MS-7A63

ATX

Ver: 10

Intel -Kabylake plamform Z270

CPU:

kabylake-S

System Chipset:

Z270

Onboard Chip:

HD Audio Codec:ALC1220
LAN:INTEL I219
SIO:Nuvoton 6795
Flash ROM: SPI 128MB

Main Memory:

*DDRIV (800/1066/1333/1600/2133MHz) * 4 (Dual Channel)*

ACPI:

NIKO/UPI

PWM:

UPI9508

Expansion Slots:

*PCI Express (X16) Slot *1*
*PCI Express (X8) Slot *1*
*PCI Express (X4) Slot * 1*
*PCI Express (X1) Slot * 3*
*M2 * 2*

Other:

SATA3.0 x6 (PCH)
*FRONT USB2.0 *4*
*FRONTUSB3.0 *4*
*REAR USB3.0 *4*
*REAR USB2.0 *2*
REAR USB TYPE A+C

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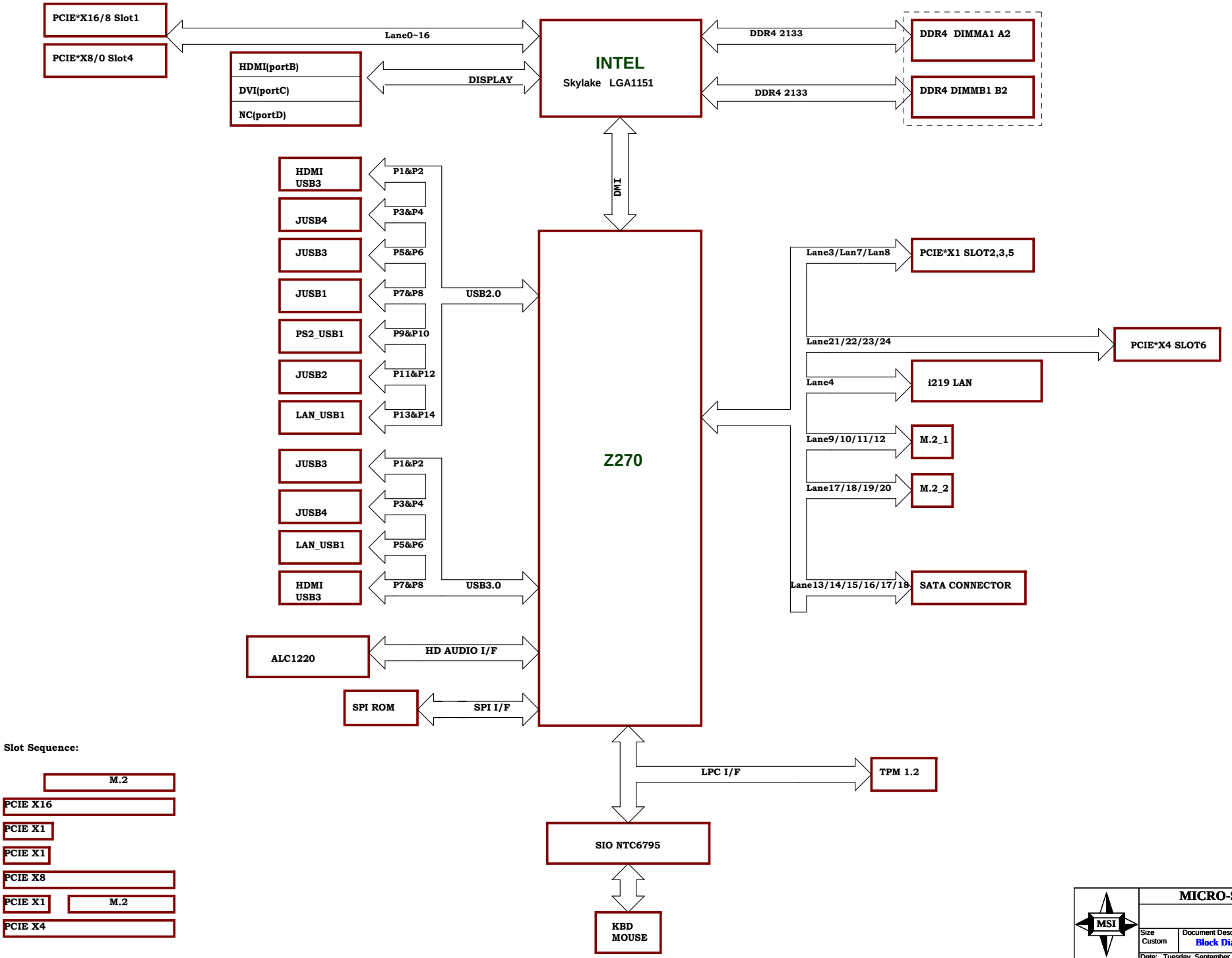
MS-7A63

Size: Custom | Document Description: Cover Sheet | Rev: 10

Date: Tuesday, September 13, 2016 | Sheet 1 of 69

MS-7A63 Block Diagram



Slot Sequence:

- M.2
- PCIE X16
- PCIE X1
- PCIE X1
- PCIE X8
- PCIE X1 / M.2
- PCIE X4

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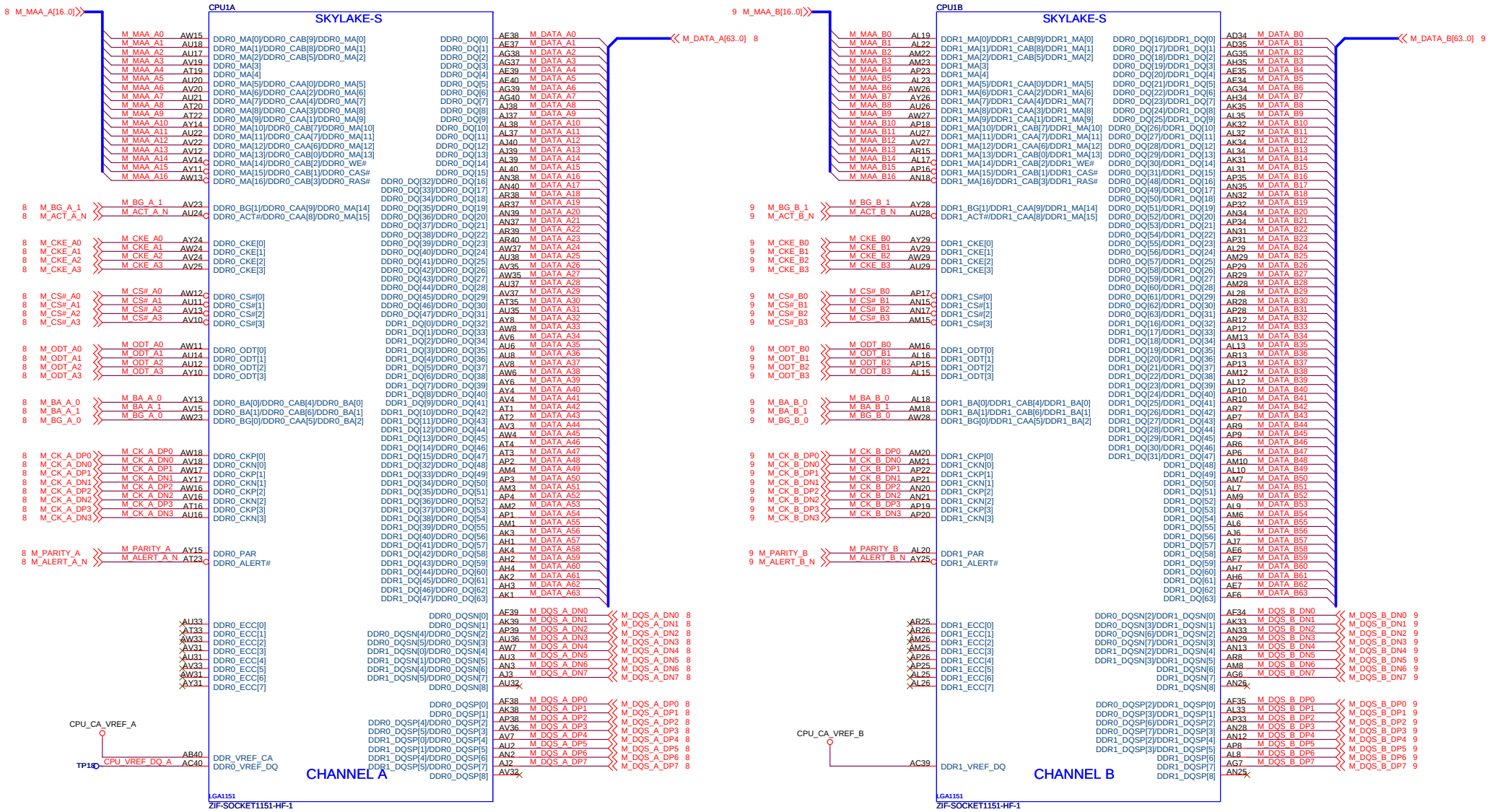
MS-7A63		
Size: Custom	Document Description: Block Diagram	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 2 of 69	



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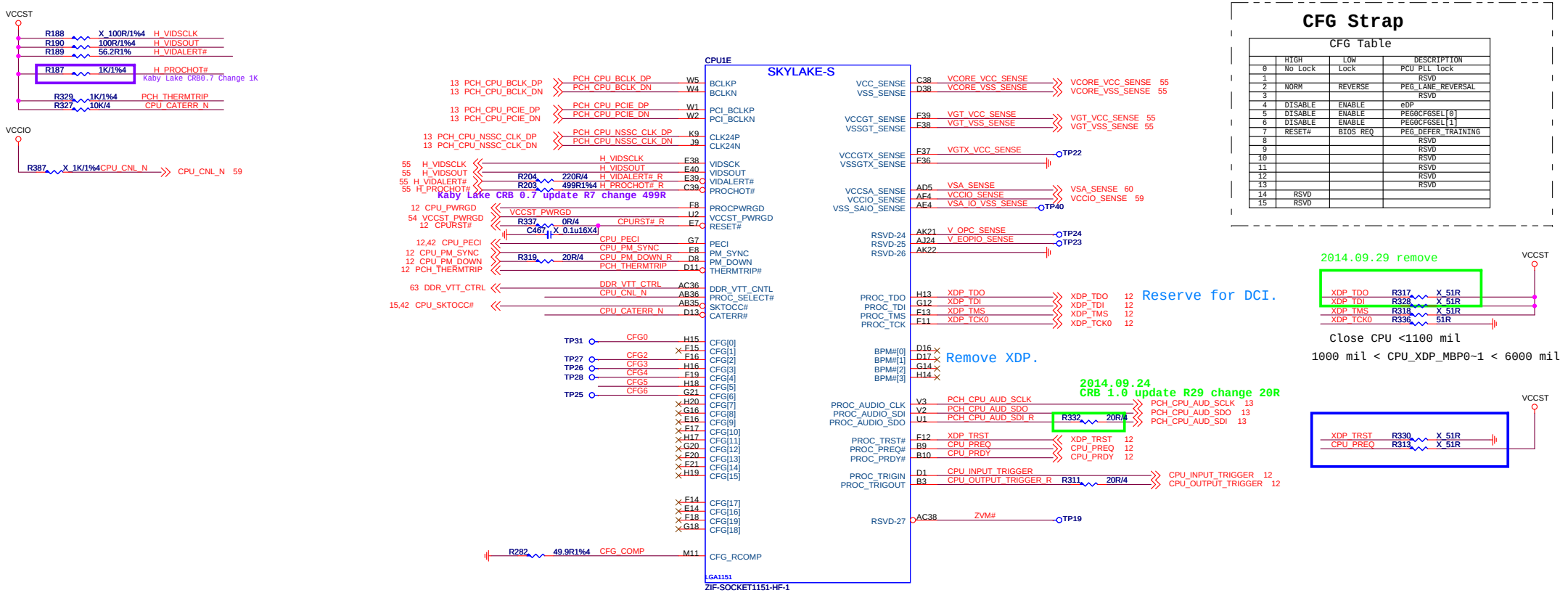
MS-7A63

Size	Document Description	Rev
Custom	CPU-Memory	10

Date: Tuesday, September 13, 2016 Sheet 3 of 69



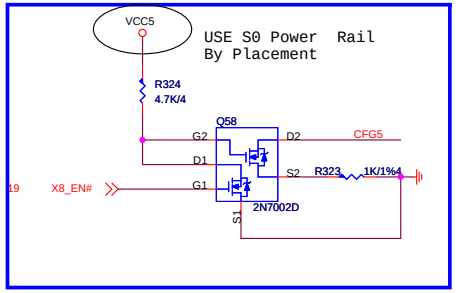
CFG Strap

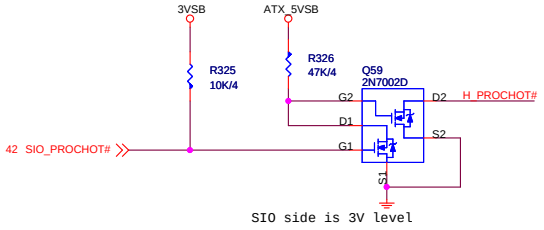
CFG Table

	HIGH	LOW	DESCRIPTION
0	No Lock	Lock	PCU PLL lock
1			RSVD
2	NORM	REVERSE	PEG_LANE_REVERSAL
3			RSVD
4	DISABLE	ENABLE	eDP
5	DISABLE	ENABLE	PEG0CFGSEL[0]
6	DISABLE	ENABLE	PEG0CFGSEL[1]
7	RESET#	BIOS REQ	PEG_DEFER_TRAINING
8			RSVD
9			RSVD
10			RSVD
11			RSVD
12			RSVD
13			RSVD
14	RSVD		
15	RSVD		

X8 Ctrl

ENABLE# X8	SLOT1	SLOT4
0	X8	X8
1	X16	X0





CFG Strap

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1			RSVD
2	NORM	REVERSE	PEG_LANE_REVERSAL
3			RSVD
4	DISABLE	ENABLE	eDP
5	DISABLE	ENABLE	PEG0CFGSEL[0]
6	DISABLE	ENABLE	PEG0CFGSEL[1]
7	RESET#	BIOS REQ	PEG_DEFER_TRAINING
8			RSVD
9	PRESENT	NO_PRESENT	SVID PRESENT
10			RSVD
11			RSVD
12			RSVD
13			RSVD
14	RSVD		
15	RSVD		

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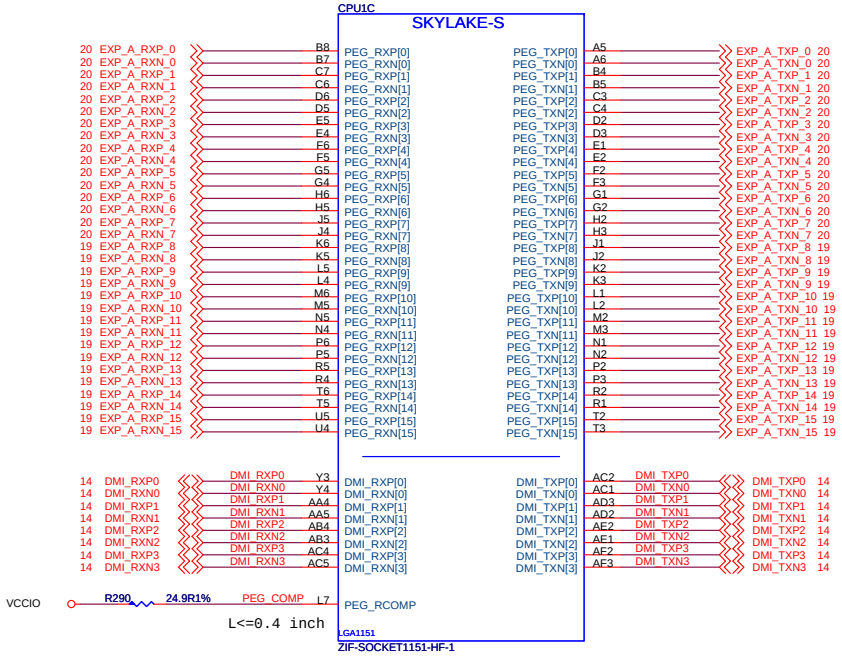
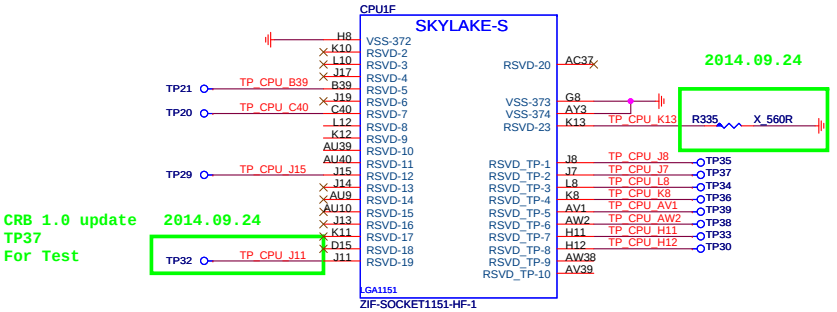
MS-7A63

Size	Document Description	Rev
Custom	CPU-Control/MISC/CFG/Audio	10

Date: Tuesday, September 13, 2016 Sheet 4 of 69





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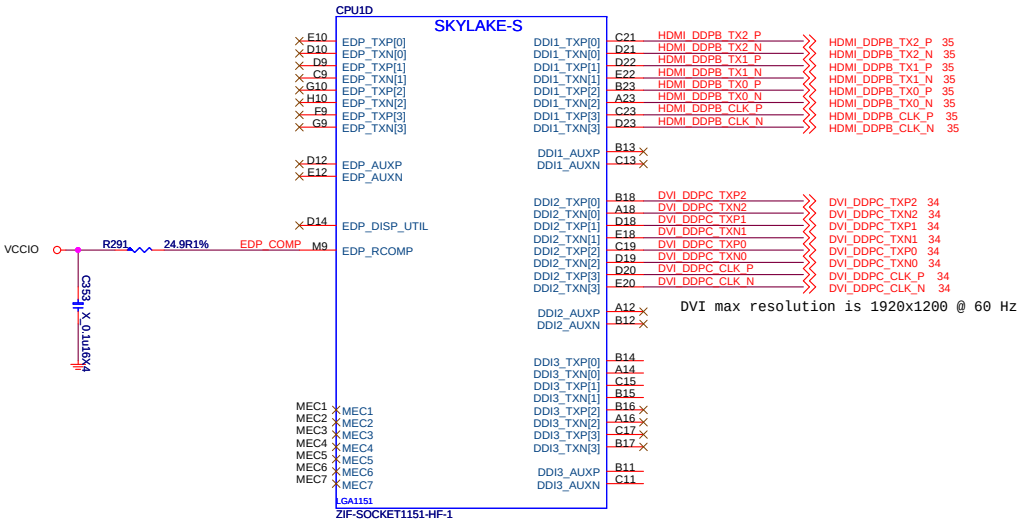

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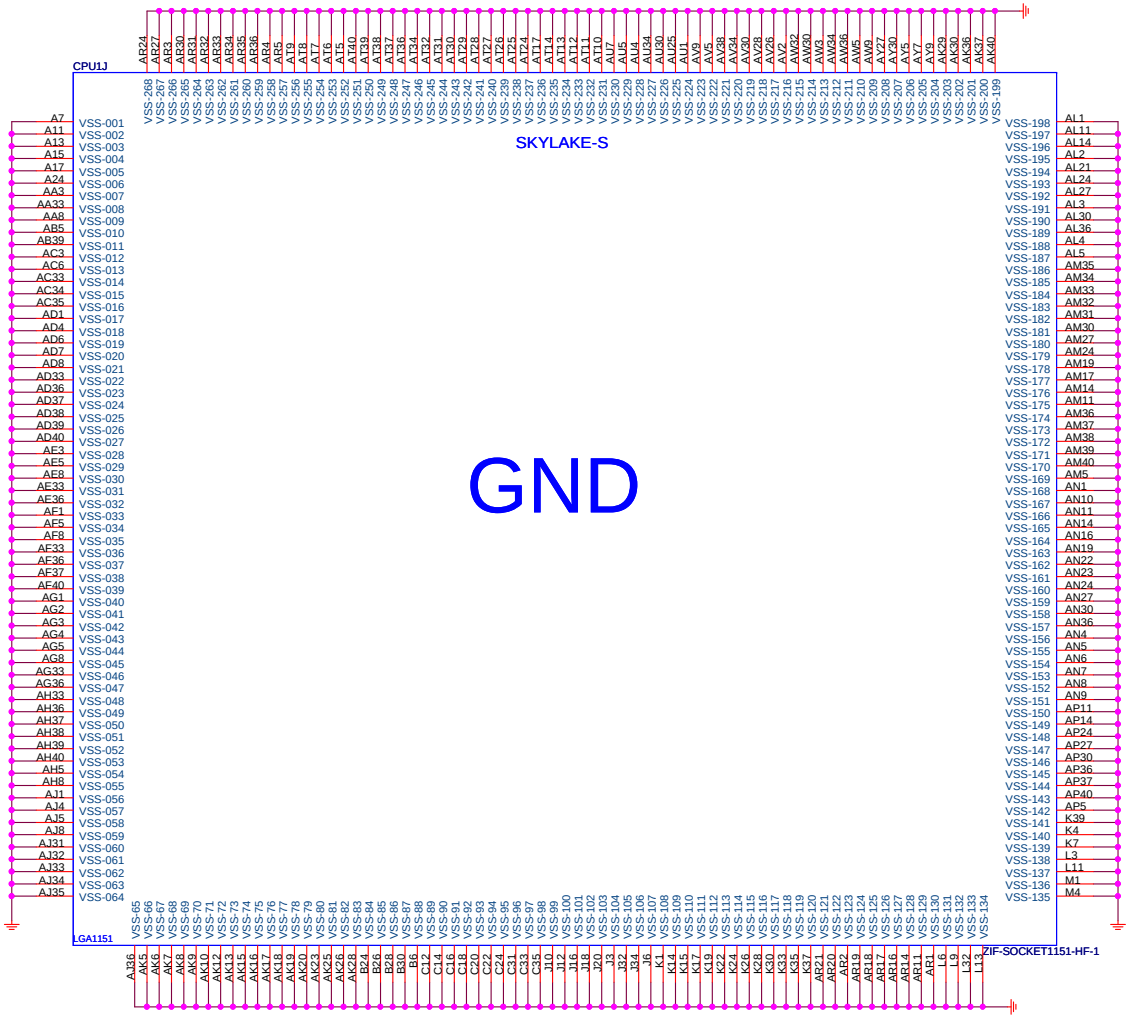
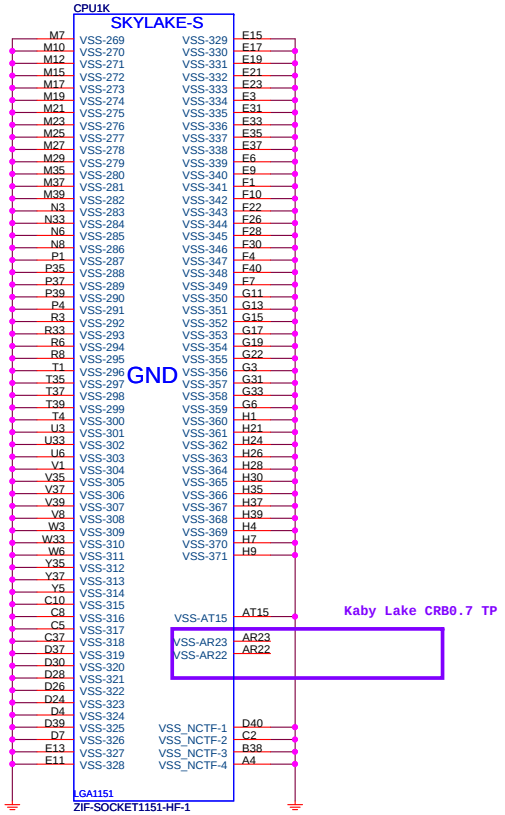
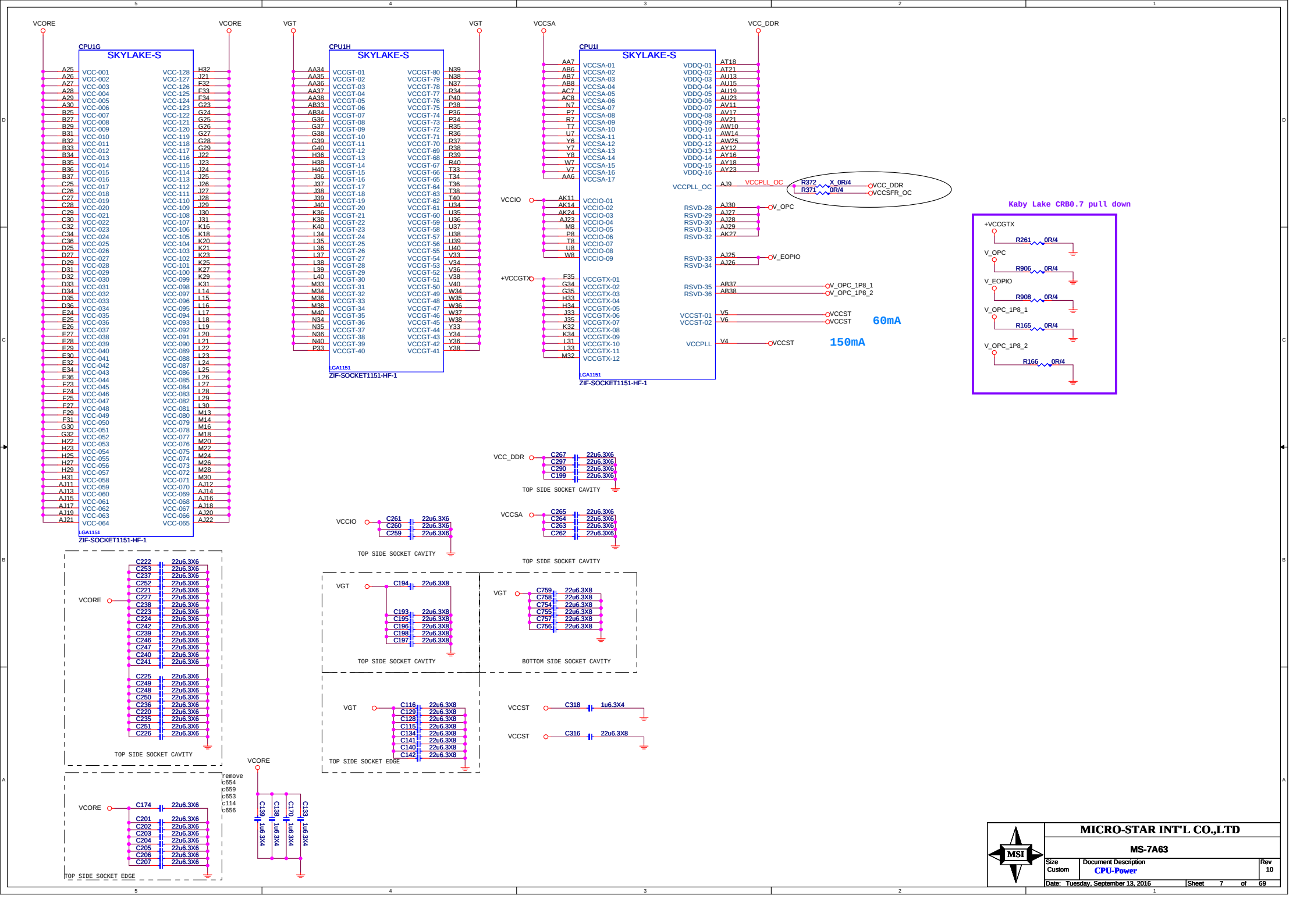
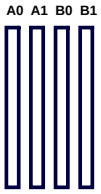
MS-7A63	
Size: Custom	Document Description: CPU-PEG/Display
Rev: 10	
Date: Tuesday, September 13, 2016	Sheet 5 of 69





MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: CPU-GND	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 6 of 69	


VCORE
CPU1G
SKYLAKE-S
VCC-001 VCC-002 VCC-003 VCC-004 VCC-005 VCC-006 VCC-007 VCC-008 VCC-009 VCC-010 VCC-011 VCC-012 VCC-013 VCC-014 VCC-015 VCC-016 VCC-017 VCC-018 VCC-019 VCC-020 VCC-021 VCC-022 VCC-023 VCC-024 VCC-025 VCC-026 VCC-027 VCC-028 VCC-029 VCC-030 VCC-031 VCC-032 VCC-033 VCC-034 VCC-035 VCC-036 VCC-037 VCC-038 VCC-039 VCC-040 VCC-041 VCC-042 VCC-043 VCC-044 VCC-045 VCC-046 VCC-047 VCC-048 VCC-049 VCC-050 VCC-051 VCC-052 VCC-053 VCC-054 VCC-055 VCC-056 VCC-057 VCC-058 VCC-059 VCC-060 VCC-061 VCC-062 VCC-063 VCC-064
VCC-065 VCC-066 VCC-067 VCC-068 VCC-069 VCC-070 VCC-071 VCC-072 VCC-073 VCC-074 VCC-075 VCC-076 VCC-077 VCC-078 VCC-079 VCC-080 VCC-081 VCC-082 VCC-083 VCC-084 VCC-085 VCC-086 VCC-087 VCC-088 VCC-089 VCC-090 VCC-091 VCC-092 VCC-093 VCC-094 VCC-095 VCC-096 VCC-097 VCC-098 VCC-099 VCC-100 VCC-101 VCC-102 VCC-103 VCC-104 VCC-105 VCC-106 VCC-107 VCC-108 VCC-109 VCC-110 VCC-111 VCC-112 VCC-113 VCC-114 VCC-115 VCC-116 VCC-117 VCC-118 VCC-119 VCC-120 VCC-121 VCC-122 VCC-123 VCC-124 VCC-125 VCC-126 VCC-127 VCC-128
LGA1151
ZIF-SOCKET1151-HF-1
VGT
CPU1H
SKYLAKE-S
VCCGT-01 VCCGT-02 VCCGT-03 VCCGT-04 VCCGT-05 VCCGT-06 VCCGT-07 VCCGT-08 VCCGT-09 VCCGT-10 VCCGT-11 VCCGT-12 VCCGT-13 VCCGT-14 VCCGT-15 VCCGT-16 VCCGT-17 VCCGT-18 VCCGT-19 VCCGT-20 VCCGT-21 VCCGT-22 VCCGT-23 VCCGT-24 VCCGT-25 VCCGT-26 VCCGT-27 VCCGT-28 VCCGT-29 VCCGT-30 VCCGT-31 VCCGT-32 VCCGT-33 VCCGT-34 VCCGT-35 VCCGT-36 VCCGT-37 VCCGT-38 VCCGT-39 VCCGT-40
VCCGT-41 VCCGT-42 VCCGT-43 VCCGT-44 VCCGT-45 VCCGT-46 VCCGT-47 VCCGT-48 VCCGT-49 VCCGT-50 VCCGT-51 VCCGT-52 VCCGT-53 VCCGT-54 VCCGT-55 VCCGT-56 VCCGT-57 VCCGT-58 VCCGT-59 VCCGT-60 VCCGT-61 VCCGT-62 VCCGT-63 VCCGT-64 VCCGT-65 VCCGT-66 VCCGT-67 VCCGT-68 VCCGT-69 VCCGT-70 VCCGT-71 VCCGT-72 VCCGT-73 VCCGT-74 VCCGT-75 VCCGT-76 VCCGT-77 VCCGT-78 VCCGT-79 VCCGT-80
LGA1151
ZIF-SOCKET1151-HF-1
VCCSA
VCC_DDR
CPU1I
SKYLAKE-S
VCCSA-01 VCCSA-02 VCCSA-03 VCCSA-04 VCCSA-05 VCCSA-06 VCCSA-07 VCCSA-08 VCCSA-09 VCCSA-10 VCCSA-11 VCCSA-12 VCCSA-13 VCCSA-14 VCCSA-15 VCCSA-16 VCCSA-17
VDDQ-01 VDDQ-02 VDDQ-03 VDDQ-04 VDDQ-05 VDDQ-06 VDDQ-07 VDDQ-08 VDDQ-09 VDDQ-10 VDDQ-11 VDDQ-12 VDDQ-13 VDDQ-14 VDDQ-15 VDDQ-16
VCCPLL_OC
VCCIO
VCCIO-01 VCCIO-02 VCCIO-03 VCCIO-04 VCCIO-05 VCCIO-06 VCCIO-07 VCCIO-08 VCCIO-09
RSVD-28 RSVD-29 RSVD-30 RSVD-31 RSVD-32
RSVD-33 RSVD-34
+VCCGTX
VCCGTX-01 VCCGTX-02 VCCGTX-03 VCCGTX-04 VCCGTX-05 VCCGTX-06 VCCGTX-07 VCCGTX-08 VCCGTX-09 VCCGTX-10 VCCGTX-11 VCCGTX-12
RSVD-35 RSVD-36
VCCST-01 VCCST-02
VCCPLL
LGA1151
ZIF-SOCKET1151-HF-1
VCCPLL_OC
R372 X_0R/4 VCC_DDR
R371 0R/4 VCCSFR_OC
V_OPC
V_EOPIO
V_OPC_1P8_1
V_OPC_1P8_2
60mA
150mA
Kaby Lake CRB0.7 pull down
+VCCGTX
R261 0R/4
V_OPC
R906 0R/4
V_EOPIO
R908 0R/4
V_OPC_1P8_1
R165 0R/4
V_OPC_1P8_2
R166 0R/4
VCC_DDR
C267 C297 C290 C199 22u6.3X6
TOP SIDE SOCKET CAVITY
VCCIO
C261 C260 C259 22u6.3X6
TOP SIDE SOCKET CAVITY
VCCSA
C265 C264 C263 C262 22u6.3X6
TOP SIDE SOCKET CAVITY
VCORE
C222 C253 C237 C252 C221 C227 C238 C223 C224 C242 C239 C246 C247 C240 C241 C225 C249 C248 C250 C236 C220 C235 C251 C226 22u6.3X6
TOP SIDE SOCKET CAVITY
VGT
C194 C193 C195 C196 C198 C197 22u6.3X8
TOP SIDE SOCKET CAVITY
VGT
C759 C758 C754 C755 C757 C756 22u6.3X8
BOTTOM SIDE SOCKET CAVITY
VGT
C116 C129 C128 C115 C134 C141 C140 C142 22u6.3X8
TOP SIDE SOCKET EDGE
VCCST
C318 1u6.3X4
VCCST
C316 22u6.3X8
VCORE
C174 C201 C202 C203 C204 C205 C206 C207 22u6.3X6
TOP SIDE SOCKET EDGE
remove
C654
C659
C653
C114
C656
VCORE
C139 C138 C170 C133 1u6.3X4
MICRO-STAR INT'L CO.,LTD
MS-7A63
Size Custom
Document Description CPU-Power
Rev 10
Date: Tuesday, September 13, 2016
Sheet 7 of 69



VCC_DDR

DIMMA1A

M_DATA_A[63..0] 3

DQS17P 51
DQS17N 52
DQS16P 132
DQS16N 133
DQS15P 121
DQS15N 122
DQS14P 110
DQS14N 111
DQS13P 99
DQS13N 100
DQS12P 40
DQS12N 41
DQS11P 29
DQS11N 30
DQS10P 18
DQS10N 19
DQS9P 7
DQS9N 8
DQS8P 197
DQS8N 196
DQS7P 278
DQS7N 277
DQS6P 267
DQS6N 266
DQS5P 256
DQS5N 255
DQS4P 245
DQS4N 244
DQS3P 186
DQS3N 185
DQS2P 175
DQS2N 174
DQS1P 164
DQS1N 163
DQS0P 153
DQS0N 152

3 M_DQS_A_DP7 M_DQS_A_DP7
3 M_DQS_A_DN7 M_DQS_A_DN7
3 M_DQS_A_DP6 M_DQS_A_DP6
3 M_DQS_A_DN6 M_DQS_A_DN6
3 M_DQS_A_DP5 M_DQS_A_DP5
3 M_DQS_A_DN5 M_DQS_A_DN5
3 M_DQS_A_DP4 M_DQS_A_DP4
3 M_DQS_A_DN4 M_DQS_A_DN4
3 M_DQS_A_DP3 M_DQS_A_DP3
3 M_DQS_A_DN3 M_DQS_A_DN3
3 M_DQS_A_DP2 M_DQS_A_DP2
3 M_DQS_A_DN2 M_DQS_A_DN2
3 M_DQS_A_DP1 M_DQS_A_DP1
3 M_DQS_A_DN1 M_DQS_A_DN1
3 M_DQS_A_DP0 M_DQS_A_DP0
3 M_DQS_A_DN0 M_DQS_A_DN0

3 M_CK_A_DP1 M_CK_A_DP1 218 CK1P
3 M_CK_A_DN1 M_CK_A_DN1 219 CK1N
3 M_CK_A_DP0 M_CK_A_DP0 74 CK0P
3 M_CK_A_DN0 M_CK_A_DN0 75 CK0N

C2 235
S3_N_C1 237
S2_N_C0 93

3 M_CS#_A1 89 S1_N
3 M_CS#_A0 84 S0_N
3 M_CKE_A1 203 CKE1
3 M_CKE_A0 60 CKE0
3 M_ODT_A1 91 ODT-1
3 M_ODT_A0 87 ODT-0

CB-7 199
CB-6 54
CB-5 192
CB-4 47
CB-3 201
CB-2 56
CB-1 194
CB-0 49

DIMM_RESET# 58 RESET_N
DIMM1_EVENT 78 EVENT_N
3 M_ALERT_A_N M_ALERT_A_N 208 ALERT_N
3 M_ACT_A_N M_ACT_A_N 62 ACT_N
3 M_PARITY_A M_PARITY_A 222 PAR

SAVE_N_NC 230

RFU-0 144
RFU-1 205
RFU-2 227

DQ-63 280 M_DATA_A57
DQ-62 135 M_DATA_A59
DQ-61 273 M_DATA_A61
DQ-60 128 M_DATA_A56
DQ-59 282 M_DATA_A60
DQ-58 137 M_DATA_A62
DQ-57 275 M_DATA_A58
DQ-56 130 M_DATA_A63
DQ-55 269 M_DATA_A55
DQ-54 124 M_DATA_A53
DQ-53 262 M_DATA_A48
DQ-52 117 M_DATA_A50
DQ-51 271 M_DATA_A49
DQ-50 126 M_DATA_A51
DQ-49 264 M_DATA_A52
DQ-48 119 M_DATA_A54
DQ-47 258 M_DATA_A42
DQ-46 113 M_DATA_A46
DQ-45 251 M_DATA_A40
DQ-44 106 M_DATA_A41
DQ-43 260 M_DATA_A43
DQ-42 115 M_DATA_A47
DQ-41 253 M_DATA_A44
DQ-40 108 M_DATA_A45
DQ-39 247 M_DATA_A39
DQ-38 102 M_DATA_A38
DQ-37 240 M_DATA_A37
DQ-36 95 M_DATA_A36
DQ-35 249 M_DATA_A35
DQ-34 104 M_DATA_A34
DQ-33 242 M_DATA_A33
DQ-32 97 M_DATA_A32
DQ-31 188 M_DATA_A27
DQ-30 43 M_DATA_A30
DQ-29 181 M_DATA_A25
DQ-28 36 M_DATA_A28
DQ-27 190 M_DATA_A31
DQ-26 45 M_DATA_A26
DQ-25 183 M_DATA_A24
DQ-24 38 M_DATA_A29
DQ-23 177 M_DATA_A23
DQ-22 32 M_DATA_A19
DQ-21 170 M_DATA_A20
DQ-20 25 M_DATA_A21
DQ-19 179 M_DATA_A18
DQ-18 34 M_DATA_A22
DQ-17 172 M_DATA_A16
DQ-16 27 M_DATA_A17
DQ-15 166 M_DATA_A15
DQ-14 21 M_DATA_A11
DQ-13 159 M_DATA_A8
DQ-12 14 M_DATA_A9
DQ-11 168 M_DATA_A14
DQ-10 23 M_DATA_A10
DQ-9 161 M_DATA_A13
DQ-8 16 M_DATA_A12
DQ-7 155 M_DATA_A7
DQ-6 10 M_DATA_A3
DQ-5 148 M_DATA_A4
DQ-4 3 M_DATA_A1
DQ-3 157 M_DATA_A2
DQ-2 12 M_DATA_A6
DQ-1 150 M_DATA_A0
DQ-0 5 M_DATA_A5

