

MS-7A38 Ver:4.0

CPU:
AMD AM4
System Chipset:
Promontory B350/A320
(Value DIY or System Builder)

Main Memory:
DDR IV * 4 MAX:64 GB

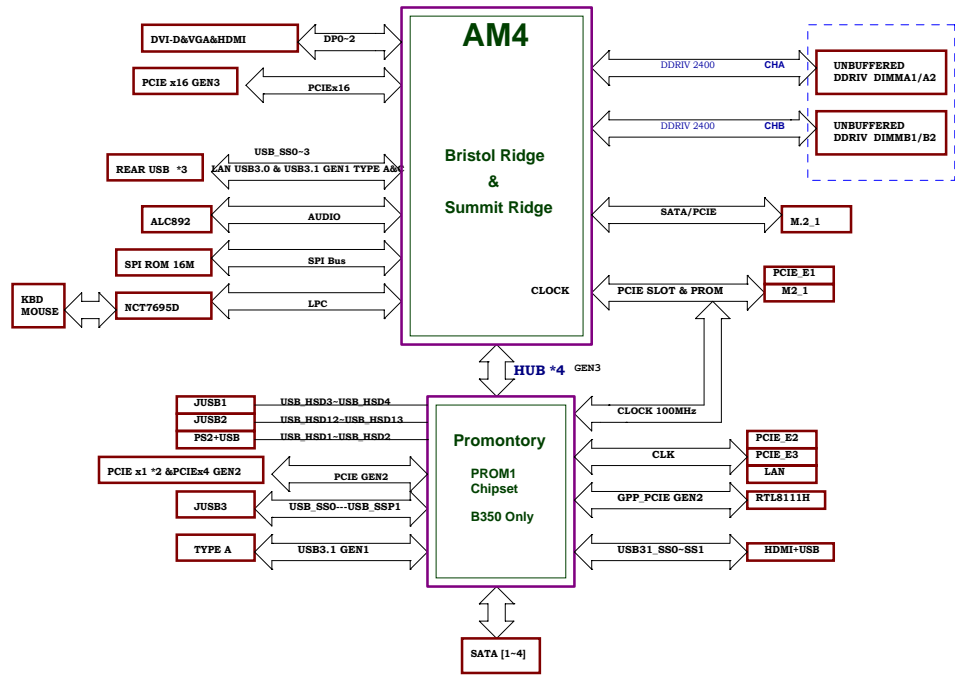
VRM
RT8894 4+2

On Board Chipset:
LPC Super I/O --NCT6795D
LAN RTL8111H
Azalia CODEC - Realtek ALC887


Expansion Slots:
From CPU
PCI Express X16 Slot * 1
PCI Express X1 Slot * 1
PCI Express X1 Slot * 1

OCP IC:
UP6273

FUSION BLOCK DIAGRAM



01 Block Diagram	37 DVI Connector
02 Cover Sheet	38 HDMI
03 FM4 DDR4 I/F	39 ACPI uPI-5VDIMM&3VSB
04 AM4 PCIE/SATAE	40 PM-NB681-1.05V/GS7133-2.5V
05 AM4 Display/Audio	41 DDR PWR VPP25/VTT-MP2143
06 AM4 SVI/ACPI/GPIO	42 DDR4 8125E Power
07 AM4 LPC/SPI/USB/CLK/STRAP	43 CPU Power 1P8V-MP2147
08 AM4 Power/RTC Power/ 09 AM4 GND	44 CPU Power VDDP-RT8125E
10,11 DDR4-DIMM CH-A/B	45 CPU Power Connector/PWRGD
12,13 DDR4-POWER/GND	46 CPU Power RT8894 4+2 Phase
14 Promontory-PCIE/SATA/SATAE	47 / 48 CPU Power Phase 1-4
15 Promontory-USB/OC	49 CPU Power NB Phase 1-2
16 Promontory-CLK/ACPI/GPIO	50 CPU Power NB Switch/NCT3933
17 Promontory-Power / 18 Promontory-GND	51 UP6273 CURRENT SENSE
19 Reserve	52 ATX/Front Panel
20 PCIE X16 /21 PCIE X1*2) SLOT	53 ALL LED
22 SIO NCT5565	54 ALL LED Control
23 HWM/COM/Debug LED	55 BOM Option
24 CPU/SYS FAN Control TYPE K	56 RTC Circuit/Moat Cap
25 CPU/SYS FAN 2	57 History
26 LAN-RTL8111H	58 Power Sequence
27 / 28 Audio ALC887	59 GPIO MAP
29 USB Rear PS2+USB2.0	60 Power Map
30 USB Rear LAN+USB3.1 GEN1	
31 Rear USB3.1 TYPE A	
32 USB Rear HDMI+TYPE A	
33 USB Front Side	
34 M.2	
35 SATA Connector	
36 DP to VGA ITE6516	

**MICRO-START INTL CO.,LTD.**

File

COVER SHEET

Size

Document Number

Rev

Cumulative

MS-7A38

4.0

Date

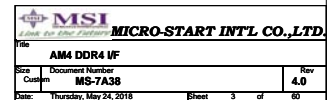
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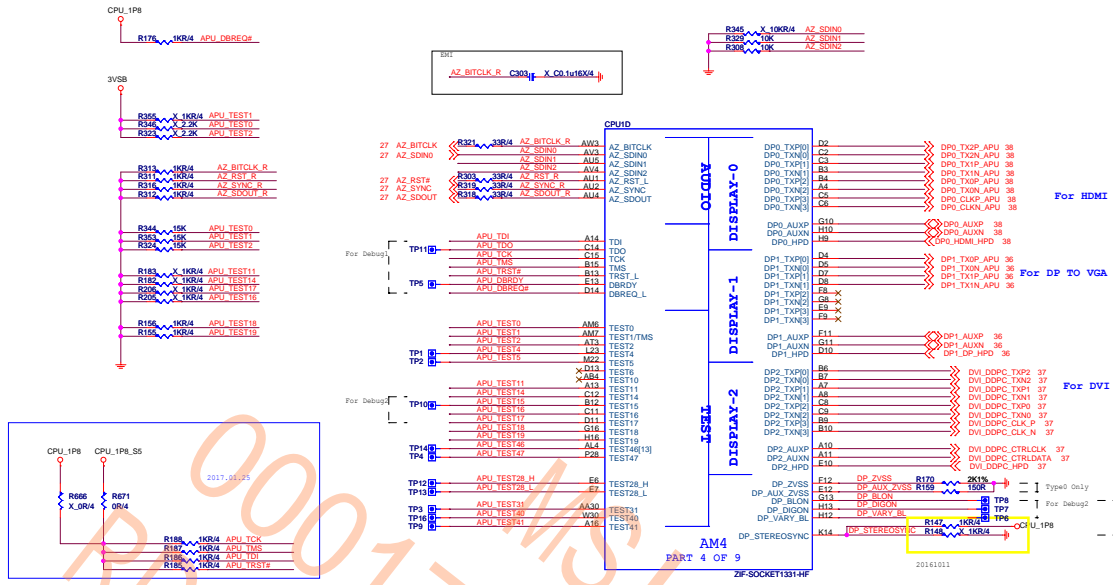
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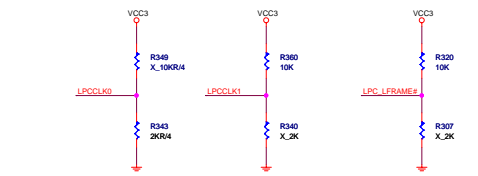
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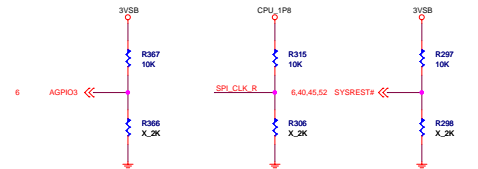




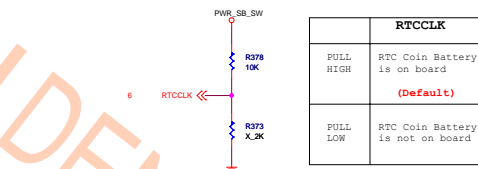
Strapping Options



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



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



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

MSI MICRO-START INTL CO., LTD.

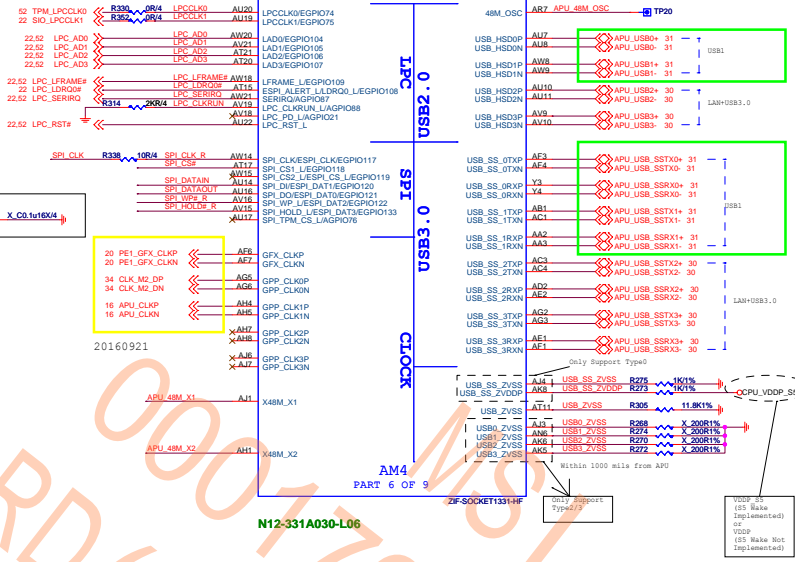
AM4 LPC/SPH/CLK/STRAP

Size Custom Document Number MS-7A38 Rev 4.0

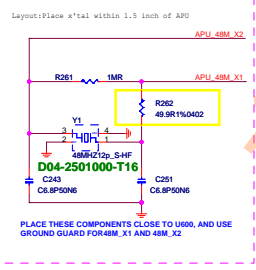
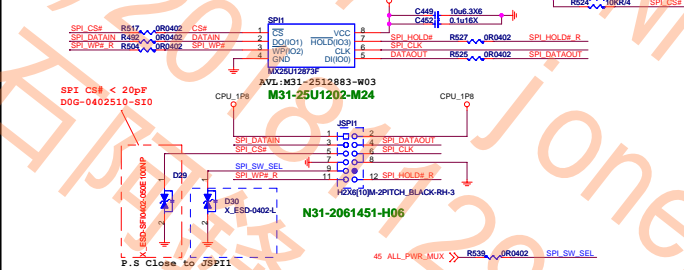
Date Thursday, May 24, 2018 Sheet 7 of 60

