AMD AM4 B550

M-ATX (243.84 X 243.84)

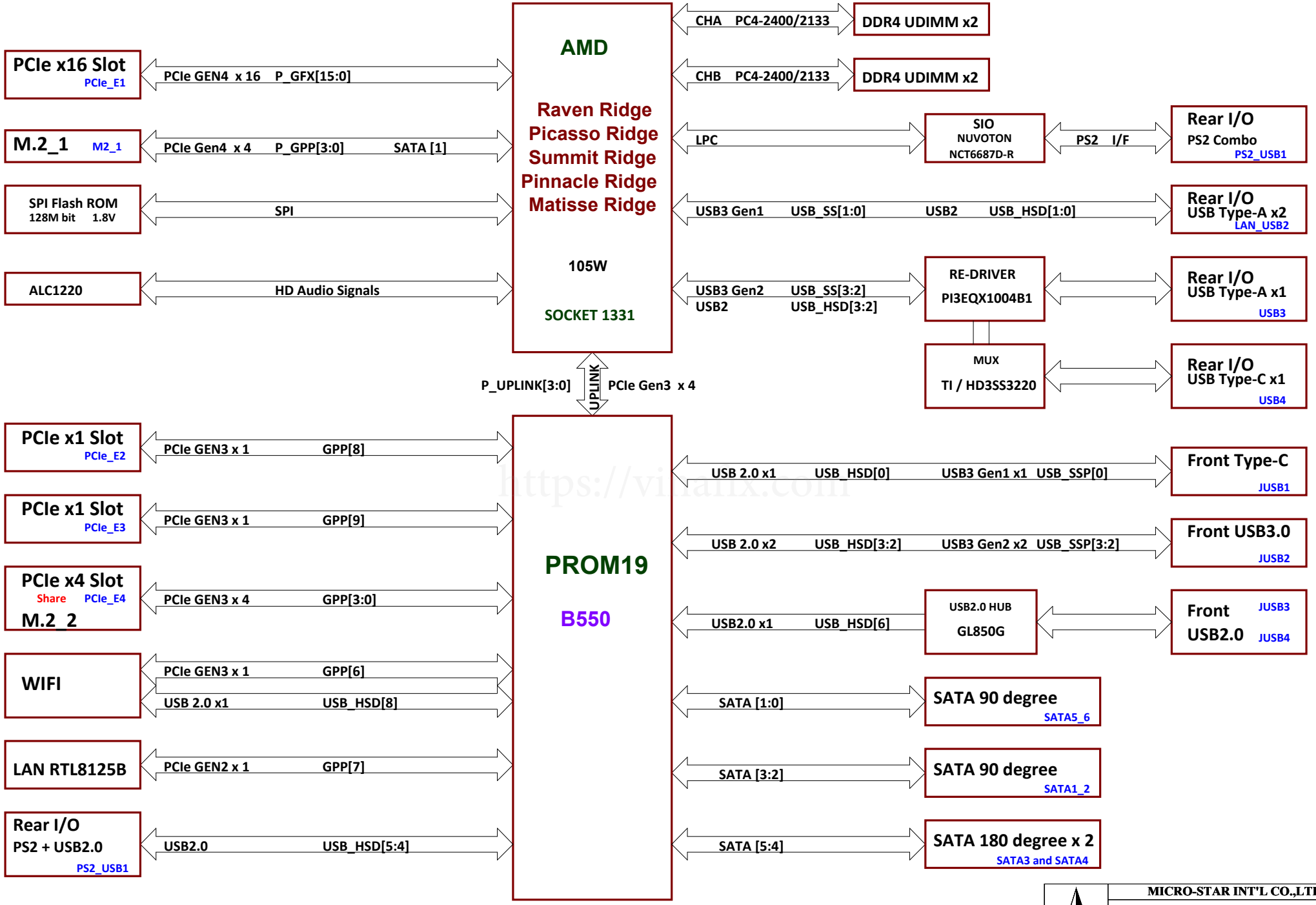
Cloude Lai

MICRO-STAR INT'L CO.,LTD

MS-7C94

Size: Custom | Document Description: Cover Sheet | Rev: 1.0

Date: Tuesday, April 28, 2020 | Sheet 1 of 76



MICRO-STAR INT'L CO.,LTD

MS-7C94

Size	Document Description	Rev
Custom	Block Diagram	1.0

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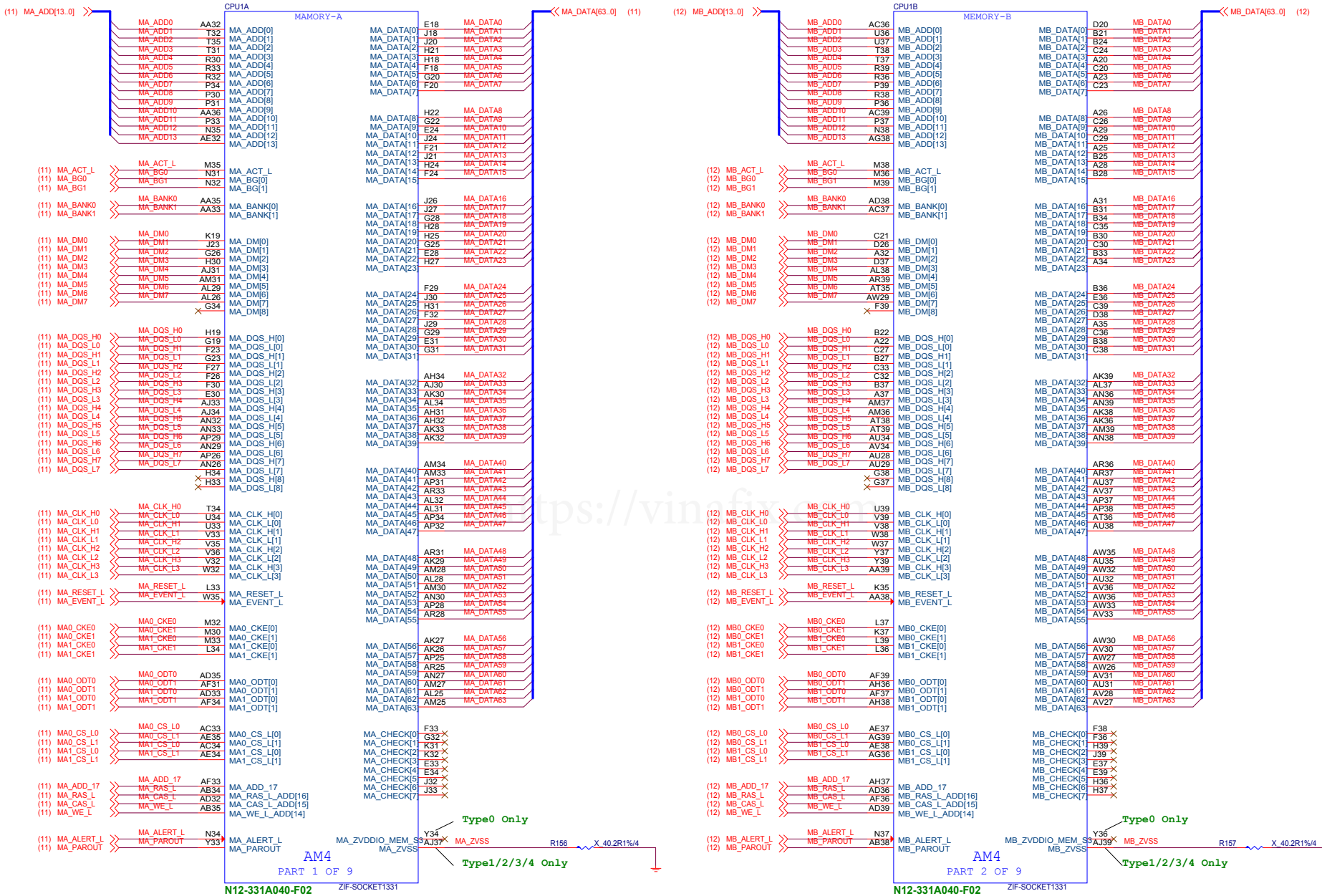
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MEMORY-A
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MA_ADD0 AA32
MA_ADD1 T32
MA_ADD2 T35
MA_ADD3 T31
MA_ADD4 R30
MA_ADD5 R33
MA_ADD6 R32
MA_ADD7 P34
MA_ADD8 P30
MA_ADD9 P31
MA_ADD10 AA36
MA_ADD11 P33
MA_ADD12 N35
MA_ADD13 AE32
MA_ADD[0]
MA_ADD[1]
MA_ADD[2]
MA_ADD[3]
MA_ADD[4]
MA_ADD[5]
MA_ADD[6]
MA_ADD[7]
MA_ADD[8]
MA_ADD[9]
MA_ADD[10]
MA_ADD[11]
MA_ADD[12]
MA_ADD[13]
(11) MA_ACT_L
(11) MA_BG0
(11) MA_BG1
MA_ACT_L M35
MA_BG0 N31
MA_BG1 N32
MA_ACT_L
MA_BG[0]
MA_BG[1]
(11) MA_BANK0
(11) MA_BANK1
MA_BANK0 AA35
MA_BANK1 AA33
MA_BANK[0]
MA_BANK[1]
(11) MA_DM0
(11) MA_DM1
(11) MA_DM2
(11) MA_DM3
(11) MA_DM4
(11) MA_DM5
(11) MA_DM6
(11) MA_DM7
MA_DM0 K19
MA_DM1 J23
MA_DM2 G26
MA_DM3 H30
MA_DM4 AJ31
MA_DM5 AM31
MA_DM6 AL29
MA_DM7 AL26
G34
MA_DM[0]
MA_DM[1]
MA_DM[2]
MA_DM[3]
MA_DM[4]
MA_DM[5]
MA_DM[6]
MA_DM[7]
MA_DM[8]
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(11) MA_DQS_L0
(11) MA_DQS_H1
(11) MA_DQS_L1
(11) MA_DQS_H2
(11) MA_DQS_L2
(11) MA_DQS_H3
(11) MA_DQS_L3
(11) MA_DQS_H4
(11) MA_DQS_L4
(11) MA_DQS_H5
(11) MA_DQS_L5
(11) MA_DQS_H6
(11) MA_DQS_L6
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(11) MA_DQS_L7
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MA_DQS_L0 G19
MA_DQS_H1 F23
MA_DQS_L1 G23
MA_DQS_H2 F27
MA_DQS_L2 F26
MA_DQS_H3 F30
MA_DQS_L3 E30
MA_DQS_H4 AJ33
MA_DQS_L4 AJ34
MA_DQS_H5 AN32
MA_DQS_L5 AN33
MA_DQS_H6 AP29
MA_DQS_L6 AN29
MA_DQS_H7 AP26
MA_DQS_L7 AN26
H34
H33
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MA_DQS_L[0]
MA_DQS_H[1]
MA_DQS_L[1]
MA_DQS_H[2]
MA_DQS_L[2]
MA_DQS_H[3]
MA_DQS_L[3]
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MA_DQS_L[6]
MA_DQS_H[7]
MA_DQS_L[7]
MA_DQS_H[8]
MA_DQS_L[8]
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(11) MA_CLK_L0
(11) MA_CLK_H1
(11) MA_CLK_L1
(11) MA_CLK_H2
(11) MA_CLK_L2
(11) MA_CLK_H3
(11) MA_CLK_L3
MA_CLK_H0 T34
MA_CLK_L0 U34
MA_CLK_H1 U33
MA_CLK_L1 V33
MA_CLK_H2 V35
MA_CLK_L2 V36
MA_CLK_H3 V32
MA_CLK_L3 W32
MA_CLK_H[0]
MA_CLK_L[0]
MA_CLK_H[1]
MA_CLK_L[1]
MA_CLK_H[2]
MA_CLK_L[2]
MA_CLK_H[3]
MA_CLK_L[3]
(11) MA_RESET_L
(11) MA_EVENT_L
MA_RESET_L L33
MA_EVENT_L W35
MA_RESET_L
MA_EVENT_L
(11) MA0_CKE0
(11) MA0_CKE1
(11) MA1_CKE0
(11) MA1_CKE1
MA0_CKE0 M32
MA0_CKE1 M30
MA1_CKE0 M33
MA1_CKE1 L34
MA0_CKE[0]
MA0_CKE[1]
MA1_CKE[0]
MA1_CKE[1]
(11) MA0_ODT0
(11) MA0_ODT1
(11) MA1_ODT0
(11) MA1_ODT1
MA0_ODT0 AD35
MA0_ODT1 AF31
MA1_ODT0 AD33
MA1_ODT1 AF34
MA0_ODT[0]
MA0_ODT[1]
MA1_ODT[0]
MA1_ODT[1]
(11) MA0_CS_L0
(11) MA0_CS_L1
(11) MA1_CS_L0
(11) MA1_CS_L1
MA0_CS_L0 AC33
MA0_CS_L1 AE35
MA1_CS_L0 AC34
MA1_CS_L1 AE34
MA0_CS_L[0]
MA0_CS_L[1]
MA1_CS_L[0]
MA1_CS_L[1]
(11) MA_ADD_17
(11) MA_RAS_L
(11) MA_CAS_L
(11) MA_WE_L
MA_ADD_17 AF33
MA_RAS_L AB34
MA_CAS_L AD32
MA_WE_L AB35
MA_ADD_17
MA_RAS_L_ADD[16]
MA_CAS_L_ADD[15]
MA_WE_L_ADD[14]
(11) MA_ALERT_L
(11) MA_PAROUT
MA_ALERT_L N34
MA_PAROUT Y33
MA_ALERT_L
MA_PAROUT
MA_DATA[63..0] (11)
MA_DATA0 E18
MA_DATA1 J18
MA_DATA2 J20
MA_DATA3 H21
MA_DATA4 H18
MA_DATA5 F18
MA_DATA6 G20
MA_DATA7 F20
MA_DATA8 H22
MA_DATA9 G22
MA_DATA10 E24
MA_DATA11 J24
MA_DATA12 F21
MA_DATA13 J21
MA_DATA14 H24
MA_DATA15 F24
MA_DATA16 J26
MA_DATA17 J27
MA_DATA18 G28
MA_DATA19 H28
MA_DATA20 H25
MA_DATA21 G25
MA_DATA22 E28
MA_DATA23 H27
MA_DATA24 F29
MA_DATA25 J30
MA_DATA26 H31
MA_DATA27 F32
MA_DATA28 J29
MA_DATA29 G29
MA_DATA30 E31
MA_DATA31 G31
MA_DATA32 AH34
MA_DATA33 AJ30
MA_DATA34 AK30
MA_DATA35 AL34
MA_DATA36 AH31
MA_DATA37 AH32
MA_DATA38 AK33
MA_DATA39 AK32
MA_DATA40 AM34
MA_DATA41 AM33
MA_DATA42 AP31
MA_DATA43 AR33
MA_DATA44 AL32
MA_DATA45 AL31
MA_DATA46 AP34
MA_DATA47 AP32
MA_DATA48 AR31
MA_DATA49 AK29
MA_DATA50 AM28
MA_DATA51 AL28
MA_DATA52 AM30
MA_DATA53 AN30
MA_DATA54 AP28
MA_DATA55 AR28
MA_DATA56 AK27
MA_DATA57 AK26
MA_DATA58 AP25
MA_DATA59 AR25
MA_DATA60 AN27
MA_DATA61 AM27
MA_DATA62 AL25
MA_DATA63 AM25
MA_DATA[0]
MA_DATA[1]
MA_DATA[2]
MA_DATA[3]
MA_DATA[4]
MA_DATA[5]
MA_DATA[6]
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MA_DATA[8]
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MA_CHECK[1] G32
MA_CHECK[2] K31
MA_CHECK[3] K32
MA_CHECK[4] E33
MA_CHECK[5] E34
MA_CHECK[6] J32
MA_CHECK[7] J33
Type0 Only
Y34
MA_ZVSS AJ37
R156 X_40.2R1%/4
Type1/2/3/4 Only
MA_ZVDDIO_MEM_S3
MA_ZVSS
AM4
PART 1 OF 9
N12-331A040-F02
ZIF-SOCKET1331
CPU1B
MEMORY-B
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MB_ADD0 AC36
MB_ADD1 U36
MB_ADD2 U37
MB_ADD3 T38
MB_ADD4 T37
MB_ADD5 R39
MB_ADD6 R36
MB_ADD7 P39
MB_ADD8 R38
MB_ADD9 P36
MB_ADD10 AC39
MB_ADD11 P37
MB_ADD12 N38
MB_ADD13 AG38
MB_ADD[0]
MB_ADD[1]
MB_ADD[2]
MB_ADD[3]
MB_ADD[4]
MB_ADD[5]
MB_ADD[6]
MB_ADD[7]
MB_ADD[8]
MB_ADD[9]
MB_ADD[10]
MB_ADD[11]
MB_ADD[12]
MB_ADD[13]
(12) MB_ACT_L
(12) MB_BG0
(12) MB_BG1
MB_ACT_L M38
MB_BG0 M36
MB_BG1 M39
MB_ACT_L
MB_BG[0]
MB_BG[1]
(12) MB_BANK0
(12) MB_BANK1
MB_BANK0 AD38
MB_BANK1 AC37
MB_BANK[0]
MB_BANK[1]
(12) MB_DM0
(12) MB_DM1
(12) MB_DM2
(12) MB_DM3
(12) MB_DM4
(12) MB_DM5
(12) MB_DM6
(12) MB_DM7
MB_DM0 C21
MB_DM1 D26
MB_DM2 A32
MB_DM3 D37
MB_DM4 AL38
MB_DM5 AR39
MB_DM6 AT35
MB_DM7 AW29
F39
MB_DM[0]
MB_DM[1]
MB_DM[2]
MB_DM[3]
MB_DM[4]
MB_DM[5]
MB_DM[6]
MB_DM[7]
MB_DM[8]
(12) MB_DQS_H0
(12) MB_DQS_L0
(12) MB_DQS_H1
(12) MB_DQS_L1
(12) MB_DQS_H2
(12) MB_DQS_L2
(12) MB_DQS_H3
(12) MB_DQS_L3
(12) MB_DQS_H4
(12) MB_DQS_L4
(12) MB_DQS_H5
(12) MB_DQS_L5
(12) MB_DQS_H6
(12) MB_DQS_L6
(12) MB_DQS_H7
(12) MB_DQS_L7
MB_DQS_H0 B22
MB_DQS_L0 A22
MB_DQS_H1 C27
MB_DQS_L1 B27
MB_DQS_H2 C33
MB_DQS_L2 C32
MB_DQS_H3 B37
MB_DQS_L3 A37
MB_DQS_H4 AM37
MB_DQS_L4 AM36
MB_DQS_H5 AT38
MB_DQS_L5 AT39
MB_DQS_H6 AU34
MB_DQS_L6 AV34
MB_DQS_H7 AU28
MB_DQS_L7 AU29
G38
G37
MB_DQS_H[0]
MB_DQS_L[0]
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MB_DQS_L[1]
MB_DQS_H[2]
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MB_DQS_L[4]
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MB_DQS_L[8]
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(12) MB_CLK_L3
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MB_CLK_L0 V39
MB_CLK_H1 V38
MB_CLK_L1 W38
MB_CLK_H2 W37
MB_CLK_L2 Y37
MB_CLK_H3 Y39
MB_CLK_L3 AA39
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MB_CLK_H[3]
MB_CLK_L[3]
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(12) MB_EVENT_L
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MB_EVENT_L AA38
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MB_EVENT_L
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(12) MB0_CKE1
(12) MB1_CKE0
(12) MB1_CKE1
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MB0_CKE1 K37
MB1_CKE0 L39
MB1_CKE1 L36
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MB0_CKE[1]
MB1_CKE[0]
MB1_CKE[1]
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(12) MB1_ODT0
(12) MB1_ODT1
MB0_ODT0 AF39
MB0_ODT1 AH36
MB1_ODT0 AF37
MB1_ODT1 AH38
MB0_ODT[0]
MB0_ODT[1]
MB1_ODT[0]
MB1_ODT[1]
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(12) MB0_CS_L1
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(12) MB1_CS_L1
MB0_CS_L0 AE37
MB0_CS_L1 AG39
MB1_CS_L0 AE38
MB1_CS_L1 AG36
MB0_CS_L[0]
MB0_CS_L[1]
MB1_CS_L[0]
MB1_CS_L[1]
(12) MB_ADD_17
(12) MB_RAS_L
(12) MB_CAS_L
(12) MB_WE_L
MB_ADD_17 AH37
MB_RAS_L AD36
MB_CAS_L AF36
MB_WE_L AD39
MB_ADD_17
MB_RAS_L_ADD[16]
MB_CAS_L_ADD[15]
MB_WE_L_ADD[14]
(12) MB_ALERT_L
(12) MB_PAROUT
MB_ALERT_L N37
MB_PAROUT AB38
MB_ALERT_L
MB_PAROUT
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MB_DATA1 B21
MB_DATA2 B24
MB_DATA3 C24
MB_DATA4 A20
MB_DATA5 C20
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MB_DATA7 C23
MB_DATA8 A26
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MB_DATA10 A29
MB_DATA11 C29
MB_DATA12 A25
MB_DATA13 B25
MB_DATA14 A28
MB_DATA15 B28
MB_DATA16 A31
MB_DATA17 B31
MB_DATA18 B34
MB_DATA19 C35
MB_DATA20 B30
MB_DATA21 C30
MB_DATA22 B33
MB_DATA23 A34
MB_DATA24 B36
MB_DATA25 E36
MB_DATA26 C39
MB_DATA27 D38
MB_DATA28 A35
MB_DATA29 C36
MB_DATA30 B38
MB_DATA31 C38
MB_DATA32 AK39
MB_DATA33 AL37
MB_DATA34 AN36
MB_DATA35 AN39
MB_DATA36 AK38
MB_DATA37 AK36
MB_DATA38 AM39
MB_DATA39 AN38
MB_DATA40 AR36
MB_DATA41 AR37
MB_DATA42 AU37
MB_DATA43 AV37
MB_DATA44 AP37
MB_DATA45 AP38
MB_DATA46 AT36
MB_DATA47 AU38
MB_DATA48 AW35
MB_DATA49 AU35
MB_DATA50 AW32
MB_DATA51 AU32
MB_DATA52 AV36
MB_DATA53 AW36
MB_DATA54 AW33
MB_DATA55 AV33
MB_DATA56 AW30
MB_DATA57 AV30
MB_DATA58 AW27
MB_DATA59 AW26
MB_DATA60 AV31
MB_DATA61 AU31
MB_DATA62 AV28
MB_DATA63 AV27
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MB_DATA[61]
MB_DATA[62]
MB_DATA[63]
MB_CHECK[0] F38
MB_CHECK[1] F36
MB_CHECK[2] H39
MB_CHECK[3] J39
MB_CHECK[4] E37
MB_CHECK[5] E39
MB_CHECK[6] H36
MB_CHECK[7] H37
Type0 Only
Y36
MB_ZVSS AJ39
R157 X_40.2R1%/4
Type1/2/3/4 Only
MB_ZVDDIO_MEM_S3
MB_ZVSS
AM4
PART 2 OF 9
N12-331A040-F02
ZIF-SOCKET1331
MICRO-STAR INT'L CO.,LTD
MS-7C94
Size Custom
Document Description AM4 DDR4 I/F
Rev 1.0
Date: Tuesday, April 28, 2020
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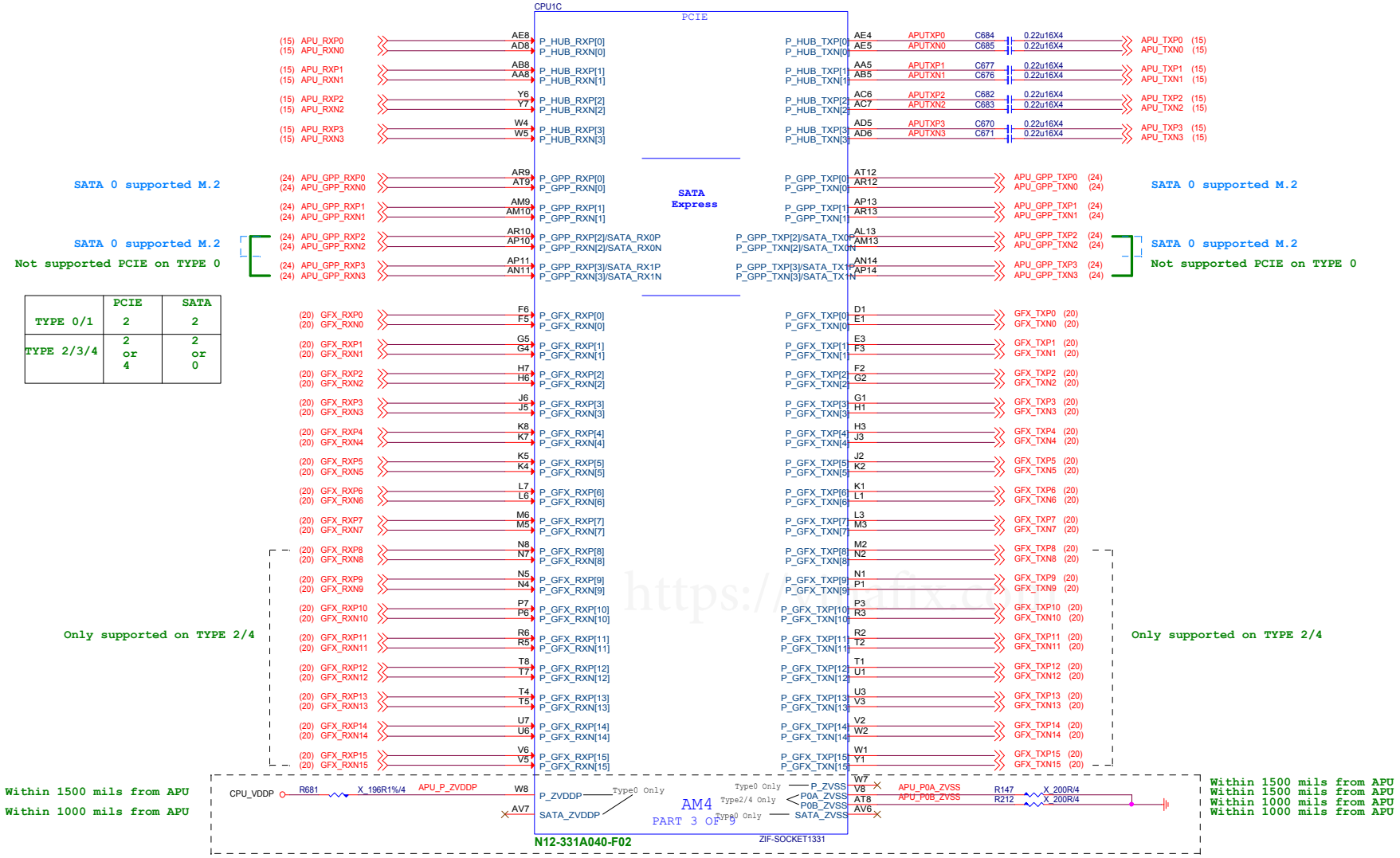

	PCIE	SATA
TYPE 0/1	2	2
TYPE 2/3/4	2 or 4	2 or 0

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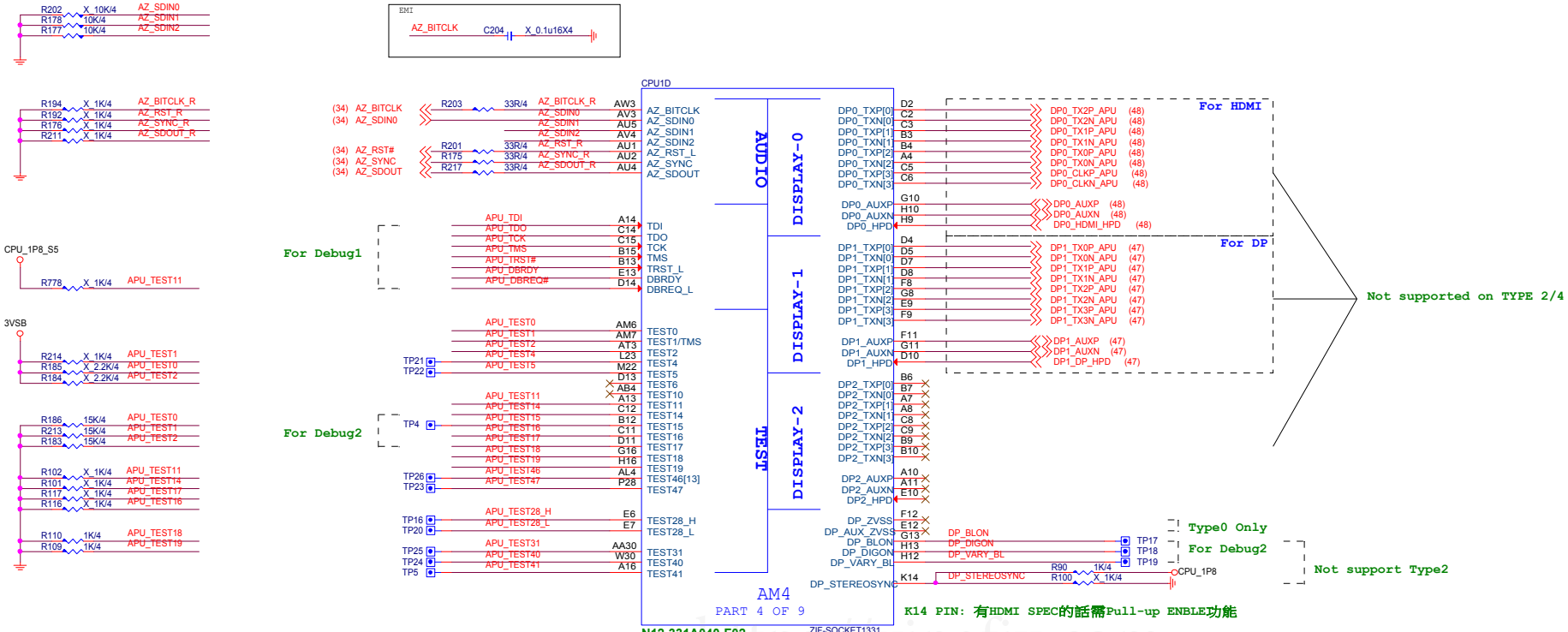

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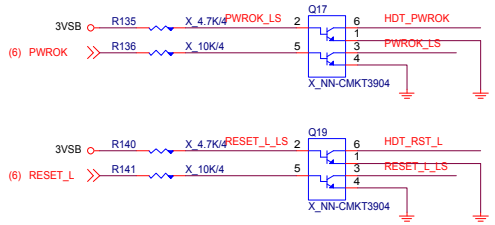
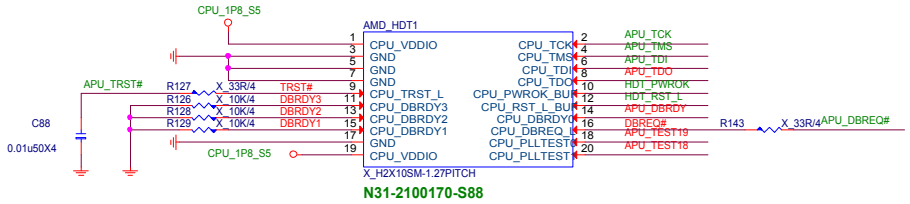
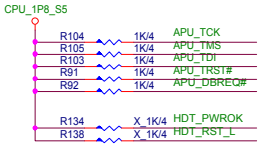
0: 1.8V(Type0)







