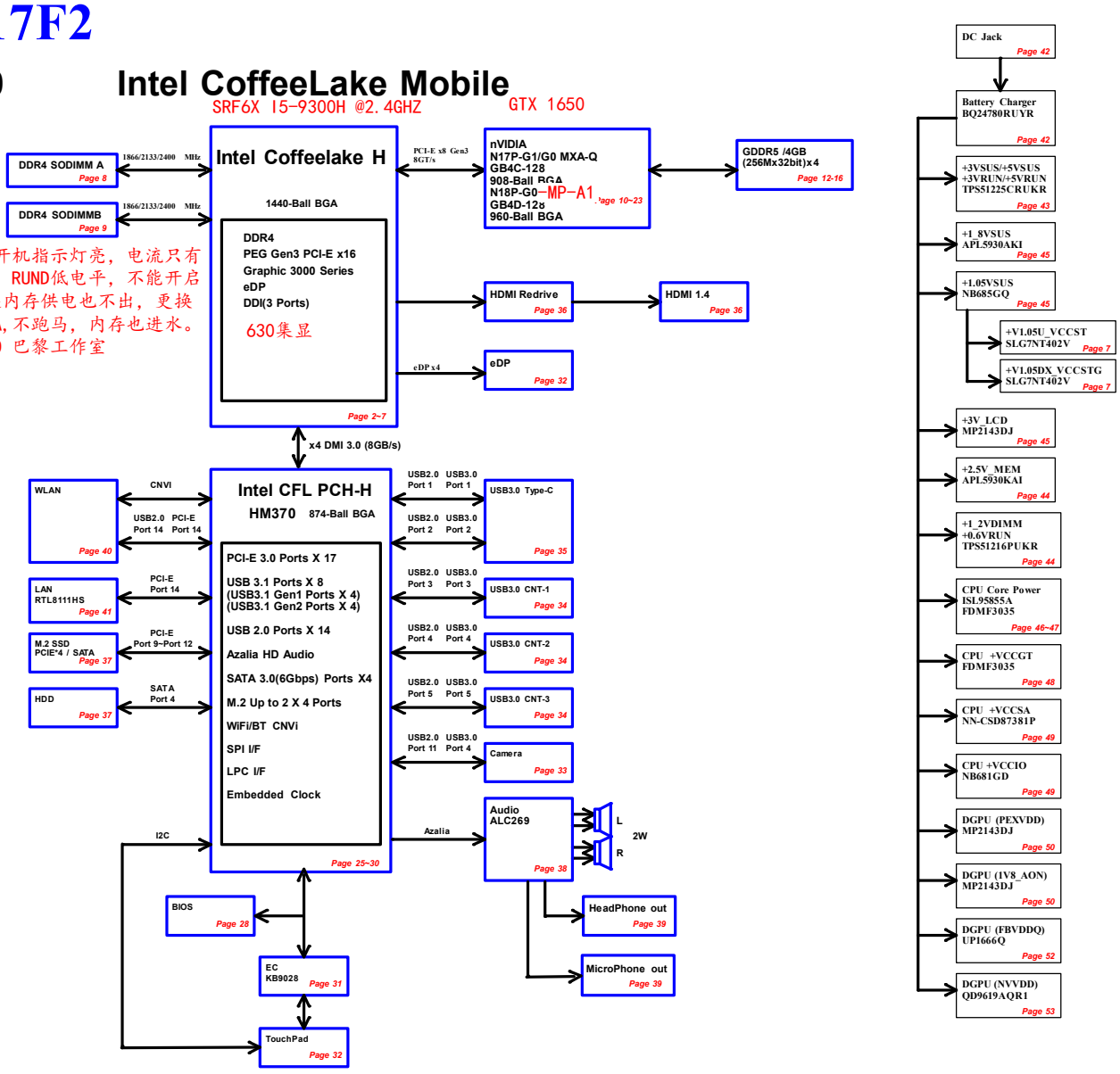
MS-17F2

Ver:1.0 Intel CoffeeLake Mobile

SRF6X I5-9300H @2.4GHZ GTX 1650



PR311进水腐蚀，开机指示灯亮，电流只有0.032A,但不掉电，RUND低电平，不能开启后续电压，所以连内存供电也不出，更换电阻开机电流1.7A,不跑马，内存也进水。

20201210 巴黎工作室

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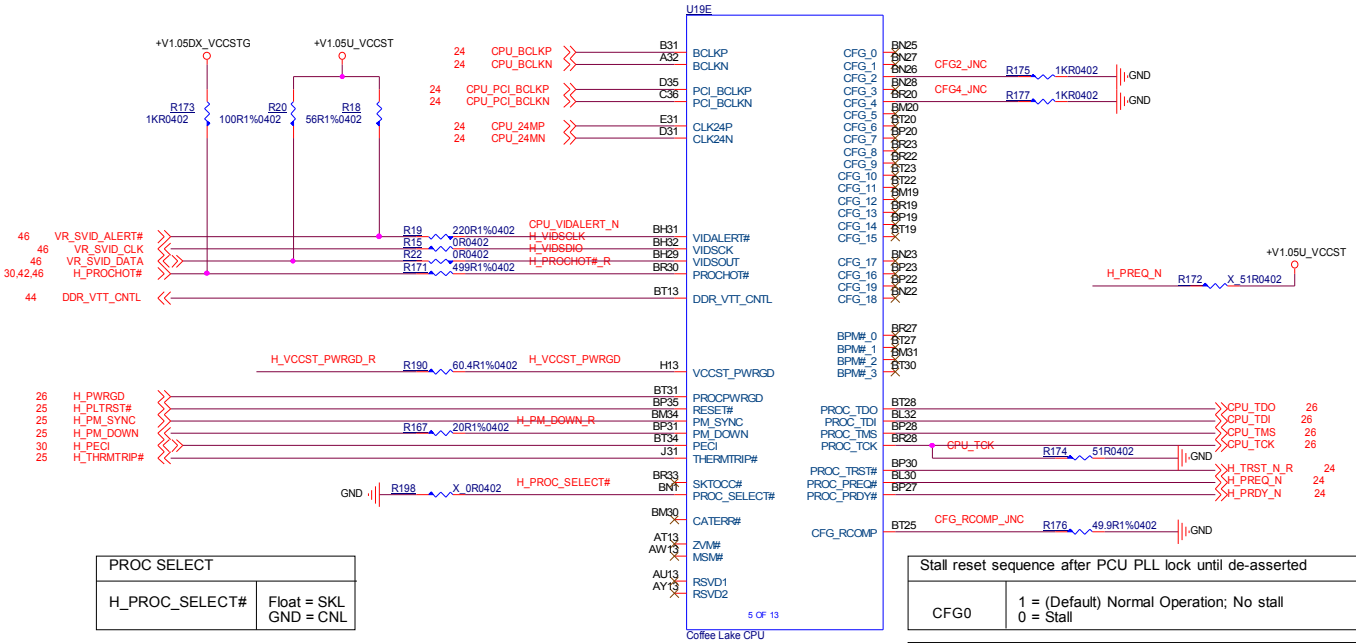
Block Diagram

MS-17F2

Rev 1.0



PROC SELECT	
H_PROC_SELECT#	Float = SKL GND = CNL

Stall reset sequence after PCU PLL lock until de-asserted	
CFG0	1 = (Default) Normal Operation; No stall 0 = Stall

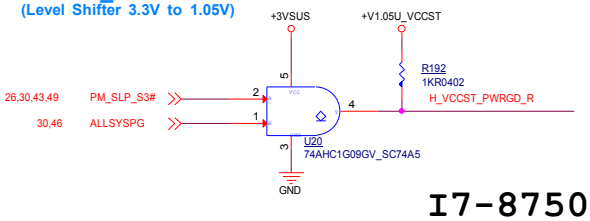
PCIE Express * Static X16 Lane Numbering Reversal	
CFG2	1 = Normal operation 0 = Lane numbers reversed.

eDP Enable	
CFG4	1 = Disabled 0 = Enabled

PCI Express* Bifurcation	
CFG[6:5]	00 = 1 x8, 2 x4 PCI Express* 01 = reserved 10 = 2 x8 PCI Express* 11 = 1 x16 PCI Express*

PEG DEFER TRAINING	
CFG7	1: (default) PEG Train immediately following RESET# de assertion. 0: PEG Wait for BIOS for training

VCCST_PWRGD
(Level Shifter 3.3V to 1.05V)



I7-8750H

I7_8750

A0D-8750H05-I06

X_I7-8750

I5-8300H

I5_8300

A0C-8300H05-I06

X_I5-8300

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Title: **Coffeelake(HOST)**

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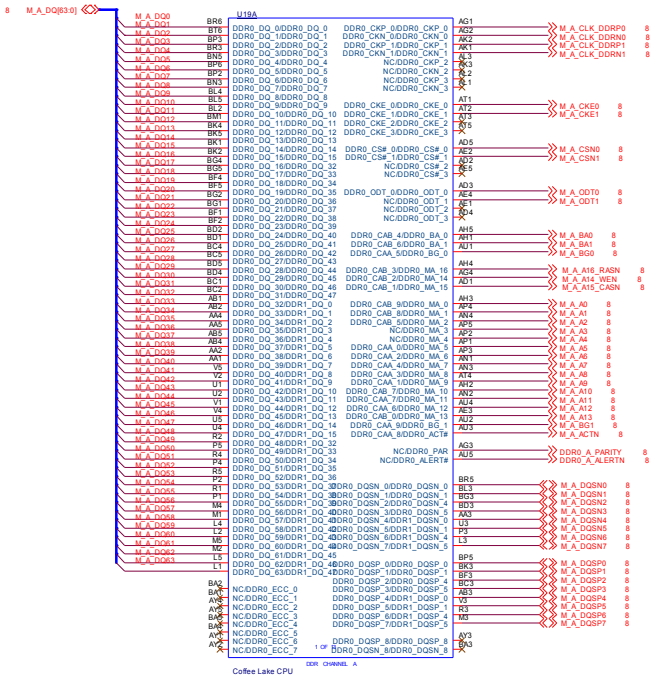
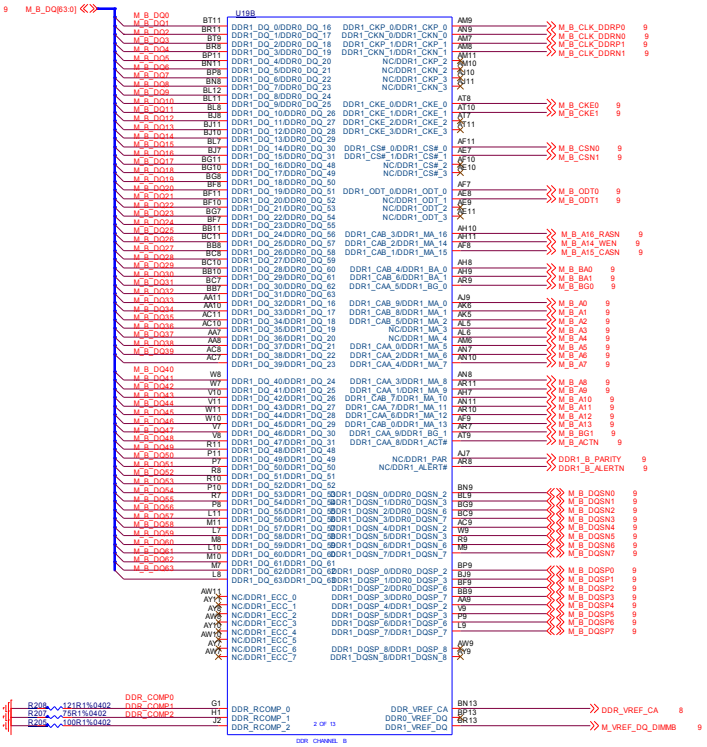
DDR Channel A



DDR Channel B



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Title: Coffeelake(DDR4)			
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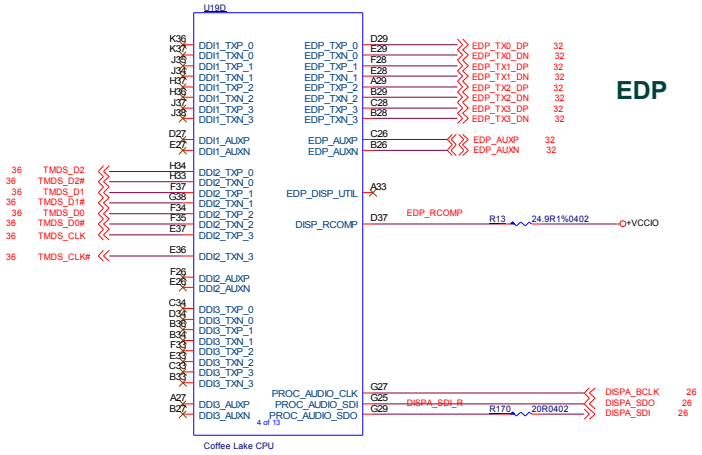
DDI C HDMI

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



EDP

MSI	MICRO-STAR INT'L CO.,LTD.	
Title	Coffeelake(DMI/Display)	
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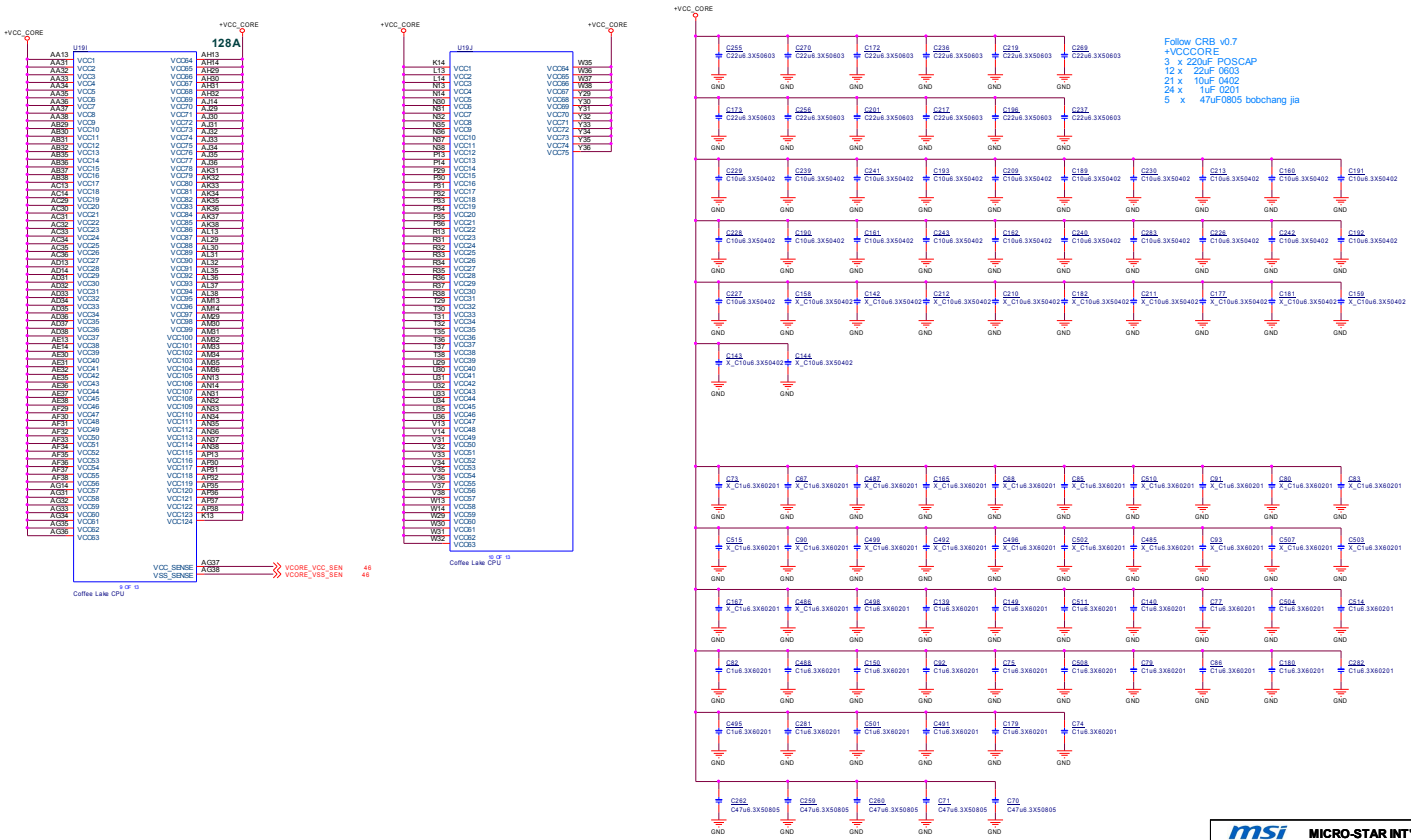
+VCC_CORE
128A
U19I
Coffee Lake CPU
U19J
Coffee Lake CPU
VCORE_VCC_SEN
VCORE_VSS_SEN
Follow CRB v0.7
+VCCCORE
3 x 220uF POSCAP
12 x 22uF 0603
21 x 10uF 0402
24 x 1uF 0201
5 x 47uF0805 bobchang jia
MICRO-STAR INT'L CO.,LTD.
Coffeelake(Power1)
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Follow CRB v0.7
+VCCDU (+1_2VDIMM)
4 x 22uF 0603
12 x 10uF 0402

11.1A
6.4A
3.3A
0.13A
0.06A
0.02A
0.15A

Close CPU Y23 pin
Close CPU H30 pin
Close CPU H28 and J28 pin

Coffee Lake CPU

Follow CRB v0.7
+VCCSA
2 x 47uF 0805
4 x 22uF 0603
7 x 10uF 0402
1 x 1uF 0201

Follow CRB v0.7
+VCCIO
3 x 22uF 0603

VCCST must always ramp with or earlier then VCCSTG;

+V1.05DX_VCCSTG

SLG7NT402V_TDFN8
TDFN8
I36-NT4020C-SF9

X_M74VHC1GT08DFT2G_SC705

(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

SLG7NT402V_TDFN8
TDFN8
I36-NT4020C-SF9

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Title: Coffeelake(Power2)

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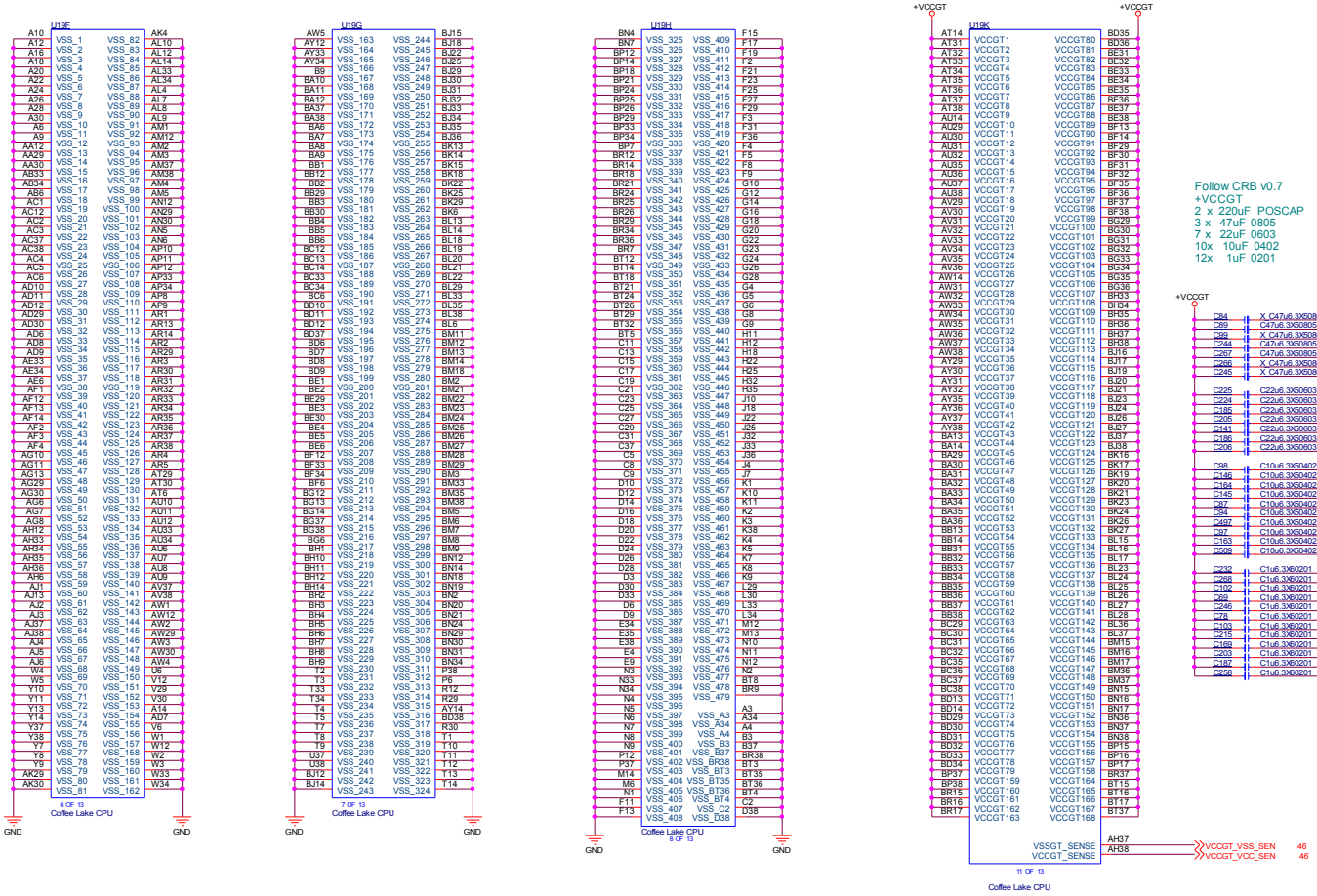

MSI	MICRO-STAR INT'L CO.,LTD.
Title	Coffeelake(Power3)
Size: Custom	Document Number: MS-17F2
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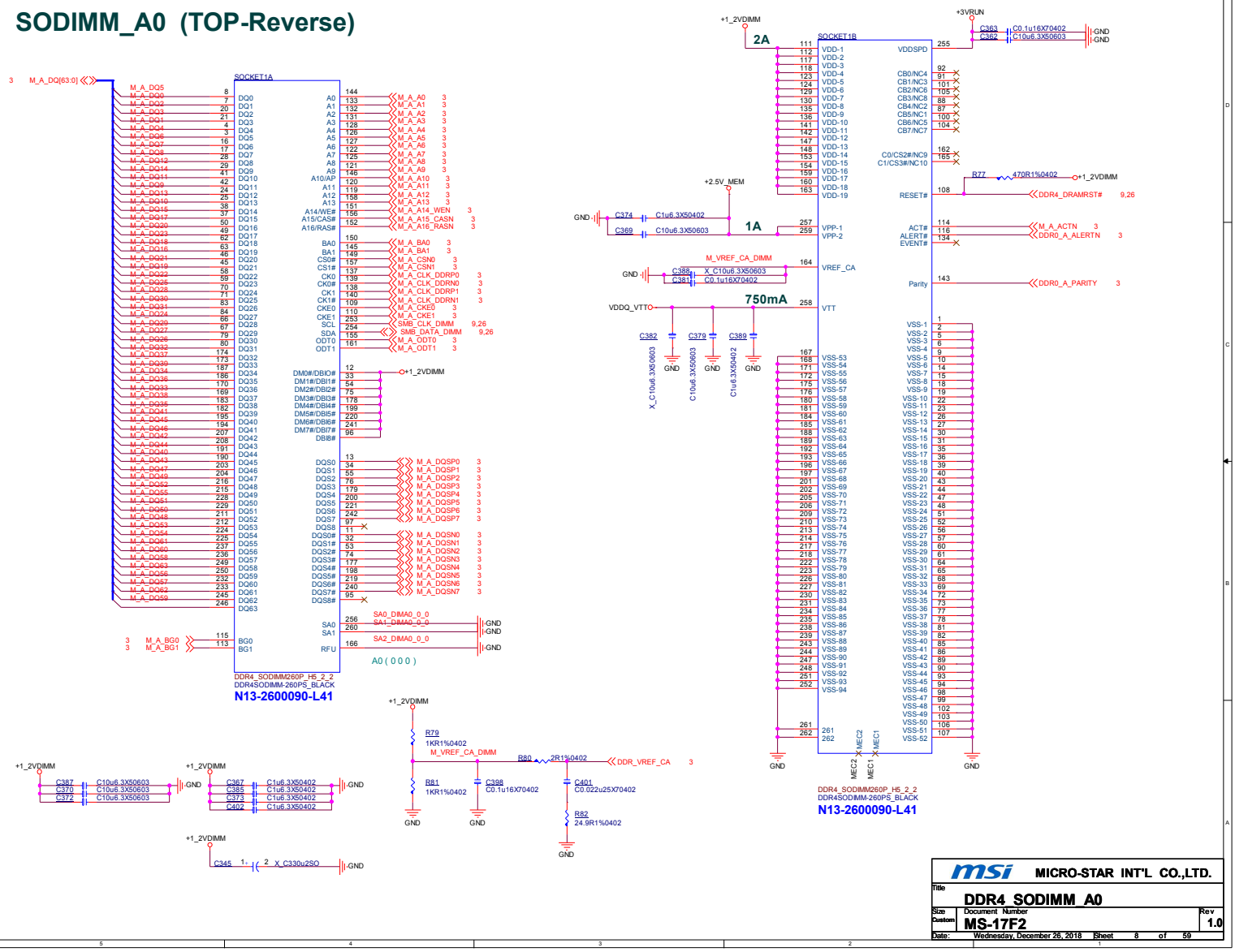
SODIMM_A0 (TOP-Reverse)



