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MS-7A94

ATX

Ver: 20

Basinfall Platform

CPU:

Skylake X/Kabylake X

System Chipset:

Kaby Lake PCH-X

Onboard Chip:

HD Audio Codec:ALC1220

LAN-Intel i219

SIO:NTC6795D

Dual Flash ROM: SPI 64 MB X2

Main Memory:

*DDRIV (UP to 2677MHz) * 8DIMM (4 Channel)*

ACPI:

MPS

PWM:

VR13 -IR35201

Expansion Slots:

*PCI Express (X16) Slot * 2*
*PCI Express (X8) Slot * 1*
*PCI Express (X4) Slot * 1*
*PCI Express (X1) Slot * 1*

Other:

*SATA3.0 *8*
*USB2.0 *6 Ports (4R/4F)*
*REAR USB30*4 + USB3.1*1 & TYPEC*1*
*FRONT USB3.0 *4+TYPEC*1*

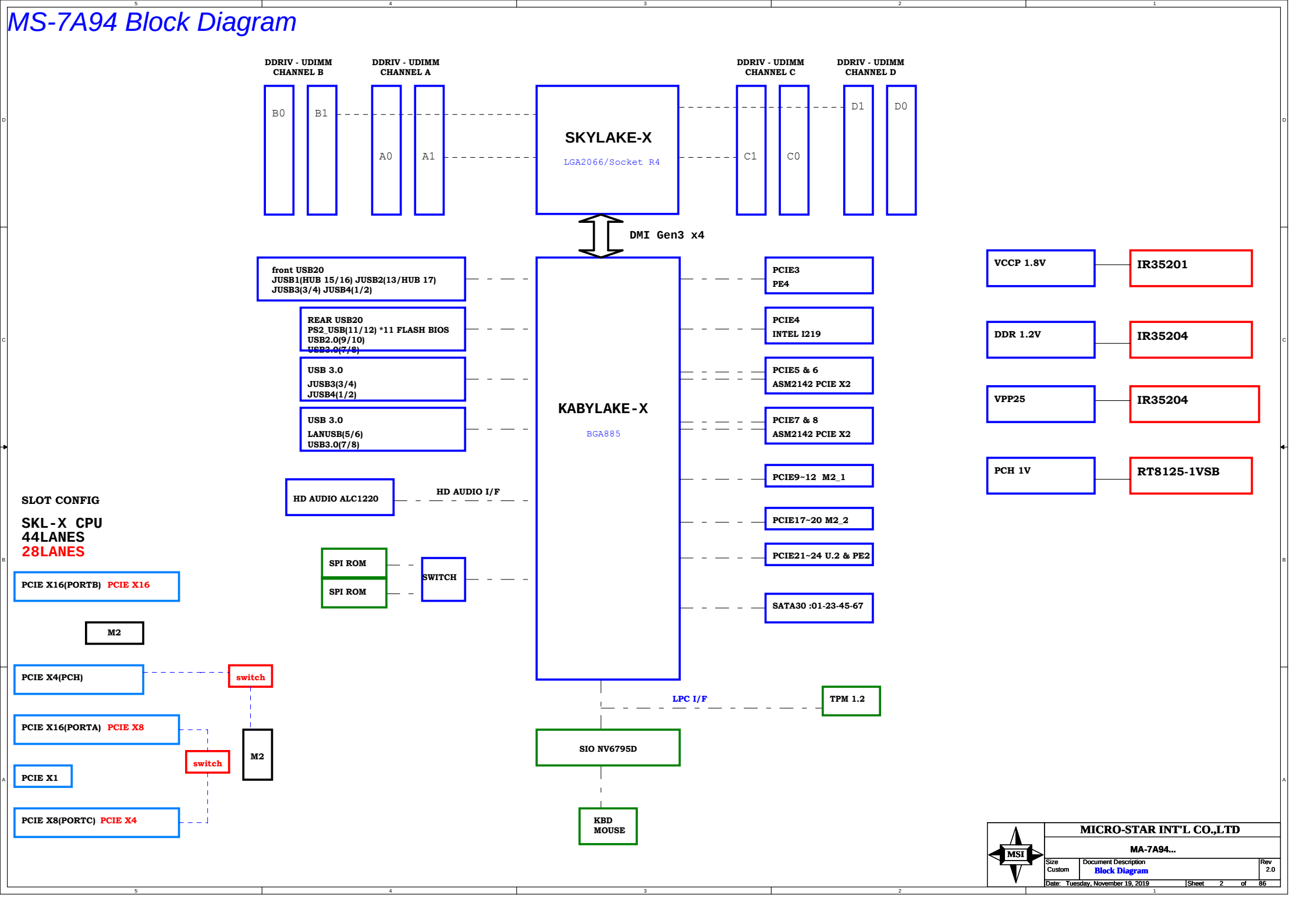
MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size: Custom | Document Description: Cover Sheet | Rev: 2.0

Date: Tuesday, November 19, 2019 | Sheet 1 of 86

MS-7A94 Block Diagram



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Size: Custom	Document Description: Block Diagram	Rev: 2.0
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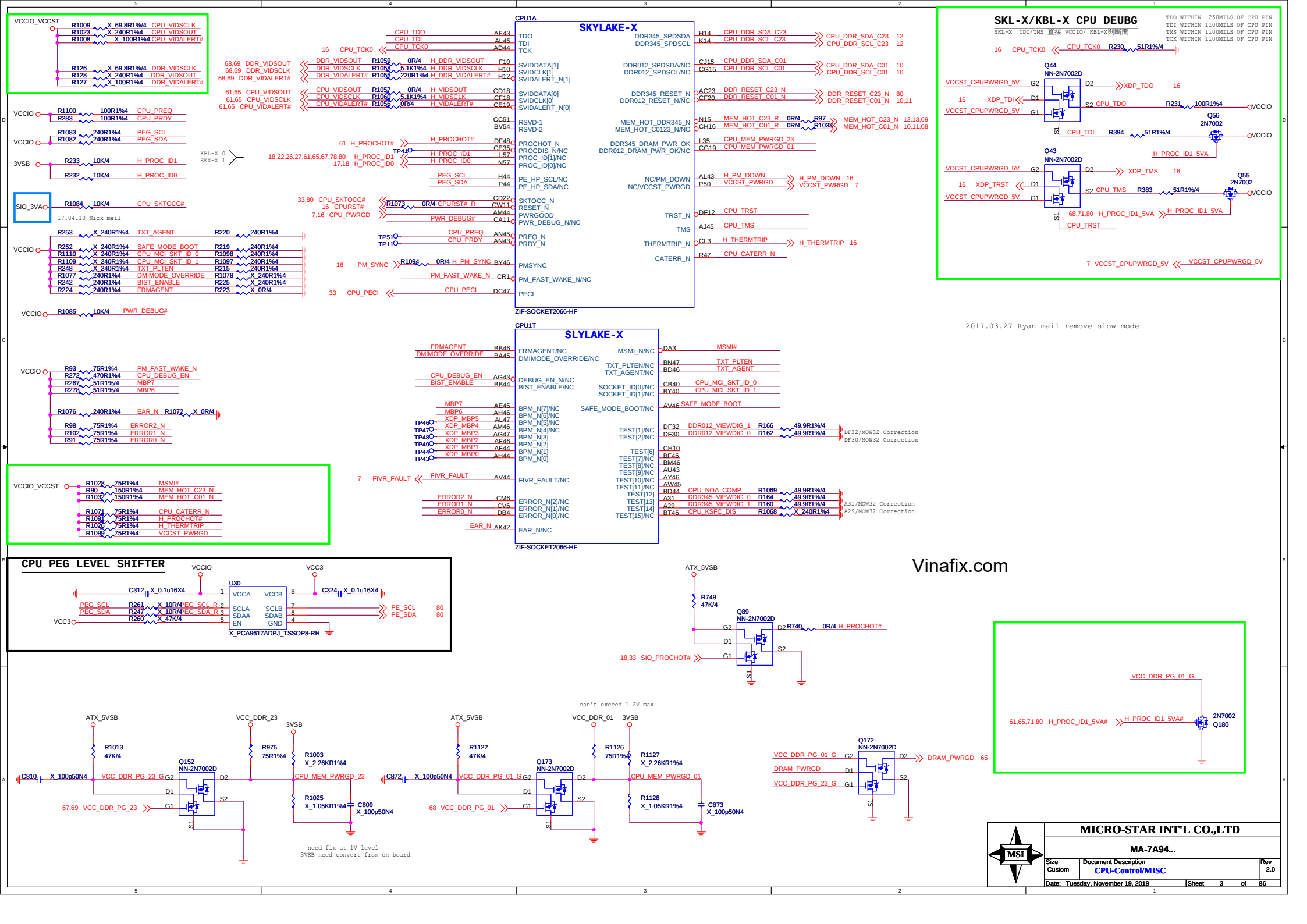
SKL-X/KBL-X CPU DEUBG
SKL-X TDI/TMS 直接 VCCIO/ KBL-X則斷開
TDO WITHIN 250MILS OF CPU PIN
TDI WITHIN 1100MILS OF CPU PIN
TMS WITHIN 1100MILS OF CPU PIN
TCK WITHIN 1100MILS OF CPU PIN
CPU1A
SKYLAKE-X
ZIF-SOCKET2066-HF
CPU1T
SLYLAKE-X
ZIF-SOCKET2066-HF
2017.03.27 Ryan mail remove slow mode
Vinafix.com
CPU PEG LEVEL SHIFTER
X_PCA9617ADPJ_TSSOP8-RH
can't exceed 1.2V max
need fix at 1V level
3VSB need convert from on board
MICRO-STAR INT'L CO.,LTD
MA-7A94...
CPU-Control/MISC
Date: Tuesday, November 19, 2019
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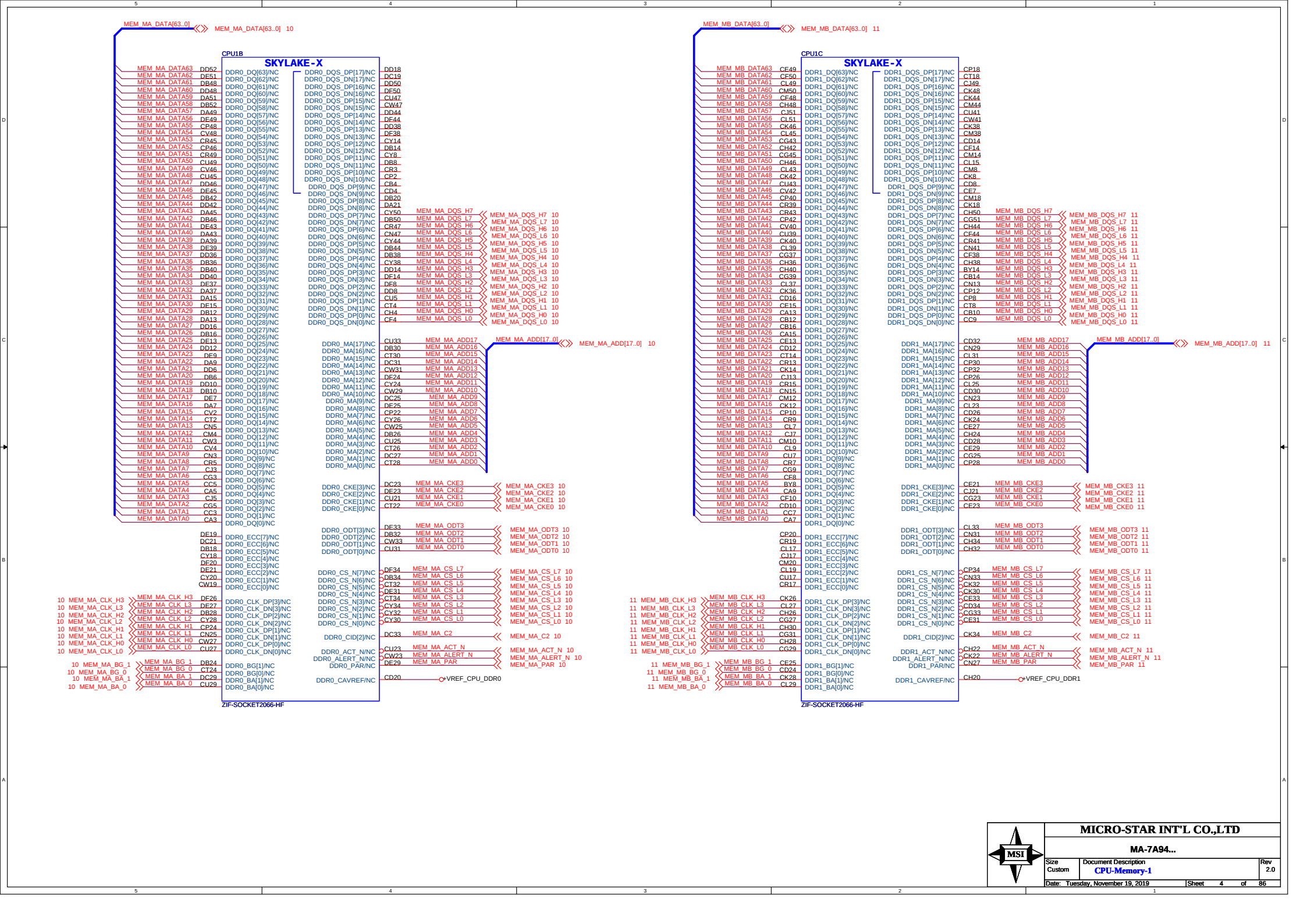
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MEM_MA_DATA[63..0] 10
CPU1B
SKYLAKE-X
DDR0_DQ[63]/NC DD52
DDR0_DQ[62]/NC DE51
DDR0_DQ[61]/NC DB48
DDR0_DQ[60]/NC DD48
DDR0_DQ[59]/NC DA51
DDR0_DQ[58]/NC DB52
DDR0_DQ[57]/NC DA49
DDR0_DQ[56]/NC DE49
DDR0_DQ[55]/NC CP48
DDR0_DQ[54]/NC CV48
DDR0_DQ[53]/NC CR45
DDR0_DQ[52]/NC CP46
DDR0_DQ[51]/NC CR49
DDR0_DQ[50]/NC CU49
DDR0_DQ[49]/NC CV46
DDR0_DQ[48]/NC CU45
DDR0_DQ[47]/NC DD46
DDR0_DQ[46]/NC DE45
DDR0_DQ[45]/NC DB42
DDR0_DQ[44]/NC DD42
DDR0_DQ[43]/NC DA45
DDR0_DQ[42]/NC DB46
DDR0_DQ[41]/NC DE43
DDR0_DQ[40]/NC DA43
DDR0_DQ[39]/NC DA39
DDR0_DQ[38]/NC DE39
DDR0_DQ[37]/NC DD36
DDR0_DQ[36]/NC DB36
DDR0_DQ[35]/NC DB40
DDR0_DQ[34]/NC DD40
DDR0_DQ[33]/NC DE37
DDR0_DQ[32]/NC DA37
DDR0_DQ[31]/NC DA15
DDR0_DQ[30]/NC DE15
DDR0_DQ[29]/NC DB12
DDR0_DQ[28]/NC DA13
DDR0_DQ[27]/NC DD16
DDR0_DQ[26]/NC DB16
DDR0_DQ[25]/NC DE13
DDR0_DQ[24]/NC DD12
DDR0_DQ[23]/NC DE9
DDR0_DQ[22]/NC DA9
DDR0_DQ[21]/NC DD6
DDR0_DQ[20]/NC DB6
DDR0_DQ[19]/NC DD10
DDR0_DQ[18]/NC DB10
DDR0_DQ[17]/NC DE7
DDR0_DQ[16]/NC DA7
DDR0_DQ[15]/NC CV2
DDR0_DQ[14]/NC CT2
DDR0_DQ[13]/NC CN5
DDR0_DQ[12]/NC CM4
DDR0_DQ[11]/NC CW3
DDR0_DQ[10]/NC CV4
DDR0_DQ[9]/NC CN3
DDR0_DQ[8]/NC CR5
DDR0_DQ[7]/NC CJ3
DDR0_DQ[6]/NC CG3
DDR0_DQ[5]/NC CC5
DDR0_DQ[4]/NC CA5
DDR0_DQ[3]/NC CJ5
DDR0_DQ[2]/NC CG5
DDR0_DQ[1]/NC CC3
DDR0_DQ[0]/NC CA3
DDR0_ECC[7]/NC DE19
DDR0_ECC[6]/NC DC21
DDR0_ECC[5]/NC DB18
DDR0_ECC[4]/NC CY18
DDR0_ECC[3]/NC DE20
DDR0_ECC[2]/NC DF21
DDR0_ECC[1]/NC CY20
DDR0_ECC[0]/NC CW19
DDR0_CLK_DP[3]/NC DE27
DDR0_CLK_DN[3]/NC DB28
DDR0_CLK_DP[2]/NC CY28
DDR0_CLK_DN[2]/NC CP24
DDR0_CLK_DP[1]/NC CN25
DDR0_CLK_DN[1]/NC CW27
DDR0_CLK_DP[0]/NC CU27
DDR0_CLK_DN[0]/NC
DDR0_BG[1]/NC
DDR0_BG[0]/NC
DDR0_BA[1]/NC DC29
DDR0_BA[0]/NC CU29
DDR0_DQS_DP[17]/NC DD18
DDR0_DQS_DN[17]/NC DC19
DDR0_DQS_DP[16]/NC DD50
DDR0_DQS_DN[16]/NC DF50
DDR0_DQS_DP[15]/NC CU47
DDR0_DQS_DN[15]/NC CW47
DDR0_DQS_DP[14]/NC DD44
DDR0_DQS_DN[14]/NC DF44
DDR0_DQS_DP[13]/NC DD38
DDR0_DQS_DN[13]/NC DF38
DDR0_DQS_DP[12]/NC CY14
DDR0_DQS_DN[12]/NC DB14
DDR0_DQS_DP[11]/NC CY8
DDR0_DQS_DN[11]/NC DB8
DDR0_DQS_DP[10]/NC CR3
DDR0_DQS_DN[10]/NC CP2
DDR0_DQS_DP[9]/NC CB4
DDR0_DQS_DN[9]/NC CD4
DDR0_DQS_DP[8]/NC DB20
DDR0_DQS_DN[8]/NC DA21
DDR0_DQS_DP[7]/NC CY50
DDR0_DQS_DN[7]/NC DB50
DDR0_DQS_DP[6]/NC CR47
DDR0_DQS_DN[6]/NC CN47
DDR0_DQS_DP[5]/NC CY44
DDR0_DQS_DN[5]/NC DB44
DDR0_DQS_DP[4]/NC DB38
DDR0_DQS_DN[4]/NC CY38
DDR0_DQS_DP[3]/NC DD14
DDR0_DQS_DN[3]/NC DF14
DDR0_DQS_DP[2]/NC DF8
DDR0_DQS_DN[2]/NC DD8
DDR0_DQS_DP[1]/NC CU5
DDR0_DQS_DN[1]/NC CT4
DDR0_DQS_DP[0]/NC CH4
DDR0_DQS_DN[0]/NC CF4
MEM_MA_DQS_H7
MEM_MA_DQS_L7
MEM_MA_DQS_H6
MEM_MA_DQS_L6
MEM_MA_DQS_H5
MEM_MA_DQS_L5
MEM_MA_DQS_H4
MEM_MA_DQS_L4
MEM_MA_DQS_H3
MEM_MA_DQS_L3
MEM_MA_DQS_H2
MEM_MA_DQS_L2
MEM_MA_DQS_H1
MEM_MA_DQS_L1
MEM_MA_DQS_H0
MEM_MA_DQS_L0
MEM_MA_DQS_H7 10
MEM_MA_DQS_L7 10
MEM_MA_DQS_H6 10
MEM_MA_DQS_L6 10
MEM_MA_DQS_H5 10
MEM_MA_DQS_L5 10
MEM_MA_DQS_H4 10
MEM_MA_DQS_L4 10
MEM_MA_DQS_H3 10
MEM_MA_DQS_L3 10
MEM_MA_DQS_H2 10
MEM_MA_DQS_L2 10
MEM_MA_DQS_H1 10
MEM_MA_DQS_L1 10
MEM_MA_DQS_H0 10
MEM_MA_DQS_L0 10
DDR0_MA[17]/NC CU33
DDR0_MA[16]/NC DB30
DDR0_MA[15]/NC CT30
DDR0_MA[14]/NC DC31
DDR0_MA[13]/NC CW31
DDR0_MA[12]/NC DF24
DDR0_MA[11]/NC CY24
DDR0_MA[10]/NC CW29
DDR0_MA[9]/NC DC25
DDR0_MA[8]/NC DE25
DDR0_MA[7]/NC CP22
DDR0_MA[6]/NC CY26
DDR0_MA[5]/NC CW25
DDR0_MA[4]/NC DB26
DDR0_MA[3]/NC CU25
DDR0_MA[2]/NC CT26
DDR0_MA[1]/NC DC27
DDR0_MA[0]/NC CT28
MEM_MA_ADD17
MEM_MA_ADD16
MEM_MA_ADD15
MEM_MA_ADD14
MEM_MA_ADD13
MEM_MA_ADD12
MEM_MA_ADD11
MEM_MA_ADD10
MEM_MA_ADD9
MEM_MA_ADD8
MEM_MA_ADD7
MEM_MA_ADD6
MEM_MA_ADD5
MEM_MA_ADD4
MEM_MA_ADD3
MEM_MA_ADD2
MEM_MA_ADD1
MEM_MA_ADD0
MEM_MA_ADD[17..0]
MEM_MA_ADD[17..0] 10
DDR0_CKE[3]/NC DC23
DDR0_CKE[2]/NC DE23
DDR0_CKE[1]/NC CU21
DDR0_CKE[0]/NC CT22
MEM_MA_CKE3
MEM_MA_CKE2
MEM_MA_CKE1
MEM_MA_CKE0
MEM_MA_CKE3 10
MEM_MA_CKE2 10
MEM_MA_CKE1 10
MEM_MA_CKE0 10
DDR0_ODT[3]/NC DE33
DDR0_ODT[2]/NC DB32
DDR0_ODT[1]/NC CW33
DDR0_ODT[0]/NC CU31
MEM_MA_ODT3
MEM_MA_ODT2
MEM_MA_ODT1
MEM_MA_ODT0
MEM_MA_ODT3 10
MEM_MA_ODT2 10
MEM_MA_ODT1 10
MEM_MA_ODT0 10
DDR0_CS_N[7]/NC DF34
DDR0_CS_N[6]/NC DB34
DDR0_CS_N[5]/NC CT32
DDR0_CS_N[4]/NC DE31
DDR0_CS_N[3]/NC CT34
DDR0_CS_N[2]/NC CY34
DDR0_CS_N[1]/NC CY32
DDR0_CS_N[0]/NC CY30
MEM_MA_CS_L7
MEM_MA_CS_L6
MEM_MA_CS_L5
MEM_MA_CS_L4
MEM_MA_CS_L3
MEM_MA_CS_L2
MEM_MA_CS_L1
MEM_MA_CS_L0
MEM_MA_CS_L7 10
MEM_MA_CS_L6 10
MEM_MA_CS_L5 10
MEM_MA_CS_L4 10
MEM_MA_CS_L3 10
MEM_MA_CS_L2 10
MEM_MA_CS_L1 10
MEM_MA_CS_L0 10
DDR0_CID[2]/NC DC33
MEM_MA_C2
MEM_MA_C2 10
DDR0_ACT_N/NC CU23
DDR0_ALERT_N/NC CW23
DDR0_PAR/NC DE29
MEM_MA_ACT_N
MEM_MA_ALERT_N
MEM_MA_PAR
MEM_MA_ACT_N 10
MEM_MA_ALERT_N 10
MEM_MA_PAR 10
DDR0_CAVREF/NC CD20
VREF_CPU_DDR0
10 MEM_MA_CLK_H3
10 MEM_MA_CLK_L3
10 MEM_MA_CLK_H2
10 MEM_MA_CLK_L2
10 MEM_MA_CLK_H1
10 MEM_MA_CLK_L1
10 MEM_MA_CLK_H0
10 MEM_MA_CLK_L0
MEM_MA_CLK_H3 DF26
MEM_MA_CLK_L3 DE27
MEM_MA_CLK_H2 DB28
MEM_MA_CLK_L2 CY28
MEM_MA_CLK_H1 CP24
MEM_MA_CLK_L1 CN25
MEM_MA_CLK_H0 CW27
MEM_MA_CLK_L0 CU27
10 MEM_MA_BG_1
10 MEM_MA_BG_0
10 MEM_MA_BA_1
10 MEM_MA_BA_0
MEM_MA_BG_1 DB24
MEM_MA_BG_0 CT24
MEM_MA_BA_1 DC29
MEM_MA_BA_0 CU29
ZIF-SOCKET2066-HF
MEM_MB_DATA[63..0]
MEM_MB_DATA[63..0] 11
CPU1C
SKYLAKE-X
DDR1_DQ[63]/NC CE49
DDR1_DQ[62]/NC CF50
DDR1_DQ[61]/NC CL49
DDR1_DQ[60]/NC CM50
DDR1_DQ[59]/NC CF48
DDR1_DQ[58]/NC CH48
DDR1_DQ[57]/NC CJ51
DDR1_DQ[56]/NC CL51
DDR1_DQ[55]/NC CK46
DDR1_DQ[54]/NC CL45
DDR1_DQ[53]/NC CG43
DDR1_DQ[52]/NC CH42
DDR1_DQ[51]/NC CG45
DDR1_DQ[50]/NC CH46
DDR1_DQ[49]/NC CL43
DDR1_DQ[48]/NC CK42
DDR1_DQ[47]/NC CU43
DDR1_DQ[46]/NC CV42
DDR1_DQ[45]/NC CP40
DDR1_DQ[44]/NC CR39
DDR1_DQ[43]/NC CR43
DDR1_DQ[42]/NC CP42
DDR1_DQ[41]/NC CV40
DDR1_DQ[40]/NC CU39
DDR1_DQ[39]/NC CK40
DDR1_DQ[38]/NC CL39
DDR1_DQ[37]/NC CG37
DDR1_DQ[36]/NC CH36
DDR1_DQ[35]/NC CH40
DDR1_DQ[34]/NC CG39
DDR1_DQ[33]/NC CL37
DDR1_DQ[32]/NC CK36
DDR1_DQ[31]/NC CD16
DDR1_DQ[30]/NC CE15
DDR1_DQ[29]/NC CA13
DDR1_DQ[28]/NC CB12
DDR1_DQ[27]/NC CB16
DDR1_DQ[26]/NC CA15
DDR1_DQ[25]/NC CE13
DDR1_DQ[24]/NC CD12
DDR1_DQ[23]/NC CT14
DDR1_DQ[22]/NC CR13
DDR1_DQ[21]/NC CK14
DDR1_DQ[20]/NC CJ13
DDR1_DQ[19]/NC CR15
DDR1_DQ[18]/NC CN15
DDR1_DQ[17]/NC CM12
DDR1_DQ[16]/NC CK12
DDR1_DQ[15]/NC CP10
DDR1_DQ[14]/NC CR9
DDR1_DQ[13]/NC CL7
DDR1_DQ[12]/NC CJ7
DDR1_DQ[11]/NC CM10
DDR1_DQ[10]/NC CL9
DDR1_DQ[9]/NC CU7
DDR1_DQ[8]/NC CR7
DDR1_DQ[7]/NC CG9
DDR1_DQ[6]/NC CF8
DDR1_DQ[5]/NC BY8
DDR1_DQ[4]/NC CA9
DDR1_DQ[3]/NC CF10
DDR1_DQ[2]/NC CD10
DDR1_DQ[1]/NC CC7
DDR1_DQ[0]/NC CA7
DDR1_ECC[7]/NC CP20
DDR1_ECC[6]/NC CR19
DDR1_ECC[5]/NC CL17
DDR1_ECC[4]/NC CJ17
DDR1_ECC[3]/NC CM20
DDR1_ECC[2]/NC CL19
DDR1_ECC[1]/NC CU17
DDR1_ECC[0]/NC CR17
DDR1_CLK_DP[3]/NC CL27
DDR1_CLK_DN[3]/NC CH26
DDR1_CLK_DP[2]/NC CG27
DDR1_CLK_DN[2]/NC CH30
DDR1_CLK_DP[1]/NC CG31
DDR1_CLK_DN[1]/NC CH28
DDR1_CLK_DP[0]/NC CG29
DDR1_CLK_DN[0]/NC
DDR1_BG[1]/NC
DDR1_BG[0]/NC
DDR1_BA[1]/NC CK28
DDR1_BA[0]/NC CL29
DDR1_DQS_DP[17]/NC CP18
DDR1_DQS_DN[17]/NC CT18
DDR1_DQS_DP[16]/NC CJ49
DDR1_DQS_DN[16]/NC CK48
DDR1_DQS_DP[15]/NC CK44
DDR1_DQS_DN[15]/NC CM44
DDR1_DQS_DP[14]/NC CU41
DDR1_DQS_DN[14]/NC CW41
DDR1_DQS_DP[13]/NC CK38
DDR1_DQS_DN[13]/NC CM38
DDR1_DQS_DP[12]/NC CD14
DDR1_DQS_DN[12]/NC CF14
DDR1_DQS_DP[11]/NC CM14
DDR1_DQS_DN[11]/NC CL15
DDR1_DQS_DP[10]/NC CM8
DDR1_DQS_DN[10]/NC CK8
DDR1_DQS_DP[9]/NC CD8
DDR1_DQS_DN[9]/NC CE7
DDR1_DQS_DP[8]/NC CM18
DDR1_DQS_DN[8]/NC CK18
DDR1_DQS_DP[7]/NC CH50
DDR1_DQS_DN[7]/NC CG51
DDR1_DQS_DP[6]/NC CH44
DDR1_DQS_DN[6]/NC CF44
DDR1_DQS_DP[5]/NC CR41
DDR1_DQS_DN[5]/NC CN41
DDR1_DQS_DP[4]/NC CF38
DDR1_DQS_DN[4]/NC CH38
DDR1_DQS_DP[3]/NC BY14
DDR1_DQS_DN[3]/NC CB14
DDR1_DQS_DP[2]/NC CN13
DDR1_DQS_DN[2]/NC CP12
DDR1_DQS_DP[1]/NC CP8
DDR1_DQS_DN[1]/NC CT8
DDR1_DQS_DP[0]/NC CB10
DDR1_DQS_DN[0]/NC CC9
MEM_MB_DQS_H7
MEM_MB_DQS_L7
MEM_MB_DQS_H6
MEM_MB_DQS_L6
MEM_MB_DQS_H5
MEM_MB_DQS_L5
MEM_MB_DQS_H4
MEM_MB_DQS_L4
MEM_MB_DQS_H3
MEM_MB_DQS_L3
MEM_MB_DQS_H2
MEM_MB_DQS_L2
MEM_MB_DQS_H1
MEM_MB_DQS_L1
MEM_MB_DQS_H0
MEM_MB_DQS_L0
MEM_MB_DQS_H7 11
MEM_MB_DQS_L7 11
MEM_MB_DQS_H6 11
MEM_MB_DQS_L6 11
MEM_MB_DQS_H5 11
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MEM_MB_DQS_L4 11
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MEM_MB_DQS_L3 11
MEM_MB_DQS_H2 11
MEM_MB_DQS_L2 11
MEM_MB_DQS_H1 11
MEM_MB_DQS_L1 11
MEM_MB_DQS_H0 11
MEM_MB_DQS_L0 11
DDR1_MA[17]/NC CD32
DDR1_MA[16]/NC CN29
DDR1_MA[15]/NC CL31
DDR1_MA[14]/NC CP30
DDR1_MA[13]/NC CP32
DDR1_MA[12]/NC CP26
DDR1_MA[11]/NC CL25
DDR1_MA[10]/NC CD30
DDR1_MA[9]/NC CN23
DDR1_MA[8]/NC CL23
DDR1_MA[7]/NC CD26
DDR1_MA[6]/NC CK24
DDR1_MA[5]/NC CE27
DDR1_MA[4]/NC CH24
DDR1_MA[3]/NC CD28
DDR1_MA[2]/NC CE29
DDR1_MA[1]/NC CG25
DDR1_MA[0]/NC CP28
MEM_MB_ADD17
MEM_MB_ADD16
MEM_MB_ADD15
MEM_MB_ADD14
MEM_MB_ADD13
MEM_MB_ADD12
MEM_MB_ADD11
MEM_MB_ADD10
MEM_MB_ADD9
MEM_MB_ADD8
MEM_MB_ADD7
MEM_MB_ADD6
MEM_MB_ADD5
MEM_MB_ADD4
MEM_MB_ADD3
MEM_MB_ADD2
MEM_MB_ADD1
MEM_MB_ADD0
MEM_MB_ADD[17..0]
MEM_MB_ADD[17..0] 11
DDR1_CKE[3]/NC CF21
DDR1_CKE[2]/NC CJ21
DDR1_CKE[1]/NC CG23
DDR1_CKE[0]/NC CF23
MEM_MB_CKE3
MEM_MB_CKE2
MEM_MB_CKE1
MEM_MB_CKE0
MEM_MB_CKE3 11
MEM_MB_CKE2 11
MEM_MB_CKE1 11
MEM_MB_CKE0 11
DDR1_ODT[3]/NC CL33
DDR1_ODT[2]/NC CN31
DDR1_ODT[1]/NC CH34
DDR1_ODT[0]/NC CH32
MEM_MB_ODT3
MEM_MB_ODT2
MEM_MB_ODT1
MEM_MB_ODT0
MEM_MB_ODT3 11
MEM_MB_ODT2 11
MEM_MB_ODT1 11
MEM_MB_ODT0 11
DDR1_CS_N[7]/NC CP34
DDR1_CS_N[6]/NC CN33
DDR1_CS_N[5]/NC CK32
DDR1_CS_N[4]/NC CK30
DDR1_CS_N[3]/NC CE33
DDR1_CS_N[2]/NC CD34
DDR1_CS_N[1]/NC CG33
DDR1_CS_N[0]/NC CE31
MEM_MB_CS_L7
MEM_MB_CS_L6
MEM_MB_CS_L5
MEM_MB_CS_L4
MEM_MB_CS_L3
MEM_MB_CS_L2
MEM_MB_CS_L1
MEM_MB_CS_L0
MEM_MB_CS_L7 11
MEM_MB_CS_L6 11
MEM_MB_CS_L5 11
MEM_MB_CS_L4 11
MEM_MB_CS_L3 11
MEM_MB_CS_L2 11
MEM_MB_CS_L1 11
MEM_MB_CS_L0 11
DDR1_CID[2]/NC CK34
MEM_MB_C2
MEM_MB_C2 11
DDR1_ACT_N/NC CH22
DDR1_ALERT_N/NC CK22
DDR1_PAR/NC CN27
MEM_MB_ACT_N
MEM_MB_ALERT_N
MEM_MB_PAR
MEM_MB_ACT_N 11
MEM_MB_ALERT_N 11
MEM_MB_PAR 11
DDR1_CAVREF/NC CH20
VREF_CPU_DDR1
11 MEM_MB_CLK_H3
11 MEM_MB_CLK_L3
11 MEM_MB_CLK_H2
11 MEM_MB_CLK_L2
11 MEM_MB_CLK_H1
11 MEM_MB_CLK_L1
11 MEM_MB_CLK_H0
11 MEM_MB_CLK_L0
MEM_MB_CLK_H3 CK26
MEM_MB_CLK_L3 CL27
MEM_MB_CLK_H2 CH26
MEM_MB_CLK_L2 CG27
MEM_MB_CLK_H1 CH30
MEM_MB_CLK_L1 CG31
MEM_MB_CLK_H0 CH28
MEM_MB_CLK_L0 CG29
11 MEM_MB_BG_1
11 MEM_MB_BG_0
11 MEM_MB_BA_1
11 MEM_MB_BA_0
MEM_MB_BG_1 CE25
MEM_MB_BG_0 CD24
MEM_MB_BA_1 CK28
MEM_MB_BA_0 CL29
ZIF-SOCKET2066-HF
MICRO-STAR INT'L CO.,LTD
MA-7A94...
Size Custom
Document Description CPU-Memory-1
Rev 2.0
Date: Tuesday, November 19, 2019
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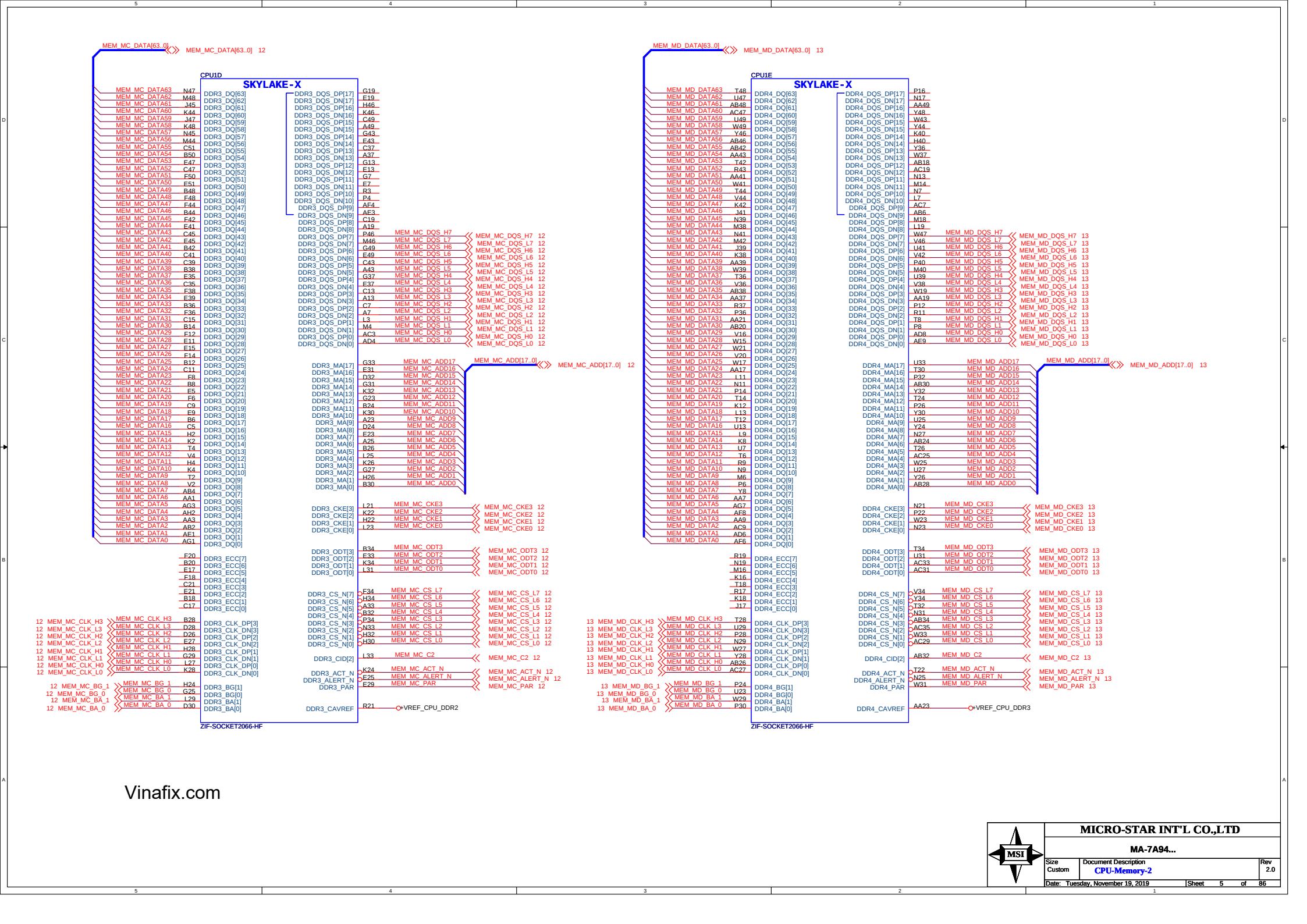
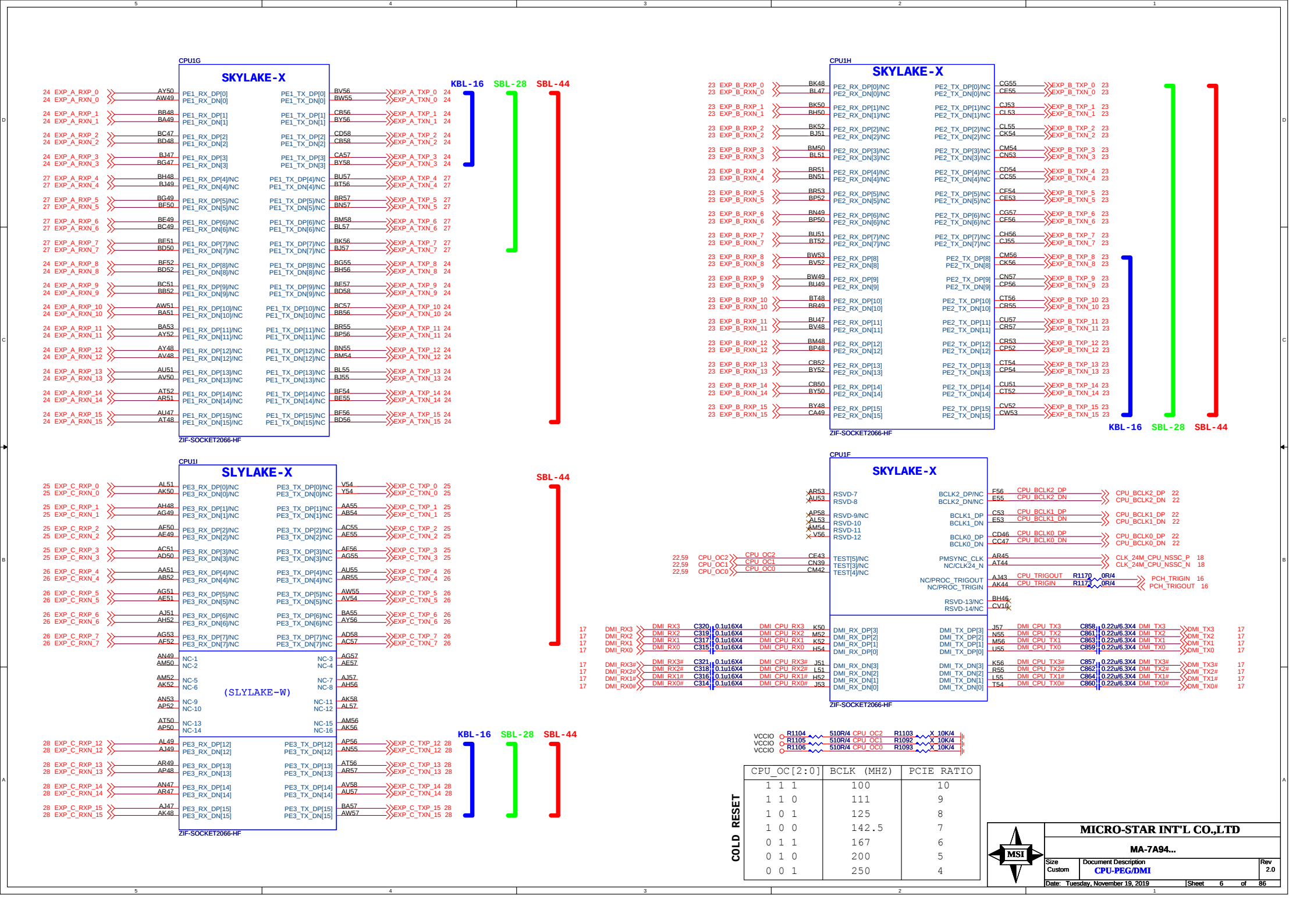

MEM_MC_DATA[63..0]
MEM_MC_DATA[63..0] 12
CPU1D
SKYLAKE-X
ZIF-SOCKET2066-HF
MEM_MD_DATA[63..0]
MEM_MD_DATA[63..0] 13
CPU1E
SKYLAKE-X
ZIF-SOCKET2066-HF
MEM_MC_ADD[17..0]
MEM_MC_ADD[17..0] 12
MEM_MD_ADD[17..0]
MEM_MD_ADD[17..0] 13
VREF_CPU_DDR2
VREF_CPU_DDR3
Vinafix.com
MICRO-STAR INT'L CO.,LTD
MA-7A94...
Size
Custom
Document Description
CPU-Memory-2
Rev
2.0
Date: Tuesday, November 19, 2019
Sheet 5 of 86


