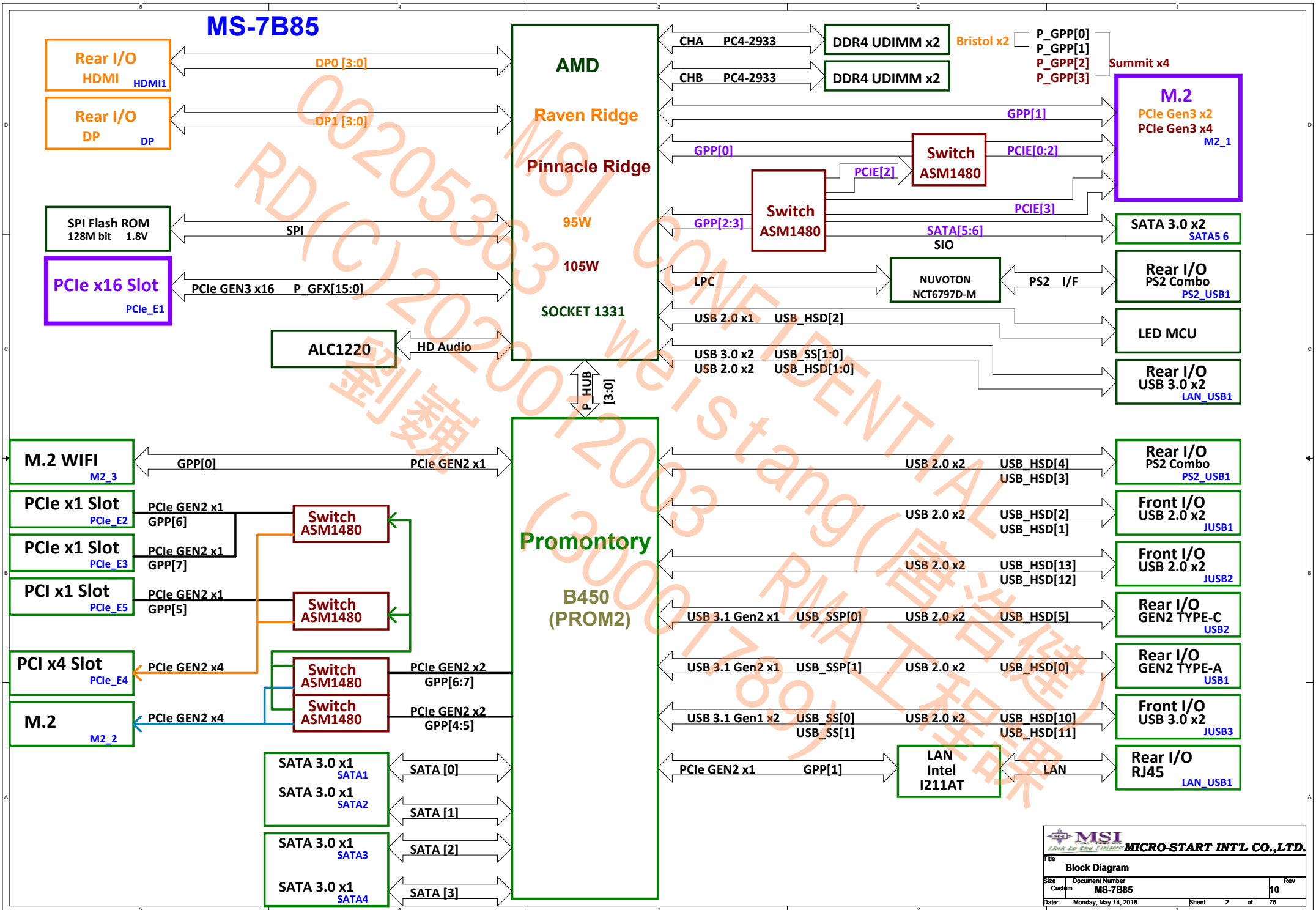


01 Cover Sheet	39 SATA
02 Block Diagram	40 DVI
03 FM4 DDR4 I/F	41 HDMI
04 AM4 PCIE/SATAE	42 ACPI 5VDIMM/3VSB
05 AM4 Display/Audio	43 DDR VPP25/VTT
06 AM4 SVI/ACPI/GPIO	44 DDR Power-RT8125E
07 AM4 LPC/SPI/USB/CLK/STRAP	45 CPU Power RT8894 4+2
08 AM4 Power/VDDIO_AUDIO Power	46,47 CPU Phase1-5
09,10 RTC/Clear CMOS/RTC Power/GND	48,49 CPU NB,CPU NB_S5
11,12,13,14 DDR4-POWER GND	50 CPU 1.8_S0/S5
15 Promontory-PCIE/SATA/SATAE	51 CPU Power VDDP - MP8712
16 Promontory-USB/OC	52 Prom-GS7133/2.5V
17 Promontory-CLK/ACPI/GPIO	53 Prom- SY8288RAC / 1.05V
18,19 Promontory-Power GND	54 VRM-EN/PWRGD
20 PCI_E1/E4 X16	55 RT9553B CURRENT SENSE/OV Control
21 PCI_E2_E3_E5/E4 X1/X4	56 ATX/Front Panel
22 PCIE Switch X4 / X1/X1	57 ALL LED Control
23 PCIE Switch M2_2/SATA	58 TEMP SENSOR/EMI CAP
24 SIO NCT6797D	59 LED MCU Control
25 SIO HWM/COM	60 Power/JPIPE
26 M.2_1	61 JLED1/2/3/4
27 CPU FAN1/PUMP_FAN1 TYPE L	62 RGB LED Control_1
28 SYS_FAN1-3 TYPE K	63 RGB LED Control_2
29 SYS_FAN4 TYPE K/NCT5605Y	64 M2_3 WIFI
30 LAN 8111H	65 M2_2
31 Audio ALC892	66 M2_2 AND PCIEx4 SWITCH
32 Audio De-POP	67 BOM Option
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35 Rear USB3.1 Type A / redrive	70 Power Sequence
36 Rear USB3.1 Type C / mux	71 GPIO MAP
37 Front USB2.0	72 Power Delivery
38 Front USB3.0 180° Header	73 History1 74 History2 75 History3

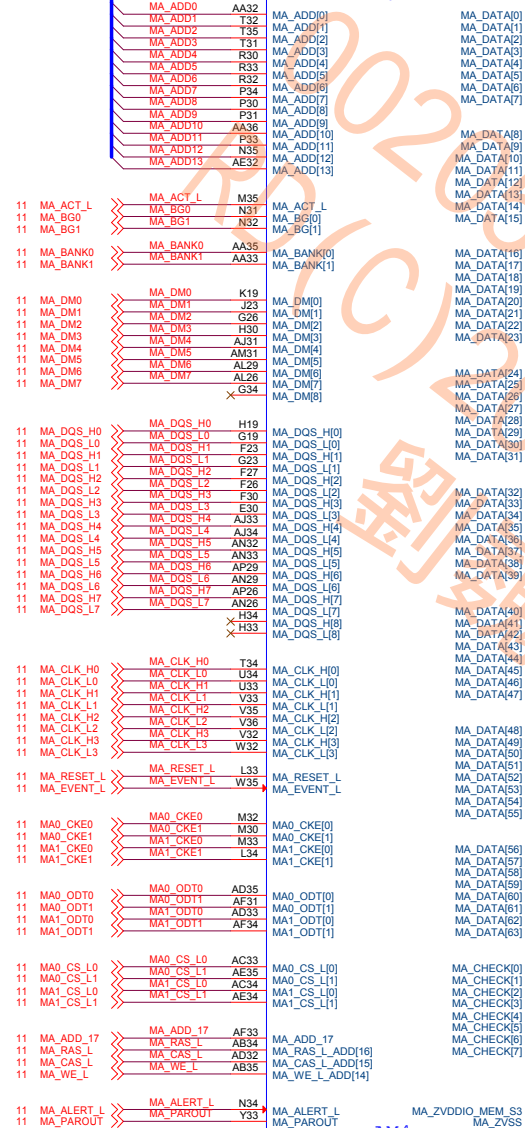
MS-7B85 BOM List

Schematic Cfg	ERP NO.	Remark	BOM
CFG-7B85-10-Performance Gaming	601-7B85-A01		A
CFG-7B85-20-Arsenal Gaming			

MS-7B85



11 MA_ADD[13..0]

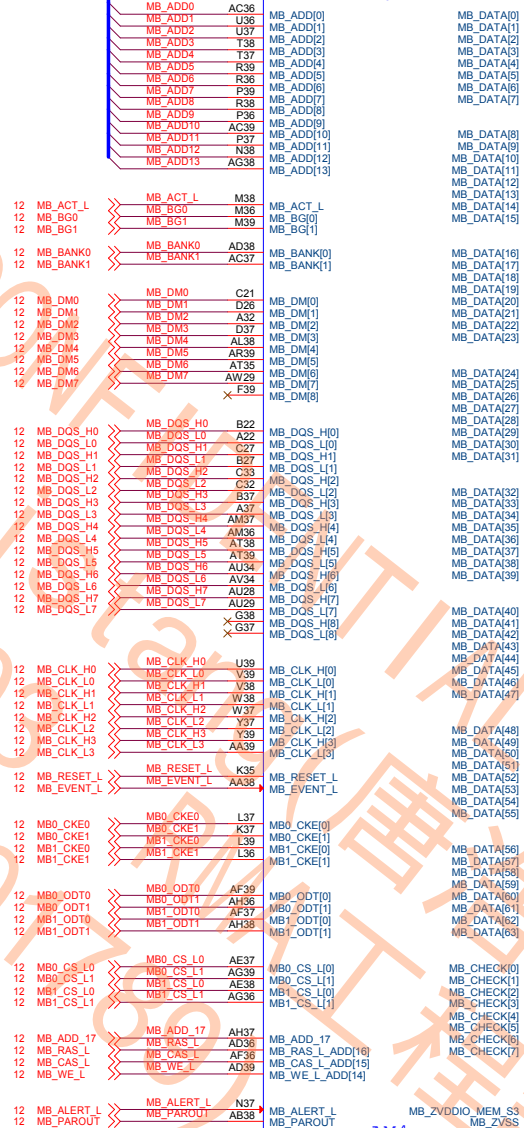


N12-331A030-L06 ZIF-SOCKET1331-HF

AM4
PART 1 OF 9

11 MA_DATA[63..0]

12 MB_ADD[13..0]



N12-331A030-L06 ZIF-SOCKET1331-HF

AM4
PART 2 OF 9

Schematic Cfg		Project	
CFG-7B85-10-Performance Gaming		V	A
CFG-7B85-20-Arsenal Gaming			

MSI
MICRO-START INT'L CO., LTD.

File: AM4 DDR4 I/F

Size: Custom Document Number: MS-7B85

Date: Monday, May 14, 2018 Sheet 3 of 75

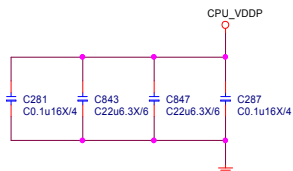
Not supported HUB on TYPE 1

Not supported PCIE on TYPE 0,1

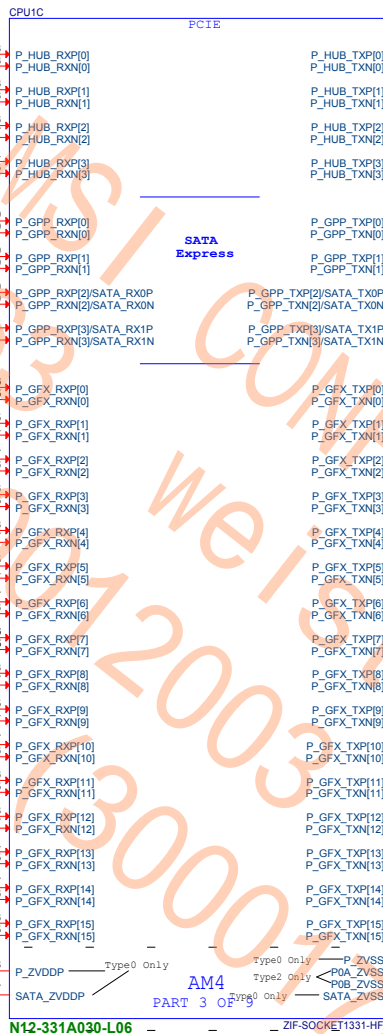
TYPE 0	PCIE	SATA
TYPE 2/3	2 or 4	2 or 0

Not supported GFX 4~15 on TYPE,1

Only supported on TYPE 2
Not supported GFX 8~15 on TYPE 0,3



Within 1500 mils from APU
Within 1000 mils from APU

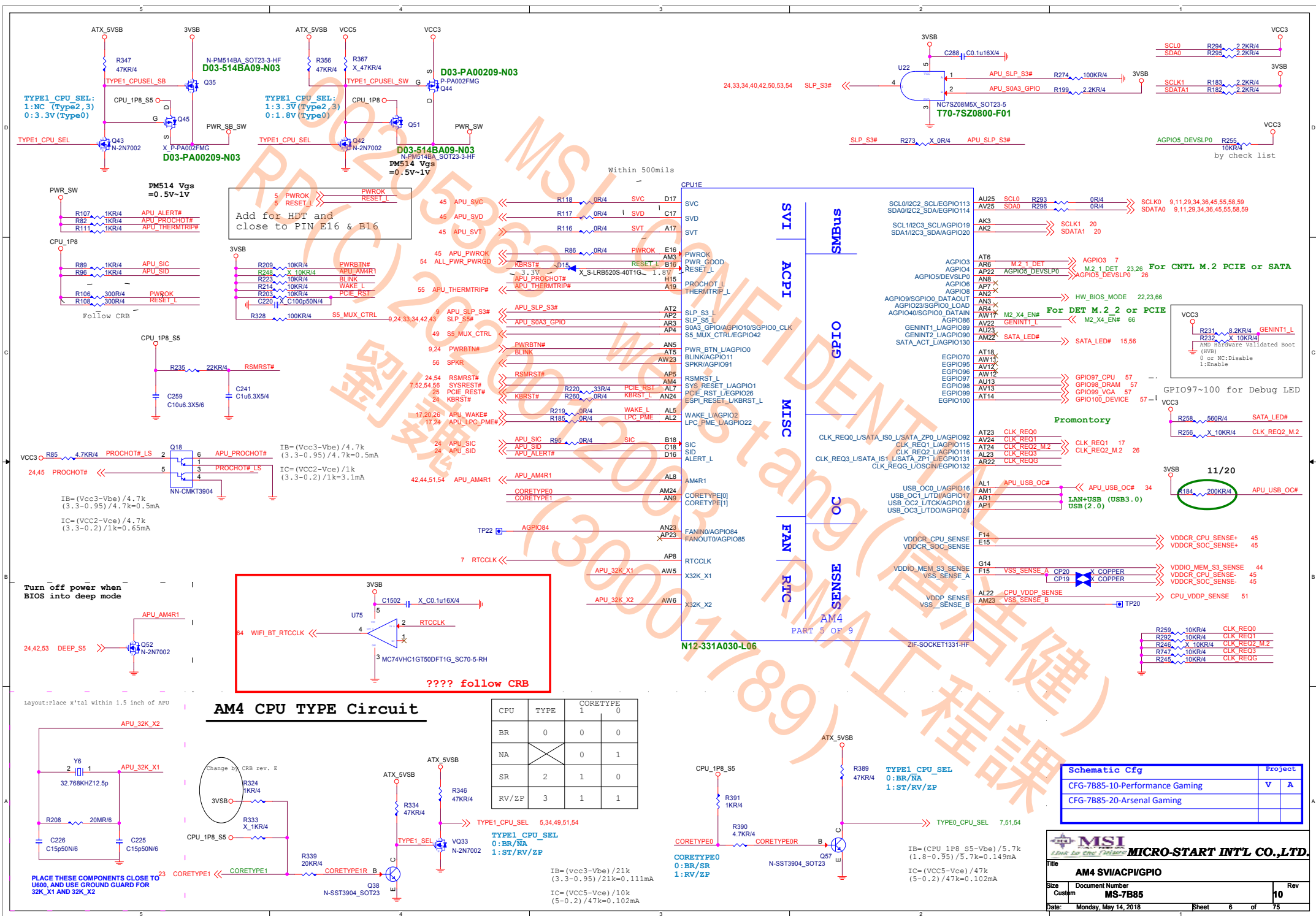


Only supported on TYPE 2

Within 1500 mils from APU
Within 1000 mils from APU
Within 1000 mils from APU

Schematic Cfg	Project
CFG-7B85-10-Performance Gaming	V A
CFG-7B85-20-Arsenal Gaming	


MSI MICRO-START INT'L CO.,LTD.	
File: AM4 PCIE/SATAE	
Size: Custom	Document Number: MS-7B85
Date: Monday, May 14, 2018	Rev: 10
Sheet 4 of 75	



AM4 CPU TYPE Circuit

CPU	TYPE	CORETYPE 1	CORETYPE 0
BR	0	0	0
NA		0	1
SR	2	1	0
RV/ZP	3	1	1

Schematic Cfg		Project	
CFG-7B85-10-Performance Gaming		V	A
CFG-7B85-20-Arsenal Gaming			



MICRO-START INTL CO.,LTD.

File: **AM4 SVI/ACPI/GPIO**

Size: Custom

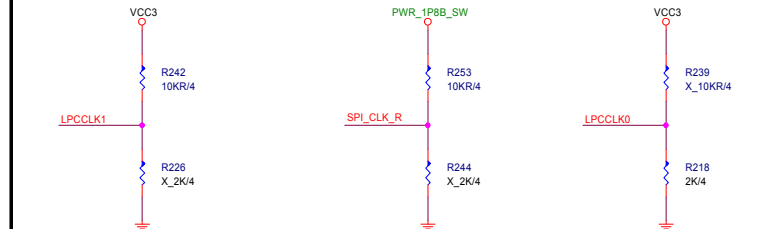
Document Number: **MS-7B85**

Date: Monday, May 14, 2018

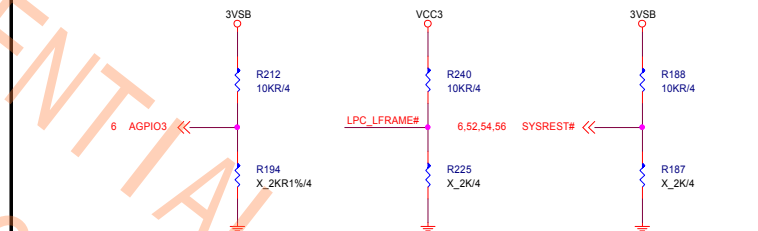
Rev: **10**

Sheet: 6 of 75

Strapping Options

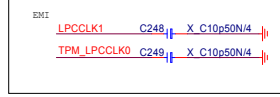


	LPCCLK1	SPI_CLK	LPCCLK0
PULL HIGH	Configured for Internal clock generator (Default)	Use 48Mhz crystal clock and generate both internal and external clocks (Default)	LPC device Boot Fail Timer Enabled
PULL LOW	Configured for External clock generator ????	Use 100Mhz PCIe clock as reference clock and generate internal clocks only	LPC device Boot Fail Timer Disabled (Default)

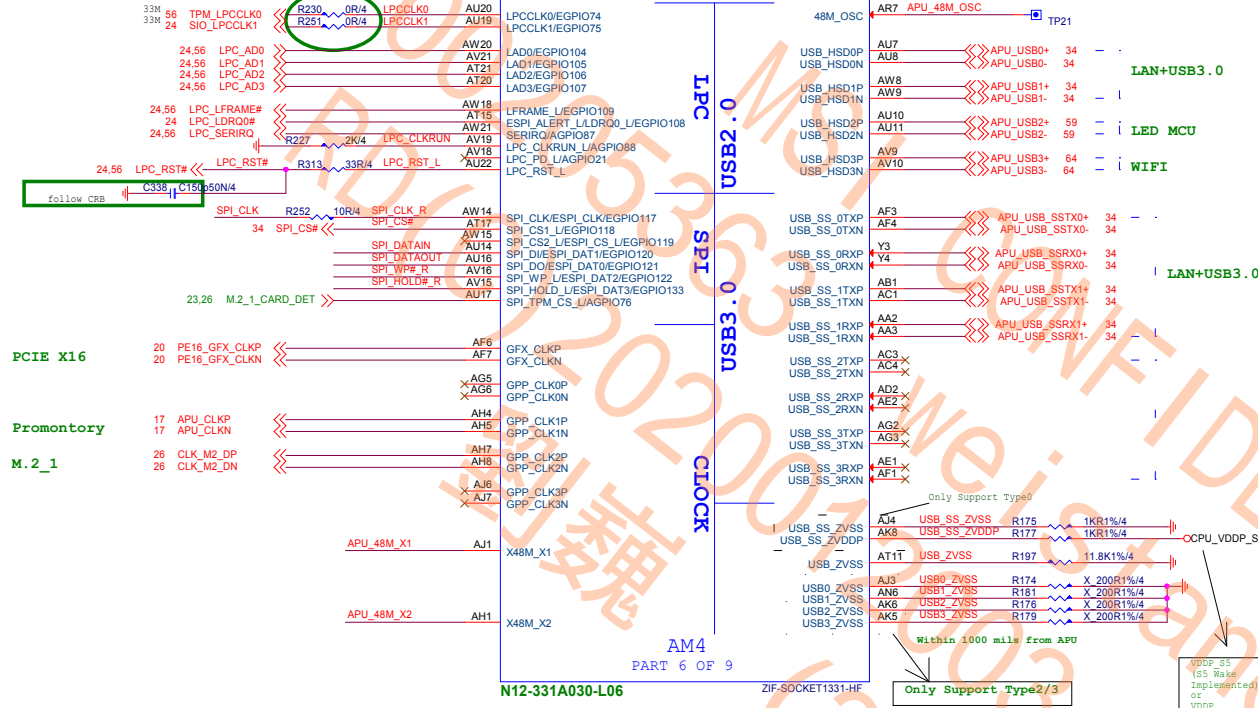


	AGPIO3	SIO_LFRAME	SYSREST#
PULL HIGH	Enhanced Reset logic (Default)	SPI ROM (Default)	Normal reset mode (Default)
PULL LOW	Traditional Reset logic	LPC ROM	short reset mode

	RTCCCLK
PULL HIGH	RTC Coin Battery is on board (Default)
PULL LOW	RTC Coin Battery is not on board

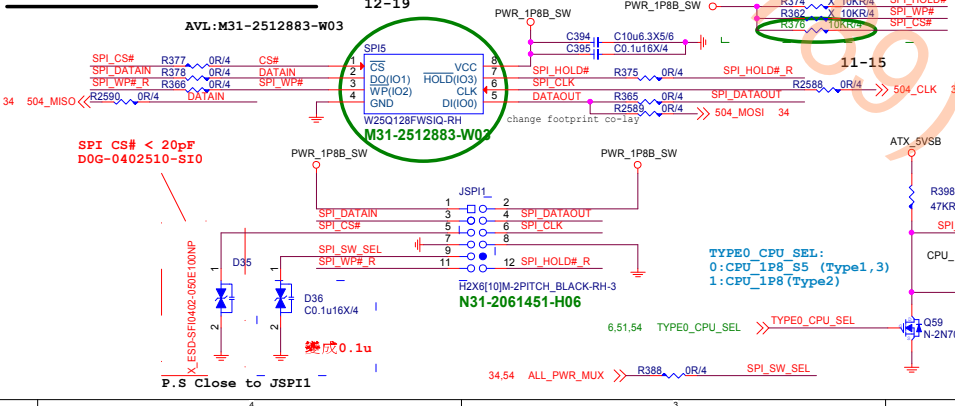
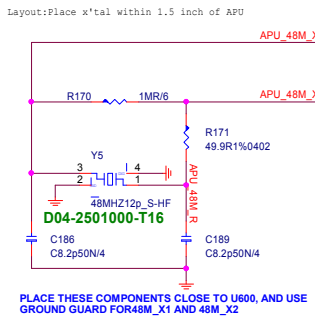


11/20

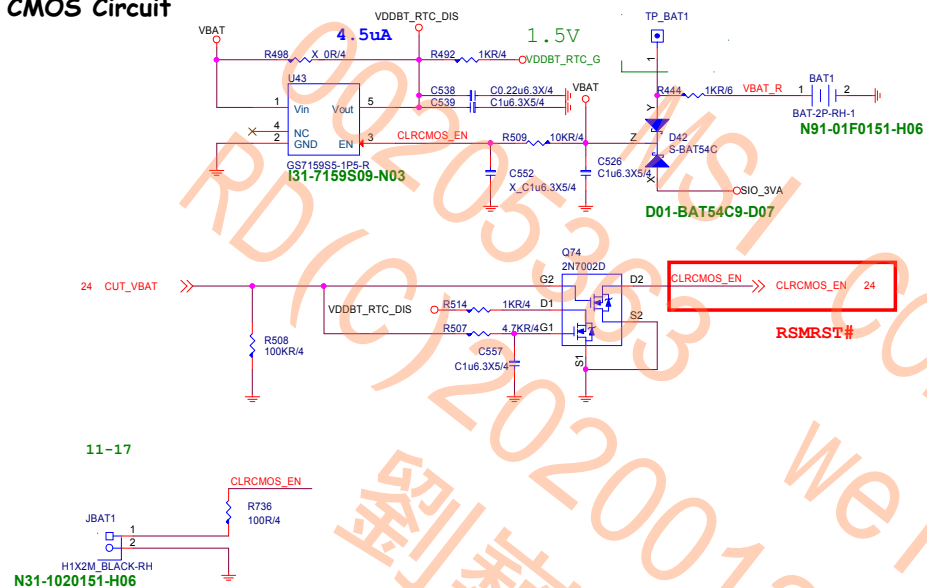


Schematic Cfg	Project
CFG-7B85-10-Performance Gaming	V A
CFG-7B85-20-Arsenal Gaming	

