Model Name: B460M DS3H AC

Rev 1.1

SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A
05	CPU_LGA1151-B-DDR4
06	CPU_LGA1151-C
07	CPU_LGA1150-D
08	DDR4 CHANNEL A
09	DDR4 CHANNEL B
10	PCH_CLK BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH PWR
15	PCH GND
16	ITE 8686 LPC IO
17	HWM
18	FAN CTRL--SIO
19	BIOS
20	CEC
21	PCI EXPRESS*16 SLOT
22	PCI EXPRESS*1 SLOT
23	SATA Connector
24	M.2 X4 (A)
25	IT8892E (NA)
26	PCI SLOT (NA)
27	ASM1085 POWER (NA)
28	LDO POWER (NA)

SHEET	TITLE
29	ISL95866 PWM-IRON
30	ISL95866 VCORE-IRON
31	ISL95866 VCCGT-IRON
32	VCCSA_VCCIO_VCCPLL
33	RT8237_DDR_BEAD
34	RT8068A_VPP
35	RT8237_PCH-BEAD
36	DISCRETE POWER
37	POWER MAP
38	ATX POWER , A_-PROCHOT
39	KB_MS
40	DVI CONN
41	RTD2168 - DP to VGA - IC
42	RTD2168 - DP to VGA - Conn
43	REALTEK 8111G
44	USB_LAN CONNECTOR-81118
45	Realtek ALC887
46	REAR AUDIO JACK
47	ADUIO LED
48	R_USB30_1
49	R_USB30_2
50	HDMI (MASK)
51	Redriver-R_USB31 (NA)
52	F_USB30
53	F_USB
54	F_PANEL
55	COM, TPM
56	EMI-ESD
	NTC MAP

Gigabyte Technology

Title: Cover Sheet

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Date: Monday, August 31, 2020 | Sheet 1 of 63

Model Name: B460M DS3H AC

rev 1.1

Component value change history

2020/03/17

Data	Change Item	Reason
2019/12/11	MCUR7 Update footprint "DIODE_1N5820-SHORT100-MASK"	
2019/12/23	ECD_U1 Capture value : (12R當主料,11R當替料)	
	MCU_PH1 , MCU_PH2不上件	
	IT5702 周邊0ohm改為Short pad	
2020/01/06	DDR SLOT 改為黑灰黑灰	
	NRN11 pin2 接3VDUAL_PCH	
	page.12 1. NC5, NC6, NC8, NC9 value及footprinte改為1u/4/X5R/6.3V/K及C0402-2 (NC5不上件) 2. 增加NR444 3. NR134改不上件 page.14 1. NBC10, NBC13, NBC30, NBC31, NBC39, NBC9 value及footprinte改為1u/4/X5R/6.3V/K及C0402-2 (上件) 2. NBC25, NBC3, NBC32, NBC4, NBC5, NBC6, NBC7 value及footprinte改為1u/4/X5R/6.3V/K及C0402-2 (不上件)	
2020/01/15	Update M2 螺孔 ADD NTC3933 X2 Update Connector name	
2020/01/31	ADD Loadline Patch Modify DDR	
2020/02/06	Update to 1.0 及文字面 SYS_FAN -> SYS_FAN1 COM -> COMA	
2020/02/10	Remove NR221 FIX ASUS WIFI Card PCIE WAKE ISSUE, NRN11 Modify to 1K Update DUAL BIOS OPT STRAP (Pull Up)	
2020/02/13	Update B460 PCH-V Rev.0.6 模組線路 1. 增加NR21, NQ8, NR22 2. NRN11改為1K/8P4R/4 3. Unsupported RKL CPU Patch 線路	
2020/02/20	Update HDA_SDO 線路 ADD VCCPLL_OC	
2020/02/25	Update Z490 Notes Rev 1.12	
2020/03/02	修改為For B460M DS3H AC的Spec Remove AUDIO LED Remove COMA & B Remove D-Sub & DVI ATX 24PIN 改為一般PIN	

Circuit or PCB layout change

DATE	Change Item	Reason
2020/03/17	Update to R1.01 Update HDA_SDO 線路 [P12] Update CHA&B DDR Vref	

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Title: BOM & PCB MODIFY HISTORY

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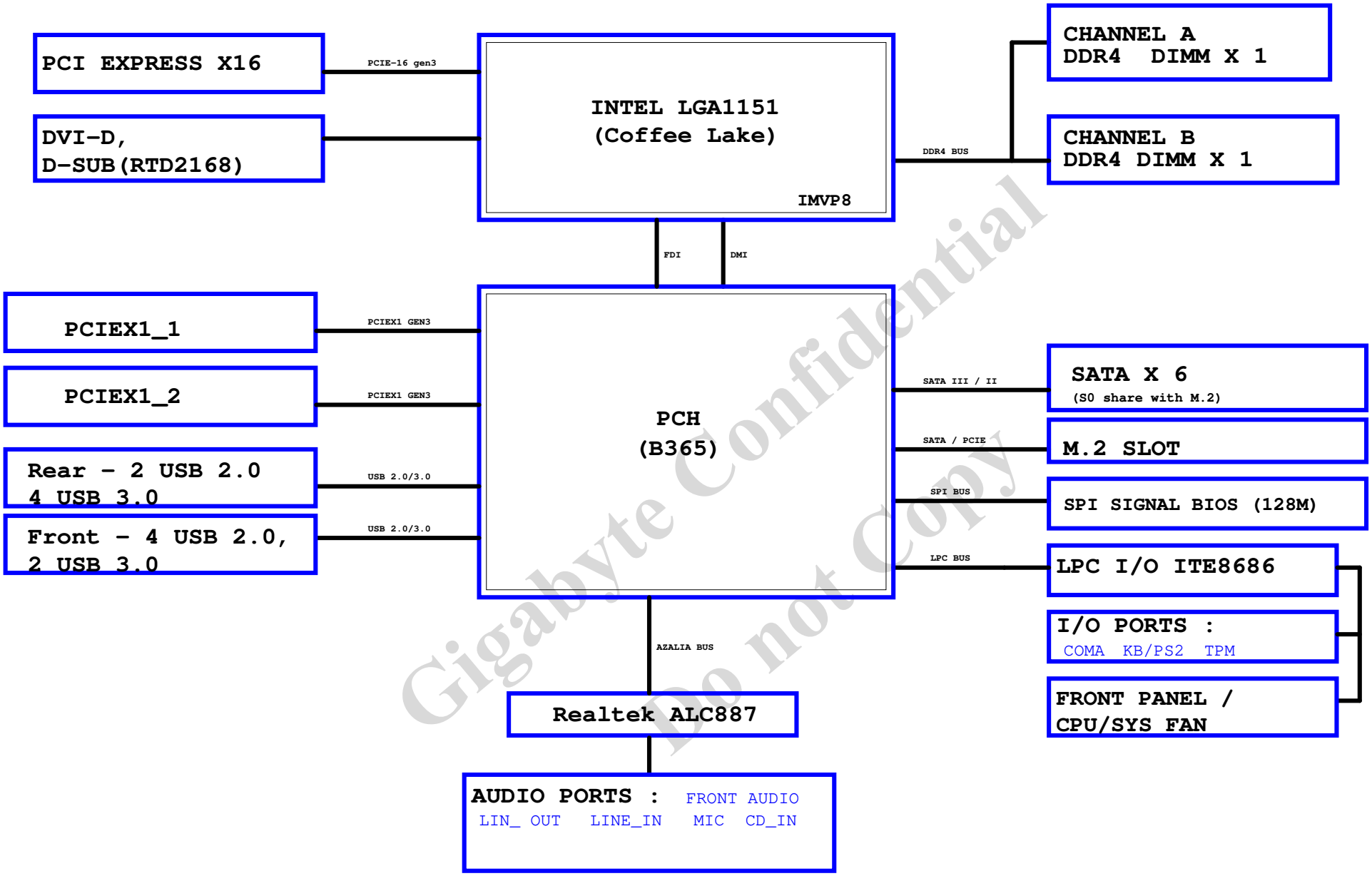
Date: Monday, August 31, 2020 | Sheet 2 of 63

BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 3 of 63	

檢查組態調整線路
The CFG signals default value of '1'

CFG[4]: 0=eDP enable / 1=eDP disable
CFG[7]: 1=PEG Train immediately following RESET
0=PEG Wait for BIOS

CFG[13]: 1=VCCSA Fixed Mode / 0=SVID Mode

Z490 Notes Rev 1.05
VAXG 1.3V Run PTU VAXG High & CPU OC 5G hang issue
Remove WR30

* CPU_ID
1: RKL -->VCCIO=1.0V
0: CML -->VCCIO=0V

若有不上CODEC出貨的可能，請預留CLK and SDO對地電阻。

Gigabyte Technology	
Title	CPU LGA1200-A
Size: Custom	Document Number: B460M DS3H AC
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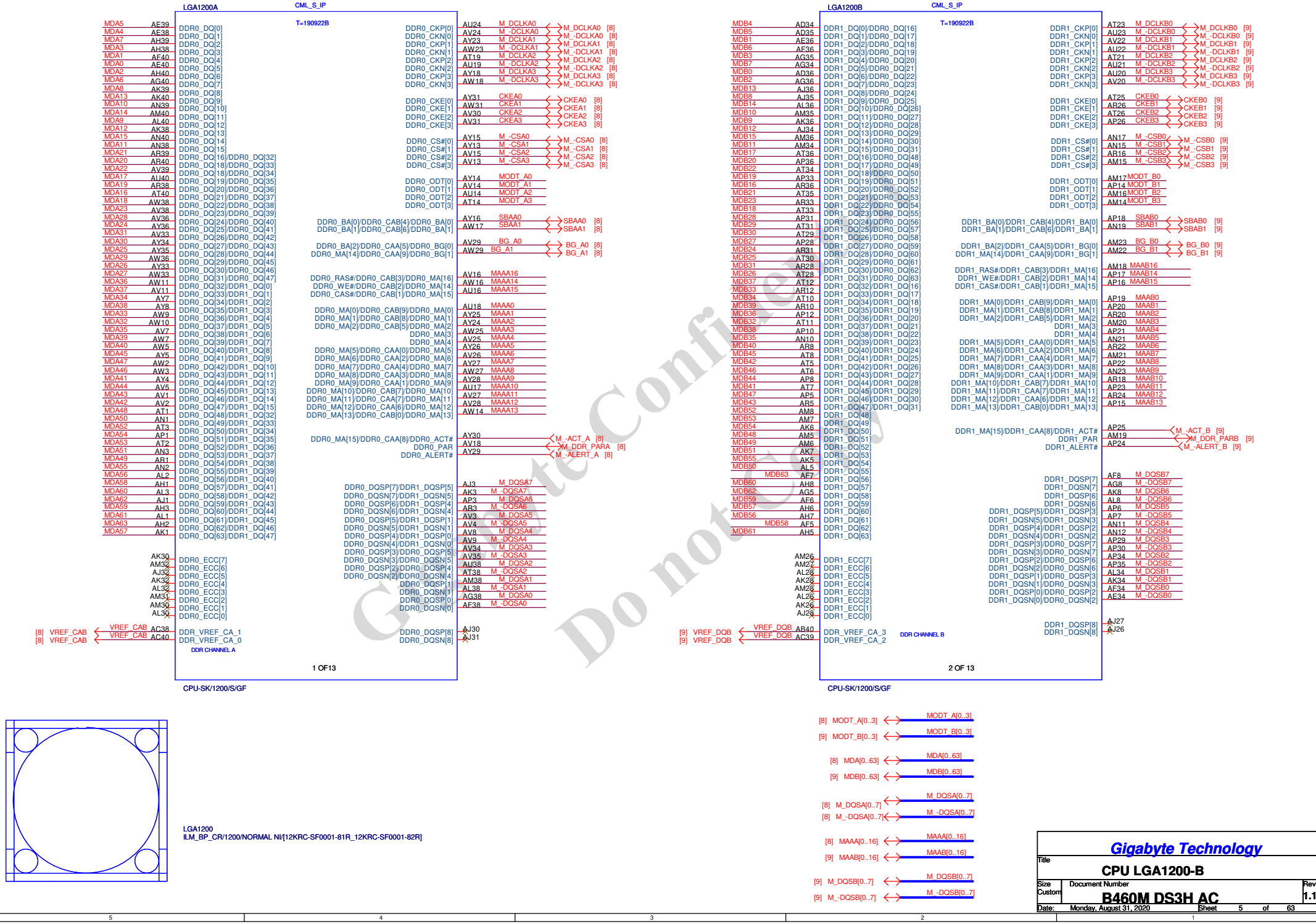
Date: Monday, August 31, 2020	Sheet 4 of 63


LGA1200A
CML_S_IP
T=190922B
DDR CHANNEL A
1 OF13
CPU-SK/1200/S/GF
LGA1200B
CML_S_IP
T=190922B
DDR CHANNEL B
2 OF 13
CPU-SK/1200/S/GF
LGA1200
ILM_BP_CR/1200/NORMAL NI/[12KRC-SF0001-81R_12KRC-SF0001-82R]
Gigabyte Technology
CPU LGA1200-B
B460M DS3H AC
1.1
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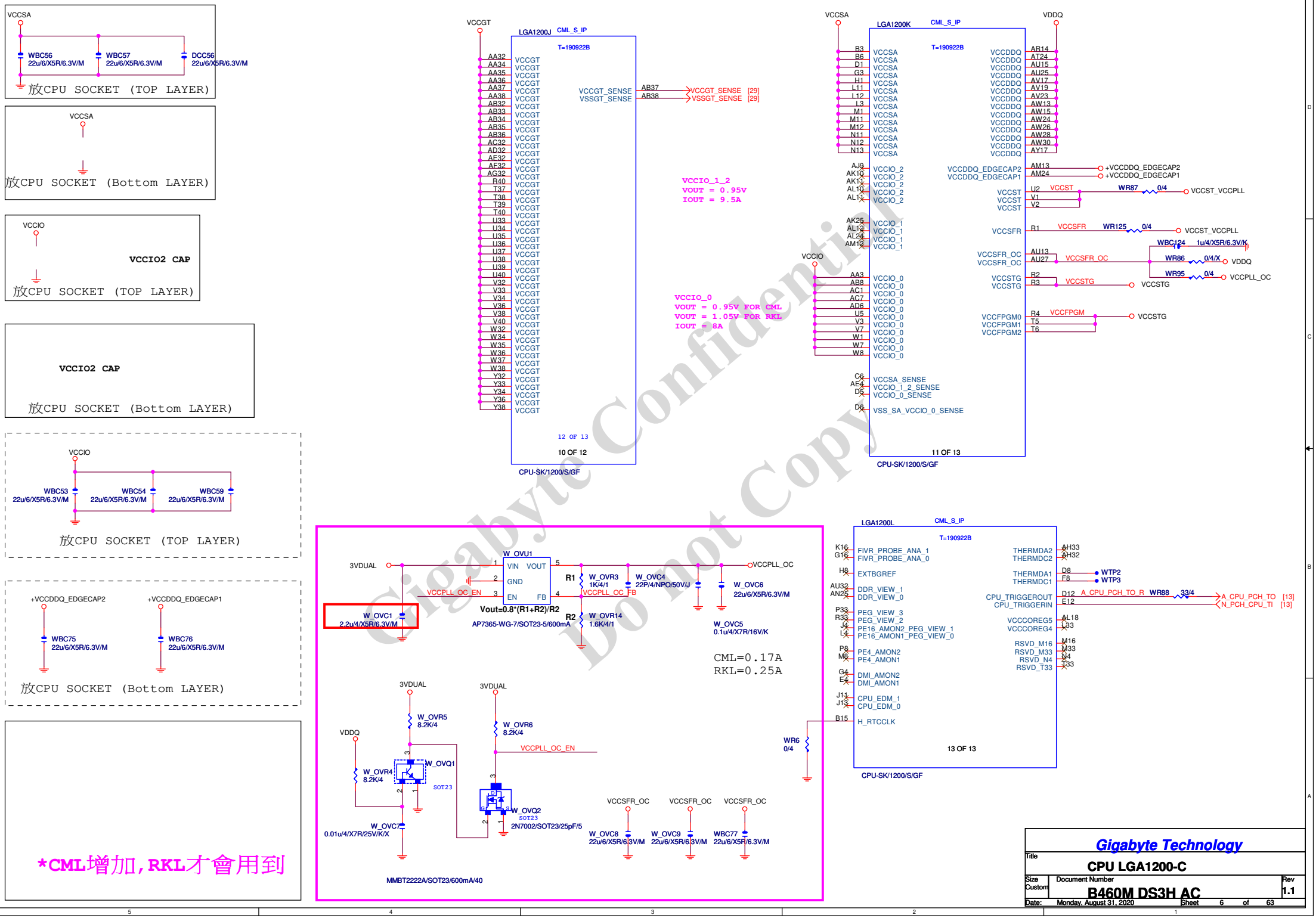
VCCSA
WBC56 22u/6/X5R/6.3V/M
WBC57 22u/6/X5R/6.3V/M
DCC56 22u/6/X5R/6.3V/M
放CPU SOCKET (TOP LAYER)
VCCSA
放CPU SOCKET (Bottom LAYER)
VCCIO
VCCIO2 CAP
放CPU SOCKET (TOP LAYER)
VCCIO2 CAP
放CPU SOCKET (Bottom LAYER)
VCCIO
WBC53 22u/6/X5R/6.3V/M
WBC54 22u/6/X5R/6.3V/M
WBC59 22u/6/X5R/6.3V/M
放CPU SOCKET (TOP LAYER)
+VCCDDQ_EDGECAP2
+VCCDDQ_EDGECAP1
WBC75 22u/6/X5R/6.3V/M
WBC76 22u/6/X5R/6.3V/M
放CPU SOCKET (Bottom LAYER)
*CML增加,RKL才會用到
VCCGT
LGA1200J CML_S_IP
T=190922B
VCCGT_SENSE
VSSGT_SENSE
VCCGT_SENSE [29]
VSSGT_SENSE [29]
12 OF 13
10 OF 12
CPU-SK/1200/S/GF
VCCIO_1_2
VOUT = 0.95V
IOUT = 9.5A
VCCIO_0
VOUT = 0.95V FOR CML
VOUT = 1.05V FOR RKL
IOUT = 8A
VCCSA
VDDQ
LGA1200K CML_S_IP
T=190922B
VCCIO
VCCDDQ_EDGECAP2
VCCDDQ_EDGECAP1
+VCCDDQ_EDGECAP2
+VCCDDQ_EDGECAP1
VCCST
VCCSFR
VCCSFR_OC
VCCSTG
VCCFPGM0
VCCFPGM1
VCCFPGM2
VCCSA_SENSE
VCCIO_1_2_SENSE
VCCIO_0_SENSE
VSS_SA_VCCIO_0_SENSE
11 OF 13
CPU-SK/1200/S/GF
WR87 0/4 VCCST_VCCPLL
WR125 0/4 VCCST_VCCPLL
WBC124 1u/4/X5R/6.3V/K
WR86 0/4/X VDDQ
WR95 0/4 VCCPLL_OC
VCCSTG
VCCFPGM
3VDUAL
W_OVU1
VIN VOUT
GND
EN FB
VCCPLL_OC_EN
VCCPLL_OC_FB
VCCPLL_OC
R1 W_OVR3 1K/4/1
R2 W_OVR14 1.6K/4/1
W_OVC4 22P/4/NPO/50V/J
W_OVC6 22u/6/X5R/6.3V/M
W_OVC5 0.1u/4/X7R/16V/K
W_OVC1 2.2u/4/X5R/6.3V/M
Vout=0.8*(R1+R2)/R2
AP7365-WG-7/SOT23-5/600mA
CML=0.17A
RKL=0.25A
VDDQ
W_OVR5 8.2K/4
W_OVR6 8.2K/4
W_OVR4 8.2K/4
W_OVQ1
W_OVQ2
SOT23
2N7002/SOT23/25pF/5
W_OVC7 0.01u/4/X7R/25V/K/X
W_OVC8 22u/6/X5R/6.3V/M
W_OVC9 22u/6/X5R/6.3V/M
WBC77 22u/6/X5R/6.3V/M
VCCSFR_OC
MMBT2222A/SOT23/600mA/40
LGA1200L CML_S_IP
T=190922B
FIVR_PROBE_ANA_1
FIVR_PROBE_ANA_0
EXTBGREF
DDR_VIEW_1
DDR_VIEW_0
PEG_VIEW_3
PEG_VIEW_2
PE16_AMON2_PEG_VIEW_1
PE16_AMON1_PEG_VIEW_0
PE4_AMON2
PE4_AMON1
DMI_AMON2
DMI_AMON1
CPU_EDM_1
CPU_EDM_0
H_RTCCLK
THERMDA2
THERMDC2
THERMDA1
THERMDC1
CPU_TRIGGEROUT
CPU_TRIGGERIN
VCCCOREG5
VCCCOREG4
RSVD_M16
RSVD_M33
RSVD_N4
RSVD_T33
13 OF 13
CPU-SK/1200/S/GF
WR6 0/4
WTP2
WTP3
WR88 33/4
A_CPU_PCH_TO_R
A_CPU_PCH_TO [13]
N_PCH_CPU_TI [13]
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Gigabyte Technology
Title
CPU LGA1200-C
Size Custom
Document Number
B460M DS3H AC
Rev 1.1
Date: Monday, August 31, 2020
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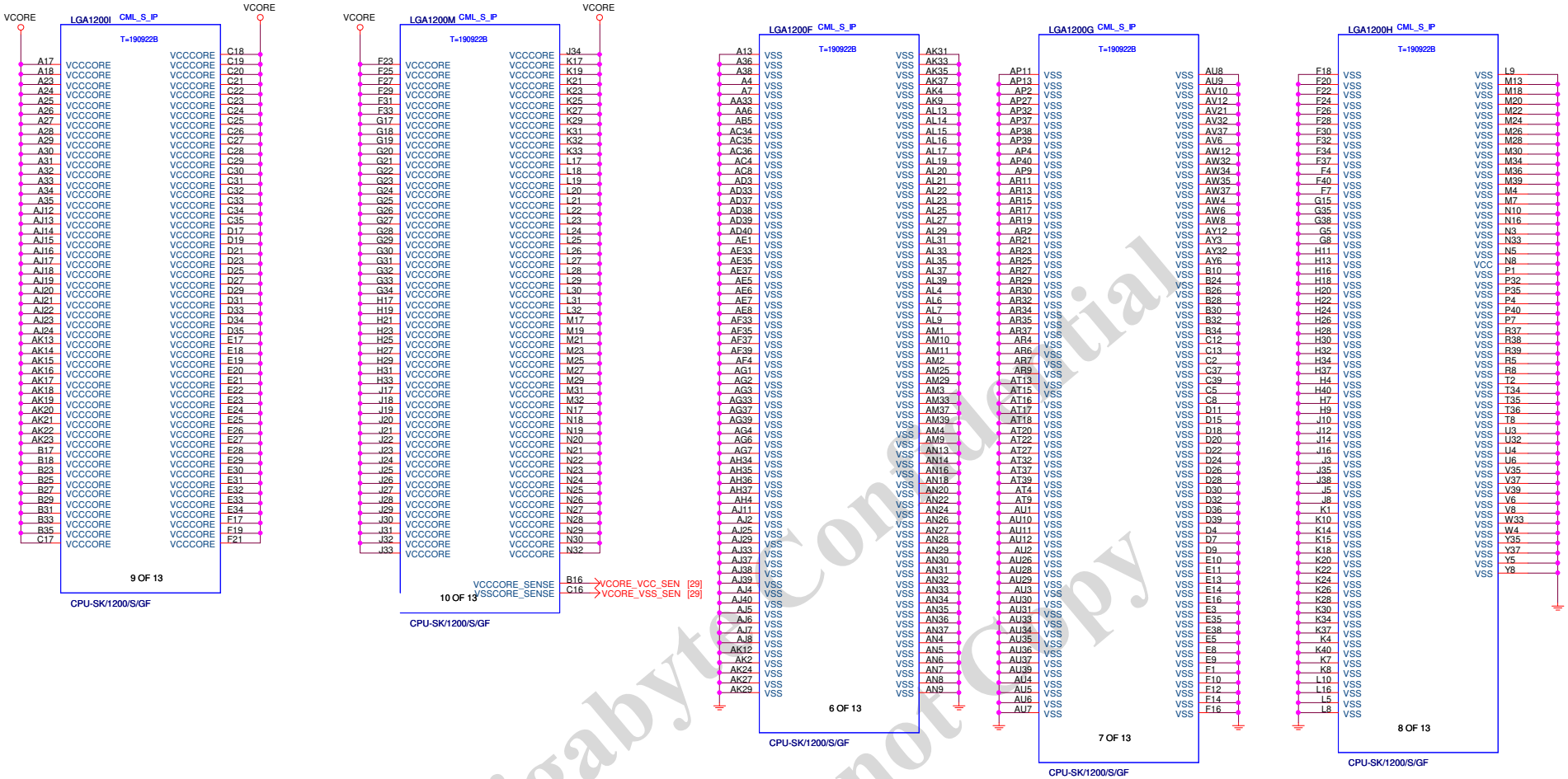
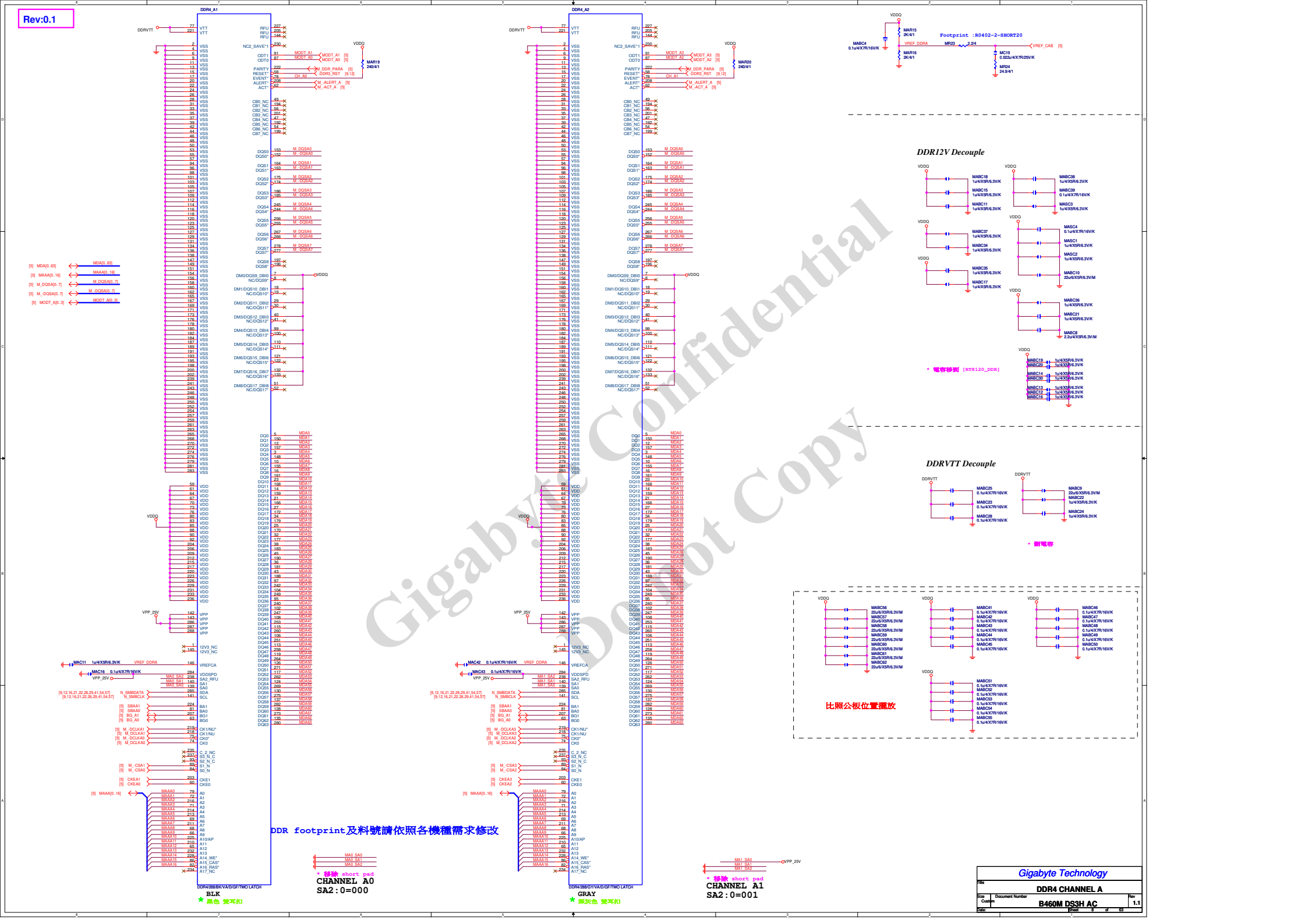


