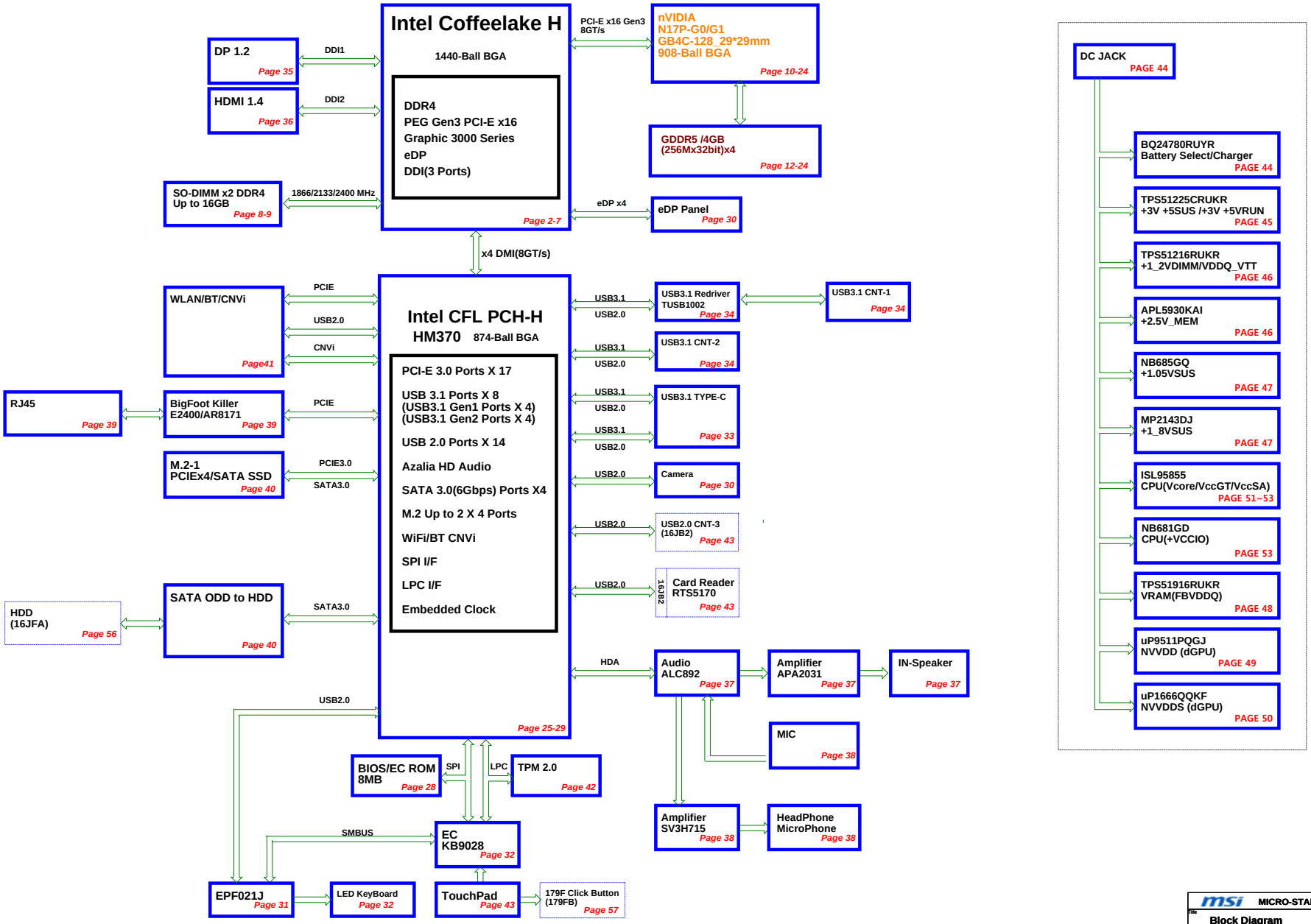
MS-16JF/MS-179F

Ver:0A

Intel CoffeeLake Mobile



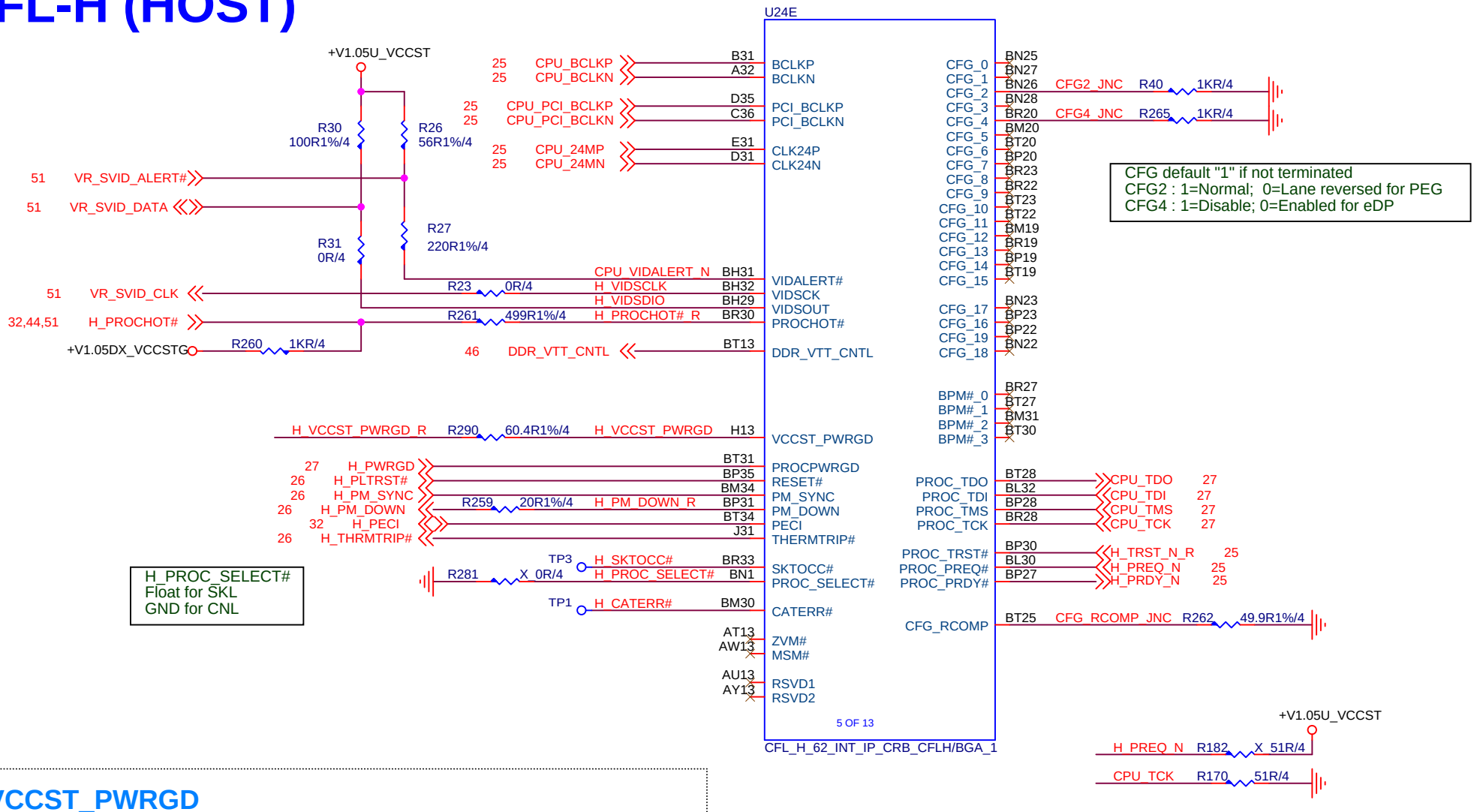
MICRO-STAR INT'L CO.,LTD.

Block Diagram

MS-16JF/179F

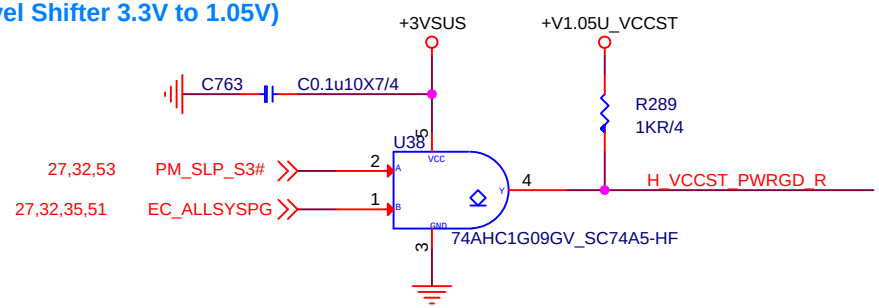
0A

CFL-H (HOST)



[Fuqun] PREQ: Trace length >1100mil, need add PU

VCCST_PWRGD
(Level Shifter 3.3V to 1.05V)



MICRO-STAR INT'L CO.,LTD.			
Title: CFL-H(HOST)			
Size: Custom	Document Number: MS-16JF/179F		Rev: 0A
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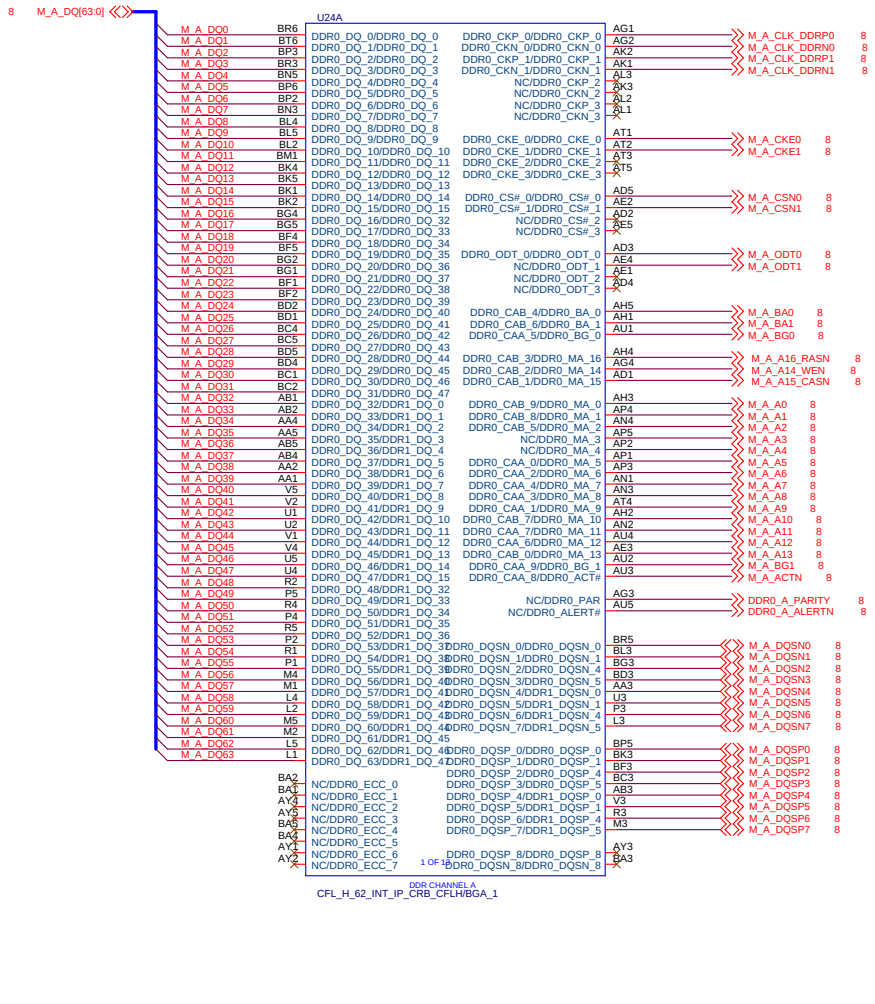
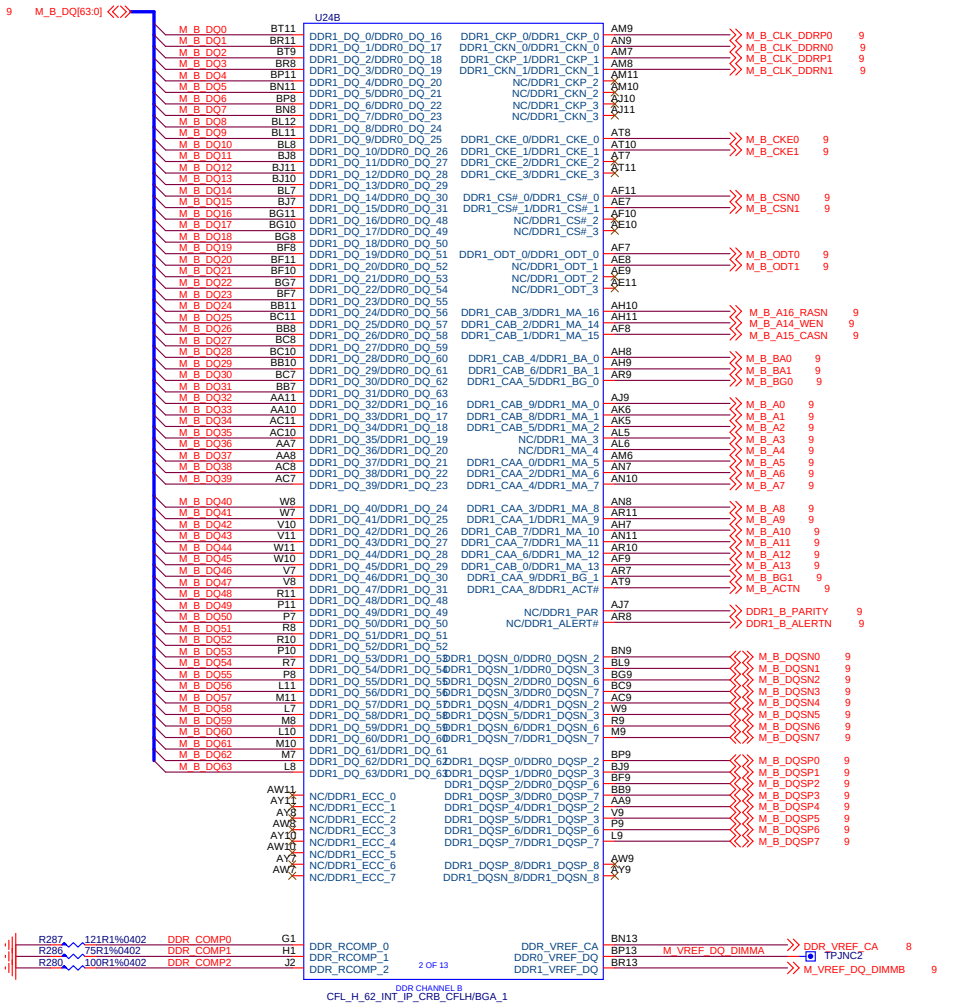
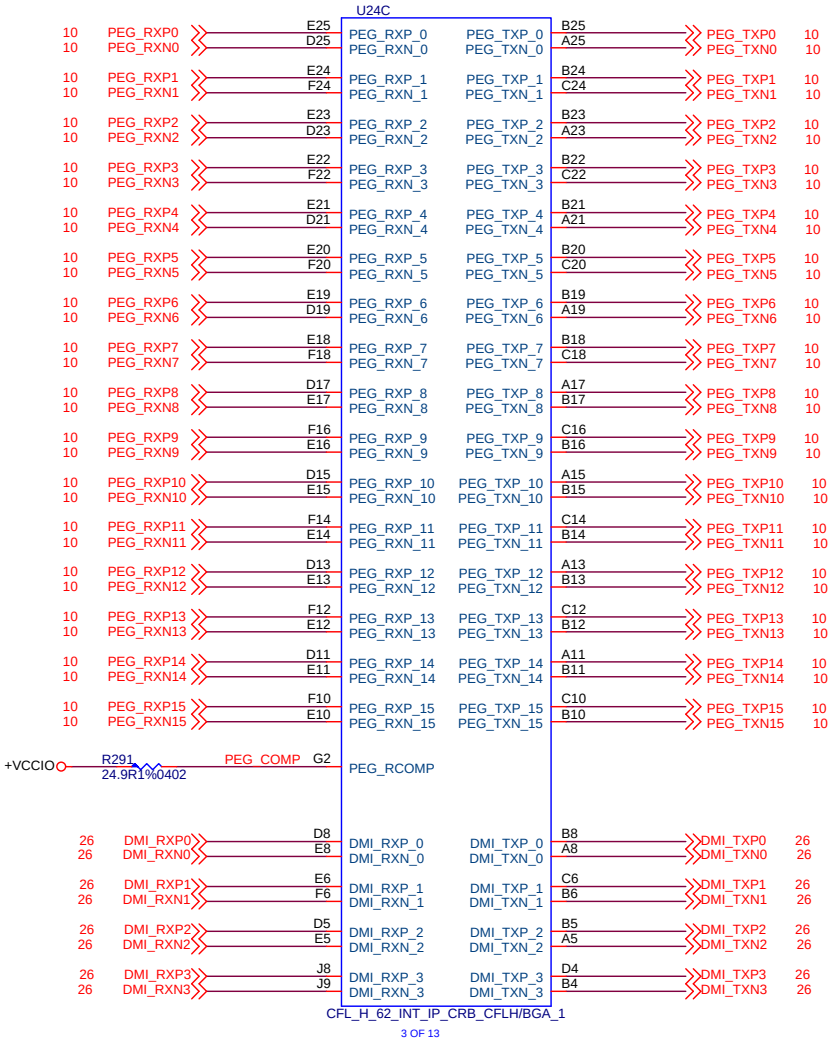
DDR Channel A



DDR Channel B

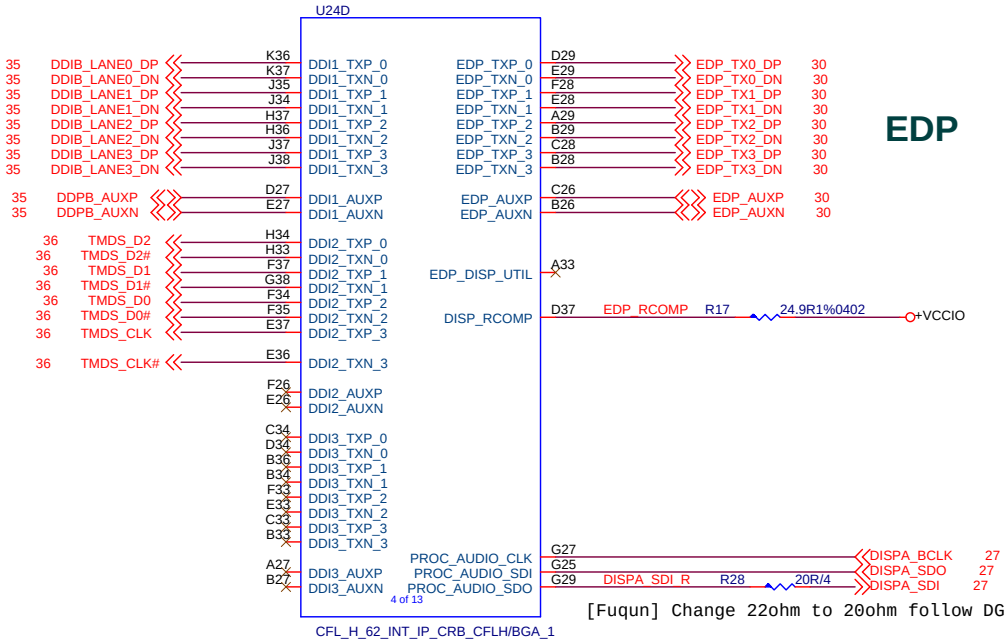


msi	MICRO-STAR INT'L CO.,LTD.		
Title	CFL-H(DDR4)		
Size: Custom	Document Number: MS-16JF/179F		Rev: 0A
Date: Thursday, November 09, 2017	Sheet 3 of 61		



DP

HDMI



EDP

[Fuqun] Change 22ohm to 20ohm follow DG

MICRO-STAR INT'L CO.,LTD.

Title: CFL-H(DMI/Display)

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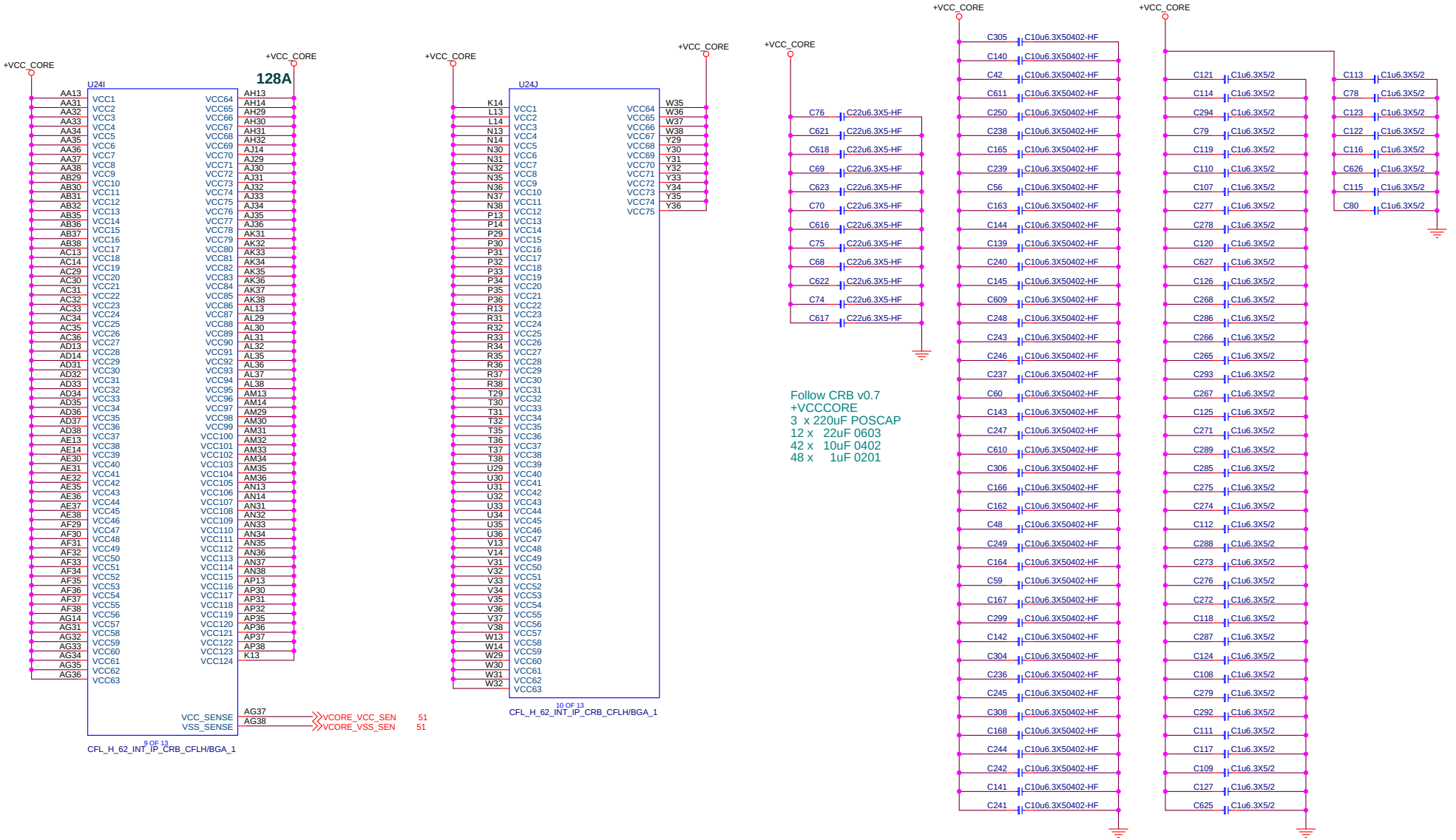
+VCC_CORE
U24I
128A
AA13 AA31 AA32 AA33 AA34 AA35 AA36 AA37 AA38 AB29 AB30 AB31 AB32 AB35 AB36 AB37 AB38 AC13 AC14 AC29 AC30 AC31 AC32 AC33 AC34 AC35 AC36 AD13 AD14 AD31 AD32 AD33 AD34 AD35 AD36 AD37 AD38 AE13 AE14 AE30 AE31 AE32 AE35 AE36 AF29 AF30 AF31 AF32 AF33 AF34 AF35 AF36 AF37 AF38 AG14 AG31 AG32 AG33 AG34 AG35 AG36
VCC1 VCC2 VCC3 VCC4 VCC5 VCC6 VCC7 VCC8 VCC9 VCC10 VCC11 VCC12 VCC13 VCC14 VCC15 VCC16 VCC17 VCC18 VCC19 VCC20 VCC21 VCC22 VCC23 VCC24 VCC25 VCC26 VCC27 VCC28 VCC29 VCC30 VCC31 VCC32 VCC33 VCC34 VCC35 VCC36 VCC37 VCC38 VCC39 VCC40 VCC41 VCC42 VCC43 VCC44 VCC45 VCC46 VCC47 VCC48 VCC49 VCC50 VCC51 VCC52 VCC53 VCC54 VCC55 VCC56 VCC57 VCC58 VCC59 VCC60 VCC61 VCC62 VCC63
VCC64 VCC65 VCC66 VCC67 VCC68 VCC69 VCC70 VCC71 VCC72 VCC73 VCC74 VCC75 VCC76 VCC77 VCC78 VCC79 VCC80 VCC81 VCC82 VCC83 VCC84 VCC85 VCC86 VCC87 VCC88 VCC89 VCC90 VCC91 VCC92 VCC93 VCC94 VCC95 VCC96 VCC97 VCC98 VCC99 VCC100 VCC101 VCC102 VCC103 VCC104 VCC105 VCC106 VCC107 VCC108 VCC109 VCC110 VCC111 VCC112 VCC113 VCC114 VCC115 VCC116 VCC117 VCC118 VCC119 VCC120 VCC121 VCC122 VCC123 VCC124
AH13 AH14 AH29 AH30 AH31 AH32 AJ14 AJ29 AJ30 AJ31 AJ32 AJ33 AJ34 AJ35 AJ36 AK31 AK32 AK33 AK34 AK35 AK36 AK37 AK38 AL13 AL29 AL30 AL31 AL32 AL35 AL36 AL37 AL38 AM13 AM14 AM29 AM30 AM31 AM32 AM33 AM34 AM35 AM36 AN13 AN14 AN31 AN32 AN33 AN34 AN35 AN36 AN37 AN38 AP13 AP30 AP31 AP32 AP35 AP36 AP37 AP38 K13
VCC_SENSE
VSS_SENSE
AG37
AG38
VCORE_VCC_SEN 51
VCORE_VSS_SEN 51
9 OF 13
CFL_H_62_INT_IP_CRB_CFLH/BGA_1
U24J
K14 L13 L14 N13 N14 N30 N31 N32 N35 N36 N37 N38 P13 P14 P29 P30 P31 P32 P33 P34 P35 P36 R13 R31 R32 R33 R34 R35 R36 R37 R38 T29 T30 T31 T32 T35 T36 T37 T38 U29 U30 U31 U32 U33 U34 U35 U36 V13 V14 V31 V32 V33 V34 V35 V36 V37 V38 W13 W14 W29 W30 W31 W32
VCC1 VCC2 VCC3 VCC4 VCC5 VCC6 VCC7 VCC8 VCC9 VCC10 VCC11 VCC12 VCC13 VCC14 VCC15 VCC16 VCC17 VCC18 VCC19 VCC20 VCC21 VCC22 VCC23 VCC24 VCC25 VCC26 VCC27 VCC28 VCC29 VCC30 VCC31 VCC32 VCC33 VCC34 VCC35 VCC36 VCC37 VCC38 VCC39 VCC40 VCC41 VCC42 VCC43 VCC44 VCC45 VCC46 VCC47 VCC48 VCC49 VCC50 VCC51 VCC52 VCC53 VCC54 VCC55 VCC56 VCC57 VCC58 VCC59 VCC60 VCC61 VCC62 VCC63
VCC64 VCC65 VCC66 VCC67 VCC68 VCC69 VCC70 VCC71 VCC72 VCC73 VCC74 VCC75
W35 W36 W37 W38 Y29 Y30 Y31 Y32 Y33 Y34 Y35 Y36
10 OF 13
CFL_H_62_INT_IP_CRB_CFLH/BGA_1
C76 C621 C618 C69 C623 C70 C616 C75 C68 C622 C74 C617
C22u6.3X5-HF
Follow CRB v0.7
+VCCCORE
3 x 220uF POSCAP
12 x 22uF 0603
42 x 10uF 0402
48 x 1uF 0201
C305 C140 C42 C611 C250 C238 C165 C239 C56 C163 C144 C139 C240 C145 C609 C248 C243 C246 C237 C60 C143 C247 C610 C306 C166 C162 C48 C249 C164 C59 C167 C299 C142 C304 C236 C245 C308 C168 C244 C242 C141 C241
C10u6.3X50402-HF
C121 C114 C294 C79 C119 C110 C107 C277 C278 C120 C627 C126 C268 C286 C266 C265 C293 C267 C125 C271 C289 C285 C275 C274 C112 C288 C273 C276 C272 C118 C287 C124 C108 C279 C292 C111 C117 C109 C127 C625
C1u6.3X5/2
C113 C78 C123 C122 C116 C626 C115 C80
MICRO-STAR INT'L CO.,LTD.
Title
CFL-H(Power1)
Size Custom
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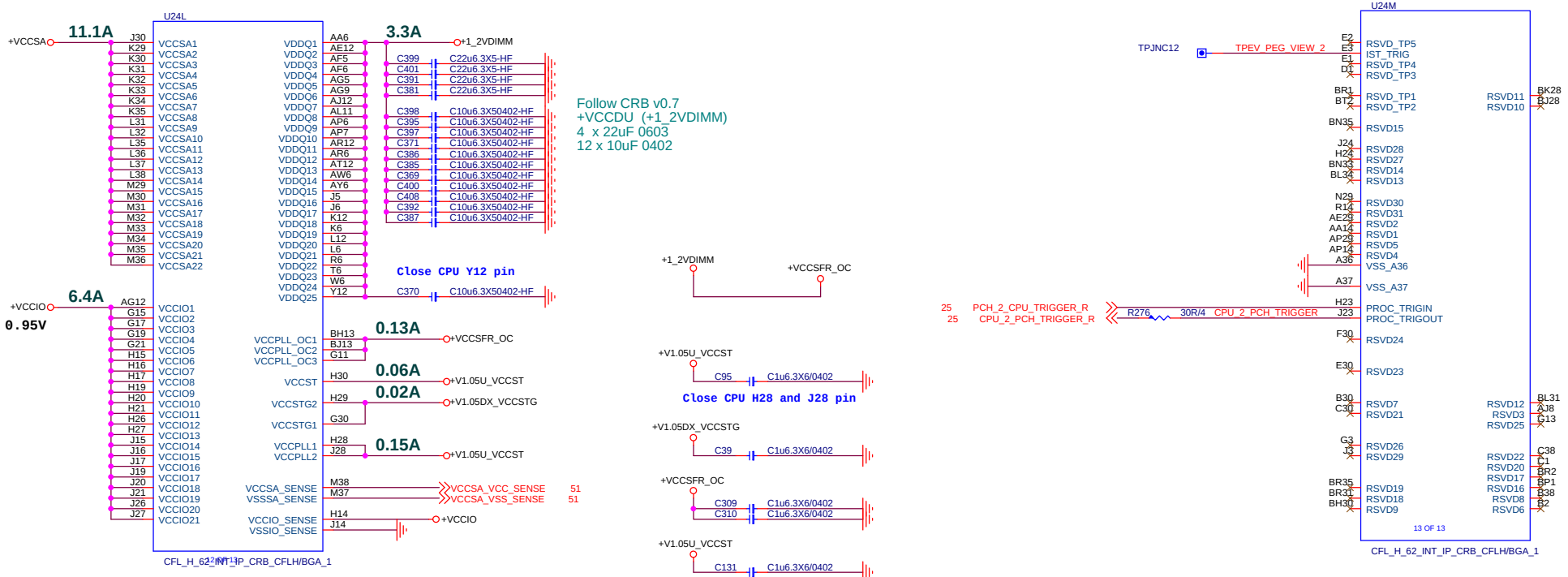

Title	CFL-H(Power2)
Size	Custom
Document Number	MS-16JF/179F
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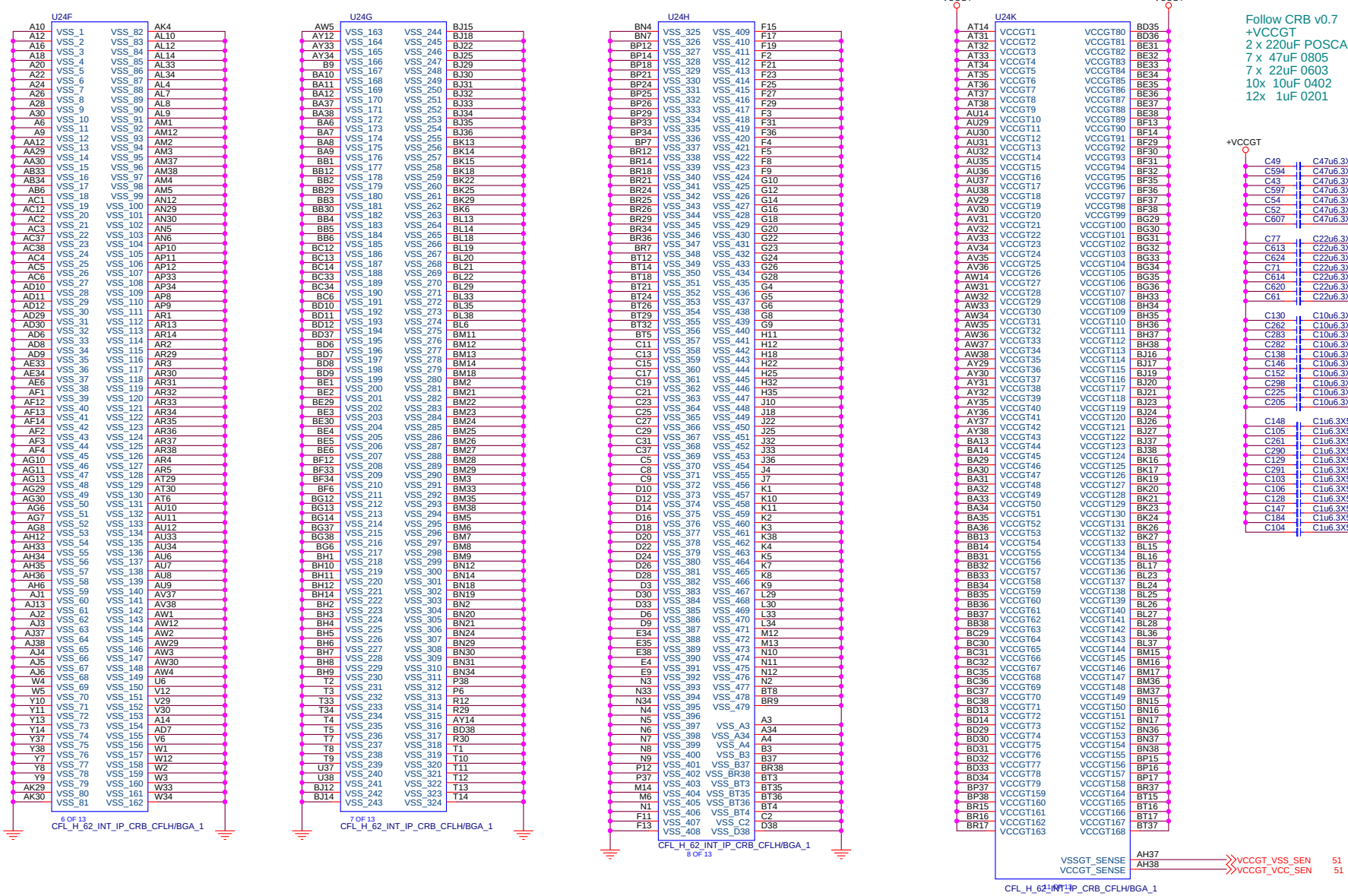
MICRO-STAR INT'L CO.,LTD.



Title	CFL-H(Power3)
Size	A3
Document Number	MS-16JF/179F
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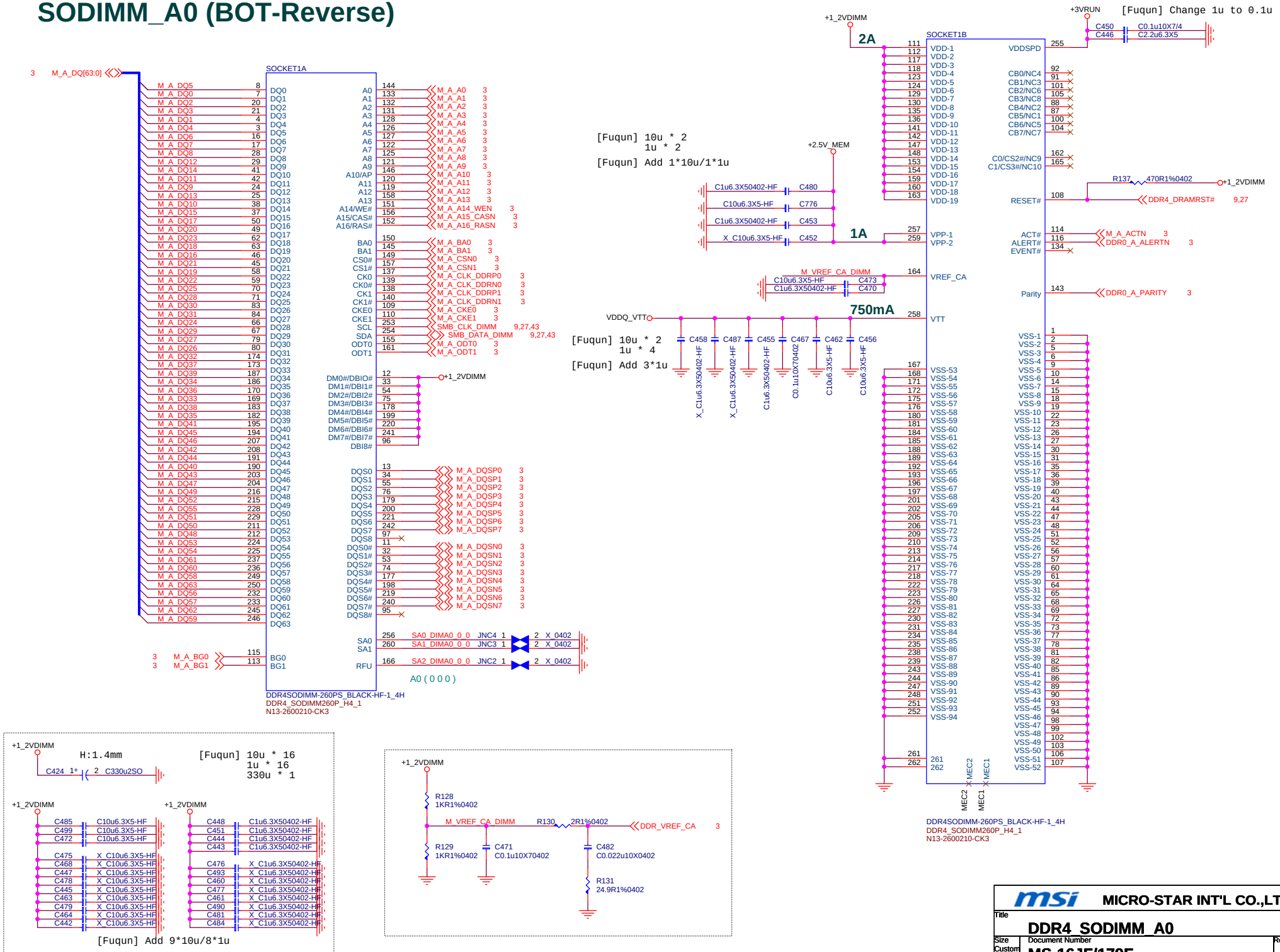
MICRO-STAR INT'L CO.,LTD.