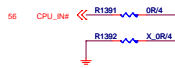
LPCLK1 C314 X Co.1u6K4


TPM LPCLK0 C314 X Co.1u6K4

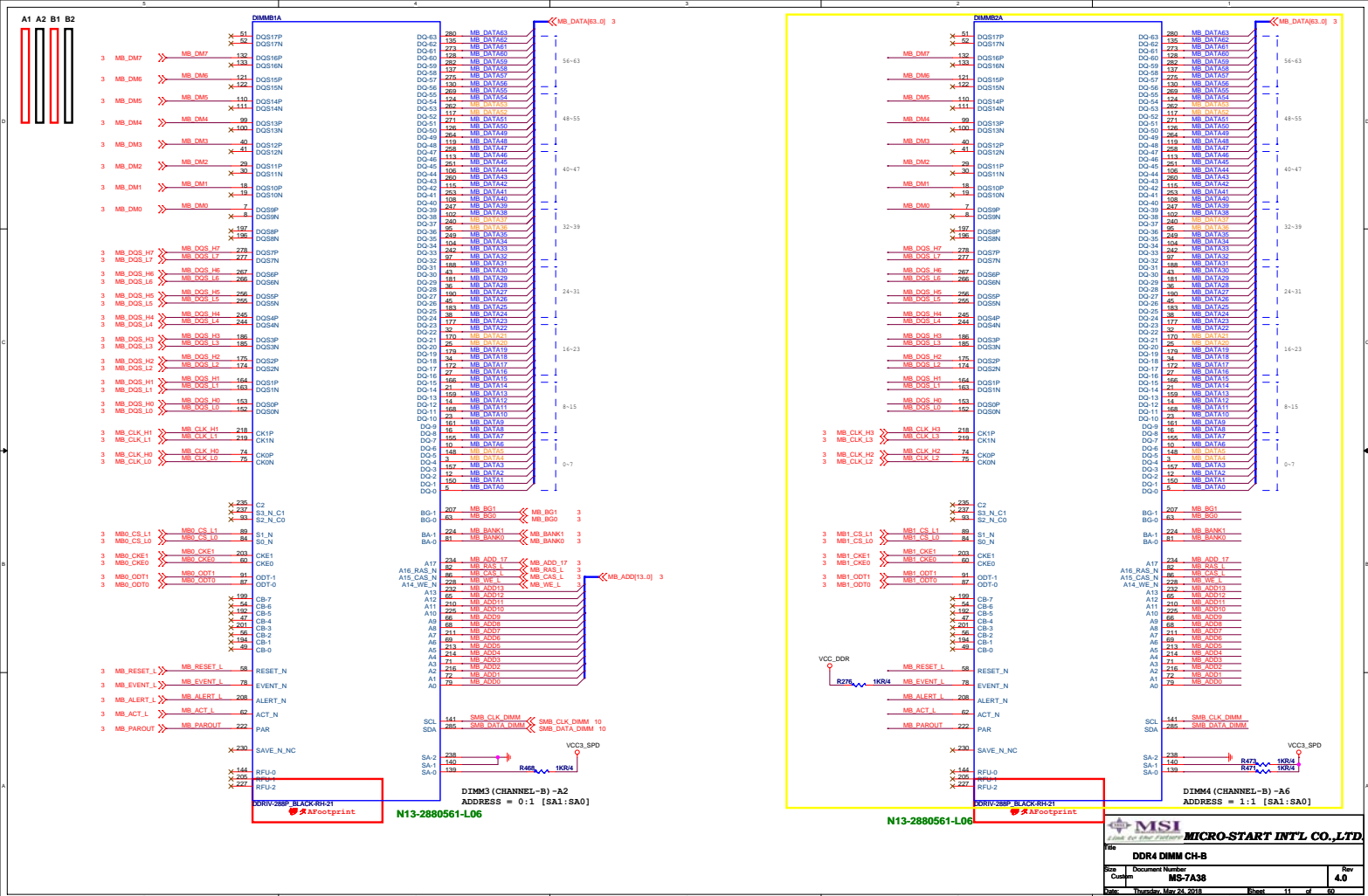


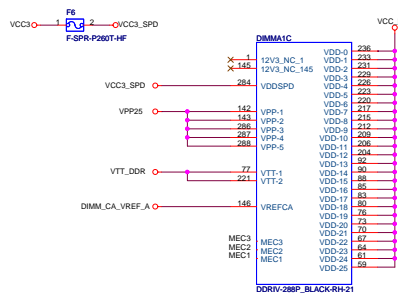
SPI ROM (1.8V)



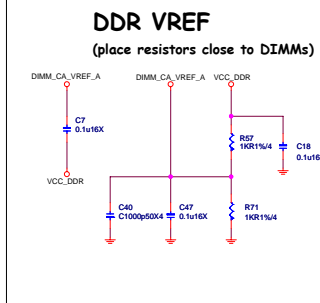
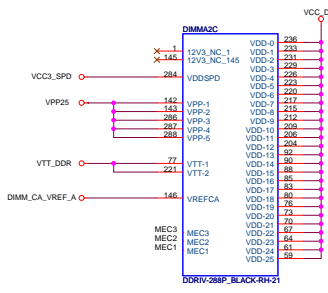


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Title			
AM4 GND			
Size	Document Number	Rev	
Custom	MS-7A38	4.0	
Date	Thursday, May 24, 2018	Sheet	9 of 60



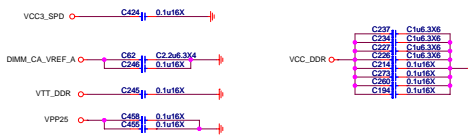
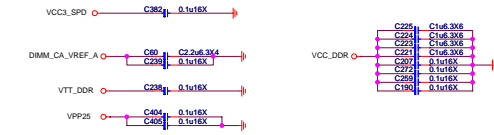


DIMM SLOT PN BY SPEC



N13-2880561-L06

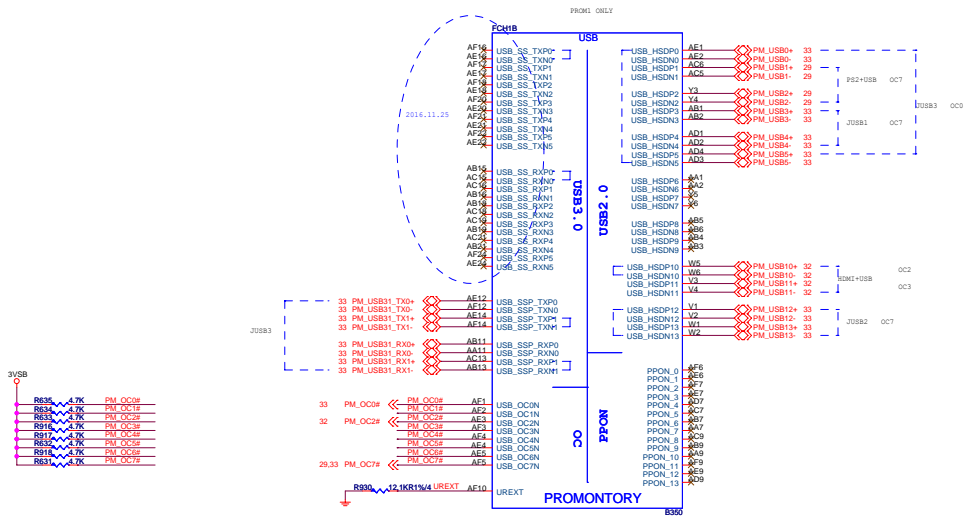
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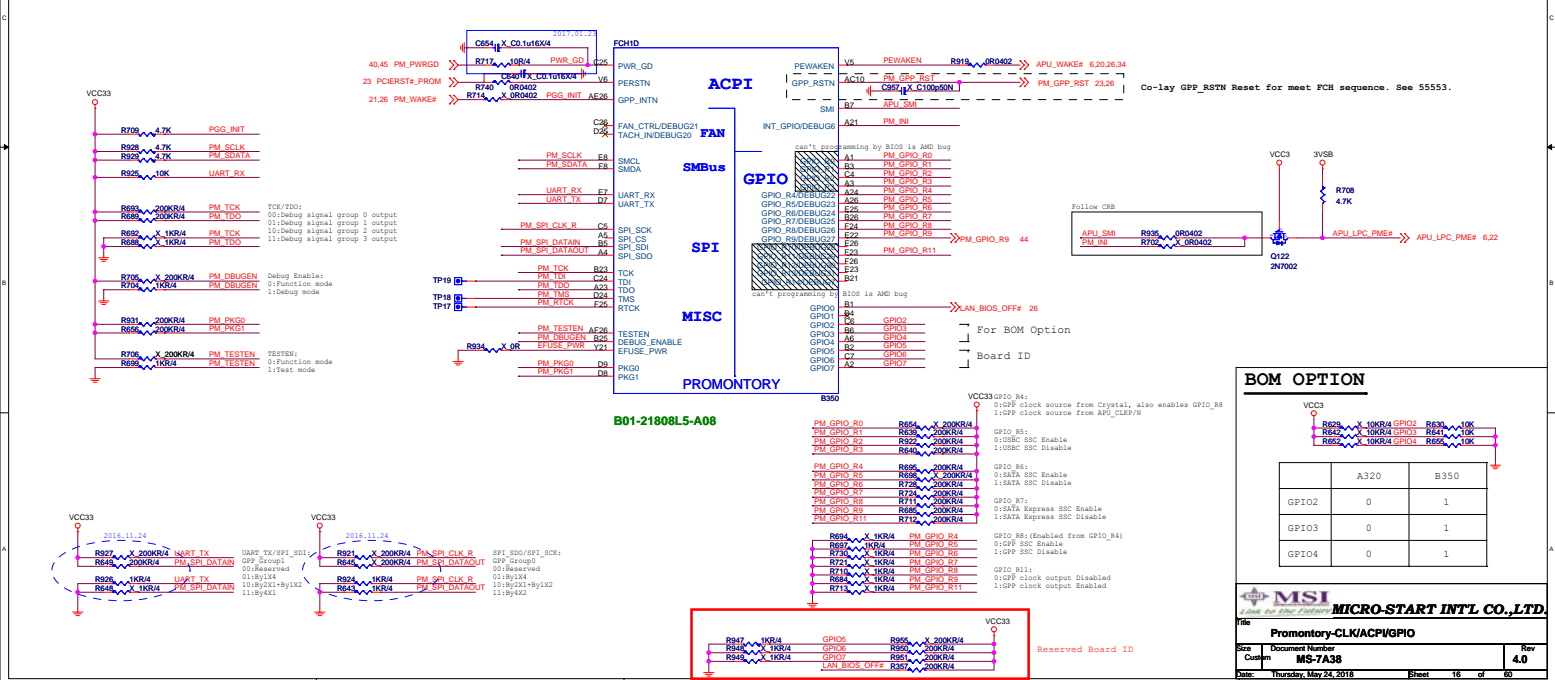
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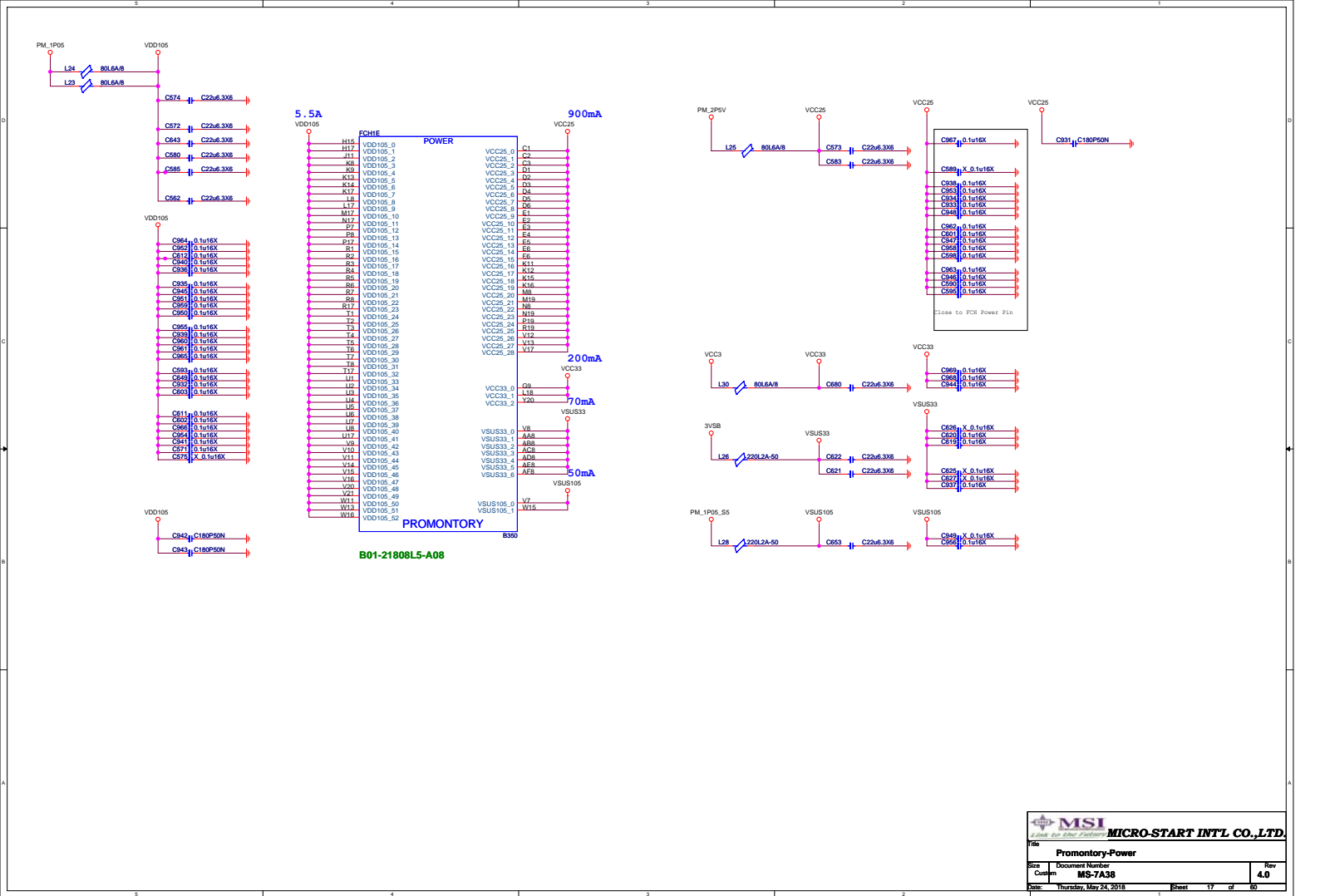
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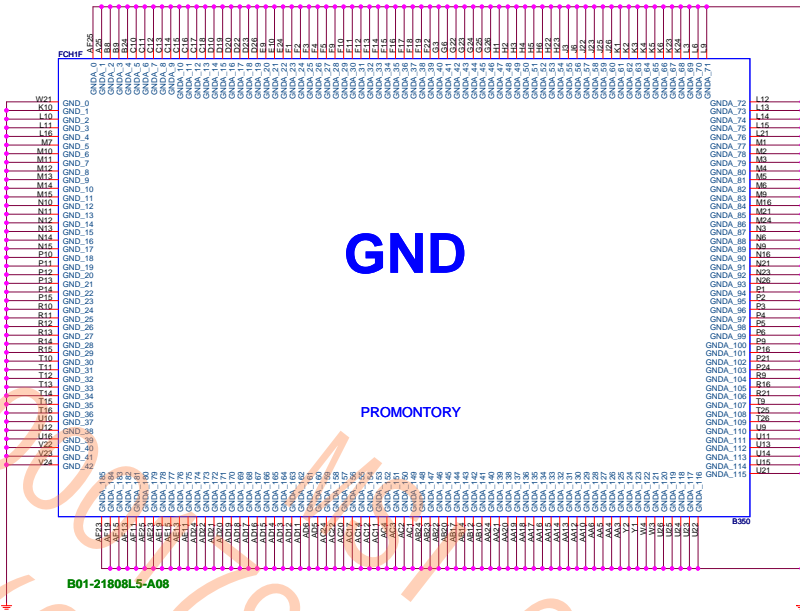
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Size	Document Number	Rev
Custom	MS-7A38	4.0
Date: Thursday, May 24, 2018		Sheet 12 of 60