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Title	DDR4_SODIMM_A0	
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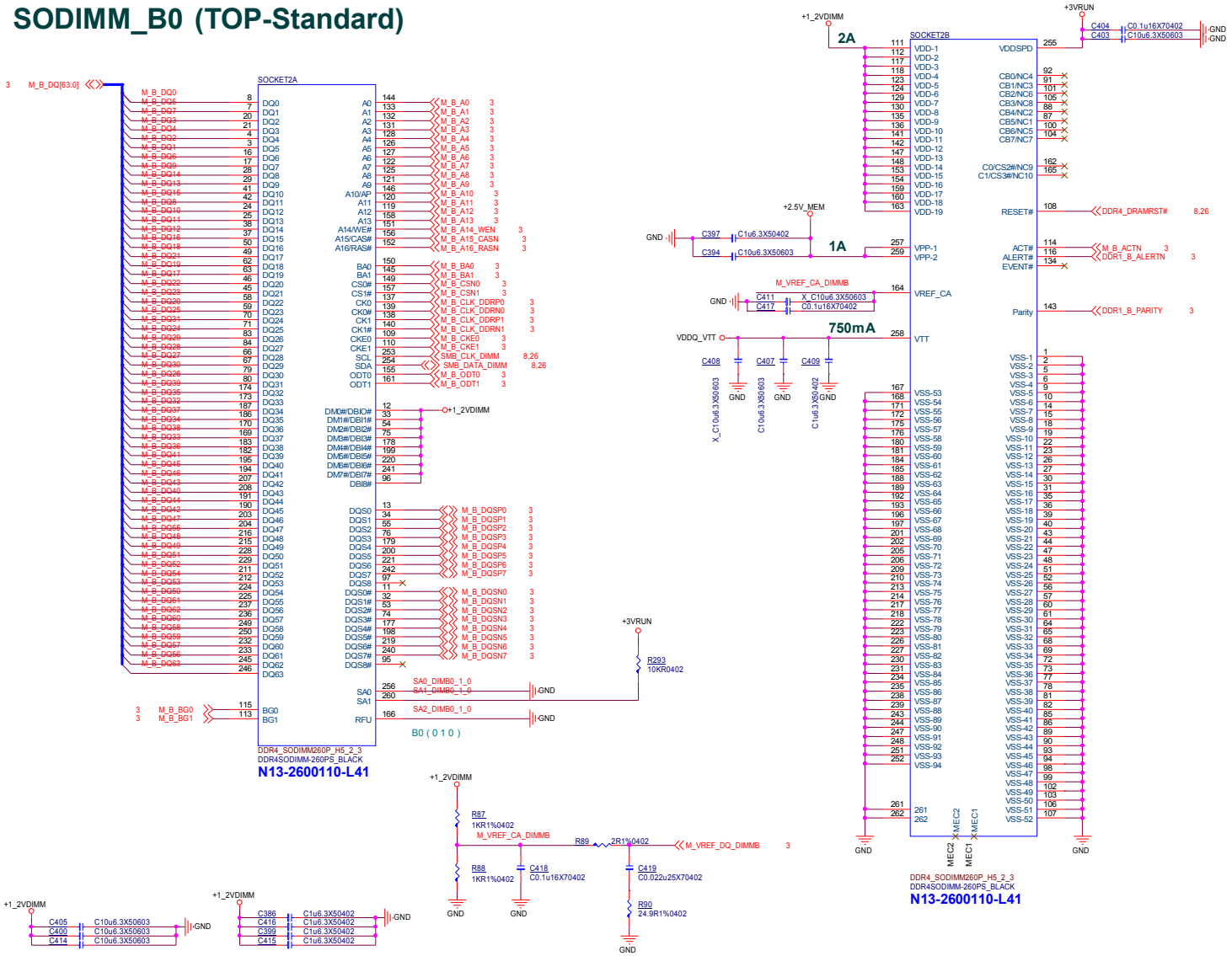
SODIMM_B0 (TOP-Standard)



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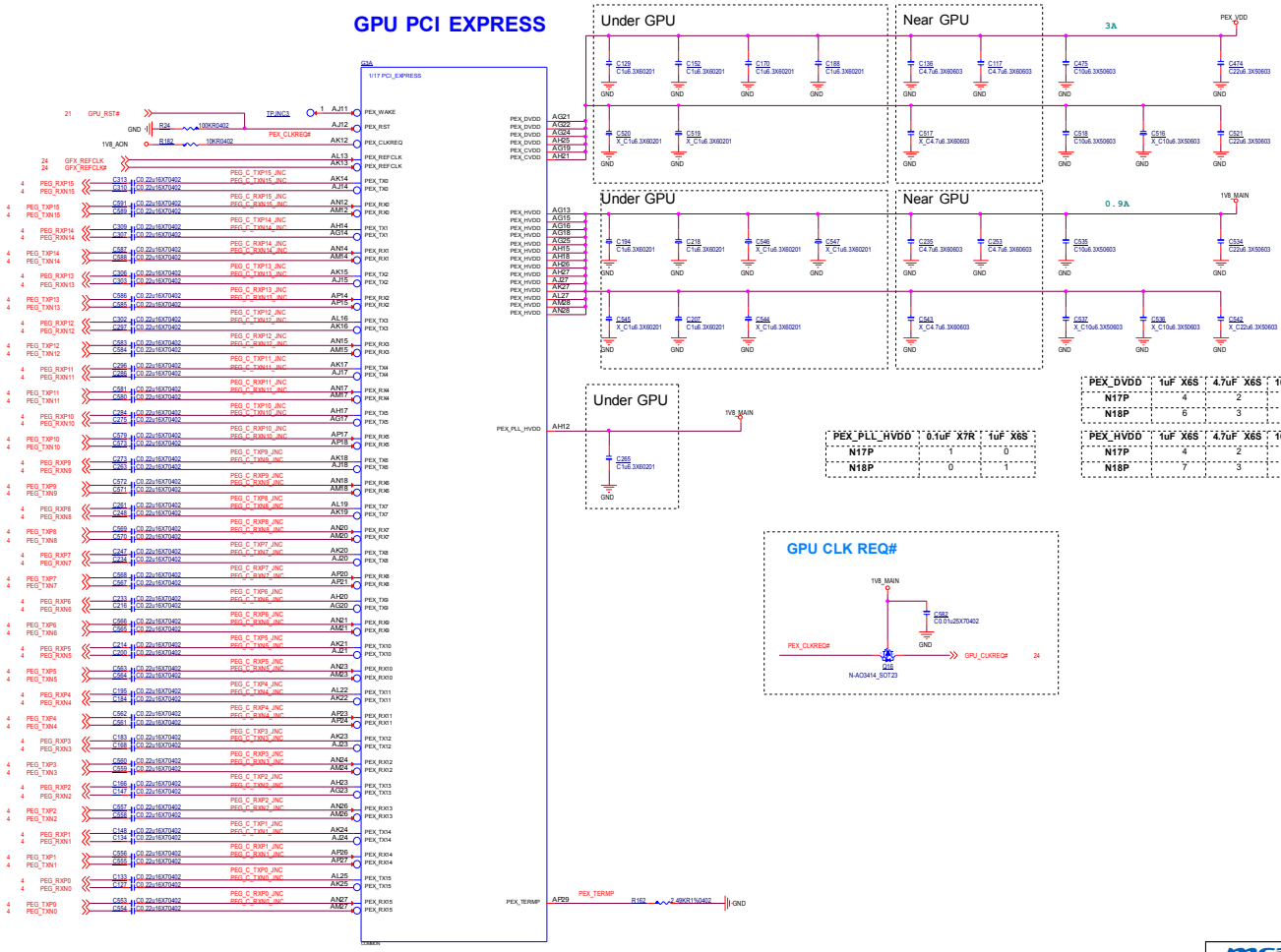
GPU PCI EXPRESS



PEX_DVDD	1uF X6S	4.7uF X6S	10uF X6S	22uF X5R
N17P	4	2	1	1
N18P	6	3	3	2

PEX_HVDD	1uF X6S	4.7uF X6S	10uF X6S	22uF X5R
N17P	4	2	2	1
N18P	7	3	3	2

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

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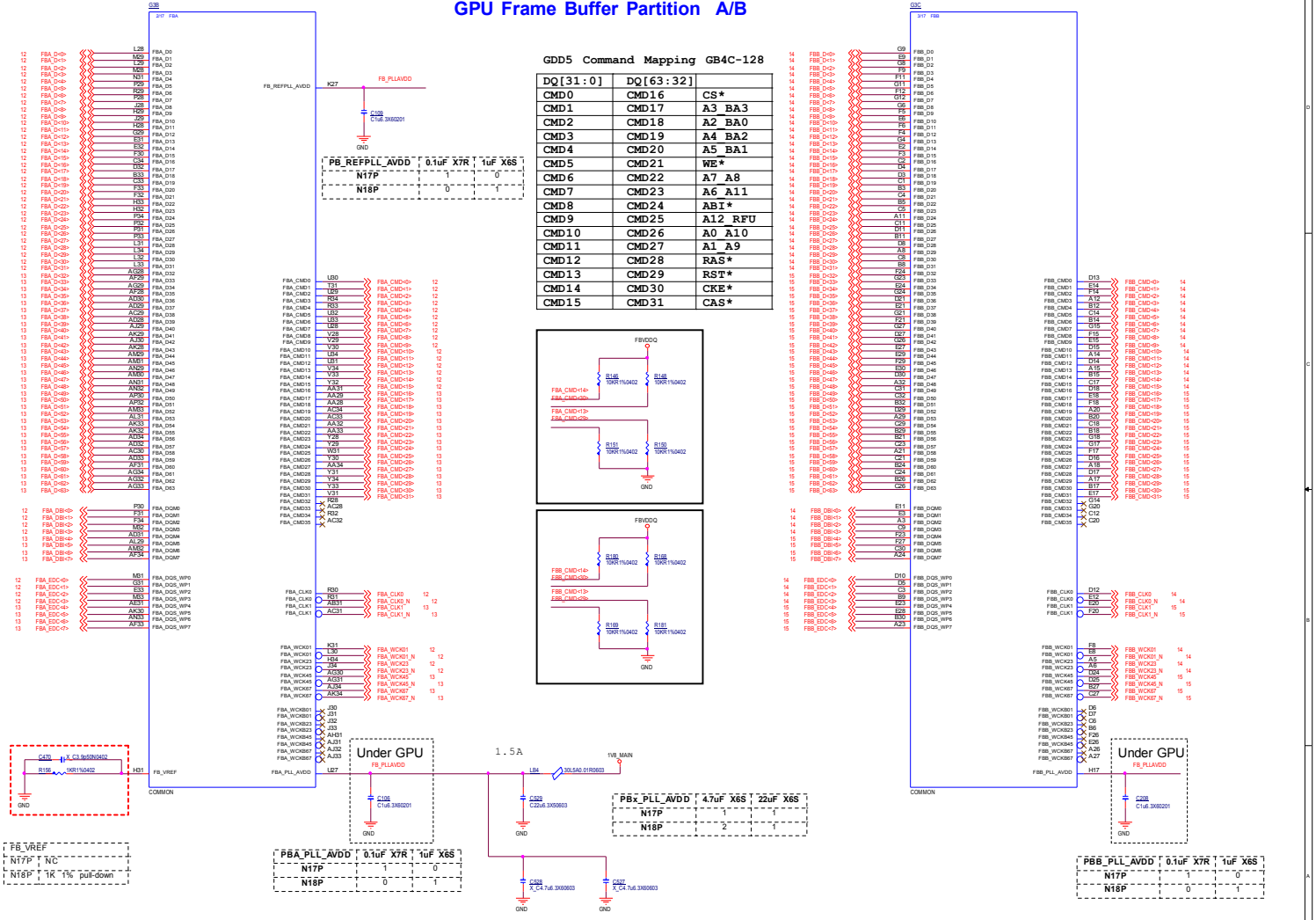
GPU Frame Buffer Partition A/B



GDD5 Command Mapping GB4C-128

DQ[31:0]	DQ[63:32]	
CMD0	CMD16	CS*
CMD1	CMD17	A3_BA3
CMD2	CMD18	A2_BA0
CMD3	CMD19	A4_BA2
CMD4	CMD20	A5_BA1
CMD5	CMD21	WE*
CMD6	CMD22	A7_A8
CMD7	CMD23	A6_A11
CMD8	CMD24	ABI*
CMD9	CMD25	A12_RFU
CMD10	CMD26	A0_A10
CMD11	CMD27	A1_A9
CMD12	CMD28	RAS*
CMD13	CMD29	RST*
CMD14	CMD30	CKE*
CMD15	CMD31	CAS*

MICRO-STAR INT'L CO.,LTD.

Title: DGPU_MEM IF A/B

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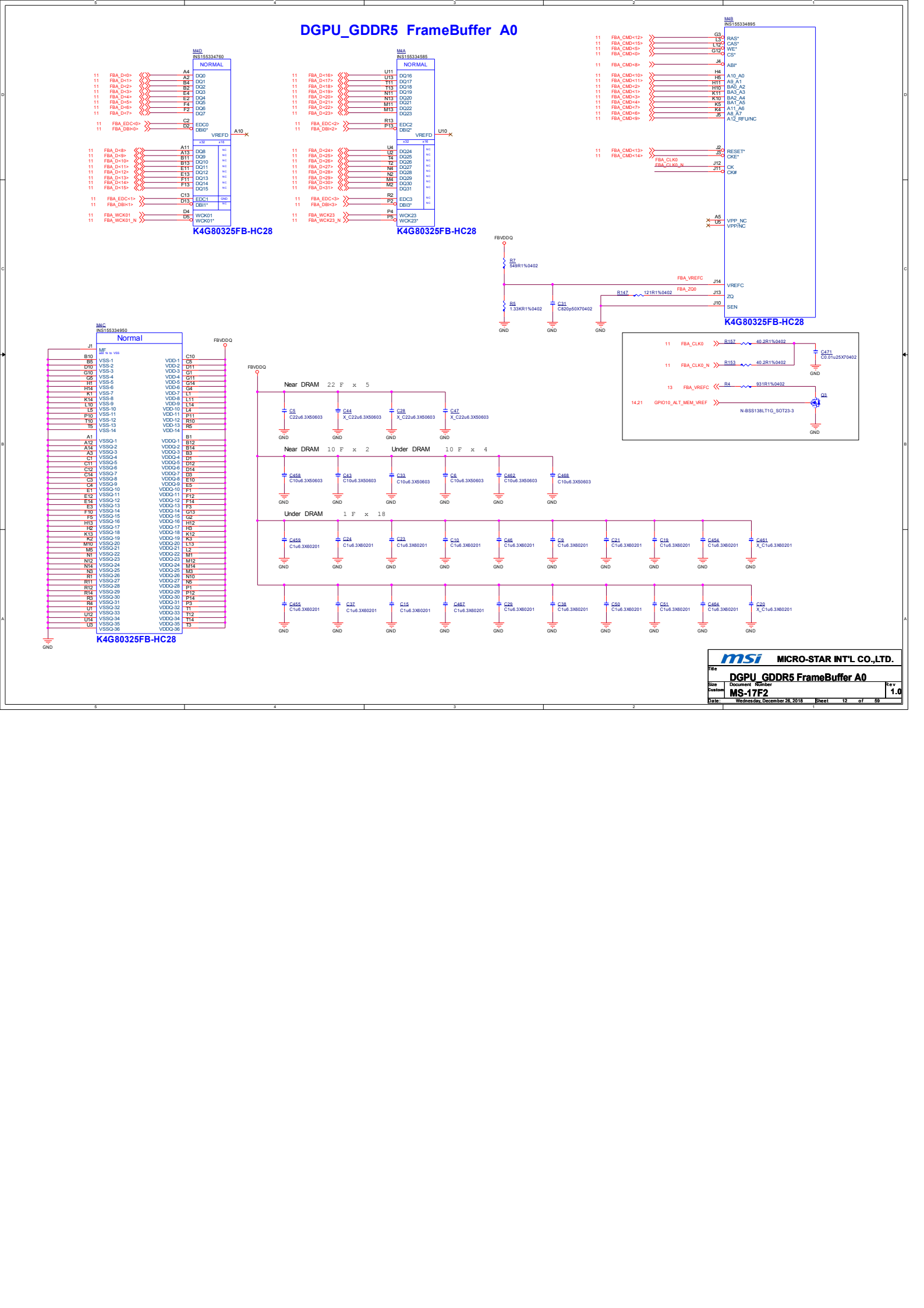
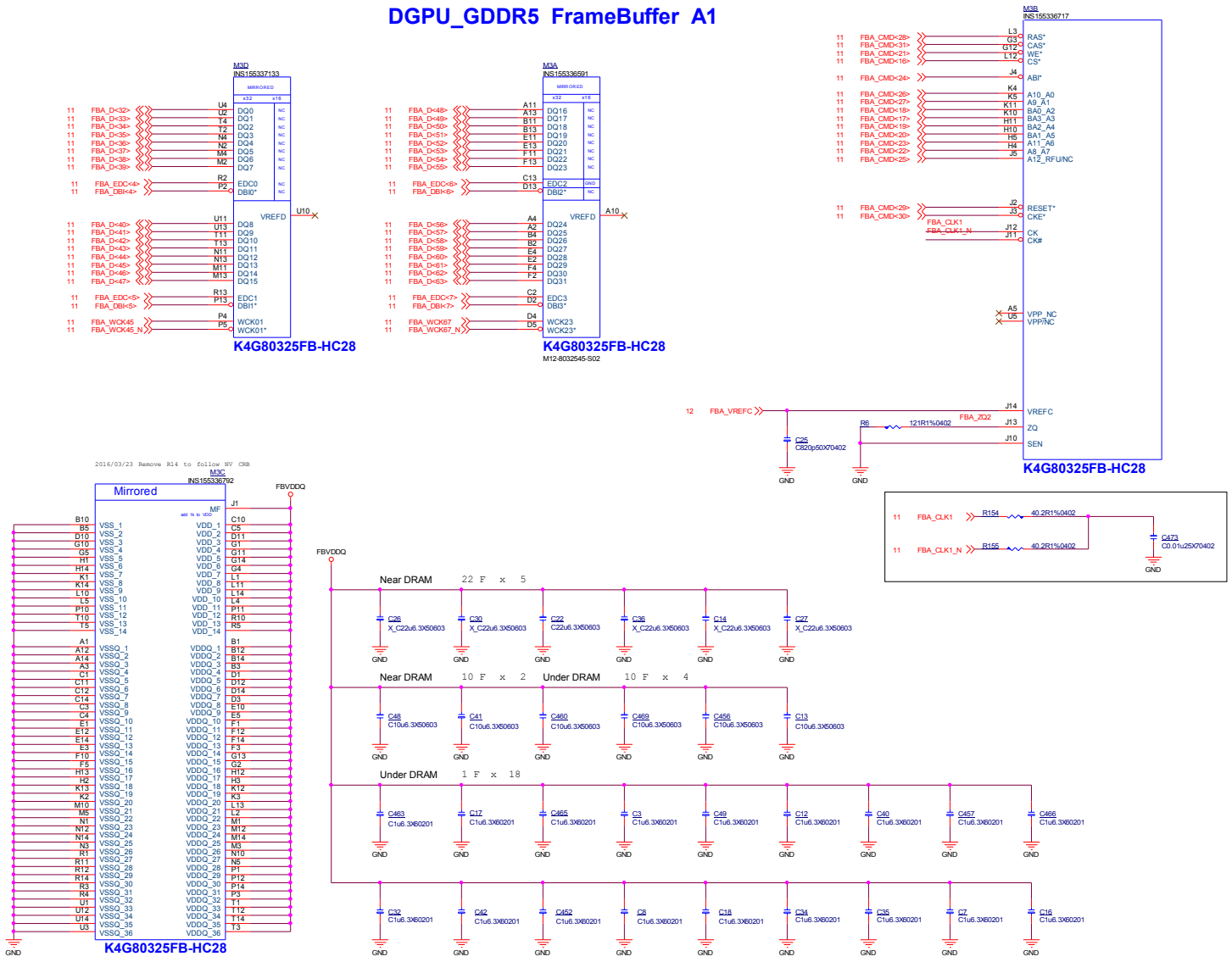
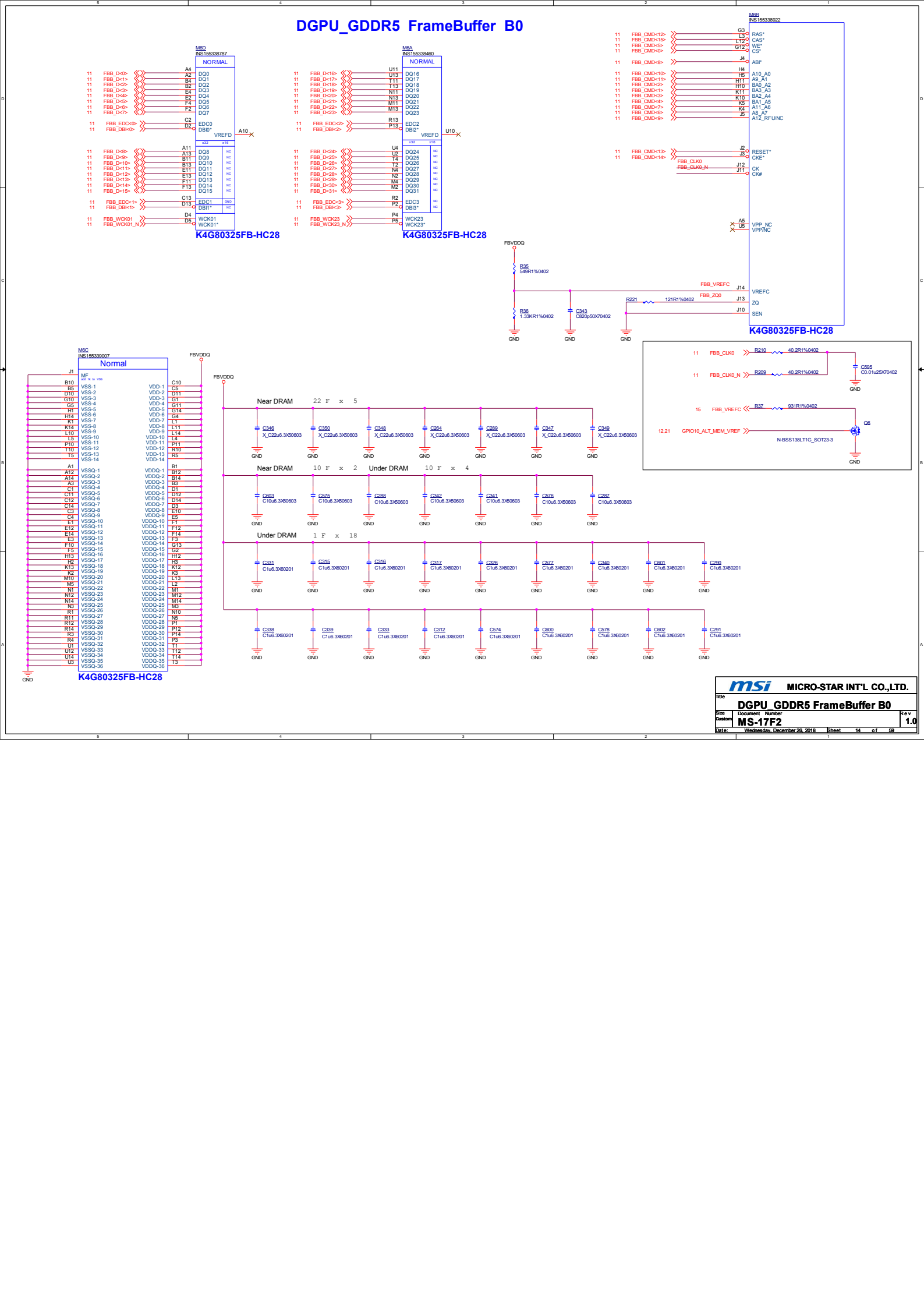
DGPU_GDDR5 FrameBuffer A0



