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EATX

Ver: 0A

305mm*272mm

Kabylake Platform

CPU:

Kabylake S

System Chipset:

Z270 PCH_H

Onboard Chip:

*HD Audio Codec:ALC1220*2*
*LAN-KILLIER LAN E2500*3*
SIO:NTC6795D
Dual Flash ROM: SPI 64 MB X2
Dual Flash ROM: SPI 64 MB X2
USB HUB:ASM1074
CLK Gen :IDT6V41606BNLG8
*FAN CTL:NCT7802*2*
MCU:R5F104GDAFB #V0
USB31:ASM2142AE
PCIE HUB:ASM1187e
Thunder Bolt:JHL6540 DP

Main Memory:

*DDRIV (5000MHz) * 4 (Dual Channel)*

ACPI:

MPS

PWM:

IMVP8 -IR35201

Expansion Slots:

*PCI Express (X16) Slot * 1*
*PCI Express (X8) Slot * 1*
*PCI Express (X4) Slot * 1*
*PCI Express (X1) Slot * 1*

Other:

*SATA3.0 *6*
*REAL USB3.0 *9+TYPEC*1*
*FRONT USB3.0 *4+TYPEC*1*

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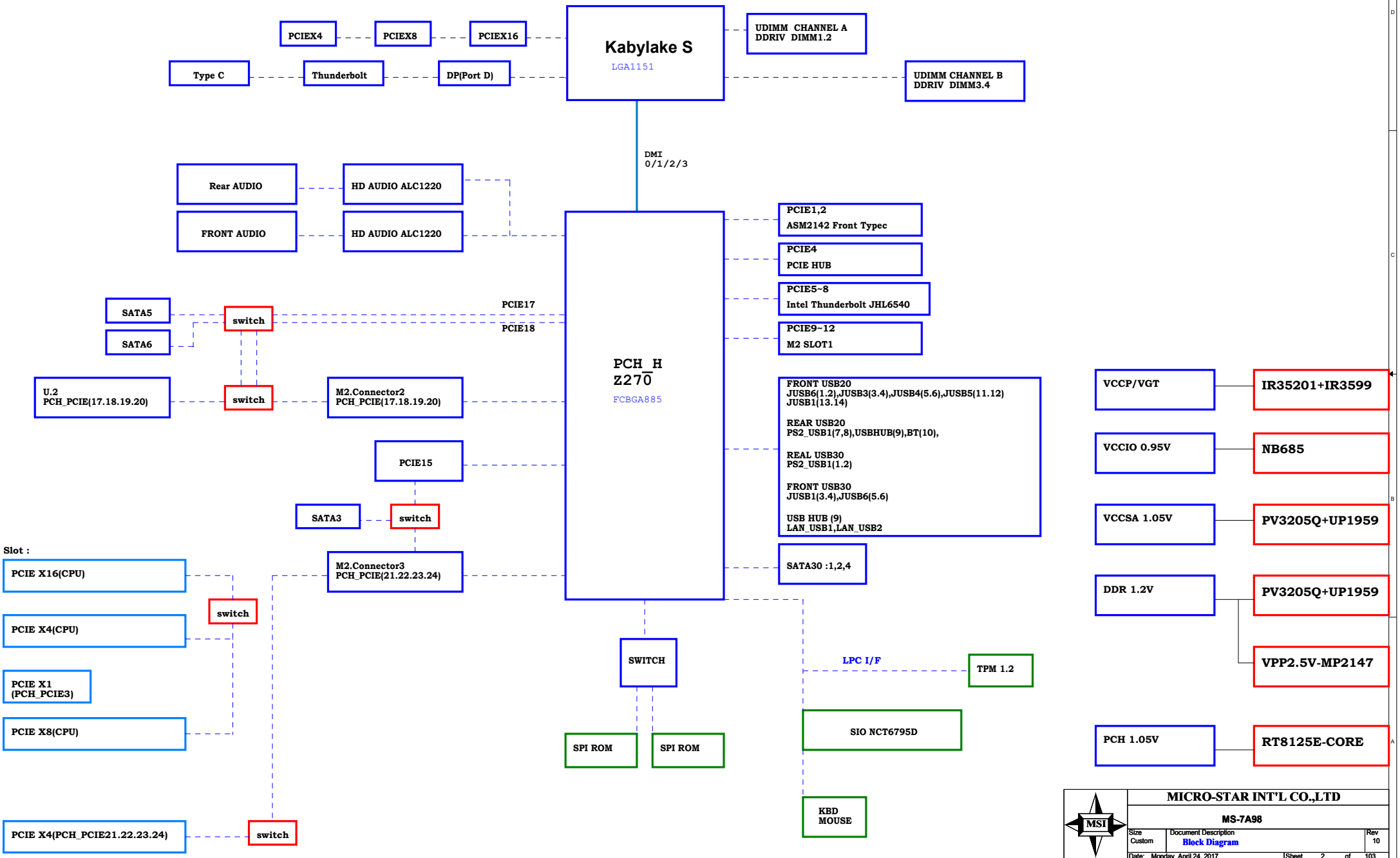
MS-7A58 Block Diagram



MSI	MICRO-STAR INT'L CO.,LTD	
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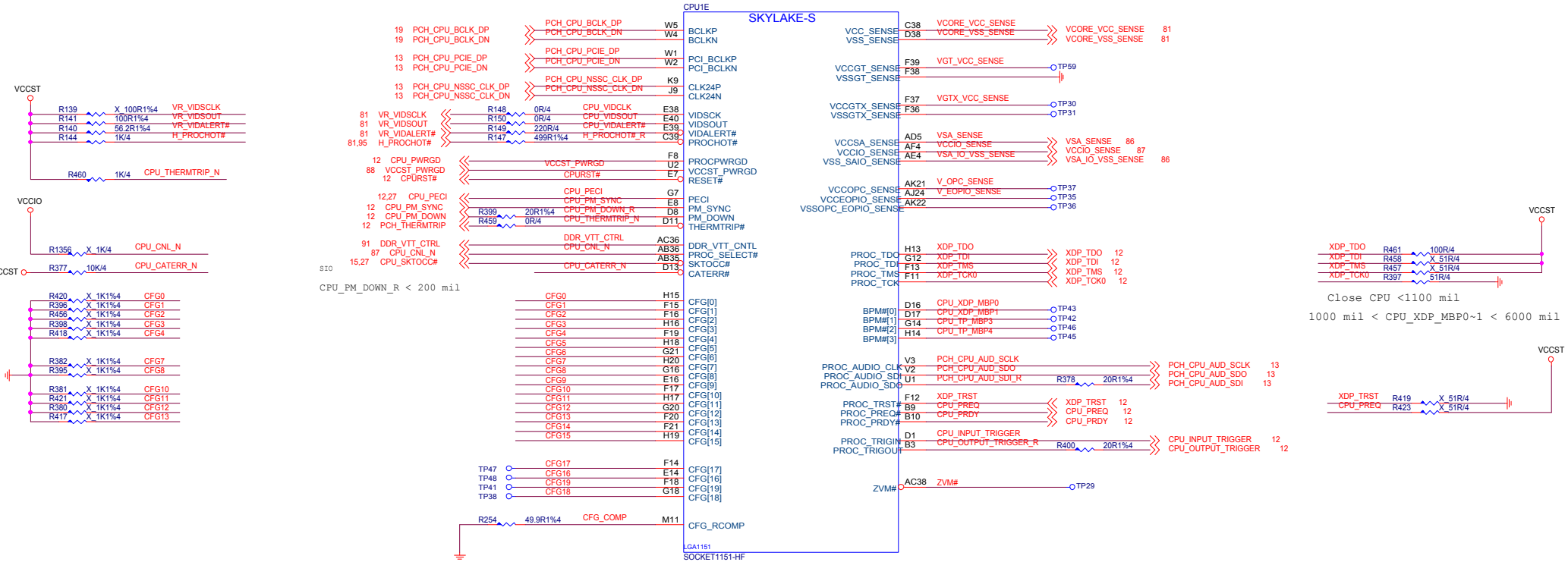
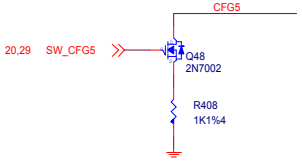
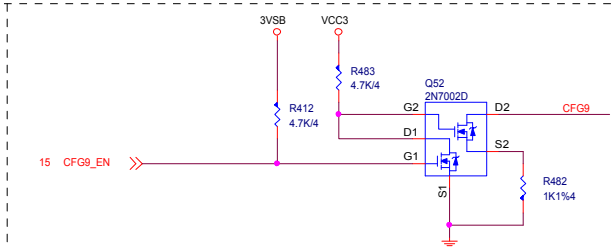
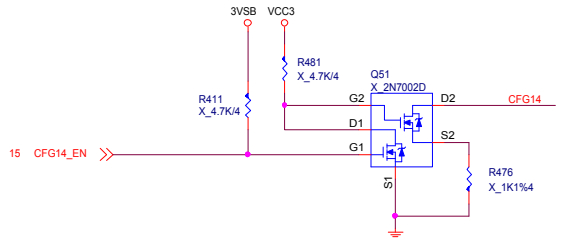


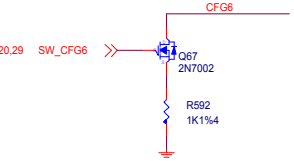
X8 and X4 Ctrl

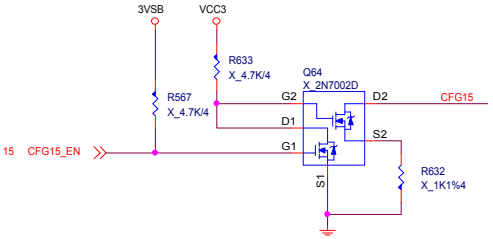
ENABLE#		SLOT2	SLOT5	SLOT7
X8	X4			
0	0	X8	X4	X4
0	1	X8	X8	X0
1	0	None	None	None
1	1	X16	X0	X0

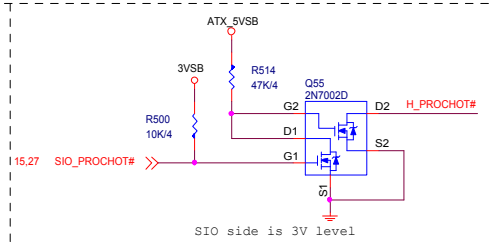












CFG Strap

CFG Table

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

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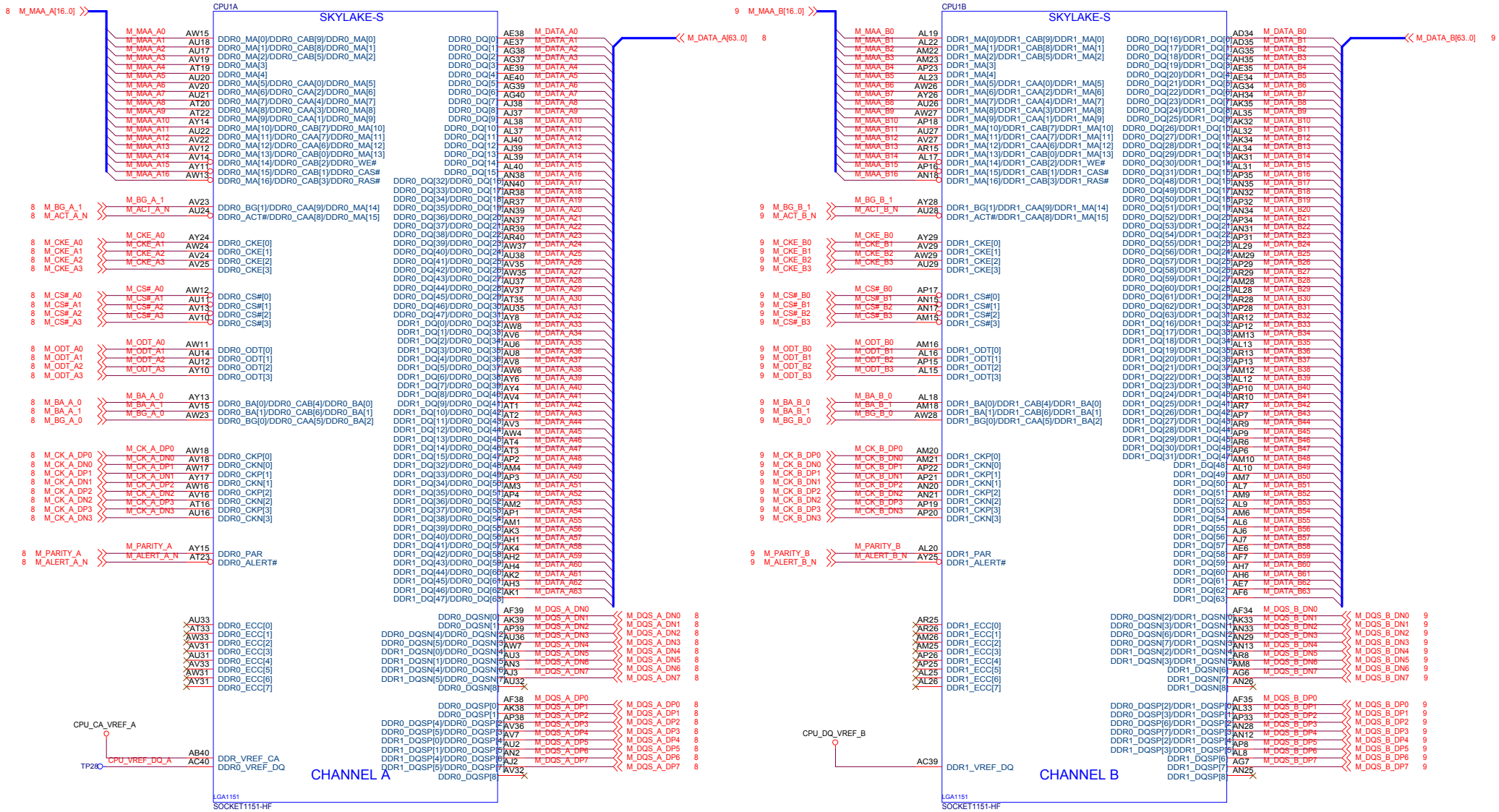
SOCKET PN N12-151A010-L06



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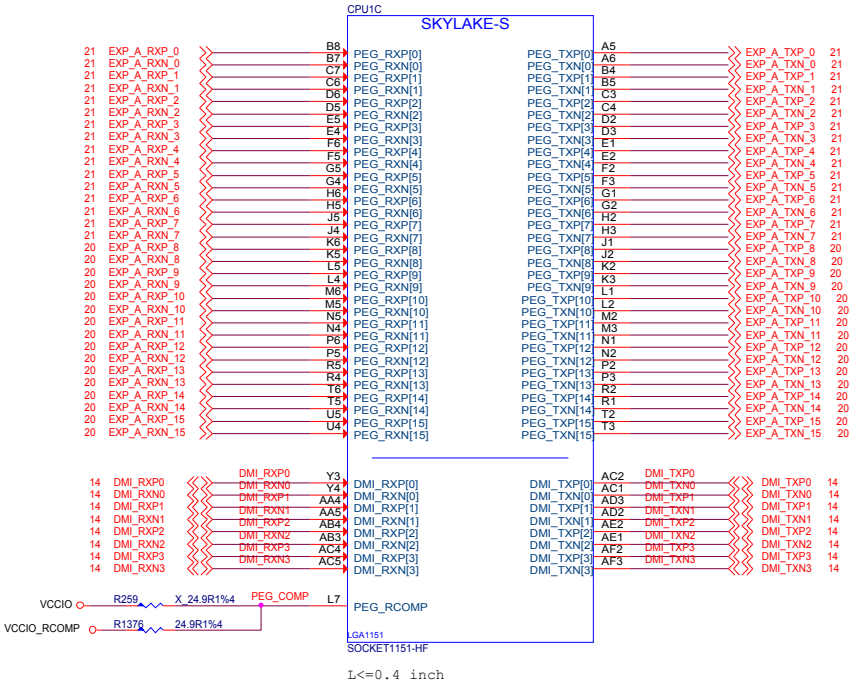
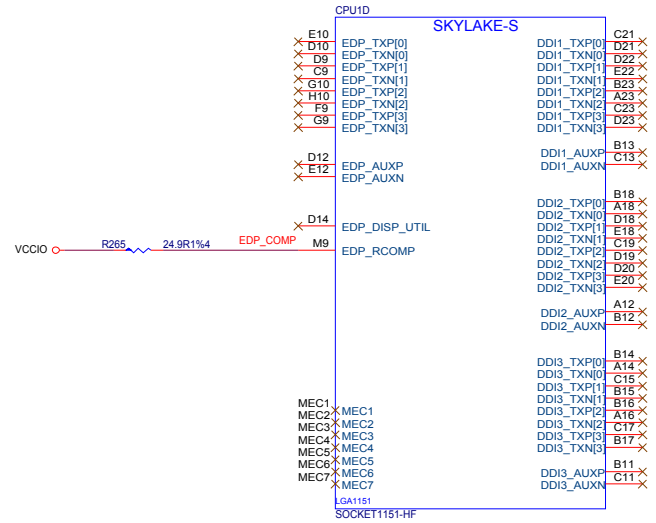
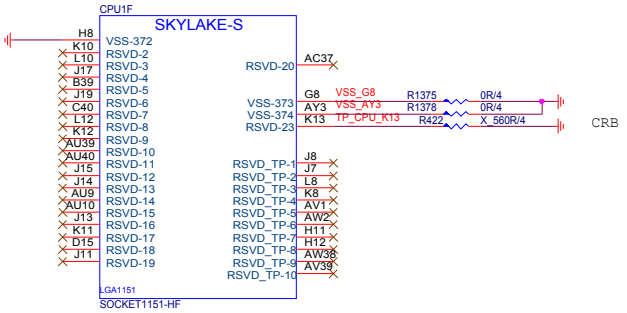


L<=0.4 inch





MICRO-STAR INT'L CO.,LTD		
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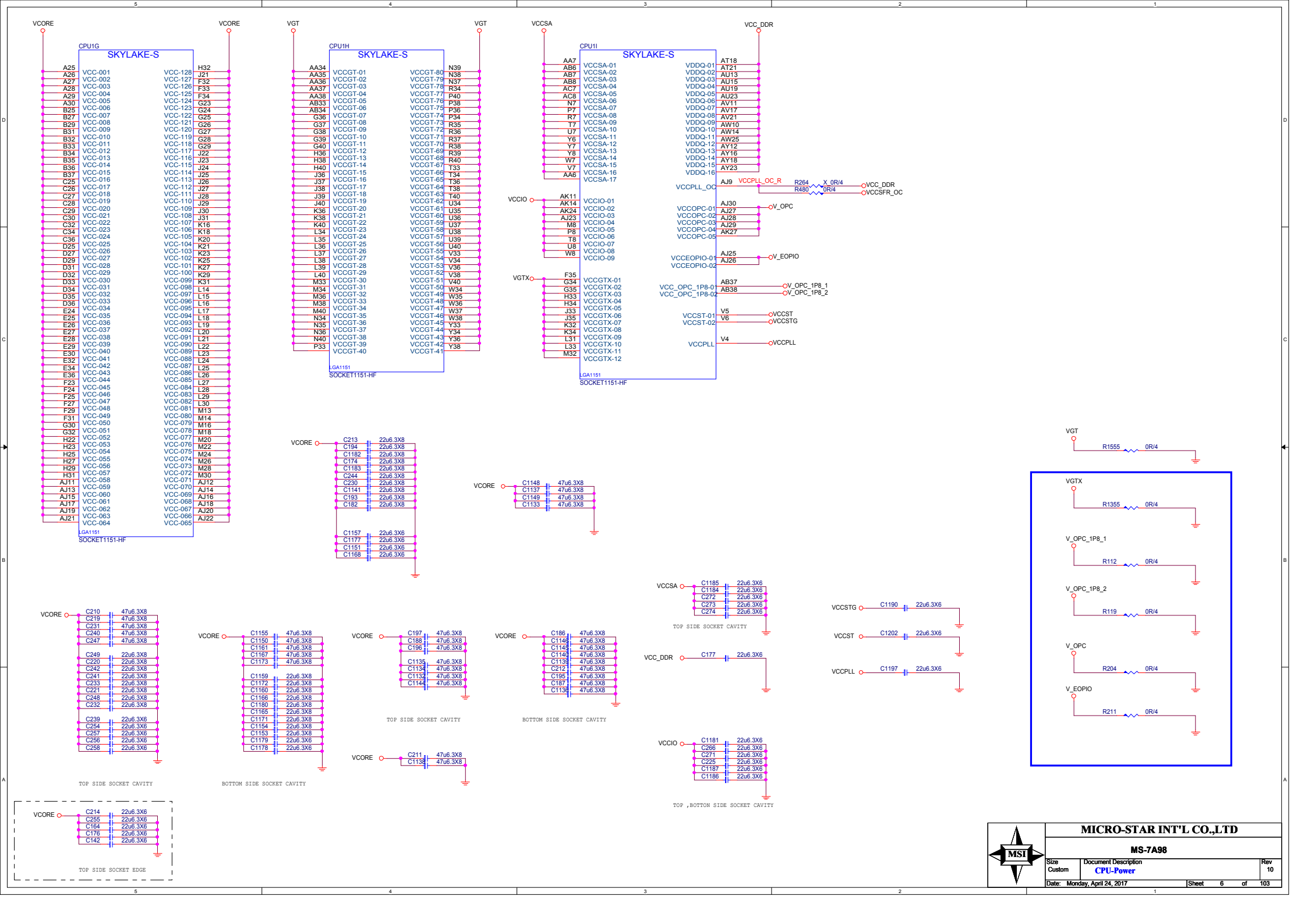

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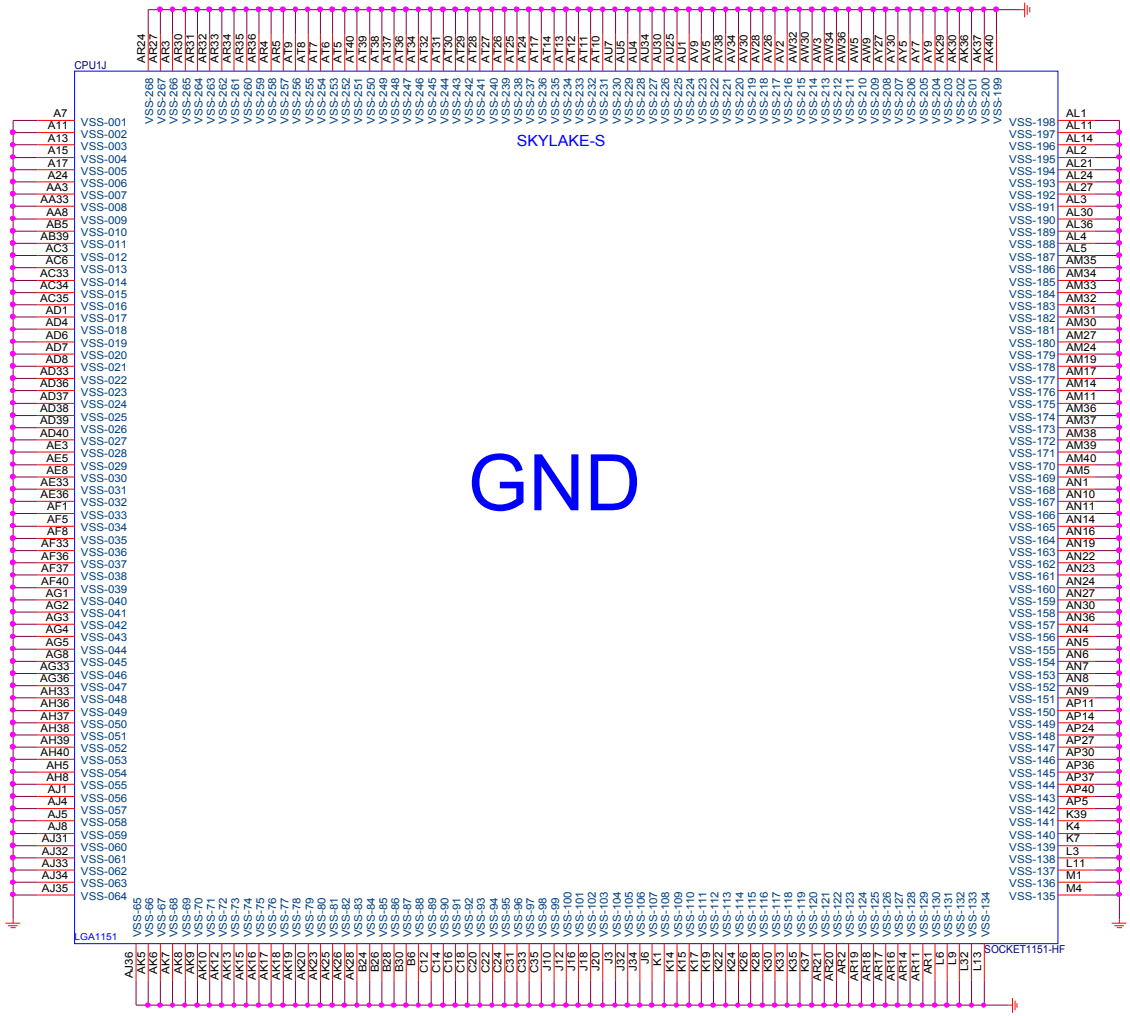

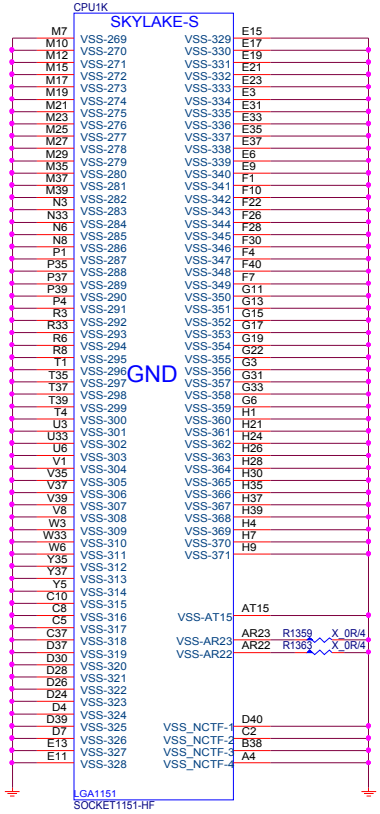

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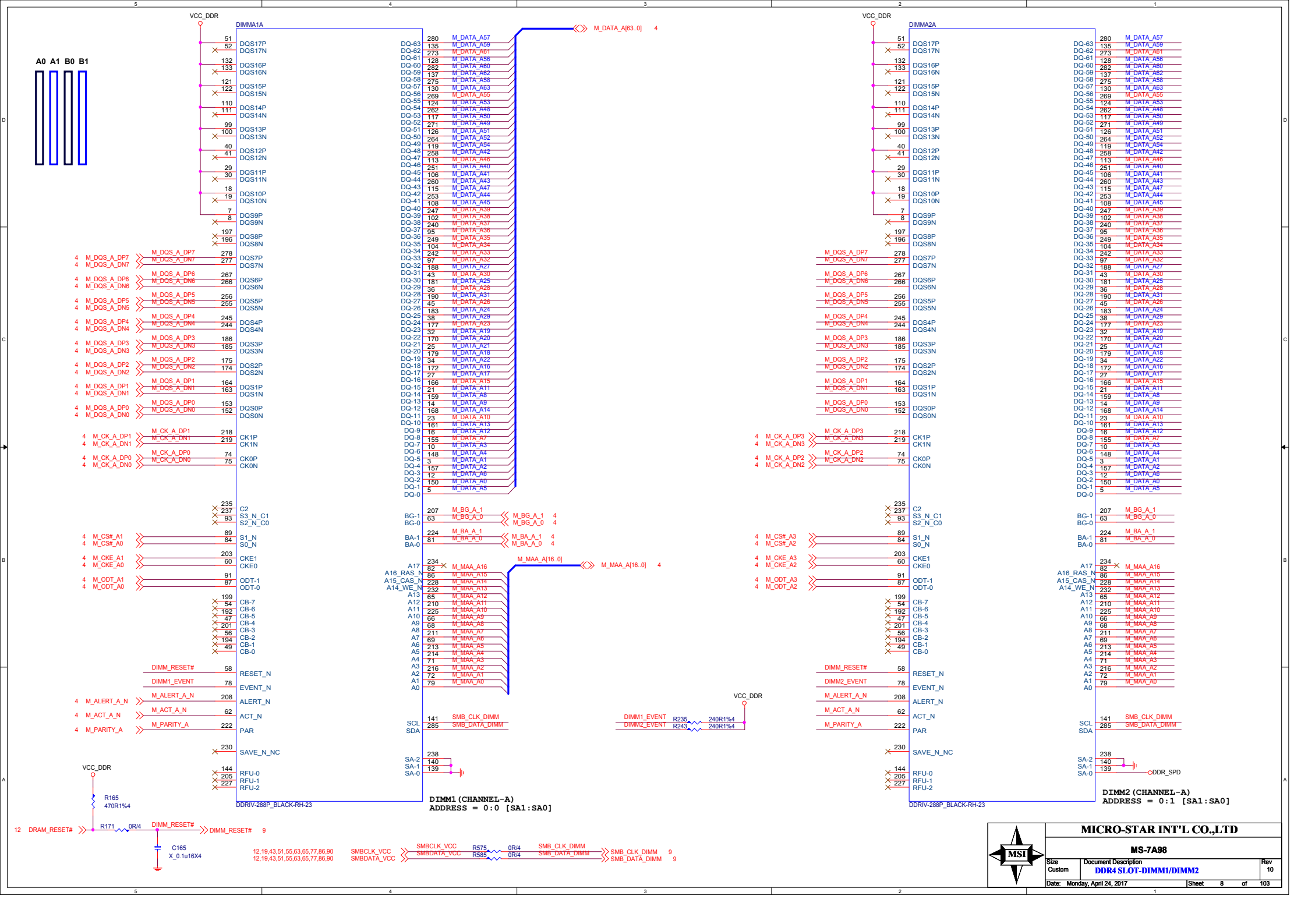
A0 A1 B0 B1
VCC_DDR
DIMMA1A
DDRIV-288P_BLACK-RH-23
DIMM1(CHANNEL-A)
ADDRESS = 0:0 [SA1:SA0]
M_DATA_A[63..0]
M_MAA_A[16..0]
DIMM1_EVENT R235 240R1%4
DIMM2_EVENT R243 240R1%4
R165 470R1%4
R171 0R/4
DRAM_RESET#
DIMM_RESET#
C165 X_0.1u16X4
SMBCLK_VCC R575 0R/4 SMB_CLK_DIMM
SMBDATA_VCC R585 0R/4 SMB_DATA_DIMM
DIMMA2A
DDRIV-288P_BLACK-RH-23
DIMM2(CHANNEL-A)
ADDRESS = 0:1 [SA1:SA0]
DDR_SPD
MICRO-STAR INT'L CO.,LTD
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Size Custom
Document Description DDR4 SLOT-DIMM1/DIMM2
Rev 10
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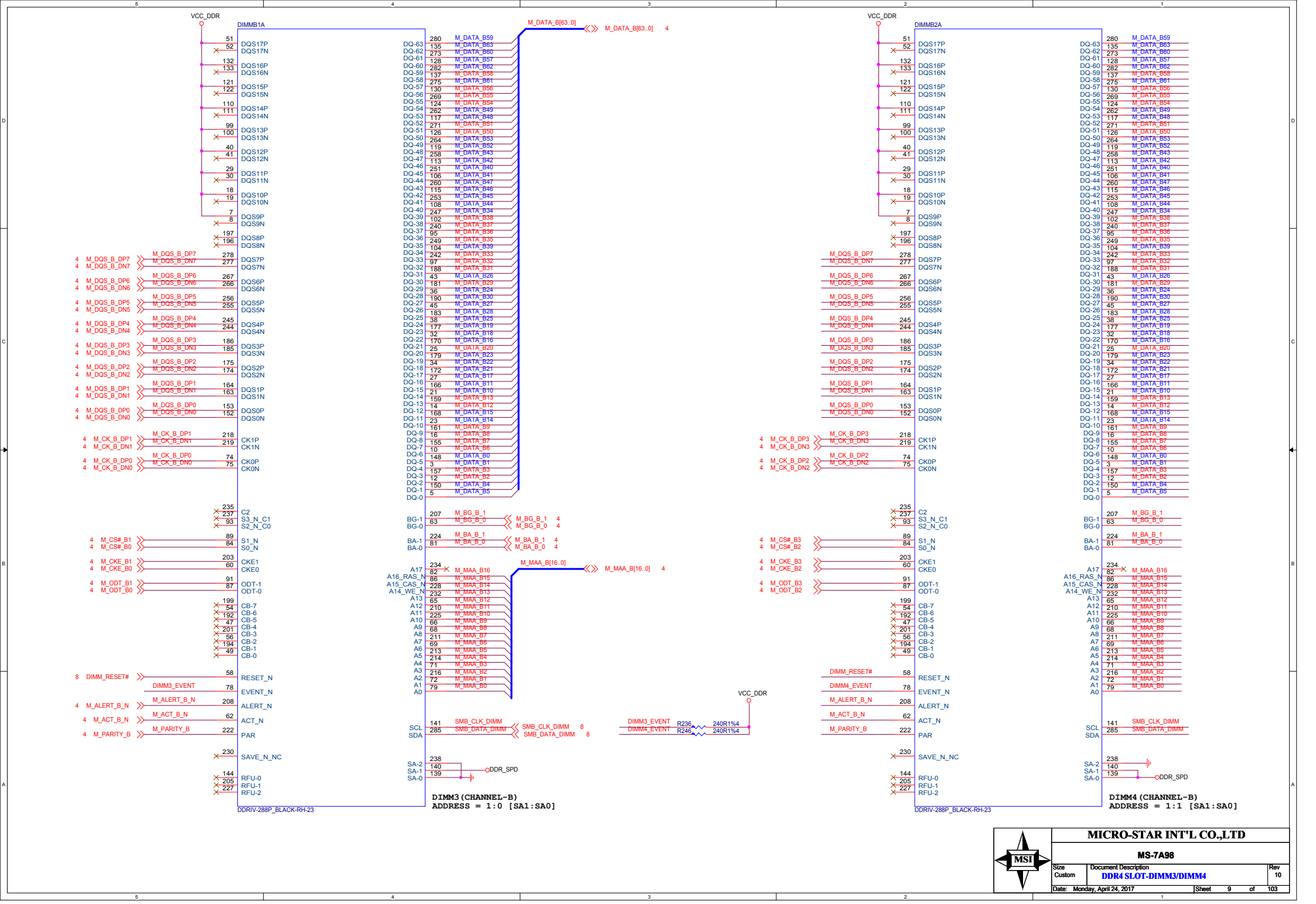
VCC_DDR
DIMMB1A
M_DATA_B[63..0]
M_DATA_B[63..0] 4
DQS17P
DQS17N
DQS16P
DQS16N
DQS15P
DQS15N
DQS14P
DQS14N
DQS13P
DQS13N
DQS12P
DQS12N
DQS11P
DQS11N
DQS10P
DQS10N
DQS9P
DQS9N
DQS8P
DQS8N
DQS7P
DQS7N
DQS6P
DQS6N
DQS5P
DQS5N
DQS4P
DQS4N
DQS3P
DQS3N
DQS2P
DQS2N
DQS1P
DQS1N
DQS0P
DQS0N
CK1P
CK1N
CK0P
CK0N
C2
S3_N_C1
S2_N_C0
S1_N
S0_N
CKE1
CKE0
ODT-1
ODT-0
CB-7
CB-6
CB-5
CB-4
CB-3
CB-2
CB-1
CB-0
RESET_N
EVENT_N
ALERT_N
ACT_N
PAR
SAVE_N_NC
RFU-0
RFU-1
RFU-2
DQ-63
DQ-62
DQ-61
DQ-60
DQ-59
DQ-58
DQ-57
DQ-56
DQ-55
DQ-54
DQ-53
DQ-52
DQ-51
DQ-50
DQ-49
DQ-48
DQ-47
DQ-46
DQ-45
DQ-44
DQ-43
DQ-42
DQ-41
DQ-40
DQ-39
DQ-38
DQ-37
DQ-36
DQ-35
DQ-34
DQ-33
DQ-32
DQ-31
DQ-30
DQ-29
DQ-28
DQ-27
DQ-26
DQ-25
DQ-24
DQ-23
DQ-22
DQ-21
DQ-20
DQ-19
DQ-18
DQ-17
DQ-16
DQ-15
DQ-14
DQ-13
DQ-12
DQ-11
DQ-10
DQ-9
DQ-8
DQ-7
DQ-6
DQ-5
DQ-4
DQ-3
DQ-2
DQ-1
DQ-0
BG-1
BG-0
BA-1
BA-0
A17
A16_RAS_N
A15_CAS_N
A14_WE_N
A13
A12
A11
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
A0
SCL
SDA
SA-2
SA-1
SA-0
DDR_SPD
M_BG_B_1
M_BG_B_0
M_BA_B_1
M_BA_B_0
M_MAA_B[16..0]
M_MAA_B[16..0] 4
SMB_CLK_DIMM
SMB_DATA_DIMM
DIMM3_EVENT
DIMM4_EVENT
R236
R246
240R1%4
DDRIV-288P_BLACK-RH-23
DIMM3(CHANNEL-B)
ADDRESS = 1:0 [SA1:SA0]
DIMMB2A
DIMM_RESET#
M_ALERT_B_N
M_ACT_B_N
M_PARITY_B
M_CK_B_DP3
M_CK_B_DP2
M_CS#_B3
M_CS#_B2
M_CKE_B3
M_CKE_B2
M_ODT_B3
M_ODT_B2
M_DQS_B_DP7
M_DQS_B_DN7
M_DQS_B_DP6
M_DQS_B_DN6
M_DQS_B_DP5
M_DQS_B_DN5
M_DQS_B_DP4
M_DQS_B_DN4
M_DQS_B_DP3
M_DQS_B_DN3
M_DQS_B_DP2
M_DQS_B_DN2
M_DQS_B_DP1
M_DQS_B_DN1
M_DQS_B_DP0
M_DQS_B_DN0
DDRIV-288P_BLACK-RH-23
DIMM4(CHANNEL-B)
ADDRESS = 1:1 [SA1:SA0]
MICRO-STAR INT'L CO.,LTD
MS-7A98
Size
Custom
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DDR4 SLOT-DIMM3/DIMM4
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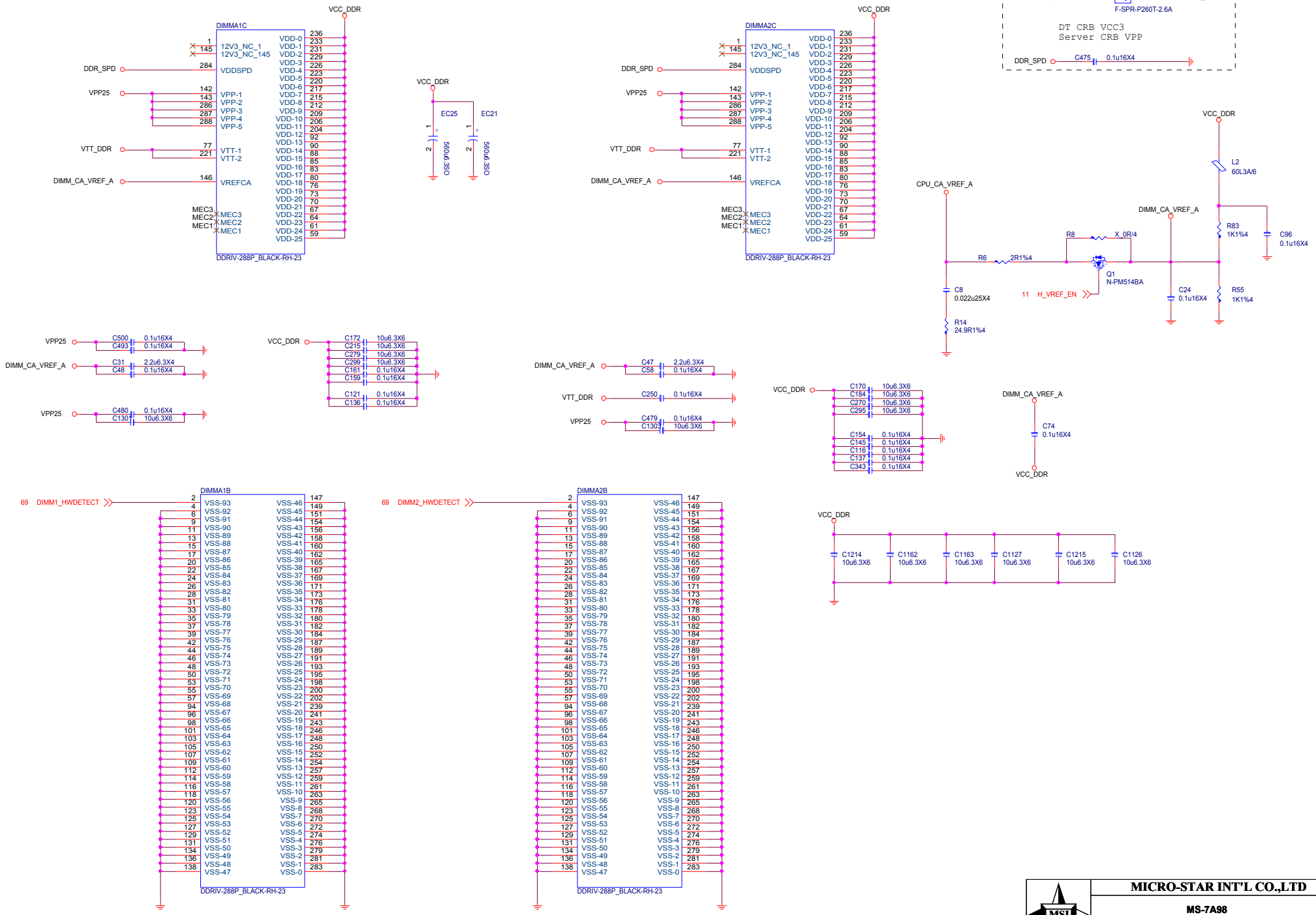

MICRO-STAR INT'L CO.,LTD		
MS-7A98		
Size: Custom	Document Description: DDR4-POWER/GND-1	Rev: 10
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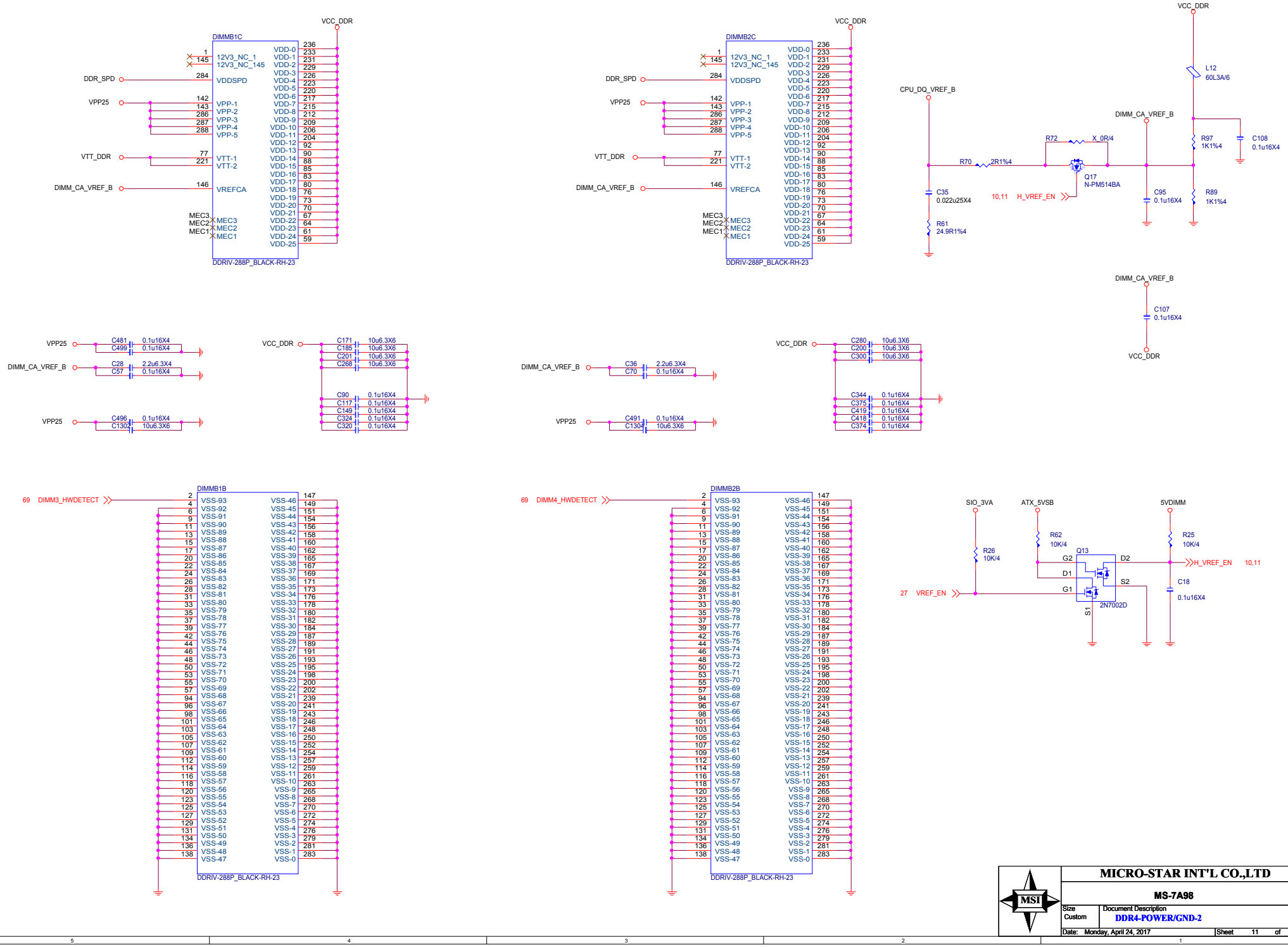

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MS-7A98		
Size: Custom	Document Description: DDR4-POWER/GND-2	Rev: 10
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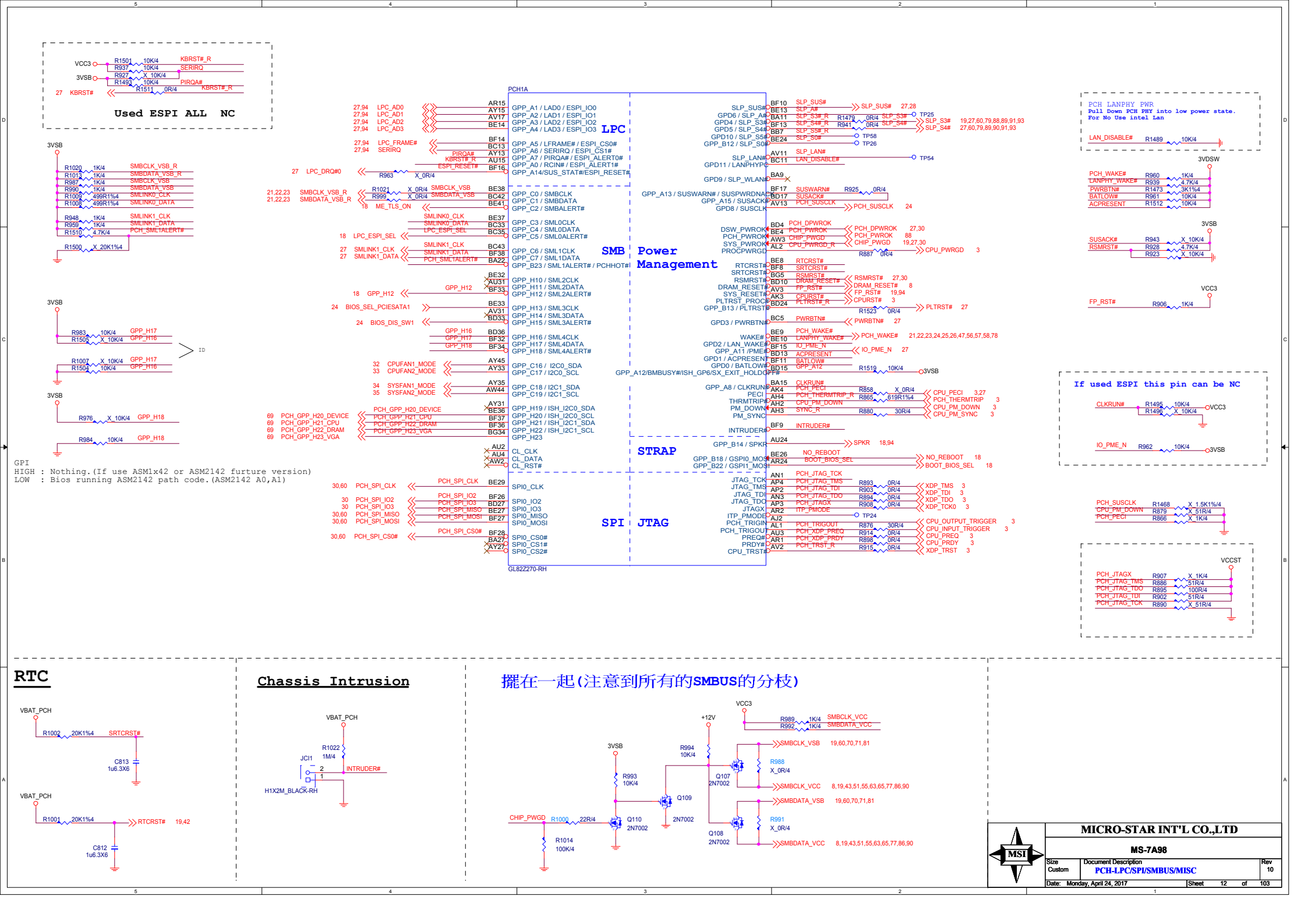
Used ESPI ALL NC
PCH1A
LPC
SMB
Power Management
STRAP
SPI
JTAG
GL82Z270-RH
PCH LANPHY PWR
Pull Down PCH PHY into low power state.
For No Use intel Lan
If used ESPI this pin can be NC
GPI
HIGH : Nothing.(If use ASM1x42 or ASM2142 furture version)
LOW : Bios running ASM2142 path code.(ASM2142 A0,A1)
RTC
Chassis Intrusion
擺在一起(注意到所有的SMBUS的分枝)
MICRO-STAR INT'L CO.,LTD
MS-7A98
PCH-LPC/SPI/SMBUS/MISC
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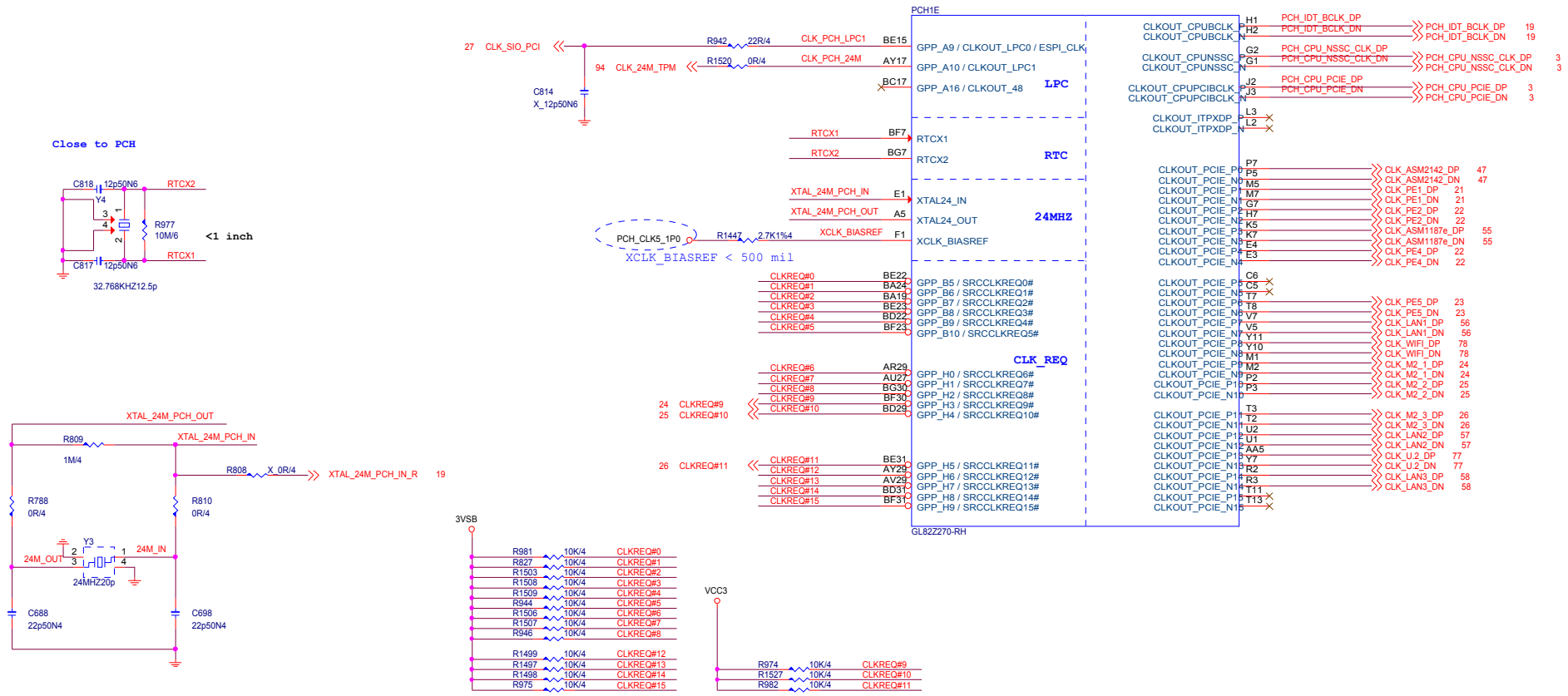
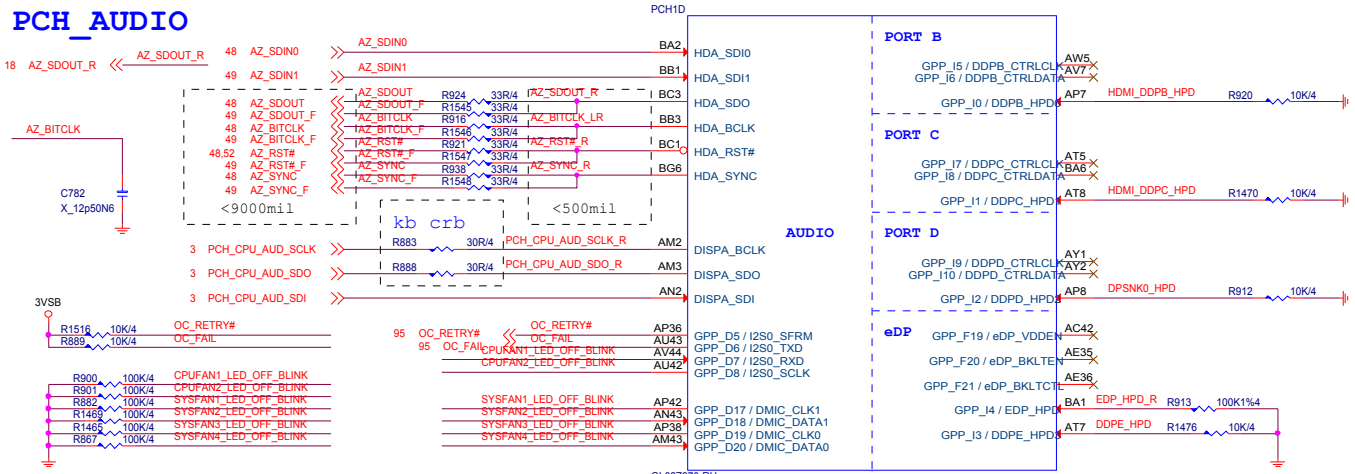
PCH_CLK