SODIMM_A0 (BOT-Reverse)



Title	DDR4_SODIMM_A0
Size	Custom
Document Number	MS-16JF/179F
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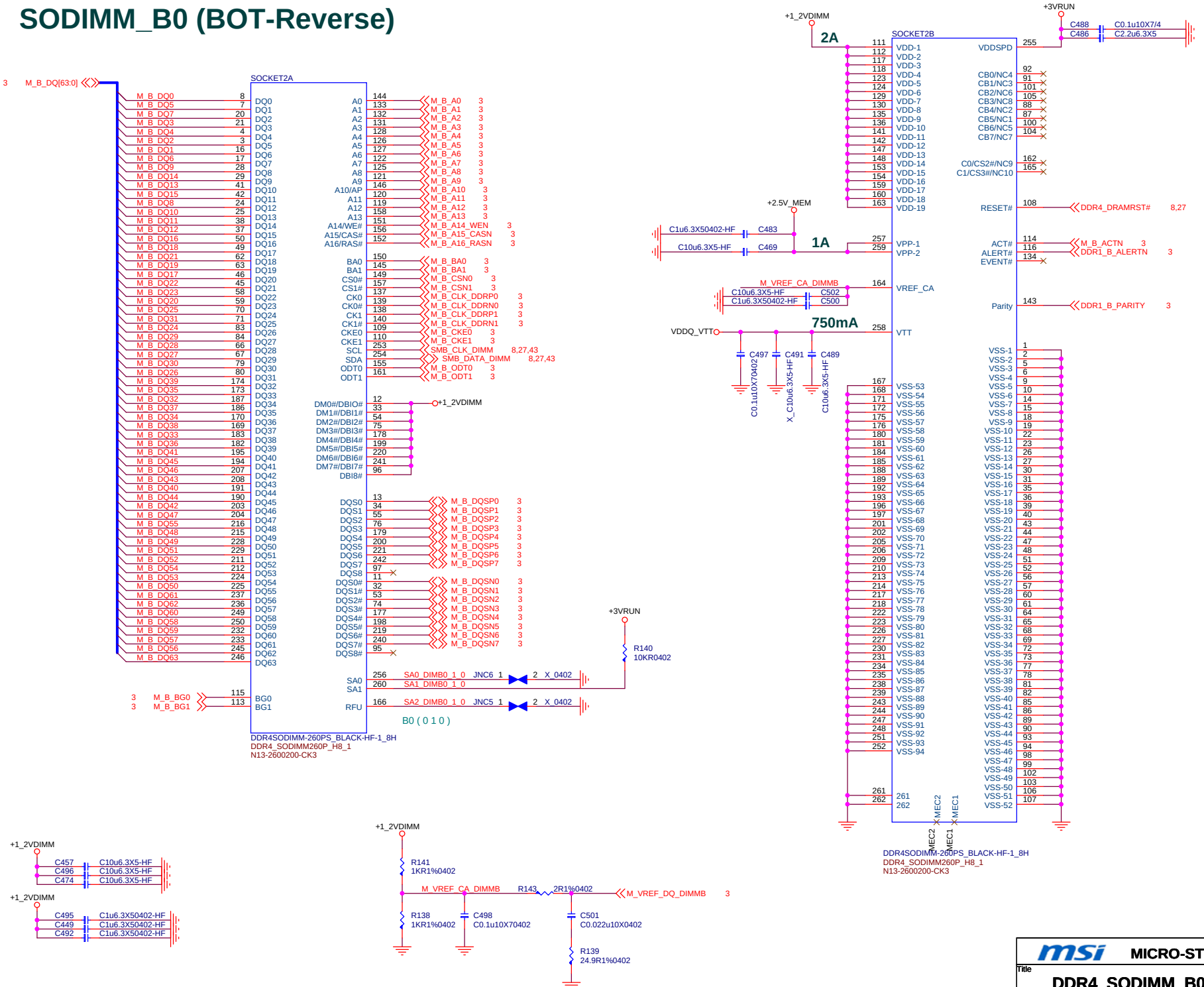
MICRO-STAR INT'L CO.,LTD.

SODIMM_B0 (BOT-Reverse)



MSI	MICRO-STAR INT'L CO.,LTD.	
Title	DDR4_SODIMM_B0	
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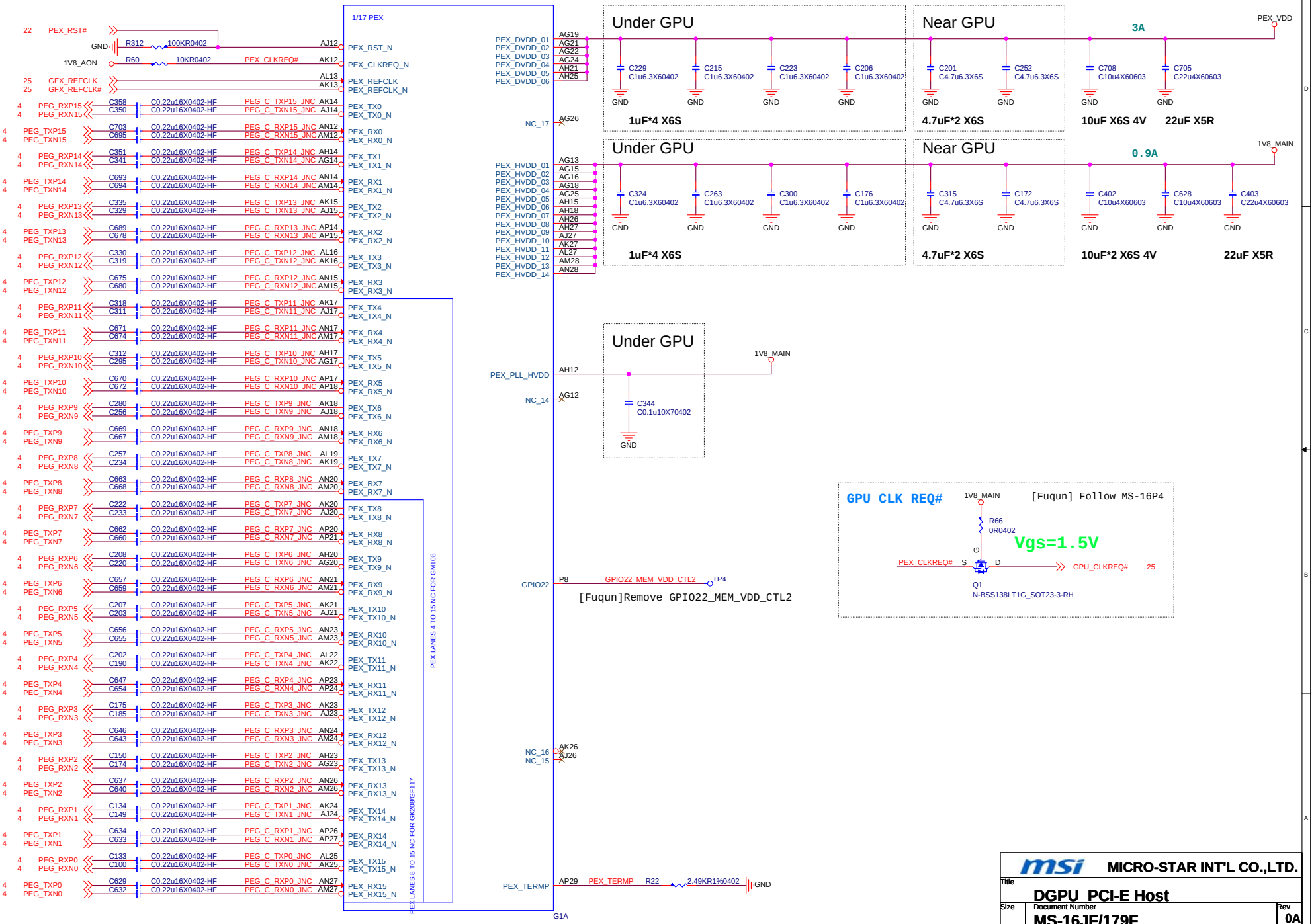
GPU PCI EXPRESS



MICRO-STAR INT'L CO.,LTD.	
Title	DGPU_PCI-E Host
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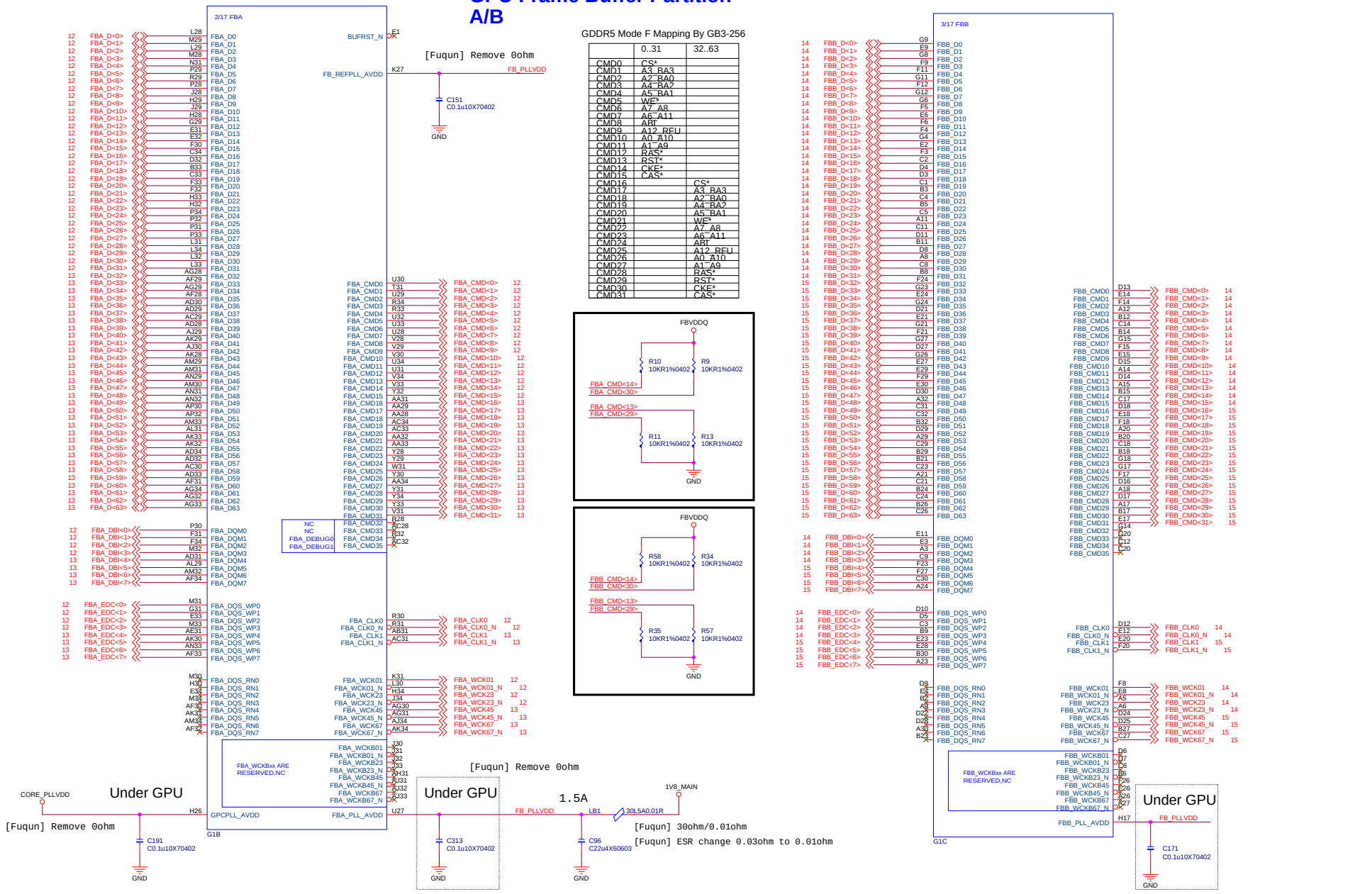
GPU Frame Buffer Partition A/B



MICRO-STAR INT'L CO.,LTD.

Title: DGPU_MEM IF A/B

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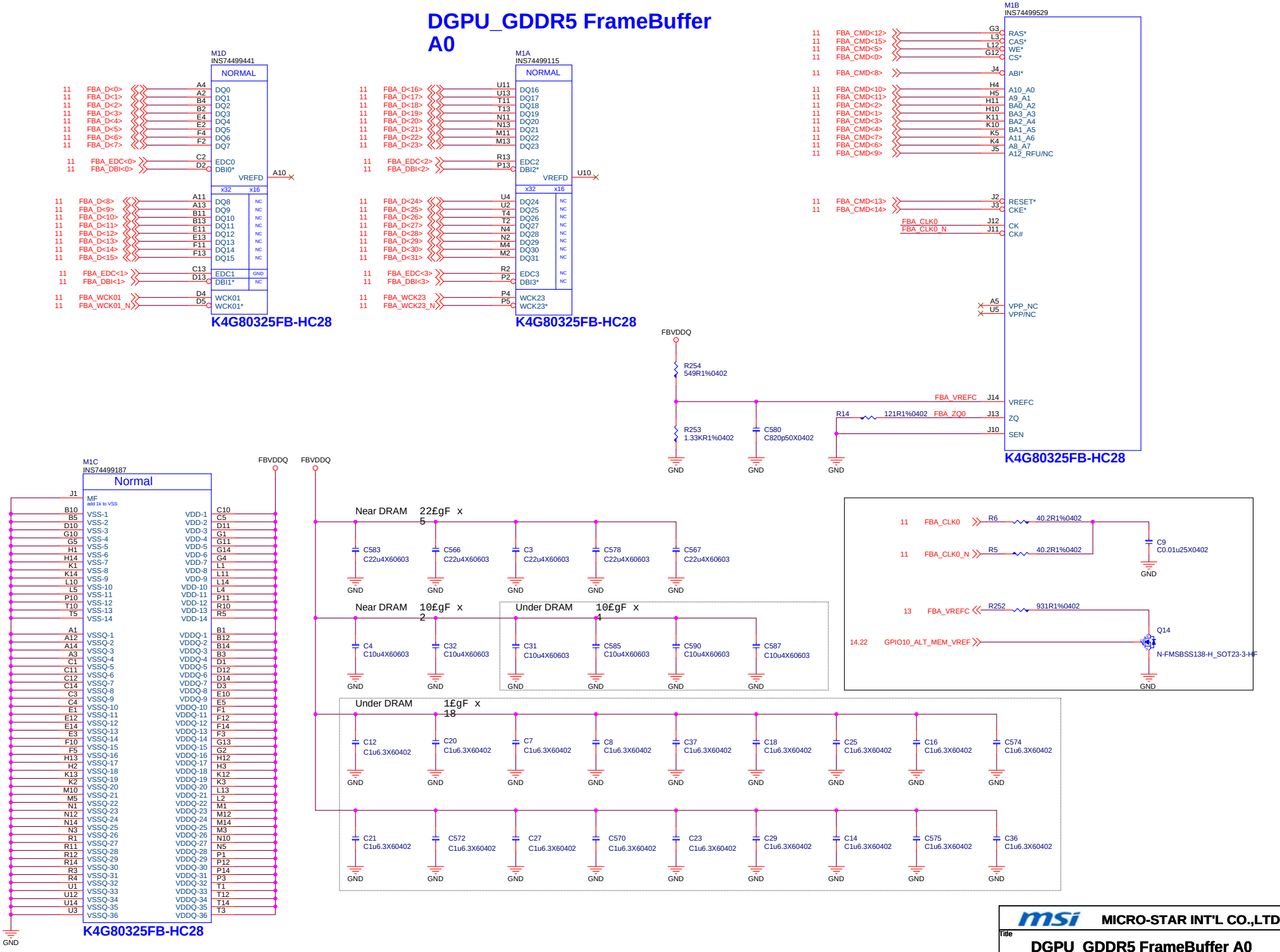
DGPU_GDDR5 FrameBuffer A0



MICRO-STAR INT'L CO.,LTD.		
Title: DGPU_GDDR5 FrameBuffer A0		
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DGPU_GDDR5 FrameBuffer A1

M2D
INS74500952
MIRRORED
x32 x16
U4 DQ0 NC
U2 DQ1 NC
T4 DQ2 NC
T2 DQ3 NC
N4 DQ4 NC
N2 DQ5 NC
M4 DQ6 NC
M2 DQ7 NC
R2 EDC0 NC
P2 DBI0* NC
VREFD U10
U11 DQ8
U13 DQ9
T11 DQ10
T13 DQ11
N11 DQ12
N13 DQ13
M11 DQ14
M13 DQ15
R13 EDC1
P13 DBI1*
P4 WCK01
P5 WCK01*
K4G80325FB-HC28

M2A
INS74501040
MIRRORED
x32 x16
A11 DQ16 NC
A13 DQ17 NC
B11 DQ18 NC
B13 DQ19 NC
E11 DQ20 NC
E13 DQ21 NC
F11 DQ22 NC
F13 DQ23 NC
C13 EDC2 GND
D13 DBI2* NC
VREFD A10
A4 DQ24
A2 DQ25
B4 DQ26
B2 DQ27
E4 DQ28
E2 DQ29
F4 DQ30
F2 DQ31
C2 EDC3
D2 DBI3*
D4 WCK23
D5 WCK23*
K4G80325FB-HC28
M12-8032545-S02

M2B
INS74500808
L3 RAS*
G3 CAS*
G12 WE*
L12 CS*
J4 ABI*
K4 A10_A0
K5 A9_A1
K11 BA0_A2
K10 BA3_A3
H11 BA2_A4
H10 BA1_A5
H5 A11_A6
H4 A8_A7
J5 A12_RFU/NC
J2 RESET*
J3 CKE*
J12 CK
J11 CK#
A5 VPP_NC
U5 VPP/NC
J14 VREFC
J13 ZQ
J10 SEN
K4G80325FB-HC28

12 FBA_VREFC
R12 121R1%0402 FBA_ZQ2
C581 C820p50X0402
GND

2016/03/23 Remove R14 to follow NV CRB

M2C
INS74501073
Mirrored
MF
add 1k to VDD
J1
VSS_1 VDD_1 C10
VSS_2 VDD_2 C5
VSS_3 VDD_3 D11
VSS_4 VDD_4 G1
VSS_5 VDD_5 G11
VSS_6 VDD_6 G14
VSS_7 VDD_7 G4
VSS_8 VDD_8 L1
VSS_9 VDD_9 L11
VSS_10 VDD_10 L14
VSS_11 VDD_11 L4
VSS_12 VDD_12 P11
VSS_13 VDD_13 R10
VSS_14 VDD_14 R5
VSSQ_1 VDDQ_1 B1
VSSQ_2 VDDQ_2 B12
VSSQ_3 VDDQ_3 B14
VSSQ_4 VDDQ_4 B3
VSSQ_5 VDDQ_5 D1
VSSQ_6 VDDQ_6 D12
VSSQ_7 VDDQ_7 D14
VSSQ_8 VDDQ_8 D3
VSSQ_9 VDDQ_9 E10
VSSQ_10 VDDQ_10 E5
VSSQ_11 VDDQ_11 F1
VSSQ_12 VDDQ_12 F12
VSSQ_13 VDDQ_13 F14
VSSQ_14 VDDQ_14 F3
VSSQ_15 VDDQ_15 G13
VSSQ_16 VDDQ_16 G2
VSSQ_17 VDDQ_17 H12
VSSQ_18 VDDQ_18 H3
VSSQ_19 VDDQ_19 K12
VSSQ_20 VDDQ_20 K3
VSSQ_21 VDDQ_21 L13
VSSQ_22 VDDQ_22 L2
VSSQ_23 VDDQ_23 M1
VSSQ_24 VDDQ_24 M12
VSSQ_25 VDDQ_25 M14
VSSQ_26 VDDQ_26 M3
VSSQ_27 VDDQ_27 N10
VSSQ_28 VDDQ_28 N5
VSSQ_29 VDDQ_29 P1
VSSQ_30 VDDQ_30 P12
VSSQ_31 VDDQ_31 P14
VSSQ_32 VDDQ_32 P3
VSSQ_33 VDDQ_33 T1
VSSQ_34 VDDQ_34 T12
VSSQ_35 VDDQ_35 T14
VSSQ_36 VDDQ_36 T3
K4G80325FB-HC28
FBVDDQ FBVDDQ

Near DRAM 22£gF x 5
C33 C22u4X60603
C588 C22u4X60603
C568 C22u4X60603
C579 C22u4X60603
C582 C22u4X60603

Near DRAM 10£gF x 2
C584 C10u4X60603
C569 C10u4X60603

Under DRAM 10£gF x 4
C589 C10u4X60603
C2 C10u4X60603
C1 C10u4X60603
C34 C10u4X60603

Under DRAM 1£gF x 18
C22 C1u6.3X60402
C24 C1u6.3X60402
C11 C1u6.3X60402
C38 C1u6.3X60402
C573 C1u6.3X60402
C5 C1u6.3X60402
C19 C1u6.3X60402
C17 C1u6.3X60402
C13 C1u6.3X60402
C35 C1u6.3X60402
C576 C1u6.3X60402
C577 C1u6.3X60402
C571 C1u6.3X60402
C30 C1u6.3X60402
C26 C1u6.3X60402
C6 C1u6.3X60402
C586 C1u6.3X60402
C28 C1u6.3X60402

11 FBA_CLK1 R8 40.2R1%0402
11 FBA_CLK1_N R7 40.2R1%0402
C10 C0.01u25X0402
GND

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Title: DGPU_GDDR5 FrameBuffer A1
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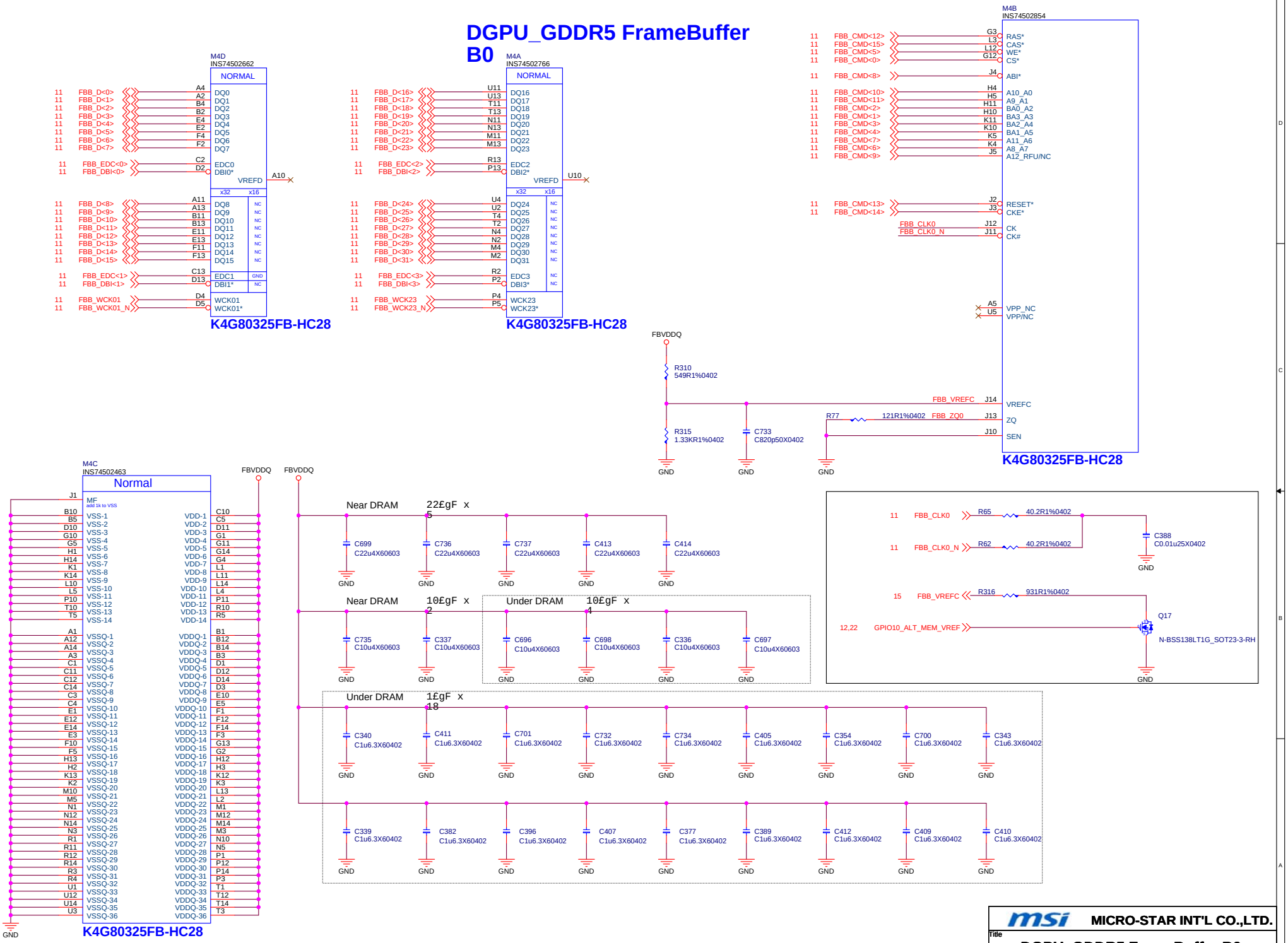
DGPU_GDDR5 FrameBuffer B0



MICRO-STAR INT'L CO.,LTD.			
Title: DGPU_GDDR5 FrameBuffer B0			
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DGPU_GDDR5 FrameBuffer B1

M3D
INS74504587
MIRRORED
x32 x16
K4G80325FB-HC28

M3A
INS74504427
MIRRORED
x32 x16
K4G80325FB-HC28

M3B
INS74504165
K4G80325FB-HC28

M3C
INS74504301
Mirrored
K4G80325FB-HC28

FBVDDQ

Near DRAM 22£gF x 5
C652 C22u4X60603
C653 C22u4X60603
C601 C22u4X60603
C651 C22u4X60603
C602 C22u4X60603

Near DRAM 10£gF x 2
C603 C10u4X60603
C650 C10u4X60603

Under DRAM 10£gF x 4
C57 C10u4X60603
C198 C10u4X60603
C58 C10u4X60603
C160 C10u4X60603

Under DRAM 1£gF x 18
C84 C1u6.3X60402
C81 C1u6.3X60402
C65 C1u6.3X60402
C62 C1u6.3X60402
C64 C1u6.3X60402
C157 C1u6.3X60402
C648 C1u6.3X60402
C606 C1u6.3X60402
C649 C1u6.3X60402
C605 C1u6.3X60402
C94 C1u6.3X60402
C63 C1u6.3X60402
C85 C1u6.3X60402
C155 C1u6.3X60402
C89 C1u6.3X60402
C156 C1u6.3X60402
C72 C1u6.3X60402
C154 C1u6.3X60402

FBB_VREFC
C604 C820p50X0402
R16 121R1%0402 FBB_ZQ2

FBB_CLK1 R20 40.2R1%0402
FBB_CLK1_N R18 40.2R1%0402
C87 C0.01u25X0402

MICRO-STAR INT'L CO.,LTD.

Title	DGPU_GDDR5 FrameBuffer B1	
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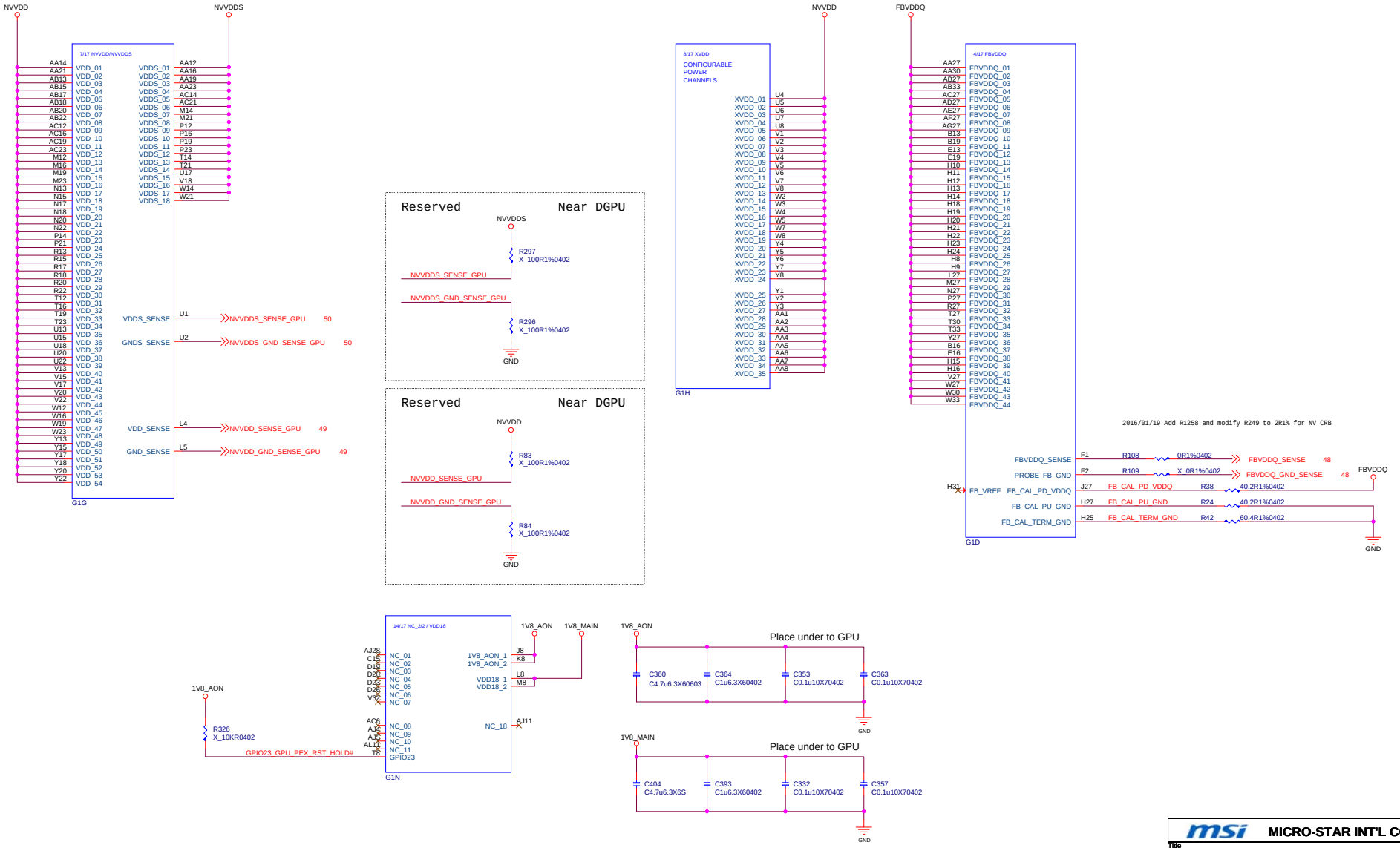
GPU NVVDD, FBVDDQ



MICRO-STAR INT'L CO.,LTD.			
Title: DGPU NVVDD, FBVDDQ			
Size	Document Number: MS-16JF/179F		Rev: 0A
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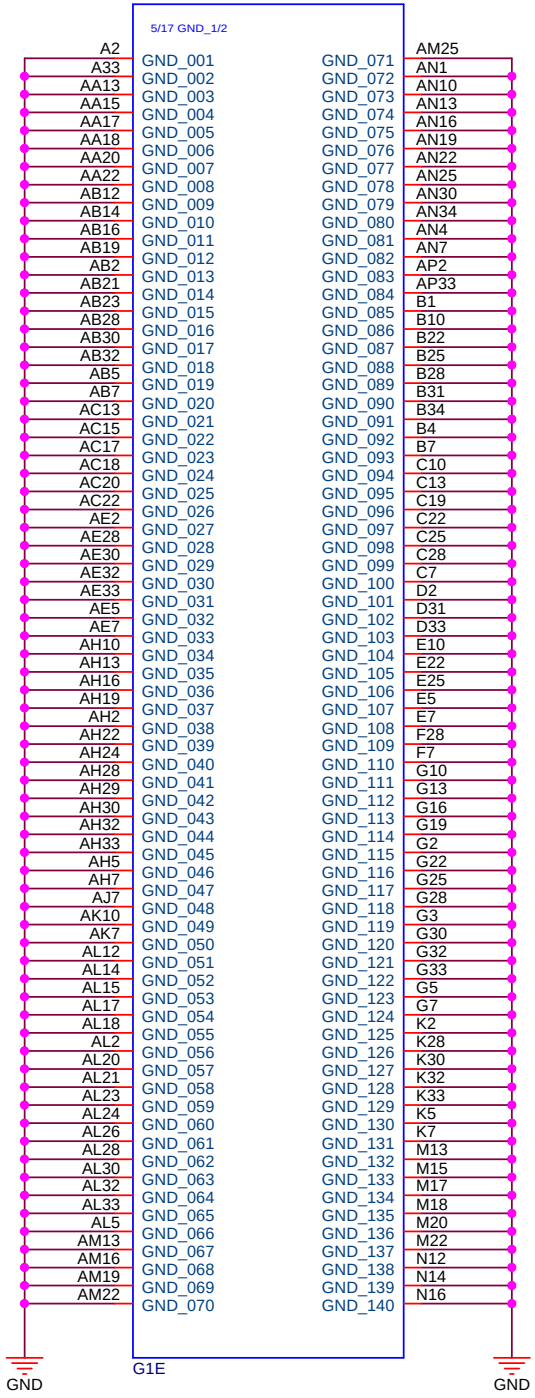
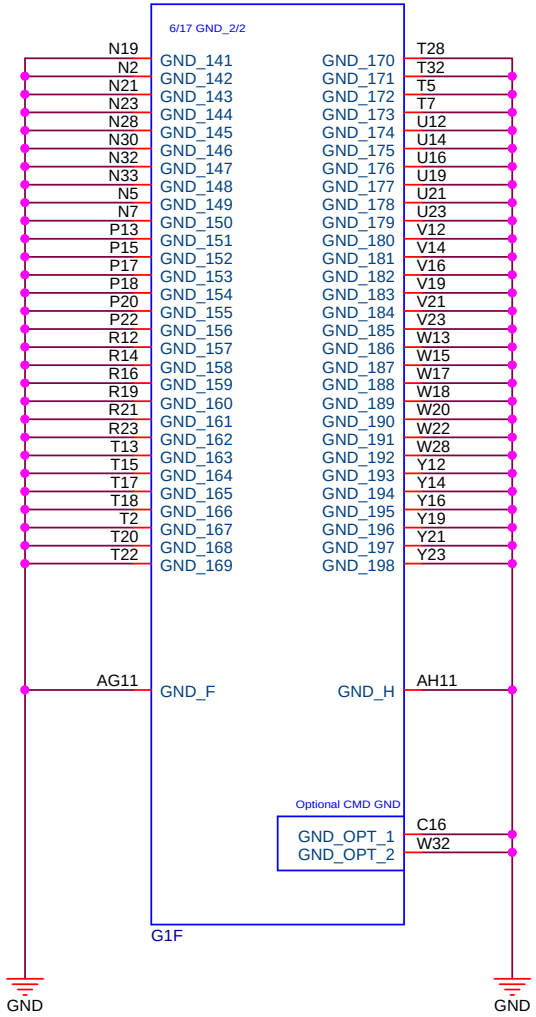
DGPU GND





MICRO-STAR INT'L CO.,LTD.		
Title: DGPU_GND		
Size	Document Number: MS-16JF/179F	Rev: 0A
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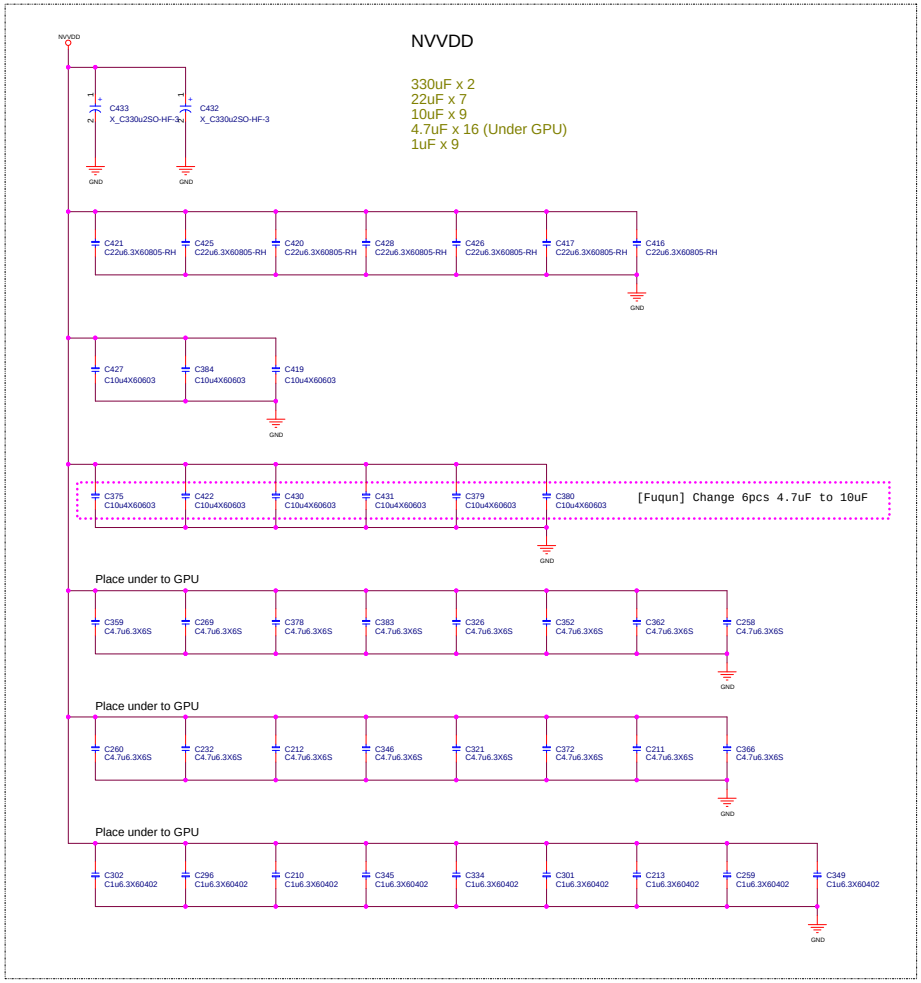
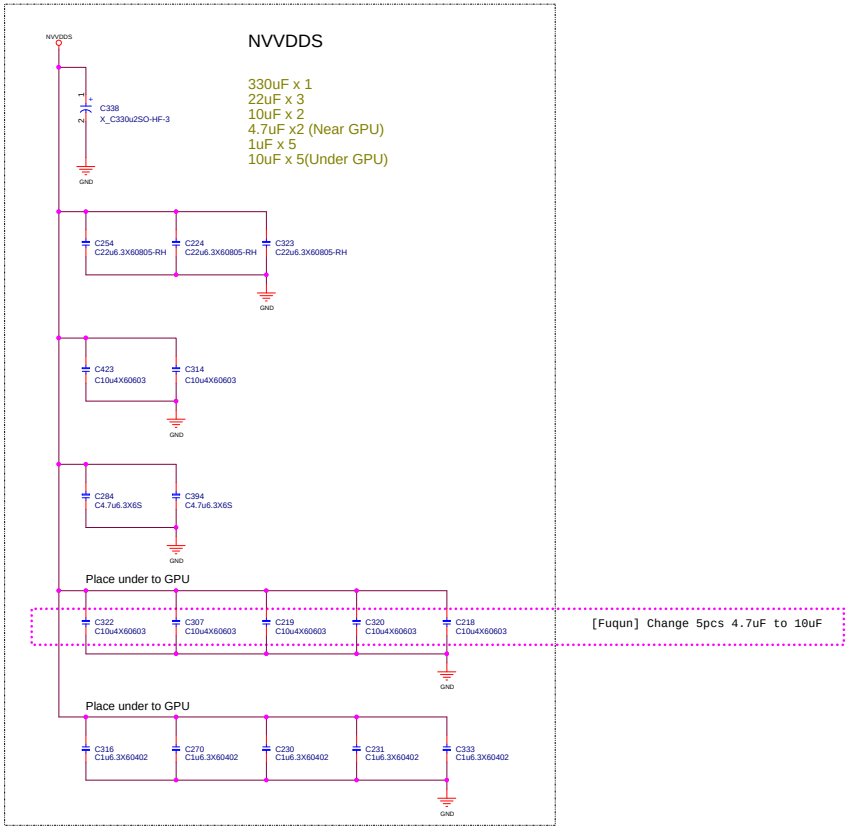
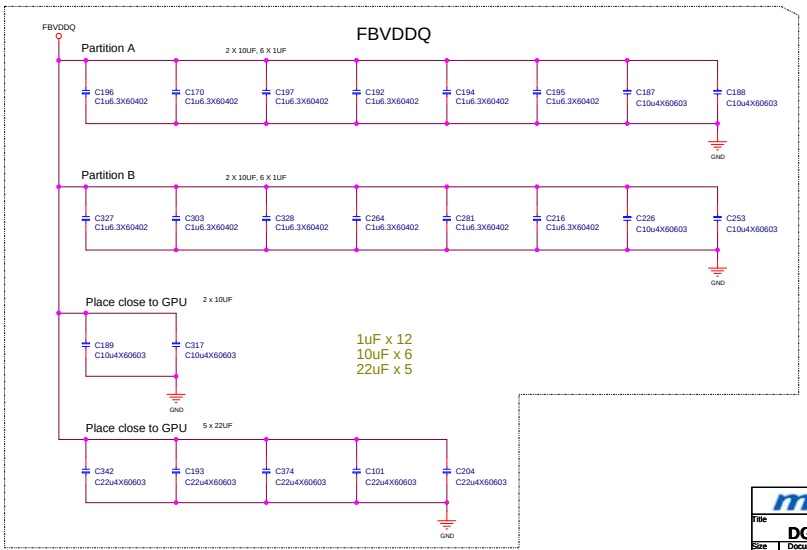
GPU DECOUPLING







MICRO-STAR INT'L CO.,LTD.

