AMD AM4

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MS-7A33 BOM List

	Schematic Cfg	ERP NO.	Remark	BOM
	CFG1-7A33-0A-X370-GAMING_601-7A33-A01	601-7A33-A01	X370 KRAIT GAMING	A
*	CFG2-7A33-0A-B350-GAMING_601-7A33-A02	601-7A33-A02	B350 KRAIT GAMING	B
	CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	601-7A33-B01	X370 SLI PLUS	C

MSI BOM: A B C

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Title: COVER SHEET

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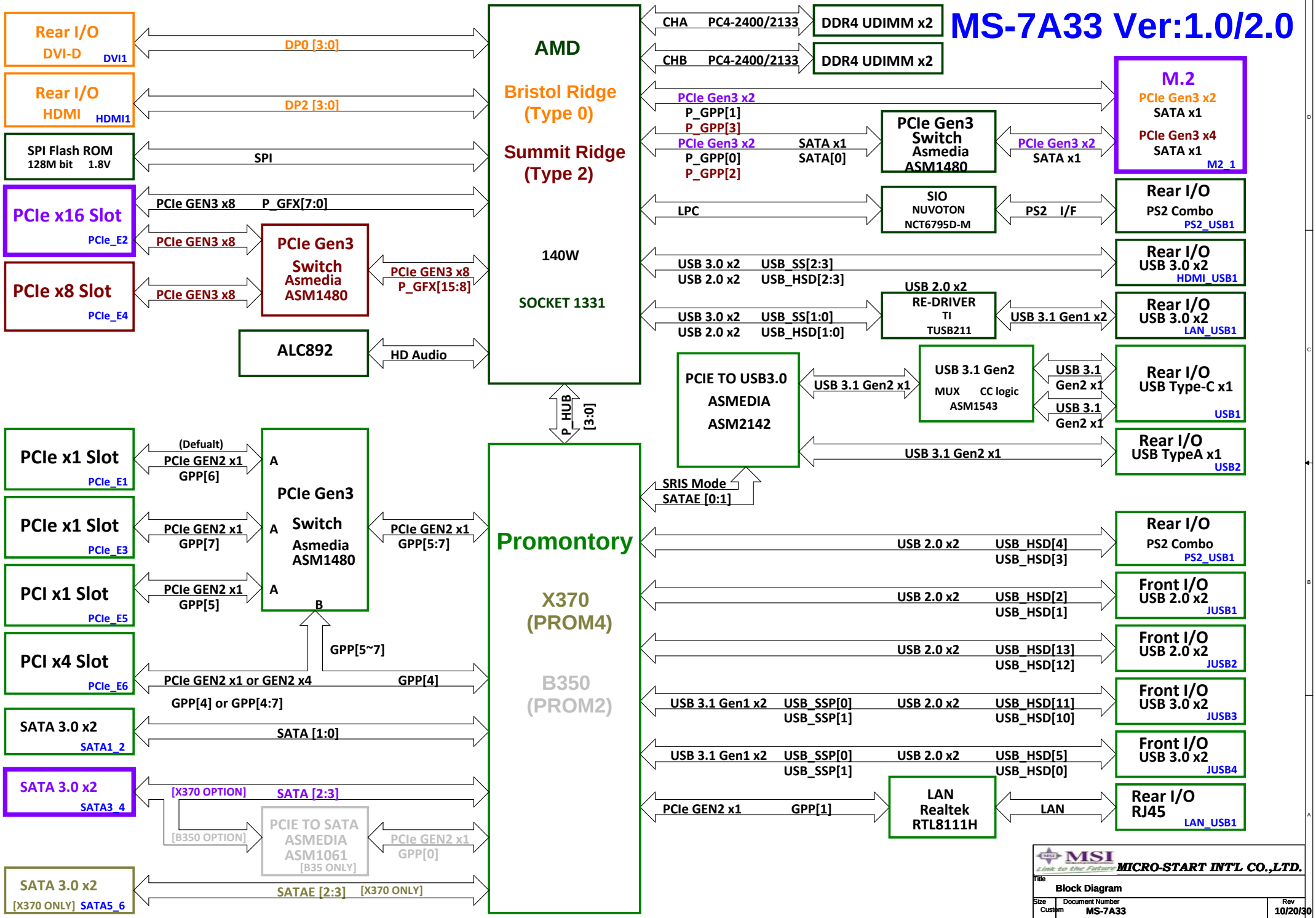
MS-7A33 Ver:1.0/2.0
Rear I/O
DVI-D
DVI1
DP0 [3:0]
Rear I/O
HDMI
HDMI1
DP2 [3:0]
SPI Flash ROM
128M bit 1.8V
SPI
PCIe x16 Slot
PCIe_E2
PCIe GEN3 x8
P_GFX[7:0]
PCIe x8 Slot
PCIe_E4
PCIe GEN3 x8
PCIe Gen3
Switch
Asmedia
ASM1480
PCIe GEN3 x8
P_GFX[15:8]
ALC892
HD Audio
AMD
Bristol Ridge
(Type 0)
Summit Ridge
(Type 2)
140W
SOCKET 1331
CHA PC4-2400/2133
DDR4 UDIMM x2
CHB PC4-2400/2133
DDR4 UDIMM x2
PCIe Gen3 x2
P_GPP[1]
P_GPP[3]
PCIe Gen3 x2
P_GPP[0]
P_GPP[2]
SATA x1
SATA[0]
PCIe Gen3
Switch
Asmedia
ASM1480
PCIe Gen3 x2
SATA x1
M.2
PCIe Gen3 x2
SATA x1
PCIe Gen3 x4
SATA x1
M2_1
LPC
SIO
NUVOTON
NCT6795D-M
PS2 I/F
Rear I/O
PS2 Combo
PS2_USB1
USB 3.0 x2
USB 2.0 x2
USB_SS[2:3]
USB_HSD[2:3]
Rear I/O
USB 3.0 x2
HDMI_USB1
USB 3.0 x2
USB 2.0 x2
USB_SS[1:0]
USB_HSD[1:0]
USB 2.0 x2
RE-DRIVER
TI
TUSB211
USB 3.1 Gen1 x2
Rear I/O
USB 3.0 x2
LAN_USB1
P_HUB
[3:0]
PCIE TO USB3.0
ASMEDIA
ASM2142
USB 3.1 Gen2 x1
USB 3.1 Gen2
MUX CC logic
ASM1543
USB 3.1
Gen2 x1
USB 3.1
Gen2 x1
Rear I/O
USB Type-C x1
USB1
USB 3.1 Gen2 x1
Rear I/O
USB TypeA x1
USB2
SRIS Mode
SATAE [0:1]
PCIe x1 Slot
PCIe_E1
(Defualt)
PCIe GEN2 x1
GPP[6]
PCIe x1 Slot
PCIe_E3
PCIe GEN2 x1
GPP[7]
PCI x1 Slot
PCIe_E5
PCIe GEN2 x1
GPP[5]
PCIe Gen3
Switch
Asmedia
ASM1480
A
A
A
B
PCIe GEN2 x1
GPP[5:7]
GPP[5~7]
PCI x4 Slot
PCIe_E6
PCIe GEN2 x1 or GEN2 x4
GPP[4]
GPP[4] or GPP[4:7]
SATA 3.0 x2
SATA1_2
SATA [1:0]
SATA 3.0 x2
SATA3_4
[X370 OPTION]
SATA [2:3]
[B350 OPTION]
PCIE TO SATA
ASMEDIA
ASM1061
[B35 ONLY]
PCIe GEN2 x1
GPP[0]
SATA 3.0 x2
[X370 ONLY] SATA5_6
SATAE [2:3]
[X370 ONLY]
Promontory
X370
(PROM4)
B350
(PROM2)
USB 2.0 x2
USB_HSD[4]
USB_HSD[3]
Rear I/O
PS2 Combo
PS2_USB1
USB 2.0 x2
USB_HSD[2]
USB_HSD[1]
Front I/O
USB 2.0 x2
JUSB1
USB 2.0 x2
USB_HSD[13]
USB_HSD[12]
Front I/O
USB 2.0 x2
JUSB2
USB 3.1 Gen1 x2
USB_SSP[0]
USB_SSP[1]
USB 2.0 x2
USB_HSD[11]
USB_HSD[10]
Front I/O
USB 3.0 x2
JUSB3
USB 3.1 Gen1 x2
USB_SSP[0]
USB_SSP[1]
USB 2.0 x2
USB_HSD[5]
USB_HSD[0]
Front I/O
USB 3.0 x2
JUSB4
PCIe GEN2 x1
GPP[1]
LAN
Realtek
RTL8111H
LAN
Rear I/O
RJ45
LAN_USB1
MSI
MICRO-START INT'L CO.,LTD.
Title
Block Diagram
Size
Custom
Document Number
MS-7A33
Rev
10/20/30
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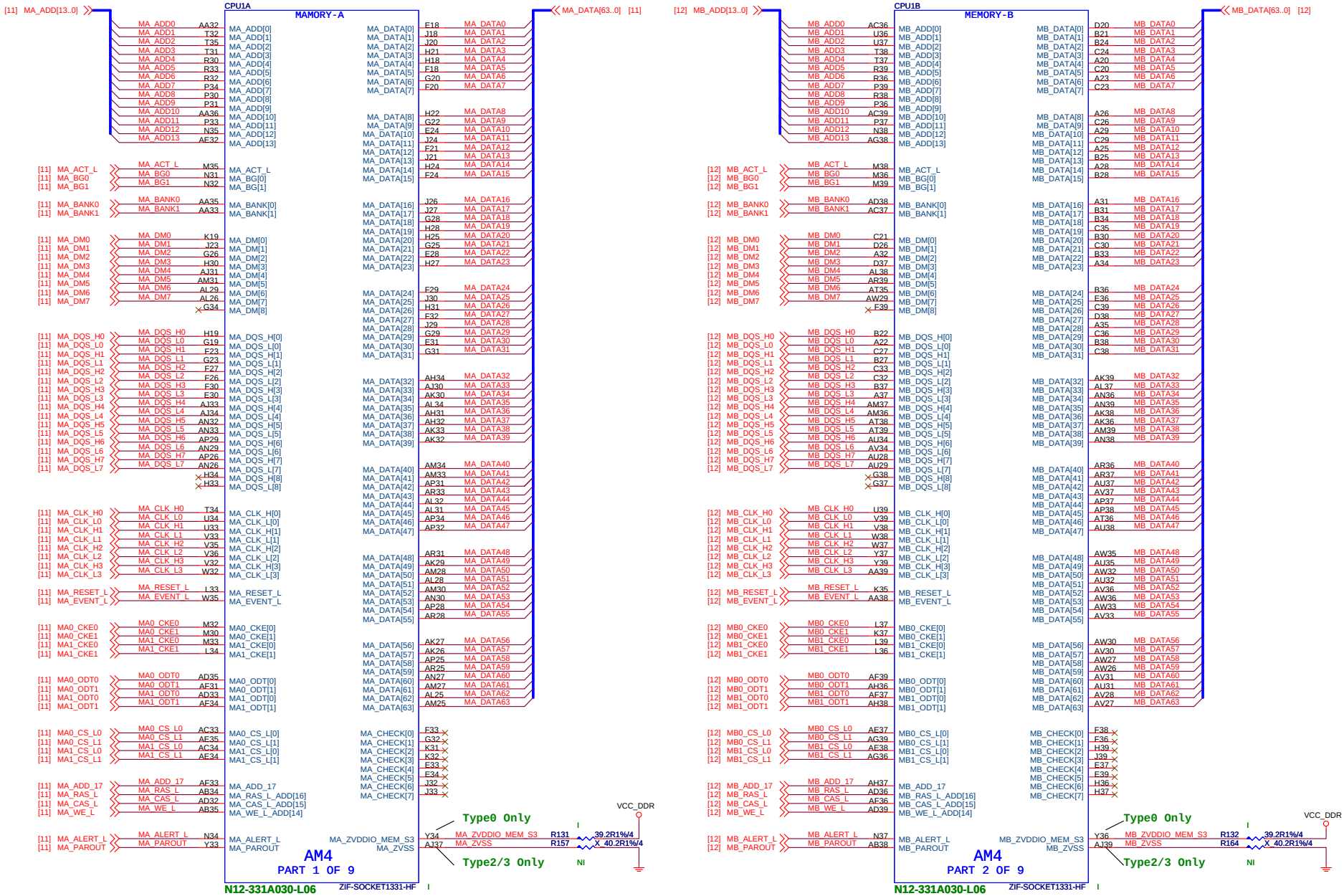

Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

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Title: AM4 DDR4 I/F

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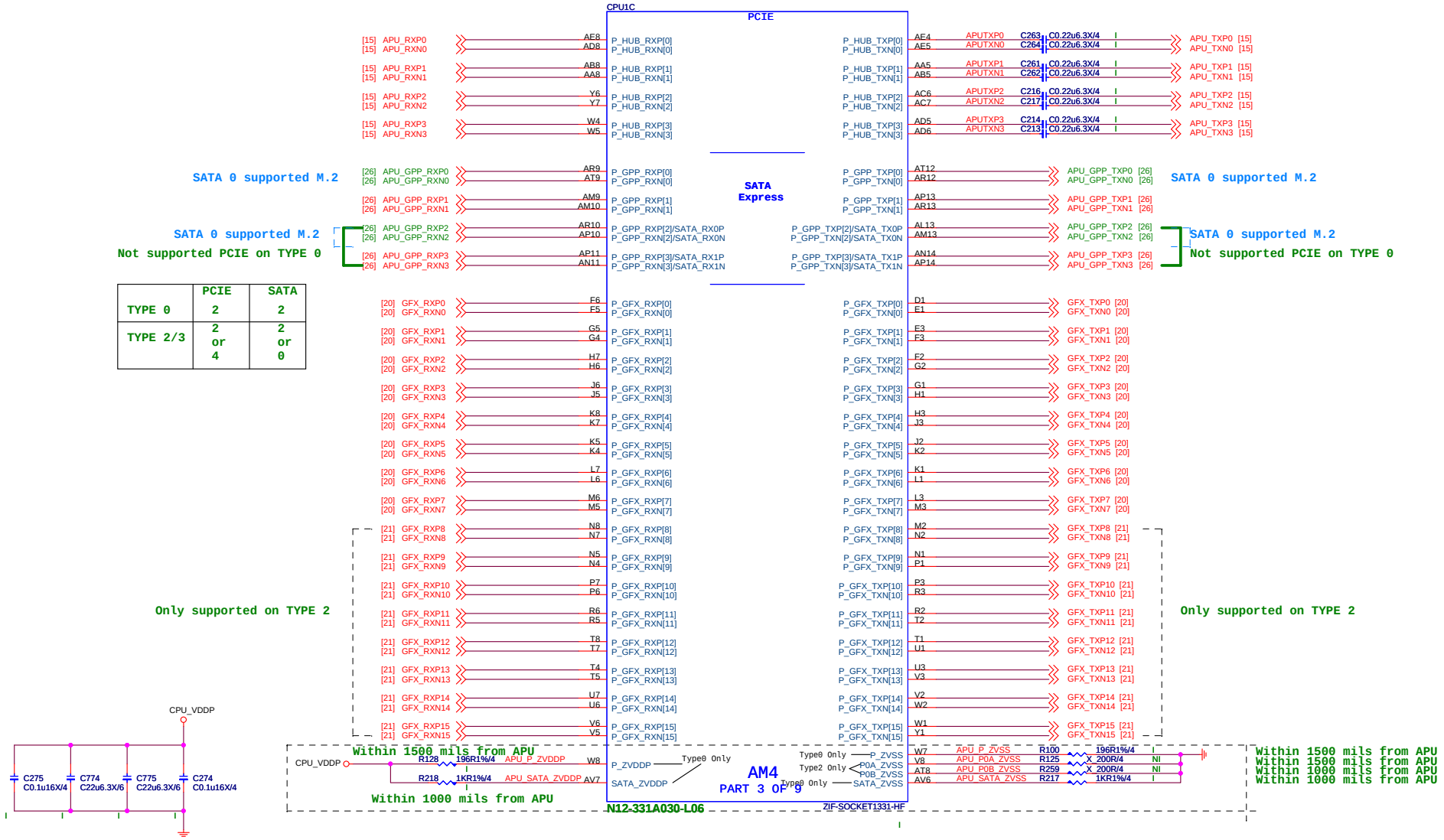

	PCIE	SATA
TYPE 0	2	2
TYPE 2/3	2 or 4	2 or 0

Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

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Title: AM4 PCIE/SATAE

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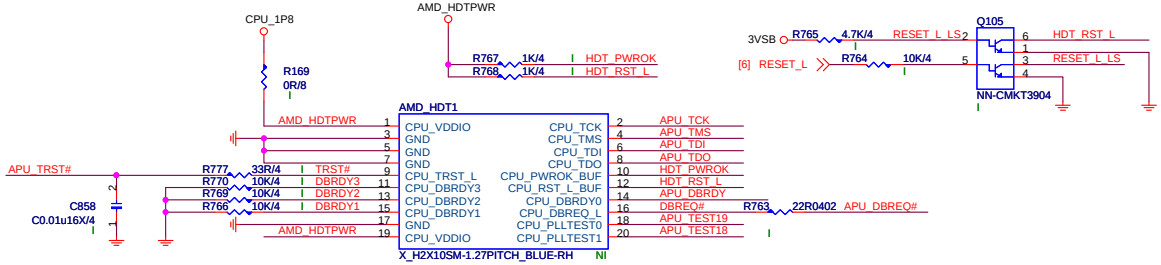
Stuff for first model



IB=(AMD_HDTPWR-Vbe)/4.7k
(1.8-0.95)/4.7k=0.181mA
IC=(Vc-Vce)/10k
(1.8-0.2)/10k=0.16mA
B*Ib>Ic=10*0.181=1.81>0.16
IB=(Vb-Vbe)/10k
(1.75-0.95)/10k=0.08mA
IC=(Vc-Vce)/10k
(3.3-0.2)/10k=0.16mA
B*Ib>Ic=10*0.08=0.8>0.16

IB=(AMD_HDTPWR-Vbe)/4.7k
(1.8-0.95)/4.7k=0.181mA
IC=(Vc-Vce)/10k
(1.8-0.2)/10k=0.16mA
B*Ib>Ic=10*0.181=1.81>0.16
IB=(Vb-Vbe)/10k
(1.75-0.95)/10k=0.08mA
IC=(Vc-Vce)/10k
(3.3-0.2)/10k=0.16mA
B*Ib>Ic=10*0.08=0.8>0.16

Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

MICRO-START INT'L CO.,LTD.

Title: AM4 DISPLAY/AUDIO

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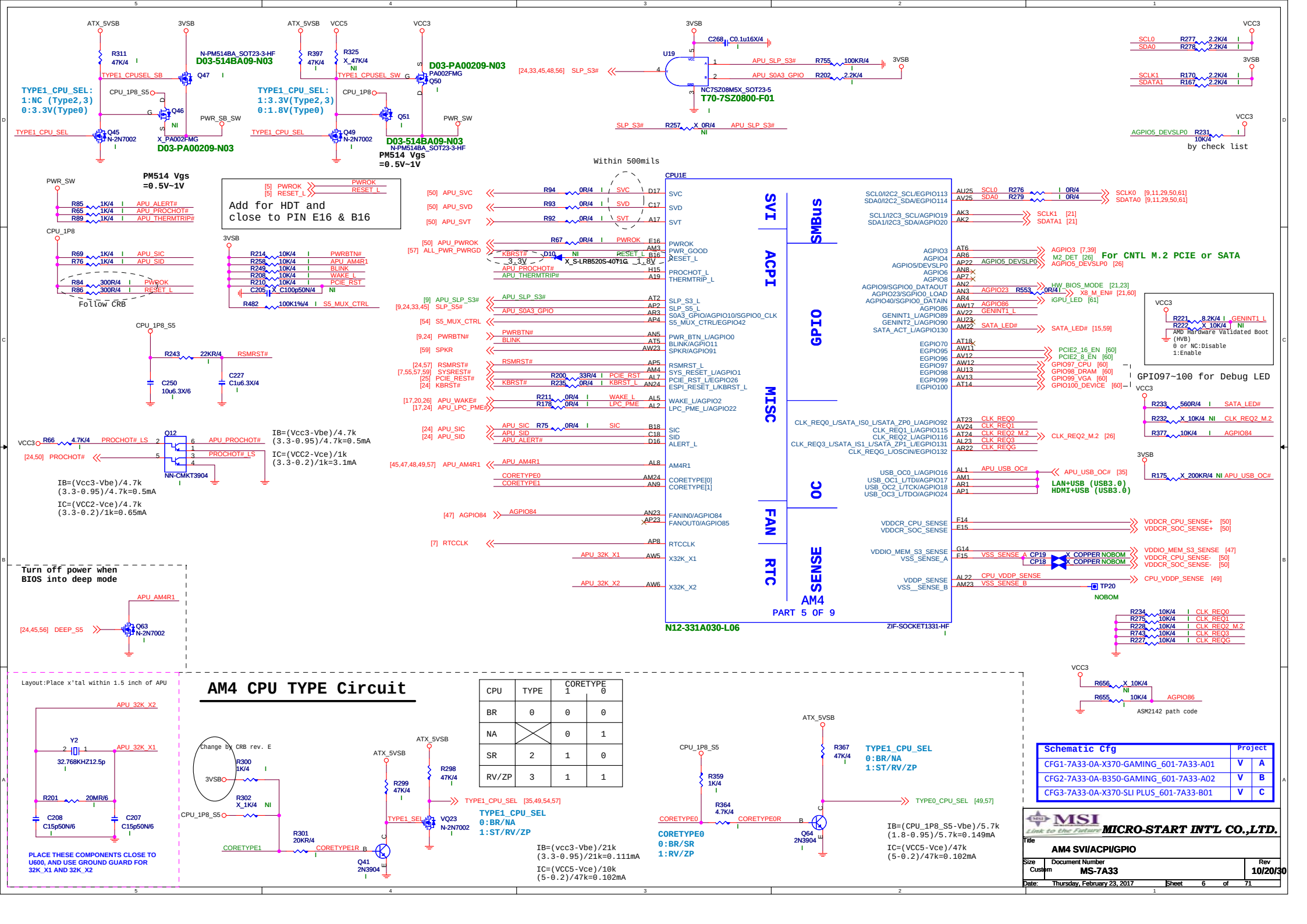

CPU	TYPE	CORETYPE 1	CORETYPE 0
BR	0	0	0
NA	X	0	1
SR	2	1	0
RV/ZP	3	1	1

Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

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Title	AM4 SVI/ACPI/GPIO	
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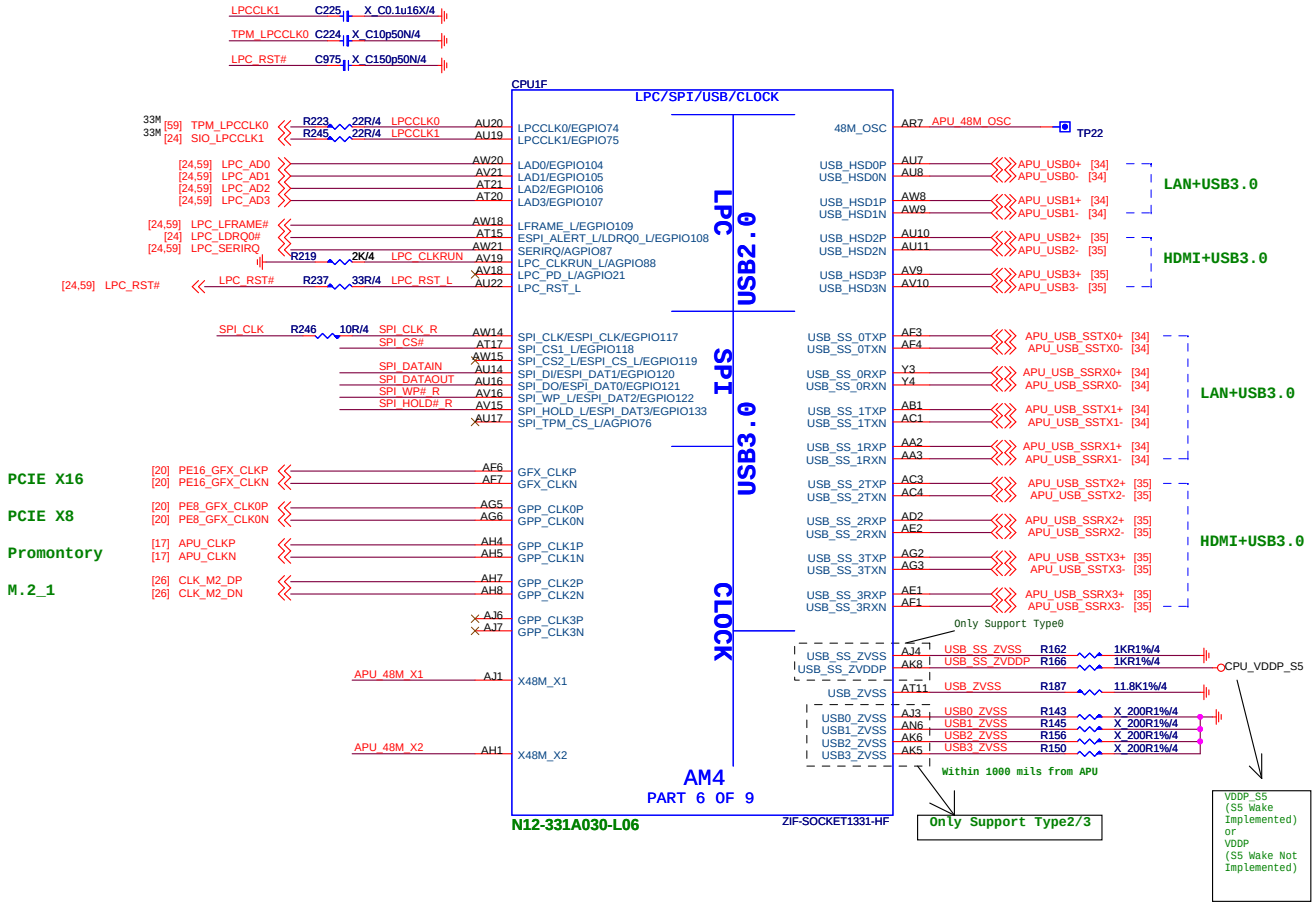
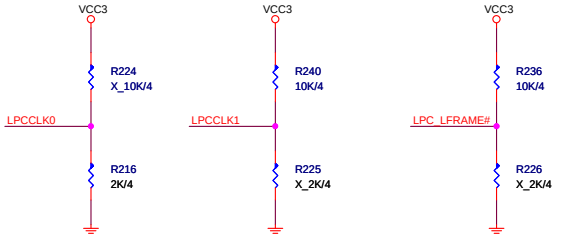
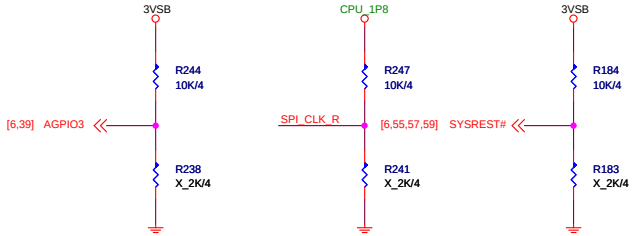


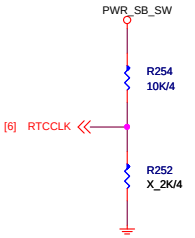
Strapping Options



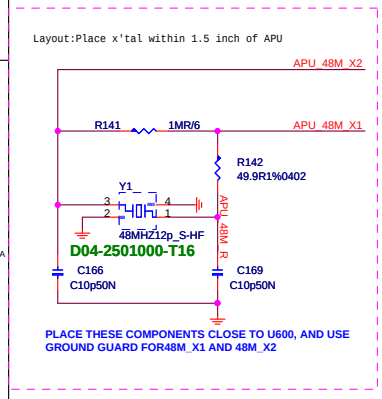
	LPCCLK0	LPCCLK1	SIO_LFRAME
PULL HIGH	LPC device Boot Fail Timer Enabled	Configured for Internal clock generator **(Default)**	SPI ROM **(Default)**
PULL LOW	LPC device Boot Fail Timer Disabled **(Default)**	Configured for External clock generator ?????	LPC ROM



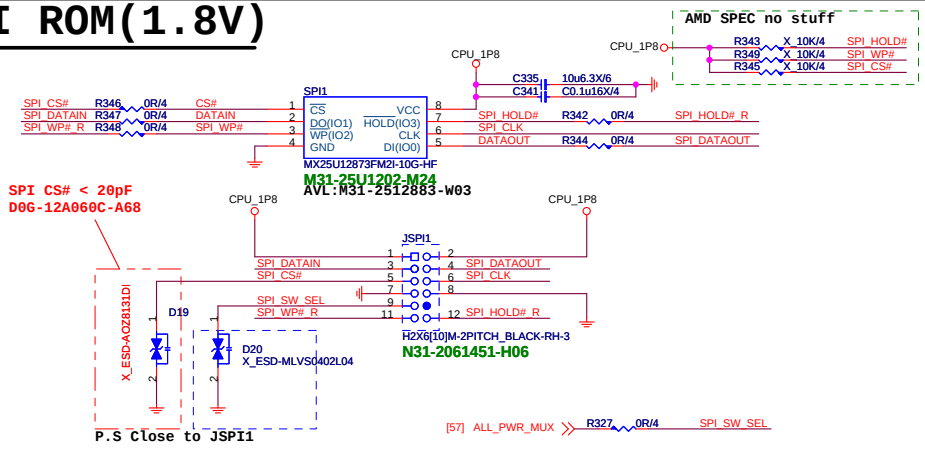
	AGPIO3	SPI_CLK	SYSREST#
PULL HIGH	Enhanced Reset logic **(Default)**	Use 48Mhz crystal clock and generate both internal and external clocks **(Default)**	Normal reset mode **(Default)**
PULL LOW	Traditional Reset logic	Use 100Mhz PCIE clock as reference clock and generate internal clocks only	short reset mode



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



SPI ROM(1.8V)



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Title: AM4 LPC/SPI/USB/CLK/STRAP

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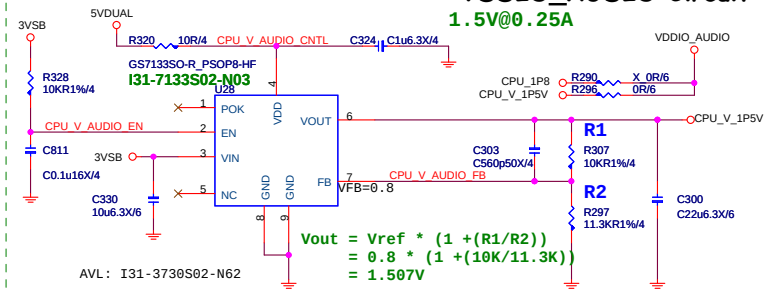
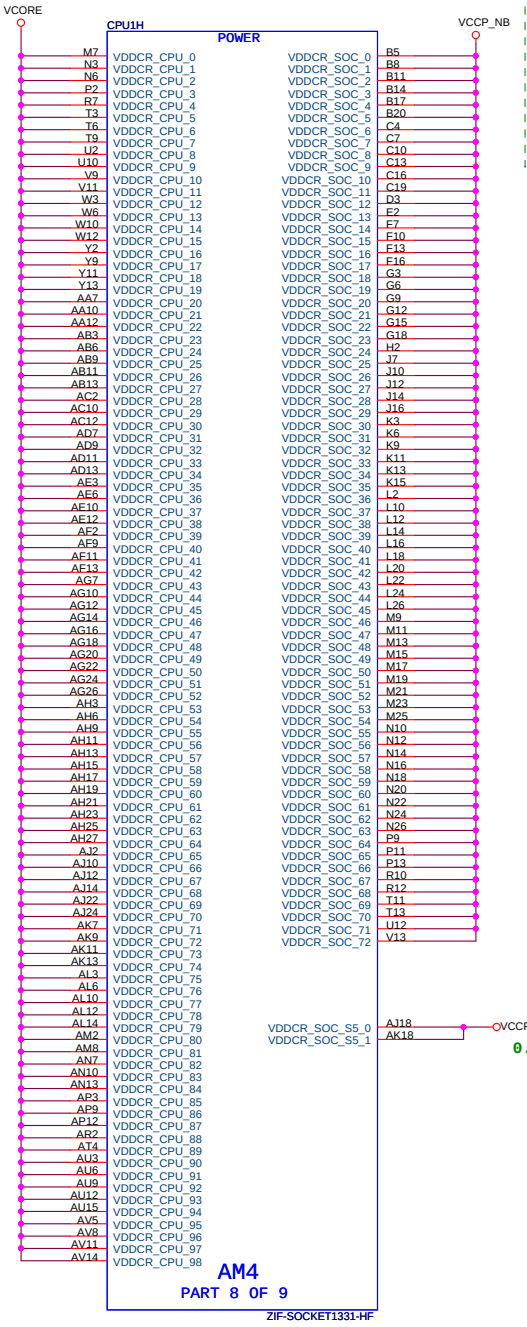
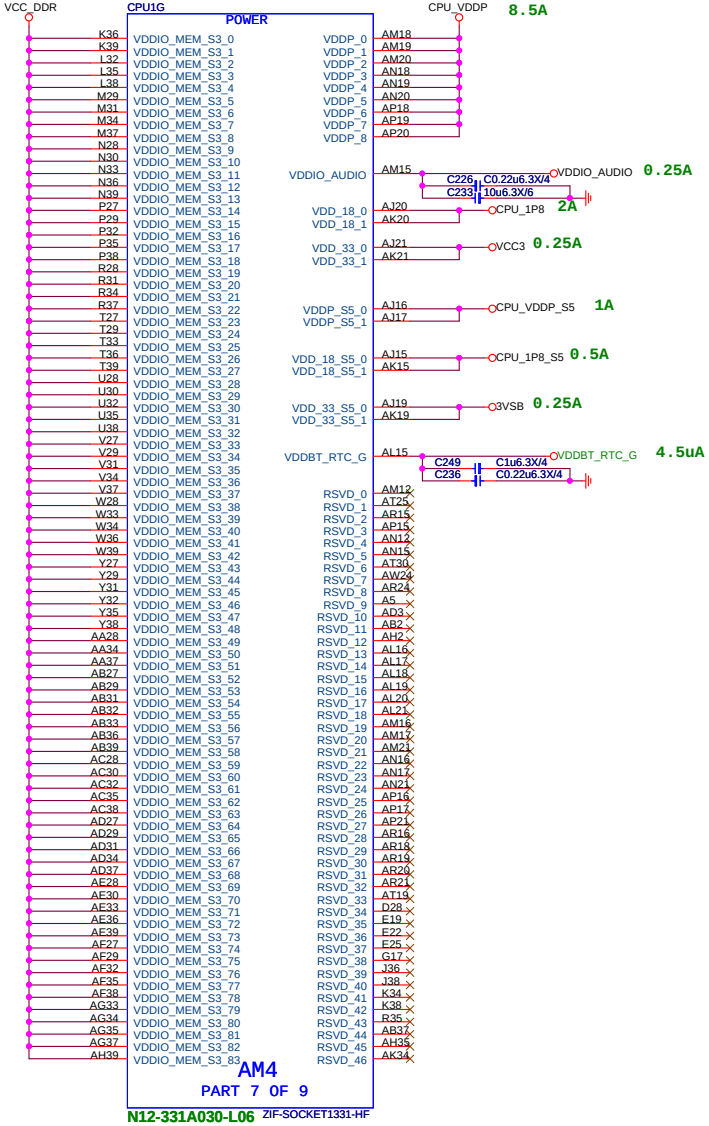
VDDIO_AUDIO Circuit

1.5V@0.25A





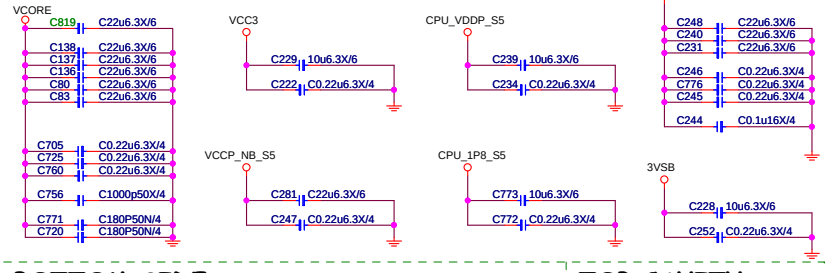


VCCP_NB_S5 0.9A

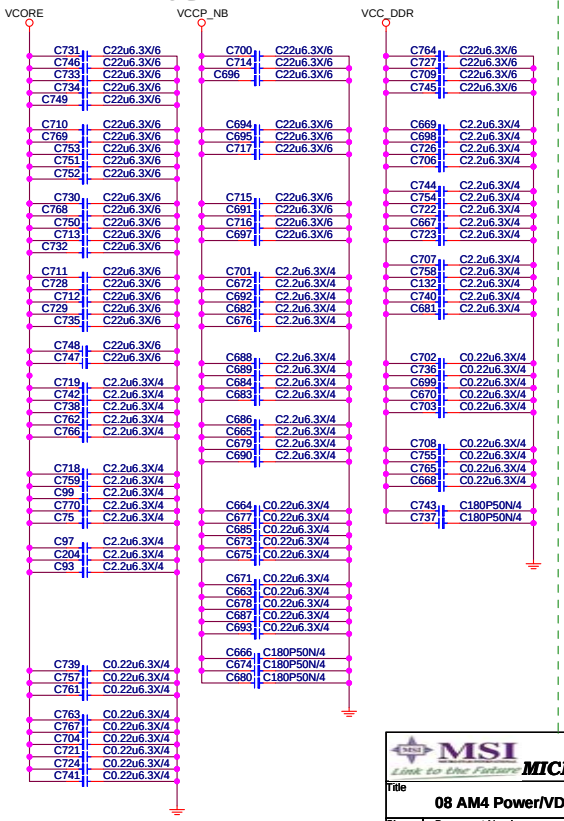
N12-331A030-L06

N12-331A030-L06

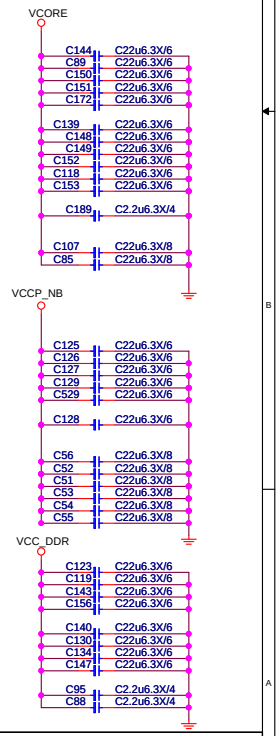
TOP SIDE



BOTTOM SIDE



TOP CAVITY



MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: 08 AM4 Power/VDDIO_AUDIO Power

