MS-7A21

ATX

Ver: 11

Haswell-E Platform

CPU:

Haswell-E

System Chipset:

Wellsburg

Onboard Chip:

HD Audio Codec:ALC1150

LAN-INTEL LAN i219

SIO:NTC6792D

Dual Flash ROM: SPI 64 MB X2

Main Memory:

*DDRIV (1666MHz) * 8 (Dual Channel)*

ACPI:

UPI

PWM:

VRD12.5 -ISL 6388

Expansion Slots:

*PCI Express (X16) Slot * 4*

*PCI Express (X8) Slot * 1*

*PCI Express (X1) Slot * 1*

Other:

*SATA-EX *1*

*SATA3.0 *6*

REAR USB2.0 x11

REAR USB3.0 x6 + USB3.1 x2

FRONT USB3.0 x4 + USB3.1 x1

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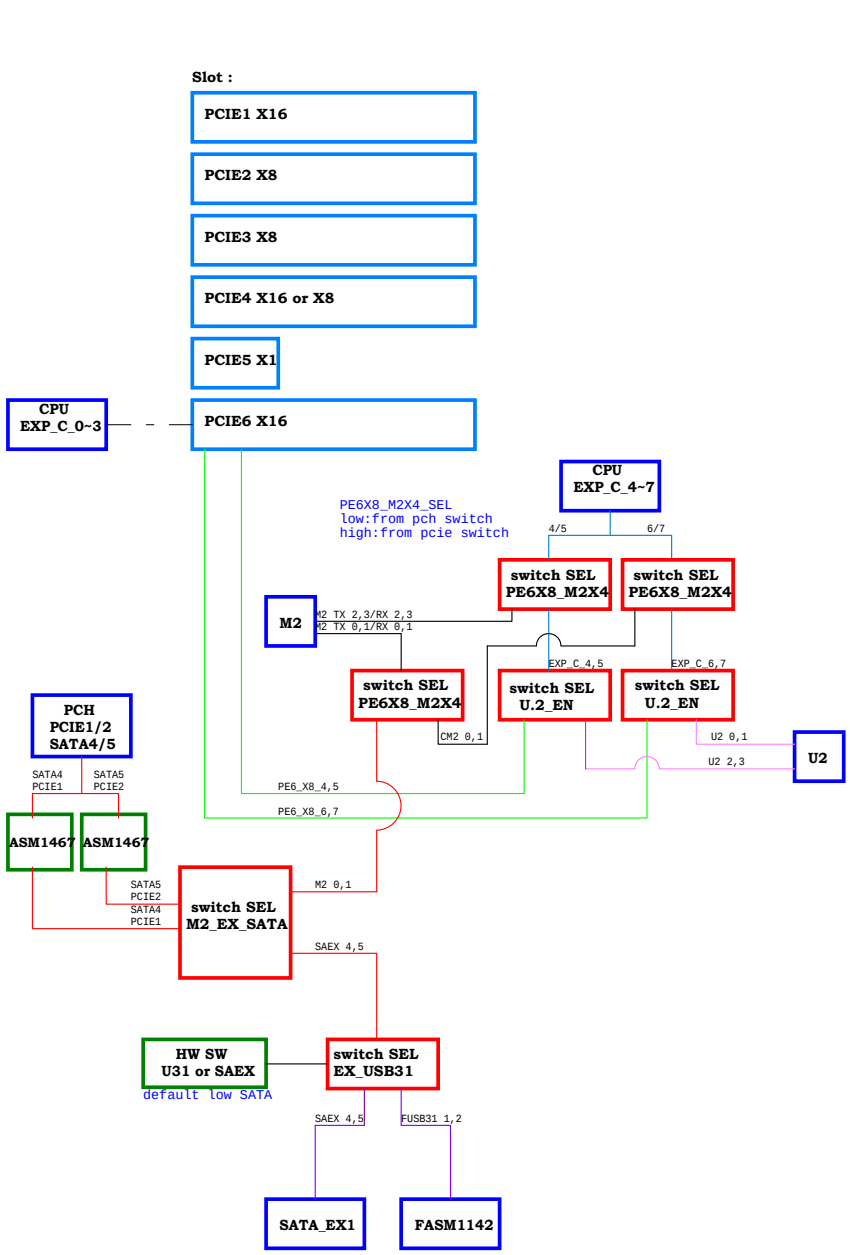
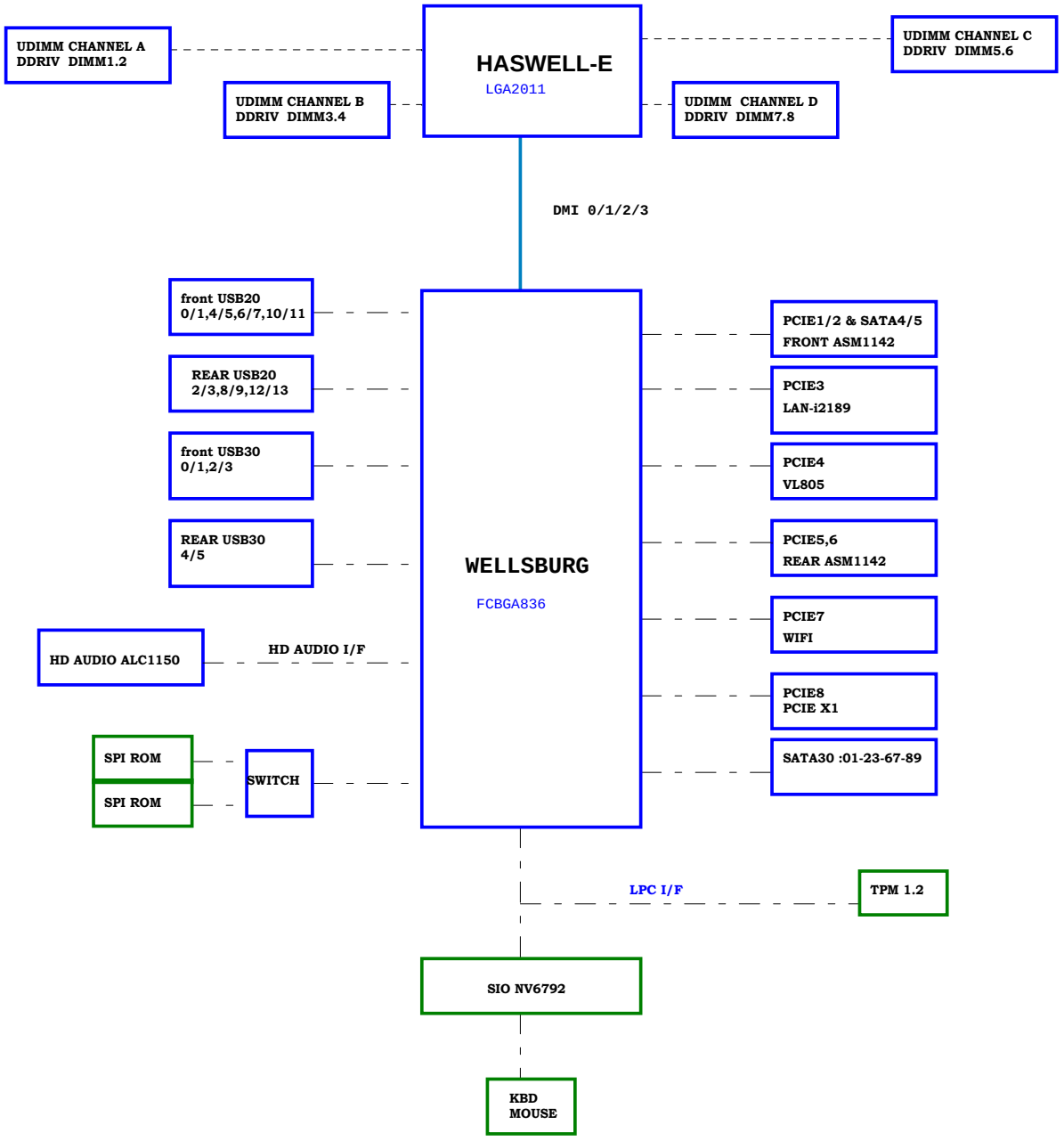
MS-7A21 Block Diagram





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CPU-CLK/Control/MISC

OR:R278 REMOVED

CPU1A — HASWELL-E — ZIF-SOCKET2036_0

PROC_ID	+VCCIO_IN
0	0.95V
1	1.05V

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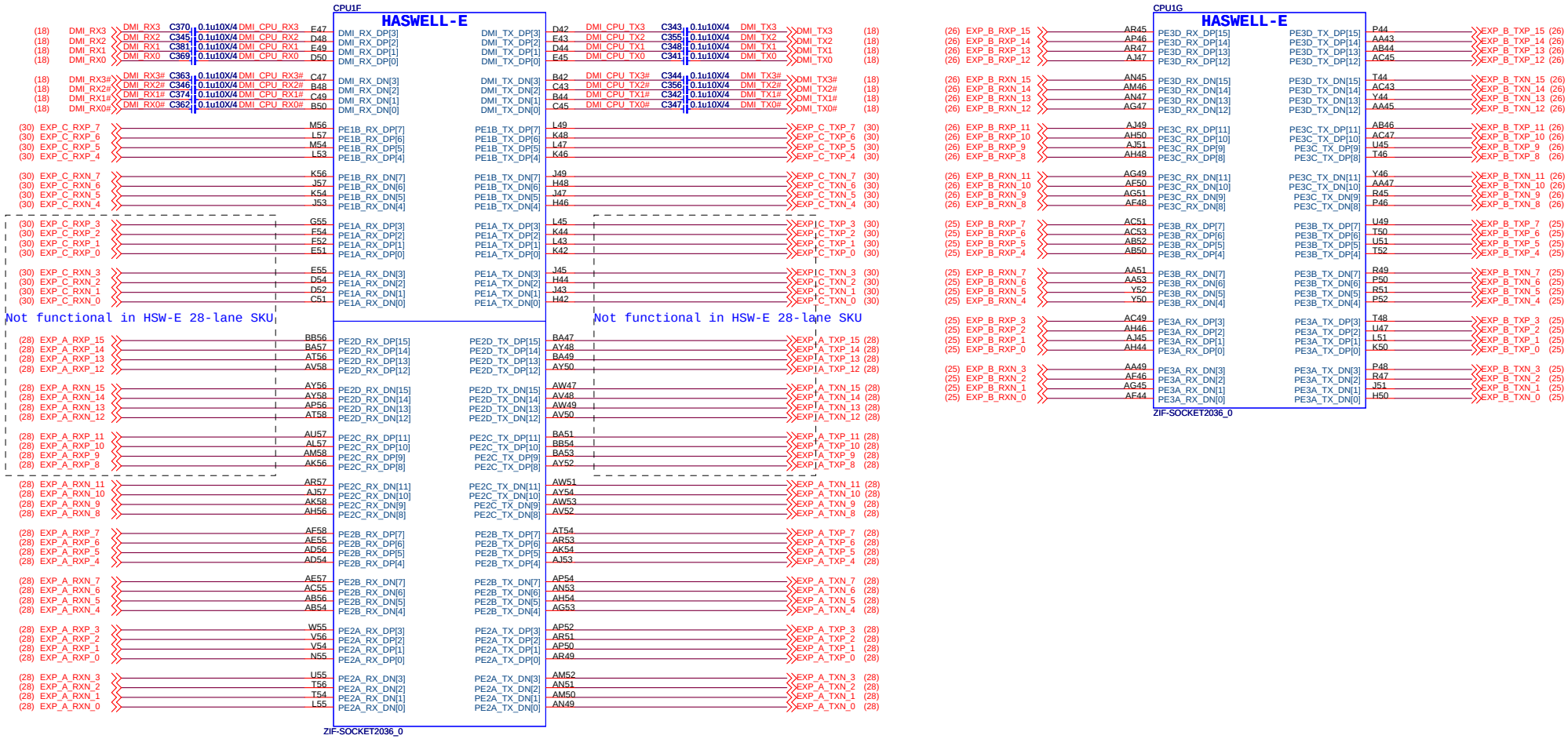
CPU-DMI/PEG



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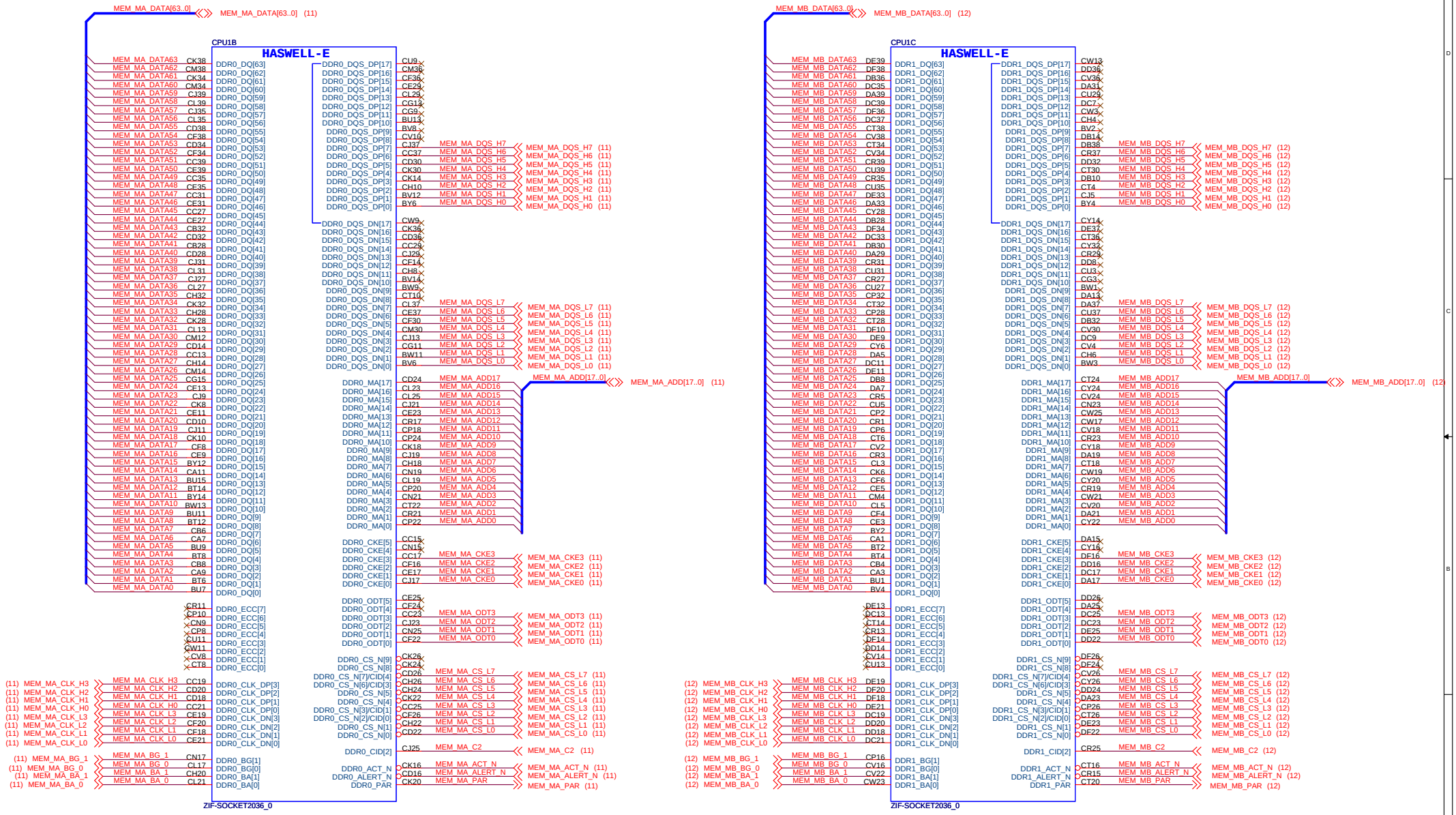
CPU-Memory0/1



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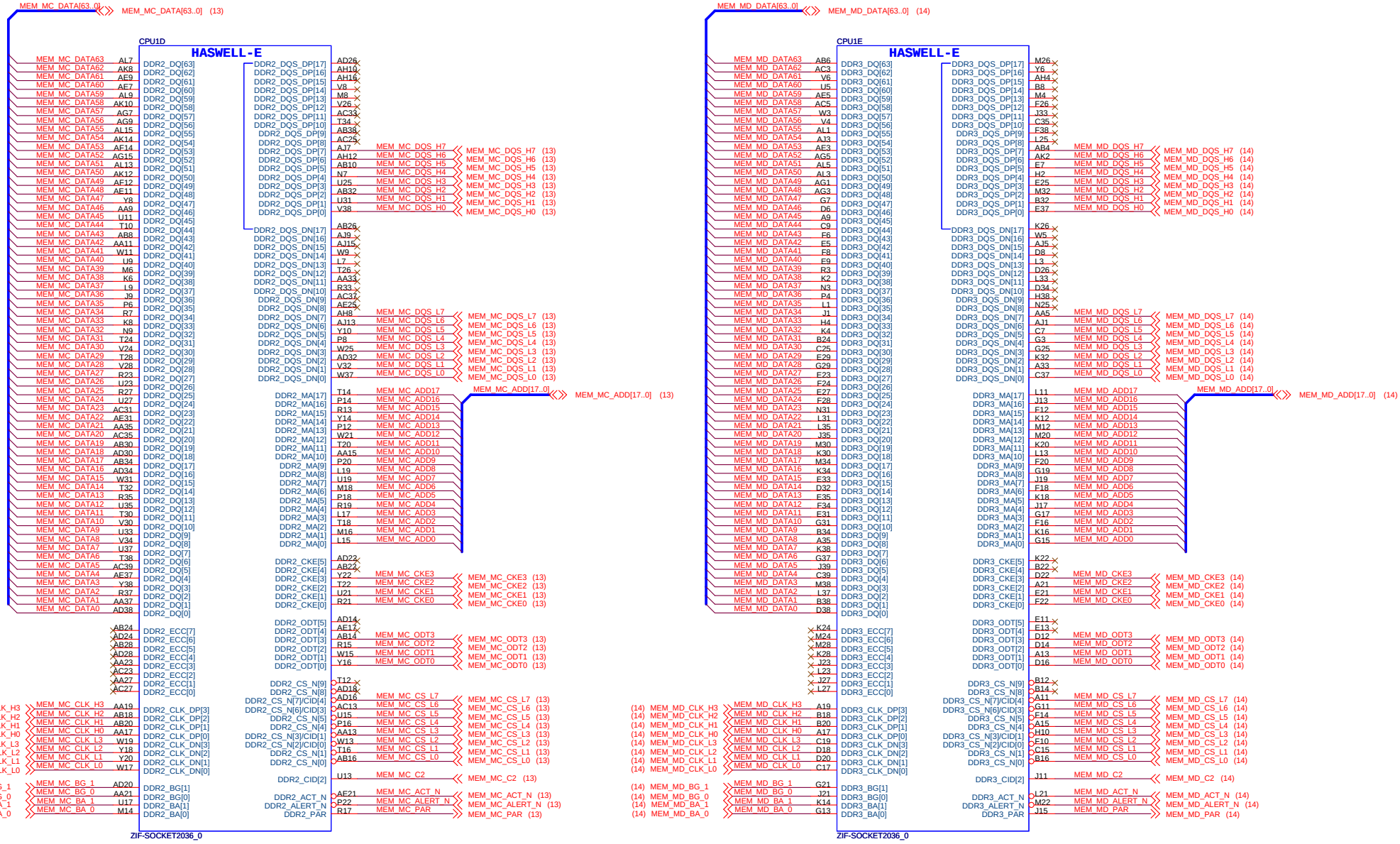
CPU-Memory2/3



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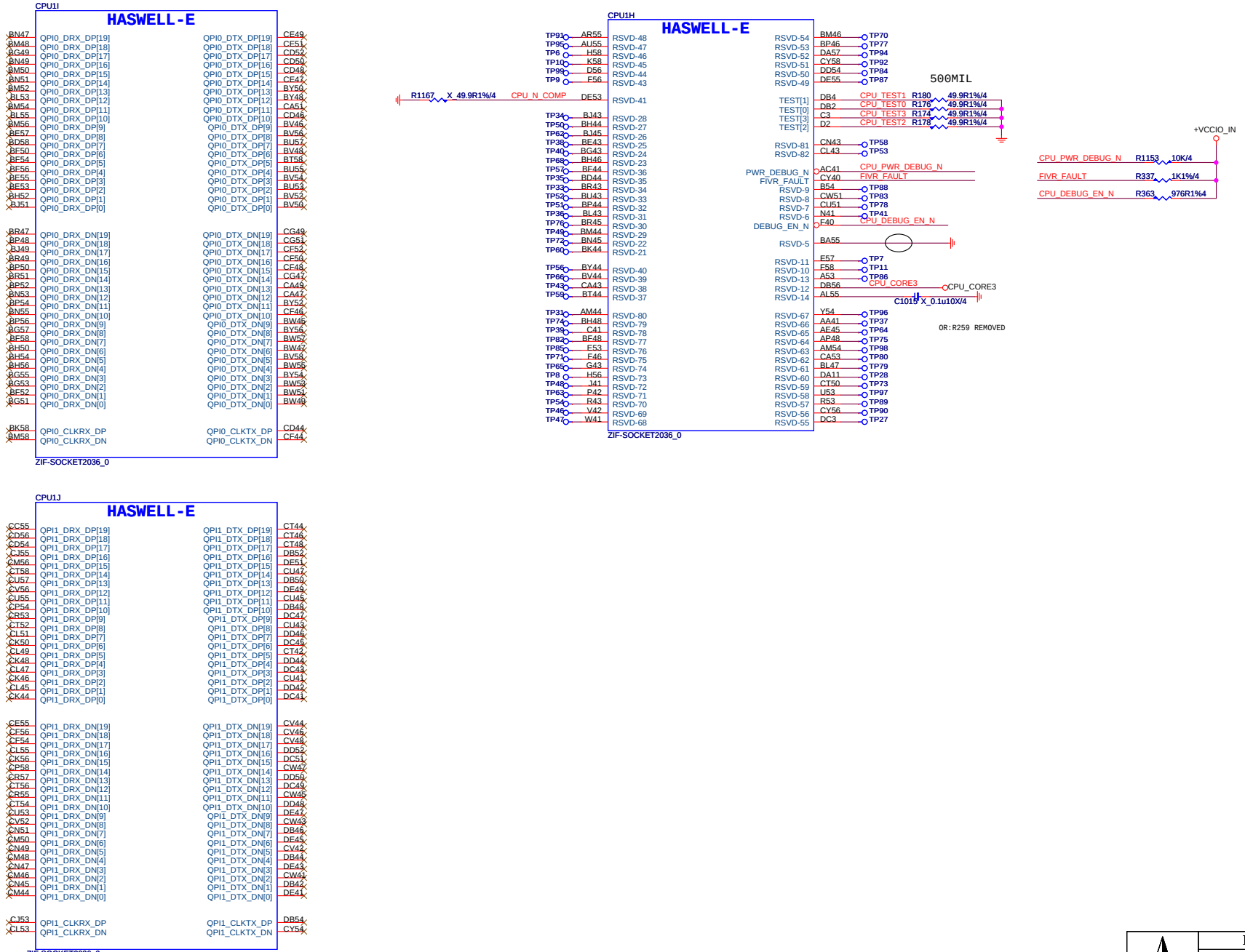
CPU-QPI/RESERVE



MICRO-STAR INT'L CO.,LTD

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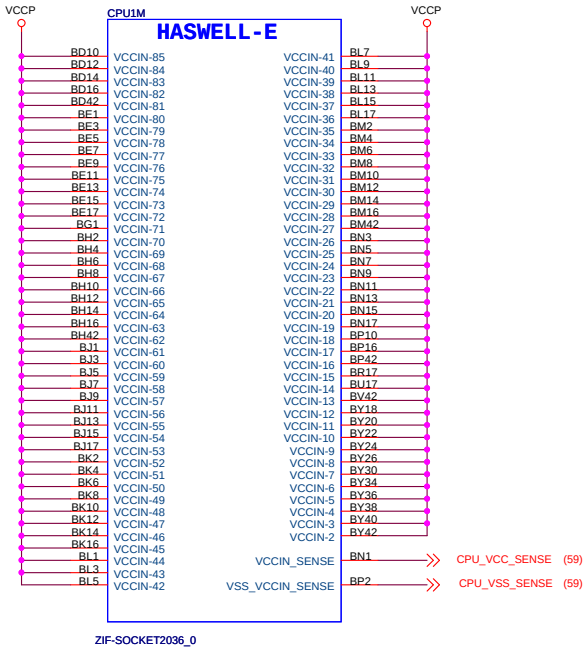
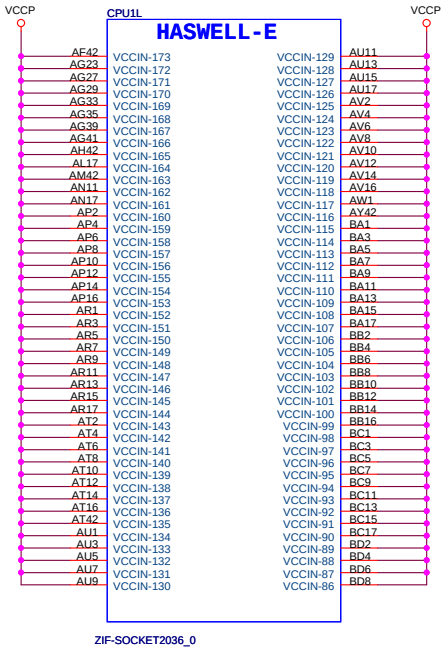
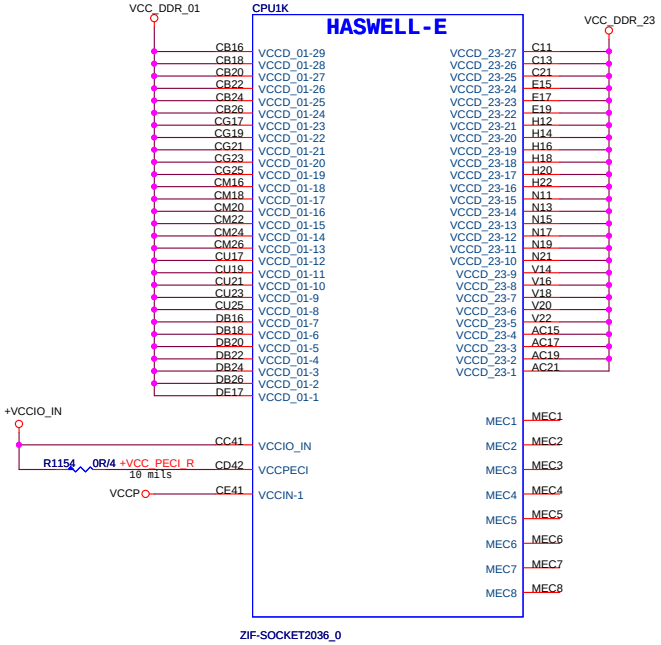
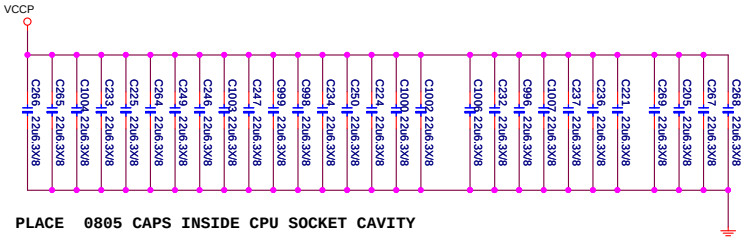
CPU-Power



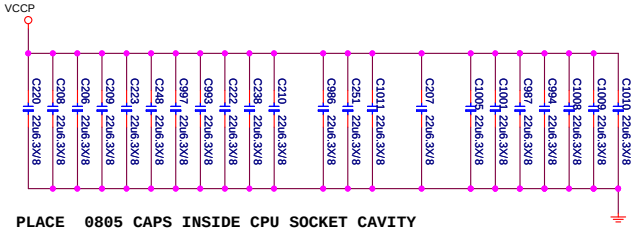




+CPU_VCCP-Decoupling



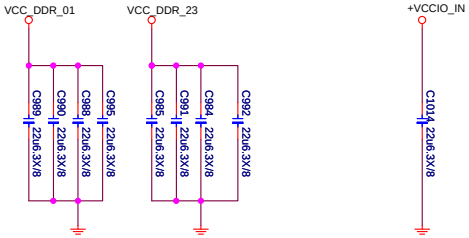
PLACE 0805 CAPS INSIDE CPU SOCKET CAVITY



PLACE 0805 CAPS INSIDE CPU SOCKET CAVITY

Skt cavity caps, place: 28 on top side & 26 on back side.

+CPU_DDR-Decoupling



PLACE 0805 CAPS INSIDE CPU SOCKET CAVITY

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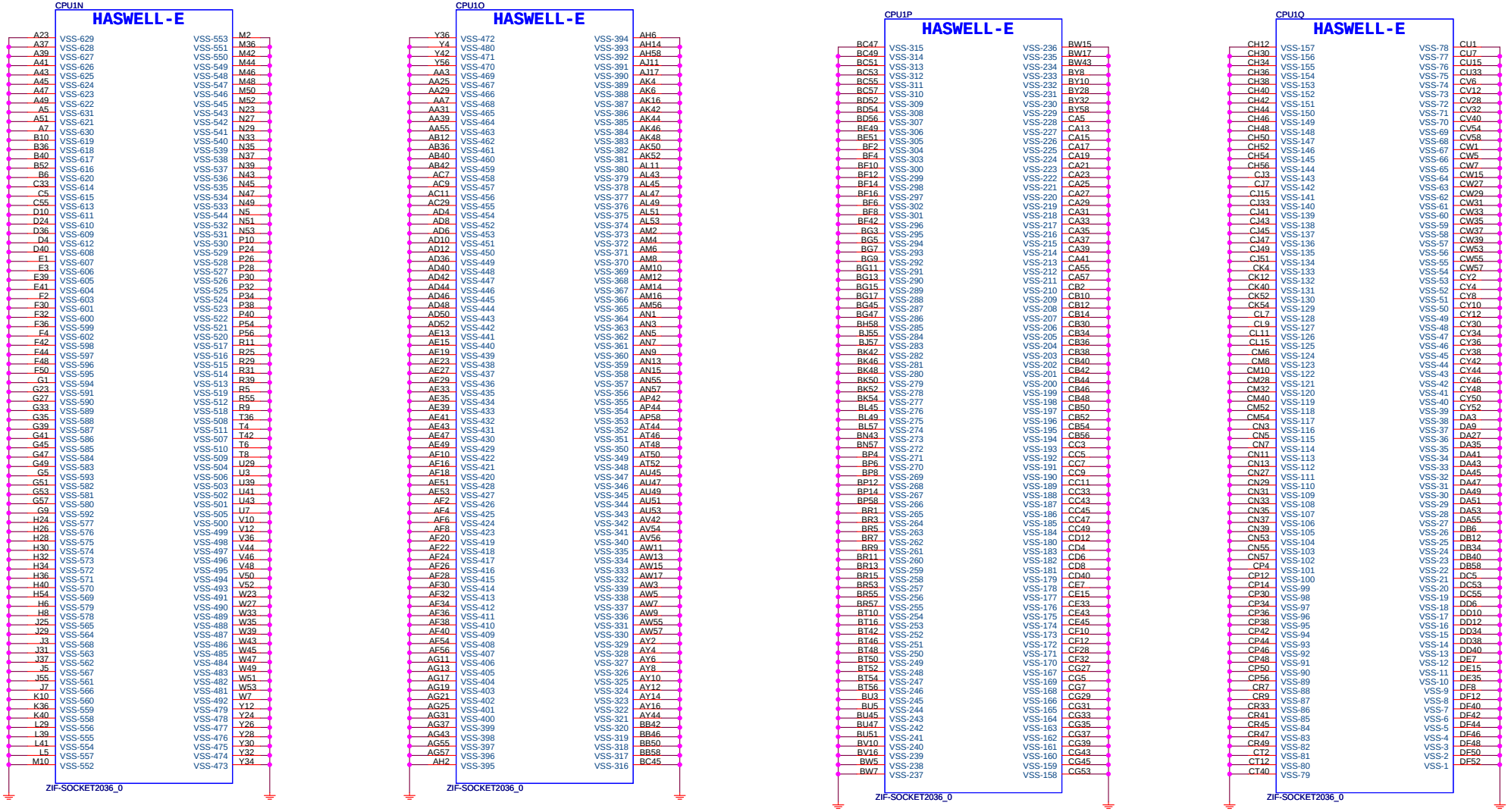
CPU-GND



MSI	MICRO-STAR INT'L CO.,LTD	
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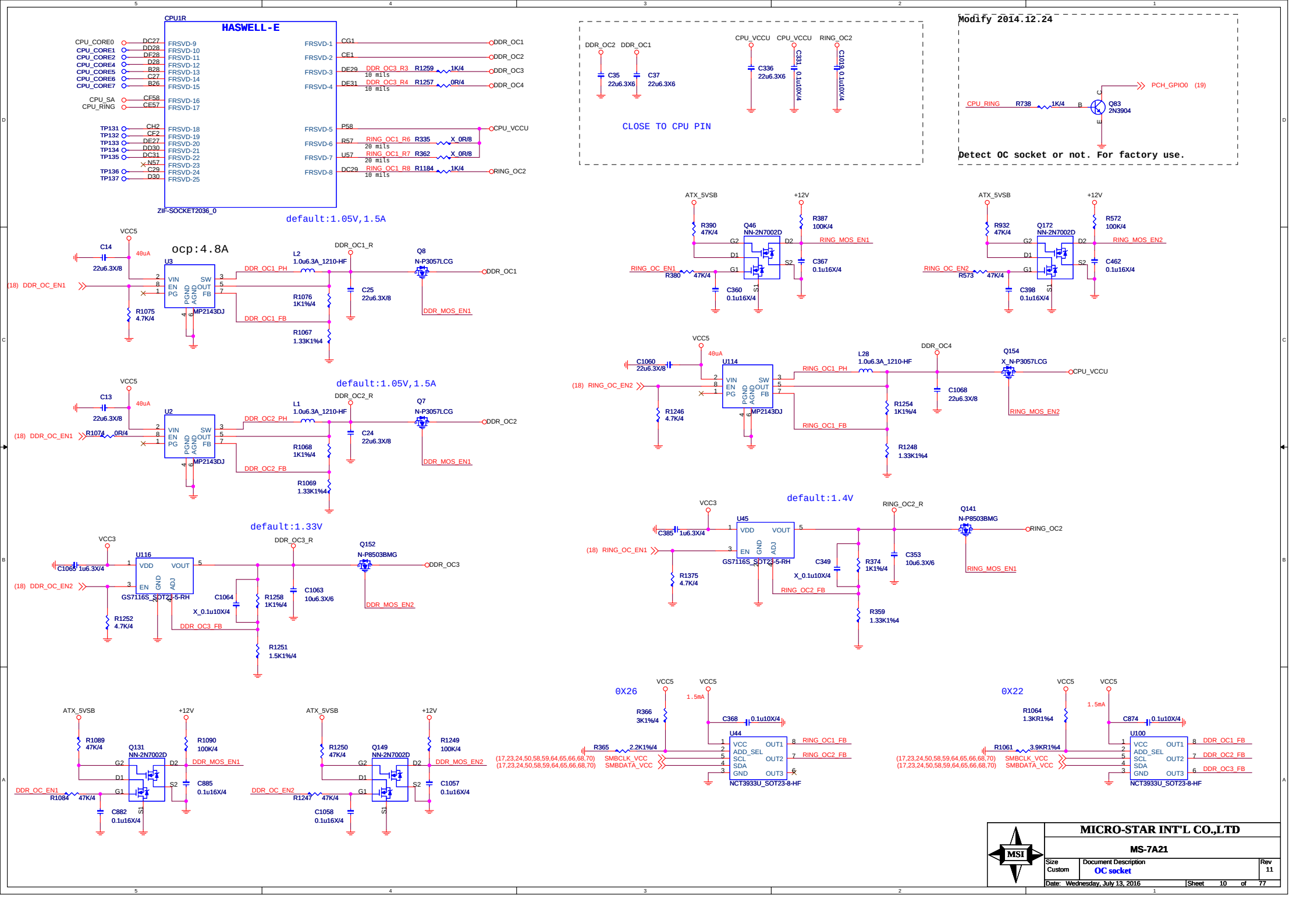
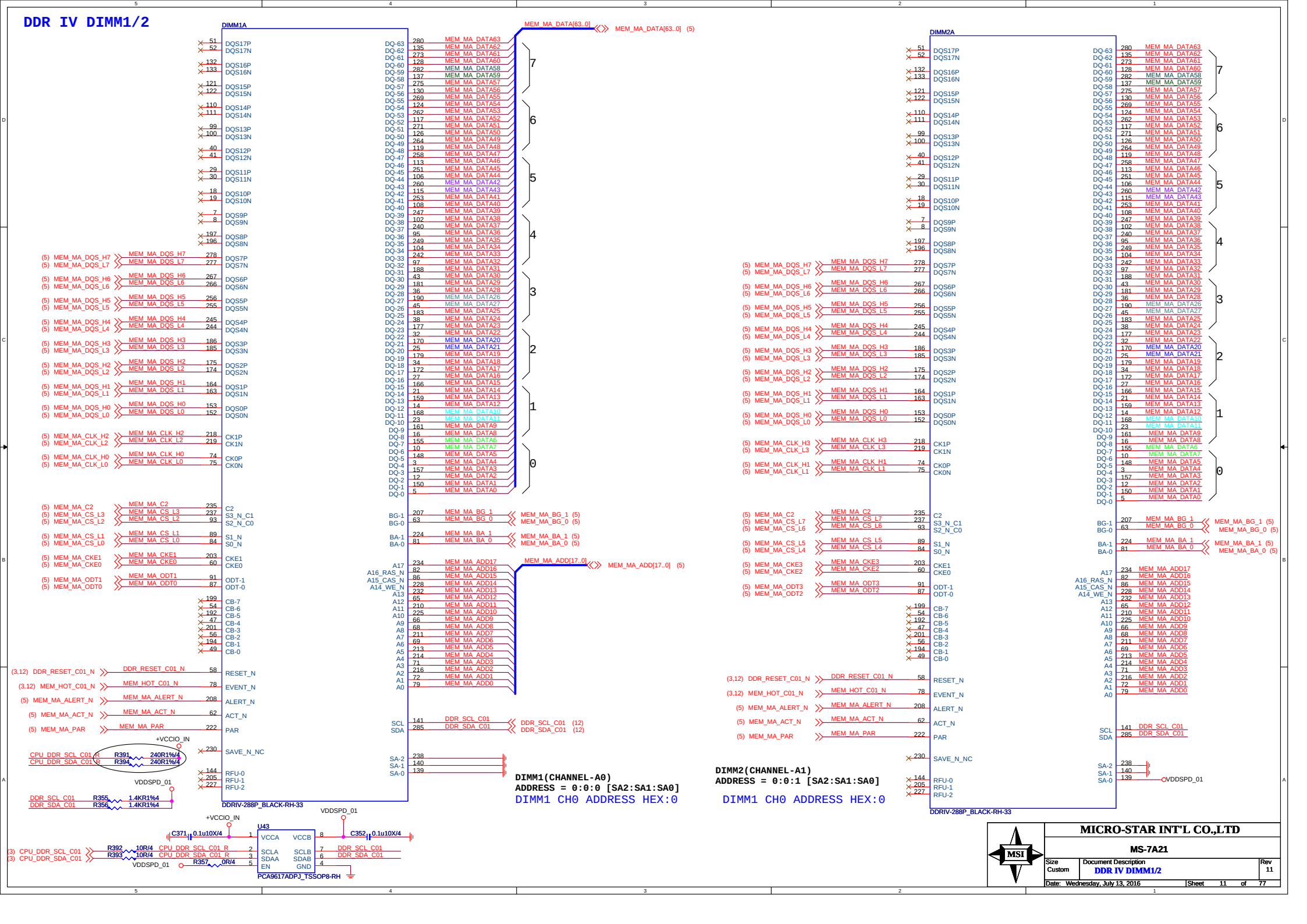

CPU1R
HASWELL-E
ZIF-SOCKET2036_0
CLOSE TO CPU PIN
Modify 2014.12.24
Detect OC socket or not. For factory use.
default:1.05V,1.5A
ocp:4.8A
default:1.05V,1.5A
default:1.33V
default:1.4V
0X26
0X22
MICRO-STAR INT'L CO.,LTD
MS-7A21
OC socket
Wednesday, July 13, 2016

DDR IV DIMM1/2



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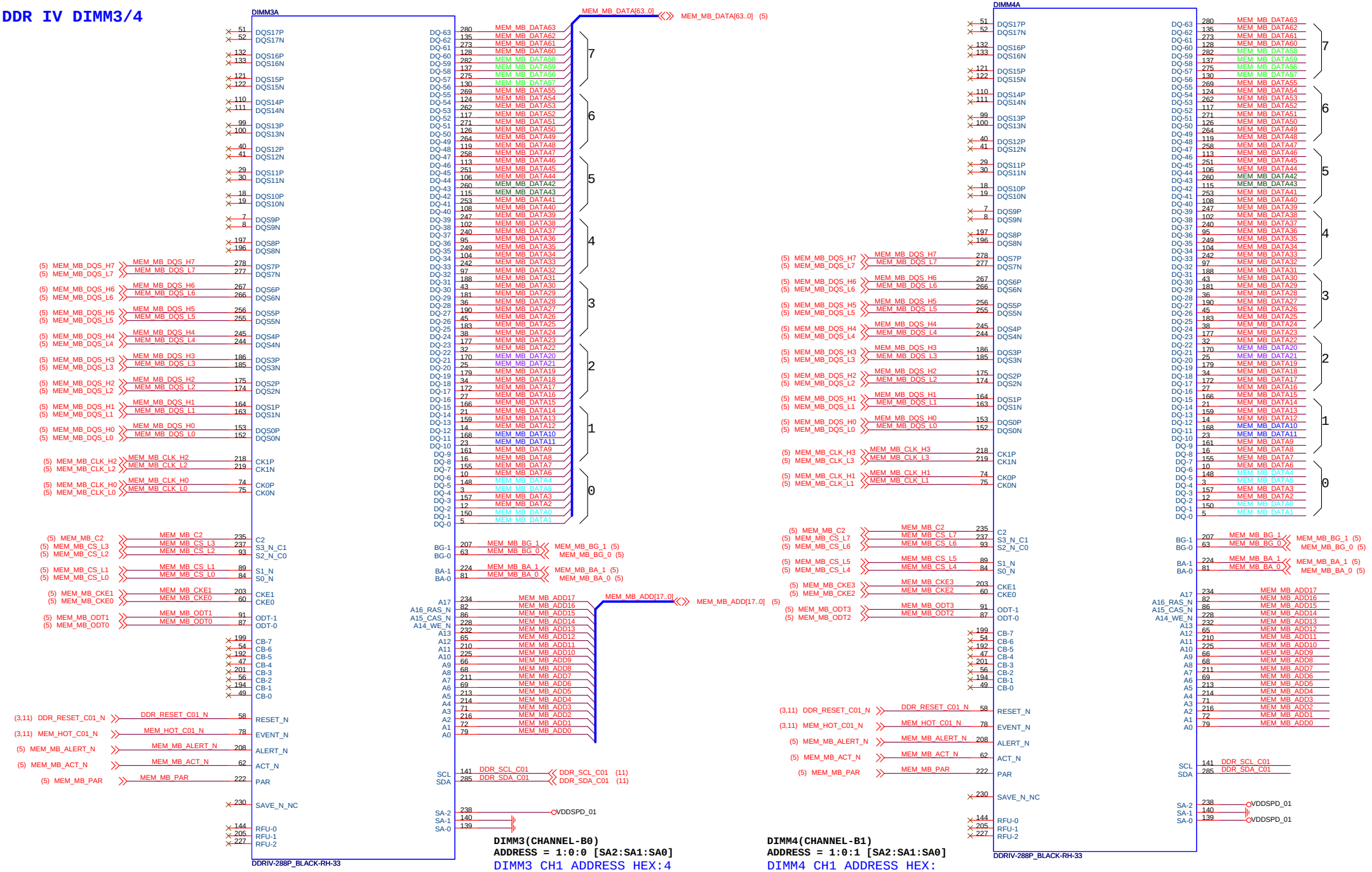
DDR IV DIMM3/4