B01-21808L5-A08








B01-21808L5-A08

MICRO-START INTL CO., LTD.			
Promontory-GND			
Size	Document Number	Rev	
Custom	MS-7A38	4.0	
Date	Thursday, May 24, 2018	Sheet	18 of 60

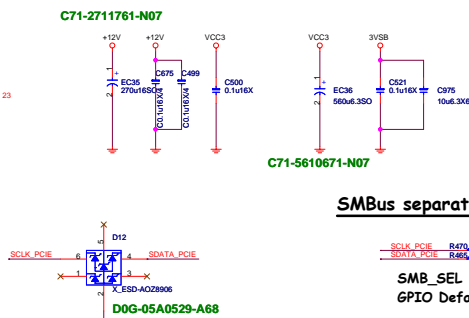
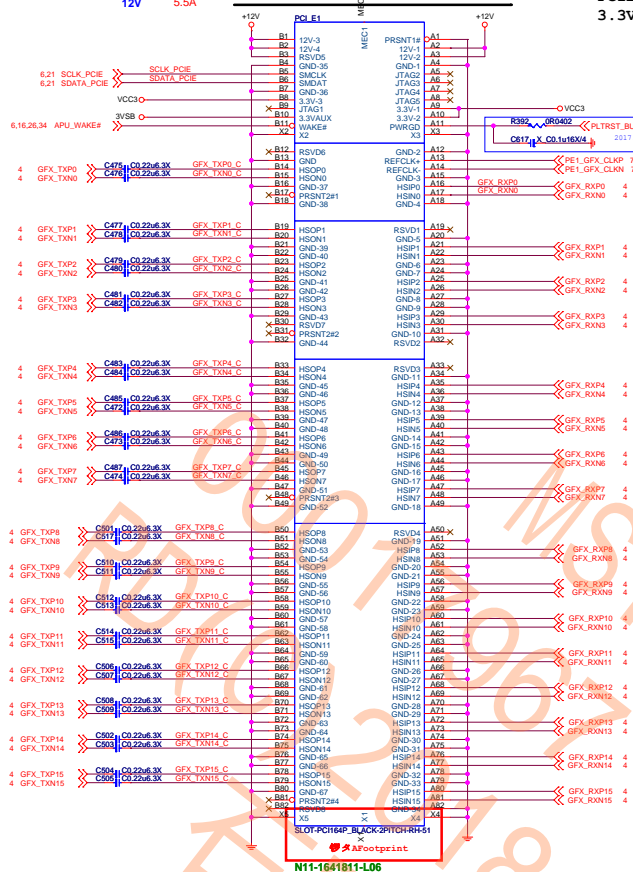
MSI CONFIDENTIAL
00017967 jonepei (裴亮樂)
RD(C)2018112901 RMA工程課
石阿鋒 (00068760)

 MICRO-START INTL CO., LTD.	
Title: PCIE CLK	
Size	Document Number
Custom	MS-7A38
Date	Thursday, May 24, 2018
Sheet	19 of 60

3.3V 3.0A
12V 5.5A

PCI EXPRESS x16 Slot

PCIEX1 12V 0.5A
3.3V weak 375mA



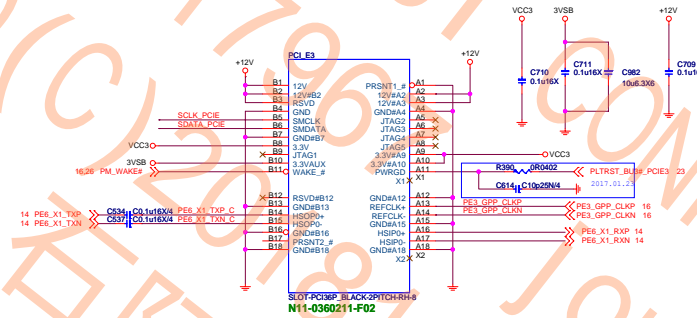
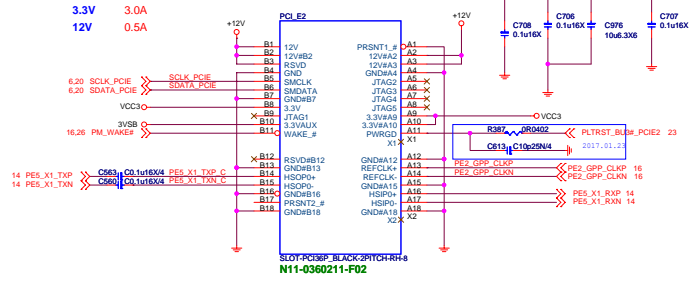
SMBus separate circuit

SMB_SEL
GPIO Default High

SLOT PCH164P_ILUACK2P1CH1RH51
N11-1641811-L06

MSI MICRO-START INTL CO., LTD.			
PCIE X16 SLOT			
Size	Document Number	Rev	
Custom	MS-7A38	4.0	
Date	Thursday, May 24, 2018	Sheet	20 of 60

PCIEX1 12V 0.5A
3.3V weak 375mA

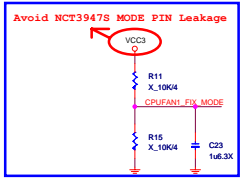


PCI Express x1 Slot *2	
+12V	- 1 A
+VCC3	- 6A
+3V3_S5 (wake)	- 750mA
+3V3_S5 (no wake)	- 40mA

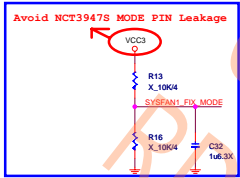
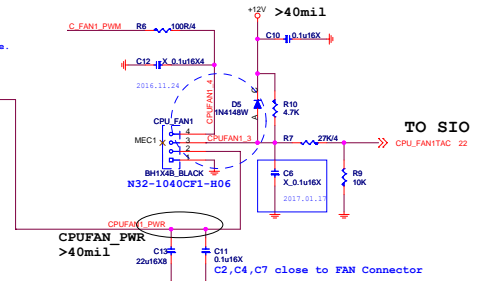
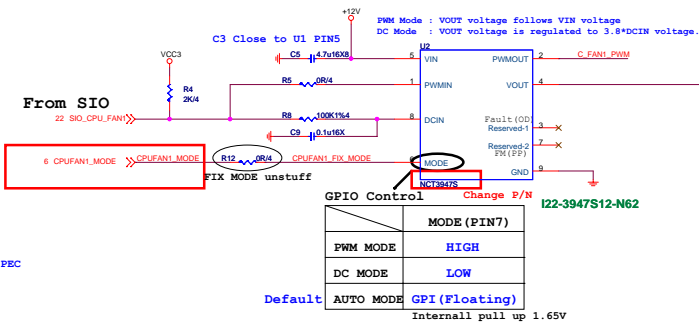
MICRO-START INTL CO., LTD.	
PCIE X4(X1*2) SLOT	
Size	Document Number
Custom	MS-7A38
Date	Thursday, May 24, 2018
Sheet	21 of 60

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

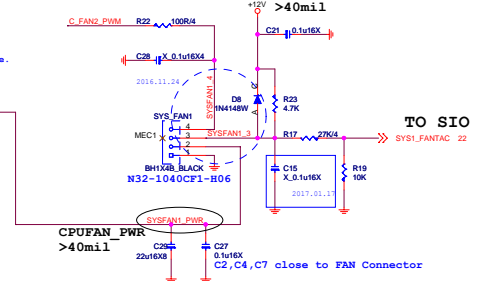
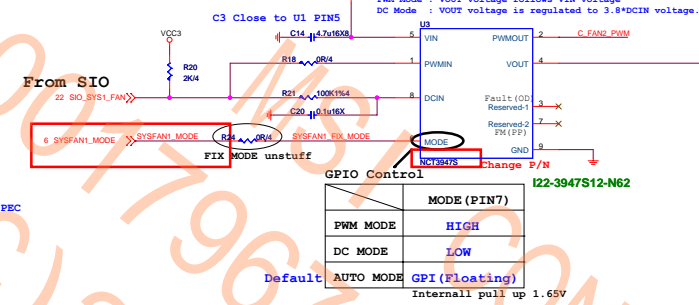
2.GPIO BIOS 传输 PWM/DC MODE