BG-1 207 M_BG_A_1 M_BG_A_1 3
BG-0 63 M_BG_A_0 M_BG_A_0 3
BA-1 224 M_BA_A_1 M_BA_A_1 3
BA-0 81 M_BA_A_0 M_BA_A_0 3

M_MAA_A[16..0]

A17 234
A16_RAS_N 82 M_MAA_A16
A15_CAS_N 86 M_MAA_A15
A14_WE_N 228 M_MAA_A14
A13 232 M_MAA_A13
A12 65 M_MAA_A12
A11 210 M_MAA_A11
A10 225 M_MAA_A10
A9 66 M_MAA_A9
A8 68 M_MAA_A8
A7 211 M_MAA_A7
A6 69 M_MAA_A6
A5 213 M_MAA_A5
A4 214 M_MAA_A4
A3 71 M_MAA_A3
A2 216 M_MAA_A2
A1 72 M_MAA_A1
A0 79 M_MAA_A0

M_MAA_A[16..0] 3

SCL 141 SMB_CLK_DIMM
SDA 285 SMB_DATA_DIMM

SA-2 238
SA-1 140
SA-0 139

VCC_DDR
R254 470R1%4
12 DRAM_RESET# R252 0R/4 DIMM_RESET# DIMM_RESET# 9
C175 X_0.1u16X4

DDRIV-288P_BLACK-RH-21

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

VCC_DDR
DIMM1_EVENT R283 240R1%4
DIMM2_EVENT R284 240R1%4

12,23,38,55 SMBCLK_VCC SMBCLK_VCC R390 0R/4 SMB_CLK_DIMM SMB_CLK_DIMM 9
12,23,38,55 SMBDATA_VCC SMBDATA_VCC R389 0R/4 SMB_DATA_DIMM SMB_DATA_DIMM 9

DIMMA2A

DQS17P 51
DQS17N 52
DQS16P 132
DQS16N 133
DQS15P 121
DQS15N 122
DQS14P 110
DQS14N 111
DQS13P 99
DQS13N 100
DQS12P 40
DQS12N 41
DQS11P 29
DQS11N 30
DQS10P 18
DQS10N 19
DQS9P 7
DQS9N 8
DQS8P 197
DQS8N 196
DQS7P 278
DQS7N 277
DQS6P 267
DQS6N 266
DQS5P 256
DQS5N 255
DQS4P 245
DQS4N 244
DQS3P 186
DQS3N 185
DQS2P 175
DQS2N 174
DQS1P 164
DQS1N 163
DQS0P 153
DQS0N 152

M_DQS_A_DP7 M_DQS_A_DP7
M_DQS_A_DN7 M_DQS_A_DN7
M_DQS_A_DP6 M_DQS_A_DP6
M_DQS_A_DN6 M_DQS_A_DN6
M_DQS_A_DP5 M_DQS_A_DP5
M_DQS_A_DN5 M_DQS_A_DN5
M_DQS_A_DP4 M_DQS_A_DP4
M_DQS_A_DN4 M_DQS_A_DN4
M_DQS_A_DP3 M_DQS_A_DP3
M_DQS_A_DN3 M_DQS_A_DN3
M_DQS_A_DP2 M_DQS_A_DP2
M_DQS_A_DN2 M_DQS_A_DN2
M_DQS_A_DP1 M_DQS_A_DP1
M_DQS_A_DN1 M_DQS_A_DN1
M_DQS_A_DP0 M_DQS_A_DP0
M_DQS_A_DN0 M_DQS_A_DN0

3 M_CK_A_DP3 M_CK_A_DP3 218 CK1P
3 M_CK_A_DN3 M_CK_A_DN3 219 CK1N
3 M_CK_A_DP2 M_CK_A_DP2 74 CK0P
3 M_CK_A_DN2 M_CK_A_DN2 75 CK0N

C2 235
S3_N_C1 237
S2_N_C0 93

3 M_CS#_A3 89 S1_N
3 M_CS#_A2 84 S0_N
3 M_CKE_A3 203 CKE1
3 M_CKE_A2 60 CKE0
3 M_ODT_A3 91 ODT-1
3 M_ODT_A2 87 ODT-0

CB-7 199
CB-6 54
CB-5 192
CB-4 47
CB-3 201
CB-2 56
CB-1 194
CB-0 49

DIMM_RESET# 58 RESET_N
DIMM2_EVENT 78 EVENT_N
M_ALERT_A_N 208 ALERT_N
M_ACT_A_N 62 ACT_N
M_PARITY_A 222 PAR

SAVE_N_NC 230

RFU-0 144
RFU-1 205
RFU-2 227

DQ-63 280 M_DATA_A57
DQ-62 135 M_DATA_A59
DQ-61 273 M_DATA_A61
DQ-60 128 M_DATA_A56
DQ-59 282 M_DATA_A60
DQ-58 137 M_DATA_A62
DQ-57 275 M_DATA_A58
DQ-56 130 M_DATA_A63
DQ-55 269 M_DATA_A55
DQ-54 124 M_DATA_A53
DQ-53 262 M_DATA_A48
DQ-52 117 M_DATA_A50
DQ-51 271 M_DATA_A49
DQ-50 126 M_DATA_A51
DQ-49 264 M_DATA_A52
DQ-48 119 M_DATA_A54
DQ-47 258 M_DATA_A42
DQ-46 113 M_DATA_A46
DQ-45 251 M_DATA_A40
DQ-44 106 M_DATA_A41
DQ-43 260 M_DATA_A43
DQ-42 115 M_DATA_A47
DQ-41 253 M_DATA_A44
DQ-40 108 M_DATA_A45
DQ-39 247 M_DATA_A39
DQ-38 102 M_DATA_A38
DQ-37 240 M_DATA_A37
DQ-36 95 M_DATA_A36
DQ-35 249 M_DATA_A35
DQ-34 104 M_DATA_A34
DQ-33 242 M_DATA_A33
DQ-32 97 M_DATA_A32
DQ-31 188 M_DATA_A27
DQ-30 43 M_DATA_A30
DQ-29 181 M_DATA_A25
DQ-28 36 M_DATA_A28
DQ-27 190 M_DATA_A31
DQ-26 45 M_DATA_A26
DQ-25 183 M_DATA_A24
DQ-24 38 M_DATA_A29
DQ-23 177 M_DATA_A23
DQ-22 32 M_DATA_A19
DQ-21 170 M_DATA_A20
DQ-20 25 M_DATA_A21
DQ-19 179 M_DATA_A18
DQ-18 34 M_DATA_A22
DQ-17 172 M_DATA_A16
DQ-16 27 M_DATA_A17
DQ-15 166 M_DATA_A15
DQ-14 21 M_DATA_A11
DQ-13 159 M_DATA_A8
DQ-12 14 M_DATA_A9
DQ-11 168 M_DATA_A14
DQ-10 23 M_DATA_A10
DQ-9 161 M_DATA_A13
DQ-8 16 M_DATA_A12
DQ-7 155 M_DATA_A7
DQ-6 10 M_DATA_A3
DQ-5 148 M_DATA_A4
DQ-4 3 M_DATA_A1
DQ-3 157 M_DATA_A2
DQ-2 12 M_DATA_A6
DQ-1 150 M_DATA_A0
DQ-0 5 M_DATA_A5

BG-1 207 M_BG_A_1
BG-0 63 M_BG_A_0
BA-1 224 M_BA_A_1
BA-0 81 M_BA_A_0

A17 234
A16_RAS_N 82 M_MAA_A16
A15_CAS_N 86 M_MAA_A15
A14_WE_N 228 M_MAA_A14
A13 232 M_MAA_A13
A12 65 M_MAA_A12
A11 210 M_MAA_A11
A10 225 M_MAA_A10
A9 66 M_MAA_A9
A8 68 M_MAA_A8
A7 211 M_MAA_A7
A6 69 M_MAA_A6
A5 213 M_MAA_A5
A4 214 M_MAA_A4
A3 71 M_MAA_A3
A2 216 M_MAA_A2
A1 72 M_MAA_A1
A0 79 M_MAA_A0

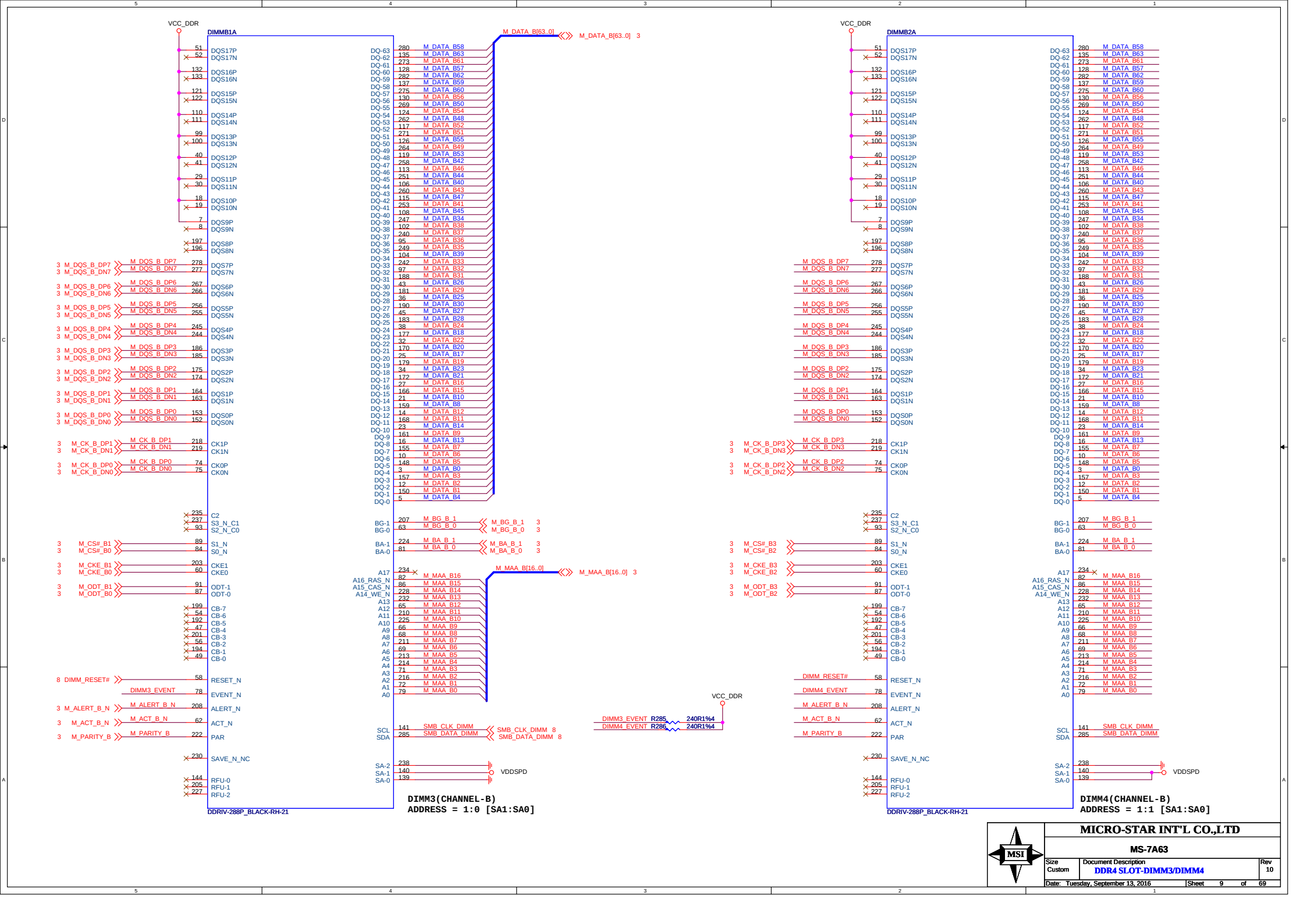
SCL 141 SMB_CLK_DIMM
SDA 285 SMB_DATA_DIMM

SA-2 238
SA-1 140
SA-0 139 VDDSPD

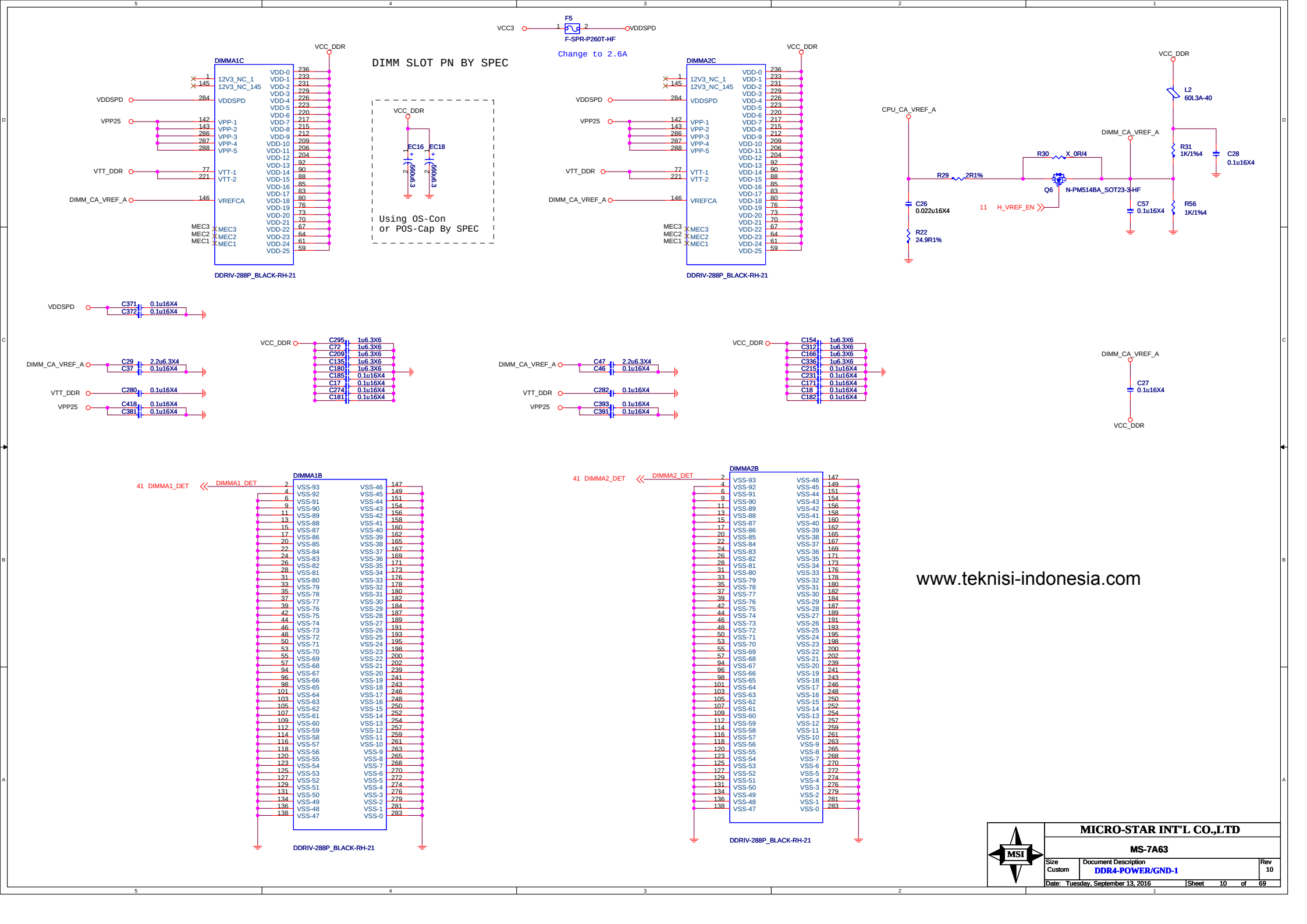
DDRIV-288P_BLACK-RH-21

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

MICRO-STAR INT'L CO.,LTD	
MS-7A63	
Size: Custom	Document Description: DDR4 SLOT-DIMM1/DIMM2 — Rev: 10
Date: Tuesday, September 13, 2016	Sheet 8 of 69



MICRO-STAR INT'L CO.,LTD	
MS-7A63	
Size: Custom	Document Description: DDR4 SLOT-DIMM3/DIMM4
Rev: 10	
Date: Tuesday, September 13, 2016	Sheet 9 of 69


F5
VCC3
VDDSPD
F-SPR-P260T-HF
DIMM SLOT PN BY SPEC
Change to 2.6A
DIMMA1C
DIMMA2C
DDRIV-288P_BLACK-RH-21
VCC_DDR
VDDSPD
VPP25
VTT_DDR
DIMM_CA_VREF_A
EC16
EC18
560u6.3
Using OS-Con
or POS-Cap By SPEC
CPU_CA_VREF_A
L2
60L3A-40
R30
X_0R/4
R29
2R1%
Q6
N-PM514BA_SOT23-3-HF
R31
1K/1%4
C28
0.1u16X4
C26
0.022u16X4
11
H_VREF_EN
C57
0.1u16X4
R56
1K/1%4
R22
24.9R1%
C371
C372
0.1u16X4
C29
C37
2.2u6.3X4
C280
C418
C381
C295
C72
C209
C135
C180
C185
C17
C274
C181
1u6.3X6
C47
C46
C282
C393
C391
C154
C312
C166
C336
C215
C231
C171
C18
C182
C27
DIMMA1B
DIMMA2B
41 DIMMA1_DET
41 DIMMA2_DET
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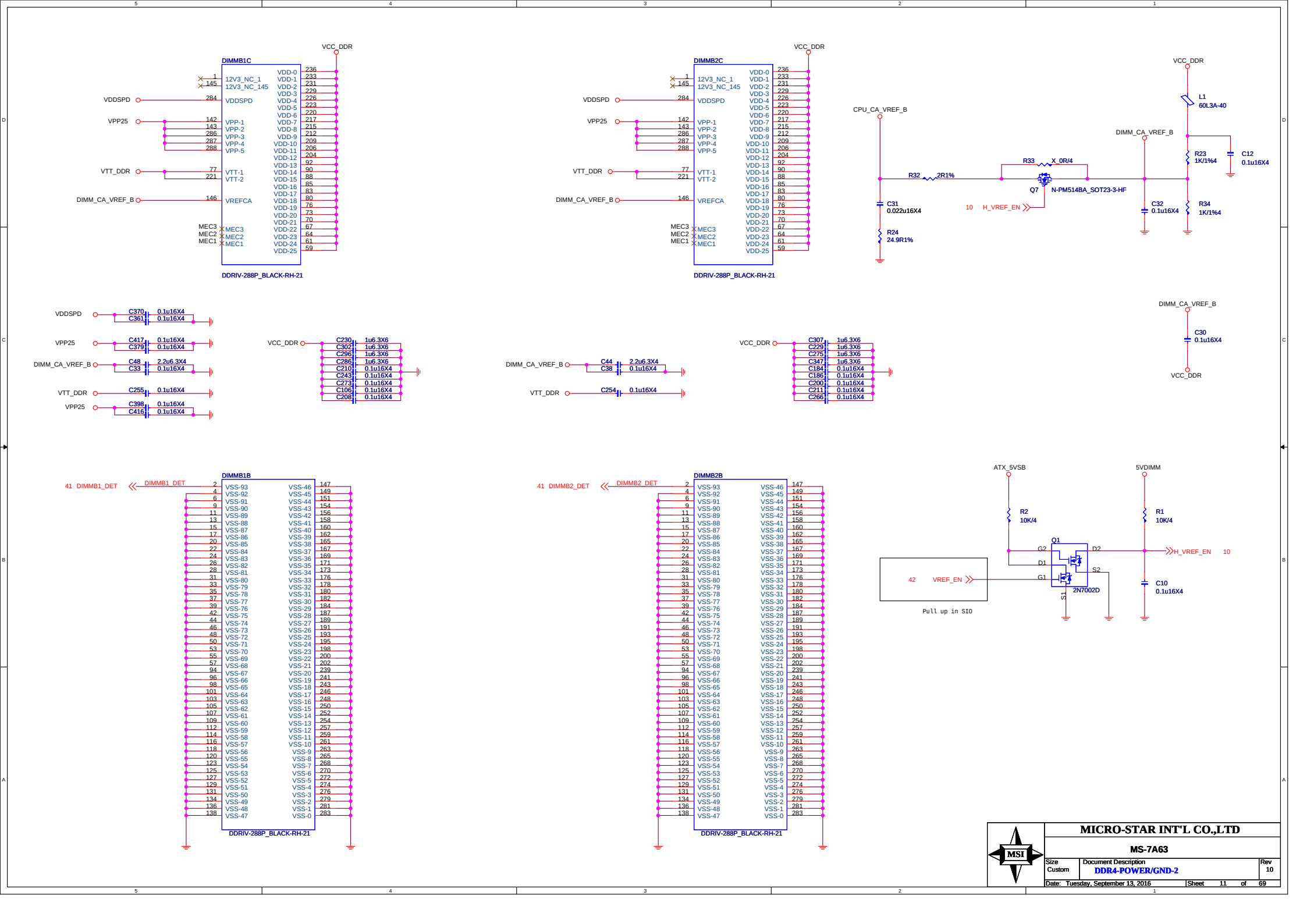
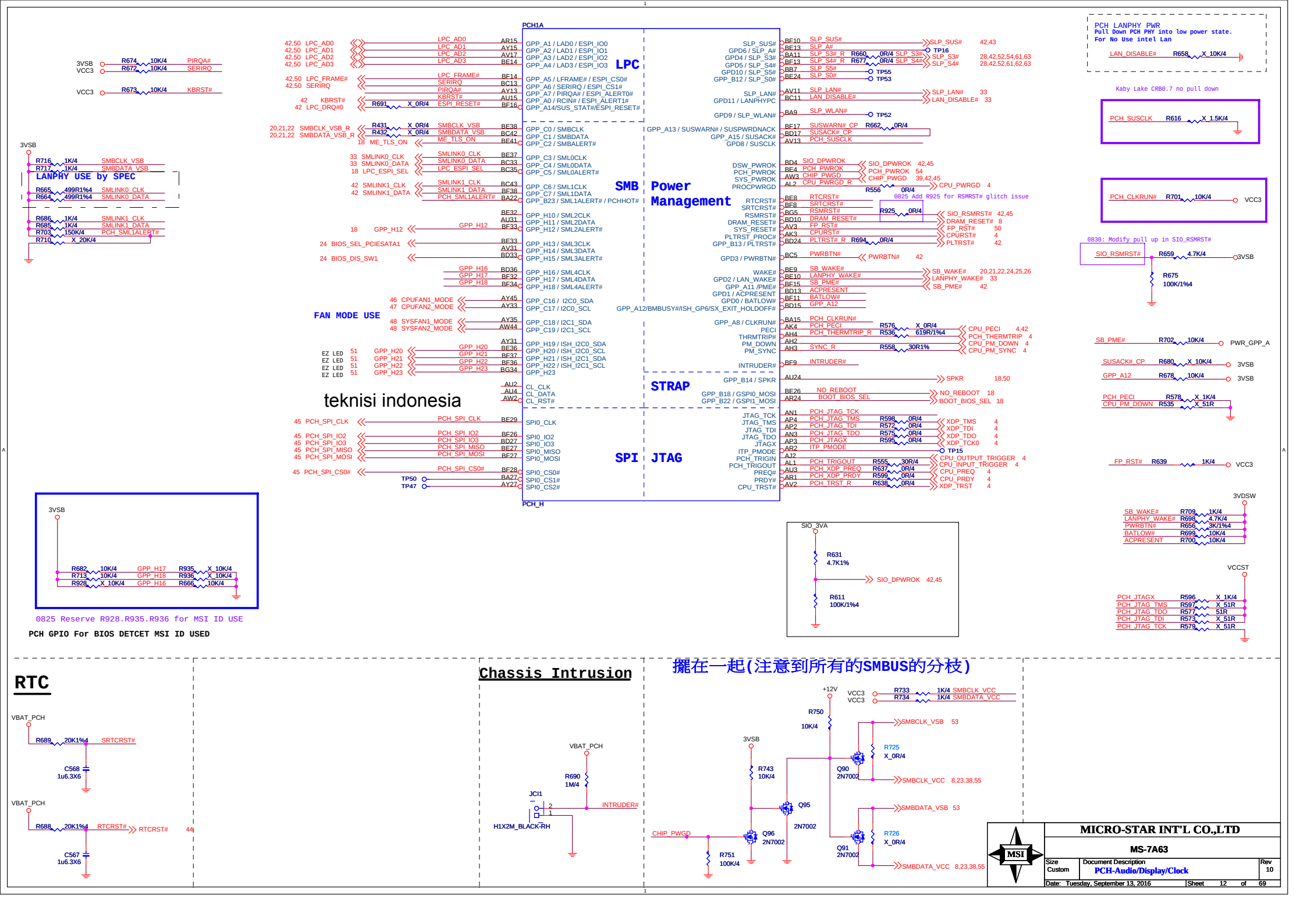
MICRO-STAR INT'L CO.,LTD
MS-7A63
Size
Custom
Document Description
DDR4-POWER/GND-1
Rev
10
Date: Tuesday, September 13, 2016
Sheet 10 of 69

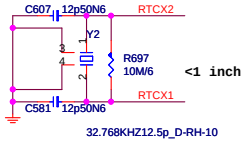

DIMMB1C
DDRIV-288P_BLACK-RH-21
VCC_DDR
VDDSPD
VPP25
VTT_DDR
DIMM_CA_VREF_B
DIMMB2C
DDRIV-288P_BLACK-RH-21
CPU_CA_VREF_B
L1
60L3A-40
R23
1K/1%4
C12
0.1u16X4
R33
X_0R/4
R32
2R1%
Q7
N-PM514BA_SOT23-3-HF
C31
0.022u16X4
10
H_VREF_EN
C32
0.1u16X4
R34
1K/1%4
R24
24.9R1%
C370
C361
C417
C379
C48
C33
C255
C398
C416
C230
C302
C296
C286
C210
C243
C273
C106
C208
C44
C38
C254
C307
C229
C275
C347
C184
C186
C200
C211
C266
C30
DIMMB1B
41
DIMMB1_DET
DIMMB2B
41
DIMMB2_DET
ATX_5VSB
5VDIMM
R2
10K/4
R1
10K/4
Q1
2N7002D
42
VREF_EN
Pull up in SIO
C10
0.1u16X4
MICRO-STAR INT'L CO.,LTD
MS-7A63
Size
Custom
Document Description
DDR4-POWER/GND-2
Rev
10
Date: Tuesday, September 13, 2016
Sheet 11 of 69

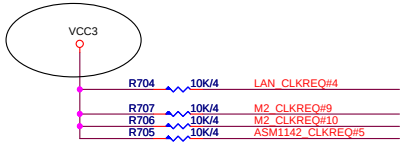

PCH1A
LPC
SMB
Power Management
STRAP
SPI
JTAG
PCH_H
FAN MODE USE
teknisi indonesia
LANPHY USE by SPEC
PCH_LANPHY_PWR
Pull Down PCH PHY into low power state.
For No Use intel Lan
Kaby Lake CRB0.7 no pull down
0825 Reserve R928.R935.R936 for MSI ID USE
PCH GPIO For BIOS DETCET MSI ID USED
RTC
Chassis Intrusion
擺在一起(注意到所有的SMBUS的分枝)
MICRO-STAR INT'L CO.,LTD
MS-7A63
PCH-Audio/Display/Clock

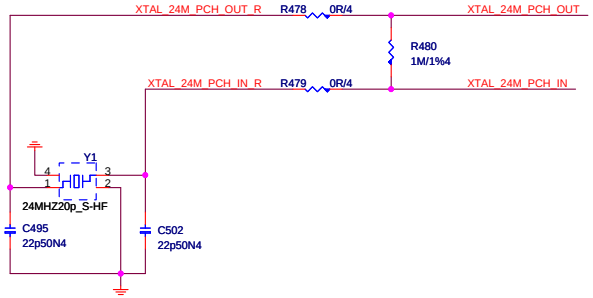
PCH_CLK

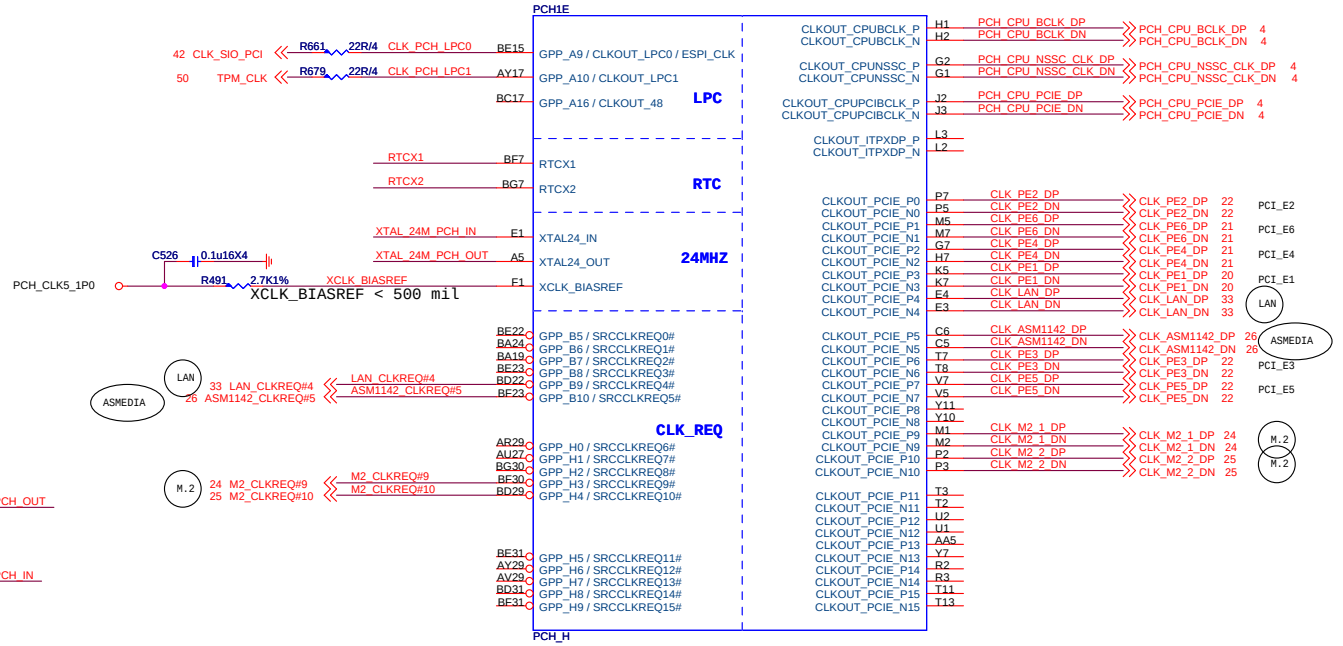
RTC Block

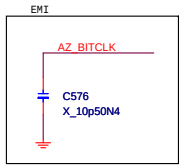
Close to PCH

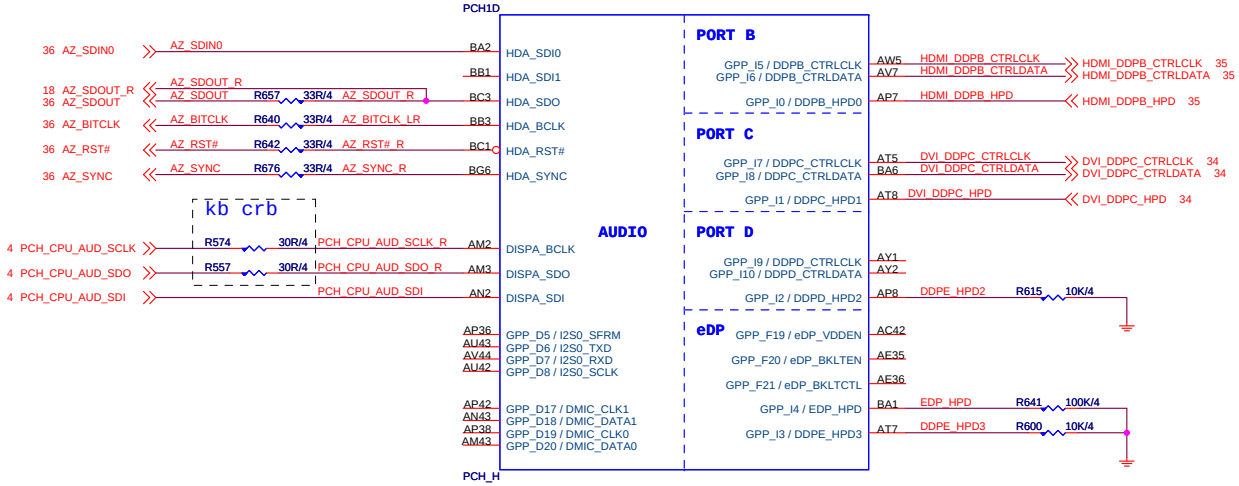


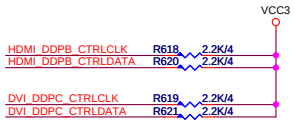










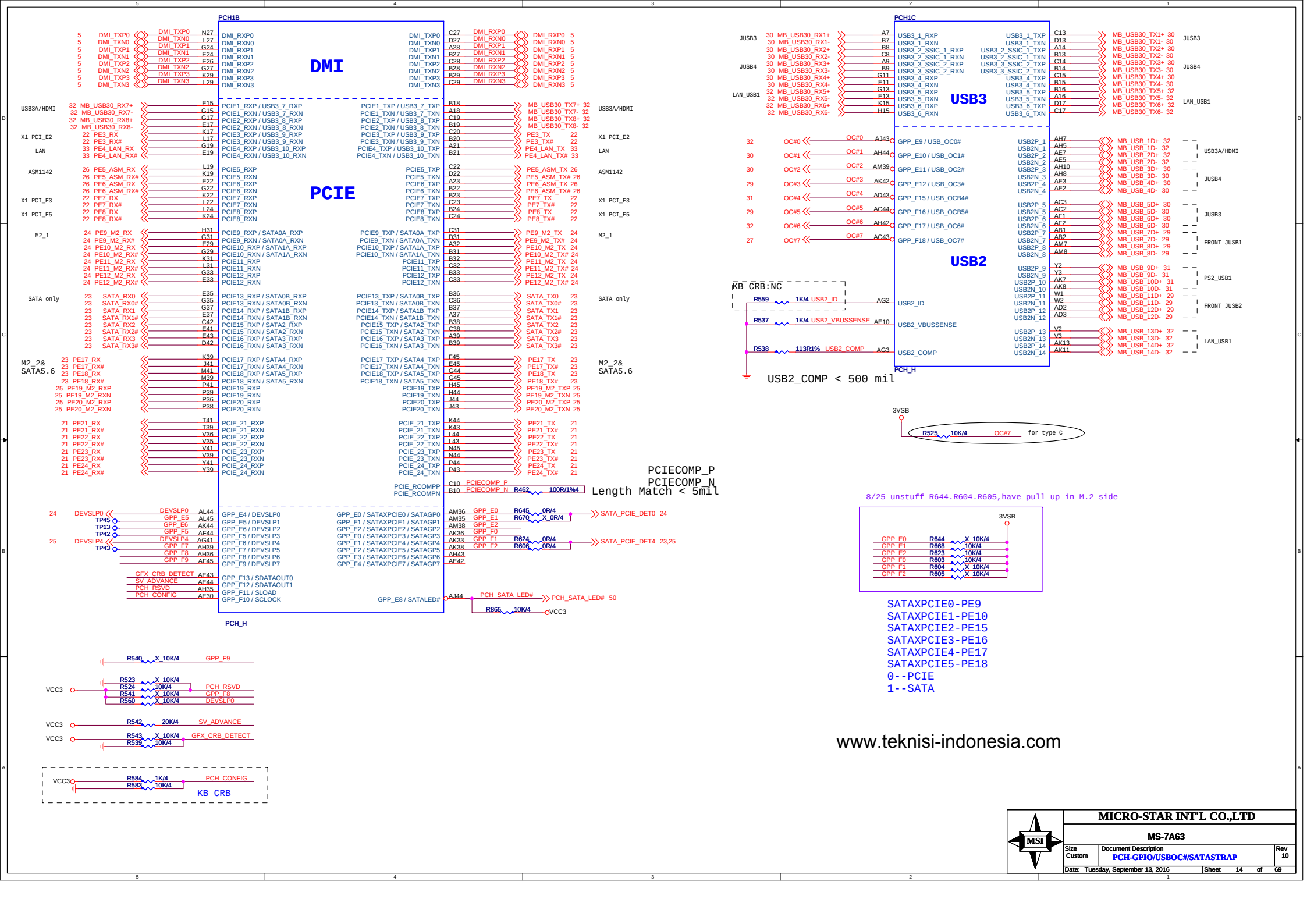


MICRO-STAR INT'L CO.,LTD

MS-7A63

Size	Document Description	Rev
Custom	PCH-USB/PCIE/DMI/SATA	10

Date: Tuesday, September 13, 2016 Sheet 13 of 69


PCH1B
DMI
PCIE
PCH_H
PCH1C
USB3
USB2
KB CRB:NC
USB2_COMP < 500 mil
PCIECOMP_P
PCIECOMP_N
Length Match < 5mil
8/25 unstuff R644.R604.R605,have pull up in M.2 side
SATAXPCIE0-PE9
SATAXPCIE1-PE10
SATAXPCIE2-PE15
SATAXPCIE3-PE16
SATAXPCIE4-PE17
SATAXPCIE5-PE18
0--PCIE
1--SATA
KB CRB
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MICRO-STAR INT'L CO.,LTD
MS-7A63
PCH-GPIO/USBOC#/SATASTRAP
Rev 10
Date: Tuesday, September 13, 2016
Sheet 14 of 69

GPP_A18	
0	SATA1
1	M2_1

GPP_A20	
0	M2_2
1	SATA5

0825 Add GPP_A18,GPP_A20 for BIOS Detect M.2 SATA
or on board SATA

PCH1F

24 GPP_A18 — GPP_A18 — BE17 GPP_A17 / ISH_GP7
BD19 GPP_A18 / ISH_GP0
23 GPP_A20 — GPP_A20 — BE18 GPP_A19 / ISH_GP1
BE19 GPP_A20 / ISH_GP2
BE18 GPP_A21 / ISH_GP3
BG16 GPP_A22 / ISH_GP4
BE19 GPP_A23 / ISH_GP5

TP51 GPP_B0 — AY22 GPP_B0
TP48 GPP_B1 — AV19 GPP_B1
3VSB R692 10K/4 VRALERT# — BG21 GPP_B2 / VRALERT#
TP54 GPP_B3 — BF21 GPP_B3 / CPU_GP2
VCC3 R693 8.2K1% GPP_B4 — BF22 GPP_B4 / CPU_GP3

BIOS SHOW FAN FAULT Information USE

AR17 GPP_B11
AV22 GPP_B15 / GSPI0_CS#
AY24 GPP_B16 / GSPI0_CLK
BG25 GPP_B17 / GSPI0_MISO
BF25 GPP_B19
BF24 GPP_B20 / GSPI1_CLK
AP24 GPP_B21 / GSPI1_MISO

GPIO

41 PCIE1_16_EN — BA39 GPP_C8 / UART0_RXD
41 PCIE1_8_EN — BG39 GPP_C9 / UART0_TXD
BF39 GPP_C10 / UART0_RTS#
BC45 GPP_C11 / UART0_CTS#
BB45 GPP_C12 / UART1_RXD / ISH_UART1_RXD
BA44 GPP_C13 / UART1_TXD / ISH_UART1_TXD
BA45 GPP_C14 / UART1_RTS# / ISH_UART1_RTS#
BA35 GPP_C15 / UART1_CTS# / ISH_UART1_CTS#

BIOS SHOW FAN MODE Information USE
Default GPI

FAN MODE USE

49 SYSFAN3_MODE — AY44 GPP_C20 / UART2_RXD
49 SYSFAN4_MODE — BA33 GPP_C21 / UART2_TXD
GPP_C22 — AW43 GPP_C22 / UART2_RTS#
USB_SMI_USE
26 GPP_C23_USB3_SMI1 — GPP_C23_USB3_SMI1 — AW42 GPP_C23 / UART2_CTS#