Title: DGPU_GPU DECOUPLING

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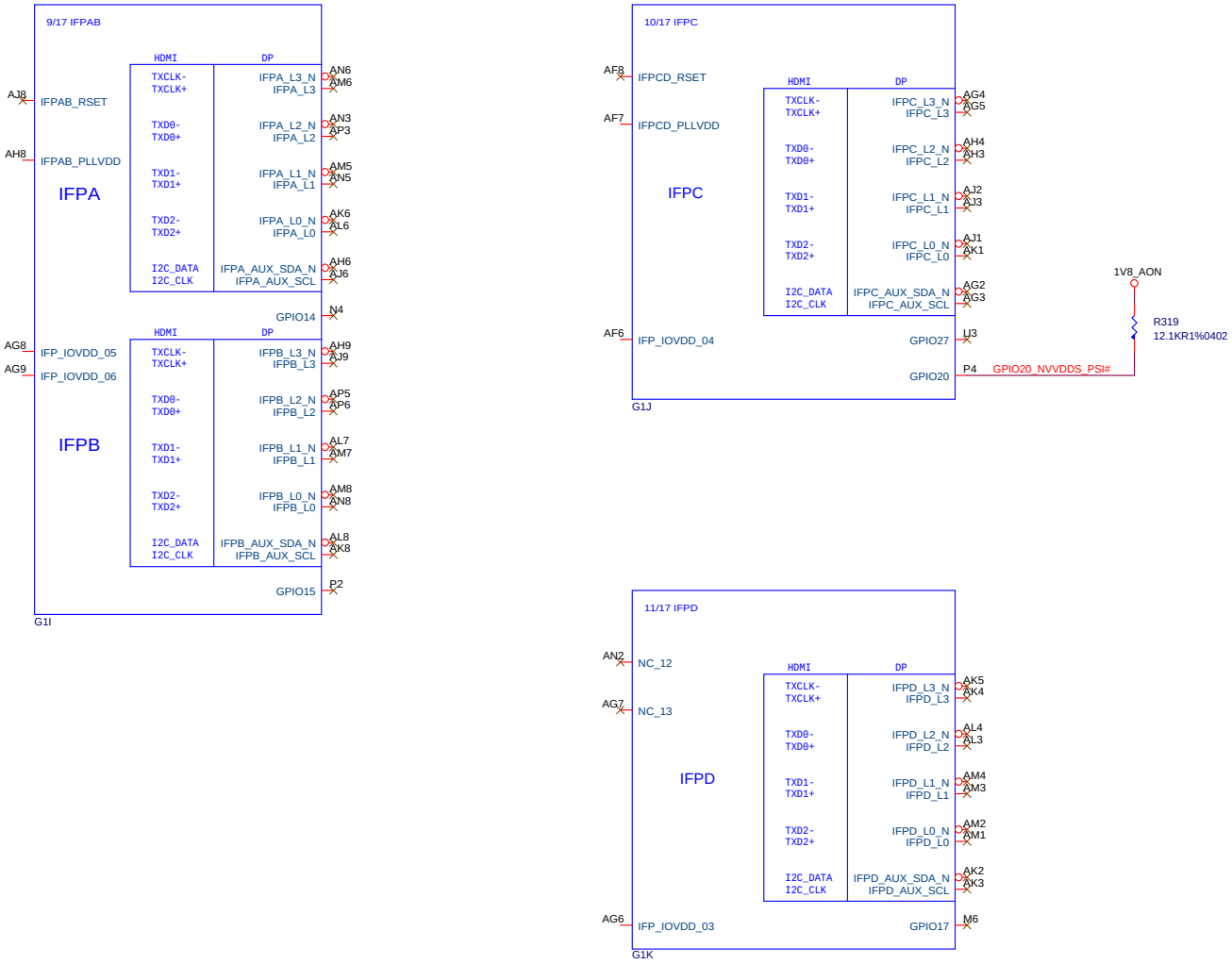
DACA,Display IF



MICRO-STAR INT'L CO.,LTD.		
Title: DGPU_DACA,Display IF		
Size	Document Number: MS-16JF/179F	Rev: 0A
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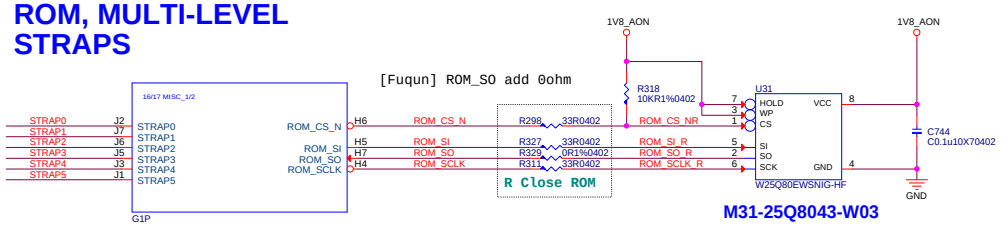
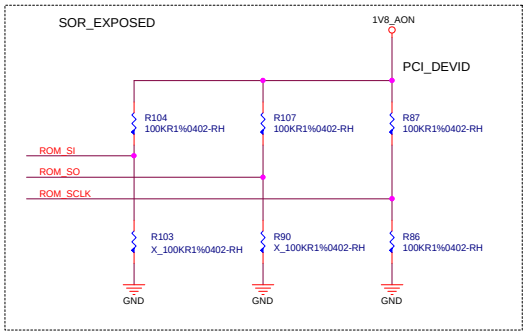
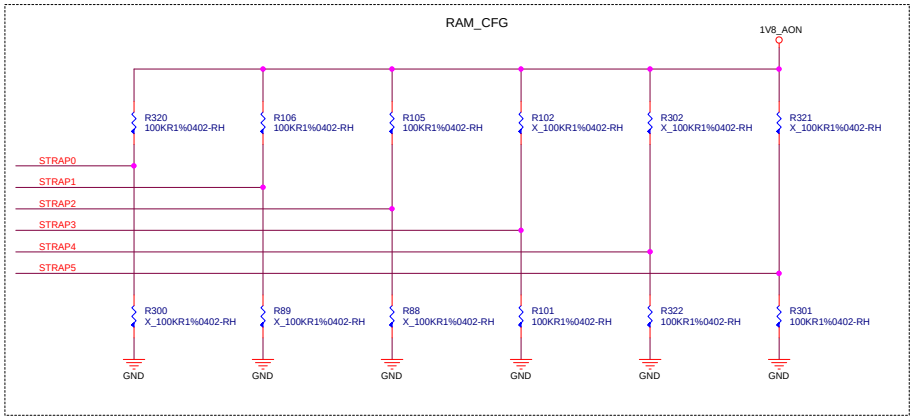
ROM, MULTI-LEVEL STRAPS



M31-25Q8043-W03



ROM_SO	ROM_SI	ROM_SCLK	SOR_EXPOSED[3:0]	1:ENABLE 0:DISABLE
L	L	L	1111 DEFAULT	SOR0/1/2/3 ENABLE
L	L	H	1110	
L	H	L	1101	
L	H	H	1100	
H	L	L	1011	
H	L	H	1010	
H	H	L	1001	
H	H	H	1000	
L	L	M	0111	
L	M	L	0110	
L	M	H	0101	
L	H	M	0100	
H	L	M	0011	
H	M	L	0010	
H	M	H	0001	
H	H	M	0000	V



STRAP5	STRAP4	STRAP3	SMB_ALT_ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE
M	H	H	1	1	1	1
M	H	L	1	1	1	0
M	L	H	1	1	0	1
M	L	L	1	1	0	0
L	H	M	1	0	1	1
L	M	H	1	0	1	0
L	M	L	1	0	0	1
L	L	M	1	0	0	0
H	H	H	0	1	1	1
H	H	L	0	1	1	0
H	L	H	0	1	0	1
H	L	L	0	1	0	0
L	H	H	0	0	1	1
L	H	L	0	0	1	0
L	L	H	0	0	0	1 DEFAULT
L	L	L	0	0	0	0 V

1:SMB_ALT_ADDR ENABLE
0:SMB_ALT_ADDR DISABLE

1:DEVID_SEL REBRAND
0:DEVID_SEL ORIGNAL

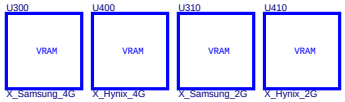
1:PCIE_CFG LOW POWER
0:PCIE_CFG HIGH POWER

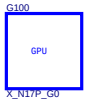
1:VGA_DEVICE ENABLE
0:VGA_DEVICE DISABLE

H=High :Tied to 1.8V
M=Middle:Tied to 0.9V
L=Low :Tied to 0V

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]	STRAP Set
L	L	L	0x0 Samsung: M12-8032545-S02 / K4G80325FB-HC28	R330.R92.R91
L	L	H	0x1 Micron: MT51J256M32HF-70:A	R354.R92.R91
L	H	L	0x2 Hynix: M12-5GC8H05-H23 / H5GC8H24MJR-R0C	R330.R106.R91
L	H	H		
H	L	L		
H	L	H		
H	H	L	0x6 Hynix: M12-5GC4HG5-H23 / H5GC4H24AJR-R0C	R330.R106.R105
H	H	H	0x7 Samsung: M12-41325A5-S02 / K4G41325FE-HC28	R354.R106.R105
L	L	M	0x8 Micron: EDW032BABG-70-F:A	R330.R354.R92.R91
L	M	L		

H=High :Tied to 1.8V
M=Middle:Tied to 0.9V
L=Low :Tied to 0V





MICRO-STAR INT'L CO.,LTD.

Title: DGPU_ROM,HW Straps

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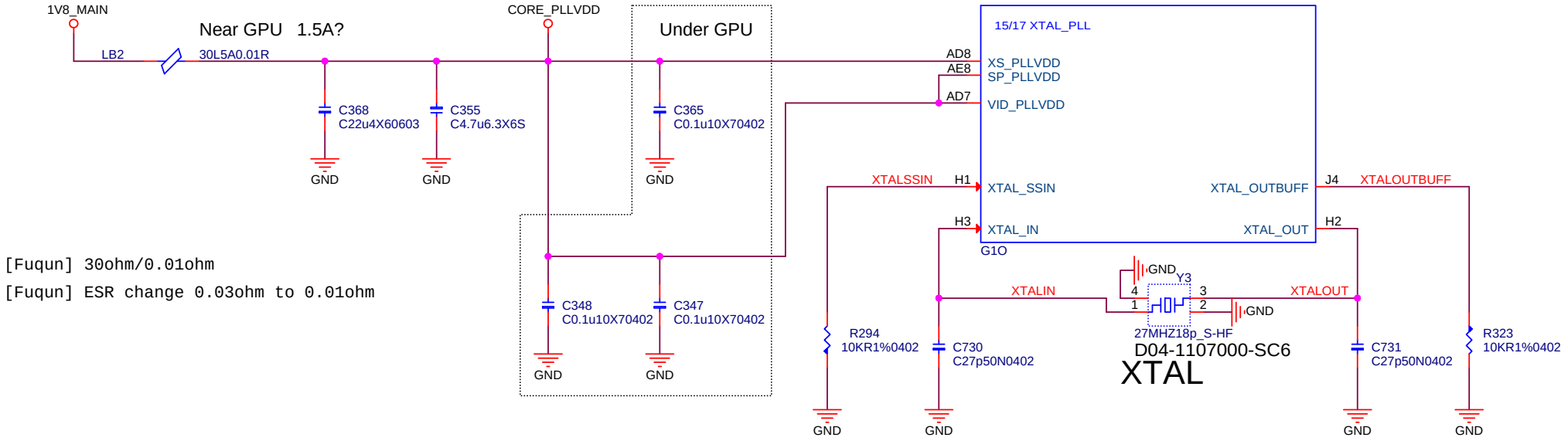
DGPU
XTAL



[Fuqun] 30ohm/0.01ohm
[Fuqun] ESR change 0.03ohm to 0.01ohm

MICRO-STAR INT'L CO.,LTD.		
Title: DGPU_XTAL		
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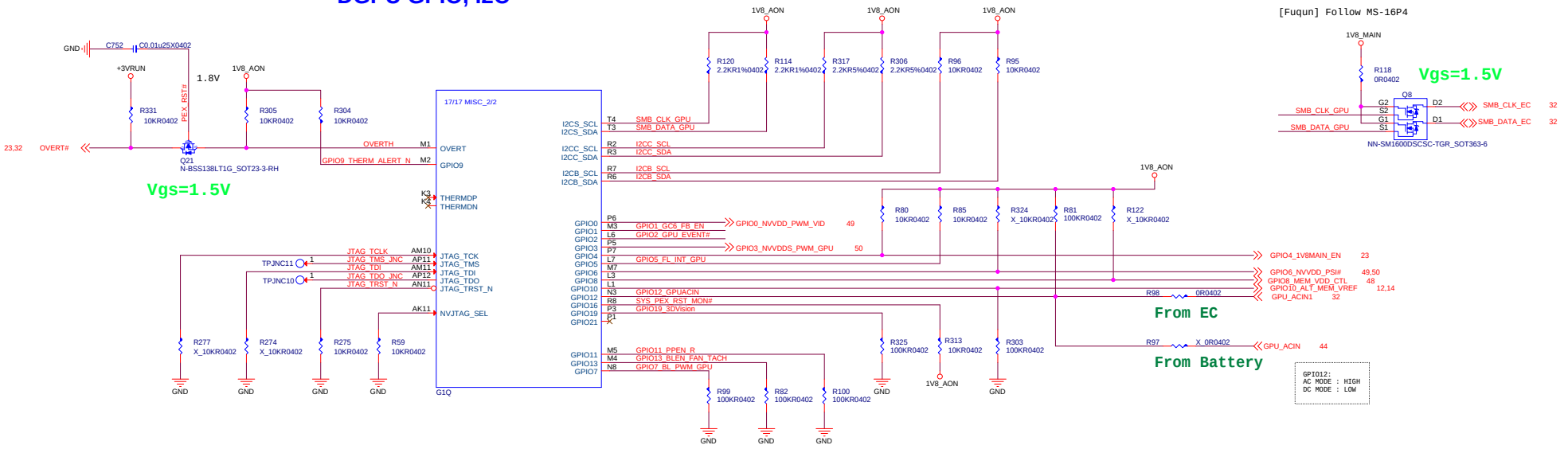
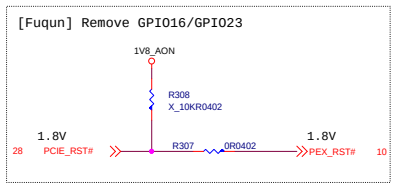
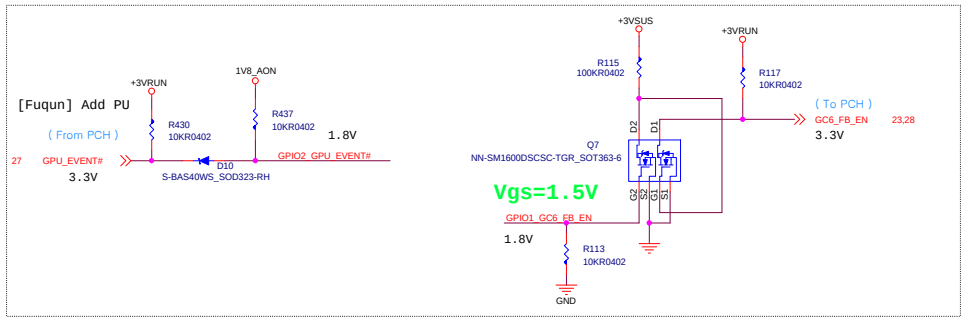
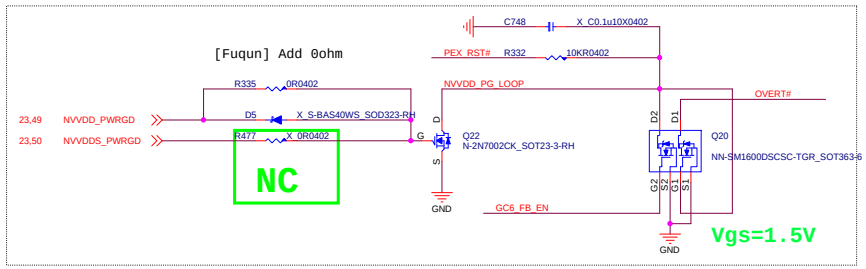
DGPU GPIO, I2C



Pin Name	Normal function	I/O	Functional Description	Recommended Default Pull-up or Pull-down
GPIO0	PWR_VID	O	GPU Core VDD PWM control signal	0 to 1V8 PWM output
GPIO1	GC6_FB_EN	O	FB Enable for GC6 2.1	OD, 10K pull-down
GPIO2	GPU_EVENT#	I	GPU wake signal for GC6 2.1	10K pull-up to 1V8 _AON
GPIO3	NVVDD_SRAM_PWM	O	PWM output to control the SRAM power supply	0 to 1V8 output
GPIO4	1V8_MAIN_EN	O	GPU POWER Sequencing for GC6 2.1	OD, 10K pull-up to 1V8 _AON
GPIO5	FRM_LCK#	I	Active low Frame Lock	OD, 1V8 pull-up to 1V8 _AON
GPIO6	NVVDD_PSI	O	Phase shedding	10K pull-up to 1V8 _AON
GPIO7	LCD_BL_PWM	O	Panel Backlight PWM Brighteness Control	100K pull-down
GPIO8	MEM_VDD_CTL	O	Memory Voltage Control	pull-up/pull-down to set the FBVDD/Q power-on voltage
GPIO9	THERM_ALERT	I/O	Active Low Thermal Alert	OD, 10K pull-up to 1V8_AON
GPIO10	MEM_VREF_CTL	O	Memory VREF Control	100K pull-down
GPIO11	LCD_VCC	O	Panel Power Enable	100K pull-down
GPIO12	PWR_LEVEL	I	AC power detect or power supply overdraw input	100K pull-up to 1V8_AON
GPIO13	LCD_BLEN	O	Panel Backlight Enable	100K pull-down
GPIO14	HPD_A	I	Hot Plug Detect for IFPA	
GPIO15	HPD_B	I	Hot Plug Detect for IFPB	
GPIO16	SYS_PEX_RST_MON#	O	System side PCIe reset monitor	10K pull-up to 1V8 _AON
GPIO17	HPD_D	I	Hot Plug Detect for IFPD	
GPIO18	HPD_E	I	Hot Plug Detect for IFPE	
GPIO19	3DVision	O	3D Vision L/R signal	100K pull-down
GPIO20	GC5_MODE			
GPIO21	UNUSED	I/O		
GPIO22	UNUSED	I/O		
GPIO23	GPU_PEX_RST_HOLD#	O	GPU PCIe self-reset control	OD, 10K pull-up to a gated 3V3
GPIO24	HPD_F	I		
GPIO25	UNUSED			
GPIO26	UNUSED			
GPIO27	HPD_C	I	Hot Plug Detect for IFPC	







MSI	MICRO-STAR INT'L CO.,LTD.
Title	DGPU_GPIO,I2C
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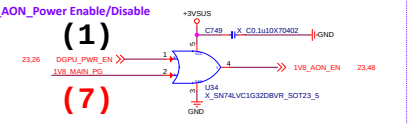
nVIDIA Power Sequence Control

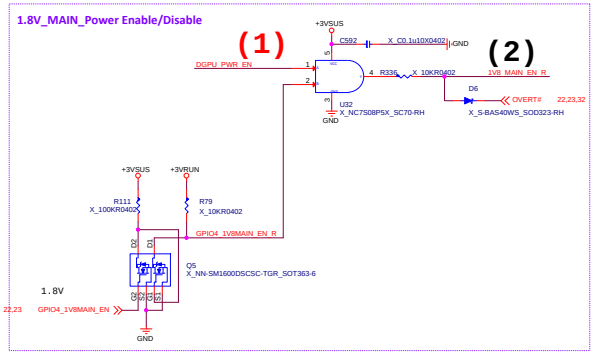
Power on = 1V8_AON -> 1V8_MAIN -> 3V3_NV/NVVDD -> NVDDS/PEX_VDD -> FBVDDQ -> DGPUPWRGD

Power Off=NVVDDS/PEX_VDD/FBVDDQ->NVVDD->NV3V3->1V8_MAIN->1V8_AON

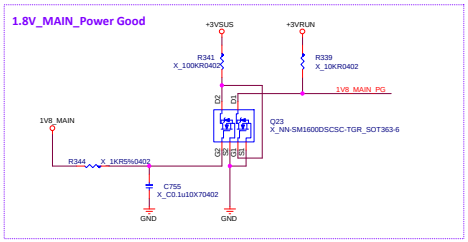
1.8V_AON_Power Enable/Disable



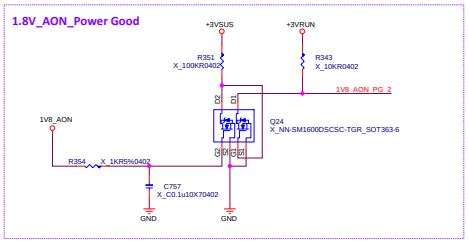
1.8V_MAIN_Power Enable/Disable



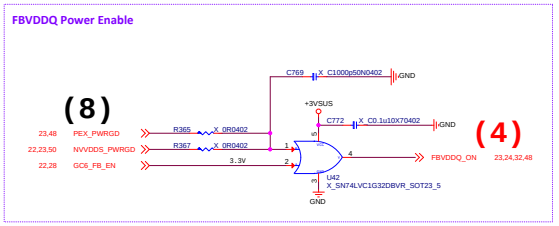
1.8V_MAIN_Power Good



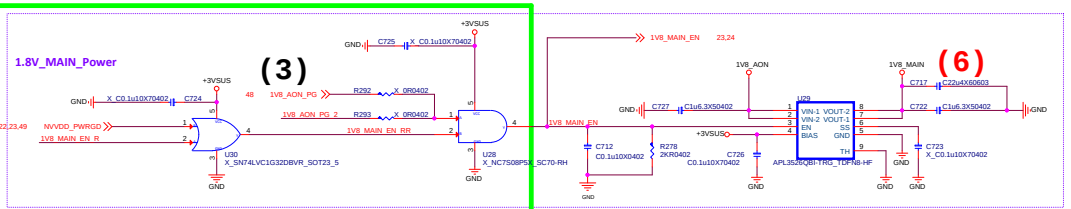
1.8V_AON_Power Good



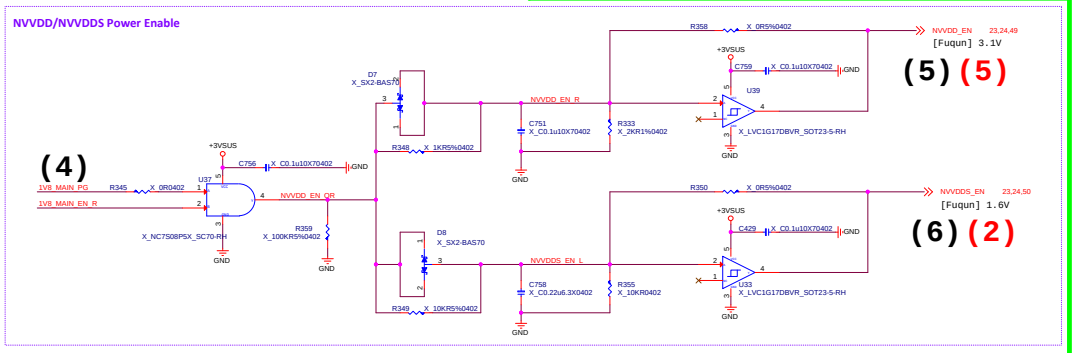
FBVDDQ Power Enable



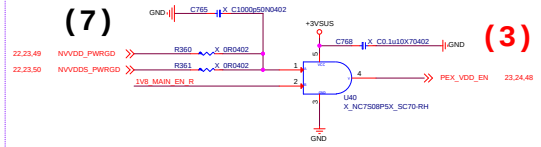
1.8V_MAIN_Power



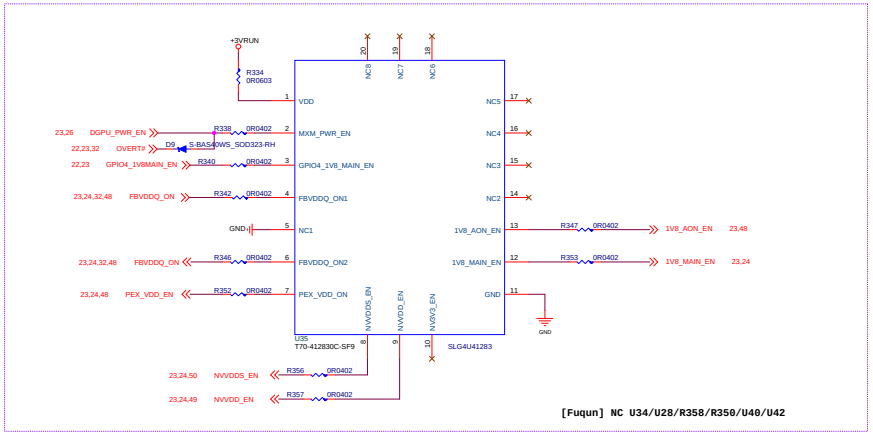
NVVDD/NVVDDS Power Enable



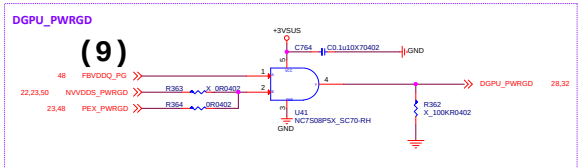
(7) (3)



NC



DGPU_PWRGD



msi	MICRO-STAR INT'L CO.,LTD.		
Title	DGPU_Power Sequence		
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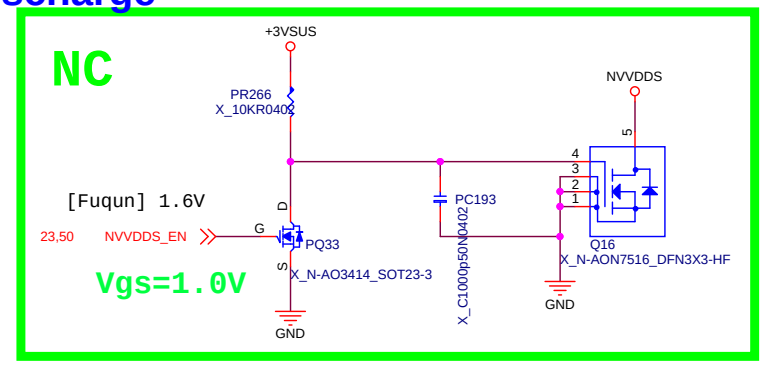
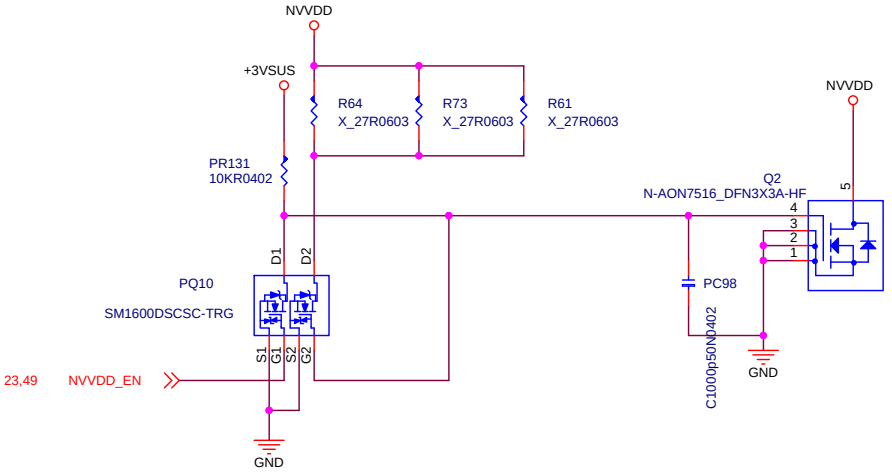
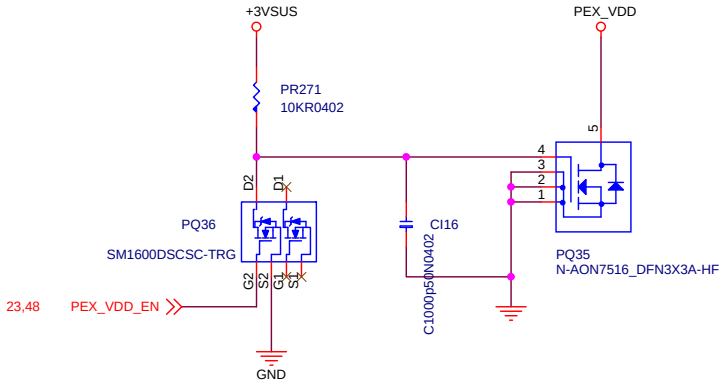
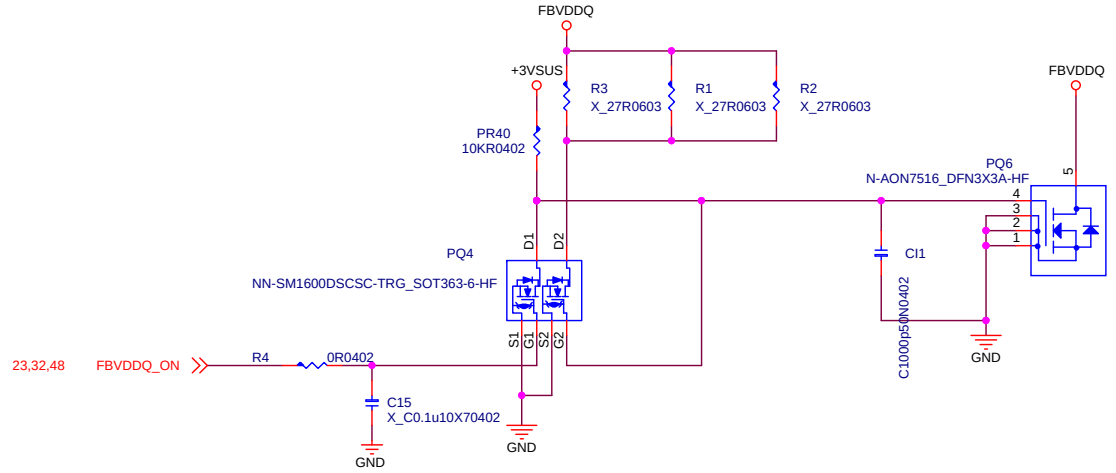
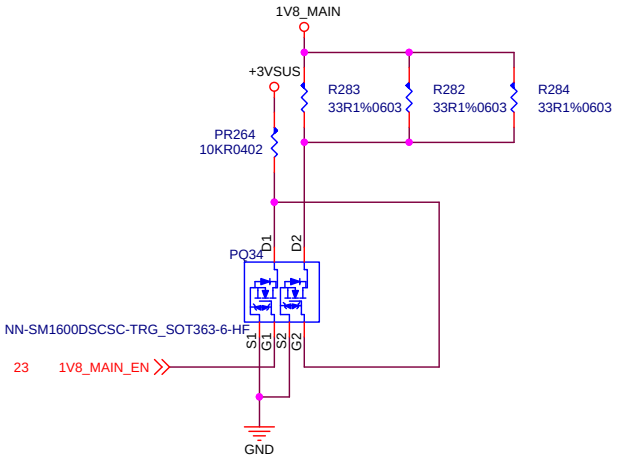
Discharge











MICRO-STAR INT'L CO.,LTD.

Title: DGPU_Discharge

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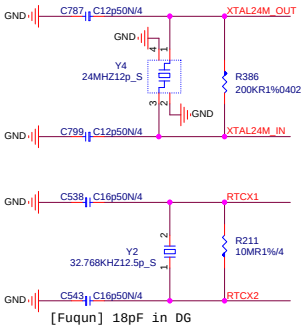
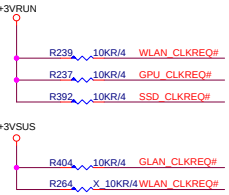
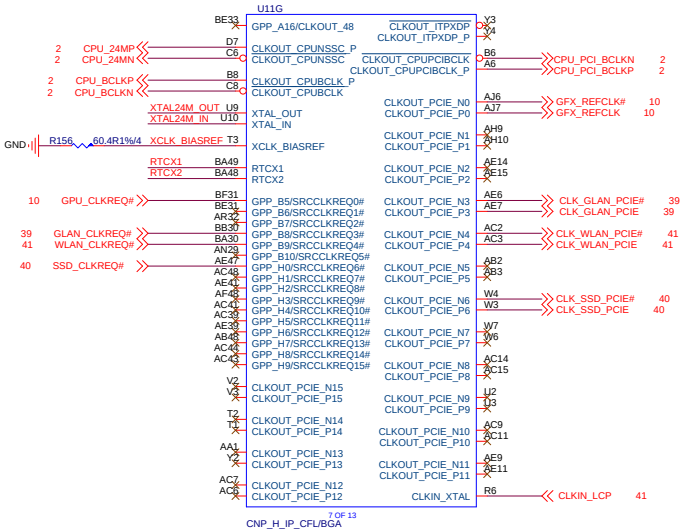
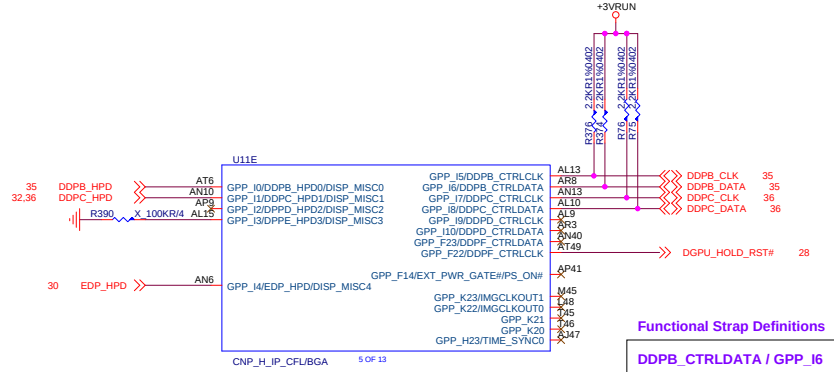
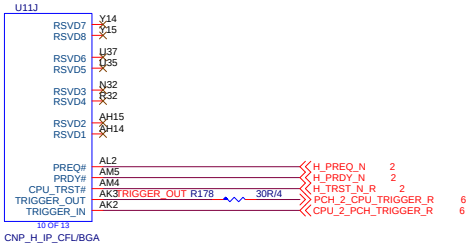
HM370 (RTC/Clock)











Functional Strap Definitions

DDPB_CTRLDATA / GPP_I6

This signal has a weak internal pull-down.
0 = Port B is not detected. (Default)
1 = Port B is detected.