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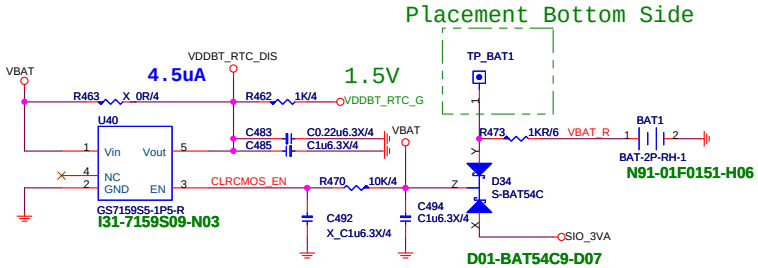
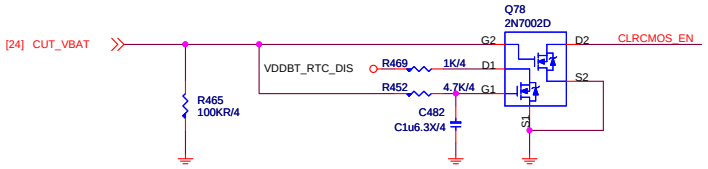
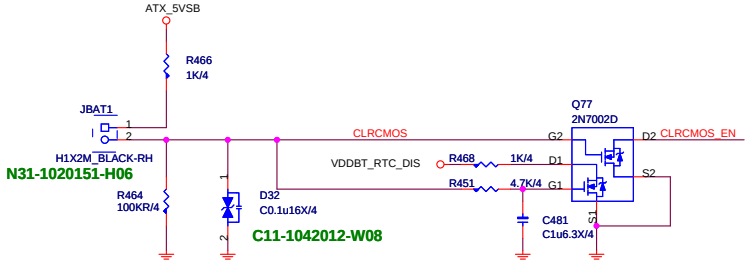
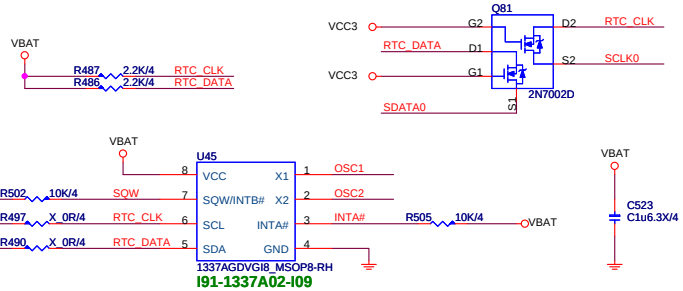
RTC & Clear CMOS Circuit

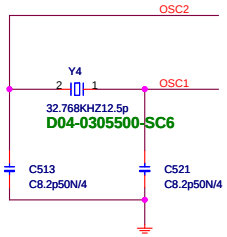


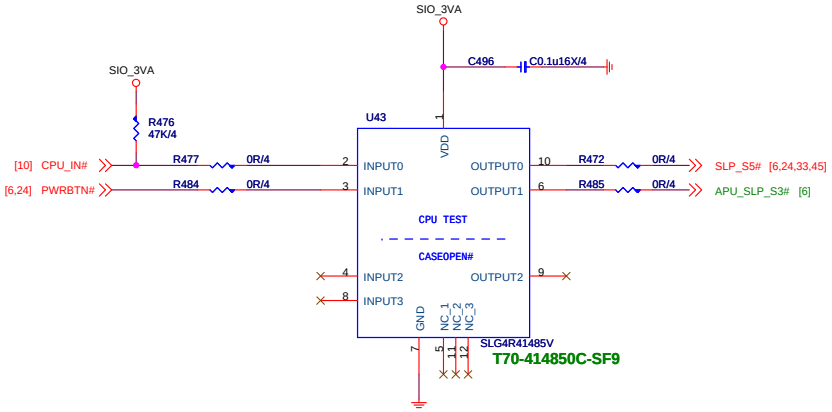




For RTC







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

Default

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Title: RTC/Clear CMOS/RTC Power			
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MICRO-START INT'L CO.,LTD.	
Title	AM4 GND
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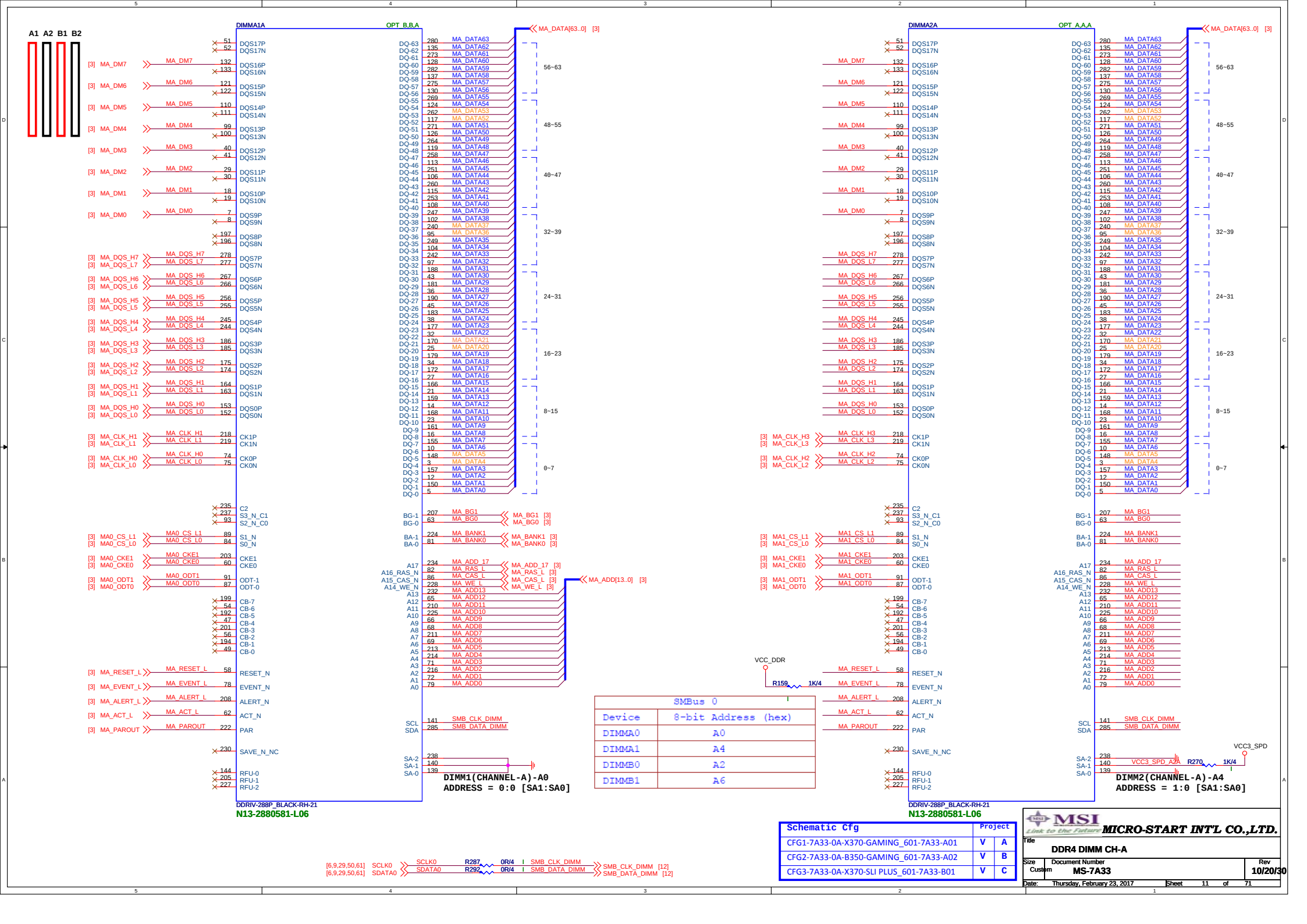
A1 A2 B1 B2
DIMMA1A
OPT_B,B,A
DIMMA2A
OPT_A,A,A
MA_DATA[63..0] [3]
MA_ADD[13..0] [3]
DDRIV-288P_BLACK-RH-21
N13-2880581-L06
DIMM1(CHANNEL-A)-A0
ADDRESS = 0:0 [SA1:SA0]
DIMM2(CHANNEL-A)-A4
ADDRESS = 1:0 [SA1:SA0]
VCC_DDR
R159 1K/4
VCC3_SPD
R270 1K/4
VCC3_SPD_A2
SMBus 0
Device 8-bit Address (hex)
DIMMA0 A0
DIMMA1 A4
DIMMB0 A2
DIMMB1 A6
SCLK0 R287 0R/4 SMB_CLK_DIMM
SDATA0 R292 0R/4 SMB_DATA_DIMM
Schematic Cfg Project
CFG1-7A33-0A-X370-GAMING_601-7A33-A01 V A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02 V B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01 V C
MICRO-START INTL CO.,LTD.
Title
DDR4 DIMM CH-A
Size Custom
Document Number MS-7A33
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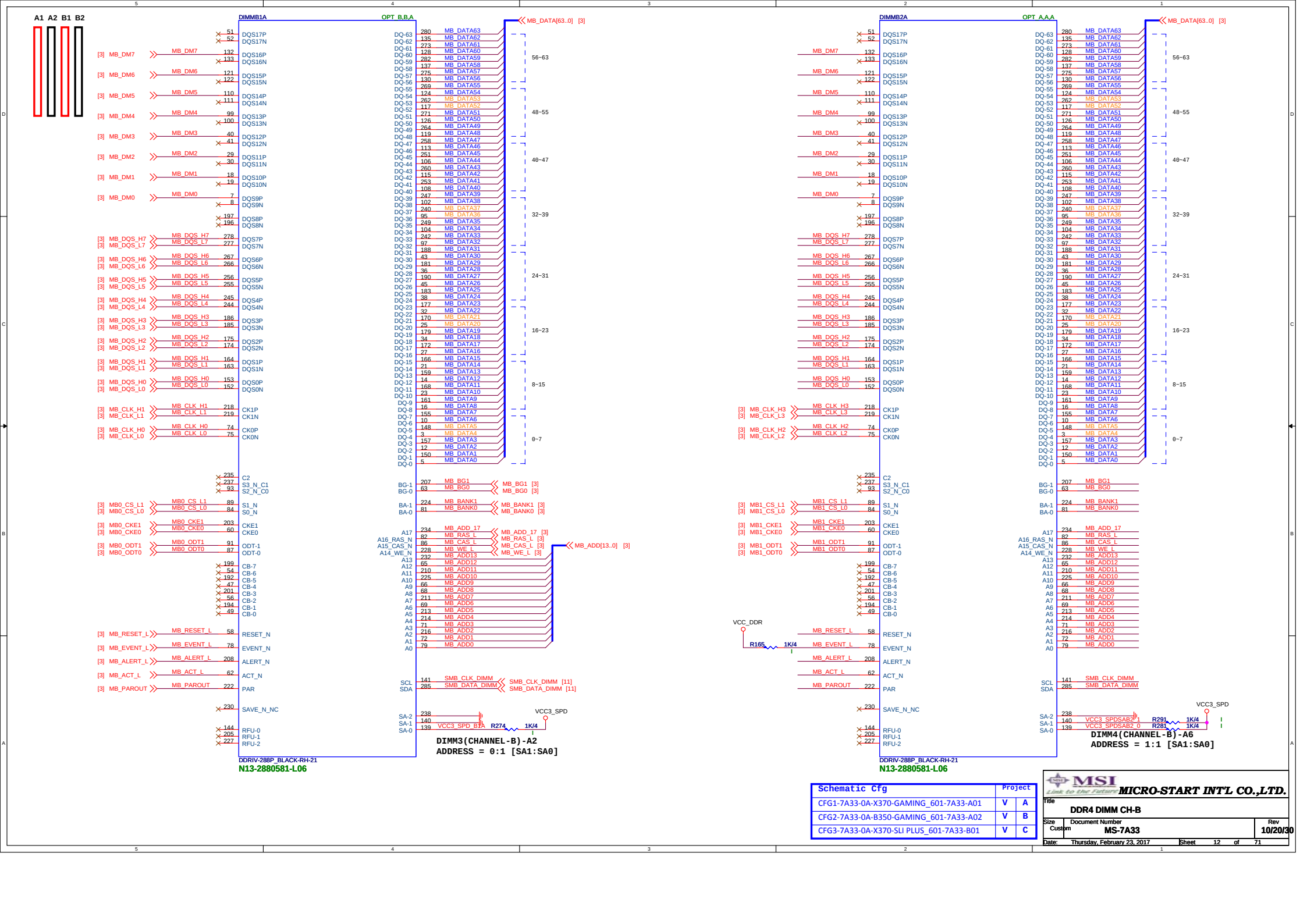

Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

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Title: DDR4 DIMM CH-B

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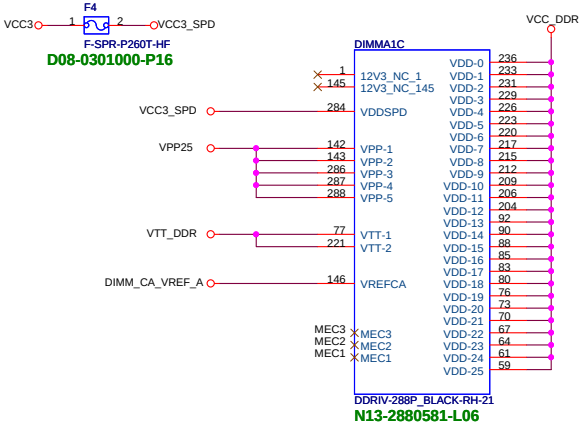
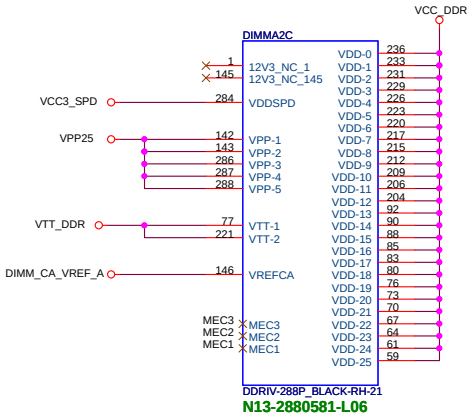
avl:D08-0301100-B07

F4
VCC3 1 2 VCC3_SPD
F-SPR-P260T-HF
D08-0301000-P16

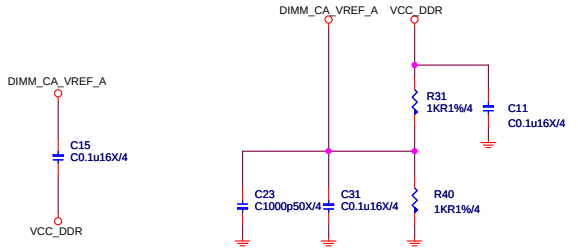
DIMM SLOT PN BY SPEC

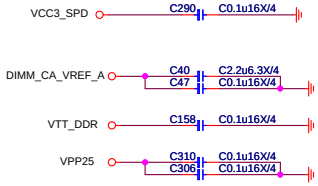


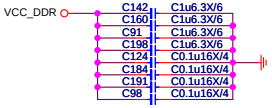


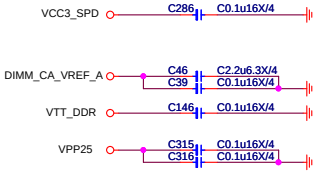
DDR VREF

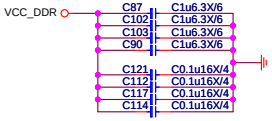
(place resistors close to DIMMs)

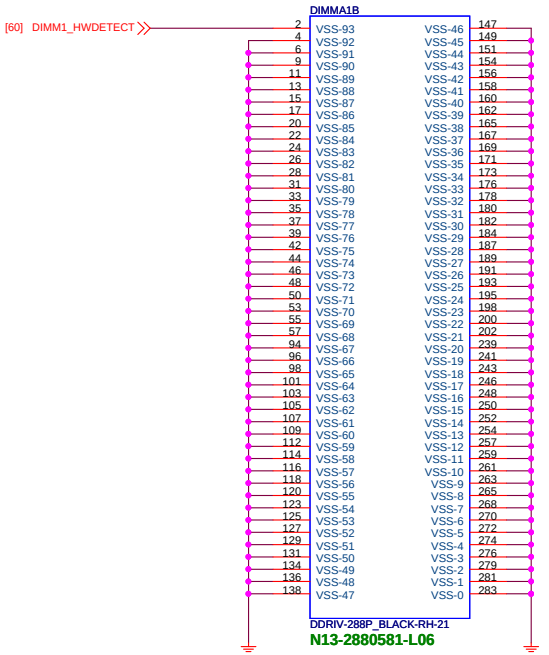


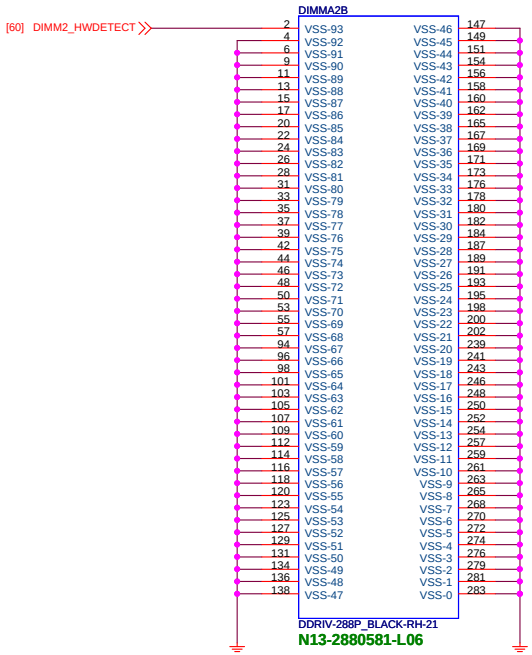












MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title	DDR4-POWER/GND-1	
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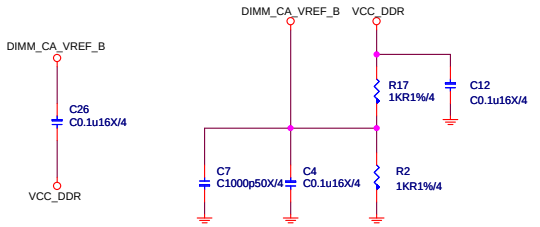
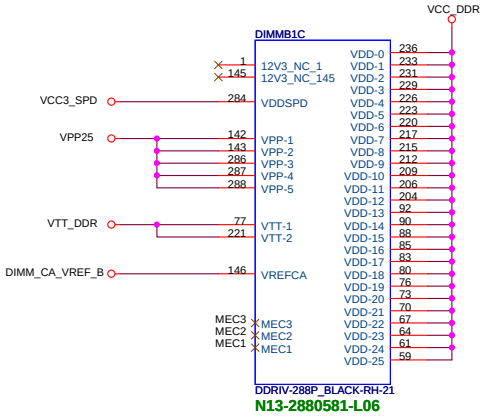
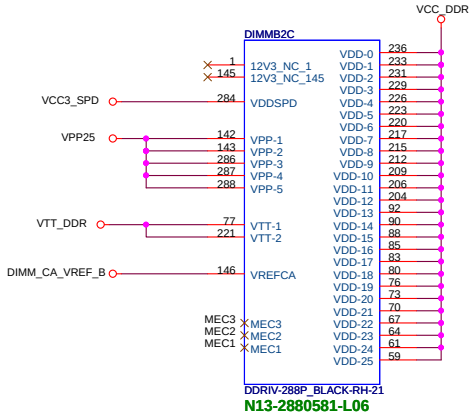
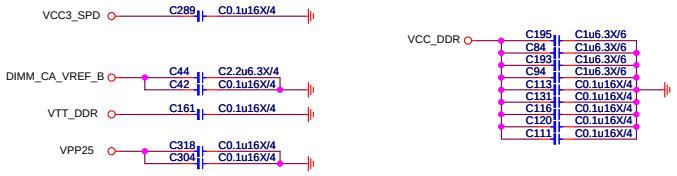
DDR VREF

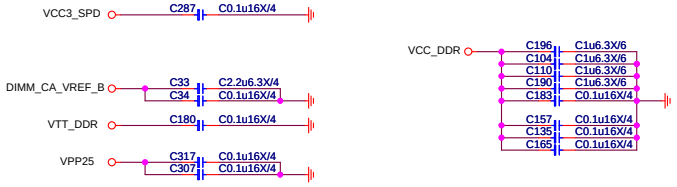
(place resistors close to DIMMs)

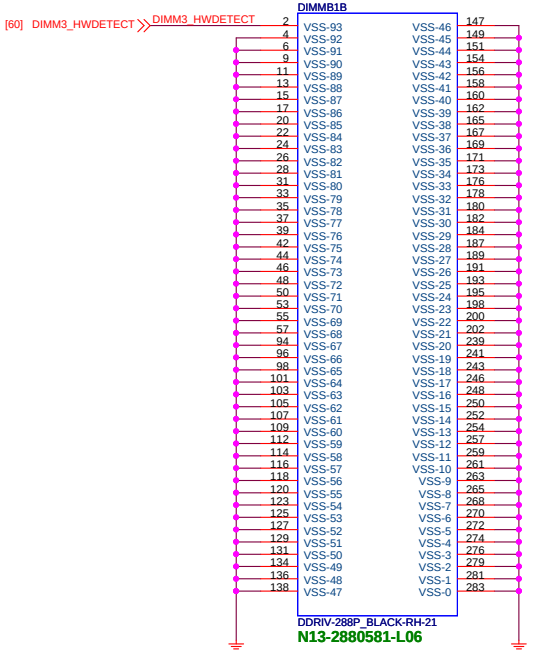


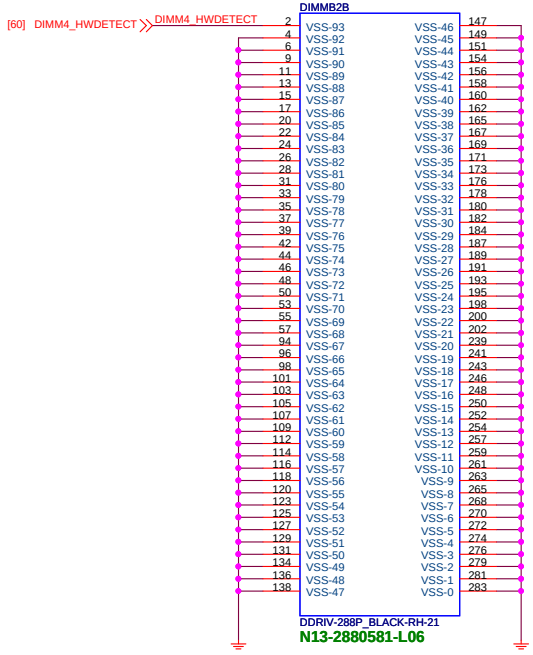












MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title	DDR4-POWER/GND-2	
Size: Custom	Document Number: MS-7A33	Rev: 10/20/30
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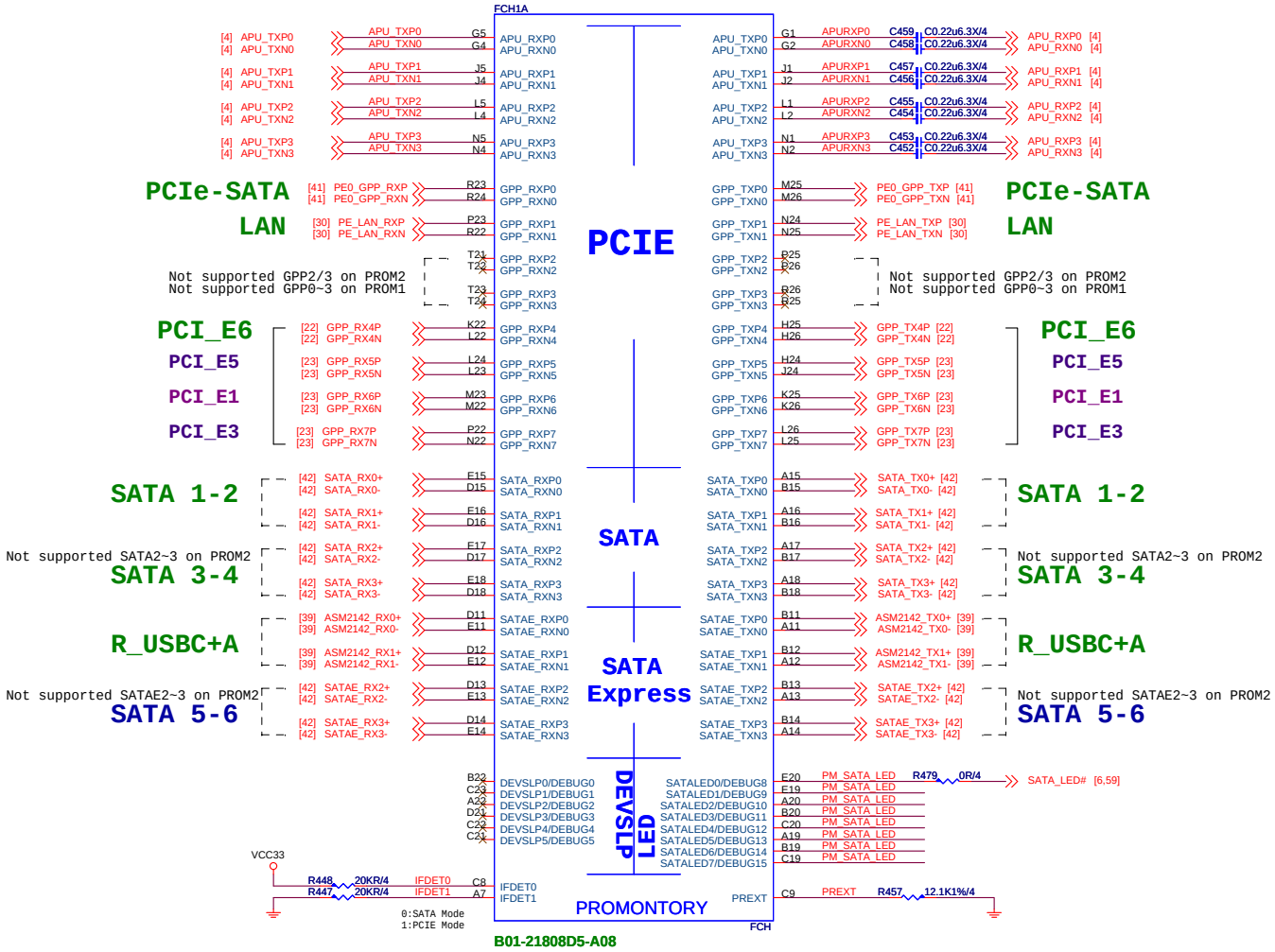

MSI MICRO-START INT'L CO.,LTD.		
Title: Promontory-PCIE/SATA/SATAE		
Size: Custom	Document Number: MS-7A33	Rev: 10/20/30
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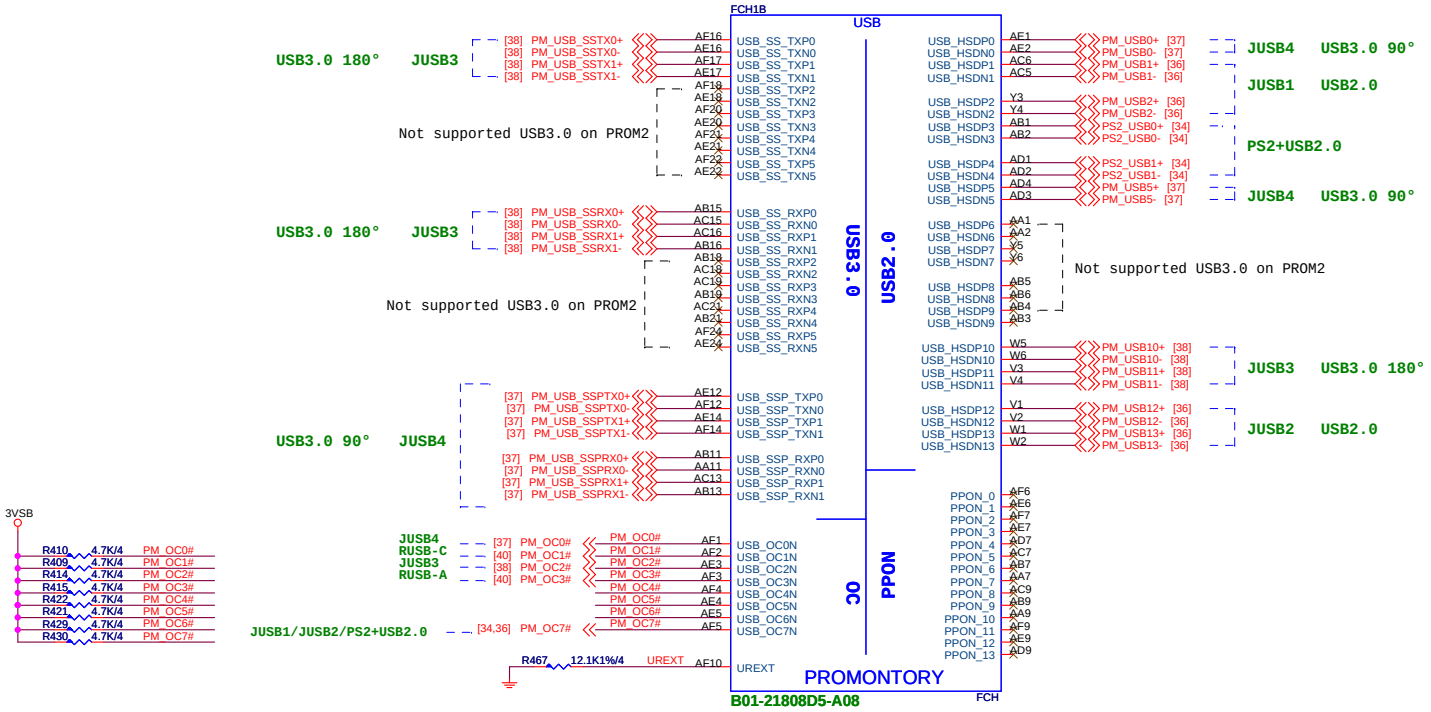

Appendix D USB Port to OC Pin Mapping

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_SS_TX/RXP/N[0]	USB_HSDP/N[10]	USB_OC2N
USB_SS_TX/RXP/N[1]	USB_HSDP/N[11]	USB_OC3N
USB_SS_TX/RXP/N[2]	USB_HSDP/N[6]	USB_OC4N
USB_SS_TX/RXP/N[3]	USB_HSDP/N[7]	USB_OC5N
USB_SS_TX/RXP/N[4]	USB_HSDP/N[8]	USB_OC6N
USB_SS_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
PROM4	USB_SSP Port0~1	USB_SS Port 0~3	USB_HSD Port0~13	USB_SSP Port0
PROM2	USB_SSP Port0~1	USB_SS Port 0~1	USB_HSD Port0~5 USB_HSD Port10~13	USB_SSP Port0
PROM1	USB_SSP Port0	USB_SS Port0 USB_SSP Port1	USB_HSD Port0~5 USB_HSD Port10, 12~13	USB_SSP Port0

BUS Model	SATA 3.0	SATA Express	PCI Express® Gen2 GPP	PCI Express® CLK
PROM4	SATA port0~3	SATAE port0~3	GPP lane0~7	CLK0~7
PROM2	SATA port0~1	SATAE port0~1	GPP lane0~1 GPP lane4~7	CLK0~1 CLK4~7
PROM1	SATA port0~1	SATAE port0~1	GPP lane4~7	CLK4~7

CLK2.3不能用
CLK1-3不能用

MICRO-START INT'L CO.,LTD.

Title: Promontory-USB/OC

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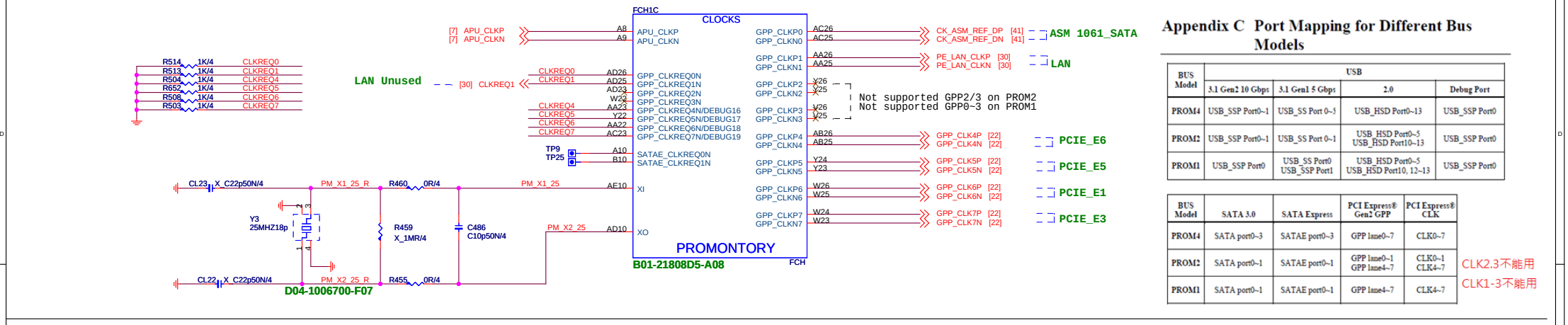
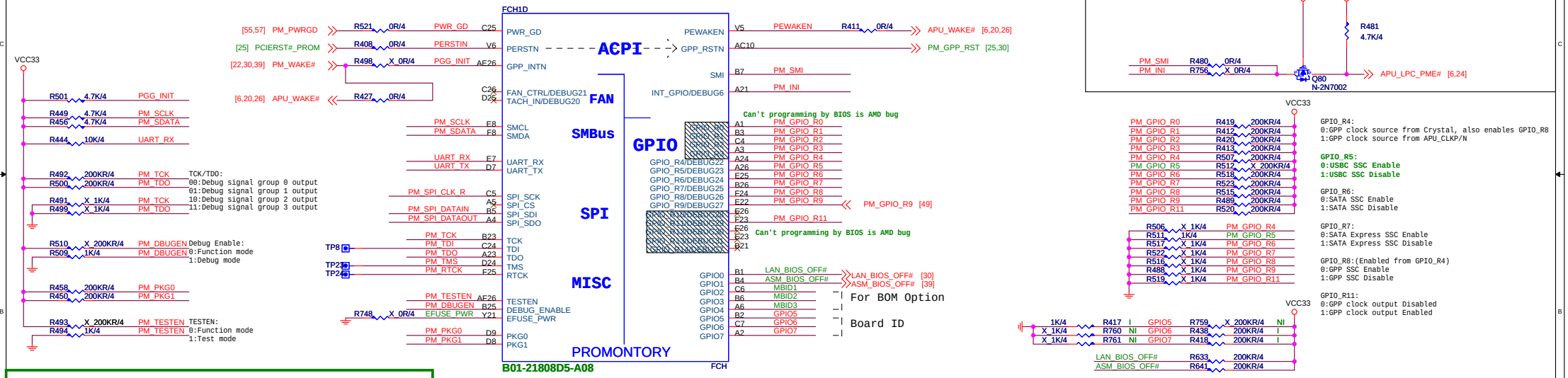


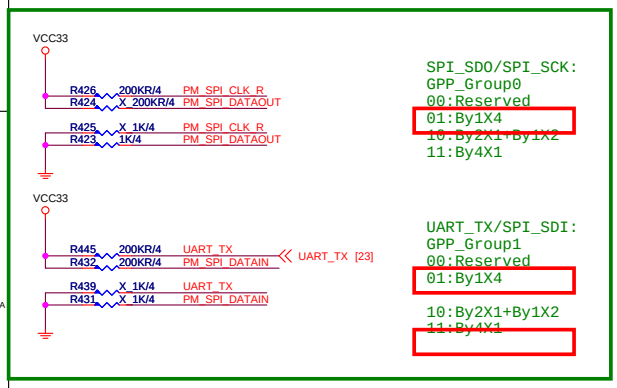
Appendix C Port Mapping for Different Bus Models

BUS Model	USB			
	3.1 Gen2 10 Gbps	3.1 Gen1 5 Gbps	2.0	Debug Port
PROM4	USB_SSP Port0~1	USB_SS Port 0~5	USB_HSD Port0~13	USB_SSP Port0
PROM2	USB_SSP Port0~1	USB_SS Port 0~1	USB_HSD Port0~5 USB_HSD Port10~13	USB_SSP Port0
PROM1	USB_SSP Port0	USB_SS Port0 USB_SSP Port1	USB_HSD Port0~5 USB_HSD Port10, 12~13	USB_SSP Port0

BUS Model	SATA 3.0	SATA Express	PCI Express® Gen2 GPP	PCI Express® CLK
PROM4	SATA port0~3	SATAE port0~3	GPP lane0~7	CLK0~7
PROM2	SATA port0~1	SATAE port0~1	GPP lane0~1 GPP lane4~7	CLK0~1 CLK4~7
PROM1	SATA port0~1	SATAE port0~1	GPP lane4~7	CLK4~7

CLK2.3不能用
CLK1-3不能用





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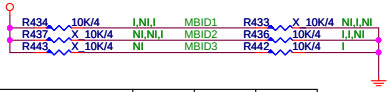
BOM OPTION



	MBID1	MBID2	MBID3
X370-GAMING 601-7A33-A01	1	0	0
B350-GAMING 601-7A33-A02	0	0	0
X370-SLI PLUS 601-7A33-B01	1	1	0

Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

MICRO-START INTL CO.,LTD.

