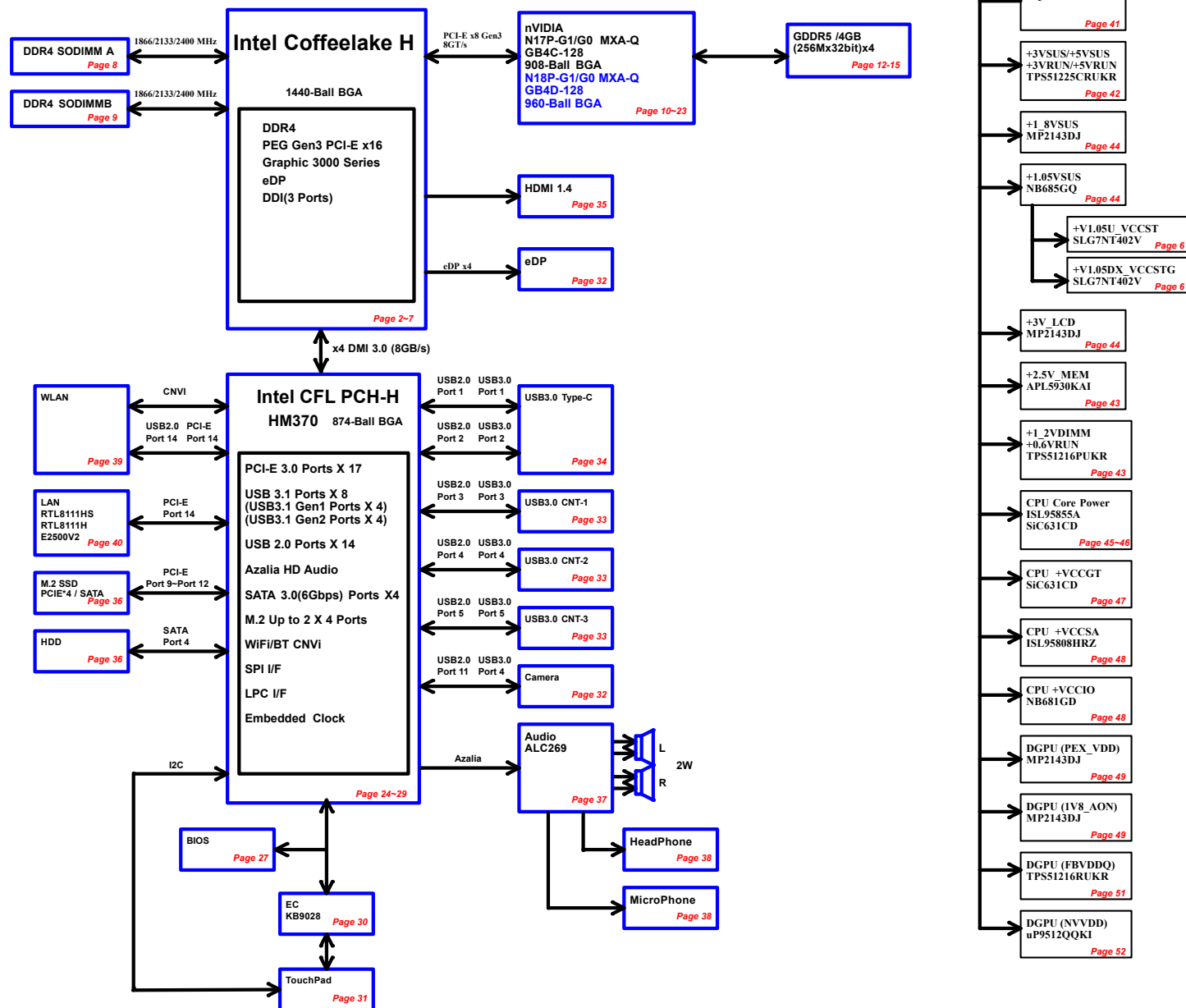
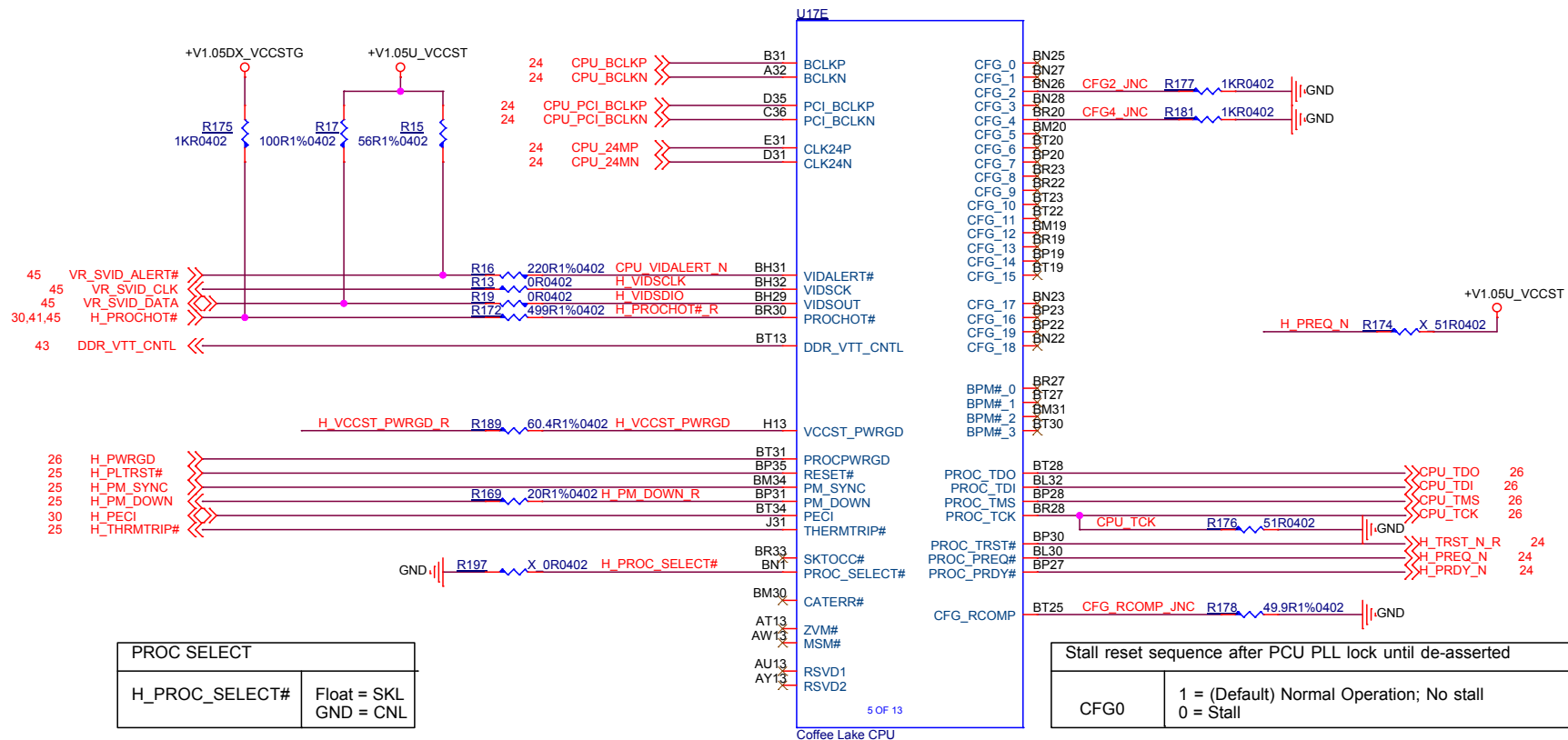


Ver:1.0

Intel CoffeeLake Mobile





I7-8750H

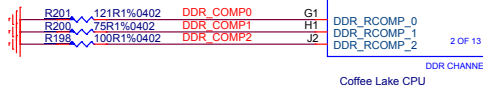
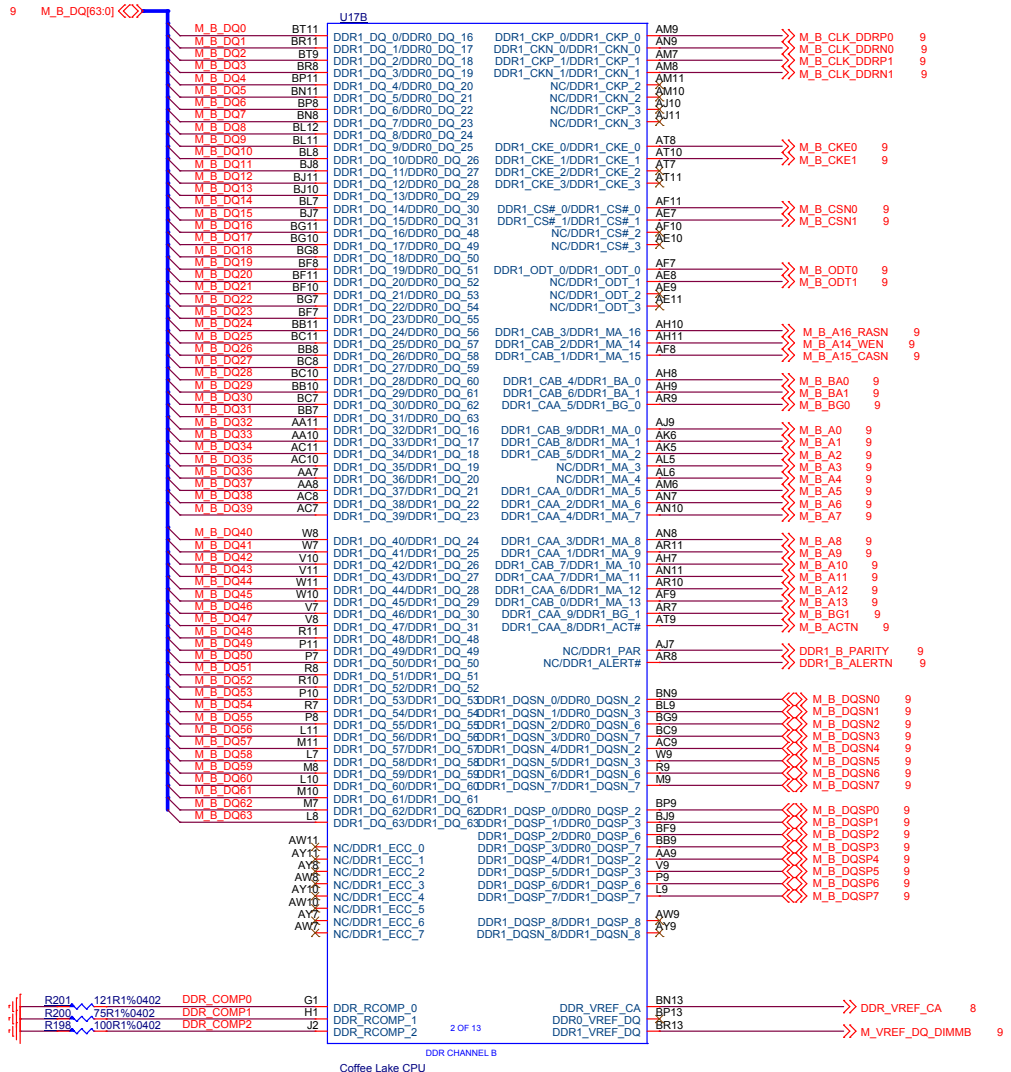
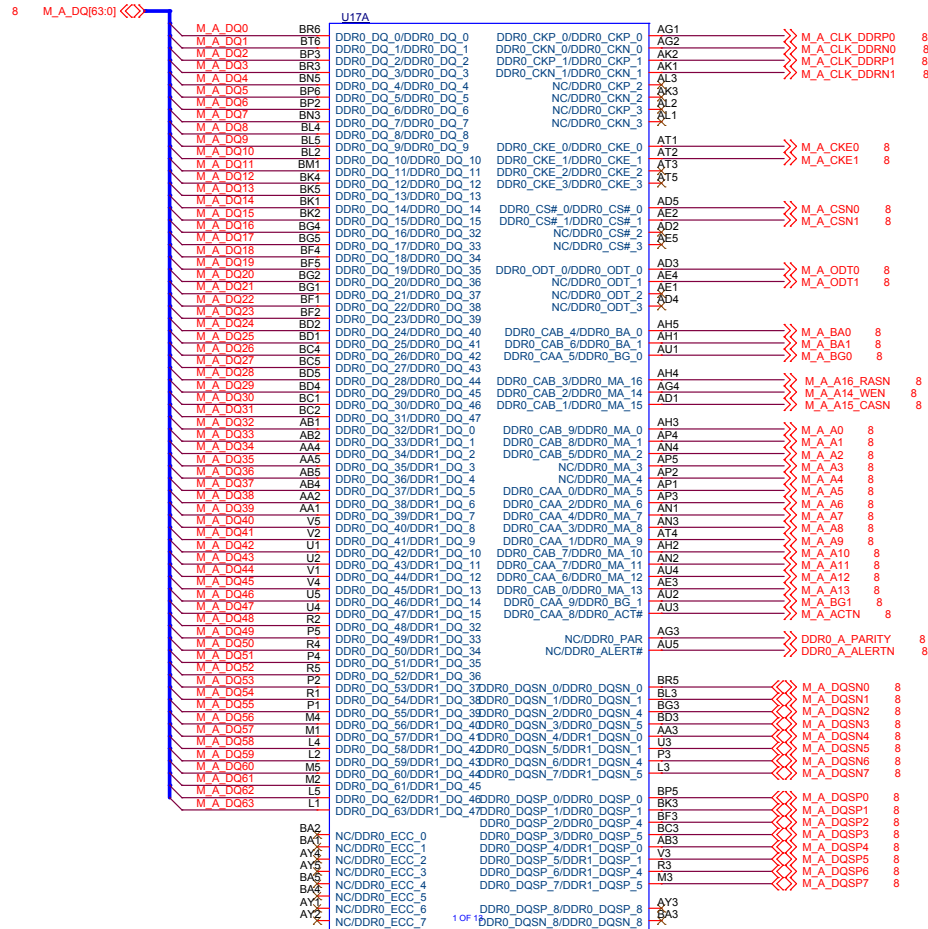
I7_8750
A0D-8750H05-I06
X_I7-8750

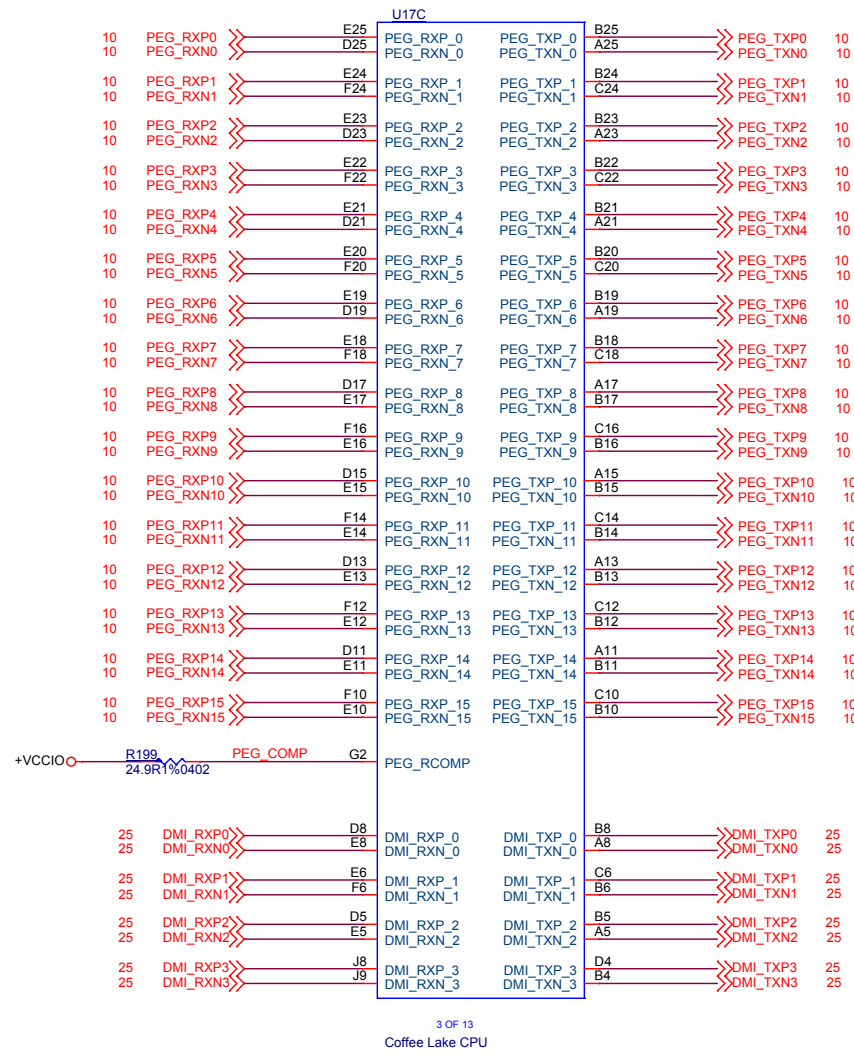
I5-8300H

I5_8300
A0C-8300H05-I06
X_I5-8300

DDR Channel A

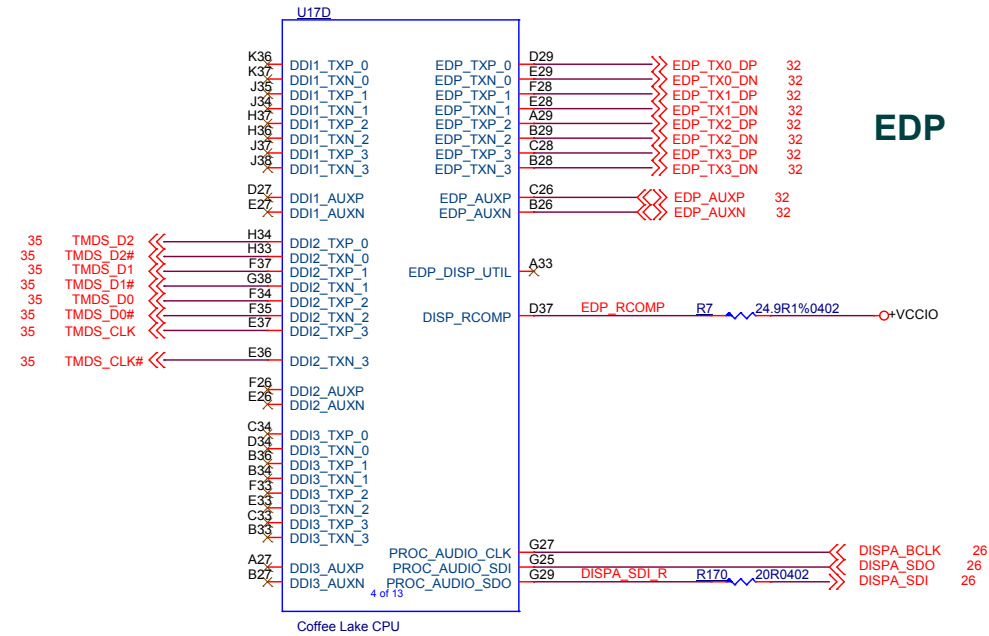
DDR Channel B

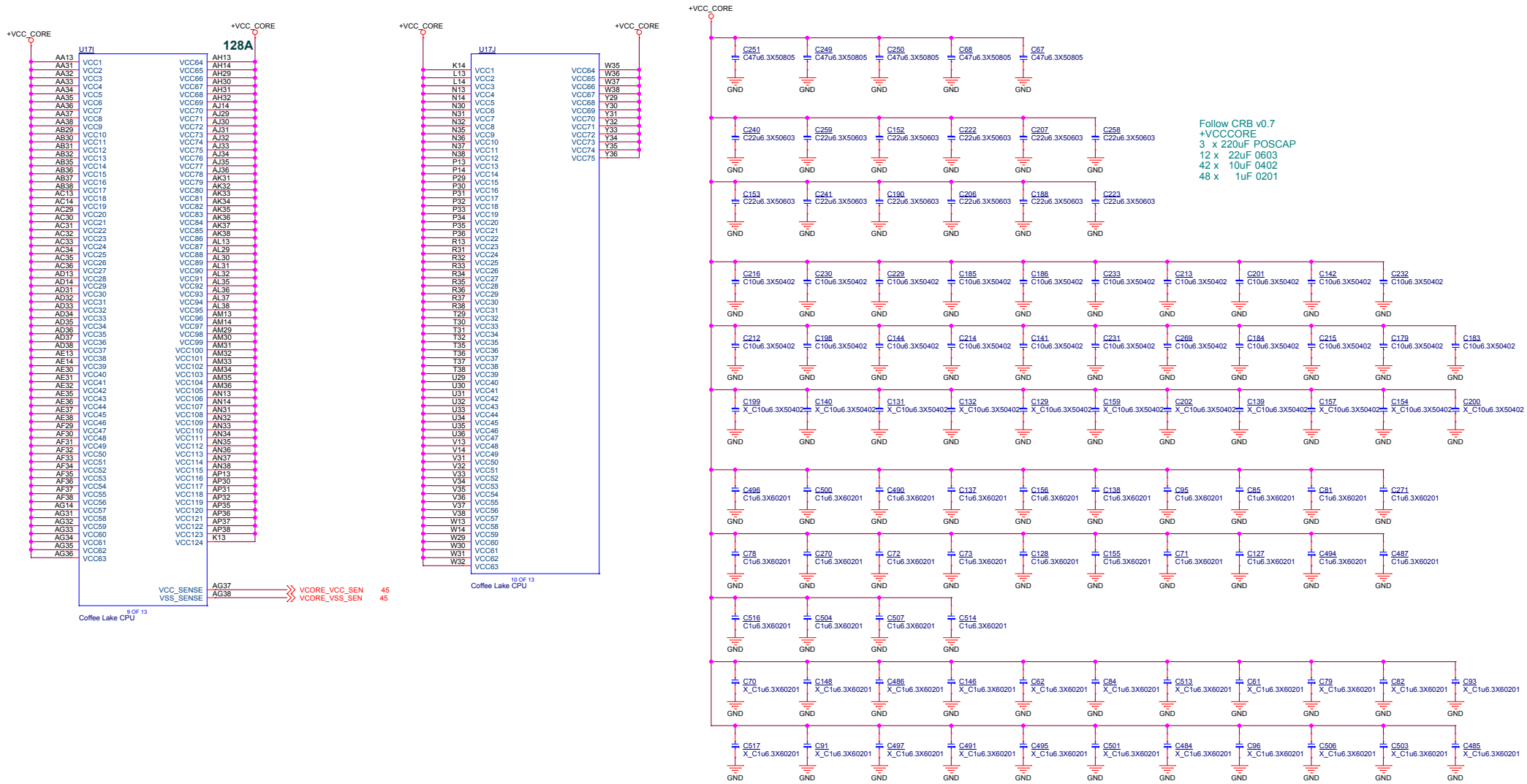




DDI C
HDMI

OUT_D0==>IN_D2
OUT_D1==>IN_D1
OUT_D2==>IN_D0

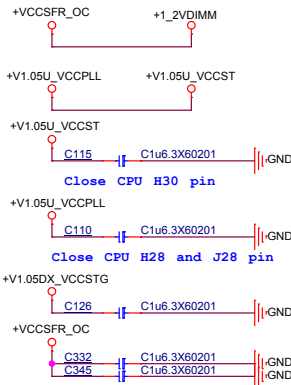
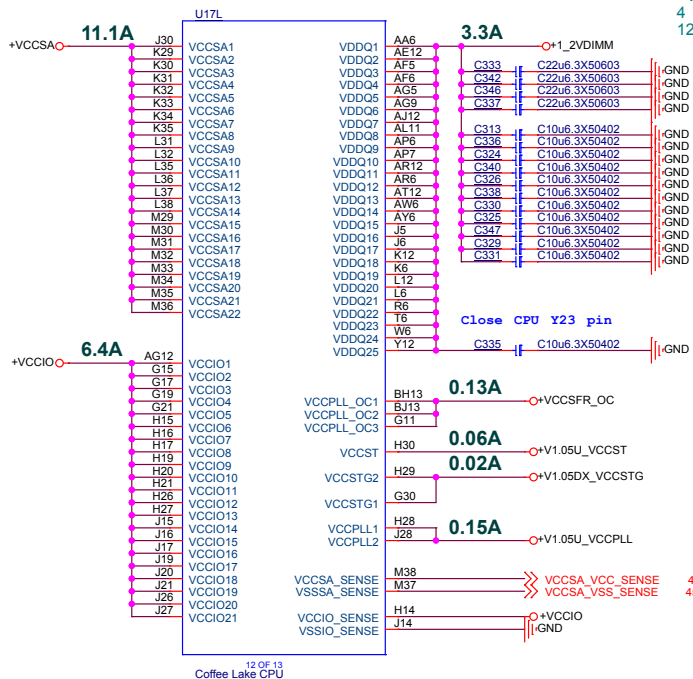




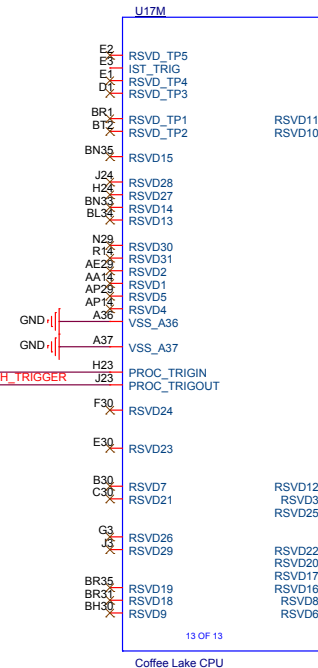
Follow CRB v0.7
+VCCCORE
3 x 220uF POSCAP
12 x 22uF 0603
42 x 10uF 0402
48 x 1uF 0201

msi MICRO-STAR INT'L CO.,LTD.			
Title			
Coffee Lake(Power1)			
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Follow CRB v0.7
+VCCDU (+1.2V DIMM)
4 x 22uF 0603
12 x 10uF 0402