AV41 GPP_D0
AY39 GPP_D1
BB44 GPP_D2
AV43 GPP_D3
AU44 GPP_D4 / ISH_I2C2_SDA / ISH_I2C3_SDA

PCIE1_16_EN R669 100K/4
PCIE1_8_EN R667 100K/4

42 GPP_D4 — GPP_D4
3VSB R580 10K/4 GPP_D9 — AT45 GPP_D9
TP49 GPP_D10 — AV39 GPP_D10
TP46 GPP_D11 — AT38 GPP_D11
TP14 GPP_D12 — AT41 GPP_D12
AP44 GPP_D13 / ISH_UART0_RXD / SML0BDATA / I2C2_SDA
AP43 GPP_D14 / ISH_UART0_TXD / SML0BCLK / I2C2_SCL
AT44 GPP_D15 / ISH_UART0_RTS#
AT39 GPP_D16 / ISH_UART0_CTS#

3VSB
R581 10K/4 GPP_D4
R602 10K/4 GPP_C22
R601 10K/4 GPP_C23_USB3_SMI1

AM44 GPP_D21
AM42 GPP_D22
43 GPPD23_PLTRST# — AN44 GPP_D23 / ISH_I2C2_SCL / ISH_I2C3_SCL

AP17 TP1
AU19 TP2

0825 Add GPPD23_PLTRST# for ASM2142 PLTRST#

PCH_H

VCC3
R939 10K/4 GPPD23_PLTRST#

0825 Add R939 for ASM2142 PLTRST#

GPP_E3 / CPU_GP0 — AP41 GPP_E3 — R561 8.2K1% — VCC3
GPP_E7 / CPU_GP1 — AK43 GPP_E7 — TP44

CPU_SKTOCC# R522 X_10K/4 3VSB

GPP_F14 — AD44 CPU_SKTOCC# — CPU_SKTOCC# 4,42
GPP_F22 — AB45 GPP_F22
GPP_F23 — AE39 GPP_F23 — TP41

GPP_G0 / FAN_TACH_0 — AA43 — PEG_MODE_0 19
GPP_G1 / FAN_TACH_1 — AB44 — PEG_MODE_1 19
GPP_G2 / FAN_TACH_2 — AC36 — XMP_LED 50
GPP_G3 / FAN_TACH_3 — T44
GPP_G4 / FAN_TACH_4 — AC33
GPP_G5 / FAN_TACH_5 — V43 — BIOS_SEL_PCIESATA2 25
GPP_G6 / FAN_TACH_6 — Y42 — M2_2_SEL 23,25
GPP_G7 / FAN_TACH_7 — AA44 — BIOS_DIS_SW2 25
GPP_G8 / FAN_PWM_0 — W44
GPP_G9 / FAN_PWM_1 — Y44
GPP_G10 / FAN_PWM_2 — AC35
GPP_G11 / FAN_PWM_3 — AC41
GPP_G12 / GSXDOUT — AC39
GPP_G13 / GSXSLOAD — Y36
GPP_G14 / GSXDIN — Y43
GPP_G15 / GSXSRESET# — U44
GPP_G16 / GSXCLK — T43
GPP_G17 / ADR_COMPLETE — V42
GPP_G18 / NMI# — U45 NMI# — R502 10K/4 — 3VSB
GPP_G19 / SMI# — R43 SMI# — R500 10K/4 — 3VSB
GPP_G20 — Y35 TEST_SETUP_MENU — R504 10K/4 — VCC3
GPP_G21 — AC30 GPP_G21 — R506 X_10K/4 — 3VSB
GPP_G22 — R45 GPP_G22
GPP_G23 — R44 GPP_G23

CPU X16/X8 SEL GPIO

GPP_F22 R516 10K/4
PEG_MODE_1 R517 10K/4 — 3VSB
PEG_MODE_0 R515 10K/4
XMP_LED R306 10K/4

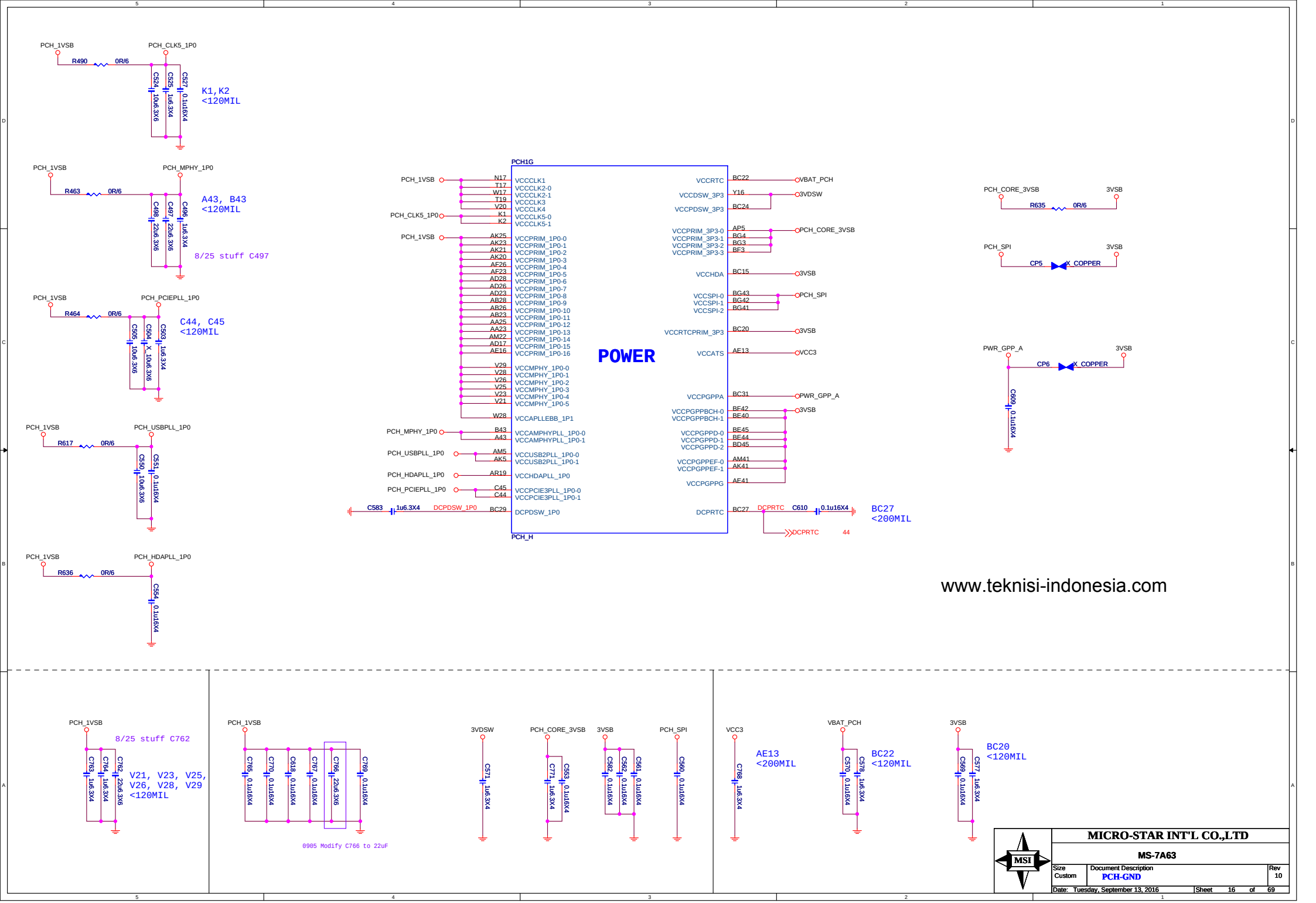
For BIOS BOM USE
R582 10K/4 GPP_G21 — R562 X_10K/4
R501 10K/4 GPP_G22 — R492 X_10K/4
R503 10K/4 GPP_G23 — R505 X_10K/4 — 3VSB

GPD7 / RSVD — BG11 GPD7 — TP17

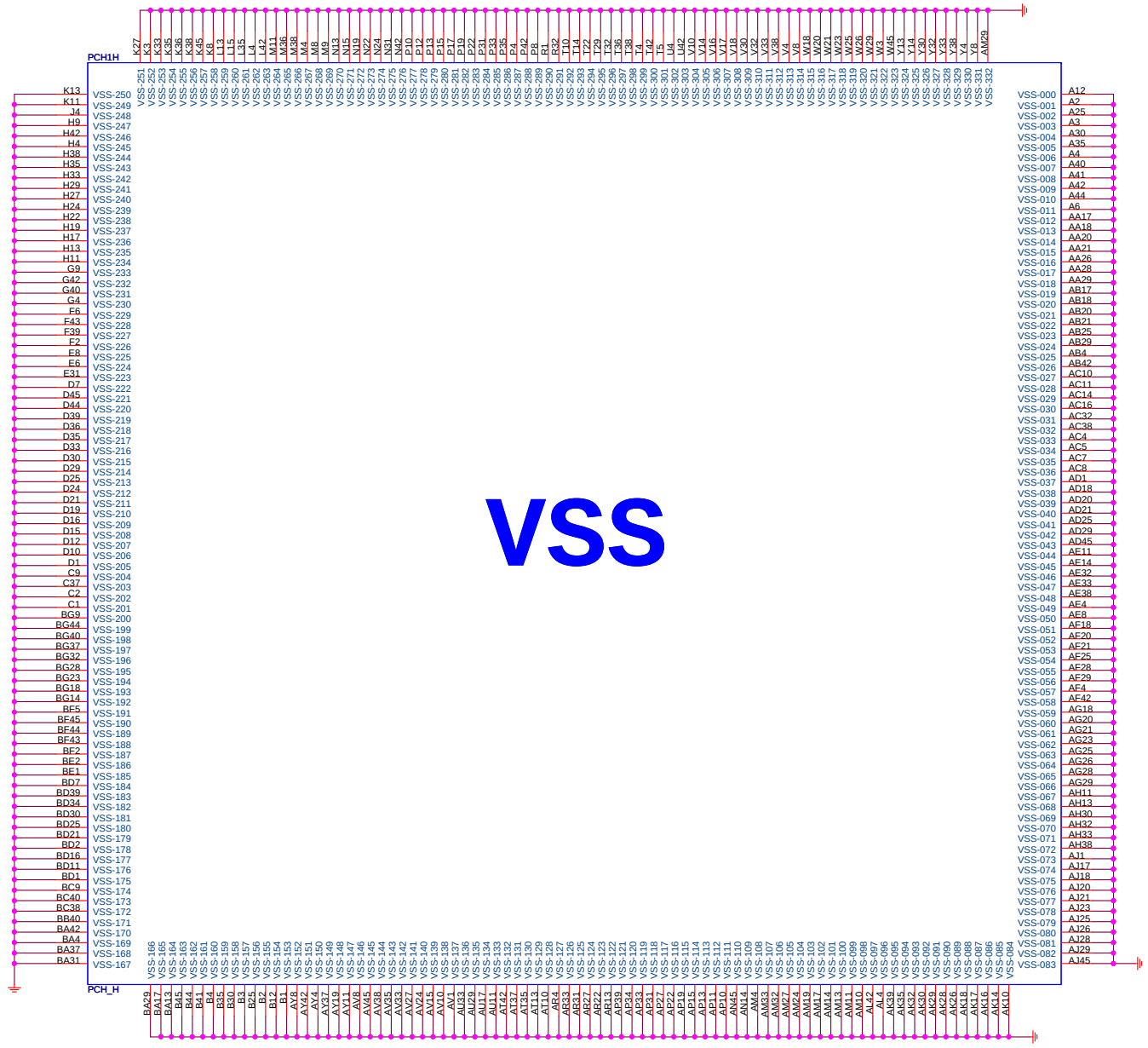
RSVD-0 V11
RSVD-1 V13
RSVD-2 AC13
RSVD-3 AF17
RSVD-4 AG17
RSVD-5 AH14
RSVD-6 AH16
RSVD-7 M33
RSVD-8 N33
RSVD-9 AU22
RSVD-10 P27
RSVD-11 T27
RSVD-12 T33
RSVD-13 T35
RSVD-14 N29
RSVD-15 P29
RSVD-16 T24
RSVD-17 P24
RSVD-18 AP29 — TP_EDM — R913 1K/4
RSVD-19 BF1
RSVD-20 BG2

CRB0.7

MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: PCH-LPC/SPI/SMBUS/MISC	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 15 of 69	



MICRO-STAR INT'L CO.,LTD	
MS-7A63	
Size: Custom	Document Description: PCH-GND
Rev: 10	
Date: Tuesday, September 13, 2016	Sheet 16 of 69



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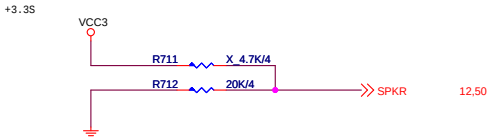
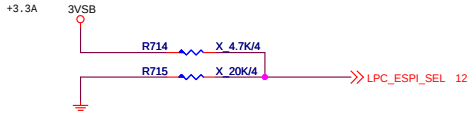
MS-7A63	
Size: Custom	Document Description: PCH-Power
Rev: 10	
Date: Tuesday, September 13, 2016	Sheet 17 of 69

TOP Swap



Internal pull-down is disabled after PLTRST#

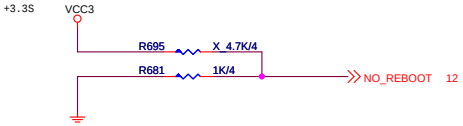
LPC eSPI Mode



0 : LPC
1 : eSPI

Internal pull-down is disabled after RSMRST

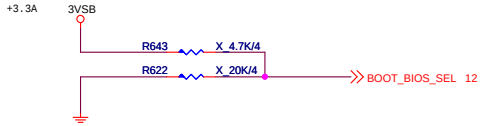
No Reboot



0 : DISABLE (Default)
1 : ENABLE

Internal pull-down is disabled after PLTRST#

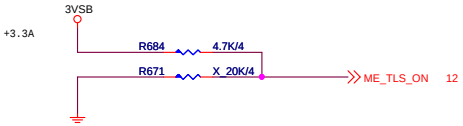
Boot BIOS



0 : SPI
1 : LPC

Internal pull-down is disabled after PLTRST

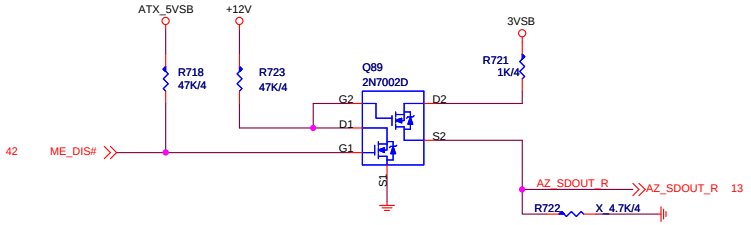
AMT and SBA with confidentiality



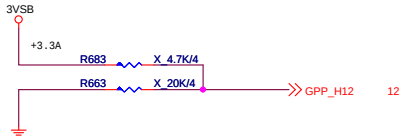
0 : DISABLE
1 : ENABLE (Default)

Internal pull-down is disabled after RSMRST

HDA_SDO



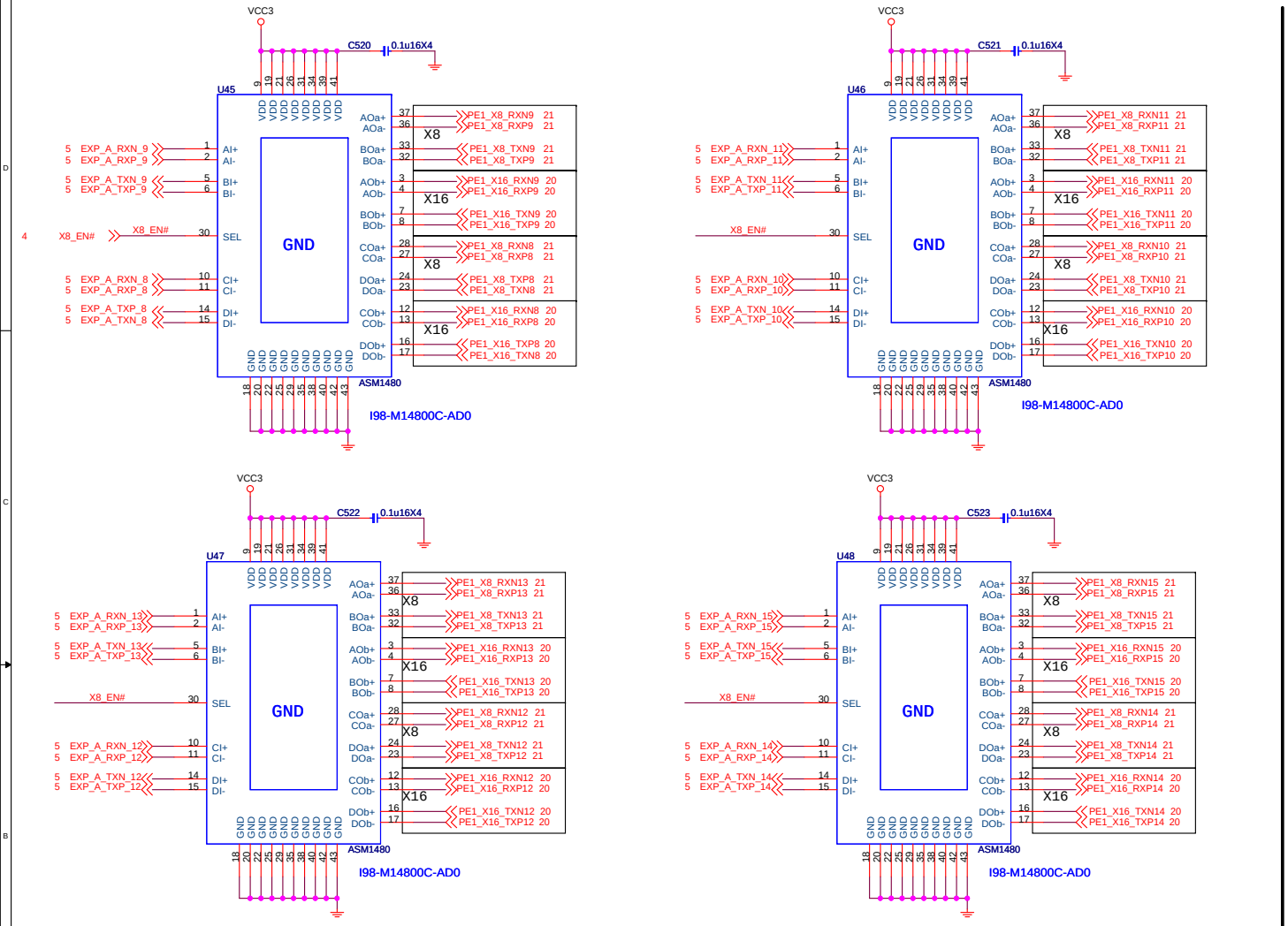
ESPI FLASH SHARING MODE

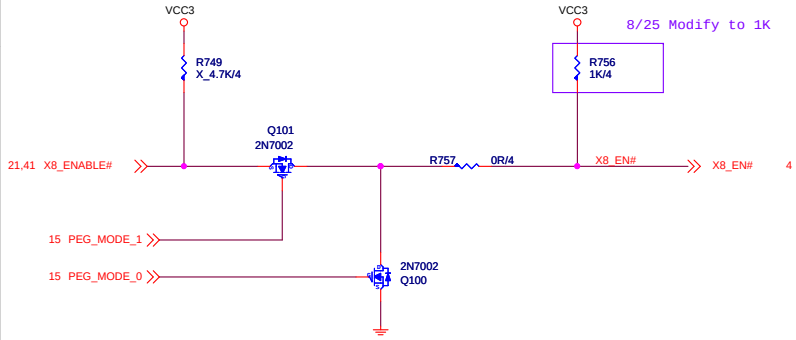


0 : MASTER ATTACHED FLASH SHARING
1 : SLAVE ATTACHED FLASH SHARING

Internal pull-down is disabled after RSMRST

MICRO-STAR INT'L CO.,LTD	
MS-7A63	
Size: Custom	Document Description: PCH-Strap
Rev: 10	
Date: Tuesday, September 13, 2016	Sheet 18 of 69





MODE_1

0: BIOS MODE
1: HW MODE (Default)

HW MODE

PCH Status	MODE_0	MODE_1
AUTO	0	1

If USE HW MODE
GPP_G0 & GPP_G1 programming to GPI

If USE BIOS MODE
GPP_G0 & GPP_G1 programming to GPO

BIOS MODE

PCH Status	MODE_0	MODE_1
16,0	0	0
8,8	1	0

MICRO-STAR INT'L CO.,LTD

MS-7A63

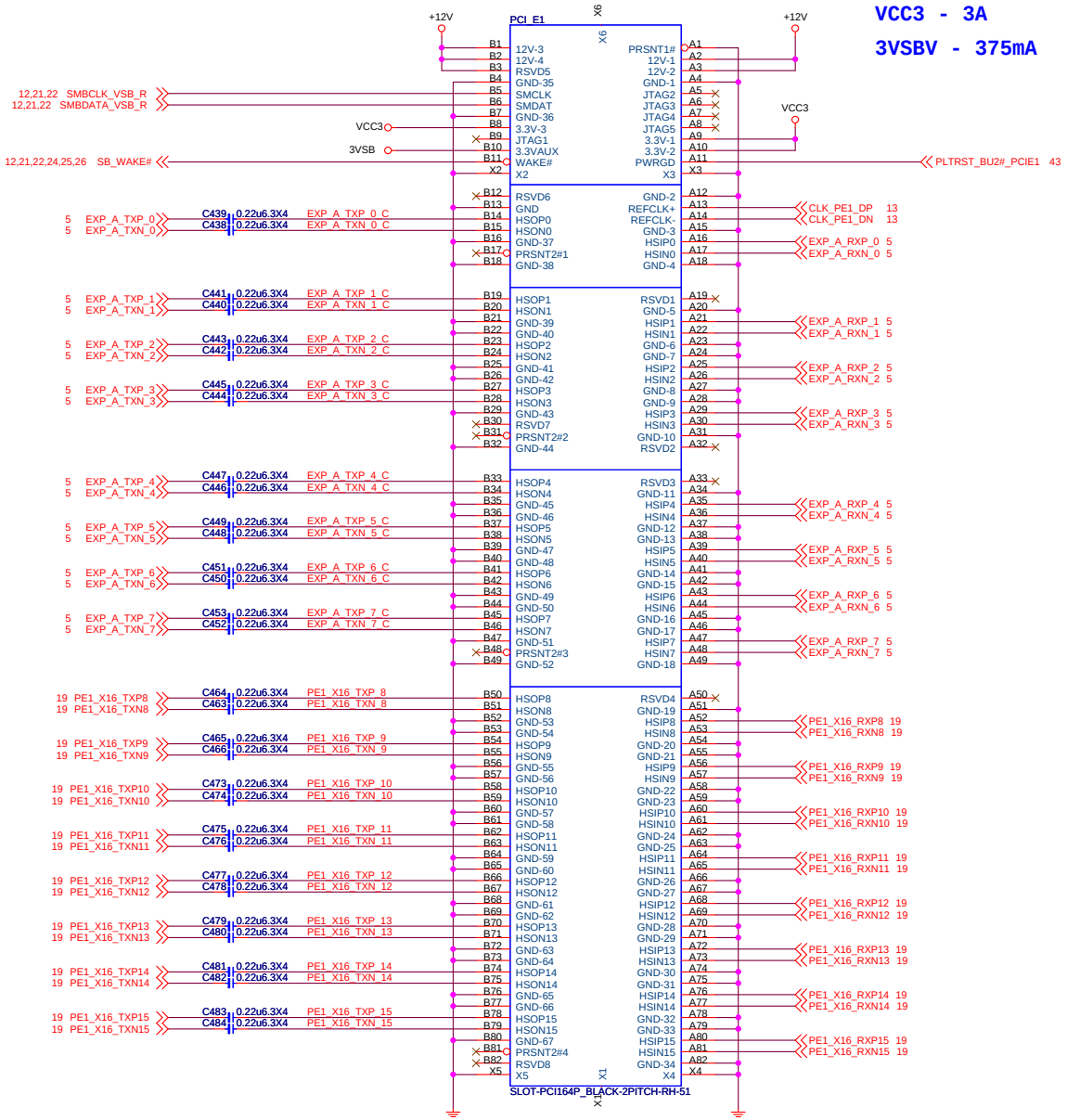
Size	Document Description	Rev
Custom	PCIE SWITCH	10

Date: Tuesday, September 13, 2016 Sheet 19 of 69

12V - 5.5A

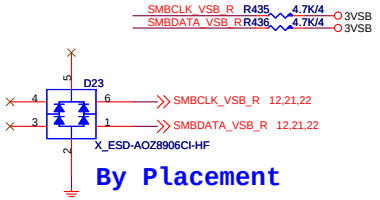
VCC3 - 3A

3VSBV - 375mA



0901 Modify PCI_E1 PIN X2.X3.X4.X5 Connect to GND

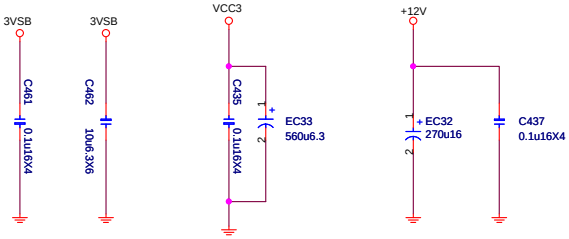
SMBUS ESD



By Placement

Main:D0G-05A0529-A68

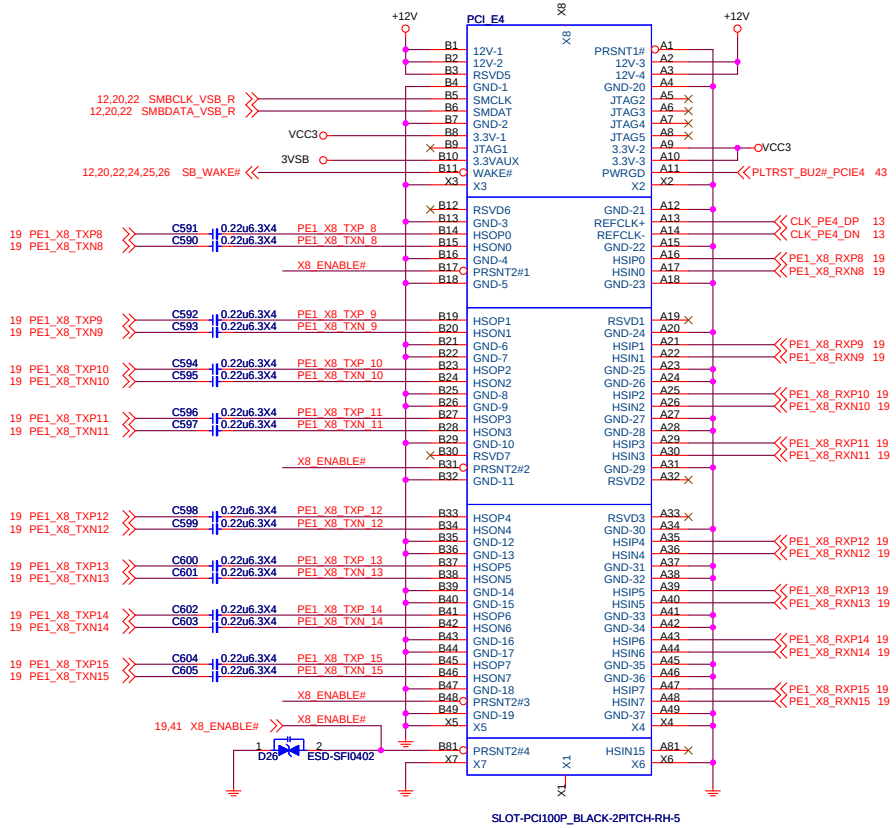
AVL:D0G-45B0510-I14



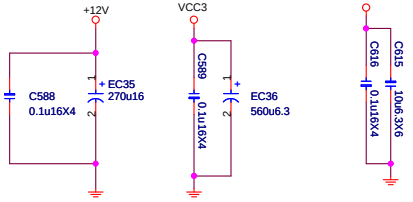
MICRO-STAR INT'L CO.,LTD	
MS-7A63	
Size: Custom	Document Description: PCIE SLOT (X16)
Rev: 10	
Date: Tuesday, September 13, 2016	Sheet 20 of 69

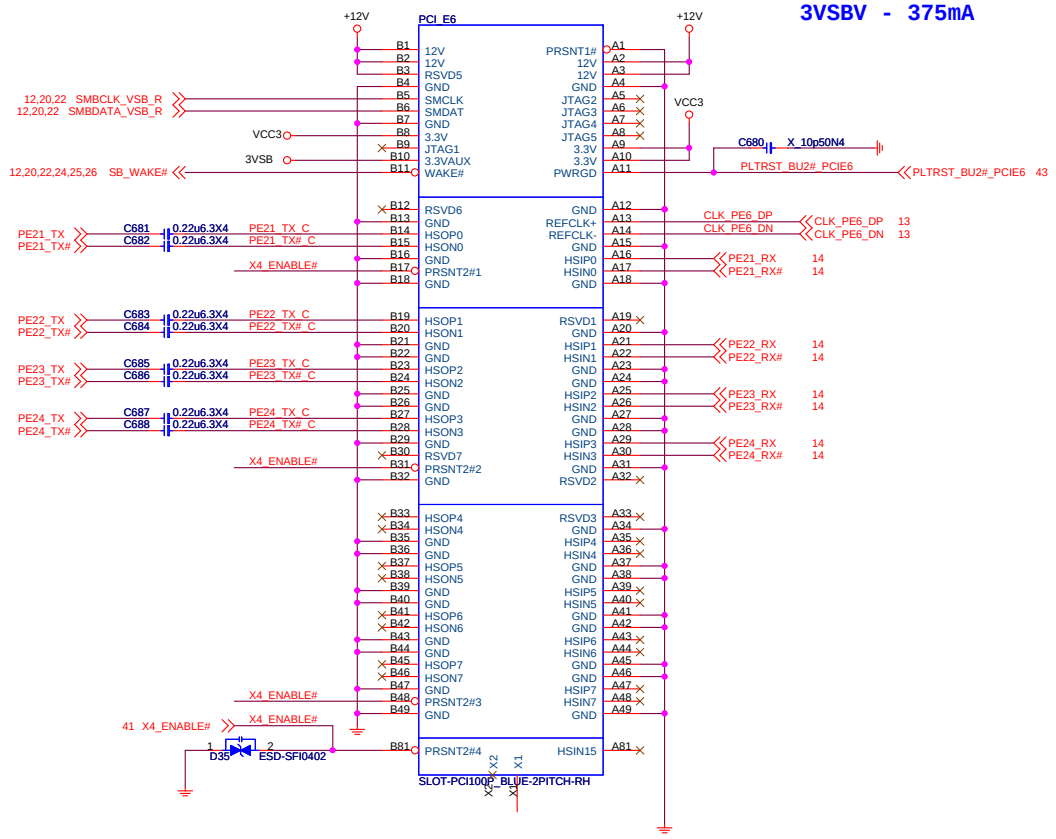
PCI_Express X4 Slot

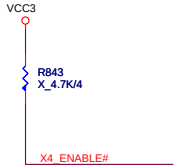
12V - 2.1A
VCC3 - 3A
3VSBV - 375mA

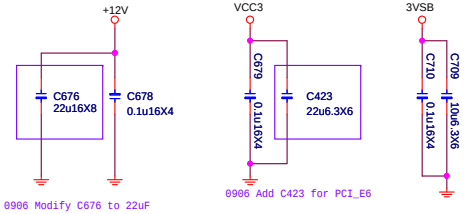


0901 Modify PCI_E4 PIN X2.X3.X4.X5.X6.X7 Connect to GND









0906 Modify C676 to 22uF

0906 Add C423 for PCI_E6

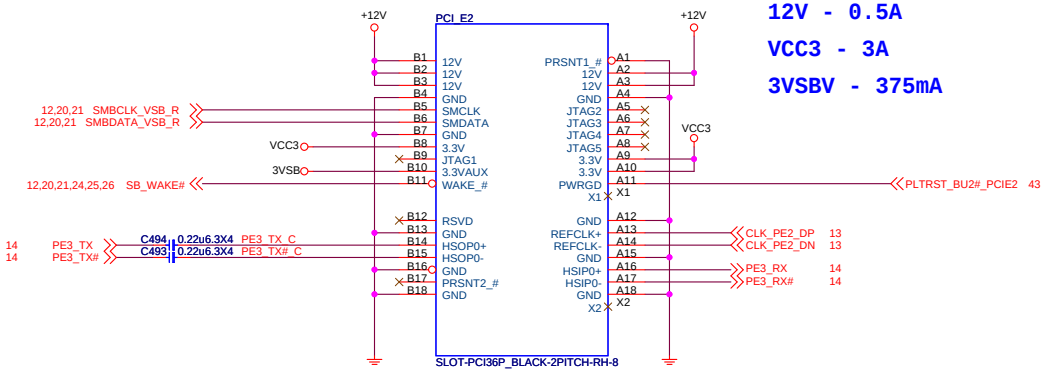
MICRO-STAR INT'L CO.,LTD

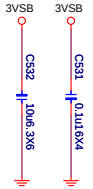
MS-7A63

Size	Document Description	Rev
Custom	PCIE SLOT (X4)	10

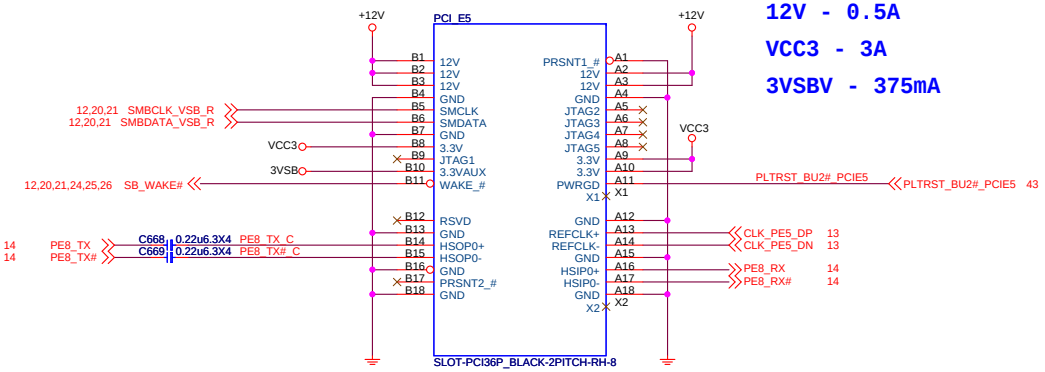
Date: Tuesday, September 13, 2016 Sheet 21 of 69

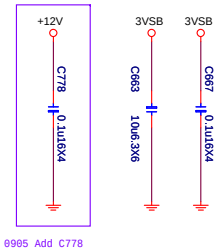
2016.08.25 Modify to N11-0360211-F02





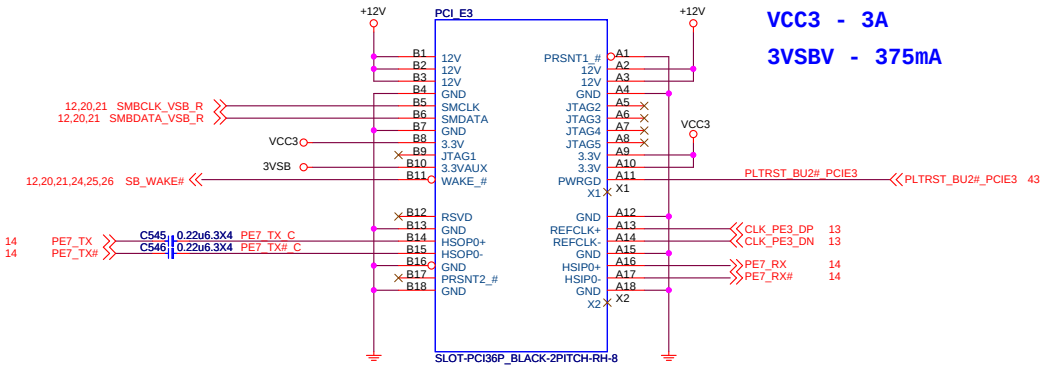
2016.08.25 Modify to N11-0360211-F02

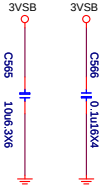




0905 Add C778

2016.08.25 Modify to N11-0360211-F02



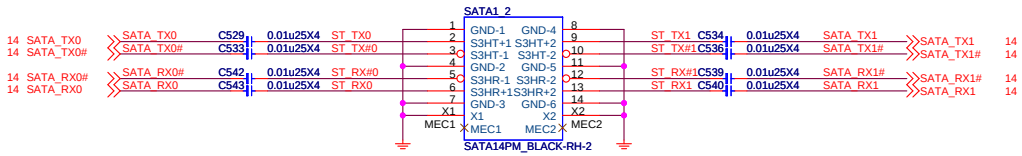


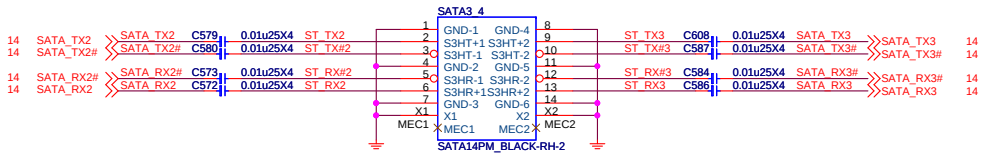
MICRO-STAR INT'L CO.,LTD

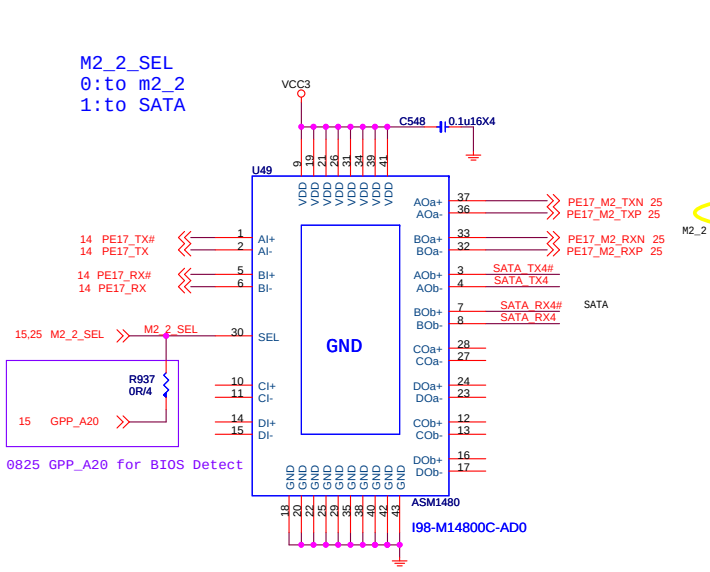
MS-7A63

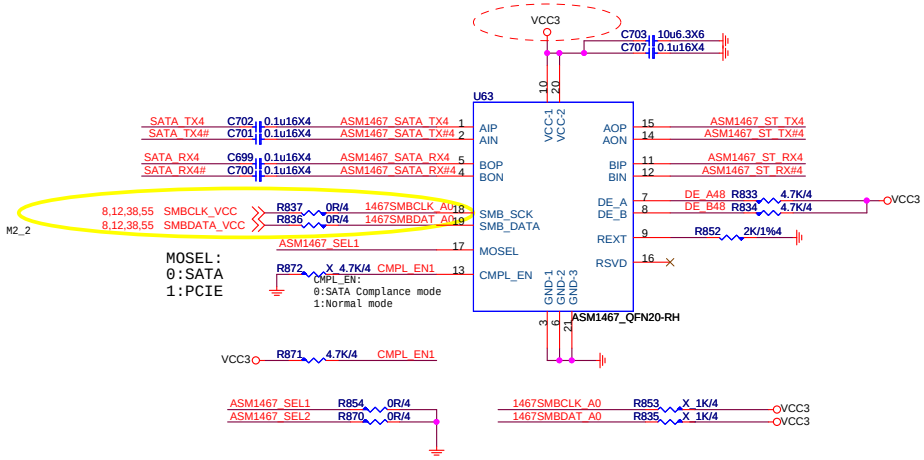
Size	Document Description	Rev
Custom	PCIE SLOT (X1)	10

