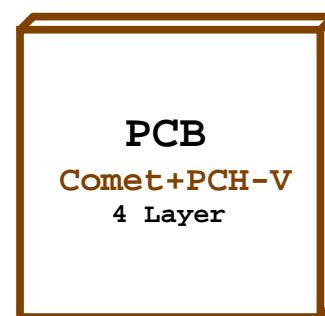


SCHEMATICS TABLE:

Page	Index
1	COVER PAGE
2	BLOCK DIADRAM
3	CPU-PEG/DMI/DDI/eDP
4	CPU-MISC
5	CPU-DDR4
6	CPU-POWER/GND
7	DDR4-DIMM
8	PCIE-X16_X4
9	PCIE-_X1
10	PCH-DMI/USB/PCIE/SATA/LPC
11	PCH-CLK/XTAL/SPI/DDI
12	PCH-HDA/PMC/CMOS/CNVi/STRAP
13	PCH-POWER/GND
14	HDMI/DP
15	VGA IT6516BFN
16	PCIE M.2 2230 Key-E WIFI/BT
17	USB3R/USB3F/USB2F
18	SIO-IT8625E
19	TPM/COM/PS2/LPT
20	LAN RTL8111H-CG/USB2x2

344mm

200mm



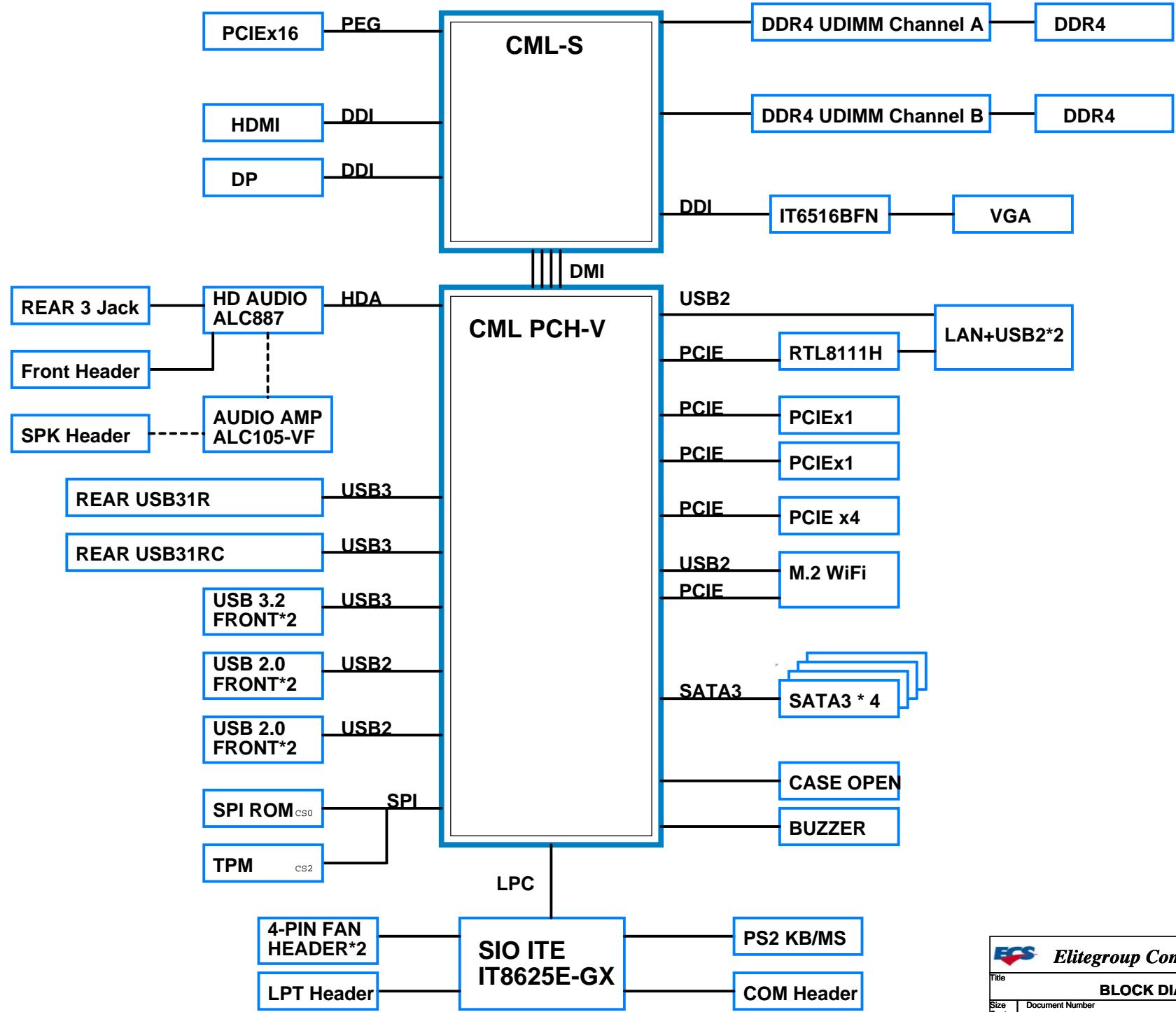
REVISION HISTORY

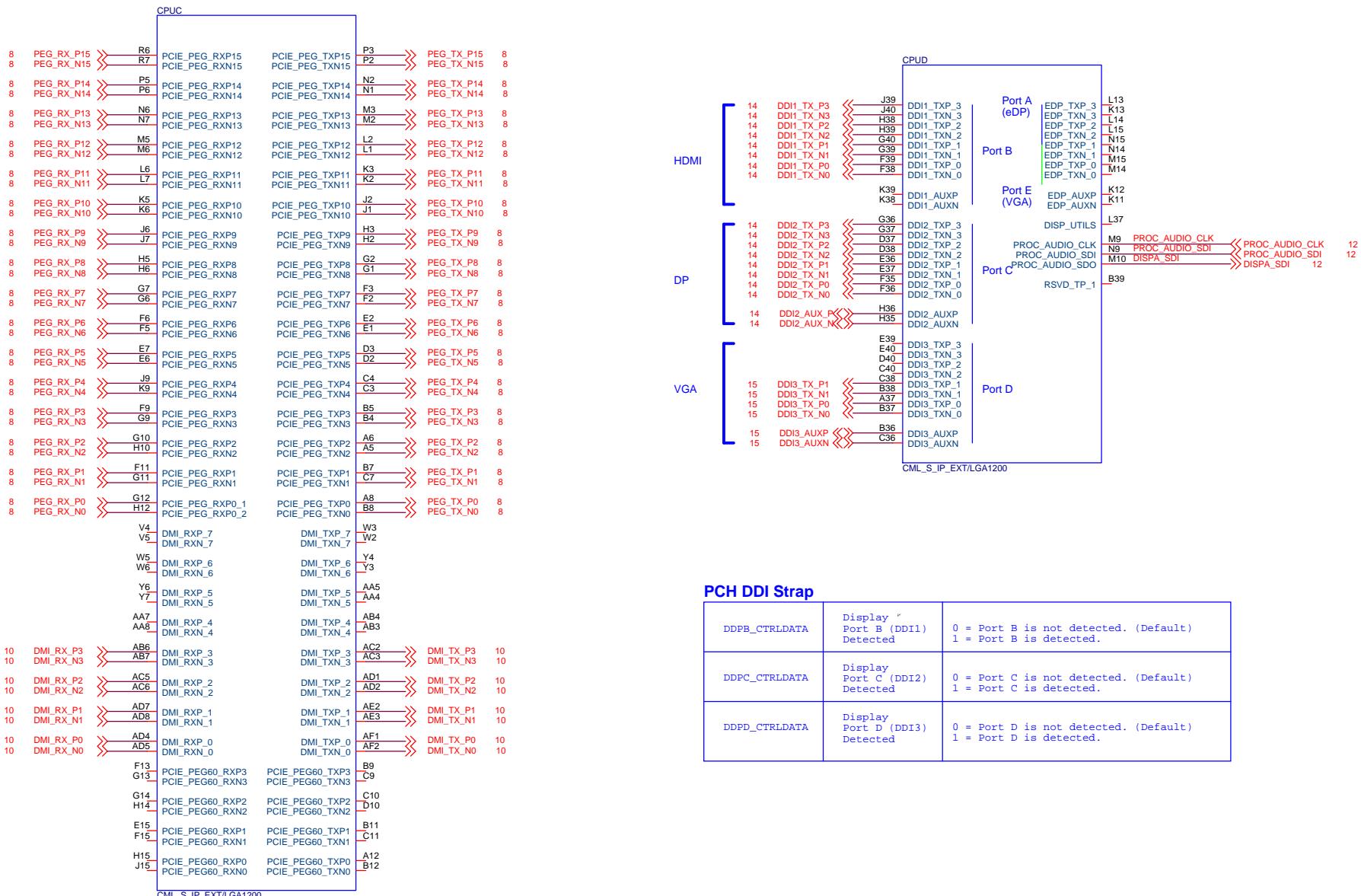
Rev	Date	Notes
V.A	2020/01/06	Base on H410H6-M7 V1.0 change to B460H6-M14 VA.

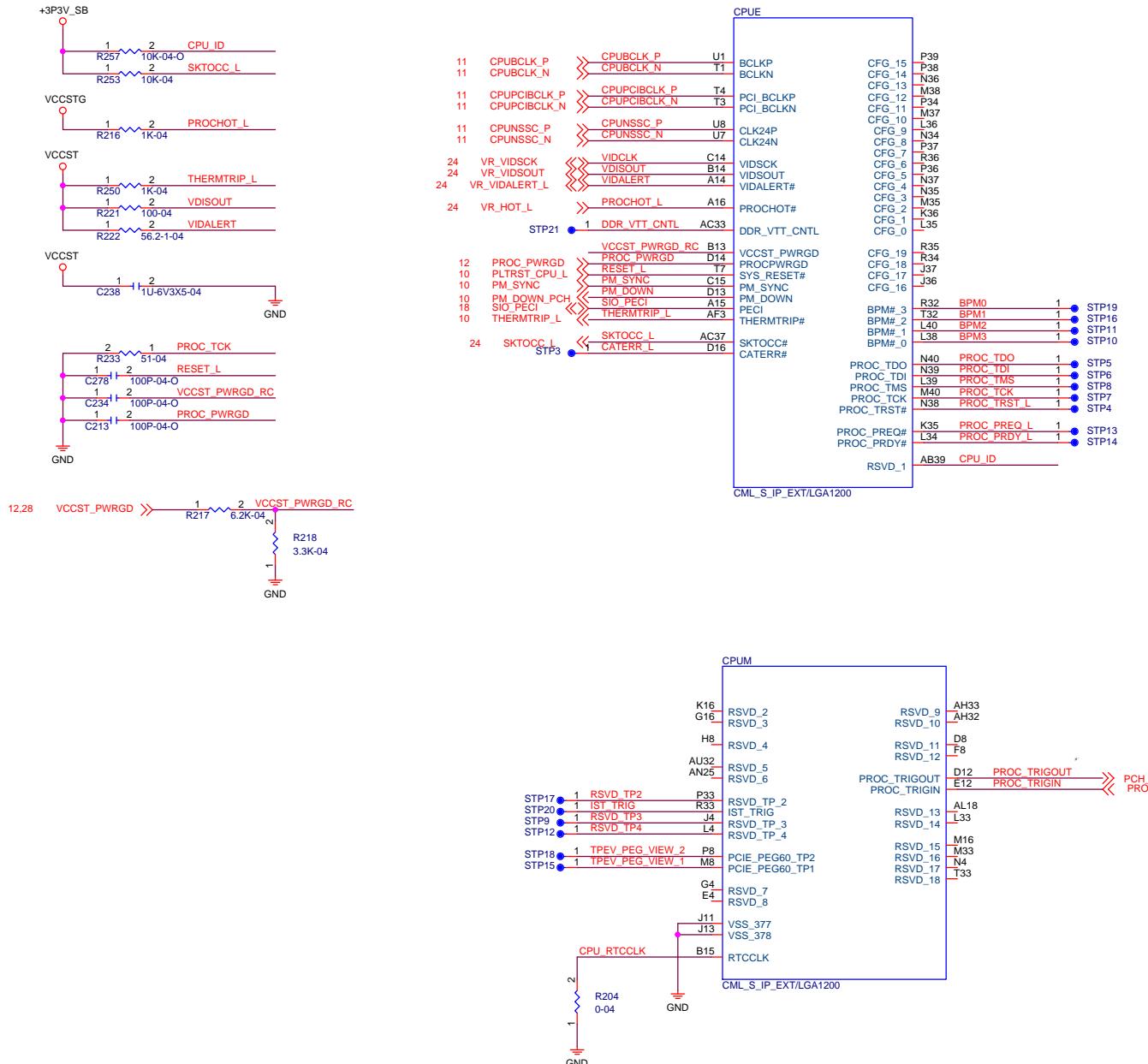
Intel® 400 Series (CML PCH-V) Chipset HSIO Assignments

a) SATA ports can be configured to Direct-Port mode and/or RAID mode.