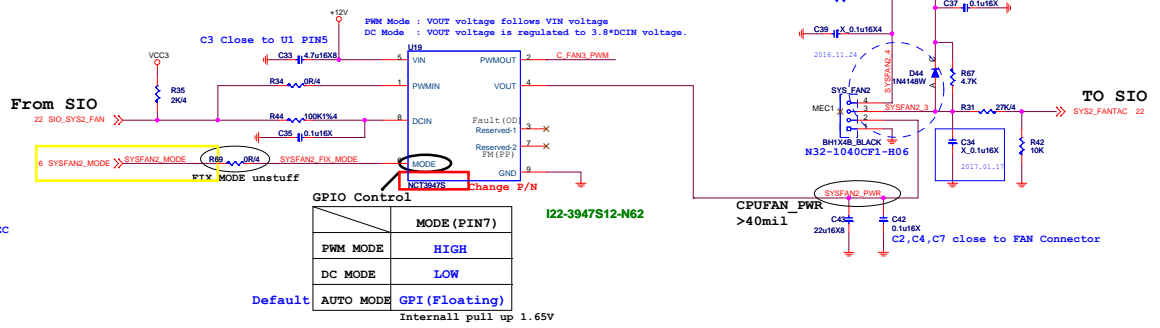


Resever For FIX DC or PWM MODE USE By PM SPEC



Resever For FIX DC or PWM MODE USE By PM SPEC

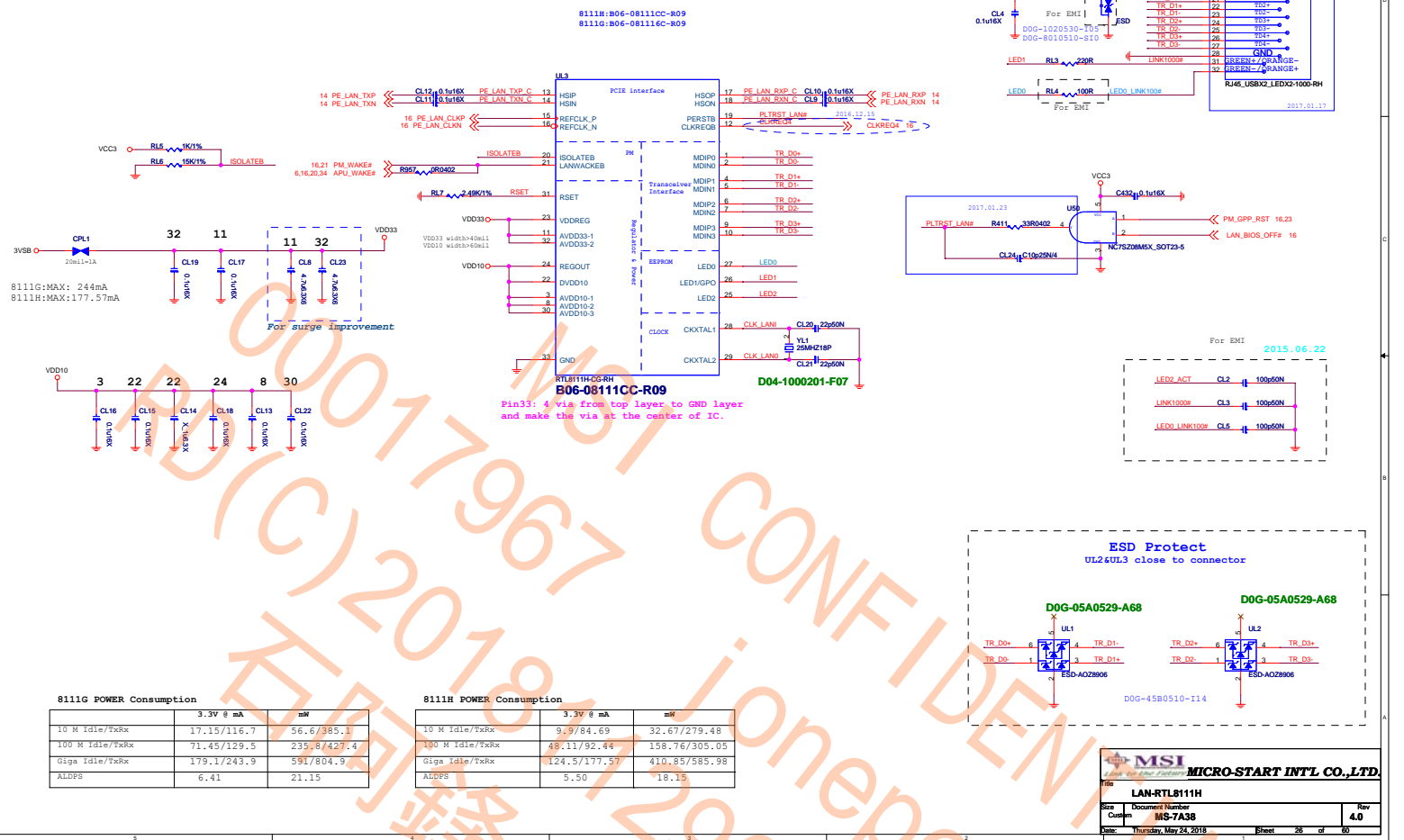


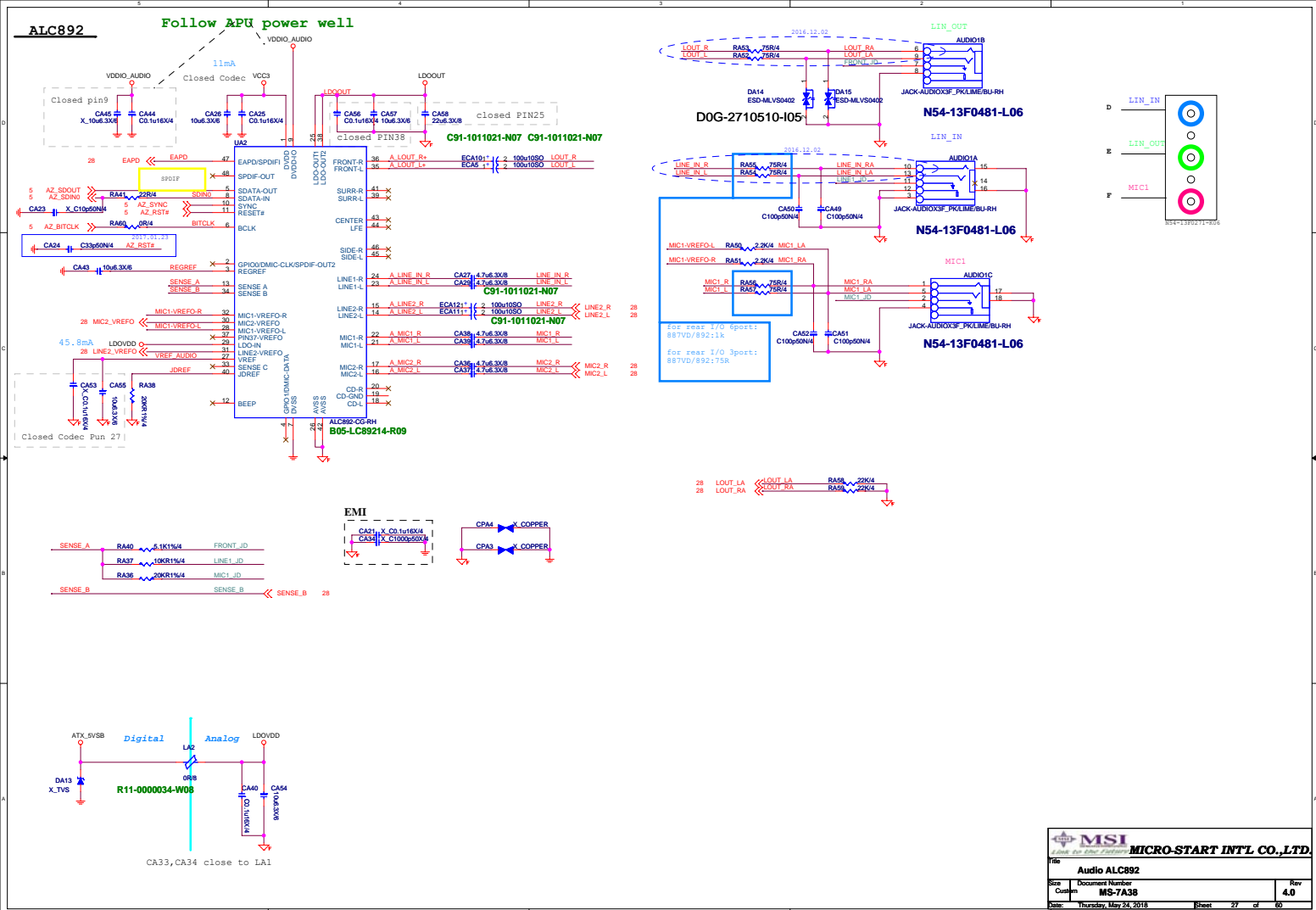


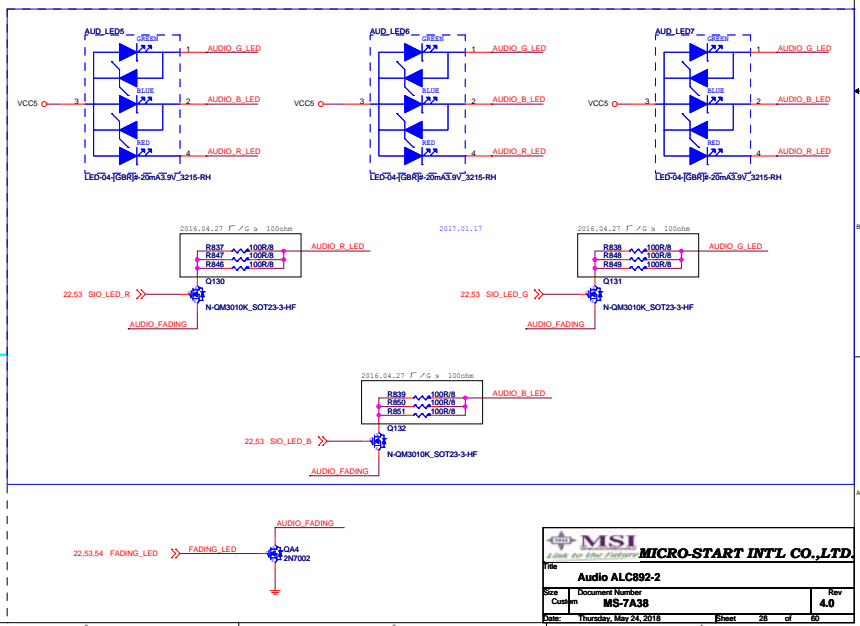
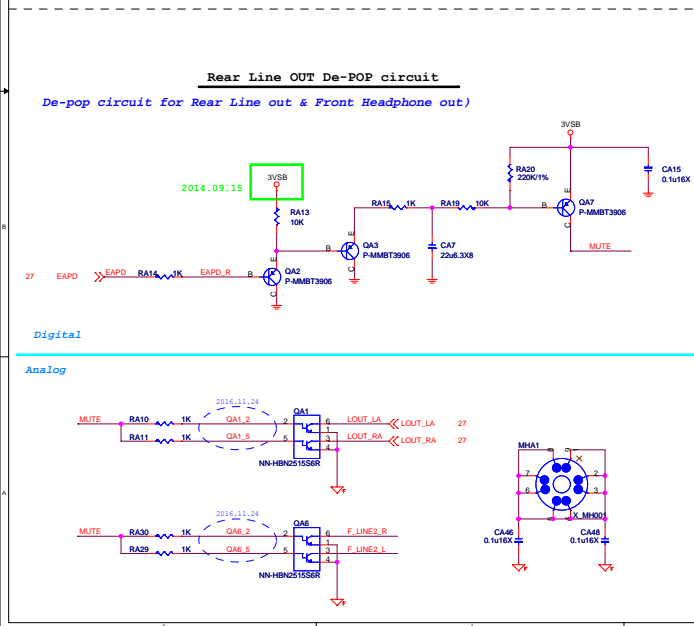
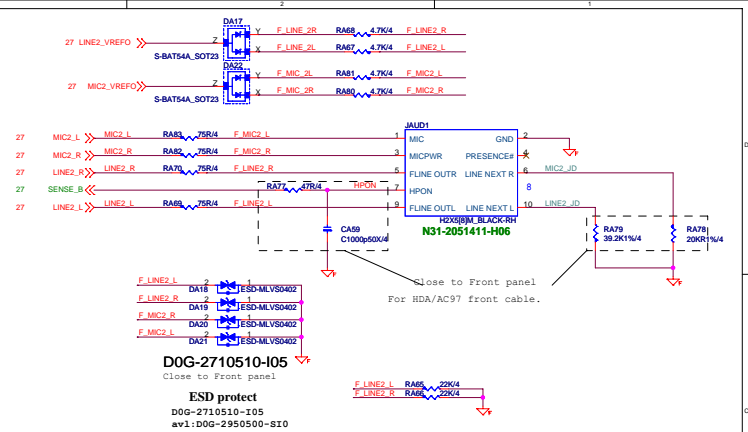
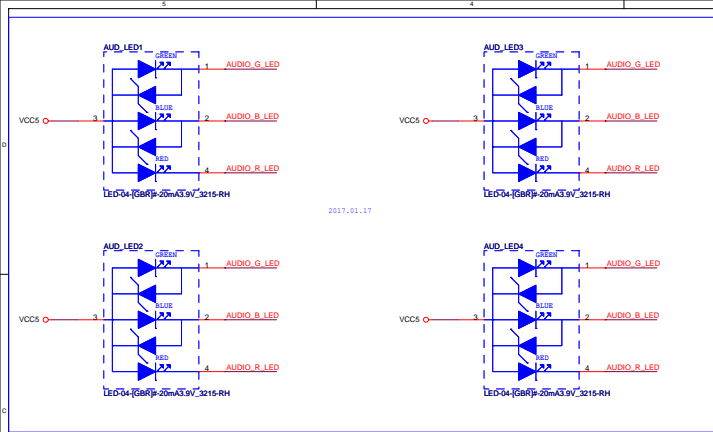
GPIO Control	
	MODE (PIN7)
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI (Floating)

Internall pull up 1.65W

RTL8111G/RTL8111H Giga LAN

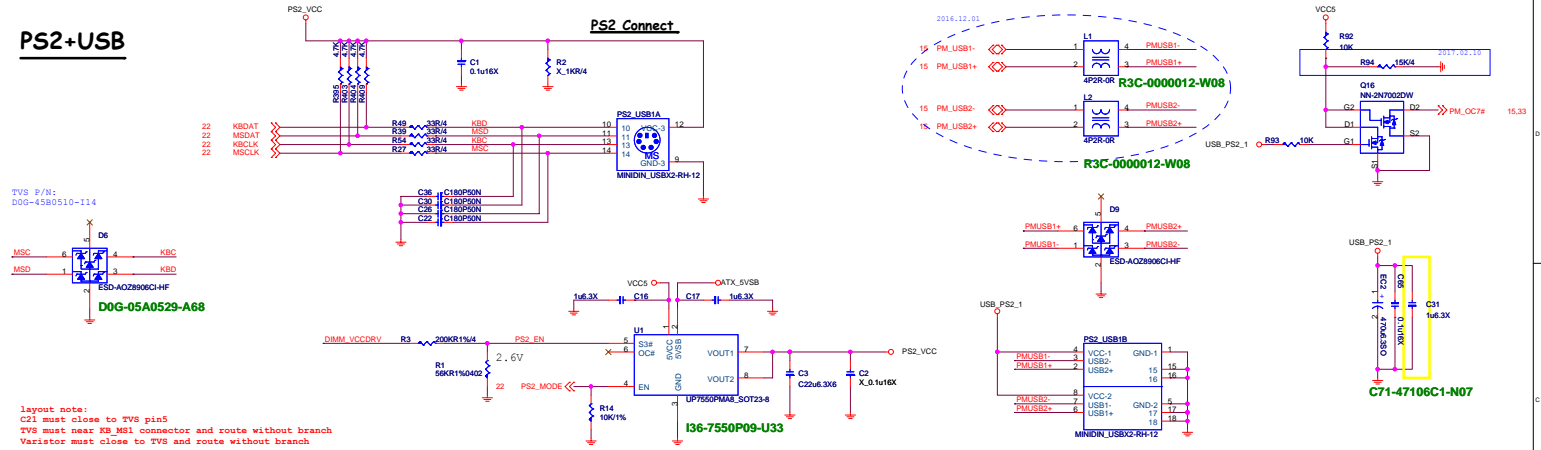




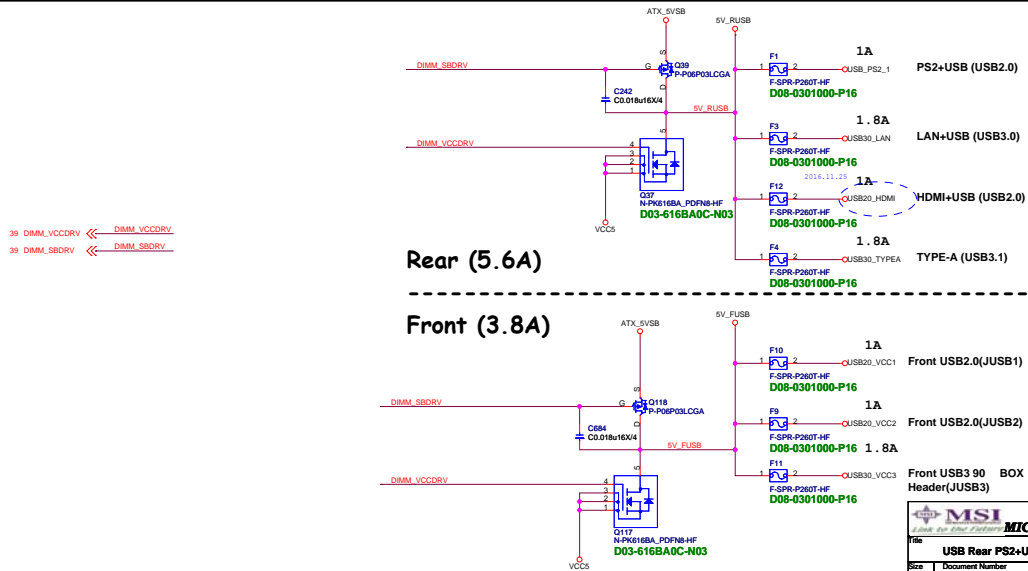



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MICRO-START INTL CO., LTD.			
File: Audio ALC892-2			
Size	Document Number	Rev	
Custom	MS-7A38	4.0	
Date	Thursday, May 24, 2018	Sheet	28 of 60

