet 20 of 39 | |




## POWER ISOLATION (CODEC 5V)

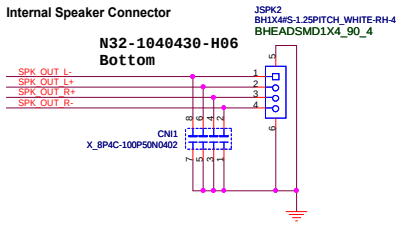



## ARRAY MIC CONN




**N32-1050580-A81**

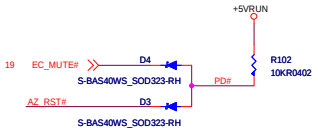
## Internal Speaker Connector



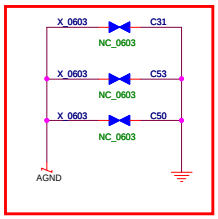

**N32-1040AV0-H06**

4ohm loading---------40 mil trace width
8ohm loading---------20 mil trace width

## simple MUTE








MICRO-STAR INT'L CO.,LTD.

Title: AZALIA CODEC(ALC269)

Size: C | Document Number: MS-1358 | Rev: 0A

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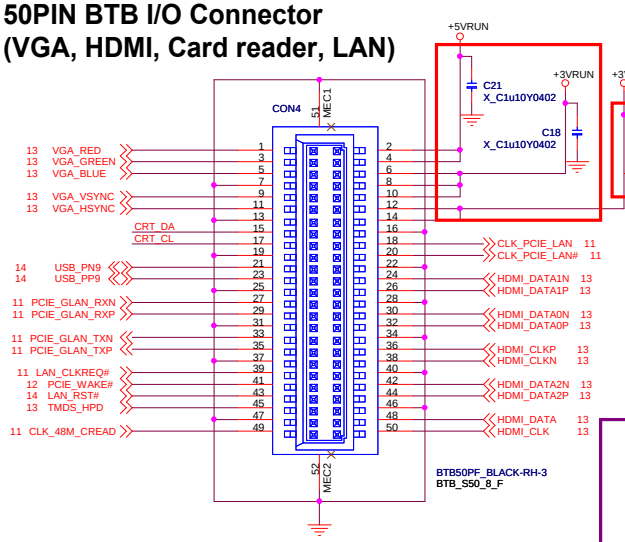
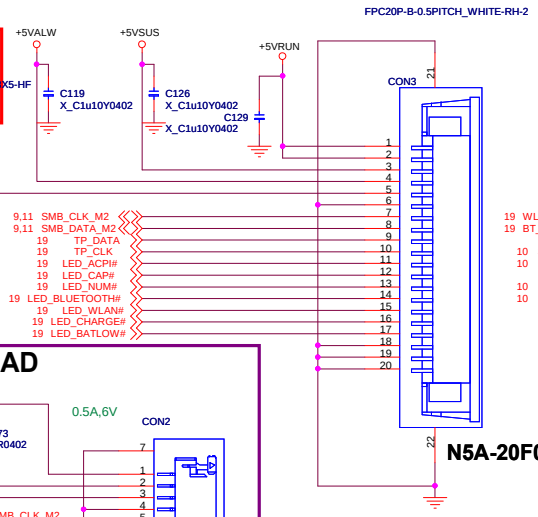
## 50PIN BTB I/O Connector (VGA, HDMI, Card reader, LAN)




N5C-50F0160-A81

LAN: 408mA
Card: 350mA

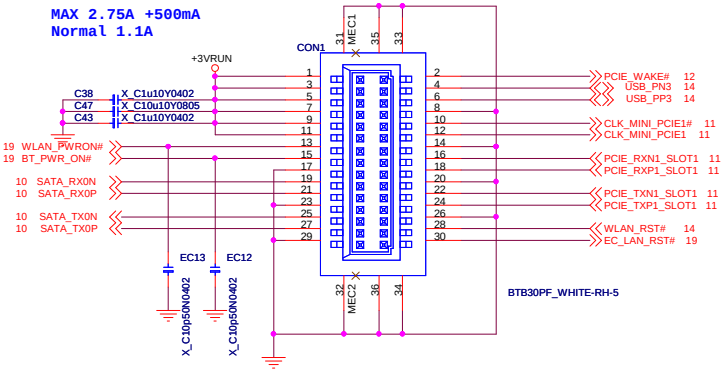
## Launch Board Connector




N5A-20F0210-A81

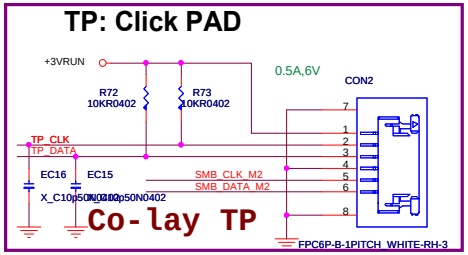
## MINI PCIE Connector

MAX 2.75A +500mA
Normal 1.1A

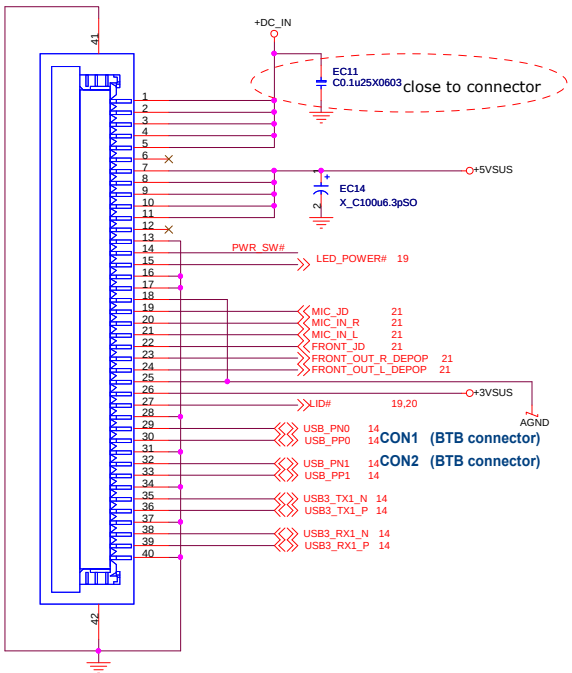



N5C-30F0220-A81

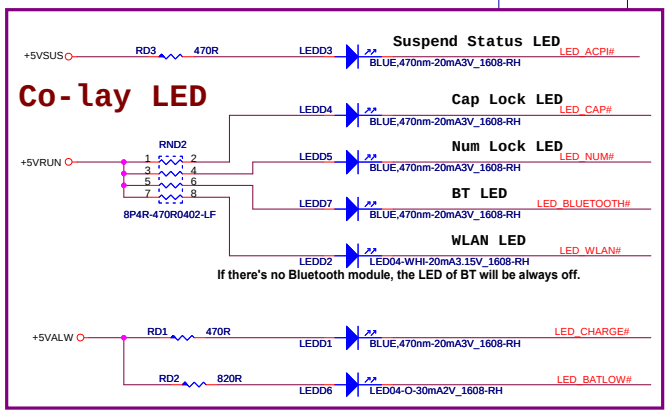
## TP: Click PAD



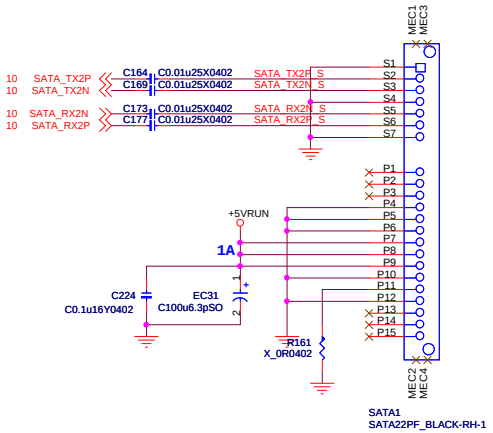

## 40PIN COAXIAL I/O Connector (USB Port x2, MIC, Earphone)




Power on: ON
S3 state: Blinking
S4/S5 state: OFF



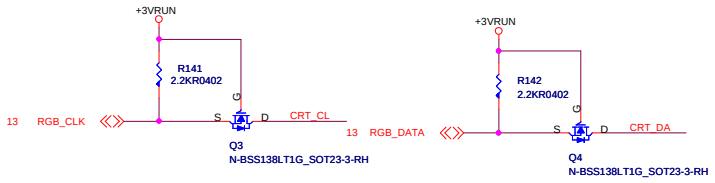

## SATA HDD Connector




N5N-22F0140-AF2

Battery Low (5%): yellow
Error: yellow Blinking
Charging: blue
Battery Full/ Discharge: OFF

## CRT DDC BUFFER




MICRO-STAR INT'L CO.,LTD.