PCH_AUDIO



MICRO-STAR INT'L CO.,LTD		
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Size: Custom	Document Description: PCH-Clock/Audio	Rev: 10
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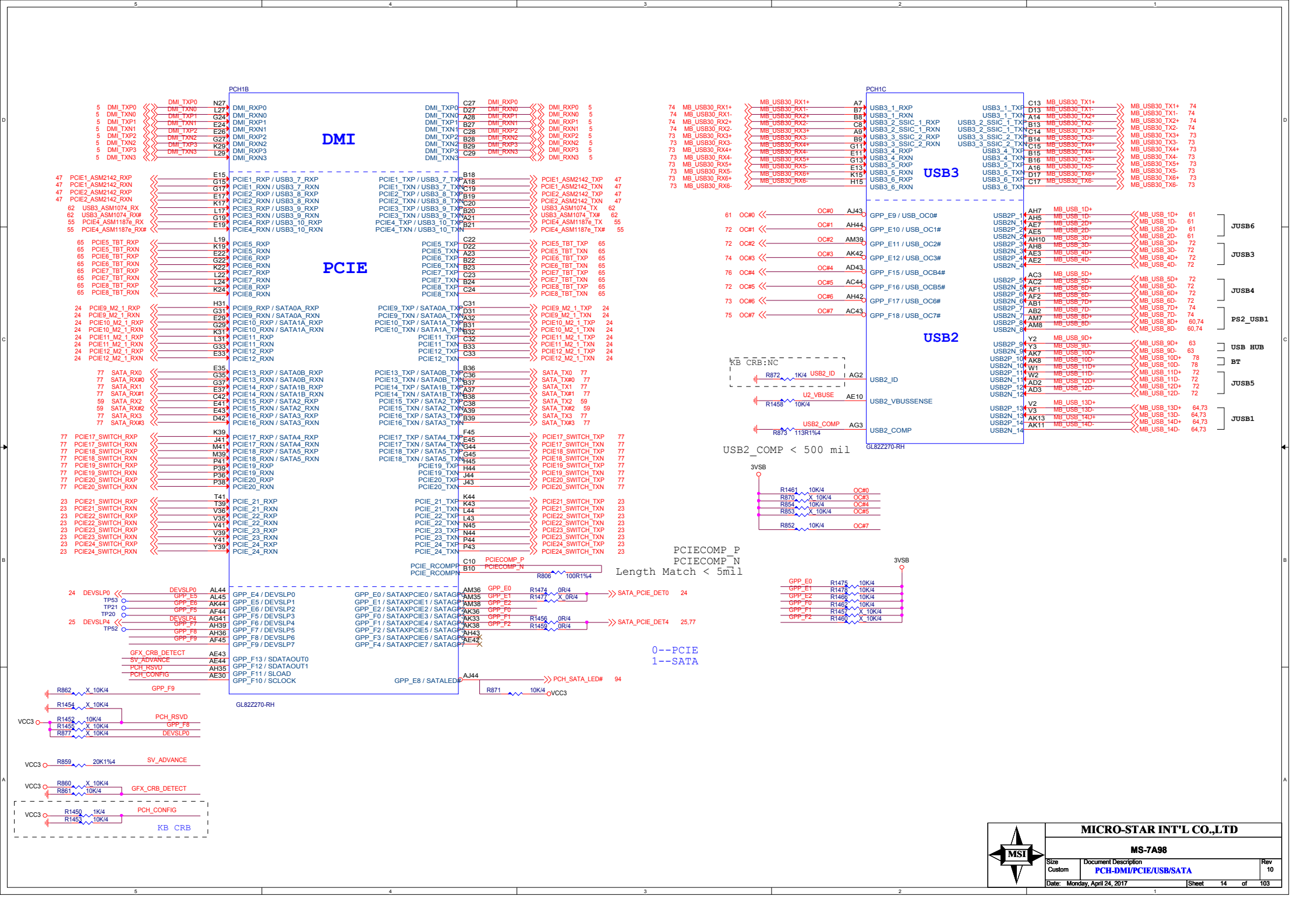
PCH1B
DMI
PCIE
GL82Z270-RH
PCH1C
USB3
USB2
GL82Z270-RH
KB CRB:NC
USB2_COMP < 500 mil
PCIECOMP_P
PCIECOMP_N
Length Match < 5mil
0--PCIE
1--SATA
KB CRB
MICRO-STAR INT'L CO.,LTD
MS-7A98
Size Custom
Document Description PCH-DMI/PCIE/USB/SATA
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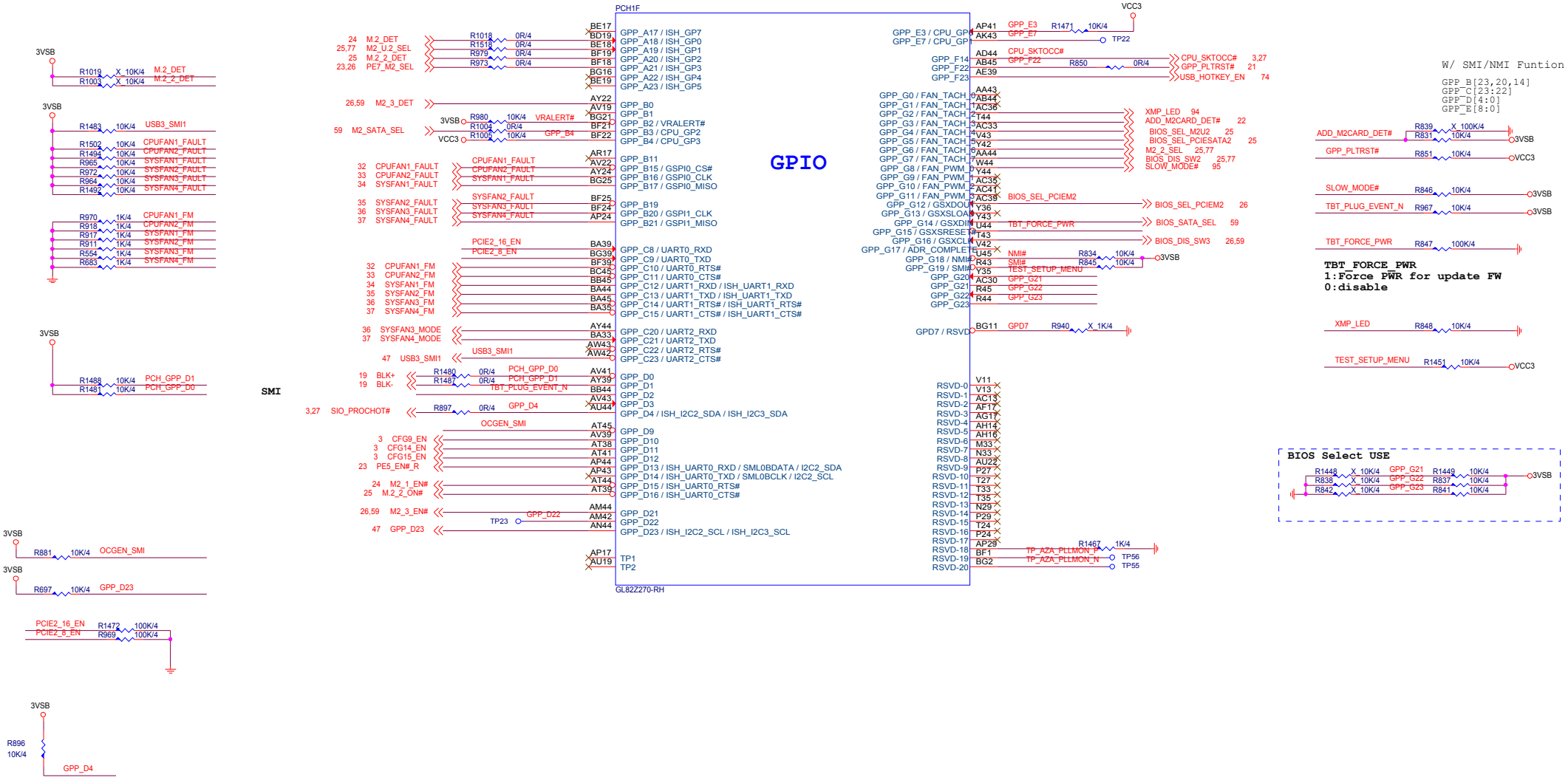
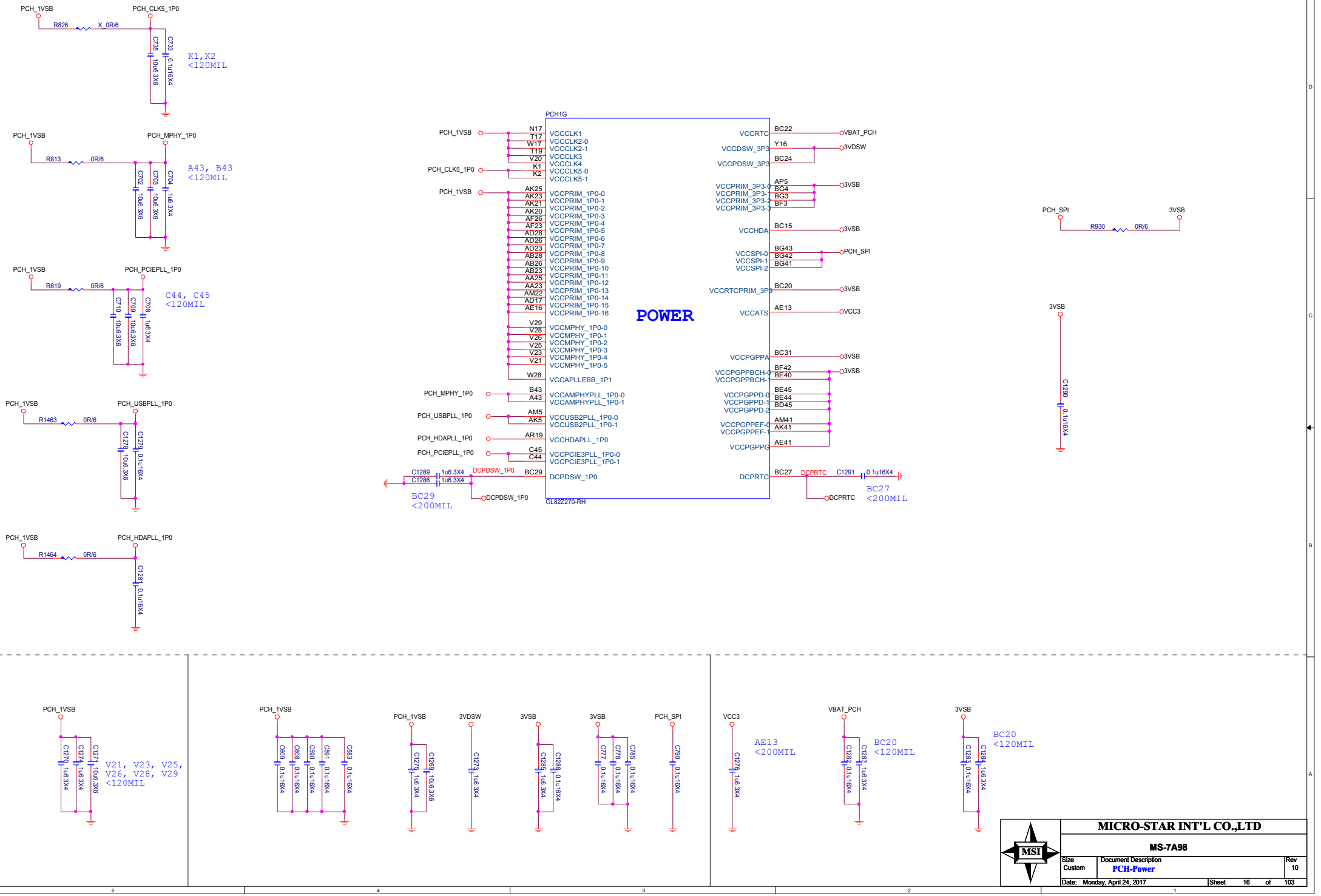
Used ESPI(GPPA) GPIO Group A will be come 1.8V leve)




PCH_1VSB
PCH_CLK5_1P0
R826
X_0R/6
C735
C733
10u6.3X6
0.1u16X4
K1,K2
<120MIL
PCH_1VSB
PCH_MPHY_1P0
R813
0R/6
C702
C703
C704
10u6.3X6
1u6.3X4
A43, B43
<120MIL
PCH_1VSB
PCH_PCIEPLL_1P0
R819
0R/6
C710
C709
C708
10u6.3X6
1u6.3X4
C44, C45
<120MIL
PCH_1VSB
PCH_USBPLL_1P0
R1463
0R/6
C1278
C1279
10u6.3X6
0.1u16X4
PCH_1VSB
PCH_HDAPLL_1P0
R1464
0R/6
C1281
0.1u16X4
PCH1G
PCH_1VSB
N17
T17
W17
T19
V20
VCCCLK1
VCCCLK2-0
VCCCLK2-1
VCCCLK3
VCCCLK4
PCH_CLK5_1P0
K1
K2
VCCCLK5-0
VCCCLK5-1
PCH_1VSB
AK25
AK23
AK21
AK20
AF26
AF23
AD28
AD26
AD23
AB28
AB26
AB23
AA25
AA23
AM22
AD17
AE16
VCCPRIM_1P0-0
VCCPRIM_1P0-1
VCCPRIM_1P0-2
VCCPRIM_1P0-3
VCCPRIM_1P0-4
VCCPRIM_1P0-5
VCCPRIM_1P0-6
VCCPRIM_1P0-7
VCCPRIM_1P0-8
VCCPRIM_1P0-9
VCCPRIM_1P0-10
VCCPRIM_1P0-11
VCCPRIM_1P0-12
VCCPRIM_1P0-13
VCCPRIM_1P0-14
VCCPRIM_1P0-15
VCCPRIM_1P0-16
V29
V28
V26
V25
V23
V21
VCCMPHY_1P0-0
VCCMPHY_1P0-1
VCCMPHY_1P0-2
VCCMPHY_1P0-3
VCCMPHY_1P0-4
VCCMPHY_1P0-5
W28
VCCAPLLEBB_1P1
PCH_MPHY_1P0
B43
A43
VCCAMPHYPLL_1P0-0
VCCAMPHYPLL_1P0-1
PCH_USBPLL_1P0
AM5
AK5
VCCUSB2PLL_1P0-0
VCCUSB2PLL_1P0-1
PCH_HDAPLL_1P0
AR19
VCCHDAPLL_1P0
PCH_PCIEPLL_1P0
C45
C44
VCCPCIE3PLL_1P0-0
VCCPCIE3PLL_1P0-1
C1289
C1286
1u6.3X4
1u6.3X4
DCPDSW_1P0
BC29
DCPDSW_1P0
BC29
<200MIL
POWER
GL82Z270-RH
VCCRTC
BC22
VBAT_PCH
VCCDSW_3P3
Y16
3VDSW
VCCPDSW_3P3
BC24
VCCPRIM_3P3-0
VCCPRIM_3P3-1
VCCPRIM_3P3-2
VCCPRIM_3P3-3
AP5
BG4
BG3
BF3
3VSB
VCCHDA
BC15
3VSB
VCCSPI-0
VCCSPI-1
VCCSPI-2
BG43
BG42
BG41
PCH_SPI
VCCRTCPRIM_3P3
BC20
3VSB
VCCATS
AE13
VCC3
VCCPGPPA
BC31
3VSB
VCCPGPPBCH-0
VCCPGPPBCH-1
BF42
BE40
3VSB
VCCPGPPD-0
VCCPGPPD-1
VCCPGPPD-2
BE45
BE44
BD45
VCCPGPPEF-0
VCCPGPPEF-1
AM41
AK41
VCCPGPPG
AE41
DCPRTC
BC27
DCPRTC
C1291
0.1u16X4
DCPRTC
BC27
<200MIL
PCH_SPI
3VSB
R930
0R/6
3VSB
C1290
0.1u16X4
PCH_1VSB
C1270
C1271
C1272
1u6.3X4
1u6.3X4
10u6.3X6
V21, V23, V25,
V26, V28, V29
<120MIL
PCH_1VSB
C609
C608
C590
C591
C583
0.1u16X4
0.1u16X4
0.1u16X4
0.1u16X4
0.1u16X4
PCH_1VSB
3VDSW
3VSB
3VSB
PCH_SPI
C1275
C1269
1u6.3X4
10u6.3X6
C1273
1u6.3X4
C1285
C1268
1u6.3X4
0.1u16X4
C777
C778
C785
0.1u16X4
0.1u16X4
0.1u16X4
C790
0.1u16X4
VCC3
AE13
<200MIL
C1276
1u6.3X4
VBAT_PCH
BC20
<120MIL
C1282
C1287
0.1u16X4
1u6.3X4
3VSB
BC20
<120MIL
C1283
C1284
0.1u16X4
1u6.3X4
MSI
MICRO-STAR INT'L CO.,LTD
MS-7A98
Size
Custom
Document Description
PCH-Power
Rev
10
Date: Monday, April 24, 2017
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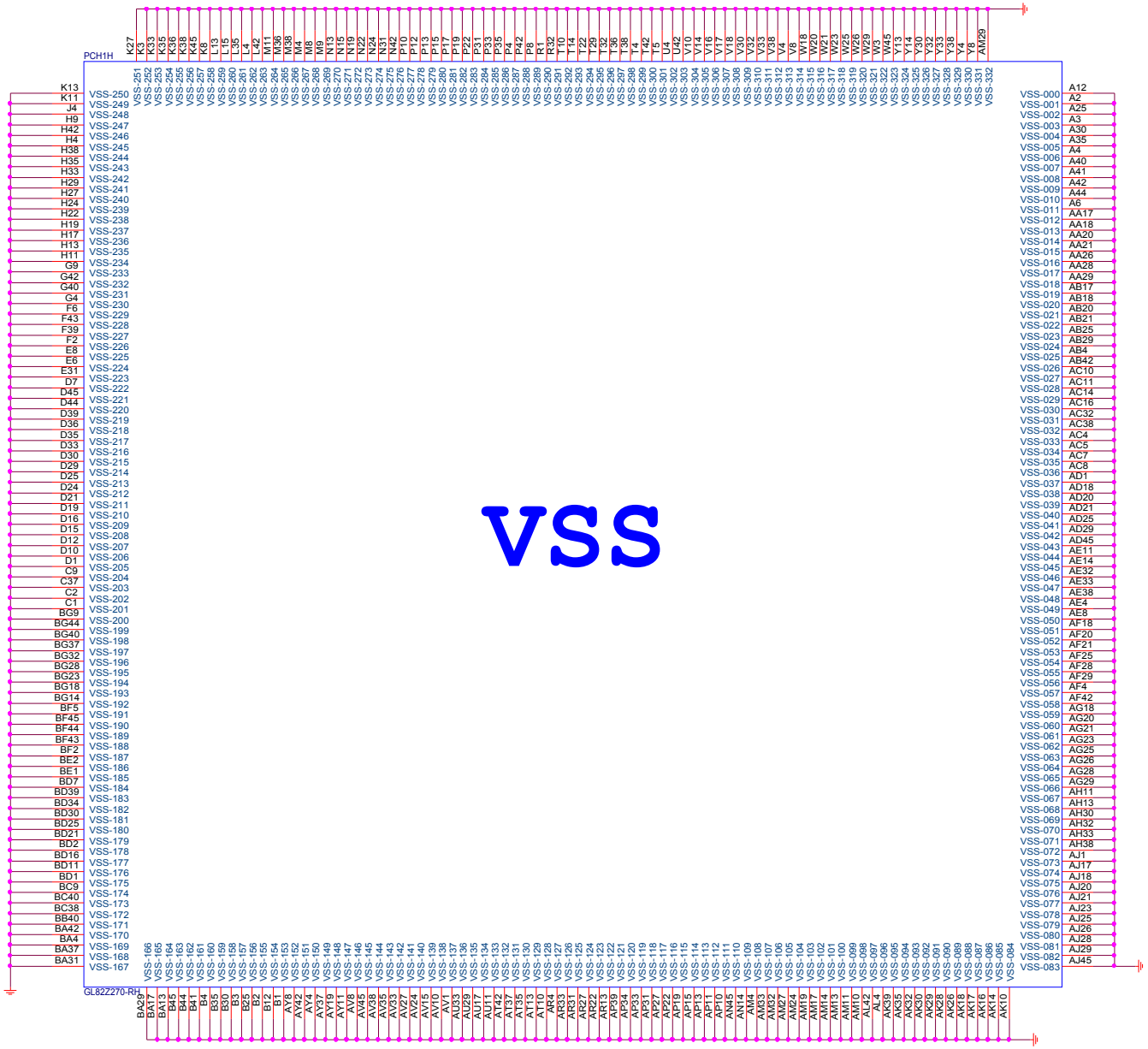

MICRO-STAR INT'L CO.,LTD	
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Size: Custom	Document Description: PCH-GND
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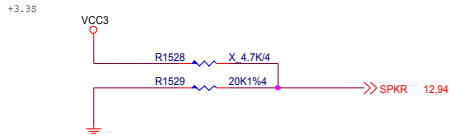
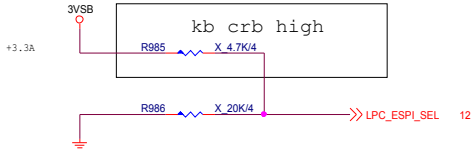
TOP Swap



Internal pull-down is disabled after PLTRST#

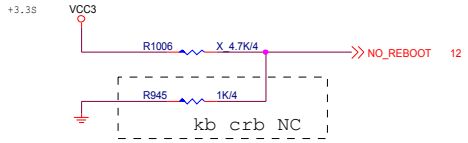
LPC eSPI Mode



0 : LPC
1 : eSPI

Internal pull-down is disabled after RSMRST

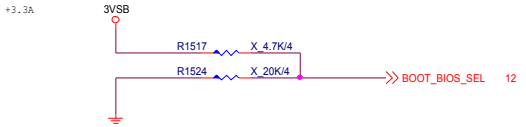
No Reboot



0 : DISABLE (Default)
1 : ENABLE

Internal pull-down is disabled after PLTRST#

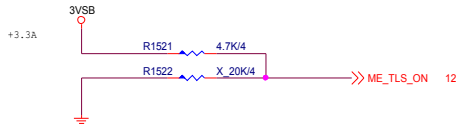
Boot BIOS



0 : SPI
1 : LPC

Internal pull-down is disabled after PLTRST

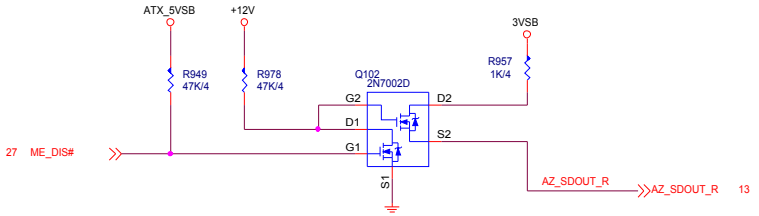
AMT and SBA with confidentiality



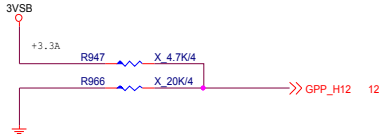
0 : DISABLE
1 : ENABLE (Default)

Internal pull-down is disabled after RSMRST

HDA_SDO



ESPI FLASH SHARING MODE



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

Internal pull-down is disabled after RSMRST

MICRO-STAR INT'L CO.,LTD

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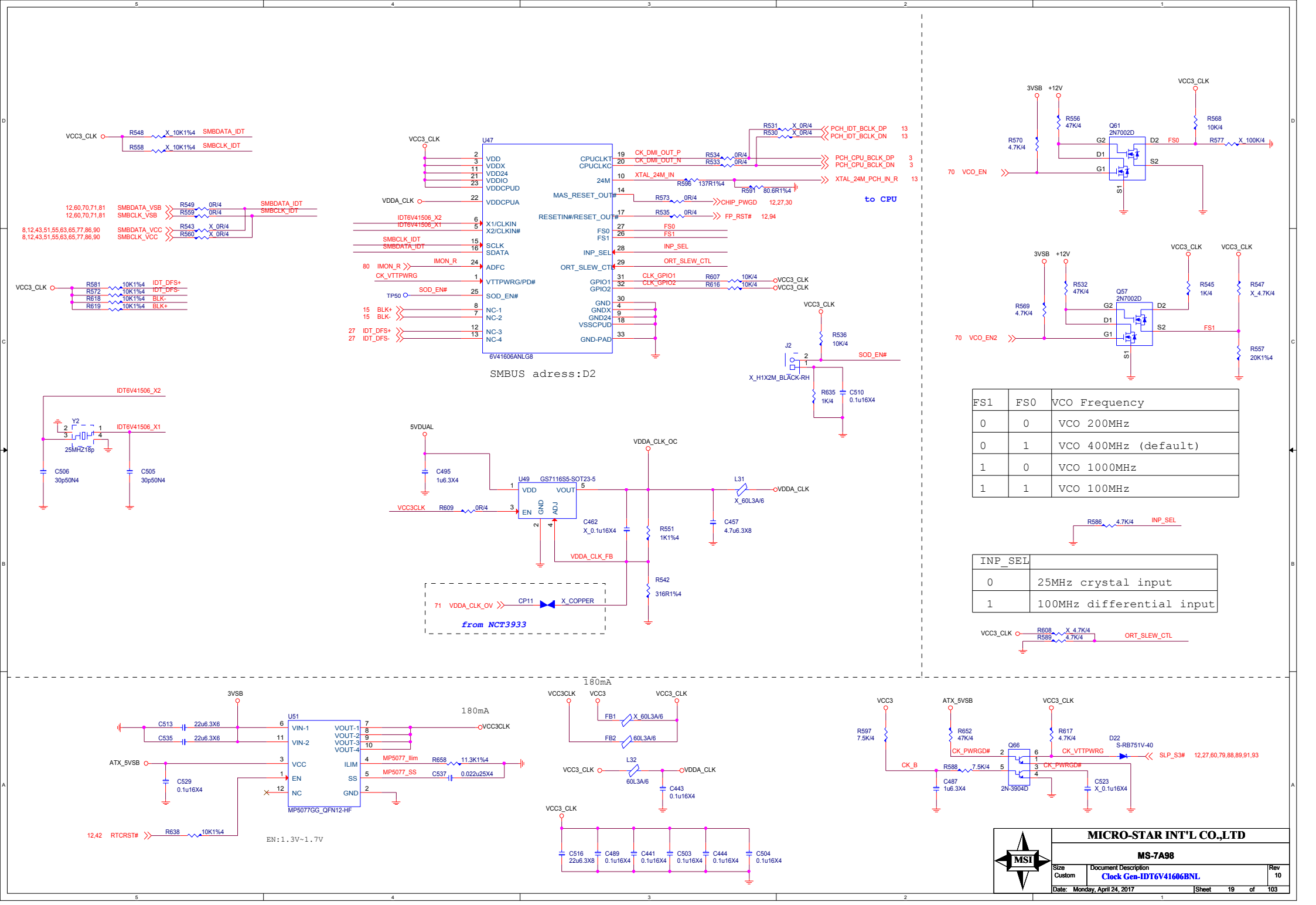
VCC3_CLK
R548 X_10K1%4 SMBDATA_IDT
R558 X_10K1%4 SMBCLK_IDT
12,60,70,71,81 SMBDATA_VSB
12,60,70,71,81 SMBCLK_VSB
R549 0R/4
R559 0R/4
SMBDATA_IDT
SMBCLK_IDT
8,12,43,51,55,63,65,77,86,90 SMBDATA_VCC
8,12,43,51,55,63,65,77,86,90 SMBCLK_VCC
R543 X_0R/4
R560 X_0R/4
R581 10K1%4 IDT_DFS+
R572 10K1%4 IDT_DFS-
R618 10K1%4 BLK-
R619 10K1%4 BLK+
U47
VDD
VDDX
VDD24
VDDIO
VDDCPUD
VDDCPUA
X1/CLKIN
X2/CLKIN#
SCLK
SDATA
ADFC
VTTPWRG/PD#
SOD_EN#
NC-1
NC-2
NC-3
NC-4
GND
GNDX
GND24
VSSCPUD
GND-PAD
6V41606ANLG8
CPUCLKT
CPUCLKC
24M
MAS_RESET_OUT#
RESETIN#/RESET_OUT#
FS0
FS1
INP_SEL
ORT_SLEW_CTL
GPIO1
GPIO2
CK_DMI_OUT_P
CK_DMI_OUT_N
XTAL_24M_IN
R531 X_0R/4
R530 X_0R/4
PCH_IDT_BCLK_DP 13
PCH_IDT_BCLK_DN 13
R534 0R/4
R533 0R/4
PCH_CPU_BCLK_DP 3
PCH_CPU_BCLK_DN 3
R596 137R1%4
R591 80.6R1%4
XTAL_24M_PCH_IN_R 13
to CPU
R573 0R/4
CHIP_PWGD 12,27,30
R535 0R/4
FP_RST# 12,94
CLK_GPIO1
CLK_GPIO2
R607 10K/4
R616 10K/4
IDT6V41506_X2
IDT6V41506_X1
SMBCLK_IDT
SMBDATA_IDT
IMON_R
CK_VTTPWRG
SOD_EN#
TP50
BLK+
BLK-
IDT_DFS+
IDT_DFS-
SMBUS adress:D2
J2
X_H1X2M_BLACK-RH
R536 10K/4
R635 1K/4
C510 0.1u16X4
Y2
25MHZ18p
C506 30p50N4
C505 30p50N4
5VDUAL
C495 1u6.3X4
U49 GS7116S5-SOT23-5
VDD
VOUT
EN
GND
ADJ
VCC3CLK
R609 0R/4
C462 X_0.1u16X4
VDDA_CLK_OC
L31
X_60L3A/6
VDDA_CLK
R551 1K%4
C457 4.7u6.3X8
VDDA_CLK_FB
R542 316R1%4
71 VDDA_CLK_OV
CP11
X_COPPER
from NCT3933
3VSB
+12V
R556 47K/4
Q61 2N7002D
R570 4.7K/4
R568 10K/4
R577 X_100K/4
70 VCO_EN
FS0
S1
S2
D1
D2
G1
G2
R532 47K/4
Q57 2N7002D
R569 4.7K/4
R545 1K/4
R547 X_4.7K/4
70 VCO_EN2
FS1
R557 20K1%4
FS1 FS0 VCO Frequency
0 0 VCO 200MHz
0 1 VCO 400MHz (default)
1 0 VCO 1000MHz
1 1 VCO 100MHz
R586 4.7K/4 INP_SEL
INP_SEL
0 25MHz crystal input
1 100MHz differential input
R608 X_4.7K/4
R589 4.7K/4
ORT_SLEW_CTL
U51
VIN-1
VIN-2
VCC
EN
NC
VOUT-1
VOUT-2
VOUT-3
VOUT-4
ILIM
SS
GND
MP5077GG_QFN12-HF
C513 22u6.3X6
C535 22u6.3X6
C529 0.1u16X4
ATX_5VSB
MP5077_Ilim
MP5077_SS
R658 11.3K1%4
C537 0.022u25X4
180mA
VCC3CLK
12,42 RTCRST#
R638 10K1%4
EN:1.3V~1.7V
180mA
VCC3
FB1
FB2
X_60L3A/6
60L3A/6
L32
C443 0.1u16X4
C516 22u6.3X8
C489 0.1u16X4
C441 0.1u16X4
C503 0.1u16X4
C444 0.1u16X4
C504 0.1u16X4
R597 7.5K/4
R652 47K/4
R617 4.7K/4
CK_PWRGD#
CK_VTTPWRG
D22 S-RB751V-40
SLP_S3# 12,27,60,79,88,89,91,93
CK_B
R588 7.5K/4
Q66 2N-3904D
C487 1u6.3X4
C523 X_0.1u16X4
MICRO-STAR INT'L CO.,LTD
MS-7A98
Size Custom
Document Description Clock Gen-IDT6V41606BNL
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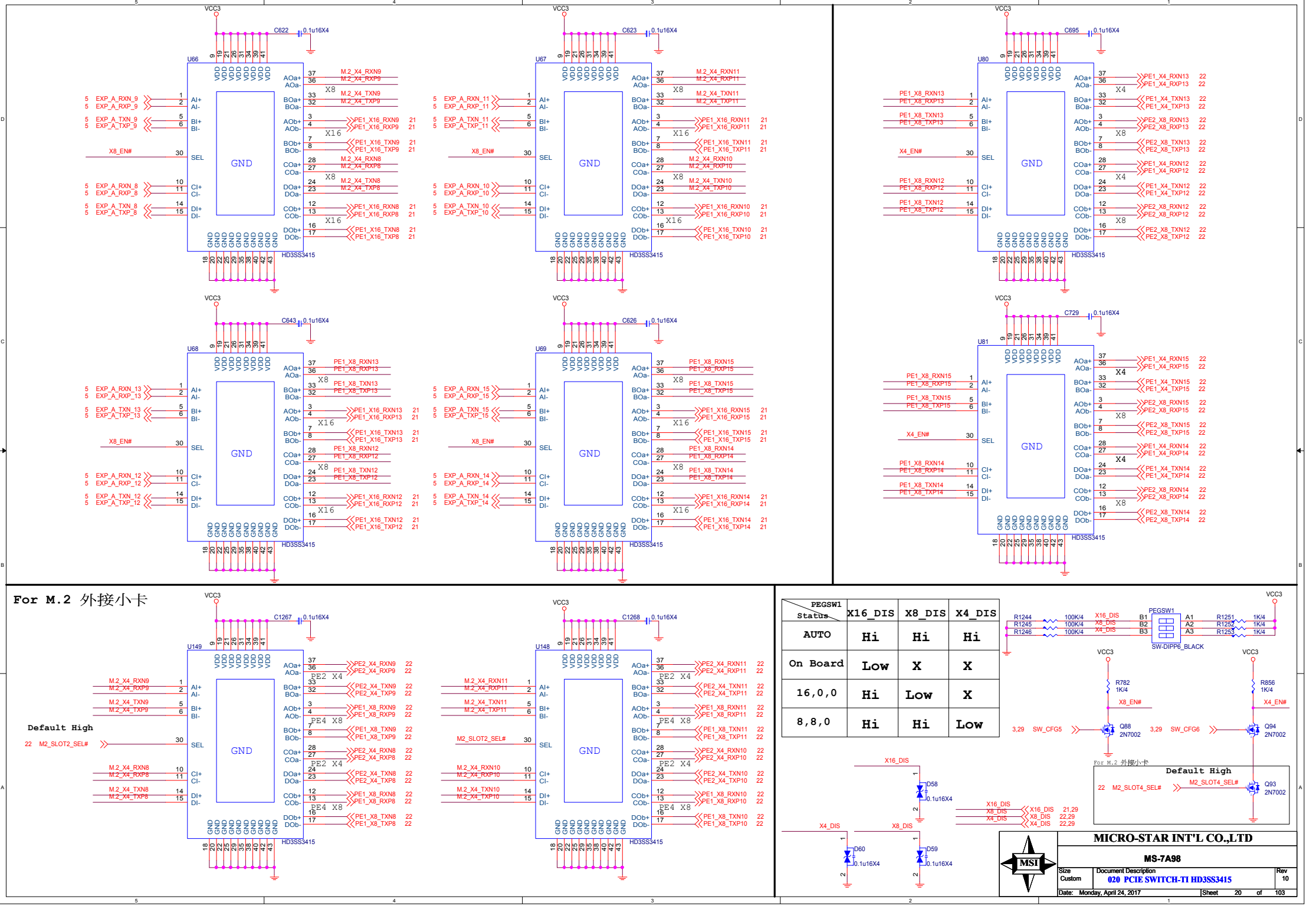

For M.2 外接小卡

PEGSW1 Status	X16_DIS	X8_DIS	X4_DIS
AUTO	Hi	Hi	Hi
On Board	Low	X	X
16,0,0	Hi	Low	X
8,8,0	Hi	Hi	Low

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MS-7A98	
Size: Custom	Document Description: 020 PCIE SWITCH-TI HD3SS3415
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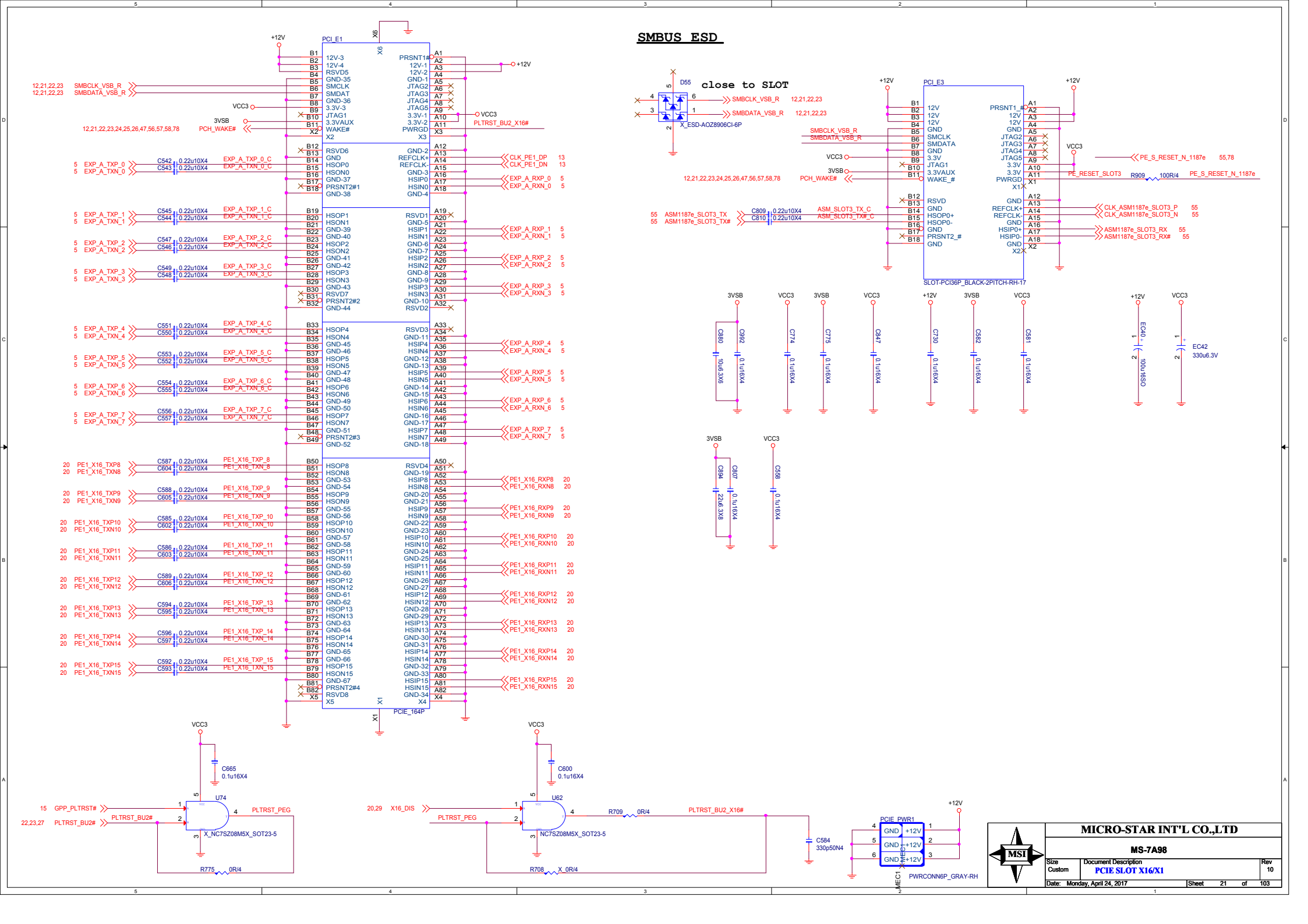
SMBUS ESD
close to SLOT
D55
X_ESD-AOZ8906CI-6P
SMBCLK_VSB_R
SMBDATA_VSB_R
PCI_E1
PCIE_164P
PCI_E3
SLOT-PCI36P_BLACK-2PITCH-RH-17
PCH_WAKE#
PLTRST_BU2_X16#
PLTRST_BU2#
PLTRST_PEG
GPP_PLTRST#
X16_DIS
U74
U62
X_NC7SZ08M5X_SOT23-5
NC7SZ08M5X_SOT23-5
PCIE_PWR1
PWRCONN6P_GRAY-RH
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PCIE SLOT X16/X1
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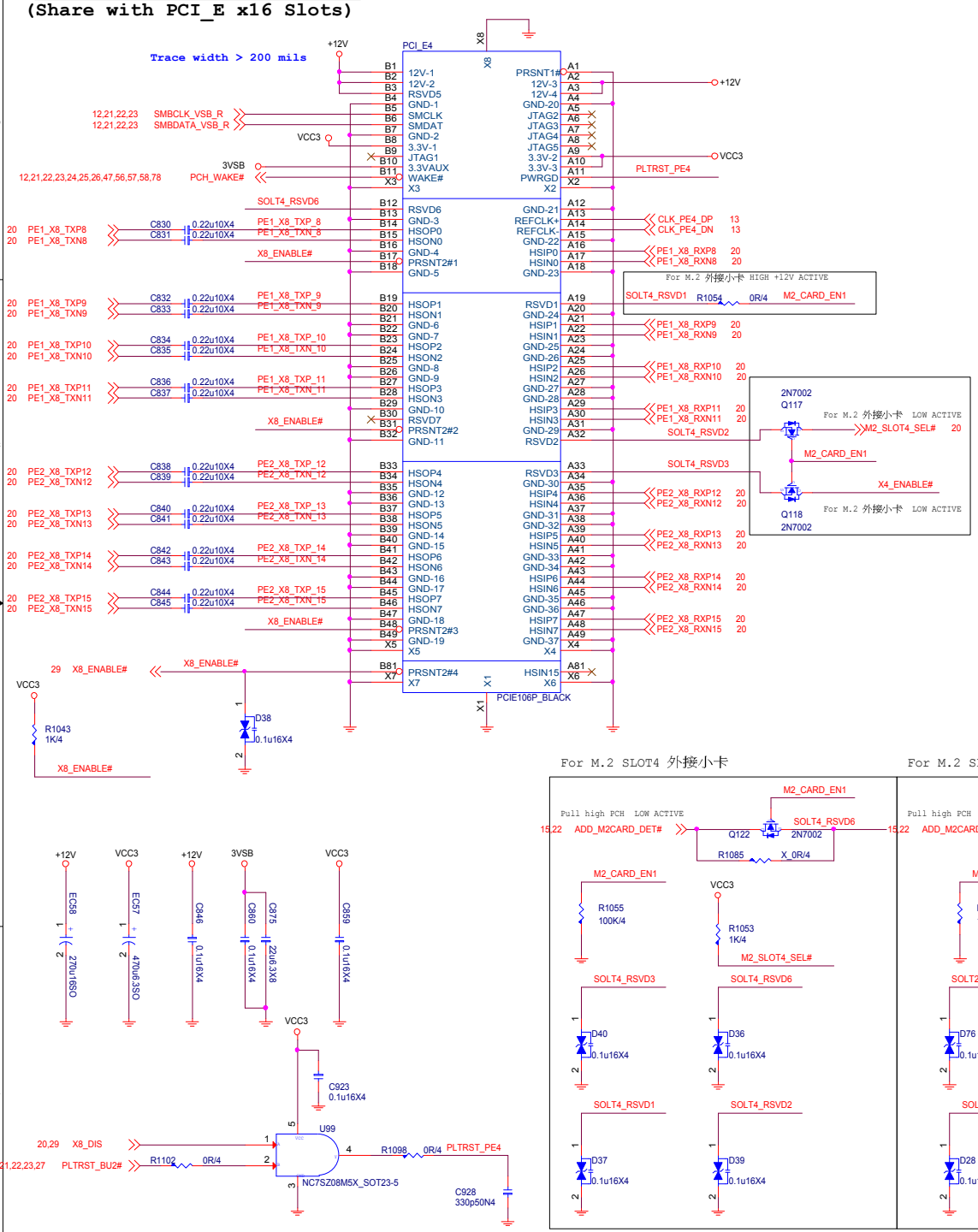
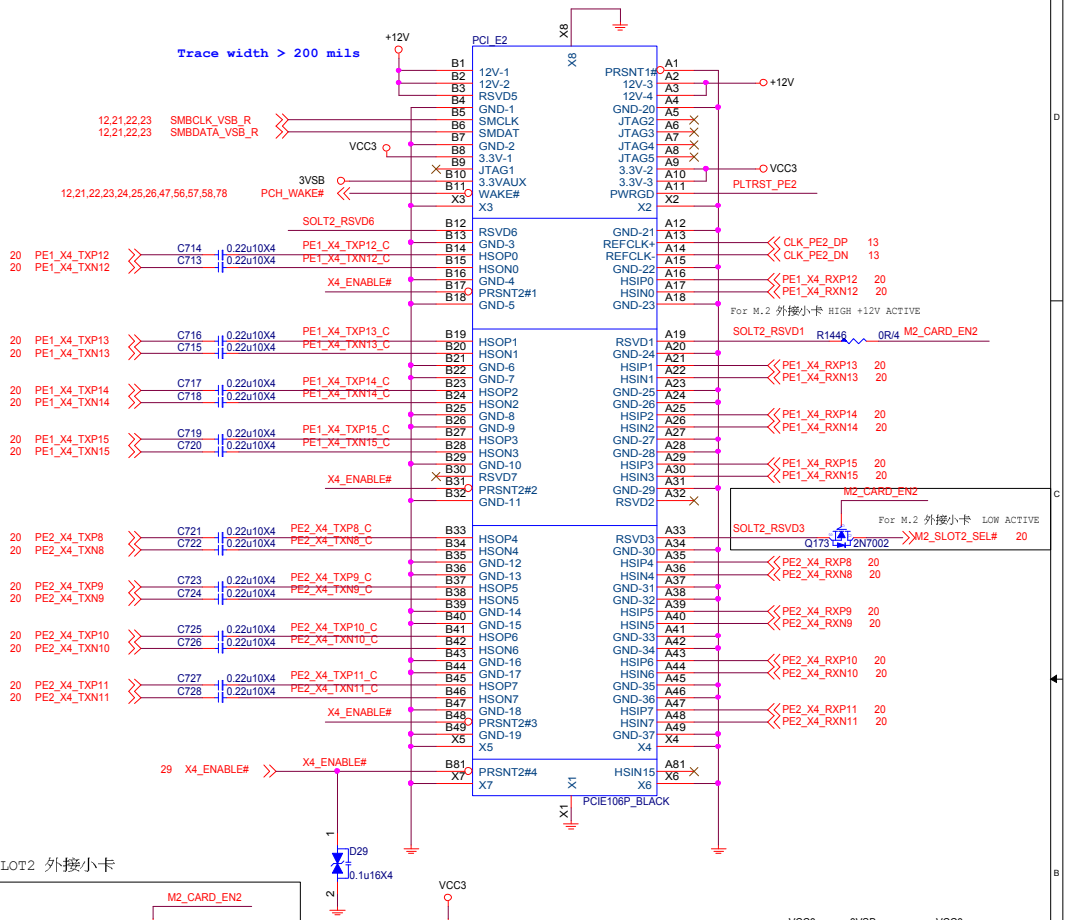
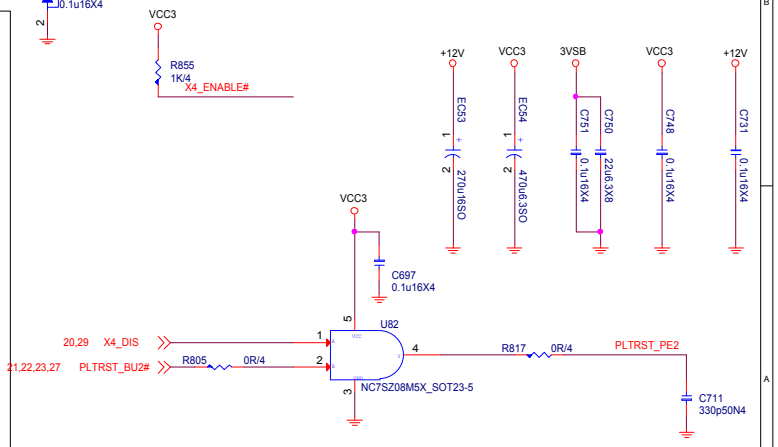
PCI_Express X8 Slot
(Share with PCI_E x16 Slots)



PCI_Express X4 Slot(by CPU)





