

TITLE	Page
Cover Sheet	1
Block Diagram	2
CPU-CLK/Control/MISC/PEG/Memory	3-5
CPU-Power,CPU-GND	6-7
DDR4 U-DIMM	8-11
PCH-LPC/HDA/RTC/MISC/SPI , PCH-Clock/Audio	12-13
PCH-DMI/PCIE/USB/SATA	14
PCH-GPIO/RSVD , POWER/GND , Strap	15-18
SPI ROM-BIOS	19
HDMI Connector	20
X	21
X	22
PCIE SLOT-CPU(X16),(X1)	23-24
SATA CNT&M.2 Card	25-26
RUSB 3.1 G2 A+C	27
Rear USB3.0/2.0	28
Front USB 3.0/2.0	29
USB Power	30
LAN - I219	31
AUDIO ALC887	32
SIO-NCT6797D1/2	33-34
COM/LPT/PS2	35
CPU FAN Type K SYSTEM FAN1/2 Type K	36-37
EZ DEBUG LED CLR COMS/CUT VBAT	38-39
OV-NCT3933/SLG Sequence	40
ACPI-3VSB/3VDSW	41
CURRENT SENSE-RT9553B	42
VCORE+VGT-PWM-RT3607BC	43
VCORE-MOS-PHASE 1~4	44
VGT-MOS-PHASE 1~2	45
CPU PWR-VCCSA-OP+MOS	46
CPU PWR-VCCIO-OP+MOS	47
CPU PWR-VCCST/PLL	48
DDR PWR-RT8125E	49
DDR PWR VPP25-MPS2329/VTI	50
PCH POWER-RT8125E/TPM	51-52
ATX Connector/F_Panel	53
Manual Parts	54
Manual part	55-58

MS-7C67 mATX
Ver: 1.0

Coffeelake Platform

CPU: Coffeelake S

PCH: B365

SPI ROM : 128 MB

Memory: DDR4 * 4 (Dual Channel)

Power Solution:

CPU : RT3607

VCCSA : OP+MOS

VCCIO : OP+MOS

DDR : RT8125E

PCH : RT8125E

ACPI: GS7133

Onboard Chip:

LAN I219

Dual Codec: ALC887

SIO: NTC6797/6795D

Expansion Slots:

PCI Express (X16) Slot * 1

PCI Express (X1) Slot * 2

M.2 Slot (Socket 1) * 1

LED

EZ Debug LED

Rear I/O Connectors

PS2

USB2.0x2

HDMI

RJ45 + USB3.0

USB3.0 (TYPEA+C)