DGPU_GDDR5 FrameBuffer A1



DGPU_GDDR5 FrameBuffer B0



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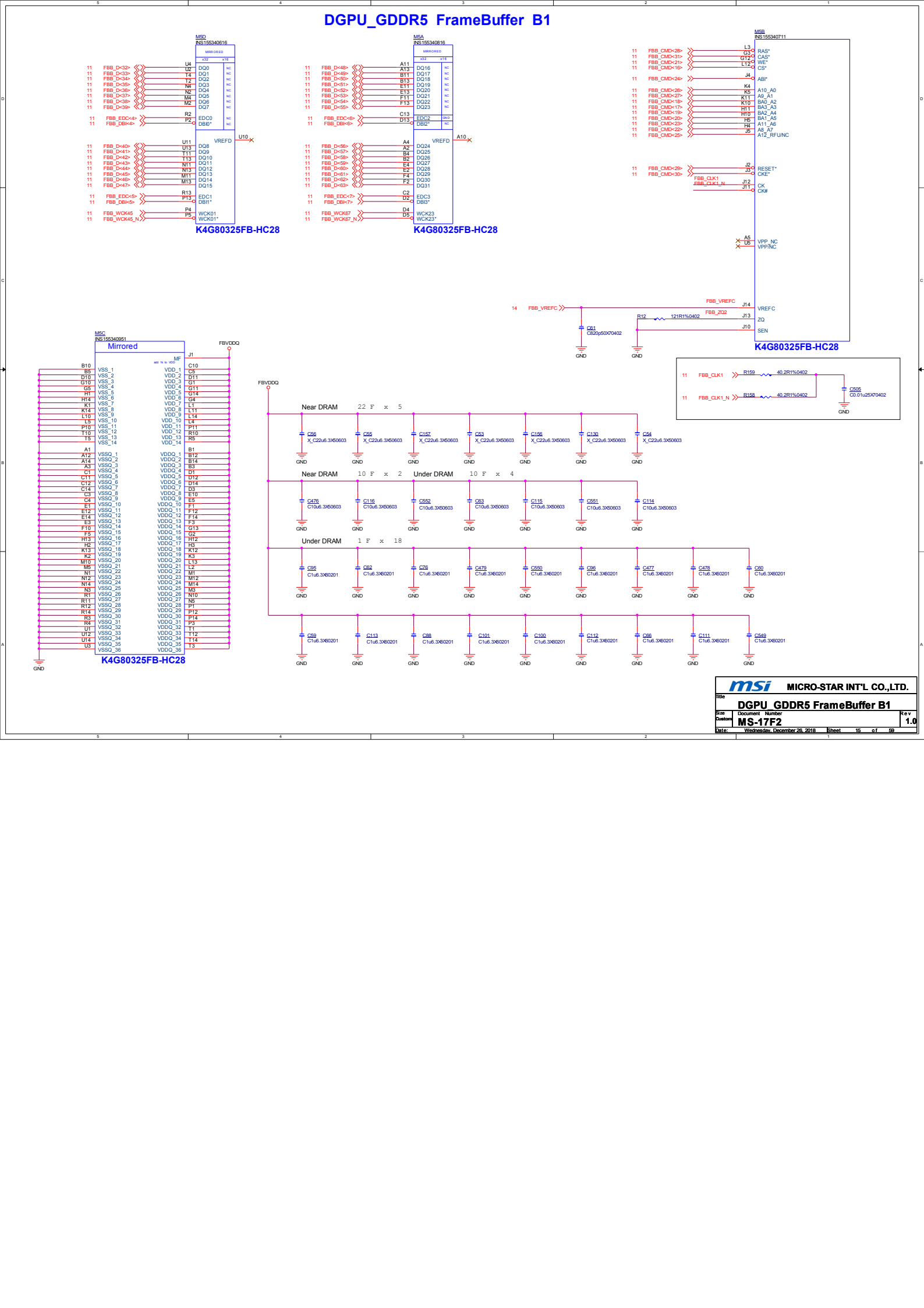
DGPU_GDDR5 FrameBuffer B1



msi	MICRO-STAR INT'L CO.,LTD.		
Title	DGPU_GDDR5 FrameBuffer B1		
Size: Custom	Document Number: MS-17F2		Rev: 1.0
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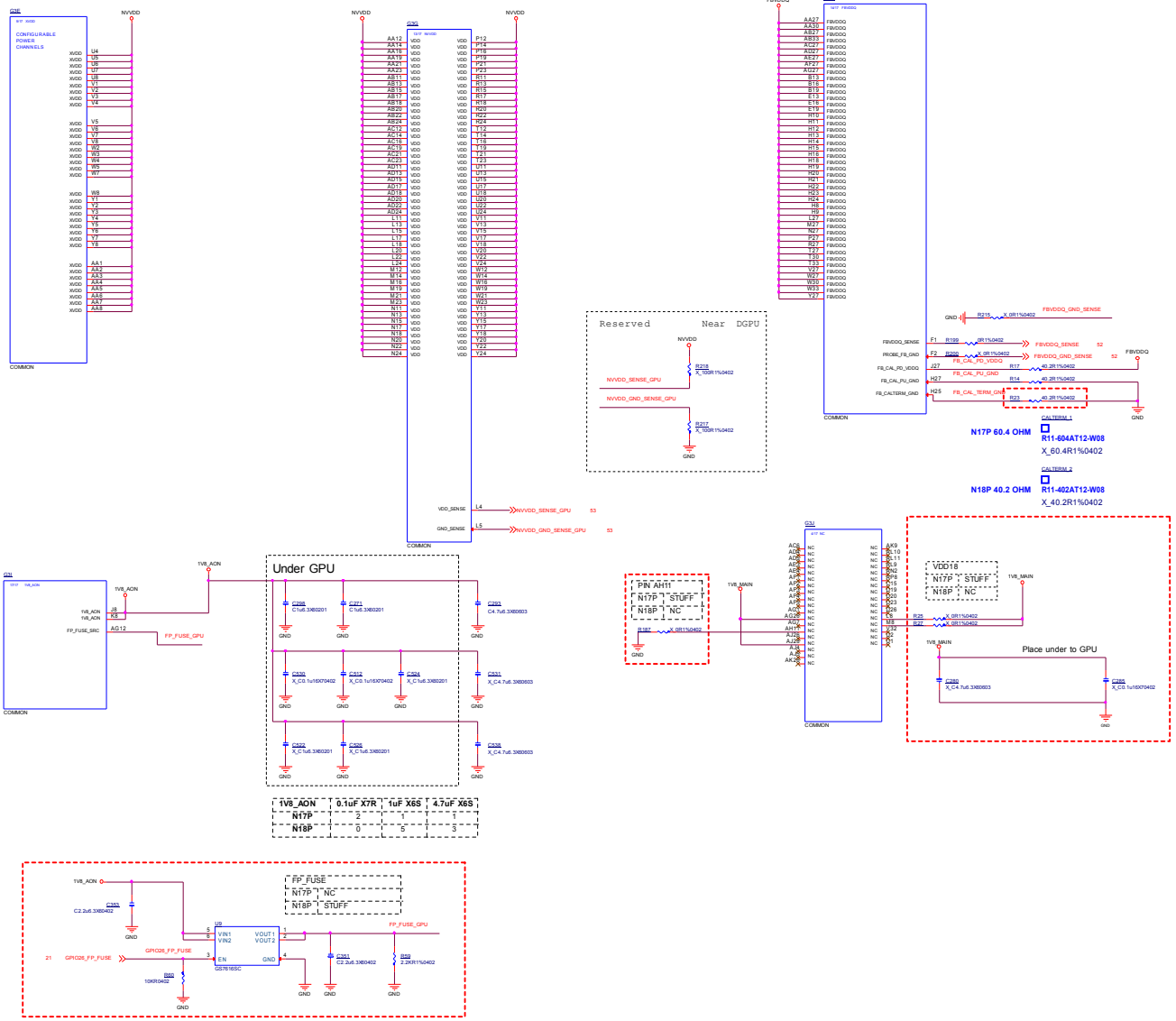
GPU NVVDD, FBVDDQ



Title	MICRO-STAR INT'L CO.,LTD.
	DGPU POWER
Size: Custom	Document Number: MS-17F2
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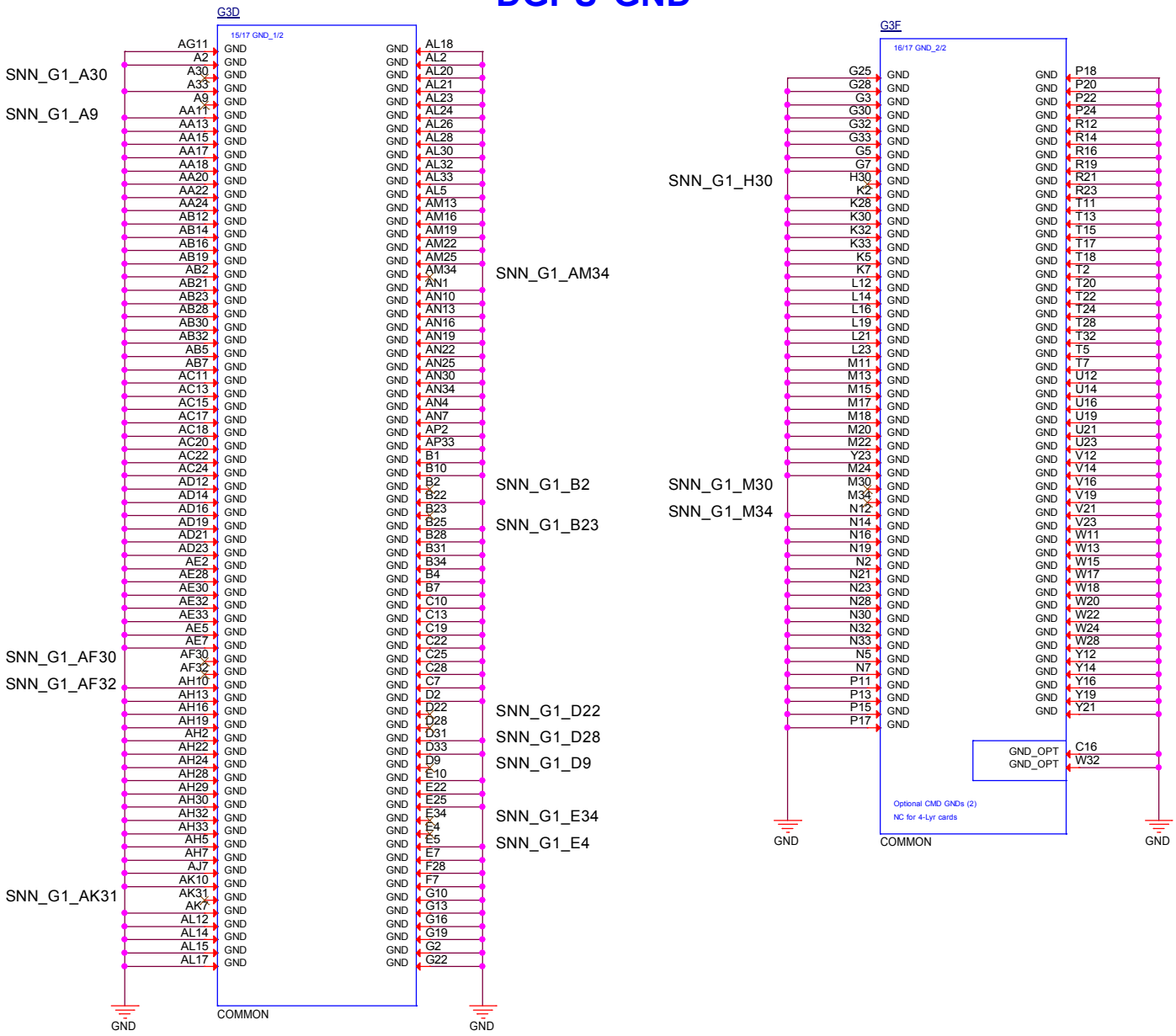
DGPU GND



MICRO-STAR INT'L CO.,LTD.			
Title: DGPU_GND			
Size: Custom	Document Number: MS-17F2		Rev: 1.0
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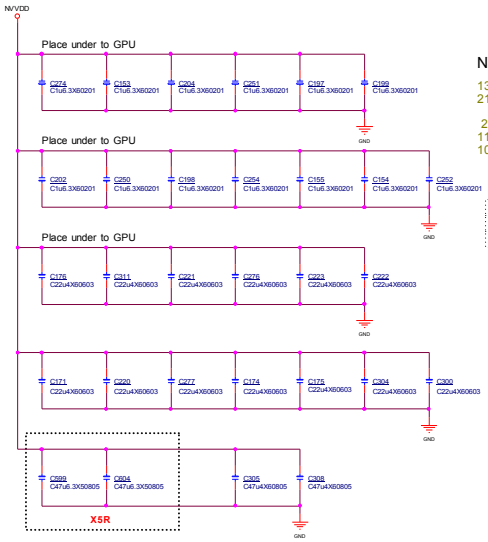
GPU DECOUPLING

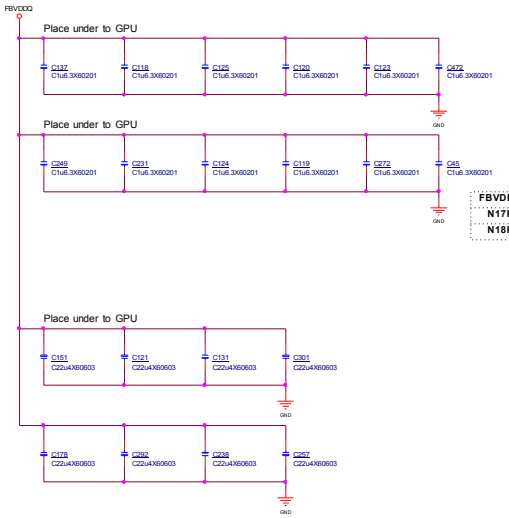


NVVDD+NVDDS

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)

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



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

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Title: DGPU_GPU DECOUPLING

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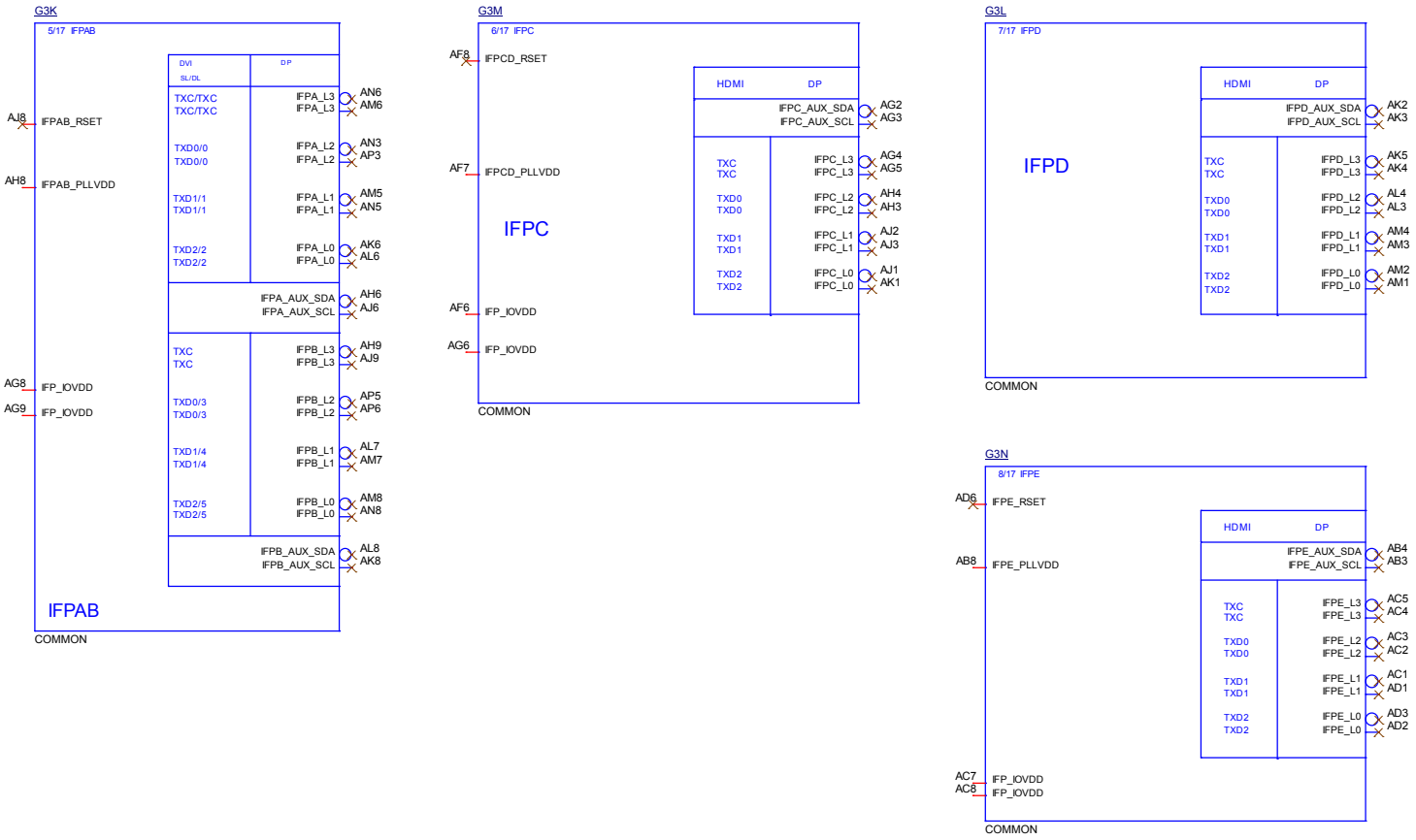
DACA,Display IF



MICRO-STAR INT'L CO.,LTD.

Title: DGPU Display IF

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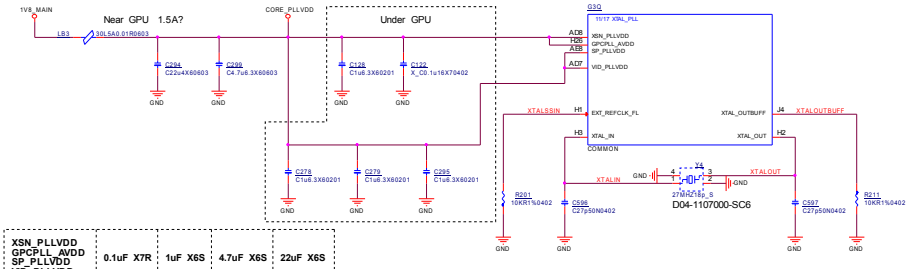
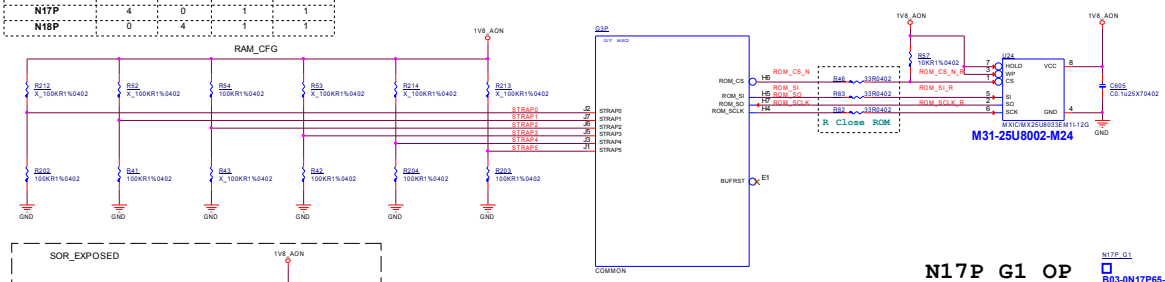
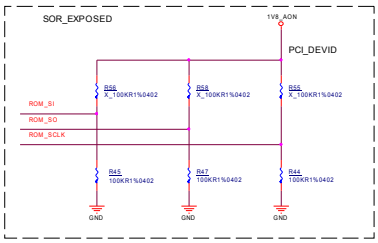
ROM, MULTI-LEVEL STRAPS



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





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		256M*32
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		

ROM_SO	ROM_SI	ROM_SCLK	N17P SOR_EXPOSED3	SOR_EXPOSED2	SOR_EXPOSED1	SOR_EXPOSED0	N18P 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	

N17P_G1_OP

N17P_G1
B03-0N17P65-N08
X_N17P-G1

N17P_G0_OP

N17P_G0
B03-0N17P75-N08
X_N17P-G0

N17P-G0-K1

N17P_K1
OB3-16R3001-N08
X_N17P-G0-K1

N18P_G0_MP

N18P_G0
B03-N18PG05-N08
X_N18P-G1

Samsung 256Mx32bit
V_BOT1
M12-8032545-S02
X_K4G80325FB-HC28

Samsung 256Mx32bit
V_BOT3
M12-80325R5-S02
X_K4G80325FC-HC25

Hynix 256Mx32bit
V_BOT2
M12-5GQ8H05-H2A
X_H5GQ8H24MJR-R4C

Hynix 256Mx32bit
V_BOT4
M12-5GC8HB5-H23
X_H5GC8H24AJR-R2C

Microm 256Mx32bit
V_BOT5
M12-25632W5-M30
X_MT51J256M32HF-80:B

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Title: ROM/HW Straps/XTAL

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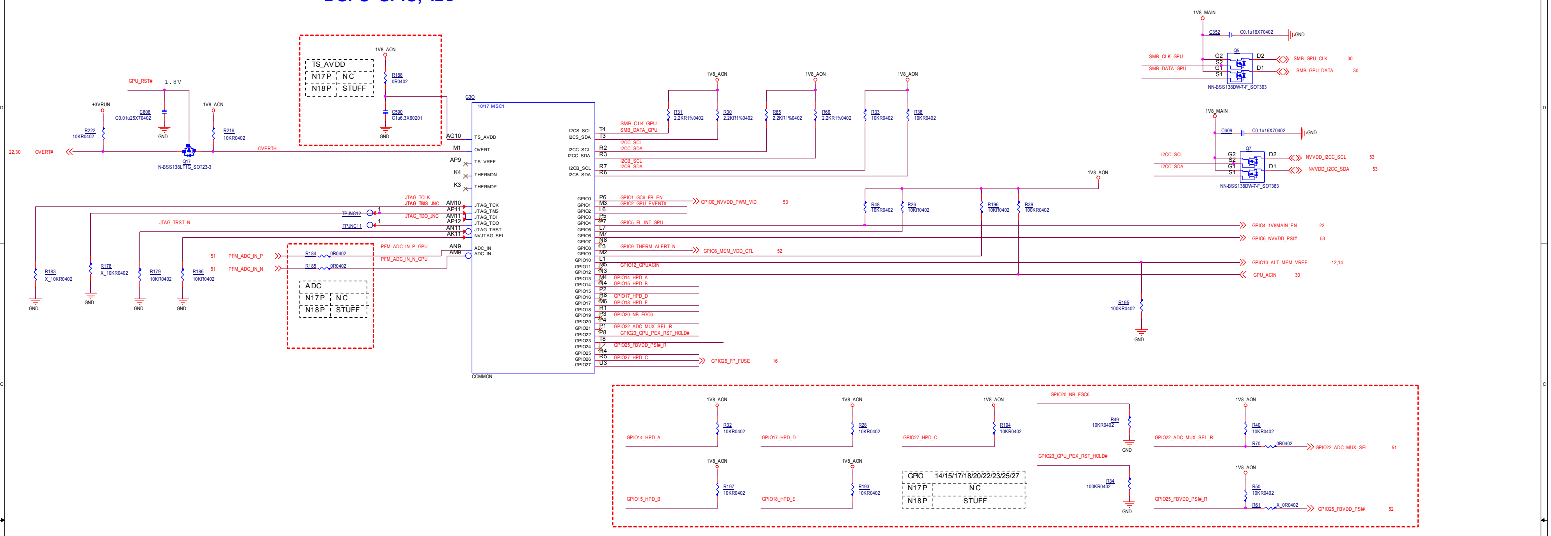
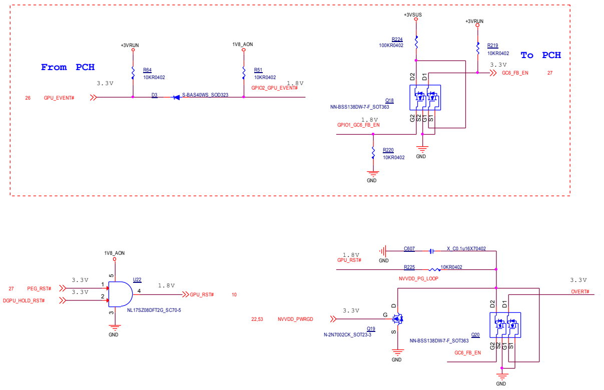
DGPU GPIO, I2C



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	
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	NVVDDS_PWM	UNUSED	PWM output to control the NVVDDS power supply	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 Brighteness 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/Q power-on voltage	pull-up/pull-down to set the FBVDD/Q 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	
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	FP_FUSE			10K pull-down
GPIO27	HPD_C	HPD_C	Hot Plug Detect for IFPC		



MICRO-STAR INT'L CO.,LTD.

Title: DGPU_GPIO/I2C

Document Number: MS-17F2 | Rev 1.0

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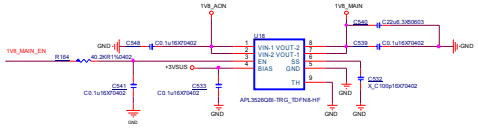
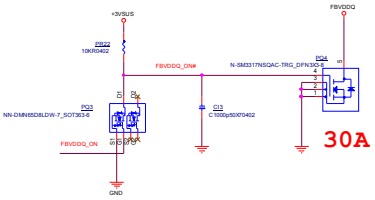
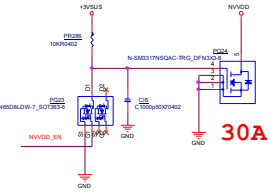
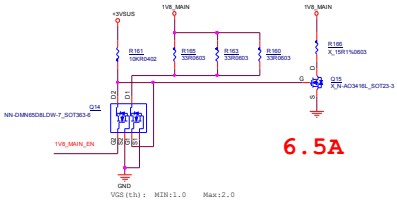
1V8_MAIN

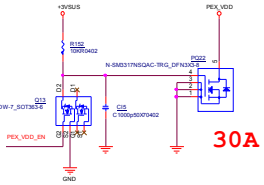


Discharge

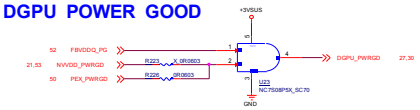




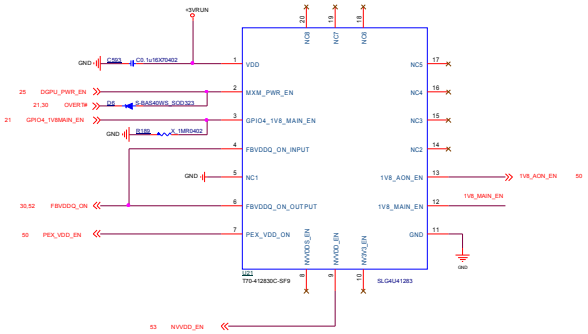




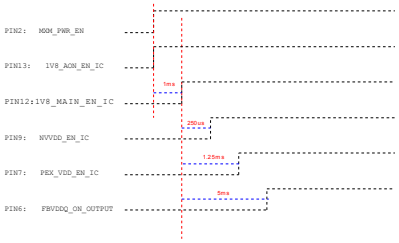
DGPU POWER GOOD



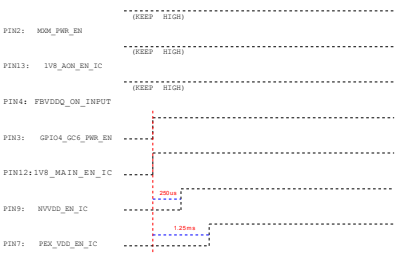
Power Sequence Control



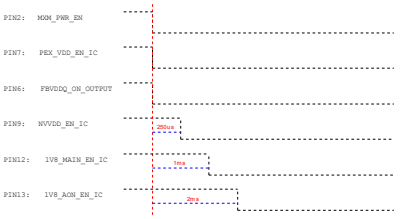
Power Up Sequence



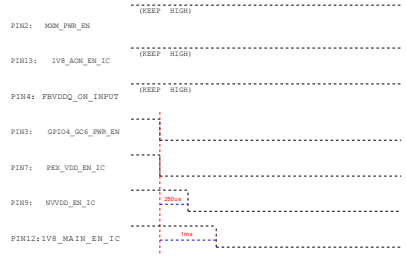
GC6 2.1 Exit Sequence



Power Down Sequence



GC6 2.1 Entry Sequence



PIN2:	MXM_PWR_EN is 3.3V	INPUT
PIN3:	GPIO4_GC6_PWR_EN is 1.8V	INPUT
PIN4:	FBVDDQ_ON_INPUT 3.3V	INPUT
PIN6:	FBVDDQ_ON_OUTPUT 3.3V	OUTPUT
PIN7:	PEX_VDD_EN_IC 3.3V	OUTPUT
PIN9:	NVVDD_EN_IC 3.3V	OUTPUT
PIN12:	1V8_MAIN_EN_IC 3.3V	OUTPUT
PIN13:	1V8_AON_EN_IC 3.3V	OUTPUT

MICRO-STAR INT'L CO.,LTD.