Intel® RST for
PCIe Storage port
configurable as
 $x2/x4$ M.2



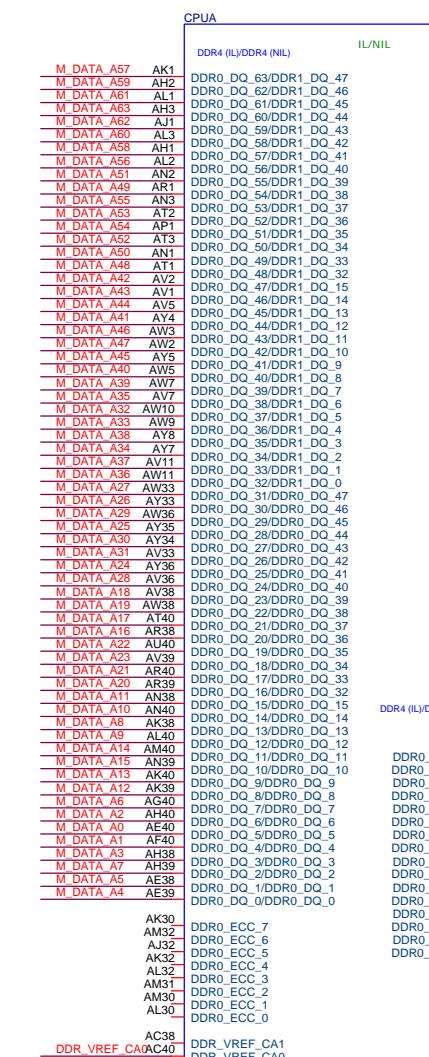


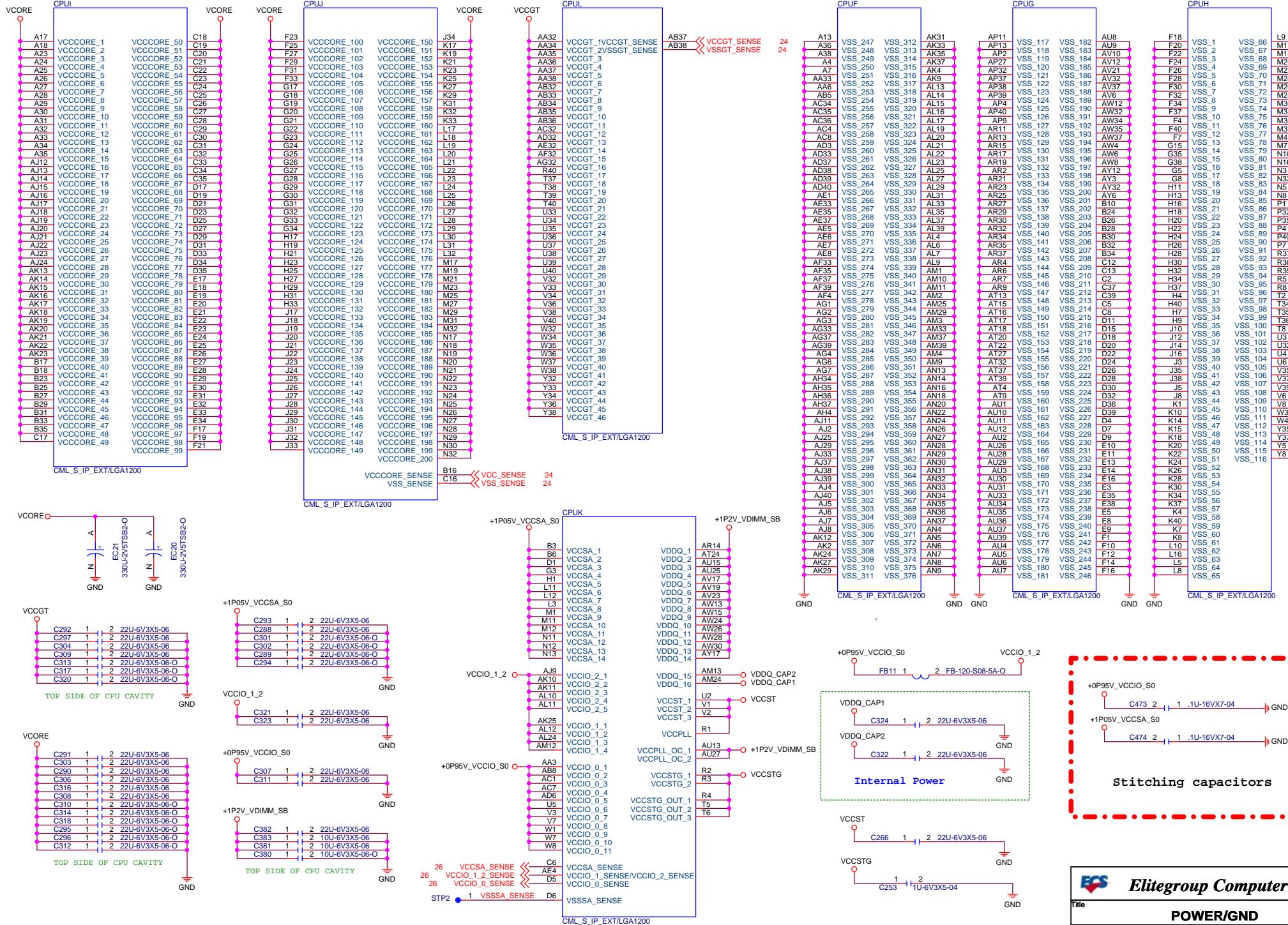


The CFG signals have a default value of '1' if not terminated on the board.

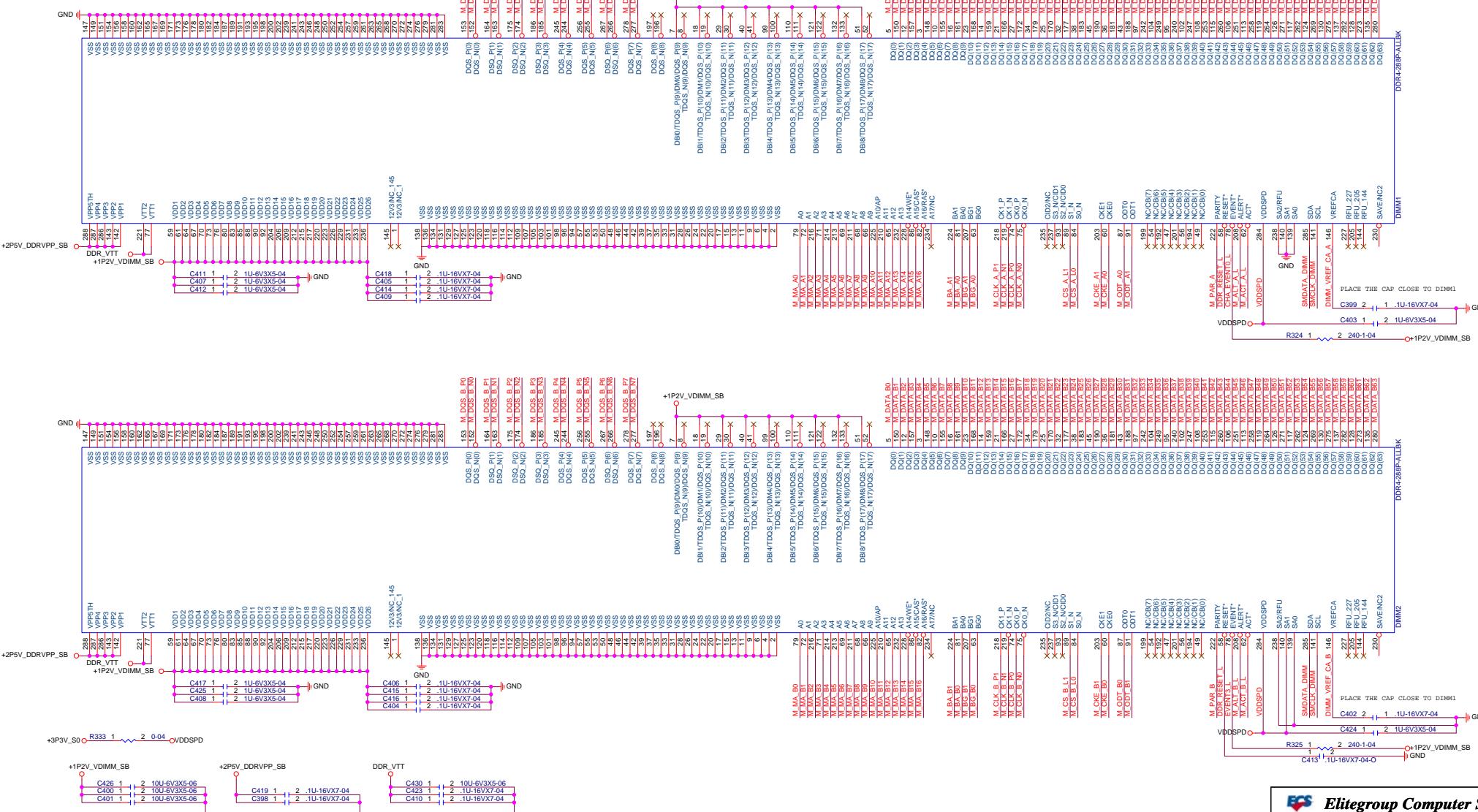
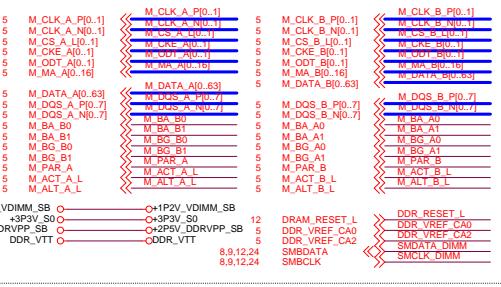
- **CFG[0]:** Stall reset sequence after PCU PLL lock until de-asserted:
 - 1 = (Default) Normal Operation; No stall.
 - 0 = Stall.
 - **CFG[1]:** Reserved configuration lane.
 - **CFG[2]:** PCI Express® Static x16 Lane Numbering Reversal.
 - 1 = Normal operation
 - 0 = Lane numbers reversed.
 - **CFG[3]:** Reserved configuration lane.
 - **CFG[4]:** eDP enable:
 - 1 = Disabled.
 - 0 = Enabled.
 - **CFG[6:5]:** PCI Express® Bifurcation
 - 00 = 1 x8, 2 x4 PCI Express®
 - 01 = reserved
 - 10 = 2 x8 PCI Express®
 - 11 = 1 x16 PCI Express®
 - **CFG[7]:** PEG Training:
 - 1 = (default) PEG Train immediately following RESET# de assertion.
 - 0 = PEG Wait for BIOS for training.
 - **CFG[10:8]:** Reserved configuration lanes