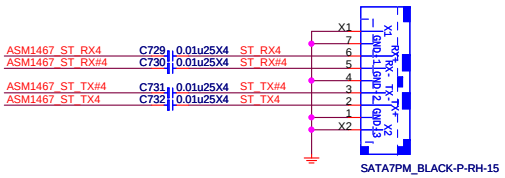
Date: Tuesday, September 13, 2016 Sheet 22 of 69

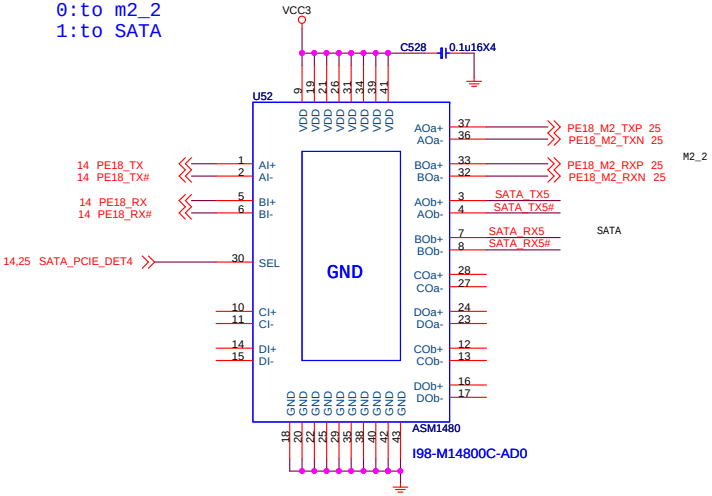


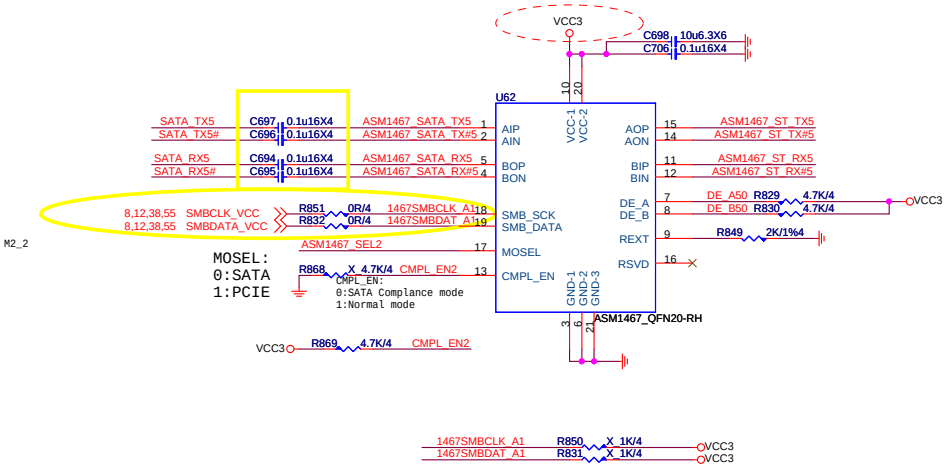


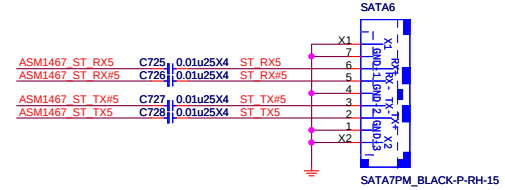




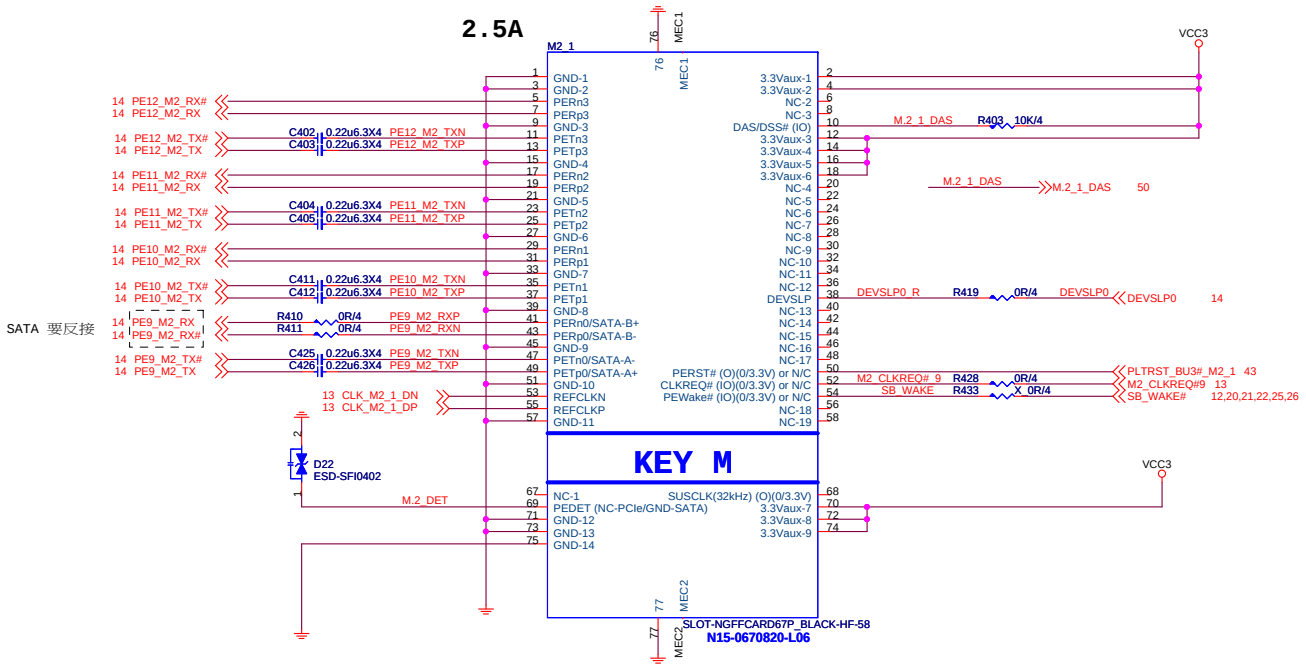


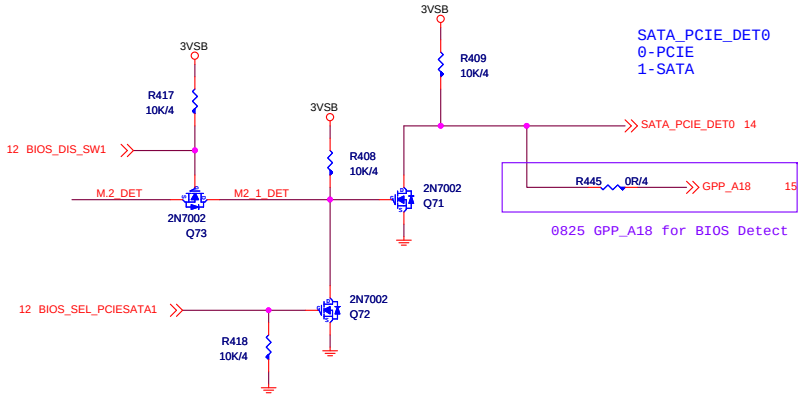






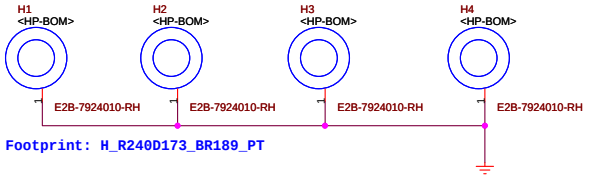
MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A63	
Size: Custom	Document Description: SATA Connector	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 23 of 69	

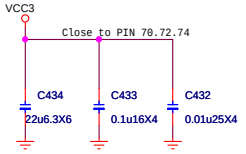


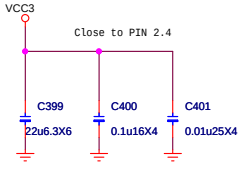


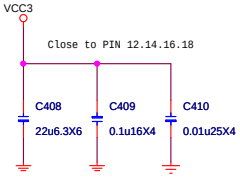
SATA_PCIE_DET0
0-PCIE
1-SATA

0825 GPP_A18 for BIOS Detect









BIOS_MODE

GPP_H15 GPP_H13

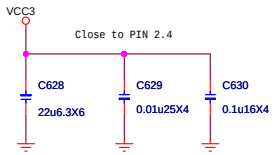
BIOS_DIS_SW1	*BIOS_SEL_PCIESATA1*	*Mode*
0	*1*	*M2-SATA*
0	*0*	*M2-PCIE*
GPI	*GPI*	*AUTO*

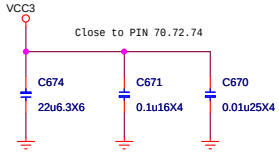
MICRO-STAR INT'L CO.,LTD

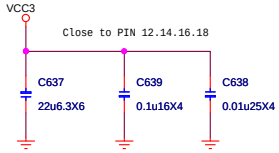
MS-7A63

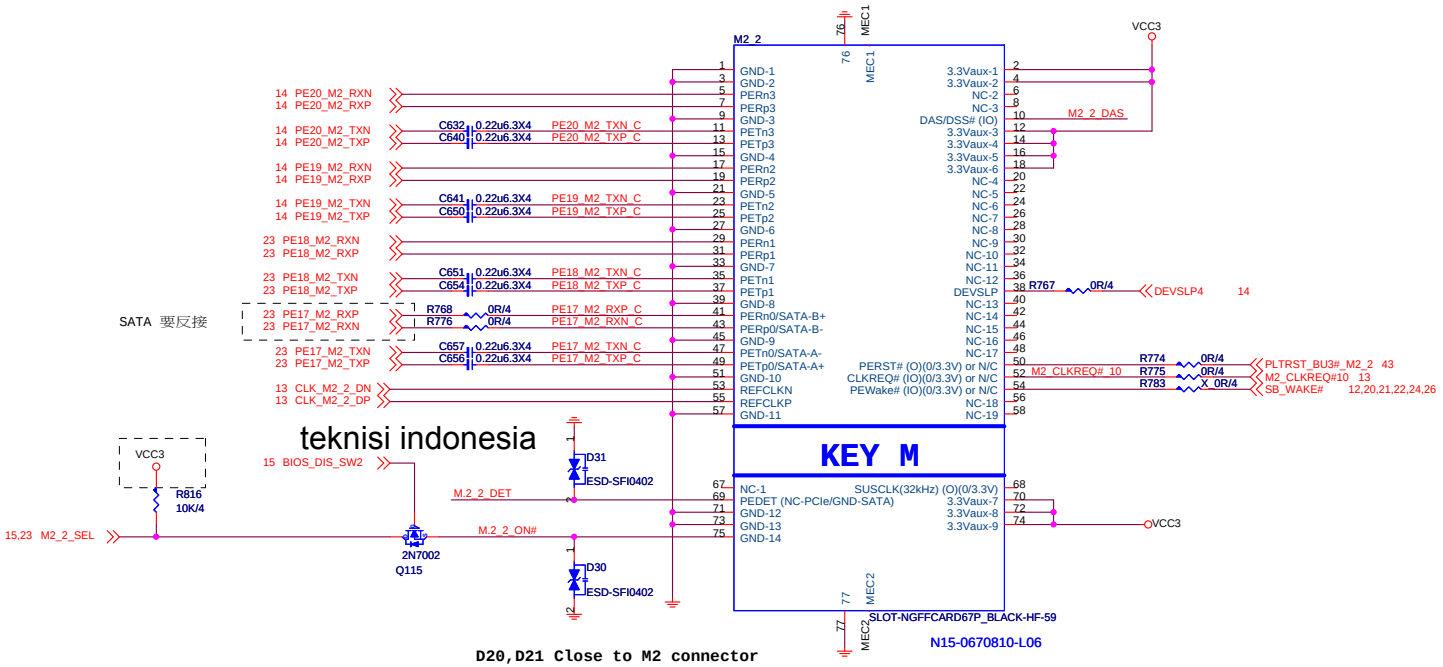
Size	Document Description	Rev
Custom	M.2-SLOT1	10

Date: Tuesday, September 13, 2016 Sheet 24 of 69

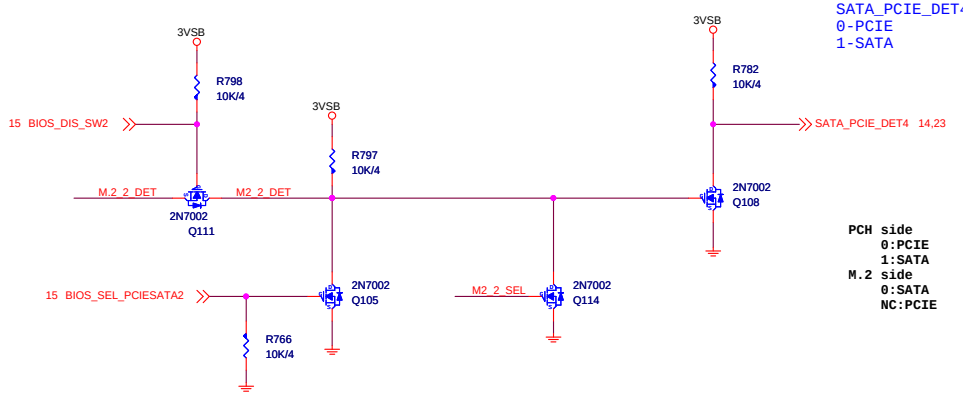


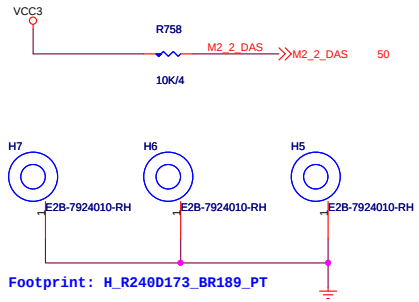






D20,D21 Close to M2 connector





BIOS_MODE

GPP_G7 GPP_G6 GPP_G5

BIOS_DIS_SW	*M2_2_SEL*	*BIOS_SEL_PCIESATA2*	*Mode*
GPI(1)	*GPI(1)*	*GPI(0)*	*AUTO*
0	*1*	*0*	*SATA5*
0	*0*	*1*	*M2-SATA*
0	*0*	*0*	*M2-PCIE*

MICRO-STAR INT'L CO.,LTD

MS-7A63

Size	Document Description	Rev
Custom	M.2-SLOT2	10

Date: Tuesday, September 13, 2016 Sheet 25 of 69

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

USB HS (90Ohm-Diff)

Chip to Connector 1.5 inch.

Power Consumption

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

Layout Guide:

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

CLK Rule (Follow SB PDG)

PCIE Rule (Follow SB PDG)

UU5A 1042 ASM1142

ASM1142 RU16 stuff RU17 unstuff
ASM2142 RU16 unstuff RU17 stuff

0909 Modify to ASM2142

UU5B 1042 ASM1142

ASM1142-RH-3

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

PPON_X Internal Pull-up to VCC3

OCI_X Internal Pull-up to SUS

RX/TX Internal Pull-up

1.0->ASM2142 (B02-021420C-AD0)

B02-021421C-AD0

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

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

ASM1142 RU19 stuff RU18 unstuff
ASM2142 RU19 unstuff RU18 stuff

teknisi indonesia

atx5vsb change to vcc5

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

ASM1142 1.2 VCC Power

SN:L01-0107118-M26

MP2143DJ_TSOT23-8-RH

0826 Add CU41&L23 for USB3_1P2

0909 Modify to ASM2142

ASM1142 RU13/RU14 200K/187K__1.24V
ASM2142 RU13/RU14 196K/261K__1.05V

UU2 GS7116S5-ADJ-R

ASM1142 unstuff
ASM2142 stuff

ASM1142 1.2 VSB Power

UU1 GS7116S5-ADJ-R

ASM1142 RU9 18K__1.2V
ASM2142 RU9 31.6K__1.05V 0909 Modify to ASM2142

EEPROM

UU3 MX25L512EMI-10G

M31-25L1022-M24

ASM1142 UU3 M31-2551222-M24(512K bit)
ASM2142 UU3 M31-25L1022-M24(1M bit)

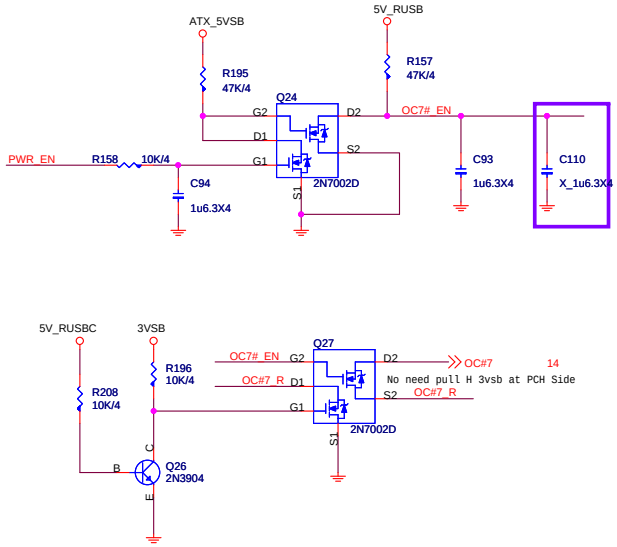
MICRO-STAR INT'L CO.,LTD

MS-7A63

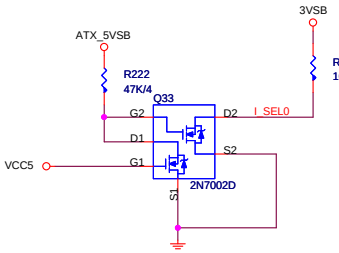
Size	Document Description	Rev
Custom	ASM 1142	10

Date: Tuesday, September 13, 2016 Sheet 26 of 69

VBUS OC#



Current Mode

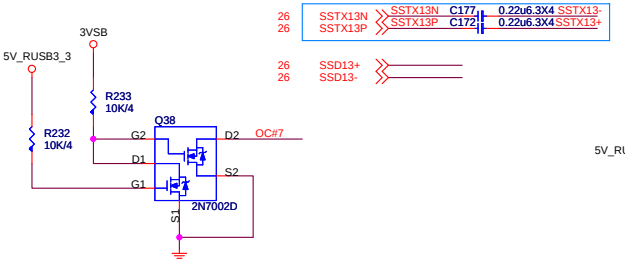


I_SEL0 : I_SEL1

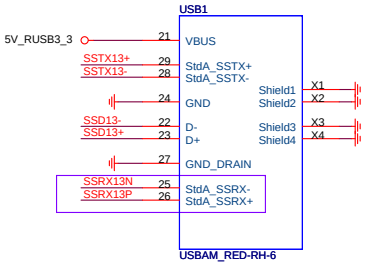
X	0	Default for 900mA
0	1	1.5A @5V
1	1	3A @5V

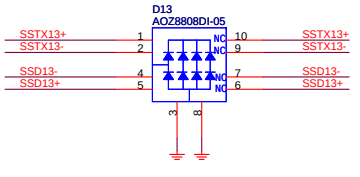
1.5A under S3 mode
3A under S0 mode

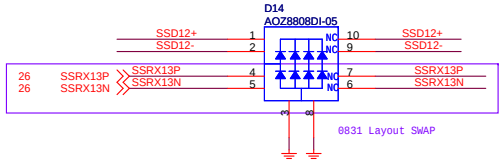
TYPE-A

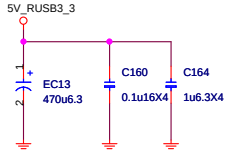


2016.08.24 Modify to N53-09M0861-L06

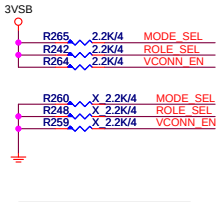








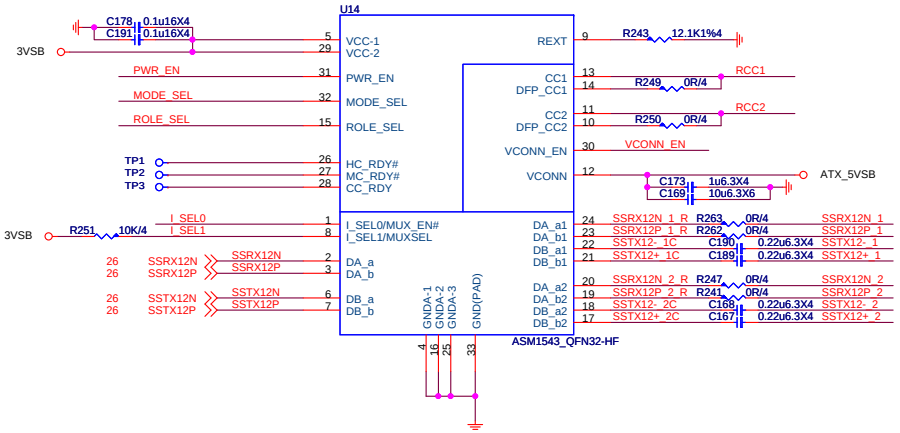
USB Type-C MUX with Configuration Channel (CC)

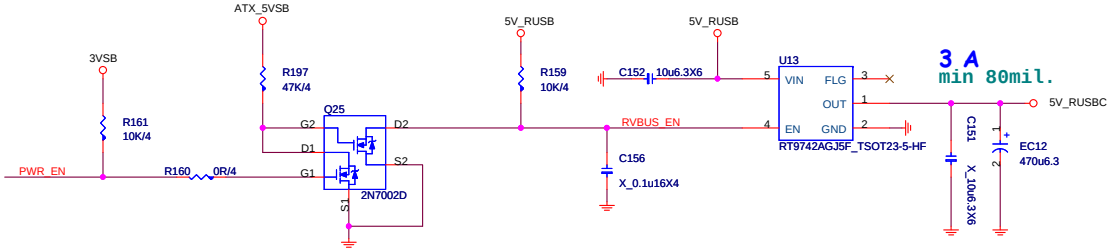


MODE_SEL	
1	CCL MODE (default)
0	Mux MODE

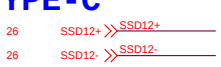
ROLE_SEL	
1	DFP role (default)
0	UFP role

VCONN_EN	
1	enable
0	disable

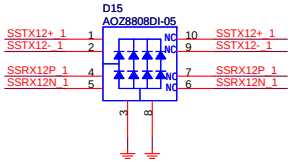


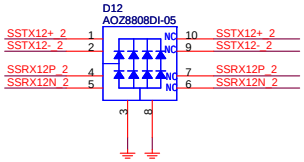


TYPE-C



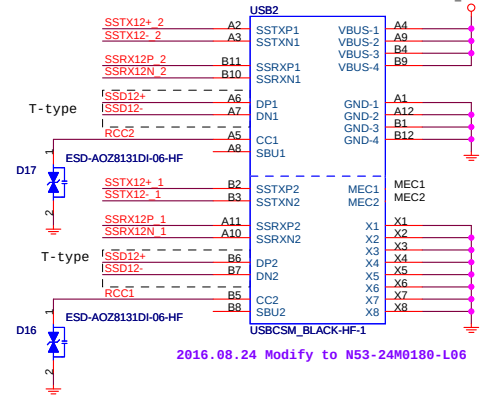
OC#7





ESD Protection
NEAR CONNECTOR

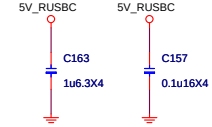
USB3.0
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL
D0G-45B031C-005 AVL



2016.08.24 Modify to N53-24M0180-L06

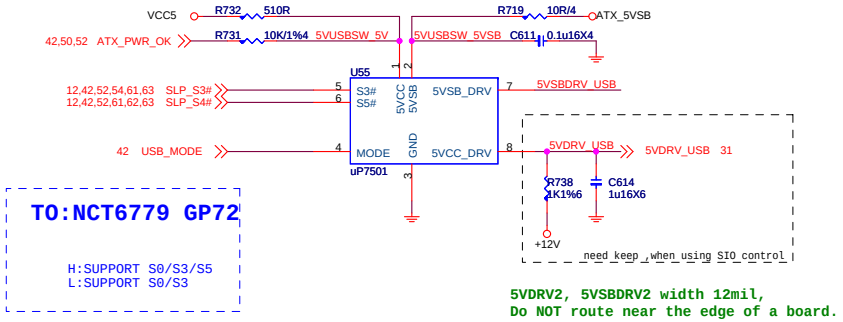
D16.D17
D0G-12A060C-A68 Main
D0G-0600600-I05 AVL
D0G-0500600-L07 AVL

close to Type C Connector



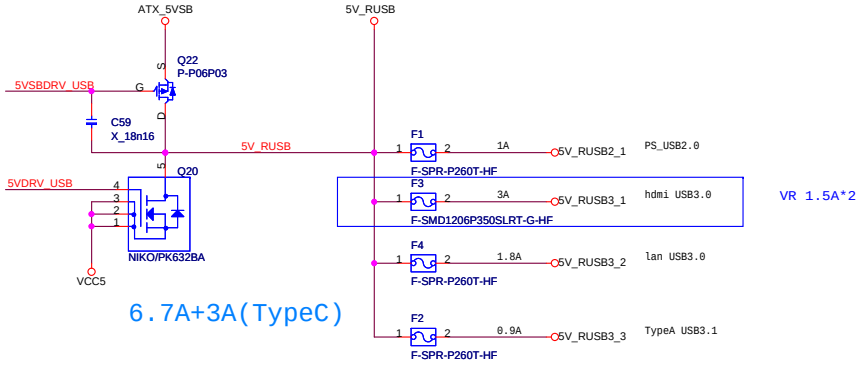
MICRO-STAR INT'L CO.,LTD			
MS-7A63			
Size: Custom	Document Description: USB TYPE C		Rev: 10
Date: Tuesday, September 13, 2016		Sheet 27 of 69	

USB PORT POWER



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

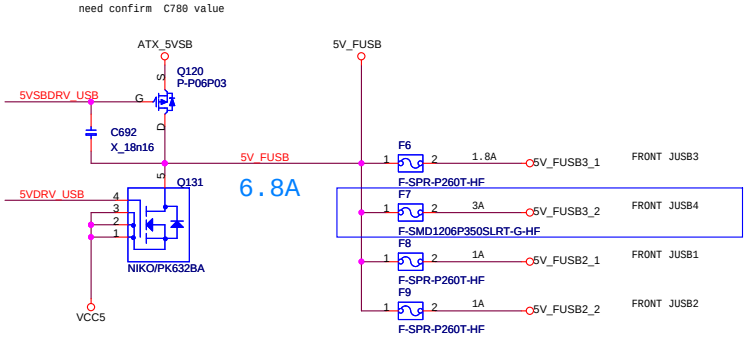
REAR USB PORT POWER



6.7A+3A(TypeC)

VR 1.5A*2

FRONT USB PORT POWER



6.8A

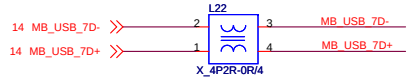
VR 1.5A*2

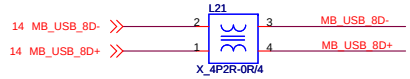
P-MOS
D03-06P0319-N03

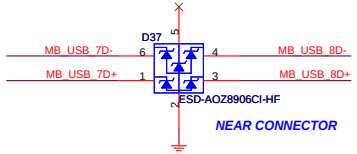
N-MOS
D03-510BA0C-N03
D03-3056M00-U47
D03-4C05N03-O05
D03-3830D09-N47
D03-632BA0C-N03

D08-0301000-P16
D08-0301100-B07

MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: USB POWER UP7501	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 28 of 69	

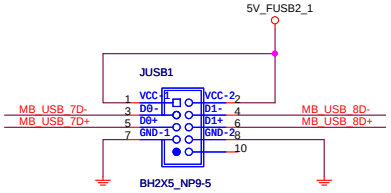




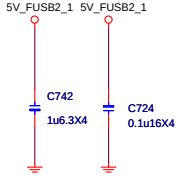


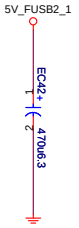
Main:D0G-05A0529-A68
AVL:D0G-45B0510-I14

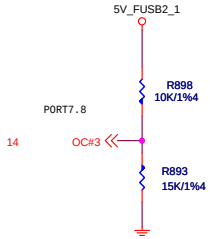
1.0A

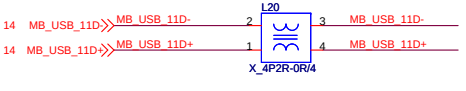


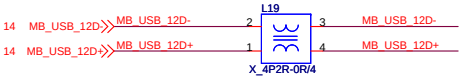
EMI Cap near Connector.

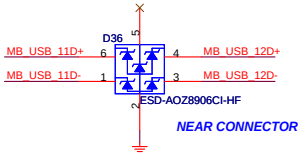






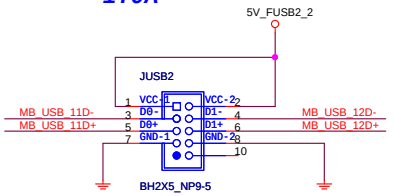




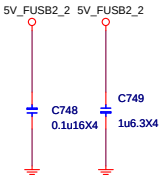


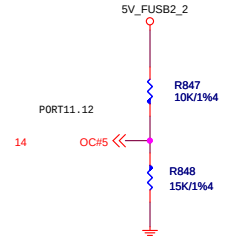
Main:D0G-05A0529-A68
AVL:D0G-45B0510-I14

1.0A

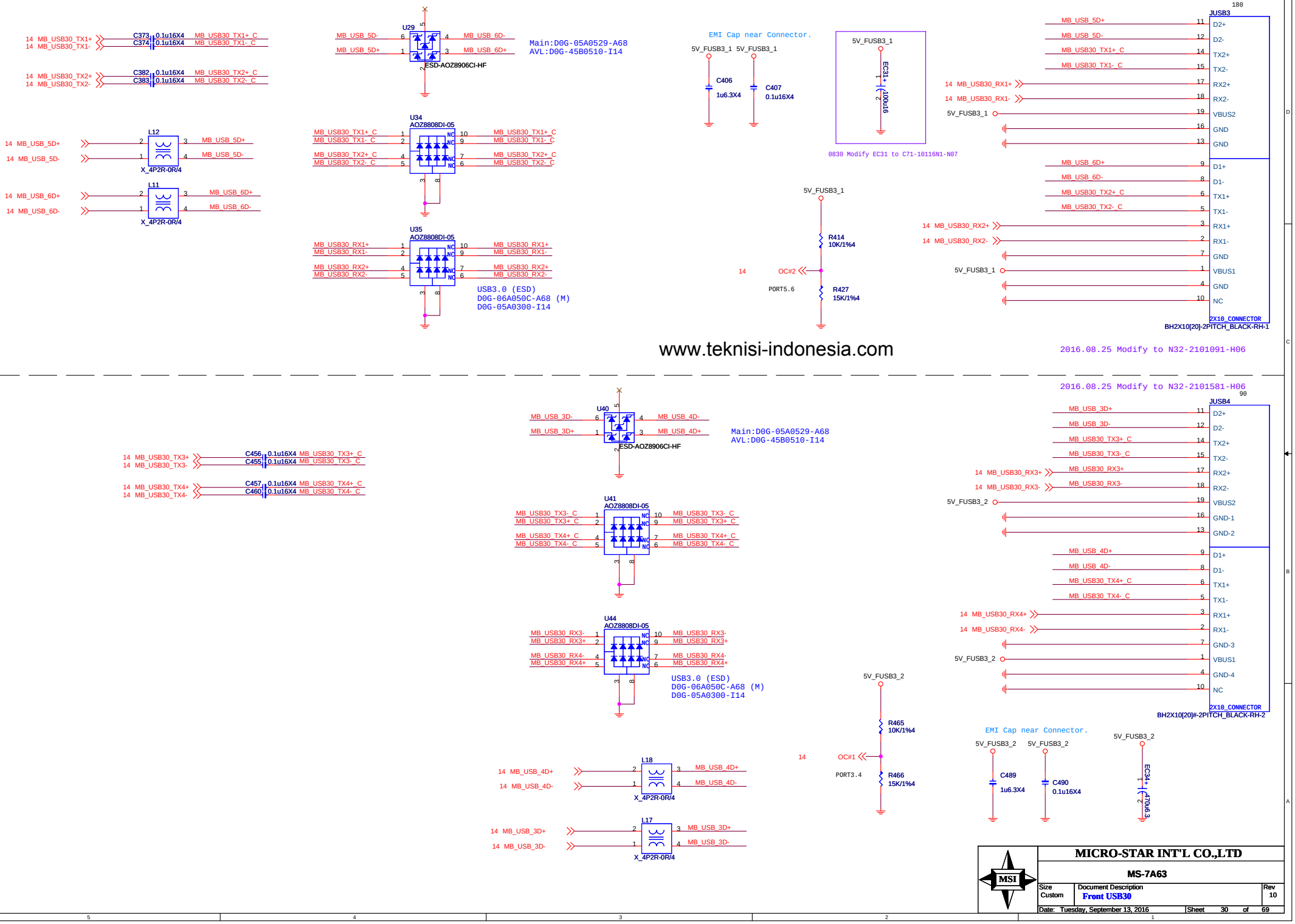


EMI Cap near Connector.





MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: Front USB20	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 29 of 69	


14 MB_USB30_TX1+
14 MB_USB30_TX1-
C373 0.1u16X4 MB_USB30_TX1+_C
C374 0.1u16X4 MB_USB30_TX1-_C
14 MB_USB30_TX2+
14 MB_USB30_TX2-
C382 0.1u16X4 MB_USB30_TX2+_C
C383 0.1u16X4 MB_USB30_TX2-_C
L12
14 MB_USB_5D+
14 MB_USB_5D-
MB_USB_5D+
MB_USB_5D-
X_4P2R-0R/4
L11
14 MB_USB_6D+
14 MB_USB_6D-
MB_USB_6D+
MB_USB_6D-
X_4P2R-0R/4
U29
MB_USB_5D-
MB_USB_5D+
MB_USB_6D-
MB_USB_6D+
ESD-AOZ8906CI-HF
Main:D0G-05A0529-A68
AVL:D0G-45B0510-I14
U34
AOZ8808DI-05
MB_USB30_TX1+_C
MB_USB30_TX1-_C
MB_USB30_TX2+_C
MB_USB30_TX2-_C
U35
AOZ8808DI-05
MB_USB30_RX1+
MB_USB30_RX1-
MB_USB30_RX2+
MB_USB30_RX2-
USB3.0 (ESD)
D0G-06A050C-A68 (M)
D0G-05A0300-I14
EMI Cap near Connector.
5V_FUSB3_1
C406 1u6.3X4
C407 0.1u16X4
EC31 100u16
0830 Modify EC31 to C71-10116N1-N07
R414 10K/1%4
R427 15K/1%4
14 OC#2
PORT5.6
JUSB3
MB_USB_5D+
MB_USB_5D-
MB_USB30_TX1+_C
MB_USB30_TX1-_C
14 MB_USB30_RX1+
14 MB_USB30_RX1-
5V_FUSB3_1
GND
VBUS2
MB_USB_6D+
MB_USB_6D-
MB_USB30_TX2+_C
MB_USB30_TX2-_C
14 MB_USB30_RX2+
14 MB_USB30_RX2-
VBUS1
NC
2X10_CONNECTOR
BH2X10[20]-2PITCH_BLACK-RH-1
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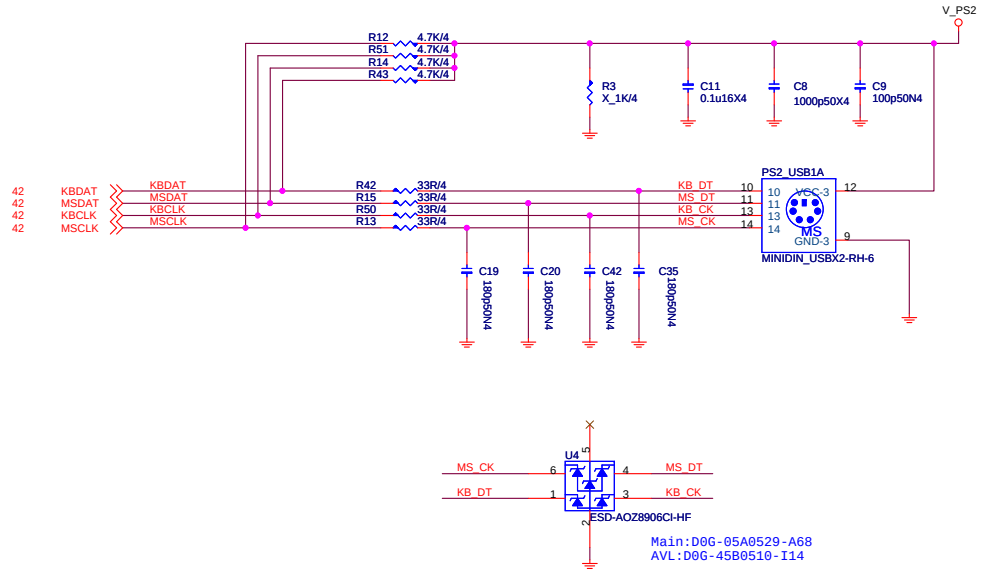
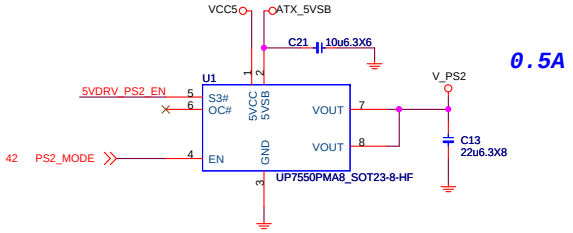
2016.08.25 Modify to N32-2101091-H06
14 MB_USB30_TX3+
14 MB_USB30_TX3-
C456 0.1u16X4 MB_USB30_TX3+_C
C455 0.1u16X4 MB_USB30_TX3-_C
14 MB_USB30_TX4+
14 MB_USB30_TX4-
C457 0.1u16X4 MB_USB30_TX4+_C
C460 0.1u16X4 MB_USB30_TX4-_C
U40
MB_USB_3D-
MB_USB_3D+
MB_USB_4D-
MB_USB_4D+
ESD-AOZ8906CI-HF
Main:D0G-05A0529-A68
AVL:D0G-45B0510-I14
U41
AOZ8808DI-05
MB_USB30_TX3-_C
MB_USB30_TX3+_C
MB_USB30_TX4+_C
MB_USB30_TX4-_C
U44
AOZ8808DI-05
MB_USB30_RX3-
MB_USB30_RX3+
MB_USB30_RX4-
MB_USB30_RX4+
USB3.0 (ESD)
D0G-06A050C-A68 (M)
D0G-05A0300-I14
L18
14 MB_USB_4D+
14 MB_USB_4D-
MB_USB_4D+
MB_USB_4D-
X_4P2R-0R/4
L17
14 MB_USB_3D+
14 MB_USB_3D-
MB_USB_3D+
MB_USB_3D-
X_4P2R-0R/4
5V_FUSB3_2
R465 10K/1%4
R466 15K/1%4
14 OC#1
PORT3.4
2016.08.25 Modify to N32-2101581-H06
JUSB4
MB_USB_3D+
MB_USB_3D-
MB_USB30_TX3+_C
MB_USB30_TX3-_C
14 MB_USB30_RX3+
14 MB_USB30_RX3-
5V_FUSB3_2
GND-1
GND-2
MB_USB_4D+
MB_USB_4D-
MB_USB30_TX4+_C
MB_USB30_TX4-_C
14 MB_USB30_RX4+
14 MB_USB30_RX4-
GND-3
GND-4
2X10_CONNECTOR
BH2X10[20]#-2PITCH_BLACK-RH-2
EMI Cap near Connector.
C489 1u6.3X4
C490 0.1u16X4
EC34 470u6.3
MICRO-STAR INT'L CO.,LTD
MS-7A63
Size Custom
Document Description
Front USB30
Rev 10
Date: Tuesday, September 13, 2016
Sheet 30 of 69