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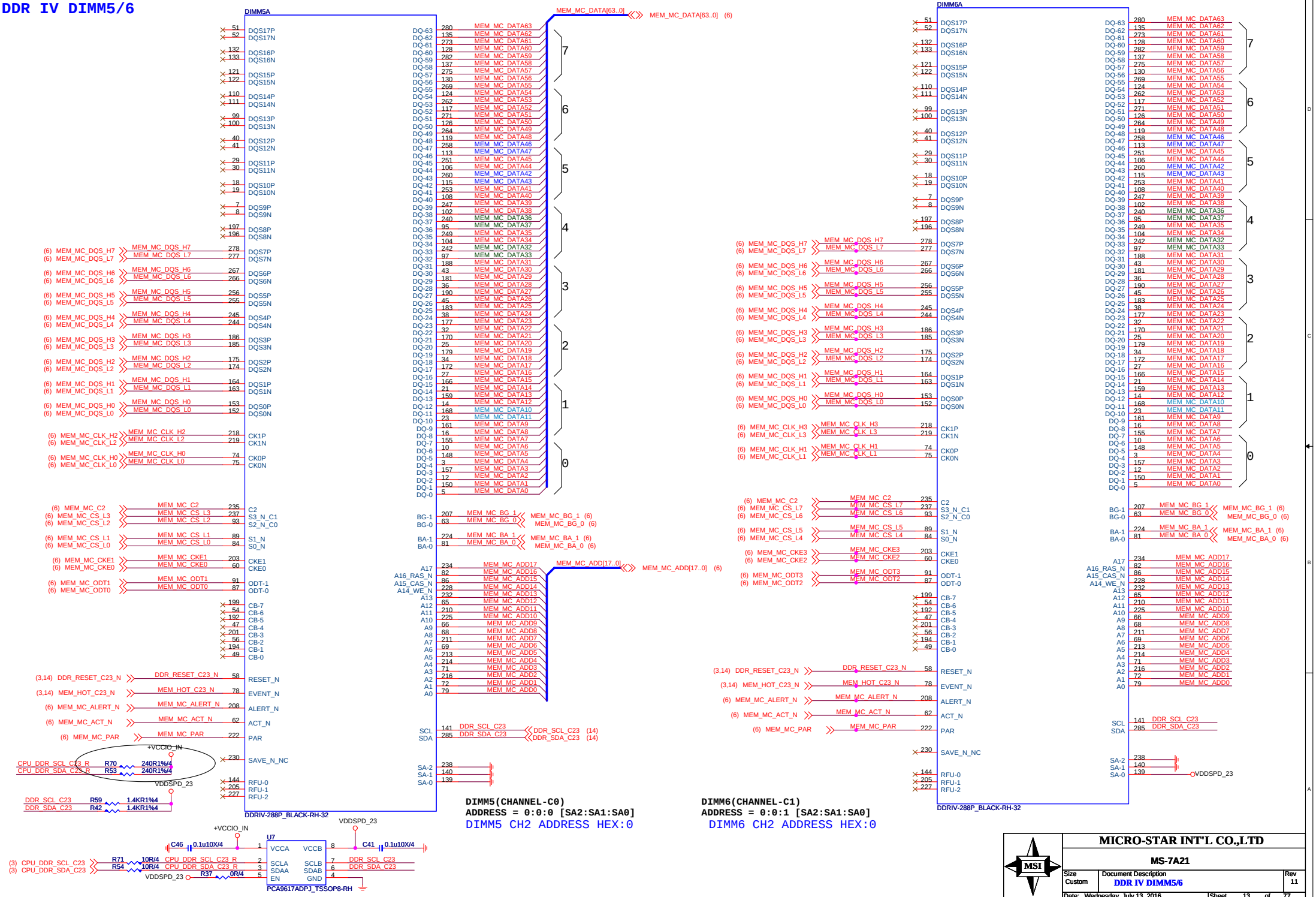
DDR IV DIMM5/6



DIMM5(CHANNEL-C0)
ADDRESS = 0:0:0 [SA2:SA1:SA0]
DIMM5 CH2 ADDRESS HEX:0

DIMM6(CHANNEL-C1)
ADDRESS = 0:0:1 [SA2:SA1:SA0]
DIMM6 CH2 ADDRESS HEX:0

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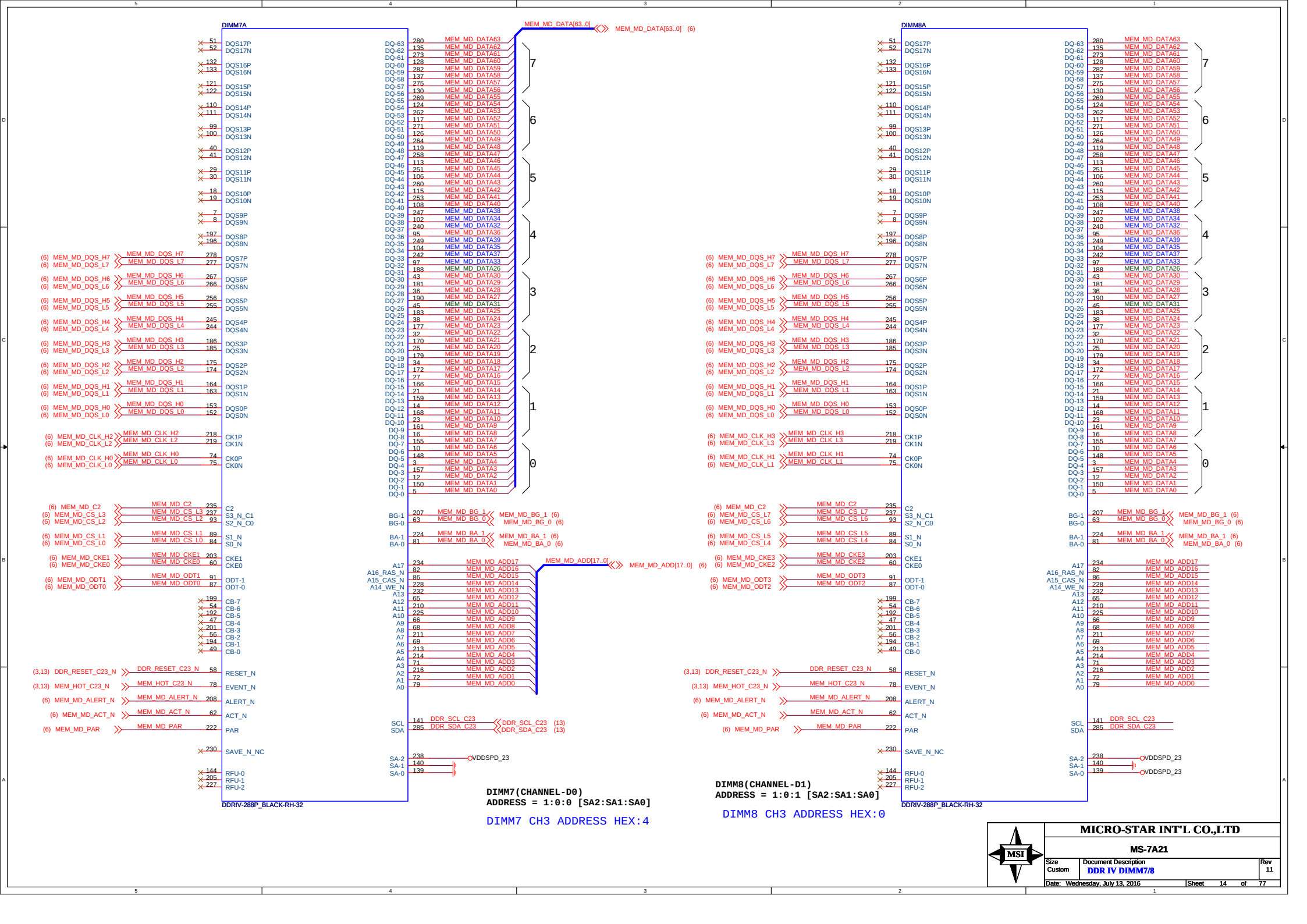
DIMM7A
DIMM8A
MEM_MD_DATA[63..0]
MEM_MD_DATA[63..0] (6)
MEM_MD_ADD[17..0]
MEM_MD_ADD[17..0] (6)
DDRIV-288P_BLACK-RH-32
DDRIV-288P_BLACK-RH-32
DIMM7(CHANNEL-D0)
ADDRESS = 1:0:0 [SA2:SA1:SA0]
DIMM7 CH3 ADDRESS HEX:4
DIMM8(CHANNEL-D1)
ADDRESS = 1:0:1 [SA2:SA1:SA0]
DIMM8 CH3 ADDRESS HEX:0
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Size
Custom
Document Description
DDR IV DIMM7/8
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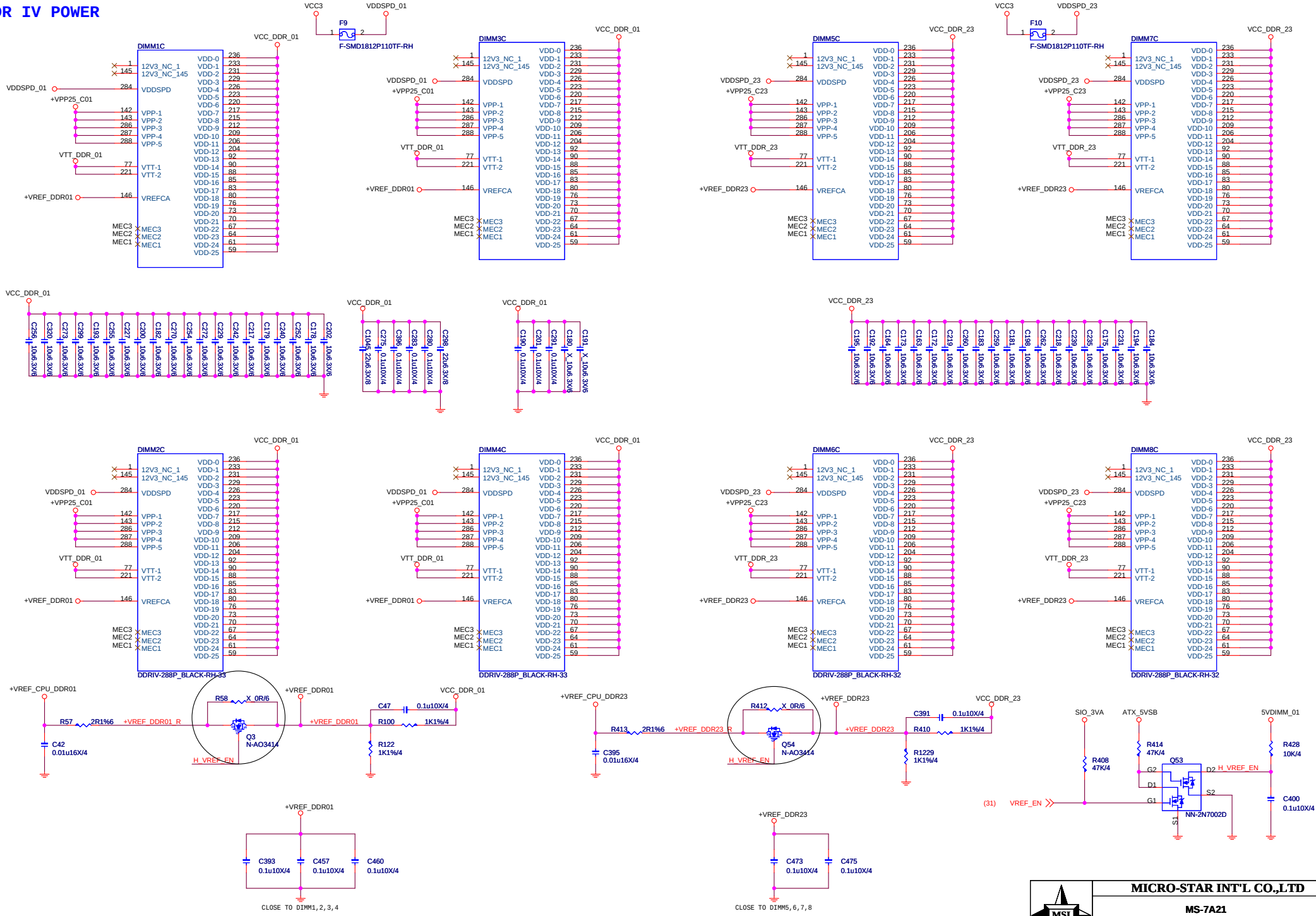
DDR IV POWER



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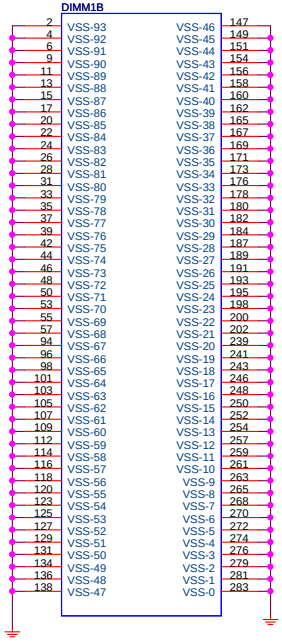
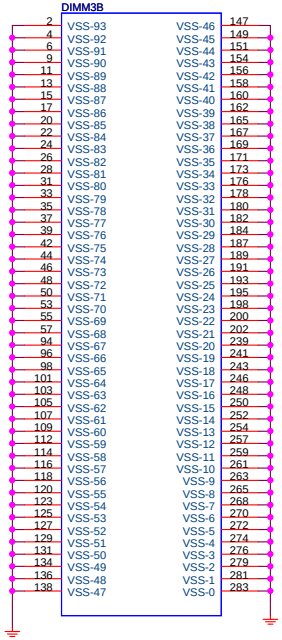
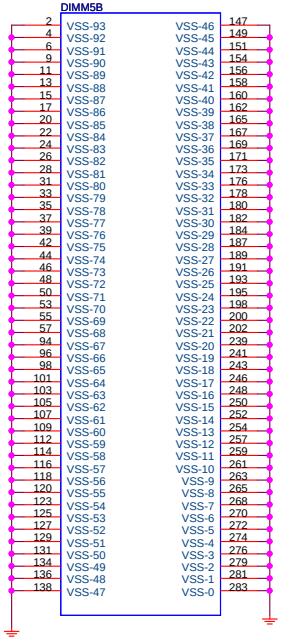
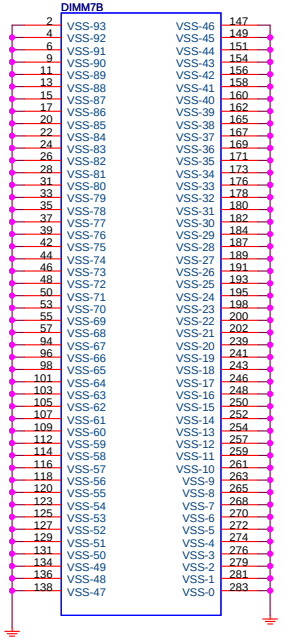
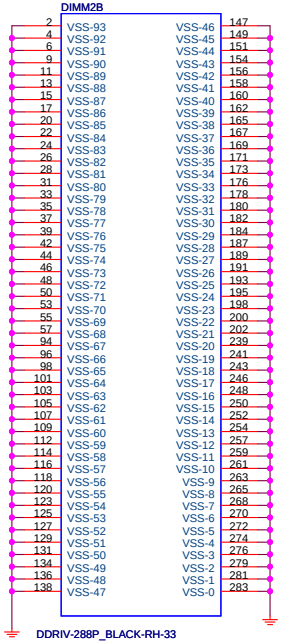
DDR IV GND

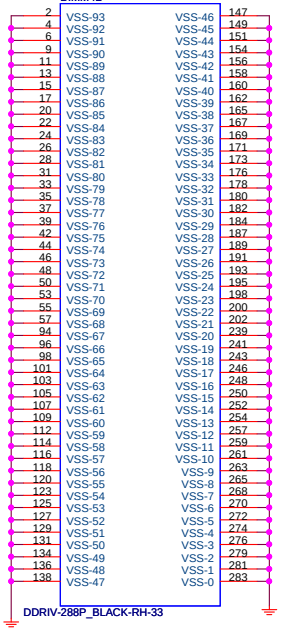


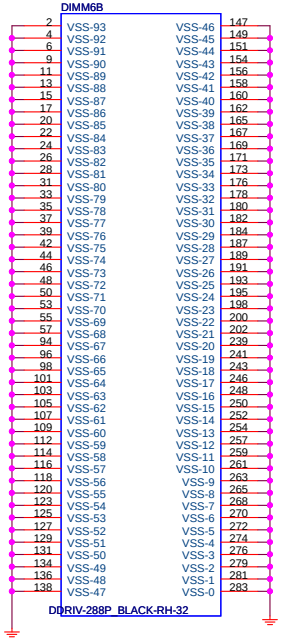


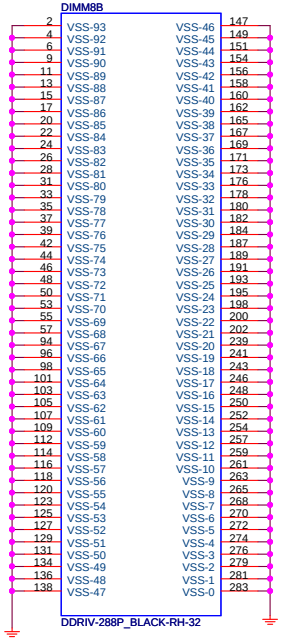












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PCH-LPC/HDA/RTC/MISC/SPI

PCH1D

LPC
LAD3
LAD2
LAD1
LAD0
GPIO23/LDRQ1_N
LDRQ0_N
LFRAME_N

HDA
HDA_SDI3
HDA_SDI2
HDA_SDI1
HDA_SDI0
HDA_SDO
HDA_BCLK
HDA_RST_N
HDA_SYNC

RTC
RTCX1
RTCX2
INTRUDER_N
DSWVRMEN
INTVRMEN
SMBALERT_N/GPIO11
SMBCLK
SMBDATA
SML1ALERT_N/PCHHOT_N/GPIO74/MGPIO8
SML1CLK/GPIO58/MGPIO11
SML1DATA/GPIO75/MGPIO12
SML0ALERT_N/GPIO60/MGPIO4
SML0CLK
SML0DATA
MEXP_SMBCLK0
MEXP_SMBCLK1
MEXP_SMBCLK2
MEXP_SMBDATA0
MEXP_SMBDATA1
MEXP_SMBDATA2
JTAG_TDI
JTAG_TDO
JTAG_TCK
JTAG_TMS

SPI
SPI_CLK
SPI_CS2_N
SPI_CS1_N
SPI_CS0_N
SPI_MOSI
SPI_MISO
SPI_IO2
SPI_IO3

Wellsburg

power management

SST
RCIN_N
SERIRQ
THRMTRIP_N
PECI
PM_SYNC
PM_SYNC2
SLP_A_N
SUSCLK/GPIO62
SUSWARN_N/GPIO30/MGPIO1
SUSACK_N
SLP_SUS_N
SLP_S3_N
SLP_S4_N
SLP_S5_N_GPIO63
SLP_LAN_N
APWROK
DPWROK
PCH_PWROK
PROCPWRGD
SYS_PWROK
DRAMPWROK
RTCRST_N
SRTCRST_N
RSMRST_N
PLTRST_N
PLTRST_PROC_N
SYS_RESET_N
PWRBTN_N
RI_N
PME_N
WAKE_N
TD_IREF
SPKR
CGC_DUT_DETECT_N

(38) AZ_SDOUT
(38) AZ_SYNC
(38) AZ_RST#
(38) AZ_BITCLK
AZ_BITCLK
RN17 33R/8P4R
AZ_SDOUT_R (22)
AZ_SDOUT_R
AZ_SYNC_R
AZ_RST#_R
AZ_BITCLK_R

3VSB
PCH_SMBALERT# R833 10K/4
PCH_SML1ALERT# R892 10K/4
PCH_SML1CLK R781 10K/4
PCH_SML1DATA R777 10K/4
PCH_SML0ALERT# R797 10K/4
SMLINK0_CLK R782 499R1%/4
SMLINK0_DATA R772 499R1%/4
data:499ohm

C744 X_10P50N/4 AZ_BITCLK

CRB:8.2K
RN14 8P4R-10KR0402
VCC3
SMB_CLK_MEXP2_S
SMB_CLK_MEXP0_S
SMB_CLK_MEXP1_S
SMB_DATA_MEXP2_S
SMB_DATA_MEXP0_S R741 10K/4
SMB_DATA_MEXP1_S R734 10K/4
PCH_GP23_DVGA R826 10K/4

SMB_DATA_MEXP1_S R735 X_10K/4
LT DEBUG MODE ENABLE
HIGH: NORMAL MODE (DEFAULT)
LOW : LT DEBUG MODE

SMB_DATA_MEXP0_S R740 X_10K/4
ADR TIMER HOLD OFF (DEFENSIVE)
NOTE: EXT PU ON SMB
HIGH: NORMAL MODE (DEFAULT)
LOW : ADR TIMER HOLD OFF

Chassis Intrusion
VBAT_WELL
R929 1M/4
JCI1
INTRUDER#
H1X2M_BLACK-RH

(31,69) LPC_AD3
(31,69) LPC_AD2
(31,69) LPC_AD1
(31,69) LPC_AD0
(72) PCH_GP23_DVGA
(31) LPC_DRQ#0
(31,69) LPC_FRAME#

(38) AZ_SDIN0
AZ_SDOUT_R
AZ_BITCLK_R
AZ_RST#_R
AZ_SYNC_R

RTCX1
RTCX2

INTRUDER#
(22) DSWODVREN
(22) INTVRMEN

(26,45,47,54,55) SMBCLK_VSB
(26,45,47,54,55) SMBDATA_VSB

(40) SMLINK0_CLK
(40) SMLINK0_DATA

MEXP_SMBCLK0
MEXP_SMBCLK1
MEXP_SMBCLK2
MEXP_SMBDATA0
MEXP_SMBDATA1
MEXP_SMBDATA2

TP123 TP23 TP125 TP22
JTAG_TDI
JTAG_TDO
JTAG_TCK
JTAG_TMS

(37,45) PCH_SPI_CLK
(37,45) PCH_SPI_CS#
(37,45) PCH_SPI_MOSI
(37,45) PCH_SPI_MISO
(37) PCH_SPI_IO2
(37) PCH_SPI_IO3

SST C43 KBRST# (31)
RCIN_N C25 SERIRQ (31,69)
SERIRQ A13 PCH_THERMTRIP_N R1318 0R/4 CPU_THERMTRIP_N (3)
THRMTRIP_N A21 R1332 X_0R/4 PM_PCH_PECI H_PECI (3,31)
PECI J18 PM_PCH_SYNC0 PM_PCH_SYNC0 (3)
PM_SYNC BJ27 PM_PCH_SYNC2 PM_PCH_SYNC2

SLP_A_N E48 PM_SLP_A_N
SUSCLK/GPIO62 J32 SUS_CLK SUS_CLK (22)
SUSWARN_N/GPIO30/MGPIO1 F43 PM_SUS_WARN_N
SUSACK_N A41 PM_SUSACK_N R768 0R/4
SLP_SUS_N H46 PM_SLP_SUS_N PM_SLP_SUS_N (31)
SLP_S3_N B46 SLP_S3# SLP_S3# (31,45,56,58,66,67)
SLP_S4_N J49 SLP_S4# SLP_S4# (31,45,56,58,63,64,65)
SLP_S5_N_GPIO63 D38 SLP_S5# SLP_S5# (71)
SLP_LAN_N J47 SLP_LAN# SLP_LAN# (40)

APWROK G29 APWROK
DPWROK N41 PM_DPWROK PM_DPWROK (31)
PCH_PWROK M48 PCH_PWROK PCH_PWROK (37,45)
PROCPWRGD F6 GPU_PWRGD CPU_PWRGD (3)
SYS_PWROK D30 SYS_PWROK SYS_PWROK (31)
DRAMPWROK B45 PCH_MEM_PWRGD PCH_MEM_PWRGD (3)

RTCRST_N P48 RTCRST# RTCRST# (22)
SRTCRST_N M46 SRTCRST#
RSMRST_N T44 RSMRST# RSMRST# (31)
PLTRST_N G38 PLTRST# PLTRST# (24,31)
PLTRST_PROC_N A17 CPU_RESET CPU_RESET (3)
SYS_RESET_N D26 FP_RST# FP_RST# (69)

PWRBTN_N N43 PWRBTN# PWRBTN# (31)
RI_N J39 PM_RI_N
PME_N C35 PM_PME_N
WAKE_N F44 PCH_WAKE# PCH_WAKE# (26,27,28,29,30,41,42,44,49,52)

TD_IREF BC6 TD_IREF R1323 8.2K1%/4
SPKR C27 SPKR SPKR (22,69)
CGC_DUT_DETECT_N D48 PCH_DUT_DETECT R811 10K/4 3VSB

The negative min timing implies that DRAMPWROK must either fall before SLP_S4# or within 100 ns after it.

+VCCIO_IN
PM_PCH_SYNC2 R726 X_10K/4
R729 X_10K/4

VCC3
KBRST# R720 10K/4
SERIRQ R699 10K/4

3VA
PM_SLP_A_N R809 X_22K/4
SLP_S3# R831 X_22K/4
SLP_S4# R807 X_22K/4

CHECK LIST
3VA
PM_DPWROK R874 2.2K1%/4
R873 100K/4
PM_SUS_WARN_N R765 X_10K/4 3VSB
PM_SUSACK_N R769 X_10K/4 3VSB
RSMRST# R886 4.7K/4 3VSB

VCC3
FP_RST# R727 2.2K/4

3VA
PWRBTN# R891 X_22K/4

PM_RI_N R812 10K/4 3VSB
PM_PME_N R752 10K/4
PCH_WAKE# R828 1K/4 3VA

CHECK LIST
SLP_LAN# R806 X_10K/4 3VSB

RTC Block

Close to PCH
C736 C12p50N6
C737 C12p50N6
Y3 32.768KHZ12.5p
R859 10MR/6
RTCX1
RTCX2

VBAT_WELL
R1354 20K1%/4
SRTCRST#
C721 1u16X/6
VBAT_WELL
R876 20K1%/4
RTCRST#
C738 1u16X/6

(24,59) VRM_PGD
R869 X_0R/4 SYS_PWROK
R861 0R/4 PCH_PWROK_R
PCH_PWROK_R (31,59)
PCH_PWROK_R R878 X_0R/4 WDT# (31,69)
Trace length of APWROK must be less than PCH_PWROK
R857 0R/4 PCH_PWROK
PCH_PWROK_R R879 0R/4 APWROK
R880 X_10K/4
R858 X_10K/4
C740 X_100p50N/4

(52) SUS_CLK_WIFI
(49) SUS_CLK_M2
R1343 39R/1%
R1344 39R/1%
3VSB
U120
VDD OE
Q0 Q3
Q1 Q2
GND ICLK
ICS553MILF_SOIC8-RH
R1342 10K/4
SUS_CLK
colse to PIN1,PIN8
C1144 0.01u16X/4

(10,23,24,50,58,59,64,65,66,68,70) SMBCLK_VCC
R815 0R/4 SMBCLK_VSB
(10,23,24,50,58,59,64,65,66,68,70) SMBDATA_VCC
R803 0R/4 SMBDATA_VSB

Q87
SMB_EN
SMBDATA_VSB
SMB_EN
SMBCLK_VSB
SMBCLK_VCC
X_NN-2N7002DW
SMBDATA_VCC

VCC3
SMBCLK_VCC R836 2.2K/4
SMBDATA_VCC R796 2.2K/4

3VSB
SMBCLK_VSB R800 X_2.2K/4
SMBDATA_VSB R791 X_2.2K/4

3VSB
+12V
R839 X_10K/4
R825 X_47K/4
SMB_EN
Q86 X_2N3904
PCH_PWROK_R
Q90 X_2N7002

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PCH-DMI/PCIE/USB/SATA

PCH1B

DMI

DMI_RXP3 DMI_RXN3 DMI_RXP2 DMI_RXN2 DMI_RXP1 DMI_RXN1 DMI_RXP0 DMI_RXN0 DMI_RCOMP DMI_IREF

DMI_TXP3 DMI_TXN3 DMI_TXP2 DMI_TXN2 DMI_TXP1 DMI_TXN1 DMI_TXP0 DMI_TXN0

(4) DMI_TX3 / DMI_TX3# / DMI_TX2 / DMI_TX2# / DMI_TX1 / DMI_TX1# / DMI_TX0 / DMI_TX0#

PCH_RCOMP_VCC — R667 7.5K1%/4 DMI_RCOMP — R666 0R/4 DMI_IREF1P5

PCIE

PERP_8 PERN_8 PERP_7 PERN_7 PERP_6 PERN_6 PERP_5 PERN_5 PERP_4 PERN_4 PERP_3 PERN_3 PERP_2/USB3RP_4 PERN_2/USB3RN_4 PERP_1/USB3RP_3 PERN_1/USB3RN_3 PCIE_RCOMP PCIE_IREF

(29) PE8_SLOT5_RX / (29) PE8_SLOT5_RX# / (52) PE7_WIFI_BT_RX / (52) PE7_WIFI_BT_RX# / (41) PE6_ASM_USB_RX / (41) PE6_ASM_USB_RX# / (41) PE5_ASM_USB_RX / (41) PE5_ASM_USB_RX# / (44) VIA_USB_RX / (44) VIA_USB_RX# / (40) PE3_PHY_RX / (40) PE3_PHY_RX# / (53) MB_USB30_RX5+ / (53) MB_USB30_RX5- / (53) MB_USB30_RX4+ / (53) MB_USB30_RX4-

PCH_RCOMP_VCC — R1321 7.5K1%/4 PCIE_RCOMP — R1317 0R/4 PCIE_IREF1P5

PETP_8 PETN_8 PETP_7 PETN_7 PETP_6 PETN_6 PETP_5 PETN_5 PETP_4 PETN_4 PETP_3 PETN_3 PETP_2/USB3TP_4 PETN_2/USB3TN_4 PETP_1/USB3TP_3 PETN_1/USB3TN_3

PE8_SLOT5_TX (29) / PE8_SLOT5_TX# (29) / PE7_WIFI_BT_TX (52) / PE7_WIFI_BT_TX# (52) / PE6_ASM_USB_TX (41) / PE6_ASM_USB_TX# (41) / PE5_ASM_USB_TX (41) / PE5_ASM_USB_TX# (41) / VIA_USB_TX (44) / VIA_USB_TX# (44) / PE3_PHY_TX (40) / PE3_PHY_TX# (40) / MB_USB30_TX5+ (53) / MB_USB30_TX5- (53) / MB_USB30_TX4+ (53) / MB_USB30_TX4- (53)

Rear LAN

USB

USB3RP6 USB3RN6 USB3RP5 USB3RN5 USB3RP2 USB3RN2 USB3RP1 USB3RN1

USB3TP6 USB3TN6 USB3TP5 USB3TN5 USB3TP2 USB3TN2 USB3TP1 USB3TN1

(55) MB_USB30_RX2+ / (55) MB_USB30_RX2- / (57) MB_USB30_RX1+ / (57) MB_USB30_RX1- / (57) MB_USB30_RX0+ / (57) MB_USB30_RX0-

MB_USB30_TX2+ (55) / MB_USB30_TX2- (55) / MB_USB30_TX1+ (57) / MB_USB30_TX1- (57) / MB_USB30_TX0+ (57) / MB_USB30_TX0- (57)

FTYPEC

Front USB30 JUSB3

USB2P13 USB2N13 USB2P12 USB2N12 USB2P11 USB2N11 USB2P10 USB2N10 USB2P9 USB2N9 USB2P8 USB2N8 USB2P7 USB2N7 USB2P6 USB2N6 USB2P5 USB2N5 USB2P4 USB2N4 USB2P3 USB2N3 USB2P2 USB2N2 USB2P1 USB2N1 USB2P0 USB2N0

MB_USB_13D+ (45) / MB_USB_13D- (45) / MB_USB_12D+ (52) / MB_USB_12D- (52) / MB_USB_11D+ (56) / MB_USB_11D- (56) / MB_USB_10D+ (56) / MB_USB_10D- (56) / MB_USB_9D+ (56) / MB_USB_9D- (56) / MB_USB_8D+ (56) / MB_USB_8D- (56) / MB_USB_7D+ (56) / MB_USB_7D- (56) / MB_USB_6D+ (56) / MB_USB_6D- (56) / MB_USB_4D+ (55) / MB_USB_4D- (55) / MB_USB_3D+ (53) / MB_USB_3D- (53) / MB_USB_2D+ (53) / MB_USB_2D- (53) / MB_USB_1D+ (57) / MB_USB_1D- (57) / MB_USB_0D+ (57) / MB_USB_0D- (57)

USB HOTKEY

Rear BT

Front USB20 JUSB1

Rear PS2

Front USB20 JUSB2

Front USB20 CHARGE FTYPEC

Rear LAN

Front USB20 JUSB3

Wellsburg

0A to 10

(31) SIO_PME_N / OC#6 / USB3_SMI1 / (44) USB3_SMI1 / (54,56) OC#4 / (45,56) OC#3 / (57) OC#2 / (53) OC#1 / (46,55) OC#0

OC7_N/GPIO14 OC6_N/GPIO10 OC5_N/GPIO9 OC4_N/GPIO43 OC3_N/GPIO42 OC2_N/GPIO41 OC1_N/GPIO40 OC0_N/GPIO59

USB_COMP — R802 22.6R1%4

USBRBIAS USBRBIAS_N

3VSB

R1349 10K/4 SIO_PME_N
R1346 10K/4 OC#6
R810 10K/4 USB3_SMI1
R1345 10K/4 OC#4
R794 X_10K/4 OC#3
R757 10K/4 OC#2
R758 10K/4 OC#1
R832 10K/4 OC#0

0A to 10

PCH_RCOMP_VCC — C1101 0.1u16X/4 / C1099 0.1u16X/4 / C1098 0.1u16X/4 / C1131 0.1u16X/4

PCH1C

SATA

sSATA_RXP_3 sSATA_RXN_3 sSATA_RXP_2 sSATA_RXN_2 sSATA_RXP_1 sSATA_RXN_1 sSATA_RXP_0 sSATA_RXN_0 SATA_RXP_5/PERP_2 SATA_RXN_5/PERN_2 SATA_RXP_4/PERP_1 SATA_RXN_4/PERN_1 SATA_RXP_3 SATA_RXN_3 SATA_RXP_2 SATA_RXN_2 SATA_RXP_1 SATA_RXN_1 SATA_RXP_0 SATA_RXN_0 sSATA_RCOMP sSATA_IREF

sSATA_TXP_3 sSATA_TXN_3 sSATA_TXP_2 sSATA_TXN_2 sSATA_TXP_1 sSATA_TXN_1 sSATA_TXP_0 sSATA_TXN_0 SATA_TXP_5/PETP_2 SATA_TXN_5/PETN_2 SATA_TXP_4/PETP_1 SATA_TXN_4/PETN_1 SATA_TXP_3 SATA_TXN_3 SATA_TXP_2 SATA_TXN_2 SATA_TXP_1 SATA_TXN_1 SATA_TXP_0 SATA_TXN_0 SATALED_N sSATALED_N SATA_RCOMP sSATA1GP sSATA2GP SATA3GP PWM3 PWM2 PWM1 PWM0 TACH7/GPIO71 TACH6/GPIO70 TACH5/GPIO69 TACH4/GPIO68 TACH3/GPIO7 TACH2/GPIO6 TACH1/GPIO1 TACH0/GPIO17 SCLOCK/GPIO22 SLOAD/GPIO38

sSATA0GP/GPIO21 sSATA1GP/GPIO19 SATA2GP/GPIO36 SATA3GP/GPIO37 SATA4GP/GPIO16/MGPIO9 SATA5GP/GPIO49/MGPIO10 SDATAOUT0/GPIO39 SDATAOUT1/GPIO48 sSDATAOUT0 sSDATAOUT1 sSLOAD sSCLOCK

(51) SATA_RX9 / (51) SATA_RX#9 / (51) SATA_RX8 / (51) SATA_RX#8 / (51) SATA_RX7 / (51) SATA_RX#7 / (51) SATA_RX6 / (51) SATA_RX#6 / (48) SATA_RX5 / (48) SATA_RX#5 / (48) SATA_RX4 / (48) SATA_RX#4 / (51) SATA_RX3 / (51) SATA_RX#3 / (51) SATA_RX2 / (51) SATA_RX#2 / (51) SATA_RX1 / (51) SATA_RX#1 / (51) SATA_RX0 / (51) SATA_RX#0

PCH_RCOMP_VCC — R745 7.5K1%/4 SATAS_RCOMP — R754 0R/4 SATAS_IREF1P5

PCH_RCOMP_VCC — R668 7.5K1%/4 SATA_RCOMP — R673 0R/4 SATA_IREF1P5

(71) OC_RETRY

(72) PCH_GP22_DDRAM

(51) SATA_TX9 / (51) SATA_TX#9 / (51) SATA_TX8 / (51) SATA_TX#8 / (51) SATA_TX7 / (51) SATA_TX#7 / (51) SATA_TX6 / (51) SATA_TX#6 / (48) SATA_TX5 / (48) SATA_TX#5 / (48) SATA_TX4 / (48) SATA_TX#4 / (51) SATA_TX3 / (51) SATA_TX#3 / (51) SATA_TX2 / (51) SATA_TX#2 / (51) SATA_TX1 / (51) SATA_TX#1 / (51) SATA_TX0 / (51) SATA_TX#0

SATALED_N — R675 0R/4 — R746 0R/4 — SATAS_LED_N_R (69)

VCC3

8P4R-10KR0402

PCH_GP21 (3) / PCH_GP19 (22) / PCH_GP36 (22) / PCH_GP37 (22)

PCH_GP16 / PCH_GP49 / PCH_GP39 / PCH_GP48 / SSDATAOUT0 / SSDATAOUT1

SSLOAD / SSCLOCK

Wellsburg

FOR BIOS USED

VCC3

R889 10K/4 PCH_GP69 R890 X_10K/4
R885 10K/4 PCH_GP70 R871 X_10K/4
R817 X_10K/4 PCH_GP71 R838 10K/4

BOM \ GPIO	69	70	71
010 MS-7A21 10	0	1	1
01S MS-7A21 11	0	0	1

PCH_1P5 — R665 0R/8
PCH_1P05 — R664 X_0R/8
PCH_RCOMP_VCC

(10) DDR_OC_EN1 — R1358 0R/4 PCH_GP68
(10) DDR_OC_EN2 — R888 0R/4 PCH_GP7
(10) RING_OC_EN1 — R1356 0R/4 PCH_GP6
(10) RING_OC_EN2 — R1370 0R/4 PCH_GP17

VCC3

PCH_GP17 — R872 X_10K/4
PCH_GP38
PCH_GP22_DDRAM
RN12 8P4R-10KR0402
PCH_GP68 — R1357 X_10K/4
PCH_GP6 — R1355 X_10K/4
PCH_GP7 — R887 X_10K/4
OC_RETRY — R805 10K/4

EMI RESERVATION

SATAS_RCOMP — C694 X_0.1u16X/4
SATA_RCOMP — C611 X_0.1u16X/4
PCIE_RCOMP — C1100 X_0.1u16X/4
DMI_RCOMP — C610 X_0.1u16X/4

VCC3

PCH_GP48 — R691 2K/4
SSDATAOUT0 — R761 2K/4
SSDATAOUT1 — R747 2K/4
SSLOAD — R739 10K/4
SSCLOCK — R749 10K/4
PCH_GP21 — R1308 10K/4
PCH_GP39 — R1315 2K/4

(48,49) PCH_M.2_DET

VCC3

R744 0R/4 PCH_GP16 R1316 X_10K/4
R743 0R/4 PCH_GP49 R732 X_10K/4

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CRB:0R

PCH1E

Programmable output clock
to 33/48MHZ

CRYSTAL:25MHZ

F75501 GPIO11 Connection to PCH GPIO4
F75501 GPIO12 Connection to PCH GPIO5
F75501 GPIO13 Connection to PCH GPIO1

PCH1A

CHECK LIST

HIGH: DISABLE
LOW : ENABLE

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PCH-POWER

PCH_1P05:5.83A

+1P05V_ME:0.67A

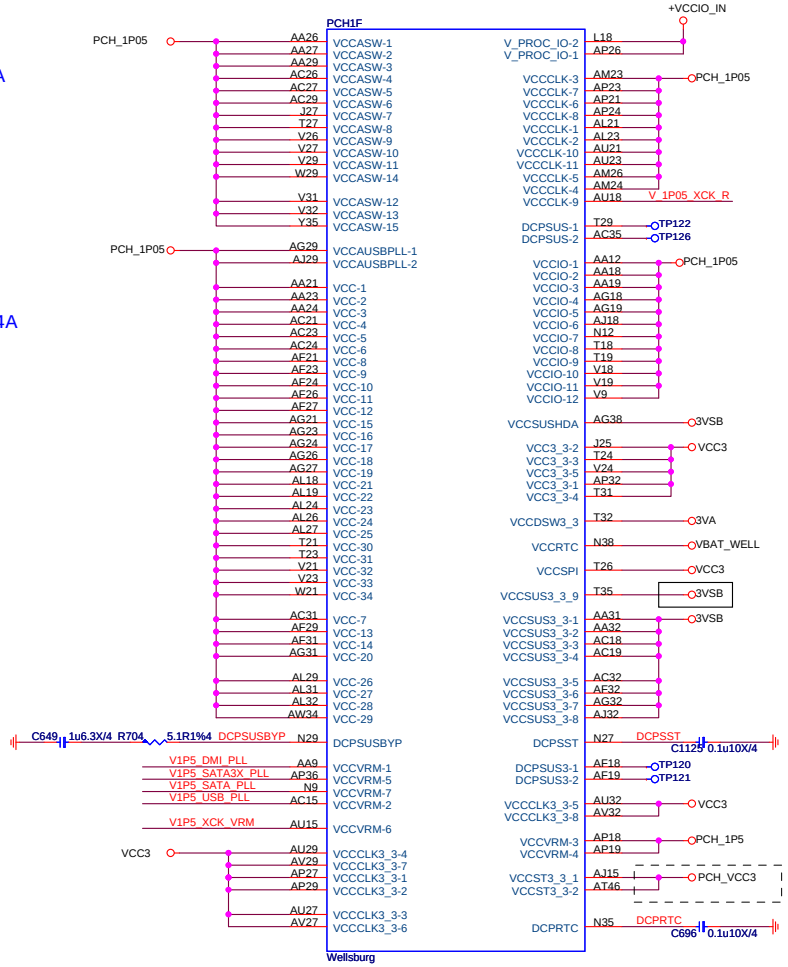
VCC3:0.2A

3VSB:0.27A

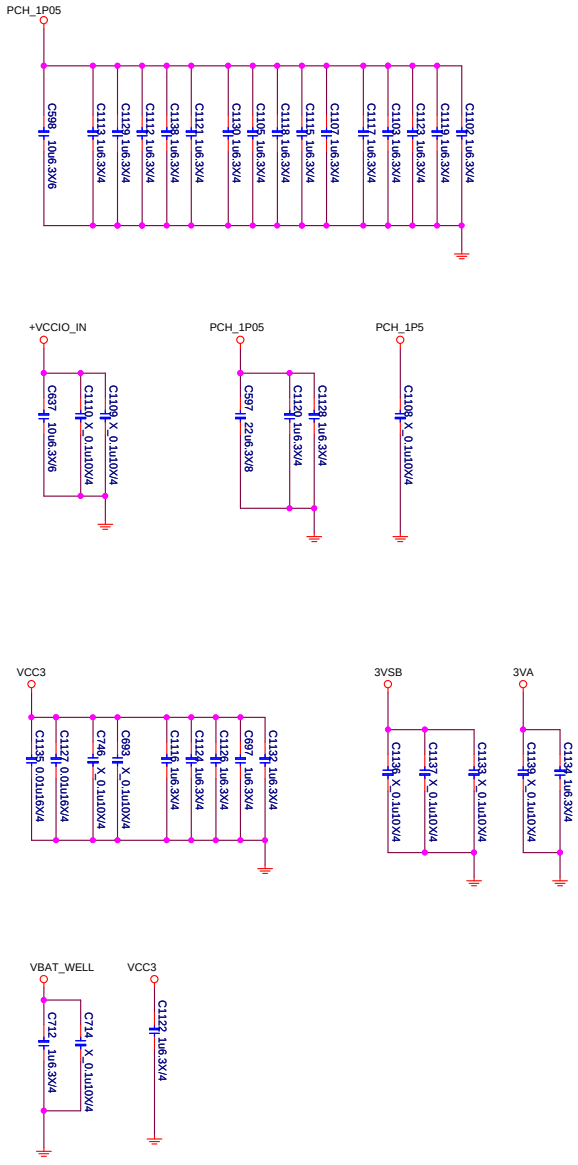
SPI_VCC3:0.02A

3VA:0.02A

+VCCIO_IN:0.004A



PCH decoupling cap



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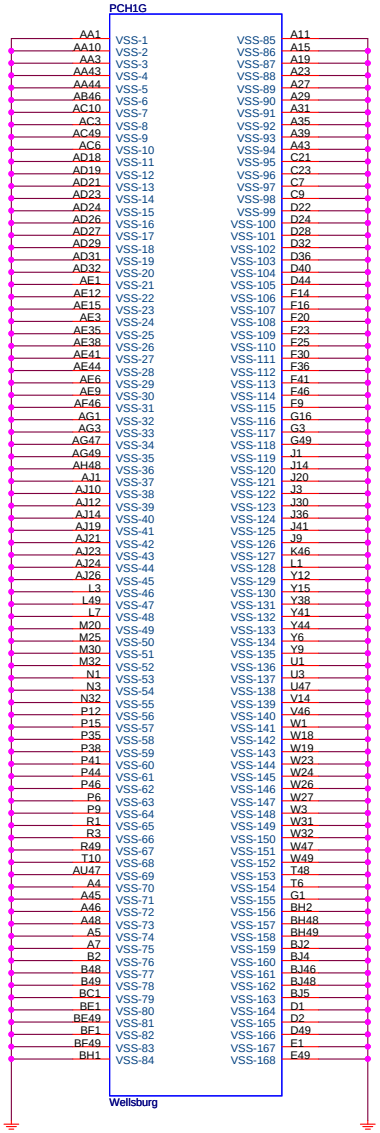
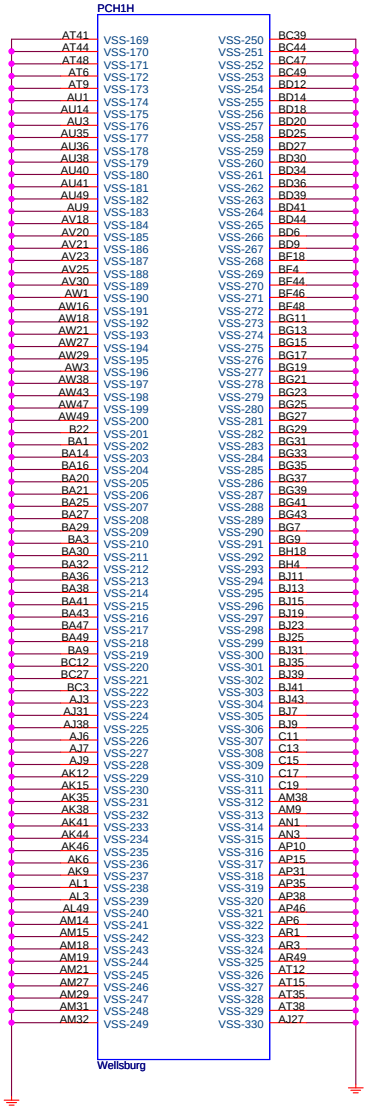
PCH-GND





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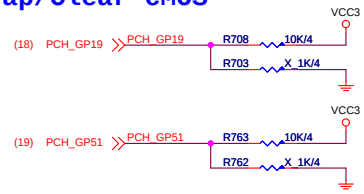
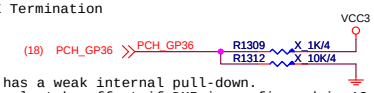
PCH Strap/Clear cMOS

	GP19	GP51
SPI	1	1
LPC	0	0



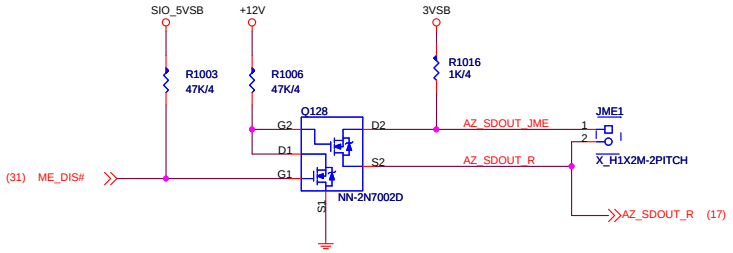
DMI RX Termination



This signal has a weak internal pull-down.
This signal only take effect if DMI is configured in AC-coupled mode.
0 = DMI RX is terminated to VSS.
1 = option not supported.