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Size: Custom	Document Description: AM4 Display / Audio
Rev: 1.0	
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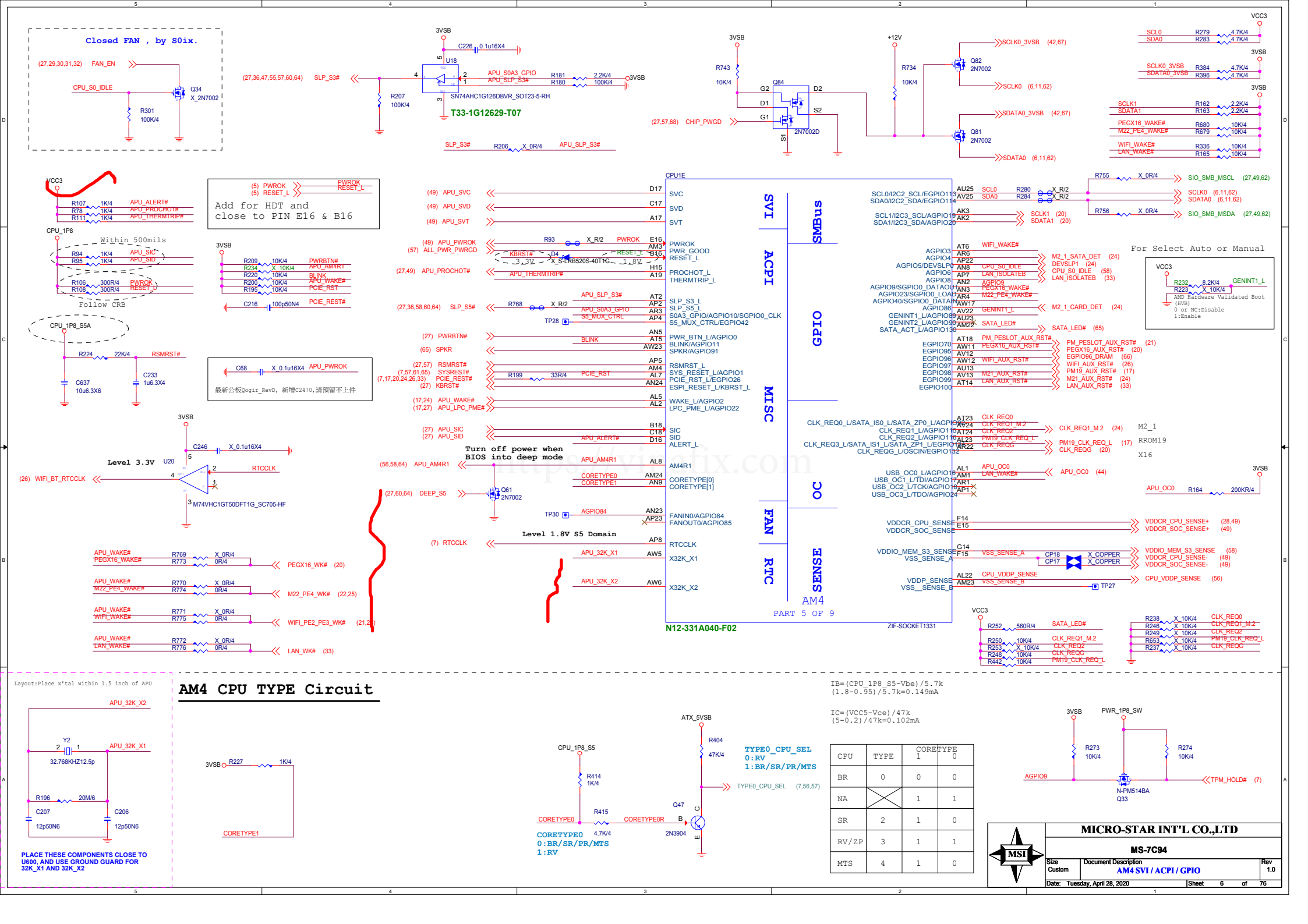
Closed FAN , by S0ix.
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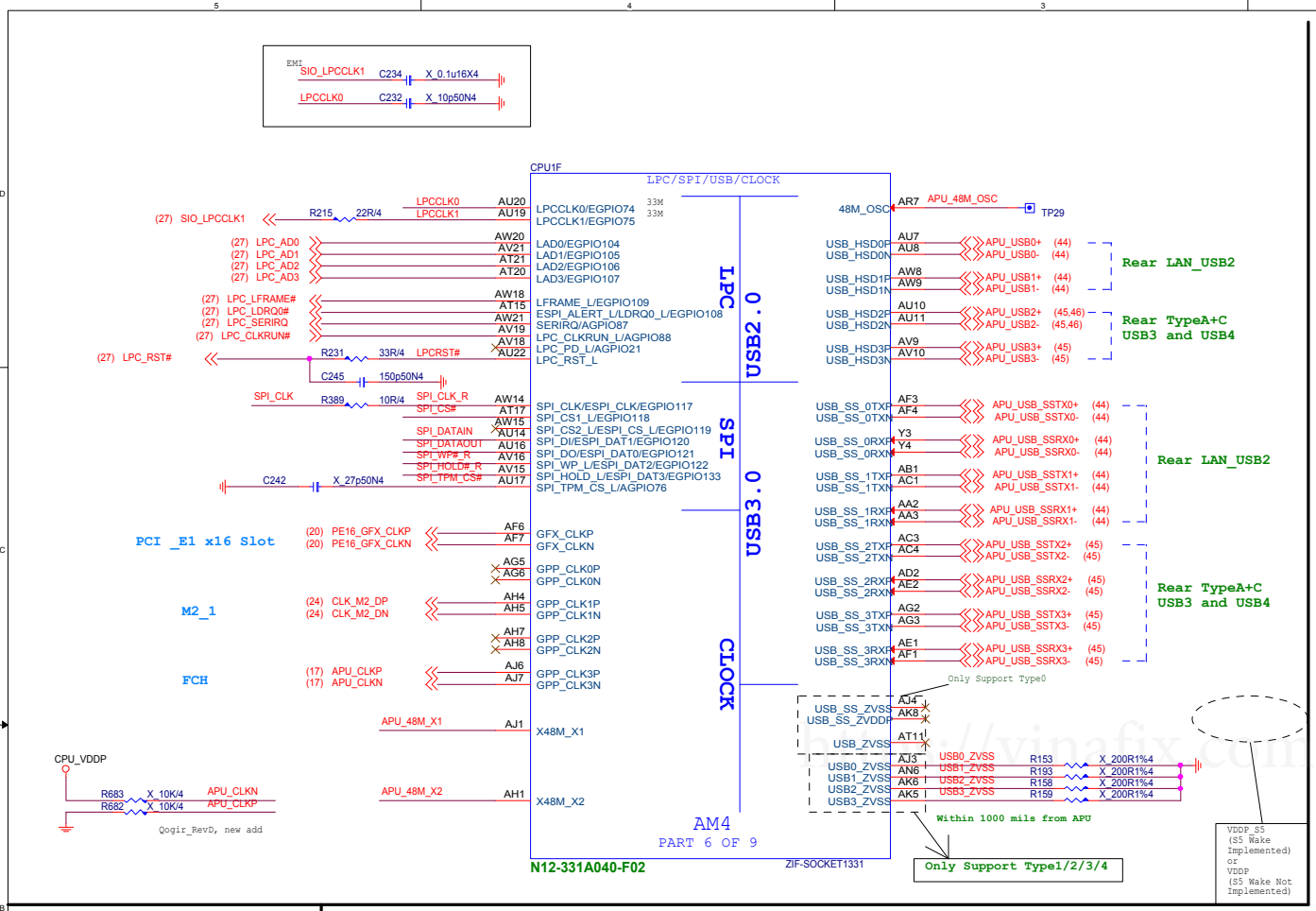
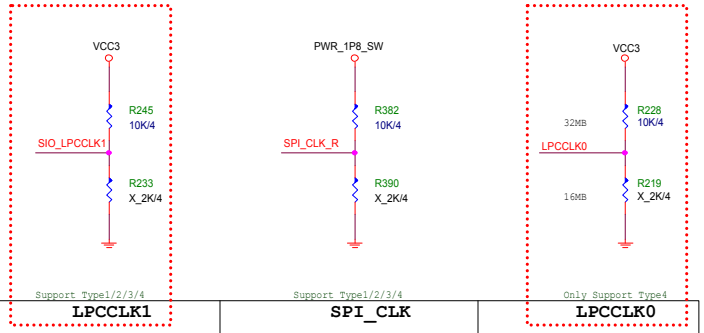
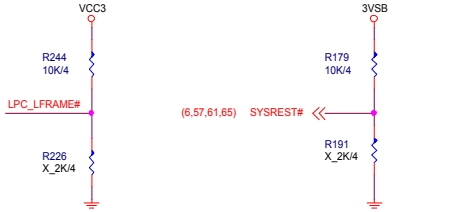
CPU_S0_IDLE
Q34
X_2N7002
R301
100K/4
3VSB
C226 0.1u16X4
U18
SN74AHC1G126DBVR_SOT23-5-RH
T33-1G12629-T07
(27,36,47,55,57,60,64) SLP_S3#
R207
100K/4
APU_S0A3_GPIO
APU_SLP_S3#
R181
R180
2.2K/4
100K/4
SLP_S3#
R206
X_0R/4
APU_SLP_S3#
R743
10K/4
Q84
2N7002D
(27,57,68) CHIP_PWGD
+12V
R734
10K/4
Q82
2N7002
Q81
2N7002
SCLK0_3VSB (42,67)
SCLK0 (6,11,62)
SDATA0_3VSB (42,67)
SDATA0 (6,11,62)
VCC3
SCL0
SDA0
R279
R283
4.7K/4
SCLK0_3VSB
SDATA0_3VSB
R384
R396
SCLK1
SDATA1
R162
R163
2.2K/4
PEGX16_WAKE#
M2Z_PE4_WAKE#
R680
R679
10K/4
WIFI_WAKE#
LAN_WAKE#
R336
R165
VCC3
R107 1K/4 APU_ALERT#
R78 1K/4 APU_PROCHOT#
R111 1K/4 APU_THERMTRIP#
CPU_1P8
Within 500mils
R94 1K/4 APU_SIC
R95 1K/4 APU_SID
R106 300R/4 PWROK
R108 300R/4 RESET_L
Follow CRB
(5) PWROK
(5) RESET_L
PWROK
RESET_L
Add for HDT and close to PIN E16 & B16
3VSB
R209 10K/4 PWRBTN#
R234 X_10K/4 APU_AM4R1
R220 10K/4 BLINK
R200 10K/4 APU_WAKE#
R195 10K/4 PCIE_RST
C216 100p50N4 PCIE_REST#
CPU_1P8_S5A
R224 22K/4 RSMRST#
C637 10u6.3X6
C233 1u6.3X4
C68 X_0.1u16X4 APU_PWROK
最新公板Oogir_RevD，新增C2470,請預留不上件
3VSB
C246 X_0.1u16X4
Level 3.3V U20
(26) WIFI_BT_RTCCLK
RTCCLK
M74VHC1GT50DFT1G_SC705-HF
APU_WAKE# PEGX16_WAKE# R769 R773 X_0R/4 0R/4 PEGX16_WK# (20)
APU_WAKE# M22_PE4_WAKE# R770 R774 X_0R/4 0R/4 M22_PE4_WK# (22,25)
APU_WAKE# WIFI_WAKE# R771 R775 X_0R/4 0R/4 WIFI_PE2_PE3_WK# (21,2)
APU_WAKE# LAN_WAKE# R772 R776 X_0R/4 0R/4 LAN_WK# (33)
CPU1E
(49) APU_SVC D17 SVC
(49) APU_SVD C17 SVD
(49) APU_SVT A17 SVT
(49) APU_PWROK R93 X_R/2 PWROK E16 PWROK
(57) ALL_PWR_PWRGD AM3 PWR_GOOD
KBRST# D4 RESET_L B16 RESET_L
3.3V X_S-1RB520S-40T1G 1.8V
(27,49) APU_PROCHOT# H15 PROCHOT_L
APU_THERMTRIP# A19 THERMTRIP_L
APU_SLP_S3# AT2 SLP_S3_L
(27,36,58,60,64) SLP_S5# R768 X_R/2 AP2 SLP_S5_L
APU_S0A3_GPIO AR3 S0A3_GPIO/AGPIO10/SGPIO0_CLK
S5_MUX_CTRL AP4 S5_MUX_CTRL/EGPIO42
TP28
(27) PWRBTN# AN5 PWR_BTN_L/AGPIO0
BLINK AT5 BLINK/AGPIO11
(65) SPKR AW23 SPKR/AGPIO91
(27,57) RSMRST# AP5 RSMRST_L
(7,57,61,65) SYSREST# AM4 SYS_RESET_L/AGPIO1
(7,17,20,24,26,33) PCIE_REST# R199 33R/4 PCIE_RST AL7 PCIE_RST_L/EGPIO26
(27) KBRST# AN24 ESPI_RESET_L/KBRST_L
(17,24) APU_WAKE# AL5 WAKE_L/AGPIO2
(17,27) APU_LPC_PME# AL2 LPC_PME_L/AGPIO22
(27) APU_SIC B18 SIC
(27) APU_SID C18 SID
APU_ALERT# D16 ALERT_L
Turn off power when BIOS into deep mode
(56,58,64) APU_AM4R1 AL8 AM4R1
CORETYPE0 AM24 CORETYPE[0]
CORETYPE1 AN9 CORETYPE[1]
(27,60,64) DEEP_S5 Q61 2N7002
TP30 AGPIO84 AN23 FANIN0/AGPIO84
AP23 FANOUT0/AGPIO85
Level 1.8V S5 Domain
(7) RTCCLK AP8 RTCCLK
APU_32K_X1 AW5 X32K_X1
APU_32K_X2 AW6 X32K_X2
SVI
ACPI
GPIO
MISC
OC
FAN
RTC
SMBus
SENSE
AM4
PART 5 OF 9
N12-331A040-F02
ZIF-SOCKET1331
R755 X_0R/4 SIO_SMB_MSCL (27,49,62)
SCL0/I2C2_SCL/EGPIO113 AU25 SCL0 R280 X_R/2 SCLK0 (6,11,62)
SDA0/I2C2_SDA/EGPIO114 AV25 SDA0 R284 X_R/2 SDATA0 (6,11,62)
R756 X_0R/4 SIO_SMB_MSDA (27,49,62)
SCL1/I2C3_SCL/AGPIO19 AK3 SCLK1 (20)
SDA1/I2C3_SDA/AGPIO20 AK2 SDATA1 (20)
AT6 WIFI_WAKE#
AGPIO3 AR6
AGPIO4 AP22 M2_1_SATA_DET (24)
AGPIO5/DEVSLP0 AN8 DEVSLP1 (24)
AGPIO6 AP7 CPU_S0_IDLE (58)
AGPIO8 AN2 LAN_ISOLATEB (33)
AGPIO9/SGPIO0_DATAOUT1 AN3 AGPIO9
AGPIO23/SGPIO0_LOAD AR4 PEGX16_WAKE#
AGPIO40/SGPIO0_DATAIN AW17 M22_PE4_WAKE#
AGPIO86 AV22 GENINT1_L M2_1_CARD_DET (24)
GENINT1_L/AGPIO89 AU23
GENINT2_L/AGPIO90 AM22 SATA_LED# SATA_LED# (65)
SATA_ACT_L/AGPIO130
For Select Auto or Manual
VCC3
R232 8.2K/4 GENINT1_L
R223 X_10K/4
AMD Hardware Validated Boot (HVB)
0 or NC:Disable
1:Enable
AT18 PM_PESLOT_AUX_RST#
EGPIO70 AW11 PEGX16_AUX_RST# PEGX16_AUX_RST# (20)
EGPIO95 AV12 EGPIO96_DRAM (66)
EGPIO96 AW12 WIFI_AUX_RST# WIFI_AUX_RST# (26)
EGPIO97 AU13 PM19_AUX_RST# (17)
EGPIO98 AV13 M21_AUX_RST# (24)
EGPIO99 AT14 LAN_AUX_RST# LAN_AUX_RST# (33)
CLK_REQ0_L/SATA_IS0_L/SATA_ZP0_L/AGPIO115 AT23 CLK_REQ0
CLK_REQ1_L/AGPIO116 AV24 CLK_REQ1_M.2 CLK_REQ1_M.2 (24)
CLK_REQ2_L/AGPIO117 AT24 CLK_REQ2
CLK_REQ3_L/SATA_IS1_L/SATA_ZP1_L/EGPIO118 AL23 PM19_CLK_REQ_L PM19_CLK_REQ_L (17)
CLK_REQG_L/OSCIN/EGPIO152 AR22 CLK_REQG CLK_REQG (20)
M2_1
RROM19
X16
USB_OC0_L/AGPIO10 AL1 APU_OC0
USB_OC1_L/TDI/AGPIO11 AM1 LAN_WAKE# APU_OC0 (44)
USB_OC2_L/TCK/AGPIO12 AR1
USB_OC3_L/TDO/AGPIO24 AP1
3VSB
APU_OC0 R164 200KR/4
VDDCR_CPU_SENSE F14 VDDCR_CPU_SENSE+ (28,49)
VDDCR_SOC_SENSE E15 VDDCR_SOC_SENSE+ (49)
VDDIO_MEM_S3_SENSE G14
VSS_SENSE_A F15 CP18 CP17 X_COPPER X_COPPER
VDDIO_MEM_S3_SENSE (58)
VDDCR_CPU_SENSE- (49)
VDDCR_SOC_SENSE- (49)
VDDP_SENSE AL22 CPU_VDDP_SENSE
VSS_SENSE_B AM23 VSS_SENSE_B TP27
CPU_VDDP_SENSE (56)
VCC3
R252 560R/4 SATA_LED#
R250 10K/4 CLK_REQ1_M.2
R253 X_10K/4 CLK_REQ2
R248 10K/4 CLK_REQG
R442 10K/4 PM19_CLK_REQ_L
R238 X_10K/4 CLK_REQ0
R246 X_10K/4 CLK_REQ1_M.2
R249 X_10K/4 CLK_REQ2
R653 X_10K/4 PM19_CLK_REQ_L
R237 X_10K/4 CLK_REQG
Layout:Place x'tal within 1.5 inch of APU
APU_32K_X2
Y2
32.768KHZ12.5p
APU_32K_X1
R196 20M/6
C207 12p50N6
C206 12p50N6
PLACE THESE COMPONENTS CLOSE TO U600, AND USE GROUND GUARD FOR 32K_X1 AND 32K_X2
AM4 CPU TYPE Circuit
3VSB R227 1K/4
CORETYPE1
ATX_5VSB
R404 47K/4
TYPE0_CPU_SEL
0:RV
1:BR/SR/PR/MTS
TYPE0_CPU_SEL (7,56,57)
CPU_1P8_S5
R414 1K/4
R415 4.7K/4
CORETYPE0
CORETYPE0R
Q47 2N3904
CORETYPE0
0:BR/SR/PR/MTS
1:RV
IB=(CPU_1P8_S5-Vbe)/5.7k
(1.8-0.95)/5.7k=0.149mA
IC=(VCC5-Vce)/47k
(5-0.2)/47k=0.102mA
CPU TYPE CORETYPE 1 0
BR 0 0 0
NA X 1 1
SR 2 1 0
RV/ZP 3 1 1
MTS 4 1 0
3VSB PWR_1P8_SW
R273 10K/4
R274 10K/4
AGPIO9
N-PM514BA
Q33
TPM_HOLD# (7)
MICRO-STAR INT'L CO.,LTD
MS-7C94
Size Custom
Document Description AM4 SVI / ACPI / GPIO
Rev 1.0
Date: Tuesday, April 28, 2020
Sheet 6 of 76



Strapping Options

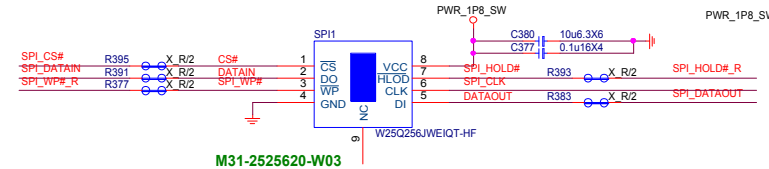


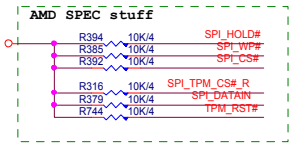
	LPCCLK1	SPI_CLK	LPCCLK0
PULL HIGH	Configured for Internal clock generator (Default)	Use 48Mhz crystal clock and generate both internal and external clocks (Default)	PSP should modify SPI page register bits [25:24] to remap physical ROM to upper image (Default)
PULL LOW	Configured for External clock generator ?????	Use 100Mhz PCIE clock as reference clock and generate internal clocks only	PSP should not modify SPI page register bits [25:24]

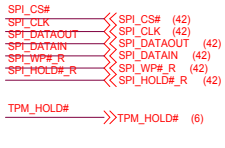


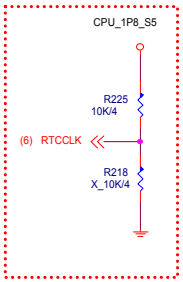
	AGPIO3	LFRAME	SYSREST#
PULL HIGH	Enhanced Reset logic	SPI ROM (Default)	Normal reset mode (Default)
PULL LOW	(Default) Traditional Reset logic	LPC ROM	short reset mode

SPI ROM(1.8V)

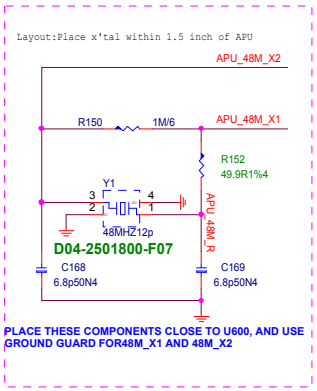


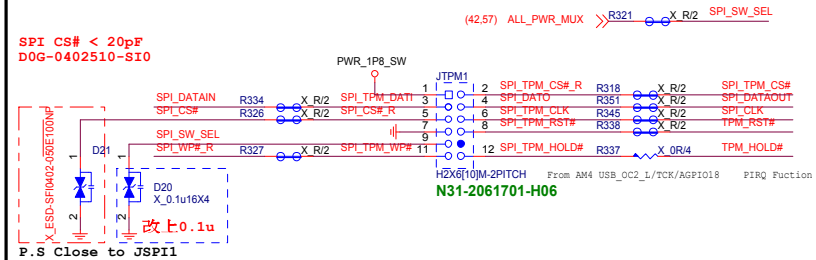


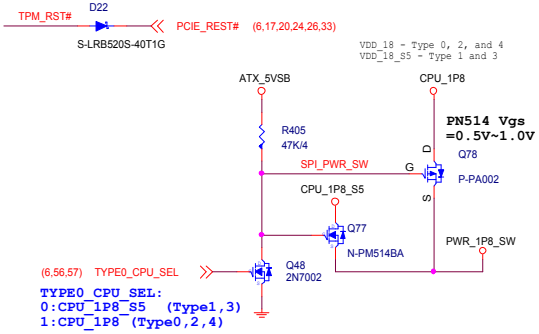




	RTCCLK
PULL HIGH	RTCCLK is input and is used as the bypass clock (Default)
PULL LOW	Normal Mode: Use 32Khz xtal as the source of RTC clock





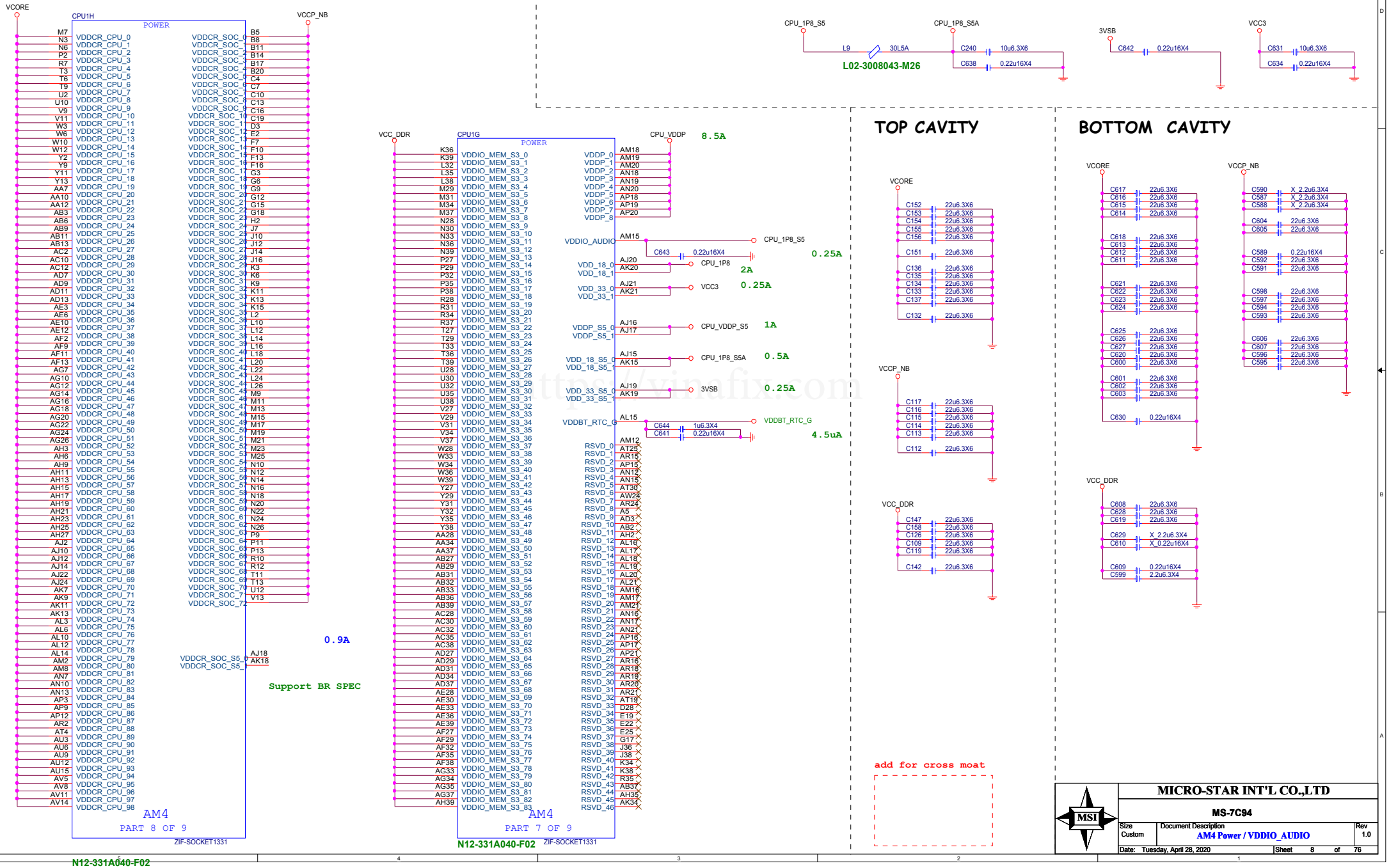


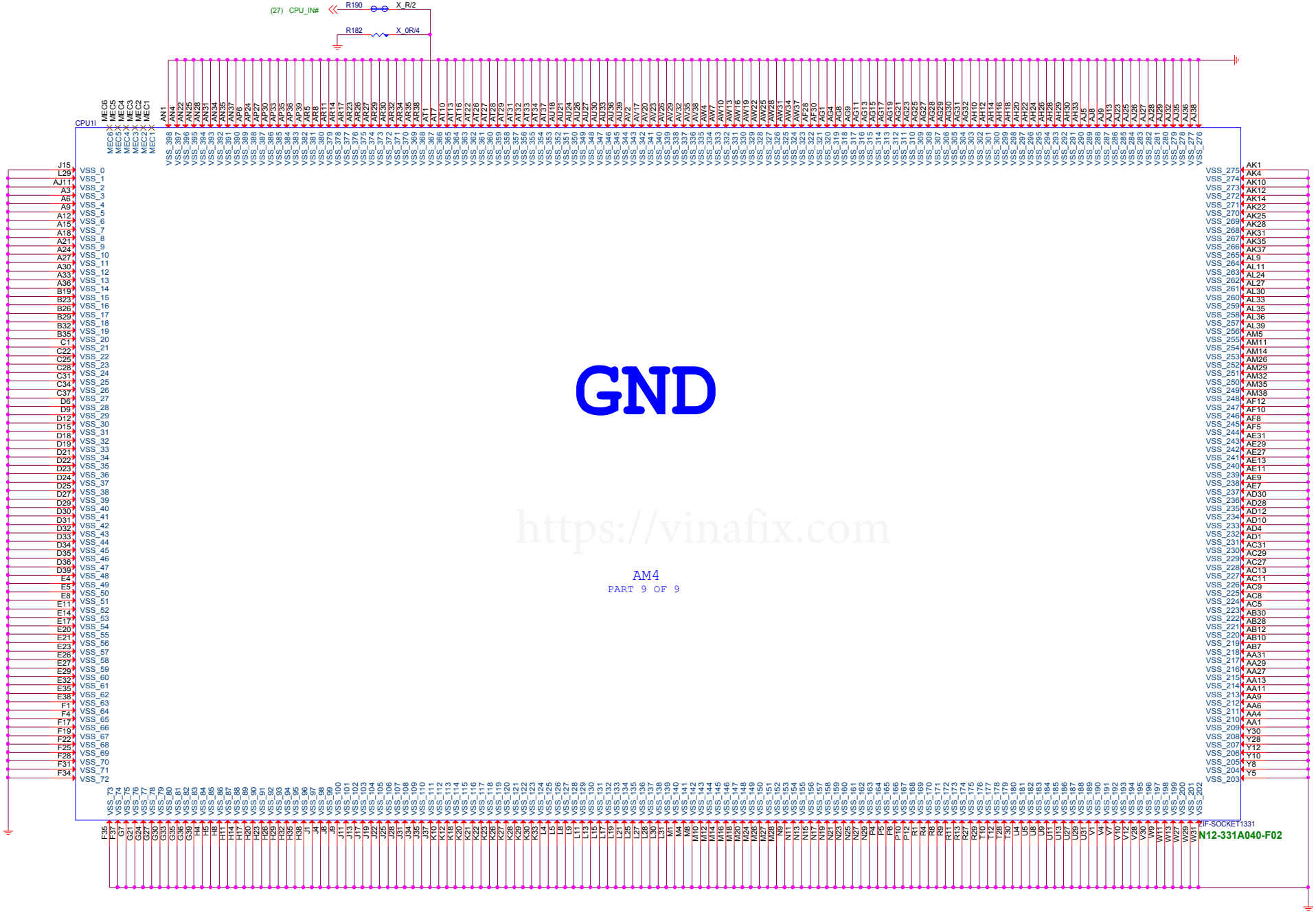
MICRO-STAR INT'L CO.,LTD

MS-7C94

Size	Document Description	Rev
Custom	AM4 LPC / SPI / USB / CLK / STRAP	1.0

Date: Tuesday, April 28, 2020 Sheet 7 of 76


TOP and BOTTOM SIDE
CPU_VDDP
C640 22u6.3X6
C639 22u6.3X6
CPU_VDDP_S5
C633 10u6.3X6
C635 0.22u16X4
CPU_1P8
C632 22u6.3X6
C636 0.22u16X4
CPU_1P8_S5
L9 30L5A
L02-3008043-M26
CPU_1P8_S5A
C240 10u6.3X6
C638 0.22u16X4
3VSB
C642 0.22u16X4
VCC3
C631 10u6.3X6
C634 0.22u16X4
VCORE
CPU1H
POWER
VCCP_NB
VDDCR_CPU_0 ... VDDCR_CPU_98
VDDCR_SOC_0 ... VDDCR_SOC_72
VDDCR_SOC_S5_0
VDDCR_SOC_S5_1
AJ18
AK18
0.9A
Support BR SPEC
AM4
PART 8 OF 9
ZIF-SOCKET1331
N12-331A040-F02
VCC_DDR
CPU1G
POWER
VDDIO_MEM_S3_0 ... VDDIO_MEM_S3_83
CPU_VDDP
8.5A
VDDP_0 ... VDDP_8
VDDIO_AUDIO
AM15
CPU_1P8_S5
C643 0.22u16X4
0.25A
VDD_18_0
VDD_18_1
AJ20
AK20
CPU_1P8
2A
VDD_33_0
VDD_33_1
AJ21
AK21
VCC3
0.25A
VDDP_S5_0
VDDP_S5_1
AJ16
AK17
CPU_VDDP_S5
1A
VDD_18_S5_0
VDD_18_S5_1
AJ15
AK15
CPU_1P8_S5A
0.5A
VDD_33_S5_0
VDD_33_S5_1
AJ19
AK19
3VSB
0.25A
VDDBT_RTC_G
AL15
C644 1u6.3X4
C641 0.22u16X4
VDDBT_RTC_G
4.5uA
RSVD_0 ... RSVD_46
AM4
PART 7 OF 9
ZIF-SOCKET1331
N12-331A040-F02
TOP CAVITY
VCORE
C152 22u6.3X6
C153 22u6.3X6
C154 22u6.3X6
C155 22u6.3X6
C156 22u6.3X6
C151 22u6.3X6
C136 22u6.3X6
C135 22u6.3X6
C134 22u6.3X6
C133 22u6.3X6
C137 22u6.3X6
C132 22u6.3X6
VCCP_NB
C117 22u6.3X6
C116 22u6.3X6
C115 22u6.3X6
C114 22u6.3X6
C113 22u6.3X6
C112 22u6.3X6
VCC_DDR
C147 22u6.3X6
C158 22u6.3X6
C126 22u6.3X6
C109 22u6.3X6
C119 22u6.3X6
C142 22u6.3X6
add for cross moat
BOTTOM CAVITY
VCORE
C617 22u6.3X6
C616 22u6.3X6
C615 22u6.3X6
C614 22u6.3X6
C618 22u6.3X6
C613 22u6.3X6
C612 22u6.3X6
C611 22u6.3X6
C621 22u6.3X6
C622 22u6.3X6
C623 22u6.3X6
C624 22u6.3X6
C625 22u6.3X6
C626 22u6.3X6
C627 22u6.3X6
C620 22u6.3X6
C600 22u6.3X6
C601 22u6.3X6
C602 22u6.3X6
C603 22u6.3X6
C630 0.22u16X4
VCCP_NB
C590 X_2.2u6.3X4
C587 X_2.2u6.3X4
C588 X_2.2u6.3X4
C604 22u6.3X6
C605 22u6.3X6
C589 0.22u16X4
C592 22u6.3X6
C591 22u6.3X6
C598 22u6.3X6
C597 22u6.3X6
C594 22u6.3X6
C593 22u6.3X6
C606 22u6.3X6
C607 22u6.3X6
C596 22u6.3X6
C595 22u6.3X6
VCC_DDR
C608 22u6.3X6
C628 22u6.3X6
C619 22u6.3X6
C629 X_2.2u6.3X4
C610 X_0.22u16X4
C609 0.22u16X4
C599 2.2u6.3X4
MICRO-STAR INT'L CO.,LTD
MS-7C94
Size Custom
Document Description
AM4 Power / VDDIO_AUDIO
Rev 1.0
Date: Tuesday, April 28, 2020
Sheet 8 of 76



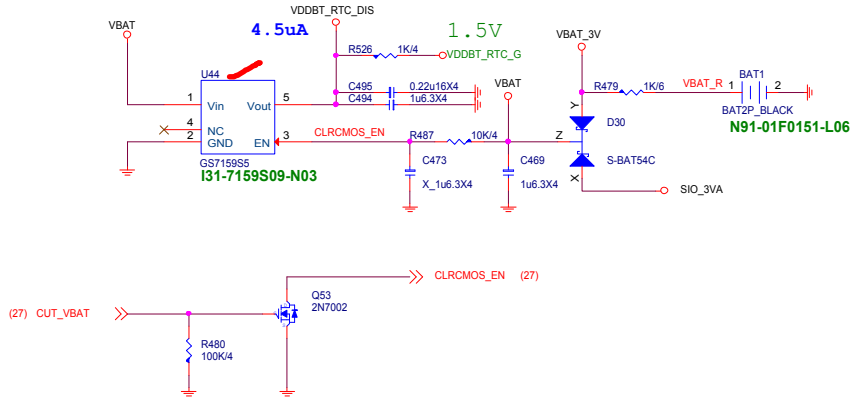
MICRO-STAR INT'L CO.,LTD

MS-7C94

Size	Document Description	Rev
Custom	AM4 GND	1.0

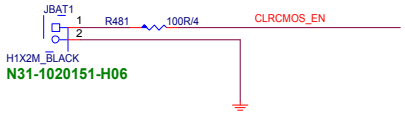
Date: Tuesday, April 28, 2020 | Sheet 9 of 76

RTC & Clear CMOS Circuit

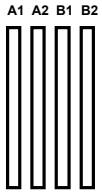


RTC Backup

Clear CMOS button



MICRO-STAR INT'L CO.,LTD		
MS-7C94		
Size: Custom	Document Description: RTC / CMOS	Rev: 1.0
Date: Tuesday, April 28, 2020	Sheet 10 of 76	



DIMMA1A

DDR4-288P_BLACK-RH-9

N13-2881271-L06

AVL: N13-2880441-F02

DIMMA2A

DDR4-288P_BLACK-RH-9

N13-2881271-L06

SMBus 0	
Device	8-bit Address (hex)
DIMMA0	A0
DIMMA1	A4
DIMMB0	A2
DIMMB1	A6

DIMM1(CHANNEL-A)-A0
ADDRESS = 0:0 [SA1:SA0]

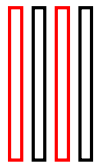
DIMM2(CHANNEL-A)-A4
ADDRESS = 1:0 [SA1:SA0]

MICRO-STAR INT'L CO.,LTD

MS-7C94

Size: Custom | Document Description: DDR4 - DIMM CH-A | Rev: 1.0

Date: Tuesday, April 28, 2020 | Sheet 11 of 76



DIMMB1A

DDR4-288P_BLACK-RH-9

N13-2881271-L06

DIMM3(CHANNEL-B)-A2
ADDRESS = 0:1 [SA1:SA0]

DIMMB2A

DDR4-288P_BLACK-RH-9

N13-2881271-L06

DIMM4(CHANNEL-B)-A6
ADDRESS = 1:1 [SA1:SA0]

MICRO-STAR INT'L CO.,LTD

MS-7C94

Size: Custom | Document Description: DDR4 - DIMM CH-B | Rev: 1.0

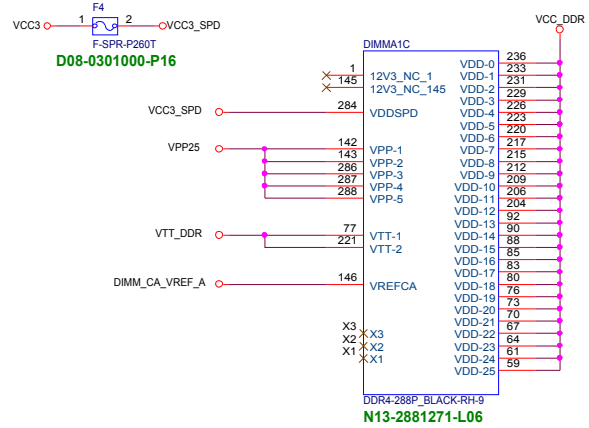
Date: Tuesday, April 28, 2020 | Sheet 12 of 76

avl:D08-0301100-B07

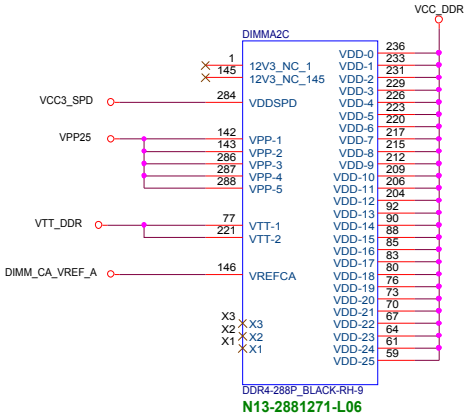
F4
VCC3 1 2 VCC3_SPD
F-SPR-P260T

D08-0301000-P16

DIMM SLOT PN BY SPEC



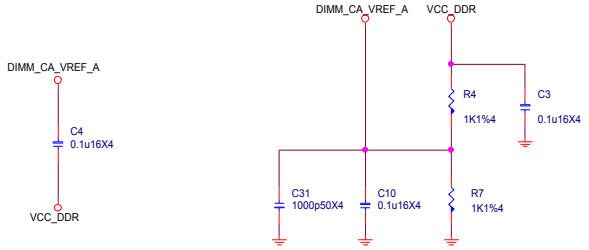
N13-2881271-L06

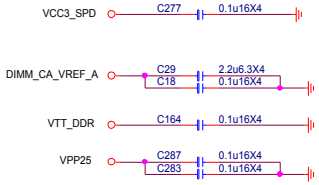


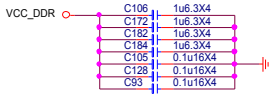
N13-2881271-L06

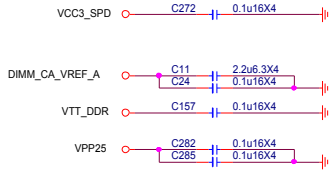
DDR VREF

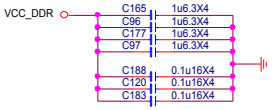
(place resistors close to DIMMs)

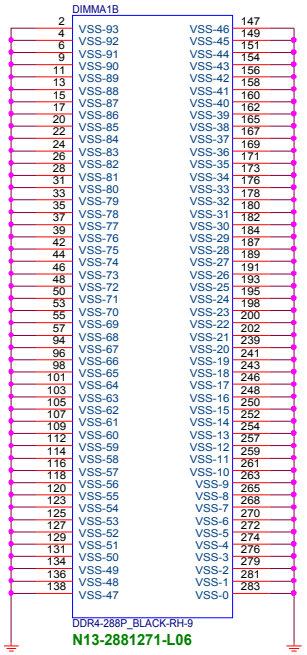




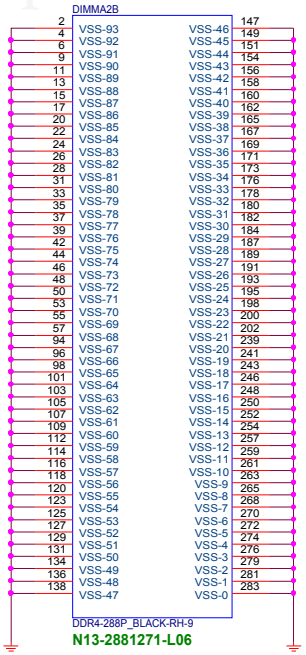








N13-2881271-L06



N13-2881271-L06

MSI

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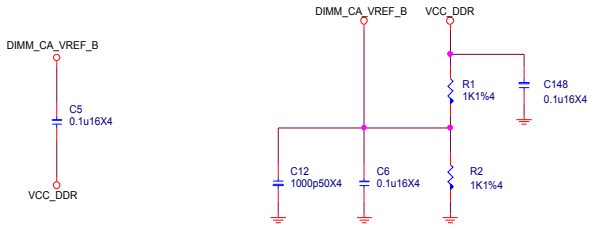
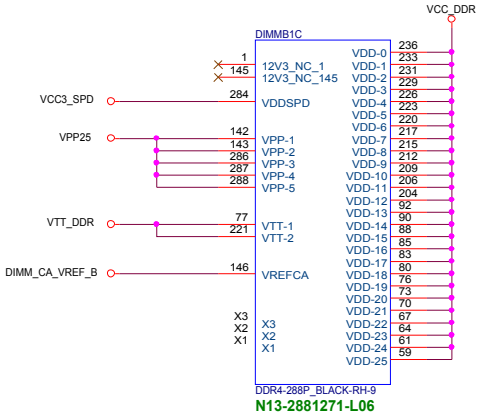
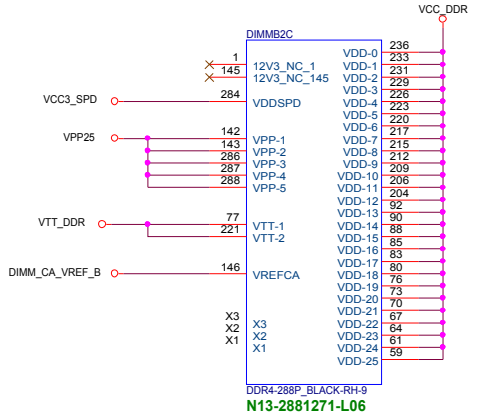
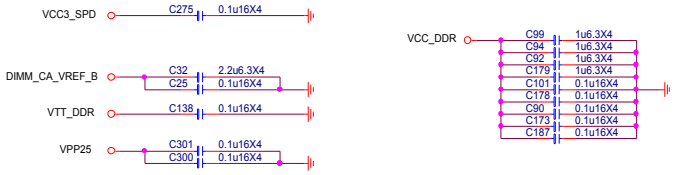
DDR VREF

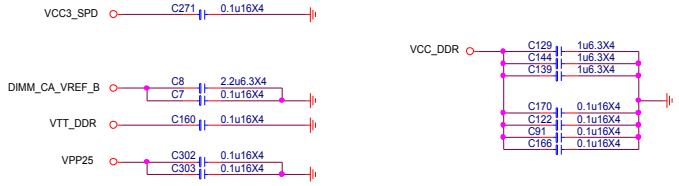
(place resistors close to DIMMs)