Title: HDD, BTB CON

Size: Custom | Document Number: MS-1358 | Rev: 0A

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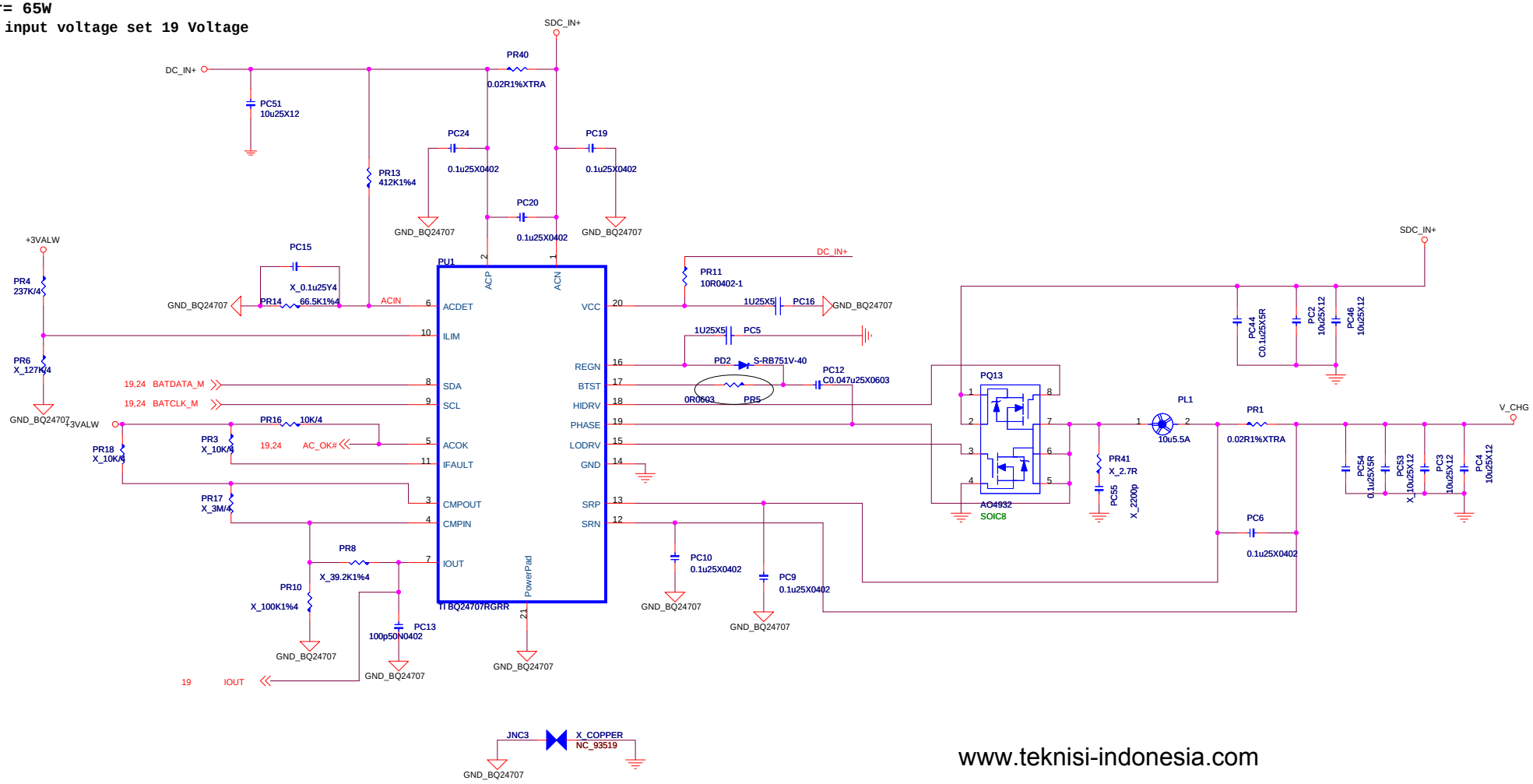
**Adapter= 65W**
**Adapter input voltage set 19 Voltage**

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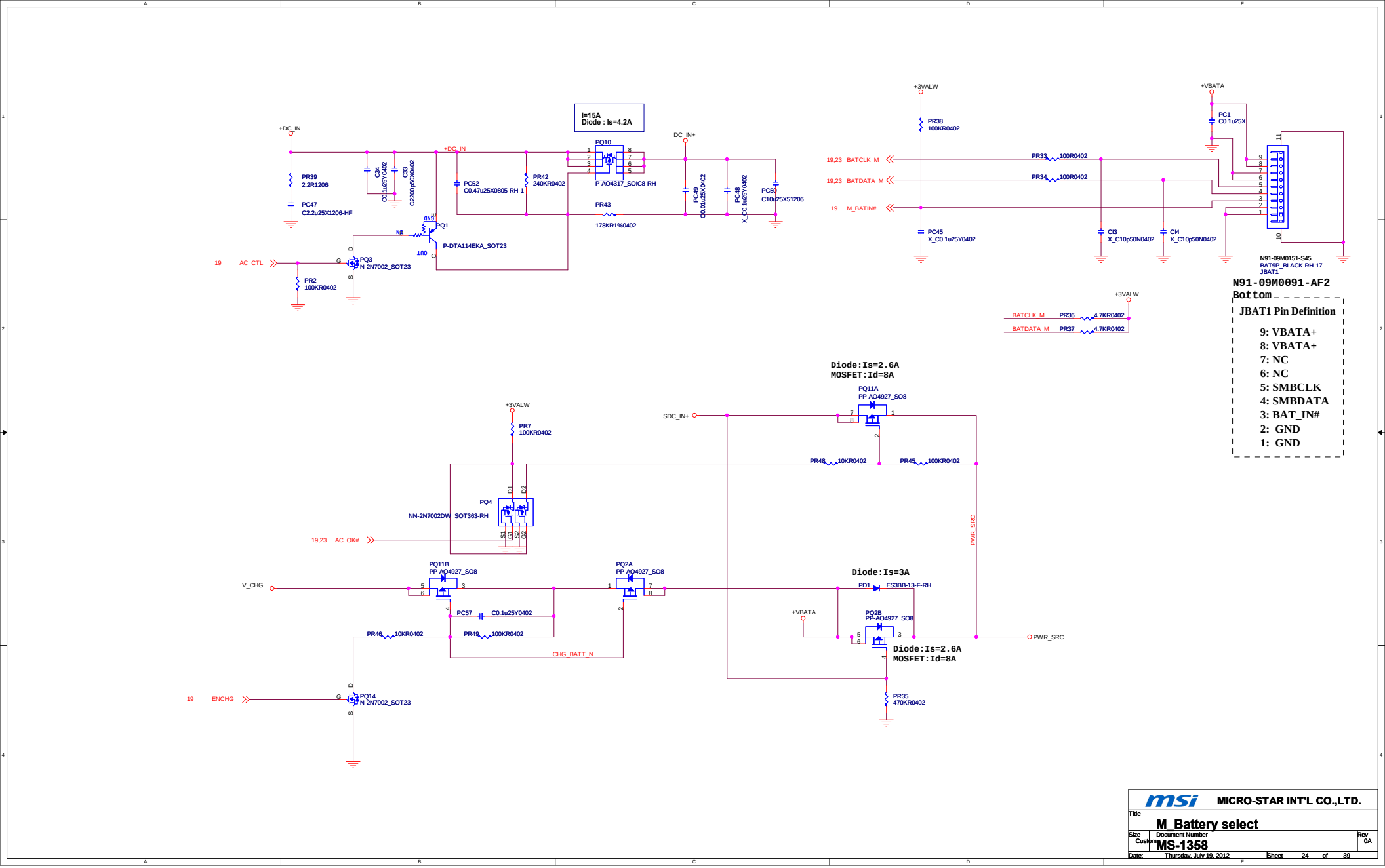
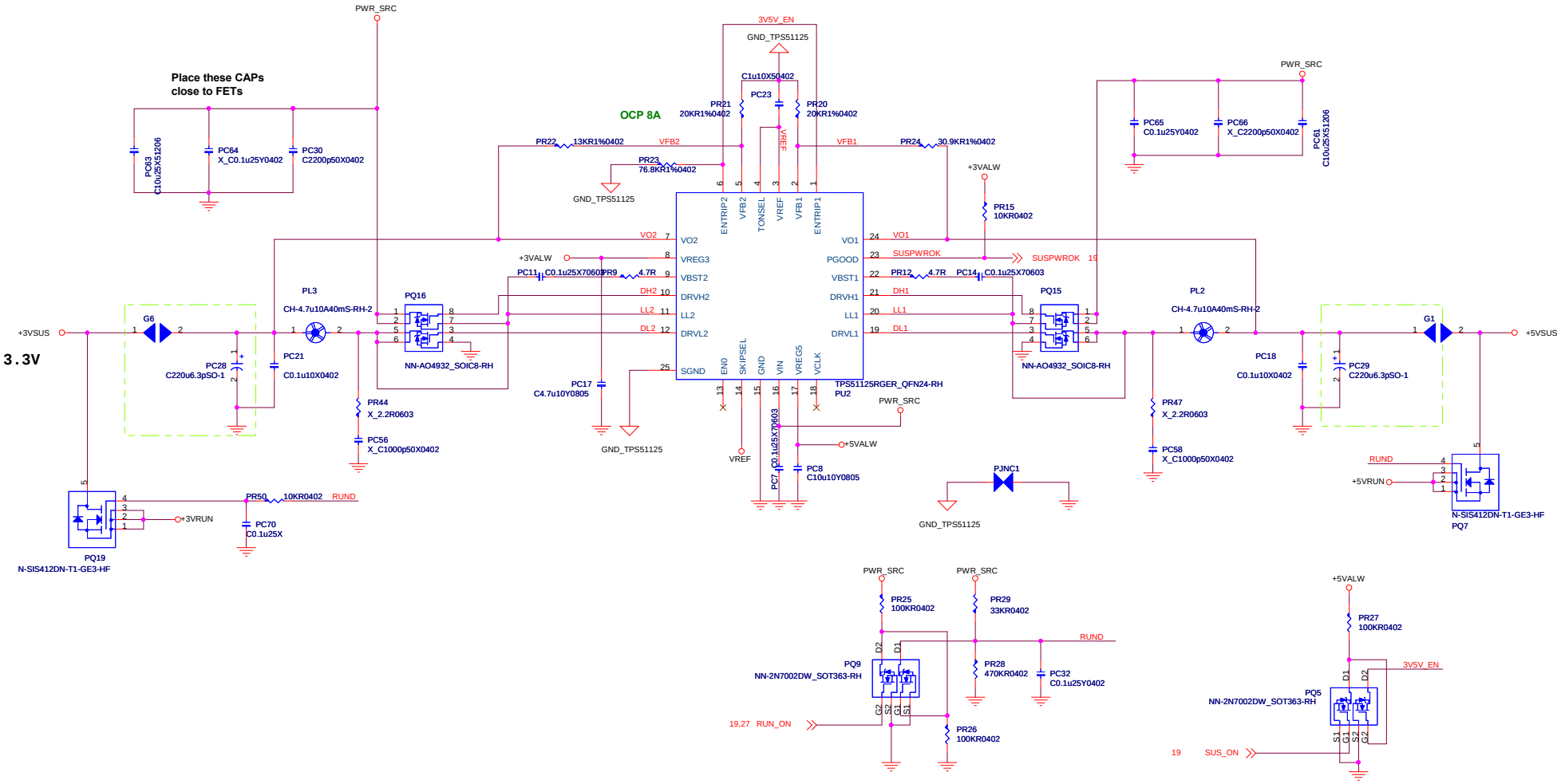
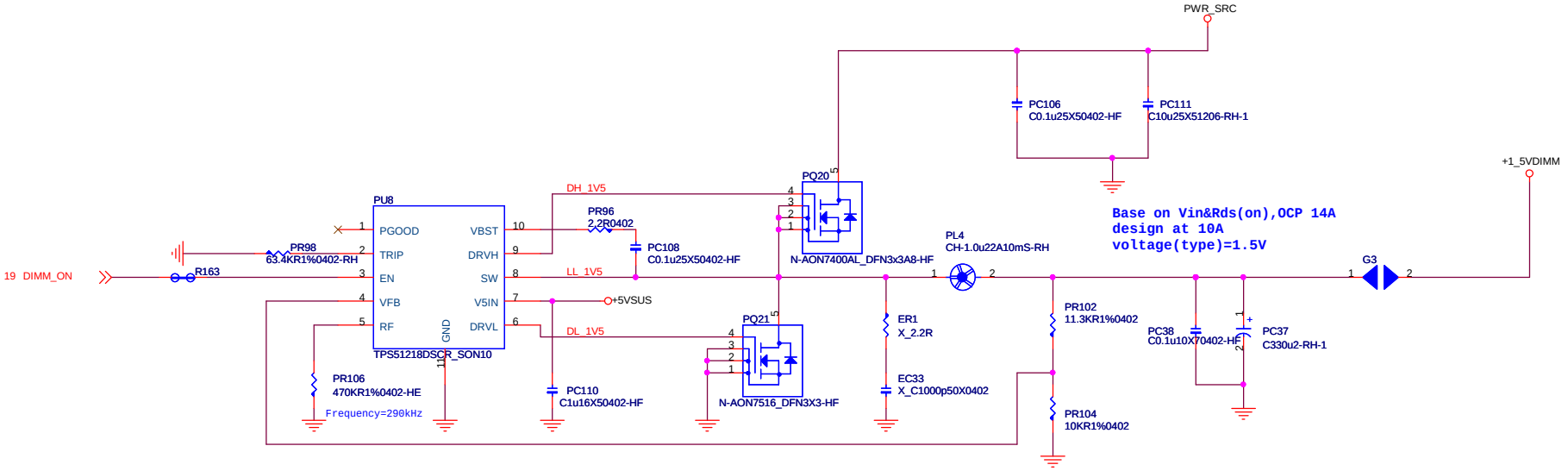
| | | |
|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | |
| Title | M_Battery Charger | |
| Size: A3 | Document Number: MS-1358 | Rev: 0A |
| Date: Thursday, July 19, 2012 | Sheet 23 of 39 | |