CPU1G
SKYLAKE-X
ZIF-SOCKET2066-HF
KBL-16
SBL-28
SBL-44
CPU1H
SKYLAKE-X
ZIF-SOCKET2066-HF
CPU1I
SLYLAKE-X
(SLYLAKE-W)
ZIF-SOCKET2066-HF
CPU1F
SKYLAKE-X
ZIF-SOCKET2066-HF
COLD RESET
CPU_OC[2:0] | BCLK (MHZ) | PCIE RATIO
1 1 1 | 100 | 10
1 1 0 | 111 | 9
1 0 1 | 125 | 8
1 0 0 | 142.5 | 7
0 1 1 | 167 | 6
0 1 0 | 200 | 5
0 0 1 | 250 | 4
MICRO-STAR INT'L CO.,LTD
MA-7A94...
Size Custom
Document Description CPU-PEG/DMI
Rev 2.0
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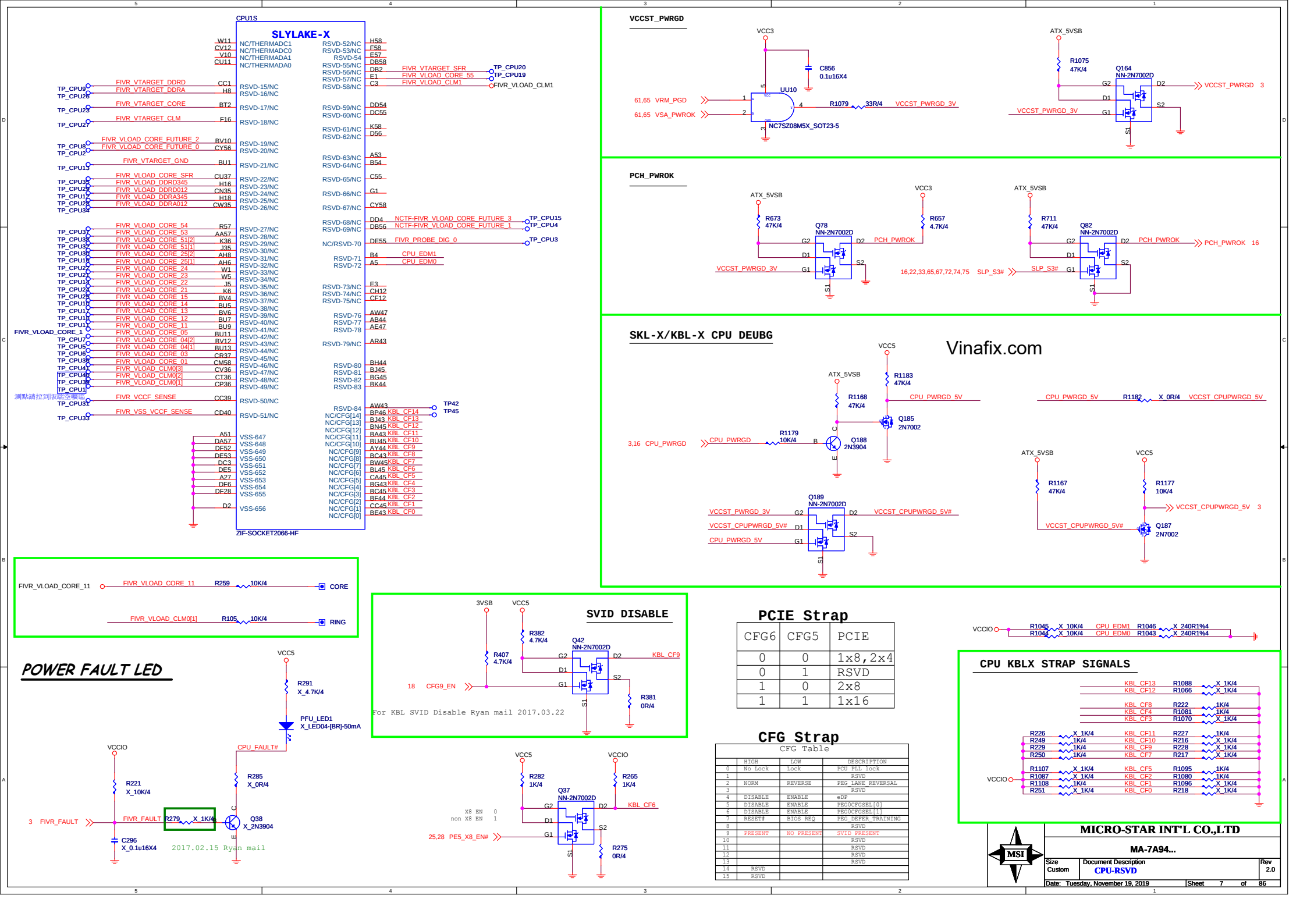
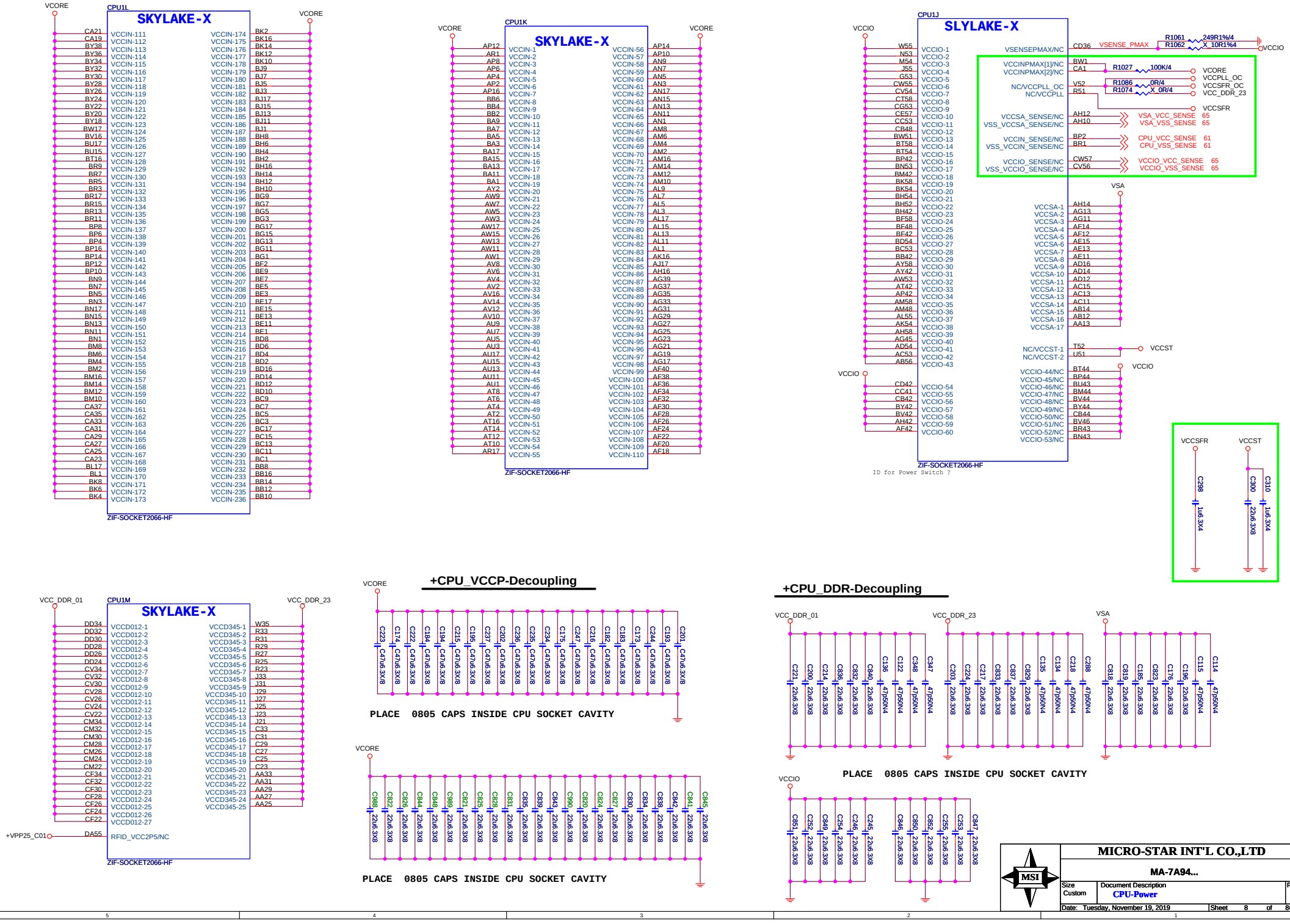


CFG6	CFG5	PCIE
0	0	1x8,2x4
0	1	RSVD
1	0	2x8
1	1	1x16

CFG Table

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


CPU1L
SKYLAKE-X
ZIF-SOCKET2066-HF
CPU1K
SKYLAKE-X
ZIF-SOCKET2066-HF
CPU1J
SLYLAKE-X
ZIF-SOCKET2066-HF
ID for Power Switch ?
CPU1M
SKYLAKE-X
ZIF-SOCKET2066-HF
+CPU_VCCP-Decoupling
PLACE 0805 CAPS INSIDE CPU SOCKET CAVITY
+CPU_DDR-Decoupling
PLACE 0805 CAPS INSIDE CPU SOCKET CAVITY
PLACE 0805 CAPS INSIDE CPU SOCKET CAVITY
MICRO-STAR INT'L CO.,LTD
MA-7A94...
CPU-Power
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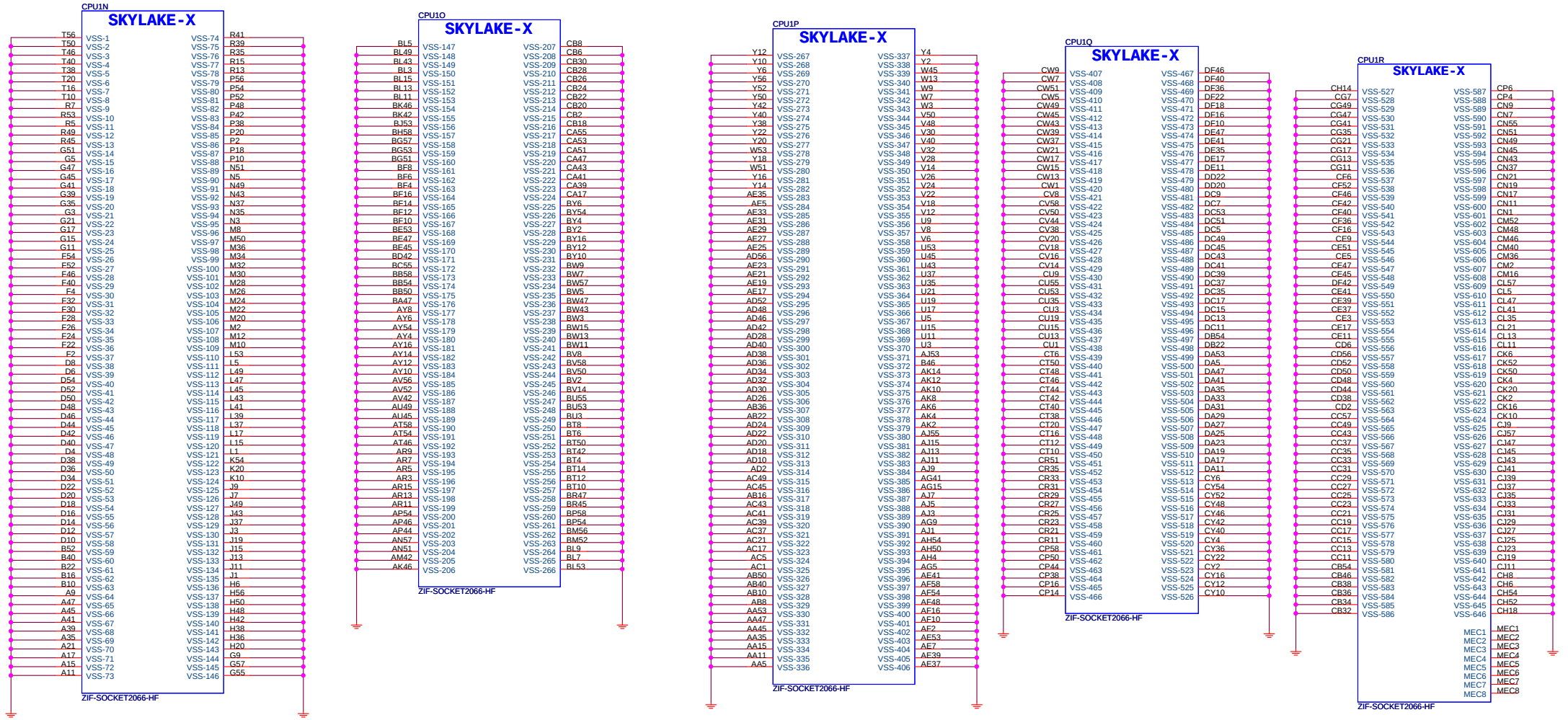

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MA-7A94...		
Size: Custom	Document Description: CPU-GND	Rev: 2.0
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DDR IV DIMM1/2

2017.02.13 Ryan mail
DQS9~17P PU to VCC_DDR

DIMMA1

DIMM1(CHANNEL-A0)
ADDRESS = 0:0:0 [SA2:SA1:SA0]
DIMM1 CH0 ADDRESS HEX:0

DIMMA2

DIMM2(CHANNEL-A1)
ADDRESS = 0:0:1 [SA2:SA1:SA0]
DIMM1 CH0 ADDRESS HEX:2

DDRIV-288P_BLACK-RH-33

U42 PCA9617ADPJ_TSSOP8-RH

F7 F-SPR-P260T-2.6A

MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size	Document Description	Rev
Custom	DDR IV DIMM1/2	2.0

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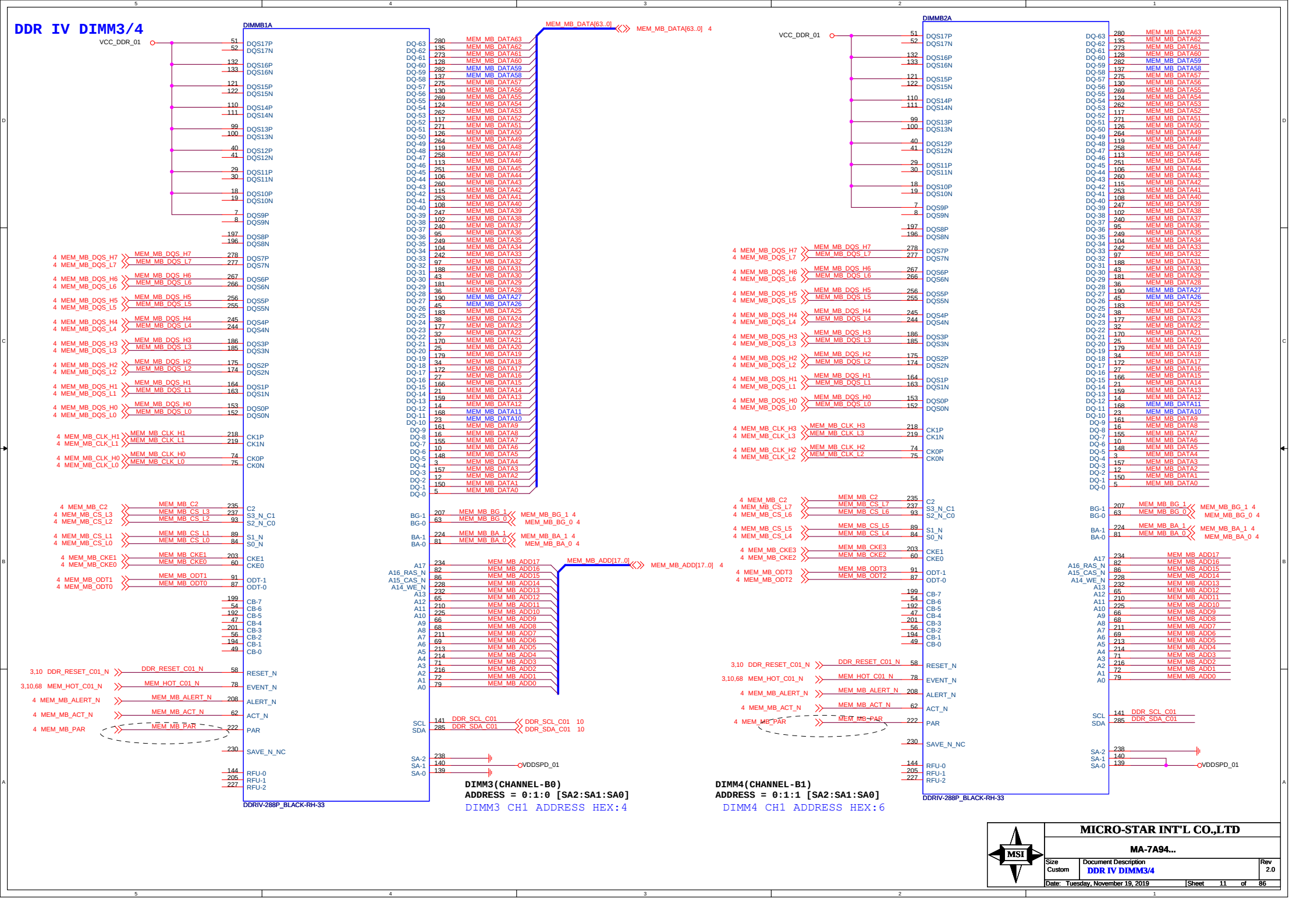
DDR IV DIMM3/4



MICRO-STAR INT'L CO.,LTD	
MA-7A94...	
Size: Custom	Document Description: DDR IV DIMM3/4
Rev: 2.0	
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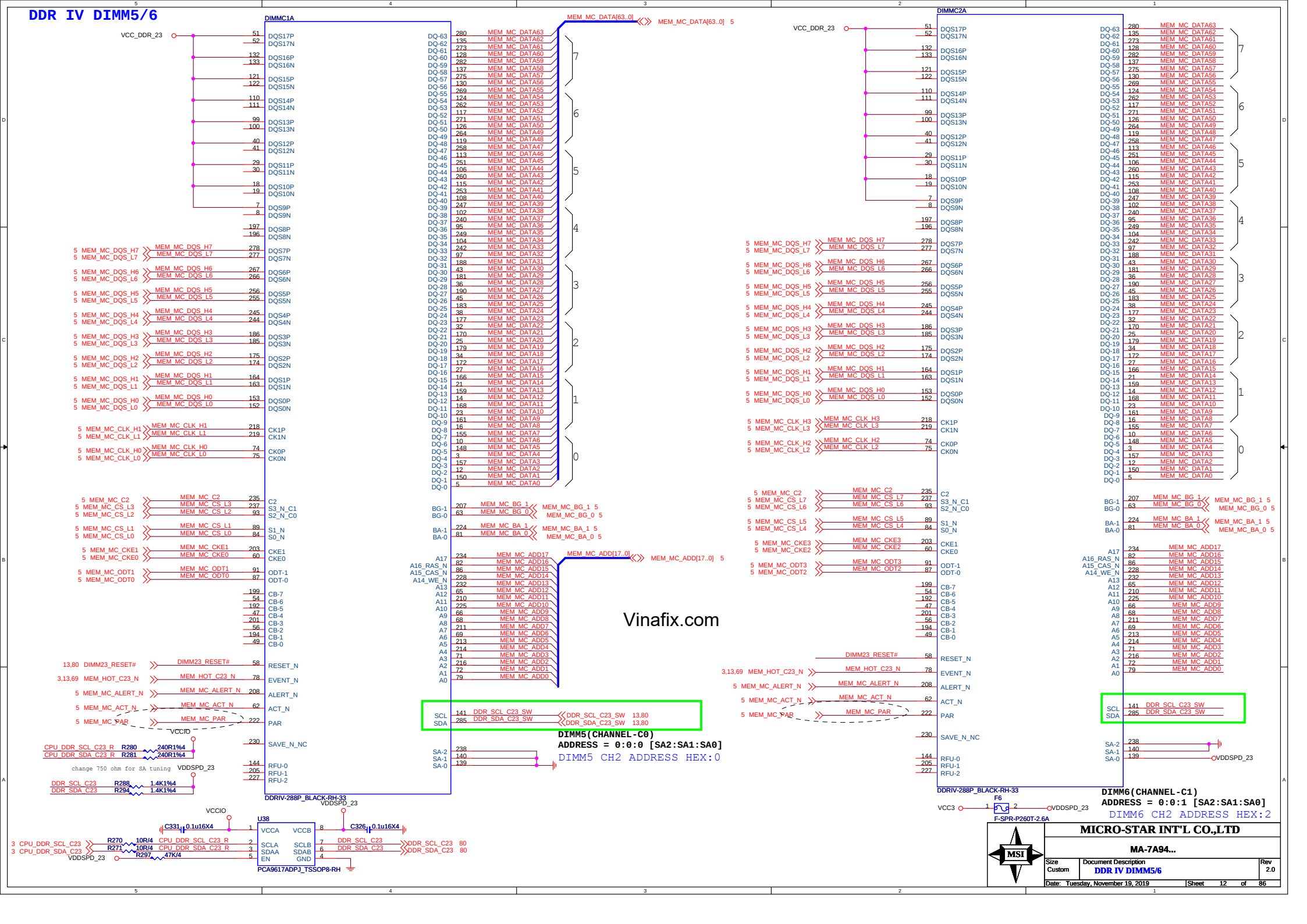
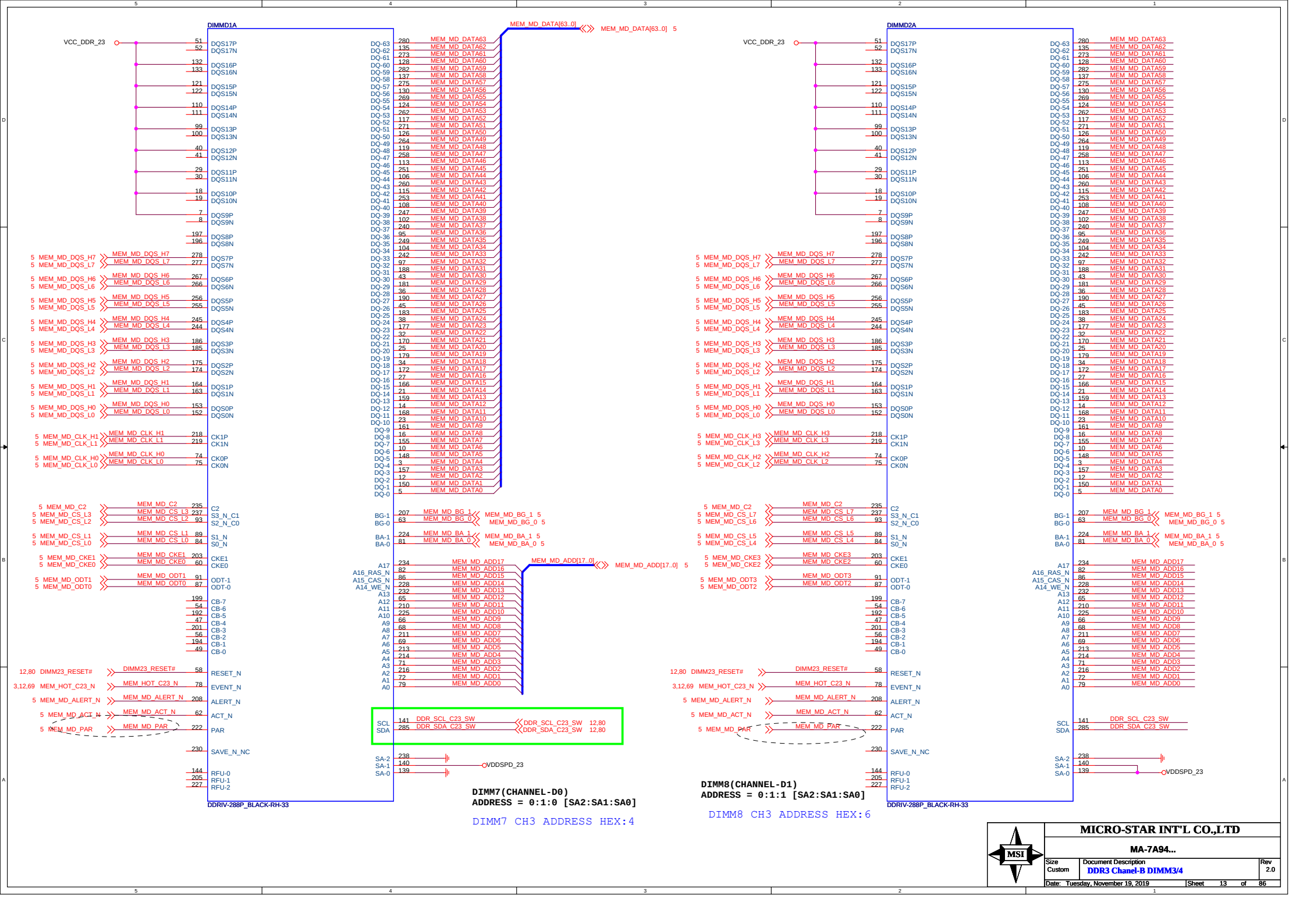
DDR IV DIMM5/6





MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size	Document Description	Rev
Custom	DDR3 Chanel-B DIMM3/4	2.0

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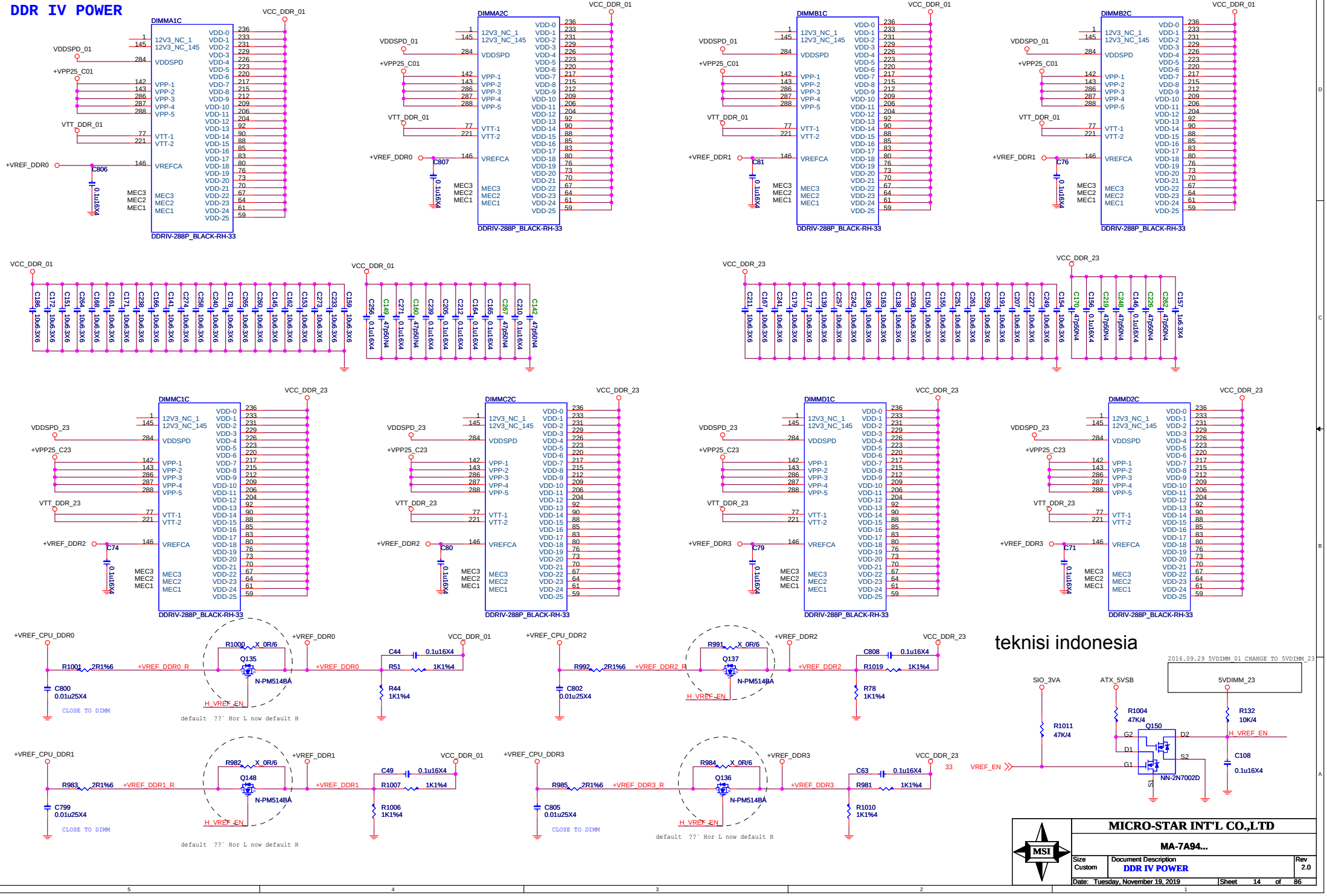
DDR IV POWER



MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size	Document Description	Rev
Custom	DDR IV POWER	2.0

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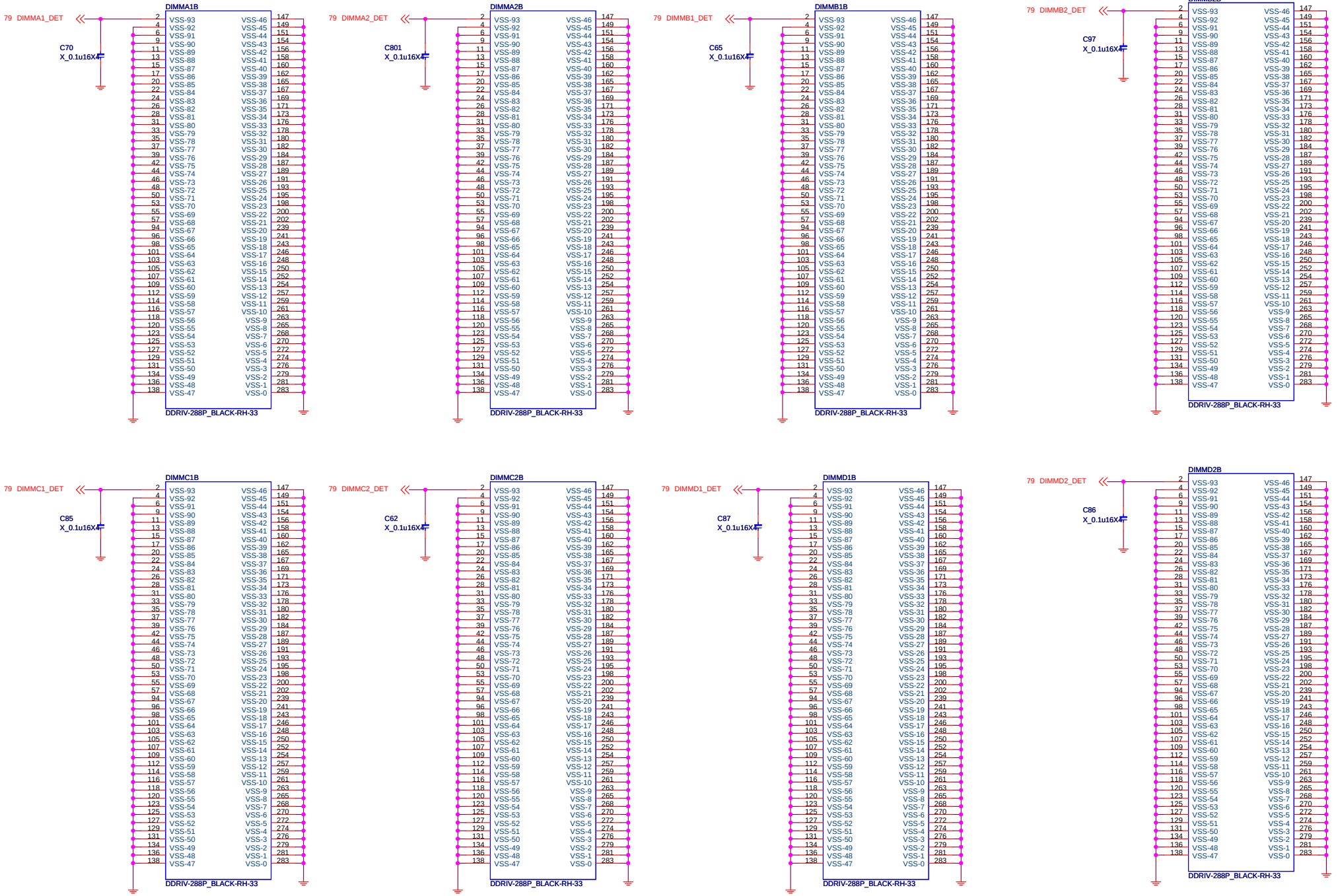
DDR IV GND



MICRO-STAR INT'L CO.,LTD	
MA-7A94...	
Size: Custom	Document Description: DDR IV GND
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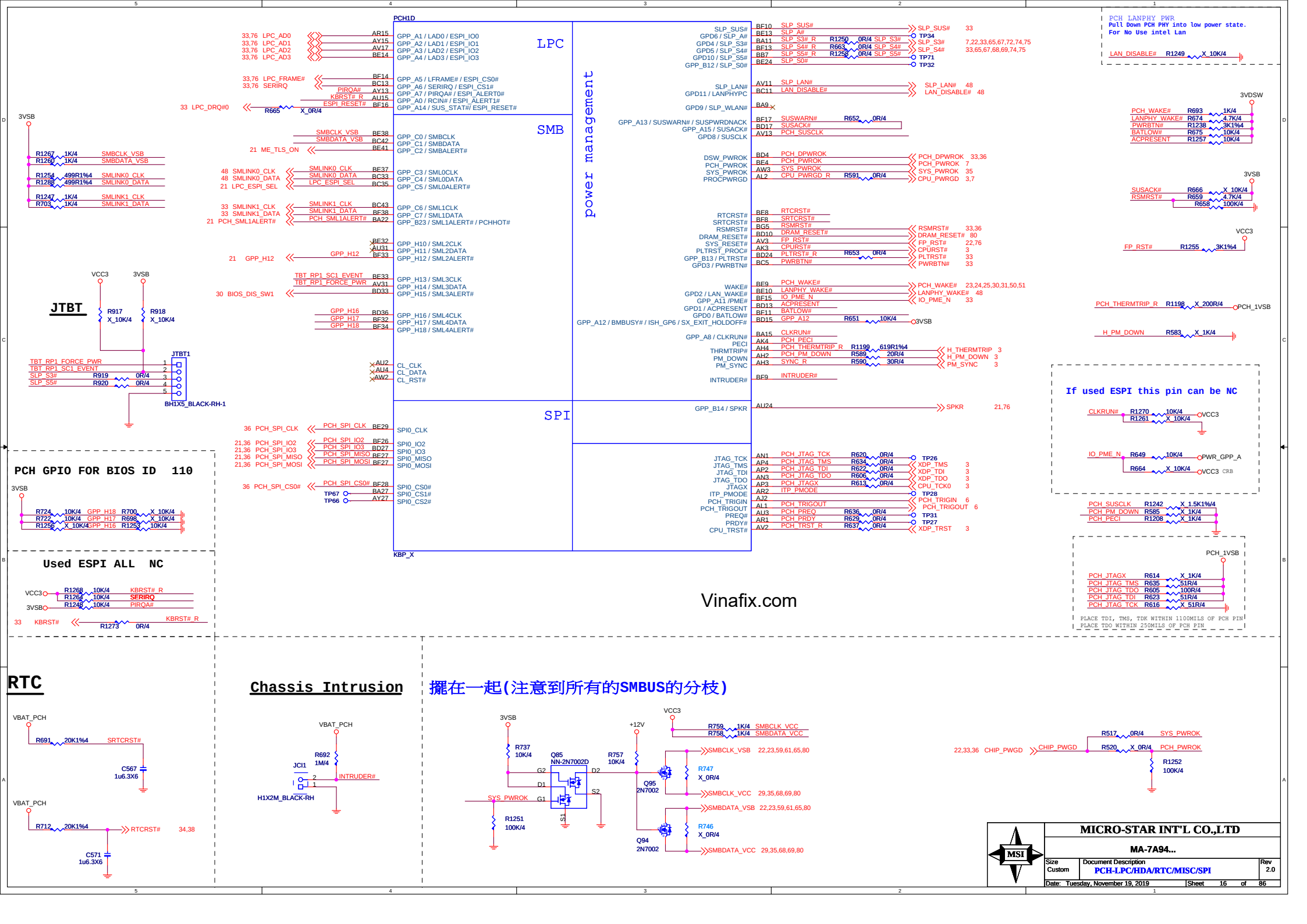
PCH1D
LPC
SMB
SPI
power management
GPP_A1 / LAD0 / ESPI_IO0
GPP_A2 / LAD1 / ESPI_IO1
GPP_A3 / LAD2 / ESPI_IO2
GPP_A4 / LAD3 / ESPI_IO3
GPP_A5 / LFRAME# / ESPI_CS0#
GPP_A6 / SERIRQ / ESPI_CS1#
GPP_A7 / PIRQA# / ESPI_ALERT0#
GPP_A0 / RCIN# / ESPI_ALERT1#
GPP_A14 / SUS_STAT#/ ESPI_RESET#
GPP_C0 / SMBCLK
GPP_C1 / SMBDATA
GPP_C2 / SMBALERT#
GPP_C3 / SML0CLK
GPP_C4 / SML0DATA
GPP_C5 / SML0ALERT#
GPP_C6 / SML1CLK
GPP_C7 / SML1DATA
GPP_B23 / SML1ALERT# / PCHHOT#
GPP_H10 / SML2CLK
GPP_H11 / SML2DATA
GPP_H12 / SML2ALERT#
GPP_H13 / SML3CLK
GPP_H14 / SML3DATA
GPP_H15 / SML3ALERT#
GPP_H16 / SML4CLK
GPP_H17 / SML4DATA
GPP_H18 / SML4ALERT#
SPI0_CLK
SPI0_IO2
SPI0_IO3
SPI0_MISO
SPI0_MOSI
SPI0_CS0#
SPI0_CS1#
SPI0_CS2#
KBP_X
SLP_SUS#
SLP_A#
SLP_S3# R
SLP_S4# R
SLP_S5# R
SLP_S0#
SLP_LAN#
LAN_DISABLE#
GPD9 / SLP_WLAN#
SUSWARN#
SUSACK#
PCH_SUSCLK
DSW_PWROK
PCH_PWROK
SYS_PWROK
CPU_PWRGD_R
PCH_DPWROK
RTCRST#
SRTCRST#
RSMRST#
DRAM_RESET#
FP_RST#
CPURST#
PLTRST# R
PWRBTN#
WAKE#
LANPHY_WAKE#
IO_PME_N
ACPRESENT
BATLOW#
GPP_A12 / BMBUSY# / ISH_GP6 / SX_EXIT_HOLDOFF#
CLKRUN#
PCH_PECI
PCH_THERMTRIP_R
H_PM_DOWN
SYNC_R
INTRUDER#
GPP_B14 / SPKR
JTAG_TCK
JTAG_TMS
JTAG_TDI
JTAG_TDO
JTAGX
ITP_PMODE
PCH_TRIGIN
PCH_TRIGOUT
PREQ#
PRDY#
CPU_TRST#
PCH_JTAG_TCK
PCH_JTAG_TMS
PCH_JTAG_TDI
PCH_JTAG_TDO
PCH_JTAGX
PCH_TRST_R
PCH_PREQ
PCH_PRDY
PCH_LANPHY_PWR
Pull Down PCH PHY into low power state.
For No Use intel Lan
If used ESPI this pin can be NC
JTBT
JTBT1
BH1X5_BLACK-RH-1
PCH GPIO FOR BIOS ID 110
Used ESPI ALL NC
RTC
Chassis Intrusion
H1X2M_BLACK-RH
擺在一起(注意到所有的SMBUS的分枝)
Q85 NN-2N7002D
Q95 2N7002
Q94 2N7002
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MICRO-STAR INT'L CO.,LTD
MA-7A94...
PCH-LPC/HDA/RTC/MISC/SPI
Rev 2.0
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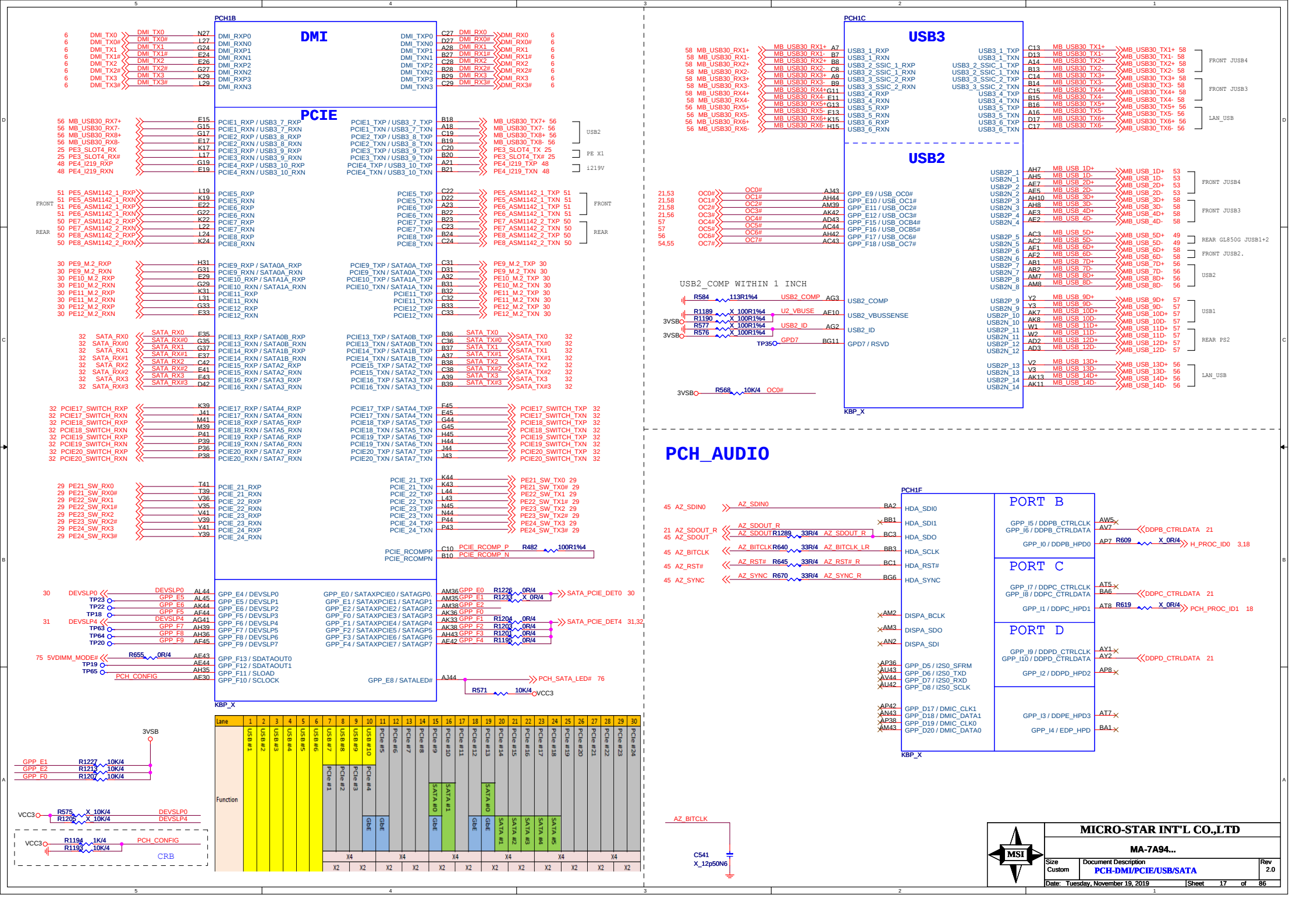
PCH1B
DMI
PCIE
KBP_X
PCH1C
USB3
USB2
KBP_X
USB2_COMP WITHIN 1 INCH
PCH_AUDIO
PCH1F
PORT B
PORT C
PORT D
KBP_X
Lane
Function
CRB
MICRO-STAR INT'L CO.,LTD
MA-7A94...
PCH-DMI/PCIE/USB/SATA
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PCH_CLK

Used ESPI(GPPA) GPIO Group A will be come 1.8V leve)

2017.03.24 Ryan mail

PCH1E

LPC
RTC
24MHz

XCLK_BIASREF < 500 mil

PCH1A

GPIO

2017.02.22 Rex mail change

2017.02.21 For GL850G

W/ SMI/NMI Funtion
GPP_B[23,20,14]
GPP_C[23:22]
GPP_D[4:0]
GPP_E[8:0]

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Close to PCH

會受到 轉態
而讓其它需靠此信號辨識之功能 誤判
故 接到 需做隔離線路

GPI GPP_D21
HIGH : A0,A1 Version FOR ASM2142
LOW : Furture Version FOR ASM2142

BOM ID

For BIOS BOM USE

	GPP_G21	GPP_G22	GPP_G23
RAIDER	0	0	0
S01	0	0	1

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MA-7A94...