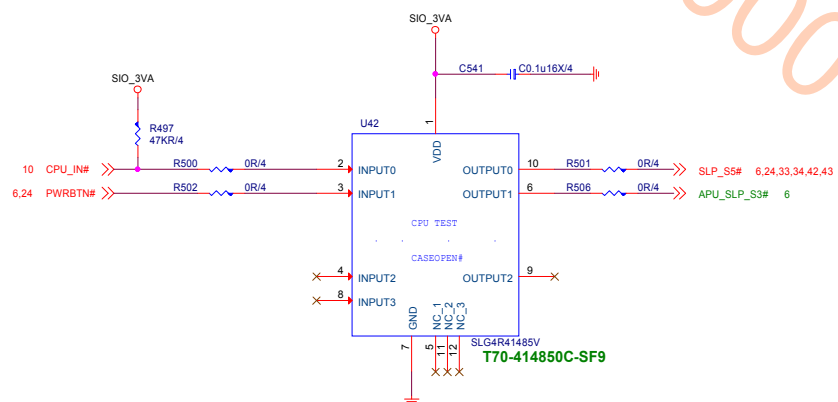
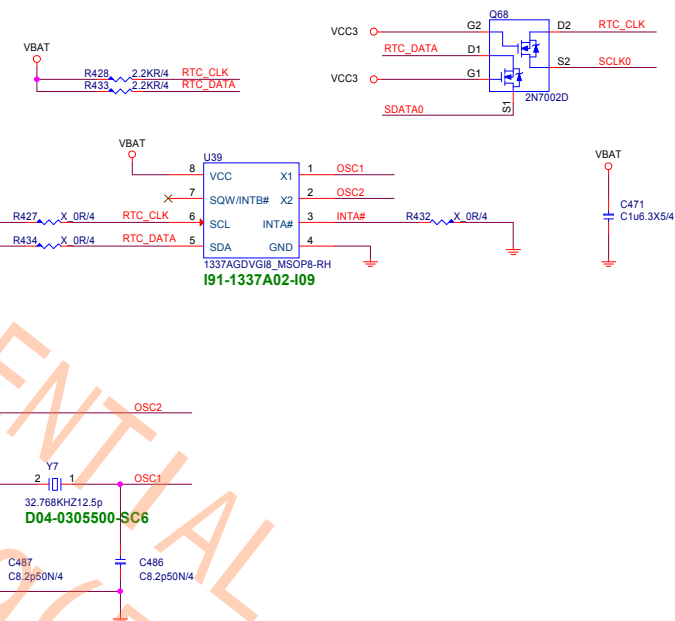
SPI ROM (1.8V)



Placement Bottom Side



6,11,29,34,36,45,55,58,59

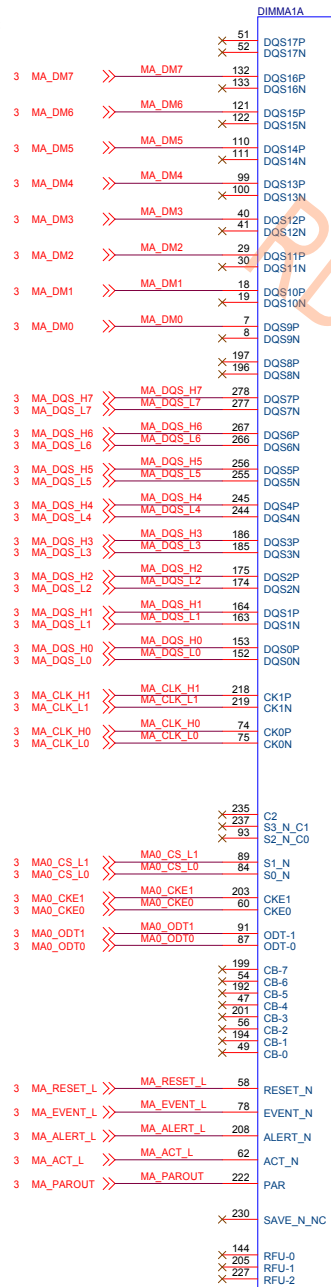


Function 2				
IN		OUT		
INPUT3 & lowswitch EN	INPUT4	OUTPUT2	OUTPUT3	VOUT
0	0	0	1	1
1	0	1	1	0 (discharge)
0	1	1	0	0 (discharge)
1	1	1	0	0 (discharge)

GND

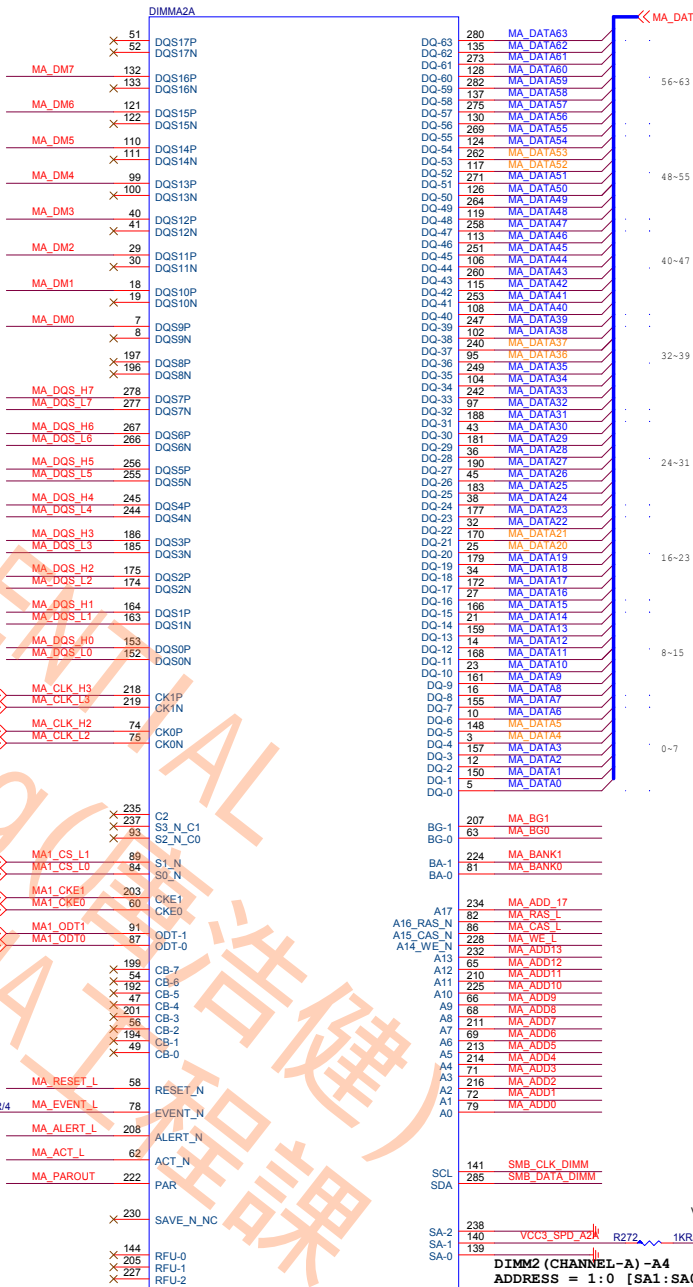
AM4
PART 9 OF 9

A1 A2 B1 B2

DDRIV-288P_BLACK-RH-21
N13-2880581-L066.9,29,34,36,45,55,58,59
6.9,29,34,36,45,55,58,59SCLK0 SCLK0 R297 OR/4 SMB_CLK_DIMM
SDATA0 SDATA0 R298 OR/4 SMB_DATA_DIMM
SMB_CLK_DIMM 12
SMB_DATA_DIMM 12DIMM1 (CHANNEL-A) -A0
ADDRESS = 0:0 [SA1:SA0]

Device	8-bit Address (hex)
DIMM1A0	A0
DIMM1A1	A1
DIMM1A2	A2
DIMM1A3	A3

DIMM2A

DDRIV-288P_BLACK-RH-21
N13-2880581-L06DIMM2 (CHANNEL-A) -A4
ADDRESS = 1:0 [SA1:SA0]

Schematic Cfg

CFG-7B85-10-Performance Gaming
CFG-7B85-20-Arsenal Gaming

Project

V A

MSI
Micro-Star International Co., Ltd.

DDR4 DIMM CH-A

Size Custom
Document Number
MS-7B85

Date: Monday, May 14, 2018

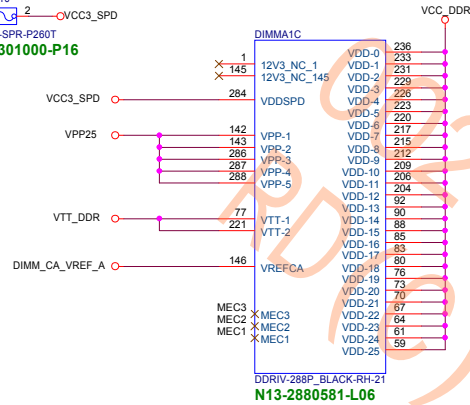
Sheet 11 of 75

Rev
10

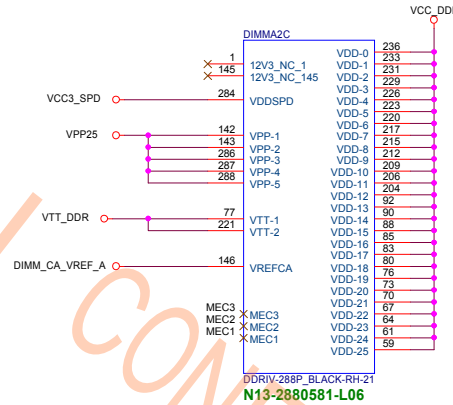


avl:D08-0301100-B07

VCC3 1 F10 2 VCC3_SPD
F-SPR-P260T
D08-0301000-P16

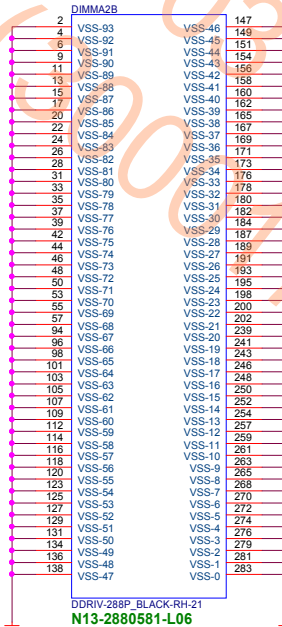
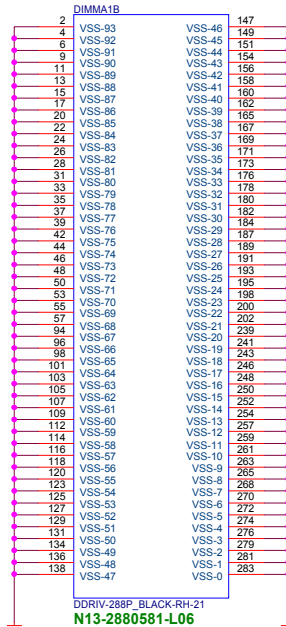
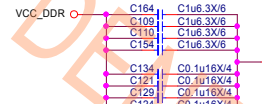
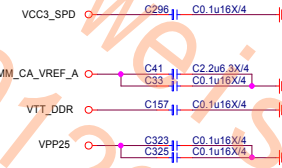
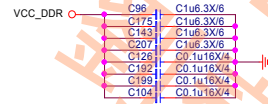
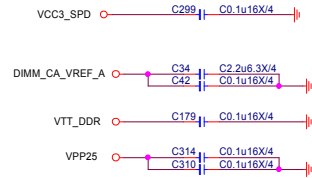
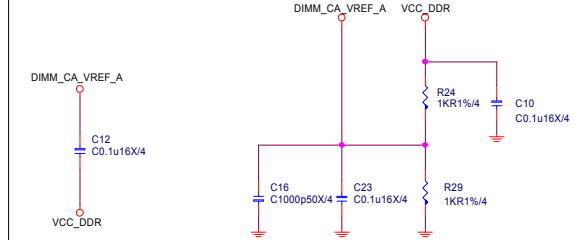


DIMM SLOT PN BY SPEC



DDR VREF

(place resistors close to DIMMs)



5

4

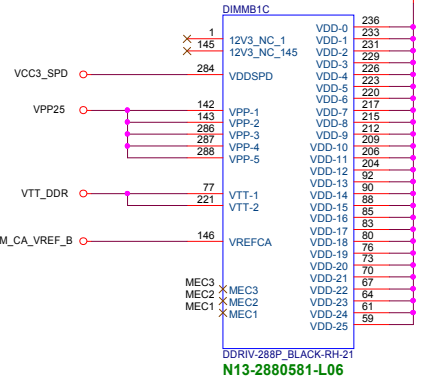
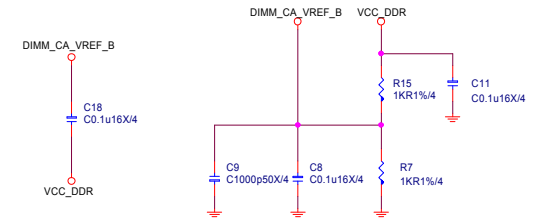
3

2

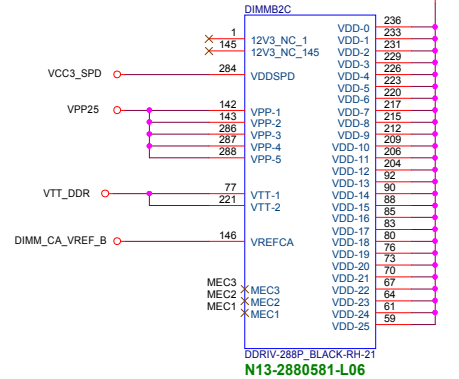
1

DDR VREF

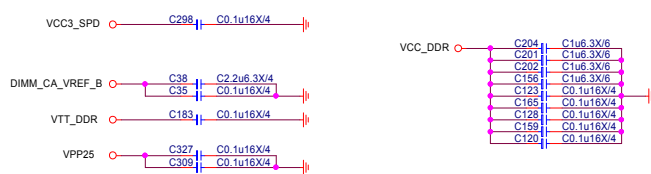
(place resistors close to DIMMs)



DDRIV-288P_BLACK-RH-Z1
N13-2880581-L06



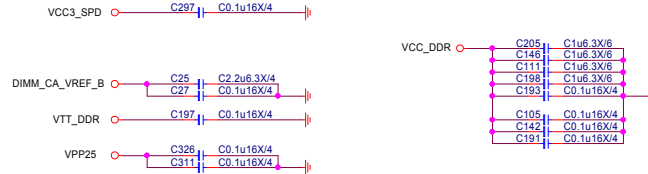
DDRIV-288P_BLACK-RH-Z1
N13-2880581-L06



DIMMB1B

2	VSS-93	147
4	VSS-92	149
6	VSS-91	151
8	VSS-90	153
10	VSS-89	155
12	VSS-88	157
14	VSS-87	159
16	VSS-86	161
18	VSS-85	163
20	VSS-84	165
22	VSS-83	167
24	VSS-82	169
26	VSS-81	171
28	VSS-80	173
30	VSS-79	175
32	VSS-78	177
34	VSS-77	179
36	VSS-76	181
38	VSS-75	183
40	VSS-74	185
42	VSS-73	187
44	VSS-72	189
46	VSS-71	191
48	VSS-70	193
50	VSS-69	195
52	VSS-68	197
54	VSS-67	199
56	VSS-66	201
58	VSS-65	203
60	VSS-64	205
62	VSS-63	207
64	VSS-62	209
66	VSS-61	211
68	VSS-60	213
70	VSS-59	215
72	VSS-58	217
74	VSS-57	219
76	VSS-56	221
78	VSS-55	223
80	VSS-54	225
82	VSS-53	227
84	VSS-52	229
86	VSS-51	231
88	VSS-50	233
90	VSS-49	235
92	VSS-48	237
94	VSS-47	239

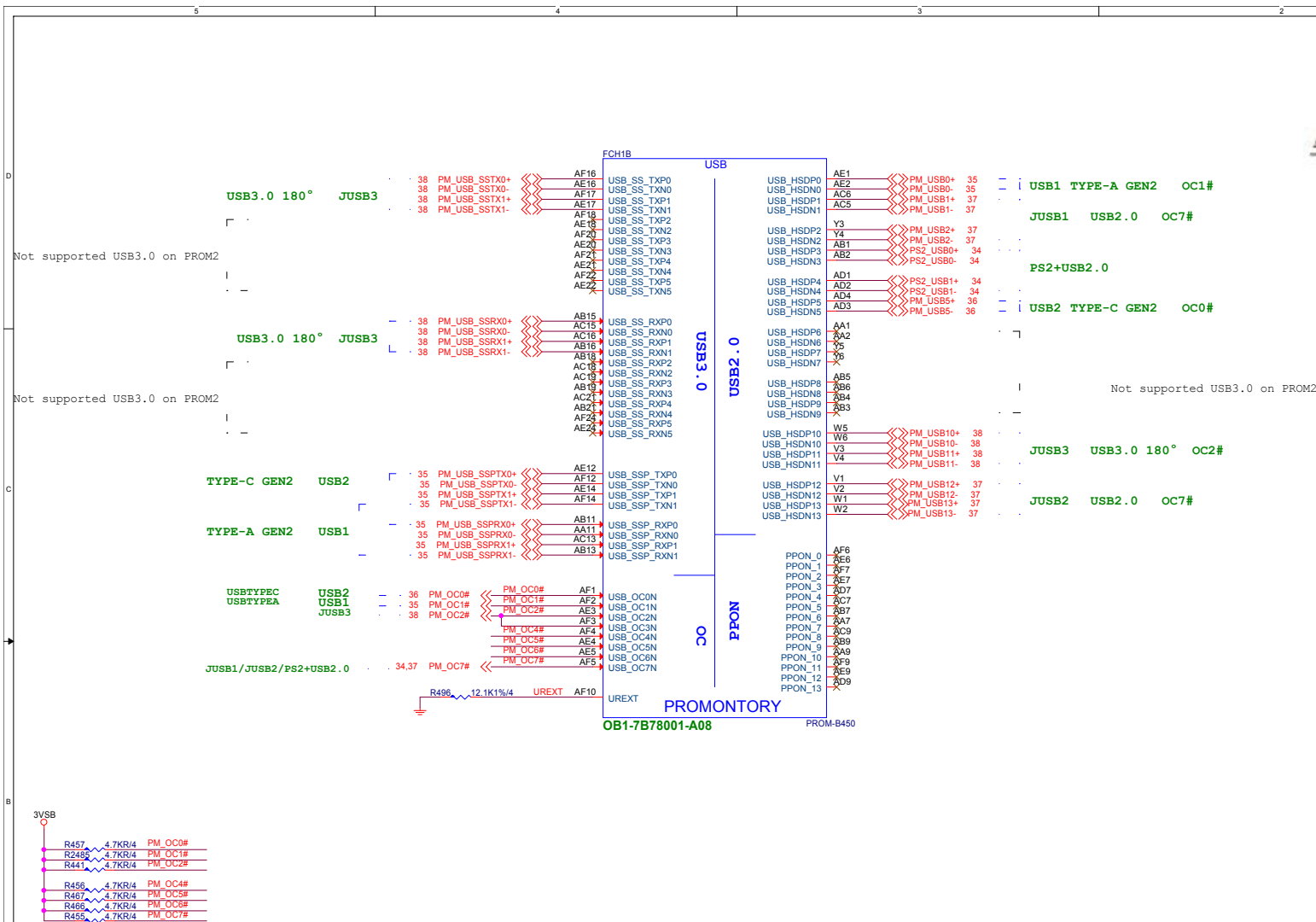
DDRIV-288P_BLACK-RH-Z1
N13-2880581-L06



DIMMB2B

2	VSS-93	147
4	VSS-92	149
6	VSS-91	151
8	VSS-90	153
10	VSS-89	155
12	VSS-88	157
14	VSS-87	159
16	VSS-86	161
18	VSS-85	163
20	VSS-84	165
22	VSS-83	167
24	VSS-82	169
26	VSS-81	171
28	VSS-80	173
30	VSS-79	175
32	VSS-78	177
34	VSS-77	179
36	VSS-76	181
38	VSS-75	183
40	VSS-74	185
42	VSS-73	187
44	VSS-72	189
46	VSS-71	191
48	VSS-70	193
50	VSS-69	195
52	VSS-68	197
54	VSS-67	199
56	VSS-66	201
58	VSS-65	203
60	VSS-64	205
62	VSS-63	207
64	VSS-62	209
66	VSS-61	211
68	VSS-60	213
70	VSS-59	215
72	VSS-58	217
74	VSS-57	219
76	VSS-56	221
78	VSS-55	223
80	VSS-54	225
82	VSS-53	227
84	VSS-52	229
86	VSS-51	231
88	VSS-50	233
90	VSS-49	235
92	VSS-48	237
94	VSS-47	239

DDRIV-288P_BLACK-RH-Z1
N13-2880581-L06



Appendix D USB Port to OC Pin Mapping

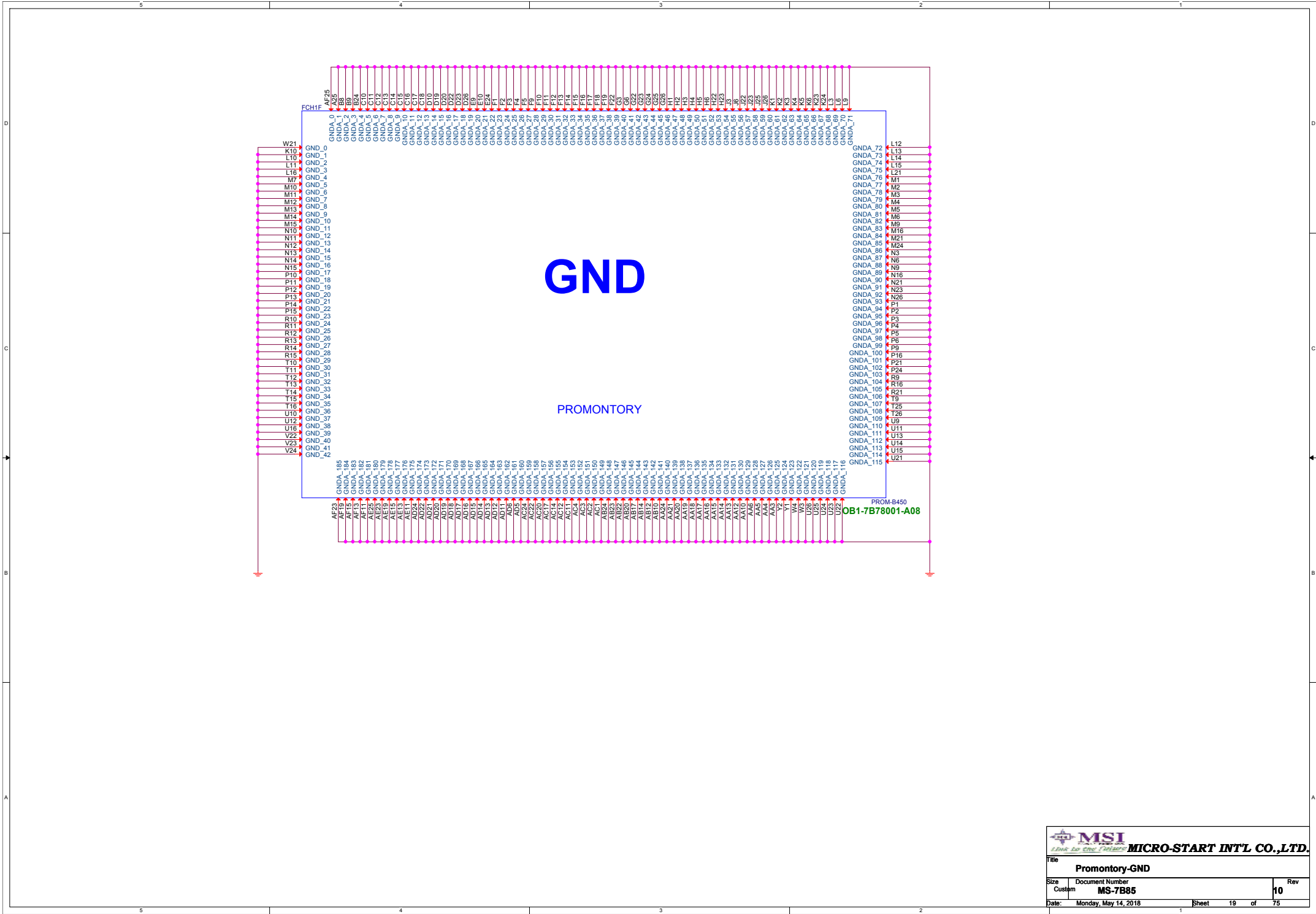
USB3.1	USB2.0	USB_OC
USB_SSP_TX/RXP[N][0]	USB_HSDP[N][5]	USB_OC0N
USB_SSP_TX/RXP[N][1]	USB_HSDP[N][0]	USB_OC1N
USB3.0	USB2.0	USB_OC
USB_SSP_TX/RXP[N][0]	USB_HSDP[N][10]	USB_OC2N
USB_SSP_TX/RXP[N][1]	USB_HSDP[N][11]	USB_OC3N
USB_SSP_TX/RXP[N][2]	USB_HSDP[N][6]	USB_OC4N
USB_SSP_TX/RXP[N][3]	USB_HSDP[N][7]	USB_OC5N
USB_SSP_TX/RXP[N][4]	USB_HSDP[N][8]	USB_OC6N
USB_SSP_TX/RXP[N][5]	USB_HSDP[N][9]	USB_OC7N
	USB_HSDP[N][1]	USB_OC7N
	USB_HSDP[N][2]	USB_OC7N
	USB_HSDP[N][3]	USB_OC7N
	USB_HSDP[N][4]	USB_OC7N
	USB_HSDP[N][12]	USB_OC7N
	USB_HSDP[N][13]	USB_OC7N