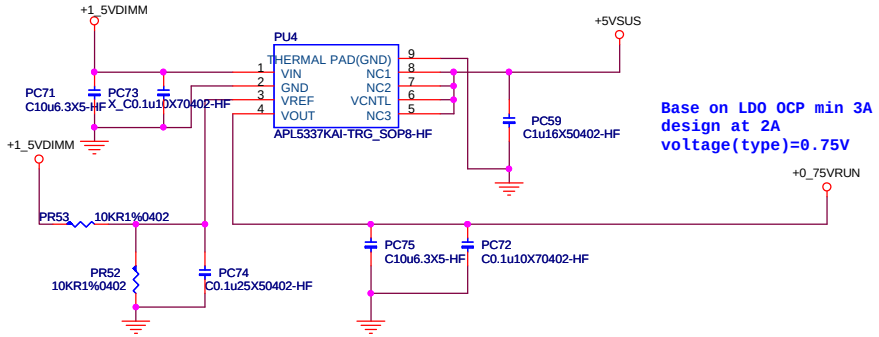



| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: M_Battery select | | |
| Size: Custom | Document Number: MS-1358 | Rev: 0A |
| Date: Thursday, July 19, 2012 | Sheet 24 of 39 | |




| | | | |
|---|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | | |
| Title: M_System Power | | | |
| Size: Custom | Document Number: MS-1358 | | Rev: 0A |
| Date: Thursday, July 19, 2012 | | Sheet 25 of 39 | |




MICRO-STAR INT'L CO.,LTD.

Title: DIMM & SMDDR_VTERM

| Size | Document Number | Rev |
|---|---|---|
| B | MS-1358 | 0A |

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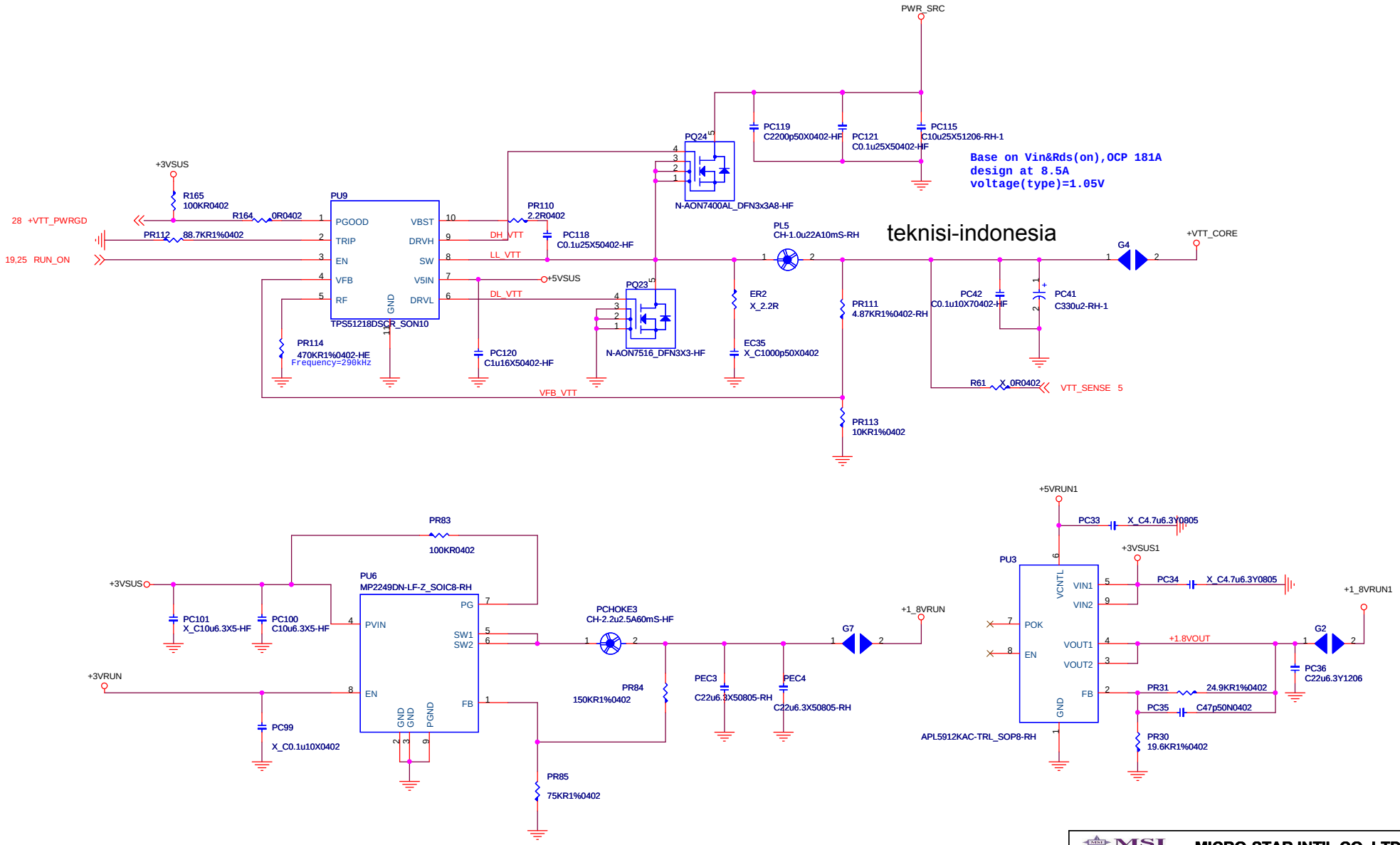


MICRO-STAR INT'L CO.,LTD.