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MS-7A98		
Size: Custom	Document Description: PCIE SLOT X8/X4	Rev: 10
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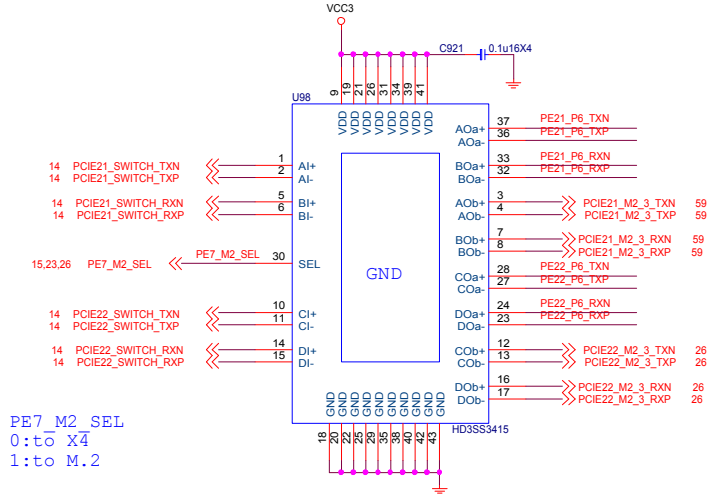
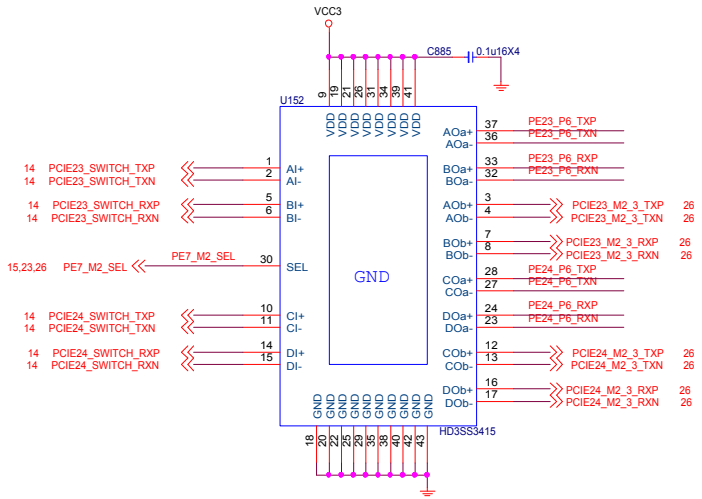
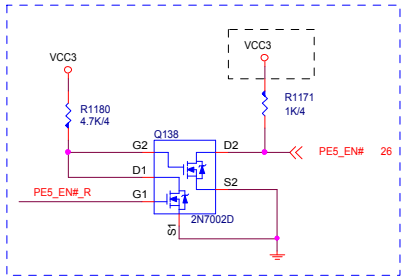
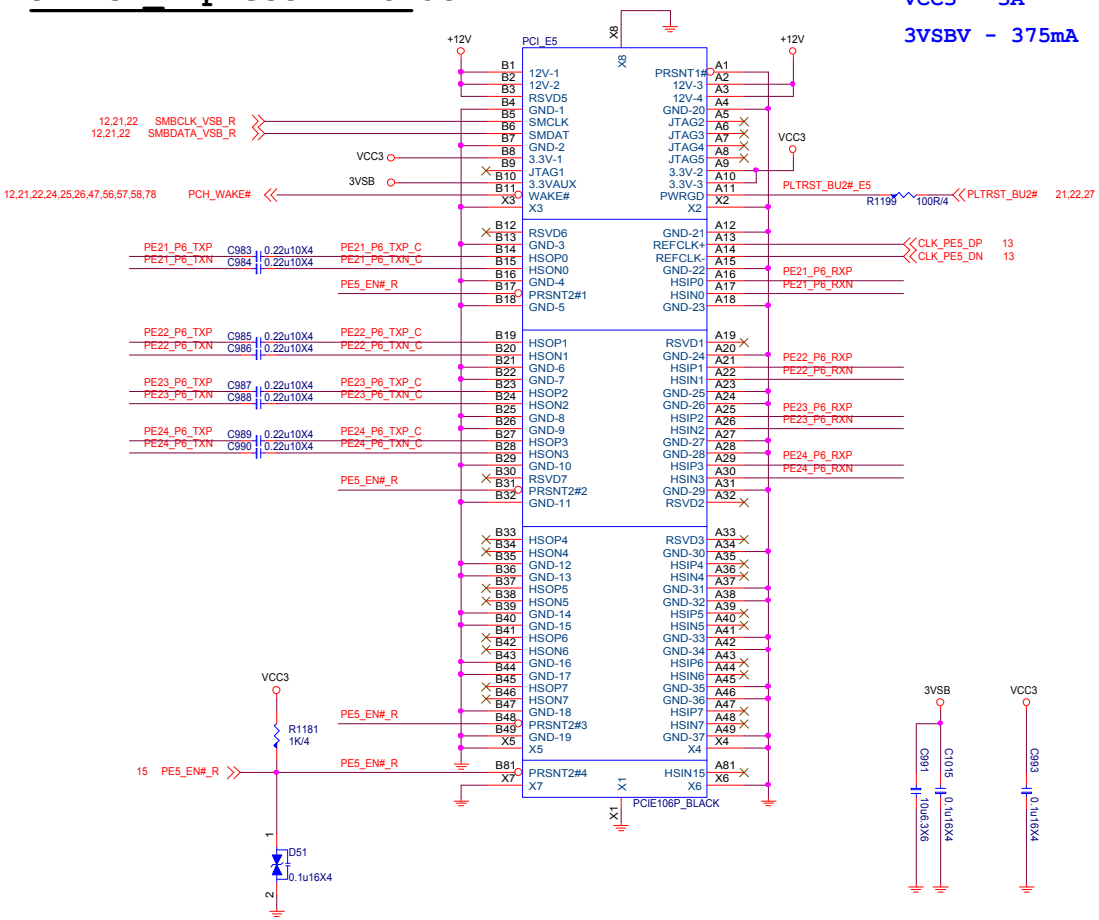
PCH PCI_Express X4 Slot

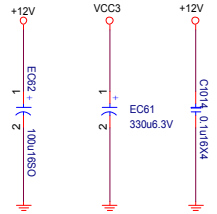
12V - 2.1A
VCC3 - 3A
3VSBV - 375mA











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Size: Custom	Document Description: PCIE SLOT-PCH(X4)
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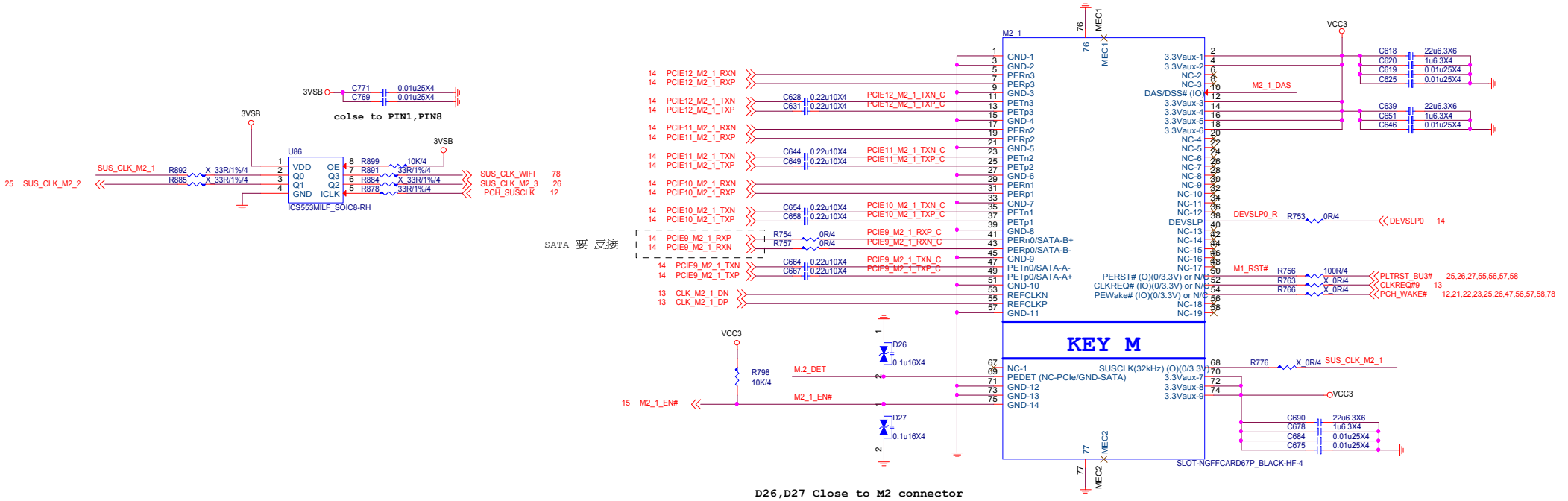
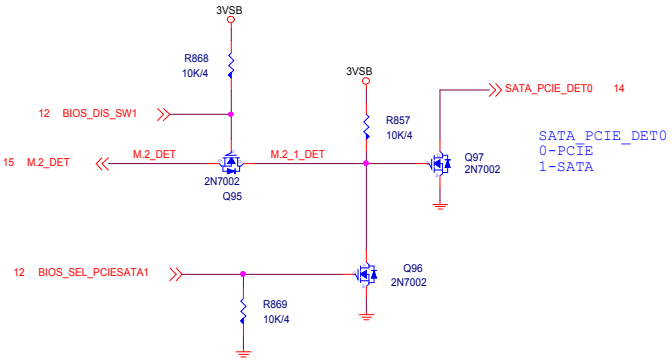
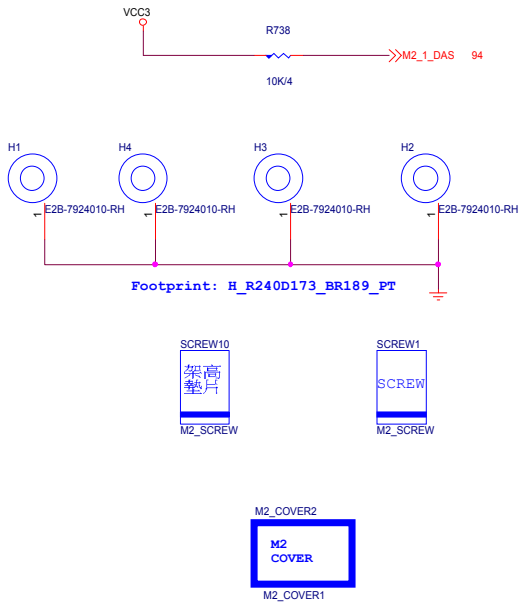




BIOS_MODE

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



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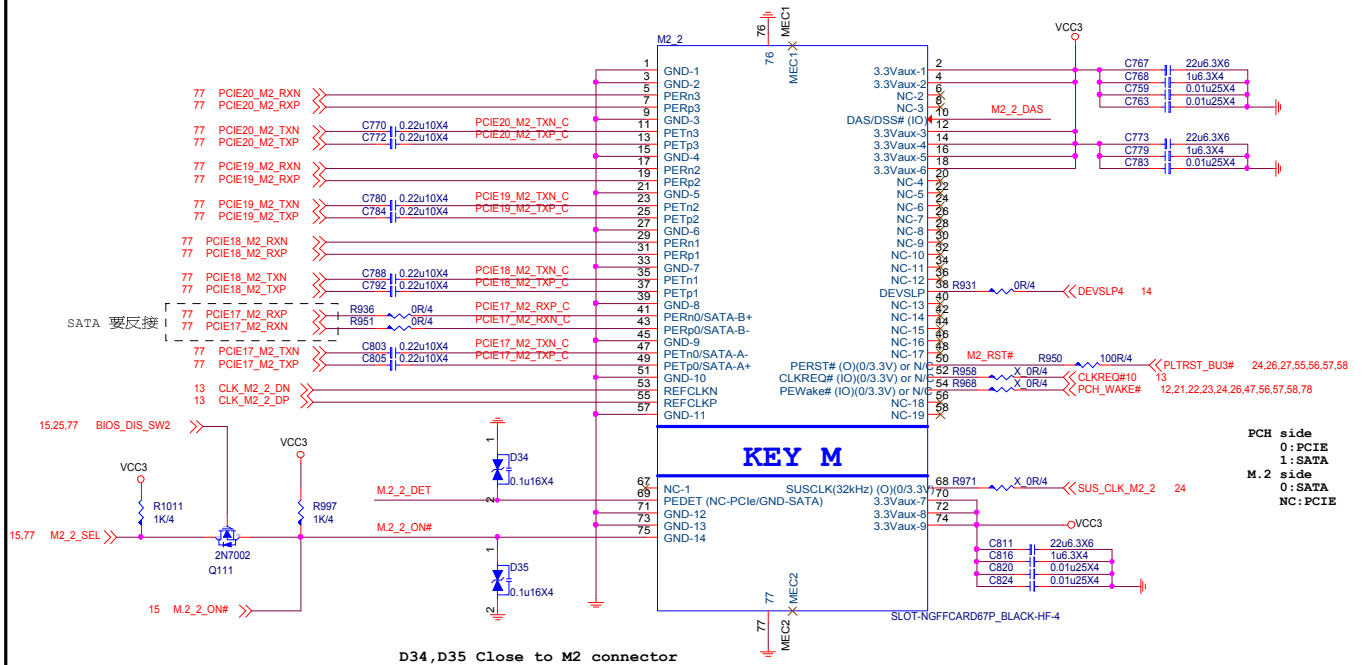

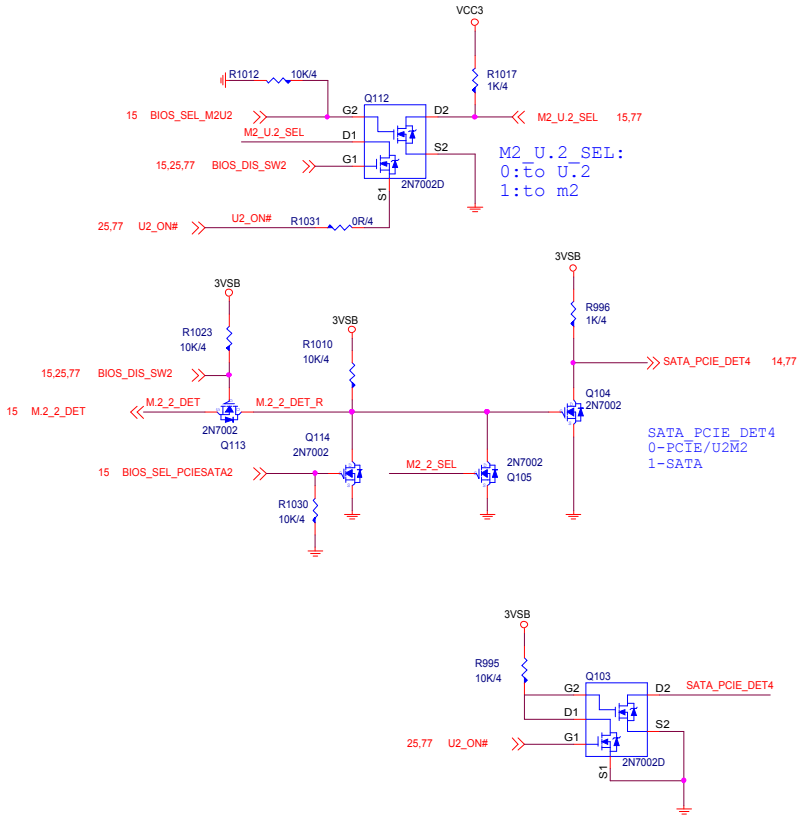

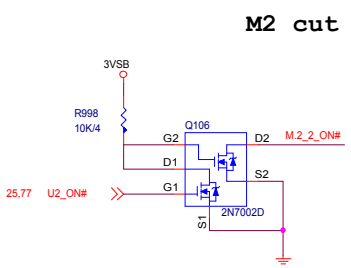

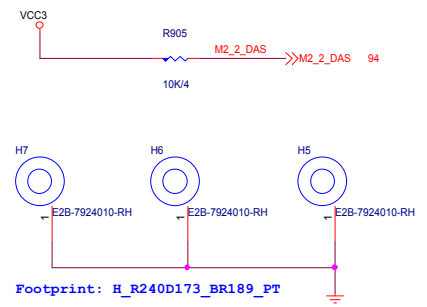

MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A98	
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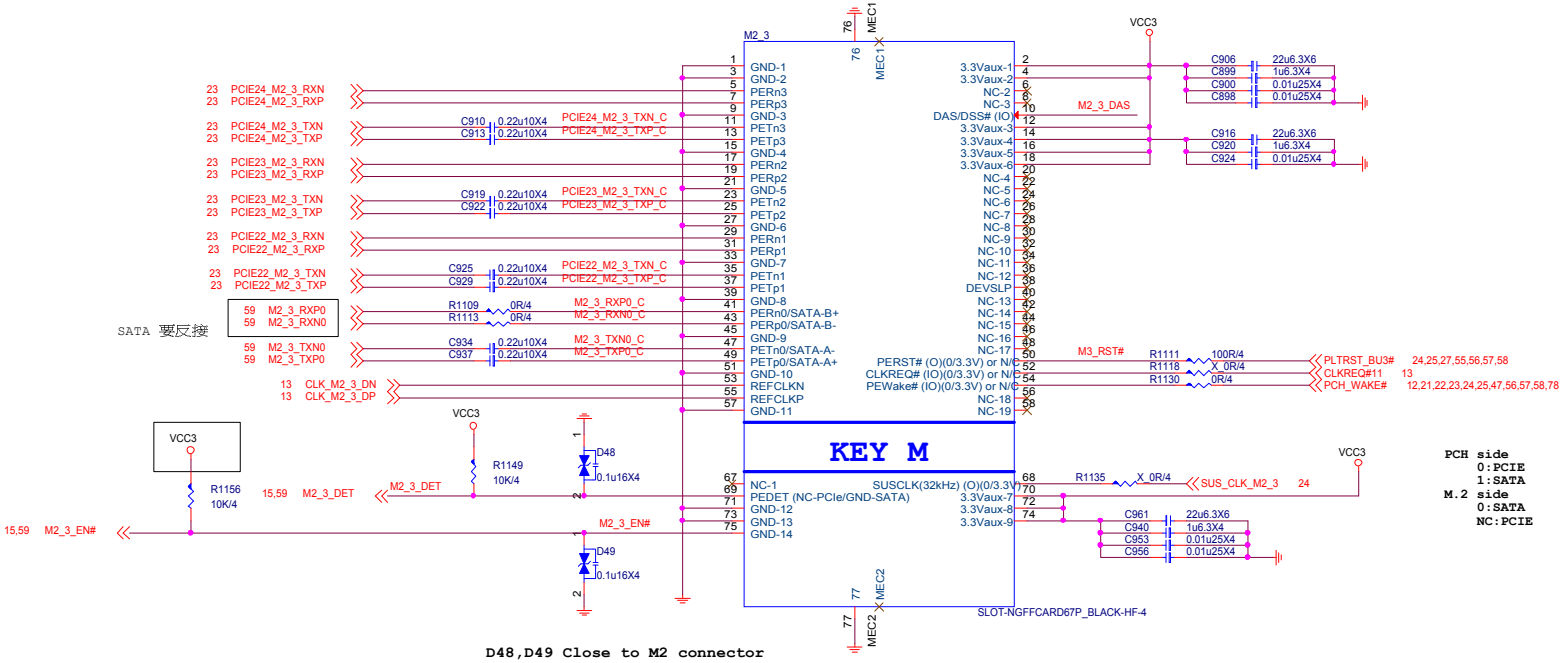
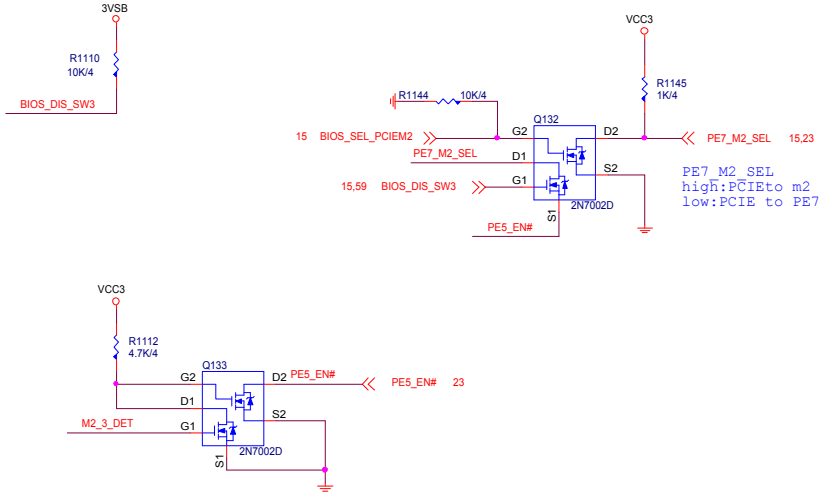
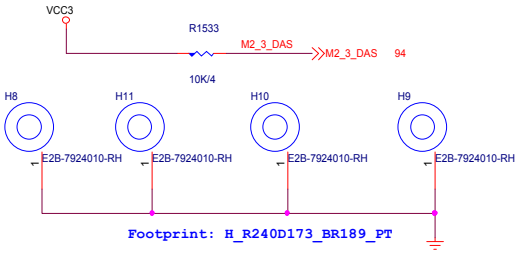
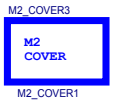


BIOS_MODE

DIS_SW	BIOS_SEL_PCIEM2	BIOS_SATA_SEL	
0	GPI	0	SATA
0	1	1	M2-SATA
0	0	GPI	M2-PCIE
0	1	GPI	PCIEX4
GPI	GPI	GPI	AUTO







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MS-7A98

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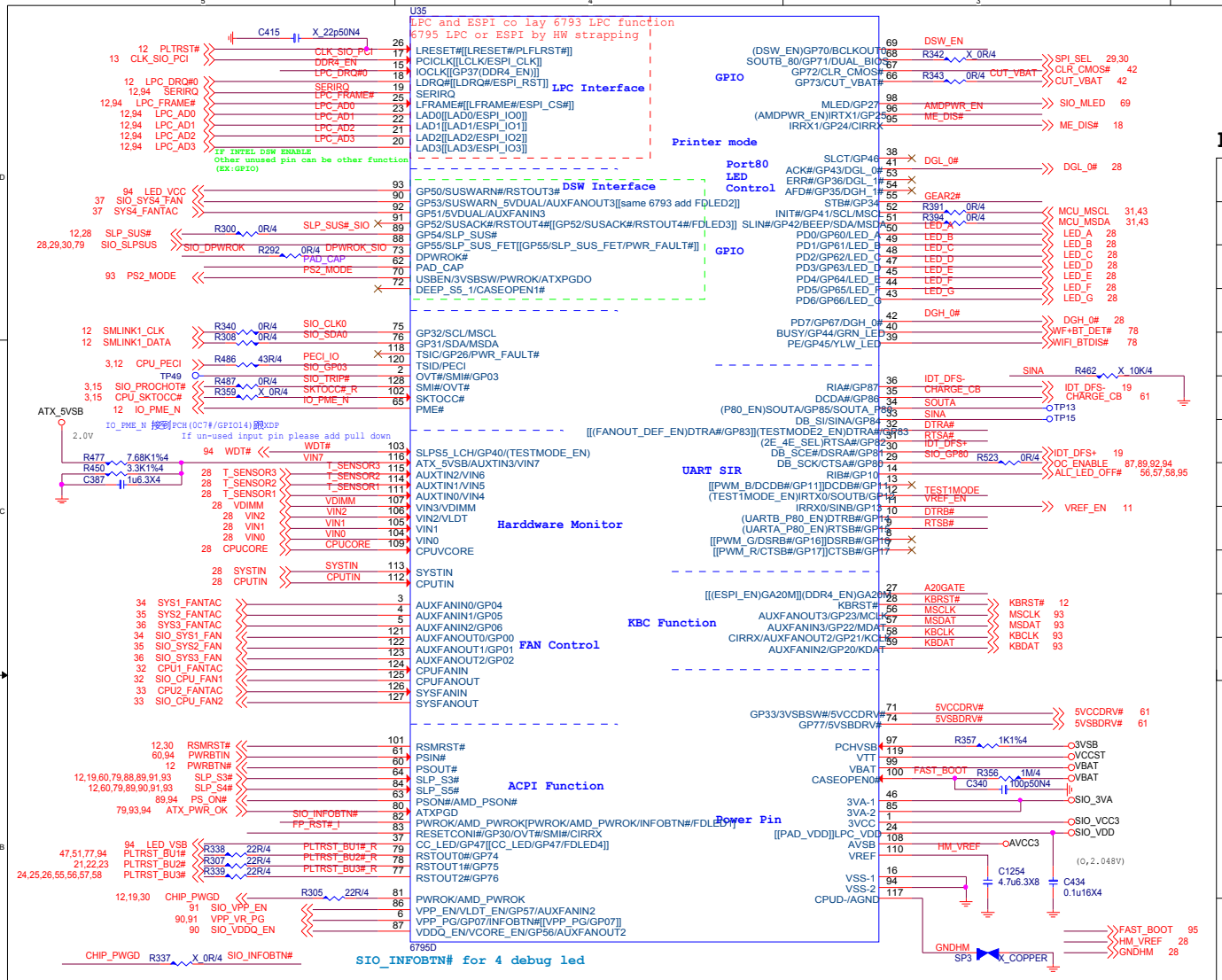
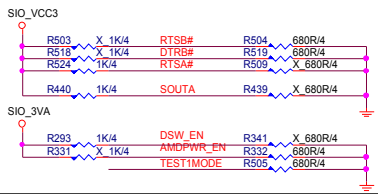
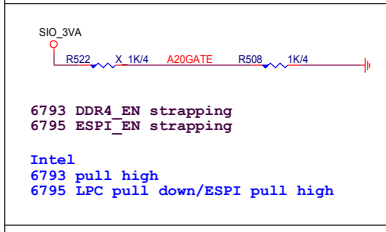


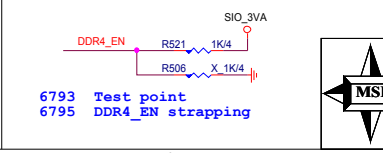
POWER ON STRAPPING PIN FOR NCT6793/6795

PIN	6793/6795 NAME	Circuit NAME	0	1	Strap Point
9	UARTA_P80_EN	RTSB#	DISABLE UARTA80	ENABLE UARTA80	LRESET
10	UARTB_P80_EN	DTRB#	DISABLE UARTB80	ENABLE UARTB80	LRESET
12	TEST1MODE_EN	TEST1MODE	DISABLE TEST1MODE	ENABLE TEST1MODE	LRESET
15	6793 test point 6795 DDR4_EN	6793 test point 6795 DDR4_EN	6793 NA 6795 Disable	6793 NA 6795 Enable	
27	6793 DDR4_EN 6795 ESPI_EN	A20GATE	6793 Disable 6795 Disable	6793 Enable 6795 Enable	
31	2E_4E_SEL	RTSA#	I/O ADDRESS 2E	I/O ADDRESS 4E	LRESET
32	6793 TESTMOD2_EN 6795 FANOUT_DEF_EN	DTRA#	6793 disable 6795 default 50%	6793 Enable 6795 default 100%	INTERNAL PWROK
34	P80_EN	SOUTA	ENABLE Non_PORT80	ENABLE PORT80	LRESET
69	DSW_EN	DSW_EN	DISABLE INTEL DSW	ENABLE INTEL DSW	INTERNAL RSMRST
96	AMDPWR_EN	AMDPWR_EN	DISABLE AMD PWR SEQ	ENABLE AMD PWR SEQ	INTERNAL RSMRST
103	TESTMODE_EN	WDT#	DISABLE TESTMODE	ENABLE TESTMODE	INTERNAL RSMRST

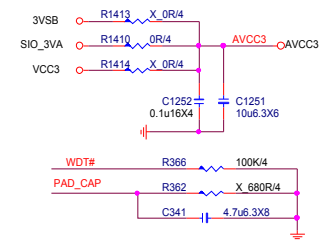
Note:
If PIN34 strapping low,BIOS must programming LPT or GPIO

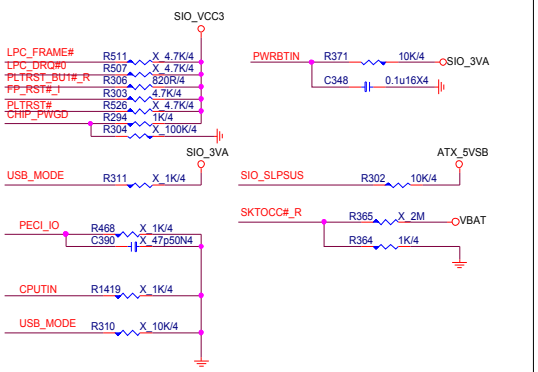


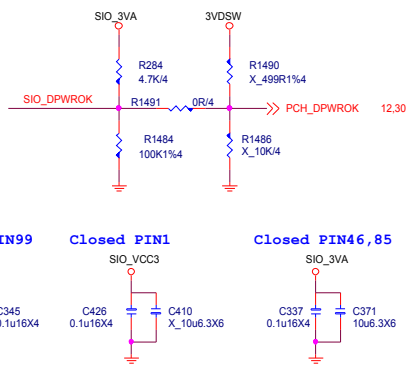




3V Analog Power







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Size: Custom	Document Description: SIO-NCT6793D-1
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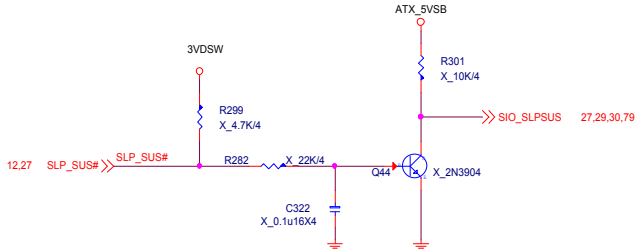
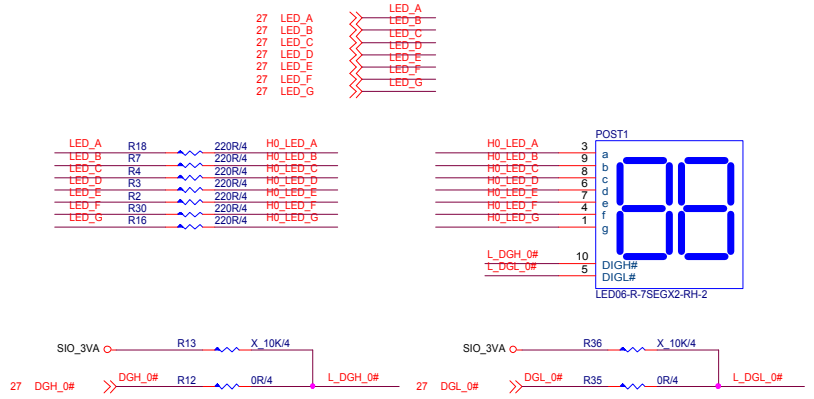
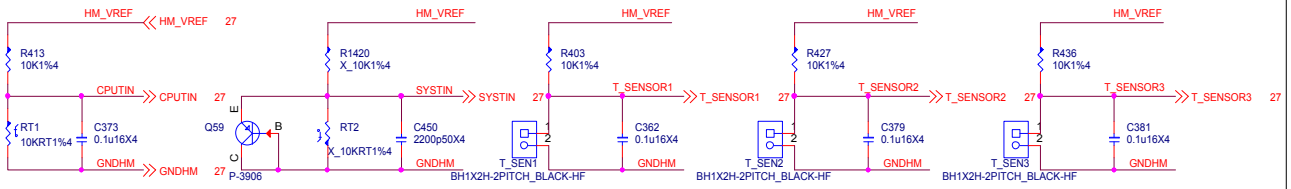
SLP_SUS Co-lay circuit

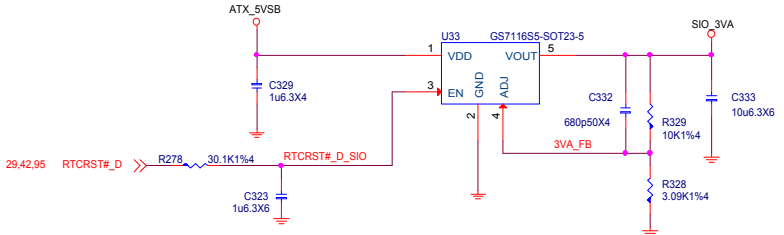


DEBUG LED



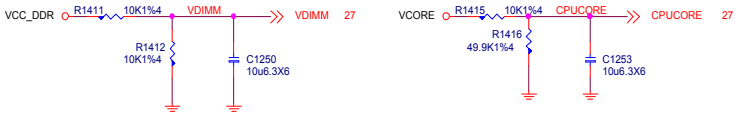
THERMAL SENSOR





HW Monitor - Voltage

SIO HM Voltage voer 2V will not detect



MICRO-STAR INT'L CO.,LTD		
MS-7A98		
Size: Custom	Document Description: SIO-NCT6793D-2	Rev: 10
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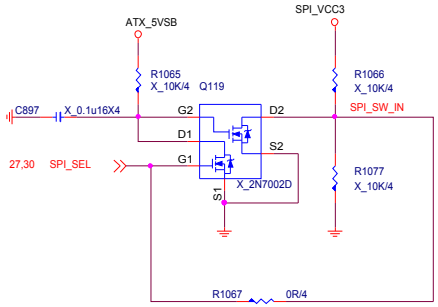

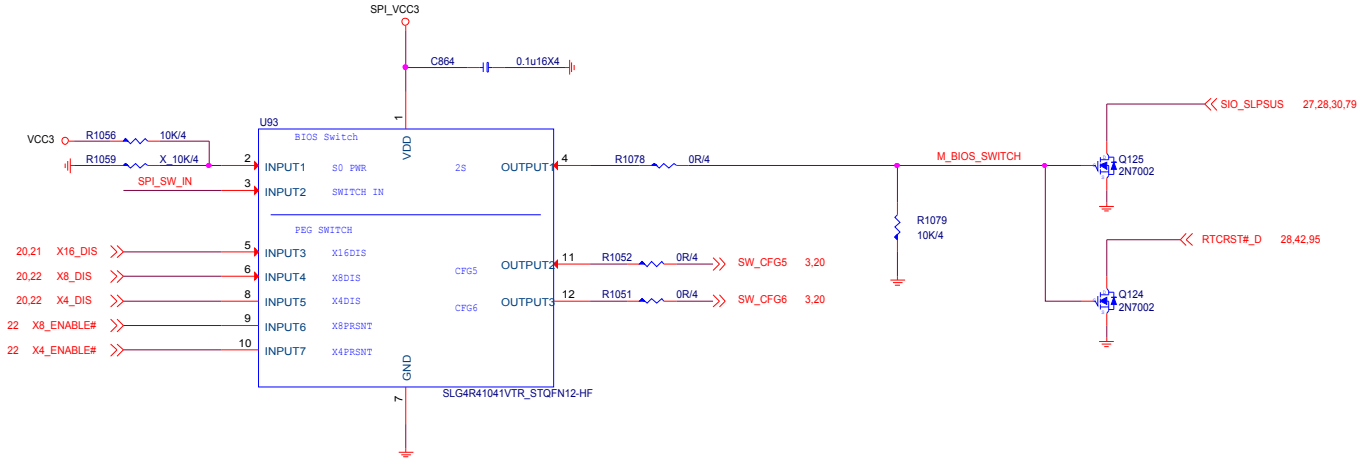

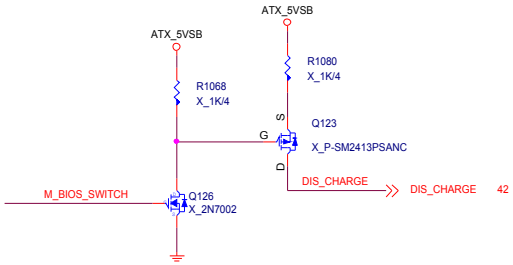

MICRO-STAR INT'L CO.,LTD		
MS-7A98		
Size: Custom	Document Description: Dual bios control-Silego	Rev: 10
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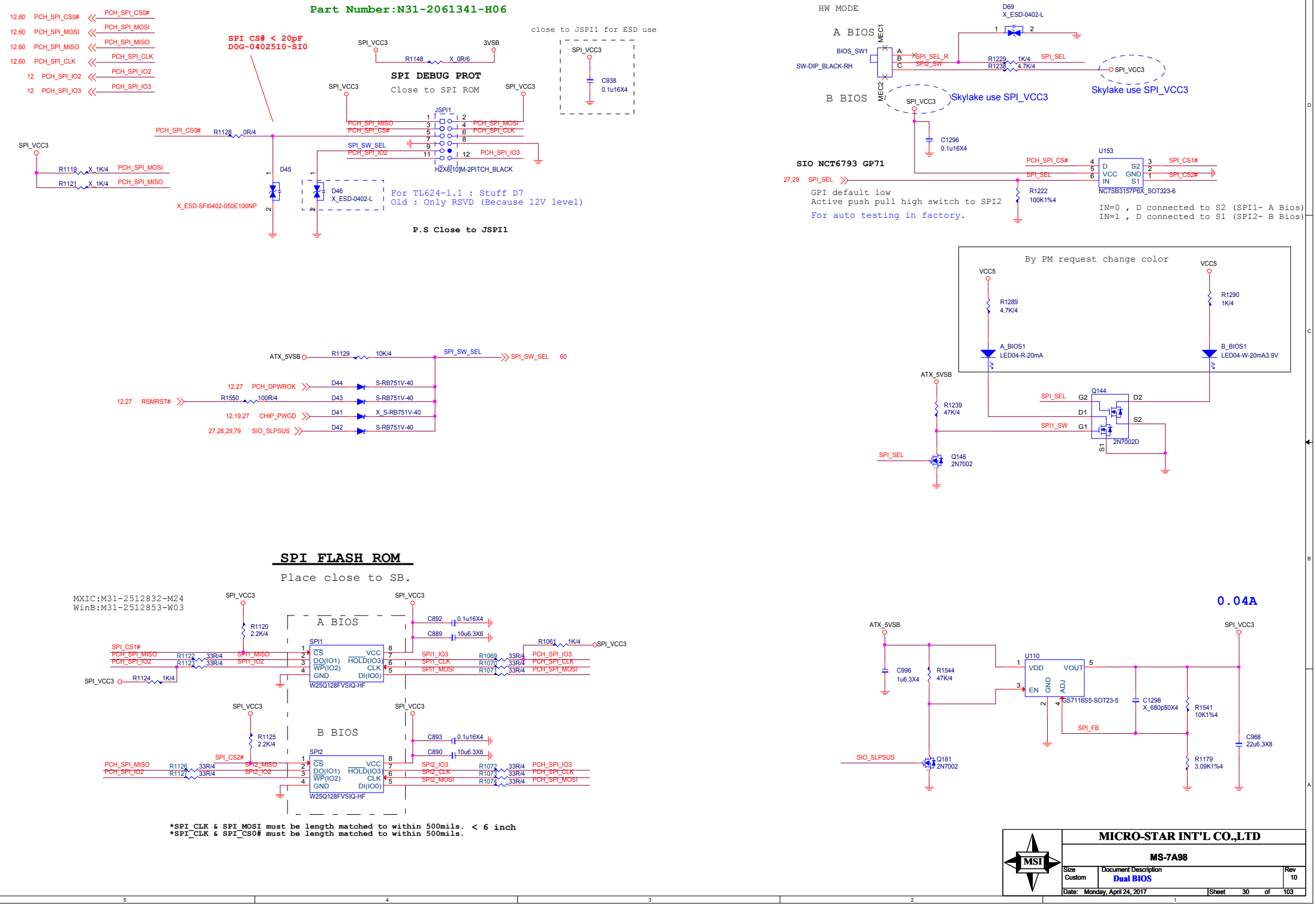
Part Number:N31-2061341-H06
12,60 PCH_SPI_CS0#
12,60 PCH_SPI_MOSI
12,60 PCH_SPI_MISO
12,60 PCH_SPI_CLK
12 PCH_SPI_IO2
12 PCH_SPI_IO3
SPI CS# < 20pF
D0G-0402510-SI0
close to JSPI1 for ESD use
SPI_VCC3
3VSB
R1148 X_0R/6
SPI DEBUG PROT
Close to SPI ROM
C938 0.1u16X4
JSPI1
H2X6[10]M-2PITCH_BLACK
PCH_SPI_CS0# R1128 0R/4
R1119 X_1K/4 PCH_SPI_MOSI
R1121 X_1K/4 PCH_SPI_MISO
SPI_SW_SEL
PCH_SPI_IO2
PCH_SPI_IO3
D45
X_ESD-SFI0402-050E100NP
D46 X_ESD-0402-L
For TL624-1.1 : Stuff D7
Old : Only RSVD (Because 12V level)
P.S Close to JSPI1
HW MODE
A BIOS
B BIOS
MEC1
MEC2
BIOS_SW1
SW-DIP_BLACK-RH
SPI_SEL_R
SPI2_SW
R1229 1K/4
R1235 4.7K/4
SPI_SEL
Skylake use SPI_VCC3
D69 X_ESD-0402-L
C1296 0.1u16X4
SIO NCT6793 GP71
27,29 SPI_SEL
GPI default low
Active push pull high switch to SPI2
For auto testing in factory.
R1222 100K1%4
U153
PCH_SPI_CS#
SPI_CS1#
SPI_CS2#
NC7SB3157P6X_SOT323-6
IN=0 , D connected to S2 (SPI1- A Bios)
IN=1 , D connected to S1 (SPI2- B Bios)
ATX_5VSB
R1129 10K/4
SPI_SW_SEL
SPI_SW_SEL 60
12,27 PCH_DPWROK
12,27 RSMRST#
R1550 100R/4
12,19,27 CHIP_PWGD
27,28,29,79 SIO_SLPSUS
D44 S-RB751V-40
D43 S-RB751V-40
D41 X_S-RB751V-40
D42 S-RB751V-40
By PM request change color
VCC5
R1289 4.7K/4
R1290 1K/4
A_BIOS1 LED04-R-20mA
B_BIOS1 LED04-W-20mA3.9V
R1239 47K/4
Q144
2N7002D
SPI_SEL
SPI1_SW
Q146 2N7002
SPI FLASH ROM
Place close to SB.
MXIC:M31-2512832-M24
WinB:M31-2512853-W03
A BIOS
B BIOS
R1120 2.2K/4
R1124 1K/4
R1125 2.2K/4
SPI1
SPI2
W25Q128FVSIQ-HF
C892 0.1u16X4
C889 10u6.3X6
C893 0.1u16X4
C890 10u6.3X6
R1061 1K/4
R1122 33R/4
R1123 33R/4
R1126 33R/4
R1127 33R/4
R1069 33R/4
R1070 33R/4
R1071 33R/4
R1072 33R/4
R1073 33R/4
R1074 33R/4
PCH_SPI_IO3
PCH_SPI_CLK
PCH_SPI_MOSI
*SPI_CLK & SPI_MOSI must be length matched to within 500mils. < 6 inch
*SPI_CLK & SPI_CS0# must be length matched to within 500mils.
0.04A
U110
SS7116S5-SOT23-5
C996 1u6.3X4
R1544 47K/4
C1298 X_680p50X4
R1541 10K1%4
R1179 3.09K1%4
C968 22u6.3X8
SPI_FB
Q181 2N7002
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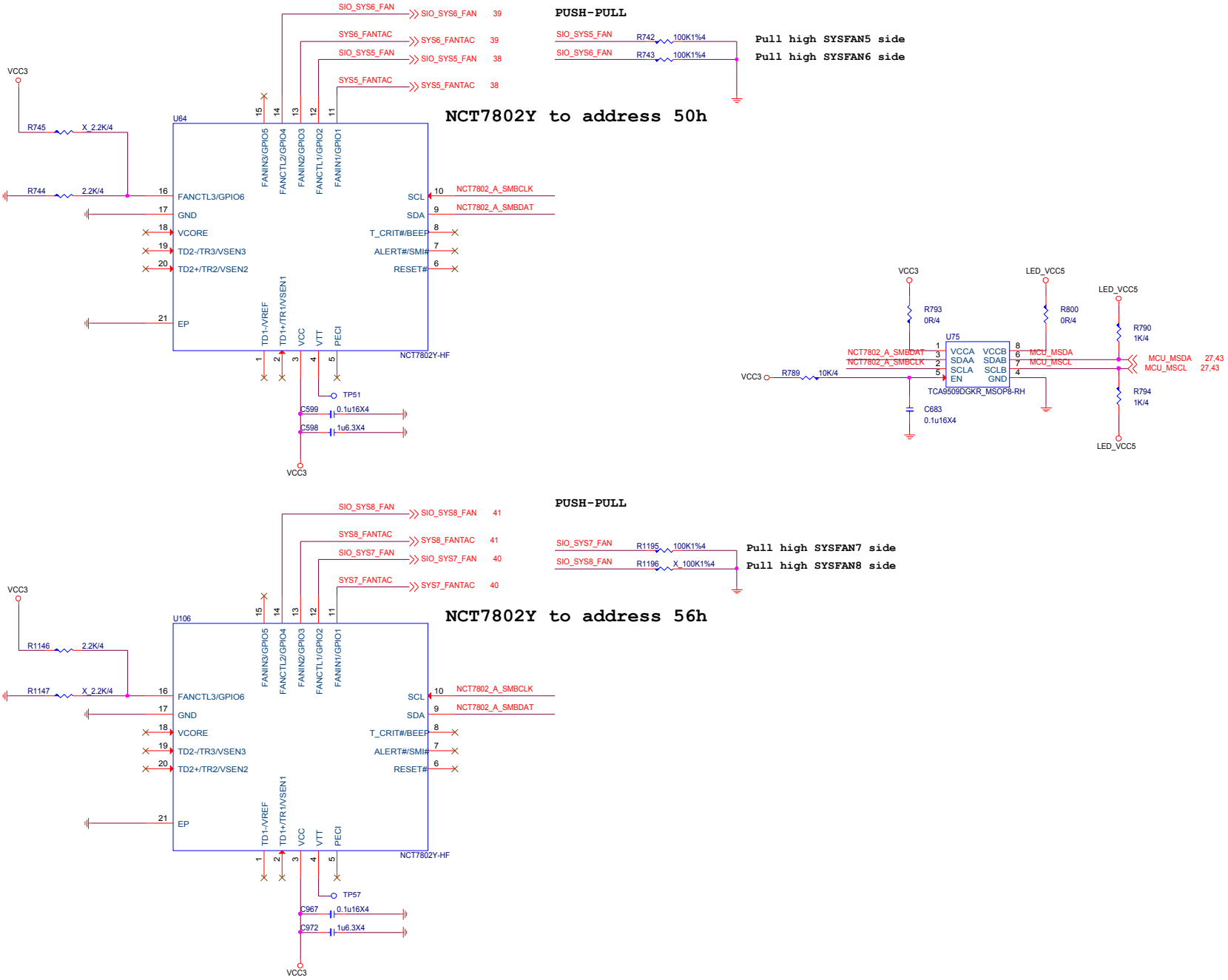

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Size: Custom	Document Description: NCT7802Y FAN CONTROLLE	Rev: 10
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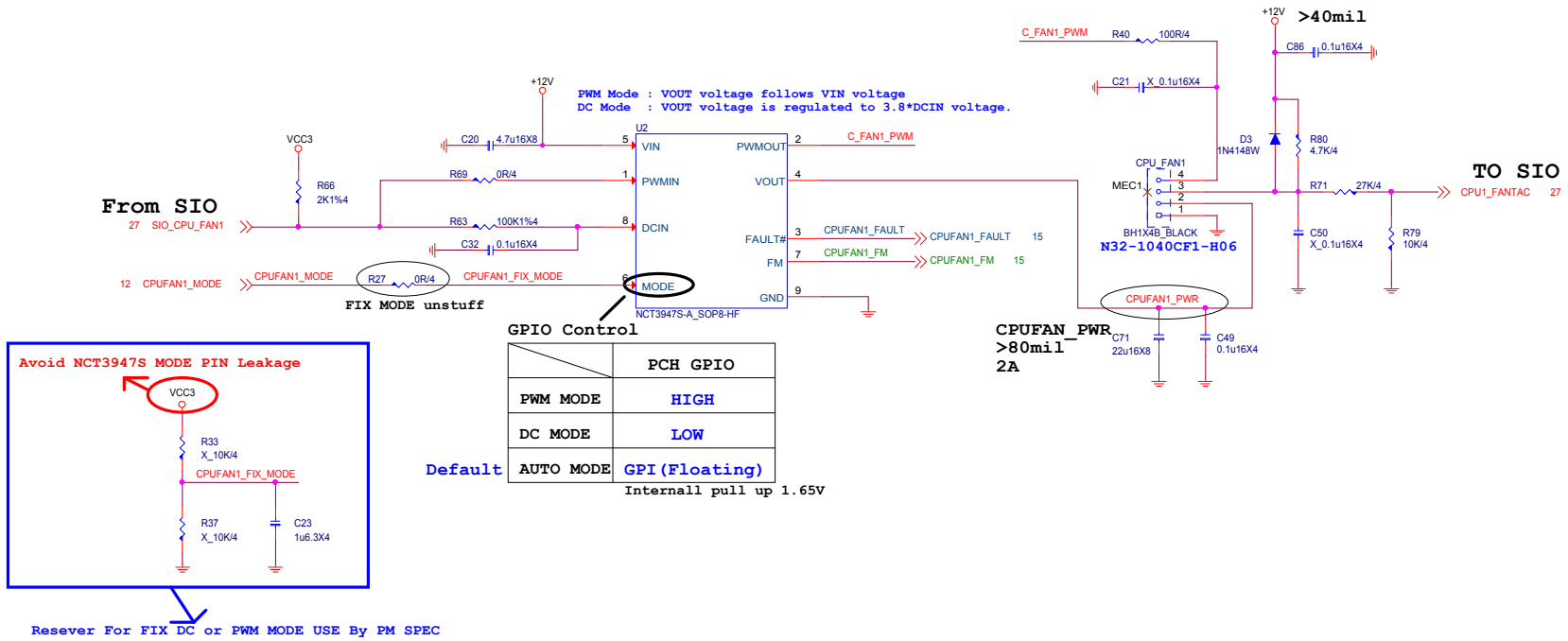
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V

MICRO-STAR INT'L CO.,LTD			
MS-7A98			
Size: Custom	Document Description: CPU FAN1		Rev: 10
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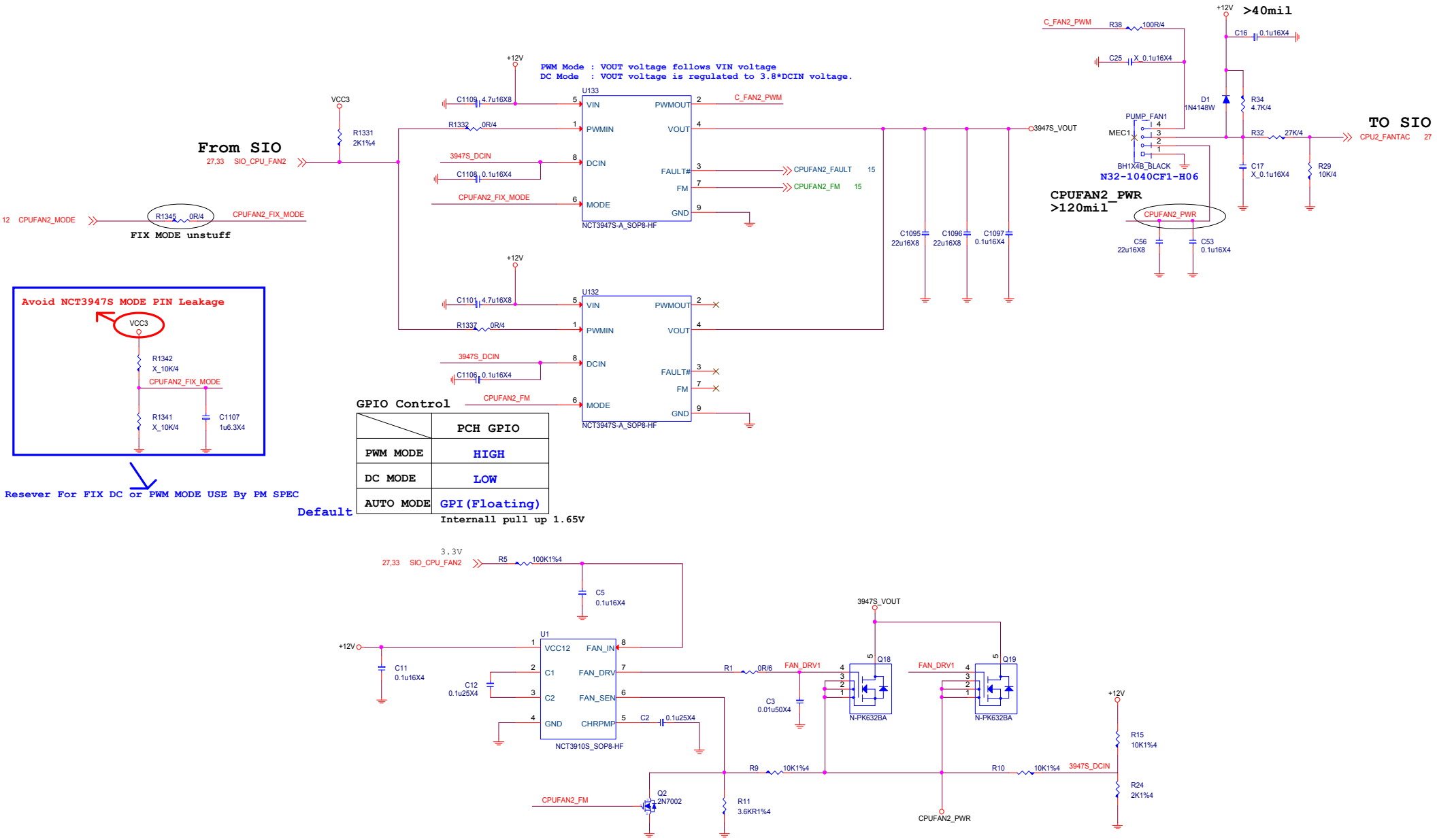
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