Size: Custom | Document Description: PCH-CLK/GPIO | Rev: 2.0

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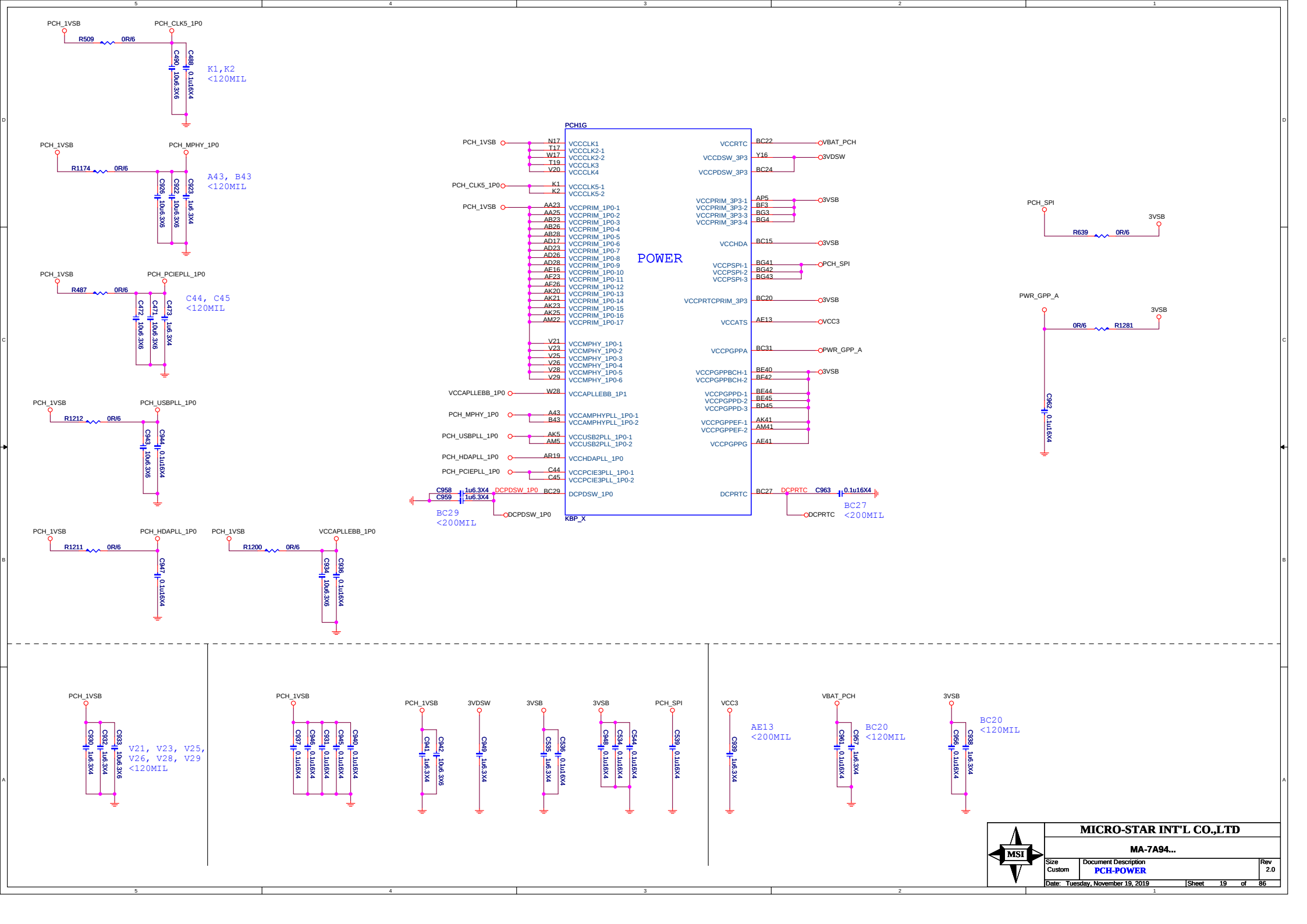
PCH_1VSB
PCH_CLK5_1P0
R509 0R/6
C490 10u6.3X6
C488 0.1u16X4
K1,K2
<120MIL
PCH_1VSB
PCH_MPHY_1P0
R1174 0R/6
C926 10u6.3X6
C922 10u6.3X6
C923 1u6.3X4
A43, B43
<120MIL
PCH_1VSB
PCH_PCIEPLL_1P0
R487 0R/6
C472 10u6.3X6
C471 10u6.3X6
C473 1u6.3X4
C44, C45
<120MIL
PCH_1VSB
PCH_USBPLL_1P0
R1212 0R/6
C943 10u6.3X6
C944 0.1u16X4
PCH_1VSB
PCH_HDAPLL_1P0
R1211 0R/6
C947 0.1u16X4
PCH_1VSB
VCCAPLLEBB_1P0
R1200 0R/6
C934 10u6.3X6
C936 0.1u16X4
PCH1G
POWER
KBP_X
PCH_1VSB
PCH_CLK5_1P0
PCH_1VSB
PCH_MPHY_1P0
VCCAPLLEBB_1P0
PCH_USBPLL_1P0
PCH_HDAPLL_1P0
PCH_PCIEPLL_1P0
N17 VCCCLK1
T17 VCCCLK2-1
W17 VCCCLK2-2
T19 VCCCLK3
V20 VCCCLK4
K1 VCCCLK5-1
K2 VCCCLK5-2
AA23 VCCPRIM_1P0-1
AA25 VCCPRIM_1P0-2
AB23 VCCPRIM_1P0-3
AB26 VCCPRIM_1P0-4
AB28 VCCPRIM_1P0-5
AD17 VCCPRIM_1P0-6
AD23 VCCPRIM_1P0-7
AD26 VCCPRIM_1P0-8
AD28 VCCPRIM_1P0-9
AE16 VCCPRIM_1P0-10
AE23 VCCPRIM_1P0-11
AE26 VCCPRIM_1P0-12
AK20 VCCPRIM_1P0-13
AK21 VCCPRIM_1P0-14
AK23 VCCPRIM_1P0-15
AK25 VCCPRIM_1P0-16
AM22 VCCPRIM_1P0-17
V21 VCCMPHY_1P0-1
V23 VCCMPHY_1P0-2
V25 VCCMPHY_1P0-3
V26 VCCMPHY_1P0-4
V28 VCCMPHY_1P0-5
V29 VCCMPHY_1P0-6
W28 VCCAPLLEBB_1P1
A43 VCCAMPHYPLL_1P0-1
B43 VCCAMPHYPLL_1P0-2
AK5 VCCUSB2PLL_1P0-1
AM5 VCCUSB2PLL_1P0-2
AR19 VCCHDAPLL_1P0
C44 VCCPCIE3PLL_1P0-1
C45 VCCPCIE3PLL_1P0-2
BC29 DCPDSW_1P0
VCCRTC BC22
VCCDSW_3P3 Y16
VCCPDSW_3P3 BC24
VCCPRIM_3P3-1 AP5
VCCPRIM_3P3-2 BF3
VCCPRIM_3P3-3 BG3
VCCPRIM_3P3-4 BG4
VCCHDA BC15
VCCPSPI-1 BG41
VCCPSPI-2 BG42
VCCPSPI-3 BG43
VCCPRTCPRIM_3P3 BC20
VCCATS AE13
VCCPGPPA BC31
VCCPGPPBCH-1 BE40
VCCPGPPBCH-2 BF42
VCCPGPPD-1 BE44
VCCPGPPD-2 BE45
VCCPGPPD-3 BD45
VCCPGPPEF-1 AK41
VCCPGPPEF-2 AM41
VCCPGPPG AE41
DCPRTC BC27
3VSB
VBAT_PCH
3VDSW
PCH_SPI
VCC3
C958 1u6.3X4
C959 1u6.3X4
DCPDSW_1P0
BC29
<200MIL
DCPRTC C963 0.1u16X4
BC27
<200MIL
PCH_SPI
3VSB
R639 0R/6
PWR_GPP_A
3VSB
0R/6 R1281
C962 0.1u16X4
PCH_1VSB
C930 1u6.3X4
C932 1u6.3X4
C933 10u6.3X6
V21, V23, V25,
V26, V28, V29
<120MIL
PCH_1VSB
C937 0.1u16X4
C946 0.1u16X4
C931 0.1u16X4
C945 0.1u16X4
C940 0.1u16X4
PCH_1VSB
C941 1u6.3X4
C942 10u6.3X6
3VDSW
C949 1u6.3X4
3VSB
C535 1u6.3X4
C536 0.1u16X4
3VSB
C948 0.1u16X4
C534 0.1u16X4
C544 0.1u16X4
PCH_SPI
C539 0.1u16X4
VCC3
C939 1u6.3X4
AE13
<200MIL
VBAT_PCH
C961 0.1u16X4
C957 1u6.3X4
BC20
<120MIL
3VSB
C956 0.1u16X4
C938 1u6.3X4
BC20
<120MIL
MICRO-STAR INT'L CO.,LTD
MA-7A94...
Size Custom
Document Description PCH-POWER
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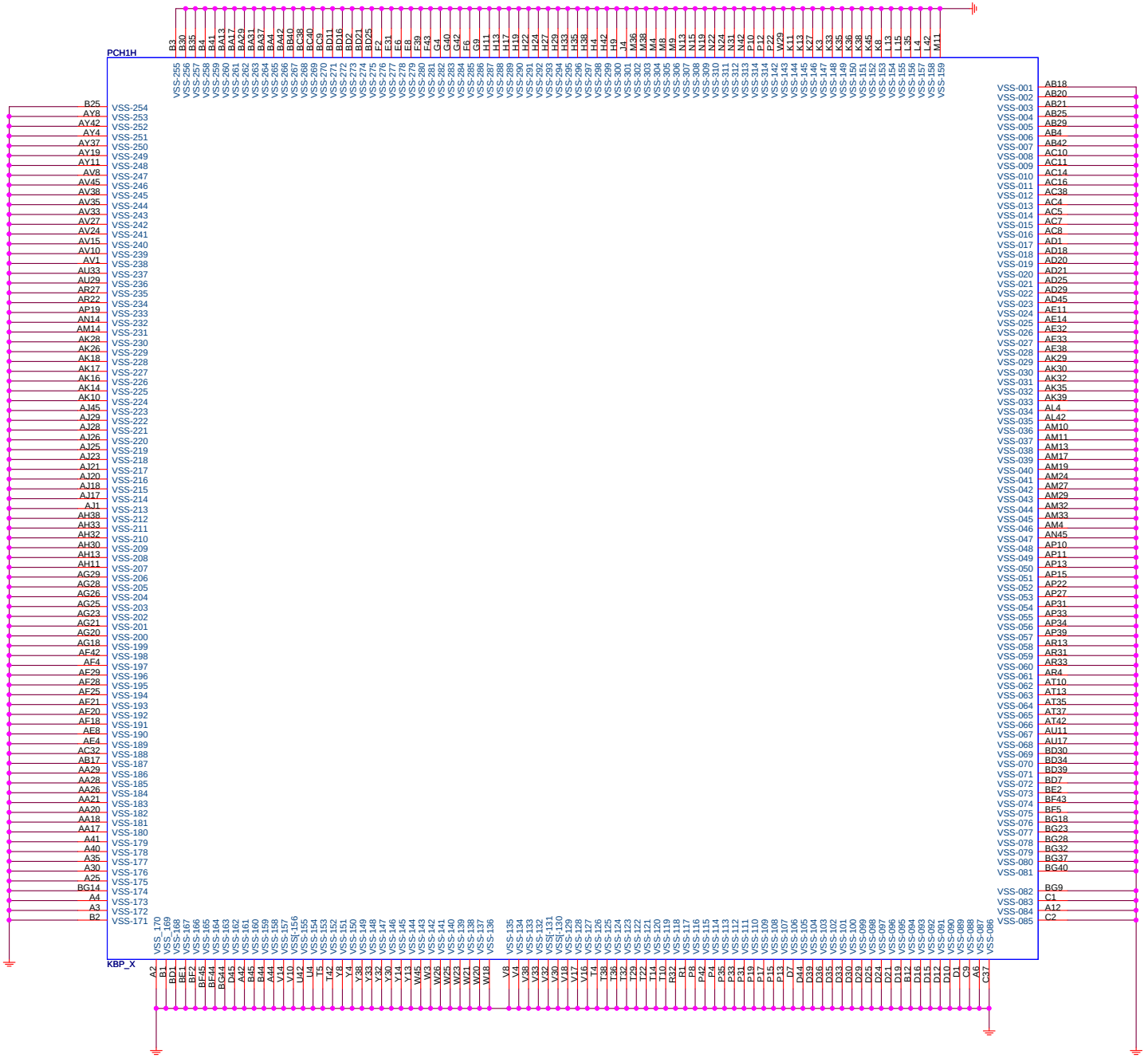

MSI	MICRO-STAR INT'L CO.,LTD	
	MA-7A94...	
Size: Custom	Document Description: PCH-GND	Rev: 2.0
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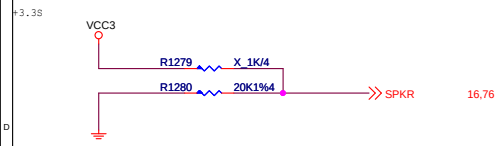
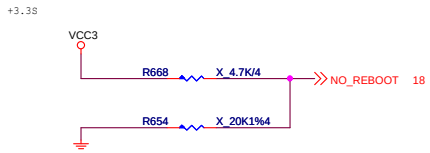
TOP SWAP OVERRIDE STRAP



HIGH: TOP_SWAP ENABLED
LOW : TOP_SWAP DISABLED

PCH HAS INTERNAL WEAK PD

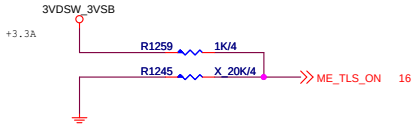
No Reboot OPTION



0 : NO-REBOOT (Default)
1 : REBOOT

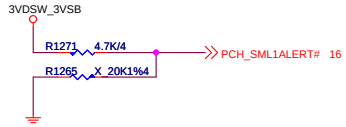
PCH HAS INTERNAL WEAK PD

AMT and SBA with confidentiality



0 : DISABLE
1 : ENABLE (Default)

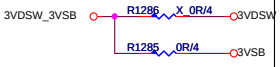
DCI ENABLE



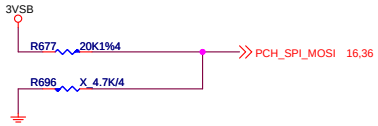
0 : DCI DISABLE
1 : DCI ENABLE (Default)

PCH HAS INTERNAL WEAK PD

CRB

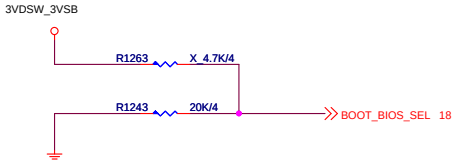


Booot-HALT SEL STRAP



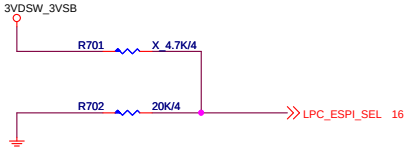
PCH HAS INTERNAL WEAK PU

Boot BIOS



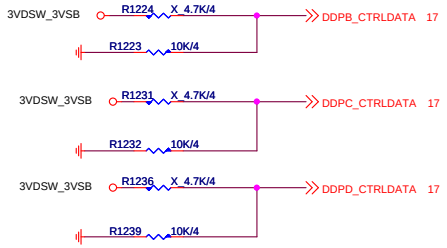
0 : SPI
1 : LPC

LPC eSPI Mode



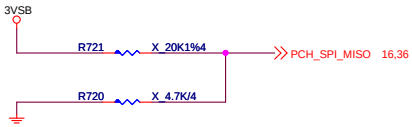
0 : LPC
1 : eSPI

DISPLAY PORT



0 : DISPLAY NOT DETECTED (Default)
1 : DISPLAY DETECTED

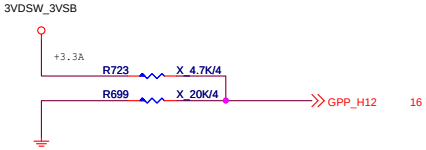
JTAG ODT SEL



HIGH: JTAG ODT ENABLED
LOW : JTAG ODT DISABLED

PCH HAS INTERNAL WEAK PU

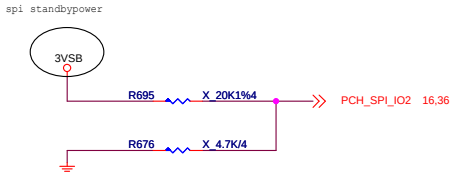
ESPI FLASH SHARING MODE



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

PCH HAS INTERNAL WEAK PD

CONSENT



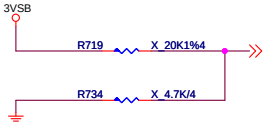
0 : CONSENT STRAP ENABLE
1 : CONSENT STRAP ENABLE

PCH HAS INTERNAL WEAK PU

DFX TEST MODE

UNSRTUFF: NORMAL
STUFF: TEST MODE

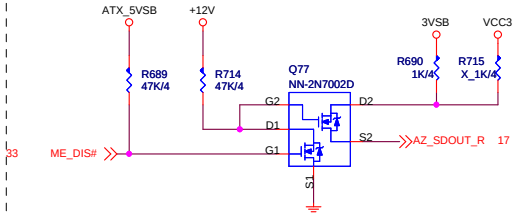
PERSONALITY



HIGH: PERSONALITY ENABLED
LOW : PERSONALITY DISABLED

PCH HAS INTERNAL WEAK PU

HDA_SDO

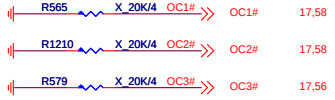


0 : SECURITY MEASURES OVERRIDEN
1 : SECURITY PER FLASH DESCRIPTOR

RING OSCILLATOR BYPASS (DFX)

0 : Ring Oscillator bypass
1 : Normal Mode

XTAL INPUT FREQUENCY [HVM MODE]



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Custom	PCH-Strap	2.0

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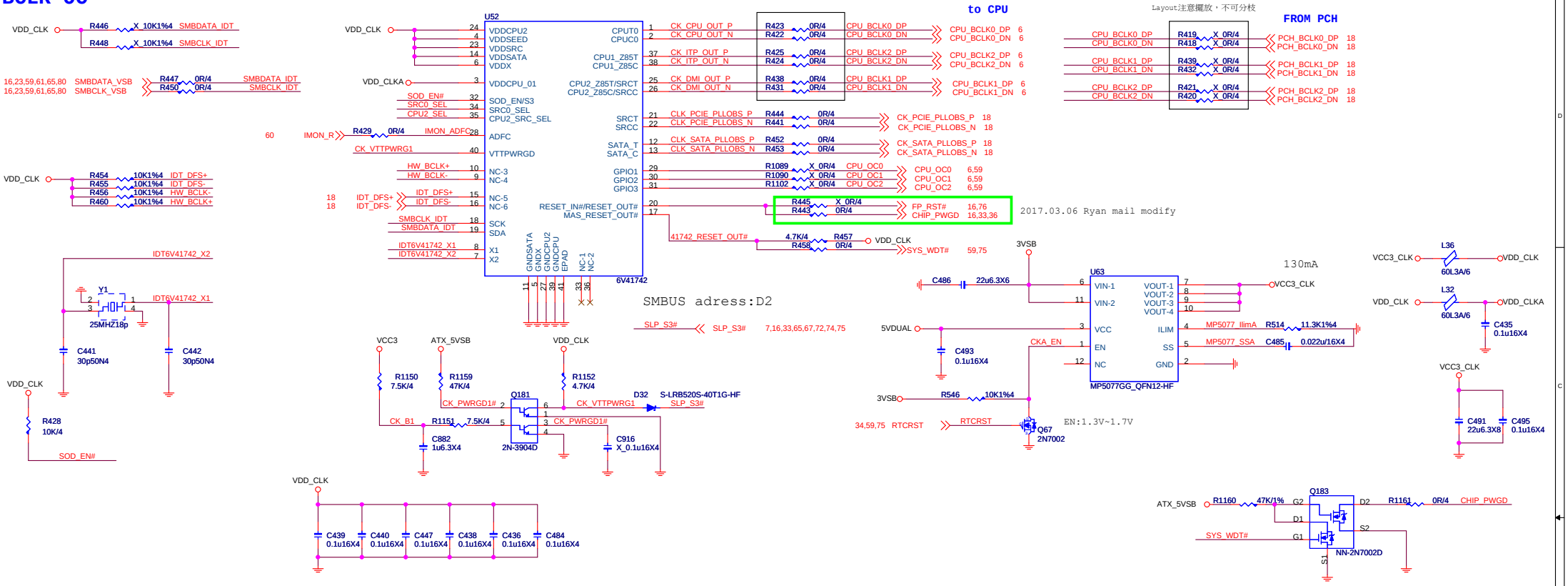
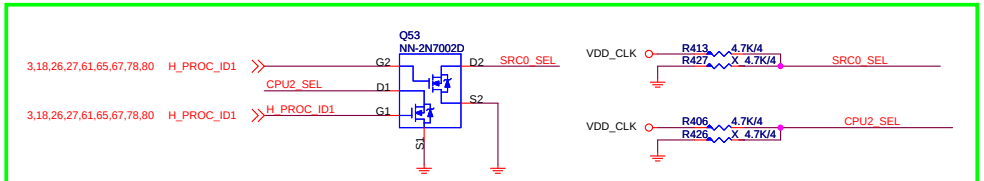
BCLK OC





SRC0_SEL	Description	CPU	H_PROC_ID1
0	Source from CPUPLL	SKX	1
1	Source from PCIEPLL	KBX	0

CPU2_SRC_SEL	Description	CPU	H_PROC_ID1
0	Source from CPUPLL	SKX	1
1	Source from PCIEPLL	KBX	0

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Custom	Clock Gen-IDT6V41506	2.0

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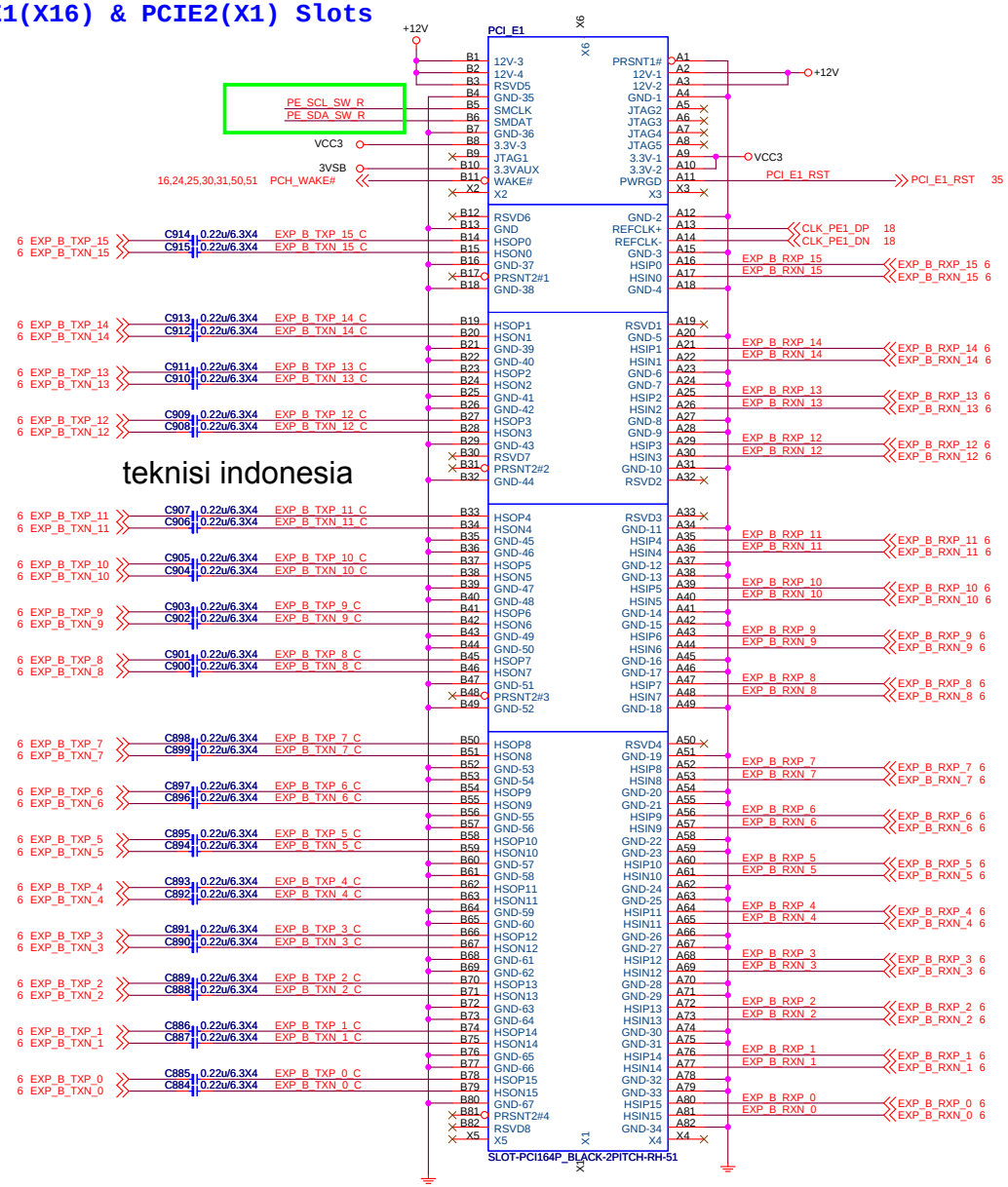
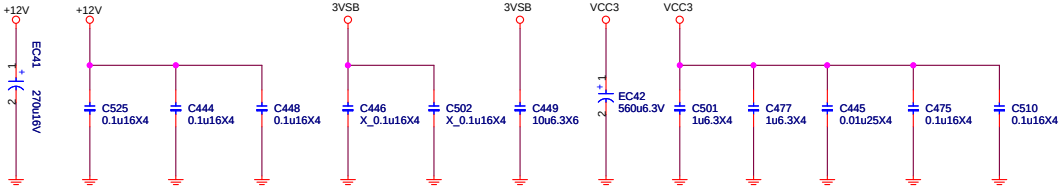
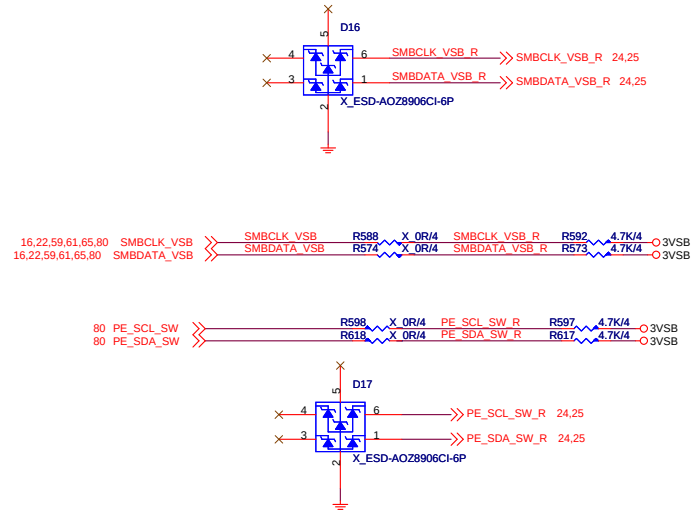
PCIE1(X16) & PCIE2(X1) Slots



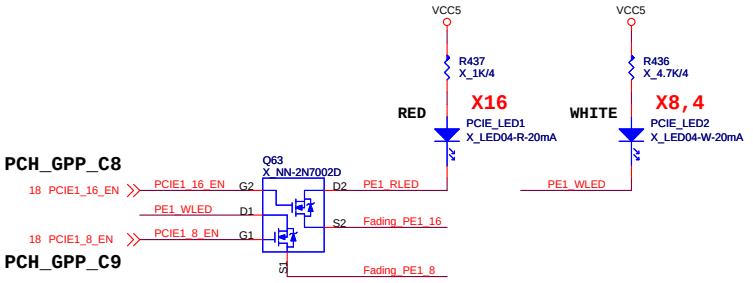


U1000
PCIE Slot S01
X_PCIE Slot S01

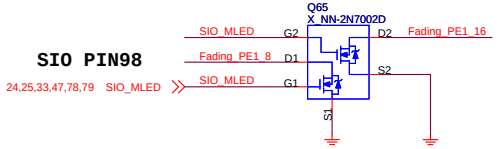
SMBUS ESD



PCIE SLOT LED



SIO PIN98



GPIO / LED	GPP_C8	GPP_C9
亮	GPO PO HIGH	GPO PO HIGH
滅	GPI (default LOW)	GPI (default LOW)

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Size	Document Description	Rev
Custom	PCIE1(X16)	2.0

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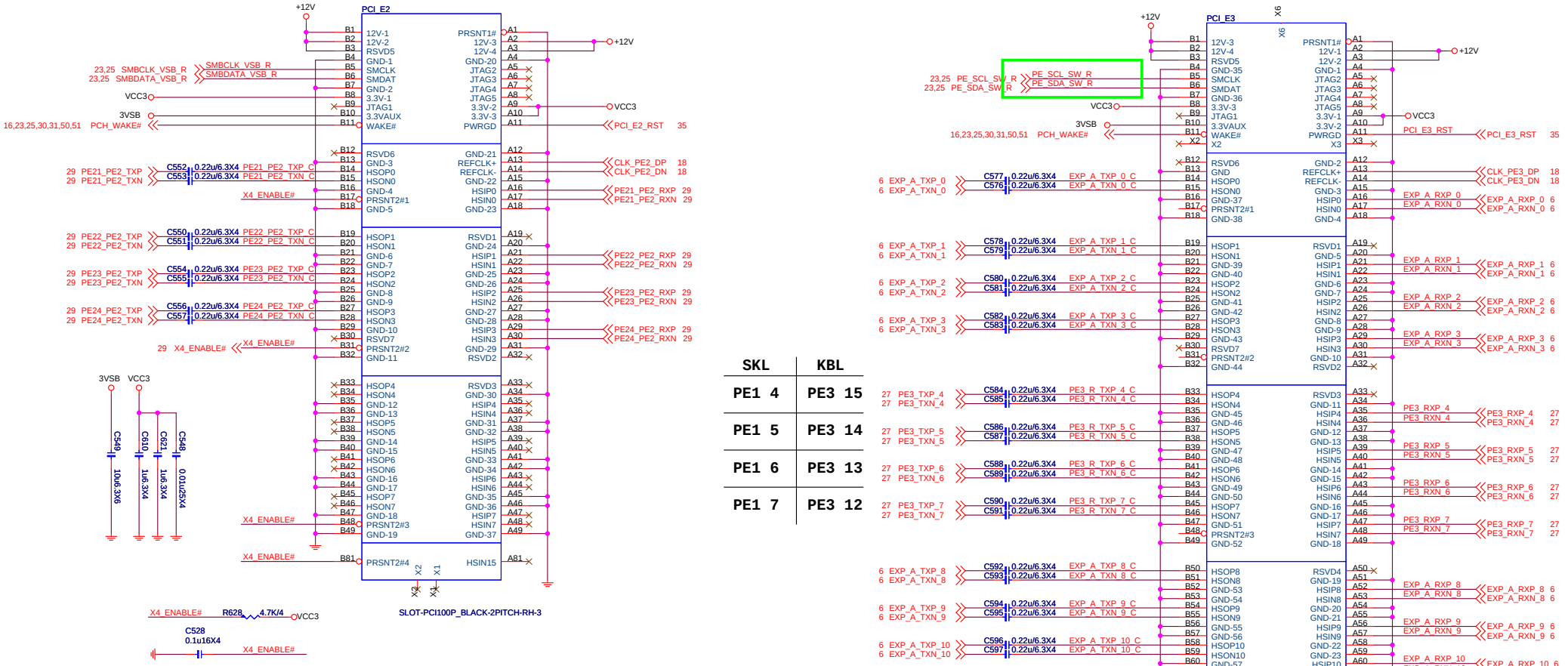
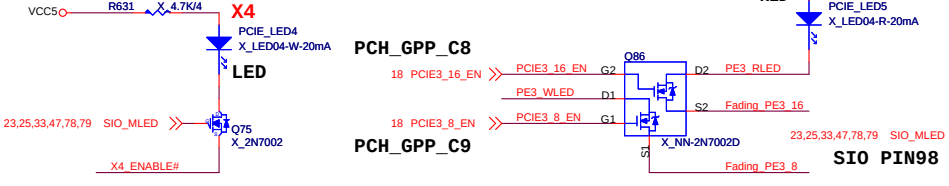


PCIE SLOT LED

GPIO	GPP_C8	GPP_C9
亮	GPO PO HIGH	GPO PO HIGH
滅	GPI (default LOW)	GPI (default LOW)



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Size: Custom	Document Description: PCIE2(X4) & PCIE3(X16) — Rev: 2.0
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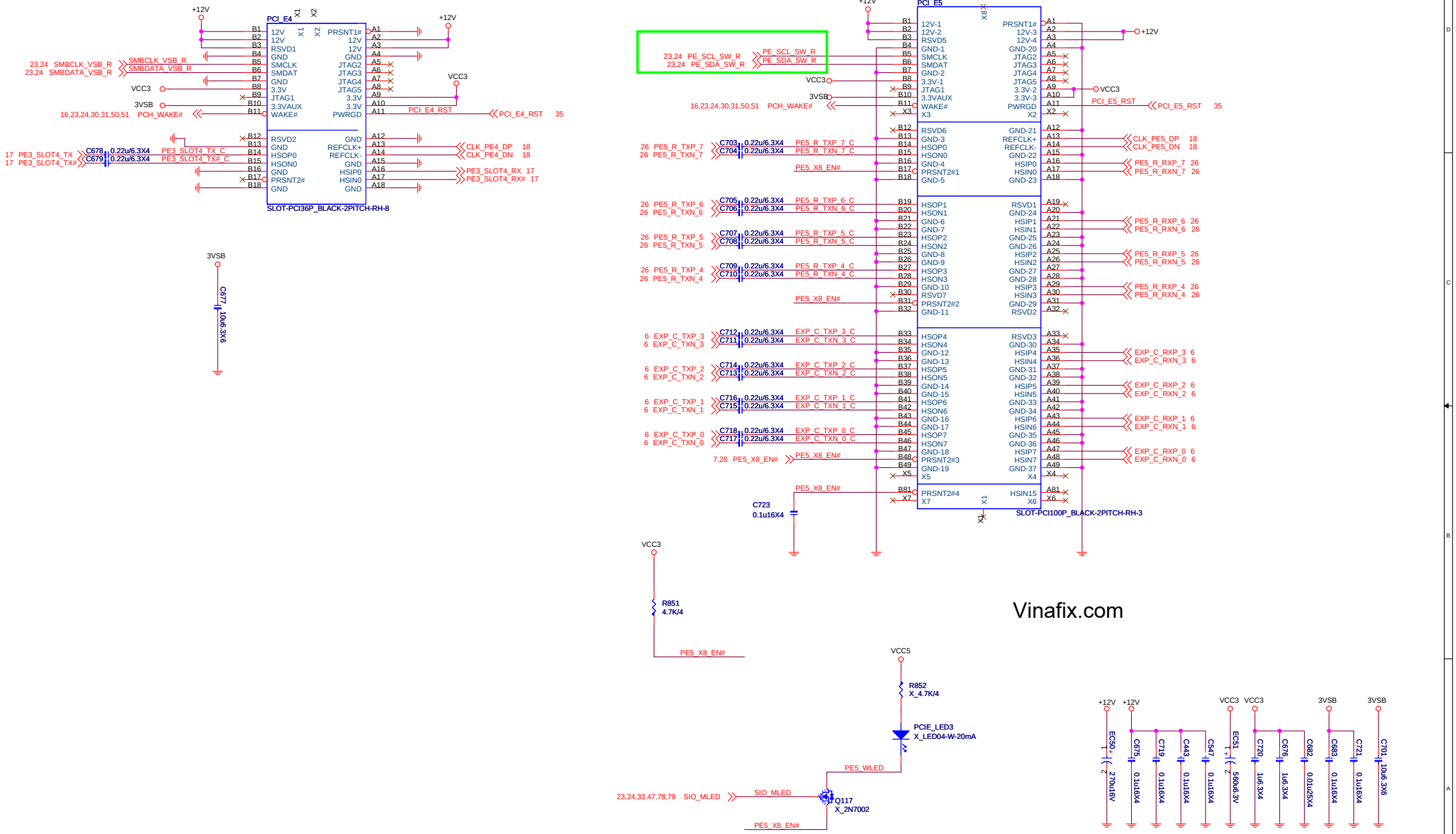
PCI_E4
SLOT-PCI36P_BLACK-2PITCH-RH-8
PCI_E5
SLOT-PCI100P_BLACK-2PITCH-RH-3
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PCIE_LED3
X_LED04-W-20mA
Q117
X_2N7002
R851
4.7K/4
R852
X_4.7K/4
C723
0.1u16X4
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PCIE4(X1)&PCIE5(X8)
Rev
2.0
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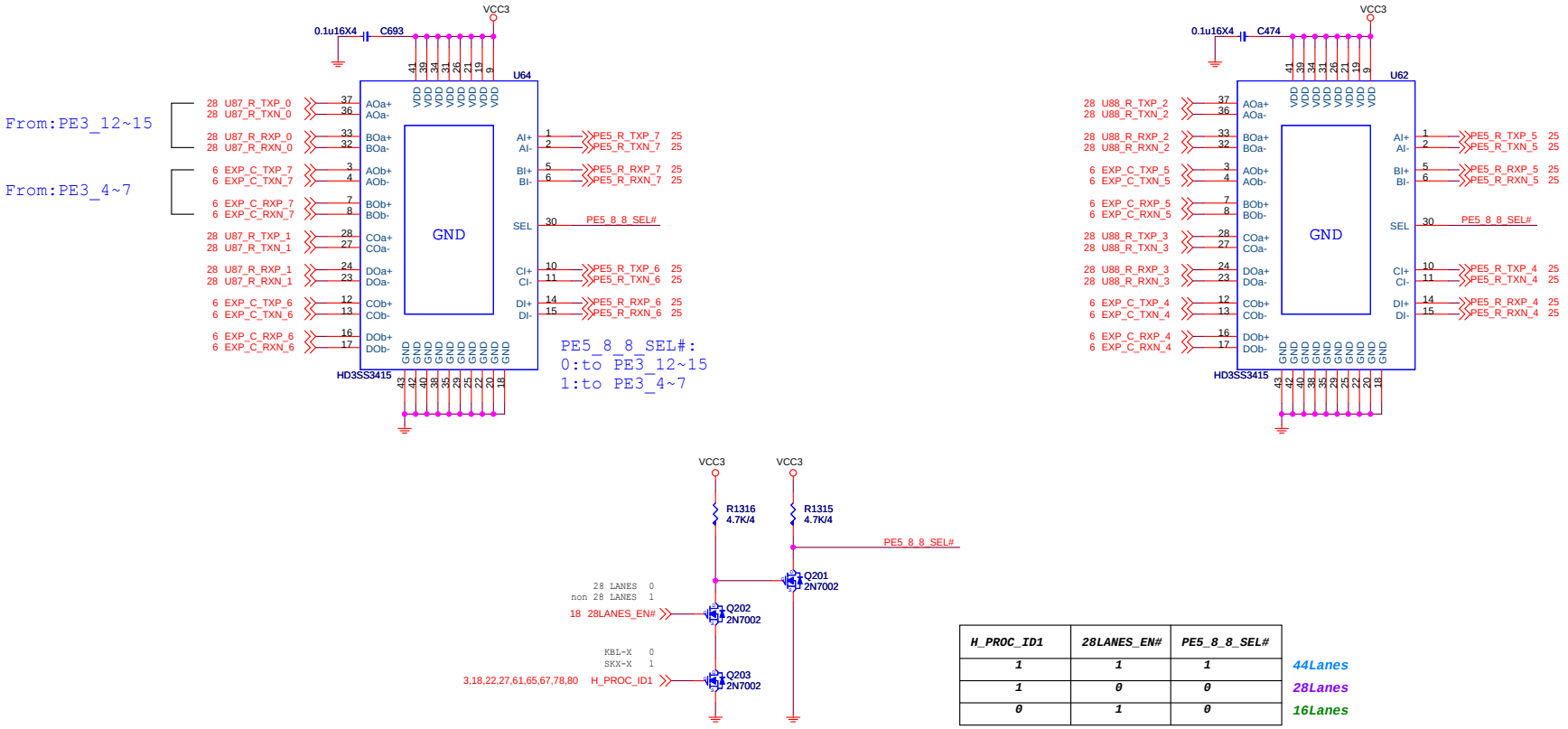
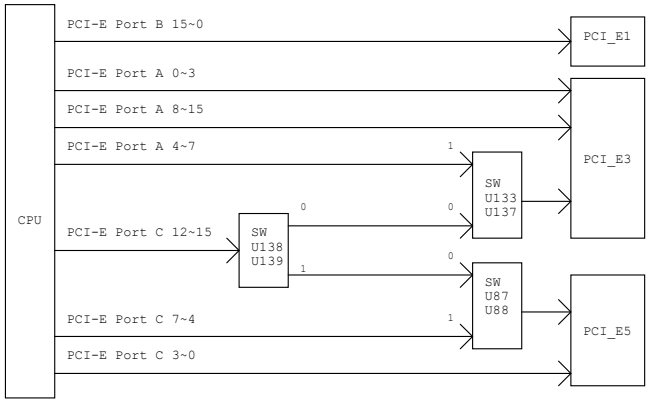
SEL:
0 : 28/16
1 : 44



H_PROC_ID1	28LANES_EN#	PE5_8_8_SEL#	
1	1	1	44Lanes
1	0	0	28Lanes
0	1	0	16Lanes



	SKL-X 44L		SKL-X 28L		KBL-X			
PE1	X16:P2[15:0]		X16:P2[15:0]		X8:P2[15:8]		X8:P2[15:8]	
PE3	X16:P1[0:15]		X8:P1[0:7]		X4:P1[0:3]		X8:P2[0:3]+P3[15:12]	
PE5	X8:P3[7:0]		X4:P3[15:12]		X4:P3[15:12]		X0:	
PE4	PCH_PE3		PCH_PE3		PCH_PE3		PCH_PE3	
M2_1	PCH_PE9~12		PCH_PE9~12		PCH_PE9~12		PCH_PE9~12	
M2_2	PCH_PE17~20		PCH_PE17~20		PCH_PE17~20		PCH_PE17~20	
PE2	PCH_PE21~24	———	PCH_PE21~24	———	PCH	———	PCH	———
U.2	———	PCH_PE21~24	———	PCH_PE21~24	———	PCH	———	PCH

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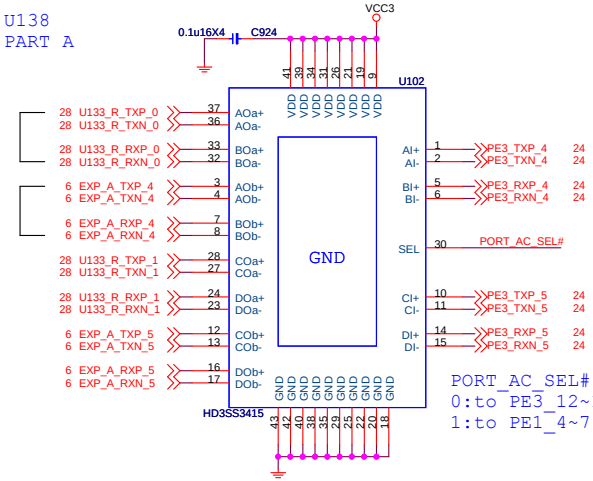
SEL:
0 : 16 x8
1 : 44/28/16 x4

SEL:
0:from U138
1:from PART A

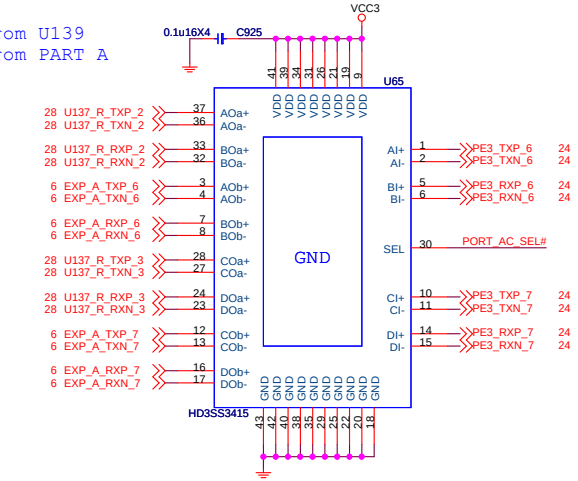
From:PE3_12~15

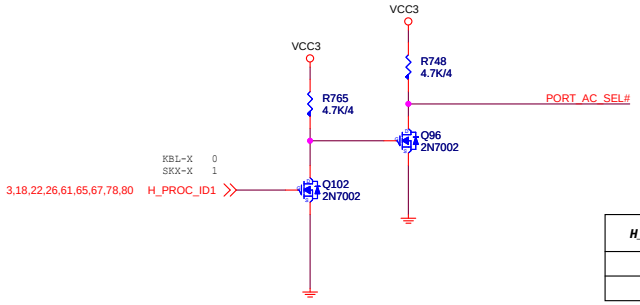
From:PE1_4~7



PORT_AC_SEL#:
0:to PE3_12~15
1:to PE1_4~7

SEL:
0:from U139
1:from PART A





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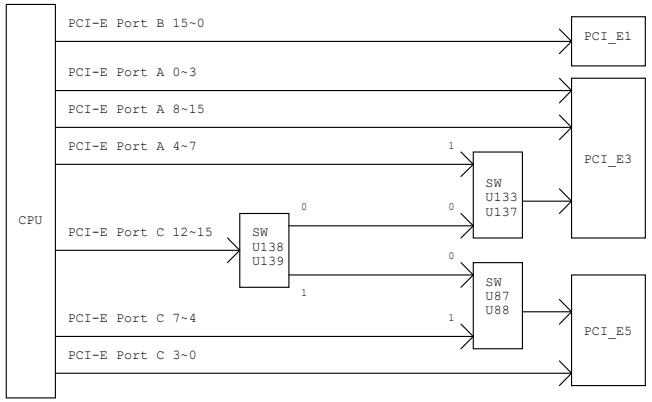
H_PROC_ID1	PORT_AC_SEL#	
1	1	SKL-X
0	0	KBL-X



	SKL-X 44L		SKL-X 28L		KBL-X			
PE1	X16:P2[15:0]		X16:P2[15:0]		X8:P2[15:8]		X8:P2[15:8]	
PE3	X16:P1[0:15]		X8:P1[0:7]		X4:P1[0:3]		X8:P2[0:3]+P3[15:12]	
PE5	X8:P3[7:0]		X4:P3[15:12]		X4:P3[15:12]		X0:	
PE4	PCH_PE3		PCH_PE3		PCH_PE3		PCH_PE3	
M2_1	PCH_PE9~12		PCH_PE9~12		PCH_PE9~12		PCH_PE9~12	
M2_2	PCH_PE17~20		PCH_PE17~20		PCH_PE17~20		PCH_PE17~20	
PE2	PCH_PE21~24	———	PCH_PE21~24	———	PCH	———	PCH	———
U.2	———	PCH_PE21~24	———	PCH_PE21~24	———	PCH	———	PCH

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Size: Custom | Document Description: PCIE-SWITCH | Rev: 2.0

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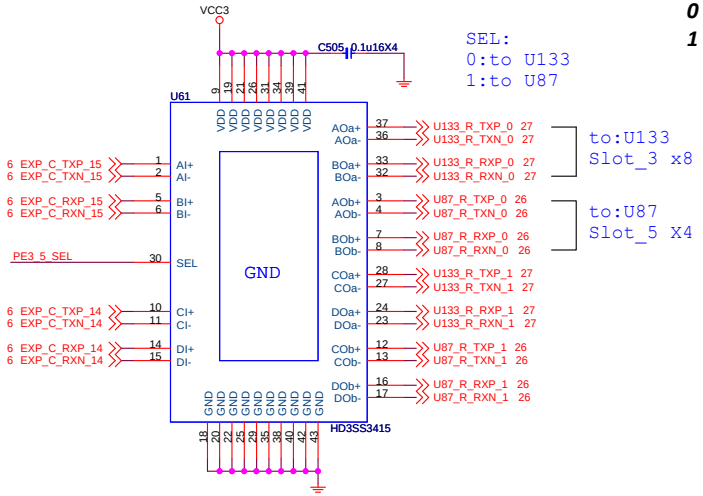
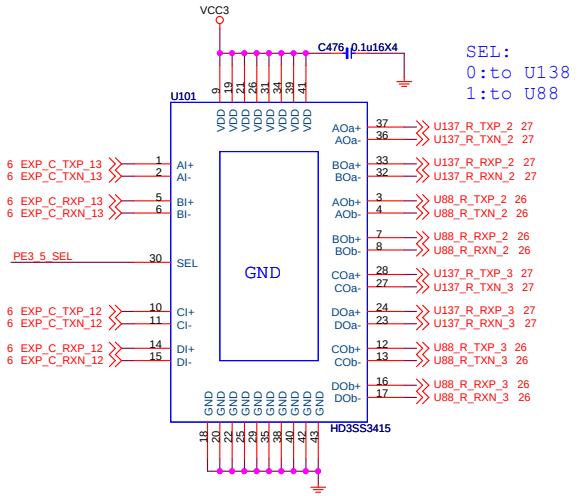
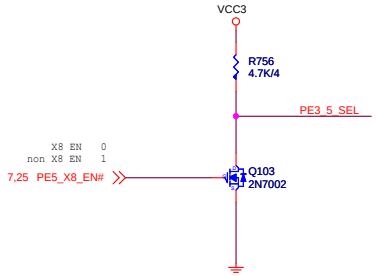


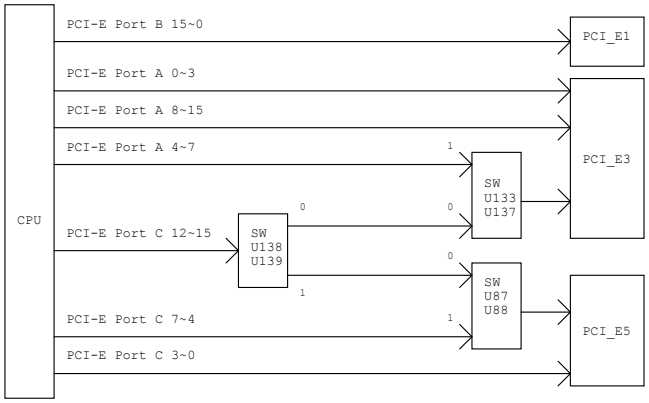
SEL:
0 : 44/28/16 x4
1 : 16 x8





PE5_X8_EN#	PE3_5_SEL
1	0
0	1

PE5 x4 in



	SKL-X 44L		SKL-X 28L		KBL-X			
PE1	X16:P2[15:0]		X16:P2[15:0]		X8:P2[15:8]		X8:P2[15:8]	
PE3	X16:P1[0:15]		X8:P1[0:7]		X4:P1[0:3]		X8:P2[0:3]+P3[15:12]	
PE5	X8:P3[7:0]		X4:P3[15:12]		X4:P3[15:12]		X0:	
PE4	PCH_PE3		PCH_PE3		PCH_PE3		PCH_PE3	
M2_1	PCH_PE9~12		PCH_PE9~12		PCH_PE9~12		PCH_PE9~12	
M2_2	PCH_PE17~20		PCH_PE17~20		PCH_PE17~20		PCH_PE17~20	
PE2	PCH_PE21~24	———	PCH_PE21~24	———	PCH	———	PCH	———
U.2	———	PCH_PE21~24	———	PCH_PE21~24	———	PCH	———	PCH

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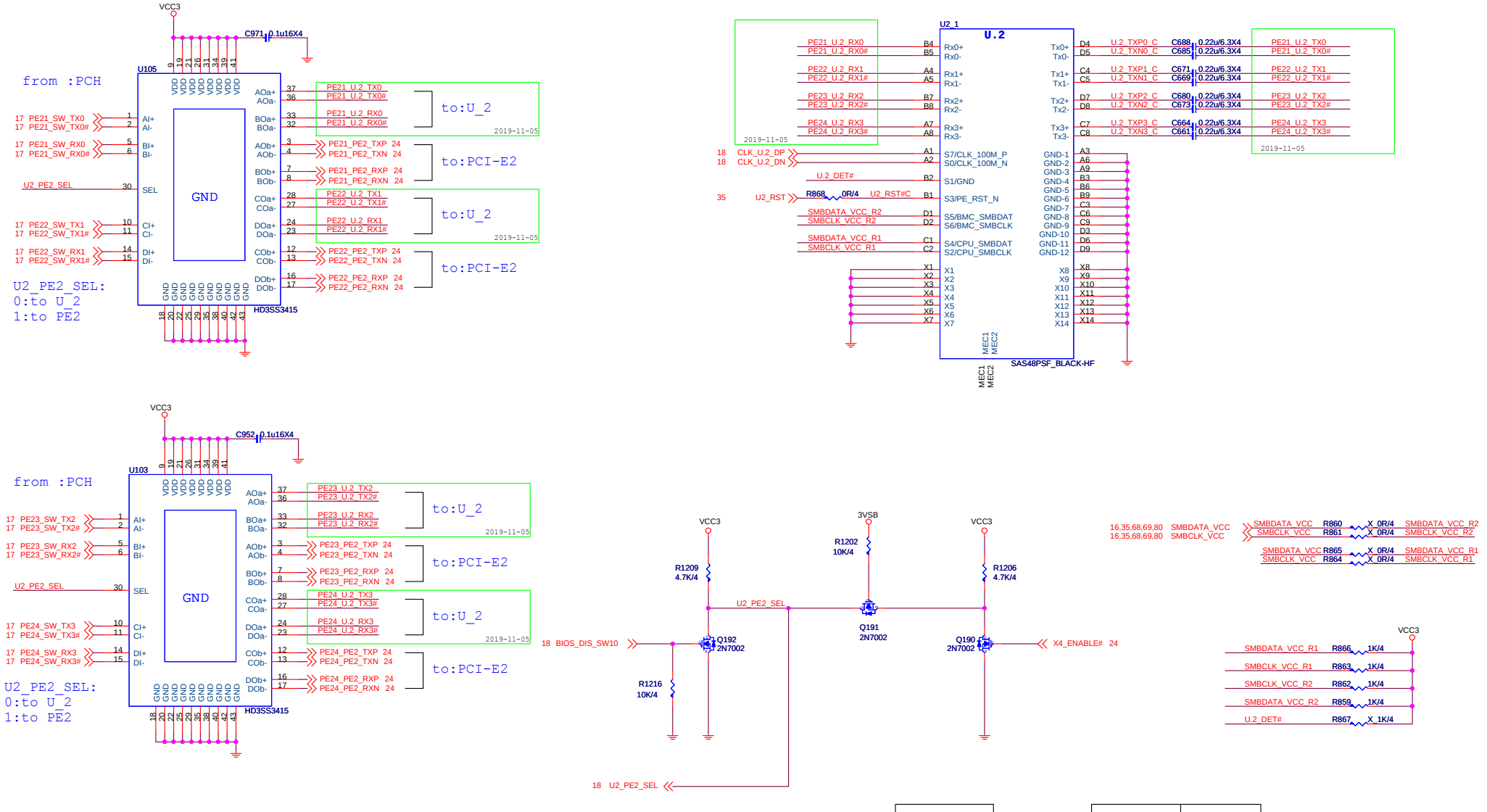