TLS CONFIDENTIALITY ENABLE STRAP

HIGH :TLS CONFIDENTIALITY ENABLE (DEFAULT)
LOW : RING OSCILLATOR BYPASS
LOW :TLS CONFIDENTIALITY DISABLE



HIGH (1-2):SECURITY MEASURES OVERRIDEN
LOW (0-1) : SECURITY PER FLASH DESCRIPTOR (DEFAULT)

DEEP SLEEP WELL ON-DIE VRM ENABLE

HIGH: ENABLE (INTERNAL SUPPLY) (DEFAULT)
LOW: DISABLE (EXTERNAL SUPPLY)

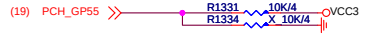
INTEGRATED SUS 1.05V VRM ENABLE

HIGH: ENABLE (INTERNAL SUPPLY) (DEFAULT)
LOW: DISABLE (EXTERNAL SUPPLY)

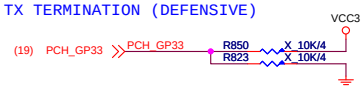
PLL ON-DIE VR ENABLE

HIGH :PLL ON-DIE VR ENABLE. INT PU. (DEFAULT)
LOW :PLL ON-DIE VR DISABLE

Top-Block Swap Override



DMI TX TERMINATION (DEFENSIVE)



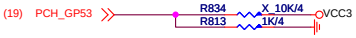
This signal has a weak internal pull-down.
This signal only takes effect if DMI is configured in DC-coupled mode.
0 = DMI TX is terminated to VSS.
1 = DMI TX is terminated to VCC/2.

LOW : REBOOT
HIGH: NO-REBOOT

NO REBOOT OPTION STRAP

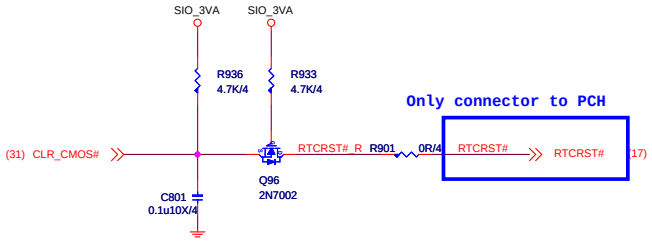
DMI AC Coupling

CHECK LIST

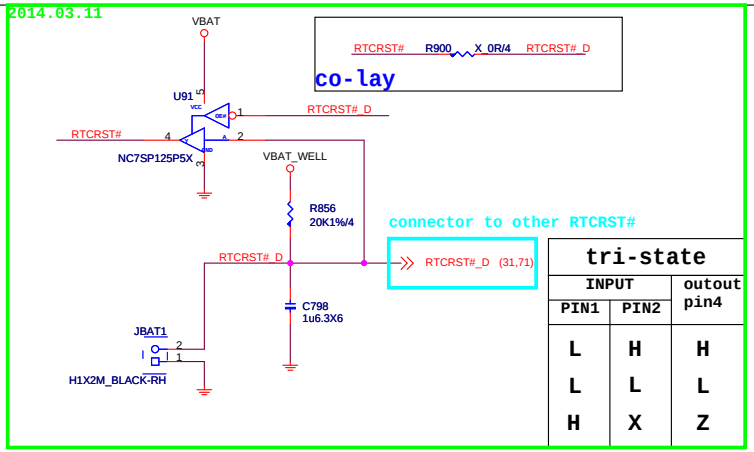


This Signal has a weak internal pull-up.
0= Configures DMI for AC coupling mode.
1 = Configures DMI for DC coupling mode.

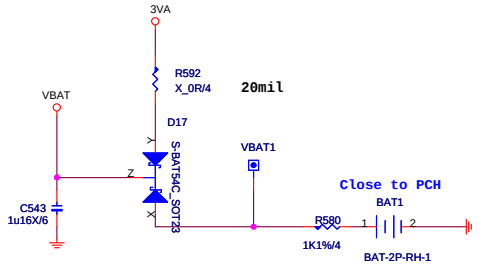
RTC and CLR_CMOS



2014.03.11



tri-state		
INPUT		outout
PIN1	PIN2	pin4
L	H	H
L	L	L
H	X	Z



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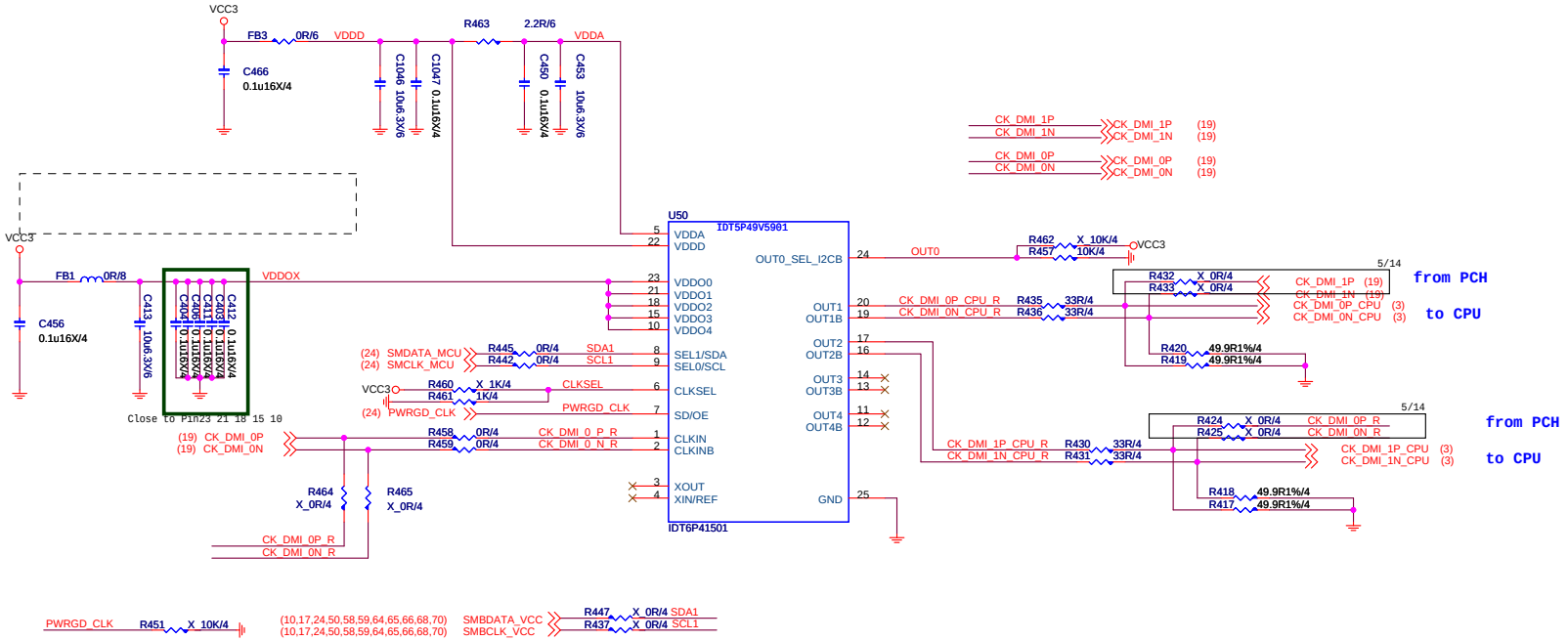

PIN:CLKSEL. Input clock select. Selects the active input reference source in manual switchover mode.
0 = XIN/REF, XOUT (default)
1 = CLKIN, CLKINB

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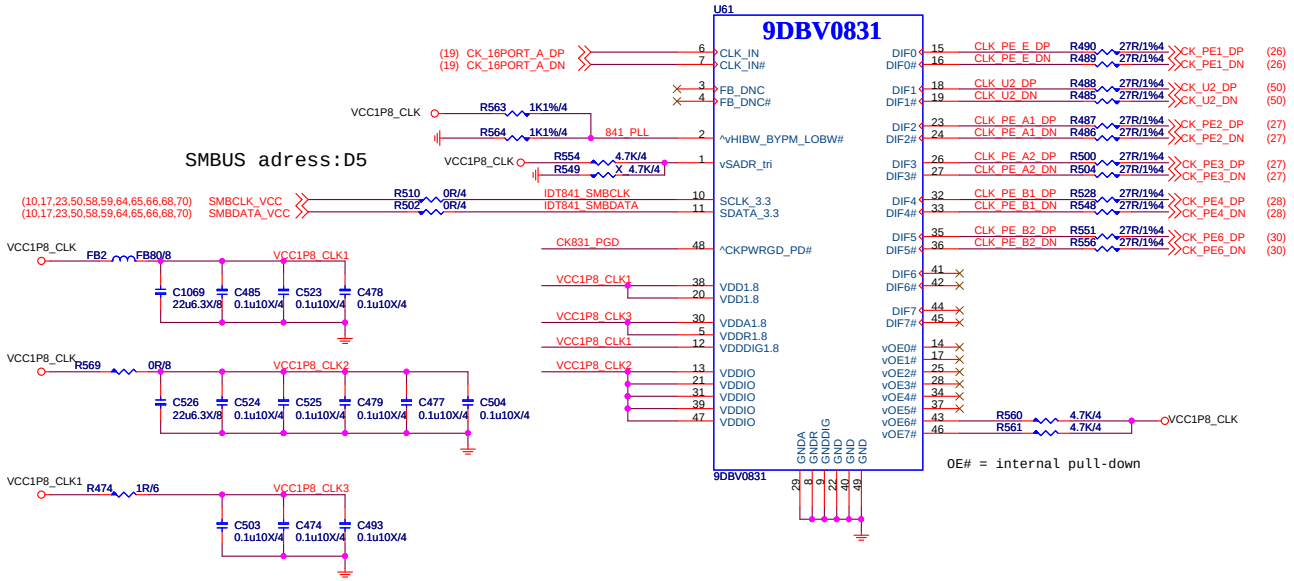
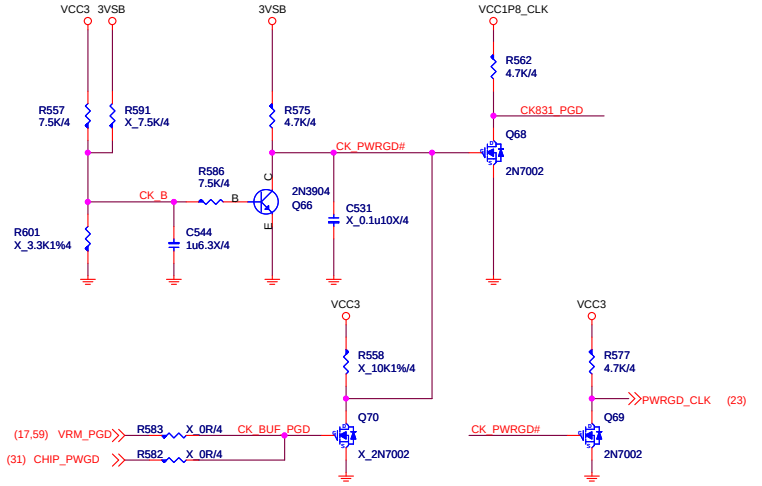
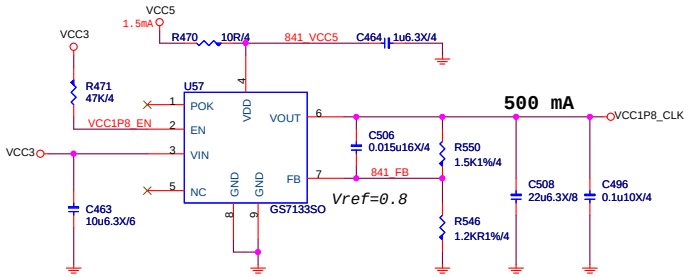
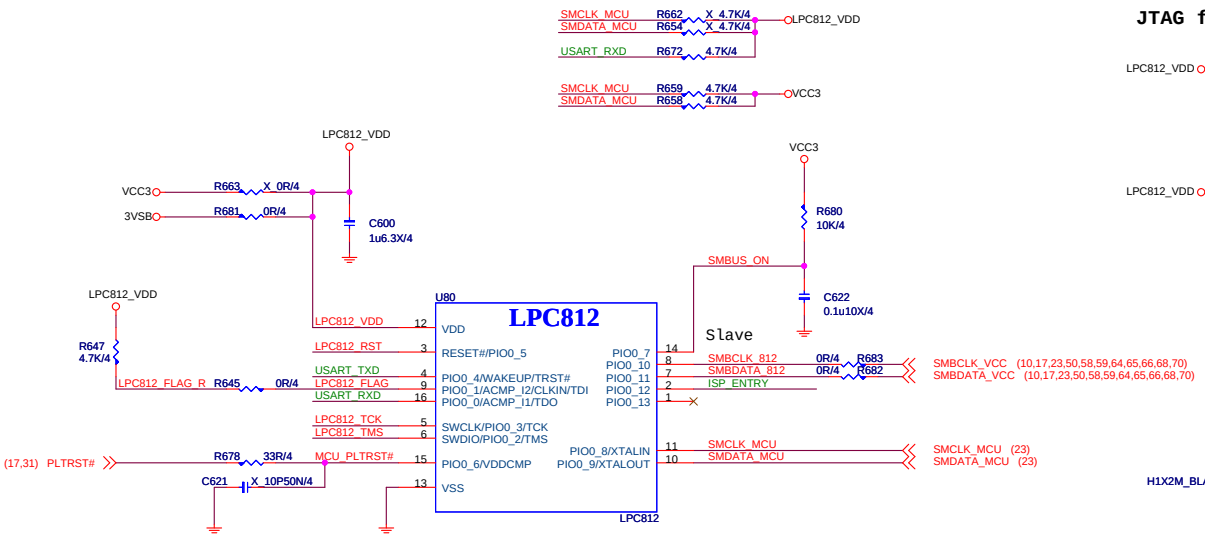
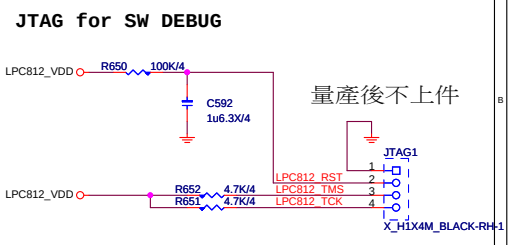


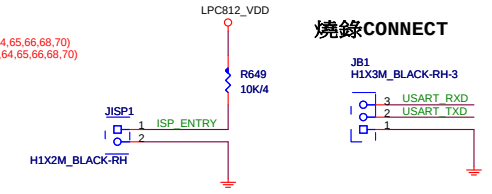




SIO 6792 , GPIO13
default low , active high







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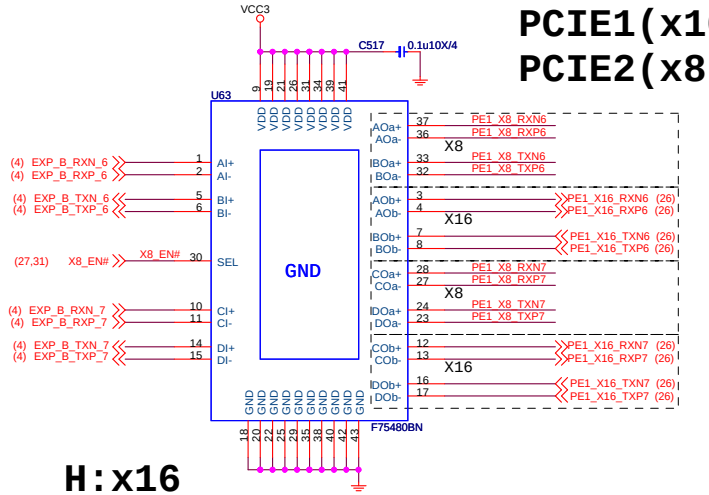
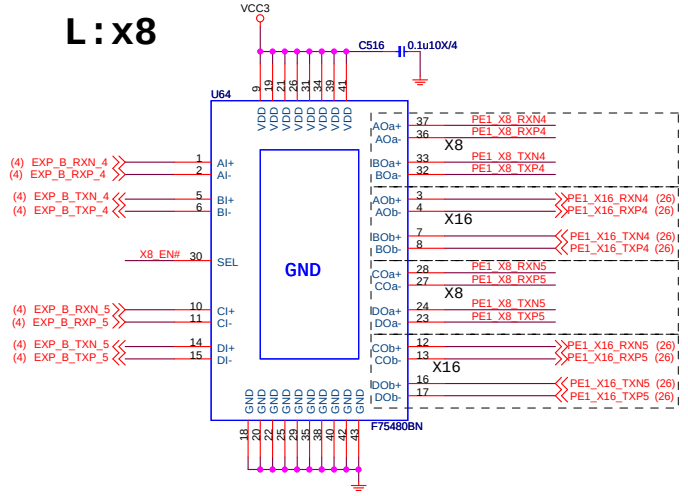
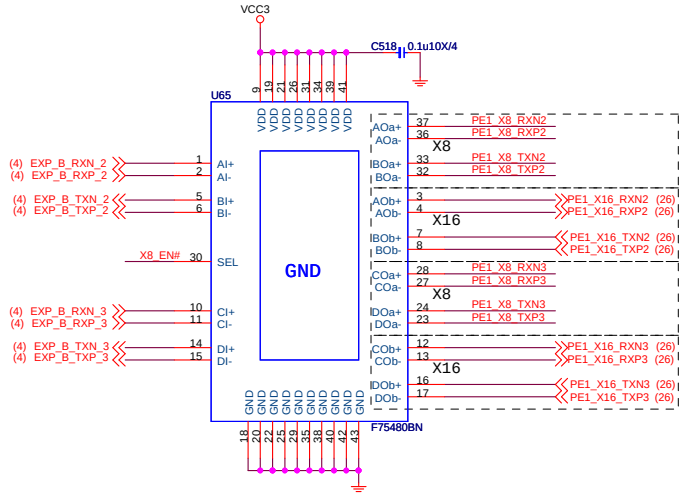
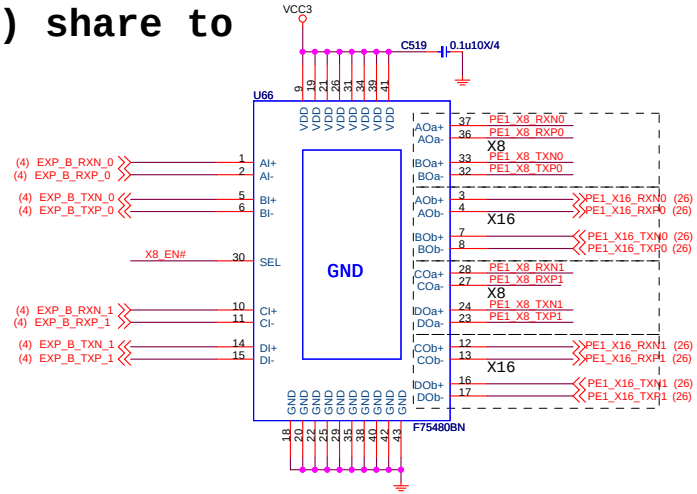
PCIE1(x16) share to PCIE2(x8)

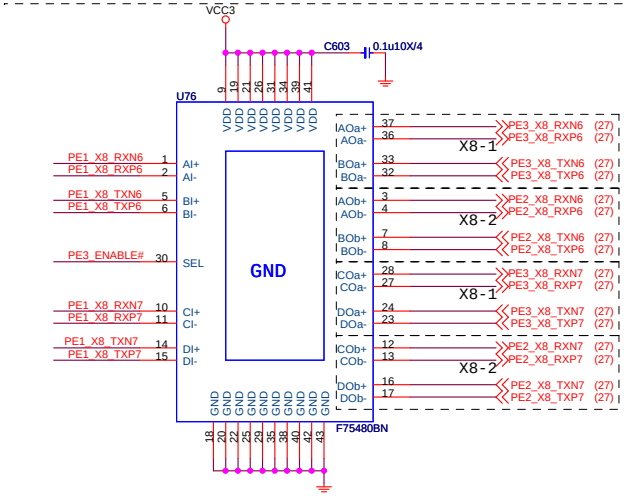
H:x16
L:x8

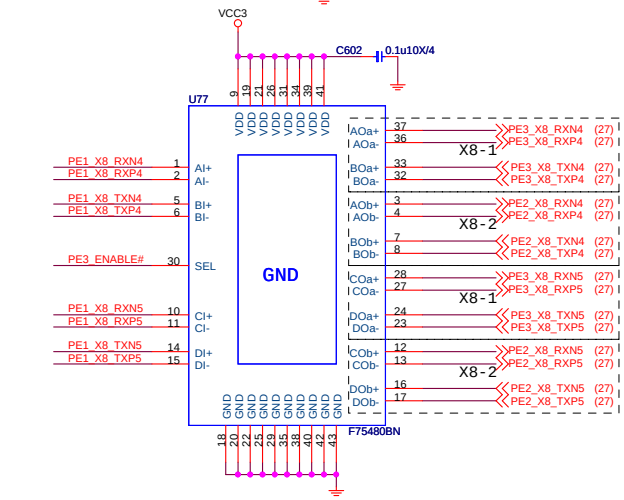




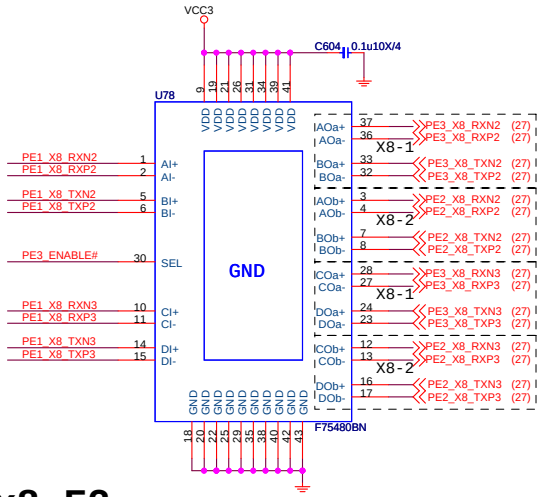


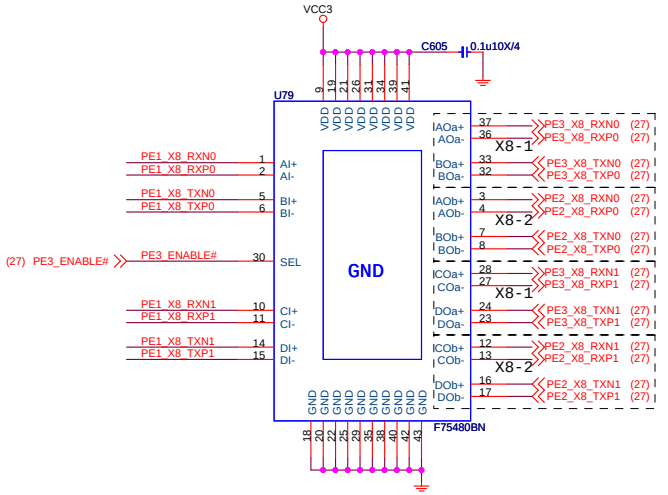






H:x8-E2
L:x8-E3





MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	CPU PCIE SWITCH	11

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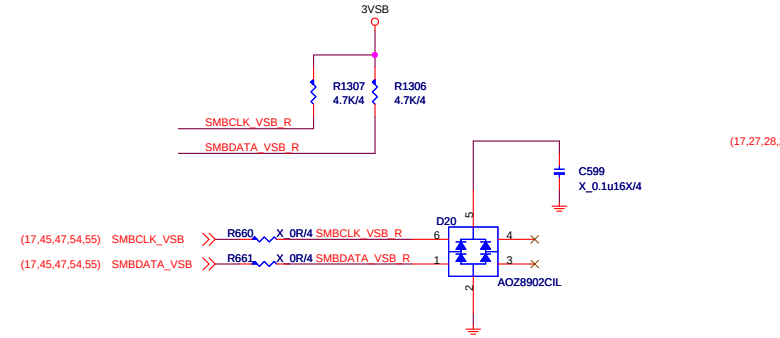
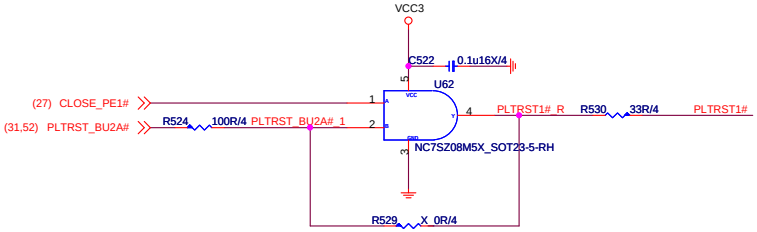
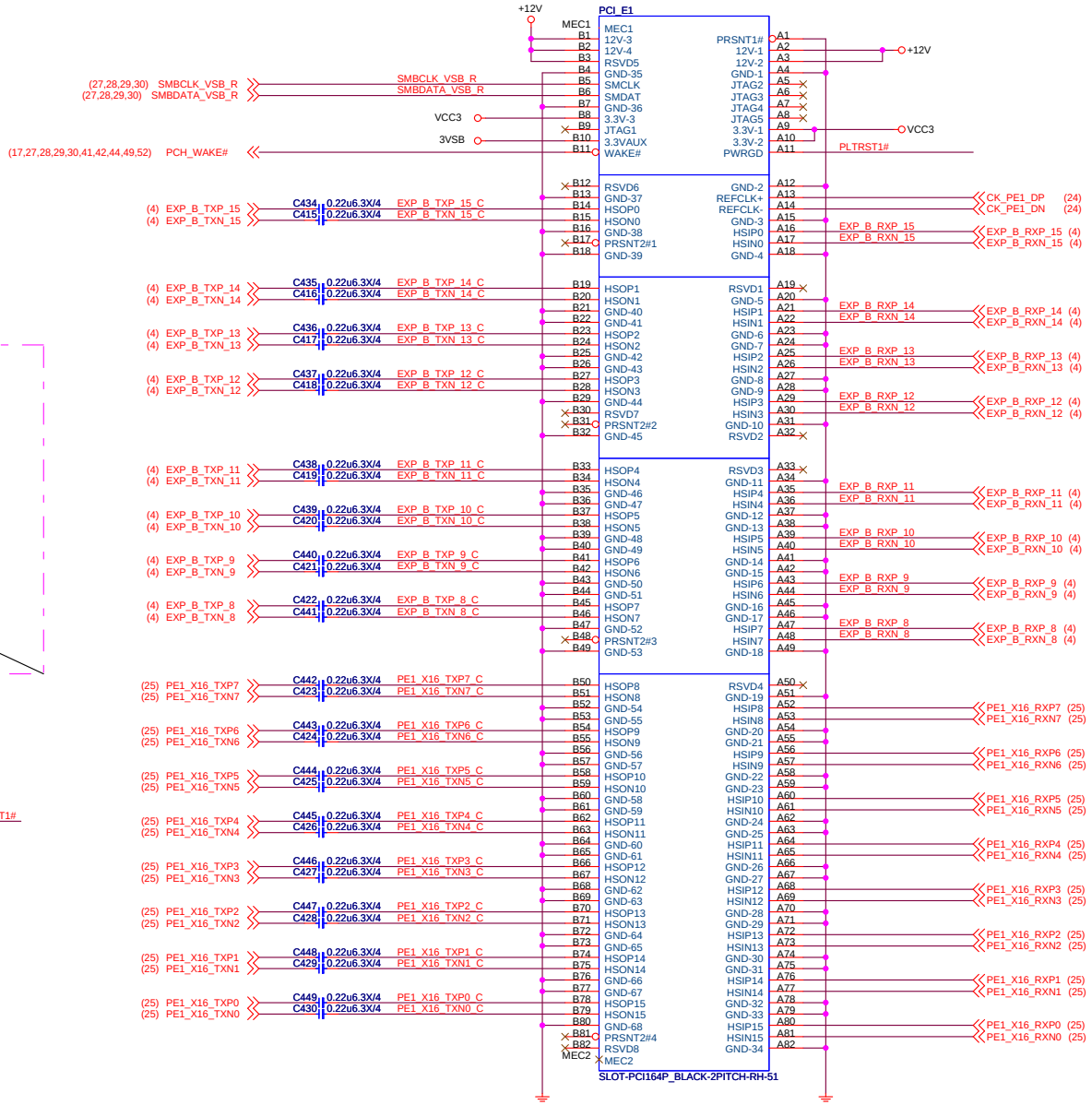
PCIE1(X16) & PCIE2(X1) Slots



0A to 10 NC SMBUS switch





MICRO-STAR INT'L CO.,LTD	
MS-7A21	
Size: Custom	Document Description: PCIE1(X16) & PCIE2(X1) Slots
Rev: 11	
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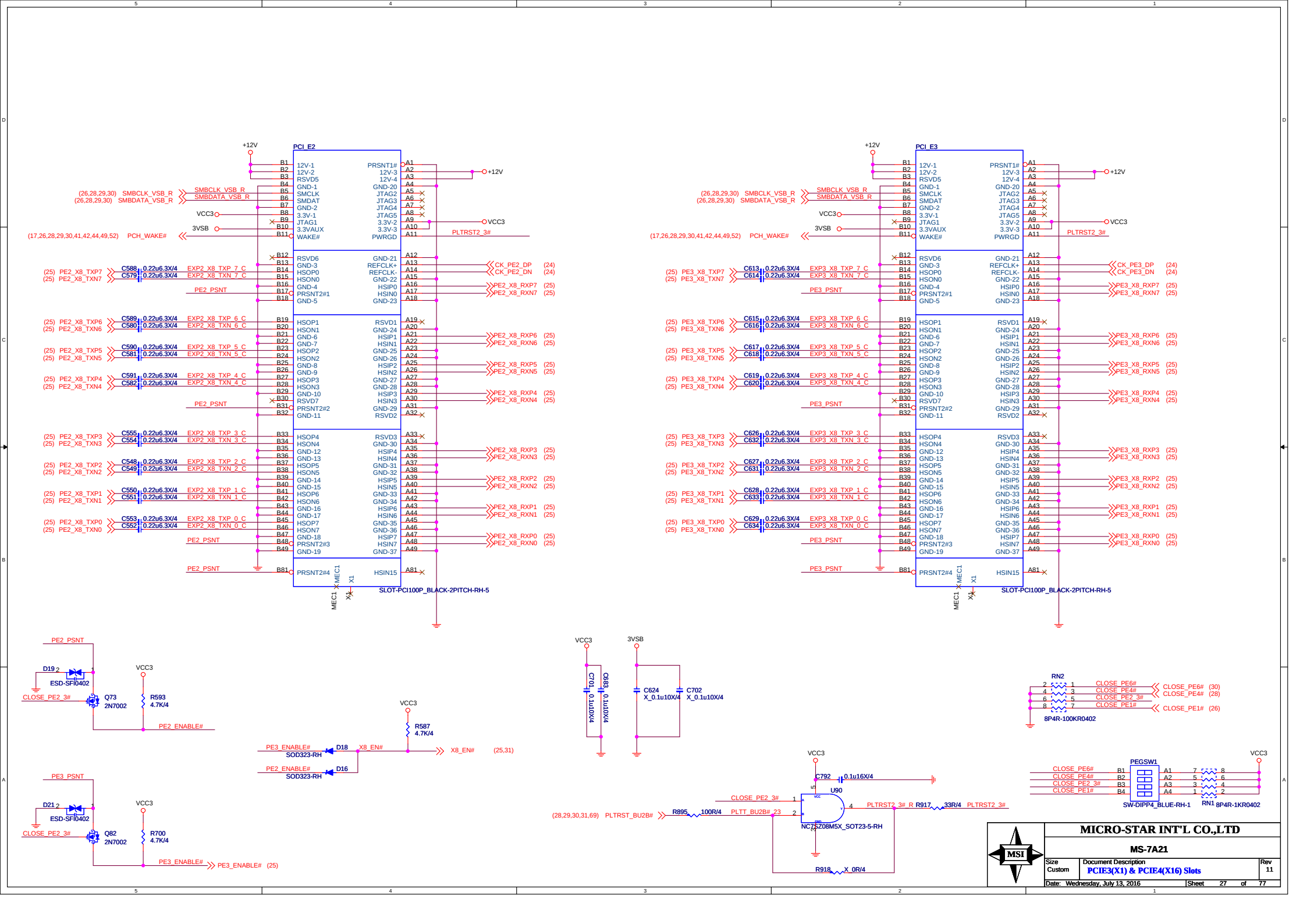
PCI_E2
PCI_E3
SLOT-PCI100P_BLACK-2PITCH-RH-5
SMBCLK_VSB_R
SMBDATA_VSB_R
PCH_WAKE#
PLTRST2_3#
PE2_PSNT
PE3_PSNT
CK_PE2_DP
CK_PE2_DN
CK_PE3_DP
CK_PE3_DN
ESD-SFI0402
Q73 2N7002
Q82 2N7002
D19
D21
R593 4.7K/4
R700 4.7K/4
R587 4.7K/4
PE2_ENABLE#
PE3_ENABLE#
SOD323-RH
D18
D16
X8_EN#
C701 0.1u10X/4
C883 0.1u10X/4
C624 X_0.1u10X/4
C702 X_0.1u10X/4
RN2
8P4R-100KR0402
C792 0.1u16X/4
U90
NC7SZ08M5X_SOT23-5-RH
R895 100R/4
PLTT_BU2B#
R917 33R/4
R918 X_0R/4
PEGSW1
SW-DIPP4_BLUE-RH-1
RN1 8P4R-1KR0402
MICRO-STAR INT'L CO.,LTD
MS-7A21
PCIE3(X1) & PCIE4(X16) Slots
Rev 11
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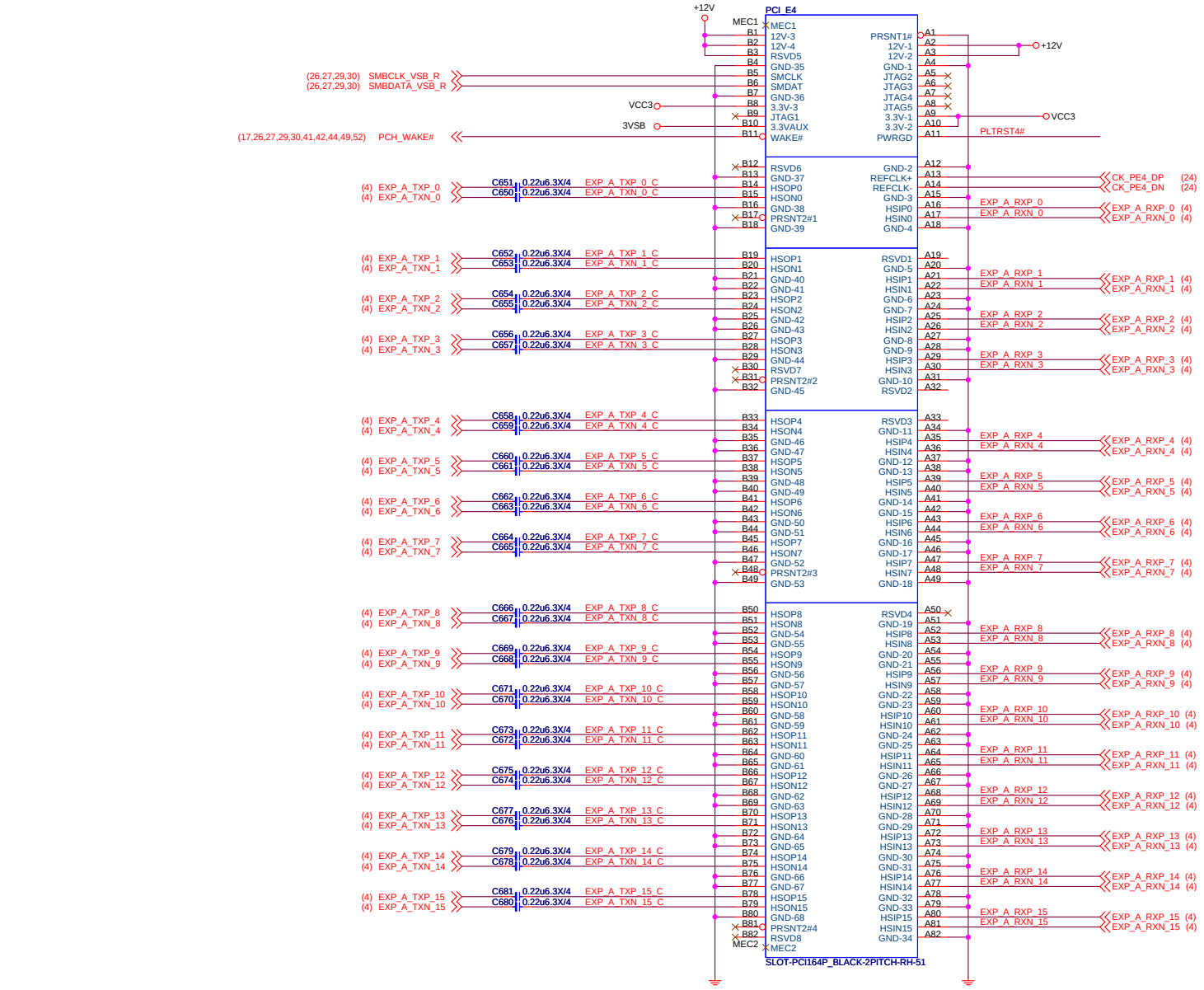