Size	Document Description	Rev
Custom	PUMP_FAN1	10

MICRO-STAR INT'L CO.,LTD

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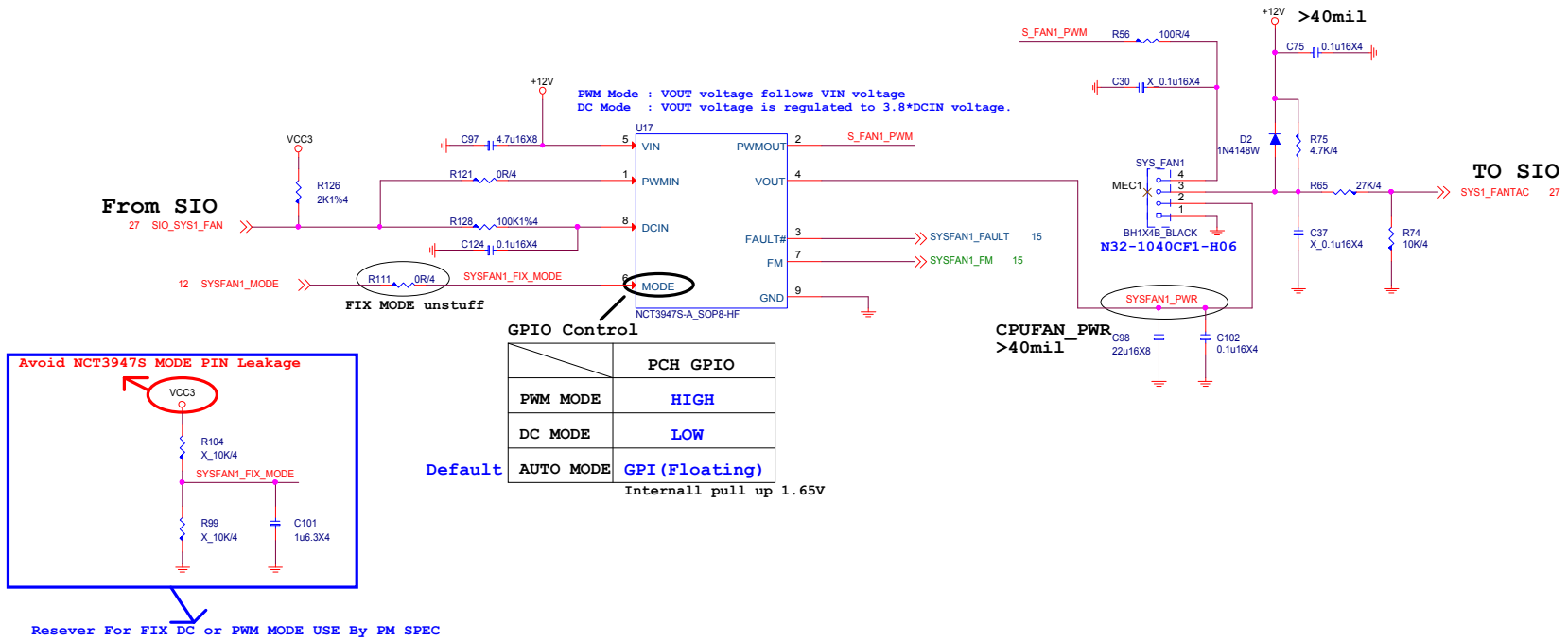
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

Company	MICRO-STAR INT'L CO.,LTD
Model	MS-7A98
Size	Custom
Document Description	SYSTEM FAN1
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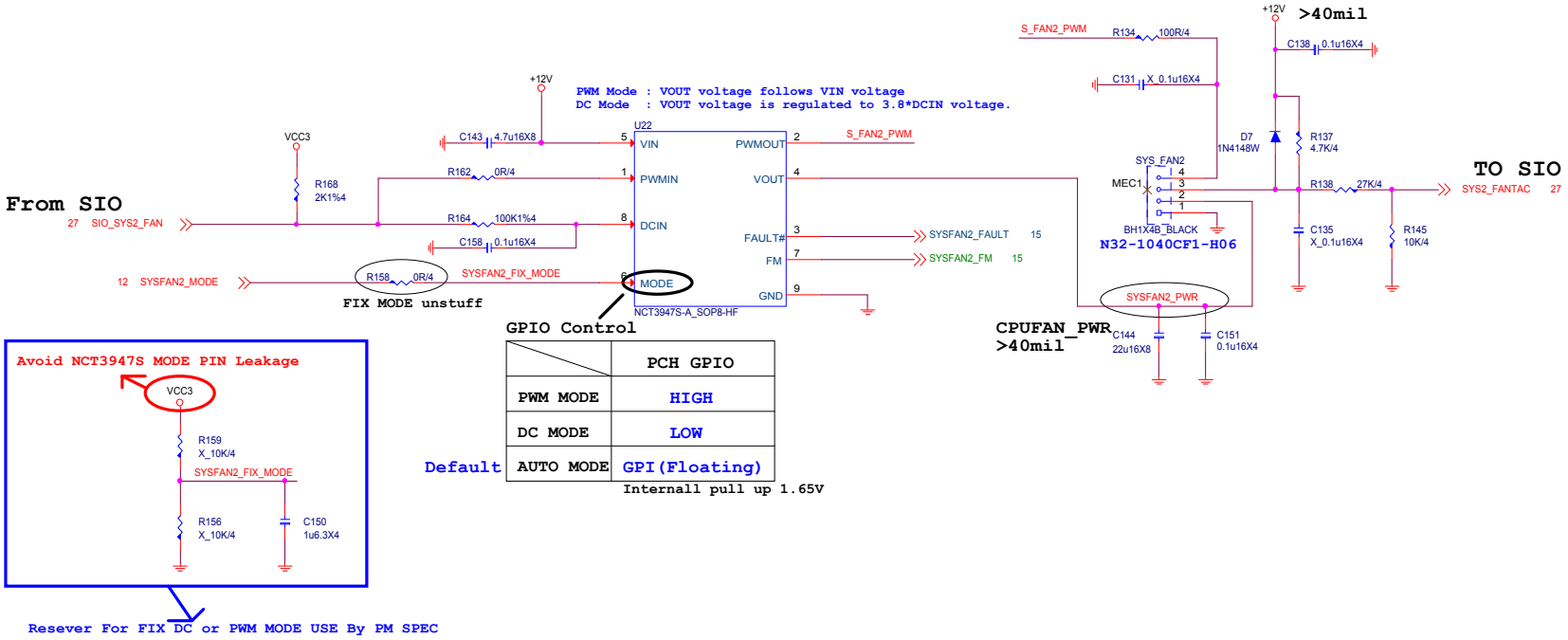
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V

Resever For FIX DC or PWM MODE USE By PM SPEC

MICRO-STAR INT'L CO.,LTD

MS-7A98

Size: Custom | Document Description: SYSTEM FAN2 | Rev: 10

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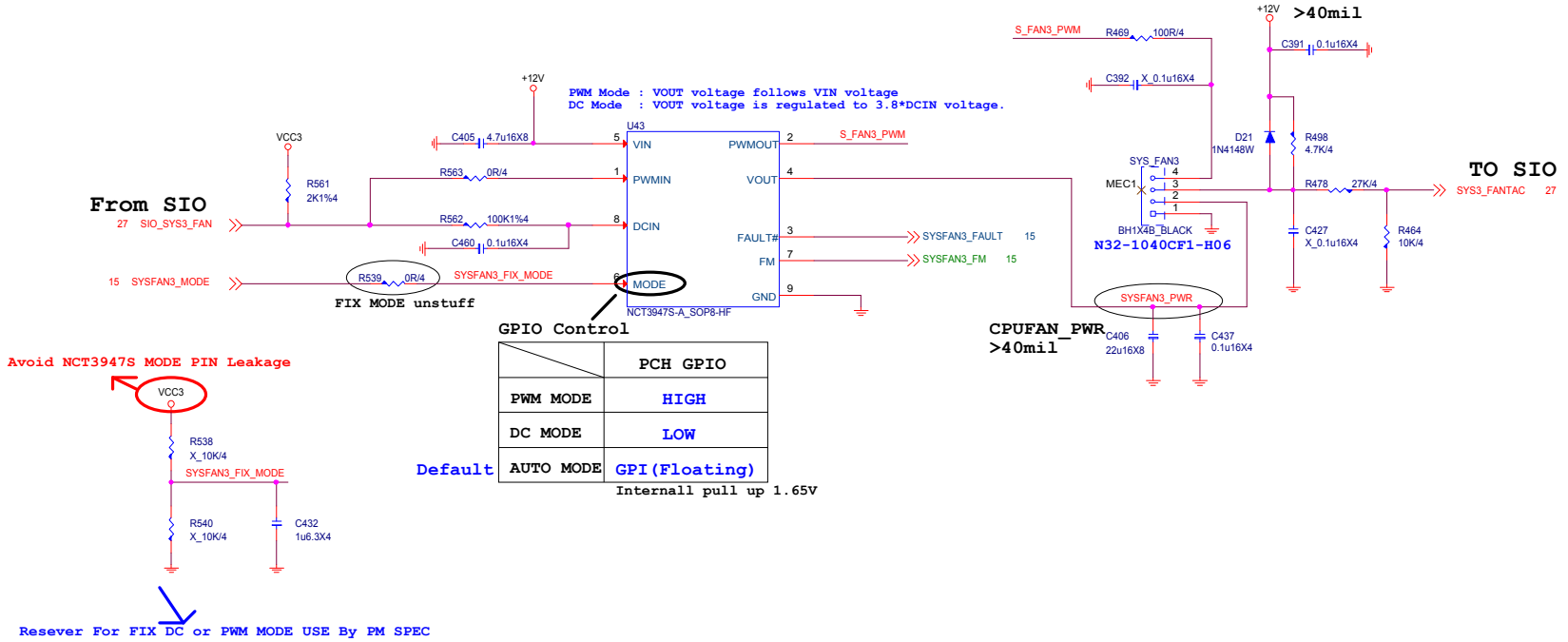
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

Default

Internall pull up 1.65V

Avoid NCT3947S MODE PIN Leakage

Resever For FIX DC or PWM MODE USE By PM SPEC

MICRO-STAR INT'L CO.,LTD

MS-7A98

Size: Custom | Document Description: SYSTEM FAN3 | Rev: 10

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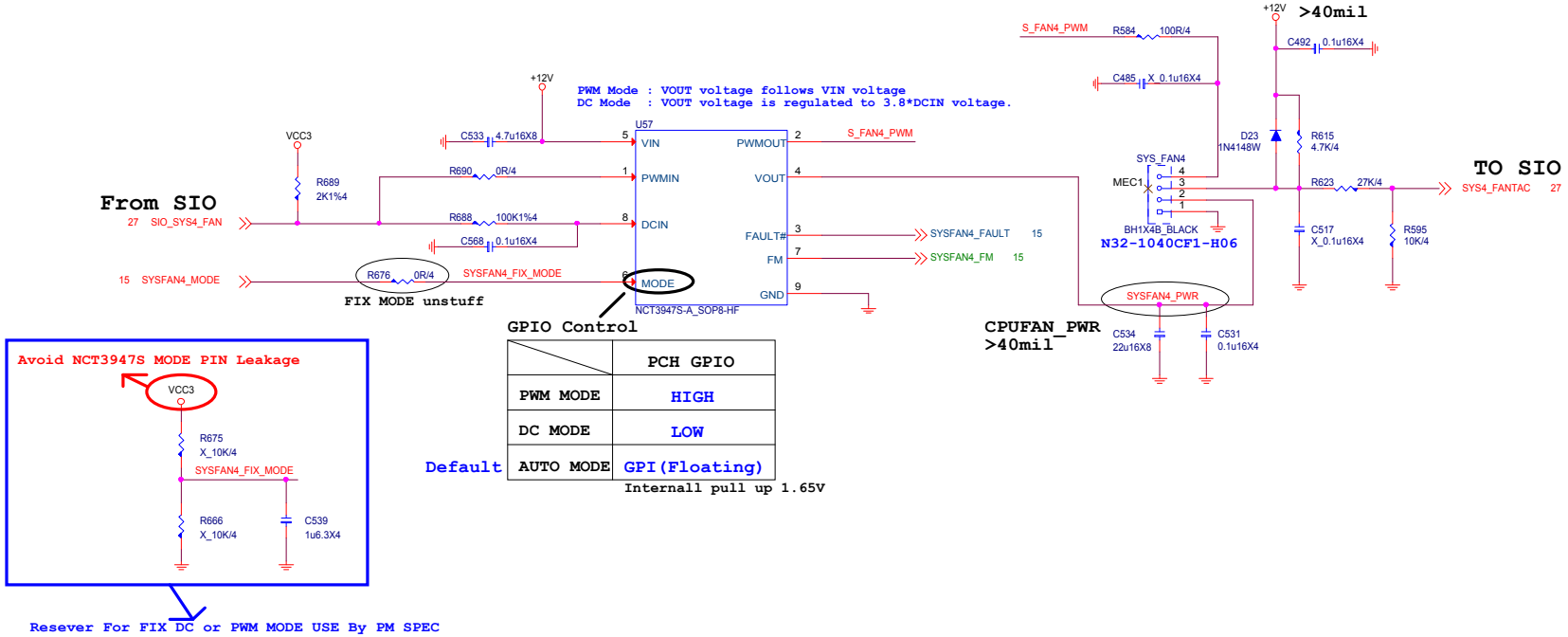
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

Default

Internall pull up 1.65V

Avoid NCT3947S MODE PIN Leakage

Resever For FIX DC or PWM MODE USE By PM SPEC

MICRO-STAR INT'L CO.,LTD

MS-7A98

Size: Custom | Document Description: SYSTEM FAN4 | Rev: 10

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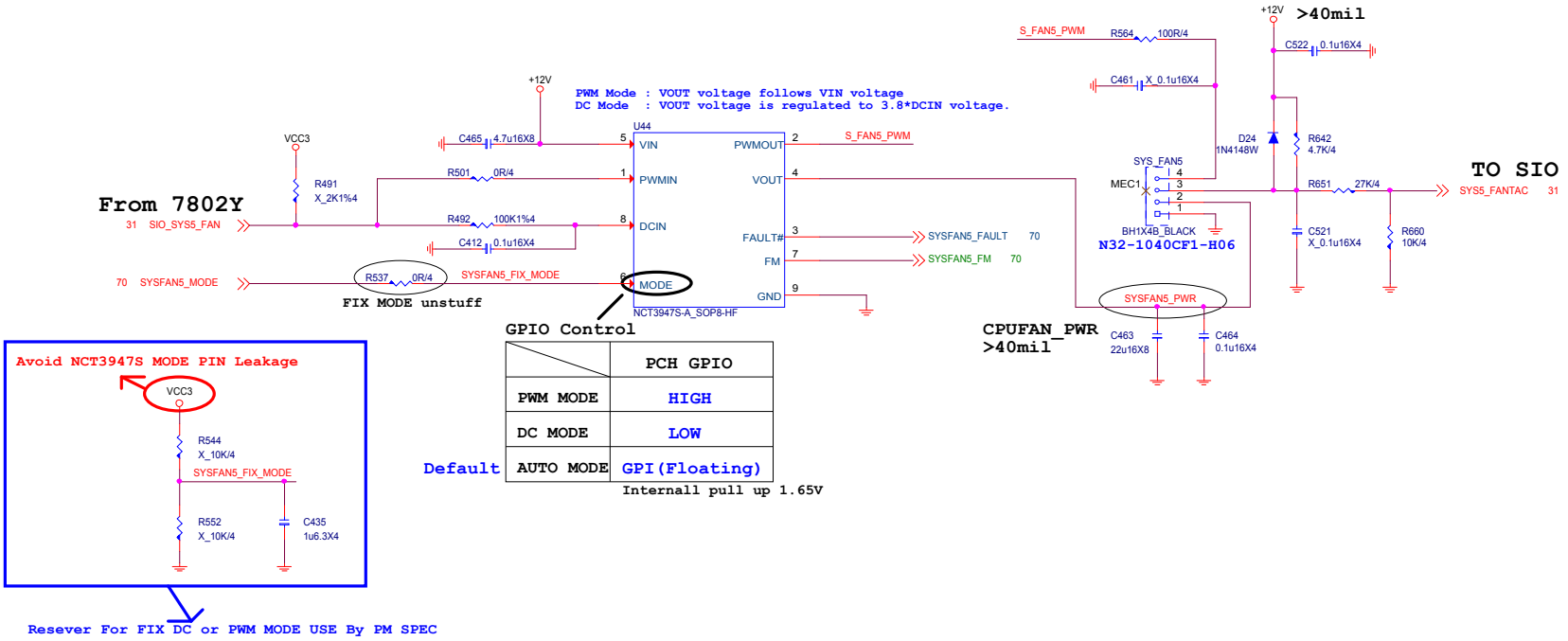
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V

Resever For FIX DC or PWM MODE USE By PM SPEC

MICRO-STAR INT'L CO.,LTD	
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Size: Custom	Document Description: SYSTEM FAN5
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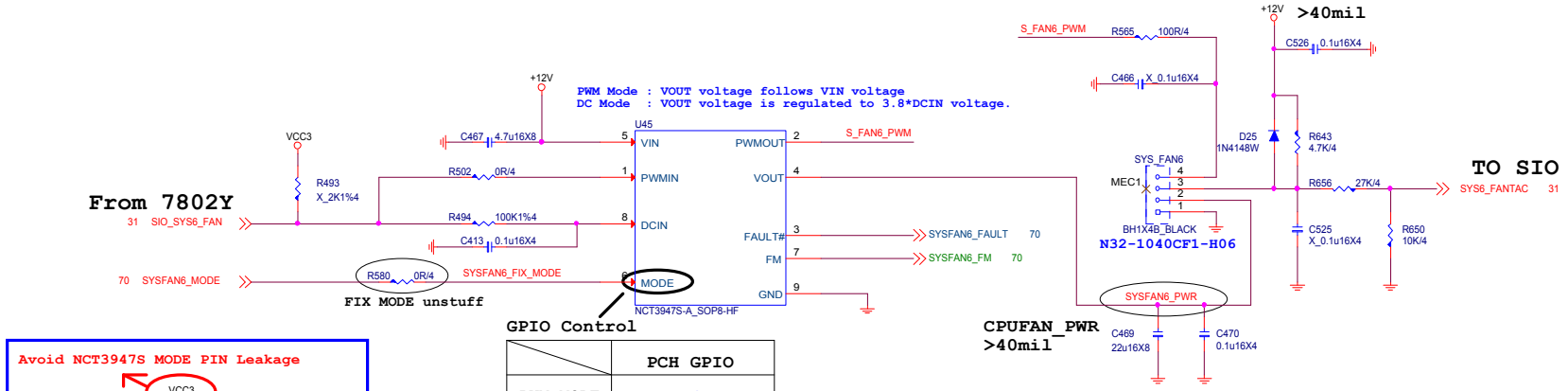
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO

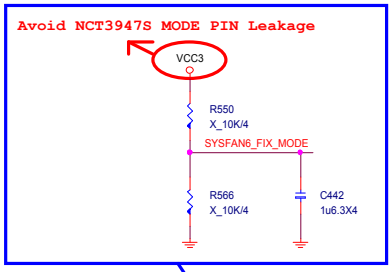


GPIO Control

	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

Default

Internall pull up 1.65V



Resever For FIX DC or PWM MODE USE By PM SPEC

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MS-7A98	
Size: Custom	Document Description: SYSTEM FAN6
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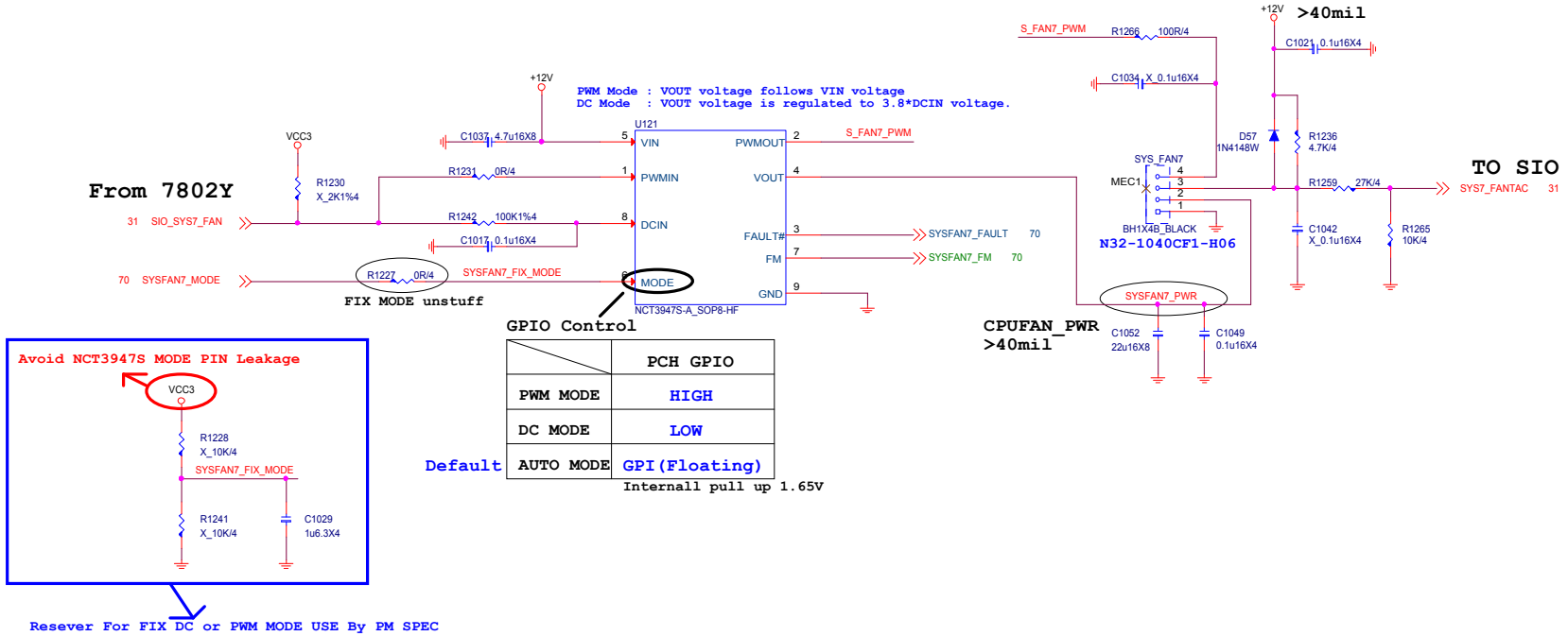
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

MICRO-STAR INT'L CO.,LTD	
MS-7A98	
Size: Custom	Document Description: SYSTEM FAN7
Rev: 10	
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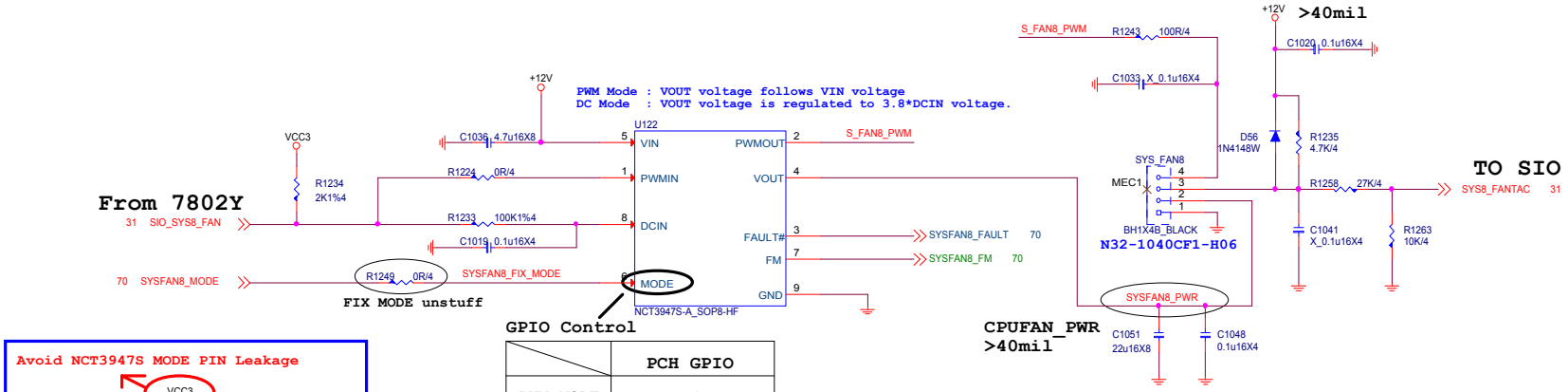
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

MICRO-STAR INT'L CO.,LTD

MS-7A98

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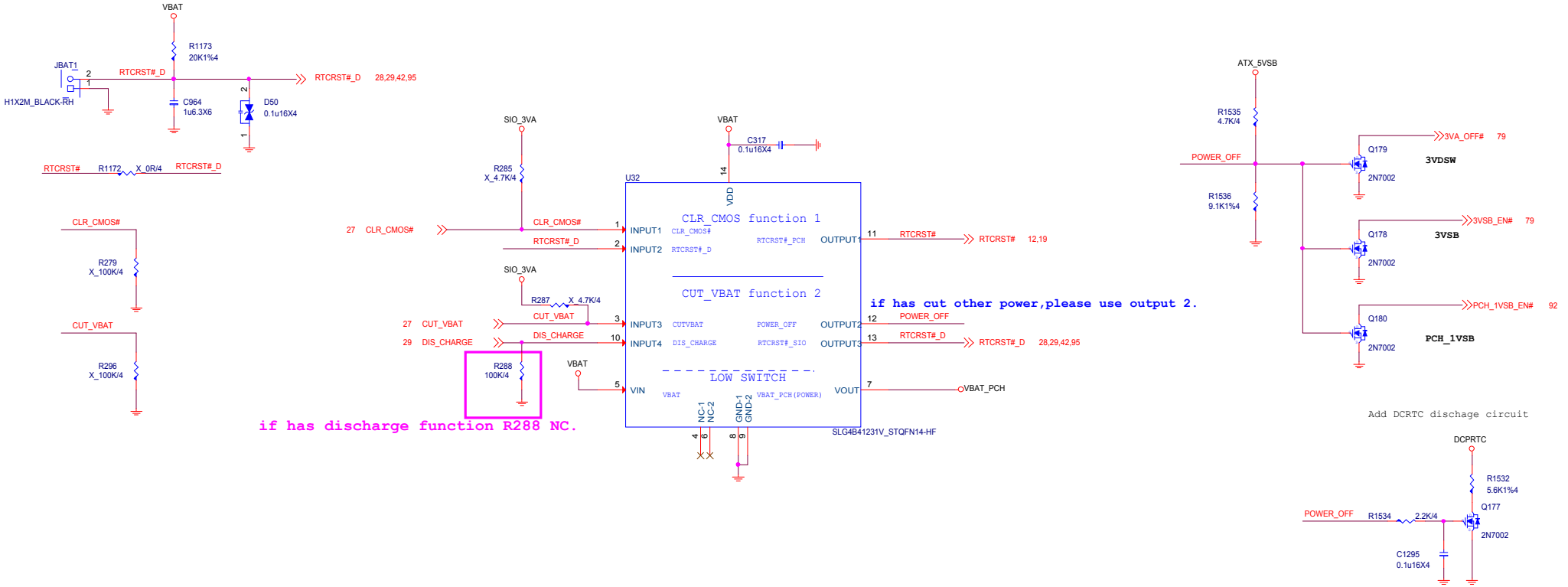
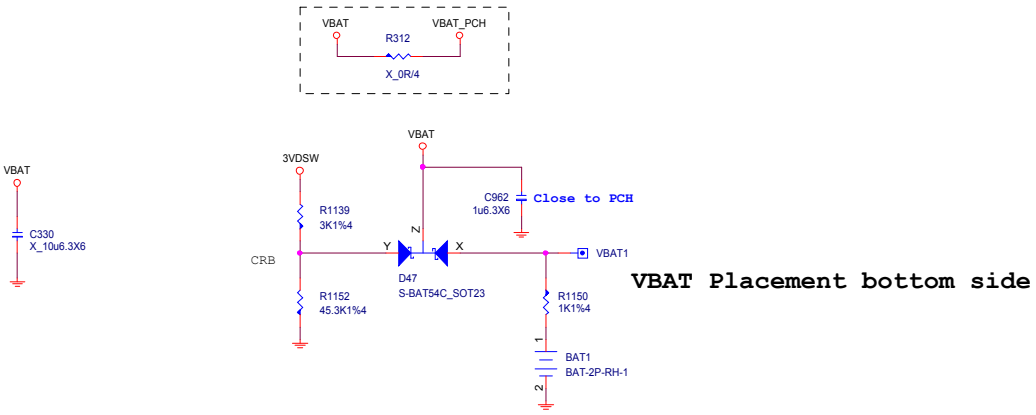
CUT VBAT



VBAT



VBAT Placement bottom side

MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A98	
Size: Custom	Document Description: CLR COMS/CUT VBAT	Rev: 10
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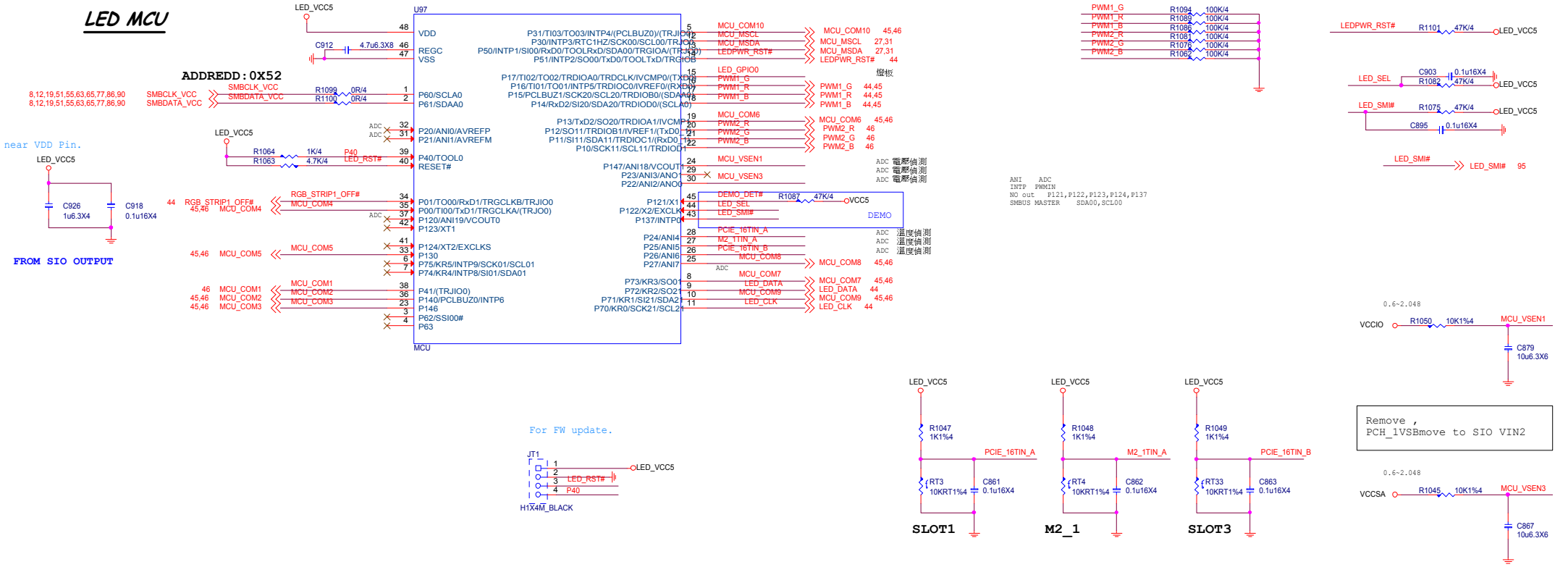
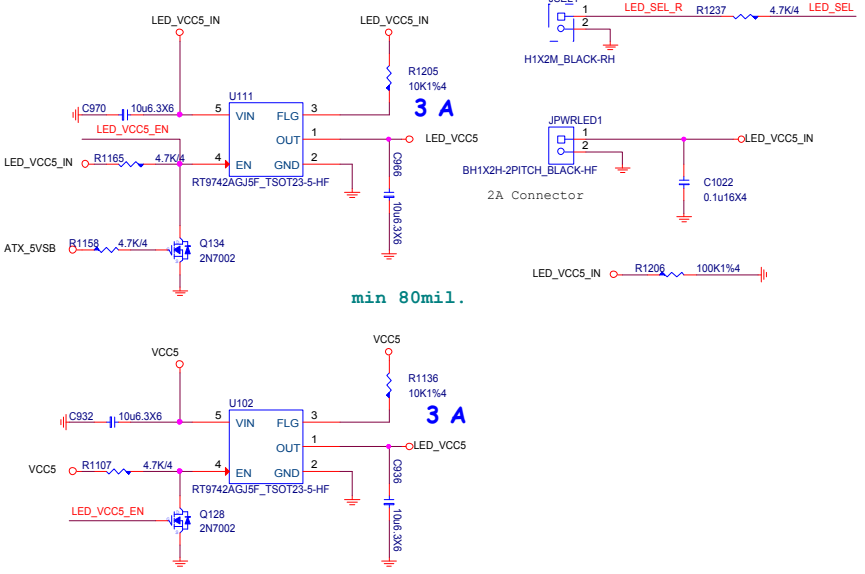
LED MCU



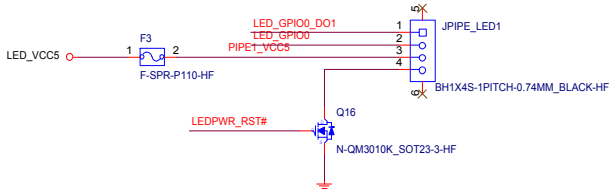
EXTERNAL POWER INPUT

ToTal 42 Pcs LED=2.52A



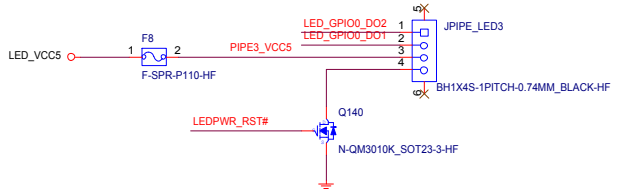
MOS Cover LED

8PCS LED*0.06A=0.48A



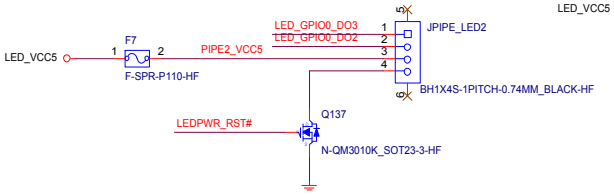
AUDIO Cover LED

5PCS LED*0.06A=0.3A

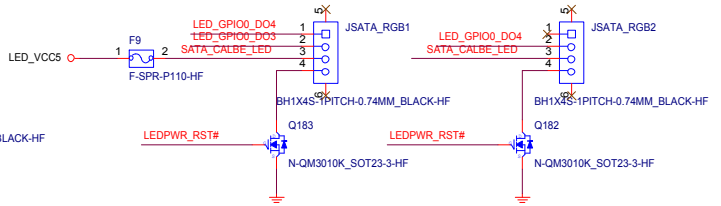


PCH HEATSINK LED

8PCS LED *0.06=0.48A



SATA CABLE LED



MICRO-STAR INT'L CO.,LTD	
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Size: Custom	Document Description: LED MCU Control
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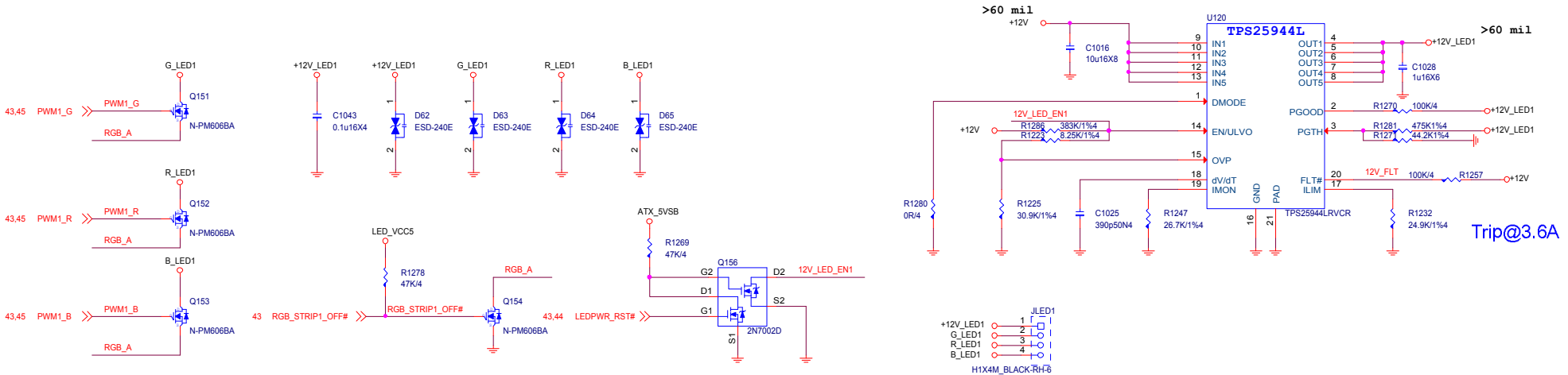
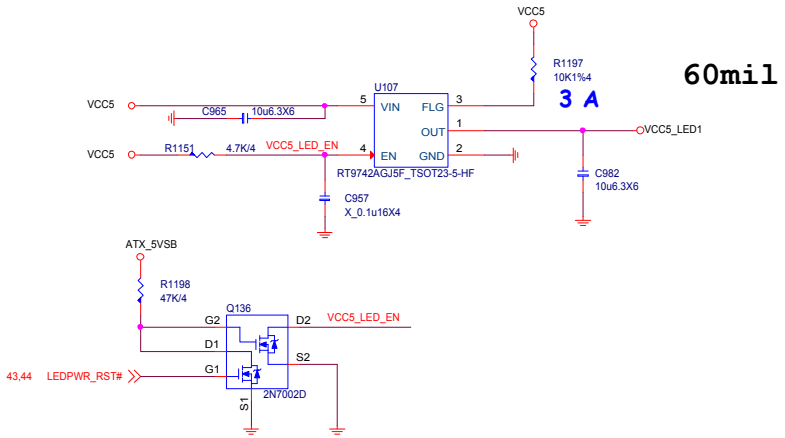
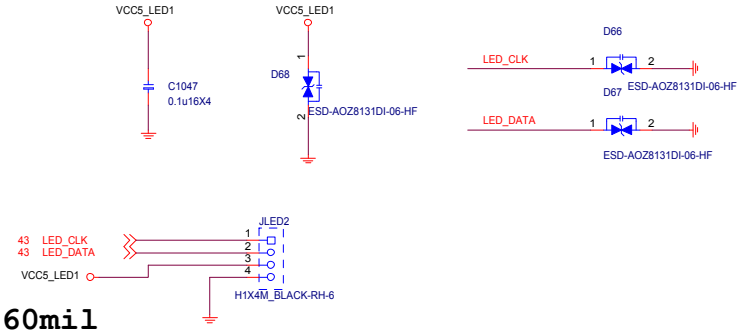
LED STRIPLINE



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





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Size: Custom	Document Description: LED STRIPLINE	Rev: 10
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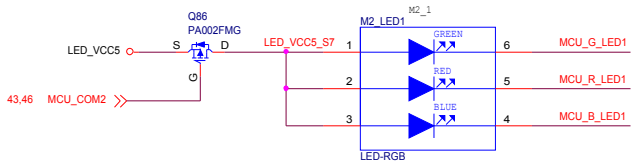
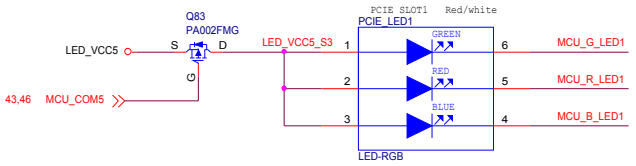
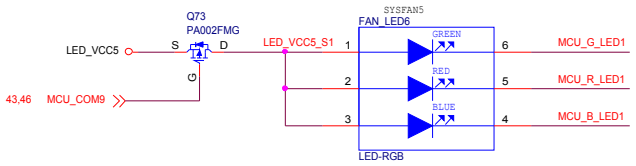
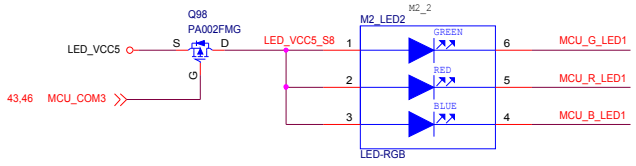
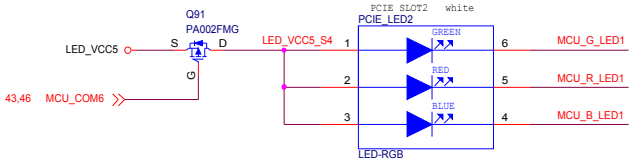
9PCS LED*0.06=0.54A

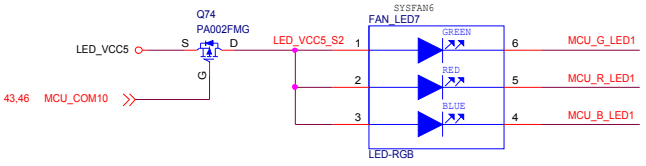


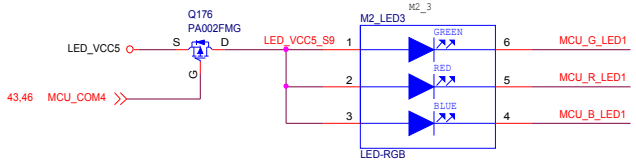


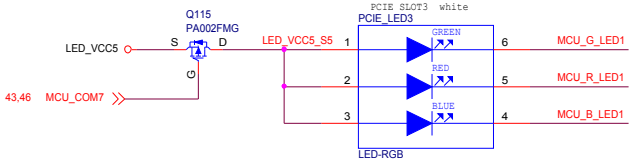


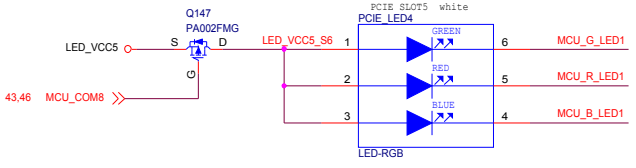


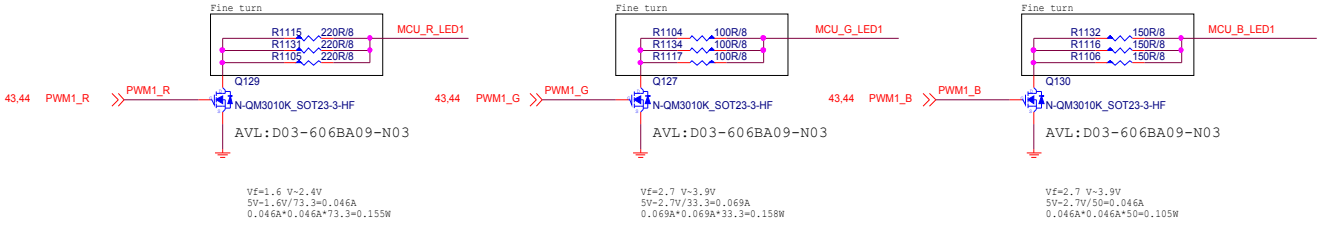












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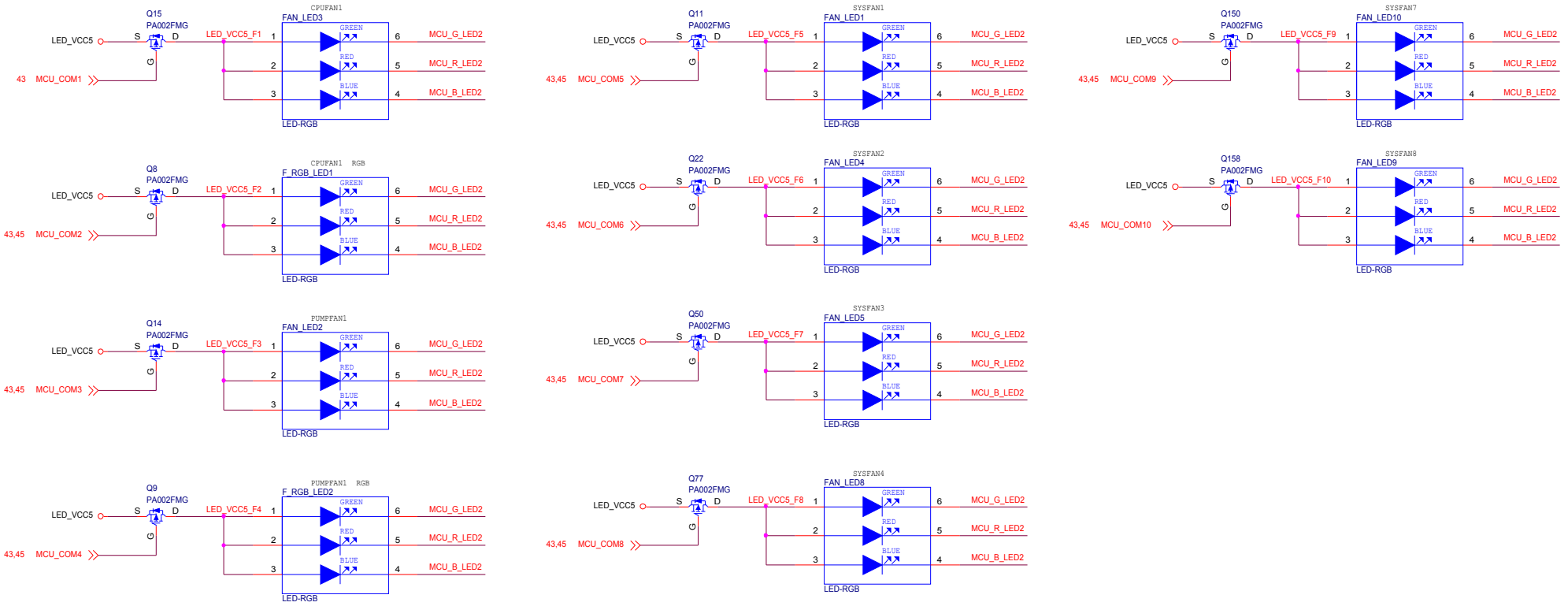
10PCS LED*0.06=0.6A

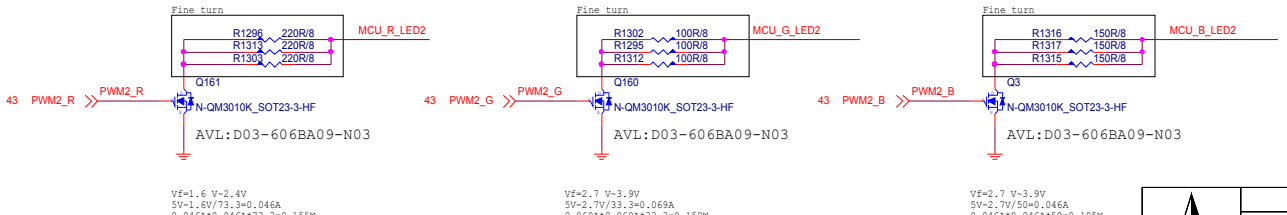


F_RGB_LED1 active reference
F_RGB_LED2 active reference

Default

Input PWM singal	65% Duty	65%~85% Duty	85% Duty
G %	0	0->100	100
R %	100	100->0	0
B %	0	0->100->0	0

GPIO			State
IN2	IN1	IN0	
0	0	0	65% 紅 85% 綠
0	0	1	65% 藍 85% 綠
0	1	0	65% 紅 85% 藍
0	1	1	65% 綠 85% 藍
1	0	0	65% 綠 85% 紅
1	0	1	65% 藍 85% 紅
1	1	0	NA
1	1	1	NA



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

Layout Guide:

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

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

Power Consumption

	3.3V	1.2V(1.05V	3.3VSUS	1.05VSUS(1.2VSUS	2.5V	Total Power
ASM1142	245mA	634mA	1mA	1mA	NA	1573.8(mW)
ASM2142	300mA	800mA	100mA	50mA	300mA	TDP
ASM1042AE	95mA	300mA	65mA	9.5mA	NA	852.975(mW)

UU3A ASM2142 — ASM2142-RH

PECLKP / PECLKN
U2DP_A / U2DM_A
U3TXP_A / U3TXN_A / U3RXP_A / U3RXN_A
U2DP_B / U2DM_B
U3TXP_B / U3TXN_B / U3RXP_B / U3RXN_B
PTX0P / PTX0N
PRX0P / PRX0N
PTX1P / PTX1N
PRX1P / PRX1N
PE_RST# / PE_WAKE# / PE_CLKREQ#
PRON_A / PRON_B
SMI#
OCI_A# / OCI_B#
PORST#
SPI_CLK / SPI_CS# / SPI_DI / SPI_DO
XI / XO
UART_RX / UART_TX
TEST_EN
REXT

PPON_X Internal Pull-up to VCC3
OCI_X Internal Pull-up to SUS
RX/TX Internal Pull-up

UU3B ASM2142 — ASM2142-RH

VREGIN
VCCH-1 / VCCH-2
LXI
VCCLP-1 / VCCLP-2
VCCHSUS_IN
VDDSUS_O
VCCLU-1 / VCCHSUS
VDDSUS-1 / VDDSUS-2
GND
PGND
VCCLU-2 / VCCLU-3
VDD-1 / VDD-2 / VDD-3
VDDP-1 / VDDP-2
VDDU-1 / VDDU-2 / VDDU-3

300mA VCC3
300mA USB3_3VCC_2P5
300mA USB3_1P05
100mA
50mA

ASM1142/ASM1042 RU10 O RU11 X
ASM2142 RU10 X RU11 O

ASM2142 RU12 X RU14 O
ASM1142/ASM1042 RU12 O RU14 X

Close to UU1.21/34

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)

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

PCH side need pull up vcc3.

ASM2142 UU8 stuff RU6 unstuff
ASM1142/1042AE UU8 unstuff RU6 stuff

Reset control for ASM2142 only.