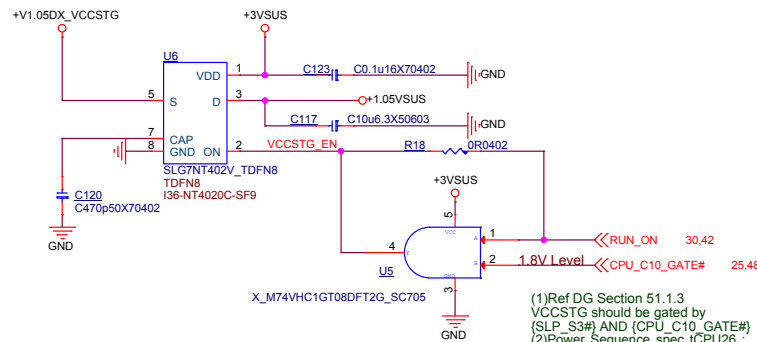


24 PCH_2_CPU_TRIGGER_R
24 CPU_2_PCH_TRIGGER_R



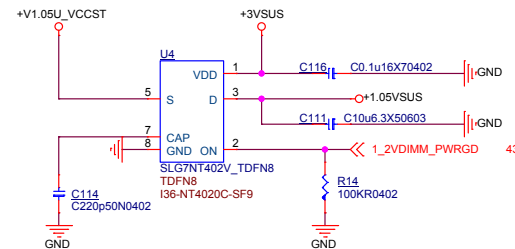
Coffee Lake CPU

+V1.05DX_VCCSTG

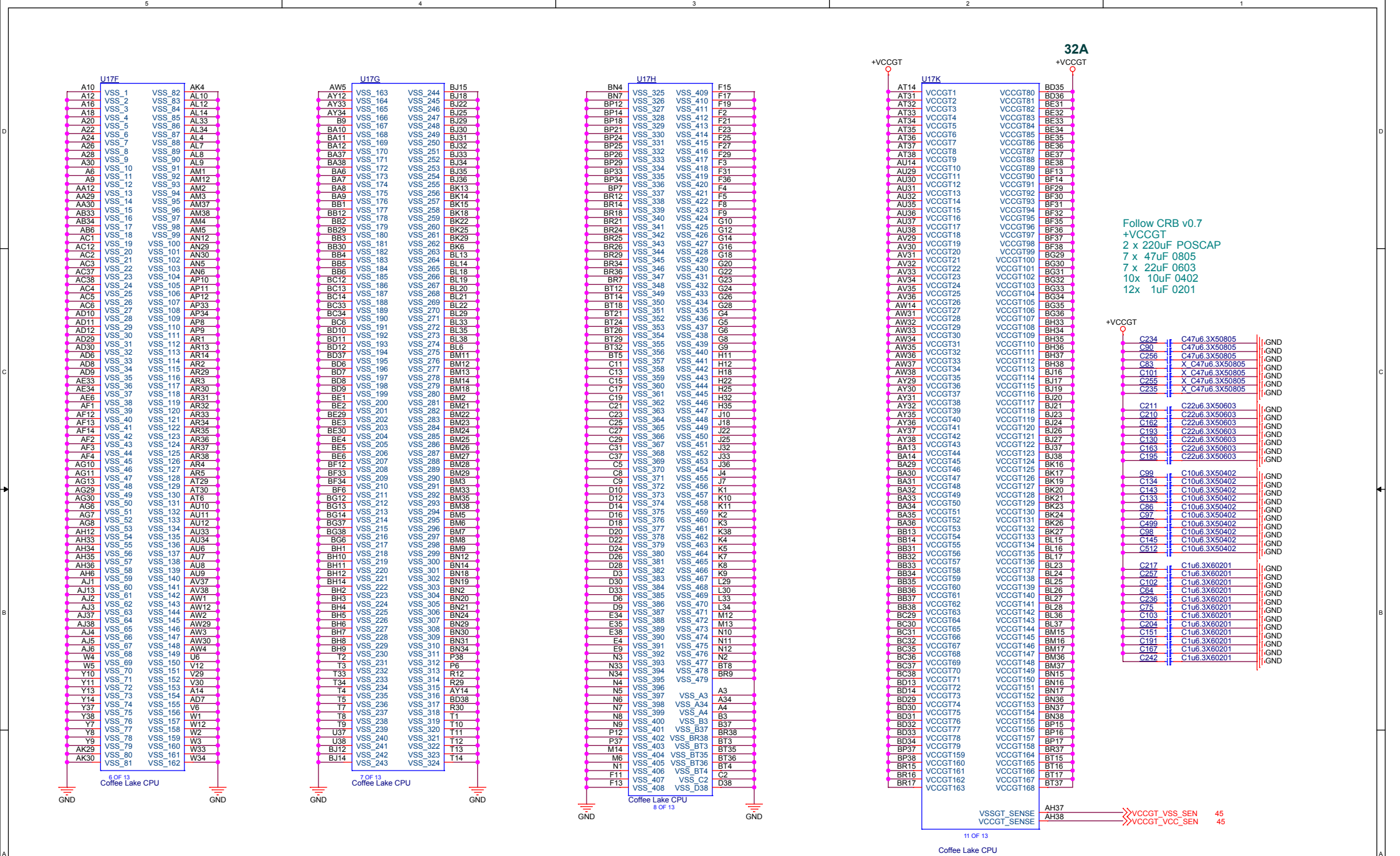


(1)Ref DG Section 51.1.3
VCCSTG should be gated by
(SLP_S3#) AND (CPU_C10_GATE#)
(2)Power Sequence spec tCPU26
CPU_C10_GATE# de-assertion to VCCSTG stable 10 < tCPU26 < 65 us

+V1.05U_VCCST



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Title			
CoffeeLake(Power2)			
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32A

Follow CRB v0.7
+VCCGT
2 x 220uF POSCAP
7 x 47uF 0805
7 x 22uF 0603
10x 10uF 0402
12x 1uF 0201


+VCCGT

C234	C47u6 3X50805	GND
C256	C47u6 3X50805	GND
C83	X C47u6 3X50805	GND
C101	X C47u6 3X50805	GND
C255	X C47u6 3X50805	GND
C235	X C47u6 3X50805	GND
C211	C22u6 3X50603	GND
C210	C22u6 3X50603	GND
C162	C22u6 3X50603	GND
C193	C22u6 3X50603	GND
C130	C22u6 3X50603	GND
C163	C22u6 3X50603	GND
C195	C22u6 3X50603	GND
C99	C10u6 3X50402	GND
C134	C10u6 3X50402	GND
C143	C10u6 3X50402	GND
C133	C10u6 3X50402	GND
C86	C10u6 3X50402	GND
C97	C10u6 3X50402	GND
C439	C10u6 3X50402	GND
C98	C10u6 3X50402	GND
C145	C10u6 3X50402	GND
C512	C10u6 3X50402	GND
C217	C1u6 3X60201	GND
C257	C1u6 3X60201	GND
C102	C1u6 3X60201	GND
C64	C1u6 3X60201	GND
C236	C1u6 3X60201	GND
C75	C1u6 3X60201	GND
C103	C1u6 3X60201	GND
C204	C1u6 3X60201	GND
C151	C1u6 3X60201	GND
C191	C1u6 3X60201	GND
C167	C1u6 3X60201	GND
C242	C1u6 3X60201	GND

VSSGT Sense
VCCGT Sense

AH37
AH38
VCCGT_VSS_SEN 45
VCCGT_VCC_SEN 45

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Coffee Lake CPU



MICRO-STAR INT'L CO.,LTD.

Title

Coffeelake(Power3)

Size

Document Number

MS-16R3

Date

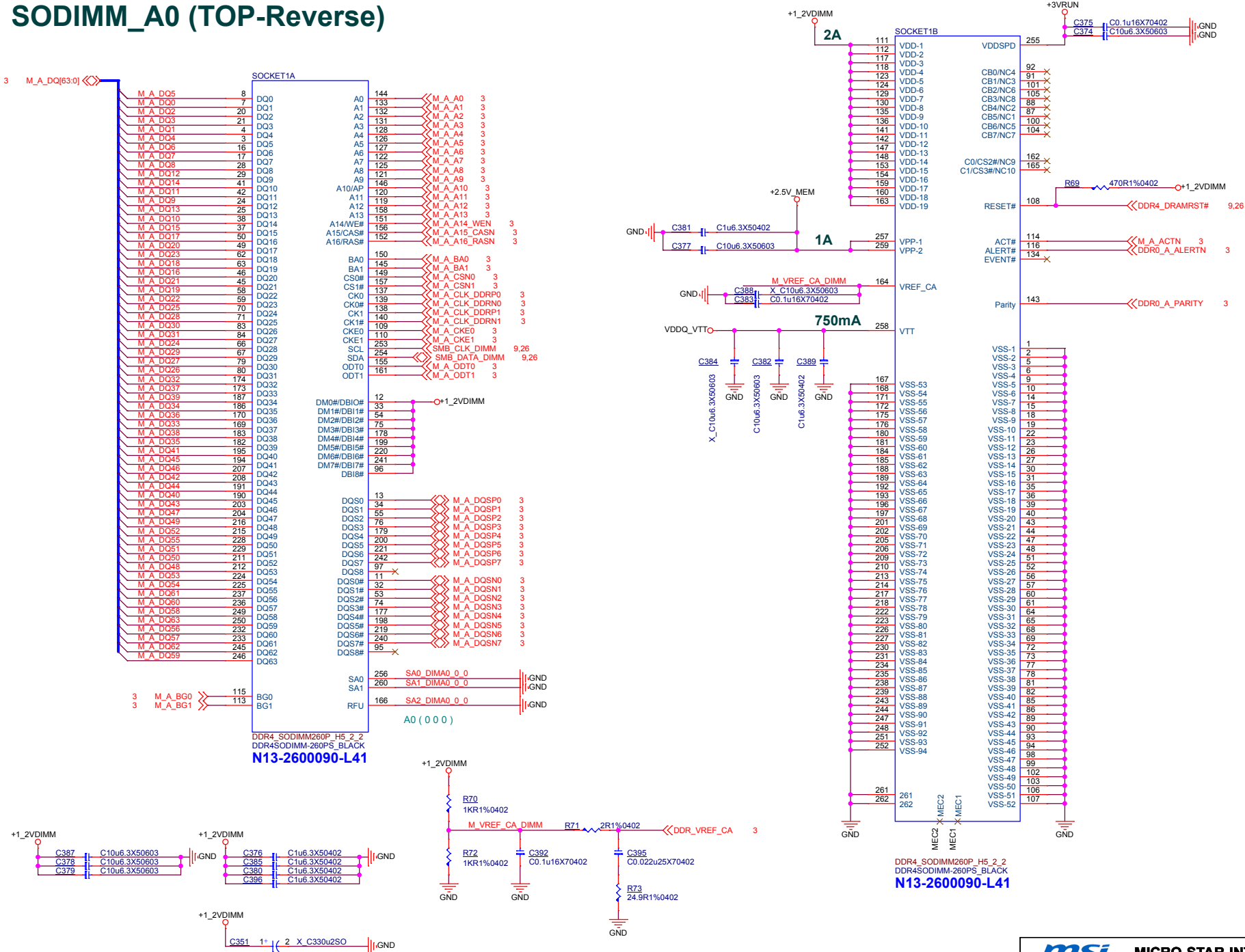
Thursday, December 20, 2018

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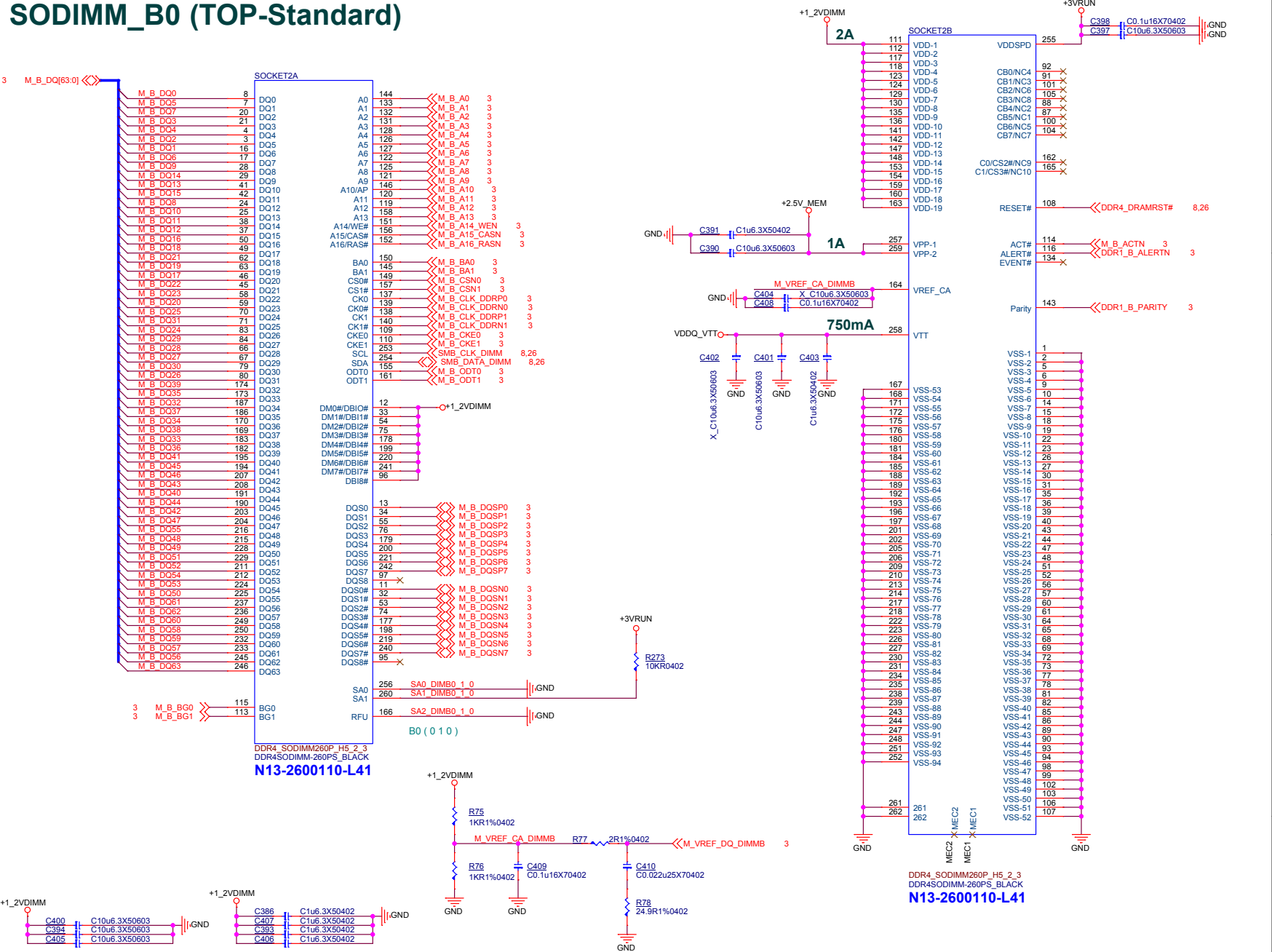
Rev

1.0

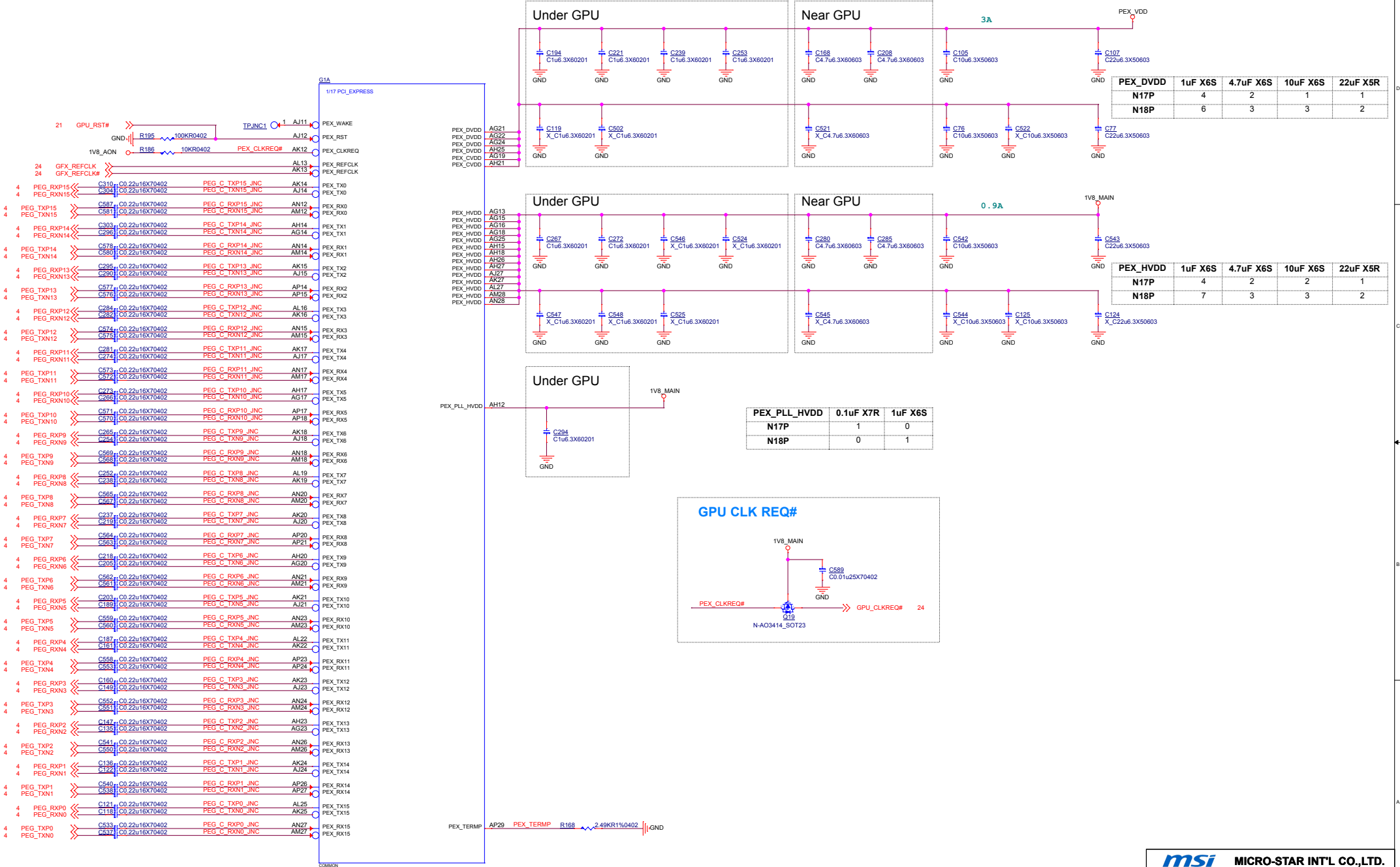
SODIMM_A0 (TOP-Reverse)



SODIMM_B0 (TOP-Standard)



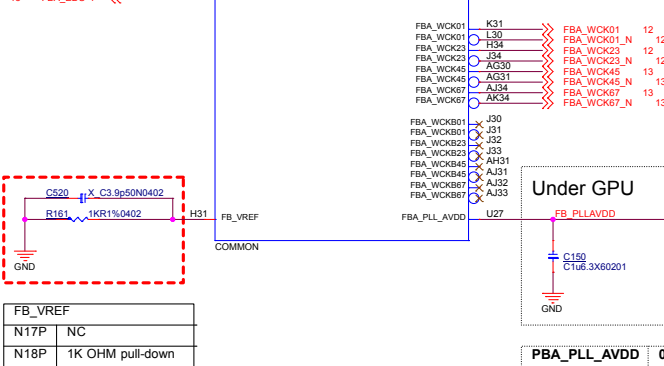
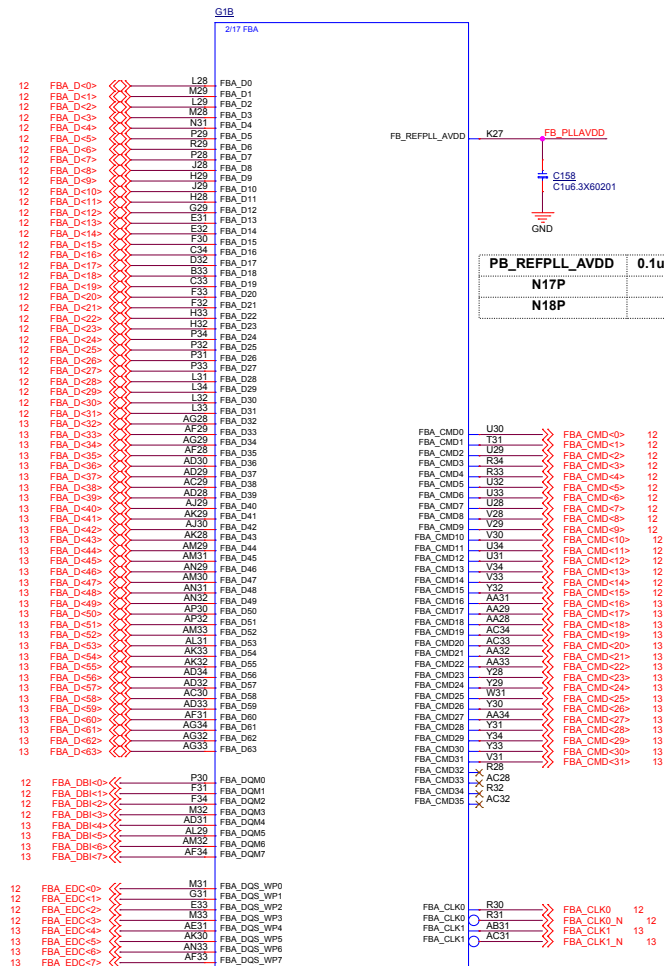
GPU PCI EXPRESS



GPU Frame Buffer Partition A/B

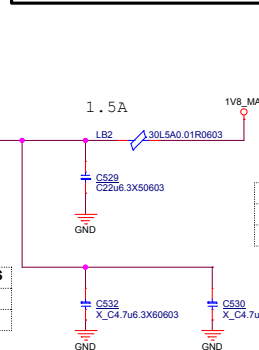
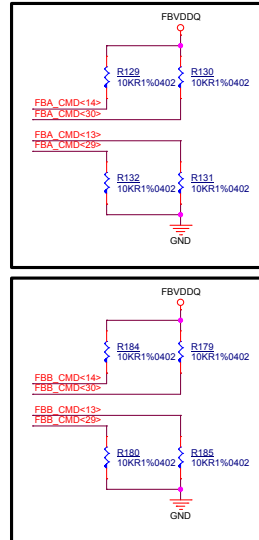
GDD5 Command Mapping GB4C-128/GB4D-128

DQ[31:0]	DQ[63:32]	CS*
CMD0	CMD16	A3 BA3
CMD1	CMD17	A2 BA0
CMD2	CMD18	A4 BA2
CMD3	CMD19	A5 BA1
CMD4	CMD20	WE*
CMD5	CMD21	A6 A11
CMD6	CMD22	AB1*
CMD7	CMD23	A12 RFU
CMD8	CMD24	A0 A10
CMD9	CMD25	A1 A9
CMD10	CMD26	RAS*
CMD11	CMD27	RST*
CMD12	CMD28	CKE*
CMD13	CMD29	CAS*
CMD14	CMD30	
CMD15	CMD31	

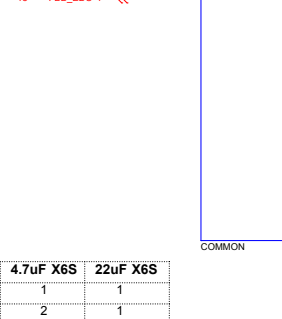
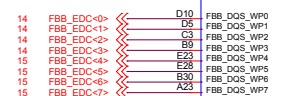


FB_VREF	
N17P	NC
N18P	1K OHM pull-down

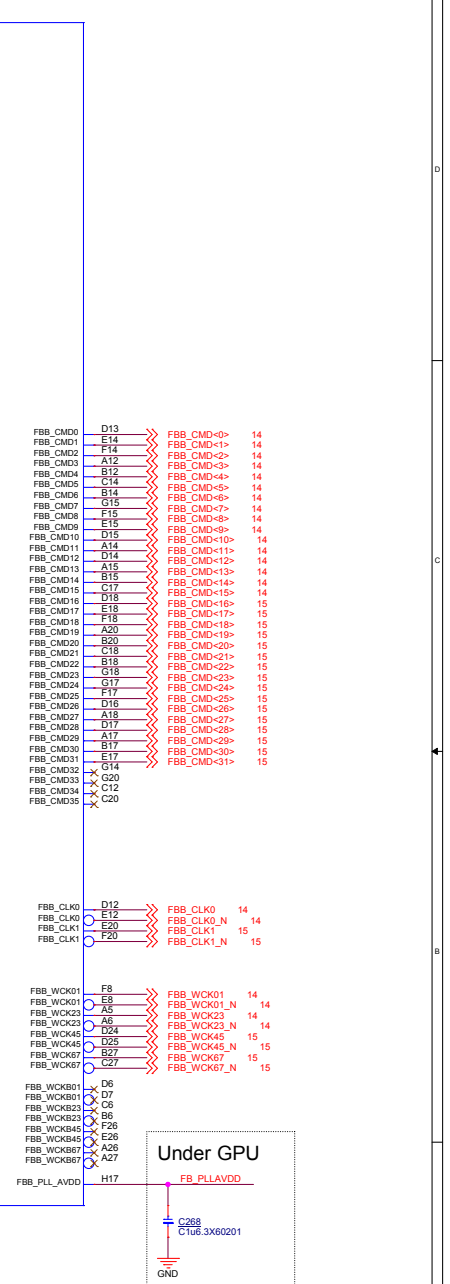
PBA_PLL_AVDD	0.1uF X7R	1uF X6S
N17P	1	0
N18P	0	1



PBx_PLL_AVDD	4.7uF X6S	22uF X6S
N17P	1	1
N18P	2	1



PBB_PLL_AVDD	0.1uF X7R	1uF X6S
N17P	1	0
N18P	0	1



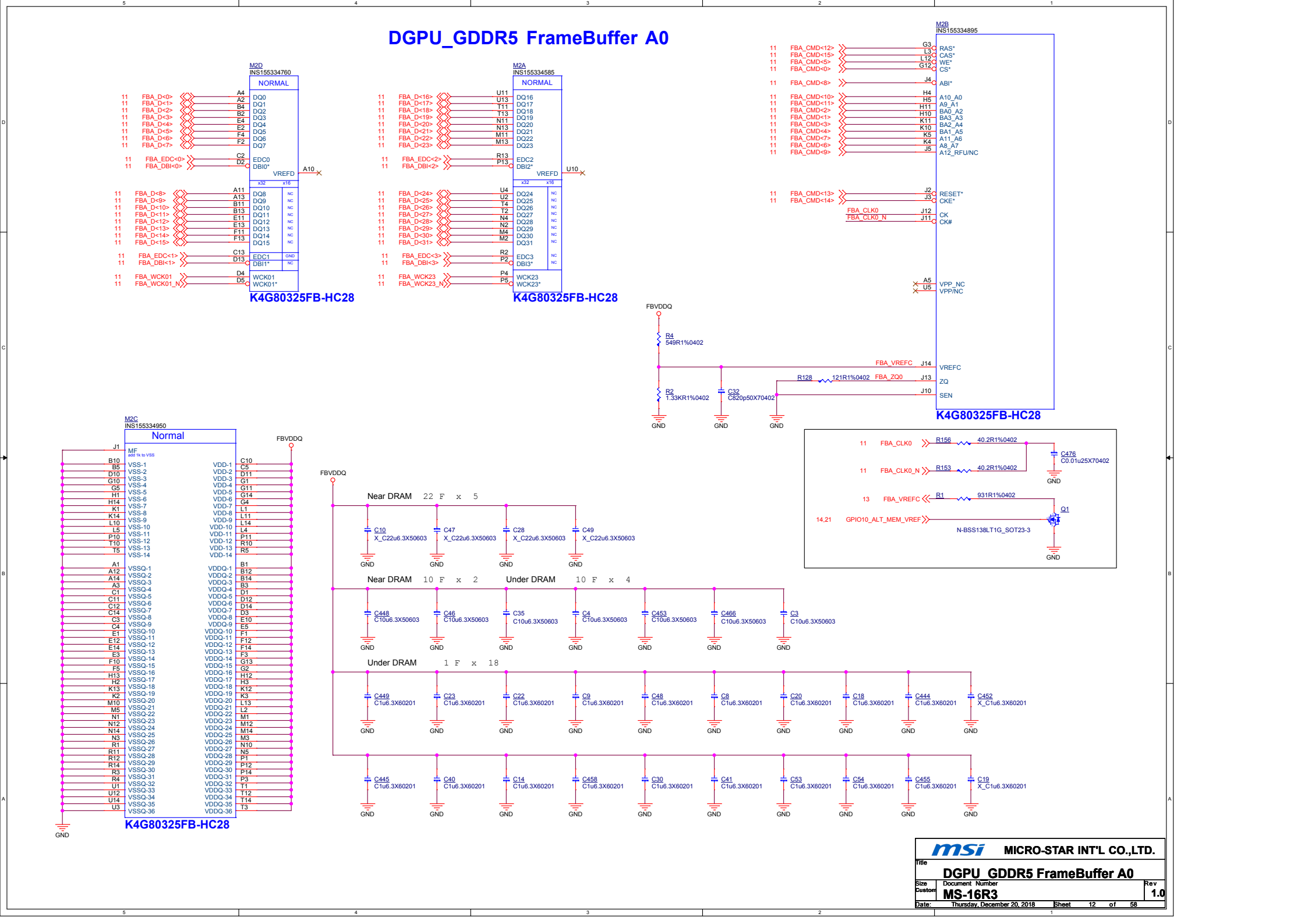
PBB_PLL_AVDD	0.1uF X7R	1uF X6S
N17P	1	0
N18P	0	1