Appendix C Port Mapping for Different Bus Models

BUS Model	USB			
	3.1 Gen2 10 Gbps	3.1 Gen1 5 Gbps	2.0	Debug Port
PROM14	USB_SSP Port0-1	USB_SSP Port0-1	USB_HSD Port0-13	USB_SSP Port0
PROM12	USB_SSP Port0-1	USB_SSP Port0-1	USB_HSD Port0-5 USB_HSD Port10-13	USB_SSP Port0
PROM11	USB_SSP Port0	USB_SSP Port0	USB_HSD Port0-5 USB_HSD Port10, 12-13	USB_SSP Port0

BUS Model	SATA J.0	SATA Express	PCI Express® Gen1 GPP	PCI Express® CLK
PROM14	SATA port0-3	SATAE port0-3	GPP lane0-7	CLK0-7
PROM12	SATA port0-1	SATAE port0-1	GPP lane0-3 GPP lane4-7	CLK0-1 CLK4-7
PROM11	SATA port0-1	SATAE port0-1	GPP lane0-7	CLK4-7

CLK2,3不能
CLK1-3不能

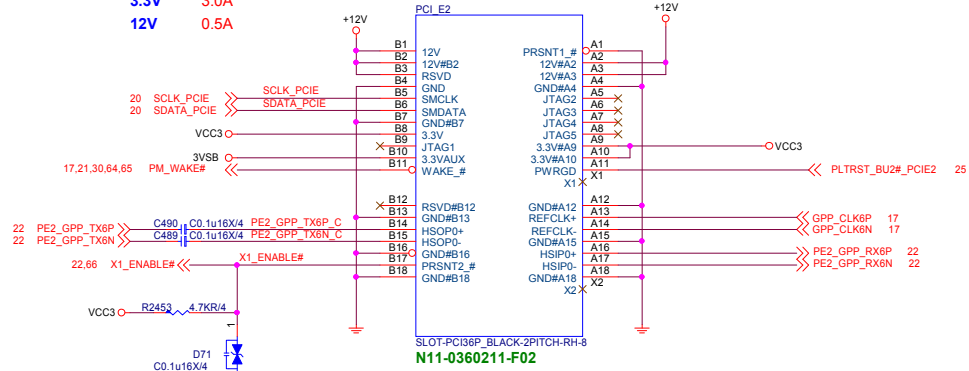


PCIEX1 12V 0.5A
3.3V weak 375mA

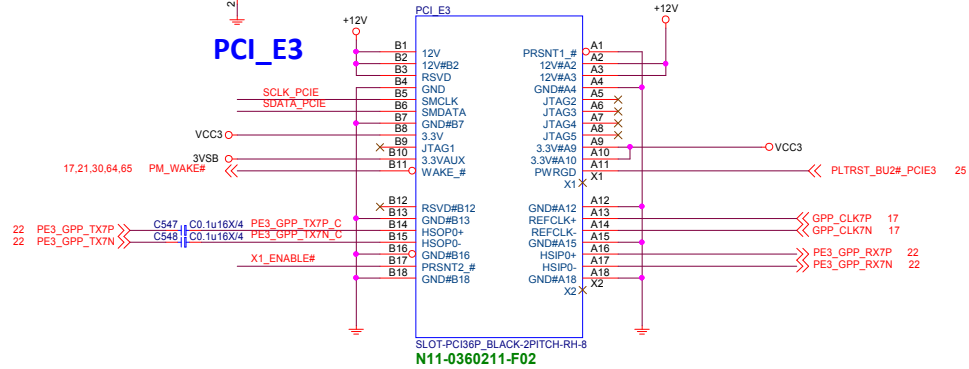
PCI_E2

3.3V
12V

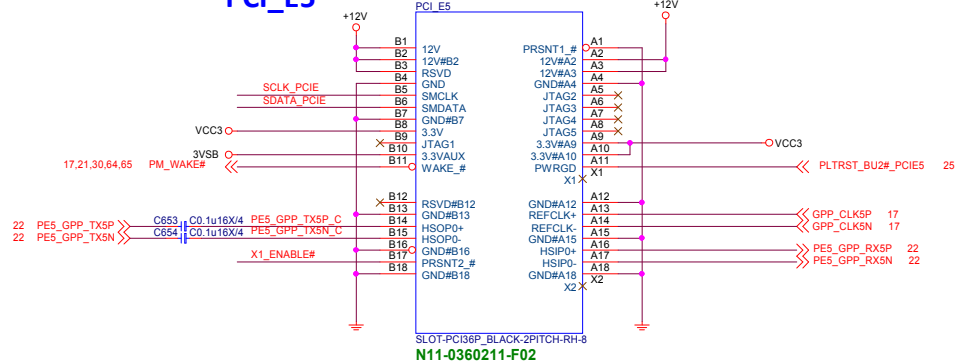
3.0A
0.5A



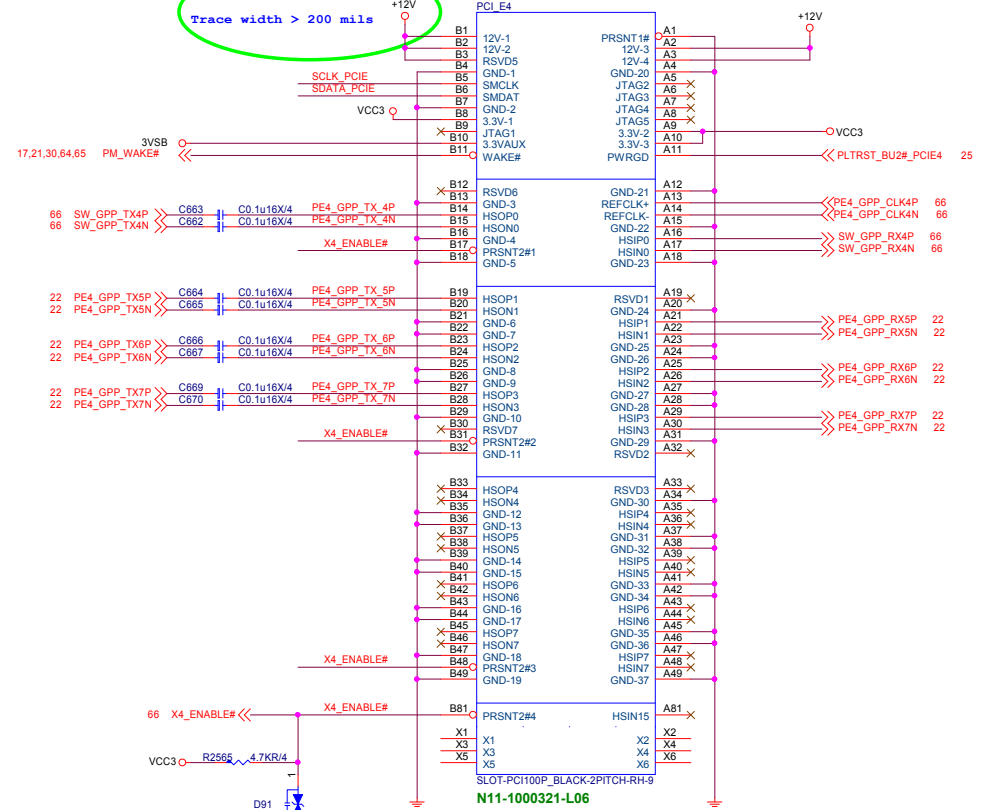
PCI_E3



PCI_E5



Trace width > 200 mils



PCI Express x4 Slot *1

+12V	- 2.1A
+VCC3	- 3A
+3V3_S5 (wake)	- 375mA
+3V3_S5 (no wake)	- 20mA

PCI Express x1 Slot *3

+12V	- 1.5 A
+VCC3	- 9A
+3V3_S5 (wake)	- 1125mA
+3V3_S5 (no wake)	- 60mA

Schematic Cfg

CFG-7B85-10-Performance Gaming
CFG-7B85-20-Arsenal Gaming

Project

V A

File

PCI_E2_E3_E5/E4 X1/X4

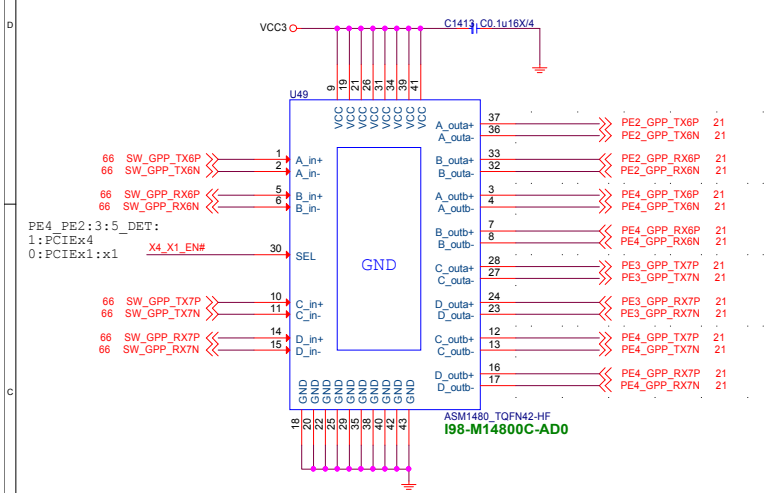
Size Custom MS-7B85

Date: Monday, May 14, 2018

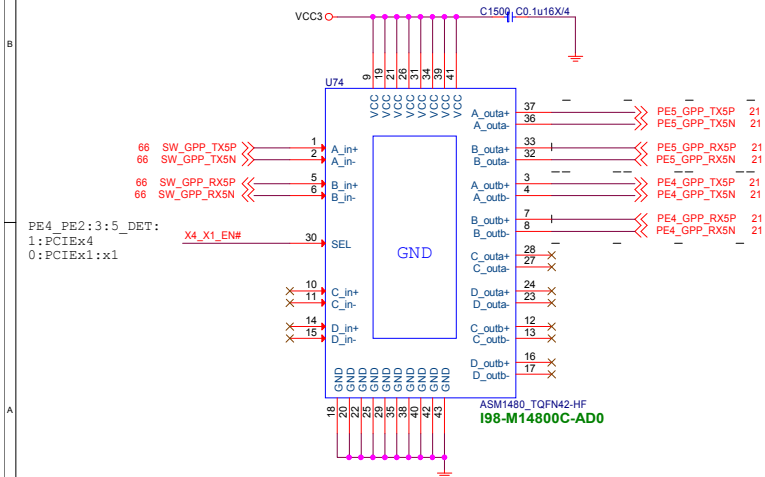
Sheet 21 of 75

MSI MICRO-START INT'L CO.,LTD.

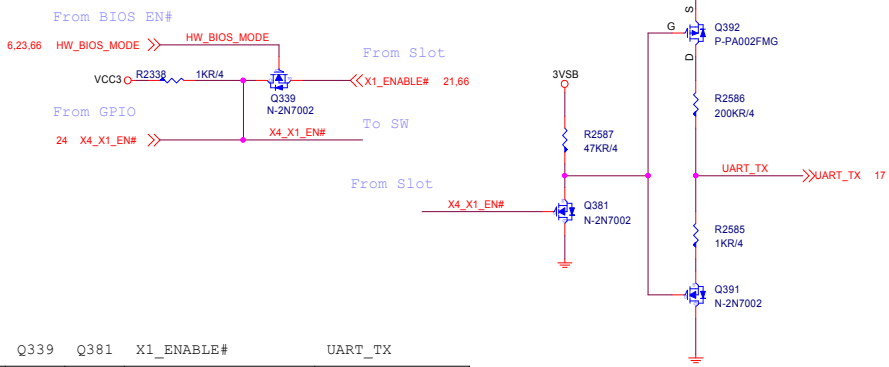
PCI_E4 and PCIE_2 :3 :5 Switch



SEL	Function
L	N_in +/1 to N_outa+/-
H	N_in +/1 to N_outb+/-

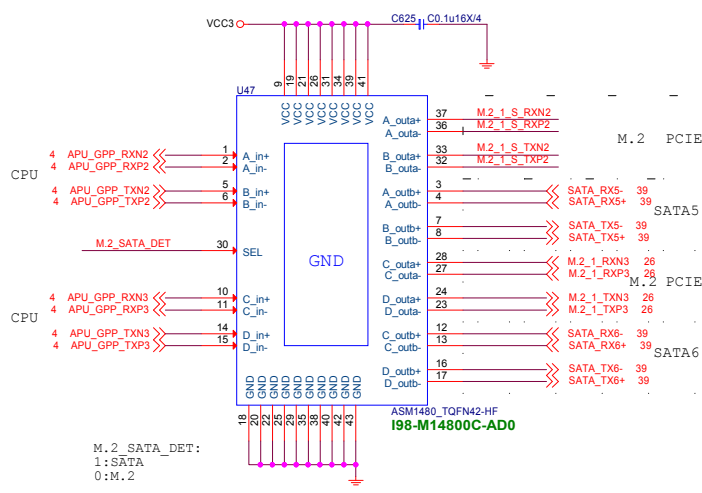


PCIE Lanes control circuit



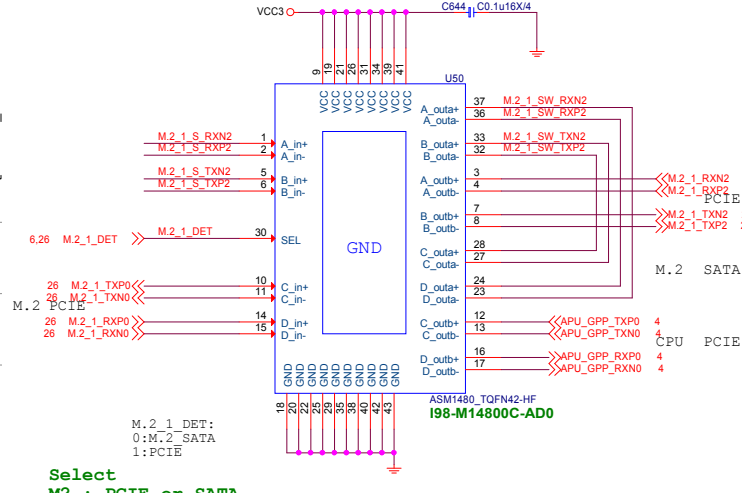
	HW_BIOS_MODE	Q339	Q381	X1_ENABLE#	UART_TX
Manual x4	L	OFF	OFF	X	11:By4x1 (def)
Manual x1,x1,x1,x1	L	OFF	OFF	L	01:By1x4
HW x4	H	ON	ON	H	11:By4X1 (def)
H/W x1,x1,x1,x1	H	ON	ON	L (Stuff PCIE_2.3.5)	01:By1x4

M2_1 and SATA5 6 Switch



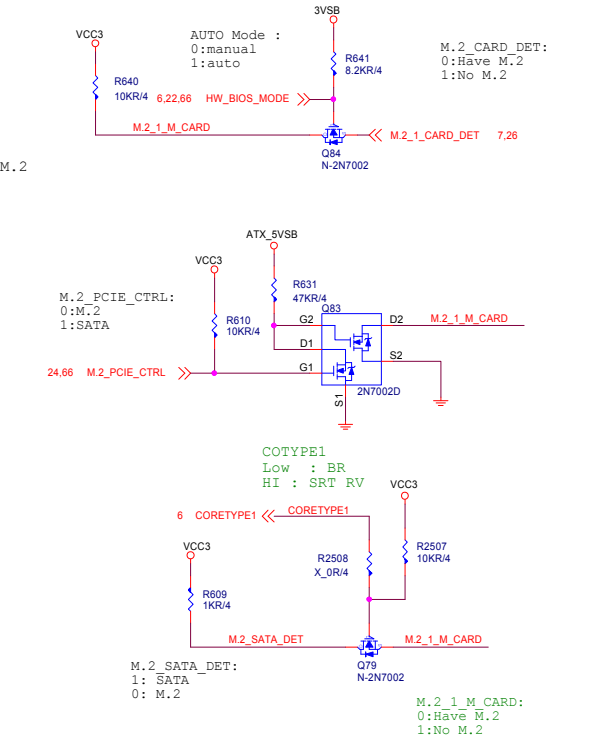
M.2 SATA_DET:
1:SATA
0:M.2
(Default for SATA)

SEL	Function
L	N_in +/1 to N_out+/-
H	N_in +/1 to N_out+/-



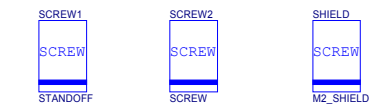
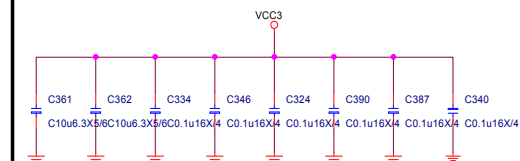
M.2_1 DET:
0:M.2 SATA
1:PCIE
Select
M2 : PCIE or SATA
(Default for PCIE)

	AUTO Mode	SATA CON	M.2 (PCIE)	M.2 (SATA)
HW_BIOS_MODE	1		0	0
M.2_PCIE_CTRL	1		0	0
M.2_1_CARD_DET		1	0	0
M.2_DET		X	1	0

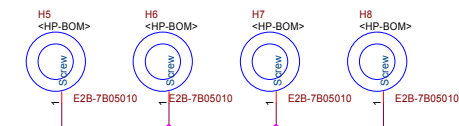


CPU	TYPE	CORETYPE 1	0
BR	0	0	0
NA		0	1
SR	2	1	0
RV/2P	3	1	1

3.3V@2.5A



E2B-7984020-A89 E49-1203303-A89 E31-0001390-A87



Footprint: H_R240D173_BR189_PT

E2B-7B05010-A89

E2B-7B05010-A89

E2B-7B05010-A89

E2B-7B05010-A89

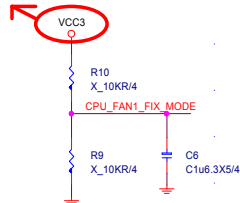
Schematic Cfg	Project
CFG-7B85-10-Performance Gaming	V
CFG-7B85-20-Arsenal Gaming	

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

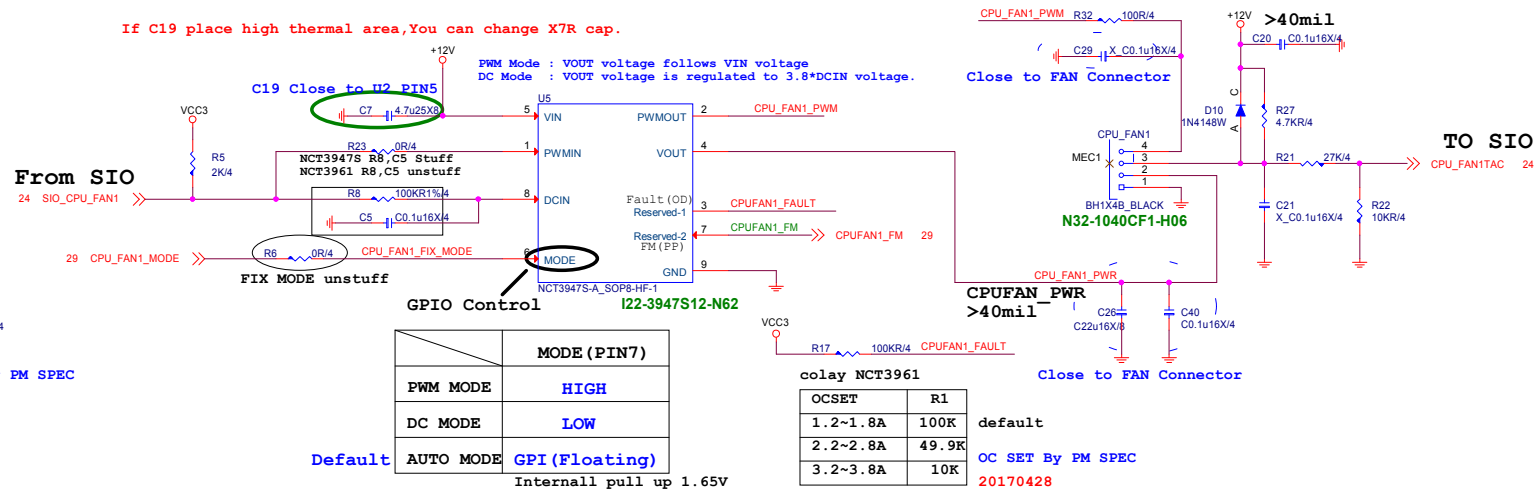
- 1.Mode GPIO BIOS can swtich PWM/DC MODE
- 2.FM:BIOS can read FAN PWM/DC MODE

CPU_FAN1

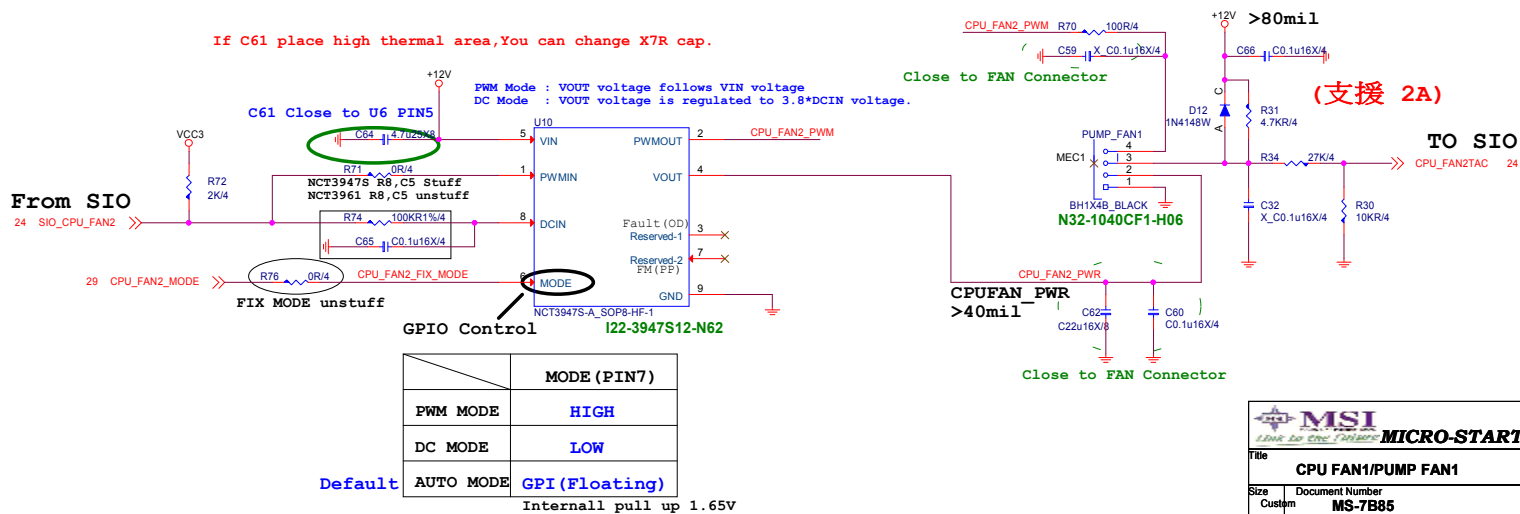
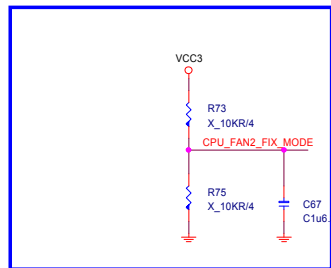
Avoid NCT3947S MODE PIN Leakage