DDPC_CTRLDATA / GPP_I8

This signal has a weak internal pull-down.
0 = Port B is not detected. (Default)
1 = Port B is detected.

DDPD_CTRLDATA / GPP_I10

This signal has a weak internal pull-down.
0 = Port B is not detected. (Default)
1 = Port B is detected.

GPP_F23

This signal has a weak internal pull-down.
0 = Port F is not detected. (Default)
1 = Port F is detected.

MICRO-STAR INT'L CO.,LTD.

Title	PCH-1(CLK)	
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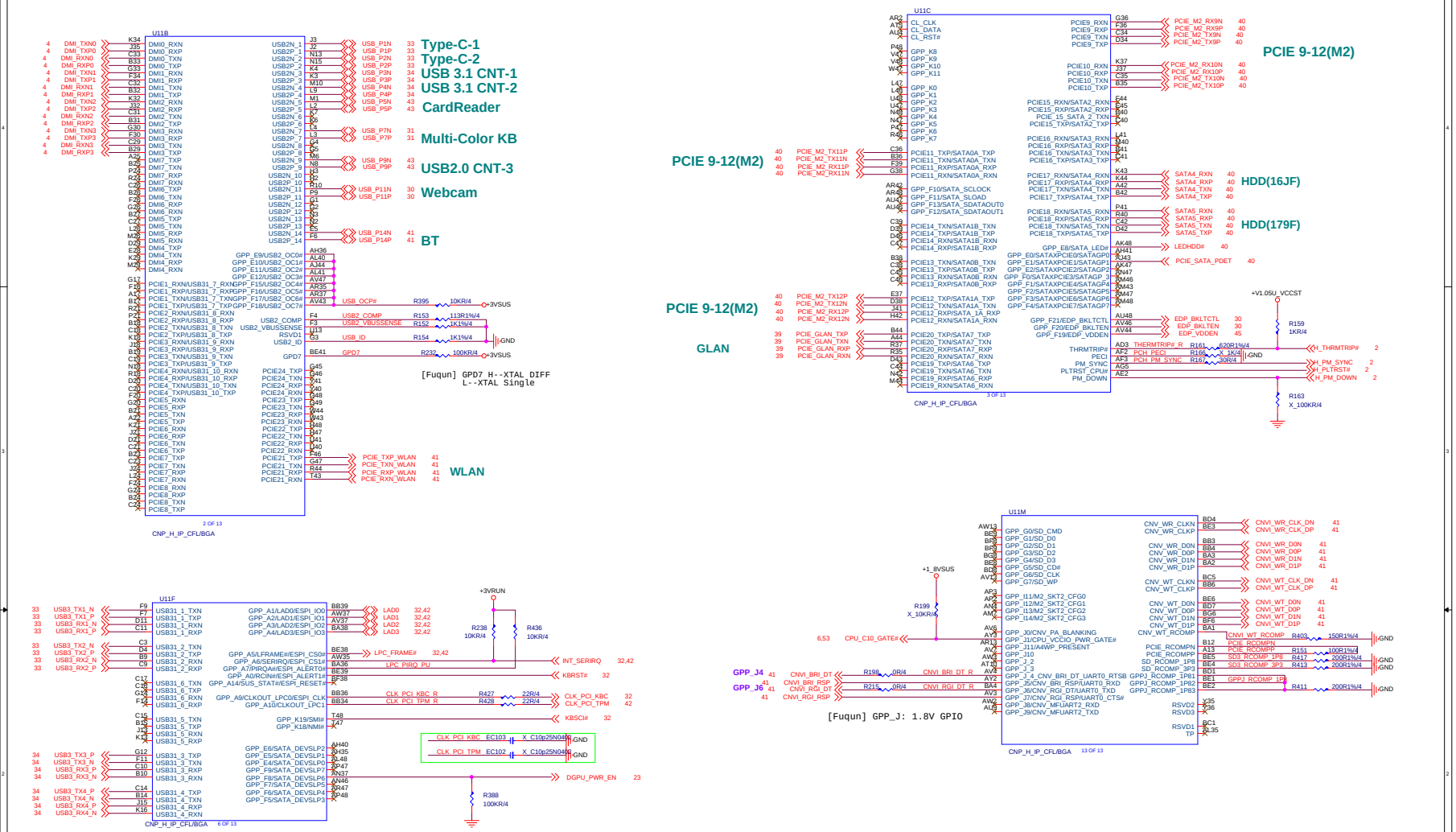
HM370 (DMI/PCIE/USB3.1/USB2.0/CNVi)



GPD7

External pull-up is required. Recommend 100K.
This strap should sample HIGH. There should NOT be any on-board device driving it to opposite direction during strap sampling

GPP_J4

This signal has a weak internal pull-down.
An external pull-up is required on this strap since 38.4 MHz XTAL is not supported on the PCH.
0 = 38.4 XTAL frequency selected. (Default)
1 = 24MHz XTAL frequency selected.

GPP_J6

An external pull-up or pull-down is required.
0 = Integrated CNVi enable.
1 = Integrated CNVi disable.

GPP_J9

The signal has a weak internal pull-down
0 = VCCSPI is connected to 3.3V rail
1 = VCCSPI is connected to 1.8V rail

[Fuqun] WLAN(94620 38.4MHz ????

GPP_J4
High = 24MHz

GPP_J6
Low = CNVi Enable

Title	PCH-2(DMI/PCIE/USB)
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MICRO-STAR INT'L CO.,LTD.

HM370 (HDA/GPIO/TJAG)

Functional Strap Definitions

HDA_SDO
This signal has a weak internal pull-down.
0 = Enable security measures defined in the Flash Descriptor. (Default)

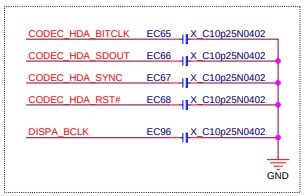
SMBALERT# / GPP_C2
This signal has a weak internal pull-down.
0 = Disable Intel ME Crypto Transport Layer Security (TLS) cipher suite (no confidentiality). (Default)

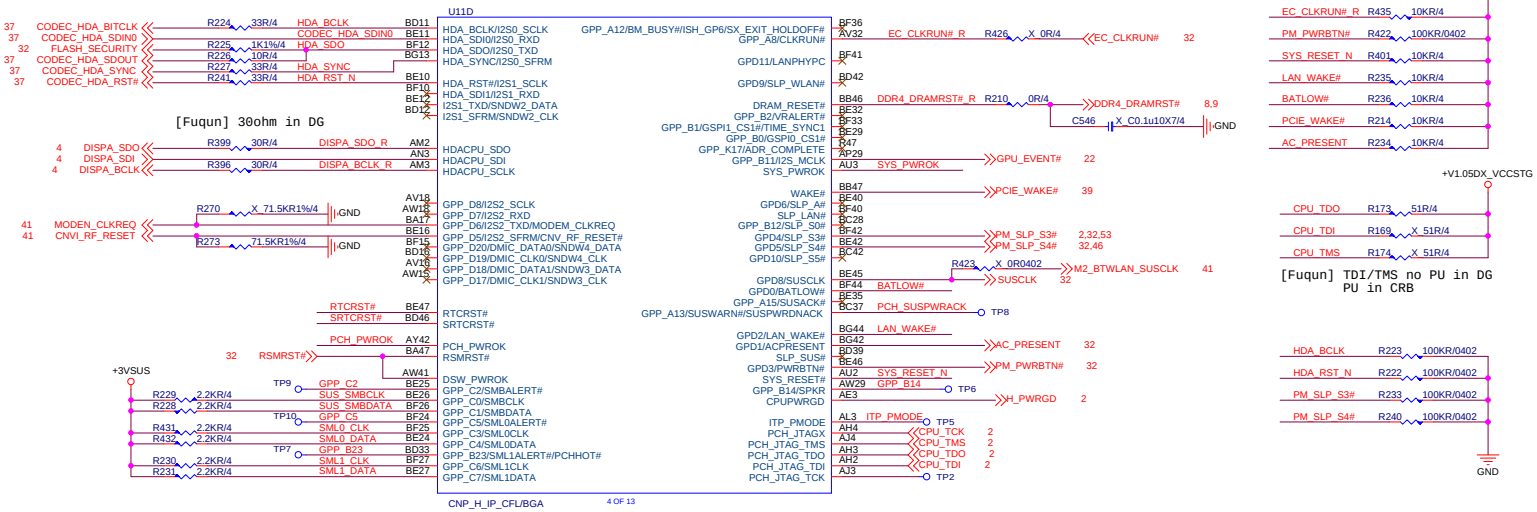
SML0ALERT# / GPP_C5
This signal has a weak internal pull-down.
0 = LPC Is selected for EC. (Default)
1 = eSPI Is selected for EC.

SML1ALERT# / PCHHOT#/ GPP_B23
This signal has an internal pull-down.

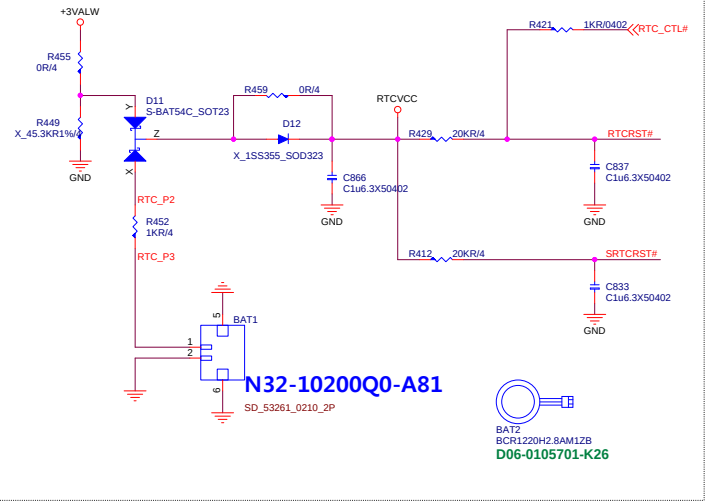
DG/ RTC Well Input Strap
RSMRST# & DSW_PWROK, PCH_PWROK : PD
RTCRST#, SRTCRST#, INTRUDER# : PU

SPKR / GPP_B14
The signal has a weak internal pull-down.
0 = Disable Top Swap mode. (Default)

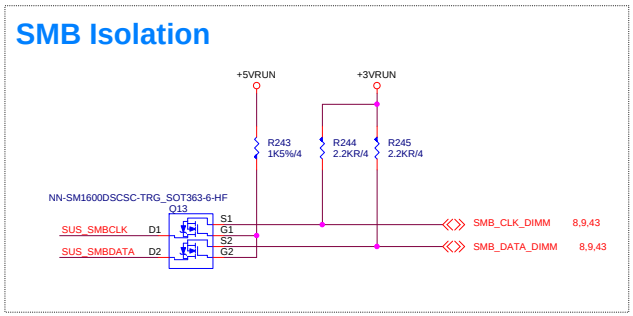




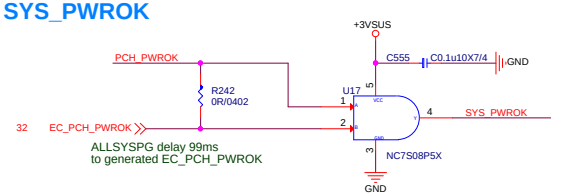
RTCVCC



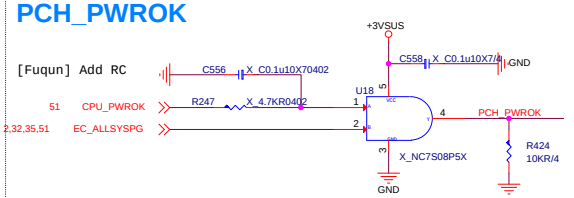
SMB Isolation



SYS_PWROK



PCH_PWROK



MSI	MICRO-STAR INT'L CO.,LTD.		
Title	PCH-3(HDA/GPIO/TJAG)		
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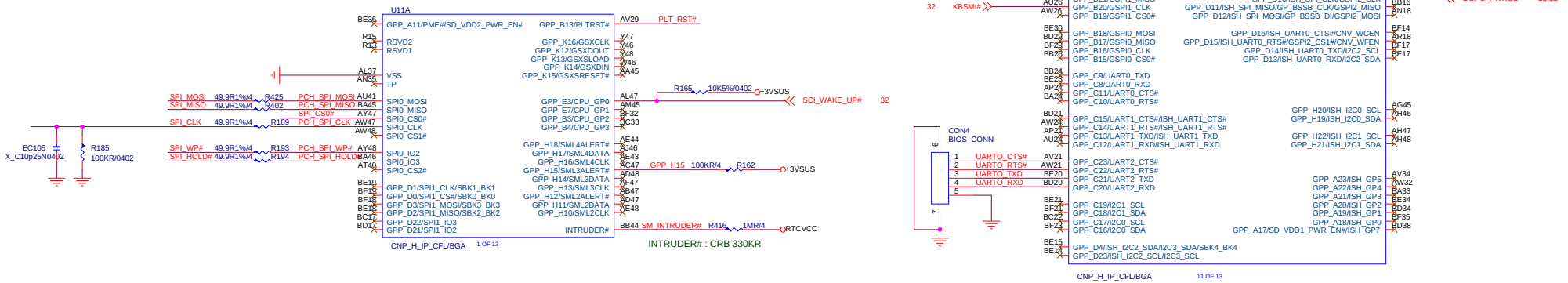
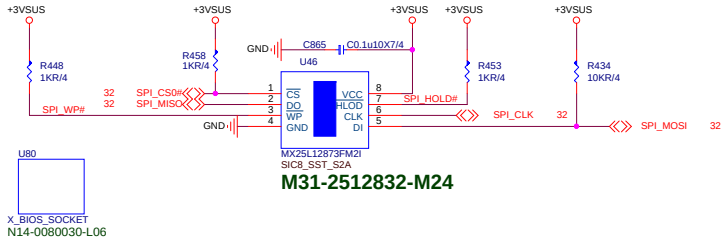
HM370 (UART/I2C/SPI)



SPI FLASH ROM



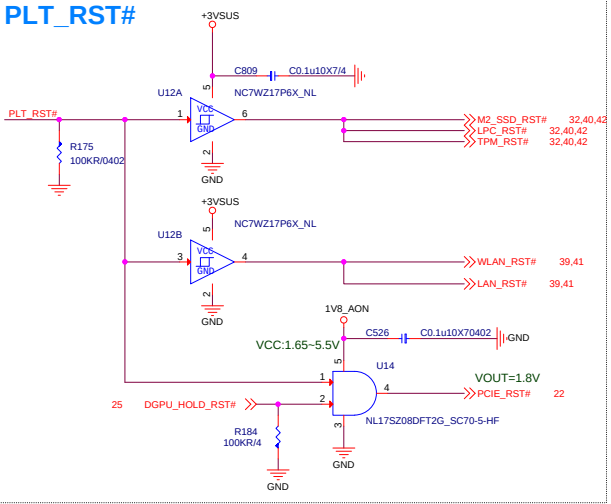
DG / Single Flash Topology Table 29-3
(1) R use 50 Ohm for 3.3V
(2) SPIO_IO2/IO3 PU 1KR when using quad mode

SPI0_IO2
External pull-up is required. Recommend 100K if pulled up to 3.3V or 75K if pulled up to 1.8V.

SPI0_IO3
External pull-up is required. Recommend 100K if pulled up to 3.3V or 75K if pulled up to 1.8V.

SPI0_MOSI
External pull-up is required. Recommend 100K if pulled up to 3.3V or 75K if pulled up to 1.8V.

PLT_RST#



GSPI0_MOSI / GPP_B18
The signal has a weak internal pull-down.
0 = Disable No Reboot mode. (Default)
1 = Enable No Reboot mode

GSPI1_MOSI / GPP_B22
This Signal has a weak internal pull-down.
Bit 6 Boot BIOS Destination
0 SPI (Default)
1 LPC

SML2ALERT# / GPP_H12
The signal has a weak internal pull-down.
0 = Master attached Flash sharing enable. (Default)
1 = Slave attached Flash sharing enable

SML3ALERT# / GPP_H15
External pull-up is required.
Recommend 100K if pulled
up to 3.3V or 75K if pulled up to 1.8V.

MICRO-STAR INT'L CO.,LTD.

Title	PCH-4(UART/I2C/SPI)	
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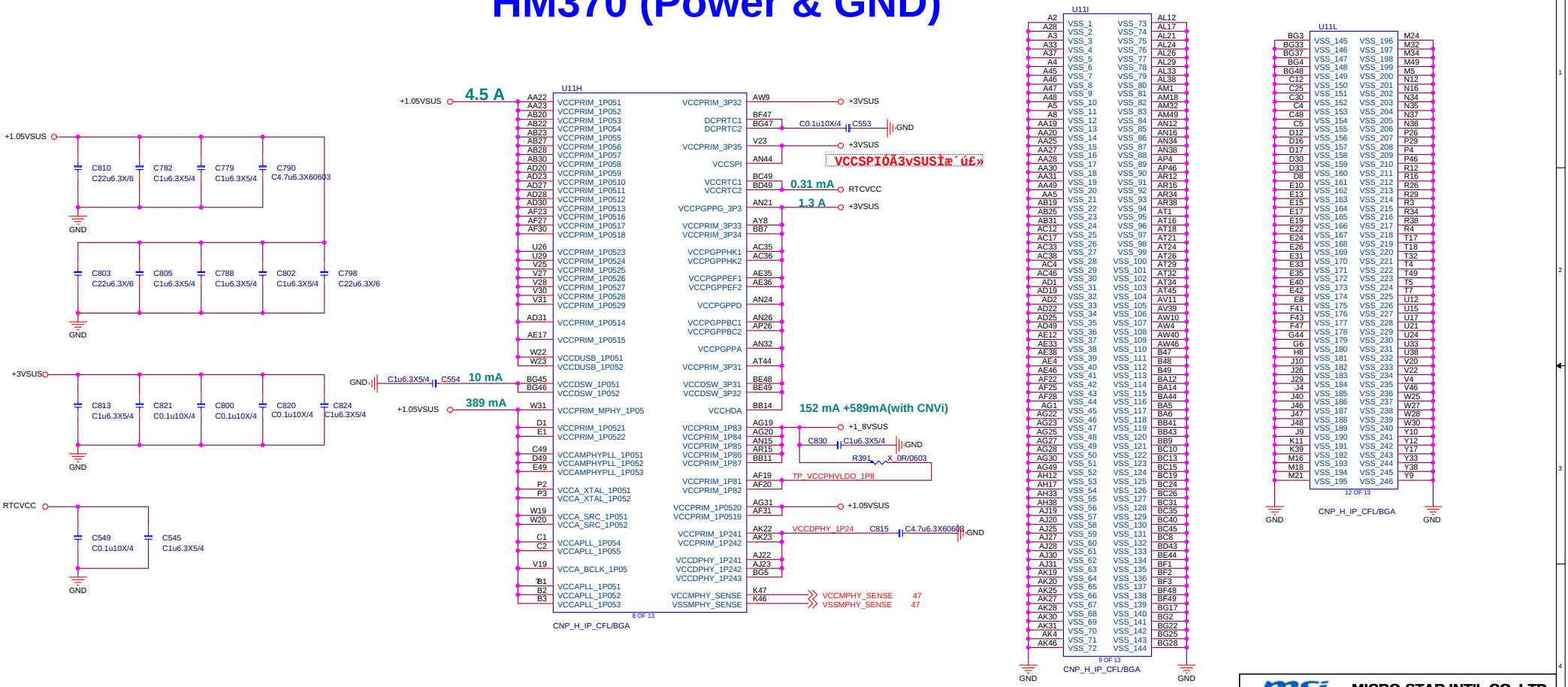
HM370 (Power & GND)



MICRO-STAR INT'L CO.,LTD.

Title: PCH-5(Power)

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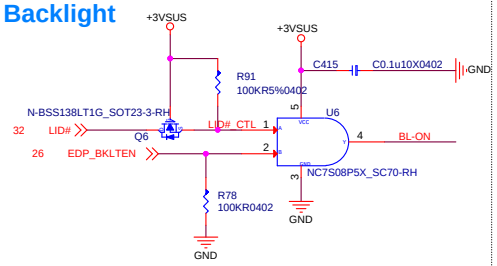
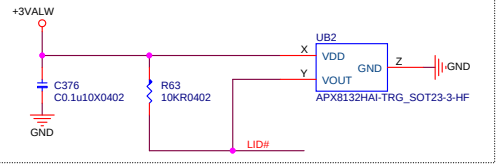
eDP

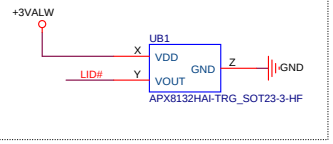
Backlight



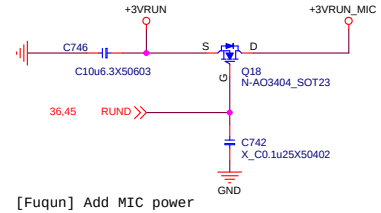
Hall Switch(16JF)



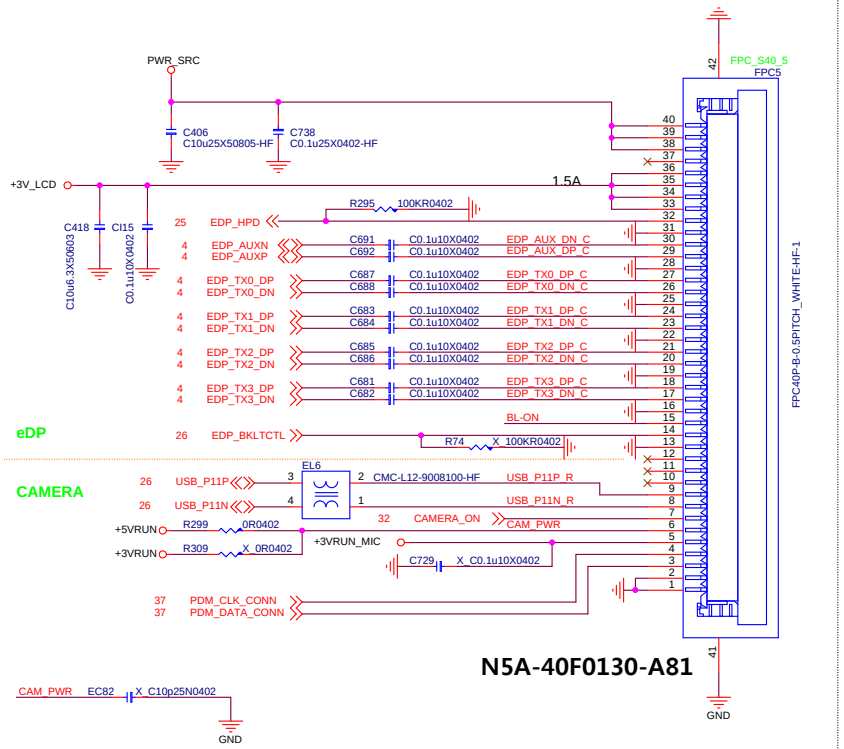
Hall Switch(179F)

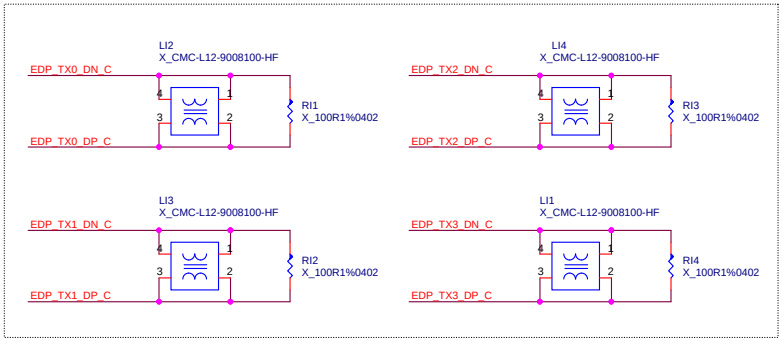


MIC Power



eDP CONN
CAMERA





LCD Module Pin Define

Pin No	Symbol	Description
1	WP	EEPROM Write Protect(Keep open)
2	H_GND	High Speed Ground(0V)
3	eDP_Rx_3N	Complement Signal Link Lane 3
4	eDP_Rx_3P	True Signal Link Lane 3
5	H_GND	High Speed Ground(0V)
6	eDP_Rx_2N	Complement Signal Link Lane 2
7	eDP_Rx_2P	True Signal Link Lane 2
8	H_GND	H_GND
9	eDP_Rx_1N	Complement Signal Link Lane 1
10	eDP_Rx_1P	True Signal Link Lane 1
11	H_GND	H_GND
12	eDP_Rx_0N	Complement Signal Link Lane 0
13	eDP_Rx_0P	True Signal Link Lane 0
14	H_GND	H_GND
15	eDP_AUX_CH_P	True Signal Aux Channel
16	eDP_AUX_CH_N	Complement Signal Aux Channel
17	H_GND	H_GND
18	LCD_VCC	LCD logic and driver power
19	LCD_VCC	LCD logic and driver power
20	LCD_VCC	LCD logic and driver power
21	LCD_VCC	LCD logic and driver power
22	TEST	LCD Test Port
23	LCD_GND	LCD logic and driver ground(0V)
24	LCD_GND	LCD logic and driver ground(0V)
25	LCD_GND	LCD logic and driver ground(0V)
26	LCD_GND	LCD logic and driver ground(0V)
27	eDP_HPD	HPD signal pin
28	BL_GND	Backlight ground(0V)
29	BL_GND	Backlight ground(0V)
30	BL_GND	Backlight ground(0V)
31	BL_GND	Backlight ground(0V)
32	BL_ENABLE	Backlight enable
33	BL_PWM_DIM	System PWM signal input
34	SDA	I2C-bus Data
35	SCL	I2C-bus Clock
36	BL_PWR	Backlight power (5~21V)
37	BL_PWR	Backlight power (5~21V)
38	BL_PWR	Backlight power (5~21V)
39	BL_PWR	Backlight power (5~21V)
40	HSYNC	HSYNC output from Tcon

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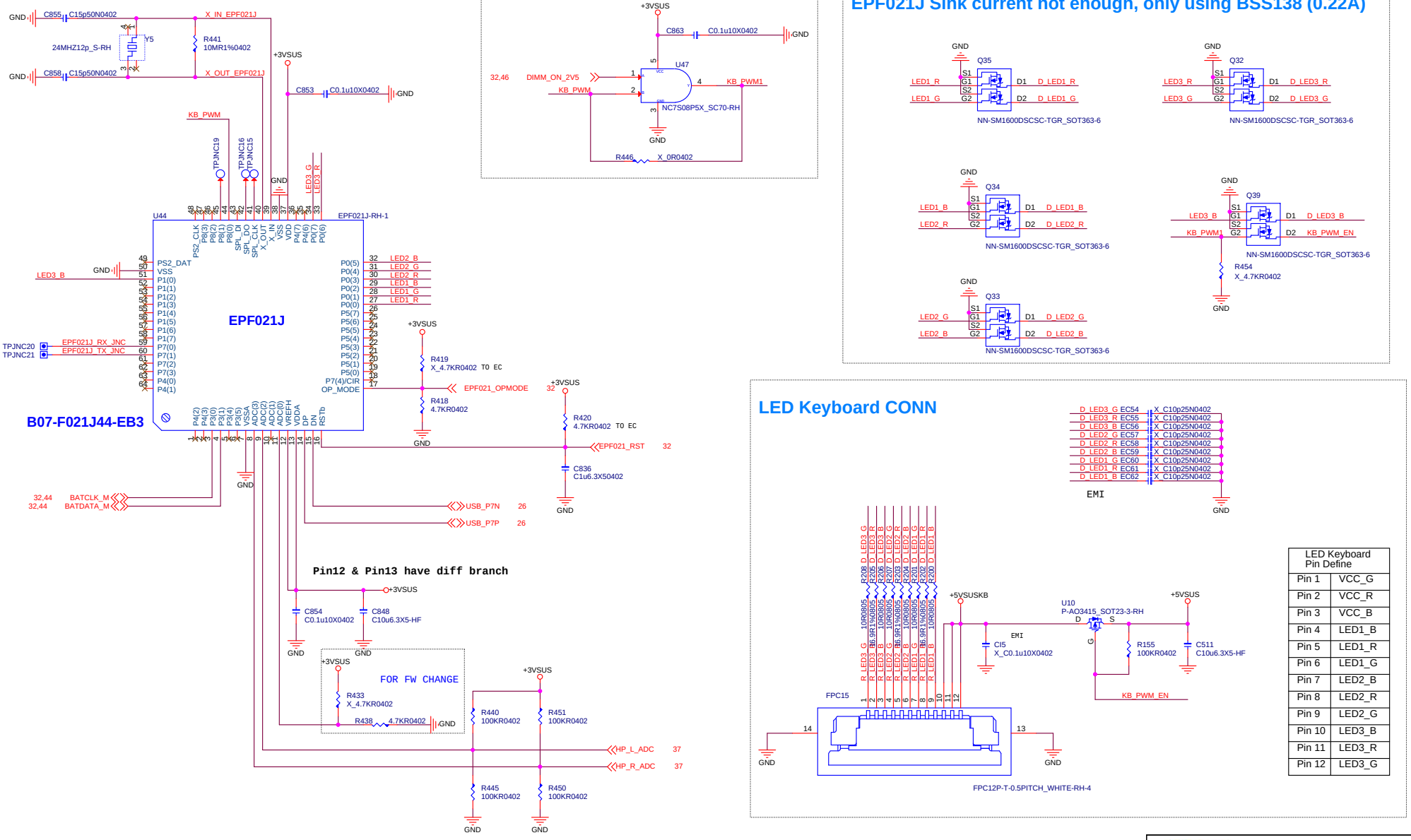
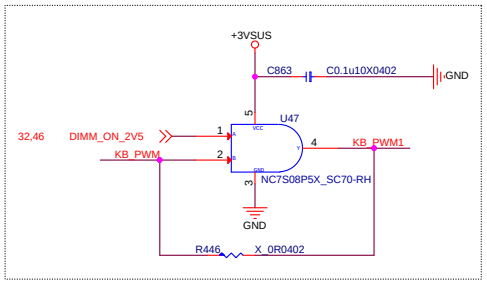
LED 8051 Controller





EPF021J Sink current not enough, only using BSS138 (0.22A)

LED Keyboard CONN

LED Keyboard Pin Define	
Pin 1	VCC_G
Pin 2	VCC_R
Pin 3	VCC_B
Pin 4	LED1_B
Pin 5	LED1_R
Pin 6	LED1_G
Pin 7	LED2_B
Pin 8	LED2_R
Pin 9	LED2_G
Pin 10	LED3_B
Pin 11	LED3_R
Pin 12	LED3_G

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Title: LED_8051

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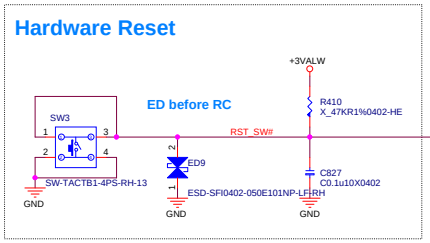
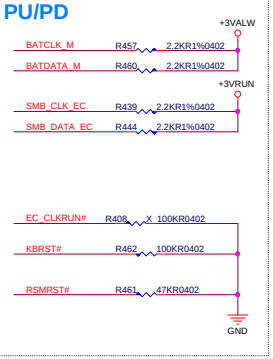
KBC(ENE9028)

Hardware Reset

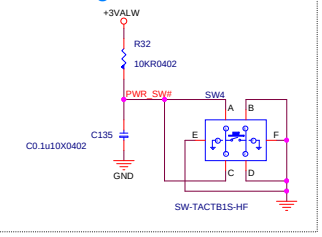


R409 33R0402 — EC_RST# 37

PU/PD



HW Debug



U45

LPC I/F

26,42	INT_SERIRQ	3 SERIRQ
26,42	LPC_FRAME#	4 LFRAME#
26	CLK_PCI_KBC	12 PCICLK
27	EC_CLKRUN#	38 CLKRUN#/GPIO1D
26,42	LAD0	10 LAD0
26,42	LAD1	8 LAD1
26,42	LAD2	7 LAD2
26,42	LAD3	5 LAD3

POWER/GROUND

VCC_LPC 9, VCC 22, VCC-1 33, VCC-2 96, VCC-3 125, VCC0 111, VCC_IO2 124, AVCC 67, AGND 69, GND 11, GND-1 24, GND-2 35, GND-3 94, GND-4 113

+3VALW

C869 C0.1u10X0402, C508 C0.1u10X0402, C563 C0.1u10X0402, C849 C0.1u10X0402, C828 C0.1u10X0402

ECRST

26	KBRST#	2 ECRST#/GPIO01
26	KBSCI#	20 KBRST#/GPIO01
22,23	OVERT#	1 SCI#/GPIO0E
28,40,42	LPC_RST#	13 GA20/GPIO00
		PCIRST#/GPIO05

FAN&PWM

43	DGPU_ON#	21 PWM0/GPIO0F
44	BAT_BM#	23 PWM1/GPIO10
44	AC_CTL	25 PWM2/GPIO11
27	FLASH_SECURITY	34 PWM3/GPIO19
42	FAN1_PWM0	26 FANPWM0/GPIO12
42	FAN1_PWM1	27 FANPWM1/GPIO13
42	CPUFAN_FB	28 FANFB0/GPIO14
42	GPUFAN_FB	29 FANFB1/GPIO15

SMBUS

	SDA0/GPIO45	78
	SCL0/GPIO44	77
	IEDI_SDA/SDA1/GPIO47	80 EC_SDA
	IEDI_SCL/SCL1/GPIO46	79 EC_SCL

SMB_DATA_EC 22, SMB_CLK_EC 22, EC_SDA 36, EC_SCL 36

AD/DA

	DA0/GPO3C	68
	DA1/GPO3D	70
	DA2/GPO3E	72
	DA3/GPO3F	63
	AD0/GPI38	64
	AD1/GPI39	65
	AD2/GPI3A	66
	AD3/GPI3B	75
	AD4/GPI42	76
	AD5/GPI43	

BT_PWR_ON 41, TPJNC14 SUSPWRACK, CAMERA_ON 30, DGPU_PWRGD 23,28, EC101 C330p50X0402, KBIN0, KBIN1, KBIN2, KBIN3, KBIN4, KBIN5

IKB

KBOUT0		39 KSO0/GPIO20
KBOUT1		40 KSO1/GPIO21
KBOUT2		41 KSO2/GPIO22
KBOUT3		42 KSO3/GPIO23
KBOUT4		43 KSO4/GPIO24
KBOUT5		44 KSO5/GPIO25/UART_SOUT
KBOUT6		45 KSO6/GPIO26
KBOUT7		46 KSO7/GPIO27/SERIRQ(LPC_Bypass)UART_RTS
KBOUT16		47 KSO8/GPIO28
KBOUT17		48 KSO9/GPIO29
		49 KSO10/GPIO2A
		50 KSO11/GPIO2B/LAD3(LPC_Bypass)
44	BATT_OFF	51 KSO12/GPIO2C/LAD2(LPC_Bypass)UART_DTR
44	BAT_IN#	52 KSO13/GPIO2D/LAD1(LPC_Bypass)
30	LID#	53 KSO14/GPIO2E/LAD0(LPC_Bypass)
47	SUSPWROK	54 KSO15/GPIO2F
	EC_SDA	81 KSO16/GPIO48/UART_SOUT2
	EC_SCL	82 KSO17/GPIO49

TPJNC17, TPJNC18

SDI

	GPXIOA00/GPIO60/SHICS#	97
	GPXIOA01/GPIO61/SHICLK	98
	GPXIOA02/GPIO62/SHIDO	99

EAPD 37, EC_MUTE# 37,38, HDMI_HPD_DET 25,36

KBOUT8		55 KSI0/GPIO30/E51TXD
KBOUT9		56 KSI1/GPIO31
KBOUT10		57 KSI2/GPIO32
KBOUT11		58 KSI3/GPIO33
KBOUT12		59 KSI4/GPIO34
KBOUT13		60 KSI5/GPIO35
KBOUT14		61 KSI6/GPIO36
KBOUT15		62 KSI7/GPIO37/EDI_DO

ESB

43	KBLED_BACKLIGHT_SW#	17 GPIO0B/ESB_CLK
43	COOLER_BOOST_SW#	18 GPIO0C/ESB_DAT_O

CIR

KBIN6		73 GPIO40/AD6
KBIN7		74 GPIO41/CIR_RLC_TX/AD7
31,46	DIMM_ON_2V5	16 GPIO0A/OWM
27	RTC_CTL#	19 GPIO0D/RLC_TX2

SPI FLASH

28	SPI_MISO	119 MISO/GPIO5B
28	SPI_MOSI	120 MOSI/GPIO5C
28	SPI_CLK	126 SPICLK/GPIO58
28	SPI_CS0#	128 SPICS#/GPIO5A

PS2 I/F

43	TP_CLK	87 PSCLK3/GPIO4E
43	TP_DATA	88 PSDAT3/GPIO4F
41	WLAN_PWRON	85 PSCLK2/GPIO4C/SCL3
		86 PSDAT2/GPIO4D/SDA3
31,44	BATCLK_M	83 PSCLK1/GPIO4A/SCL2/SMBD_CLK
31,44	BATDATA_M	84 PSDAT1/GPIO4B/SDA2/SMBD_DAT