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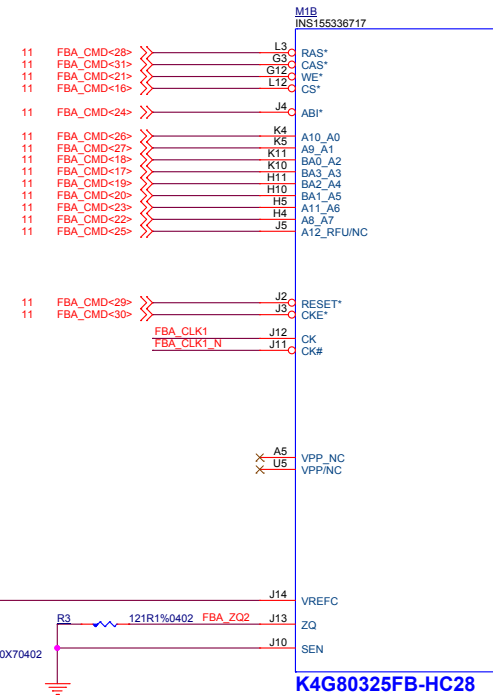
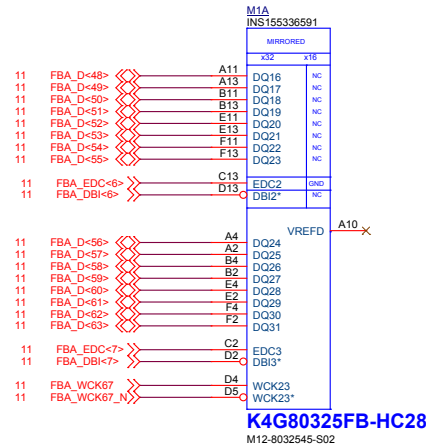
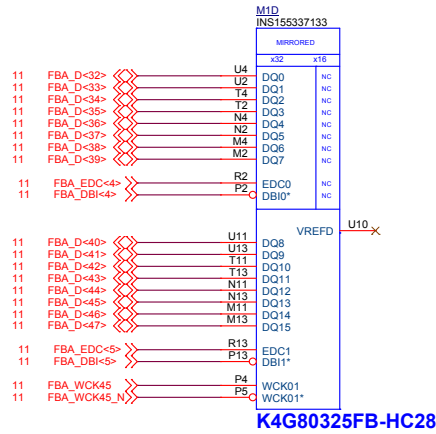
DGPU MEM IF A/B

MS-16R3

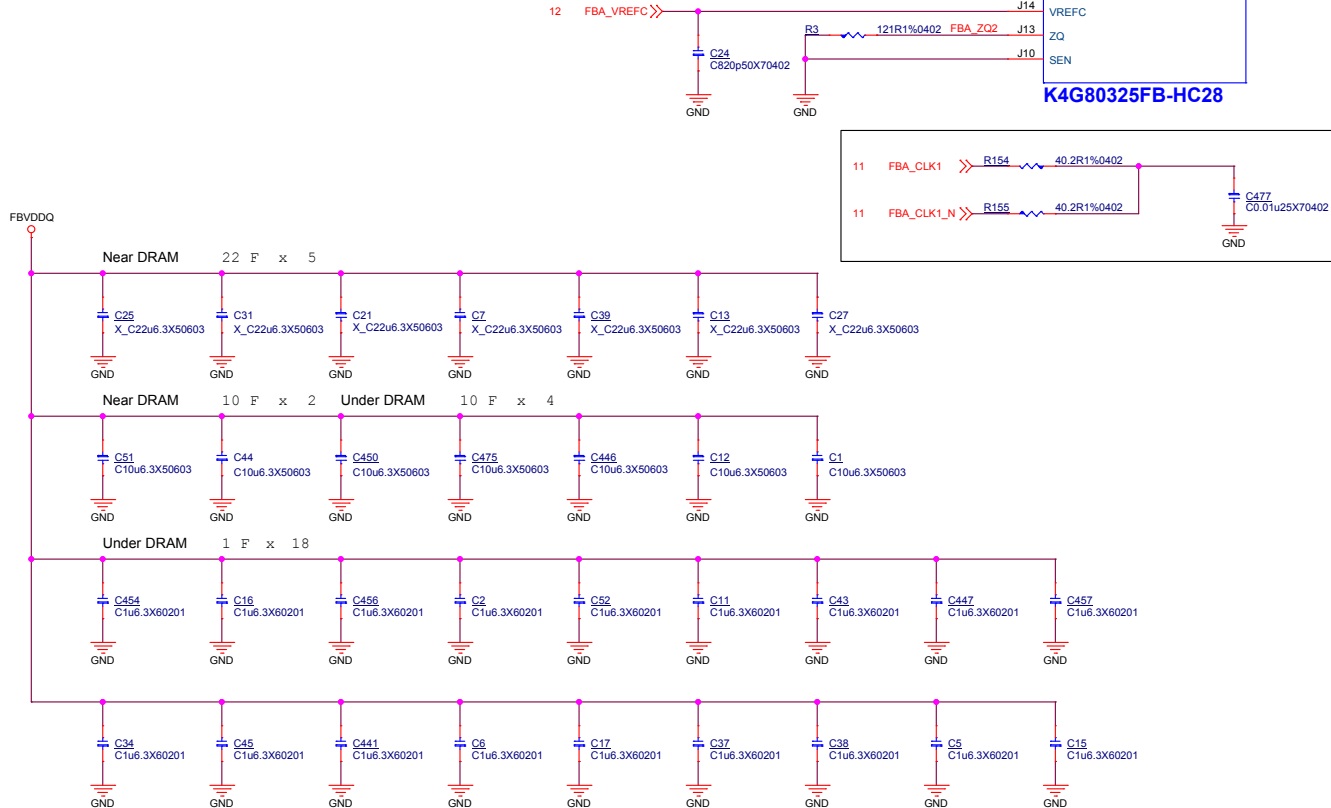
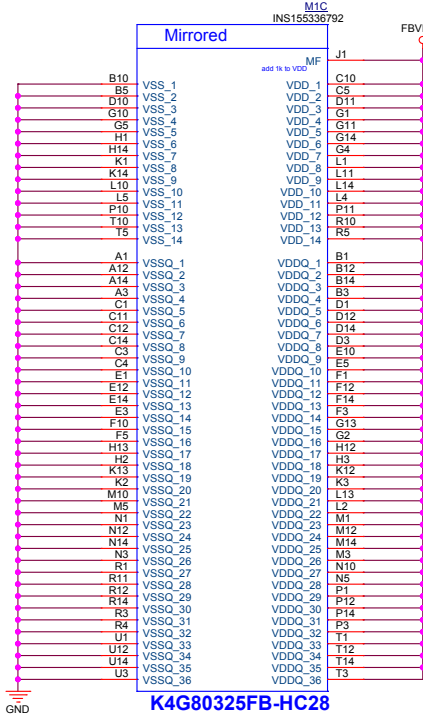
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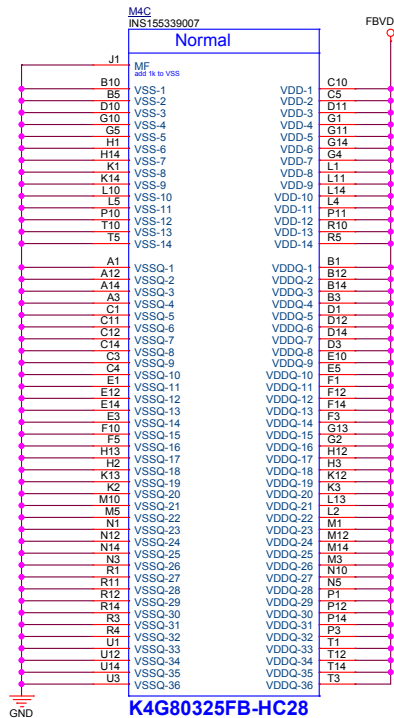
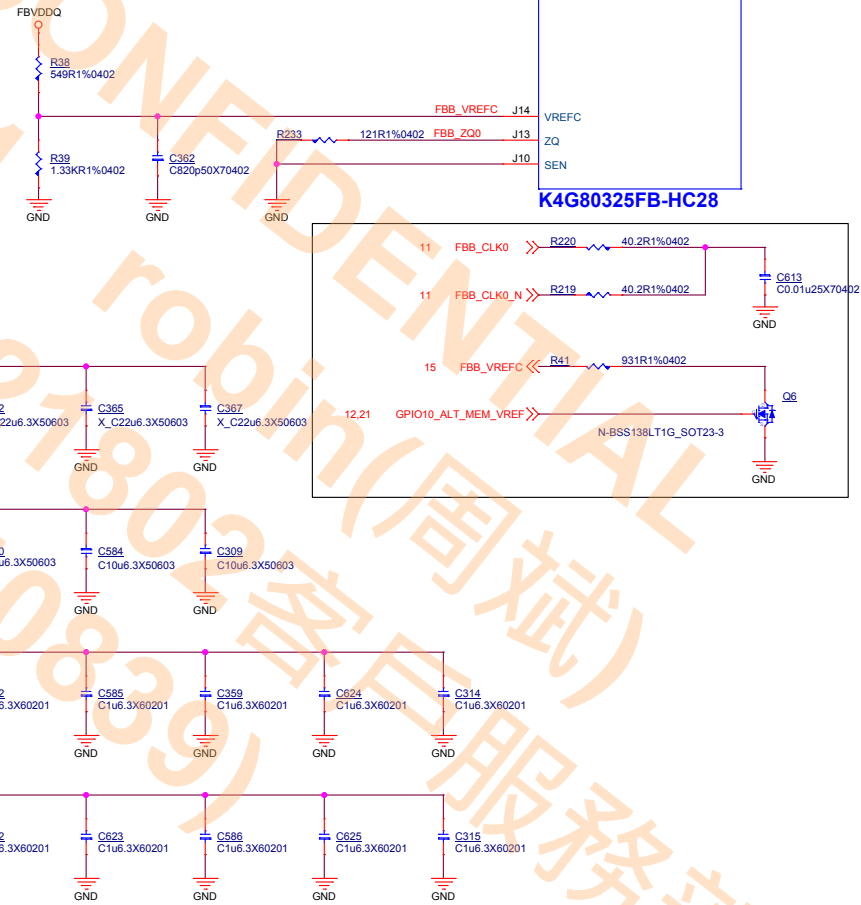
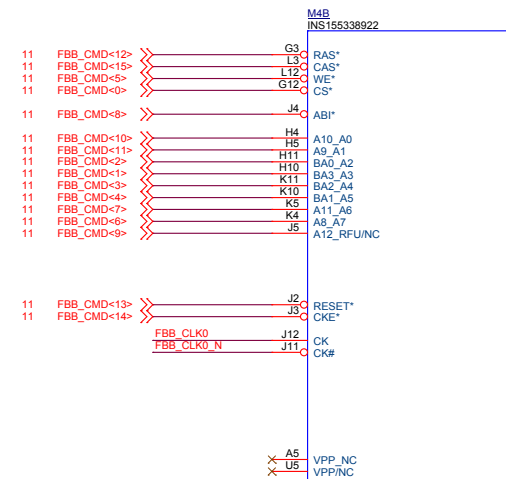
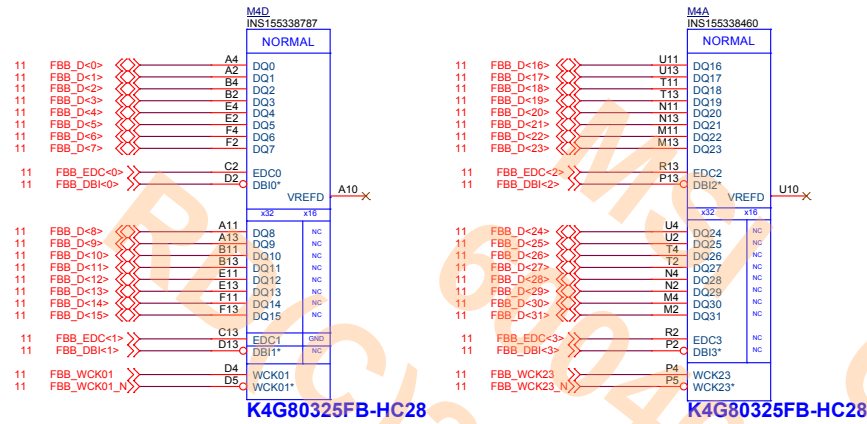
DGPU_GDDR5 FrameBuffer A1



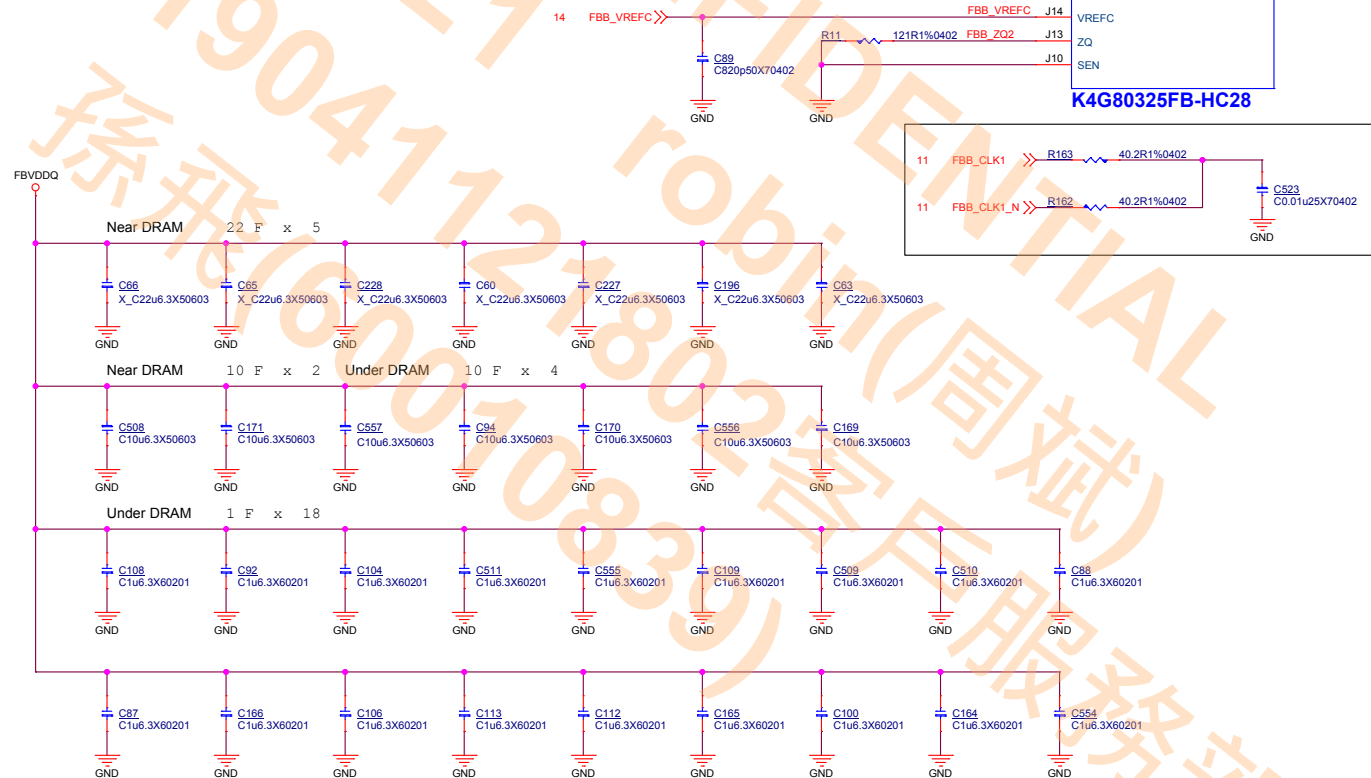
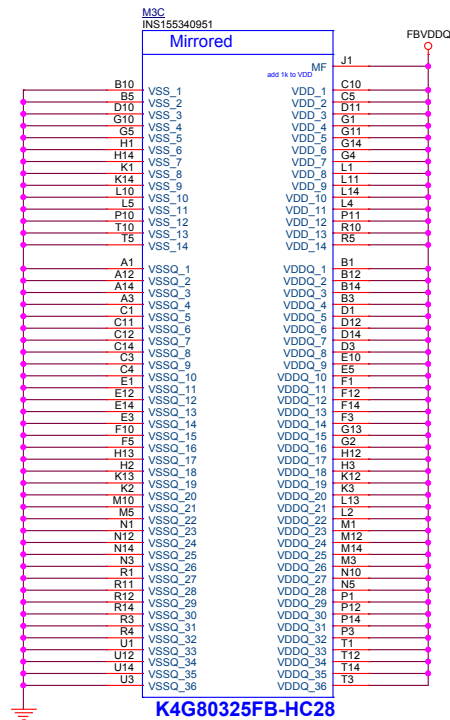
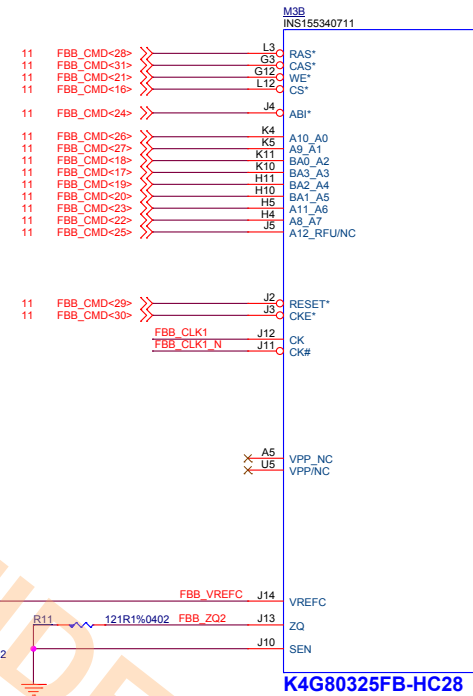
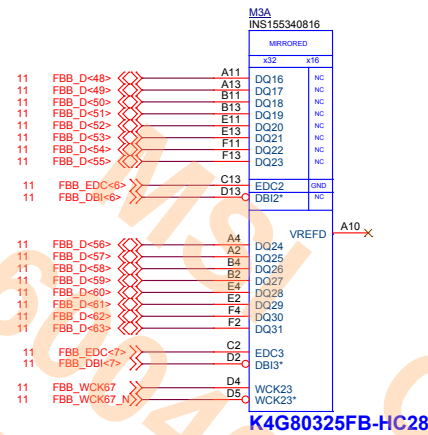
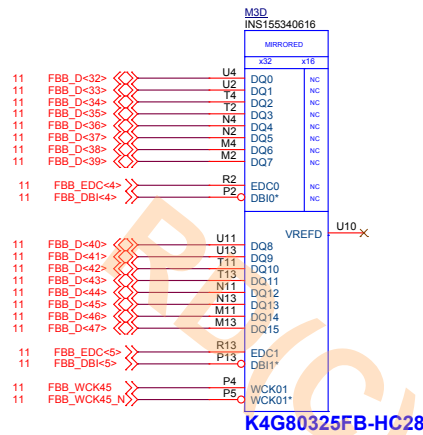
2016/03/23 Remove R14 to follow NV CRB



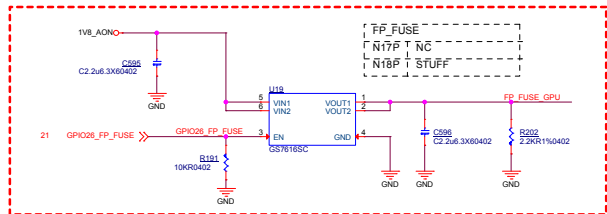
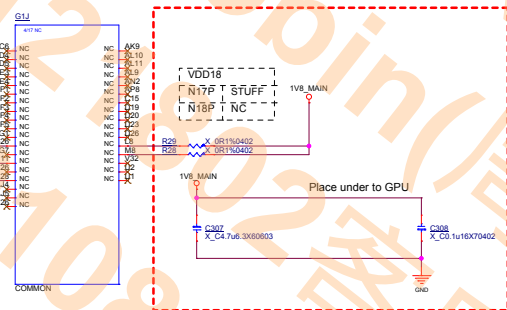
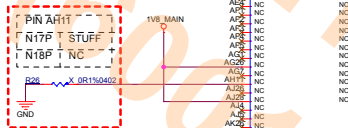
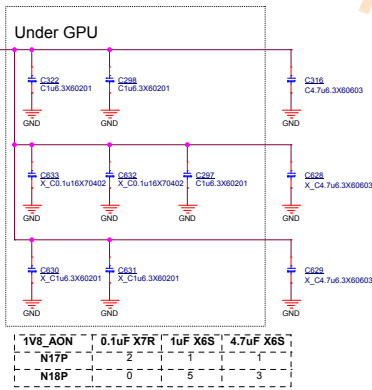
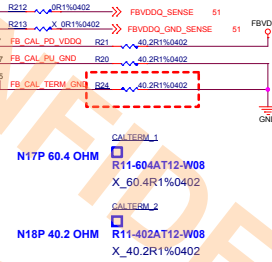
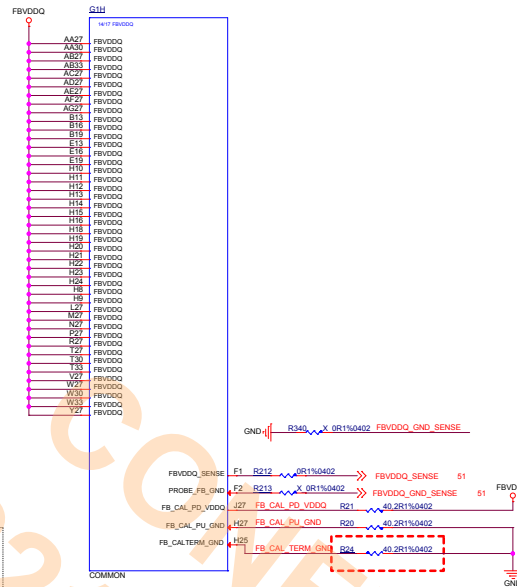
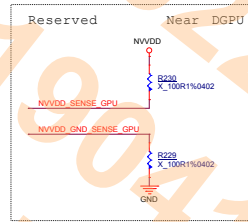
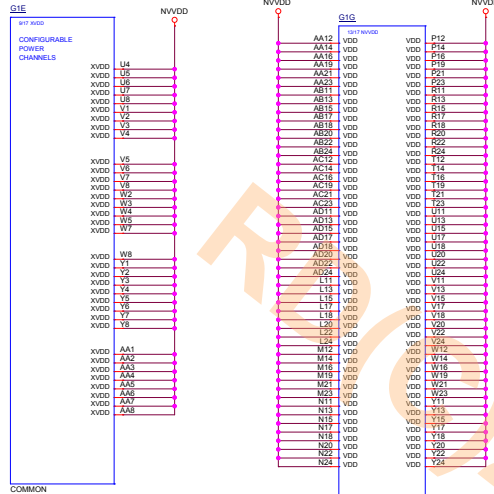
DGPU_GDDR5 FrameBuffer B0



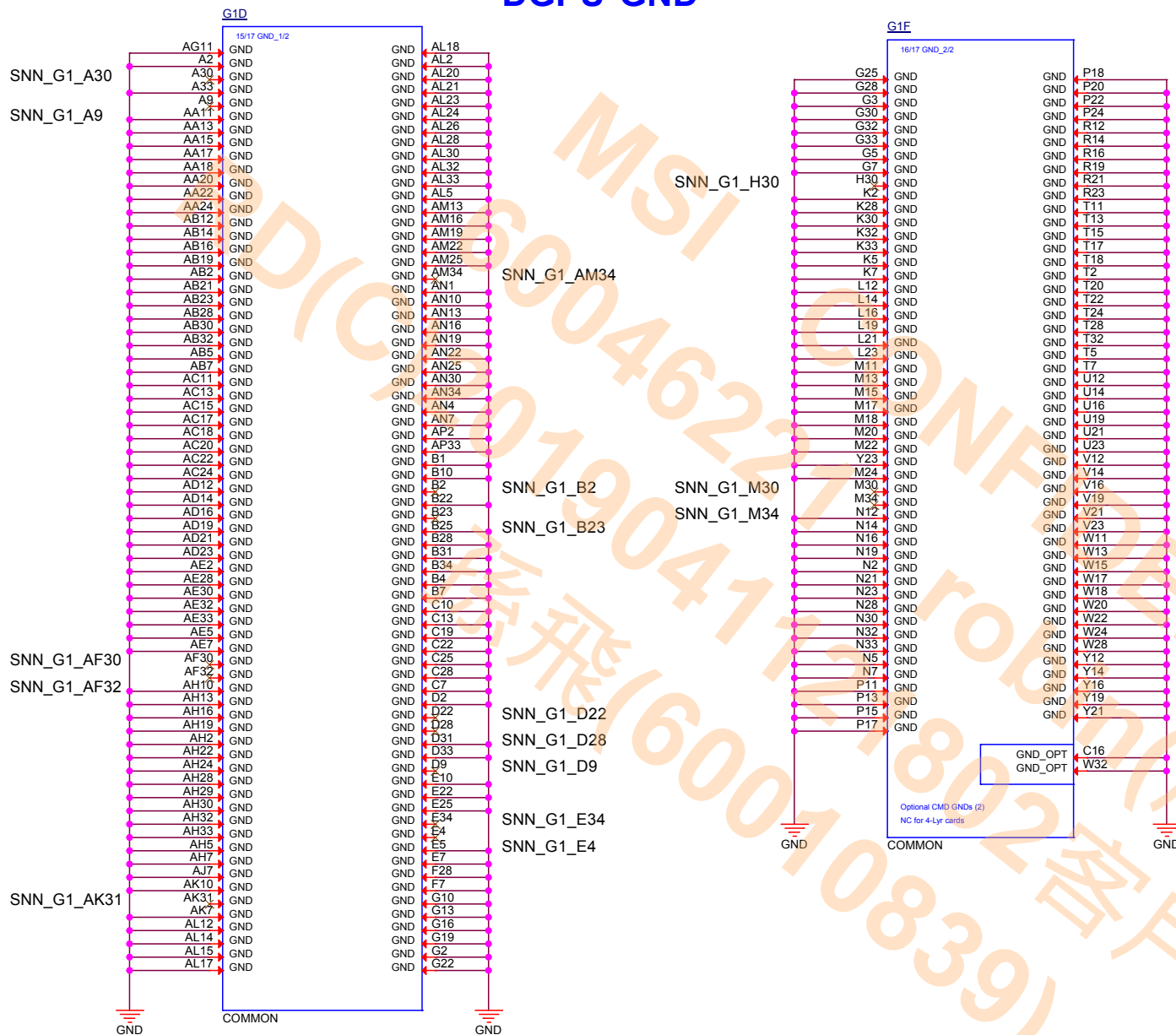
DGPU_GDDR5 FrameBuffer B1



GPU NVDD, FBVDDQ



DGPU GND



GPU DECOUPLING

NVVD

Place under to GPU



NVVD+NVDDS

13 x 1uF(Under GPU)
21 x 10uF(Under GPU)