7 M_CLK_A_P[0..1] M_CLK_A_N[0..1]
 7 M_CLK_B_N[0..1] M_CS_A_L[0..1]
 7 M_CS_A_L[0..1] M_CKE_N[0..1]
 7 M_CKE_A[0..1] M_ODT_N[0..1]
 7 M_ODT_A[0..1] M_MA[0..16]
 7 M_MA_A[0..16] M_DATA_A[0..63]
 7 M_DATA_A[0..63] M_DQS_A[0..7]
 7 M_DQS_A[0..7] M_DQS_A_N[0..7]
 7 M_BA_A0 M_BA_A0
 7 M_BA_A1 M_BA_A1
 7 M_BG_A0 M_BG_A0
 7 M_BG_A1 M_BG_A1
 7 M_PAR_A M_PAR_A
 7 M_ACT_A L M_ACT_A L
 7 M_ALT_A L M_ALT_A L
 7 DDR_VREF_CAO DDR_VREF_CAO

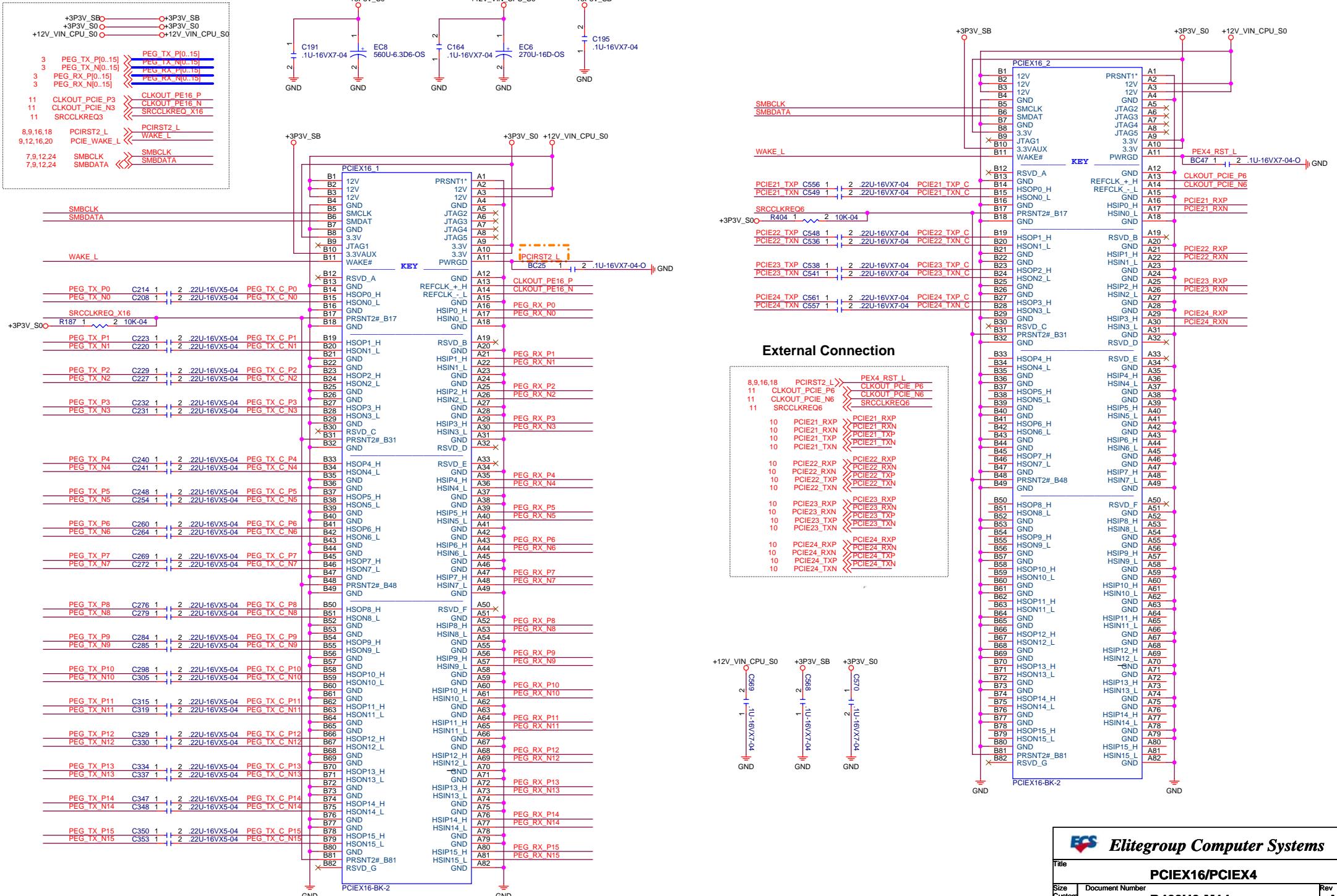




External Connection



External Connection



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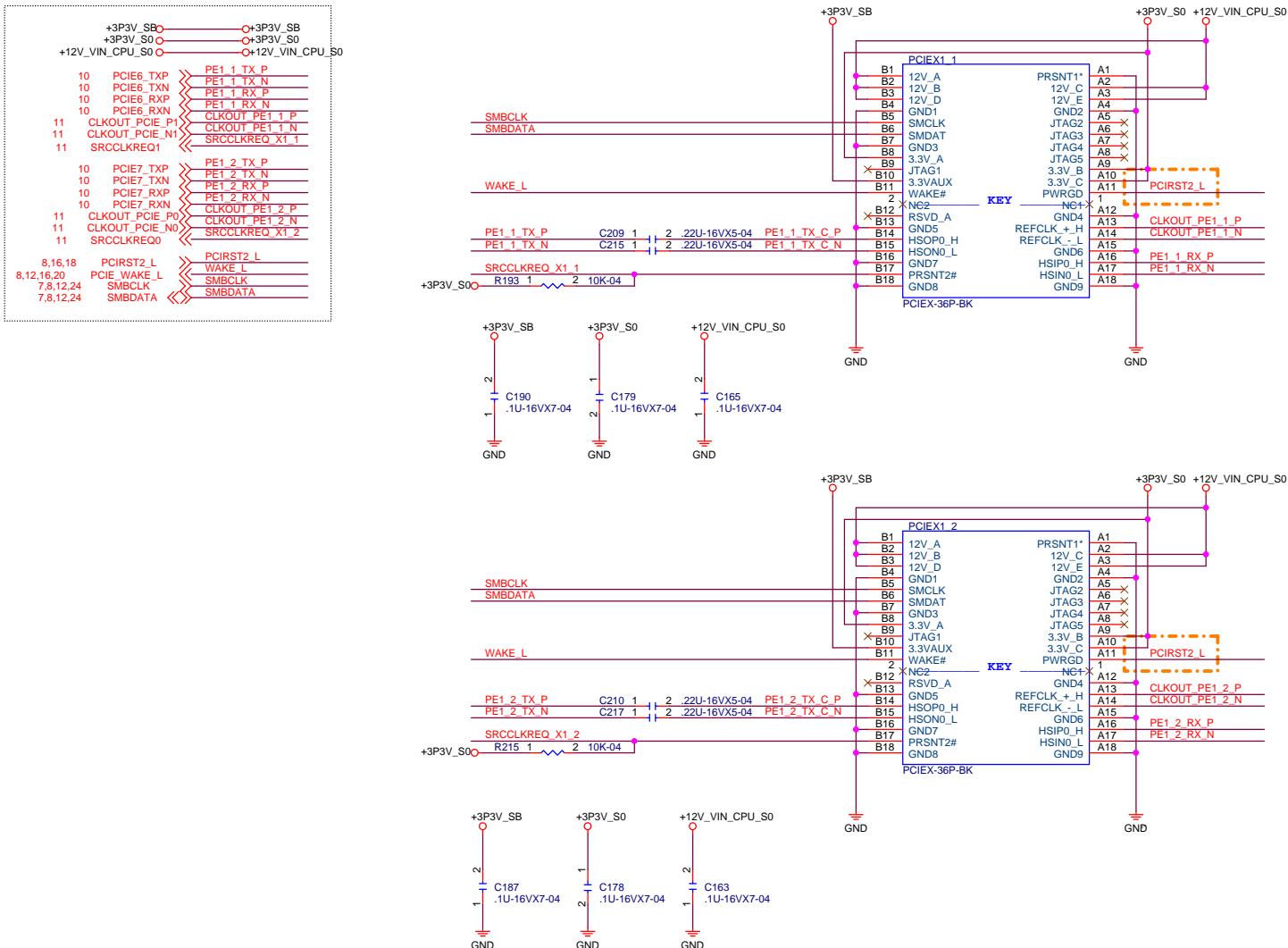
PCIEX16/PCIEX4