Title: DGPU Power Control

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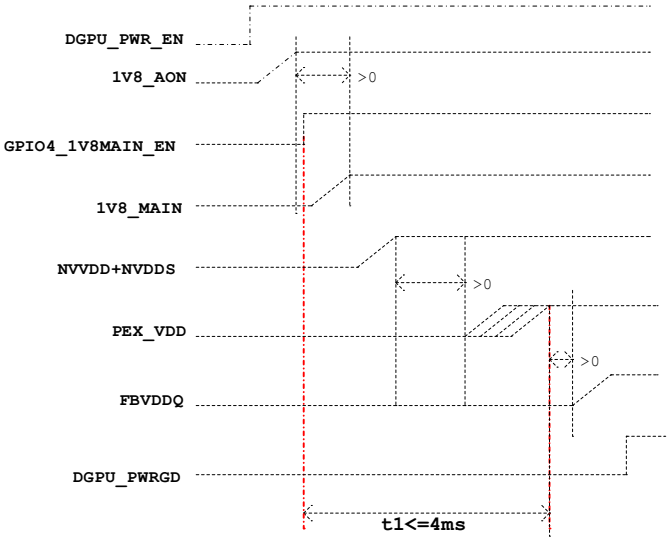
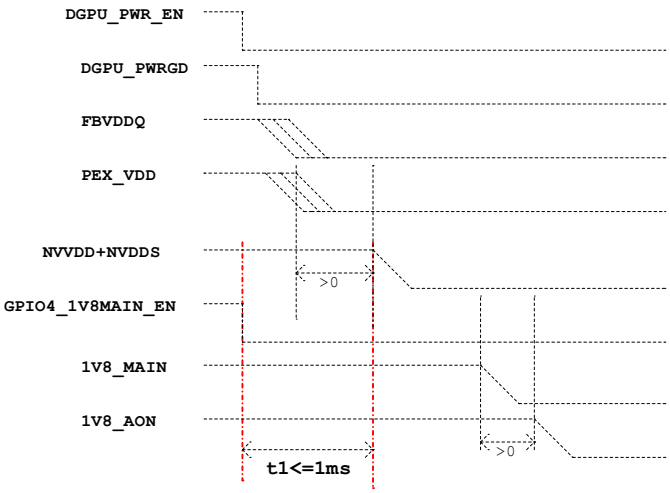
POWER UP Sequence

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

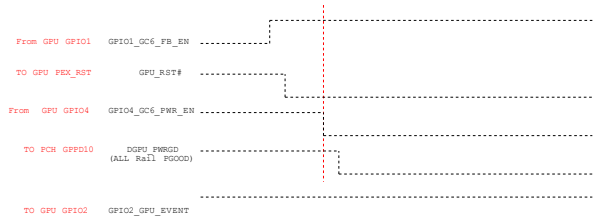


POWER Down Sequence

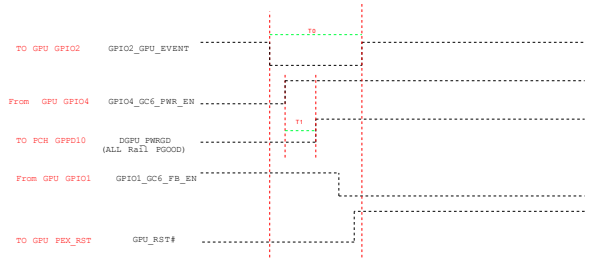
NVVDDS/PEX_VDD/FBVDDQ ->NVVDD/NV3V3->1V8_MAIN> 1V8_AON



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:

1. ALL RailPGOOD=1 represents all GPU power rails are ramped up and in regulation.
   If any GPU power rail cannot ge guaranteed in regulation this state should equal to 0.
2. 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.
3. All delays should be minimized to increase time spent in GC6 for maximum power saving.
4. The entire entry and exit sequence must complete within 200 ms.

MICRO-STAR INT'L CO.,LTD.

Title: DGPU Power Sequence

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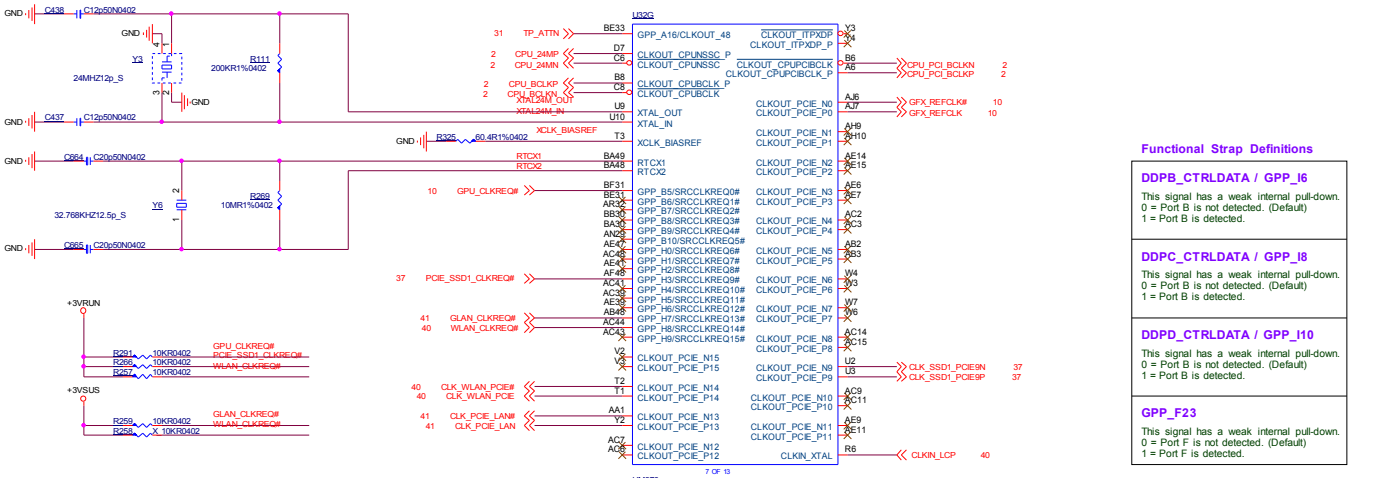
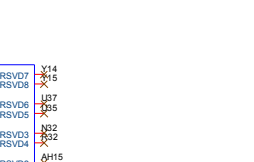
HM370 (RTC/PCIE_Clock/Clock/RSVD)





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/DDI)			
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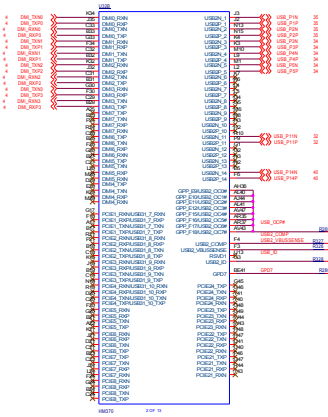
HM370 (DMI/PCIE/USB3.1/USB2.0/CNVi)

GPP_K10	
N17P	PULL LOW
N18P	PULL HIGH

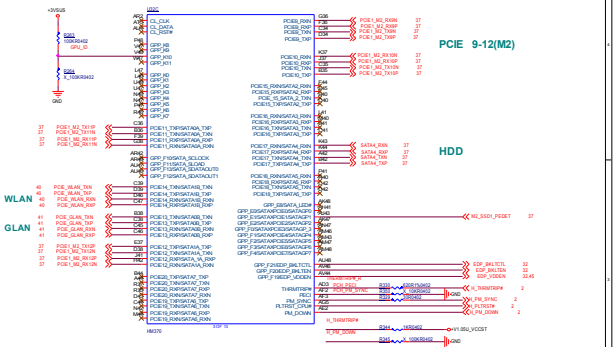


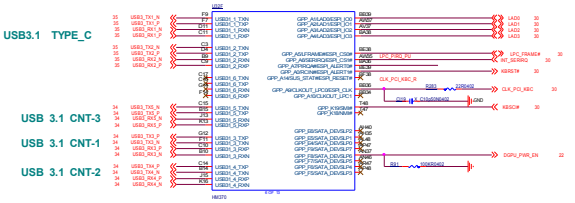
USB			
USB 2.0	USB 3.1	Device	Note
1	1	USB TYPE_C-1	
2	3	USB TYPE_C-2	
3	3	USB TYPE_A-1	
4	4	USB TYPE_A-2	
5	5	USB TYPE_A-3	
6			
7			
8			
9			
10			
11		WebCam	
12			
13			
14		WLAN	

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		
10	PCIE	PCIE Configurable lane	M.2 SSD-1
11	PCIE/SATA 0A		
12	PCIE/LAN/SATA 1A		
13	PCIE/LAN/SATA 0B		LAN
14	PCIE/SATA 1B		WLAN
15	PCIE		NC
16	PCIE		NC
17	PCIE/SATA 4		HDD
18	PCIE/SATA 5		NC
19	PCIE		NC
20	PCIE		NC
21	PCIE		
22	PCIE		NC
23	PCIE		
24	PCIE		

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

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





GPP_A6
PCI Interrupt Request Ax
Note: An external Pull-up is required

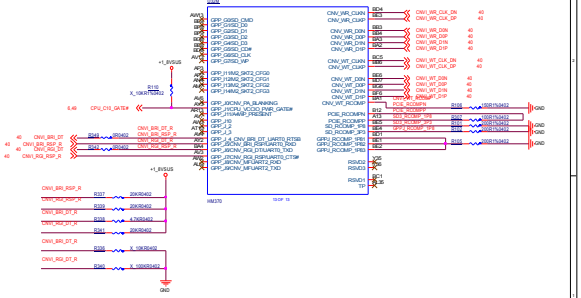
GPP_A7
PCI Interrupt Request Ax
Note: An external Pull-up is required

GPP_A14
LPC Mode - Suspend Status:
This signal is asserted by the PCH to indicate that the system will be entering a low power state soon.

GPP_J4 / CNV_BRI_DT
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 / CNV_RGI_DT
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



Title	MICRO-STAR INT'L CO.,LTD.
	PCH-2(DMI/PCIE/USB/SATA)
Size	Document Number: MS-17F2
Date	Wednesday, December 26, 2018
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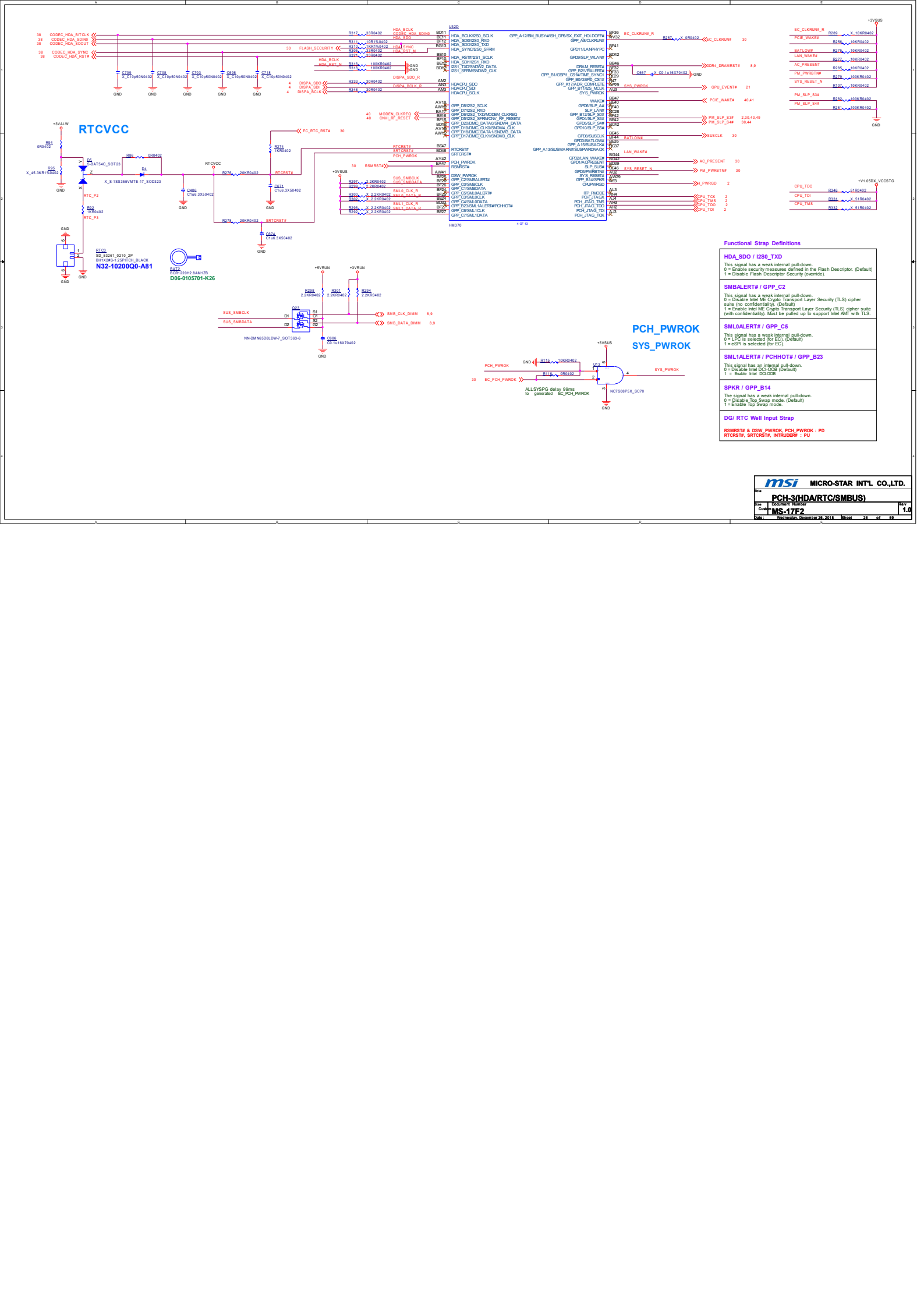
RTCVCC
N32-10200Q0-A81
D06-0105701-K26
PCH_PWROK
SYS_PWROK
Functional Strap Definitions
HDA_SDO / I2S0_TXD
This signal has a weak internal pull-down.
0 = Enable security measures defined in the Flash Descriptor. (Default)
1 = Disable Flash Descriptor Security (override).
SMBALERT# / GPP_C2
This signal 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
RTCRST#, SRTCRST#, INTRUDER# : PU
MICRO-STAR INT'L CO.,LTD.
PCH-3(HDA/RTC/SMBUS)
MS-17F2
1.0
Wednesday, December 26, 2018
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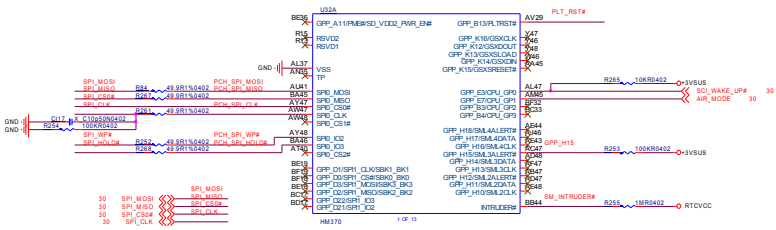
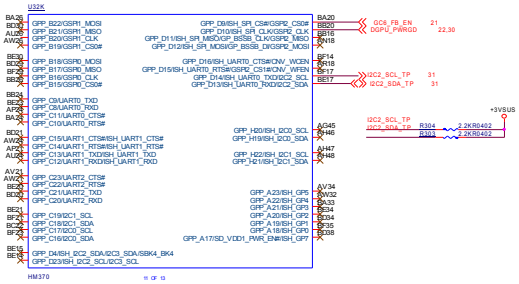
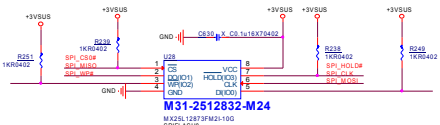
HM370 (UART/I2C/SPI)



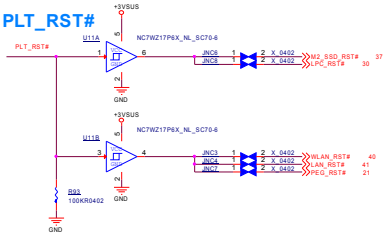


SPI FLASH ROM 16MB



Supported types of Flash Memory
Command:0x03 & 0x0B & 0xBB

PLT_RST#



Functional Strap Definitions

SML3ALERT# / GPP_H15

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

GSPI1_MOSI / GPP_B22

This Signal has a weak internal pull-down.

Bit 6 Boot BIOS	Destination
0	SPI (Default)
1	LPC

GSPI0_MOSI / GPP_B18

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

msi	MICRO-STAR INT'L CO.,LTD.	
Title	PCH-4(SPI/GPIO)	
Size	Document Number: MS-17F2	Rev 1.0
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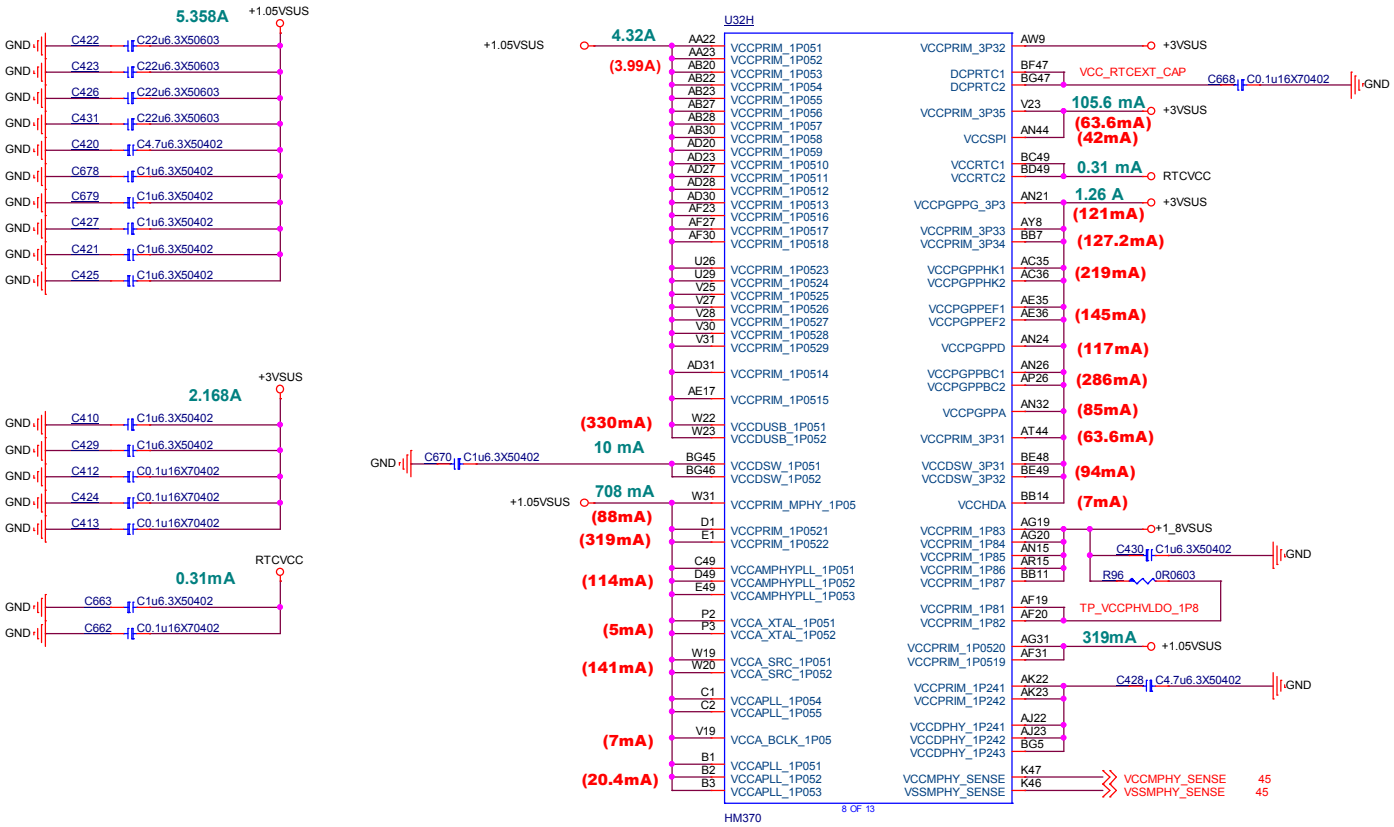
HM370 (Power)



MICRO-STAR INT'L CO.,LTD.		
Title: PCH-5(Power)		
Size: Custom	Document Number: MS-17F2	Rev: 1.0
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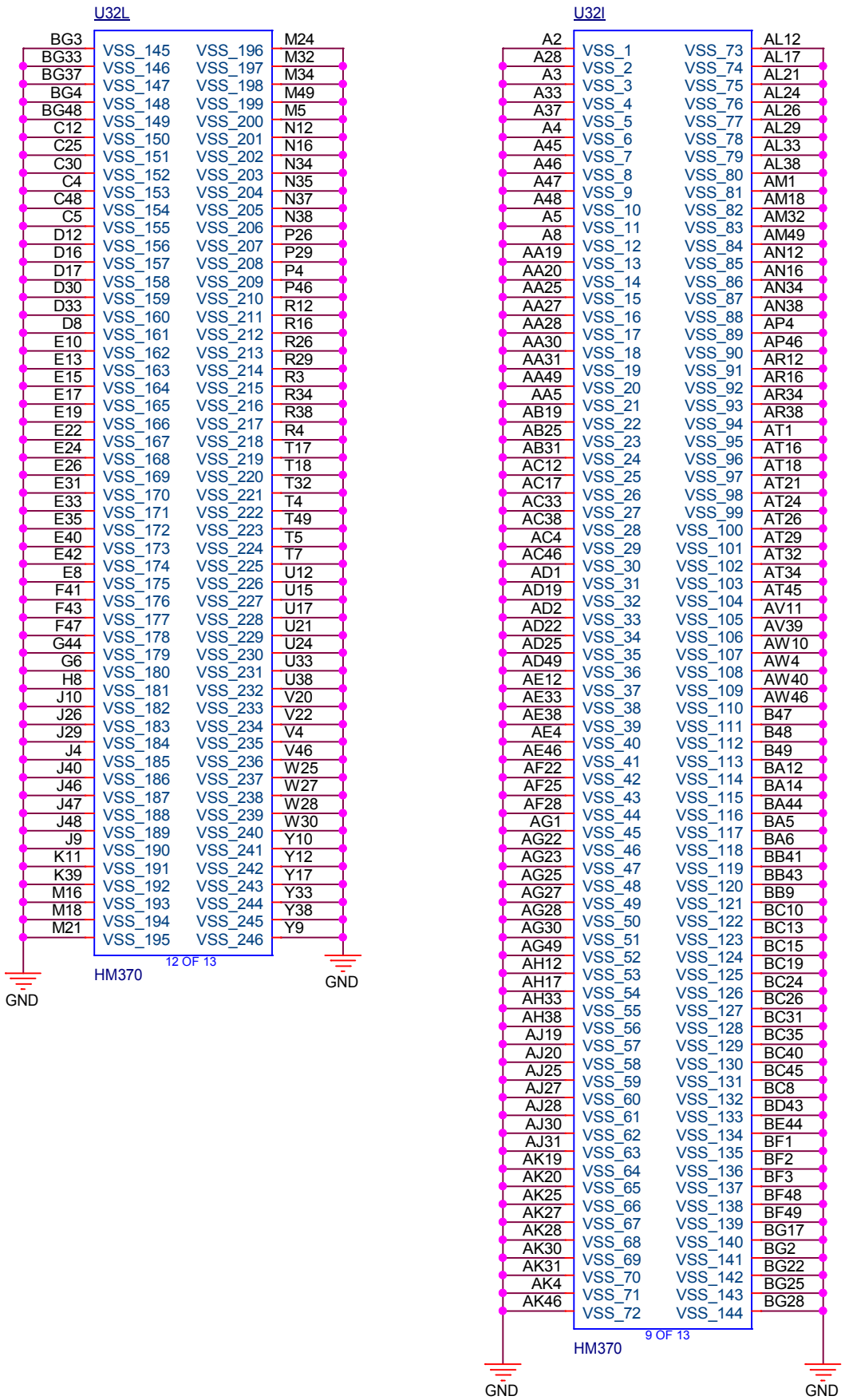
PCH-H(GND)