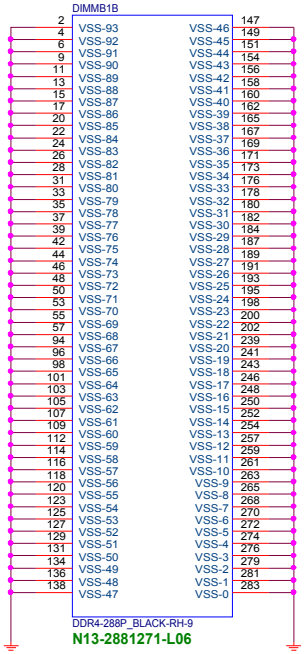


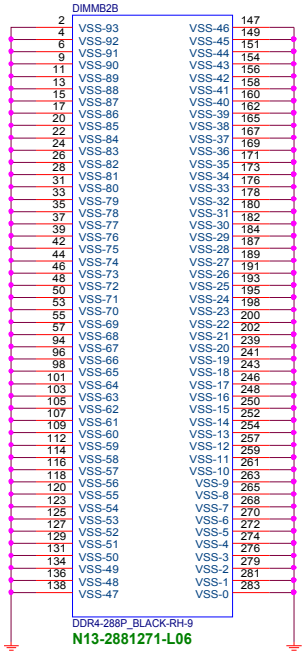












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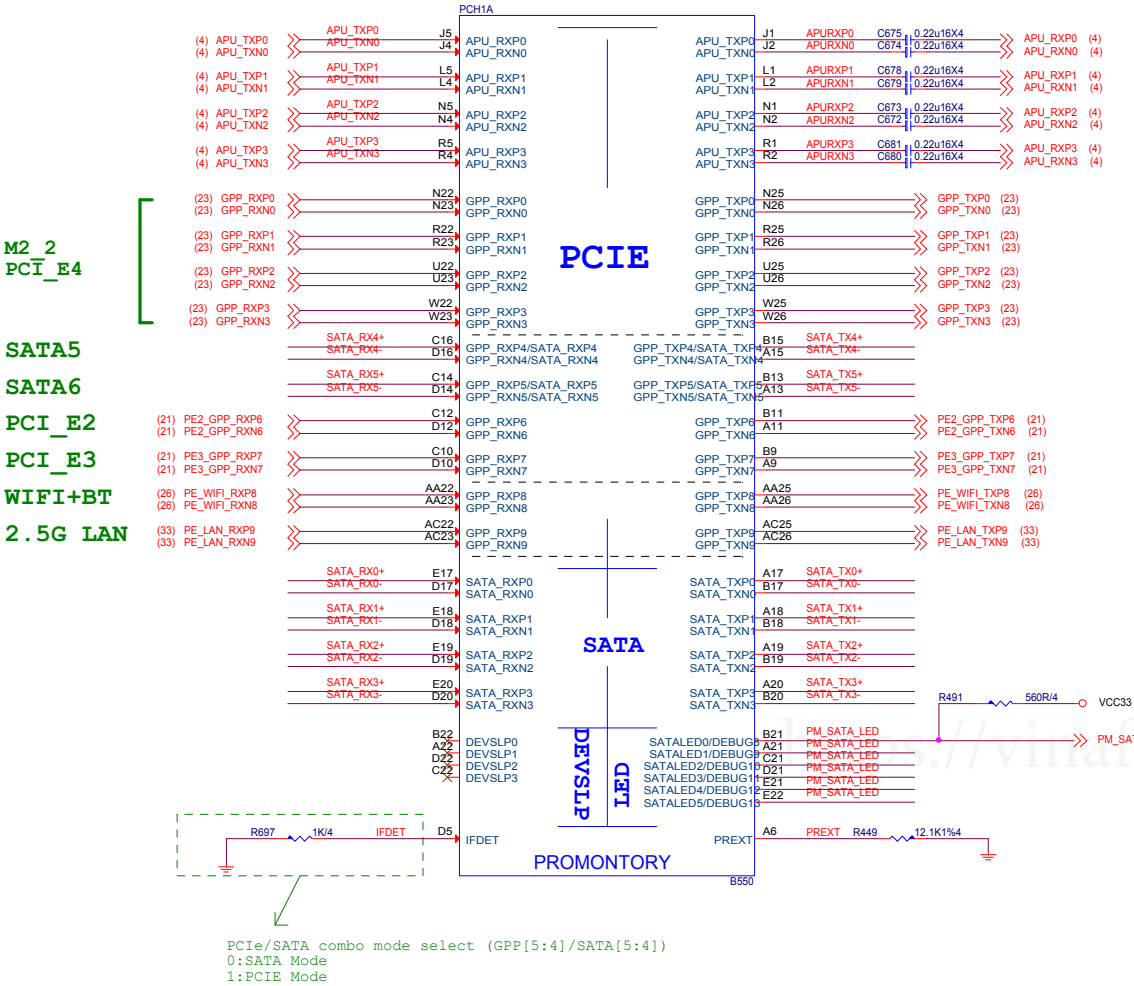
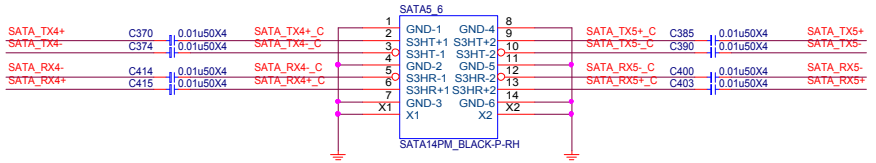


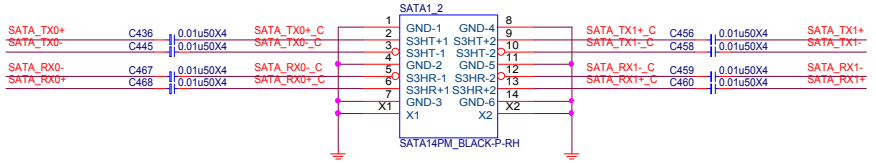
SATA Connector

SATA1_2



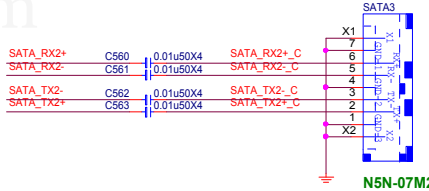
AVL:N5N-14M0201-L06

SATA3_4



AVL:N5N-14M0201-L06

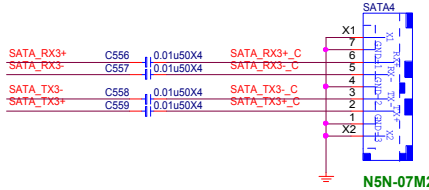
SATA5



N5N-07M2441-L06

AVL:N5N-14M0201-L06

SATA6



N5N-07M2441-L06

AVL:N5N-14M0201-L06

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Size: Custom	Document Description: Premium - PCIE/SATA	Rev: 1.0
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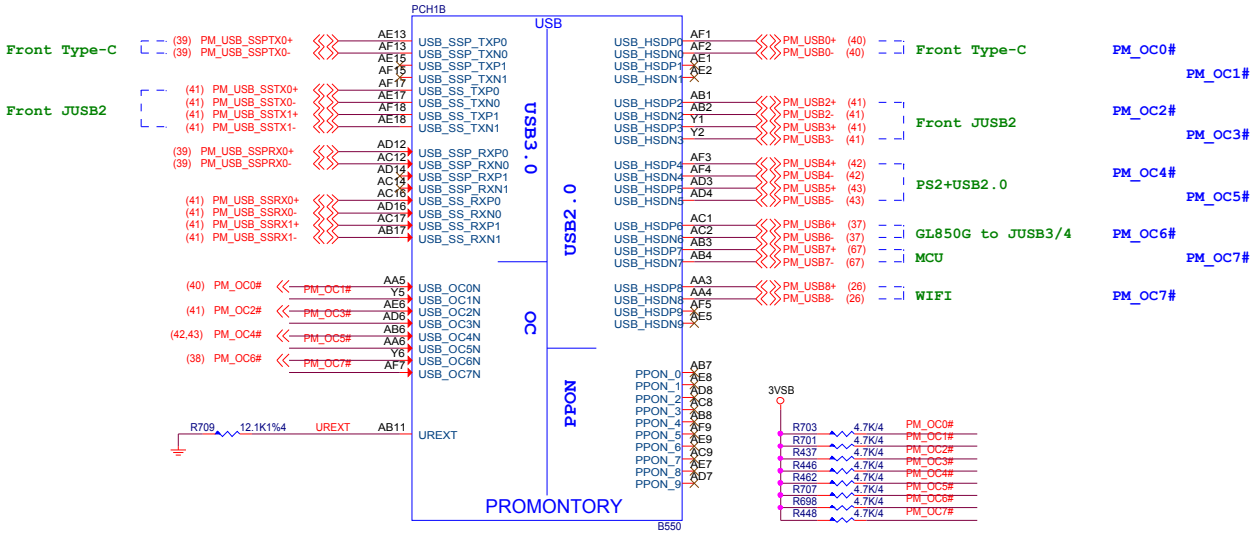

PM_OC0#
PM_OC1#
PM_OC2#
PM_OC3#
PM_OC4#
PM_OC5#
PM_OC6#
PM_OC7#

USB mapping

USB_SSP_TX/RX[0] + USB_HSDP/N[0] + USB_OC0N
USB_SSP_TX/RX[1] + USB_HSDP/N[1] + USB_OC1N

USB_SS_TX/RX[0] + USB_HSDP/N[2] + USB_OC2N
USB_SS_TX/RX[1] + USB_HSDP/N[3] + USB_OC3N
USB_HSDP/N[4] + USB_OC4N
USB_HSDP/N[5] + USB_OC5N
USB_HSDP/N[6] + USB_OC6N
USB_HSDP/N[7] + USB_OC7N
USB_HSDP/N[8] + USB_OC7N
USB_HSDP/N[9] + USB_OC7N

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Custom	Premium - USB/OC	1.0

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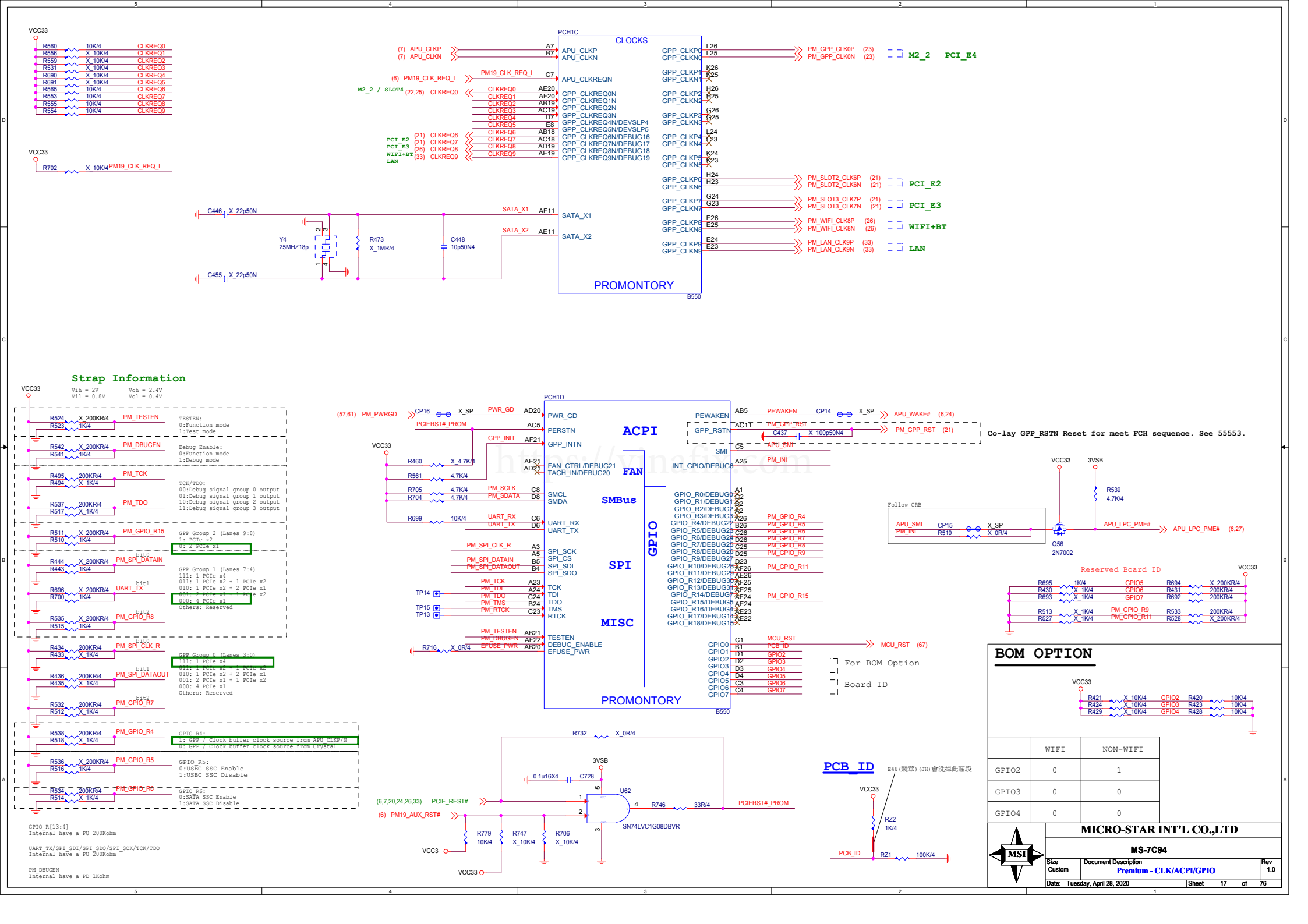
PCH1C
CLOCKS
PROMONTORY
B550
M2_2 PCI_E4
PCI_E2
PCI_E3
WIFI+BT
LAN
Strap Information
PCH1D
ACPI
FAN
SMBus
GPIO
SPI
MISC
PROMONTORY
B550
Co-lay GPP_RSTN Reset for meet FCH sequence. See 55553.
Reserved Board ID
BOM OPTION
PCB_ID
MICRO-STAR INT'L CO.,LTD
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Premium - CLK/ACPI/GPIO
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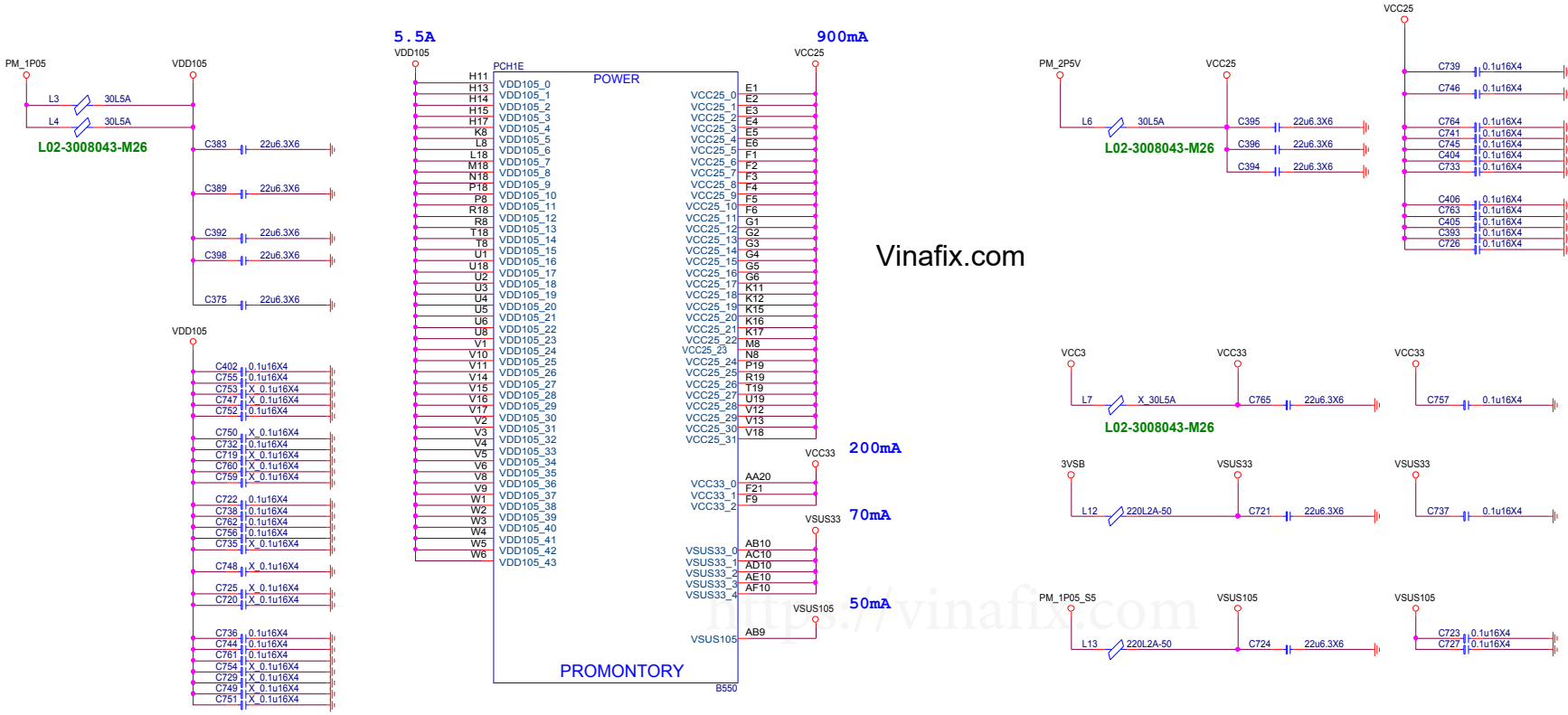

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MS-7C94		
Size: Custom	Document Description: Premium - Power	Rev: 1.0
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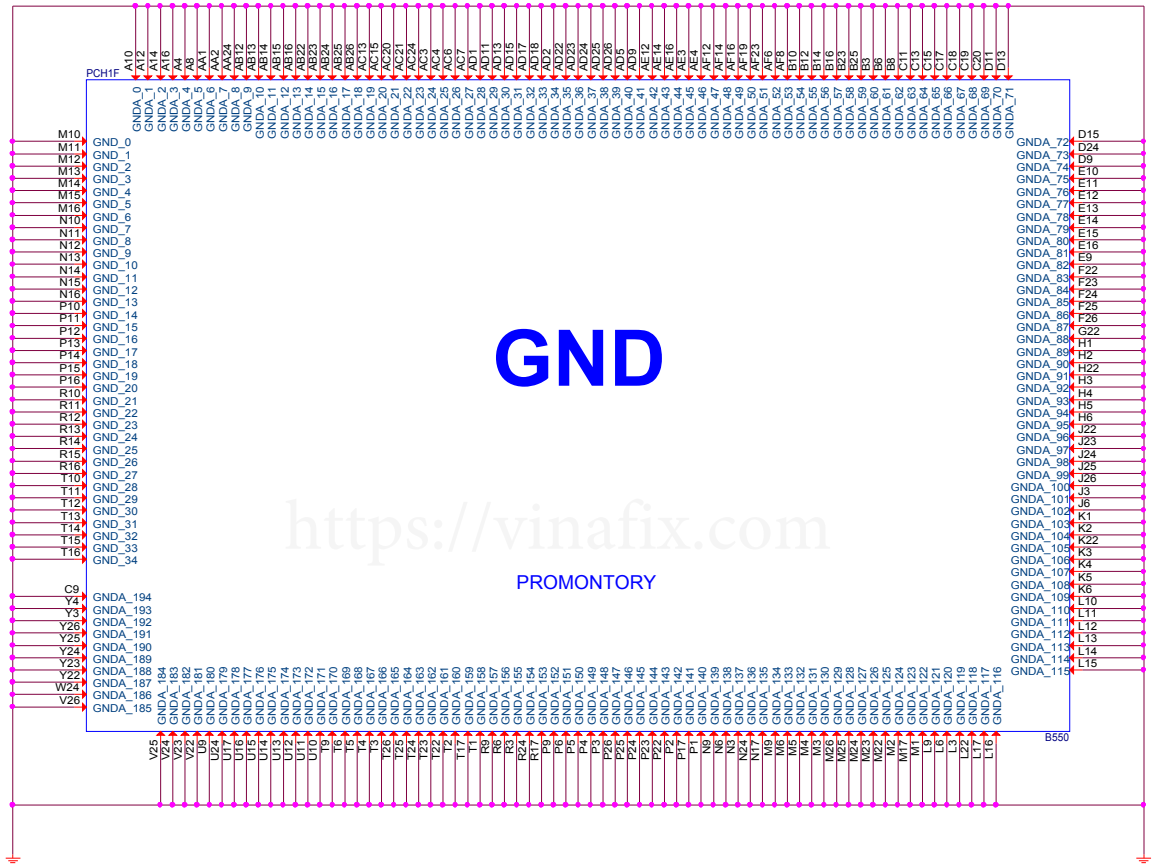

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MS-7C94	
Size: Custom	Document Description: Premium - GND
Rev: 1.0	
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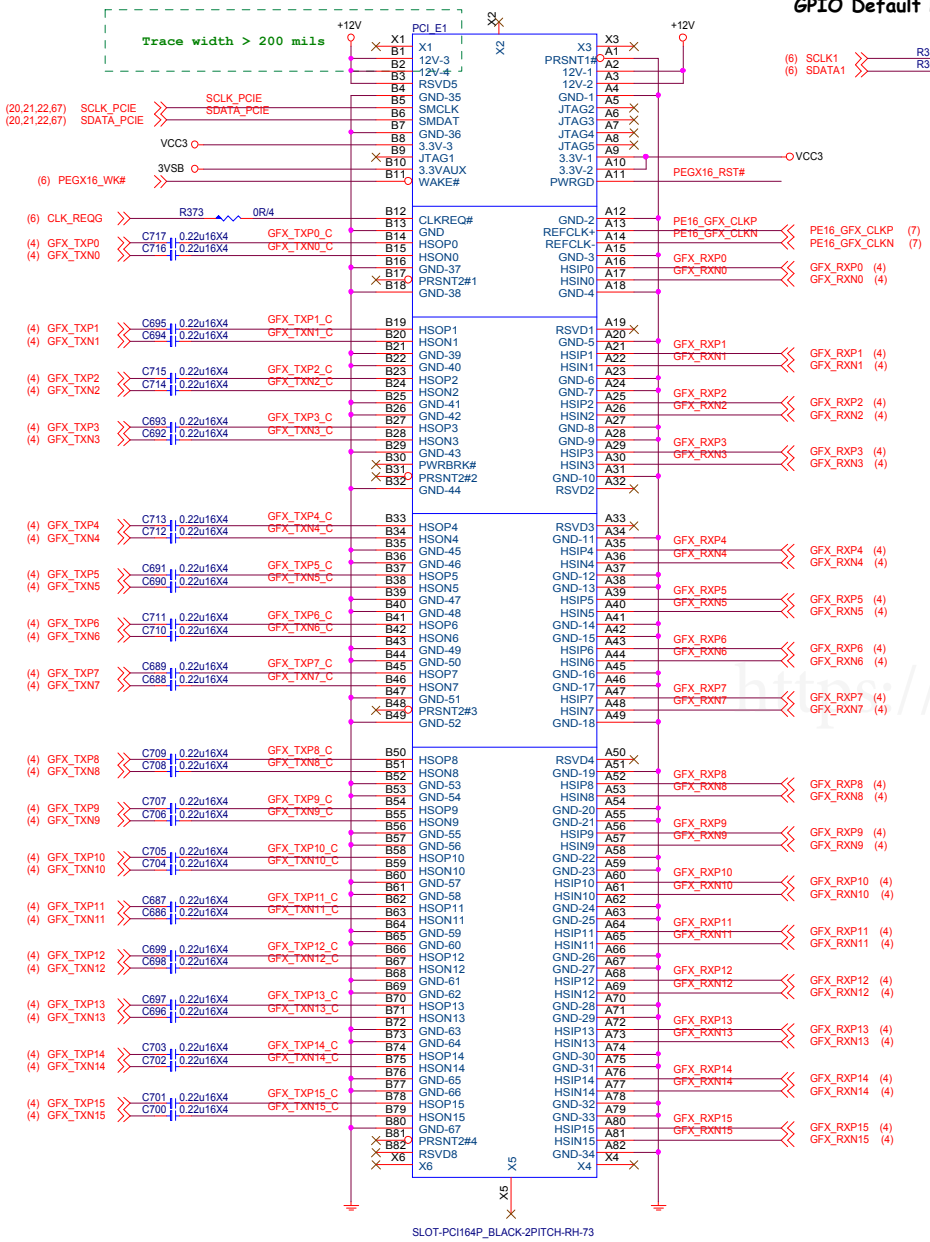
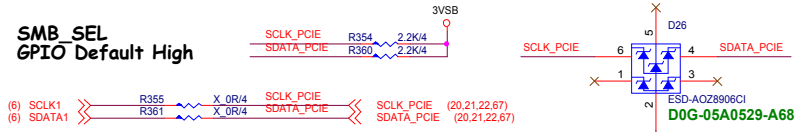
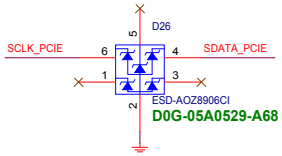
PCI EXPRESS x16 Slot

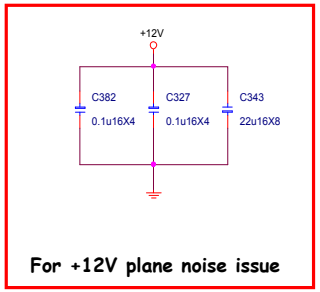
PCI_E1

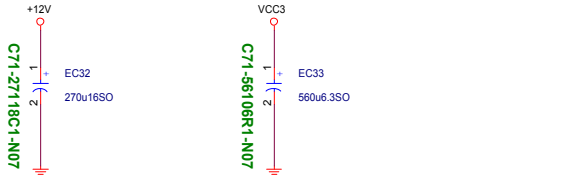


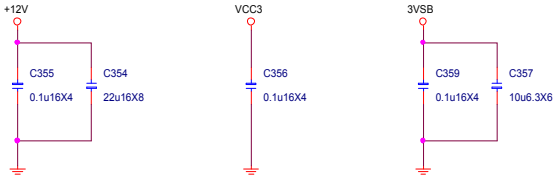
SMB_SEL
GPIO Default High

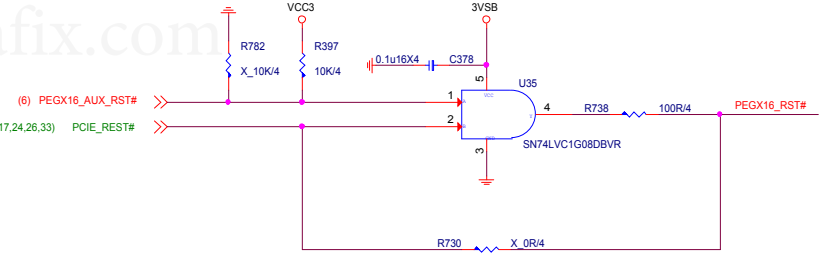












PCI Express x16 Slot		
+12V		- 5.5 A
+VCC3		- 3A
+3V3_S5	(wake)	- 375mA
+3V3_S5	(no wake)	- 20mA

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Size: Custom	Document Description: PCI_E1 (X16)	Rev: 1.0
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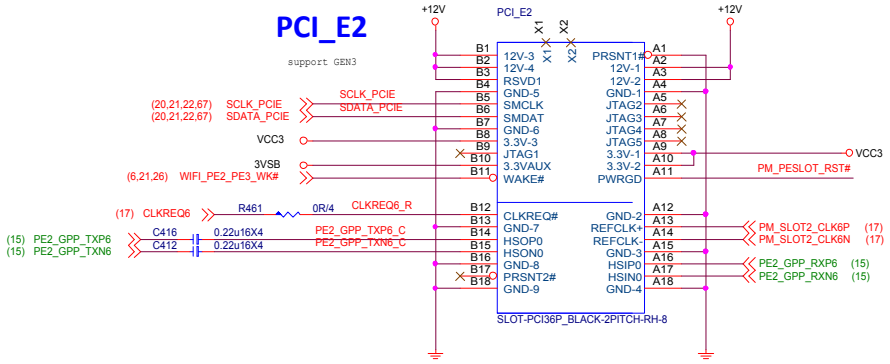
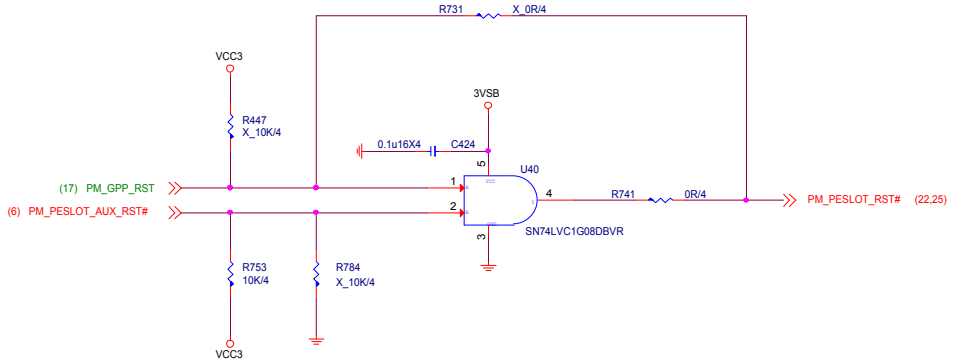
PCI EXPRESS X1 SLOT

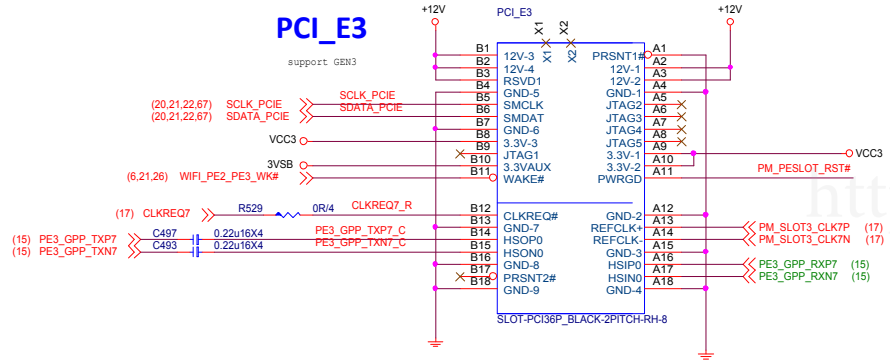


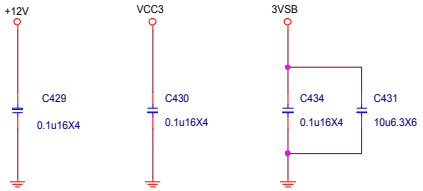
12V - 0.5A

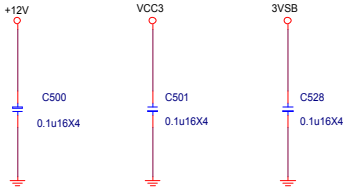
VCC3 - 3A

3VSBV - 375mA









PCI Express x1 Slot *3		
+12V		- 1.5 A
+VCC3		- 9A
+3V3_S5	(wake)	- 1125mA
+3V3_S5	(no wake)	- 20mA

MICRO-STAR INT'L CO.,LTD		
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Size: Custom	Document Description: PCI_E2 (X1) / PCI_E3 (X1)	Rev: 1.0
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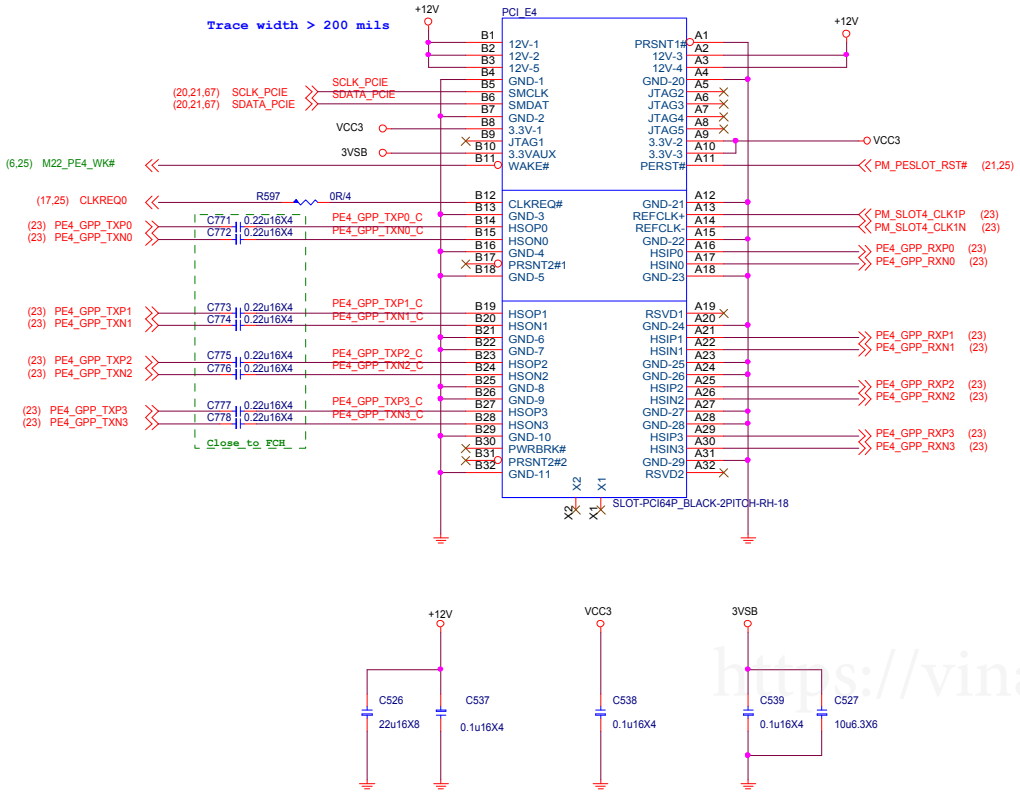
PCI EXPRESS x4 SLOT

PCI_E4 X4



PCI Express x4 Slot		
+12V		- 2.1A
+VCC3		- 3A
+3V3_S5	(wake)	- 375mA
+3V3_S5	(no wake)	- 20mA

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Size: Custom	Document Description: PCI_E4 (X4)
Rev: 1.0	
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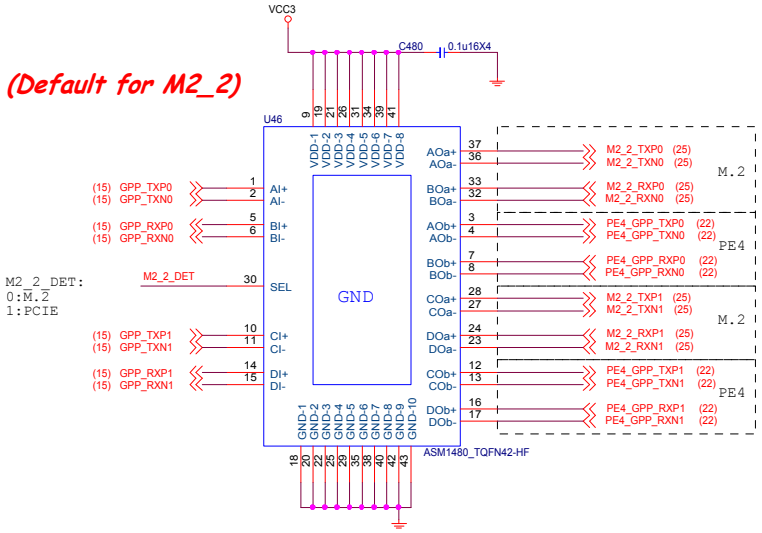
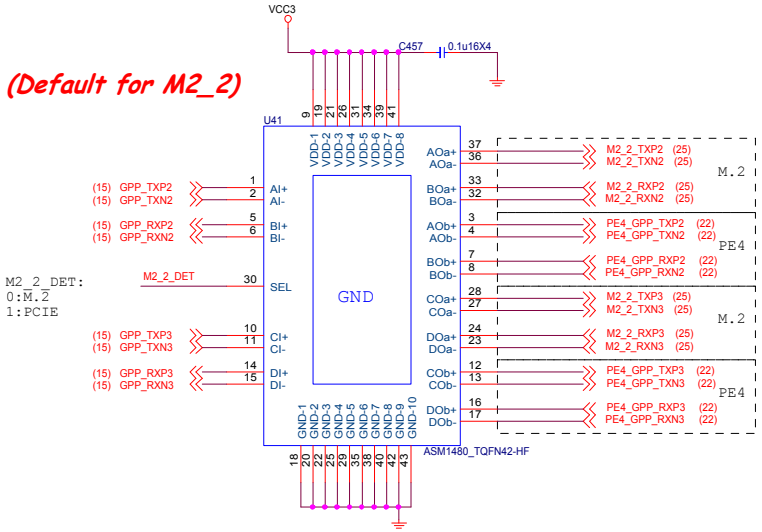
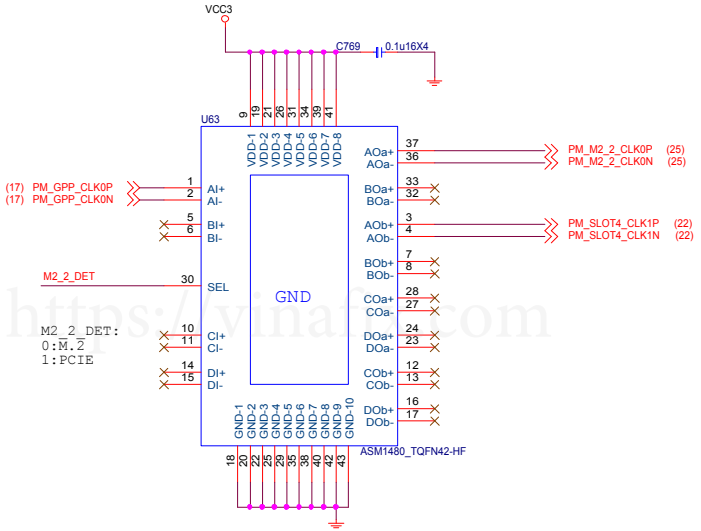
PCI_E4 and M2_2 Switch

(Default for M2_2)

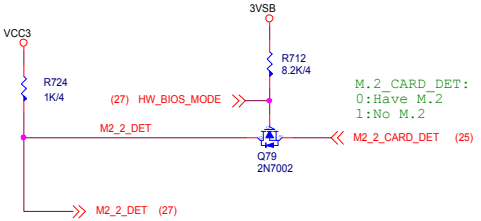


(Default for M2_2)





Manufature Control		Default PCIE_X4			
	AUTO Mode	PCIE X4	M.2 X4		
HW_BIOS_MODE	1	0	0		
M2_2_DET	input	1	0		
Device Detect		紅字為偵測PCIE或SATA device			
M2_2_DET		1	0		



MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	PCI_E4 / M2_2 SWITCH	1.0

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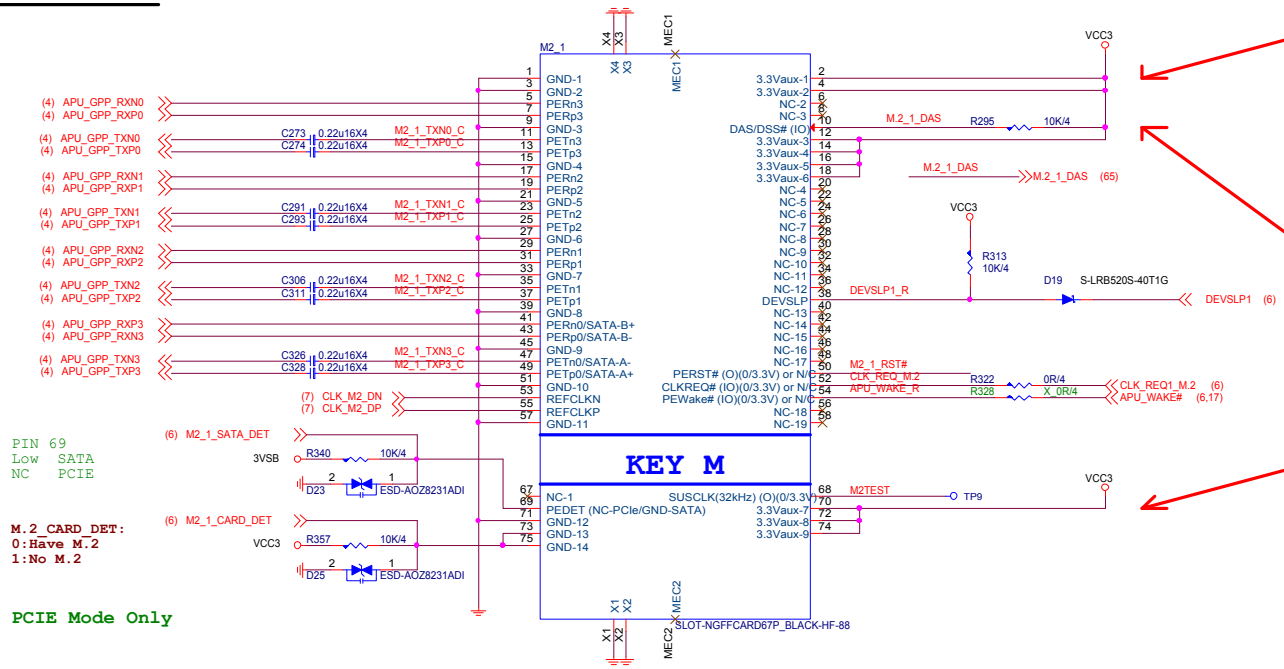
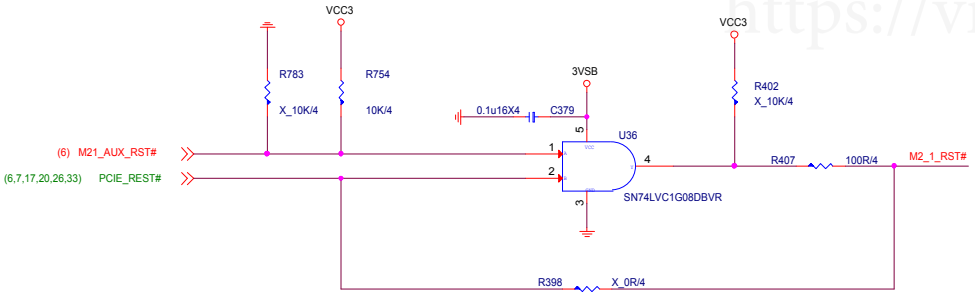
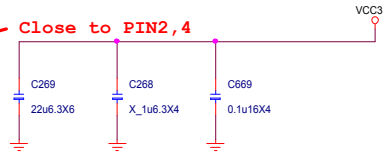
M.2_1 Connector

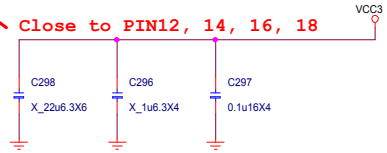
M2下方零件擺放限高要小於0.9mm的零件

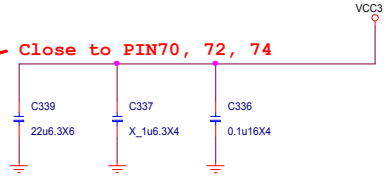
VCC3 4.25A
Max: 14W

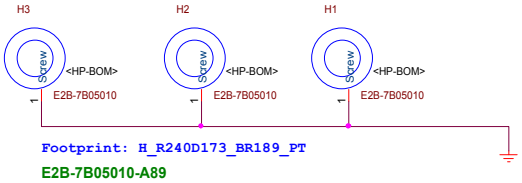












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Rev: 1.0	
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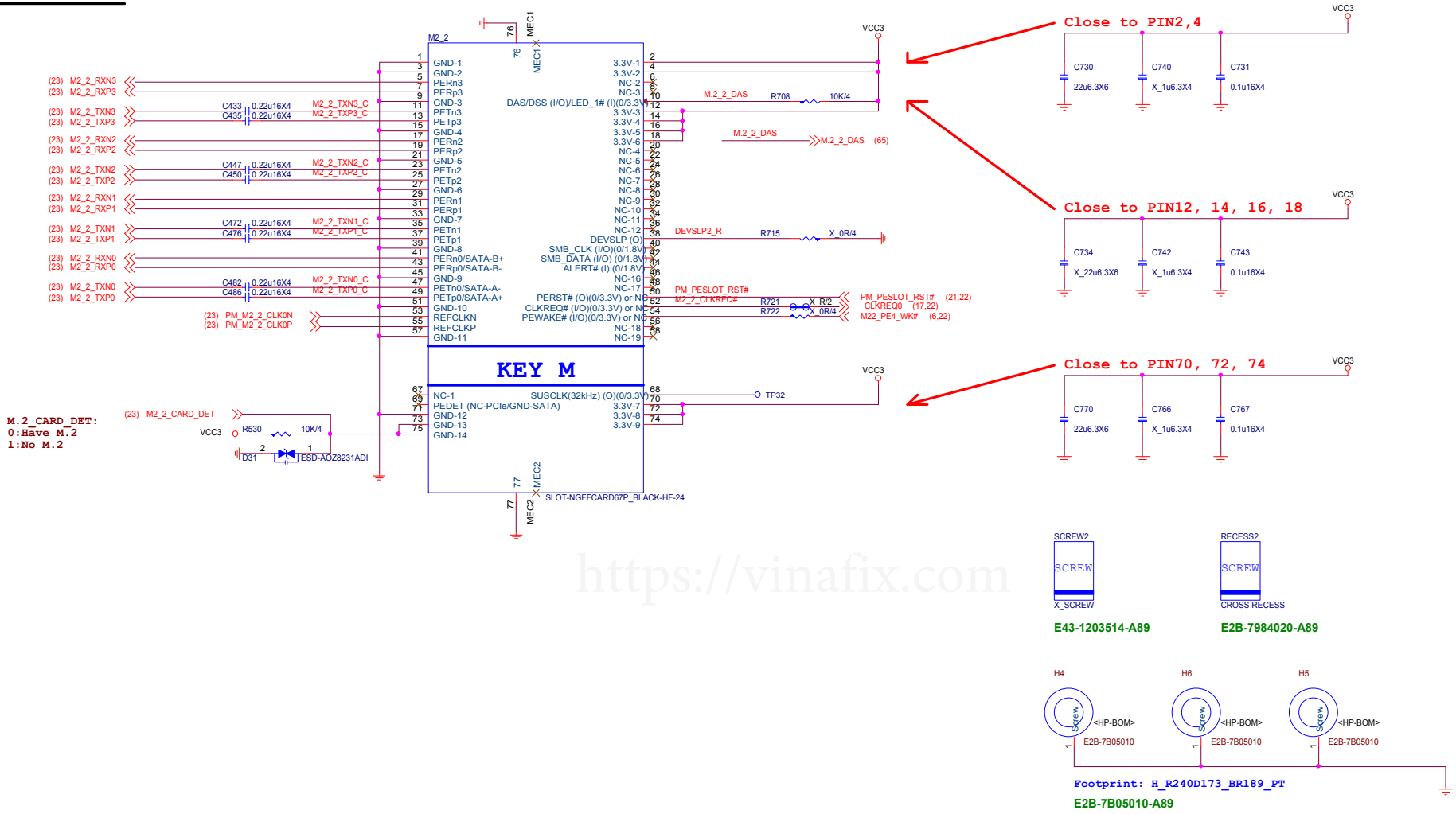
M.2_2 Connector

M2下方零件擺放限高要小於0.9mm的零件

VCC3 4.25A
Max: 14W



E43-1203514-A89

E2B-7984020-A89

E2B-7B05010-A89

Vinafix.com

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MS-7C94		
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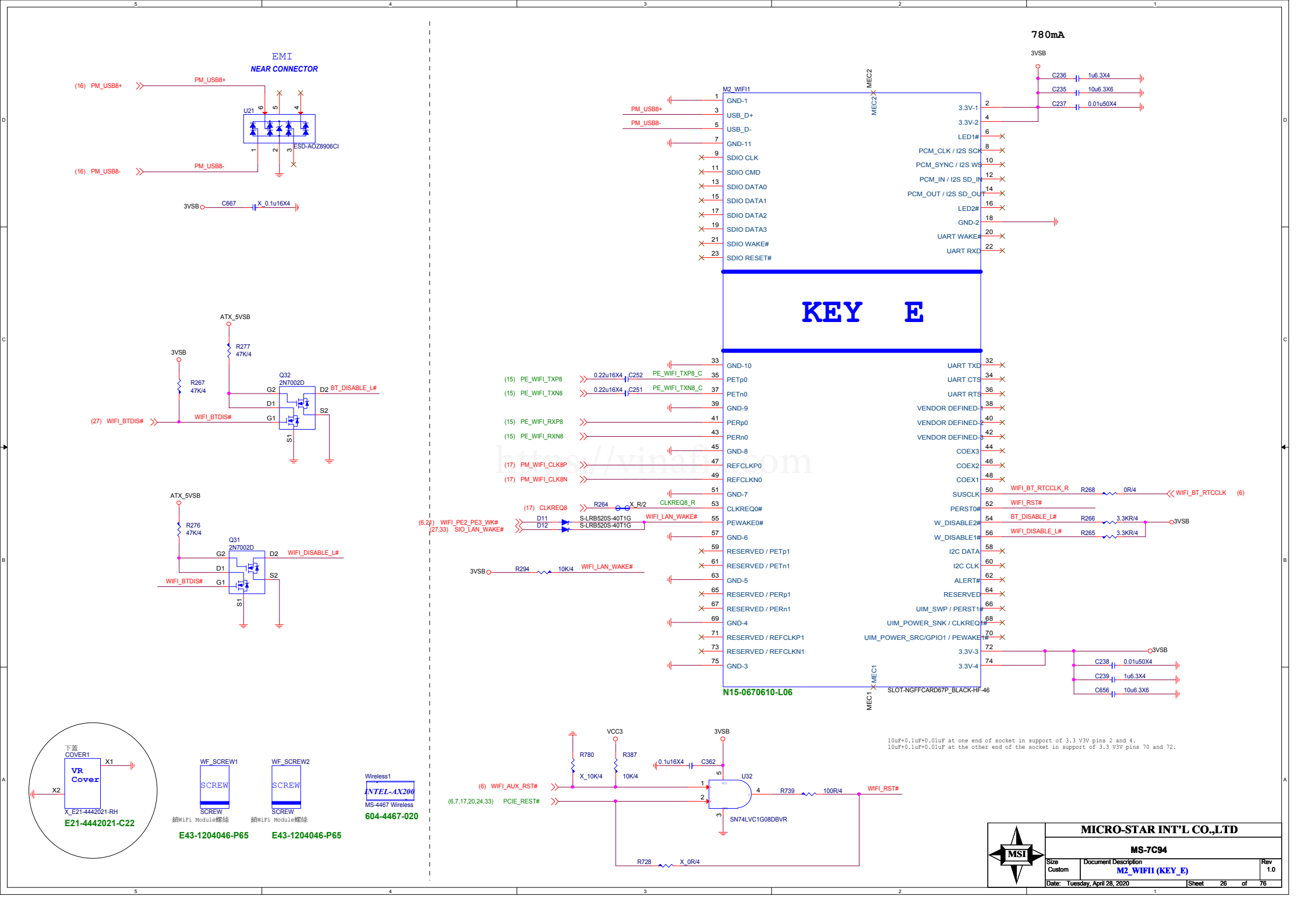
EMI
NEAR CONNECTOR
(16) PM_USB8+
PM_USB8+
U21
ESD-AOZ8906CI
(16) PM_USB8-
PM_USB8-
3VSB
C667
X_0.1u16X4
780mA
3VSB
M2_WIFI1
MEC2
GND-1
PM_USB8+
USB_D+
PM_USB8-
USB_D-
GND-11
SDIO CLK
SDIO CMD
SDIO DATA0
SDIO DATA1
SDIO DATA2
SDIO DATA3
SDIO WAKE#
SDIO RESET#
3.3V-1
3.3V-2
LED1#
PCM_CLK / I2S SCK
PCM_SYNC / I2S WS
PCM_IN / I2S SD_IN
PCM_OUT / I2S SD_OUT
LED2#
GND-2
UART WAKE#
UART RXD
C236 1u6.3X4
C235 10u6.3X6
C237 0.01u50X4
KEY E
GND-10
PETp0
PETn0
GND-9
PERp0
PERn0
GND-8
REFCLKP0
REFCLKN0
GND-7
CLKREQ0#
PEWAKE0#
GND-6
RESERVED / PETp1
RESERVED / PETn1
GND-5
RESERVED / PERp1
RESERVED / PERn1
GND-4
RESERVED / REFCLKP1
RESERVED / REFCLKN1
GND-3
UART TXD
UART CTS
UART RTS
VENDOR DEFINED-1
VENDOR DEFINED-2
VENDOR DEFINED-3
COEX3
COEX2
COEX1
SUSCLK
PERST0#
W_DISABLE2#
W_DISABLE1#
I2C DATA
I2C CLK
ALERT#
RESERVED
UIM_SWP / PERST1#
UIM_POWER_SNK / CLKREQ1#
UIM_POWER_SRC/GPIO1 / PEWAKE1#
3.3V-3
3.3V-4
MEC1
SLOT-NGFFCARD67P_BLACK-HF-46
N15-0670610-L06
(15) PE_WIFI_TXP8
0.22u16X4 C252
PE_WIFI_TXP8_C
(15) PE_WIFI_TXN8
0.22u16X4 C251
PE_WIFI_TXN8_C
(15) PE_WIFI_RXP8
(15) PE_WIFI_RXN8
(17) PM_WIFI_CLK8P
(17) PM_WIFI_CLK8N
(17) CLKREQ8
R264 X_R/2
CLKREQ8_R
(6,24) WIFI_PE2_PE3_WK#
(27,33) SIO_LAN_WAKE#
D11 S-LRB520S-40T1G
D12 S-LRB520S-40T1G
WIFI_LAN_WAKE#
3VSB R294 10K/4 WIFI_LAN_WAKE#
WIFI_BT_RTCCLK_R R268 0R/4 WIFI_BT_RTCCLK (6)
WIFI_RST#
BT_DISABLE_L# R266 3.3KR/4 3VSB
WIFI_DISABLE_L# R265 3.3KR/4
C238 0.01u50X4
C239 1u6.3X4
C656 10u6.3X6
ATX_5VSB
R277 47K/4
3VSB
R267 47K/4
Q32 2N7002D
G2 D2 BT_DISABLE_L#
D1
(27) WIFI_BTDIS# WIFI_BTDIS# G1 S2
S1
ATX_5VSB
R276 47K/4
Q31 2N7002D
G2 D2 WIFI_DISABLE_L#
D1
WIFI_BTDIS# G1 S2
S1
VCC3
3VSB
R780
R387
X_10K/4
10K/4
0.1u16X4 C362
U32
(6) WIFI_AUX_RST#
(6,7,17,20,24,33) PCIE_REST#
R739 100R/4 WIFI_RST#
SN74LVC1G08DBVR
R728 X_0R/4
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.
下蓋
COVER1
VR Cover
X1
X2
X_E21-4442021-RH
E21-4442021-C22
WF_SCREW1
SCREW
SCREW
鎖WiFi Module螺絲
E43-1204046-P65
WF_SCREW2
SCREW
SCREW
鎖WiFi Module螺絲
E43-1204046-P65
Wireless1
INTEL-AX200
MS-4467 Wireless
604-4467-020
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MS-7C94
Size Custom
Document Description
M2_WIFI1 (KEY_E)
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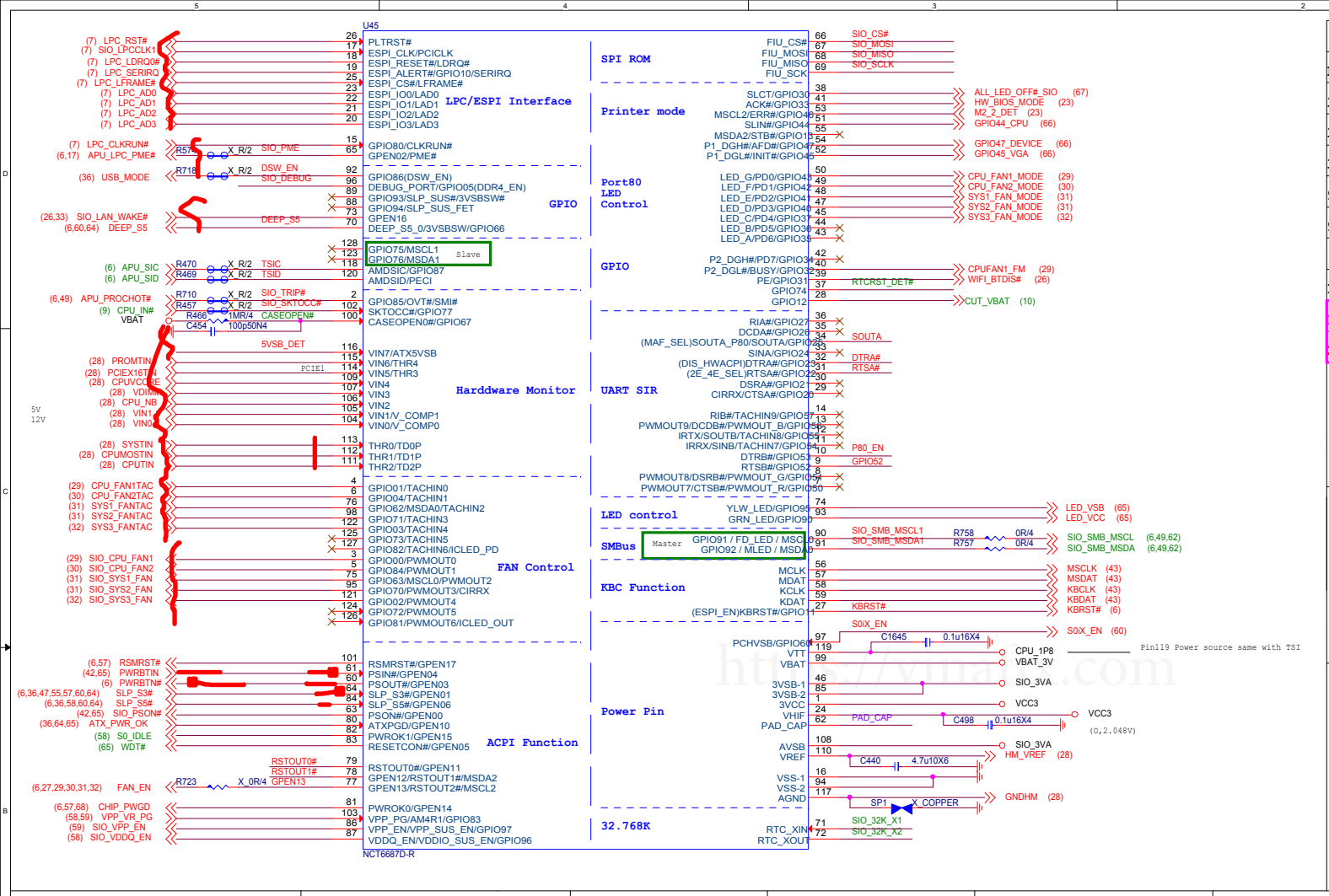
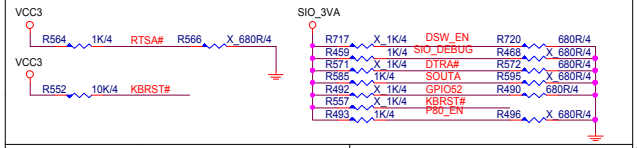
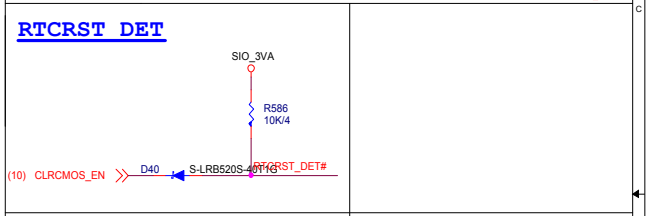
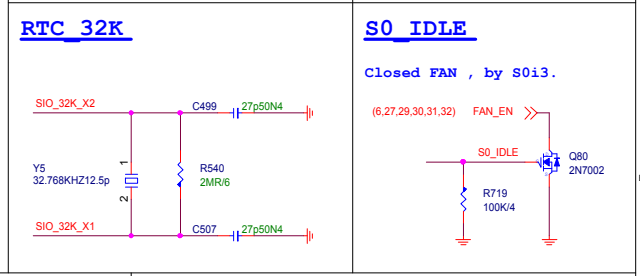


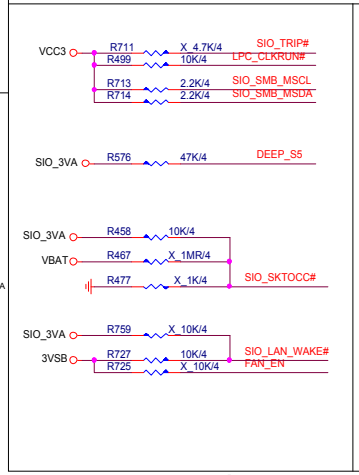
POWER ON STRAPPING PIN FOR NCT6687D-R

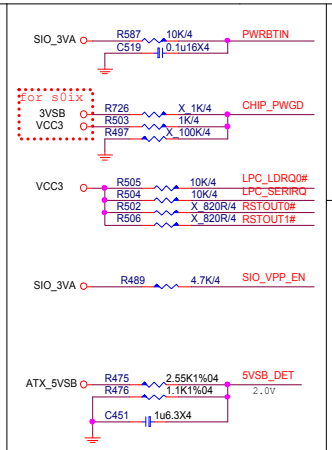
PIN	NAME	Circuit NAME	0	1	Strap Point
31	2E_4E_SEL	RTSA#	I/O ADDRESS 2E	I/O ADDRESS 4E	3VCC
32	DIS_HWACPI	DTRA#	HW ACPI enable	HW ACPI disable	3VA
34	MAF_SEL	SOUTA	MAF enable	MAF disable	3VA
92	DSW_EN	DSW_EN	DSW disable	DSW enable	3VA
96	DDR4_EN	SIO_DEBUG	DDR4 control disable	DDR4 control enable	3VA
9	FAN789_EN (FW setting)	GPIO52	FAN789 disable	FAN789 enable	3VA
10	P80_EN	GPIO46	Port80 LED	GPIO	3VA
PIN	NAME	Circuit NAME	VCC3	3VA	Strap Point
27	ESPI_EN	KBRST#	LPC	ESPI	VCC3 or 3VA

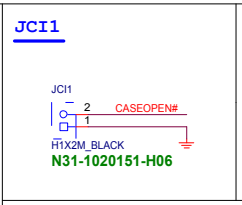


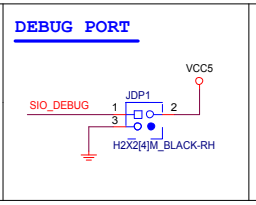


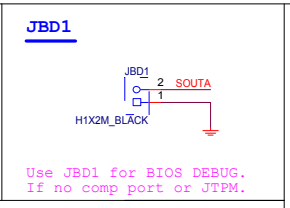


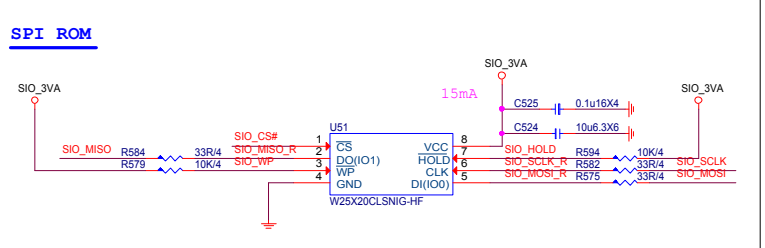


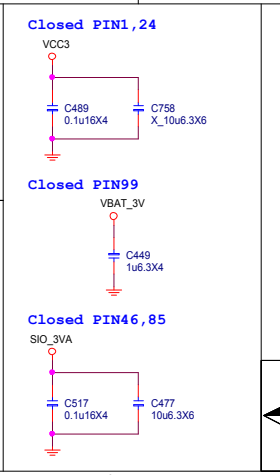


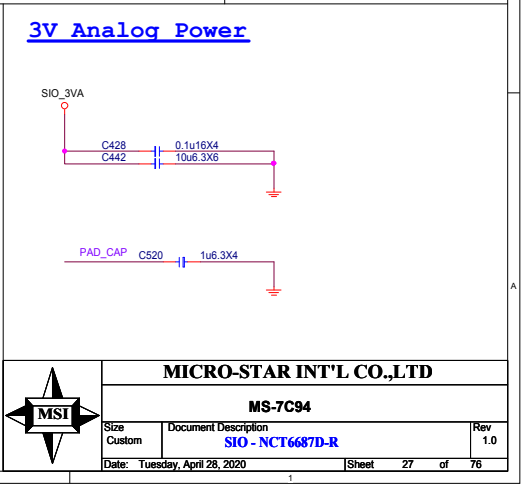












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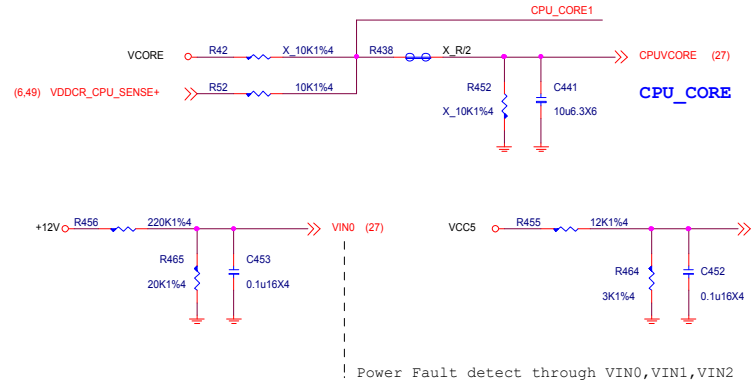
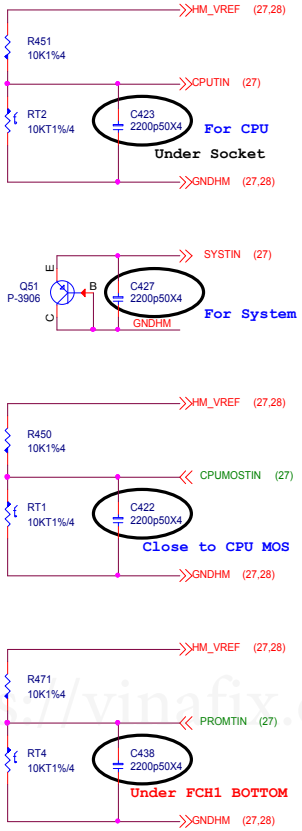
HW Monitor - Voltage

SIO HM Voltage over 2.048V will not detect



TEMP SENSOR

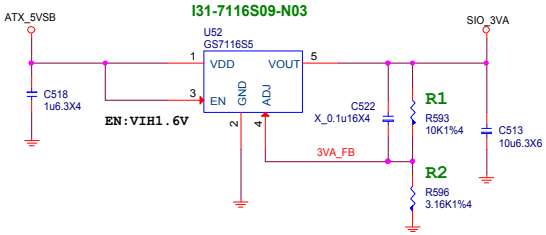


PM RESET

CPU RESET

SIO_PLN

SIO_3VA



Vout = Vref * (1 +(R1/R2))
= 0.8 * (1 +(10K/3.16K))
= 3.33V

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Size: Custom	Document Description: SIO - HW Monitor / RESET	Rev: 1.0
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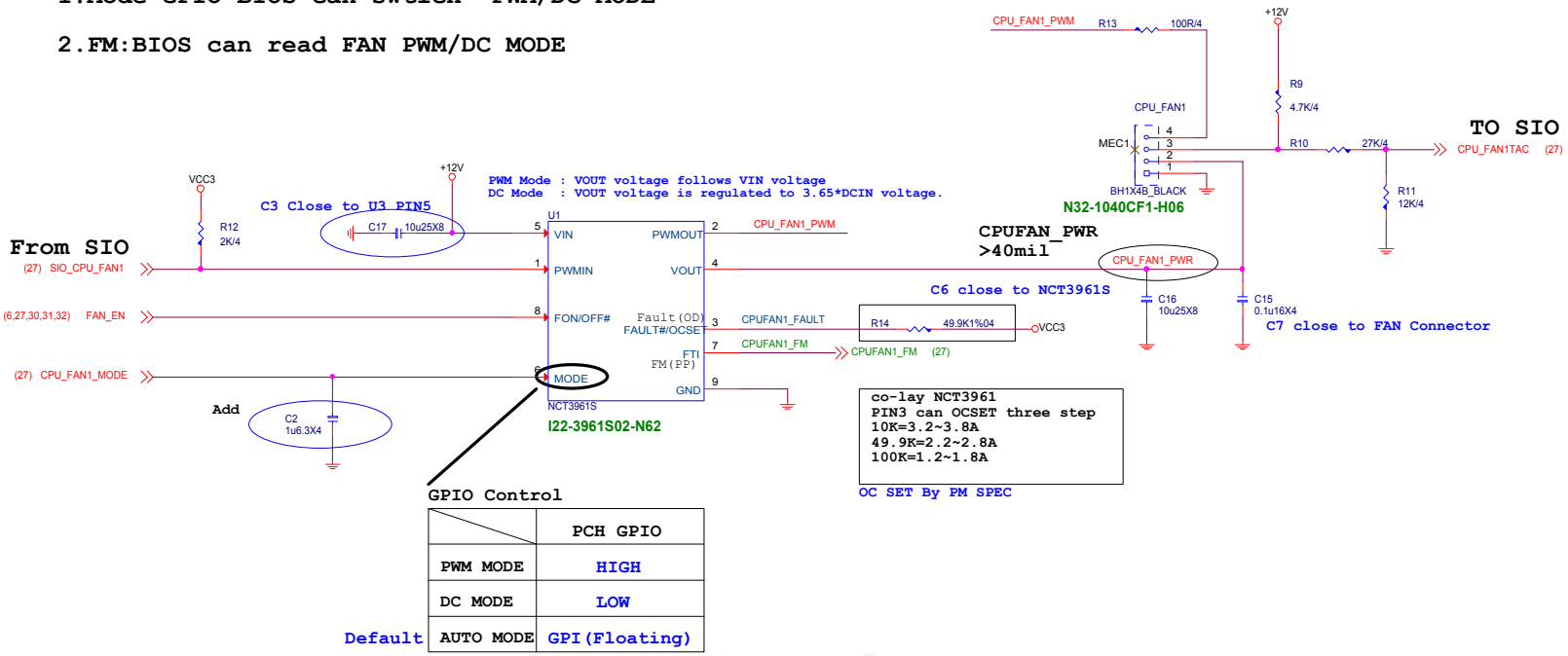
CPUFAN1 TYPE N : 4 PIN CPU FAN USE NCT3961S USE PCH GPIO CONTROL FAN MODE

1.Mode GPIO BIOS can swtich PWM/DC MODE

2.FM:BIOS can read FAN PWM/DC MODE



co-lay NCT3961
PIN3 can OCSET three step
10K=3.2~3.8A
49.9K=2.2~2.8A
100K=1.2~1.8A

OC SET By PM SPEC

GPIO Control

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

MICRO-STAR INT'L CO.,LTD

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Size: Custom | Document Description: FAN TYPE-N CPUFAN1 | Rev: 1.0

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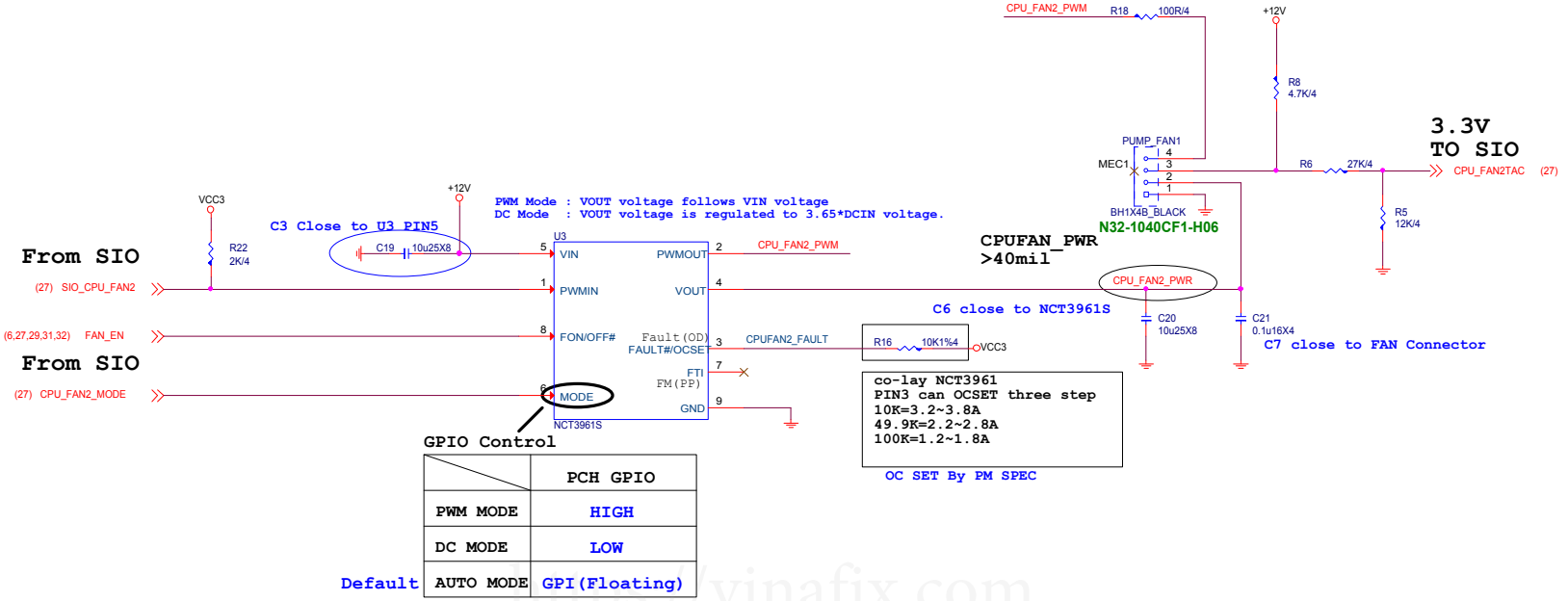
PUMPFAN1

TYPE M : 4 PIN CPU FAN USE NCT3961S USE PCH GPIO CONTROL FAN MODE

1.Mode GPIO BIOS can swtich PWM/DC MODE



GPIO Control

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

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Size: Custom	Document Description: FAN TYPE-M PUMPFAN1
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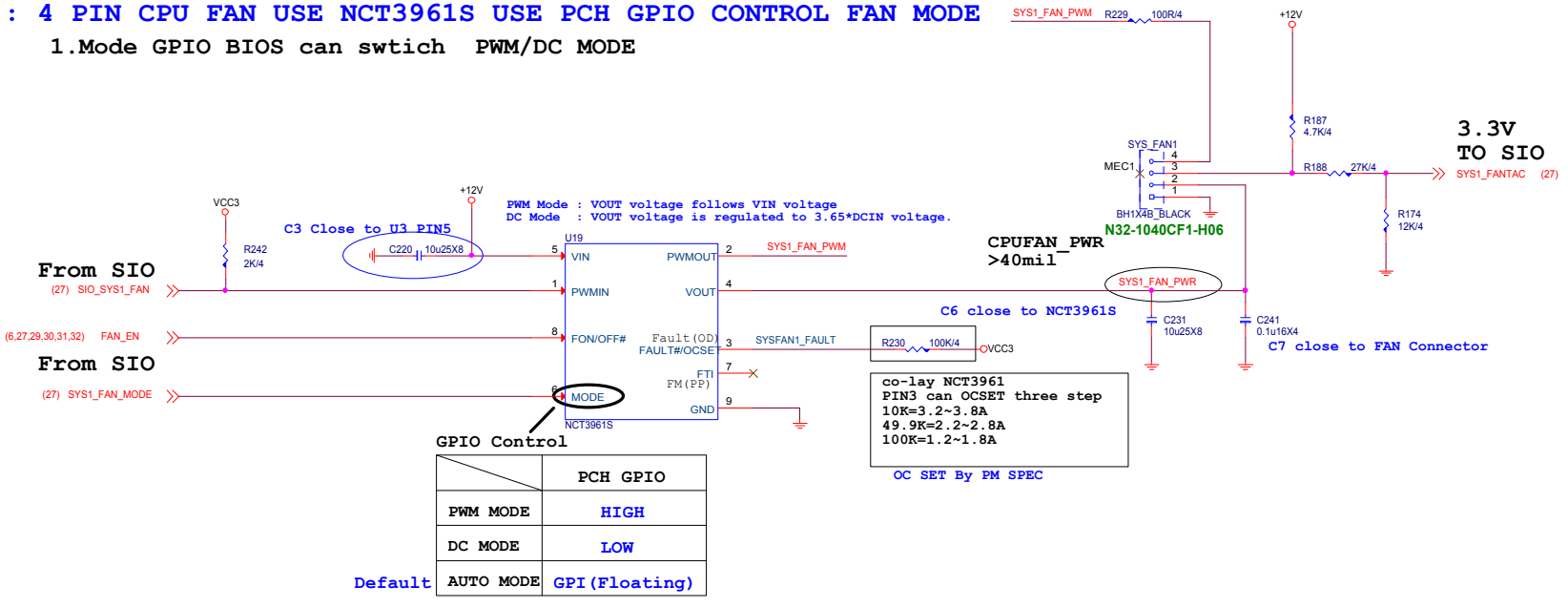
SYSFAN1