MICRO-STAR INT'L CO.,LTD		
MS-7A21		
Size: Custom	Document Description: PCIE4(X16/X8)	Rev: 11
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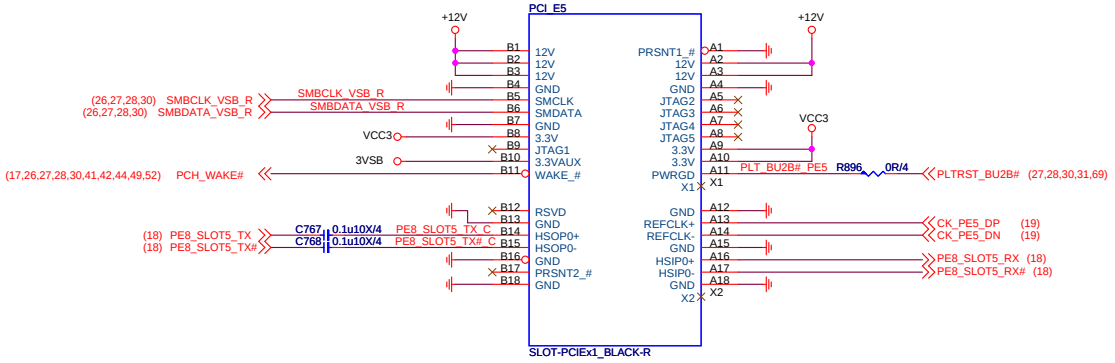

MICRO-STAR INT'L CO.,LTD		
MS-7A21		
Size: Custom	Document Description: PCIE5(X1)	Rev: 11
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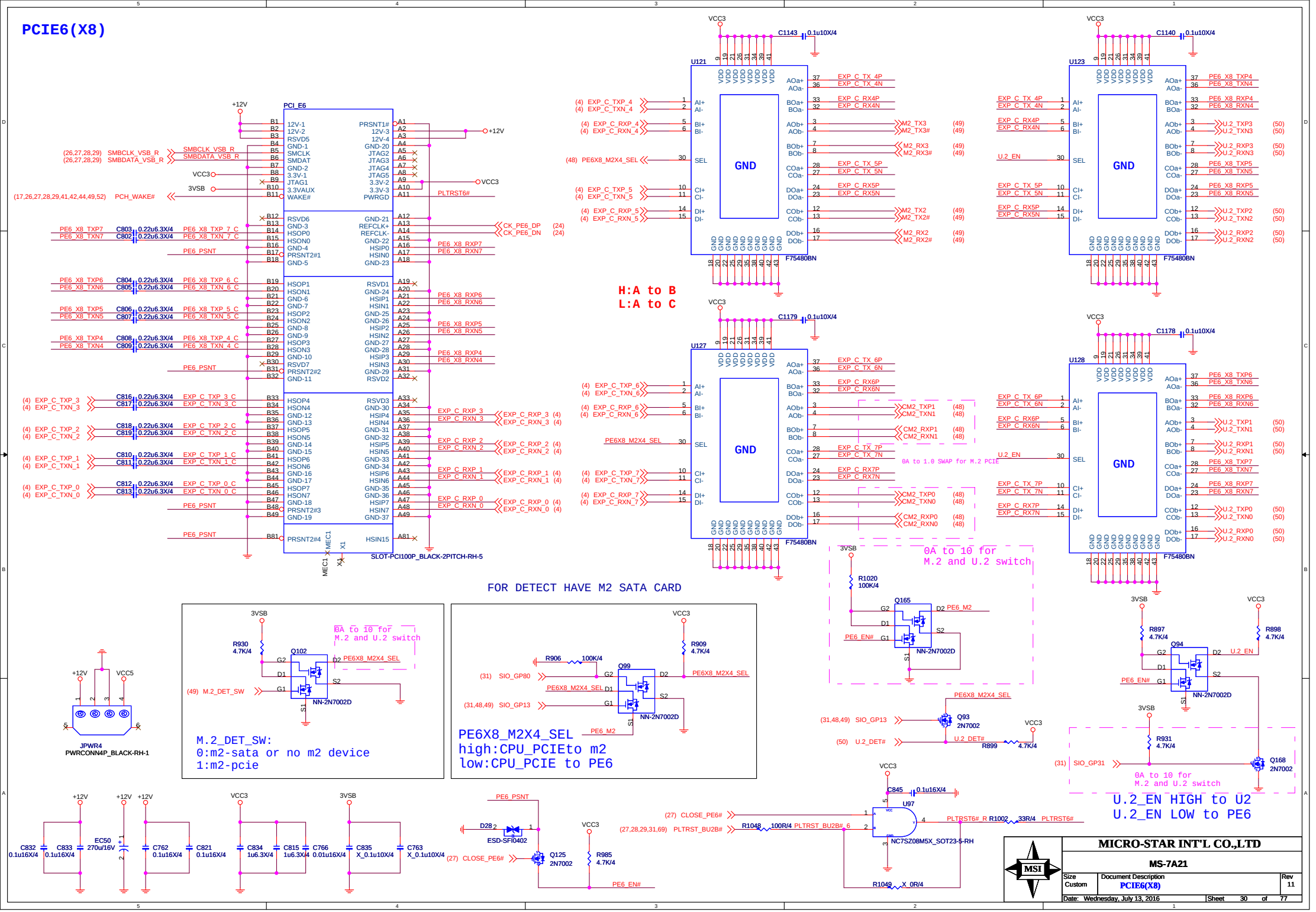
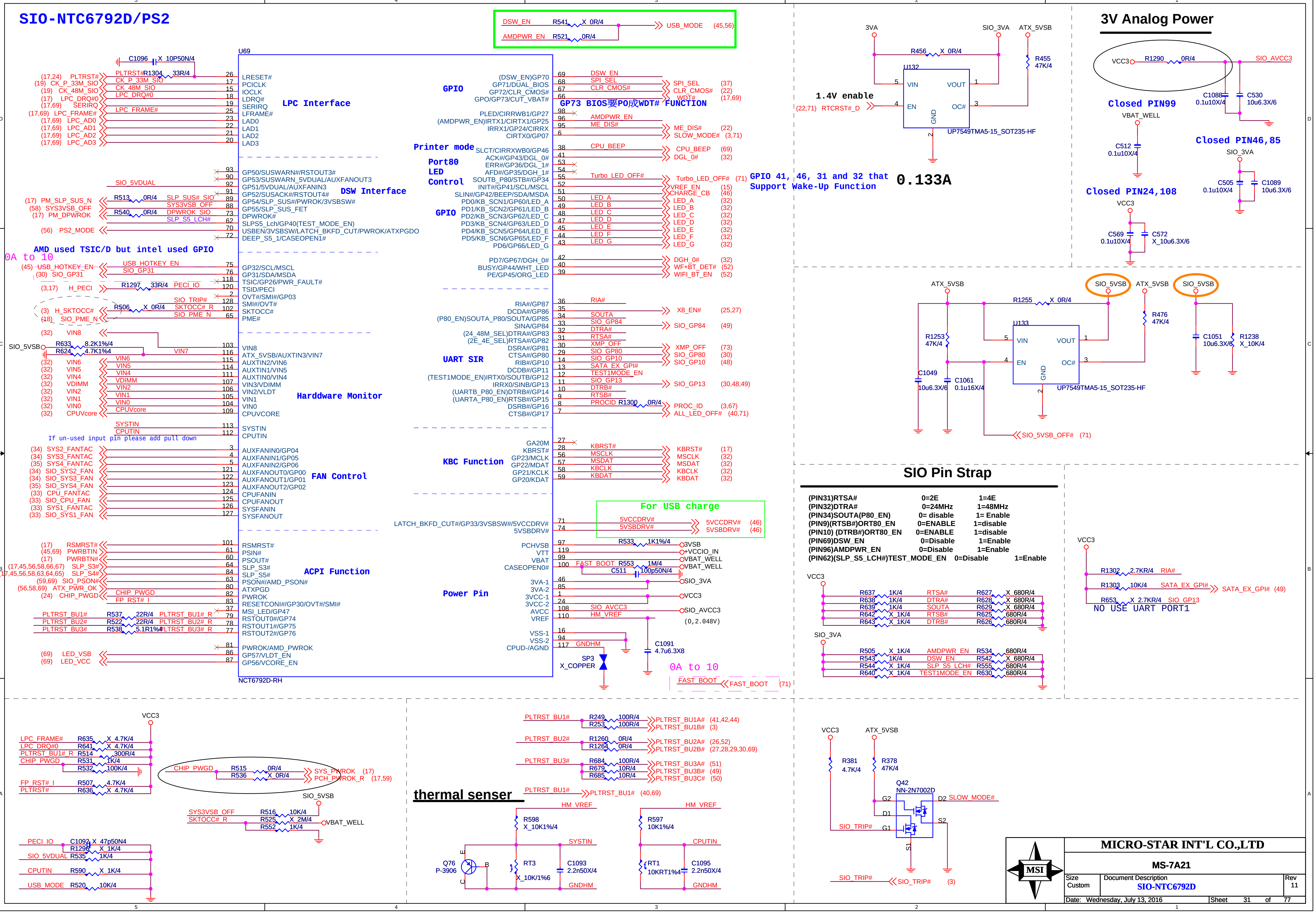
PCIE6(X8)


PCI_E6
SLOT-PCI100P_BLACK-2PITCH-RH-5
U121
U123
U127
U128
F75480BN
GND
H:A to B
L:A to C
FOR DETECT HAVE M2 SATA CARD
0A to 10 for
M.2 and U.2 switch
M.2_DET_SW:
0:m2-sata or no m2 device
1:m2-pcie
PE6X8_M2X4_SEL
high:CPU_PCIEto m2
low:CPU_PCIE to PE6
U.2_EN HIGH to U2
U.2_EN LOW to PE6
JPWR4
PWRCONN4P_BLACK-RH-1
MICRO-STAR INT'L CO.,LTD
MS-7A21
PCIE6(X8)
Wednesday, July 13, 2016



SIO-NTC6792D/PS2
DSW_EN R541 X_0R/4 USB_MODE (45,56)
AMDPWR_EN R521 0R/4
U69
LPC Interface
GPIO
GP73 BIOS要PO成WDT# FUNCTION
Printer mode
Port80 LED Control
DSW Interface
AMD used TSIC/D but intel used GPIO
0A to 10
UART SIR
Harddware Monitor
If un-used input pin please add pull down
KBC Function
FAN Control
For USB charge
ACPI Function
Power Pin
NCT6792D-RH
3V Analog Power
1.4V enable
U132
UP7549TMA5-15_SOT235-HF
Closed PIN99
Closed PIN46,85
Closed PIN24,108
GPIO 41, 46, 31 and 32 that Support Wake-Up Function
0.133A
U133
UP7549TMA5-15_SOT235-HF
SIO Pin Strap
(PIN31)RTSA# 0=2E 1=4E
(PIN32)DTRA# 0=24MHz 1=48MHz
(PIN34)SOUTA(P80_EN) 0= disable 1= Enable
(PIN9)(RTSB#)ORT80_EN 0=ENABLE 1=disable
(PIN10) (DTRB#)ORT80_EN 0=ENABLE 1=disable
(PIN69)DSW_EN 0=Disable 1=Enable
(PIN96)AMDPWR_EN 0=Disable 1=Enable
(PIN62)(SLP_S5_LCH#)TEST_MODE_EN 0=Disable 1=Enable
NO USE UART PORT1
thermal senser
MICRO-STAR INT'L CO.,LTD
MS-7A21
Size Custom
Document Description SIO-NTC6792D
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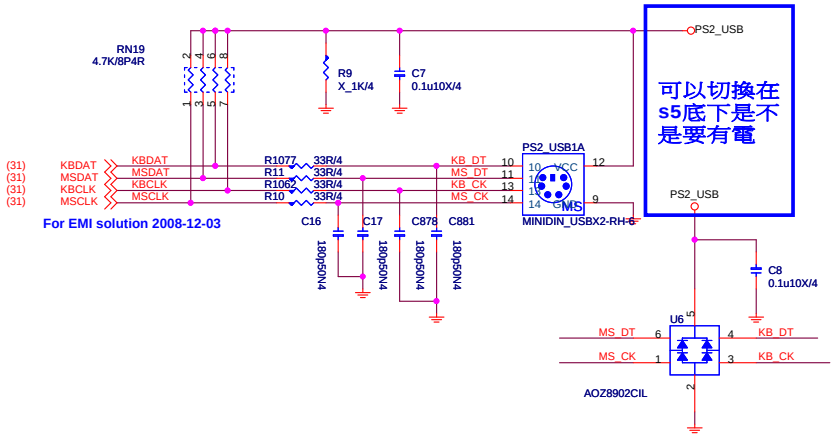
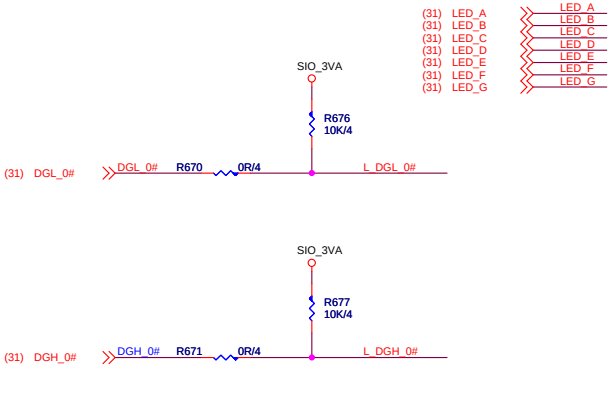
DEBUG LED

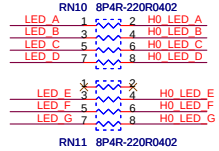
Placement Placement
POST4 POST3 POST2 POST1

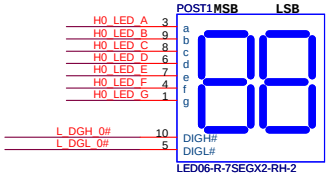
Placement一定要對
(DGH1=Post4/DGL1=Post3/DGH0=Post2/DGL0=Post1)

PS2 KEYBOARD & MOUSE CONNECTOR

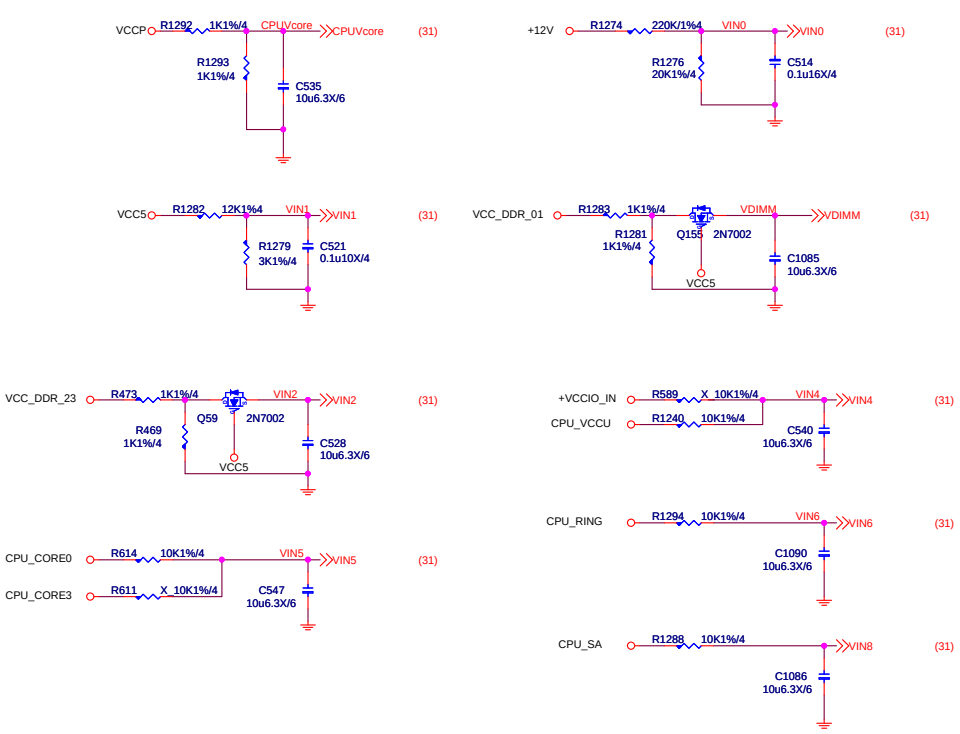








HW Monitor - Voltage



MSI_LED

0A to 10 remove

MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A21	
Size: Custom	Document Description: SIO-NTC6792D/PS2	Rev: 11
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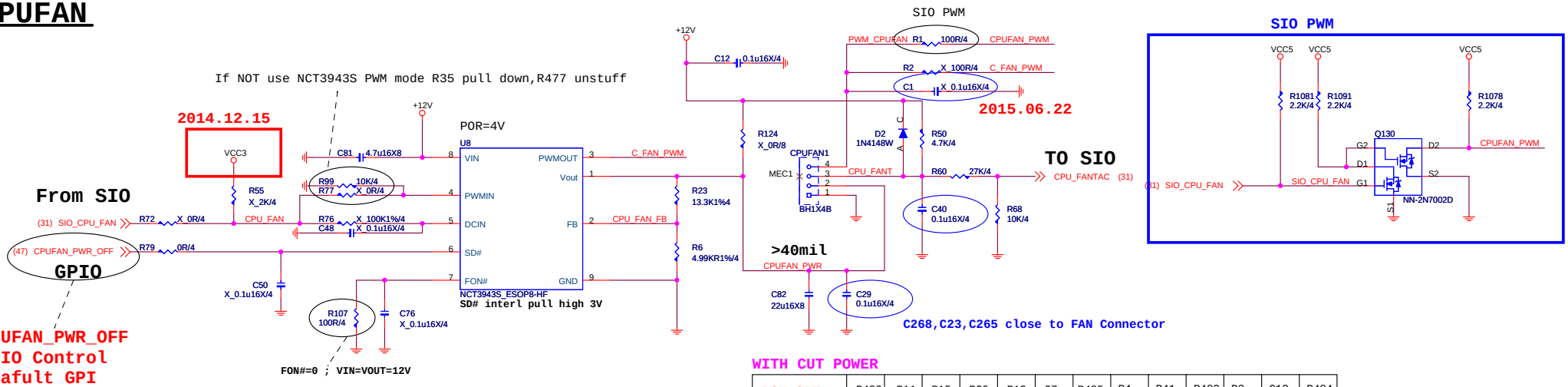
Type I : 4 PIN CPU FAN USE SIO PWM (STUFF NCT3943S WITH GPIO CUT POWER)

CPUFAN



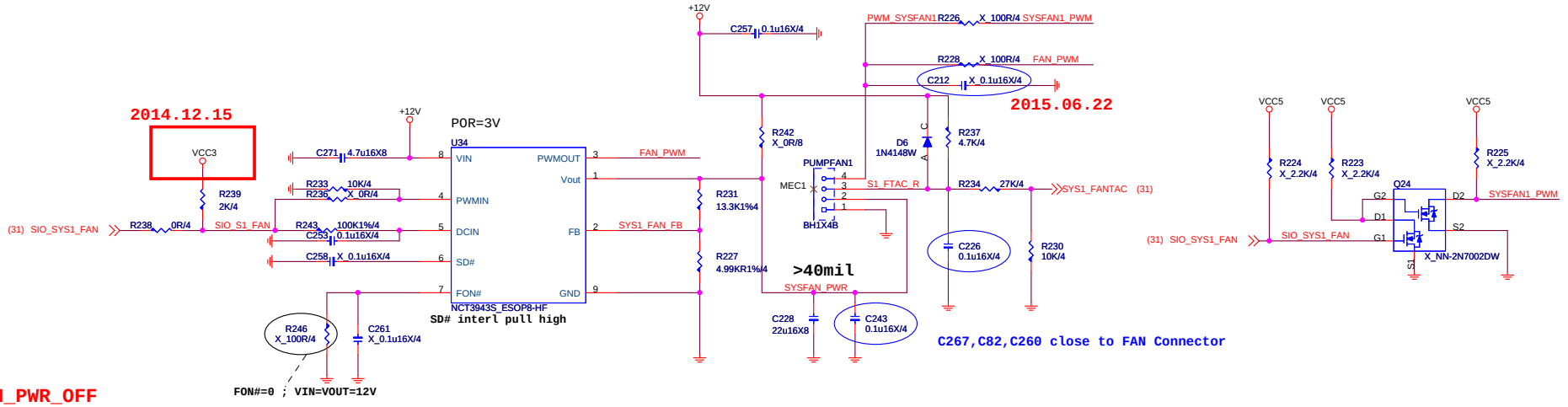
CPUFAN_PWR_OFF
GPIO Control
Deafult GPI
If USE CUT POWER
1.OPEN DRAIN LOW:SD# LOW Active，CPUFAN(PIN2)= 0V
2.OPEN DRAIN : SD# Internal Pull high，CPUFAN(PIN2)=12V

WITH CUT POWER

BOM OPT	R482	R11	R15	R30	R12	Q7	R485	R4	R41	R483	R3	C13	R484
SIO PWM	X	0	0	0	0	0	X	X	0	X	X	X	0
NCT3943 PWM	0	X	X	X	X	X	0	0	X	0	0	0	X

Type H : 4/3 PIN SYS FAN FROM NCT3943S(USE SIO CUT POWER)

PUMPFAN



SYSFAN_PWR_OFF
SIO control
Close SIO_SYS1_FAN Vout=0

MICRO-STAR INT'L CO.,LTD

MS-7A21

Size: Custom | Document Description: FAN CONTROLLOR-1 | Rev: 11

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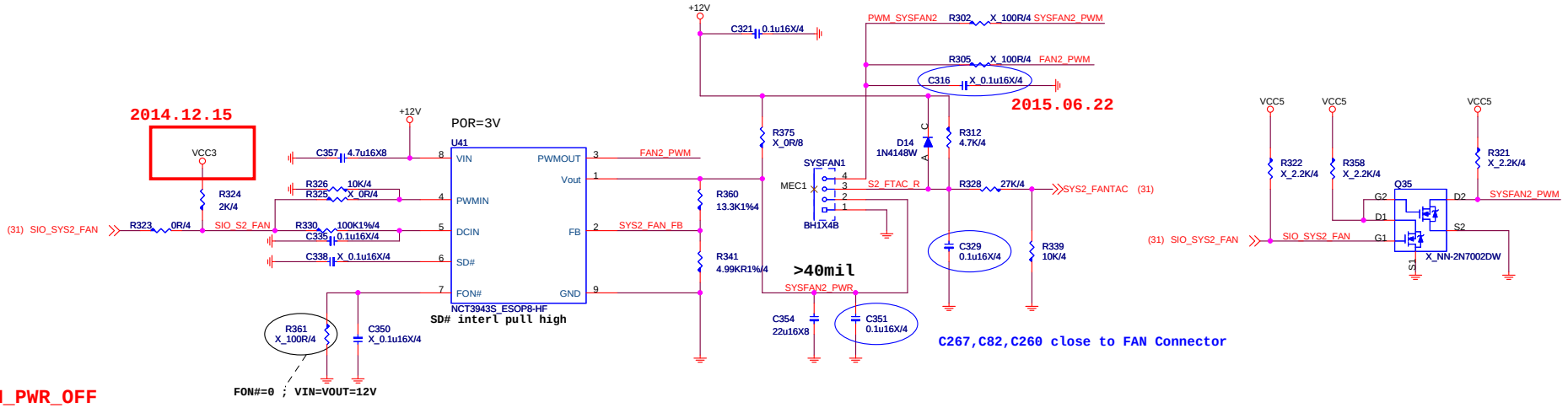
Type H : 4/3 PIN SYS FAN FROM NCT3943S(USE SIO CUT POWER)

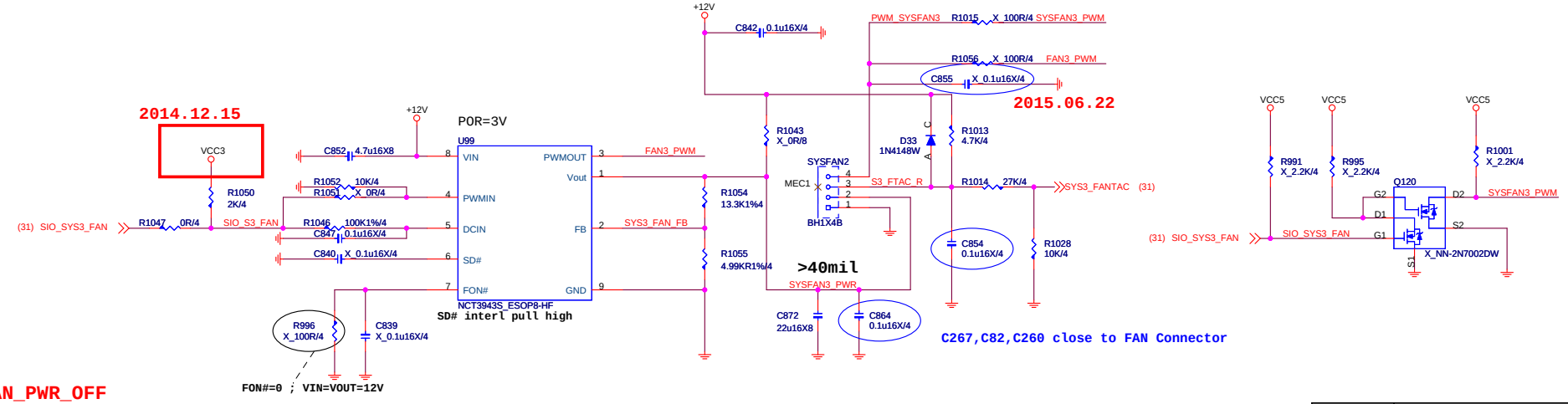
SYSFAN1



SYSFAN_PWR_OFF
SIO control
Close SIO_SYS1_FAN Vout=0

Type H : 4/3 PIN SYS FAN FROM NCT3943S(USE SIO CUT POWER)

SYSFAN2



SYSFAN_PWR_OFF
SIO control
Close SIO_SYS1_FAN Vout=0

MICRO-STAR INT'L CO.,LTD

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Custom	FAN CONTROLLOR-2	11

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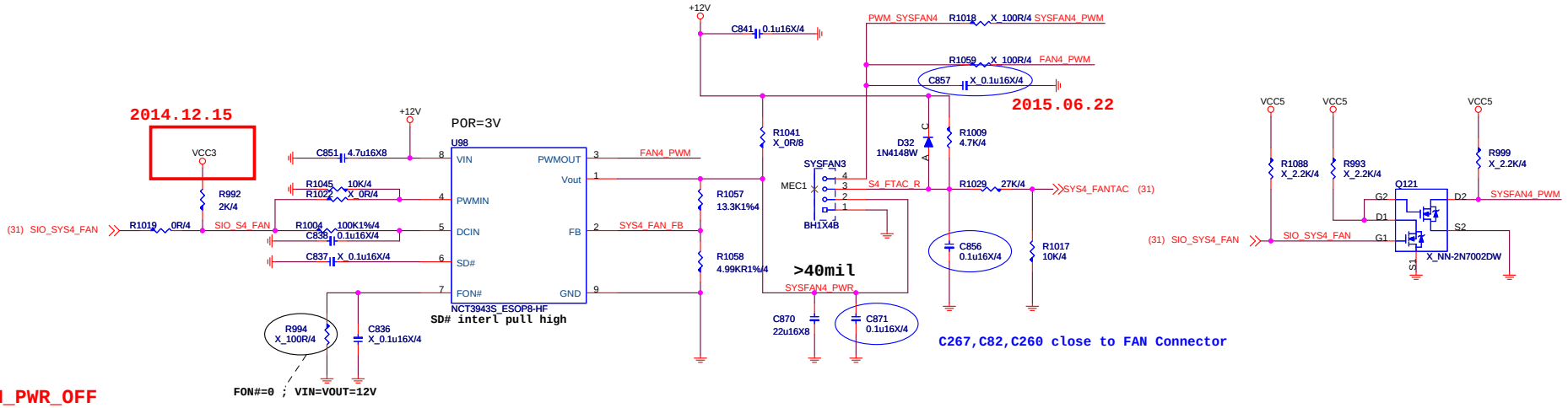
Type H : 4/3 PIN SYS FAN FROM NCT3943S(USE SIO CUT POWER)

SYSFAN3



SYSFAN_PWR_OFF
SIO control
Close SIO_SYS1_FAN Vout=0

MICRO-STAR INT'L CO.,LTD		
MS-7A21		
Size: Custom	Document Description: FAN CONTROLLOR-3	Rev: 11
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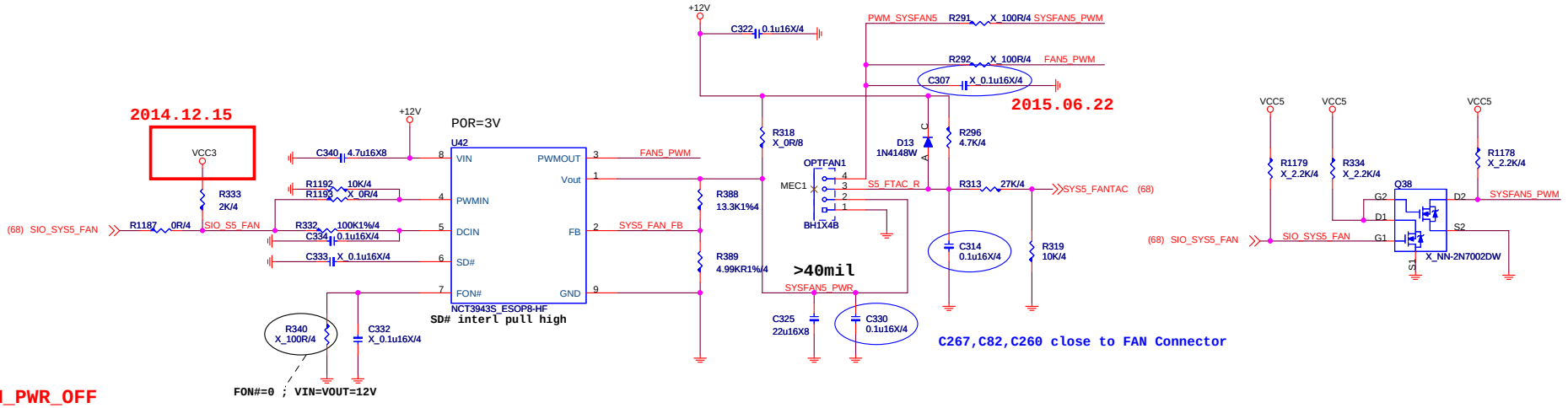
Type H : 4/3 PIN SYS FAN FROM NCT3943S(USE SIO CUT POWER)

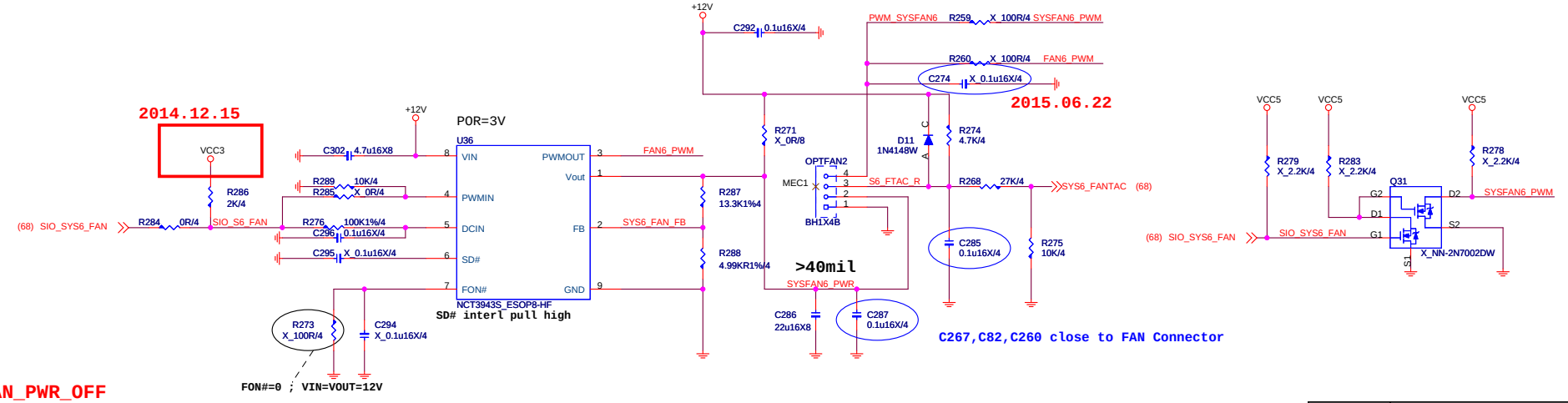
OPTFAN1



SYSFAN_PWR_OFF
SIO control
Close SIO_SYS1_FAN Vout=0

Type H : 4/3 PIN SYS FAN FROM NCT3943S(USE SIO CUT POWER)

OPTFAN2



SYSFAN_PWR_OFF
SIO control
Close SIO_SYS1_FAN Vout=0

MICRO-STAR INT'L CO.,LTD

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Custom	OPTFAN	11

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(17,45) PCH_SPI_MOSI PCH_SPI_MOSI

(17,45) PCH_SPI_MISO PCH_SPI_MISO

(17,45) PCH_SPI_CLK PCH_SPI_CLK

(17) PCH_SPI_IO2 PCH_SPI_IO2

(17) PCH_SPI_IO3 PCH_SPI_IO3

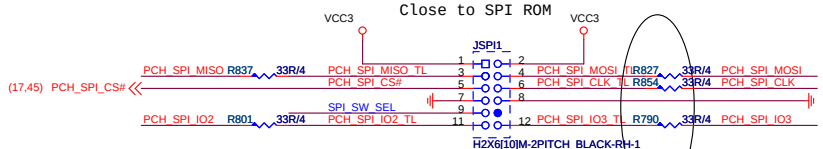
For Tl624 1.1: stuff D19
Old: Unstuff due to 12V

PCH_SPI_CS# — D23 ESD-SFI0402/7~13pF

SPI_SW_SEL — D22 ESD-SFI0402

SPI DEBUG PROT

Close to SPI ROM



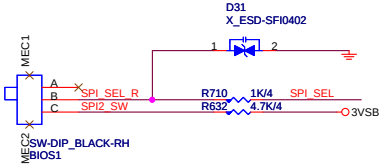
Part Number:N31-2061341-H06

For Tl624 1.1: Stuff R1232
Old: Unstuff

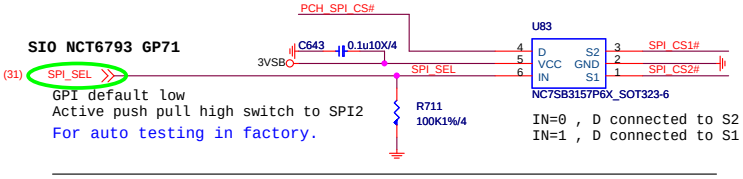
(17,45) PCH_PWROK — R818 0R/4 — SPI_SW_SEL

A BIOS

B BIOS



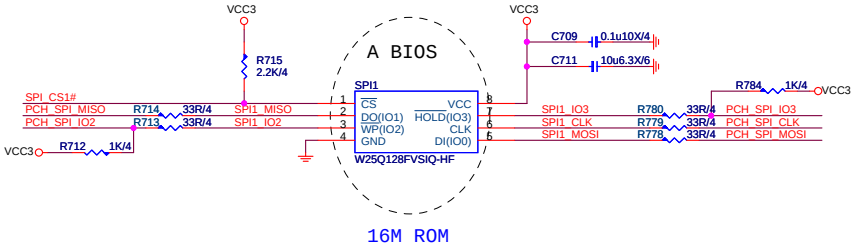
SIO NCT6793 GP71



GPI default low
Active push pull high switch to SPI2
For auto testing in factory.

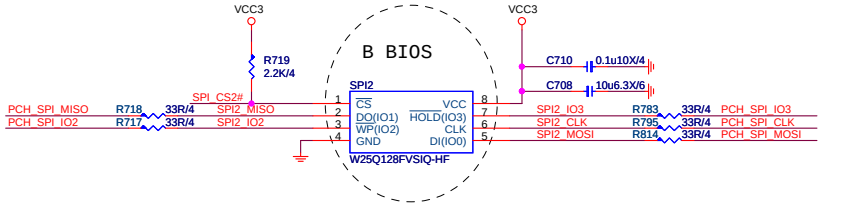
IN=0 , D connected to S2 (SPI1- A Bios)
IN=1 , D connected to S1 (SPI2- B Bios)

A BIOS



16M ROM

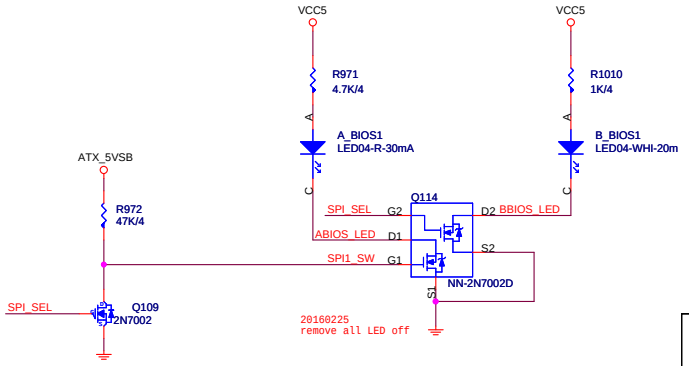
B BIOS



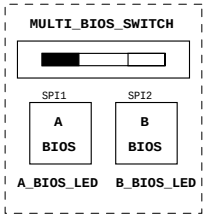
SPI FLASH ROM

Place close to SB.

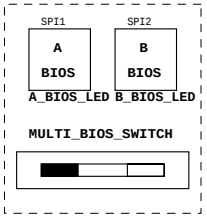
*SPI_CLK & SPI_MOSI must be length matched to within 500mils.
*SPI_CLK & SPI_CS0# must be length matched to within 500mils.