* 刪 Vcore 電容

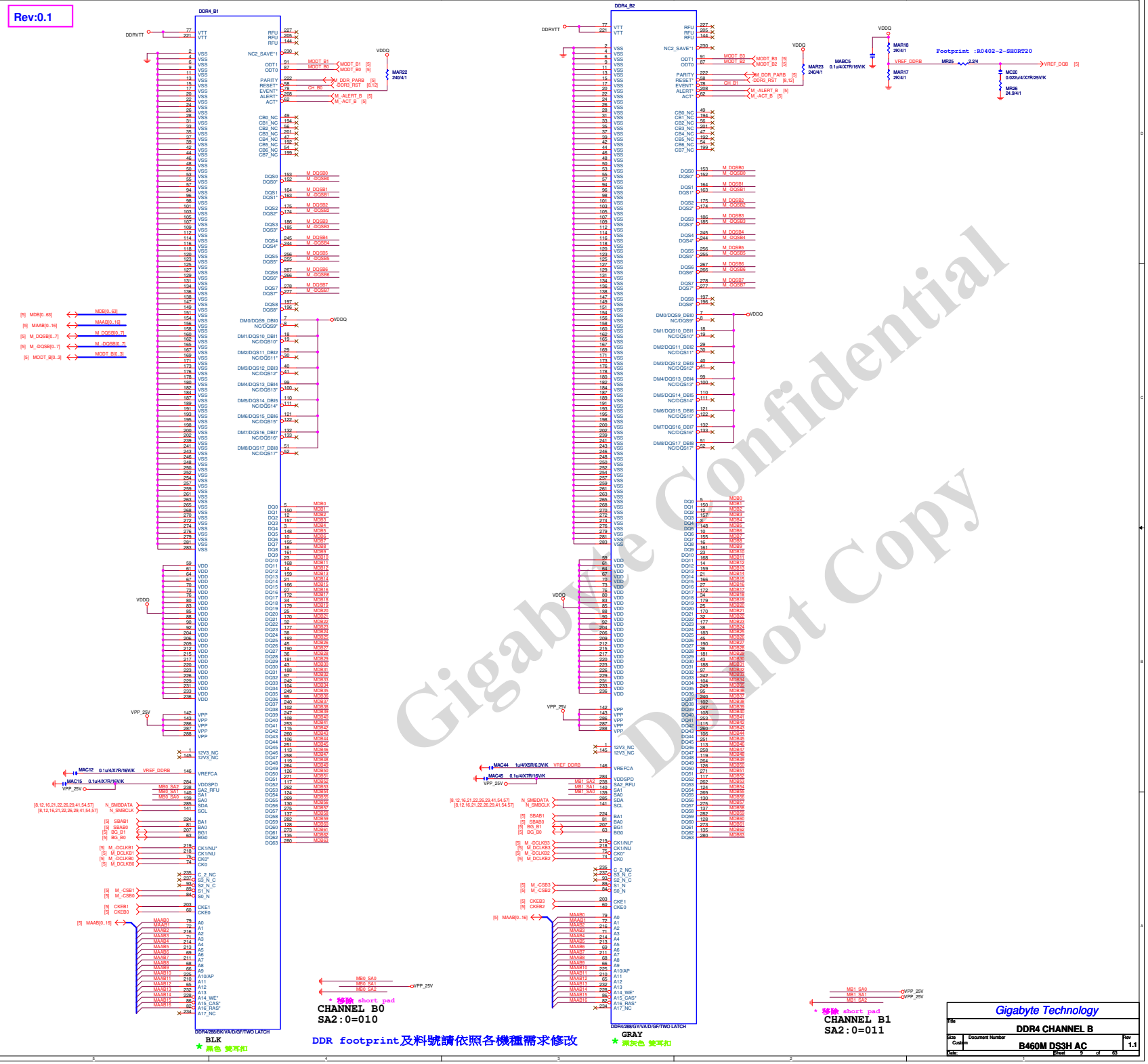
Gigabyte Technology		
Title: CPU LGA1200-D		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 7 of 63	

Rev:0.1

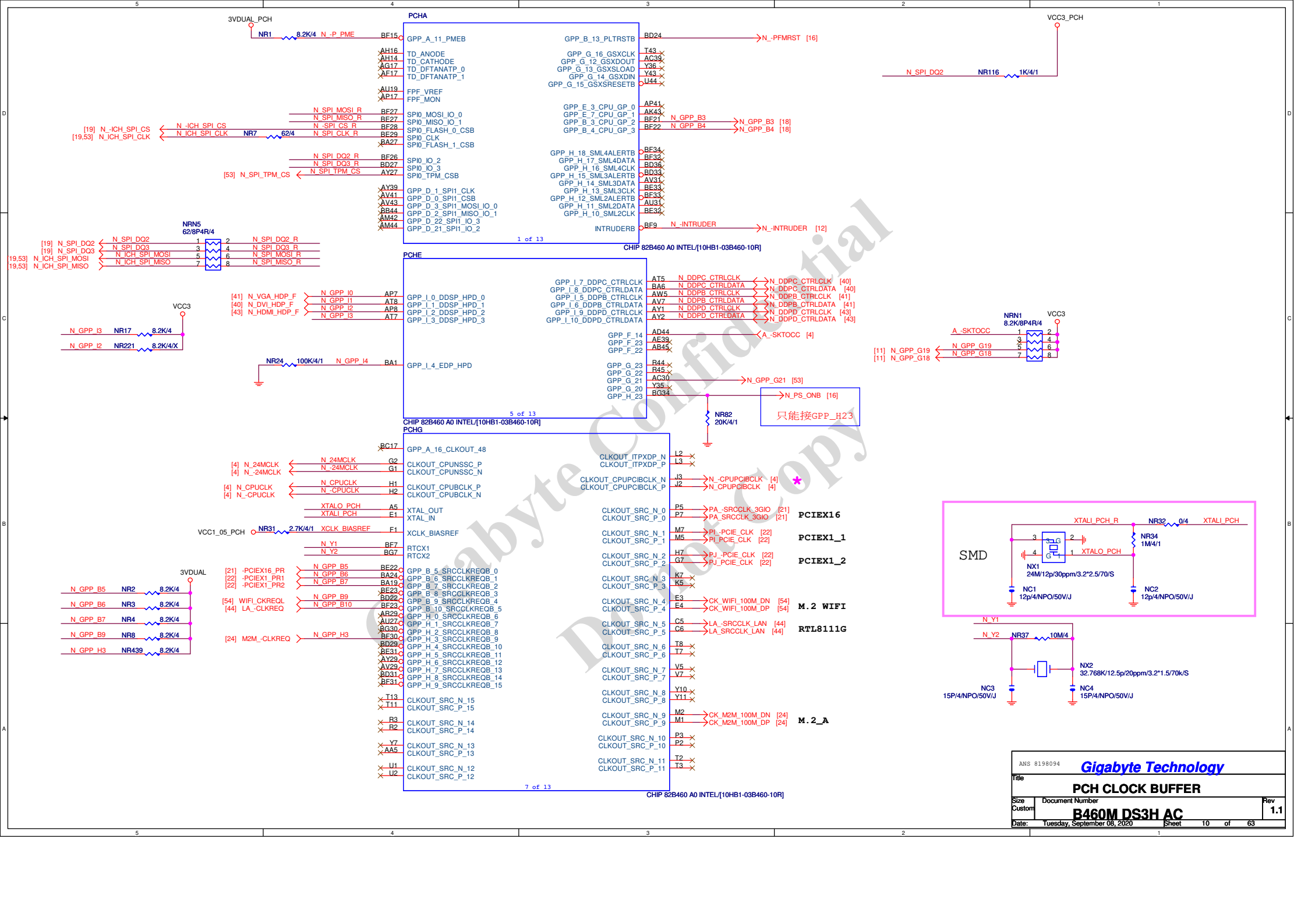


Gigabyte Technology			
Title: DDR4 CHANNEL A			
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1	
Date:	Sheet 8 of 63		

Rev:0.1



Gigabyte Technology			
Title: DDR4 CHANNEL B			
Size: Custom	Document Number: B460M DS3H AC		Rev: 1.1
Date:	Sheet 9 of 63		


PCHA
3VDUAL_PCH
NR1 8.2K/4 N_-P_PME BF15
GPP_A_11_PMEB
GPP_B_13_PLTRSTB BD24 N_-PFMRST [16]
TD_ANODE AH16
TD_CATHODE AH14
TD_DFTANATP_0 AG17
TD_DFTANATP_1 AF17
GPP_G_16_GSXCLK T43
GPP_G_12_GSXDOUT AC39
GPP_G_13_GSXSLOAD Y36
GPP_G_14_GSXDIN Y43
GPP_G_15_GSXSRESETB U44
FPP_VREF AU19
FPP_MON AP17
GPP_E_3_CPU_GP_0 AP41
GPP_E_7_CPU_GP_1 AK43
GPP_B_3_CPU_GP_2 BF21 N_GPP_B3 N_GPP_B3 [18]
GPP_B_4_CPU_GP_3 BF22 N_GPP_B4 N_GPP_B4 [18]
N_SPI_MOSI_R BF27
N_SPI_MISO_R BF27
N_-SPI_CS_R BF28
N_SPI_CLK_R BE29
SPI0_MOSI_IO_0
SPI0_MISO_IO_1
SPI0_FLASH_0_CSB
SPI0_CLK BA27
SPI0_FLASH_1_CSB
[19] N_-ICH_SPI_CS
[19,53] N_ICH_SPI_CLK
N_-ICH_SPI_CS
N_ICH_SPI_CLK NR7 62/4
N_SPI_DQ2_R BF26
N_SPI_DQ3_R BD27
N_SPI_TPM_CS AY27
SPI0_IO_2
SPI0_IO_3
SPI0_TPM_CSB
[53] N_SPI_TPM_CS
GPP_H_18_SML4ALERTB BF34
GPP_H_17_SML4DATA BF32
GPP_H_16_SML4CLK BD36
GPP_H_15_SML3ALERTB BD33
GPP_H_14_SML3DATA AV31
GPP_H_13_SML3CLK BE33
GPP_H_12_SML2ALERTB BF33
GPP_H_11_SML2DATA AU31
GPP_H_10_SML2CLK BE32
GPP_D_1_SPI1_CLK AY39
GPP_D_0_SPI1_CSB AV41
GPP_D_3_SPI1_MOSI_IO_0 AV43
GPP_D_2_SPI1_MISO_IO_1 BB44
GPP_D_22_SPI1_IO_3 AM42
GPP_D_21_SPI1_IO_2 AM44
INTRUDERB BF9 N_-INTRUDER N_-INTRUDER [12]
1 of 13
CHIP 82B460 A0 INTEL/[10HB1-03B460-10R]
VCC3_PCH
N_SPI_DQ2 NR116 1K/4/1
NRN5
62/8P4R/4
[19] N_SPI_DQ2
[19] N_SPI_DQ3
[19,53] N_ICH_SPI_MOSI
[19,53] N_ICH_SPI_MISO
N_SPI_DQ2 1
N_SPI_DQ3 3
N_ICH_SPI_MOSI 5
N_ICH_SPI_MISO 7
2 N_SPI_DQ2_R
4 N_SPI_DQ3_R
6 N_SPI_MOSI_R
8 N_SPI_MISO_R
PCHE
GPP_I_7_DDPC_CTRLCLK AT5 N_DDPC_CTRLCLK N_DDPC_CTRLCLK [40]
GPP_I_8_DDPC_CTRLDATA BA6 N_DDPC_CTRLDATA N_DDPC_CTRLDATA [40]
GPP_I_5_DDPB_CTRLCLK AW5 N_DDPB_CTRLCLK N_DDPB_CTRLCLK [41]
GPP_I_6_DDPB_CTRLDATA AV7 N_DDPB_CTRLDATA N_DDPB_CTRLDATA [41]
GPP_I_9_DDPD_CTRLCLK AY1 N_DDPD_CTRLCLK N_DDPD_CTRLCLK [43]
GPP_I_10_DDPD_CTRLDATA AY2 N_DDPD_CTRLDATA N_DDPD_CTRLDATA [43]
[41] N_VGA_HDP_F
[40] N_DVI_HDP_F
[43] N_HDMI_HDP_F
N_GPP_I0 AP7
N_GPP_I1 AT8
N_GPP_I2 AP8
N_GPP_I3 AT7
GPP_I_0_DDSP_HPD_0
GPP_I_1_DDSP_HPD_1
GPP_I_2_DDSP_HPD_2
GPP_I_3_DDSP_HPD_3
GPP_F_14 AD44 A_-SKTOCC A_-SKTOCC [4]
GPP_F_23 AE39
GPP_F_22 AB45
VCC3
N_GPP_I3 NR17 8.2K/4
N_GPP_I2 NR221 8.2K/4/X
NR24 100K/4/1 N_GPP_I4 BA1
GPP_I_4_EDP_HPD
GPP_G_23 R44
GPP_G_22 R45
GPP_G_21 AC30 N_GPP_G21 [53]
GPP_G_20 Y35
GPP_H_23 BG34 N_PS_ONB [16]
只能接GPP_H23
NR82 20K/4/1
5 of 13
CHIP 82B460 A0 INTEL/[10HB1-03B460-10R]
NRN1
8.2K/8P4R/4
VCC3
A_-SKTOCC 1
N_GPP_G19 3
N_GPP_G18 7
2 4
6 8
[11] N_GPP_G19
[11] N_GPP_G18
PCHG
GPP_A_16_CLKOUT_48 BC17
[4] N_24MCLK
[4] N_-24MCLK
N_24MCLK G2
N_-24MCLK G1
CLKOUT_CPUNSSC_P
CLKOUT_CPUNSSC_N
[4] N_CPUCLK
[4] N_-CPUCLK
N_CPUCLK H1
N_-CPUCLK H2
CLKOUT_CPUBCLK_P
CLKOUT_CPUBCLK_N
XTALO_PCH A5
XTALI_PCH E1
XTAL_OUT
XTAL_IN
VCC1_05_PCH
NR31 2.7K/4/1 XCLK_BIASREF F1
XCLK_BIASREF
N_Y1 BF7
N_Y2 BG7
RTCX1
RTCX2
CLKOUT_ITPXDP_N L2
CLKOUT_ITPXDP_P L3
CLKOUT_CPUPCIBCLK_N J3 N_-CPUPCIBCLK [4]
CLKOUT_CPUPCIBCLK_P J2 N_CPUPCIBCLK [4]
*
CLKOUT_SRC_N_0 P5 PA_-SRCCLK_3GIO [21]
CLKOUT_SRC_P_0 P7 PA_SRCCLK_3GIO [21]
PCIEX16
CLKOUT_SRC_N_1 M7 PI_-PCIE_CLK [22]
CLKOUT_SRC_P_1 M5 PI_PCIE_CLK [22]
PCIEX1_1
CLKOUT_SRC_N_2 H7 PJ_-PCIE_CLK [22]
CLKOUT_SRC_P_2 G7 PJ_PCIE_CLK [22]
PCIEX1_2
CLKOUT_SRC_N_3 K7
CLKOUT_SRC_P_3 K5
CLKOUT_SRC_N_4 E3 CK_WIFI_100M_DN [54]
CLKOUT_SRC_P_4 E4 CK_WIFI_100M_DP [54]
M.2 WIFI
CLKOUT_SRC_N_5 C5 LA_-SRCCLK_LAN [44]
CLKOUT_SRC_P_5 C6 LA_SRCCLK_LAN [44]
RTL8111G
CLKOUT_SRC_N_6 T8
CLKOUT_SRC_P_6 T7
CLKOUT_SRC_N_7 V5
CLKOUT_SRC_P_7 V7
CLKOUT_SRC_N_8 Y10
CLKOUT_SRC_P_8 Y11
CLKOUT_SRC_N_9 M2 CK_M2M_100M_DN [24]
CLKOUT_SRC_P_9 M1 CK_M2M_100M_DP [24]
M.2_A
CLKOUT_SRC_N_10 P3
CLKOUT_SRC_P_10 P2
CLKOUT_SRC_N_11 T2
CLKOUT_SRC_P_11 T3
[21] -PCIEX16_PR
[22] -PCIEX1_PR1
[22] -PCIEX1_PR2
N_GPP_B5 BF22
N_GPP_B6 BA24
N_GPP_B7 BA19
BF23
BD22
BF23
AR29
AU27
BG30
BF30
BD29
BF31
AY29
AV29
BD31
BF31
GPP_B_5_SRCCLKREQB_0
GPP_B_6_SRCCLKREQB_1
GPP_B_7_SRCCLKREQB_2
GPP_B_8_SRCCLKREQB_3
GPP_B_9_SRCCLKREQB_4
GPP_B_10_SRCCLKREQB_5
GPP_H_0_SRCCLKREQB_6
GPP_H_1_SRCCLKREQB_7
GPP_H_2_SRCCLKREQB_8
GPP_H_3_SRCCLKREQB_9
GPP_H_4_SRCCLKREQB_10
GPP_H_5_SRCCLKREQB_11
GPP_H_6_SRCCLKREQB_12
GPP_H_7_SRCCLKREQB_13
GPP_H_8_SRCCLKREQB_14
GPP_H_9_SRCCLKREQB_15
[54] WIFI_CKREQL
[44] LA_-CLKREQ
N_GPP_B9
N_GPP_B10
[24] M2M_-CLKREQ
N_GPP_H3
T13 CLKOUT_SRC_N_15
T11 CLKOUT_SRC_P_15
R3 CLKOUT_SRC_N_14
R2 CLKOUT_SRC_P_14
Y7 CLKOUT_SRC_N_13
AA5 CLKOUT_SRC_P_13
U1 CLKOUT_SRC_N_12
U2 CLKOUT_SRC_P_12
7 of 13
CHIP 82B460 A0 INTEL/[10HB1-03B460-10R]
3VDUAL
N_GPP_B5 NR2 8.2K/4
N_GPP_B6 NR3 8.2K/4
N_GPP_B7 NR4 8.2K/4
N_GPP_B9 NR8 8.2K/4
N_GPP_H3 NR439 8.2K/4
SMD
XTALI_PCH_R NR32 0/4 XTALI_PCH
NR34 1M/4/1
XTALO_PCH
NX1
24M/12p/30ppm/3.2*2.5/70/S
NC1 12p/4/NPO/50V/J
NC2 12p/4/NPO/50V/J
N_Y1
N_Y2 NR37 10M/4
NX2
32.768K/12.5p/20ppm/3.2*1.5/70k/S
NC3 15P/4/NPO/50V/J
NC4 15P/4/NPO/50V/J
ANS 8198094
Gigabyte Technology
Title
PCH CLOCK BUFFER
Size Custom
Document Number
B460M DS3H AC
Rev 1.1
Date: Tuesday, September 08, 2020
Sheet 10 of 63
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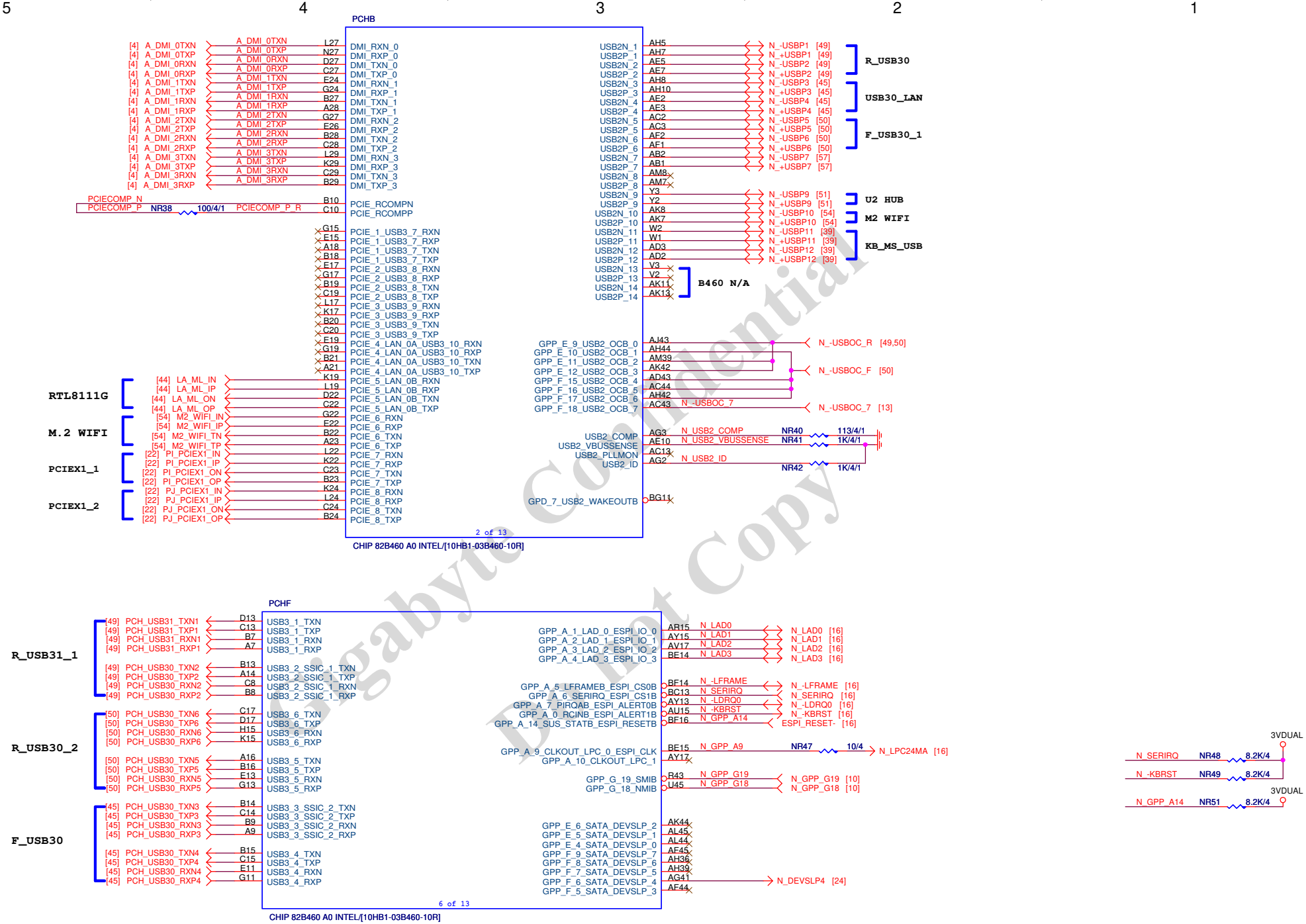
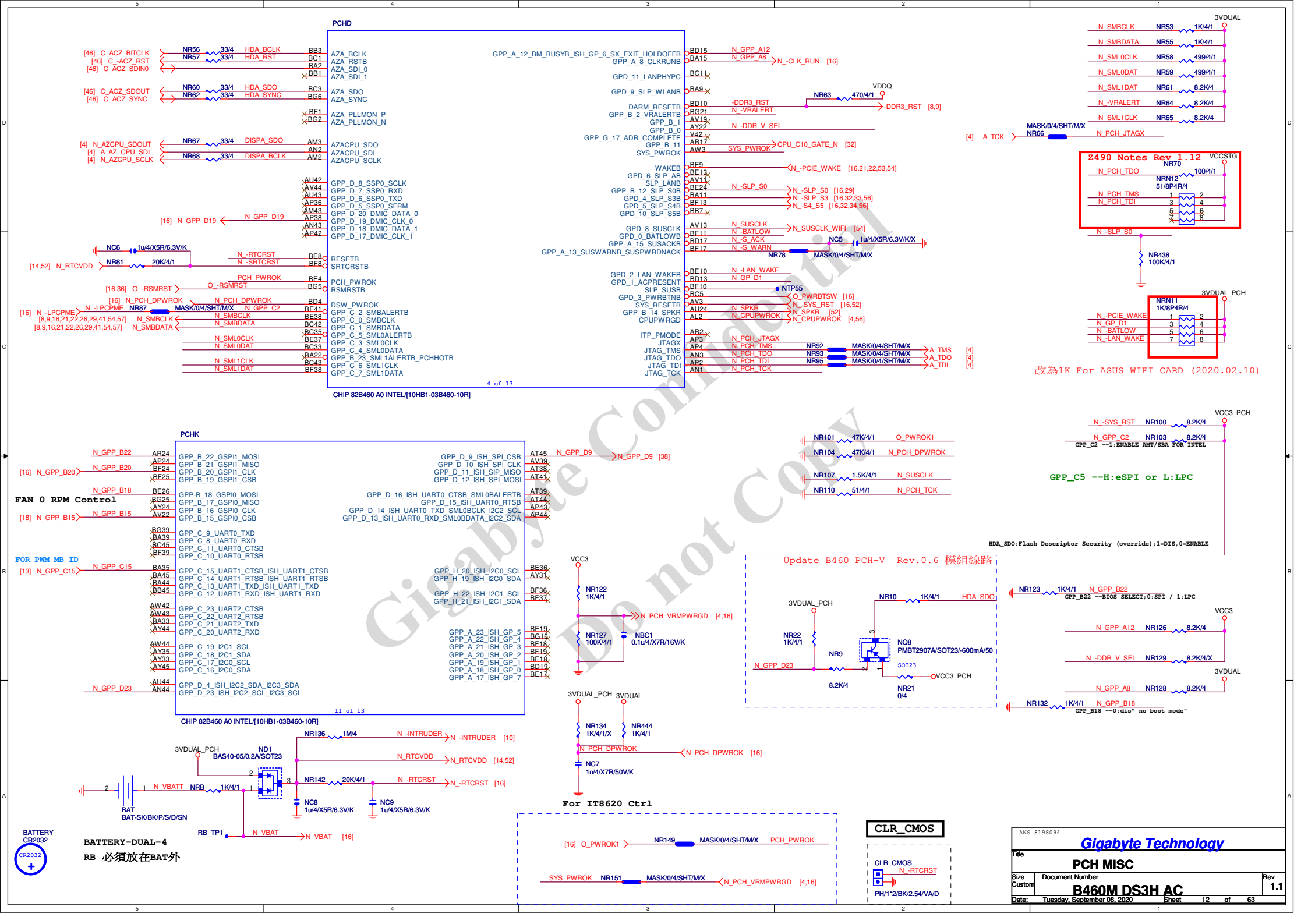
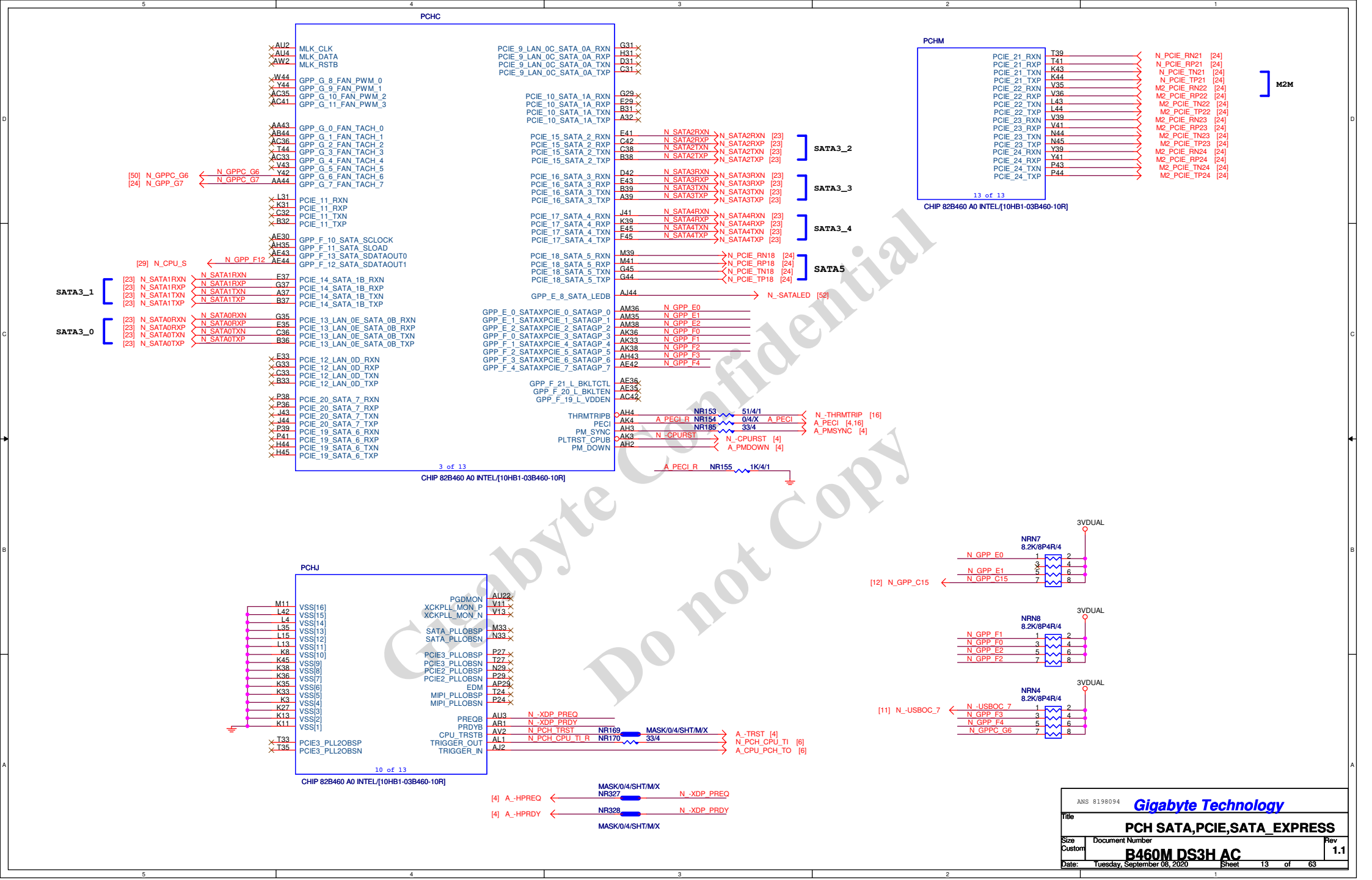
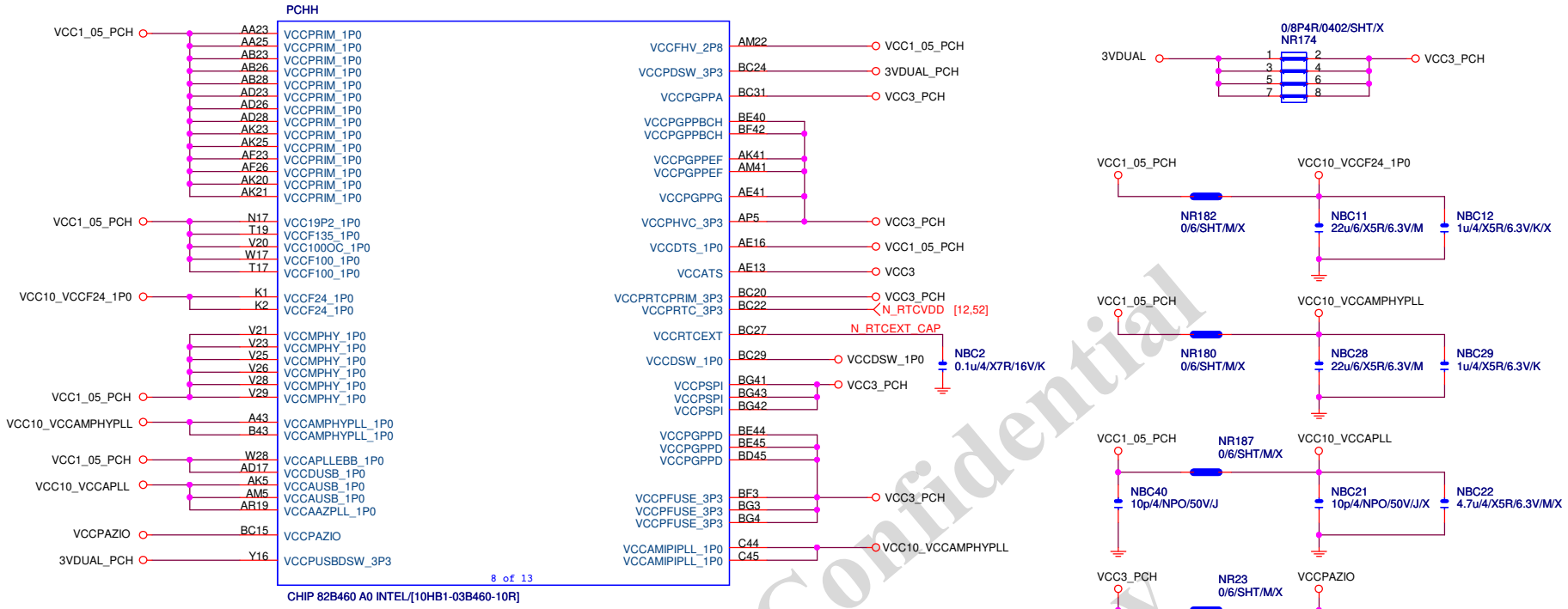