MICRO-STAR INT'L CO.,LTD.		
Title: PCH-6(GND)		
Size: Custom	Document Number: MS-17F2	Rev: 1.0
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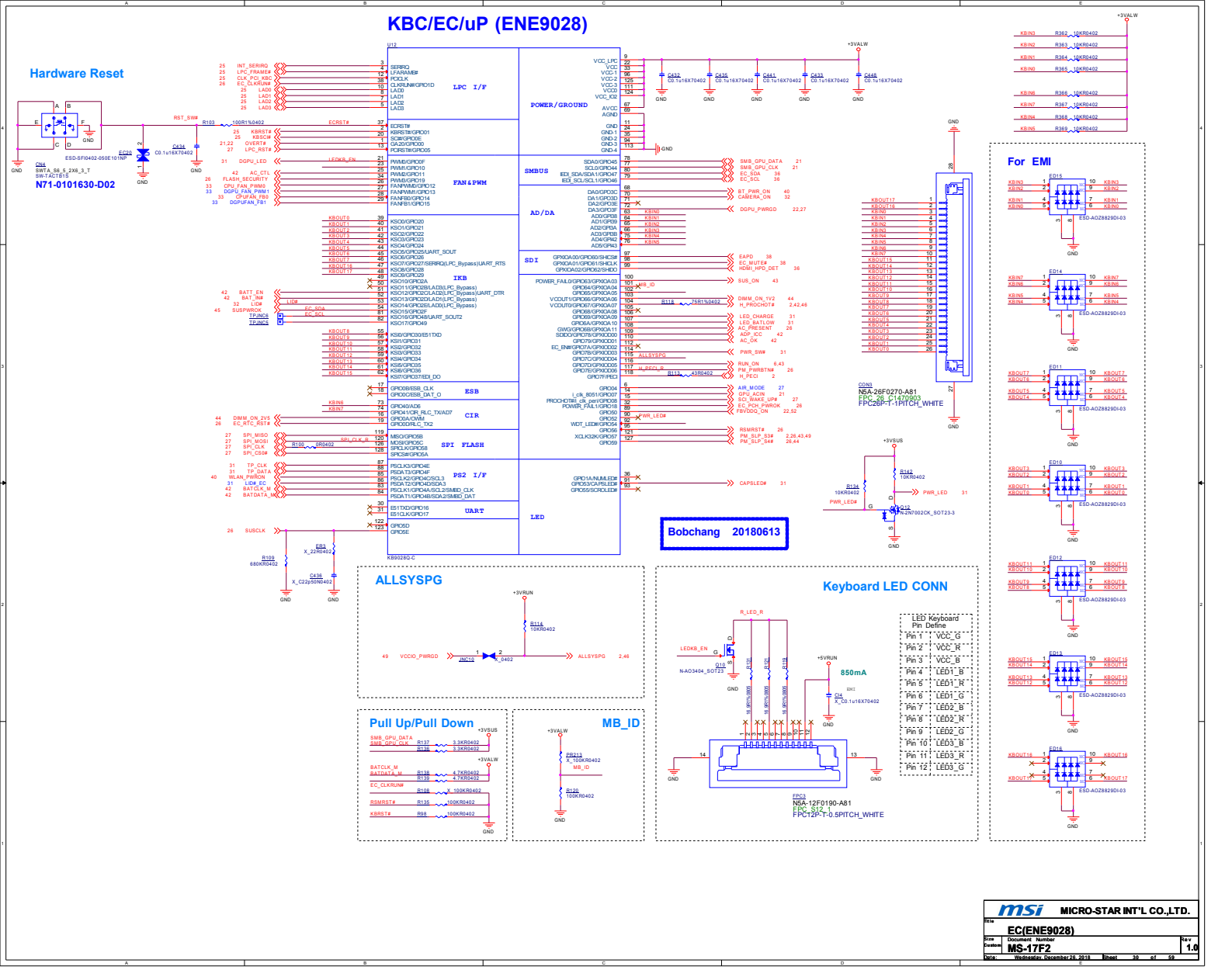
KBC/EC/uP (ENE9028)



MICRO-STAR INT'L CO.,LTD.

Title: EC(ENE9028)

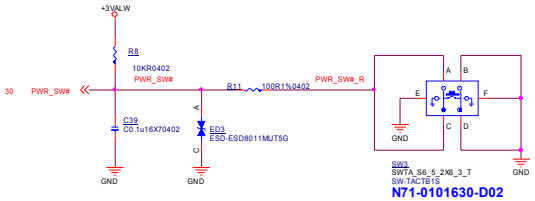
Size: Document Number: MS-17F2 Rev: 1.0

Date: Wednesday, December 26, 2018 Sheet 30 of 59

Power Switch /Touch Pad / LED

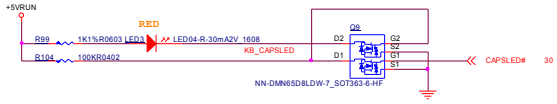
Bobchang 20180702

Power Switch

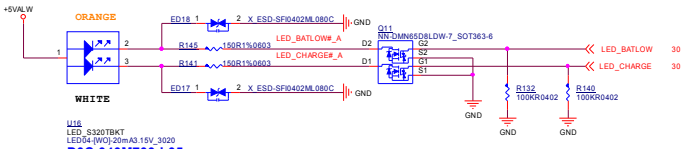


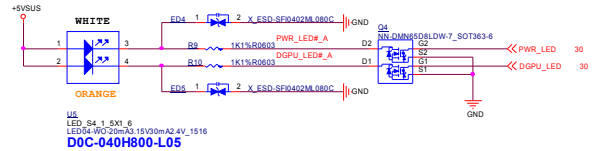
17F1 LED2

CAPSLED

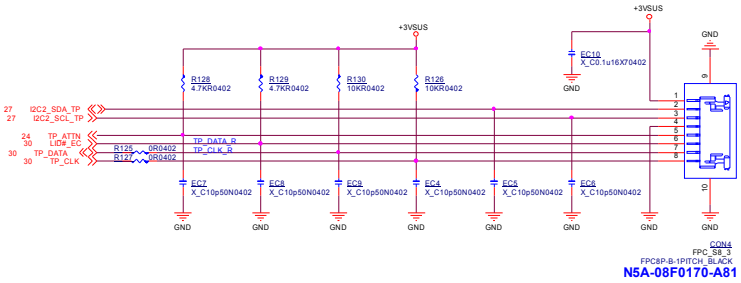


LED



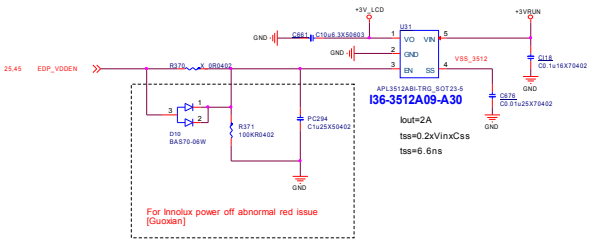


Touch Pad Board

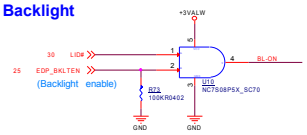


MSI	MICRO-STAR INT'L CO.,LTD.	
Title	Power Switch/FAN/Touch Pad/LED	
Size: Custom	Document Number: MS-17F2	Rev: 1.0
Date: Wednesday, December 26, 2018	Sheet 31 of 59	

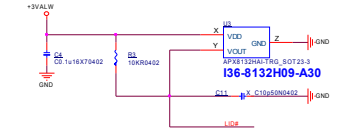
Pannel Device Logic Power



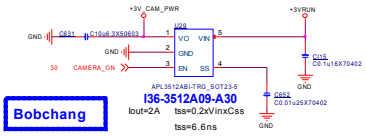
Backlight



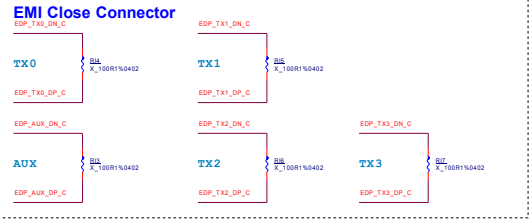
Hall Switch



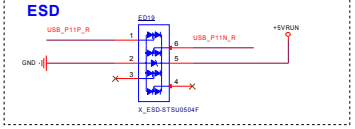
CAMERA Power



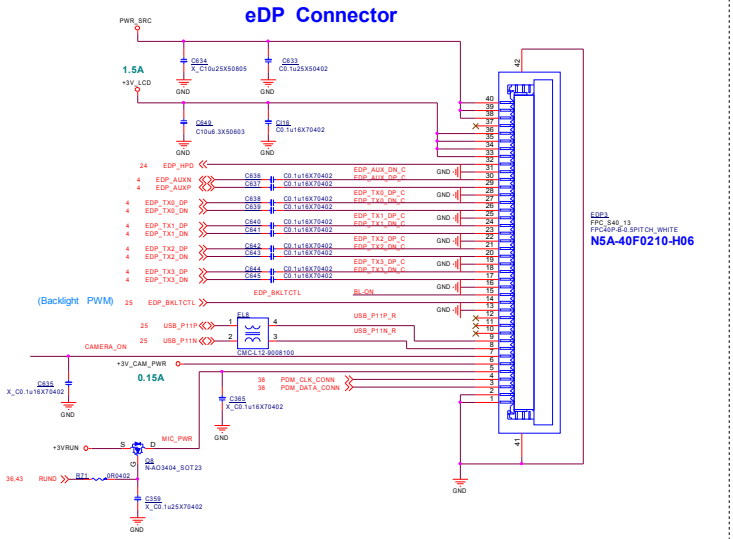
EMI Close Connector



ESD



eDP Connector



msi	MICRO-STAR INT'L CO.,LTD.		
Title	eDP Connector/Camera/LID		
Size: Custom	Document Number: MS-17F2		Rev: 1.0
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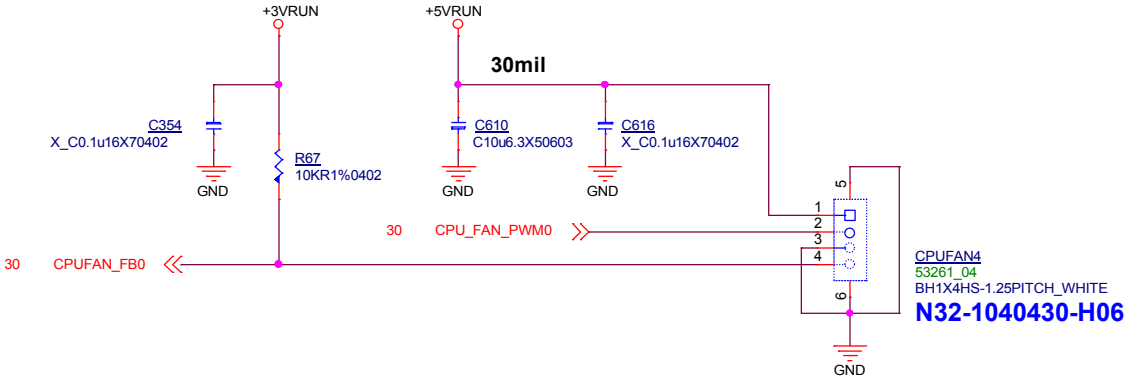
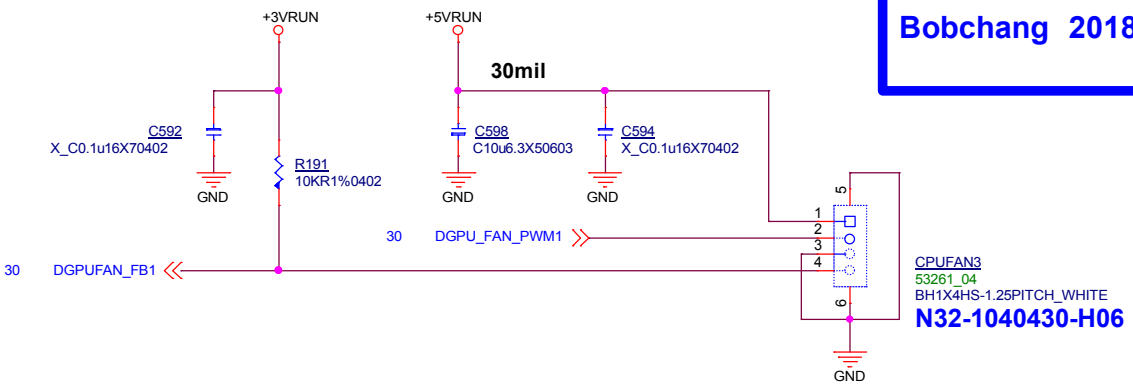
CPU FAN



DGPU FAN



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MICRO-STAR INT'L CO.,LTD.

Title: FAN		
Size: A	Document Number: MS-17F2	Rev: 1.0
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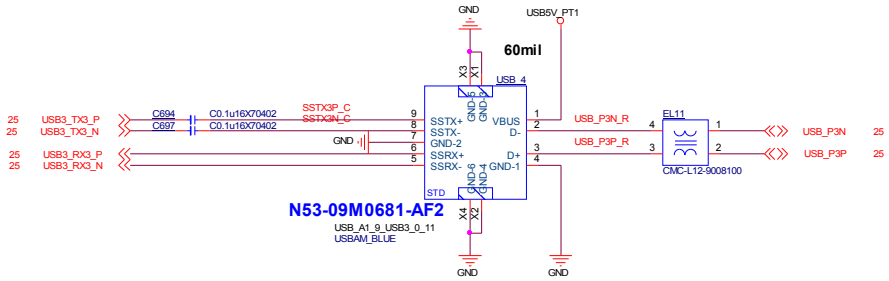
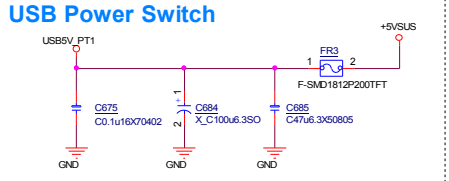
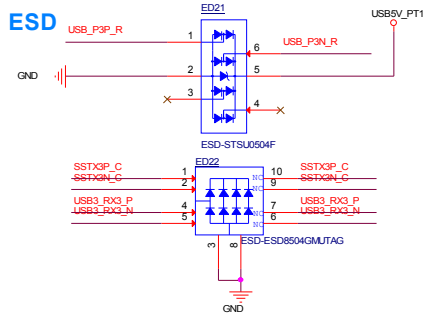
USB3.0 CNT-1



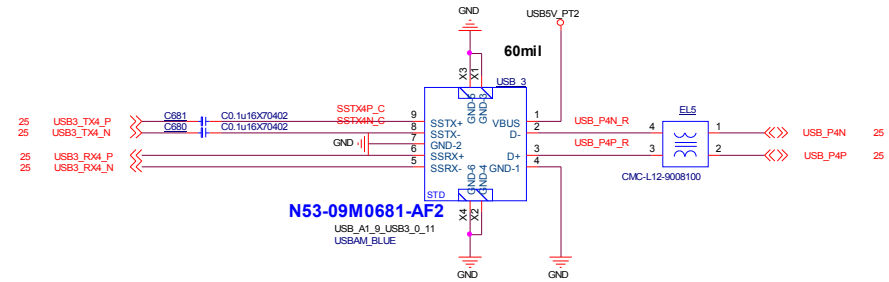
USB Power Switch



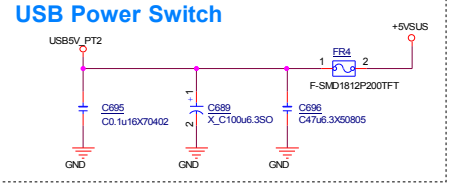
ESD



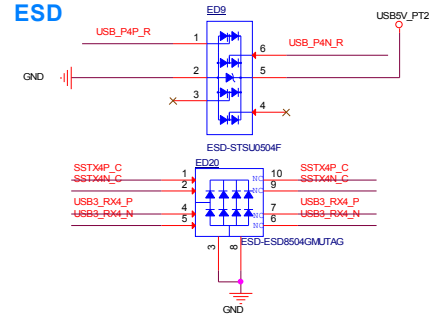
USB3.0 CNT-2



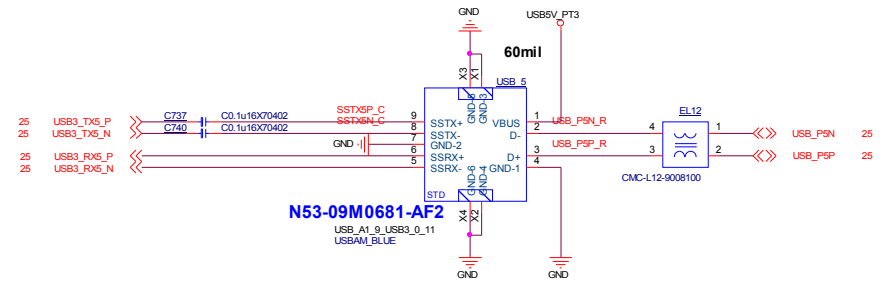
USB Power Switch



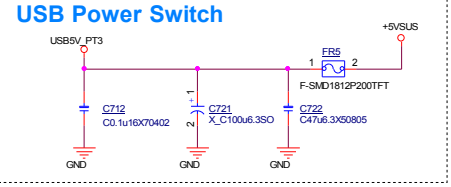
ESD



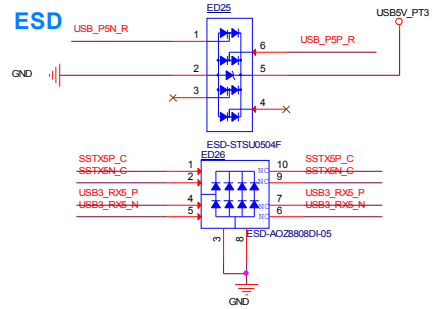
USB3.0 CNT-3



USB Power Switch



ESD



MSI	MICRO-STAR INT'L CO.,LTD.	
Title	USB 3.0 TYPE_A	
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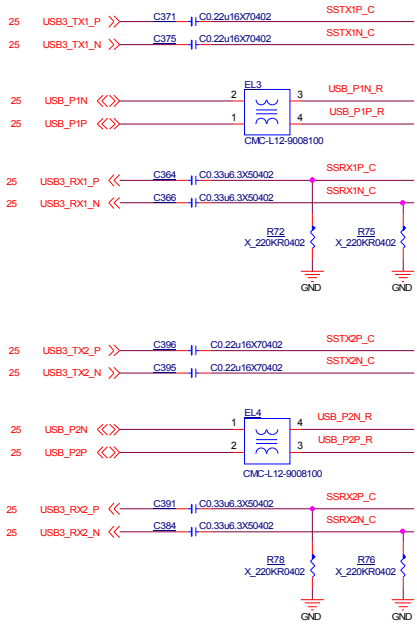
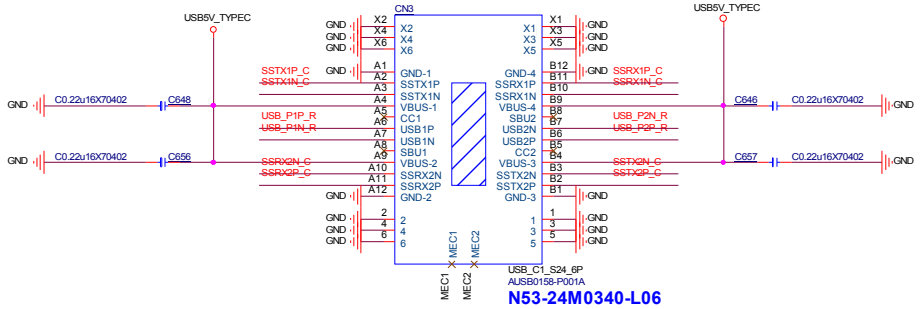
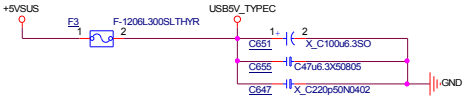
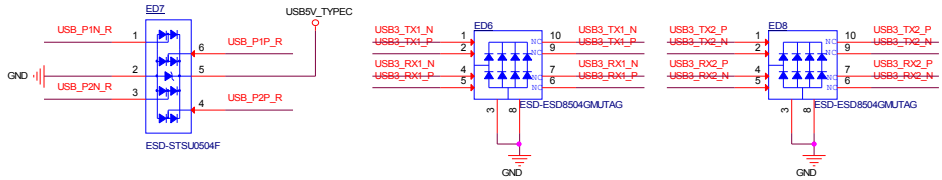
USB 3.0 TYPE_C







ESD



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

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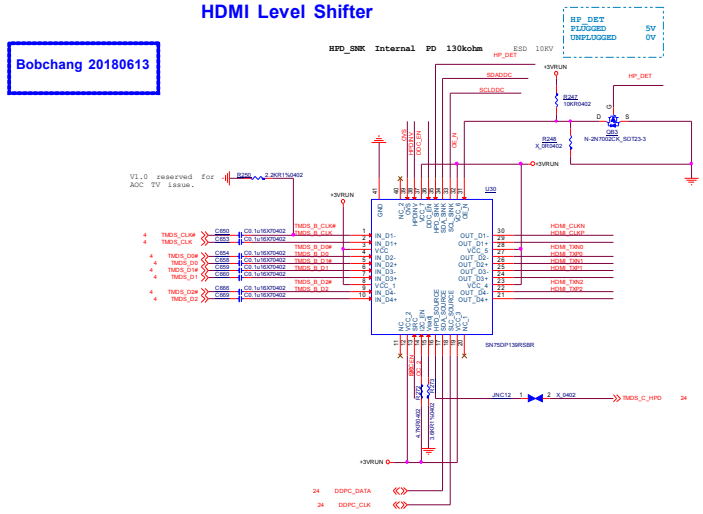
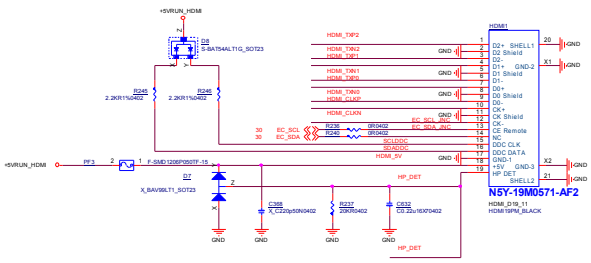
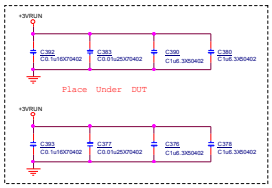
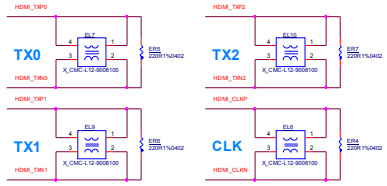


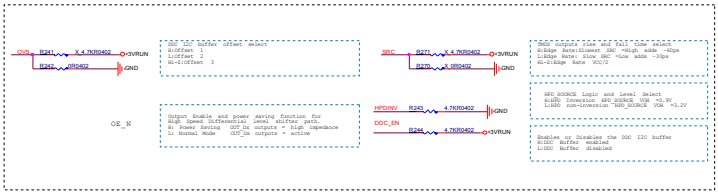
HDMI connector





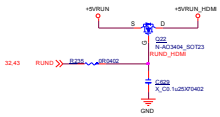
EMI Close Connector



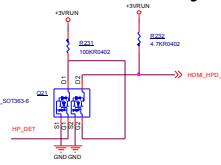


Avoid HDMI Leakage

W>20mils



HPD Level Shift 5V to 3V for Debug Card



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Title	HDMI		
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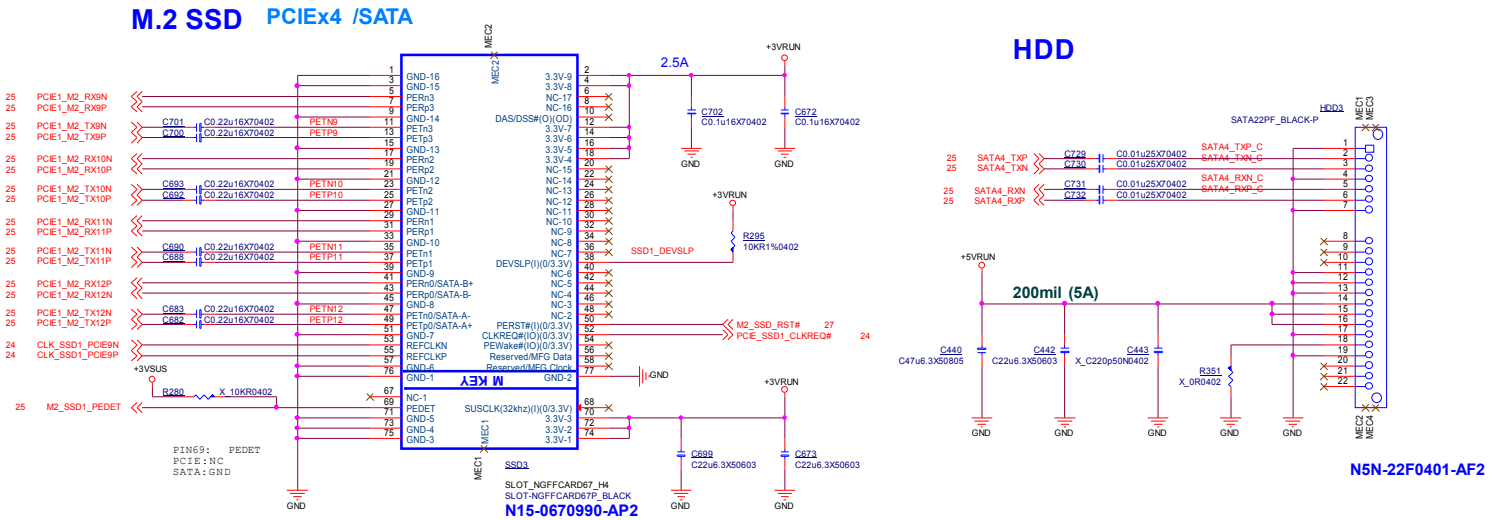