Placement 1



Placement 2



MICRO-STAR INT'L CO.,LTD

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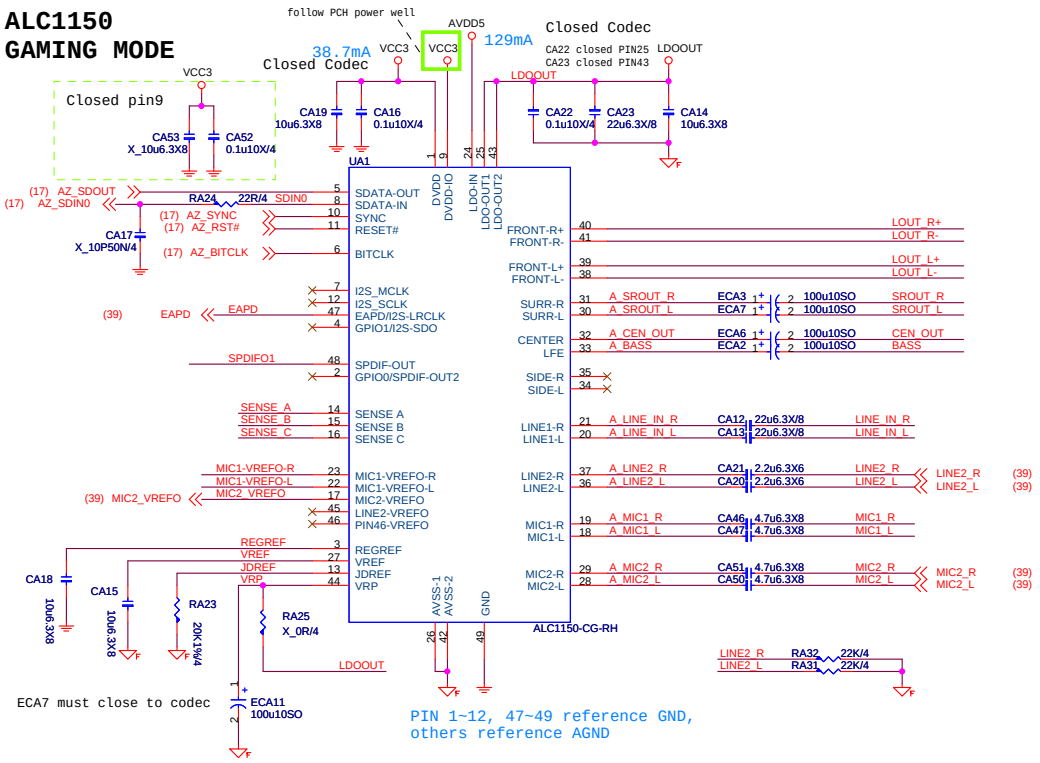
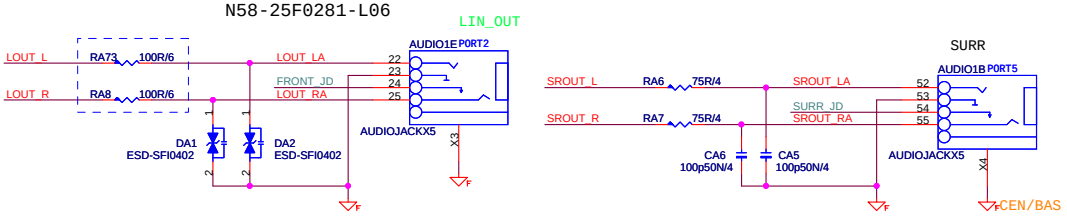
ALC1150 GAMING MODE

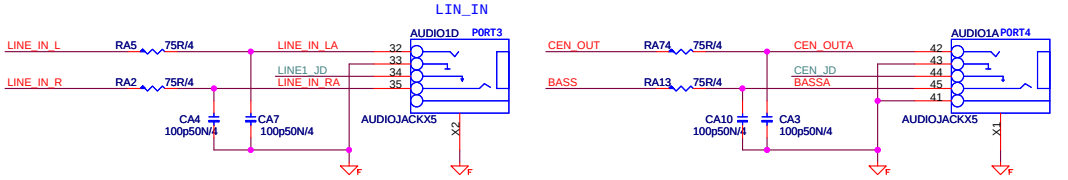


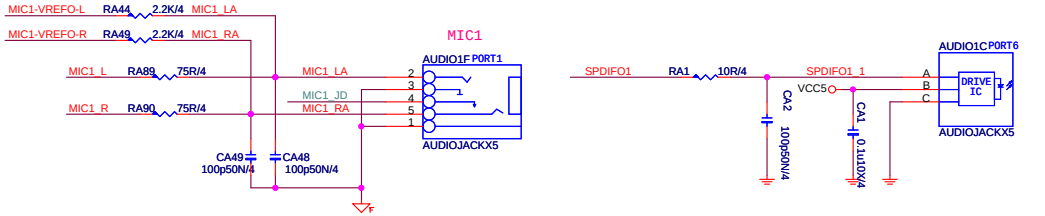
ECA7 must close to codec

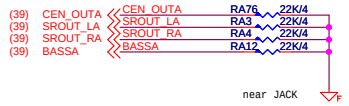
PIN 1~12, 47~49 reference GND, others reference AGND

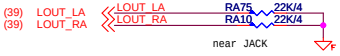
N58-25F0281-L06



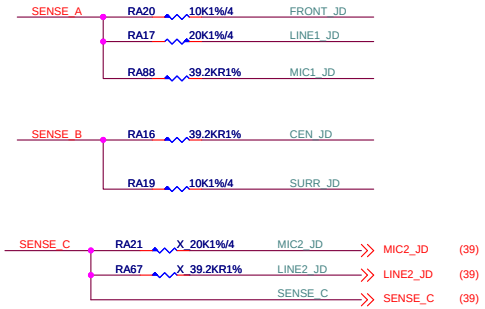


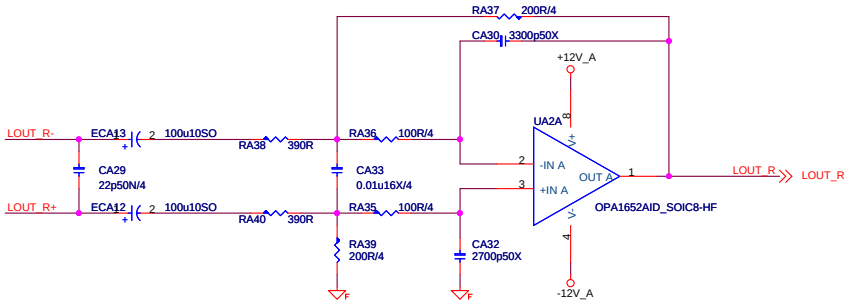


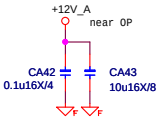


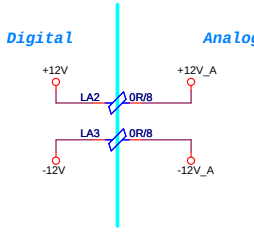


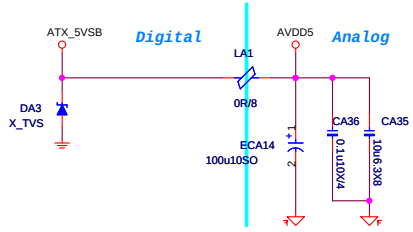
Closed Codec



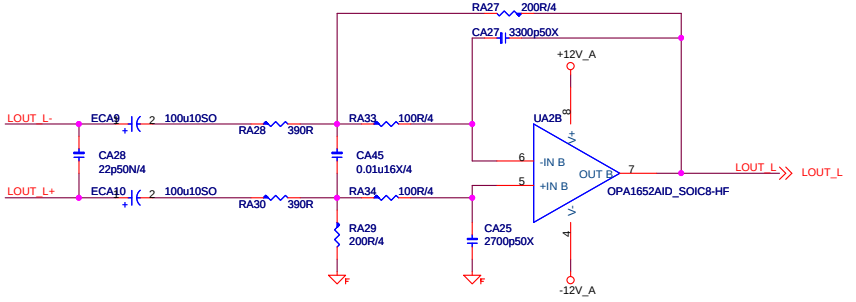


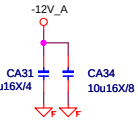


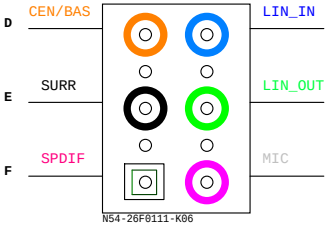




CA33,CA34 close to LA1







MSI	MICRO-STAR INT'L CO.,LTD	
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Size: Custom	Document Description: Audio Codec ALC1150-1	Rev: 11
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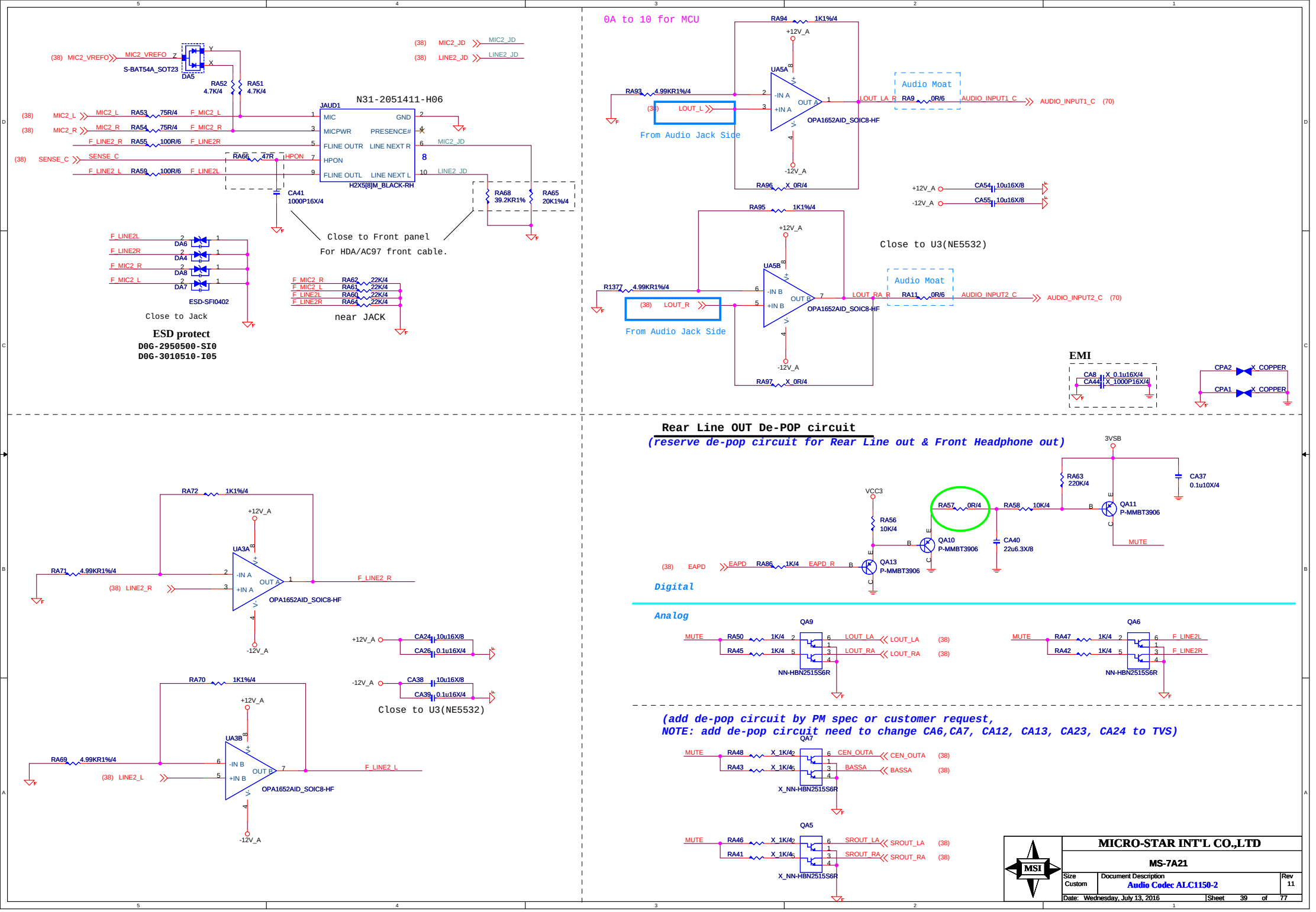
0A to 10 for MCU
N31-2051411-H06
JAUD1
MIC
GND
MICPWR
PRESENCE#
FLINE OUTR
LINE NEXT R
HPON
FLINE OUTL
LINE NEXT L
H2X5[8]M_BLACK-RH
MIC2_VREFO
MIC2_JD
LINE2_JD
S-BAT54A_SOT23
DA5
RA52 4.7K/4
RA51 4.7K/4
MIC2_L
MIC2_R
F_MIC2_L
F_MIC2_R
F_LINE2_R
F_LINE2L
SENSE_C
RA53 75R/4
RA54 75R/4
RA55 100R/6
RA59 100R/6
RA66 47R
HPON
CA41 1000P16X/4
RA68 39.2KR1%
RA65 20K1%/4
Close to Front panel
For HDA/AC97 front cable.
DA6
DA4
DA8
DA7
ESD-SFI0402
Close to Jack
ESD protect
D0G-2950500-SI0
D0G-3010510-I05
RA62 22K/4
RA61 22K/4
RA60 22K/4
RA64 22K/4
near JACK
RA94 1K1%/4
+12V_A
UA5A
-IN A
+IN A
OUT A
OPA1652AID_SOIC8-HF
RA93 4.99KR1%/4
LOUT_L
From Audio Jack Side
LOUT_LA_R
RA9 0R/6
AUDIO_INPUT1_C
AUDIO_INPUT1_C (70)
Audio Moat
RA96 X_0R/4
-12V_A
CA54 10u16X/8
CA55 10u16X/8
RA95 1K1%/4
UA5B
-IN B
+IN B
OUT B
R1377 4.99KR1%/4
LOUT_R
LOUT_RA_R
RA11 0R/6
AUDIO_INPUT2_C
AUDIO_INPUT2_C (70)
RA97 X_0R/4
Close to U3(NE5532)
EMI
CA8 X_0.1u16X/4
CA44 X_1000P16X/4
CPA2 X_COPPER
CPA1 X_COPPER
RA72 1K1%/4
UA3A
RA71 4.99KR1%/4
LINE2_R
F_LINE2_R
CA24 10u16X/8
CA26 0.1u16X/4
RA70 1K1%/4
UA3B
RA69 4.99KR1%/4
LINE2_L
F_LINE2_L
CA38 10u16X/8
CA39 0.1u16X/4
Close to U3(NE5532)
Rear Line OUT De-POP circuit
(reserve de-pop circuit for Rear Line out & Front Headphone out)
3VSB
VCC3
RA56 10K/4
RA57 0R/4
RA58 10K/4
RA63 220K/4
CA37 0.1u10X/4
QA10 P-MMBT3906
QA11 P-MMBT3906
QA13 P-MMBT3906
CA40 22u6.3X/8
MUTE
EAPD
RA86 1K/4
EAPD_R
Digital
Analog
QA9
MUTE
RA50 1K/4
RA45 1K/4
LOUT_LA
LOUT_RA
NN-HBN2515S6R
QA6
RA47 1K/4
RA42 1K/4
F_LINE2L
F_LINE2R
(add de-pop circuit by PM spec or customer request,
NOTE: add de-pop circuit need to change CA6,CA7, CA12, CA13, CA23, CA24 to TVS)
QA7
RA48 X_1K/4
RA43 X_1K/4
CEN_OUTA
BASSA
X_NN-HBN2515S6R
QA5
RA46 X_1K/4
RA41 X_1K/4
SROUT_LA
SROUT_RA
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MS-7A21
Size Custom
Document Description
Audio Codec ALC1150-2
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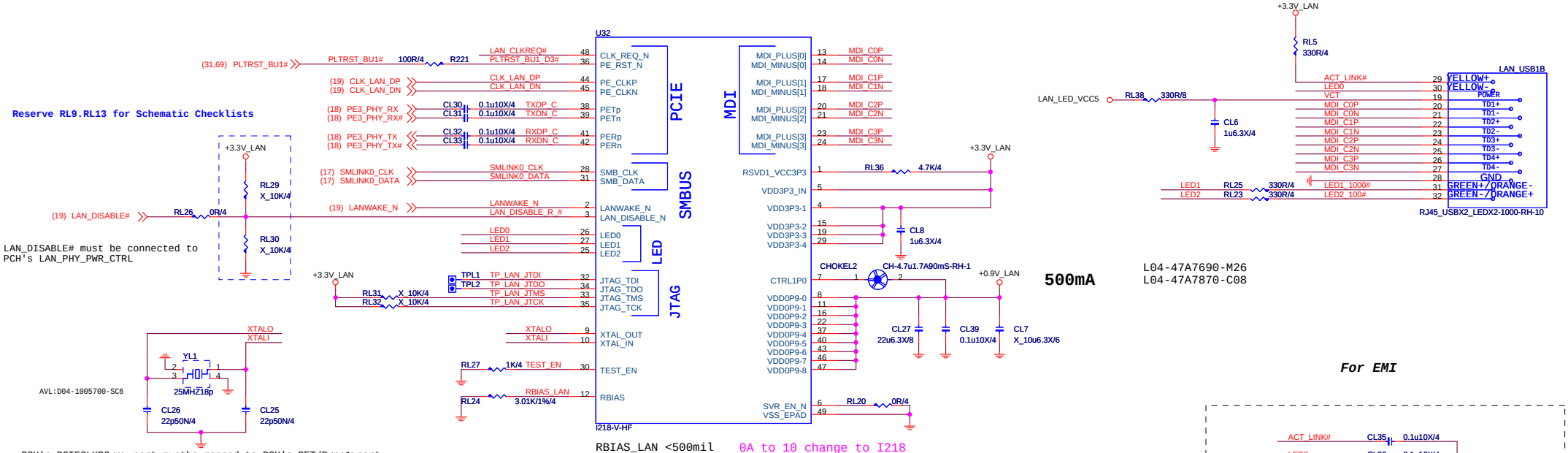
Intel I219V / I218V PHY



Reserve RL9.RL13 for Schematic Checklists

LAN_DISABLE# must be connected to PCH's LAN_PHY_PWR_CTRL

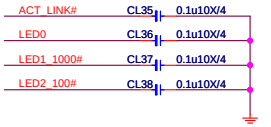
PCH's PCIECLKRQ<n> port mustbe mapped to PCH's PET/R<n+1>port.
If CLK_REQ_N is not used, pin48 is pulled up 10KR to 3.3V_LAN

RBIAS_LAN <500mil 0A to 10 change to I218

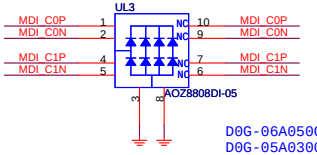
500mA

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

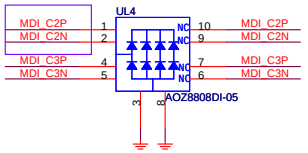
For EMI



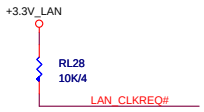
UL2&UL3 close to connector



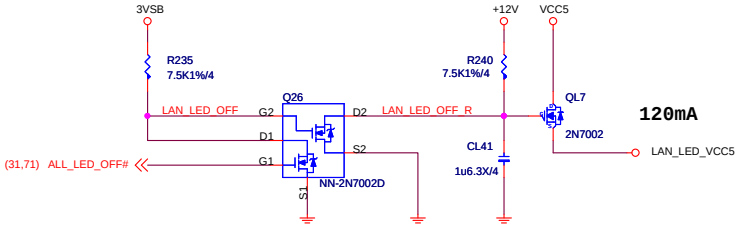
D0G-06A050C-A68
D0G-05A0300-I14



Do not pair MDI0 and MDI1 on the same TVSdevice (avoid LAN POE connecting issue).
Otherpairing combination is ok.

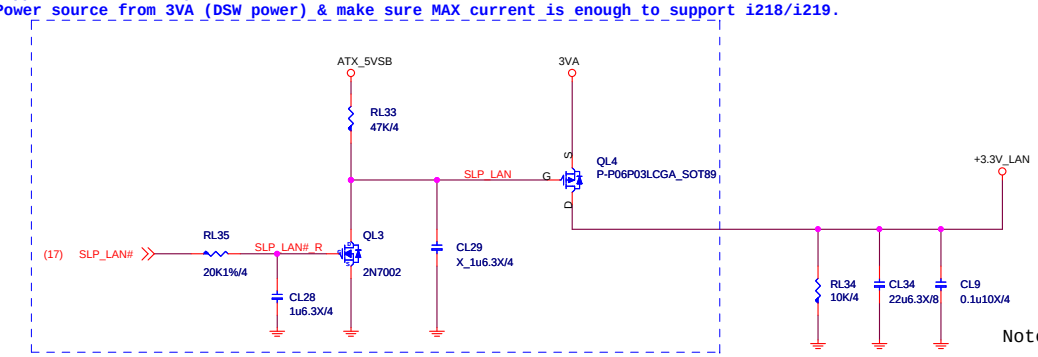


The 10Kohm pull-up resistor (RL18) of CLK_REQ_N is connected to 3.3V Suspend/Core/etc. power well, depending on the power well of PCH's input PCIECLKRQ<n> buffer.



120mA

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



+3.3V_LAN
I218:132mA
I219:542mW

Note:These caps closed to PHY

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Minimun gap should be greater of
>15mil with other signal.

Power Consumption

	3.3V	1.2V(1.05V	3.3VSUS	1.05VSUS(1.2VSUS)	2.5V	Total Power
ASM1142	245mA	634mA	1mA	1mA		1573.8(mW)
ASM1142	245mA	634mA	1mA	1mA	300mA	

Layout Guide:

1.) USB3.1 to Connector Total Length < 1.5"
2.) VIA hole <2

CLK Rule (Follow SB PDG)

PCIE Rule (Follow SB PDG)

Use 0.22uF cap for GEN3 , Gen2 use 0.1uf by Upstream SPEC

SMI connect to GPI which support smi function.
SB side need pull high 10K ohm to 3VSB.

SMI connect to GPI which support smi function.
SB side pull high 10K ohm to 3VSB.
(Intel 8X & 9X series use GPIO10)
(Intel SKL use GPP_C23)

PPON_X Internal Pull-up to VCC3

OCI_X Internal Pull-up to SUS

RX/TX Internal Pull-up

ASM1142 RU29 stuff RU14 unstuff
ASM2142 RU29 unstuff RU14 stuff

ASM1142 RU7 stuff RU13 unstuff
ASM2142 RU7 unstuff RU13 stuff

USB3.1 power switch

ASM_SMI has internal Pull-up to VCC
ASM_WAKE has internal Pull-up to VCCSUS

X0/XI (95hm-Diff,Spacing 30mil)
UREXT,PEUREXT(W/S) : 10/7
OCIA,OCIB,PPONA,PPONB(W/S) : 5/8

ASM1142 1.2 VCC Power

ASM1142 1.2 VSB Power

ASM1142 RU32 19.6K__1.2V
ASM2142 RU32 31.6K__1.05V

ASM1142 RU1/RU2 200K/200K__1.2V
ASM2142 RU1/RU2 196K/261K__1.05V

ASM1142 unstuff
ASM2142 stuff

EEPROM

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MS-7A21	
Size: Custom	Document Description: ASM1142 RUSB3.1 2PORT — Rev: 11
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Minimun gap should be greater of
>15mil with other signal.

CLK Rule (Follow SB PDG)

PCIE Rule (Follow SB PDG)

Use 0.22uF cap for GEN3 , Gen2 use 0.1uf by Upstream SPEC

SMI connect to GPI which
support smi function.
SB side need pull high 10K ohm to 3VSB.

1042:
Stuff RU9 100K
1142:
Stuff RU9 80K

SMI connect to GPI which
support smi function.
SB side need pull high 10K ohm to 3VSB.
(Intel 8X & 9X series use GPIO10)
(Intel SKL use GPP_C23)

USB HS (90Ohm-Diff)

USB SS (80Ohm-Diff)
USB HS (90Ohm-Diff)

USB SS (80Ohm-Diff)

PPON_X Internal Pull-up to VCC3

OCI_X Internal Pull-up to SUS

RX/TX Internal Pull-up

Power Consumption

	3.3V	1.2V(1.05V	3.3VSUS	1.05VSUS(1.2VSUS)	2.5V	Total Power
ASM1142	245mA	634mA	1mA	1mA		1573.8(mW)
ASM1142	245mA	634mA	1mA	1mA	300mA	

Layout Guide:

1.) USB3.1 to Connector Total Length < 1.5"
2.) VIA hole <2

ASM1142 RU30 stuff RU20 unstuff
ASM2142 RU30 unstuff RU20 stuff

ASM1142 RU18 stuff RU19 unstuff
ASM2142 RU18 unstuff RU19 stuff

ASM_SMI has internal Pull-up to VCC
ASM_WAKE has internal Pull-up to VCCSUS

USB3.1 power switch

X0/XI (95hm-Diff,Spacing 30mil)
UREXT,PEUREXT(W/S) : 10/7
OCIA,OCIB,PPONA,PPONB(W/S) : 5/8

ASM1142 1.2 VCC Power

ASM1142 RU3/RU4 200K/200K__1.2V
ASM2142 RU3/RU4 196K/261K__1.05V

ASM1142 1.2 VSB Power

ASM1142 RU36 19.6K__1.2V
ASM2142 RU36 31.6K__1.05V

ASM1142 unstuff
ASM2142 stuff

EEPROM

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Model	MS-7A21
Size	Custom
Document Description	ASM1142 RUSB3.1 2PORT
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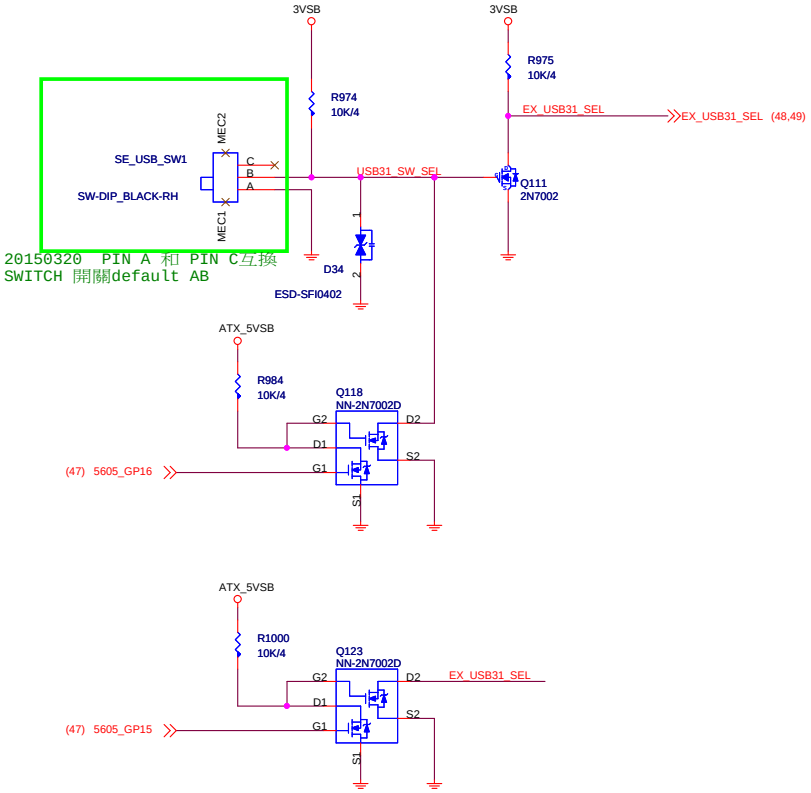
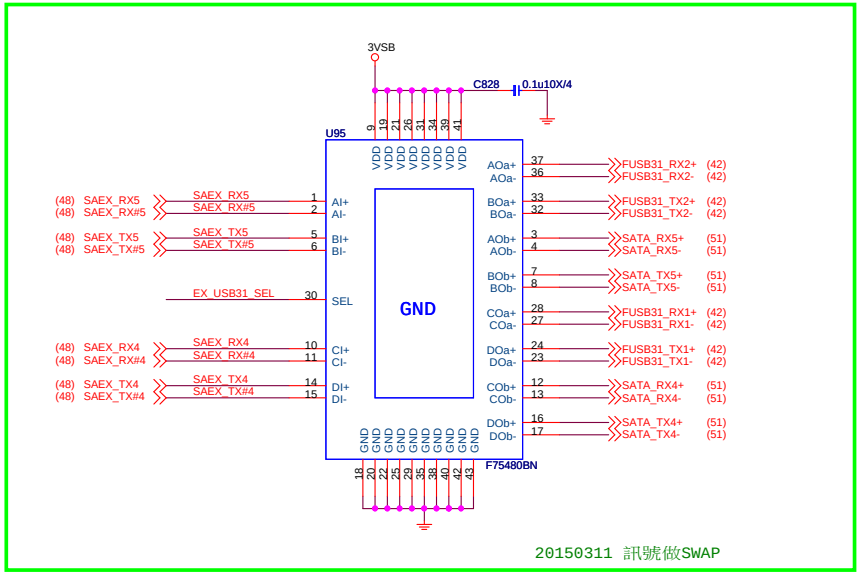
確認一下default 是否為為BC

增加一個GPIO給BIOS判斷為PCIE或SATAEXPRESS





BIOS_MODE

5605_GP16	*5605_GP15*	*SEL*	*Mode*
1	*1*	*SATA*	*default*
0	*1*	*SATA*	
0	*0*	*USB3.1*	

Switch_MODE

Switch	*SEL*	*Mode*	
A_B	*SATA*		
B_C	*USB3.1*	*default*	

MICRO-STAR INT'L CO.,LTD

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Size: Custom | Document Description: **Front USB3.1 switch** | Rev: 11

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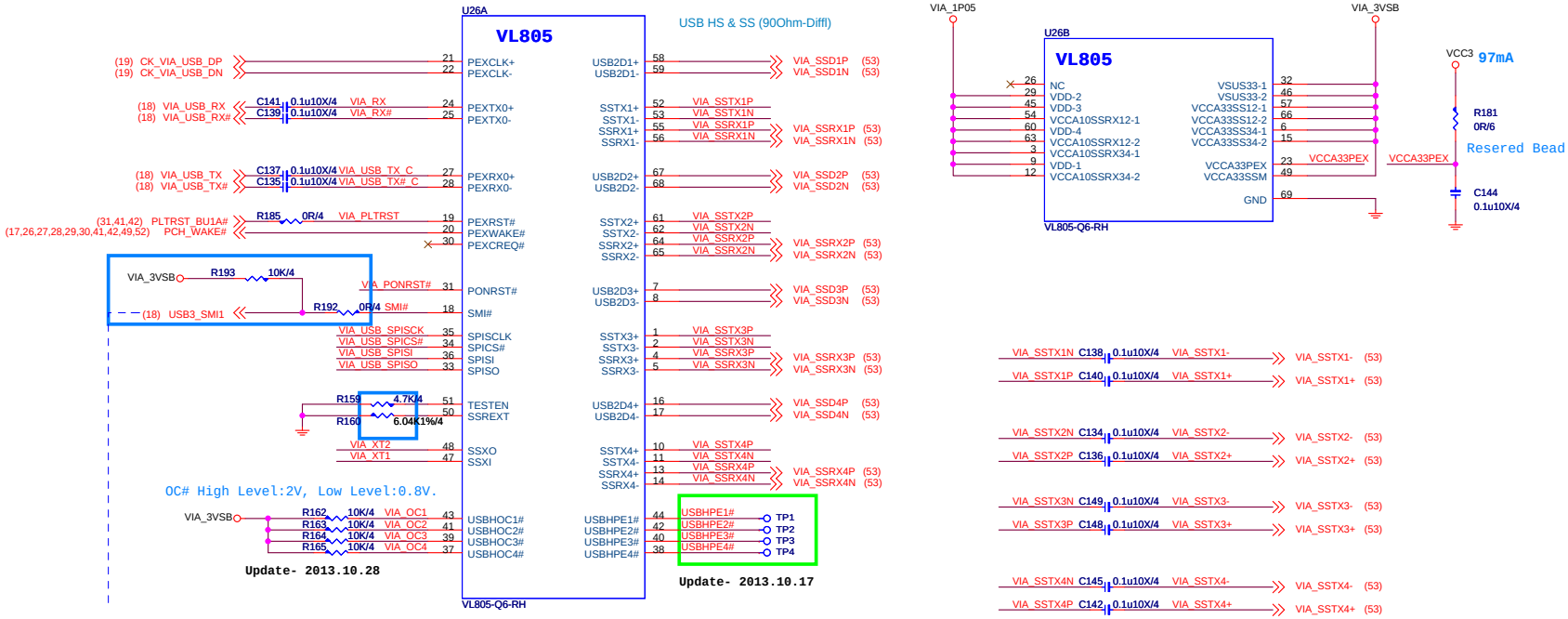
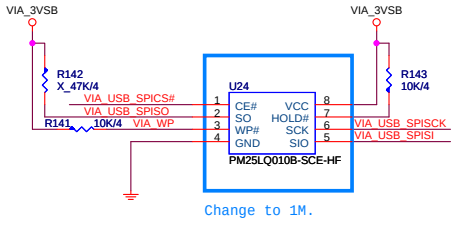
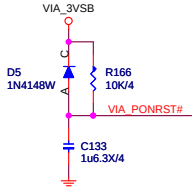
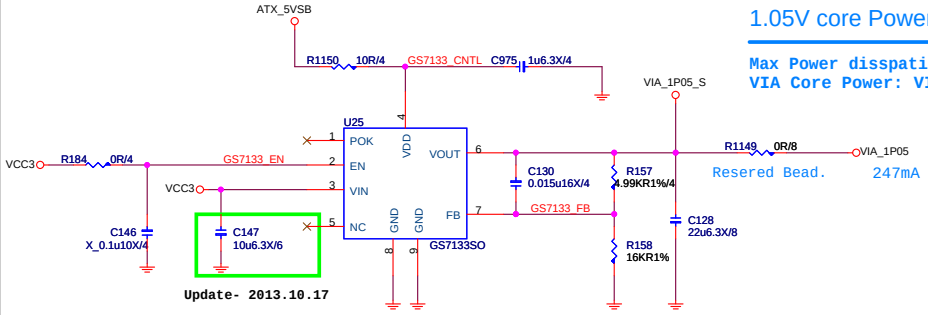


EEPROM

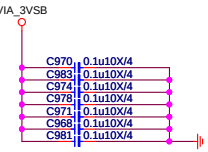


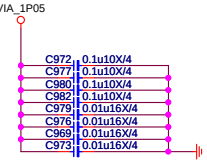




1.05V core Power

Max Power disspation: (3.3 V-1.05V)*0.247A=0.55575W
VIA Core Power: VIA_1P05 247mA





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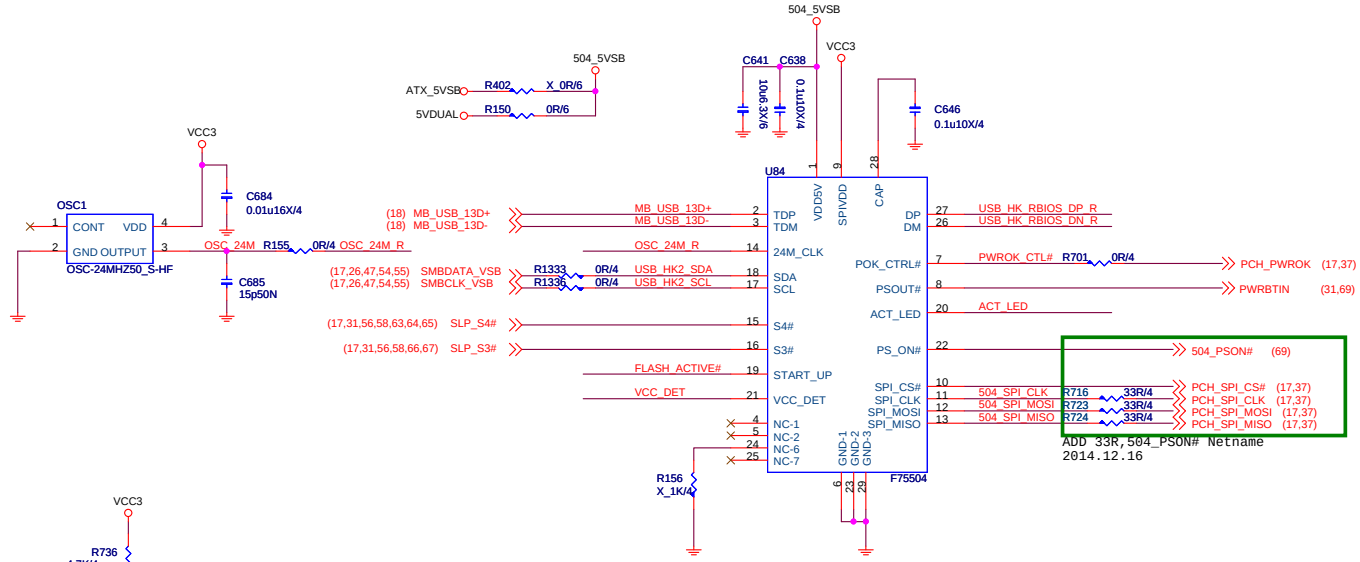
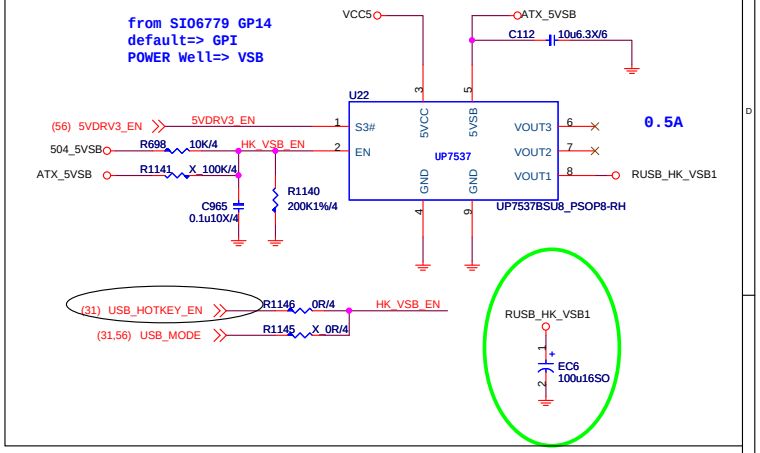
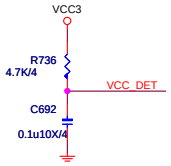
Host USB connector

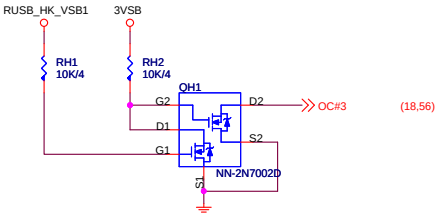


ADD 33R,504_PSON# Netname
2014.12.16

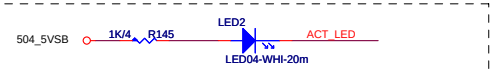
REAR USB PORT 8,9 (With PS2)

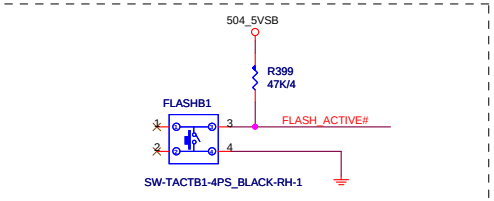






OC# signal connect to
SB OC pin.

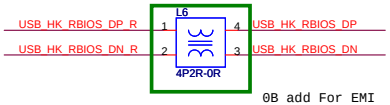




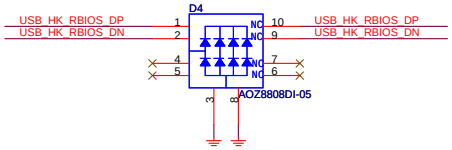
Reserved for when F75501 Hotkey device fail use

* All close to Front IO side

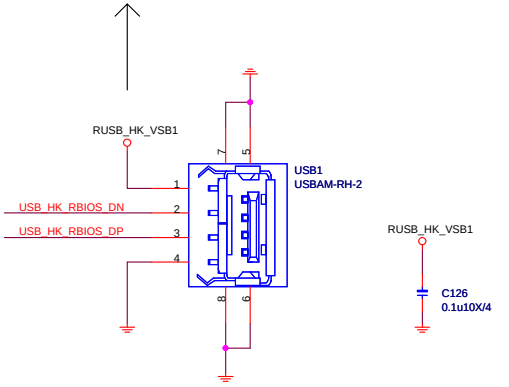
USB Connector power come from UP7537
provide(USB Hotkey Connector same)



0B add For EMI
2014.12.26



ESD close to connector.
(use usb3.0 ESD for eye diagram)



MICRO-STAR INT'L CO.,LTD		
MS-7A21		
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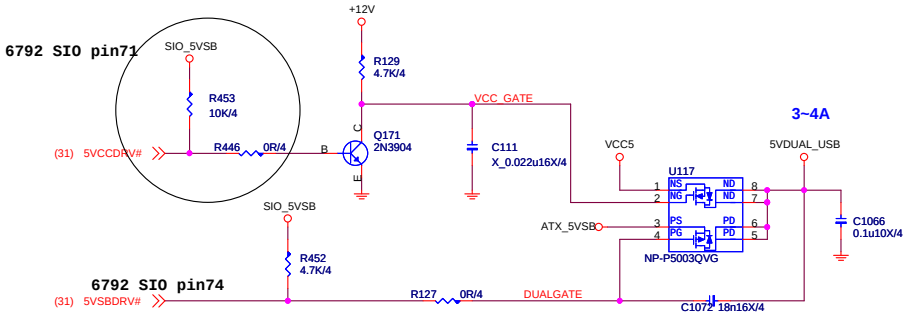
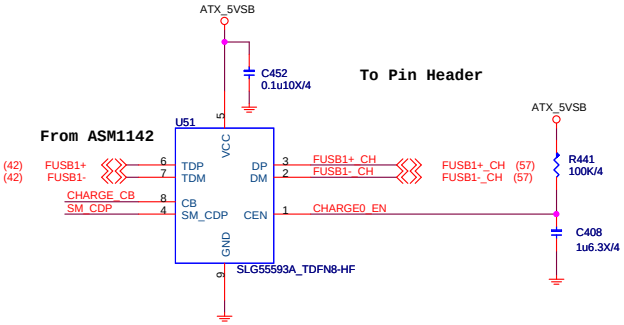
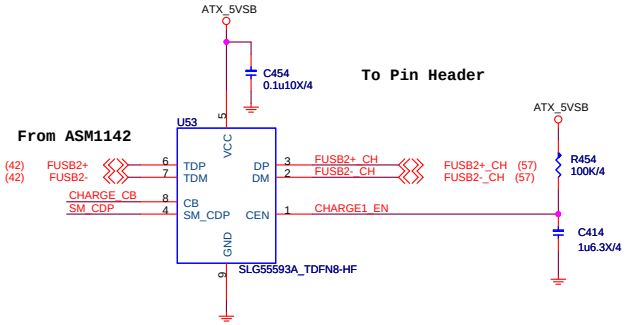
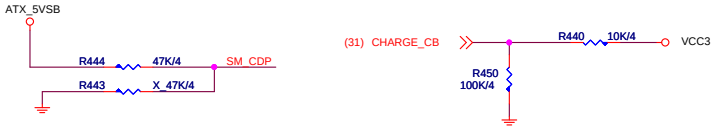
0A to 10 change to jusb4 19 pin use.