BIOS_DIS_SW10	
1	U2
default 0	PE2

X4_ENABLE#	U2_PE2_SEL	
1	0	
0	1	PE2 x4 in

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Custom	U2/PCH-SWITCH	2.0

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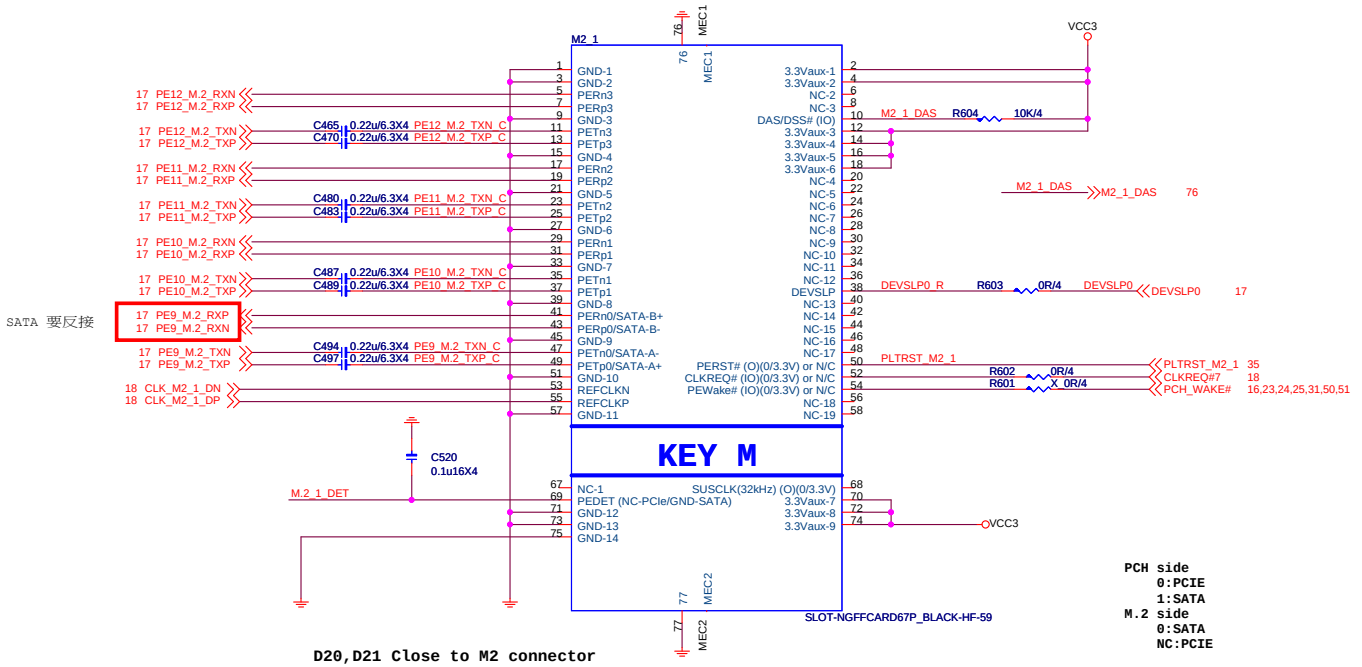
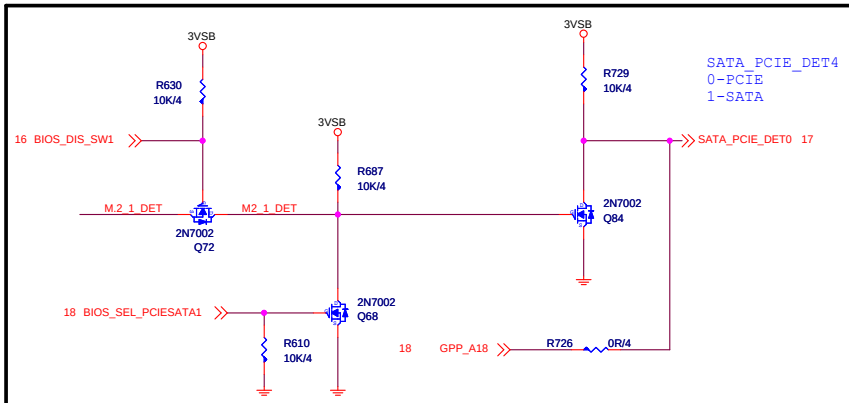
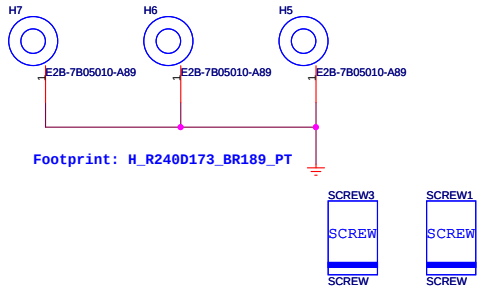
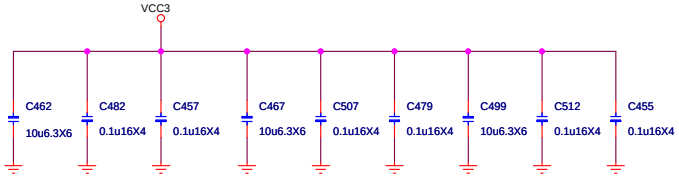




BIOS_MODE

BIOS_DIS_SW1	*BIOS_SEL_PCIESATA0*	*Mode*
0	*1*	*M2-SATA*
0	*0*	*M2-PCIE*
GPI(1)	*GPI(1)*	*AUTO*





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Custom	M2_1	2.0

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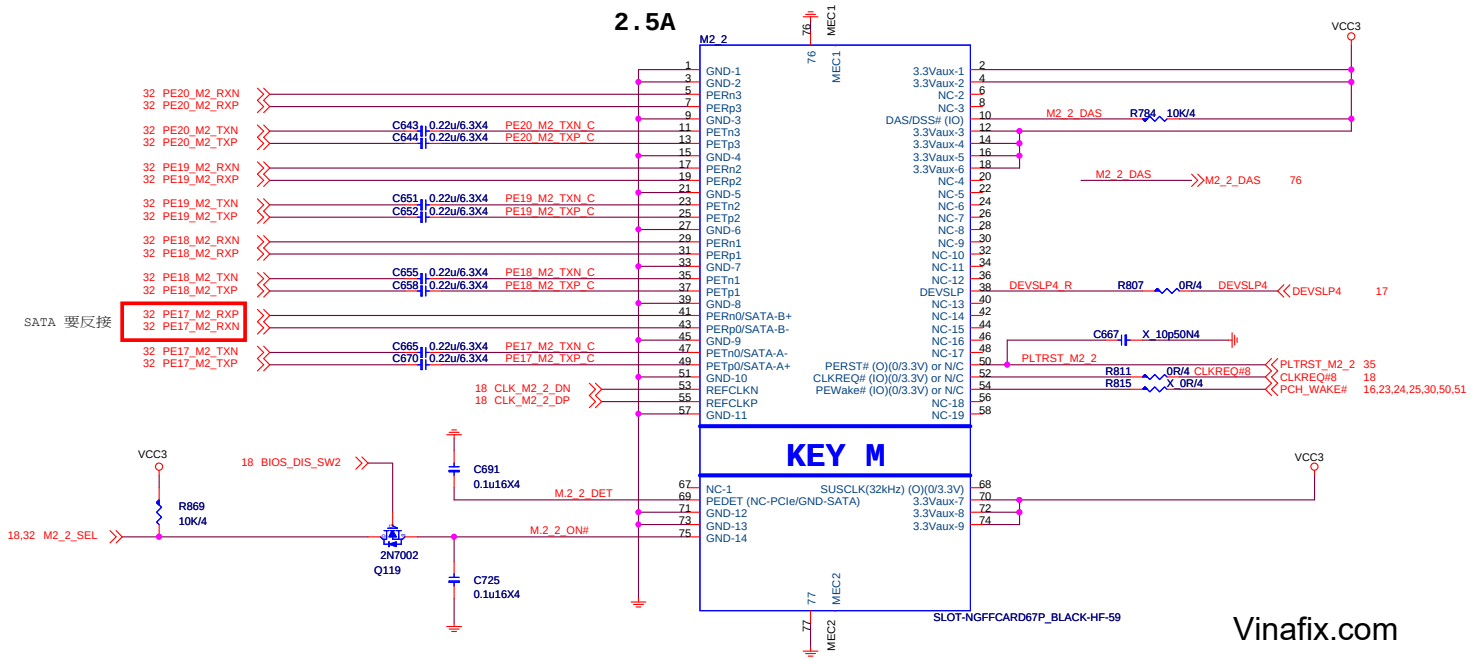

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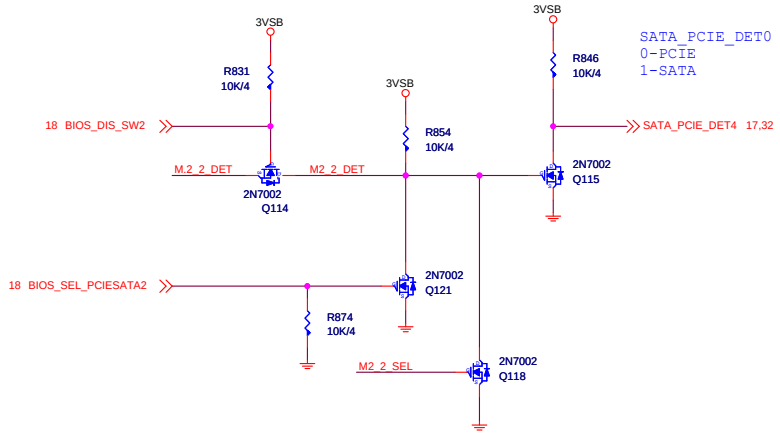
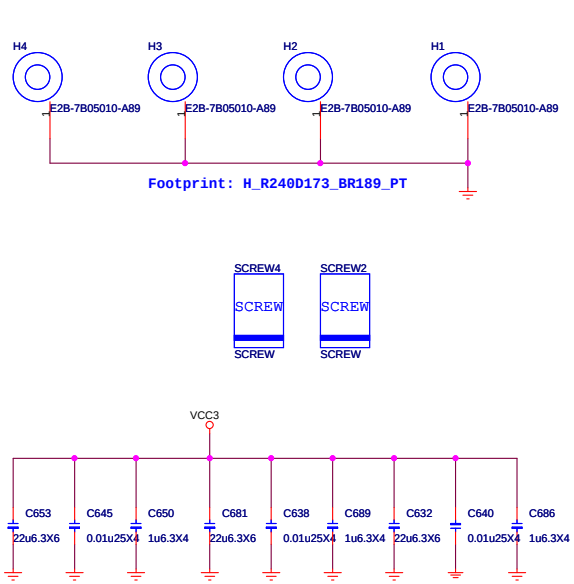


M2_CPUSEL#	BIOS_DIS_SW2	M2_2_SEL	BIOS_SEL_PCIESATA2	Mode
GPI(1)	GPI(1)	GPI(1)	GPI(0)	AUTO
0	0	1	1	M2-CPU
1	0	1	0	SATA
1	0	0	1	M2-SATA
1	0	0	0	M2-PCIE



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Size	Document Description	Rev
Custom	M2_2	2.0

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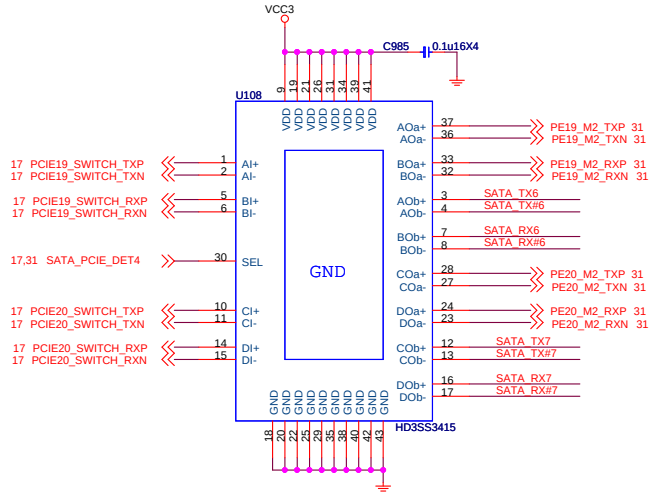

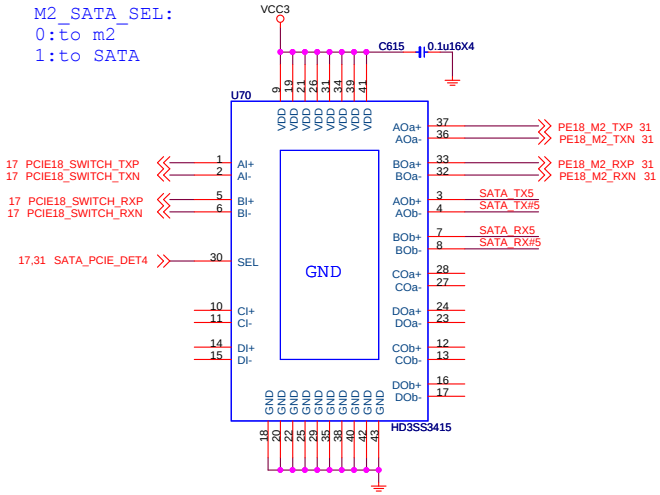

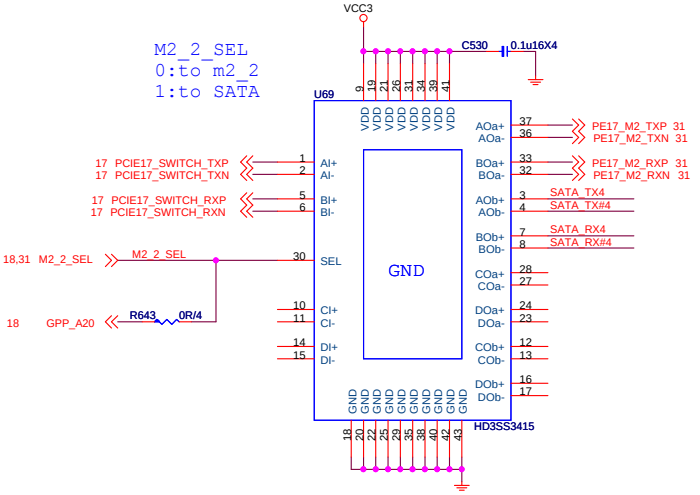

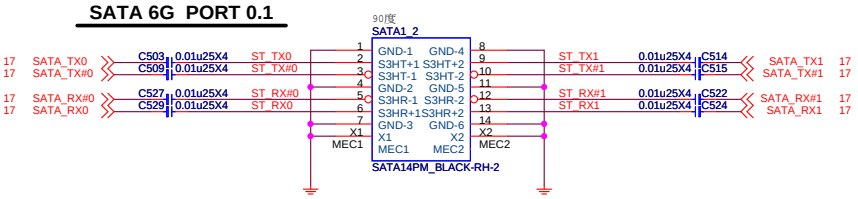

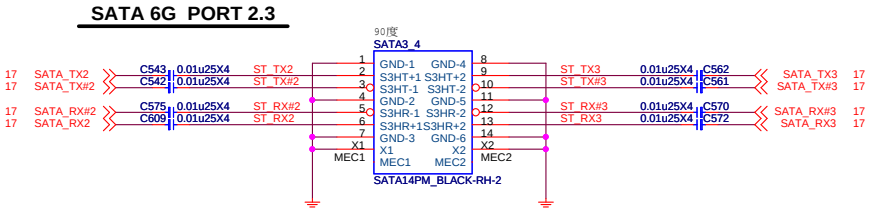

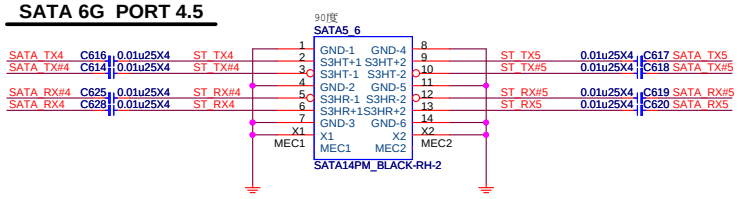

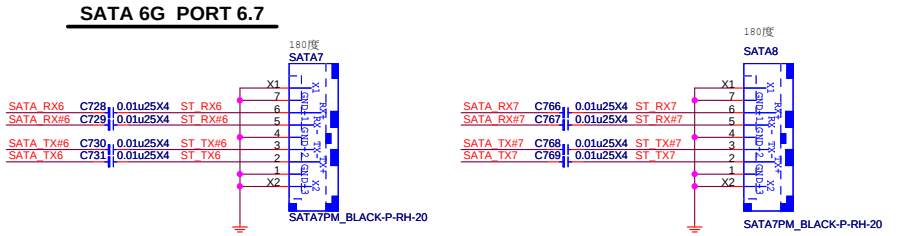

MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	SATA CONN	2.0

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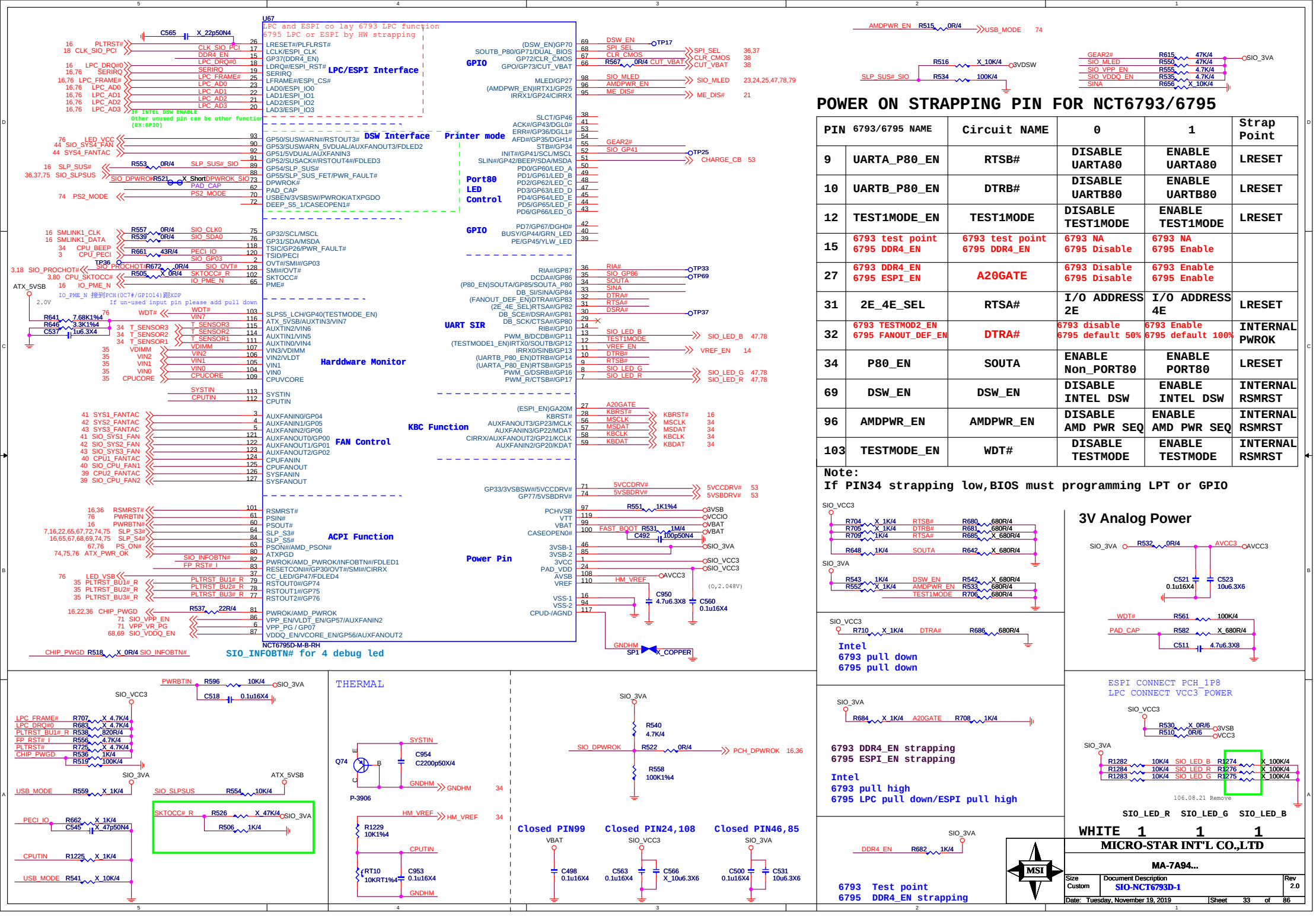
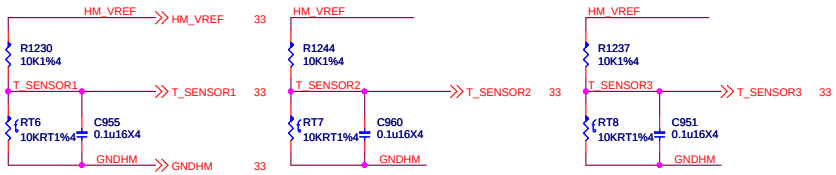


PIN	6793/6795 NAME	Circuit NAME	0	1	Strap Point
9	UARTA_P80_EN	RTSB#	DISABLE UARTA80	ENABLE UARTA80	LRESET
10	UARTB_P80_EN	DTRB#	DISABLE UARTB80	ENABLE UARTB80	LRESET
12	TEST1MODE_EN	TEST1MODE	DISABLE TEST1MODE	ENABLE TEST1MODE	LRESET
15	6793 test point 6795 DDR4_EN	6793 test point 6795 DDR4_EN	6793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

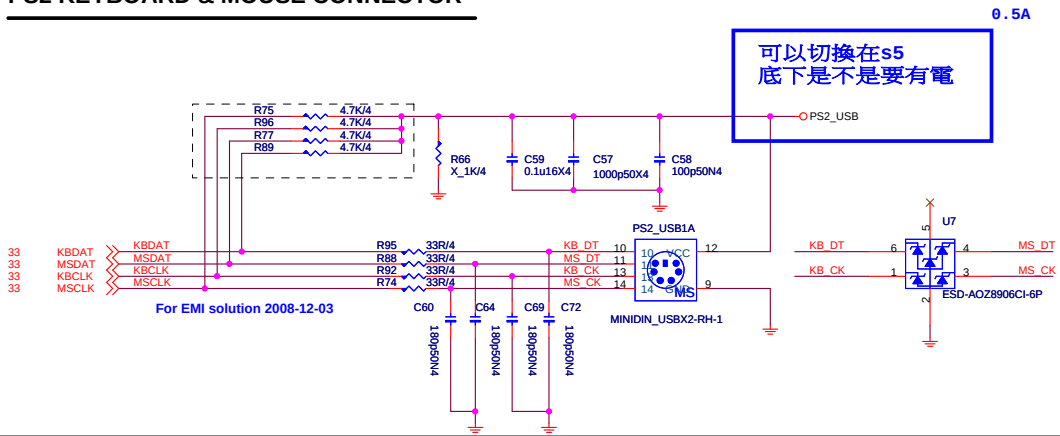
THERMAL



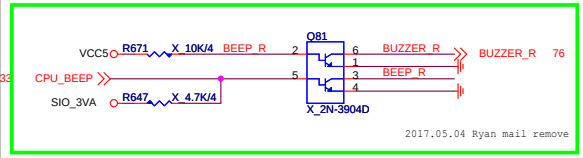
DEBUG LED

2017.04.10 PM Spec Remove

PS2 KEYBOARD & MOUSE CONNECTOR



COM Port for BIOS Debug



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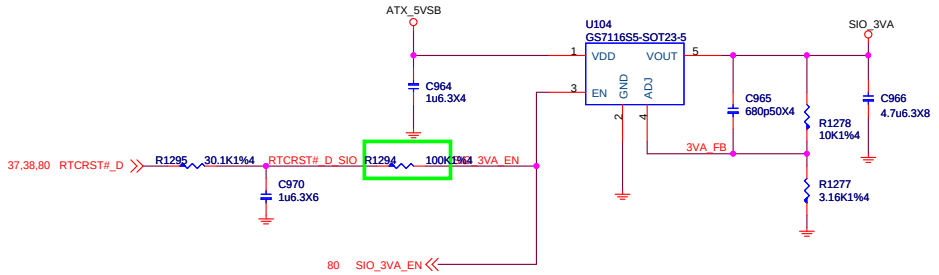
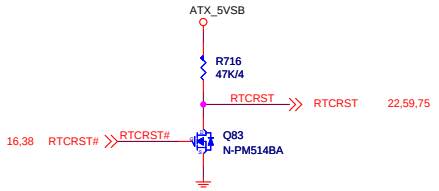
SLP_SUS Co-lay circuit





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MA-7A94...		
Size: Custom	Document Description: SIO-NCT6793D-2	Rev: 2.0
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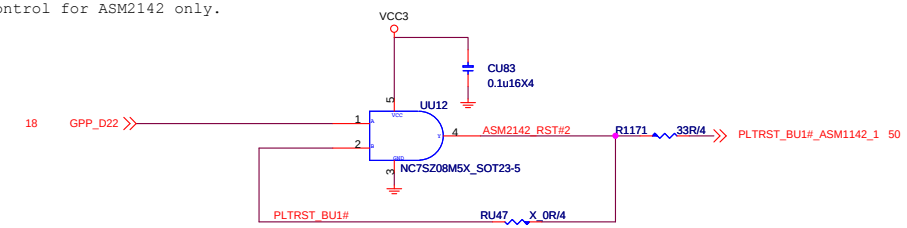
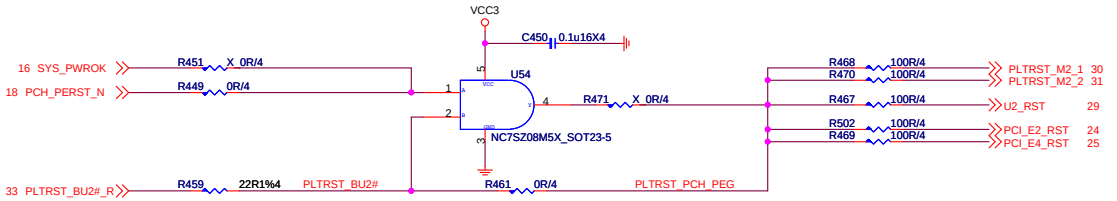
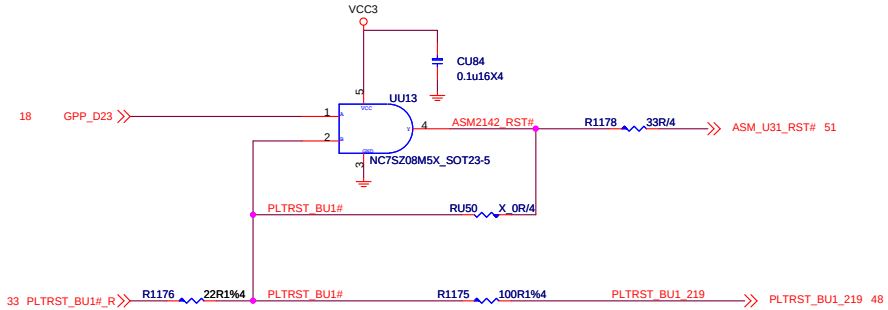
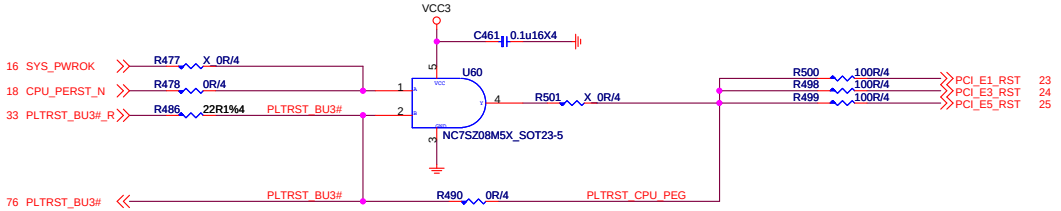
Reset control for ASM2142 only.



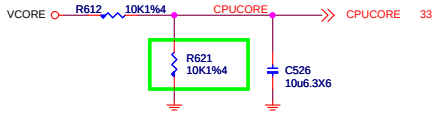


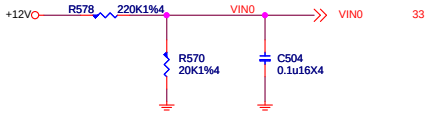


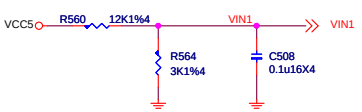


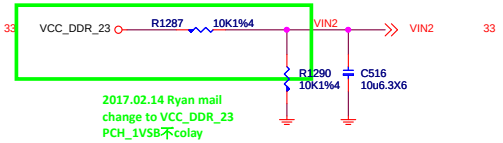
HW Monitor - Voltage

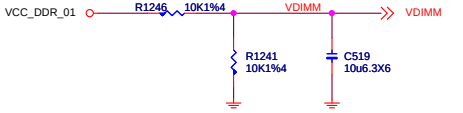
SIO HM Voltage voer 2V will not detect

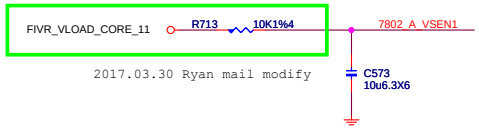


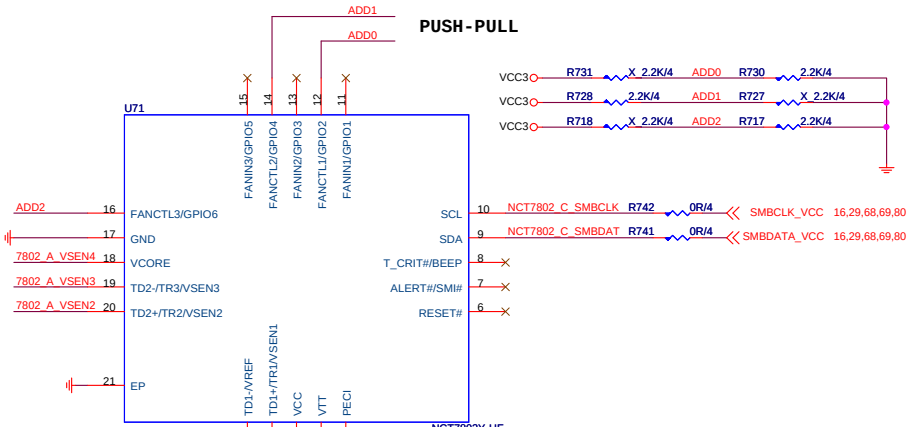




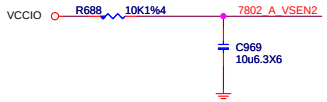


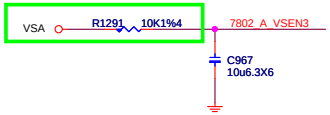


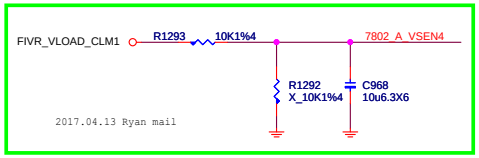




NCT7802Y to address 54h







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MA-7A94...		
Size: Custom	Document Description: SIO-NCT6793D-3	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 35 of 86	

Part Number:N31-2061341-H06

16 PCH_SPI_CS0# PCH_SPI_CS0#
16,21 PCH_SPI_MOSI PCH_SPI_MOSI
16,21 PCH_SPI_MISO PCH_SPI_MISO
16 PCH_SPI_CLK PCH_SPI_CLK
16,21 PCH_SPI_IO2 PCH_SPI_IO2
16,21 PCH_SPI_IO3 PCH_SPI_IO3

SPI CS# < 25pF
D0G-0402510-SI0

close to JSPI1 for ESD use

SPI_VCC3 R845 0R/6 3VSB

SPI DEBUG PROT
Close to SPI ROM

SPI_VCC3 C697 0.1u16X4

JSPI1
PCH_SPI_MISO PCH_SPI_MOSI
PCH_SPI_CS# PCH_SPI_CLK
SPI_SW_SEL
PCH_SPI_IO2 PCH_SPI_IO3
H2X6[10]M-2PITCH_BLACK-RH-3

PCH_SPI_CS0# R838 0R/4
D21 ESD-AOZ8131DI
C698 0.1u16X4

For TL624-1.1 : Stuff D7
Old : Only RSVD (Because 12V level)

P.S Close to JSPI1

HW MODE

A BIOS
B BIOS
MEC1 MEC2
BIOS_SW1 SW-DIP_BLACK-RH
SPI_SEL_R SPI2_SW
C732 X_0.1u16X4
R887 1K/4 SPI_SEL
R886 4.7K/4
SPI_VCC3 Skylake use SPI_VCC3
Skylake use SPI_VCC3
C726 0.1u16X4

R873 X_0R/4 For MCJ singal BIOS

SIO NCT6793 GP71

U80
PCH_SPI_CS# SPI_SEL
SPI_CS1# SPI_CS2#
NC7SB3157P6X_SOT323-6

33,37 SPI_SEL
R877 100K1%4

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

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

ATX_5VSB R856 10K/4 SPI_SW_SEL SPI_SW_SEL 80

16,33 PCH_DPWROK D23 S-LRB520S-40T1G-HF
16,33 RSMRST# D24 S-LRB520S-40T1G-HF
16,22,33 CHIP_PWGD D25 X_S-LRB520S-40T1G-HF
33,37,75 SIO_SLPSUS D22 S-LRB520S-40T1G-HF

VCC5
R839 X_4.7K/4
A_BIOS1 X_LED04-R-20mA
R875 X_1K/4
B_BIOS1 X_LED04-W-20mA
ATX_5VSB
R858 X_47K/4
SPI_SEL Q120 G2 D2 D1 S2 SPI1_SW G1 X_NN-2N7002D
SPI_SEL Q122 X_2N7002

SPI_VCC3
R836 X_1K/4 PCH_SPI_MOSI
R837 X_1K/4 PCH_SPI_MISO

SPI FLASH ROM
Place close to SB.

MXIC:M31-2512832-M24
WinB:M31-2512853-W03

32M ROM For X299

A BIOS
R813 2.2K/4
A_SPI1
SPI_CS1# PCH_SPI_MISO PCH_SPI_IO2
R819 33R/4 SPI1_MISO
R823 33R/4 SPI1_IO2
CS SO(SIO1) WP(SIO2) GND VCC RESET(SIO3) SCLK SI(SIO0) EPAD
W25Q128JVSIQ-HF
C662 0.1u16X4
C668 10u6.3X6
SPI1_IO3 SPI1_CLK SPI1_MOSI
R814 R824 R828 33R/4 PCH_SPI_IO3 PCH_SPI_CLK PCH_SPI_MOSI

B BIOS
R808 2.2K/4
B_SPI1
SPI_CS2# PCH_SPI_MISO PCH_SPI_IO2
R820 33R/4 SPI2_MISO
R827 33R/4 SPI2_IO2
W25Q128JVSIQ-HF
C660 0.1u16X4
C663 10u6.3X6
SPI2_IO3 SPI2_CLK SPI2_MOSI
R812 R822 R829 33R/4 PCH_SPI_IO3 PCH_SPI_CLK PCH_SPI_MOSI

*SPI_CLK & SPI_MOSI must be length matched to within 500mils. < 6 inch
*SPI_CLK & SPI_CS0# must be length matched to within 500mils.

ATX_5VSB
U78 X_GS7116S5-SOT23-5
VDD VOUT EN GND ADJ
C724 X_1u6.3X4
R855 X_47K/4
C722 X_680p50X4
R870 X_10K1%4
SPI_FB
SIO_SLPSUS Q116 X_2N7002
R857 X_3.09K1%4
C700 X_22u6.3X8

MICRO-STAR INT'L CO.,LTD
MA-7A94...
Size Custom
Document Description Dual BIOS
Rev 2.0
Date: Tuesday, November 19, 2019
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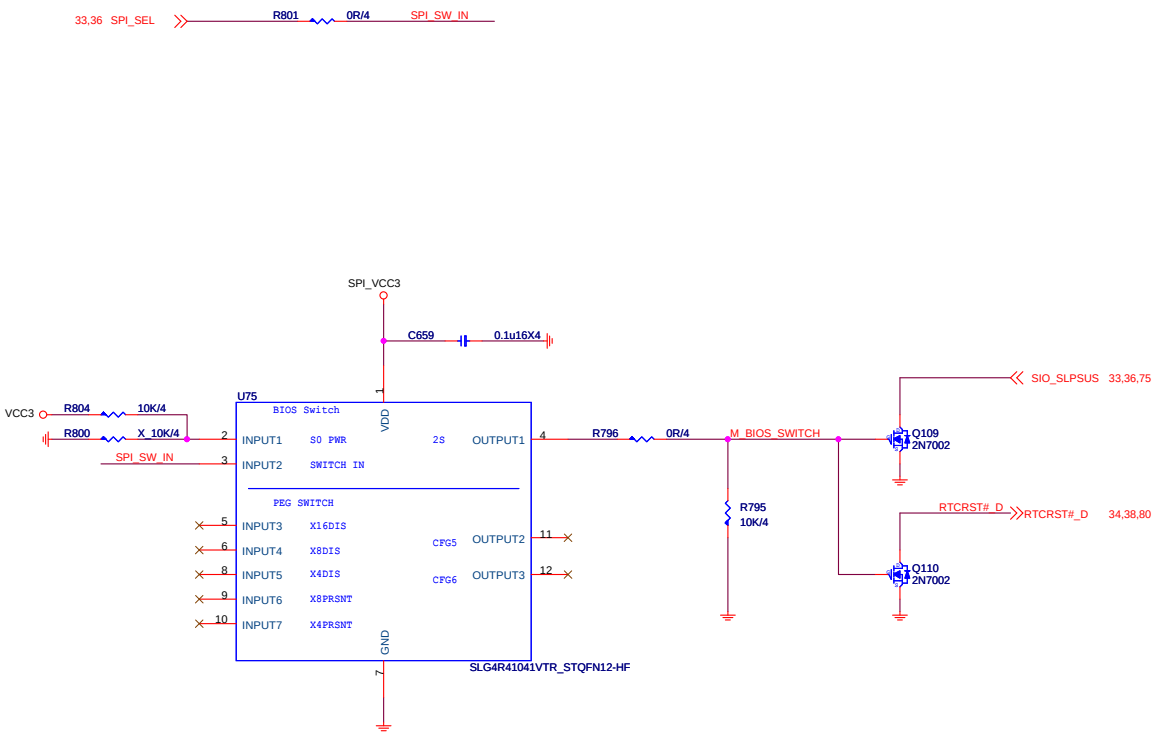
Skylake/Kabylake Path Circuit For Dual Bios



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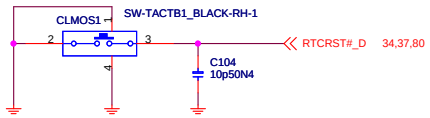
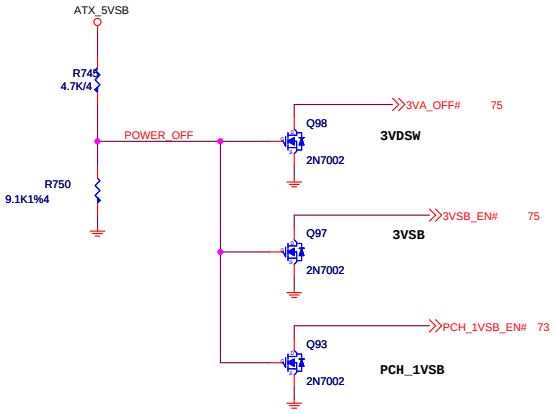
MA-7A94...		
Size: Custom	Document Description: Dual bios control-Silego	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 37 of 86	

RTCRST# R462 X_0R/4 RTCRST#_D

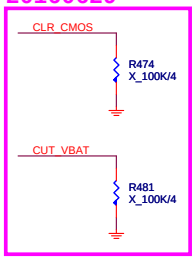
Clear CMOS button

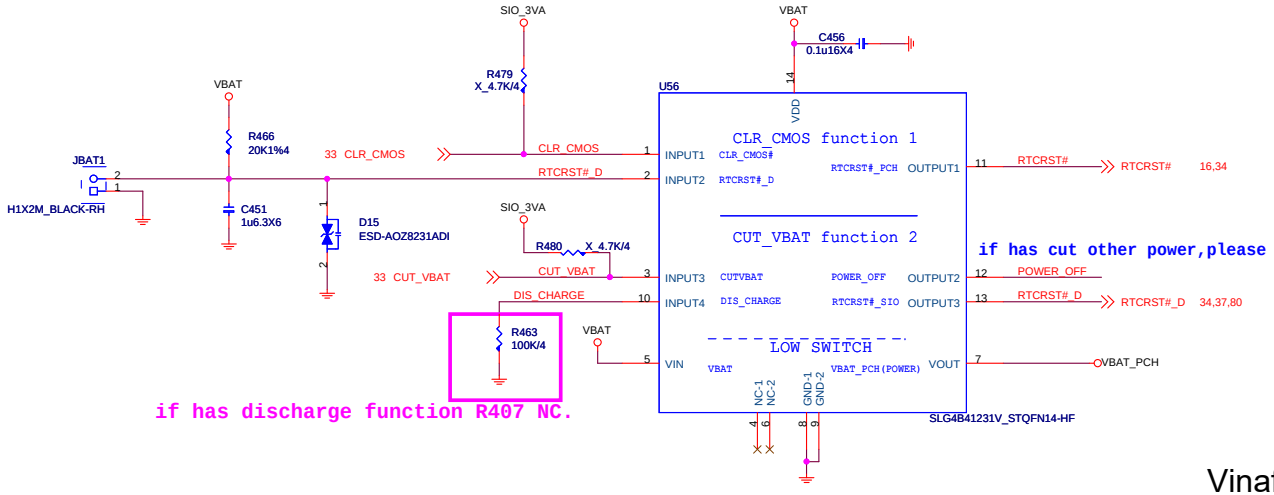


CUT VBAT



20160629

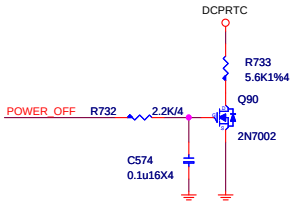




if has discharge function R407 NC.

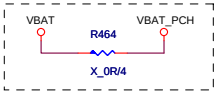
if has cut other power,please use output 2.