PS2+USB



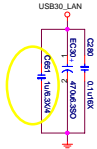
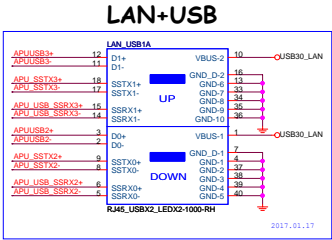
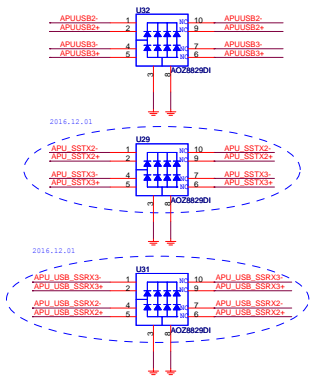
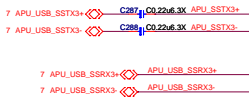
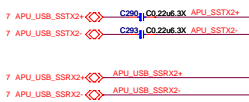
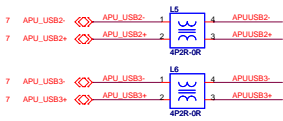
USB Power



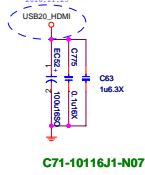
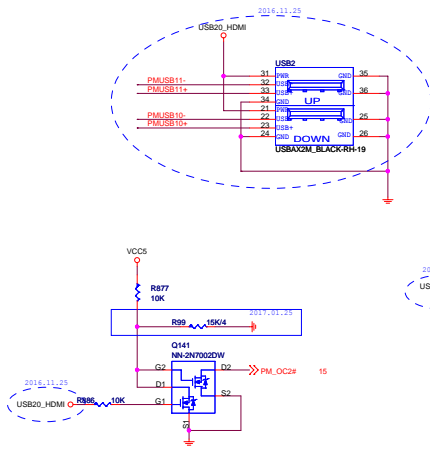
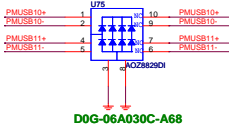
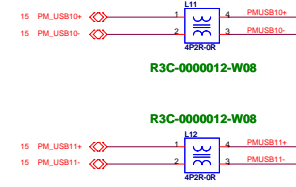
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Size Custom	Document Number MS-7A38				Rev 4.0
Date: Thursday, May 24, 2018		Sheet 29		of 60	

USB3.1 GEN1

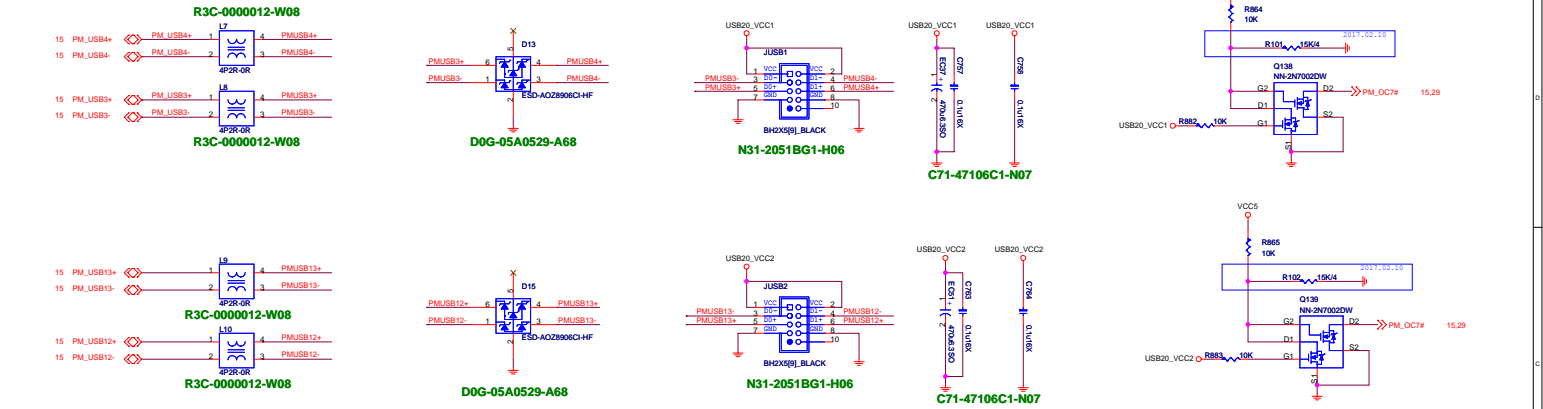
VR Sloution U2 redriver



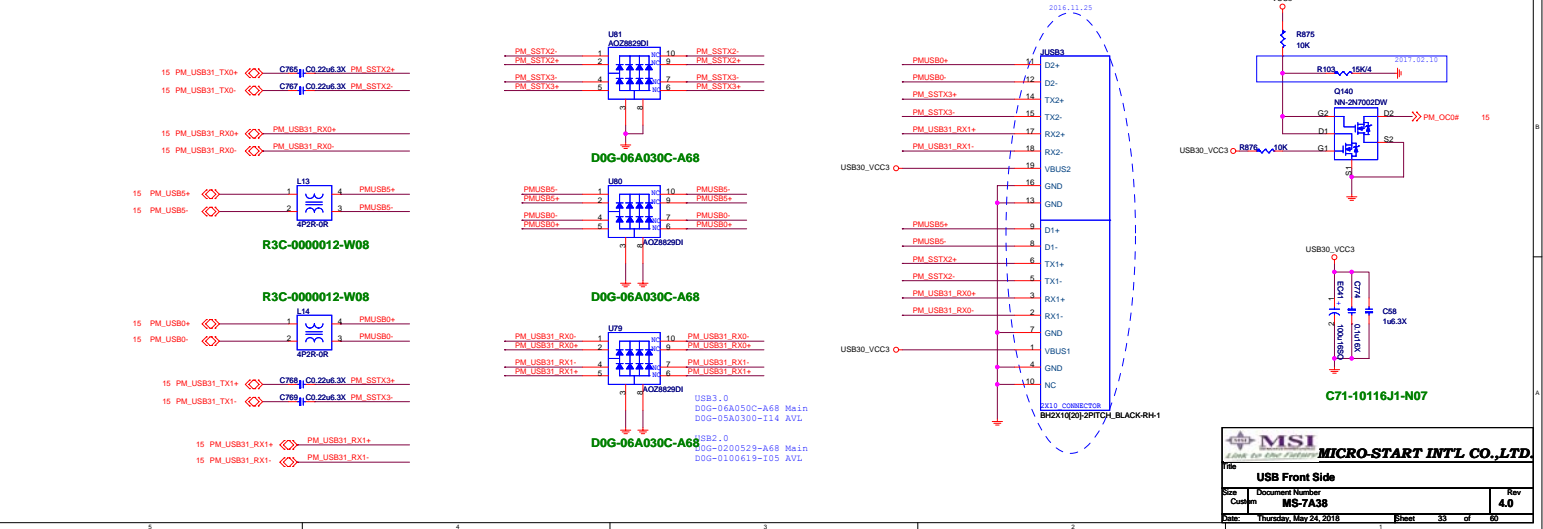
Front USB2.0



Front USB2.0

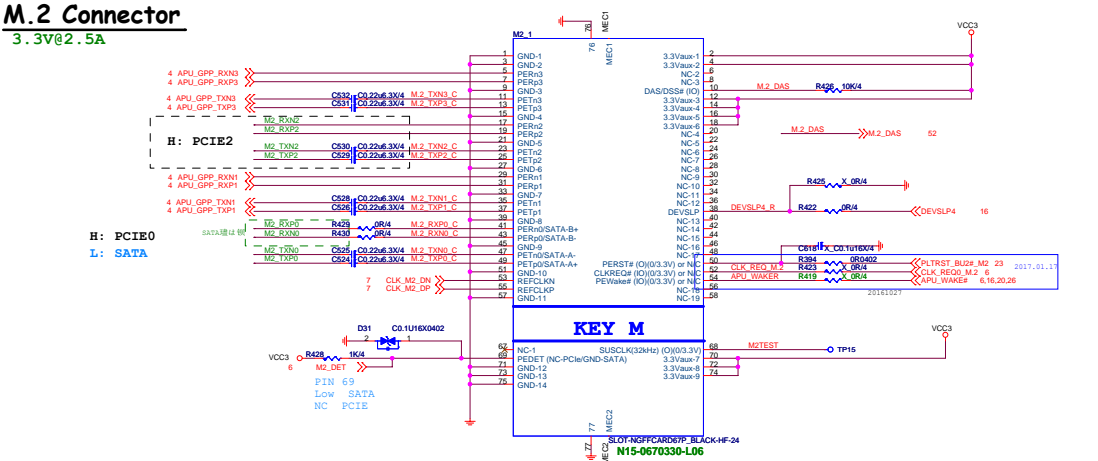


Front USB3.1 GEN1

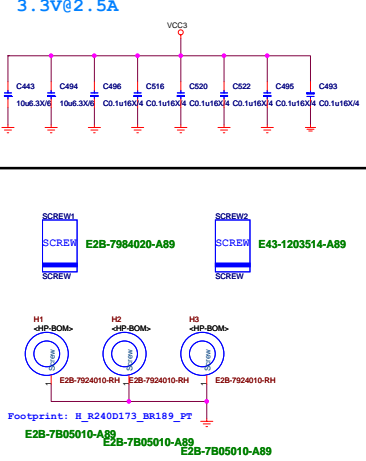


MSI Link to the Future			
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Size	Document Number	Rev	
Custom	MS-7A38	4.0	
Date	Thursday, May 24, 2018	Sheet	53 of 60