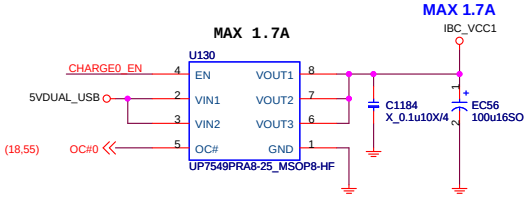




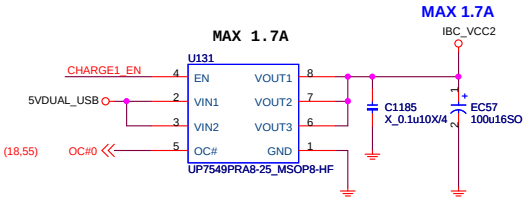




USB POWER PORT 1 For USB Charging



USB POWER PORT 1 For USB Charging



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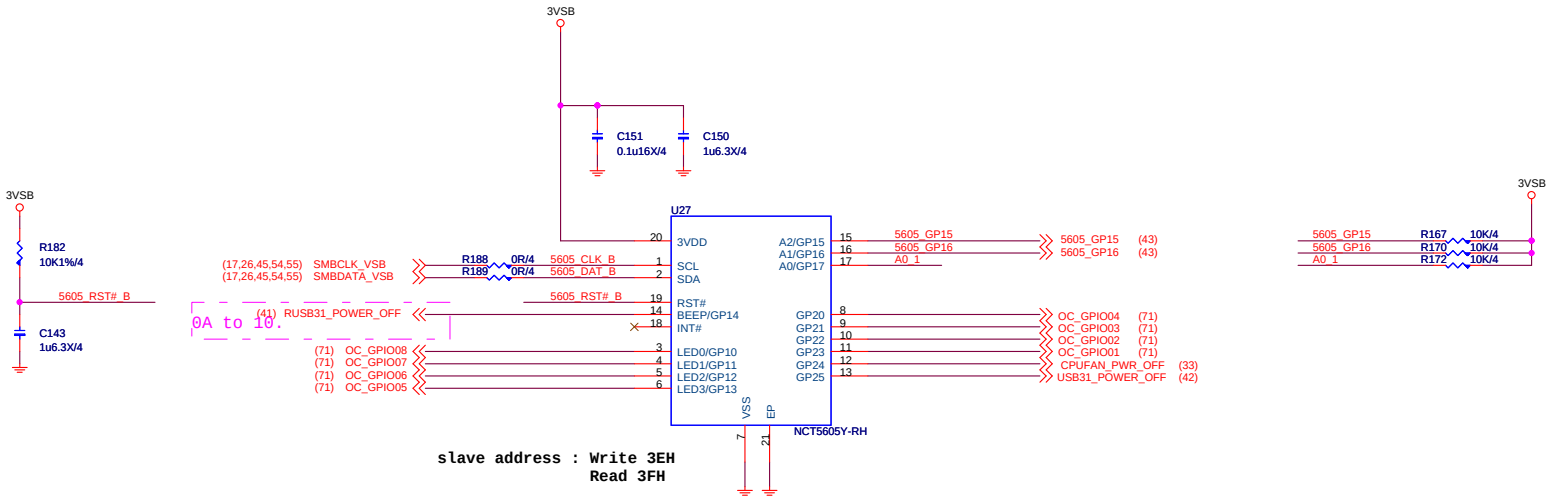

MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A21	
Size: Custom	Document Description: GPIO CONTROLLER	Rev: 11
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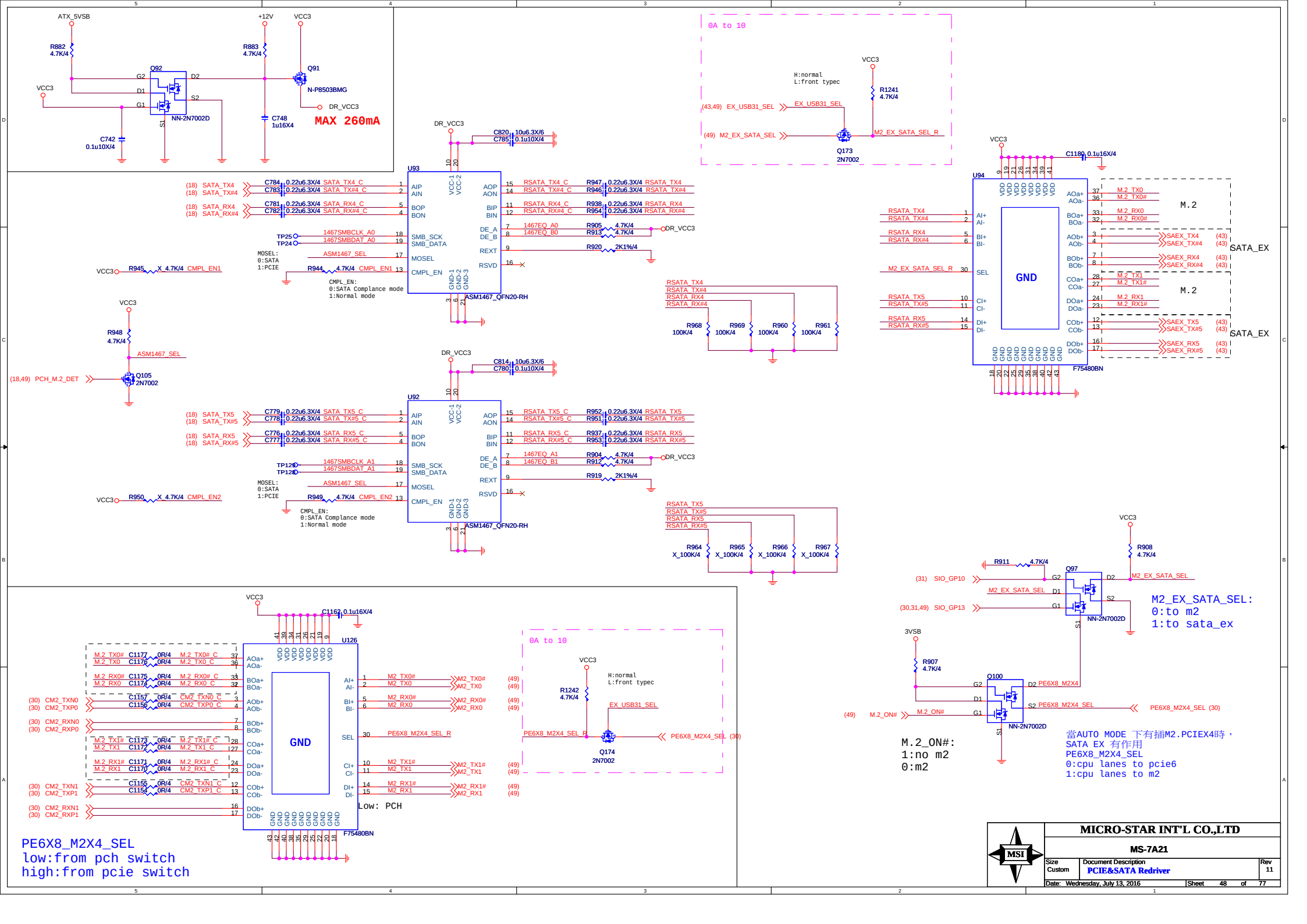
ATX_5VSB
+12V
VCC3
R882 4.7K/4
R883 4.7K/4
Q92
Q91
N-P8503BMG
NN-2N7002D
DR_VCC3
C742 0.1u10X/4
C748 1u16X4
MAX 260mA
0A to 10
H:normal
L:front typec
(43,49) EX_USB31_SEL
EX_USB31_SEL
R1241 4.7K/4
(49) M2_EX_SATA_SEL
M2_EX_SATA_SEL_R
Q173 2N7002
U93
U92
ASM1467_QFN20-RH
C820 10u6.3X/6
C785 0.1u10X/4
C814 10u6.3X/6
C780 0.1u10X/4
(18) SATA_TX4
(18) SATA_TX#4
(18) SATA_RX4
(18) SATA_RX#4
(18) SATA_TX5
(18) SATA_TX#5
(18) SATA_RX5
(18) SATA_RX#5
TP25
TP24
TP128
TP129
1467SMBCLK_A0
1467SMBDAT_A0
1467SMBCLK_A1
1467SMBDAT_A1
ASM1467_SEL
MOSEL:
0:SATA
1:PCIE
CMPL_EN:
0:SATA Complance mode
1:Normal mode
R945 X_4.7K/4 CMPL_EN1
R944 4.7K/4 CMPL_EN1
R950 X_4.7K/4 CMPL_EN2
R949 4.7K/4 CMPL_EN2
R920 2K1%/4
R919 2K1%/4
R948 4.7K/4
Q105 2N7002
(18,49) PCH_M.2_DET
R968 100K/4
R969 100K/4
R960 100K/4
R961 100K/4
R964 X_100K/4
R965 X_100K/4
R966 X_100K/4
R967 X_100K/4
U94
F75480BN
GND
M.2
SATA_EX
C1180 0.1u16X/4
U126
C1162 0.1u16X/4
M2_TX0
M2_TX0#
M2_RX0
M2_RX0#
M2_TX1
M2_TX1#
M2_RX1
M2_RX1#
(30) CM2_TXN0
(30) CM2_TXP0
(30) CM2_RXN0
(30) CM2_RXP0
(30) CM2_TXN1
(30) CM2_TXP1
(30) CM2_RXN1
(30) CM2_RXP1
PE6X8_M2X4_SEL_R
PE6X8_M2X4_SEL (30)
Q174 2N7002
R1242 4.7K/4
Low: PCH
PE6X8_M2X4_SEL
low:from pch switch
high:from pcie switch
R911 4.7K/4
R908 4.7K/4
Q97
(31) SIO_GP10
(30,31,49) SIO_GP13
M2_EX_SATA_SEL
M2_EX_SATA_SEL:
0:to m2
1:to sata_ex
3VSB
R907 4.7K/4
Q100
(49) M.2_ON#
PE6X8_M2X4_SEL (30)
M.2_ON#:
1:no m2
0:m2
當AUTO MODE 下有插M2.PCIEX4時，
SATA EX 有作用
PE6X8_M2X4_SEL
0:cpu lanes to pcie6
1:cpu lanes to m2
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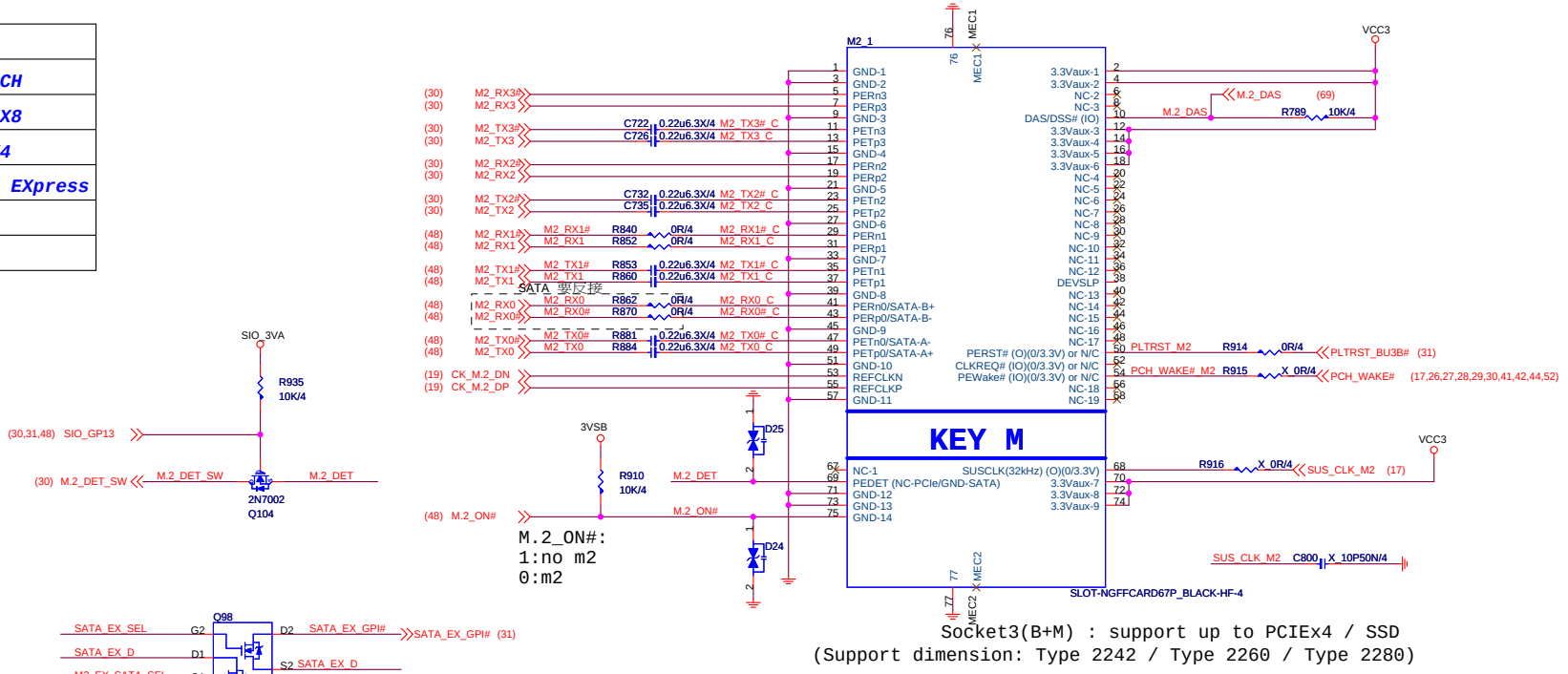
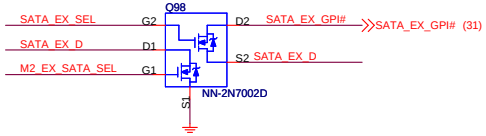
BIOS_MODE

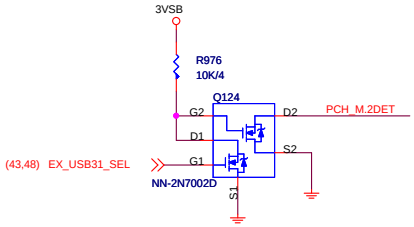
SIO_GP10	SIO_GP80	SIO_GP84	SIO_GP13	Mode
1	0	1:PCIE 0:SATA	0	M2-PCH
X	1	X	0	PCIEX8
X	0	X	0	M2-X4
0	X	1:PCIE 0:SATA	X	SATA EXpress
GPI	GPI	GPI	1	AUTO



Socket3(B+M) : support up to PCIEx4 / SSD
(Support dimension: Type 2242 / Type 2260 / Type 2280)

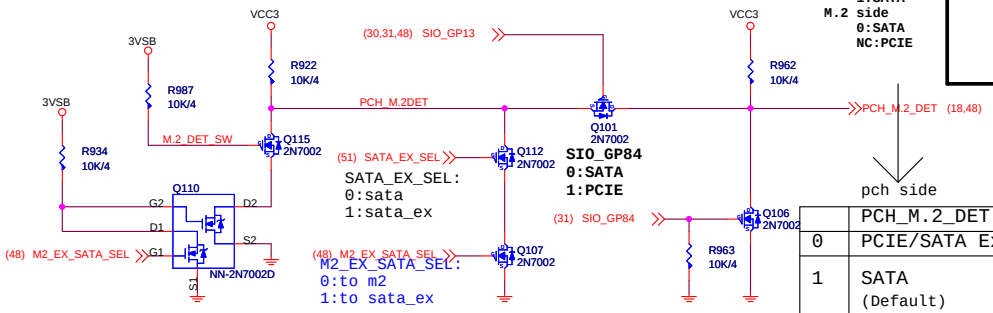


FRONT_U3.0 SEL

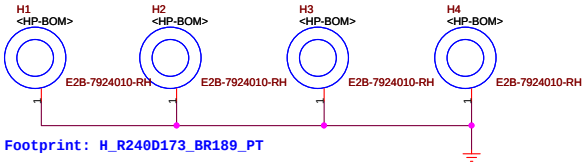


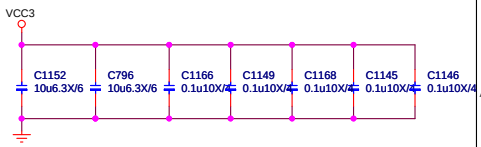
BIOS_MODE SATA & PCIE SWITCH

GP13	GP80	GP11	GP10	GP84	Mode
1	0	0	0	0	AUTO(Default)
0	X	1	1	0	M2-SATA
0	X	1	1	1	M2-PCIE
0	0	0	X	X	M2-CPU
0	X	X	0	0	SATA-E SATA
0	X	X	0	1	SATA-E PCIE



	PCH_M.2_DET
0	PCIE/SATA Exp.
1	SATA (Default)





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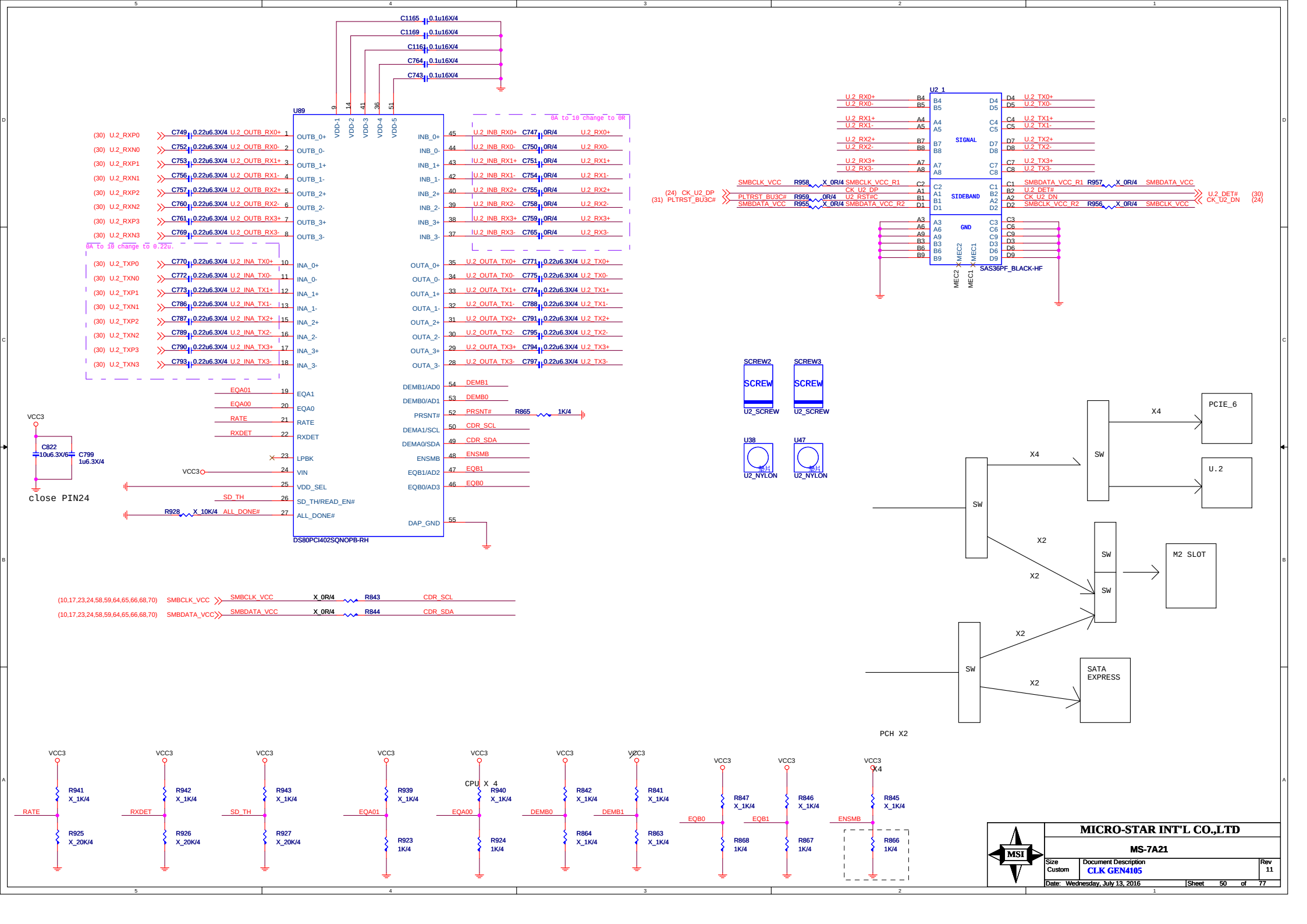
U89
DS80PCI402SQNOPB-RH
C1165 0.1u16X/4
C1169 0.1u16X/4
C1161 0.1u16X/4
C764 0.1u16X/4
C743 0.1u16X/4
VDD-1
VDD-2
VDD-3
VDD-4
VDD-5
OUTB_0+
OUTB_0-
OUTB_1+
OUTB_1-
OUTB_2+
OUTB_2-
OUTB_3+
OUTB_3-
INB_0+
INB_0-
INB_1+
INB_1-
INB_2+
INB_2-
INB_3+
INB_3-
INA_0+
INA_0-
INA_1+
INA_1-
INA_2+
INA_2-
INA_3+
INA_3-
OUTA_0+
OUTA_0-
OUTA_1+
OUTA_1-
OUTA_2+
OUTA_2-
OUTA_3+
OUTA_3-
EQA1
EQA0
RATE
RXDET
LPBK
VIN
VDD_SEL
SD_TH/READ_EN#
ALL_DONE#
DEMB1/AD0
DEMB0/AD1
PRSNT#
DEMA1/SCL
DEMA0/SDA
ENSMB
EQB1/AD2
EQB0/AD3
DAP_GND
0A to 10 change to 0R
0A to 10 change to 0.22u.
close PIN24
VCC3
C822 10u6.3X/6
C799 1u6.3X/4
R865 1K/4
R928 X_10K/4
SMBCLK_VCC
SMBDATA_VCC
X_0R/4
R843
R844
CDR_SCL
CDR_SDA
U2_1
SIGNAL
SIDEBAND
GND
SAS36PF_BLACK-HF
R958
R959
R955
R957
R956
SCREW2
SCREW3
U2_SCREW
U38
U47
U2_NYLON
PCIE_6
U.2
M2 SLOT
SATA EXPRESS
SW
X4
X2
PCH X2
R941 X_1K/4
R925 X_20K/4
R942 X_1K/4
R926 X_20K/4
R943 X_1K/4
R927 X_20K/4
R939 X_1K/4
R923 1K/4
R940 X_1K/4
R924 1K/4
R842 X_1K/4
R864 X_1K/4
R841 X_1K/4
R863 X_1K/4
R847 X_1K/4
R868 1K/4
R846 X_1K/4
R867 1K/4
R845 X_1K/4
R866 1K/4
CPU_X_4
MICRO-STAR INT'L CO.,LTD
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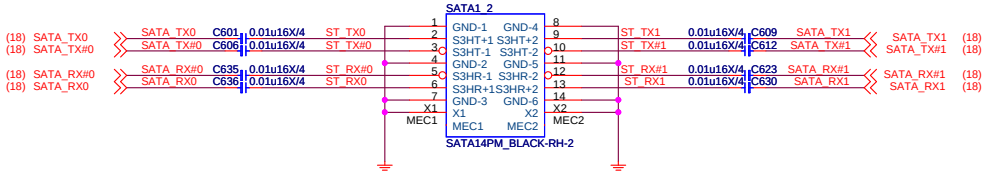
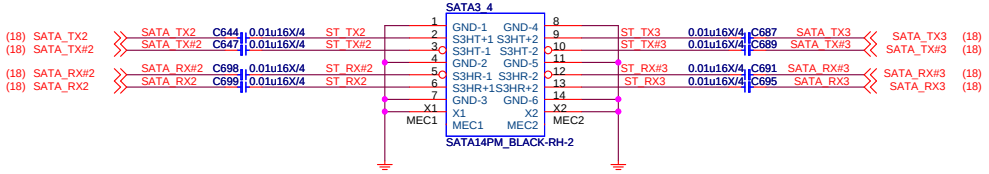
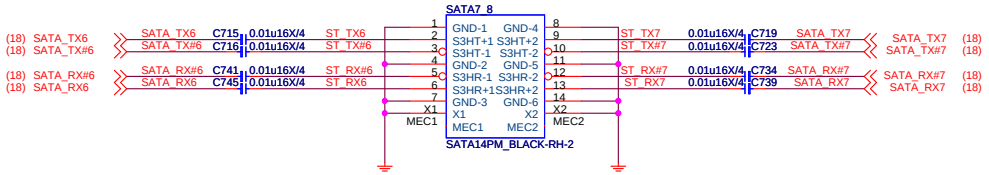
SATA 6G PORT 0.1



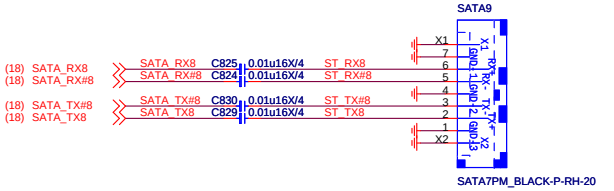
SATA 6G PORT 2.3

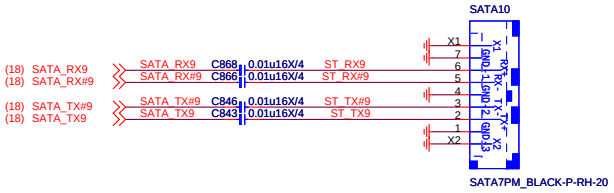


SATA 6G PORT 6.7

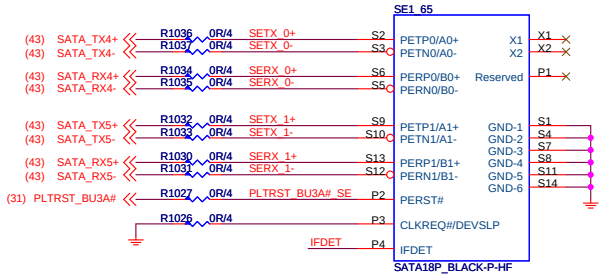


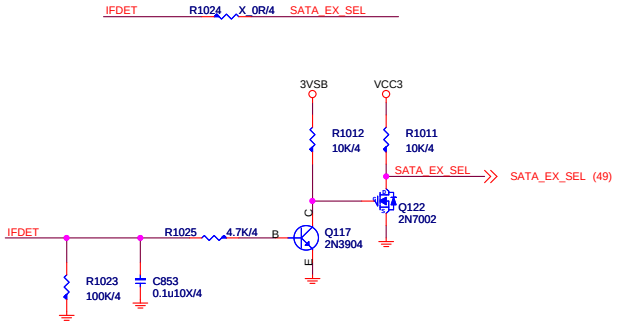
SATA 6G PORT 8.9





SATA 6G PORT 56





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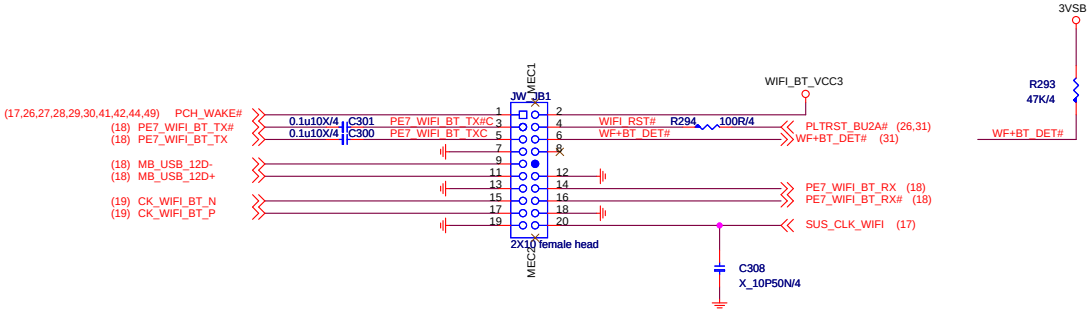
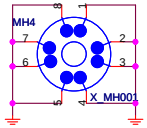
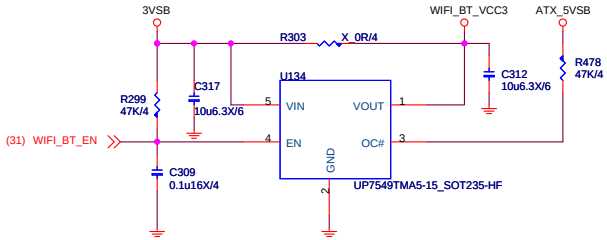




VIRTU_LA8
Label
VIRTU
WIFI

VIRTU_LA9
Label
VIRTU
WIFI_SCREW



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Size: Custom	Document Description: WIFI+BTconnector	Rev: 11
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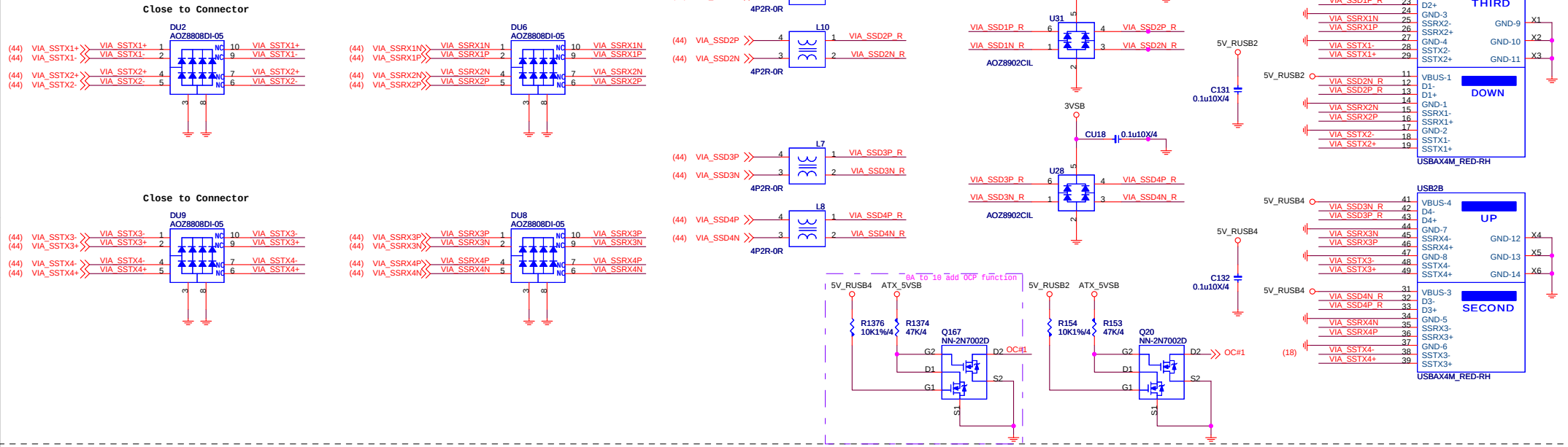
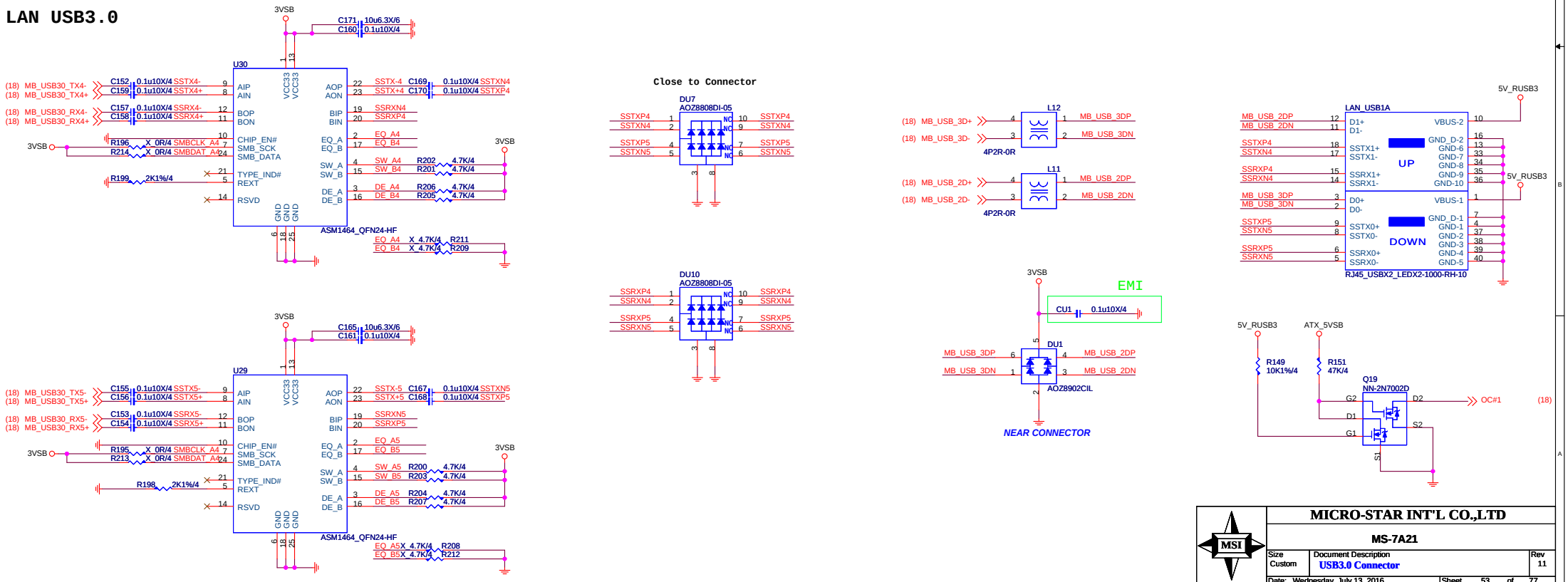
REAR USB3.0 Connector



LAN USB3.0



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Size: Custom	Document Description: USB3.0 Connector	Rev: 11
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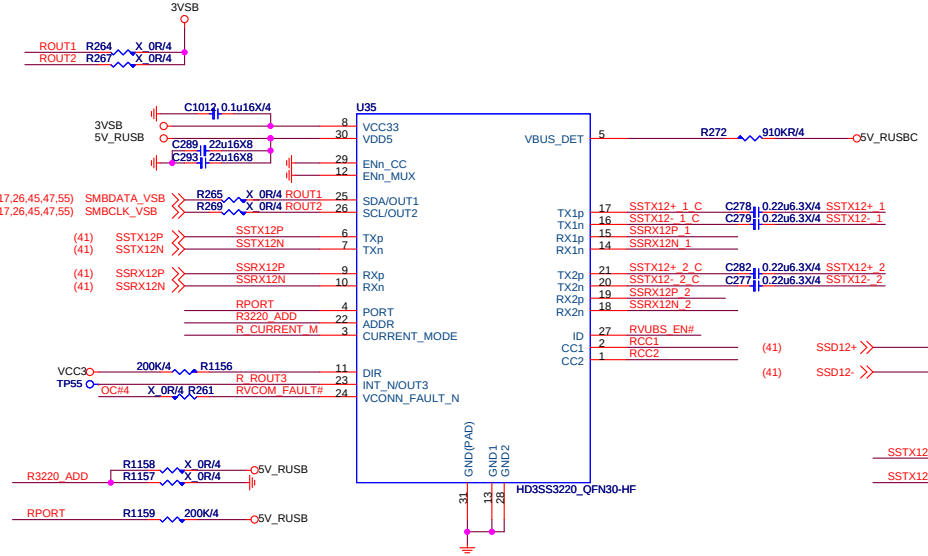
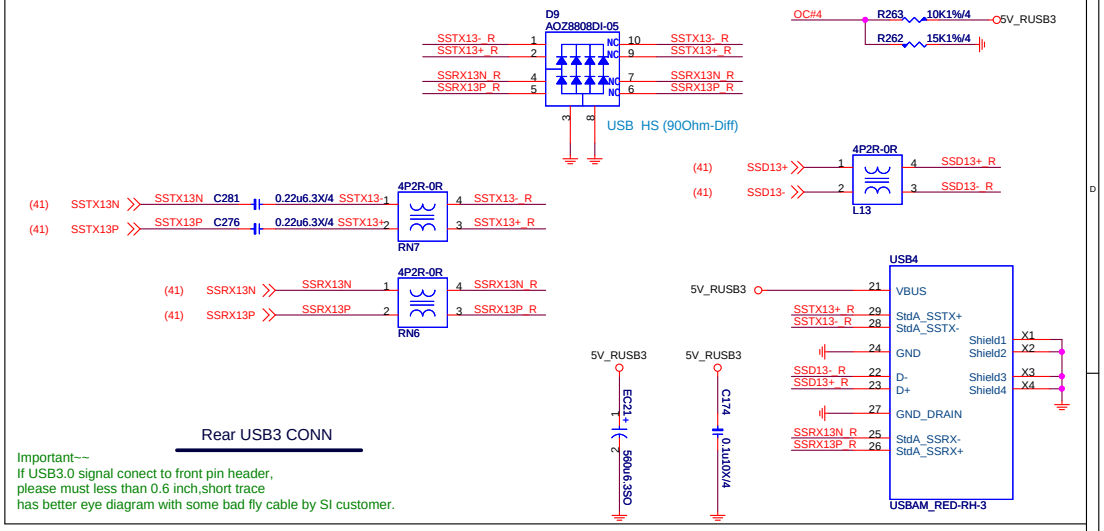
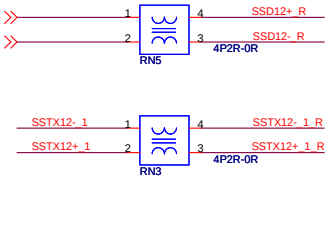
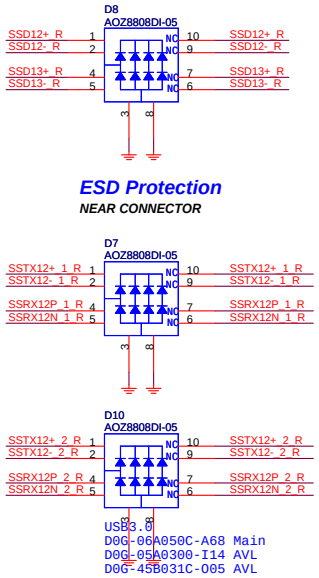
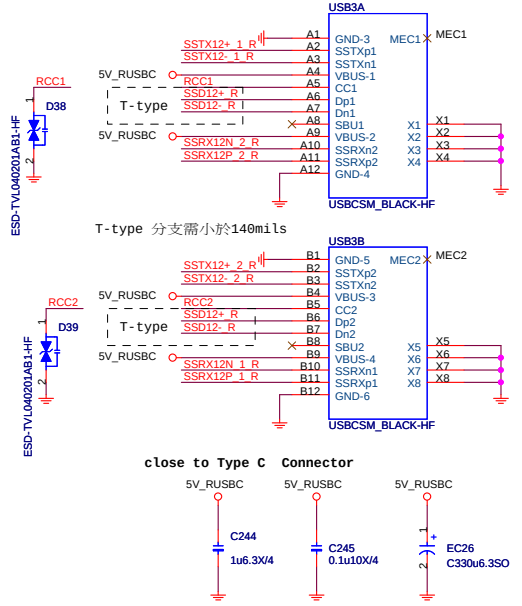
USB3.1



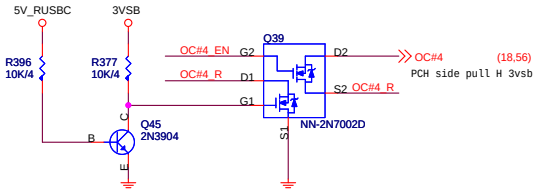


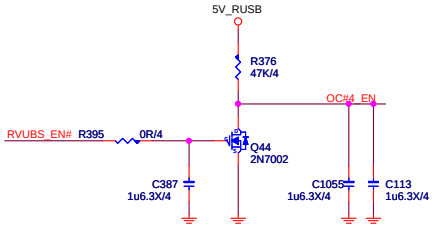




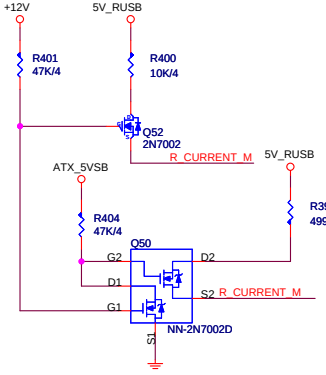


USB OC# Singal

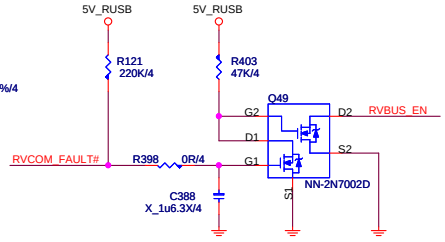


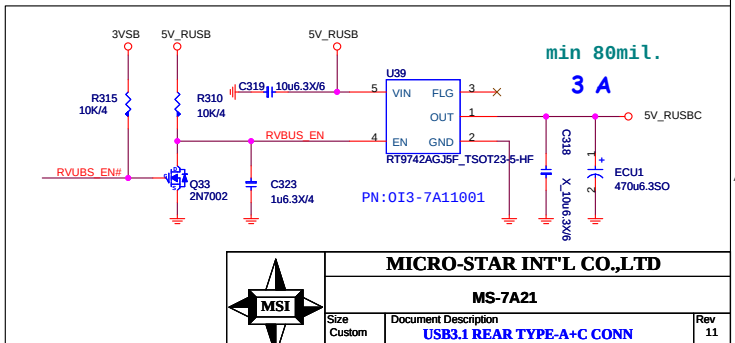


Current Mode



VCOM Singal





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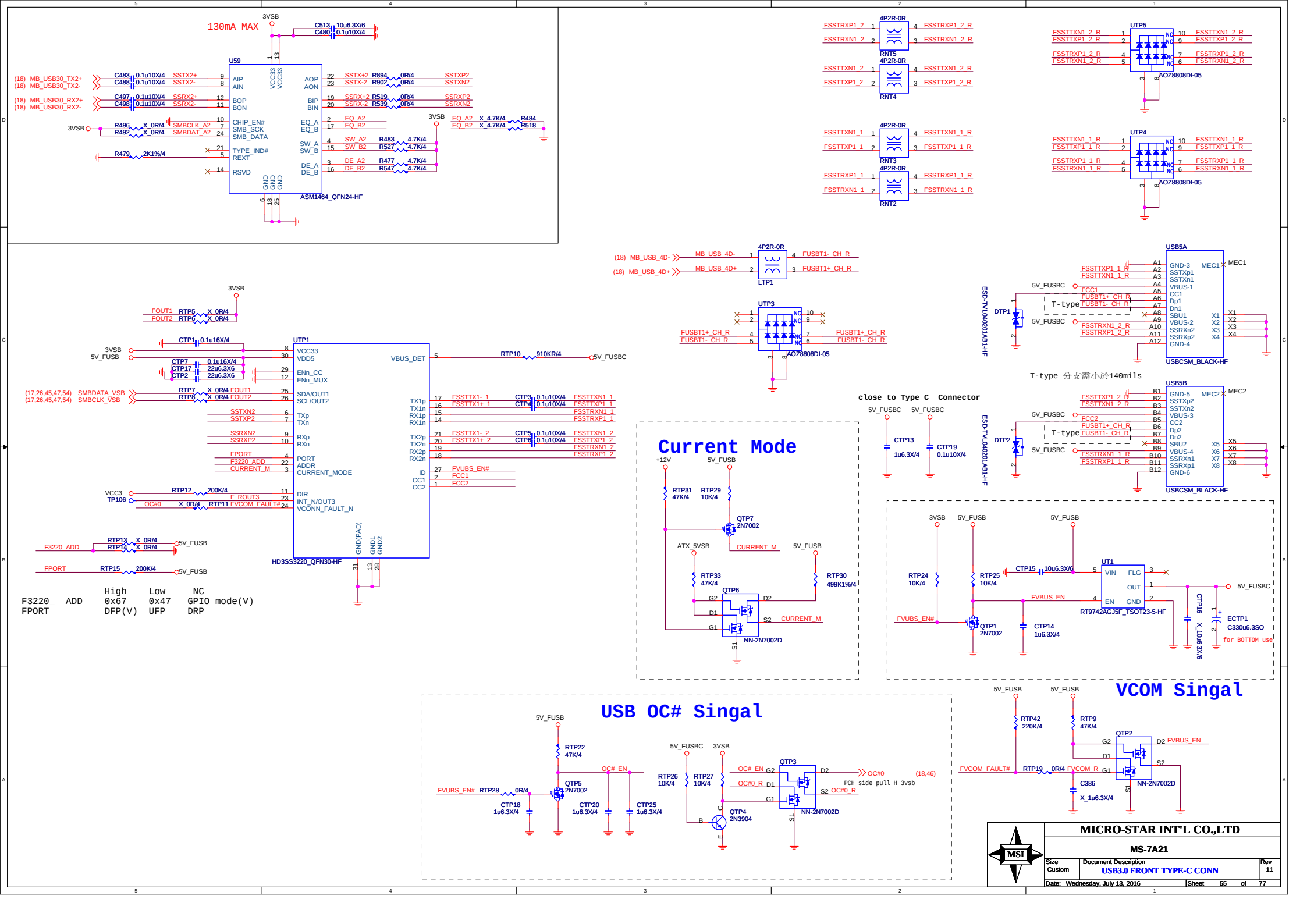
130mA MAX
3VSB
U59
ASM1464_QFN24-HF
Current Mode
USB OC# Singal
VCOM Singal
close to Type C Connector
T-type 分支需小於140mils
UTP1
HD3SS3220_QFN30-HF
UTP5
UTP4
UTP3
LTP1
USB5A
USB5B
USBCSM_BLACK-HF
AOZ8808DI-05
RT9742AGJ5F_TSOT23-5-HF
F3220_ ADD High Low NC
FPORT DFP(V) UFP DRP
MICRO-STAR INT'L CO.,LTD
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USB3.0 FRONT TYPE-C CONN
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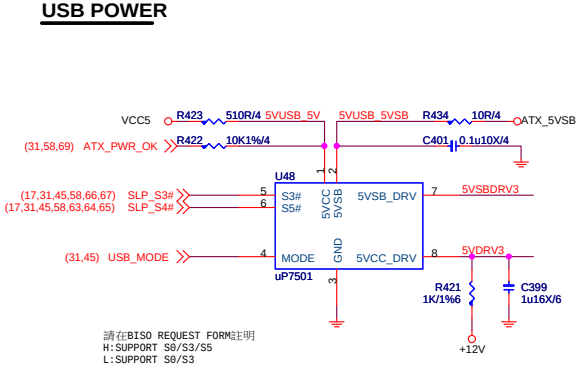
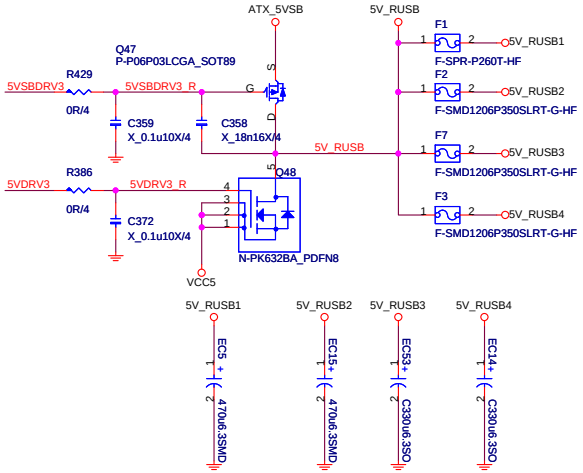
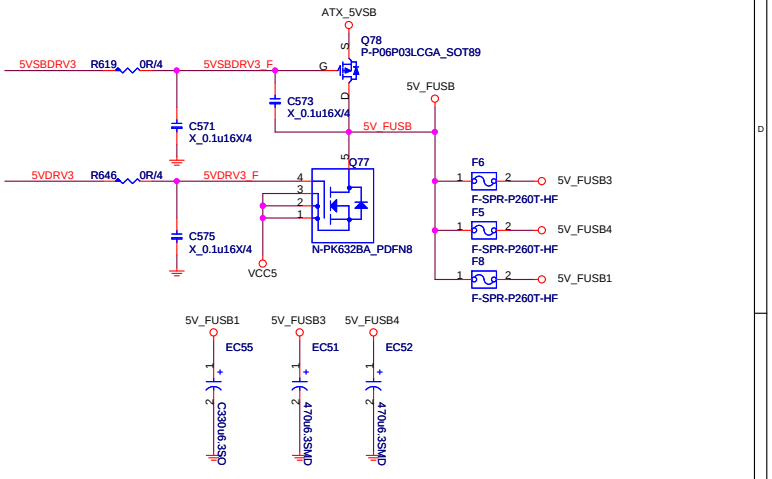
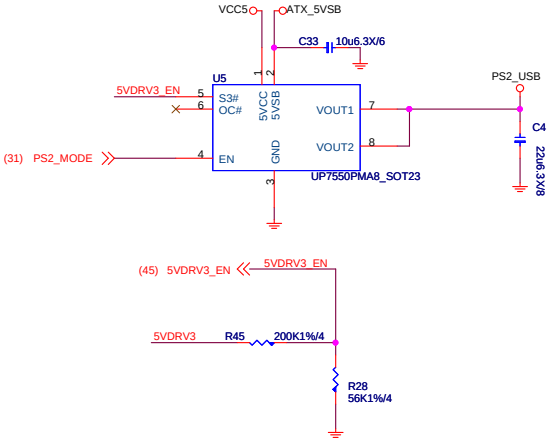
USB POWER