YU1
D04-0900900-SC6(M)
D04-0901200-F07
D04-0901100-T16

Close to UU1.58
Close to UU1.1/12/33
Close to UU1.41
Close to UU1.35/47/52
Close to UU1.4/32
Close to UU1.20/24
Close to UU1.38/44/55/62

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

ASM1042AE change to 0.1uF cap

ASM2142 1.05 VCC Power

UU5 MP2143DJ — 800mA

ASM1142 RU36/RU35 100K/100K 1.2V
ASM2142 RU36/RU35 196K/261K 1.05V

ASM1142 1.2 VSB Power

UU1 GS7116S5-SOT23-5 — 50mA

ASM1142 RU24 19.6K 1.2V
ASM2142 RU24 31.6K 1.05V

CUT POWER

ASM2142 2.5V Power

UU4 GS7116S5-SOT23-5 — 300mA

ASM1142/ASM1042AE unstuff
ASM2142 stuff

EEPROM

UU2 MX25L1006E

ASM1142 M31-2551222-M24(512K bit)
ASM2142 M31-25L1022-M24(1M bit)

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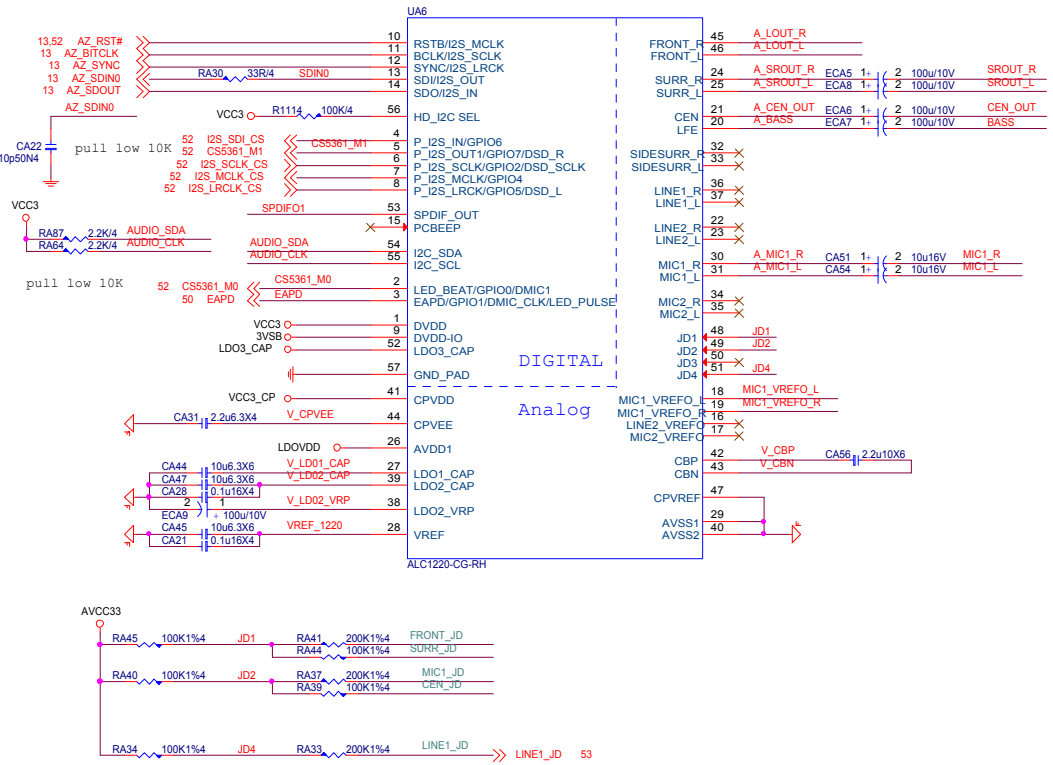
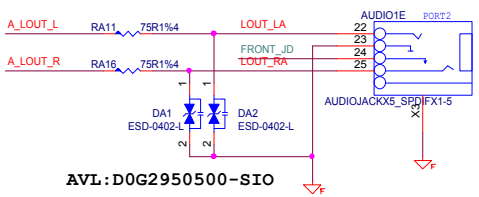
ALC1220





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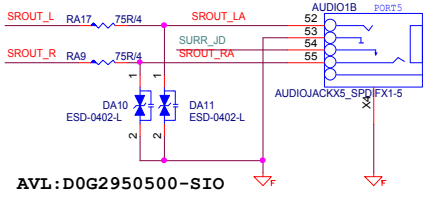

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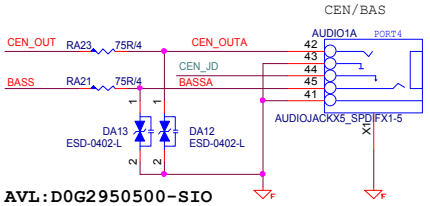

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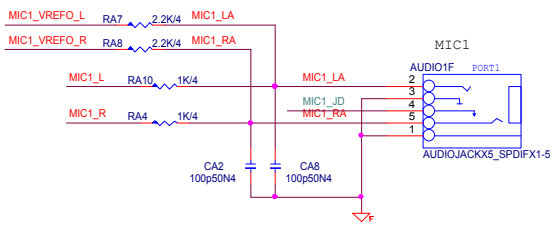
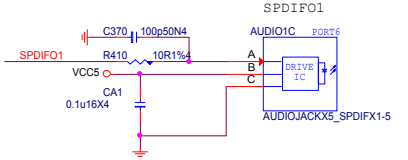
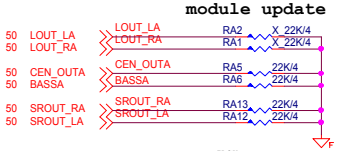
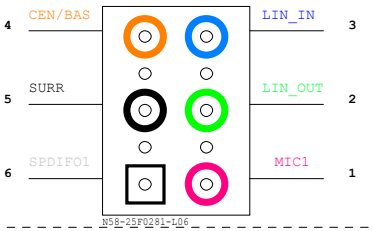
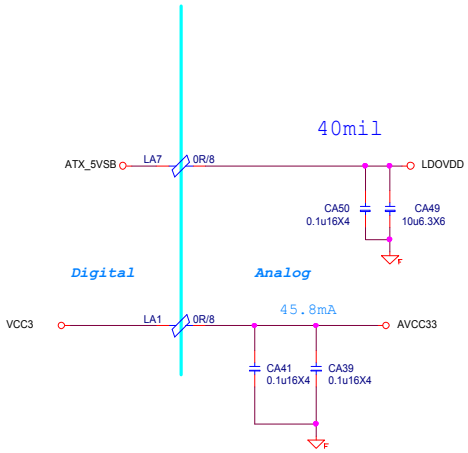




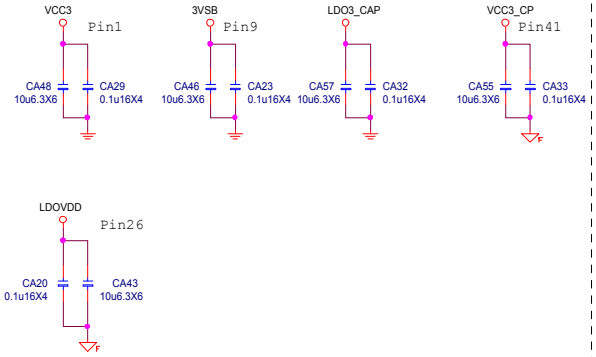
module update



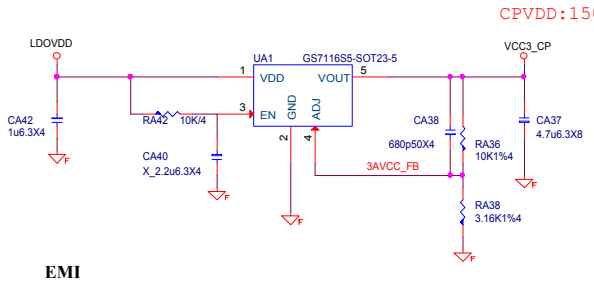


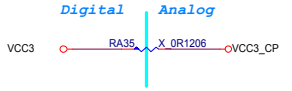


Closed Codec



CPVDD POWER:ATX5VSB will Leakage to CVDD by ALC1220, so CVDD must keep 3.3V





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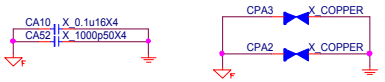

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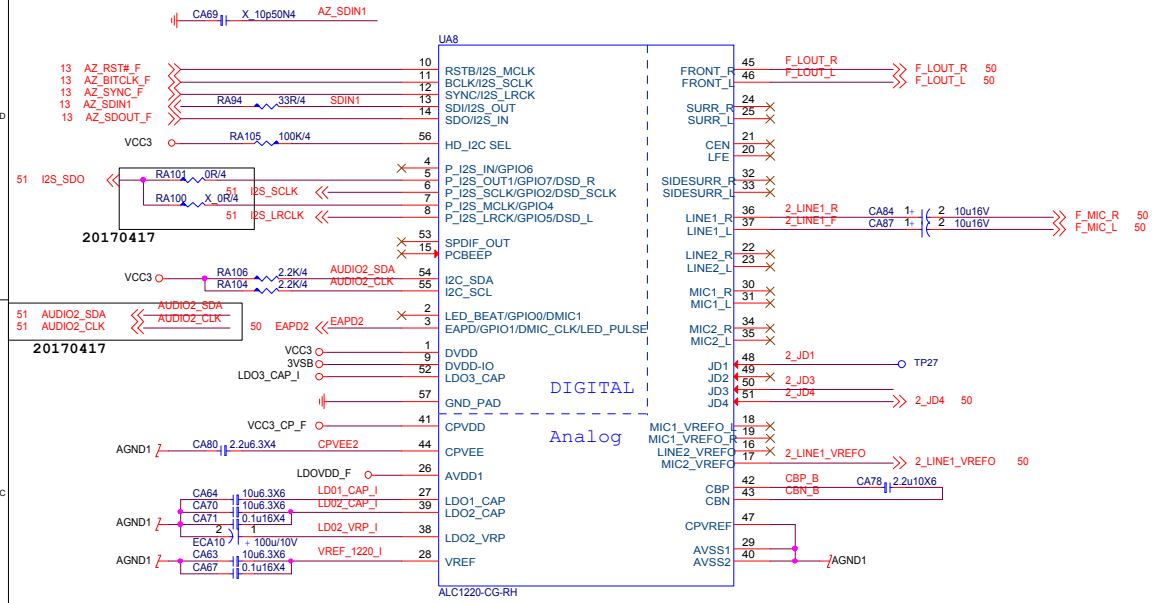
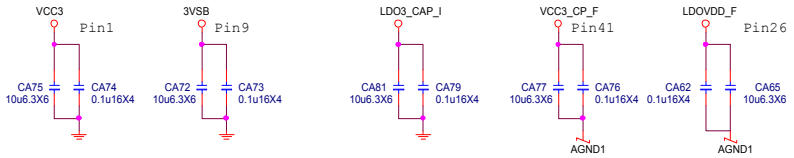
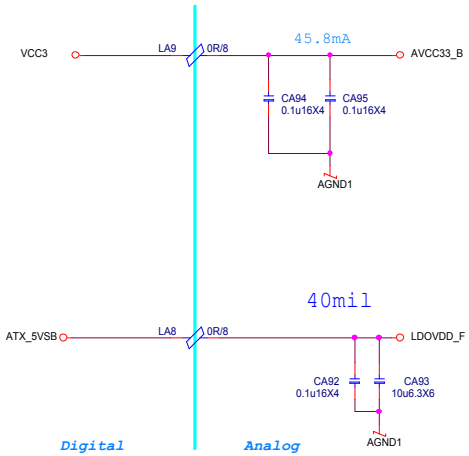
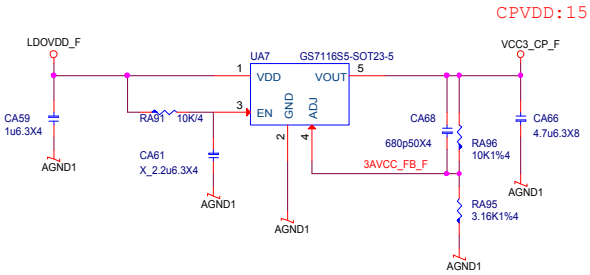
ALC1220

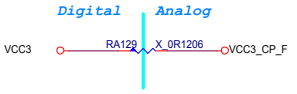




CPVDD POWER:ATX5VSB will Leakage to CVDD by ALC1220, so CVDD must keep 3.3V







Closed Codec

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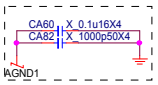

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Size: Custom	Document Description: AUDIO-ALC1220-B1 FRONT	Rev: 10
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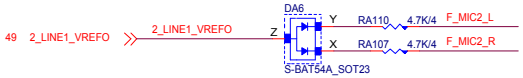
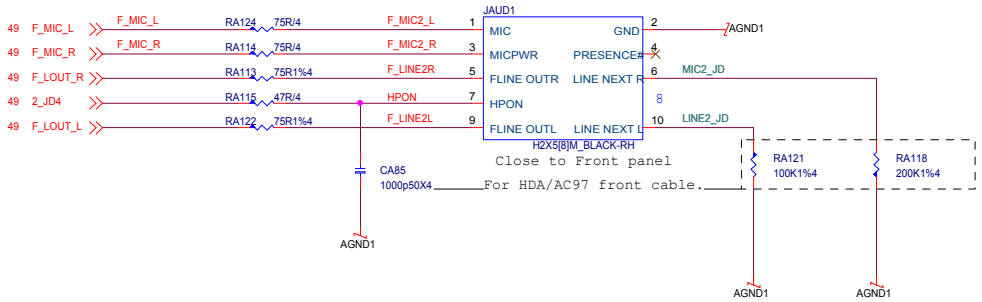
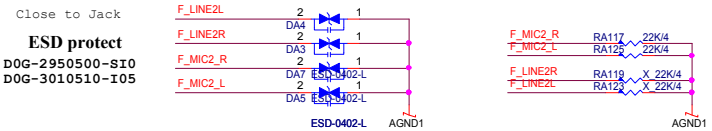


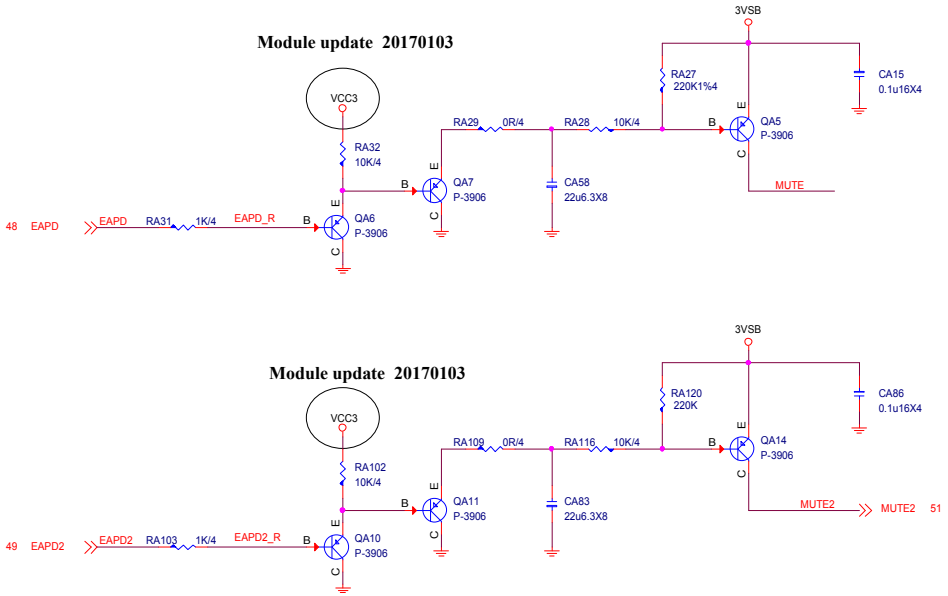




Rear Line OUT De-POP circuit

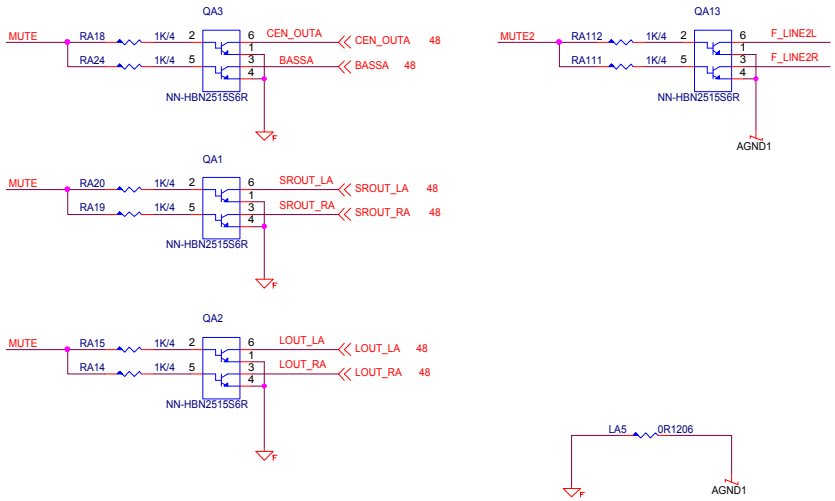
(De-pop circuit for Rear Line out & Front Headphone out)

Digital



(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)

Analog



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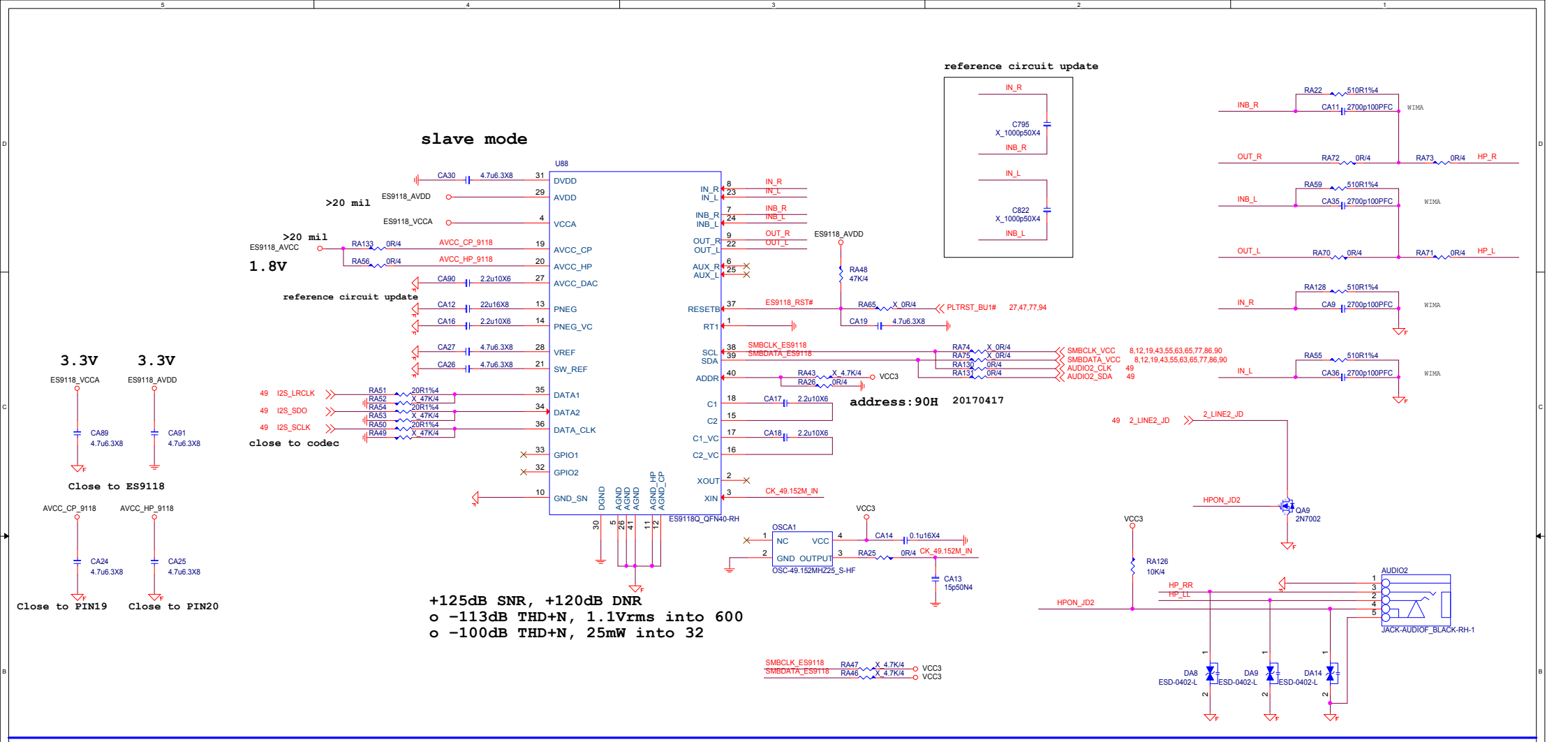
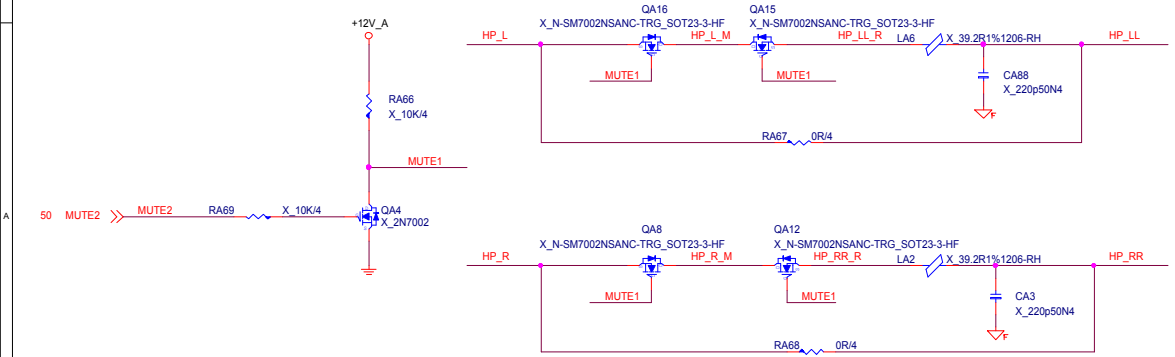


De-pop circuit for Rear Headphone out



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Size: Custom	Document Description: AUDIO ES9118
Rev: 10	
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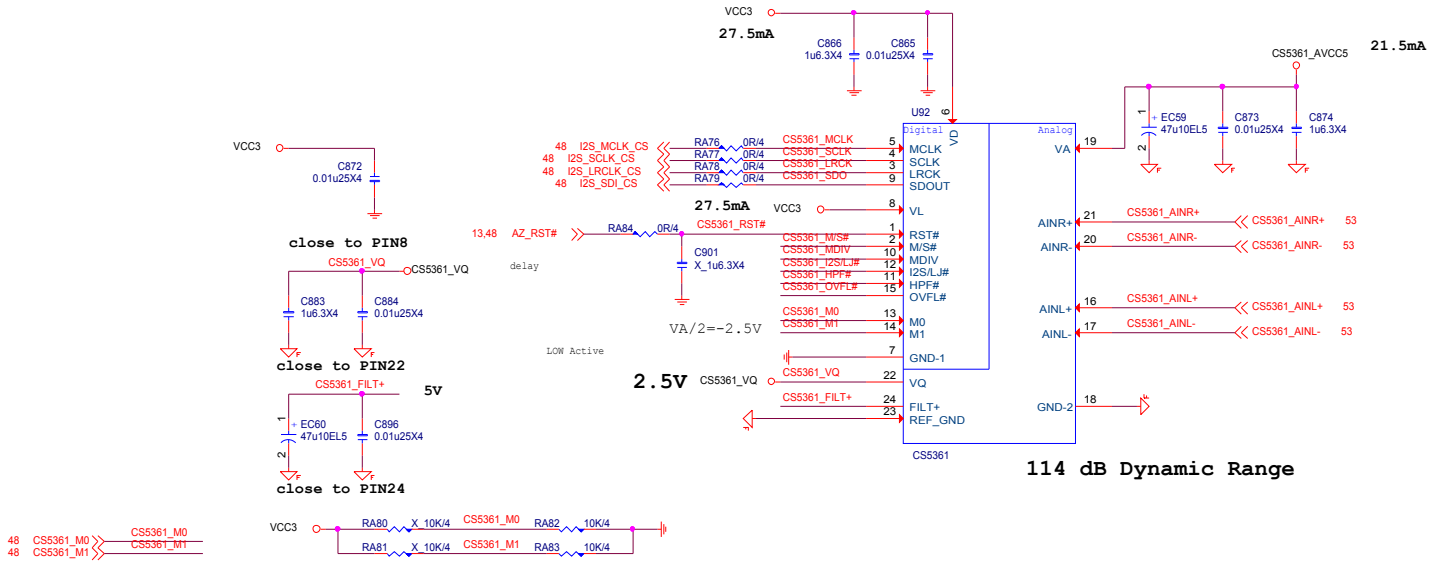
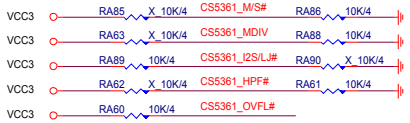


M1 (Pin 14)	M0 (Pin 13)	MODE	Output Sample Rate (Fs)
0	0	Single Speed Mode	2 kHz - 51 kHz
0	1	Double Speed Mode	50 kHz - 102 kHz
1	0	Quad Speed Mode	100 kHz - 204 kHz
1	1	Reserved	

Table 1. CS5361 Mode Control



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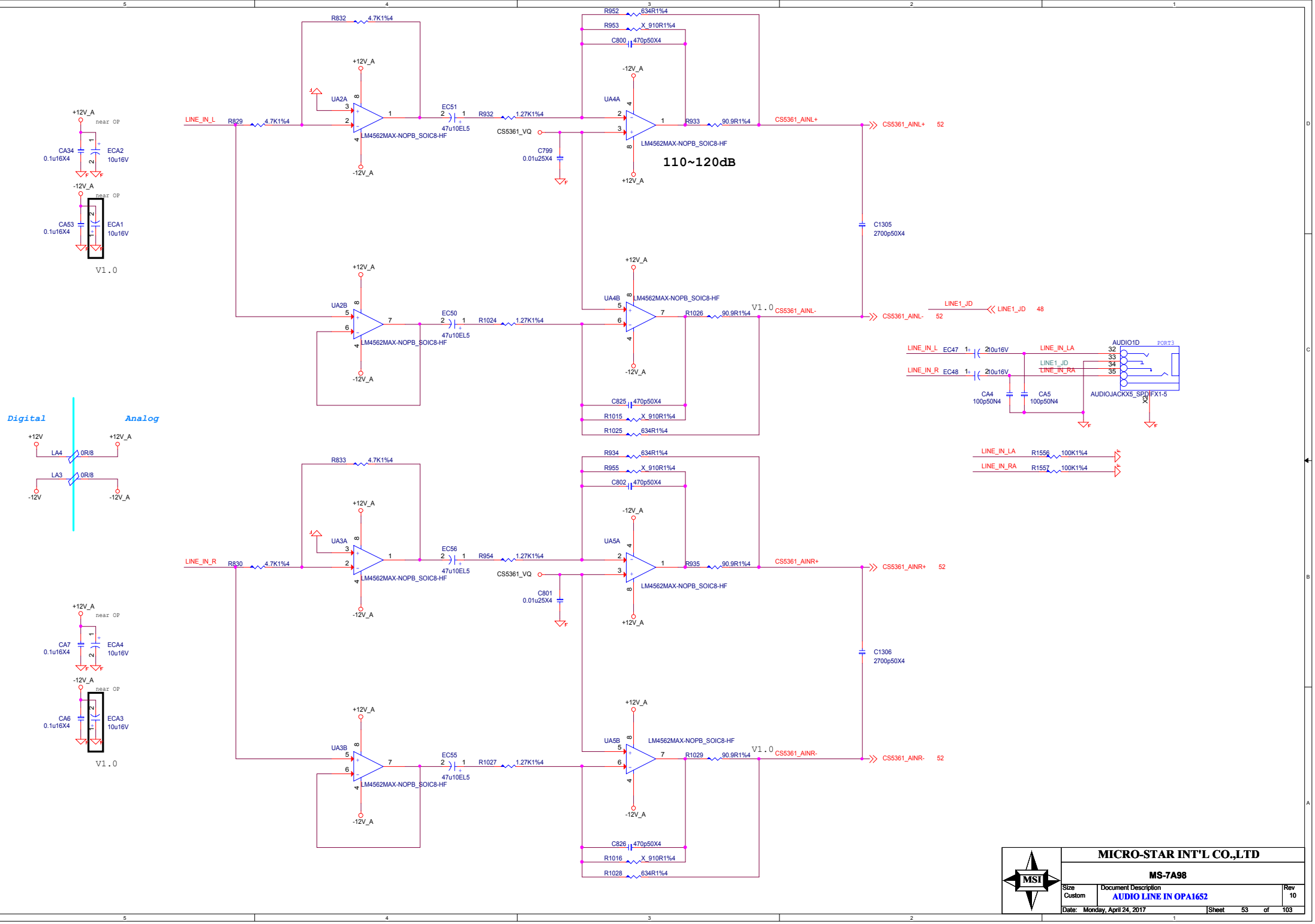
R832 4.7K1%4
R952 634R1%4
R953 X_910R1%4
C800 470p50X4
+12V_A
-12V_A
UA2A
UA4A
LINE_IN_L
R829 4.7K1%4
EC51 47u10EL5
R932 1.27K1%4
CS5361_VQ
C799 0.01u25X4
LM4562MAX-NOPB_SOIC8-HF
R933 90.9R1%4
CS5361_AINL+
CS5361_AINL+ 52
110~120dB
C1305 2700p50X4
CA34 0.1u16X4
ECA2 10u16V
CA53 0.1u16X4
ECA1 10u16V
near OP
V1.0
UA2B
UA4B
EC50 47u10EL5
R1024 1.27K1%4
R1026 90.9R1%4
CS5361_AINL-
CS5361_AINL- 52
LINE1_JD
LINE1_JD 48
C825 470p50X4
R1015 X_910R1%4
R1025 634R1%4
LINE_IN_L EC47 2u10V
LINE_IN_R EC48 2u10V
LINE_IN_LA
LINE_IN_RA
AUDIO1D
PORT3
AUDIOJACKX5_SPDIFX1-5
CA4 100p50N4
CA5 100p50N4
LINE_IN_LA R1556 100K1%4
LINE_IN_RA R1557 100K1%4
Digital
Analog
+12V
-12V
LA4 0R/8
LA3 0R/8
R833 4.7K1%4
R934 634R1%4
R955 X_910R1%4
C802 470p50X4
UA3A
UA5A
LINE_IN_R
R830 4.7K1%4
EC56 47u10EL5
R954 1.27K1%4
CS5361_VQ
C801 0.01u25X4
R935 90.9R1%4
CS5361_AINR+
CS5361_AINR+ 52
C1306 2700p50X4
CA7 0.1u16X4
ECA4 10u16V
CA6 0.1u16X4
ECA3 10u16V
UA3B
UA5B
EC55 47u10EL5
R1027 1.27K1%4
R1029 90.9R1%4
CS5361_AINR-
CS5361_AINR- 52
C826 470p50X4
R1016 X_910R1%4
R1028 634R1%4
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MS-7A98
Size Custom
Document Description
AUDIO LINE IN OPA1652
Rev 10
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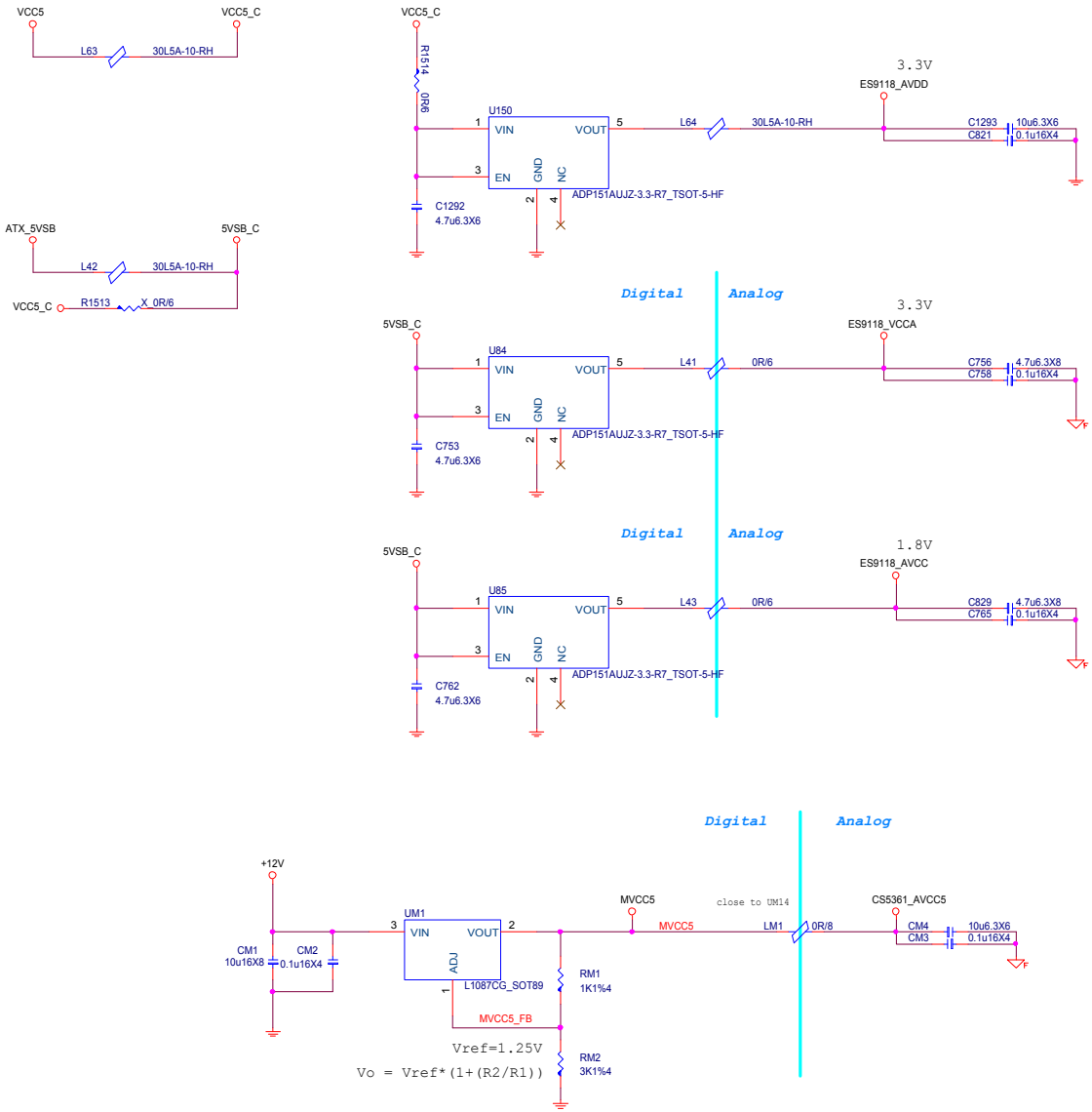

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MS-7A98		
Size: Custom	Document Description: AUDIO POWER	Rev: 10
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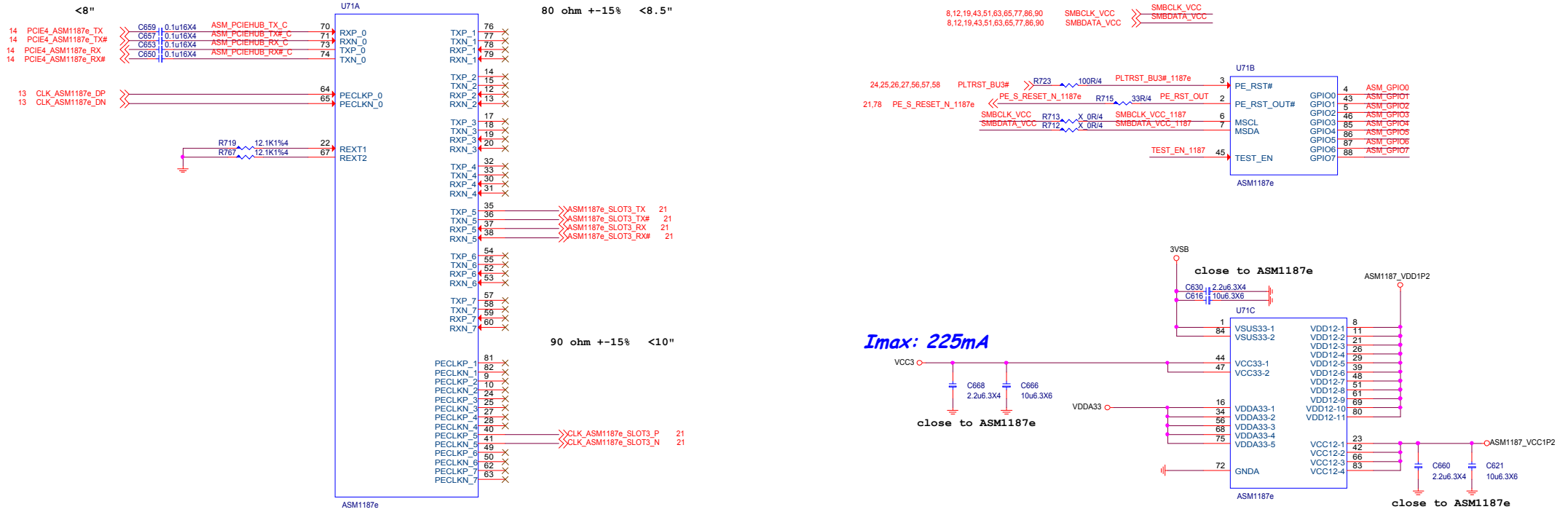

GPIO0	0:PLL mode; 1: bypass mode
GPIO1	clock buffer termination 0: disable ; 1: enable
GPIO2	Reserved for test mode
GPIO3	Port configuration. 0: 1 x 4lane + 3 x 1lane; 1: 7 x 1lane
GPIO4	SMBus enable
GPIO5	SMBus address[0]
GPIO6	SMBus address[1]
GPIO7	SMBus address[2]
MSCL	I2C enable

GPIO4	MSCL	Function
0	0	(MSCL,MSDA) is no function
0	1	(MSCL,MSDA) is I2C,chip is master
1	0	(MSCL,MSDA) is SMBus, chip is salve
1	1	(MSCL,MSDA) is SMBus, chip is salve

H/W Strapping

Internal pull high 50Kohm

ASM_GPIO0 R714 X_1K/4
ASM_GPIO1 R758 X_1K/4
ASM_GPIO2 R722 X_1K/4
ASM_GPIO3 R770 X_1K/4
ASM_GPIO4 R732 X_1K/4
ASM_GPIO5 R726 X_1K/4
ASM_GPIO6 R724 X_1K/4
ASM_GPIO7 R717 X_1K/4

MICRO-STAR INT'L CO.,LTD

MS-7A98

Size	Document Description	Rev
Custom	ASM1187e PCIE HUB	10

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E2500 GIGA LAN

151.6mA

3VSB — CPL8 X_COPPER — VDD33_A

CL102 10u6.3X6, CL6 10u6.3X6, CL7 1u6.3X4, CL8 0.1u16X4, CL9 X_1000p50X4

VDD33_A — CPL7 X_COPPER — AVDD33_A

CL96 1u6.3X4, CL97 0.1u16X4

Close to Pin16

place near pin <200mil

AVDDH_A — 2.7V

9 22 9

CL48 1u6.3X4, CL50 0.1u16X4, CL47 0.1u16X4

place near pin <200mil

DVDDL_A

CL101 1u6.3X4, CL25 0.1u16X4

Close to Pin37

place near pin <200mil

AVDDL_A

6 6 13 19 31

CL30 1u6.3X4, CL31 0.1u16X4, CL32 0.1u16X4, CL33 0.1u16X4, CL34 0.1u16X4

place near pin <200mil

PIN2:
AMD platform connect to PCIE_RST#,
don't connect to A-RST#.
INTEL platform connect to PLT_RST#,

UL9 E2500-RIV1-RL-HF

PCIE interface

65 TBT_TX0+ / 65 TBT_TX0- → RX_P / RX_N

13 CLK_LAN1_DP / 13 CLK_LAN1_DN → REFCLK_P / REFCLK_N

TX_P / TX_N → TBT_RX0+_C / TBT_RX0-_C → CL53 0.1u16X4 / CL52 0.1u16X4 → TBT_RX0+ 65 / TBT_RX0- 65

WAKEn ← PCH_WAKE# ← CLKREQnA

PCH_WAKE# — RL26 X_4.7K/4

CLKREQnA — RL37 4.7K/4

check SB

24,25,26,27,55,57,58 PLTRST_BU3# — R641 0R/4 — LAN1_RST# — RL19 2.37K1%4 → PERSTn

RBIAS

PPS

Media interface

TRXP0/TRXN0 TR1_D0+/TR1_D0-

TRXP1/TRXN1 TR1_D1+/TR1_D1-

TRXP2/TRXN2 TR1_D2+/TR1_D2-

TRXP3/TRXN3 TR1_D3+/TR1_D3-

DIFF 100 ohm

Power

VDD33 / AVDD33 ← VDD33_A / AVDD33_A

LX ← LX_A ← CH-4.7u2A70mS-HF-2 ← CHOKE1 ← CL104 X_1000p50X4, CL103 0.1u16X4, CL105 10u6.3X6

Close to pin40

LX should be wider than 30 mils.

DVDDL_REG ← DVDDL_A ← CPL9 X_COPPER

1.1V

AVDDL_REG ← AVDDL_A

AVDDL-1/2/3 ← L62 300L600mA-150

1.1V AVDDVCO_A

AVDDL-4 ← CL98 0.1u16X4, CL99 X_1u6.3X4, CL100 X_4.7u6.3X6

AVDDH_REG ← AVDDH_A

AVDDH

NC

GND

Test: DEBUGMODE[0] RL39 30K/4 → VDD33_A; TESTMODE[0] TESTMODE[1] TESTMODE[2]

LED: LED[0] LED0_A, LED[1] LED1_A, LED[2] LED2_A

Reserve for strap hi

RL5 X_10K/4, RL41 X_10K/4, RL22 X_10K/4 → VDD33_A

CLOCK: XTLI ← LAN_XTAL1_A ← CL49 27p50N4; XTLO → LAN_XTAL2_A → CL51 27p50N4; YL3 25MHZ18p

9 GND via

near pin34 <200mil

160926 Modify Y1 to D04-1006700-F07
Main:D04-1006700-F07
AVL:D04-1000640-T16

20160921 update
CHOKE1: L04-47A70T0-T19
AVL: L04-47A7870-C08
L04-47A7690-M26

L2:
L02-3018023-C08
L02-3018023-T19

note:

LED0:
1=High core voltage
0=Low core voltage

LED1:
1=SWR mode
0=LDO mode

LED2:
1=25MHz clock
0=48MHz clock

VDD33 >= 30mils;
AVDD33 >= 30mils;
AVDDH >= 20mils;
AVDDL >= 20mils.
DVDDL >= 20mils.
Pin LX to L1 >= 30mils.

LED ON/OFF by SIO

ATX_5VSB — RL13 47K/4 → QL5 G2

+12V — RL11 4.7K/4 → D2

27,57,58,95 ALL_LED_OFF# → G1

D1

S2 → VCC5 → LAN_LED_VCC5_A

S1

2N7002D

N-QM3010K_SOT23-3-HF QL6

LAN_LED_VCC5_A — CL17 0.1u16X4

M:D03-3010K09-U47
AVL:D03-606BA09-N03

EMC

UL6 ESD-AOZ8829-10P

TR1_D0+/TR1_D0- 1/2 → 10/9 TR1_D0+/TR1_D0-

TR1_D1+/TR1_D1- 4/5 → 7/6 TR1_D1+/TR1_D1-

3 8

20160926 update
Main:D0G-06A030C-A68
AVL:D0G-05A0300-I14
D0G-45B031C-005

UL5 ESD-AOZ8829-10P

TR1_D2+/TR1_D2- 1/2 → 10/9 TR1_D2+/TR1_D2-

TR1_D3+/TR1_D3- 4/5 → 7/6 TR1_D3+/TR1_D3-

3 8

Close to LAN conn.

LED0_ACT_A — CL27 470p50X4

LED1_LINK1000#_A — CL28 470p50X4

LED2_LINK100#_A — CL29 470p50X4

LAN_LED_VCC5_A_R — CL35 0.1u16X4 — DL3 ESD-VPORT0603L102KV05-HF

Main:D0G-1020530-I05
AVL :D0G-8010510-SI0

Close to LAN conn.

VDD33_A — RL9 220R/4 — for EMI — CL26 X_0.1u16X4

LAN_USB3B

LED0_A — RL10 75R/4, RL12 330R/8 — LAN_LED_VCC5_A

LED0_A_A, LED0_ACT_A, LAN_LED_VCC5_A_R

TR1_D0+/TR1_D0-, TR1_D1+/TR1_D1-, TR1_D2+/TR1_D2-, TR1_D3+/TR1_D3-

LED1_A — RL42 220R/4

LED2_A — RL21 220R/4

LED1_LINK1000#_A, LED2_LINK100#_A

YELLOW+/YELLOW-/LEDVCC/RJ1/RJ2/RJ3/RJ4/RJ5/RJ6/RJ7/RJ8/GND/GREEN+/ORANGE-/GREEN-/ORANGE+

JFM38U1G

LED1 low is Orange 1000
LED2 low is Green 100

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E2500 GIGA LAN

151.6mA

3VSB — CPL4 X_COPPER — VDD33_B

CL37 10u6.3X6 | CL87 10u6.3X6 | CL38 1u6.3X4 | CL39 0.1u16X4 | CL77 X_100u6.3X6

VDD33_B — CPL2 X_COPPER — AVDD33_B

CL56 1u6.3X4 | CL57 0.1u16X4

Close to Pin16

place near pin <200mil

AVDDH_B — 2.7V

9 9 22

CL63 1u6.3X4 | CL66 0.1u16X4 | CL21 0.1u16X4

place near pin <200mil

DVDDL_B

CL94 1u6.3X4 | CL90 0.1u16X4

Close to Pin37

place near pin <200mil

AVDDL_B

6 6 13 19 31

CL68 1u6.3X4 | CL69 0.1u16X4 | CL60 0.1u16X4 | CL65 0.1u16X4 | CL73 0.1u16X4

place near pin <200mil

PIN2:
AMD platform connect to PCIE_RST#,
don't connect to A-RST#.
INTEL platform connect to PLT_RST#,

UL7 — E2500-RIV1-RL-HF

PCIE interface

65 TBT_TX1+ — 35 RX_P
65 TBT_TX1- — 36 RX_N
13 CLK_LAN2_DP — 33 REFCLK_P
13 CLK_LAN2_DN — 32 REFCLK_N

30 TX_P — TBT_RX1+_C — CL42 0.1u16X4 — TBT_RX1+ 65
29 TX_N — TBT_RX1-_C — CL40 0.1u16X4 — TBT_RX1- 65

3 WAKEn — PCH_WAKE# — PCH_WAKE# 12,21,22,23,24,25,26,47,56,58,78
4 CLKREQnB — CLKREQnB

24,25,26,27,55,56,58 PLTRST_BU3# — R495 0R/4 — LAN2_RST# — RL14 2.37K1%4

2 PERSTn
10 RBIAS
24 PPS

Media interface

11 TRXP0 — TR2_D0+
12 TRXN0 — TR2_D0-
14 TRXP1 — TR2_D1+
15 TRXN1 — TR2_D1-
17 TRXP2 — TR2_D2+
18 TRXN2 — TR2_D2-
20 TRXP3 — TR2_D3+
21 TRXN3 — TR2_D3-

DIFF 100 ohm

Power

DVDDL_B — Close to pin40 — CH-4.7u2A70mS-HF-2 — VDD33_B — AVDD33_B
1 VDD33 / AVDD33
40 LX — LX_B — CHOKEL1 — CL88 X_1000p50X4 | CL86 1u16X4 | CL95 10u6.3X6
37 DVDDL_REG — DVDDL_B — CPL3 X_COPPER

LX should be wider than 30 mils.

1.1V

AVDDL_B
6 AVDDL_REG
13 AVDDL-1
19 AVDDL-2
31 AVDDL-3
34 AVDDL-4

L61 300L600mA-150

1.1V — AVDDVCO_B — CL79 0.1u16X4 | CL75 X_1u6.3X4 | CL83 X_4.7u6.3X6

AVDDH_B
9 AVDDH_REG
22 AVDDH
28 NC
GND

near pin34 <200mil

Test

5 DEBUGMODE[0] — RL16 30K/4 — VDD33_B
25 TESTMODE[0]
26 TESTMODE[1]
27 TESTMODE[2]

Reserve for strap hi

LED

38 LED[0] — LED0_B — RL40 X_10K/4 — VDD33_B
39 LED[1] — LED1_B — RL20 X_10K/4
23 LED[2] — LED2_B — RL15 X_10K/4

CLOCK

8 XTLI — LAN_XTAL1_B — CL19 27p50N4 — YL1 25MHZ18p — LAN_XTAL2_B — CL20 27p50N4
7 XTLO

41 GND — 9 GND via

20160921 update
CHOKE1: L04-47A70T0-T19
AVL: L04-47A7870-C08
L04-47A7690-M26

L2:
L02-3018023-C08
L02-3018023-T19

160926 Modify Y1 to D04-1006700-F07
Main:D04-1006700-F07
AVL:D04-1000640-T16

PCH_WAKE# — RL18 X_4.7K/4 — VDD33_B
CLKREQnB — RL17 4.7K/4
check SB

note:

LED0:
1=High core voltage
0=Low core voltage

LED1:
1=SWR mode
0=LDO mode

LED2:
1=25MHz clock
0=48MHz clock

VDD33 >= 30mils;
AVDD33 >= 30mils;
AVDDH >= 20mils;
AVDDL >= 20mils.
DVDDL >= 20mils.
Pin LX to L1 >= 30mils.

LED ON/OFF by SIO

ATX_5VSB — RL1 47K/4 — QL1 2N7002D
G2 — D2 — S2
D1 — G1 — S1
27,56,58,95 ALL_LED_OFF#

+12V — RL23 4.7K/4 — VCC5 — QL4 N-QM3010K_SOT23-3-HF — LAN_LED_VCC5_B

LAN_LED_VCC5_B — CL3 0.1u16X4

M:D03-3010K09-U47
AVL:D03-606BA09-N03

EMC

UL2 — ESD-AOZ8829-10P

TR2_D0+ / TR2_D0- — TR2_D1+ / TR2_D1-

Main:D0G-06A030C-A68
AVL:D0G-05A0300-I14
D0G-45B031C-005

UL1 — ESD-AOZ8829-10P

TR2_D2+ / TR2_D2- — TR2_D3+ / TR2_D3-

Close to LAN conn.

LED0_ACT_B — CL2 470p50X4
LED1_LINK1000#_B — CL4 470p50X4
LED2_LINK100#_B — CL10 470p50X4

LAN_LED_VCC5_B_R — CL5 0.1u16X4 — DL1 ESD-VPORT0603L102KV05-HF

Main:D0G-1020530-I05
AVL :D0G-8010510-SI0

Close to LAN conn.

VDD33_B — RL24 220R/4 — for EMI — CL1 X_0.1u16X4

LAN_USB1B — RJ45_USBX2_LEDX2-1000-RH-10

LED0_B — RL25 75R/4 — LED0_A_B — LED0_ACT_B
LAN_LED_VCC5_B — RL2 330R/8 — LAN_LED_VCC5_B_R

TR2_D0+ / TR2_D0- / TR2_D1+ / TR2_D1- / TR2_D2+ / TR2_D2- / TR2_D3+ / TR2_D3-

29 YELLOW+
30 YELLOW-
19 LEDVCC
20–27 RJ1–RJ8
28 GND

LED1_B — RL27 220R/4 — LED1_LINK1000#_B — 31 GREEN+/ORANGE-
LED2_B — RL28 220R/4 — LED2_LINK100#_B — 32 GREEN-/ORANGE+

LED1 low is Orange 1000
LED2 low is Green 100

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E2500 GIGA LAN

151.6mA

3VSB — CPL6 X_COPPER — VDD33_C

CL85 10u6.3X6, CL80 10u6.3X6, CL74 1u6.3X4, CL72 0.1u16X4, CL78 X_100u6D3X4

VDD33_C — CPL1 X_COPPER — AVDD33_C

CL58 1u6.3X4, CL59 0.1u16X4 — Close to Pin16

place near pin <200mil

AVDDH_C — 2.7V

9 9 22

CL62 1u6.3X4, CL18 0.1u16X4, CL24 0.1u16X4

place near pin <200mil

DVDDL_C

CL91 1u6.3X4, CL92 0.1u16X4 — Close to Pin37

place near pin <200mil

AVDDL_C

6 6 13 19 31

CL70 1u6.3X4, CL64 0.1u16X4, CL61 0.1u16X4, CL71 0.1u16X4, CL67 0.1u16X4

place near pin <200mil

PIN2:
AMD platform connect to PCIE_RST#,
don't connect to A-RST#.
INTEL platform connect to PLT_RST#,

UL8

65 TBT_TX2+ / 65 TBT_TX2- → RX_P / RX_N
13 CLK_LAN3_DP / 13 CLK_LAN3_DN → REFCLK_P / REFCLK_N
PCIE interface
TX_P / TX_N → TBT_RX2+_C / TBT_RX2-_C → CL44 0.1u16X4, CL43 0.1u16X4 → TBT_RX2+ 65 / TBT_RX2- 65
WAKEn ← PCH_WAKE# ← CLKREQnC
PCH_WAKE# 12,21,22,23,24,25,26,47,56,57,78

24,25,26,27,55,56,57 PLTRST_BU3# → R497 0R/4 → LAN3_RST# → RL31 2.37K1%4
PERSTn, RBIAS, PPS

Media interface
TRXP0/TRXN0 ↔ TR3_D0+/TR3_D0-
TRXP1/TRXN1 ↔ TR3_D1+/TR3_D1-
TRXP2/TRXN2 ↔ TR3_D2+/TR3_D2-
TRXP3/TRXN3 ↔ TR3_D3+/TR3_D3-

DIFF 100 ohm

DVDDL_C — Close to pin40 — CH-4.7u2A70mS-HF-2 — CHOKEL2 — LX_C
CL93 X_1000p50X4, CL89 1u16X4, CL81 10u6.3X6
LX should be wider than 30 mils.

VDD33_C, AVDD33_C — VDD33, AVDD33 — Power
LX
DVDDL_REG — DVDDL_C — CPL5 X_COPPER — 1.1V
AVDDL_REG — AVDDL_C
AVDDL-1, AVDDL-2, AVDDL-3
L60 300L600mA-150
AVDDL-4 — 1.1V — AVDDVCO_C — CL76 0.1u16X4, CL82 X_1u6.3X4, CL84 X_4.7u6.3X6
AVDDH_REG — AVDDH_C
AVDDH
NC, GND
near pin34 <200mil

Test: DEBUGMODE[0], TESTMODE[0], TESTMODE[1], TESTMODE[2] — RL32 30K/4 → VDD33_C

LED: LED[0] LED0_C, LED[1] LED1_C, LED[2] LED2_C — Reserve for strap hi
RL33 X_10K/4, RL34 X_10K/4, RL35 X_10K/4 → VDD33_C

CLOCK: XTLI, XTLO
LAN_XTAL1_C — CL22 27p50N4 — YL2 25MHZ18p — LAN_XTAL2_C — CL23 27p50N4

E2500-RIV1-RL-HF

9 GND via

160926 Modify Y1 to D04-1006700-F07
Main:D04-1006700-F07
AVL:D04-1000640-T16

20160921 update
CHOKE1: L04-47A70T0-T19
AVL: L04-47A7870-C08
L04-47A7690-M26

L2:
L02-3018023-C08
L02-3018023-T19

PCH_WAKE# — RL29 X_4.7K/4
CLKREQnC — RL30 4.7K/4
check SB

VDD33_C

note:

LED0:
1=High core voltage
0=Low core voltage

LED1:
1=SWR mode
0=LDO mode

LED2:
1=25MHz clock
0=48MHz clock

VDD33 >= 30mils;
AVDD33 >= 30mils;
AVDDH >= 20mils;
AVDDL >= 20mils.
DVDDL >= 20mils.
Pin LX to L1 >= 30mils.