Title: +VTT & +1.05VLAN

| Size | Document Number | Rev |
|---|---|---|
| B | MS-1358 | 0A |

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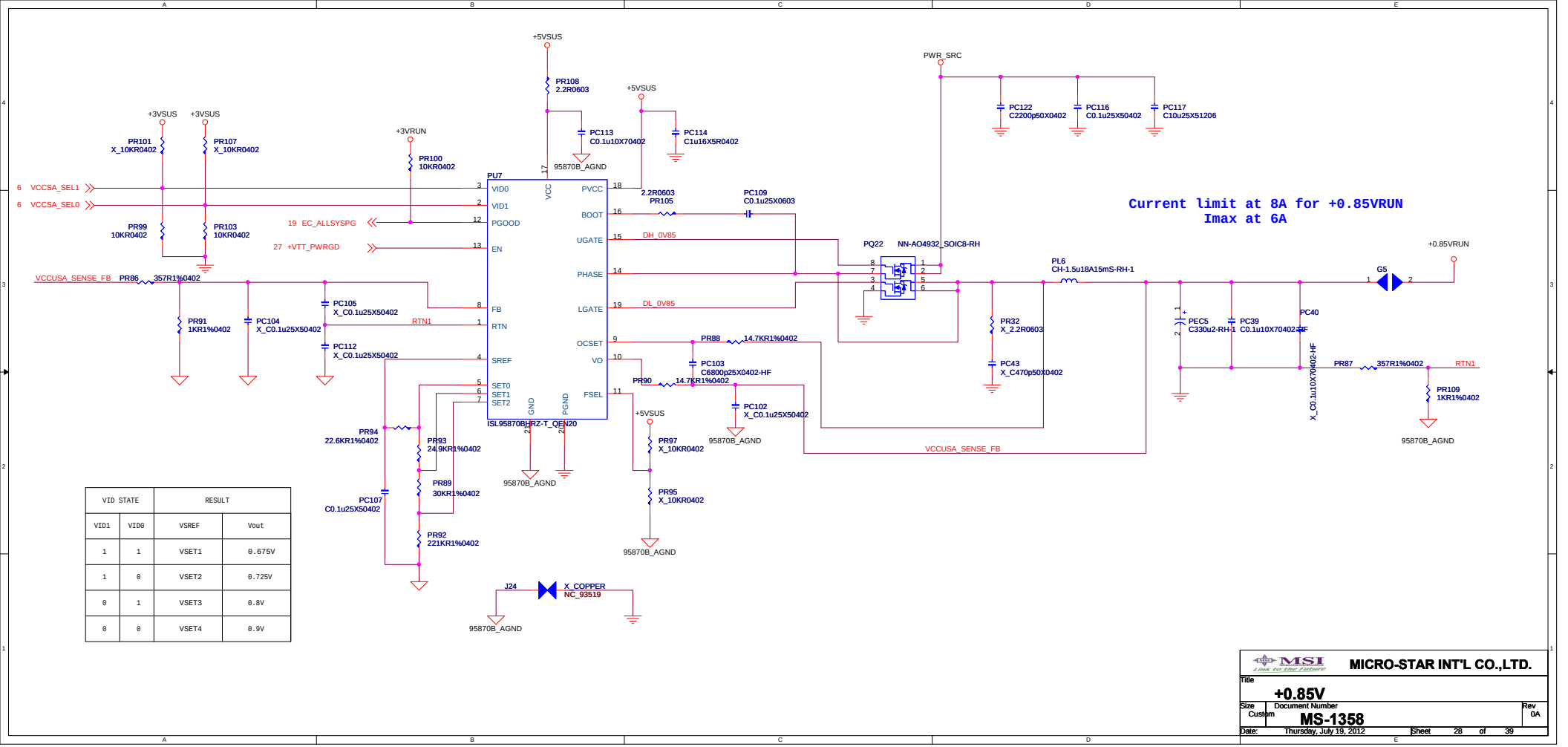


| VID STATE | | RESULT | |
|---|---|---|---|
| VID1 | VID0 | VSREF | Vout |
| 1 | 1 | VSET1 | 0.675V |
| 1 | 0 | VSET2 | 0.725V |
| 0 | 1 | VSET3 | 0.8V |
| 0 | 0 | VSET4 | 0.9V |

MSI Link to the Future — MICRO-STAR INT'L CO.,LTD.

Title: +0.85V

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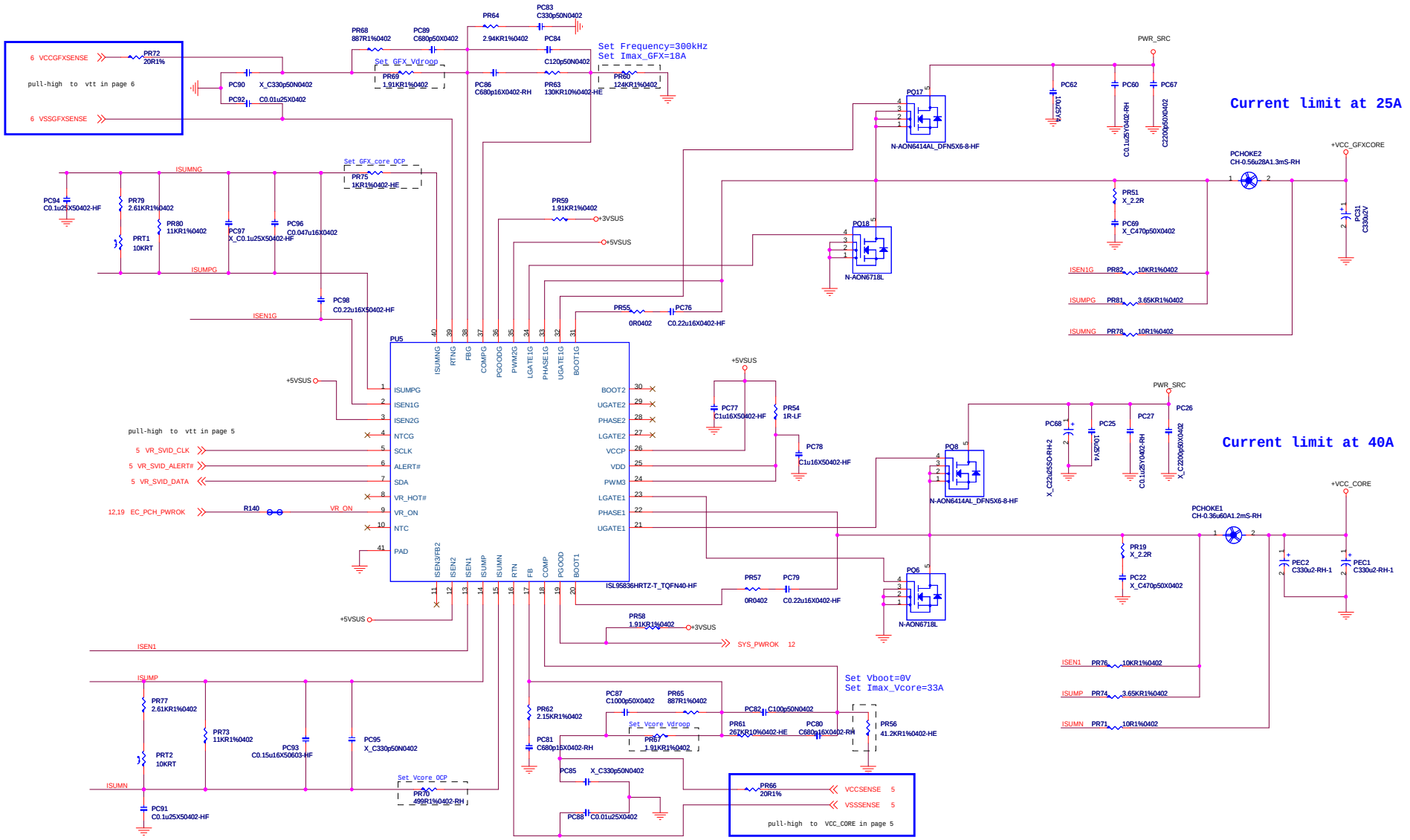


| | | | |
|---|---|---|---|
| MSI | MICRO-STAR INT'L CO.,LTD. | | |
| Title | CPU_GFX-CORE | | |
| Size C | Document Number MS-1358 | | Rev 0A |
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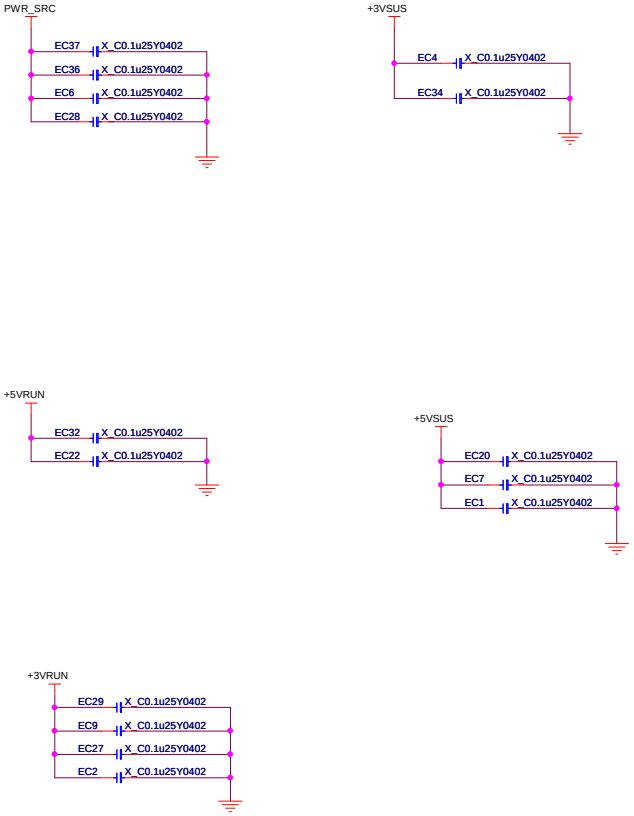
# EMI SOLUTION