Audio Jack 3 Port

Internal Connectors

Dual SATA * 2

SINGLE SATA * 2

FUSB3.0 Header * 1

FUSB2.0 Header * 2

Front Audio Header * 1

Front Panel Header * 2

SPI Header * 1

TPM Header * 1

CPU Fan * 1

System Fan * 2

Internal Pin Header

JRGB1

JSPI1

JCI1

JBAT1

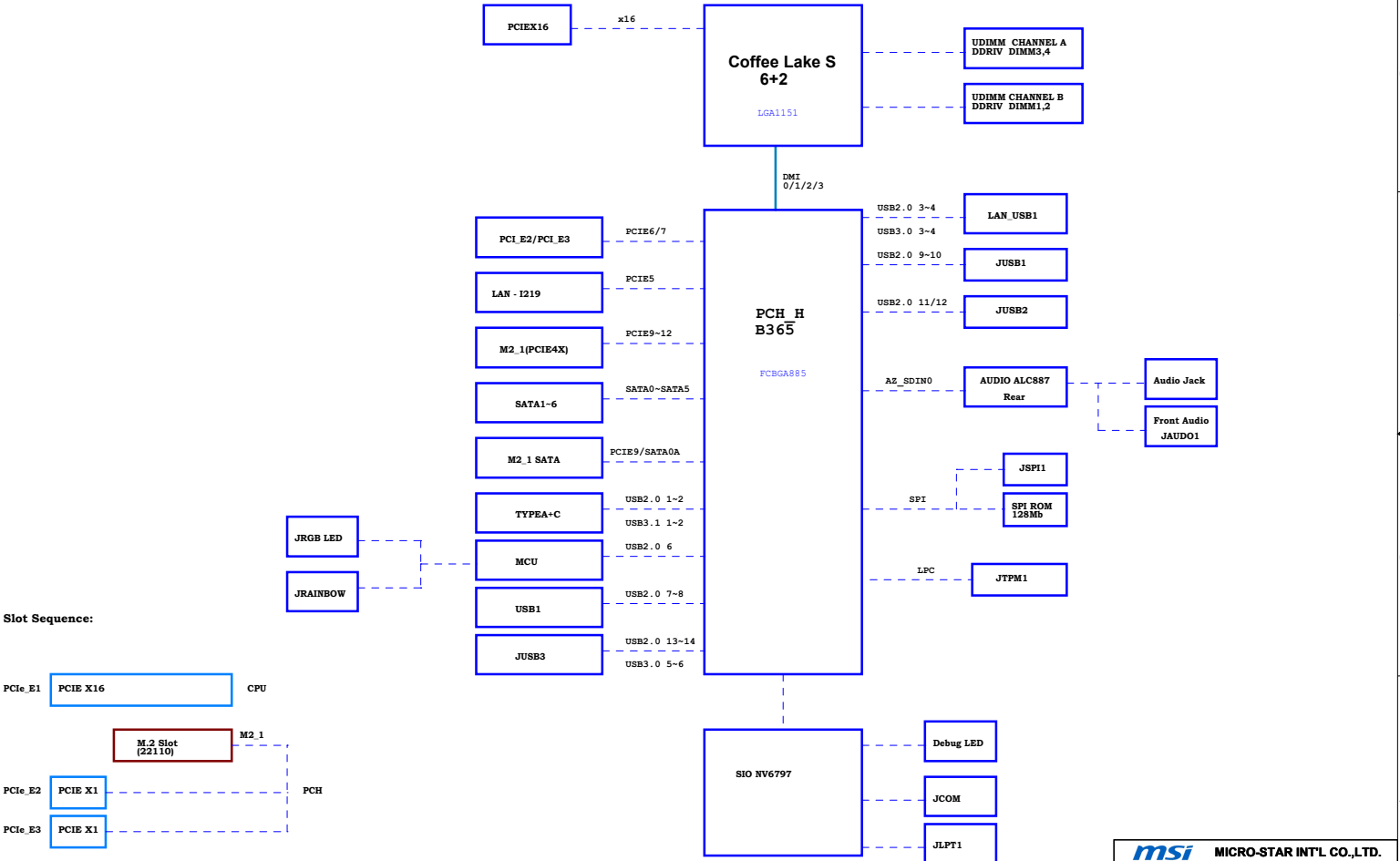
JCOM1

JTPM1

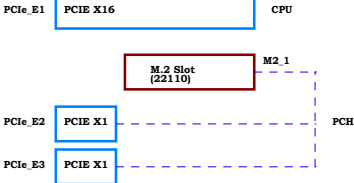
JT1

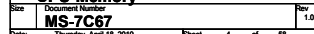
JLPT1

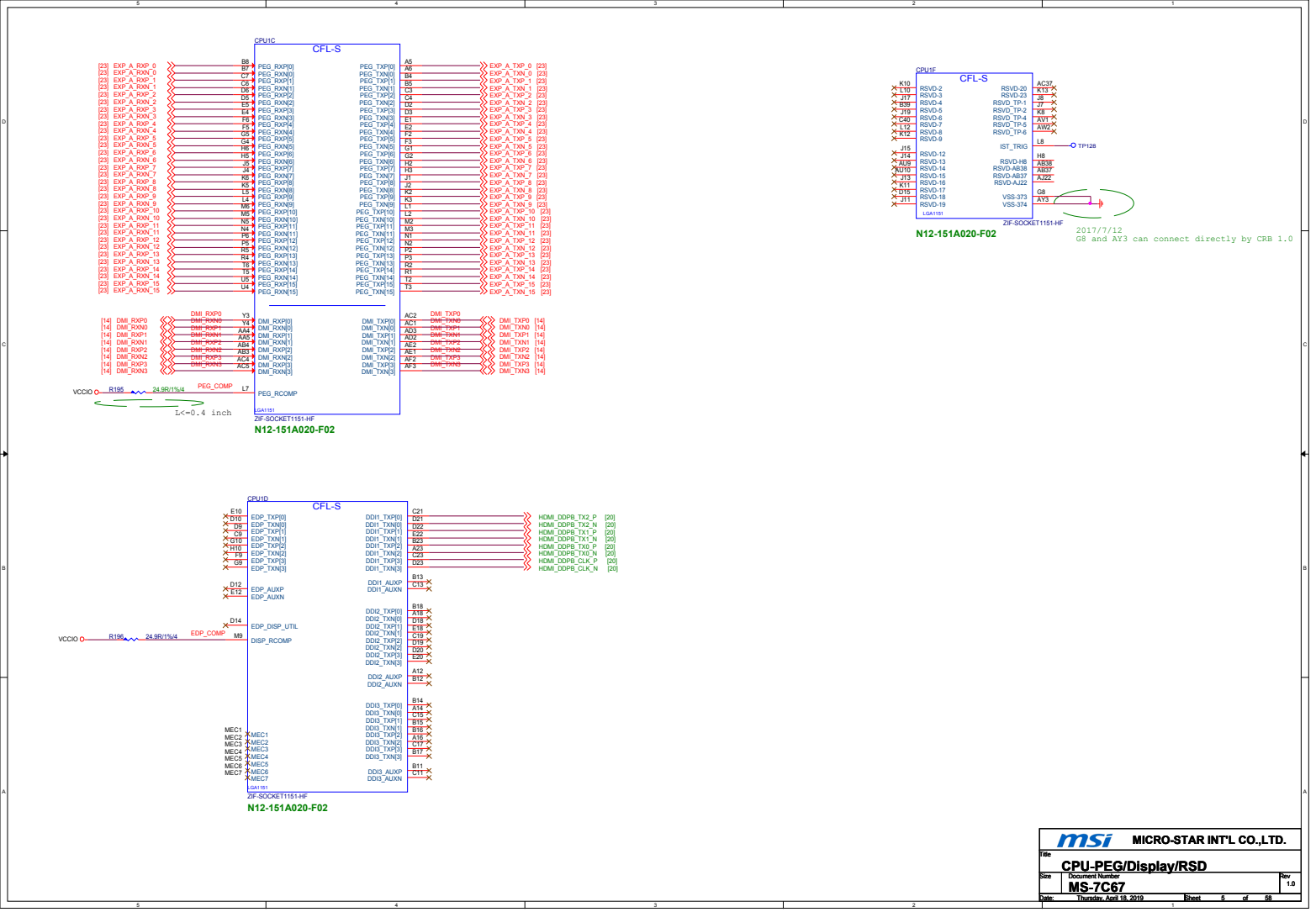
MS-7C67 Block Diagram

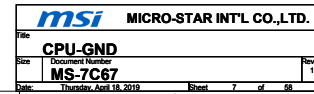


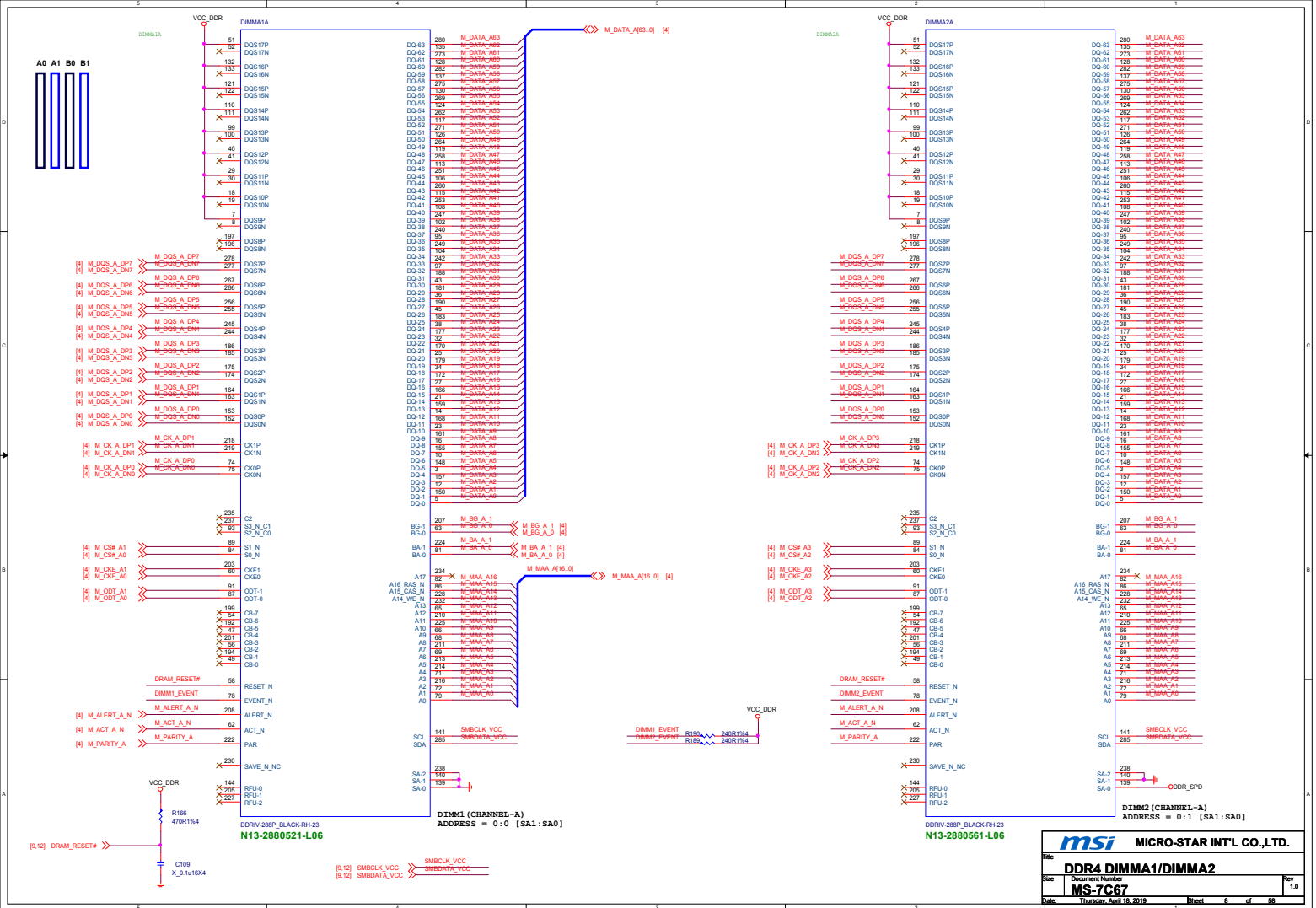
Slot Sequence:

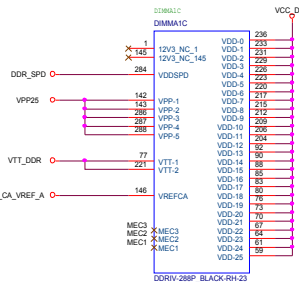




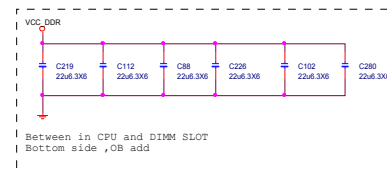
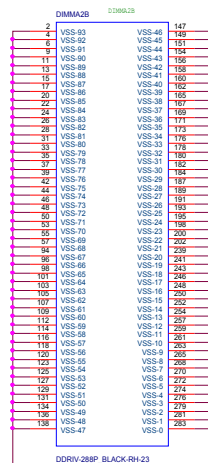
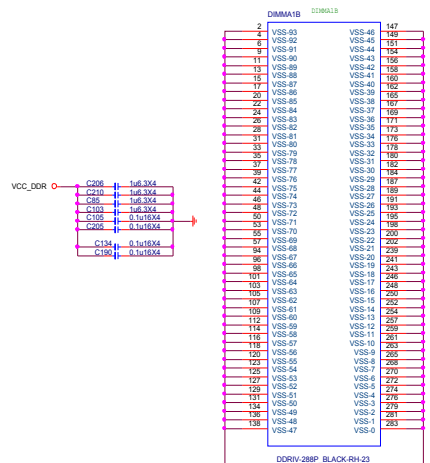
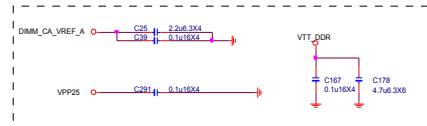
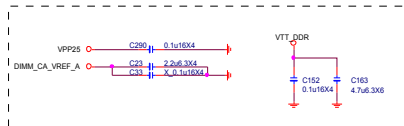
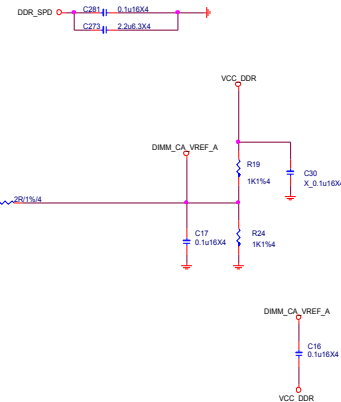
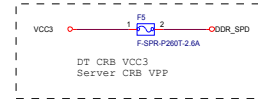
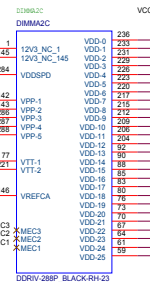
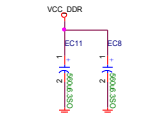


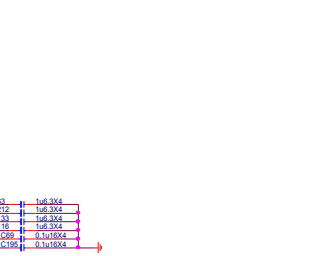
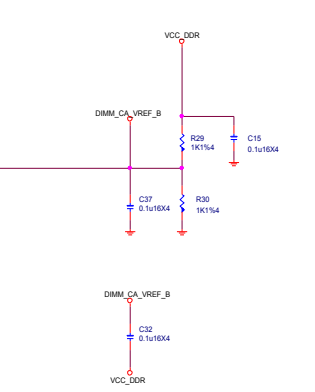
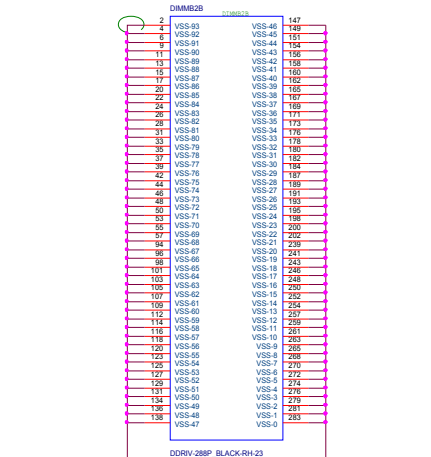
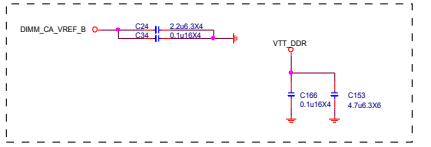
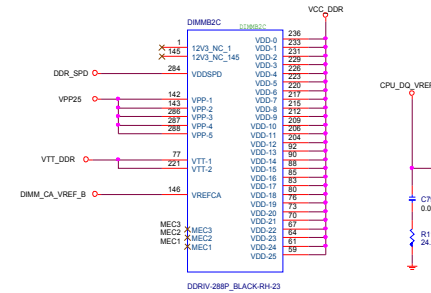
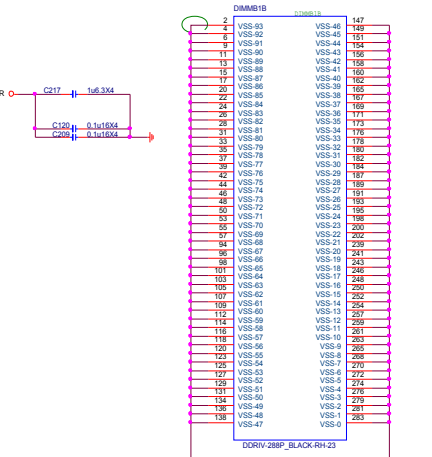
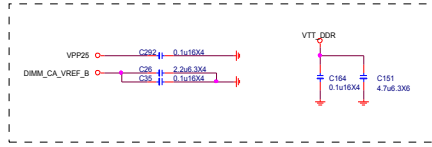
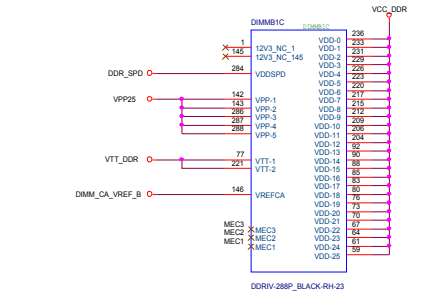


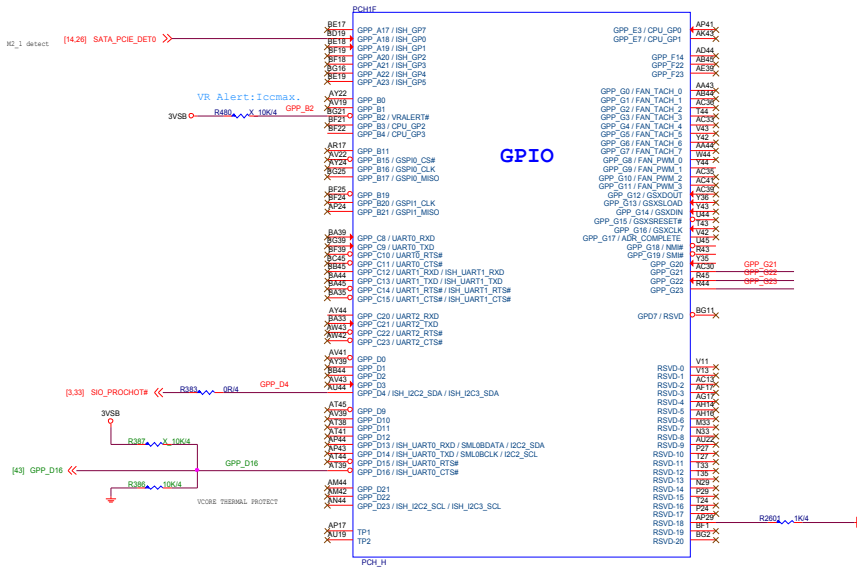




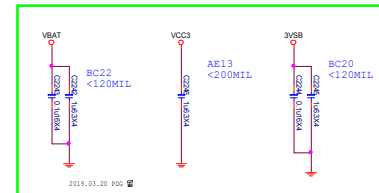
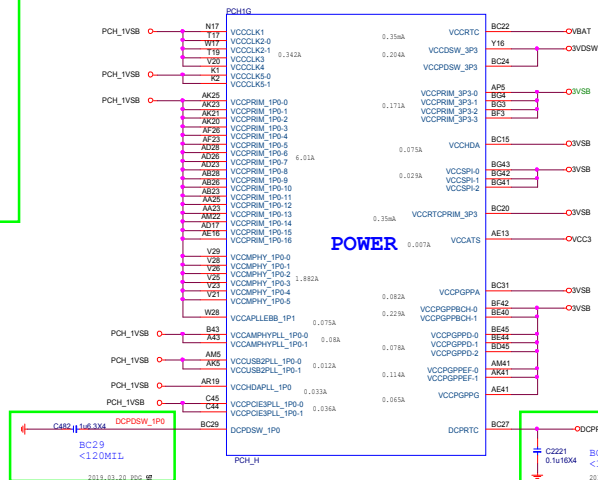
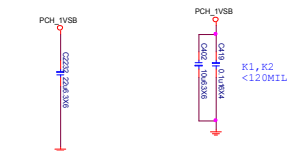
DIMM SLOT PN BY SPEC