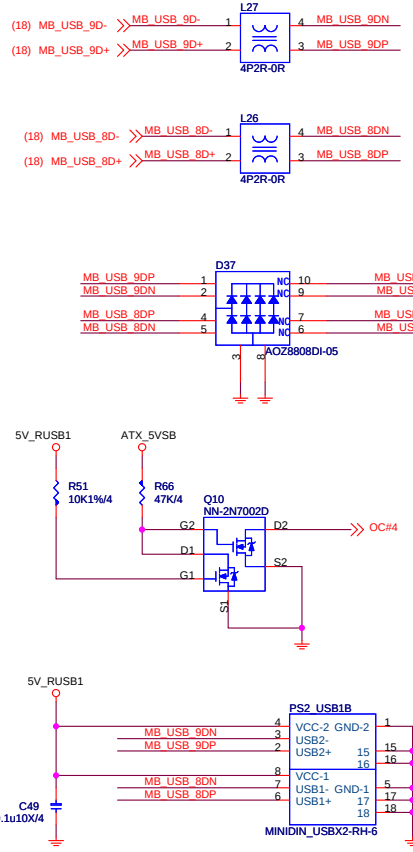




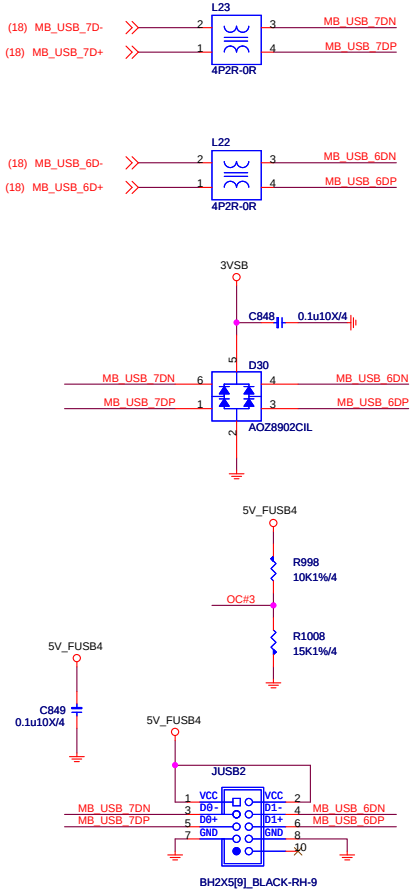




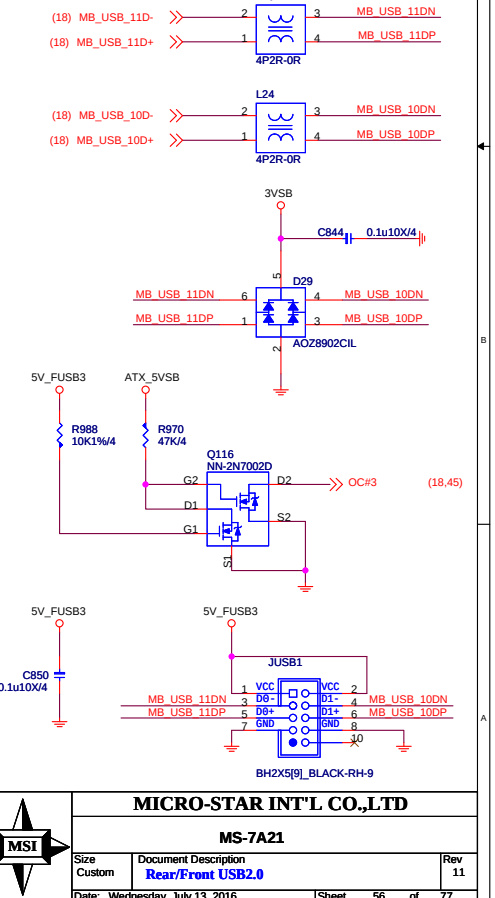
REAR USB PORT 8,9



FRONT USB PORT 10.11



FRONT USB PORT 4,5



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	MS-7A21	
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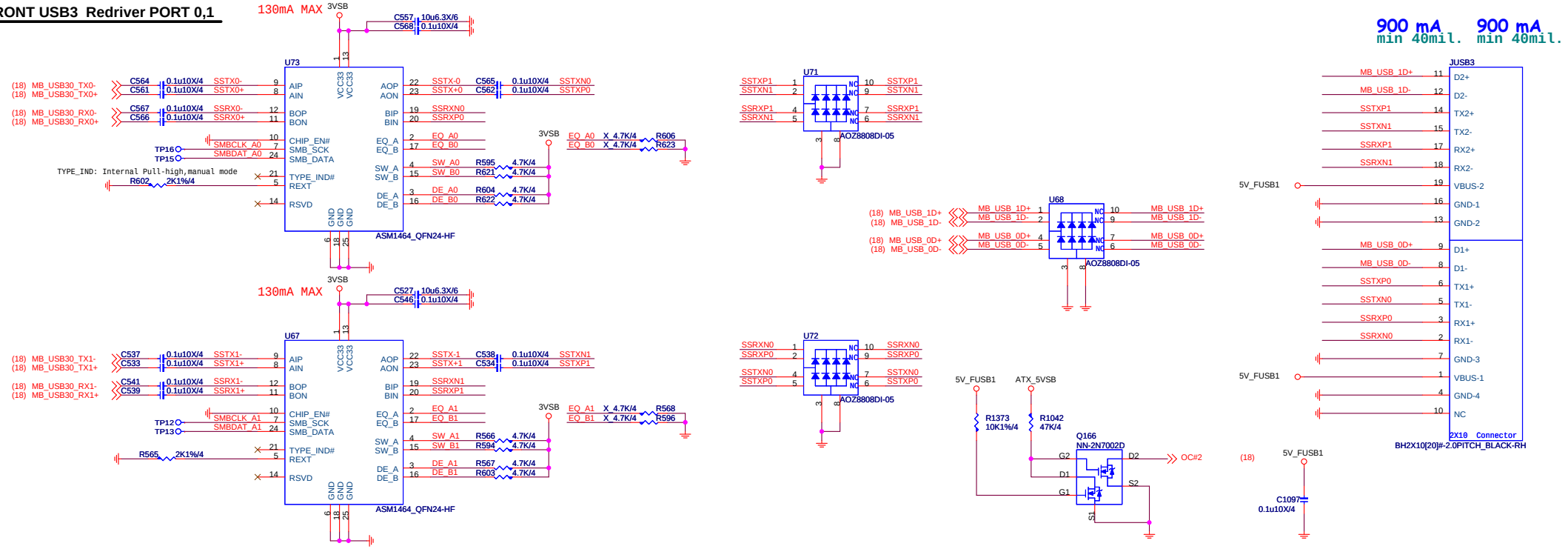
FRONT USB3 Redriver PORT 0,1

130mA MAX

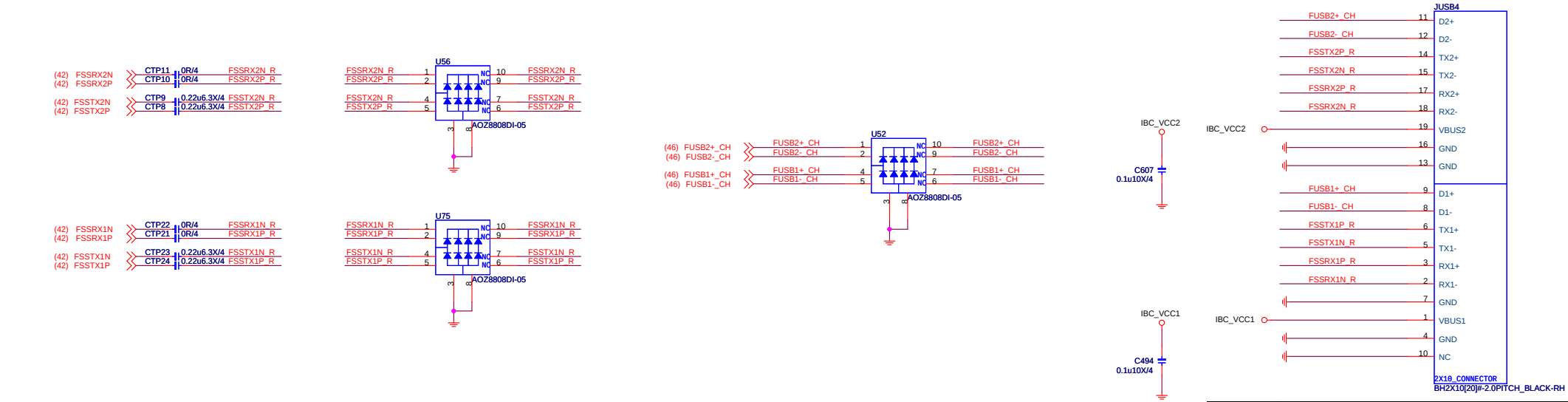
900 mA min 40mil. 900 mA min 40mil.



FRONT USB3 Redriver PORT 2,3

0A to 10

900 mA min 40mil. 900 mA min 40mil.



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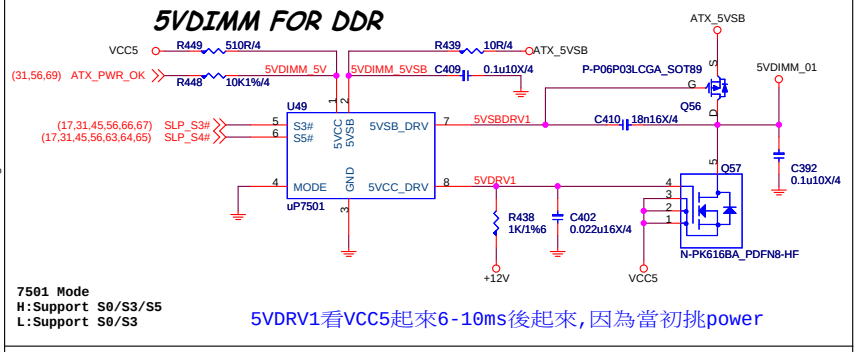
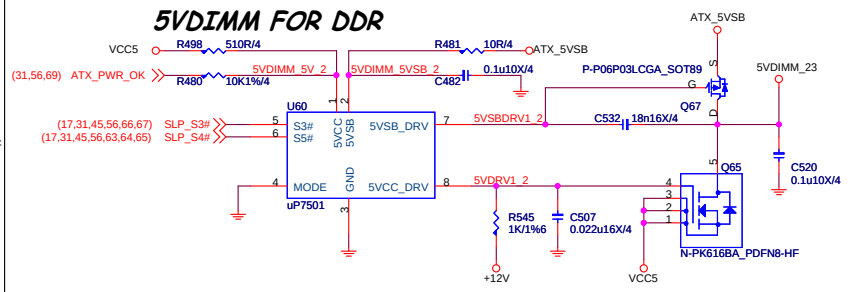
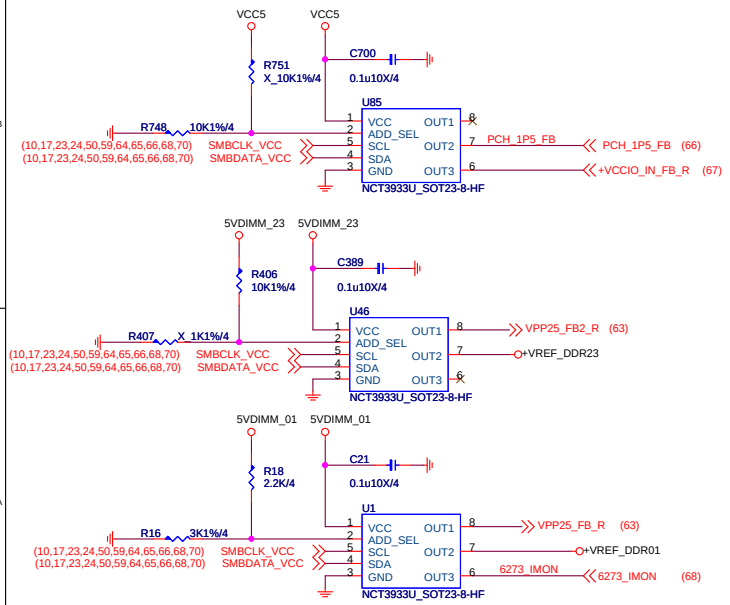
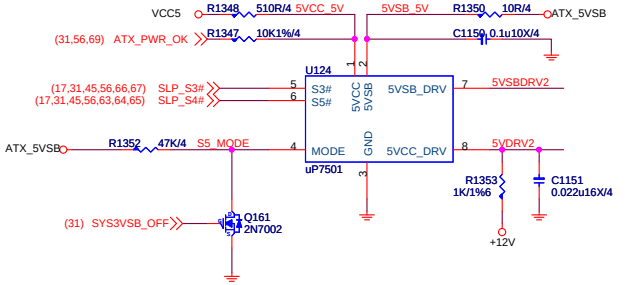
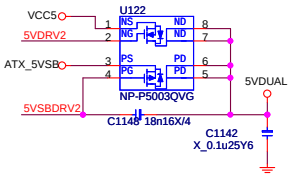
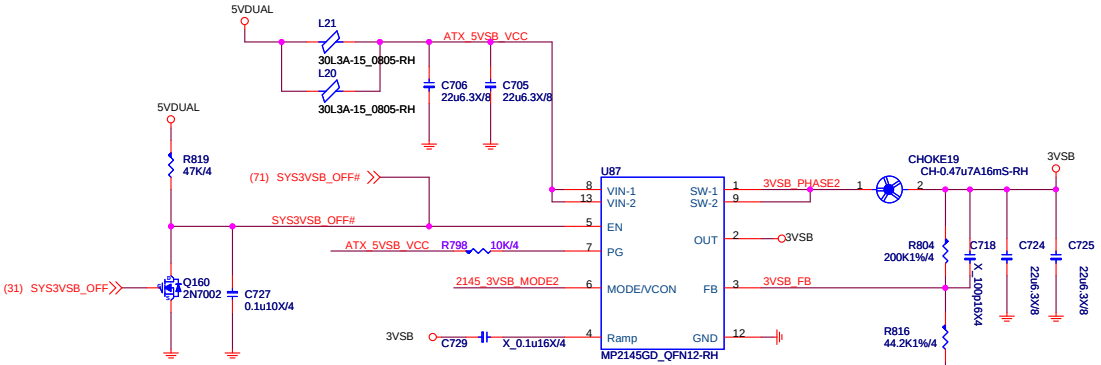


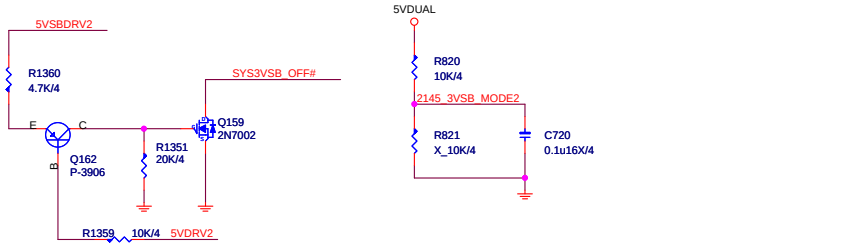




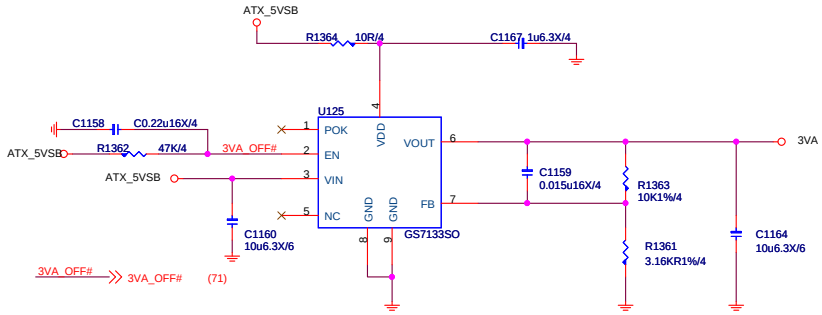








防G3-->S5底下5VSBDRV2瞬間有電變沒電,使得下一級電壓爬升有drop



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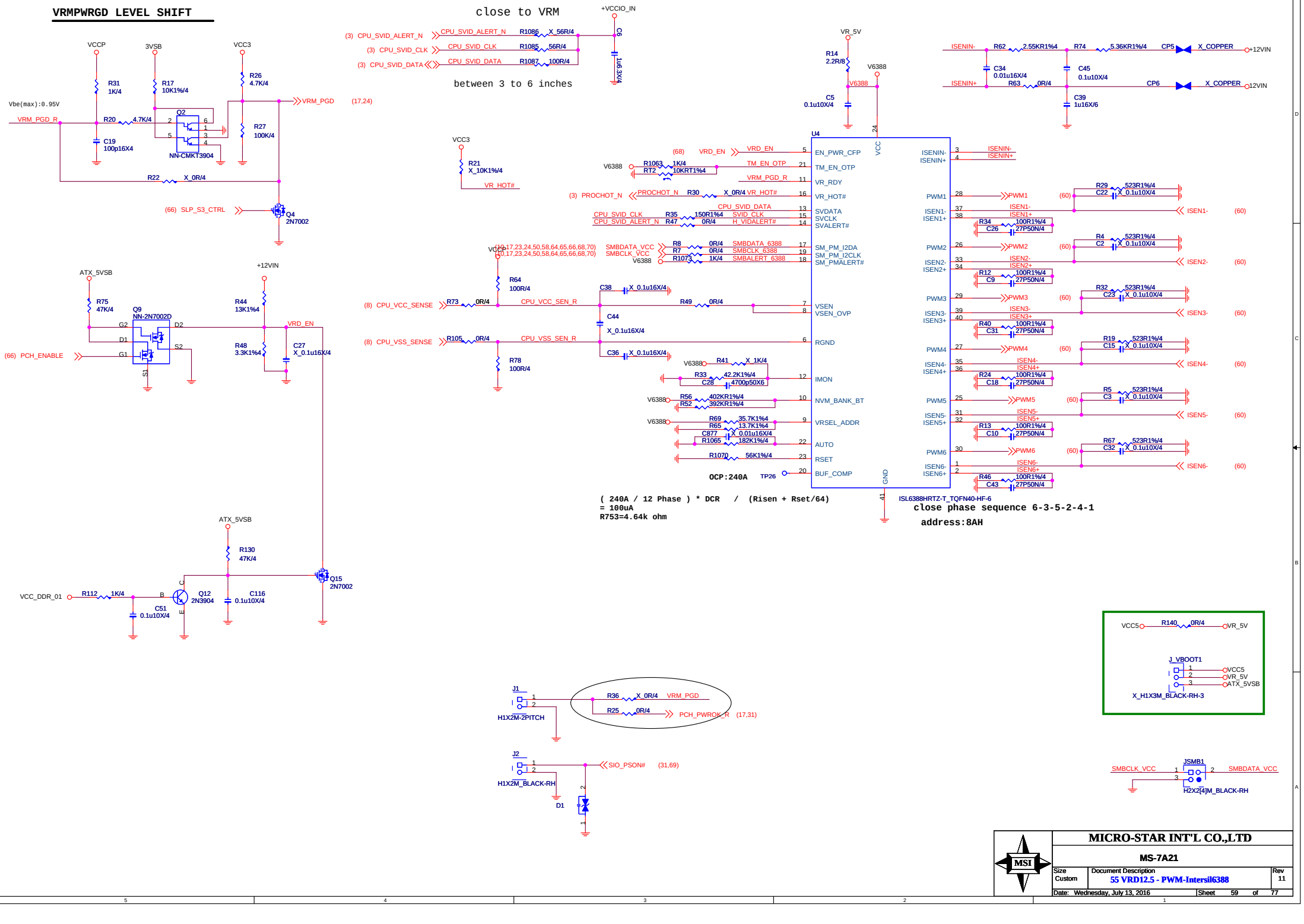
VRMPWRGD LEVEL SHIFT

close to VRM

between 3 to 6 inches



MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A21	
Size: Custom	Document Description: 55 VRD12.5 - PWM-Intersil6388	Rev: 11
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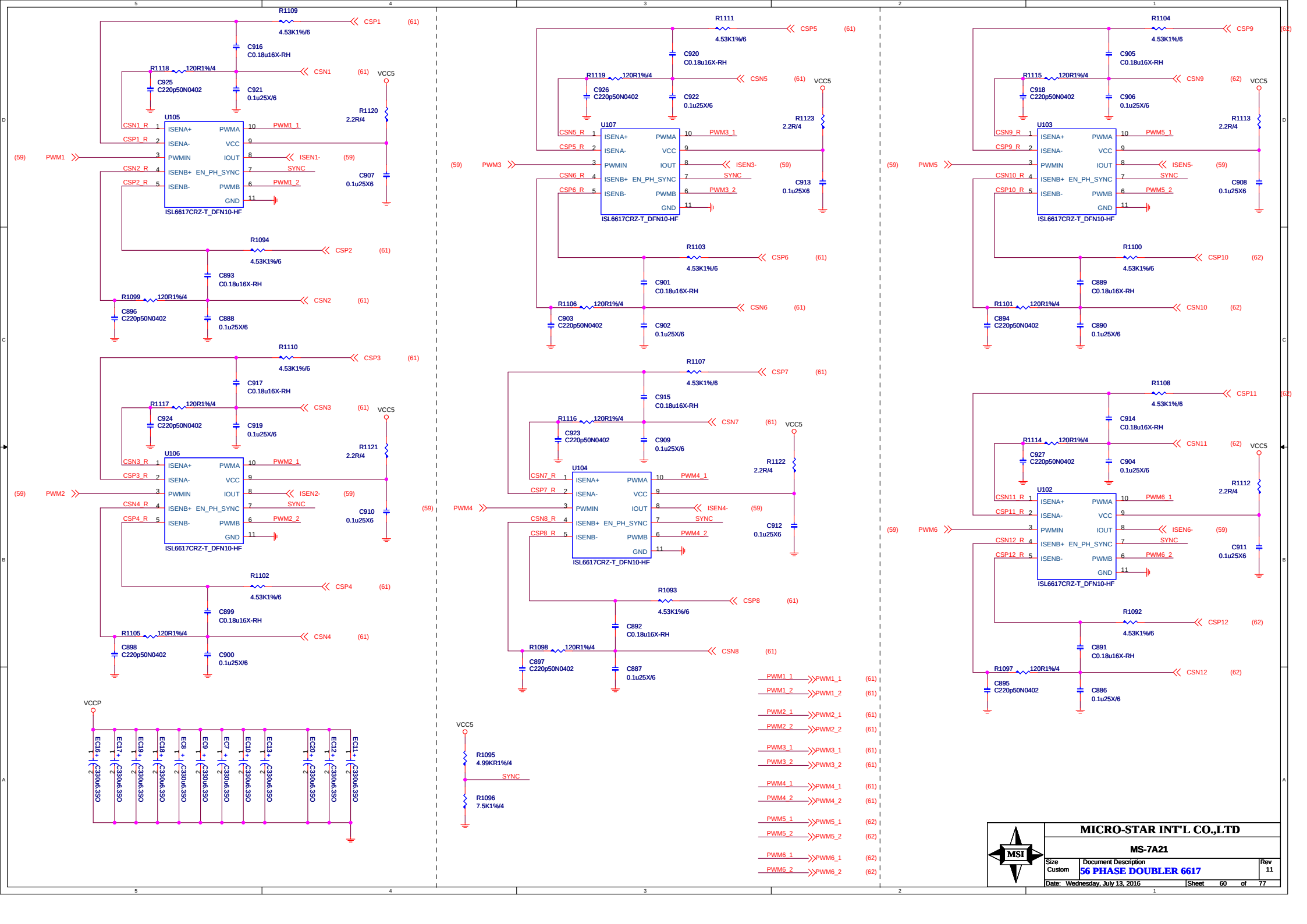
R1109
4.53K1%/6
CSP1
(61)
C916
C0.18u16X-RH
R1118
120R1%/4
CSN1
(61)
VCC5
C925
C220p50N0402
C921
0.1u25X/6
R1120
2.2R/4
U105
CSN1_R
CSP1_R
(59)
PWM1
CSN2_R
CSP2_R
ISENA+
ISENA-
PWMIN
ISENB+
ISENB-
PWMA
VCC
IOUT
EN_PH_SYNC
PWMB
GND
PWM1_1
ISEN1-
SYNC
PWM1_2
C907
0.1u25X6
ISL6617CRZ-T_DFN10-HF
R1094
4.53K1%/6
CSP2
(61)
C893
C0.18u16X-RH
R1099
120R1%/4
CSN2
(61)
C896
C220p50N0402
C888
0.1u25X/6
R1110
4.53K1%/6
CSP3
(61)
C917
C0.18u16X-RH
R1117
120R1%/4
CSN3
(61)
VCC5
C924
C220p50N0402
C919
0.1u25X/6
R1121
2.2R/4
U106
CSN3_R
CSP3_R
(59)
PWM2
CSN4_R
CSP4_R
PWM2_1
ISEN2-
SYNC
PWM2_2
C910
0.1u25X6
(59)
ISL6617CRZ-T_DFN10-HF
R1102
4.53K1%/6
CSP4
(61)
C899
C0.18u16X-RH
R1105
120R1%/4
CSN4
(61)
C898
C220p50N0402
C900
0.1u25X/6
VCCP
EC16+
EC17+
EC19+
EC18+
EC8+
EC9+
EC7+
EC10+
EC13+
EC20+
EC12+
EC11+
C330u6.3SO
R1111
4.53K1%/6
CSP5
(61)
C920
C0.18u16X-RH
R1119
120R1%/4
CSN5
(61)
VCC5
C926
C220p50N0402
C922
0.1u25X/6
R1123
2.2R/4
U107
CSN5_R
CSP5_R
(59)
PWM3
CSN6_R
CSP6_R
PWM3_1
ISEN3-
SYNC
PWM3_2
C913
0.1u25X6
(59)
ISL6617CRZ-T_DFN10-HF
R1103
4.53K1%/6
CSP6
(61)
C901
C0.18u16X-RH
R1106
120R1%/4
CSN6
(61)
C903
C220p50N0402
C902
0.1u25X/6
R1107
4.53K1%/6
CSP7
(61)
C915
C0.18u16X-RH
R1116
120R1%/4
CSN7
(61)
VCC5
C923
C220p50N0402
C909
0.1u25X/6
R1122
2.2R/4
U104
CSN7_R
CSP7_R
(59)
PWM4
CSN8_R
CSP8_R
PWM4_1
ISEN4-
SYNC
PWM4_2
C912
0.1u25X6
(59)
ISL6617CRZ-T_DFN10-HF
R1093
4.53K1%/6
CSP8
(61)
C892
C0.18u16X-RH
R1098
120R1%/4
CSN8
(61)
C897
C220p50N0402
C887
0.1u25X/6
VCC5
R1095
4.99KR1%/4
SYNC
R1096
7.5K1%/4
PWM1_1
PWM1_2
PWM2_1
PWM2_2
PWM3_1
PWM3_2
PWM4_1
PWM4_2
PWM5_1
PWM5_2
PWM6_1
PWM6_2
(61)
(62)
R1104
4.53K1%/6
CSP9
(62)
C905
C0.18u16X-RH
R1115
120R1%/4
CSN9
(62)
VCC5
C918
C220p50N0402
C906
0.1u25X/6
R1113
2.2R/4
U103
CSN9_R
CSP9_R
(59)
PWM5
CSN10_R
CSP10_R
PWM5_1
ISEN5-
SYNC
PWM5_2
C908
0.1u25X6
(59)
ISL6617CRZ-T_DFN10-HF
R1100
4.53K1%/6
CSP10
(62)
C889
C0.18u16X-RH
R1101
120R1%/4
CSN10
(62)
C894
C220p50N0402
C890
0.1u25X/6
R1108
4.53K1%/6
CSP11
(62)
C914
C0.18u16X-RH
R1114
120R1%/4
CSN11
(62)
VCC5
C927
C220p50N0402
C904
0.1u25X/6
R1112
2.2R/4
U102
CSN11_R
CSP11_R
(59)
PWM6
CSN12_R
CSP12_R
PWM6_1
ISEN6-
SYNC
PWM6_2
C911
0.1u25X6
(59)
ISL6617CRZ-T_DFN10-HF
R1092
4.53K1%/6
CSP12
(62)
C891
C0.18u16X-RH
R1097
120R1%/4
CSN12
(62)
C895
C220p50N0402
C886
0.1u25X/6
MICRO-STAR INT'L CO.,LTD
MS-7A21
Size
Custom
Document Description
56 PHASE DOUBLER 6617
Rev
11
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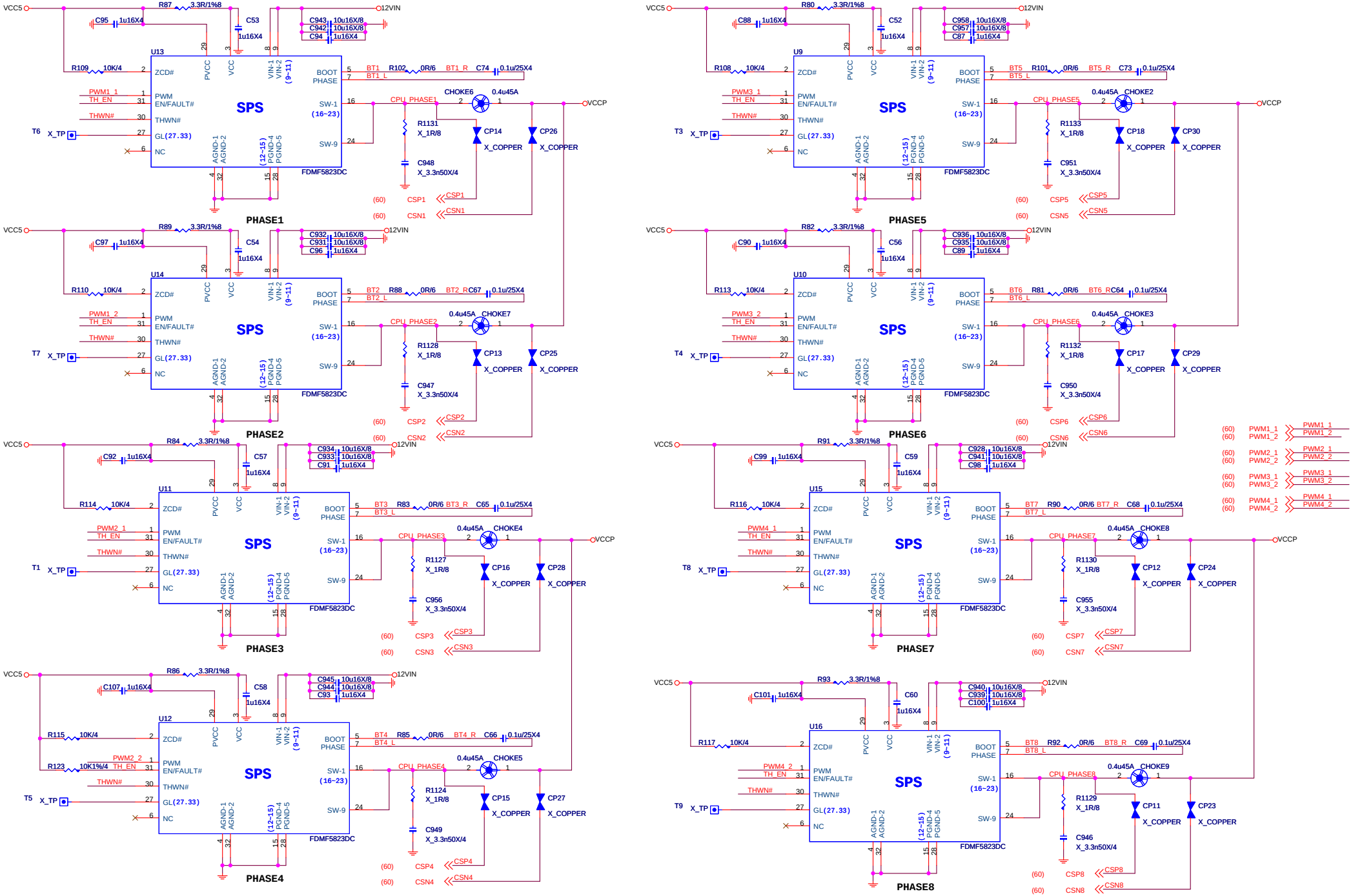

(62) TH_EN

(3,62) THWN#

MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	57 VCOR FCH5823 PHASE 1~8	11

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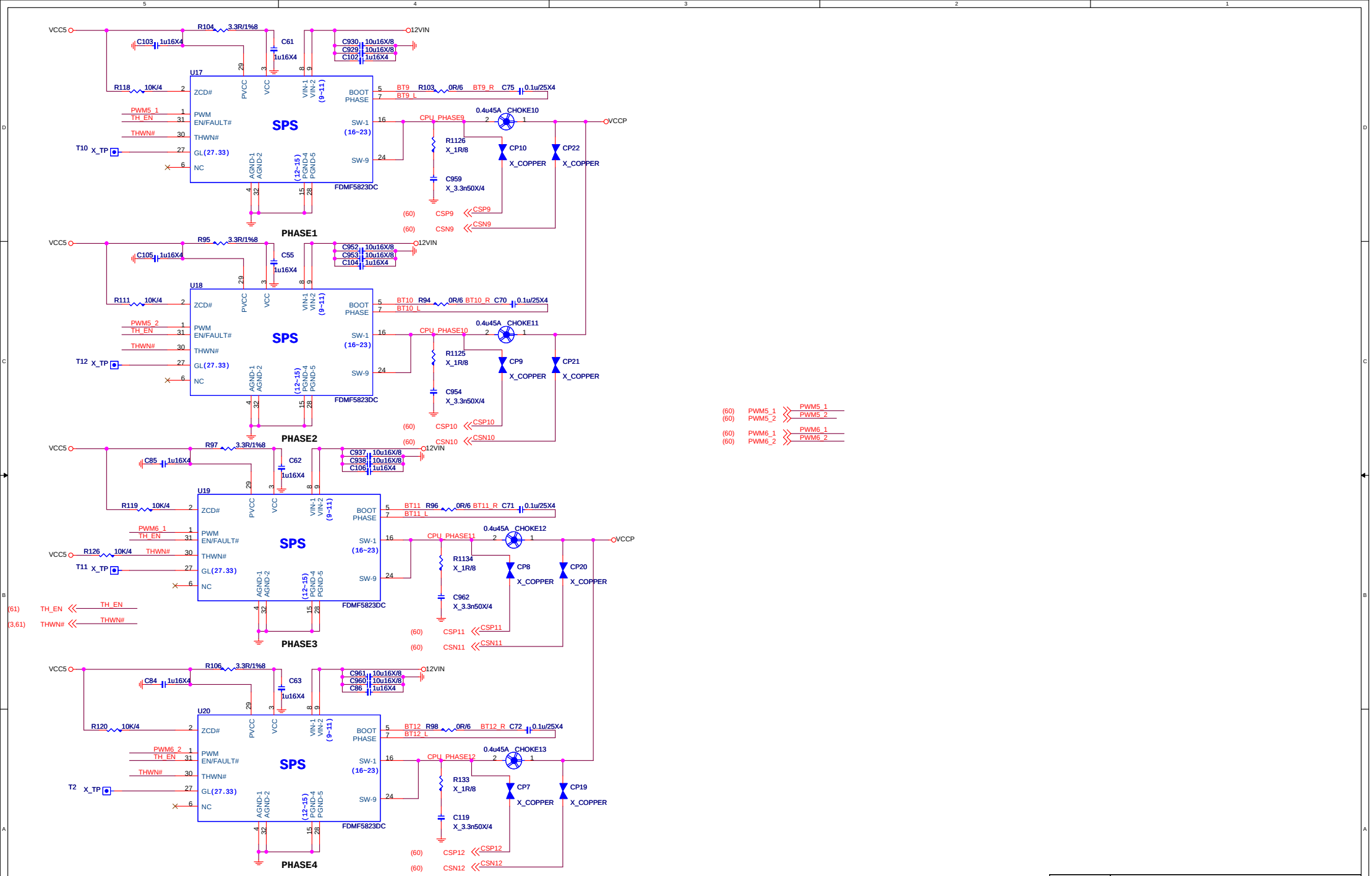

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VPP25-->VCCDDR

4DIMM :6A FOR DDR VPP

High: PWM Mode
Low/NC: PFM Mode

5VDIMM_01
L18 5VDIMM_VPP1 30L3A-15_0805-RH
L19 30L3A-15_0805-RH
5VDIMM_VPP1
C510 22u6.3X/8
C500 22u6.3X/8
C499 22u6.3X/8
C492 0.1u16X/4
R517 10K/4
2145_MODE
R509 X_10K/4
C495 0.1u16X/4

ATX_5VSB
R559 47K/4
5VDIMM_01
R523 2.2K/4
Q63 NN-2N7002D
C515 C1u10X/4
G2 D2 D1 G1 S2 S1
VPP1_EN
(17,31,45,56,58,64,65) SLP_S4#
R508 3.3K1%4
C490 0.1u16X/4

5VDIMM_01
R427 100K/4
Q153 2N7002
R1263 X_0R/4
R426 X_100K/4
C1073 1u16X4

5VDIMM_VPP1
U58
VIN-1 VIN-2 EN PG MODE/VCON Ramp SW-1 SW-2 OUT FB GND
MP2145GD_QFN12-RH
VPP_PHASE1
CHOKE15 CH-0.47u7A16mS-RH
+VPP25_C01
VPP1_EN
(64) VR_DDR_EN1
2145_MODE
+VPP25_C01 C481 X_0.1u16X/4
R495 1K1%/4
C472 22u6.3X/8
C459 22u6.3X/8
R497 316R1%/4
VPP25_FB
R494 0R/4
VPP25_FB_R (58)
C361 0.22u6.3X/4
VPP_PHASE1
C476 X_C2200p16/4
R493 X_2.2R1%/8

+VPP25_C01
C373 10u6.3X/6
C384 10u6.3X/6
C382 10u6.3X/6
C383 10u6.3X/6
C380 10u6.3X/6

5VDIMM_VPP2
R134 10K/4
2145_MODE2
R139 X_10K/4
C125 0.1u16X/4

ENABLE HIGH:1.6V

5VDIMM_VPP2
U21
VIN-1 VIN-2 EN PG MODE/VCON Ramp SW-1 SW-2 OUT FB GND
MP2145GD_QFN12-RH
VPP_PHASE2
CHOKE1 CH-0.47u7A16mS-RH
+VPP25_C23
VPP2_EN
(65) VR_DDR_EN2
2145_MODE2
+VPP25_C23 C124 X_0.1u16X/4
R135 1K1%/4
C122 22u6.3X/8
C121 22u6.3X/8
R137 316R1%/4
VPP25_FB2
R136 0R/4
VPP25_FB2_R (58)
C117 0.22u6.3X/4
VPP_PHASE2
C83 X_C2200p16/4
R128 X_2.2R1%/8

+VPP25_C23
C108 10u6.3X/6
C80 10u6.3X/6
C78 10u6.3X/6
C77 10u6.3X/6
C79 10u6.3X/6

5VDIMM_23
L4 5VDIMM_VPP2 30L3A-15_0805-RH
L5 30L3A-15_0805-RH
5VDIMM_VPP2
C109 22u6.3X/8
C114 22u6.3X/8
C115 22u6.3X/8
C110 0.1u16X/4

ENABLE HIGH:2V

ATX_5VSB
R1137 47K/4
5VDIMM_23
R1143 2.2K/4
Q134 NN-2N7002D
C964 C1u10X/4
G2 D2 D1 G1 S2 S1
VPP2_EN
(17,31,45,56,58,64,65) SLP_S4#
R1139 3.3K1%4
C963 0.1u16X/4

5VDIMM_23
R1147 100K/4
Q137 2N7002
R1144 X_0R/4
R1148 X_100K/4
C967 1u16X4

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DDR Power1-PV3201-2-Phase

DDR4_1.2V 11A , OC margin = 44A

OCP:66A for 2Phase

Iin ripple = 5.082A

Internal LDO 1.8V

PV Address: 0X20
SMB Address: 0X40

Close to DDR PHASE1 Q103

MICRO-STAR INT'L CO.,LTD	
MS-7A21	
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DDR3_1.2V 2.6A+6A+1.2A=9.8A
2.6A FOR CPU
6A FOR 4DIMM
1.2A FOR DDR VTT

OCP:22A for 2Phase

Iin ripple = 5.082A

Imax: 20.75A

Iout ripple = 9A

Internal LDO 1.8V

PV Address: 0X20
SMB Address: 0X40

Close to DDR PHASE1 Q103

Place Close to Pins

close to DIMM side

DDR VTT Power 0.3*4=1.2A

If VTT need supported in S3 , VCC5 change to 5VDIMM.