Resever For FIX DC or PWM MODE USE By FM SPEC



PUMP_FAN1

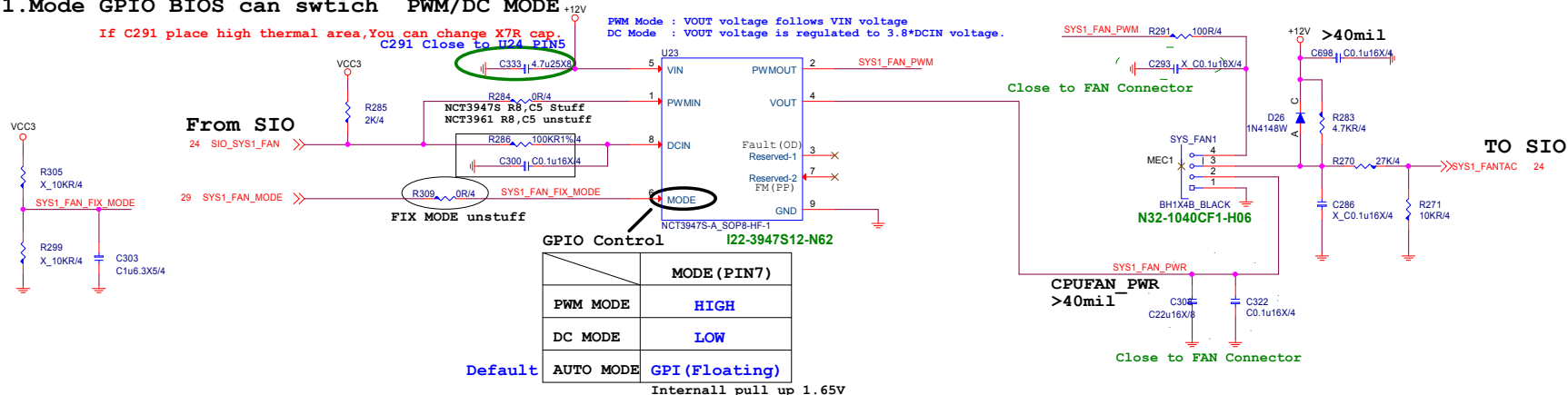


SYSFAN

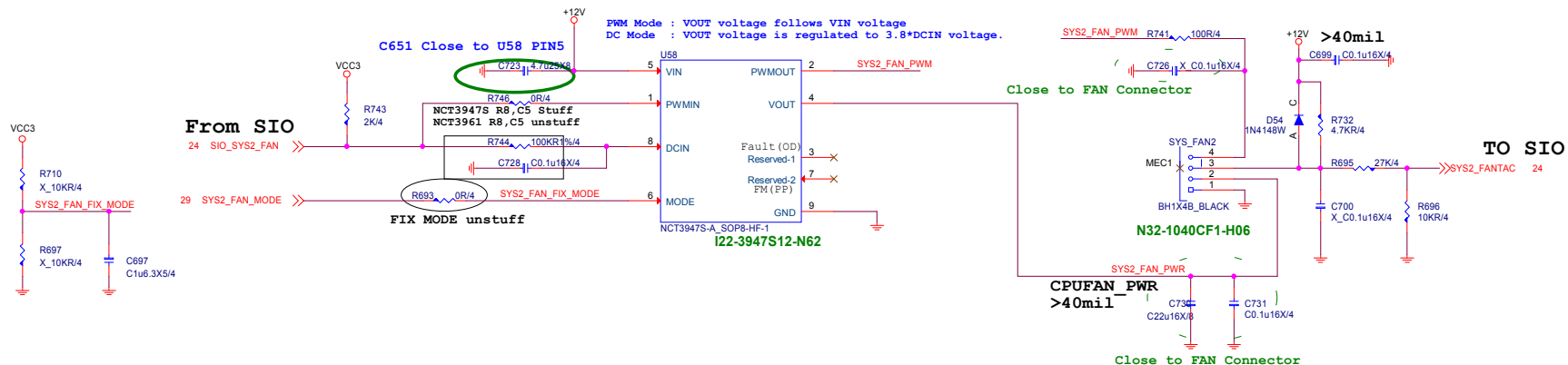
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

1.Mode GPIO BIOS can swtich PWM/DC MODE

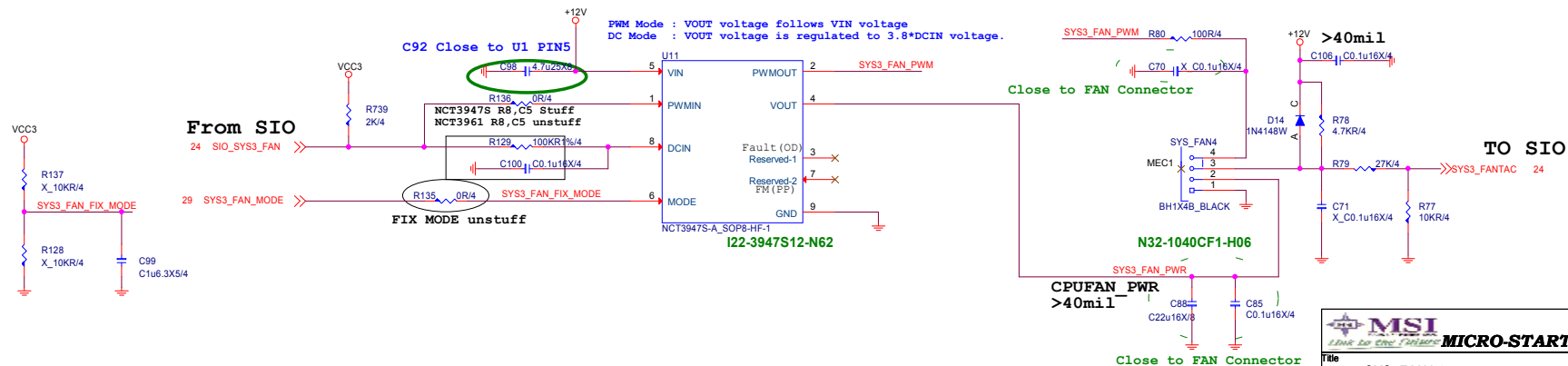
If C291 place high thermal area,You can change X7R cap.
C291 Close to U24 PIN5



If C651 place high thermal area,You can change X7R cap.



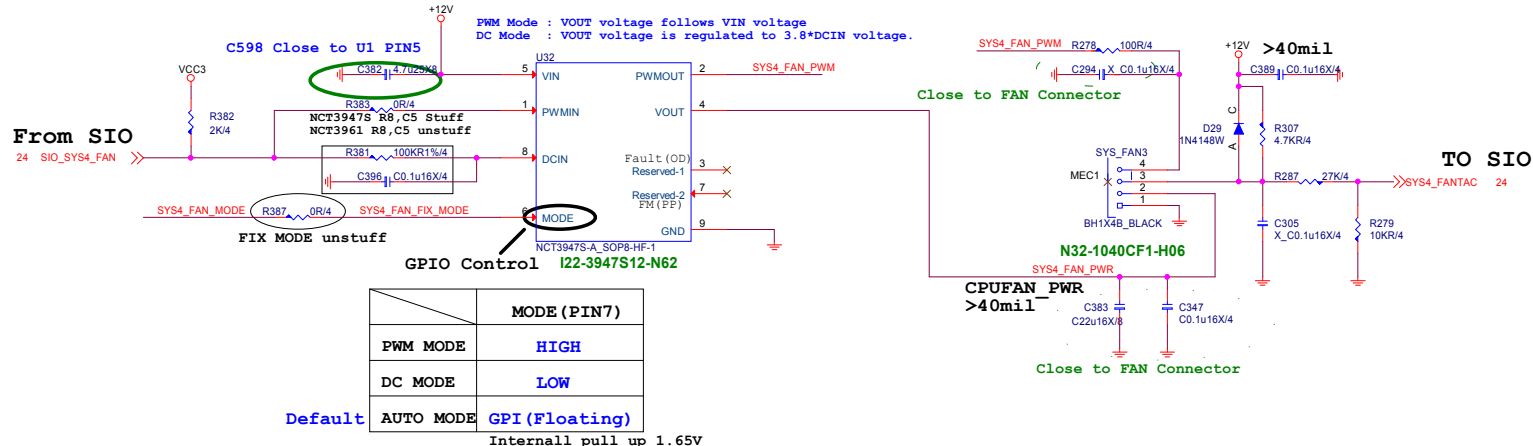
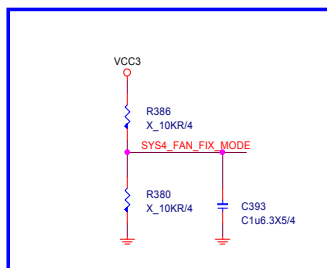
If C92 place high thermal area,You can change X7R cap.



SYSFAN 4

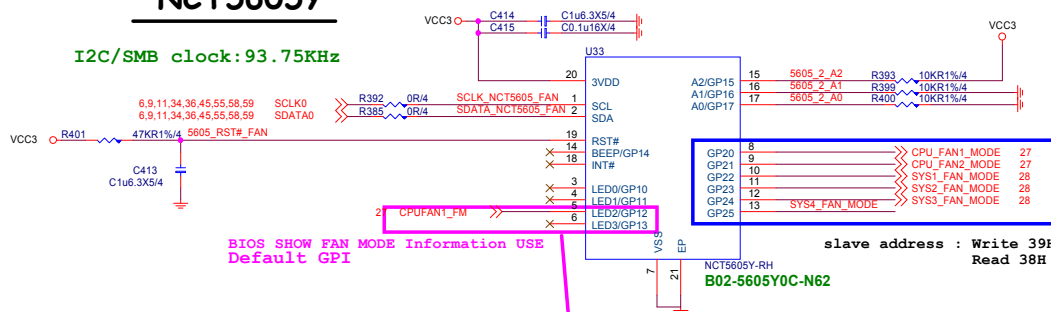
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

If C598 place high thermal area, You can change X7R cap.



NCT5605Y

I2C/SMB clock:93.75KHz



By PM Define FAN name

SHOW FAN MODE USE	FAN
GP12	CPUFAN1
GP13	CPUFAN2 PUMPFAN

By PM Define FAN name

FAN MODE USE	FAN
GP20	CPUFAN1
GP21	CPUFAN2 PUMPFAN
GP22	SYSFAN1
GP23	SYSFAN2
GP24	SYSFAN3
GP25	SYSFAN4

1. GENERAL DESCRIPTION

The NCT5605Y is a general purpose input/output IC with SMBus™ which provides 14 GPIO pins. It also can provide SMBus™ address setting pins to set the address during power-on reset or from external reset.

NCT5605Y SMBus™ Address is:

0	0	1	1	A2	A1	A0	R/W
---	---	---	---	----	----	----	-----

Digital

Analog

C91-1011021-N07

B05-012205C-R09

AVCC33

RA16 100K1%/4 JD1 RA17 200K1%/4 FRONT_JD

RA18 100K1%/4 SURR_JD

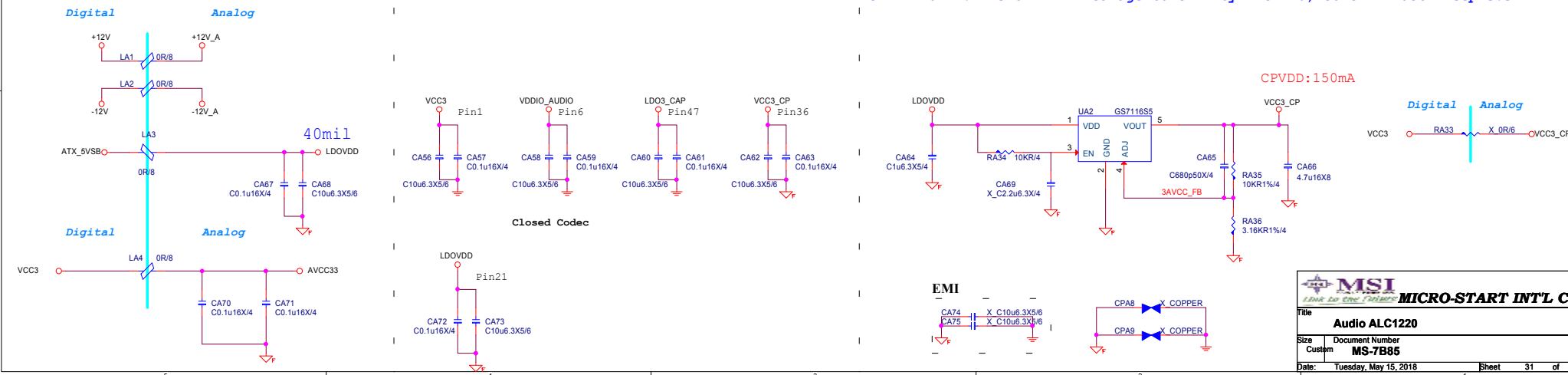
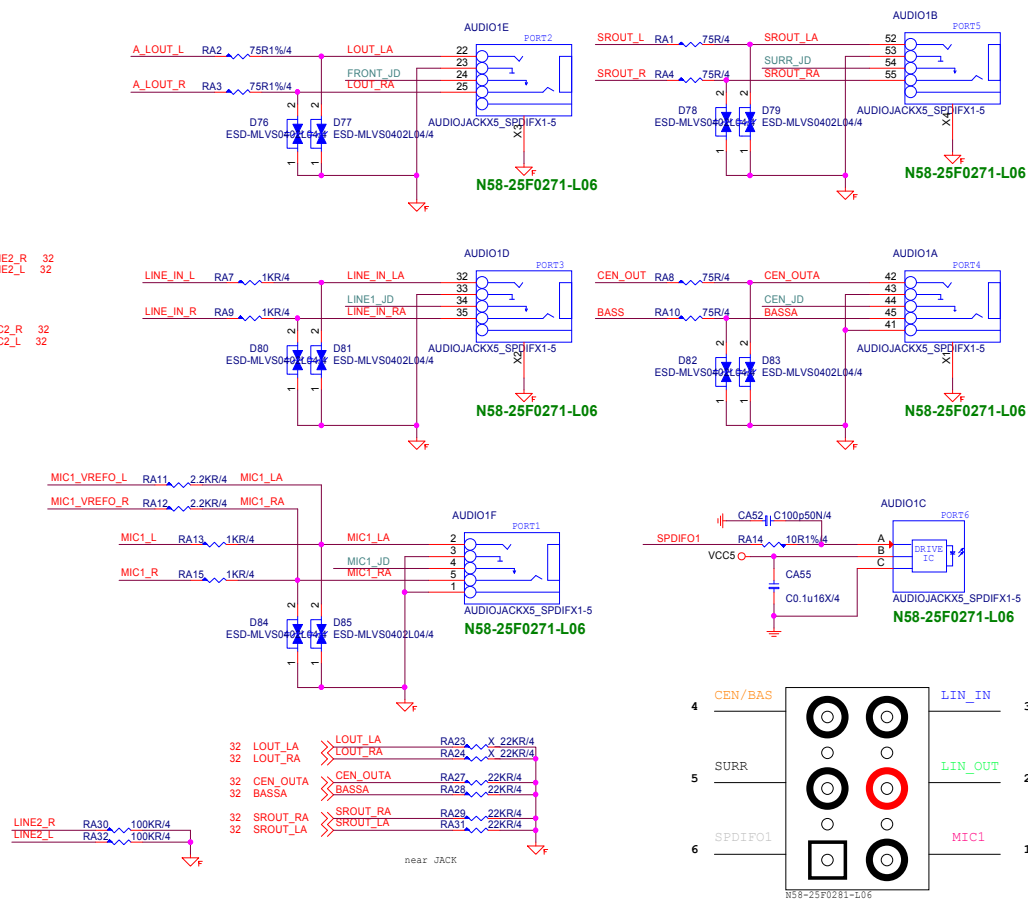
RA19 100K1%/4 JD2 RA20 200K1%/4 MIC1_JD

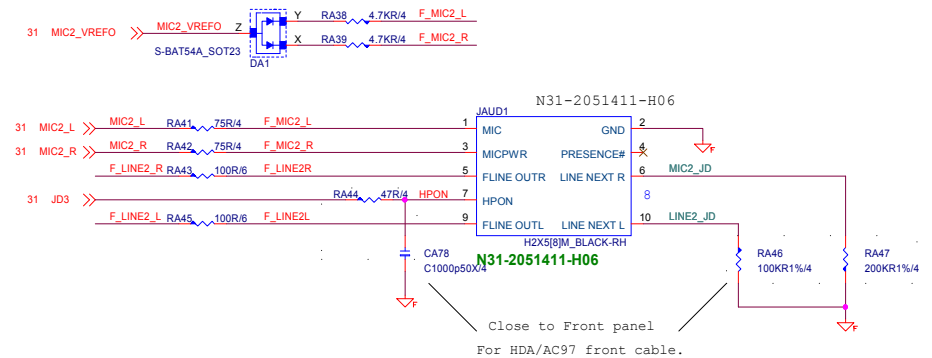
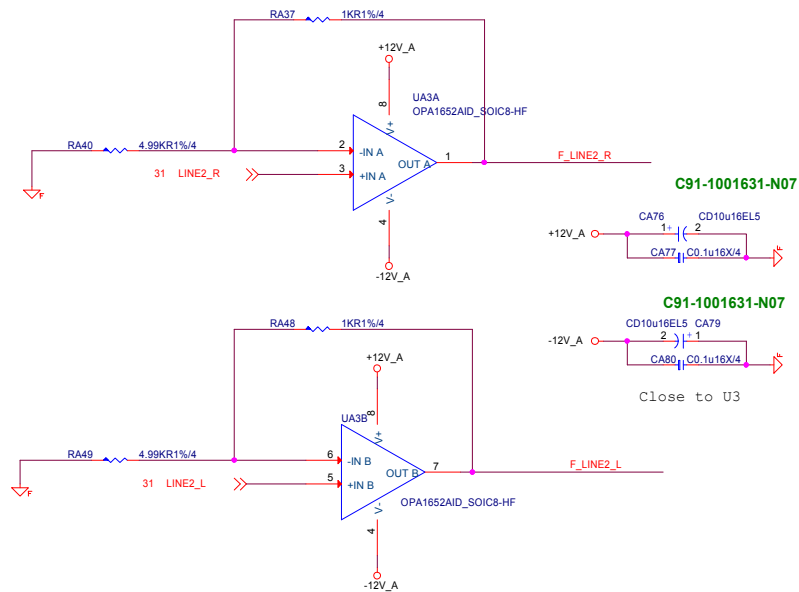
RA21 100K1%/4 CEN_JD

RA22 100K1%/4 JD3

RA25 100K1%/4 JD4 RA26 200K1%/4 LINE1_JD

all of JD resistors should be placed as close as possible to the sepse pin of codec.



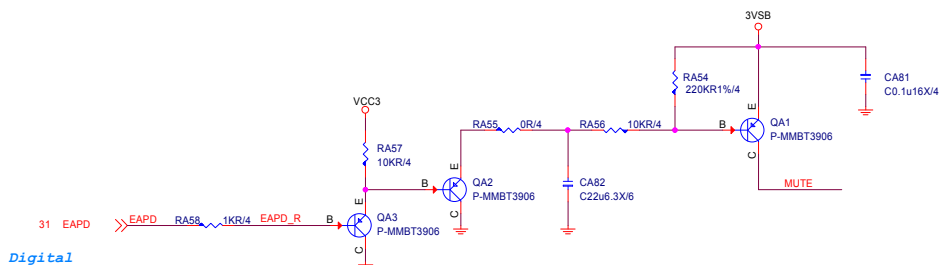


Close to Jack
ESD protect

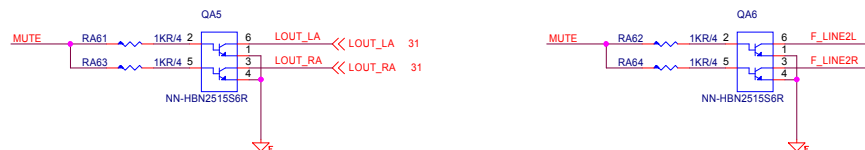


Rear Line OUT De-POP circuit (De-pop circuit for Rear Line out & Front Headphone out)

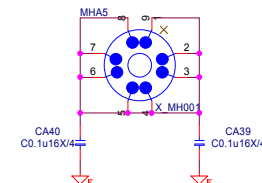
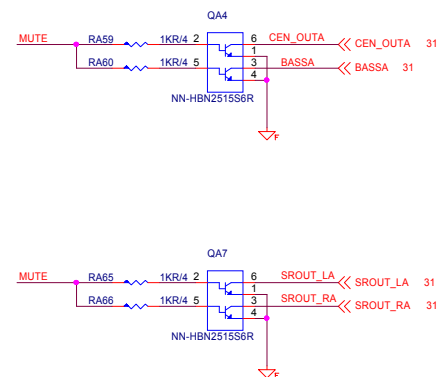
(add de-pop circuit by PM spec or customer request,
NOTE: add de-pop circuit need to change SROUT_LA, SROUT_RA, CEN_OUTA, BASSA to TVS)



Analog



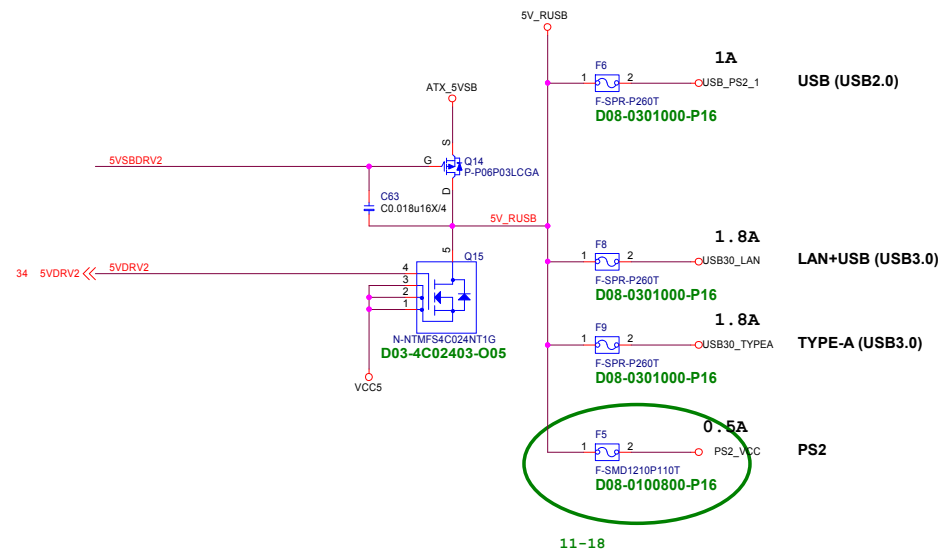
Audio moat is transparent and width 40mil



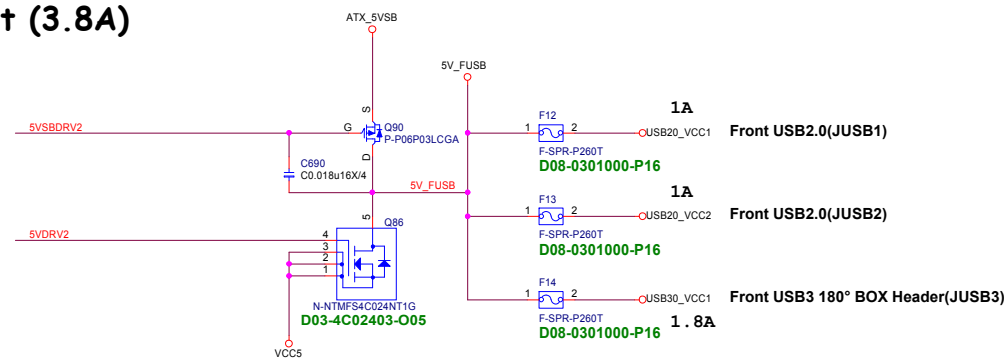
TO:NCT6793 GP25

H:SUPPORT S0/S3/S5
L:SUPPORT S0/S3

5VDRV2, 5VSBDV2 width 12mil,
Do NOT route near the edge of a
board.