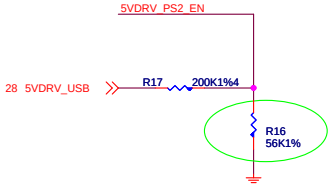
PS2 Connector



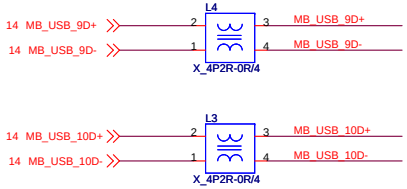
PS2 Power

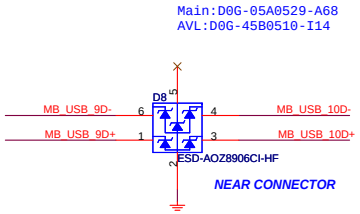


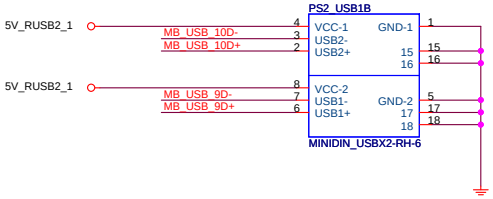
USB MODE

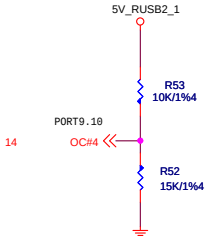


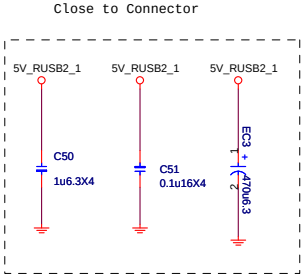
PS2 _USB





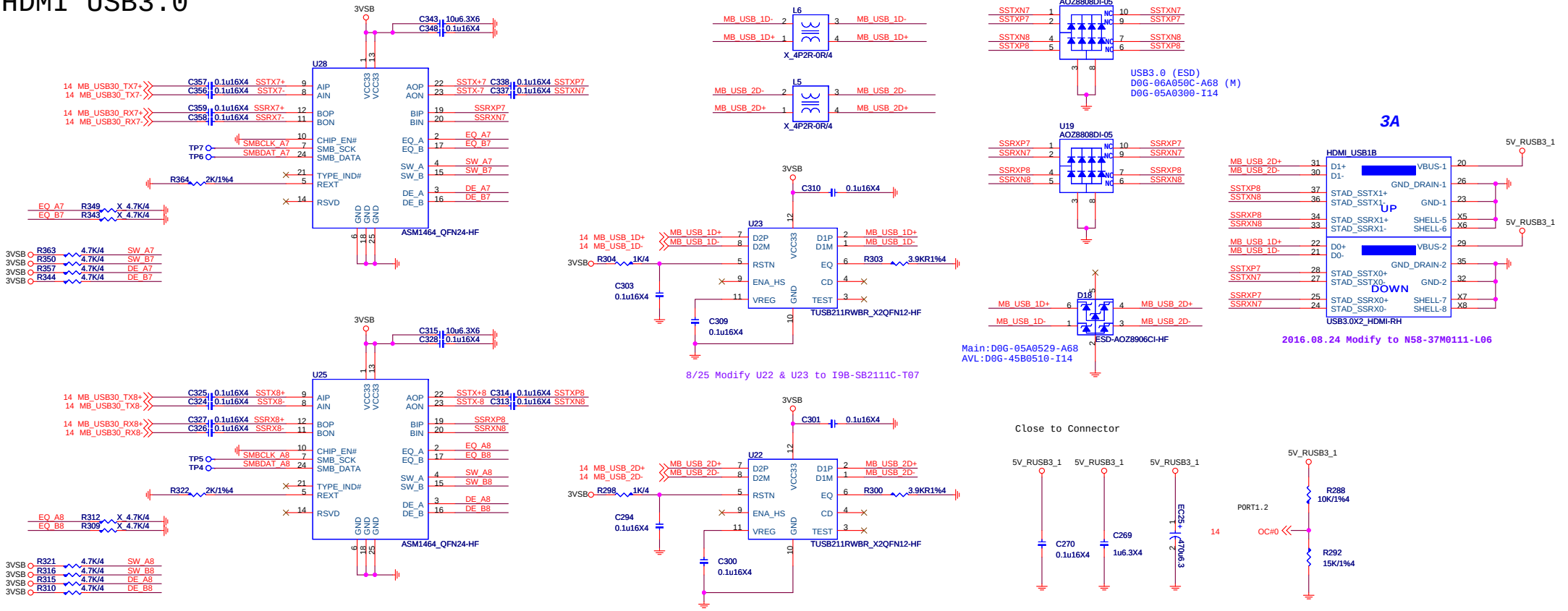




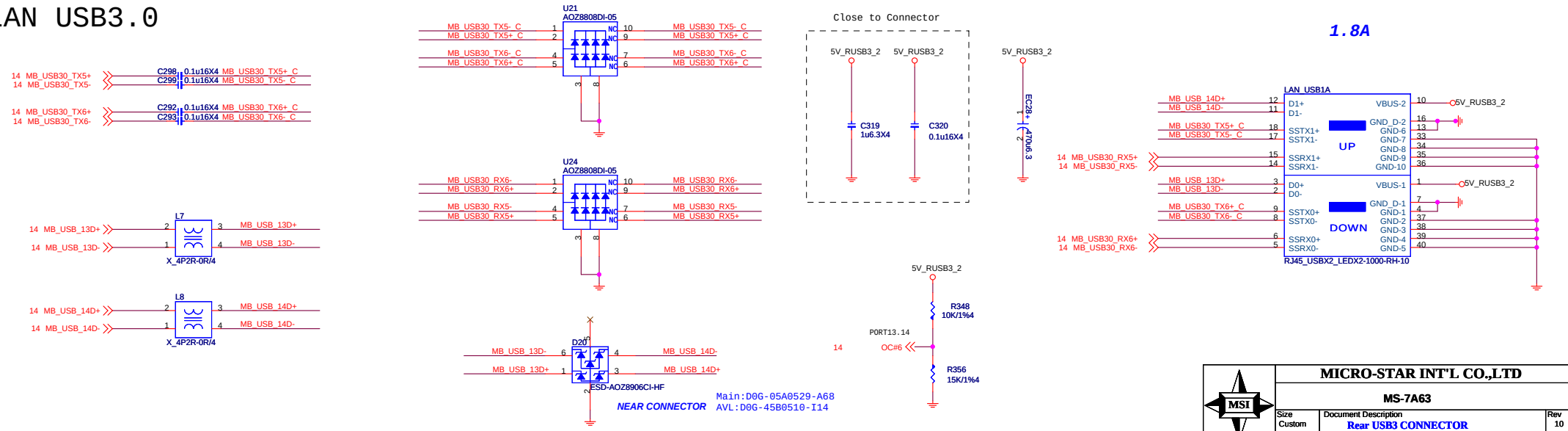


MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: Real USB2&PS2 CONNECTOR	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 31 of 69	

HDMI USB3.0



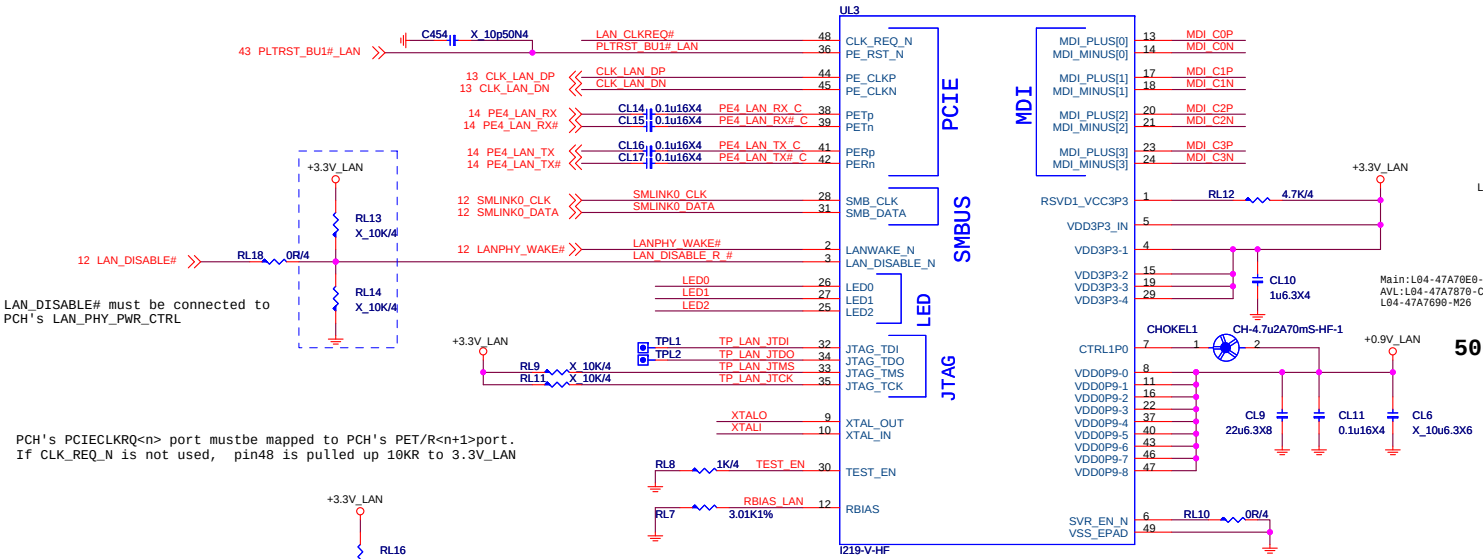
LAN USB3.0



MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: Rear USB3 CONNECTOR	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 32 of 69	

Intel Lan- i219

8111H:B06-08111CC-R09
8111G:B06-081116C-R09

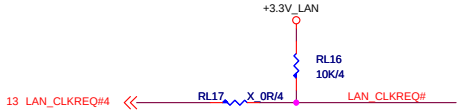


Main:L04-47A70E0-T19
AVL:L04-47A7870-C08
L04-47A7690-M26

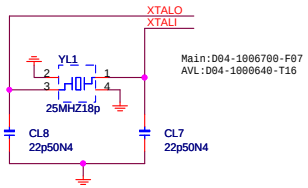
500mA

LAN_DISABLE# must be connected to PCH's LAN_PHY_PWR_CTRL

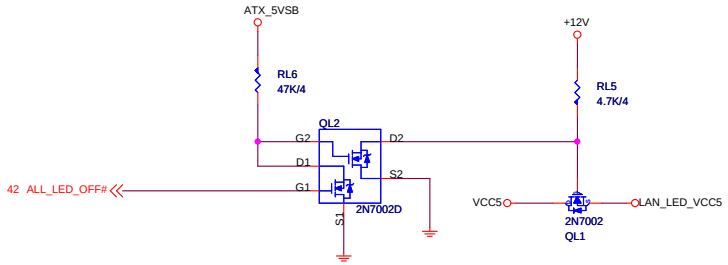
PCH's PCIECLKRQ<n> port mustbe mapped to PCH's PET/R<n+1>port.
If CLK_REQ_N is not used, pin48 is pulled up 10KR to 3.3V_LAN



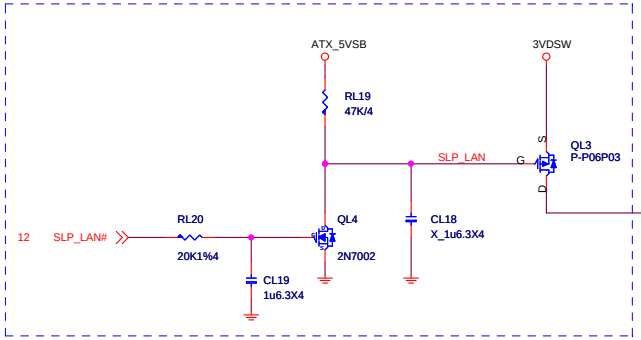
The 10Kohm pull-up resistor (RL18) of CLK_REQ_N is connected to 3.3V Suspend/Core/etc. power well, depending on the power well of PCH's input PCIECLKRQ<n> buffer.

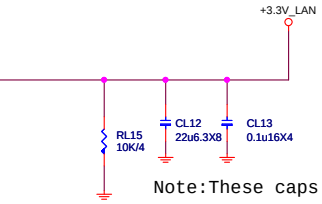


LED ON/OFF by SIO



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

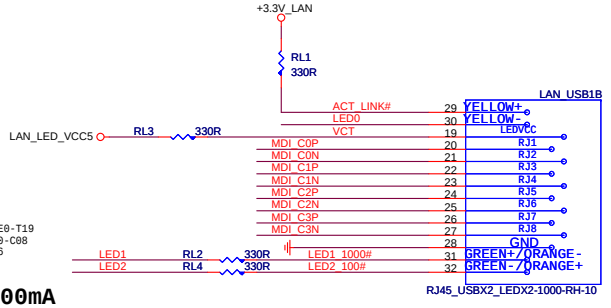




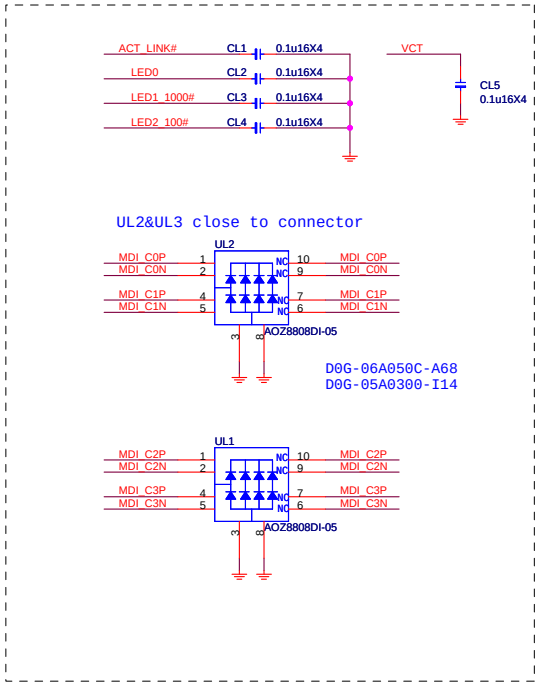
+3.3V_LAN
I218:132mA
I219:542mW

Note:These caps closed to PHY

LAN Connector



For EMI



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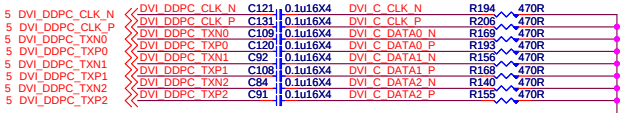
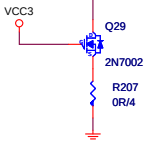
MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: Intel Lan- i219	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 33 of 69	

VGA: resolution of 2048x1536 pixels with 32-bit color at 75 Hz (4:3 QXGA)





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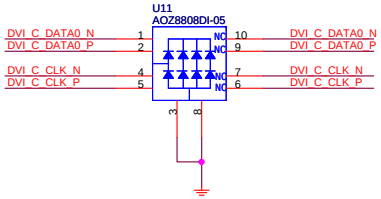
D0G-06A050C-A68



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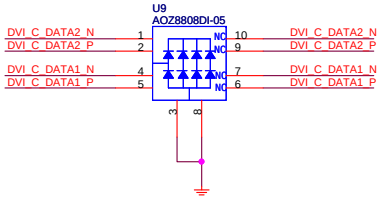
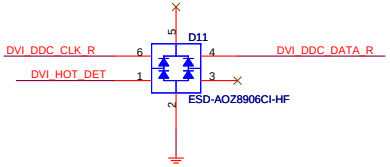
D0G-06A050C-A68





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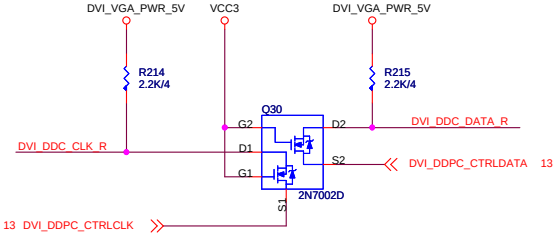
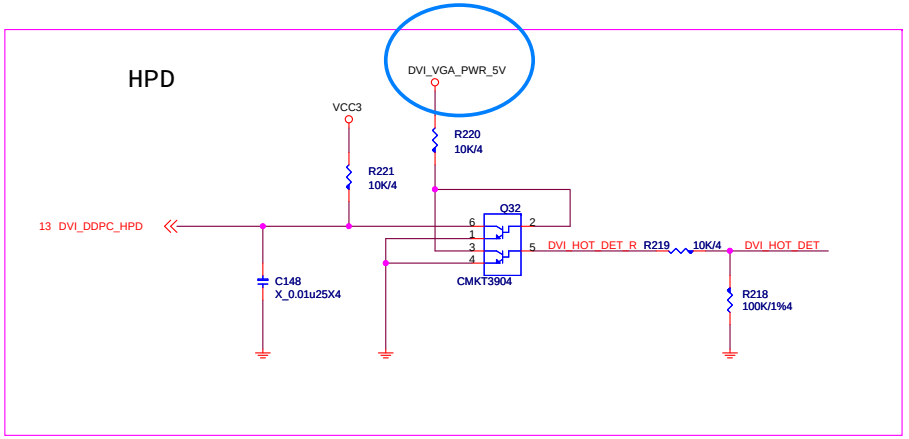
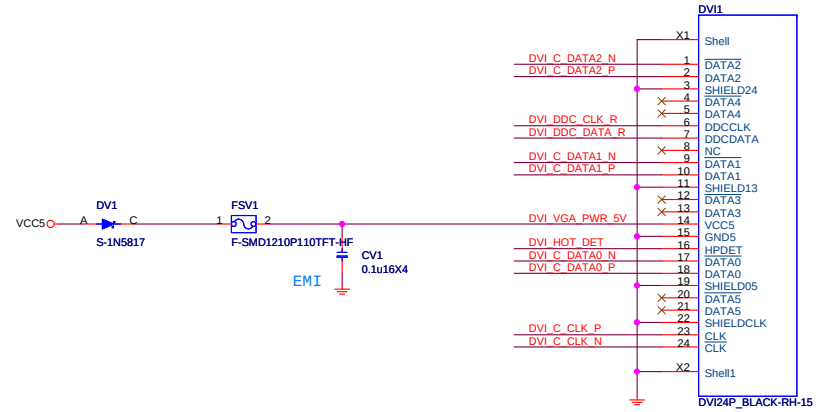
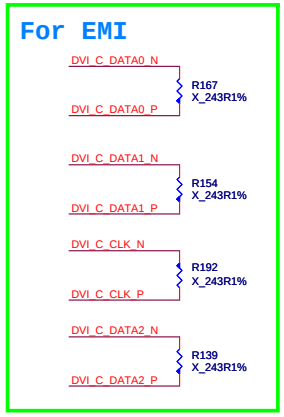
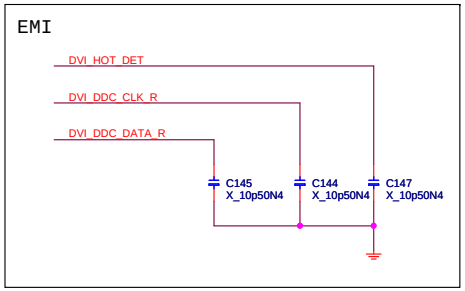
AVL:D0G-45B0510-I14





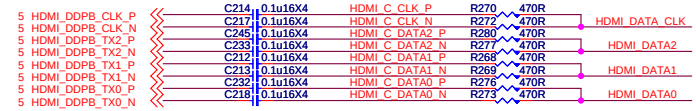


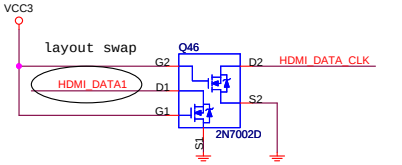


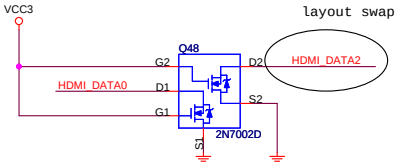


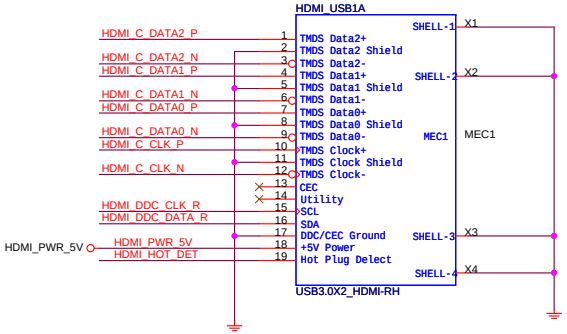
MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A63	
Size: Custom	Document Description: DVI Connector	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 34 of 69	

HDMI, DVI : 1920x1200 at 60 Hz (16:10 WUXGA)

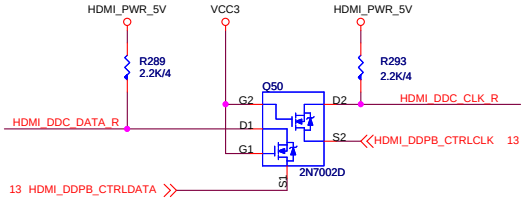


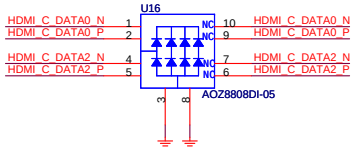


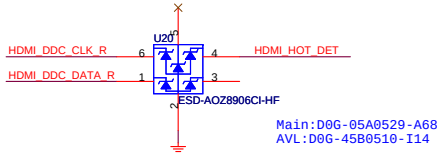




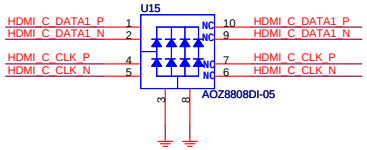
2016.08.24 Modify to N58-37M0111-L06

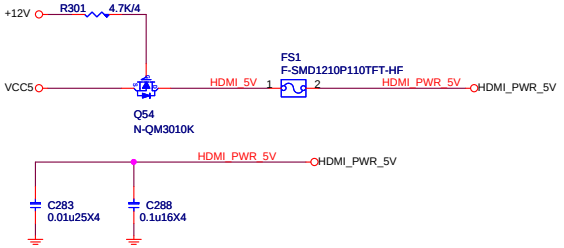




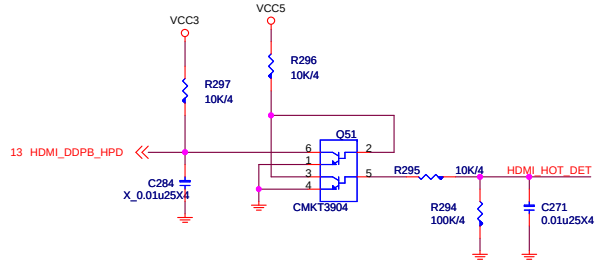


Main:D0G-05A0529-A68
AVL:D0G-45B0510-I14

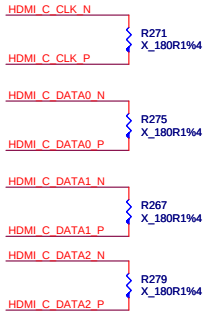




HPD

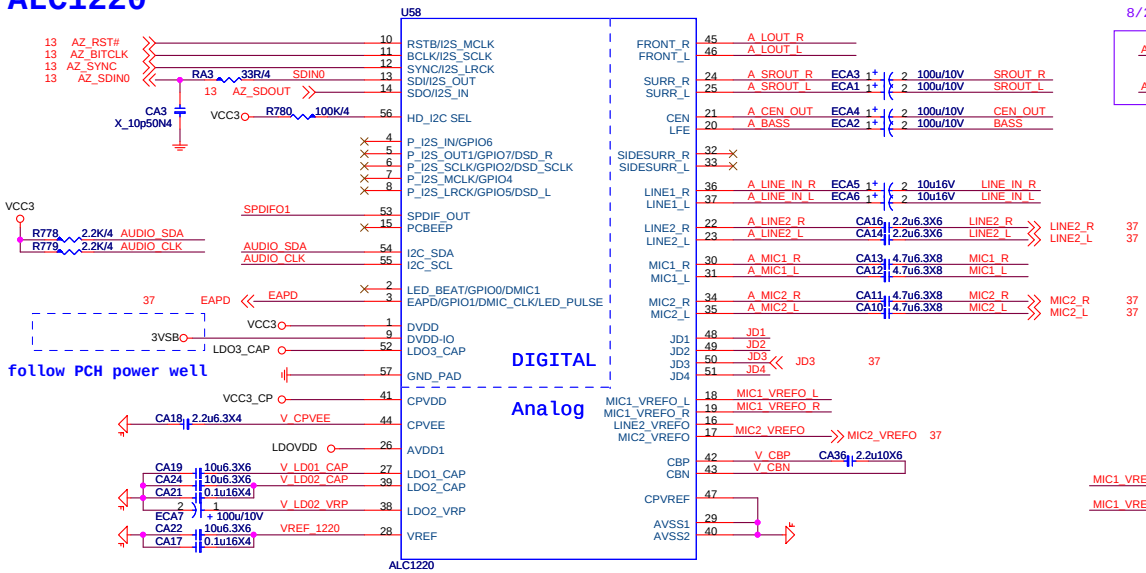


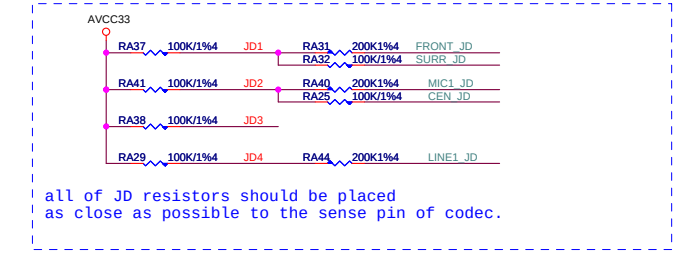
For EMI

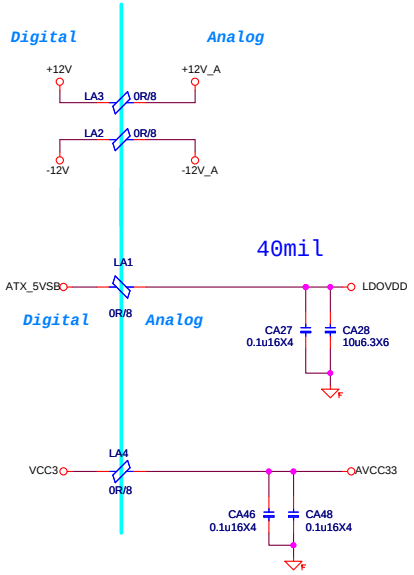


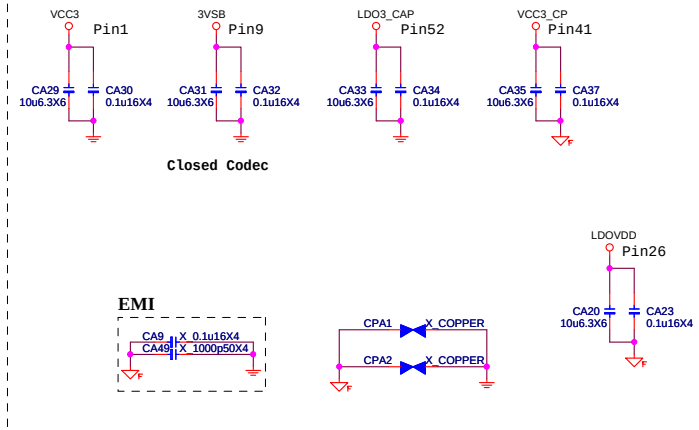
MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: HDMI Connector	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 35 of 69	

ALC1220

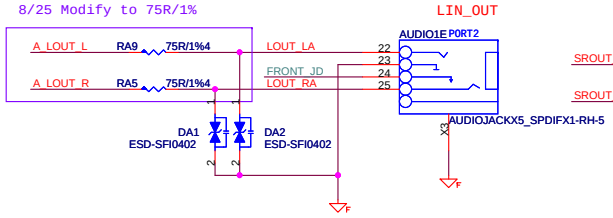


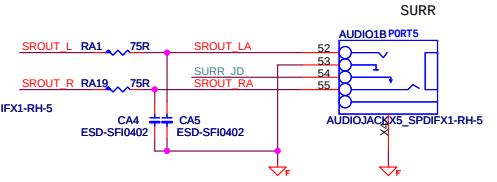




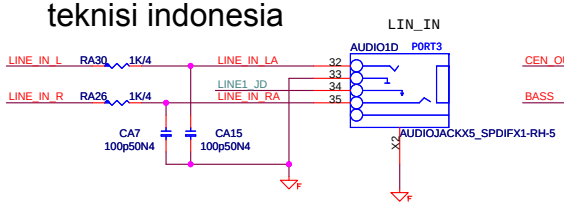


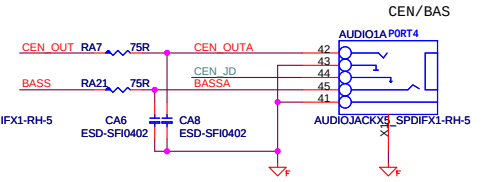
8/25 Modify to 75R/1%

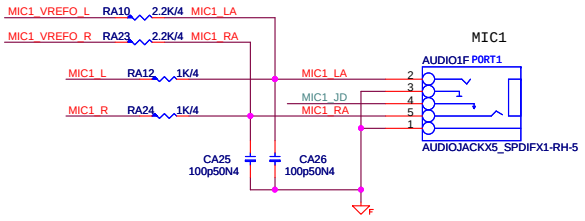


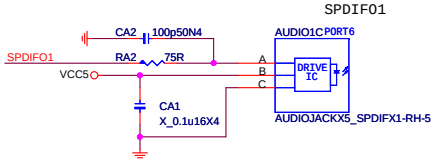


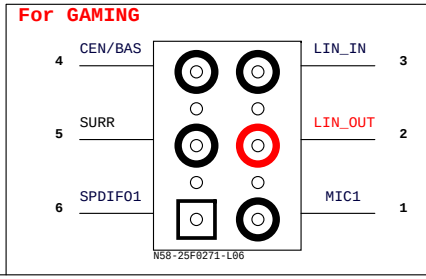
teknisi indonesia

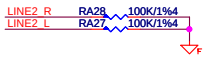


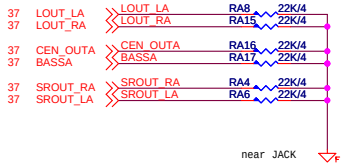




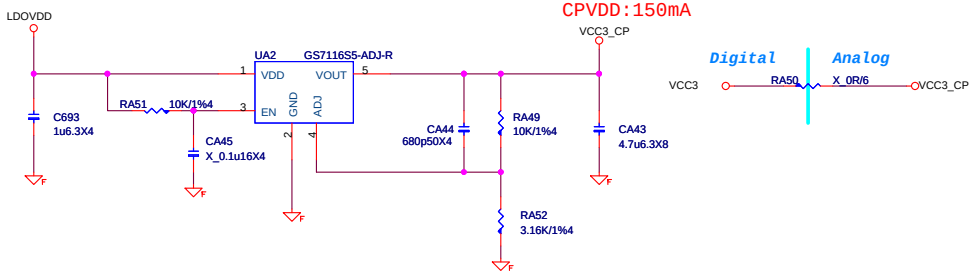




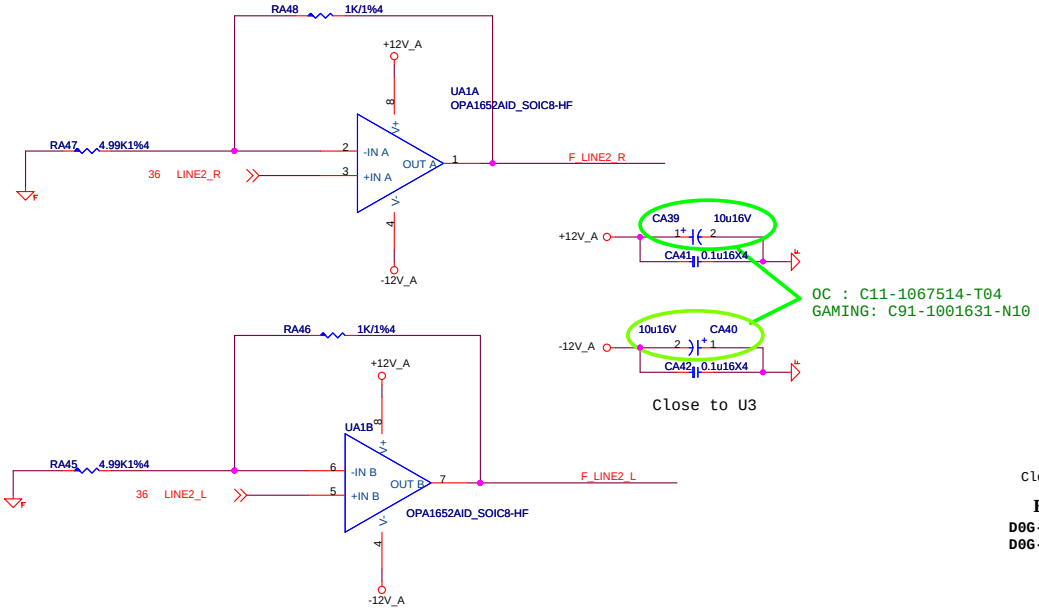


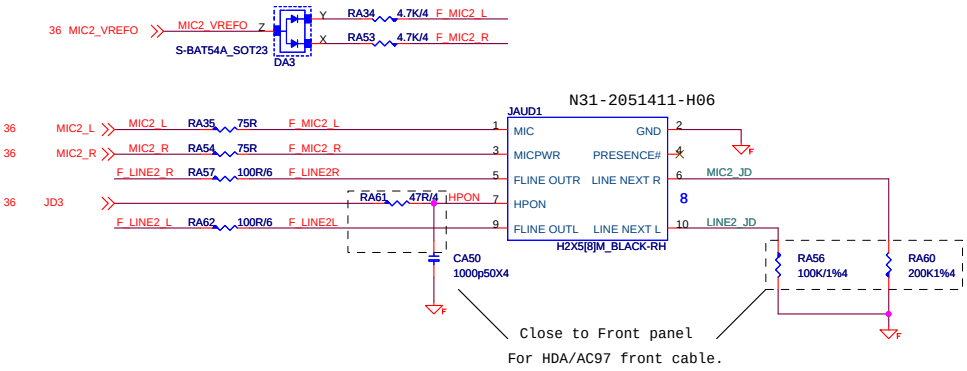


CPVDD POWER:ATX5VSB will Leakage to CVDD by ALC1220, so CVDD must keep 3.3V



MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: AUDIO ACL1220-1	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 36 of 69	



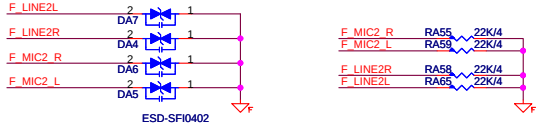


Close to Jack

ESD protect

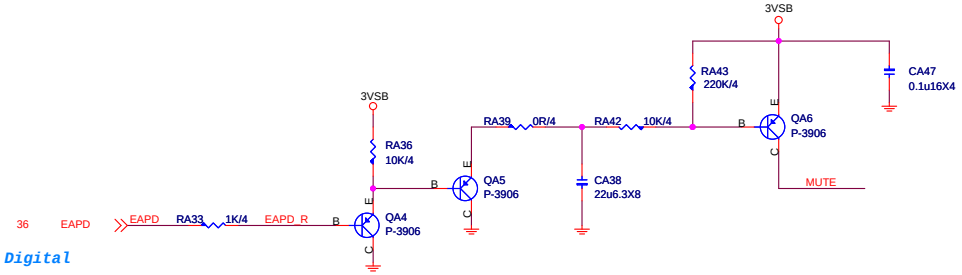
D0G-2710510-I05

D0G-2950500-SI0



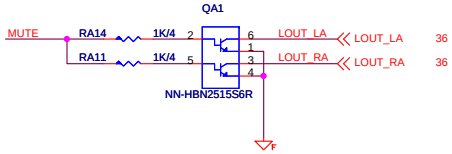
Rear Line OUT De-POP circuit

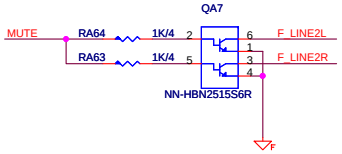
(De-pop circuit for Rear Line out & Front Headphone out)



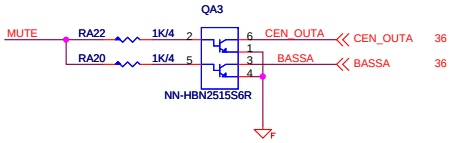
Digital

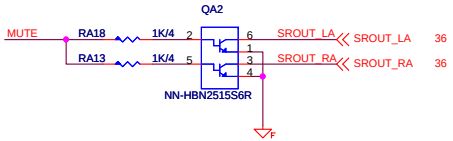
Analog





(add de-pop circuit by PM spec or customer request,
NOTE: add de-pop circuit need to change CA4,CA5, CA6, CA8,to TVS)





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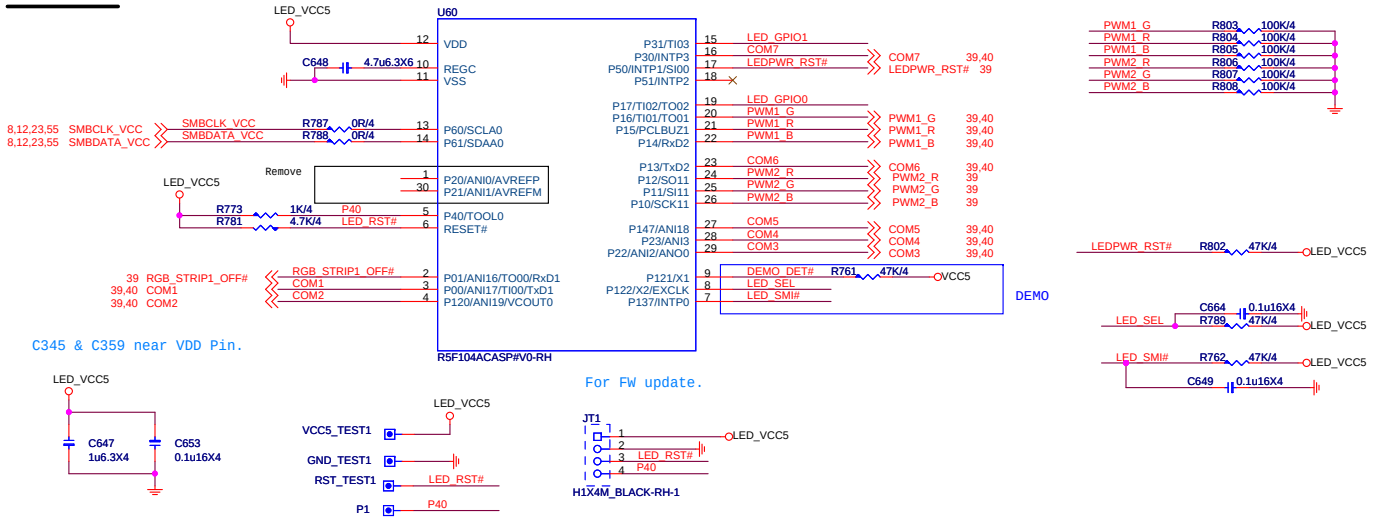
MS-7A63

Size	Document Description	Rev
Custom	AUDIO ACL1220-2	10

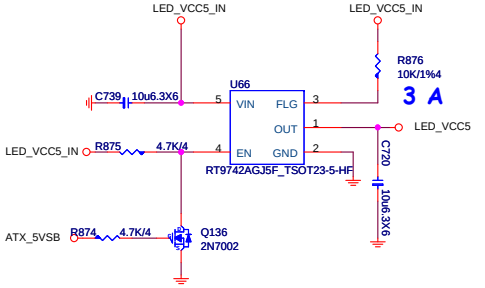
Date: Tuesday, September 13, 2016 Sheet 37 of 69