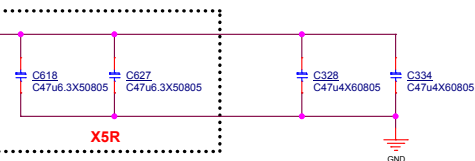
2 x 4.7uF(Near GPU)
11 x 10uF(Near GPU)
10 x 22uF(Near GPU)

NVVD	1uF X7R	4.7uF X6S	10uF X6S	22uF X6S
N17P	13	2	31	10
N18P	13	0	34	15

Place under to GPU



Place under to GPU



FBVDDQ

Place under to GPU



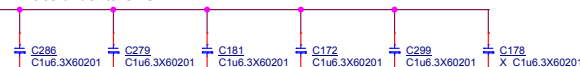
FBVDDQ

12 x 1uF(Under GPU)
4 x 10uF(Under GPU)

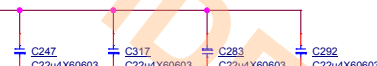
2 x 10uF(Near GPU)
5 x 22uF(Near GPU)

FBVDDQ	1uF X7R	10uF X6S	22uF X6S
N17P	12	6	5
N18P	12	6	5

Place under to GPU

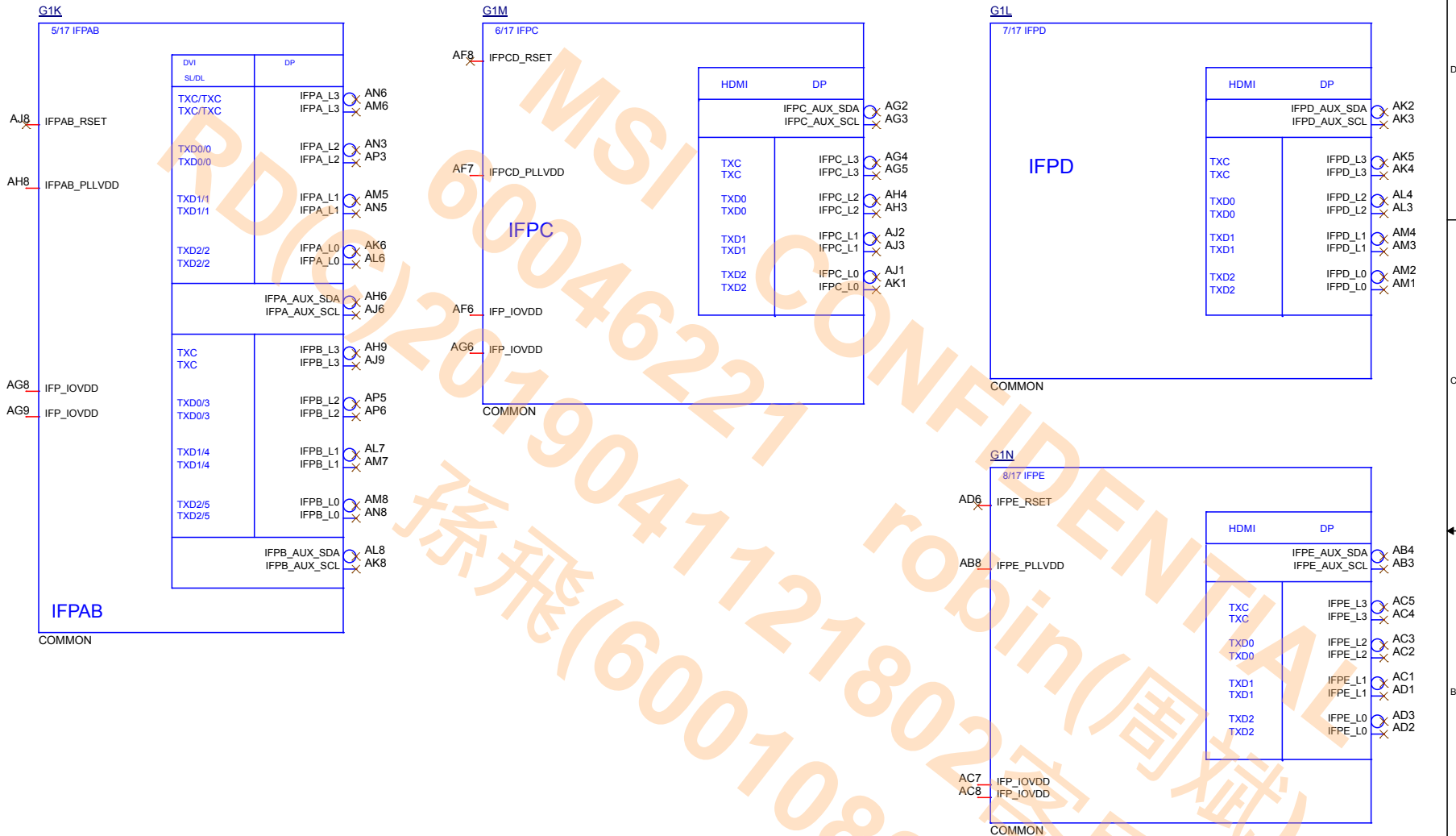


Place under to GPU

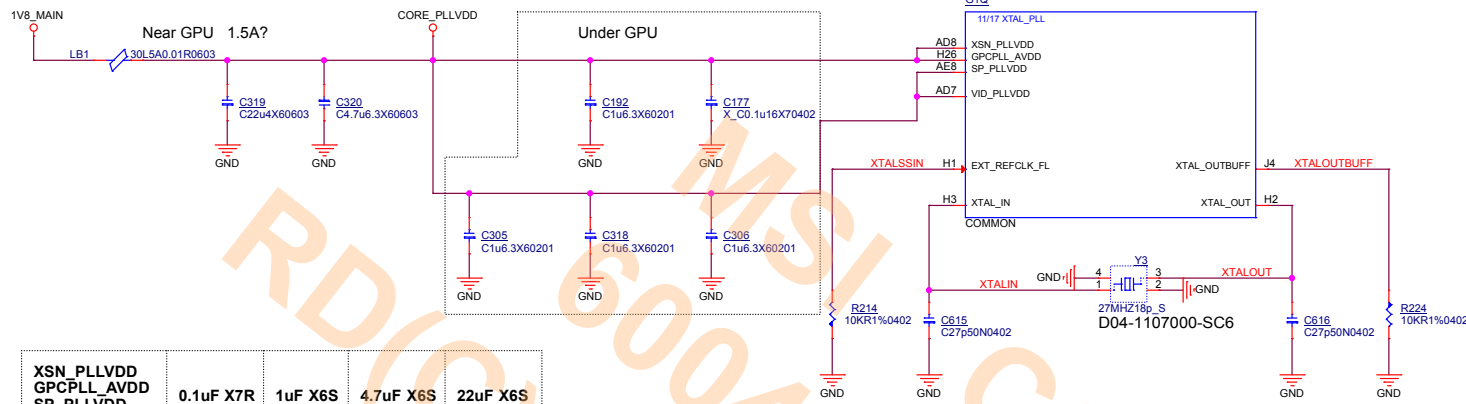


msi MICRO-STAR INT'L CO.,LTD.			
Title DGPU GPU DECOUPLING			
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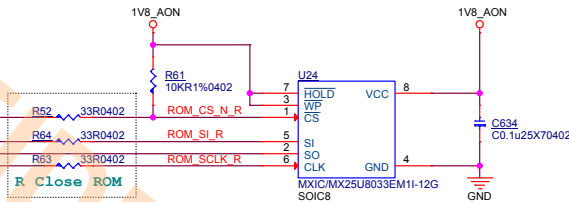
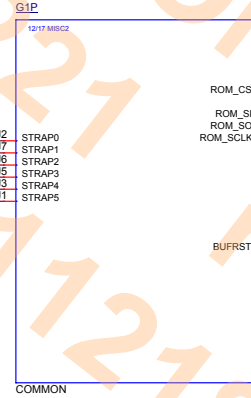
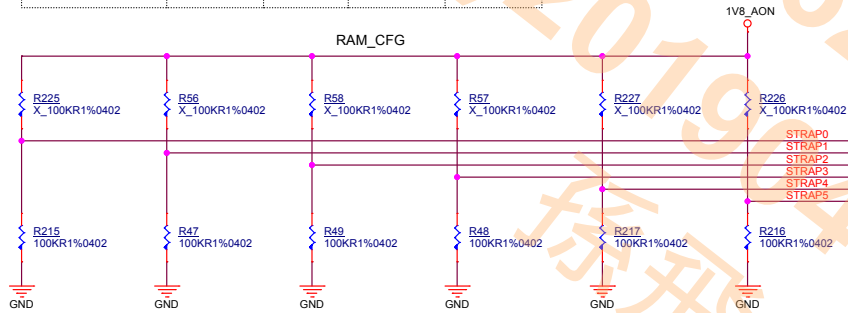
DACA,Display IF



ROM, MULTI-LEVEL STRAPS



XSN_PLLVDD GPCPLL_AVDD SP_PLLVDD VID_PLLVDD	0.1uF X7R	1uF X6S	4.7uF X6S	22uF X6S
N17P	4	0	1	1
N18P	0	4	1	1



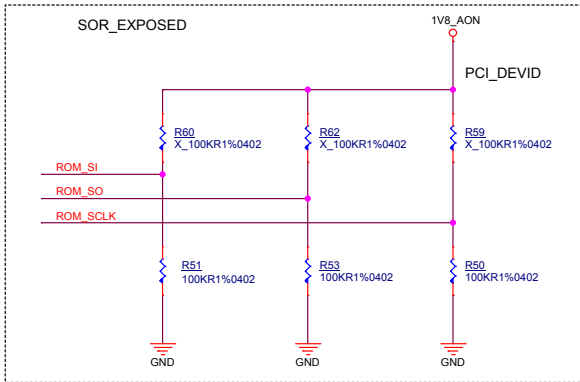
M31-25U8002-M24

N17P_G1_OP

N17P_G0_OP

N18P_G0_MP

N18P_G0
B03-N18PG05-N08
X_N18P-G0



STRAP 5	STRAP 4	STRAP 3	
L	L	L	Optimus
L	L	H	Discrete
H	L	H	Discrete with Gsync

STRAP 2	STRAP 1	STRAP 0		N17P	N18P	
L	L	L	0x0	Samsung K4G80325FB-HC25		
L	L	L	0x0	Samsung K4G80325FB-HC28		
L	L	H	0x1	Microm MT51J256M32HF-70:A	Microm MT51J256M32HF-80:B	
L	L	H	0x1	Microm MT51J256M32HF-80:A		
L	H	L	0x2	Hynix H5GC8H24MJR-R0C	Hynix H5GC8H24AJR-R2C	
L	H	L	0x2	Hynix H5GC8H24MJR-R4C		
H	L	L	0x4	Microm MT51J256M32HF-70:B	Samsung K4G80325FC-HC25	
H	L	L	0x4	Microm MT51J256M32HF-80:B		
H	L	H	0x5	Hynix H5GC8H24AJR-R0C		
H	L	H	0x5	Hynix H5GC8H24AJR-R2C		

Samsung
256Mx32bit
M12-8032545-S02
X_K4G80325FB-HC28

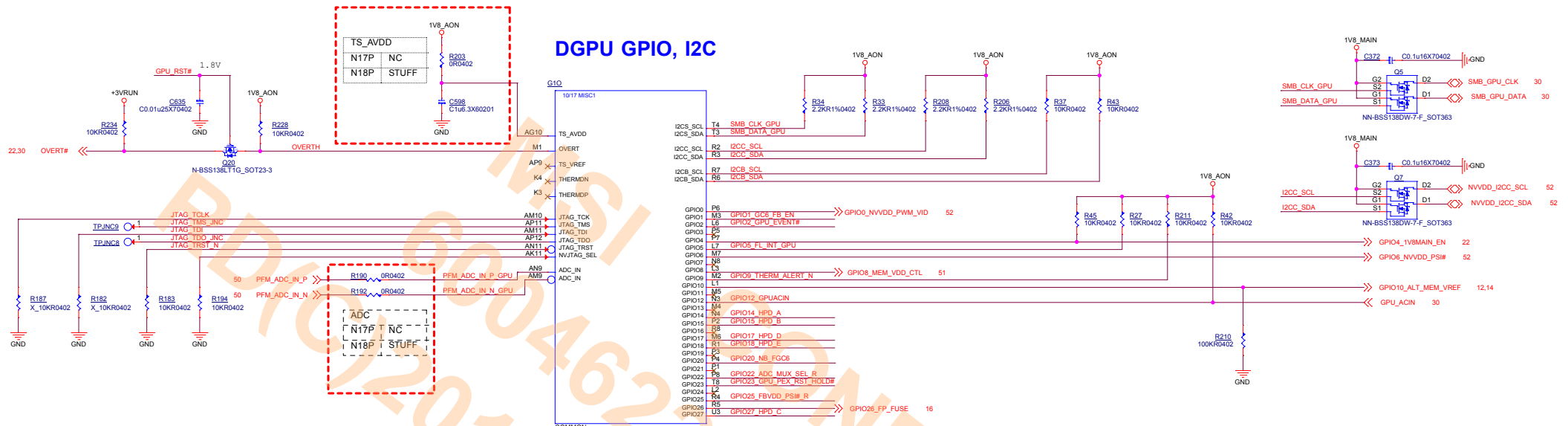
Hynix
256Mx32bit
M12-5GQ8H05-H2A
X_H5GQ8H24MJR-R4C

Samsung
256Mx32bit
M12-80325R5-S02
X_K4G80325FC-HC25

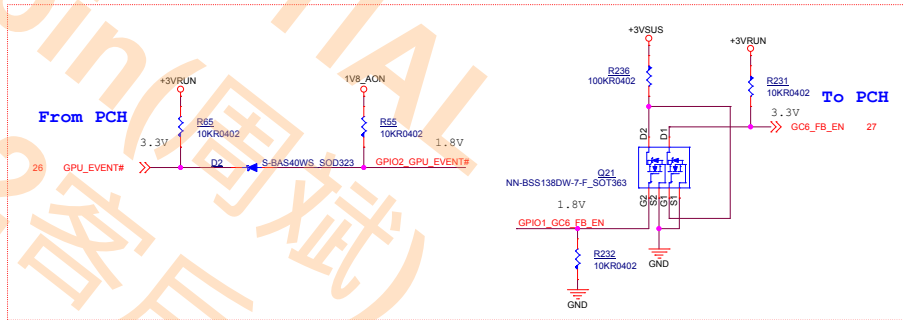
Hynix
256Mx32bit
M12-5GC8HB5-H23
X_H5GC8H24AJR-R2C

Microm
256Mx32bit
M12-25632W5-M30
X_MT51J256M32HF-80:B

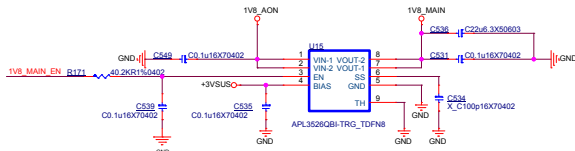
ROM_SO	ROM_SI	ROM_SCLK	SOR_EXPOSED3	SOR_EXPOSED2	SOR_EXPOSED1	SOR_EXPOSED0	FS_OVERT# Function
L	L	L	1:ENABLED	1:ENABLED	1:ENABLED	1:ENABLED	ENABLED
L	L	H	1:ENABLED	1:ENABLED	1:ENABLED	0:DISABLED	DISABLED
L	H	L	1:ENABLED	1:ENABLED	0:DISABLED	1:ENABLED	
L	H	H	1:ENABLED	1:ENABLED	0:DISABLED	0:DISABLED	
H	H	H	1:ENABLED	0:DISABLED	0:DISABLED	0:DISABLED	Invalid Do not configure
H	H	M	0:DISABLED	0:DISABLED	0:DISABLED	0:DISABLED	



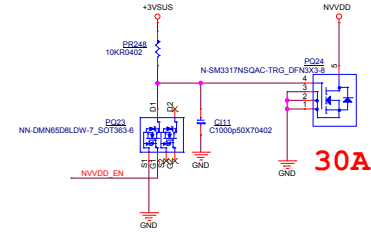
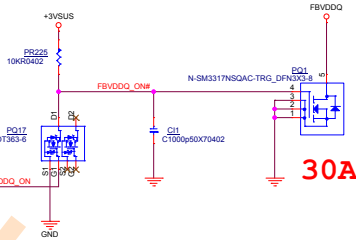
Pin Name	N17P	N18P	N17P Functional Description	N17P Recommended Default Pull-up or Pull-down	N18P Recommended Default Pull-up or Pull-down
GPIO0	NVVDD_PWM	NVVDD_PWM_VID	PWM Output to control NVVDD	0 to 1V8 PWM output	0 to 1V8 PWM output
GPIO1	GC6_FB_EN	GC6_FB_EN	FB Enable for GC6 2.1	OD, 10K pull-down	OD, 10K pull-down
GPIO2	GPU_EVENT#	GPU_EVENT#	GPU wake signal for GC6 2.1	10K pull-up to 1V8_AON	10K pull-up to 1V8_AON
GPIO3	NVVDD_PWM	UNUSED	PWM output to control the NVVDD power supply	0 to 1V8 output	0 to 1V8 output
GPIO4	1V8_MAIN_EN	1V8_MAIN_EN	GPU POWER Sequencing for GC6 2.1	OD, 10K pull-up to 1V8_AON	OD, 10K pull-up to 1V8_AON
GPIO5	FRM_LCK#	FRM_LCK#	Active low Frame Lock	OD, 10K pull-up to 1V8_AON	OD, 10K pull-up to 1V8_AON
GPIO6	NVVDD_PSI	NVVDD_PSI	Phase shedding	10K pull-up to 1V8_AON	10K pull-up to 1V8_AON
GPIO7	LCD_BL_PWM	LCD_BL_PWM	Panel Backlight PWM Brightness Control	100K pull-down	100K pull-down
GPIO8	MEM_VDD_CTL	MEM_VDD_CTL	Memory Voltage Control	pull-up/pull-down to set the FBVDD power-on voltage	pull-up/pull-down to set the FBVDD power-on voltage
GPIO9	THERM_ALERT	THERM_ALERT	Active Low Thermal Alert	OD, 10K pull-up to 1V8_AON	OD, 10K pull-up to 1V8_AON
GPIO10	MEM_VREF_CTL	MEM_VREF_CTL	Memory VREF Control	100K pull-down	100K pull-down
GPIO11	LCD_VCC	LCD_VCC	Panel Power Enable	100K pull-down	100K pull-down
GPIO12	PWR_LEVEL	PWR_LEVEL	AC power detect or power supply overdraw input	100K pull-up to 1V8_AON	10K pull-up to 1V8_AON
GPIO13	LCD_BLEN	UNUSED	Panel Backlight Enable	100K pull-down	100K pull-down
GPIO14	HPD_A	HPD_A	Hot Plug Detect for IFPA		
GPIO15	HPD_B	HPD_B	Hot Plug Detect for IFPB		
GPIO16	SYS_PEX_RST_MON#	UNUSED	System side PCIe reset monitor	10K pull-up to 1V8_AON	
GPIO17	HPD_D	HPD_D	Hot Plug Detect for IFPD		
GPIO18	HPD_E	HPD_E	Hot Plug Detect for IFPE		
GPIO19	3Dvision	UNUSED	3D Vision L/R signal	100K pull-down	
GPIO20	GC5_MODE	NB_GC6			10K pull-down
GPIO21	UNUSED	LCD_BLEN			100K pull-down
GPIO22	UNUSED	ADC_MUX_SEL			2.2K pull-up See Circuit
GPIO23	GPU_PEX_RST_HOLD#	RESERVED	GPU PCIe self-reset control	OD, 10K pull-up to a gated 3V3	100K pull-down
GPIO24	HPD_F	UNUSED	Hot Plug Detect for IFPF		
GPIO25	UNUSED	FBVDD_PSI#			
GPIO26	UNUSED	FF_FUSE			10K pull-down
GPIO27	HPD_C	HPD_C	Hot Plug Detect for IFPC		



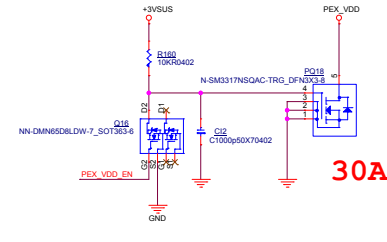
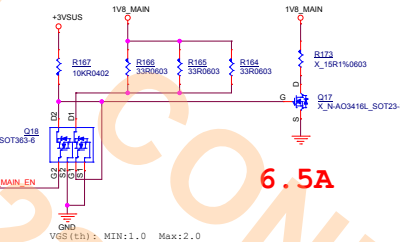
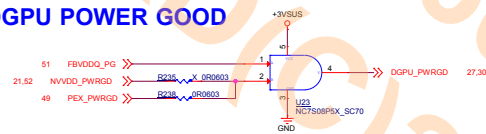
1V8_MAIN



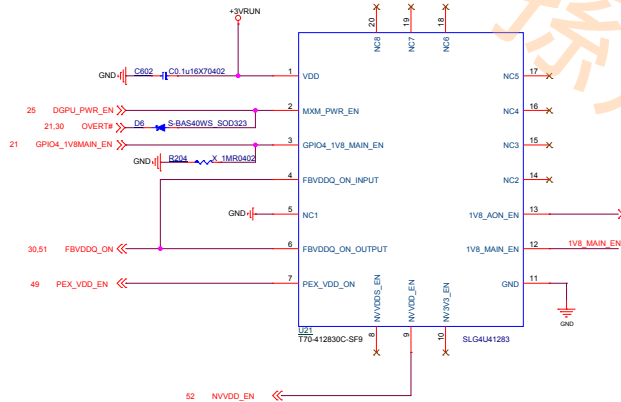
Discharge



DGPU POWER GOOD



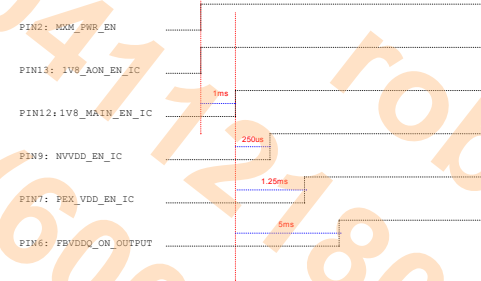
Power Sequence Control



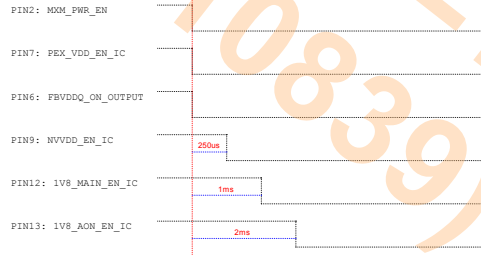
PIN2: MXM_PWR_EN is 3.3V
 PIN3: GPIO4_GC6_PWR_EN is 1.8V
 PIN4: FBVDDQ_ON_INPUT 3.3V
 PIN6: FBVDDQ_ON_OUTPUT 3.3V
 PIN7: PEX_VDD_EN IC 3.3V
 PIN9: NVVDD_EN IC 3.3V
 PIN12: 1V8_MAIN_EN IC 3.3V
 PIN13: 1V8_AON_EN IC 3.3V

INPUT
 INPUT
 INPUT
 OUTPUT
 OUTPUT
 OUTPUT
 OUTPUT

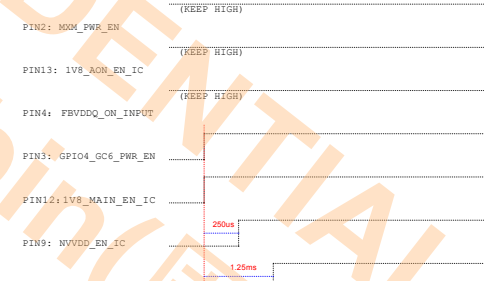
Power Up Sequence



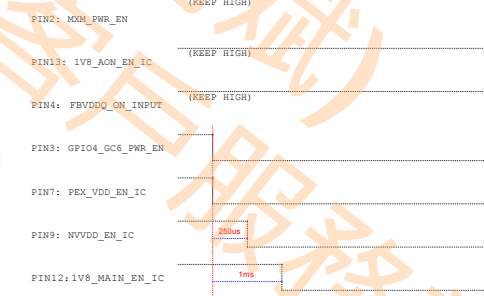
Power Down Sequence



GC6 2.1 Exit Sequence

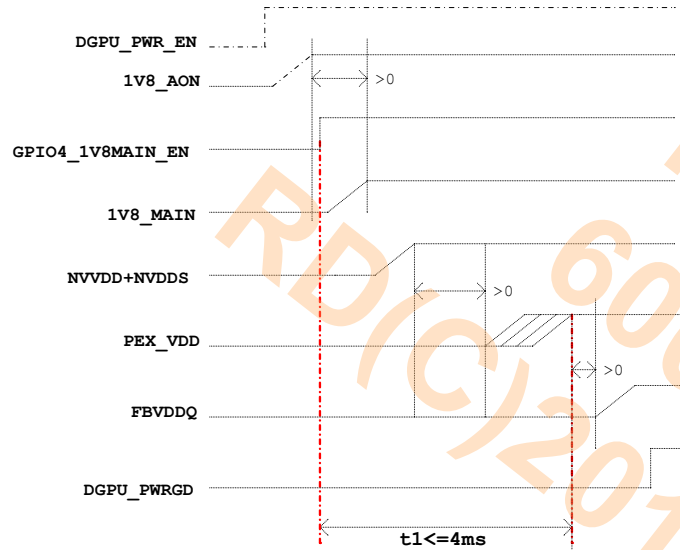


GC6 2.1 Entry Sequence



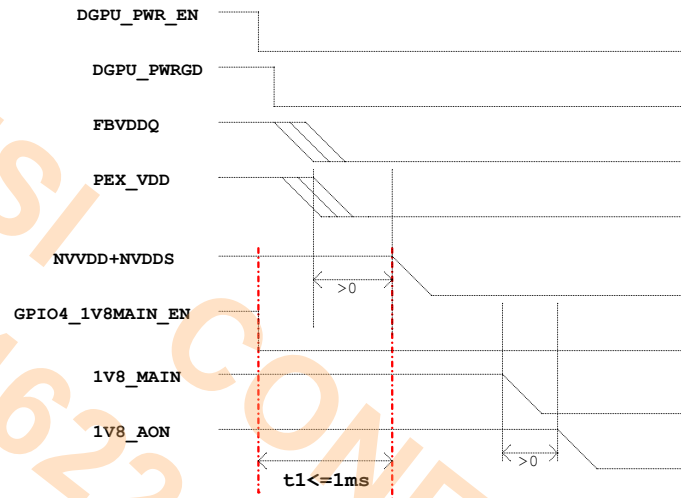
POWER UP Sequence

1V8_AON -> 1V8_MAIN->NV3V3 -> NVVDD -> NVVDDS / PEX_VDD -> FBVDDQ

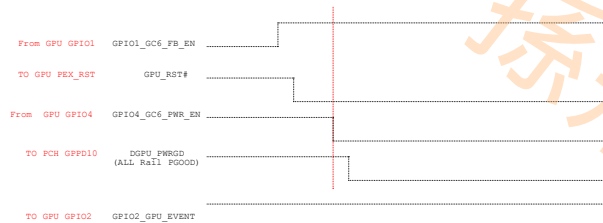


POWER Down Sequence

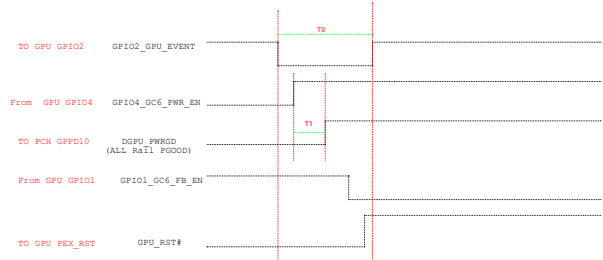
NVVDDS/PEX_VDD/FBVDDQ ->NVVDD/NV3V3->1V8_MAIN> 1V8_AON