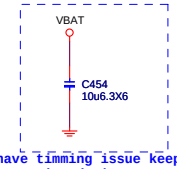
Add DCRTC dischage circuit



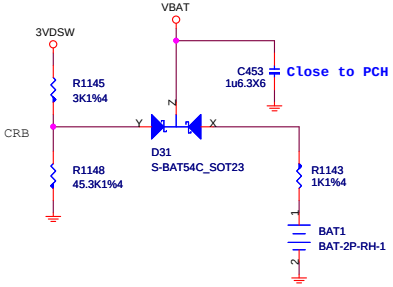
Vinafix.com

VBAT





have timming issue keep
0805 size don't removed



MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size	Document Description	Rev
Custom	CLR COMS/CUT VBAT	2.0

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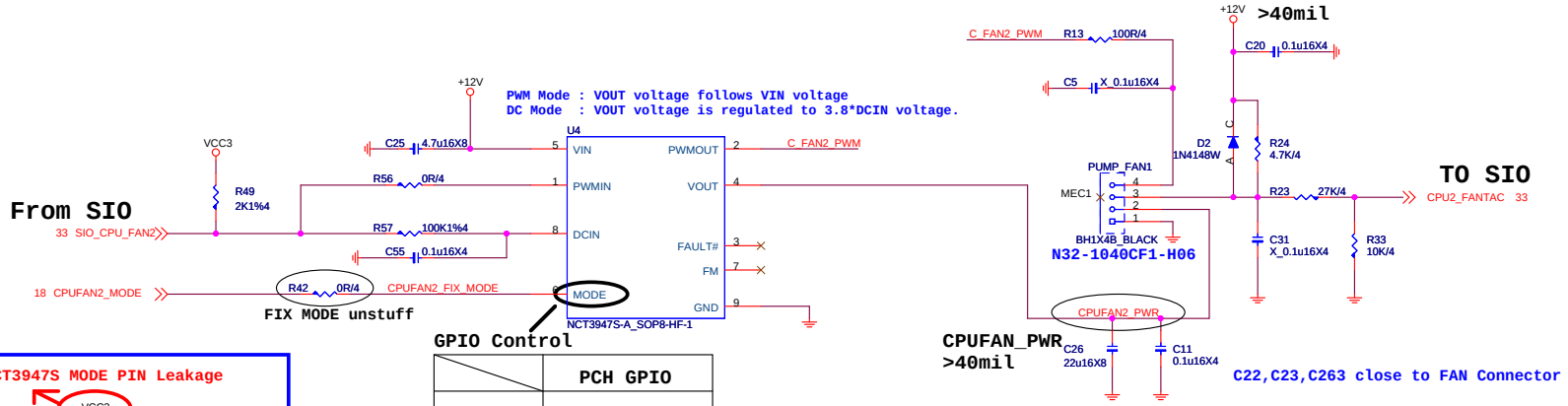
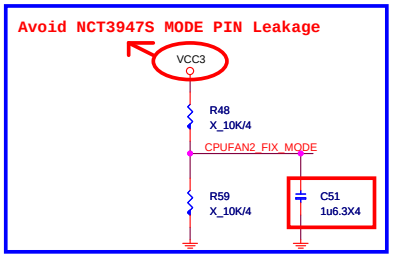
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



GPIO Control

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

Internall pull up 1.65V



Resever For FIX DC or PWM MODE USE By PM SPEC

MICRO-STAR INT'L CO.,LTD	
MA-7A94...	
Size: Custom	Document Description: CPU FAN2
Rev: 2.0	
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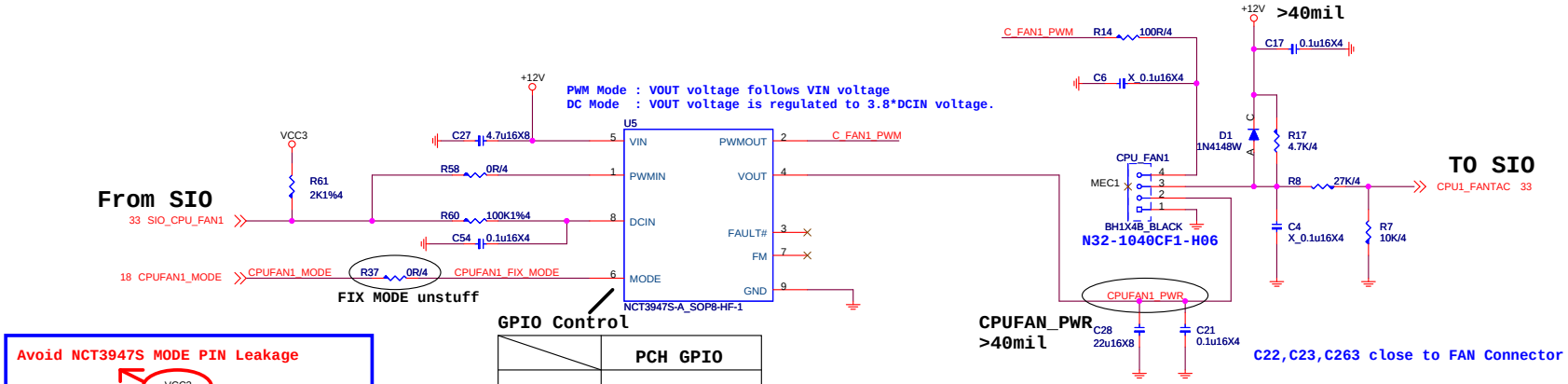
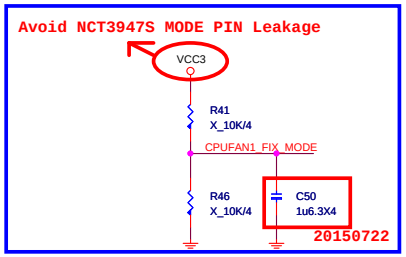
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



GPIO Control

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

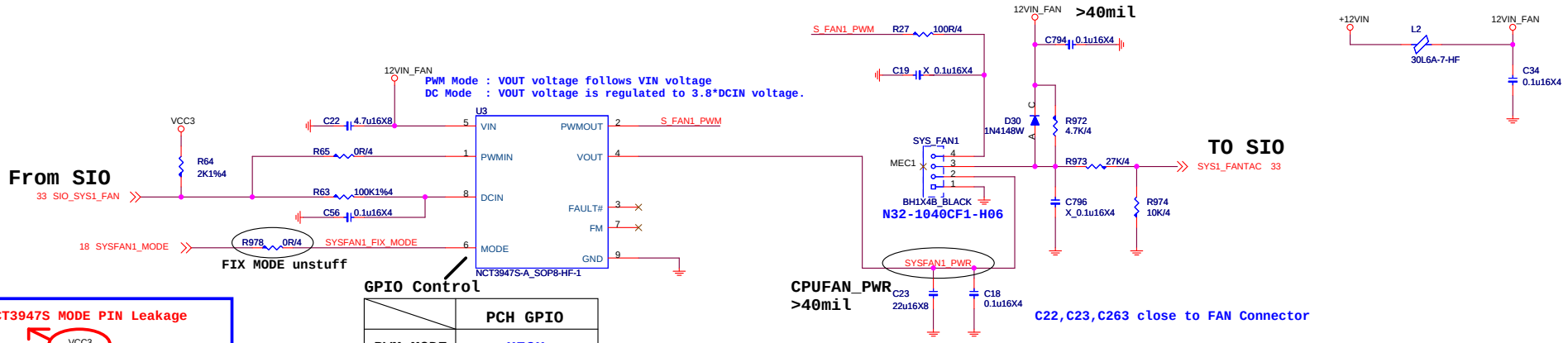
Internall pull up 1.65V



Resever For FIX DC or PWM MODE USE By PM SPEC

MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: CPU FAN1	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 40 of 86	

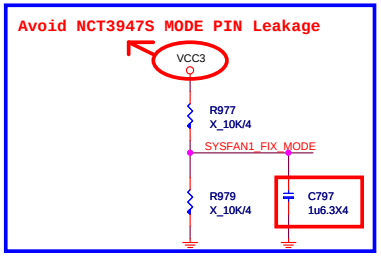
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



GPIO Control

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

Internall pull up 1.65V



Resever For FIX DC or PWM MODE USE By PM SPEC

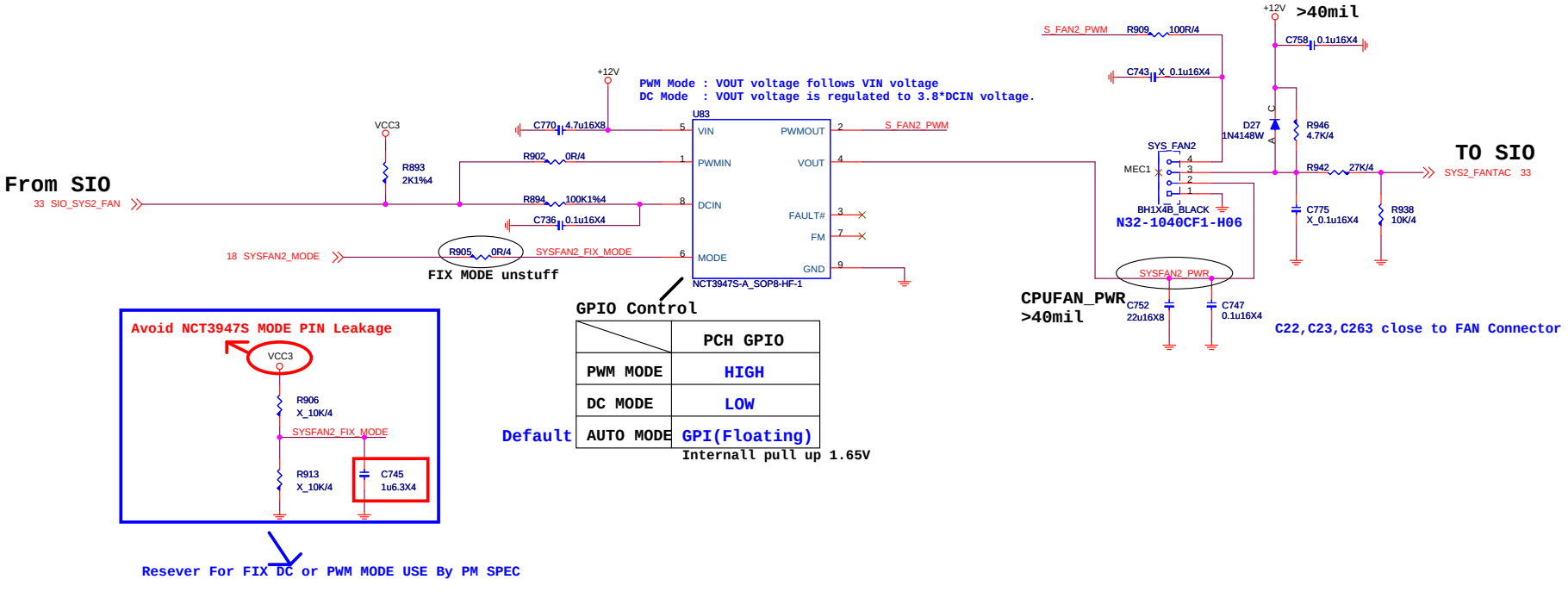
MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size: Custom | Document Description: SYSTEM FAN1 | Rev: 2.0

Date: Tuesday, November 19, 2019 | Sheet 41 of 86

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



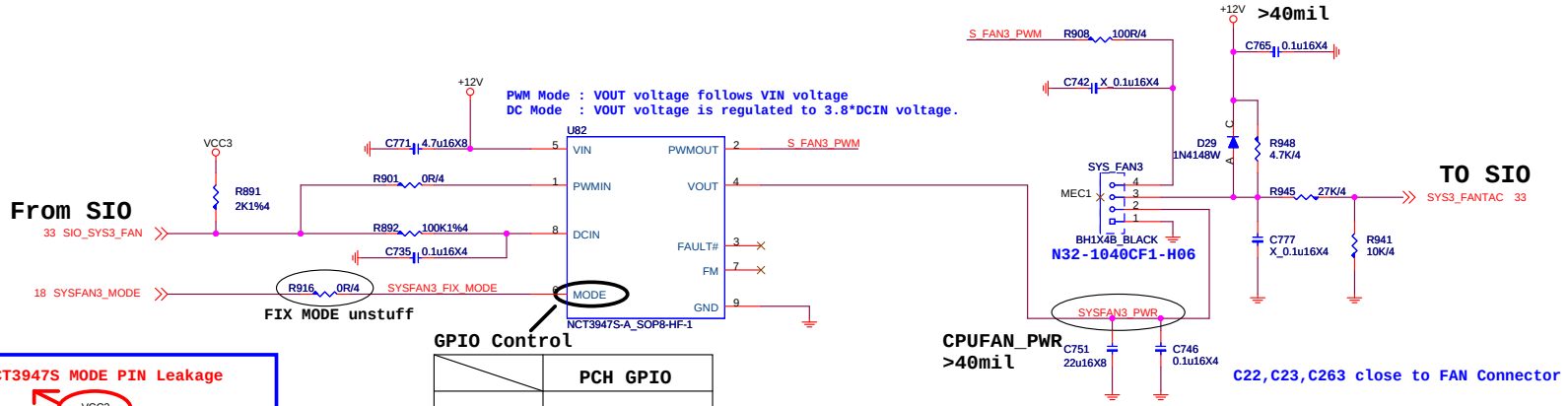
	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V

Resever For FIX DC or PWM MODE USE By PM SPEC

MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: SYSTEM FAN2	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 42 of 86	

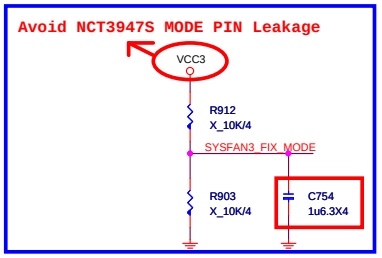
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



GPIO Control

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

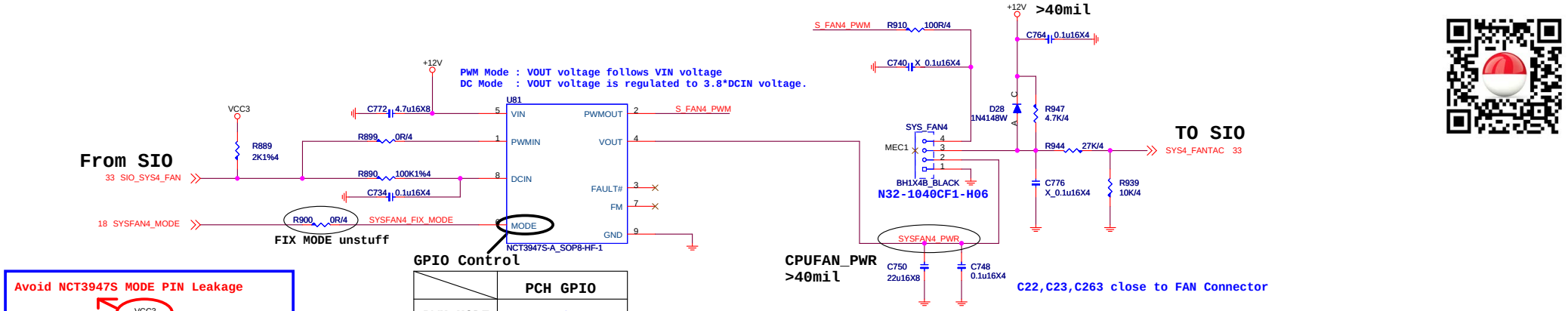
Internall pull up 1.65V



Resever For FIX DC or PWM MODE USE By PM SPEC

MICRO-STAR INT'L CO.,LTD	
MA-7A94...	
Size: Custom	Document Description: SYSTEM FAN3
Rev: 2.0	
Date: Tuesday, November 19, 2019	Sheet 43 of 86

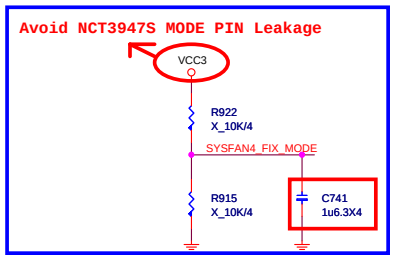
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



GPIO Control

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

Internall pull up 1.65V



Resever For FIX DC or PWM MODE USE By PM SPEC

MICRO-STAR INT'L CO.,LTD	
MA-7A94...	
Size: Custom	Document Description: SYSTEM FAN4
Rev: 2.0	
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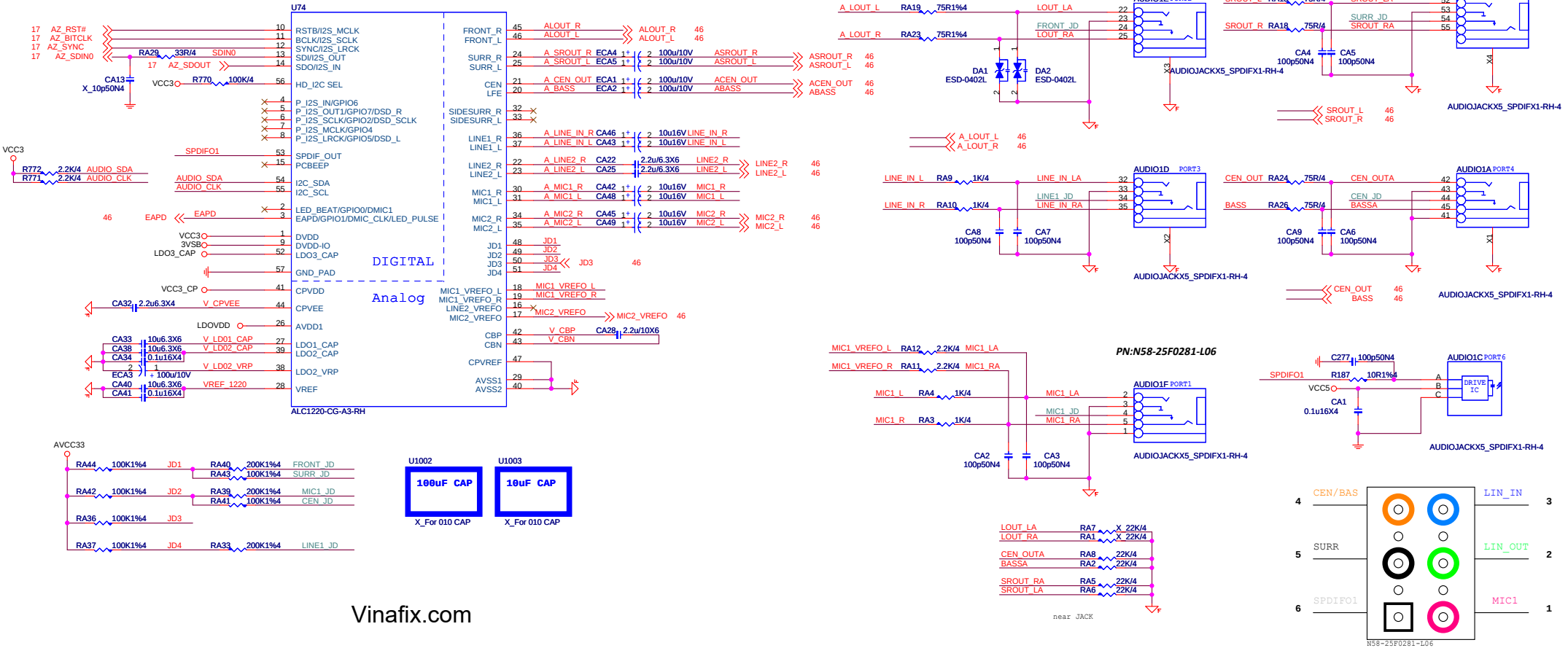
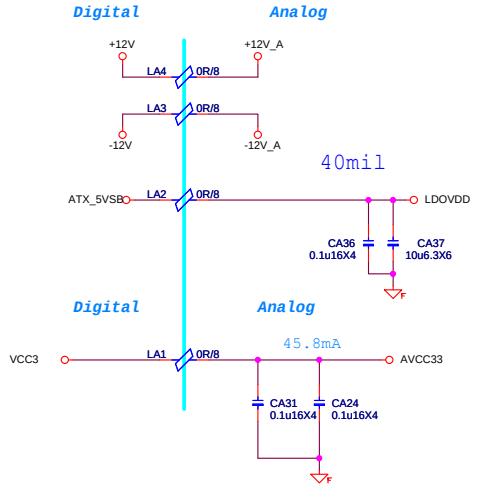
ALC1220

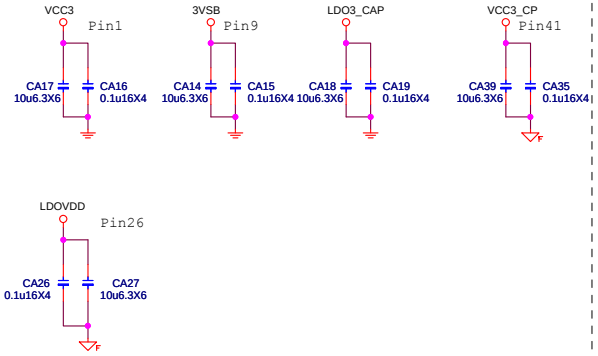


Vinafix.com

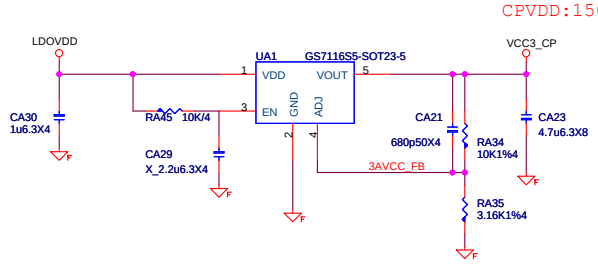
Digital / Analog



Closed Codec



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



EMI

CPA1 X_COPPER

CPA2 X_COPPER

MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: AUDIO-ACL1220-1	Rev: 2.0
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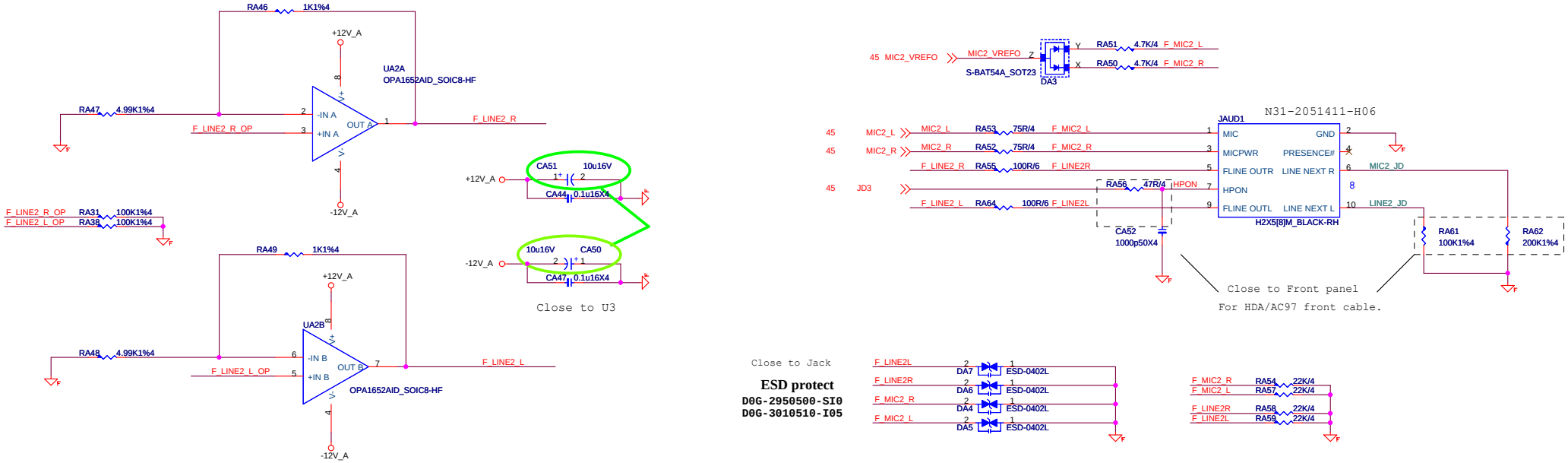
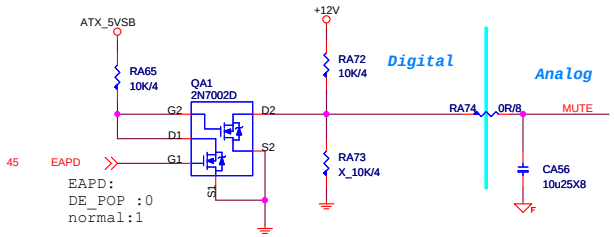
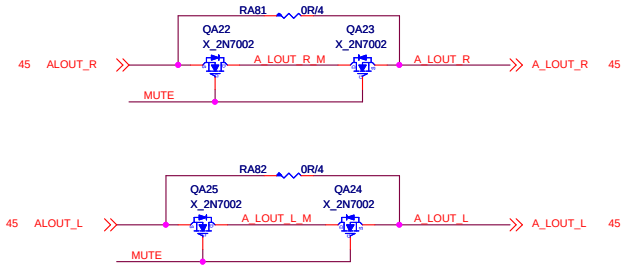
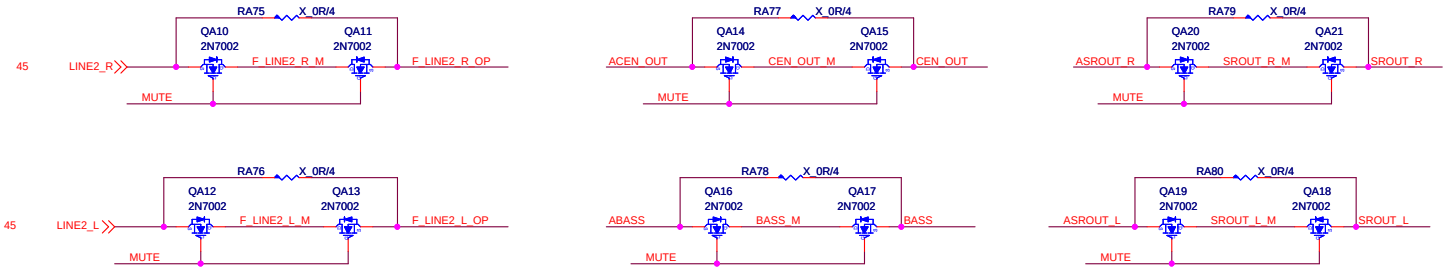
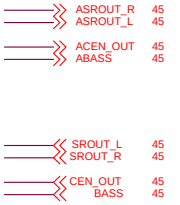


De-POP circuit









MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size	Document Description	Rev
Custom	AUDIO-ACL1220-2	2.0

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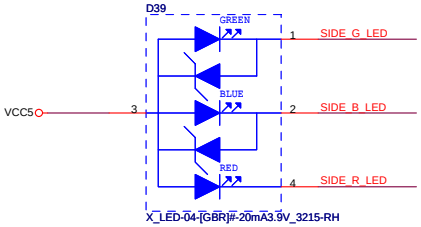
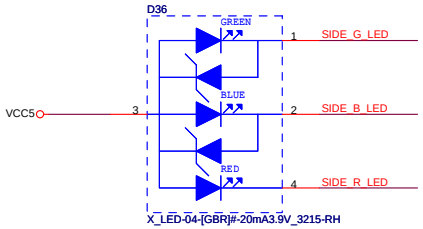
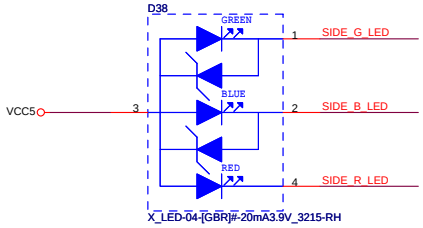
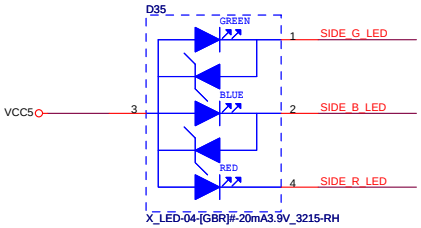
BOARD SIDE LED

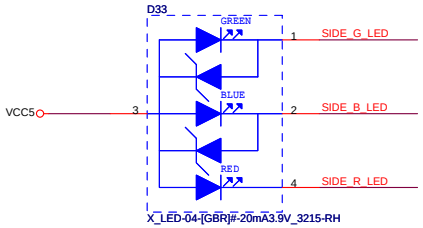
Audio moat is transparent and width 40mil

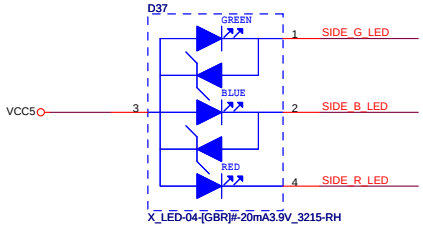


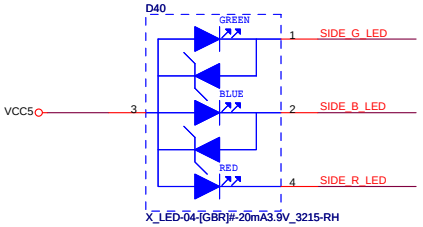


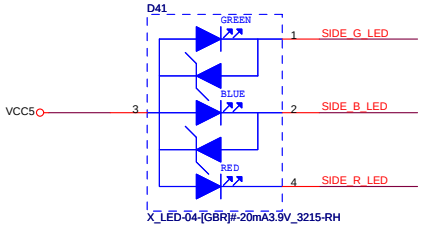


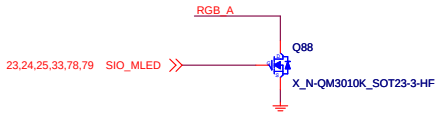


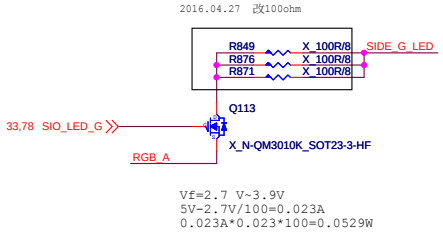


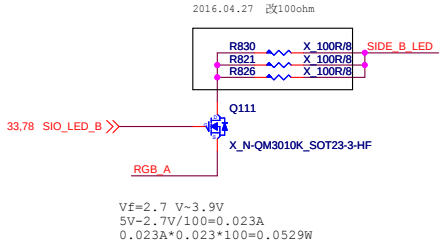


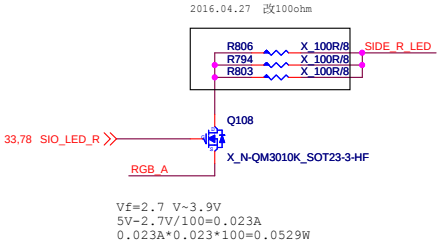












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MA-7A94...

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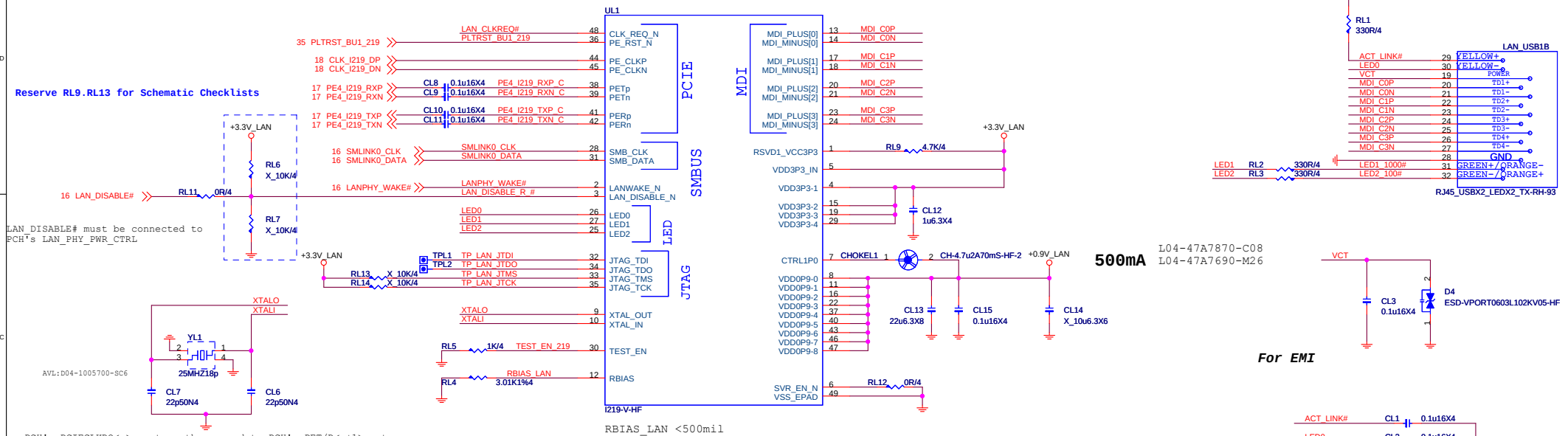
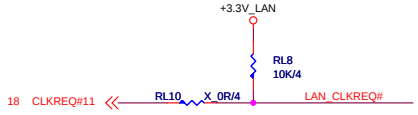
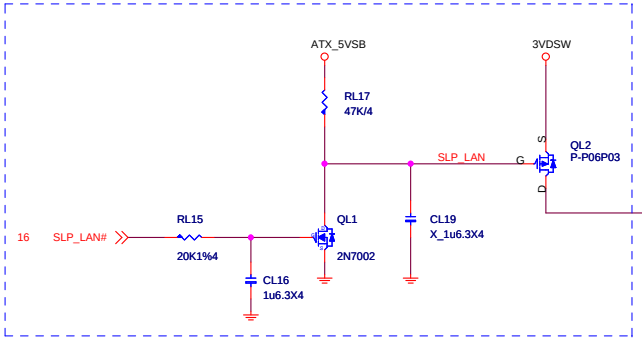
Intel I219V / I218V PHY





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



+3.3V_LAN
I218:132mA
I219:542mW

MICRO-STAR INT'L CO.,LTD			
MA-7A94...			
Size: Custom	Document Description: Intel Lan- i219		Rev: 2.0
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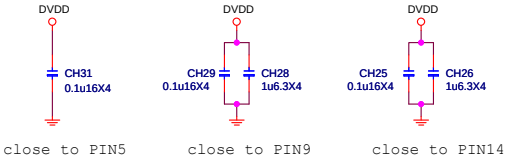

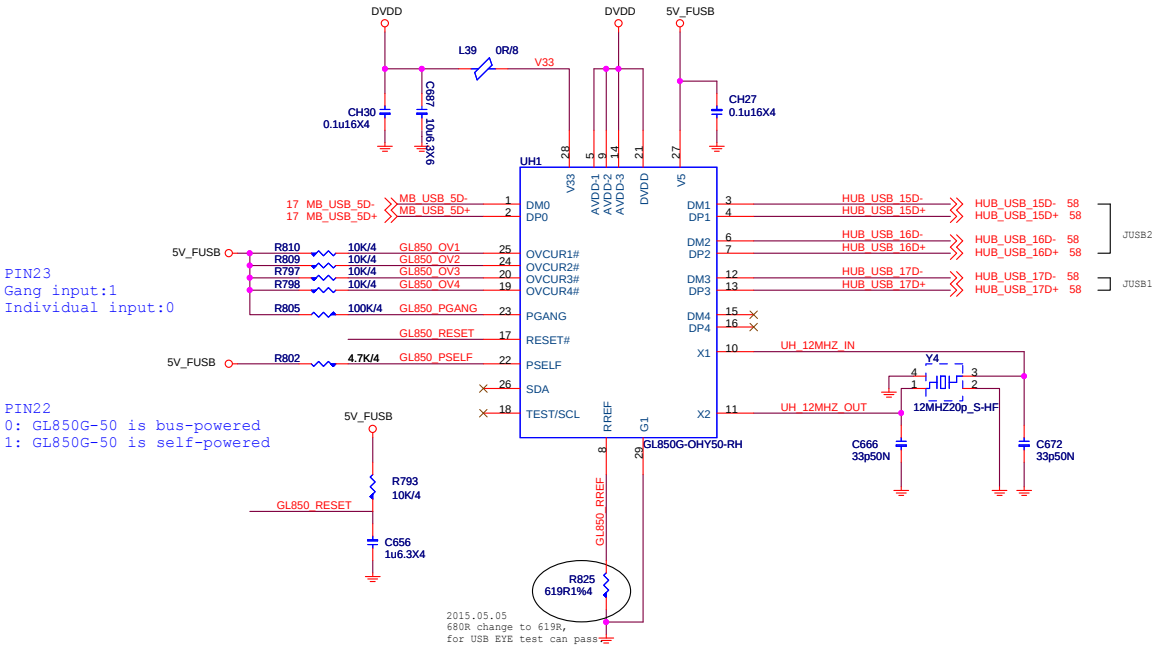

Follow 7A49

MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: USB HUB GL850G-50	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 49 of 86	

Layout Guide:

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

1 -> USB3.1-C
2 -> USB3.1-A

Power Consumption

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

UU2A ASM2142 / ASM3142-RH

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

18 CLK_ASM1142_2_DP
18 CLK_ASM1142_2_DN
PECLKP
PECLKN
U2DP_A
U2DM_A
SS31_2_DP1 54
SS31_2_DN1 54

17 PE7_ASM1142_2_RXP
17 PE7_ASM1142_2_RXN
CU10 0.22u/6.3X4
CU12 0.22u/6.3X4
PE7_ASM1142_2_RXP_C
PE7_ASM1142_2_RXN_C
PTX0P
PTX0N
U3TXP_A
U3TXN_A
U3RXP_A
U3RXN_A
SS31_2_TXP1 54
SS31_2_TXN1 54
SS31_2_RXP1 54
SS31_2_RXN1 54

17 PE7_ASM1142_2_TXP
17 PE7_ASM1142_2_TXN
CU11 0.22u/6.3X4
CU9 0.22u/6.3X4
PE7_ASM1142_2_TXP_C
PE7_ASM1142_2_TXN_C
PRX0P
PRX0N

17 PE8_ASM1142_2_RXP
17 PE8_ASM1142_2_RXN
CU13 0.22u/6.3X4
CU14 0.22u/6.3X4
PE8_ASM1142_2_RXP_C
PE8_ASM1142_2_RXN_C
PTX1P
PTX1N
U2DP_B
U2DM_B
SS31_2_DP2 54
SS31_2_DN2 54

17 PE8_ASM1142_2_TXP
17 PE8_ASM1142_2_TXN
CU15 0.22u/6.3X4
CU16 0.22u/6.3X4
PE8_ASM1142_2_TXP_C
PE8_ASM1142_2_TXN_C
PRX1P
PRX1N
U3TXP_B
U3TXN_B
U3RXP_B
U3RXN_B
SS31_2_TXP2 54
SS31_2_TXN2 54
SS31_2_RXP2 54
SS31_2_RXN2 54

35 PLTRST_BU1#_ASM1142_1
PLTRST_BU1#_ASM1142_1
ASM1142_WAKE# 2
PE_RST#
PE_WAKE#
PE_CLKREQ#

18 CLKREQ#10
RU10 0R/4
PRON_A
PRON_B
PPON_X Internal Pull-up to VCC3

ASM1142_SMI1# 2
SMI#
OCI_A#
OCI_B#

VCC3
RU37 80.6K1%4
PONRST# 2
PORST#
OCI_X Internal Pull-up to SUS

CU60 1u6.3X6
USB_SPISCK_2
USB_SPICSB_2
USB_SPISI_2
USB_SPISO_2
SPI_CLK
SPI_CS#
SPI_DI
SPI_DO
XI
XO
XI_2
XO_2

UART_RX
UART_TX
TPU2
TPU1
RX/TX Internal Pull-up

USB_SPISCK_2 RU1 4.7K/4 VCC3
RU2 X_4.7K/4
RU9 4.7K/4
TEST_EN
REXT
ASM1142_REXT_2 RU11 12.1K1%4

16,23,24,25,30,31,51 PCH_WAKE#
C230 0.1u16X4
ASM1142_WAKE# 2
QU2 NN-2N7002D
D2 S2 G2 D1 G1 S1
ASM1142_SMI1# 2

3VSB RU6 4.7K/4
18 USB3_SMI2
RU5 4.7K/4 VCC3

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

UU2B ASM2142 / ASM3142-RH

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

VCC3
USB3_3VCC_2P5_2
USB3_1P2_2

USB3_3VCC_2P5_2 RU36 0R/4 RU33 X_0R/4 VCCLU_2
3VSB
3VSB
USB3_1P2_VSB_2

VCC3 USB3_2P5_2 RU38 X_0R/4 RU39 0R/4 USB3_3VCC_2P5_2

ASM1142 RU36 stuff RU37 unstuff
ASM2142 RU36 unstuff RU37 stuff

XO_2
CU6 15p50N4
YU1 20MHZ18p_S-HF
XI_2

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

USB3_1P2_2
Close to UU1.58
CU66 10u6.3X6

USB3_1P2_VSB_2
Close to UU1.21/34
CU54 0.1u16X4
CU5 0.1u16X4

USB3_1P2_2
Close to UU1.41
CU61 10u6.3X6

USB3_1P2_2
Close to UU1.1/12/33
CU58 0.1u16X4
CU65 0.1u16X4
CU57 0.1u16X4

VCC3
Close to UU1.4/32
CU62 0.1u16X4
CU56 0.1u16X4

USB3_1P2_2
Close to UU1.35/47/52
CU59 2.2u6.3X4
CU64 2.2u6.3X4
CU67 2.2u6.3X4

3VSB
Close to UU1.20/24
CU4 0.1u16X4
CU55 0.1u16X4
VCCLU_2

USB3_3VCC_2P5_2
Close to UU1.38/44/55/62
CU63 2.2u6.3X4
CU68 2.2u6.3X4
CU8 2.2u6.3X4
CU7 2.2u6.3X4

ASM1142 1.2 VCC Power

VCC5
VCC3
CU46 22u6.3X8
RU30 47K/4
UU7 MP2143DJ
VIN SW EN FB PG PGND AGND
U95 1.0u6.3A_1210-HF
USB3_1P2_PH_2
USB3_1P2_FB_2
RU31 200K1%4
RU32 240K1%4
CU47 X_0.1u16X4
CU49 22u6.3X8
CU50 22u6.3X8
CU48 0.1u16X4
USB3_1P2_2

ASM1142 RU8/RU9 200K/187K 1.24V
ASM2142 RU8/RU21 196K/261K 1.05V

ASM1142 1.2 VSB Power

VCC3
USB3_2P5_2
UU9 GS7116S5-SOT23-5
VDD VOUT EN GND ADJ
CU69 1u6.3X4
CU71 0.1u16X4
RU40 20K1%4
RU41 9.31KR1%4
CU70 1u6.3X4

ASM1142 unstuff
ASM2142 stuff

3VSB
USB3_1P2_VSB_2
UU8 GS7116S5-SOT23-5
VDD VOUT EN GND ADJ
CU51 1u6.3X4
CU53 X_0.1u16X4
RU34 75K1%4
RU35 200K1%4
CU52 1u6.3X4

ASM1142 RU33 18K 1.24V
ASM2142 RU33 31.6K 1.05V

EEPROM

VCC3
UU1 MX25L1006EMI-10G
HOLD WP CS SO SI SCK VCC GND
RU4 10K/4
RU7 10K/4
RU8 X_4.7K/4
RU3 X_4.7K/4
USB_SPICSB_2
USB_SPISO_2
USB_SPISI_2
USB_SPISCK_2
CU1 0.1u16X4

ASM1142 UU3 M31-2551222-M24(512K bit)
ASM2142 UU3 M31-2511022-M24(1M bit)

MICRO-STAR INT'L CO.,LTD
MA-7A94...
Size: Custom
Document Description: USB3.1-ASM2142AE-2
Rev: 2.0
Date: Tuesday, November 19, 2019
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Layout Guide:

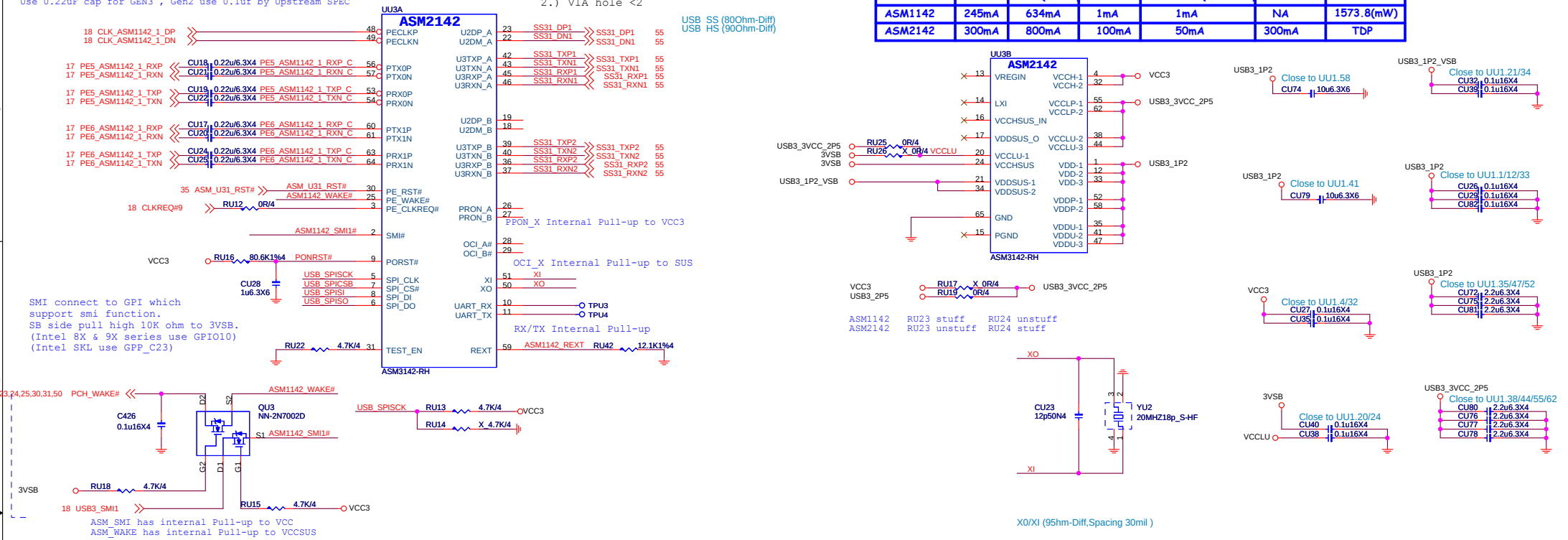
1.) USB3.1 to Connector Total Length < 1.5"
2.) VIA hole <2

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

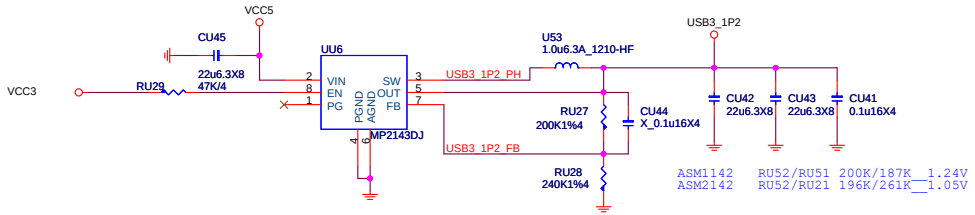
USB SS (80Ohm-Diff)
USB HS (90Ohm-Diff)

Power Consumption

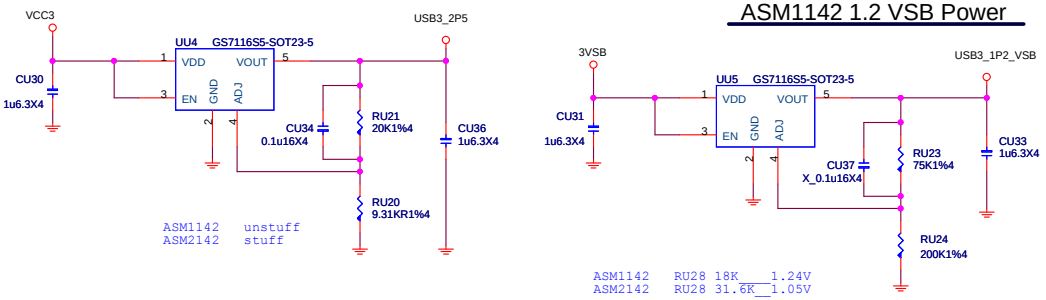
	3.3V	1.2V(1.05V)	3.3VSUS	1.05VSUS(1.2VSUS)	2.5V	Total Power
ASM1142	245mA	634mA	1mA	1mA	NA	1573.8(mW)
ASM2142	300mA	800mA	100mA	50mA	300mA	TDP



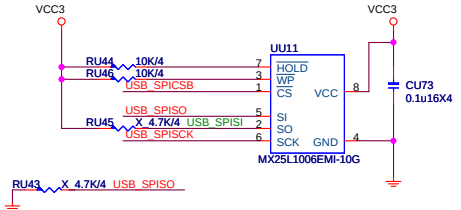
ASM1142 1.2 VCC Power



ASM1142 1.2 VSB Power



EEPROM



MSI	MICRO-STAR INT'L CO.,LTD	
	MA-7A94...	
Size: Custom	Document Description: USB3.1-ASM2142AE-1	Rev: 2.0
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F75504 layout placement must meet to spi/usb trace length spec with host.
As for as possible place near to host.