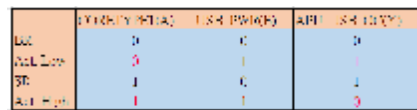
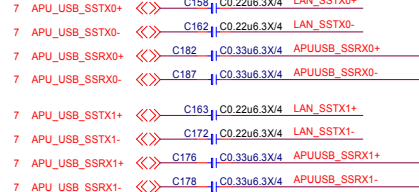


Front (3.8A)

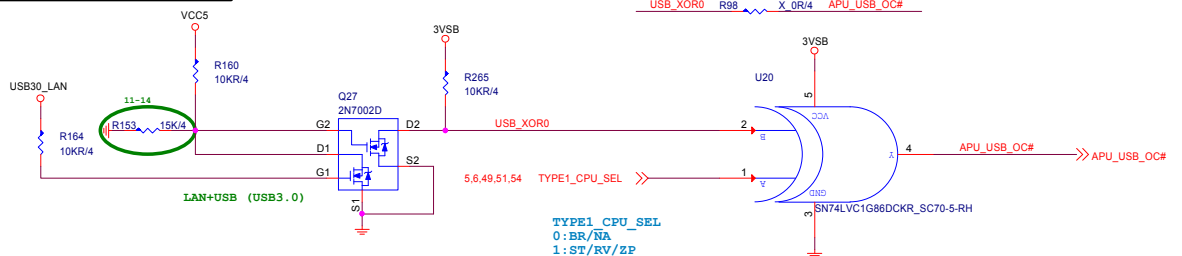


LAN+USB (USB3.0)

5V@1A

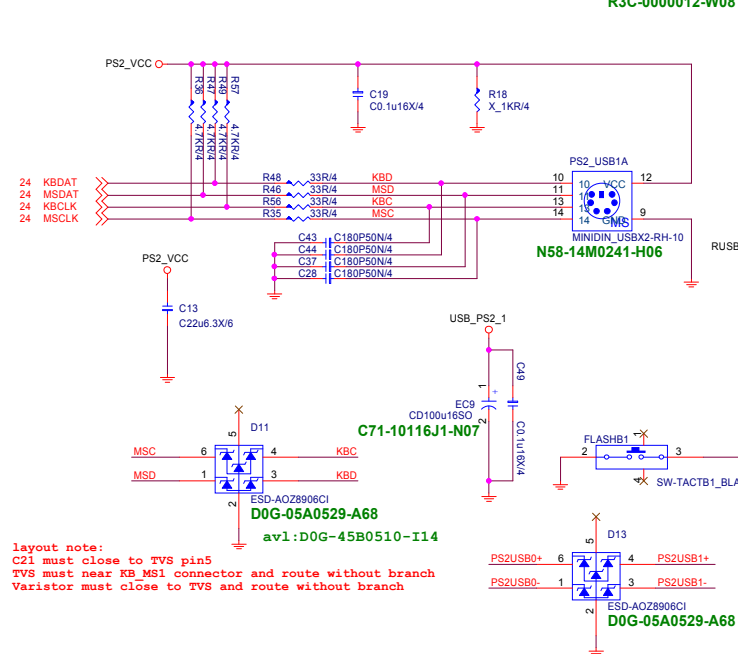


APU_USB_OC

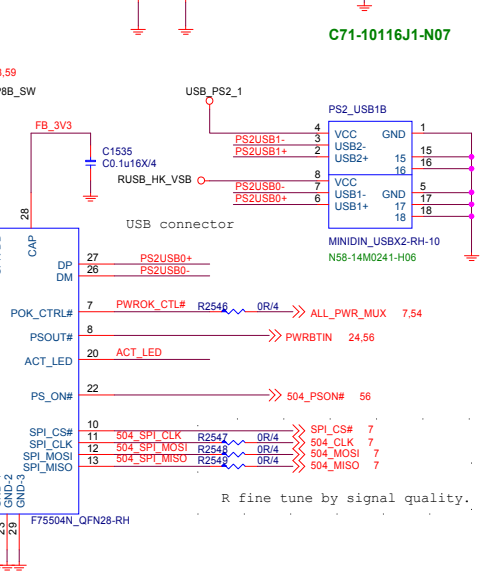
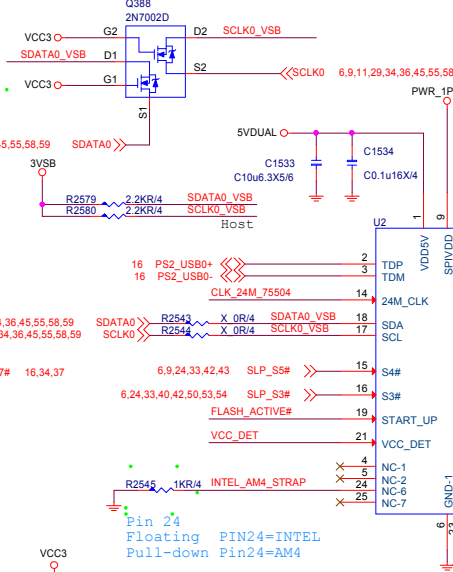
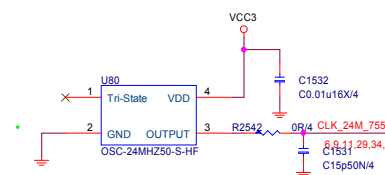


PS2+USB (USB2.0)

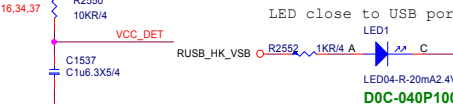
5V@1A



CLK running in S0, don't require in sleep

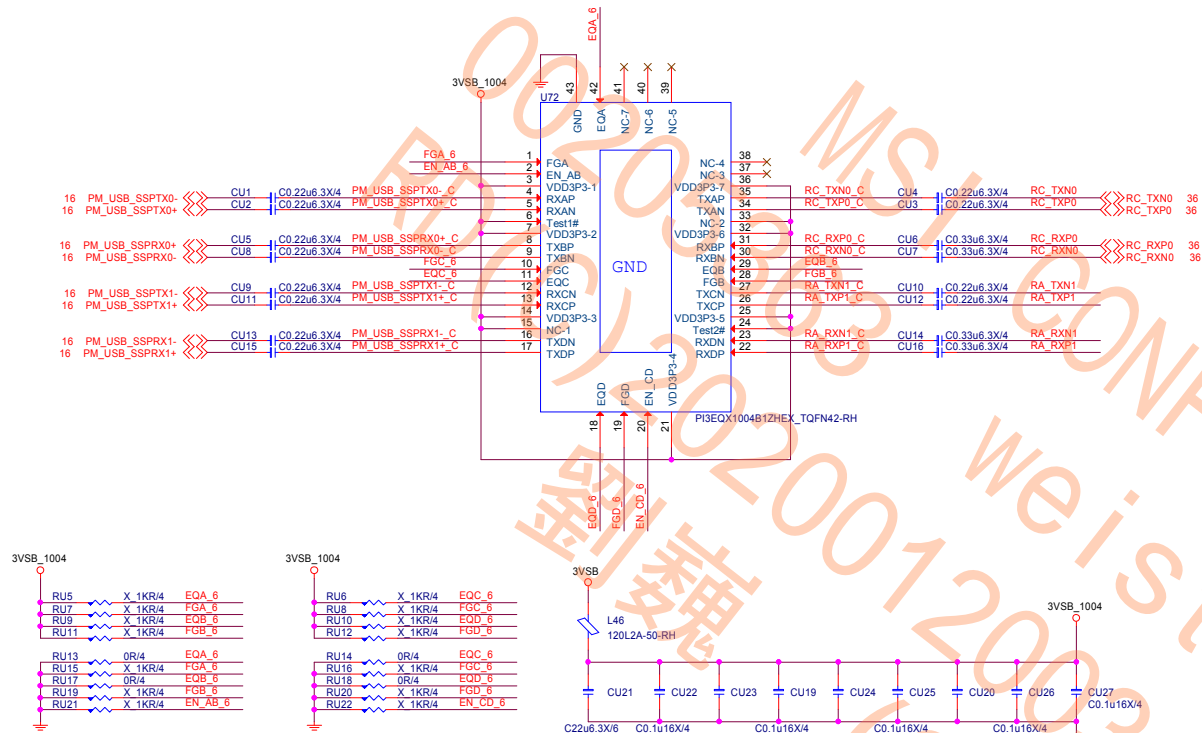


layout note:
 C21 must close to TVS pin5
 TVS must near KB_MS1 connector and route without branch
 Varistor must close to TVS and route without branch



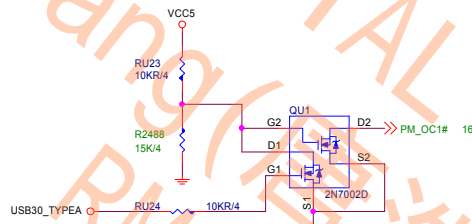
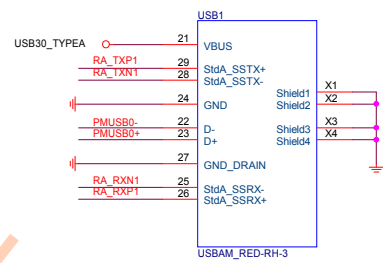
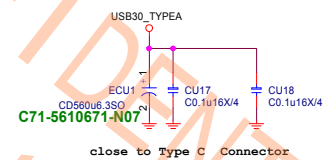
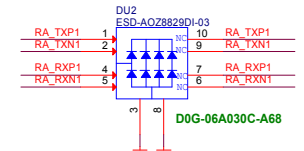
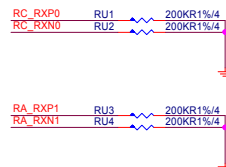
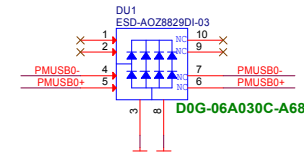
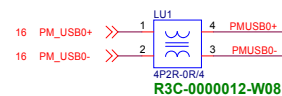
MSI MICRO-START INT'L CO.,LTD.		
Rear PS2_USB2.0/LAN_USB3.0/FLASH SPI		
Size	Document Number	Rev
Custom	MS-7B85	10
Date:	Wednesday, May 16, 2018	Sheet 34 of 75

TYPE-A PI3EQX1004 Redriver



EQ	dB	
0	10.9	0 to GND
R	6.7	68K to GND
F	8.9	NC
1	13.1	0 to VDD

FG	dB	
0	-3	0 to GND
R	-1.5	68K to GND
F	0	NC
1	2	0 to VDD



Front USB3 180° BOX Header(JUSB4)

5V@1.8A

16 PM_USB_SSTX0+ <<< C695 C0.22u6.3X/4 PM_SSTX0+
16 PM_USB_SSTX0- <<< C694 C0.22u6.3X/4 PM_SSTX0-

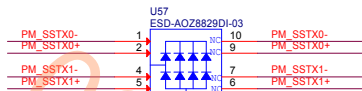
16 PM_USB_SSRX0+ <<< C693 C0.33u6.3X/4 PMUSB_SSRX0+
16 PM_USB_SSRX0- <<< C692 C0.33u6.3X/4 PMUSB_SSRX0-

16 PM_USB10+ <<< L35 4 PMUSB10+
16 PM_USB10- <<< 2 3 PMUSB10-
4P2R-0R/4
R3C-0000012-W08

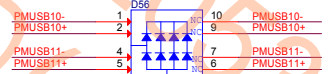
16 PM_USB11+ <<< L36 4 PMUSB11+
16 PM_USB11- <<< 2 3 PMUSB11-
4P2R-0R/4
R3C-0000012-W08

16 PM_USB_SSTX1+ <<< C689 C0.22u6.3X/4 PM_SSTX1+
16 PM_USB_SSTX1- <<< C688 C0.22u6.3X/4 PM_SSTX1-

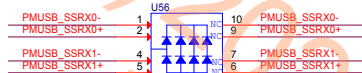
16 PM_USB_SSRX1+ <<< C687 C0.33u6.3X/4 PMUSB_SSRX1+
16 PM_USB_SSRX1- <<< C686 C0.33u6.3X/4 PMUSB_SSRX1-



D0G-06A030C-A68

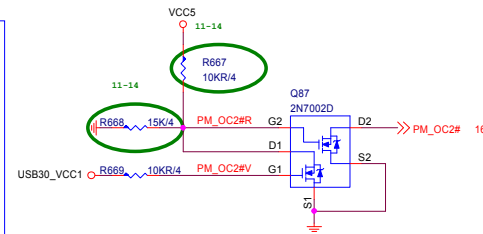
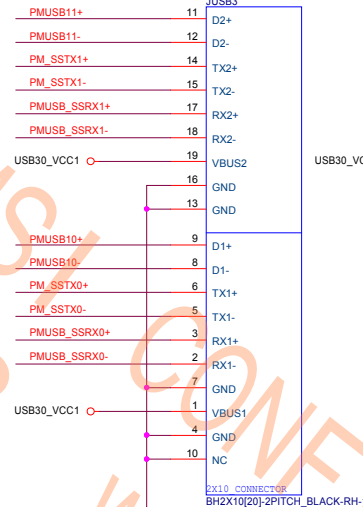


D0G-06A030C-A68

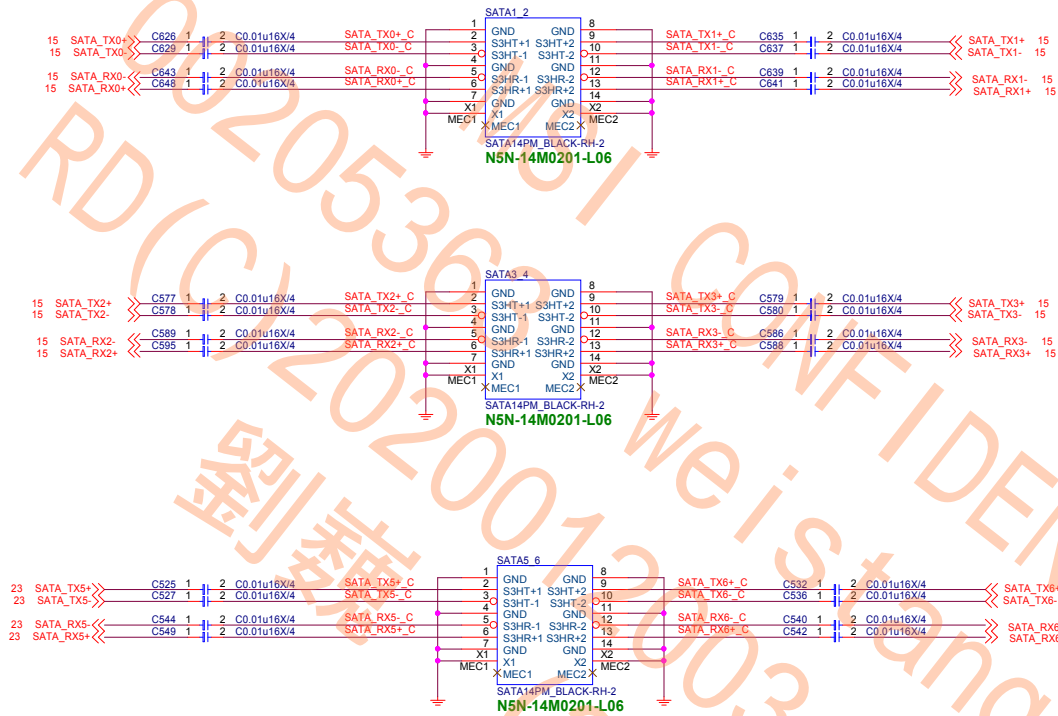


D0G-06A030C-A68


USB3.0
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL
USB2.0
D0G-0200529-A68 Main
D0G-0100619-I05 AVL



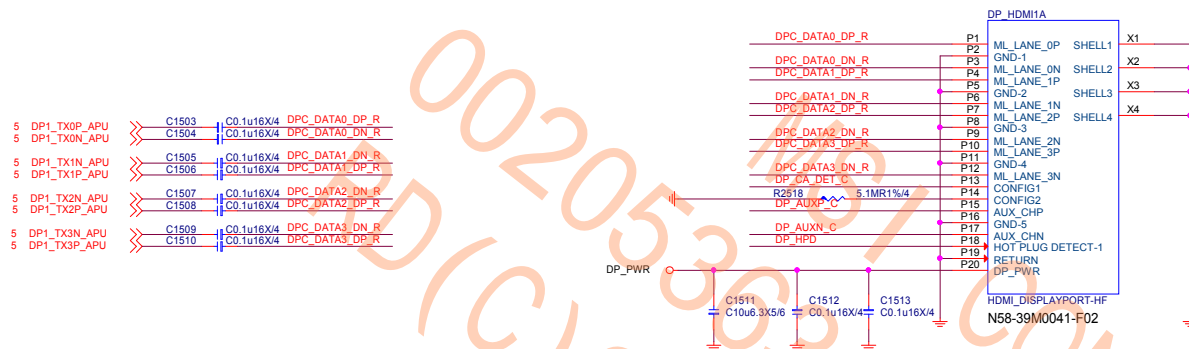
SATA Connector



Schematic Cfg	Project	
CFG-7B85-10-Performance Gaming	V	A
CFG-7B85-20-Arsenal Gaming		

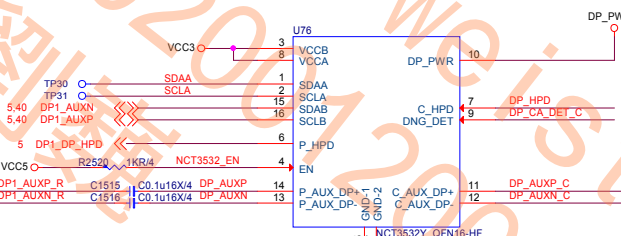
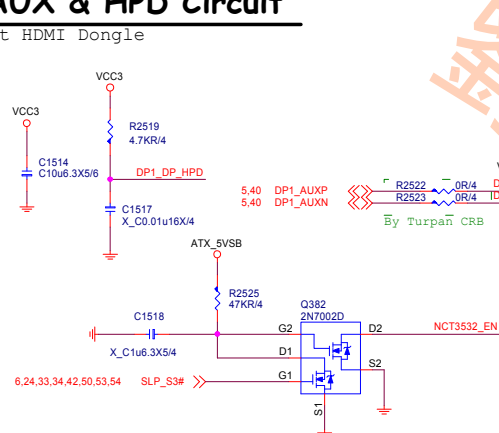
 MICRO-START INT'L CO.,LTD.		
File SATA		
Size Custom	Document Number MS-7B85	Rev 10
Date: Monday, May 14, 2018	Sheet 39	of 75

DP CONNECTOR

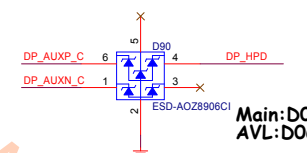


DP AUX & HPD Circuit

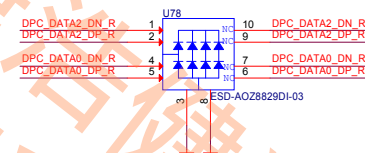
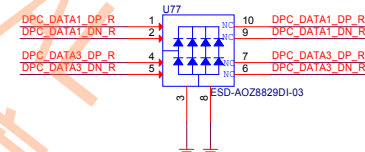
Support HDMI Dongle



ESD



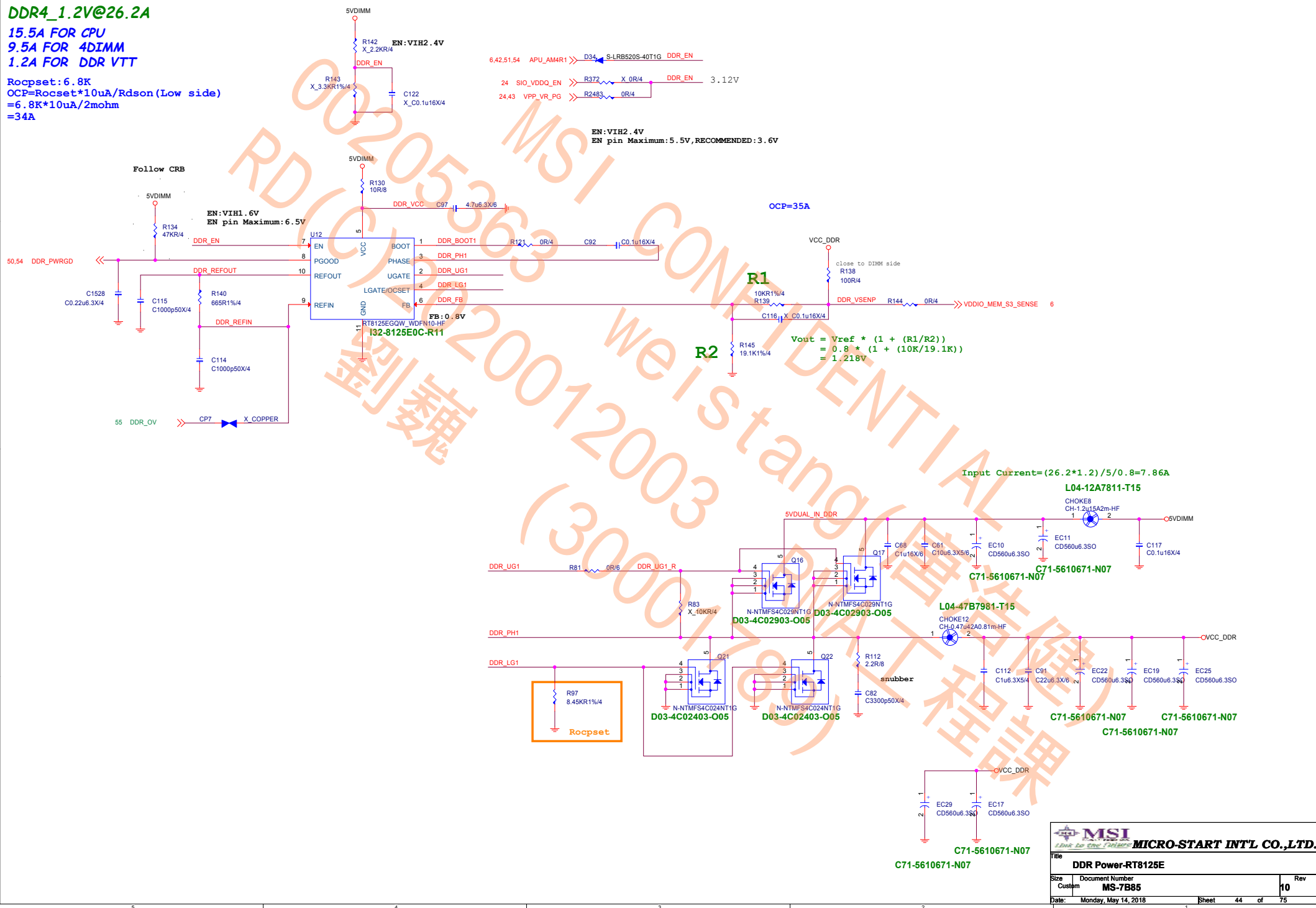
06CI Main:DOG-05A0529-A68
AVL:DOG-45B0510-I14

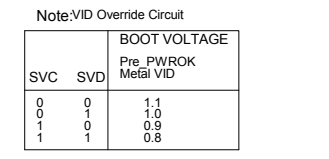
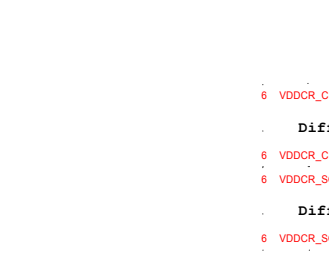
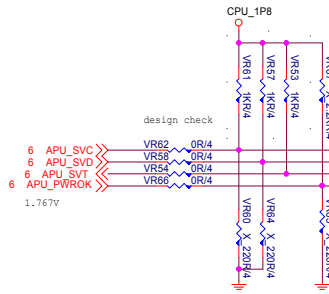


DDR4_1.2V@26.2A

15.5A FOR CPU
9.5A FOR 4DIMM
1.2A FOR DDR VTT

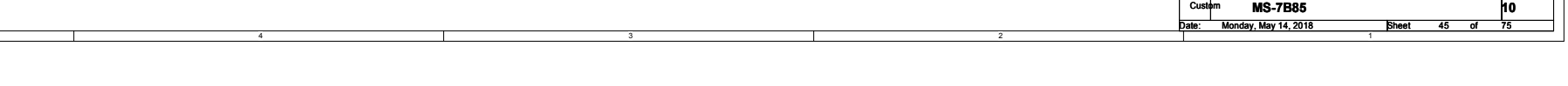
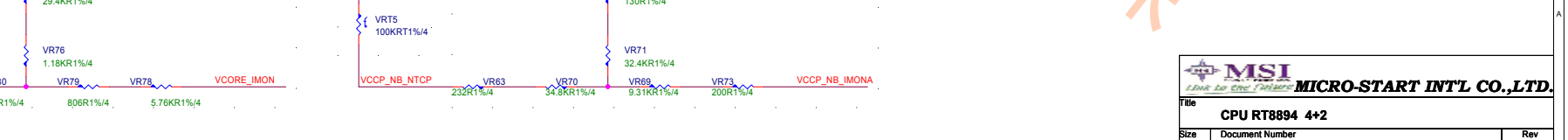
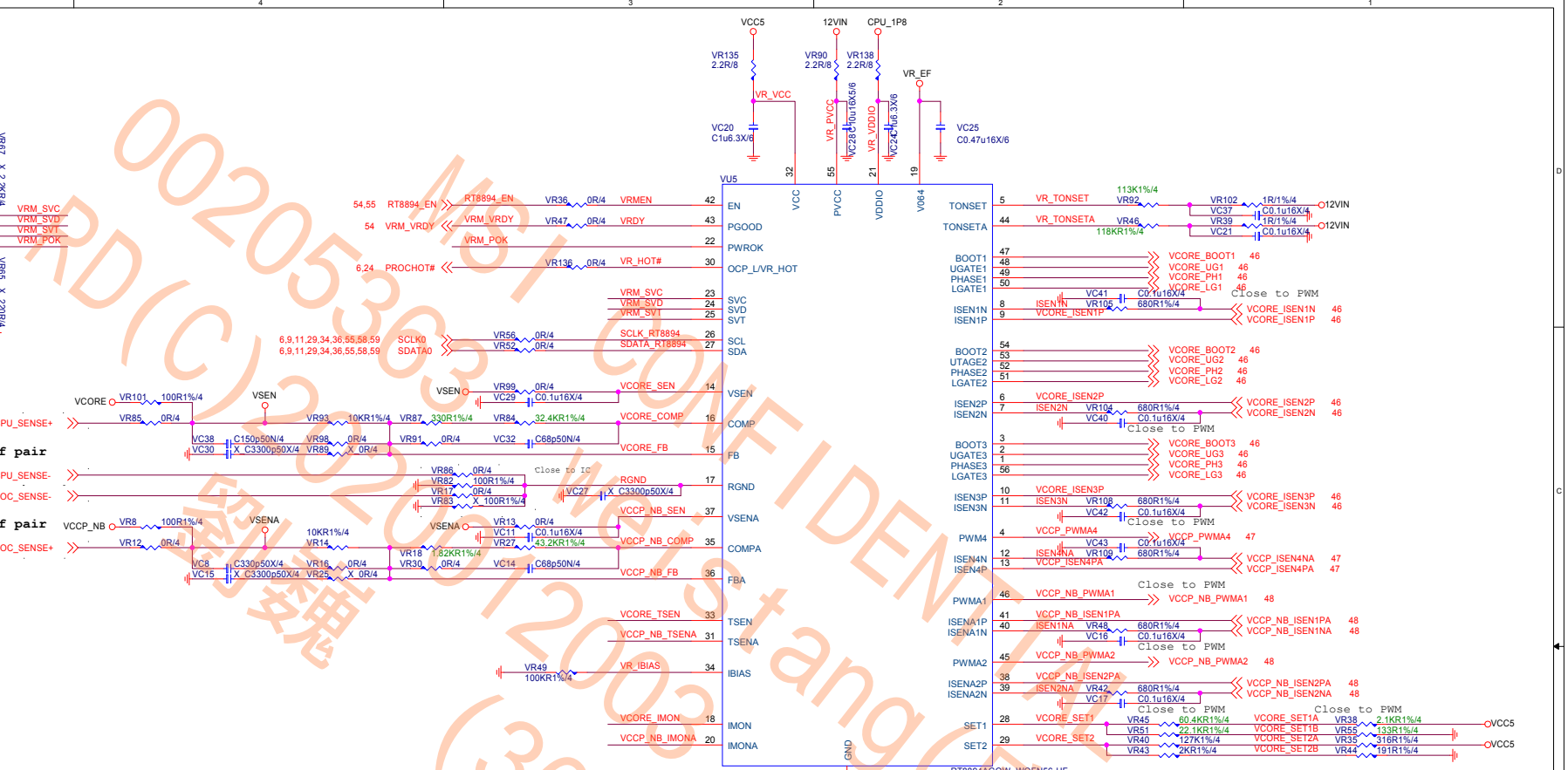
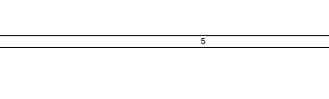
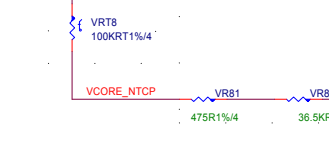
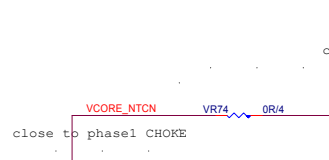
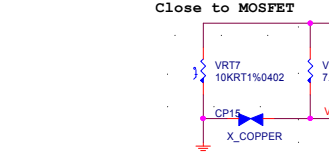
Rocpset: 6.8K
OCP=Rocpset*10uA/Rdson(Low side)
=6.8K*10uA/2mohm
=34A