MICRO-STAR INT'L CO.,LTD.

| | | |
|---|---|---|
| Title: EMI-1 | | |
| Size: Custom | Document Number: MS-1358 | Rev: 0A |
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PCB1
PCB
PCB
P30-135810A-H73
P30-135810A-T53,

UME8
BIOS LABEL
X_BIOS_LABEL

MYLAR6
FAN
E2P-3515911-Y42

MYLAR5
CMOS
E2P-3514211-Y42

RUBBER1
KB CON
E2Y-3511311-Y40

RUBBER2
KB CON
E2Y-3511311-Y40

MYLAR2
LVDS
LVDS_E2P-3512411-Y42

RUBBER3
LVDS
E2Y-5220111-Y40

MYLAR1
PCB
X_DDR_E2P-0112911-Y42

UME1
HDMI LABEL
X_HDMI_LABEL

ADHESIVE1
PCB
X_E2Y-0114812-Y42

RUBBER4
Click Pad
E2Y-5220111-Y40

FM13 FM10 FM9 FM8
FM6 FM3 FM2 FM17
FM11 FM14 FM7 FM15
FM12 FM4 FM16 FM5 FM1
F_PAD_X

50 OHM
J15 L1_4mil_50_Ohm X_H1X2M_BLACK-RH GND2
J16 L3_5.5mil_50_Ohm X_H1X2M_BLACK-RH GND2
J7 L4_5.5mil_50_Ohm X_H1X2M_BLACK-RH GND5
J6 L6_4mil_50_Ohm X_H1X2M_BLACK-RH GND5

37 OHM
J13 L1_8mil_37_Ohm X_H1X2M_BLACK-RH GND2
J14 L3_9.5mil_37_Ohm X_H1X2M_BLACK-RH GND2

40 OHM
J23 L1_7mil_40_Ohm X_H1X2M_BLACK-RH GND2
J12 L3_8.5mil_40_Ohm X_H1X2M_BLACK-RH GND2

DIFF_72 OHM
J17 L1_DIFF_7/5/7_72_Ohm+ L1_DIFF_7/5/7_72_Ohm- X_H1X4_black-RH GND2
J19 L3_DIFF_7/5/7_72_Ohm+ L3_DIFF_7/5/7_72_Ohm- X_H1X4_black-RH GND2

DIFF_85 OHM
J20 L1_DIFF_4/4/4_85_Ohm+ L1_DIFF_4/4/4_85_Ohm- X_H1X4_black-RH GND2
J22 L3_DIFF_4/4/4_85_Ohm+ L3_DIFF_4/4/4_85_Ohm- X_H1X4_black-RH GND2
J4 L4_DIFF_4/4/4_85_Ohm+ L4_DIFF_4/4/4_85_Ohm- X_H1X4_black-RH GND5
J8 L6_DIFF_4/4/4_85_Ohm+ L6_DIFF_4/4/4_85_Ohm- X_H1X4_black-RH GND5

DIFF_90 OHM
J3 L1_DIFF_4/6/4_90_Ohm+ L1_DIFF_4/6/4_90_Ohm- X_H1X4_black-RH GND2
J11 L3_DIFF_4.5/6/4.5_90_Ohm+ L3_DIFF_4.5/6/4.5_90_Ohm- X_H1X4_black-RH GND2
J5 L4_DIFF_4.5/6/4.5_90_Ohm+ L4_DIFF_4.5/6/4.5_90_Ohm- X_H1X4_black-RH GND5
J9 L6_DIFF_4/6/4_90_Ohm+ L6_DIFF_4/6/4_90_Ohm- X_H1X4_black-RH GND5

DIFF_100 OHM
J18 L1_DIFF_4/8/4_100_Ohm+ L1_DIFF_4/8/4_100_Ohm- X_H1X4_black-RH GND2
J21 L3_DIFF_4/8/4_100_Ohm+ L3_DIFF_4/8/4_100_Ohm- X_H1X4_black-RH GND2
J10 L4_DIFF_4/8/4_100_Ohm+ L4_DIFF_4/8/4_100_Ohm- X_H1X4_black-RH GND5

holes_S295d110_P MH2 X_S7.5D2.8
H_S295D110_P_V5 MH3 X_VIA5
holes_S295d110_P MH4 X_S7.5D2.8
HOLES_R158D110 MH8 X_HOLES_R158D110
SP1 Spacer Support X_H_R295D165_T193
H_NR177D91 MH9 HOLES_HDD1
H_NR177D91 MH10 HOLES_HDD1
SCREW1 E43-1205003-H29
SCREW2 E43-1205003-H29
holes_S295d110_P MH1 X_S7.5D2.8
holes_S295d110_P MH5 X_S7.5D2.8
holes_S295d110_P MH6 X_S7.5D2.8
holes_S295d110_P MH7 X_S7.5D2.8

BOSS
SP2 Spacer Support X_E2B-171A020-RH

MICRO-STAR INT'L CO.,LTD.
Title: Non_Footprint for BOM
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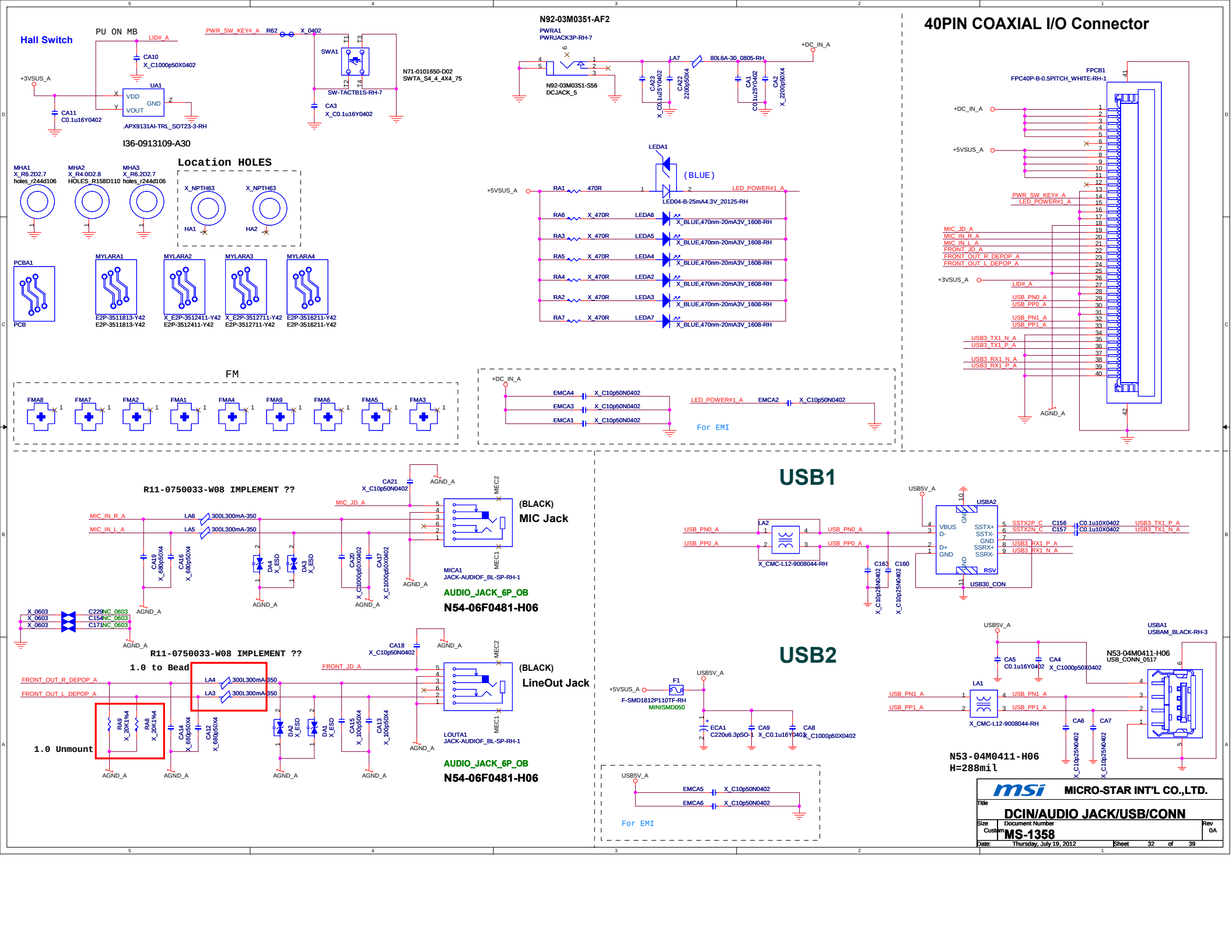