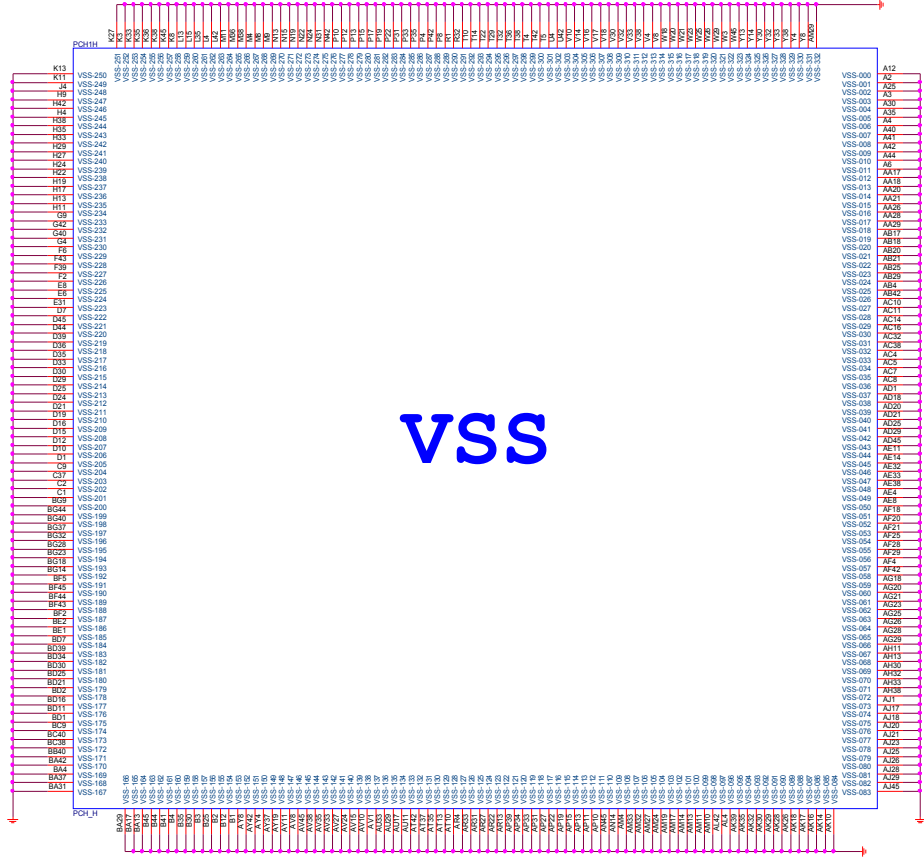




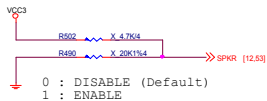


3VSB 0.846A



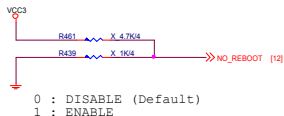


TOP Swap



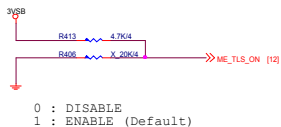
Internal pull-down 20K is disabled after PLTRST#

No Reboot



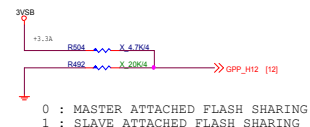
Internal pull-down 20K is disabled after PLTRST#

TLS confidentiality



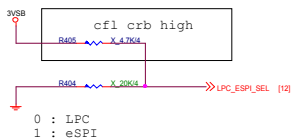
Internal pull-down is disabled after RSMRST# de-assert.

ESPI FLASH SHARING MODE



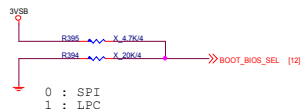
Internal pull-down is disabled after RSMRST# de-assert.

LPC eSPI Mode



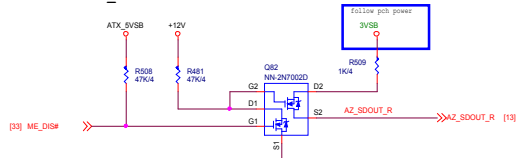
Internal pull-down is disabled after RSMRST# de-assert.

Boot BIOS



Internal pull-down is disabled after PCH_FWROK is high.

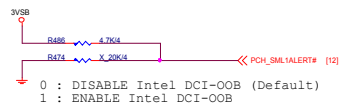
HDA_SDO



0 : Enable security measures defined in the Flash Descriptor.
(Default)
1 : DISABLE:Flash Descritior Security(Override).

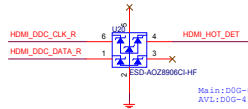
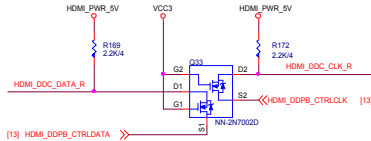
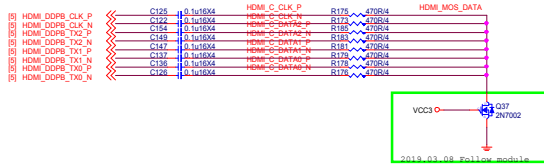
Internal pull-down is disabled after PCH_FWROK is high.

DCI ENABLE

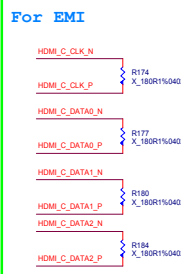
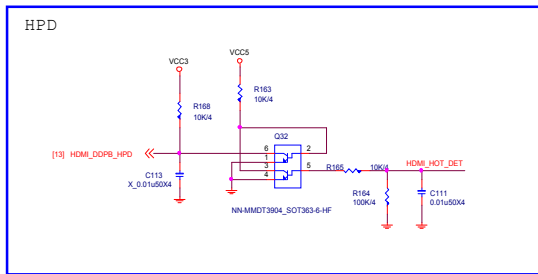
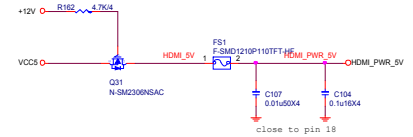
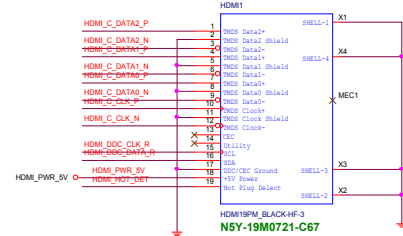
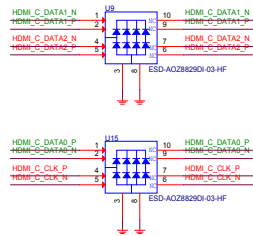


Internal pull-down is disabled after RSMRST# de-assert.

HDMI, DVI : 1920x1200 at 60 Hz (16:10 WUXGA)




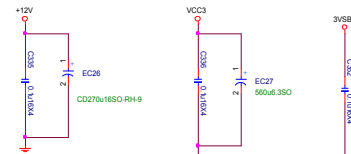
Main: DOG-05A0529-A68
AV1: DOG-45B0510-I14



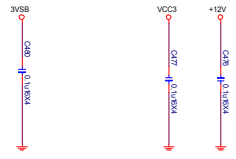
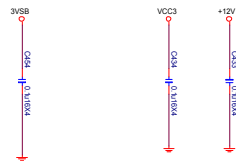
DVI

VGA

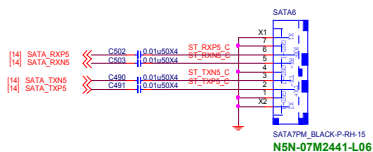
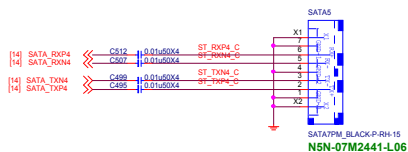
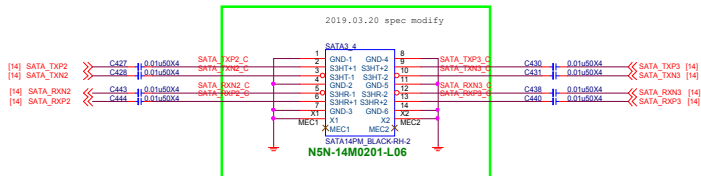
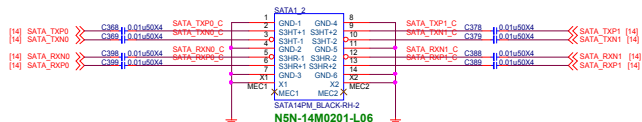
		MICRO-STAR INT'L CO.,LTD.	
File			
VGA - RTD2166			
Size Document Number			
MS-7C67			
Date Thursday, April 16, 2015			
Sheet 22 of 58			
Rev 1.0			



PCH PCIE X1 Slot



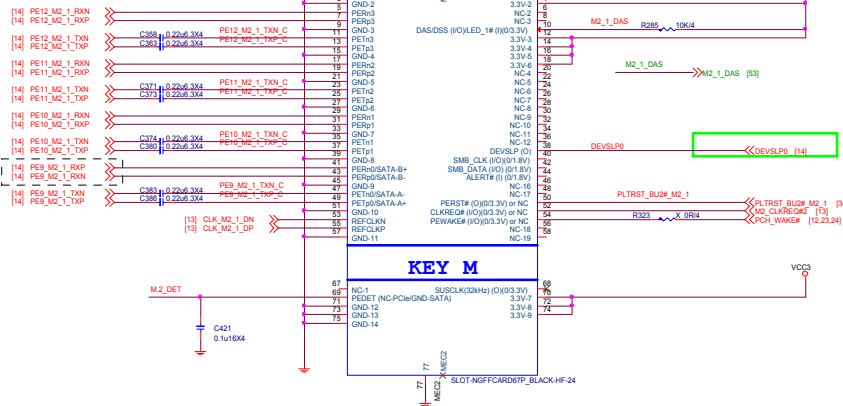
SATA 6G PORT 0.1

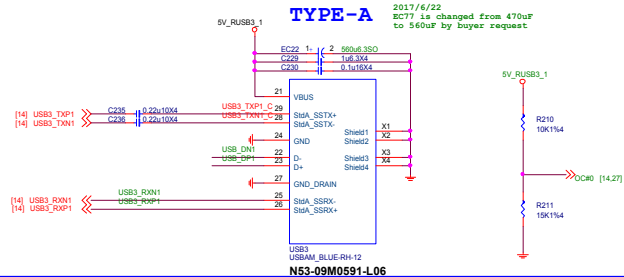
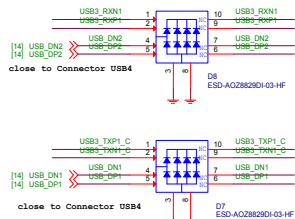


M.2 SLOT

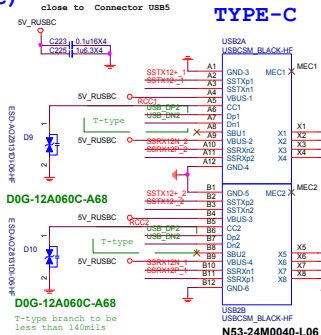
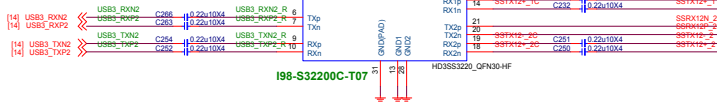
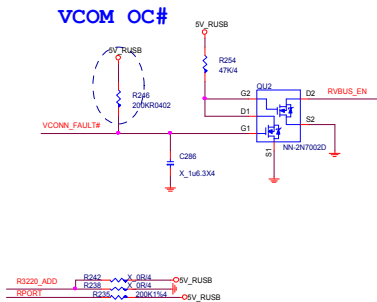
默认M.2 SATA為主
純SATA要正接，PCIE/SATA要反接