F75504 PM requst Remove 0407 mail

MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	PS2 USB	2.0

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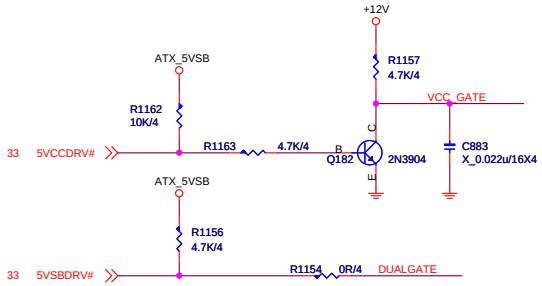
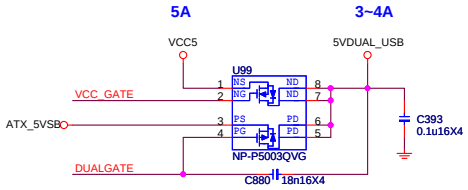
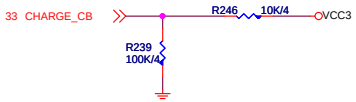
5VDUAL_USB

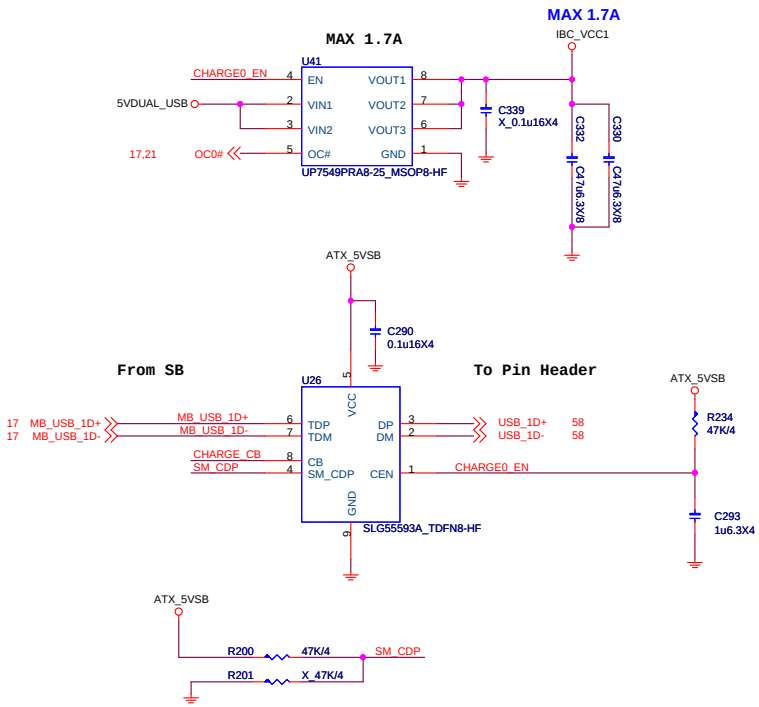




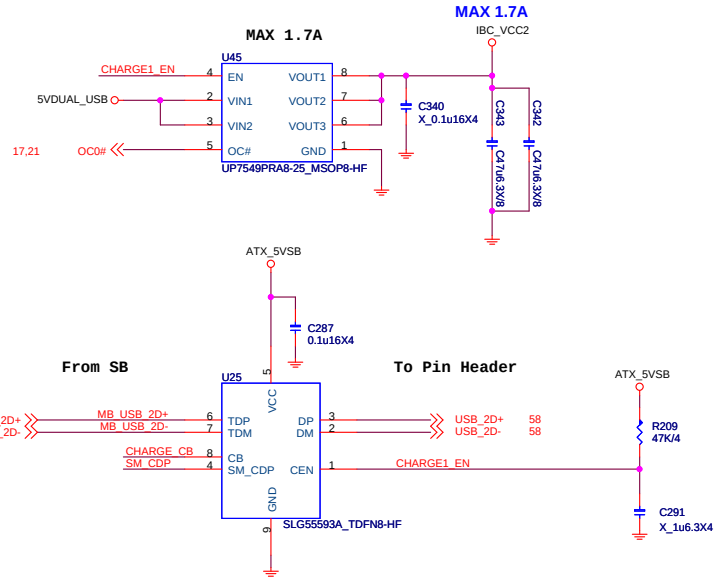
Pin power : I_3VSB
Register power : I_3VSB
Register reset : I_3VSB



USB POWER PORT 0 For USB Charging



USB POWER PORT 1 For USB Charging



MICRO-STAR INT'L CO.,LTD

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Custom	USB CHARGE_SLG55593A	2.0

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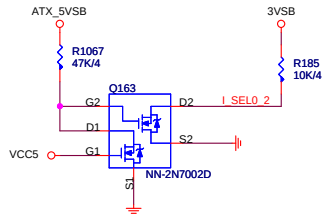
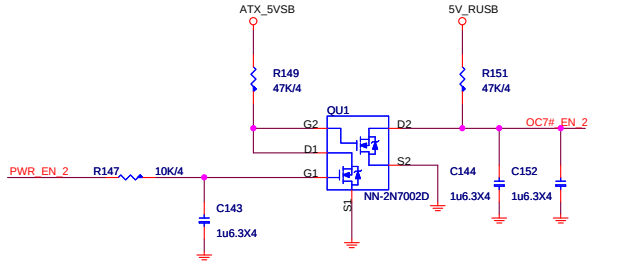
Current Mode

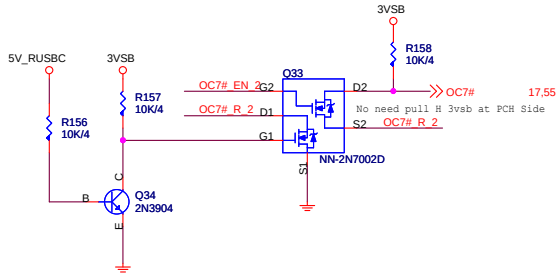


0	X	Default for 900mA
1	0	1.5A @5V
1	1	3A @5V

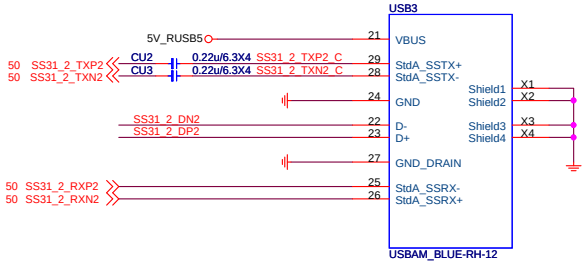
1.5A under S3 mode
3A under S0 mode

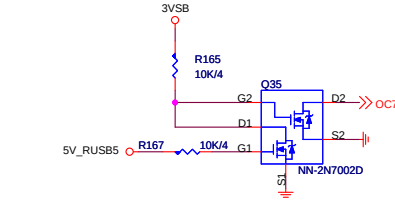
VBUS OC#

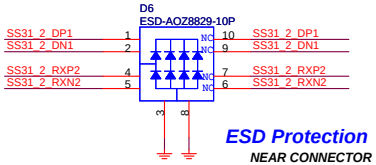


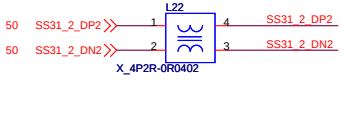


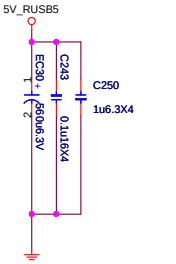
TYPE-A





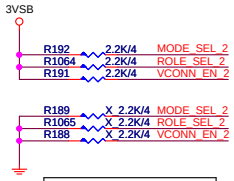






ESD Protection
NEAR CONNECTOR

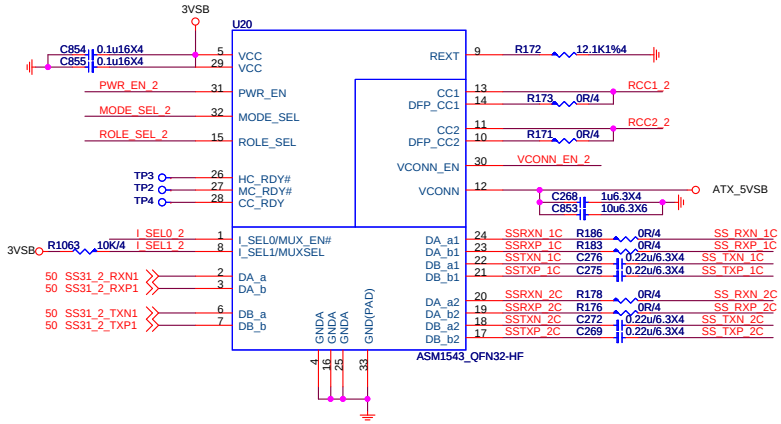
USB Type-C MUX with Configuration Channel (CC)

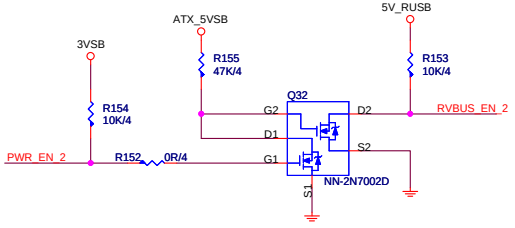


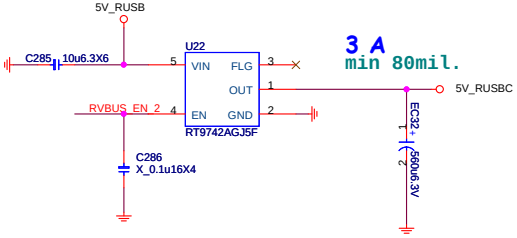
MODE_SEL	
1	CCL MODE (default)
0	Mux MODE

ROLE_SEL	
1	DFP role (default)
0	UFP role

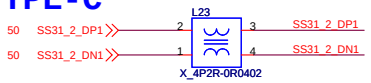
VCONN_EN	
1	enable
0	disable

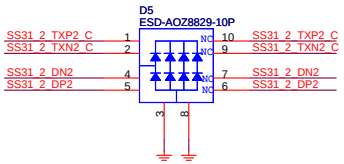




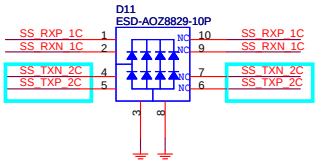


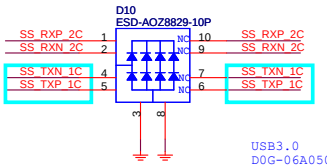
TYPE-C

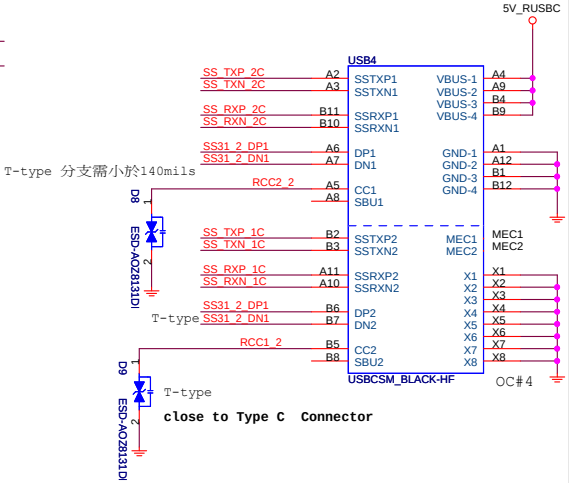


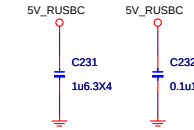


ESD Protection
NEAR CONNECTOR









USB3.0
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL
D0G-45B031C-005 AVL

MSI	MICRO-STAR INT'L CO.,LTD		
	MA-7A94...		
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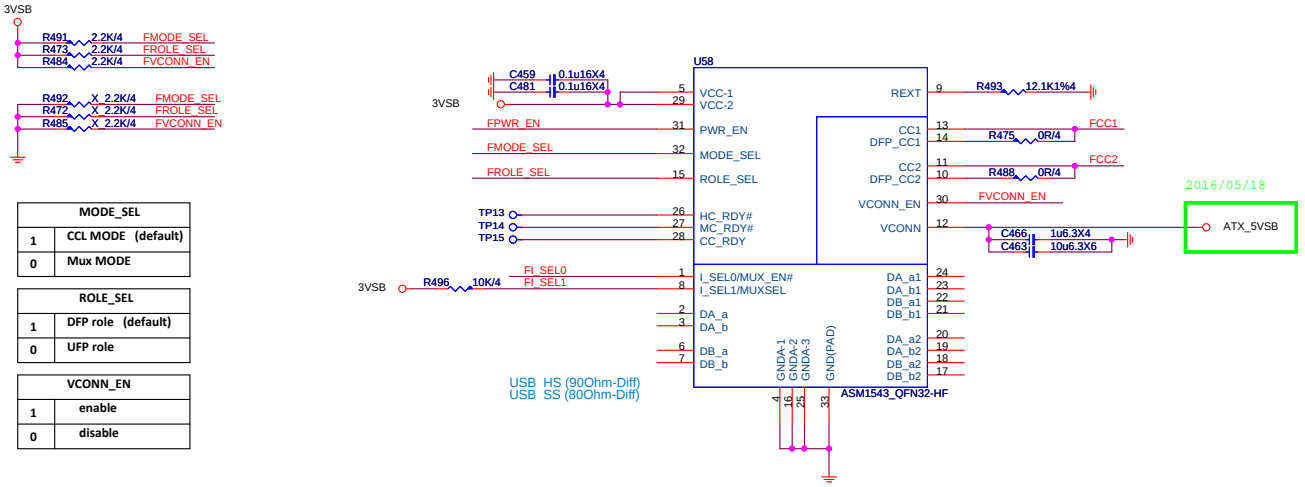
USB 3.1-Type-C

USB Type-C MUX with Configuration Channel (CC)

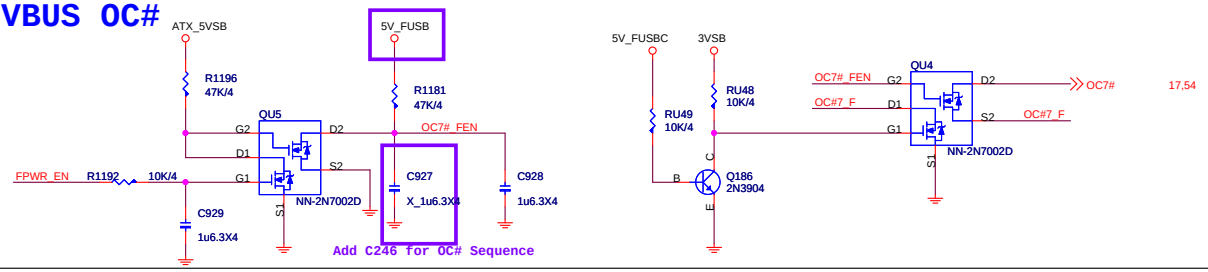


MODE_SEL	
1	CCL MODE (default)
0	Mux MODE

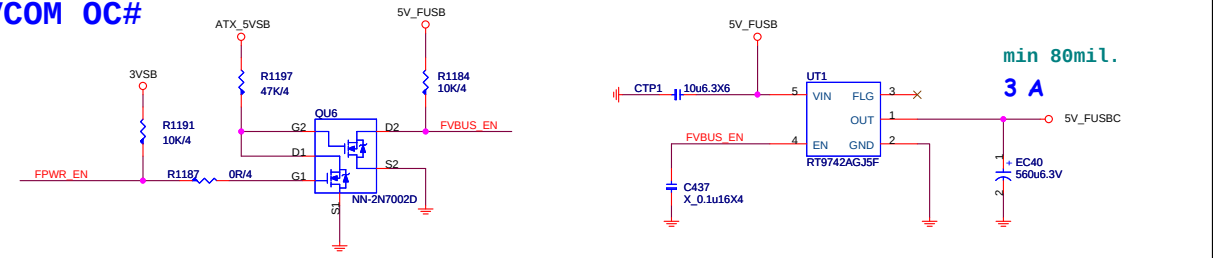
ROLE_SEL	
1	DFP role (default)
0	UFP role

VCONN_EN	
1	enable
0	disable

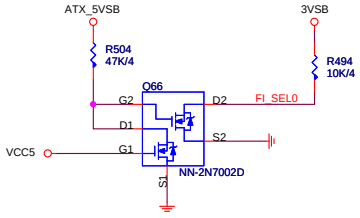
VBUS OC#



VCOM OC#



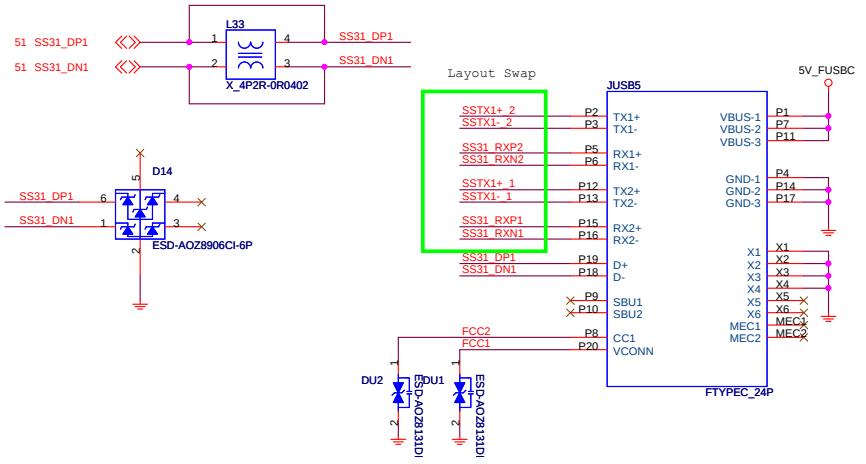
Current Mode

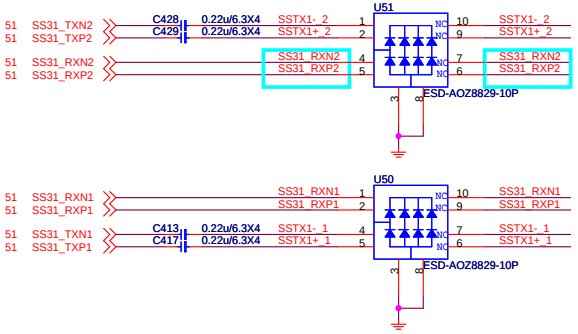


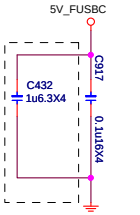
I_SEL0 : I_SEL1

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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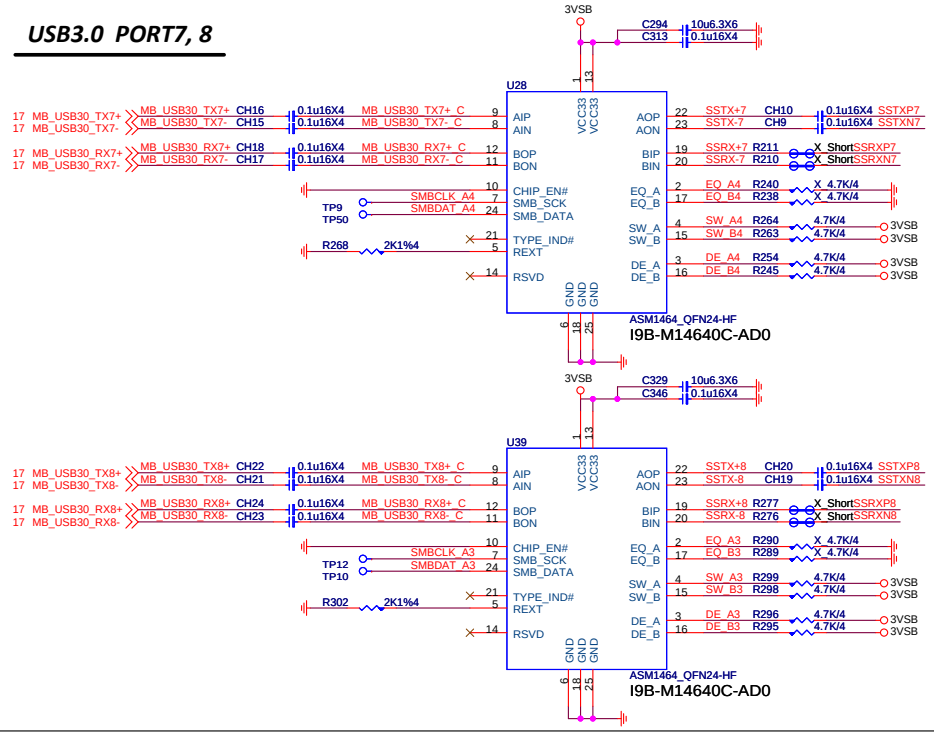
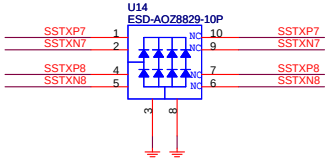
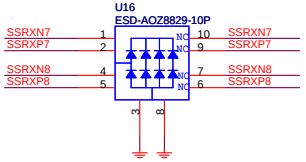
USB3.0 PORT7, 8

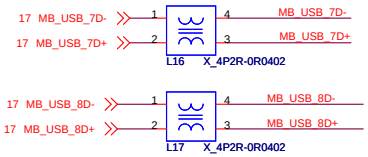


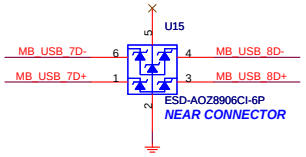
Close to Connector



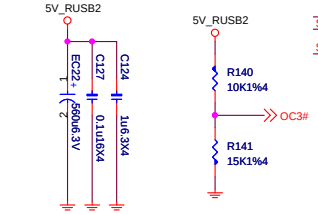
Close to Connector

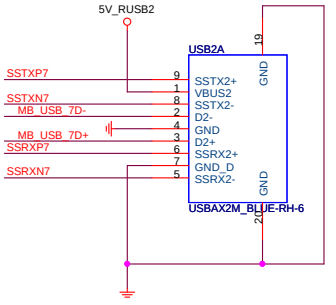


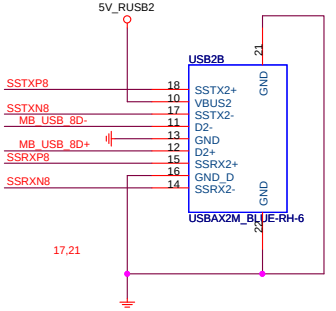




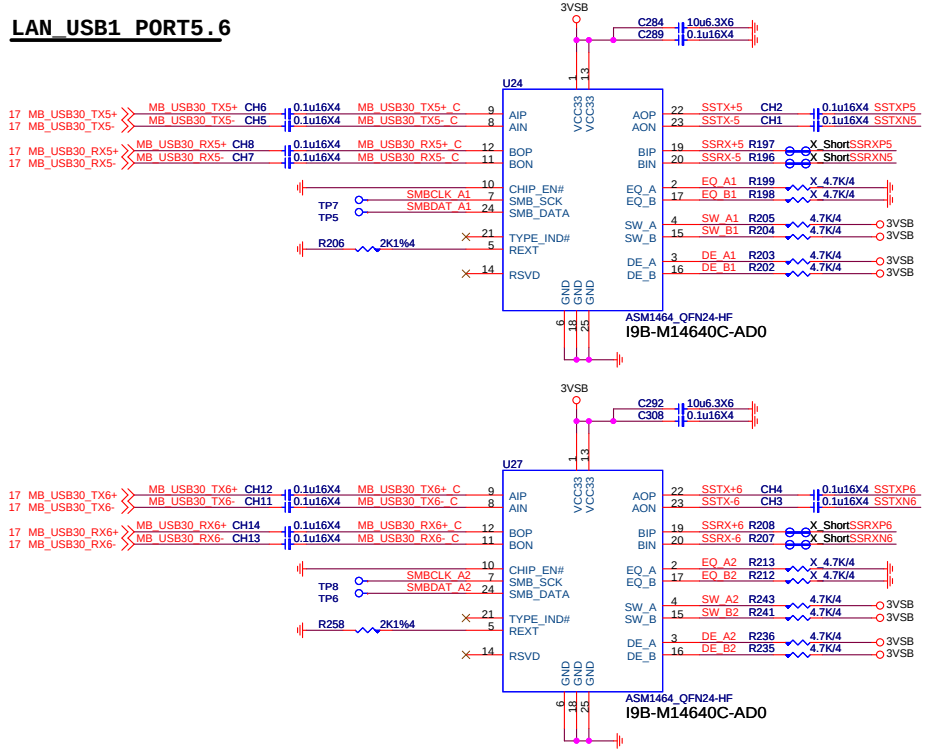
Close to Power Pin

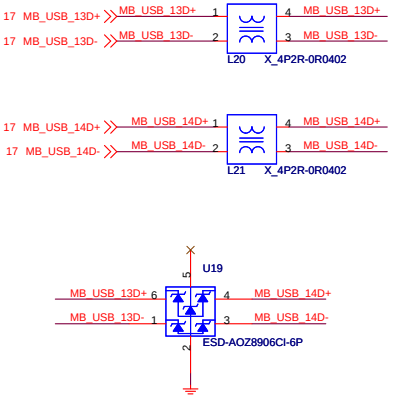


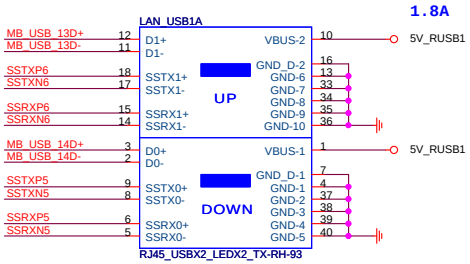




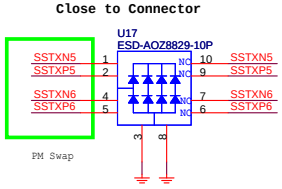
LAN_USB1 PORT5.6



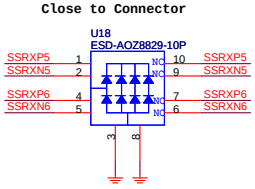




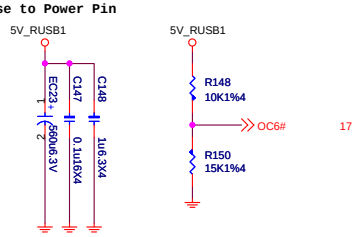
Close to Connector



Close to Connector



Close to Power Pin



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MA-7A94...
Size: Custom
Document Description: REAR USB30 CONNECTOR
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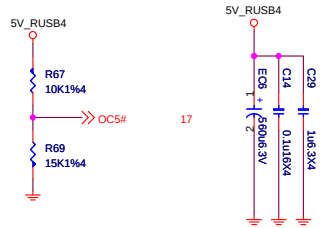
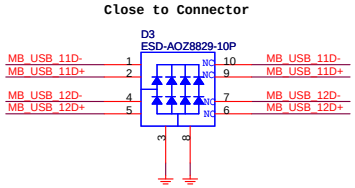
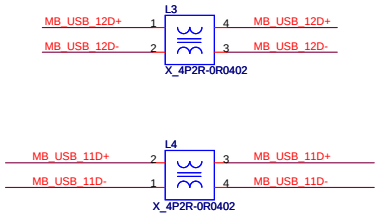
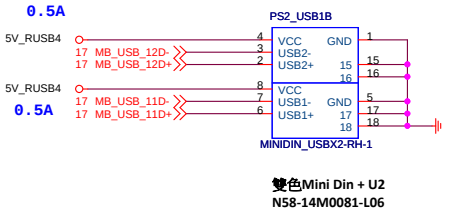
PS2_USB1



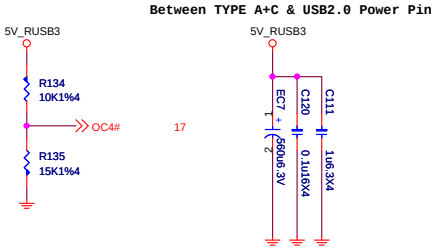


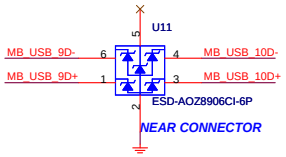


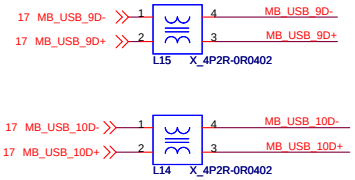


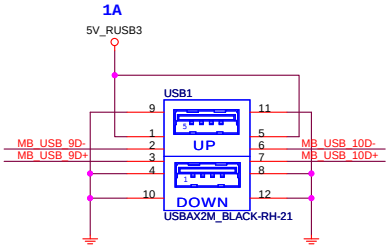
雙色Mini Din + U2
N58-14M0081-L06

USB2.0 PORT9, 10









MSI	MICRO-STAR INT'L CO.,LTD	
	MA-7A94...	
Size: Custom	Document Description: REAR USB20 CONNECTOR	Rev: 2.0
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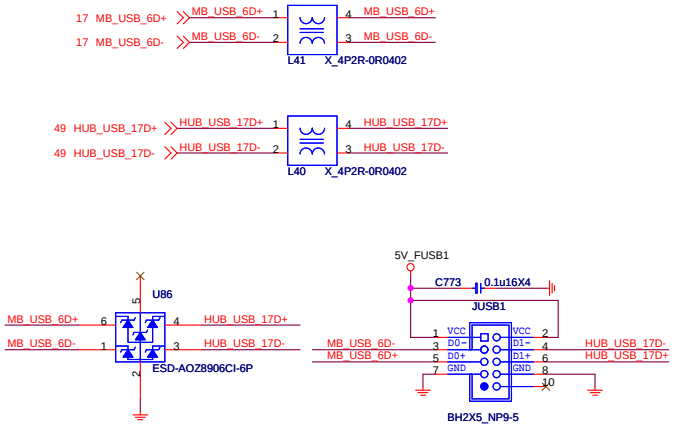
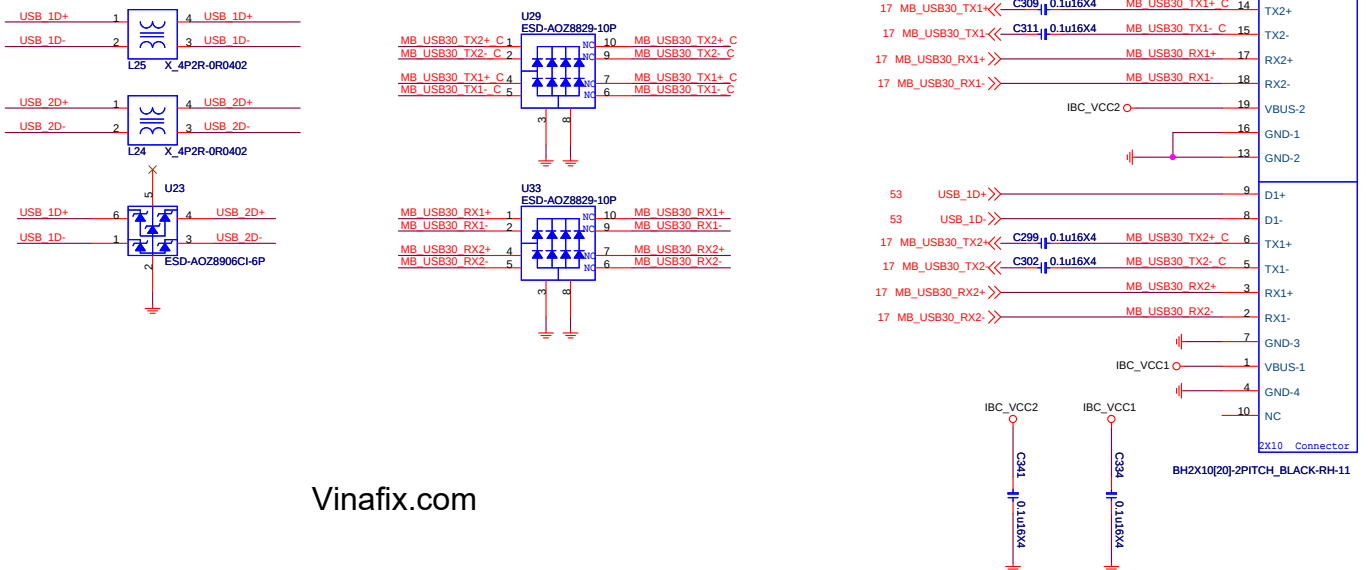
FRONT USB PORT 6. HUB PORT 17

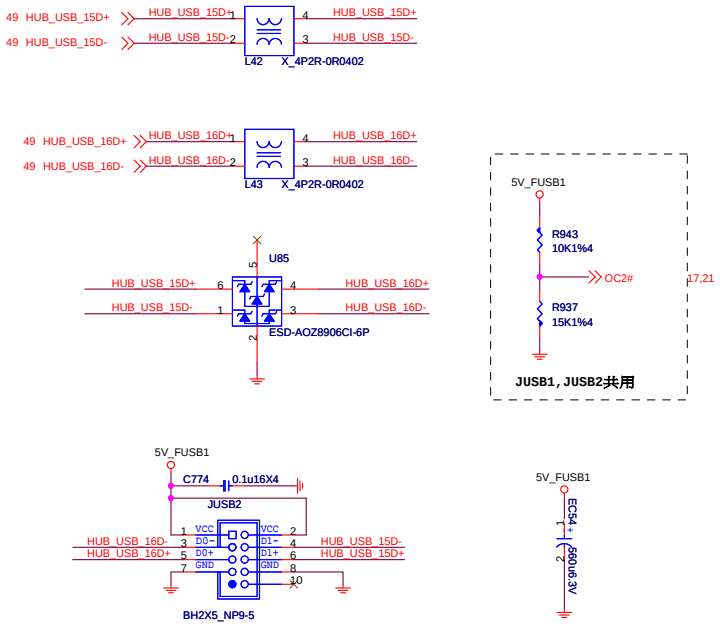


FRONT USB PORT 1,2

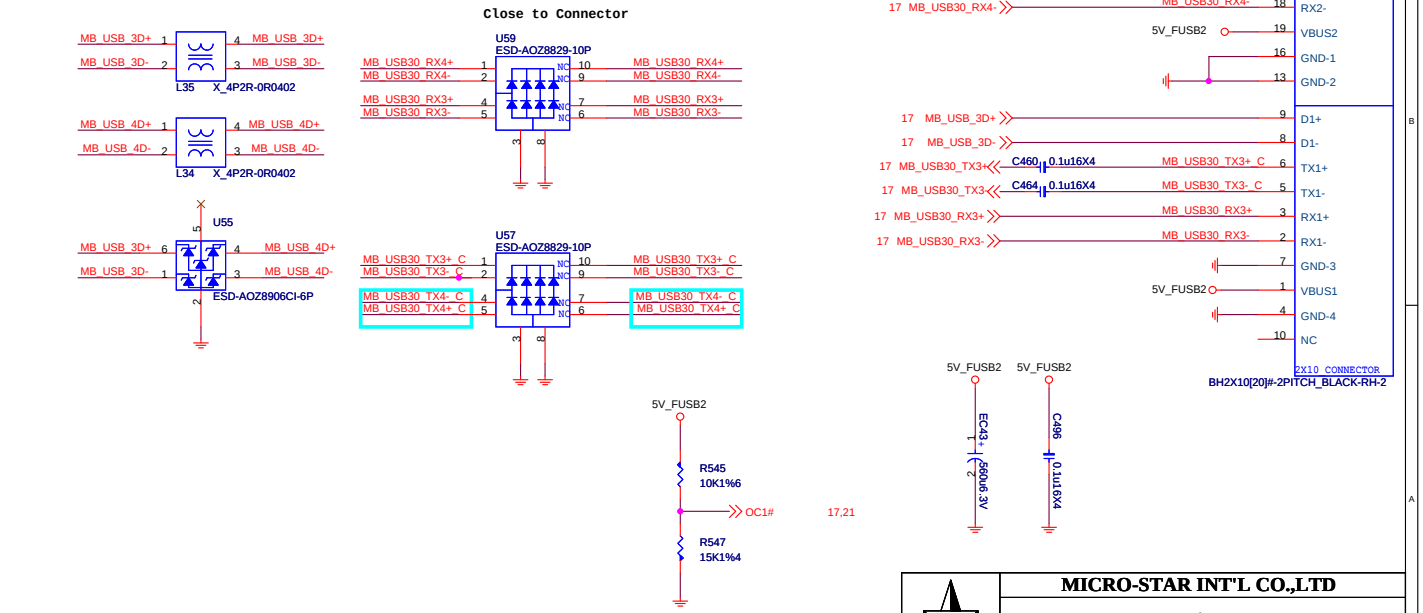


Vinafix.com

FRONT USB HUB PORT 15,16



FRONT USB PORT 3,4



MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: Rear/Front USB2.0	Rev: 2.0
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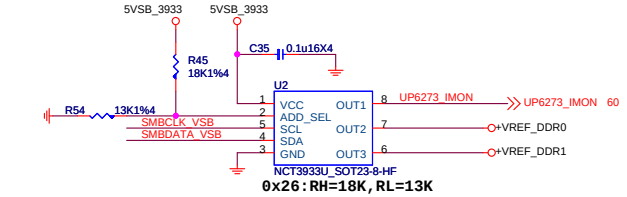
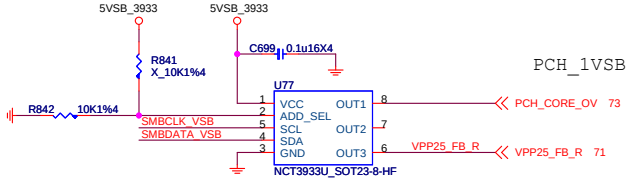
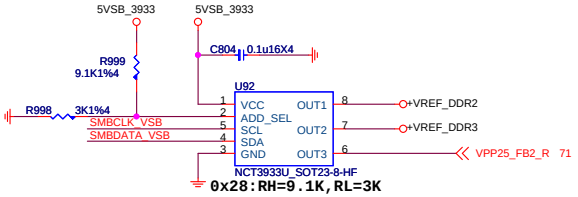
UPI VOLTAGE CONSOLE



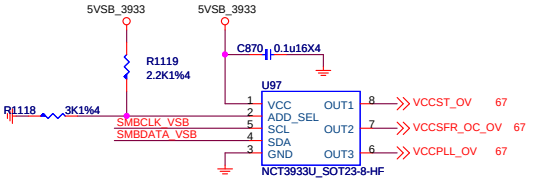
0x26:RH=18K,RL=13K



0x2A:RH=OPEN,RL=10K



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

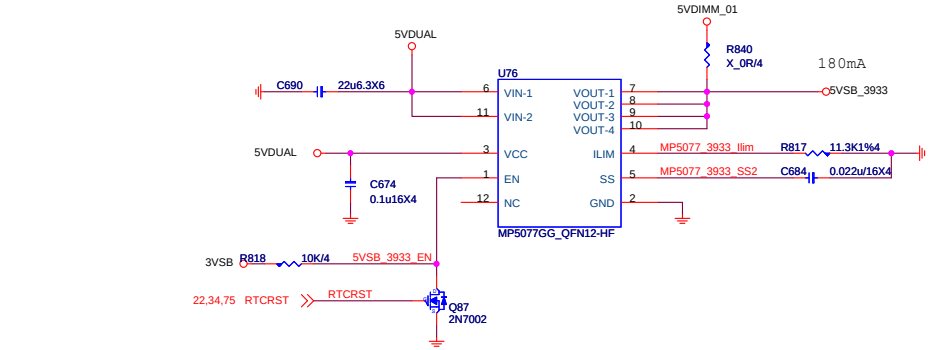


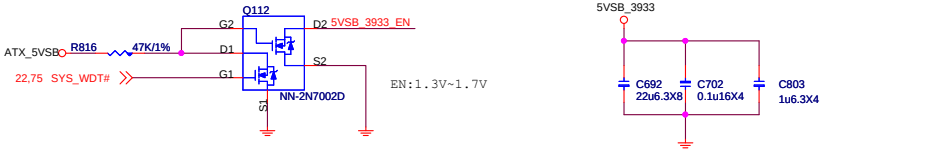
0x24:RH=2.2k,RL=3K

VOLTAGE CONSOLE

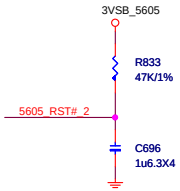
ADDRESS	0x2A	0X28	0x26	0x24	0x22	0x20
RH (KOhm)	OPEN	3.9	3	2.2	1.3	10
RL (KOhm)	10	1.3	2.2	3	3.9	OPEN
BUS_SEL	0%	25%	42%	58%	75%	100%

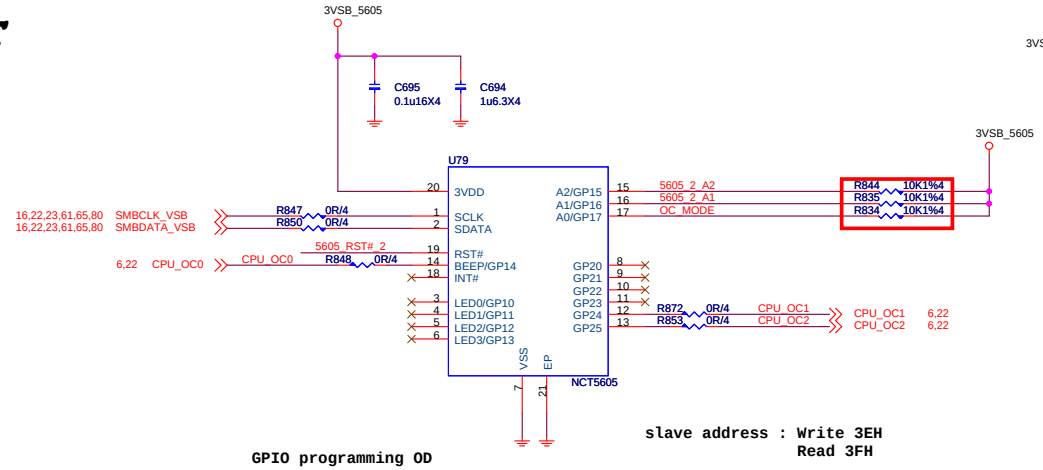
2017.04.14 Ryan mail Remove





RSVD FOR OC





GPIO programming OD

slave address : Write 3EH
Read 3FH

MICRO-STAR INT'L CO.,LTD			
MA-7A94...			
Size: Custom	Document Description: NCT3933U OV		Rev: 2.0
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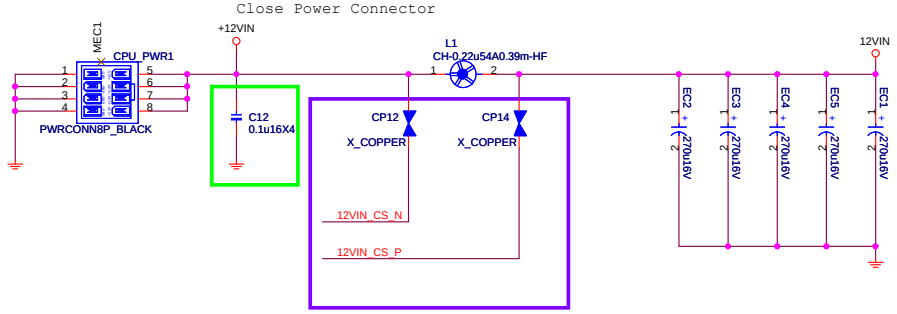
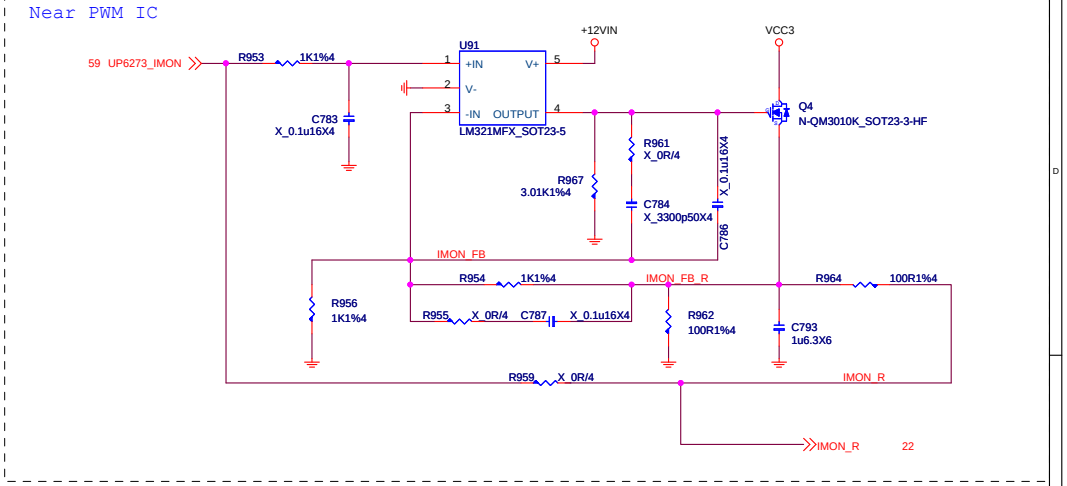
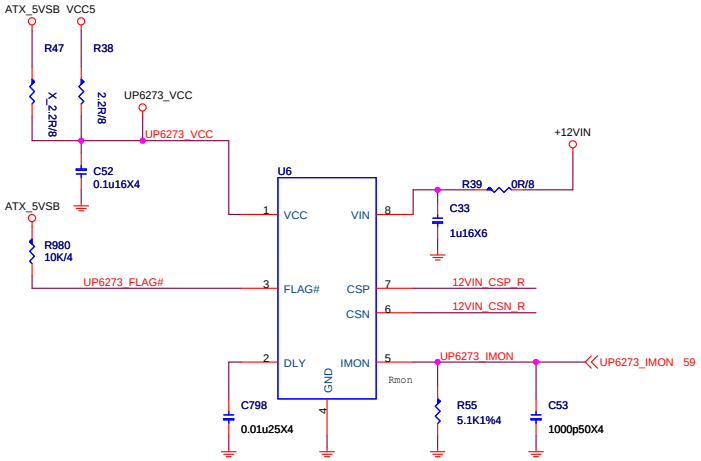






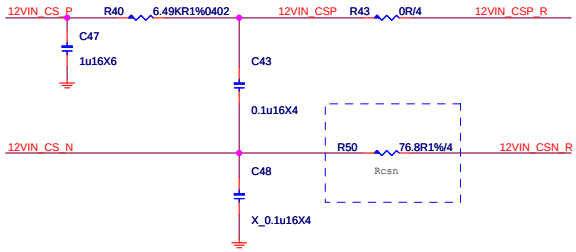
UP6273AMT8_TSOP23-8-HF

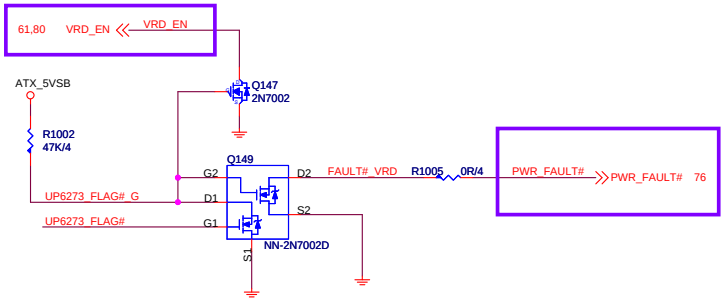
Iin=(Vmon*Rcsn)/(Rmon*Rdc)
Vmon=1.2
can change OCP trigger level by Rcsn and Rmon

一路2A
Rimon5.1Kohm
Rcsn0.0768Kohm
DCR0.39mohm
Vimon1.2V
Iocp48A

Iin*Rdc*Rmon/Rcsn>Vmon
48*0.39m*5.1K/76.8=1.243

Imon*Rcsn/Rdc=Iin
10u*76.8/0.39m=1.969A





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MA-7A94...		
Size: Custom	Document Description: 12VIN SENSE RT9553	Rev: 2.0
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VRMPWRGD LEVEL SHIFT

Vcore: ICC Max 100A
LL: 1.0 mohm
OCP: 320A

VSA: ICC Max 15A
OCP: 40A

teknisi indonesia

PROC_ID1	Sequence	CPU TYPE
1	VCCIO->VCCIN->VCCSA	SKX-X (VR13)
0	VCCIO->VCCSA->VCCIN	KBL-X(IMVP8)

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

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

SMB Address: 0X70

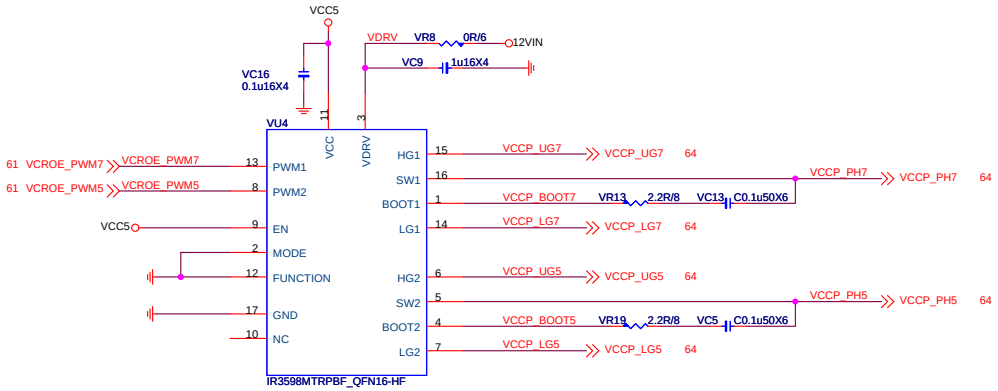
7B05 Add PWM6,7,8

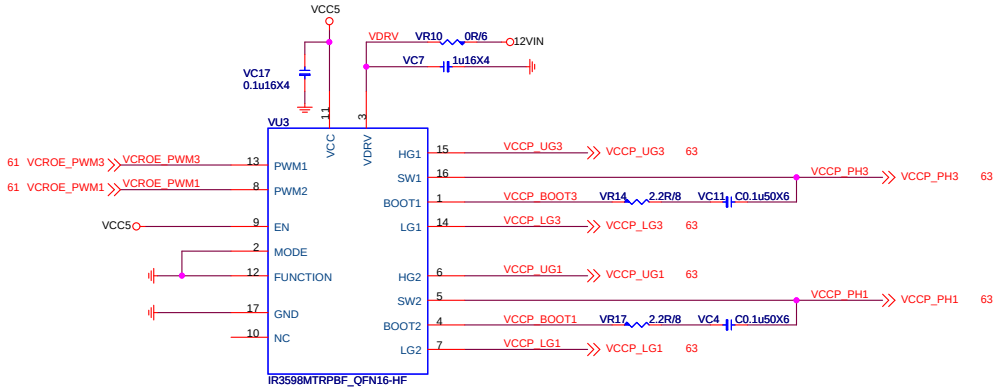
0302 ADD

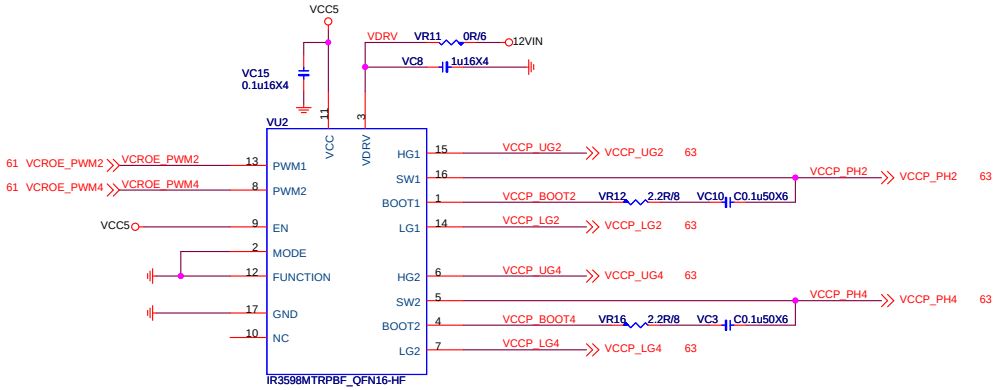
防S5下漏電到VCC5
改版記得拿掉

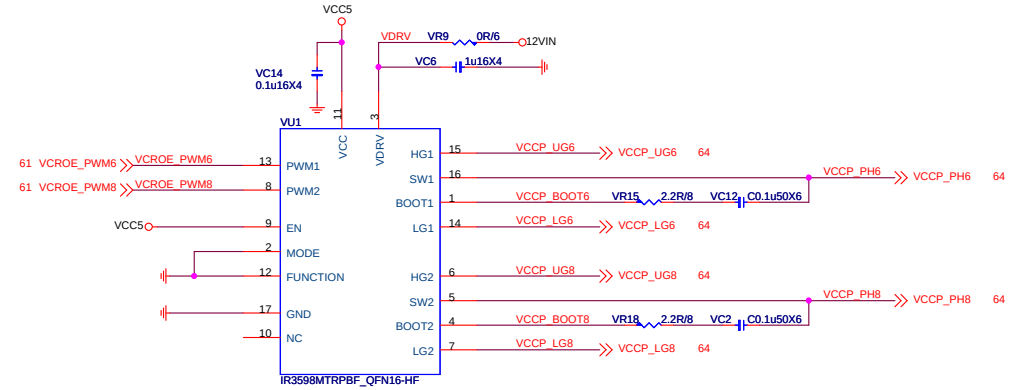
dummy load for SEN pin 漏電

MICRO-STAR INT'L CO.,LTD	
MA-7A94...	
Size: Custom	Document Description: CPU PWR-IR35201
Rev: 2.0	
Date: Tuesday, November 19, 2019	Sheet 61 of 86









MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size	Document Description	Rev
Custom	CPU PWR-IR3598	2.0

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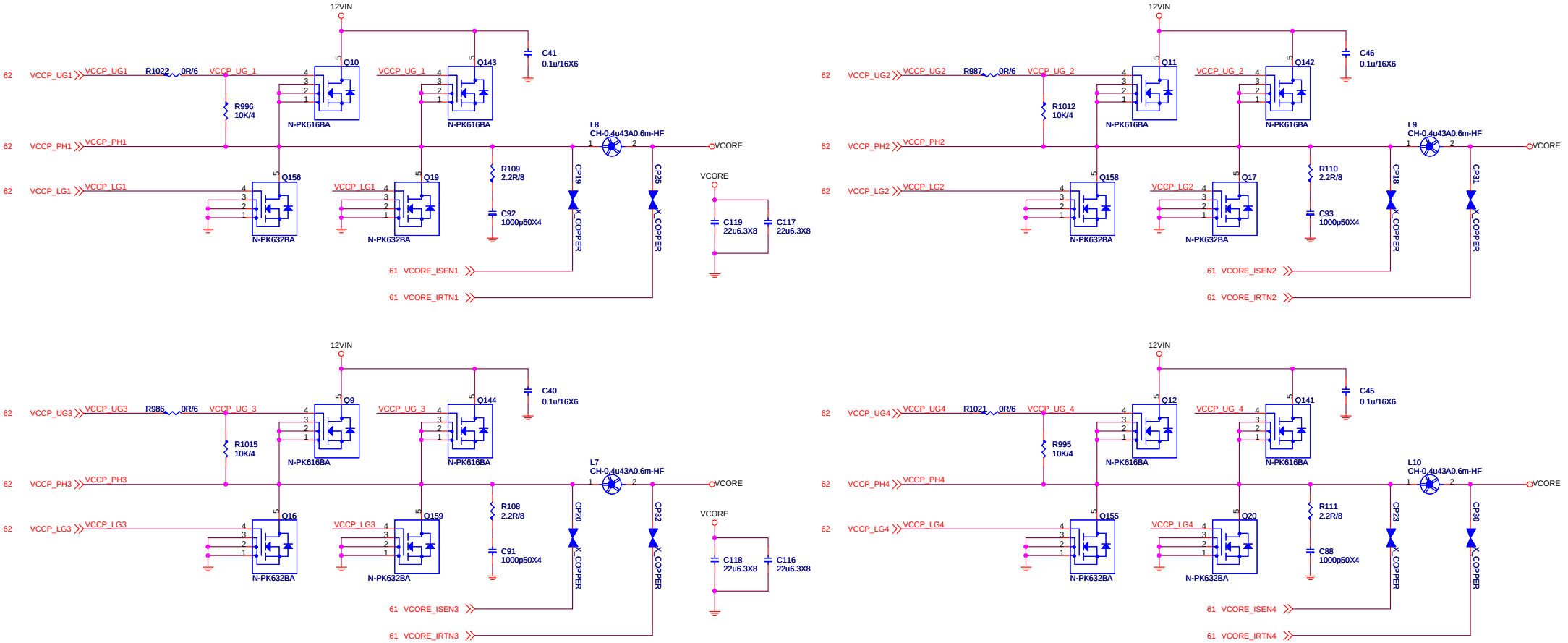

MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: CPU PWR-CORE-PH1~4	Rev: 2.0
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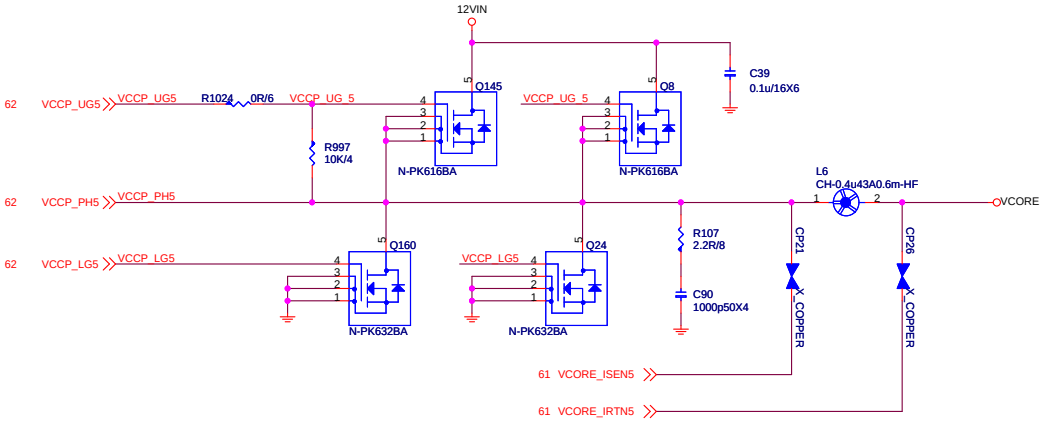

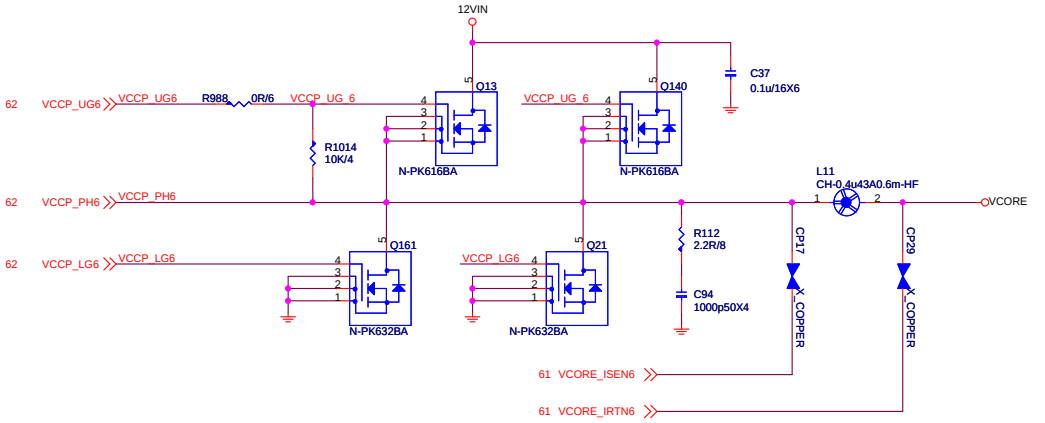

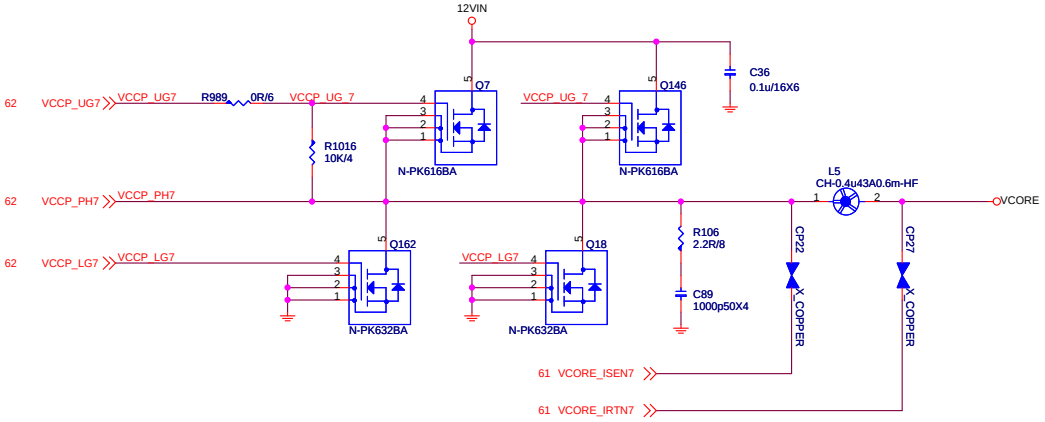

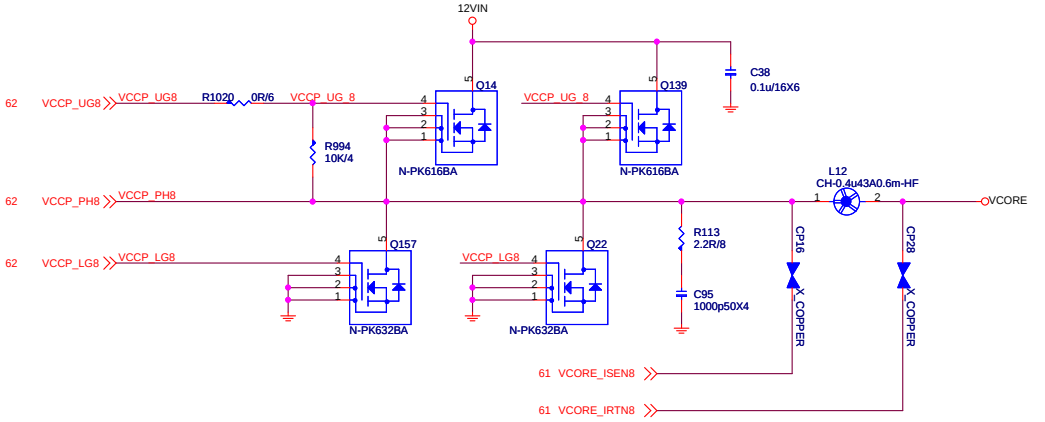

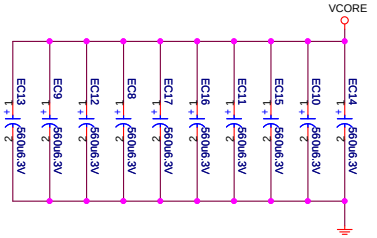

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MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size	Document Description	Rev
Custom	CPU PWR-CORE-PH5~8	2.0

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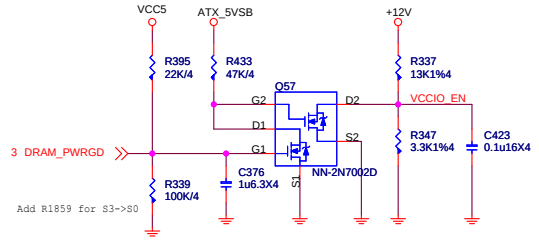
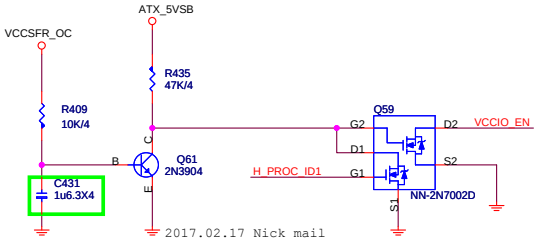
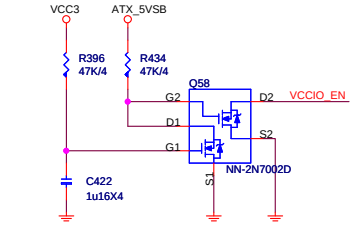
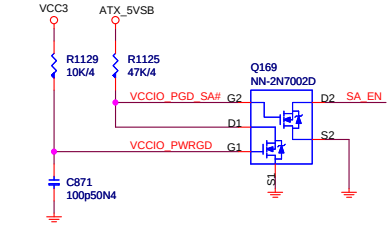
VCCIOPWRGD LEVEL SHIFT

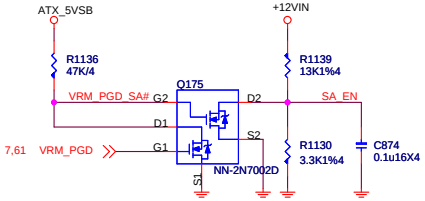


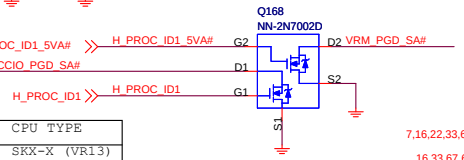
RSVD For KBL-X VCCIO Sequence











PROC_ID1	Sequence	CPU TYPE
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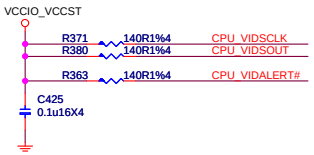
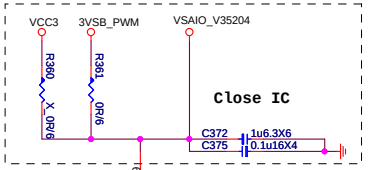
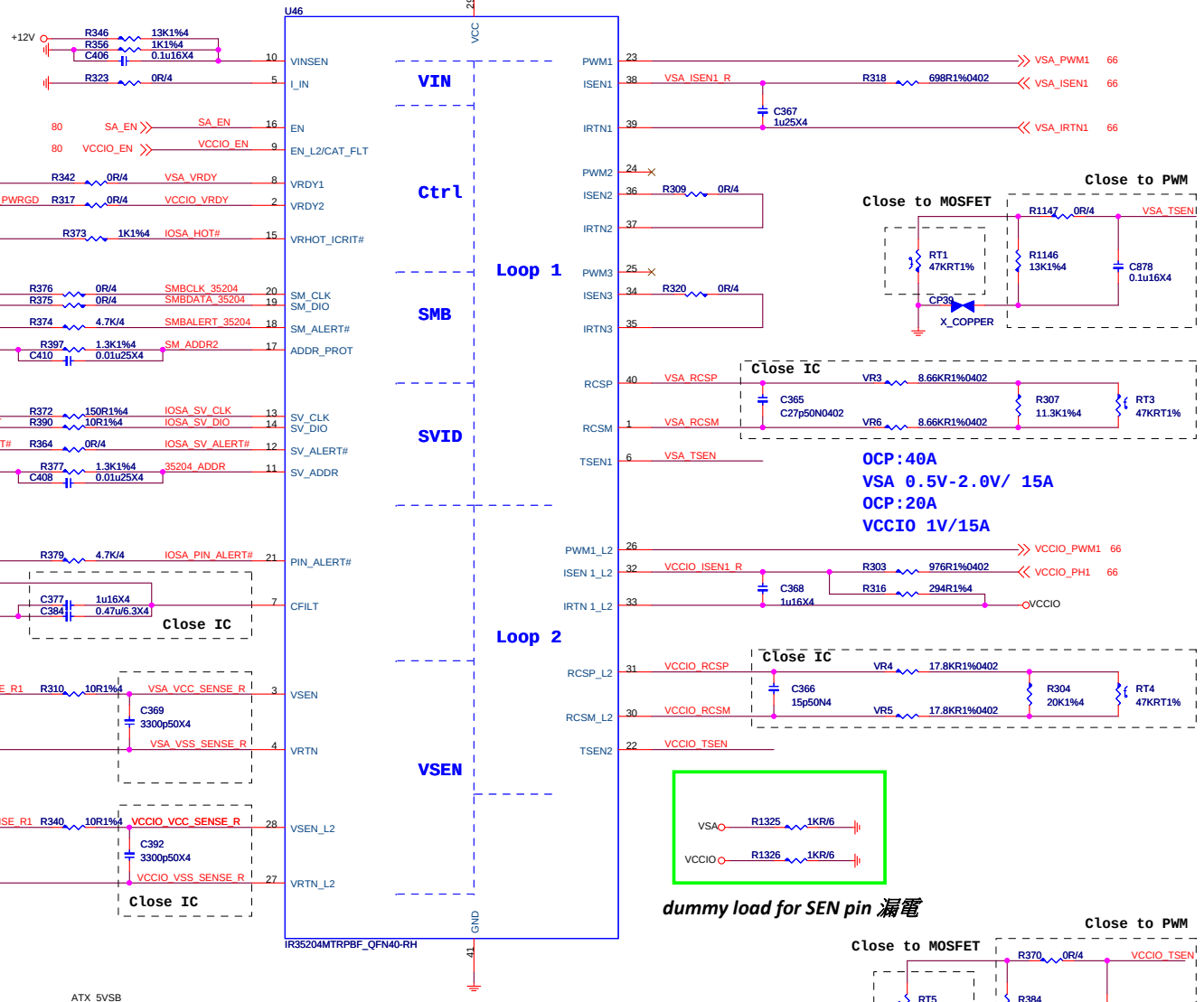
0	VCCIO->VCCSA->VCCIN	KBL-X(IMVP8)





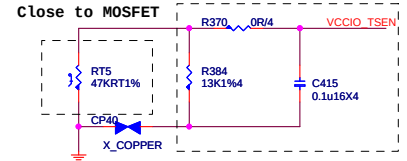
CPU ID CFG

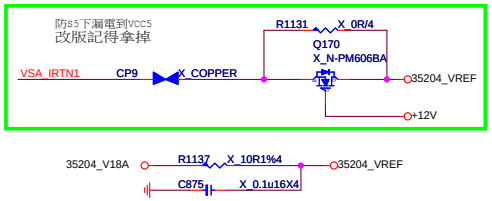
PROC_ID1	PROC_ID0	CPU TYPE
0	0	future CPU(IMVP9)
0	1	KBL-X(IMVP8)
1	0	future CPU
1	1	SKX-X (VR13)

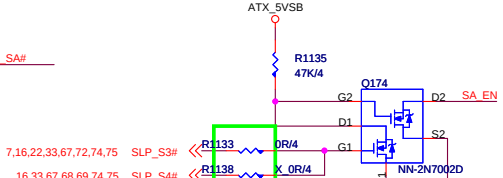


OCP:40A
VSA 0.5V-2.0V/ 15A
OCP:20A
VCCIO 1V/15A

dummy load for SEN pin 漏電







106.07.20 Ryan mail
防止進入S3時,SA_EN掉電未完全時,PHASE倫打

MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: VR13_VSA/VCCIO IR35204	Rev: 2.0
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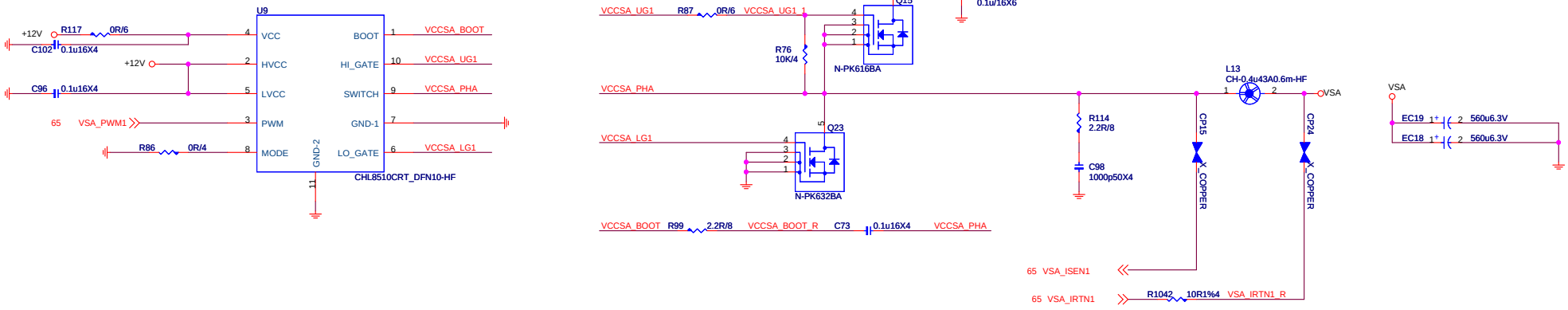
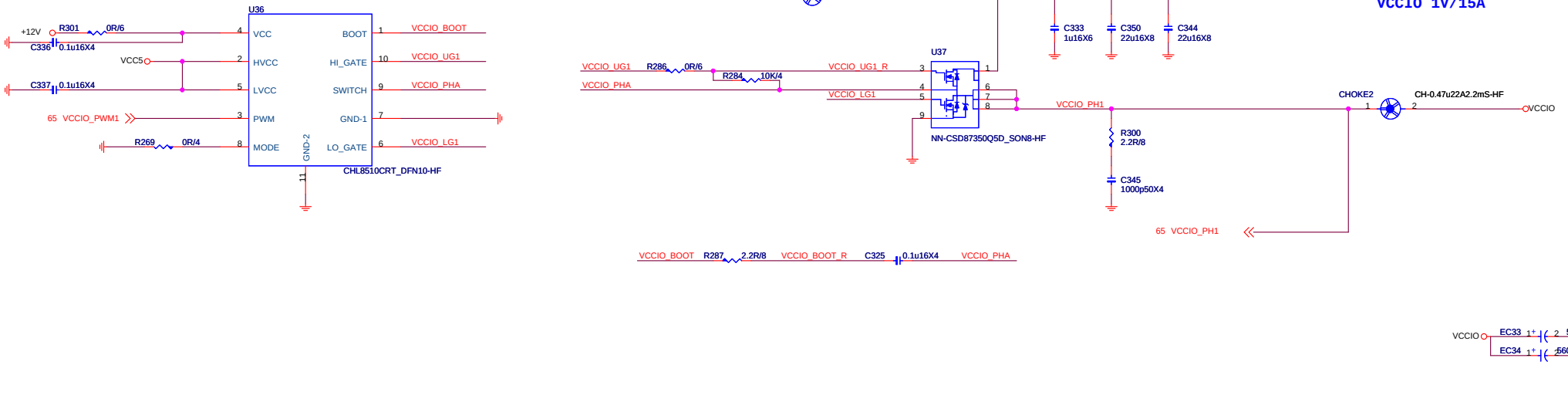
OCP:40A
VSA 0.5V-2.0V/ 15A



Vinafix.com

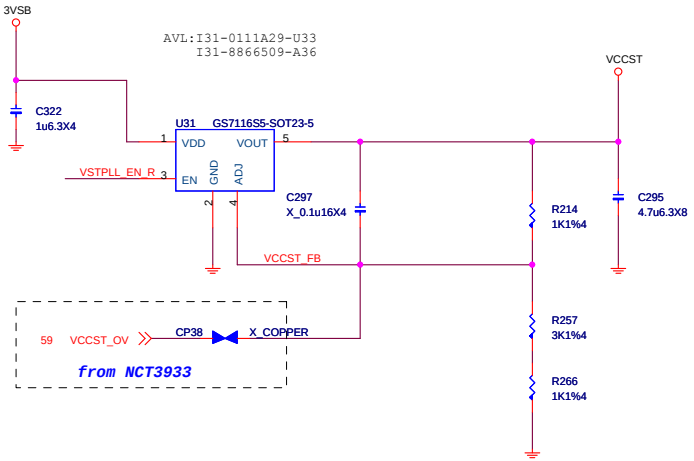
OCP:20A
VCCIO 1V/15A



MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: VCCIO/VSA 1+1 PHASE	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 66 of 86	

VCCST

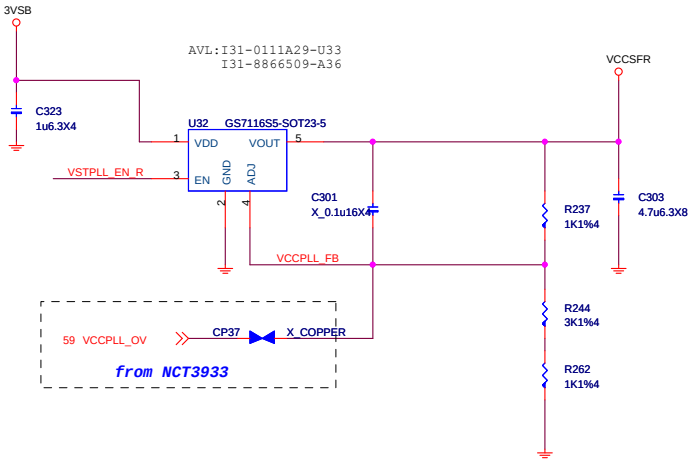
1.0V; 60mA



VCCIO ramped and stable before
beginning of VCCOPC/VCCEOPIO ramp
VCCST/PLL stable lms before PROCPWRGD

VCCSFR

1.0V; 150mA



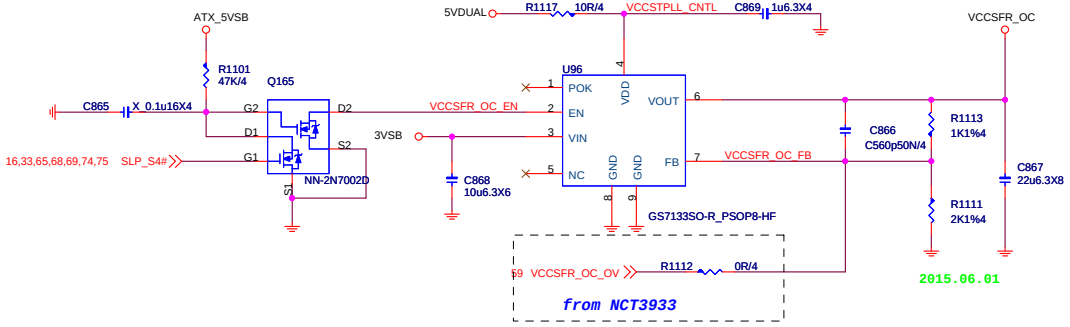
2017.03.27 Ryan mail remove vccst02

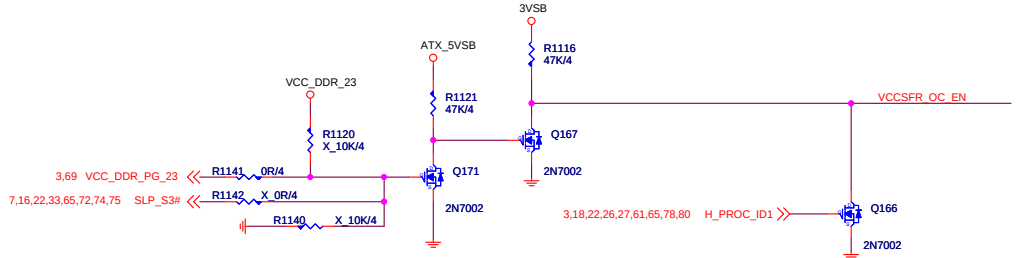
For non-OC system, configures +VCCSFR_OC as 1.2V

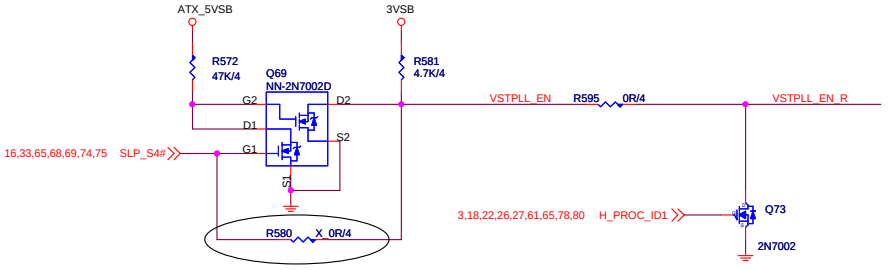
VCCSFR_OC

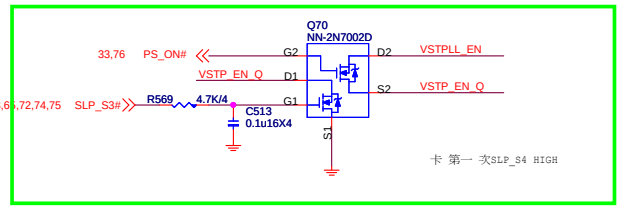
1.1V~1.26V; 500mA

EN:VIH1.2V
EN pin Maximum:VIN+0.3V







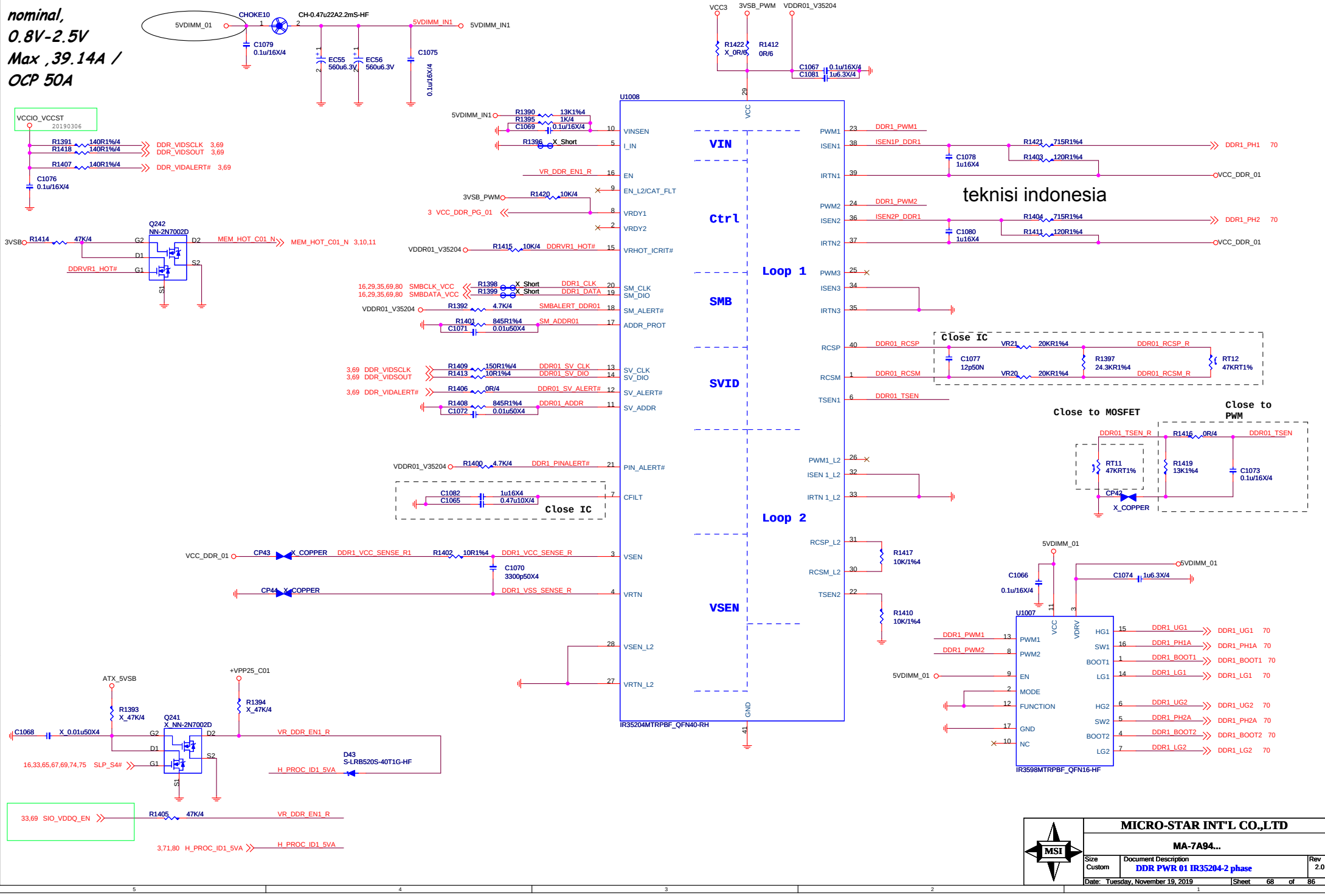


MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: CPU VCCST/VCCSFR/VCCSFR_OC	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 67 of 86	

DDR Power1-IR35204-2-Phase

DDR4 1.2V
nominal,
0.8V-2.5V
Max ,39.14A /
OCP 50A

Iin ripple =5.2A



MICRO-STAR INT'L CO.,LTD

MA-7A94...

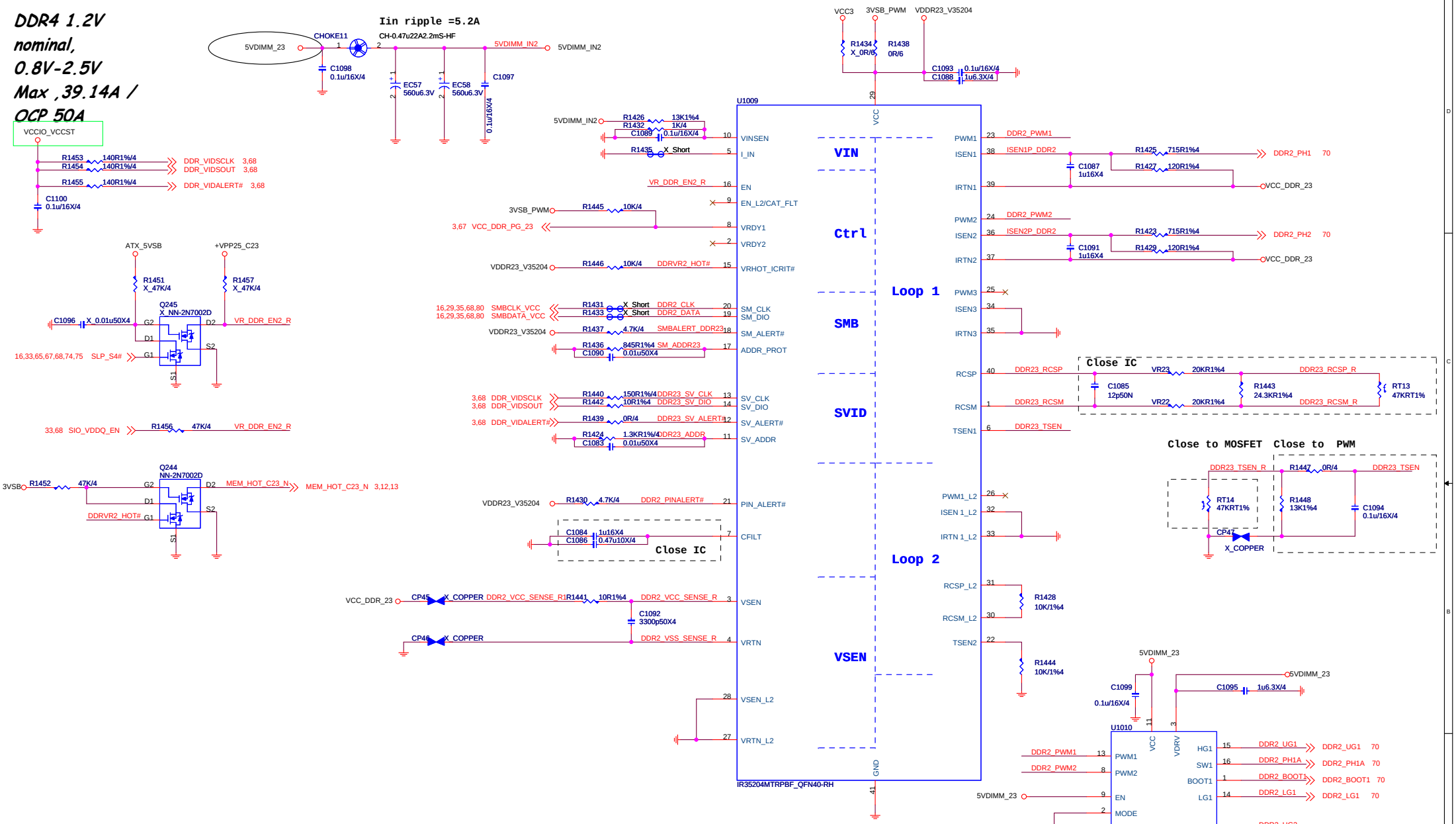
Size	Document Description	Rev
Custom	DDR PWR 01 IR35204-2 phase	2.0

Date: Tuesday, November 19, 2019 | Sheet 68 of 86

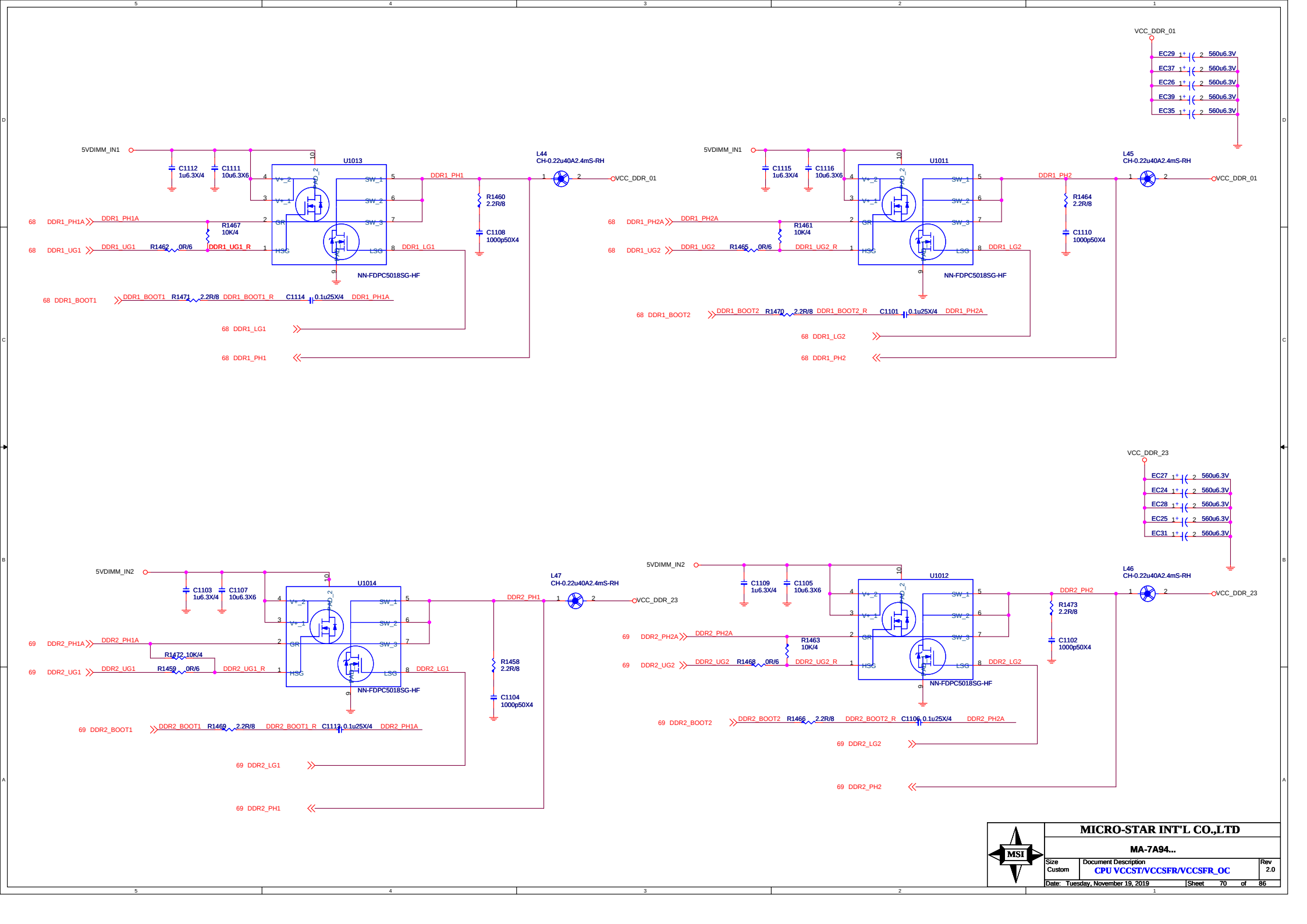
DDR Power1-IR35204-2-Phase

DDR4 1.2V
nominal,
0.8V-2.5V
Max ,39.14A /
OCP 50A

Iin ripple =5.2A

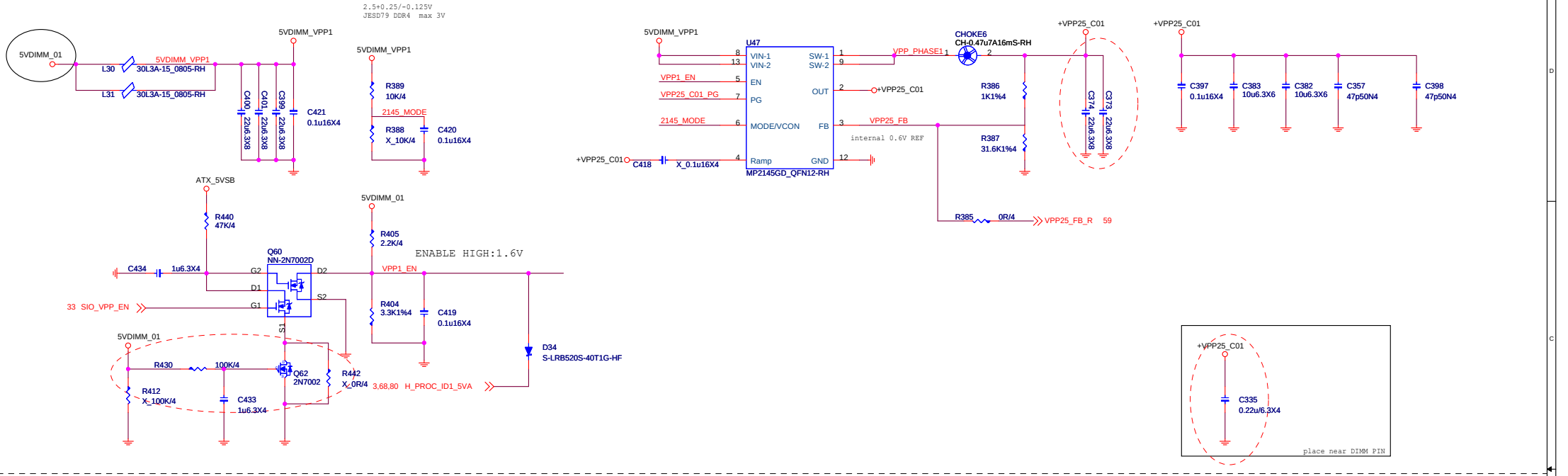


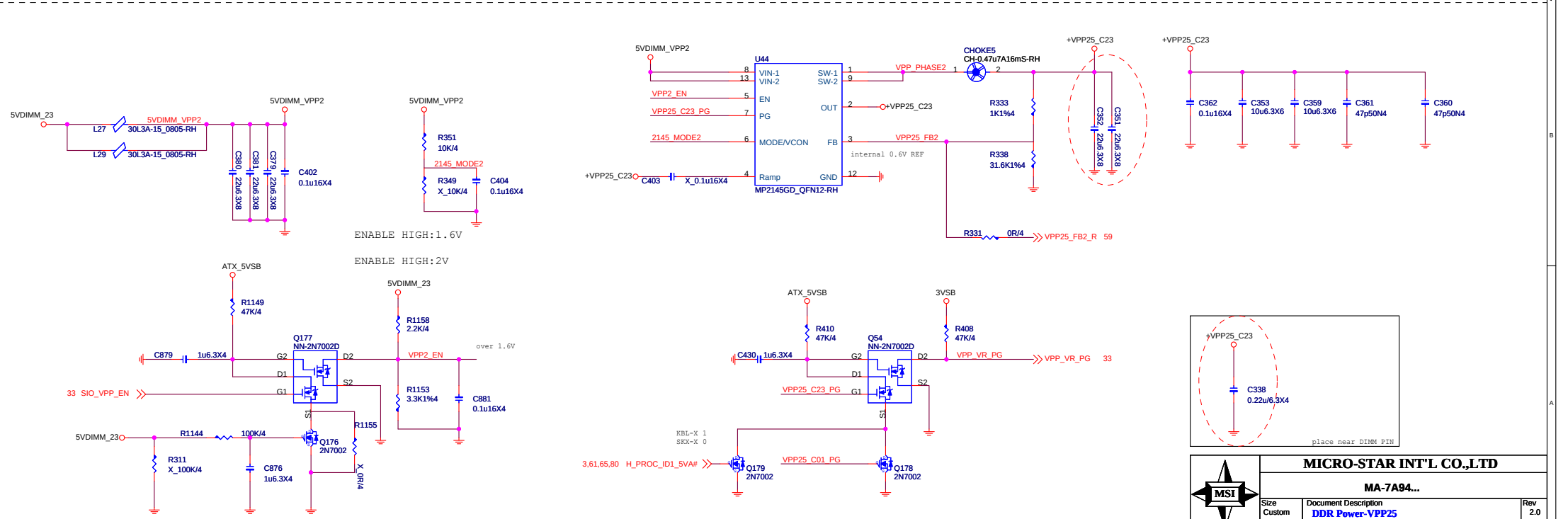
MICRO-STAR INT'L CO.,LTD	
MA-7A94...	
Size: Custom	Document Description: DDR PWR 23 IR35204-2 phase
Rev: 2.0	
Date: Tuesday, November 19, 2019	Sheet 69 of 86



MSI	MICRO-STAR INT'L CO.,LTD	
	MA-7A94...	
Size: Custom	Document Description: CPU VCCST/VCCSFR/VCCSFR_OC	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 70 of 86	

4DIMM :6A FOR DDR VPP

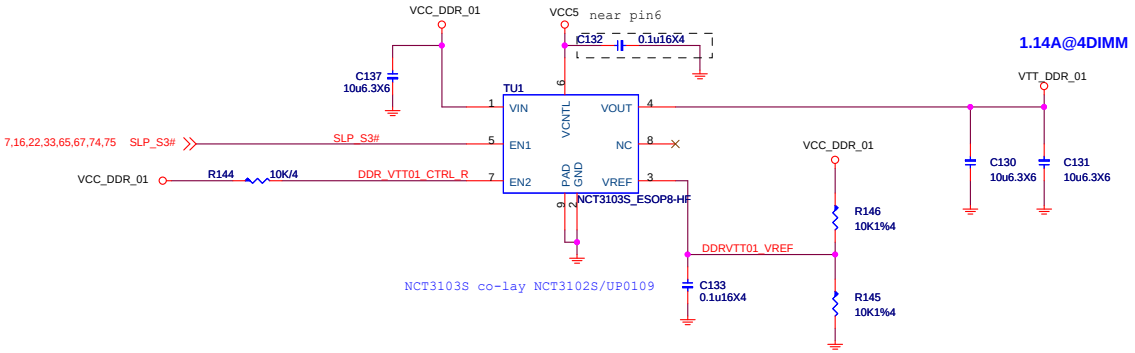


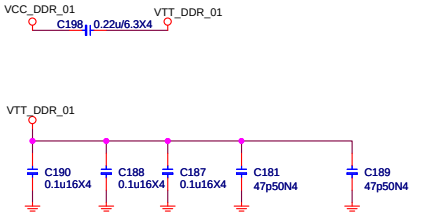


MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: DDR Power-VPP25	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 71 of 86	