ANS 8198094 **Gigabyte Technology**

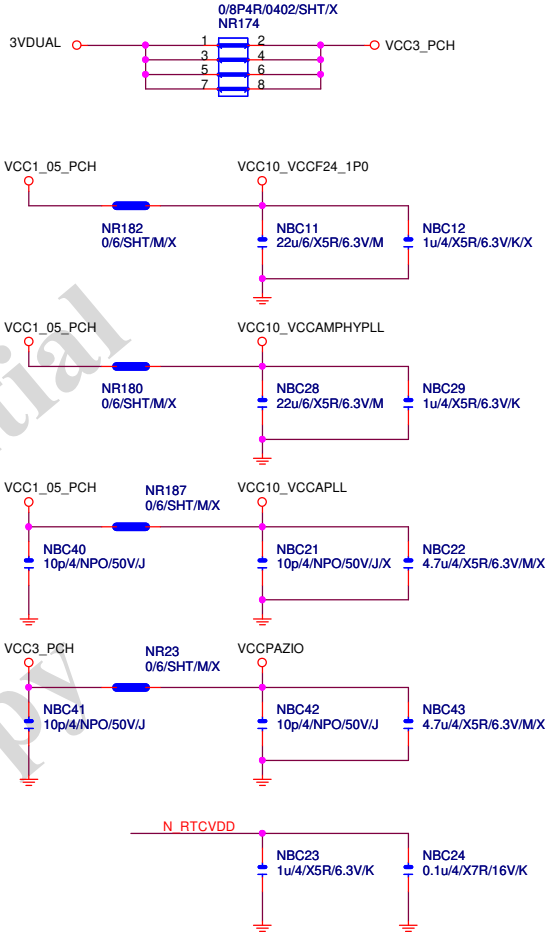
Title	PCH DMI,USB,PCIE	
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Tuesday, September 08, 2020	Sheet 11 of 63	

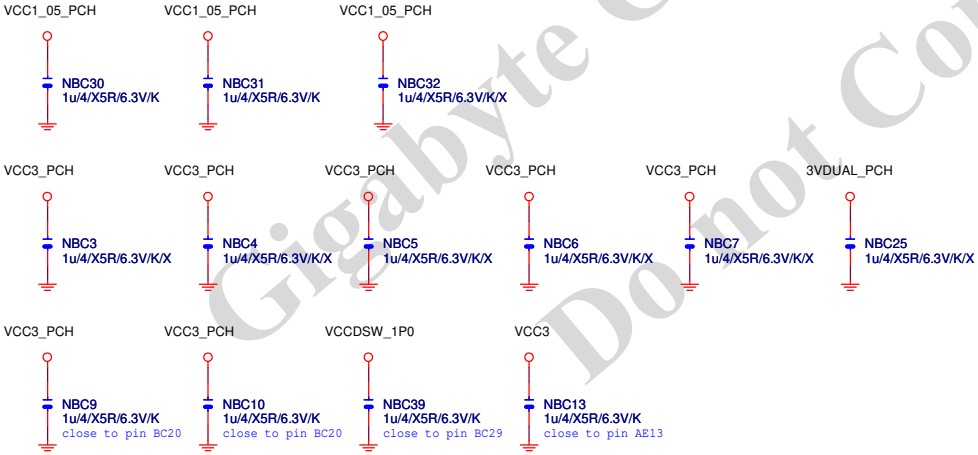






CHIP 82B460 A0 INTEL/[10HB1-03B460-10R]





ANS 8198094

Gigabyte Technology

Title: **PCH PWR**

Size	Document Number	Rev
B	**B460M DS3H AC**	1.1

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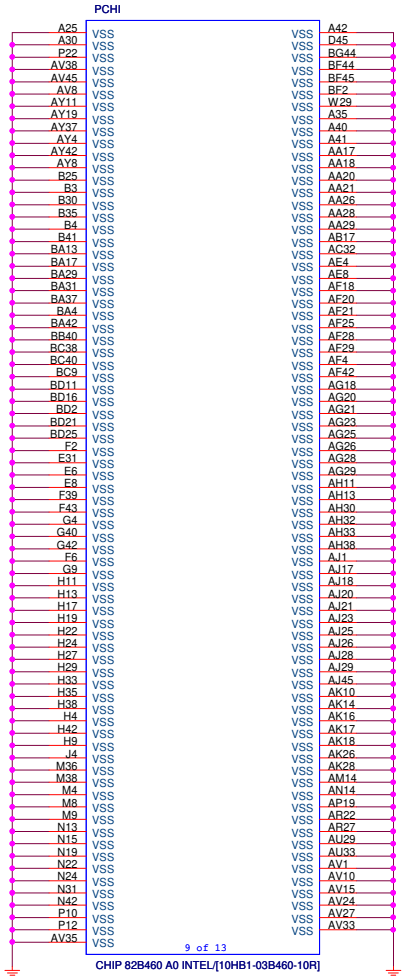
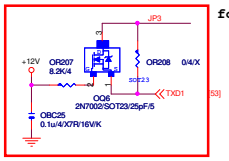


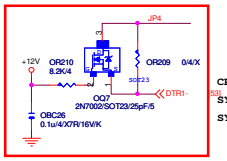
Gigabyte Technology		ANS 8198094
Title: PCH GND		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Tuesday, September 08, 2020	Sheet 15 of 63	

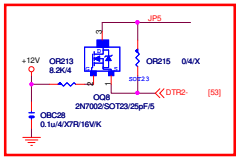
CFL SIO IT8686 REV:0.5

IT8686 LPT+COMA

for LPC/eSPI power mode







CPU_FAN

SYS_FAN1

SYS_FAN2

SYS_FAN3 sensor

SYS_FAN4 sensor

低階MB有COMB，無OTP_FAN 建議用GP16取代

IT8688

THRMTRIP

PROCHOT

DUAL BIOS ONLY

CLOSE TO SIO PIN 79

Placement CPU

CPU 端 A_~THRMTRIP不可與PCH及SIO N_~THRMTRIP直接連接。否則會出現無法拉LOW情況。

FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL4 FAN_TAC4
OPT_FAN or SYS_FAN4	FAN_CTL5 FAN_TAC5
THRMTRIP	PIN56
PROCHOT	PIN89

DUAL BIOS OPT STRAP

DUAL BIOS

OR58 上件/OR56 不上件 SINGLE BIOS

OR58 不上件/OR56 上件 DUAL BIOS

MB ID

SIO_18V

internal power pin, max 22nF cap

SIO CAP

CLOSE SIO PIN4 2_5LEVEL

PWR SHT

SIO PU

新增

SIO STRAP

EUP control detect

JP8 Pull High For Dual BIOS

JP2	1	Disable WDT to rest PWROK
	0	Enable WDT to rest PWROK
JP3		Dual-BIOS CS pin mode select bit "0" See the below table
JP4	1	LPC/ESPI power VCCBT = 3.3V
	0	LPC/ESPI power VCCBT = 1.8V
JP5	1	LPC I/F
	0	ESPI I/F
JP6	1	Enable Dual BIOS Function (for GigaByte Only)
	0	Disable Dual BIOS Function (for GigaByte Only)
JP7		Dual-BIOS CE pin mode select bit "1" See the below table
JP7 JP3	1 1	CE pin disable (Hold pin mode)
	1 0	CE mode 1
	0 1	CE mode 2
	0 0	CE mode 3

請依開案規格，選擇Support Erp下 LAN Wake up組態。

(組態一) PCIE LAN(Single & Dual LAN)

ERP Wake on LAN		
Single LAN	Realtek	組態一
	Atheros	
	Intel 219	組態二
Dual LAN (只管一個LAN支援ERP下WAKE UP)	Atheros+Atheros	組態一
	Intel 219+Atheros	組態三
	Intel 219+Intel 210	
No Support ERP	Single LAN BOM只上OR97。 Dual LAN BOM只上OR97、OR99。	

Gigabyte Technology

Title: IT8686

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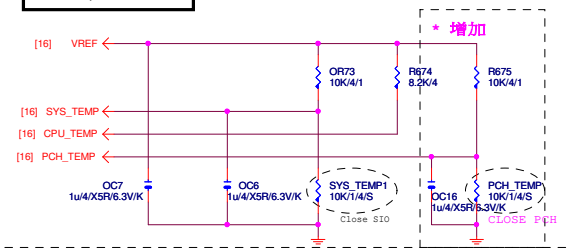
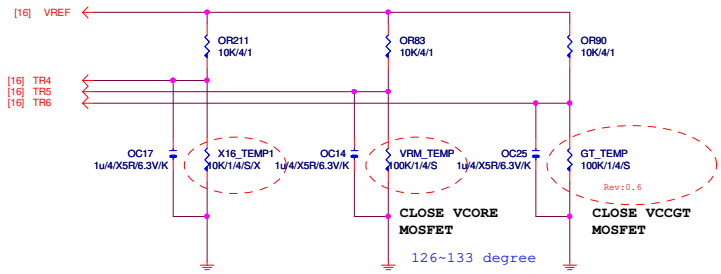
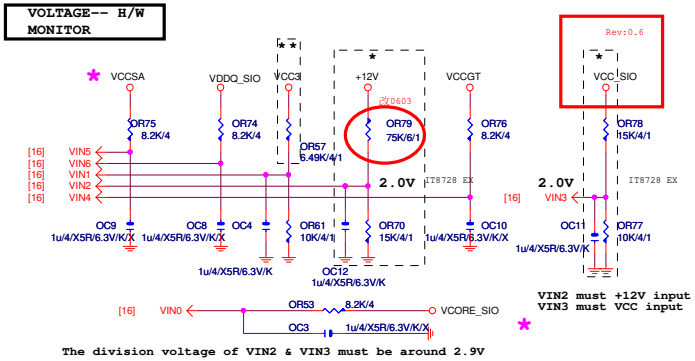
TEMP H/W MONITOR

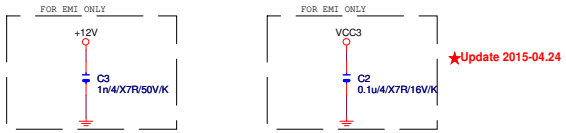


低階機種:3個FAN時使用



VOLTAGE-- H/W MONITOR





★Update 2015-04.24

Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
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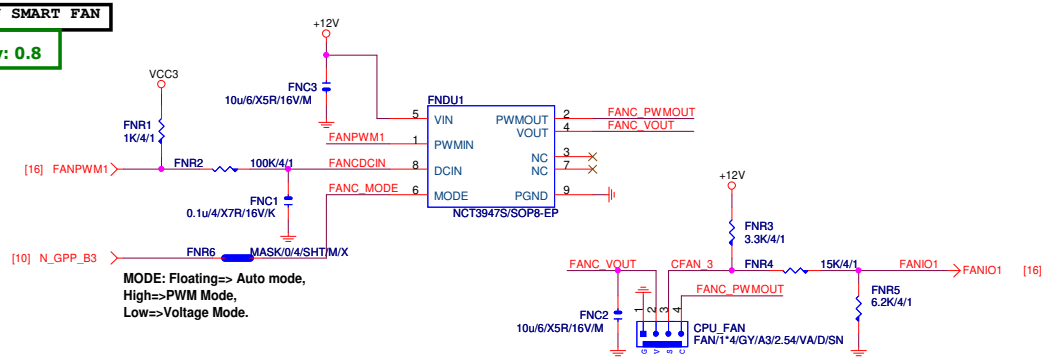
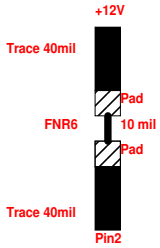
CPU SMART FAN

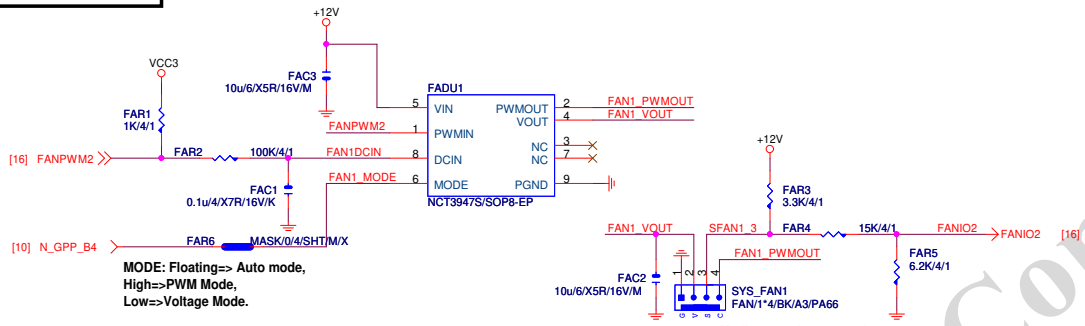
Rev: 0.8



MODE: Floating=> Auto mode,
High=>PWM Mode,
Low=>Voltage Mode.



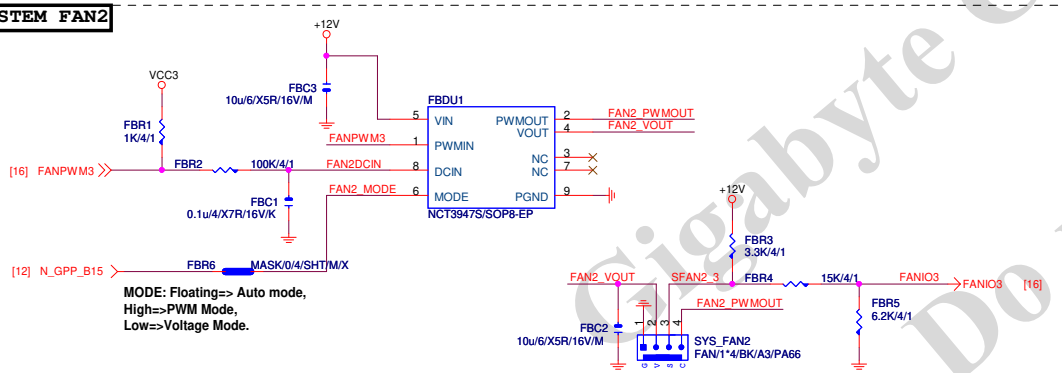
A. SYSTEM FAN1



MODE: Floating=> Auto mode,
High=>PWM Mode,
Low=>Voltage Mode.

Modify name(2020.02.06)

SYSTEM FAN2



MODE: Floating=> Auto mode,
High=>PWM Mode,
Low=>Voltage Mode.

Gigabyte Technology		
Title: FAN CTRL		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
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DUAL BIOS

MOSI For DMI RX Termination Voltage

指定用DII

3VDUAL

BSR1 330/4

BSR2 1K/4/1

-SPI_CS_1

Single BIOS OPTION

BSR3 0/4/X

SOT23

N_-ICH_SPI_CS → N_-ICH_SPI_CS [10]

BSQ1 MMBT2222A/SOT23/600mA/40

BSQ2 MMBT2222A/SOT23/600mA/40

-SPI_HOLD_B BSR4 8.2K/4

指定用DII

BSR5 330/4

BSR6 1K/4/1

-SPI_CS_2

BSQ3 MMBT2222A/SOT23/600mA/40

N_-ICH_SPI_CS

BSQ4 MMBT2222A/SOT23/600mA/40

-SPI_HOLD_M BSR7 8.2K/4

M_BIOS

BSR12 0/4/SHT/M/X

BSC2 1u/4/X5R/6.3V/K

-SPI_CS_1 BSR8 22/4

SPI_MISO

BSC1 10p/4/NPO/50V/J/X

[10] N_SPI_DQ2 BSR9 0/4/SHT/X N_-SPI_WP0

CS# SO WP# VSS VDD HOLD# SCK SI

-HOLD0 BSR13 0/4/SHT/X → N_SPI_DQ3 [10] [10,53]

N_ICH_SPI_CLK

N_ICH_SPI_MOSI

BSC3 10p/4/NPO/50V/J/X

MAIN BIOS

128M/Q/SPI/SO8/S

* (footprint 改 SOIC8-SPI-SOCKET)

B_BIOS

BSR14 0/4/SHT/M/X

BSC4 1u/4/X5R/6.3V/K

-SPI_CS_2 BSR10 22/4

SPI_MISO

[10] N_SPI_DQ2 BSR11 0/4/SHT/X N_-SPI_WP1

-HOLD1 BSR15 0/4/SHT/X → N_SPI_DQ3 [10]

N_ICH_SPI_CLK → N_ICH_SPI_CLK [10,53]

N_ICH_SPI_MOSI → N_ICH_SPI_MOSI [10,53]

BACKUP BIOS

128M/Q/SPI/SO8/S

* (footprint 改 IC8-BIOS)

[16] -SPI_HOLD_M → -SPI_HOLD_M BSR16 1K/4/1

[16] -SPI_HOLD_B → -SPI_HOLD_B BSR17 1K/4/1

N_ICH_SPI_MISO BSR18 8.2K/4

[10,53] N_ICH_SPI_MISO BSR19 22/4 SPI_MISO

BSC5 0.1u/4/X7R/16V/K/X

BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

M_BIOS

LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]/X

* 試產先上 , PVT 移除

Gigabyte Technology

Title: BIOS

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GIGABYTE™

Title	CEC relate circuit		
Size: Custom	Document Number: B460M DS3H AC		Rev: 1.1
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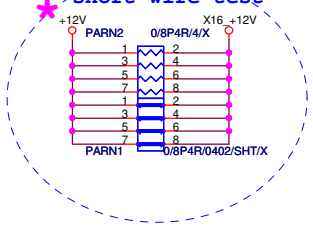
Rev 0.2

+12 protect
short-wire test



PCIESLOT-164P

PCIEX16

3GIO_*16

KEY

X16_+12V

3VDUAL

VCC3

[8,9,12,16,22,26,29,41,54,57] N_SMBCLK
[8,9,12,16,22,26,29,41,54,57] N_SMBDATA
PAR4 0/4/X
PAR5 0/4/X
PAR3 0/4/SHT/M/X

[12,16,22,53,54] N_-PCIE_WAKE

[10] -PCIEX16_PR

PAR1 0/4/SHT/M/X
PAR2 0/4/SHT/M/X

O_-PCIE_RST [16,22,24,53,54]

PAC1 33p/4/NPO/50V/J

PA_SRCCLK_3GIO [10]
PA_-SRCCLK_3GIO [10]

PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] [4]
PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] [4]
PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] [4]
PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] [4]

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_TXP8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_TXN8_C
PA_EXP_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_TXP9_C
PA_EXP_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_TXN9_C
PA_EXP_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_TXP10_C
PA_EXP_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_TXN10_C
PA_EXP_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_TXP11_C
PA_EXP_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_TXN11_C
PA_EXP_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_TXP12_C
PA_EXP_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_TXN12_C
PA_EXP_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_TXP13_C
PA_EXP_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_TXN13_C
PA_EXP_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_TXP14_C
PA_EXP_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_TXN14_C
PA_EXP_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_TXN15_C

B1	12V	PRSNT1*	A1
B2	12V	12V	A2
B3	RSVD	12V	A3
B4	GND	GND	A4
B5	SMCLK	JTAG2	A5
B6	SMDAT	JTAG3	A6
B7	GND	JTAG4	A7
B8	3.3V	JTAG5	A8
B9	JTAG1	3.3V	A9
B10	3.3VAUX	3.3V	A10
B11	WAKE*	PWRGD	A11
B12	RSVD	GND	A12
B13	GND	REFCLK+	A13
B14	HSOP0	REFCLK-	A14
B15	HSON0	GND	A15
B16	GND	HSIP0	A16
B17	PRSNT2*	HSIN0	A17
B18	GND	GND	A18
B19	HSOP1	RSVD	A19
B20	HSON1	GND	A20
B21	GND	HSIP1	A21
B22	GND	HSIN1	A22
B23	HSOP2	GND	A23
B24	HSON2	GND	A24
B25	GND	HSIP2	A25
B26	GND	HSIN2	A26
B27	HSOP3	GND	A27
B28	HSON3	GND	A28
B29	GND	HSIP3	A29
B30	RSVD	HSIN3	A30
B31	PRSNT2*	GND	A31
B32	GND	RSVD	A32
B33	HSOP4	RSVD	A33
B34	HSON4	GND	A34
B35	GND	HSIP4	A35
B36	GND	HSIN4	A36
B37	HSOP5	GND	A37
B38	HSON5	GND	A38
B39	GND	HSIP5	A39
B40	GND	HSIN5	A40
B41	HSOP6	GND	A41
B42	HSON6	GND	A42
B43	GND	HSIP6	A43
B44	GND	HSIN6	A44
B45	HSOP7	GND	A45
B46	HSON7	GND	A46
B47	GND	HSIP7	A47
B48	PRSNT2*	HSIN7	A48
B49	GND	GND	A49
B50	HSOP8	RSVD	A50
B51	HSON8	GND	A51
B52	GND	HSIP8	A52
B53	GND	HSIN8	A53
B54	HSOP9	GND	A54
B55	HSON9	GND	A55
B56	GND	HSIP9	A56
B57	GND	HSIN9	A57
B58	HSOP10	GND	A58
B59	HSON10	GND	A59
B60	GND	HSIP10	A60
B61	GND	HSIN10	A61
B62	HSOP11	GND	A62
B63	HSON11	GND	A63
B64	GND	HSIP11	A64
B65	GND	HSIN11	A65
B66	HSOP12	GND	A66
B67	HSON12	GND	A67
B68	GND	HSIP12	A68
B69	GND	HSIN12	A69
B70	HSOP13	GND	A70
B71	HSON13	GND	A71
B72	GND	HSIP13	A72
B73	GND	HSIN13	A73
B74	HSOP14	GND	A74
B75	HSON14	GND	A75
B76	GND	HSIP14	A76
B77	GND	HSIN14	A77
B78	HSOP15	GND	A78
B79	HSON15	GND	A79
B80	GND	HSIP15	A80
B81	PRSNT2*	HSIN15	A81
B82	RSVD	GND	A82

PA_EXP_RXP0 PA_EXP_RXN0
PA_EXP_RXP1 PA_EXP_RXN1
PA_EXP_RXP2 PA_EXP_RXN2
PA_EXP_RXP3 PA_EXP_RXN3
PA_EXP_RXP4 PA_EXP_RXN4
PA_EXP_RXP5 PA_EXP_RXN5
PA_EXP_RXP6 PA_EXP_RXN6
PA_EXP_RXP7 PA_EXP_RXN7
PA_EXP_RXP8 PA_EXP_RXN8
PA_EXP_RXP9 PA_EXP_RXN9
PA_EXP_RXP10 PA_EXP_RXN10
PA_EXP_RXP11 PA_EXP_RXN11
PA_EXP_RXP12 PA_EXP_RXN12
PA_EXP_RXP13 PA_EXP_RXN13
PA_EXP_RXP14 PA_EXP_RXN14
PA_EXP_RXP15 PA_EXP_RXN15