UART

31	EPF021_RST	JNC13 1 2 X_0402 E51TXD_JNC 30
31	EPF021_OPMODE	JNC12 1 2 X_0402 E51CLK_JNC 31
		E51TXD/GPIO16
		E51CLK/GPIO17

LED

	GPIO1A/NUMLED#	36
	GPIO53/CAPSLED#	91
	GPIO55/SCROLED#	93

LED_NUM# 43, LED_CAP# 43, COOLER_LED# 43

		EC_XIN_JNC 122
27	SUSCLK	EC_XOUT_JNC 123
		GPIO5D
		GPIO5E

R464 0R0402, ER9 X_22R0402, Y6 X_32.768KHZ12.5p_S-RH-21, R465 680KR0402-HE, C870, C867 X_C16p50N0402-RH, C868 X_C16p50N0402-RH, X_C22p50N0402

KB9028Q-C-RH

B02-9028Q04-E18

GPIO

	GPIO00	6
	i_clk_8051/GPIO07	14
	PROCHOT#/i_clk_peri/GPIO08	15
	POWER_FAIL1/GPIO18	32
	GPIO50	89
	GPIO52	90
	WDT_LED#/GPIO54	92 UMA_ON#
	GPIO56	95
	XCLK32K/GPIO57	121
	GPIO59	127

KBSMI# 28, GPU_ACIN1 22, SCI_WAKE_UP# 28, EC_PCH_PWROK 27, FBVDDQ_ON 23,24,48, USB_ENABLE 33,34,43, RSMRST# 27, PM_SLP_S3# 2,27,53, PM_SLP_S4# 27,46

POWER_FAIL

	POWER_FAIL0/GPIO63/GPXIOA03	100
	GPIO64/GPXIOA04	101
	GPIO65/GPXIOA05	102 MB_ID
	VCOUT1/GPIO66/GPXIOA06	103
	VCOUT0/GPIO67/GPXIOA07	104 PROCHOT#
	GPIO68/GPXIOA08	105
	GPIO69/GPXIOA09	106
	GPIO6A/GPXIOA10	107
	GWG/GPIO6B/GPXIOA11	108
	SDIDO/GPIO78/GPXIOD00	109
	GPIO79/GPXIOD01	110
	EC_EN#/GPIO7A/GPXIOD02	112
	GPIO7B/GPXIOD03	114 PWR_SW#
	GPIO7C/GPXIOD04	115 EC_ALLSYSPG
	GPIO7D/GPXIOD05	116
	GPIO7E/GPXIOD06	117
	GPIO7F/PECI	118 H_PECI_R

EC_EN#/GPIO7A/GPXIOD02 — TPJNC22

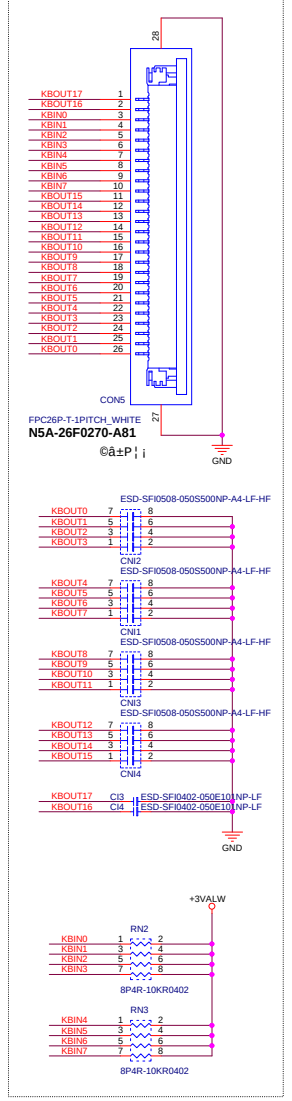
PROCHOT# EC R248 75R0402, PWR_SW# R467 0R0402, H_PECI_R R466 43R0402

DIMM_ON_1V2 46, H_PROCHOT# 2,44,51, LED_WLAN# 43, LED_CHARGE# 43, LED_BATLOW# 43, AC_PRESENT 27, ADP_ICC 44, AC_OK 44, PWR_SW# 43, RUN_ON 6,45, PM_PWRBTN# 27, H_PECI 2

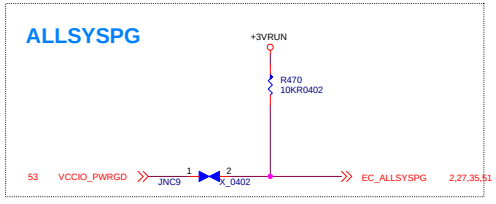
+3VRUN R456 X_10KR0402 KBLED_BACKLIGHT_SW# C862 C0.1u25X50402 GND

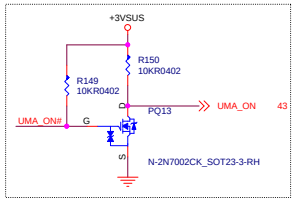
+3VRUN R443 X_10KR0402 COOLER_BOOST_SW# C859 C0.1u25X50402 GND

Keyboard conn

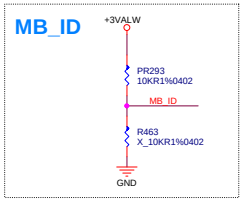


ALLSYSPG





MB_ID



MB_ID	PR293	R463	ID	LAN	HDD
GF62/GF72	NC	10K	0	E2400	MS-16JF: ODD-->16JFA-->HDD MS-179F: HDD
GV62/GV72 62ODM/72ODM	10K	NC	1	AR8171	MS-16JF: ODD-->16JFA-->HDD MS-179F: HDD
PE62/PE72	10K	10K	1/2	AR8171	MS-16JF: ODD-->16JFA-->HDD MS-179F: HDD
	20K	10K	1/3	AR8171	
	10K	20K	2/3		

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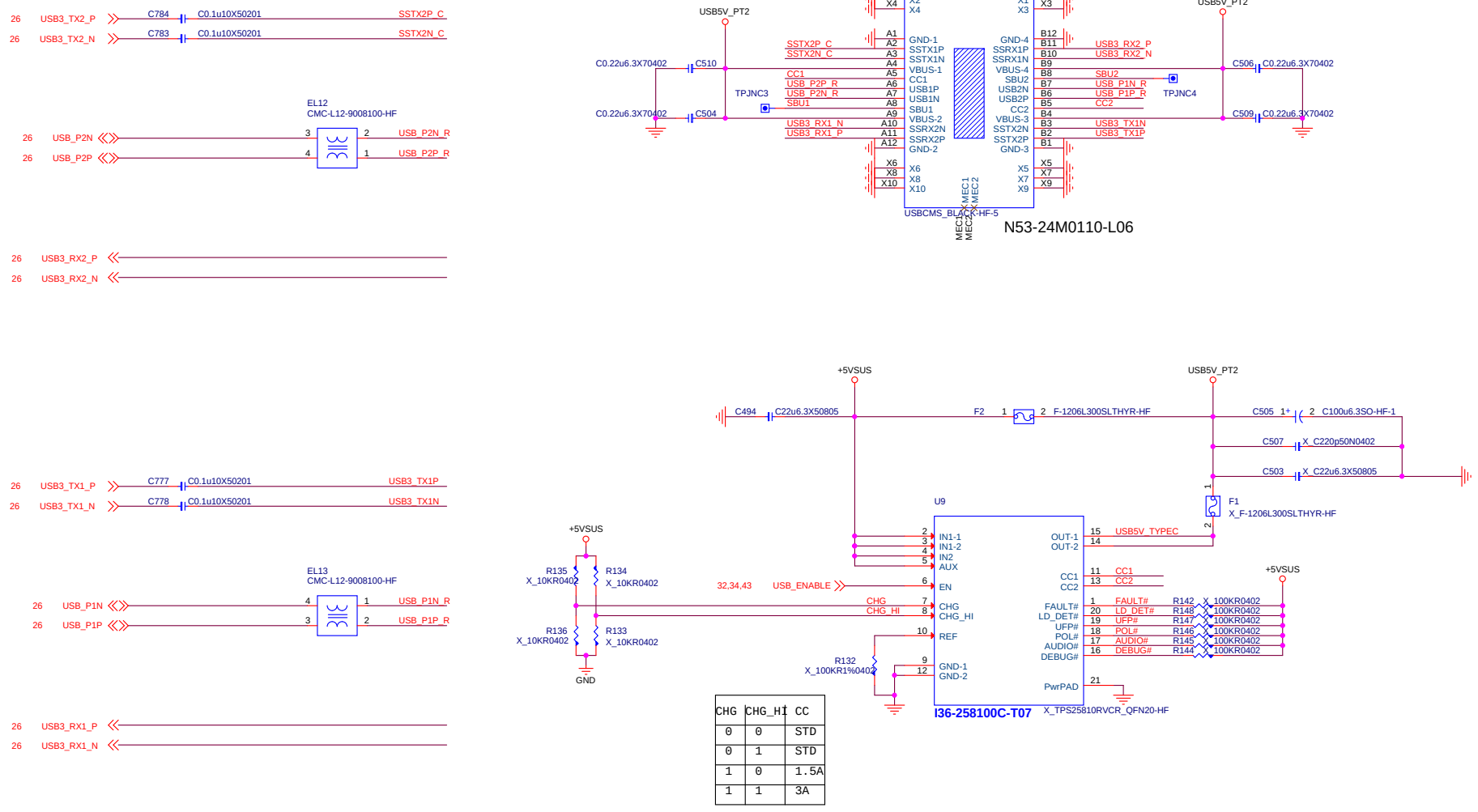
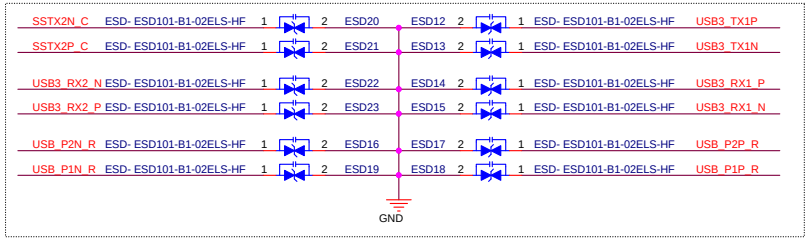
Type-C



CHG	CHG_HI	CC
0	0	STD
0	1	STD
1	0	1.5A
1	1	3A



MSI	MICRO-STAR INT'L CO.,LTD.		
Title	TYPE-C		
Size	Document Number		Rev
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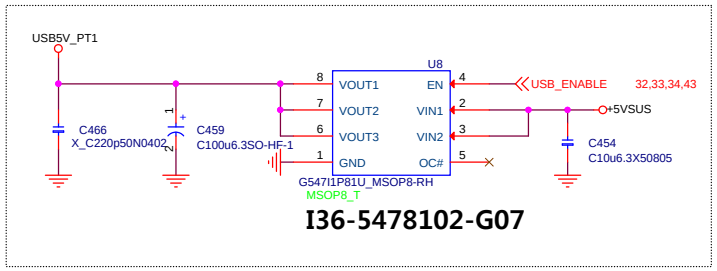
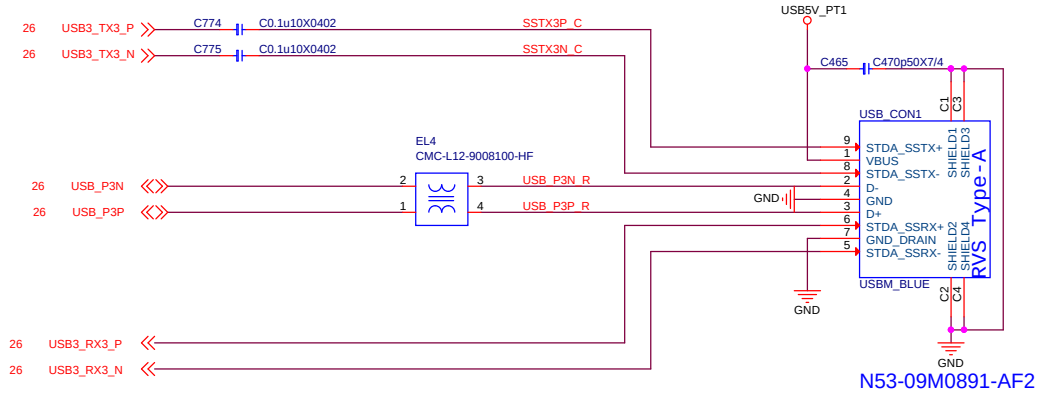
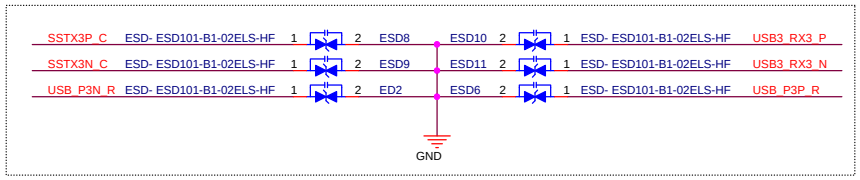
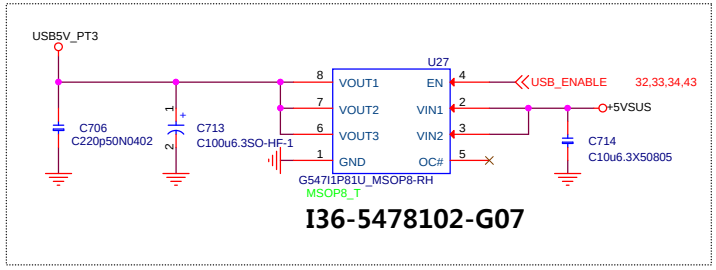
USB3.1 CNT-1

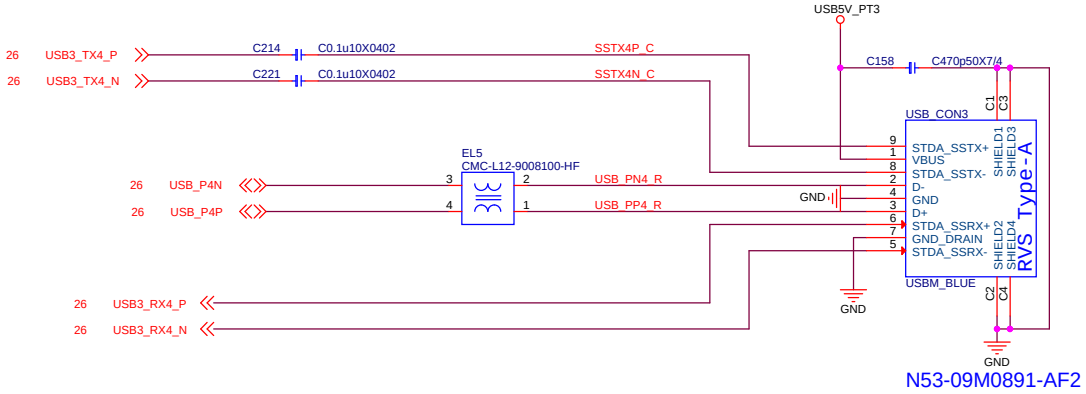


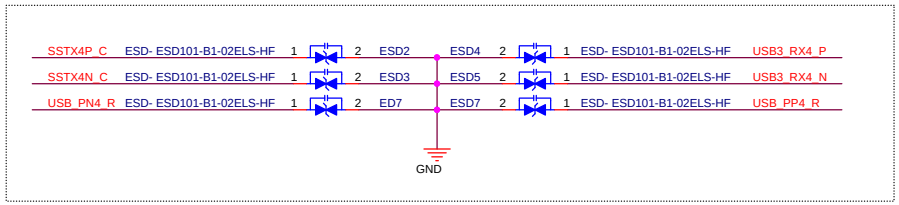




USB3.1 CNT-2







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Title: USB 3.1

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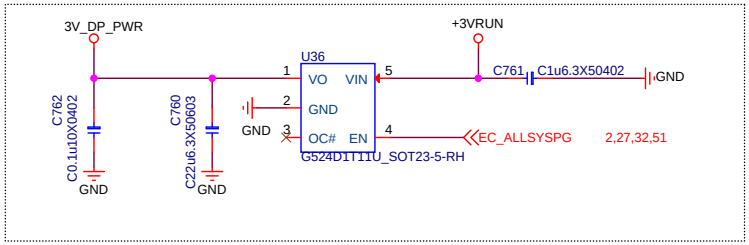
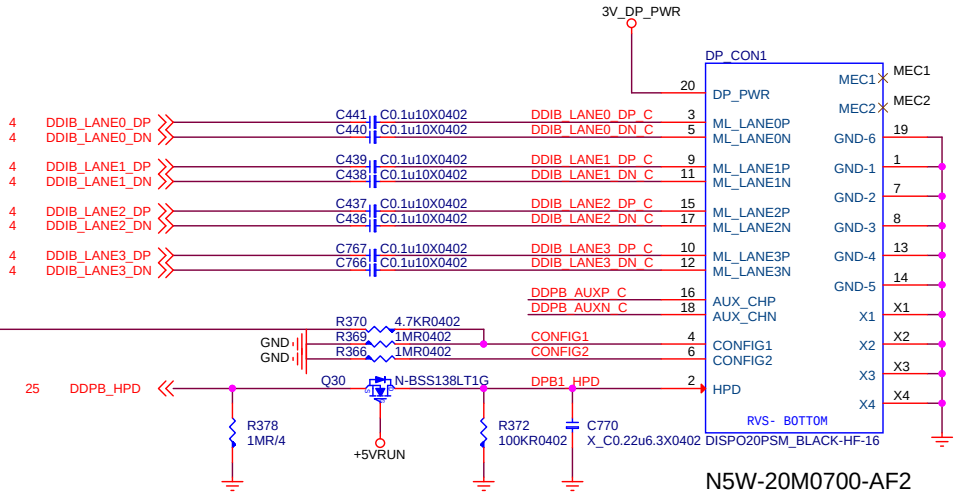
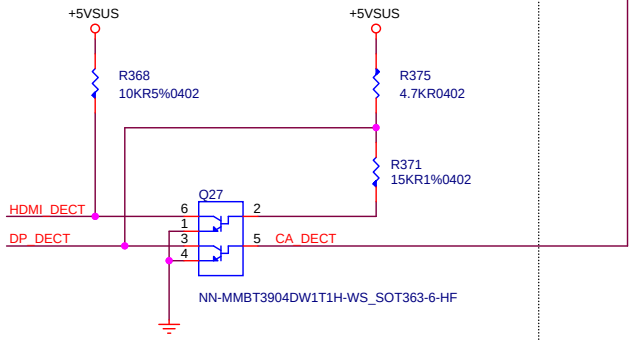
Display Port



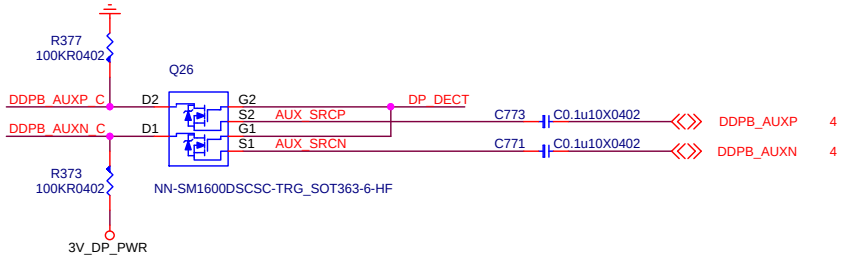


Display Select

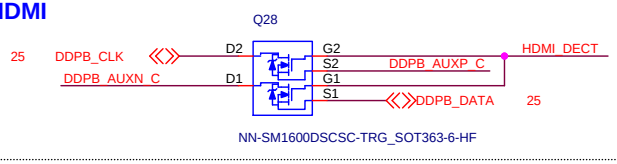


Dual Mode Switch

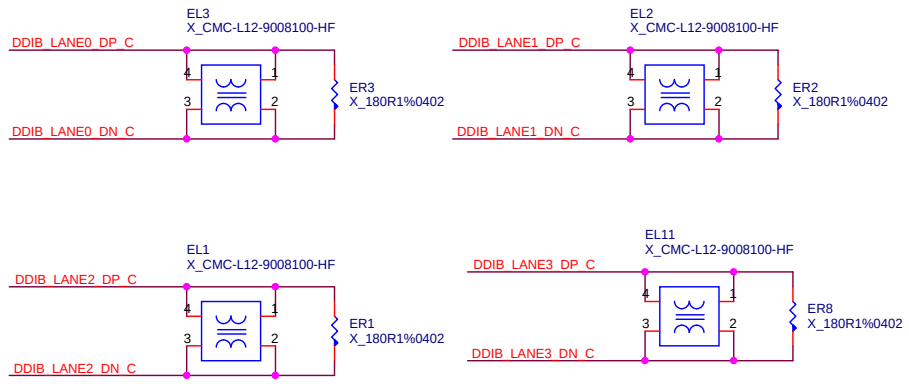
DP



HDMI



EMI Close Connector



MICRO-STAR INT'L CO.,LTD.

Title: DP

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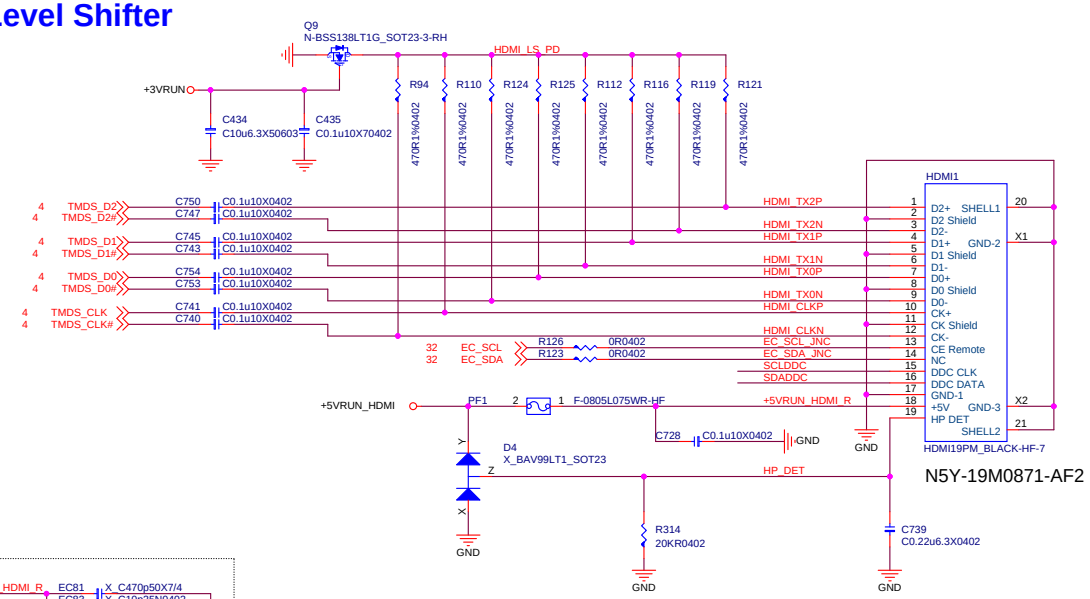
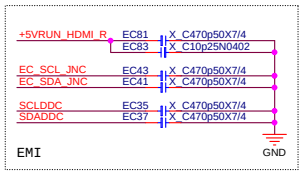
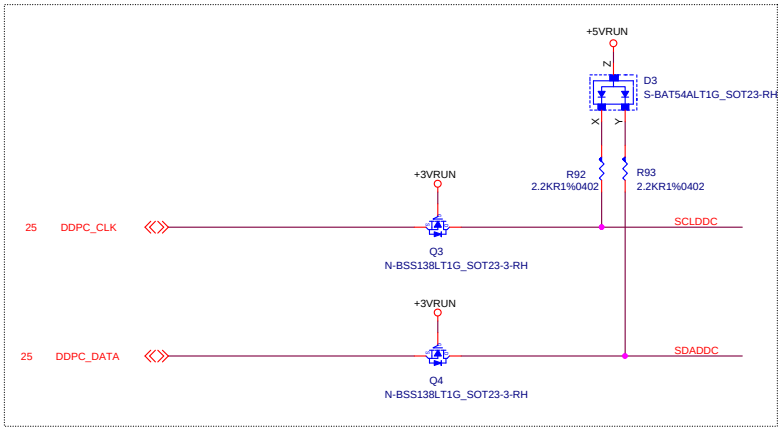
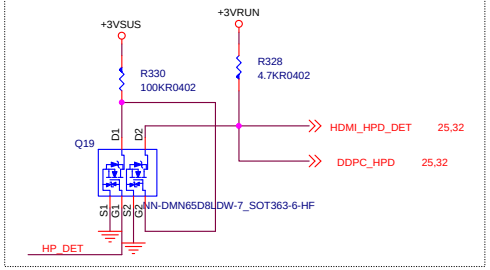
HDMI Level Shifter

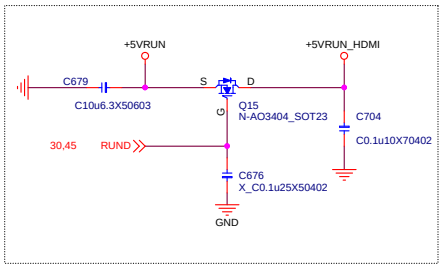




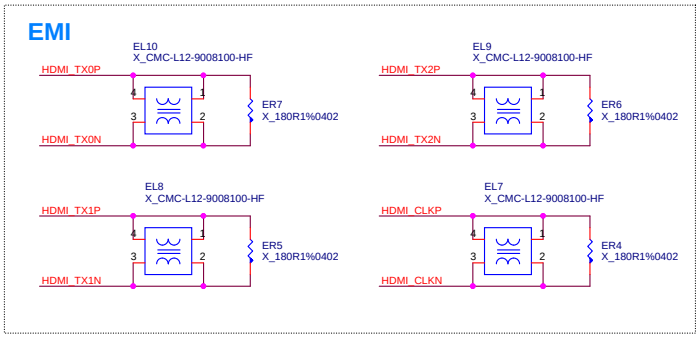


HPD Level Shift 5V to 3V





EMI



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Title: HDMI DP139

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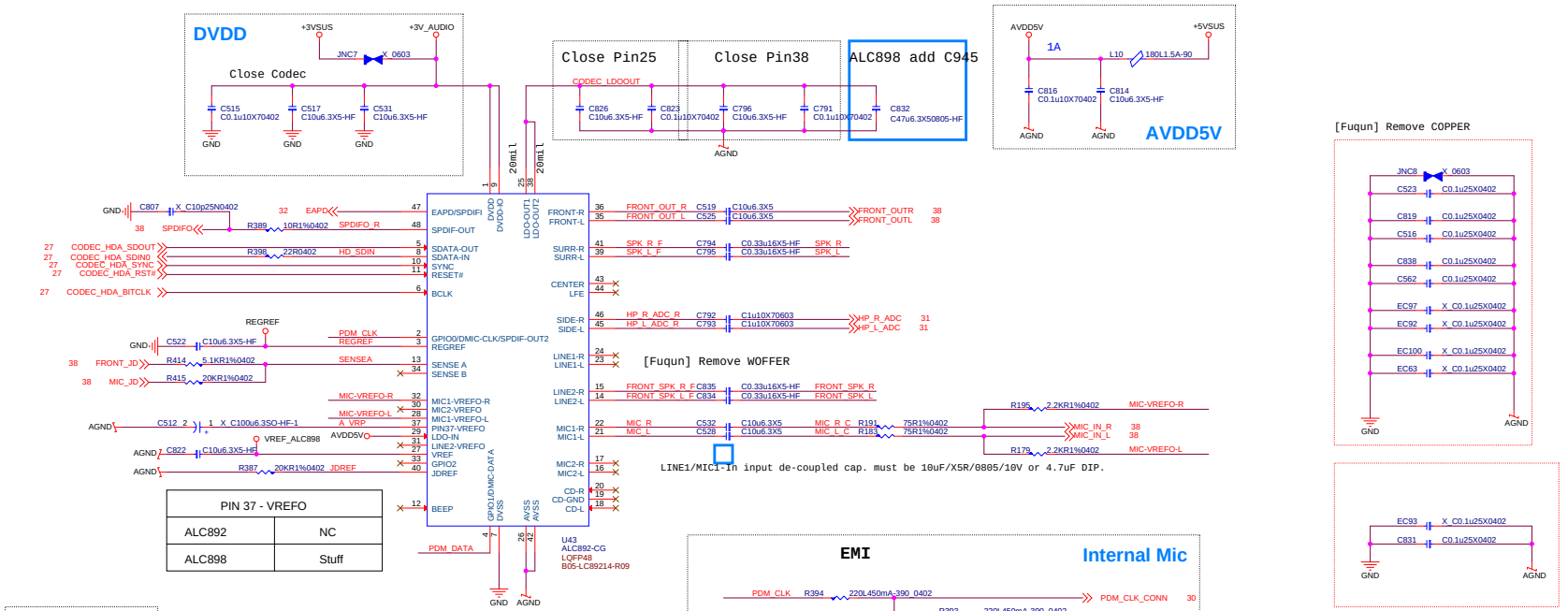
Audio CODEC(ALC892)



PIN 37 - VREFO	
ALC892	NC
ALC898	Stuff

Av	GAIN0	GAIN1
6dB	0	0
10dB	0	
15.6dB	1	0
21.6dB	1	1
4.3dB	X	X

Av	GAIN0	GAIN1
6dB	0	0
10dB	0	1
15.6dB	1	0
21.6dB	1	1
4.3dB	X	X

	CODEC	³â¥z
L	-	-
L	+	+
R	+	+
R	-	-
L2	+	+
L2	-	-
R2	-	-
R2	+	+

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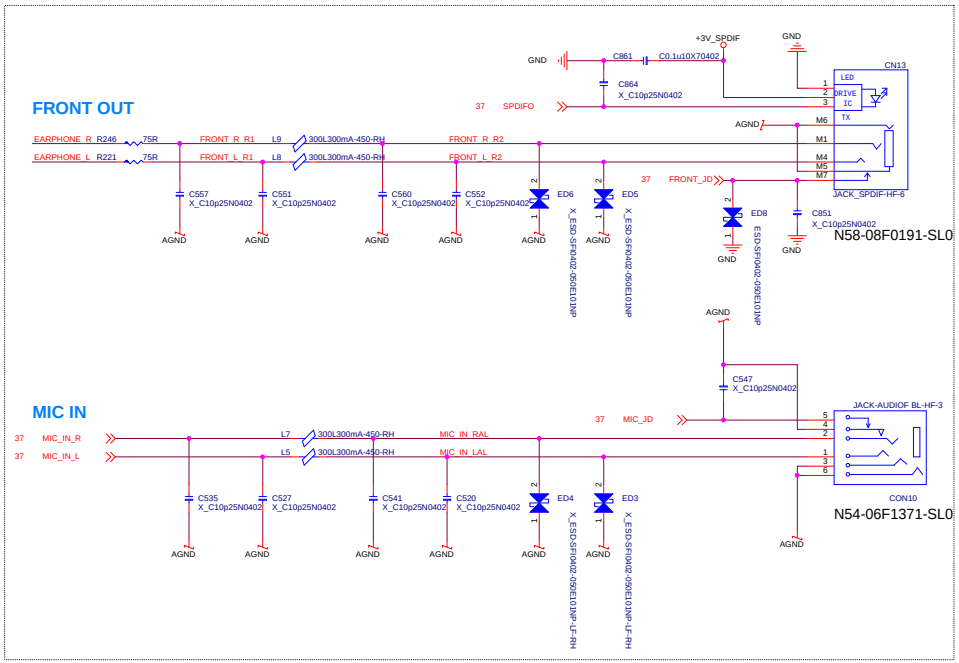
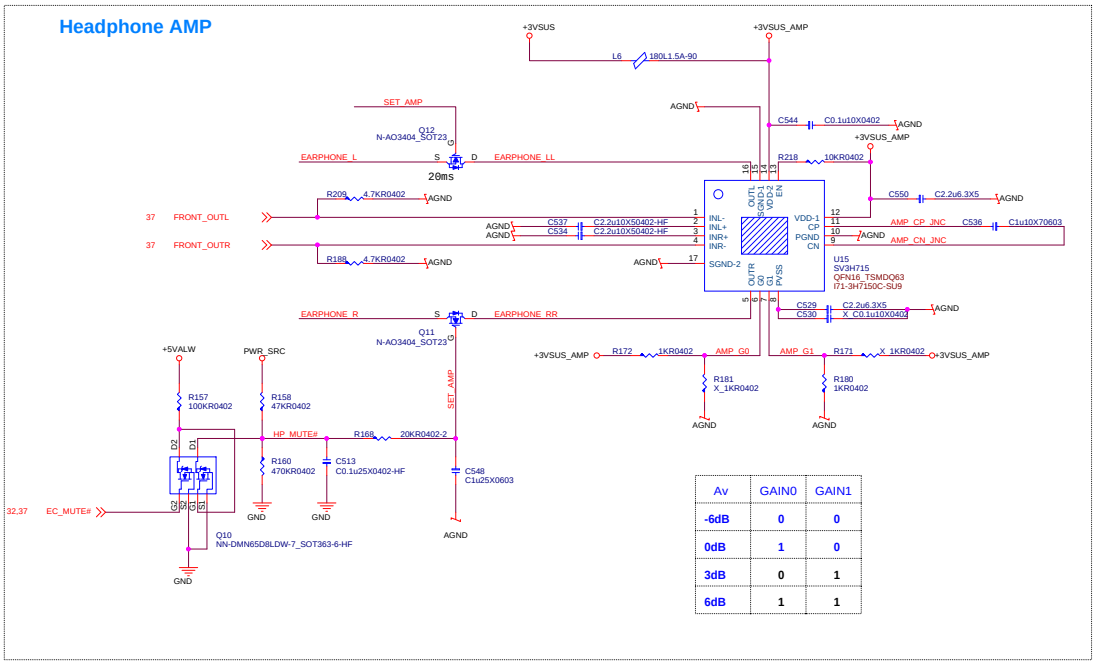
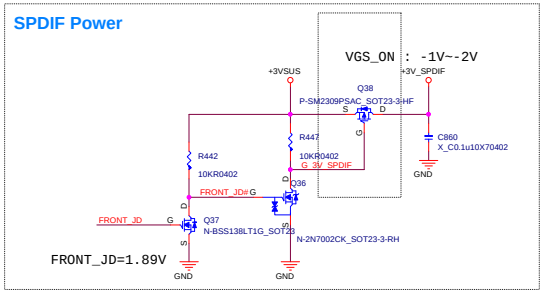
Audio CONN /Woffer







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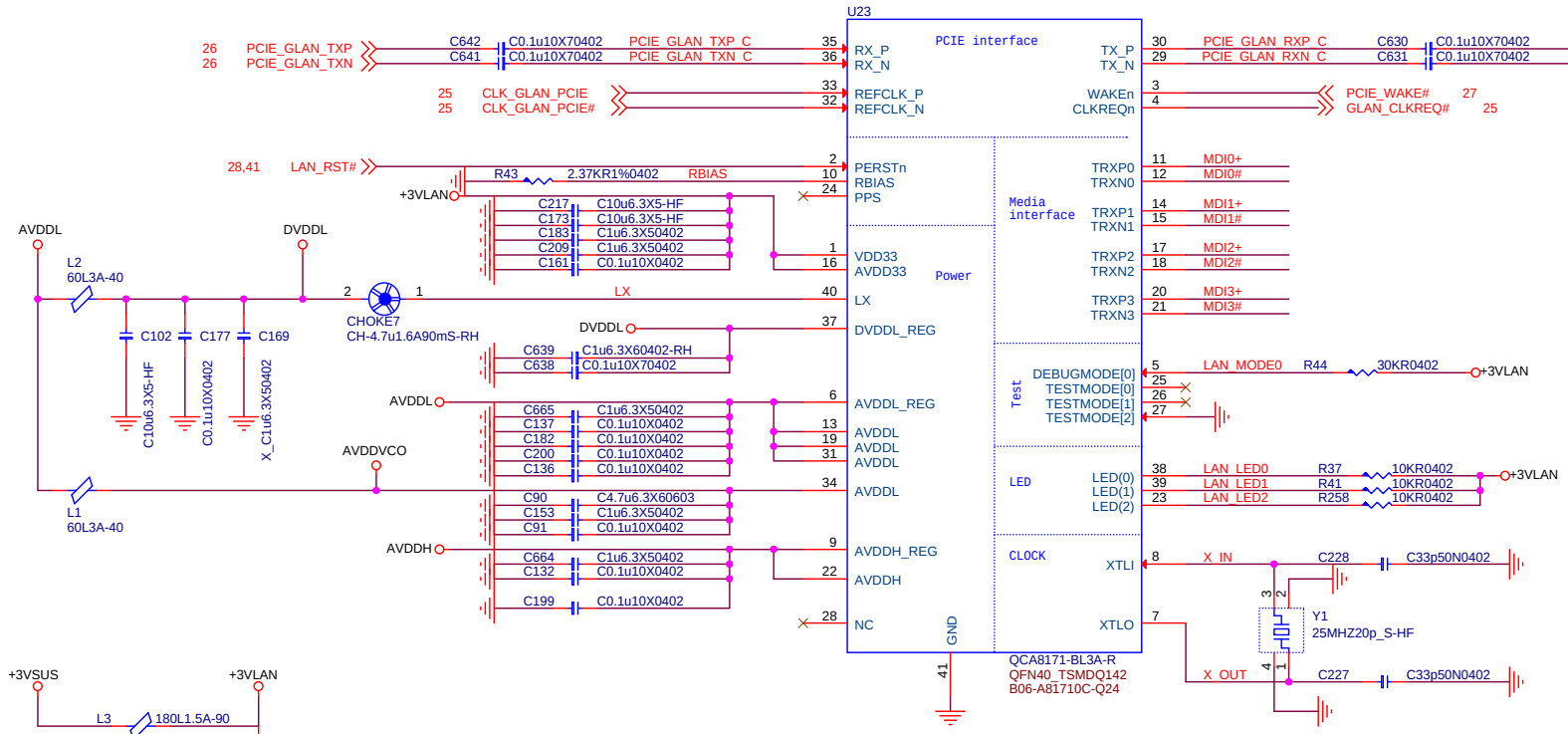
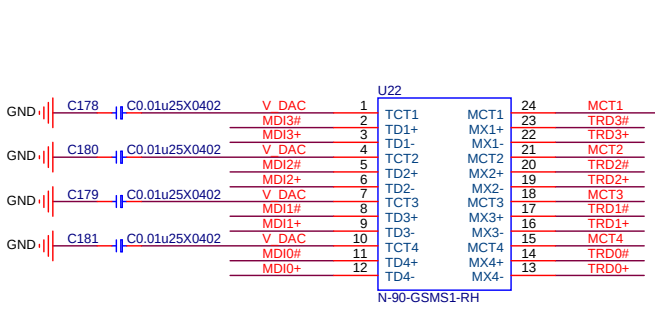
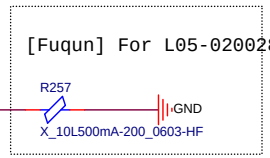
LAN(AR8171/E2400)

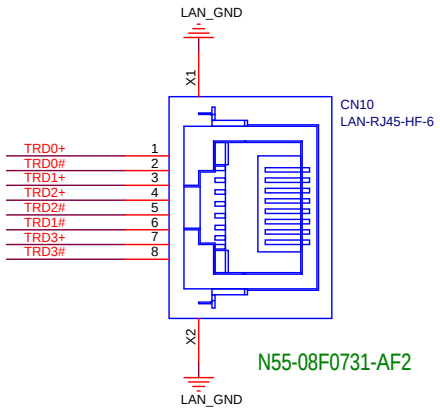




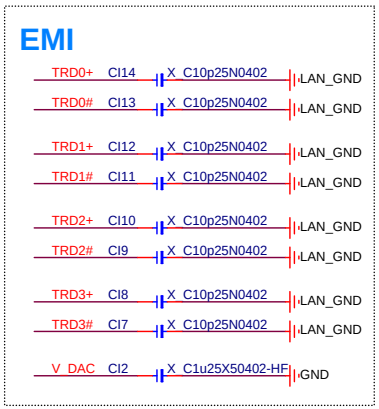
L05-0200070-B09

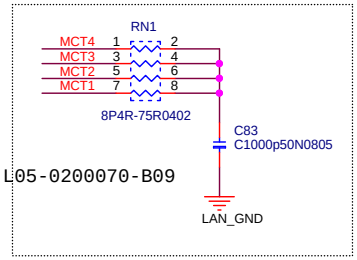
[Fuqun] For L05-0200280-A91



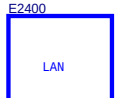


N55-08F0731-AF2

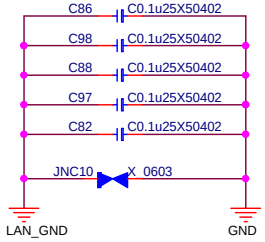




[Fuqun] For L05-0200070-B09



B06-E24000C-R54



MICRO-STAR INT'L CO.,LTD.