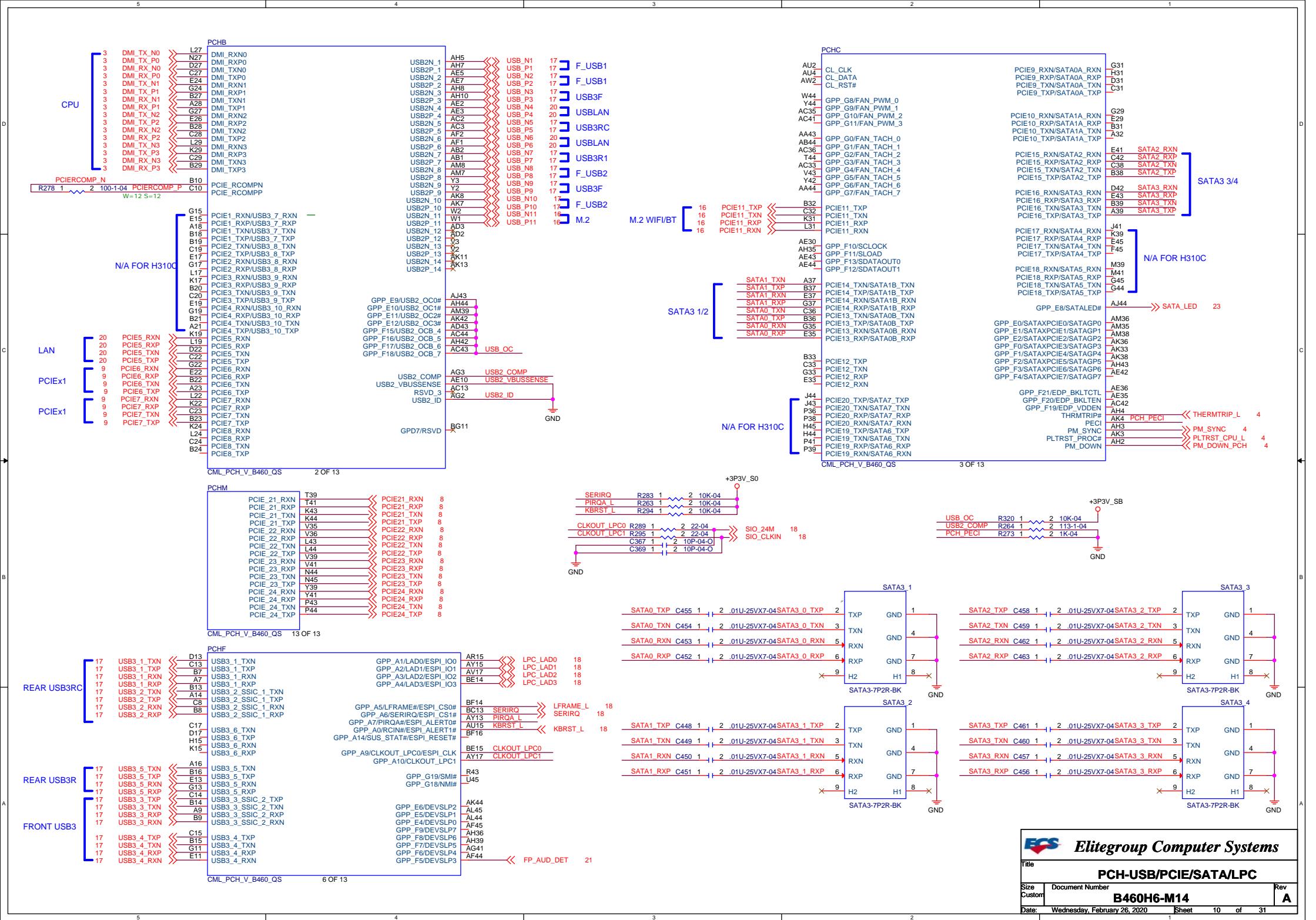
Document Number B460H6-M14 Rev A

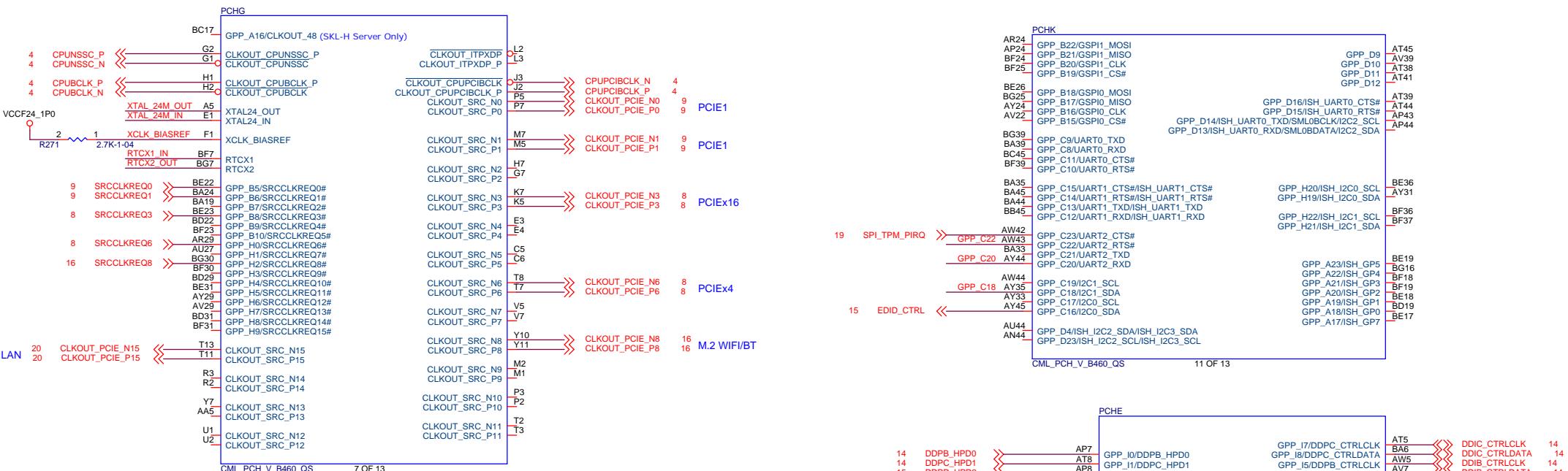
February 26, 2020 Sheet

1

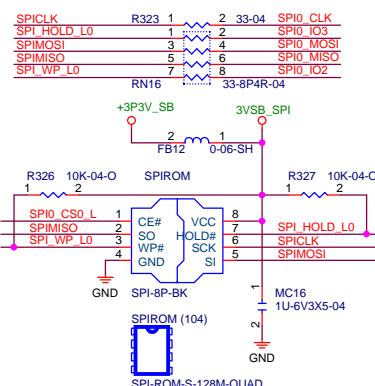
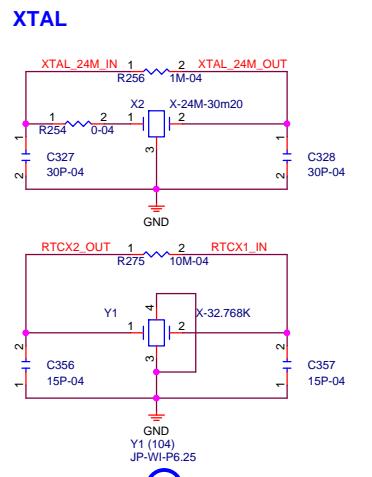
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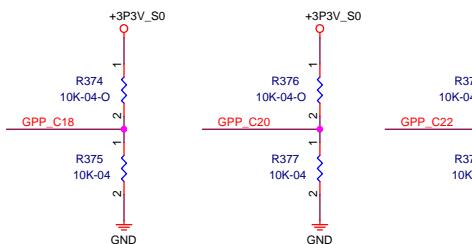




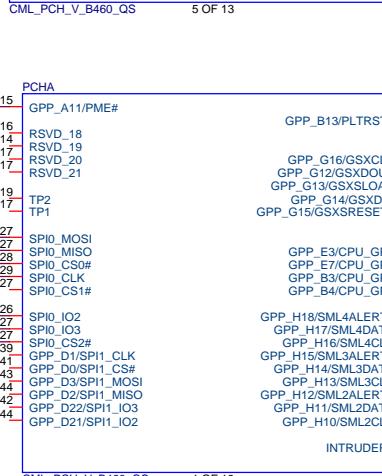
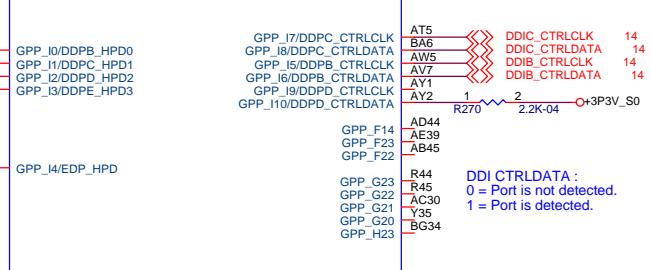
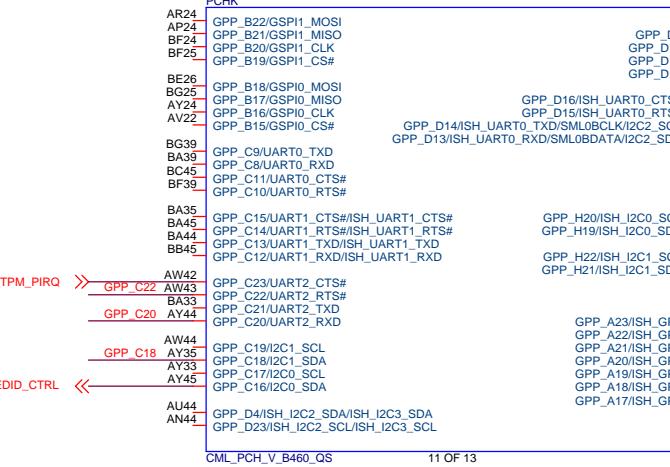
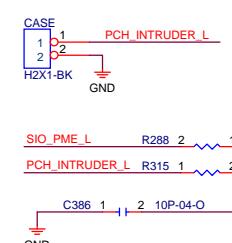
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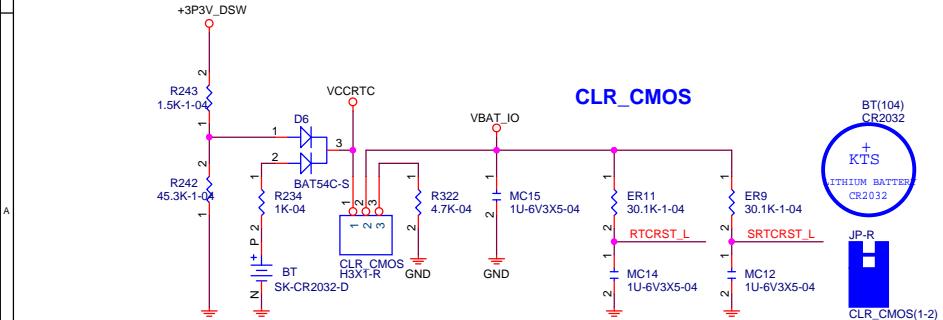
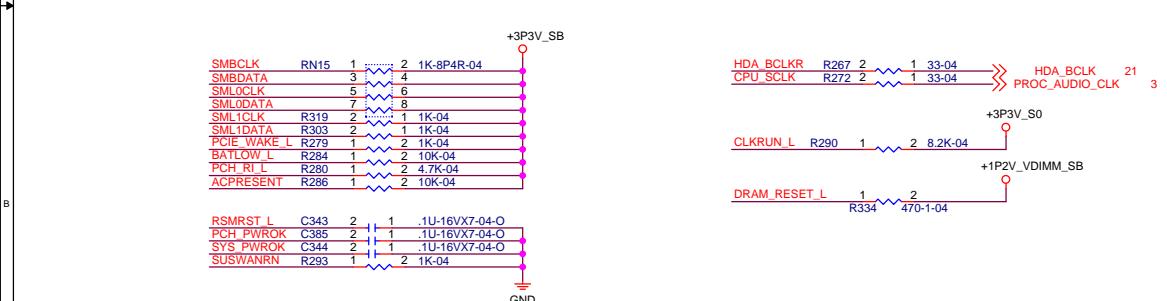
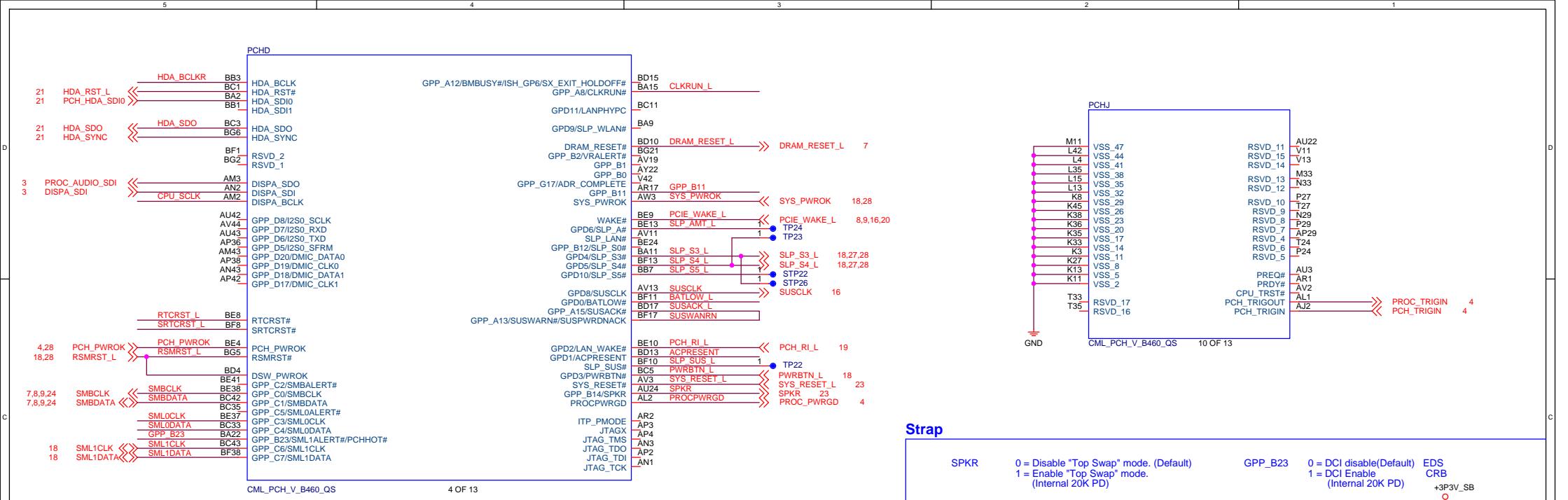