VCC3
PABC2 0.1u/4/X7R/16V/K
PABC3 0.1u/4/X7R/16V/K
PABC4 0.1u/4/X7R/16V/K/X

+12V
PAEC1 270u/FP/D/16V/8C/A/10m
X16_+12V
PABC1 0.1u/4/X7R/16V/K
VCC3
PAEC2 560u/FP/D/6.3V/69/A/7m

PCI-E/16X-164P/GY/LONG DOUBLE/HK*2

黑色SLOT

PCIEX16:16/5/5/5/16

PCI-E REV:1.1--> 2.5GHZ

PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ

Gigabyte Technology

Title: PCI EXPRESS * 16

Size: Custom | Document Number: B460M DS3H AC | Rev: 1.1

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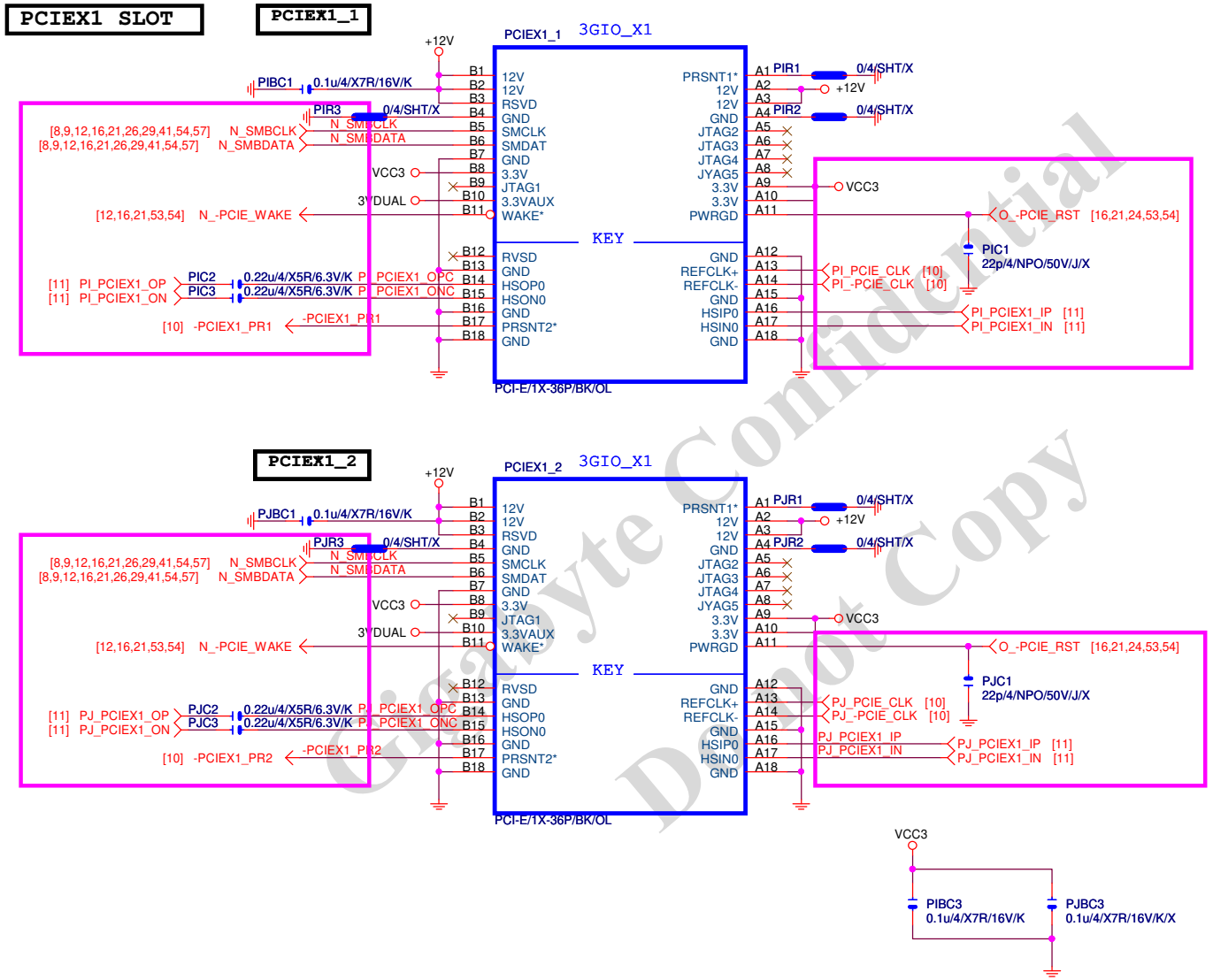
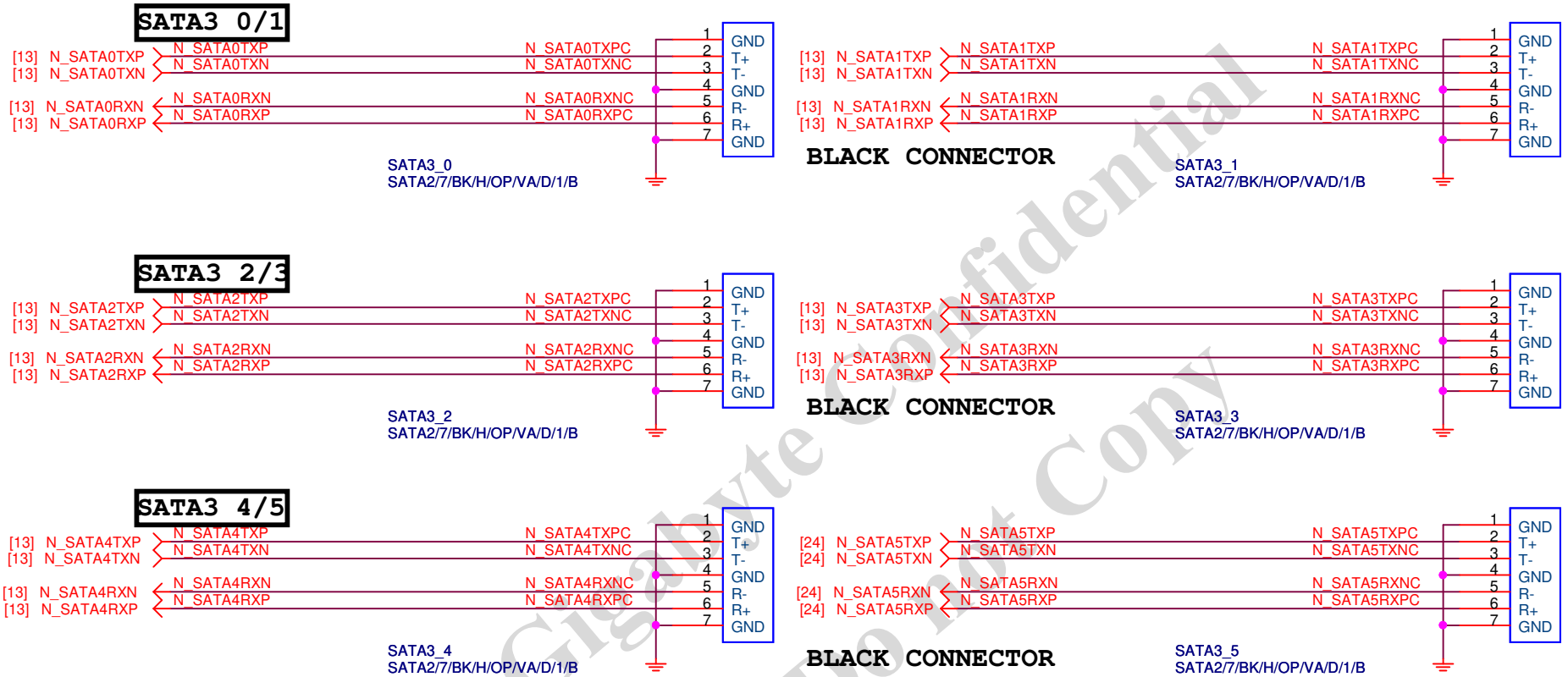
Rev 0.51



Gigabyte Technology		
Title: PCIE_X4		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 22 of 63	



Gigabyte Technology

Title: SATA

Size: Custom | Document Number: B460M DS3H AC | Rev: 1.1

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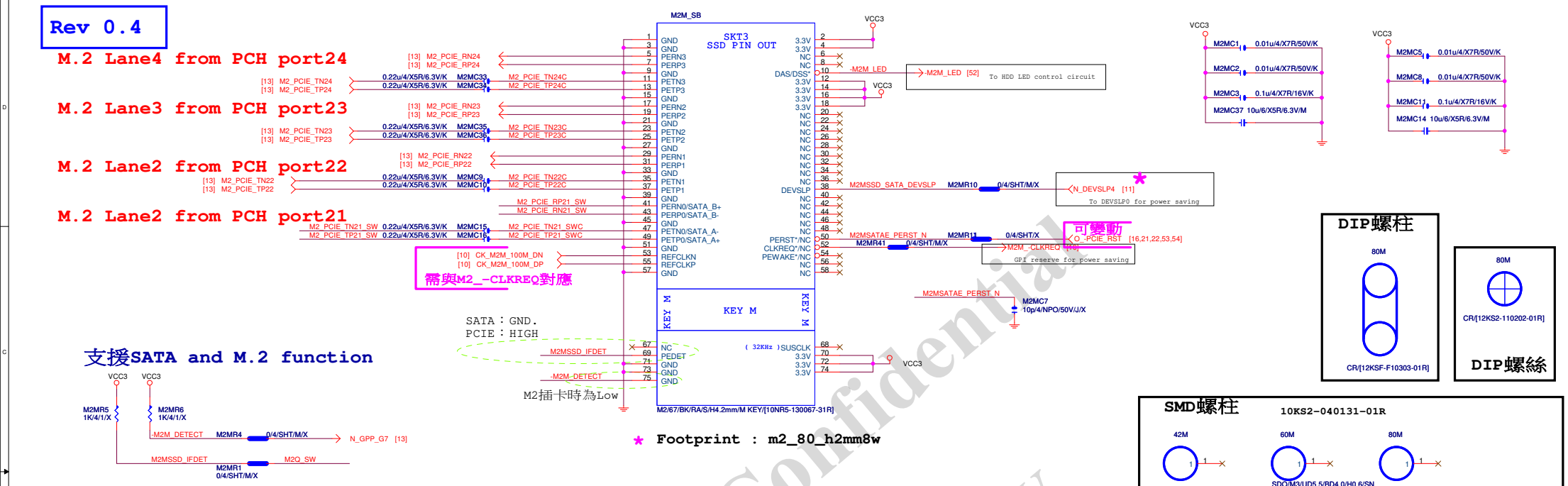
Rev 0.4

M.2 Lane4 from PCH port24

M.2 Lane3 from PCH port23

M.2 Lane2 from PCH port22

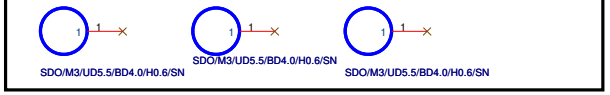
M.2 Lane2 from PCH port21



支援SATA and M.2 function

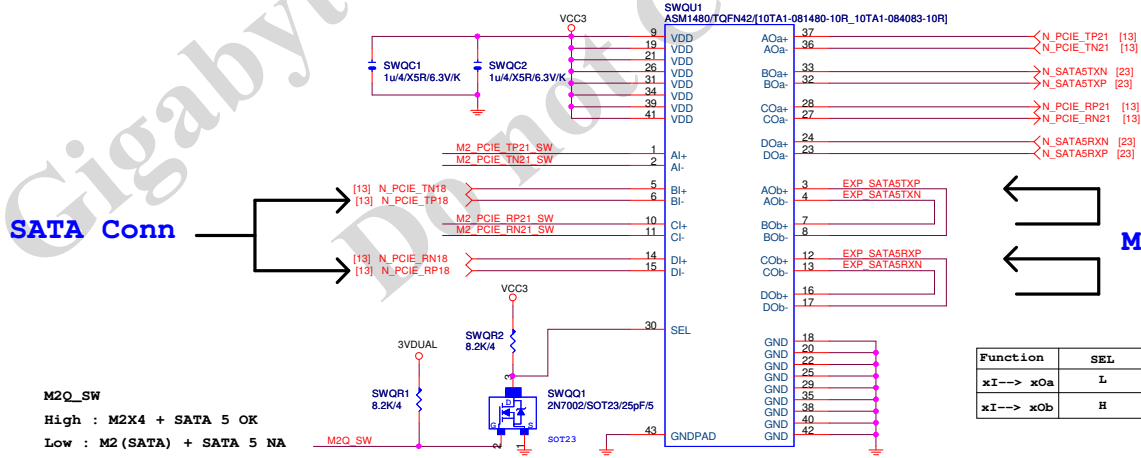
DIP螺柱

SMD螺柱 10KS2-040131-01R



★ Footprint : m2_80_h2mm8w

舊的Switch,價格低



SATA Conn

M.2 PCIE Mode

M.2 SATA Mode

M2Q_SW
High : M2X4 + SATA 5 OK
Low : M2(SATA) + SATA 5 NA

Function	SEL
xI--> xOa	L
xI--> xOb	H

Gigabyte Technology

Title: M.2 X4

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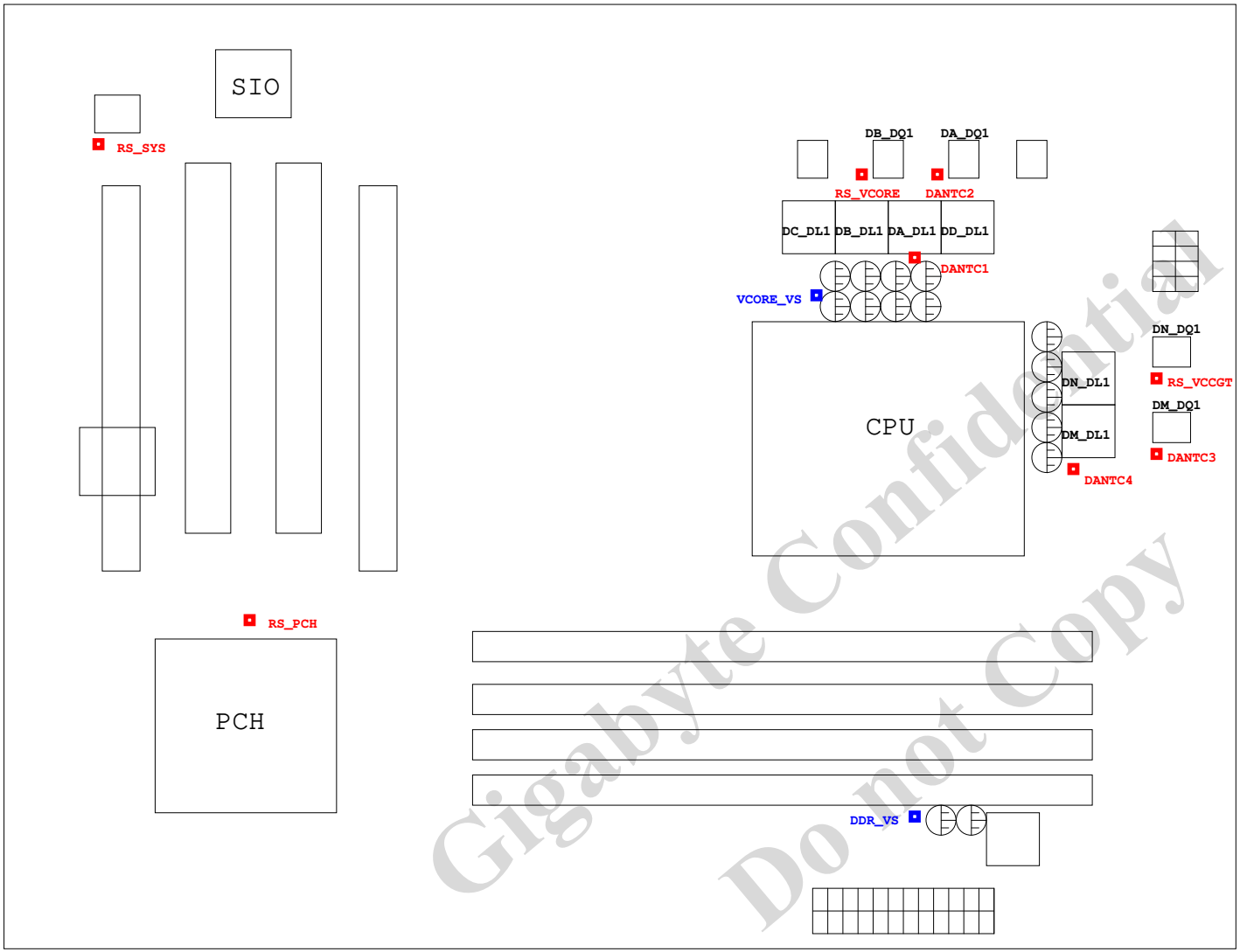

熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL1	N/A
DANTC2	DA_DQ1	Differential
DANTC3	DM_DQ1	N/A
DANTC4	DM_DL1	Differential
RS_VCORE	DB_DQ1	N/A
RS_VCCGT	DN_DQ1	N/A
RS_PCH	PCH	N/A
RS_SYS	CU1	N/A

Gigabyte Technology

Title: NTC MAP

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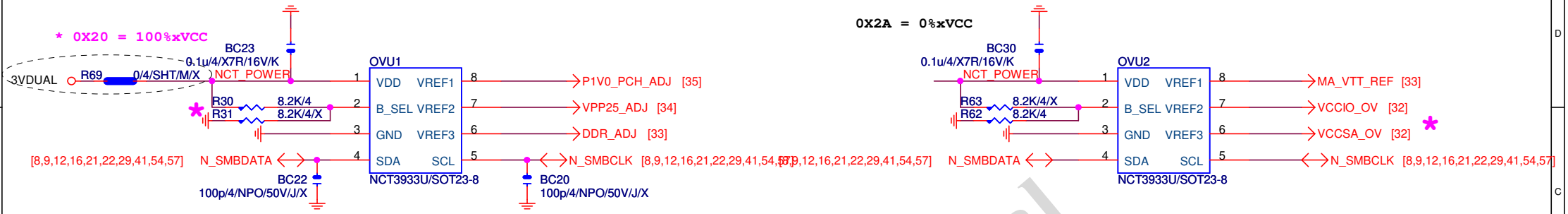
OVER VOLTAGE



NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology

Title: CPU CORE VR-2

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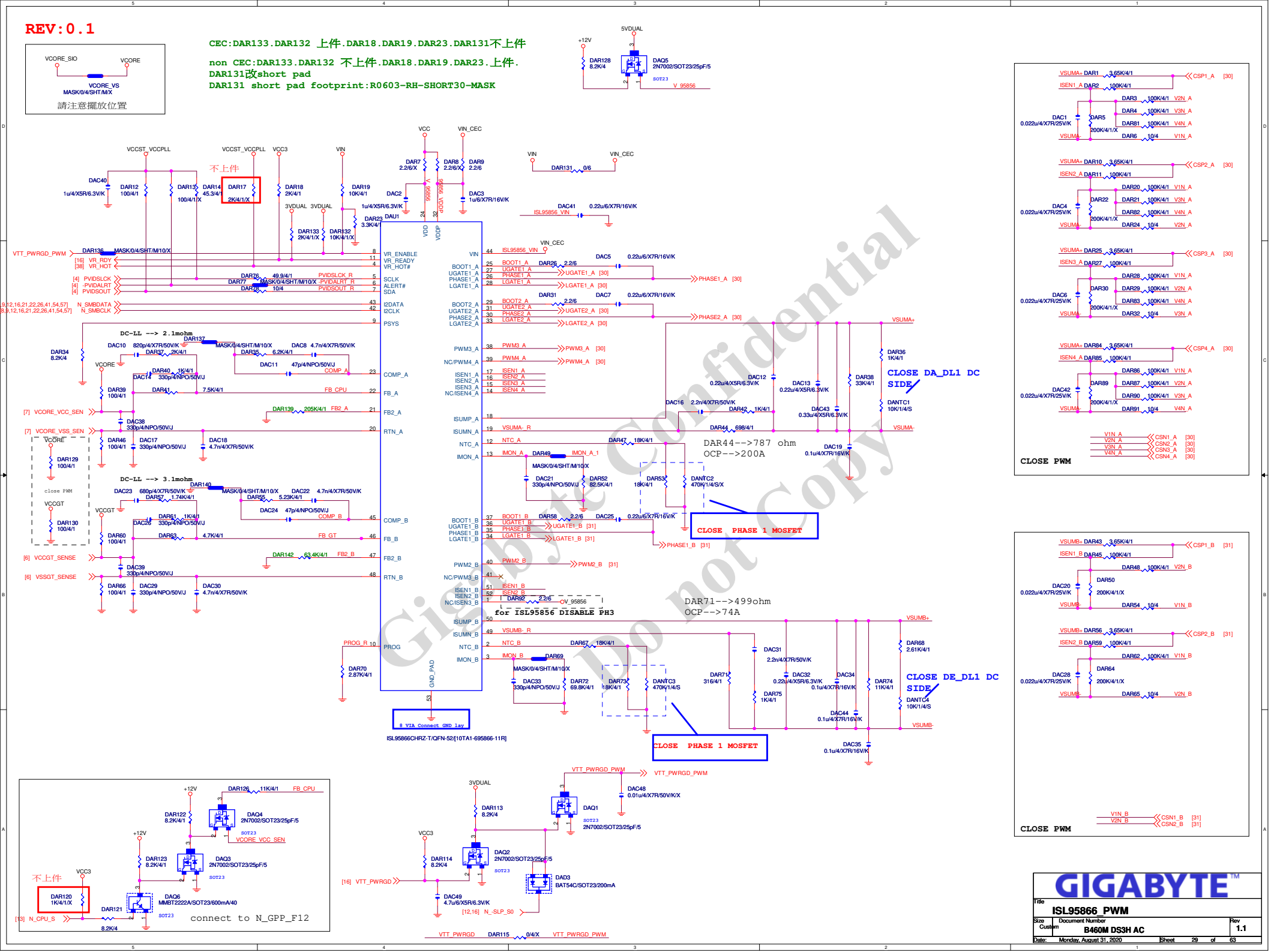
REV:0.1

VCORE_SIO — VCORE_VS — VCORE
MASK/0/4/SHT/M/X
請注意擺放位置

CEC:DAR133.DAR132 上件.DAR18.DAR19.DAR23.DAR131不上件

non CEC:DAR133.DAR132 不上件.DAR18.DAR19.DAR23.上件.
DAR131改short pad
DAR131 short pad footprint:R0603-RH-SHORT30-MASK



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Title	ISL95866_PWM	
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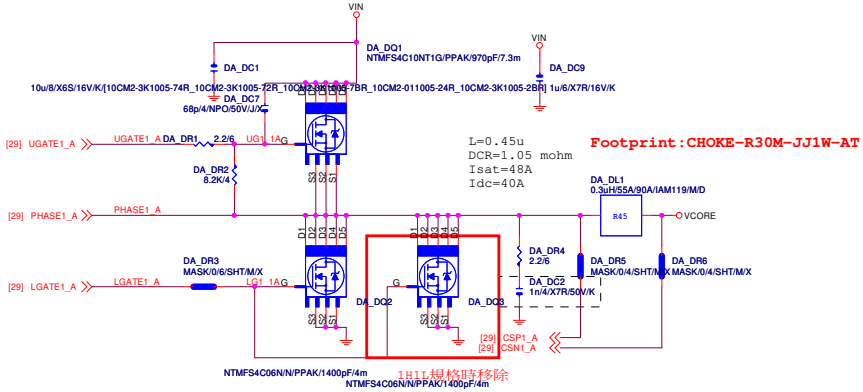
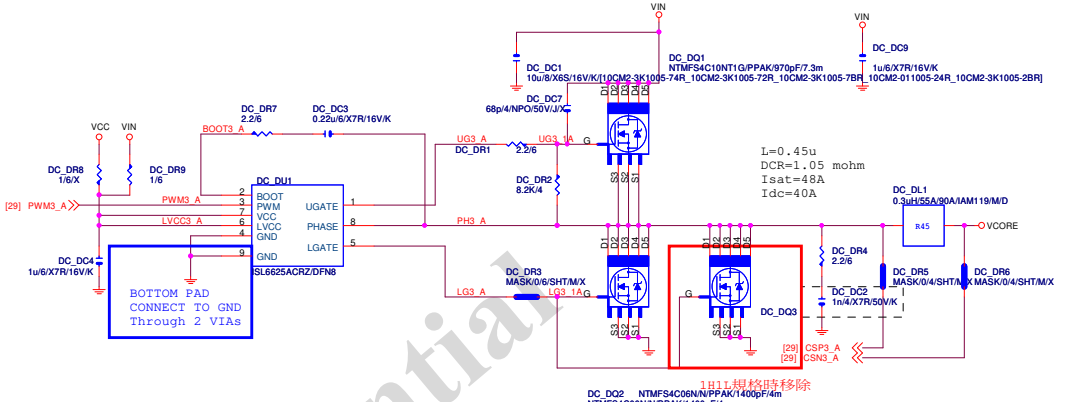
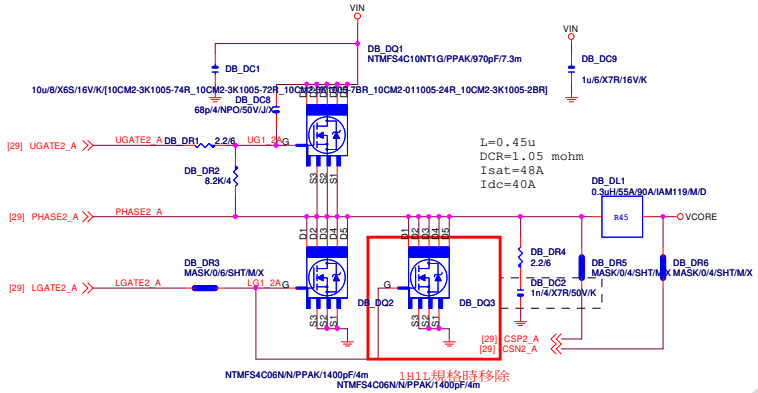
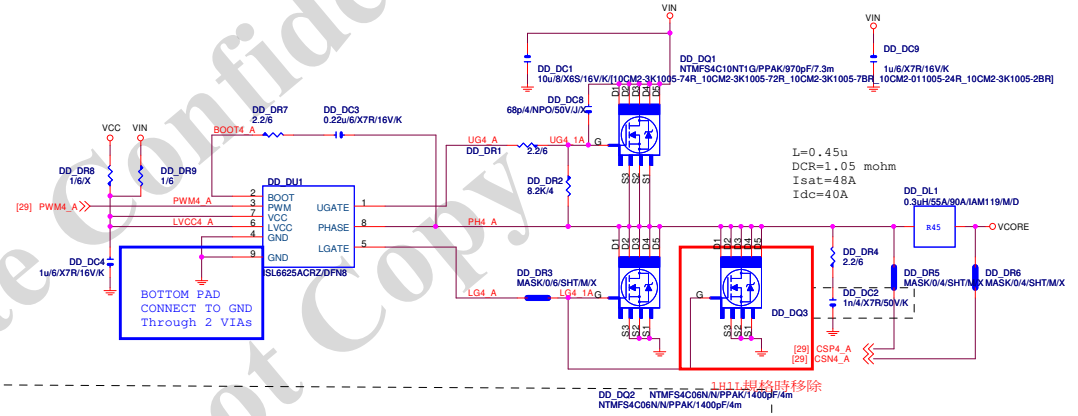
REV:0.55

VCORE



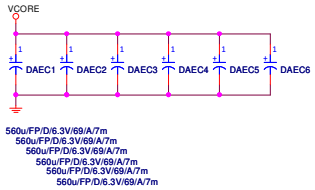


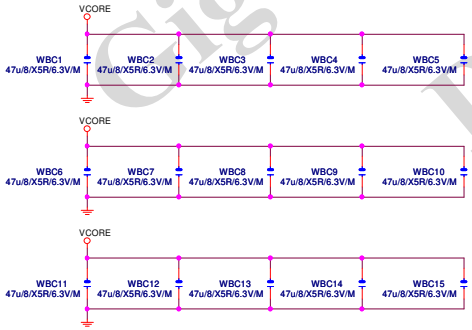


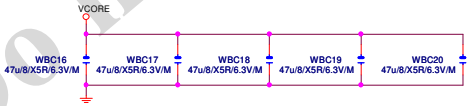


VCORE CAP

560u*6PCS
22u*20PCS



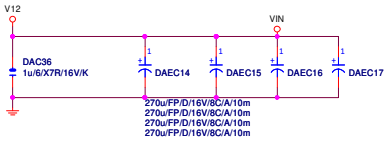




放CPU SOCKET (TOP LAYER)