Title: Promontory-CLK/ACPI/GPIO

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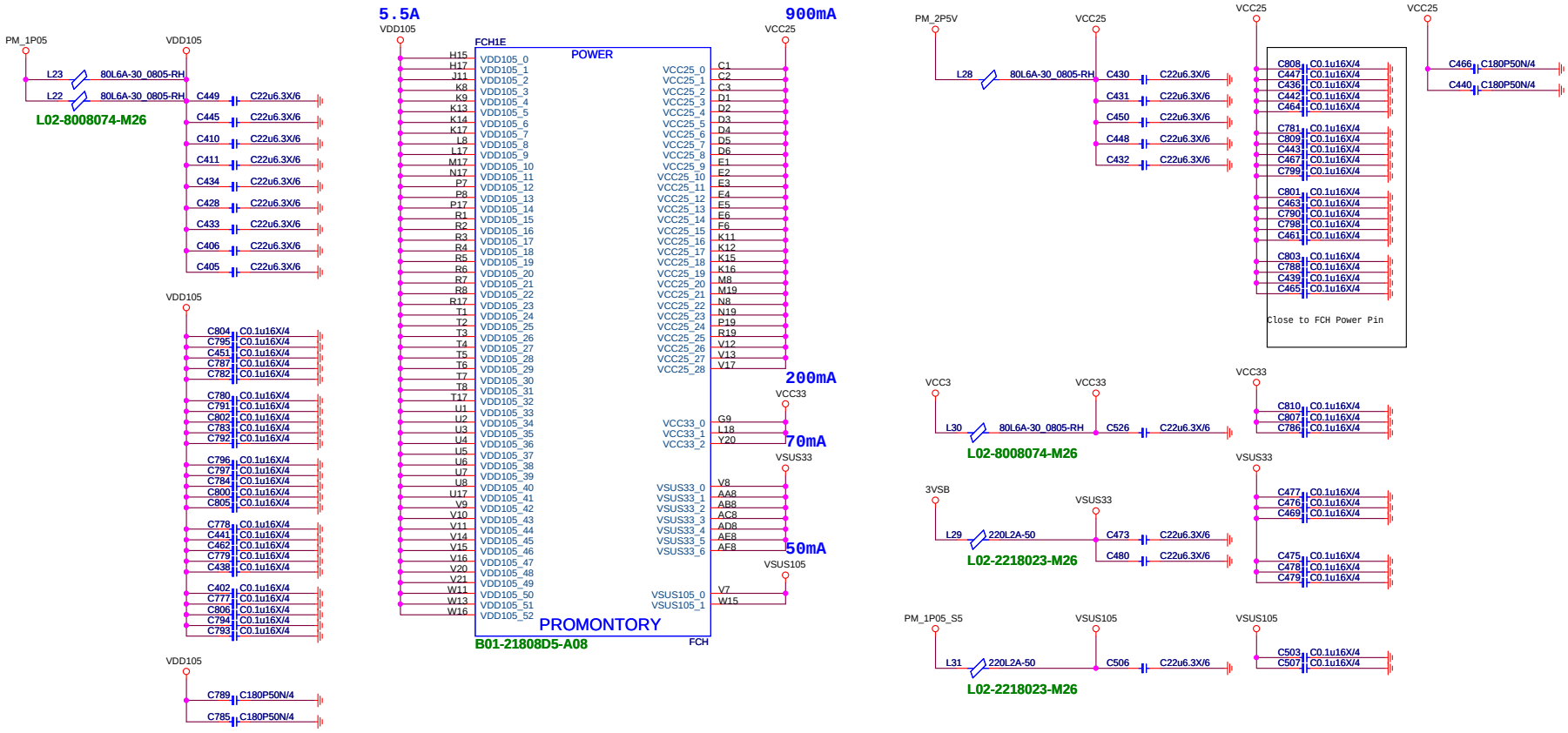

MICRO-START INT'L CO.,LTD.		
Title: Promontory-Power		
Size: Custom	Document Number: MS-7A33	Rev: 10/20/30
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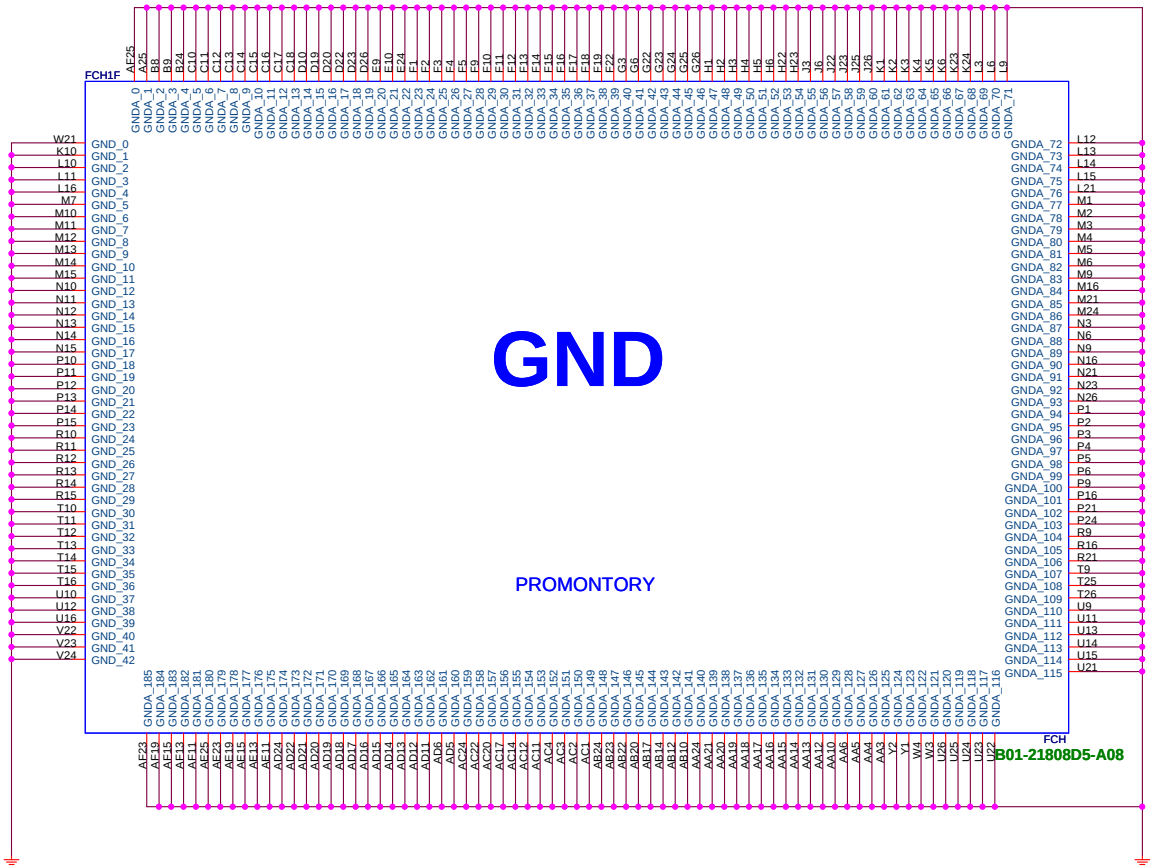

MSI MICRO-STAR INT'L CO.,LTD.	
Title	Promontory-GND
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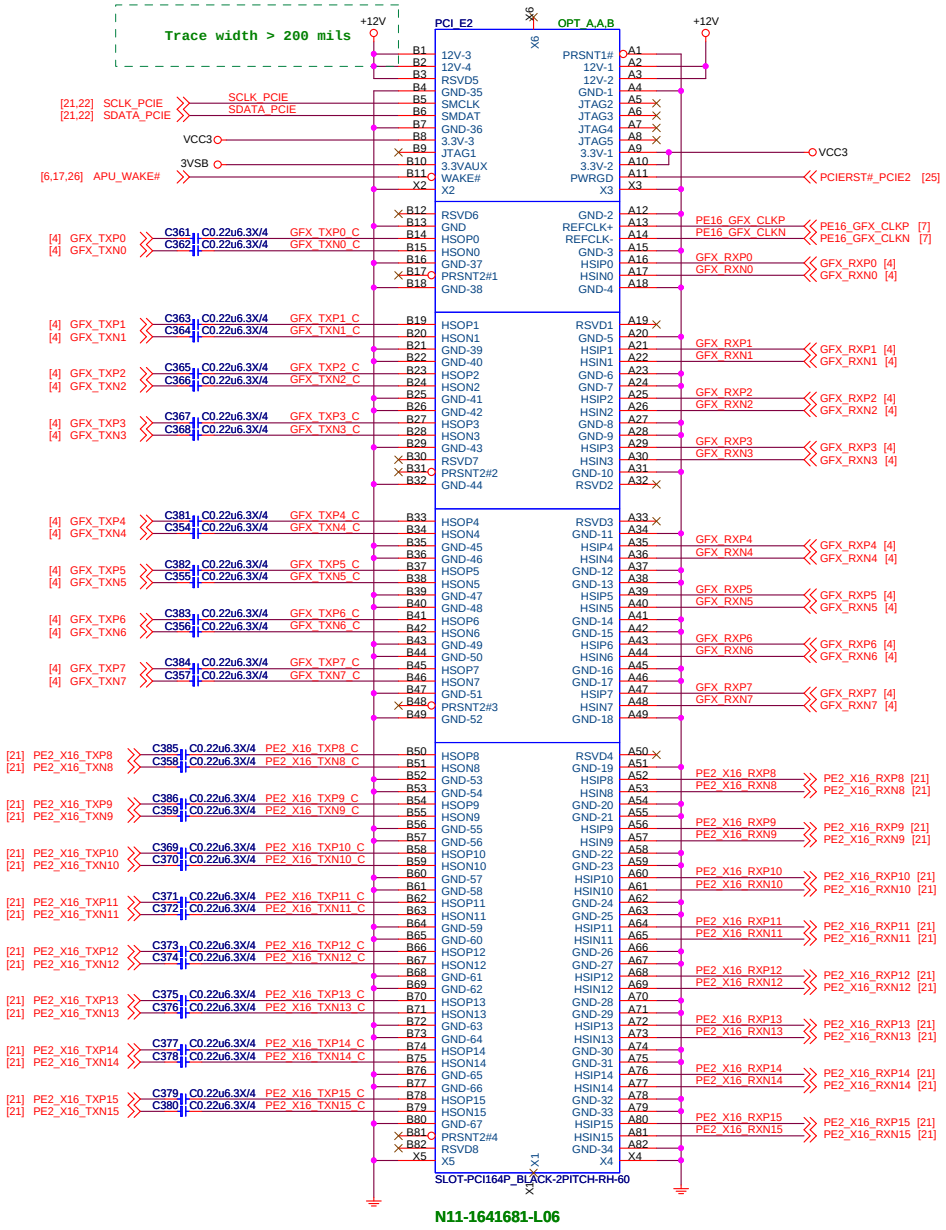
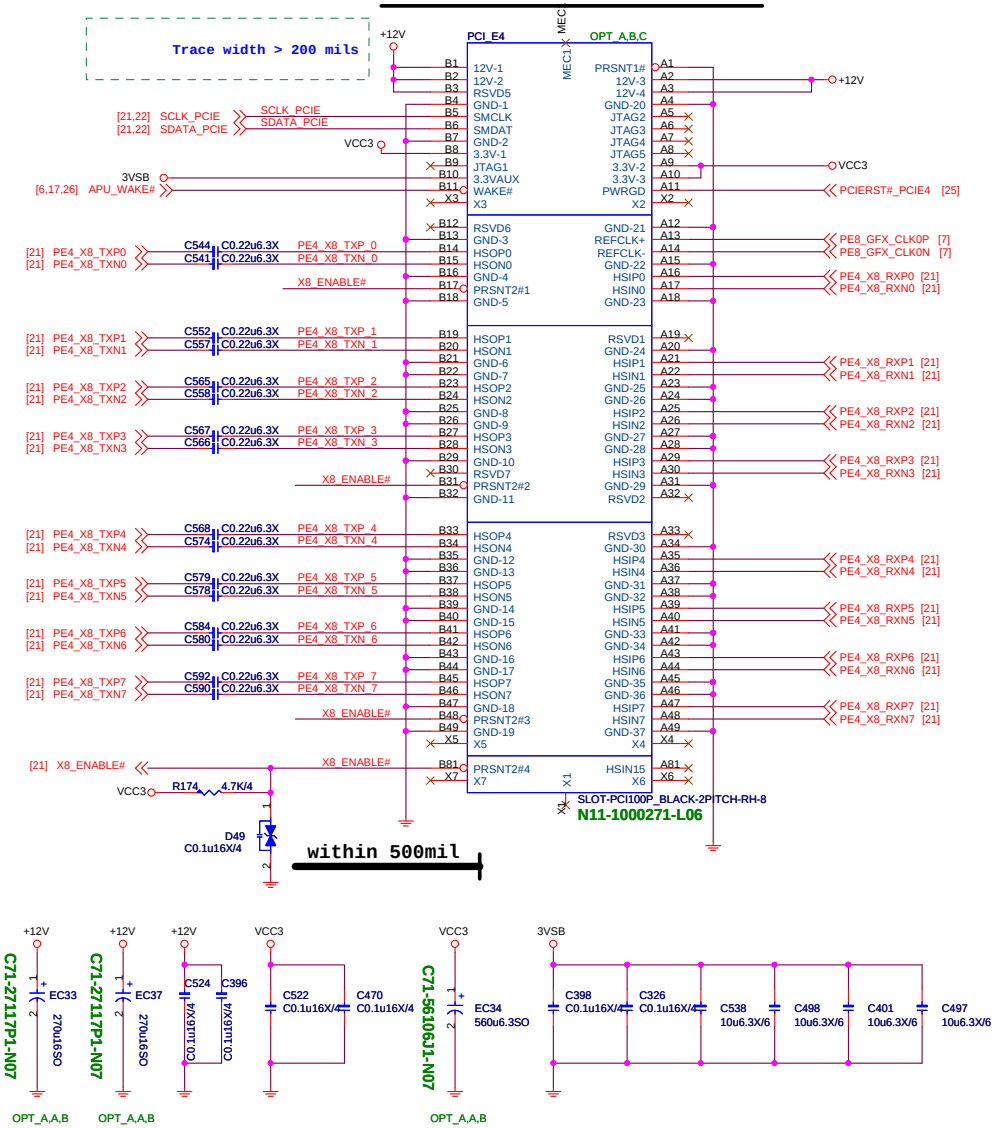
PCI EXPRESS x16 Slot



PCI EXPRESS x8 Slot



Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

MICRO-START INTL CO.,LTD.

Title	PCIE X16	
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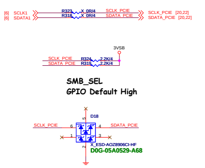
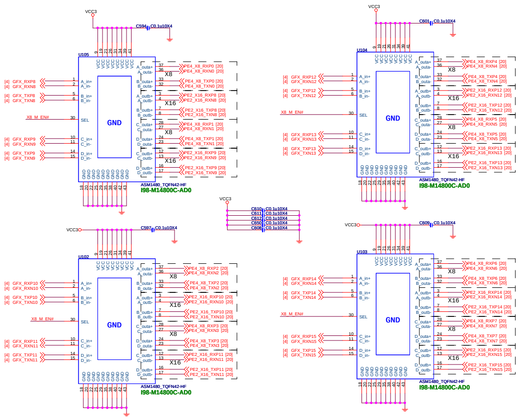
PCI EXPRESS Switch

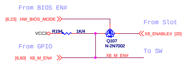
For PCIE_2 & PCIE_4 (X16/ X8)

SMBus separate circuit





PCIE Lanes control circuit



	HW_BIOS_MODE	X8_M_EN#
Auto	1	1
Manual x16	0	1
Manual x8, x8	0	0

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

MICRO-STAR INT'L CO.,LTD

MS-7A33

Size	Document Description	Rev
E	ASM1083 PCI Bri.	10/20/30

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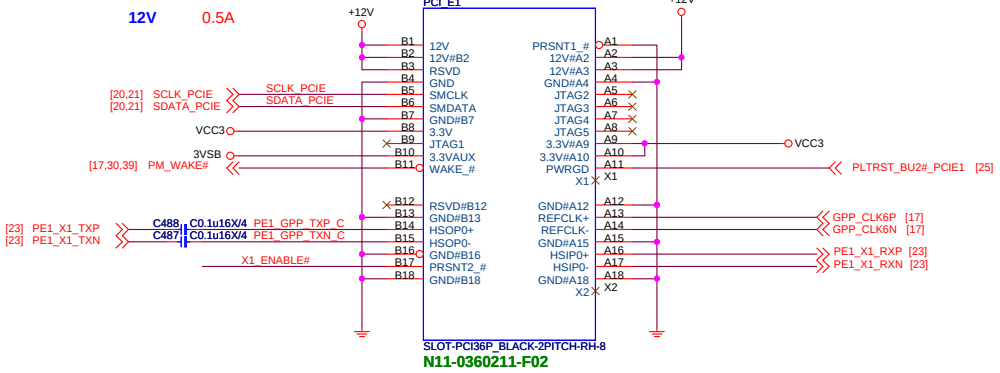
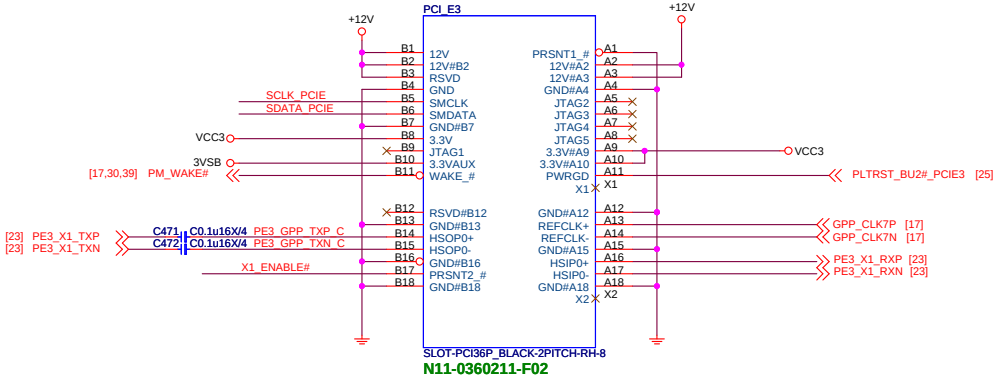
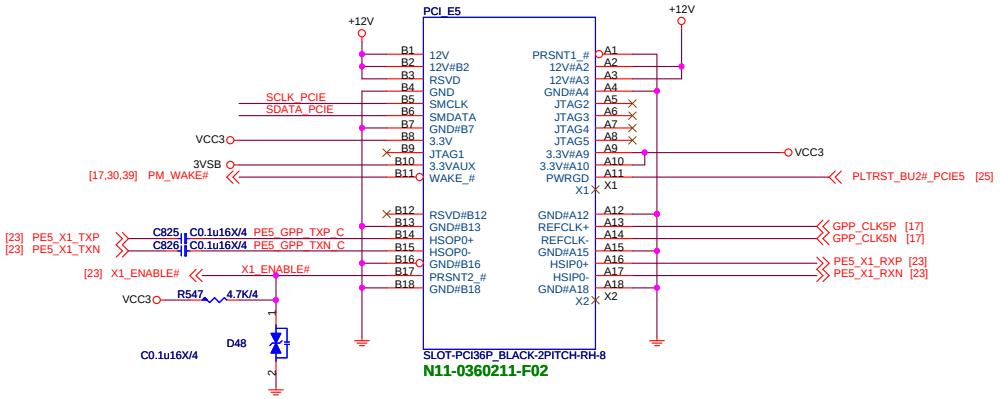
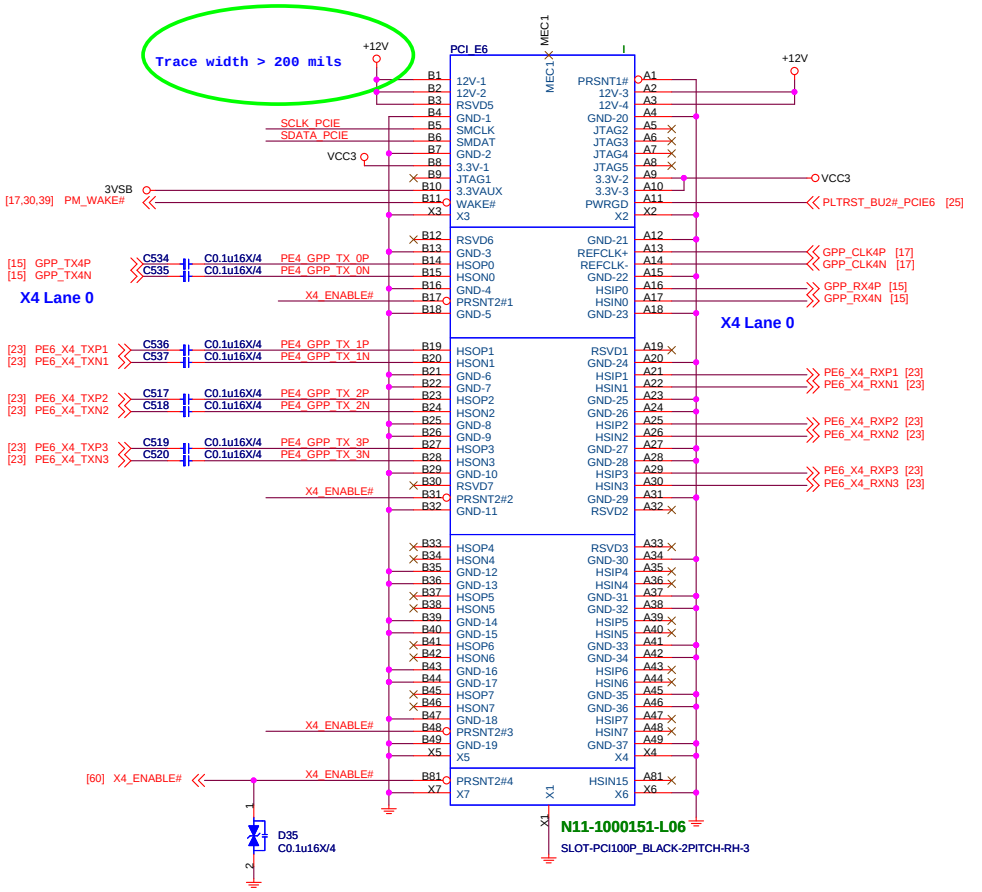
PCIEX1 12V 0.5A
3.3V weak 375mA

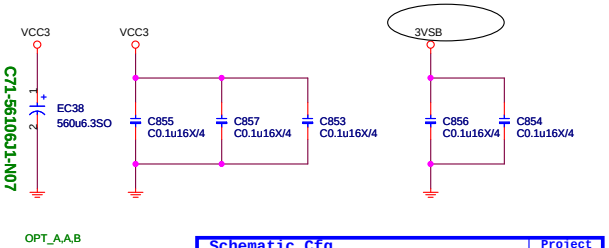
3.3V 3.0A
12V 0.5A











PCI Express x4 Slot *1		
+12V		- 2.1A
+VCC3		- 3A
+3V3_S5	(wake)	- 375mA
+3V3_S5	(no wake)	- 20mA
PCI Express x1 Slot *2		
+12V		- 1 A
+VCC3		- 6A
+3V3_S5	(wake)	- 750mA
+3V3_S5	(no wake)	- 40mA

Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

MSI Link to the Future MICRO-START INTL CO.,LTD.

Title: 21 PCIE X1/PCIE X4

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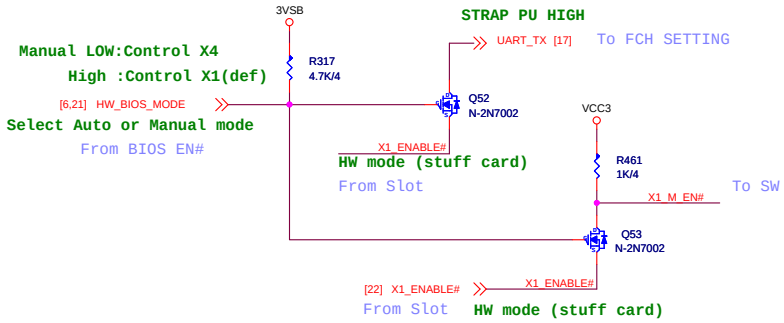
PCIE Lanes control circuit



	HW_BIOS_MODE	Q52	Q53		X1_ENABLE#	PM_SPI_DATAIN
Manual x4	L	OFF	OFF		X	11:By4X1 (def)
Manual x1,x1,x1,x1	H	ON	ON		L (Stuff PCIE_1)	01:By1X4
HW x4	H	ON	ON		H	11:By4X1 (def)

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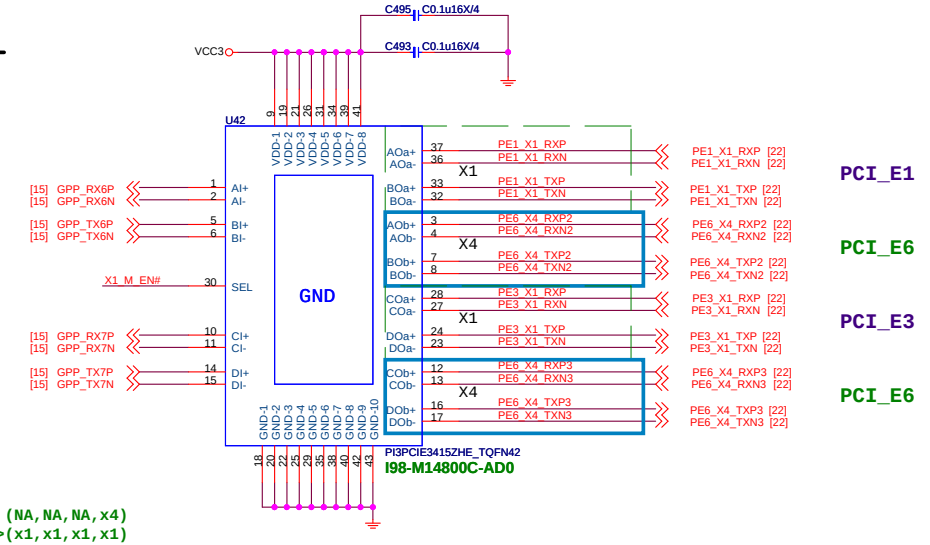
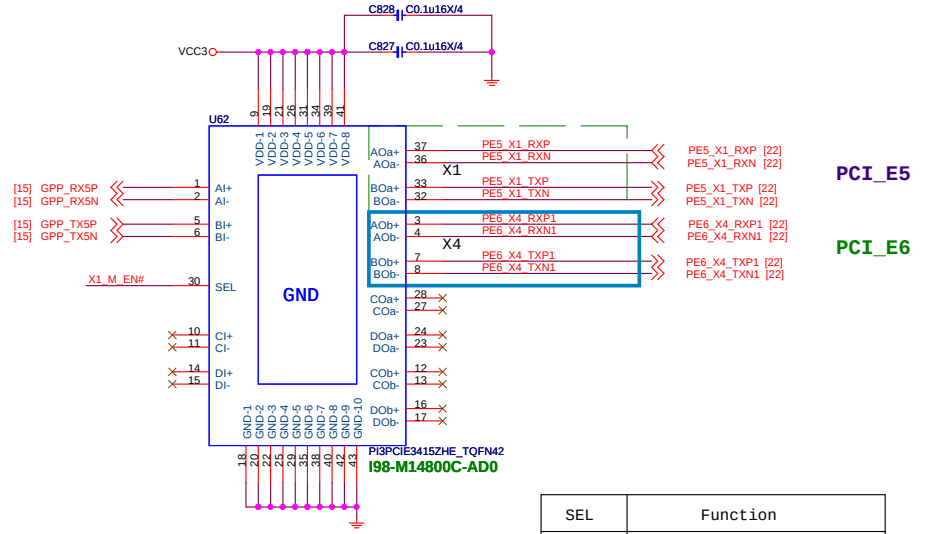
PCIE Lanes SW



default (H): (NA,NA,NA,x4)
Low (Oa+/-)=>(x1,x1,x1,x1)
High(Ob+/-)=>(NA,NA,NA,x4)



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

MICRO-START INT'L CO.,LTD.

Title: PCIE X16

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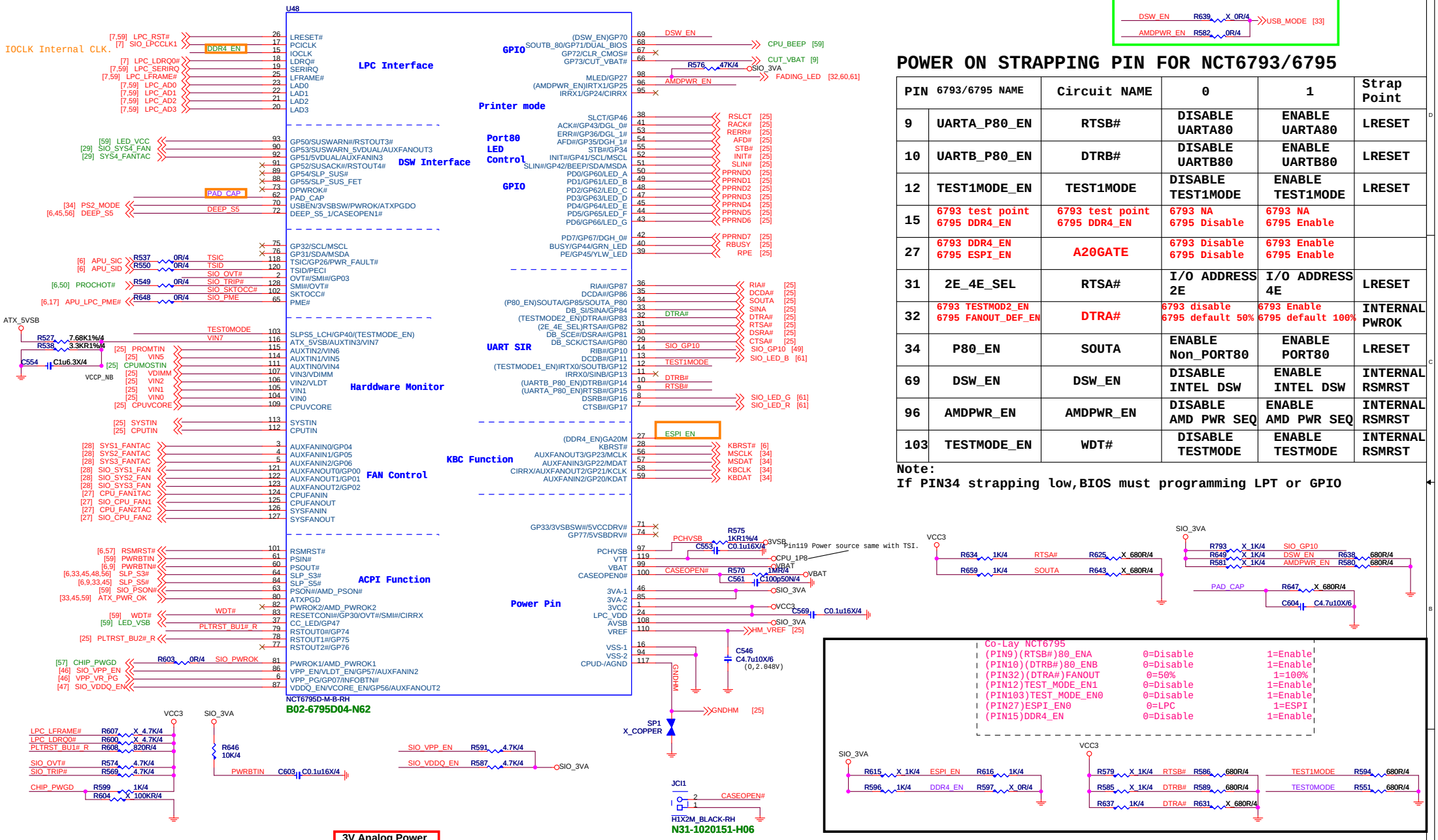

POWER ON STRAPPING PIN FOR NCT6793/6795

PIN	6793/6795 NAME	Circuit NAME	0	1	Strap Point
9	UARTA_P80_EN	RTSB#	DISABLE UARTA80	ENABLE UARTA80	LRESET
10	UARTB_P80_EN	DTRB#	DISABLE UARTB80	ENABLE UARTB80	LRESET
12	TEST1MODE_EN	TEST1MODE	DISABLE TEST1MODE	ENABLE TEST1MODE	LRESET
15	6793 test point 6795 DDR4_EN	6793 test point 6795 DDR4_EN	6793 NA 6795 Disable	6793 NA 6795 Enable	
27	6793 DDR4_EN 6795 ESPI_EN	A20GATE	6793 Disable 6795 Disable	6793 Enable 6795 Enable	
31	2E_4E_SEL	RTSA#	I/O ADDRESS 2E	I/O ADDRESS 4E	LRESET
32	6793 TESTMOD2_EN 6795 FANOUT_DEF_EN	DTRA#	6793 disable 6795 default 50%	6793 Enable 6795 default 100%	INTERNAL PWROK
34	P80_EN	SOUTA	ENABLE Non_PORT80	ENABLE PORT80	LRESET
69	DSW_EN	DSW_EN	DISABLE INTEL DSW	ENABLE INTEL DSW	INTERNAL RSMRST
96	AMDPWR_EN	AMDPWR_EN	DISABLE AMD PWR SEQ	ENABLE AMD PWR SEQ	INTERNAL RSMRST
103	TESTMODE_EN	WDT#	DISABLE TESTMODE	ENABLE TESTMODE	INTERNAL RSMRST

Note:
If PIN34 strapping low,BIOS must programming LPT or GPIO

Co-Lay NCT6795		
(PIN9)(RTSB#)80_ENA	0=Disable	1=Enable
(PIN10)(DTRB#)80_ENB	0=Disable	1=Enable
(PIN32)(DTRA#)FANOUT	0=50%	1=100%
(PIN12)TEST_MODE_EN1	0=Disable	1=Enable
(PIN103)TEST_MODE_EN0	0=Disable	1=Enable
(PIN27)ESPI_EN0	0=LPC	1=ESPI
(PIN15)DDR4_EN	0=Disable	1=Enable

Title	SIO NCT6795D
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MICRO-START INT'L CO.,LTD.

HW Monitor - Voltage

SIO HM Voltage over 2.048V will not detect

VCC_DDR — 10KR1%/4 R525 — VDIMM — Q85 N-2N7002 — VDIMM [24]
R526 10KR1%/4 — VCC5
C550 10u6.3X/6

VCORE — R531 10KR1%/4 — CPUVCORE [24]
R536 X_10K1%/4 — C549 10u6.3X/6

+12V — R545 220K/1%/4 — VIN0 [24]
R544 20KR1%/4 — C556 C0.1u16X/4

VCC5 — R532 12K1%/4 — VIN1 [24]
R543 3KR1%/4 — C555 C0.1u16X/4

Power Fault detect through VIN0,VIN1,VIN2

VCCP_NB — R528 10KR1%/4 — VIN2 [24]
R539 X_10K1%/4 — C547 10u6.3X/6

CPU_VDDP — R540 10KR1%/4 — VIN5 [24]
C548 10u6.3X/6

TEMP SENSOR

For CPU

HM_VREF [24]
R530 10KR1%/4
CPUTIN [24]
RT2 10KRT1%0402 — C528 C2200p50X/4
GNDHM [24]

Under Socket

For System

SYSTIN [24]
Q84 P-MMBT3906 — C530 C2200p50X/4
GNDHM

HM_VREF [24]
R529 10KR1%/4
CPUMOSTIN [24]
RT1 10KRT1%0402 — C527 C2200p50X/4
GNDHM [24]

Close to CPU MOS

HM_VREF [24]
R535 10KR1%/4
PROMTIN [24]
RT3 10KRT1%0402 — C551 C2200p50X/4
GNDHM [24]

RT3 under FCH1 BOTTOM

COM PORT

VCC3
R642 X_2.7K/4 SINA
R620 X_2.7K/4 CTSA#
R645 X_2.7K/4 RIA#
R644 X_2.7K/4 DCDA#
R624 X_2.7K/4 DSRA#

NO USE UART PORT1

C623 X_C0.1u16X/4
VCC5
U57 GD75232DBR_SSOP20-RH
I95-7523212-T07

NRIA 2 — RIA# [24]
NCTSA# 3 — CTSA# [24]
NDSRA# 4 — DSRA# [24]
NSINA 7 — SINA [24]
NDCDA# 9 — DCDA# [24]
RTSA# 16 — RTSA# [24]
DTRA# 15 — DTRA# [24]
SOUTA 13 — SOUTA [24]

C660 C0.1u16X/4
D46 1N4148W — +12V
+12V_COM
-12V_COM
D47 1N4148W — -12V
C658 C0.1u16X/4

JCOM1 H2X5[10]M_BLACK-RH
N31-2051331-H06
NDCDA# NSINA
NSOUTA NDTRA
NDSRA#
NRTSA NCTSA#
NRIA

CN2 X_8P4C-470p50X4
NRIA NCTSA# NDSRA# NRTSA

CN1 X_8P4C-470p50X4
NDTRA NSINA NSOUTA NDCDA#

PROM RESET

[24] PLTRST_BU2#_R — R617 X_22R1%/4 — PLTRST_BU2#

FROM SIO

R622 R627 R618 R621 R629 R657 100R1%/4
PLTRST_BU2#_PCIE1 [22]
PLTRST_BU2#_PCIE3 [22]
PLTRST_BU2#_PCIE5 [22]
PLTRST_BU2#_PCIE6 [22]
PLTRST_BU2#_SATA [41]
PLTRST_BU2#_ASM2142 [39]

[17,30] PM_GPP_RST — R626 0R/4 — PLTRST_BU2# — C484 X_C100p50N/4

FROM PROM

Co-lay FCH Reset for meet FCH sequence. See 55553.