LED ON/OFF by SIO

ATX_5VSB — RL36 47K/4 — QL2 2N7002D
27,56,57,95 ALL_LED_OFF#
+12V — RL4 4.7K/4
VCC5 — N-QM3010K_SOT23-3-HF QL3 — LAN_LED_VCC5_C
LAN_LED_VCC5_C — CL15 0.1u16X4

M:D03-3010K09-U47
AVL:D03-606BA09-N03

VDD33_C — RL38 220R/4 — for EMI — CL11 X_0.1u16X4

LAN_USB2B
LED0_C — RL3 75R/4, RL8 330R/8 — LAN_LED_VCC5_C
LED0_A_C, LED0_ACT_C, LAN_LED_VCC5_C_R
TR3_D0+ / TR3_D0- / TR3_D1+ / TR3_D1- / TR3_D2+ / TR3_D2- / TR3_D3+ / TR3_D3-
LED1_C — RL6 220R/4
LED2_C — RL7 220R/4
LED1_LINK1000#_C, LED2_LINK100#_C
GND
29 YELLOW+, 30 YELLOW-, 19 LEDVCC, 20 RJ1, 21 RJ2, 22 RJ3, 23 RJ4, 24 RJ5, 25 RJ6, 26 RJ7, 27 RJ8, 28 GND, 31 GREEN+/ORANGE-, 32 GREEN-/ORANGE+
RJ45_USBX2_LEDX2-1000-RH-10

LED1 low is Orange 1000
LED2 low is Green 100

EMC

UL4 — TR3_D0+/TR3_D0- — TR3_D1+/TR3_D1- — ESD-AOZ8829-10P
Main:D0G-06A030C-A68
AVL:D0G-05A0300-I14
D0G-45B031C-005

UL3 — TR3_D2+/TR3_D2- — TR3_D3+/TR3_D3- — ESD-AOZ8829-10P
Close to LAN conn.

LED0_ACT_C — CL12 470p50X4
LED1_LINK1000#_C — CL13 470p50X4
LED2_LINK100#_C — CL14 470p50X4

LAN_LED_VCC5_C_R — CL16 0.1u16X4 — DL2 ESD-VPORT0603L102KV05-HF
Main:D0G-1020530-I05
AVL :D0G-8010510-SI0
Close to LAN conn.

MSI

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MS-7A98

Size	Document Description	Rev
Custom	Killer LAN E2500 - C	10

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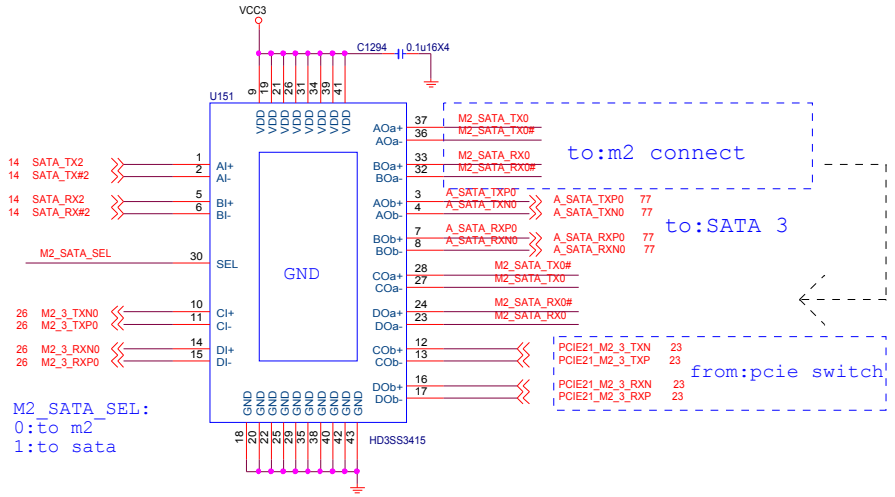

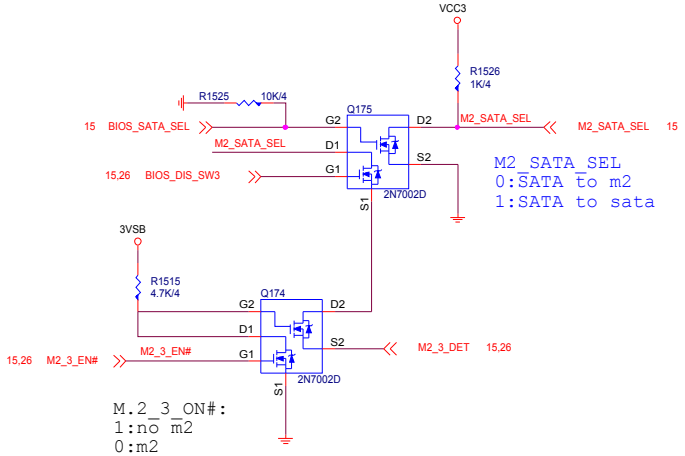

from:pch switch

MICRO-STAR INT'L CO.,LTD		
MS-7A98		
Size: Custom	Document Description: M2/SATA SWITCH	Rev: 10
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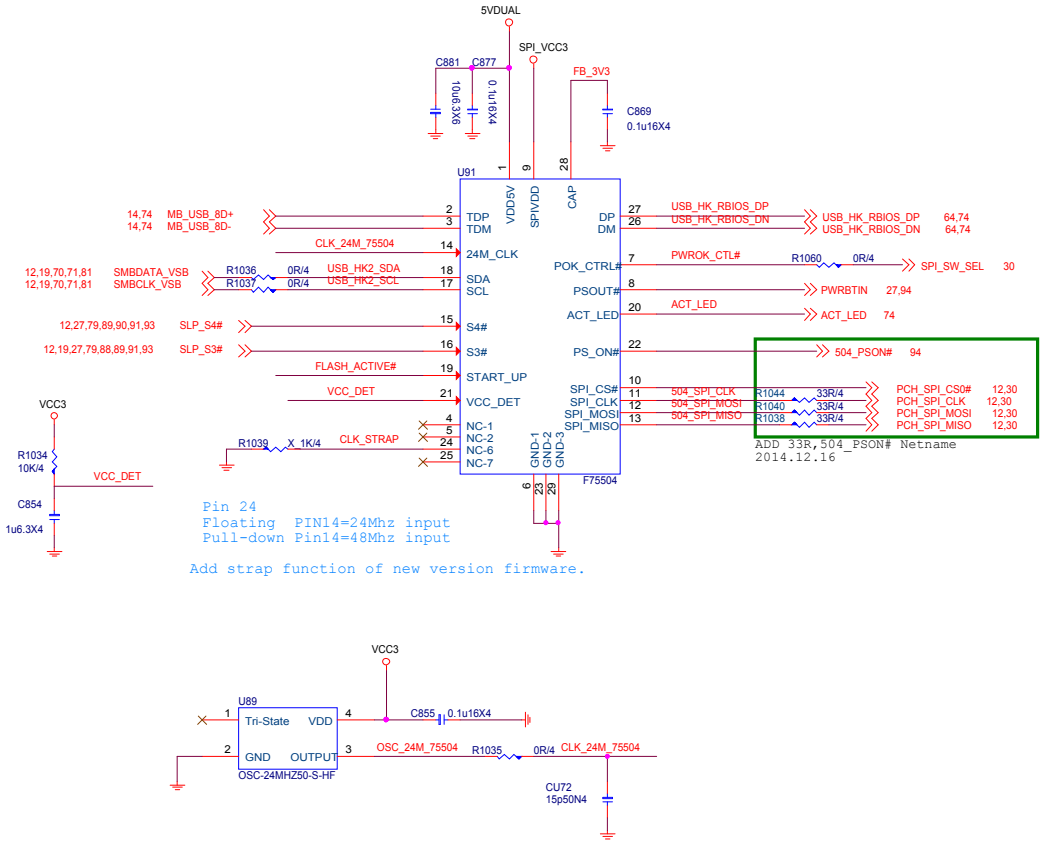
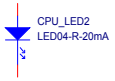
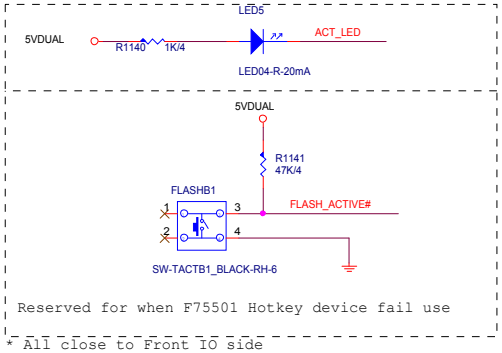
Host USB connector



ADD 33R,504_PSON# Netname
2014.12.16

Add strap function of new version firmware.





* All close to Front IO side

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MS-7A98		
Size: Custom	Document Description: USB HOTKEY F75504	Rev: 10
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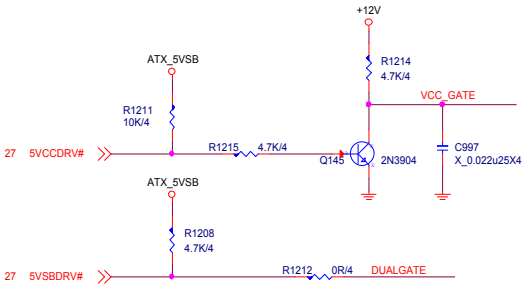
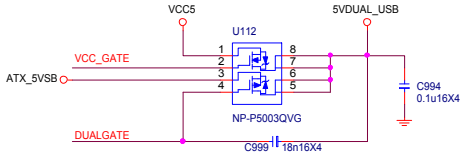
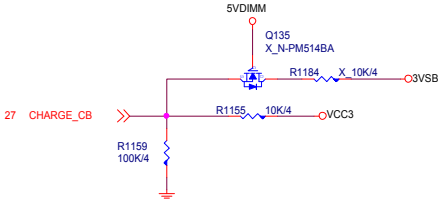
5VDUAL_USB



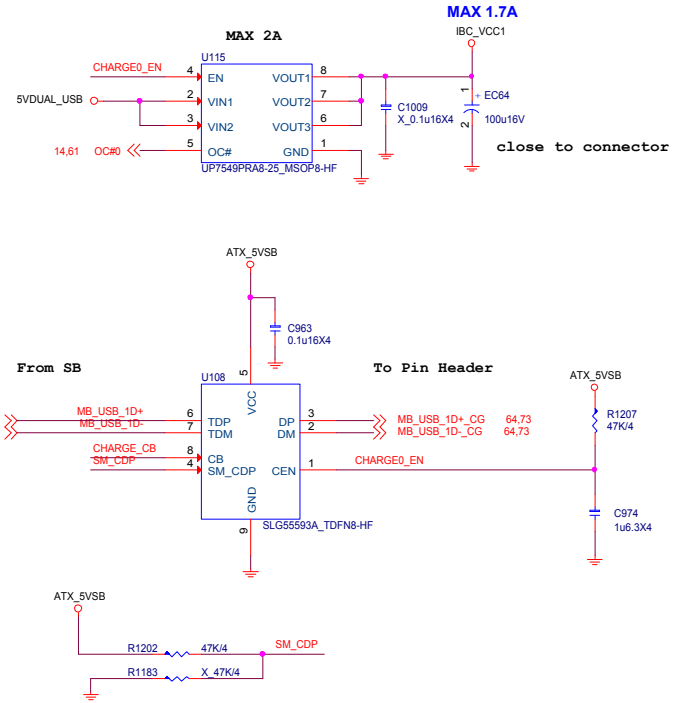
3~4A



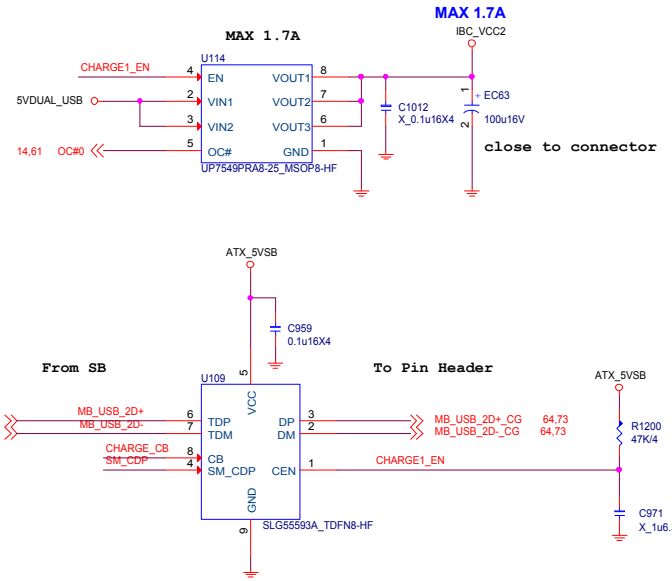
Pin power : I_3VSB
Register power : I_3VSB
Register reset : I_3VSB



USB POWER PORT 0 For USB Charging



USB POWER PORT 1 For USB Charging



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MS-7A98		
Size: Custom	Document Description: USB CHARGE_SLG55593A	Rev: 10
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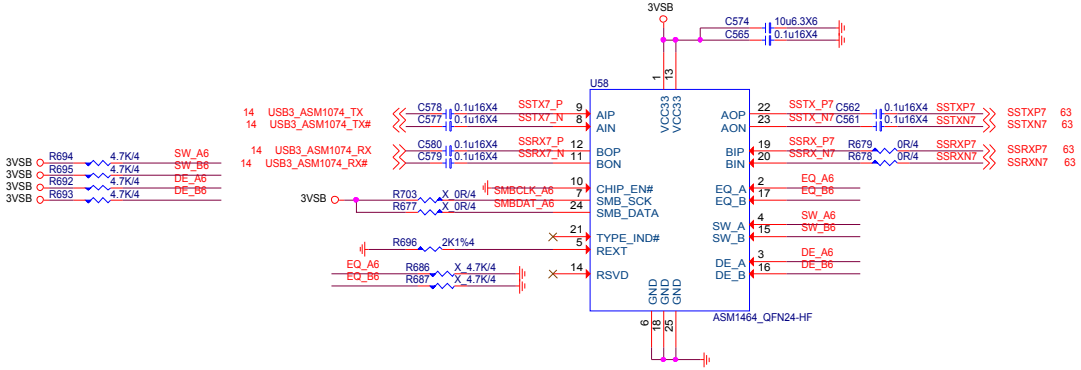

MICRO-STAR INT'L CO.,LTD		
MS-7A98		
Size: Custom	Document Description: ASM1074 USB redriver	Rev: 10
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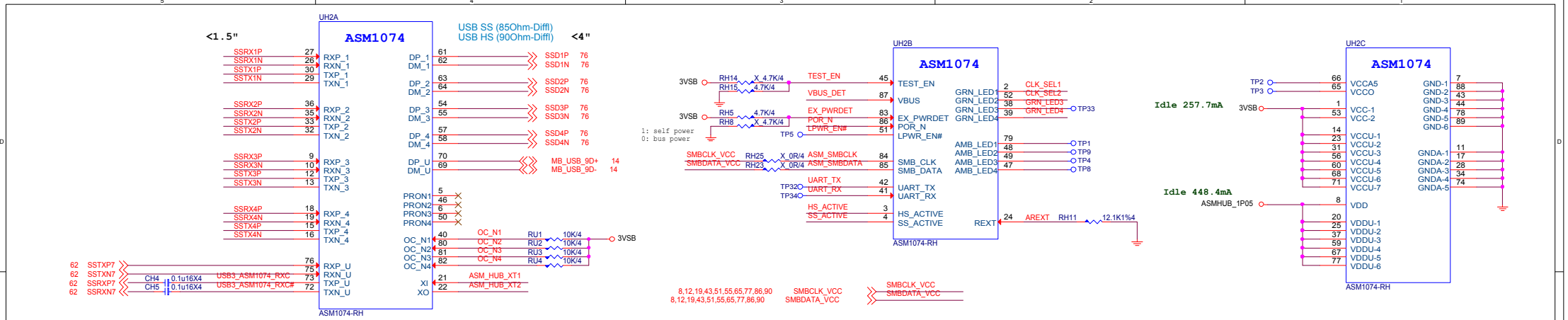
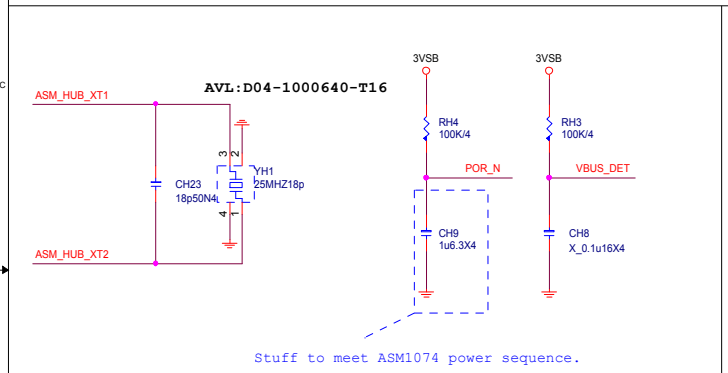


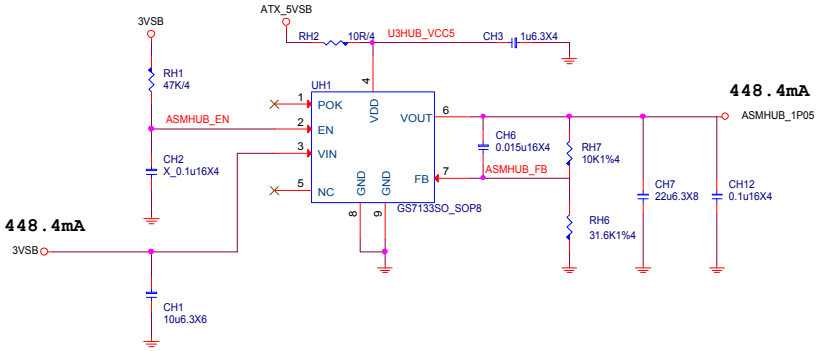


H/W Strapping

Strapping Table

GRN_LED2 (CLK_SEL1)	GRN_LED1 (CLK_SEL0)		
0	0	25MHz	Default
1	0	30MHz	
1	1	20MHz	

ASM1074 USB3.0 HUB core Power

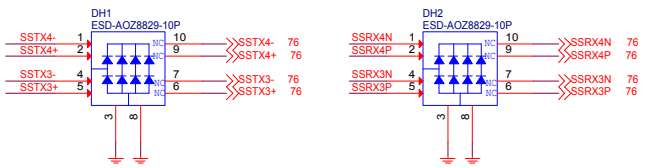


Close to Connector

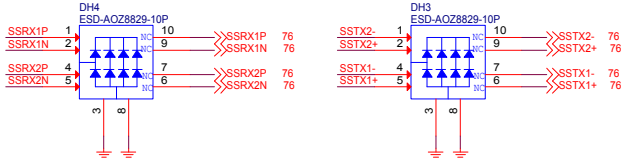
ESD Protection

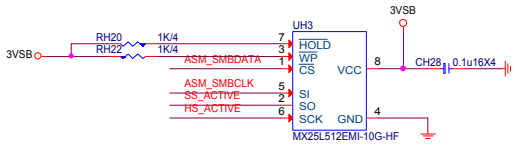
USB3.0 (ESD)
D0G-06A050C-A68 (M)
D0G-05A0300-I14

Close to Connector

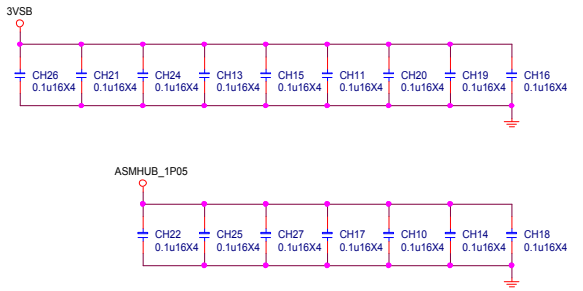


Close to Connector





AVL:M31-2551293-I13



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Size: Custom	Document Description: ASM1074 USB HUB
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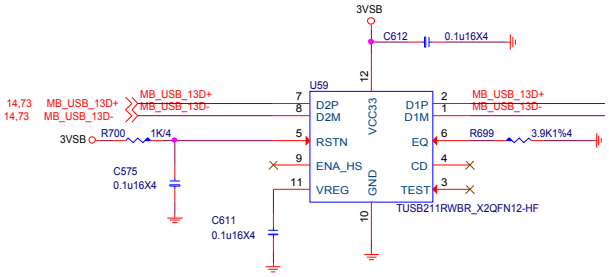
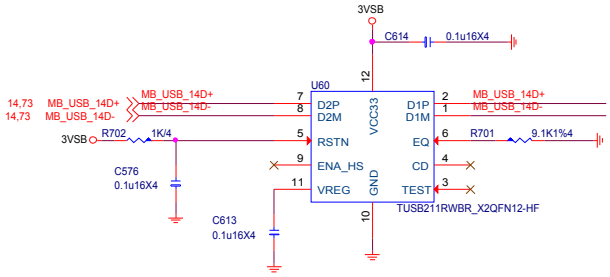
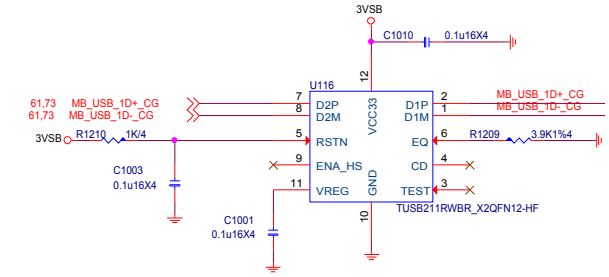
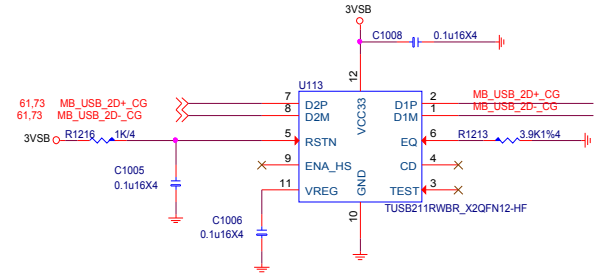
USB2.0 FRONT VR PORT JUSB1



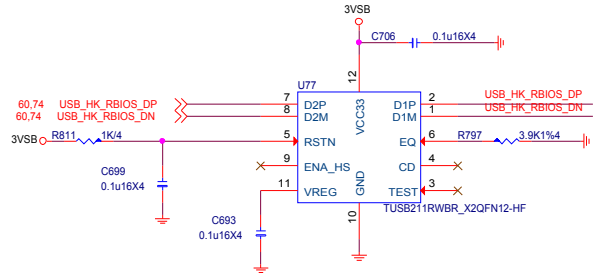


USB2.0 FRONT CHARG PORT JUSB6





USB2.0 REAR PS2 PORT



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Size	Document Description	Rev
Custom	USB2 Ridriver TUSB211	10

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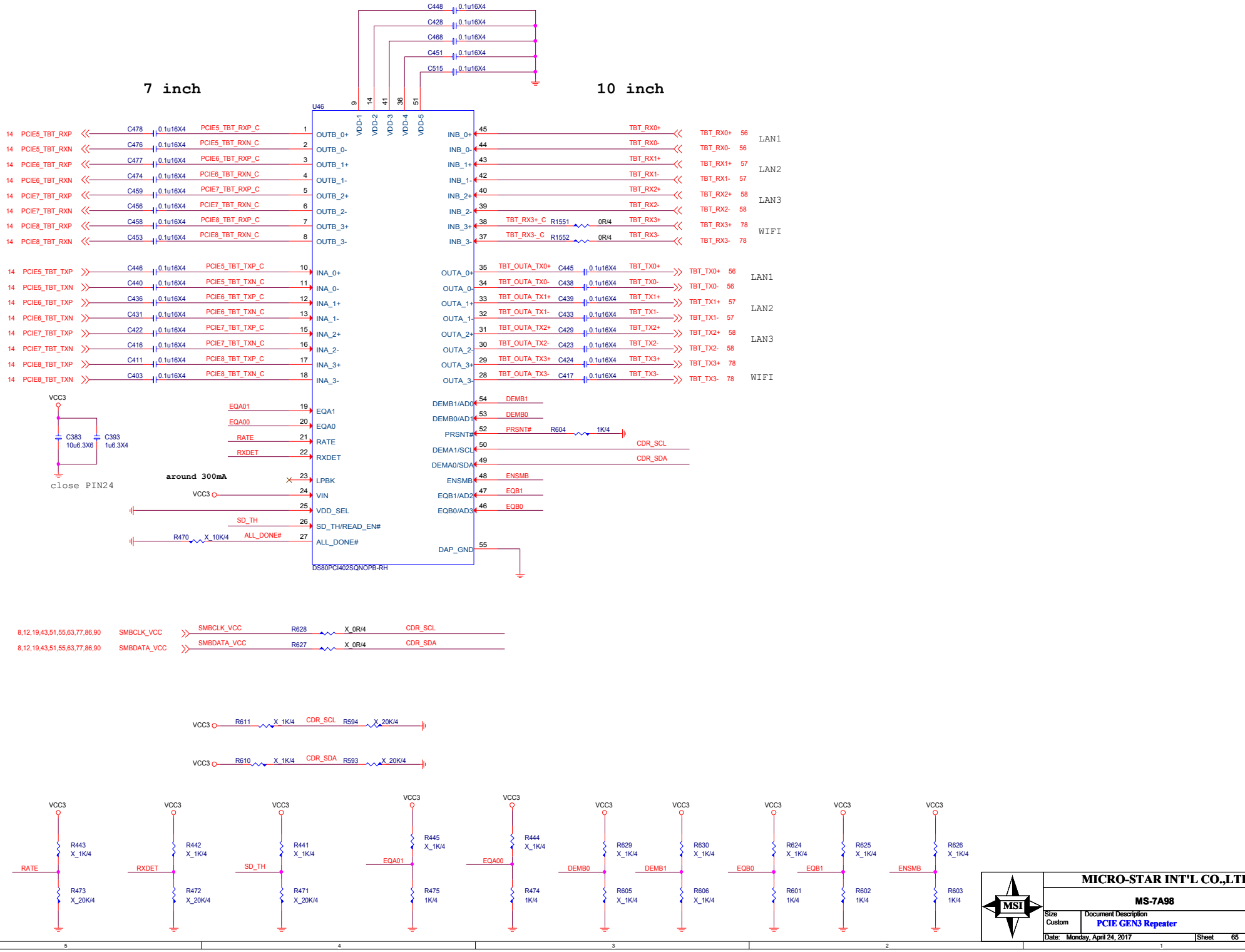

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MS-7A98	
Size: Custom	Document Description: PCIE GEN3 Repeater
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Size	Document Description	Rev
Custom	Thunderbolt JHL6540 DP	10

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MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	Thunderbolt POWER	10

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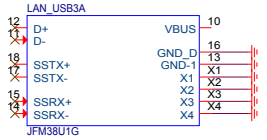

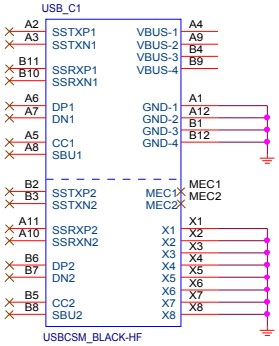

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	MS-7A98	
Size: Custom	Document Description: TPS65982_TYPEC	Rev: 10
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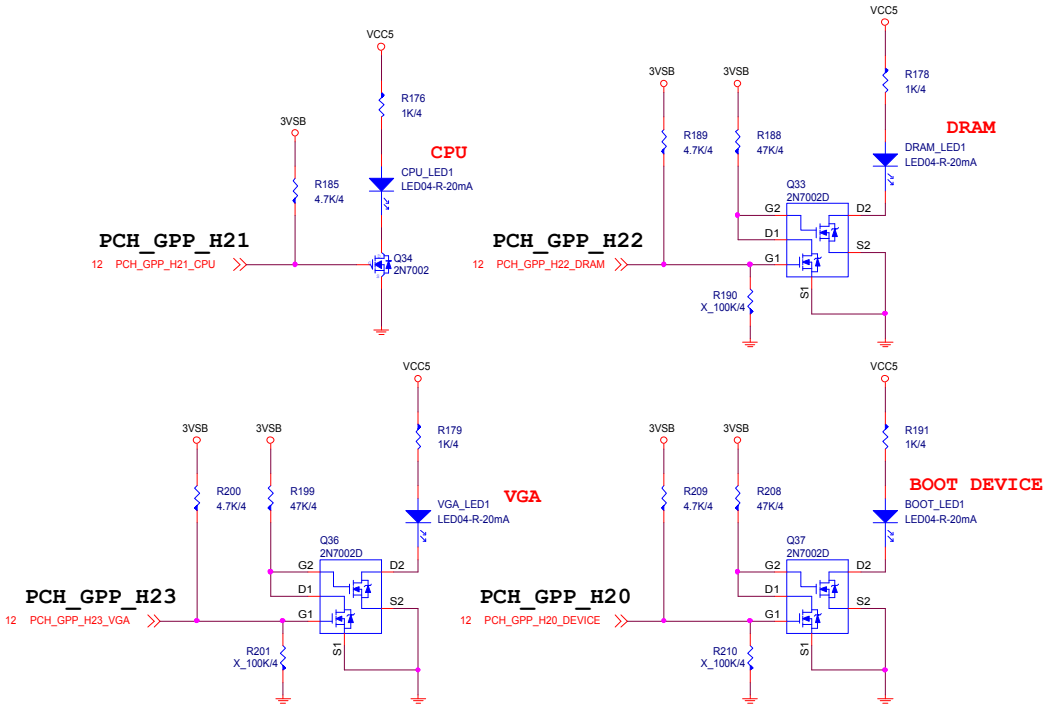
EZ DEBUG LED



LED 紅 : D0C-040P100-H91
AVL: D0C-040S500-E07

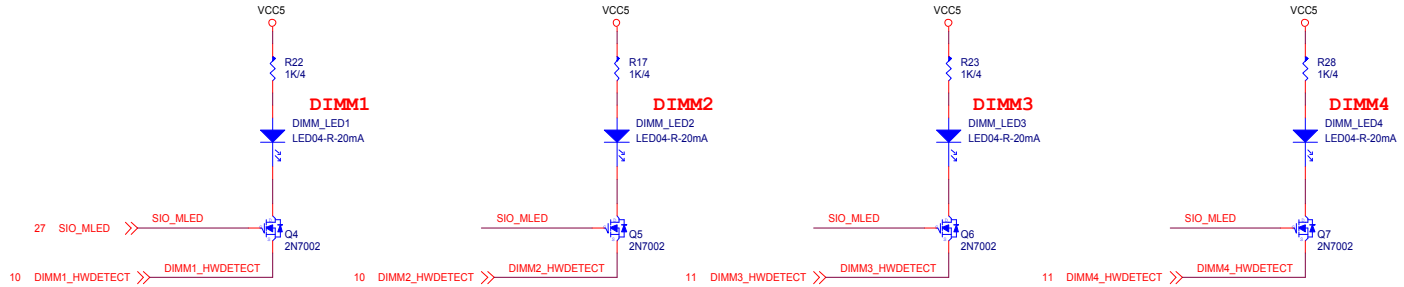
LED 白 : D0C-040T200-H91
AVL: D0C-040S200-E07

GPIO / LED	GPP_H21	GPP_H22	GPP_H23	GPP_H20
亮	GPI PULL HIGH	GPO PO LOW	GPO PO LOW	GPO PO LOW
滅	GPO LOW	GPO HIGH (default HIGH)	GPO HIGH (default HIGH)	GPO 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. BOOT DEVICE的check/BOOT LED亮，check PASS後則BOOT LED滅掉。
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）

DIMM SLOT LED



MICRO-STAR INT'L CO.,LTD

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Custom	EZ DEBUG / DIMM SLOT LED	10

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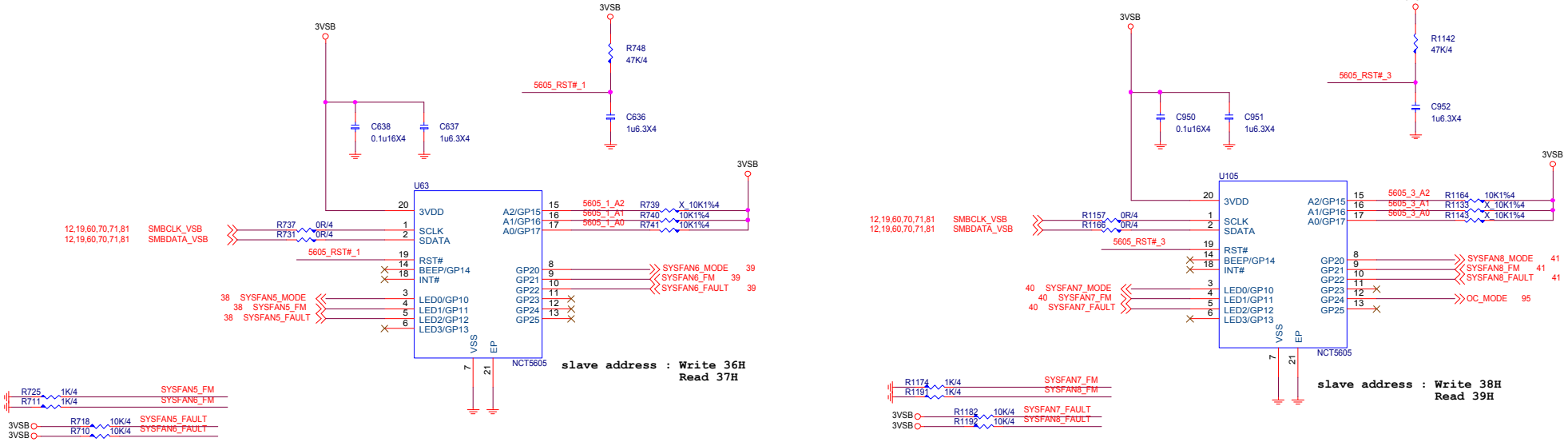
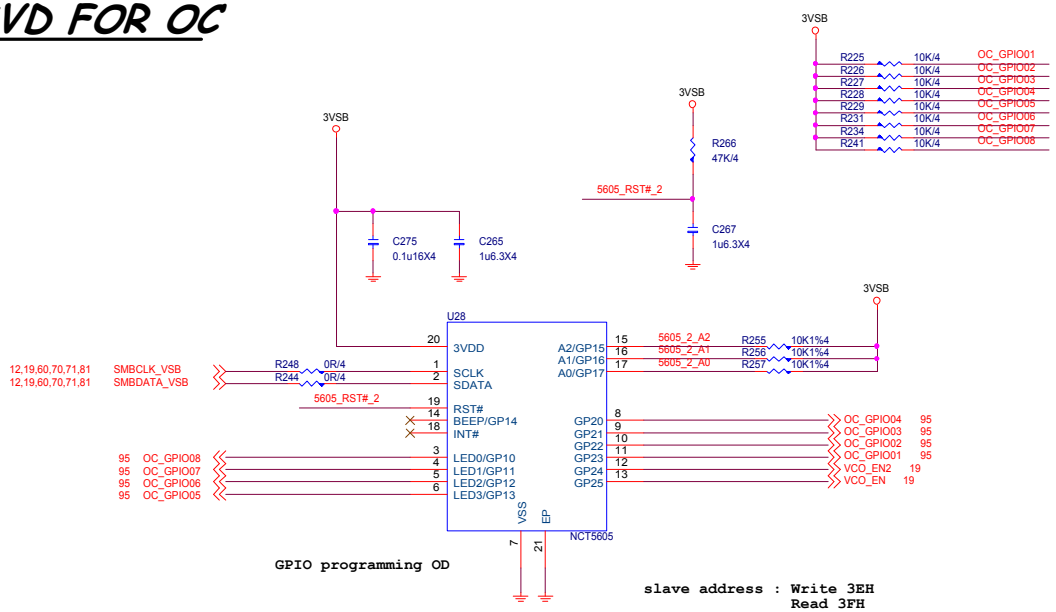
FAN GPIO



RSVD FOR OC



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	MS-7A98	
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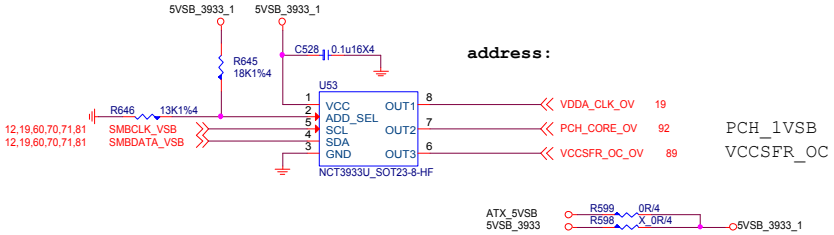
UPI VOLTAGE CONSOLE

0x20:RH=10K,RL=OPEN

ADDRESS	0x2A	0X28	0x26	0x24	0x22	0x20
RH (KOhm)	OPEN	3.9	3	2.2	1.3	10
RL (KOhm)	10	1.3	2.3	3	3.9	OPEN
BUS_SEL	0%	25%	40%	60%	75%	100%

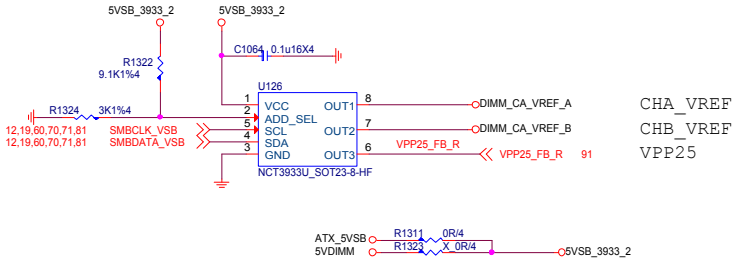
UPI VOLTAGE CONSOLE

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



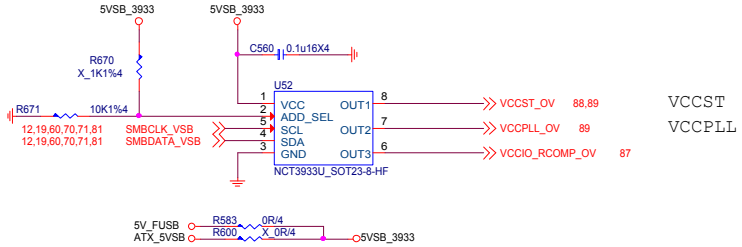
UPI VOLTAGE CONSOLE

0x28:RH=9.1K,RL=3K



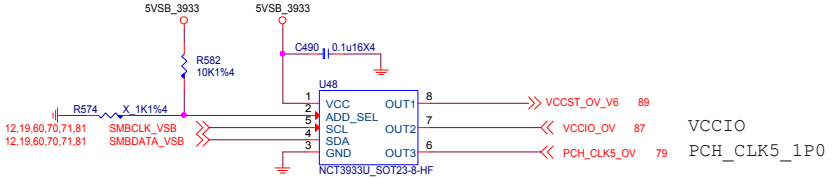
UPI VOLTAGE CONSOLE

0x2A:RH=9.1K,RL=3K



UPI VOLTAGE CONSOLE

0x20:RH=18K,RL=13K



MICRO-STAR INT'L CO.,LTD		
MS-7A98		
Size: Custom	Document Description: OV-NCT3933	Rev: 10
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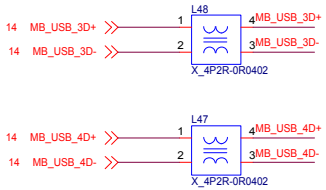
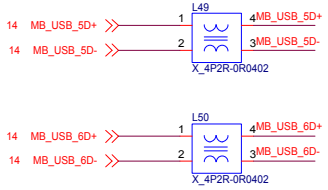
FRONT USB PORT 3,4



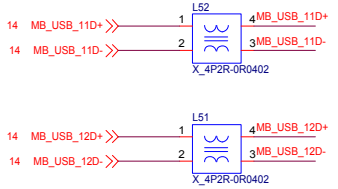
0R:R3C-0000012-W08

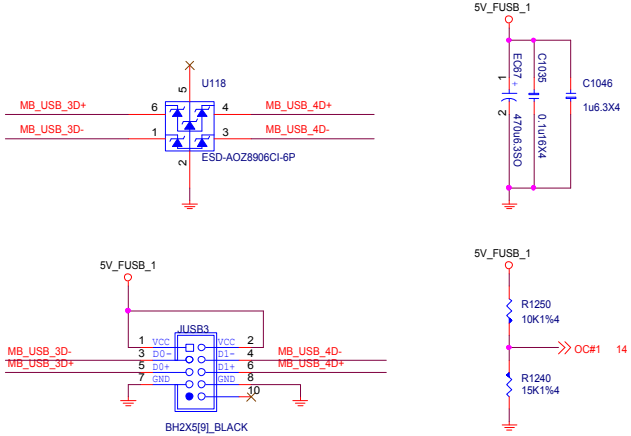
FRONT USB PORT 5,6

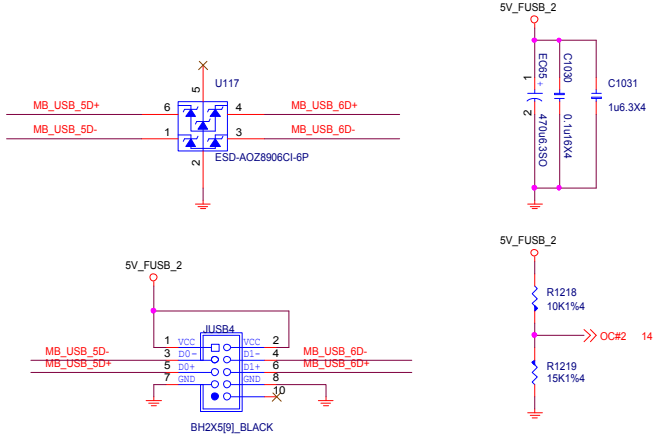


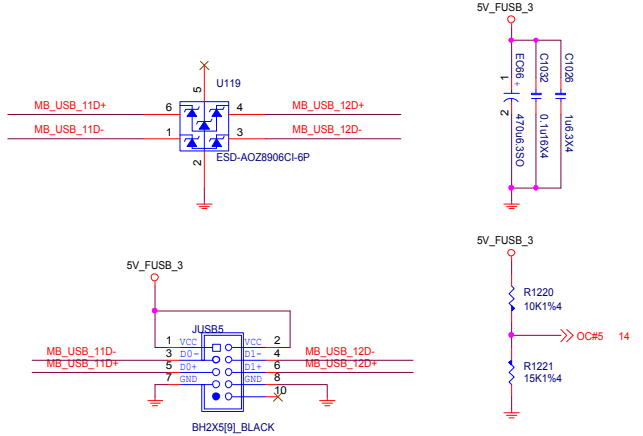
0R:R3C-0000012-W08

FRONT USB PORT 11,12









MICRO-STAR INT'L CO.,LTD		
MS-7A98		
Size: Custom	Document Description: Front USB2 HEADER CONN	Rev: 10
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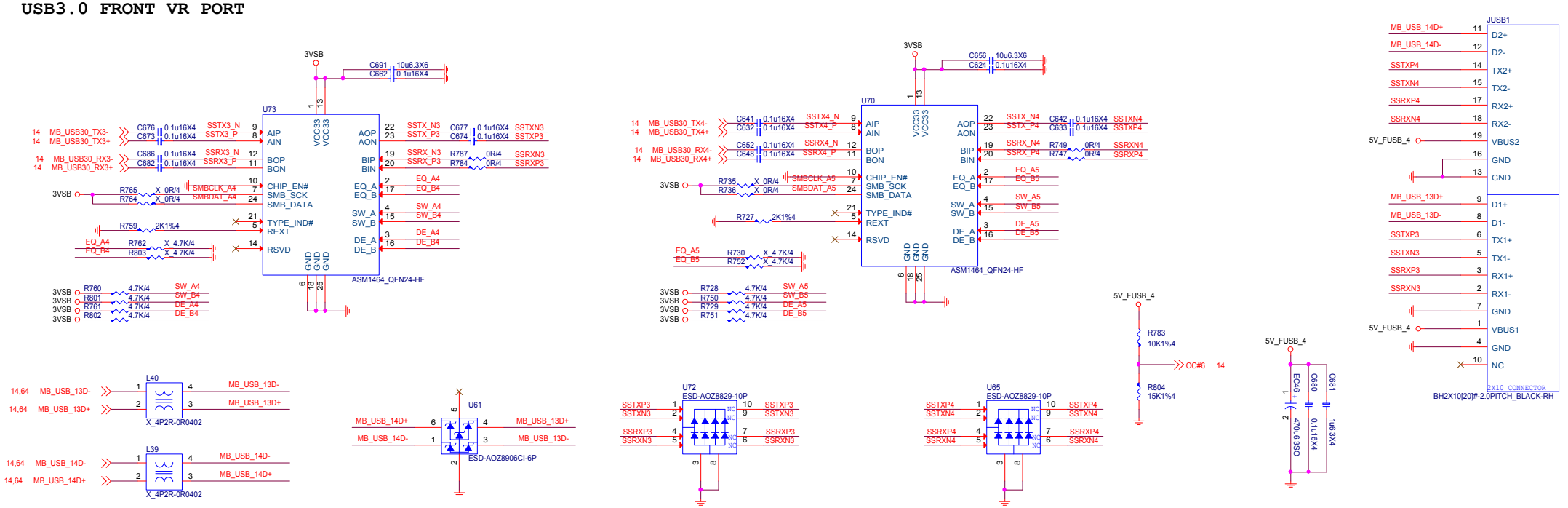
USB3.0 FRONT VR PORT

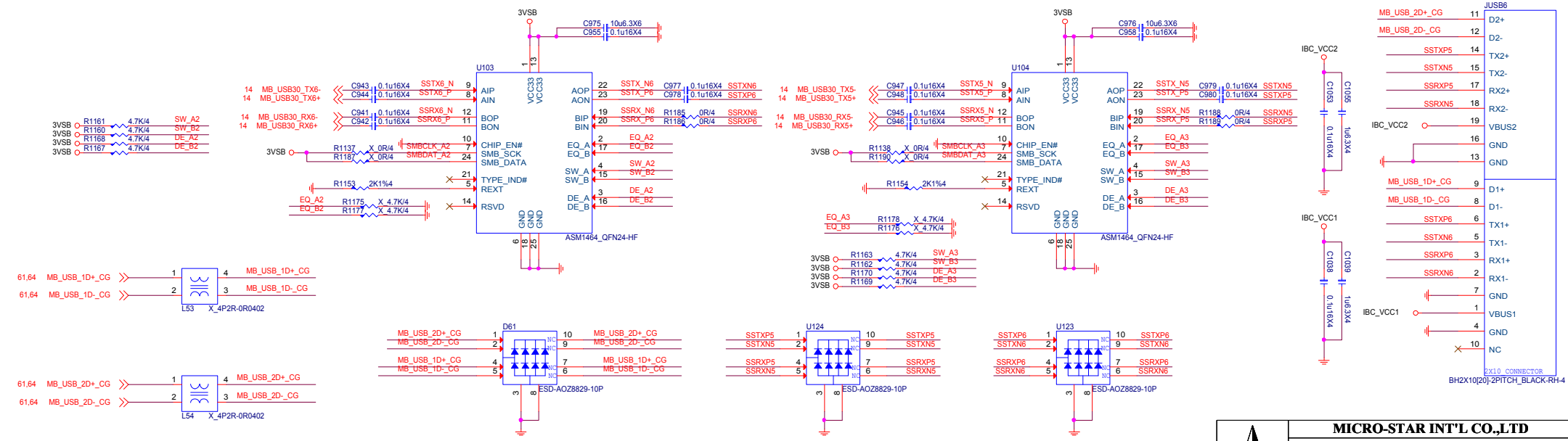


FRONT USB30 PORT 0,1,13,14

USB3.0 FRONT CHARG PORT

layout SWAP

1.8A



MICRO-STAR INT'L CO.,LTD			
MS-7A98			
Size: Custom	Document Description: Front USB3 HEADER CONN		Rev: 10
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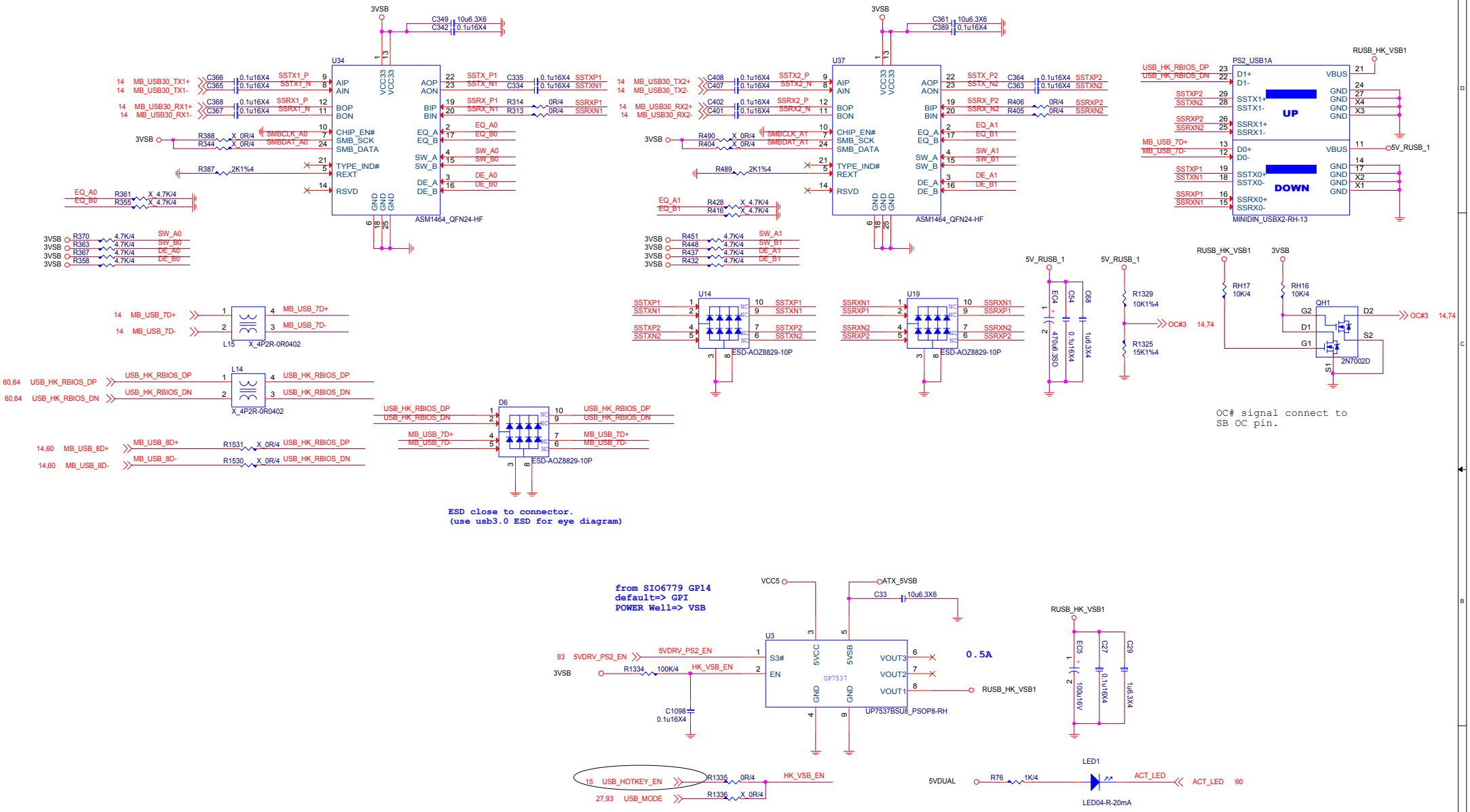
USB30 PORT 0,1,4,5