VIN CAP

270u*4PCS



GIGABYTE

Title	ISL95866_MOS	
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
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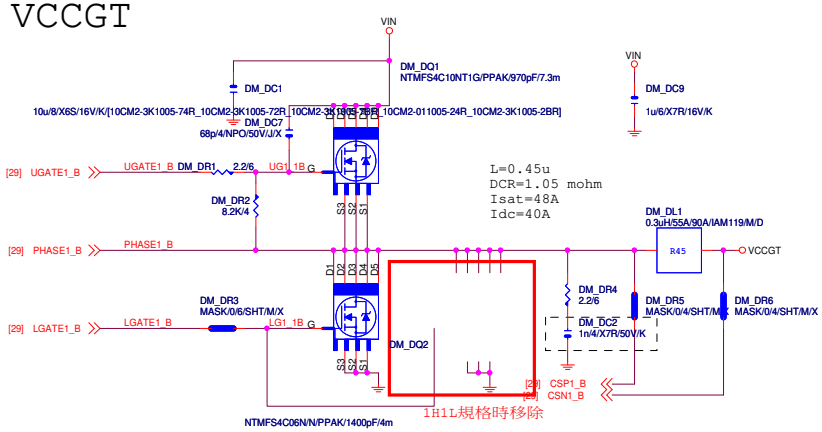
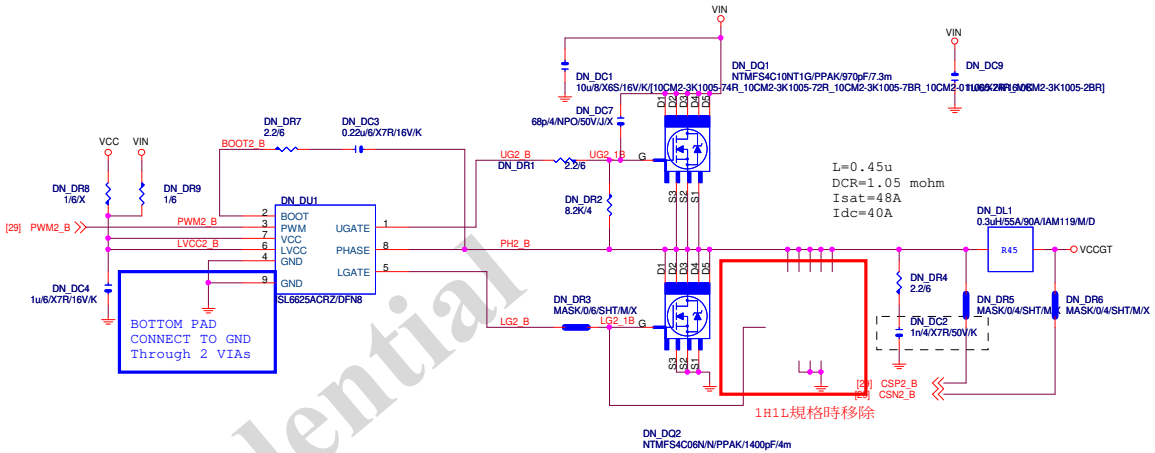
REV::0.55

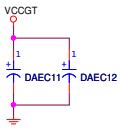
VCCGT



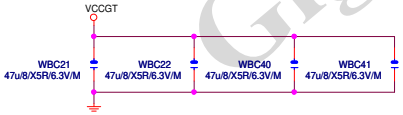


VCCGT CAP

560u*2PCS
22u*4PCS



560u/FP/D/6.3V/69/A/7m
560u/FP/D/6.3V/69/A/7m



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Title	ISL95866_MOS	
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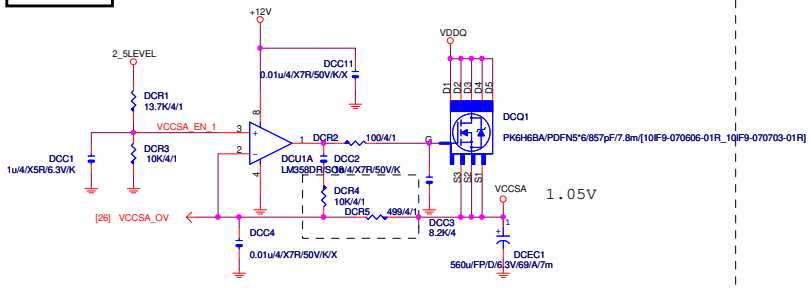
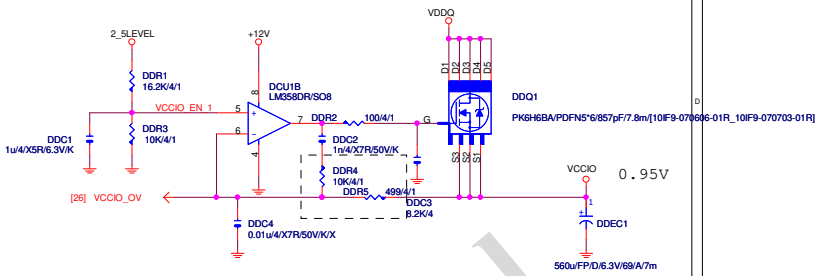
REV:0.3

VCCSA

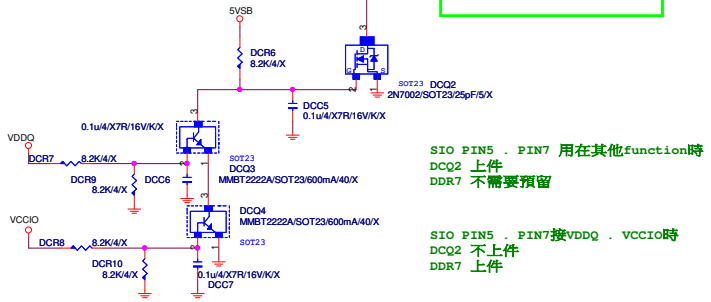


VCCIO



VCCSA_EN_1 DDR7 MASK/0/4/SHT/M/X VCCSA_EN [16]

Connect to IT8686

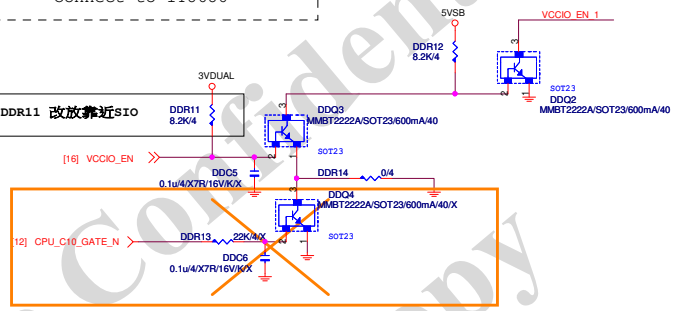


SIO PIN5 . PIN7 用在其他function時
DCQ2 上件
DDR7 不需要預留

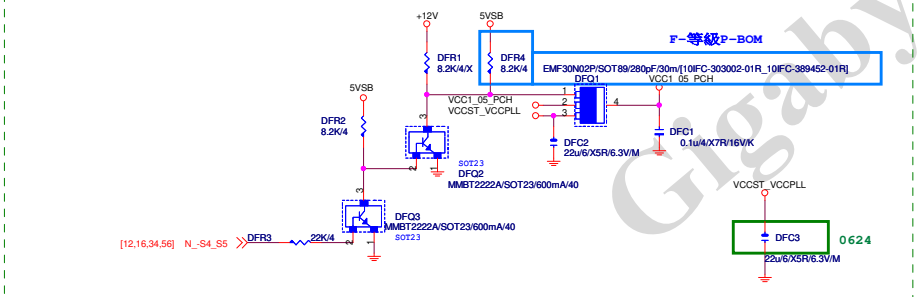
SIO PIN5 . PIN7接VDDQ . VCCIO時
DCQ2 不上件
DDR7 上件

VCCIO_EN_1 DDR8 0/4/X VCCIO_EN [16]

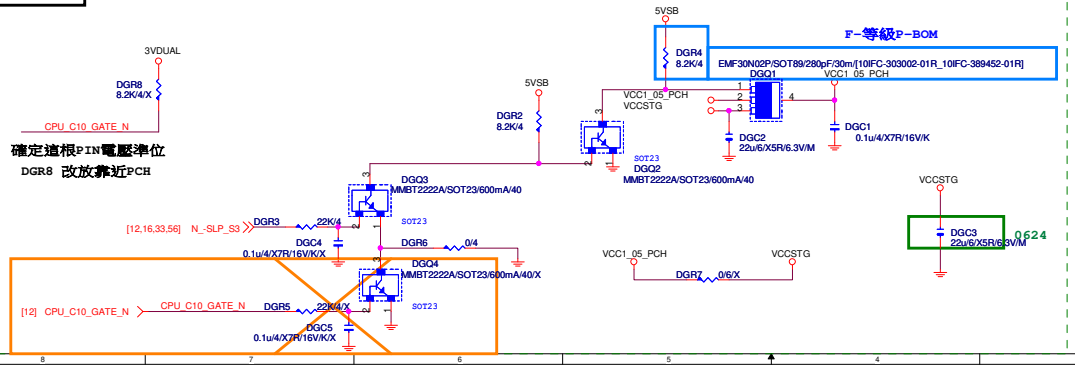
Connect to IT8686



VCCST_VCCPLL



VCCSTG



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Title	VCCSA_VCCIO_no 44E	
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REV:0.3

DDR4

上件

MA_DR38.MA_DC15

VPP_25V使用8120.8068A.RT8237時上件

DDR_VS MASK/0/4/SHT/M/X

CLOSE TO DDR POWER PLANE

FS=290K

OCP=40A

MAU2 RT8237/[10TA1-608237-01R]

PIN7-->20mil
PIN1-->6mil
PIN2-->6mil
PIN5-->6mil
PIN3-->6mil

MOSFET請依MOSFET使用規則,自行選擇
ON-->10IF9-040406-10R[NTMFS4C06N/N/PPAK/1400pF/4m]
VISHAY-->10IF9-040012-10R[SIRA12DP/PPAKSO8/2070pF/4.3m]

DDR VIN CAP 560u*2PCS

CHOKE與CAP料號可變

自動插件 footprint: CHOKE05U-40A-1PQ-AT

SUPPORT DDR4 1.2V

25A MAX

L=1u
DCR=2.5 mohm
Isat=35A
Idc=28A

灰色平面

10*10

1H1L規格移除

請放置CHOKE一出來位置.先預留.
請自行確認ripple後再決定是否上件

Remote sense請從最重的負載端點拉回

PWR SEQ

For power sequence require

VPP_25V使用8120時上件

MAU1上RT9045時上件(不可MASK)

DDRVTT

NCT3103S/SOP8/2A/[10GL2-203103-01R]

1.1A MAX

DDR CAP 560u*4PCS 22u*2PCS

Footprint EC6D8MM-RH-2

* 大電容 x4

DDRVTT CAP

* 大電容 x0

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Title	RT8237_DDR4 POWER	
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
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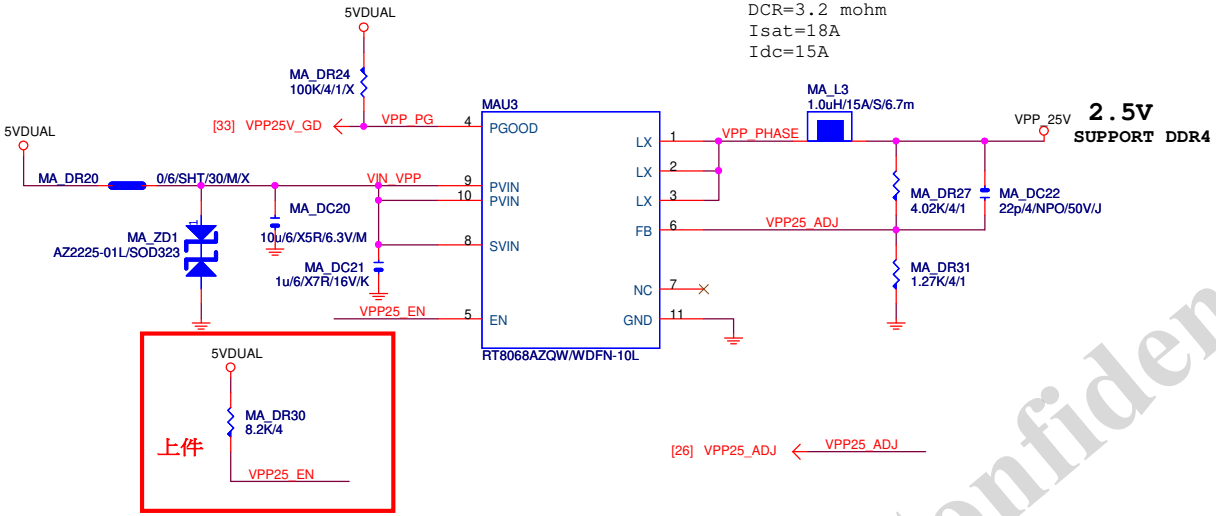
REV:0.1

VPP_25V

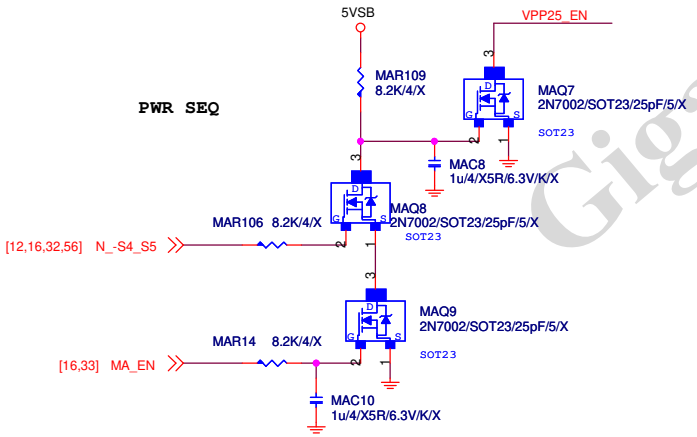
CHOKE與CAP料號可變

L=1u
DCR=3.2 mohm
Isat=18A
Idc=15A

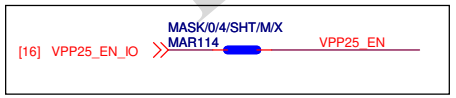


PWR SEQ

* 刪 MA_DR32

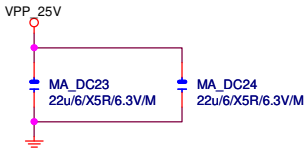


PWR SEQ



VPP CAP 22u*1PCS

* 大電容 x0



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Title	RT8068A_VPP25 POWER	
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
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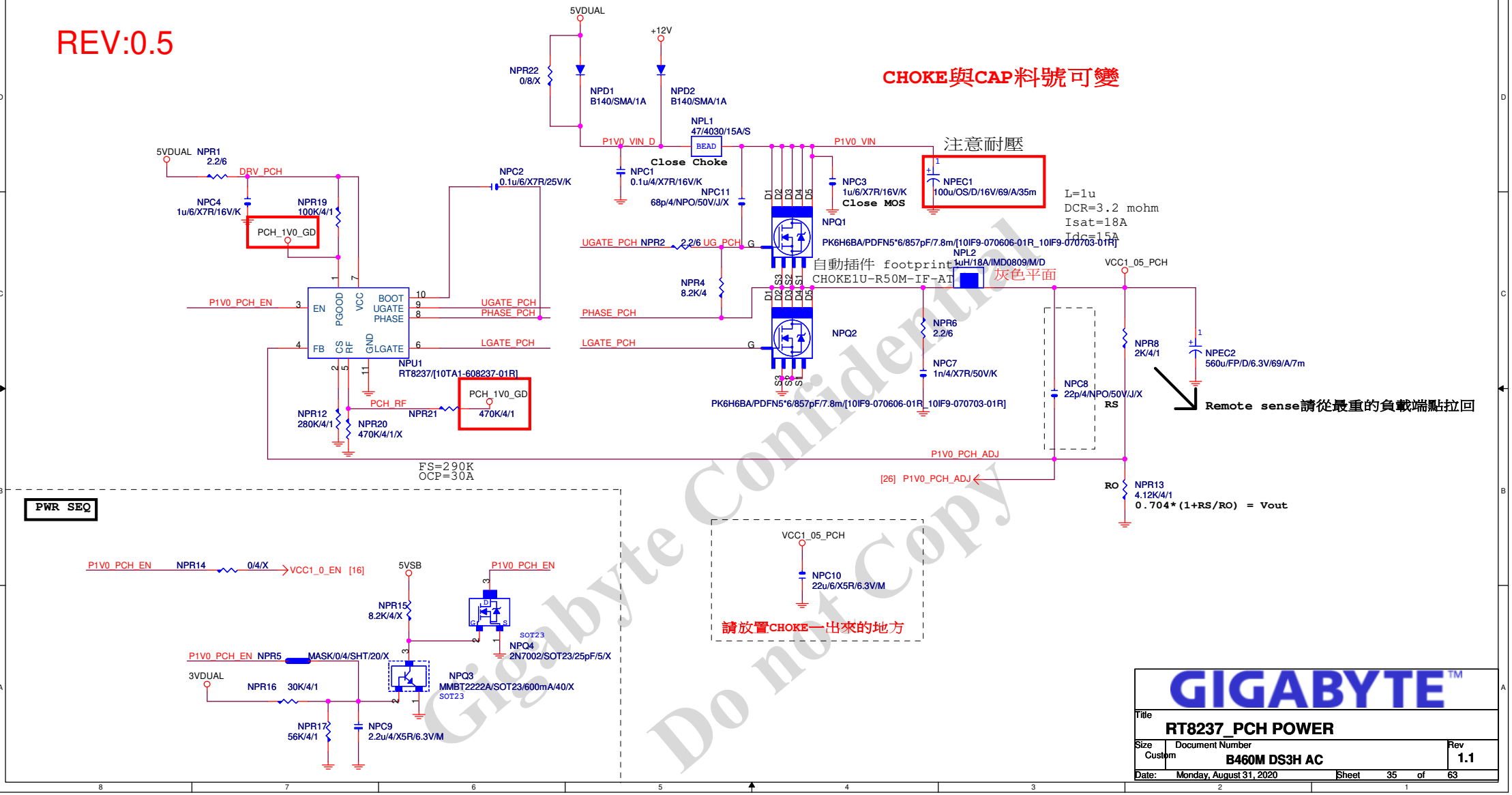
REV:0.5



GIGABYTE™

Title	RT8237_PCH POWER	
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
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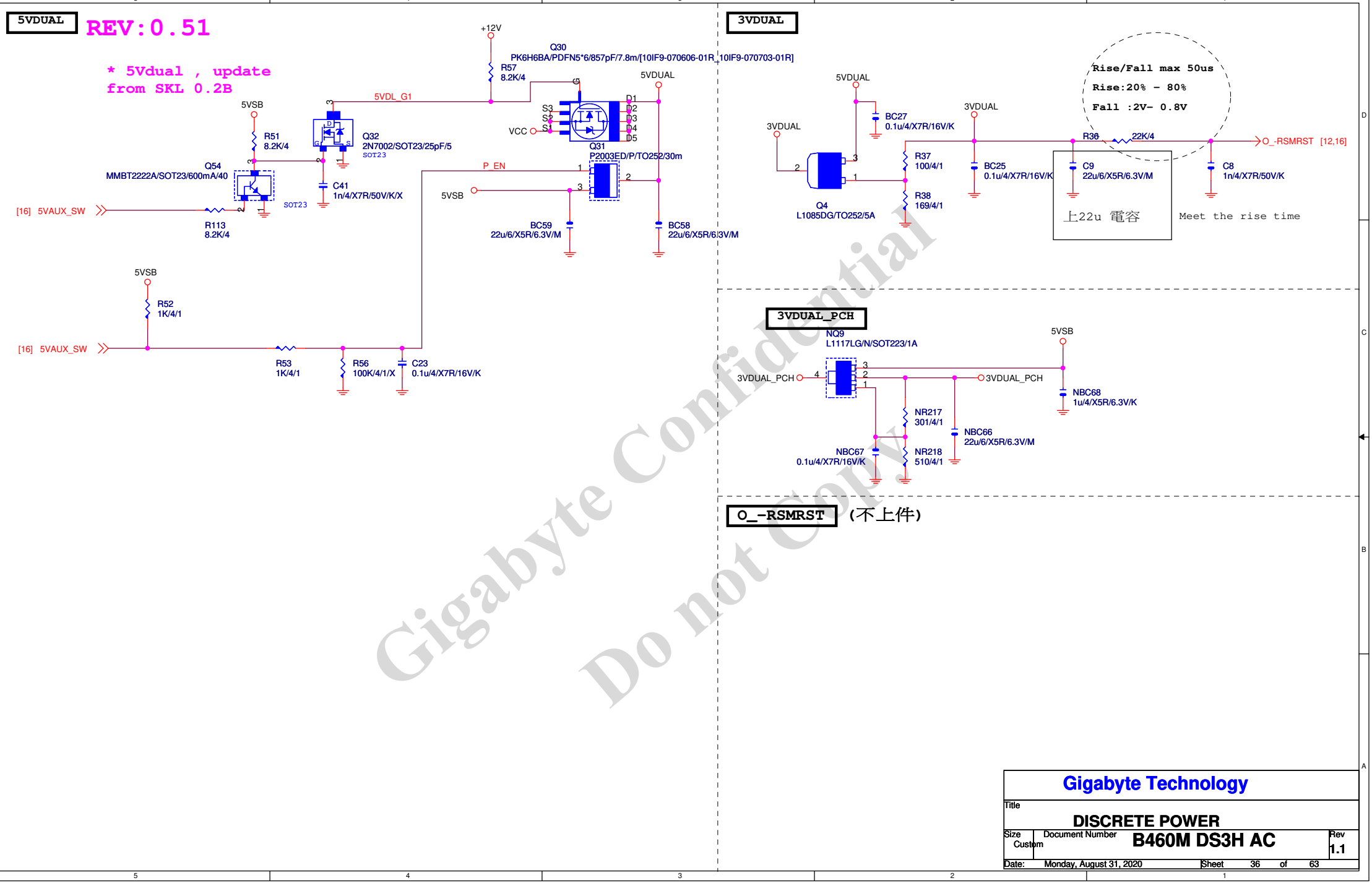
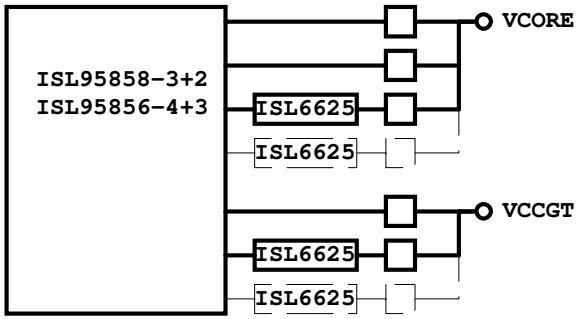
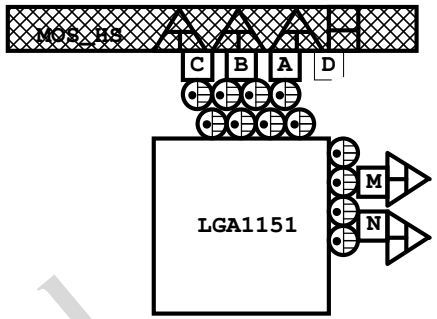


POWER BLOCK MAP

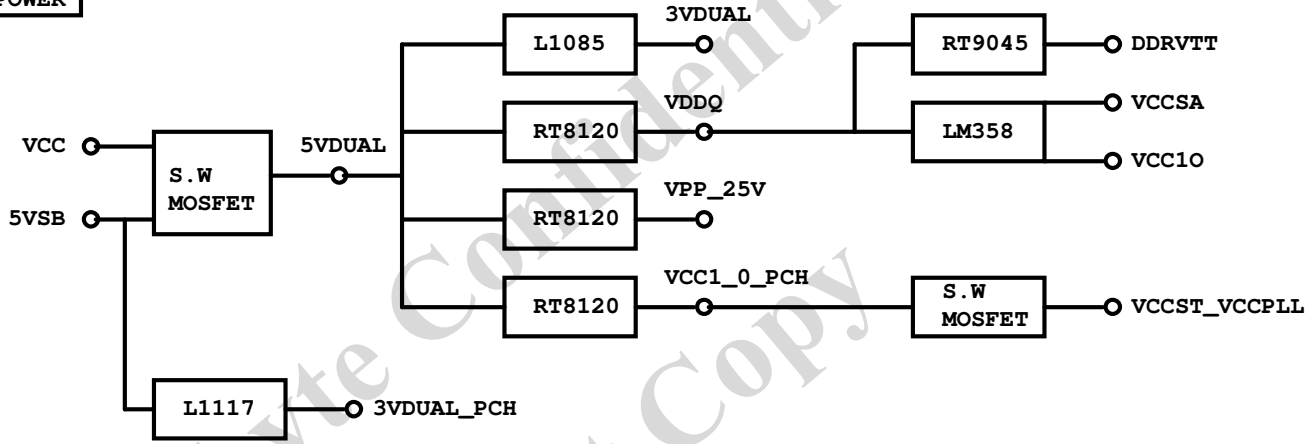
- CPU
  - VCORE
  - VCCGT
  - VCCSA
  - VCCIO
  - VDDQ
  - VCCST_VCCPLL
  - VCCSFUSEPRG
- DDR4
  - VDDQ
  - DDRVTT
  - VPP_25V
  - VDDSPD(VCC3)
- PCH
  - VCC1_0_PCH
  - VCC1_0_PCH_DSW
  - VCC10_VCCF24_1P0
  - VCC10_VCCAMPHYPLL
  - VCC10_VCCAPLL
  - VCC3_PCH
  - 3VDUAL_PCH
  - VCC3
  - N_RTCVDD
- IT8628
  - IT_VCCH
  - IT_AVCC
  - 2_5LEVEL
- HM
  - +12V
  - VCC
  - VCC3
  - VCORE
  - VCCGT(IMON_VCCGT)
  - VDDQ
  - VCCSA(IMON_VCORE)

VCORE/VCCGT

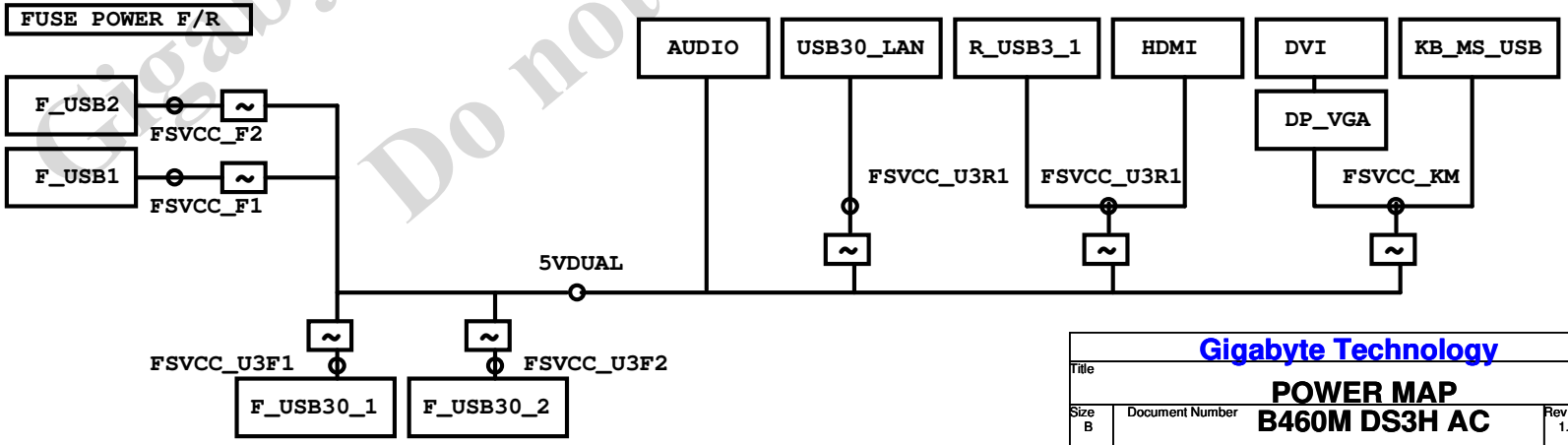




POWER



FUSE POWER F/R



Gigabyte Technology

Title: POWER MAP

Size: B | Document Number: B460M DS3H AC | Rev: 1.1

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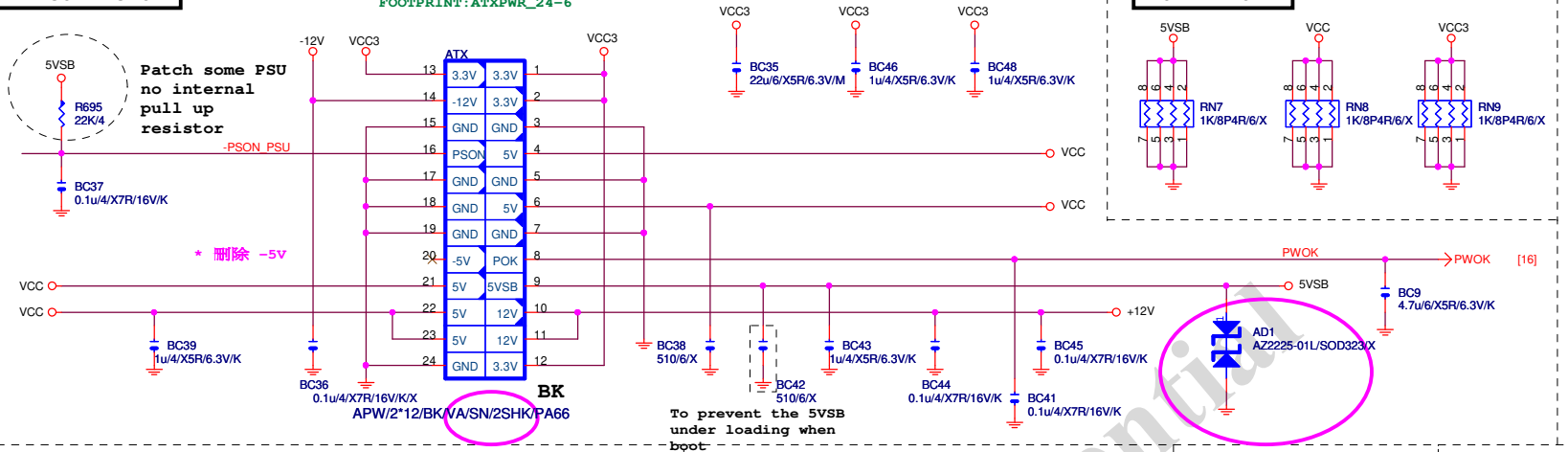
ATXX24 POWER CONNECTOR