CPU RESET

FROM CPU

3VSB
X_C0.1u16X/4 C599
[6] PCIE_REST# — PCIE_REST# — U52 X_NC7SZ08M5X_SOT23-5 — PCIE_RST_BUF
VCC3 — R660 X_4.7K/4

R619 R628 R623 R758 100R1%/4
PCIERST#_PCIE2 [20]
PCIERST#_PCIE4 [20]
PCIERST#_M2_1 [26]
PCIERST#_PROM [17]

PCIE_REST# — R630 0R/4 — PCIE_RST_BUF

SIO_3VA

ATX_5VSB
I31-7116S09-N03
U50 GS7116S5
C531 C1u6.3X/4
EN:VIH1.6V
C581 X_C0.1u16X/4
3VA_FB
SIO_3VA
R1 R601 10KR1%/4
R2 R602 3.09KR1%/4
C593 10u6.3X/6

Vout = Vref * (1 +(R1/R2))
= 0.8 * (1 +(10K/3.09K))
= 3.38V

PARALLAL PORT

JLPT1 H2X13[26]M_BLACK-RH
N31-2131131-H06

RSTB# RAFD#
PRND0 RERR#
PRND1 RINIT#
PRND2 RSLIN#
PRND3
PRND4
PRND5
PRND6
PRND7
RACK#
RBUSY
RPE
RSLCT

D45 1N4148W — LPT_VC
VCC5
C656 C0.1u16X/4

[24] PPRND3 — R699 33R/4 — PRND3 — R714 2.7K/4
[24] PPRND2 — R698 33R/4 — PRND2 — R713 2.7K/4
[24] PPRND1 — R695 33R/4 — PRND1 — R710 2.7K/4
[24] PPRND0 — R694 33R/4 — PRND0 — R708 2.7K/4

[24] PPRND4 — R700 33R/4 — PRND4 — R715 2.7K/4
[24] PPRND5 — R701 33R/4 — PRND5 — R716 2.7K/4
[24] PPRND6 — R702 33R/4 — PRND6 — R717 2.7K/4
[24] PPRND7 — R703 33R/4 — PRND7 — R718 2.7K/4

[24] STB# — R692 33R/4 — RSTB# — R706 2.7K/4
[24] SLIN# — R697 33R/4 — RSLIN# — R712 2.7K/4
[24] INIT# — R696 33R/4 — RINIT# — R711 2.7K/4
[24] AFD# — R693 33R/4 — RAFD# — R707 2.7K/4

[24] RACK# — RACK# — R719 2.7K/4
[24] RBUSY — RBUSY — R720 2.7K/4
[24] RPE — RPE — R721 2.7K/4
[24] RSLCT — RSLCT — R722 2.7K/4

[24] RERR# — RERR# — R709 2.7K/4

PRND0 C633 X_470p50/4
PRND1 C635 X_470p50/4
PRND2 C638 X_470p50/4
PRND3 C639 X_470p50/4
PRND7 C643 X_470p50/4
PRND6 C642 X_470p50/4
PRND5 C641 X_470p50/4
PRND4 C640 X_470p50/4
RSTB# C631 X_470p50/4
RSLIN# C637 X_470p50/4
RINIT# C636 X_470p50/4
RAFD# C632 X_470p50/4
RACK# C644 X_470p50/4
RBUSY C645 X_470p50/4
RPE C646 X_470p50/4
RSLCT C647 X_470p50/4
RERR# C634 X_470p50/4

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Title	HWM/PS2/Debug LED	
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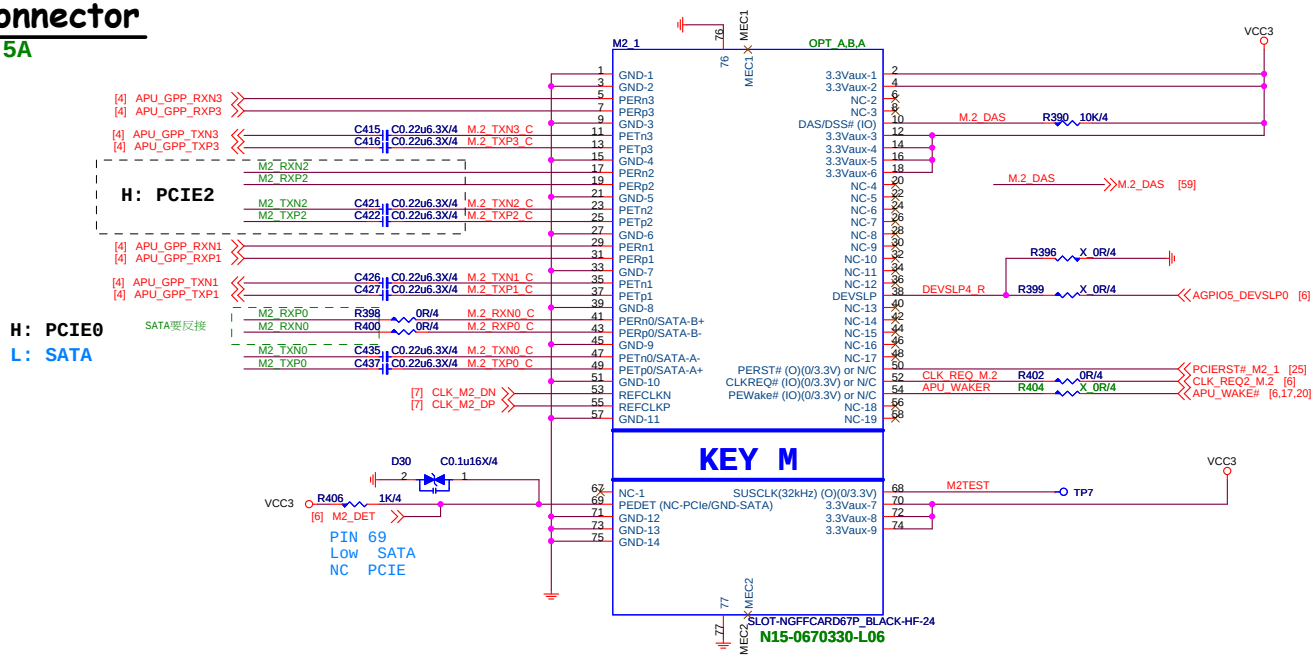
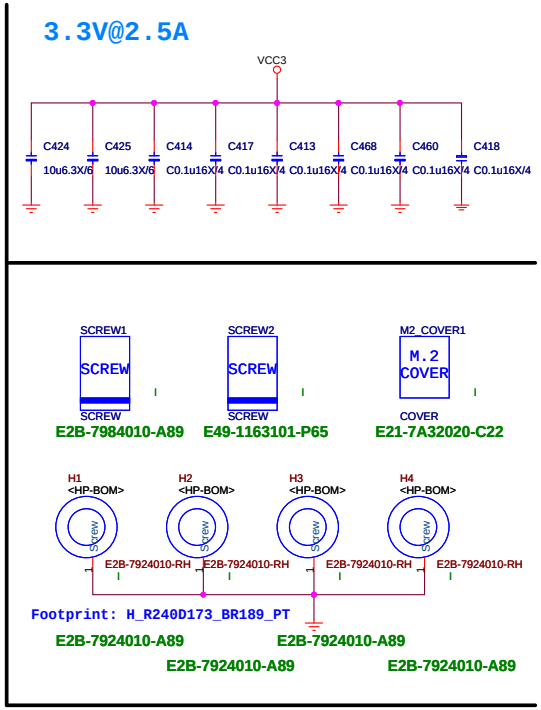
M.2 Connector

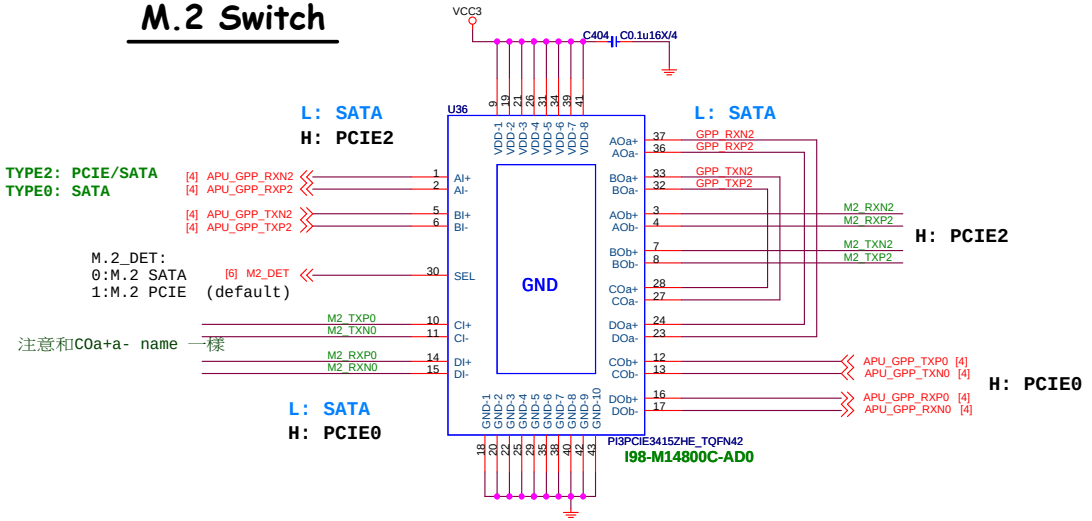
3.3V@2.5A

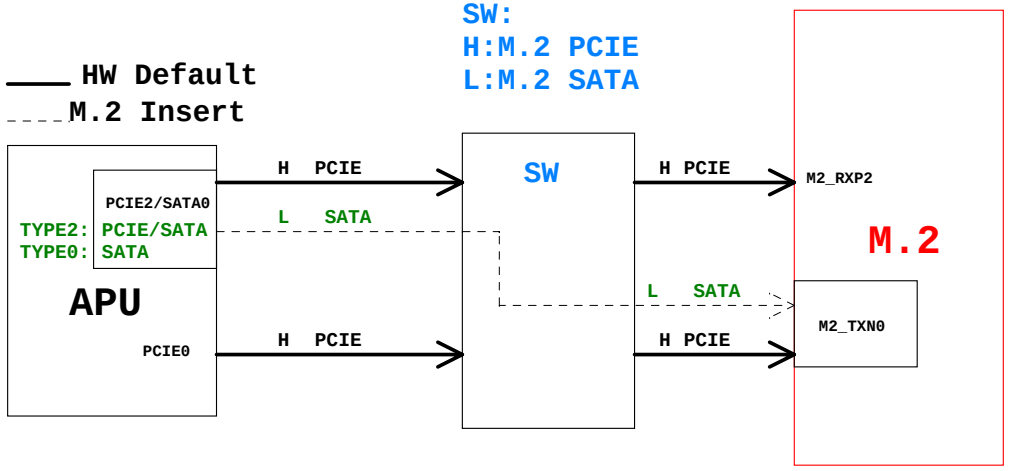




Vinafix.com

M.2 Switch





Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

MICRO-START INT'L CO.,LTD.

Title: M.2 Connector

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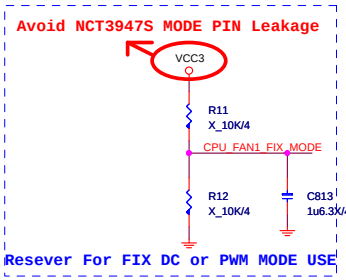
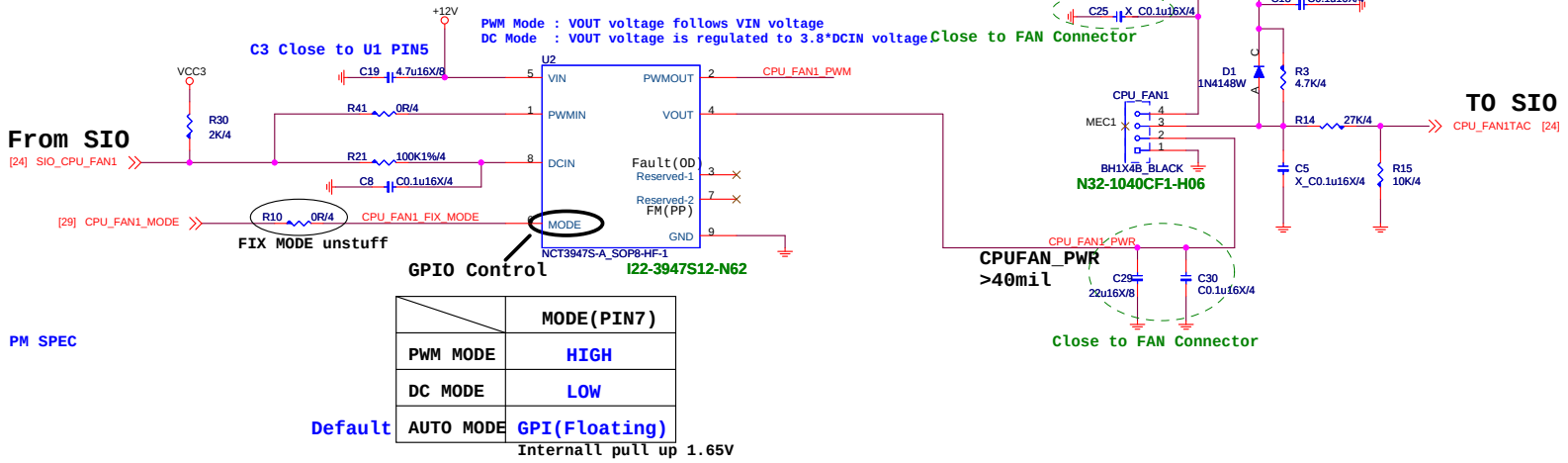
TYPE K :4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE
GPIO可以由BIOS切換 PWM/DC MODE

CPU_FAN1

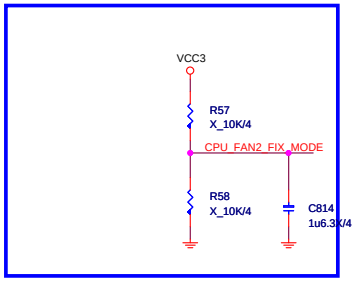


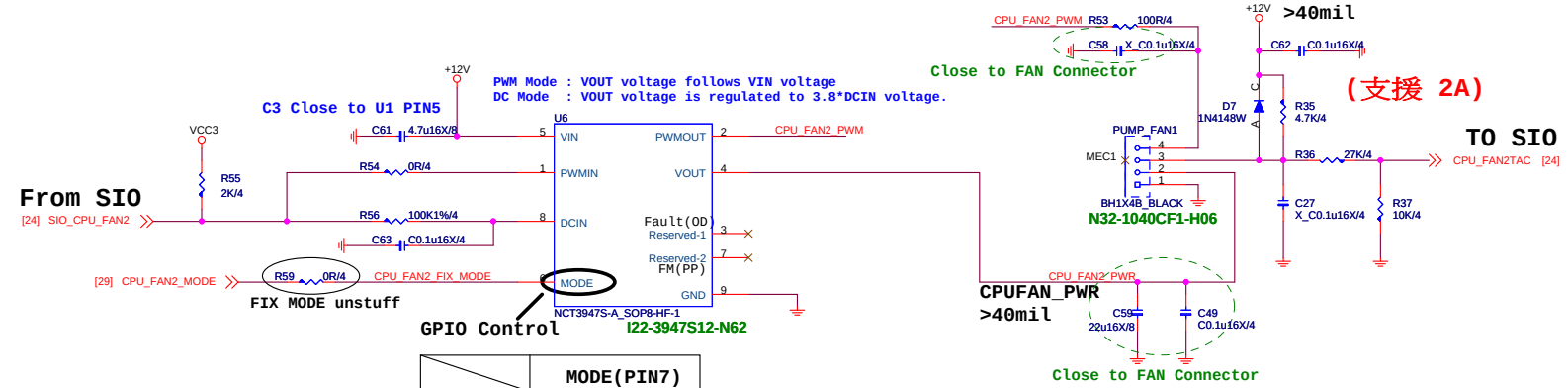


	MODE(PIN7)
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V

PUMP_FAN1





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

Internall pull up 1.65V

MICRO-START INT'L CO.,LTD.

Title: CPU FAN Control

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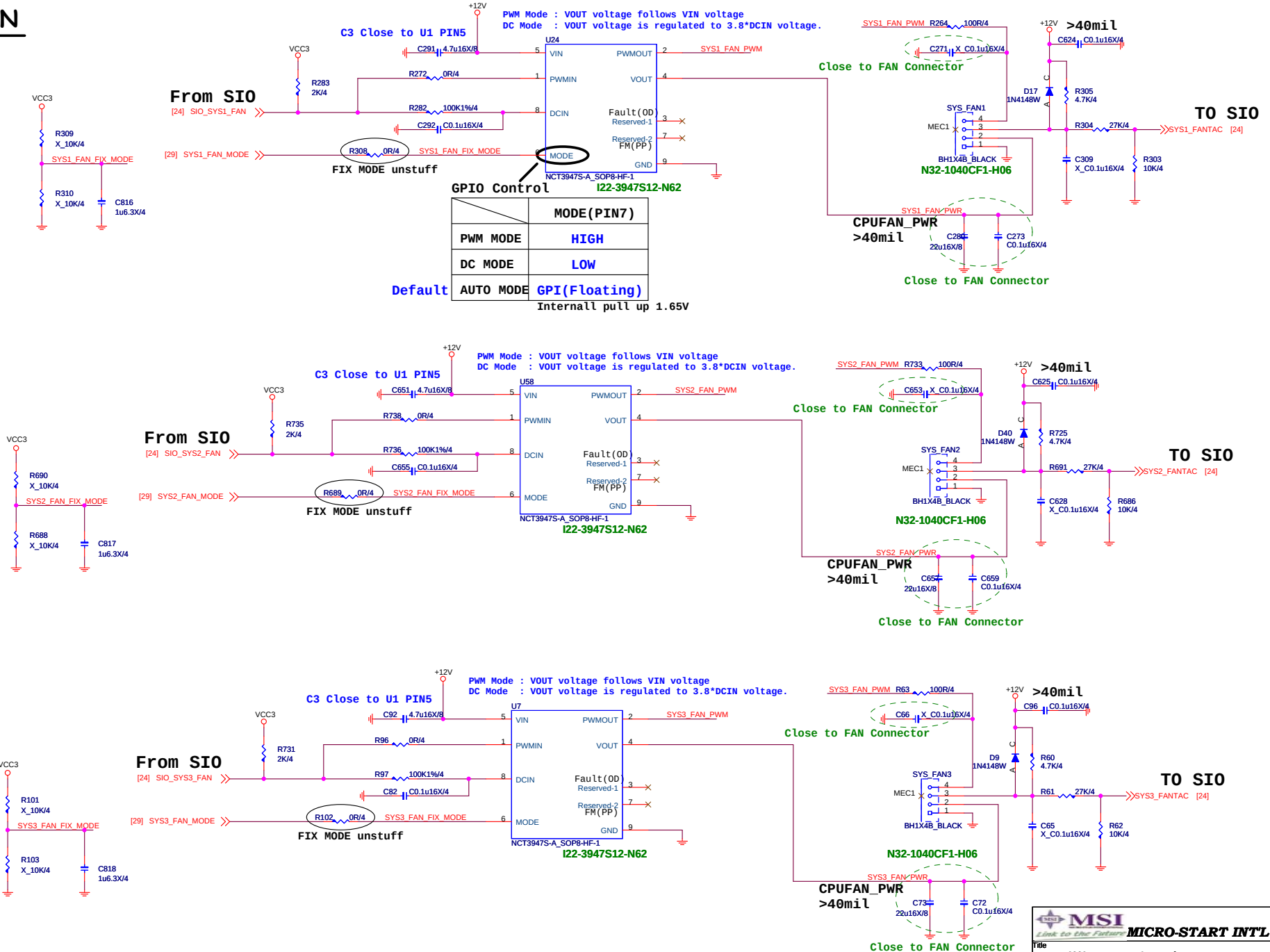
Type H : 4/3 PIN SYS FAN FROM NCT3943S(USE SIO CUT POWER)

SYSFAN



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

Title	SYSTEM FAN Control	
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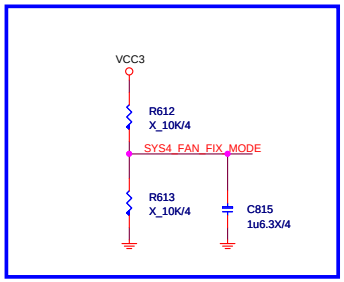
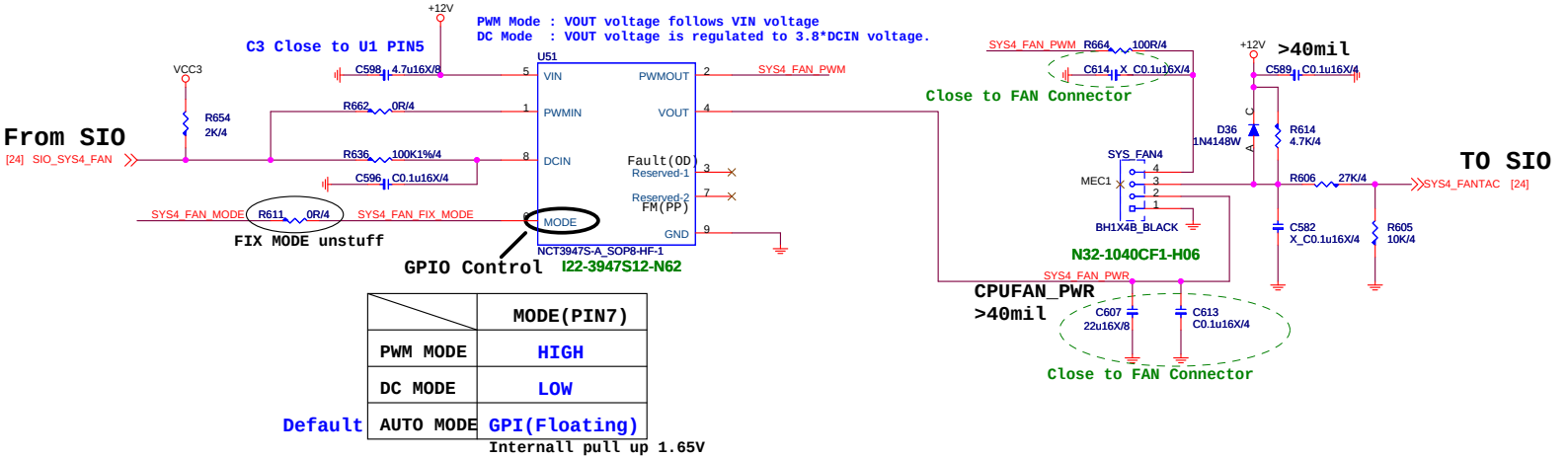
SYSFAN 4



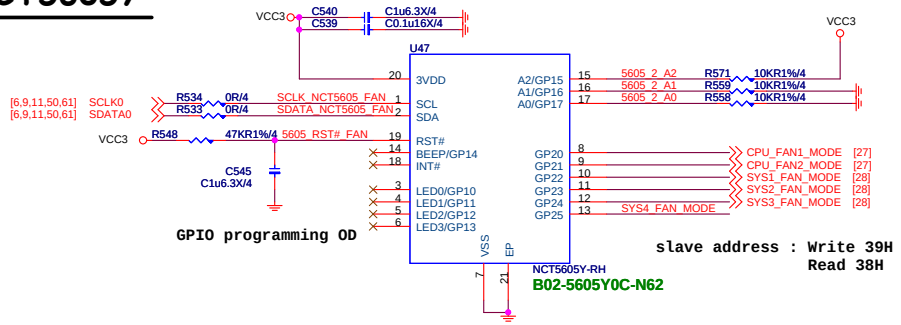


	MODE(PIN7)
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

Default

Internall pull up 1.65V

NCT5605Y



MICRO-START INT'L CO.,LTD.

Title	PCIE X16	
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RTL8111H Giga LAN

3.3V@177.57mA

VDD33 — RL10 X_1K/4 — LAN_WAKE#

Remove pull-up R if R existence on motherboard (or SB has internal pull-up R).

PIN19:
AMD platform connect to PCIE_RST#,
don't connect to A-RST#.
INTEL platform connect to PLT_RST#,

VCC3 — RL9 1KR1%/4 — RL11 15K1%/4 — ISOLATEB

[15] PE_LAN_TXP / [15] PE_LAN_TXN — CL15 C0.1u16X/4 — CL16 C0.1u16X/4 — PE_LAN_TXP_C / PE_LAN_TXN_C

[17] PE_LAN_CLKP / [17] PE_LAN_CLKN — PE_LAN_CLKP / PE_LAN_CLKN

[17,22,39] PM_WAKE# — RL12 0R/4 — ISOLATEB / LAN_WAKE#

RL5 2.49KR1%/4 RSET

VDD33 — VDD33 width>40mil, VDD10 width>60mil

VDD10

3VSB — CPL1 20mil=1A — 11 CL11 C0.1u16X/4 — 32 CL9 C0.1u16X/4 — 11 CL10 4.7u6.3X/6 — 32 CL8 4.7u6.3X/6 — VDD33

For surge improvement

VDD10 — 3 CL7 C0.1u16X/4 — 22 CL19 C0.1u16X/4 — 22 CL20 X_1u6.3X/4 — 24 CL21 C0.1u16X/4 — 8 CL6 C0.1u16X/4 — 30 CL12 C0.1u16X/4

UL3 — RTL8111H-CG-RH — B06-08111CC-R09

PCIE interface: HSIP, HSIN, REFCLK_P, REFCLK_N, PERSTB, CLKREQB, HSOP, HSON

PM: ISOLATEB, LANWACKEB

Transceiver Interface: MDIP0/MDIN0, MDIP1/MDIN1, MDIP2/MDIN2, MDIP3/MDIN3

Regulator & Power: VDDREG, AVDD33-1, AVDD33-2, REGOUT, DVDD10, AVDD10-1, AVDD10-2, AVDD10-3, RSET, GND

EEPROM: LED0, LED1/GPO, LED2

CLOCK: CKXTAL1, CKXTAL2

PE_LAN_RXP_C / PE_LAN_RXN_C — C0.1u16X/4 — CL17 CL18 — PE_LAN_RXP [15] / PE_LAN_RXN [15]

PLTRST_BU3# LAN_C — LAN_CLKREQ#

TR_D0+ / TR_D0- / TR_D1+ / TR_D1- / TR_D2+ / TR_D2- / TR_D3+ / TR_D3-

LED0 — CLK_LANI — CL14 C27p50N/4 — YL1 25MHZ18P — CL13 C27p50N/4 — CLK_LAN0

D04-1000201-F07

Pin33: 4 via from top layer to GND layer and make the via at the center of IC.

LAN Connector

VDD33 — For_EMI — RL2 100R/4 — CL2 C0.1u16X/4

LED2 — RL1 220R/4 — DL1 — CL5 C0.1u16X/4 — ESD

Main:D0G-1020530-I05
AVL:D0G-8010510-SI0
D0G-1020530-I05

For EMI

LED1 — RL3 220R/4 — LINK1000#

LED0 — RL4 100R/4 — LED0_LINK100# — For EMI

LAN_USB1B — RJ45_USBX2_LEDX2_TX-RH-93 — N58-32F0291-F02

LVDD33, LED2_ACT, VCT, TR_D0+, TR_D0-, TR_D1+, TR_D1-, TR_D2+, TR_D2-, TR_D3+, TR_D3-, LINK1000#, YELLOW+, YELLOW-, POWER, TD1+, TD1-, TD2+, TD2-, TD3+, TD3-, TD4+, TD4-, GND, GREEN+/ORANGE-, GREEN-/ORANGE+

For EMI

LED2_ACT — CL1 C100p50N/4
LINK1000# — CL3 C100p50N/4
LED0_LINK100# — CL4 C100p50N/4

Pull-up resister RL9 required to either 3.3V suspend or core rail depending on the power well of the PCH input CLKREQ# buffer.

3VSB — RL7 10K/4 — LAN_CLKREQ# — RL8 X_0R/4 — CLKREQ1 [17]

RL6 X_10K/4

VCC3 — C812 0.1u16X/4

U59 — NC7SZ08M5X_SOT23-5

PLTRST_BU3# LAN_C — R598 22R/4 — PLTRST_BU3# LAN_R

PLTRST_BU3# LAN — R754 0R/4 — PM_GPP_RST [17,25] — FROM PROM

LAN_BIOS_OFF# [17] — FROM PROM GPIO

ESD Protect

close to connector

D0G-0200529-A68
D0G-0100619-I05

UL2 — ESD-AOZ8906CI-HF — D0G-05A0529-A68

TR_D0- / TR_D0+ / TR_D1- / TR_D1+

UL1 — ESD-AOZ8906CI-HF — D0G-05A0529-A68

TR_D2- / TR_D2+ / TR_D3- / TR_D3+

8111H POWER Consumption

	3.3V @ mA	mW
10 M Idle/TxRx	9.9/84.69	32.67/279.48
100 M Idle/TxRx	48.11/92.44	158.76/305.05
Giga Idle/TxRx	124.5/177.57	410.85/585.98
ALDPS	5.50	18.15

MSI — MICRO-START INT'L CO.,LTD.

Title: LAN-8111H

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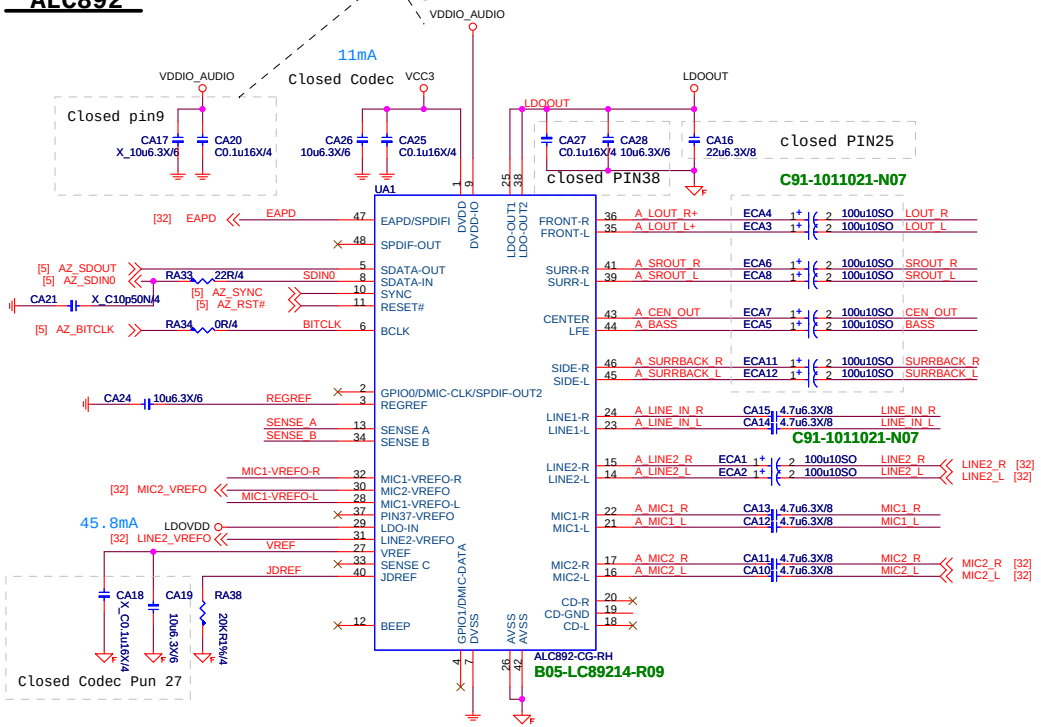
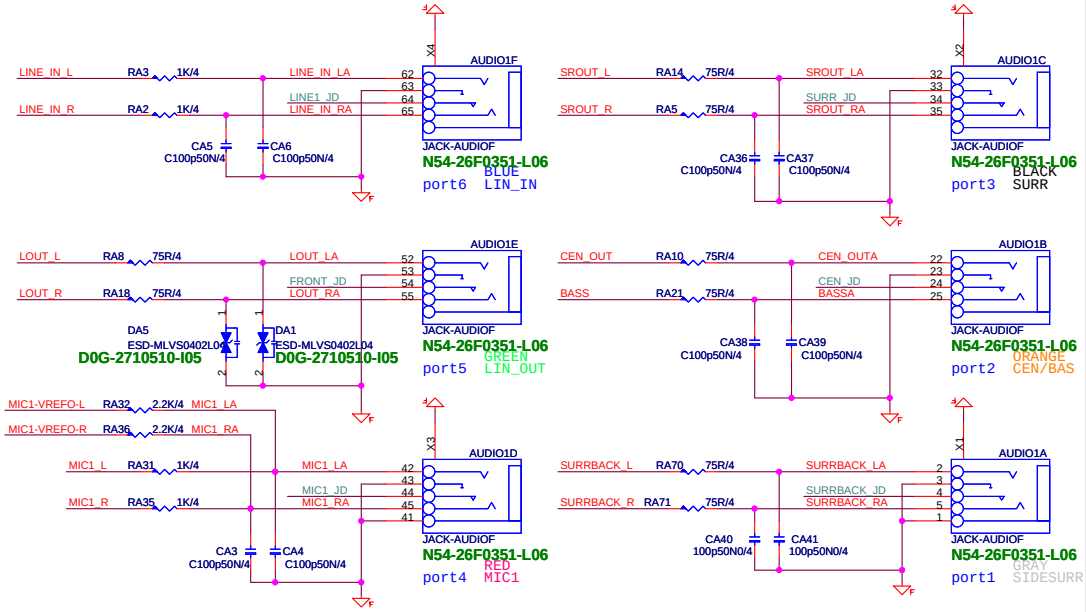
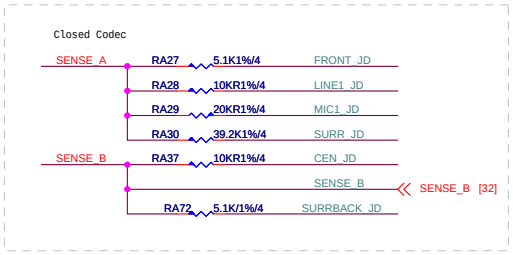
ALC892

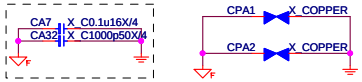
Follow APU power well

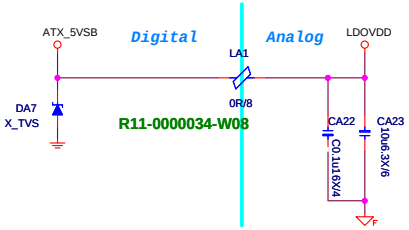




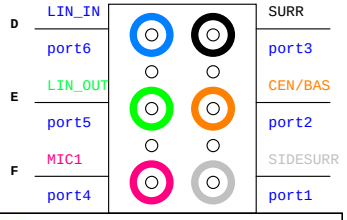


EMI





Vinafix.com



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

Title: Audio ALC892

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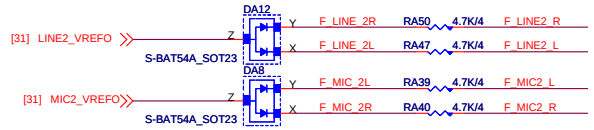
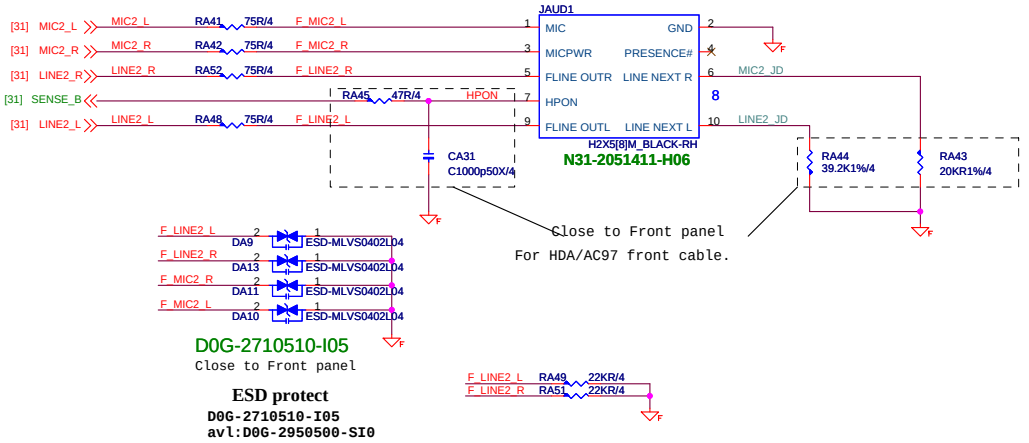
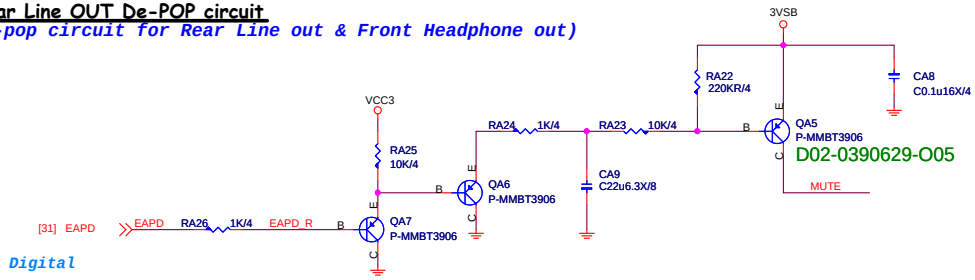