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MS-7A21	
Size: Custom	Document Description: DDR Power2-PV3203-2-Phase
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PCH Core 6.504A

PCH Power:1.05V

Imax: 5.6A

PCH_VCORE
PCH_VDD33D C586 0.1u16X/4
PCH_VDD33A C585 0.1u16X/4
C594 X_0.22u6.3X/4
C587 0.22u6.3X/4
C593 0.01u16X/4

VCC3
Internal LDO 1.8V
PV Address: 0X22
SMB Address: 0X44

U74 PV3203Q
R657 0R/6 PCH_VDD33D
R656 1R/6 PCH_VDD33A
PCH_VCORE
R616 X_0R/4 PCH_ADDR2
R609 X_10K/4 PCH_ADDR1
R634 0R/4 PCH_CLK
R620 0R/4 PCH_DATA
R617 10K/4 PCHVR_HOT#
1P05_ENABLE
TP20
R613 1K/4 PCH_VCC_PG
R615 147K/1%
R608 X_10K/4
PCH_TSENP2
PCH_TSENN2
TP19
VINSEN <1.6V
R655 10K/4 +12V
R648 1K/4
C584 0.1u16X/4
TP18 TP17
PCH_PWM1
Place Close to Pins
R631 1K/4 PCH_ISEN1P_R
C570 0.22u6.3X/4
R618 1K/4 PCH_ISEN1N_R
PCH_VSENP
R644 0R/4 PCH_1P05
PCH_VCOMP C574 100p50N/4
C583 0.01u16X/4
TP21 TP14

(10,17,23,24,50,58,59,64,65,68,70) SMBCLK_VCC
(10,17,23,24,50,58,59,64,65,68,70) SMBDATA_VCC

CHOKE18 0.82u18A
R581 10K/4 PCH_PH1
PCH_UG1 R585 0R/6 PCH_UG1_R
Q74 NN-FDMS3660S_POWER56-8-HF
PCH_LG1
R612 X_2.2R/8
C556 X_1000P50X/4
C595 1u6.3X/4
EC45 C330u6.3SO
EC46 C330u6.3SO
EC44 C330u6.3SO
PCH_1P05
Iin ripple = 2.15A

CHOKE17 CH-0.47u22A2.2mS-HF
+12V +12V_PCH
EC42 C100u16SO-HF-3
EC43 C100u16SO-HF-3
C559 10u16X/8
C529 1u16X/6

PCH_ISEN1P_R R1299 750R1%0/4
PCH_ISEN1N_R R1301 0R/4

ATX_5VSB
R599 47K/4
Q72 NN-2N7002D
R584 11KR1%4
1P05_ENABLE
(17,31,45,56,58,67) SLP_S3#
R607 X_0R/4 S3#_1P05_EN
R605 47K/4
C545 1u6.3X/4
R588 5.11K1%4
Waitting PCH_1P05 Ready

Close to PCH_1P05 Q117
Q75 2N3904
PCH_TSENP2
C558 100p50N/4
PCH_TSENN2

U70 UP1959
C563 0.1u25X6 PCH_PH1
PCH_BOOT1_R R610 2.2R/8 PCH_BOOT1
PCH_PWM1
VCC5
R600 0R/6 UP1959_VCC5
C542 0.1u16X/4
PCH_UG1
PCH_PH1
PCH_LG1

PCH_1P05 ATX_5VSB VCC3
R1295 4.7K/4
R1305 20K1%/4
R1291 47K/4
R1284 X_0R/4
PCH_VCC_PG
PCH_ENABLE
PCH_ENABLE (59)
Q158 2N3904
Q156 2N7002
C1094 1u6.3X/4
C1087 X_1u6.3X/4

ATX_5VSB
R1298 20K1%/4
Q157 NN-2N7002D
(59) SLP_S3_CTRL
(17,31,45,56,58,67) SLP_S3#

VCC5
R799 10R/4 VCC3_VCC C717 1u6.3X/4
U86 GS7133SO
PCH_ENABLE
VCC3
C707 10u6.3X/6
C703 0.015u16X/4
R773 1K1%/4 10mV
R771 1.13K1%/4
C713 22u6.3X/8
PCH_1P5
(58) PCH_1P5_FB

PCH_VCC3

Imax: 0.133A

VCC3 PCH_VCC3 VCC5
R835 0R/6
R482 X_47K/4
U23 X_UP7549TMA5-15_SOT235-HF
PCH_ENABLE
VIH:1.4
VIL:0.4V
放PCH下面
C731 0.1u10X/4
C733 0.1u10X/4
C1141 0.1u10X/4

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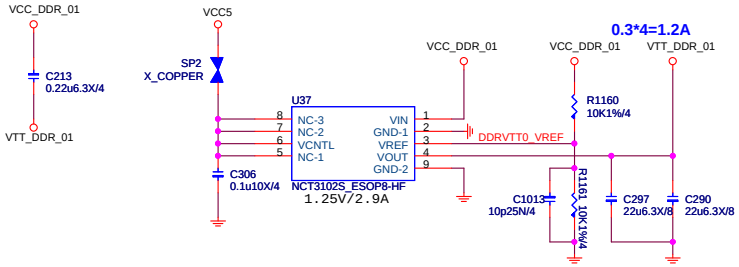
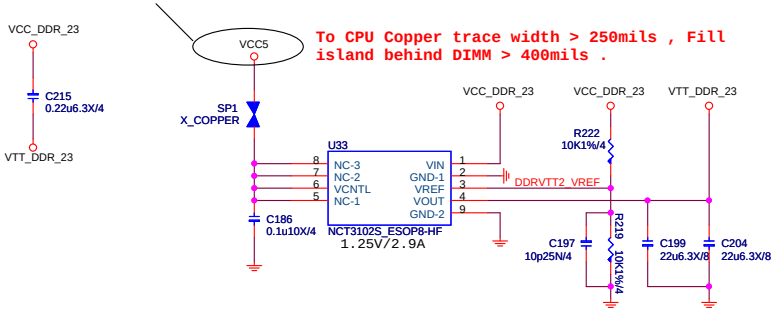
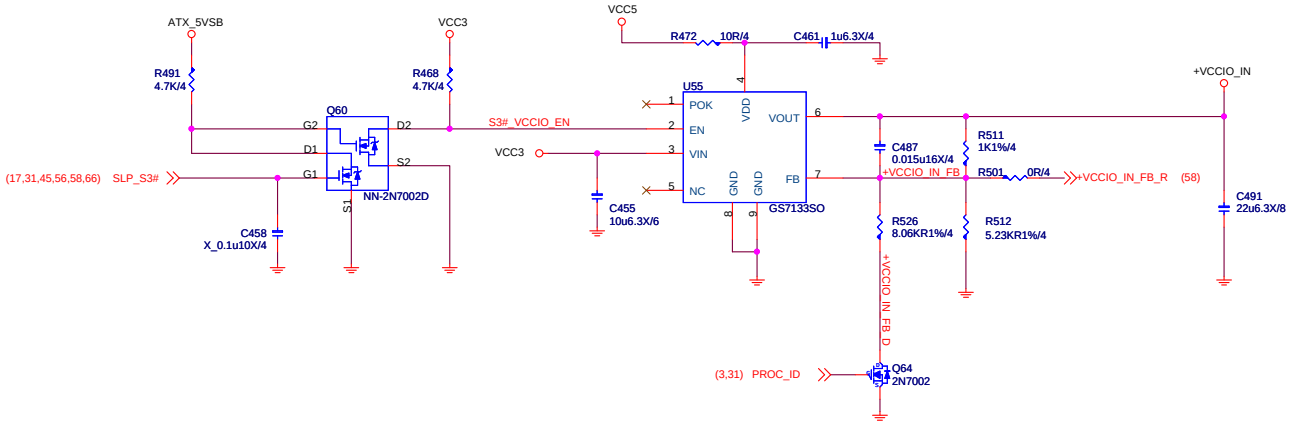
channel AB



channel CD





PROC_ID	+VCCIO_IN
0	0.95V
1	1.05V

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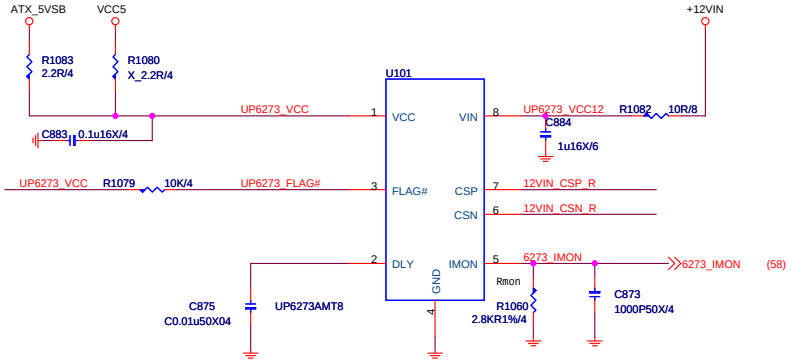
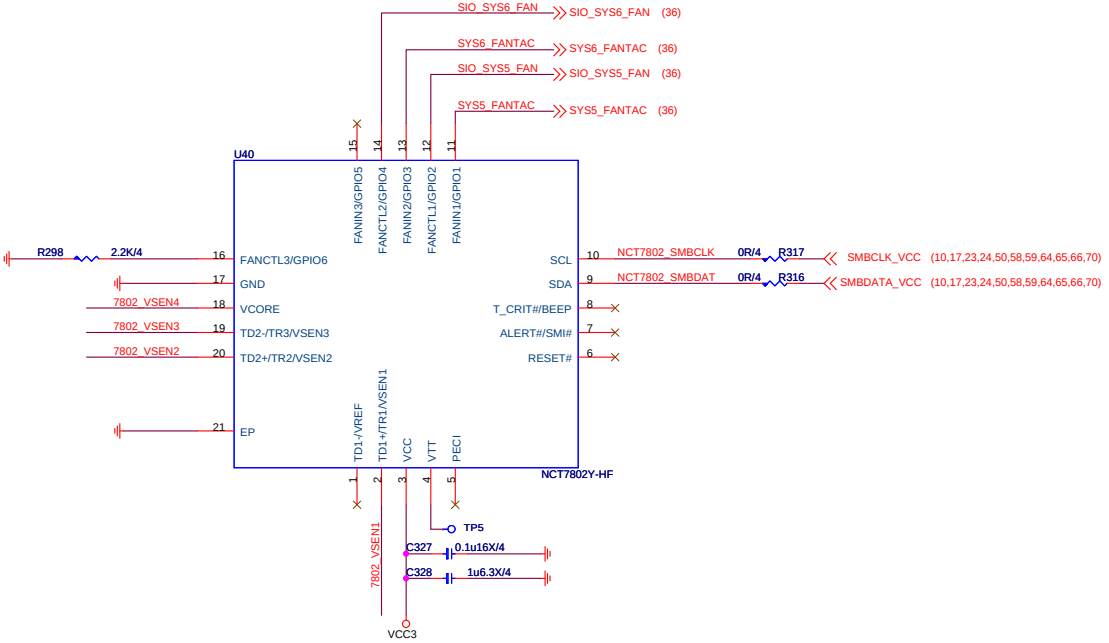
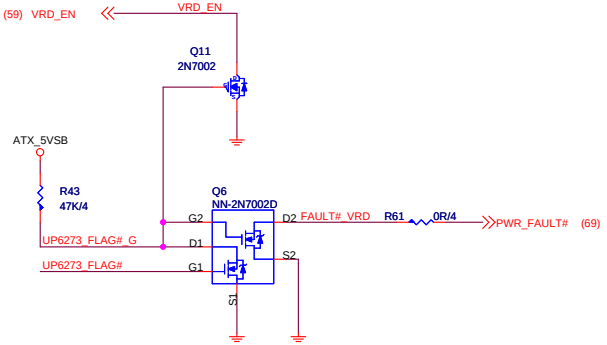
POWER METER
OCP: 120A

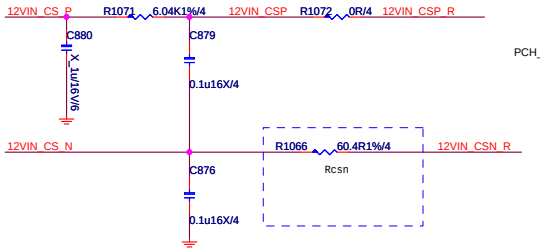


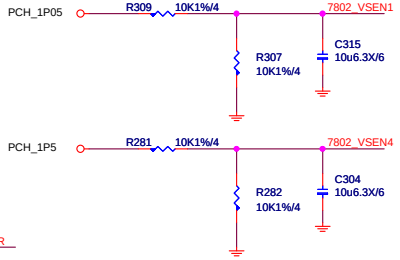


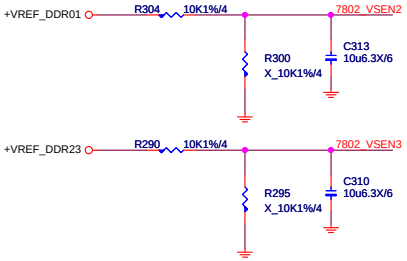
Iin=(Vmon*Rcsn)/(Rmon*Rdc)
Vmon=1.2
can change OCP trigger level by Rcsn and Rmon

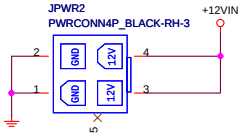
(1.2 * 0.2) / (10K* 0.3m) = 80A

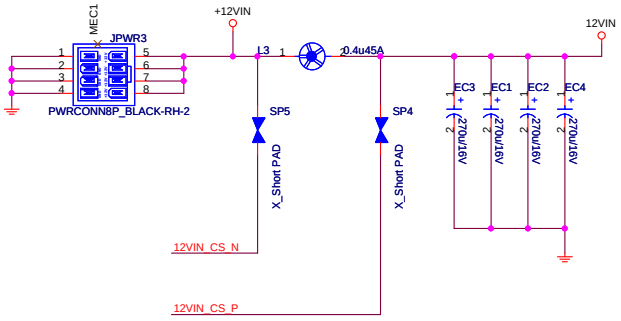












UPI VOLTAGE CONSOLE

0xD4:RL=10K

ADDRESS	0xD4			0xD6			0xD8			0xDA		
	Min	Typ.	Max	Min	Typ.	Max	Min	Typ.	Max	Min	Typ.	Max
BUS_SEL Vlotage	70	90	110	170	210	250	310	380	450	510	600	690

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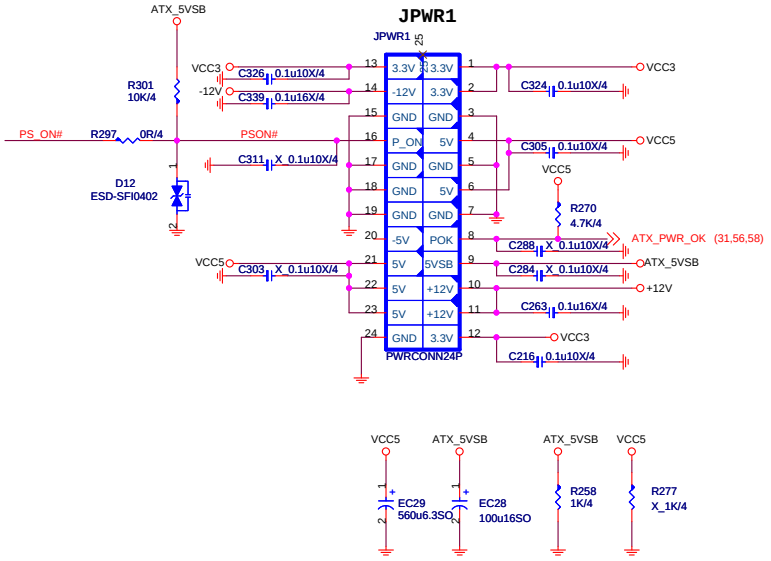
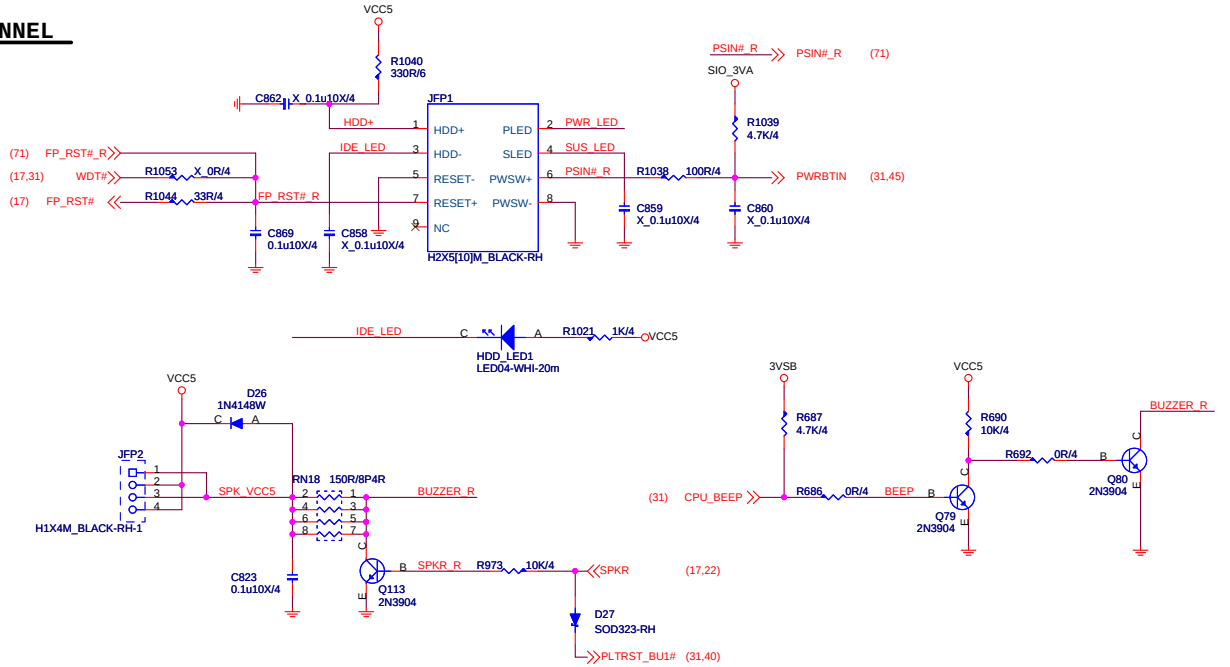
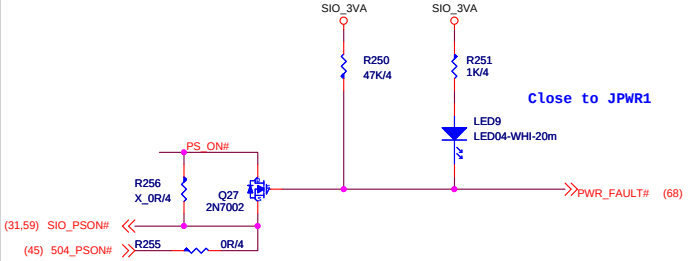
ATX POWER CONNECTOR

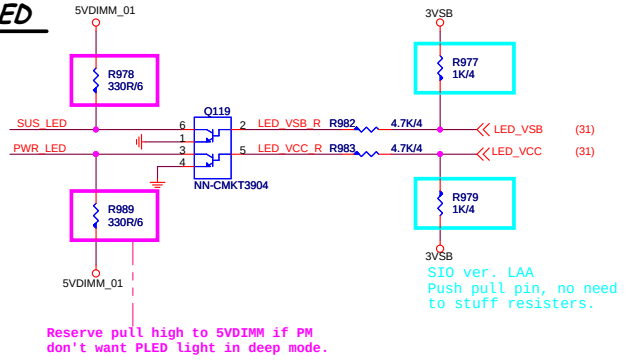


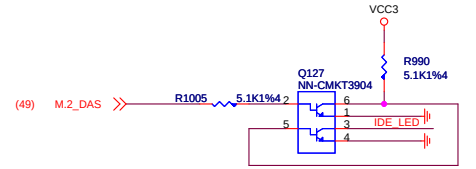
FRONT PANNEL



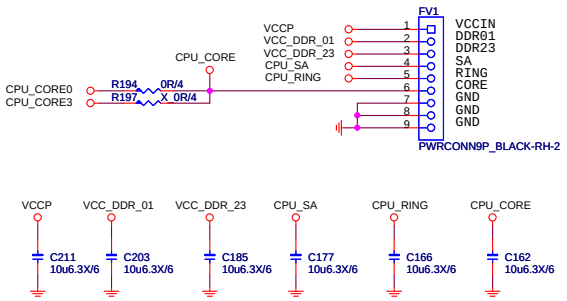


Front Panel LED

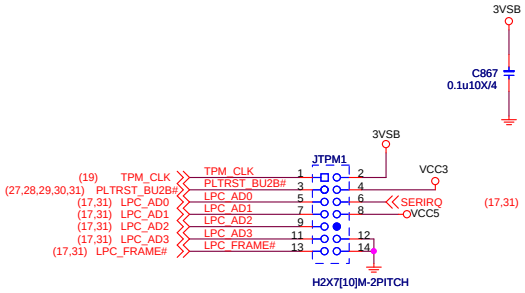


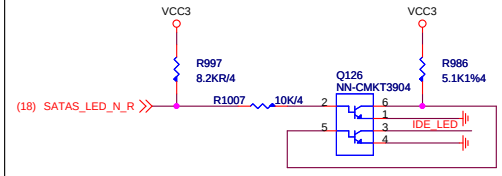


Voltage test point



TPM





MSI

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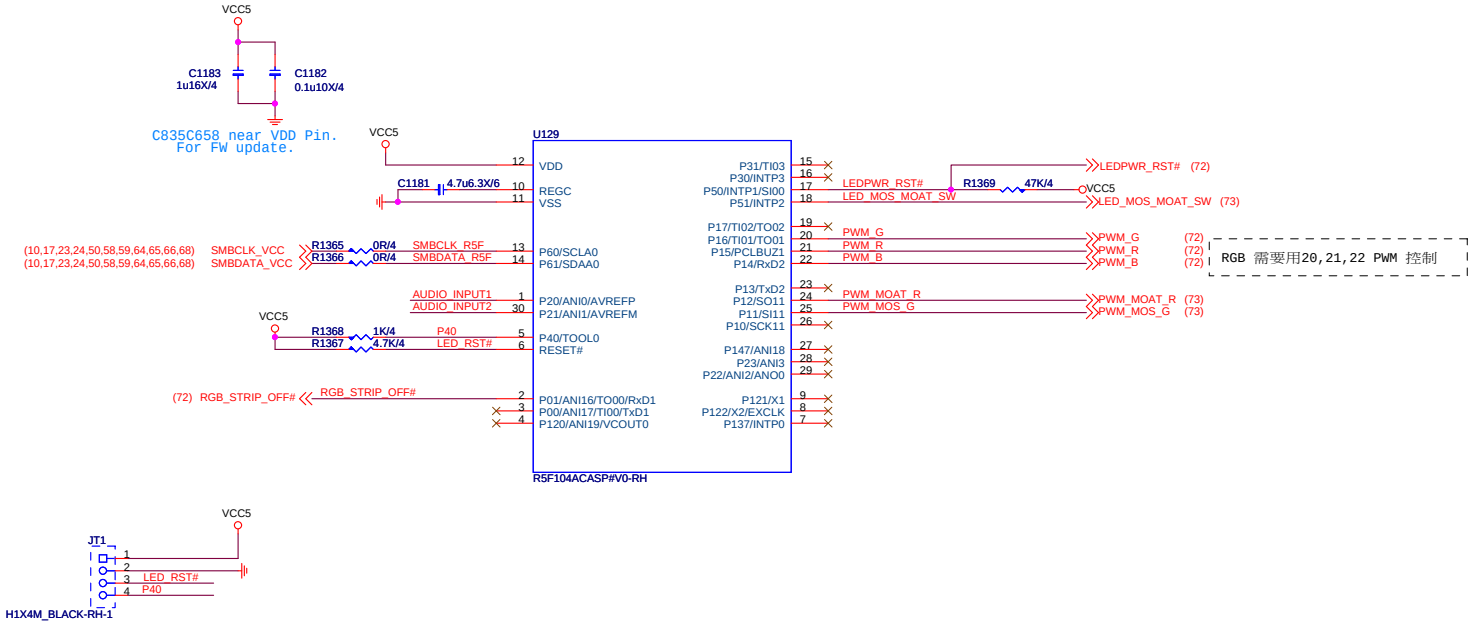

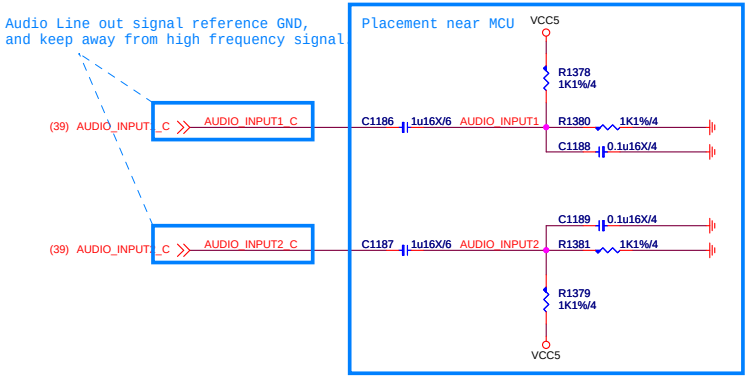

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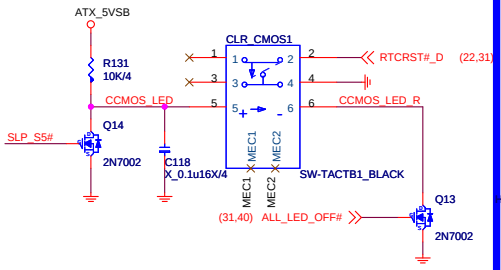
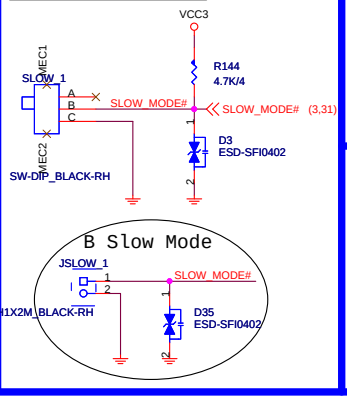
Clear CMOS button

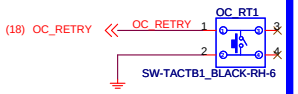
LED LIGHTING RULE
S0/S3/S4 : LED OFF
S5 : LED ON



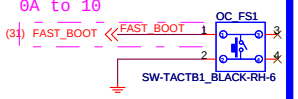
SLOW MODE#



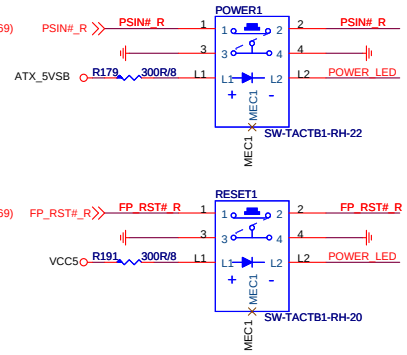
OC Retry Botton

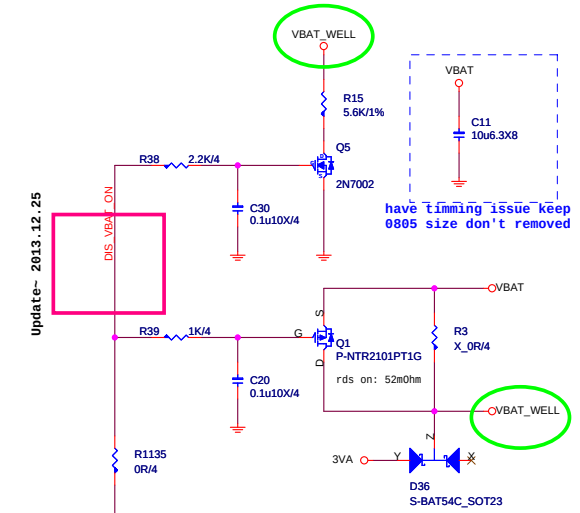


OC Fail Setting Botton

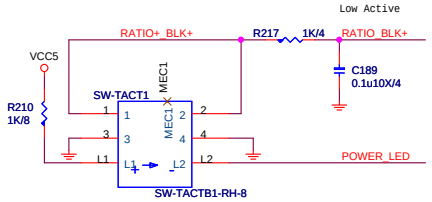


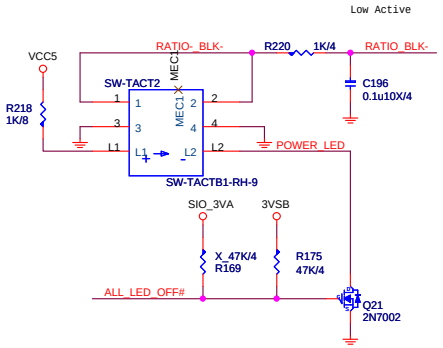
PWR/RST Botton

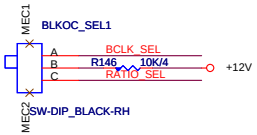


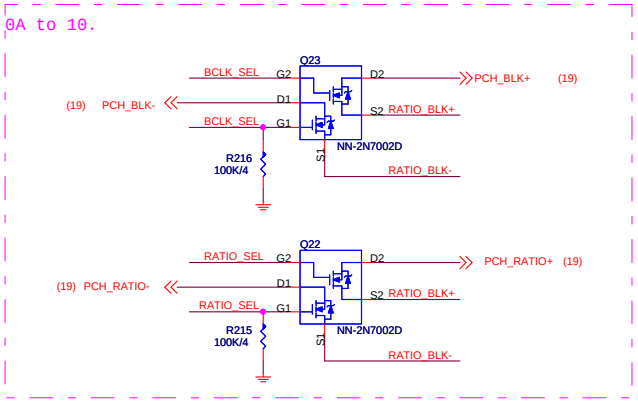


+/- BCLK_RATIO Frequebcy

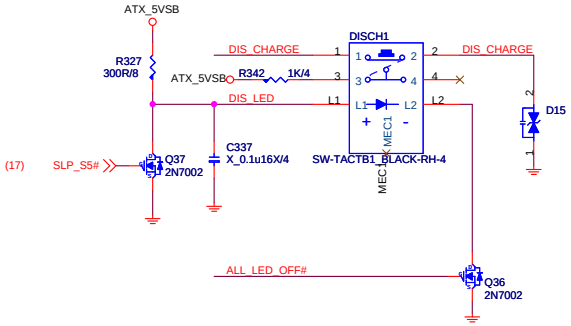


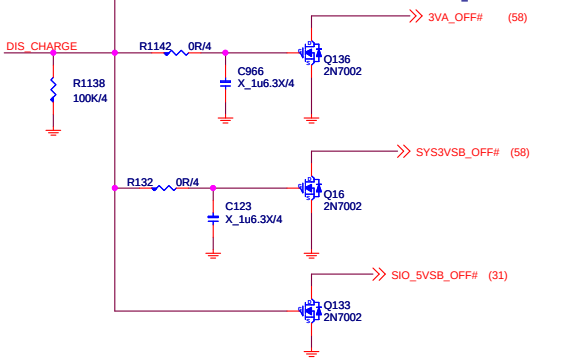




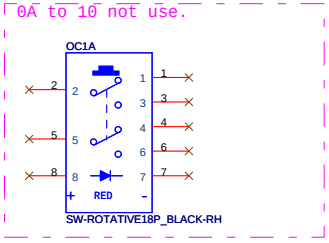


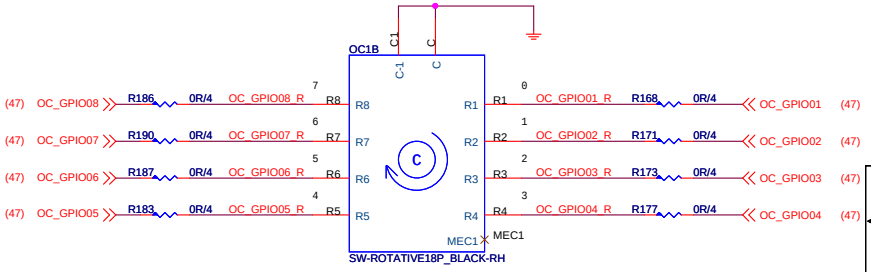
Discharge Botton

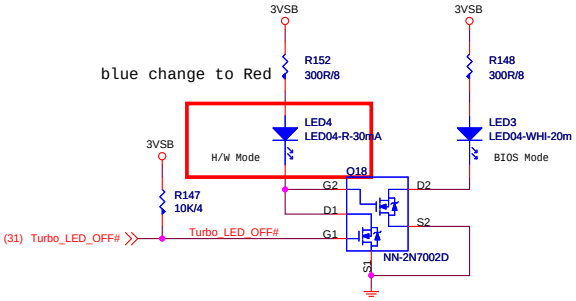




OC Botton







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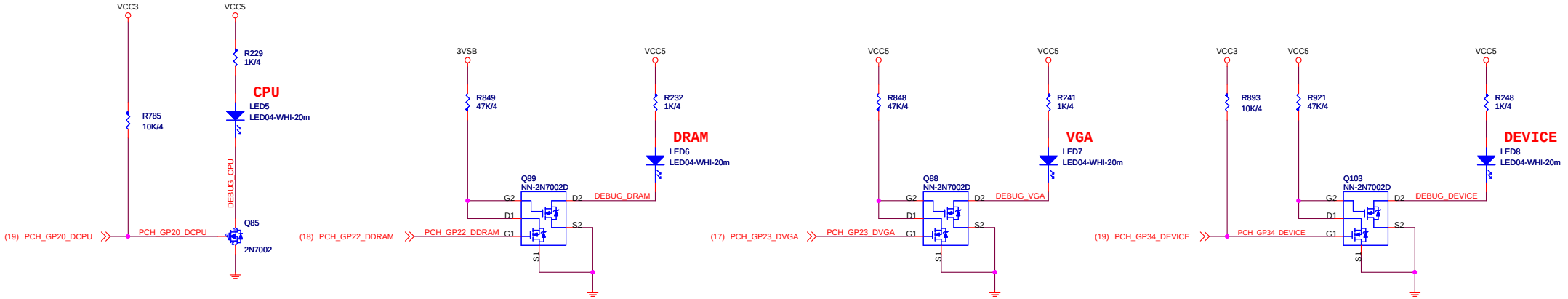
DEBUG LED



GPIO / LED	PCH_GP20	PCH_GP22	PCH_GP23	PCH_GP34
亮	NATIVE PULL HIGH	GPI PULL LOW	NATIVE PULL LOW	GPI PULL LOW
滅	NATIVE LOW	GPI HIGH (default HIGH)	GPI HIGH (default HIGH)	GPI HIGH (default HIGH)

關機斷電狀態下，4個LED先維持default全暗，開機通電後：

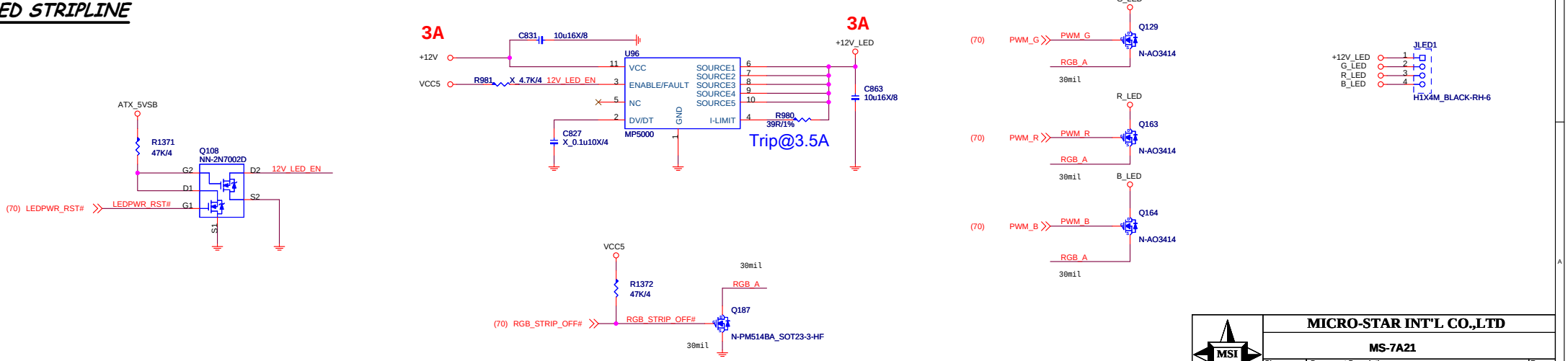
1. 首先進行CPU checkCPU LED 亮，check PASS後則CPU LED滅掉。
2. 接著依序進行Memory /memory LED亮check PASS後則memory LED滅掉。
3. VGA的check/VGA LED亮，check PASS後則VGA LED滅掉。
4. LED恆滅，開機後若沒有 bootable device (HDD, ODD, USB, M.2..)，則亮燈。
5. 因此最後正常順利開機後，四個LED燈都是滅掉的。（系統重啟或其他原因造成系統重開機，則LED仍按上述行為動作）

外接LED 燈條 (RGB)

---- PCB 文字面 (JLED1)

---- 手冊 註明 RGB 接頭支援標準 5050 RGB LED 燈條 (12V/G/R/B)，燈條總輸出電流限制為3安培 (12 伏特)，長度限制為2公尺 (待7A20驗證)

LED STRIPLINE



MICRO-STAR INT'L CO.,LTD

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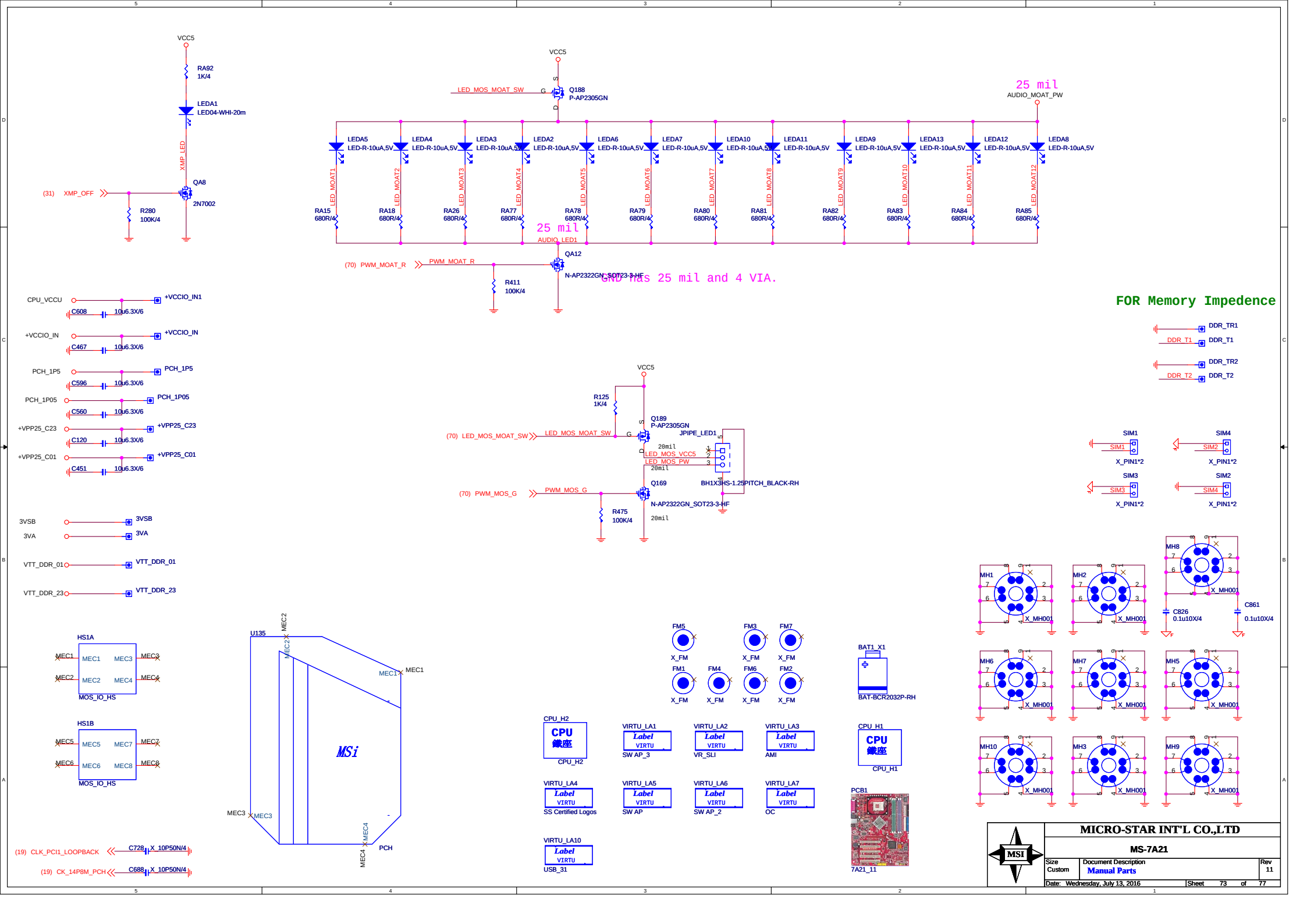
VCC5
RA92
1K/4
LEDA1
LED04-WHI-20m
XMP_LED
(31) XMP_OFF
QA8
2N7002
R280
100K/4
LED_MOS_MOAT_SW
Q188
P-AP2305GN
25 mil
AUDIO_MOAT_PW
LEDA5 LED-R-10uA,5V
LEDA4 LED-R-10uA,5V
LEDA3 LED-R-10uA,5V
LEDA2 LED-R-10uA,5V
LEDA6 LED-R-10uA,5V
LEDA7 LED-R-10uA,5V
LEDA10 LED-R-10uA,5V
LEDA11 LED-R-10uA,5V
LEDA9 LED-R-10uA,5V
LEDA13 LED-R-10uA,5V
LEDA12 LED-R-10uA,5V
LEDA8 LED-R-10uA,5V
LED_MOAT1
LED_MOAT2
LED_MOAT3
LED_MOAT4
LED_MOAT5
LED_MOAT6
LED_MOAT7
LED_MOAT8
LED_MOAT9
LED_MOAT10
LED_MOAT11
LED_MOAT12
RA15 680R/4
RA18 680R/4
RA26 680R/4
RA77 680R/4
RA78 680R/4
RA79 680R/4
RA80 680R/4
RA81 680R/4
RA82 680R/4
RA83 680R/4
RA84 680R/4
RA85 680R/4
25 mil
AUDIO_LED1
(70) PWM_MOAT_R
PWM_MOAT_R
QA12
N-AP2322GN_SOT23-3-HF
R411
100K/4
GND has 25 mil and 4 VIA.
FOR Memory Impedence
CPU_VCCU
+VCCIO_IN1
C608
10u6.3X/6
+VCCIO_IN
+VCCIO_IN
C467
10u6.3X/6
PCH_1P5
PCH_1P5
C596
10u6.3X/6
PCH_1P05
PCH_1P05
C560
10u6.3X/6
+VPP25_C23
+VPP25_C23
C120
10u6.3X/6
+VPP25_C01
+VPP25_C01
C451
10u6.3X/6
3VSB
3VSB
3VA
3VA
VTT_DDR_01
VTT_DDR_01
VTT_DDR_23
VTT_DDR_23
VCC5
R125
1K/4
Q189
P-AP2305GN
(70) LED_MOS_MOAT_SW
LED_MOS_MOAT_SW
JPIPE_LED1
20mil
LED_MOS_VCC5
LED_MOS_PW
20mil
Q169
BH1X3HS-1.25PITCH_BLACK-RH
(70) PWM_MOS_G
PWM_MOS_G
N-AP2322GN_SOT23-3-HF
R475
100K/4
20mil
DDR_TR1
DDR_T1
DDR_T1
DDR_TR2
DDR_T2
DDR_T2
SIM1
SIM1
X_PIN1*2
SIM4
SIM4
X_PIN1*2
SIM3
SIM3
X_PIN1*2
SIM2
SIM4
X_PIN1*2
HS1A
MEC1
MEC3
MEC2
MEC4
MOS_IO_HS
HS1B
MEC5
MEC7
MEC6
MEC8
MOS_IO_HS
U135
MEC2
MEC1
MSi
MEC3
MEC4
PCH
(19) CLK_PCI1_LOOPBACK
C728
X_10P50N/4
(19) CK_14P8M_PCH
C688
X_10P50N/4
FM5
FM3
FM7
FM1
FM4
FM6
FM2
X_FM
BAT1_X1
BAT-BCR2032P-RH
MH1
MH2
MH8
MH6
MH7
MH5
MH10
MH3
MH9
X_MH001
C826
0.1u10X/4
C861
0.1u10X/4
CPU_H2
CPU
鎖座
CPU_H2
VIRTU_LA1
Label
VIRTU
SW AP_3
VIRTU_LA2
VR_SLI
VIRTU_LA3
AMI
CPU_H1
CPU_H1
VIRTU_LA4
SS Certified Logos
VIRTU_LA5
SW AP
VIRTU_LA6
SW AP_2
VIRTU_LA7
OC
PCB1
7A21_11
VIRTU_LA10
USB_31
MICRO-STAR INT'L CO.,LTD
MS-7A21
Size
Custom
Document Description
Manual Parts
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