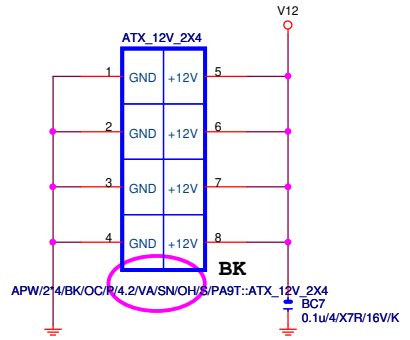
2x12 (一般Pin)
FOOTPRINT:ATXPWR_24-6



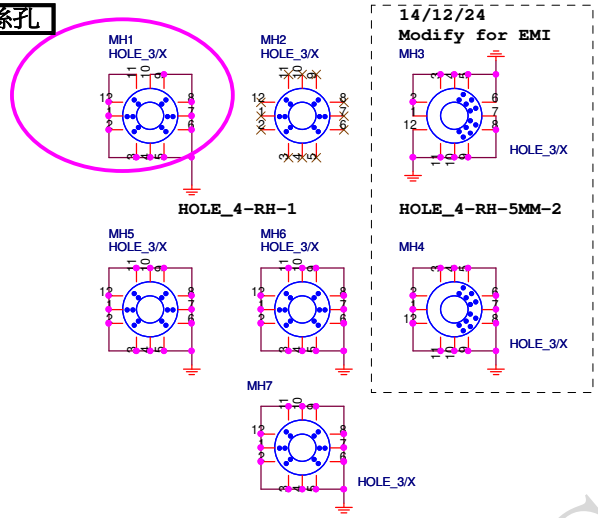
DUMMY LOAD

ATXX4 POWER CONNECTOR

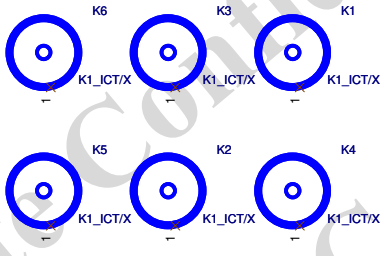
2x4 (單心Pin)
FOOTPRINT:ATXPW2X4-SOLID

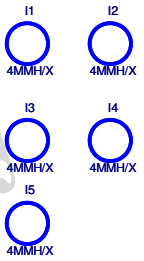


螺絲孔



固定孔/光學點

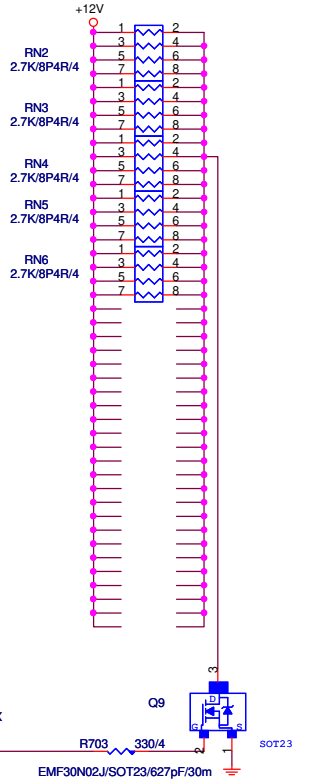


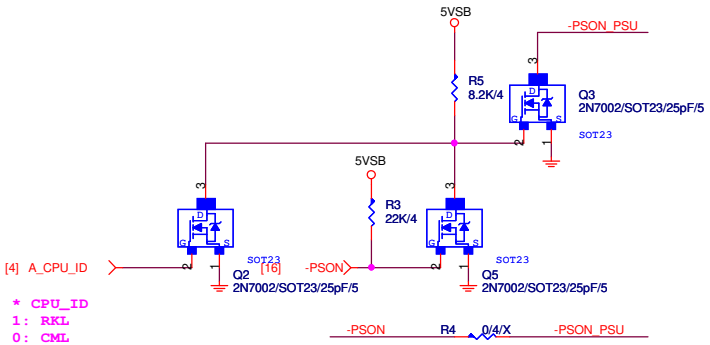


+12V DUMMY LOAD

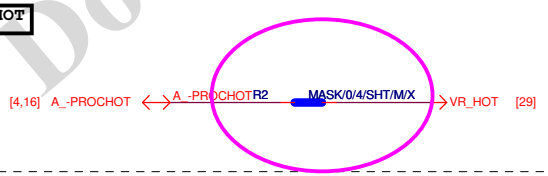
【技術通報R&D技術通報153】

To fix 12V light load abnromal issue

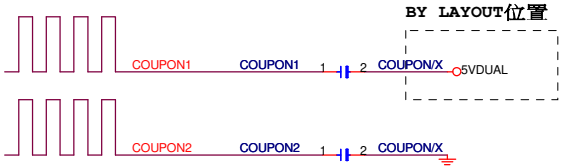




-PROHOT



COUPON

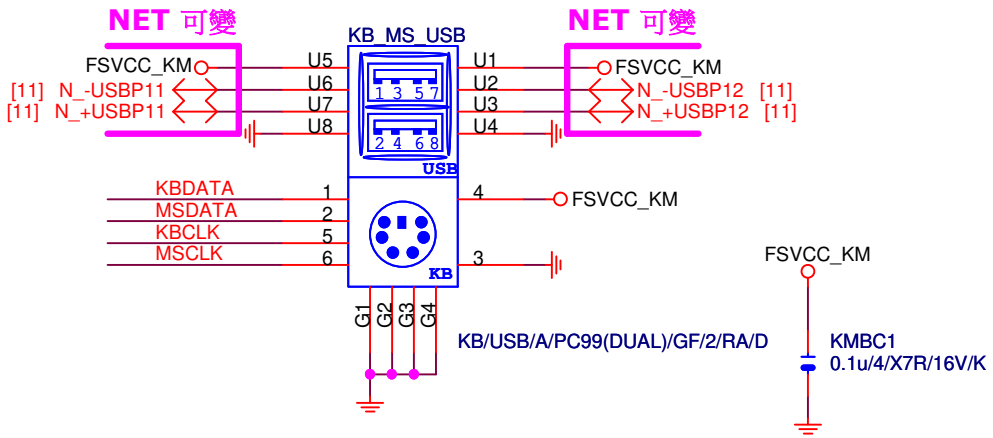


BY LAYOUT位置

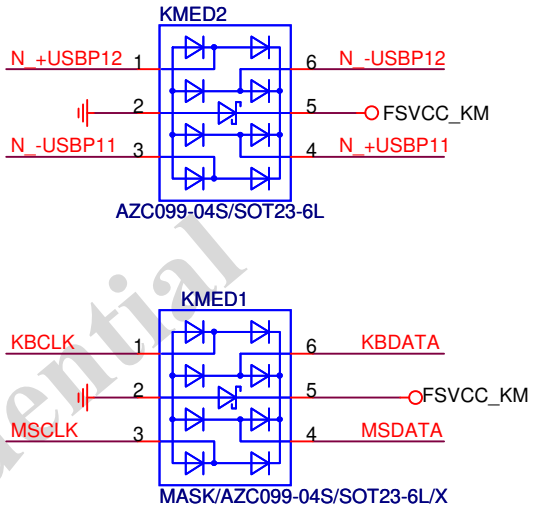
Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 38 of 63	

KB_MS_USB

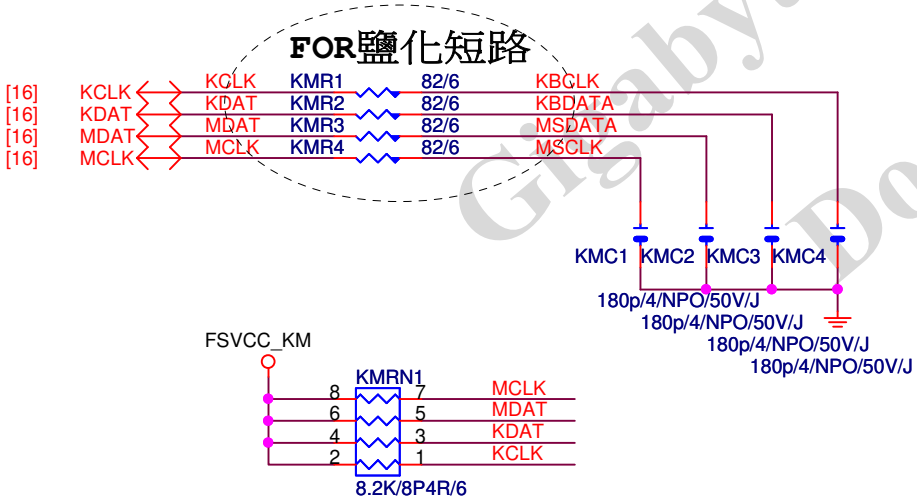
Rev: 0.7



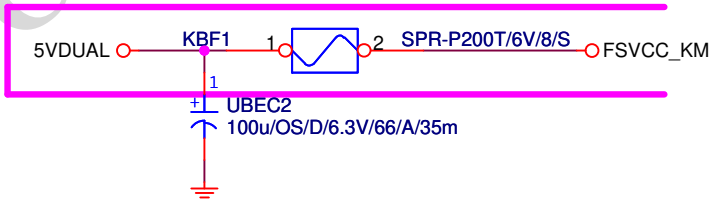
ESD



KB_MS_USB DAMPING/PU



KB_MS_USB PWR



USB OC PROTECT

Gigabyte Technology			
Title: KB_MS_USB			
Size: A	Document Number: B460M DS3H AC		Rev: 1.1
Date: Monday, August 31, 2020	Sheet 39 of 63		

DVI

Rev: 0.8

DVI:20/4/6/4/20
Impedance=85 +- 17.5%

NET 可變

[4] DVI_TXC
[4] DVI_TXC-
VBC1 0.1u/4/X7R/16V/K/X
VBC2 0.1u/4/X7R/16V/K/X
DVITXC+ VR1 680/4/1/X
DVITXC- VR2 680/4/1/X

[4] DVI_TX0
[4] DVI_TX0-
VBC3 0.1u/4/X7R/16V/K/X
VBC4 0.1u/4/X7R/16V/K/X
DVITX0+ VR3 680/4/1/X
DVITX0- VR4 680/4/1/X

[4] DVI_TX1
[4] DVI_TX1-
VBC5 0.1u/4/X7R/16V/K/X
VBC7 0.1u/4/X7R/16V/K/X
DVITX1+ VR7 680/4/1/X
DVITX1- VR8 680/4/1/X

[4] DVI_TX2
[4] DVI_TX2-
VBC8 0.1u/4/X7R/16V/K/X
VBC9 0.1u/4/X7R/16V/K/X
DVITX2+ VR9 680/4/1/X
DVITX2- VR10 680/4/1/X

DVI_G

VQ1
2N7002/SOT23/25pF/5/X
SOT23

VCC VR16 8.2K/4/X VQ1_2

DVI_SCL

VQ2
2N7002/SOT23/25pF/5/X
SOT23

VCC VR17 1K/4/1/X VQ2_2 N_DDPC_CTRLCLK

DVI_SDA

VQ3
2N7002/SOT23/25pF/5/X
SOT23

VCC VR18 1K/4/1/X VQ3_2 N_DDPC_CTRLDATA

DVI PU

VCC
防漏電
★Update 2015.05.27

VD1
BAT54A/SOT23/200mA/X
SOT23

VR14 2.2K/4/1/X
VR13 2.2K/4/1/X

DVI_SDA
DVI_SCL

[10] N_DDPC_CTRLCLK
[10] N_DDPC_CTRLDATA
VR5 2.2K/4/1/X
VR6 2.2K/4/1/X
VCC3

VBC6
0.1u/4/X7R/16V/K/X

DVI_HP

VQ4
2N7002/SOT23/25pF/5/X
SOT23

VCC3
VR20 1M/4/X

VCC VR19 8.2K/4/X VQ4_2 N_DVI_HDP_F

N_DVI_HDP_F [10]

DVI CONN

NET 可變

FSVCC_KM

DVITX0-
DVITX0+
DVITX1-
DVITX1+
DVITX2-
DVITX2+
DVI_SCL
DVI_SDA
DVI_HP
DVITXC-
DVITXC+

VR15 20K/4/1/X

M1 M2 M5 M6 M7 M8

DVI

COMMON

DVI-30P-4P-1

DVI-D/24P/SC/RA/D/SH/X

平躺式 DVI-D

11NR6-501024-31

ESD

NET 可變

FSVCC_KM

VBC10
0.1u/4/X7R/16V/K/X

VESD3

DVI_SCL
DVI_SDA
DVI_HP
FSVCC_KM

AZC099-04S/SOT23-6L/X

Close to connector

VESD2

DVITX2-
DVITX2+
DVITX1+
DVITX1-

AZ1045-04F/MSOP10/X

Close to connector

VESD1

DVITX0+
DVITX0-
DVITXC-
DVITXC+

* swap

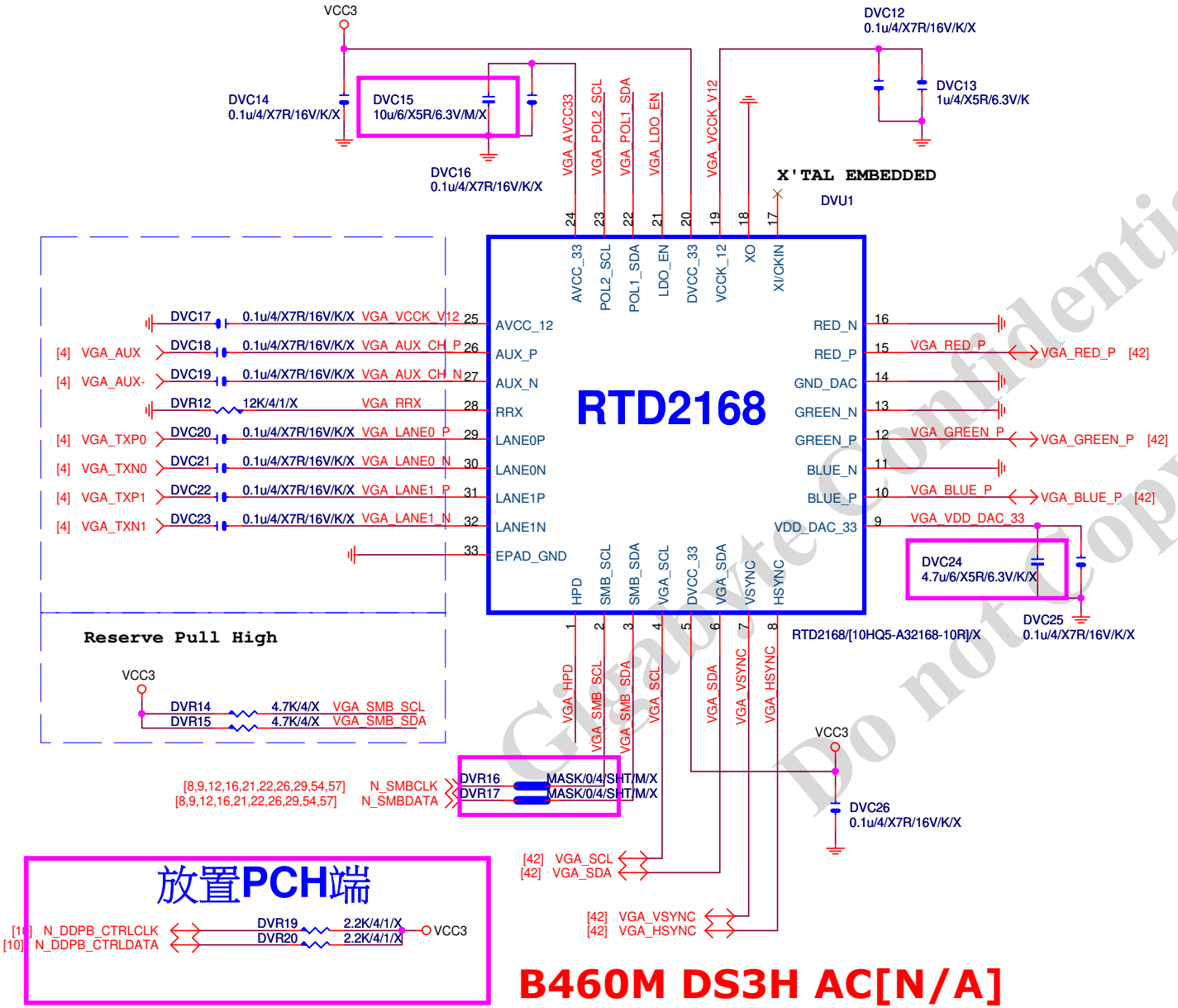
AZ1045-04F/MSOP10/X

Close to connector

B460M DS3H AC[N/A]

Gigabyte Technology		
Title: DVI		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 40 of 63	

RTD2168 | R2.0



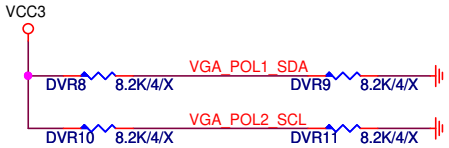
放置PCH端

[10] N_DDPB_CTRLCLK
[10] N_DDPB_CTRLDATA
DVR19 2.2K/4/1/X
DVR20 2.2K/4/1/X
VCC3

B460M DS3H AC[N/A]

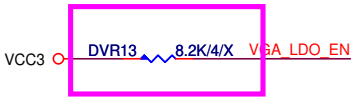
POWER

Power on latch



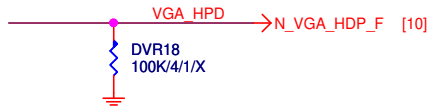
		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	**ROM ONLY MODE**	EEPROM MODE

Embedded LDO

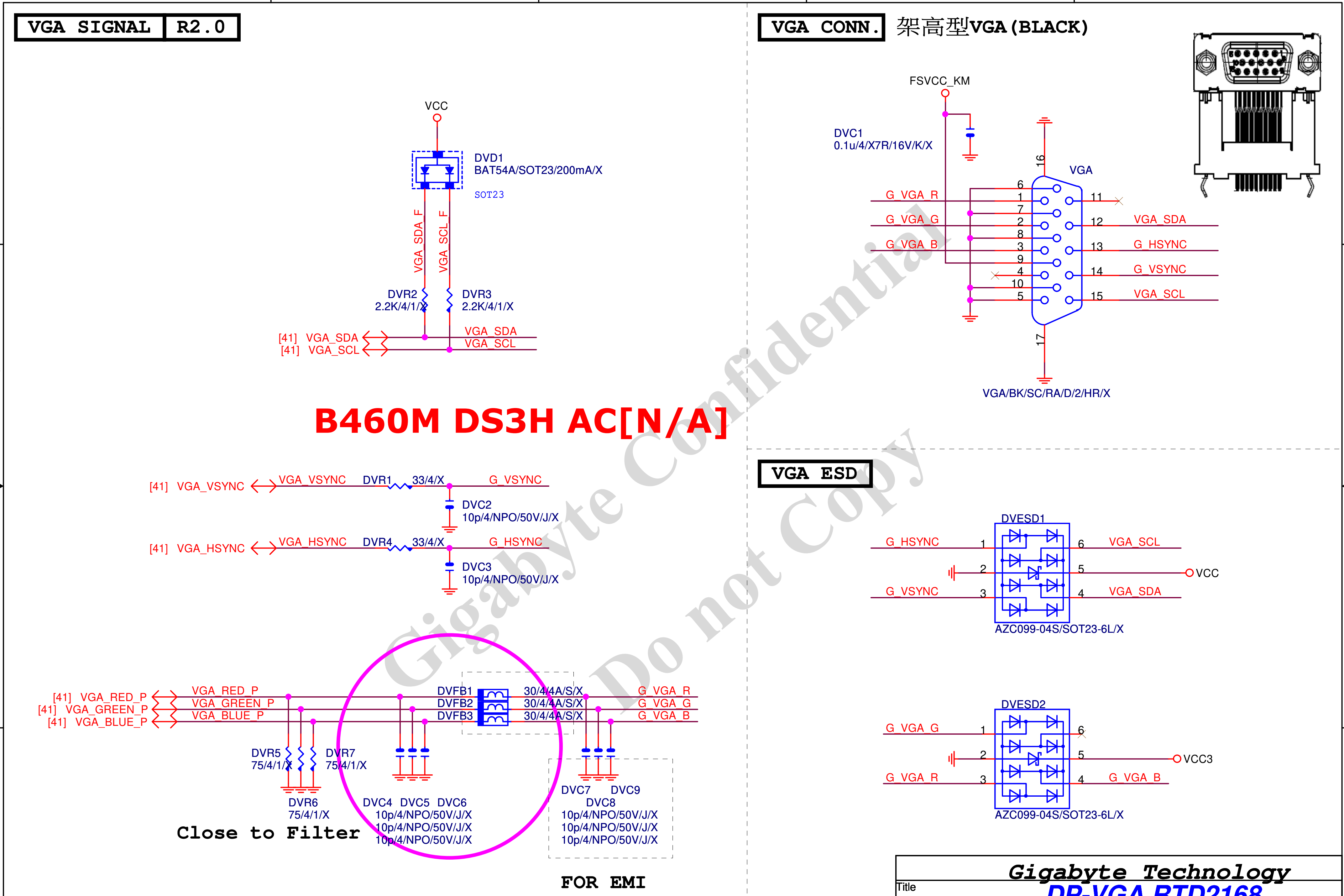


LDO_EN(PIN21)	
0	1
VCCK_V12 from External 1.2V	VCCK_V12 from Embedded LDO

DP HPD



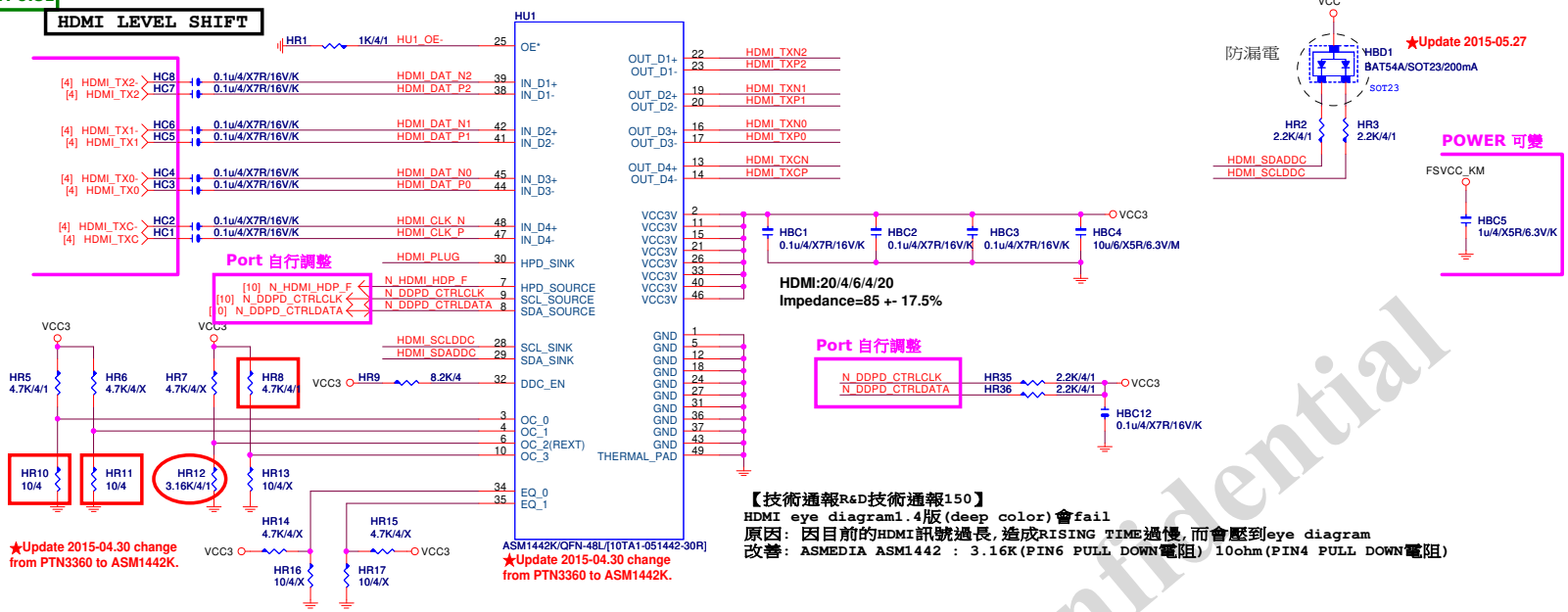
Title	Gigabyte Technology DP-VGA RTD2168		
Size: Custom	Document Number: B460M DS3H AC		Rev: 1.1
Date: Monday, August 31, 2020		Sheet 41 of 63	

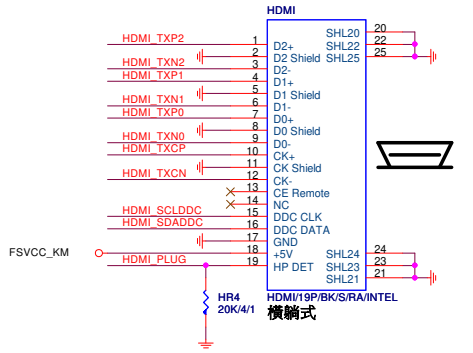


Gigabyte Technology

Title	DP-VGA RTD2168	
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 42 of 63	

Rev: 0.81





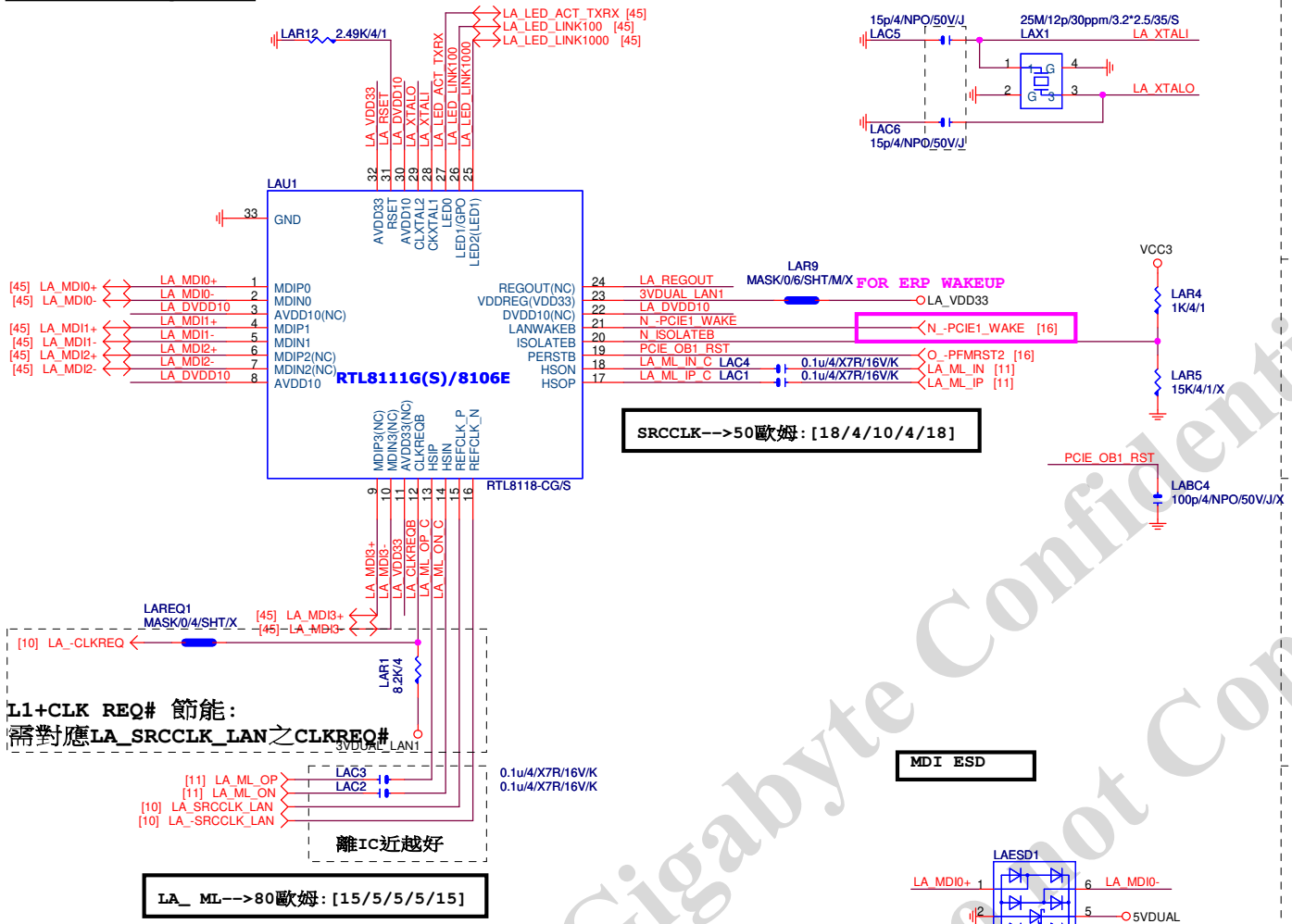
【技術通報R&D技術通報150】
HDMI eye diagram1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K
ASM1442:紅色框要上,HR12:3.16K