PCIE/SATA



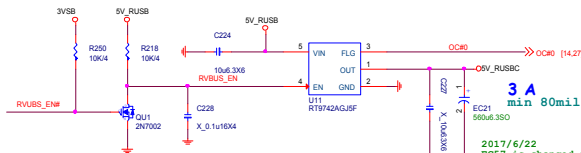
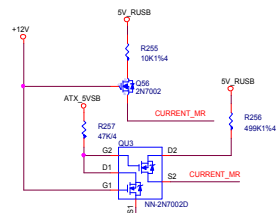


USB Type-C MUX with Configuration Channel (CC)

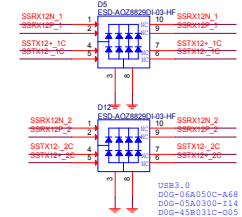


Current Mode

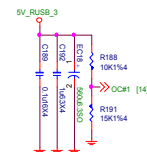
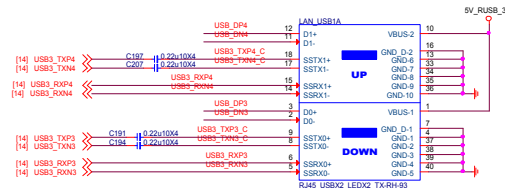
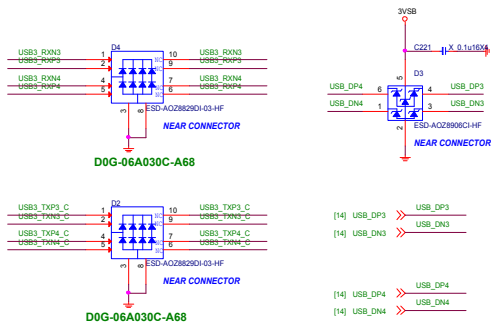
L = Default for 900mA
M = Mid (500K) for 1.5A
H = High (10K) for 3A



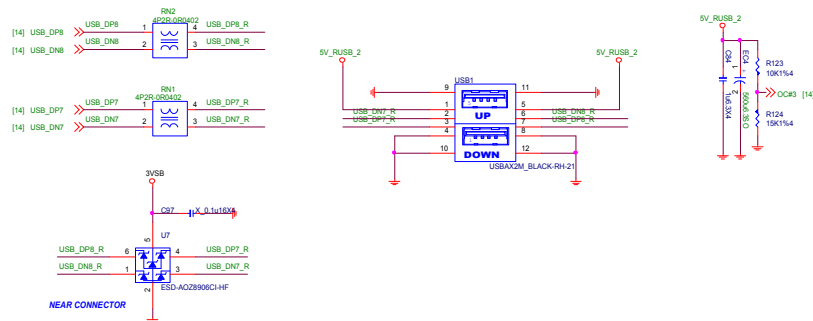
ESD Protection NEAR CONNECTOR



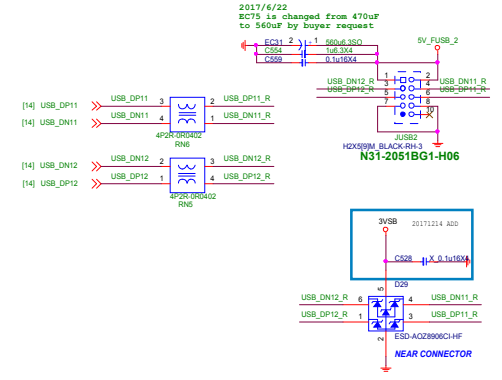
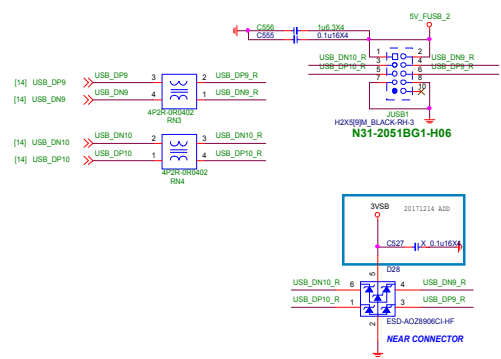
LAN_USB1



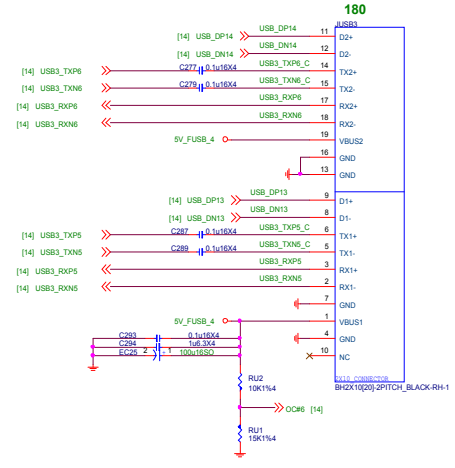
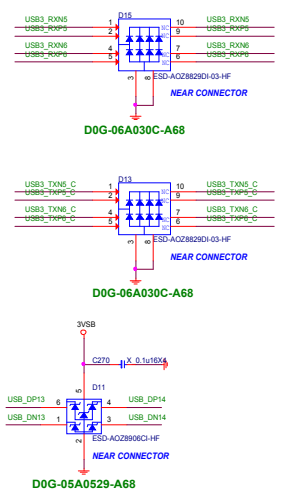
USB1



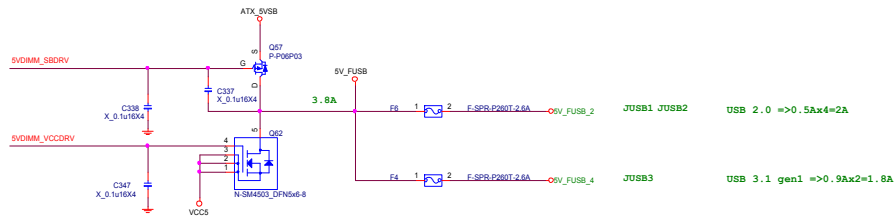
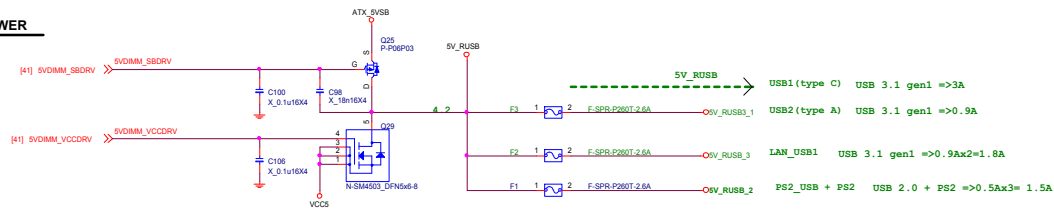
FRONT USB2.0



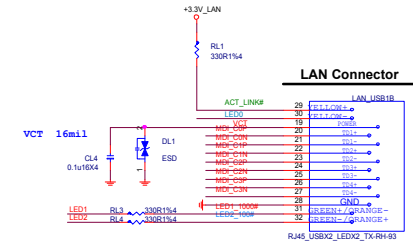
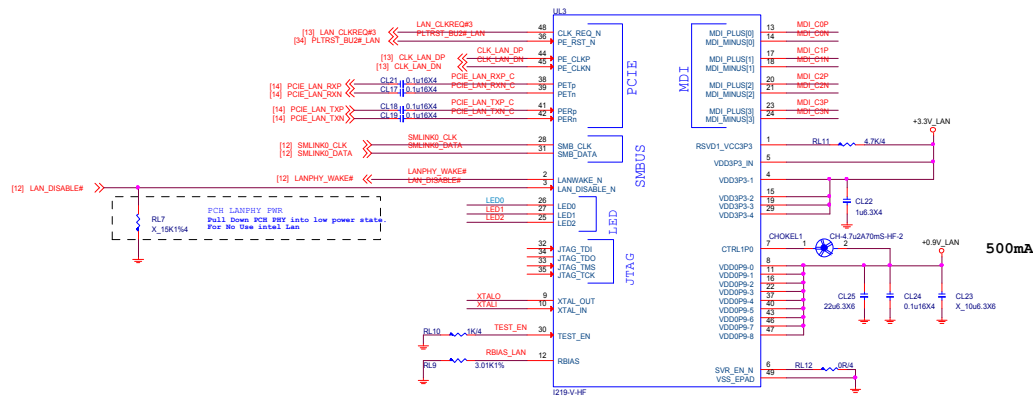
FRONT USB3.0



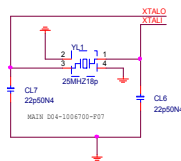
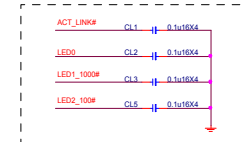
FRONT USB PORT POWER



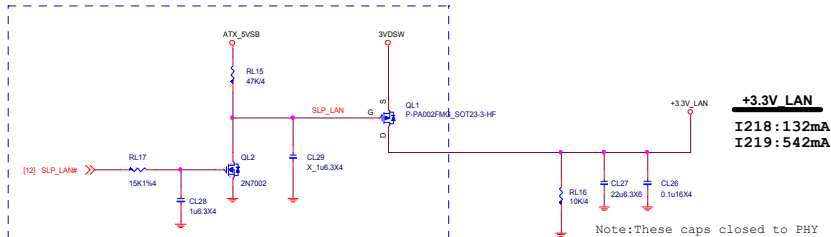
Intel Lan- i219



For EMI

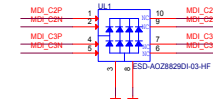
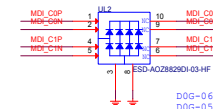


support WOL from Deep Sx:
Power source from 3VA (DSW power) & make sure MAX current is enough to support i218/i219.



Note: These caps closed to PHY

ESD Protect
UL2&UL3 close to connector



Type B: ALC892/887

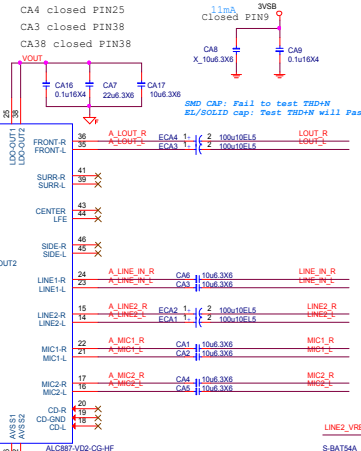
(13) AZ_SDOUT
(13) AZ_SDOH
(13) AZ_SYNC
(13) AZ_RSTA
(13) AZ_RSTB
(13) AZ_RSTC
(13) AZ_RSTD
(13) AZ_RSTF
(13) AZ_RSTG
(13) AZ_RSTH
(13) AZ_RSTJ
(13) AZ_RSTK
(13) AZ_RSTL
(13) AZ_RSTM
(13) AZ_RSTN
(13) AZ_RSTO
(13) AZ_RSTP
(13) AZ_RSTQ
(13) AZ_RSTR
(13) AZ_RSTS
(13) AZ_RSTT
(13) AZ_RSTU
(13) AZ_RSTV
(13) AZ_RSTW
(13) AZ_RSTX
(13) AZ_RSTY
(13) AZ_RSTZ