Title: **GIGA LAN(BigFoot BFN2400/AR8171)**

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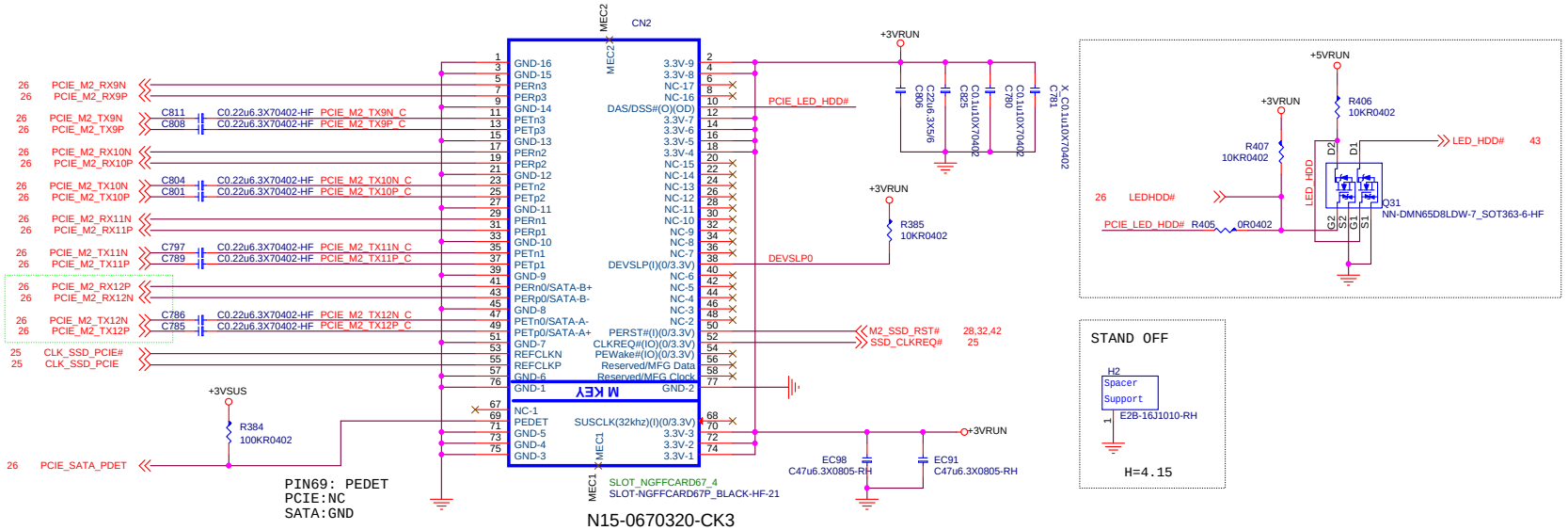
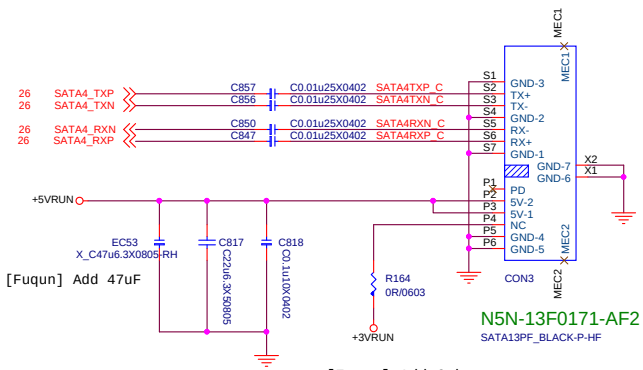
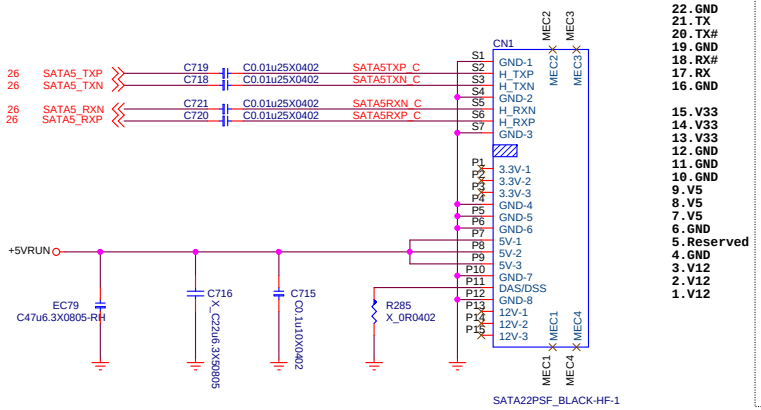
SSD

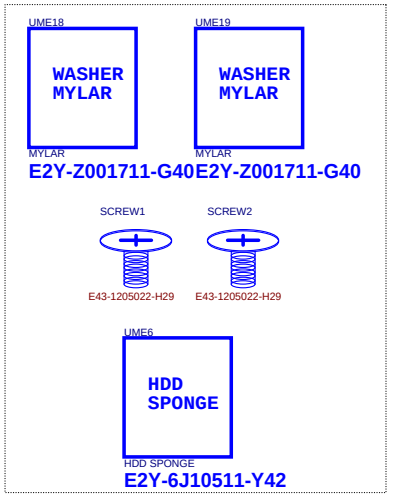


HDD(MS-16JF)



HDD(MS-179F)





msi	MICRO-STAR INT'L CO.,LTD.	
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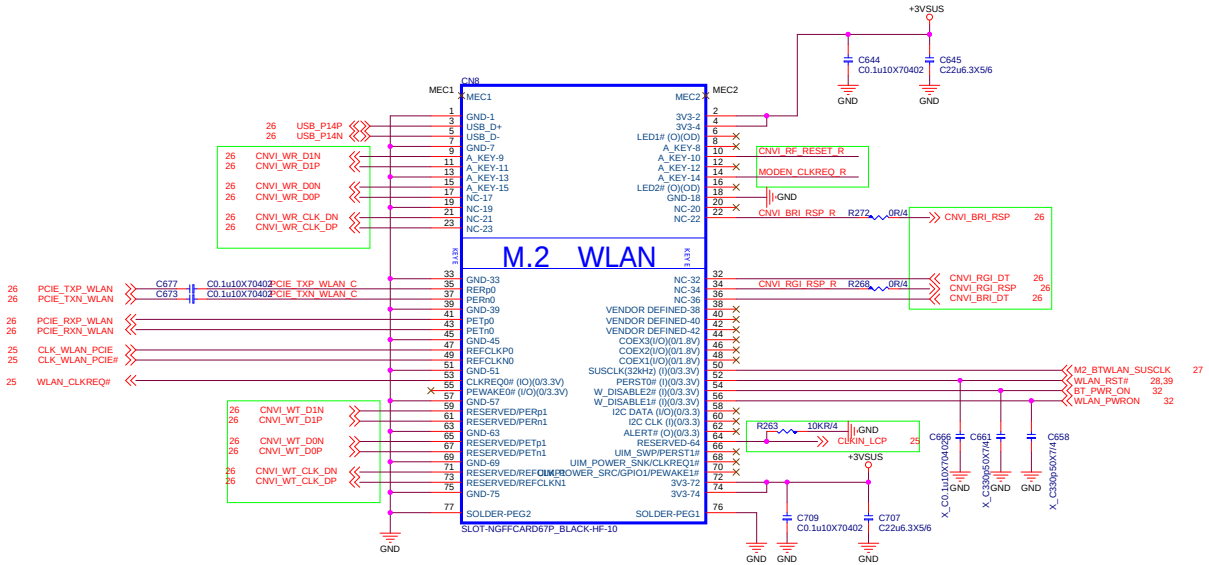
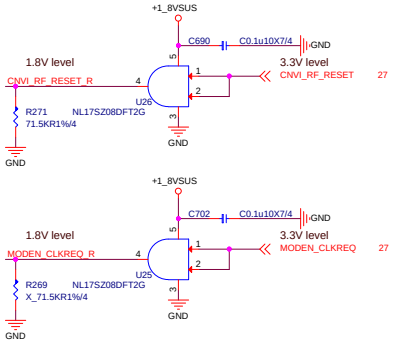
WLAN

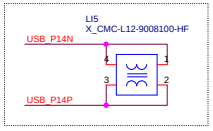


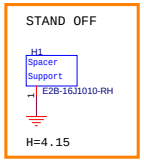
(Level Shifter 3.3V to 1.8V)

PN : T70-7SZ0870-O05
AND Gate/ NL17SZ08DFT2G

VCC	VIH Min	VIL Max
1.65 to 1.95	**0.75*VCC**	**0.25*VCC**
2.3 to 5.5	0.7*VCC	0.3*VCC







Pin #	M.2 WLAN	INTEL CNVi WLAN	Pin #	M.2 WLAN	INTEL CNVi WLAN
Pin 1	GND	GND	Pin 2	3.3V	3.3V
Pin 3	USB_D+	N/C	Pin 4	3.3V	3.3V
Pin 5	USB_D-	N/C	Pin 6	LED1#	LED1#
Pin 7	GND	GND	Pin 8	Module Key	N/C
Pin 9	Module Key	WGR_D1N	Pin 10	Module Key	RF_RESET_B(1.8V)
Pin 11	Module Key	WGR_D1P	Pin 12	Module Key	N/C
Pin 13	Module Key	GND	Pin 14	Module Key	CLKREQ0(1.8V)
Pin 15	Module Key	WGR_D0N	Pin 16	LED2#	LED2#
Pin 17	N/C	WGR_D0P	Pin 18	GND	GND
Pin 19	N/C	GND	Pin 20	N/C	N/C
Pin 21	N/C	WGR_CLKN	Pin 22	N/C	BRI_RSP(1.8V)
Pin 23	N/C	WGR_CLKP	Pin 24	Module Key	Module Key
Pin 25	Module Key	Module Key	Pin 26	Module Key	Module Key
Pin 27	Module Key	Module Key	Pin 28	Module Key	Module Key
Pin 29	Module Key	Module Key	Pin 30	Module Key	Module Key
Pin 31	Module Key	Module Key	Pin 32	N/C	RGI_DT(1.8V)
Pin 33	GND	GND	Pin 34	N/C	RGI_RSP(1.8V)
Pin 35	PERP0	N/C	Pin 36	N/C	BGI_DT(1.8V)
Pin 37	PERN0	N/C	Pin 38	N/C	N/C
Pin 39	GND	GND	Pin 40	N/C	N/C
Pin 41	PETP0	N/C	Pin 42	N/C	N/C
Pin 43	PETN0	N/C	Pin 44	N/C	N/C
Pin 45	GND	GND	Pin 46	N/C	N/C
Pin 47	REFCLKP0	N/C	Pin 48	N/C	N/C
Pin 49	REFCLKN0	N/C	Pin 50	SUSCLK (32KHz)	SUSCLK (32KHz)
Pin 51	GND	GND	Pin 52	PERST0#	N/C
Pin 53	CLKREQ0#	N/C	Pin 54	BT_EN (W_DISABLE2#)	BT_EN (W_DISABLE2#)
Pin 55	PEWAKE0#	N/C	Pin 56	WLAN_EN (W_DISABLE2#)	WLAN_EN (W_DISABLE2#)
Pin 57	GND	GND	Pin 58	N/C	N/C
Pin 59	N/C	WT_D1N	Pin 60	N/C	N/C
Pin 61	N/C	WT_D1P	Pin 62	N/C	N/C
Pin 63	GND	GND	Pin 64	Resever	REFCLK0(38.4MKz)
Pin 65	N/C	WT_D0N	Pin 66	N/C	N/C
Pin 67	N/C	WT_D0P	Pin 68	N/C	N/C
Pin 69	GND	GND	Pin 70	N/C	N/C
Pin 71	N/C	WT_CLKN	Pin 72	3.3V	3.3V
Pin 73	N/C	WT_CLKP	Pin 74	3.3V	3.3V
Pin 75	GND	GND			

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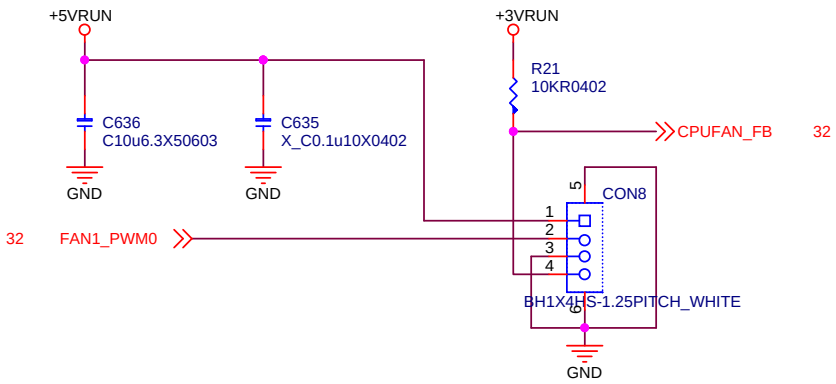
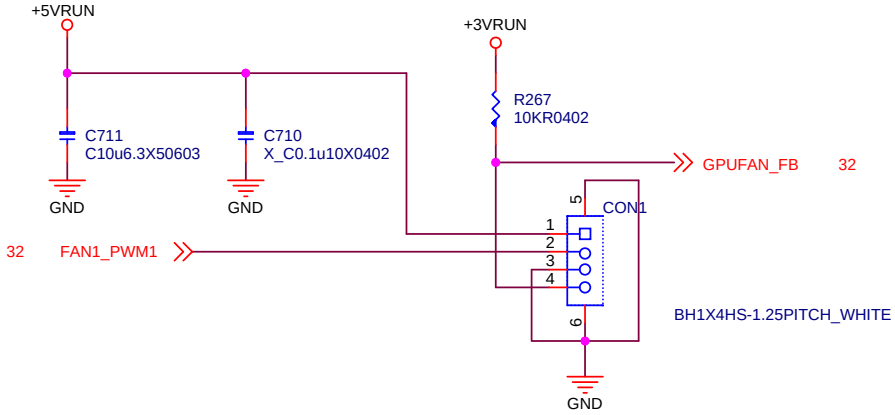
CPU FAN



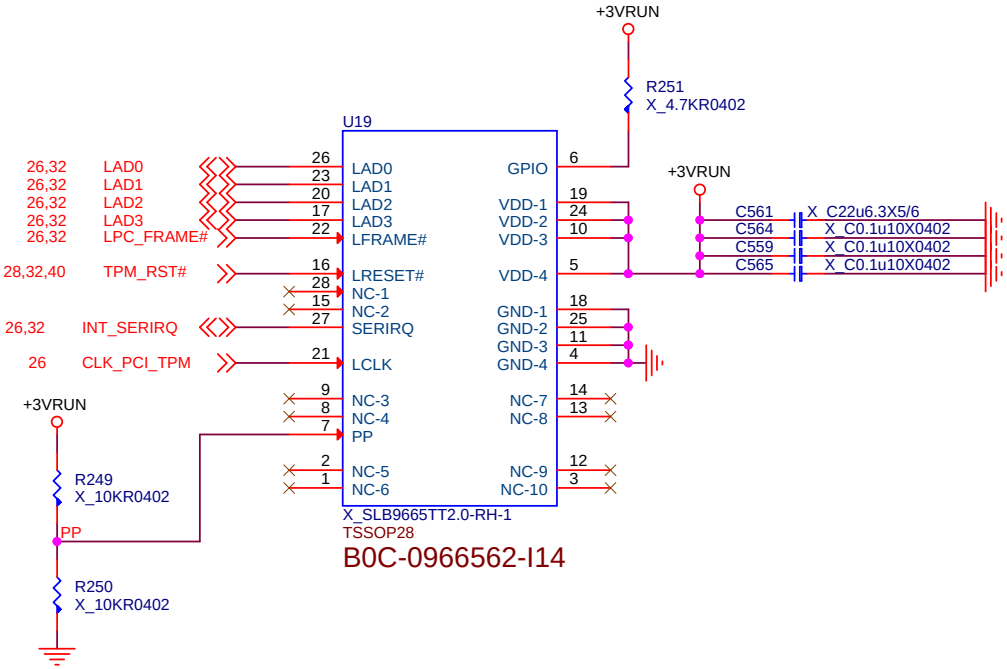
N32-1040430-H06

GPU FAN



N32-1040430-H06

TPM



B0C-0966562-I14

Title	ODD/HDD/FAN	
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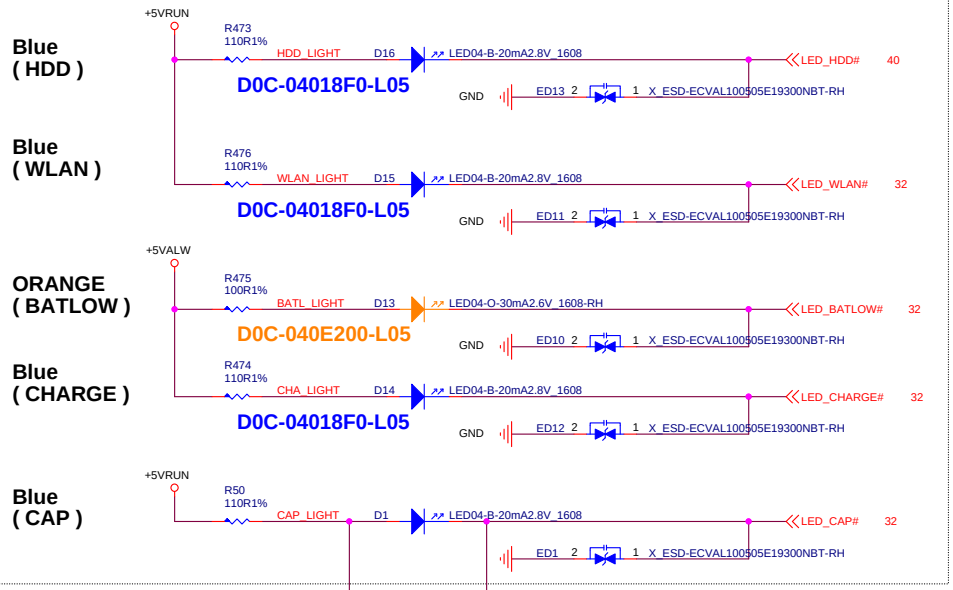
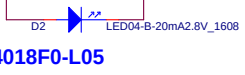
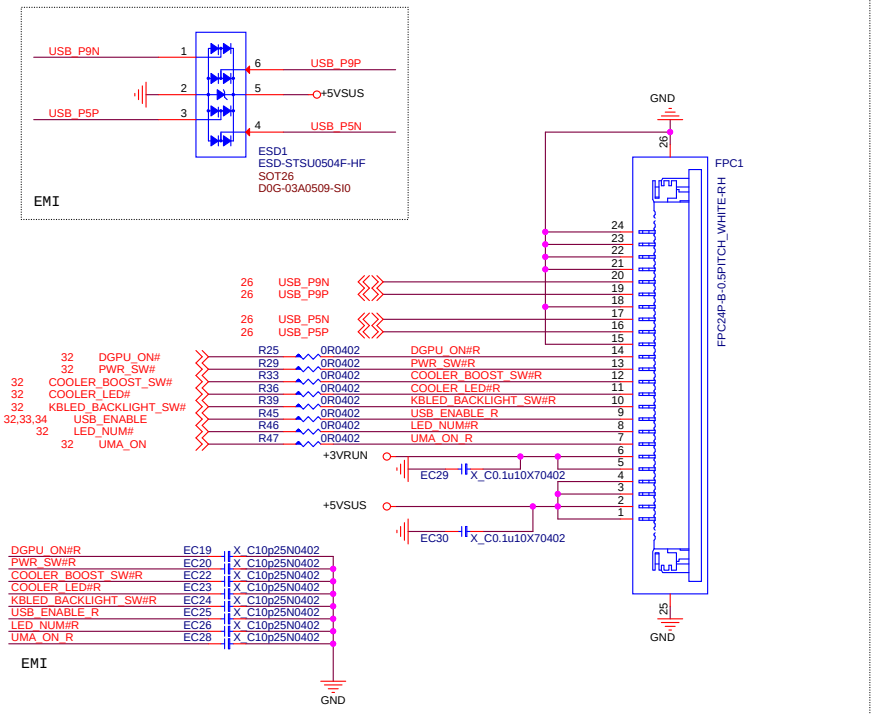
LED for 16JF



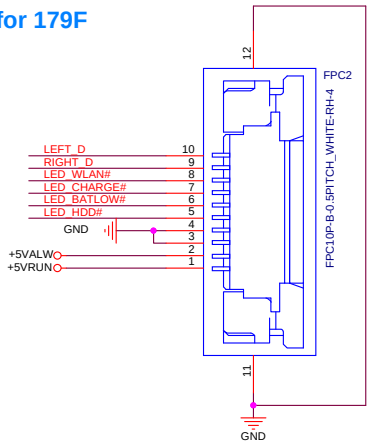
LED for 179F
(16Mx remove)



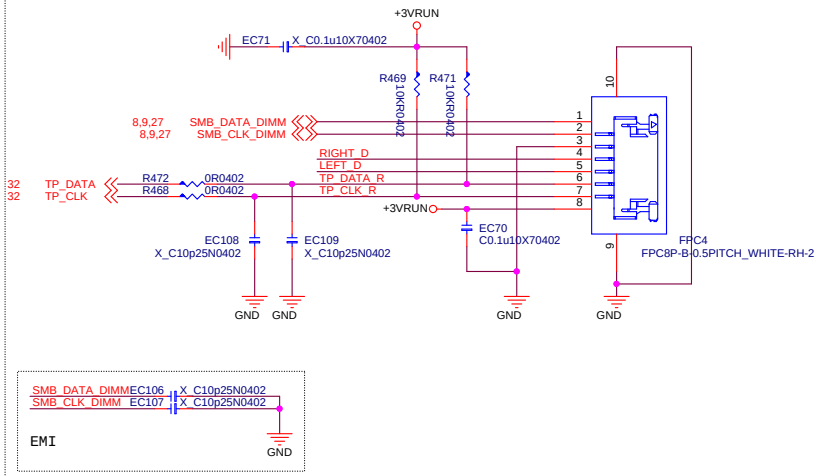
16JF2/179F2



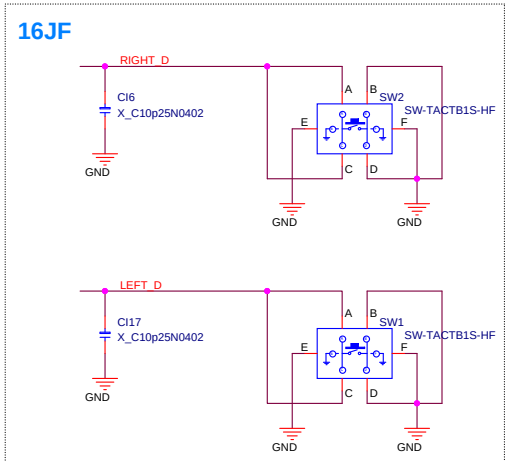
LED for 179F



Touch Pad



16JF



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Title: WLAN /LED/TP			
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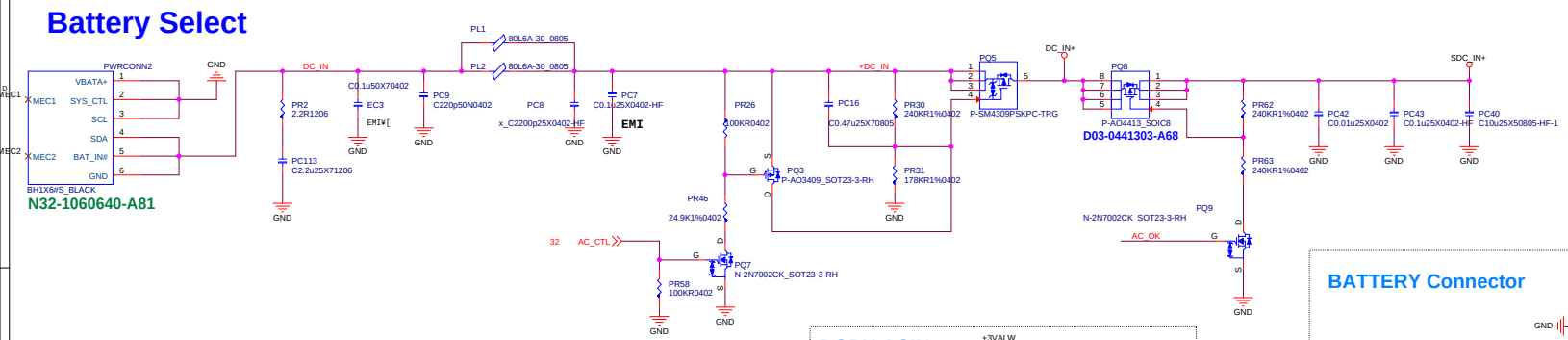
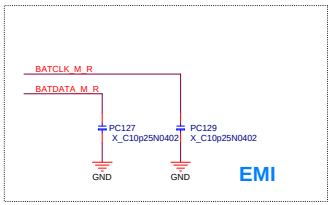
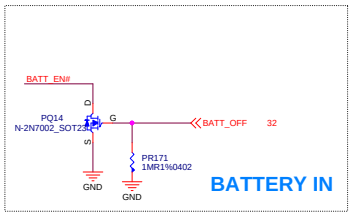
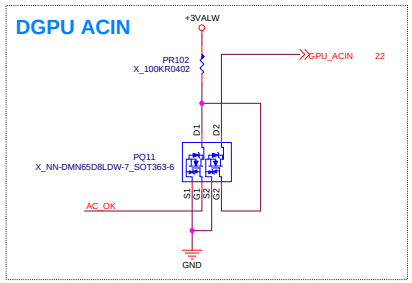
Battery Select/Charger

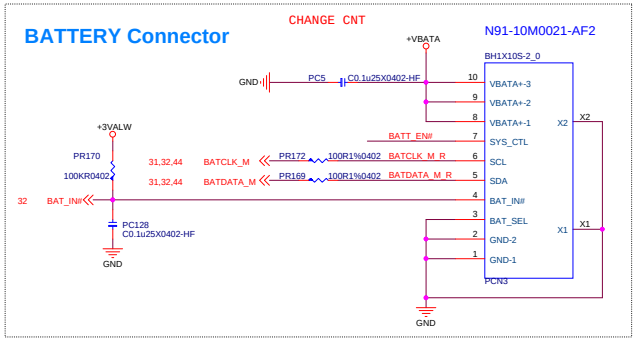
Battery Select



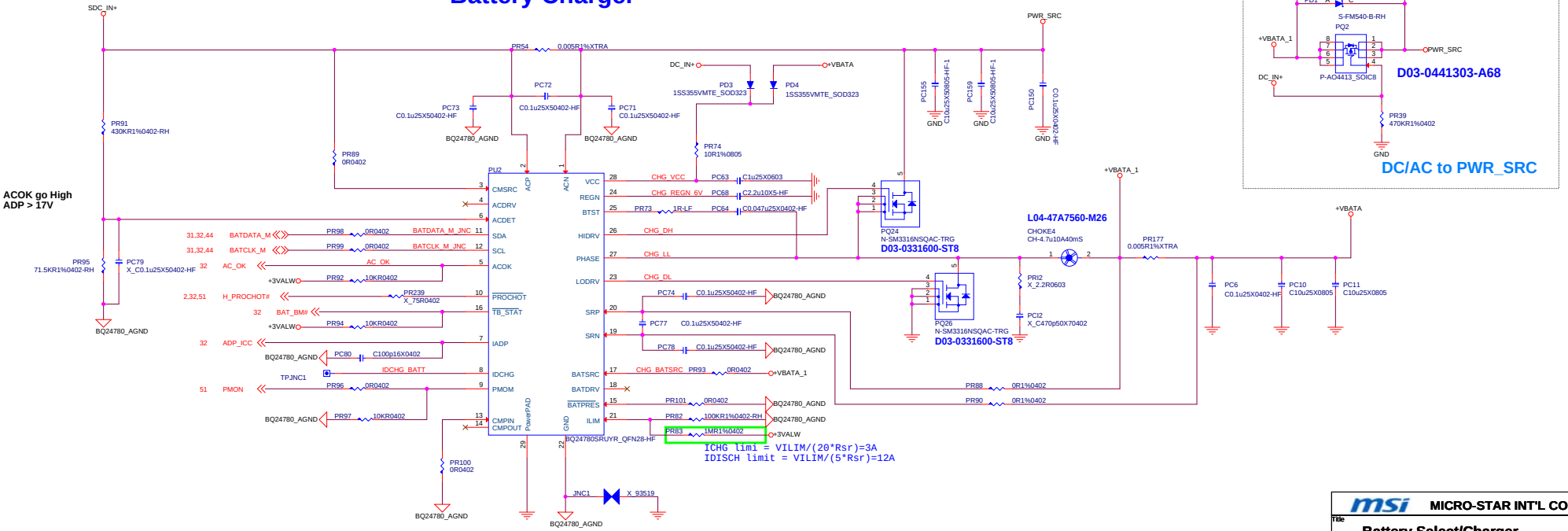








Battery Charger



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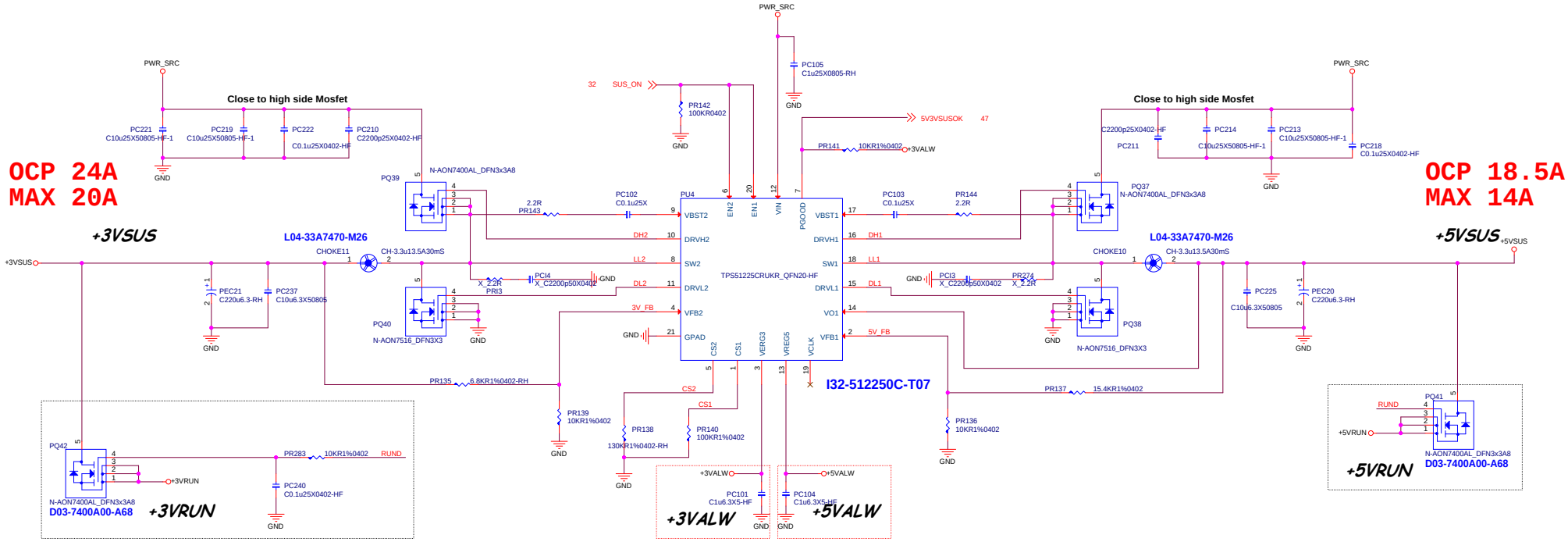
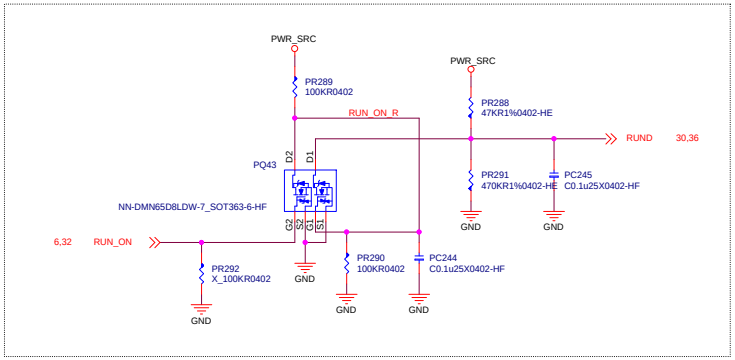
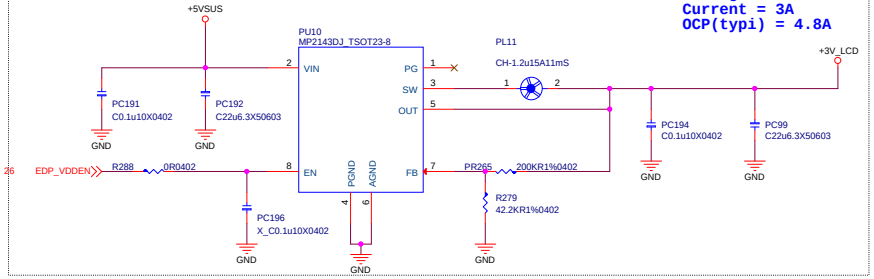
System Power





+3V_LCD — Pannel Device Logic Power

Voltage = 3.45V
Current = 3A
OCP(typi) = 4.8A



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Title	System Power/3VLCD/+1.1VRUN
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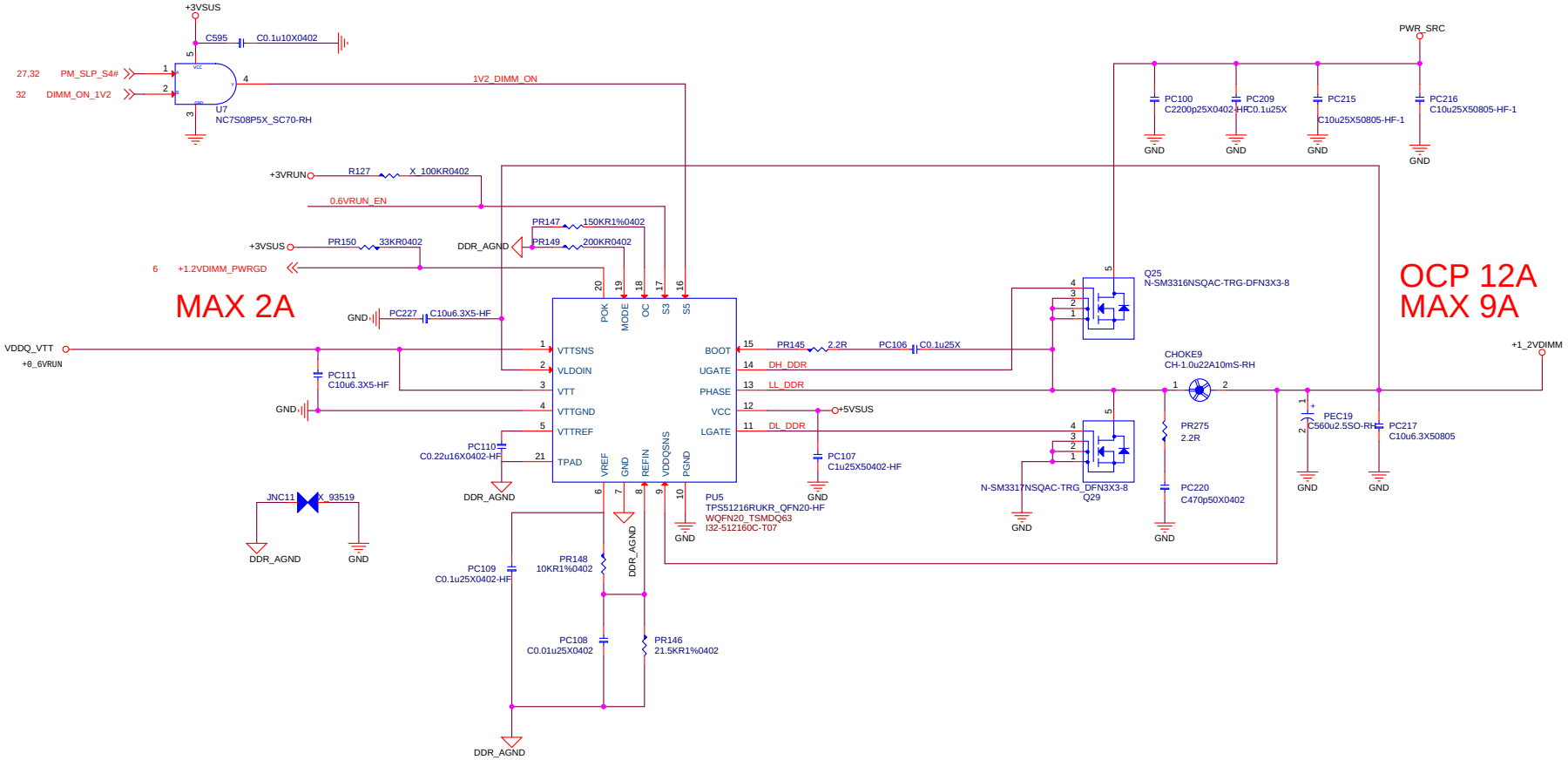
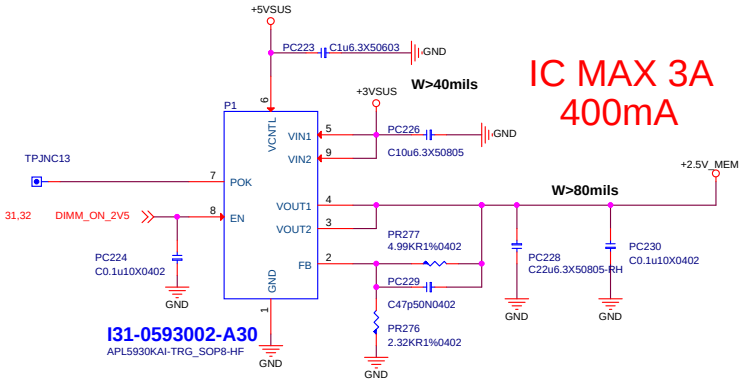
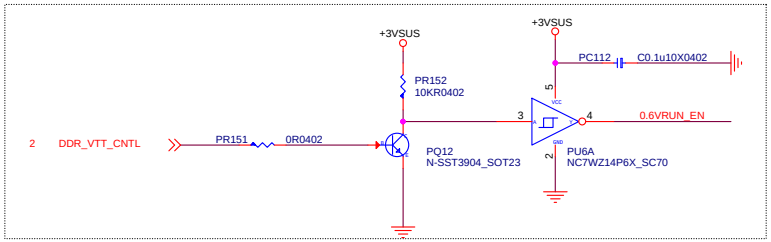
+1_2VDIMM/+0.6VRUN



+2.5V_MEM





MICRO-STAR INT'L CO.,LTD.