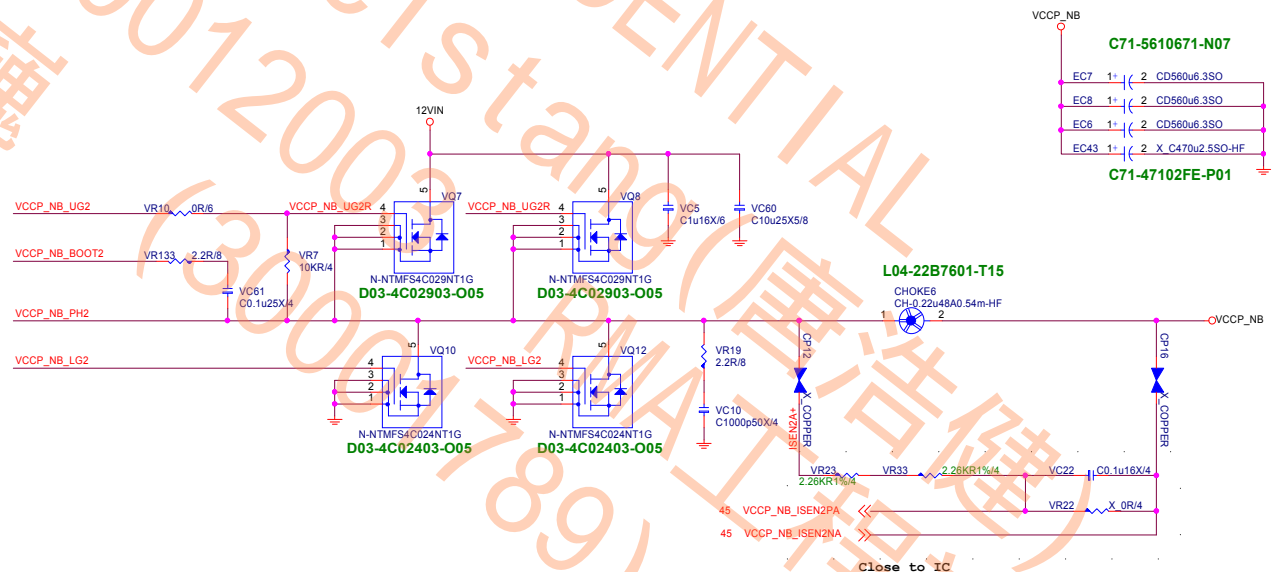
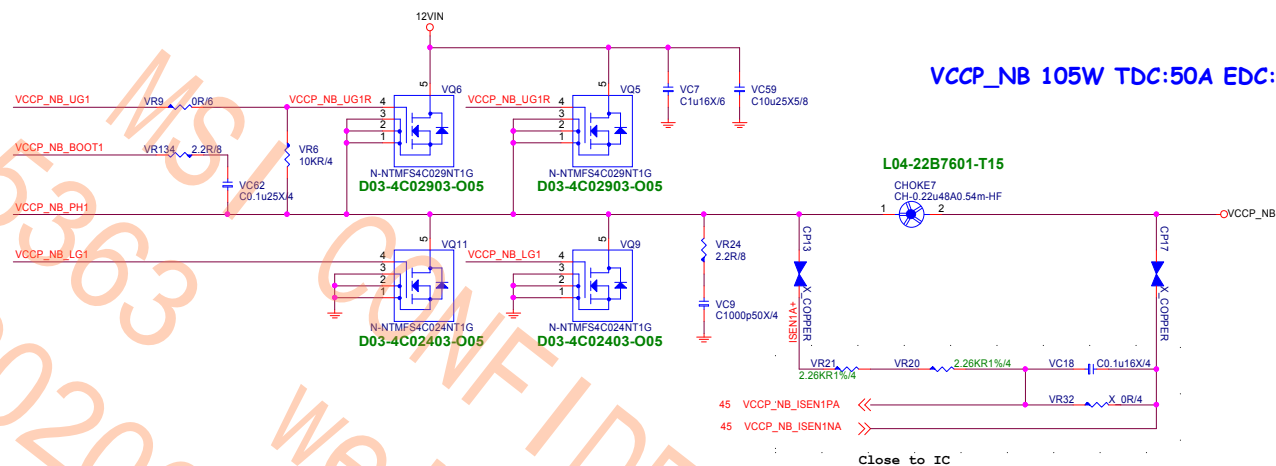
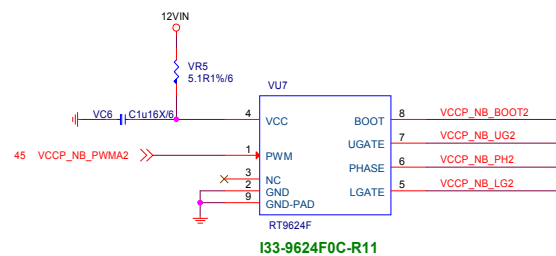
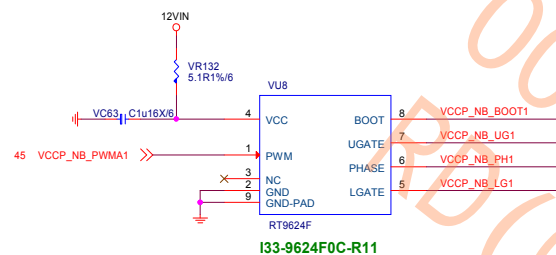


Note:VID Override Circuit

SVC	SVD	BOOT VOLTAGE
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8



VCCP_NB 105W TDC:50A EDC:75A

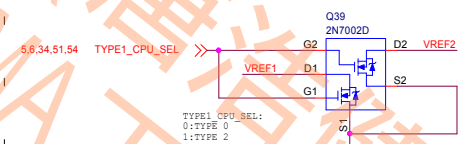
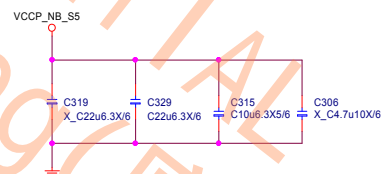
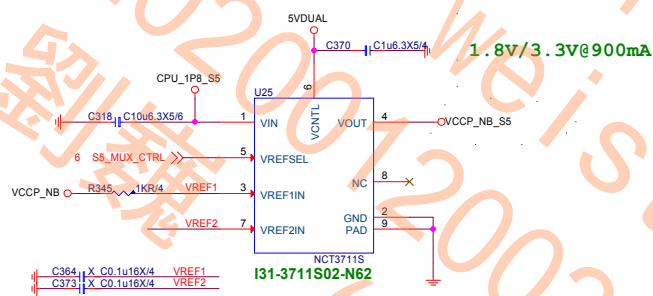
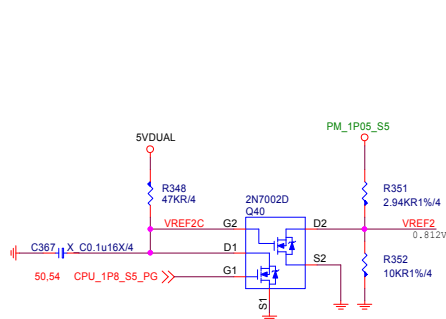


FOR
VCCP_SOC_S5
0.9A

S5_MUX_CTRL
HIGH:S0
LOW: S3/S5

H: +VDDCR_FCH_ALW will track VDDNB
L: If VDDCR_SOC<0.775V (OR 0.85V), VDDCR_SOC_S5 =0.775V.
If VDDCR_SOC >= 0.775V (OR 0.85V) , VDDCR_SOC_S5 will track VDDCR_NB

(VDDCR_SOC_S5 is only used for AMD Family 15h Models 60h-6Fh processors)

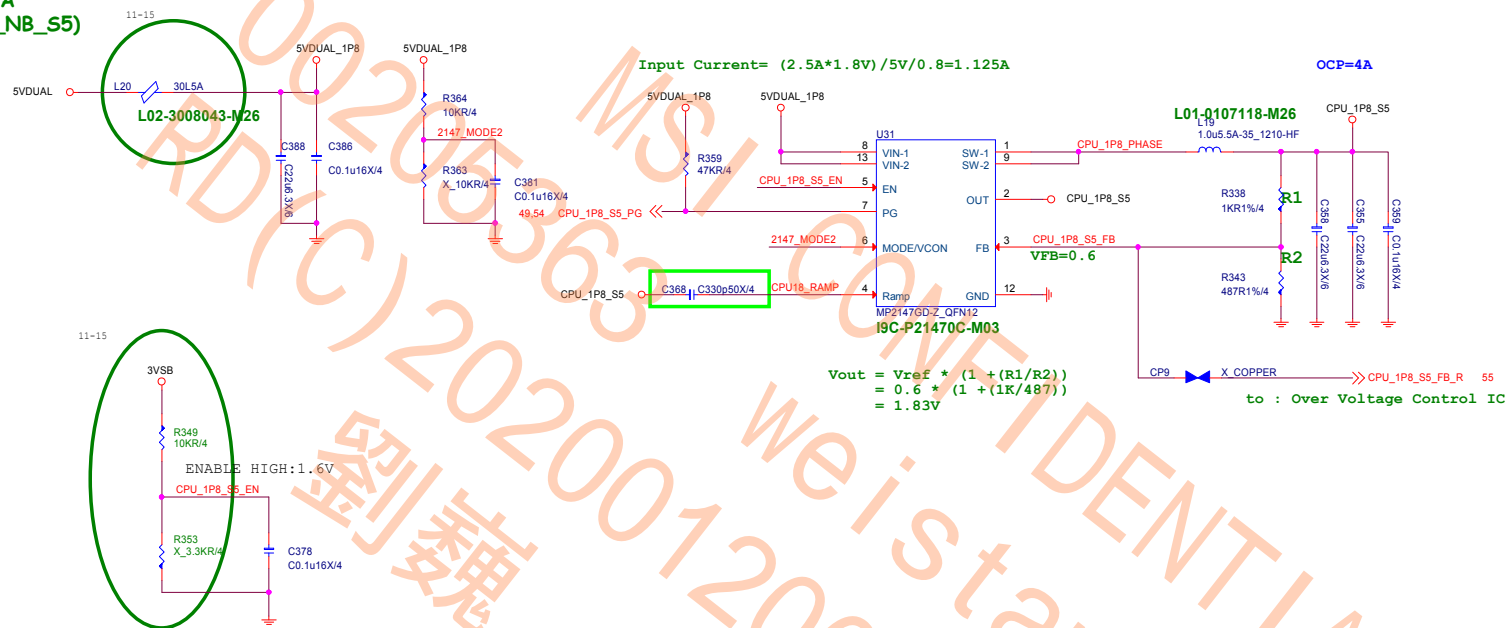


CPU	TYPE	TYPE1_CPU_SEL	TYPE0_CPU_SEL
BR	0	0	1
NA	2	0	0
SR	2	1	1
RV/ZP	3	1	0

CPU VCCP_NB_S5 ONLY SUPPORT TYPE0

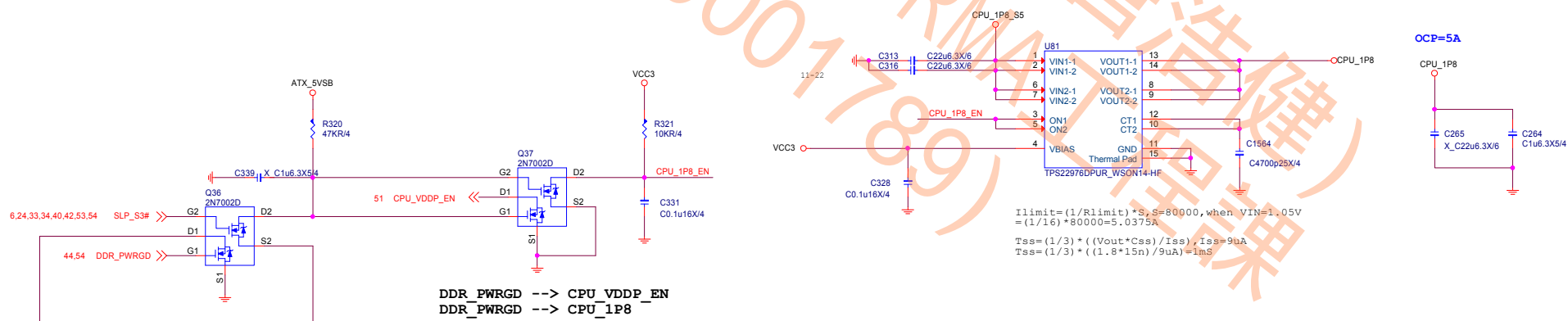
CPU 1.8V S5 @3.4A

1.8V S5@0.5A
1.8V S0@2A
0.9A(VCCP_NB_S5)



CPU 1.8V S0

1.8V@2A
FOR VCCP_SOC@0.9A



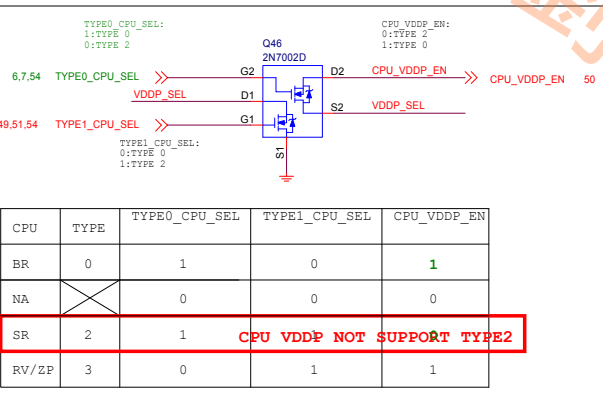
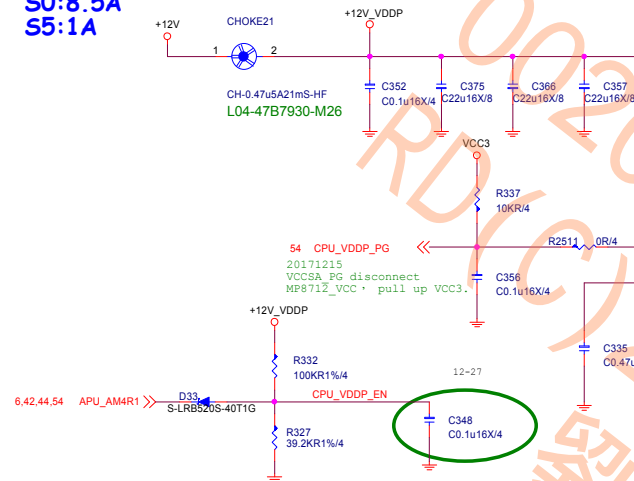
CPU_VDDP_S0

1.05V/0.9V@S0:8.5A

S0:8.5A
S5:1A

OCP=14A

Input Current= (8.5A*1.05V)/12V/0.8=0.93A



CPU	TYPE	TYPE0_CPU_SEL	TYPE1_CPU_SEL	CPU_VDDP_EN
BR	0	1	0	1
NA	0	0	0	0
SR	2	1	0	0
RV/ZP	3	0	1	1

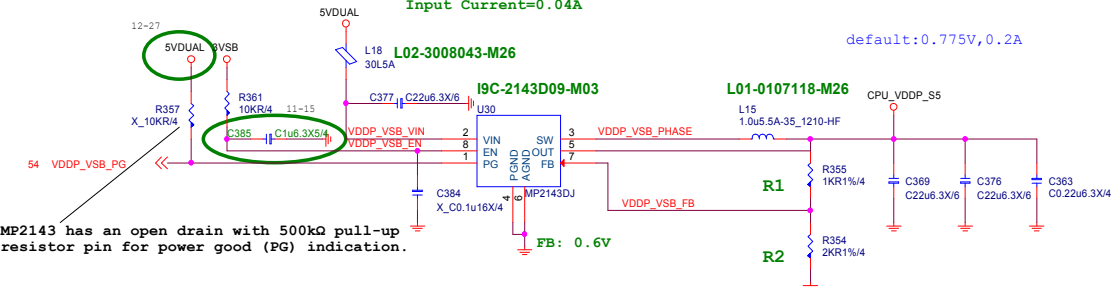
CPU_VDDP_S5

1.05V/0.9V
S5:1A

(VDDCR_SOC_S5 is only used for AMD TYPE0)

Input Current=0.04A

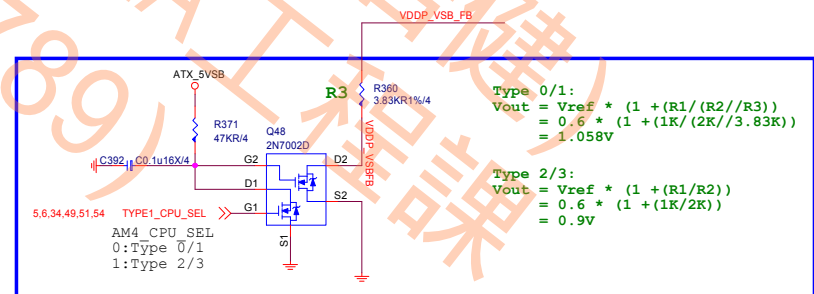
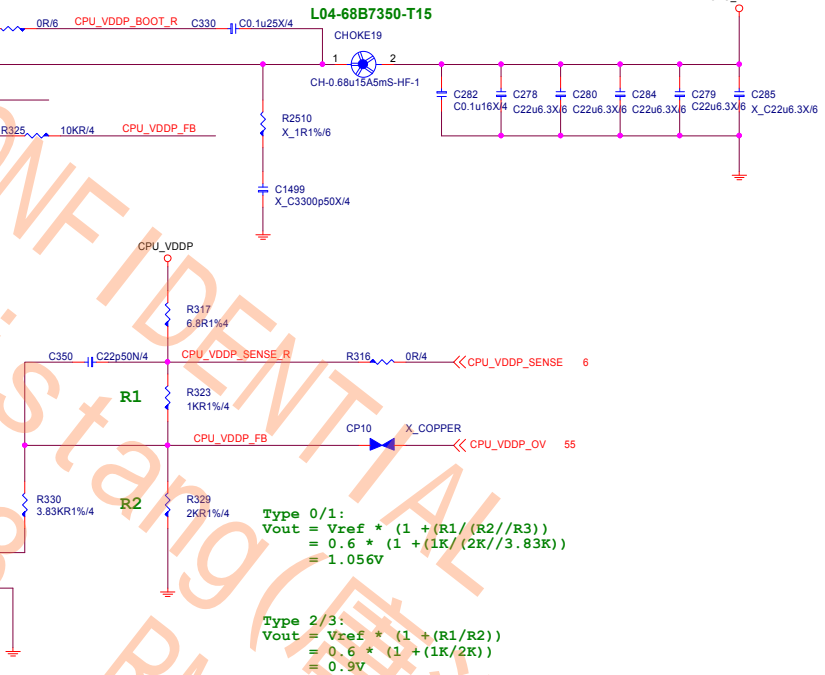
default:0.775V,0.2A



MP2143 has an open drain with 500kΩ pull-up resistor pin for power good (PG) indication.