GC6 2.1 ENTRY SEQUENCE



GC6 2.1 EXIT SEQUENCE



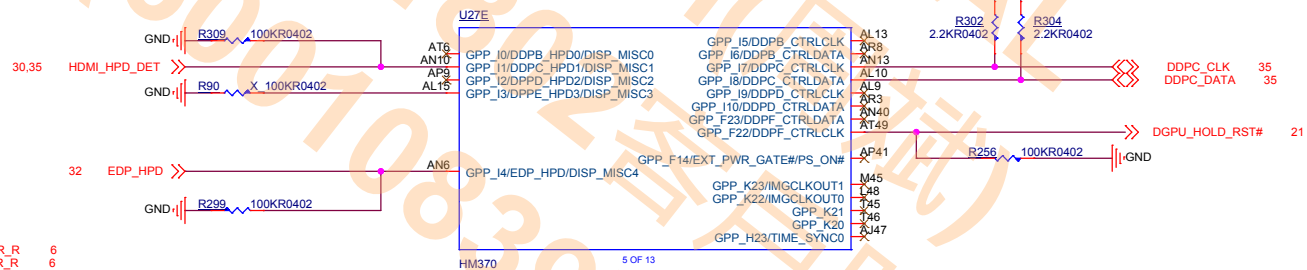
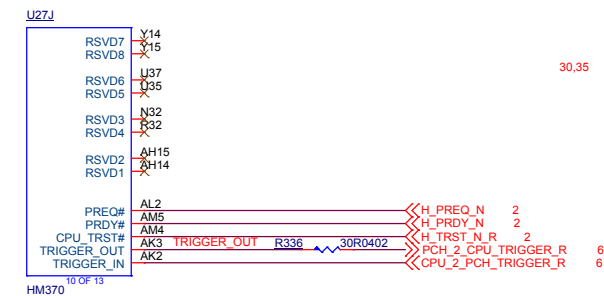
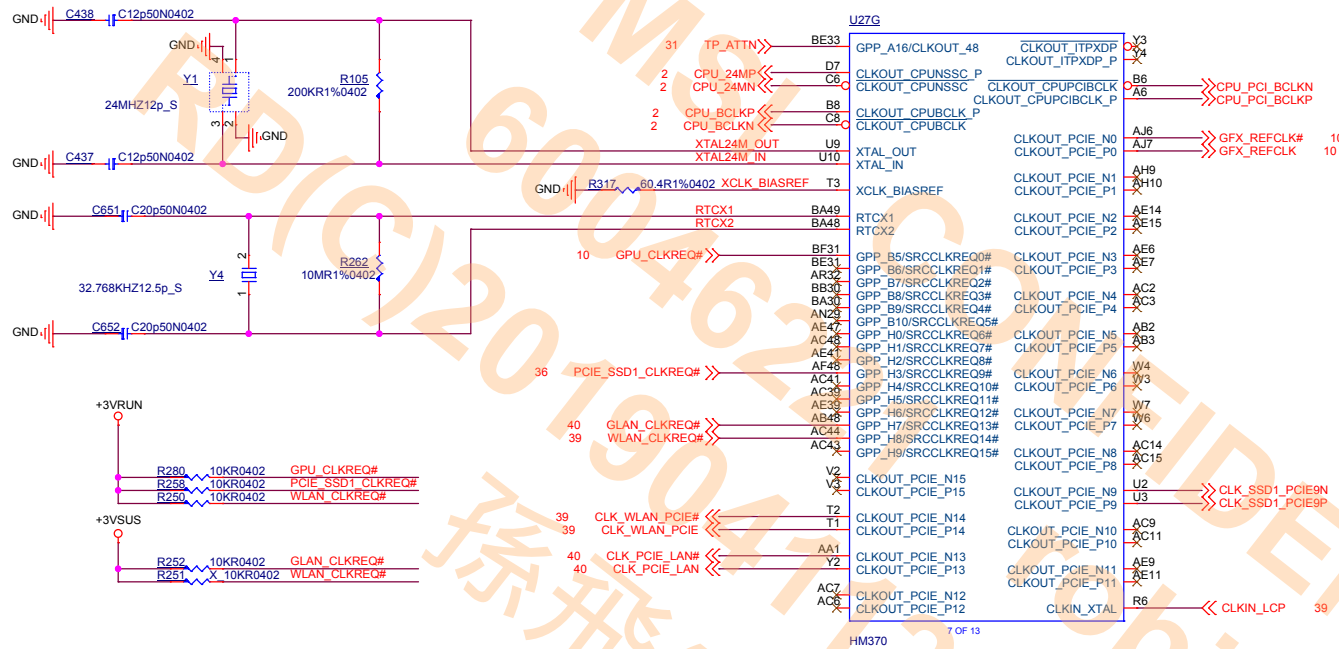
GC6 2.1 TIMING

	Min	Max	Unit	Description
T0	0.001	N/A	ms	GPU EVENT# assertion
T1	0.04	4	ms	3V3_MAIN_EN assertion to all power rails up and stable

NOTES:

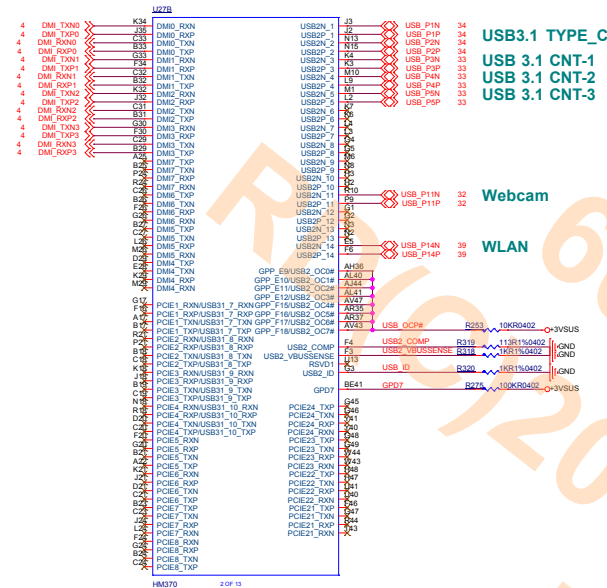
- ALL RailPGOOD=1 represents all GPU power rails are ramped up and in regulation. If any GPU power rail cannot be guaranteed in regulation this state should equal to 0.
- During GC6 exit, the order of power rail ramp-up must follow the Power up sequence described in Chapter 3 with the exception that FBVDD/Q stays on.
- All delays should be minimized to increase time spent in GC6 for maximum power saving.
- The entire entry and exit sequence must complete within 200 ms.

HM370 (RTC/PCIE_Clock/Clock/RSVD)



HM370 (DMI/PCIE/USB3.1/USB2.0/CNVI)

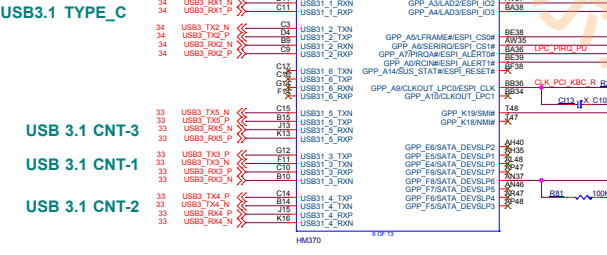
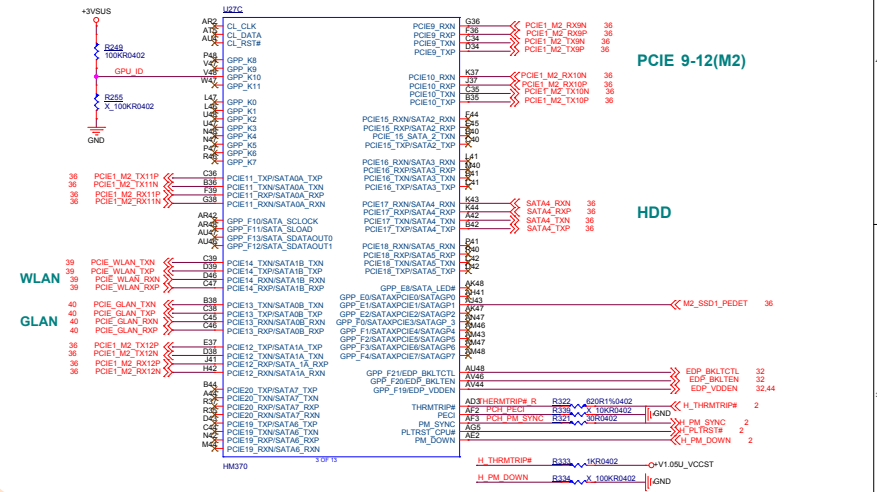
GPP_K10	
N17P	PULL LOW
N18P	PULL HIGH



USB			
USB 2.0	USB 3.1	Device	Note
1	1	USB TYPE_C-1	
2	3	USB TYPE_C-2	
3	3	USB TYPE_A-1	
4	4	USB TYPE_A-2	
5	5	USB TYPE_A-3	
6			
7			
8			
9			
10			
11			
12			
13			
14			

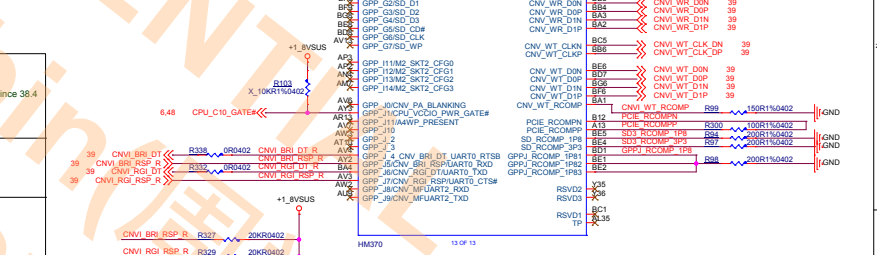
High Speed I/O Ports		
HM370	Device	
1	USB3.1 Gen 1	NC
2	USB3.1 Gen 1	NC
3	N/A	NC
4	N/A	NC
5	INTEL LAN Only	NC
6	N/A	NC
7	N/A	NC
8	N/A	NC
9	PCIe/LAN	PCIe Configurable M2
10	PCIe	M.2 SSD-1
11	PCIe/SATA0A	
12	PCIe/LAN/SATA1A	
13	PCIe/LAN/SATA0B	LAN
14	PCIe/SATA1B	WLAN
15	PCIe	NC
16	PCIe	NC
17	PCIe/SATA4	HDD
18	PCIe/SATA5	NC
19	PCIe	NC
20	PCIe	NC
21	PCIe	NC
22	PCIe	NC
23	PCIe	NC
24	PCIe	NC

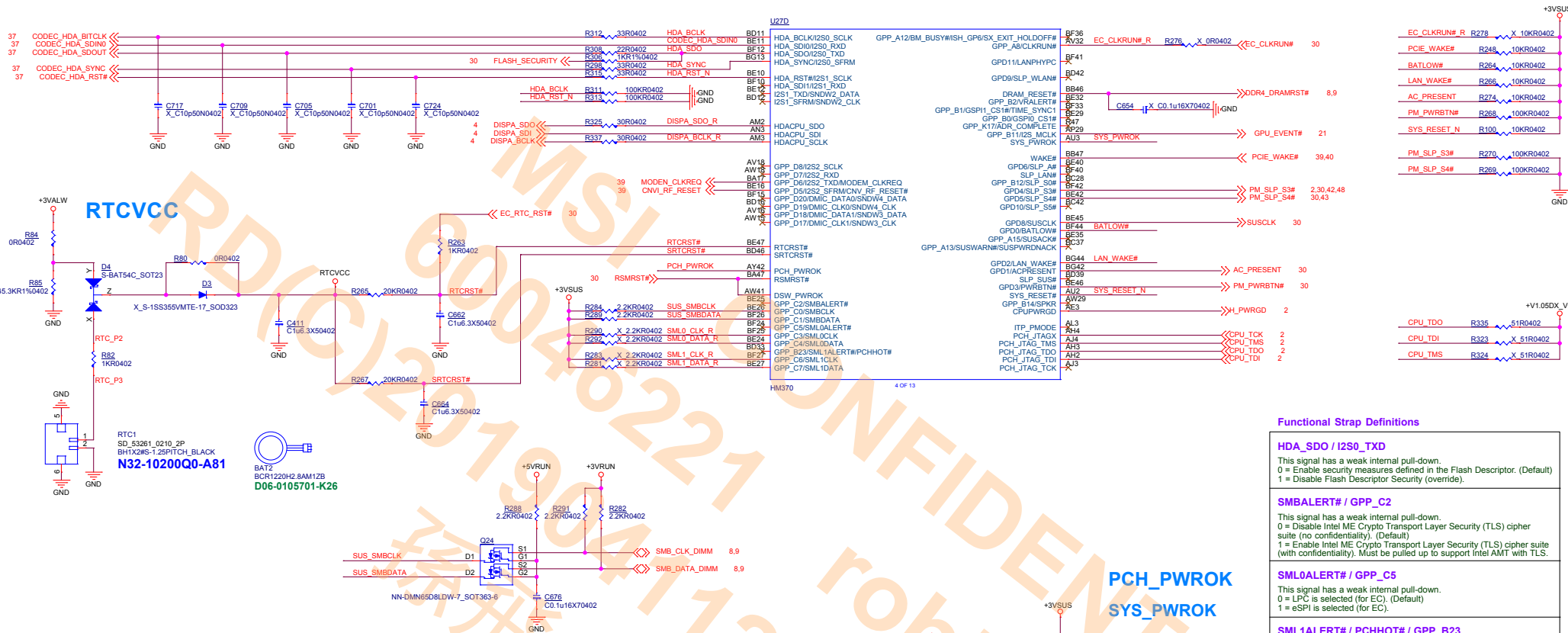
SATA Lane 0 has the flexibility to be mapped to PCIe 11 or 13
SATA Lane 1 has the flexibility to be mapped to PCIe 12 or 14



USB			
USB 2.0	USB 3.1	Device	Note
1	1	USB TYPE_C-1	
2	3	USB TYPE_C-2	
3	3	USB TYPE_A-1	
4	4	USB TYPE_A-2	
5	5	USB TYPE_A-3	
6			
7			
8			
9			
10			
11			
12			
13			
14			

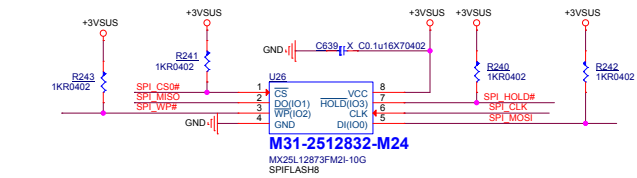
High Speed I/O Ports		
HM370	Device	
1	USB3.1 Gen 1	NC
2	USB3.1 Gen 1	NC
3	N/A	NC
4	N/A	NC
5	INTEL LAN Only	NC
6	N/A	NC
7	N/A	NC
8	N/A	NC
9	PCIe/LAN	PCIe Configurable M2
10	PCIe	M.2 SSD-1
11	PCIe/SATA0A	
12	PCIe/LAN/SATA1A	
13	PCIe/LAN/SATA0B	LAN
14	PCIe/SATA1B	WLAN
15	PCIe	NC
16	PCIe	NC
17	PCIe/SATA4	HDD
18	PCIe/SATA5	NC
19	PCIe	NC
20	PCIe	NC
21	PCIe	NC
22	PCIe	NC
23	PCIe	NC
24	PCIe	NC





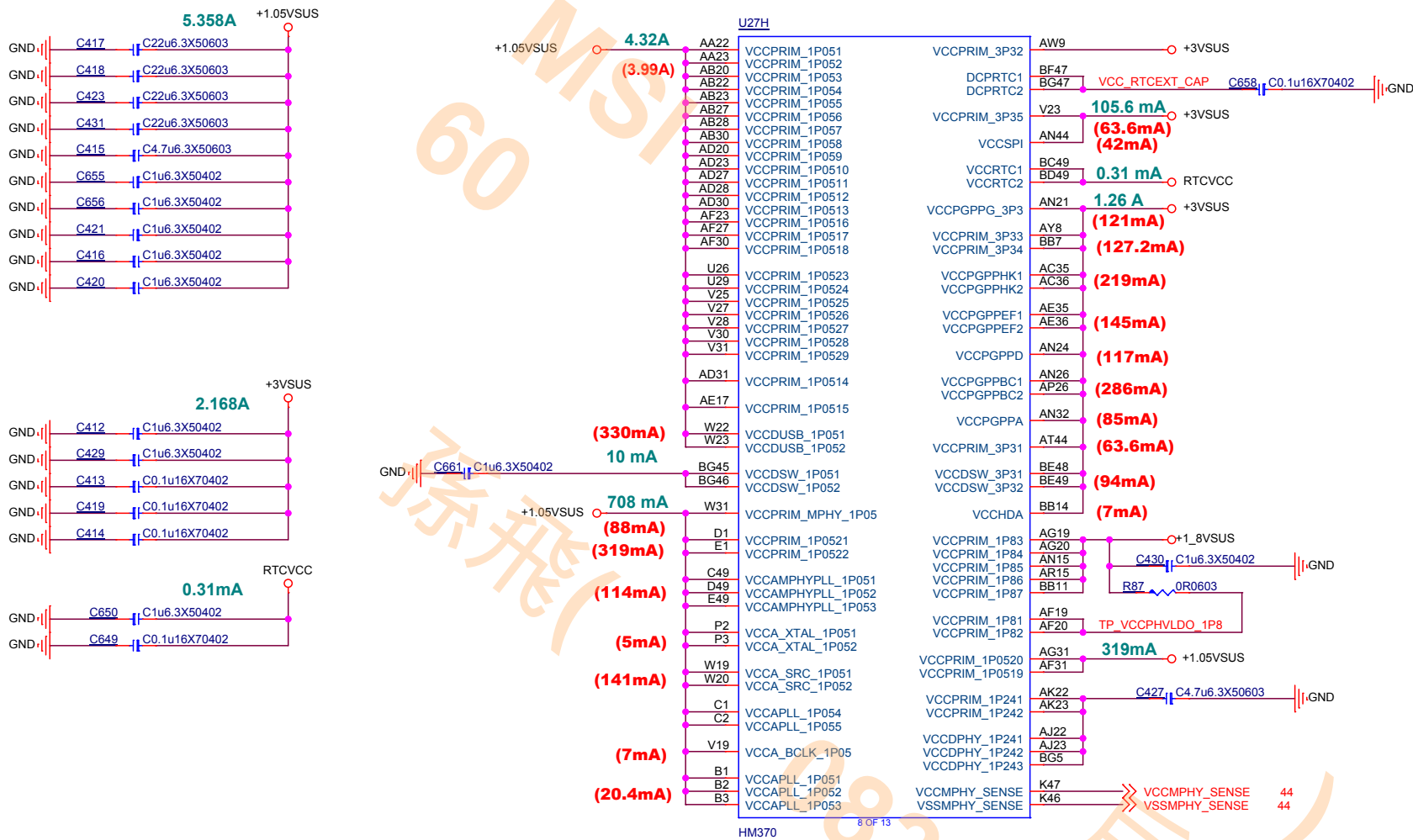
Functional Strap Definitions	
HDA_SDO / I2S0_TXD	This signal has a weak internal pull-down. 0 = Enable security measures defined in the Flash Descriptor. (Default) 1 = Disable Flash Descriptor Security (override).
SMBALERT# / GPP_C2	This signal has a weak internal pull-down. 0 = Disable Intel ME Crypto Transport Layer Security (TLS) cipher suite (no confidentiality). (Default) 1 = Enable Intel ME Crypto Transport Layer Security (TLS) cipher suite (with confidentiality). Must be pulled up to support Intel AMT with TLS.
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. 0 = Disable Intel DCI-OOB (Default) 1 = Enable Intel DCI-OOB
SPKR / GPP_B14	The signal has a weak internal pull-down. 0 = Disable Top Swap mode. (Default) 1 = Enable Top Swap mode.
DG/ RTC Well Input Strap	
RSMRST# & DSW_PWROK, PCH_PWROK : PD RTCSTRT#, SRTCSTRT#, INTRUDER# : PU	

SPI FLASH ROM 16MB



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

HM370 (Power)



PCH-H(GND)

U27L			
BG3	VSS_145	VSS_196	M24
BG33	VSS_146	VSS_197	M32
BG37	VSS_147	VSS_198	M34
BG4	VSS_148	VSS_199	M49
BG48	VSS_149	VSS_200	M5
C12	VSS_150	VSS_201	N12
C25	VSS_151	VSS_202	N16
C30	VSS_152	VSS_203	N34
C4	VSS_153	VSS_204	N35
C48	VSS_154	VSS_205	N37
C5	VSS_155	VSS_206	N38
D12	VSS_156	VSS_207	P26
D16	VSS_157	VSS_208	P29
D17	VSS_158	VSS_209	P4
D30	VSS_159	VSS_210	P46
D33	VSS_160	VSS_211	R12
D8	VSS_161	VSS_212	R16
E10	VSS_162	VSS_213	R26
E13	VSS_163	VSS_214	R29
E15	VSS_164	VSS_215	R3
E17	VSS_165	VSS_216	R34
E19	VSS_166	VSS_217	R38
E22	VSS_167	VSS_218	R4
E24	VSS_168	VSS_219	T17
E26	VSS_169	VSS_220	T18
E31	VSS_170	VSS_221	T32
E33	VSS_171	VSS_222	T4
E35	VSS_172	VSS_223	T49
E40	VSS_173	VSS_224	T5
E42	VSS_174	VSS_225	T7
E8	VSS_175	VSS_226	U12
F41	VSS_176	VSS_227	U15
F43	VSS_177	VSS_228	U17
F47	VSS_178	VSS_229	U21
G44	VSS_179	VSS_230	U24
G6	VSS_180	VSS_231	U33
H8	VSS_181	VSS_232	U38
J10	VSS_182	VSS_233	V20
J26	VSS_183	VSS_234	V22
J29	VSS_184	VSS_235	V4
J4	VSS_185	VSS_236	V46
J40	VSS_186	VSS_237	W25
J46	VSS_187	VSS_238	W27
J47	VSS_188	VSS_239	W28
J48	VSS_189	VSS_240	W30
J9	VSS_190	VSS_241	Y10
K11	VSS_191	VSS_242	Y12
K39	VSS_192	VSS_243	Y17
M16	VSS_193	VSS_244	Y33
M18	VSS_194	VSS_245	Y38
M21	VSS_195	VSS_246	Y9

U27I			
A2	VSS_1	VSS_73	AL12
A28	VSS_2	VSS_74	AL17
A3	VSS_3	VSS_75	AL21
A33	VSS_4	VSS_76	AL24
A37	VSS_5	VSS_77	AL26
A4	VSS_6	VSS_78	AL29
A45	VSS_7	VSS_79	AL33
A46	VSS_8	VSS_80	AL38
A47	VSS_9	VSS_81	AM1
A48	VSS_10	VSS_82	AM18
A5	VSS_11	VSS_83	AM32
A8	VSS_12	VSS_84	AM49
AA19	VSS_13	VSS_85	AN12
AA20	VSS_14	VSS_86	AN16
AA25	VSS_15	VSS_87	AN34
AA27	VSS_16	VSS_88	AN38
AA28	VSS_17	VSS_89	AP4
AA30	VSS_18	VSS_90	AP46
AA31	VSS_19	VSS_91	AR12
AA49	VSS_20	VSS_92	AR16
AA5	VSS_21	VSS_93	AR34
AB19	VSS_22	VSS_94	AR38
AB25	VSS_23	VSS_95	AT1
AB31	VSS_24	VSS_96	AT16
AC12	VSS_25	VSS_97	AT18
AC17	VSS_26	VSS_98	AT21
AC33	VSS_27	VSS_99	AT24
AC38	VSS_28	VSS_100	AT26
AC4	VSS_29	VSS_101	AT29
AC46	VSS_30	VSS_102	AT32
AD1	VSS_31	VSS_103	AT34
AD19	VSS_32	VSS_104	AT45
AD2	VSS_33	VSS_105	AV11
AD22	VSS_34	VSS_106	AV39
AD25	VSS_35	VSS_107	AW10
AD49	VSS_36	VSS_108	AW4
AE12	VSS_37	VSS_109	AW40
AE33	VSS_38	VSS_110	AW46
AE38	VSS_39	VSS_111	B47
AE4	VSS_40	VSS_112	B48
AE46	VSS_41	VSS_113	B49
AF22	VSS_42	VSS_114	BA12
AF25	VSS_43	VSS_115	BA14
AF28	VSS_44	VSS_116	BA44
AG1	VSS_45	VSS_117	BA5
AG22	VSS_46	VSS_118	BA6
AG23	VSS_47	VSS_119	BB41
AG25	VSS_48	VSS_120	BB43
AG27	VSS_49	VSS_121	BB9
AG28	VSS_50	VSS_122	BC10
AG30	VSS_51	VSS_123	BC13
AG49	VSS_52	VSS_124	BC15
AH12	VSS_53	VSS_125	BC19
AH17	VSS_54	VSS_126	BC24
AH33	VSS_55	VSS_127	BC26
AH38	VSS_56	VSS_128	BC31
AJ19	VSS_57	VSS_129	BC35
AJ20	VSS_58	VSS_130	BC40
AJ25	VSS_59	VSS_131	BC45
AJ27	VSS_60	VSS_132	BC8
AJ28	VSS_61	VSS_133	BD43
AJ30	VSS_62	VSS_134	BE44
AJ31	VSS_63	VSS_135	BF1
AK19	VSS_64	VSS_136	BF2
AK20	VSS_65	VSS_137	BF3
AK25	VSS_66	VSS_138	BF48
AK27	VSS_67	VSS_139	BF49
AK28	VSS_68	VSS_140	BG17
AK30	VSS_69	VSS_141	BG2
AK31	VSS_70	VSS_142	BG22
AK4	VSS_71	VSS_143	BG25
AK46	VSS_72	VSS_144	BG28



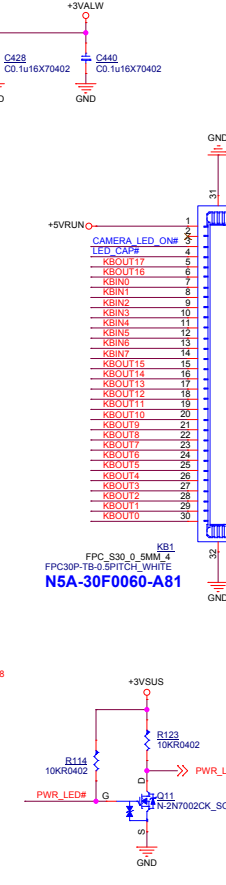
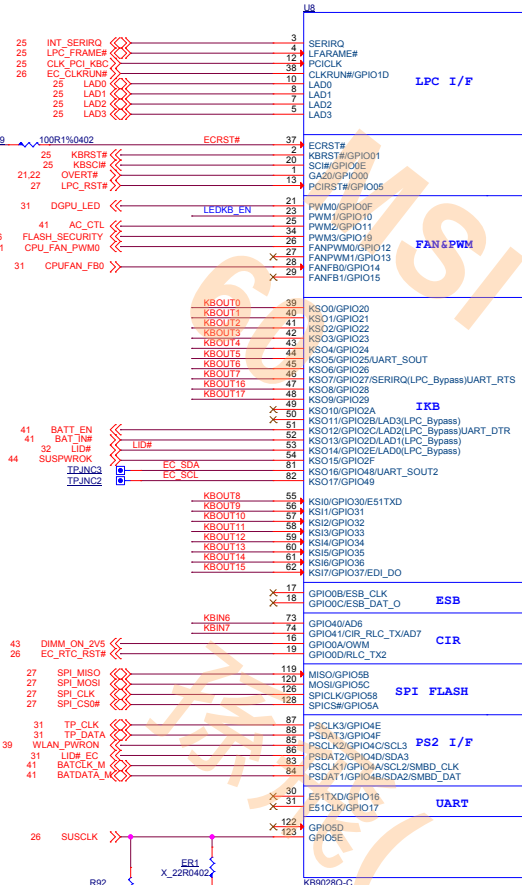
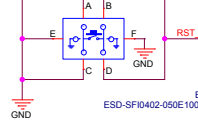
MICRO-STAR INT'L CO.,LTD.