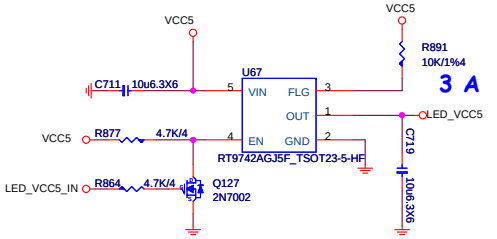
LED MCU



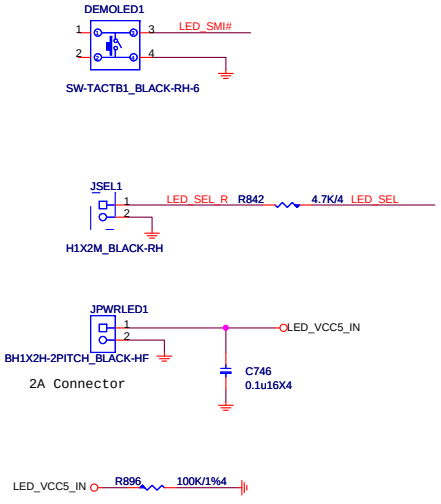
Control	Net Name	PWM USE	Connector
PCH	LED_GPIO1	No Use	JPIPE_LED2
Audio	COM1~7	PWM1	RGB LED
Board Side LED	COM1~7	PWM2	RGB LED
LED STRIPLINE	RGB_STRIP1_OFF#	PWM1	JLED1
IO Cover	LED_GPIO0	No Use	JPIPE_LED1

EXTERNAL POWER INPUT



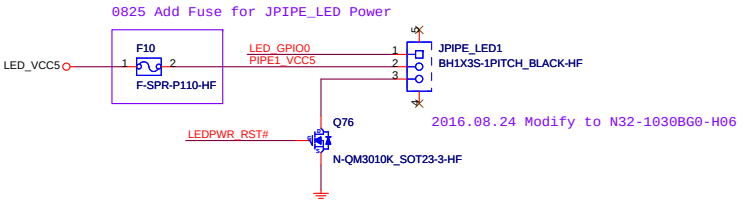


LED Demo Button



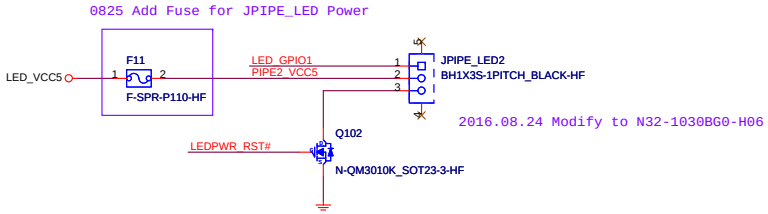
Cover LED

6PCS LED*0.16W=0.96W



HEATSINK LED

9PCS LED*0.16W=1.44W



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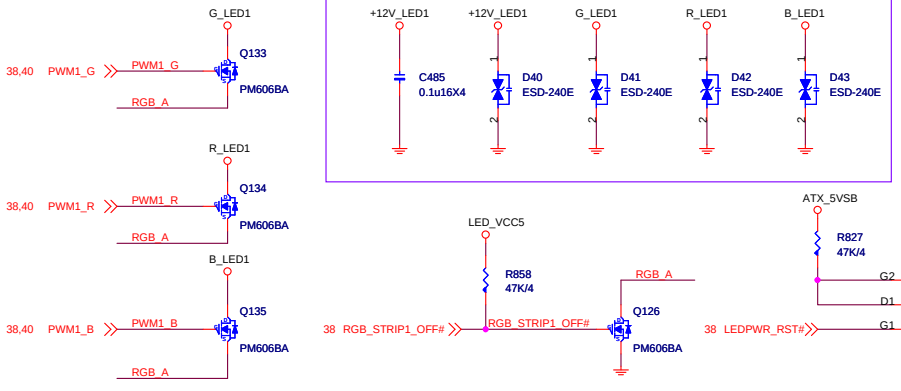
MS-7A63

Size	Document Description	Rev
Custom	LED MCU Control	10

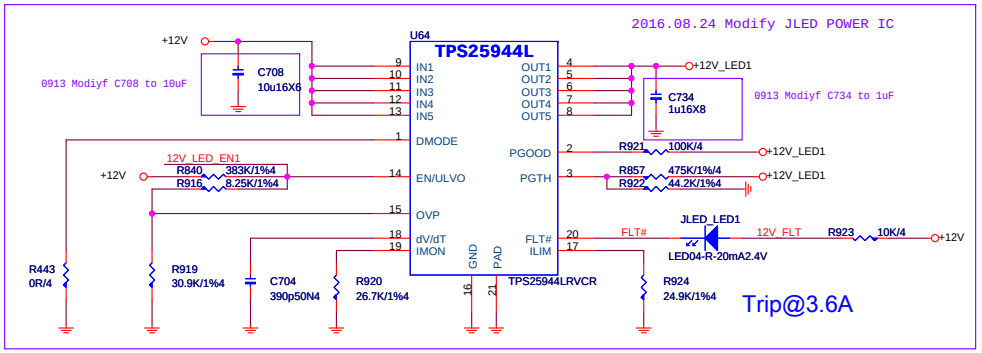
Date: Tuesday, September 13, 2016 | Sheet 38 of 69

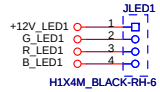
LED STRIPLINE(LEFT)

2016.08.24 Add,Close to JLED1

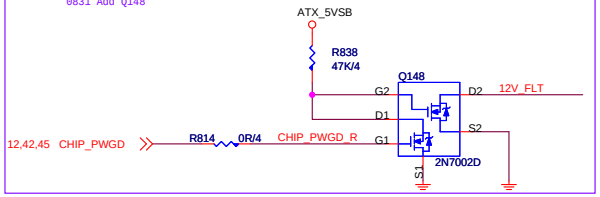


2016.08.24 Modify JLED POWER IC



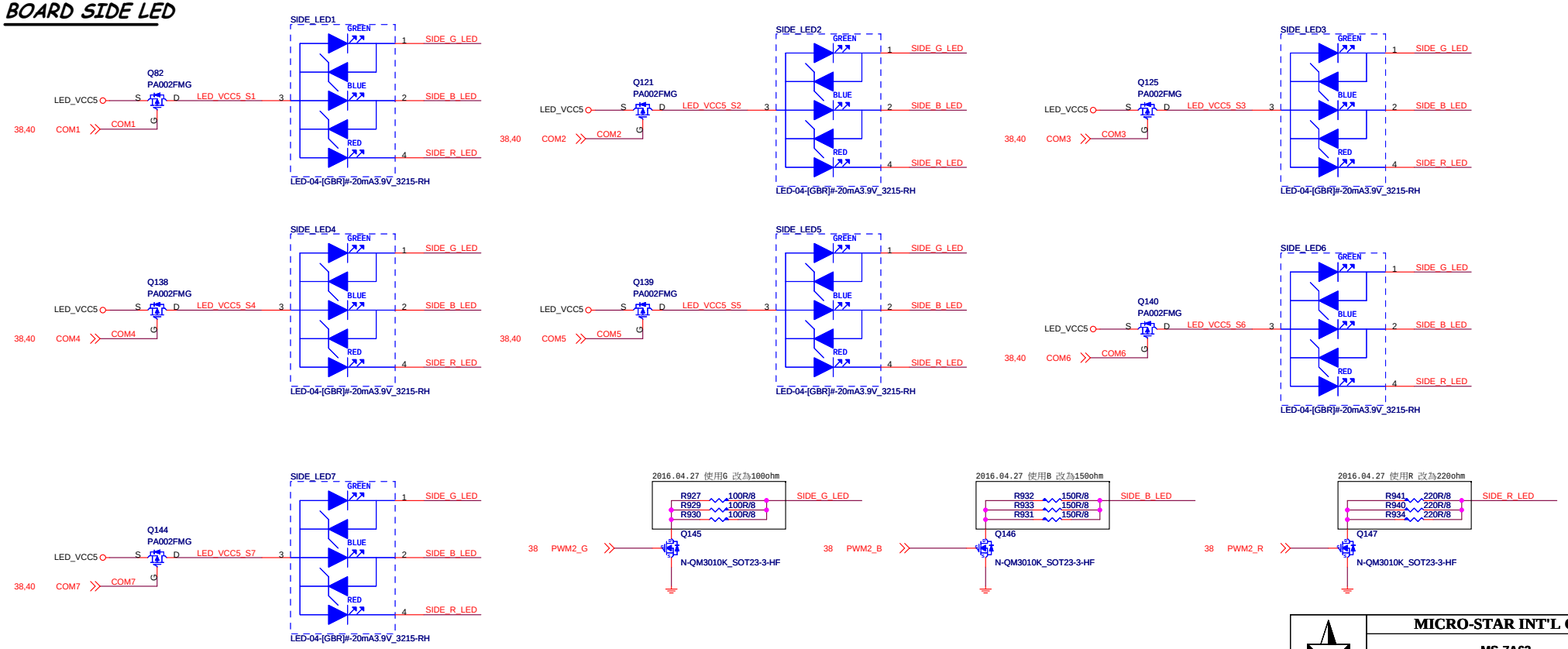


0831 Add Q148



外接LED 燈條 (RGB)
---- PCB 文字面 (JLED1)
---- 手冊 註明 RGB 接頭支援標準 5050 RGB LED 燈條 (12V/G/R/B) , 燈條總輸出電流限制為3安培 (12 伏特) , 長度限制為2公尺 (待7A20驗證)

BOARD SIDE LED



MICRO-STAR INT'L CO.,LTD

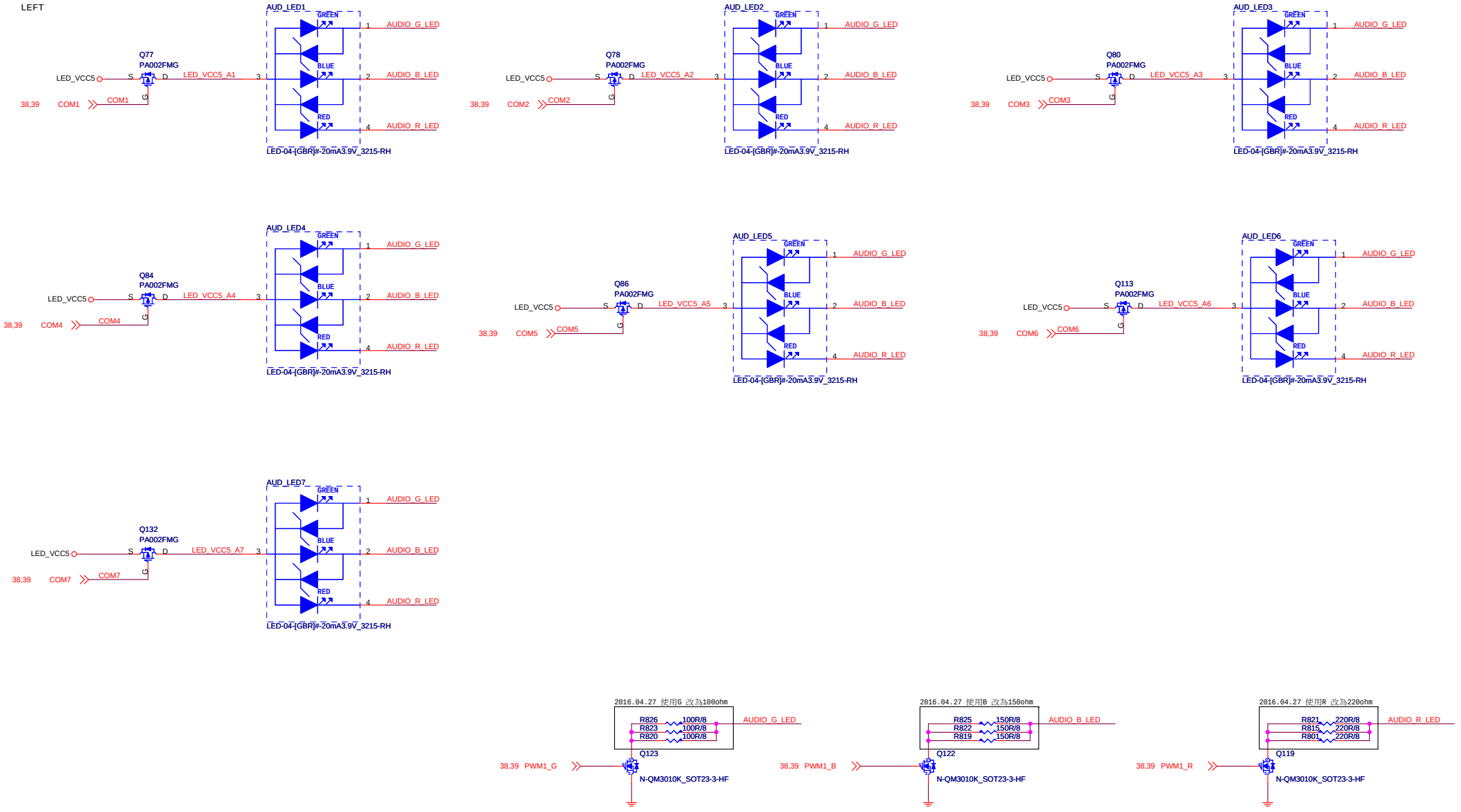
MS-7A63

Size	Document Description	Rev
Custom	LED STRIPLINE/BOARD SIDE LED	10

Date: Tuesday, September 13, 2016 Sheet 39 of 69

AUDIO_MOAT LED

LEFT



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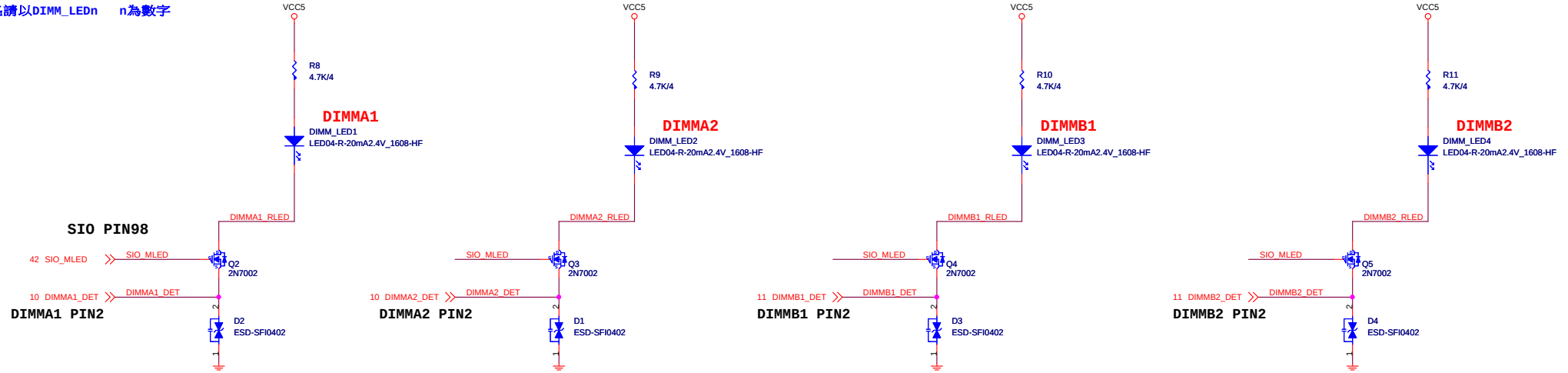
	MS-7A63	
Size: Custom	Document Description: LED AUDIO	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 40 of 69	

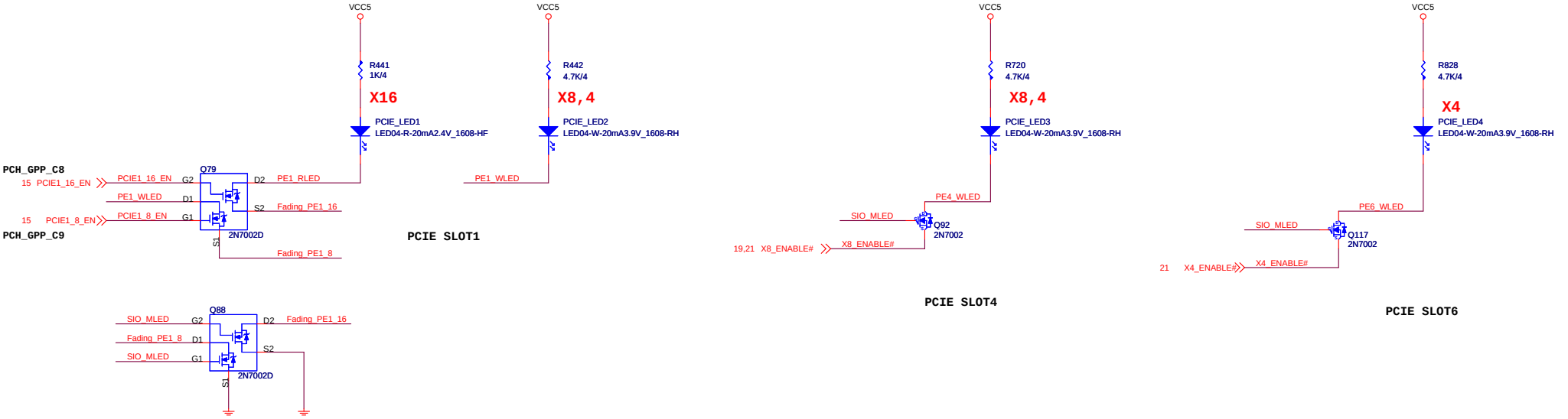
DIMM_SLOT

紅 : D0C-040S500-E07

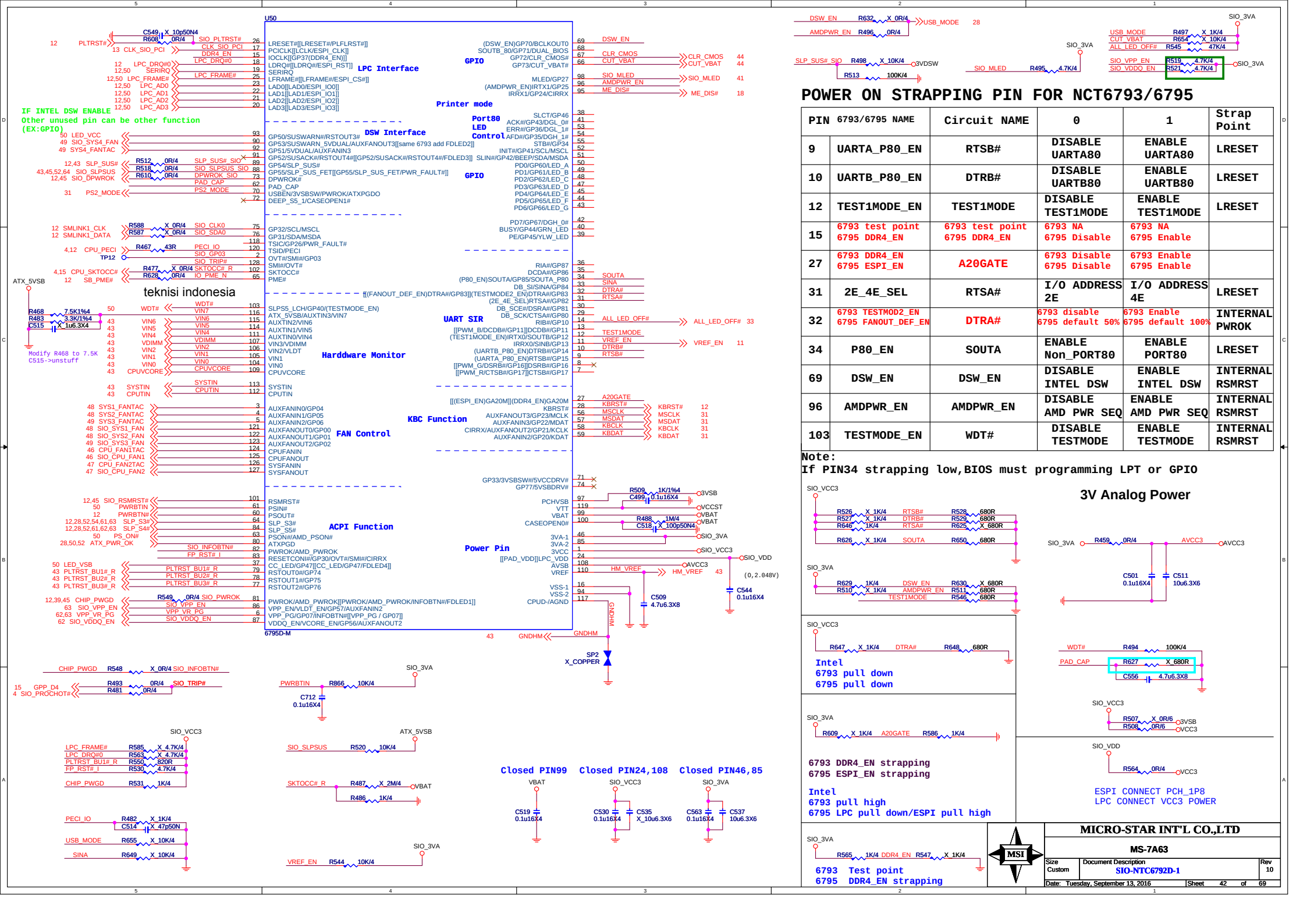
LED 命名請以DIMM_LEDn n為數字



PCIE SLOT LED



MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A63	
Size: Custom	Document Description: LED DIMM/PCIE	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 41 of 69	

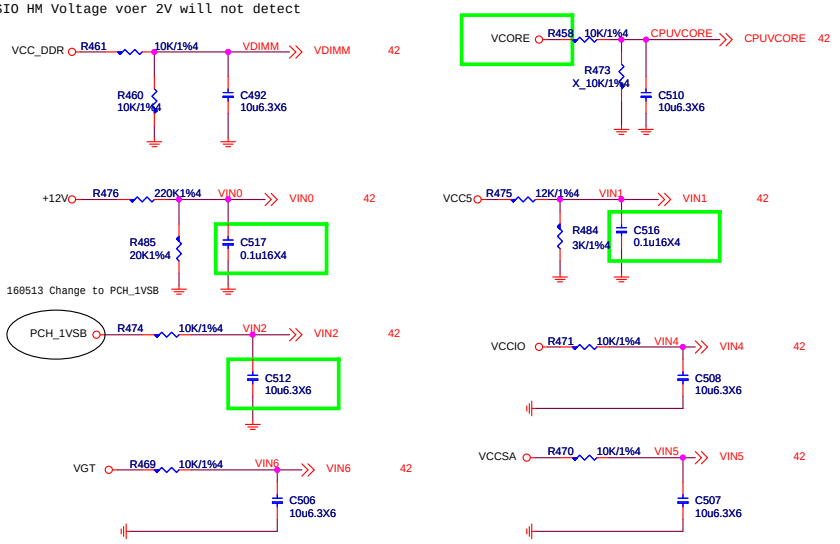


PIN	6793/6795 NAME	Circuit NAME	0	1	Strap Point
9	UARTA_P80_EN	RTSB#	DISABLE UARTA80	ENABLE UARTA80	LRESET
10	UARTB_P80_EN	DTRB#	DISABLE UARTB80	ENABLE UARTB80	LRESET
12	TEST1MODE_EN	TEST1MODE	DISABLE TEST1MODE	ENABLE TEST1MODE	LRESET
15	6793 test point 6795 DDR4_EN	6793 test point 6795 DDR4_EN	6793 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

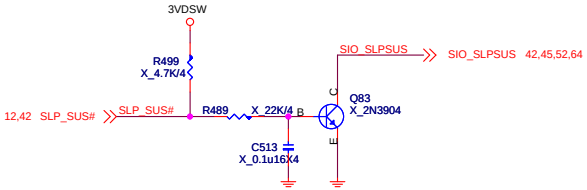
Size	Custom
Document Description	SIO-NTC6792D-1
Rev	10
Date:	Tuesday, September 13, 2016
Sheet	42 of 69

HW Monitor - Voltage

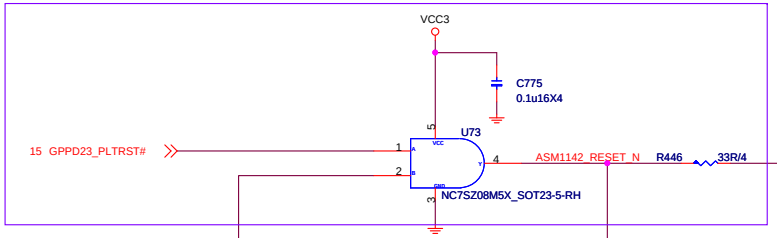
SIO HM Voltage voer 2V will not detect



SLP_SUS Co-lay circuit



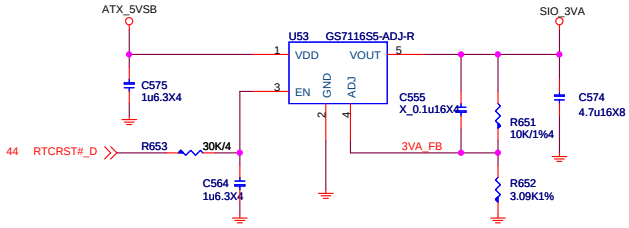
Thermal Monitor



0825 Add U73&R446 for ASM2142 PLTRST#

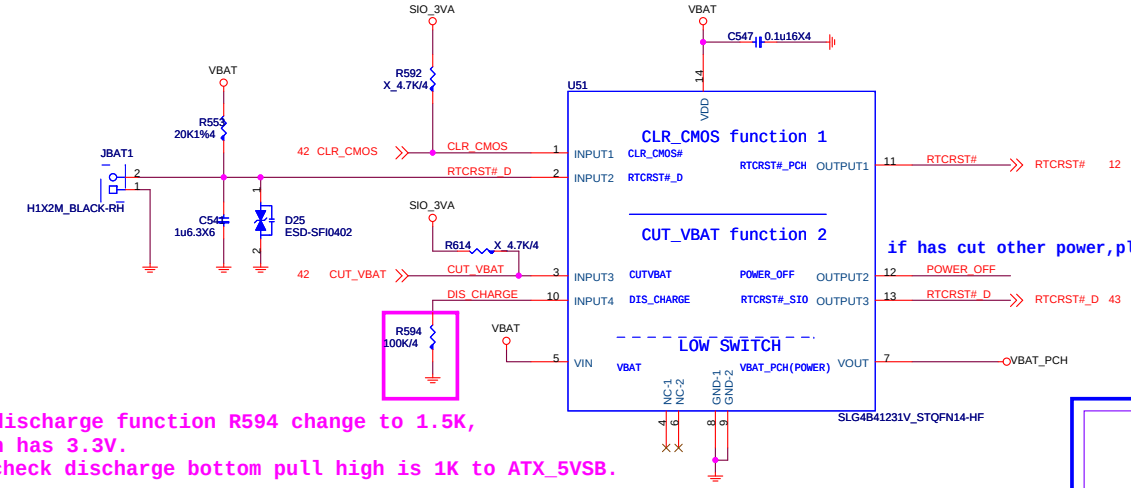
ASM2142 U73 stuff R552 unstuff
ASM1142 U73 unstuff R552 stuff

Reset control for ASM2142 only.



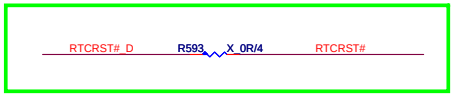
MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A63	
Size: Custom	Document Description: SIO-NTC6792D-2	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 43 of 69	

CLR_CMOS



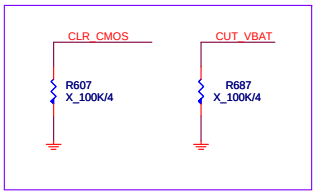
if has cut other power,please use output 2.

If has discharge function R594 change to 1.5K,
this pin has 3.3V.
please check discharge bottom pull high is 1K to ATX_5VSB.



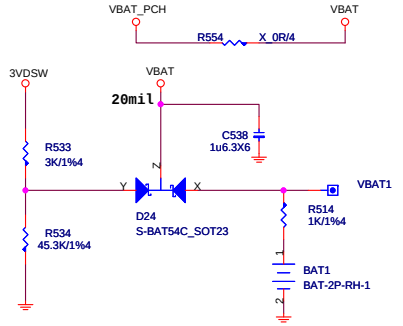
Co-Lay NOT USE U12 , R139 STUFF

If STUFF R139 Please Check RTCRST# Double Pull High

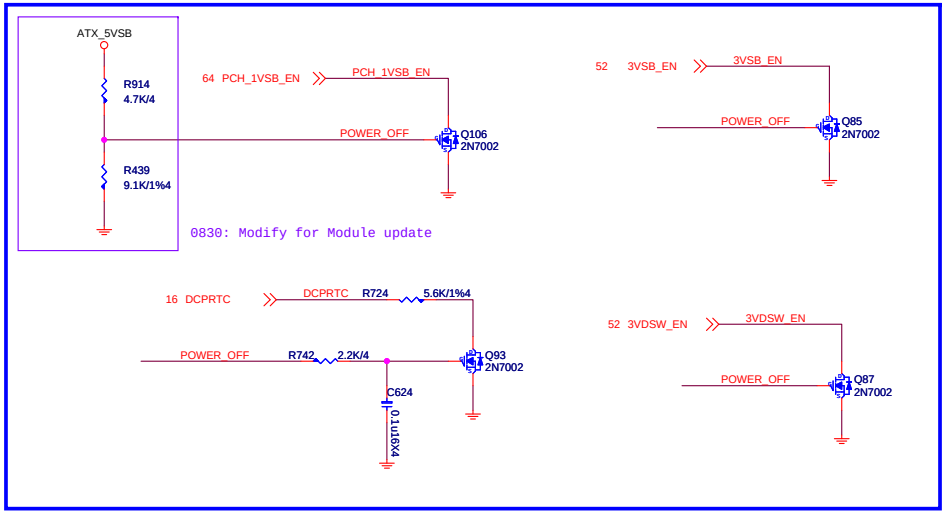


0830: Add R607.R687 for Module update

VBAT



Co-Lay NOT USE U12 , ALL UNSTUFF



Function 1		
IN		OUT
INPUT1	INPUT2	OUTPUT1
0	1	1
1	0	0
1	1	0
0	0	0

Default

Function 2				
IN		OUT		
INPUT3 & lowswitch EN	INPUT4	OUTPUT2	OUTPUT3	VOUT
0	0	0	1	1
1	0	1	1	0 (discharge)
0	1	1	0	0 (discharge)
1	1	1	0	0 (discharge)

Default

MICRO-STAR INT'L CO.,LTD

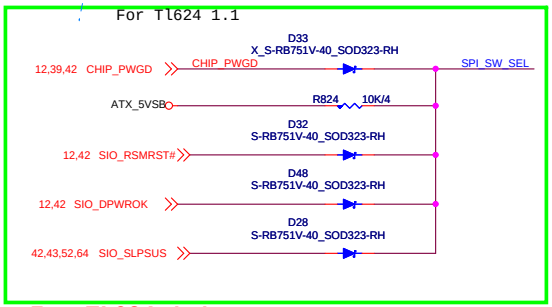
MS-7A63

Size	Document Description	Rev
Custom	Clear CMOS/CUT VBAT	10

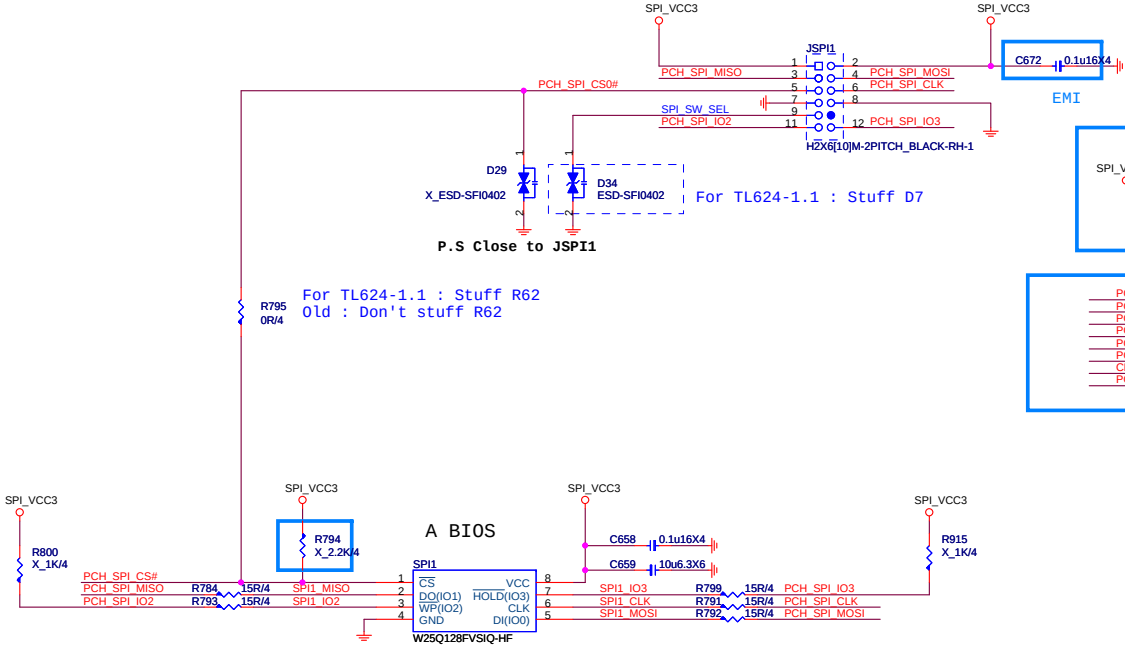
Date: Tuesday, September 13, 2016 Sheet 44 of 69

Module Stuff CHIP_PWGD,
But PCH_PWROK may ramp up before CHIP_PWGD.

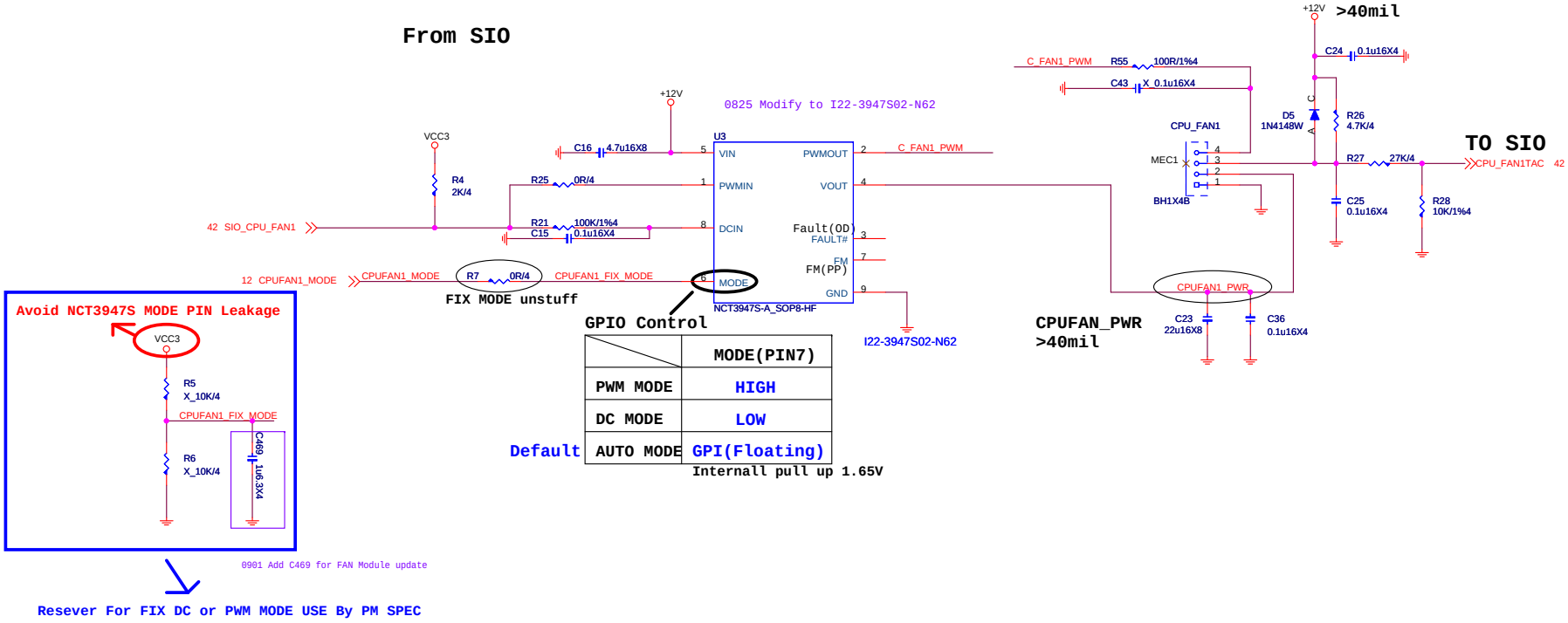
0825 Add D48,unstuff D33



For TL624-1.1
SKYLAKE : Stuff D10/D17/R353
B85/H87 : Stuff D8/D9/R353
Others : Stuff R272



MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: BIOS	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 45 of 69	



	MODE(PIN7)
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V

1.MODE : USE MODE PIN change FAN MODE(PWM or DC FAN)
2.FAULT : USE FAULT PIN Triger OVT/OCP Protection,LOW Atcive (Reserve NEW IC)
3.FM : USE FM PIN For BIOS USE to Detect PWM or DC FAN & Show information(Reserve NEW IC)

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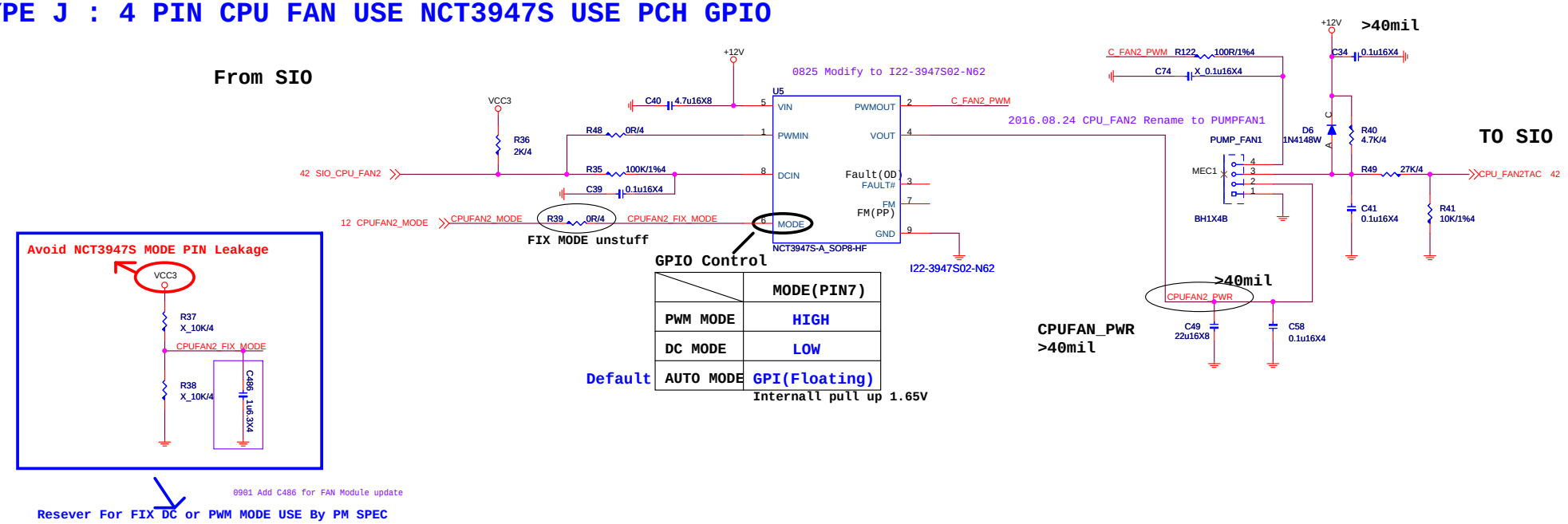
MS-7A63

Size	Document Description	Rev
Custom	CPU FAN1	10

Date: Tuesday, September 13, 2016 Sheet 46 of 69

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



	MODE(PIN7)
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V

1.MODE : USE MODE PIN change FAN MODE(PWM or DC FAN)
2.FAULT : USE FAULT PIN Triger OVT/OCP Protection,LOW Atcive (Reserve NEW IC)
3.FM : USE FM PIN For BIOS USE to Detect PWM or DC FAN & Show information(Reserve NEW IC)