Hall Switch
PU ON MB
LID#_A
CA10
X_C1000p50X0402
+3VSUS_A
UA1
VDD
GND
VOUT
CA11
C0.1u16Y0402
.APX9131AI-TRL_SOT23-3-RH
PWR_SW_KEY#_A
R62
X_0402
SWA1
SW-TACTB1S-RH-7
CA3
X_C0.1u16Y0402
N71-0101650-D02
SWTA_S4_4_4X4_75
I36-0913109-A30
Location HOLES
MHA1
X_R6.2D2.7
holes_r244d106
MHA2
X_R4.0D2.8
HOLES_R158D110
MHA3
X_R6.2D2.7
holes_r244d106
X_NPTH63
HA1
HA2
PCBA1
PCB
MYLARA1
MYLARA2
MYLARA3
MYLARA4
E2P-3511813-Y42
E2P-3512411-Y42
E2P-3512711-Y42
E2P-3516211-Y42
FM
FMA8
FMA7
FMA2
FMA1
FMA4
FMA9
FMA6
FMA5
FMA3
N92-03M0351-AF2
PWRA1
PWRJACK3P-RH-7
N92-03M0351-S56
DCJACK_5
+DC_IN_A
LA7
80L6A-30_0805-RH
CA23
CA22
2200p50X4
CA1
CA2
X_2200p50X4
LEDA1
(BLUE)
LED_POWER#1_A
LED04-B-25mA4.3V_20125-RH
RA1
470R
RA6
RA3
RA5
RA4
RA2
RA7
X_470R
LEDA6
LEDA5
LEDA4
LEDA2
LEDA3
LEDA7
X_BLUE,470nm-20mA3V_1608-RH
40PIN COAXIAL I/O Connector
FPCB1
FPC40P-B-0.5PITCH_WHITE-RH-1
+5VSUS_A
PWR_SW_KEY#_A
LED_POWER#1_A
MIC_JD_A
MIC_IN_R_A
MIC_IN_L_A
FRONT_JD_A
FRONT_OUT_R_DEPOP_A
FRONT_OUT_L_DEPOP_A
LID#_A
USB_PN0_A
USB_PP0_A
USB_PN1_A
USB_PP1_A
USB3_TX1_N_A
USB3_TX1_P_A
USB3_RX1_N_A
USB3_RX1_P_A
AGND_A
EMCA4
EMCA3
EMCA1
EMCA2
X_C10p50N0402
For EMI
R11-0750033-W08 IMPLEMENT ??
CA21
MIC_JD_A
MEC2
MEC1
(BLACK)
MIC Jack
MIC_IN_R_A
MIC_IN_L_A
LA6
LA5
300L300mA-350
CA19
CA16
X_680p50X4
DA4
DA3
X_ESD
CA20
CA17
X_C1000p50X0402
MICA1
JACK-AUDIOF_BL-SP-RH-1
AUDIO_JACK_6P_OB
N54-06F0481-H06
X_0603
C229NC_0603
C154NC_0603
C171NC_0603
R11-0750033-W08 IMPLEMENT ??
1.0 to Bead
CA18
FRONT_JD_A
(BLACK)
LineOut Jack
FRONT_OUT_R_DEPOP_A
FRONT_OUT_L_DEPOP_A
LA4
LA3
RA9
RA8
X_20K1%4
CA14
CA12
X_680p50X4
DA2
DA1
CA15
CA13
X_100p50X4
LOUTA1
JACK-AUDIOF_BL-SP-RH-1
AUDIO_JACK_6P_OB
N54-06F0481-H06
1.0 Unmount
USB1
USB5V_A
USBA2
LA2
X_CMC-L12-9008044-RH
VBUS
D-
D+
GND
SSTX+
SSTX-
GND
SSRX+
SSRX-
RSV
USB30_CON
SSTX2P_C
SSTX2N_C
C156
C157
C0.1u10X0402
C163
C160
X_C10p25N0402
USB2
F1
F-SMD1812P110TF-RH
MINISMD050
ECA1
C220u6.3pSO-1
CA9
X_C0.1u16Y0402
CA8
X_C1000p50X0402
USBA1
USBAM_BLACK-RH-3
N53-04M0411-H06
USB_CONN_0517
LA1
CA5
C0.1u16Y0402
CA4
X_C1000p50X0402
CA6
CA7
N53-04M0411-H06
H=288mil
MSI
MICRO-STAR INT'L CO.,LTD.
Title
DCIN/AUDIO JACK/USB/CONN
Size
Custom
Document Number
MS-1358
Rev
0A
Date:
Thursday, July 19, 2012
Sheet
32
of
39

N55-08F0371-AF2

close to RTL8111E

RB13 2.49KR1%0402 RSET

X_OUT YB1 25MHZ20p_S-RH-2 X_IN

CB20 C27p50N0402

CB16 C27p50N0402

VDD33_B

VDD10_B

RB10 1KR0402 EESK

UB3 RTL8111E-VB-GR-RH

9 VIAs to GND

REGOUT and AVDD33_REG_A
Do not use via

REGOUT AVDD33_REG_B

VDD33_B

EEDI EEDO EECS

VDD10_B

PCIE_WAKE#_B 36

ISOLATE# LAN_RST#_R_B 36

+3VRUN_B

RB8 1KR0402

RB7 15KR0402

93C56/66 Pull-UP VDD33
93C46 Pull-Down GND
EFuse/BIOS Pull-Down GND

RB12 10KR0402

GLAN_CK_REQ#_A Pull-up 3.3VRUN in M/B

36 LAN_CLKREQ#_B

36 PCIE_GLAN_TXP_B
36 PCIE_GLAN_TXN_B
36 CLK_PCIE_LAN_B
36 CLK_PCIE_LAN#_B

HSON HSOP CB12 C0.1u10X0402 CB14 C0.1u10X0402

PCIE_GLAN_RXN_B 36
PCIE_GLAN_RXP_B 36

EVDD10_B

RB2 X_10KR0402 RB3 X_10KR0402

VDD33_B

UB1 X_AT93C46-10SU-2.7-RH

RB1 10KR0402 RB4 10KR0402

CB1 X_C0.1u16Y0402

RJ45_D8_P2_04MM

TPB1 X_TEST PAD LAN_JACK_IN#

LANCONB1 LAN-RJ45-7

UB2 GST5009 LF-RH

CB32 C0.01U25X0402

MCT4 R175 75R0402
MCT3 R173 75R0402
MCT2 R171 75R0402
MCT1 R169 75R0402

R170 CB24 C1000p2000X1808
R172 CB30 C1000p2000X1808
R174 CB31 C1000p2000X1808
R176 CB34 C1000p2000X1808

| Symbol | Parameter | Conditions | Minimum | Typical | Maximum | Units |
|---|---|---|---|---|---|---|
| Icc33 | Average Operating Supply Current from 3.3V | At 1Gbps with heavy network traffic | - | 70 | - | mA |
| Icc10 | Average Operating Supply Current from 1.05V | At 1Gbps with heavy network traffic | - | 300 | - | mA |

40mil

RB6 X_0603 RB5 X_0603

CB9 CB10 CB28 CB29 CB23 CB18 CB13 X_C0.1u16Y0402

AVDD33_REG_B

CB7 C4.7u6.3X50603 CB11 C0.1u10X0402-1

close to p34 p35
within 200mil
X5R use

L04-47A7320-T04

Typical
Icc10=300mA

60mil LB1 60mil

CH-4.7u1.24A98mS-RH

CB5 C4.7u6.3X50603 CB4 C0.1u10X0402-1

X5R use

close to pin 36
within 200mil

RB11 X_0603

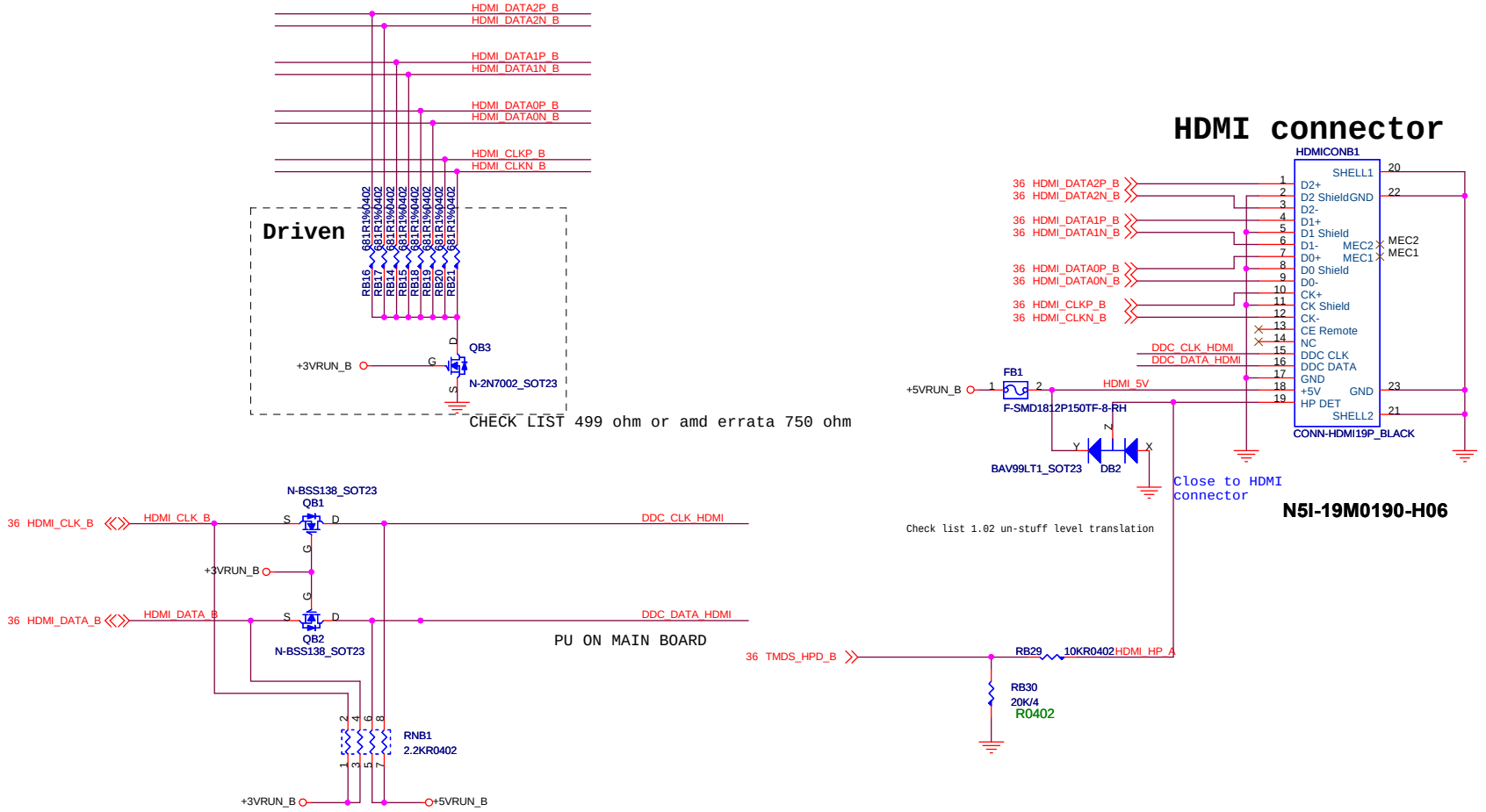
CB15 CB21 CB25 CB26 CB8 CB27 CB22 X_C0.1u16Y0402