TYPE M : 4 PIN CPU FAN USE NCT3961S USE PCH GPIO CONTROL FAN MODE

1.Mode GPIO BIOS can swtich PWM/DC MODE

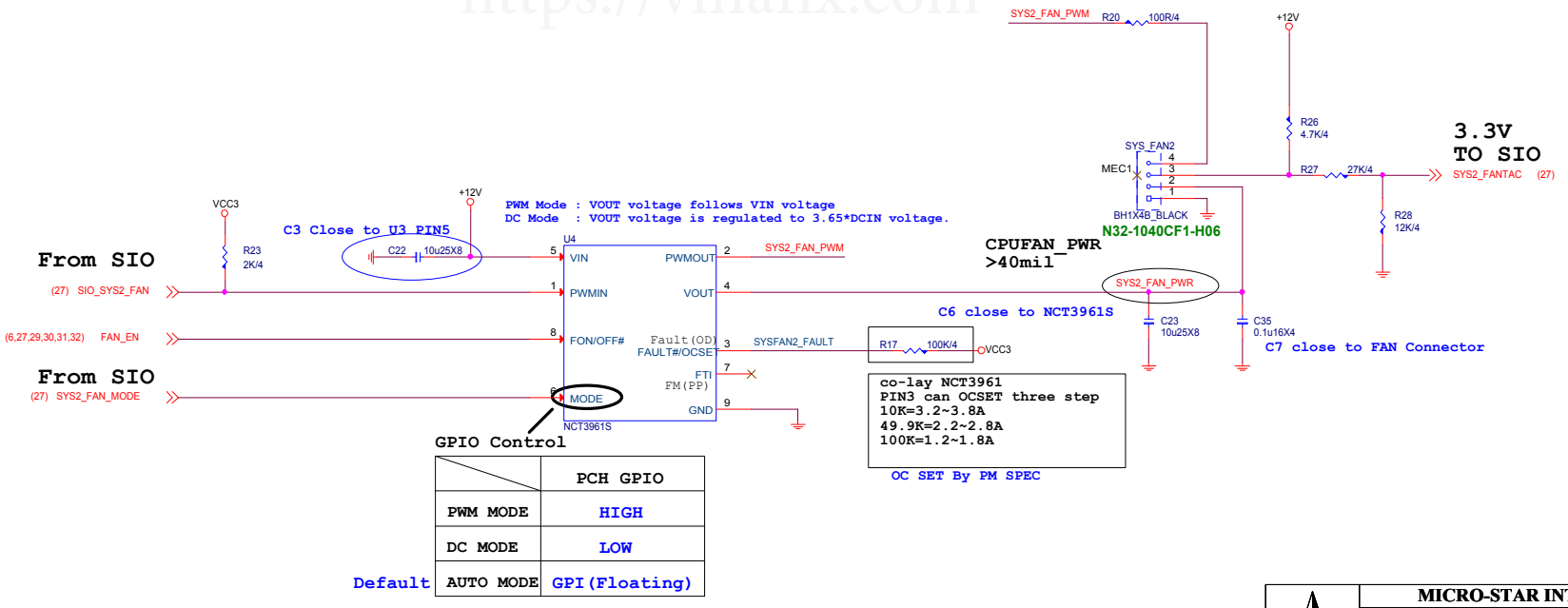


	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

SYSFAN2

TYPE M : 4 PIN CPU FAN USE NCT3961S USE PCH GPIO CONTROL FAN MODE

1.Mode GPIO BIOS can swtich PWM/DC MODE



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

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Custom	FAN TYPE-M SYSFAN1 / 2	1.0

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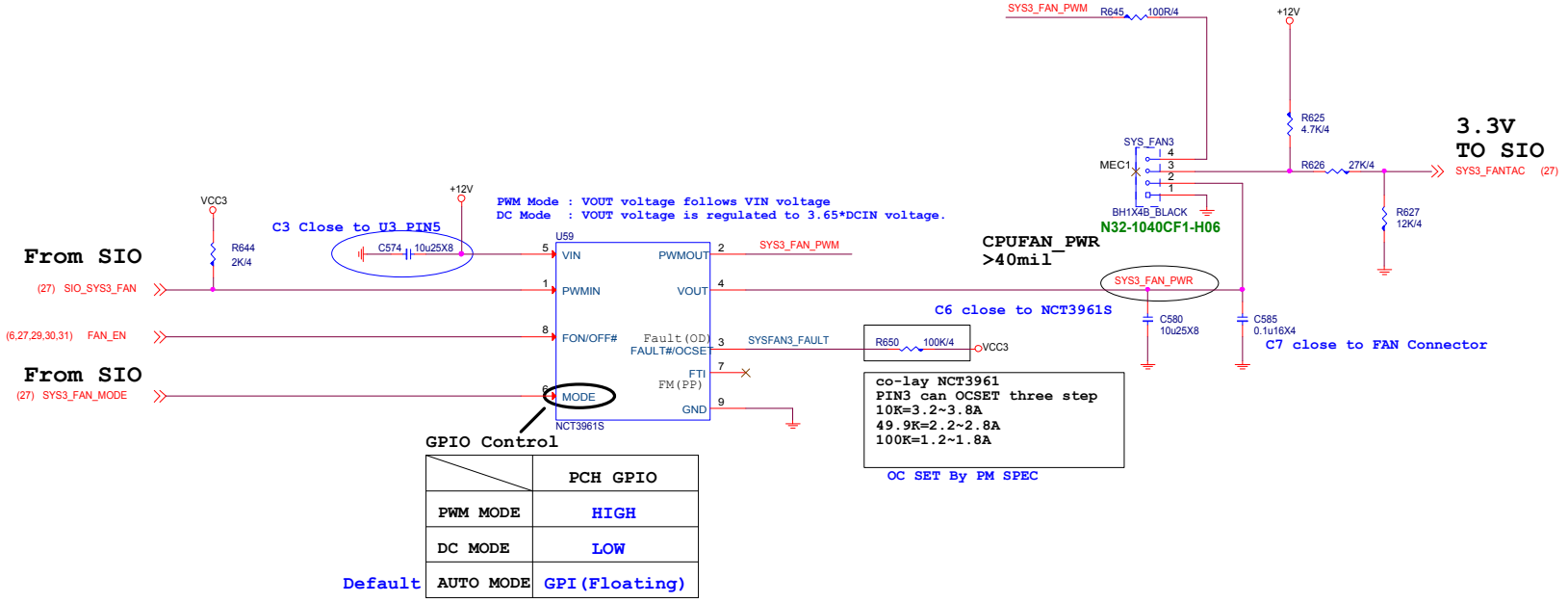
SYSFAN3

TYPE M : 4 PIN CPU FAN USE NCT3961S USE PCH GPIO CONTROL FAN MODE

1.Mode GPIO BIOS can swtich PWM/DC MODE



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

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Size: Custom	Document Description: FAN TYPE-M SYSFAN3
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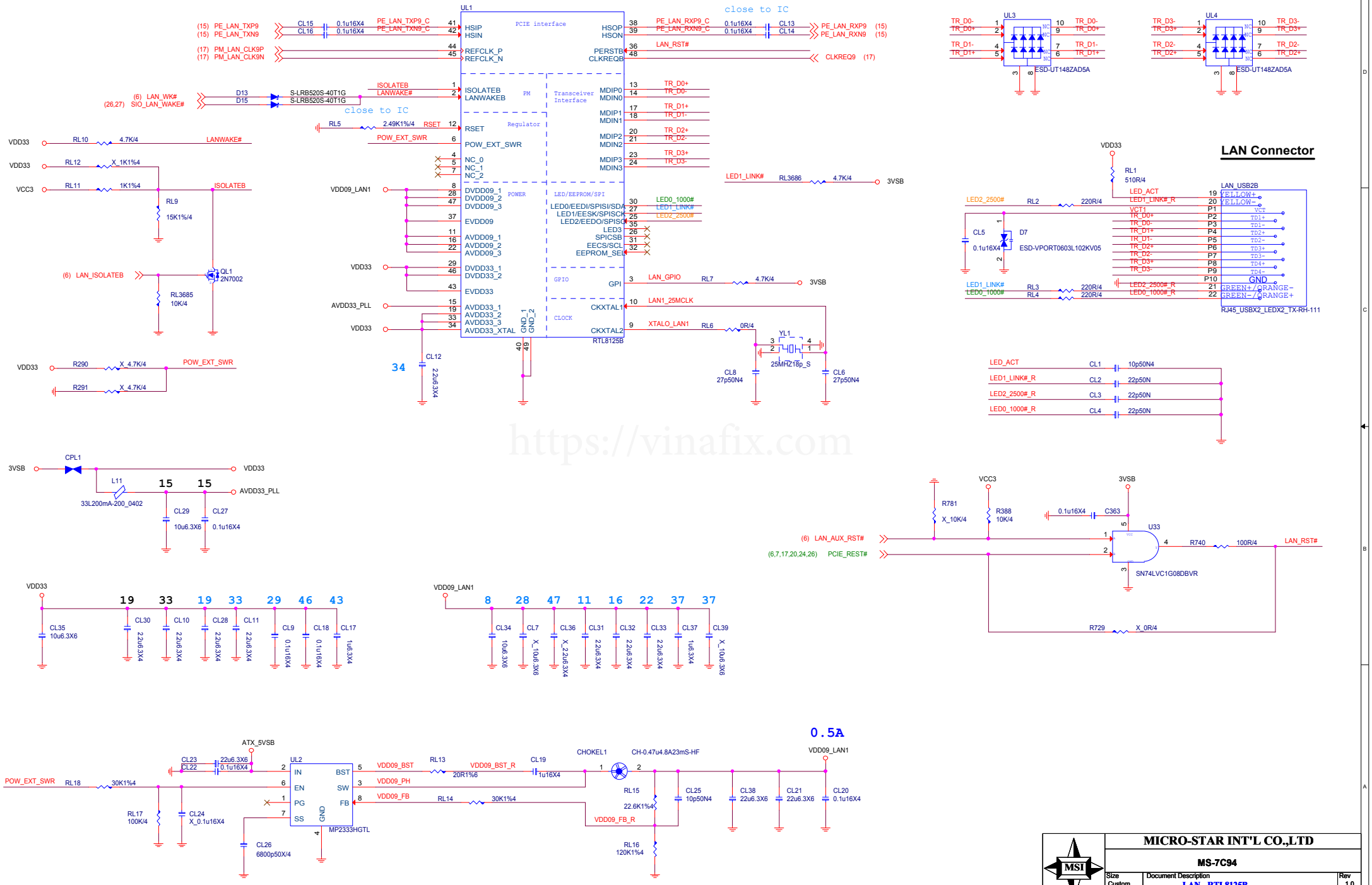
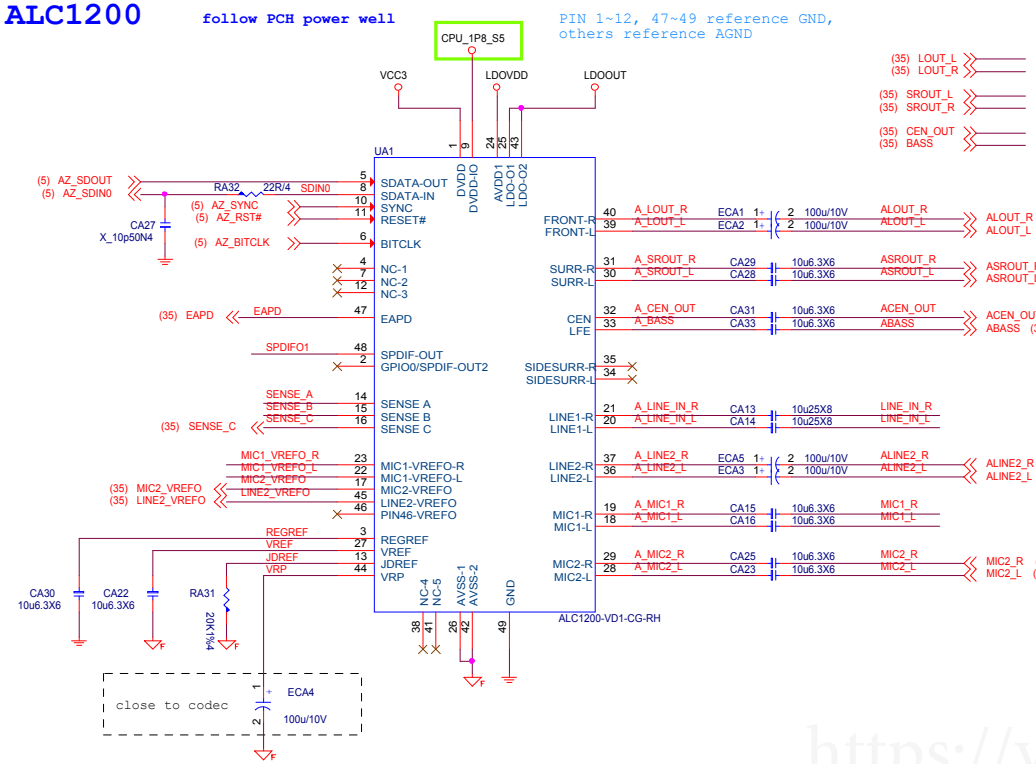
Realtek Lan1-RTL8125B(2.5G)

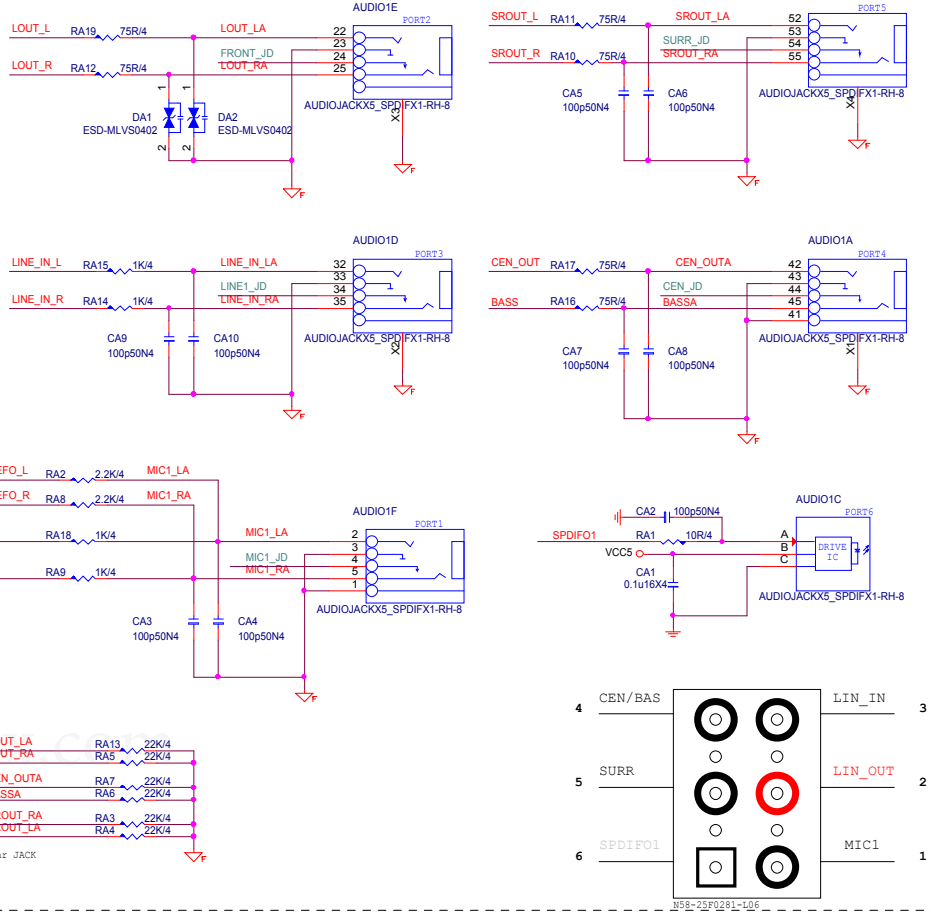


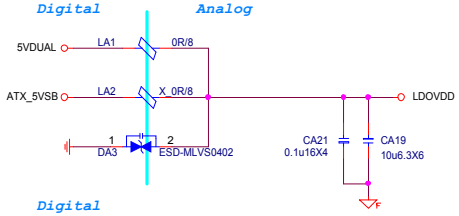
ALC1200

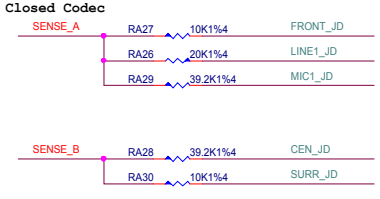
follow PCH power well

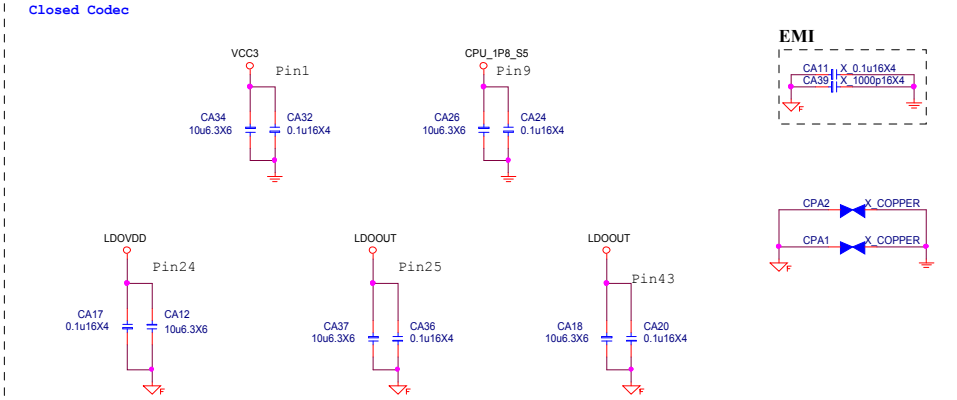
PIN 1~12, 47~49 reference GND, others reference AGND











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Size: Custom	Document Description: Audio ALC1200
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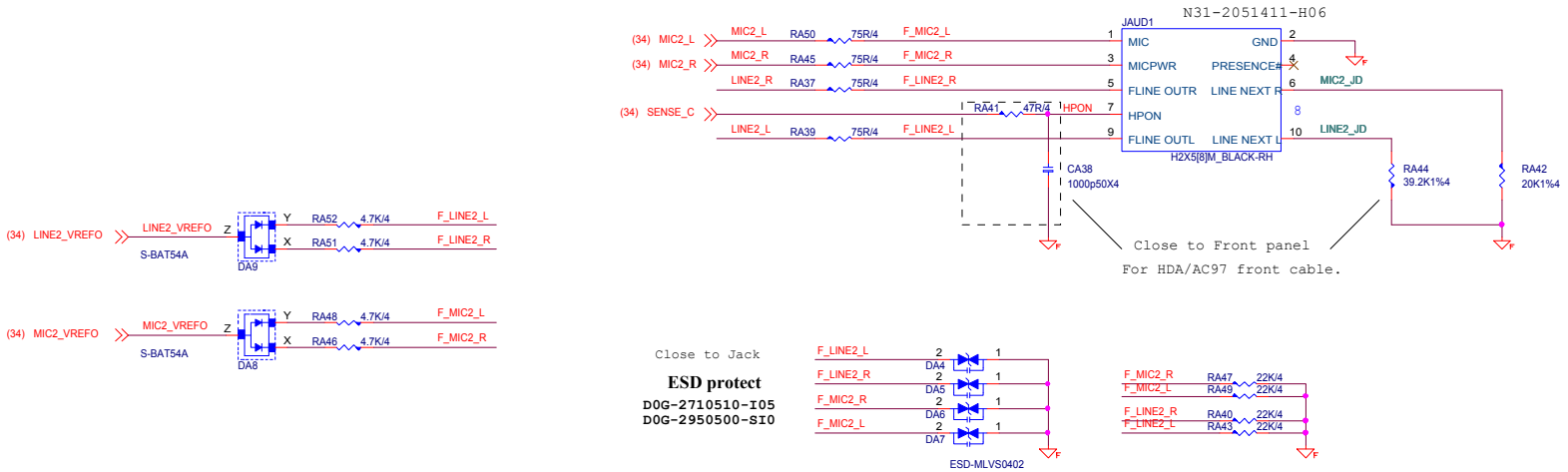
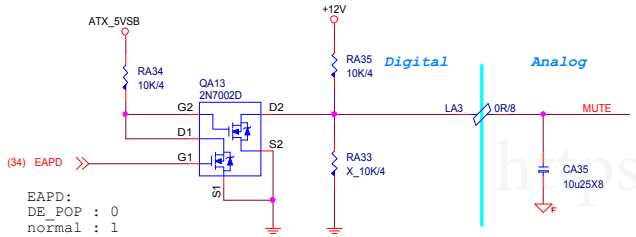
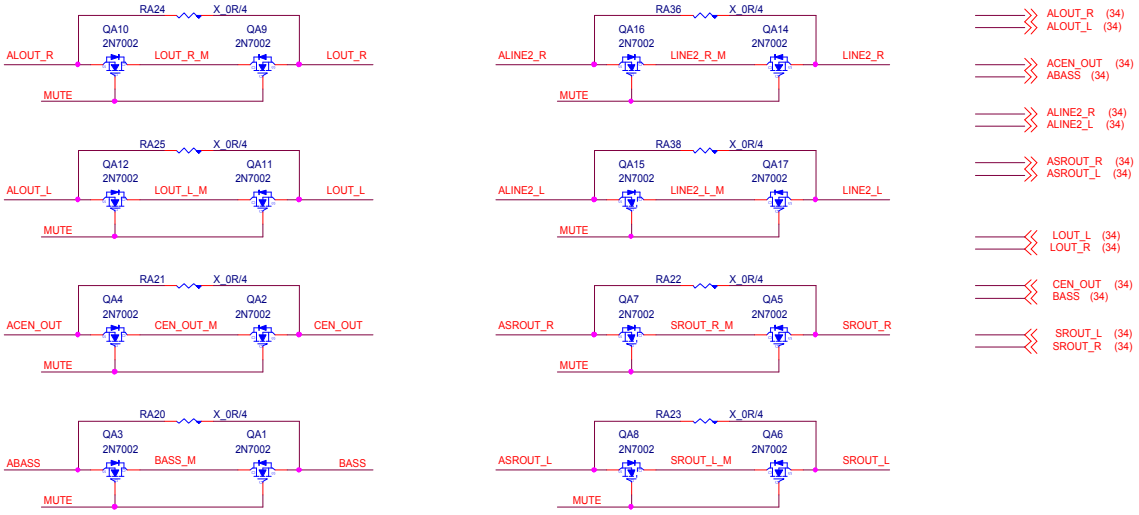


De-POP circuit



Vinafix.com



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Custom	Audio DePoP	1.0

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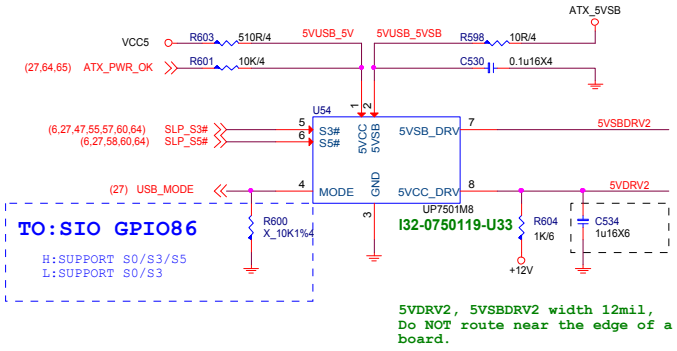
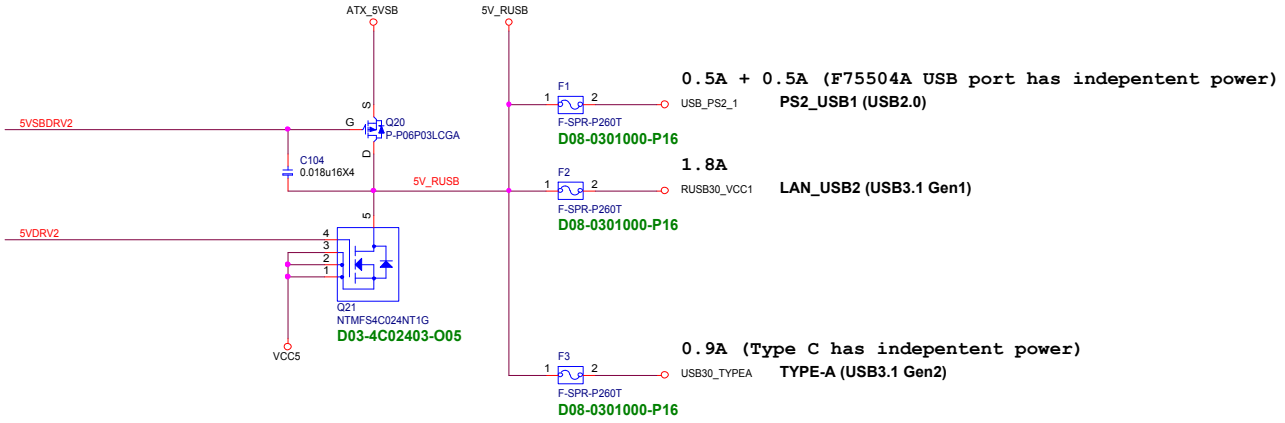
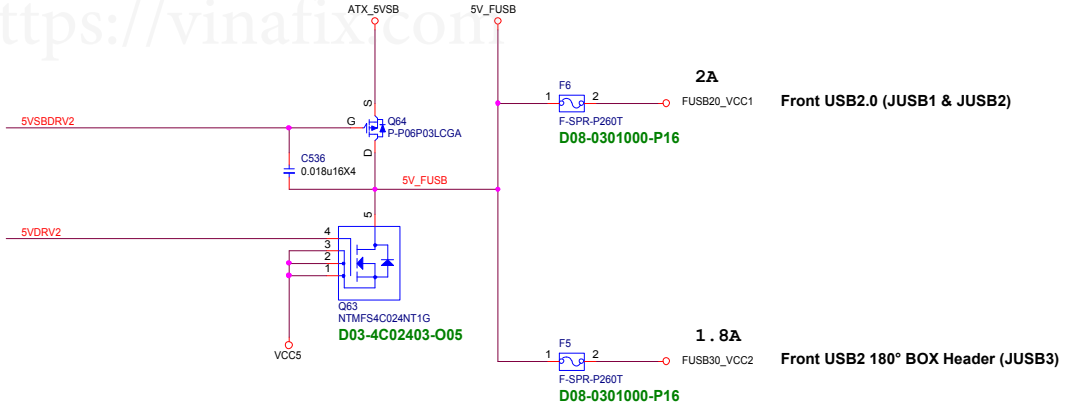
USB Power





Rear (6A)

Front (5.6A)



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Size: Custom	Document Description: USB Power - UP7501	Rev: 1.0
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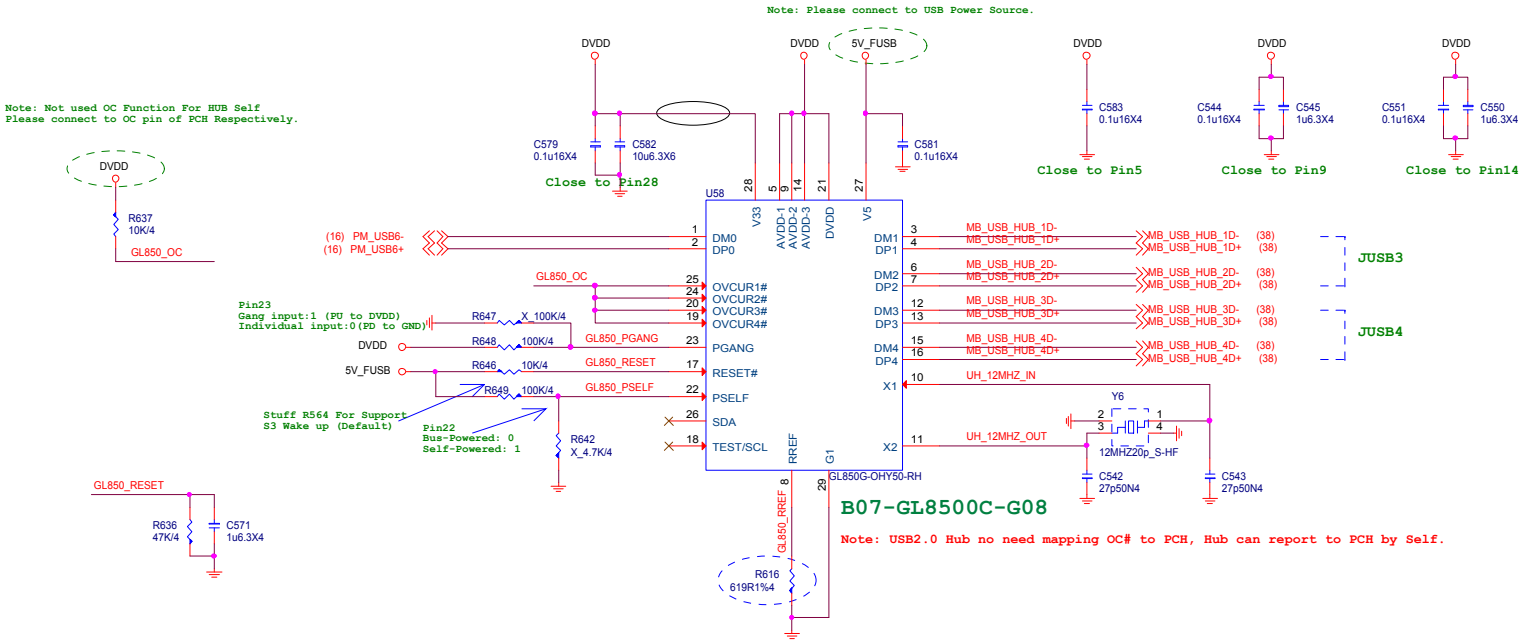
GL850G USB2.0 HUB



MICRO-STAR INT'L CO.,LTD		
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Size: Custom	Document Description: Front USB2.0 GL850G	Rev: 1.0
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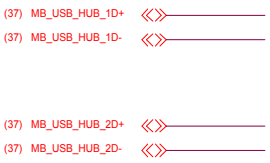
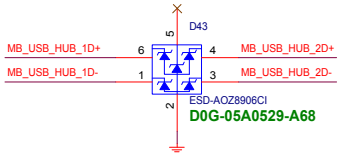
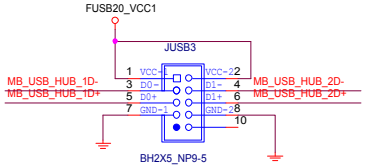
Front USB2.0(JUSB1)

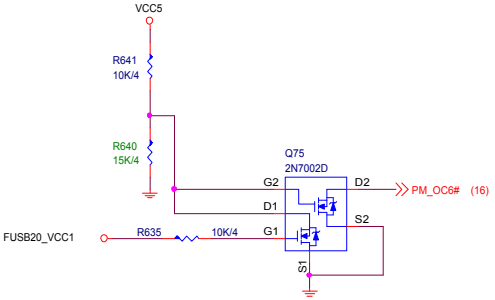
Form GL850G USB2.0 HUB

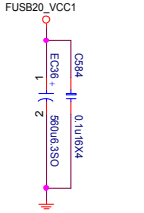
5V@1A







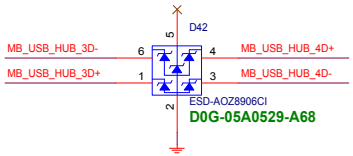


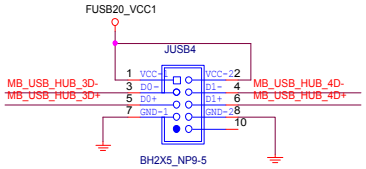


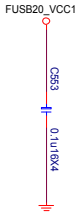
Front USB2.0(JUSB2)

Form GL850G USB2.0 HUB

5V@1A







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MICRO-STAR INT'L CO.,LTD		
MS-7C94		
Size: Custom	Document Description: Front USB2.0 Header	Rev: 1.0
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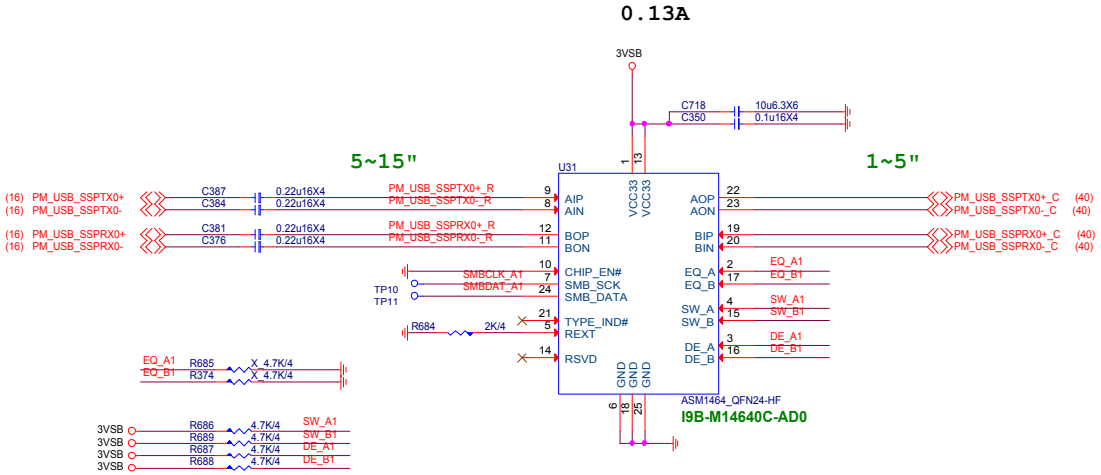
USB3.1 Gen1 Redriver for Type-C



MICRO-STAR INT'L CO.,LTD

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Custom	FAN GPIO NCT5635	1.0

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USB 3.1-Type-C

USB Type-C MUX with Configuration Channel (CC)

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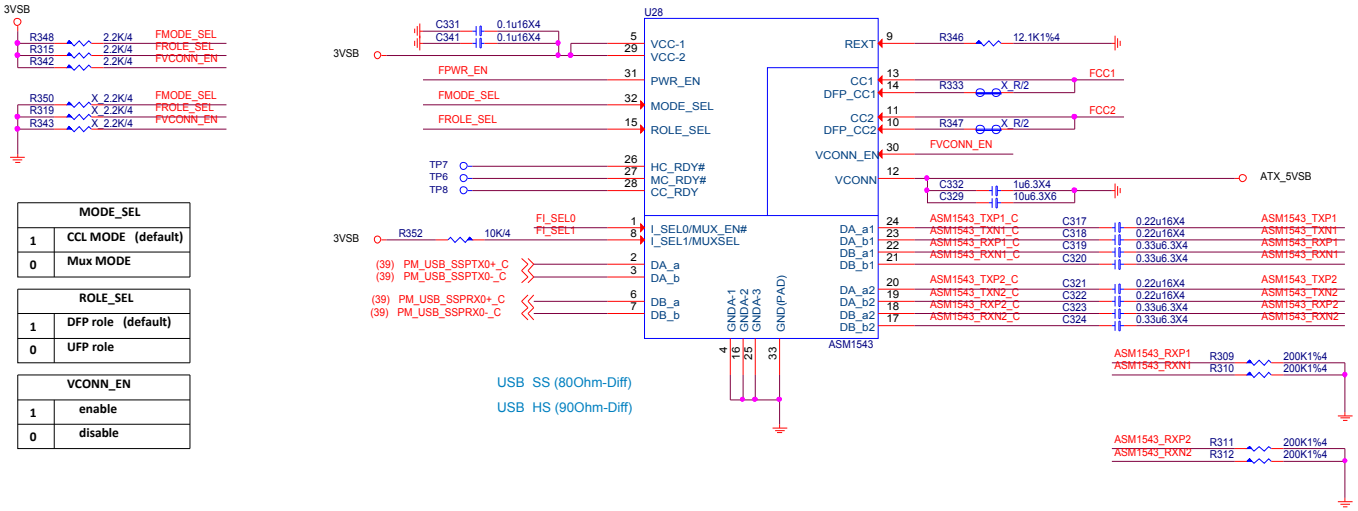
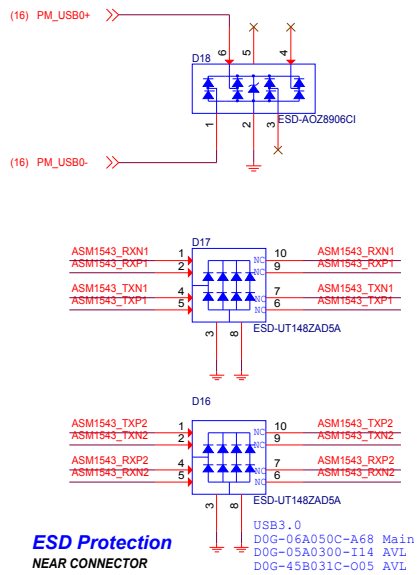


MODE_SEL	
1	CCL MODE (default)
0	Mux MODE

ROLE_SEL	
1	DFP role (default)
0	UFP role

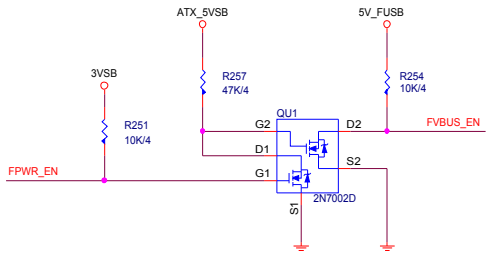
VCONN_EN	
1	enable
0	disable

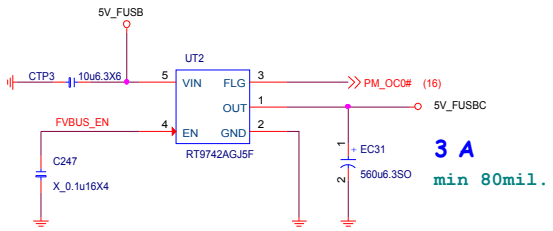


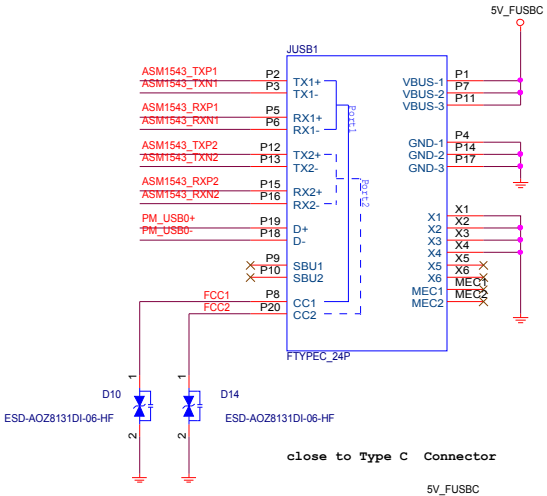
VBUS OC# LEVEL SHIFT

VBUS EN

VCOM OC#



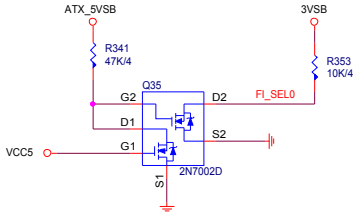




Current Mode

I_SEL0	I_SEL1	
X	0	Default for 900mA
0	1	1.5A @5V
1	1	3A @5V

1.5A under S3 mode
3A under S0 mode



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MS-7C94	
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Front USB3 180° BOX Header(JUSB3)

5V@1.8A

(16) PM_USB2+
(16) PM_USB2-
(16) PM_USB3+
(16) PM_USB3-

U47
PM_USB3+ / PM_USB3- → PM_USB3+ / PM_USB3-
PM_USB2+ / PM_USB2- → PM_USB2+ / PM_USB2-
ESD-UT148ZAD5A
D0G-28B030C-U33

U50
PM_SSTX0+ / PM_SSTX0- → PM_SSTX0+ / PM_SSTX0-
PM_SSTX1+ / PM_SSTX1- → PM_SSTX1+ / PM_SSTX1-
ESD-UT148ZAD5A
D0G-28B030C-U33