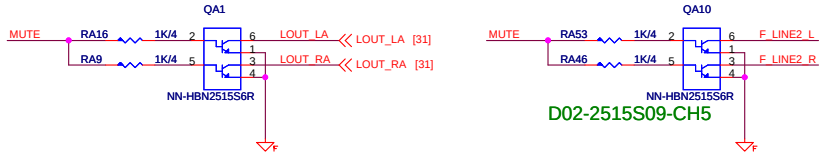
Rear Line OUT De-POP circuit

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

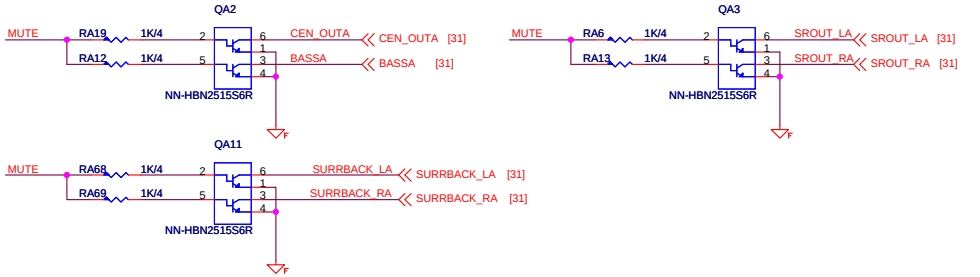


Digital

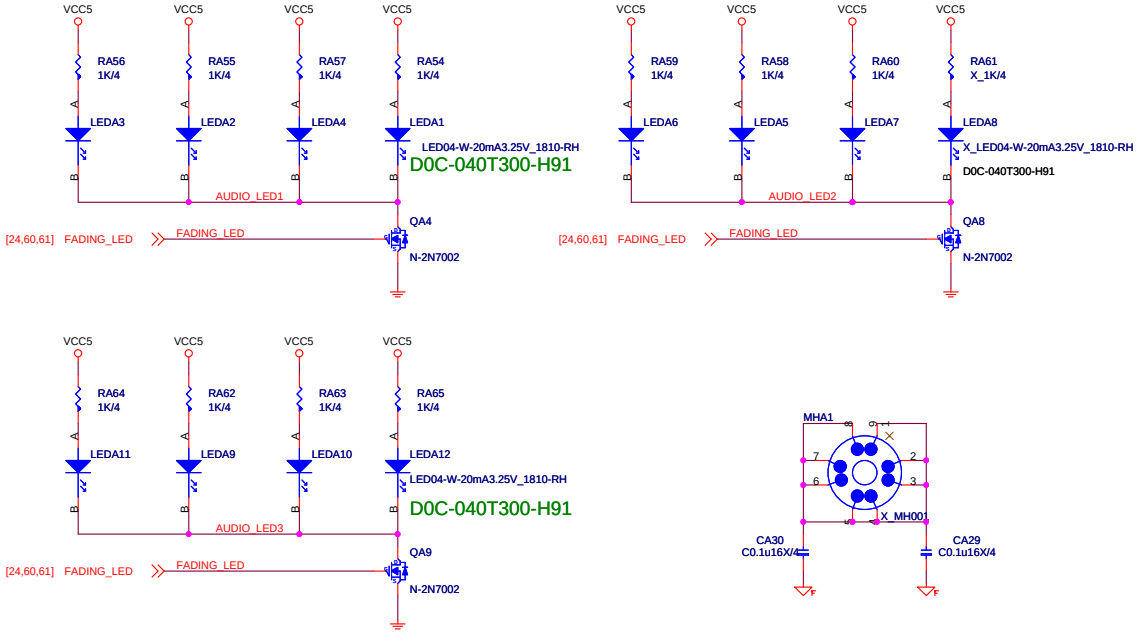
Analog



(add de-pop circuit by PM spec or customer request,
NOTE: add de-pop circuit need to change CA5,CA6, CA7, CA9,to TVS)



使用測光LED



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

Title: Audio ALC892		
Size: Custom	Document Number: MS-7A33	Rev: 10/20/30
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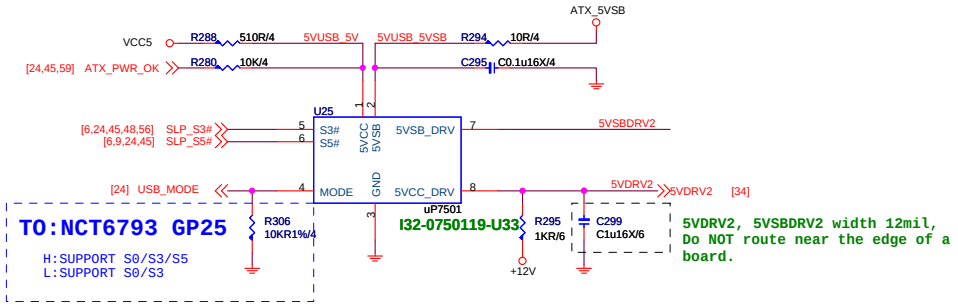
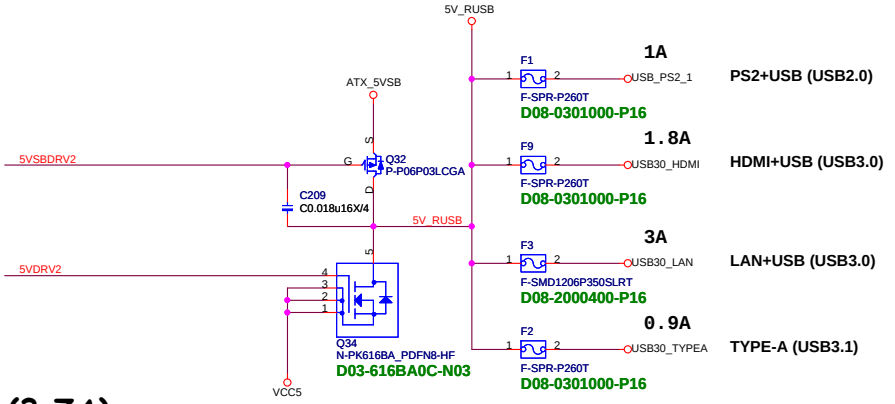
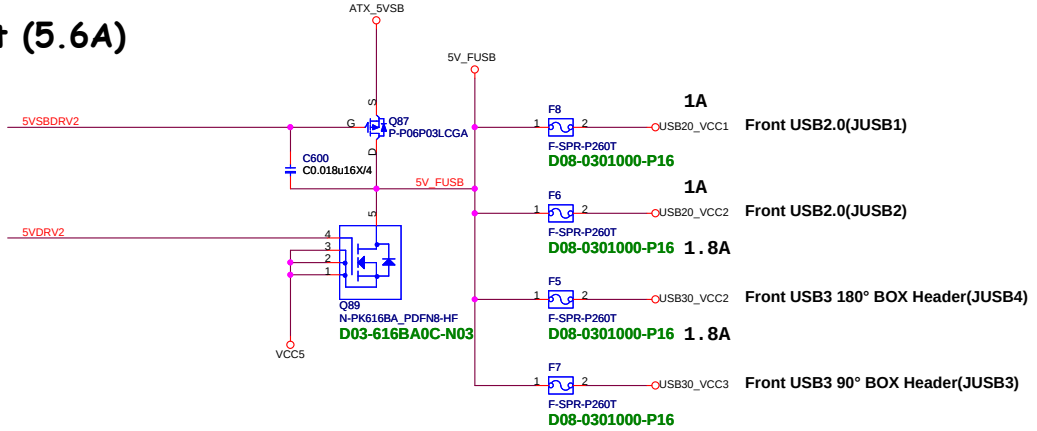
USB Power





Rear (3.7A)

Front (5.6A)



MICRO-START INT'L CO.,LTD.

Title: USB Power		
Size: Custom	Document Number: MS-7A33	Rev: 10/20/30
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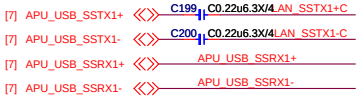
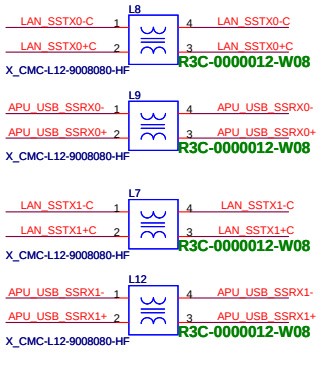
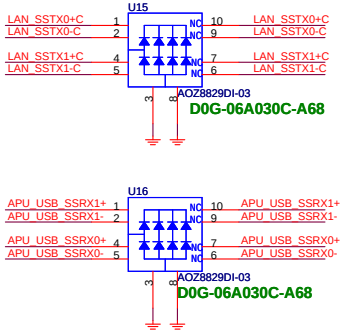
LAN+USB (USB3.0)

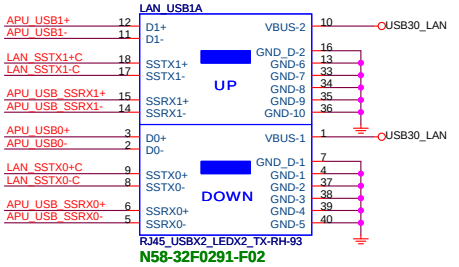
5V@1A

VR Sloution U2 redriver

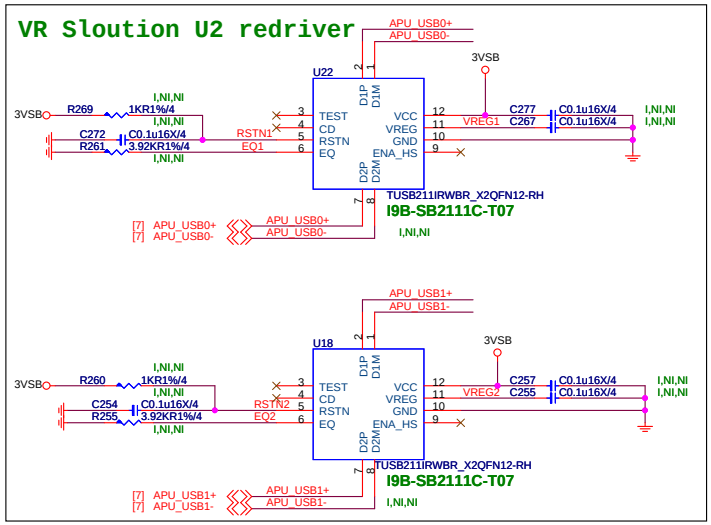


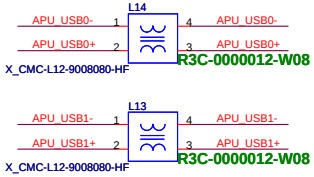


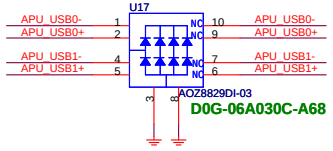


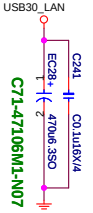


VR Sloution U2 redriver





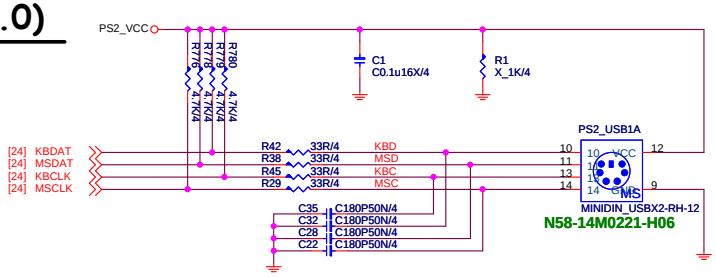


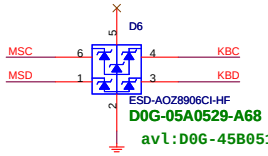


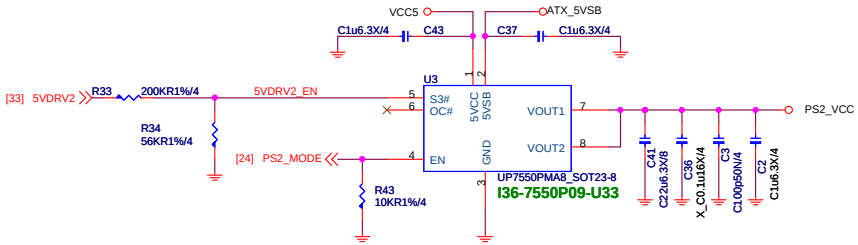
Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

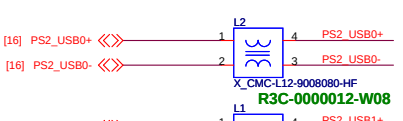
PS2+USB (USB2.0)

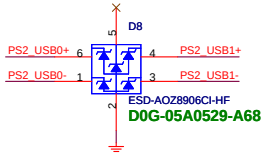
5V@1A

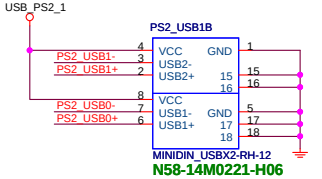


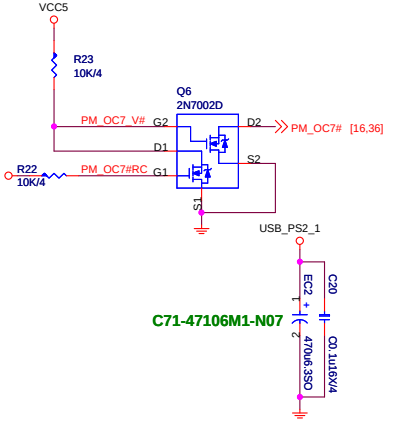












layout note:
C21 must close to TVS pin5
TVS must near KB_MS1 connector and route without branch
Varistor must close to TVS and route without branch

MSI Link to the Future MICRO-START INTL CO.,LTD.

Title: Rear USB

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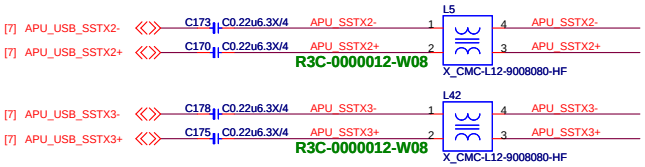
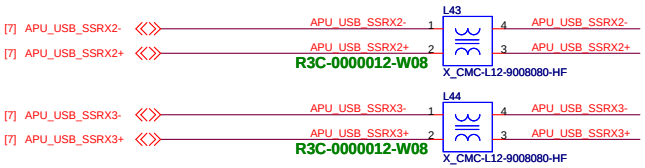
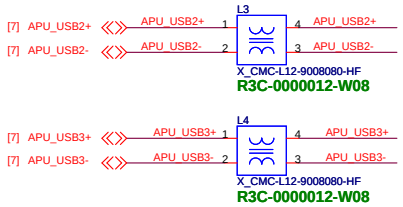
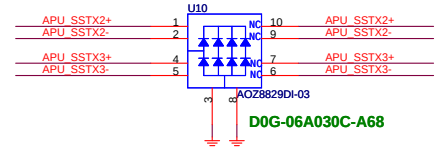
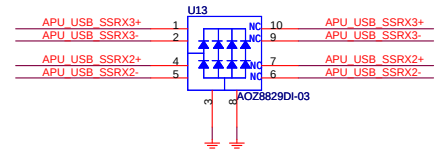
USB30_HDMI

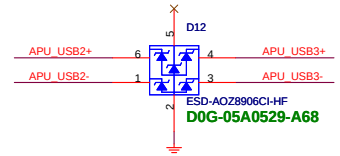


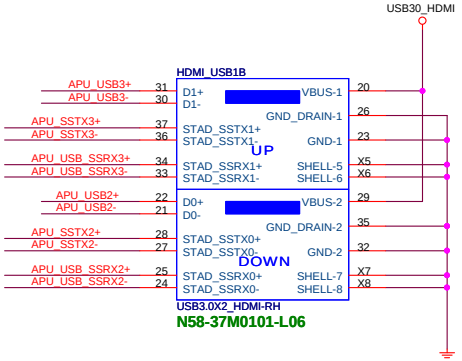


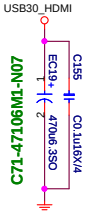




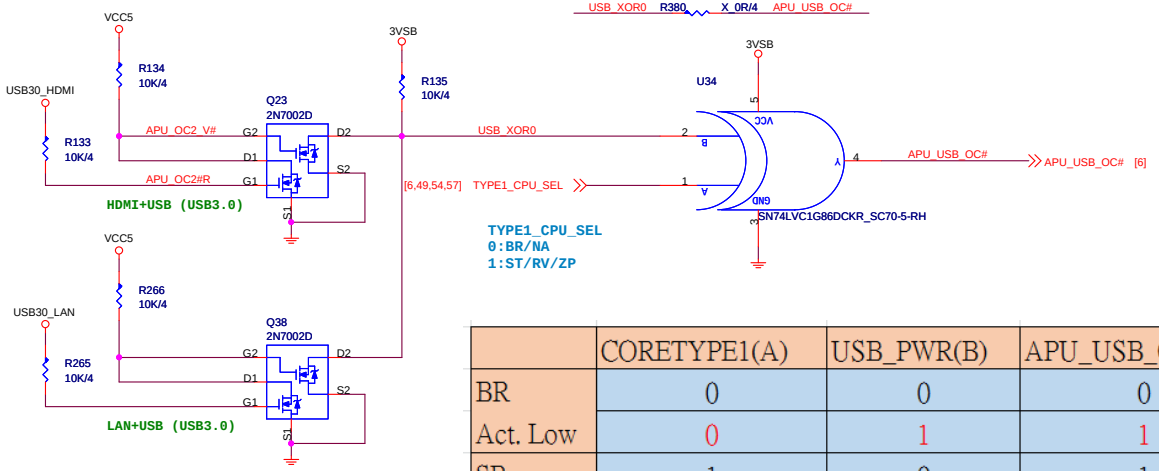








APU_USB_OC



	CORETYPE1(A)	USB_PWR(B)	APU_USB_OC(Y)
BR	0	0	0
Act. Low	0	1	1
SR	1	0	1
Act. High	1	1	0

MICRO-START INT'L CO.,LTD.

Title: USB3.1 TYPE C-Rear

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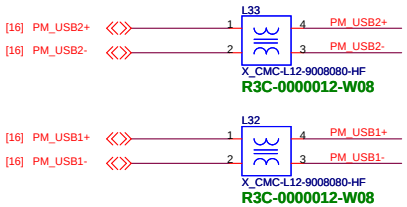
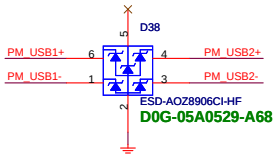
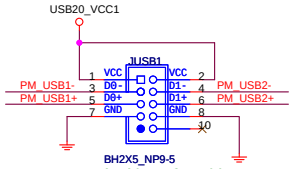
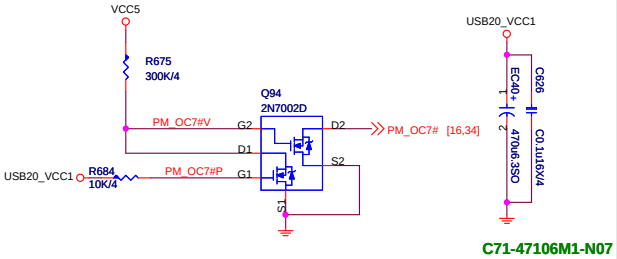
Front USB2.0(JUSB1)

5V@1A



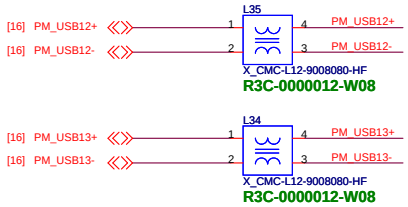


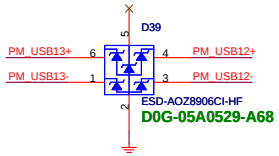


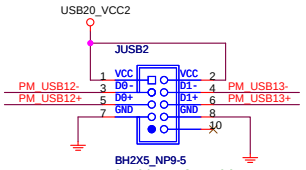


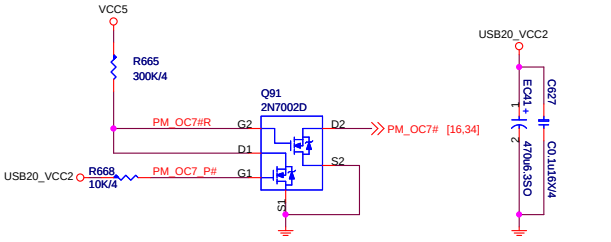
Front USB2.0(JUSB2)

5V@1A









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

Title: USB Front Side-1		
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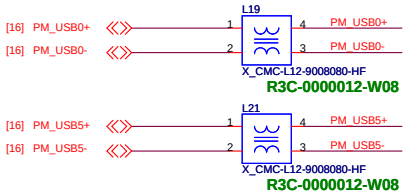
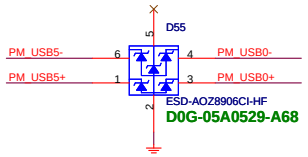
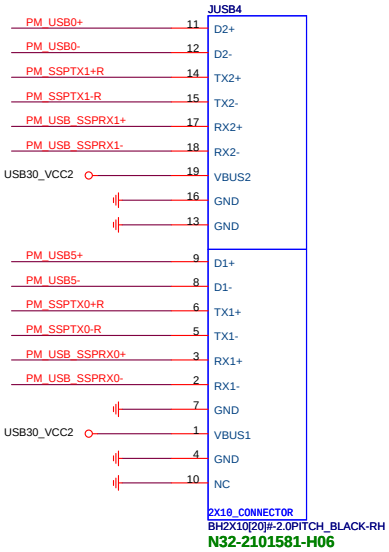
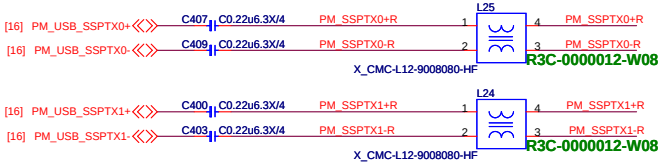
Front USB3 90° BOX Header(JUSB4)

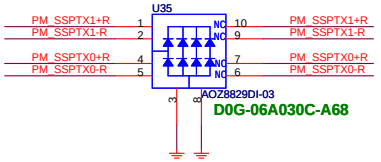
5V@1.8A

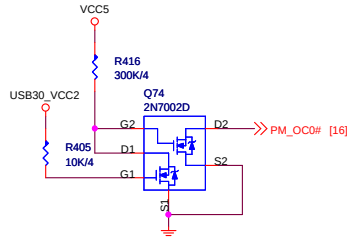


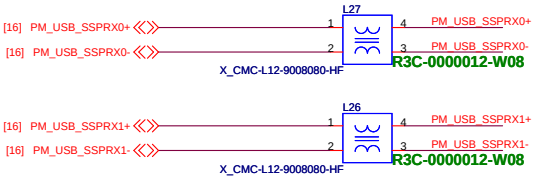


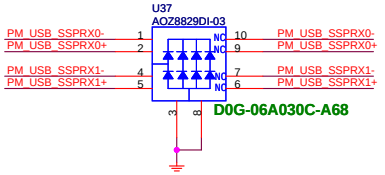


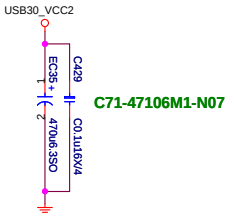












MSI Link to the Future **MICRO-START INT'L CO.,LTD.**

Title: **Front USB3 90° BOX Header**		
Size: Custom	Document Number: **MS-7A33**	Rev: **10/20/30**
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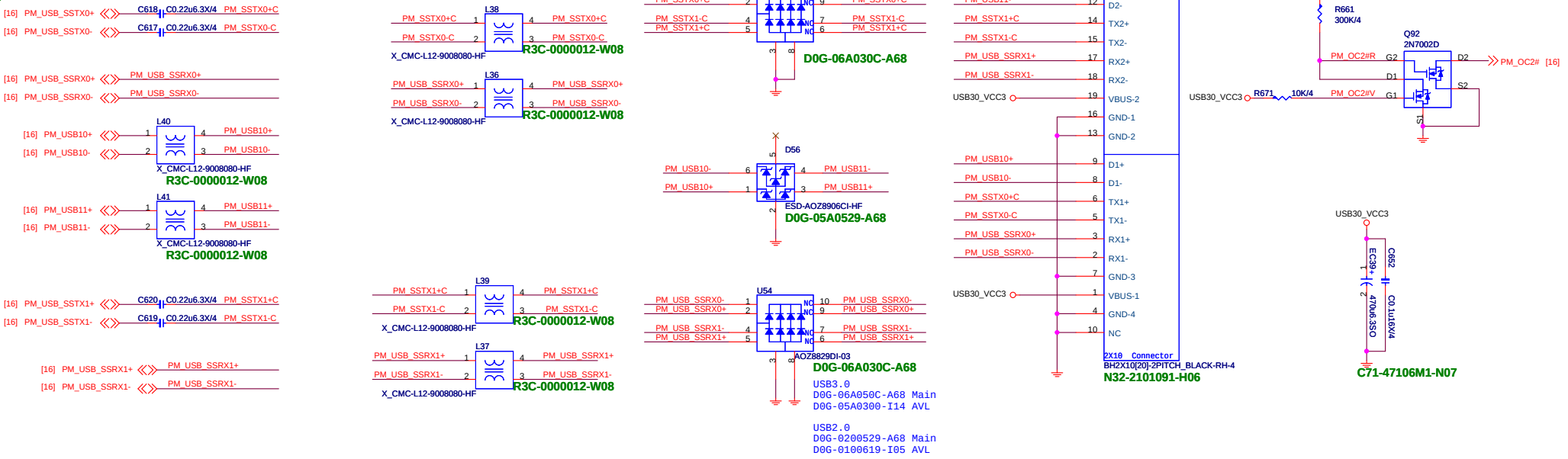
Front USB3 180° BOX Header(JUSB3)

5V@1.8A



MSI Link to the Future — MICRO-START INT'L CO.,LTD.		
Title: Front USB3 180° BOX Header		
Size: Custom	Document Number: MS-7A33	Rev: 10/20/30
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Power Consumption

	3.3V	1.2V(1.05V	3.3VSUS	1.05VSUS(1.2VSUS)	2.5V	Total Power
ASM1142	245mA	634mA	1mA	1mA	NA	1573.8(mW)
ASM2142	300mA	800mA	100mA	50mA	300mA	TDP

CLK Rule (Follow SB PDG)

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

USB HS (90Ohm-Diff)

Chip to Connector 1.5 inch.

UU1A 2142 ASM1142

TPU5 ASM2142_CLKP
TPU6 ASM2142_CLKN
PECLKP
PECLKN

[15] ASM2142_RX0+ CU41 0.22u6.3 ASM2142_RX0+_C
[15] ASM2142_RX0- CU30 0.22u6.3 ASM2142_RX0-_C
[15] ASM2142_TX0+ CU27 0.22u6.3 ASM2142_TX0+_C
[15] ASM2142_TX0- CU43 0.22u6.3 ASM2142_TX0-_C

PTX0P
PTX0N
PRX0P
PRX0N

PCIE Rule (Follow SB PDG)

[15] ASM2142_RX1+ CU42 0.22u6.3 ASM2142_RX1+_C
[15] ASM2142_RX1- CU44 0.22u6.3 ASM2142_RX1-_C
[15] ASM2142_TX1+ CU39 0.22u6.3 ASM2142_TX1+_C
[15] ASM2142_TX1- CU40 0.22u6.3 ASM2142_TX1-_C

PTX1P
PTX1N
PRX1P
PRX1N

C840 X_10p50N/4
ASM1142_RST#
ASM1142_WAKE#
PE_RST#
PE_WAKE#
PE_CLKREQ#

U2DP_A SSD12+ [40]
U2DM_A SSD12- [40]
U3TXP_A SSTX12P [40]
U3TXN_A SSTX12N [40]
U3RXP_A SSRX12P [40]
U3RXN_A SSRX12N [40]

USB SS (80Ohm-Diff)
USB HS (90Ohm-Diff)

U2DP_B SSD13+ [40]
U2DM_B SSD13- [40]
U3TXP_B SSTX13P [40]
U3TXN_B SSTX13N [40]
U3RXP_B SSRX13P [40]
U3RXN_B SSRX13N [40]

USB SS (80Ohm-Diff)

PRON_A PPONA TPU4
PRON_B PPONB TPU8
PPON_X Internal Pull-up to VCC3

OCI_A# OCIA TPU10
OCI_B# OCIB TPU11
OCI_X Internal Pull-up to 3VS

XI
XO

UART_RX ASM2142_USAT_RX RU22 4.7K/4
UART_TX ASM2142_USAT_TX RU23 4.7K/4
RX/TX Internal Pull-up

REXT ASM1142_REXT RU21 12.1K1%

ASM_SMI1
SMI#
VCC3 RU17 80.6K1% PONRST#
PORST#
CU9 1u16X6
USB_SPISCK SPI_CLK
USB_SPICSB SPI_CS#
USB_SPISI SPI_DI
USB_SPISO SPI_DO
RU20 4.7K/4
TEST_EN

ASM2142-A1-RH B02-021421C-AD0

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

Layout Guide:

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

ASM1142 RU29 stuff RU28 unstuff
ASM2142 RU29 unstuff RU28 stuff

UU1B 2142 ASM1142

VCC_IN
EXTL
VCCSUS_IN
VCCSUS_O
VCCSUS-1
VCCSUS-2
GND
PGND

VCC-1 VCC-2 VCC3
VCCP-1 VCCP-2 USB3_3VCC_2P5
VCCU-1 VCCU-2
VDD-1 VDD-2 VDD-3 USB3_1P2
VDDSUS-1 VDDSUS-2
VDDP-1 VDDP-2
VDDU-1 VDDU-2 VDDU-3

TPU12
TPU13
TPU9

USB3_3VCC_2P5 RU28 0R/4
3VSB RU29 X_0R VCCLU
3VSB
USB3_1P2_VSB

ASM2142-A1-RH

VCC3
USB3_2P5 RU14 X_0R RU16 0R/4 USB3_3VCC_2P5

ASM1142 RU14 stuff RU16 unstuff
ASM2142 RU14 unstuff RU16 stuff

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

XO
XI
CU25 12p50N
YU1 20MHZ18p_S
YU1 D04-0901200-F07 D04-0901100-T16
D04-0900900-SC6

RU46 4.7K/4 3VSB
[17,22,30] PM_WAKE#
ASM1142_WAKE#
QU4 N-2N7002
DU5 C0.1u16X/4
C11-1042012-W08

RU51 4.7K/4 VCC3
[6,7] AGPIO3
ASM_SMI1
QU5 N-2N7002
DU6 X_ESD-MLVS0402L04
D0G-2710510-I05

RU47 4.7K/4
USB_SPISCK
RU48 X_4.7K

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

VCC3
CU45 0.1u/16X4
UU8
[17] ASM_BIOS_OFF#
[25] PLTRST_BU2#_ASM2142
ASM_RST_BUFF
RU7 33R/4 ASM1142_RST#
NC7SZ08M5X_SOT23-5
T70-7SZ0800-F01
RU6 X_0R

ASM2142 UU8 stuff RU6 unstuff
ASM1142 UU8 unstuff RU6 stuff

Reset control for ASM2142 only.

USB3_1P2 Close to UU1.58 CU50 10u6.3X6
USB3_1P2 Close to UU1.41 CU48 10u6.3X6
USB3_1P2 Close to UU1.35/47/52 CU16 CU19 CU26 2.2u6.3
USB3_1P2_VSB Close to UU1.21/34 CU21 CU23 0.1u6.3
VCC3 Close to UU1.4/32 CU10 CU13 0.1u6.3
USB3_3VCC_2P5 Close to UU1.38/44/55/62 CU11 CU12 CU14 CU15 2.2u6.3
USB3_1P2 Close to UU1.1/12/33 CU17 CU18 CU20 0.1u6.3
3VSB Close to UU1.20/24 VCCLU CU22 CU24 0.1u6.3

ASM1142 1.2 VCC Power

SN:L01-0107118-M26

VCC5
VCC3
UU6
CU31 22u6.3X8
RU2 47K/4
VIN EN PG SW OUT FB PGND AGND
MP2143DJ_TSOT23-8-RH
I9C-2143D09-M03

USB3_1P2_PH LU3 1.0u6.3A_1210-HF
USB3_1P2
USB3_1P2_FB
RU3 196KR1%4
RU4 261K1%4
CU28 X_0.1u6.3
CU32 22u6.3X8
CU33 22u6.3X8
CU29 0.1u6.3

ASM1142 RU3/RU4 100K/93.12K__1.24V
ASM2142 RU3/RU4 100K/100K____1.2V
ASM1042AE RU3/RU4 196K/261K____1.05V

VCC3
UU7 GS7116S_SOT23-5-RH
VDD VOUT EN GND ADJ
CU37 1u6.3X4
I31-7116S09-N03
CU34 0.1u10X4
RU39 20KR1%4
RU35 9.31KR1%4
USB3_2P5
CU38 1u6.3X4

ASM1142/ASM1042 unstuff
ASM2142 stuff

ASM1142 1.2 VSB Power

3VSB
UU2 GS7116S5-ADJ-R
VDD VOUT EN GND ADJ
CU2 1u6.3
I31-7116S09-N03
CU4 X_0.1u10
USB3_1P2_VSB
CU3 1u6.3
RU34 10KR1%/4
RU33 31.6KR1%/4

ASM1142 RU33 18K____1.24V
ASM2142 RU33 31.6K__1.05V

EEPROM

VCC3
UU3
RU27 10K/4
RU30 10K/4
USB_SPICSB
HOLD WP CS VCC SI SO SCK GND
CU49 0.1u6.3
USB_SPISO
USB_SPISCK
RU24 X_4.7K USB_SPISI
RU38 X_4.7K USB_SPISO
MX25L512EMI-10G
M31-25L1022-M24

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

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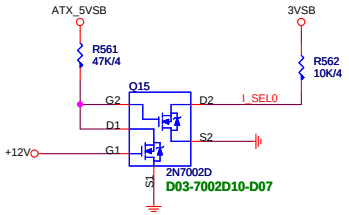
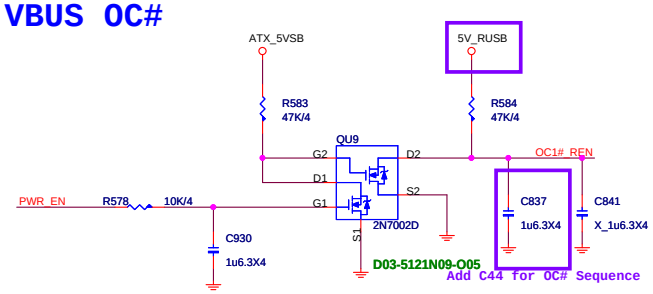
Current Mode

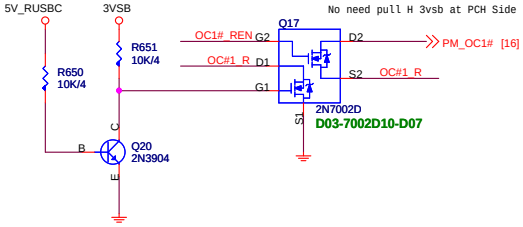


I_SEL0 : I_SEL1		
X	0	Default for 900mA
0	1	1.5A @5V
1	1	3A @5V

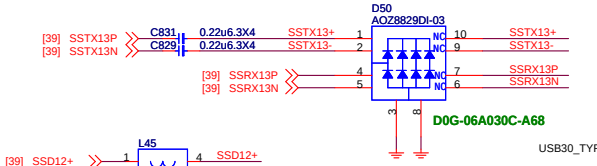
1.5A under S3 mode
3A under S0 mode

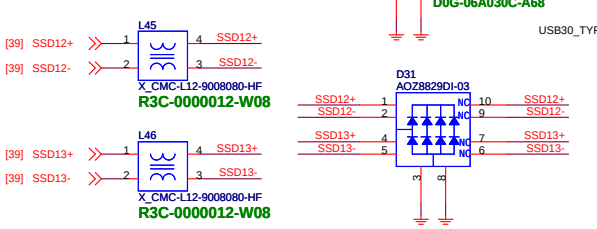
VBUS OC#

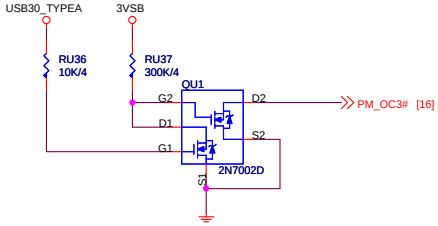


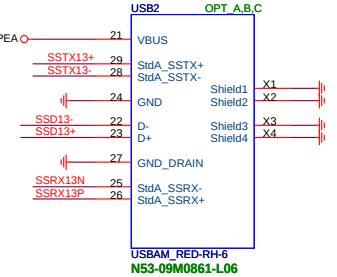


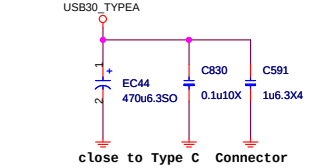
TYPE-A



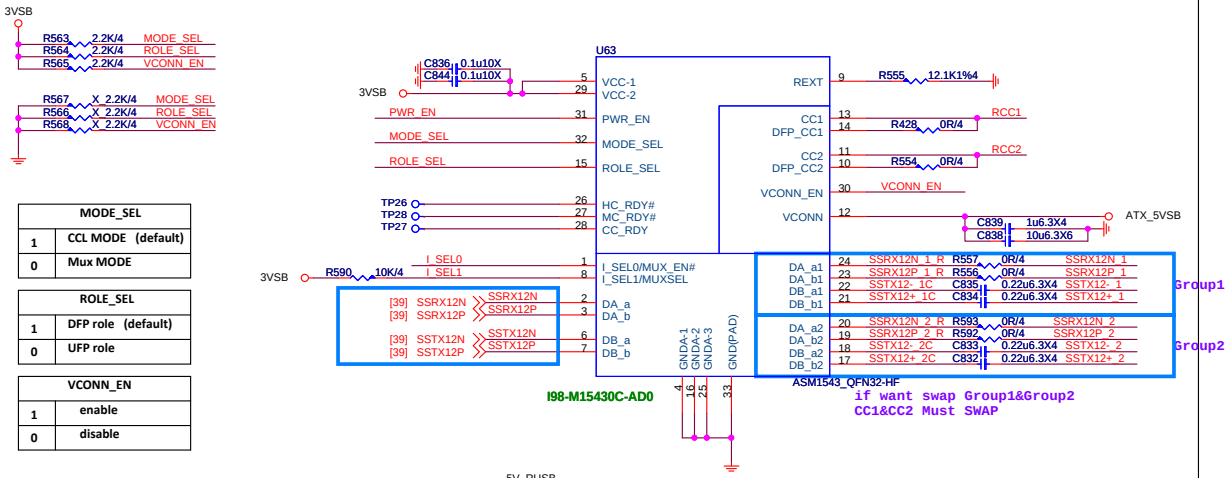








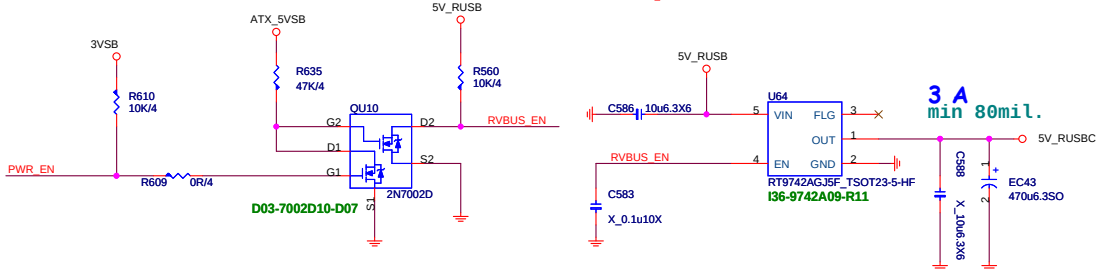
USB Type-C MUX with Configuration Channel (CC)



MODE_SEL	
1	CCL MODE (default)
0	Mux MODE

ROLE_SEL	
1	DFP role (default)
0	UFP role

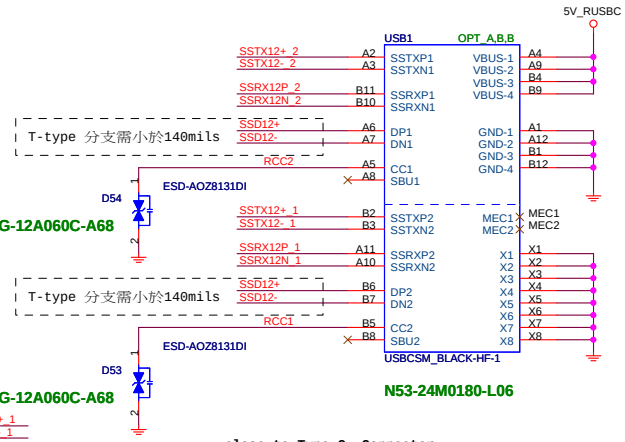
VCONN_EN	
1	enable
0	disable

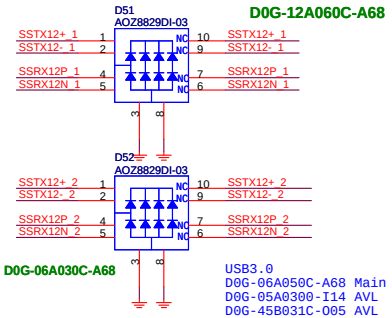


TYPE-C

Black gold plating

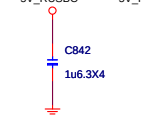
OC#4





USB3.0
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL
D0G-45B031C-O05 AVL

close to Type C Connector



MSI Link to the Future MICRO-START INT'L CO.,LTD.