CA11
X_10u50N4
CA12
X_0.1u10K4
CA13
X_10u53K6
CA14
X_10u53K6
CA15
0.1u10K4
CA16
X_10u53K6
CA17
X_10u53K6
CA18
X_10u53K6
CA19
0.1u10K4
CA20
22u43K6
CA21
X_10u53K6
CA22
X_10u53K6
CA23
X_10u53K6
CA24
X_10u53K6
CA25
X_10u53K6
CA26
X_10u53K6
CA27
X_10u53K6
CA28
X_10u53K6
CA29
X_10u53K6
CA30
X_10u53K6
CA31
X_10u53K6
CA32
X_10u53K6
CA33
X_10u53K6
CA34
X_10u53K6
CA35
X_10u53K6
CA36
X_10u53K6
CA37
X_10u53K6
CA38
X_10u53K6
CA39
X_10u53K6
CA40
X_10u53K6
CA41
X_10u53K6
CA42
X_10u53K6
CA43
X_10u53K6
CA44
X_10u53K6
CA45
X_10u53K6
CA46
X_10u53K6
CA47
X_10u53K6
CA48
X_10u53K6
CA49
X_10u53K6
CA50
X_10u53K6
CA51
X_10u53K6
CA52
X_10u53K6
CA53
X_10u53K6
CA54
X_10u53K6
CA55
X_10u53K6
CA56
X_10u53K6
CA57
X_10u53K6
CA58
X_10u53K6
CA59
X_10u53K6
CA60
X_10u53K6
CA61
X_10u53K6
CA62
X_10u53K6
CA63
X_10u53K6
CA64
X_10u53K6
CA65
X_10u53K6
CA66
X_10u53K6
CA67
X_10u53K6
CA68
X_10u53K6
CA69
X_10u53K6
CA70
X_10u53K6
CA71
X_10u53K6
CA72
X_10u53K6
CA73
X_10u53K6
CA74
X_10u53K6
CA75
X_10u53K6
CA76
X_10u53K6
CA77
X_10u53K6
CA78
X_10u53K6
CA79
X_10u53K6
CA80
X_10u53K6
CA81
X_10u53K6
CA82
X_10u53K6
CA83
X_10u53K6
CA84
X_10u53K6
CA85
X_10u53K6
CA86
X_10u53K6
CA87
X_10u53K6
CA88
X_10u53K6
CA89
X_10u53K6
CA90
X_10u53K6
CA91
X_10u53K6
CA92
X_10u53K6
CA93
X_10u53K6
CA94
X_10u53K6
CA95
X_10u53K6
CA96
X_10u53K6
CA97
X_10u53K6
CA98
X_10u53K6
CA99
X_10u53K6
CA100
X_10u53K6

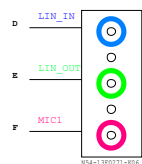
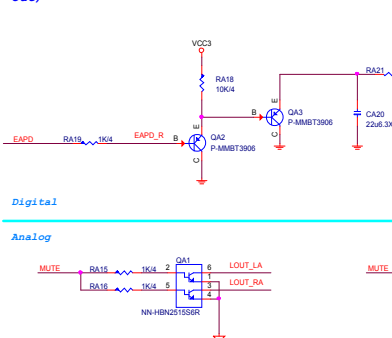
EMI
CA1
X_0.1u10K4
CA2
X_0.1u10K4
CA3
X_0.1u10K4
CA4
X_0.1u10K4
CA5
X_0.1u10K4
CA6
X_0.1u10K4
CA7
X_0.1u10K4
CA8
X_0.1u10K4
CA9
X_0.1u10K4
CA10
X_0.1u10K4
CA11
X_0.1u10K4
CA12
X_0.1u10K4
CA13
X_0.1u10K4
CA14
X_0.1u10K4
CA15
X_0.1u10K4
CA16
X_0.1u10K4
CA17
X_0.1u10K4
CA18
X_0.1u10K4
CA19
X_0.1u10K4
CA20
X_0.1u10K4
CA21
X_0.1u10K4
CA22
X_0.1u10K4
CA23
X_0.1u10K4
CA24
X_0.1u10K4
CA25
X_0.1u10K4
CA26
X_0.1u10K4
CA27
X_0.1u10K4
CA28
X_0.1u10K4
CA29
X_0.1u10K4
CA30
X_0.1u10K4
CA31
X_0.1u10K4
CA32
X_0.1u10K4
CA33
X_0.1u10K4
CA34
X_0.1u10K4
CA35
X_0.1u10K4
CA36
X_0.1u10K4
CA37
X_0.1u10K4
CA38
X_0.1u10K4
CA39
X_0.1u10K4
CA40
X_0.1u10K4
CA41
X_0.1u10K4
CA42
X_0.1u10K4
CA43
X_0.1u10K4
CA44
X_0.1u10K4
CA45
X_0.1u10K4
CA46
X_0.1u10K4
CA47
X_0.1u10K4
CA48
X_0.1u10K4
CA49
X_0.1u10K4
CA50
X_0.1u10K4
CA51
X_0.1u10K4
CA52
X_0.1u10K4
CA53
X_0.1u10K4
CA54
X_0.1u10K4
CA55
X_0.1u10K4
CA56
X_0.1u10K4
CA57
X_0.1u10K4
CA58
X_0.1u10K4
CA59
X_0.1u10K4
CA60
X_0.1u10K4
CA61
X_0.1u10K4
CA62
X_0.1u10K4
CA63
X_0.1u10K4
CA64
X_0.1u10K4
CA65
X_0.1u10K4
CA66
X_0.1u10K4
CA67
X_0.1u10K4
CA68
X_0.1u10K4
CA69
X_0.1u10K4
CA70
X_0.1u10K4
CA71
X_0.1u10K4
CA72
X_0.1u10K4
CA73
X_0.1u10K4
CA74
X_0.1u10K4
CA75
X_0.1u10K4
CA76
X_0.1u10K4
CA77
X_0.1u10K4
CA78
X_0.1u10K4
CA79
X_0.1u10K4
CA80
X_0.1u10K4
CA81
X_0.1u10K4
CA82
X_0.1u10K4
CA83
X_0.1u10K4
CA84
X_0.1u10K4
CA85
X_0.1u10K4
CA86
X_0.1u10K4
CA87
X_0.1u10K4
CA88
X_0.1u10K4
CA89
X_0.1u10K4
CA90
X_0.1u10K4
CA91
X_0.1u10K4
CA92
X_0.1u10K4
CA93
X_0.1u10K4
CA94
X_0.1u10K4
CA95
X_0.1u10K4
CA96
X_0.1u10K4
CA97
X_0.1u10K4
CA98
X_0.1u10K4
CA99
X_0.1u10K4
CA100
X_0.1u10K4

2019.03.08 Follow module
5VDDAL
LA2
OR8
LA1
X_0.1u10K4
DA1
X_0.1u10K4
CA21
X_0.1u10K4
CA22
X_0.1u10K4
CA23
X_0.1u10K4
CA24
X_0.1u10K4
CA25
X_0.1u10K4
CA26
X_0.1u10K4
CA27
X_0.1u10K4
CA28
X_0.1u10K4
CA29
X_0.1u10K4
CA30
X_0.1u10K4
CA31
X_0.1u10K4
CA32
X_0.1u10K4
CA33
X_0.1u10K4
CA34
X_0.1u10K4
CA35
X_0.1u10K4
CA36
X_0.1u10K4
CA37
X_0.1u10K4
CA38
X_0.1u10K4
CA39
X_0.1u10K4
CA40
X_0.1u10K4
CA41
X_0.1u10K4
CA42
X_0.1u10K4
CA43
X_0.1u10K4
CA44
X_0.1u10K4
CA45
X_0.1u10K4
CA46
X_0.1u10K4
CA47
X_0.1u10K4
CA48
X_0.1u10K4
CA49
X_0.1u10K4
CA50
X_0.1u10K4
CA51
X_0.1u10K4
CA52
X_0.1u10K4
CA53
X_0.1u10K4
CA54
X_0.1u10K4
CA55
X_0.1u10K4
CA56
X_0.1u10K4
CA57
X_0.1u10K4
CA58
X_0.1u10K4
CA59
X_0.1u10K4
CA60
X_0.1u10K4
CA61
X_0.1u10K4
CA62
X_0.1u10K4
CA63
X_0.1u10K4
CA64
X_0.1u10K4
CA65
X_0.1u10K4
CA66
X_0.1u10K4
CA67
X_0.1u10K4
CA68
X_0.1u10K4
CA69
X_0.1u10K4
CA70
X_0.1u10K4
CA71
X_0.1u10K4
CA72
X_0.1u10K4
CA73
X_0.1u10K4
CA74
X_0.1u10K4
CA75
X_0.1u10K4
CA76
X_0.1u10K4
CA77
X_0.1u10K4
CA78
X_0.1u10K4
CA79
X_0.1u10K4
CA80
X_0.1u10K4
CA81
X_0.1u10K4
CA82
X_0.1u10K4
CA83
X_0.1u10K4
CA84
X_0.1u10K4
CA85
X_0.1u10K4
CA86
X_0.1u10K4
CA87
X_0.1u10K4
CA88
X_0.1u10K4
CA89
X_0.1u10K4
CA90
X_0.1u10K4
CA91
X_0.1u10K4
CA92
X_0.1u10K4
CA93
X_0.1u10K4
CA94
X_0.1u10K4
CA95
X_0.1u10K4
CA96
X_0.1u10K4
CA97
X_0.1u10K4
CA98
X_0.1u10K4
CA99
X_0.1u10K4
CA100
X_0.1u10K4

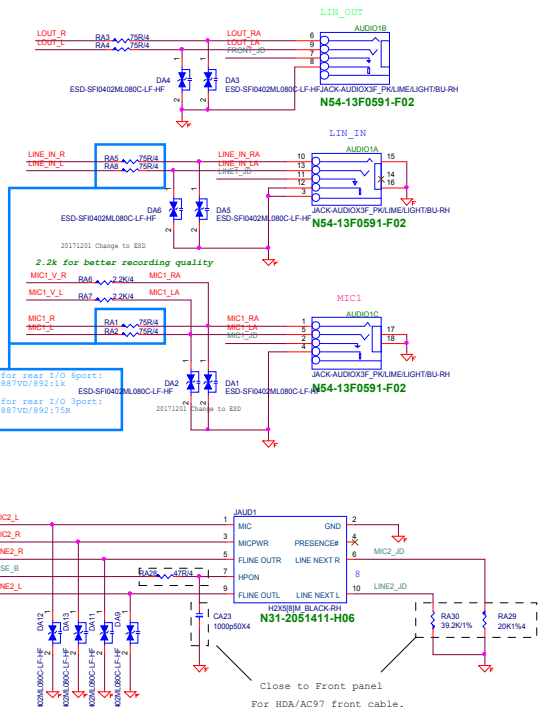
SENSE_A
RA15
X_10K15K4
RA16
X_10K15K4
RA17
X_10K15K4
RA18
X_10K15K4
RA19
X_10K15K4
RA20
X_10K15K4
RA21
X_10K15K4
RA22
X_10K15K4
RA23
X_10K15K4
RA24
X_10K15K4
RA25
X_10K15K4
RA26
X_10K15K4
RA27
X_10K15K4
RA28
X_10K15K4
RA29
X_10K15K4
RA30
X_10K15K4
RA31
X_10K15K4
RA32
X_10K15K4
RA33
X_10K15K4
RA34
X_10K15K4
RA35
X_10K15K4
RA36
X_10K15K4
RA37
X_10K15K4
RA38
X_10K15K4
RA39
X_10K15K4
RA40
X_10K15K4
RA41
X_10K15K4
RA42
X_10K15K4
RA43
X_10K15K4
RA44
X_10K15K4
RA45
X_10K15K4
RA46
X_10K15K4
RA47
X_10K15K4
RA48
X_10K15K4
RA49
X_10K15K4
RA50
X_10K15K4
RA51
X_10K15K4
RA52
X_10K15K4
RA53
X_10K15K4
RA54
X_10K15K4
RA55
X_10K15K4
RA56
X_10K15K4
RA57
X_10K15K4
RA58
X_10K15K4
RA59
X_10K15K4
RA60
X_10K15K4
RA61
X_10K15K4
RA62
X_10K15K4
RA63
X_10K15K4
RA64
X_10K15K4
RA65
X_10K15K4
RA66
X_10K15K4
RA67
X_10K15K4
RA68
X_10K15K4
RA69
X_10K15K4
RA70
X_10K15K4
RA71
X_10K15K4
RA72
X_10K15K4
RA73
X_10K15K4
RA74
X_10K15K4
RA75
X_10K15K4
RA76
X_10K15K4
RA77
X_10K15K4
RA78
X_10K15K4
RA79
X_10K15K4
RA80
X_10K15K4
RA81
X_10K15K4
RA82
X_10K15K4
RA83
X_10K15K4
RA84
X_10K15K4
RA85
X_10K15K4
RA86
X_10K15K4
RA87
X_10K15K4
RA88
X_10K15K4
RA89
X_10K15K4
RA90
X_10K15K4
RA91
X_10K15K4
RA92
X_10K15K4
RA93
X_10K15K4
RA94
X_10K15K4
RA95
X_10K15K4
RA96
X_10K15K4
RA97
X_10K15K4
RA98
X_10K15K4
RA99
X_10K15K4
RA100
X_10K15K4