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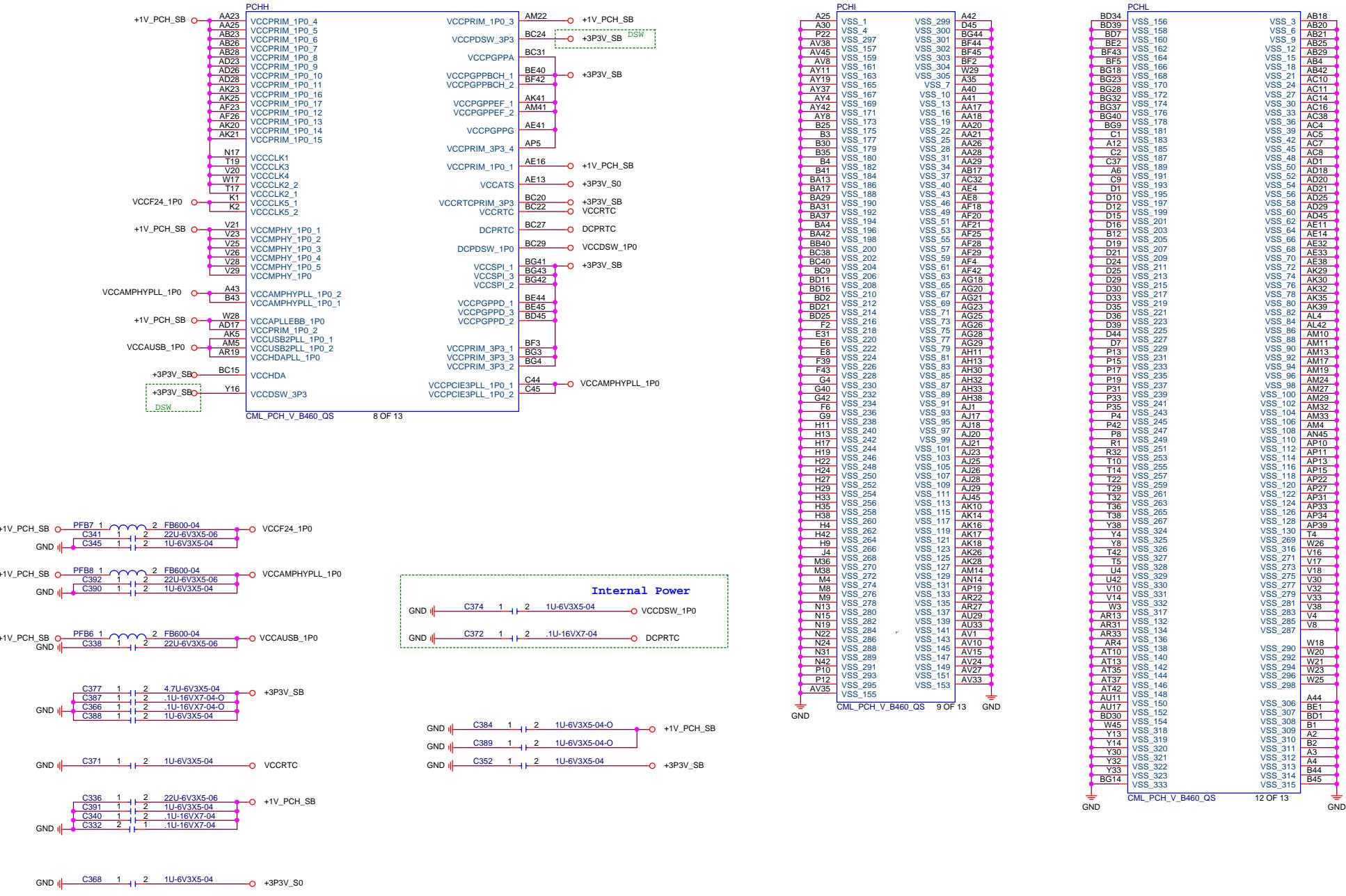
CASE OPEN



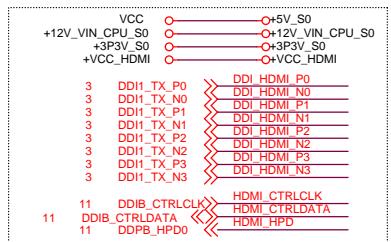


Strap

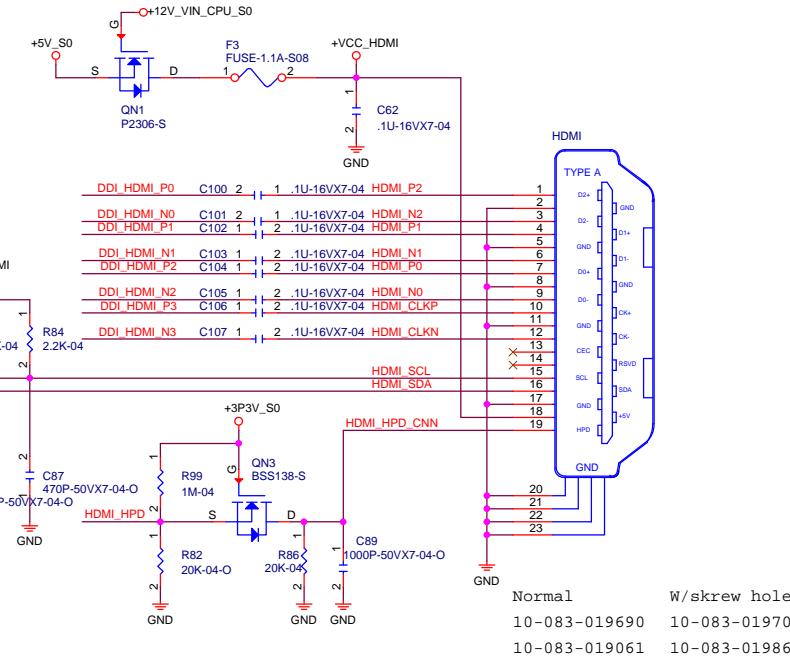
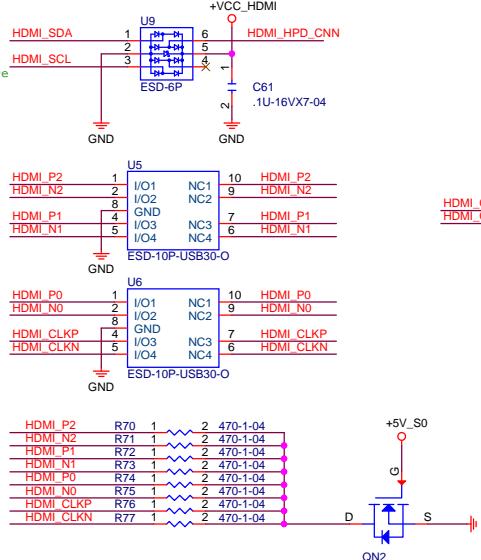
SPKR	0 = Disable "Top Swap" mode. (Default) 1 = Enable "Top Swap" mode. (Internal 20K PD)	GPP_B23	0 = DCI disable(Default) 1 = DCI Enable (Internal 20K PD)	EDS CRB
GPP_B18	0 = "Reboot" mode. (Default) 1 = "No Reboot" mode (Internal 20K PD)	GPP_B23	R318 2 ↗ 1 4.7K-04	+3P3V_SB
GPP_C2	0 = Disable TLS. (Default) 1 = Enable TLS for AMT. (Internal 20K PD)	SPI0_IO2	0 = Consent strap enable? 1 = Consent strap disable (Default) (Internal PU)	+3P3V_SB
GPP_B22	0 = SPI ROM (Default) 1 = LPC ROM (Internal 20K PD)	SPI0_IO2	R299 1 ↗ 2 20K-04-O	+3P3V_SB
GPP_C5	0 = LPC Bus (Default) 1 = eSPI Bus (Internal 20K PD)	SPI0_IO3	0 = Personality strap enable? 1 = Personality strap disable (Default) (Internal PU)	+3P3V_SB
SPI0_MOSI	0 = Boot Halt 1 = Normal (Default) (Internal PU)	SPI0_IO3	R316 1 ↗ 2 20K-04-O	+3P3V_SB
SPI0_MISO	0=JTAG ODT disable 1=JTAG ODT enable (Default) (Internal PU)	HDA_SDO	0 = ME enable, Protect. (Default) 1 = ME disable (Override) (Internal 20K PD)	GPP_B11
GPP_H12	0 = Master Attached Flash Sharing. (Default) 1 = Slave Attached Flash Sharing. (Internal 20K PD)	HDA_SDO	R269 1 ↗ 2 1K-04	



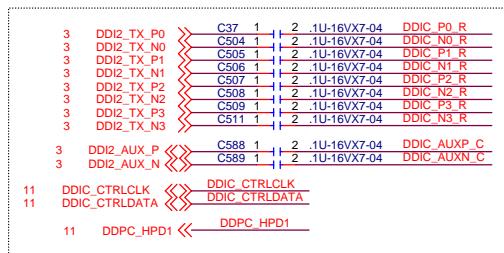
External Connection



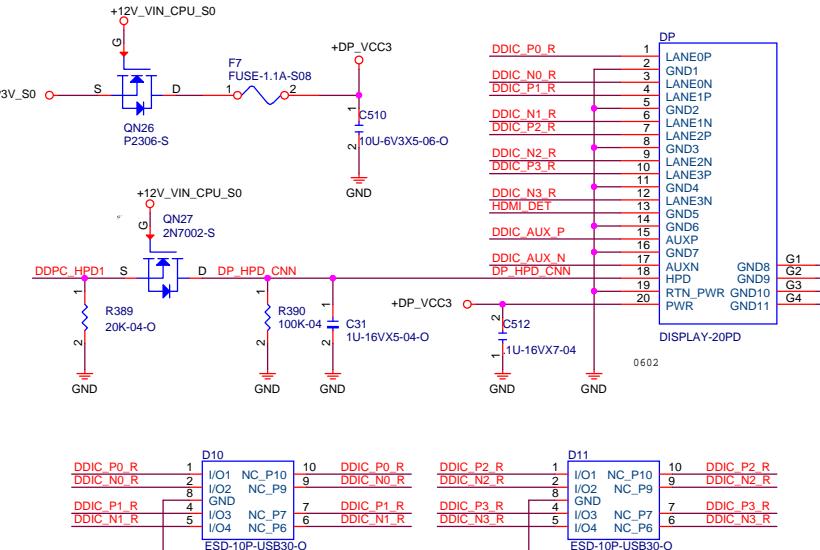
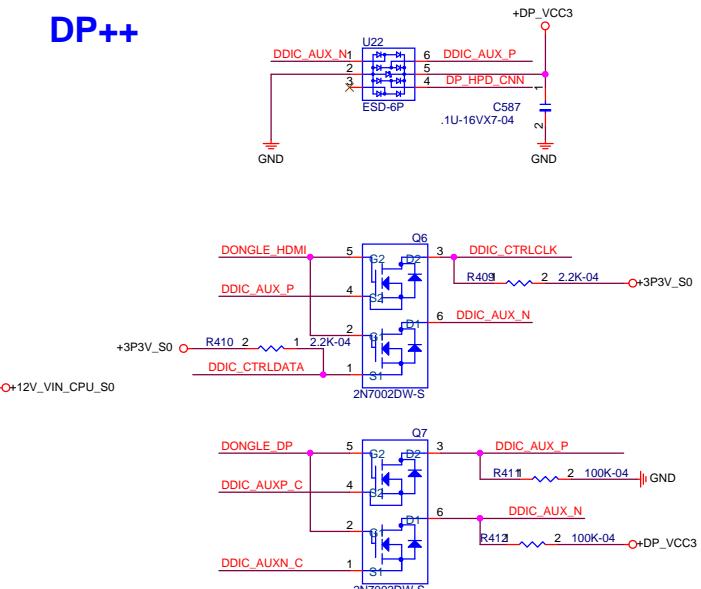
HDMI