DDR VTT Power

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

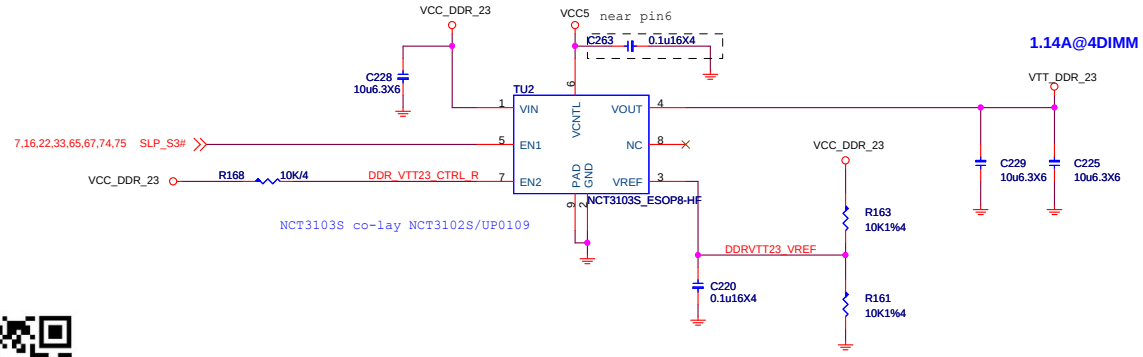


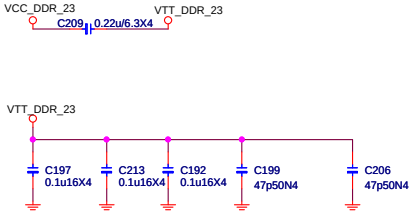


Vinafix.com

DDR VTT Power

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





MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: VTTDDR	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 72 of 86	

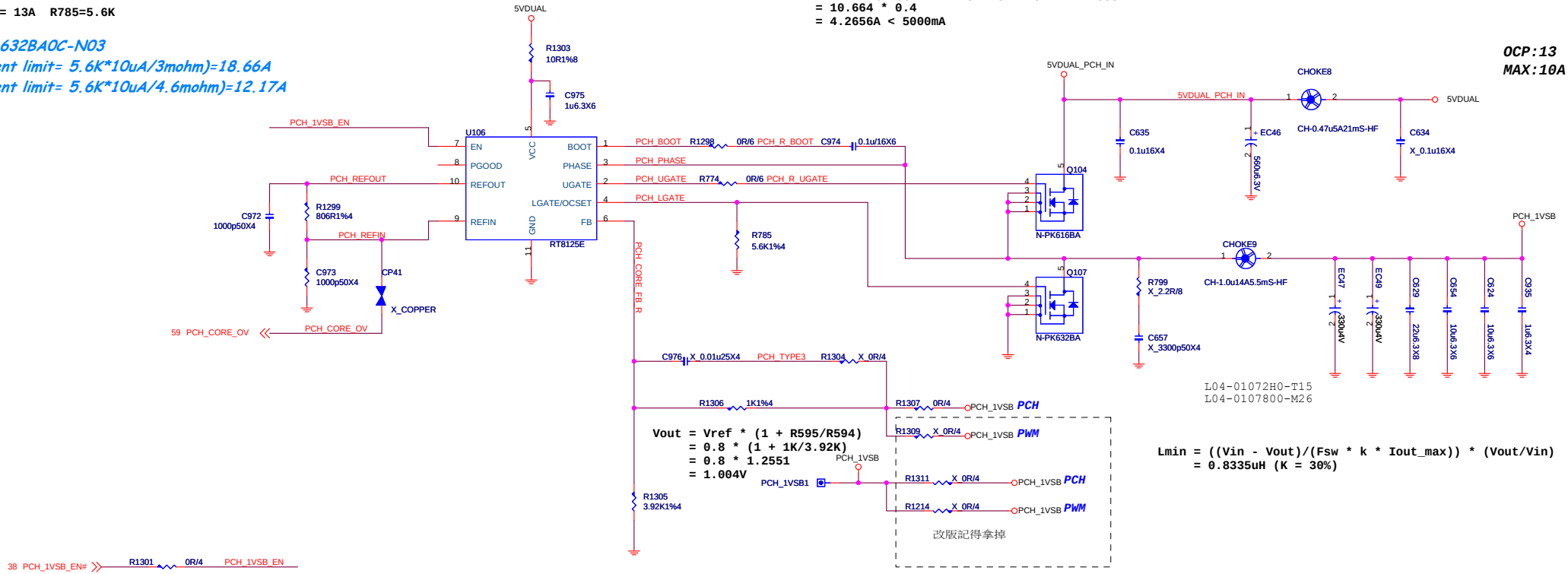
PCH_1VSB Power:1.0V,10A

OCP = 13A R785=5.6K

D03-632BA0C-N03
*Current limit= 5.6K*10uA/3mohm)=18.66A*
*Current limit= 5.6K*10uA/4.6mohm)=12.17A*

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

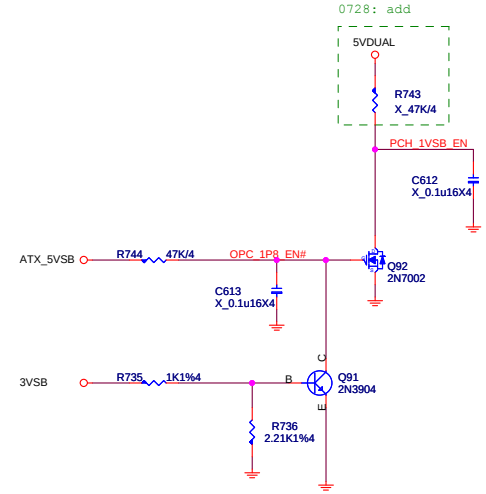
OCP:13
MAX:10A




```
Vout = Vref * (1 + R595/R594)
     = 0.8 * (1 + 1K/3.92K)
     = 0.8 * 1.2551
     = 1.004V
```

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

38 PCH_1VSB_EN# R1301 0R/4 PCH_1VSB_EN



MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: PCH POWER-RT8125E	Rev: 2.0
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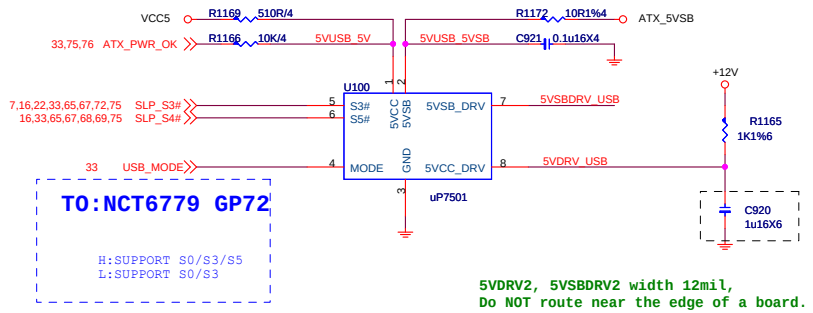
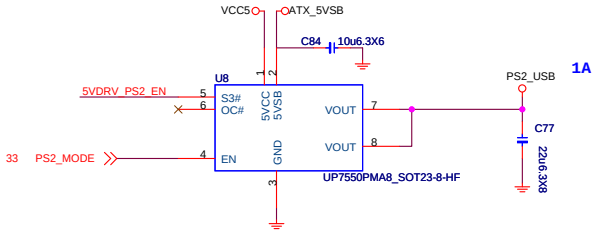
USB POWER

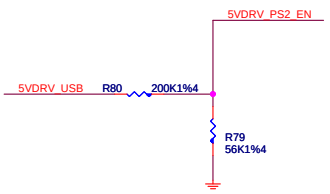


5VDRV2, 5VSBDRV2 width 12mil,
Do NOT route near the edge of a board.

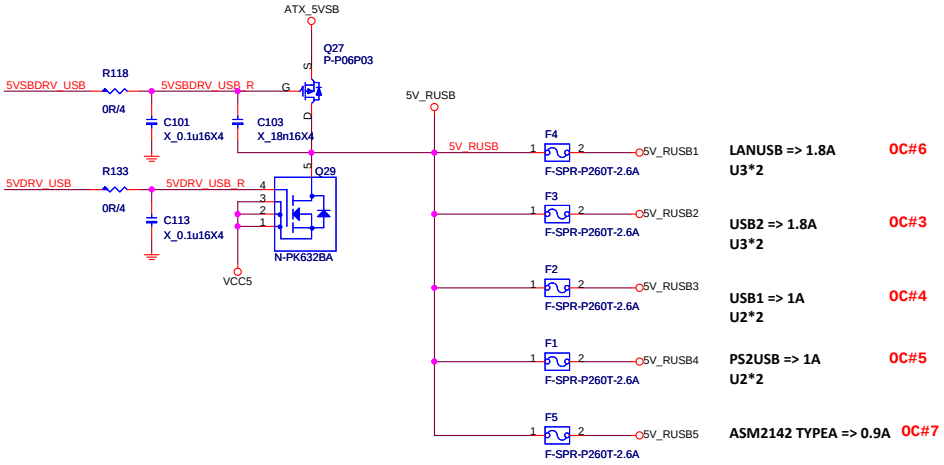
PS2 POWER



USB MODE

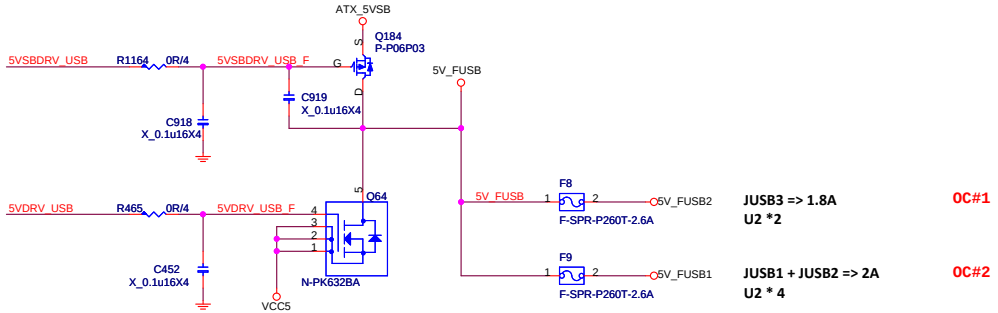


REAR USB PORT POWER



LANUSB => 1.8A U3*2	OC#6	
USB2 => 1.8A U3*2	OC#3	
USB1 => 1A U2*2	OC#4	
PS2USB => 1A U2*2	OC#5	
ASM2142 TYPEA => 0.9A	OC#7	

FRONT USB PORT POWER



JUSB3 => 1.8A U2 *2	OC#1	
JUSB1 + JUSB2 => 2A U2 * 4	OC#2	

MICRO-STAR INT'L CO.,LTD		
MA-7A94...		
Size: Custom	Document Description: USB Power	Rev: 2.0
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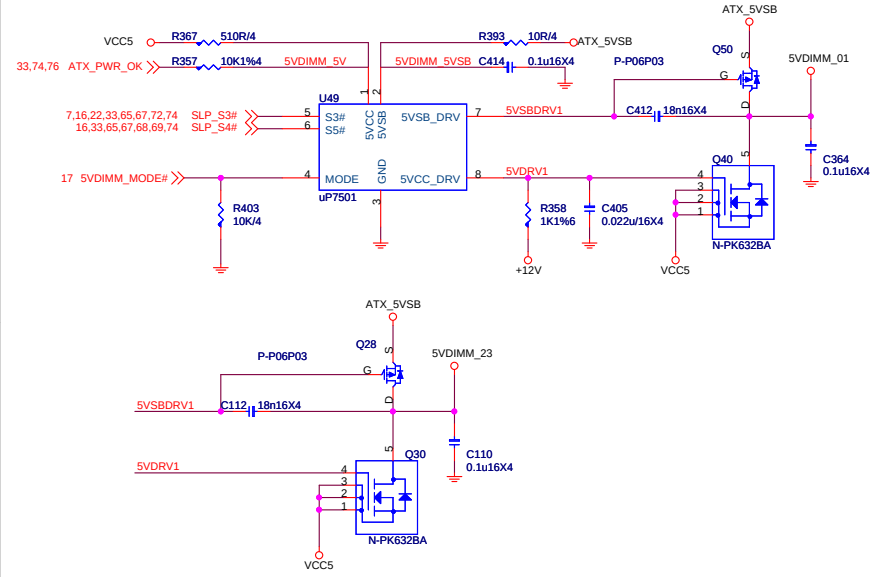
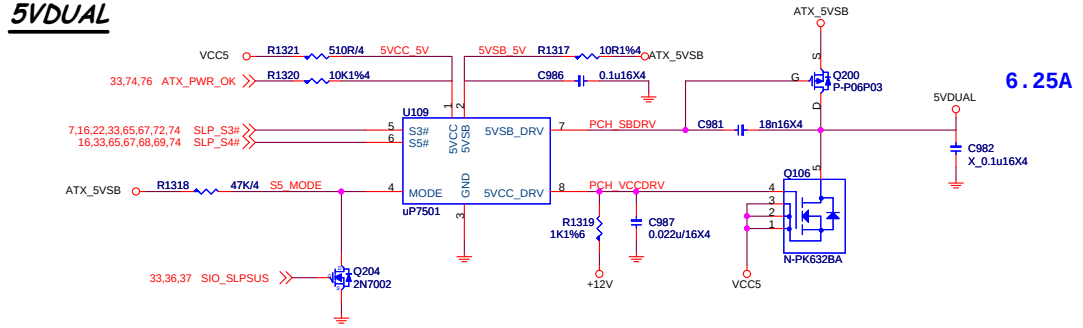
5VDIMM FOR DDR

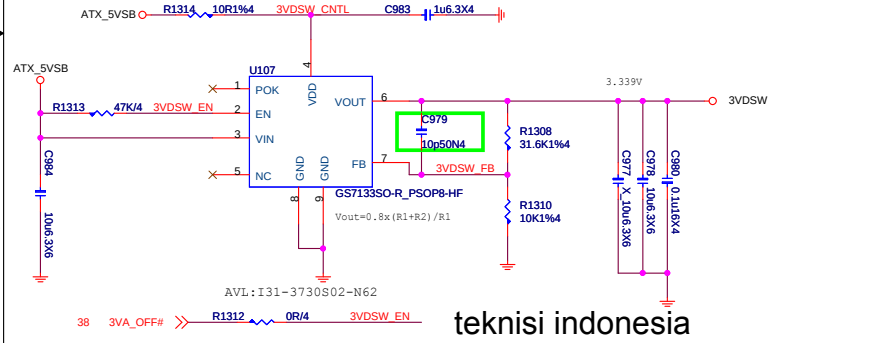


5VDUAL

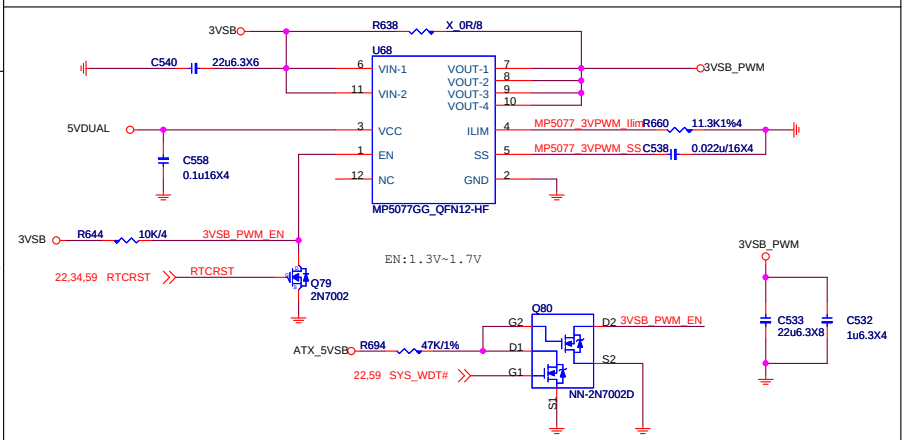


3VDSW

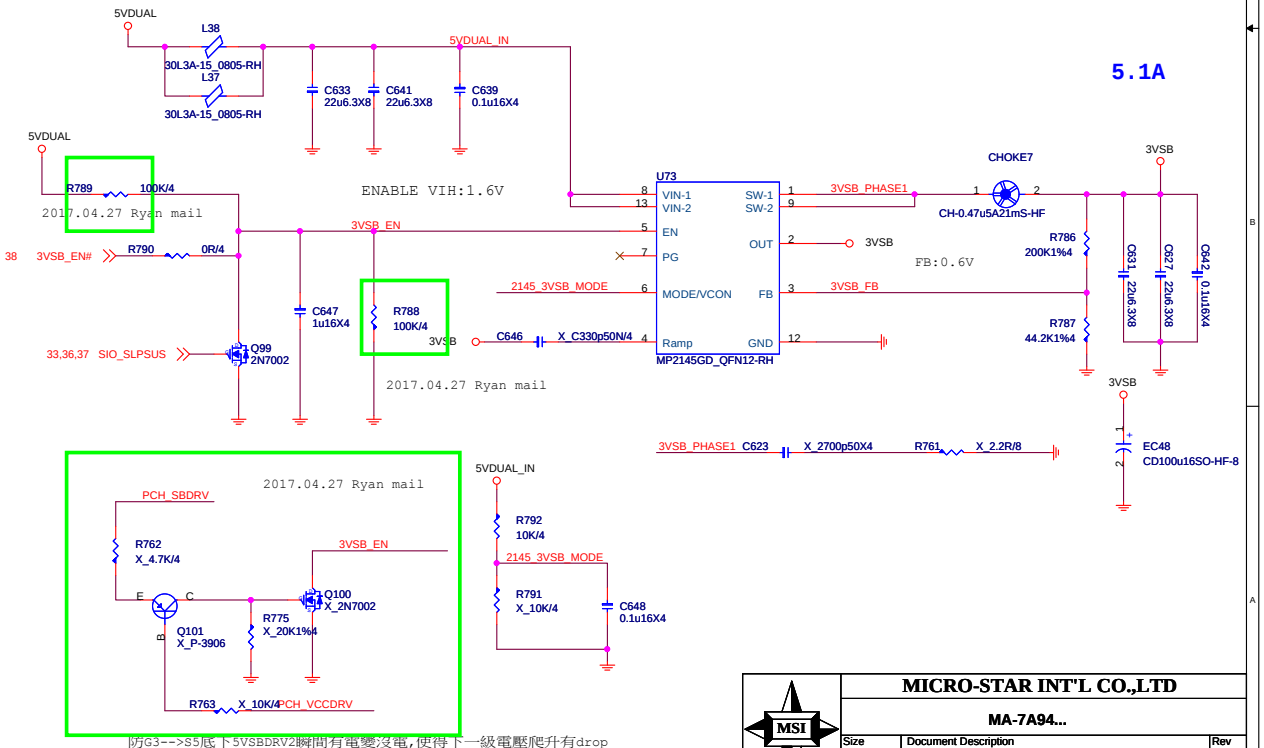
PCH 0.2A+I219 0.15=0.35A



teknisi indonesia



3VSB for OC & Gaming



MSI	MICRO-STAR INT'L CO.,LTD	
	MA-7A94...	
Size: Custom	Document Description: ACPI-MPS	Rev: 2.0
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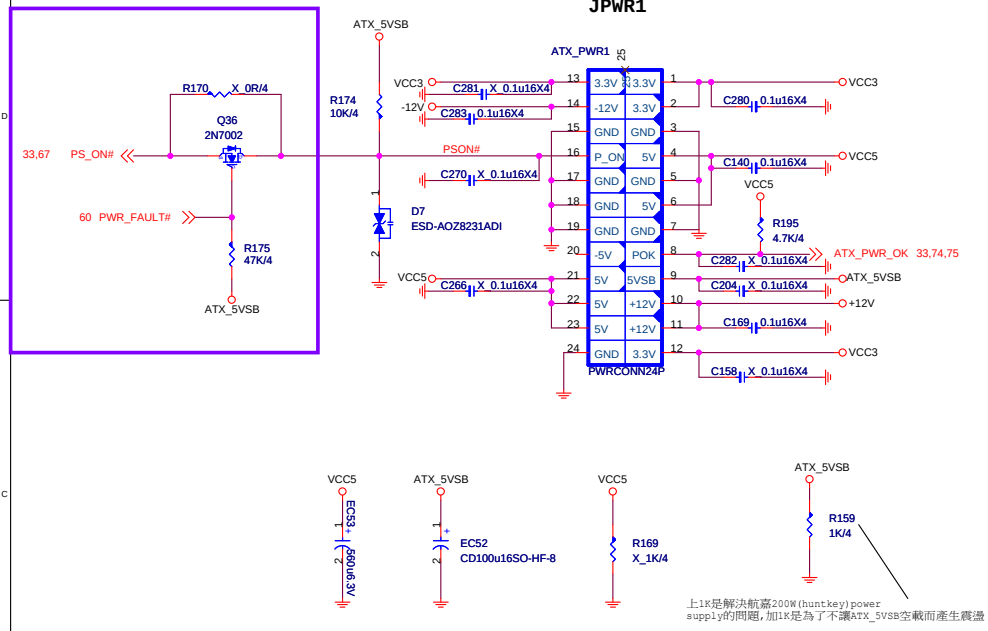
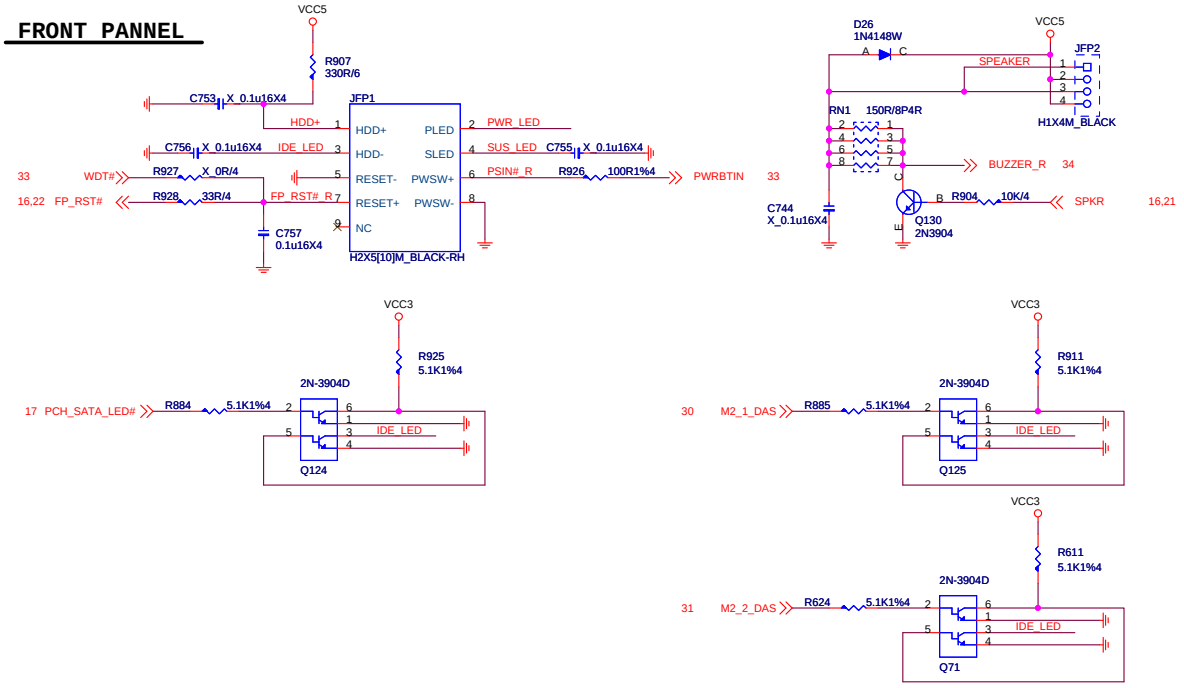
ATX POWER CONNECTOR

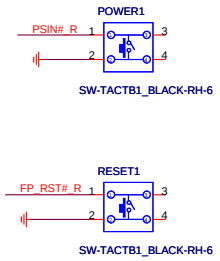


FRONT PANNEL

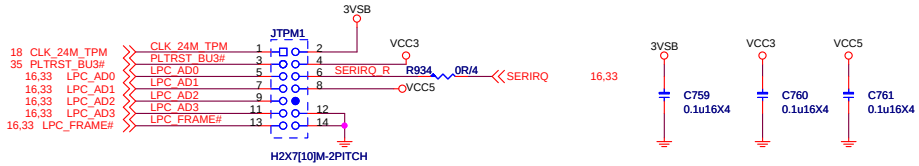


2017.03.27 Ryan mail remove JLN1

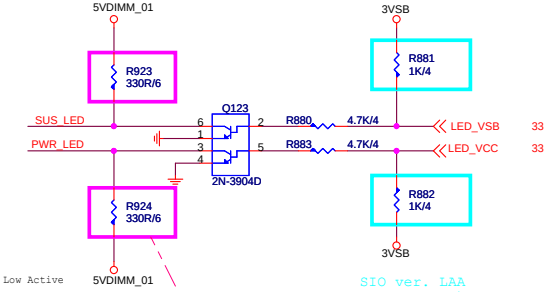
PWR/RST Botton



TPM Pin Header



Front Panel LED



MICRO-STAR INT'L CO.,LTD

MA-7A94...

Size	Document Description	Rev
Custom	ATX Connector/F_Panel	2.0

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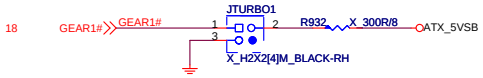
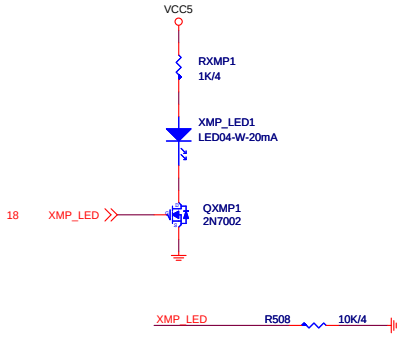
JTURBO

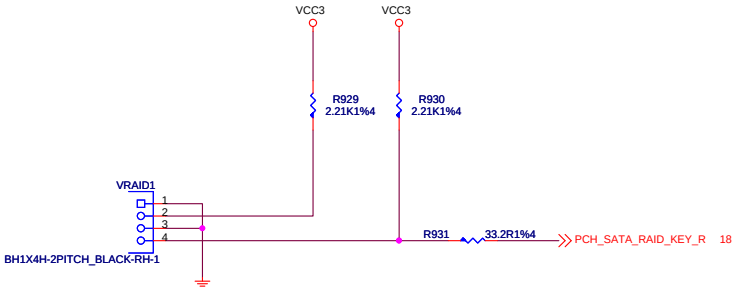


XMP LED

XMP LED >> (default) :DOC-040T200-H91



VROC



MSI	MICRO-STAR INT'L CO.,LTD	
	MA-7A94...	
Size: Custom	Document Description: Turbo/XMP LED/VROC	Rev: 2.0
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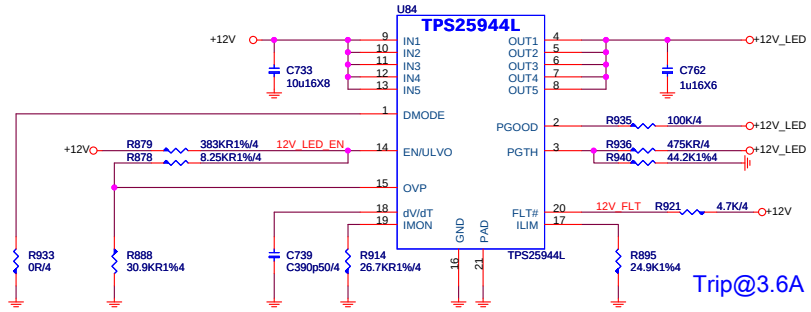
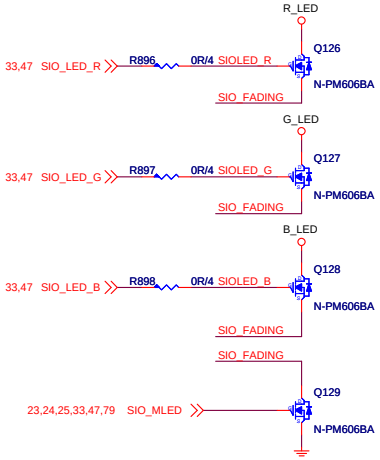
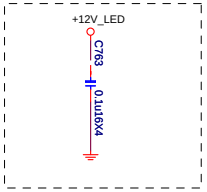
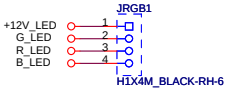
LED STRIPLINE



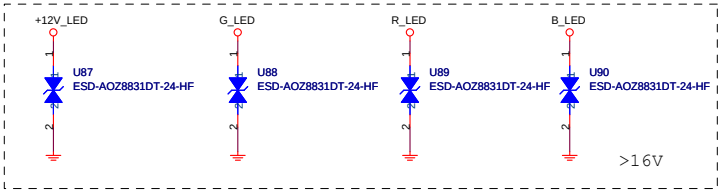


2016.08.02 Add +12V_LED 0.1uF





2016.07.06 only reserve now
2016.08.02 stuff ESD



EZ Debug

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

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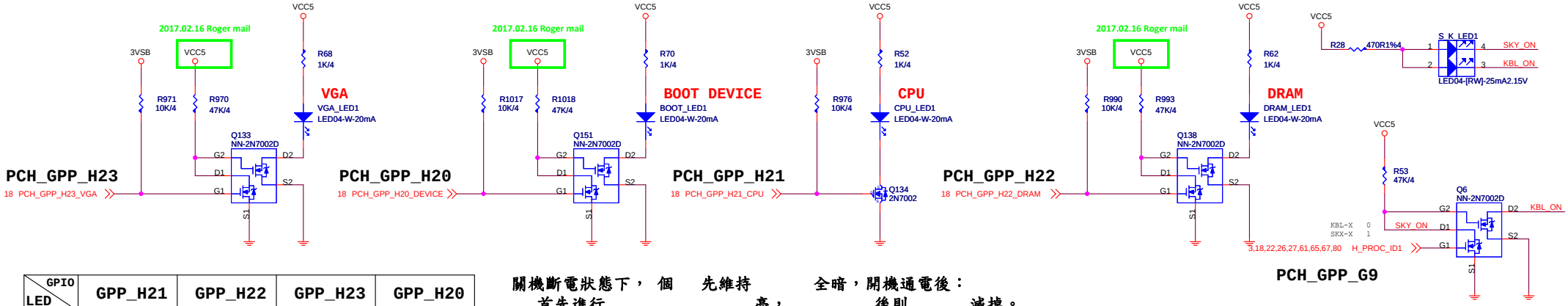


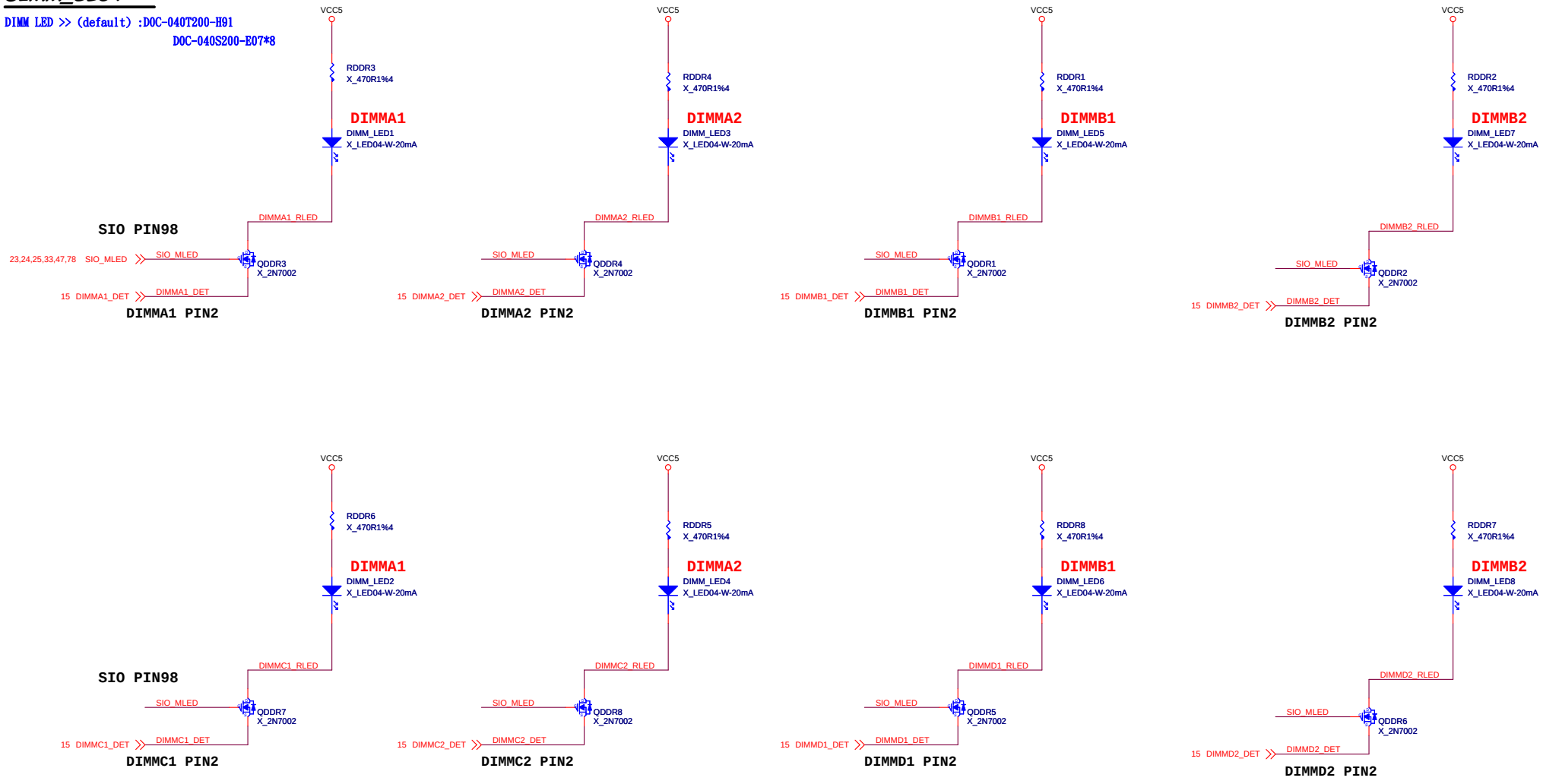
GPIO / LED	GPP_H21	GPP_H22	GPP_H23	GPP_H20
亮	GPI PULL HIGH	GPO PO LOW	GPO PO LOW	GPO PO LOW
滅	GPO LOW	GPO HIGH (default HIGH)	GPO HIGH (default HIGH)	GPO HIGH (default HIGH)

關機斷電狀態下， 個 先維持 全暗，開機通電後：
首先進行 亮， 後則 滅掉。
接著依序進行 亮 後則 滅掉。
的 亮， 後則 滅掉。
的 亮， 後則 滅掉。
因此最後正常順利開機後，四個 燈都是滅掉的。
（系統重啟或其他原因造成系統重開機，則 仍按上述行為動作）

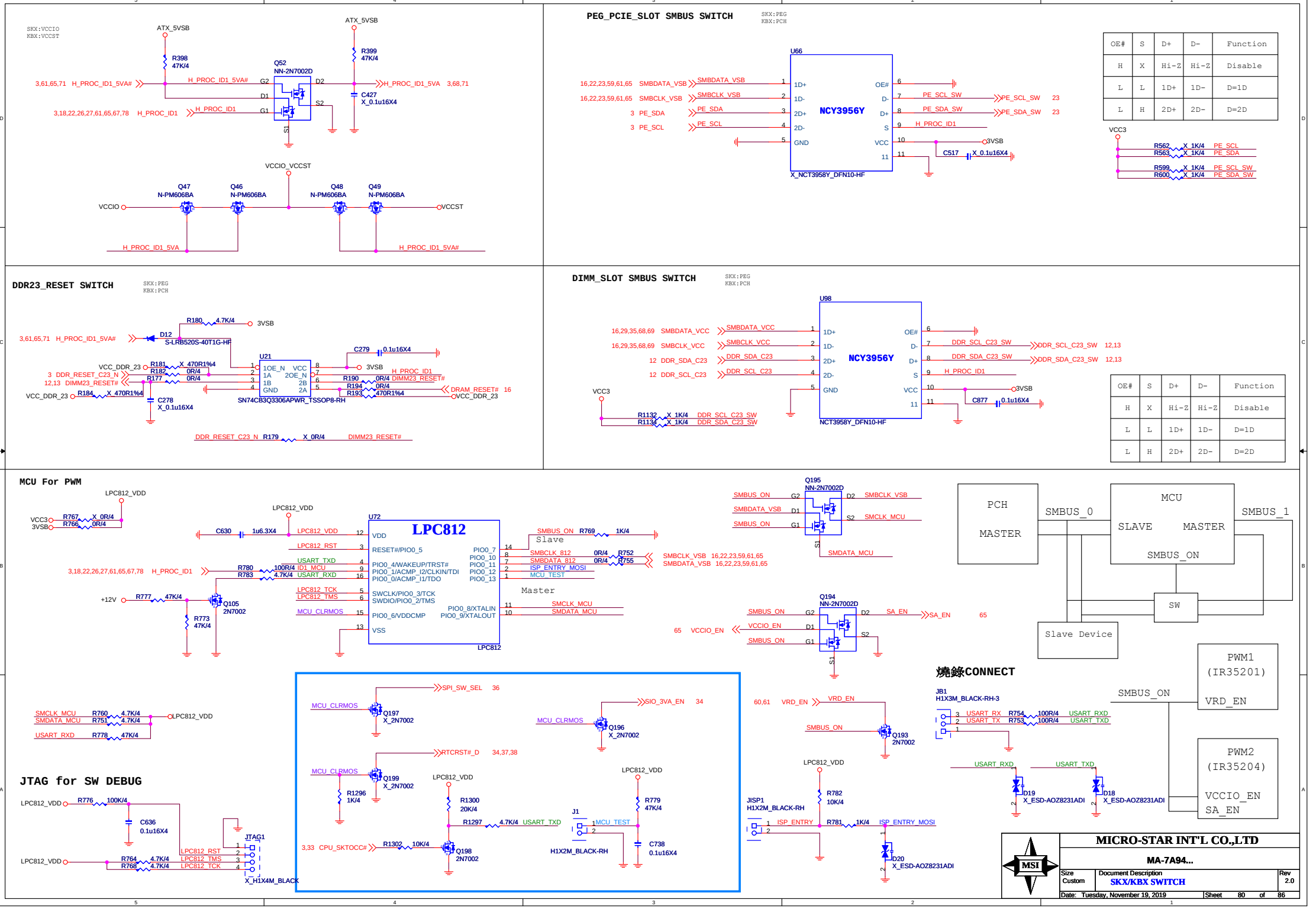
MICRO-STAR INT'L CO.,LTD	
MA-7A94...	
Size: Custom	Document Description: LED STRIP/EZ Debug
Rev: 2.0	
Date: Tuesday, November 19, 2019	Sheet 78 of 86

DIMM_SLOT

DIMM LED >> (default) :D0C-040T200-H91
D0C-040S200-E07*8



MSI	MICRO-STAR INT'L CO.,LTD	
	MA-7A94...	
Size: Custom	Document Description: DIMM LED	Rev: 2.0
Date: Tuesday, November 19, 2019	Sheet 79 of 86	


SKX:VCCIO
KBX:VCCST
ATX_5VSB
R398
47K/4
Q52
NN-2N7002D
R399
47K/4
C427
X_0.1u16X4
3,61,65,71 H_PROC_ID1_5VA#
H_PROC_ID1_5VA#
H_PROC_ID1_5VA 3,68,71
3,18,22,26,27,61,65,67,78 H_PROC_ID1
H_PROC_ID1
VCCIO_VCCST
Q47
N-PM606BA
Q46
N-PM606BA
Q48
N-PM606BA
Q49
N-PM606BA
VCCIO
VCCST
H_PROC_ID1_5VA
H_PROC_ID1_5VA#
PEG_PCIE_SLOT SMBUS SWITCH
SKX:PEG
KBX:PCH
U66
NCY3956Y
X_NCT3958Y_DFN10-HF
16,22,23,59,61,65 SMBDATA_VSB
16,22,23,59,61,65 SMBCLK_VSB
3 PE_SDA
3 PE_SCL
1D+
1D-
2D+
2D-
GND
OE#
D-
D+
S
VCC
PE_SCL_SW
PE_SDA_SW
H_PROC_ID1
3VSB
C517
X_0.1u16X4
PE_SCL_SW 23
PE_SDA_SW 23
OE# S D+ D- Function
H X Hi-Z Hi-Z Disable
L L 1D+ 1D- D=1D
L H 2D+ 2D- D=2D
VCC3
R562 X_1K/4 PE_SCL
R563 X_1K/4 PE_SDA
R599 X_1K/4 PE_SCL_SW
R600 X_1K/4 PE_SDA_SW
DDR23_RESET SWITCH
SKX:PEG
KBX:PCH
R180 4.7K/4
3VSB
3,61,65,71 H_PROC_ID1_5VA#
D12
S-LRB520S-40T1G-HF
U21
SN74CB3Q3306APWR_TSSOP8-RH
VCC_DDR_23
R181 X_470R1%4
R182 0R/4
R177 0R/4
R184 X_470R1%4
C278
X_0.1u16X4
C279 0.1u16X4
3 DDR_RESET_C23_N
12,13 DIMM23_RESET#
R190 0R/4 DIMM23_RESET#
R194 0R/4
R193 470R1%4
DRAM_RESET# 16
VCC_DDR_23
DDR_RESET_C23_N R179 X_0R/4 DIMM23_RESET#
DIMM_SLOT SMBUS SWITCH
SKX:PEG
KBX:PCH
U98
NCT3958Y_DFN10-HF
16,29,35,68,69 SMBDATA_VCC
16,29,35,68,69 SMBCLK_VCC
12 DDR_SDA_C23
12 DDR_SCL_C23
DDR_SCL_C23_SW
DDR_SDA_C23_SW
DDR_SCL_C23_SW 12,13
DDR_SDA_C23_SW 12,13
R1132 X_1K/4 DDR_SCL_C23_SW
R1134 X_1K/4 DDR_SDA_C23_SW
C877 0.1u16X4
OE# S D+ D- Function
H X Hi-Z Hi-Z Disable
L L 1D+ 1D- D=1D
L H 2D+ 2D- D=2D
MCU For PWM
LPC812_VDD
VCC3
3VSB
R767 X_0R/4
R766 0R/4
C630 1u6.3X4
U72
LPC812
VDD
RESET#/PIO0_5
PIO0_4/WAKEUP/TRST#
PIO0_1/ACMP_I2/CLKIN/TDI
PIO0_0/ACMP_I1/TDO
SWCLK/PIO0_3/TCK
SWDIO/PIO0_2/TMS
PIO0_6/VDDCMP
VSS
PIO0_7
PIO0_10
PIO0_11
PIO0_12
PIO0_13
PIO0_8/XTALIN
PIO0_9/XTALOUT
LPC812_RST
USART_TXD
USART_RXD
LPC812_TCK
LPC812_TMS
MCU_CLRMOS
SMBUS_ON R769 1K/4
Slave
SMBCLK_812
SMBDATA_812
ISP_ENTRY_MOSI
MCU_TEST
Master
SMCLK_MCU
SMDATA_MCU
SMBCLK_VSB 16,22,23,59,61,65
SMBDATA_VSB 16,22,23,59,61,65
R780 100R/4 ID1_MCU
R783 4.7K/4 USART_RXD
3,18,22,26,27,61,65,67,78 H_PROC_ID1
+12V
R777 47K/4
R773 47K/4
Q105
2N7002
Q195
NN-2N7002D
SMBUS_ON
SMBDATA_VSB
SMBUS_ON
SMBCLK_VSB
SMCLK_MCU
SMDATA_MCU
Q194
NN-2N7002D
SMBUS_ON
VCCIO_EN
SMBUS_ON
SA_EN
SA_EN 65
65 VCCIO_EN
PCH
MASTER
SMBUS_0
MCU
SLAVE
MASTER
SMBUS_ON
SMBUS_1
SW
Slave Device
SMCLK_MCU R760 4.7K/4
SMDATA_MCU R751 4.7K/4
USART_RXD R778 47K/4
LPC812_VDD
JTAG for SW DEBUG
LPC812_VDD
R776 100K/4
C636
0.1u16X4
LPC812_VDD
R764 4.7K/4
R768 4.7K/4
LPC812_RST
LPC812_TMS
LPC812_TCK
JTAG1
X_H1X4M_BLACK
SPI_SW_SEL 36
MCU_CLRMOS
Q197
X_2N7002
SIO_3VA_EN 34
MCU_CLRMOS
Q196
X_2N7002
RTCRST#_D 34,37,38
MCU_CLRMOS
Q199
X_2N7002
R1296
1K/4
LPC812_VDD
R1300
20K/4
R1297 4.7K/4 USART_TXD
3,33 CPU_SKTOCC#
R1302 10K/4
Q198
2N7002
J1
MCU_TEST
H1X2M_BLACK-RH
LPC812_VDD
R779
47K/4
C738
0.1u16X4
60,61 VRD_EN
VRD_EN
SMBUS_ON
Q193
2N7002
LPC812_VDD
JISP1
H1X2M_BLACK-RH
R782
10K/4
ISP_ENTRY
R781 1K/4 ISP_ENTRY_MOSI
D20
X_ESD-AOZ8231ADI
燒錄CONNECT
JB1
H1X3M_BLACK-RH-3
USART_RX R754 100R/4 USART_RXD
USART_TX R753 100R/4 USART_TXD
USART_RXD
USART_TXD
D19
X_ESD-AOZ8231ADI
D18
X_ESD-AOZ8231ADI
SMBUS_ON
PWM1
(IR35201)
VRD_EN
PWM2
(IR35204)
VCCIO_EN
SA_EN
MICRO-STAR INT'L CO.,LTD
MA-7A94...
Size
Custom
Document Description
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HEATSINK

CPU_H1
CPU
鐵座
CPU_ILM1
2017.05.22 PM Change

PCB1

7A94_10
PD0-07A9410-G37
PD0-07A9410-E48

Mounting Holes

MH2 X_MH001
MH3 X_MH001
MH1 X_MH001
MH4 X_MH001
MH5 X_MH001
MH6 X_MH001
MH7 X_MH001
MH8 X_MH001
MH9 X_MH001
C749 0.1u16X4
C727 0.1u16X4

Simulation

SIM1 X_PIN1*2
SIM2 X_PIN1*2
SIM4 X_PIN1*2
SIM3 X_PIN1*2

Test point

VCORE	CPU
VSA	VCCSA
VCCIO	VCCIO
3VSB	3VSB
5VDUAL	5VDUAL
VCCSFR_OC	VCCSFR_OC
VCCST	VCCST
VCCSFR	VCC_SFR
VCC_DDR_01	VCC_DDR_01
VCC_DDR_23	VCC_DDR_23
VTT_DDR_23	VTT_DDR_23
VTT_DDR_01	VTT_DDR_01
5VDIMM_01	5VDIMM_01
5VDIMM_23	5VDIMM_23
+VPP25_C23	VPP25_C23
+VPP25_C01	VPP25_C01

Optical Fiducial Marks-120

FM1 X_FM
FM6 X_FM
FM2 X_FM
FM5 X_FM
FM3 X_FM
FM8 X_FM
FM4 X_FM
FM7 X_FM

VIRTUAL1
Label
X_VIRTUAL

BAT1_X1
BAT-BCR2032P-RH

COVER1
CHOKE Cover
X1
X2
X_COVER

BIOS_LA1
AMI_BIOS LABLE
G51-M1SPXXA-A09

MKT_LA1
MKT LABLE
G51-M1SPL38-Q13

MKT_LA2
MKT LABLE
X_G51-M1SPL38-Q13

LABLE5
SLI LABLE
Y01-RNVIDIM-000

U1005 CAP 560uF X_SOLID 560uF
U1006 CAP 100uF X_SOLID 100uF
U1004 CAP 270uF X_SOLID 270uF

MOS_SINK1
MOS SINK
MCE1
MCE2
MOS_SINK1

PCH_SINK1
MEC1
MEC2
MEC3
MEC4
PCH_SINK1

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