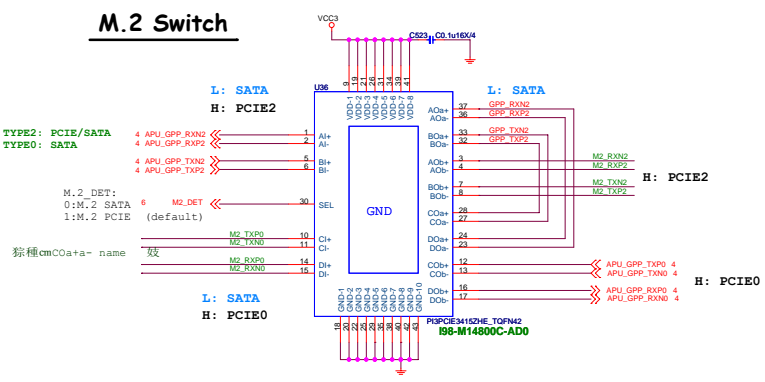
M.2 Connector
3.3V@2.5A



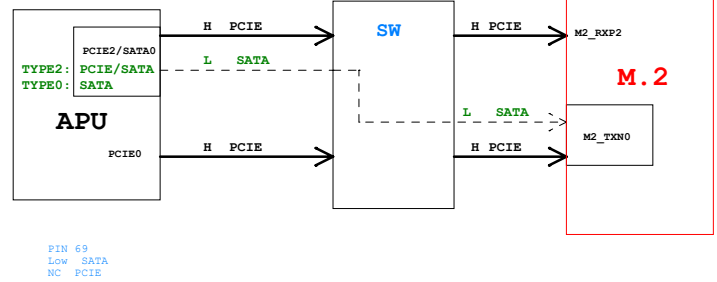
3.3V@2.5A



M.2 Switch

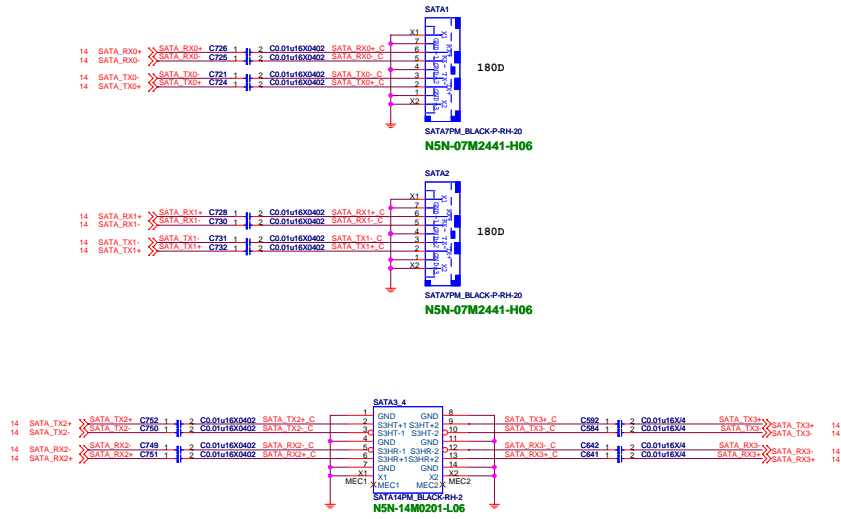


HW Default
M.2 Insert

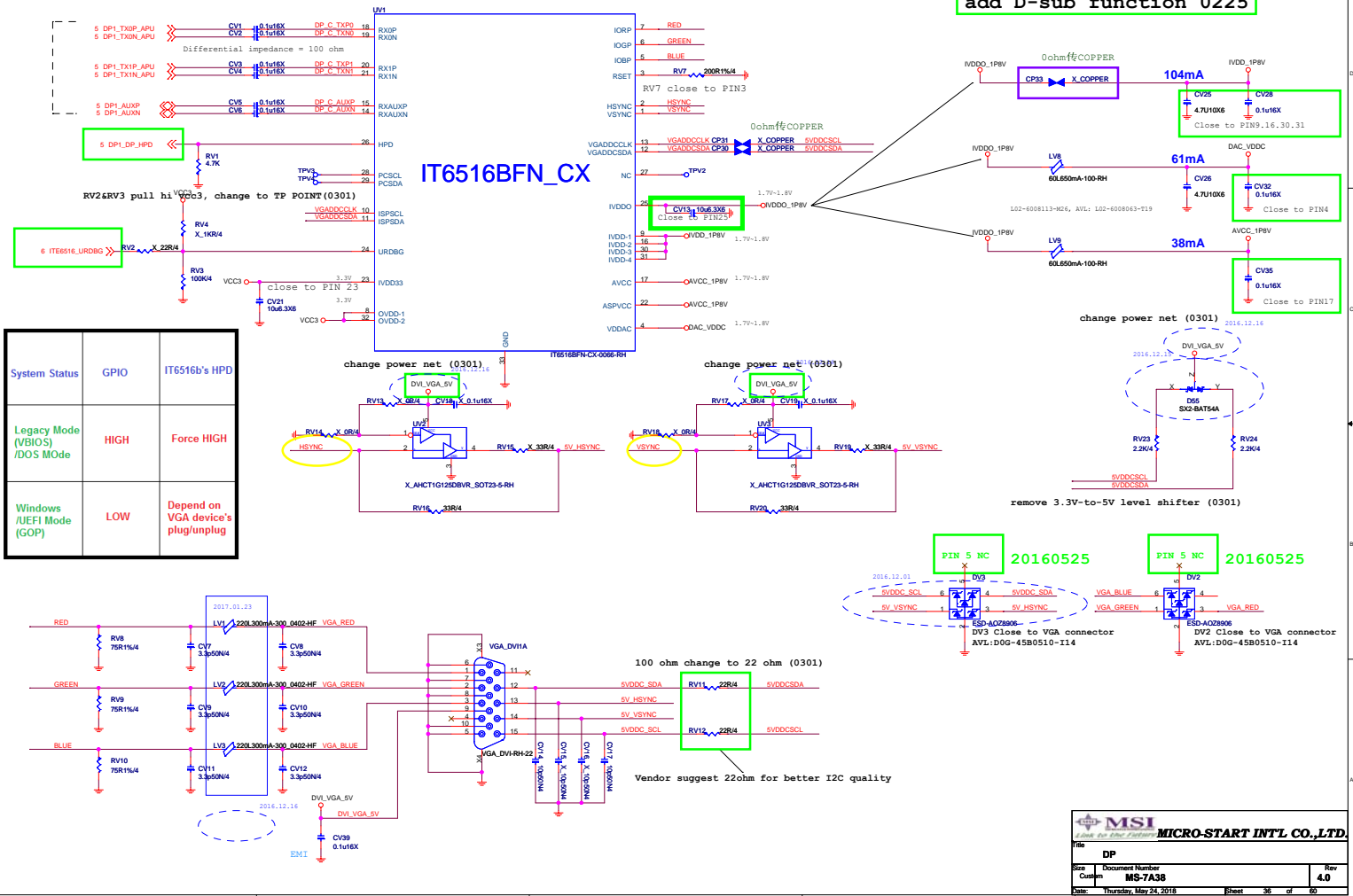


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MICRO-START INTL CO.,LTD.			
File: M.2			
Size	Document Number	Rev	
Custom	MS-7A38	4.0	
Date: Thursday, May 24, 2018		Sheet	34 of 60

SATA Connector

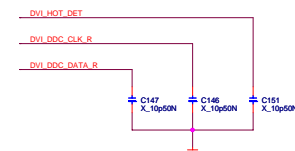
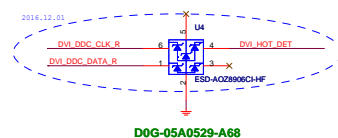
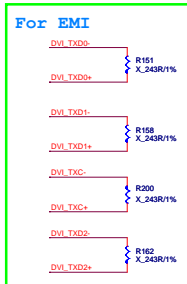
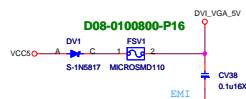
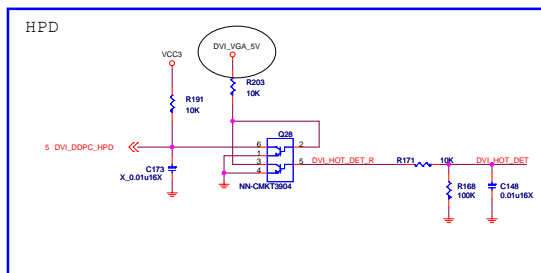
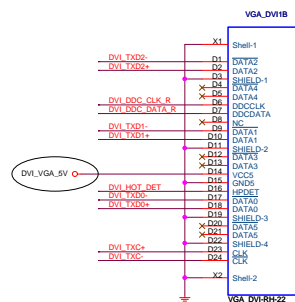
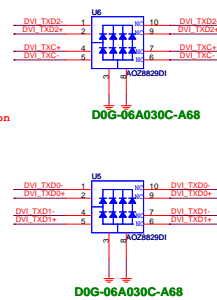
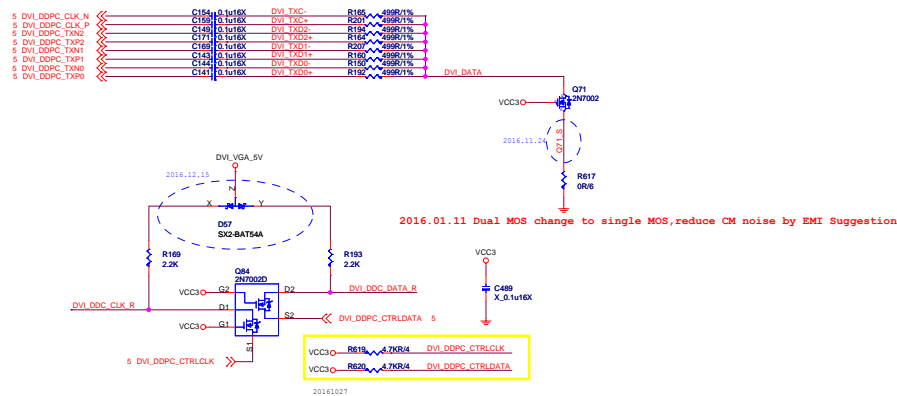


Note:
If connect to eDP port,must confirm whether it
support hot plug detection HPD and re-auxtraining



DVI level shifter

VGA: resolution of 2048x1536 pixels with 32-bit color at 75 Hz (4:3 QXGA)



MSI Link to the Future			
MICRO-START INTL CO., LTD.			
File			
DVI Connector			
Size	Document Number	Rev	
Custom	MS-7A38	4.0	
Date	Thursday, May 24, 2018	Sheet	37 of 60

I32-0750119-U33

29 DIMM_VCCDRV << DIMM_VCCDRV
29 DIMM_SBDIV << DIMM_SBDIV

[illegible]

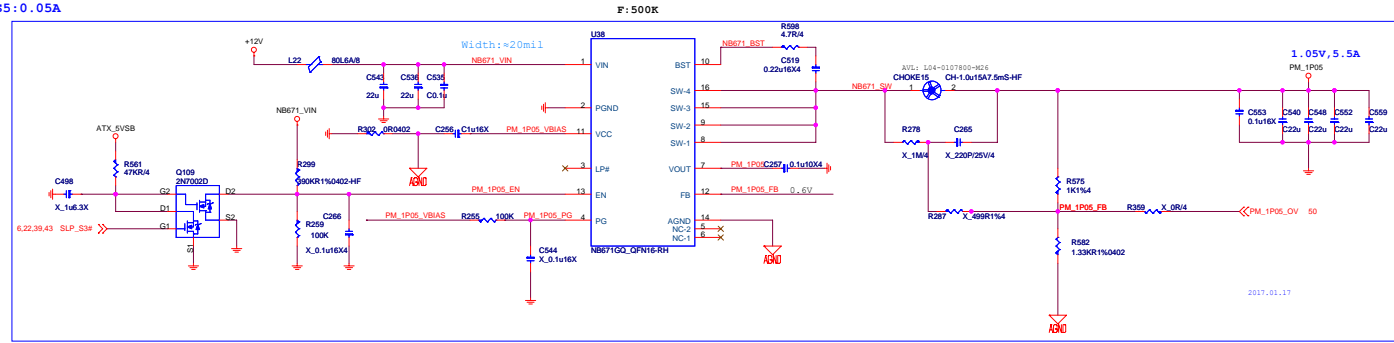
FOR Promontory 1.05V_S0

1.05V
S0:5.5A
S5:0.05A

support OV=>NB685
not support OV=> NB681

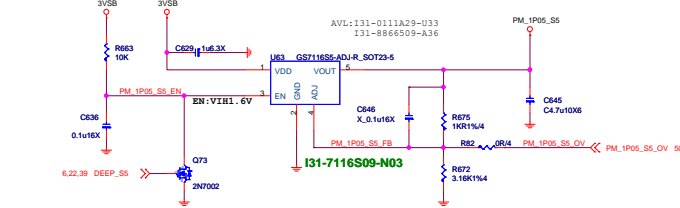
IMAX 10A
ILIMIT=10A~12A
IOC=ILIMIT*40%*IMAX/2=12A~14A.

0.7776uH±1.1664uH



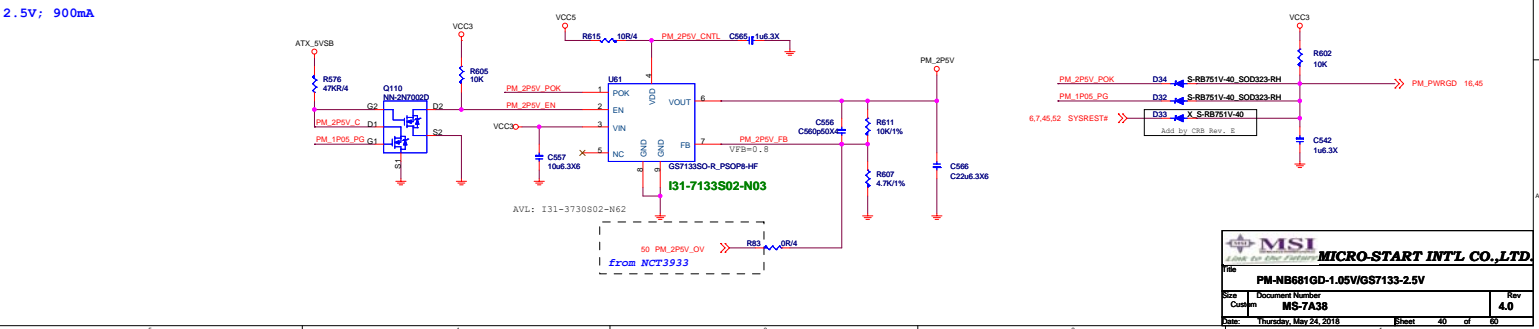
FOR Promontory 1.05V_S5


0.05A



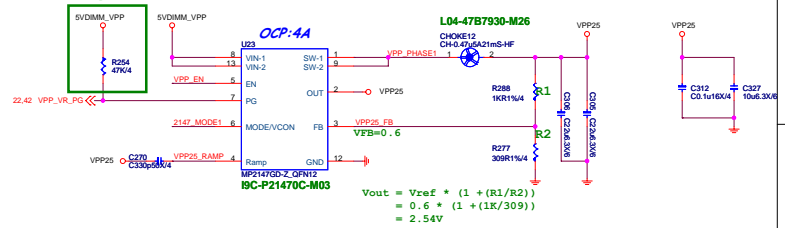
Promontory-2.5V

2.5V; 900mA

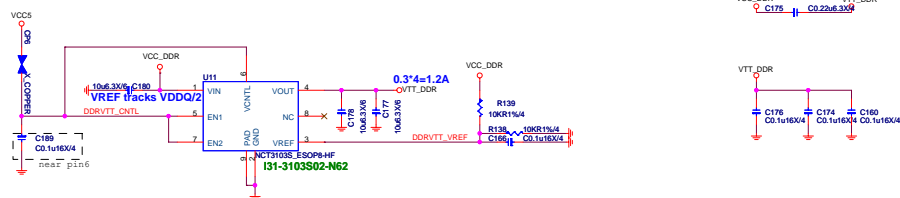



 Link to the Future		MICRO-START INTL CO.,LTD.	
File PM-NB681GD-1.05V/GS7133-2.5V			
Size	Document Number		Rev
Custom	MS-7A38		4.0
Date:	Thursday, May 24, 2018	Sheet	40 of 60