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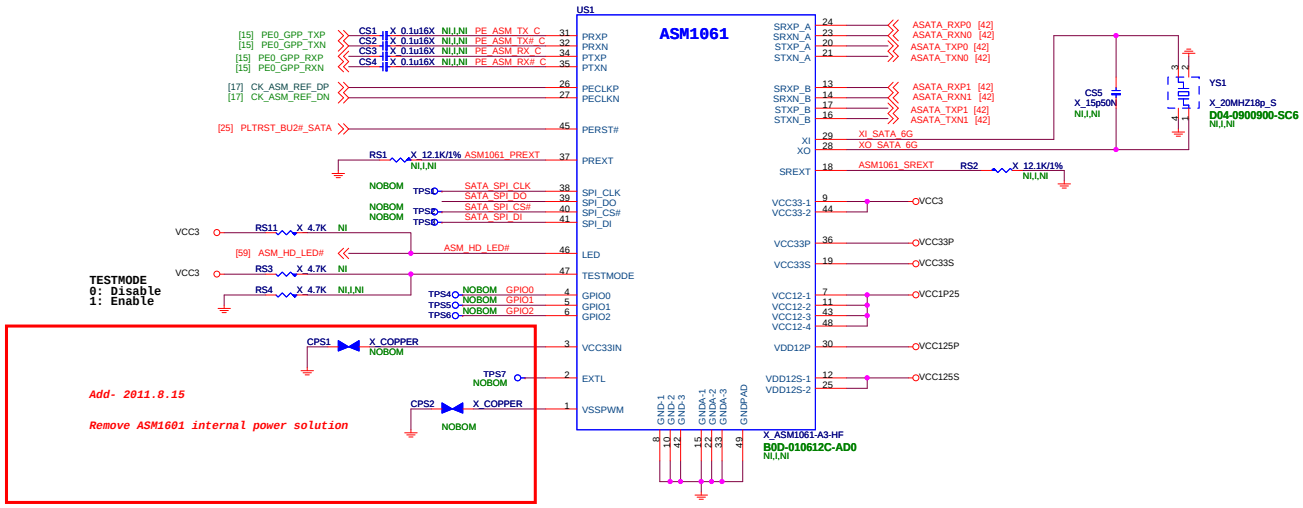
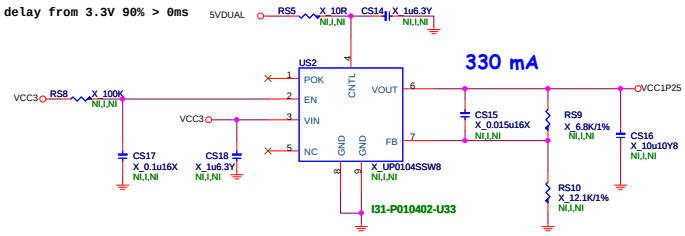
ASM1061 SATA6G

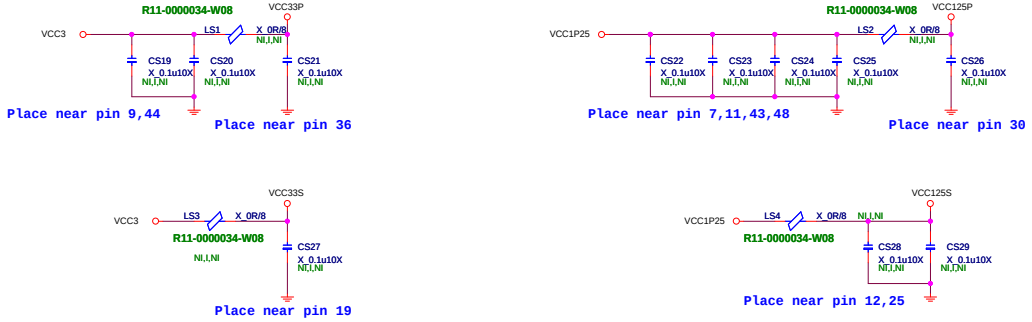


1.2V delay from 3.3V 90% > 0ms

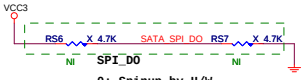


ASM1061 POWER Consumption

	3.3V	1.2V	Power (mW)
Idle (mA)	98.45	212.3	579.645
Busy (mA)	91.1	330.7	697.47



3.0



Add- 2011.3.18

SATA_SPI_DO don't need pull up (integrated pull-up)
or pull down for Asmedia recommendation.
Asmedia suggest that we use spinup by s/w mode for MB or PCI-E Card.

Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01		A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01		C

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

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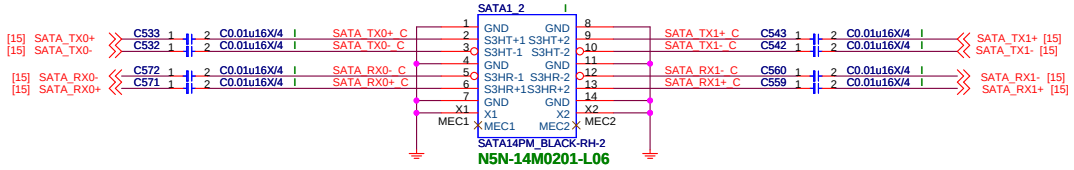
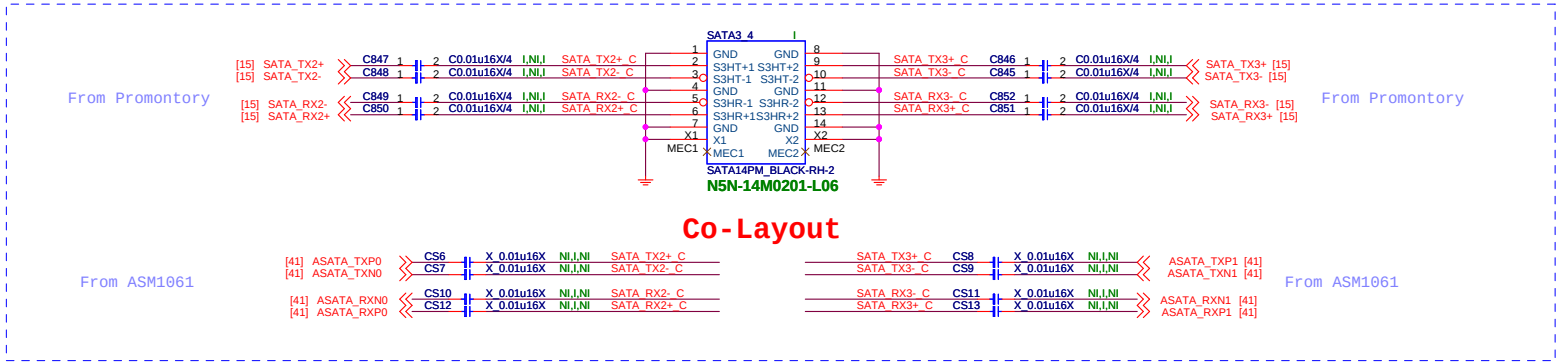
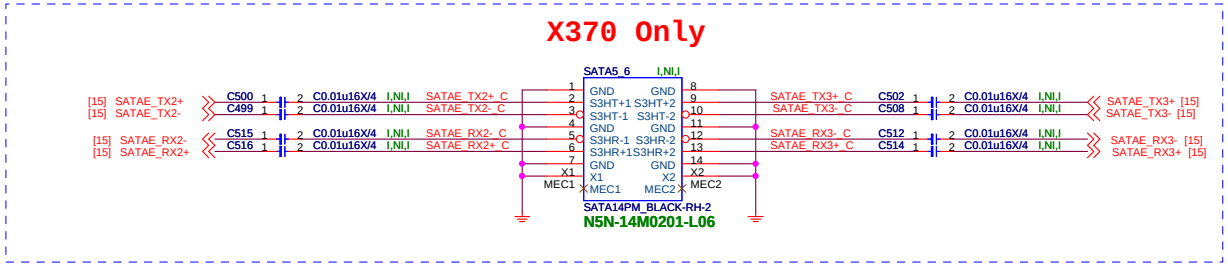
SATA Connector







Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

MICRO-START INT'L CO.,LTD.

Title: PCIE X16

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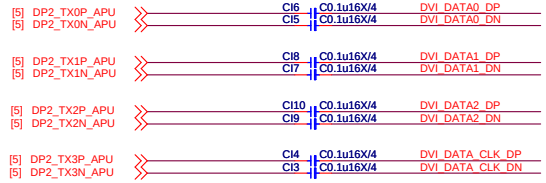
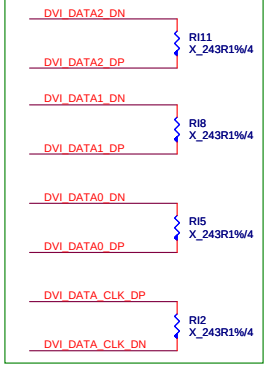
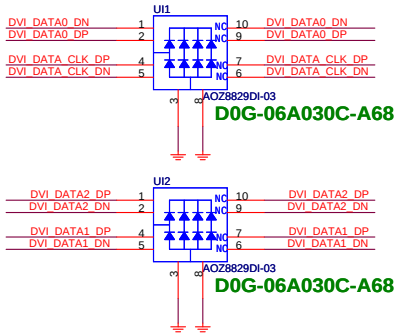
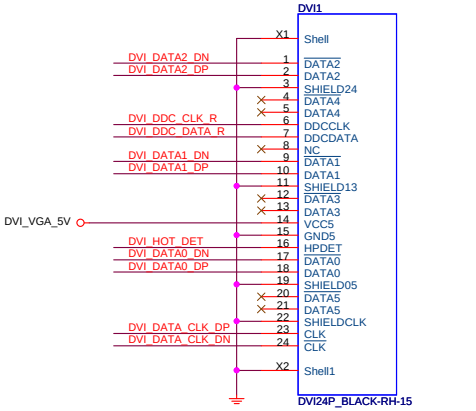
DVI CONNECTOR

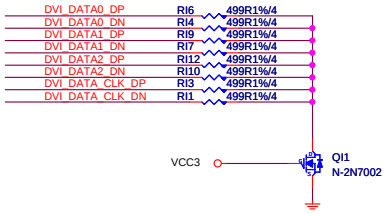


For EMI

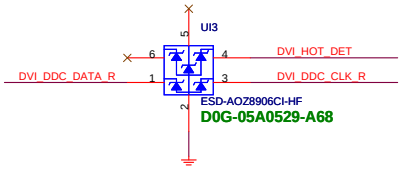




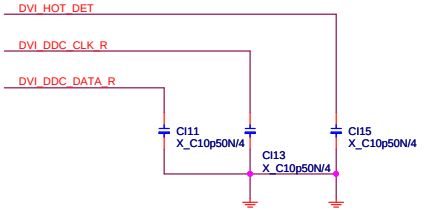




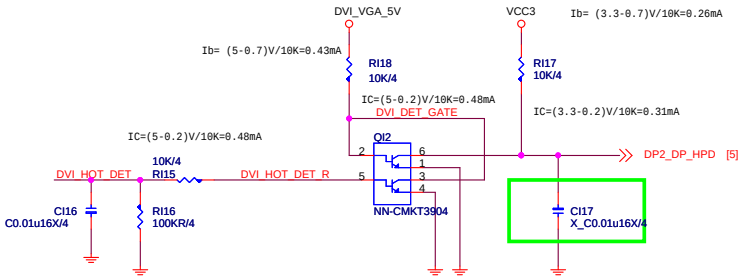
注意:耐壓5V零件



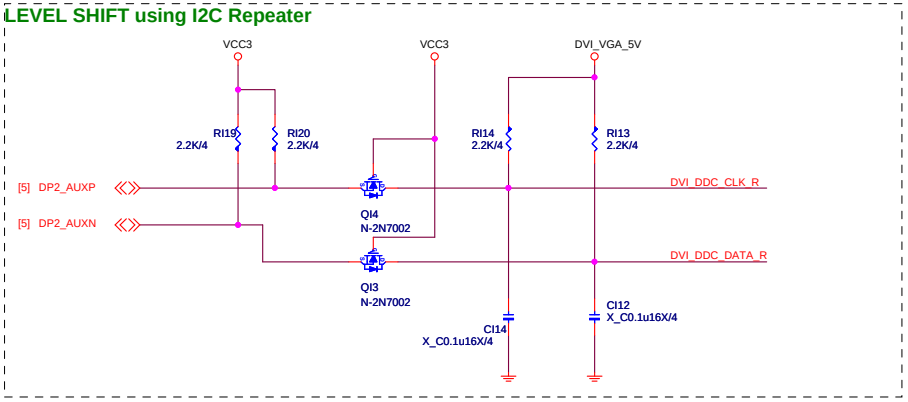
For EMI

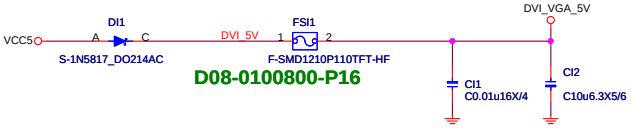


HPD



LEVEL SHIFT using I2C Repeater





D08-0100800-P16

MICRO-START INT'L CO.,LTD.

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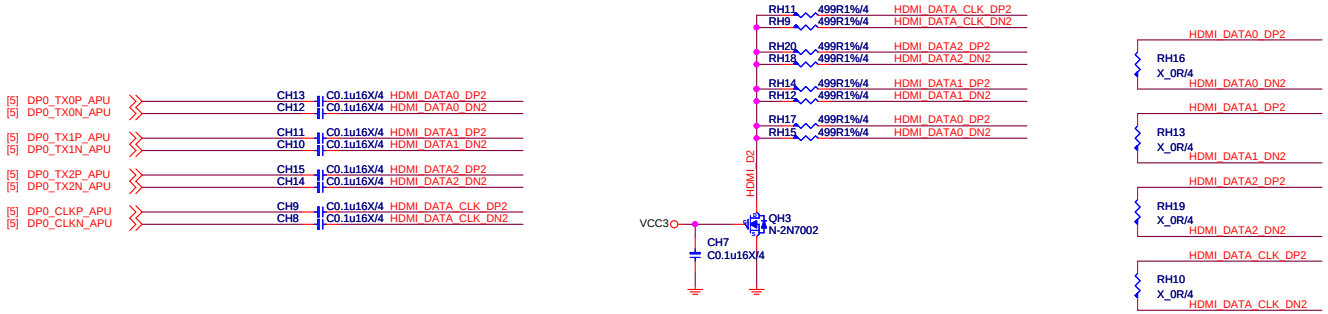
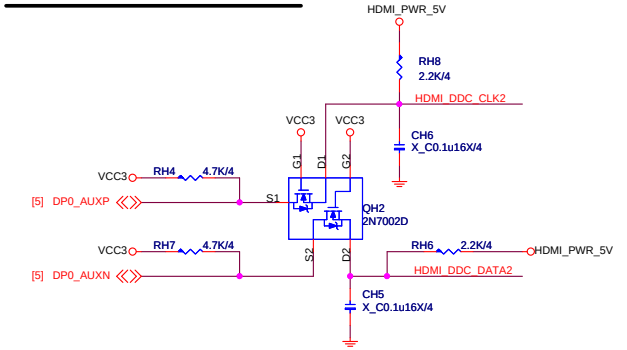
HDMI CONNECTOR

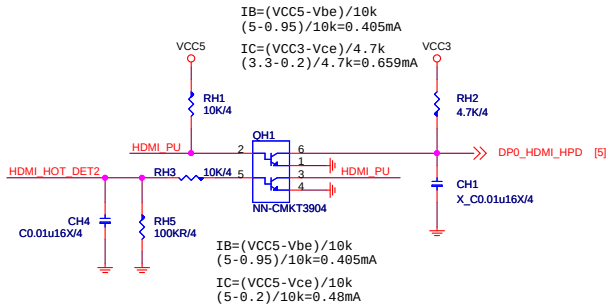
For HDMI 1.4



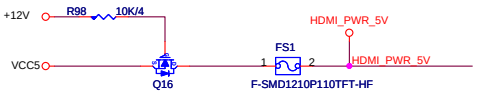
AUX Level Shifter



HPD Circuit

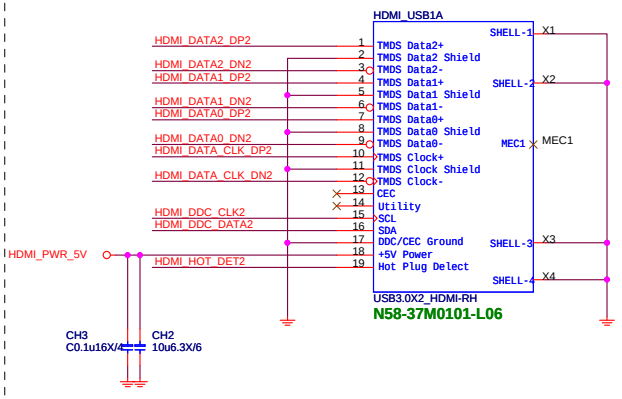


Connector Power

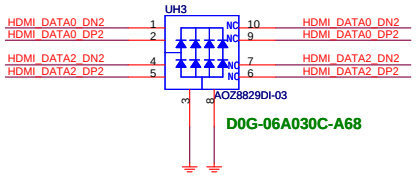


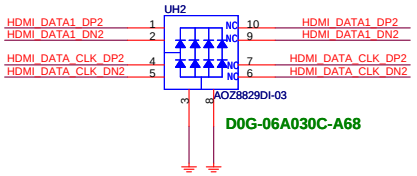
如果用DIODE SA測試電壓會不過

Connector

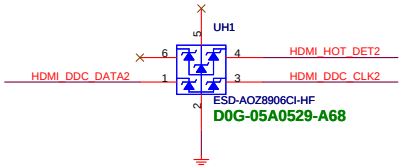


For EMI





注意:耐壓5V零件



MSI Link to the Future MICRO-START INT'L CO.,LTD.

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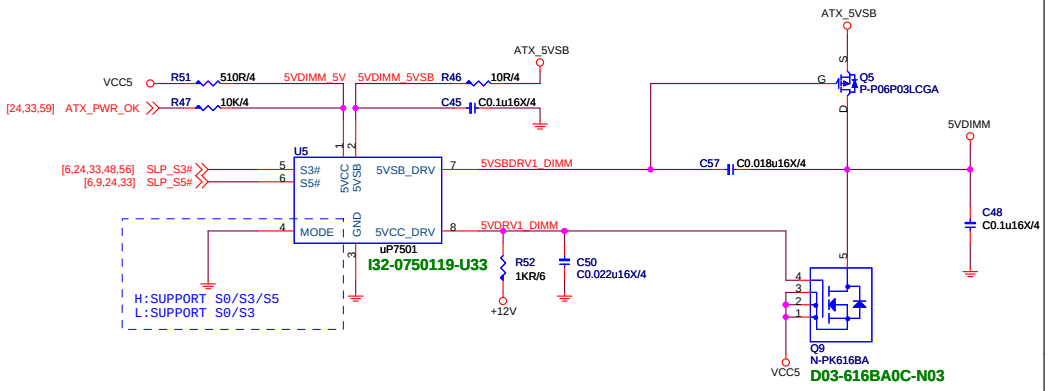
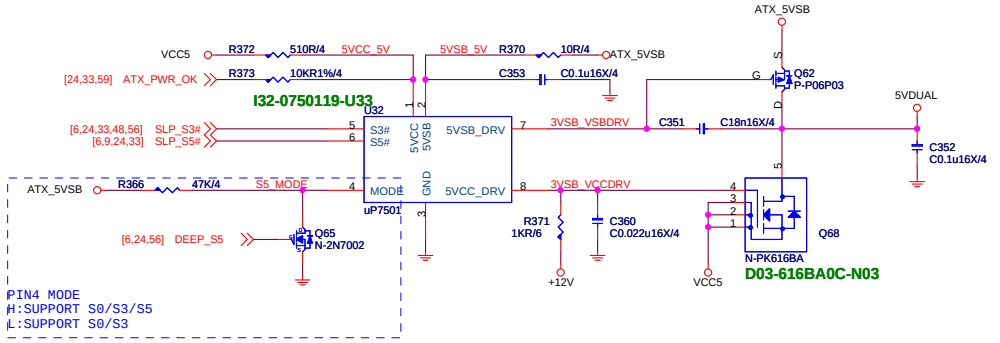
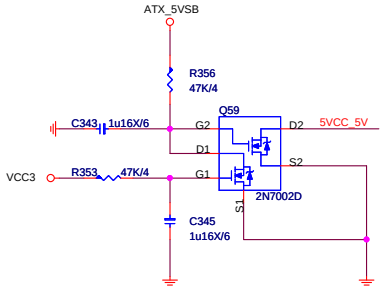
5VDIMM FOR DDR



Vinafix.com

5VDUAL For 3VSB、CPU 1.8V 、 VDDP



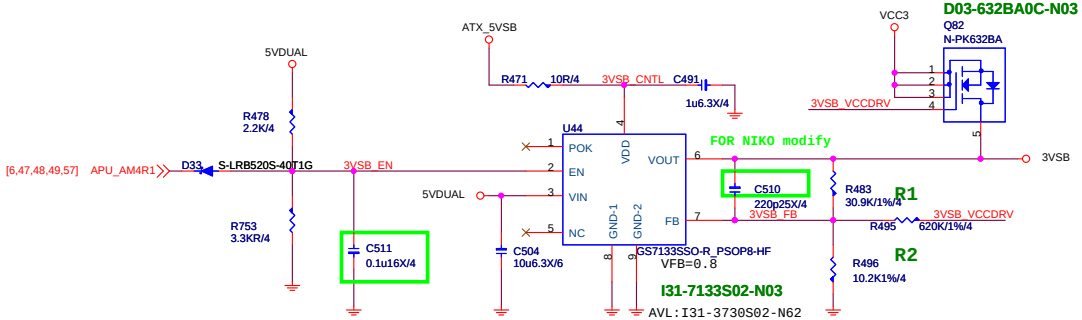


For power 700W solution (only for uP7501+uP7506 for 3VSB solution)
The power supply VCC3 delay 12ms after VCC5 assert.
The chip U7501 5VDRV1 work when the VCC5 ready
(When VCC5 up to 4.2V and the 5VDRV1 delay 6ms assert), but
VCC3 not ready and let the 3VSB sequence fail.

3VSB cost down

3.3V@2.63A

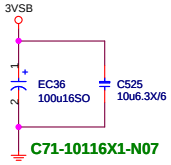
1.05V@0.05A
VDDBT_RTC_G@4.5uA
FCH@0.07A
CPU@0.25A
PCI @0.75A
*PCIE*4 @1.5A*
USB TYPE-C @0.9mA



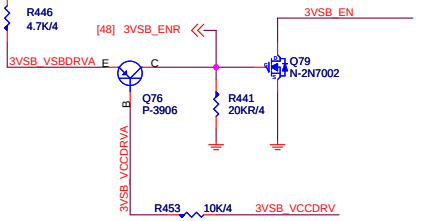
VFB=3.224V for S0->S3 3VSB voltage raise & ATX_5VSB drop.

Vout = Vref * (1 +(R1/R2))
= 0.8 * (1 +(30.9K/10.2K))
= 3.22V

OCP=12A
2.63A



防G3-->S5底下5VSBDRV2瞬間有電變沒電,
使得下一級電壓(3VSB or 1.8V_S5)爬升有drop



MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: ACPI uPI-5VDIMM&3VSB

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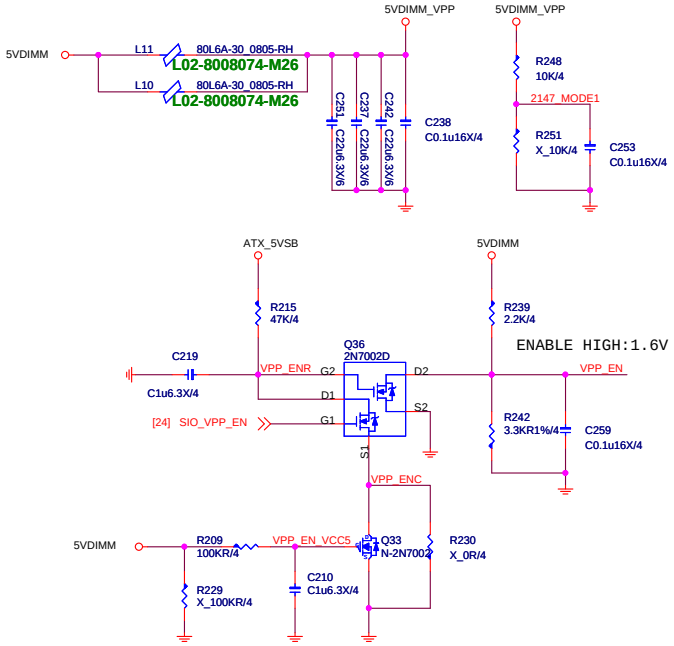
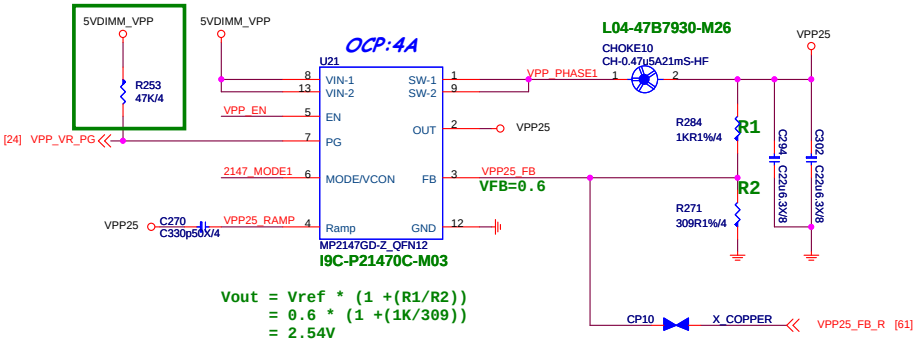
4DIMM : VPP25

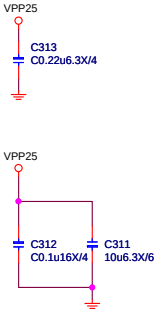
2.5V@2.24A



Input Current=(2.5*2.24)/5/0.8=1.4A

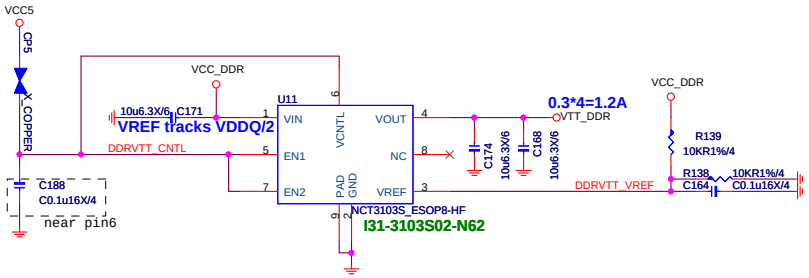


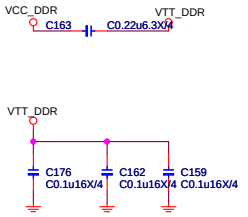
Vout = Vref * (1 +(R1/R2))
= 0.6 * (1 +(1K/309))
= 2.54V



DDR VTT Power

To CPU Copper trace width > 250mils , Fill island behind DIMM > 400mils .





MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: DDR PWR VPP25/VTT-MP2147		
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DDR4_1.2V@26.2A

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

Follow CRB

5VDIMM
R106 10K/4

EN:VIH1.6V
EN pin Maximum:6.5V

5VDIMM
R104 10R/8
DDR_VCC C86 4.7u6.3X/6

[48,57] DDR_PWRGD
DDR_EN
DDR_REFOUT
DDR_REFIN

U8
EN
PGOOD
REFOUT
REFIN
VCC
GND
BOOT
PHASE
UGATE
LGATE/OCSET
FB

DDR_BOOT1 R99 0R/4 C79 C0.1u16X/4
DDR_PH1
DDR_UG1
DDR_LG1
DDR_FB

RT8125EGQW_WDFN10-HF
FB:0.8V
I32-8125E0C-R11

C101 C1000p50X/4
R105 590R1%0402-RH
C100 C1000p50X/4

ATX_5VSB
R795 1K/4
JOV1
H1X2M_BLACK-RH
N31-1020151-H06

[61] DDR_FB_R
CP4 X_COPPER

R375 196KR1%0402-HE

VCC_DDR
R1
R111 X_10R1%/4
10KR1%0402
R107
DDR_VSENP
C106 X_C0.1u16X/4
R2
R108 14.3KR1%0402

Vout = Vref * (1 + (R1/R2))
= 0.8 * (1 + (10K/14.3K))
= 1.359V

close to DIMM side
R110 10R1%/4 VCC_DDR
DDR_VSENP R112 0R/4 VDDIO_MEM_S3_SENSE [6]

Q111
2N7002D
G2 D2 D1 S2 G1 S1
[6] AGPIO84 AGPIO84
D59
ESD-MLVS0402L04
D0G-2710510-I05
R794 100KR/4

[6,45,48,49,57] APU_AM4R1
D11 S-LRB520S-40T1G DDR_EN
[24] SIO_VDDQ_EN
R115 0R/4 DDR_EN 3.12V

EN:VIH2V
EN pin Maximum:5.5V,RECOMMENDED:3.6V

Input Current=(26.2*1.2)/5/0.8=7.86A

L04-12A7321-L65
CHOKE4
CH-1.2u15A1.7m-RH
5VDUAL_IN_DDR
5VDIMM
C64 C1u16X/6
C60 10u6.3X/6
EC8 560u6.3SO
EC9 560u6.3SO
C108 C0.1u16X/4
C71-56106J1-N07
C71-56106J1-N07

DDR_UG1
R64 0R/6 DDR_UG1_R
R68 X_10K/4
N-PK616BA_PDFN8-HF
Q10
D03-616BA0C-N03
N-PK616BA_PDFN8-HF
Q11
D03-616BA0C-N03

L04-47B7981-T15
CHOKE6
CH-0.47u42A0.81m-HF

DDR_PH1
VCC_DDR
DDR_LG1
R77 6.65KR1%/4
N-PK632BA_PDFN8-HF
Q13
D03-632BA0C-N03
N-PK632BA_PDFN8-HF
Q14
D03-632BA0C-N03
R95 2.2R/8
snubber
C74 C3300p50X/4

C105 C1u6.3X/4
C81 C22u6.3X/6
EC16 560u6.3SO
EC13 560u6.3SO
EC20 560u6.3SO
C71-56106J1-N07
C71-56106J1-N07
C71-56106J1-N07

VCC_DDR
EC18 560u6.3SO
EC45 560u6.3SO
C71-56106J1-N07
C71-56106J1-N07

MSI Link to the Future **MICRO-START INT'L CO.,LTD.**

Title	DDR Power-8125E	
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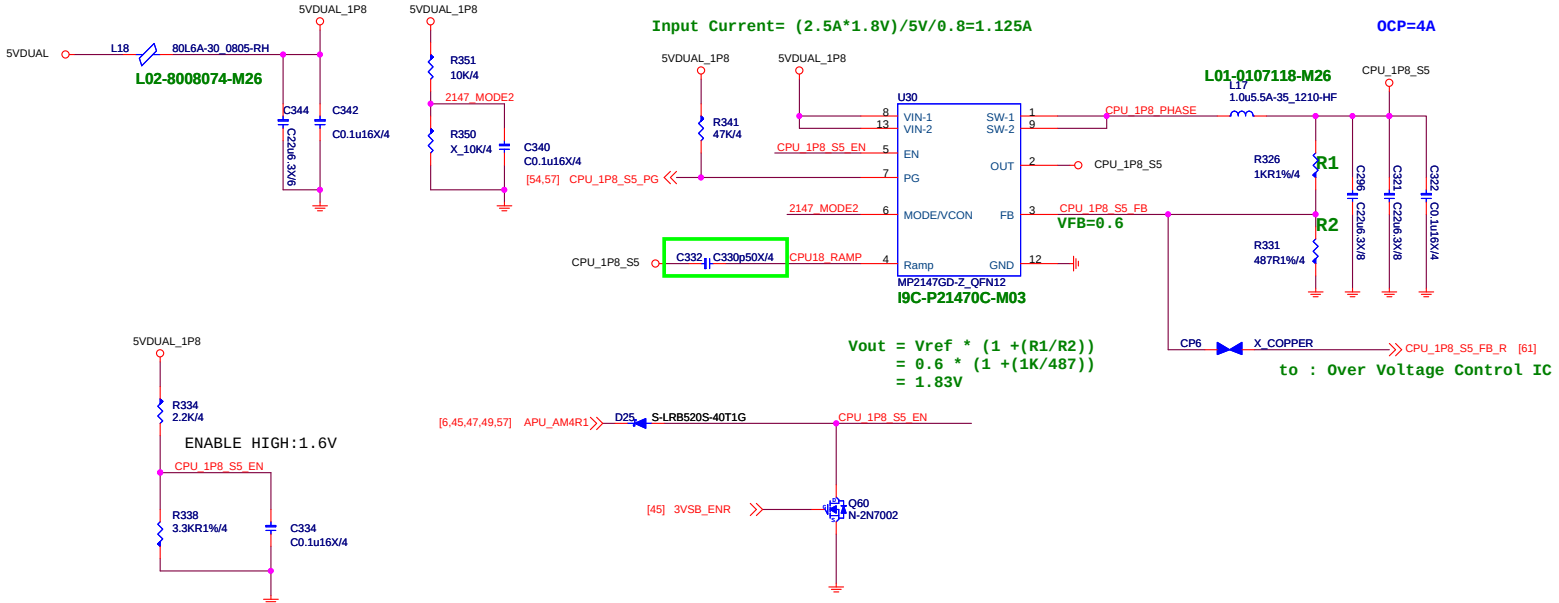
CPU 1.8V S5 @2.5A

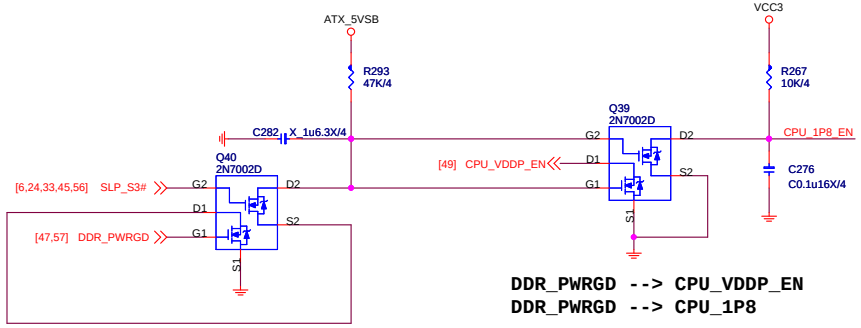
1.8V S5@0.5A
1.8V S0@2A

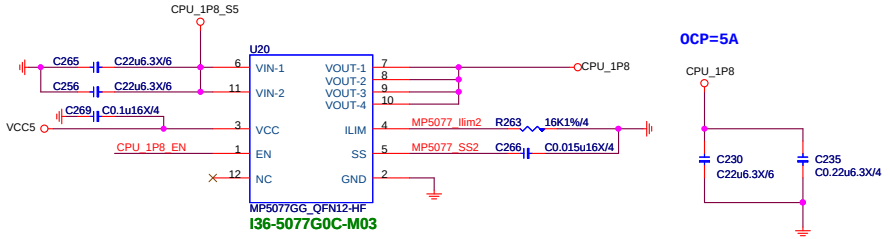


CPU 1.8V S0

1.8V@2A +0.9A(VCCP_NB_S5) =2.9A

FOR VCCP_SOC@0.9A





Ilimit=(1/Rlimit)*S,S=80000,when VIN=1.05V
=(1/16)*80000=5.0375A

Tss=(1/3)*((Vout*Css)/Iss),Iss=9uA
Tss=(1/3)*((1.8*15n)/9uA)=1mS

MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: CPU Power 1P8V-MP2147		
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CPU_VDDP_S0