Title		
PCH-6(GND)		
Size	Document Number	Rev
Custom	MS-16R3	1.0
Date:	Thursday, December 20, 2018	Sheet 29 of 58

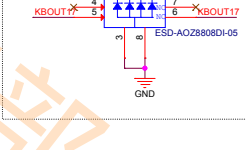
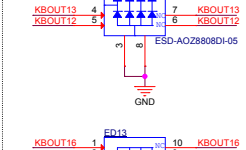
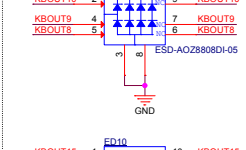
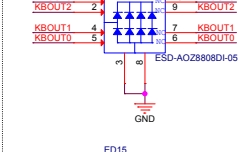
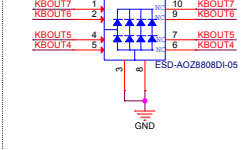
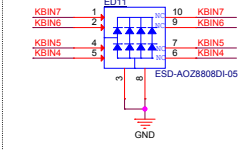
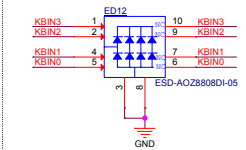
KBC/EC/μP (ENE9028)

Hardware Reset

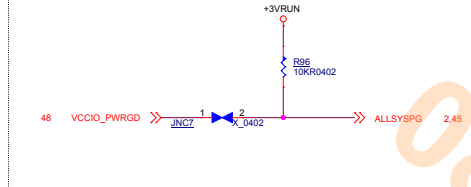
CN2
SW1A_S6_5_2X6_3_T
SW-TACTB1S
N71-0101630-D02



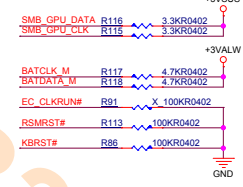
For EMI



ALLSYSPG



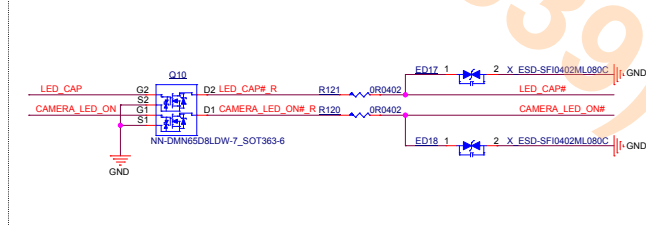
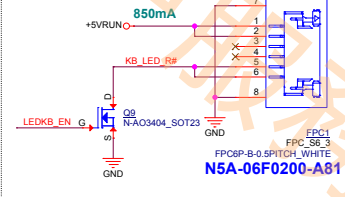
Pull Up/Pull Down



MB_ID

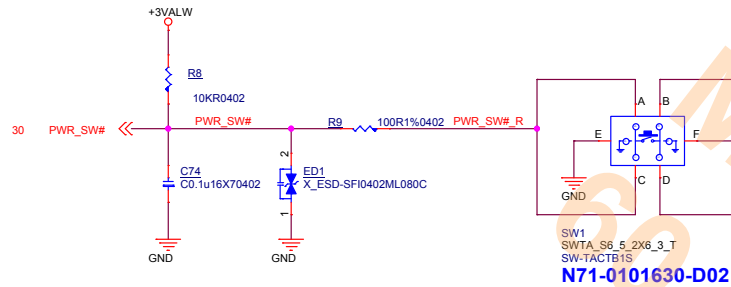


Keyboard LED CONN

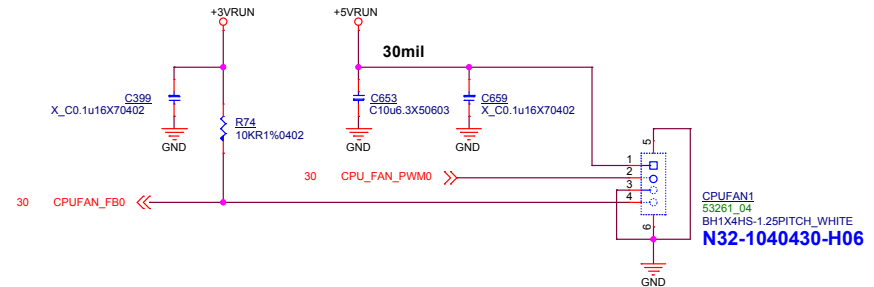


Power Switch / FAN / Touch Pad / LED

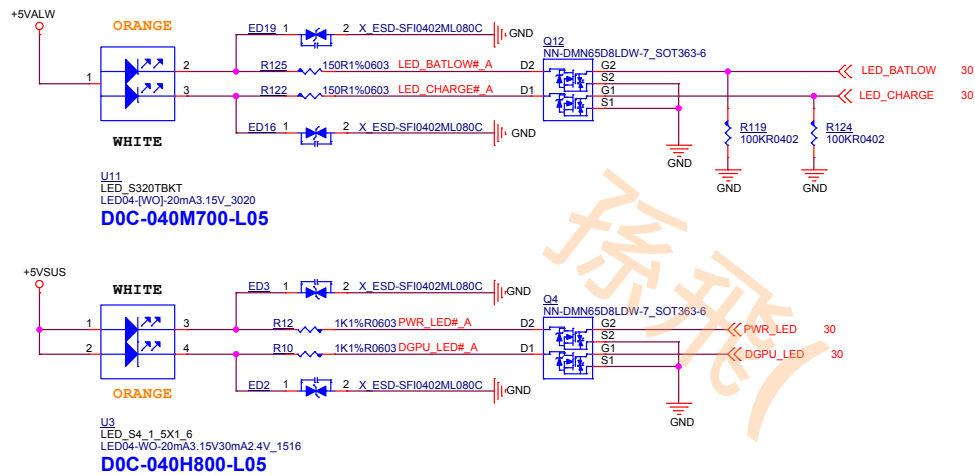
Power Switch



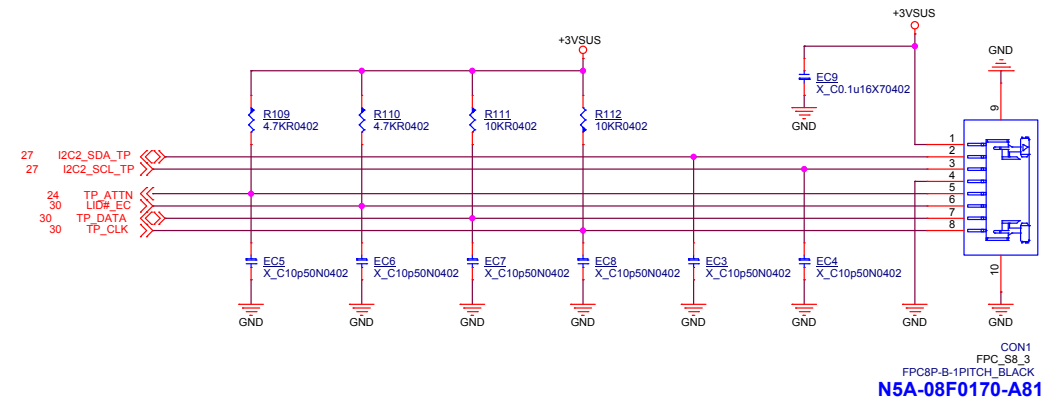
CPU FAN



LED

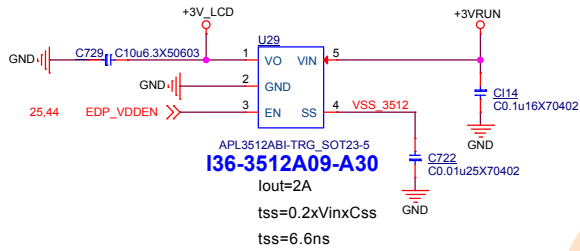


Touch Pad Board

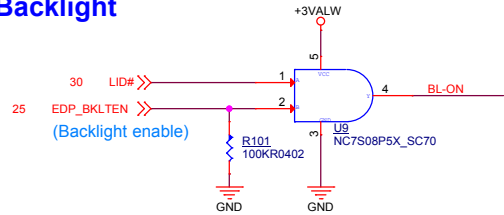


		MICRO-STAR INT'L CO.,LTD.	
Title			
Power Switch/FAN/Touch Pad/LED			
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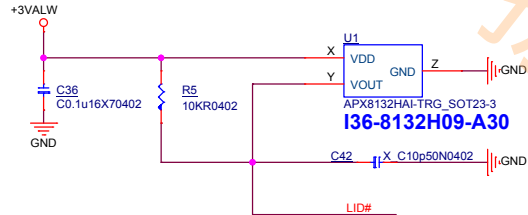
Pannel Device Logic Power



Backlight



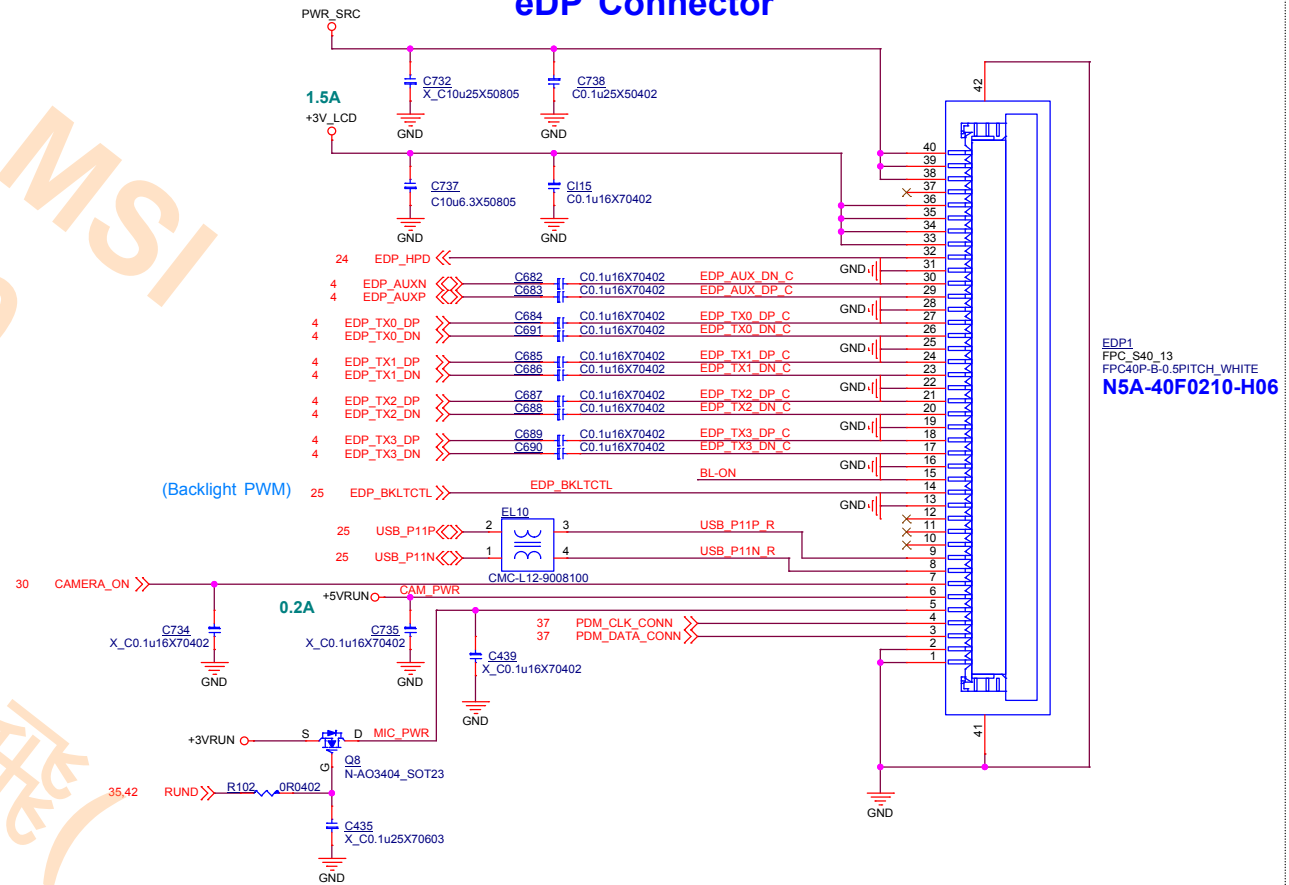
Hall Switch



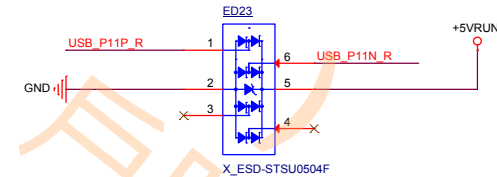
EMI Close Connector



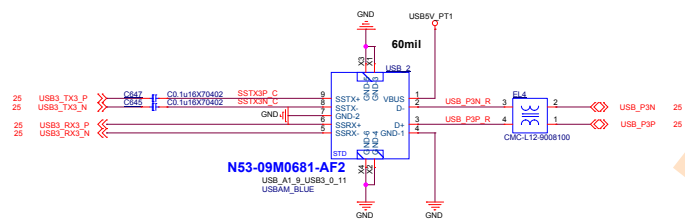
eDP Connector



ESD



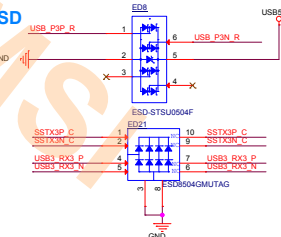
USB3.0 CNT-1



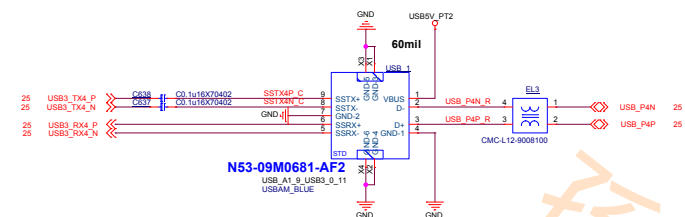
USB Power Switch



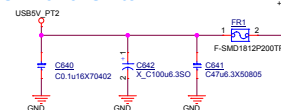
ESD



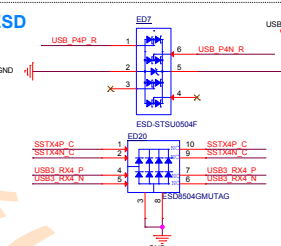
USB3.0 CNT-2



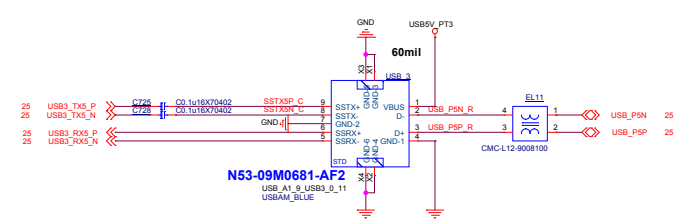
USB Power Switch



ESD



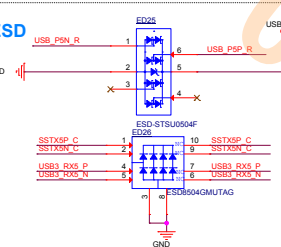
USB3.0 CNT-3



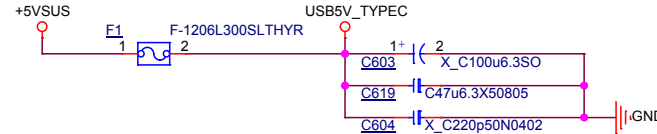
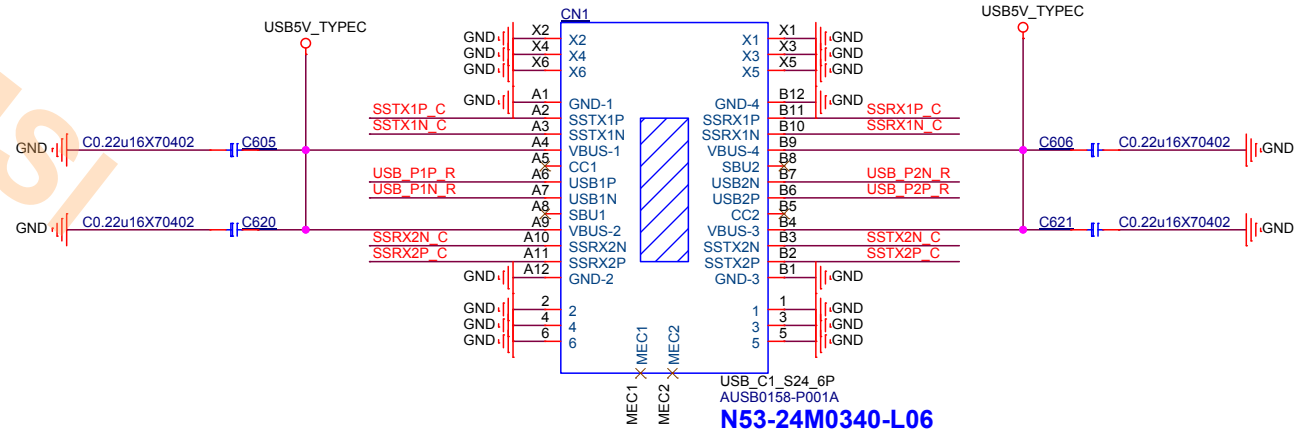
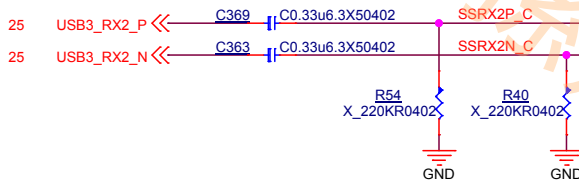
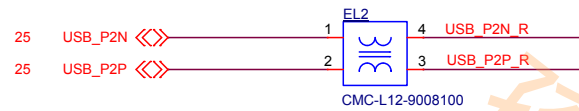
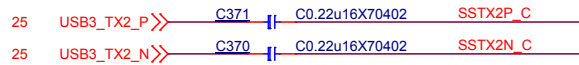
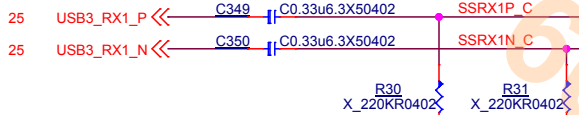
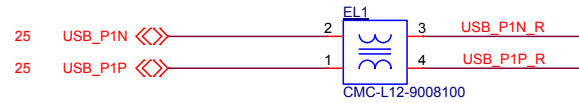
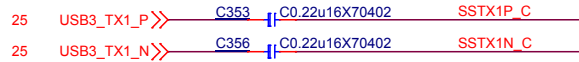
USB Power Switch



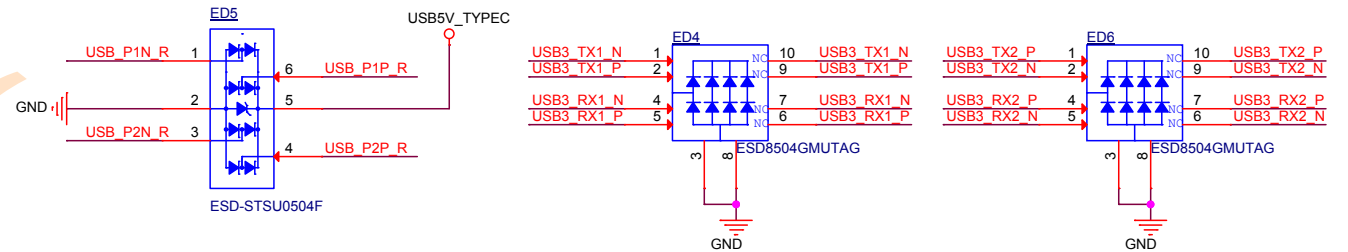
ESD



USB 3.0 TYPE_C

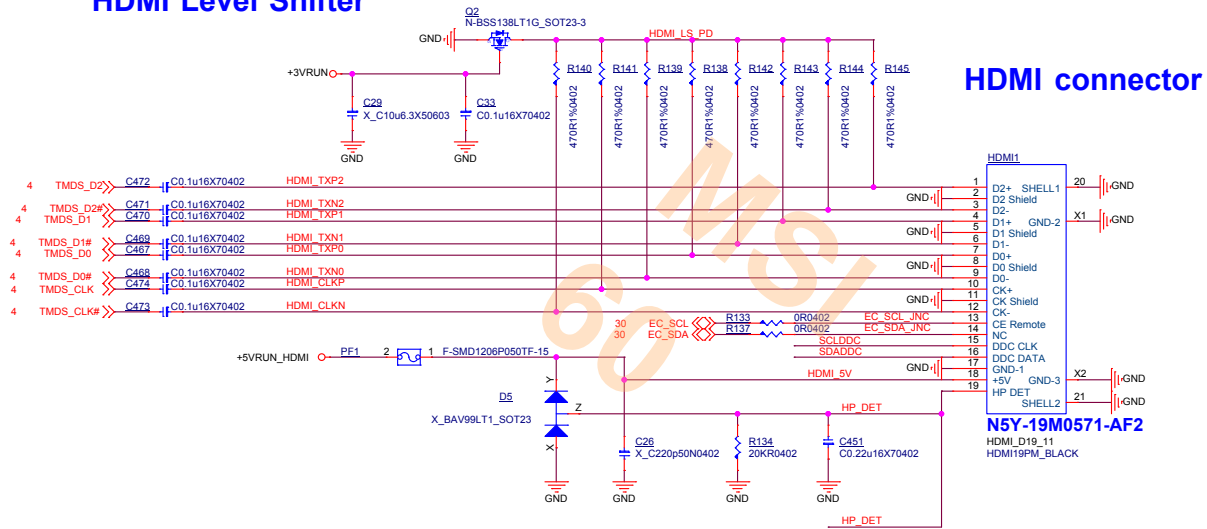


ESD

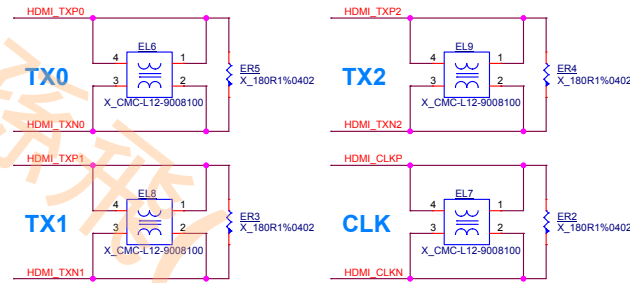


msi MICRO-STAR INT'L CO.,LTD.	
Title	
USB 3.0 TYPE_C	
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HDMI Level Shifter