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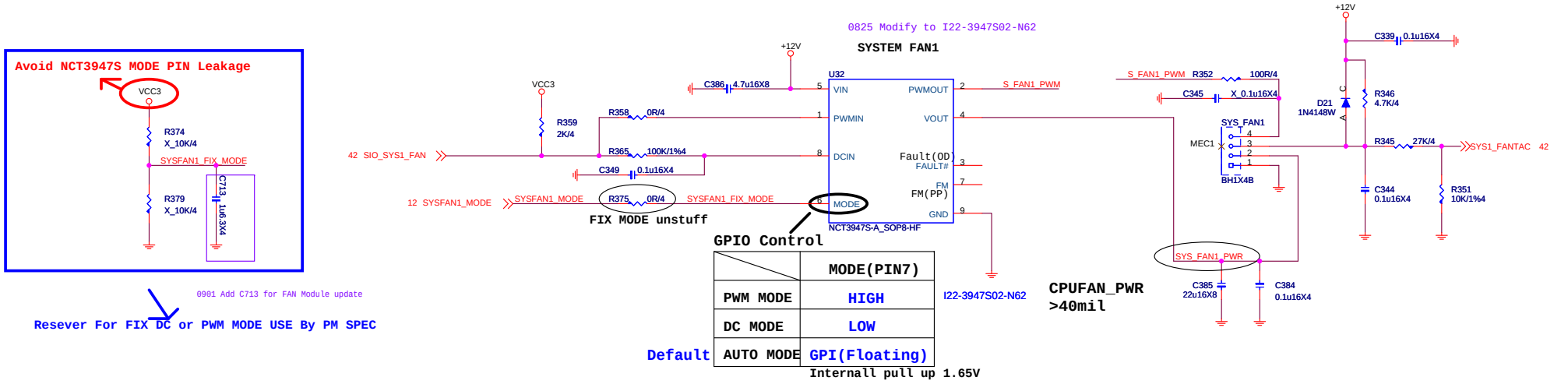
MS-7A63

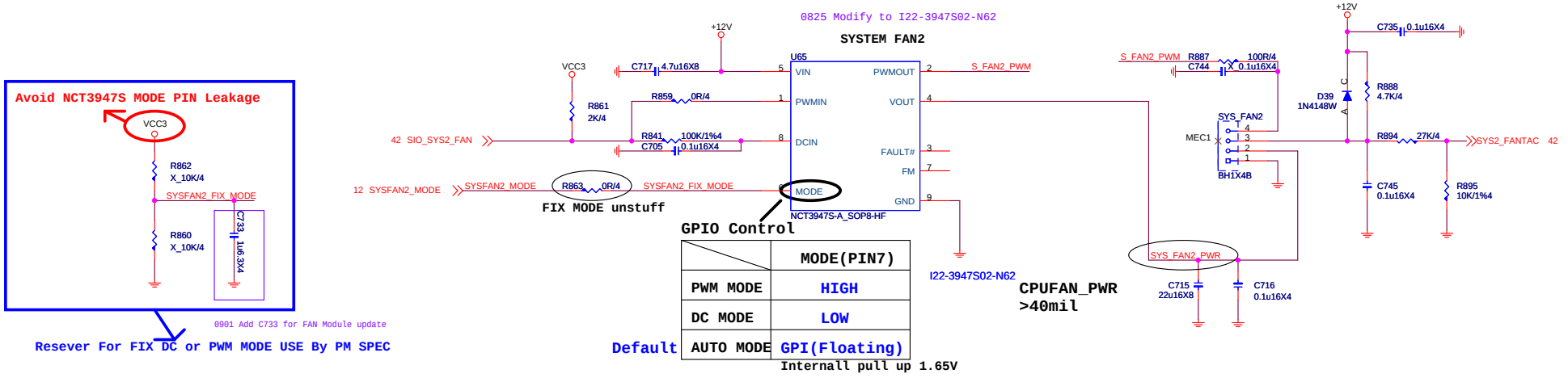
Size: Custom | Document Description: PUMPFAN1 | Rev: 10

Date: Tuesday, September 13, 2016 | Sheet 47 of 69

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

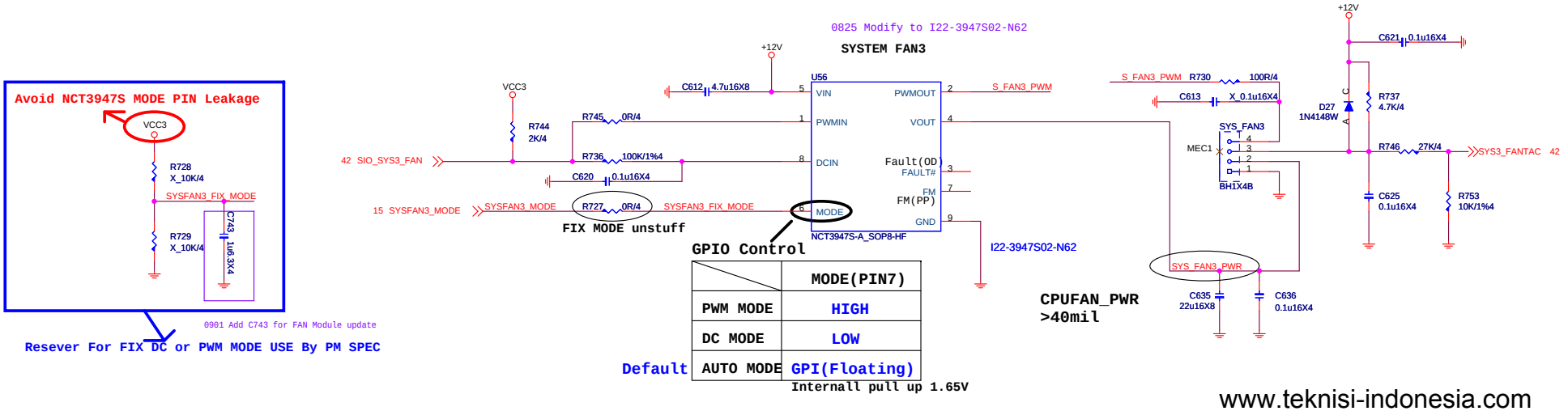


TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO



MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: SYSTEM FAN1&2	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 48 of 69	

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



	MODE(PIN7)
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V

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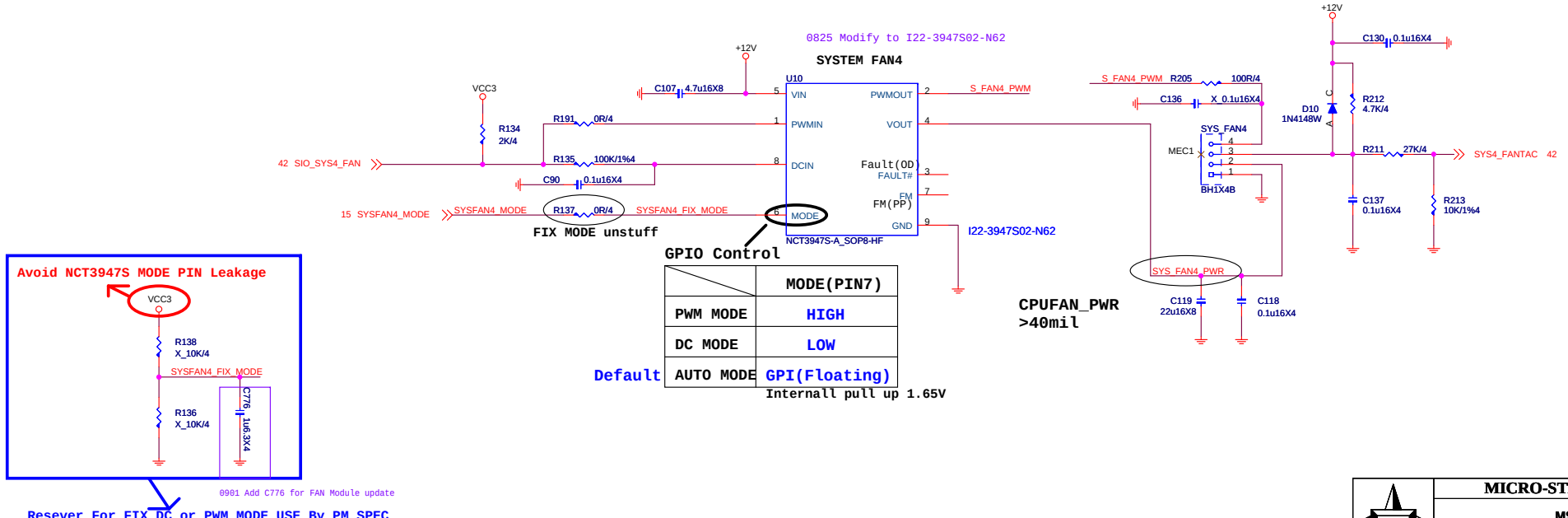
TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO

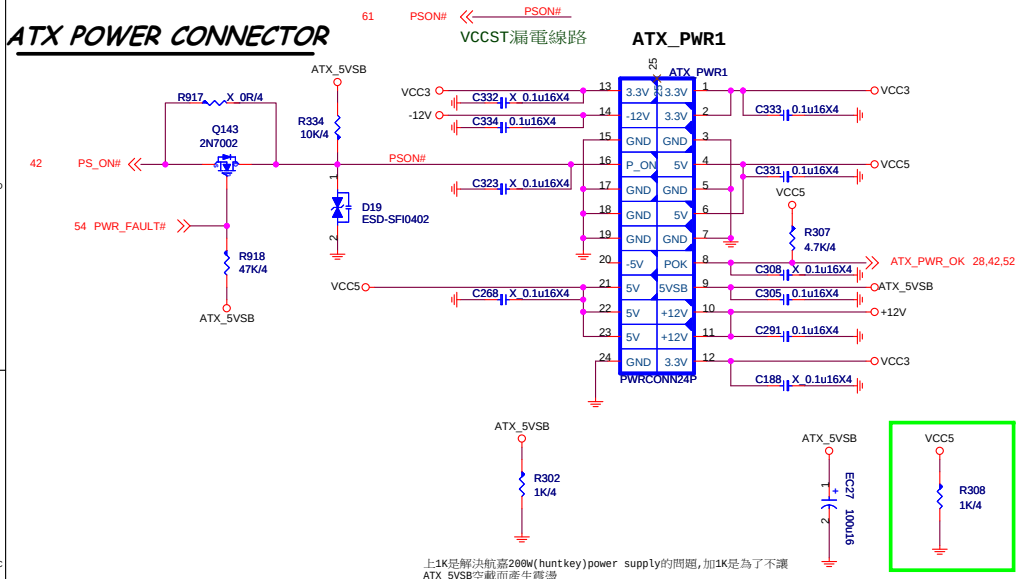


	MODE(PIN7)
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

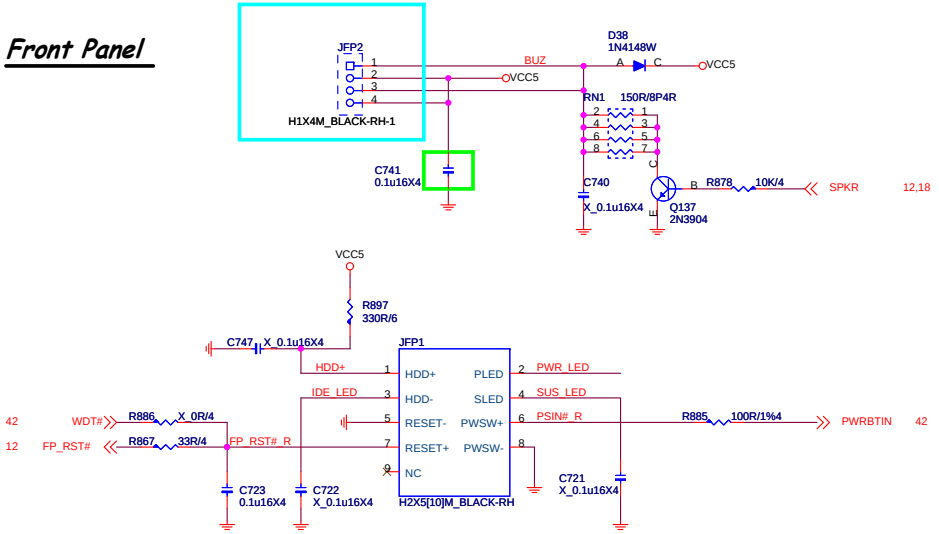
Internall pull up 1.65V

MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A63	
Size: Custom	Document Description: SYSTEM FAN3&4	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 49 of 69	

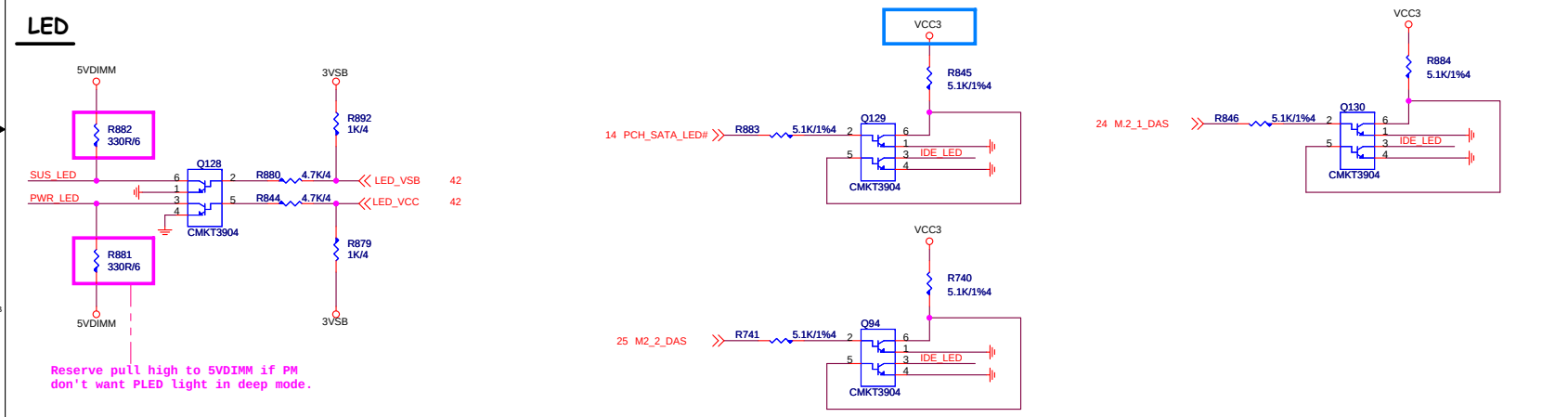
ATX POWER CONNECTOR



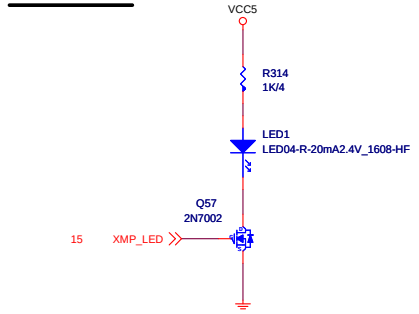
Front Panel



LED

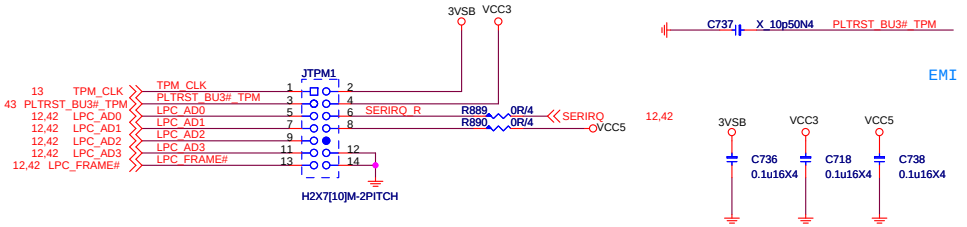


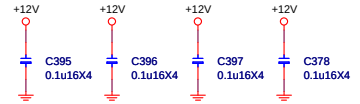
XMP LED



TPM

Confirm ESPI TPM card and TPM card pin difine
(Not ready)



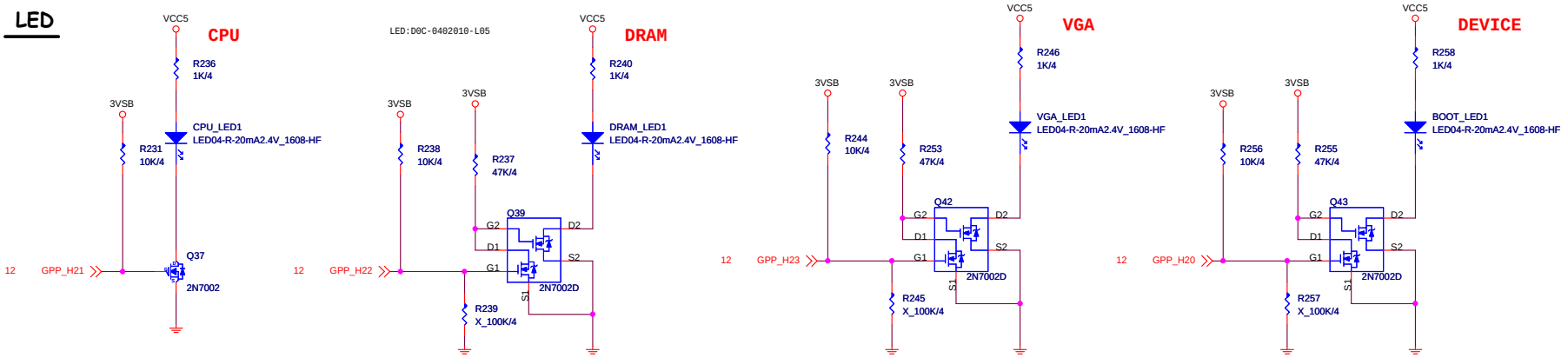


MICRO-STAR INT'L CO.,LTD

MS-7A63

Size	Document Description	Rev
Custom	ATX Power/F_Panel	10

Date: Tuesday, September 13, 2016 Sheet 50 of 69



關機斷電狀態下，4個LED先維持default全暗，開機通電後：

1. 首先進行CPU checkCPU LED 亮，check PASS後則CPU LED減掉。
2. 接著依序進行Memory /memory LED亮check PASS後則memory LED減掉。
3. VGA的check/VGA LED亮，check PASS後則VGA LED減掉。
4. 因此最後正常順利開機後，三個LED燈都是滅掉的。
   （系統重啟或其他原因造成系統重開機，則LED仍按上述行為動作）

LED	PCH_GP20	PCH_GP21	PCH_GP22	PCH_GP23
亮	NATIVE PULL HIGH	GPO PULL HIGH	GPO PULL HIGH	NATIVE PULL HIGH
滅	NATIVE LOW	GPO LOW (default LOW)	GPO LOW (default LOW)	GPO LOW (default LOW)

MICRO-STAR INT'L CO.,LTD

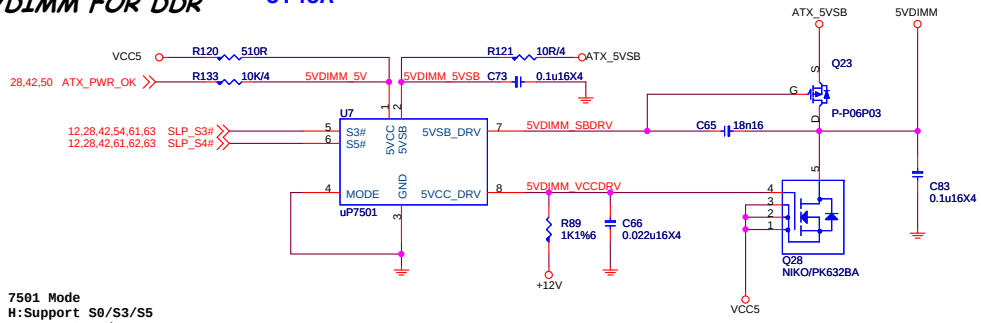
MS-7A63

Size: Custom | Document Description: EZ DEBUG LED | Rev: 10

Date: Tuesday, September 13, 2016 | Sheet 51 of 69

5VDIMM FOR DDR

5.45A

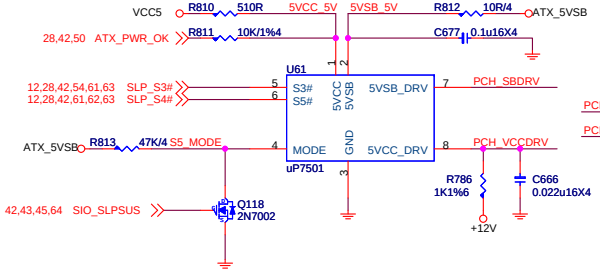


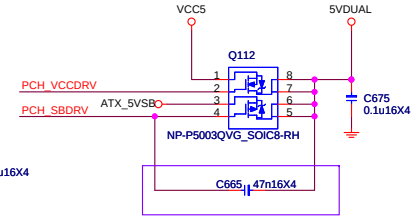
7501 Mode
H:Support S0/S3/S5
L:Support S0/S3

5VDUAL

5VDUAL is power source of 1P0SB

PCH:2.95A
3VSB:4.04A
MAX:6.99A

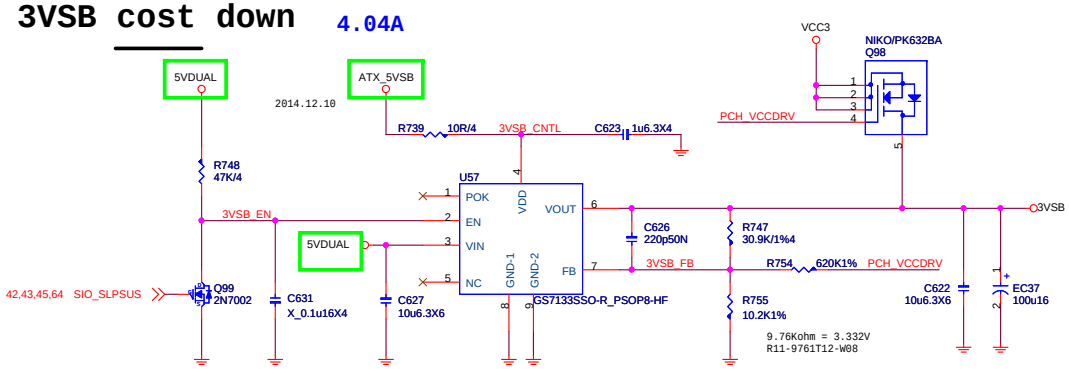




8/25 Modify to 47nF

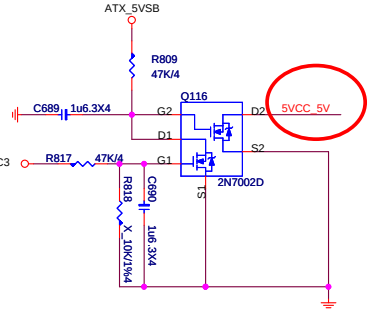
3VSB cost down

4.04A

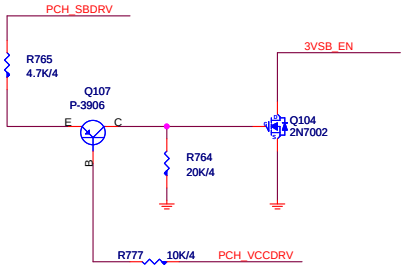


AVL:I31-3730S02-N62 2014.10.15 update

VFB=3.224V for S0->S3 3VSB voltage raise & ATX_5VSB drop.



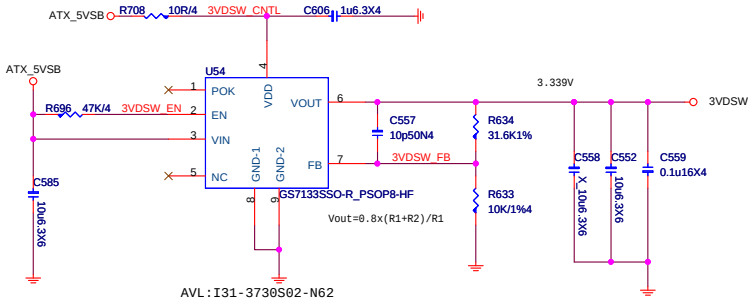
3VSB_EN → 3VSB_EN 44



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

3VDSW

0.422A



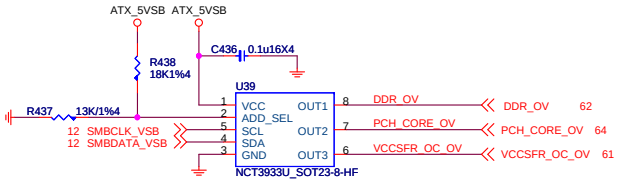
AVL:I31-3730S02-N62

3VDSW_EN → 3VDSW_EN 44

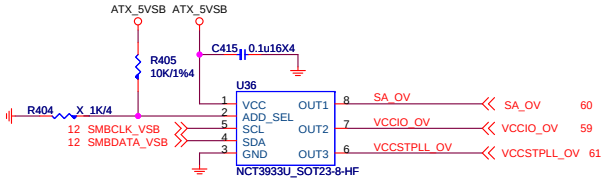
MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A63	
Size: Custom	Document Description: ACPI UPI	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 52 of 69	

UPI VOLTAGE CONSOLE

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



0x20:RH=10K,RL=OPEN



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

MICRO-STAR INT'L CO.,LTD

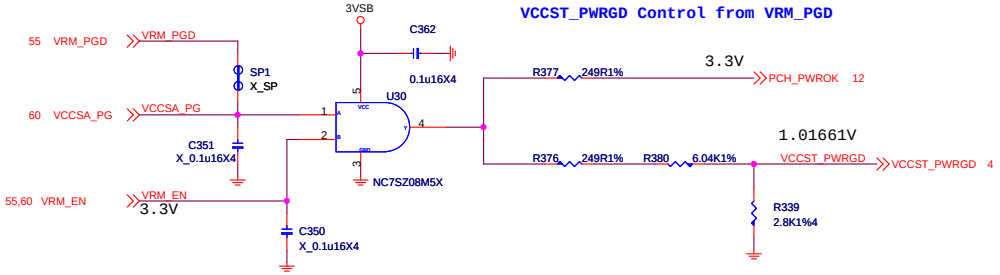
MS-7A63

Size: Custom | Document Description: OV-NCT3933/GPIO-NCT5605 | Rev: 10

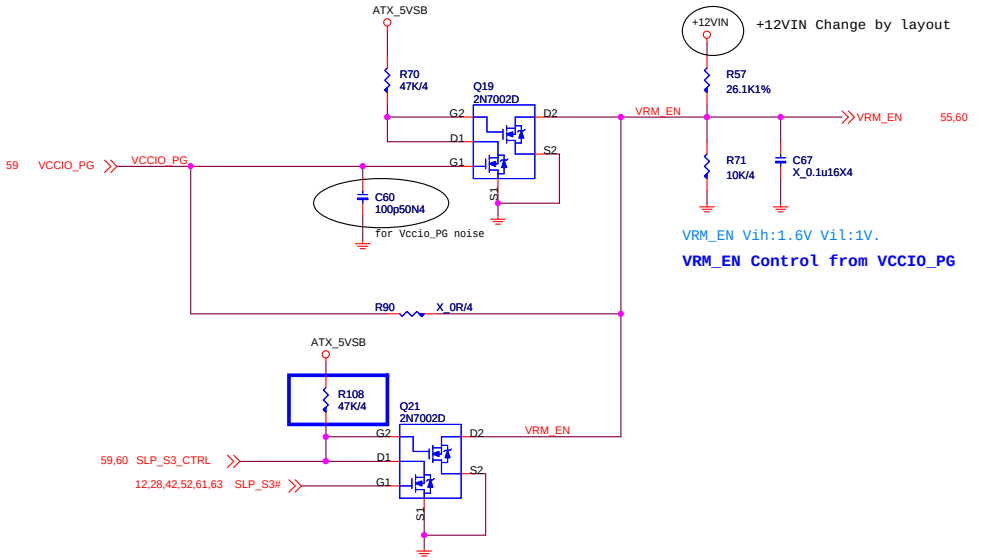
Date: Tuesday, September 13, 2016 | Sheet 53 of 69

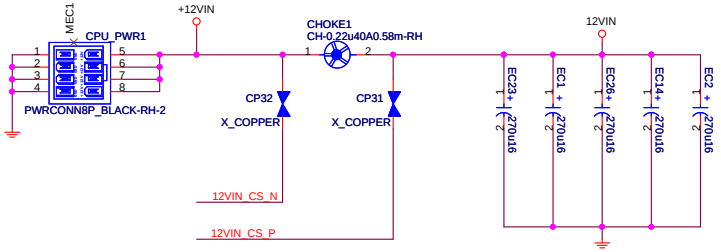
VCCSA&Vcore use same PWM IC, pull up VCC3
VCCSA&Vcore use different PWM IC,pull up VCCSA
VCCST_PWRGD can assert before or equal to PCH_PWROK, but must never lag it.

PCH_PWROK Control from VCCIO_PG&VCCSA
VCCST_PWRGD Control from VRM_PGD

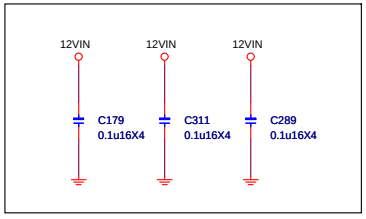


VRM_EN Control from VCCIO_PG

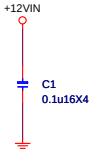


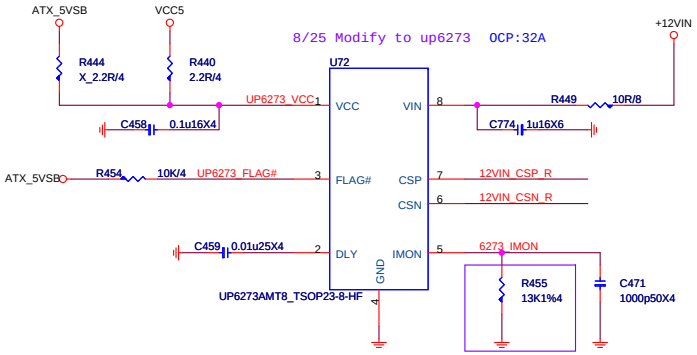


Iripple=30.95A
VCORE 18.101A
VGT 8.457A
VCCSA 4.392A

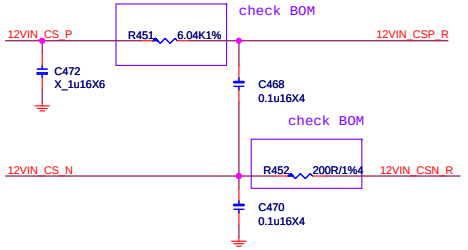


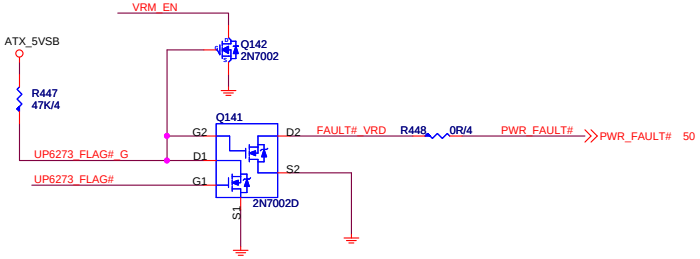
CLose to JPWR2





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





MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: Rear I/O PS2	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 54 of 69	

Vcore: ICC Max 100A
LL: 2.1 mohm
OCP: 200A

VGT: ICC Max 48A
LL: 3.1 mohm
OCP: 75A

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close to VRM < 0.1"

close to VRM <0.1"

直接放在R1105,R1080,R1029旁邊

MICRO-STAR INT'L CO.,LTD	
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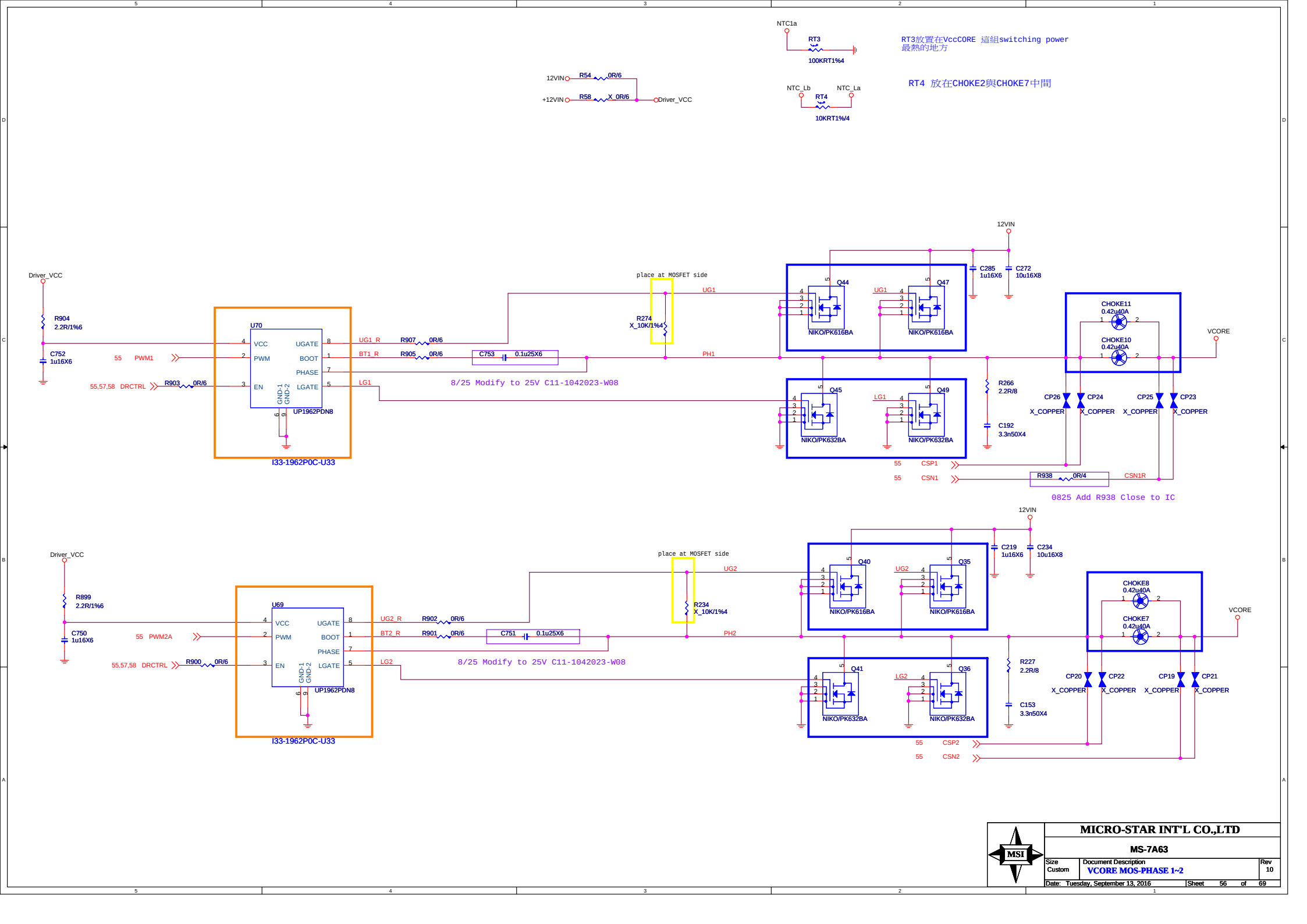
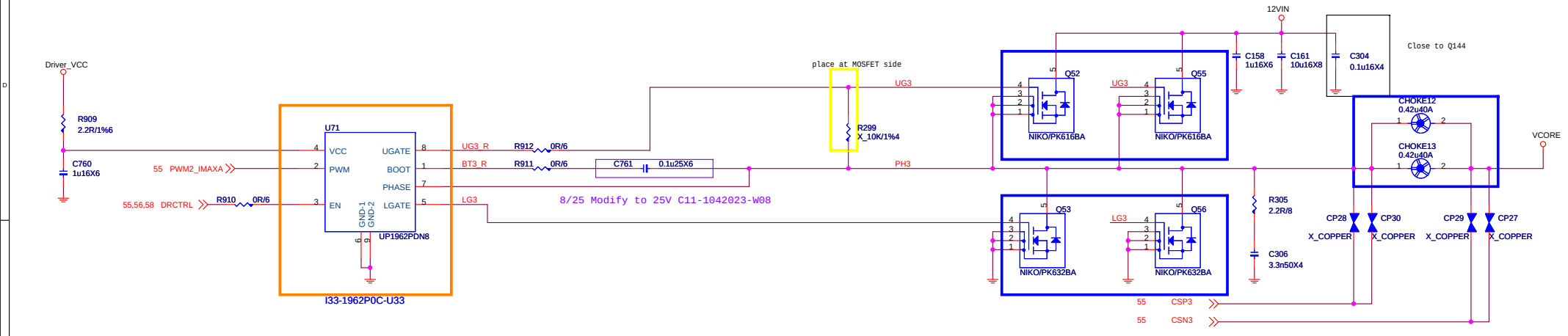
Size: Custom	Document Description: PWM-UP9508 VCORE+VGT
Rev: 10	
Date: Tuesday, September 13, 2016	Sheet 55 of 69


NTC1a
RT3
100KRT1%4
RT3放置在VccCORE 這組switching power 最熱的地方
12VIN
R54 0R/6
+12VIN
R58 X_0R/6
Driver_VCC
NTC_Lb
NTC_La
RT4
10KRT1%/4
RT4 放在CHOKE2與CHOKE7中間
Driver_VCC
R904 2.2R/1%6
C752 1u16X6
55 PWM1
55,57,58 DRCTRL
R903 0R/6
U70
VCC
PWM
EN
UGATE
BOOT
PHASE
LGATE
GND-1
GND-2
UP1962PDN8
I33-1962P0C-U33
UG1_R
R907 0R/6
BT1_R
R905 0R/6
C753 0.1u25X6
LG1
place at MOSFET side
R274 X_10K/1%4
UG1
PH1
8/25 Modify to 25V C11-1042023-W08
12VIN
C285 1u16X6
C272 10u16X8
Q44
Q47
NIKO/PK616BA
Q45
Q49
NIKO/PK632BA
R266 2.2R/8
C192 3.3n50X4
CHOKE11 0.42u40A
CHOKE10 0.42u40A
VCORE
CP26 X_COPPER
CP24 X_COPPER
CP25 X_COPPER
CP23 X_COPPER
55 CSP1
55 CSN1
R938 0R/4
CSN1R
0825 Add R938 Close to IC
Driver_VCC
R899 2.2R/1%6
C750 1u16X6
55 PWM2A
55,57,58 DRCTRL
R900 0R/6
U69
I33-1962P0C-U33
UG2_R
R902 0R/6
BT2_R
R901 0R/6
C751 0.1u25X6
LG2
place at MOSFET side
R234 X_10K/1%4
UG2
PH2
8/25 Modify to 25V C11-1042023-W08
12VIN
C219 1u16X6
C234 10u16X8
Q40
Q35
NIKO/PK616BA
Q41
Q36
NIKO/PK632BA
R227 2.2R/8
C153 3.3n50X4
CHOKE8 0.42u40A
CHOKE7 0.42u40A
VCORE
CP20 X_COPPER
CP22 X_COPPER
CP19 X_COPPER
CP21 X_COPPER
55 CSP2
55 CSN2
MICRO-STAR INT'L CO.,LTD
MS-7A63
Size Custom
Document Description
VCORE MOS-PHASE 1~2
Rev 10
Date: Tuesday, September 13, 2016
Sheet 56 of 69