MICRO-STAR INT'L CO.,LTD		
MS-7A98		
Size: Custom	Document Description: Rear USB3 PS2 connector	Rev: 10
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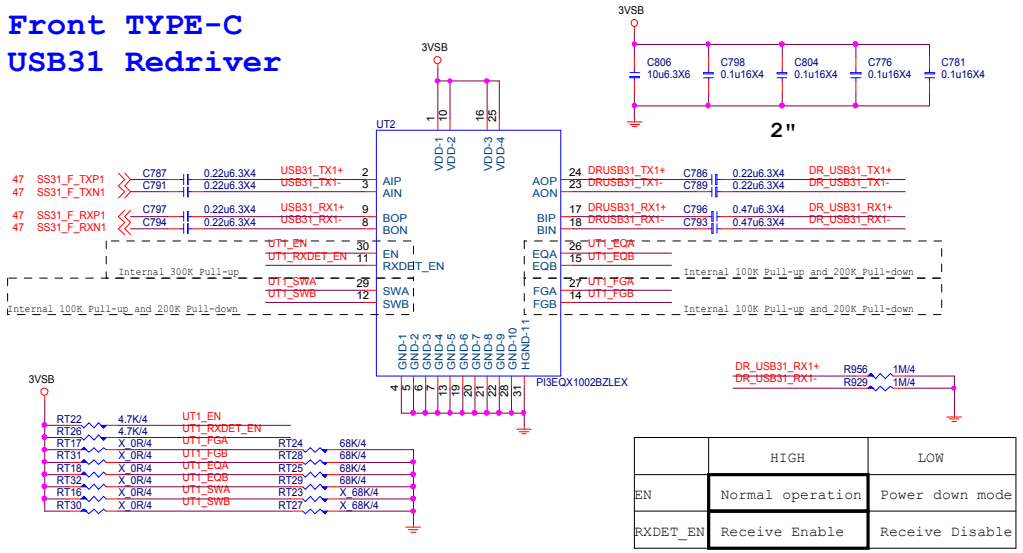
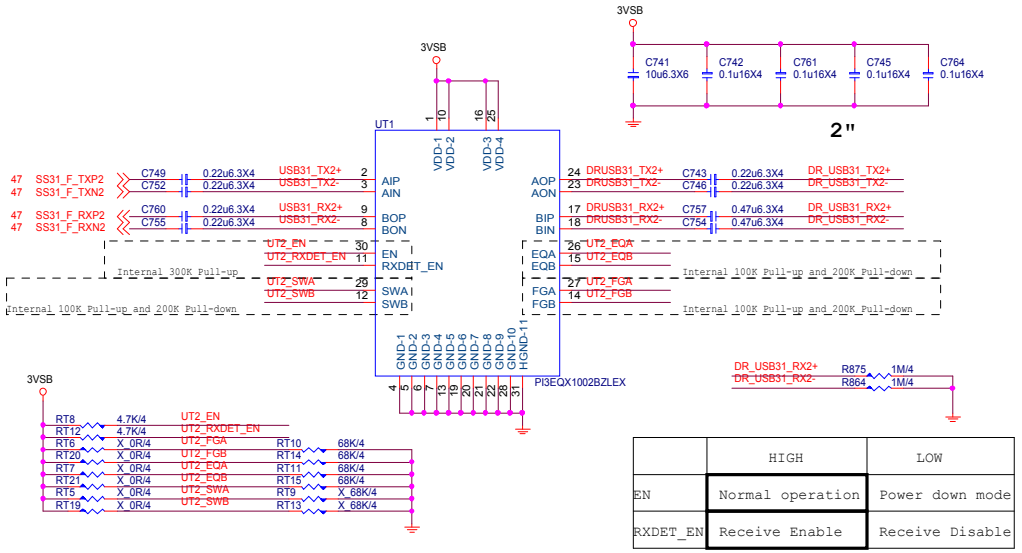
Front TYPE-C USB31 Redriver



	HIGH	LOW
EN	Normal operation	Power down mode
RXDET_EN	Receive Enable	Receive Disable



	HIGH	LOW
EN	Normal operation	Power down mode
RXDET_EN	Receive Enable	Receive Disable

EQA/B are the selection pins for the equalization selection

	Equalizer setting (dB)	
EQA/B	@2.5GHz	@5GHz
0	5.1	10.9
R	1.9	6.7
F	3.5	8.9 (Default)
1	6.8	13.1

Flat Gain Setting:

FGA/B are the selection bits for the DC gain

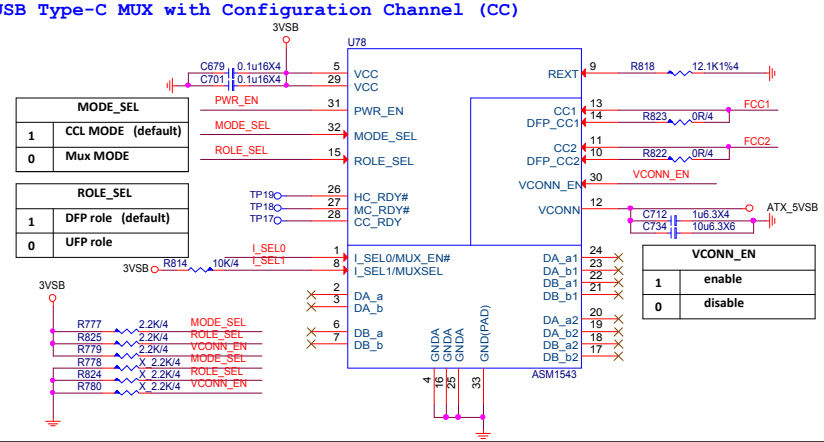
	Flat Gain Settings
FGA/B	dB
0	-3
R	-1.5
F	0 (Default)
1	+2

-1dB compression point linear Swing Setting:

SWA/B are the selection bits for the output linear swing setting

	Output Linear Swing Settings
SWA/B	mVppd
0	800
R	1200
F	1000 (Default)
1	1100

USB Type-C MUX with Configuration Channel (CC)



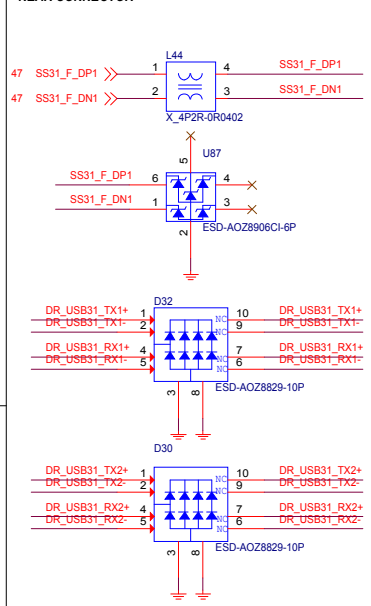
MODE_SEL	
1	CCL MODE (default)
0	Mux MODE

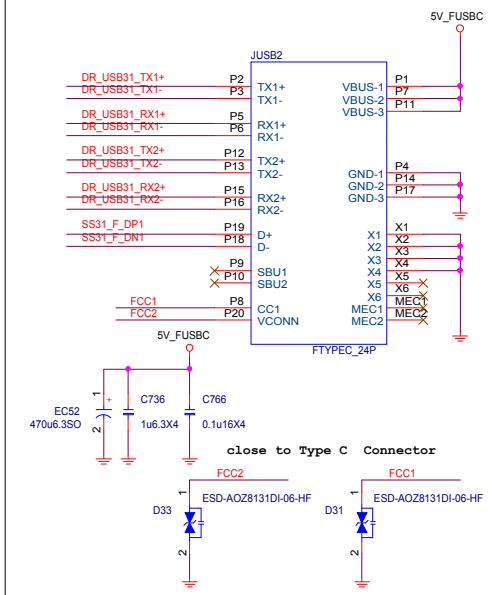
ROLE_SEL	
1	DFP role (default)
0	UFP role

VCONN_EN	
1	enable
0	disable

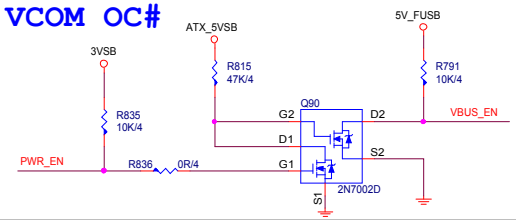
ESD Protection

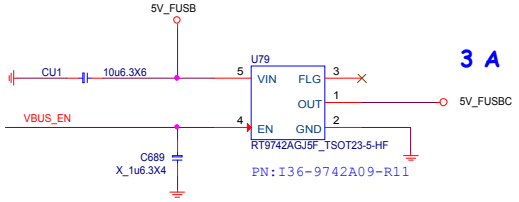
NEAR CONNECTOR



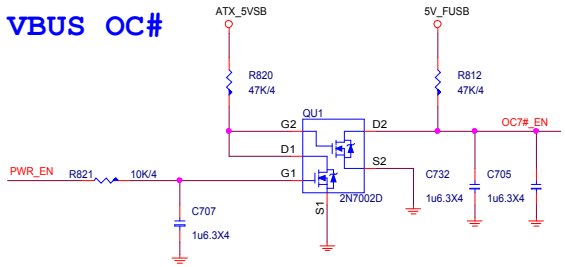


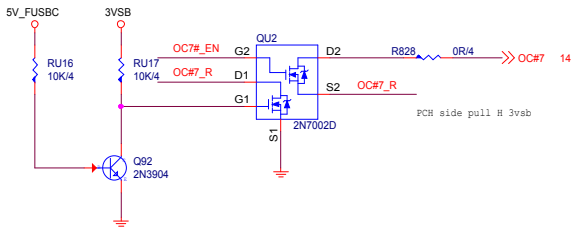
VCOM OC#



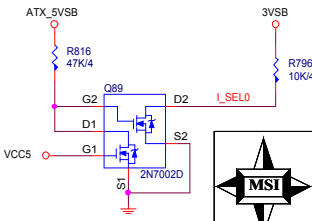


VBUS OC#





Current Mode



0	X	Default for 900mA
1	0	1.5A @5V
1	1	3A @5V

1.5A under S3 mode
3A under S0 mode

MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	Front USB TYPEC CONN	10
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SSTX1+ SSTX1- SSTX2+ SSTX2- SSTX3+ SSTX3- SSTX4+ SSTX4-

SSRX1P SSRX1N SSRX2P SSRX2N SSRX3P SSRX3N SSRX4P SSRX4N

SSD1P SSD1N SSD2P SSD2N SSD3P SSD3N SSD4P SSD4N

63,76 SSD3P
63,76 SSD3N
L55
X_4P2R-0R0402

63,76 SSD4P
63,76 SSD4N
L56
X_4P2R-0R0402

U134
SSD3P SSD3N SSD4P SSD4N
ESD-AOZ8906CI-6P
NEAR CONNECTOR

5V_RUSB_2
EC11 470u6.3SO
C129 0.1u16X4
C128 1u6.3X4
C130 22u6.3X6
By layout trace over

LAN_USB1A
SSD3P SSD3N SSTX3+ SSTX3- SSRX3P SSRX3N SSD4P SSD4N SSTX4+ SSTX4- SSRX4P SSRX4N
D1+ D1- SSTX1+ SSTX1- SSRX1+ SSRX1- D0+ D0- SSTX0+ SSTX0- SSRX0+ SSRX0-
UP
DOWN
VBUS-2 GND_D-2 GND-6 GND-7 GND-8 GND-9 GND-10 VBUS-1 GND_D-1 GND-1 GND-2 GND-3 GND-4 GND-5
5V_RUSB_2
5V_RUSB_2
RJ45_USBX2_LEDX2-1000-RH-10

63,76 SSD1P
63,76 SSD1N
L57
X_4P2R-0R0402

63,76 SSD2P
63,76 SSD2N
L58
X_4P2R-0R0402

U139
SSD1P SSD1N SSD2P SSD2N
ESD-AOZ8906CI-6P
NEAR CONNECTOR

5V_RUSB_3
EC6 470u6.3SO
C162 0.1u16X4
C163 1u6.3X4
C160 22u6.3X6
By layout trace over

LAN_USB2A
SSD1P SSD1N SSTX1+ SSTX1- SSRX1P SSRX1N SSD2P SSD2N SSTX2+ SSTX2- SSRX2P SSRX2N
D1+ D1- SSTX1+ SSTX1- SSRX1+ SSRX1- D0+ D0- SSTX0+ SSTX0- SSRX0+ SSRX0-
UP
DOWN
VBUS-2 GND_D-2 GND-6 GND-7 GND-8 GND-9 GND-10 VBUS-1 GND_D-1 GND-1 GND-2 GND-3 GND-4 GND-5
5V_RUSB_3
5V_RUSB_3
RJ45_USBX2_LEDX2-1000-RH-10

5V_RUSB_2 3VSB
R1340 10K/4
R1339 10K/4
Q164
G2 D1 G1 D2 S2 S1
2N7002D
OC# signal connect to SB OC pin.
OC#4 14,76

5V_RUSB_3 3VSB
RH19 10K/4
RH18 10K/4
QH2
G2 D1 G1 D2 S2 S1
2N7002D
OC# signal connect to SB OC pin.
OC#4 14,76

MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	Rear LAN_USB3.0 connector	10

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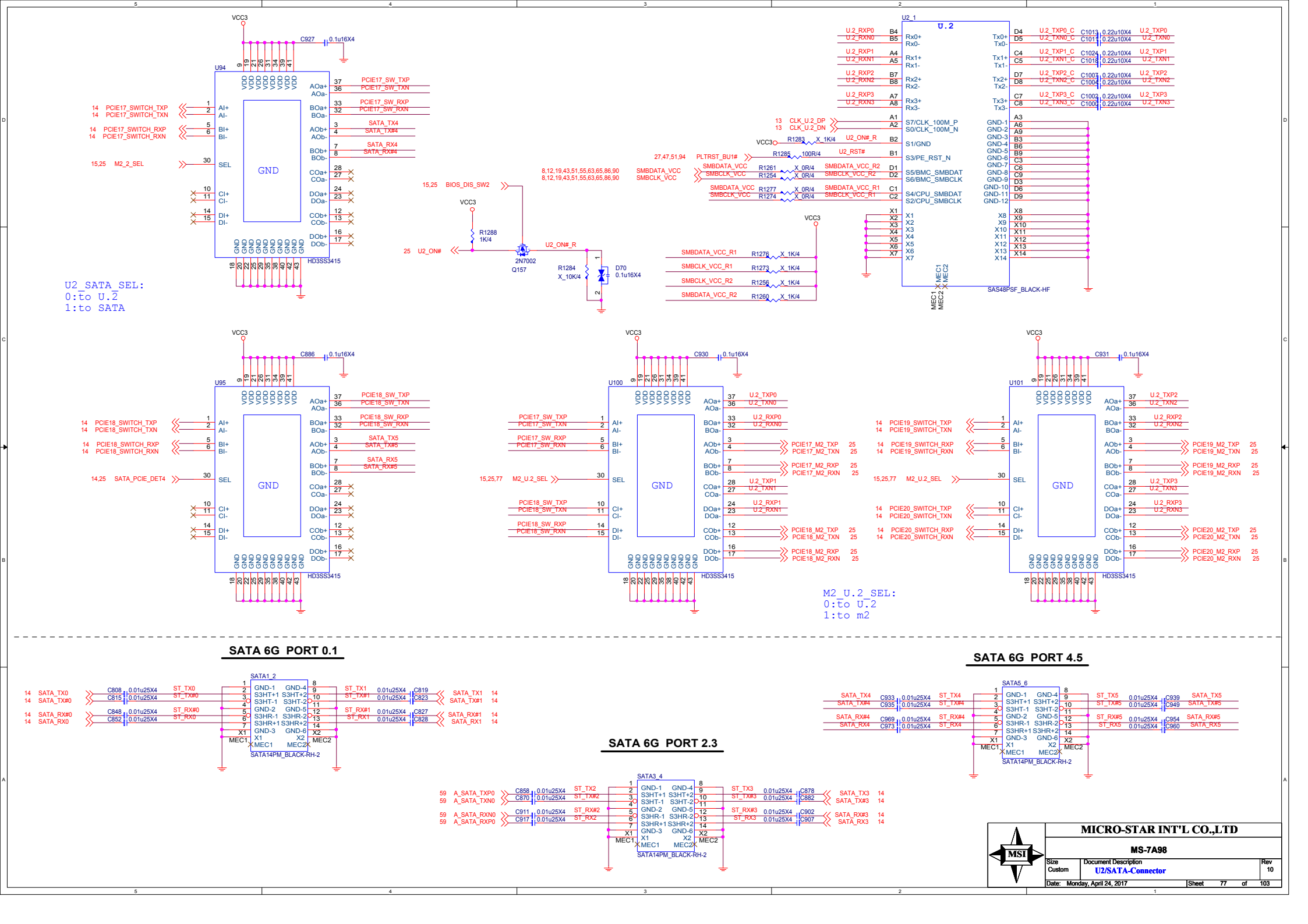
U2_SATA_SEL:
0:to U.2
1:to SATA
M2_U.2_SEL:
0:to U.2
1:to m2
SATA 6G PORT 0.1
SATA 6G PORT 2.3
SATA 6G PORT 4.5
U.2
GND
SAS48PSF_BLACK-HF
HD3SS3415
SATA14PM_BLACK-RH-2
MICRO-STAR INT'L CO.,LTD
MS-7A98
U2/SATA-Connector
Monday, April 24, 2017

780mA

EMI

NEAR CONNECTOR

KEY E

10uF+0.1uF+0.01uF at one end of socket in support of 3.3 V3V pins 2 and 4.
10uF+0.1uF+0.01uF at the other end of the socket in support of 3.3 V3V pins 70 and 72.

close to pin2

MICRO-STAR INT'L CO.,LTD	
MS-7A98	
Size: Custom	Document Description: WIFI+BT Connector
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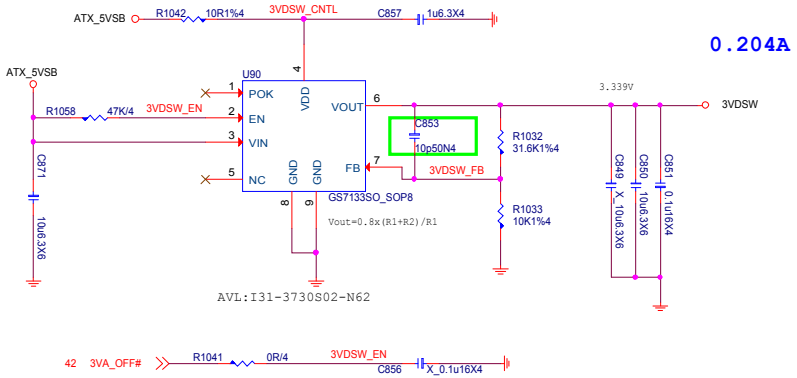
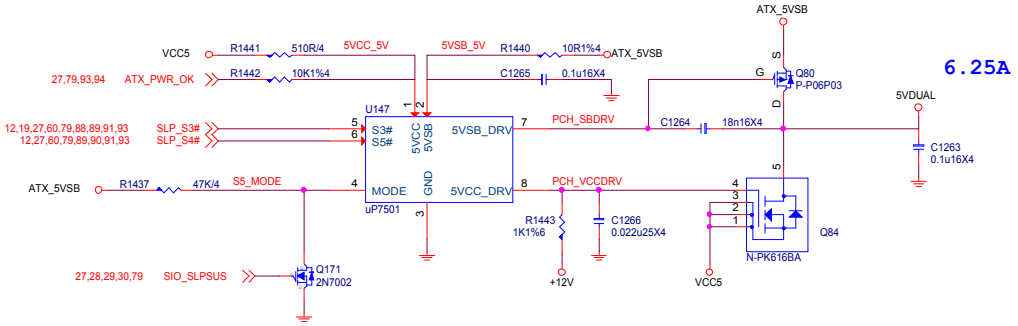
3VDSW



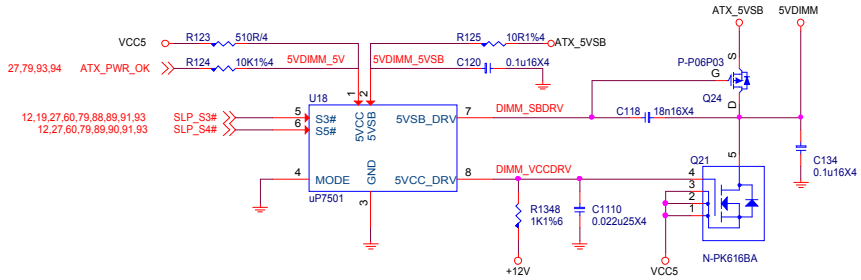
5VDUAL



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

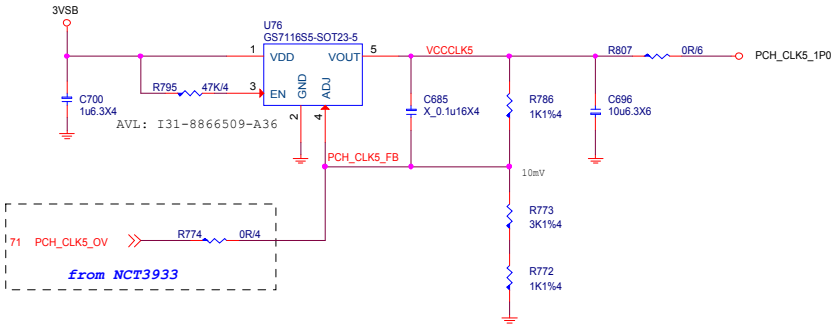
5VDIMM FOR DDR

5.15A

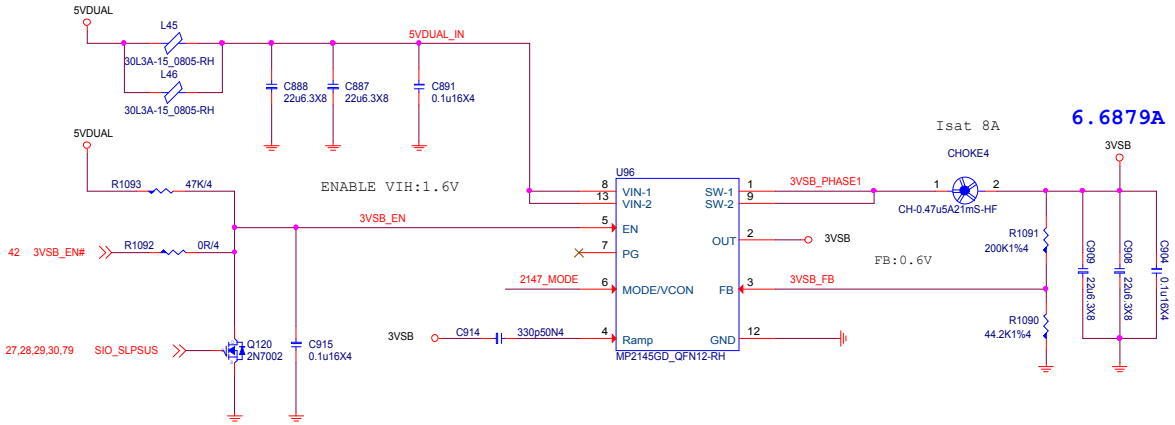


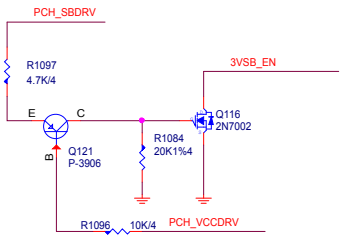
7501 Mode
H:Support S0/S3/S5
L:Support S0/S3

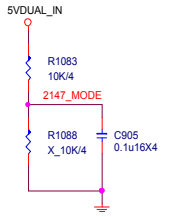
5VDRV1看VCC5起來6-10ms後起來,因為當初挑power



3VSB for OC & Gaming







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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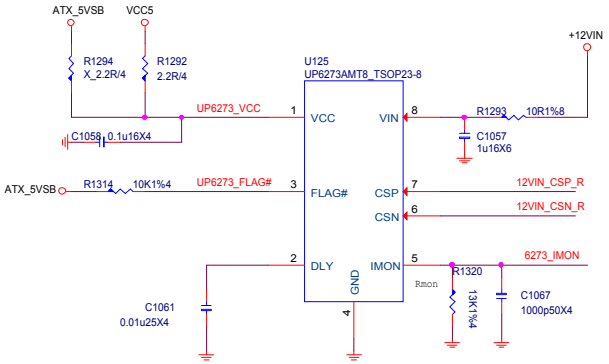
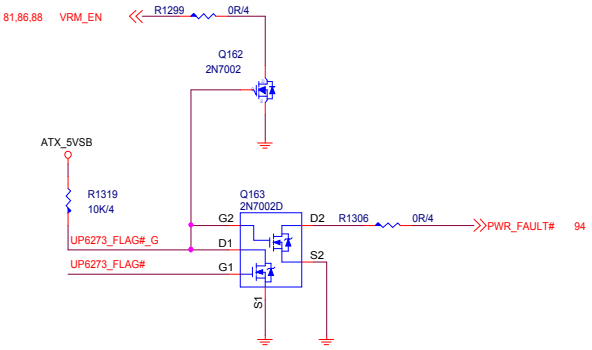
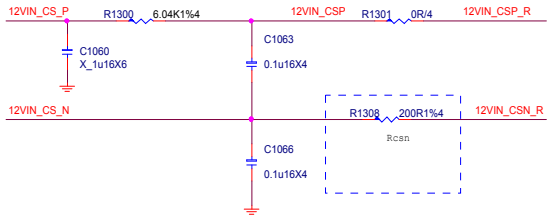
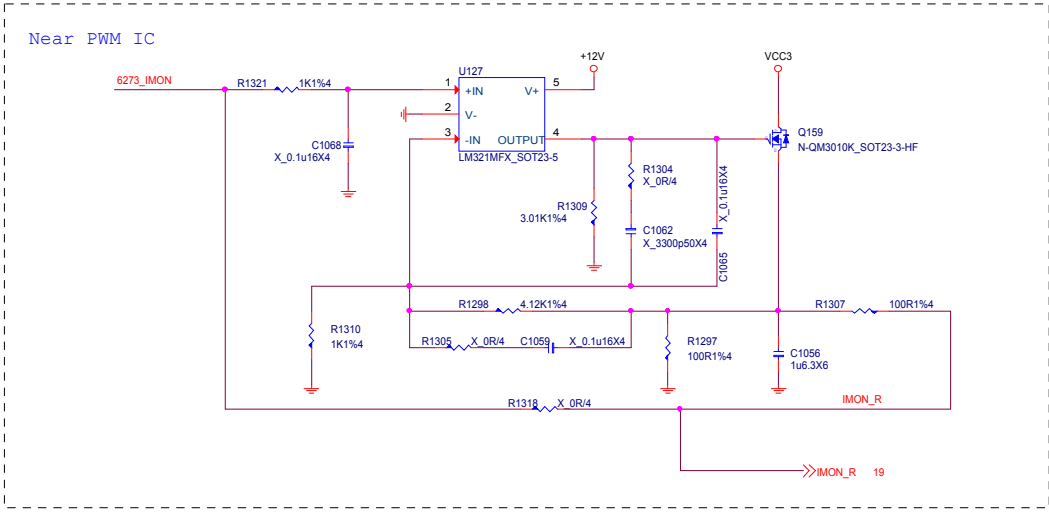
POWER METER

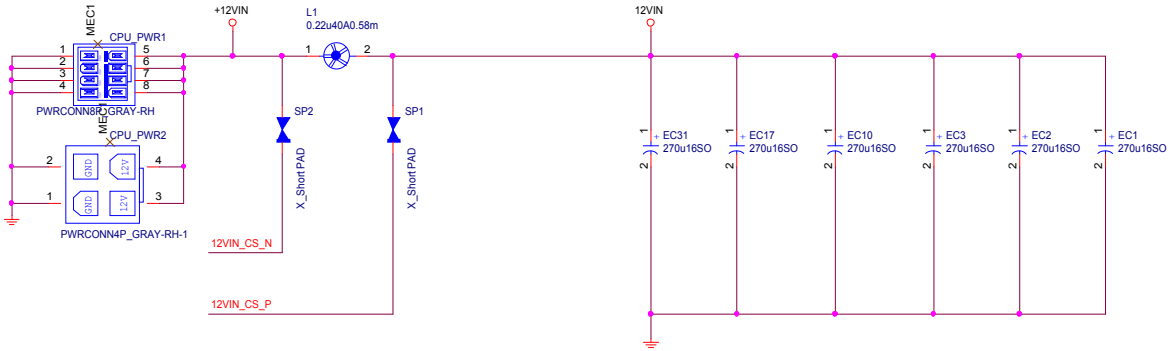


Iin=(Vmon*Rcsn)/(Rmon*Rdc)
Vmon=1.2
can change OCP trigger level by Rcsn and Rmon
Iin=1.2*200/(13*0.58)=31.8A





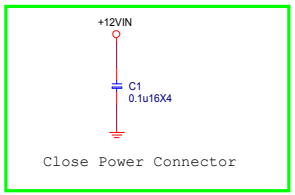




UPI VOLTAGE CONSOLE

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



MICRO-STAR INT'L CO.,LTD

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Custom	CURRENT SENSE-UP6273	10

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Vcore: ICC Max 100A
LL: 2.1 mohm
OCP: 240A

VGT: ICC Max 48A
LL: 3.1 mohm
OCP: 88A

U15

VIN
Ctrl
Loop 1
SMB
SVID
VSEN
Loop 2

VINSEN
I_IN
EN
EN_L2/PWROK/CAT_FLT
VRDY1
VRDY2
VRHOT_ICRIT#
SM_CLK
SM_DIO
SM_ALERT#
ADDR_PROT
SV_CLK
SV_DIO
SV_ALERT#/SVT
SV_ADDR/VDDIO
PIN_ALERT#
CFILT
VSEN
VRTN
VSEN_L2
VRTN_L2

PWM1 ISEN1 IRTN1
PWM2 ISEN2 IRTN2
PWM3 ISEN3 IRTN3
PWM4 ISEN4 IRTN4
PWM5 ISEN5 IRTN5
PWM6 ISEN6 IRTN6
RCSP RCSM
TSEN1
PWM8/PWM1_L2 ISEN8/ISEN 1_L2 IRTN8/IRTN 1_L2
PWM7/PWM2_L2 ISEN7/ISEN 2_L2 IRTN7/IRTN 2_L2
RCSP_L2 RCSM_L2
TSEN2/VAUXSEN

VCC GND NC-1 NC-2 NC-3 NC-4

IR35201_R4

SMB Address: 0X70

Close IC
Close CPU
Diff pair

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

		VR53	VR54	VC20	VR58	VR57	VR59	VR60
Default	Temp	6.49k	10k	100p	X	0R	X	0R
	VAUXSEN	5.76k	1k	0.01u	0R	X	0R	X

20170410

防ss下漏電到vccs

Company	MICRO-STAR INT'L CO.,LTD
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Size	Custom
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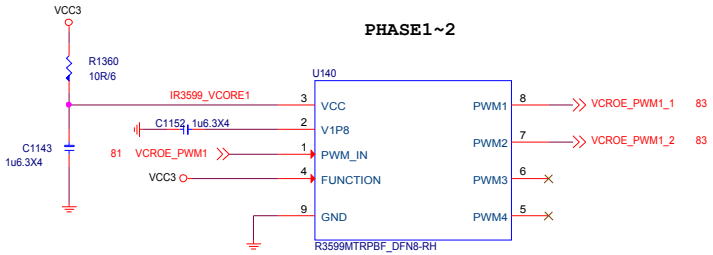
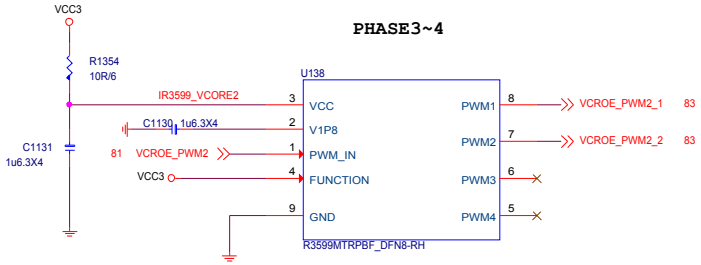
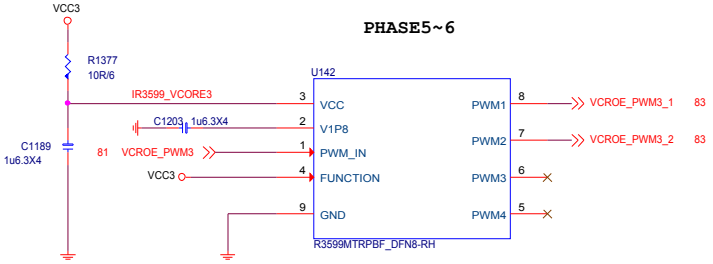
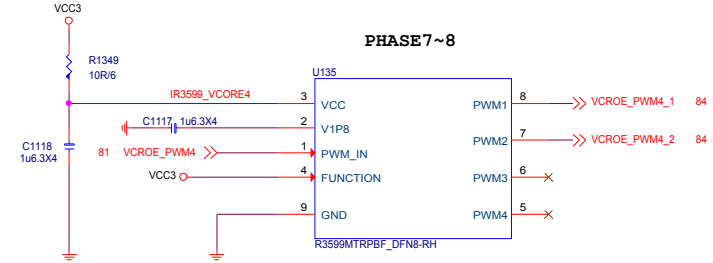
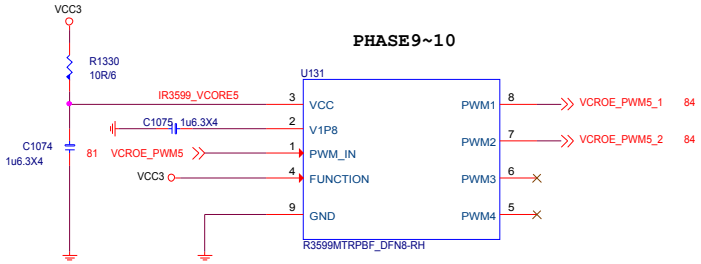
VCORE Double

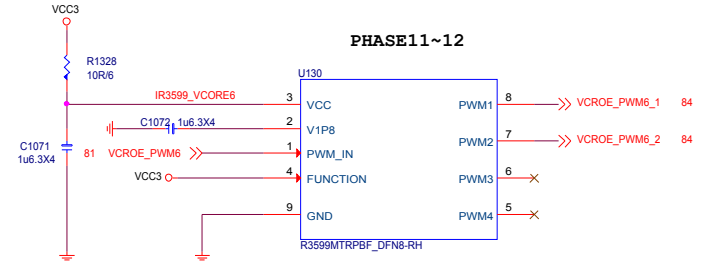


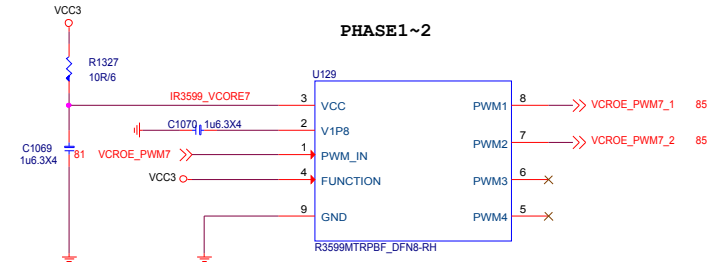


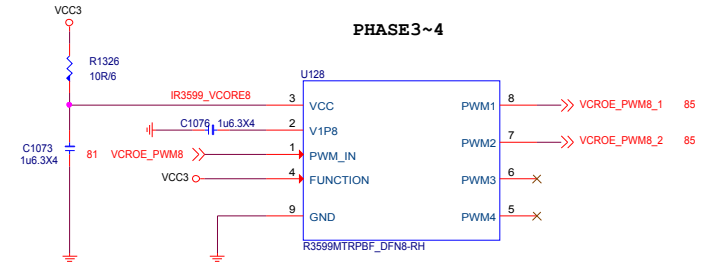












MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	CPU PWR-IR3599	10

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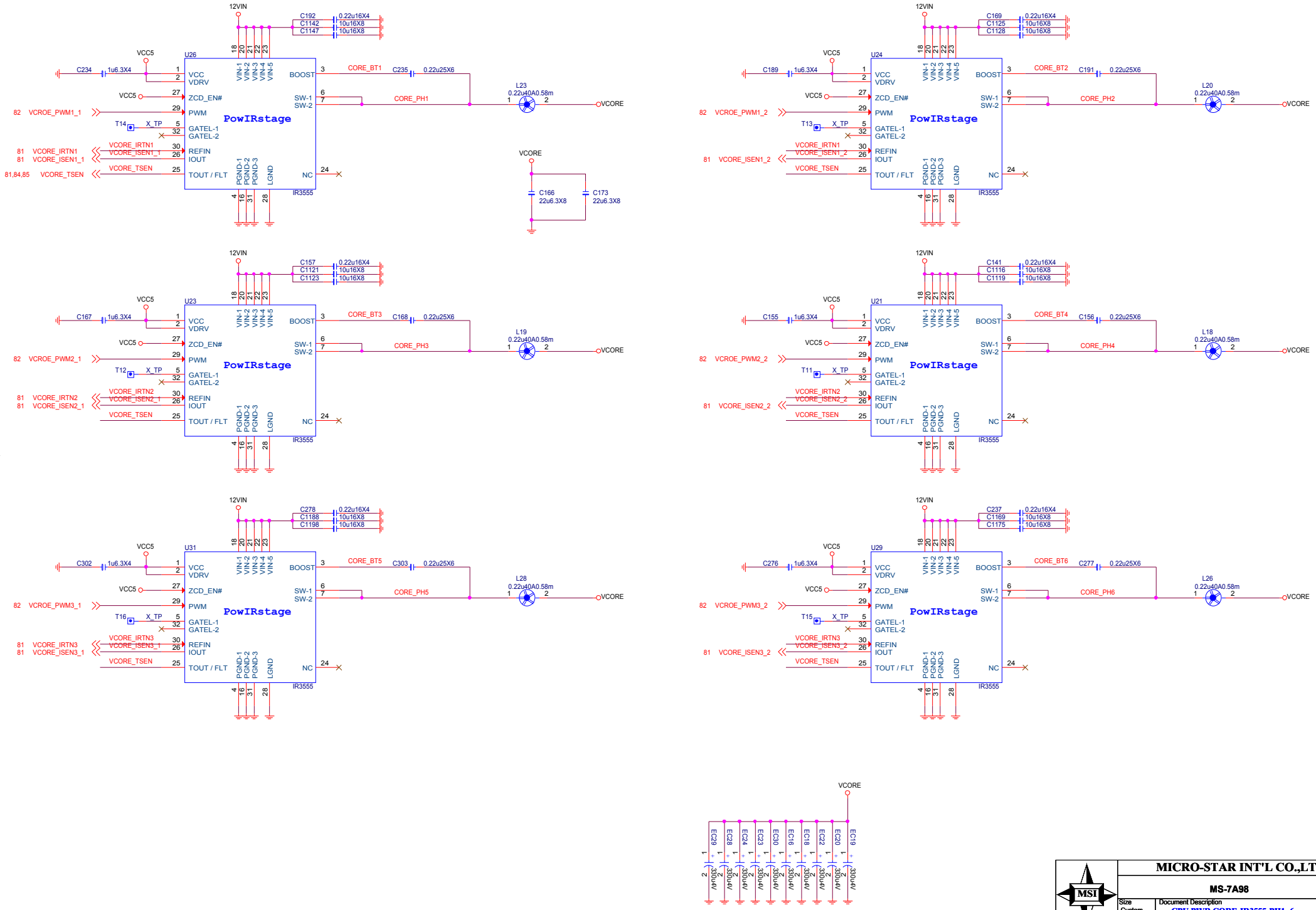
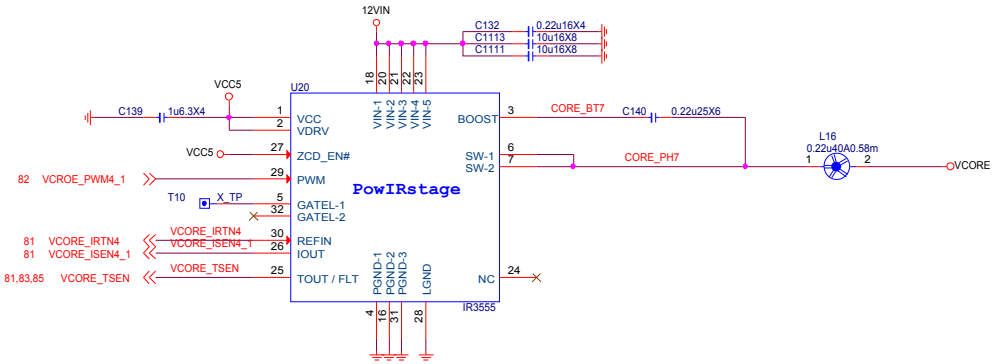
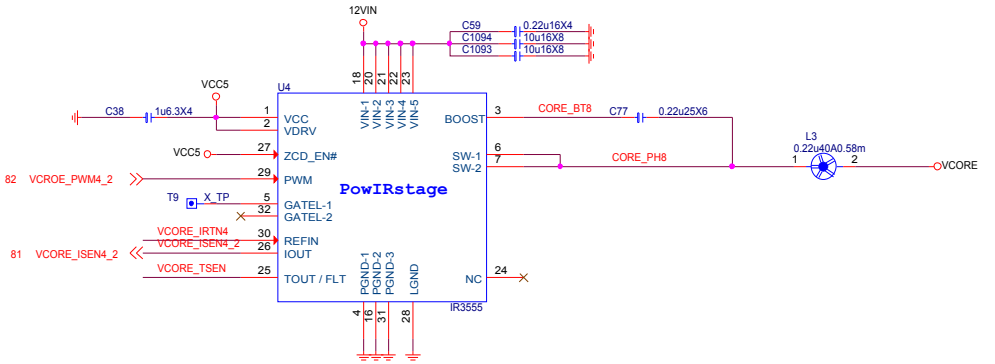
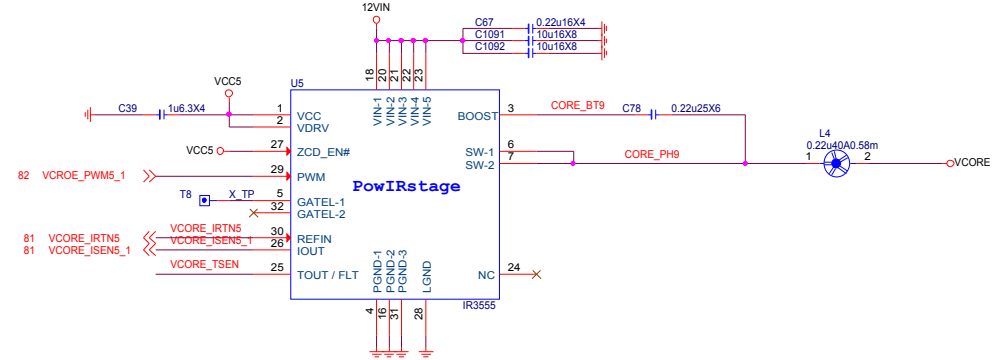
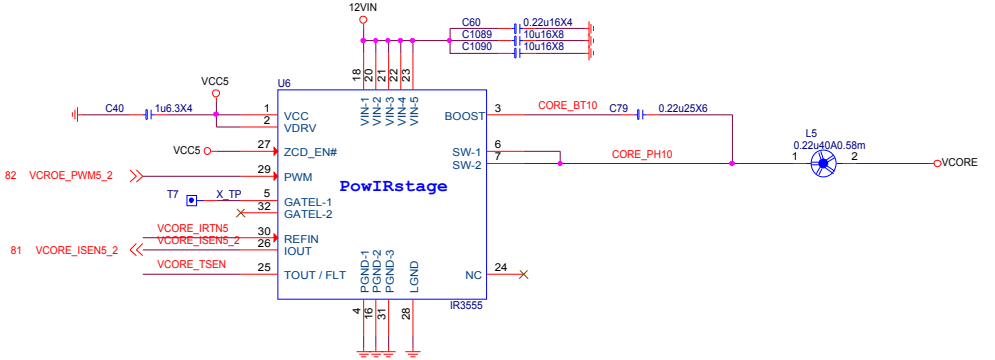


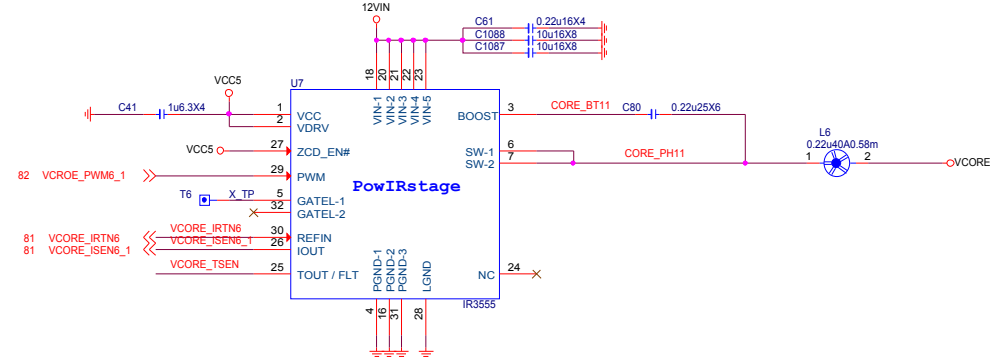
MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A98	
Size: Custom	Document Description: CPU PWR CORE-IR3555-PH1~6	Rev: 10
Date: Monday, April 24, 2017	Sheet 83 of 100	

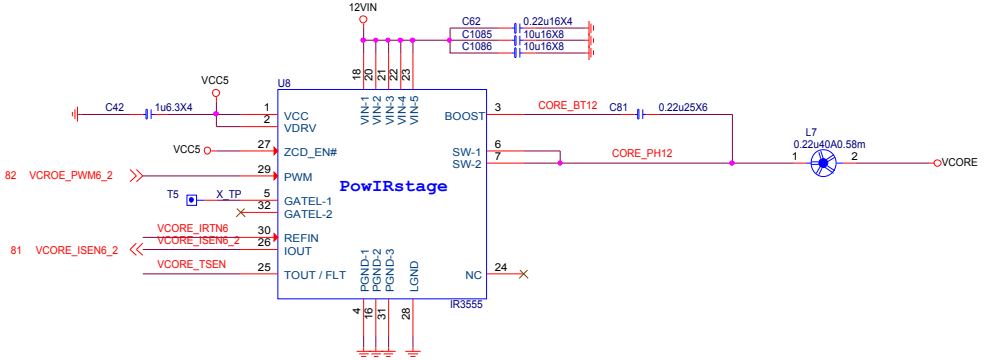












MICRO-STAR INT'L CO.,LTD

MS-7A98

Size	Document Description	Rev
Custom	CPU PWR CORE-IR3555-PH7~12	10

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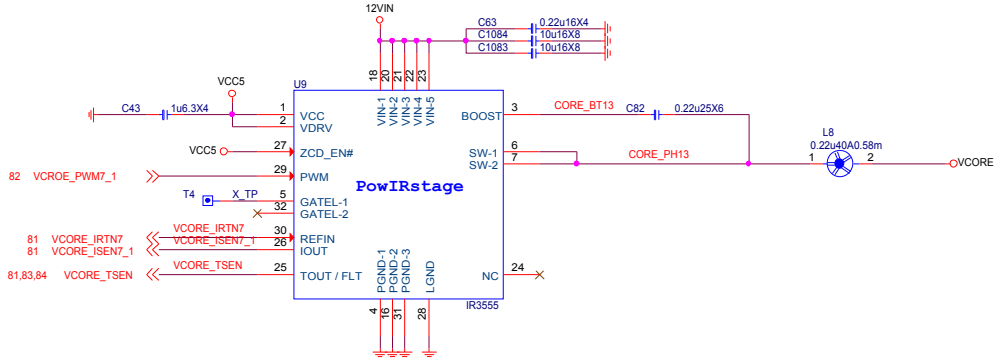

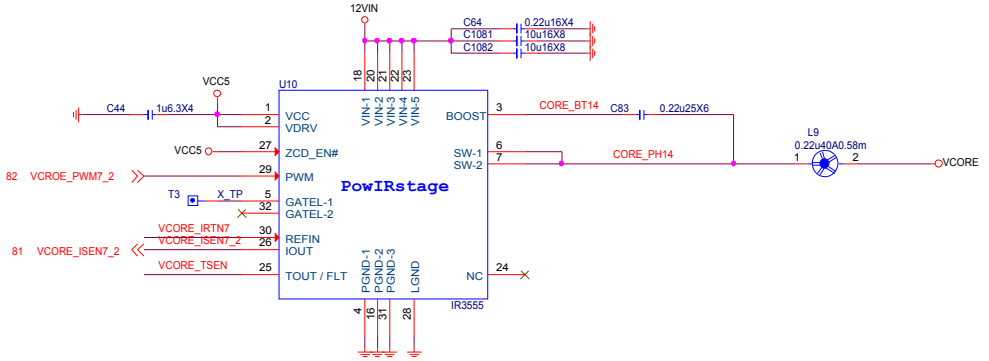

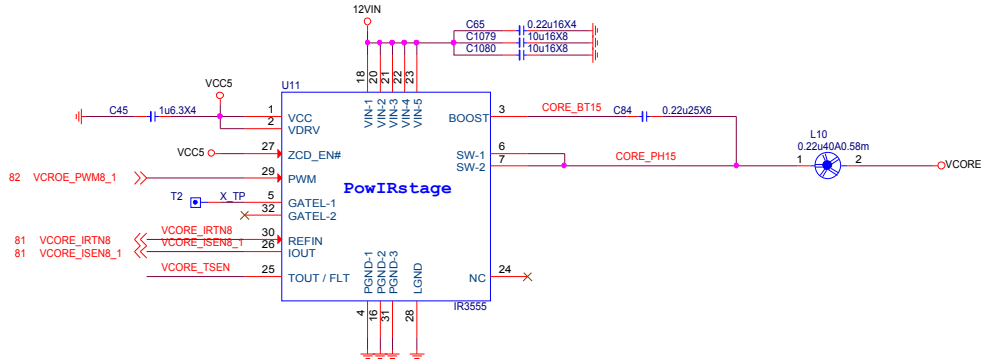

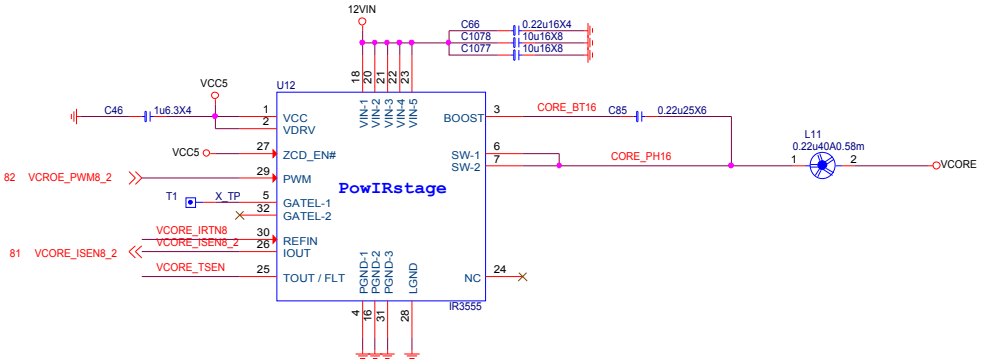

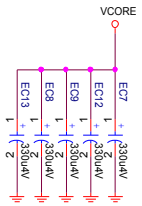

MICRO-STAR INT'L CO.,LTD

MS-7A98

Size	Document Description	Rev
Custom	CPU PWR CORE-IR3555-PH1316	10

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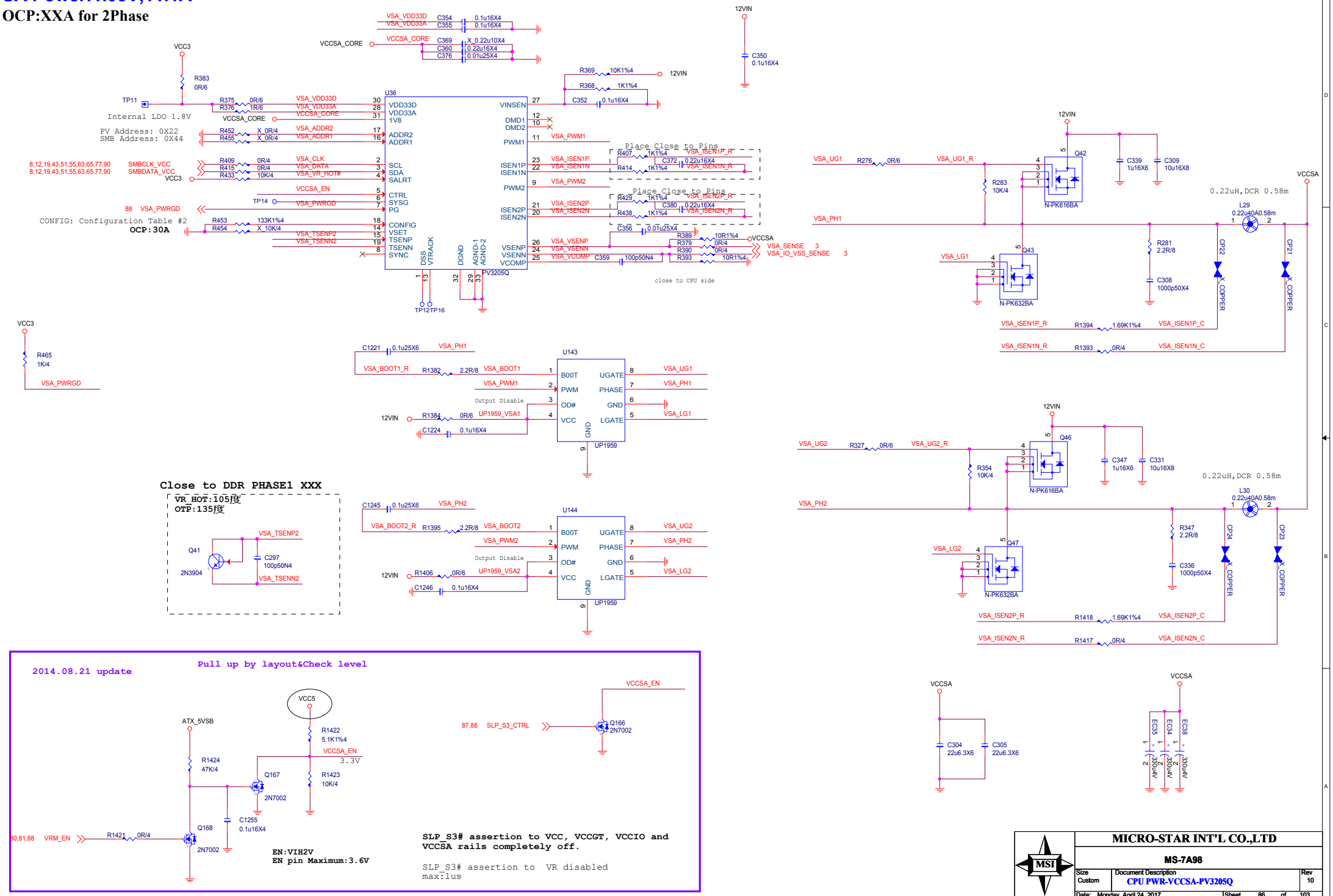
SA Power:1.05V,11.1A

OCP:XXA for 2Phase



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Size: Custom	Document Description: CPU PWR-VCCSA-PV3205Q
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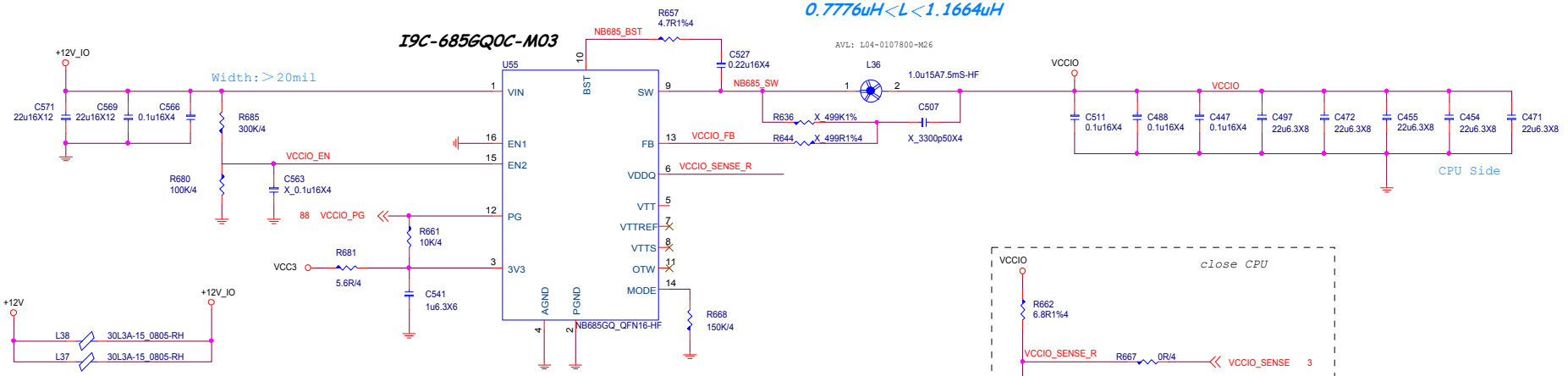
IO Power:0.95V,5.5A

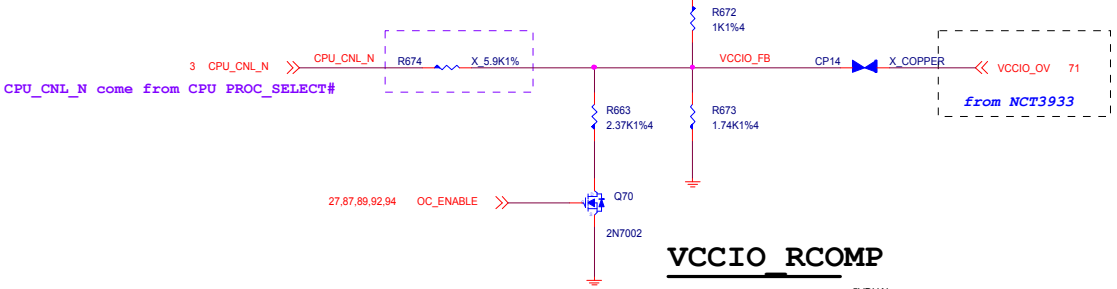
IMAX 10A
ILIMIT=10A~12A
*IOC=ILIMIT+40%*IMAX/2=12A~14A.*

support OV=>NB685

0.7776uH<L<1.1664uH

I9C-685GQ0C-M03





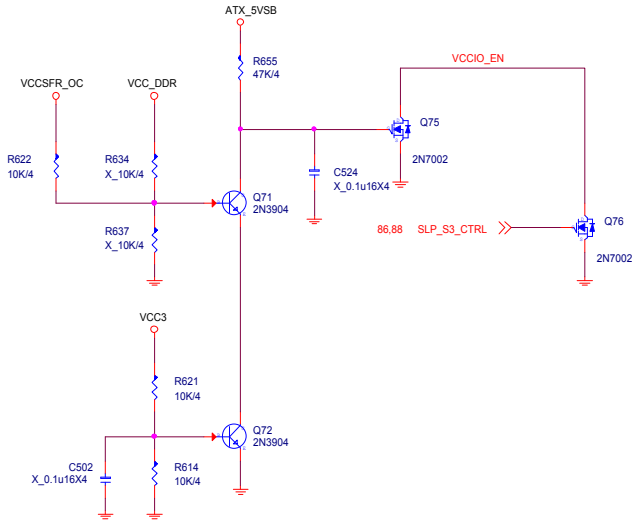
CPU_CNL_N come from CPU PROC_SELECT#

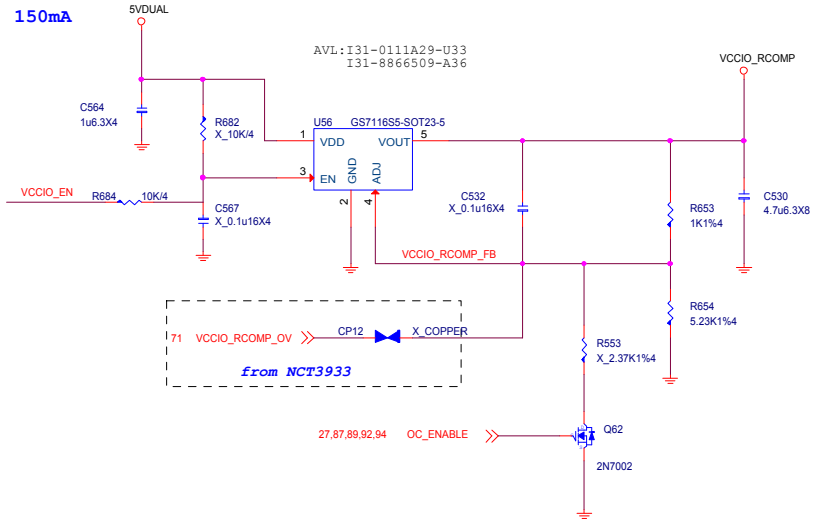
SLP_S3# assertion to VCCIO VR disabled <1uS.