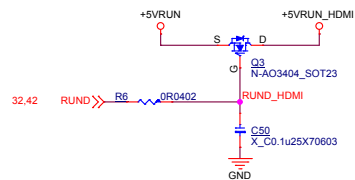


EMI Close Connector

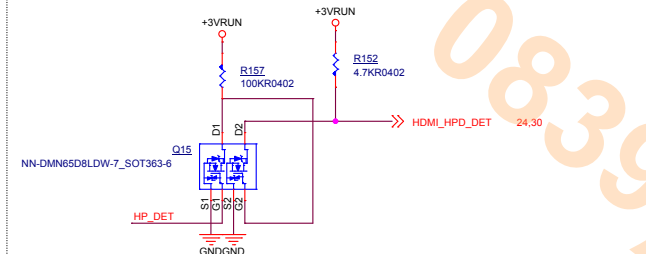


Avoid HDMI Leakage

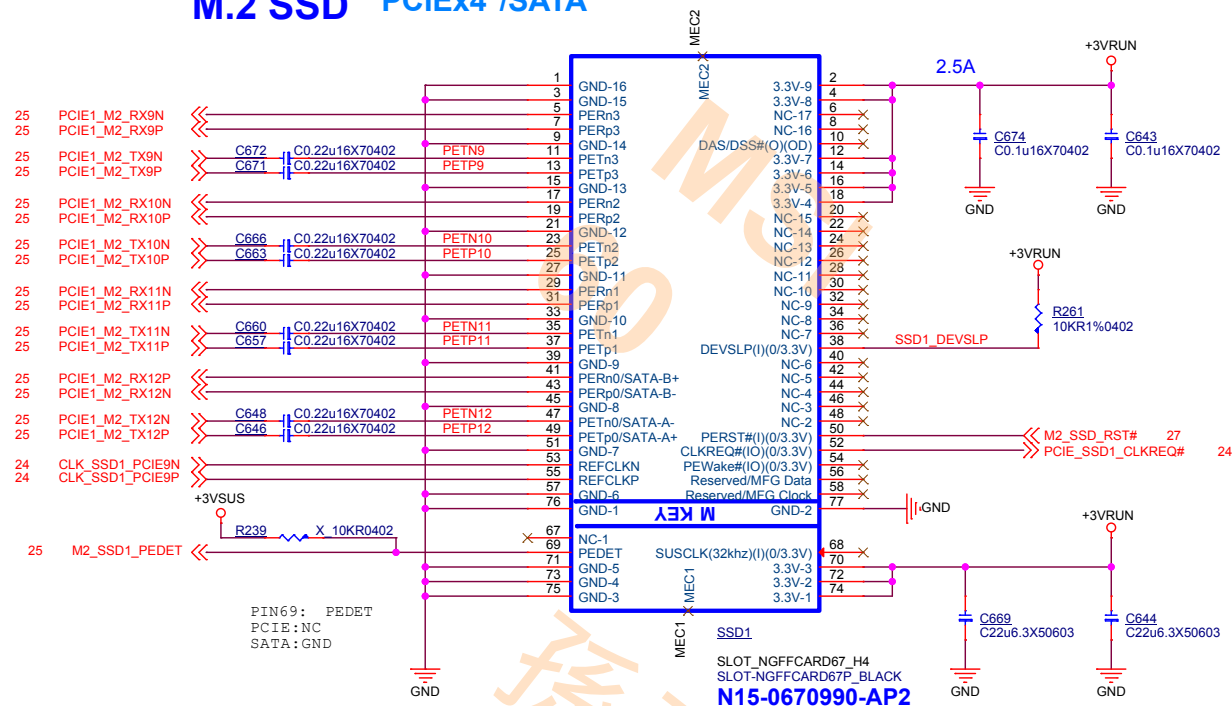
W>20mils



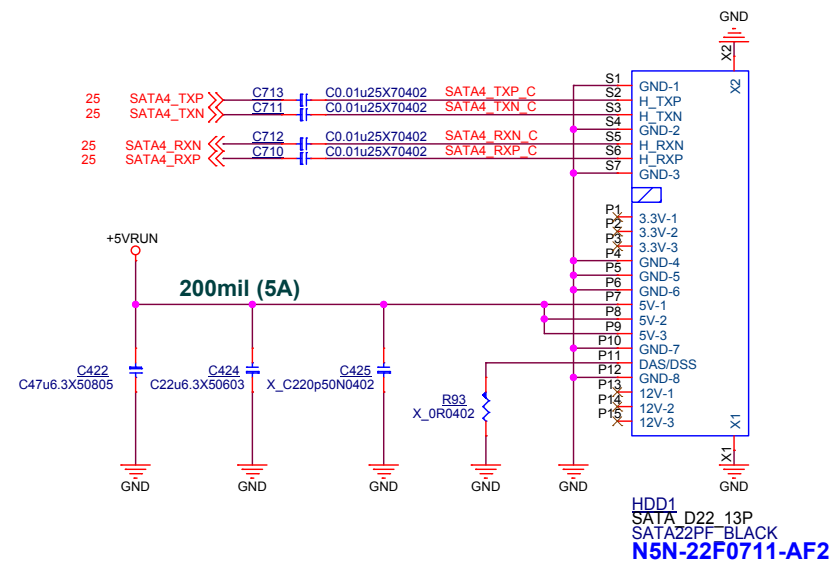
HPD Level Shift 5V to 3V for Debug Card



M.2 SSD PCIe4 /SATA



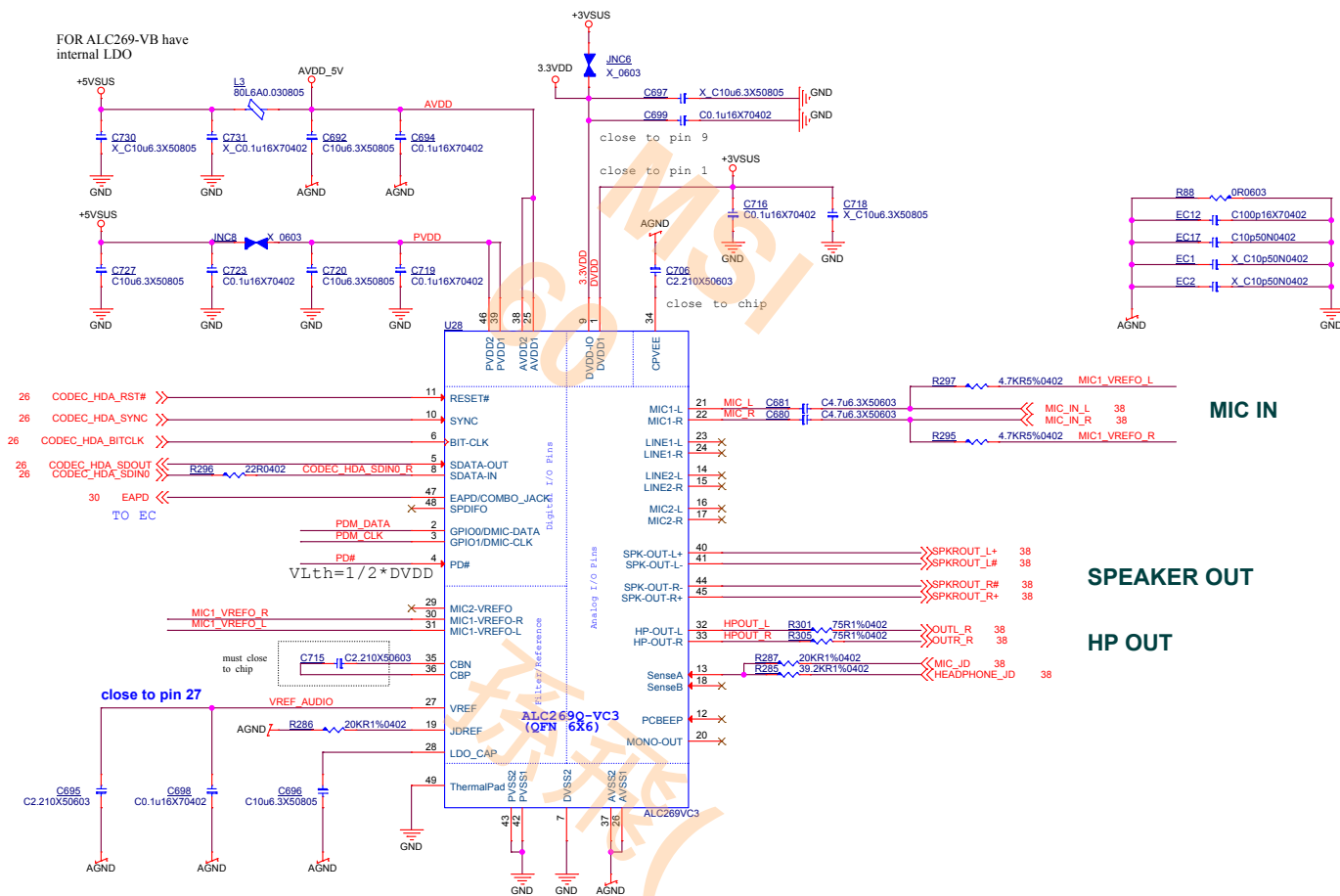
HDD



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

Title		
M.2 SSD/HDD		
Size	Document Number	Rev
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FOR ALC269-VB have
internal LDO



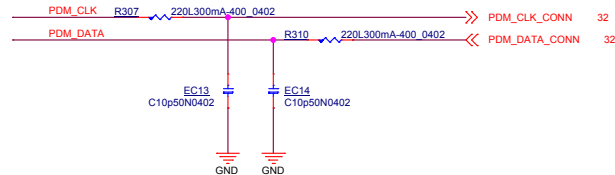
MIC IN

SPEAKER OUT

HP OUT

EMI
Close Codec

Internal Mic

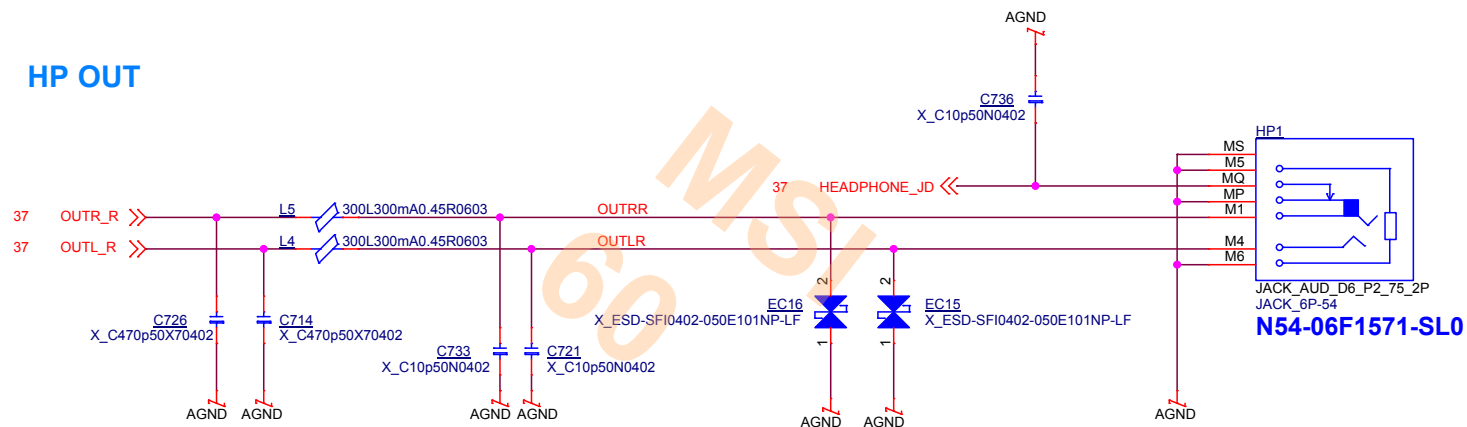


simple MUTE

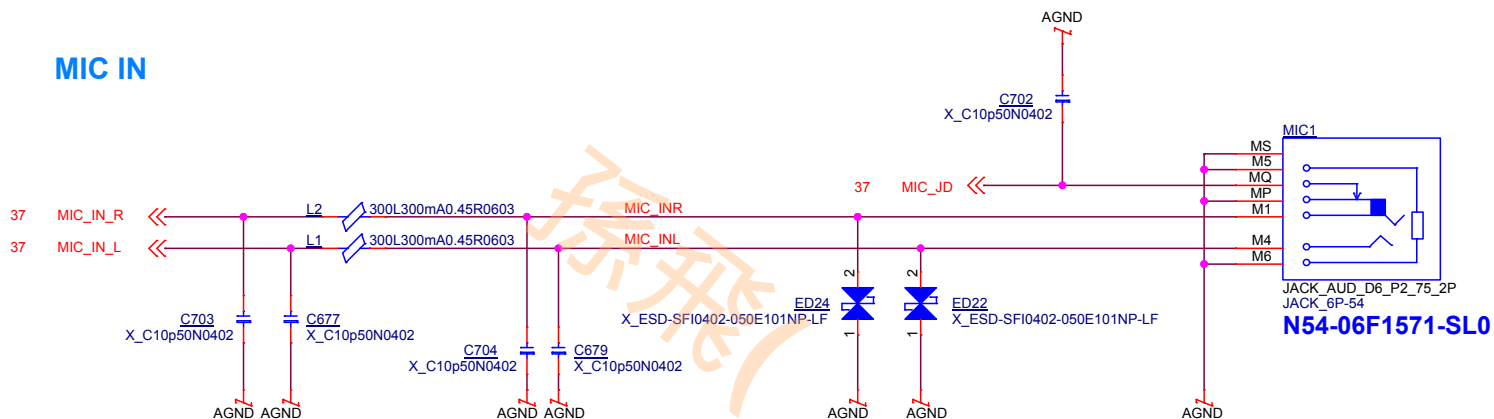


Audio CONN

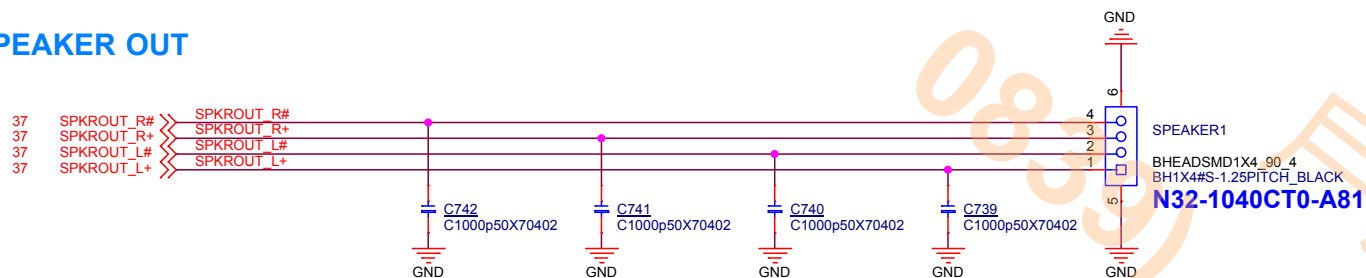
HP OUT



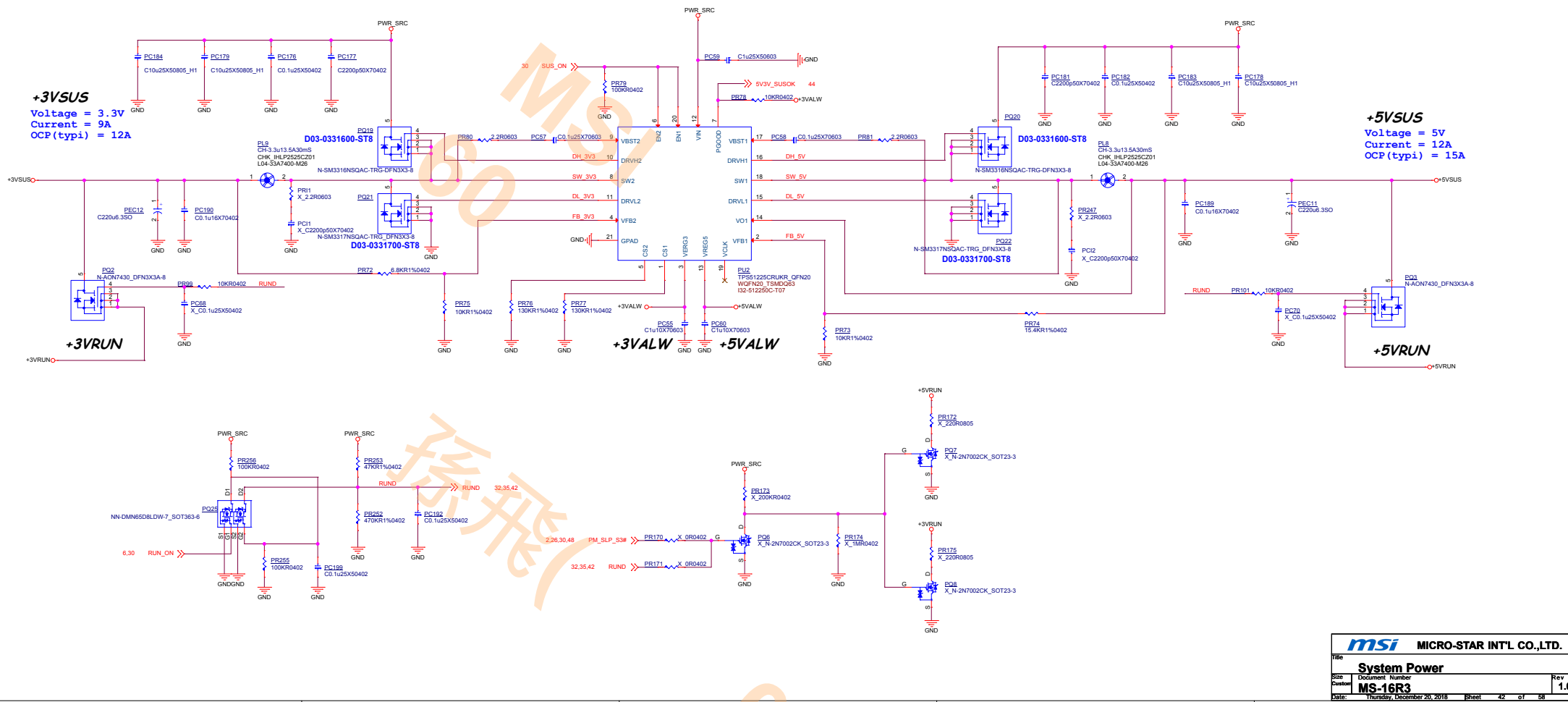
MIC IN



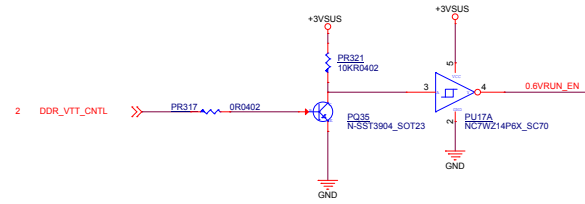
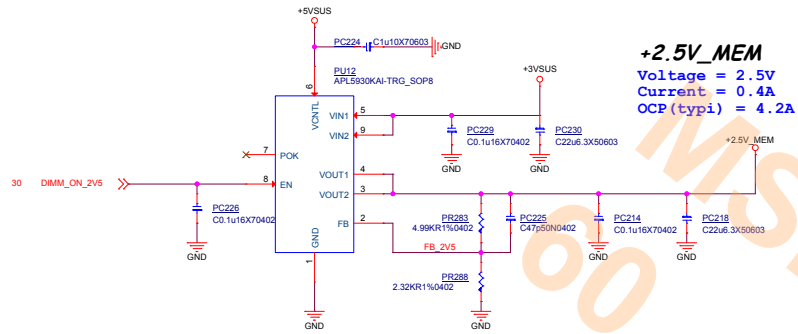
SPEAKER OUT



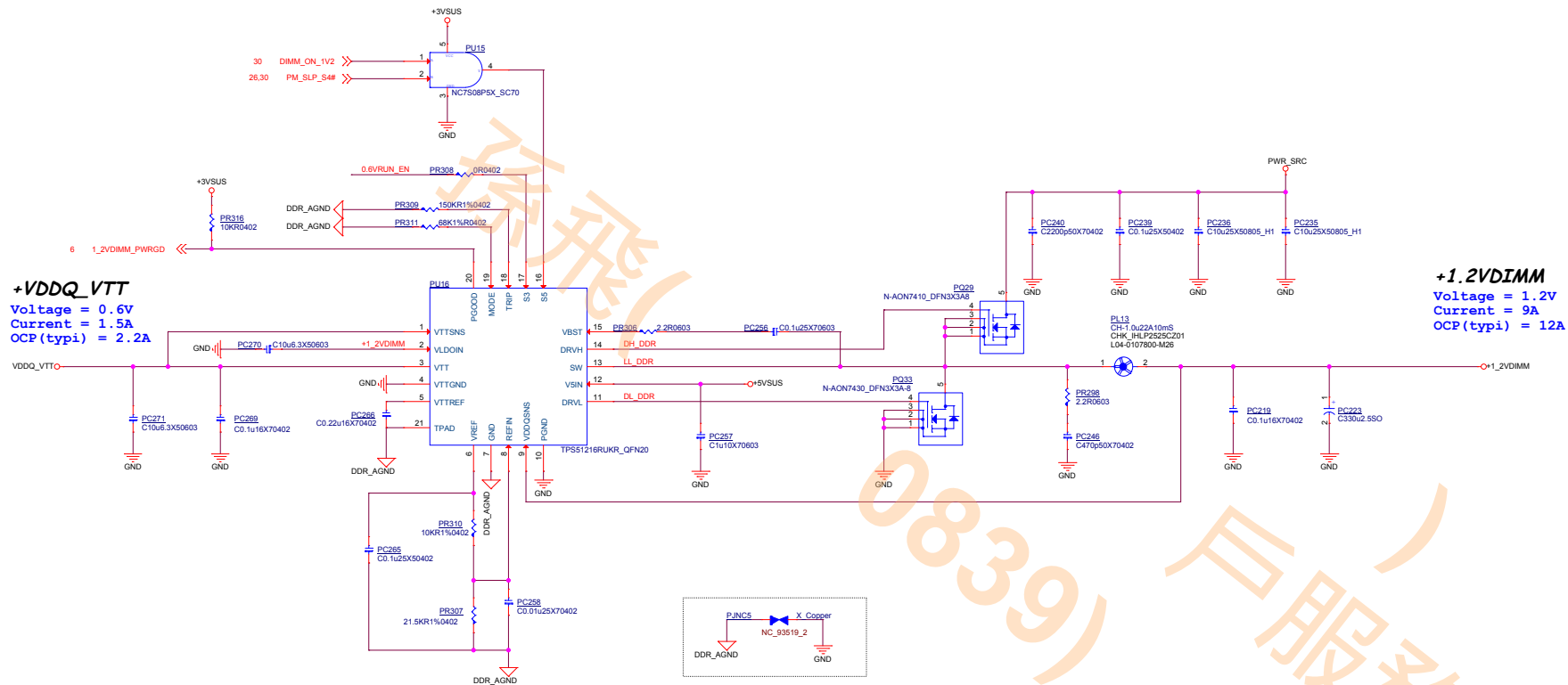
System Power



+2.5V_MEM

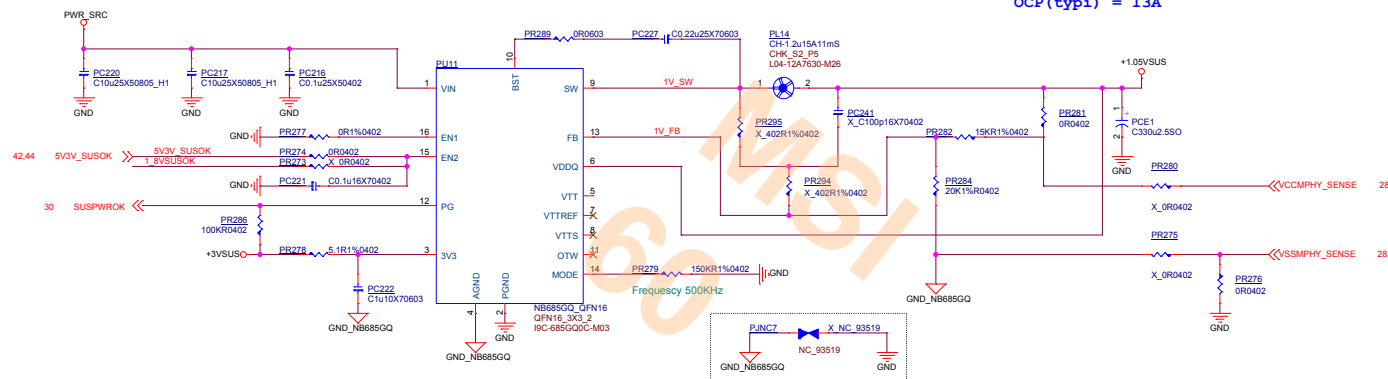


+1.2VDIMM / VDDQ_VTT(0.6V)



+1.05VSUS

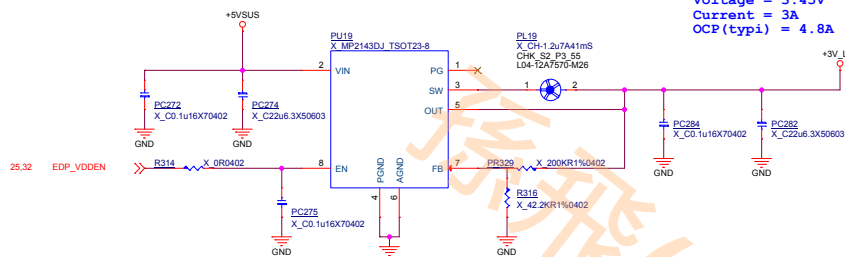
Voltage = 1.05V
Current = 10A
OCP(typi) = 13A



+3V_LCD

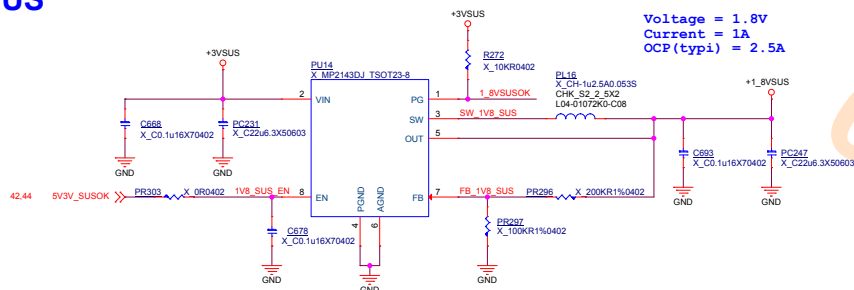
Pannel Device Logic Power

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

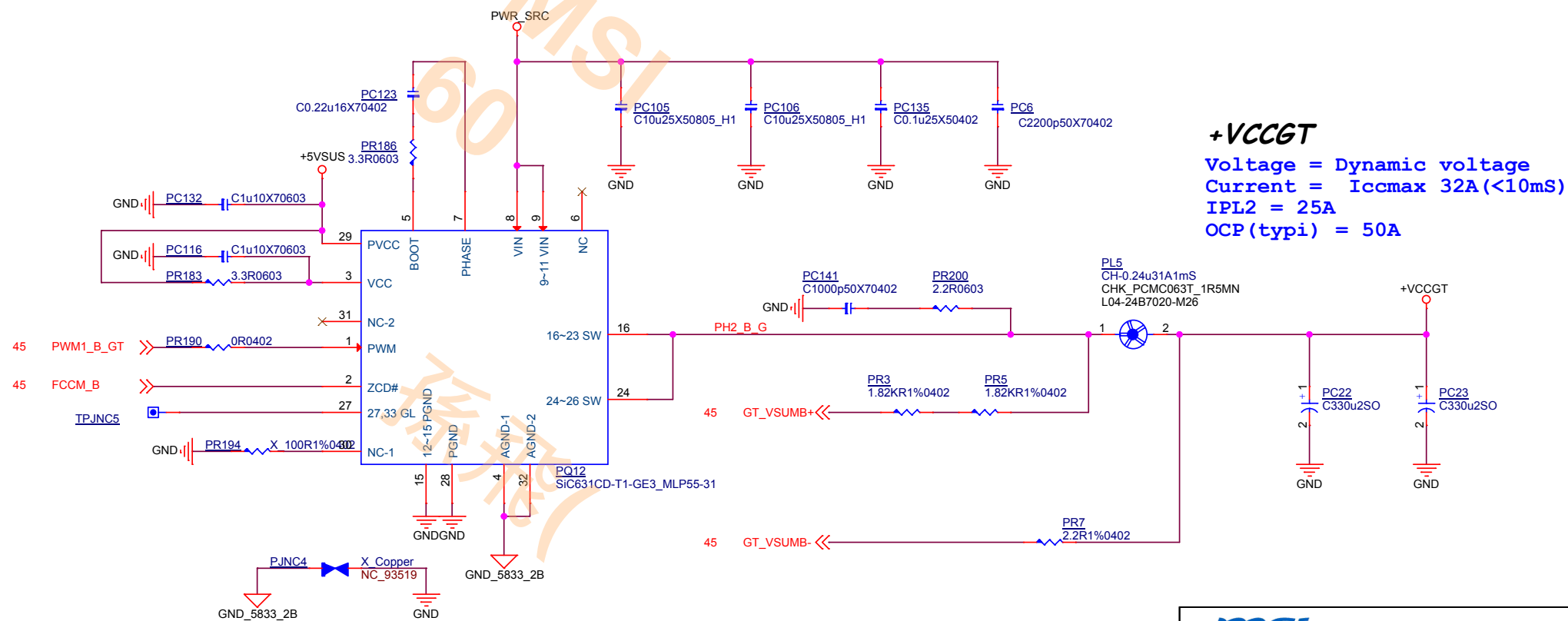


+1_8VSUS

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




+VCCGT

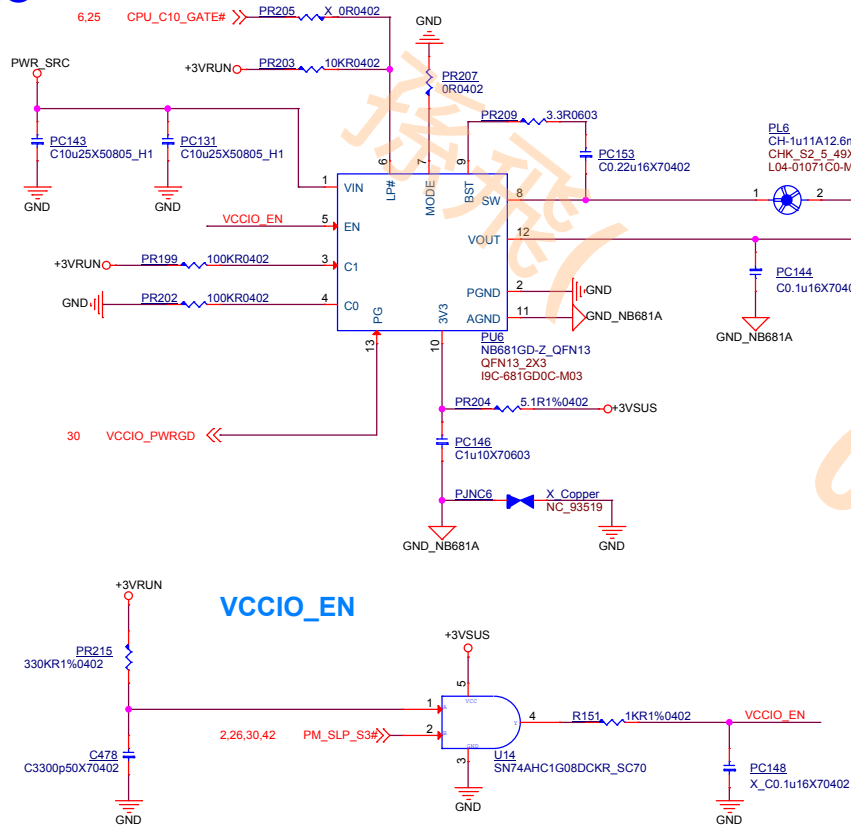


+VCCGT

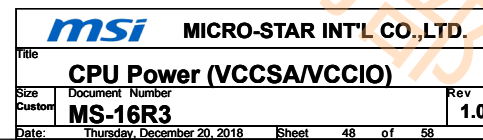
```
Voltage = Dynamic voltage
Current = Iccmax 32A (<10mS)
IPL2 = 25A
OCP(typi) = 50A
```