Title: +1.2VDIMM/+0.6VRUN/+2.5VMEM

Size | Document Number: MS-16JF/179F | Rev: 0A

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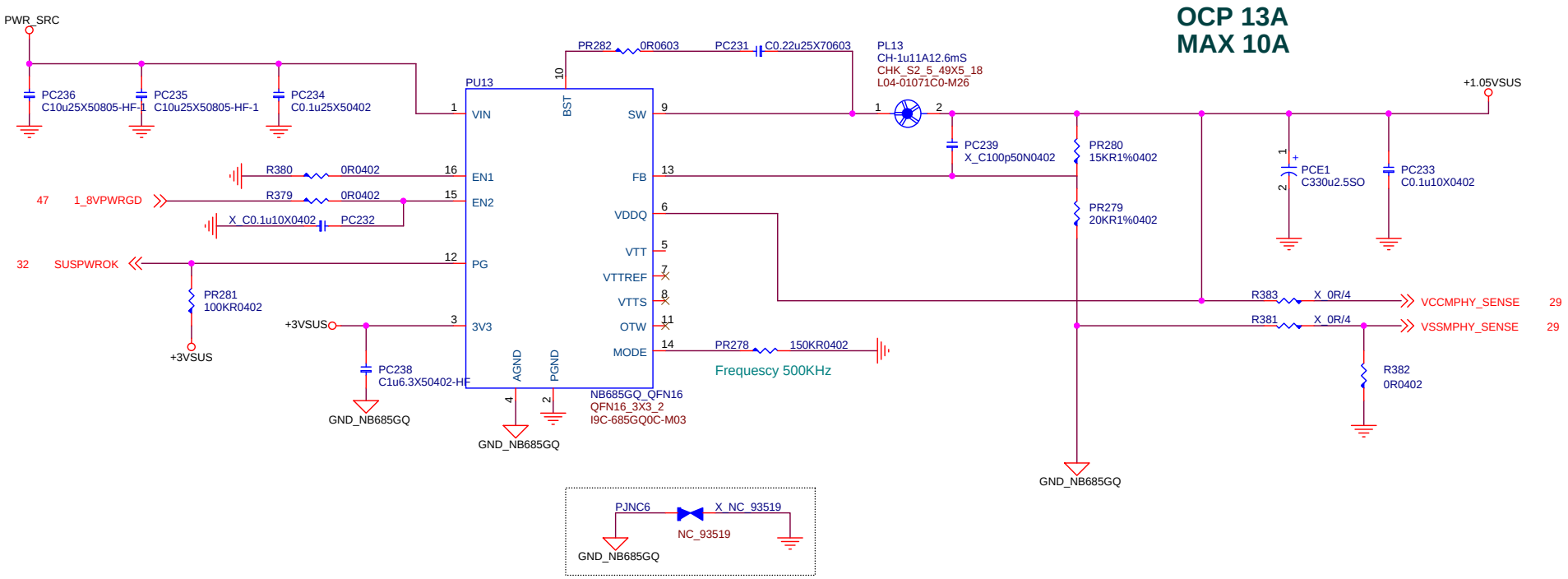
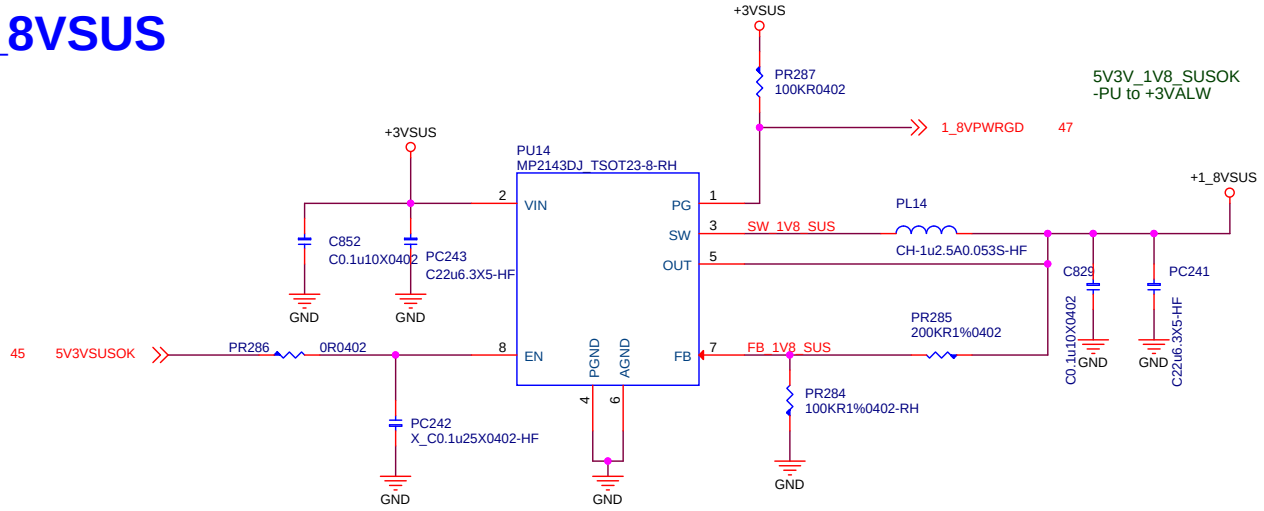
+1.05VSUS



+1_8VSUS



Voltage = 1.8V
Current = 1A
OCP(typi) = 2.5A

MICRO-STAR INT'L CO.,LTD.		
Title: 1.05VSUS /PEX_VDD/1.8VSUS		
Size	Document Number: MS-16JF/179F	Rev: 0A
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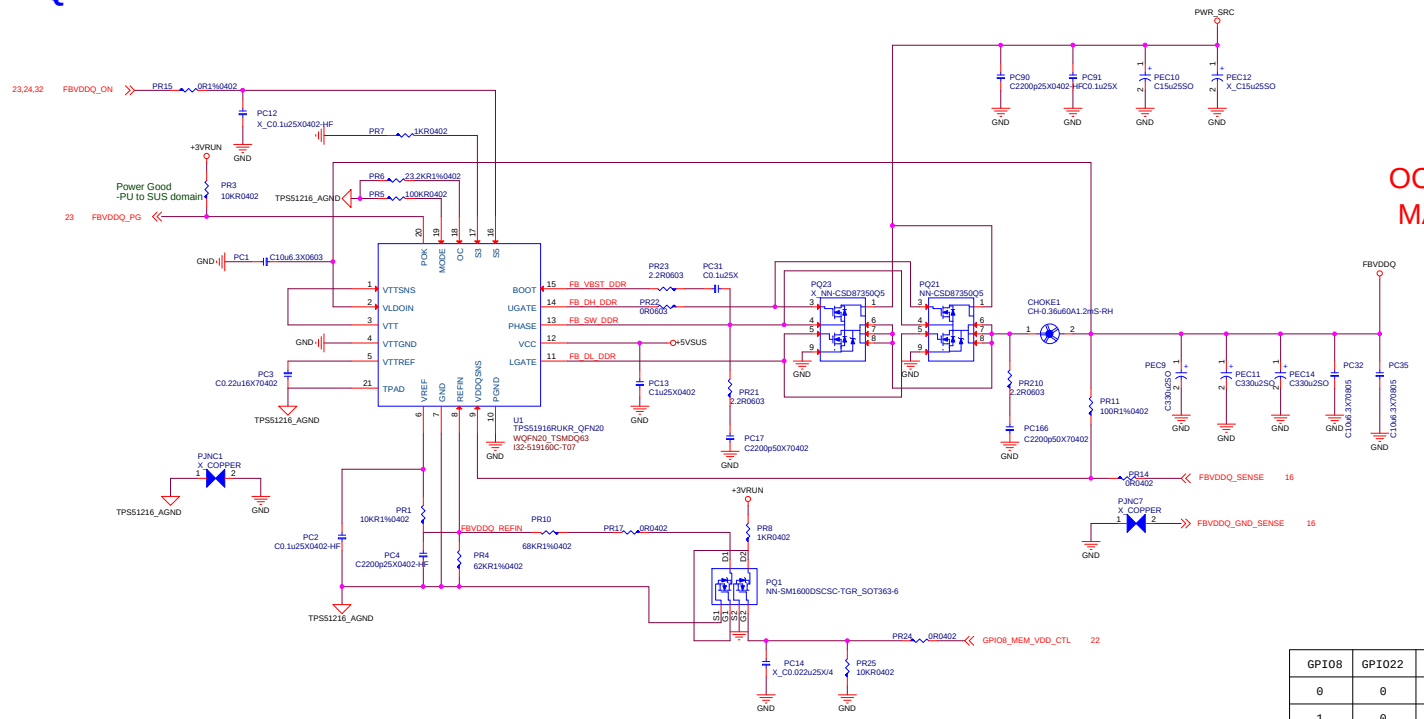
FBVDDQ

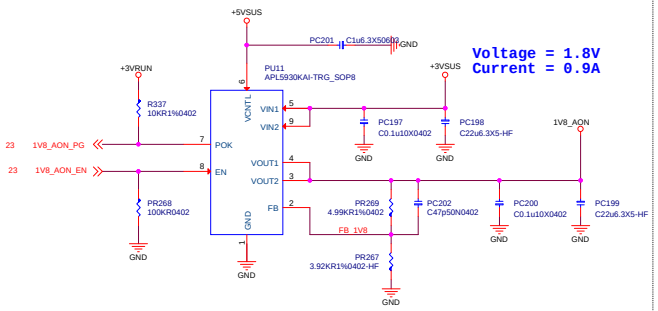


OCP 25A
MAX 11A

EDP-Peak 20A
EDP-Con 11A

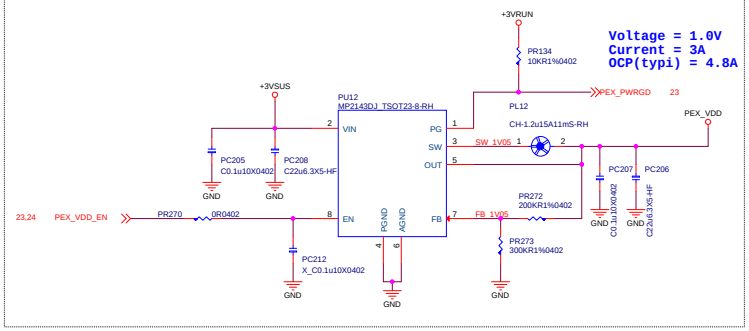
GPIO8	GPIO22	
0	0	1.35V
1	0	1.5V

1V8_AON



Voltage = 1.8V
Current = 0.9A

PEX_VDD



Voltage = 1.0V
Current = 3A
OCP(typi) = 4.8A

MICRO-STAR INT'L CO.,LTD.

Title: FBVDDQ/1V8_AON

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DGPU POWER / UP9509P

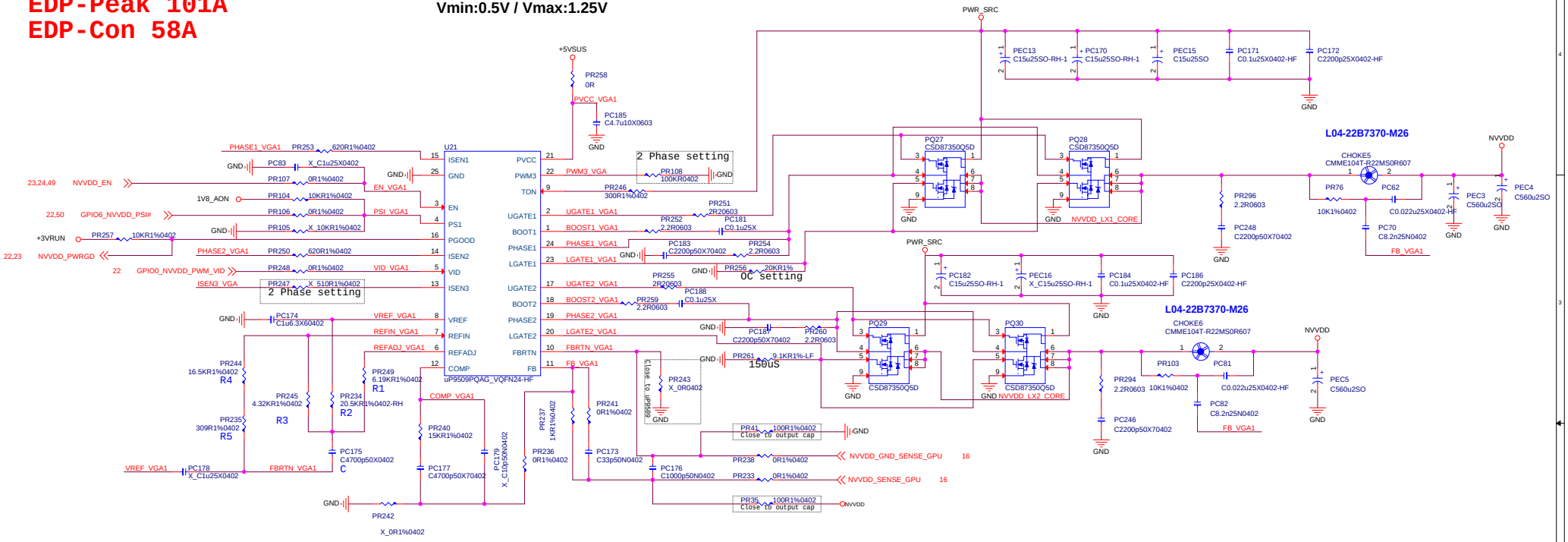
EDP-Peak 101A

EDP-Con 58A

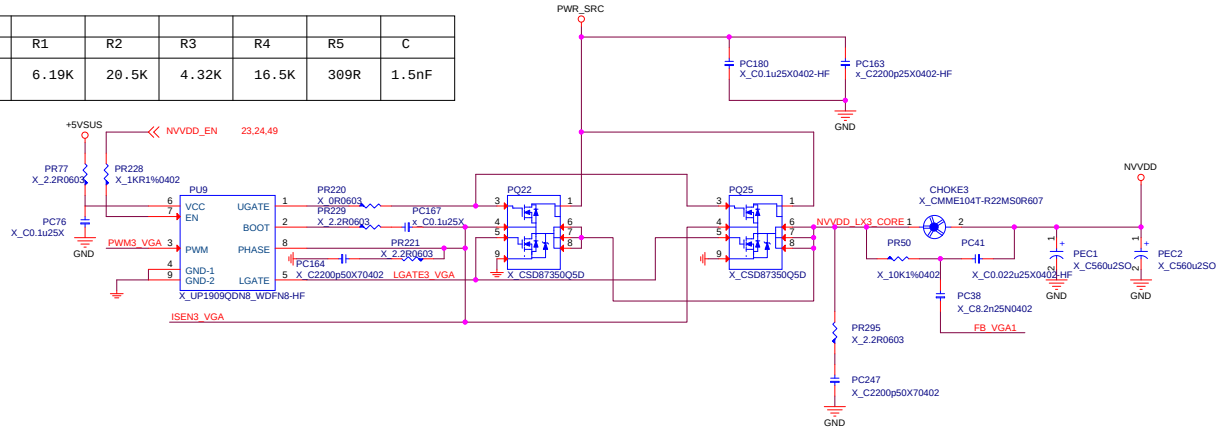
DGPU POWER NVVDD

VBoot:0.8V

Vmin:0.5V / Vmax:1.25V



CONFIG	R1	R2	R3	R4	R5	C
N17P-G1	6.19K	20.5K	4.32K	16.5K	309R	1.5nF



Title	NVVDD PWM IC (UP9509)
Size	Document Number: MS-16JF/179F
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MICRO-STAR INT'L CO.,LTD.

DGPU POWER / UP1666P

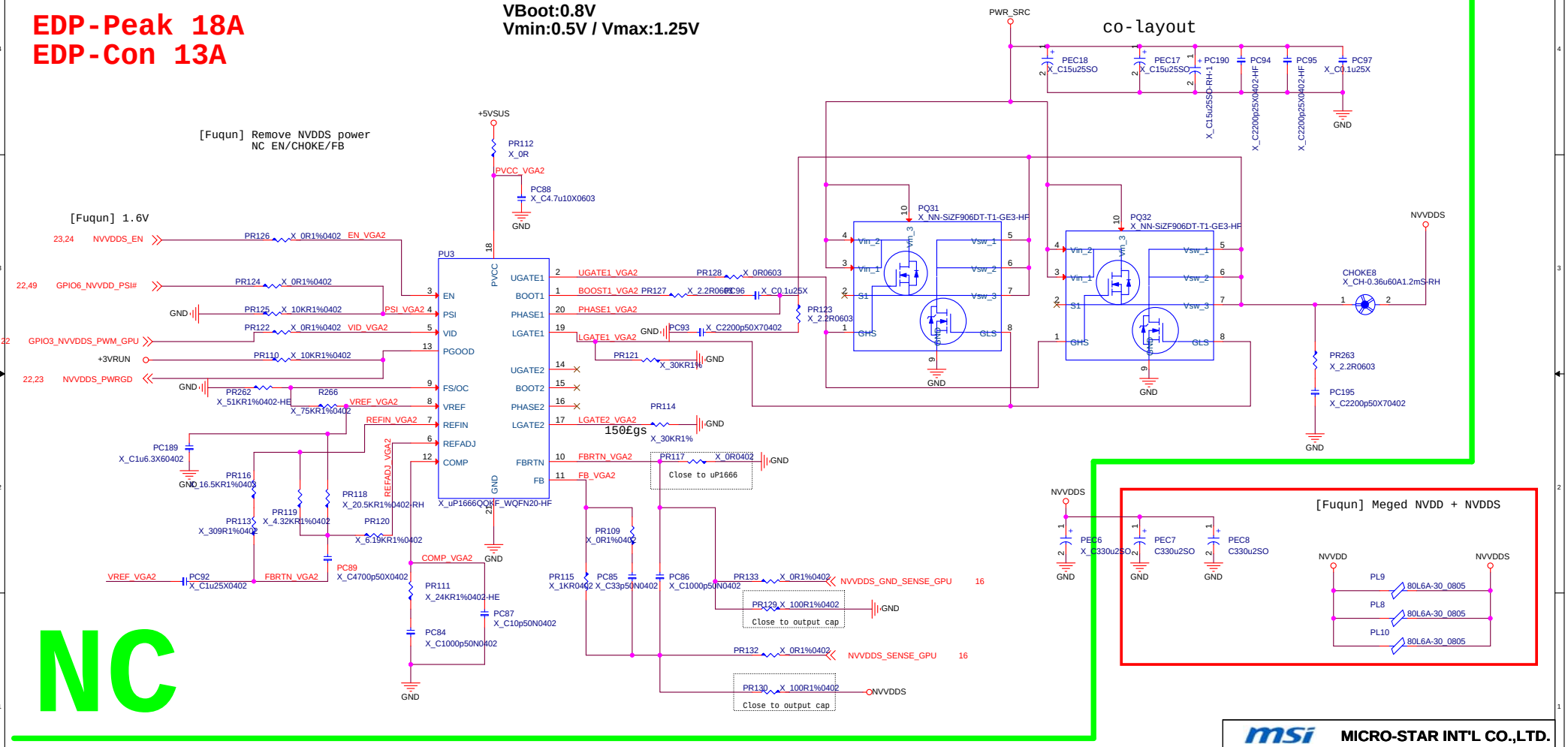
EDP-Peak 18A

EDP-Con 13A

DGPU POWER NVVDDS

VBoot:0.8V

Vmin:0.5V / Vmax:1.25V



MSI	MICRO-STAR INT'L CO.,LTD.	
Title	NVVDD PHASE 1~4	
Size	Document Number: MS-16JF/179F	Rev: 0A
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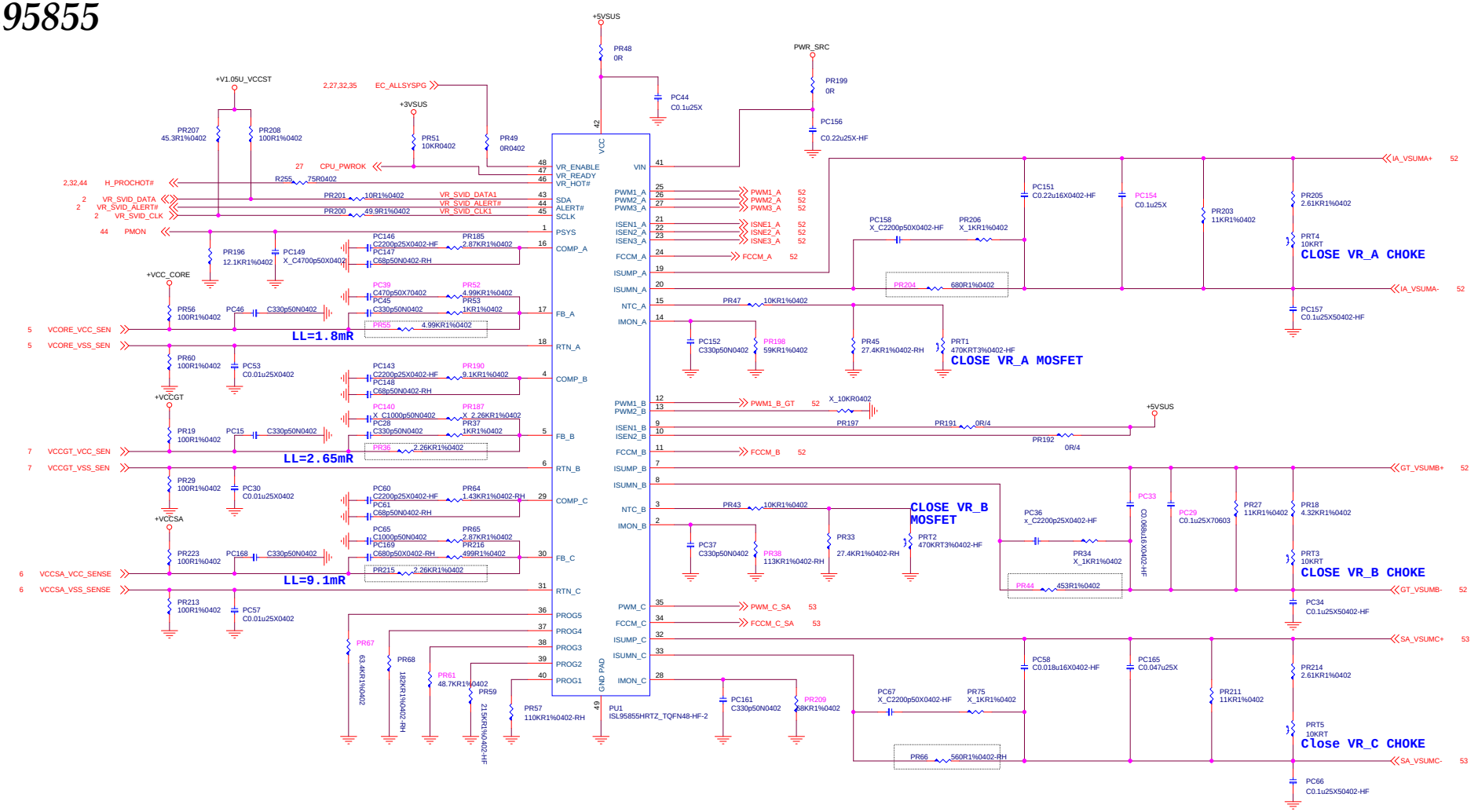
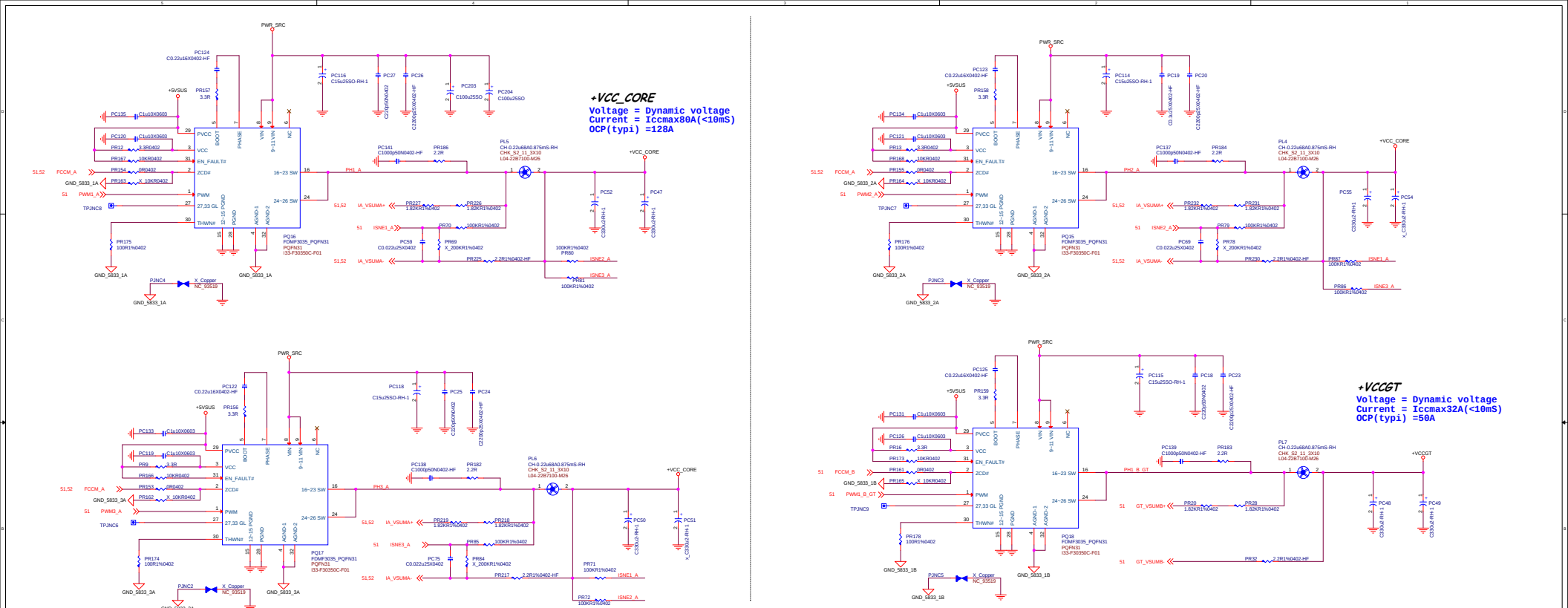
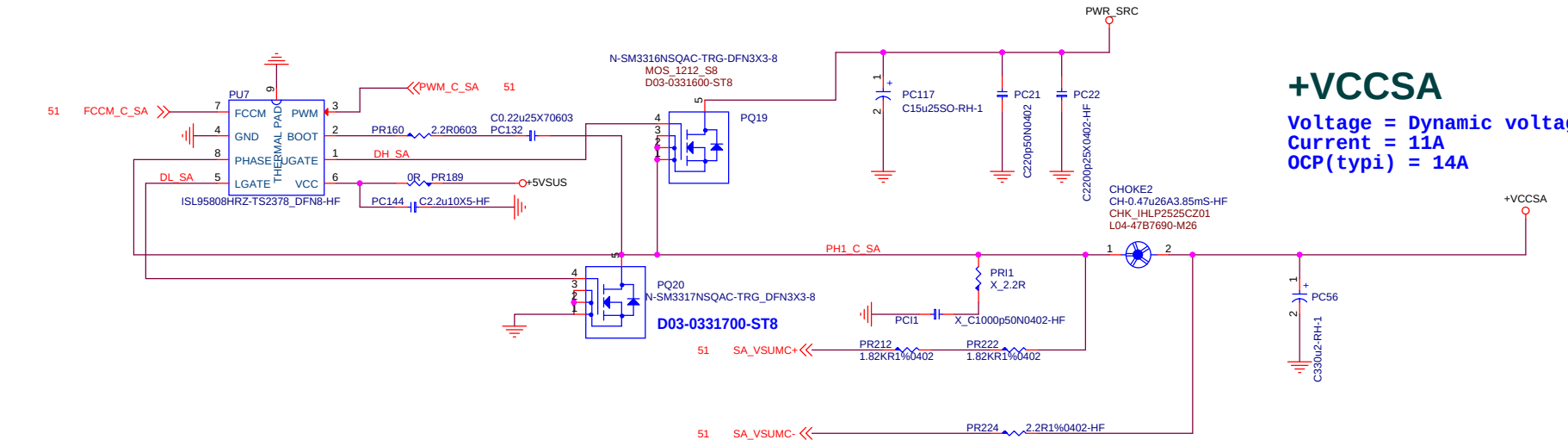
Skylake H-line 42 45W
ISL95855



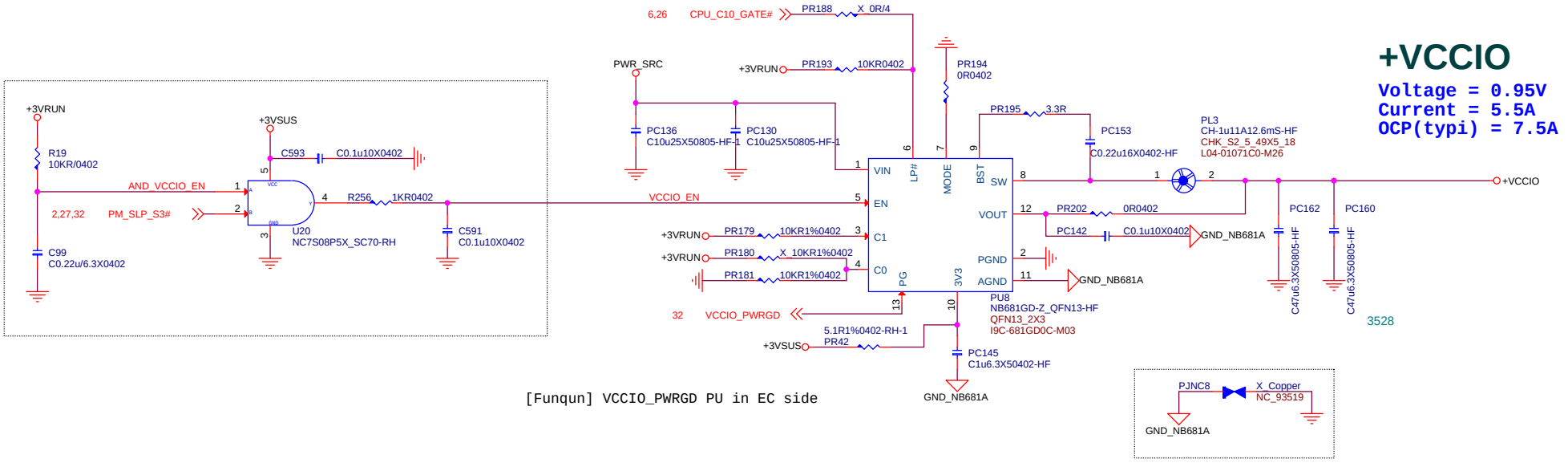
MICRO-STAR INT'L CO.,LTD.		
Title: CPU Power		
Size	Document Number: MS-16JF/179F	Rev: 0A
Date: Wednesday, November 29, 2017	Sheet 51 of 61	



MSI	MICRO-STAR INT'L CO.,LTD.
Title	Skylake VCore/VCCGT
Size	Document Number: MS-16JF/179F
Rev	0A
Date: Thursday, November 09, 2017	Sheet 52 of 61



Power Sequence spec tCPU27 :
CPU_C10_GATE# de-assertion to VCCSTG stable 10 < tCPU26 < 240 us



[Funqun] VCCIO_PWRGD PU in EC side

msi MICRO-STAR INT'L CO.,LTD.		
Title: Skylake VCCSA/VCCIO		
Size	Document Number: MS-16JF/179F	Rev: 0A
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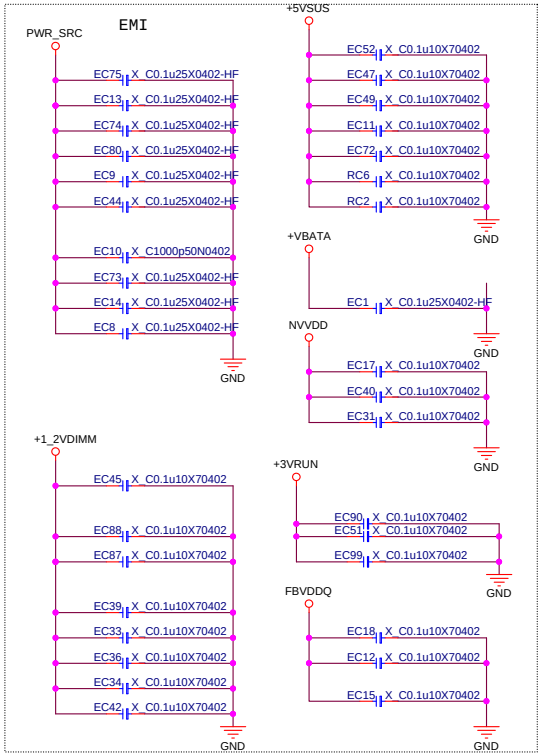

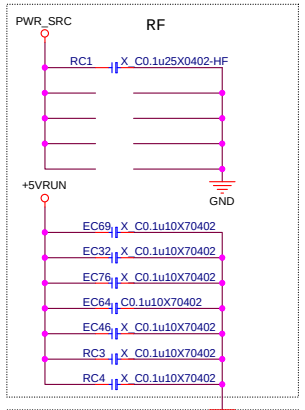

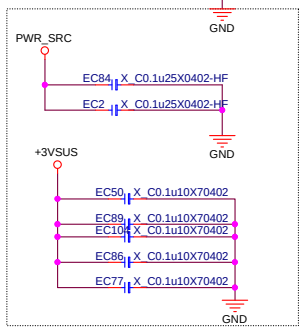

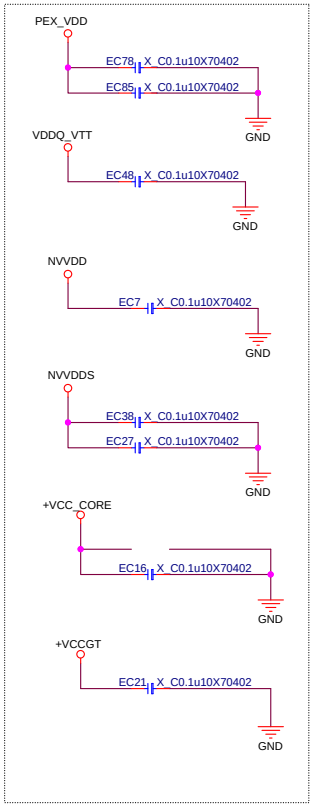

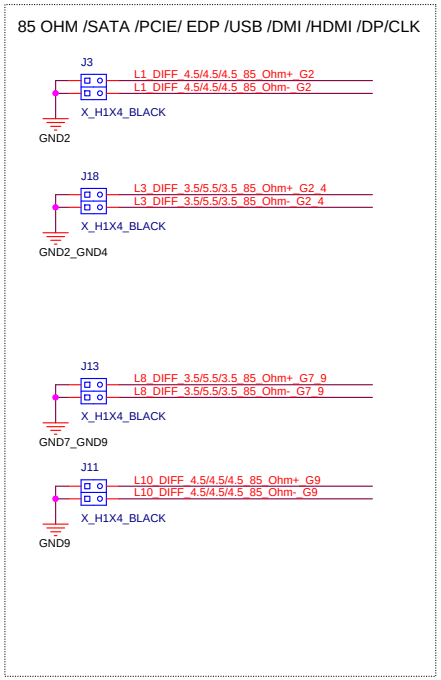

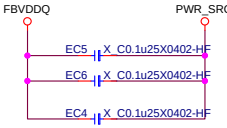

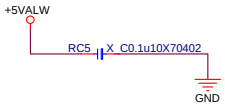

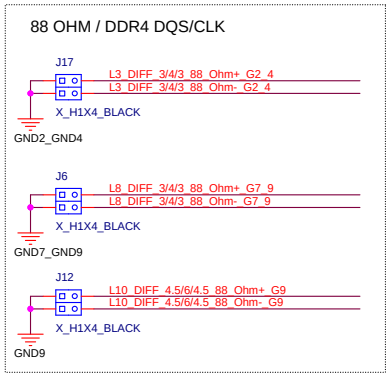

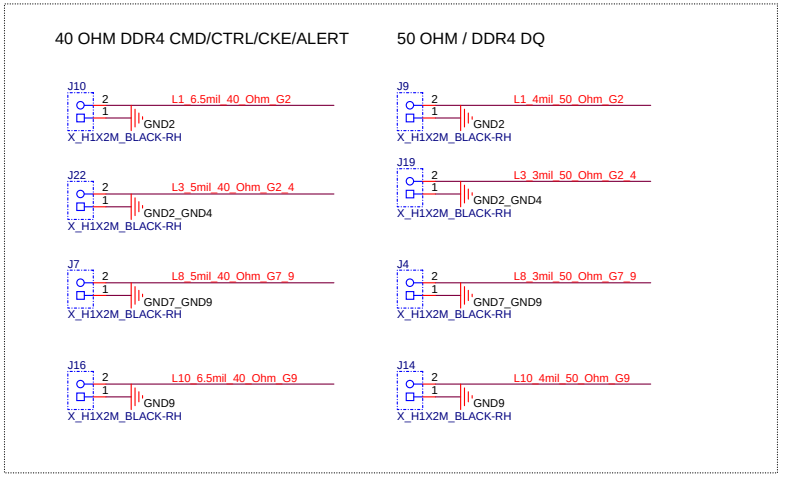

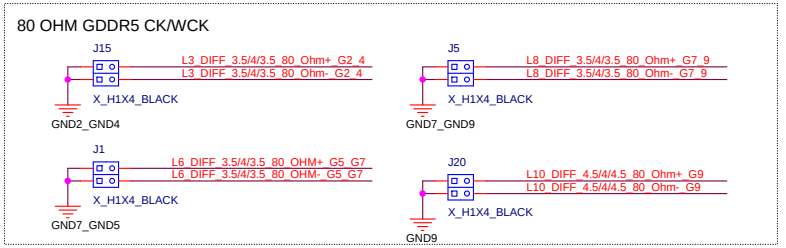

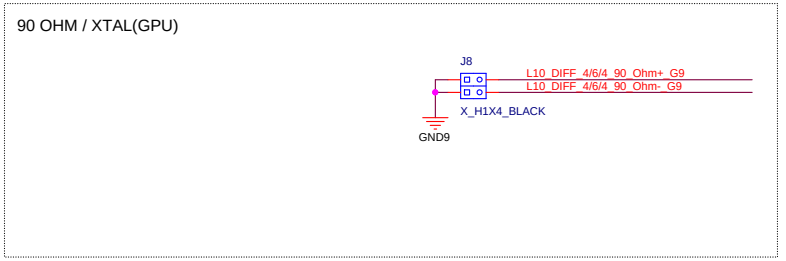

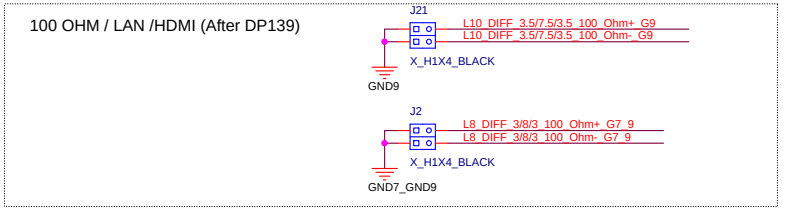

MICRO-STAR INT'L CO.,LTD.