2.5V@2.24A

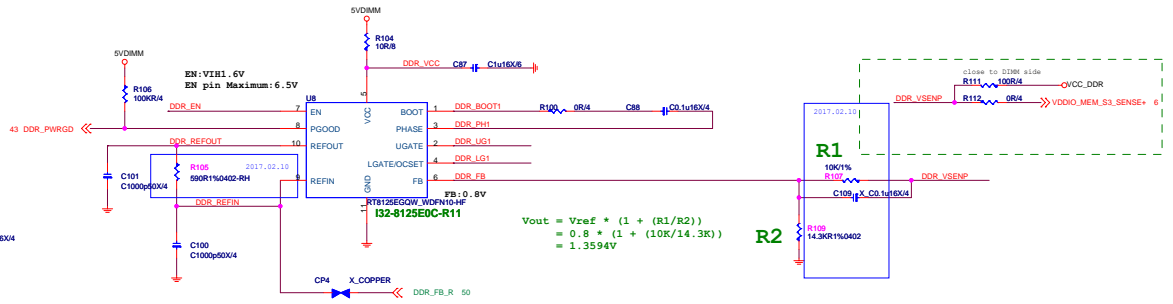
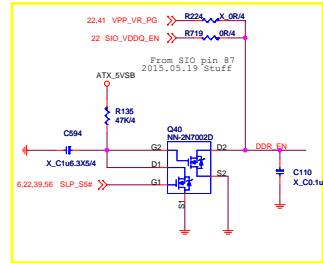


To CPU Copper trace width > 250mils , Fill island behind DIMM > 400mils .



 MSI <i>Look on the Future</i>				MICRO-START INT'L CO.,LTD.			
Title DDR PWR VPP25/VTT_DDR							
Size Custom		Document Number MS-7A38				Rev 4.0	
Date: Thursday, May 24, 2018				Sheet 41 <i>of</i> 60			

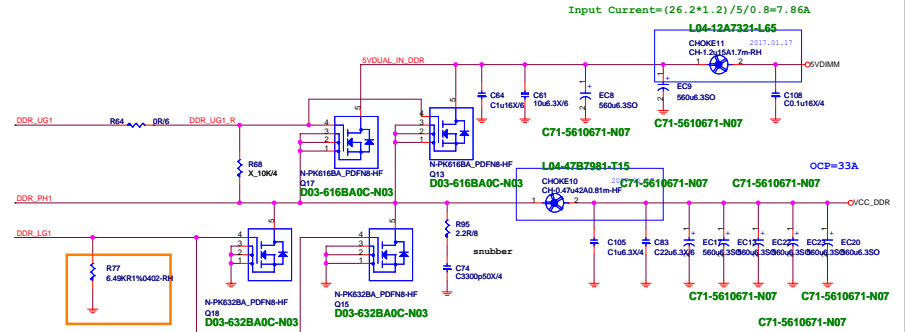
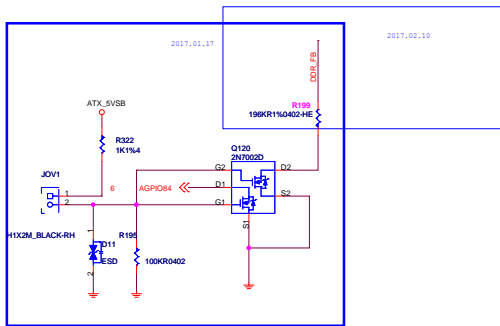
DDR4_1.2V@26.2A
15.5A FOR CPU
9.5A FOR 4DIMM
1.2A FOR DDR VTT



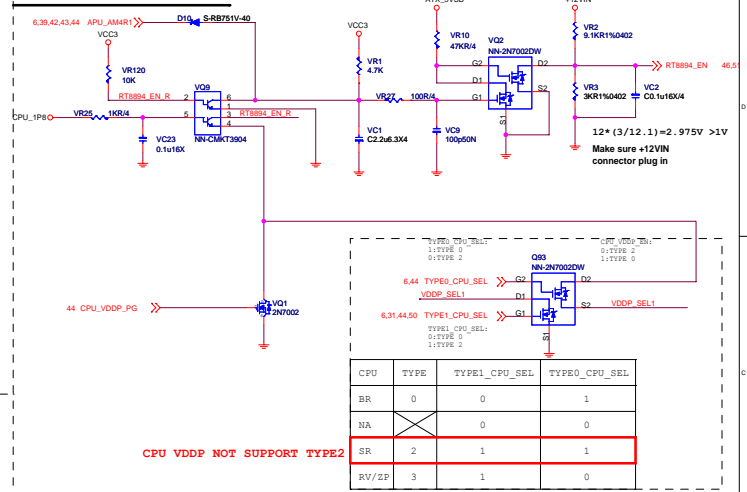
6.39,43,44,45 APU_AMAR1 D07 S-RB751V-40 DDR_EN
EN:V1H2V
EN pin Maximum:5.5V,RECOMMENDED:3.6V

EDC: $I_{rms} = I_{out} / N * \sqrt{ND(1-ND)}$
CORE:
D= $V_{out}/V_{in}=1.2/5=0.24$
N=Phase number=1
= $26.2/1 * \sqrt{ND(1-ND)}$
=11.189A

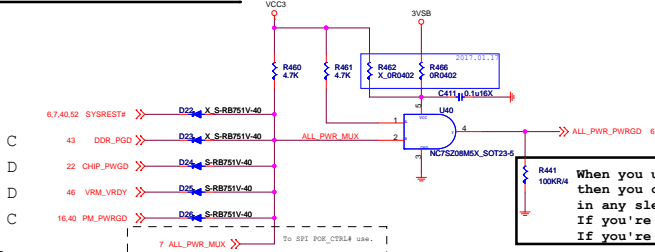
$OCP = 26.2A * 1.5 = 39.3A$
 $R_{ocs}(R95) = OCP * R_{dson}(Low\ side) / 10uA$
= $35A * 1.65mohm / 10uA$
=5.77K



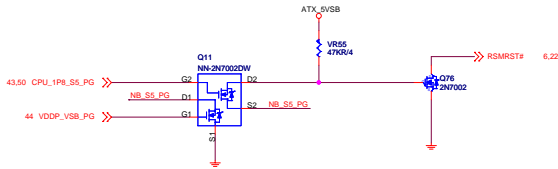
VRM_Enable circuit

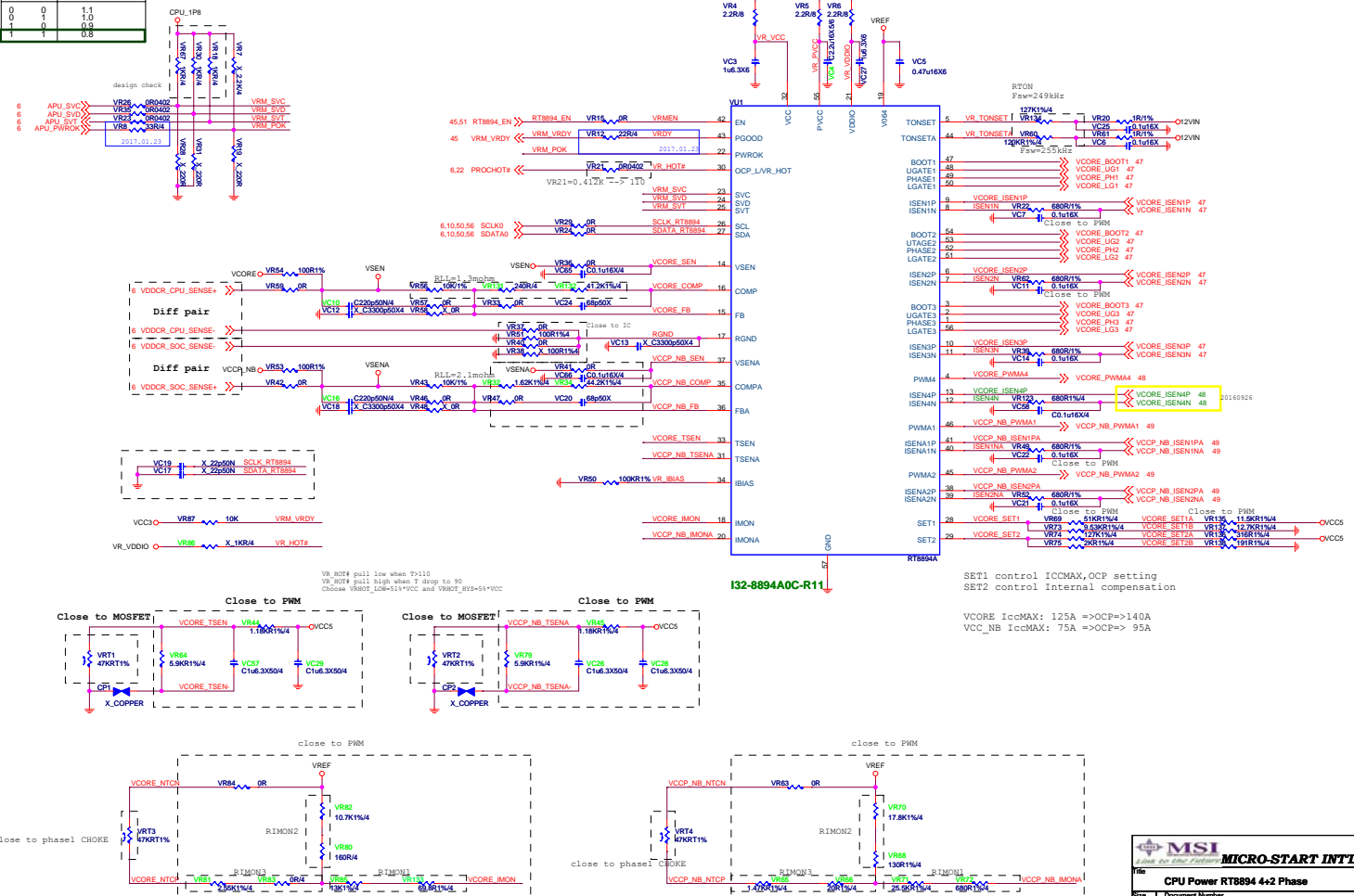



ALL POWER GOOD MUX

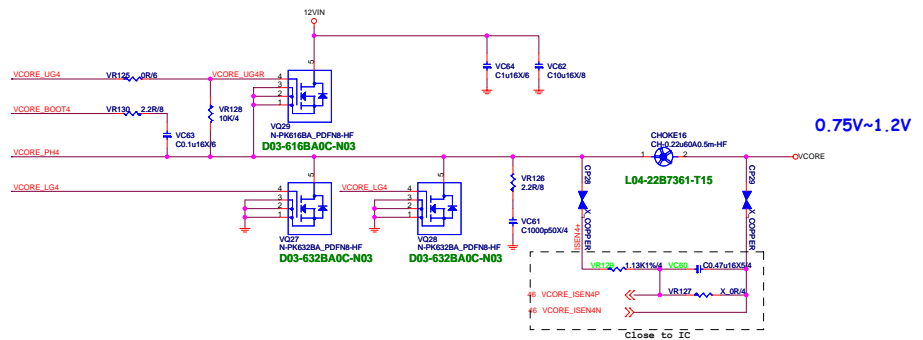
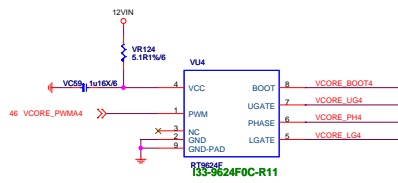