EVDD10_B

CB19 X_C1u6.3X0402-RH CB17 C0.1u16Y0402

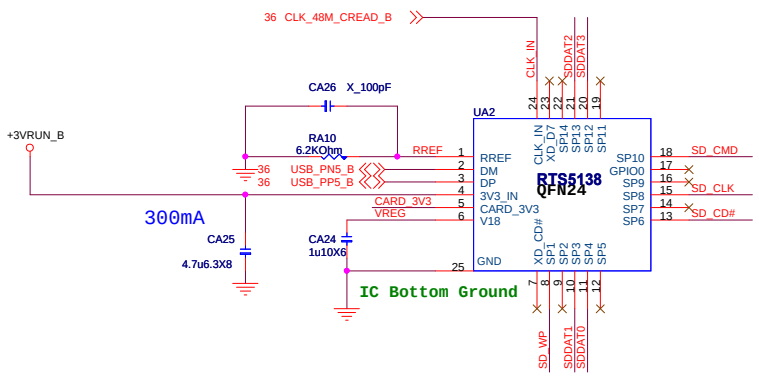
close to p21

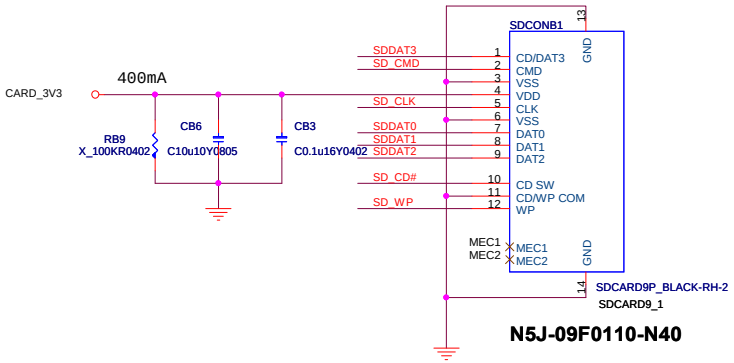
| | | | |
|---|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | | |
| Title | PCIE GIGA LAN (RTL 8111E) | | |
| Size A3 | Document Number MS-1358 | | Rev 0A |
| Date: Thursday, July 19, 2012 | | Sheet 33 of 39 | |




| | | |
|---|---|---|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title: HDMI Connecter | | |
| Size: B | Document Number: MS-1358 | Rev: 0A |
| Date: Thursday, July 19, 2012 | Sheet 34 of 39 | |

# Card Reader controller
# RTS 5138




| Clock | MODE1 | MODE0 |
|---|---|---|
| 48MHz | × | × |
| 24MHz | × | ○ |
| | | |
| 12MHz (Crystal) | ○ | ○ |

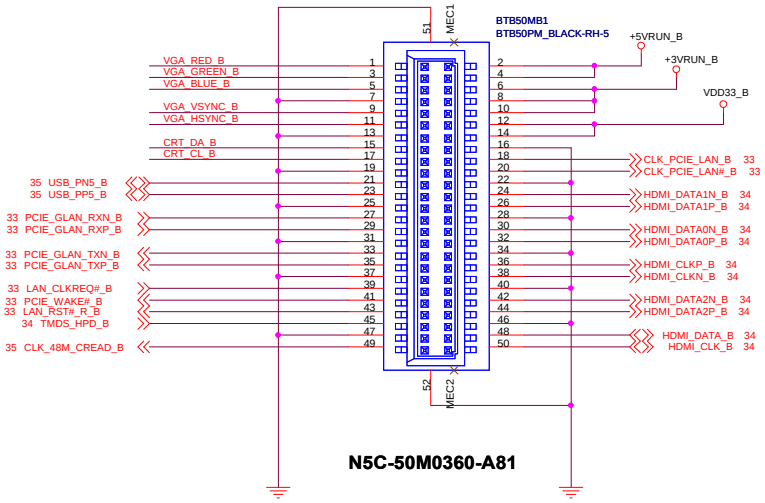
MICRO-STAR INT'L CO.,LTD.

Title: CARD READER (RTL5139)

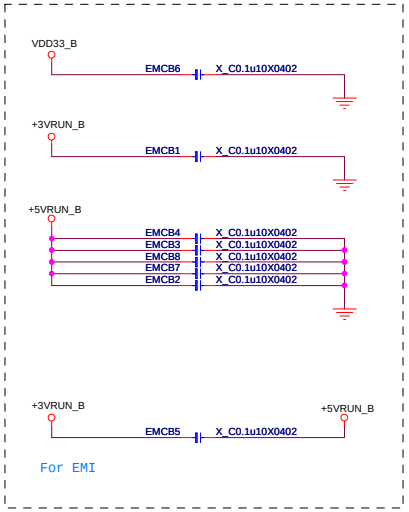
Size: A3 | Document Number: MS-1358 | Rev: 0A