MICRO-STAR INT'L CO.,LTD.			
Title: M.2 SSD/HDD			
Size: Custom	Document Number: MS-17F2		Rev: 1.0
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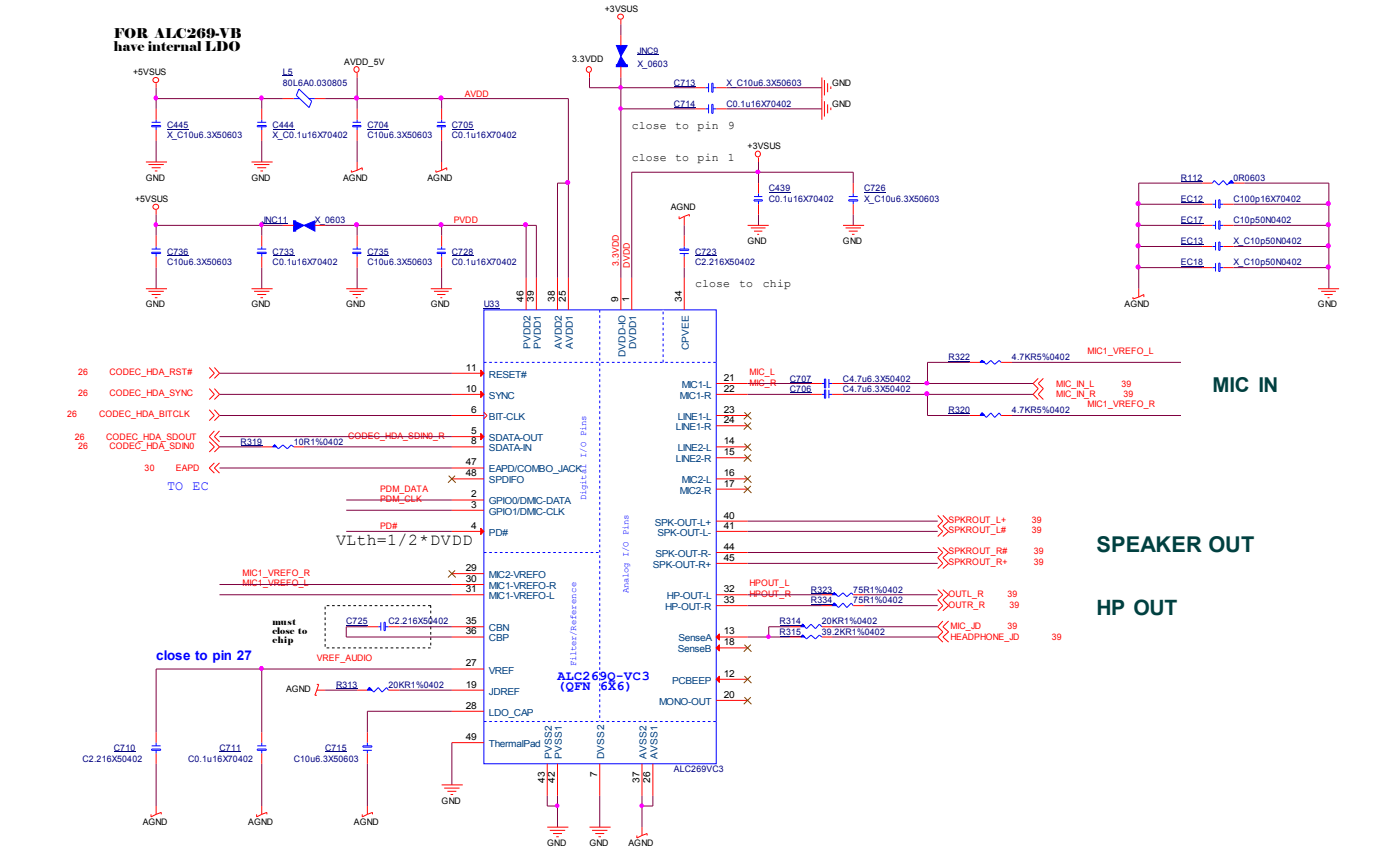

msi	MICRO-STAR INT'L CO.,LTD.		
Title	Audio CODEC(ALC269)		
Size: Custom	Document Number: MS-17F2		Rev: 1.0
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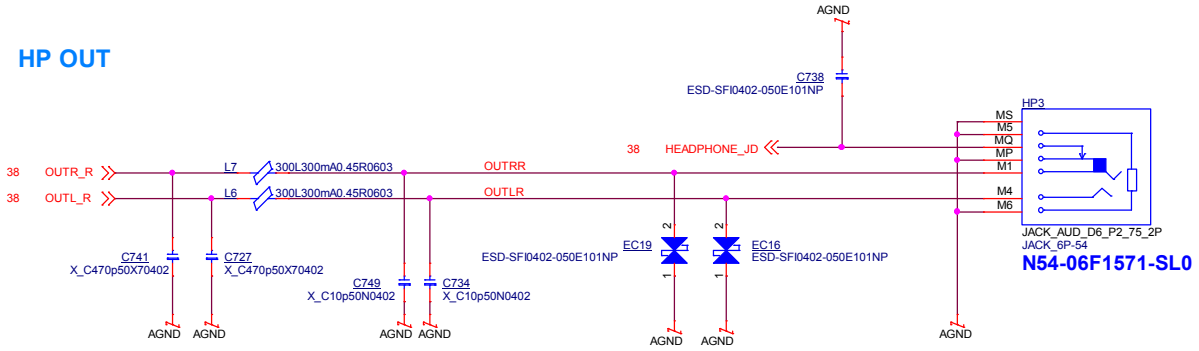
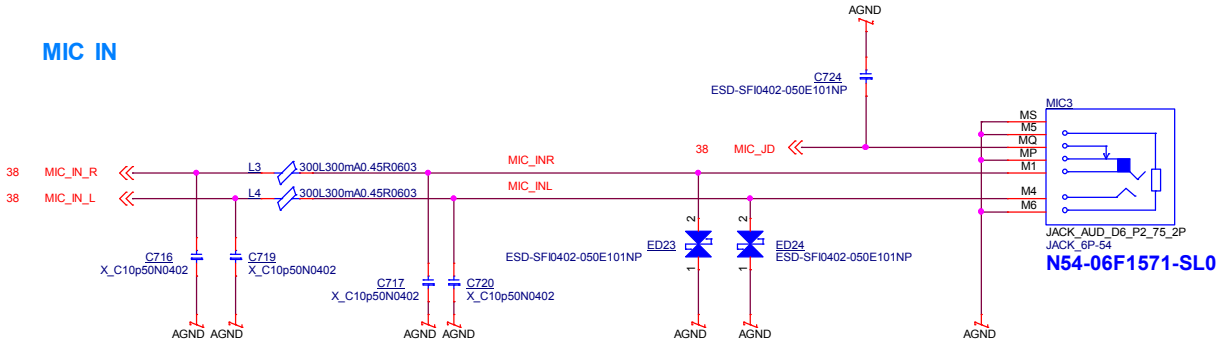
Audio CONN

HP OUT



MIC IN



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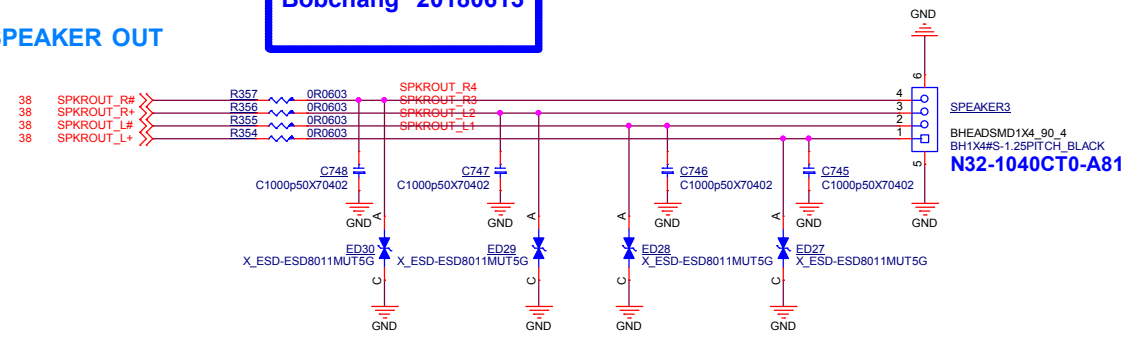
SPEAKER OUT



msi MICRO-STAR INT'L CO.,LTD.			
Title: Audio CONN			
Size: Custom	Document Number: MS-17F2		Rev: 1.0
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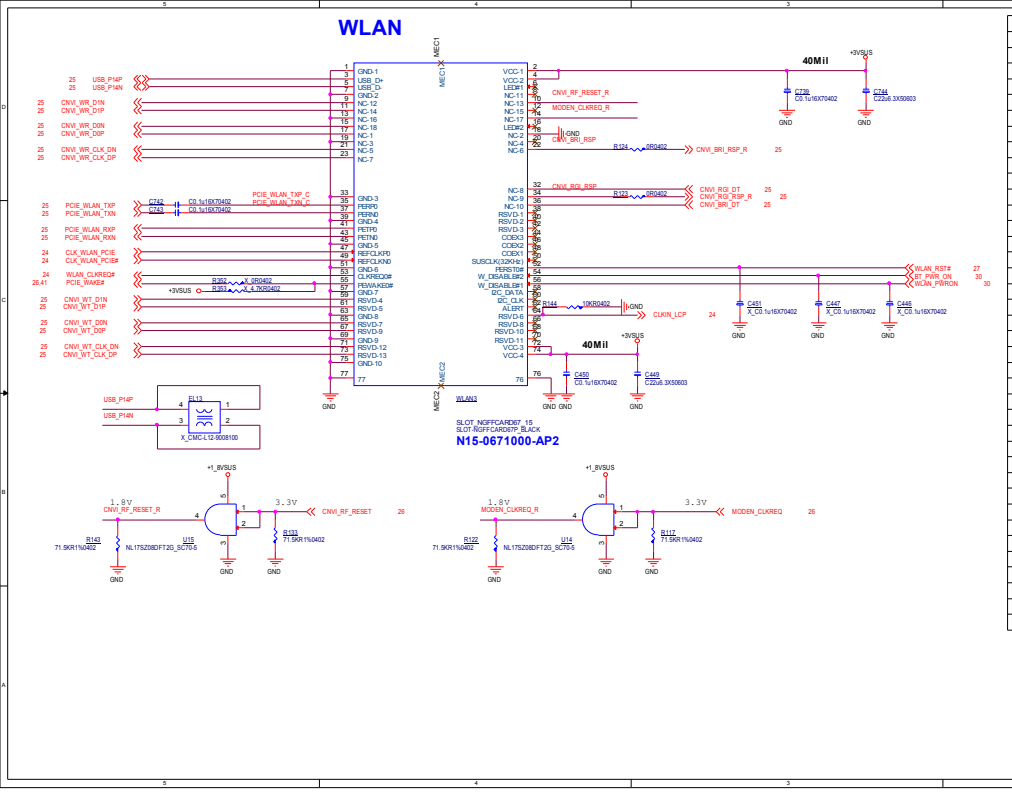

Pin #	M.2 WLAN	INTEL CNVi WLAN	Pin #	M.2 WLAN	INTEL CNVi WLAN
Pin 1	GND	GND	Pin 2	3.3V	3.3V
Pin 3	USB_D+	N/C	Pin 4	3.3V	3.3V
Pin 5	USB_D-	N/C	Pin 6	LED1#	LED1#
Pin 7	GND	GND	Pin 8	Module Key	N/C
Pin 9	Module Key	WGR_D1N	Pin 10	Module Key	RF_RESET_B(1.8V)
Pin 11	Module Key	WGR_D1P	Pin 12	Module Key	N/C
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			

MICRO-STAR INT'L CO.,LTD.

Title: WLAN

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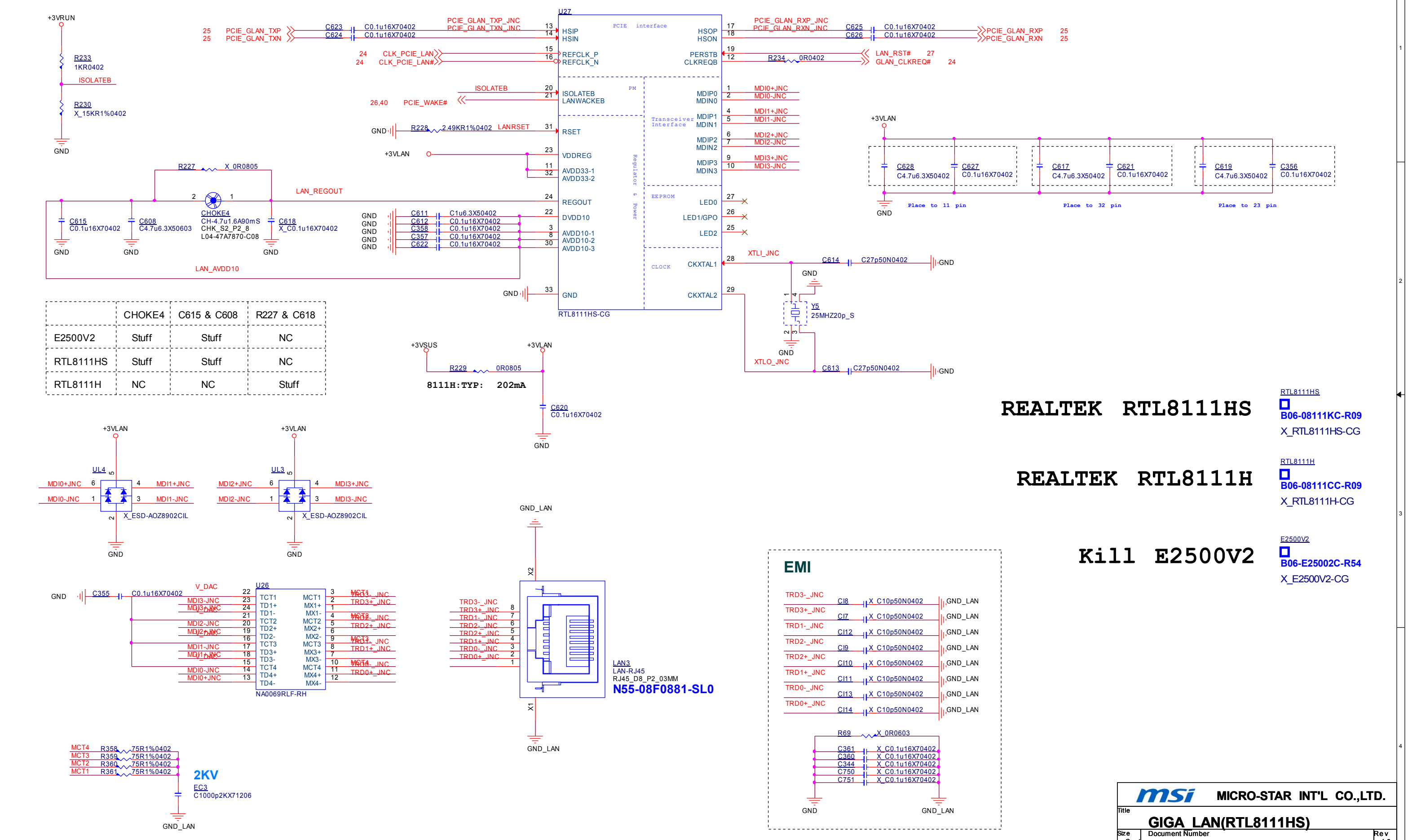
Consider VCC33 may be connected to Main Power or chipset/BIOS's GPIO,the pull-low resistor R699 can be NC only when Main Power or chipset/BIOS's GPIO can ensure to drive the ISOLATEB pin to a voltage level <0.8V at the system state S3~S5 .
If the ISOLATEB pin can not be well-controlled to a voltage level <0.8V at S3~S5 ,the pull-low resistor R699 is needed to make sure the LAN chip is well isolated.



	CHOKE4	C615 & C608	R227 & C618
E2500V2	Stuff	Stuff	NC
RTL8111HS	Stuff	Stuff	NC
RTL8111H	NC	NC	Stuff

MICRO-STAR INT'L CO.,LTD.

Title	GIGA_LAN(RTL8111HS)
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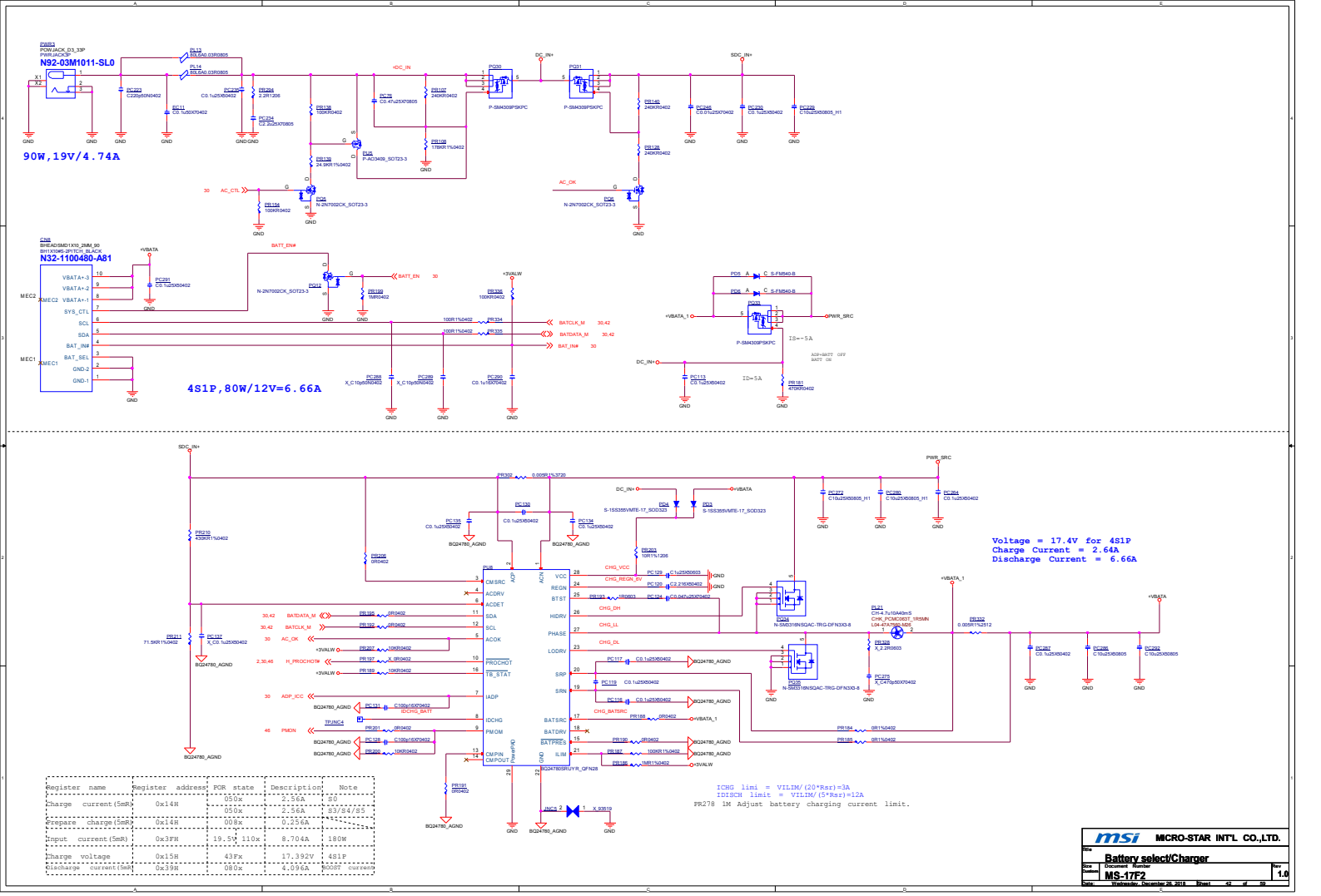

Register name	Register address	POR state	Description	Note
Charge current(5mR)	0x14H	050x	2.56A	80
		050x	2.56A	83/84/85
Prepare charge(5mR)	0x14H	008x	0.256A	
Input current(5mR)	0x3FH	19.5V 110x	8.704A	180W
Charge voltage	0x15H	43Fx	17.392V	4S1P
Discharge current(5mR)	0x39H	080x	4.096A	BOOST current

Title	MICRO-STAR INT'L CO.,LTD.			
	Battery select/Charger			
Size	Document Number			Rev
Custom	MS-17F2			1.0
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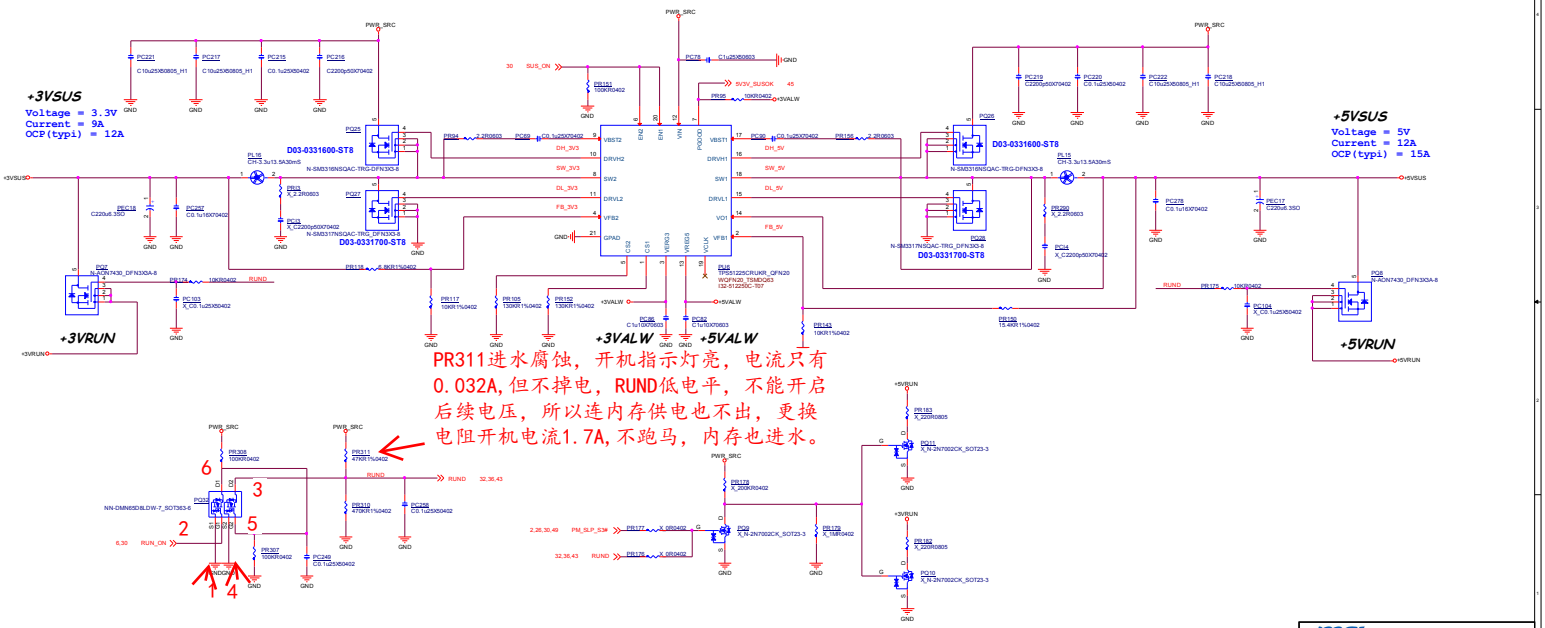
System Power



PR311进水腐蚀，开机指示灯亮，电流只有0.032A,但不掉电，RUND低电平，不能开启后续电压，所以连内存供电也不出，更换电阻开机电流1.7A,不跑马，内存也进水。