S0 PG
S5 PG



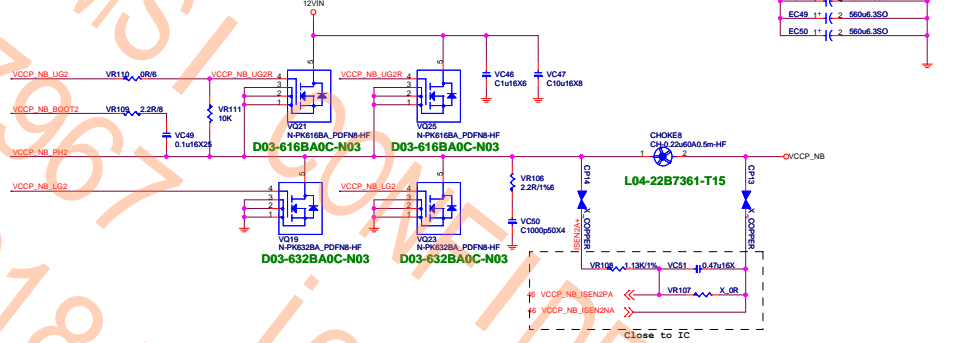
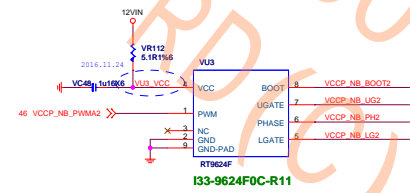
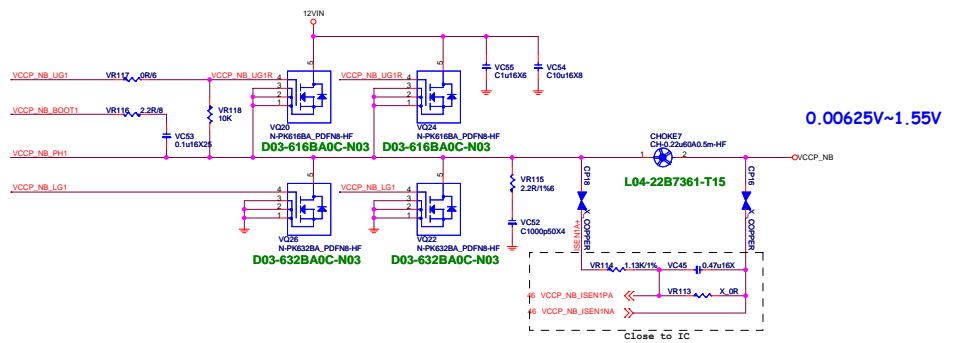
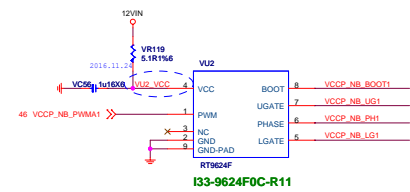


 MSI <i>Link to the Future</i>				MICRO-START INT'L CO.,LTD.			
Title CPU Power Phase 1-3							
Size Custom		Document Number MS-7A38				Rev 4.0	
Date: Thursday, May 24, 2018				Sheet 47 of 60			



MSI MICRO-START INTL CO., LTD.			
CPU Power Phase 4			
Size	Document Number	Rev	
Custom	MS-7A38	4.0	
Date	Thursday, May 24, 2018	Sheet	48 of 60

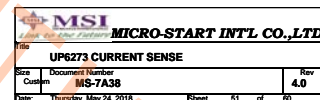
VCCP_NB 95W TDC:50A EDC:75A
VCCP_NB 65W TDC:50A EDC:75A

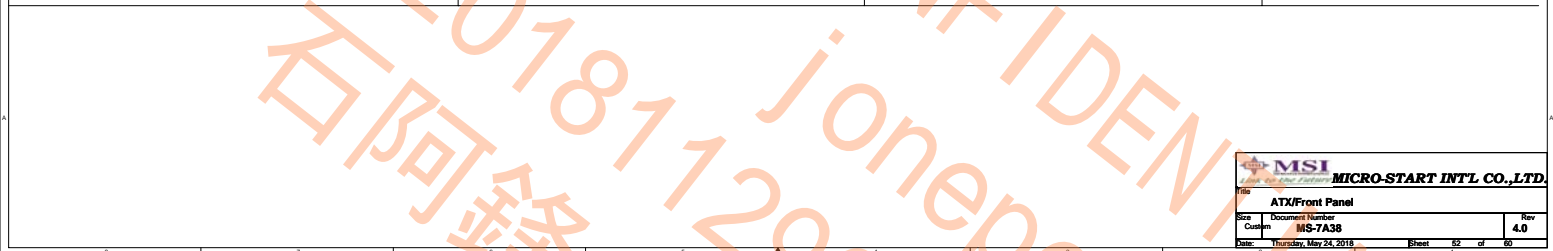


MSI MICRO-START INTL CO.,LTD.		
CPU Power NB Phase 1-2		
Size	Document Number	Rev
Customer	MS-7A38	4.0
Date	Thursday, May 24, 2018	Sheet 49 of 60

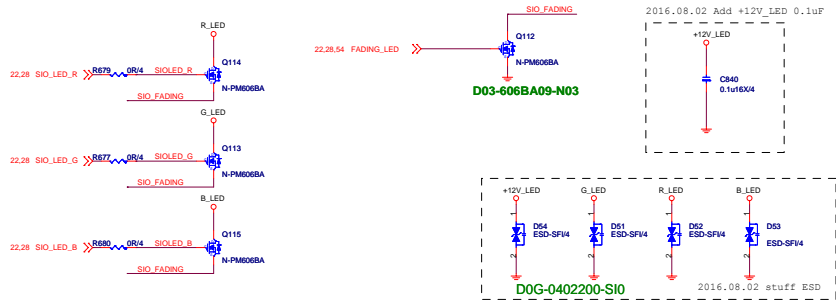
[illegible]

NB EDC MAX75A






JRGB1
+12V_LED
G_LED
R_LED
B_LED
RTX4M_BLACK-RH-6
N31-1040321-P05

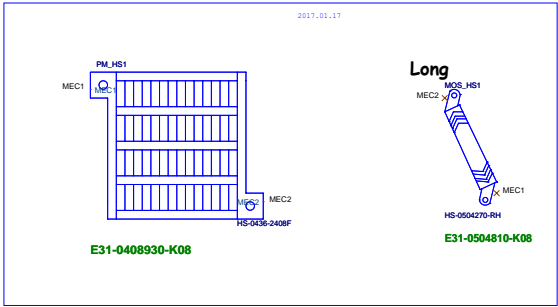


FCH LED Place under Heat-sink

LED
: D0C-040S600-E07
7 : D0C-040S300-E07

 MSI <i>Look Up the Future</i>				MICRO-START INT'L CO.,LTD.			
Title							
ALL LED							
Size		Document Number				Rev	
Custom		MS-7A38				4.0	
Date:		Thursday, May 24, 2018		Sheet		53	of 60

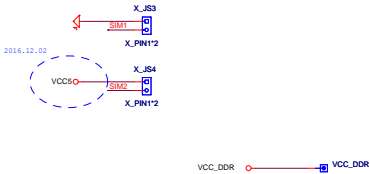
HEAT SINK



CPU Socket



Simulation



MANUAL PART

UEFH

G51-M1SPXXA-A09

G51-M1SPXXA-A09

BAT-XT

BAT-CR2032-RH

D06-0100101-P01

PCB1

7A38-4.0

P00-07A380A-045, 腳座, 腳

P00-07A380A-037, 腳座, 腳

REF1

OPT

X_CFN

MKT1

G51-M1SPK31-Q13

G51-M1SPN21-Q13

HDM_LA1

Label

HDM LABEL

Y01-RHDMI03-000

NAHMIC_LA1

Label

NAHMIC LABEL

XSPLIT_LA1

Label

XSPLIT LABEL

Y02-MU00100-NAH

SSE_LA1

Label

X_SSE LABEL

Y02-MA00401-XSP

Y02-MA00101-SSE

CPUSocket

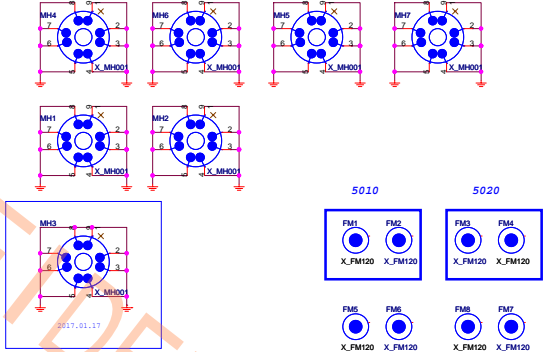
RETENTION MODULE

E95-0000022-C22

X_Y02-MU00170-CFO

Y02-MU00170-CFO

Optics Orientation Holes



OPT	Configure	BOM	Function
		601-7A38-A01	XXXX

MSI

Micro-Start Intl Co., Ltd.

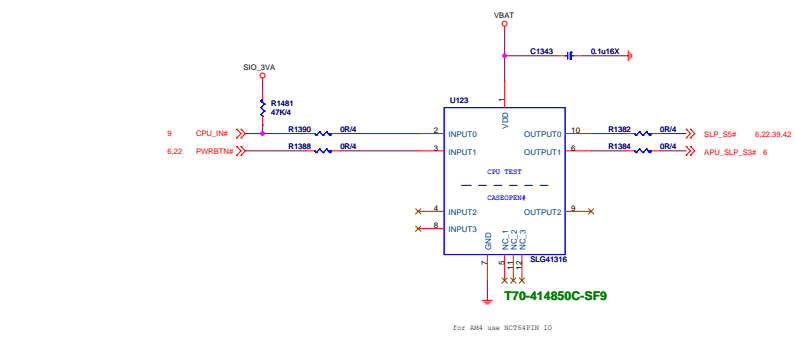
BOM Option

Size: Custom

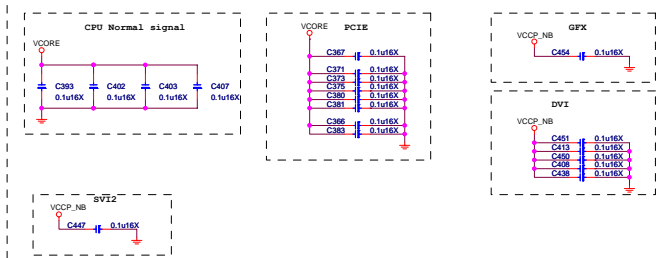
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Date: Thursday, May 24, 2018

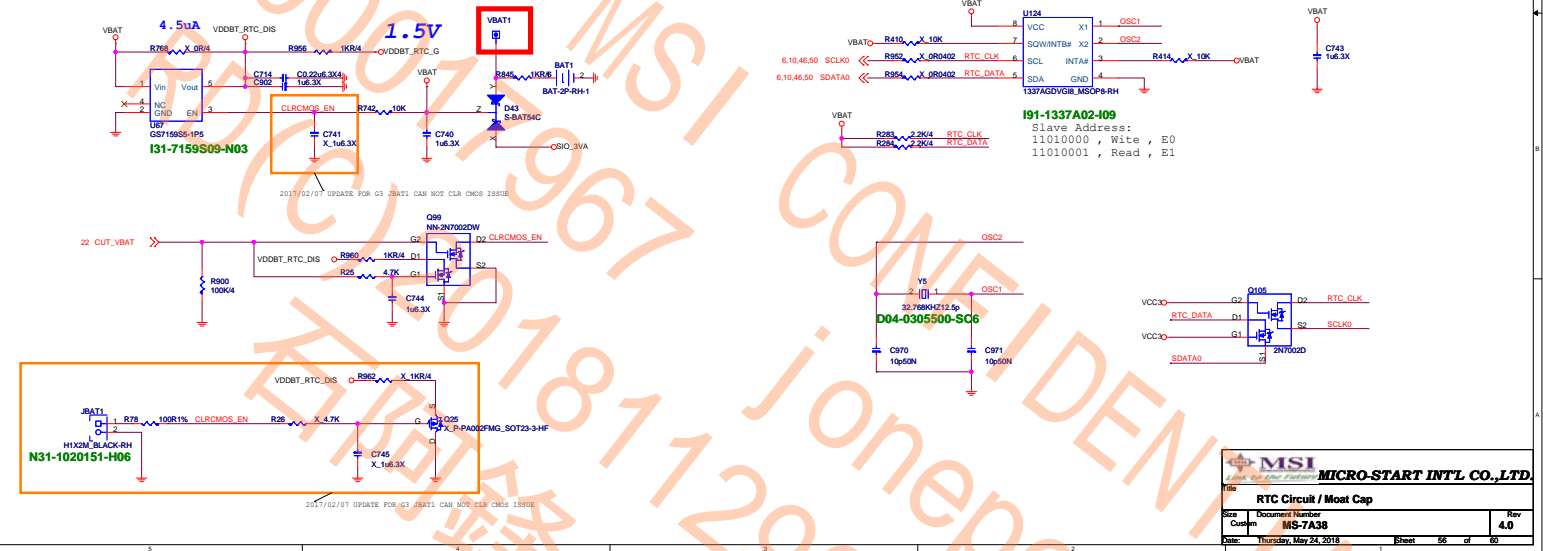
Sheet: 65 of 69



Moat Cap



RTC & Clear CMOS Circuit



MSI MICRO-START INT'L CO., LTD.		
File: RTC Circuit / Moat Cap		
Size: 1000000	Document Number: MS-7A38	Rev: 4.0
Customer: Thursday, May 24, 2018	Sheet: 66	of 69