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



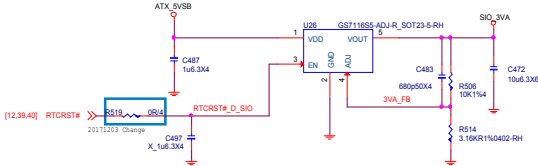
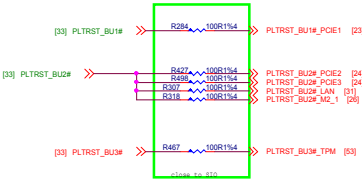
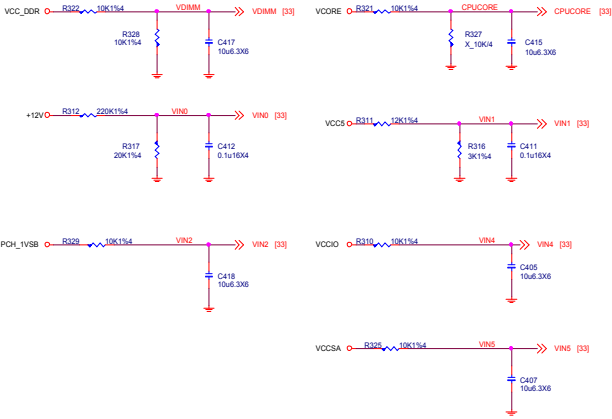
150311 6
port
change to
3 port

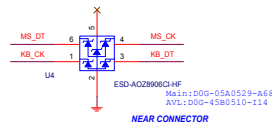
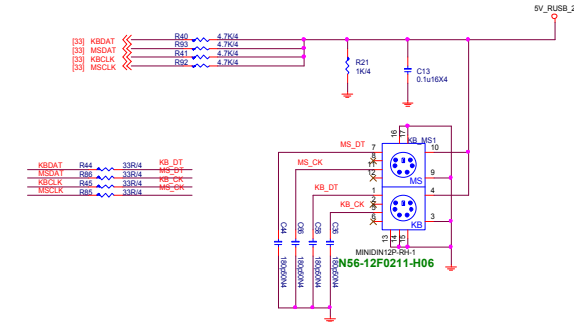
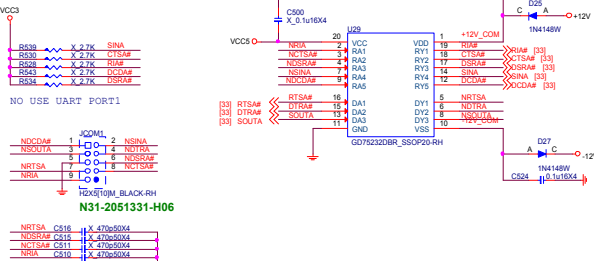


View this board for cost down
D0G-2950500-570
D0G-3010510-105
Close to jack

HW Monitor - Voltage

SIO MM Voltage voer 2V will not detect

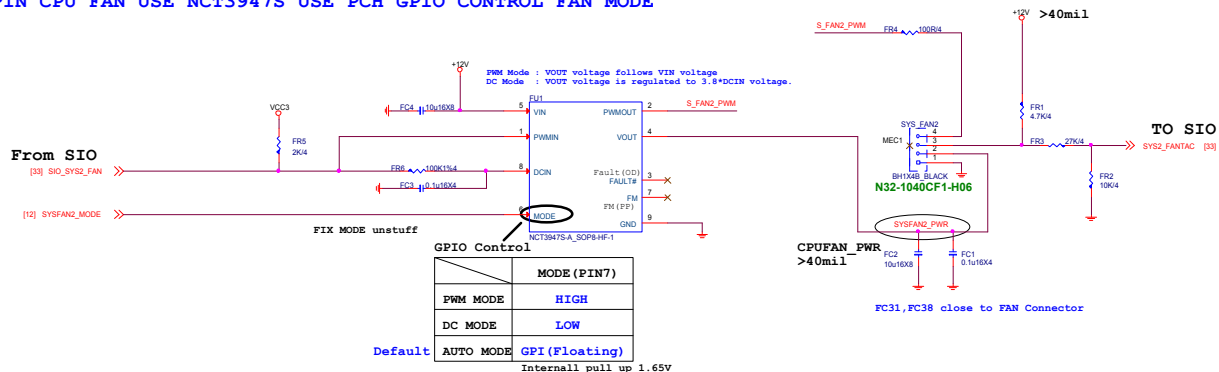




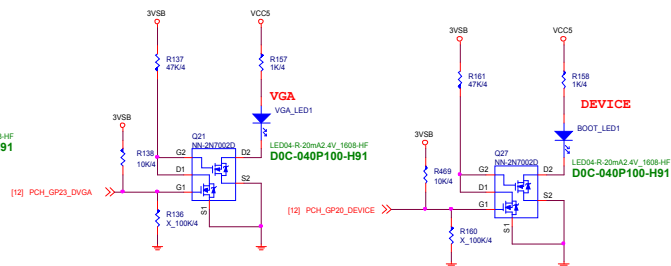
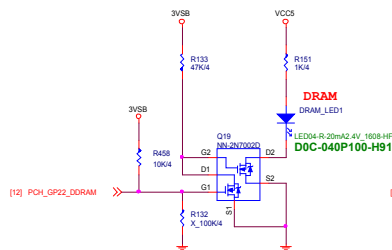
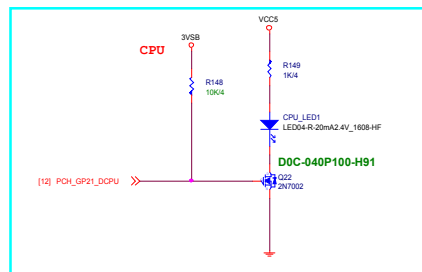
Default	AUTO MODE	GPI (Floating)
	Internall pull up 1.65V	

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

MICRO-STAR INT'L CO.,LTD.	
No.	SYSTEM FAN1/2 Type K
Size	<div style="border: 1px solid black; display: inline-block; padding: 2px;">Document Number</div> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-left: 5px;">MS-7C67</div> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-left: 5px;">Rev 1.0</div>
Date	<div style="border: 1px solid black; display: inline-block; padding: 2px;">Thursday, April 18, 2019</div> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-left: 5px;">Sheet 37 of 58</div>



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



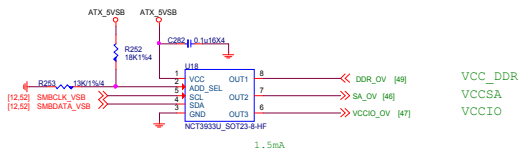
GPIO LED	PCH_GP20	PCH_GP21	PCH_GP22	PCH_GP23
亮	NATIVE PULL HIGH	GPO PULL HIGH	GPO PULL HIGH	NATIVE PULL HIGH
滅	NATIVE LOW	GPO LOW (default LOW)	GPO LOW (default LOW)	GPO LOW (default LOW)

1. 首先進行CPU check CPU LED 亮, check PASS後則CPU LED滅掉。
2. 接著依序進行Memory / memory LED亮check PASS後則memory LED滅掉。
3. VGA的check/VGA LED亮, check PASS後則VGA LED滅掉。
4. 因此最後正常順利開機後, 三個LED燈都是滅掉的。
(系統重啟或其他原因造成系統重開機, 則LED仍按上述行為動作)

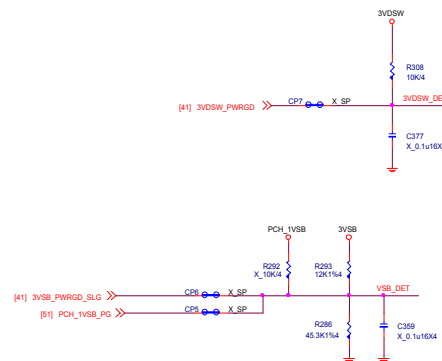
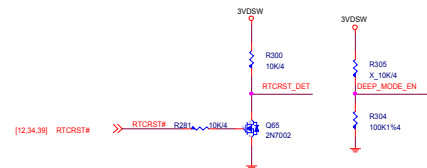
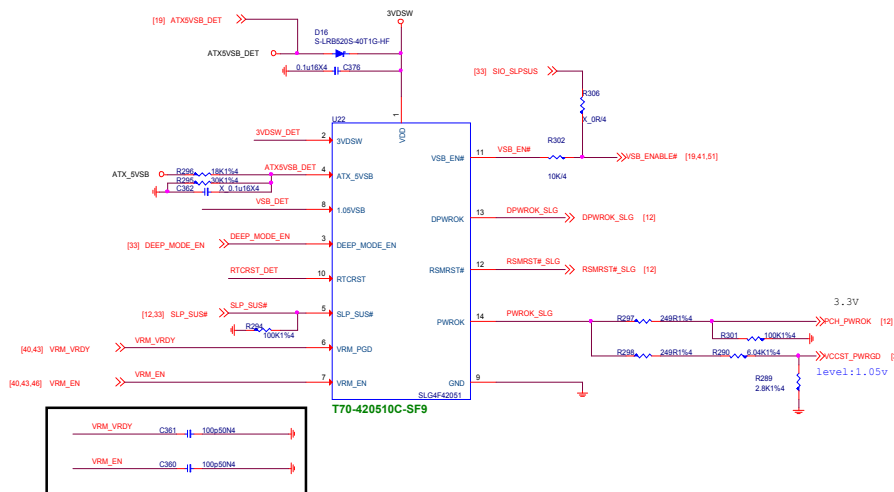
VBAT



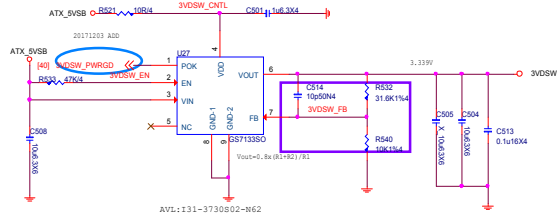
0x26:RH=18K,RL=13K



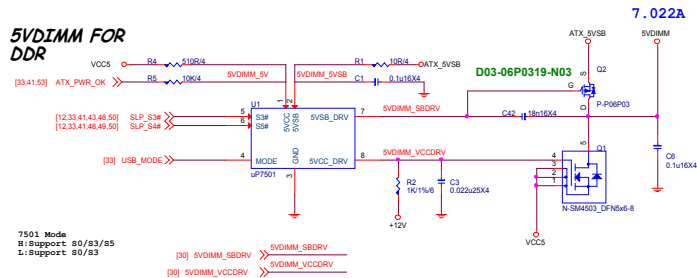
The schematic shows the PWRON_SLG pin configuration. The pin is connected to a 3.3V supply through a 30k resistor (R364) and a 10nF capacitor (C365). The signal path includes a buffer (CP4) and a logic inverter (U36) to drive the PWRON_SLG pin.