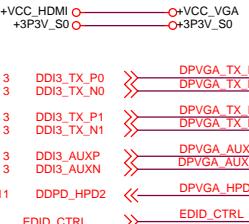
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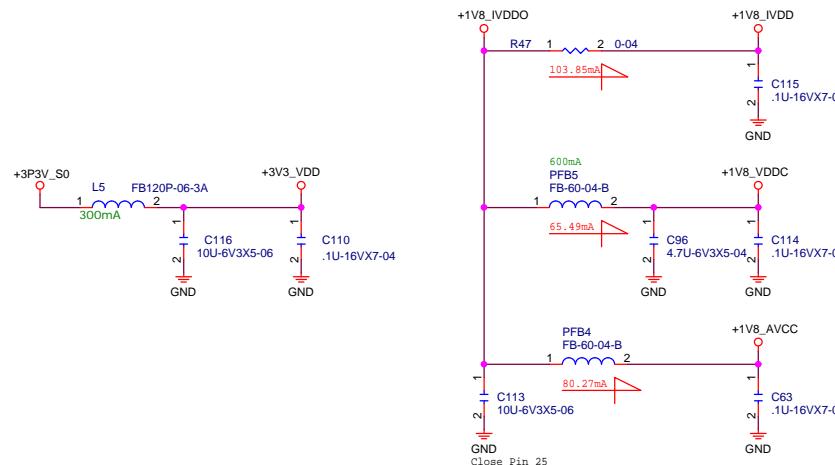
DP++



External Connection

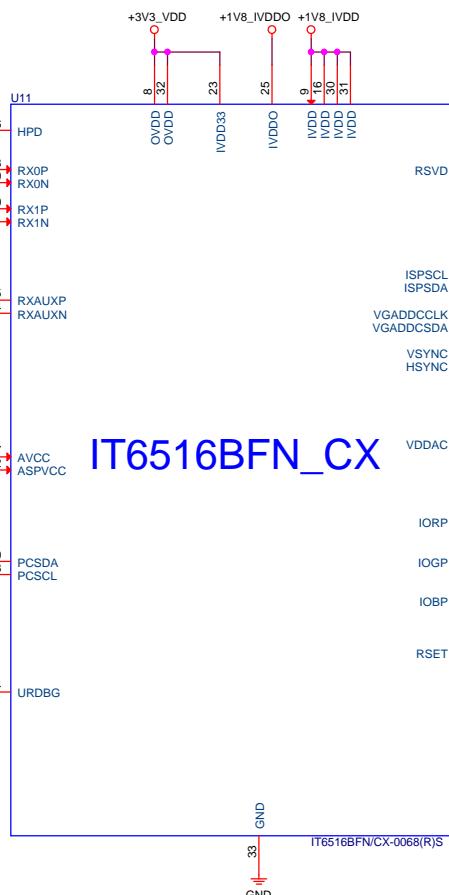


GPO control EDID behavior for KVM issue
DOS mode: High, report default EDID
Win mode: Low, report real monitor EDID

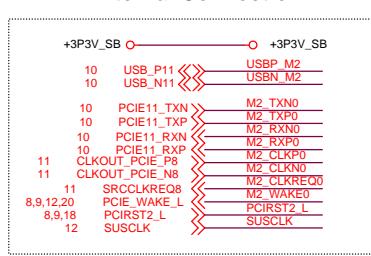


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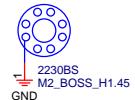
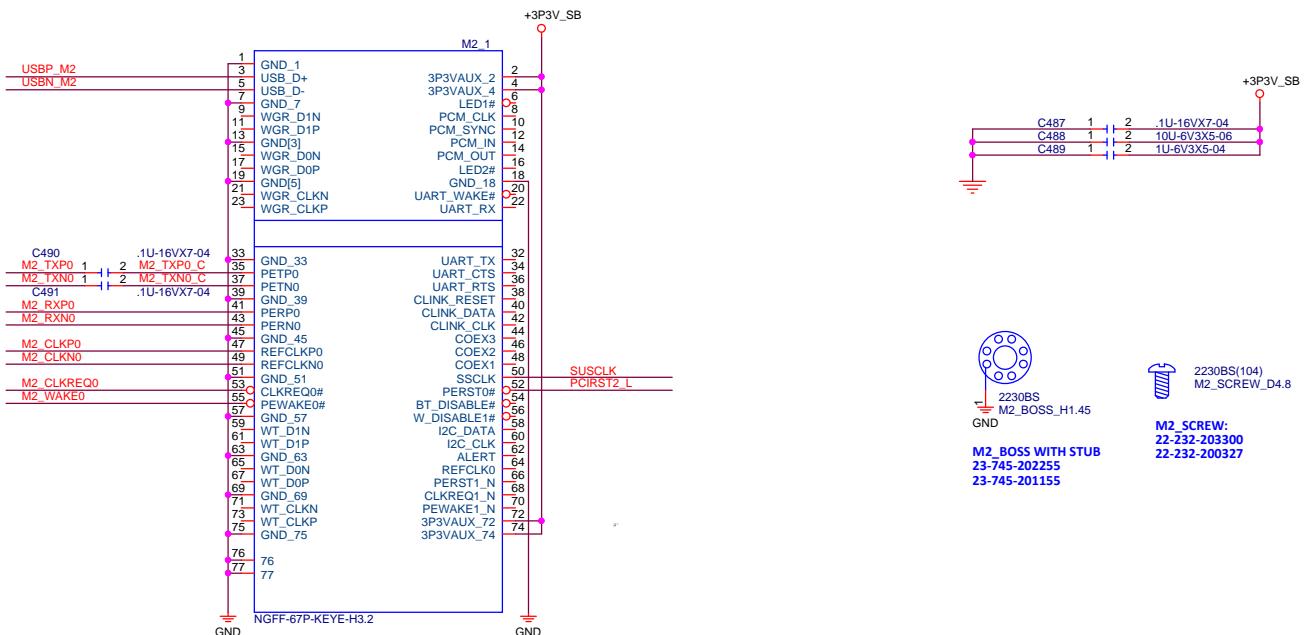
IT6516BFN_CX



Title	
VGA IT6516BFN	
Size	Document Number
Custom	B460H6-M14
Date:	Wednesday, February 26, 2020
Rev	A



M.2 2230 WiFi / BT

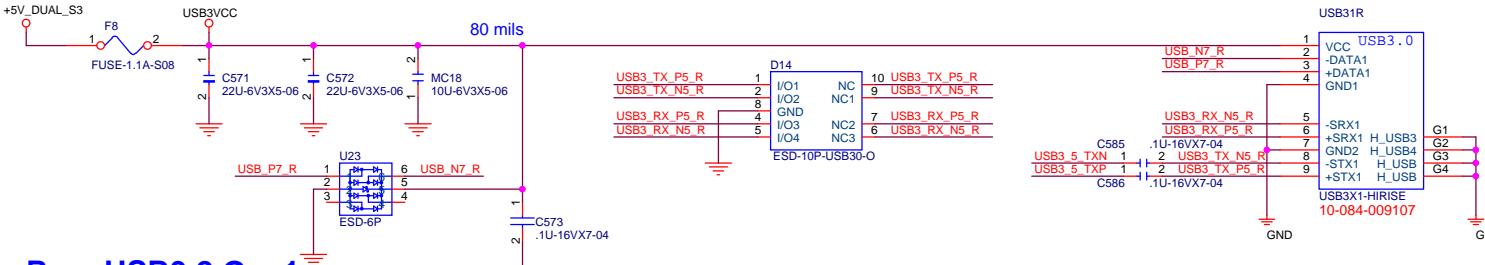


2230BS(104)
M2_SCREW_D4.8

**M2 SCREW:
22-232-203300
22-232-200327**

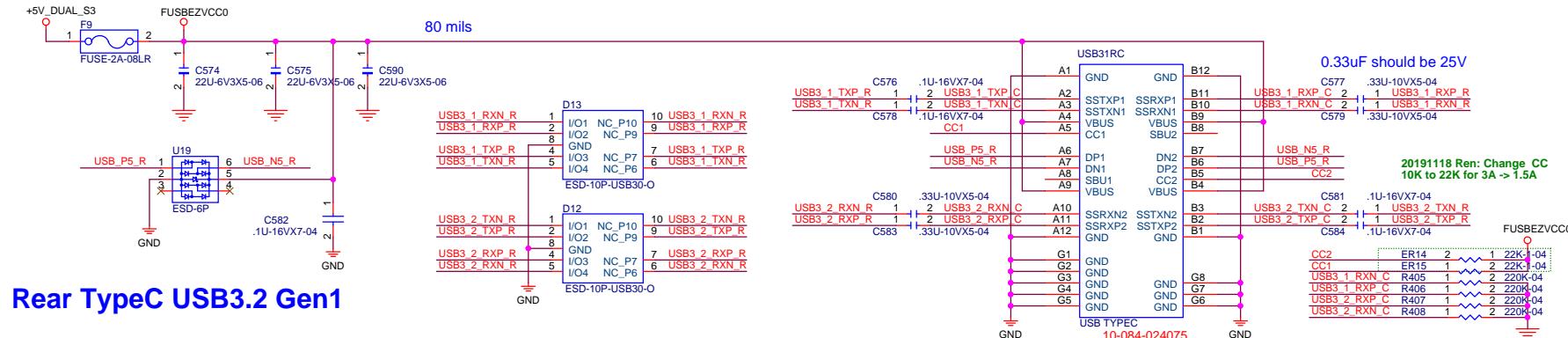
External Connection

10	USB_P7	USB_P7_R
10	USB_N7	USB_N7_R
10	USB3_5_TXP	USB3_5_TXP
10	USB3_5_TXN	USB3_5_TXN
10	USB3_5_RXP	USB3_RX_P5_R
10	USB3_5_RXN	USB3_RX_N5_R



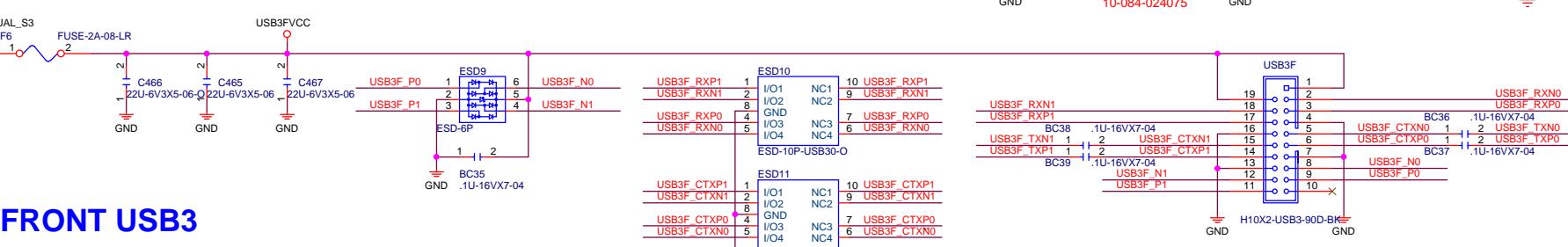
External Connection

10	USB_N5	USB_N5_R
10	USB_P5	USB_P5_R
10	USB3_1_TXN	USB3_1_TXN_R
10	USB3_1_TXP	USB3_1_TXP_R
10	USB3_1_RXN	USB3_1_RXN_R
10	USB3_1_RXP	USB3_1_RXP_R
10	USB3_2_TXN	USB3_2_TXN_R
10	USB3_2_TXP	USB3_2_TXP_R
10	USB3_2_RXN	USB3_2_RXN_R
10	USB3_2_RXP	USB3_2_RXP_R