Title: EMI/ Impedance

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CPU/GPU Holes

MCPU4 H_R276D169_PB_N — MCPU2 H_R276D169_PB_N — MCPU3 H_R276D169_PB_N — MCPU1 H_R276D169_PB_N

GND X_CPU_HOLE

MGPU2 H_R276D169_PB_N — MGPU4 H_R276D169_PB_N — MGPU1 H_R276D169_PB_N — MGPU3 H_R276D169_PB_N

GND X_CPU_HOLE

OD 2.3

MH1 H_R197D118_PT_N X_ME_ SCREW HOLE

MH5 H_R197D118_PT_N X_ME_ SCREW HOLE

MH9 H_R197D91_N X_ME_ SCREW HOLE

MH6 H_R197D91_N X_ME_ SCREW HOLE

MH7 H_R197D91_N X_ME_ SCREW HOLE

MH2 H_R197D118_PT_N X_ME_ SCREW HOLE

HOLES_8X8_D3MM_VIA8_N MH8 X_8x8

MH4 X_H_R197D118_PT_V3 H_R315D118_V3_N

GND

MH3 X_H_R197D118_PT_V3 H_R197D118_PT_V3_N

LAN_GND

FM7 FM35 FM14 FM18 FM19 FM33 FM15 FM28 FM27 FM25 FM9 FM10 FM32 FM12 FM3 FM21 FM31 FM16

FM34 FM5 FM11 FM30 FM22 FM24 FM13 FM26 FM23 FM29 FM17 FM8 FM6 FM2 FM1 FM20 FM4

X_FM / X_FM_NB2

UME9 CPU BKT — CPU BKT — 307-6JE0111-A89

UME4 GPU BKT — GPU BKT — 307-6H20211-C22

UME22 ME_MYLAR — MB MYLAR — E2Y-X047411-CA7

UME1 HDMI Lable — HDMI ROYALTY — Y01-RHDMI03-000

UME12 USB3_CON_MYLAR — GND AI FOIL — E2M-3570611-Y42

UME14 HDMI/DP MYLAR — GND AI FOIL — E2M-3570611-Y42

UME20 ME_MYLAR — GPU MYLAR — E2P-6J90111-G40

UME33 ME_MYLAR — MB MYLAR — E2Y-X047411-CA7

UME2 BIOS Lable — X_BIOS_LABEL — G51-N1CO041-A09

For MP

UME5 GPU MYLAR — X_GPU MYLAR — E2P-6H20111-G40

UME24 GPU MYLAR — X_GPU MYLAR — E2M-6H20311-C22

UME3 CPU MYLAR — X_CPU BKT — E2M-6JE0111-A89

UME10 CPU MYLAR — X_CPU BKT — E2P-6JE0111-G40

Only 16JF

UME7 LED SPONGE — LED SPONGE — E2Y-6J10611-Y42

UME8 LED SPONGE — LED SPONGE — E2Y-6J10611-Y42

UME17 ME_MYLAR — Hide Caps Lock LED_MYLAR — E2Y-6324111-Y42

UME11 ME_MYLAR — KB RUBBER — E2Y-6JF0111-Y40

UME16 ME_MYLAR — KB RUBBER — E2Y-6JF0211-Y40

Only 179F

UME15 SPONGE — SPONGE — E2Y-7910211-G40

UME21 MB MYLAR — MB MYLAR — E2P-7910312-G40

16M3 Revome

[Fuqun] Change Footprint

HOLE4 NPTH_80 X_NPTH_80

HOLE5 NPTH_80 X_NPTH_80

HOLE2 H_NR118D118_1 X_H_NR118D118_1

HOLE1 H_NR118D118_1 X_H_NR118D118_1

HOLE3 X_NPTH_80 H_R197D79_PT_N

XX2 X_NPTH_80 NPTH_80

XX3 X_NPTH_80 NPTH_80

XX1 npth_98 X_npth_98

XX10 npth_98 X_npth_98

XX7 npth_98 X_npth_98

XX4 npth_98 X_npth_98

XX6 X_NPTH_80 NPTH_80

XX5 X_NPTH_80 NPTH_80

XX8 X_NPTH_80 NPTH_80

XX9 X_NPTH_80 NPTH_80

Only 16M3

UME23 MB MYLAR — MB MYLAR — E2P-6M11211-Y42

UME25 MB MYLAR — MB MYLAR — E2P-6M30111-Y42

UME26 MB MYLAR — MB MYLAR — E2Y-X050111-CA7

UME27 MB MYLAR — MB MYLAR — E2Y-7511011-Y40

UME28 MB MYLAR — MB MYLAR — E2Y-7511011-Y40

UME29 MB MYLAR — MB MYLAR — E2Y-7511011-Y40

UME30 MB MYLAR — MB MYLAR — E2Y-7511011-Y40

UME31 MB MYLAR — MB MYLAR — E2Y-7511011-Y40

UME32 MB MYLAR — MB MYLAR — E2Y-7511011-Y40

Top Spring

PAD6 X_HS-MS1011-RH ATE_C006_106 — E23-1011040-CA7

PAD2 X_HS-MS1011-RH ATE_C006_106 — E23-1011040-CA7

PAD3 X_HS-MS1011-RH ATE_C006_106 — E23-1011040-CA7

PAD4 X_HS-MS1011-RH ATE_C006_106 — E23-1011040-CA7

BOT Spring

PAD1 X_HS-MS1011-RH ATE_C006_106 — E23-1011040-CA7

PAD5 X_HS-MS1011-RH ATE_C006_106 — E23-1011040-CA7

PCB1 — PD0-16JF10A-H73 — PD0-16JF10A-H73

MICRO-STAR INT'L CO.,LTD.

Title: Screw/ME

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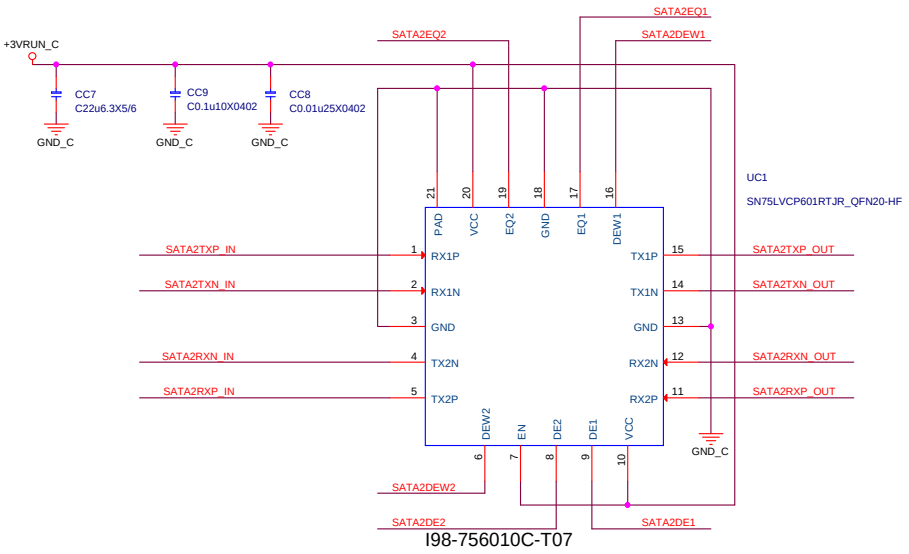
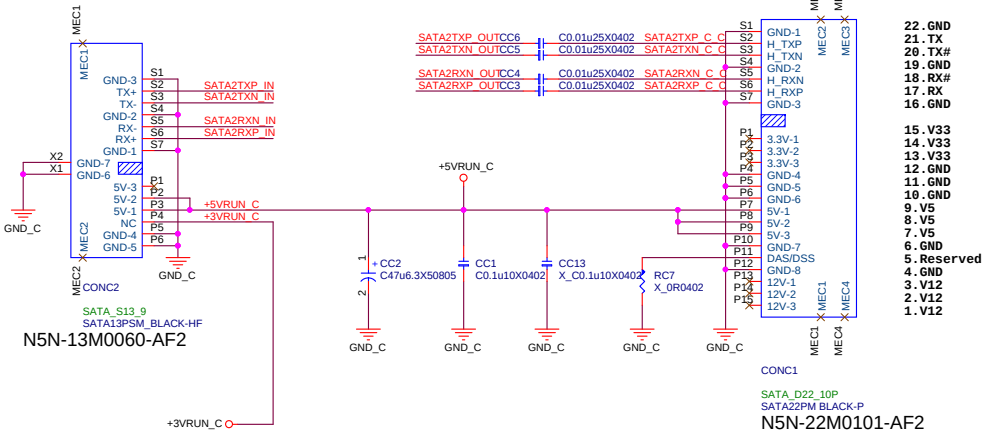
ODD SATA HDD

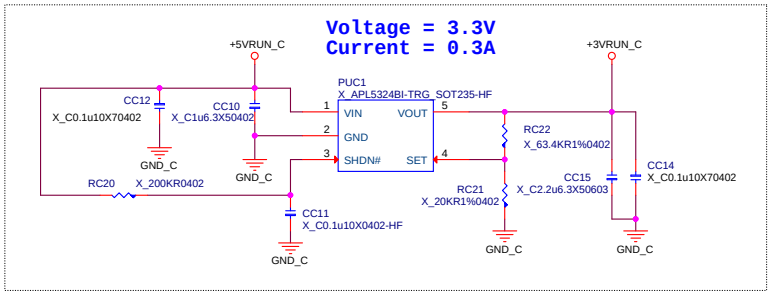


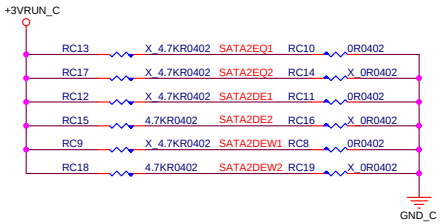
I98-756010C-T07



N5N-13M0060-AF2

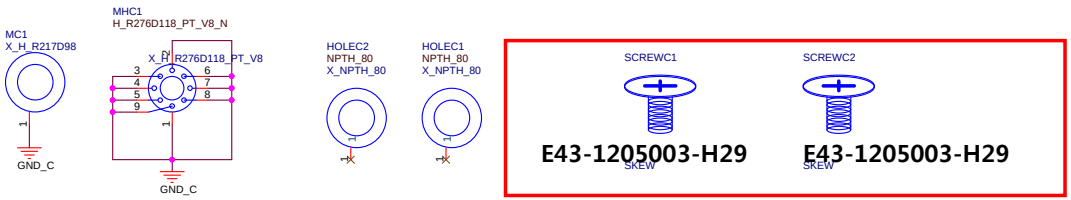
N5N-22M0101-AF2





TX and RX EQ and DE Pulse-Duration Settings

DE1 OR DE2	CH1 OR CH2 DE-EMPHASIS dB (at 6 Gbps)	EQ1 OR EQ2	CH1 OR CH2 Equalization dB (at 6 Gbps)
NC (***default***)	–4	NC (***default***)	0
0	0	0	7
1	–2	1	14
DEW1 OR DEW2	**DEVICE FUNCTION → DE WIDTH FOR CH1/CH2**		
0	De-emphasis pulse duration, short		
1 (***default***)	De-emphasis pulse duration, long		

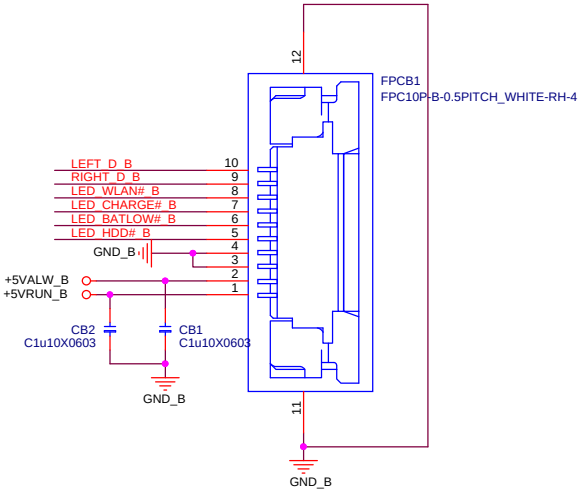


PCBC1

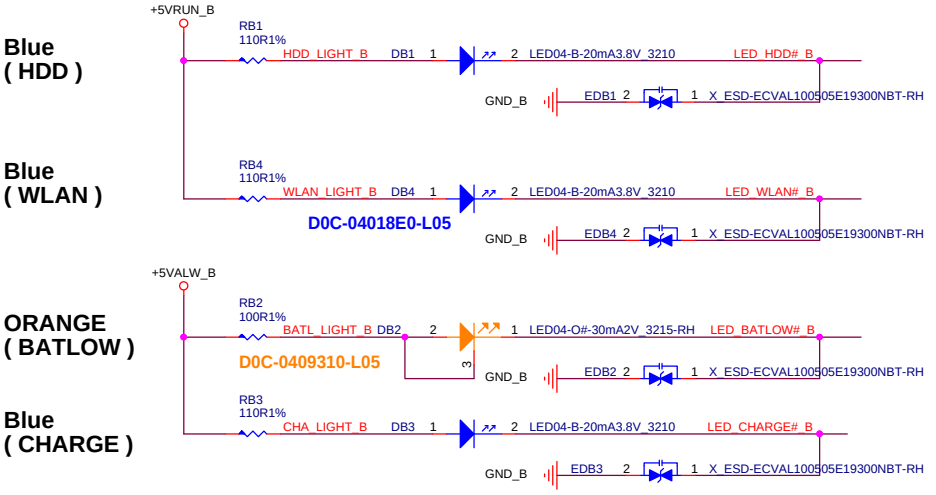
PD0-16JFA0A-H73

PD0-16JFA0A-H73

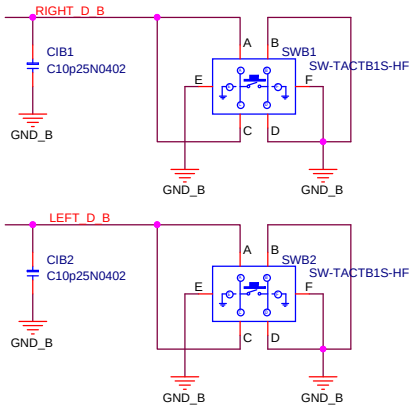
MSI	MICRO-STAR INT'L CO.,LTD.		
Title	SATA ODD to HDD		
Size: Custom	Document Number: MS-16JF/179F		Rev: 0A
Date: Thursday, November 16, 2017	Sheet 56 of 61		



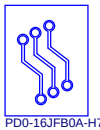
LED for 179F



T/P for 179F

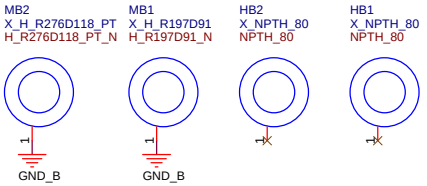


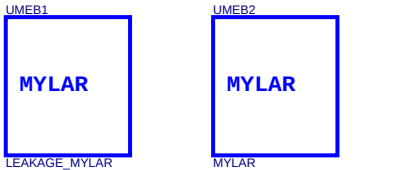
PCBB1



PD0-16JFB0A-H73

PD0-16JFB0A-H73

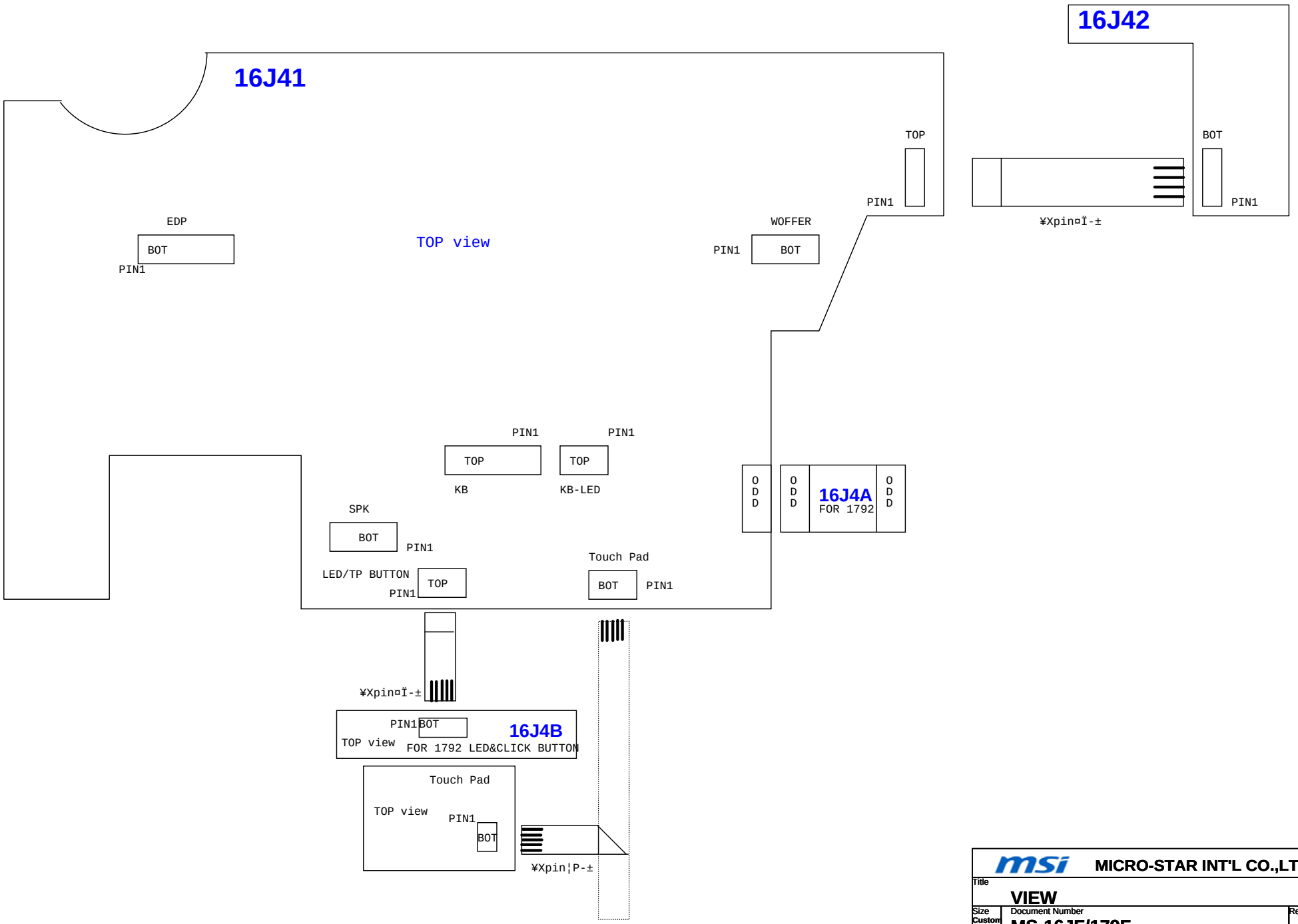




E2P-7910811-G40 **E2P-0113511-G40**

16M3 Revome

msi MICRO-STAR INT'L CO.,LTD.		
Title: [B] 1799 LED/ TP		
Size: B	Document Number: MS-16JF/179F	Rev: 0A
Date: Thursday, November 09, 2017	Sheet 57 of 61	



MICRO-STAR INT'L CO.,LTD.

Title: VIEW

Size: Custom | Document Number: MS-16JF/179F | Rev: 0A

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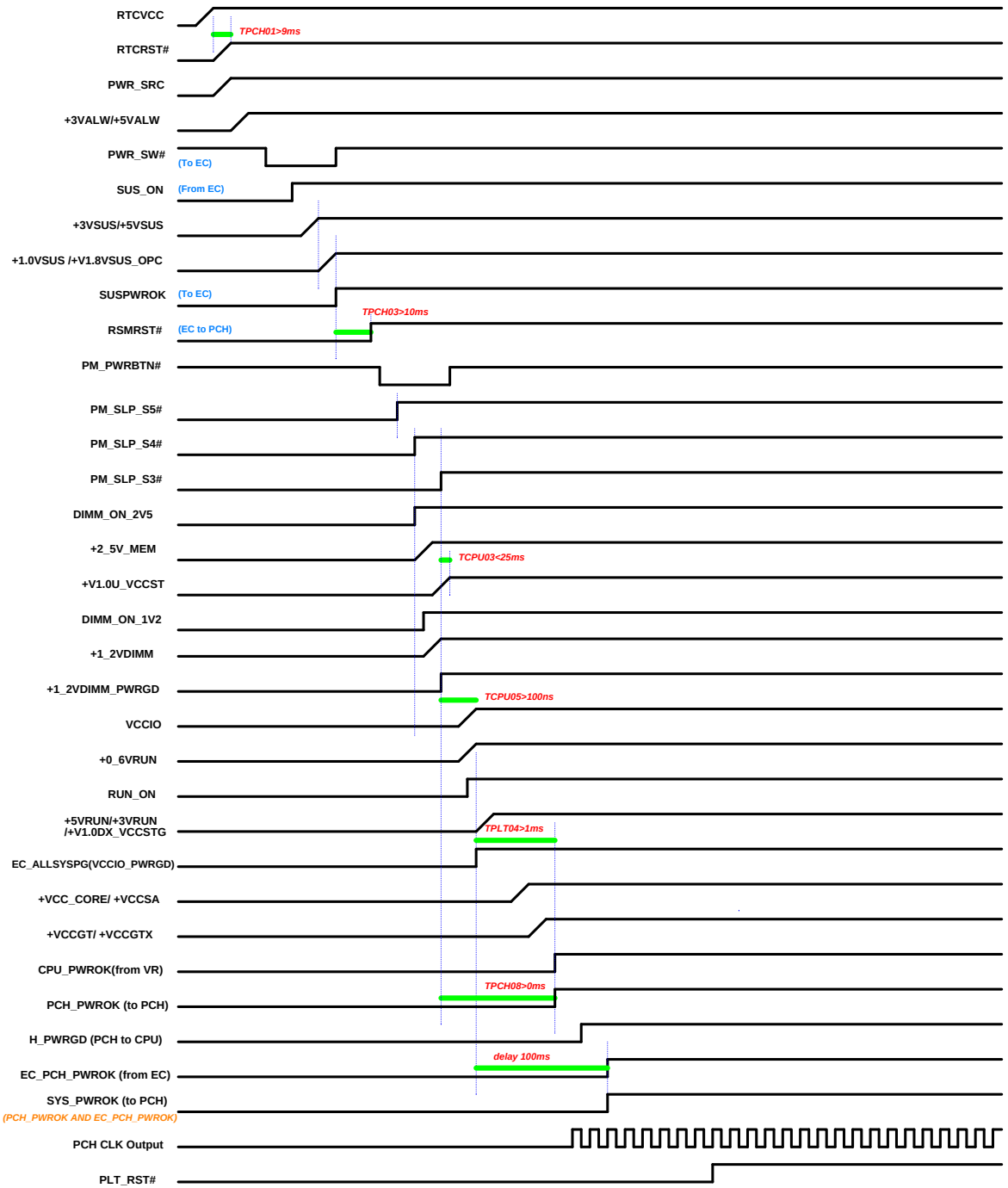
Power on Sequence

G3 -> S0



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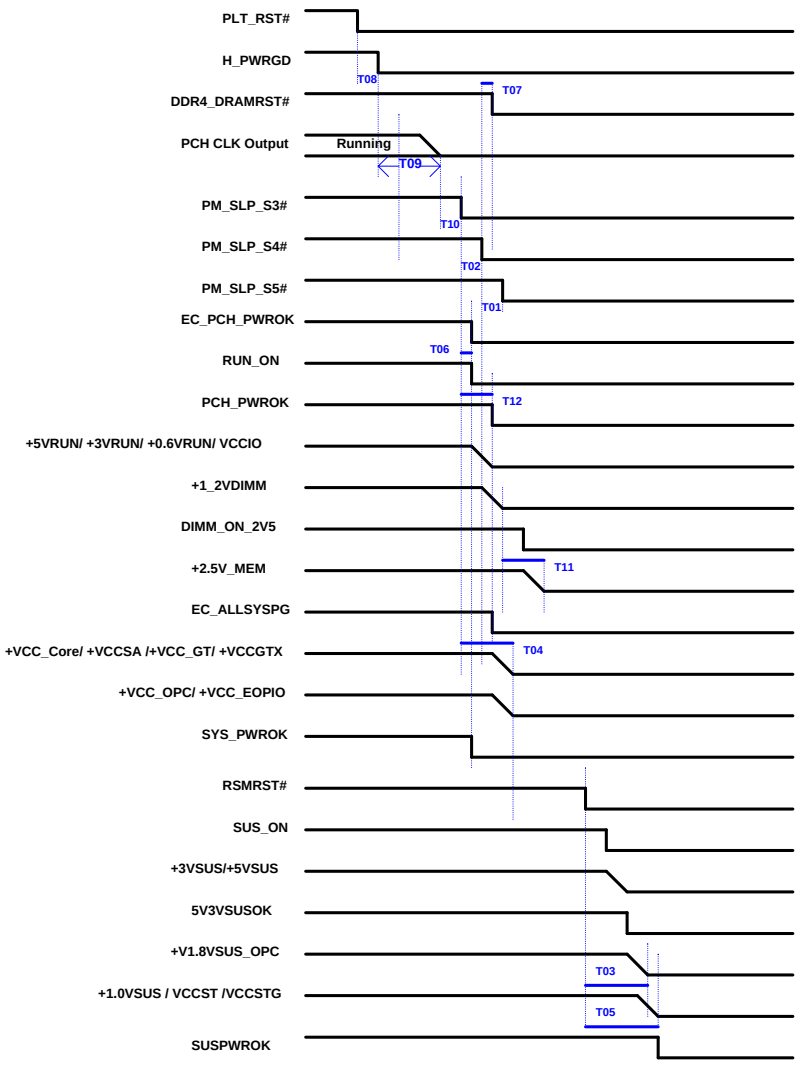
Power down Sequence

S0 -> G3



	MIN	MAX	Units	Description
T01	30		us	SLP_S5# assertion to SLP_S4#
T02	30		us	SLP_S4# assertion to SLP_S3#
T03	1		us	RSMRST# asserting to VccPRIM dropping 5% of nominal value
T04		500	ms	SLP_S3# assertion to VCC, VCCGT, VCCIO and VCCSA rails completely off.
T05	1		us	RSMRST# asserting to VccPRIM dropping 5% of nominal value
T06		1	us	SLP_S3# assertion to VCCIO VR disabled
T07	-100		ns	DDR_RESET# assertion to SLP_S4# assertion
T08	30		us	PLTRST# assertion to PROCPWRGD deassertion
T09	10		us	PROCPWRGD de-assertion to CLKOUT_BCLK turning OFF.
T10	1		us	CLKOUT_BCLK turning OFF to SLP_S3# assertion
T11	30		ms	VDDQ ramped down to VPP ramp down
T12	0		ms	SLP_S3# assertion to PCH_PWROK deassertion

History

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Page	Description
28	REMOVE PU R164,R172,R151,R149
33	JNC13 CHANGE FOOTPRINT
	R176,R412 CHANGE TO JNC29,JNC30
30	ED10,ED11 PIN4,5 CHANGE NET
42	REMOVE G2
38	ADD ESD2
30	ADD TPS25810 U34 ED11 P/N SWAP
28	R144 PU TO 3VSUS
5	REMOVE R67
6	ADD C597
3	REMOVE R74,R72 ,C262
8	REMOVE C597
25	C646 CHANGE FOOTPRINT
	REMOVE R380 ,R376
31	DP REMOVE U8 ,ADD Q22,Q23,Q24
21	ADD R448 ,R380
30	ADD C725,C726
39	PR54,PC57 CHANGE FOOTPRINT
41	PC197 0805 CHANGE 0402 FOOTPRINT
42	PC91 0805 CHANGE 0402 FOOTPRINT
05	REMOVE R31
30	U34 CHANGE FOOTPRINT
29	REMOVE R139,R163
33	REMOVE C665 ADD JNC31
48	REMOVE J24 ,J17,J12,J18
49	REMOVE PAD1,PAD5,PAD9,PAD10
43	REMOVE G3,G4
48	ADD +1_2VDIMM EMI CAP
	REMOVE J19,J22
42	ADD PC666

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Page	Description
12~17 19~21	memory change RC®Æ¸ ¹²Ïø@ 5/12
27	Change R111 reference 4.99K to 20K 5/13
30	D3 +3VRUN change to 3V_NV
49	PR61 :1ohm 0402 >0603 (R11-0010023-W08) PC64 :1u 0402>0603 (C11-1057613-W08) PR74 :205Kohm>187Kohm(R11-1873T12-W08) 5/14
52	+1VSUS VCC¤ÀÀ£
33	U17 CPU_POWOK add C to ground 5/15
49	PR33´«®Æ
44	CON10 Change to N54-06F1371-SL0 CN13 Change to N58-08F0191-SL0 5/18
39	Y4 change to D04-0901000-SC6
	R190 §ïø£¤W¥ó
37	LED-¨¬y¹q³ý§ï-È
54	PC62 change to C11-4722812-M09
	1VSUS PR223 : 12.4K?13K(R11-0133T12-W08) DIMM PU5 : APW88197TPS51216 (I32-512160C-T07) PR91 : 110K?150K(R11-0154T12-W08) PR219,PC200 : NC?¤W¥ó FBVDDQ PR7,C11 : NC?¤W¥ó VCORE PR174 : 499R?470R(R11-0471T12-W08) PR164 : 95.3K?82K(R11-0823T12-W08) PR34 : 2.43K?2.15K(R11-2151T12-W08) PR32 : 499R?1K(R11-0102T12-W08) PR160 : 1.4K?2.87K(R11-2871T12-W08) PR109,PR110 : NC?0R(R11-0000012-W08) PR123,PR122 : 10K?NC PR51,PR175 : 200k?NC PC163 : 0.22u?0.1u(C11-1042023-Y01) PC48 : 0.082u?0.1u(C11-1042812-Y01) PC154 : 680p?820P(C11-8212012-W08) PC36 : 680p?330P(C11-3312012-W08) VGT PR144 : 412R?340R(R11-0341T12-W08) PR14 : 2.61K?4.32K(R11-4321T12-W08) PR24 : 97.6K?86.6K(R11-8662T12-W08) PR154 : 2K?2.55K(R11-2551T12-W08) PR23 : 499R?1K(R11-0102T12-W08) PR155 : 1K?4.02K(R11-4021T12-W08) PR120,PR188 : NC?0R(R11-0000012-W08) PR124,PR121 : 10K?NC PR25,PR157 : 200k?NC PC22 : 680p?330P(C11-3312012-W08) PC139 : 680p?1000P(C11-1022012-W08) VCCSA PR45 : 619R?560R(R11-0561T12-W08) PR182 : 2.15K?2.26K(R11-2261T12-W08) PR176 : 100K?91K(R11-0913T12-W08) PR44 : 2K?2.87K(R11-2871T12-W08) PC168 : 0.068u?0.047u(C11-4732843-Y01) PC51 : 0.082u?6800P(C11-6822612-W08) PC56 : 680p?1000P(C11-1022012-W08) 5/20
26	Y6 change to D04-1103510-F07 PC24,38,50 : 0.01uF change to C11-1032012-W08 5/25
54	Add UMEB1 , UMEB2 5/29 PU2 change to I32-958552C-I11 CPU change to OAD-14A1001 PCH change to OB1-14A1001 U12 change to I36-258100C-T07

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Page	Description
	R247 ,R441,D8stuff R147,R464,R448¤W¥ó U39 change to B07-F021J44-EB3 U43 change to M21-25B6412-GA0 U13 change to B02-011422C-AD0 6/12
	VCORE: PR174 : 470R'453R(R11-4530T22-W08) PR34 : 2.15K'2.43K(R11-2431T12-W08) PC163 : 0.1u?NC PC48 : 0.1u'0.22u(C11-2242512-M09) PR164 : 82K'95.3K(R11-9532T12-W08) 6/16 FBVDDQ PR11 : 33.2K?27K(R11-2702T12-W08) VGT: PR144 : 340R'374R(R11-3740T12-W08) VCCSA: PC51 : 6800P'0.018u (C11-1832512-M09) PR176 : 91K'93.1K(R11-9312T12-W08)
	PR147,PR150,PR151,PR152 PC135,PC136,PC137,PC138 ¤W¥ó R72 change to L02-1008023-T19 6/17
	U29 change to N-90-GSMS1-RH 6/22
	ED10, ED11 stuff 6/23 E207¤£¤W R219¤W¥ó
	CPU PC105,PC106,PC107,PC108,PC109,PC110,PC112,PC113, DGPU : PC167,PC169,PC170,PC178,PC183,PC184,PC185,PC187 Change to C11-1067610-M09 6/24
	E2P-6J11211-Y42²¾°£ Add E2Y-Z001711-G40*2 Add BIOS Socket 6/25

Page	Description
43	**Change R421 from 33R to 22R** 7/7
43	**Change C413 & C414 from 20p to 33p**
51	**Change R135 from 0R to 4.7KR** **Add D13 circuit for power sequence**
57	**Add D14 circuit for power sequence**
59	**Stuff UME2**
	Remove all gate 7/13
59	**Add UME16 for 16J4 TP Mylar**
54	**Modify PR79 & PR194 from 2.2R to 2.7R** 7/16
56	**Modify PR114 & PR116 & PR113 & PR117 from 0R to 3.3R**
57	**Modify PR119 from 0R to 2.2R**
60	**Unstuff A board component for 16J4**
61	**Unstuff B board component for 16J4**
36	**Stuff UB1 & unstuff UB2 for 1794** 7/24
40	**20150724 Modify F1 location**
34	**20150727 Remove BIOS ROM sucket** 7/27
38	**20150727 Remove SW3 & C207**
	Modify to 1.0 BOM 8/6
	Change CPU PN to A0D-6700H15-I06 **PCH PN to B01-HM17005-I06** 8/12
	Change R348 from 20KR to 4.7KR
38	**Unstuff CON6** 8/17
	Change BIOS label to G51-N1CO041-A09 for AMI 8/18 **Change 2N7002 dual PN to D03-65D8L09-D07 for Safety**
	Change UME11 to un-stuff for ME request 8/24
	Modify DGPU VRAM size from 3G to 6G and strap value 9/03
	Change UME16 to un-stuff for ME request 9/08
	Modify GPU HW strap value to correct 11/30

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