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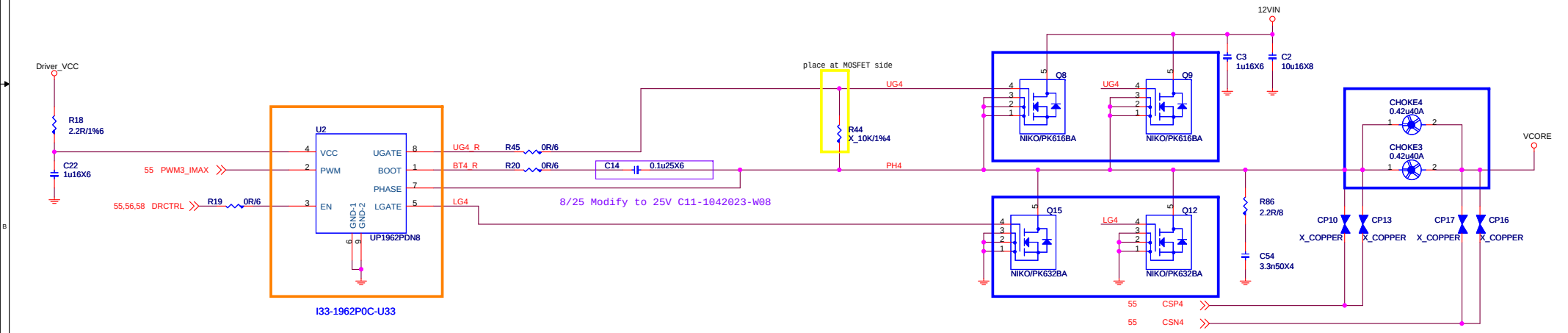

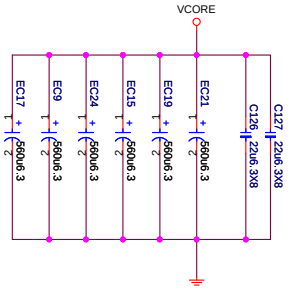

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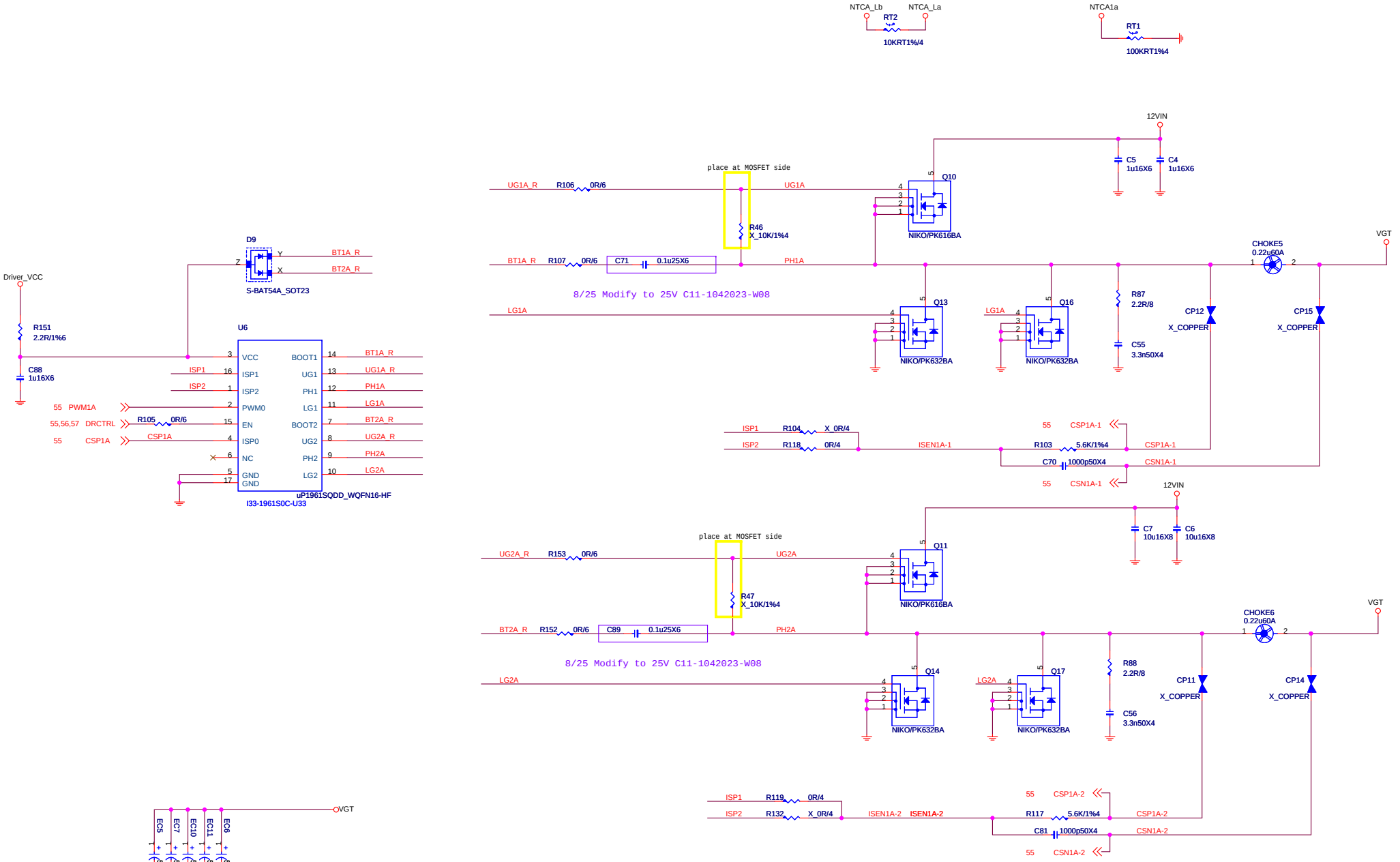
	MS-7A63	
Size: Custom	Document Description: VCORE MOS-PHASE 3~4	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 57 of 69	

RT2 放在L50與L52中間

RT1放置在VccGT 這組switching power 最熱的地方



MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A63	
Size: Custom	Document Description: VGT MOS-PHASE 1~2	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 58 of 69	

VCCIO

0.95V; 5.5A

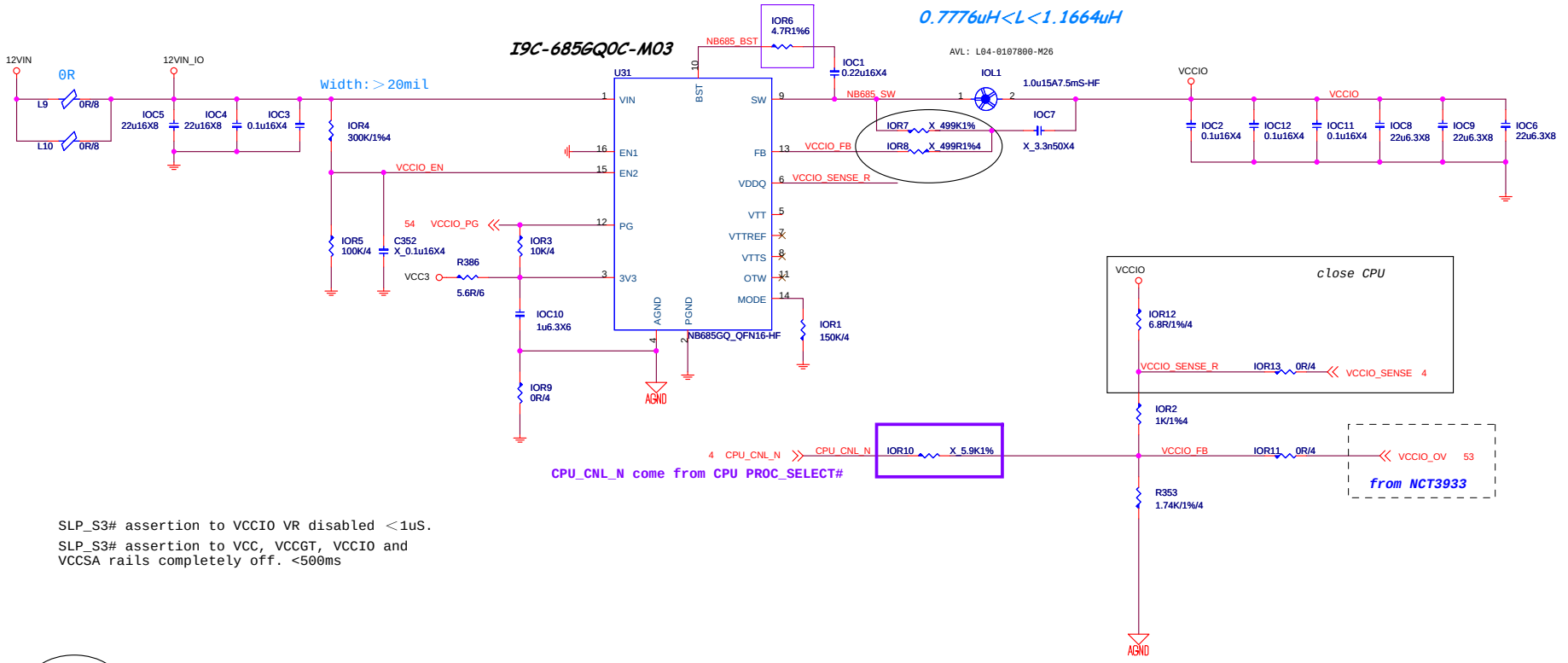
IMAX 10A
ILIMIT=10A~12A
IOC=ILIMIT+40%*IMAX/2=12A~14A.

support OV=>NB685

0902 Modify IOR6 to 0603 Size

0.7776uH<L<1.1664uH

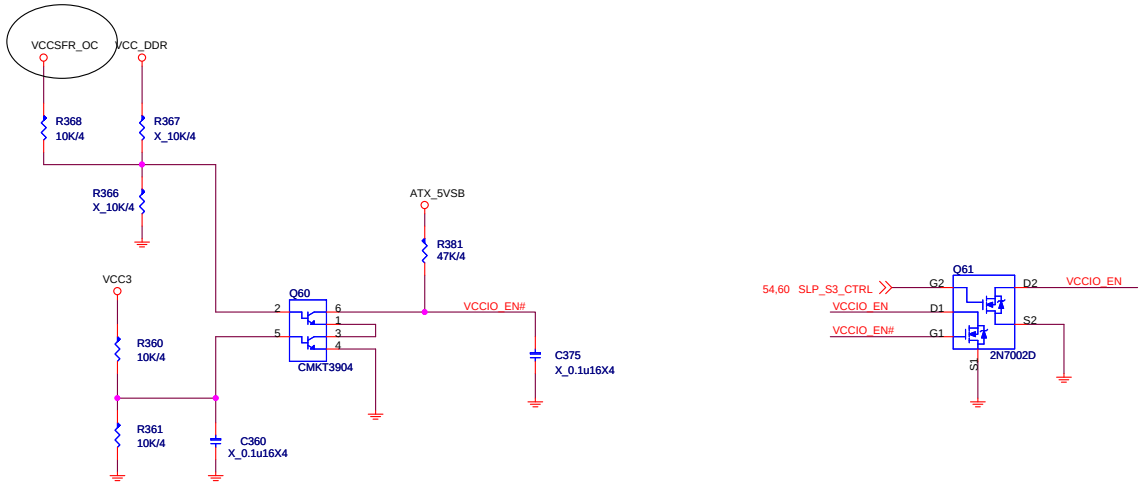
I9C-685GQ0C-M03



CPU_CNL_N come from CPU PROC_SELECT#

SLP_S3# assertion to VCCIO VR disabled <1uS.

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



SLP_S3# assertion to VR disabled
max:1us

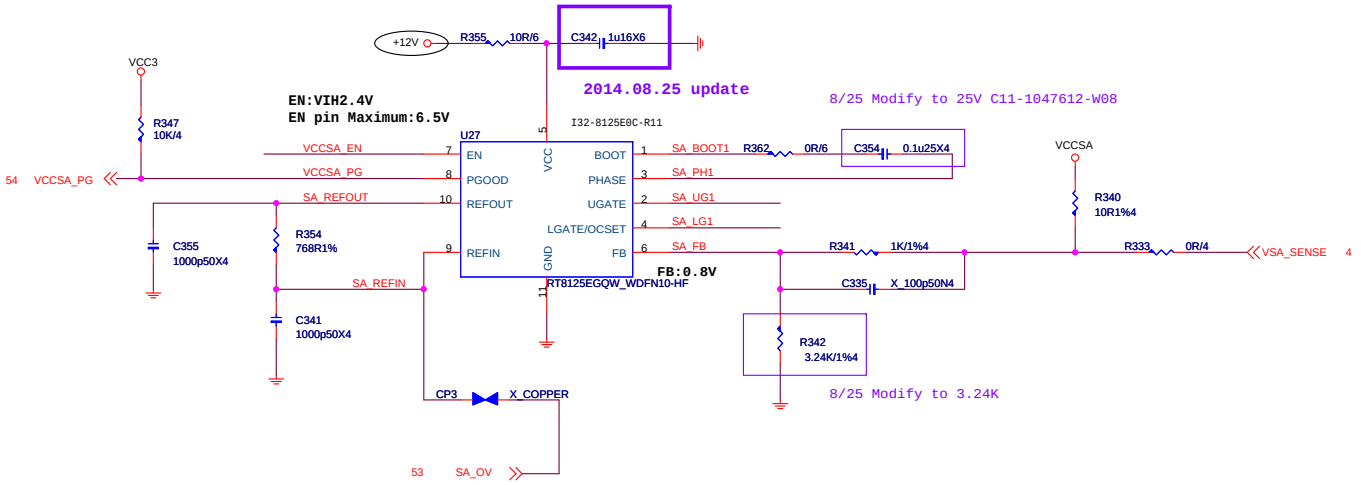
MICRO-STAR INT'L CO.,LTD		
MS-7A63		
Size: Custom	Document Description: CPU PWR_VCCIO	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 59 of 69	

SA Power:1.05V,11.1A

*OCP =11.1A*1.4=15.54A*
*Rocs(R417)=OCP*Rdson(Low side)3.4mohm]/10uA*
=15.54(3.4)mohm/10uA*
=5.2836Kohm

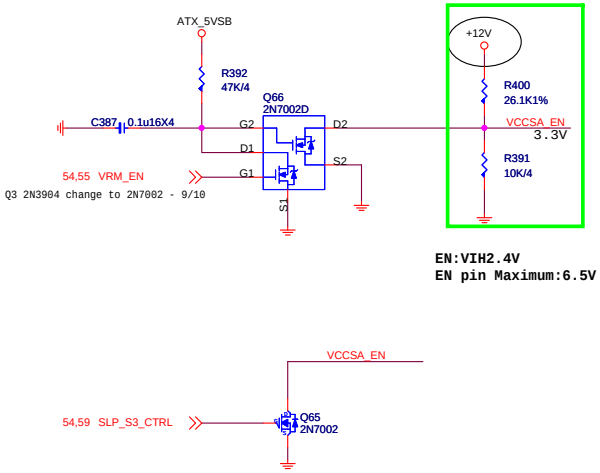
Rocs:5.2836K,OCP:
D03-4C05N03-O05 : 15.76A
D03-632BA0C-N03 : 16.24A
use UBIQ MOS need Check

Rdson(low)10V
D03-4C05N03-O05 : 3.4mohm
D03-632BA0C-N03 : 3.3mohm
D03-3056M00-U47 : 4.2mohm



VRM_EN線路update

Pull up by layout&Check level



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

SLP_S3# assertion to VR disabled
max:1us

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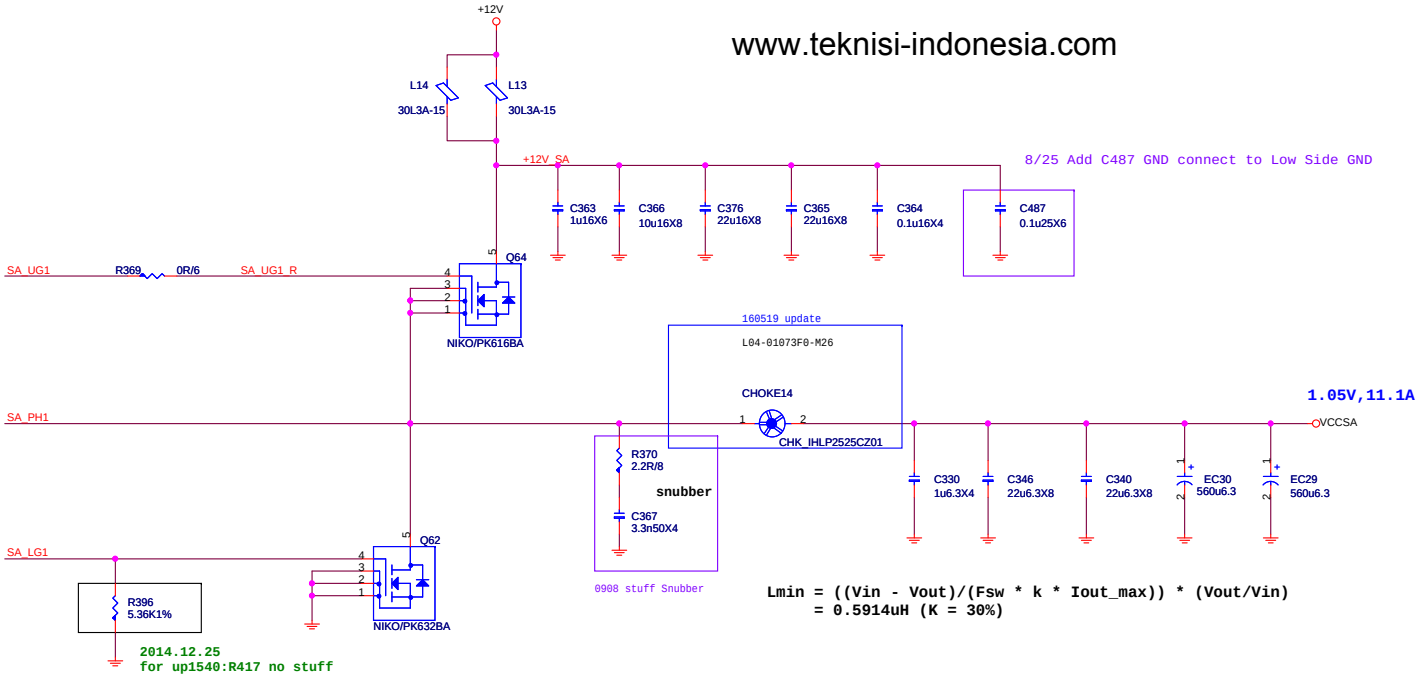


MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7A63	
Size: Custom	Document Description: CPU PWR_SA-RT8125C	Rev: 10
Date: Tuesday, September 13, 2016	Sheet 60 of 69	

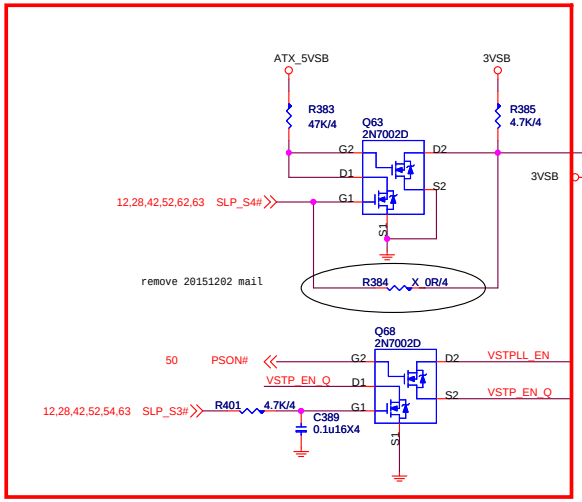
VCCST

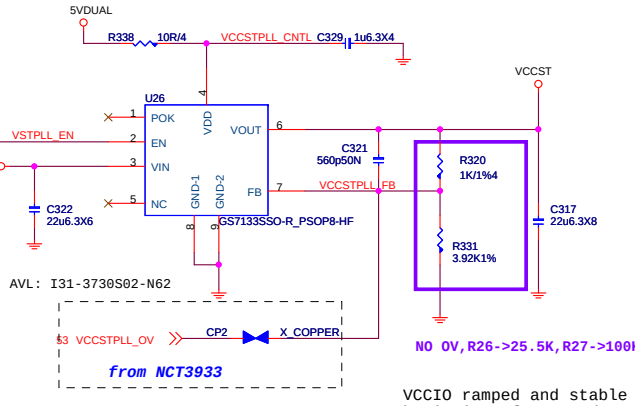
for Gaming3/5, Classic, ECO and H110

VCCST:60mA
VCCPLL:150mA

1.0V; 210mA

For Cost down VCCST&VCCPLL merge





NO OV,R26->25.5K,R27->100K, C178 unstuff

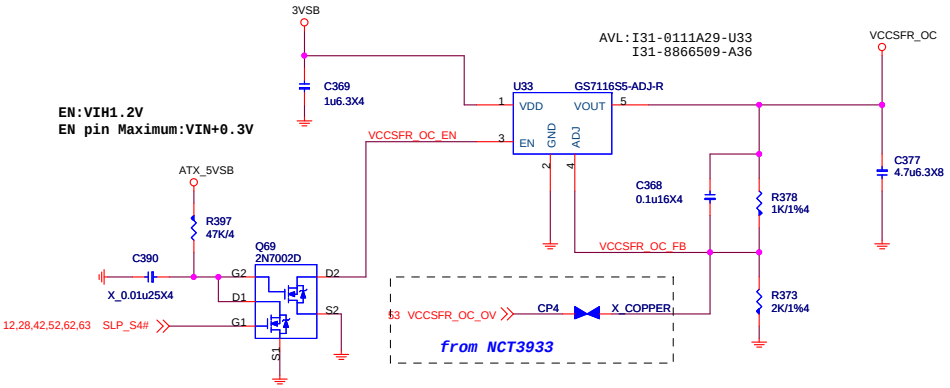
VCCIO ramped and stable before beginning of VCCOPC/VCCEOPIO ramp

VCCST/PLL stable 1ms before PROCPWRGD

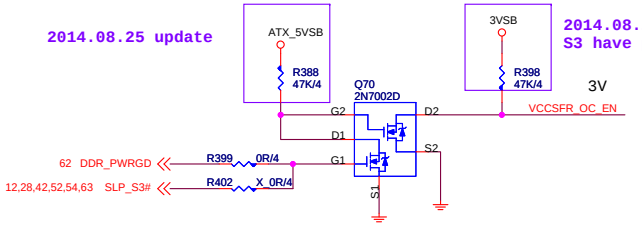
VCCPLL_OC

1.2V; 130mA

2014.08.21 update



2014.08.25 update



2014.08.25 update
S3 have power

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MS-7A63

Size	Document Description	Rev
Custom	CPU PWR_ST/PLL	10

Date: Tuesday, September 13, 2016 Sheet 61 of 69

DDR4_1.2V 2.5A+9.5A+1.2A=13.5A

2.8A FOR CPU

9.5A FOR 4DIMM

1.2A FOR DDR VTT

OCP =13.2A*1.5=20.25A

Rocs(R95)=OCP*Rdson[(Low side)]/10uA

=20.25A*(4.6)mohm/10uA

=9.315Kohm

Rocpset:5.1K

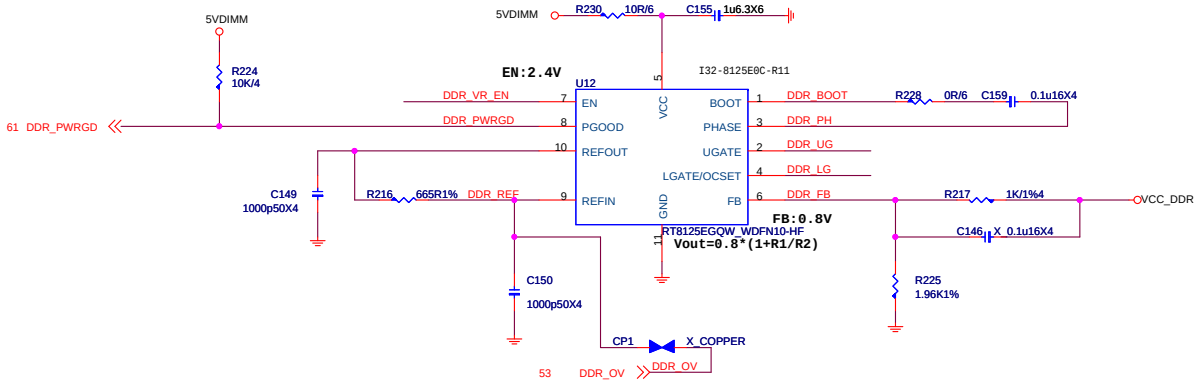
OCP=Rocset*Rdson[(Low side)]/10uA

=9.31K*(4.6)mohm/10uA

=20.23A

use UBIQ MOS need Check

Rdson(low)4.5V	
D03-4C05N03-O05	: 5 mohm
D03-632BA0C-N03	: 4.6mohm
D03-3056M00-U47	: 6.2mohm



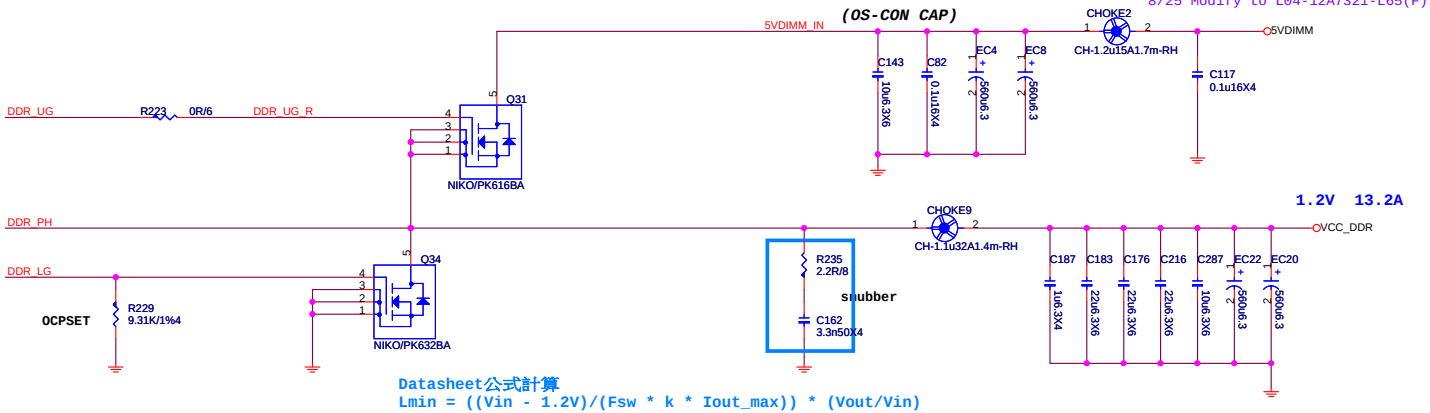
Irms = Iout * SQRT{(Vout/Vin) * [1 - (Vout/Vin)]}

= 13.2* 0.427

= 5.636A

(OS-CON CAP)

8/25 Modify to L04-12A7321-L65(F)



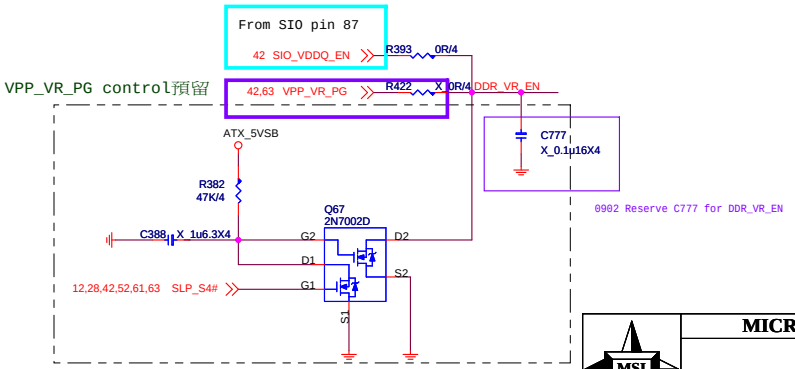
Datasheet公式計算

Lmin = ((Vin - 1.2V)/(Fsw * k * Iout_max)) * (Vout/Vin)

= 0.7677uH (K = 30%)

若帶入CAP ESR計算,0.2432uH＜L＜1.2897uH

2014.12.17 update



MICRO-STAR INT'L CO.,LTD

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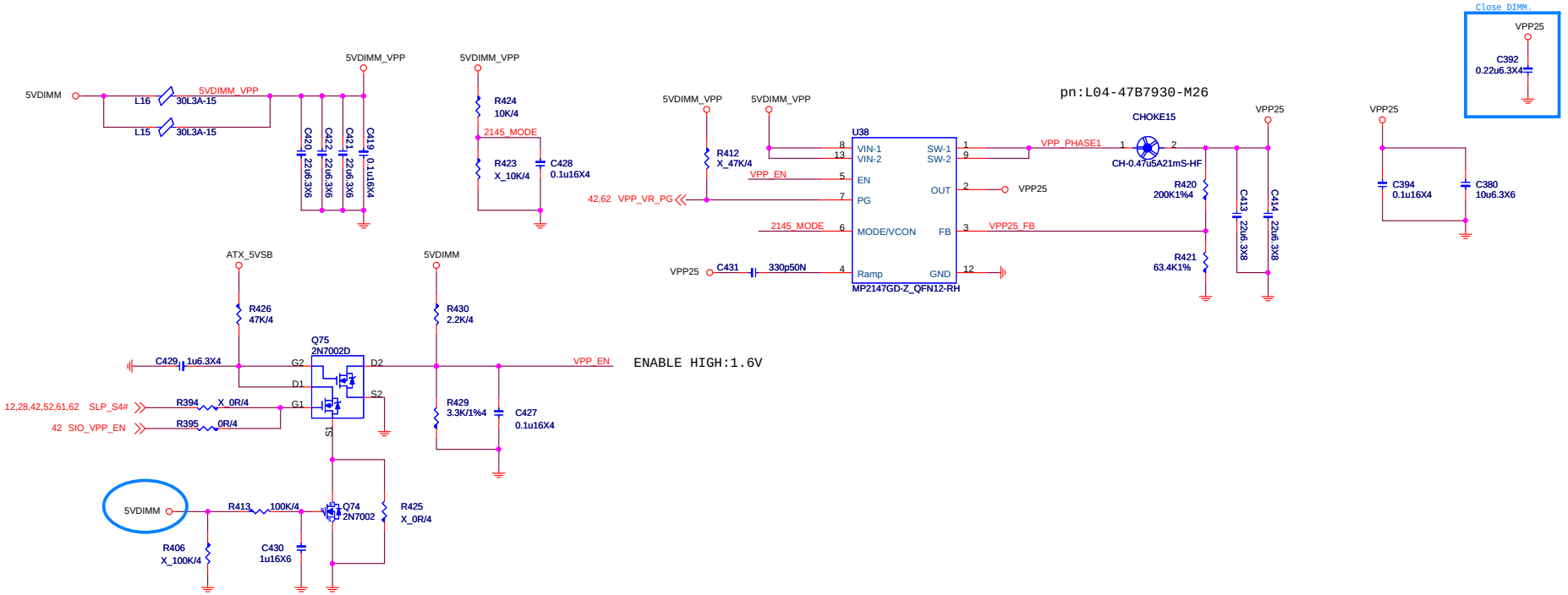
Size	Document Description	Rev
Custom	DDR4 Power-RT8125C	10

Date: Tuesday, September 13, 2016 Sheet 62 of 69

4DIMM :2.24A FOR DDR VPP2.5V

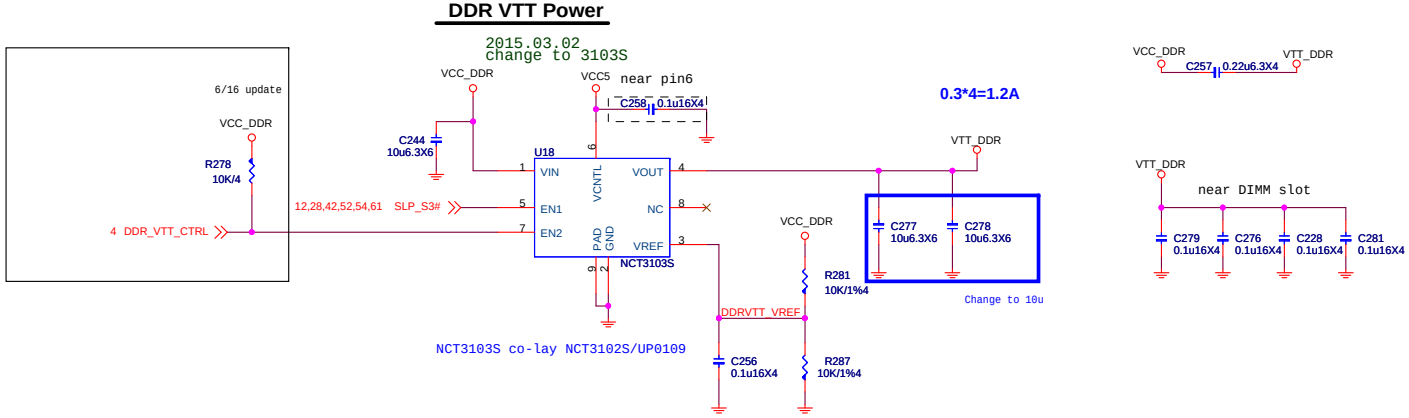
VPP25 Power

2.5V; 2.24A



To make sure VPP EN after 5VDIMM stable

DDR VTT Power



MICRO-STAR INT'L CO.,LTD	
MS-7A63	
Size: Custom	Document Description: DDR4 Power-VPP25
Rev: 10	
Date: Tuesday, September 13, 2016	Sheet 63 of 69

PCH_1VSB

1.0V; 11.83A

OCP = 17.745A

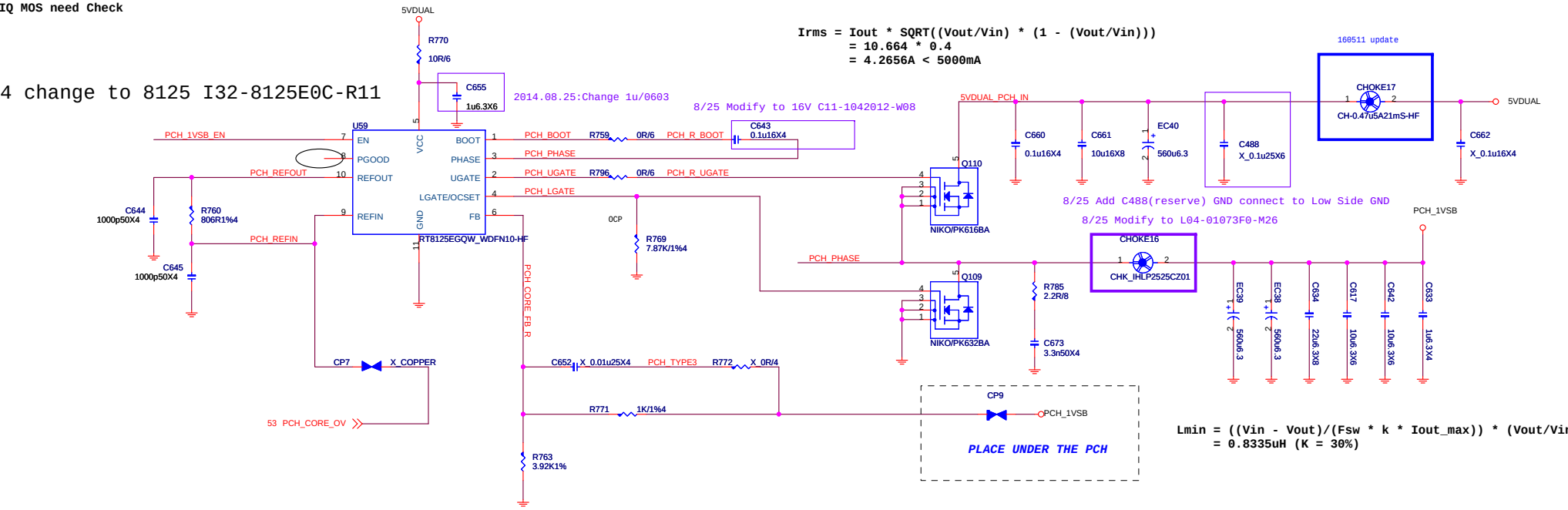
Rocset = 1.5 * Imax * Rdson(low) / Iocset
= 1.5 * 11.83 * 4.6mohm / 10uA
= 8.16K

Rocs:7.87K,OCP:
D03-4C05N03-005 : 15.74A
D03-632BA0C-N03 : 17.1A
use UBIQ MOS need Check

Rdson(low)4.5V
D03-3116M00-U47 : 3.6 mohm
D03-632BA0C-N03 : 4.6mohm
D03-3056M00-U47 : 6.2mohm

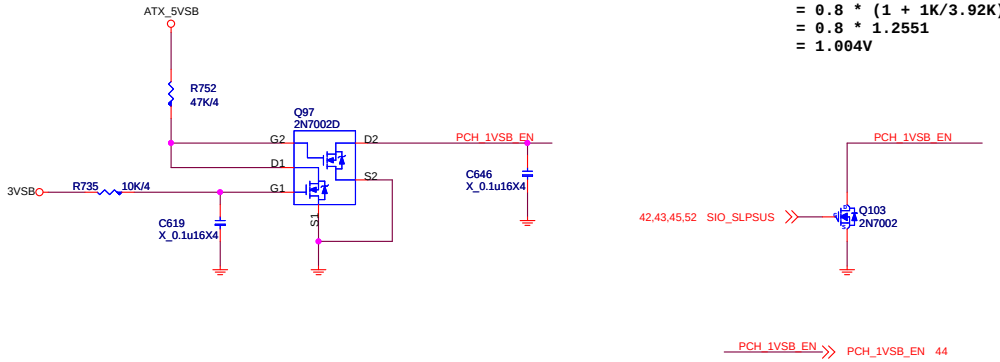
1504 change to 8125 I32-8125E0C-R11

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



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

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



MICRO-STAR INT'L CO.,LTD	
MS-7A63	
Size: Custom	Document Description: PCH Core Power-RT8125
Rev: 10	
Date: Tuesday, September 13, 2016	Sheet 64 of 69

PCB

PCB1

7A63_10

PD0-07A6310-G37

PD0-07A6310-E48

MK_LABLE1 — MARKET LABLE — MK_LABLE1

AMI_LABLE — AMI_BIOS LABLE — BIOS_LABLE

HDMI_LABLE — HDMI LABLE — HDMI LABEL

CFOS_LABLE — CFOS LABLE — CFOS_LABLE

NAHIMIC_LABLE — NAHIMIC LABLE — NAHIMIC_LABLE

SSE_LABLE — SSE LABLE — SSE_LABLE

USB31 — USB3.1 LABLE — X_USB31_LABLE

Audio Small Cover

COVER1 — Audio Cover — E21-7978010-RH

CPU_H1 — CPU 鐵座 — CPU_H1

BAT1_X1 — BAT-BCR2032P-RH

Mounting Holes

MH1, MH2, MH3, MH4, MH5, MH6, MH7, MH8, MH9 — X_MH001

C691 0.1u16X4

C714 0.1u16X4

HS_MOS1 — MEC1, MEC2, MEC3, MEC4, MEC5, MEC6, MEC7 — X_mosheatsink

PCH_HS1 — MEC1, MEC2 — msi — HS-0408530-RH

DDR_COVER1 — DDR COVER — X1, X2, X3, X4, X5 — E21-7A63010-RH

VR_COVER1 — VR Cover — X1, X2 — E21-7A63020-RH

E21-7A63020-A91

Change footprint

0901 Modify DDR_COVER1 PIN X1.X2.X3.X4.X5 Connect to GND

Simulation

VCC5 — SIM1 — X_PIN1*2 — SIM2 — X_PIN1*2

Test point

VCORE — VCORE1

VGT — VGT1

VCC_DDR — VCC_DDR1

VCCSA — VCCSA1

VCCIO — VCCIO1

PCH_1VSB — PCH_1VSB1

VCCST — VCCST1

VCCSFR_OC — VCCSFR1

VTT_DDR — VTT_DDR1

VPP25 — VPP1

HS_MOS2 — MEC1, MEC2 — HS-0503710-RH

HS_MOS3 — MEC1, MEC2 — HS-0503720-RH

PCH_HS — MEC1, MEC2 — X_PCH_HS

Optical Fiducial Marks-120

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

EMI CAP

VCC5 — C772 X_0.1u16X4

VCC5 — C773 X_0.1u16X4

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MS-7A63

Size	Document Description	Rev
Custom	Manual parts	10

Date: Tuesday, September 13, 2016 | Sheet 65 of 69