SLP_S3# assertion to VCC, VCCGT, VCCIO and VCCSA rails completely off. <500ms

VCCIO_RCOMP

1.0V; 150mA





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Size: Custom	Document Description: CPU PWR-VCCIO-NB685	Rev: 10
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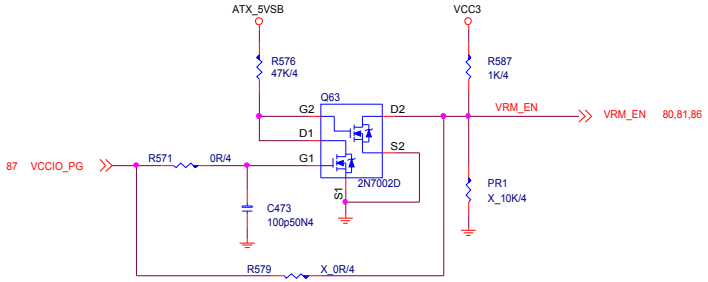

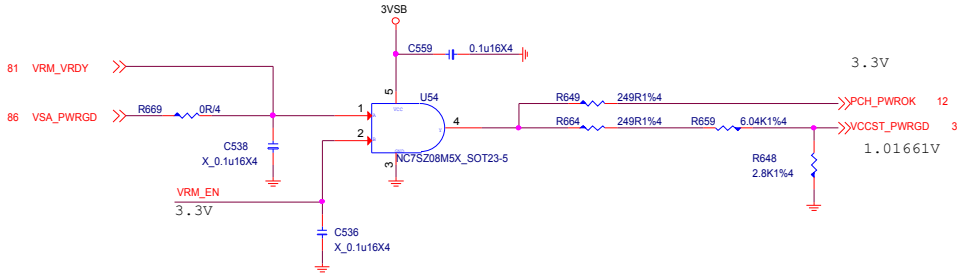

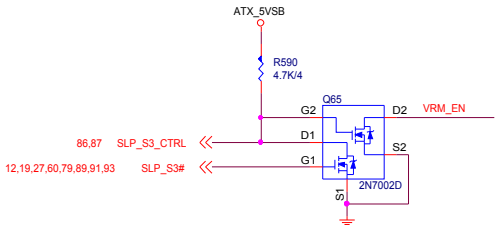

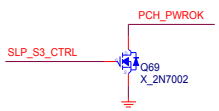

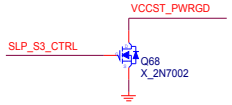

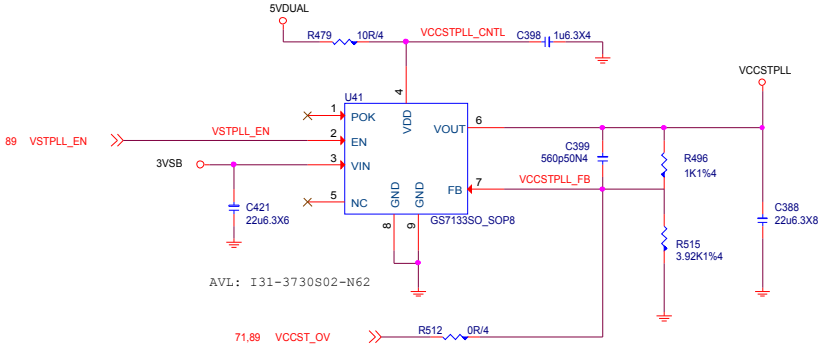

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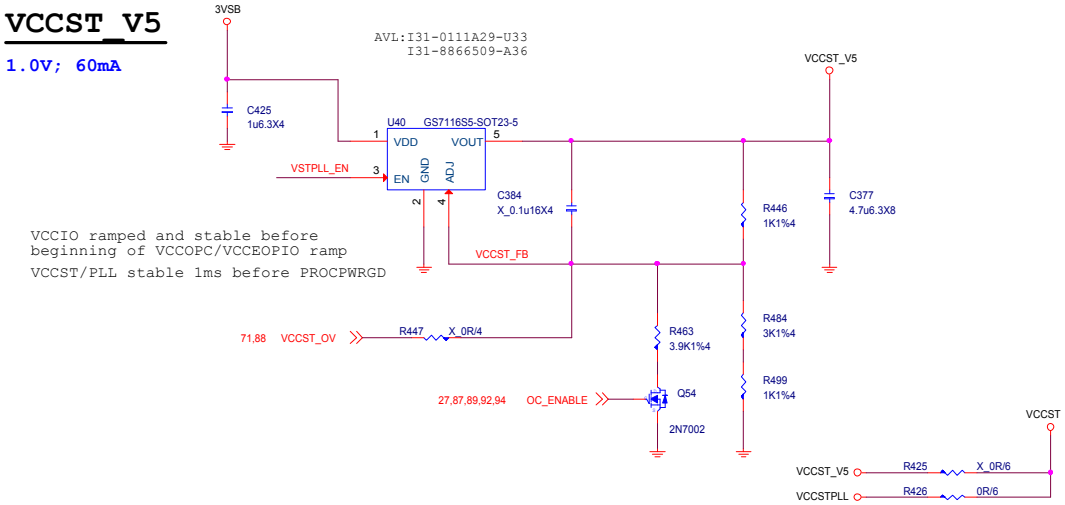
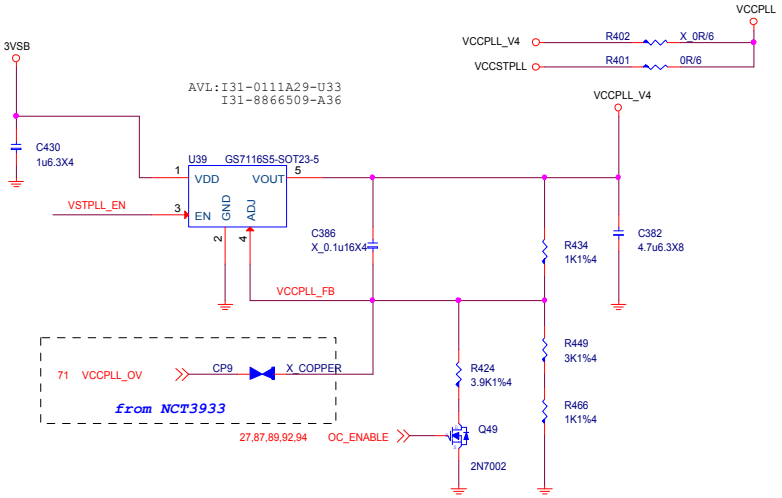
VCCST_V5

1.0V; 60mA



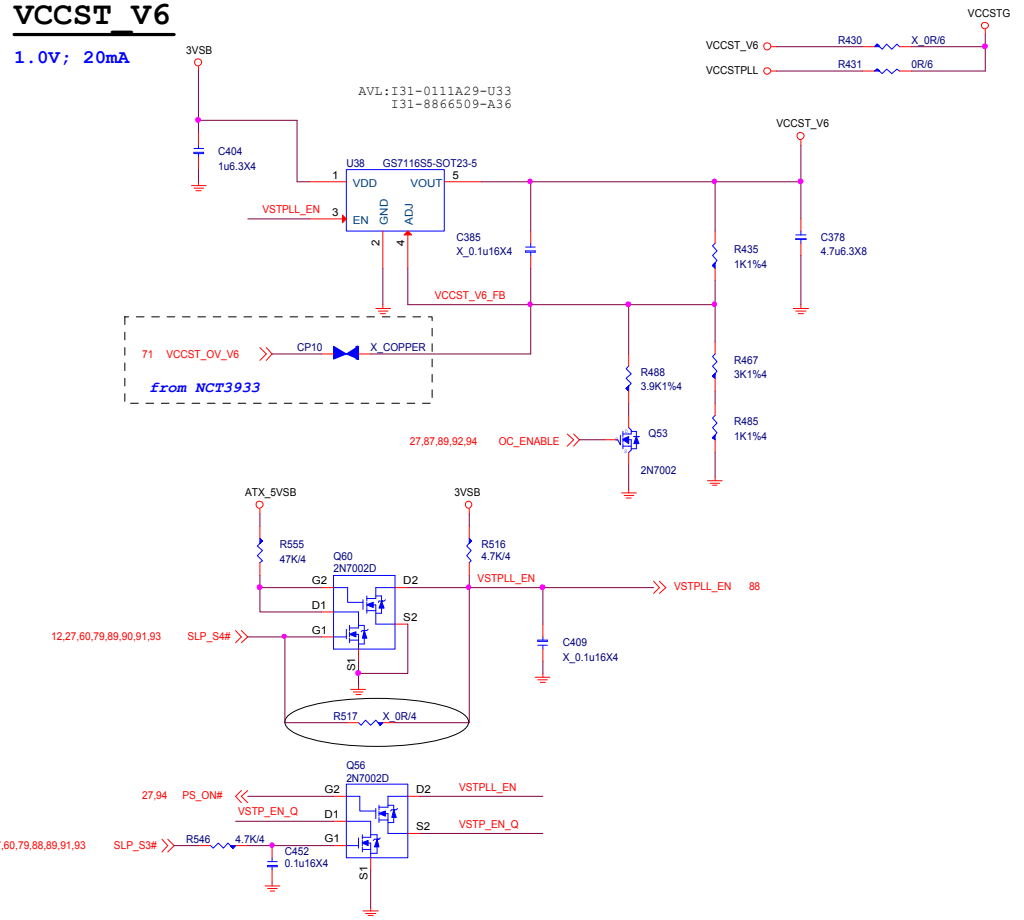
VCCPLL_V4

1.0V; 150mA



VCCST_V6

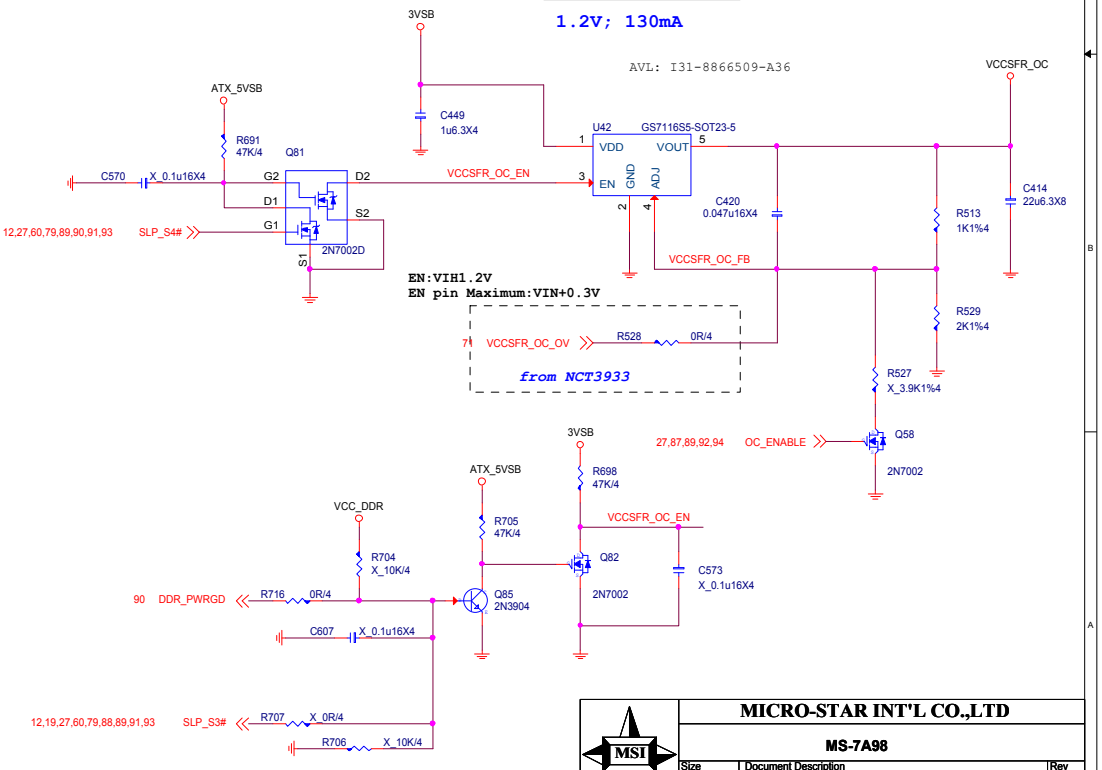
1.0V; 20mA



2014.08.21 update

VCCPLL_OC

1.2V; 130mA



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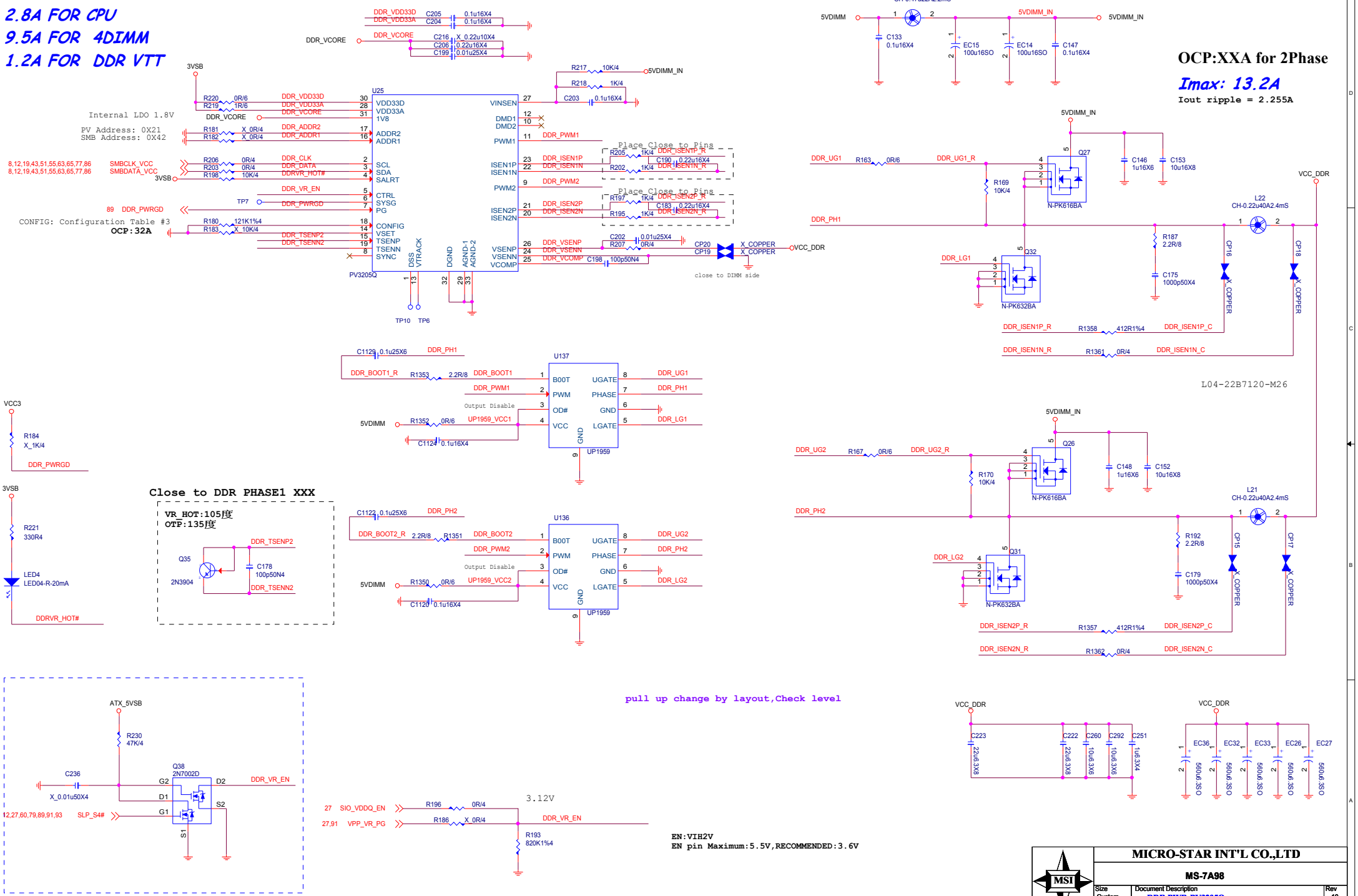
DDR4 Power:1.2V,13.5A

2.8A FOR CPU

9.5A FOR 4DIMM

1.2A FOR DDR VTT



L04-47B7730-T15

OCP:XXA for 2Phase

Imax: 13.2A

Iout ripple = 2.255A

L04-22B7120-M26

Close to DDR PHASE1 XXX

pull up change by layout,Check level

EN:VIH2V
EN pin Maximum:5.5V,RECOMMENDED:3.6V

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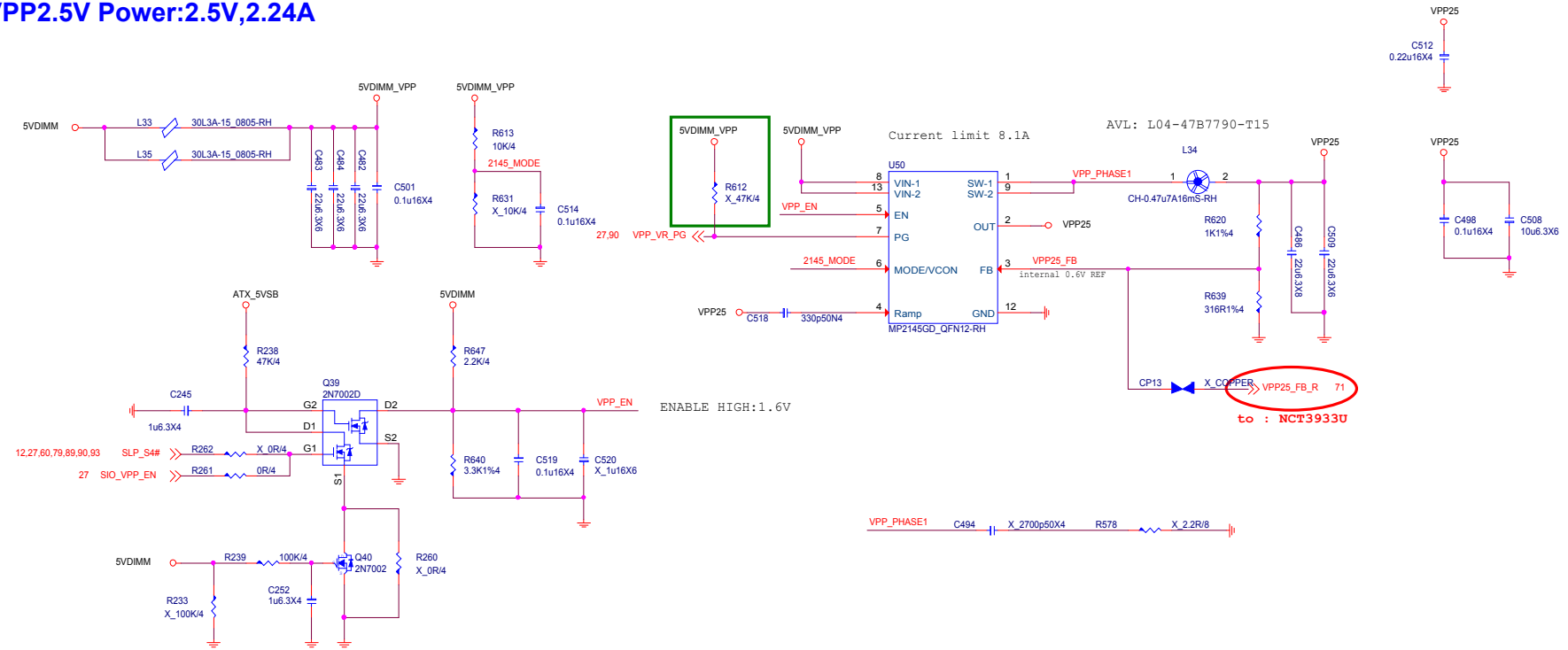
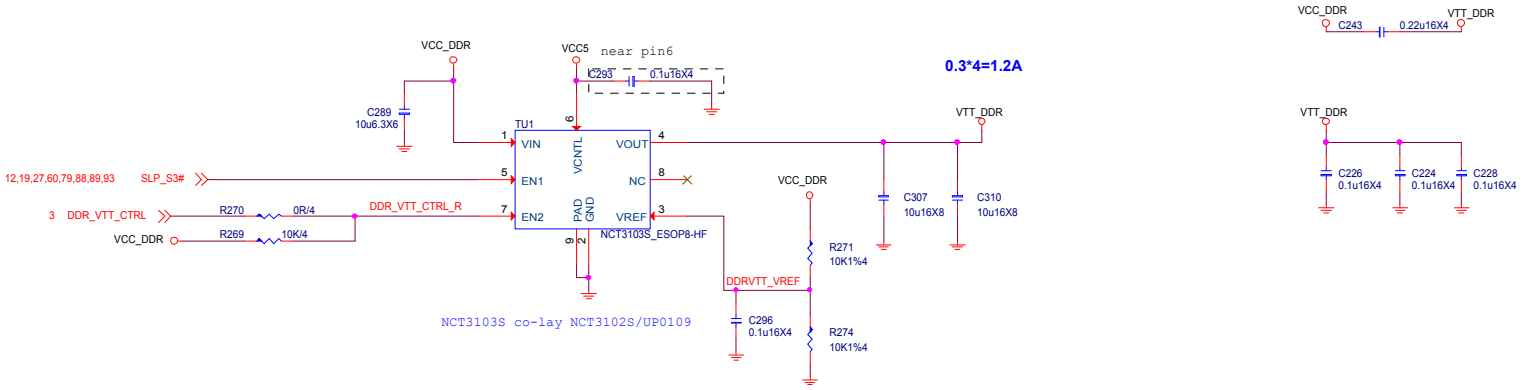
VPP2.5V Power:2.5V,2.24A



DDR VTT Power

To CPU Copper trace width > 250mils , Fill island behind DIMM > 400mils .



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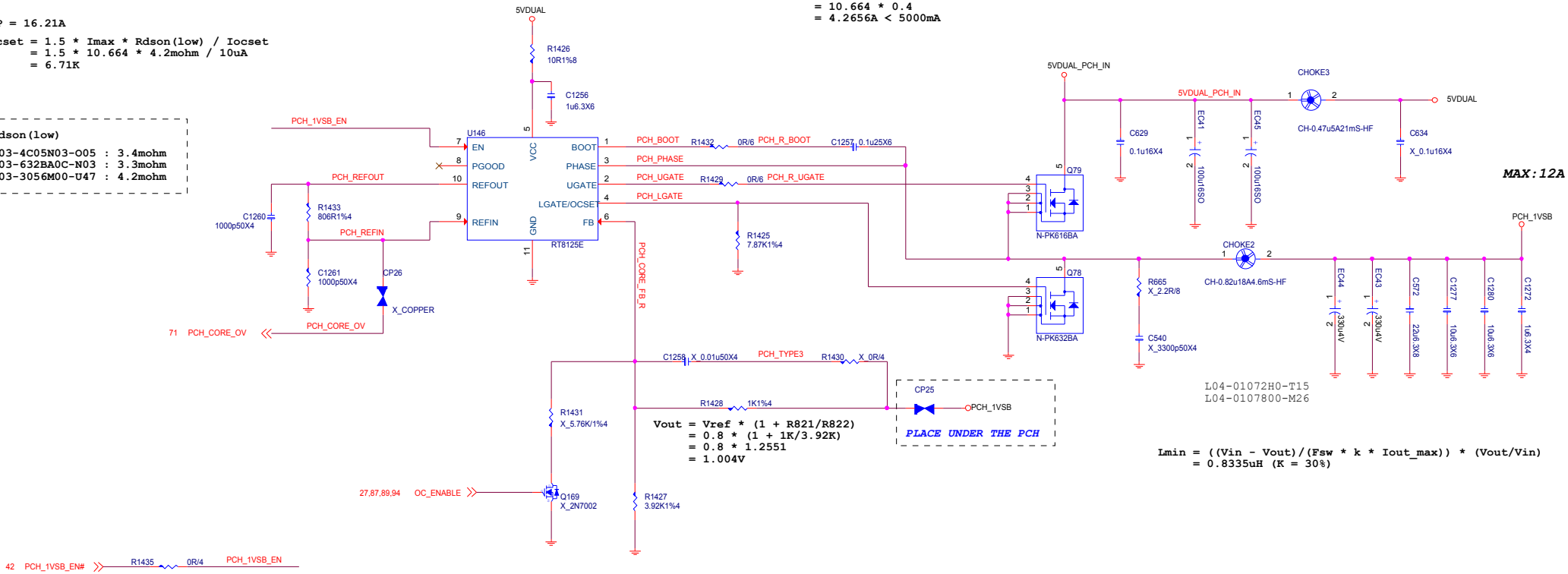
PCH_1VSB Power:1.05V,12A

OCP = 16.21A

Rocset = 1.5 * Imax * Rdson(low) / Iocset
= 1.5 * 10.664 * 4.2mohm / 10uA
= 6.71K

Rdson(low)
D03-4C05N03-O05 : 3.4mohm
D03-632BA0C-N03 : 3.3mohm
D03-3056M00-U47 : 4.2mohm

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

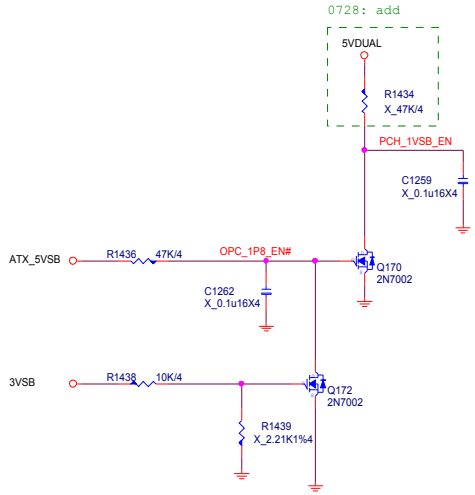


Vout = Vref * (1 + R821/R822)
= 0.8 * (1 + 1K/3.92K)
= 0.8 * 1.2551
= 1.004V

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

42 PCH_1VSB_EN# R1435 0R/4 PCH_1VSB_EN

0728: add



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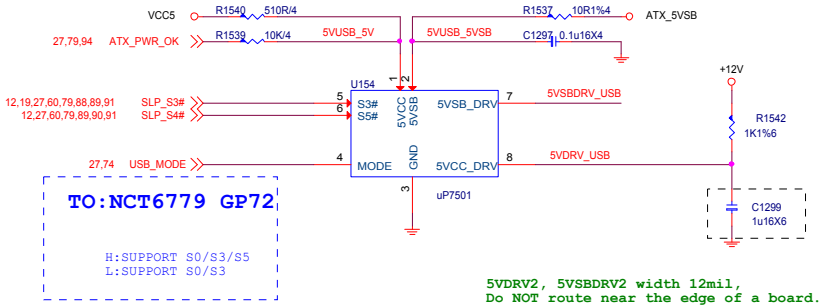
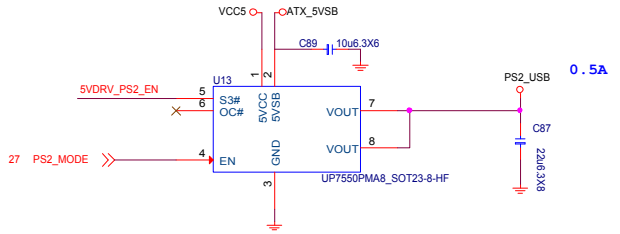
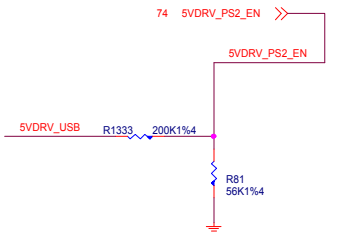
USB POWER



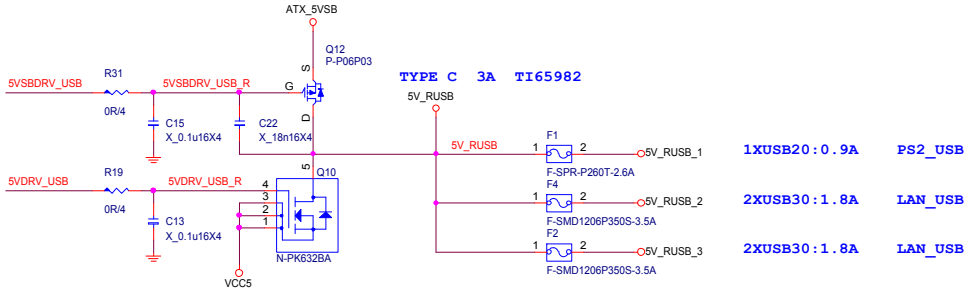
PS2 POWER



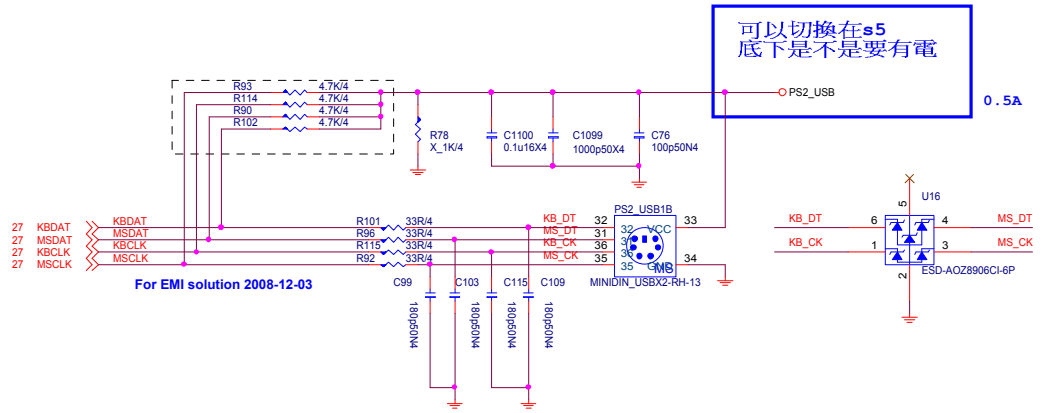
USB MODE



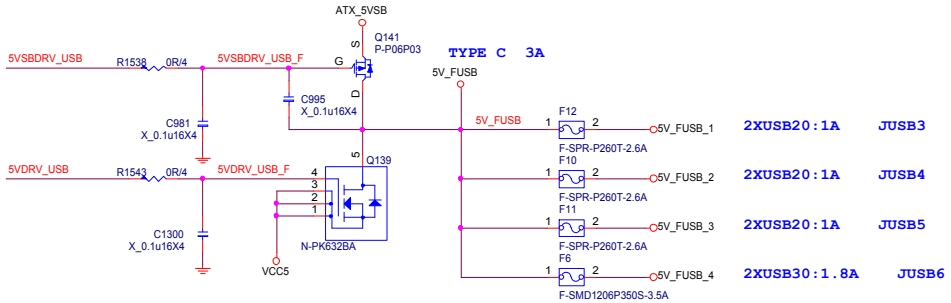
REAR USB PORT POWER



PS2 KEYBOARD & MOUSE CONNECTOR



FRONT USB PORT POWER



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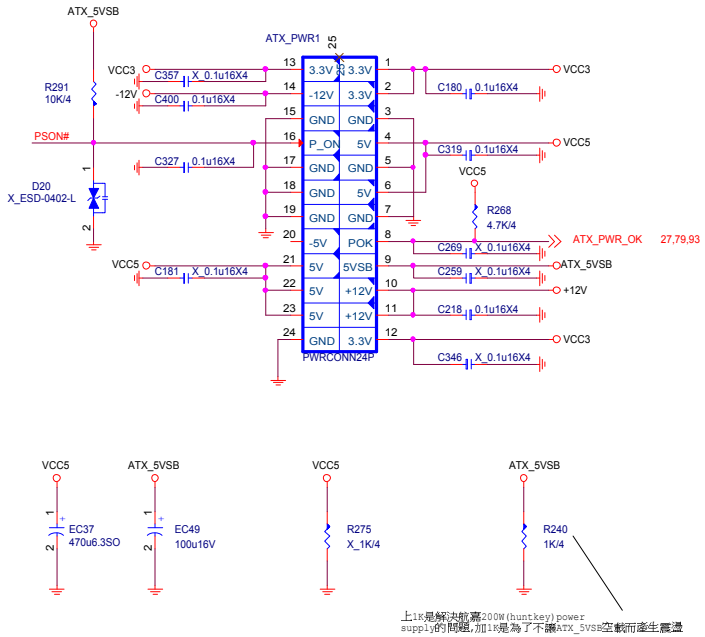
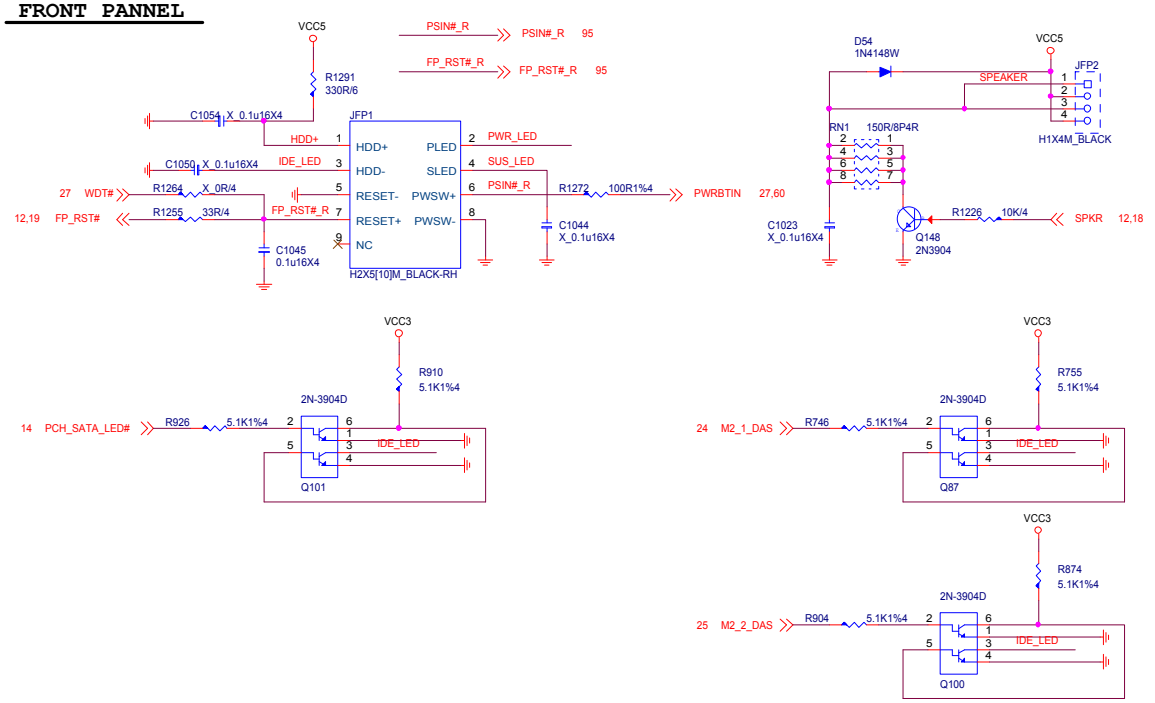
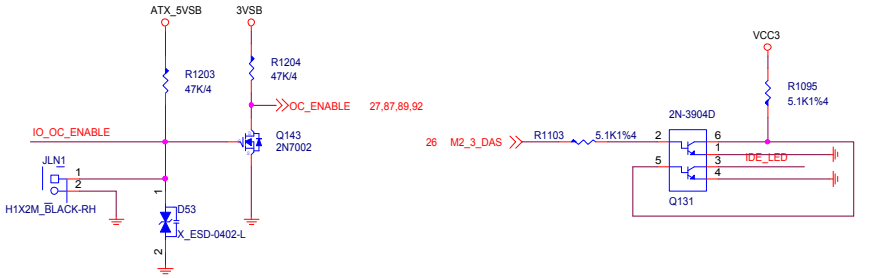
ATX POWER CONNECTOR

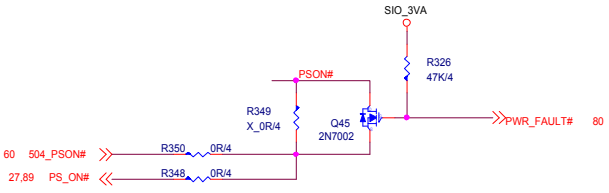


FRONT PANNEL

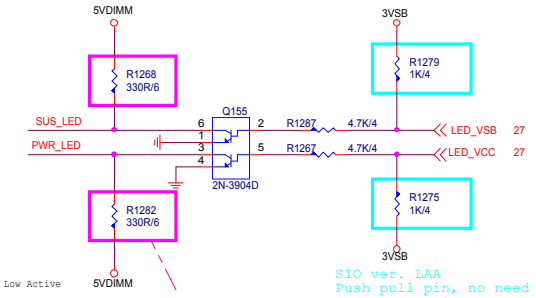


TOP PC USE Only

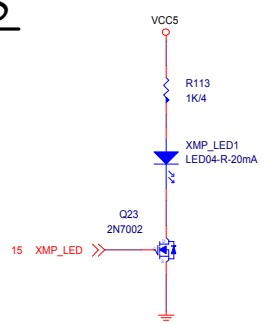




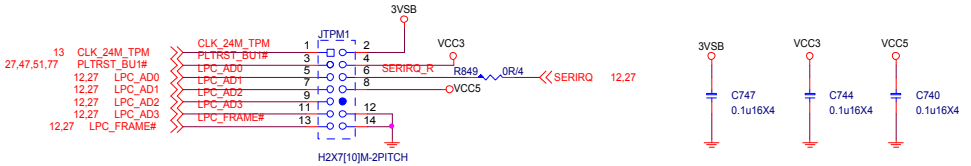
Front Panel LED



XMP LED



TPM Pin Header



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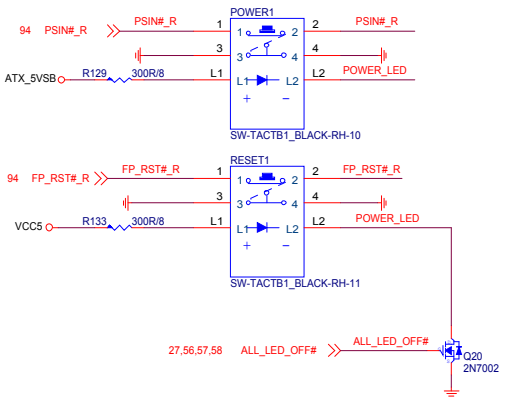
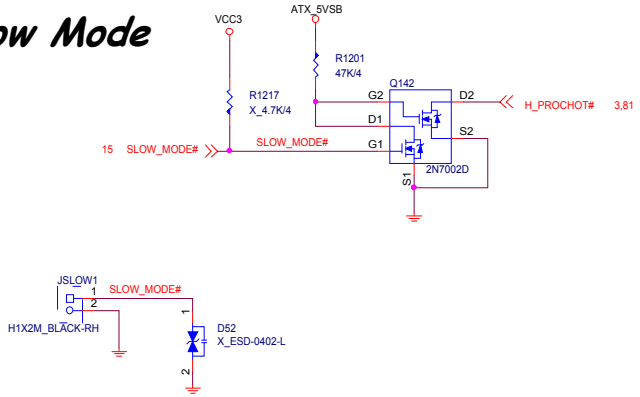
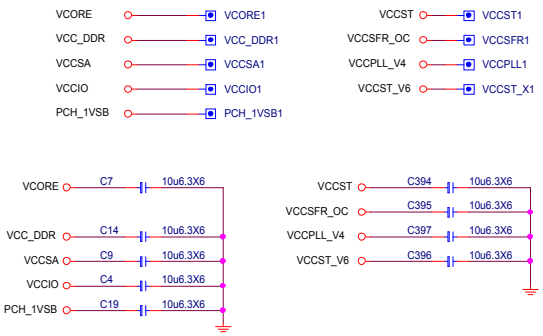
PWR/RST Botton



Slow Mode

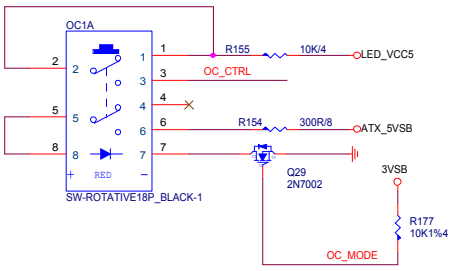


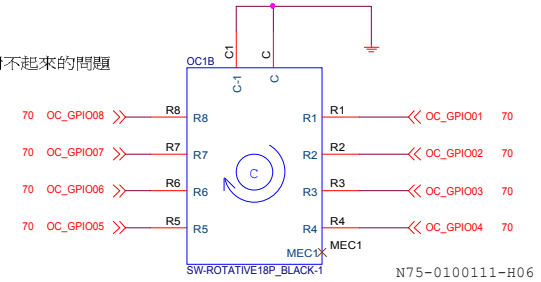
Vcheck



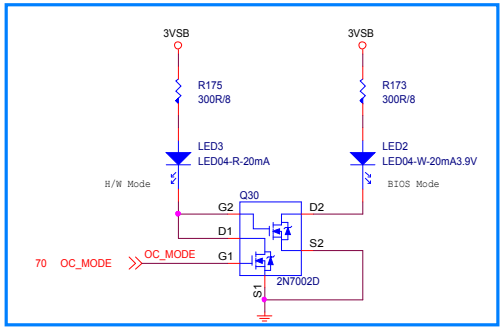
OC Genie

加貼E26-7968010-H48,遮蔽按鈕本體上和文字面對不起來的問題

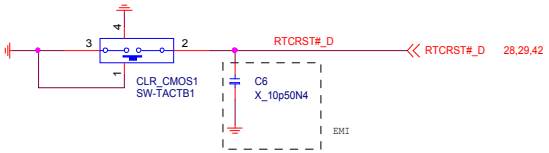


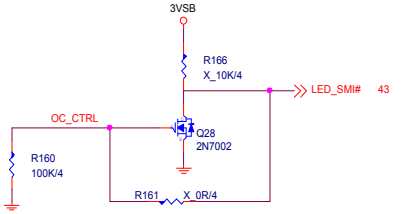


H/W & BIOS Mode LED

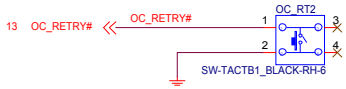


Clear CMOS Button

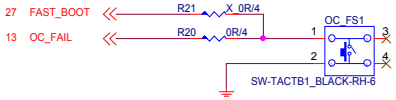




OC Retry Botton



OC Fail Setting Botton



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PCB1

7A98_10

2017/04/212017/05/03PD0-07A9810-G37,精成-深圳,15,寶安區斯邁廠(MSIS)8,black
2017/04/212017/05/03PD0-07A9810-E48,競華,15,寶安區斯邁廠(MSIS)8,black

CPU_H1

CPU
鐵座

CPU_H1

BAT1_X1

BAT-BCR2032P-RH

LABLE1

AMI_BIOS LABLE

BIOS_LABLE

LABLE2

HDMI LABLE

HDMI LABEL

LABLE3

CFOS LABLE

CFOS_LABLE

LABLE4

NAHIMIC LABLE

NAHIMIC_LABLE

LABLE5

SLI LABLE

SLI_LABLE

LABLE9

XSPLIT LABLE

XSPLIT_LABLE

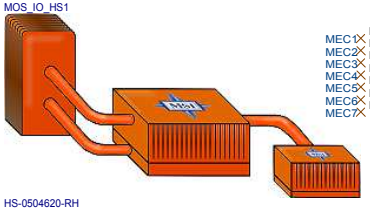
LABLE7

SSE LABLE

SSE_LABLE

HEATSINK

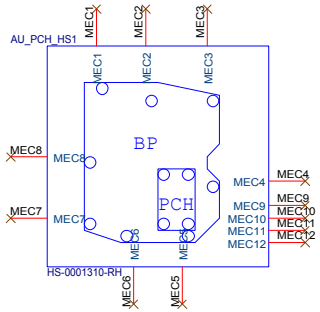
MOS_IO_HS1



MEC1 MEC2 MEC3 MEC4 MEC5 MEC6 MEC7

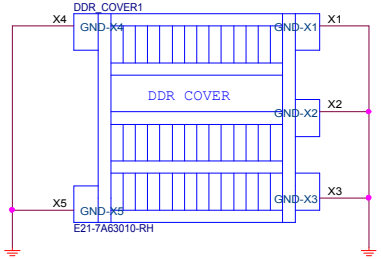
HS-0504620-RH

AU_PCH_HS1



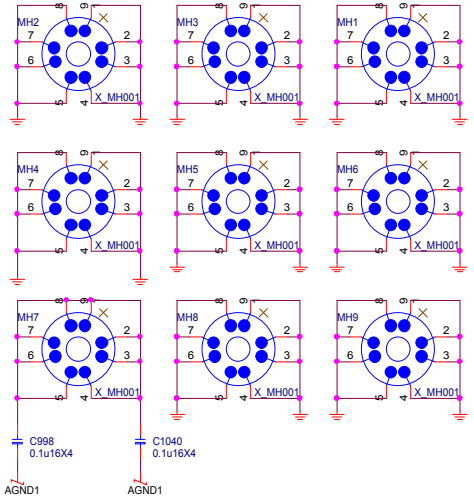
HS-0001310-RH

DDR_COVER1

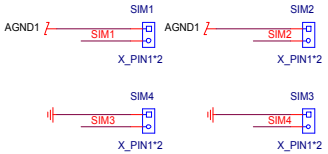


E21-7A63010-RH

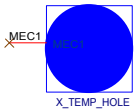
Mounting Holes



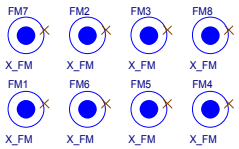
Simulation



CTEMP1



Optical Fiducial Marks-120



5VDUAL — 5VDUAL1
5VDIMM — 5VDIMM1
3VSB — 3VSB1
VPP25 — VPP1

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Size	Document Description	Rev
Custom	Manual Parts	10

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