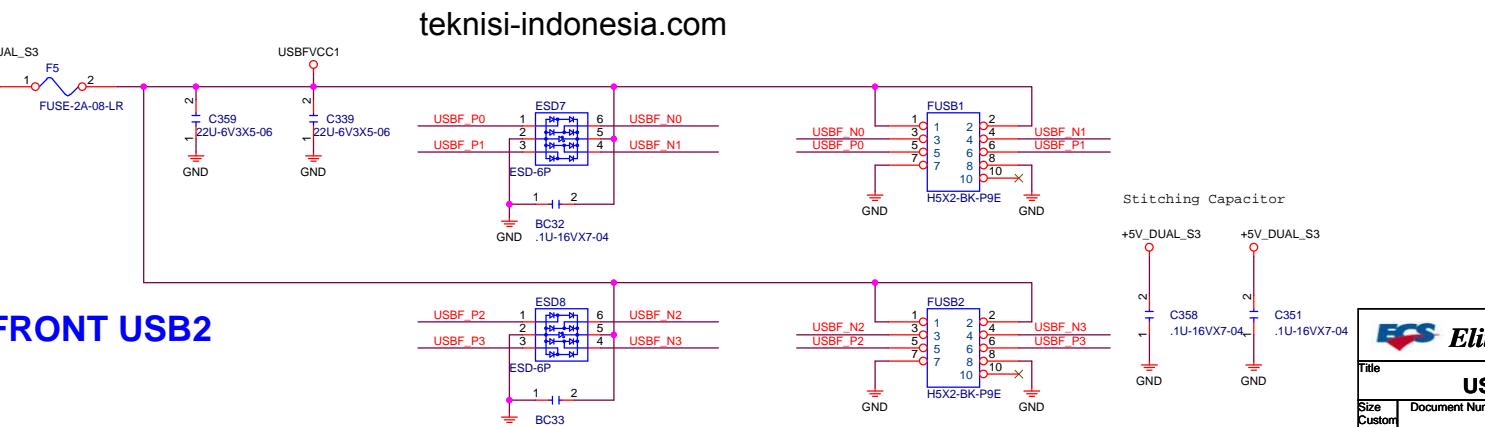
External Connection

10	USB3_3_TXN	USB3F_TXN0
10	USB3_3_TXP	USB3F_TXP0
10	USB3_3_RXN	USB3F_RXN0
10	USB3_3_RXP	USB3F_RXP0
10	USB3_4_TXN	USB3F_TXN1
10	USB3_4_TXP	USB3F_TXP1
10	USB3_4_RXN	USB3F_RXN1
10	USB3_4_RXP	USB3F_RXP1
10	USB_N9	USB3F_N0
10	USB_P9	USB3F_P0
10	USB_N3	USB3F_N1
10	USB_P3	USB3F_P1



External Connection

10	USB_N1	USBF_N0
10	USB_P1	USBF_P0
10	USB_N2	USBF_N1
10	USB_P2	USBF_P1
10	USB_N10	USBF_N2
10	USB_P10	USBF_P2
10	USB_N8	USBF_N3
10	USB_P8	USBF_P3



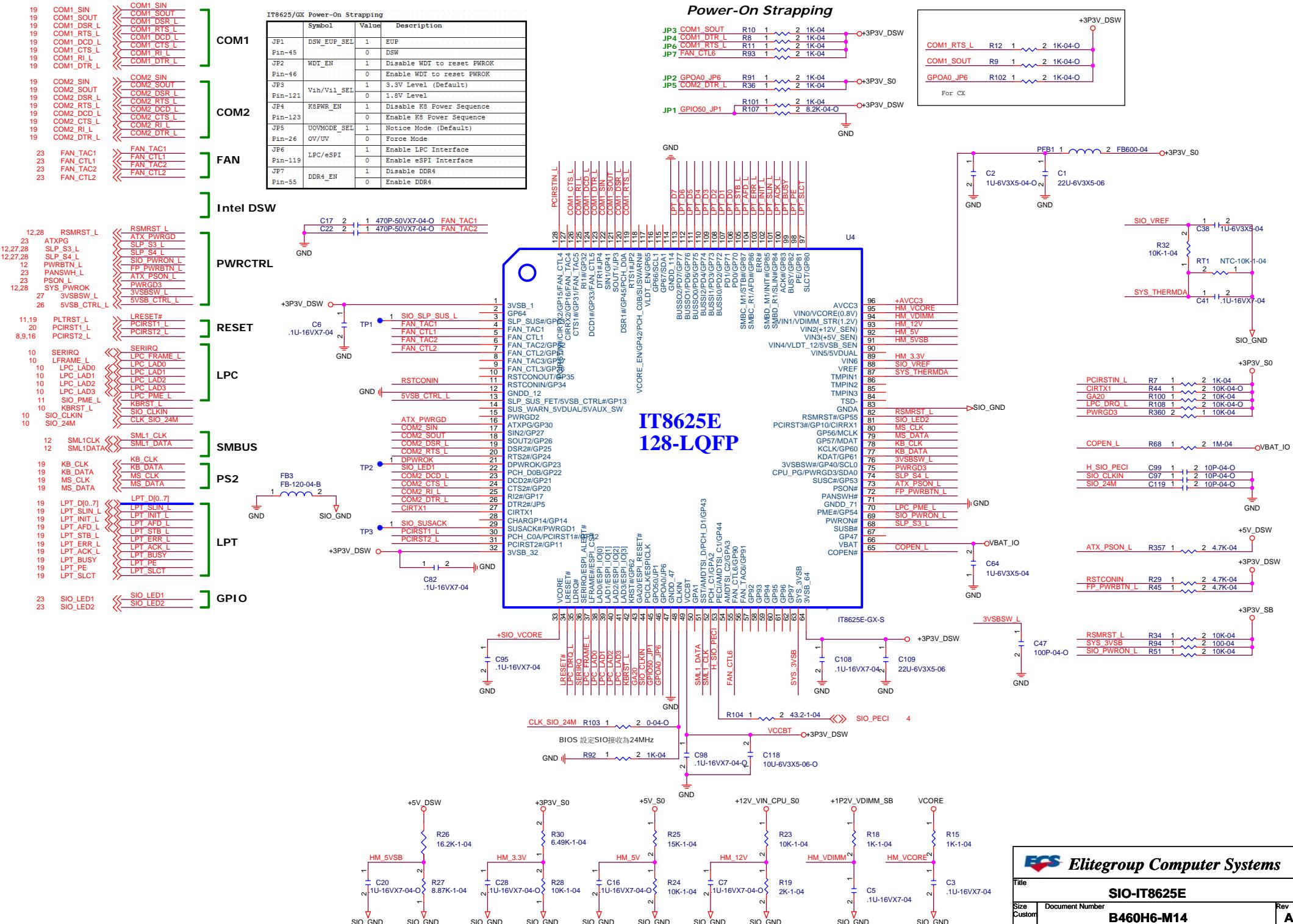
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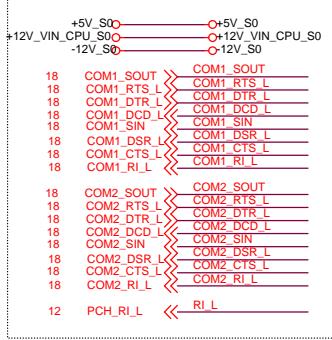
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Size: Custom Document Number: B460H6-M14 Rev: A

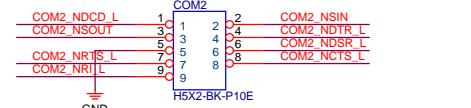
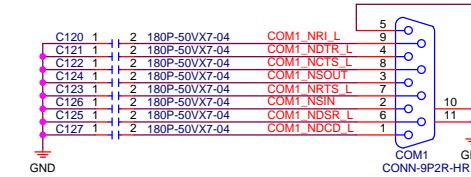
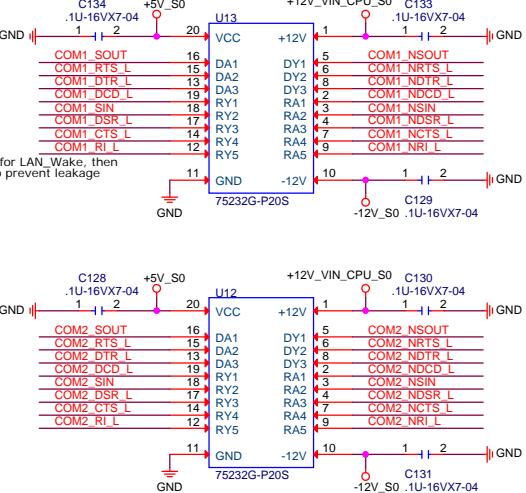
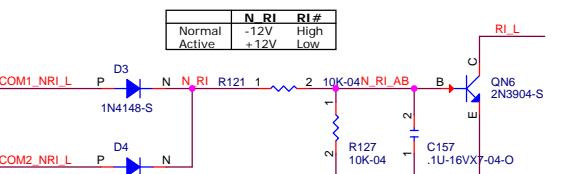
Date: Wednesday, February 26, 2020 Sheet: 17 of 31



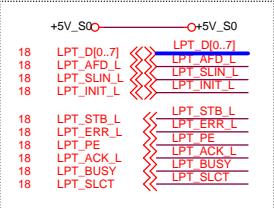
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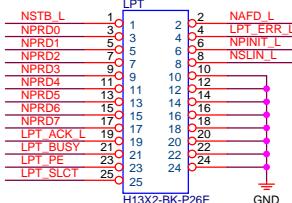
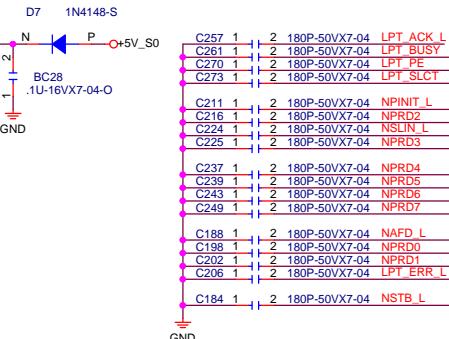
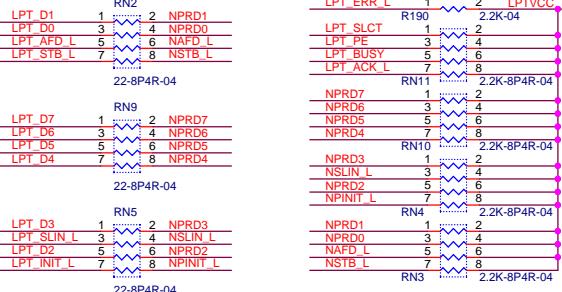
COM Header+Connector



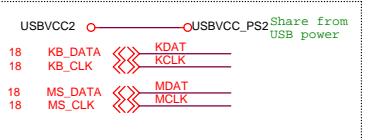
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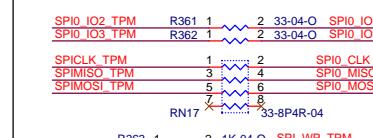
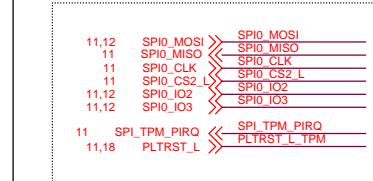
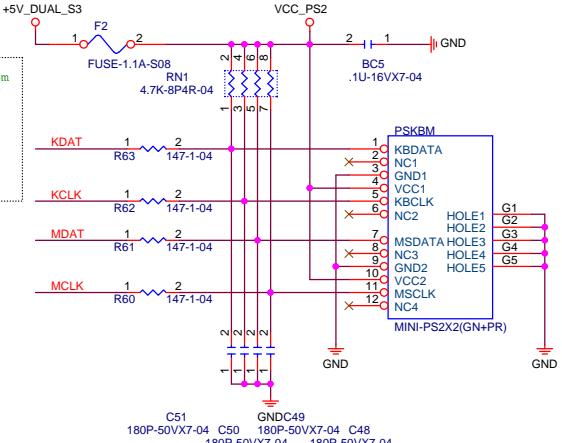
LPT Header



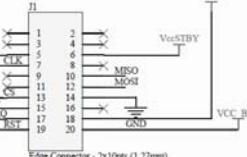
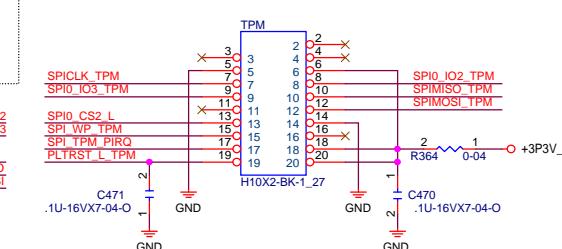
External Connection



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SPI TPM header



Pin	Name	Pin	Name
1	KEYWAY	2	N.C.
3	N.C. ¹	4	N.C.
5	GND	6	VDD3V3
7	SCL ²	8	N.C.
9	N.C.	10	MISO
11	N.C.	12	MOSI
13	SCS ³	14	GND
15	N.C.	16	N.C.
17	SPI IRQ	18	VSB3V3
19	SPI_RST ⁴	20	N.C.