U53
PM_SSRX0+ / PM_SSRX0- → PM_SSRX0+ / PM_SSRX0-
PM_SSRX1+ / PM_SSRX1- → PM_SSRX1+ / PM_SSRX1-
ESD-UT148ZAD5A
D0G-28B030C-U33

(16) PM_USB_SSTX0+ — C514 0.22u16X4 — PM_SSTX0+
(16) PM_USB_SSTX0- — C523 0.22u16X4 — PM_SSTX0-
(16) PM_USB_SSRX0+ — C532 0.33u6.3X4 — PM_SSRX0+
(16) PM_USB_SSRX0- — C533 0.33u6.3X4 — PM_SSRX0-
(16) PM_USB_SSTX1+ — C510 0.22u16X4 — PM_SSTX1+
(16) PM_USB_SSTX1- — C512 0.22u16X4 — PM_SSTX1-
(16) PM_USB_SSRX1+ — C529 0.33u6.3X4 — PM_SSRX1+
(16) PM_USB_SSRX1- — C531 0.33u6.3X4 — PM_SSRX1-

VCC5
R602 10K/4
R599 15K/4
Q62 2N7002D
G2, D1, G1, D2, S2, S1
PM_OC2# (16)
FUSB30_VCC2
R605 10K/4

USB3.0
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL

USB2.0
D0G-0200529-A68 Main
D0G-0100619-I05 AVL

FUSB30_VCC2
EC35 100u16SO
C535 0.1u16X4
C71-1011761-N07

JUSB2
PM_USB3+ 11 D2+
PM_USB3- 12 D2-
PM_SSTX1+ 14 TX2+
PM_SSTX1- 15 TX2-
PM_SSRX1+ 17 RX2+
PM_SSRX1- 18 RX2-
FUSB30_VCC2 19 VBUS2
16 GND
13 GND
PM_USB2+ 9 D1+
PM_USB2- 8 D1-
PM_SSTX0+ 6 TX1+
PM_SSTX0- 5 TX1-
PM_SSRX0+ 3 RX1+
PM_SSRX0- 2 RX1-
7 GND
FUSB30_VCC2 1 VBUS1
4 GND
10 NC
2X10_CONNECTOR
BH2X10[20]#-2PITCH
N32-2101581-H06

GEN1
1.8A

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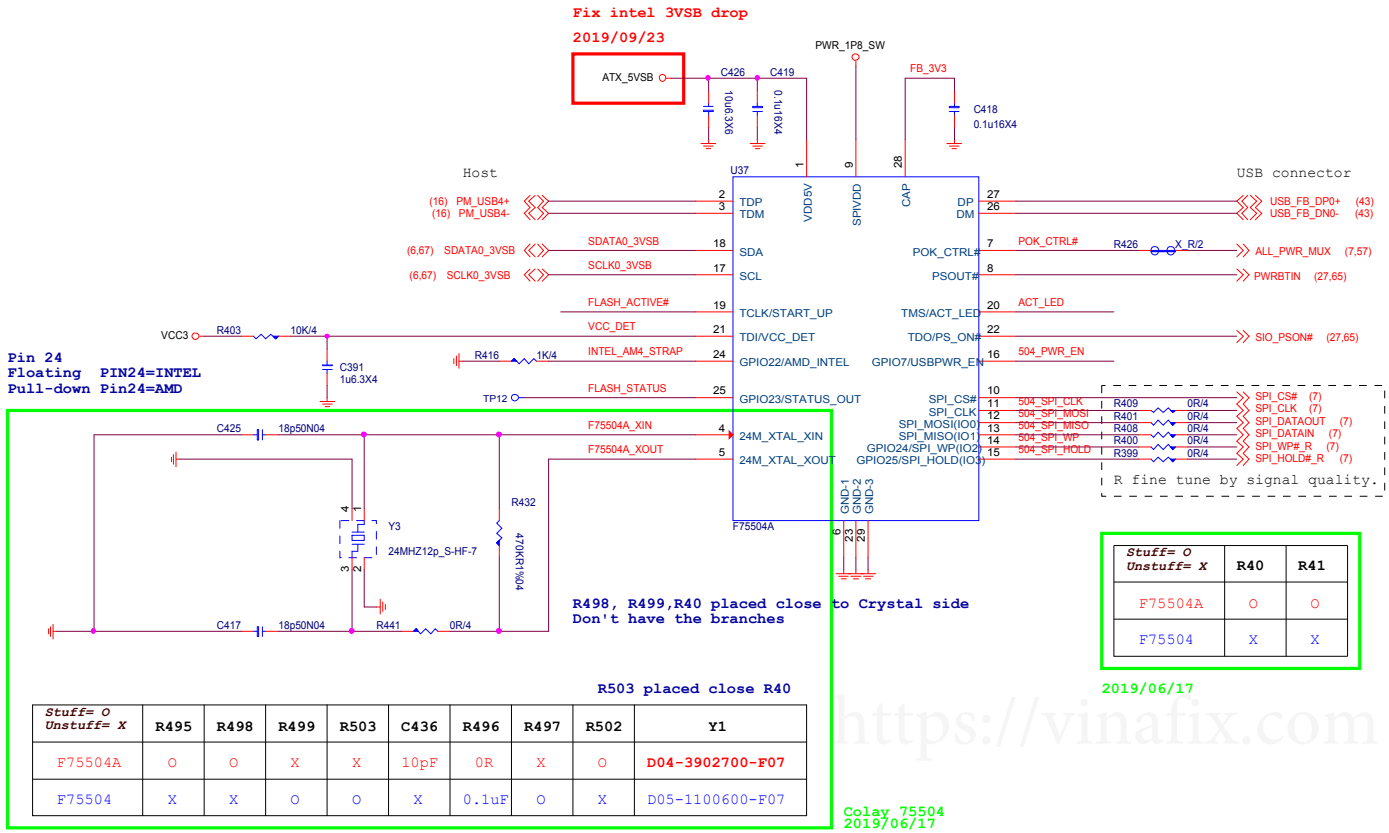
F75504A colay F75504

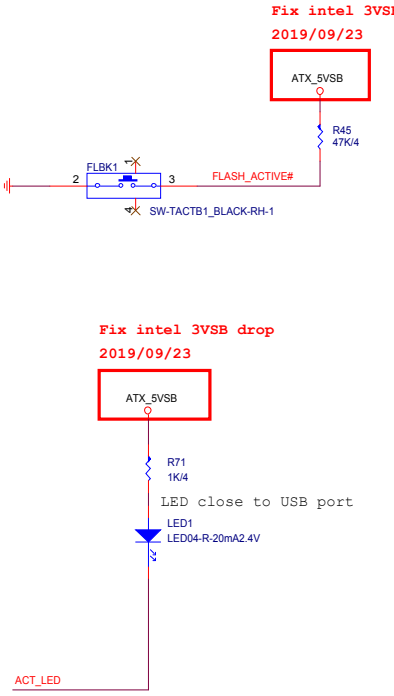
F75504A/F75504 layout placement must meet to spi/usb trace length spec with host.
As for as possible place near to host.

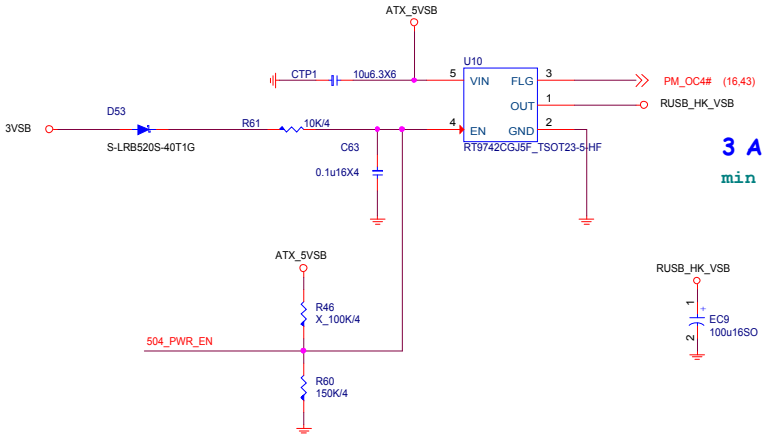


Stuff= O Unstuff= X	R40	R41
F75504A	O	O
F75504	X	X

2019/06/17

Stuff= O Unstuff= X	R495	R498	R499	R503	C436	R496	R497	R502	Y1
F75504A	O	O	X	X	10pF	0R	X	O	D04-3902700-F07
F75504	X	X	O	O	X	0.1uF	O	X	D05-1100600-F07





MICRO-STAR INT'L CO.,LTD

MS-7C94

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Custom	USB HOTKEY F75504A	1.0

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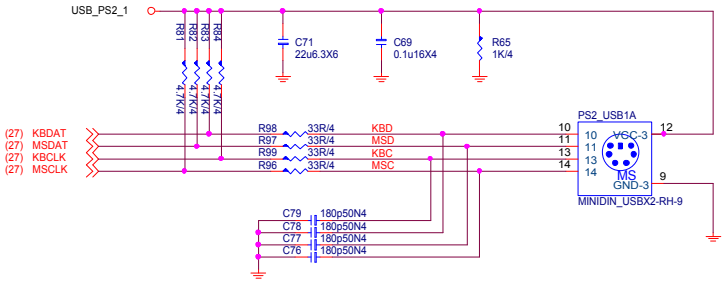
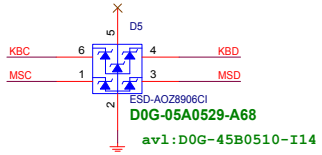
PS2+USB (USB2.0)

5V@1A

layout note:
C21 must close to TVS pin5
TVS must near KB_MS1 connector and route without branch
Varistor must close to TVS and route without branch





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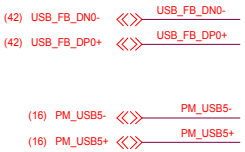
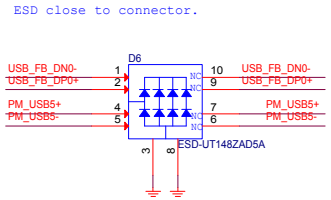
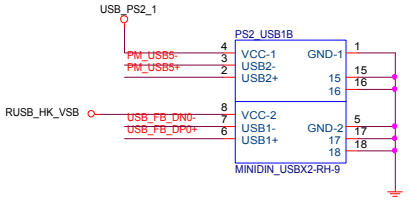
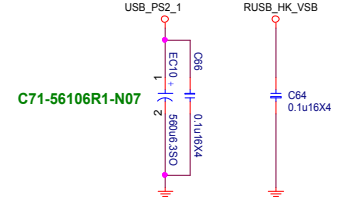
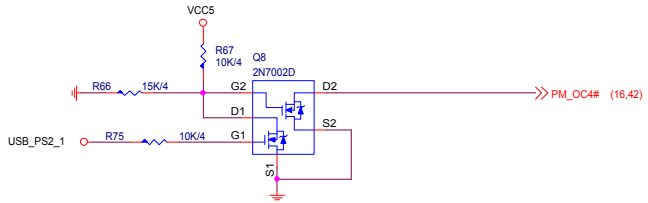






1A **USB Flash BIOS**





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MS-7C94		
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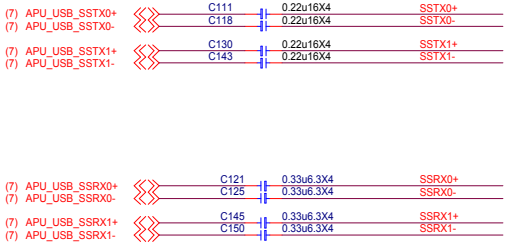
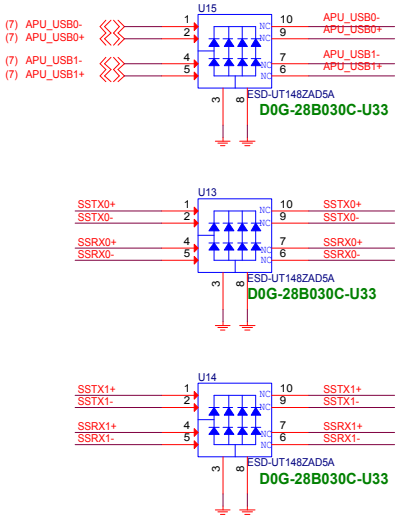
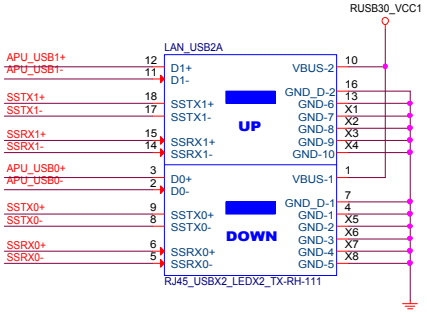
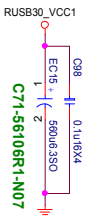
Rear USB3.1 GEN1 5V@1.8A
TYPE-A X2 from CPU



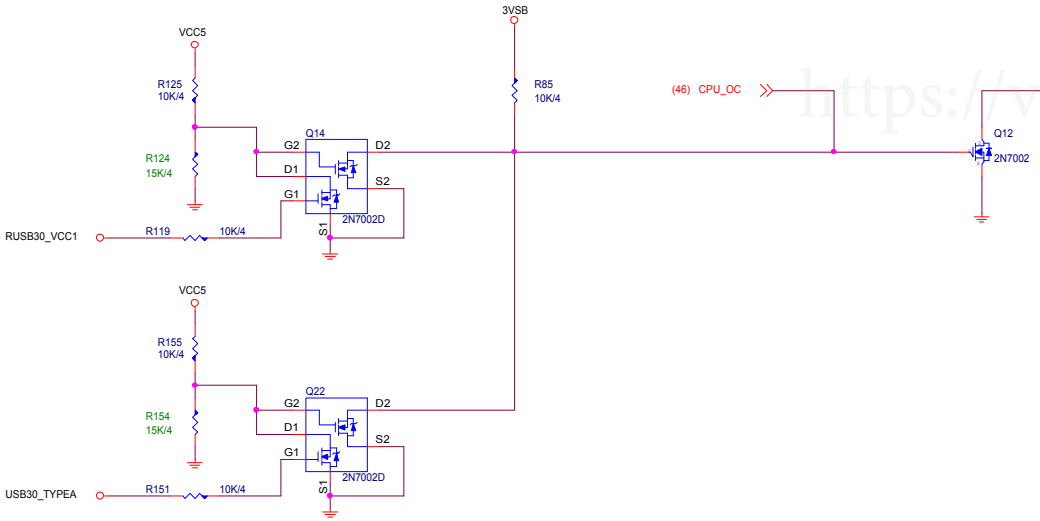


LAN下方
GEN1 1.8A





CPU OC Logic



Type1/2/3/4 High Active

	CORETYPE1(A)	USB_PWR(B)	APU_USB_OC(Y)
BR	0	0	0
Act. Low	0	1	1
SR	1	0	1
Act. High	1	1	0

MICRO-STAR INT'L CO.,LTD

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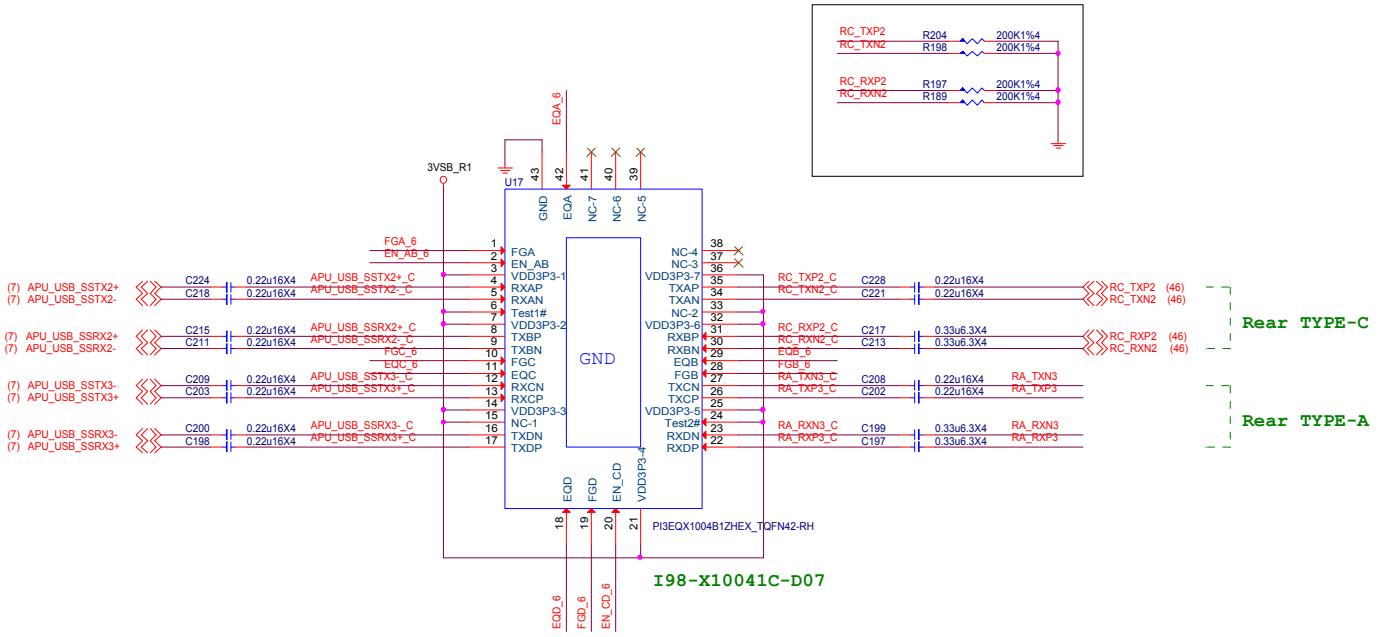
Rear USB3.1 GEN2 5V@1.8A

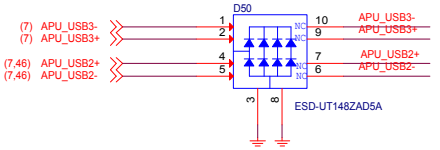
TYPE A+C from CPU PI3EQX1004 Redriver

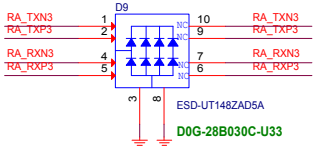


Rear TYPE-C

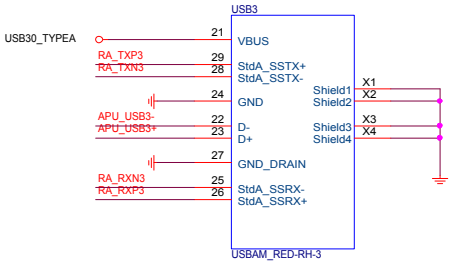
Rear TYPE-A

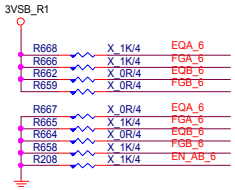
I98-X10041C-D07

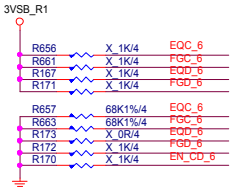


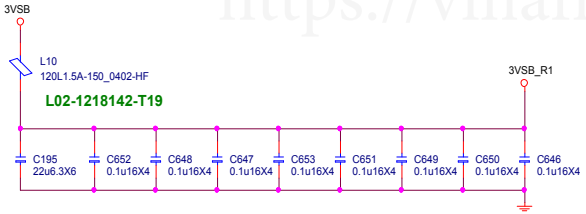


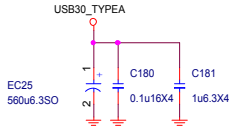
0.9A GEN2











C71-56106R1-N07

close to Type C Connector

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

		EQ	FG
USB3_TX4	A	R	F
USB3_RX4	B	R	L
USB3_TX3	C	R	F
USB3_RX3	D	R	L

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

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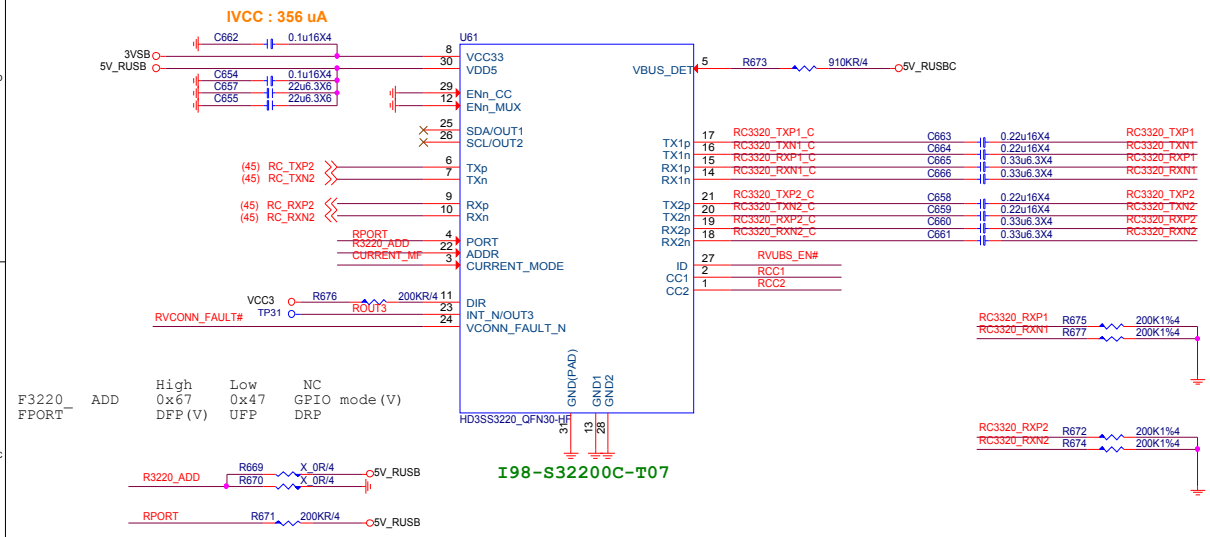
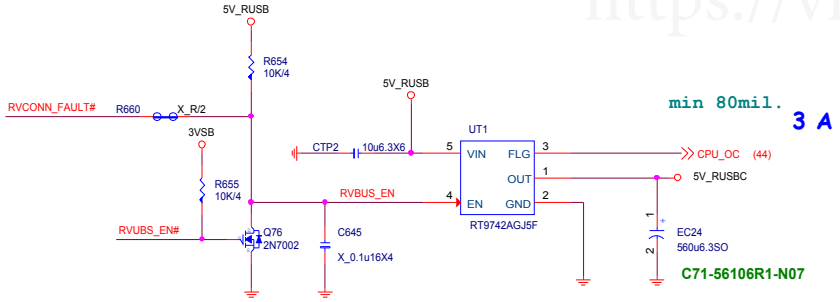
USB 3.1-Type-C

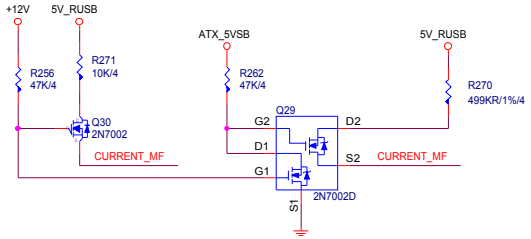
USB Type-C MUX with Configuration Channel (CC)

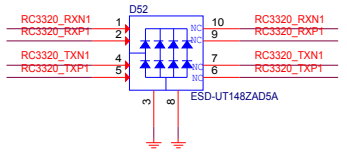


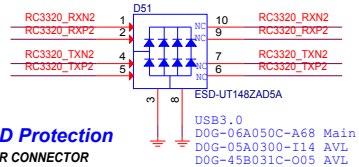
VBUS EN



Current Mode



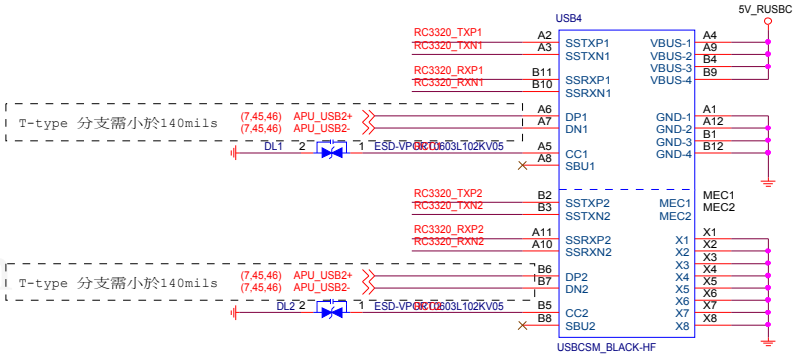




ESD Protection
NEAR CONNECTOR

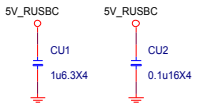
USB3.0
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL
D0G-45B031C-O05 AVL

GEN2 **3A**



N53-24M0040-L06

close to Type C Connector



MICRO-STAR INT'L CO.,LTD	
MS-7C94	
Size: Custom	Document Description: Rear USB3.1 Type C / Mux
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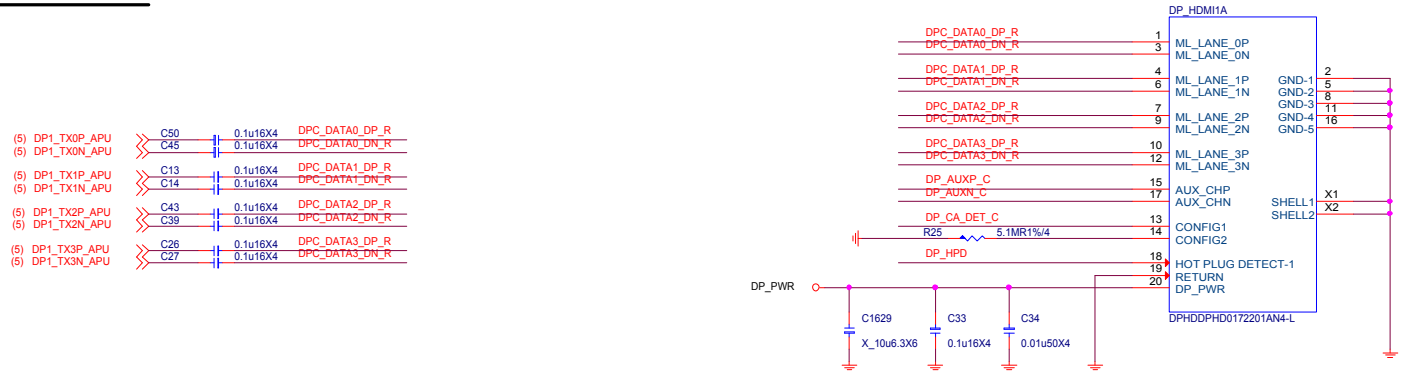
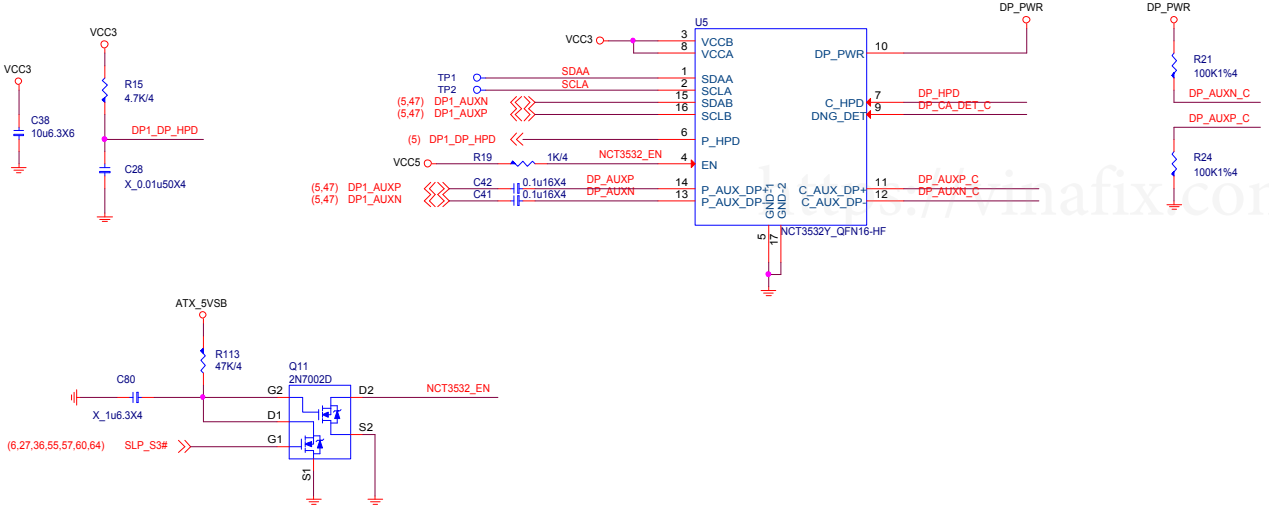
DP CONNECTOR

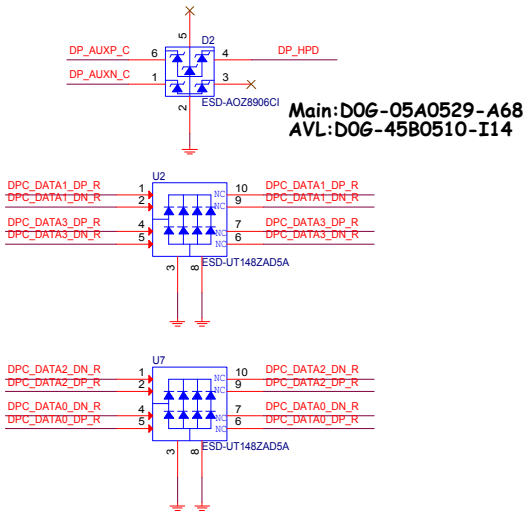


DP AUX & HPD Circuit

Support HDMI Dongle



ESD



MICRO-STAR INT'L CO.,LTD		
MS-7C94		
Size: Custom	Document Description: DP	Rev: 1.0
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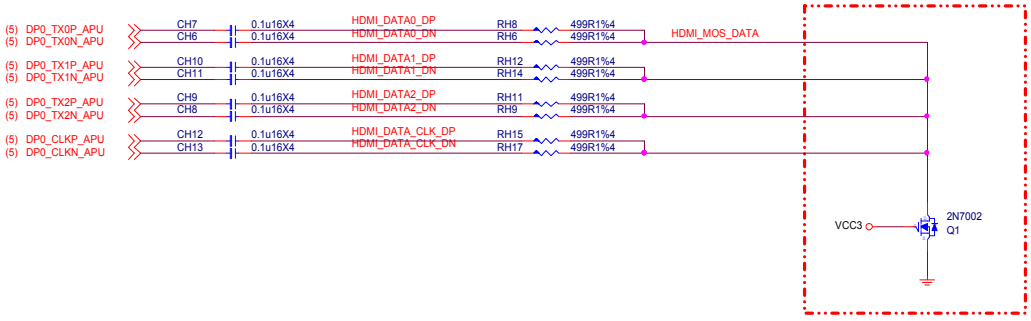
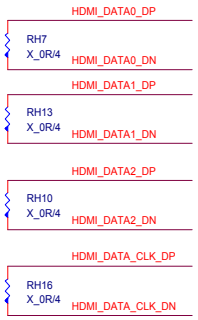
HDMI CONNECTOR

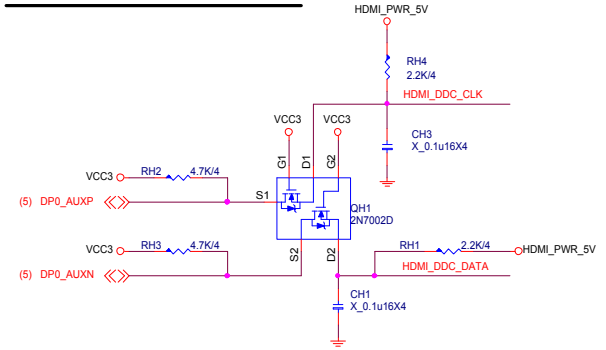
For HDMI 1.4



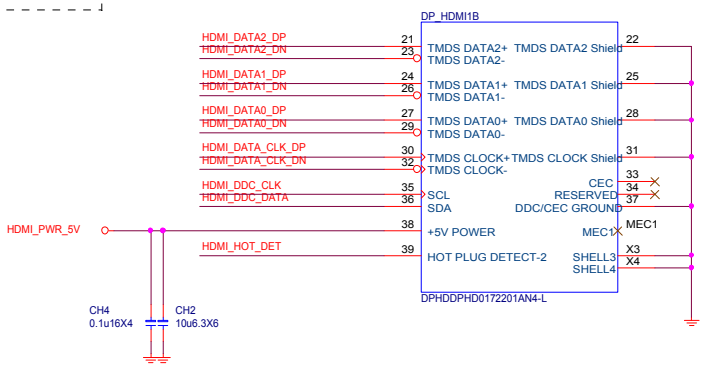


HDMI_MOS_DATA trace length <500mil
other platform please check design guide

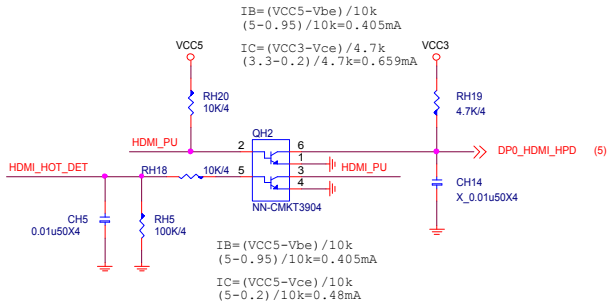
AUX Level Shifter



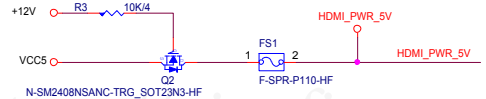
Connector



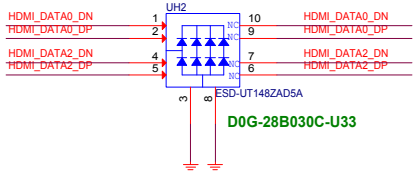
HPD Circuit

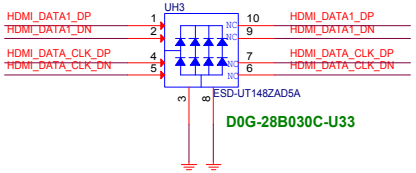


Connector Power

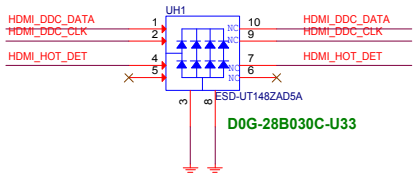


For EMI





注意:耐壓5V零件



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VCORE: ICCMax 140A
LL: 1.3mohm
OCP: 400A

SOC: ICCMax 75A
LL: 2.1ohm
OCP: 100A

Note: VID Override Circuit

SVC	SVD	BOOT VOLTAGE Pre_PWROK Metal VID
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8

SMBUS address:0X60(7 bit)
0XC0(8 bit)

Condition as TSEN point

Close IC

Diff pair

close to MOS

I31-7116S09-N03

PWM SIDE

Vout = Vref * (1 +(R1/R2))
= 0.8 * (1 +(10K/3.16K))
= 3.33V

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CPU_CORE Driver IC

VCORE Double 8-PHASE

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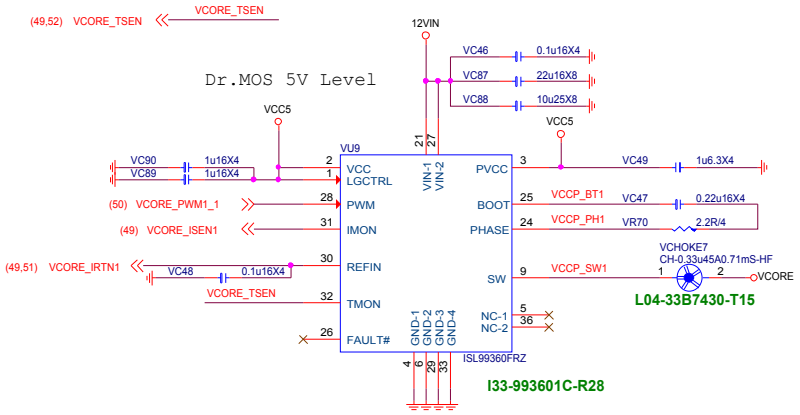
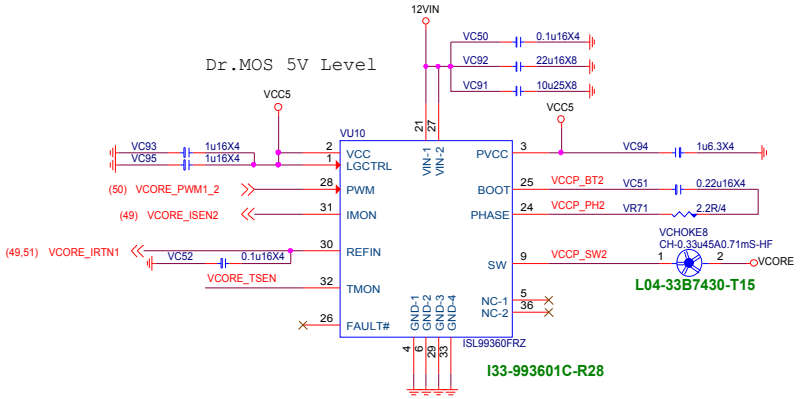
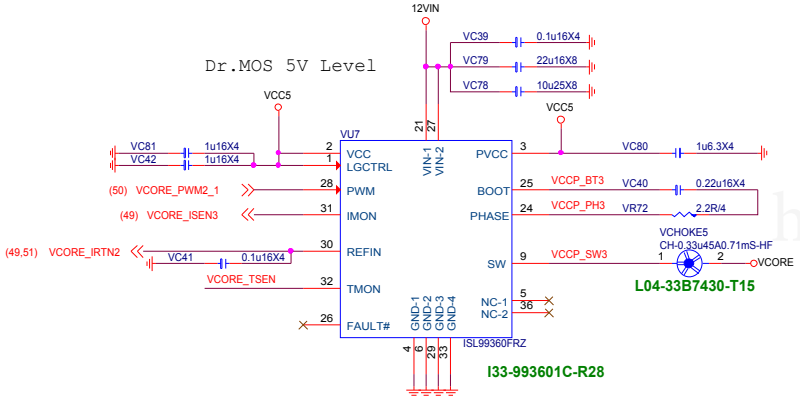
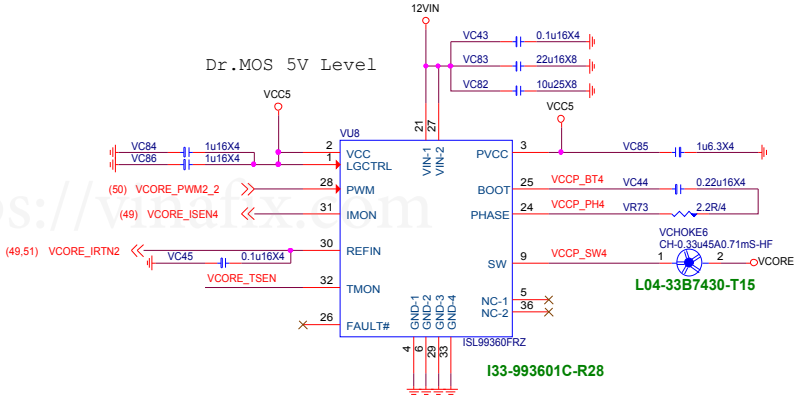
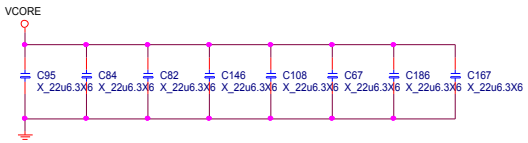
Vcore EDC Max 140A