1.05V/0.9V@S0:8.5A

S0:8.5A

OCP=12A

S5:1A

by layout

VCC5

R368 2.2K/4

EN:VIH1.6V

CPU_VDDP_EN

R365 3.3KR/4

C350 C0.1u16X/4

by layout

VCC5

R361 10K/4

[57] CPU_VDDP_PG

DDR_PWRGD --> CPU_VDDP_EN

[6,45,47,48,57] APU_AM4R1

D26 S-LRB520S-40T1G

CPU_VDDP_EN

CPU_VDDP_REFOUT

R355 768R1%/4

C346 C1000p50X/4

R369 4.53KR1%/4

CPU_VDDP_REFIN

C348 C1000p50X/4

by layout

VCC5

R354 10R/8

VDDP_VCC C347 4.7u6.3X/6

EN:VIH1.6V

EN pin Maximum:6.5V

U31

EN PGOOD REFOUT REFIN

BOOT PHASE UGATE LGATE/OCSET FB GND VCC

CPU_VDDP_BOOT1 R352 0R/4 CPU_VDDP_BT1 C339 C0.1u16X/4

CPU_VDDP_PH1

CPU_VDDP_UG1

CPU_VDDP_LG1

CPU_VDDP_FB

RT8125EGQW_WDFN10-HF

I32-8125E0C-R11

0.8V

0.684V

FB: 0.8V/0.684V

CP7 X_COPPER

CPU_VDDP_OV [61]

CPU_VDDP

R358 10R1%/4

R1

R362 1KR1%/4

CPU_VDDP_SENSE_R R360 0R/4 CPU_VDDP_SENSE [6]

C349 X_C0.1u16X/4

R2

R357 3.16KR1%0402-RH

Vout = Vref * (1 +(R1/R2))
= 0.8 * (1 +(1K/3.16K))
= 1.05V

Vout = Vref * (1 +(R1/R2))
= 0.684 * (1 +(1K/3.16K))
= 0.9V

AM4_CPU_SEL
0:Type 0/1 =>1.053V
1:Type 2/3 =>0.9V

[6,35,54,57] TYPE1_CPU_SEL

Q66 2N7002D

[17] PM_GPIO_R9

PM_GPIO_R9
1:Type 0/1 1.05V
0:Type 2/3 0.9V

3VSB

R792 1K/4

JOV2

H1X2M_BLACK-RH

N31-1020151-H06

[24] SIO_GP10

Q73 N-2N7002

R374 2.26KR1%0402

R788 100KR/4

D58 ESD-MLVS0402L04

D0G-2710510-I05

TYPE0_CPU_SEL:
1:TYPE 0
0:TYPE 2

CPU_VDDP_EN:
0:TYPE 2
1:TYPE 0

[6,57] TYPE0_CPU_SEL

Q67 2N7002D

VDDP_SEL

[6,35,54,57] TYPE1_CPU_SEL

TYPE1_CPU_SEL:
0:TYPE 0
1:TYPE 2

CPU_VDDP_EN [48]

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

CPU VDDP NOT SUPPORT TYPE2

Input Current=(9.5A*1.05V)/5V/0.8=2.5A

L04-47B7930-M26

CHOKE12 CH-0.47u5A21mS-HF

by layout

VCC5

5VDUAL_IN_VDDP

C337 C1u6.3X/4 C338 10u6.3X/6

EC32 560u6.3SO

C336 C0.1u16X/4

C71-56106J1-N07

CPU_VDDP_UG1 R340 0R/6 CPU_VDDP_UG1_R

R337 X_10K/4

N-PK616BA_PDFN8-HF

Q57 D03-616BA0C-N03

CPU_VDDP_PH1

CPU_VDDP_LG1

R339 5.1K1%/4

OCPSET:min 5Kohm
OCP
=(R475*10uA)/DCR
=(5.1k*10uA)/3.3m
=15.45A

N-PK632BA_PDFN8-HF

Q56 D03-632BA0C-N03

R316 X_2.2R/8

CPU_VDDPPH1

snubber

C325 X_C3300p50X/4

MAX:8.5A

L04-01072H0-T15

OCP=12A

1.05V,8.5A

CHOKE11 1.0u15A7.5mS-HF

CPU_VDDP

C305 C1u6.3X/4 C288 C22u6.3X/6

EC31 560u6.3SO EC30 560u6.3SO

C71-56106J1-N07

C71-56106J1-N07

CPU_VDDP_S5

1.05V/0.9V

S5:1A

(VDDCR_SOC_S5 is only used for AMD TYPE0)

Input Current=0.04A

5VDUAL

3VSB 3VSB

L16 80L6A-30_0805-RH

R313 X_10K/4

R312 10K/4

C319 C22u6.3X/6

I9C-2143D09-M03

U26

VDDP_VSB_VIN

VDDP_VSB_EN

VIN EN PG PGND AGND SW OUT FB

MP2143DJ

VDDP_VSB_PHASE

VDDP_VSB_FB

C323 X_C0.1u16X/4

[57] VDDP_VSB_PG

[6,45,47,48,57] APU_AM4R1

D16 S-LRB520S-40T1G VDDP_VSB_EN

default:0.775V,0.2A

L01-0107118-M26

L15 1.0u5.5A-35_1210-HF

CPU_VDDP_S5

R286 1K1%/4

R285 2K1%/4

C283 C22u6.3X/6

C301 C22u6.3X/6

C298 C0.22u6.3X/4

VDDP_VSB_FB

ATX_5VSB

R314 47K/4

Q44 2N7002D

C314 C0.1u16X/4

[6,35,54,57] TYPE1_CPU_SEL

AM4_CPU_SEL
0:Type 0/1
1:Type 2/3

R315 3.83KR1%/4

VDDP_VSB_FB

R488///R464=1.3139K, Vout=1.056V
R488=8.06K, Vout=0.9V

MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: CPU Power VDDP-RT8125E

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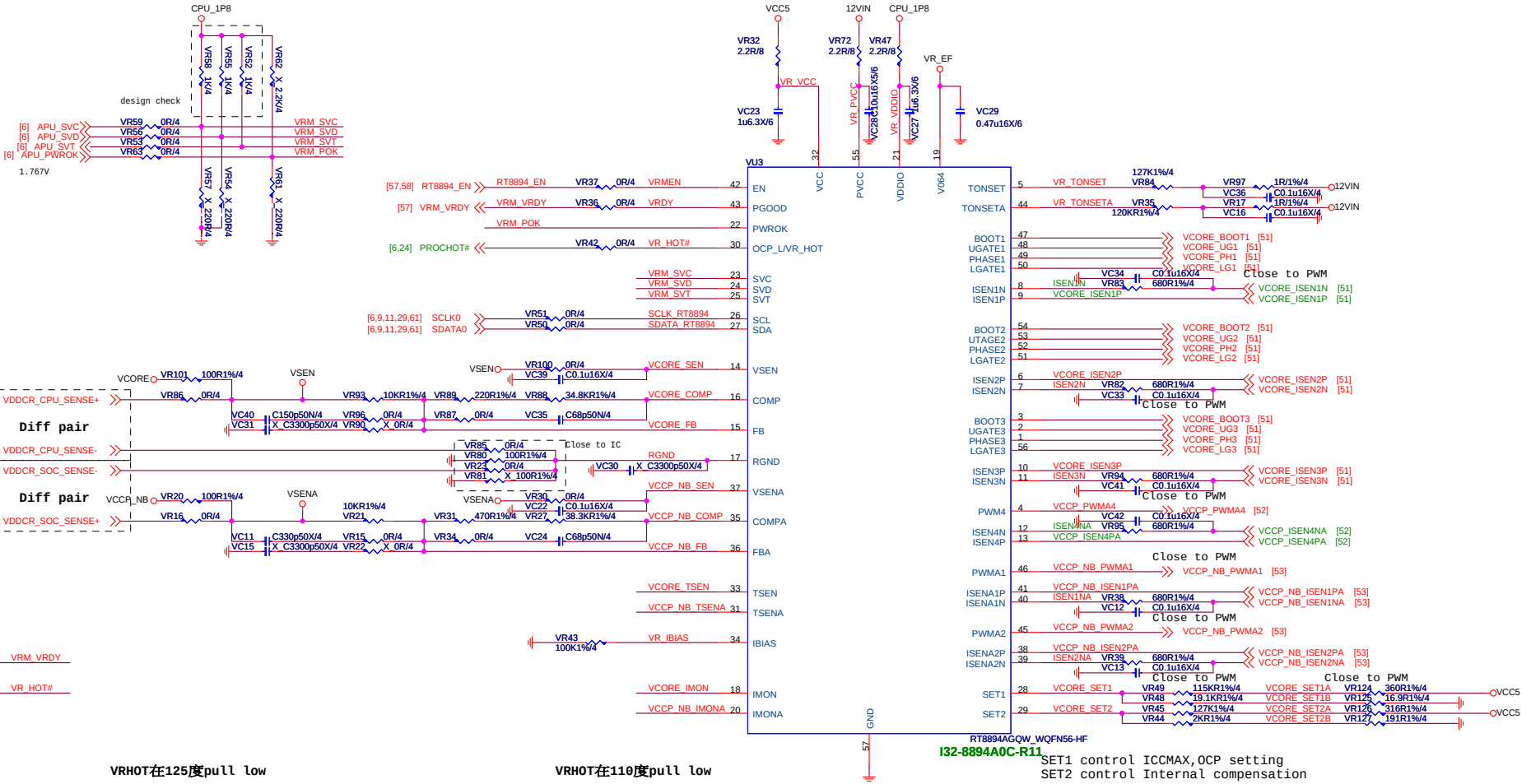
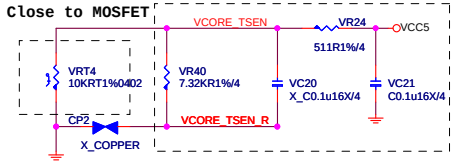
Note:VID Override Circuit

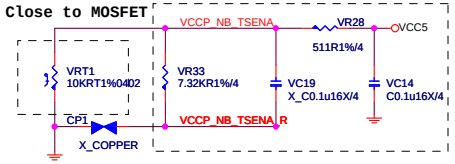
SVC	SVD	BOOT VOLTAGE Pre_PWROK Metal VID
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8

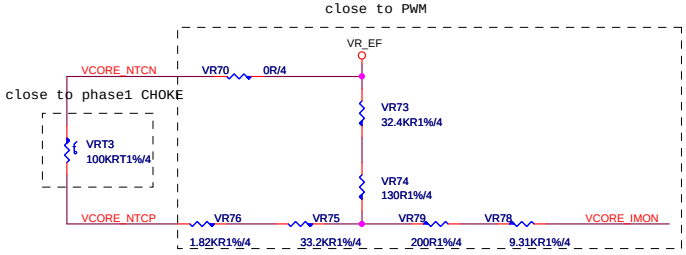


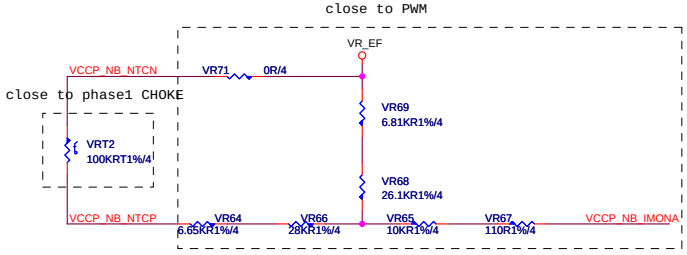
VRHOT在125度pull low
Close to PWM



VRHOT在110度pull low
Close to PWM







Vinafix.com

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

Title	CPU Power RT8894 4+2		
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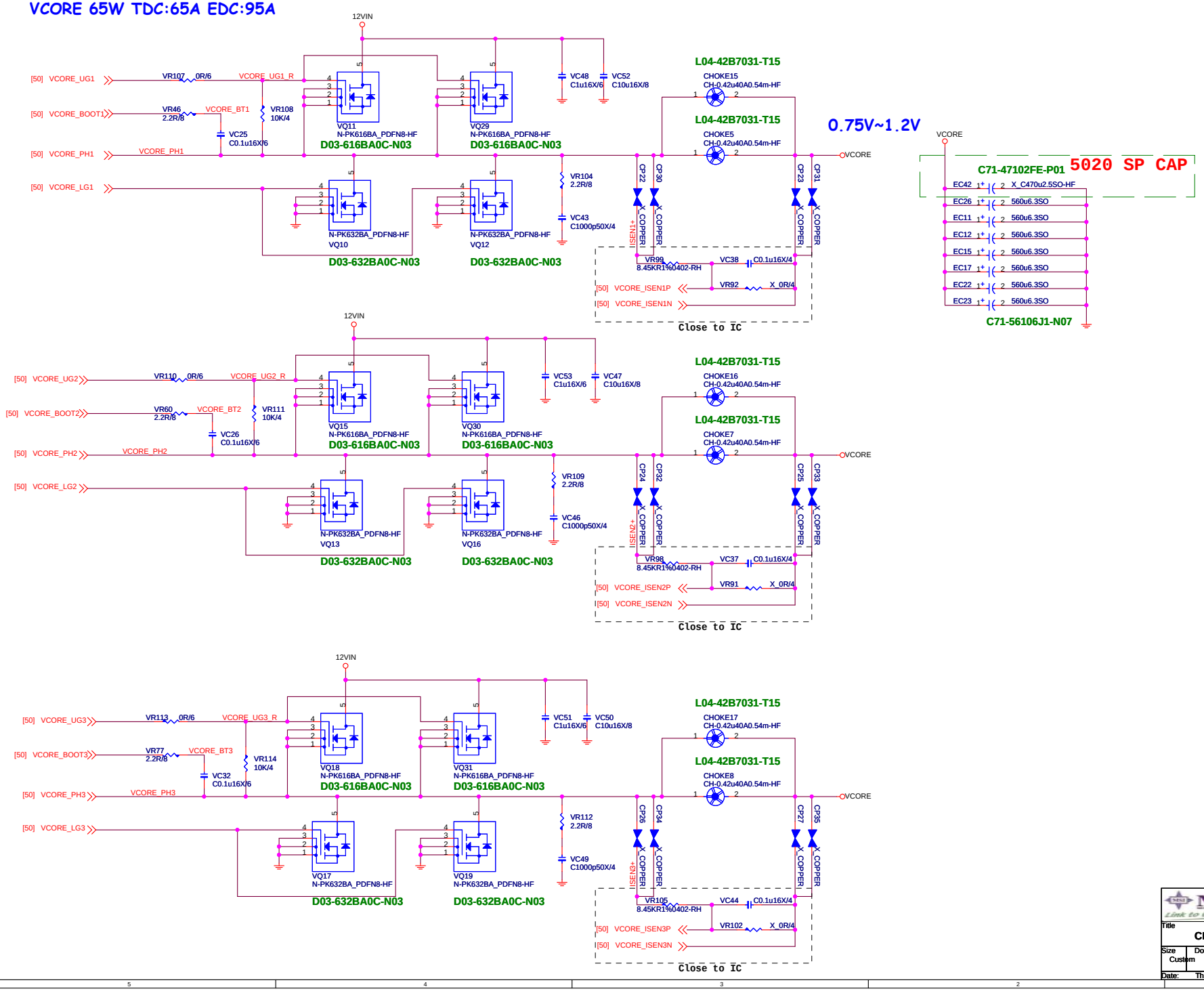
VCORE 95W TDC:80A EDC:125A
VCORE 65W TDC:65A EDC:95A



MICRO-START INT'L CO.,LTD.

Title: CPU Power Phase		
Size: Custom	Document Number: MS-7A33	Rev: 10/20/30
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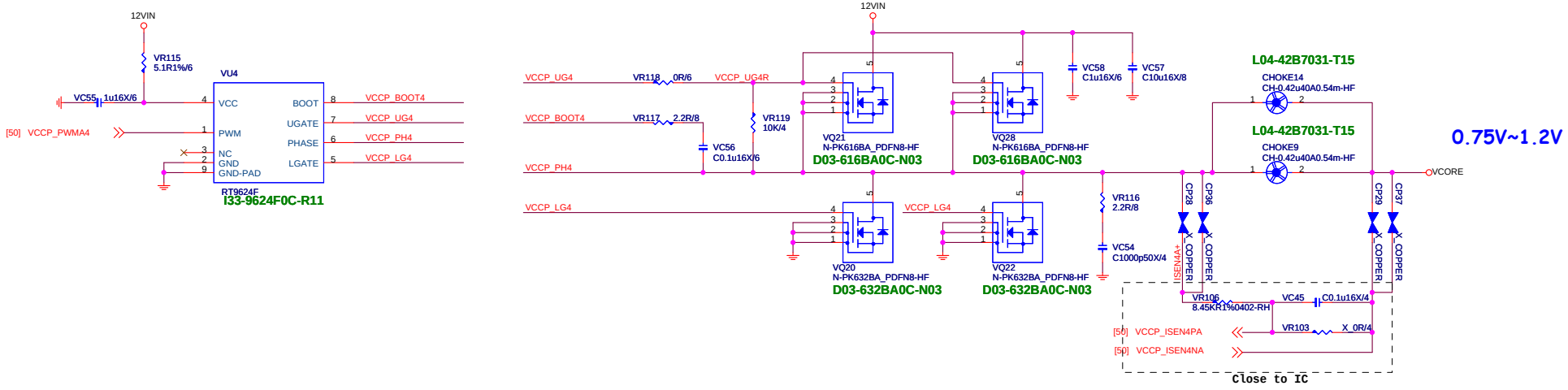

MSI Link to the Future	MICRO-START INT'L CO.,LTD.	
Title: CPU Phase4		
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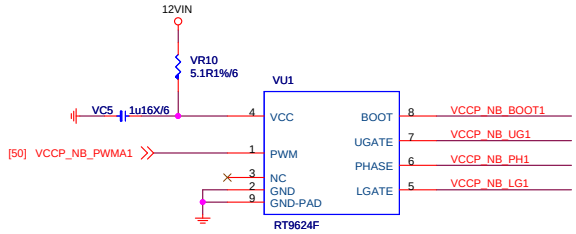
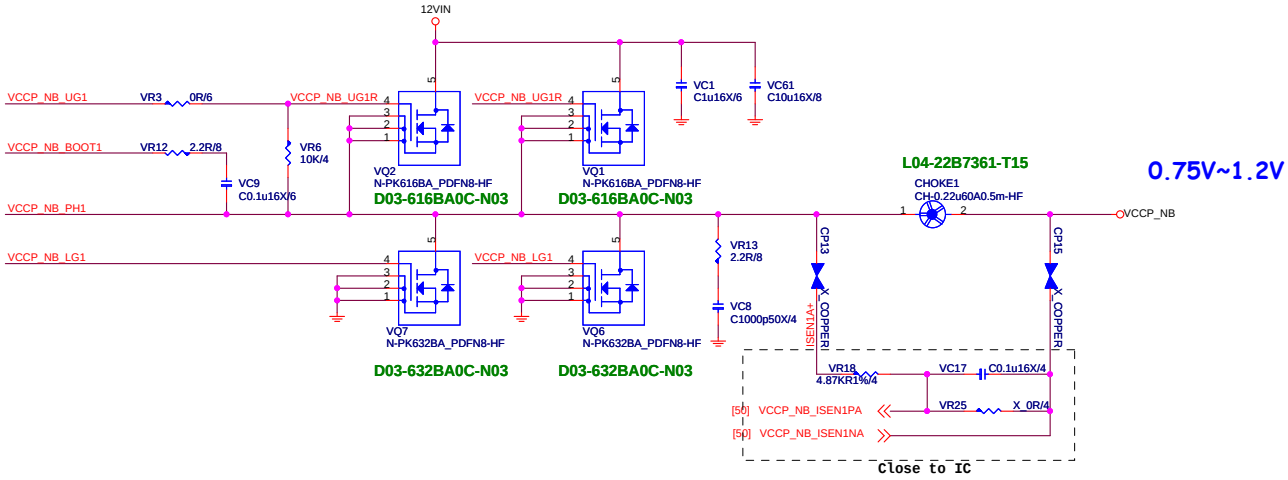
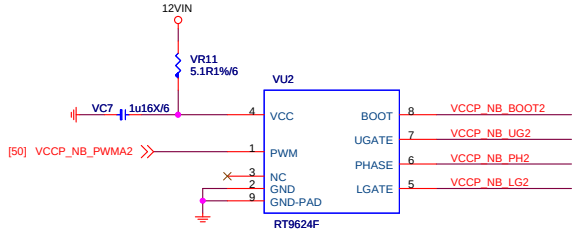
VCCP_NB 95W TDC:50A EDC:75A
VCCP_NB 65W TDC:50A EDC:75A



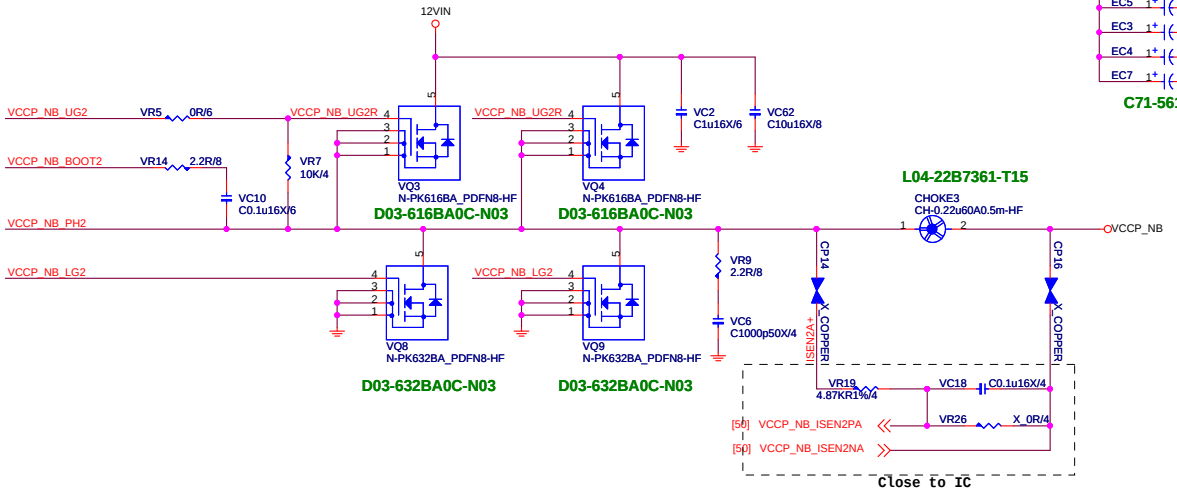
I33-9624F0C-R11

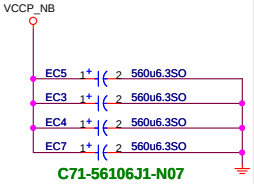


0.75V~1.2V



I33-9624F0C-R11





C71-56106J1-N07

MSI MICRO-START INTL CO.,LTD.

Title

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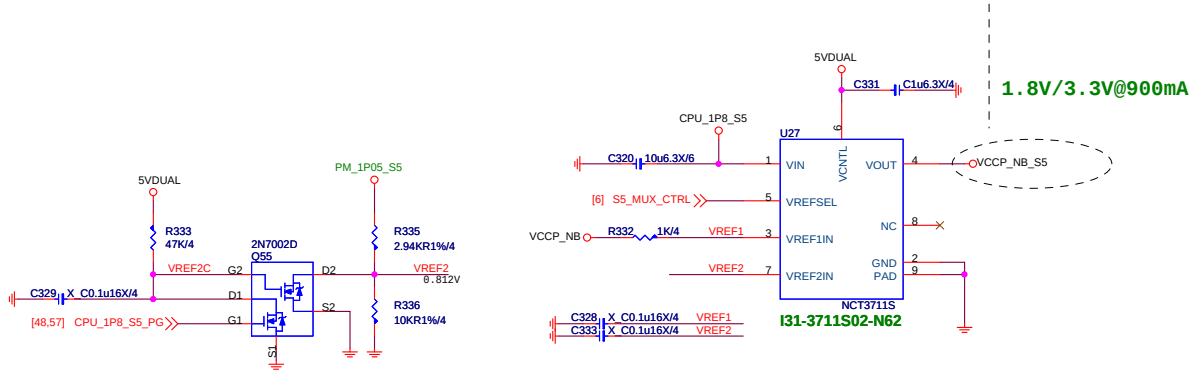
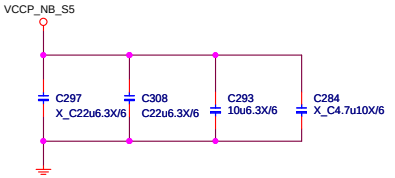
FOR VCCP_SOC_S5
0.9A

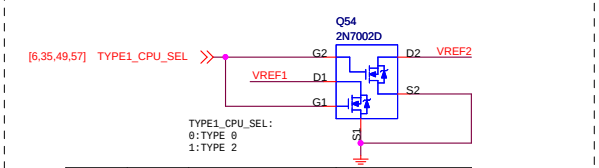
S5_MUX_CTRL
HIGH:S0
LOW: S3/S5

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		0	0
SR	2	1	1
RV/ZP	3	1	0

CPU VCCP_NB_S5 ONLY SUPPORT TYPE0

MSI Link to the Future **MICRO-START INT'L CO.,LTD.**

Title: **CPU Power NB Switch**

Size	Document Number	Rev
Custom	MS-7A33	10/20/30

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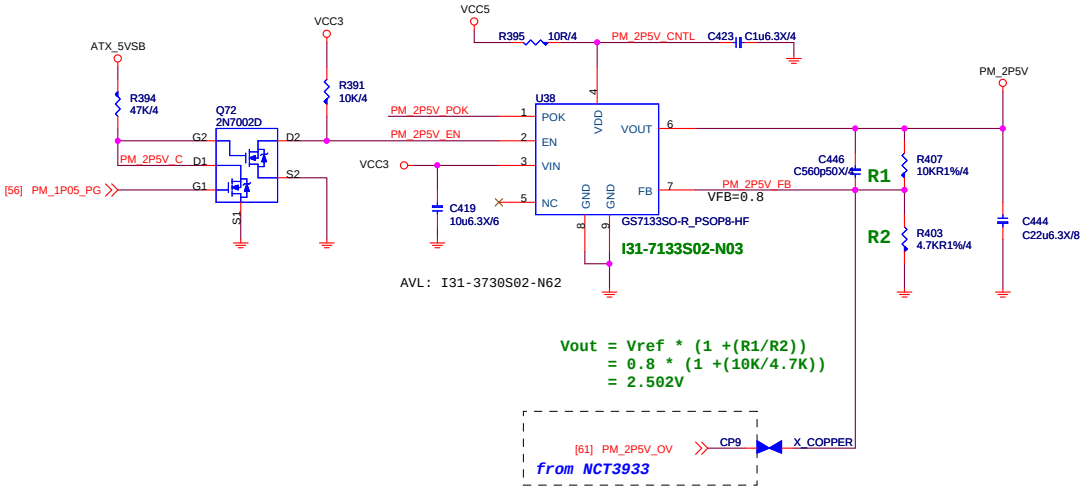
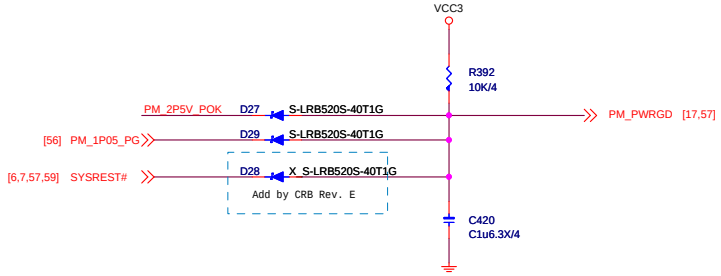
Promontory-2.5V

2.5V@900mA



Vinafix.com



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

Title: Promontory-GS7133-2.5V

Size: Custom | Document Number: MS-7A33 | Rev: 10/20/30

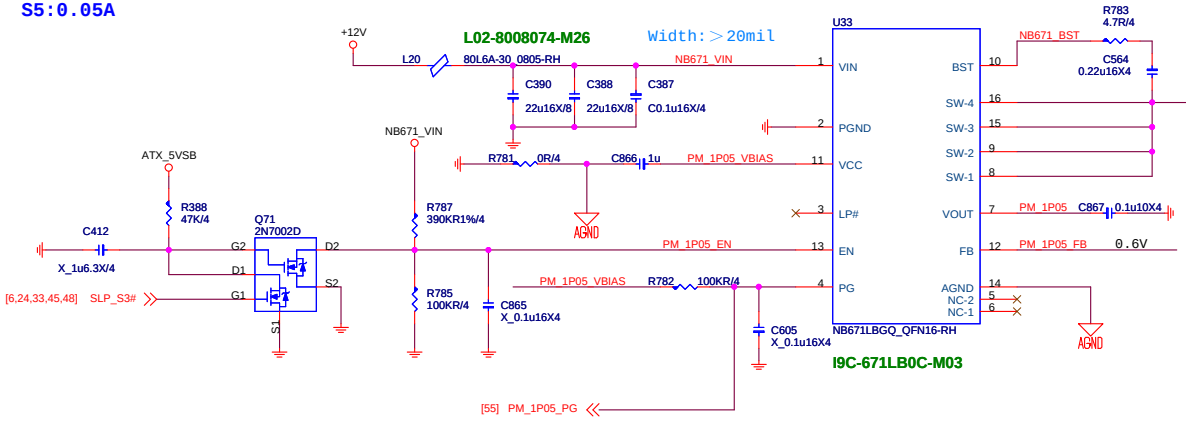
Date: Thursday, February 23, 2017 | Sheet 55 of 71

FOR Promontory 1.05V_S0

1.05V
S0:5.5A
S5:0.05A

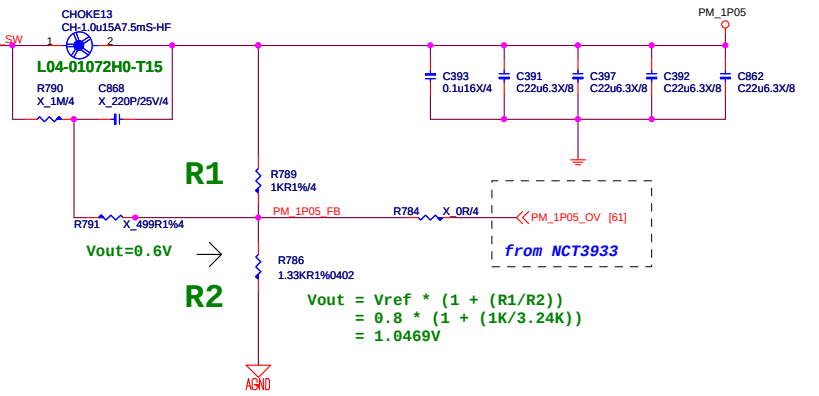
IMAX 10A
ILIMIT=10A~12A
*IOC=ILIMIT+40%*IMAX/2=12A~14A.*

F:500K



0.7776uH<L<1.1664uH

AVL: L04-0107800-M26



OCP=12A

1.05V@5.5A

Table 1—MODE selection for different rails

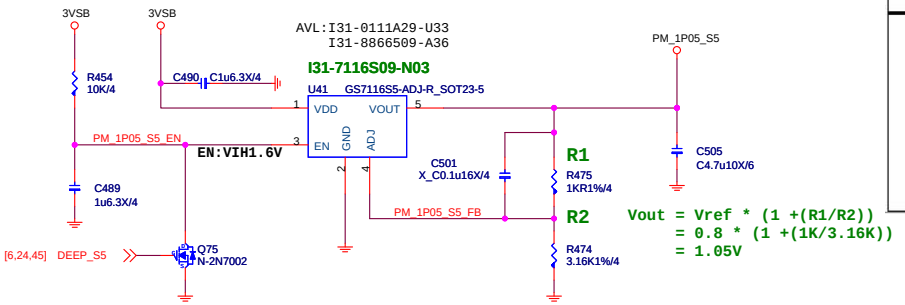
MODE	VR Rail	Resistor to GND (1% accuracy)
M1	VCCIO	0
M2	PRIMCORE	Float or > 230 K
M3	EDRAM/V1.0A/EOPIO	100 K
M4	Others	150 K

Table 3—Control bit logics

	LP#	C1	C0	VOUT(V)
VCCIO	0	X	X	0
	1	0	0	0.85
	1	0	1	0.875
	1	1	0	0.95
	1	1	1	0.975
VCCPRIM _CORE	0	X	X	0.7
	1	0	0	0.85
	1	0	1	0.9
	1	1	0	0.95
	1	1	1	1.00
EDRAM/ EOPIO/ V1.0A	0	X	X	0
	1	0	0	0.8 (MSM)
	1	0	1	0.95
	1	1	0	1
	1	1	1	1.05

FOR Promontory 1.05V_S5

1.05V@0.05A



MSI	MICRO-START INTL CO.,LTD.
Title	Promontory-NB681-1.05V
Size: Custom	Document Number: MS-7A33
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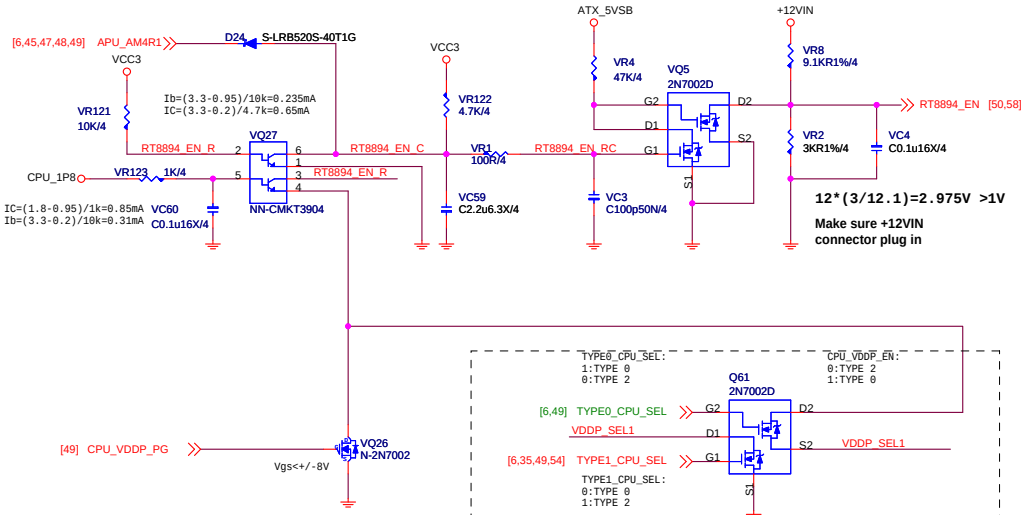
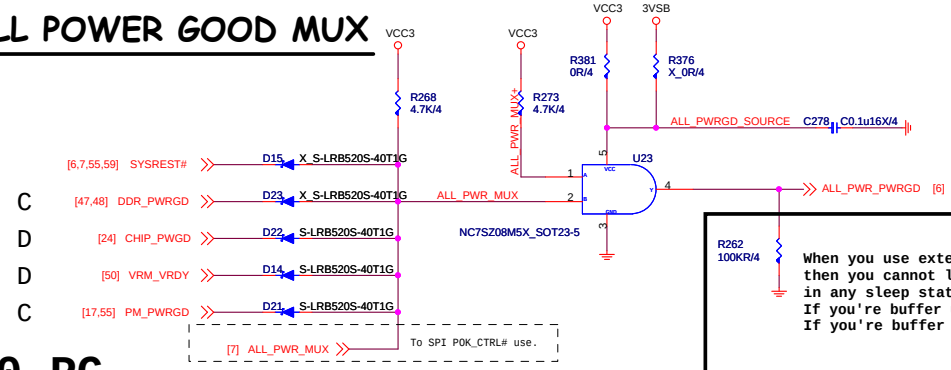
VRM_Enable circuit



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

CPU VDDP NOT SUPPORT TYPE2

ALL POWER GOOD MUX



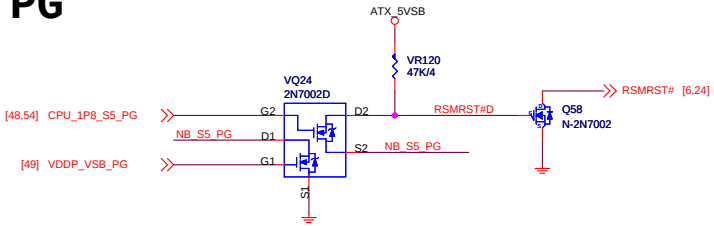
C
D
D
C

R262 100KR/4

When you use external buffer
then you cannot let APU PWR_GOOD pin float
in any sleep state.
If you're buffer use 3.3V_S0 and you need Pull-down 100K
If you're buffer use 3.3V_S5 and you don't need PD.