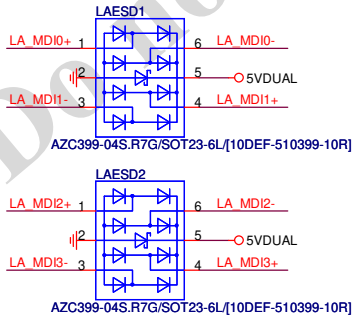
GIGABYTE

Title	FP,F_USB,USB PWR,BZ	
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 43 of 63	

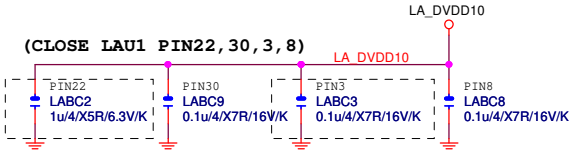
LAN:RTL8111G R2.02



MDI ESD

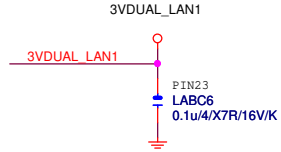


LAN POWER

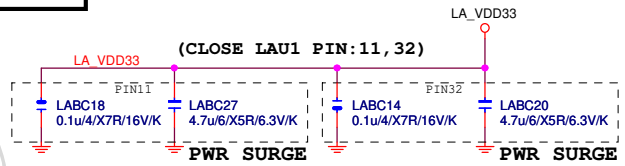


LAN POWER

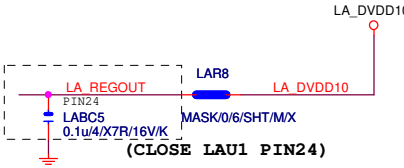
note: lan power連接及電流



LAN POWER



LAN POWER



Gigabyte Technology
Realtek RTL8111G

Size	Document Number	Rev
Custom	B460M DS3H AC	1.1

Date: Monday, August 31, 2020 Sheet 44 of 63

USB30_LAN CONNECTOR R2.01

USB_LAN CONNECTOR

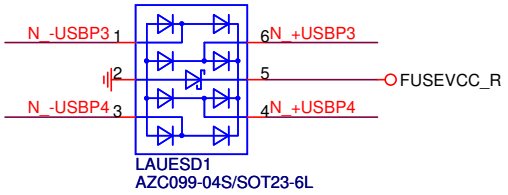
note:可變更USB NAME

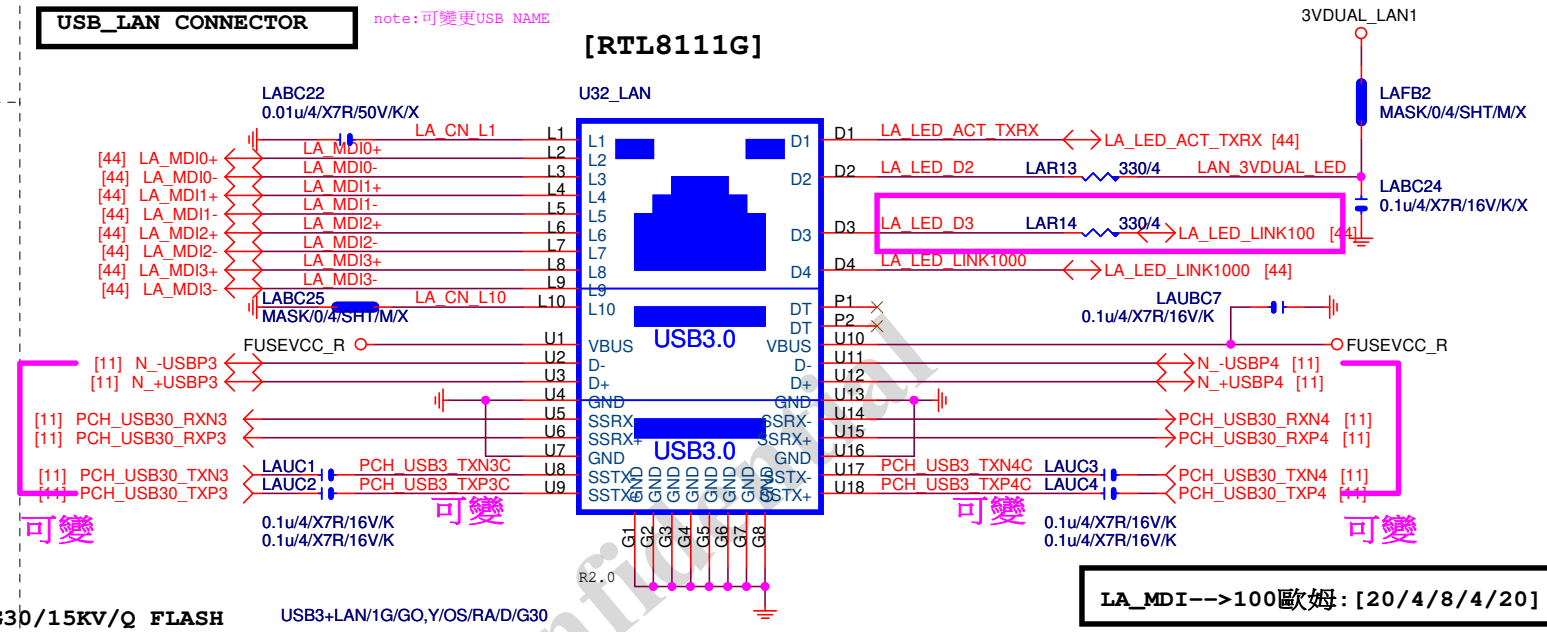
[RTL8111G]

RMA ESD PROTECT

note:可變更USB NAME

可變





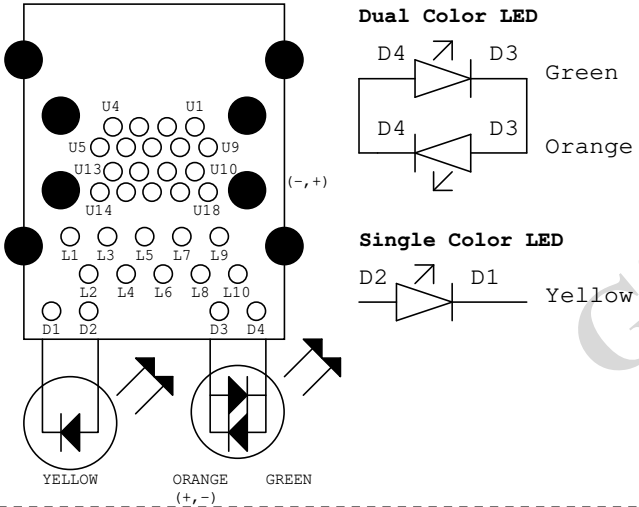
R2.0

USB上白下藍:USB3+LAN/1G/GO,Y/OS/RA/D/G30/15KV/Q FLASH

USB3+LAN/1G/GO,Y/OS/RA/D/G30

LA_MDI-->100歐姆:[20/4/8/4/20]

USB30_LAN LAYOUT示意圖

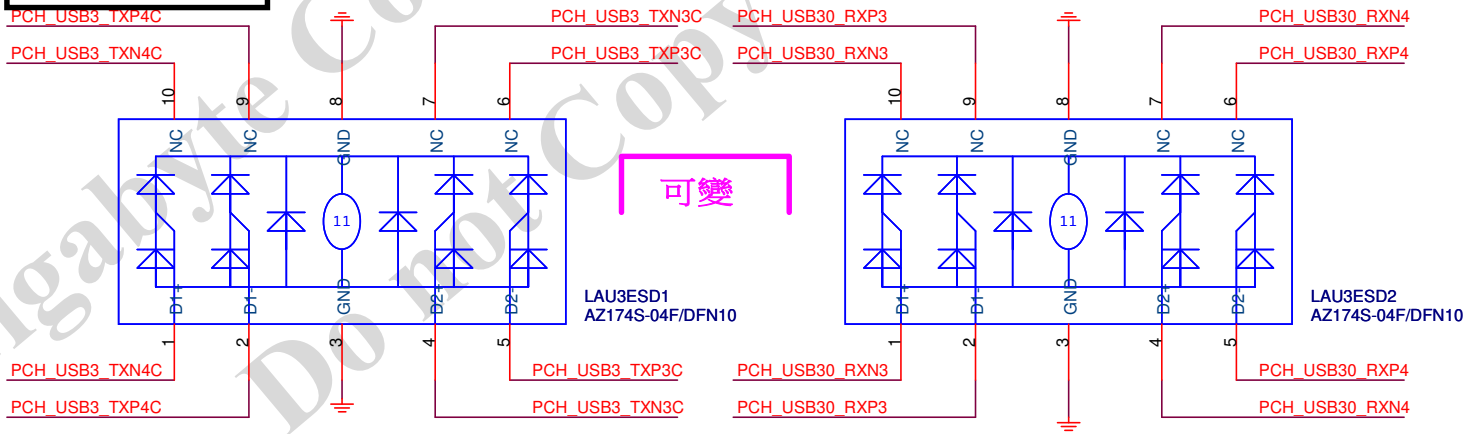


Dual Color LED

Single Color LED

RMA ESD PROTECT

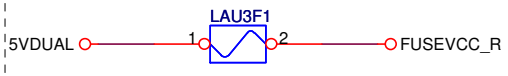
note:可變更USB NAME



USB POWER

note:可變更FUSE

可變



Close to connector

FUSE-0805

LAN POWER

note: lan power連接及電流

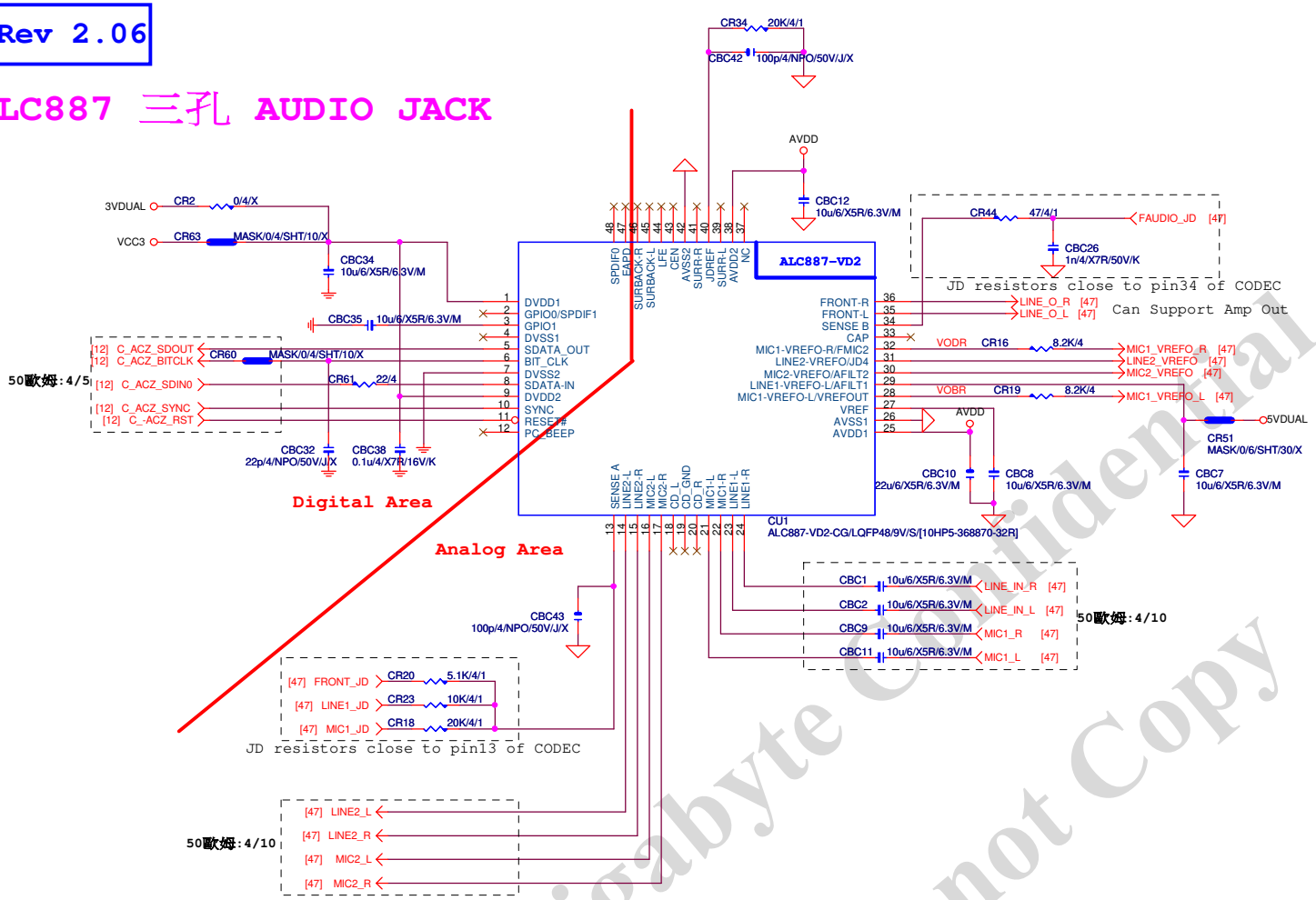
可變

R2.0

Gigabyte Technology			
Title: LAN CONNECTOR-RTL8111G			
Size: Custom	Document Number: B460M DS3H AC		Rev: 1.1
Date: Monday, August 31, 2020		Sheet 45 of 63	

Rev 2.06

ALC887 三孔 AUDIO JACK



LAYOUT注意:螺絲孔下GND方式
1. MH1空間夠,下DGND
   空間不夠,改為Isolate
2. MH2一律改為Isolate

MH1	MH2
DGND	Isolate

LAYOUT注意:要加
GND切割線

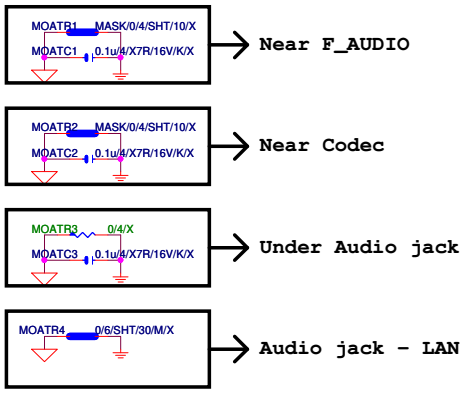
音效區域印刷

*料號後補
*LAYOUT與否,依照各Model spec

BOM OPTION : 1. Chemicon音效電容
2. 金屬外罩 Reserve (上件與否,依照各Model spec)
3. LED Reserve (上件與否和LED顏色,依照各Model spec)

Gigabyte Technology			
Title: HD AUDIO ALC887			
Size: Custom	Document Number: B460M DS3H AC		Rev: 1.1
Date: Monday, August 31, 2020	Sheet 46 of 63		

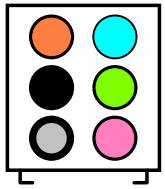
Rev 2.06

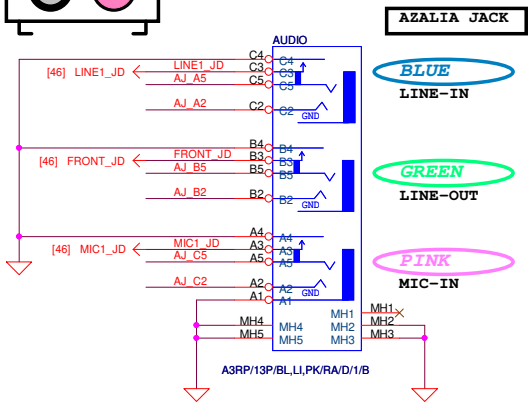


*量產前,0ohm改short pad

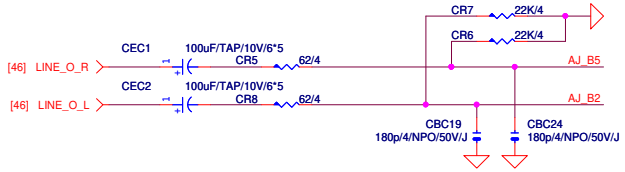
For HDMI SPDIF （依SPEC保留或移除）

AZALIA JACK

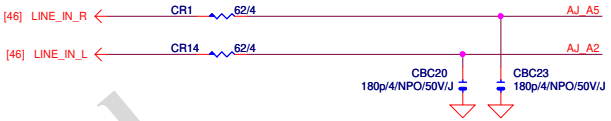




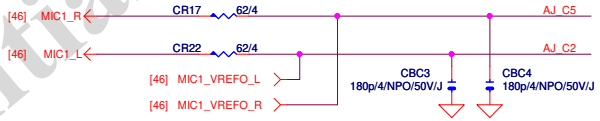
LINE-OUT



LINE-IN



MIC-IN

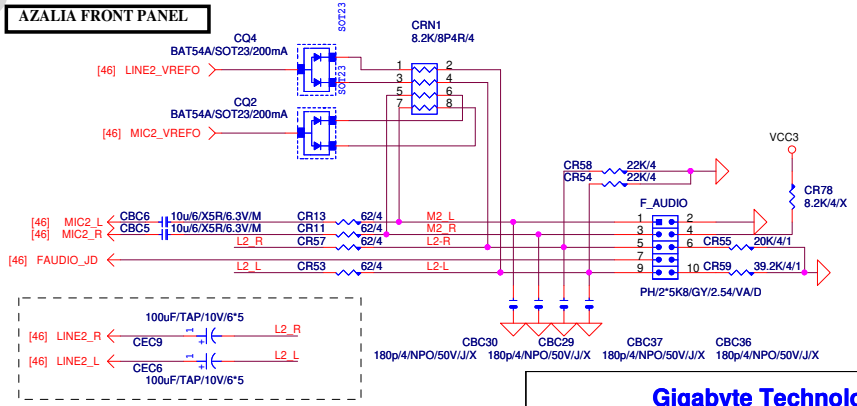


SURROUND

CEN/LFE

SURR BACK

AZALIA FRONT PANEL



Gigabyte Technology

Title	AUDIO JACK	
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 47 of 63	

GIGABYTE™

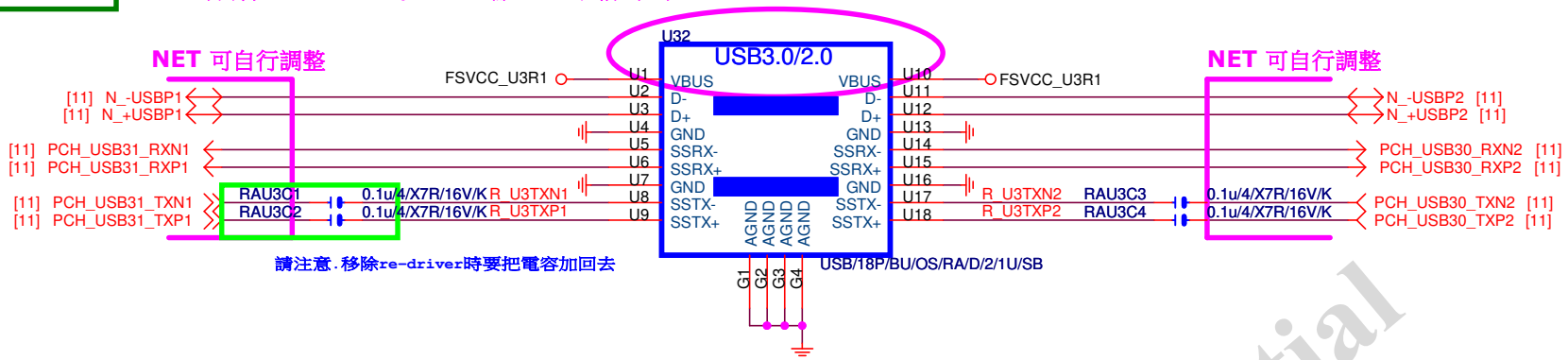
Title: Amient Single LED

Size	Document Number	Rev
Custom	B460M DS3H AC	1.1

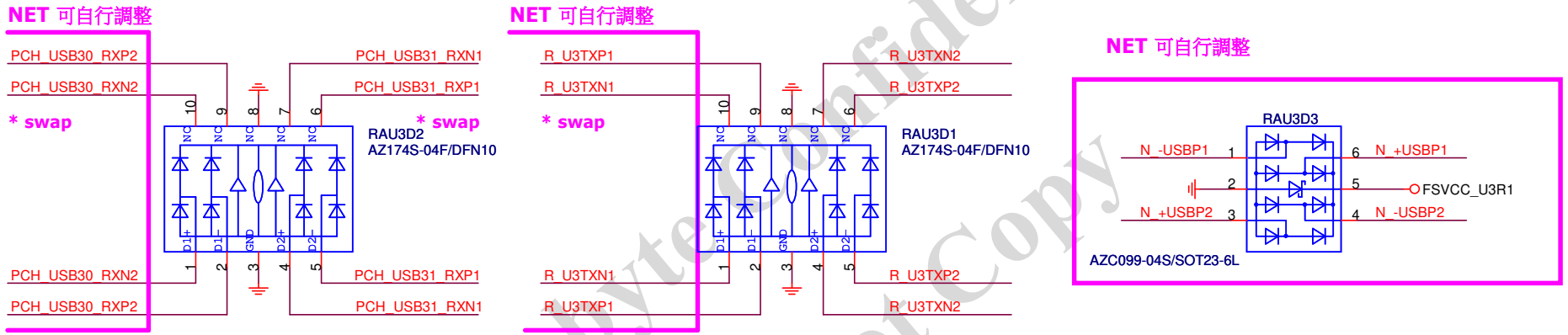
Date: Monday, August 31, 2020 Sheet 48 of 63

Rev: 0.7

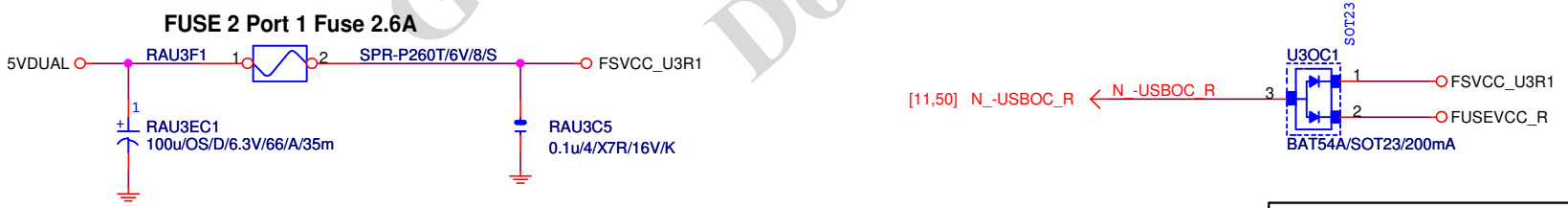
ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可



ESD

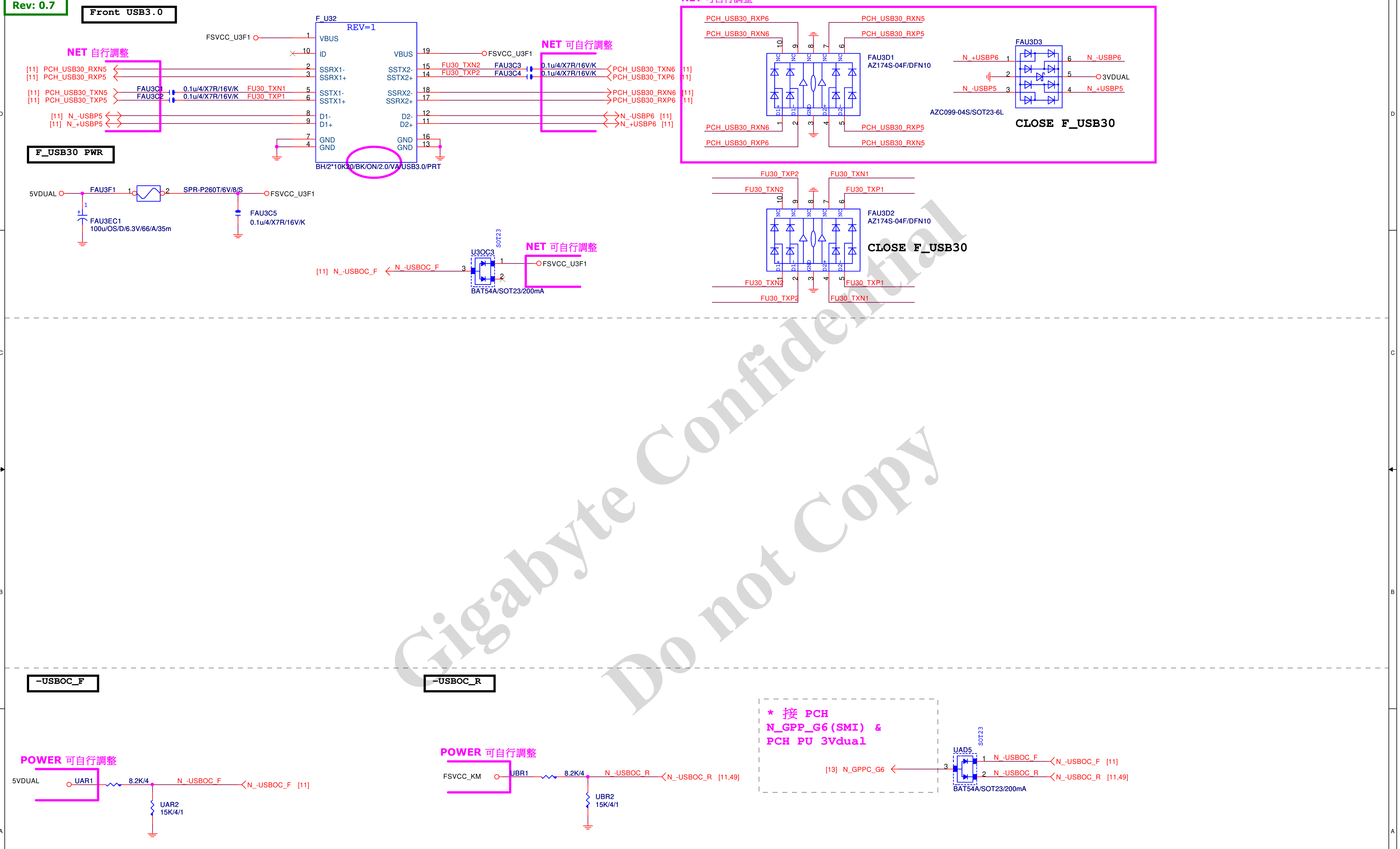


FUSE



Gigabyte Technology		
Title: R_USB30,USB_OC		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 49 of 63	

Rev: 0.7



Front USB3.0
F_U32
REV=1
NET 可自行調整
FSVCC_U3F1
VBUS
ID
SSRX1-
SSRX1+
SSTX1-
SSTX1+
D1-
D1+
GND
SSTX2-
SSTX2+
SSRX2-
SSRX2+
D2-
D2+
[11] PCH_USB30_RXN5
[11] PCH_USB30_RXP5
[11] PCH_USB30_TXN5
[11] PCH_USB30_TXP5
[11] N_-USBP5
[11] N_+USBP5
FAU3C1
FAU3C2
0.1u/4/X7R/16V/K
FU30_TXN1
FU30_TXP1
FU30_TXN2
FU30_TXP2
FAU3C3
FAU3C4
PCH_USB30_TXN6 [11]
PCH_USB30_TXP6 [11]
PCH_USB30_RXN6 [11]
PCH_USB30_RXP6 [11]
N_-USBP6 [11]
N_+USBP6 [11]
BH/2*10K20/BK/ON/2.0/VA/USB3.0/PRT
F_USB30 PWR
5VDUAL
FAU3F1
SPR-P260T/6V/8/S
FAU3EC1
100u/OS/D/6.3V/66/A/35m
FAU3C5
0.1u/4/X7R/16V/K
U3OC3
SOT23
[11] N_-USBOC_F
BAT54A/SOT23/200mA
PCH_USB30_RXP6
PCH_USB30_RXN6
PCH_USB30_RXN5
PCH_USB30_RXP5
FAU3D1
AZ174S-04F/DFN10
FAU3D3
N_+USBP6
N_-USBP6
N_-USBP5
N_+USBP5
3VDUAL
AZC099-04S/SOT23-6L
CLOSE F_USB30
FAU3D2
AZ174S-04F/DFN10
CLOSE F_USB30
-USBOC_F
-USBOC_R
POWER 可自行調整
UAR1
8.2K/4
N_-USBOC_F [11]
UAR2
15K/4/1
FSVCC_KM
UBR1
8.2K/4
N_-USBOC_R [11,49]
UBR2
15K/4/1
* 接 PCH
N_GPP_G6(SMI) &
PCH PU 3Vdual
[13] N_GPPC_G6
UAD5
N_-USBOC_F [11]
N_-USBOC_R [11,49]
BAT54A/SOT23/200mA

Gigabyte Technology

Title: R_USB30,F_USB30, USB_OC

Size	Document Number	Rev
Custom	B460M DS3H AC	1.1

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USB20 HUB_1

FRONT USB 2.0 PORT

Dual USB2 HUB used Rev 0.3

HU2AU1

GL850G/S

HUB_AVDD11	1	AVDD	DP1	28	HUB1_+USBP1
HUB1_-USBP2	2	DM2	DM1	27	HUB1_-USBP1
HUB1_+USBP2	3	DP2	DP0	26	N_+USBP9 [11]
HU2AR7 680/4/1	4	RREF	DM0	25	N_-USBP9 [11]
HUB_AVDD12	5	AVDD	V33	24	3_3V_IN1
GL1_XTALO	6	X1	V5	23	5VDUAL
GL1_XTALI	7	X2	PWREN1#/SDA	22	
HUB1_-USBP3	8	DM3	OVCUR1#/SMC	21	GL1_OVCUR
HUB1_+USBP3	9	DP3	PWREN2#	20	
HUB_AVDD13	10	AVDD	OVCUR2#/SMD	19	
HUB1_-USBP4	11	DM4	PGANG	18	GL1_PGANG
HUB1_+USBP4	12	DP4	PSELF	17	GL1_PSELF
-GL1_RESET	13	RESET#	DVDD	16	HUB1_DVDD
	14	TEST/SCL	GND	15	

HU2AC9 0.1u/4/X7R/16V/K

HU2AC7 0.1u/4/X7R/16V/K

GL850S-HHY22/SSOP28

SSOP28-IT8209R

HUB PWR

HUB1_DVDD

3_3V_IN1

HU2AC2 10u/6/X5R/6.3V/M

CLOSE PIN24

HUB AVDD11

HUB AVDD12

HUB AVDD13

HU2AC4 0.1u/4/X7R/16V/K

HU2AC5 0.1u/4/X7R/16V/K

HU2AC6 0.1u/4/X7R/16V/K

CLOSE PWR PIN

HUB OVER CURRENT SENSE

FSVCC_U2F2 — HU2AR2 8.2K/4 — GL1_OVCUR

HU2AR3 15K/4/1

GL850S的over current pin請接到GL850S不要接到PCH,
PCH端改為pull-high 3VDUAL.