3VDSW

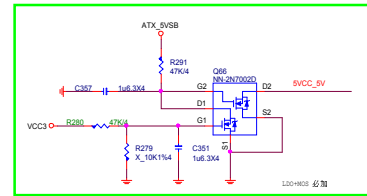
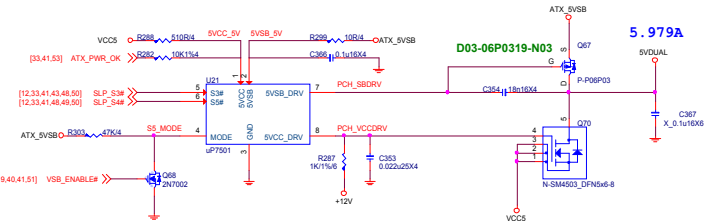


5VDIMM FOR DDR

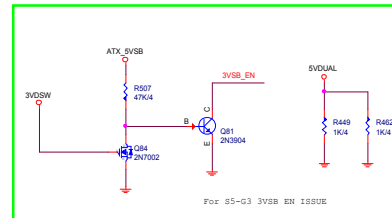
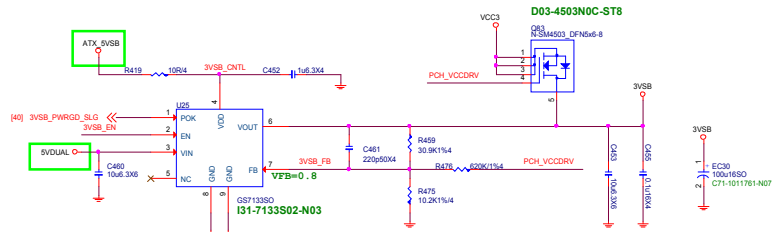
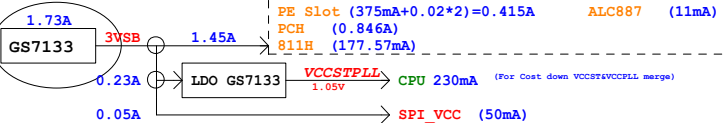


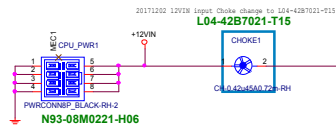
5VDUAL

5VDUAL is power source of 1P0SB



3VSB cost down@3.3V





CORE:

$$D = V_{out}/V_{in}$$

$$= 1.52/12$$

$$= 0.126667$$

$$N = 4$$

$$I_{rms} = I_{out} / N * \sqrt{N * D * (1 - N * D)}$$

$$= 138/4 * \sqrt{4 * 0.126 * (1 - 4 * 0.126)}$$

$$= 17.249A$$

GT:

$$D = V_{out}/V_{in}$$

$$= 1.52/12$$

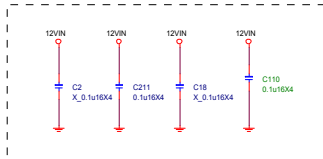
$$= 0.126667$$

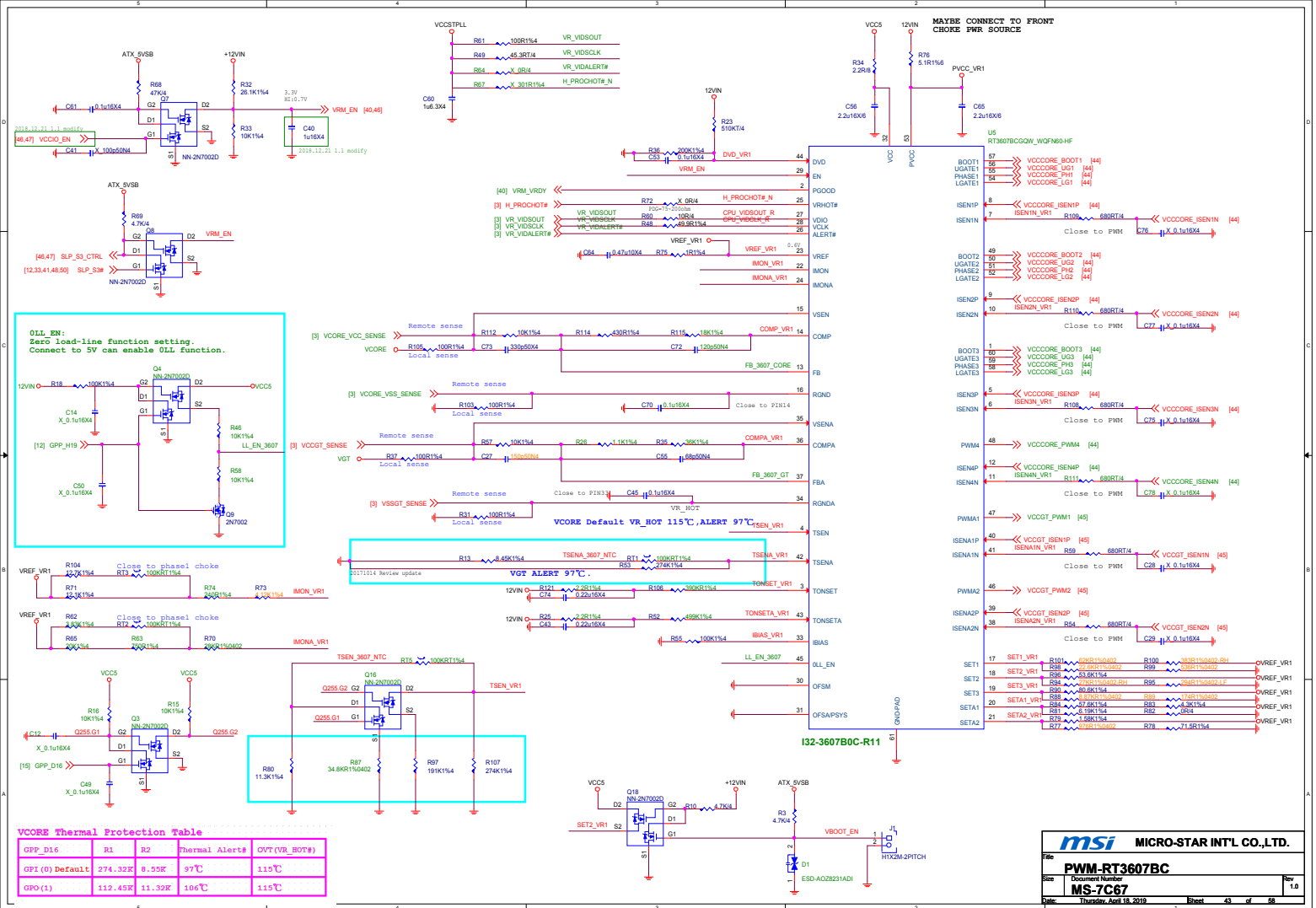
$$N = 2$$

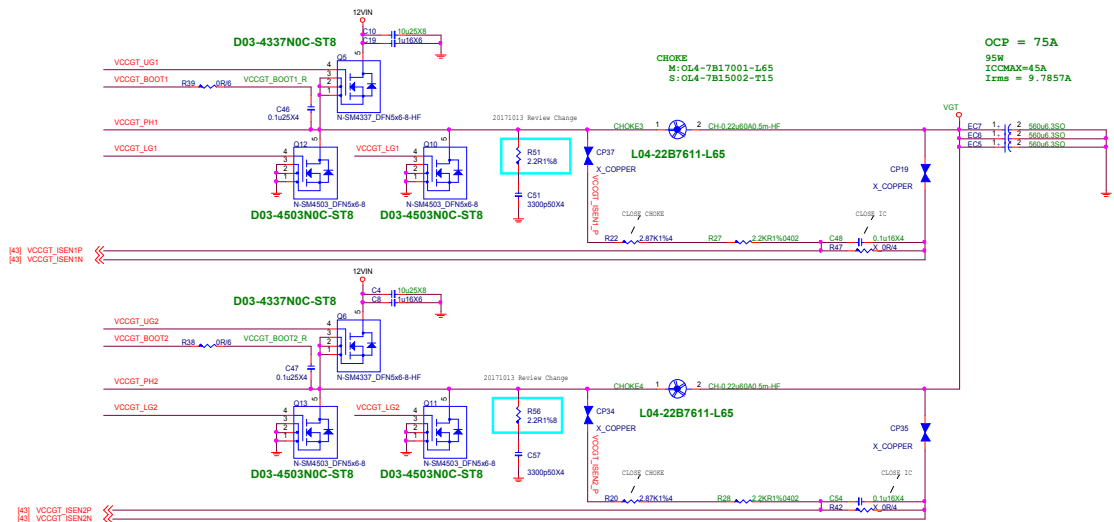
$$I_{rms} = I_{out} / N * \sqrt{N * D * (1 - N * D)}$$

$$= 45/2 * \sqrt{2 * 0.126 * (1 - 2 * 0.126)}$$

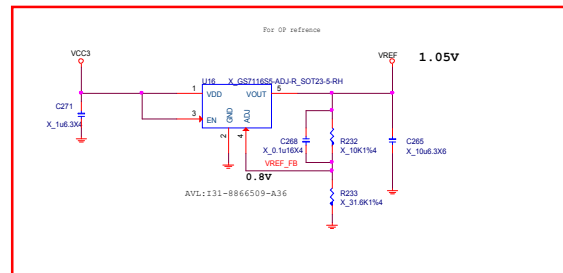
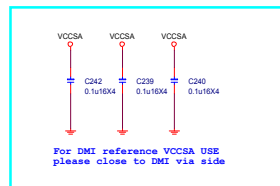
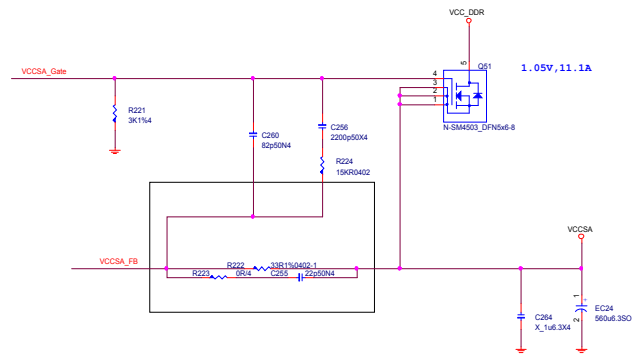
$$= 9.7857A$$





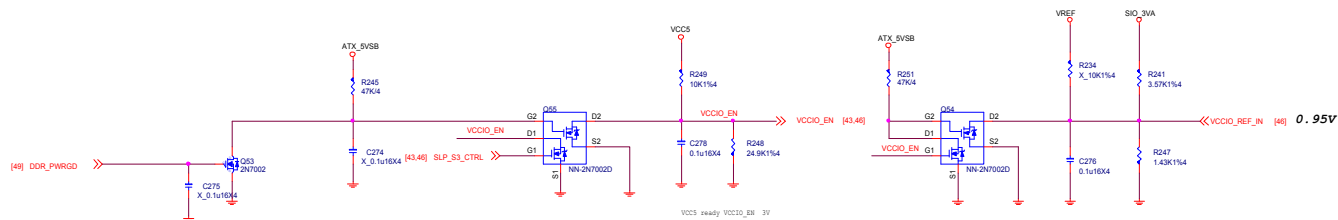
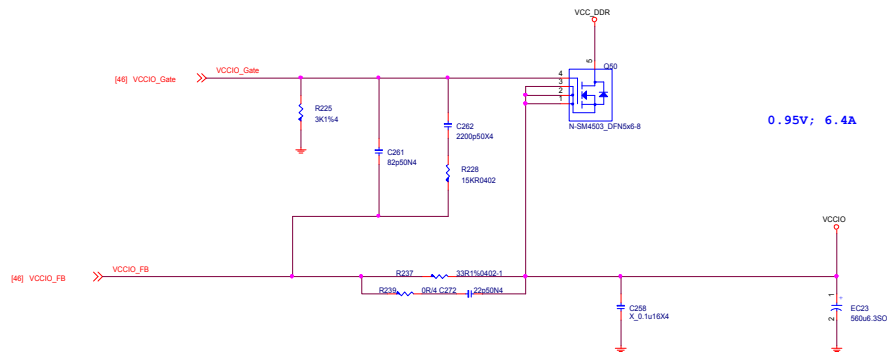


A



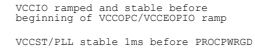
VCCIO

0.95V; 6.4A



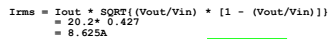
VCCIO_REF_IN cp3 X_COPPER VCCIO_OV [46]
from NCT3933