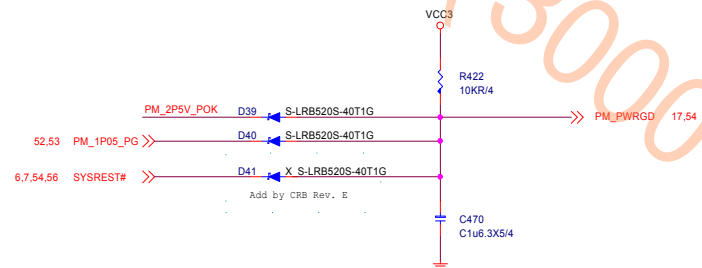
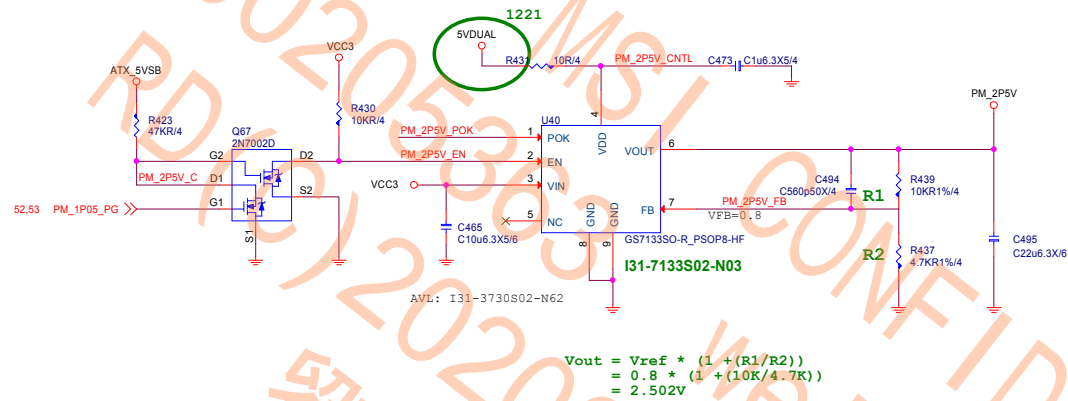
OCP=14A

1.05V, 8.5A

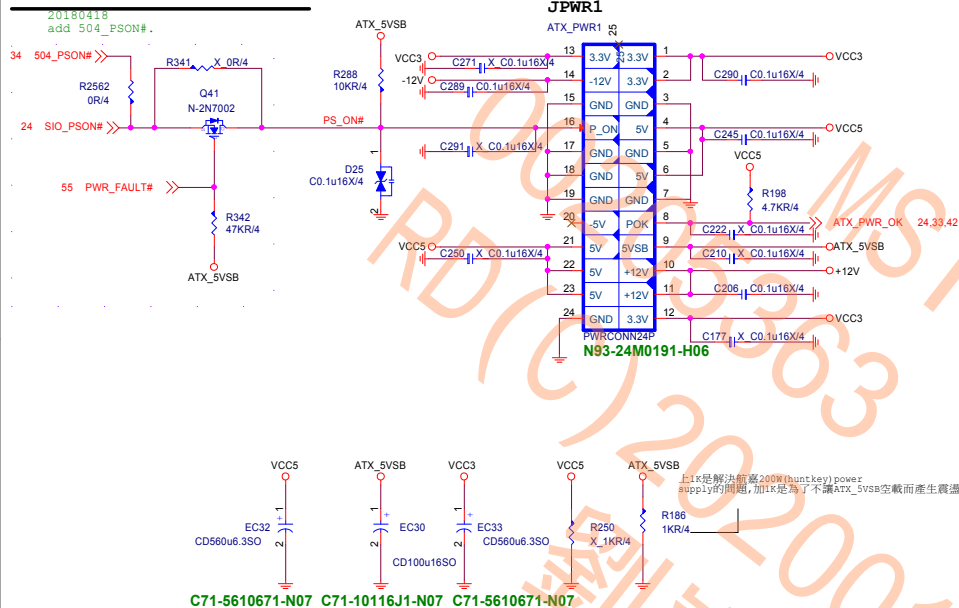


Promontory-2.5V

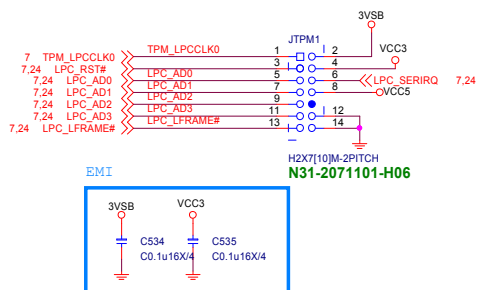
2.5V@900mA



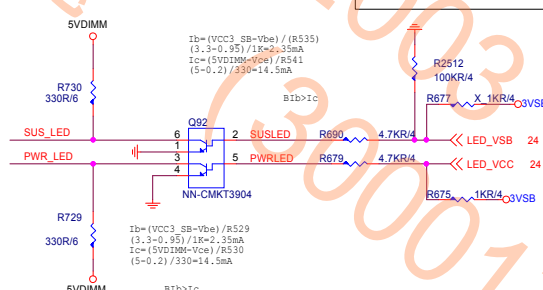
ATX POWER CONNECTOR



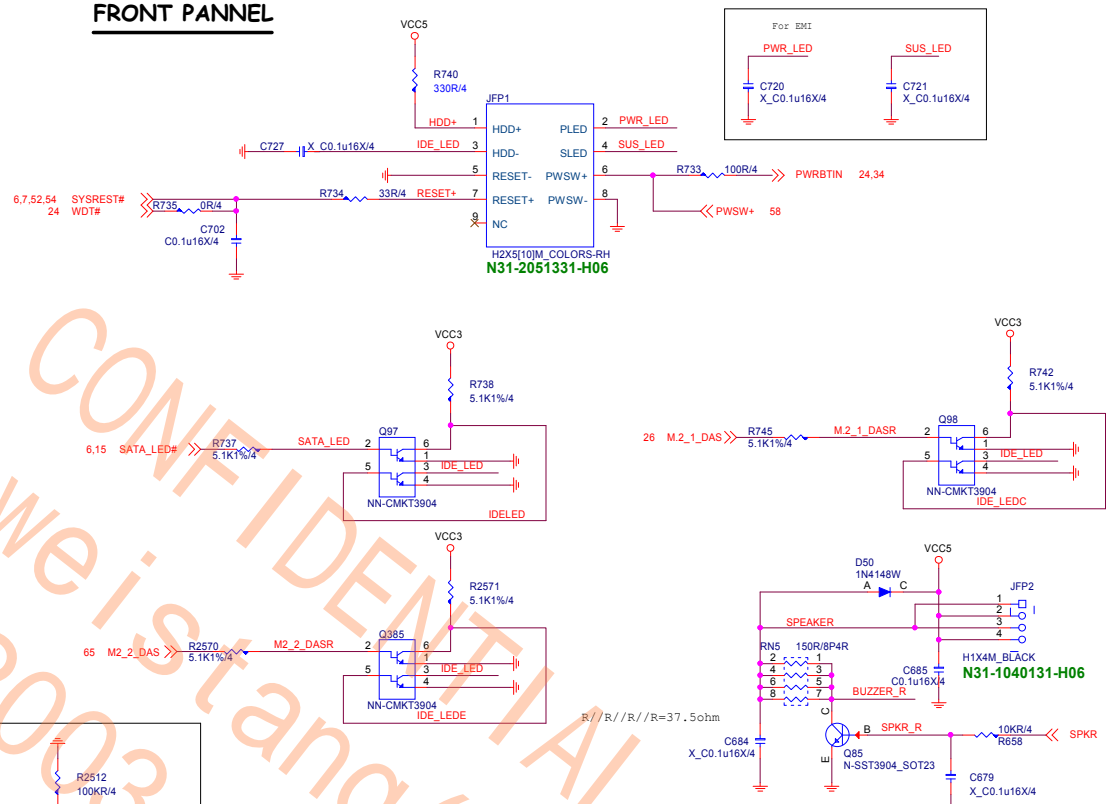
TPM



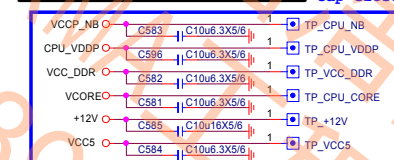
LED (for NCT6797)



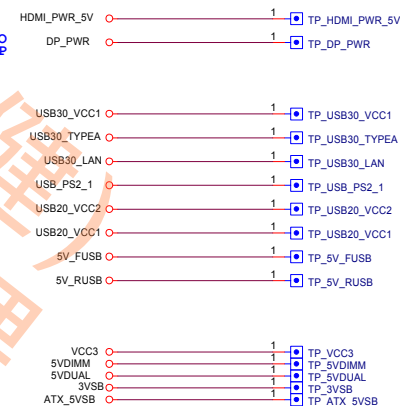
FRONT PANNEL



Voltage Measure Point



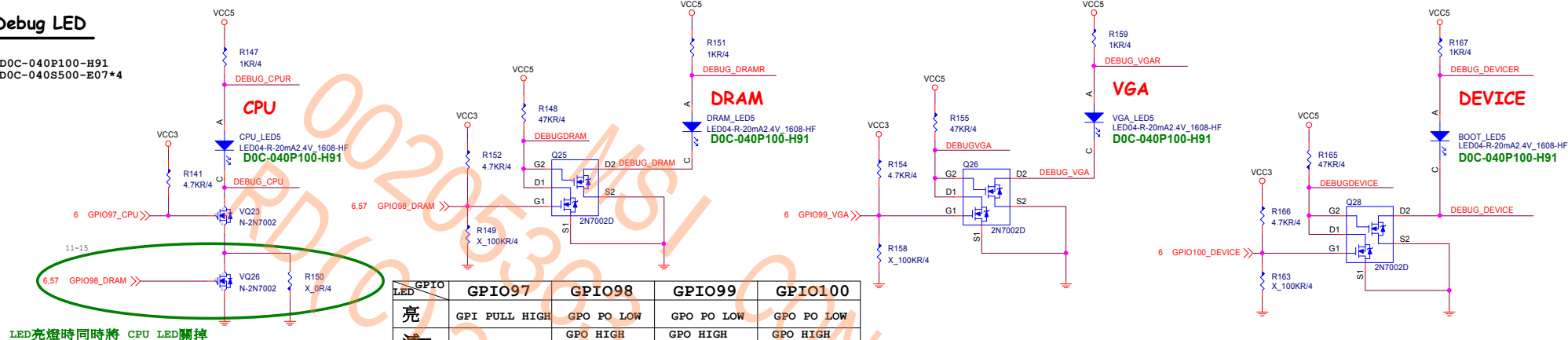
TP close to SIO
Cap close to TP



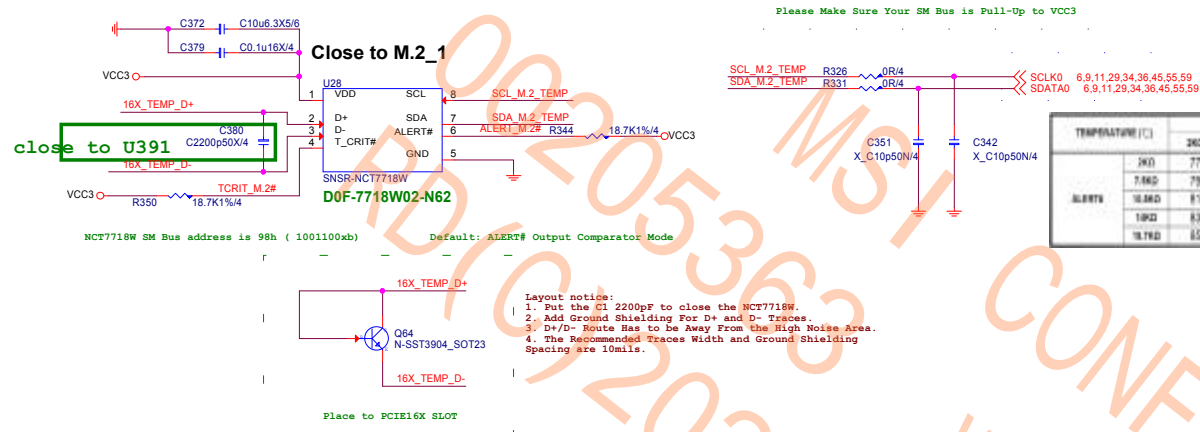
ATX/Front Panel		
File	Document Number	Rev
Custom	MS-7B85	10
Date	Monday, May 14, 2018	Sheet 56 of 75

EZ Debug LED

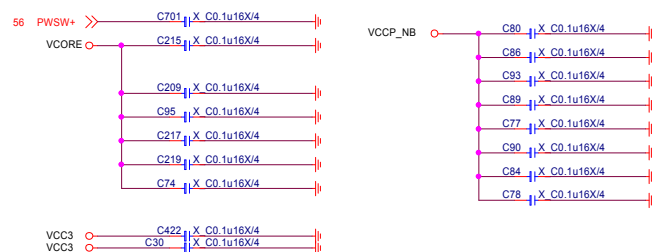
紅:M:D0C-040P100-H91
S:D0C-040S500-E07*4



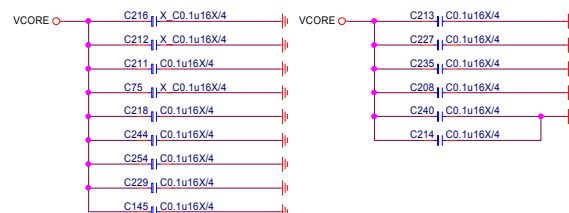
NCT7718W



Add for EMI

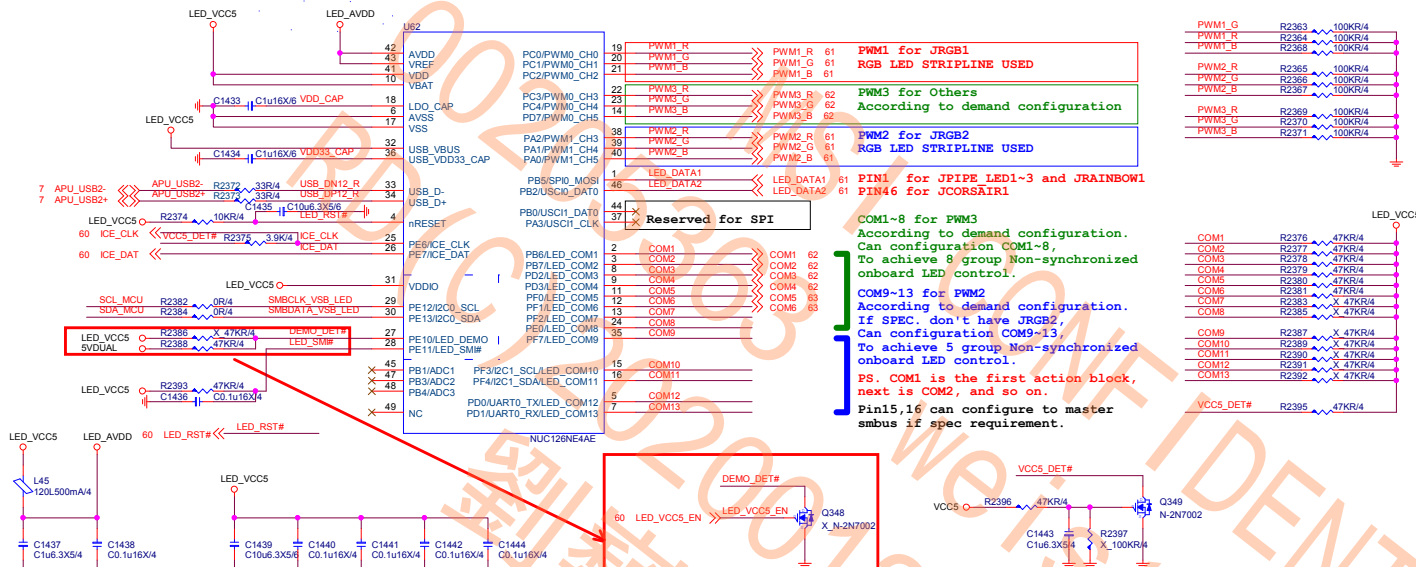


return path



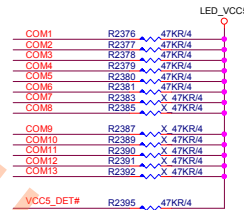
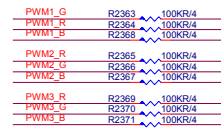
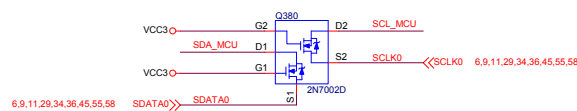
48 PIN LED MCU

If you use ADC function, need to separate VREF from AVDD and 4_09VREF stuff for VREF.



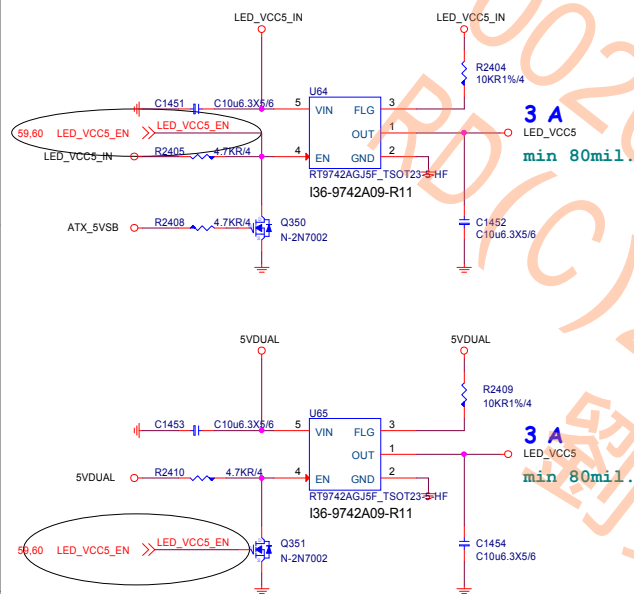
C1822 & C1823 near AVDD Pin. C1820 & C1821 near VDD Pin. C1824 near VBAT Pin. C1827 & C1828 near VDDIO & USB_VBUS Pin.

If SPEC has LED demo function without demo button, DEMO_DET# must pull up to LED_VCC5, Q319 need to stuff and control by LED_VCC5_EN. PS: R2069 remove, R2032 and Q319 need to stuff

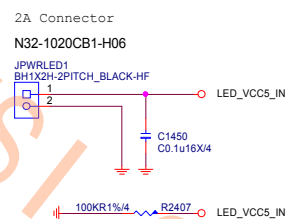


Control	Net Name	PWM USE
PCH	LED_DATA1	No Use
AUDIO Cover	LED_GPIO_01	No Use
MOS/IO cover	LED_GPIO_02	No Use
JRAINBOW1	LED_GPIO_03	No Use
JCORSAIR1	LED_DATA2	No Use
JRGB1/JRGB2	PWM1/ PWM2	PWM1/ PWM2
Board Side LED	COM 1~8	PWM3
Board Side LED	COM 9~13	PWM2

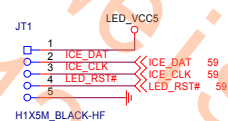
EXTERNAL POWER INPUT



External Power



JT1 for FW update



The schematic diagram shows the TPS25944L buck converter circuit. The input is +12V, and the output is 3.6V. The circuit includes a feedback network with resistors R2411, R2415, R2419, R2425, R2427, and R2428. The output is connected to a load through a diode D63 and a resistor R2428. The circuit is labeled with component values and pin numbers.

Component Values:

- R2411: 0R/4
- R2415: 383K/1%/4
- R2419: 8.25K/T/4
- R2425: 30.9K/1%/4
- R2427: 26.7K/1%/4
- R2428: 24.9K/1%/4
- C1455: 10u16X8
- C1457: C1u16X/6
- C1459: C0.1u16X/4

Pin Connections:

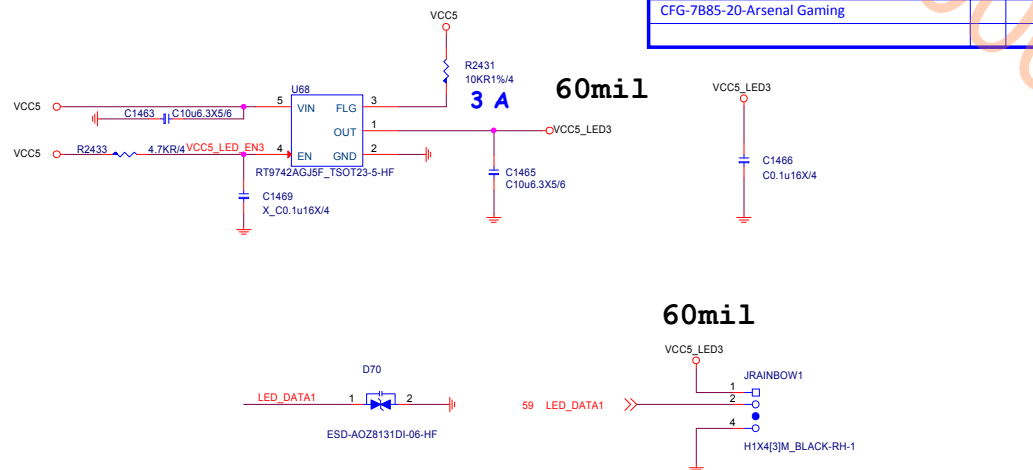
- IN1, IN2, IN3, IN4, IN5: Input pins
- OUT1, OUT2, OUT3, OUT4, OUT5: Output pins
- DMODE: Digital mode pin
- ENULVO: Enable pin
- OVP: Overvoltage protection pin
- dV/dT IMON: dV/dT monitor pin
- GND: Ground
- PAD: Pad pin
- FLT# ILIM: Fault pin

Output Section:

- G_LED1: Green LED
- R_LED1: Resistor
- D63: Diode
- ESD-AO28831DT-24-HF: ESD protection diode

Labels:

- >60mil
- Trip@3.6A
- JR6B1
- H1X4M_BLACK-RH-6

JRAINBOW1

>60mi1

TPS25944L

>60mi1

JR6B2

H1X4M_BLACK-RH-6

0A to 10

Tri@3.6A

CONFIDENTIAL

59 PWM2_G

59 PWM2_R

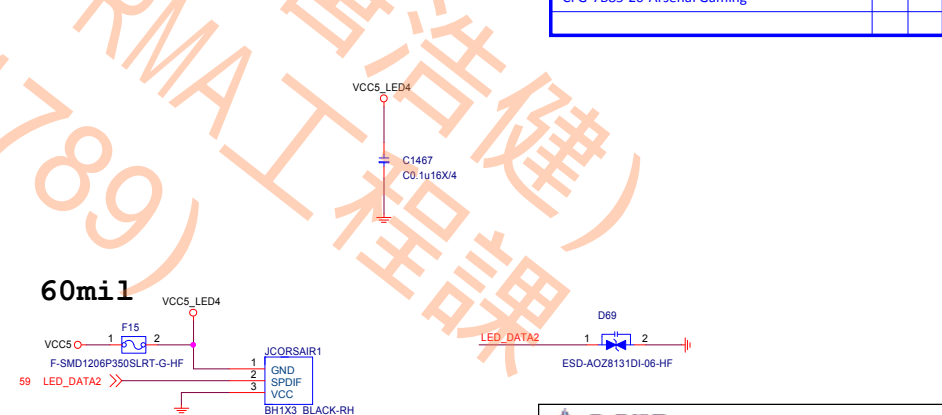
59 PWM2_B

ESD-AQ28831DT-24-HF

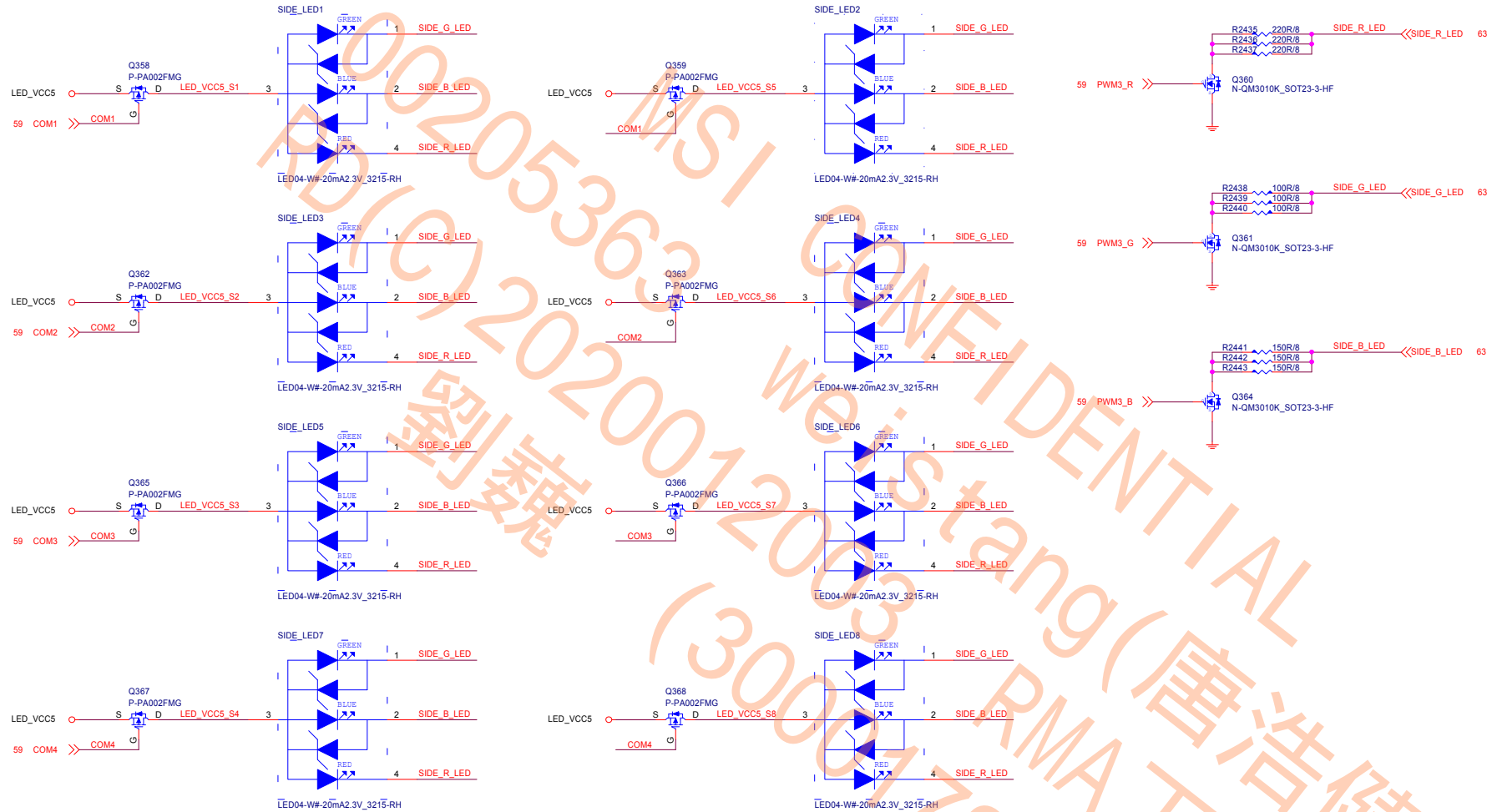
ESD-AQ28831DT-24-HF

ESD-AQ28831DT-24-HF

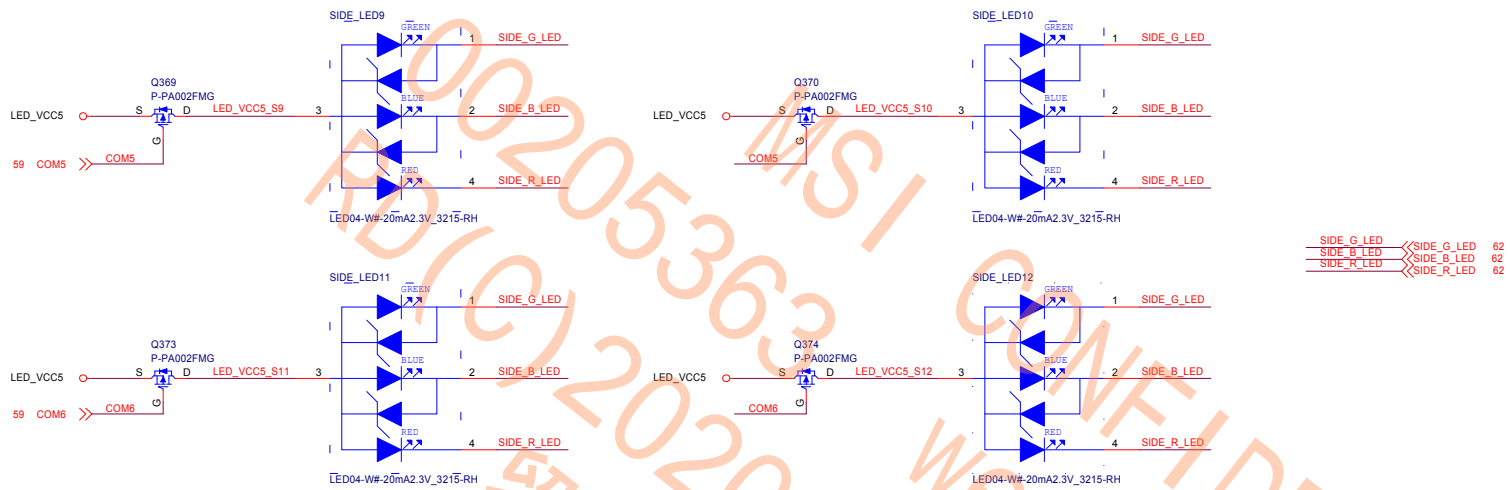
JCORSAIR1

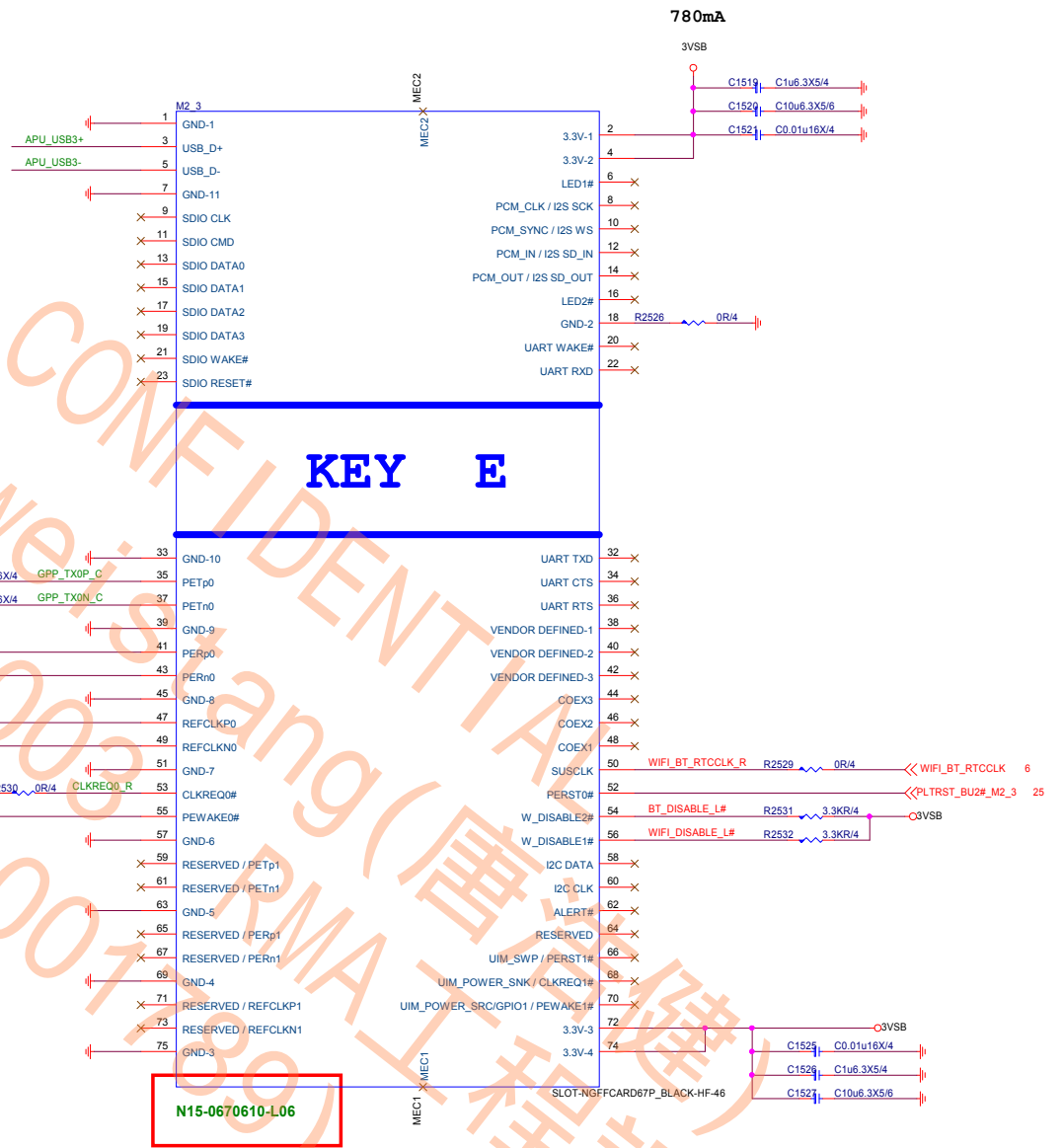
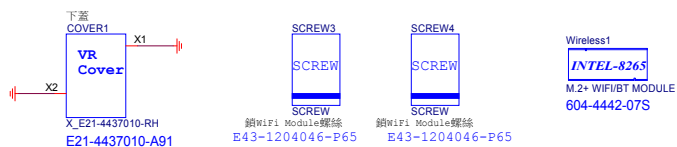
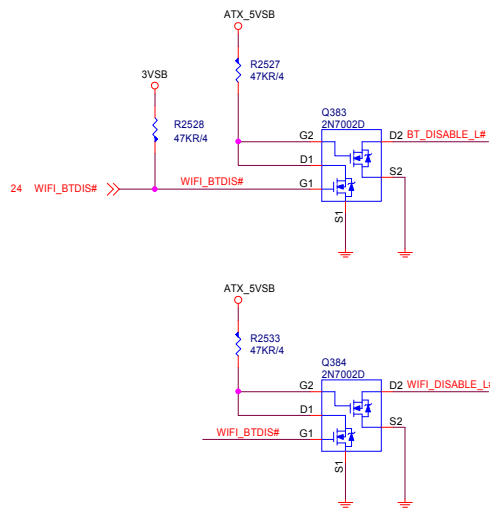
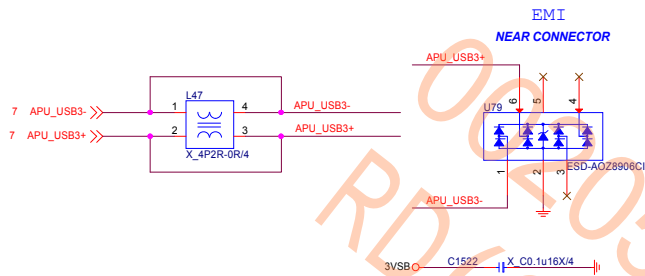


BOARD SIDE LED *8



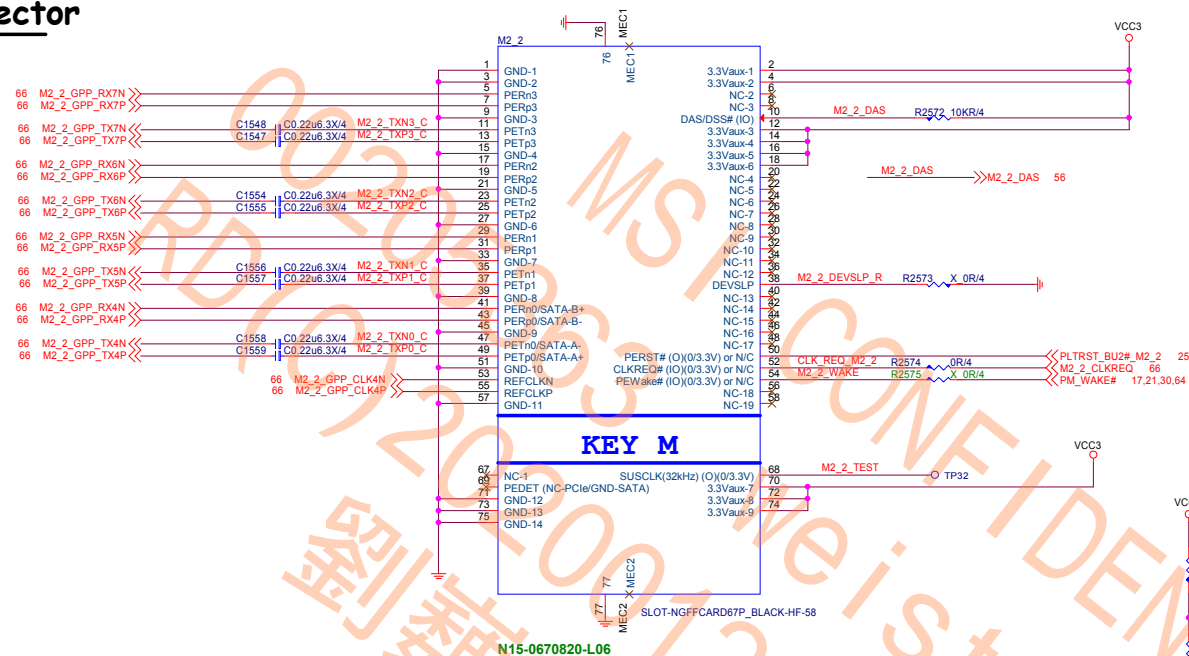
FCH SIDE LED *4





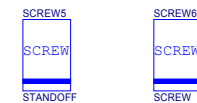
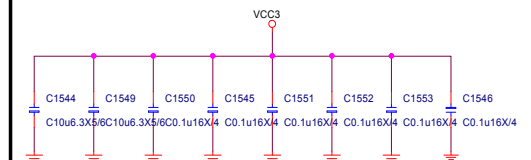
M.2_2 Connector

3.3V@2.5A

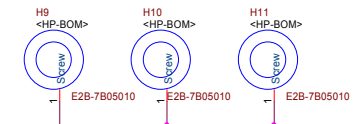


N15-0670820-L06

3.3V@2.5A



E2B-7984020-A89 E43-1203516-A89



Footprint: H_R240D173_BR189_PT

E2B-7B05010-A89

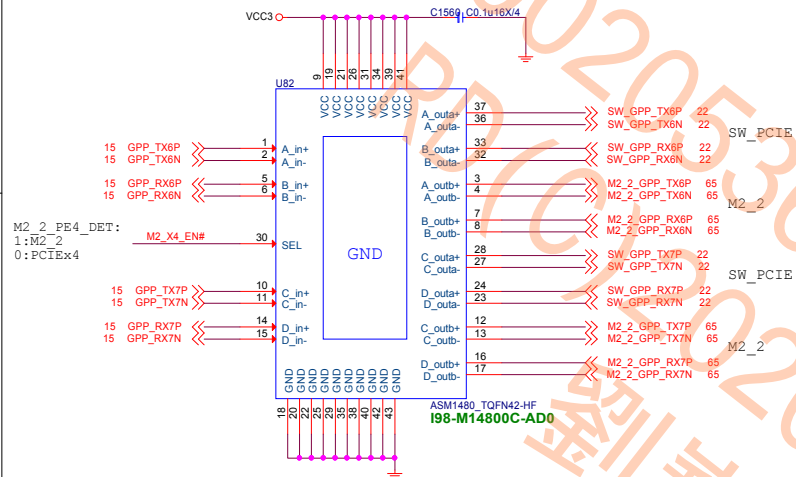
E2B-7B05010-A89

E2B-7B05010-A89

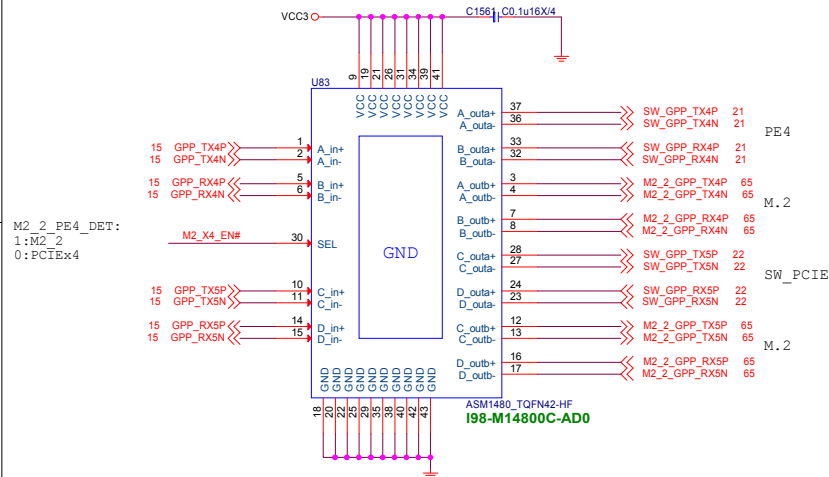
Schematic Cfg	Project
CFG-7B85-10-Performance Gaming	V A
CFG-7B85-20-Arsenal Gaming	

MSI MICRO-START INT'L CO.,LTD.			
File	M.2_2		
Size	Custom	Document Number	MS-7B85
Date:	Friday, May 18, 2018	Sheet	65 of 75

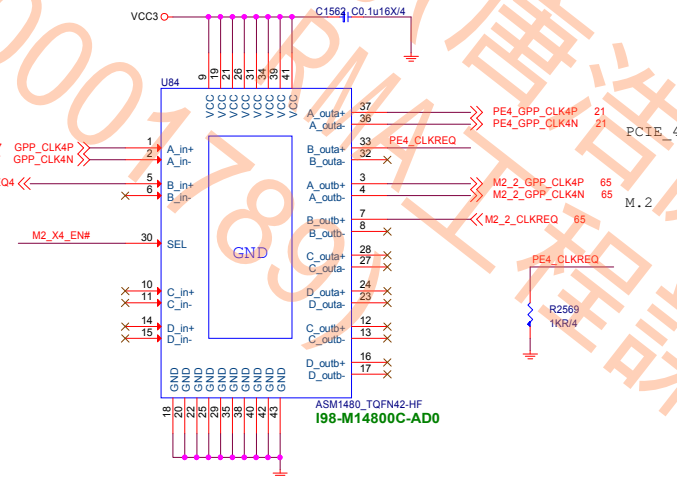
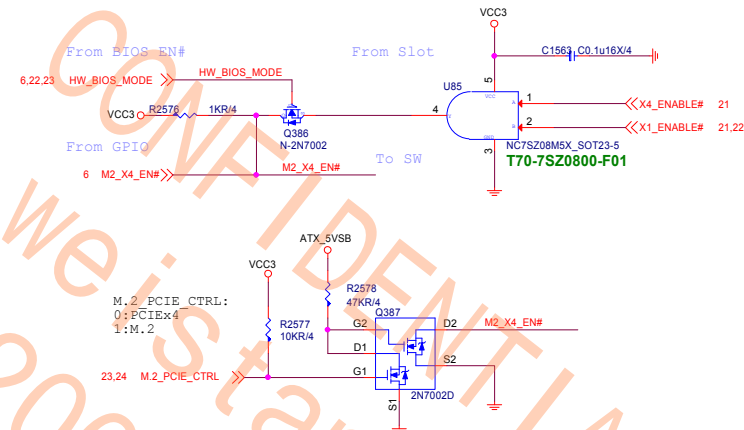
M2_2 and PCI_E4 Switch



SEL	Function
L	N_in +1 to N_outa+/-
H	N_in +1 to N_outb+/-



PCI_E Lanes control circuit



OPTION BOM PARTS

60 Level

	A	B	C	D	E
PCIE X16 SLOTT	OPT_PCIE_X16_1 SLOT_PCIEXP164_13 N11-1641491-L06	OPT_PCIE_X16_2 SLOT_PCIEXP164_13 N11-1641671-L06			OPT_PCIE_X16_3 SLOT_PCIEXP164_13 N11-1641671-L06
PCIE X8 SLOTT	OPT_PCIE_X8_1 SLOT_PCIEXP100_5 N11-1000221-L06	OPT_PCIE_X8_2 SLOT_PCIEXP100_3 N11-1000261-L06	OPT_PCIE_X8_3 SLOT_PCIEXP100_5 N11-1000221-L06	OPT_PCIE_X8_4 SLOT_PCIEXP100_3 N11-1000231-L06	OPT_PCIE_X8_5 SLOT_PCIEXP100_5 N11-1000261-L06 FOOTPRINT SLOT_PCIEXP100_5 可包容 SLOT_PCIEXP100_3
REAL USB Type A	OPT_USBA_1 USB_A1_9_USB3_1_1 N53-09M0861-L06	OPT_USBA_2 USB_A1_9_USB3_1_1 N53-09M0591-L06	OPT_USBA_3 USB_A1_9_USB3_1_1 N53-09M0671-L06	OPT_USBA_4 USB_A1_9_USB3_1_1 N53-09M0851-L06	
SOLID CAP 270u16	OPT_270u16_BLK1 C_P3_5_D8_H8 C71-2711761-N07	OPT_270u16_GLD1 C_P3_5_D8_H8 C71-2711771-N07			FOOTPRINT C_P3_5_D8_H12 因為機構無法使用 請注意! C_P3_5_D8_H9 可包容 C_P3_5_D8_H8
SOLID CAP 560u6.3	OPT_560u6.3_BLK1 C_P2_5_D6_3_H9_5 C71-5610671-N07	OPT_560u6.3_GLD1 C_P2_5_D6_3_H9_5 C71-5610671-N07			FOOTPRINT C_P2_5_D6_3_H9_5 可包容 C_P2_5_D6_3_H9
SOLID CAP 470u6.3	OPT_470u6.3_BLK1 C_P2_5_D6_3_H9_5 C71-4710671-N07	OPT_470u6.3_BU1 C_P2_5_D6_3_H9 C71-4710671-A05			FOOTPRINT C_P2_5_D6_3_H9_5 可包容 C_P2_5_D6_3_H9
SOLID CAP 100u16	OPT_100u16_BLK1 C_P2_5_D6_3_H5 C71-1011611-N07	OPT_100u16_GLD1 C_P2_5_D6_3_H5 C71-1011611-N07			FOOTPRINT C_P2_5_D6_3_H5 可包容 C_P2_5_D6_3_H5
MEM SLOTT	OPT_MEM_BLK1 DDRIV_D288 N13-2880581-L06	OPT_MEM_RED1 DDRIV_D288 N13-2880701-L06			OPT_MEM_WHITE1 DDRIV_D288 N13-2880541-L06 FOOTPRINT DDRIV_D288 1_2 可包容 DDRIV_D288
MKT6 Label	OPT_X370_1 X370 KRAIT GAMING G51-M1SPK85-Q13	OPT_B450_1 B450 GAMING PRO CARBON ACX370 SLI PLUS G51-M1SPN07-Q13	OPT_X370_2 G51-M1SPK87-Q13	OPT_X470_1 X470 GAMING PRO G51-M1SPM51-Q13	OPT_X470_4 X470 GAMING PLUS G51-M1SPM54-Q13
PCH SINK	OPT_PCH_SINK_1 HS-0408800-RH OE3-7B85030-A87	OPT_PCH_SINK_2 X470_GAMING_PLUS E31-0409460-K08		OPT_PCH_SINK_3 HS-0408800-RH E31-0408920-K08	OPT_PCH_SINK_4 KRAIT E31-0408970-A87
MOSN +IO	OPT_MOSN_IO_1 KRAIT OE3-7B85010-A87	OPT_MOSN_IO_2 SLI PLUS E31-0505420-K08		OPT_MOSN_IO_3 KRAIT E31-0504780-K08	OPT_MOSN_IO_4 PRO E31-0504820-A87
MOSW	OPT_MOSW_1 KRAIT OE3-7B85020-A87	OPT_MOSW_2 SLI PLUS E31-0505430-K08		OPT_MOSW_3 KRAIT E31-0504790-K08	OPT_MOSW_4 PRO E31-0504830-A87
PS2_USB	OPT_PS2_USB_1 IOASM_USB_DIN14 N58-14M0211-F02	OPT_PS2_USB_2 MINIDIN_USBX2-RH-10 N58-14M0241-H06			
HDMI_USB	OPT_HDMI_USB_1 IOASM_USB3_HDMI37 N58-37M0101-L06	OPT_HDMI_USB_2 IOASM_USB3_HDMI37 N58-37M0111-L06			
LAN_USB	OPT_LAN_USB_1 RJ45_USBX2_LED32 N58-32F0291-F02	OPT_LAN_USB_2 RJ45_USBX2_LEDX2-1000-RH N58-32F0311-F02			

5010 Level

	A	B	C	D	E
FCH	OPT_X470_NB PROM_B450 OB1-7B78001-A08	OPT_B450_NB 218-0831005-00-RH B01-21808L5-A08			
M.2 SLOTT	OPT_M2_1 SLOT_NGFFCARD67_31 N15-0670820-L06	OPT_M2_2 SLOT_NGFFCARD67_2 N15-0670330-L06	OPT_M2_3 SLOT_NGFFCARD67_33 N15-0670810-L06		FOOTPRINT SLOT_NGFFCARD67_31 可包容 SLOT_NGFFCARD67_2
REAL USB Type C	OPT_USBC_1 USB_C1_24_2 N53-24M0180-L06	OPT_USBC_2 USB_C1_24_2 N53-24M0040-L06			
PCB	OPT_PCB_1 7B85-10 PD0-07B8510-G37 PD0-07B850A-E48	OPT_PCB_2 7A33-21 PD0-07A3321-G37 PD0-07A3321-E48	OPT_PCB_3 7A33-31 PD0-07A3331-G37 PD0-07A3331-E48		
0 Ohm (0402)	OPT_0OHM_5010_1 UR24 5010_0402 R11-0000012-W08				
LED	OPT_LED_RED_5010_1 LED04-R-20mA2.4V_1608-HF D0C-040P100-H91				

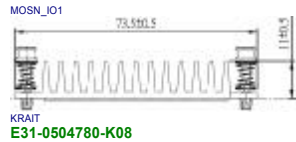
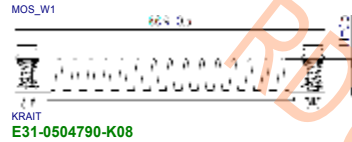
5020 Level

	A	B	C	D	E
LED	OPT_LED_LED_5020_1 LED04-BR-25mA2.35V_1711-RH 5020_0402 D0C-040S600-E07				

60 Level

	A	B	C	D	E
Audio cover	OPT_AUD_COV_1 AUDIO_COVER_20X19_5 E21-7A59010-A91				OPT_AUD_COV_2 AUDIO_COVER_20X19_5 E21-7A62010-A91
Audio Jack	OPT_AUD_JACK_1 JACK_AUD_D26P N54-26F0351-L06				OPT_AUD_JACK_2 JACK_AUD_26P_U2 N54-26F0361-L06
M.2 SCREW	OPT_M2_SCR_1 SCREW E2B-7A69010-A89				
PCIE X4 SLOTT	OPT_PCIE_X4_1 SLOT_PCIEXP100_5 N11-1000221-L06	OPT_PCIE_X4_2 SLOT_PCIEXP100_5 N11-1000261-L06			

MOS SINK



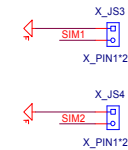
DDR Cover

11-16
RM: E95-0000022-C22/ E95-0000022-A91

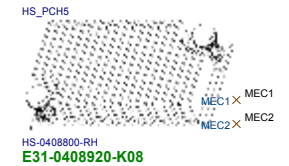
CPU Socket



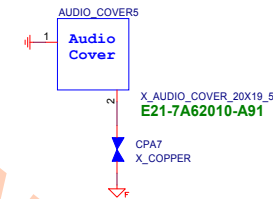
Simulation



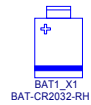
PCH SINK



AUDIO COVER



MANUAL PART



AVZ:
D06-0100161-P52
D06-0100101-K26



7B85-0A
PD0-07A340A-G37, 精成-深圳, 23, 寶安恩斯通廠 (MSIS)
PD0-07A340A-E48, 競華, 23, 寶安恩斯通廠 (MSIS)

BIOS LABEL



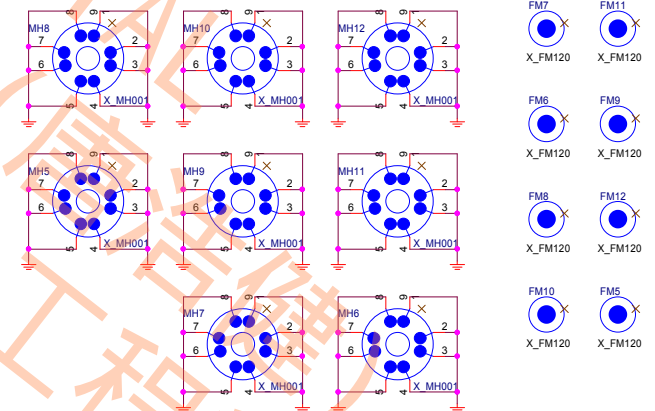
MKTG name Label



ROYALTY



Optics Orientation Holes



Schematic Cfg		Project	
CFG-7B85-10-Performance Gaming		V	A
CFG-7B85-20-Arsenal Gaming			

MSI MICRO-START INT'L CO.,LTD.			
Manual Parts			
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