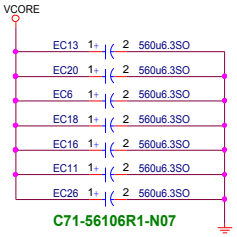












MICRO-STAR INT'L CO.,LTD

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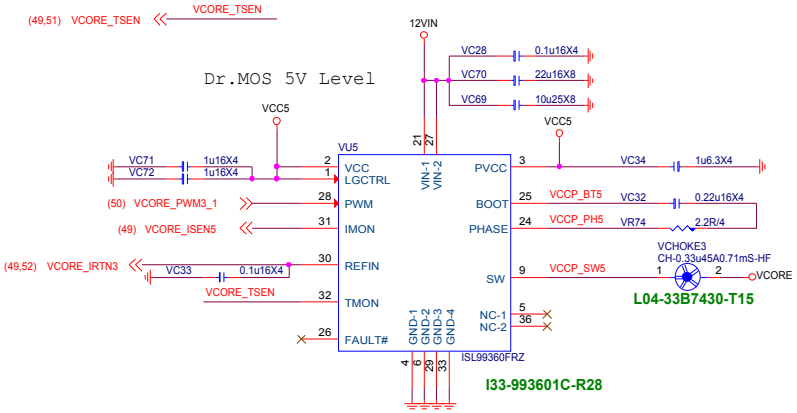

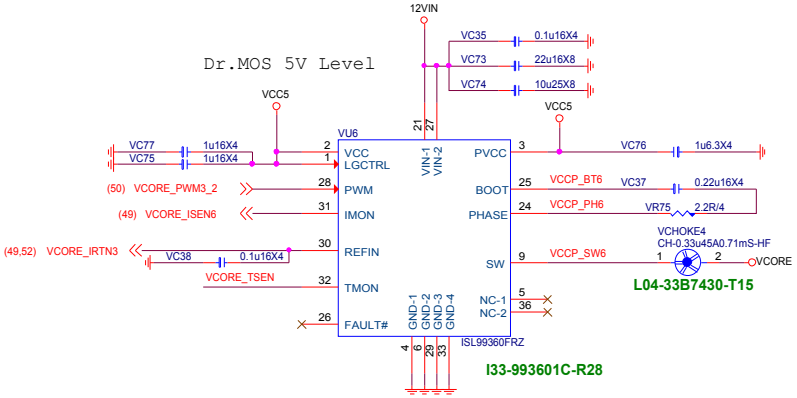

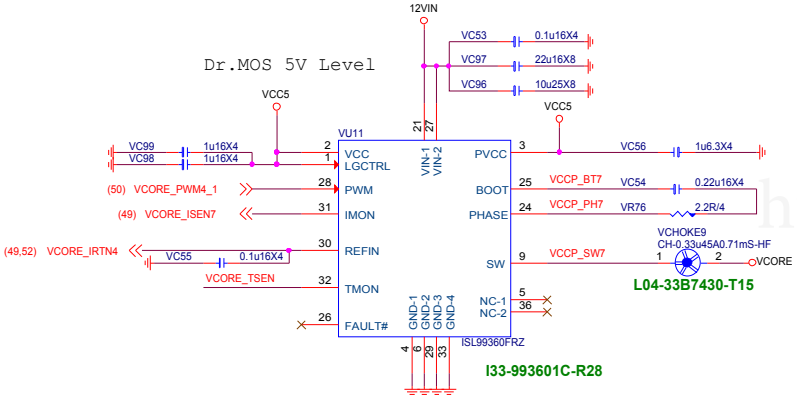

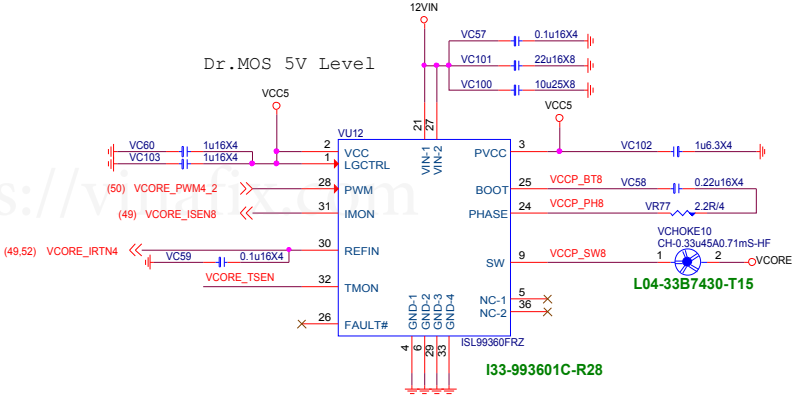

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Custom	CPU Power Vcore Phase 4 - 8	1.0

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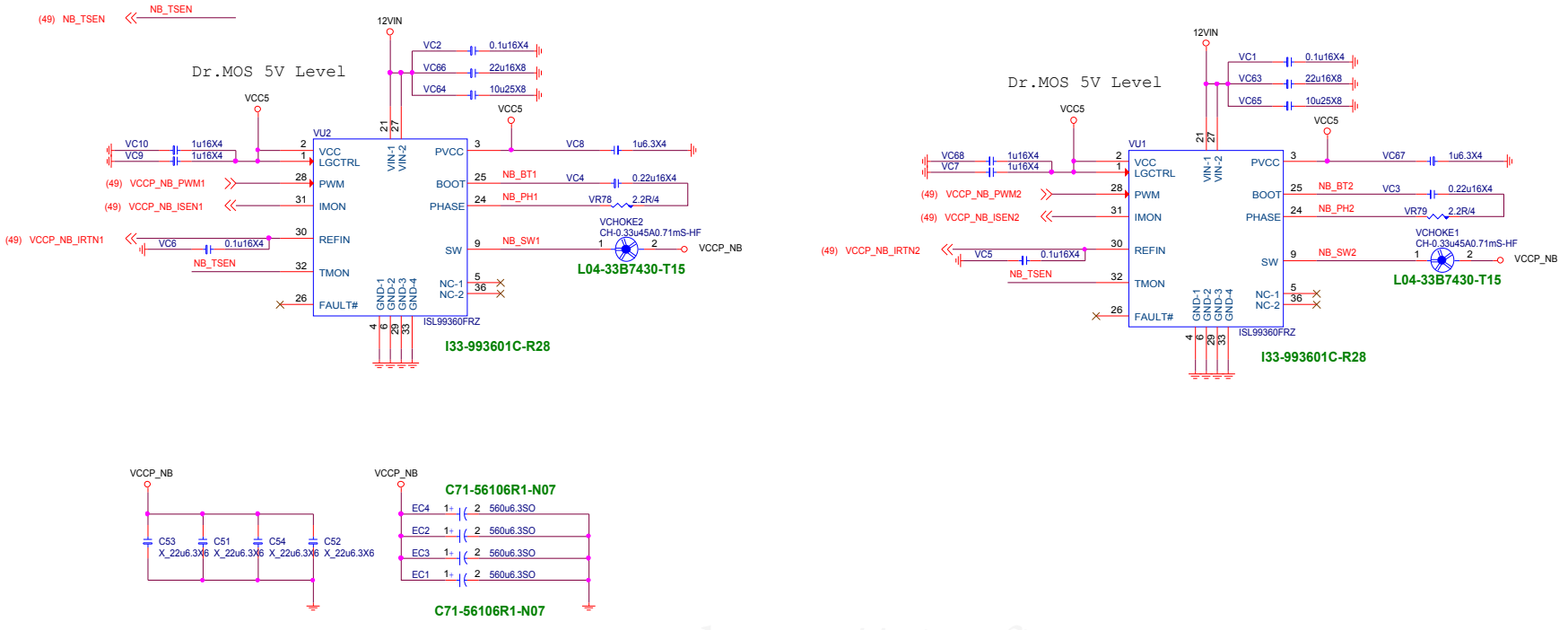
SOC EDC Max 75A



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Size: Custom	Document Description: CPU Power NB Phase 1-2	Rev: 1.0
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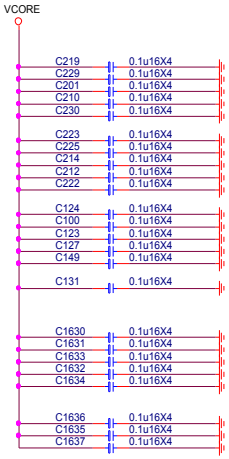

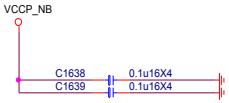

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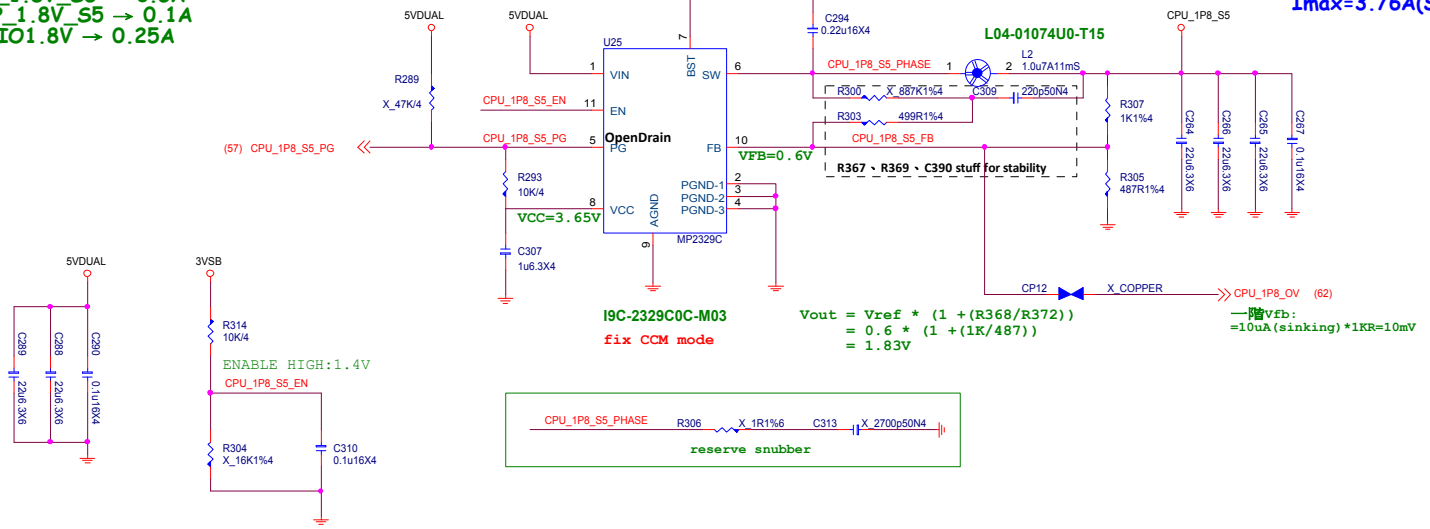
CPU 1.8V S5

CPU_1.8V → 2A
CPU_VDDP_S5 → 1A
VDD_1.8V_S5 → 0.5A
CHIP_1.8V_S5 → 0.1A
AUDIO1.8V → 0.25A

Continuous Conduction Mode (CCM)

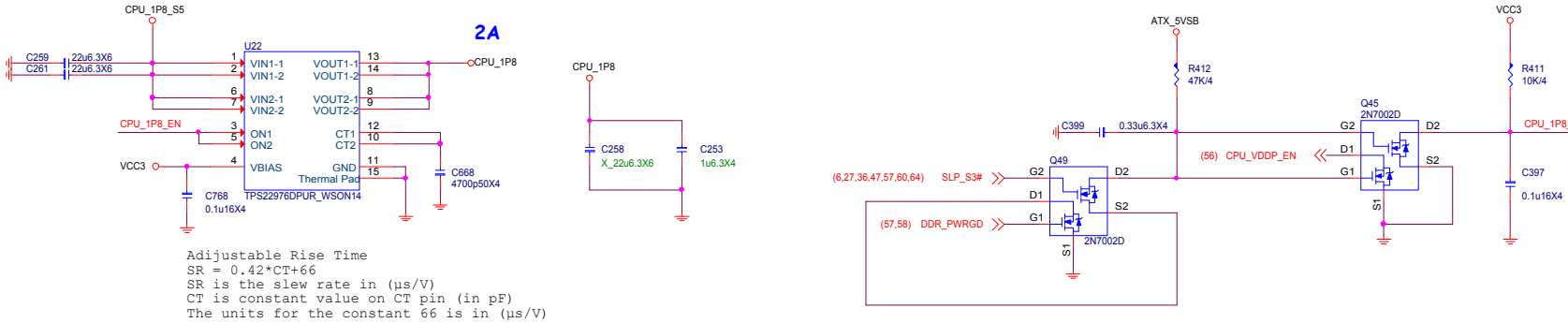
CPU_1P8_BST、CPU_1P8_BST_R >50 mils.

Imax=3.76A(S5+S0)

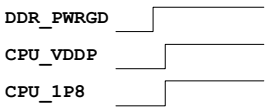


CPU 1.8V S0

CPU 1.8V_S0@2A



Adjustable Rise Time
SR = 0.42*CT+66
SR is the slew rate in (µs/V)
CT is constant value on CT pin (in pF)
The units for the constant 66 is in (µs/V)



MICRO-STAR INT'L CO.,LTD		
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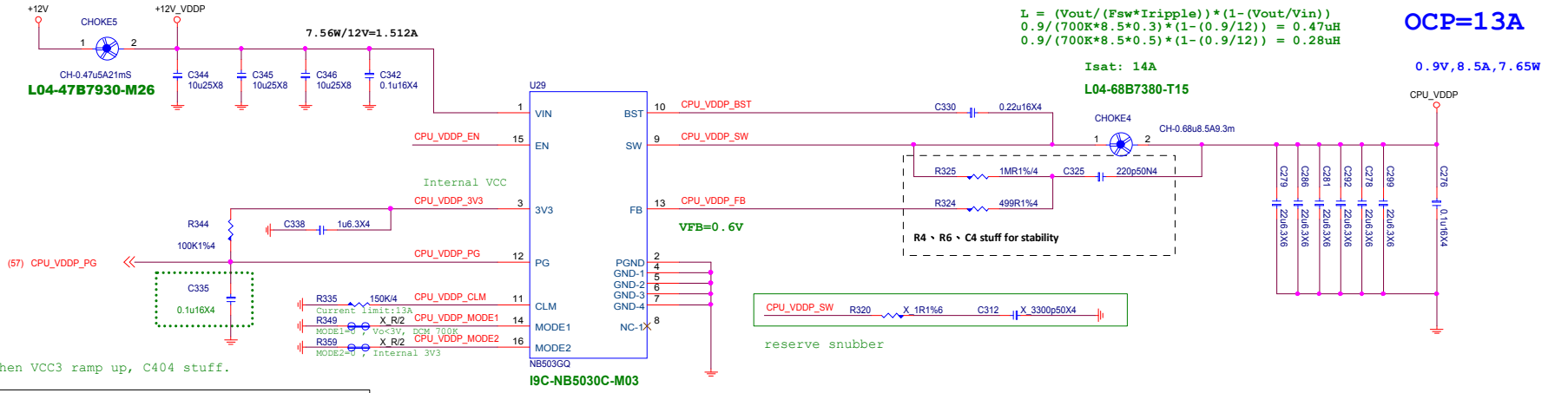
CPU_VDDP_S0

0.9V@S0:8.5A

S0:8.5A

```
Input Current = (13A*0.9V)/12V/0.8 = 1.22A
Choke Isat = 8A
Irms=Iout*SQRT((Vo/Vi)*(1-(Vo/Vi)))
=13*SQRT((0.9/12)*(1-(0.9/12))) = 3.42A
Choke Irms =5 A
```




```
L = (Vout/(Fsw*Iripple))*(1-(Vout/Vin))
0.9/(700K*8.5*0.3)*(1-(0.9/12)) = 0.47uH
0.9/(700K*8.5*0.5)*(1-(0.9/12)) = 0.28uH
```

OCP=13A

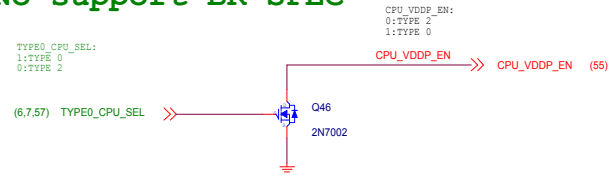
Isat: 14A

L04-68B7380-T15

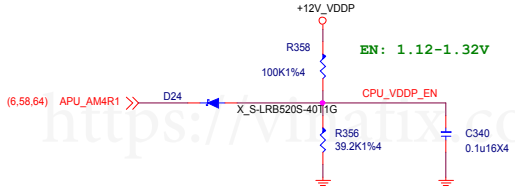
0.9V,8.5A,7.65W

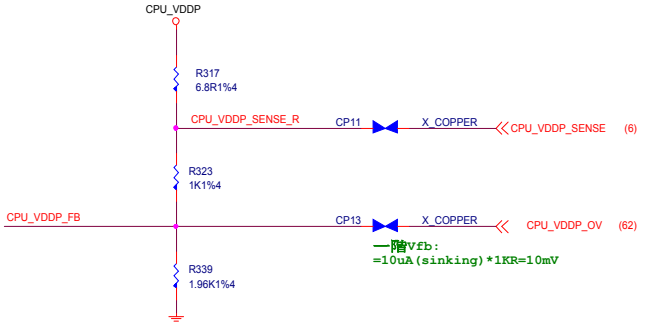
```
20180822
fix PG glitch when VCC3 ramp up, C404 stuff.
```

No support BR SPEC



CPU	TYPE	TYPE0_CPU_SEL	TYPE1_CPU_SEL	CPU_VDDP_EN	
BR	0	1	0	1	SPEC no Support
NA	X	0	0	0	
SR	2	1	1	0	NOT SUPPORT TYPE2
RV/ZP	3	0	1	1	
MTS	4	1	1	1	NOT SUPPORT TYPE4



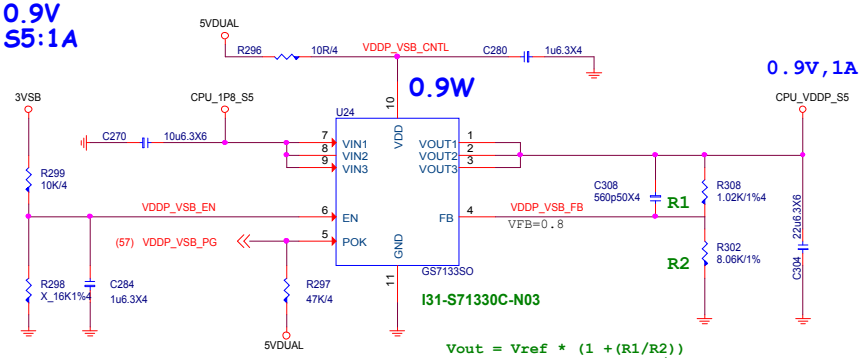



```
Vout = Vref + (R1*R4*Vref)/(R2*(R1+R4))
     = 0.6+(1k*1000k*0.6)/(1.96K*(1k+1000k))
     = 0.9058V
```


CPU_VDDP_S5

0.9V

S5:1A




```
Vout = Vref * (1 +(R1/R2))
     = 0.8 * (1 +(1.02K/8.06K))
     = 0.9V
```

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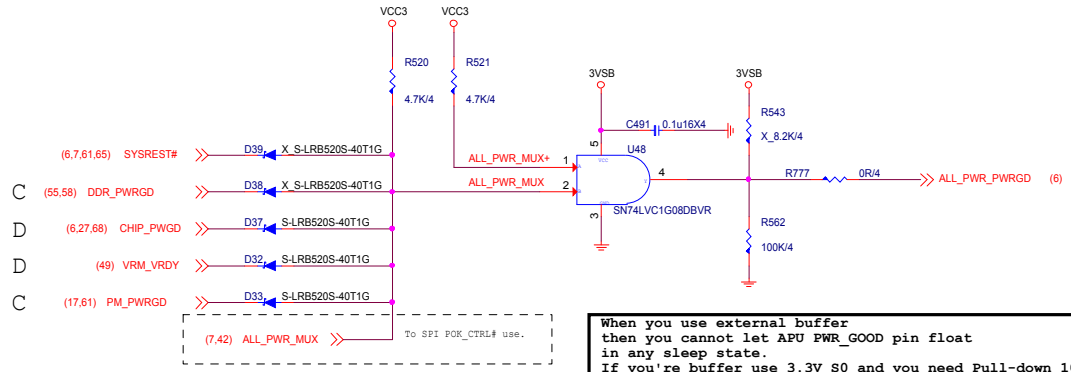
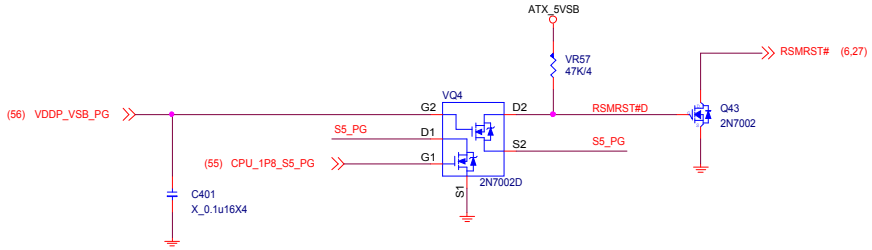
ALL POWER GOOD MUX

S0 PG

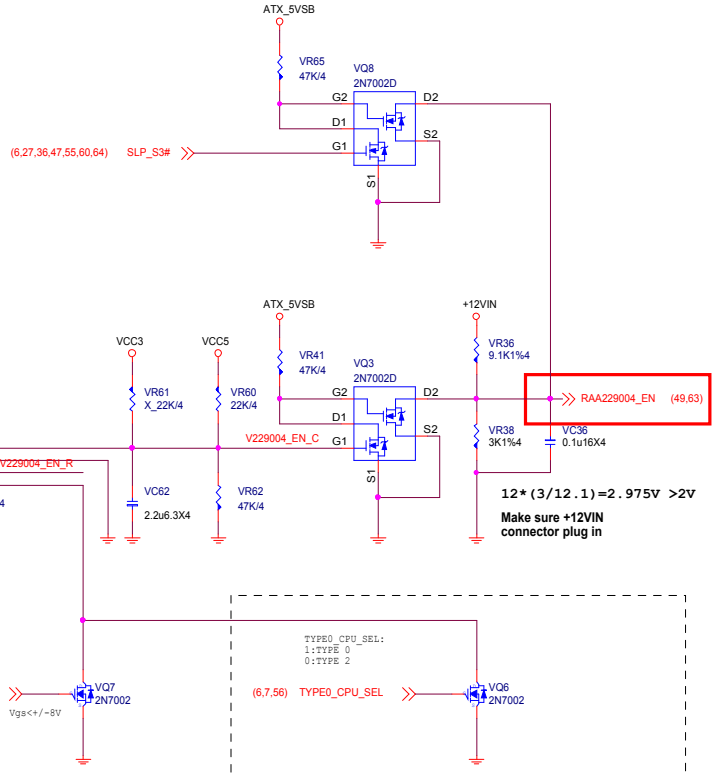



```
When you use external buffer
then you cannot let APU PWR_GOOD pin float
in any sleep state.
If you're buffer use 3.3V_S0 and you need Pull-down 100R
If you're buffer use 3.3V_S5 and you don't need PD.
```

S5 PG



VRM_Enable circuit



SPEC no Support

CPU VDDP NOT SUPPORT TYPE2

CPU VDDP NOT SUPPORT TYPE4

CPU	TYPE	TYPE1_CPU_SEL	TYPE0_CPU_SEL
BR	0	0	1
NA		0	0
SR	2	1	1
RV/ZP	3	1	0
MTS	4	1	1

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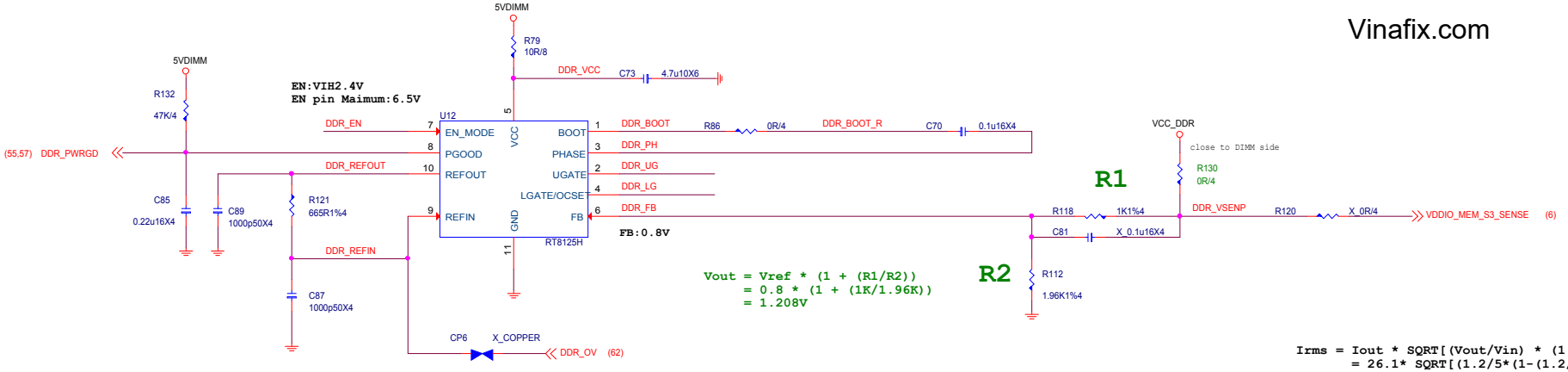
DDR4_1.2V@28.7A

18A FOR CPU
9.5A FOR 4DIMM
1.2A FOR DDR VTT

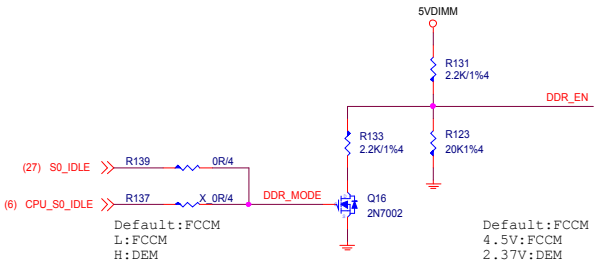
OCP = 39.3A; Choke Isat=42A

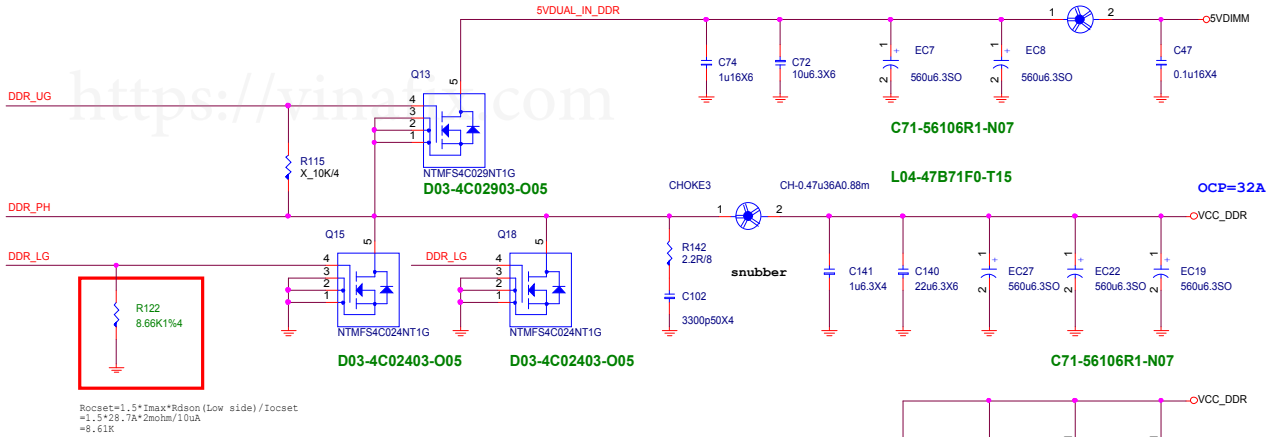
```
Rocset = 1.5 * Imax * Rdson(low) / Iocset
R649   = 1.5 * 28.7 * 2mohm / 10uA
R649   = 8.61K
```

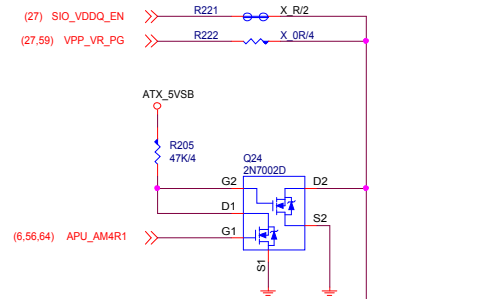
Rdson(Low Side) 5V
D03-4C02403-O05:3.3 ~ 4mohm

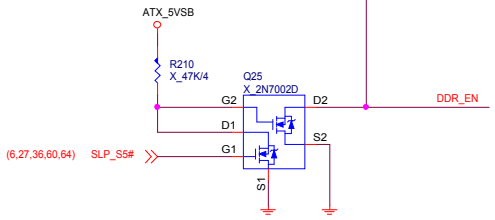


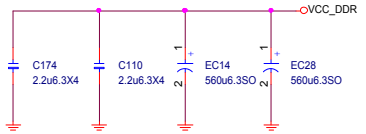
Irms = Iout * SQRT[(Vout/Vin) * (1 - (Vout/Vin))]
= 26.1* SQRT[(1.2/5*(1-(1.2/5))]
= 11.15A











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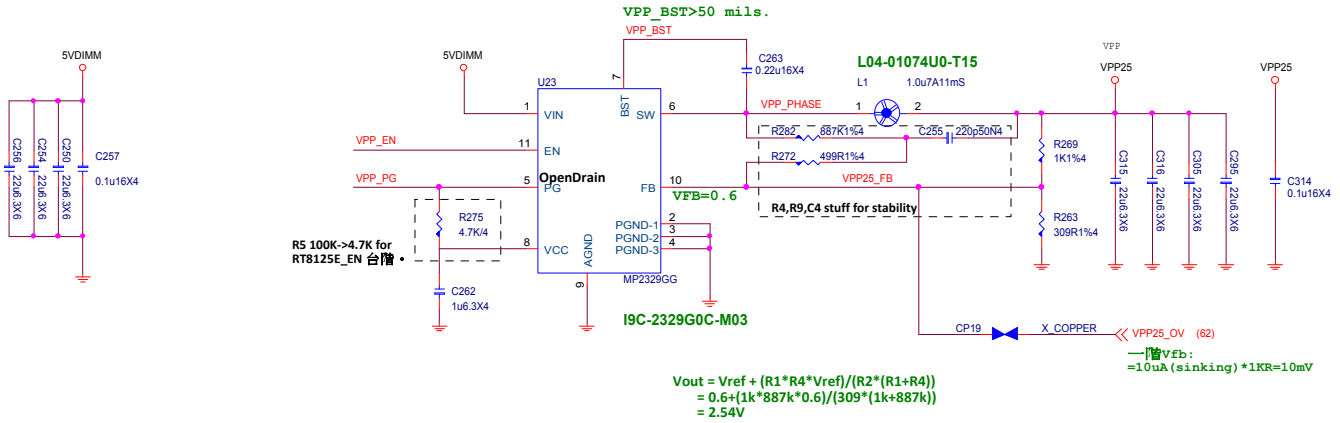
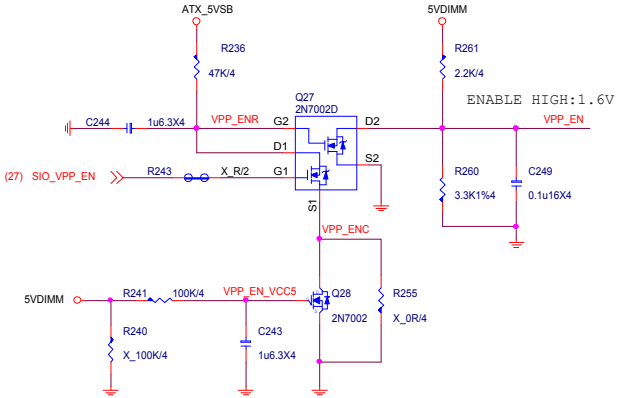
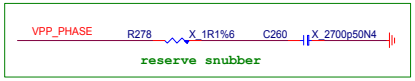
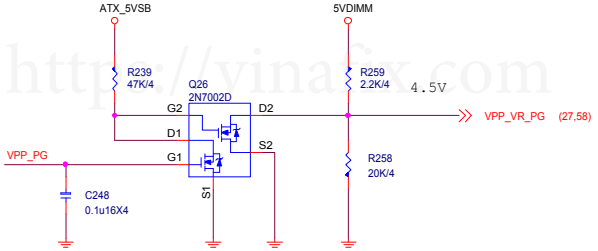
4DIMM : VPP25

2.5V@2.24A



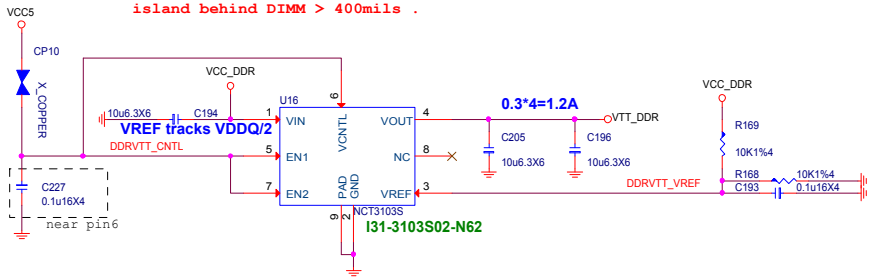


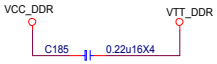




DDR VTT Power

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





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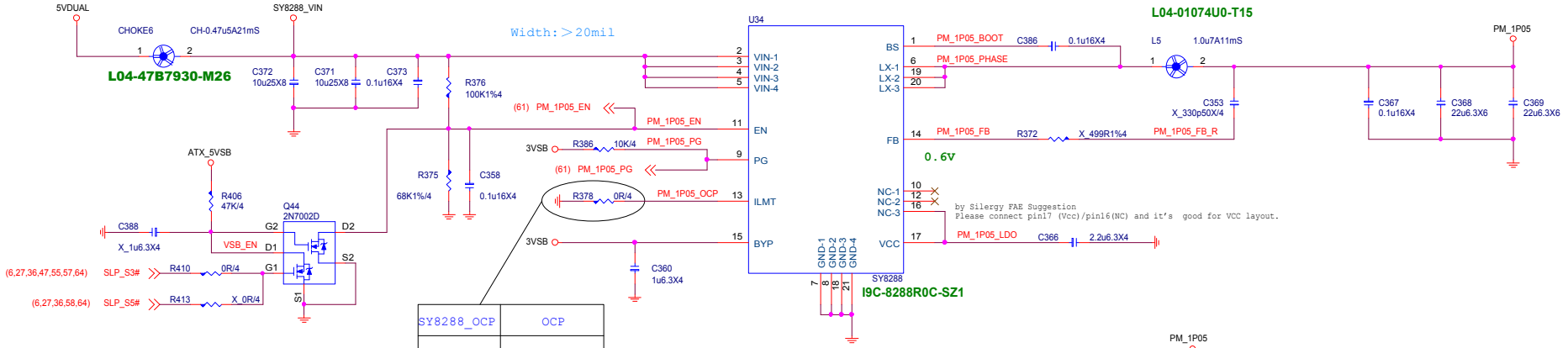
FOR Promontory 1.05V_S0

1.05V
S0:5.5A

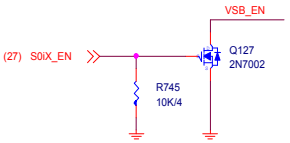
Input Current= (5.5A*1.05V)/12V/0.8=0.625A

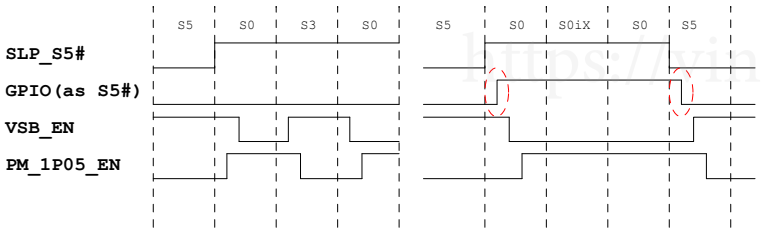
OCP=8A

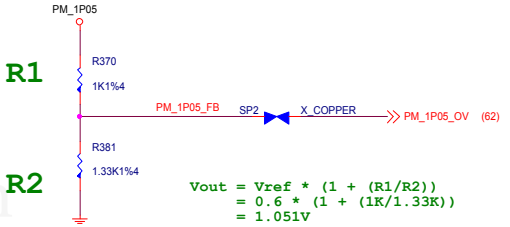
1.05V@5.5A



SY8288_OCP	OCP
0	8A
floating	12A
1	16A





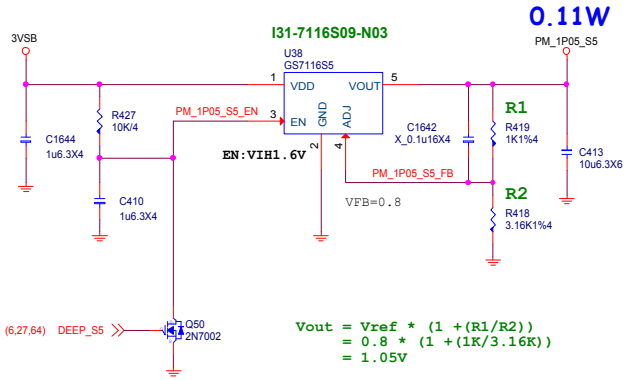


Vout = Vref * (1 + (R1/R2))
= 0.6 * (1 + (1K/1.33K))
= 1.051v

FOR PROM PM_1P05_S5

1.05V@0.05A

0.11W



Vout = Vref * (1 +(R1/R2))
= 0.8 * (1 +(1K/3.16K))
= 1.05V

MICRO-STAR INT'L CO.,LTD

MS-7C94

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Custom	PM - SY8288/PM_1P05	1.0