1.05V; 230mA
For Cost down VCCST&VCCPLL merge



IO, SA POWER

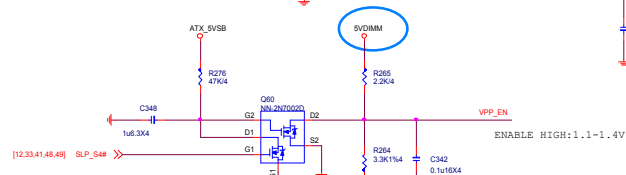
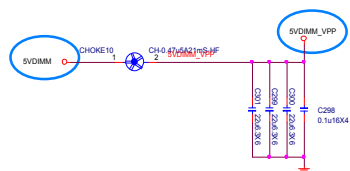
MAX: 5.1mohm TYPE: 3.9mohm



若帶入CAP ESR計算, $0.2432\mu\text{H} < L < 1.2897\mu\text{H}$

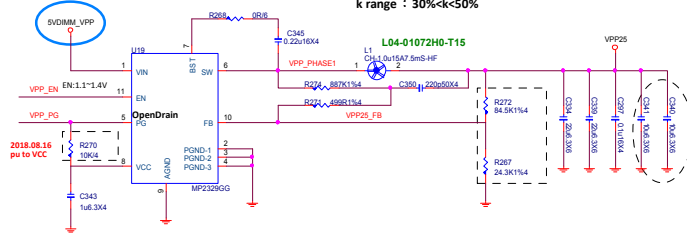


4DIMM :2.24A FOR DDR VPP2.5V



To make sure VPP EN after 5VDIMM stable

VPP25 Power 2.5V; 2.24A

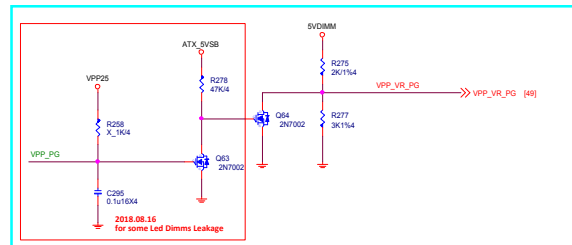
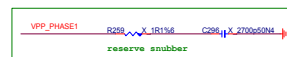


$$V_{out} = V_{ref} + \frac{(R1 \cdot R4 \cdot V_{ref})}{(R2 \cdot (R1 + R4))} = 0.6 \cdot \frac{(84.5k \cdot 887k \cdot 0.6)}{(24.3k \cdot (84.5k + 887k))} = 2.505V$$

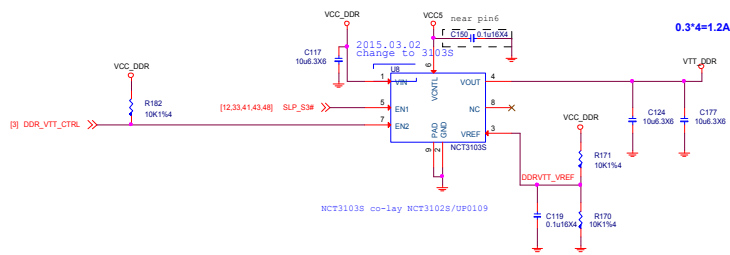
$$L = \frac{((V_{in} - V_{out}) / (F_{sw} \cdot k \cdot I_{out_max})) \cdot (V_{out} / V_{in})}{k} = 0.9259\mu H \quad (K = 30\%)$$

$$L = \frac{((V_{in} - V_{out}) / (F_{sw} \cdot k \cdot I_{out_max})) \cdot (V_{out} / V_{in})}{k} = 0.5556\mu H \quad (K = 50\%)$$

k range : 30%<k<50%



DDR VTT Power



PCH 1VSB

1.0V; 11.626A

Current limit= $6.65K \cdot 10uA / 3.9mohm = 17.05A$
 Current limit= $6.65K \cdot 10uA / 5.1mohm = 13.04A$
 CHOKE Isat=18A
 From CHOKE I-L Curve, when I=25A, L=0.6uH.

Rdson (Low) 4.5V
 D03-632BA0C-N03 :
 MAX: 4.6mohm TYPE: 3mohm

$$I_{in} = I_{OCP} \cdot V_{out} / 0.8 / V_{in} = 17.05A \cdot 1.1V / 0.8 / 5V = 4.2625A$$

2018.10.23 Change Choke

$$I_{rms} = I_{out} \cdot \sqrt{(V_{out}/V_{in}) \cdot (1 - (V_{out}/V_{in}))}$$

$$= 10.664 \cdot 0.4$$

$$= 4.2656A < 5000mA$$

MAX: .11.626A

$$V_{out} = V_{ref} \cdot (1 + (R1/R2))$$

$$= 0.8 \cdot (1 + (1R/3.92K))$$

$$= 1.004V$$

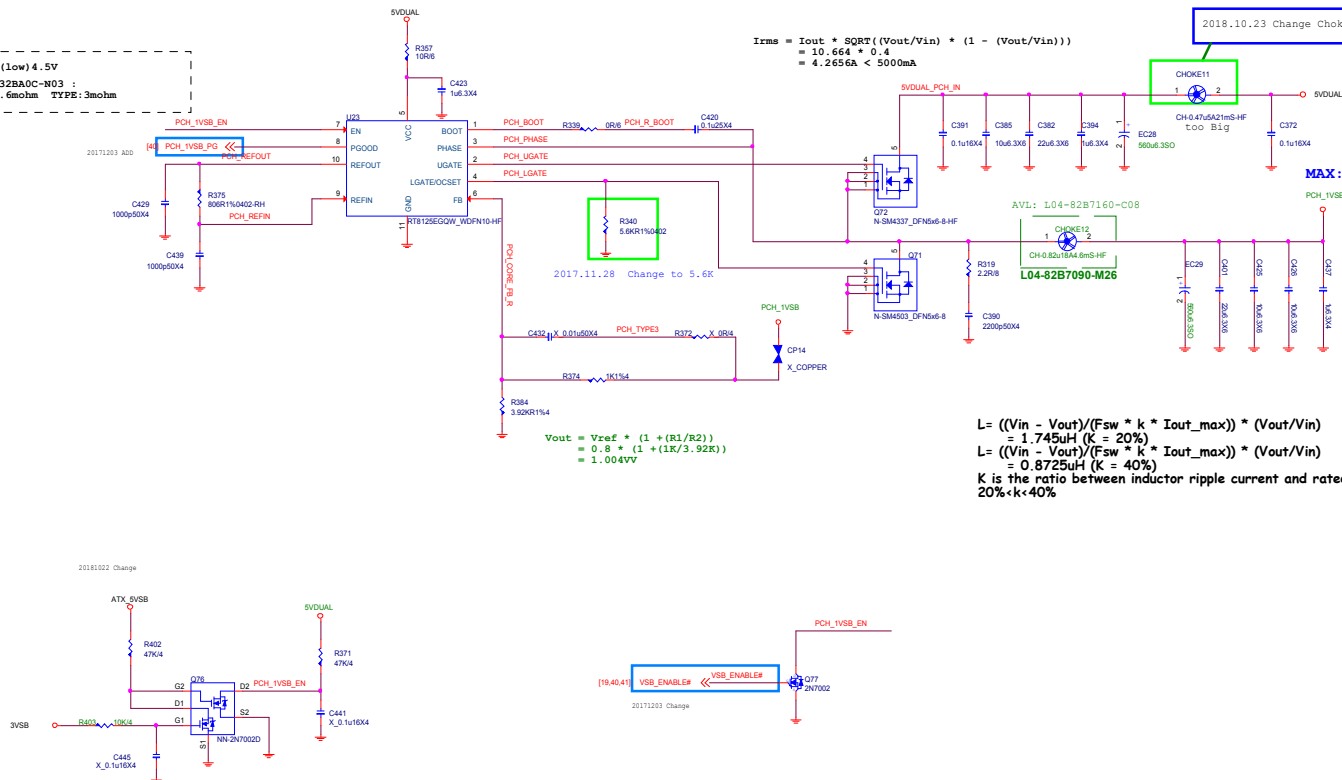
$$L = ((V_{in} - V_{out}) / (F_{sw} \cdot k \cdot I_{out_max})) \cdot (V_{out}/V_{in})$$

$$= 1.745uH (K = 20\%)$$

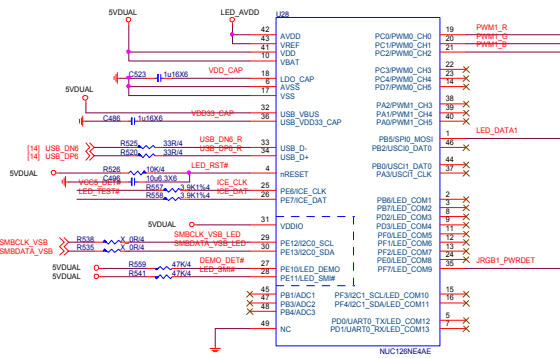
$$L = ((V_{in} - V_{out}) / (F_{sw} \cdot k \cdot I_{out_max})) \cdot (V_{out}/V_{in})$$

$$= 0.8725uH (K = 40\%)$$

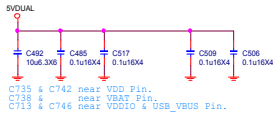
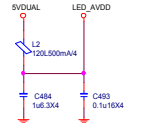
K is the ratio between inductor ripple current and rated output current.
 $20\% < k < 40\%$



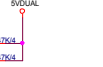
LED MCU



C702 & C712 near AVDD Pin.

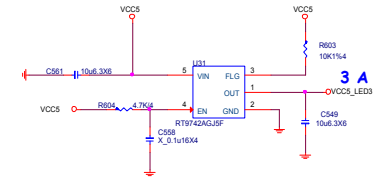
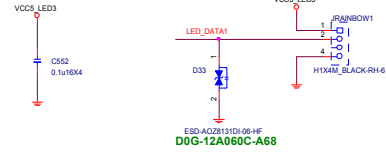


C735 & C742 near VDD Pin.
C735 & C742 near VDD Pin.
C735 & C742 near VDD Pin.



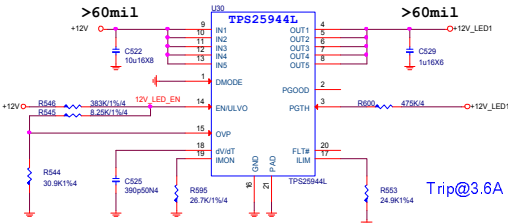
JRAINBOW1

60mil

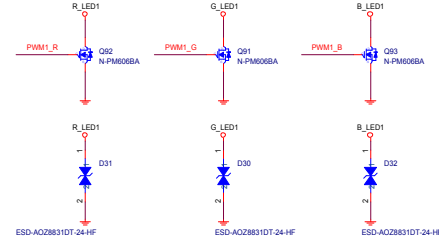


JRGB

>60mil



Trip@3.6A



JT1 for FW update



JF1 for Factory test



GRU_LH1
CPU
底座
E21-7557050-L06

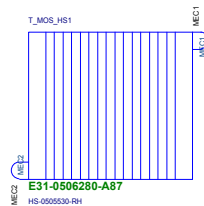
VIRTU_LA1
Label
AM1
G51-M1SPXXA-A09

MC_LABEL1
Marker
B365
G51-M1SPP21-Q13

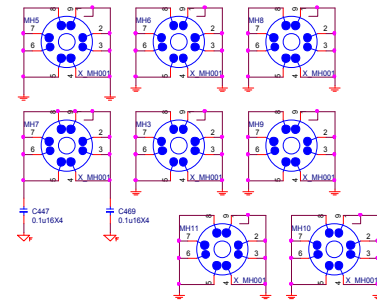


PCB1
7C3B_1.1
PD0-07C6710-G37
PD0-07C6710-E48

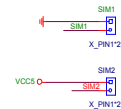
HS_PCH1
PCH
Shink
MCE1
MCE2
HS-0409500-RH
E31-0409500-A87



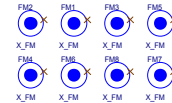
Mounting Holes



Simulation



Optical Fiducial Marks-120



Vcheck

BOTTOM Side