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Title	System Power
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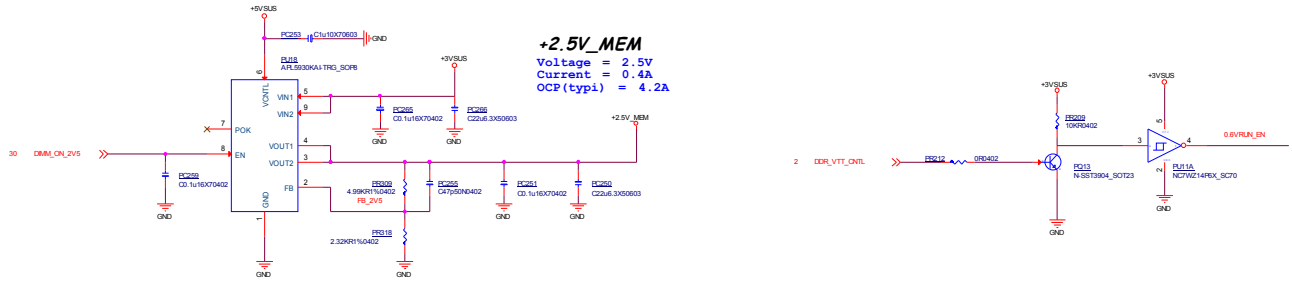
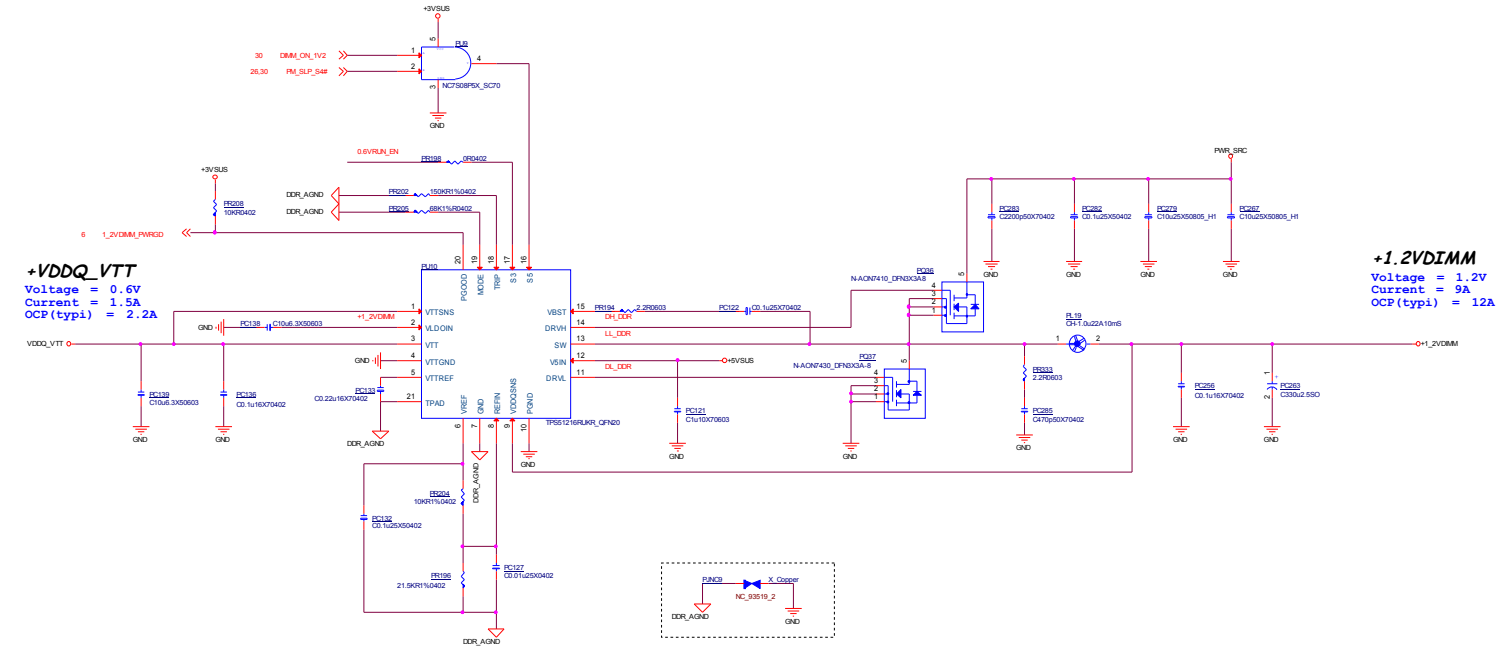
+2.5V_MEM



+1.2VDIMM / VDDQ_VTT(0.6V)



msi MICRO-STAR INT'L CO.,LTD.			
Title: +2.5VMEM/+1.2VDIMM/VDDQ_VTT			
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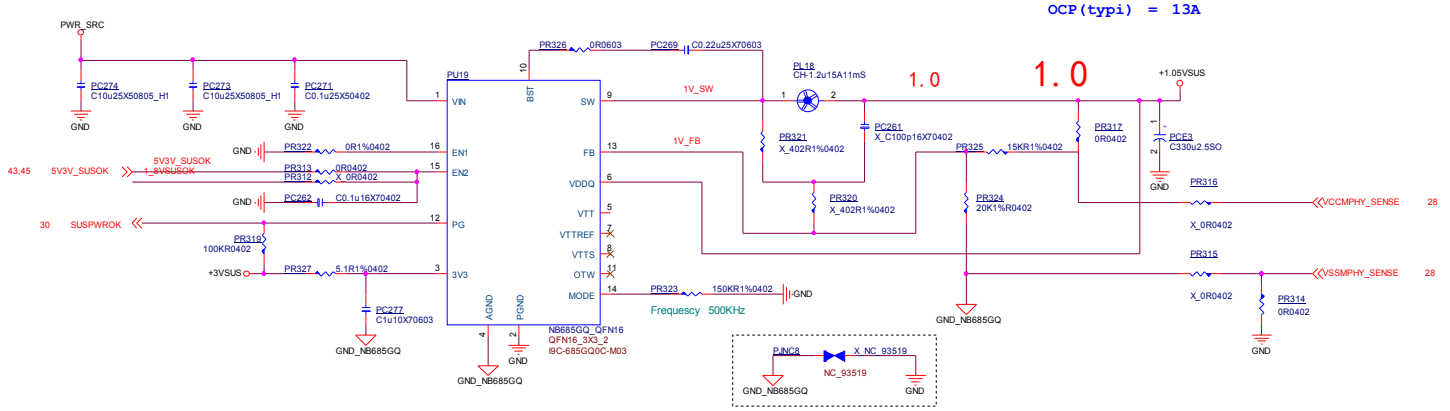
+1.05VSUS

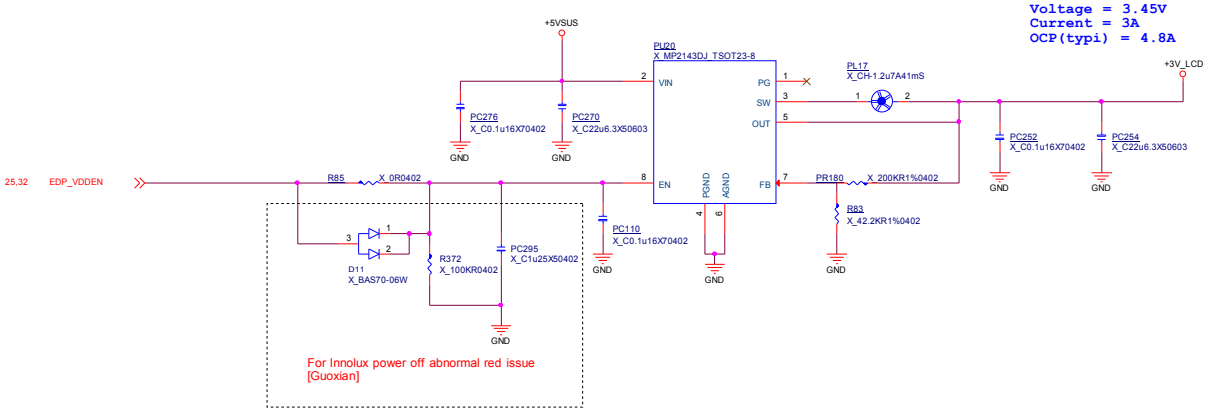
Voltage = 1.05V
Current = 10A
OCP(typi) = 13A



+3V_LCD

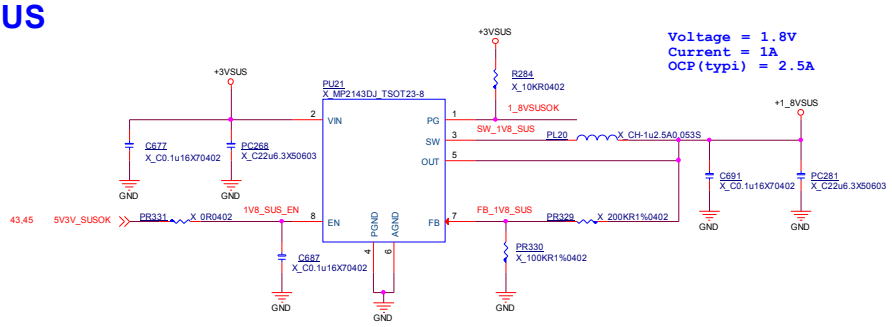
Pannel Device Logic Power

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



+1_8VSUS

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



MICRO-STAR INT'L CO.,LTD.			
Title: +1.05VSUS/+3V_LCD/+1_8VSUS			
Size: Custom	Document Number: MS-17F2		Rev: 1.0
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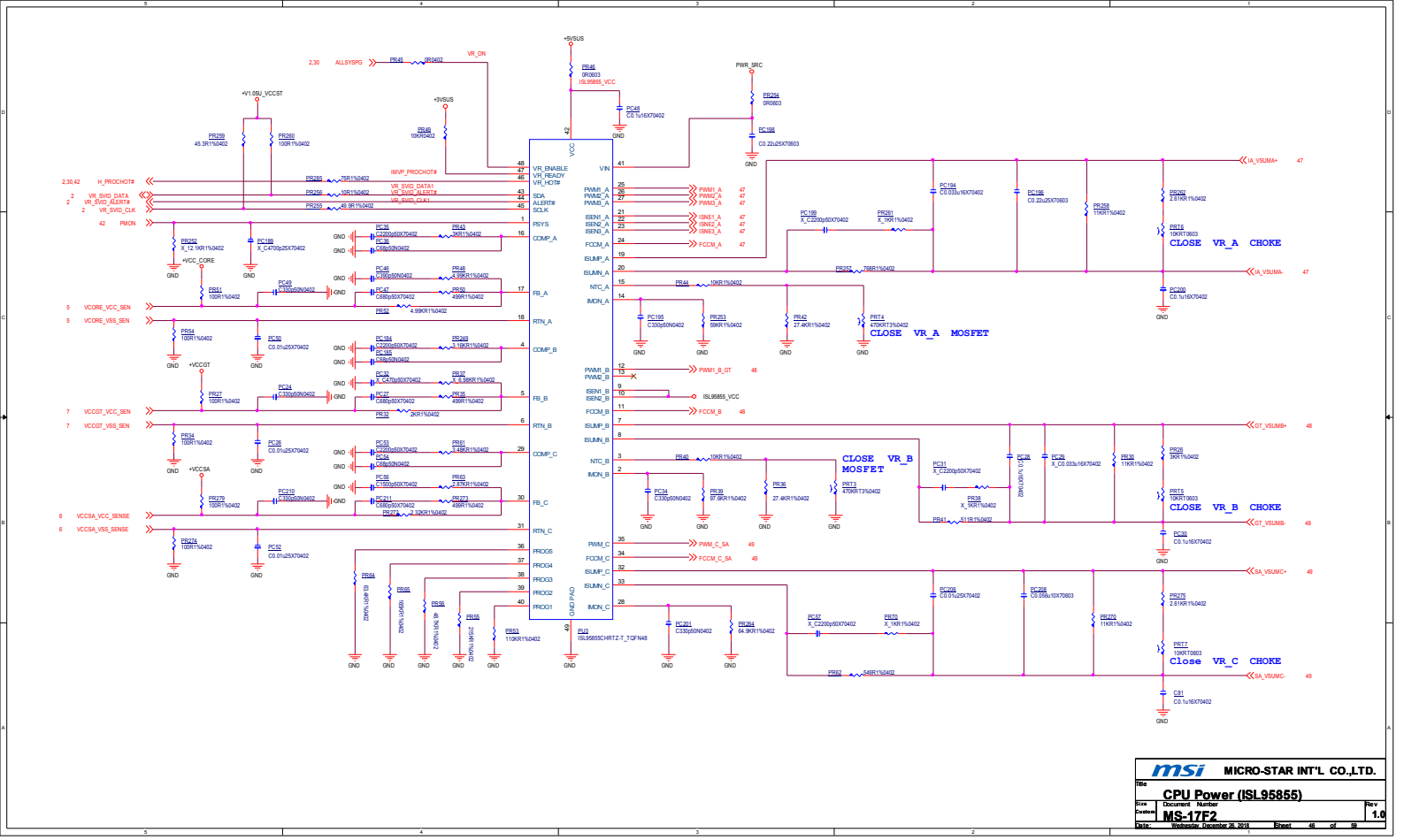

MICRO-STAR INT'L CO.,LTD.			
Title: CPU Power (ISL95855)			
Size: Custom	Document Number: MS-17F2		Rev: 1.0
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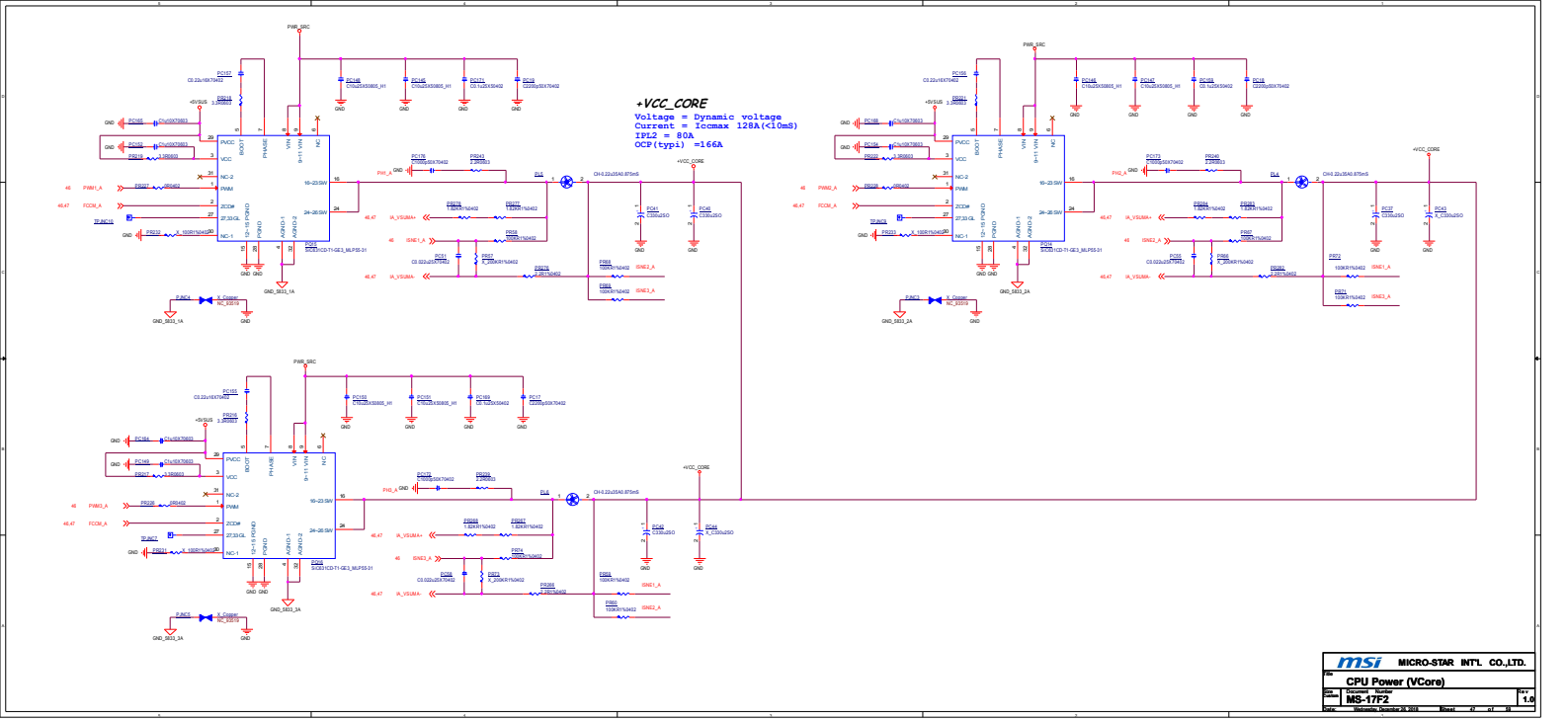

MICRO-STAR INT'L CO.,LTD.	
Title	CPU Power (VCore)
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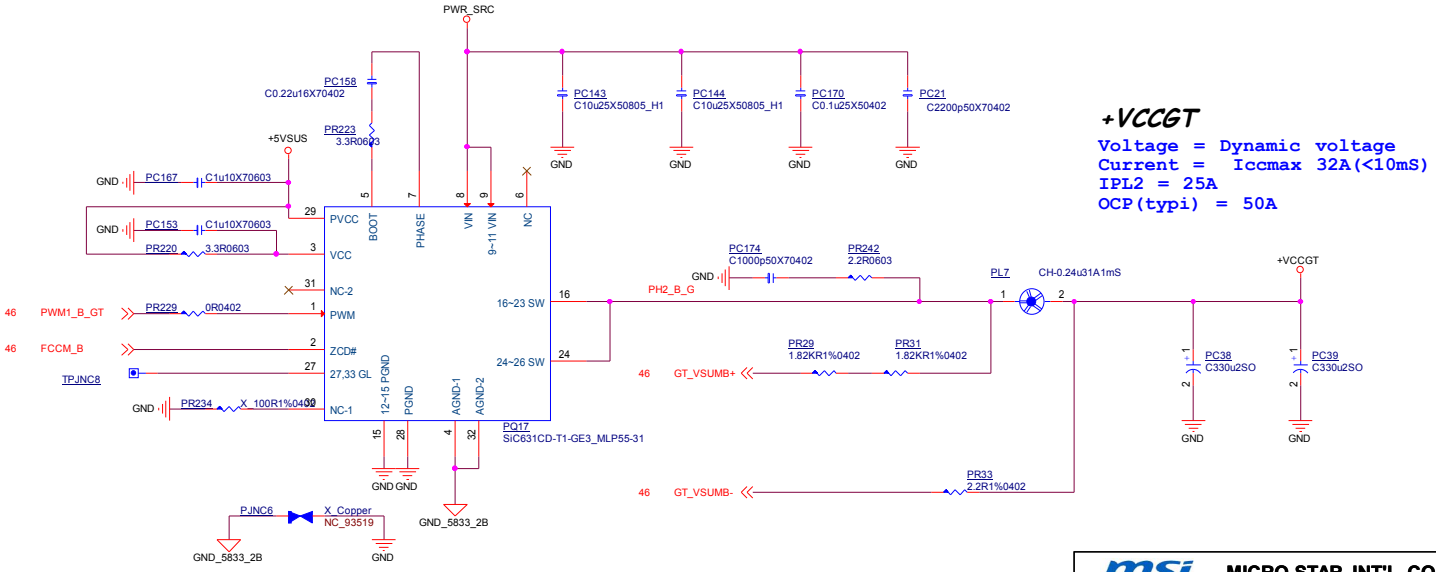
+VCCGT



+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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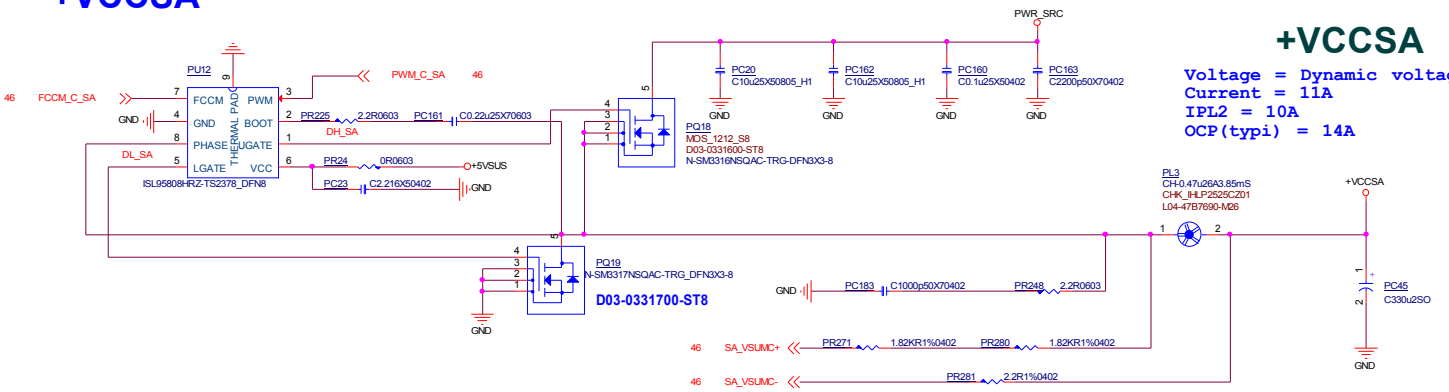
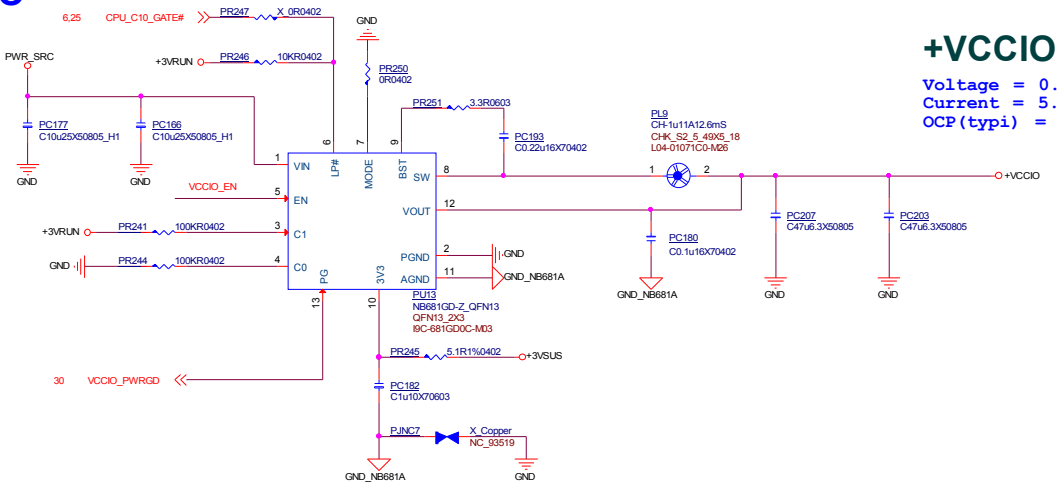
+VCCSA



+VCCSA

Voltage = Dynamic voltage
Current = 11A
IPL2 = 10A
OCP(typi) = 14A

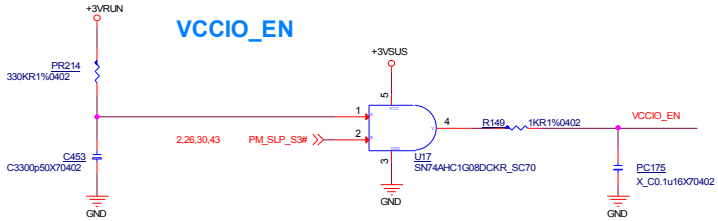
+VCCIO



+VCCIO

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

VCCIO_EN



MICRO-STAR INT'L CO.,LTD.		
Title: CPU Power (VCCSA/VCCIO)		
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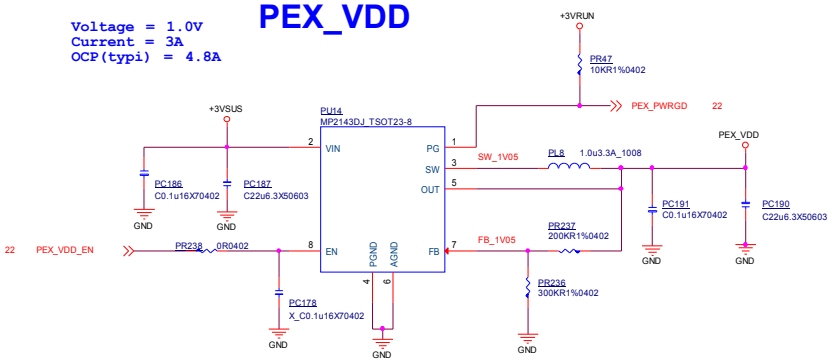
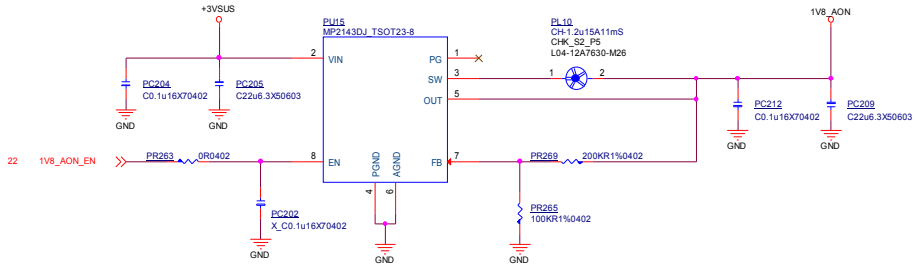
PEX_VDD

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



1V8_AON

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



MICRO-STAR INT'L CO.,LTD.

Title: DGPU POWER PEX_VDD/1V8_AON

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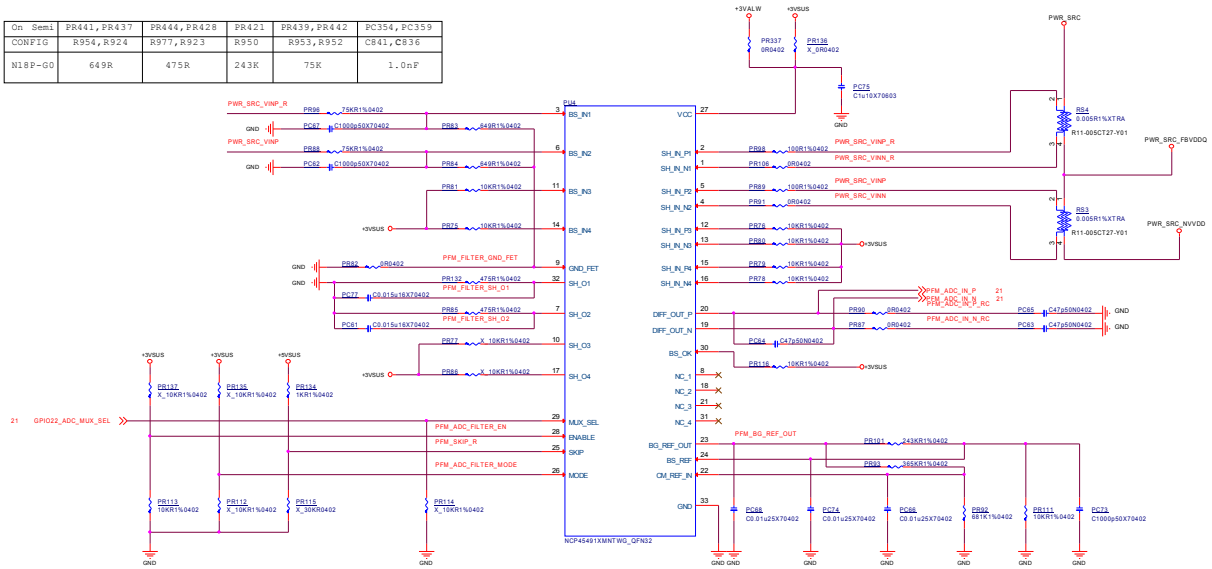
On Semi	PR441,PR437	PR444,PR428	PR421	PR439,PR442	PC354,PC359
CONFIG	R954,R924	R977,R923	R950	R953,R952	C841,C836
N18P-G0	649R	475R	243K	75K	1.0nF



MICRO-STAR INT'L CO.,LTD.