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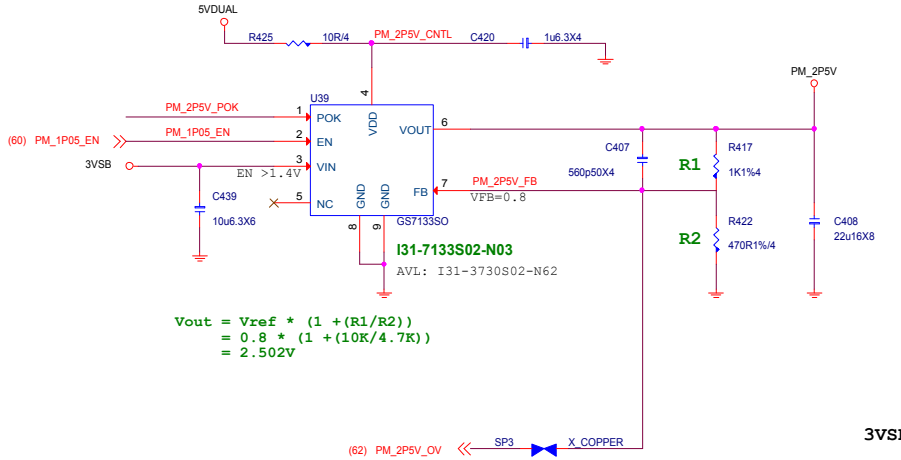
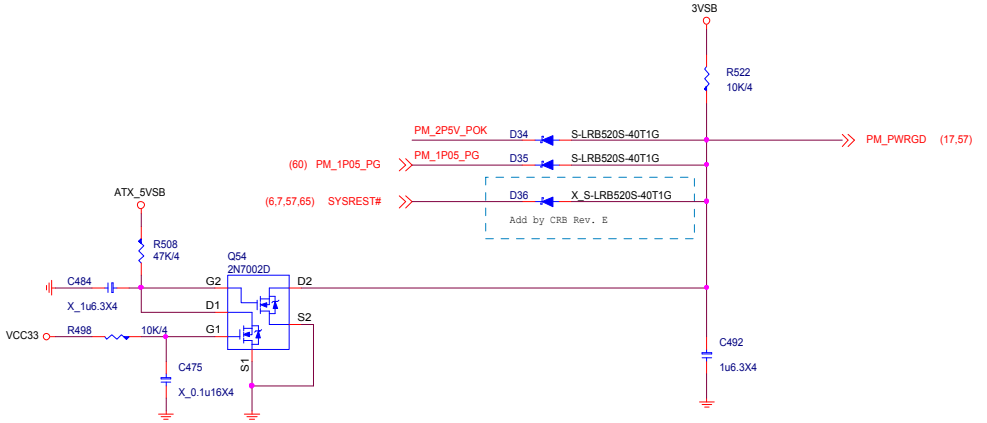
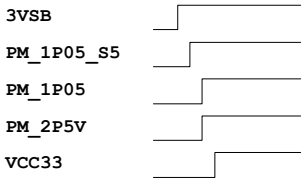
Promontory-2.5V

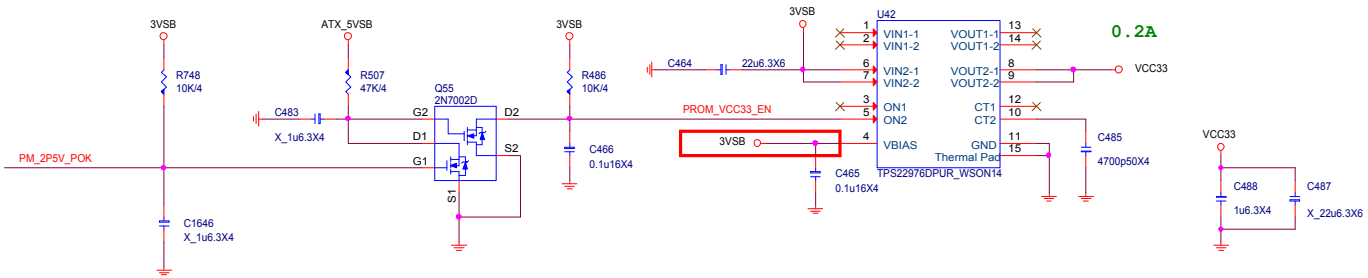
2.5V@900mA







VCC33 VCC33@0.2A



Adijustable Rise Time
SR = 0.42*CT+66
SR is the slew rate in (μs/V)
CT is constant value on CT pin (in pF)
The units for the constant 66 is in (μs/V)

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MS-7C94		
Size: Custom	Document Description: PM - GS7133/PM_2P5V	Rev: 1.0
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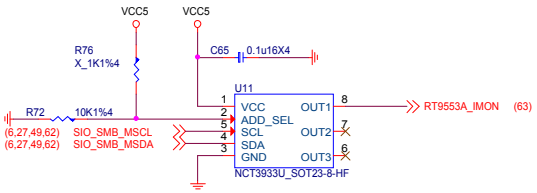
Over Voltage Control IC

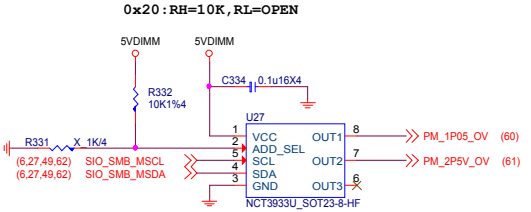
UPI VOLTAGE CONSOLE

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%

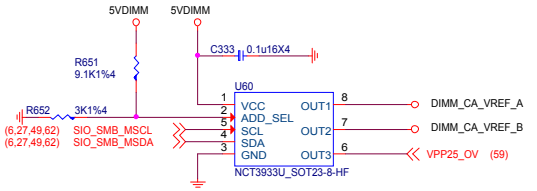
0x2A:RH=OPEN,RL=10K



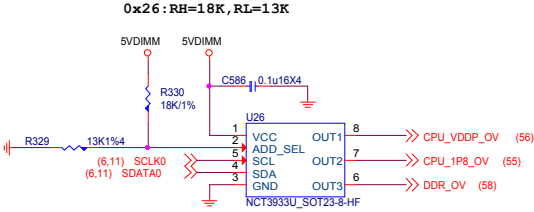
0x20:RH=10K,RL=OPEN



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



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



MICRO-STAR INT'L CO.,LTD

MS-7C94

Size	Document Description	Rev
Custom	OV Control - NCT3933	1.0

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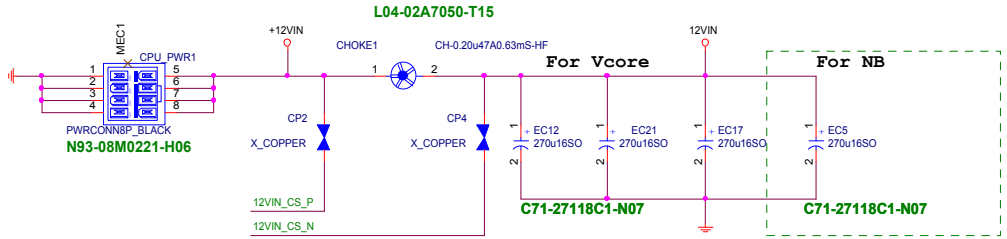
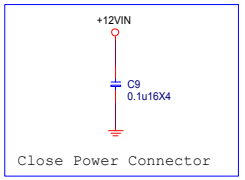
CPU POWER CONNECTOR

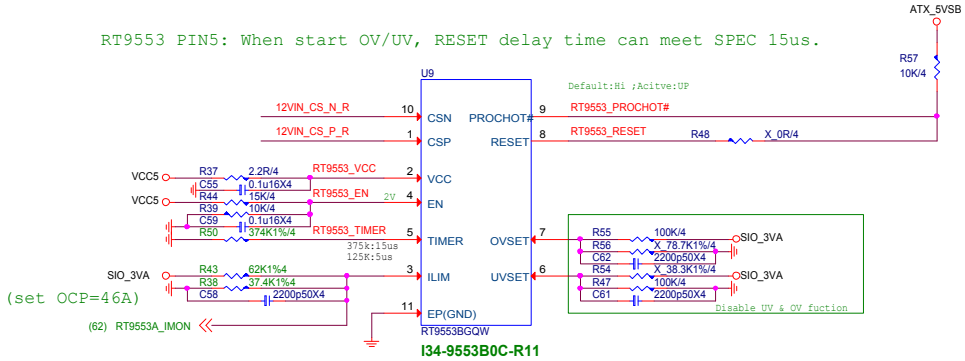


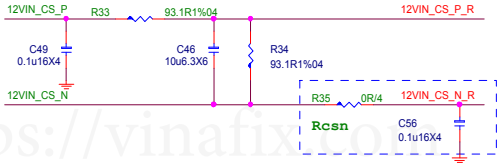
Vcore			
D=Vout/Vin			
Vin	= 12		> input voltage
Vout	= 2		> output Vcore
D	= 0.166667		
I o = Icore(max)*0.8			
I core(max)	= 200		> Vcore current
I avg.	= 160	A	
I ripple={ Io*√D*√(1-D)} / Phase			
Phase	= 10	phase	
I ripple	= 5.962848	A	
How many pcs. Of Cap.			
I ripple(cap)	= 4700	m A	
COE TEMP	= 1		
Input Cap.	= 2	pcs.	

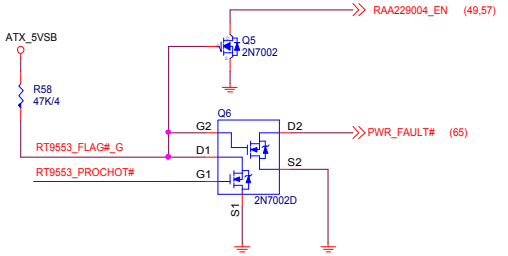
SOC			
D=Vout/Vin			
Vin	= 12		> input voltage
Vout	= 1.55		> output Vcore
D	= 0.129167		
I o = Icore(max)*0.8			
I core(max)	= 75		> Vcore current
I avg.	= 60	A	
I ripple={ Io*√D*√(1-D)} / Phase			
Phase	= 2	phase	
I ripple	= 10.06153	A	
How many pcs. Of Cap.			
I ripple(cap)	= 4700	m A	
COE TEMP	= 1		
Input Cap.	= 3	pcs.	



RT9553B CURRENT SENSE







MICRO-STAR INT'L CO.,LTD		
MS-7C94		
Size: Custom	Document Description: OCP 12VIN - RT9553B	Rev: 1.0
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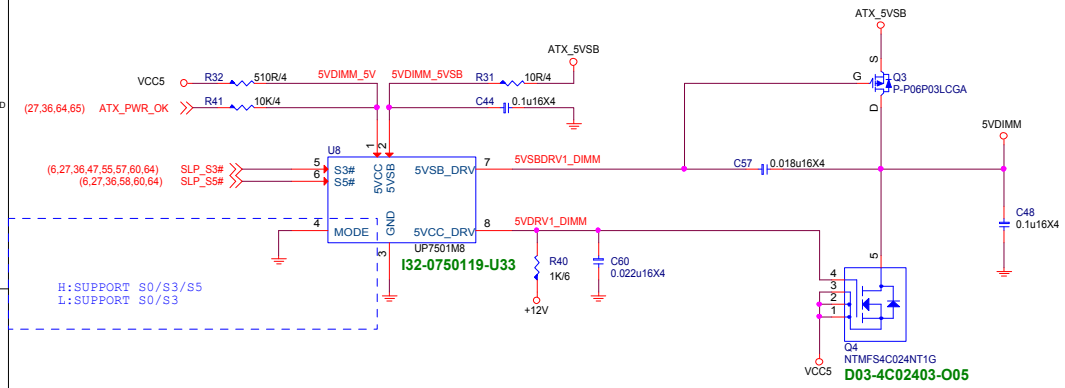
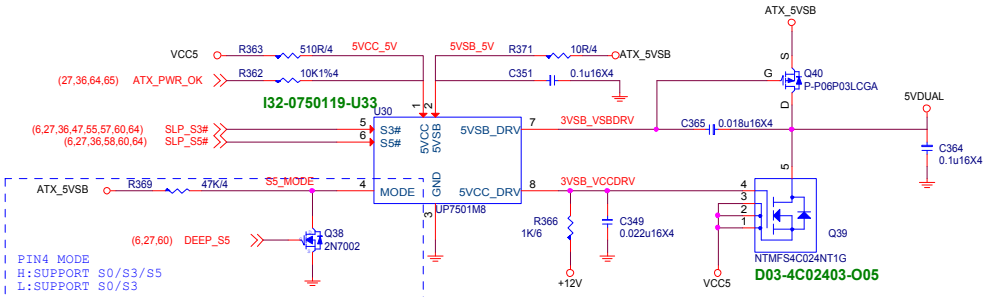
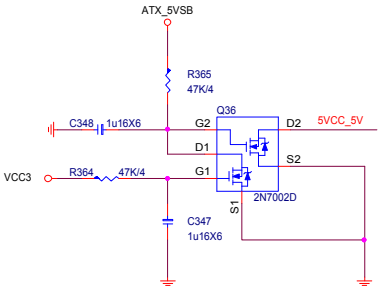
5VDIMM FOR DDR



5VDUAL For 3VSB/CPU1.8V



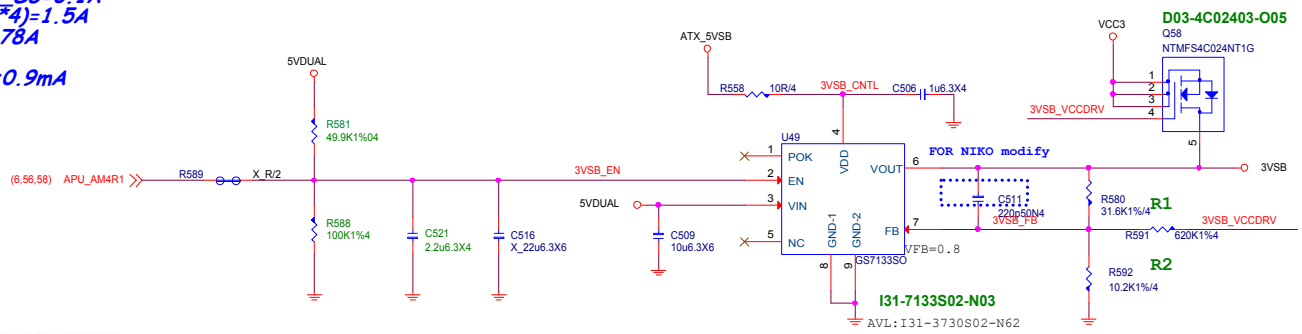
For power 700W solution (only for uP7501+uP7506 for 3VSB solution)
The power supply VCC3 delay 12ms after VCC5 assert.
The chip U7501 5VDRV1 work when the VCC5 ready
(When VCC5 up to 4.2V and the 5VDRV1 delay 6ms assert), but
VCC3 not ready and let the 3VSB sequence fail.



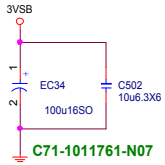
3VSB cost down

3.3V@3.125A

CPU:VDD_33_S5=0.25A
CHIP:VDD_33_S5=0.1A
*PCIE=(375mA*4)=1.5A*
M.2WIFI= 0.78A
LAN=0.12A
USB TYPE C :0.9mA



Vout = Vref * (1 +(R1/R2))
= 0.8 * (1 +(31.6K/10.2K))
= 3.328V



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MS-7C94		
Size: Custom	Document Description: ACPI - 3VSB / 5VDIMM	Rev: 1.0
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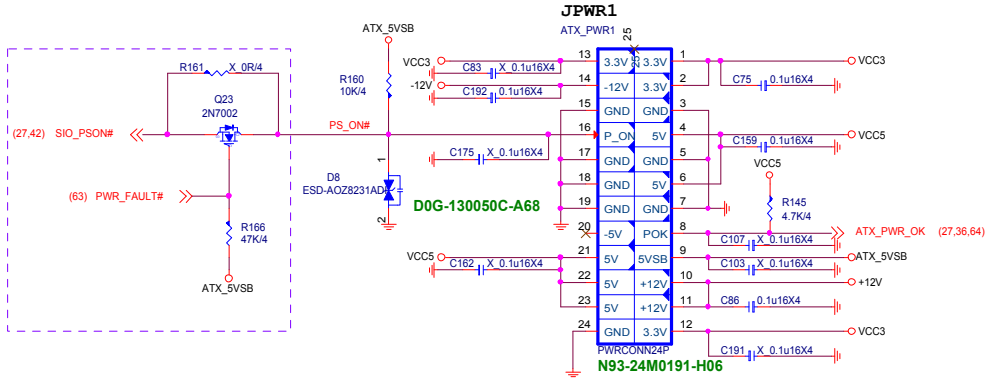
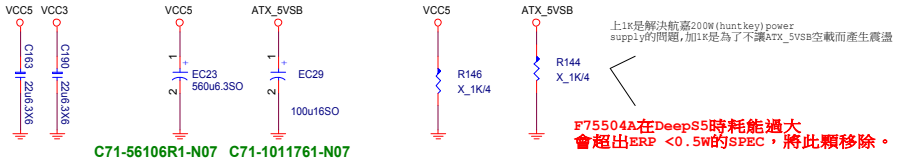
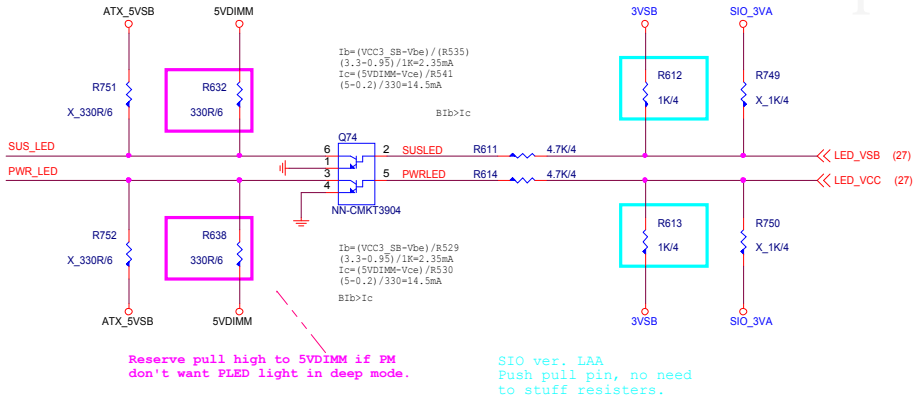
ATX POWER CONNECTOR



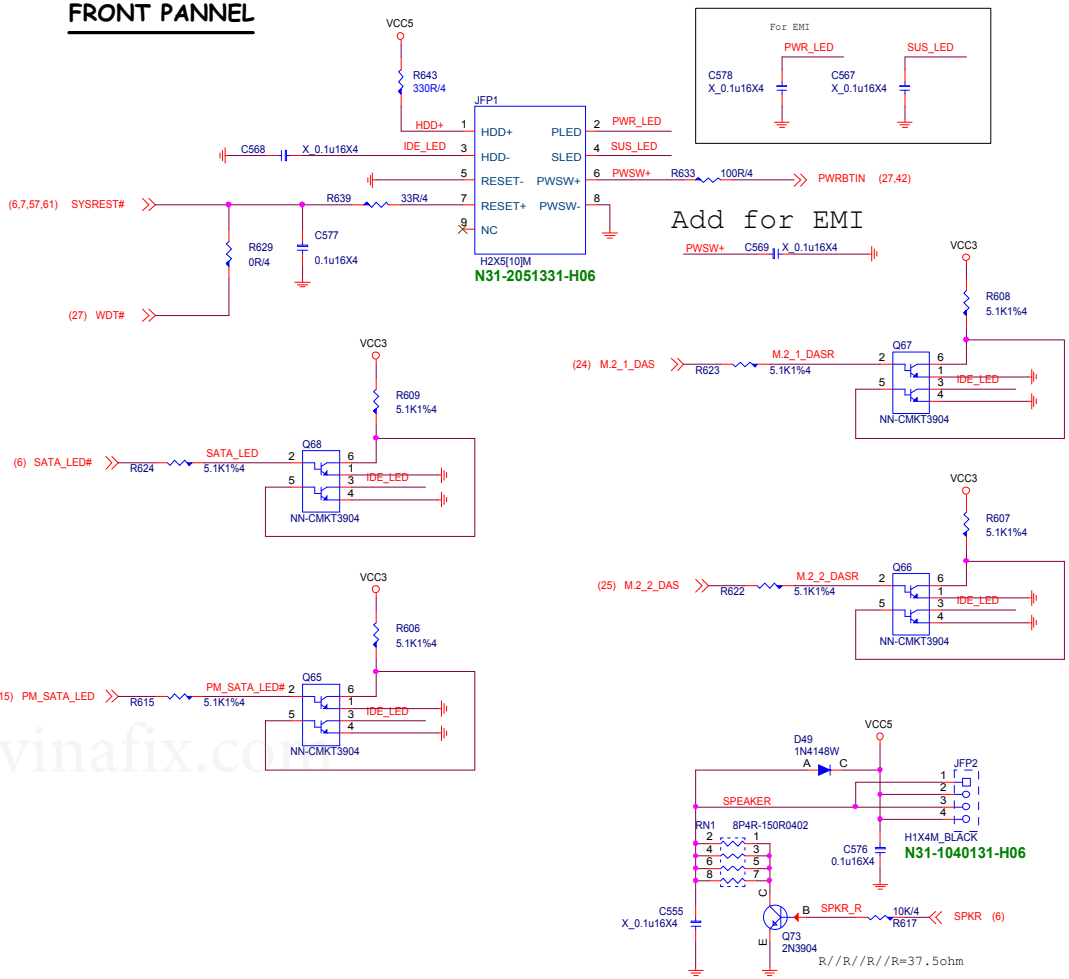


LED (for NCT6797D)



TPM

FRONT PANNEL



Voltage Mearsure Point

MICRO-STAR INT'L CO.,LTD	
MS-7C94	
Size: Custom	Document Description: ATX Power - FrontPanel / EMI
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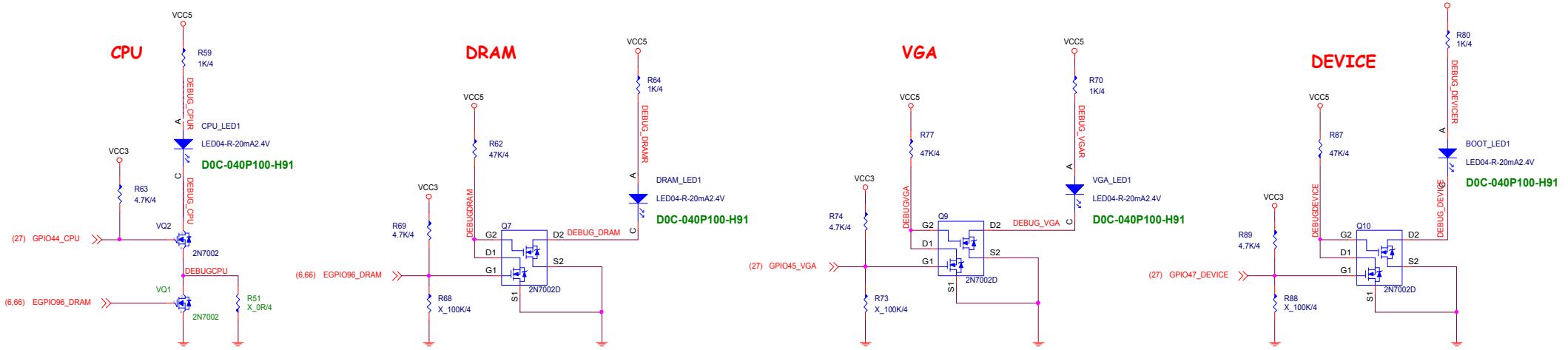
EZ Debug LED



LEDGPIO	GPIO46	EGPIO96	GPIO44	GPIO13
亮	OPEN-Drain	GPO LOW	GPO LOW	GPO LOW
滅	GPO LOW	GPO HIGH	OPEN-Drain	OPEN-Drain

default Input

LED亮燈時同時將CPU LED關掉

DIMM_SLOT FORM SIO

D0C-040P100-H91/D0C-040S500-E07

Vinafix.com

AMD AMP Detect LED

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	MS-7C94	
Size: Custom	Document Description: LED - EZ DEBUG / AMP	Rev: 1.0
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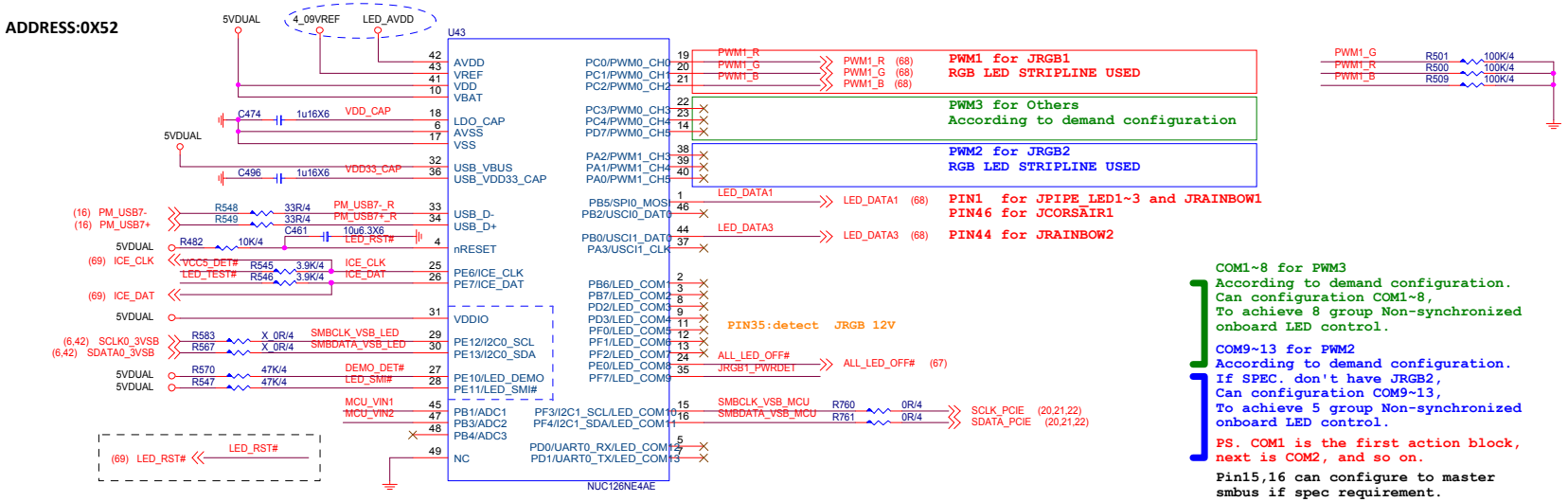
48 PIN LED MCU

If you use ADC function,need to separate VREF from AVDD and 4_09VREF stuff for VREF.

ADDRESS:0X52



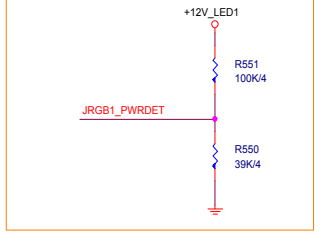
COM1~8 for PWM3
According to demand configuration.
Can configuration COM1~8,
To achieve 8 group Non-synchronized
onboard LED control.

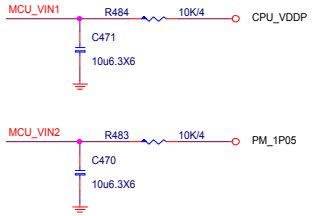
COM9~13 for PWM2
According to demand configuration.
If SPEC. don't have JRGB2,
Can configuration COM9~13,
To achieve 5 group Non-synchronized
onboard LED control.

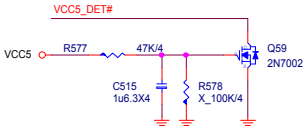
PS. COM1 is the first action block,
next is COM2, and so on.

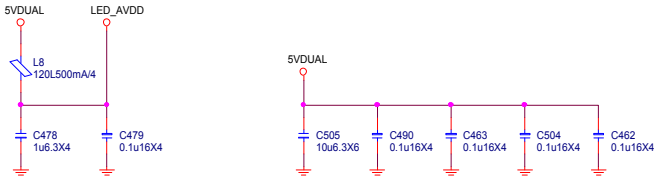
Pin15,16 can configure to master
smbus if spec requirement.

detect JRGB 12V



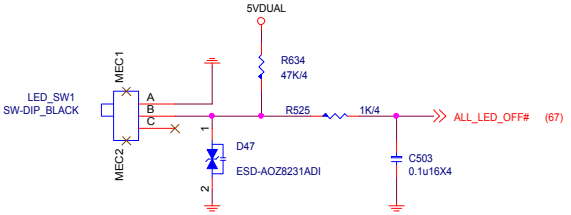


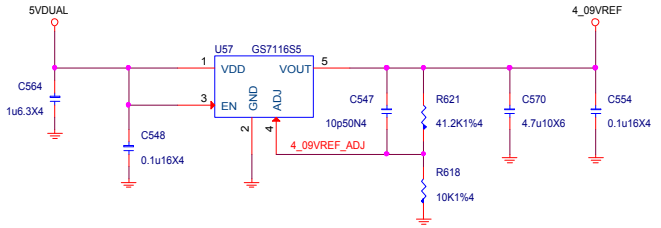


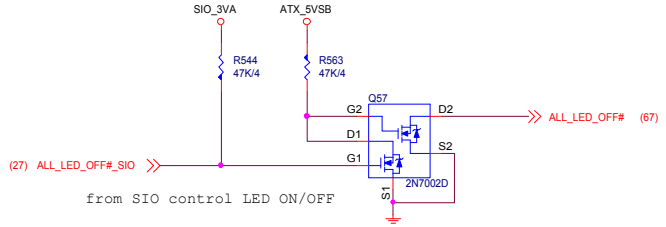


LED_SW1 for ALL LED OFF

B-C: LED ON(default)
B-A: LED OFF







Control	Net Name	PWM USE
PCH	LED_DATA1	No Use
AUDIO Cover	LED_GPIO_01	No Use
MOS/IO cover	LED_GPIO_02	No Use
JRAINBOW1	LED_GPIO_03	No Use
JCORSAIR1	LED_DATA2	No Use
JRGB1/JRGB2	PWM1/ PWM2	PWM1/ PWM2
Board Side LED	COM 1~8	PWM3
Board Side LED	COM 9~13	PWM2

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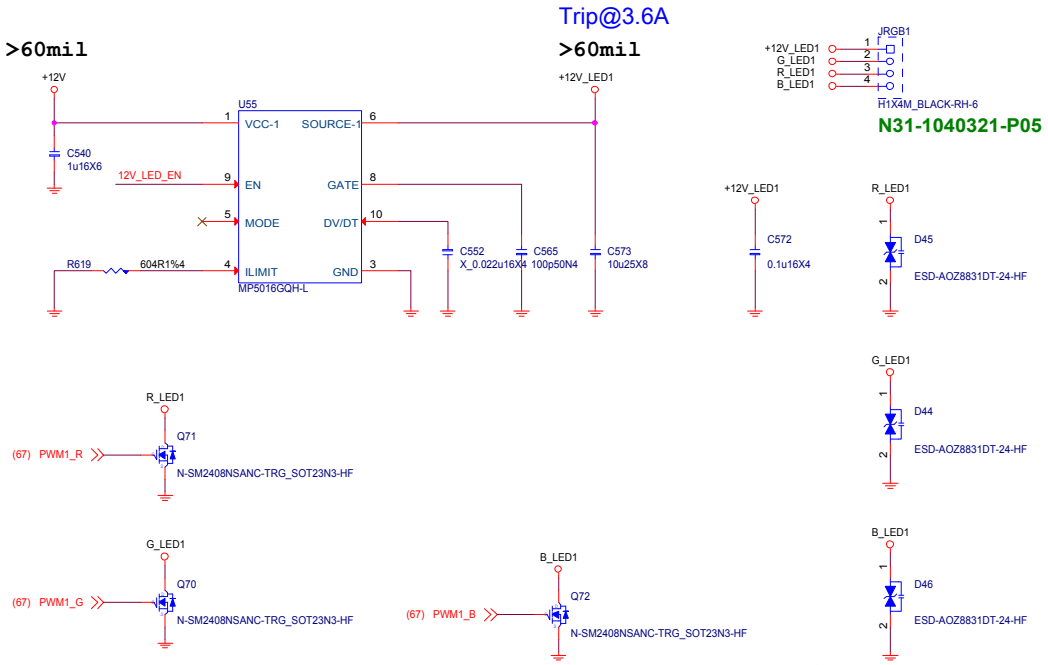
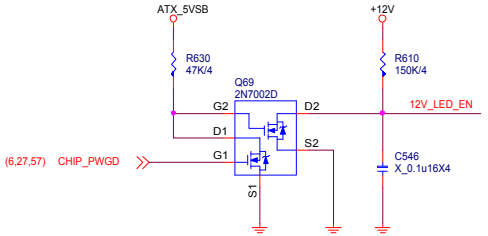
JRGB1



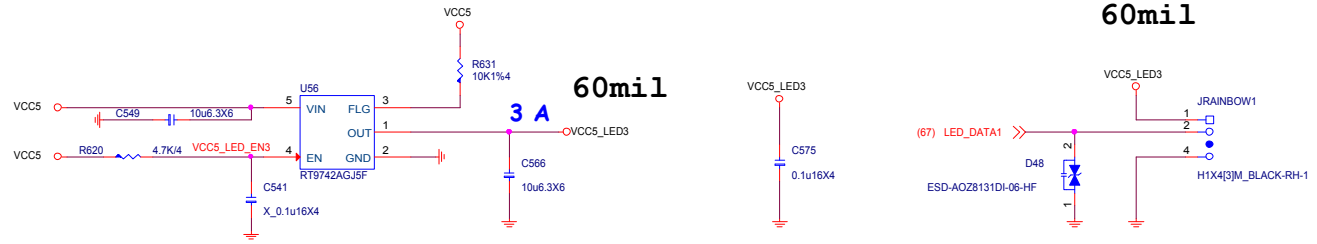
外接LED 燈條 (RGB)
---- PCB 文字面 (JRGB2)
---- 手冊 註明 RGB 接頭支援標準 5050 RGB LED 燈條 (12V/G/R/B) , 燈條總輸出電流限制為3安培 (12 伏特) , 長度限制為2公尺

JRGB2

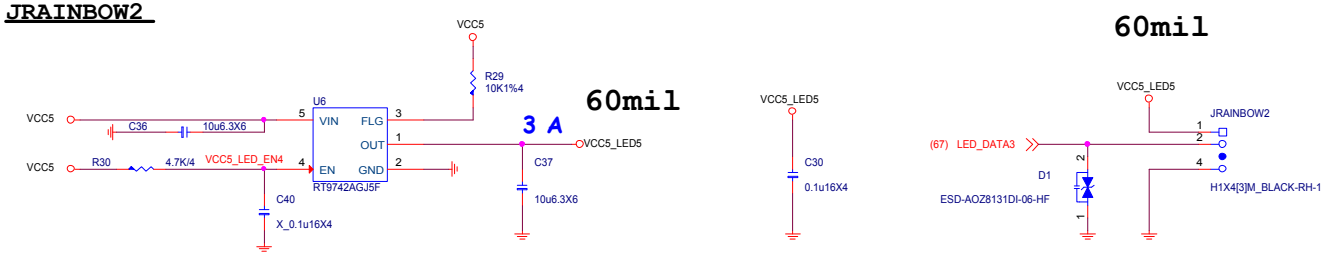


外接LED 燈條 (RGB)
---- PCB 文字面 (JRGB2)
---- 手冊 註明 RGB 接頭支援標準 5050 RGB LED 燈條 (12V/G/R/B) , 燈條總輸出電流限制為3安培 (12 伏特) , 長度限制為2公尺

JRAINBOW1



JRAINBOW2



JCORSAIR1

MICRO-STAR INT'L CO.,LTD		
MS-7C94		
Size: Custom	Document Description: LED - JLED1 / 2 / 3 / 4	Rev: 1.0
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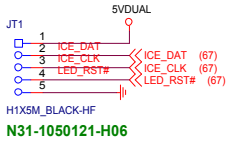
JT1 for FW update



EXTERNAL POWER INPUT

IF no JPWRLED1 & JPIPE_LED spec

MCU can powered by 5VDUAL directly.
LED_VCC5 replace with 5VDUAL.

JF1 for Factory test

MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7C94	
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MICRO-STAR INT'L CO.,LTD	
MS-7C94	
Size: Custom	Document Description: BOM Option
Rev: 1.0	
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CPU Socket

CPU2

E95-0000022-A91

E95-0000022-A91

Simulation

X_JS2 SIM1 X_PIN1*2

X_JS1 SIM2 X_PIN1*2

FM6 FM8 FM5 FM2 FM1 FM3 FM4 FM7 — X_FM120

Optics Orientation Holes

MH1 MH2 MH3 MH5 MH6 MH4 MH8 MH7 — X_MH001

C361 0.1u16X4 C352 0.1u16X4 C508 0.1u16X4 C481 0.1u16X4

MANUAL PART

UEFI1 G51-M1SPXXA-A09 **G51-M1SPXXA-A09**

CFOS <MSI-BOM> Y02-MU00170-CFO **Y02-MU00170-CFO**

HDMI_LA1 Label HDMI X_HDMI LABEL **Y01-RHDMI03-000**

NAHIMIC1 <MSI-BOM> X_Y02-MU00100-NAH **Y02-MU00100-NAH**

MARKET1 G51-M1SPP79-Q13 **G51-M1SPP79-Q13**

BAT1_X1 BAT-BCR2032P

MARKET2 X_G51-M1SPQ03-Q13 **G51-M1SPQ03-Q13**

Moat CAP

PCB

PCB

PCB1

7C94_10

PD0-07C9410-G37

PCH HEATSINK

MEC1 MEC1 HS_PCH1 MEC2 MEC2

HS-0410520-RH

HS_PCH2 X_E31-0410500-A87

MOS HEATSINK

MEC1 MEC1 HS_WMOS1 MEC2 MEC2

HS-0506750-RH

HS_WMOS2 X_E31-0506710-A87

HS_NMOS1 MEC2 MEC2 MEC1 MEC1 HS-0506760-RH

HS_NMOS2 X_E31-0506720-A87

M.2 HEATSINK

M2_HS1 E31-0002680-A87

M2_HS2 X_E31-0002630-A87

IO_Shell1 E21-7C94010-A91

IO_Shell2 X_E21-7C94020-A91

IO COVER

DDR COVER

Audio COVER

MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7C94	
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