Date: Thursday, July 19, 2012 | Sheet 35 of 39

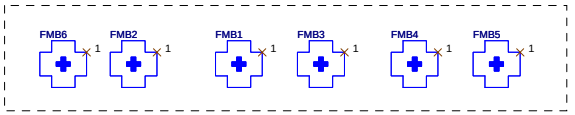
# 50PIN BTB I/O Connector そ畝

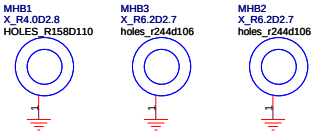



N5C-50M0360-A81

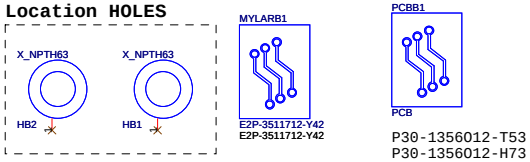



FM

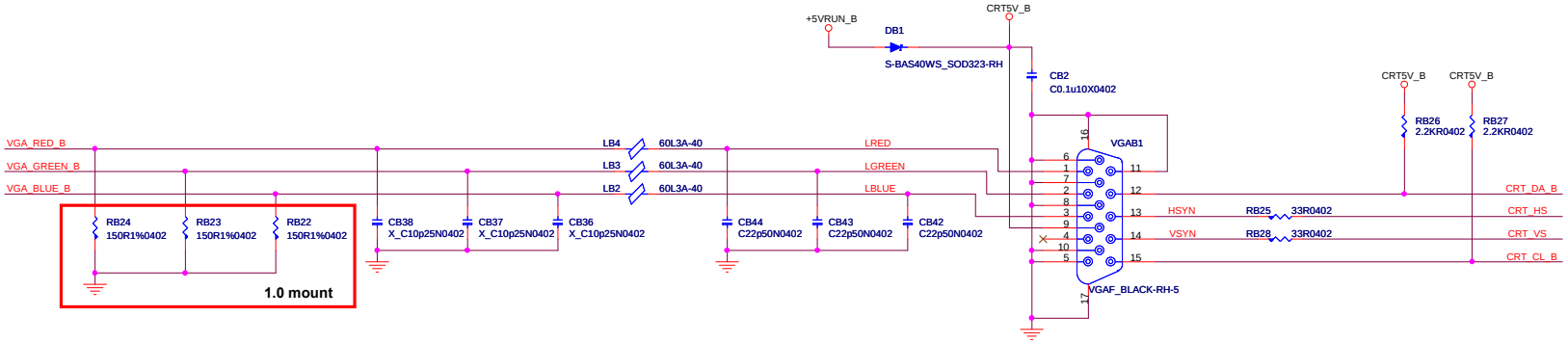


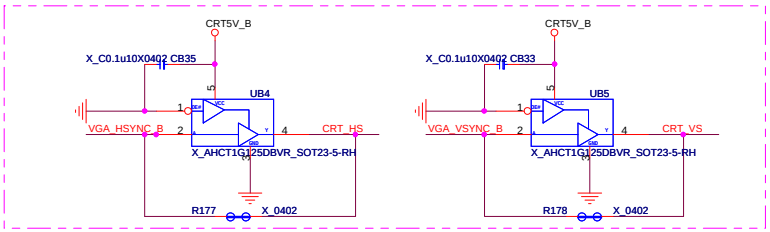

Location HOLES

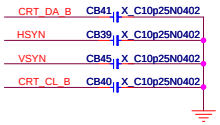



P30-1356012-T53
P30-1356012-H73




N59-15F0621-AF2



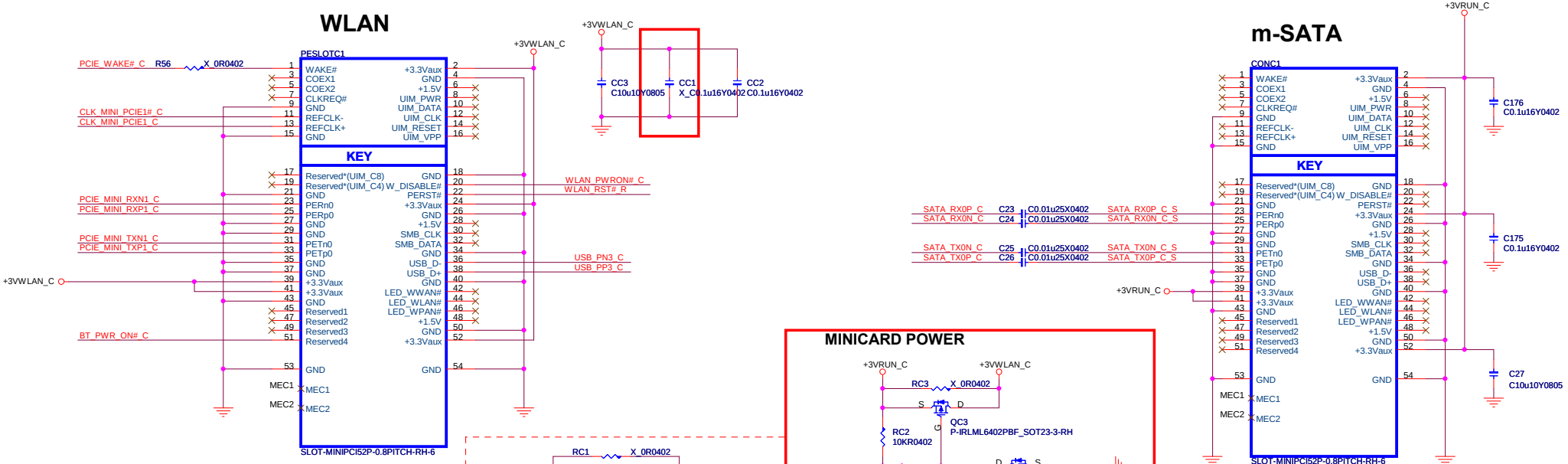




MICRO-STAR INT'L CO.,LTD.

Title: CRT/CONNECTOR

Size: Custom | Document Number: MS-1358 | Rev: 0A

Date: Thursday, July 19, 2012 | Sheet 36 of 39

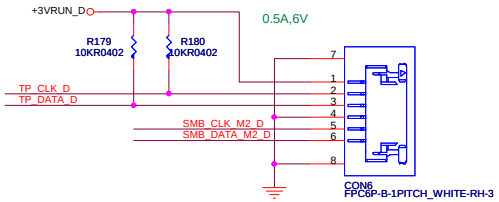


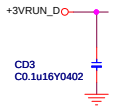

## AW-NE785H Pin-out Definitions

| Pin No. | Definition | Basic Description | Type |
|---|---|---|---|
| 1 | NC | No connect. Should be left open. | |
| 2 | 3.3v | 3.3V power supply | VCC |
| 3 | NC | No connect. Should be left open | |
| 4 | GND | Ground | GND |
| 5 | NC | No connect. Should be left open | |
| 6 | NC | No connect. Should be left open. | |
| 7 | CLKREQ_L | Reference clock request. | |
| 8 | NC | No connect. Should be left open. | |
| 9 | GND | Ground | GND |
| 10 | NC | No connect. Should be left open. | |
| 11 | REFCLK- | Differential reference clock | |
| 12 | NC | No connect. Should be left open. | |
| 13 | REFCLK+ | Differential reference clock | |
| 14 | NC | No connect. Should be left open. | |
| 15 | GND | Ground | GND |
| 16 | NC | No connect. Should be left open. | |
| 17 | NC | No connect. Should be left open. | |
| 18 | GND | Ground | GND |
| 19 | NC | No connect. Should be left open. | |
| 20 | W_DISABLE_L | WLAN disable control. | Input |
| 21 | GND | Ground | GND |
| 22 | PERST_L | PCI express fundamental reset | Input |
| 23 | PERn0 | Differential transmit | Output |
| 24 | NC | No connect. Should be left open. | |
| 25 | PERp0 | Differential transmit | Output |
| 26 | GND | Ground | GND |
| 27 | GND | Ground | GND |
| 28 | NC | No connect. Should be left open. | |
| 29 | GND | Ground | GND |
| 30 | NC | No connect. Should be left open. | |
| 31 | PETn0 | Differential receive | Input |
| 32 | NC | No connect. Should be left open. | |
| 33 | PETp0 | Differential receive | Input |
| 34 | GND | Ground | GND |
| 35 | GND | Ground | GND |
| 36 | NC | No connect. Should be left open. | |
| 37 | GND | Ground | GND |
| 38 | NC | No connect. Should be left open. | |
| 39 | NC | No connect. Should be left open. | |
| 40 | GND | Ground | GND |
| 41 | NC | No connect. Should be left open. | |
| 42 | NC | No connect. Should be left open. | |
| 43 | NC | No connect. Should be left open. | |
| 44 | LED_WLAN_L | Active low signal. The signal is used to provide status indicators via LED. | Output |
| 45 | NC | No connect. Should be left open. | |
| 46 | NC | No connect. Should be left open. | |
| 47 | NC | No connect. Should be left open. | |
| 48 | NC | No connect. Should be left open. | |
| 49 | NC | No connect. Should be left open. | |
| 50 | GND | Ground | GND |
| 51 | NC | No connect. Should be left open. | |
| 52 | 3.3v | 3.3V power supply | VCC |

| | | | |
|---|---|---|---|
| msi | MICRO-STAR INT'L CO.,LTD. | | |
| Title | MINIPCIE Board | | |
| Size A3 | Document Number MS-1358 | | Rev 0A |
| Date: Thursday, July 19, 2012 | | Sheet 37 of 39 | |

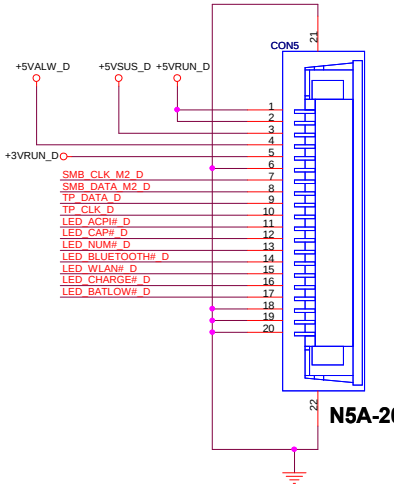
## TP: Click PAD




## Launch Board CONN

FPC20P-B-0.5PITCH_WHITE-RH-2



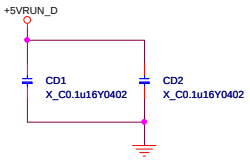

**N5A-20F0210-A81**

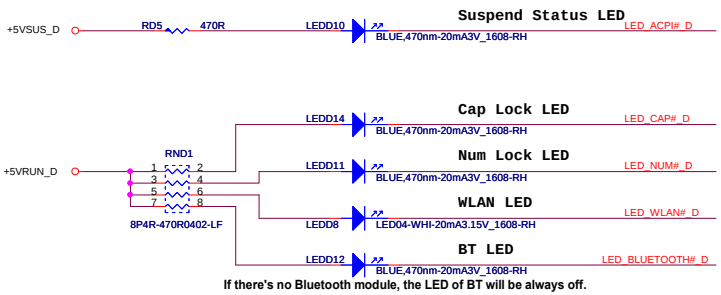
teknisi-indonesia

## LED Location

Top View left to right side

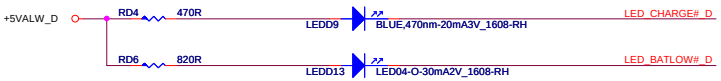
WIFI BT CHARGE BATLOW SUSPEND CAPS NUM



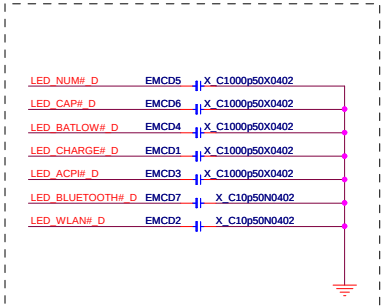




Power on: ON
S3 state: Blinking
S4/S5 state: OFF

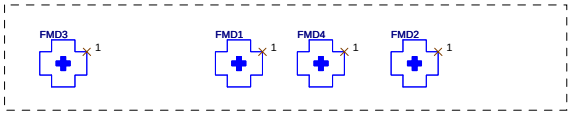
If there's no Bluetooth module, the LED of BT will be always off.



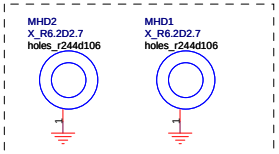

Battery Low (5%): yellow
Error: yellow Blinking
Charging: blue
Battery Full/ Discharge: OFF



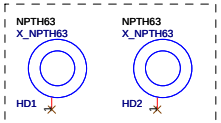

FM

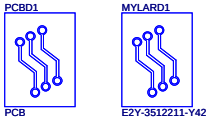



SCREW HOLES




Location HOLES




MICRO-STAR INT'L CO.,LTD.

Title: Launch+TP Board

Size: Custom | Document Number: MS-1358 | Rev: 0A

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MICRO-STAR INT'L CO.,LTD.

Title: History

| Size | Document Number | Rev |
|---|---|---|
| Custom | MS-1358 | 0A |

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