S0 PG

S5 PG



MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: CPU PWR-IR3599		
Size: Custom	Document Number: MS-7A33	Rev: 10/20/30
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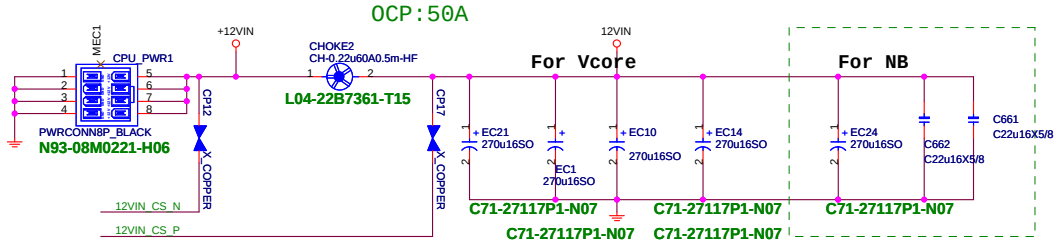
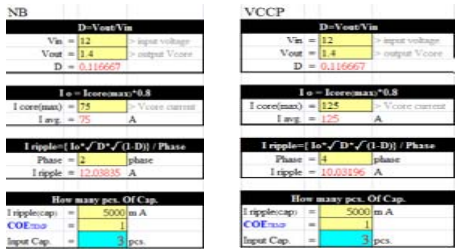
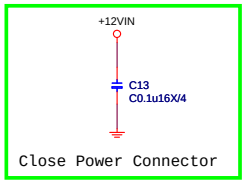
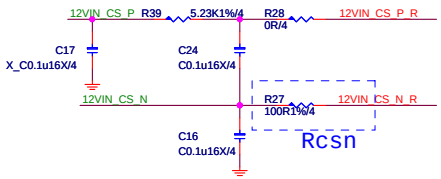
CPU POWER CONNECTOR

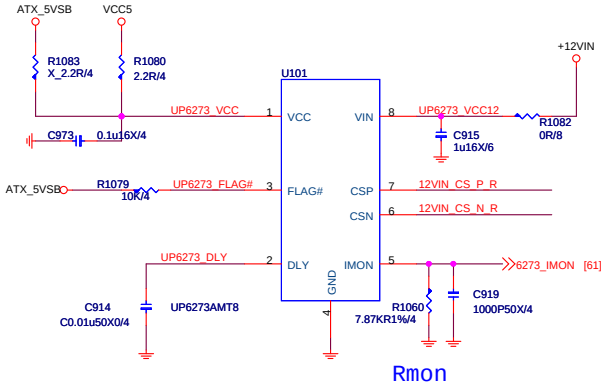


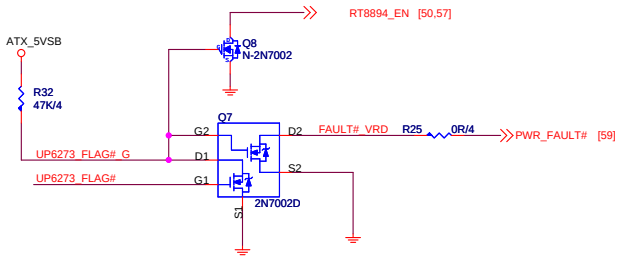




UP6273 CURRENT SENSE







I71-6273A09-U33

OCP = 30A(default)

7A33_0A		
Iset	0	uA
Rimon	7.87	Kohm
Rcsn	0.1	Kohm
DCR	0.5	mohm
Vimon	1.2	V
Iocp	30.495553	A

MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: PCIE X16

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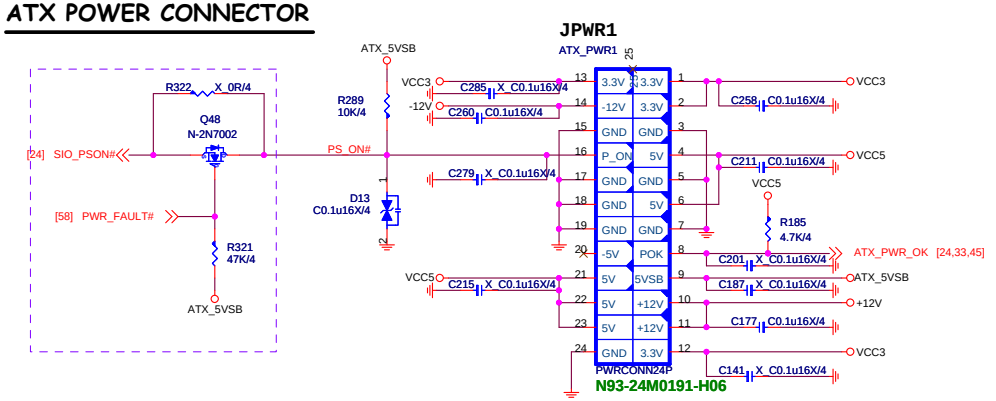
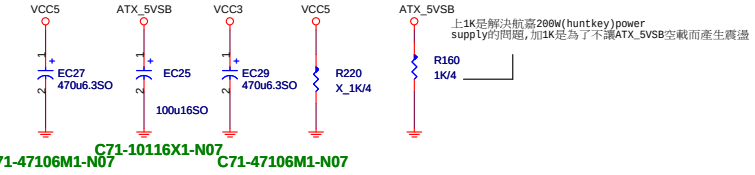
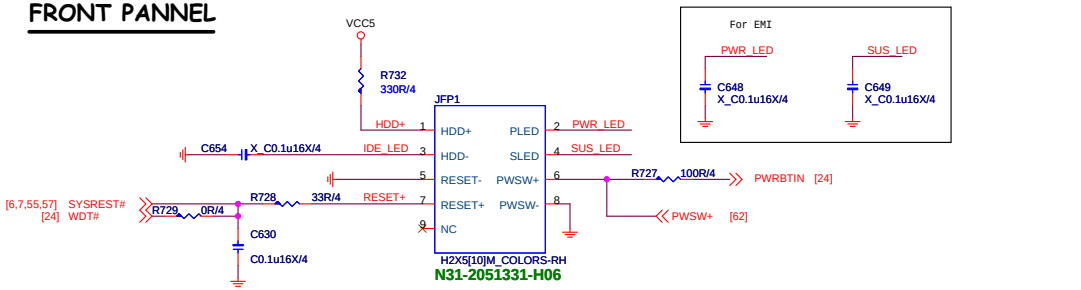
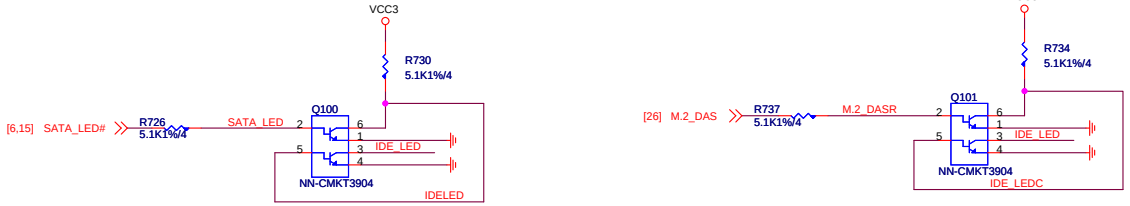
ATX POWER CONNECTOR

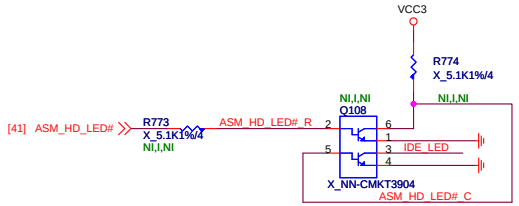




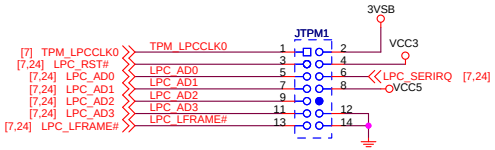
FRONT PANNEL

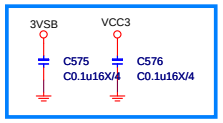




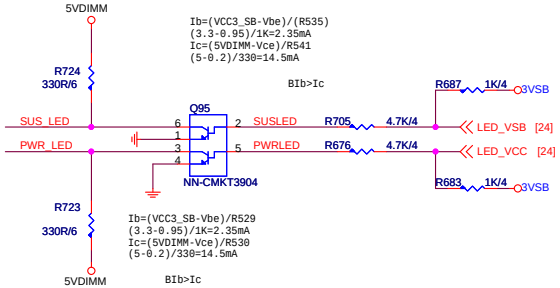


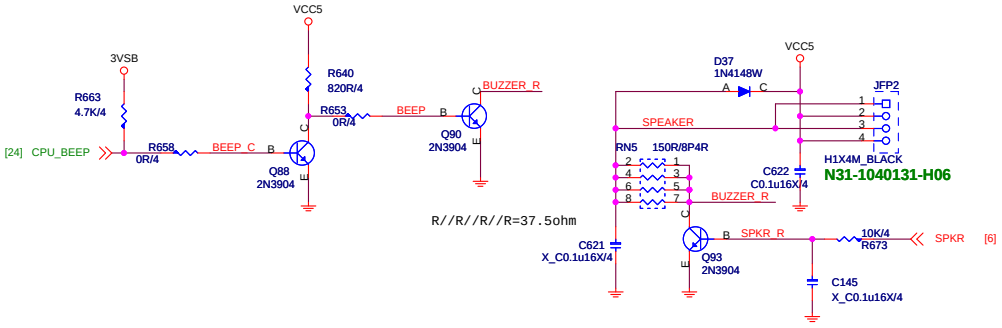
TPM



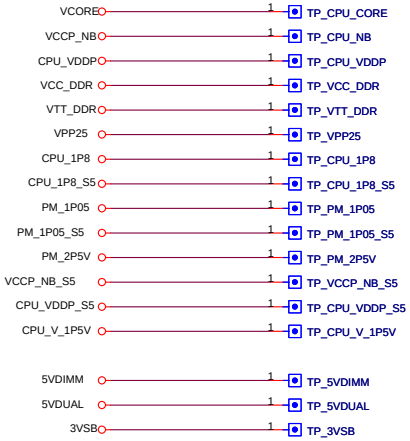


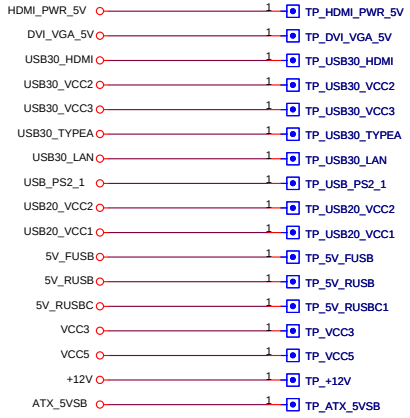
LED (for NCT6795D)





Voltage Mearsure Point





1.8A

MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: ATX/Front Panel		
Size: Custom	Document Number: MS-7A33	Rev: 10/20/30
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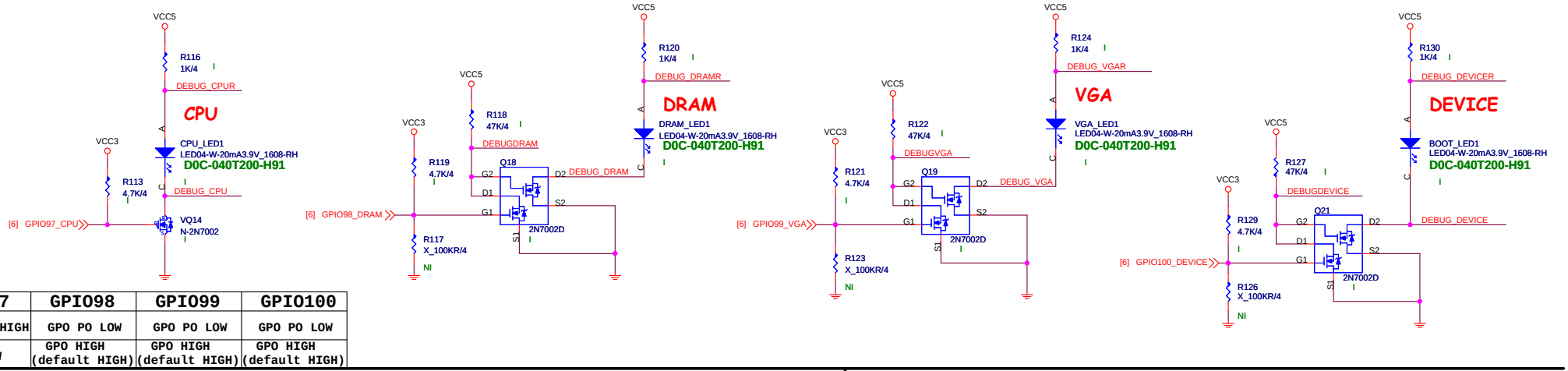
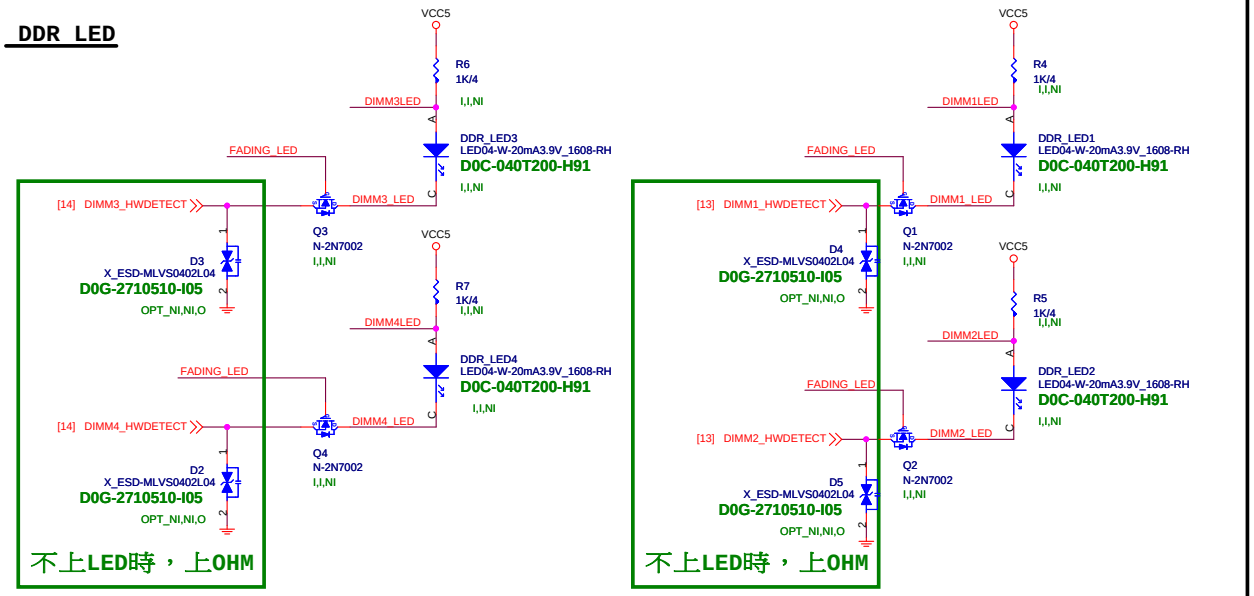
Debug LED

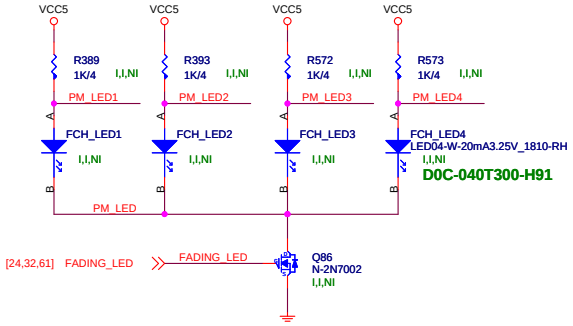


LED \ GPIO	GPIO97	GPIO98	GPIO99	GPIO100
亮	GPI PULL HIGH	GPO PO LOW	GPO PO LOW	GPO PO LOW
滅	GPO LOW	GPO HIGH (default HIGH)	GPO HIGH (default HIGH)	GPO HIGH (default HIGH)

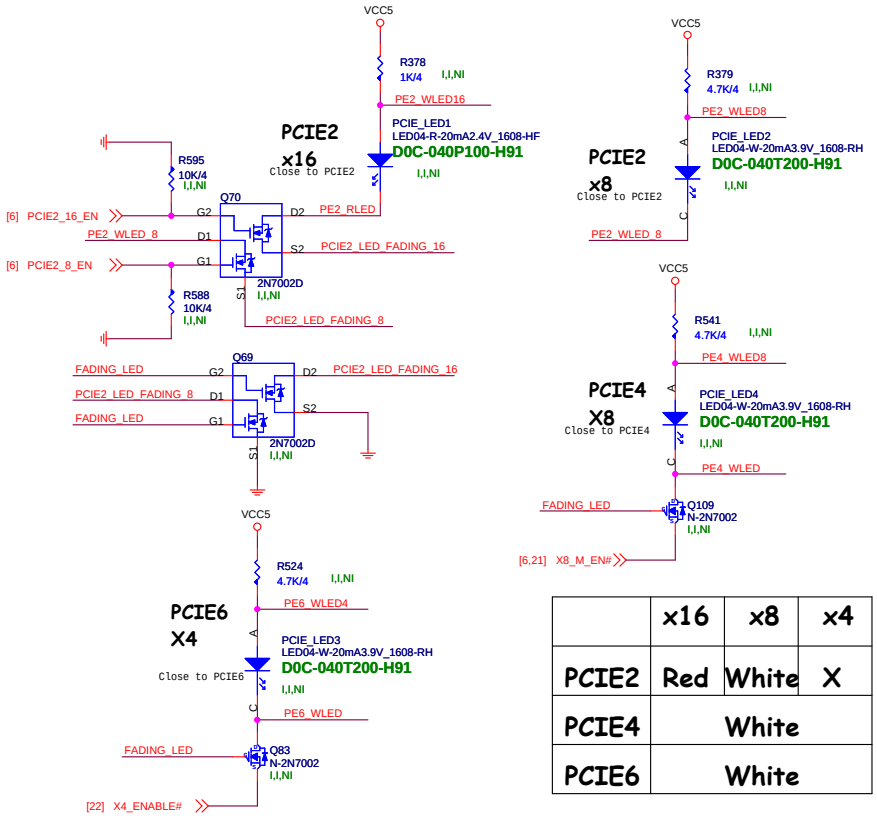
DDR LED



FCH LED Place under Heat-sink



PCI Express LED Control



	x16	x8	x4
PCIE2	Red	White	X
PCIE4	White		
PCIE6	White		

Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01		C

MSI Link to the Future MICRO-START INTL CO.,LTD.

Title: ALL LED Control

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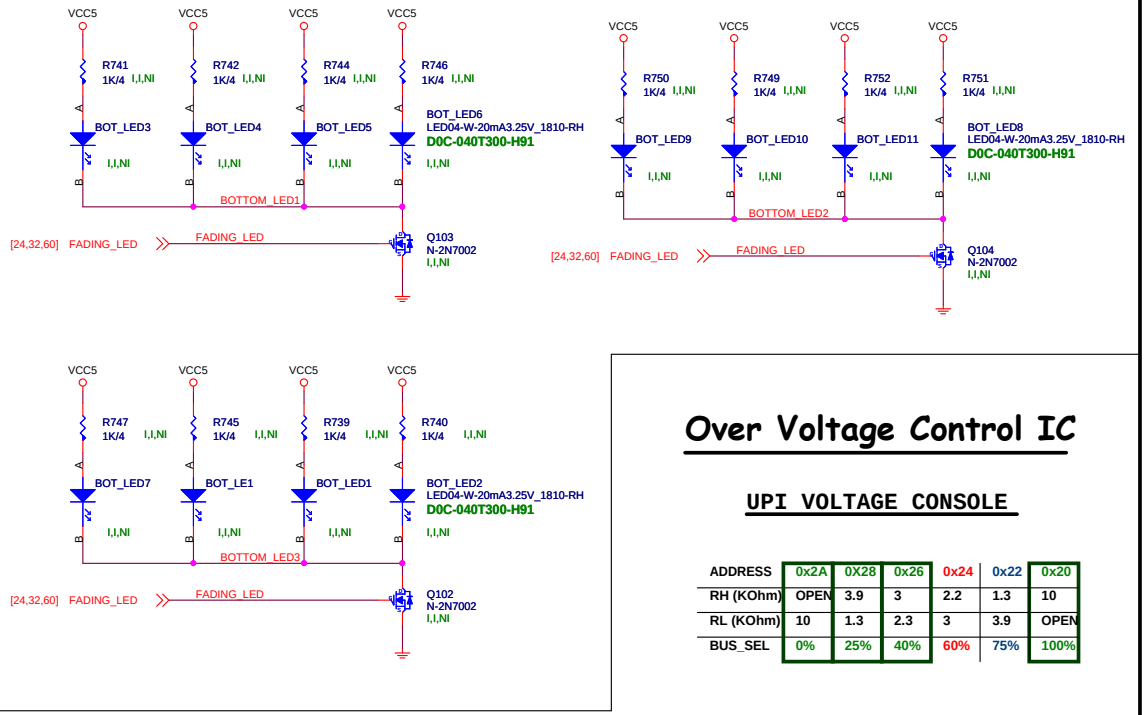
Bottom LED Control by SIO

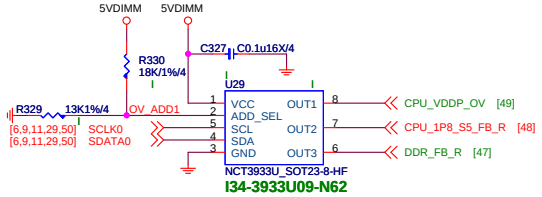


Over Voltage Control IC

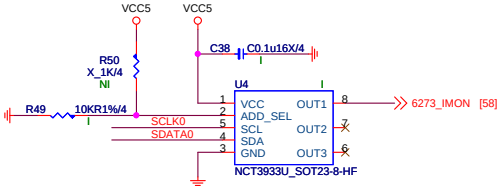
UPI VOLTAGE CONSOLE

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

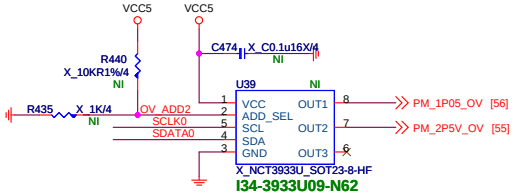
0x26:RH=18K,RL=13K



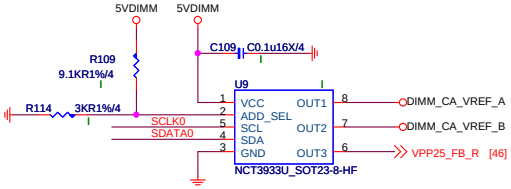
0x2A:RH=OPEN,RL=10K



0x20:RH=10K,RL=OPEN



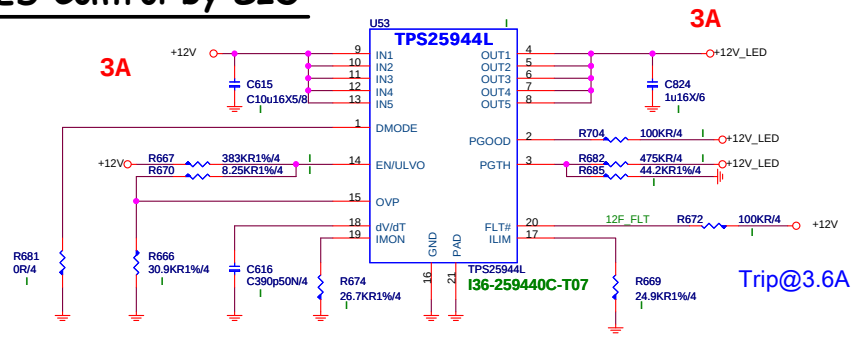
0x28:RH=9.1K,RL=3K



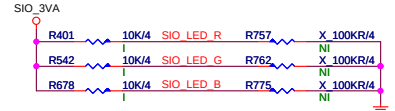
除非超壓對功能有任何幫助,否則不上NCT3933與開超壓選項

LED Control by SIO

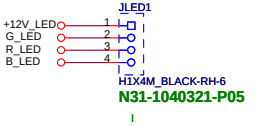
2016.07.06 Use TPS25944L



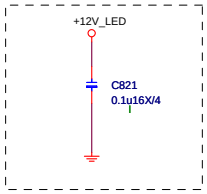
Color	SIO_LED_R	SIO_LED_G	SIO_LED_B
RED	1	0	0
GREEN	0	1	0
BLUE	0	0	1
WHITE	1	1	1

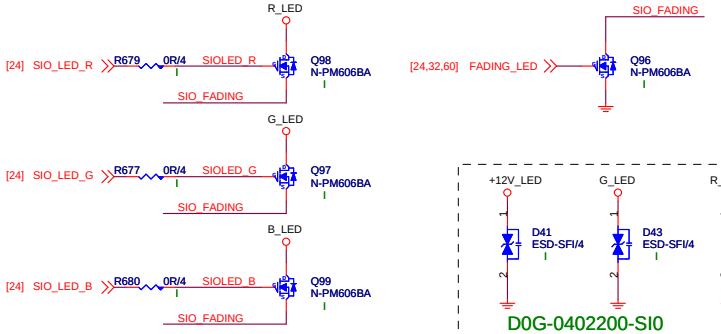


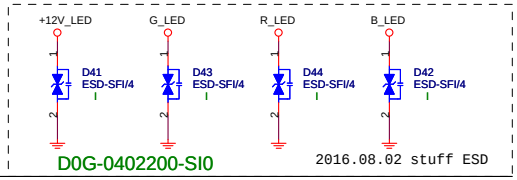
PM SPEC Default WHITE Color



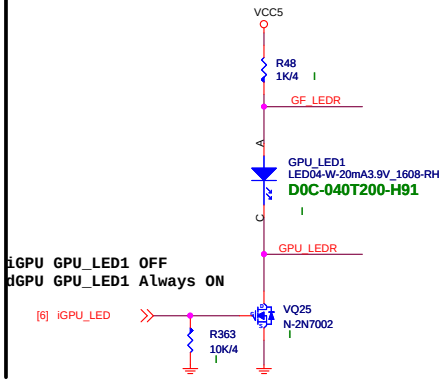
2016.08.02 Add +12V_LED 0.1uF







AM4 APU Detect LED Circuit



Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01		C

MSI MICRO-START INTL CO.,LTD.

Title: OV Control

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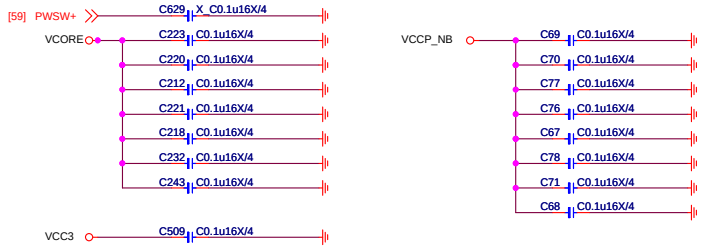
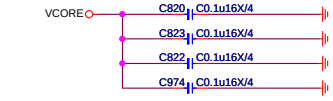
Add for EMI



return path



MICRO-START INT'L CO.,LTD.

Title: EMI CAP

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OPTION BOM PARTS

60 Level

	A	B	C	D	E
PCIE X16 SLOT	OPT_PCIE_X16_1 PCIE x16 SLOT_PCIEXP164_13 N11-1641681-L06	OPT_PCIE_X16_2 PCIE x16 SLOT_PCIEXP164_13 N11-1641491-L06			OPT_PCIE_X16_3 PCIE x16 SLOT_PCIEXP164_13 N11-1641671-L06
PCIE X8 SLOT	OPT_PCIE_X8_1 PCIE x16 SLOT_PCIEXP100_5 N11-1000271-L06	OPT_PCIE_X8_2 PCIE x16 SLOT_PCIEXP100_3 N11-1000151-L06	OPT_PCIE_X8_3 PCIE x16 SLOT_PCIEXP100_5 N11-1000221-L06	OPT_PCIE_X8_4 PCIE x16 SLOT_PCIEXP100_3 N11-1000231-L06	OPT_PCIE_X8_5 PCIE x16 SLOT_PCIEXP100_5 N11-1000261-L06
REAL USB Type A	OPT_USBA_1 USB-Type A 鍍金 USB_A1_9_USB3_1_1 N53-09M0861-L06	OPT_USBA_2 USB-Type A USB_A1_9_USB3_1_1 N53-09M0591-L06	OPT_USBA_3 USB-Type A USB_A1_9_USB3_1_1 N53-09M0671-L06		OPT_USBA_4 USB-Type A 鍍金 USB_A1_9_USB3_1_1 N53-09M0851-L06
SOLID CAP 270u16	OPT_270u16_BLK1 SOLID CAP C_P3_5_D8_H8 C71-27117P1-N07	OPT_270u16_BU1 SOLID CAP C_P3_5_D8_H9 C71-27117D1-AO5			
SOLID CAP 560u6.3	OPT_560u6.3_BLK1 SOLID CAP C_P2_5_D6_3_H9_5 C71-56106J1-N07	OPT_560u6.3_BU1 SOLID CAP C_P2_5_D6_3_H9 C71-56106F1-AO5			
SOLID CAP 470u6.3	OPT_470u6.3_BLK1 SOLID CAP C_P2_5_D6_3_H9_5 C71-47106M1-N07	OPT_470u6.3_BU1 SOLID CAP C_P2_5_D6_3_H9 C71-47106K1-AO5			
SOLID CAP 100u16	OPT_100u16_BLK1 SOLID CAP C_P2_5_D6_3_H5 C71-10116X1-N07	OPT_100u16_BU1 SOLID CAP C_P2_5_D6_3_H6 C71-10116Q1-AO5			
MEM SLOT	OPT_MEM_BLK1 MEM SLOT DDRIV_D288 N13-2880581-L06	OPT_MEM_WHITE1 MEM SLOT DDRIV_D288 N13-2880541-L06			OPT_MEM_RED1 MEM SLOT DDRIV_D288 N13-2880701-L06
MKTG Label	OPT_X370_1 X370 KRAIT GAMING G51-M1SPK85-Q13	OPT_B350_1 B350 KRAIT GAMING G51-M1SPK86-Q13	OPT_X370_2 X370 SLI PLUS G51-M1SPK87-Q13		
PCH SINK	OPT_PCH_SINK_1 MEM SLOT KRAIT E31-0408820-K08	OPT_PCH_SINK_2 MEM SLOT SLI PLUS E31-0408800-K08		OPT_PCH_SINK_3 MEM SLOT KRAIT E31-0408920-K08	
MOSN +IO	OPT_MOSN_IO_1 MEM SLOT KRAIT E31-0504670-K08	OPT_MOSN_IO_2 MEM SLOT SLI PLUS E31-0504680-K08		OPT_MOSN_IO_3 MEM SLOT PRO E31-0504780-K08	
MOSW	OPT_MOSW_1 MEM SLOT KRAIT E31-0504660-K08	OPT_MOSW_2 MEM SLOT SLI PLUS E31-0504650-K08		OPT_MOSW_3 MEM SLOT PRO E31-0504790-K08	
PS2_USB	OPT_PS2_USB_1 PS2_USB IOASM_USB_DIN14 N58-14M0221-H06	OPT_PS2_USB_2 PS2_USB IOASM_USB_DIN14 N58-14M0241-H06			
HDMI_USB	OPT_HDMI_USB_1 HDMI_USB IOASM_USB3_HDMI37 N58-37M0101-L06	OPT_HDMI_USB_2 HDMI_USB IOASM_USB3_HDMI37 N58-37M0111-L06			
LAN_USB	OPT_LAN_USB_1 LAN_USB IOASM_RJ45_USB_LED32 N58-32F0291-F02	OPT_LAN_USB_2 LAN_USB IOASM_RJ45_USB_LED32 N58-32F0311-F02			

FOOTPRINT
SLOT_PCIEXP100_5 可包容
SLOT_PCIEXP100_3

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

FOOTPRINT
C_P2_5_D6_3_H9_5 可包容
C_P2_5_D6_3_H9

FOOTPRINT
C_P2_5_D6_3_H9_5 可包容
C_P2_5_D6_3_H9

FOOTPRINT
C_P2_5_D6_3_H6 可包容
C_P2_5_D6_3_H5

FOOTPRINT
DDRIV_D288_1_T 可包容
DDRIV_D288

5010 Level

	A	B	C	D	E
FCH	OPT_X370_NB AMD-218-0891007-00-RH B01-21808D5-A08	OPT_B350_NB 218-0891005-00-RH B01-21808B5-A08			
M.2 SLOT	OPT_M2_1 M.2 Key M SLOT_NGFFCARD67_31 N15-0670820-L06	OPT_M2_2 M.2 Key M SLOT_NGFFCARD67_2 N15-0670330-L06	OPT_M2_3 M.2 Key M SLOT_NGFFCARD67_33 N15-0670810-L06		
REAL USB Type C	OPT_USBC_1 USB-Type C 鍍金 USB_C1_24_2 N53-24M0180-L06	OPT_USBC_2 USB-Type C USB_C1_24_2 N53-24M0040-L06			
PCB	OPT_PCB_1 PCB Black/Grey 7A33-10 PD0-07A3310-E48 PD0-07A3310-G37	OPT_PCB_2 PCB Black/WHITE 7A33-20 PD0-07A3320-G37 PD0-07A3320-E48	OPT_PCB_3 PCB Black/Red 7A33-30 PD0-07A3330-G37 PD0-07A3330-E48		
0 Ohm (0402)	OPT_0OHM_5010_1 Resistance 0OHM 5010_0402 R11-0000012-W08				
LED	OPT_RED_LED_5010_1 RED LED LED04-R-20mA2.4V_1608-HF D0C-040P100-H91				
M.2 COVER	OPT_M2_SCR_1 RED LED SCREW E2B-7A69010-A89				

FOOTPRINT
SLOT_NGFFCARD67_31 可包容
SLOT_NGFFCARD67_2

5020 Level

	A	B	C	D	E
LED	OPT_RED_LED_5020_1 RED LED 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 AUDIO_COVER_20X19_5 E21-7A59010-A91			OPT_AUD_COV_2 Audio Cover AUDIO_COVER_20X19_5 E21-7A62010-A91	
Audio Jack	OPT_AUD_JACK_1 Audio Jack JACK_AUD_D26P N54-26F0351-L06			OPT_AUD_JACK_2 Audio Jack AUDIO_JACK6_26P_U2 N54-26F0361-L06	

MSI Link to the Future MICRO-START INT'L CO.,LTD.

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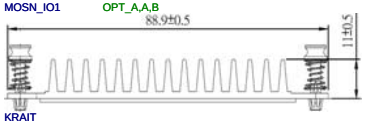
MOS SINK

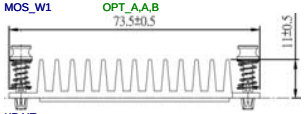
MOSN_IO1 OPT_A,A,B



KRAIT

E31-0504670-K08

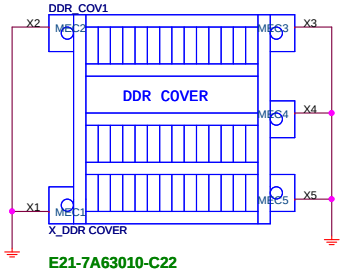
MOS_W1 OPT_A,A,B



KRAIT

E31-0504660-K08

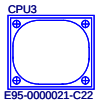
DDR Cover



E21-7A63010-C22

NI

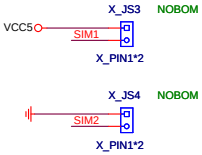
CPU Socket



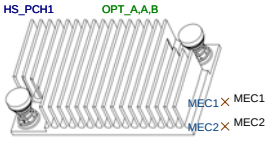
E95-0000021-C22

I

Simulation



PCH SINK

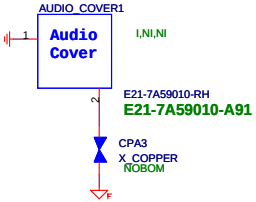


HS-0408800-RH

E31-0408800-K08

VR COVER

AUDIO COVER



MANUAL PART

I

BAT1_X1

BAT-CR2032-RH

AVL:
D06-0100161-F52
D06-0100101-K26

PCB1 OPT_A,A,B

7A33-10

PD0-07A340A-G37,精成-深圳,23,寶安恩斯邁廠(MSIS)
PD0-07A340A-E48,競華,23,寶安恩斯邁廠(MSIS)

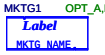
BIOS LABEL

UEFI1 I

G51-M1SPXXA-A09

MKTG name Label

MKTG1 OPT_A,B,C



ROYALTY

HDMI_LA1 I

Y01-RHDMI03-000

cFosSoftware I,I,NI GAMING Only

Y02-MU00170-CFO

NAHIMIC I,I,NI GAMING Only

Y02-MU00100-NAH

NVIDIA_SLI I,NI,I X370 Only

Y01-RNVIDIH-000

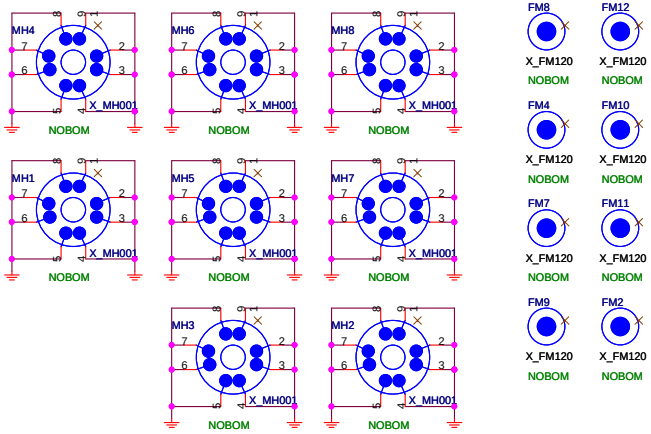
XSPLIT I,I,NI GAMING Only

Y02-MA00401-XSP

SSE I,I,NI GAMING Only

Y02-MA00101-SSE

Optics Orientation Holes



Schematic Cfg	Project	
CFG1-7A33-0A-X370-GAMING_601-7A33-A01	V	A
CFG2-7A33-0A-B350-GAMING_601-7A33-A02	V	B
CFG3-7A33-0A-X370-SLI PLUS_601-7A33-B01	V	C

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