HUB MODE

Ganged mode

HUB1_DVDD

HU2AR4 100K/4/1

GL1_PGANG

P.H. USE GL_OVCUR1
DETECT ALL PORT

PSELF

HUB1_DVDD

HU2AR6 100K/4/1

GL1_PSELF

HUB self-power mode:
P.H.=EVERY PORT 500mA.
P.D.=EVERY PORT 100mA.

HUB RESET

5VDUAL — HU2AR5 10K/4/1 — -GL1_RESET

HU2AR1 47K/4/1

HU2AC1 1u/4/X5R/6.3V/K

F_USB 2.0 OC SIGNAL

HUB CRYSTAL

ONLY SUPPORT 12MHZ

HU2AC3 22p/4/NPO/50V/J — GL1_XTALO

HU2AX1

HU2AC8 22p/4/NPO/50V/J — GL1_XTALI

12M/20p/30ppm/3.2*2.5/80/S

FRONT SIDE USB1

F_USB1

FSVCC_U2F2 — HUB1_-USBP1 — HUB1_+USBP1 — HUB1_-USBP2 — HUB1_+USBP2 — FSVCC_U2F2

PH/2*5K9/WH/2.54/VA/D

5VDUAL — FAU2F1 SPR-P260T/6V/8/S — FSVCC_U2F2

FAU2EC1 100u/OS/D/6.3V/66/A/35m

FAU2BC2 0.1u/4/X7R/16V/K

FAU2D1

HUB1_+USBP2 — HUB1_-USBP2 — 3VDUAL — HUB1_-USBP1 — HUB1_+USBP1

AZC099-04S/SOT23-6L

FRONT SIDE USB2

F_USB2

FSVCC_U2F2 — HUB1_-USBP3 — HUB1_+USBP3 — HUB1_-USBP4 — HUB1_+USBP4 — FSVCC_U2F2

PH/2*5K9/WH/2.54/VA/D

FBU2D1

HUB1_+USBP4 — HUB1_-USBP4 — 3VDUAL — HUB1_-USBP3 — HUB1_+USBP3

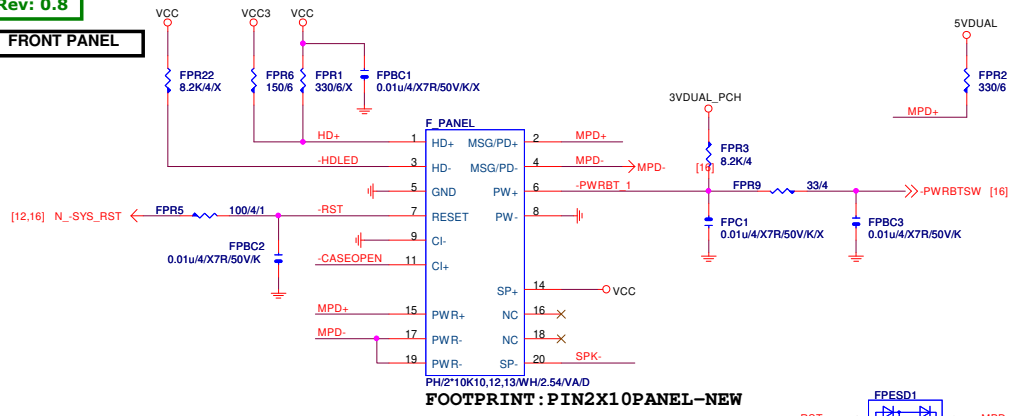
AZC099-04S/SOT23-6L

Gigabyte Technology			
Title: USB2.0			
Size: Custom	Document Number: B460M DS3H AC		Rev: 1.1
Date: Monday, August 31, 2020	Sheet 51 of 63		

Rev: 0.8

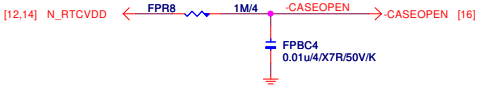
FRONT PANEL

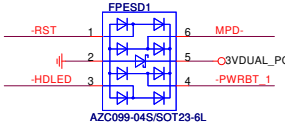
★Update 2016.06.15



FOOTPRINT:PIN2X10PANEL-NEW

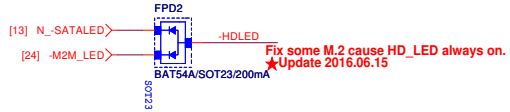
CASE OPEN





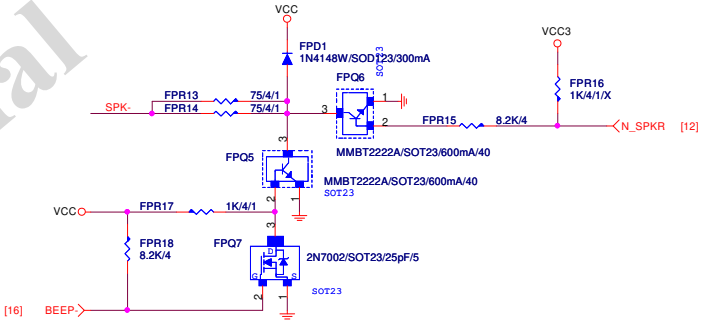
★Update 2015-02-11

SATA/M.2 LED



Fix some M.2 cause HD_LED always on.
★Update 2016.06.15

SPKR



For SPKR voltage issue. FPQ6=>2222, FPQ7=>7002

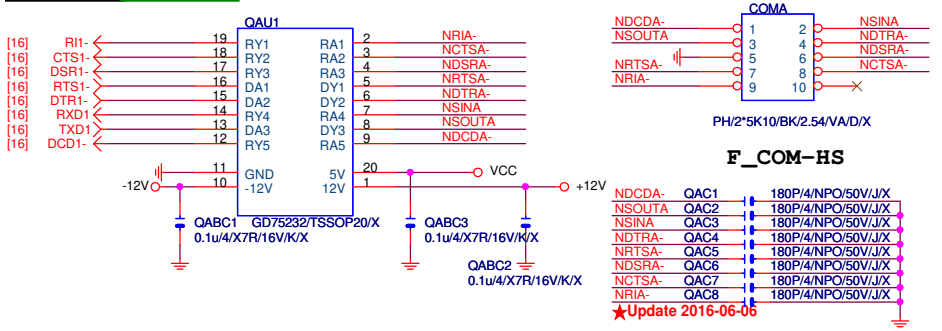
FRONT PANEL SHORT

Gigabyte Technology		
Title: FRONT PANEL		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 52 of 63	

COM PORT

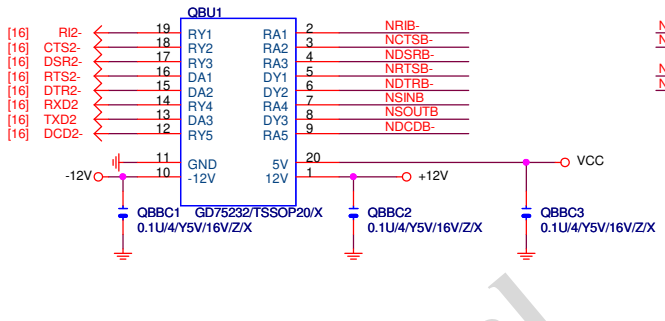
Rev: 0.7

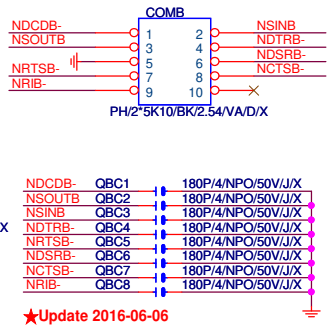
Modify name(2020.02.06)



★Update 2016-06-06

B460M DS3H AC[N/A]





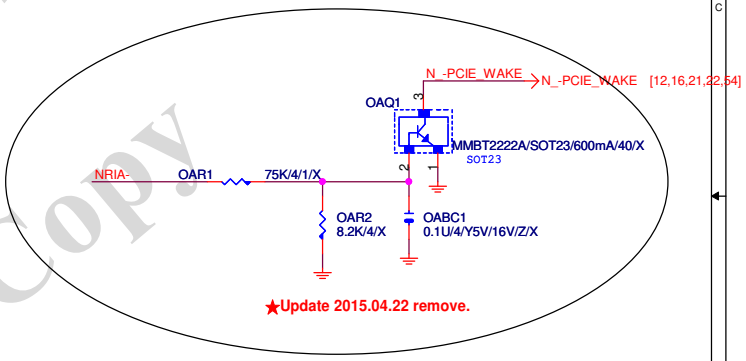
★Update 2016-06-06

B460M DS3H AC[N/A]

LPT PORT

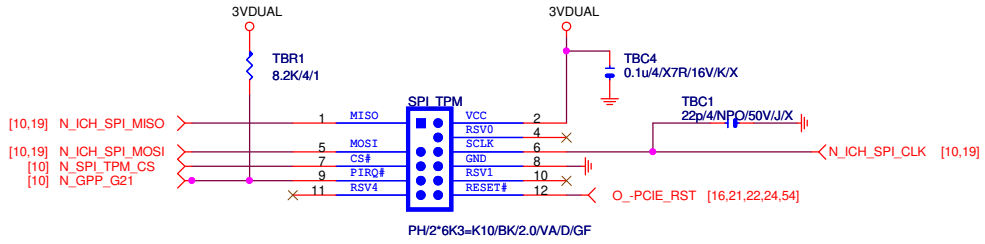
COM RI

N/A



★Update 2015.04.22 remove.

TPM CONNECT



Footprint: TPM2X6_CUT3-Z490_I

Gigabyte Technology		
Title: FP,F_USB,USB PWR,BZ		
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 53 of 63	

Rev: 0.2

請選擇適用的USBport :
SOC/UD7/UD5/G1/G7 : USB4
;UD3/G5:USB6

NET 可變
[11] N_+USBP10
[11] N_-USBP10

PCIE:15/4/4/4/15(breakout min 8/4/4/4/8)
外層Impedance=85 +- 17.5%

PCIE:15/4/4/4/15(breakout min 8/4/4/4/8)
內層 Impedance=85 +- 12%

WIFI use PCIE port4 in X99

M2_WIFI

REV=1

Module Key E

1	GND	3P3VAUX_2	2
3	USB_D+	3P3VAUX_4	4
5	USB_D-	LED1#	6
7	GND	PCM_CLK/I2S SCK	8
9	SDIO CLK	PCM_SYNC/I2S WS	10
11	SDIO CMD	PCM_IN/I2S SD_IN	12
13	SDIO DATA0	PCM_OUT/I2S SD_OUT	14
15	SDIO DATA1	LED2#	16
17	SDIO DATA2	GND	18
19	SDIO DATA3	UART WAKE#	20
21	SDIO WAKE#	UART RXD	22
23	SDIO RESET#		
33	GND	UART TXD	32
35	PETP0	UART CTS	34
37	PETN0	UART_RTS	36
39	GND	VENDOR DEFINED	38
41	PERP0	VENDOR DEFINED	40
43	PERN0	VENDOR DEFINED	42
45	GND	COEX3	44
47	REFCLKP0	COEX2	46
49	REFCLKN0	COEX1	48
51	GND	SUSCLK(32KHz)	50
53	CLKREQ0#	PERST0#	52
55	PEWAKE0#	W_DISABLE2#	54
57	GND	W_DISABLE1#	56
59	RSVD/PETP1	I2C_DATA	58
61	RSVD/PETN1	I2C_CLK	60
63	GND	ALERT#	62
65	RSVD/PERP1	RSVD	64
67	RSVD/PERN1	UIM_SWP/PERST1#	66
69	GND	UIM_PWR_SNK/CLKREQ1#	68
71	RSVD/REFCLKP1	UIM_PWR_SRC/PEWAKE1#	70
73	RSVD/REFCLKN1	3P3VAUX_72	72
75	GND	3P3VAUX_74	74

NGFF_M2_E-KEY[10NH5-130067-11R]

3VDUAL

Remove LED show

Remove LED show

NET 可變

[11] M2_WIFI_TP
[11] M2_WIFI_TN
[11] M2_WIFI_IP
[11] M2_WIFI_IN
[10] CK_WIFI_100M_DP
[10] CK_WIFI_100M_DN
[10] WIFI_CKREQL
[12,16,21,22,53] N_-PCIE_WAKE

M2WC4 0.1u/4/X7R/16V/K M2_WIFI_TP_C
M2WC5 0.1u/4/X7R/16V/K M2_WIFI_TN_C
M2WR4 22/4 WIFI_CKREQ-
M2WR6 0/4/SHT/20/X WIFI_WAKE-

3VDUAL
M2WC1 0.01u/4/X7R/50V/K
M2WC2 0.01u/4/X7R/50V/K
M2WC3 0.1u/4/X7R/16V/K
M2WC6 10u/6/X5R/6.3V/M

M2_WIFI_SUSCLK M2WR3 0/4/SHT/M/X N_SUSCLK_WIFI [12]
M2_WIFI_RST- M2WR5 0/4/SHT/M/X O_-PCIE_RST [16,21,22,24,53]
M2_WIFI_DIS2- M2WR7 8.2K/4 3VDUAL
M2_WIFI_DIS1- M2WR8 8.2K/4
M2_WIFI_SDATA M2WR9 10/4/X N_SMBDATA [8,9,12,16,21,22,26,29,41,57]
M2_WIFI_SCLK M2WR10 10/4/X N_SMBCLK [8,9,12,16,21,22,26,29,41,57]
M2_WIFI_ALERT- M2WR11 8.2K/4 3VDUAL

M2_WIFI_RST-
M2WBC1 10p/4/NPO/50V/J/X

一套WIFI MODULE包含外框+WIFI CARD+天線

M.2
WIFI

WIFI_FRAME
G1
G2

FRAME/WIFI M2/RA/1535 I/[12AC2-000004-31R]

M.2_EKEY
WIFI_MODULE
WI-FI WITH BT5.0 AC9260 INTEL/[20CB1-029260-00R]
INTEL AC9260

M_PCIE_H
CNVi CARD
CARD/[11KWP-000001-21R]
Wifi card塑膠蓋

CNVI_WIFI_SK
CR/[12KS2-110202-01R]
螺絲

ANTENNA
ANTENNA/[11NH6-010001-D1R]

ANTENNA1
ANTENNA/[11NH6-010001-D1R]

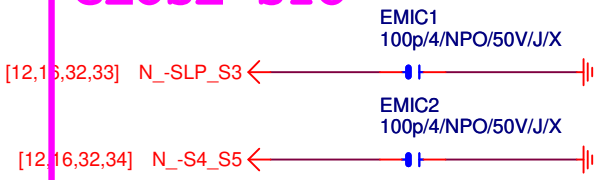
Footprint WIFI-EKEY+ WIFI-EKEY-MODULE should be a package.

GIGABYTE™

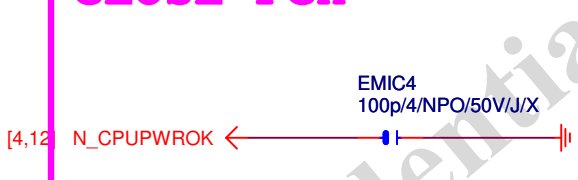
Title	M2 WIFI	
Size B	Document Number B460M DS3H AC	Rev 1.1
Date: Monday, August 31, 2020	Sheet 54 of 63	

EMI/ESD R0.1

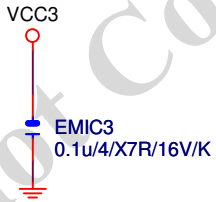
CLOSE SIO



CLOSE PCH



CLOSE NR47

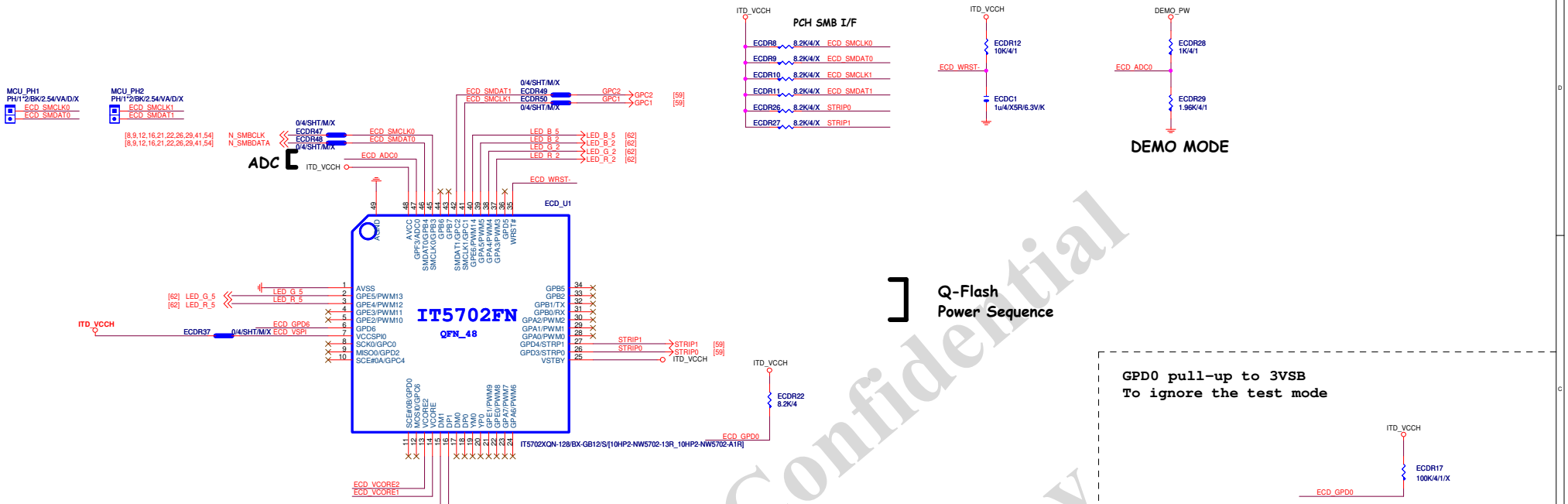


GIGABYTE™

Title	EMI/ESD	
Size: A	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 56 of 63	

Rev 1.0

ECD_U1 請放在PCH到BIOS路徑上.避免線過長

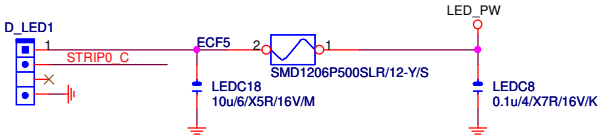


Gigabyte Technology		
Title: ITE_5702		
Size	Document Number	Rev 1.1
Date: Monday, August 31, 2020	Sheet 57 of 63	

Rev 1.0

第六區 LED (靠近左上板邊位置)

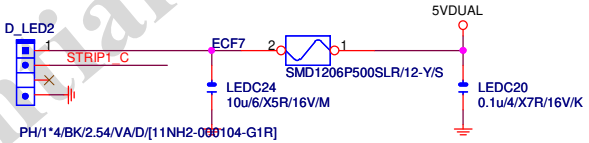
Digital LED Strip1



Footprint PH1X4-CUT3-LED-L

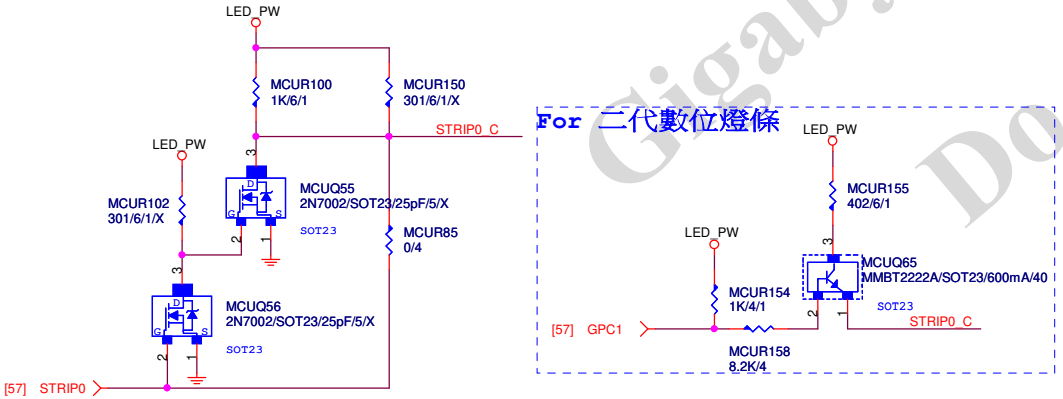
第七區(靠近右下CPU板邊位置)

Digital LED Strip2

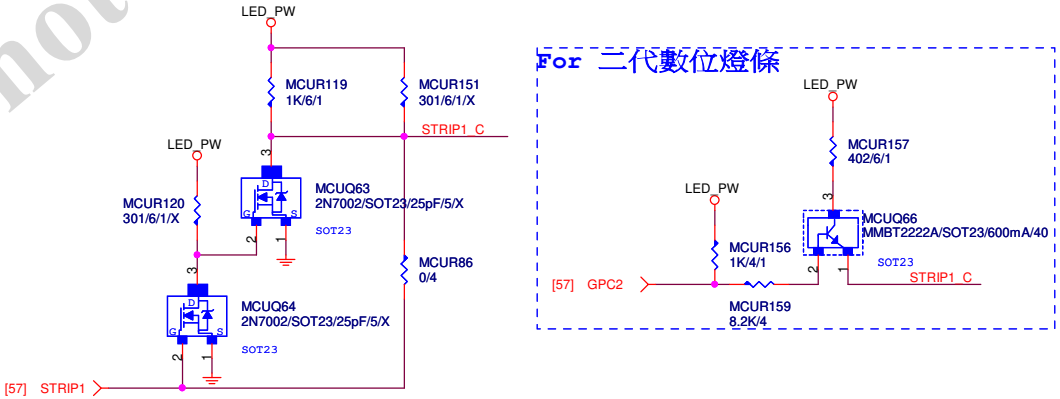


Footprint "PH1X4-CUT3-LED-R"
(for pin-name 與 model-name 同方向)

燈條 Level shift



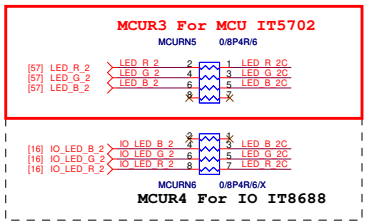
燈條 Level shift

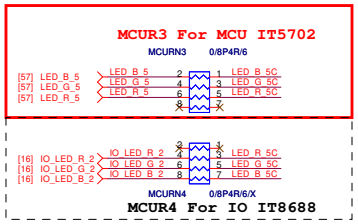


GIGABYTE™

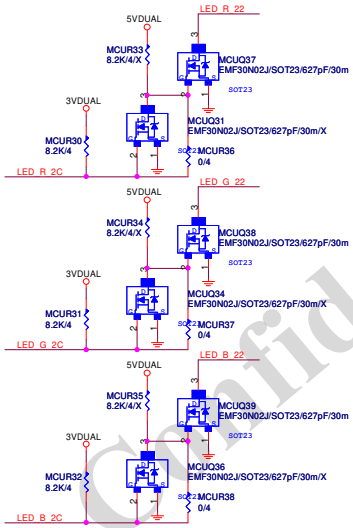
Title	D_LED1/D_LED2	
Size: Custom	Document Number: B460M DS3H AC	Rev: 1.1
Date: Monday, August 31, 2020	Sheet 59 of 63	

Rev 1.0

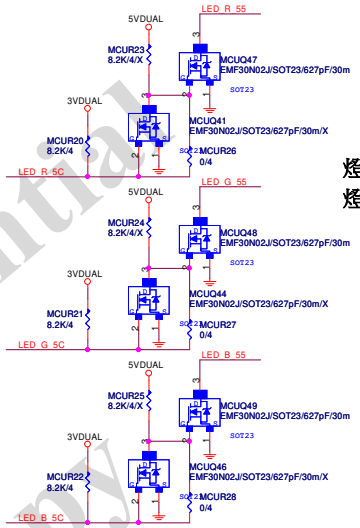




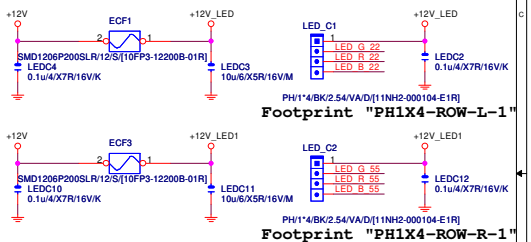
第二區 LED CONTROL

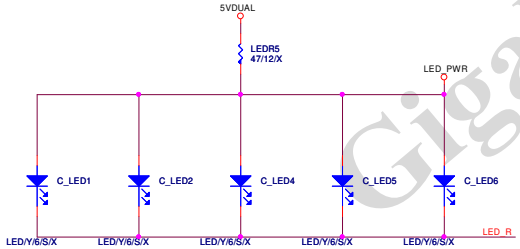


第五區 LED CONTROL



燈條 LED (LED_C1放在PCB左邊板邊位置)
燈條 LED (LED_C2放在PCB右邊板邊位置)

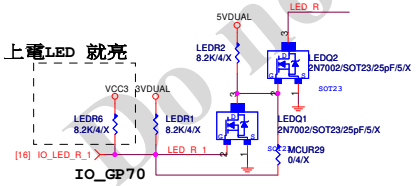




B460M DS3H AC[N/A]

第一區 LED CONTROL

FIX 上電LED 就亮



B460M DS3H AC[N/A]

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