 MICRO-STAR INT'L CO.,LTD.	
Title	
CPU Power (VCCGT)	
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+VCCIO

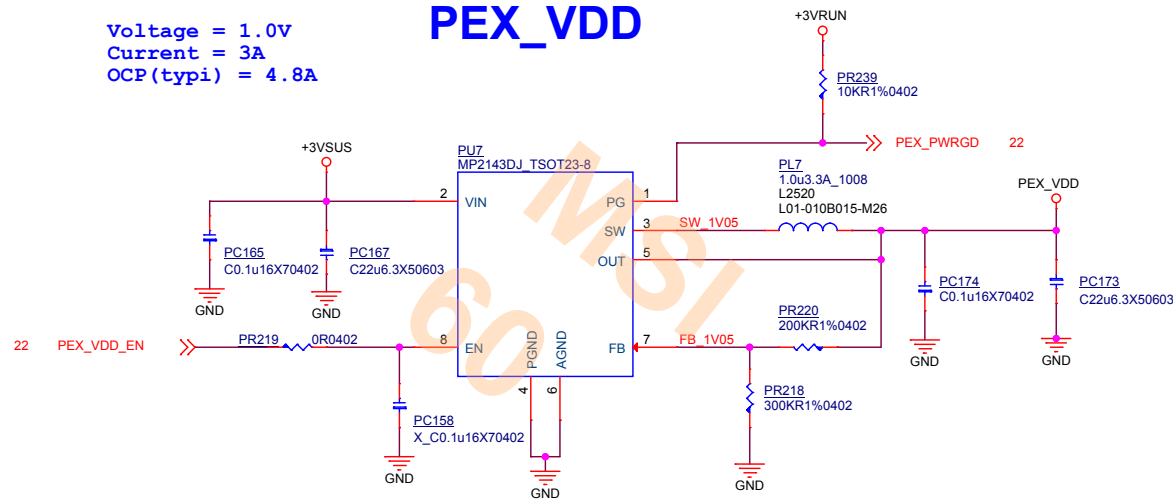


Voltage = 0.95V
Current = 5.5A
OCP(typi) = 7.5A



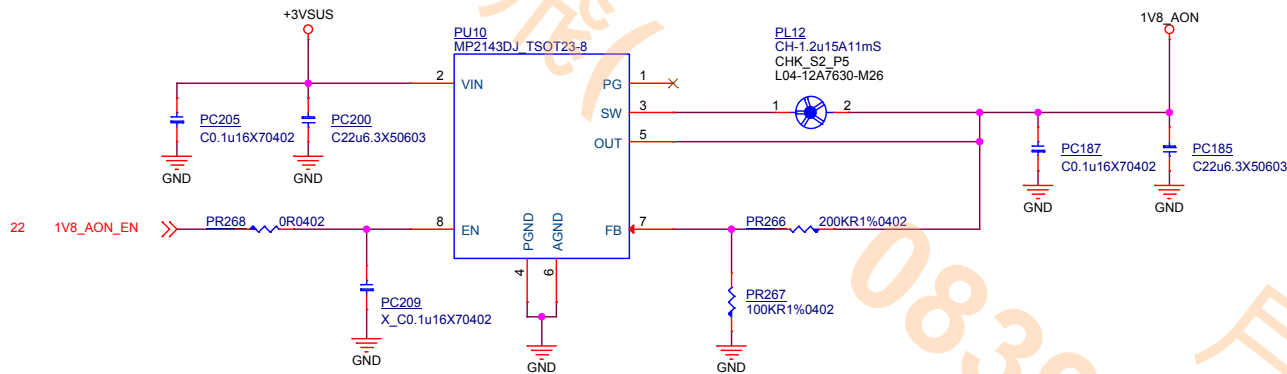
Voltage = 1.0V
Current = 3A
OCP(typi) = 4.8A

PEX_VDD



Voltage = 1.8V
Current = 2.3A
OCP(typi) = 4.8A

1V8_AON



msi

MICRO-STAR INT'L CO.,LTD.

Title DGPU POWER PEX VDD/1V8 AON

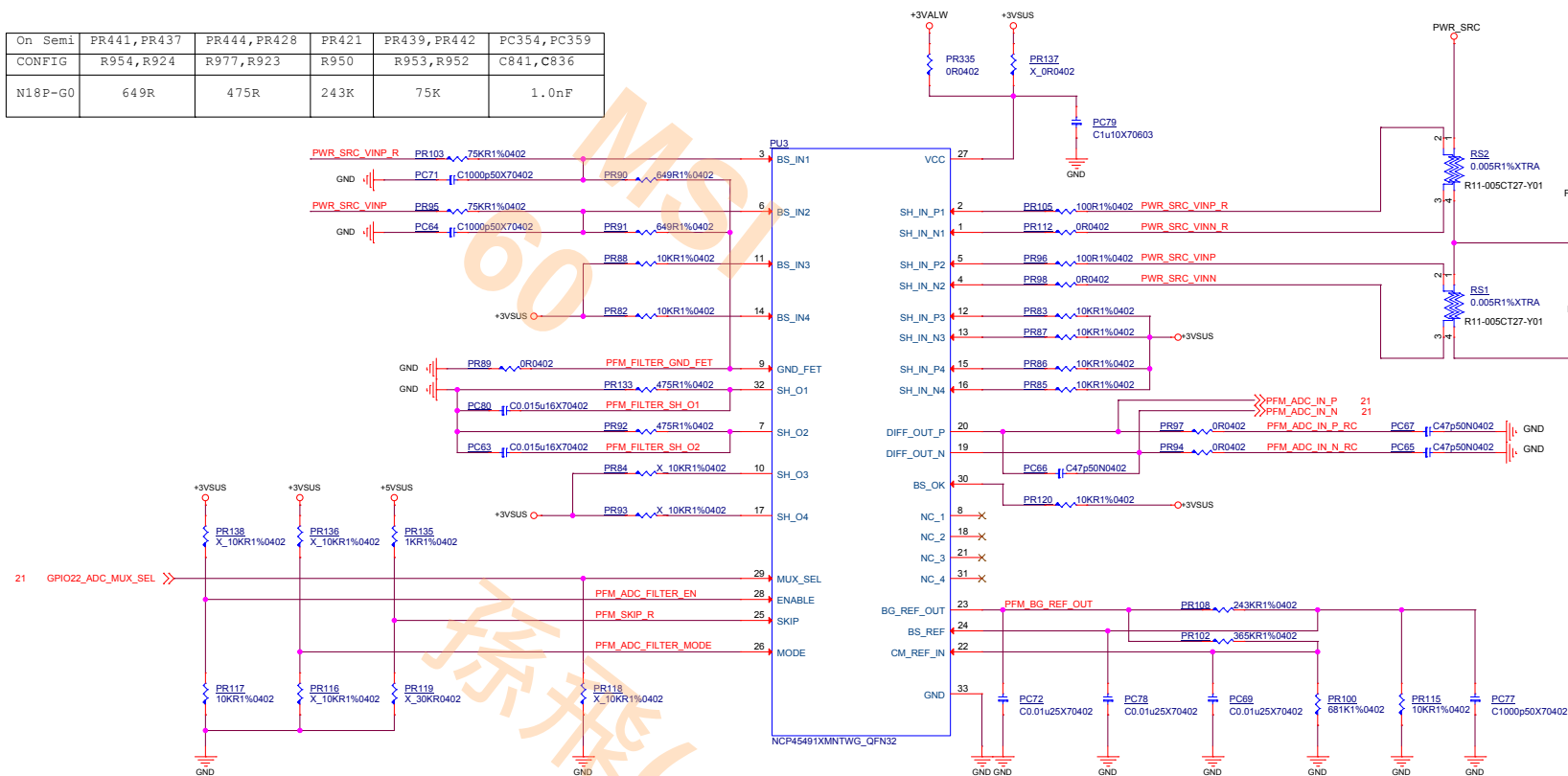
Size Document Number Rev

MS-16R3

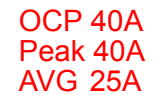
1.0


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On Semi	PR441, PR437	PR444, PR428	PR421	PR439, PR442	PC354, PC359
CONFIG	R954, R924	R977, R923	R950	R953, R952	C841, C836
N18P-G0	649R	475R	243K	75K	1.0nF

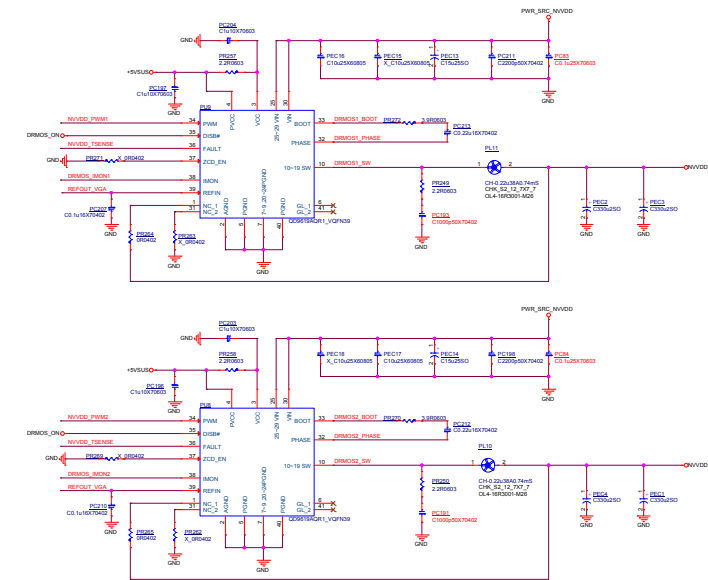


msi MICRO-STAR INT'L CO.,LTD.	
Title DGPU POWER Current Measure	
Size	Document Number MS-16R3
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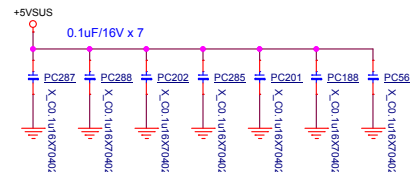
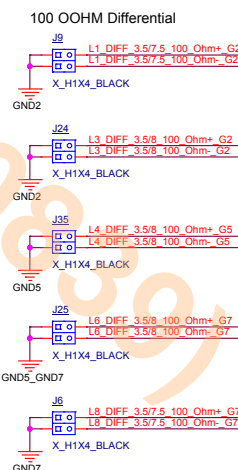
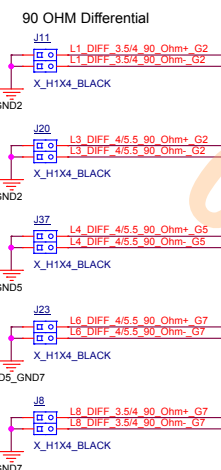
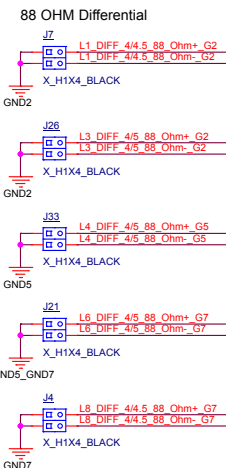
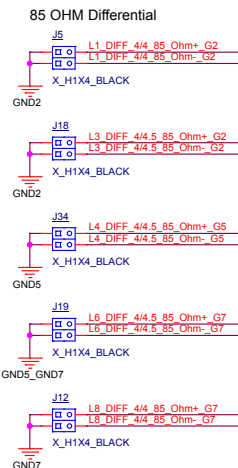
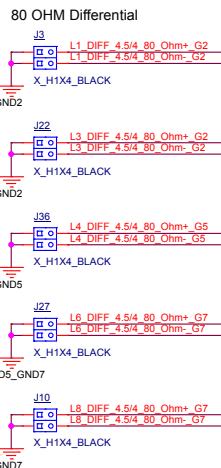
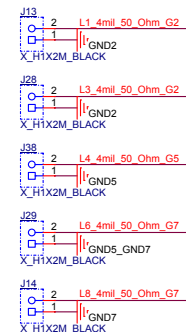
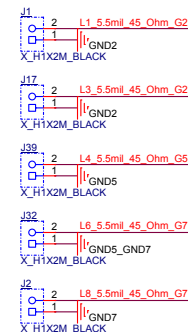
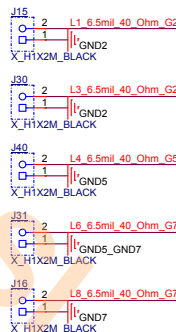
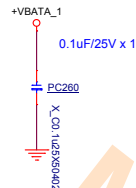
		MICRO-STAR INT'L CO.,LTD.	
Title DGPU POWER FBVDDQ			
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VBOOT:0.8V
Vmin:0.3V / Vmax:1.3V

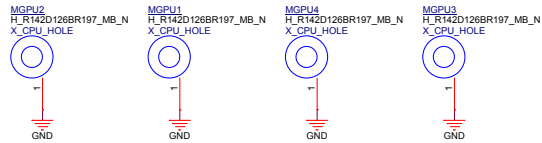


CONFIG	R1	R2	R3	R4	R5	C
N18P-G0	6.19K	20.5K	4.32K	16.5K	309R	4700PF

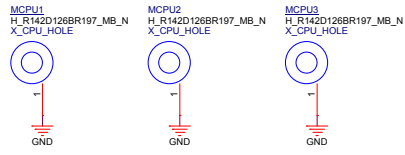
50 OHM Single-End



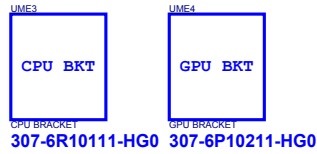
DGPU Holes



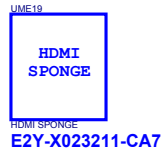
CPU Holes



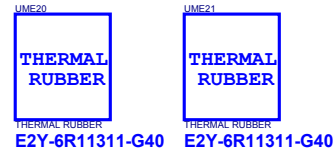
CPU/GPU BRACKET



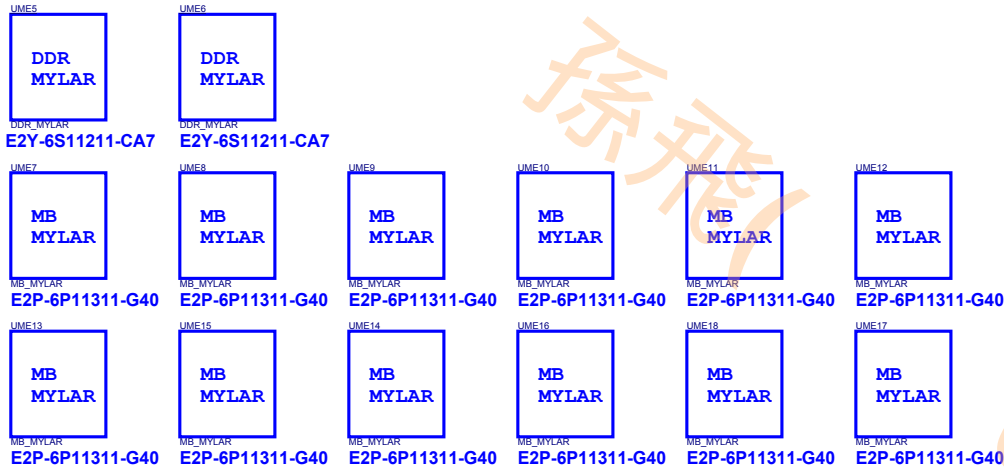
SPONGE



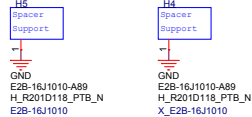
RUBBER



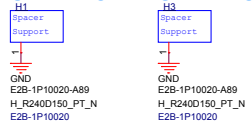
MYLAR



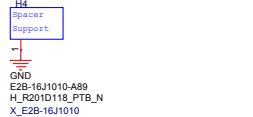
M.2 SSD STAND OFF



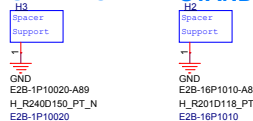
MB STAND OFF



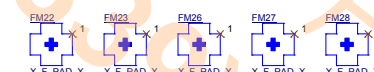
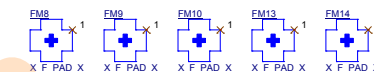
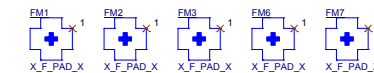
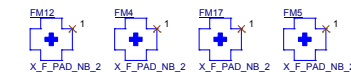
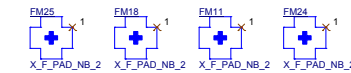
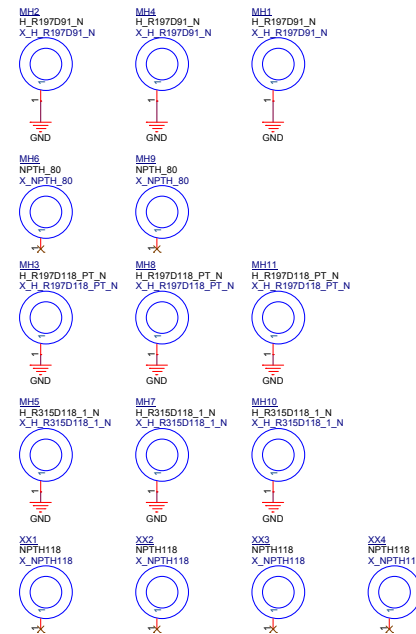
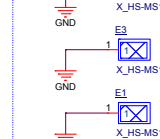
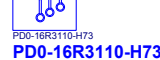
M.2 SSD STAND OFF



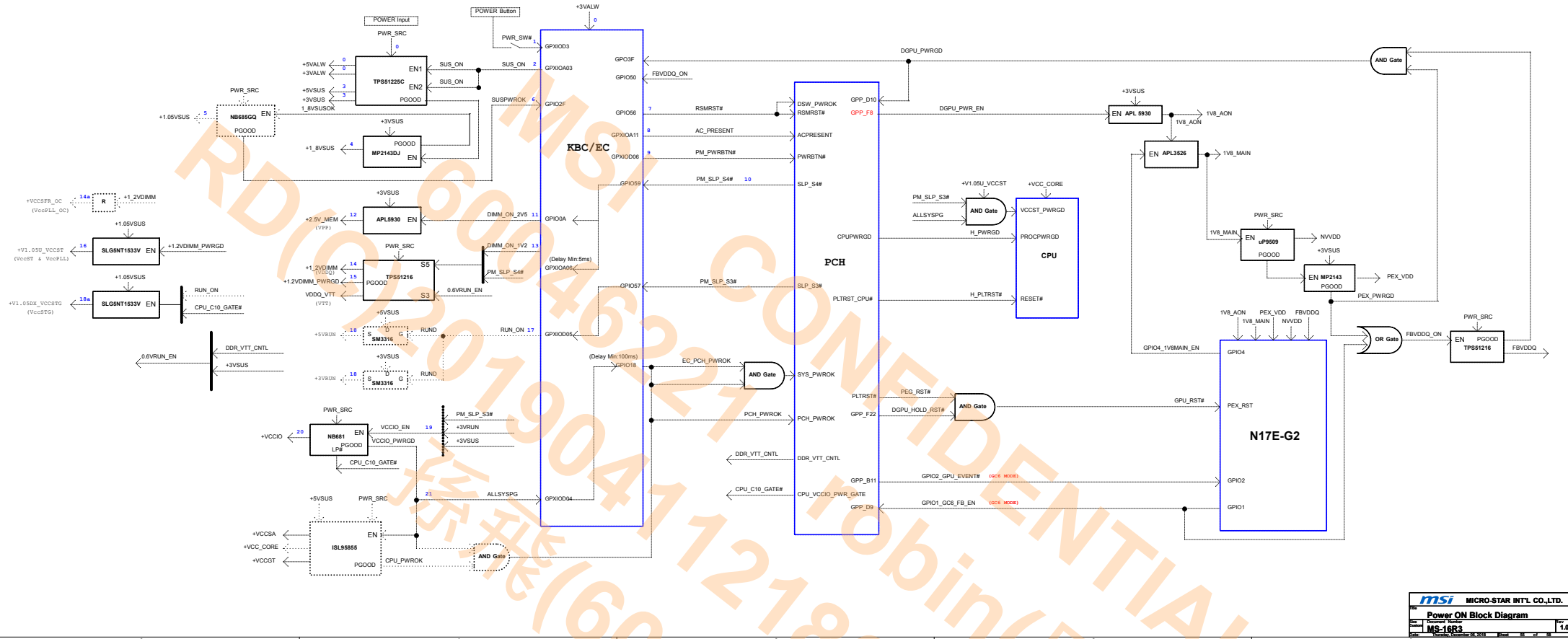
MB STAND OFF



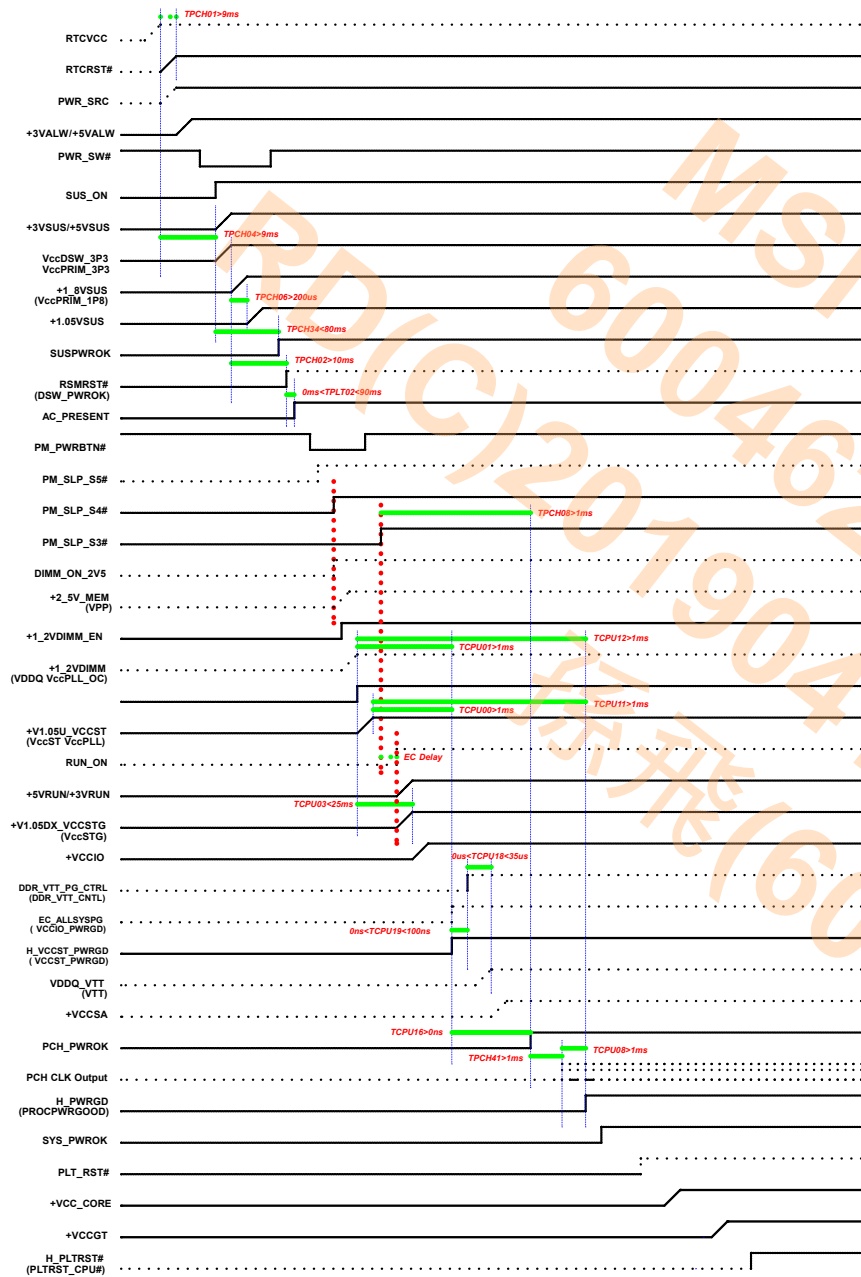
WLAN STAND OFF



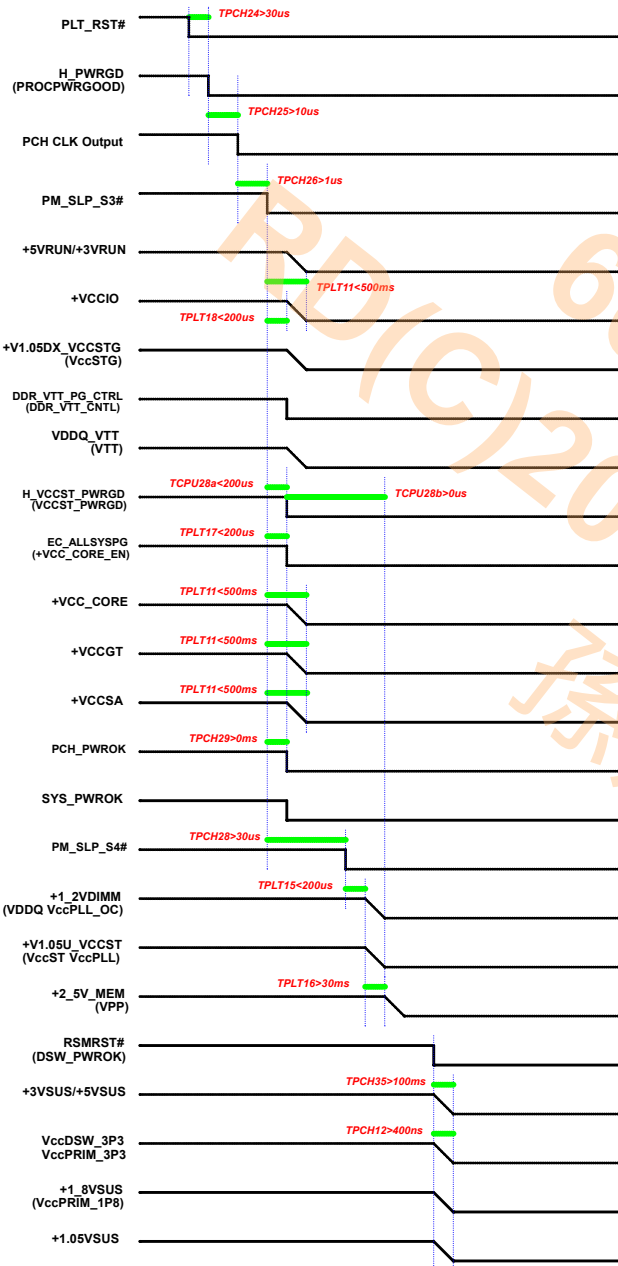
MS-16R1 Power on Block Diagram



G3 -> S0



S0 -> G3



History

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