Title: DGPU POWER Current Measure

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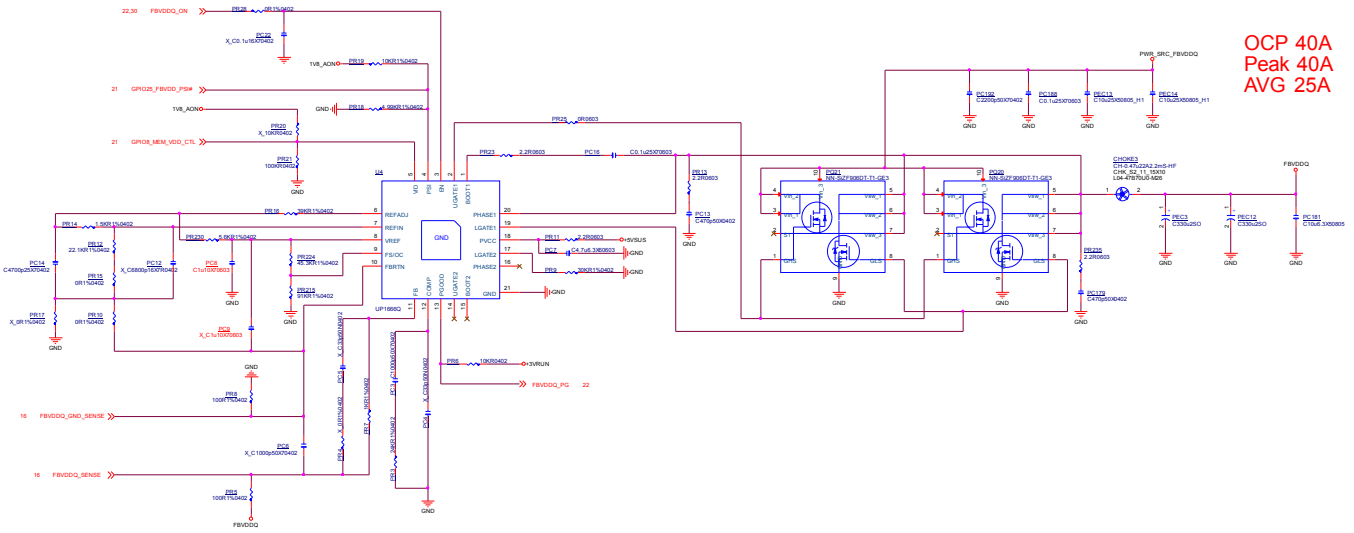
FBVDDQ



MSI	MICRO-STAR INT'L CO.,LTD.	
Title	DGPU POWER FBVDDQ	
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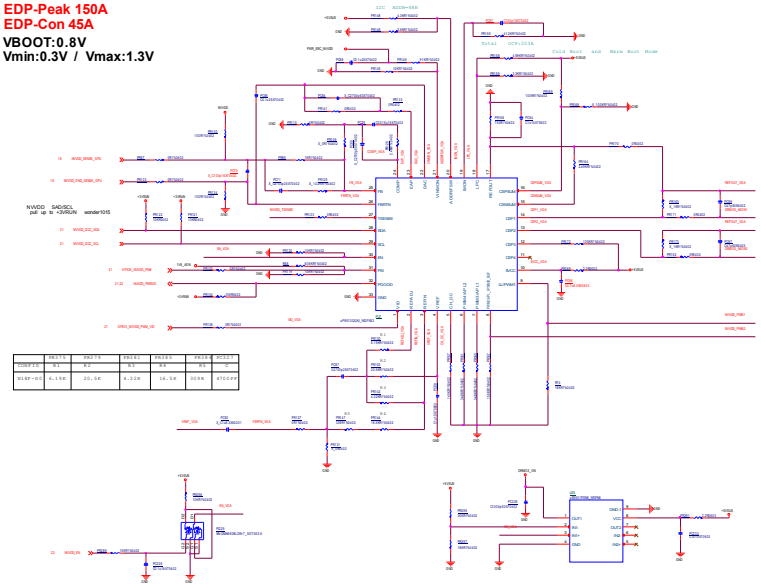
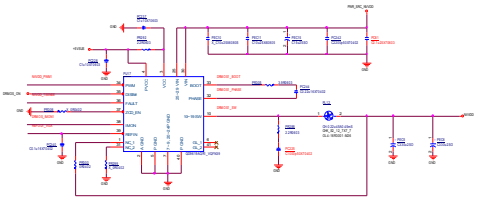
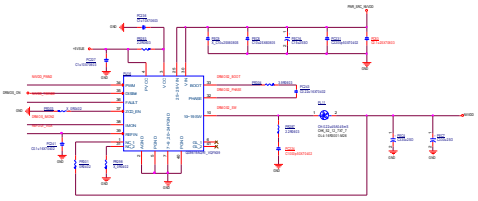
DGPU POWER NVVDD
UP9512Q

EDP-Peak 150A
EDP-Con 45A

VBOOT:0.8V
Vmin:0.3V / Vmax:1.3V



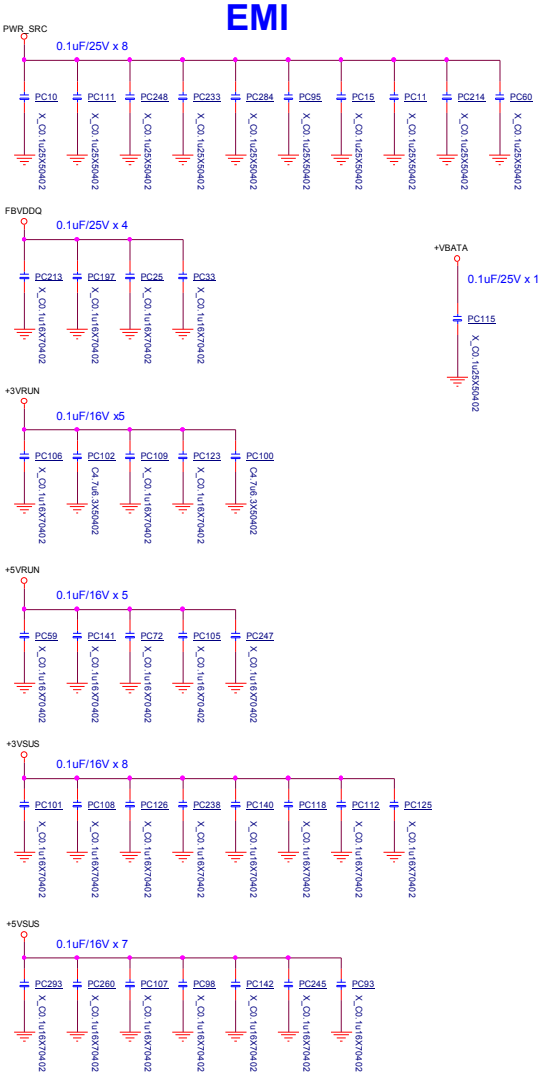




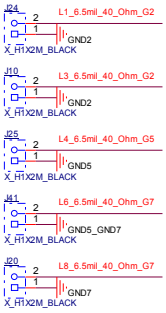
	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12
VOSET	R1	R2	R3	R4	R5	C
915mV~1V	6.19K	20.5K	6.32K	14.5K	309K	470PF

msi MICRO-STAR INT'L CO.,LTD.
DGPU POWER NVVDD
MS-17F2 1.0

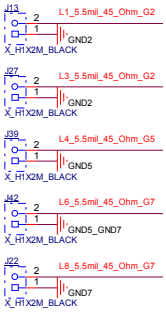
EMI



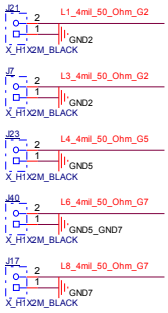
40 OHM Single-End



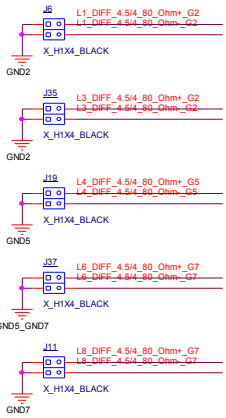
45 OHM Single-End



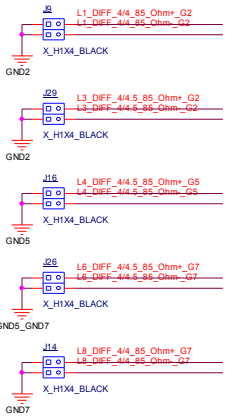
50 OHM Single-End



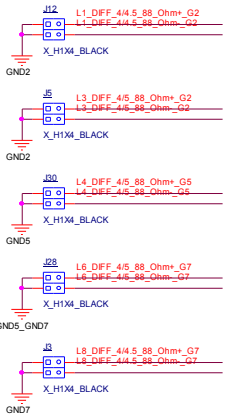
80 OHM Differential



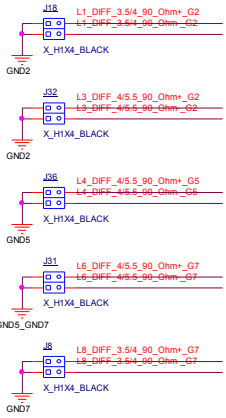
85 OHM Differential



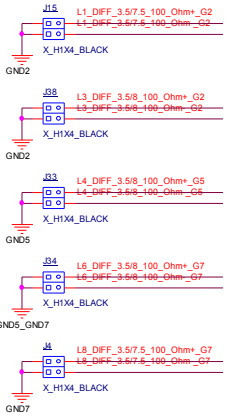
88 OHM Differential



90 OHM Differential



100 OOHM Differential



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DGPU Holes

MGPU4 H_R142D126BR197_MB_N X_CPU_HOLE — GND
MGPU3 H_R142D126BR197_MB_N X_CPU_HOLE — GND
MGPU6 H_R142D126BR197_MB_N X_CPU_HOLE — GND
MGPU5 H_R142D126BR197_MB_N X_CPU_HOLE — GND

CPU Holes

MCPU3 H_R142D126BR197_MB_N X_CPU_HOLE — GND
MCPU4 H_R142D126BR197_MB_N X_CPU_HOLE — GND
MCPU5 H_R142D126BR197_MB_N X_CPU_HOLE — GND

MH3 NPTH_80 X_NPTH_80
MH12 NPTH_80 X_NPTH_80
MH4 H_R315D118_1_N X_H_R315D118_1_N — GND
MH5 H_R315D118_1_N X_H_R315D118_1_N — GND
MH9 H_R315D118_1_N X_H_R315D118_1_N — GND
MH6 H_R315D118_1_N X_H_R315D118_1_N — GND
MH11 H_R315D118_N X_H_R315D118_N — GND
MH10 H_R315D118_N X_H_R315D118_N — GND
MH7 H_R315D118_N X_H_R315D118_N — GND
MH8 H_R315D118_N X_H_R315D118_N — GND

CPU/GPU BRACKET

UME3 CPU BKT — CPU BRACKET — 307-6R10111-HG0
UME4 GPU BKT — GPU BRACKET — 307-6P10211-HG0

SPONGE

UME23 POWER SPONGE — POWER SPONGE — E2Y-7F11111-G40
UME24 USB SPONGE — USB SPONGE — E2Y-7F11211-G40

EMI Gasket

UME22 LAN GASKET — LAN Gasket — E2Y-X036411-CA7

HDD SCREW

SCREW1 — HDD SCREW — E43-1204004-H29
SCREW2 — HDD SCREW — E43-1204004-H29

HDD WASHER

UME25 HDD WASHER — HDD WASHER — E2P-7B12311-G40
UME26 HDD WASHER — HDD WASHER — E2P-7B12311-G40

MYLAR

UME5 DDR MYLAR — DDR_MYLAR — E2P-0112911-G40
UME6 DDR MYLAR — DDR_MYLAR — E2P-0112911-G40
UME7 MB MYLAR — MB_MYLAR — E2P-6P11311-G40
UME8 MB MYLAR — MB_MYLAR — E2P-6P11311-G40
UME9 MB MYLAR — MB_MYLAR — E2P-6P11311-G40
UME10 MB MYLAR — MB_MYLAR — E2P-6P11311-G40
UME11 MB MYLAR — MB_MYLAR — E2P-6P11311-G40
UME12 MB MYLAR — MB_MYLAR — E2P-6P11311-G40
UME13 MB MYLAR — MB_MYLAR — E2P-6P11311-G40
UME14 MB MYLAR — MB_MYLAR — E2P-6P11311-G40
UME15 MB MYLAR — MB_MYLAR — E2P-6P11311-G40
UME16 MB MYLAR — MB_MYLAR — E2P-6P11311-G40

UME2 BIOS Lable — UEFI_CODE_BIOS_LABEL — G51-N1CO041-A09
UME1 HDMI Lable — HDMI ROYALTY — Y01-RHDMI03-000
PCB1 — PD0-17F2110-H73 — PD0-17F2110-H73

XX3 XX4 XX5 XX6 NPTH118 X_NPTH118

FM25 FM22 FM11 FM26 FM12 FM7 FM21 FM8 — X_F_PAD_NB_2

FM14 FM3 FM6 FM5 FM10 FM18 FM13 FM4 FM16 FM15 FM9 FM17 FM20 FM19 FM24 FM23 FM28 FM27 FM29 FM30 — X_F_PAD_X

M.2 SSD STAND OFF

H9 Spacer Support — GND — E2B-16J1010-A89 H_R201D118_PTB_N — E2B-16J1010
H8 Spacer Support — GND — E2B-16J1010-A89 H_R201D118_PTB_N — X_E2B-16J1010

MB STAND OFF

H4 Spacer Support — GND — E2B-1P10020-A89 H_R240D150_PT_N — E2B-1P10020
H7 Spacer Support — GND — E2B-1P10020-A89 H_R240D150_PT_N — E2B-1P10020
H6 Spacer Support — GND — E2B-1P10020-A89 H_R240D150_PT_N — E2B-1P10020
H3 Spacer Support — GND — E2B-17F1010-A89 H_R240D150_PT_N — E2B-17F1010
H5 Spacer Support — GND — E2B-1P10020-A89 H_R240D150_PT_N — E2B-1P10020

EMI

E5 — X_HS-MS1011 — GND
E3 — X_HS-MS1011 — GND
E4 — X_HS-MS1011 — GND

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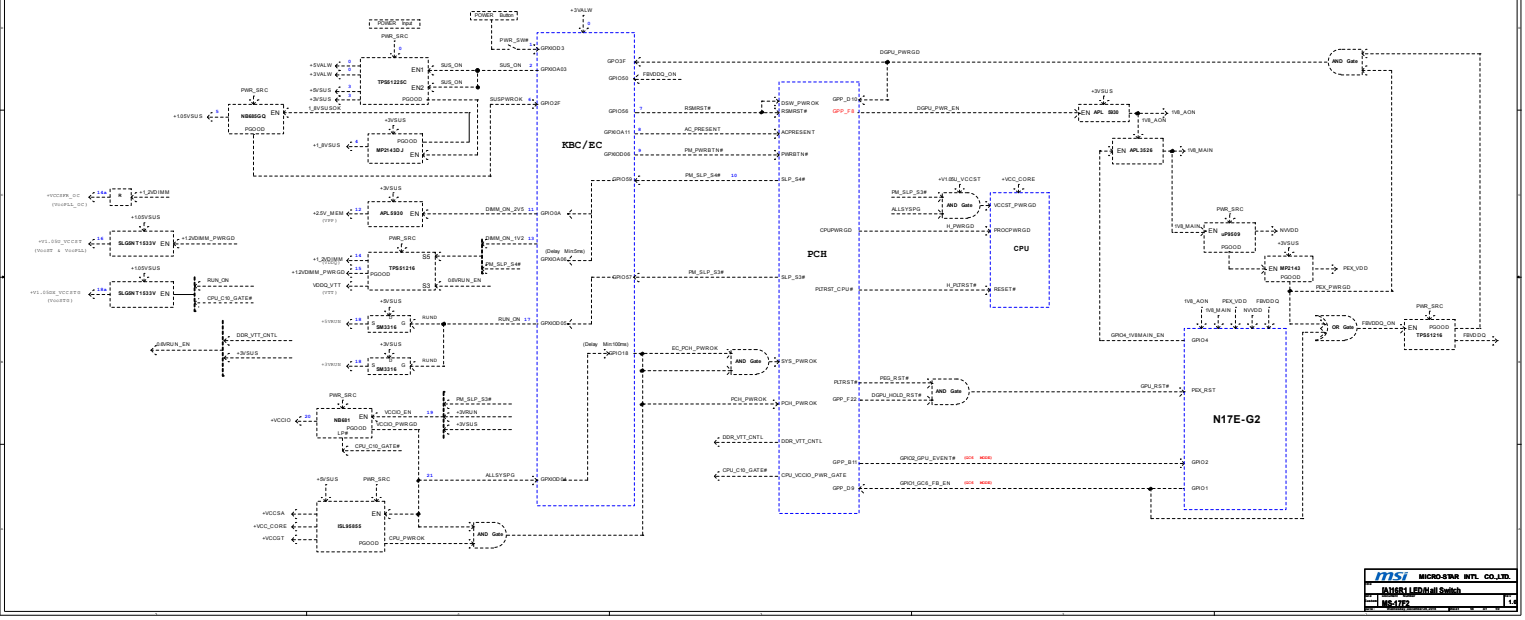
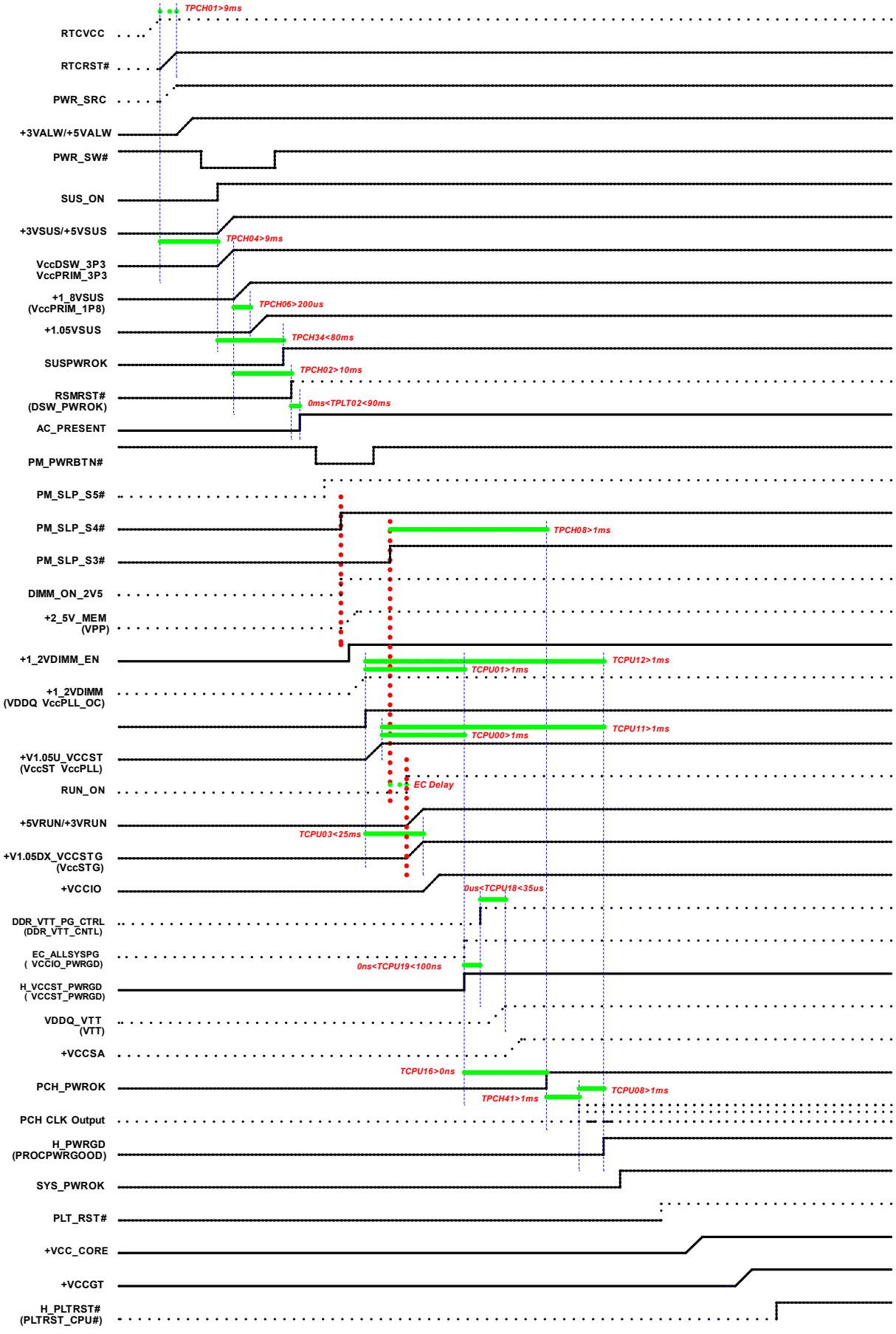
MS-16R1 Power on Block Diagram



G3 -> S0



MICRO-STAR INT'L CO.,LTD.		
Title: Power ON Block Diagram		
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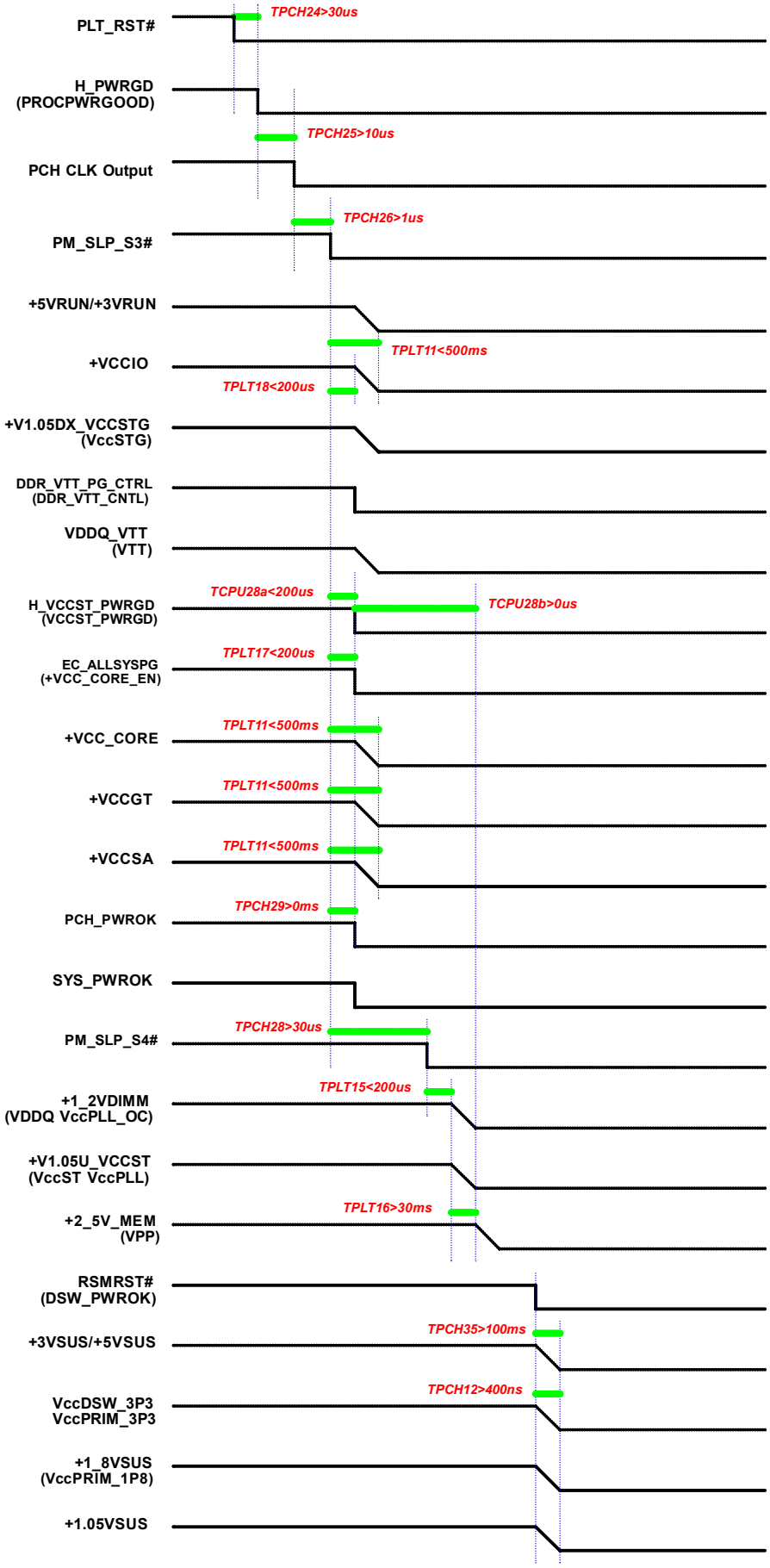
S0 -> G3



MICRO-STAR INT'L CO.,LTD.		
Title: Power on Sequence		
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History

DATE	PAGE	DESCRIPTION	DATE	PAGE	DESCRIPTION	DATE	PAGE	DESCRIPTION	DATE	PAGE	DESCRIPTION

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Title: History

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