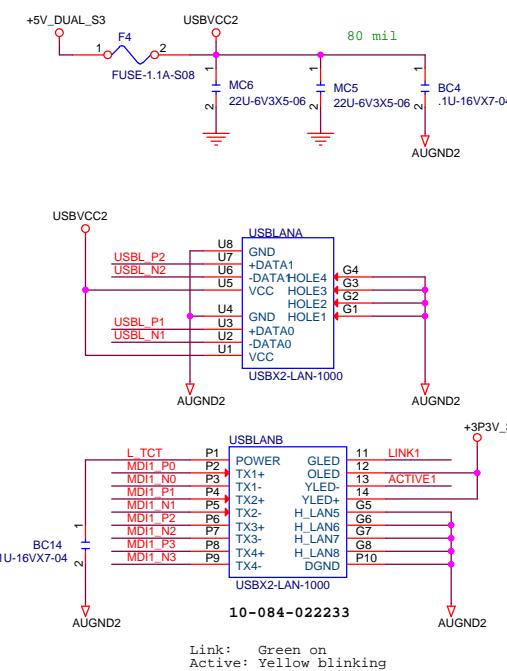
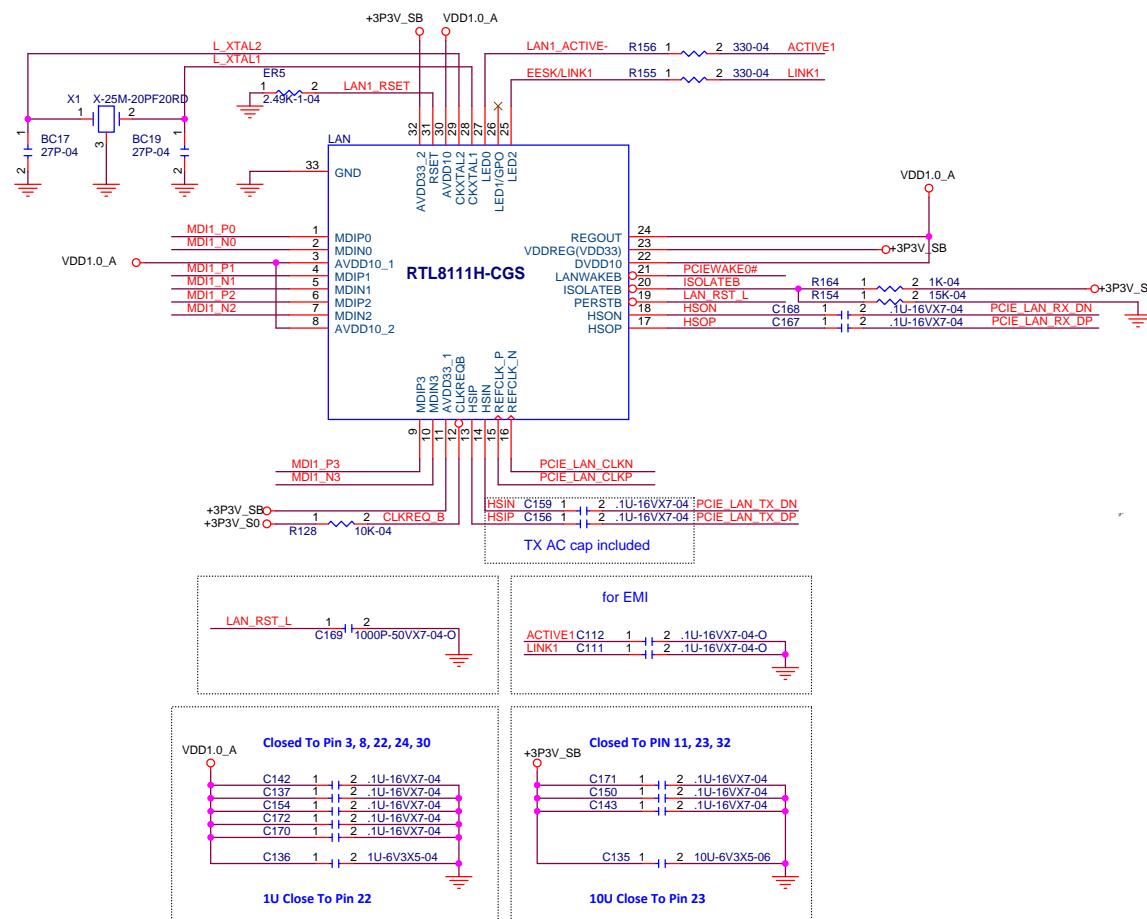
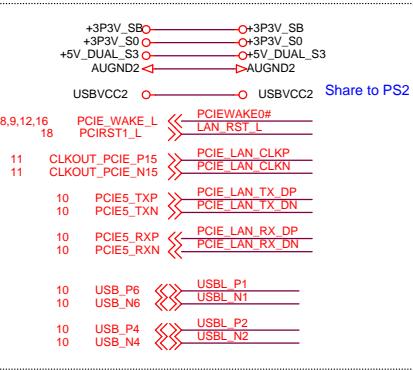
NUVOTON

Title		Rev	
Size	Document Number	A	
B460H6-M14			

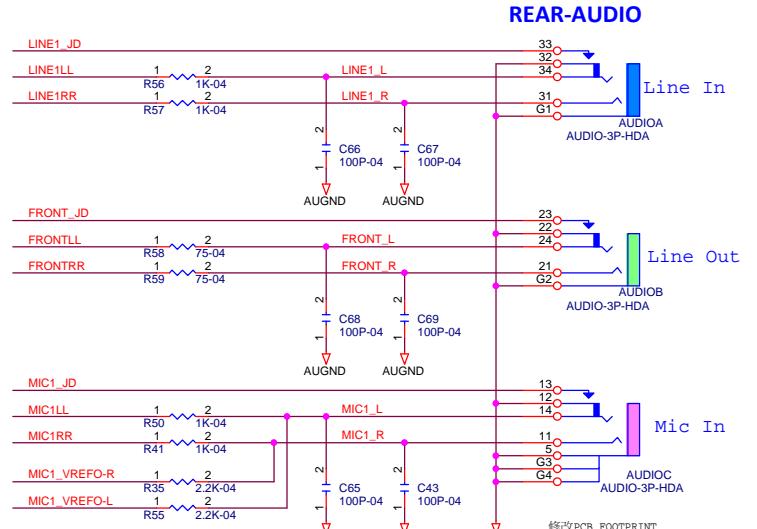
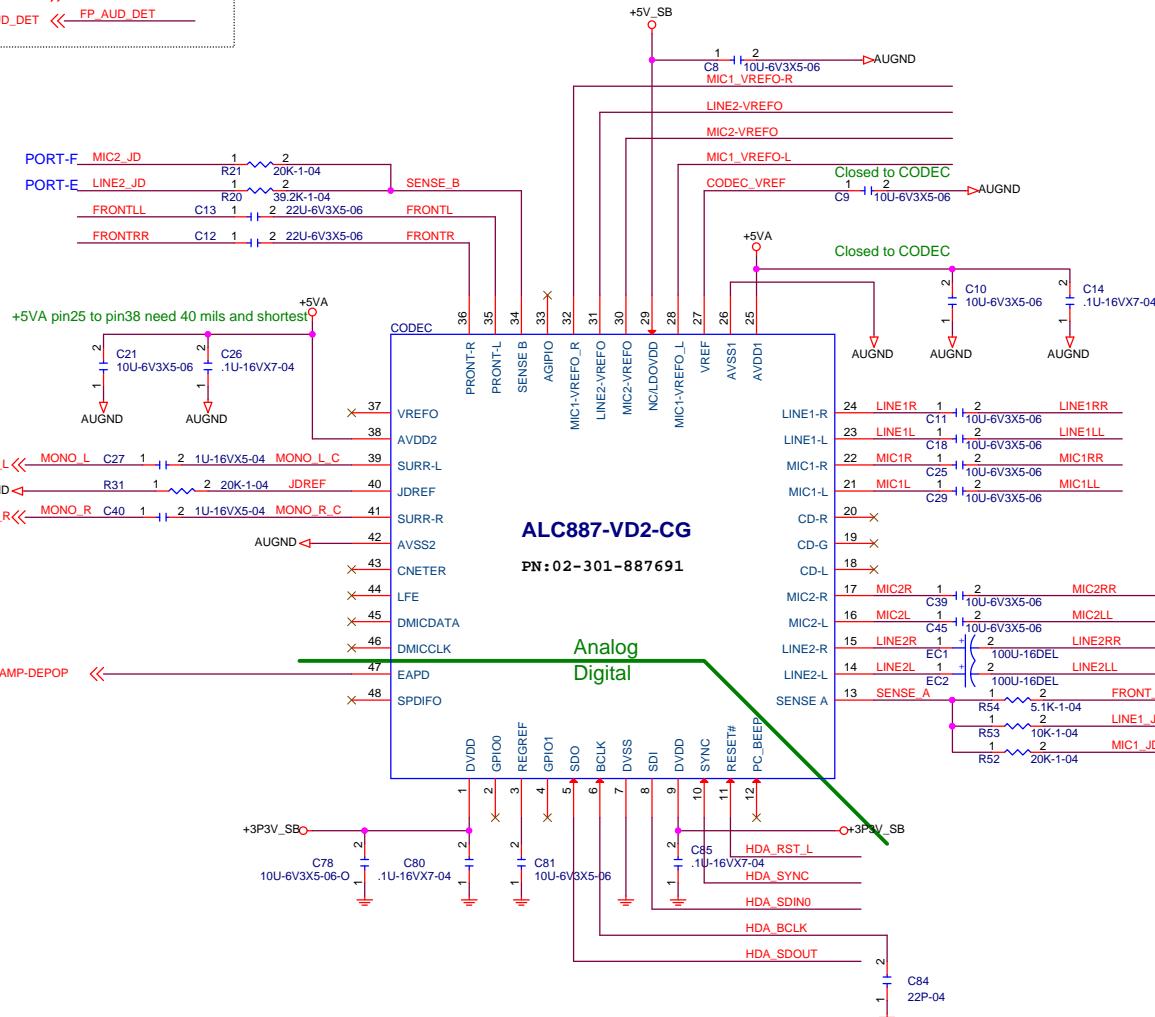
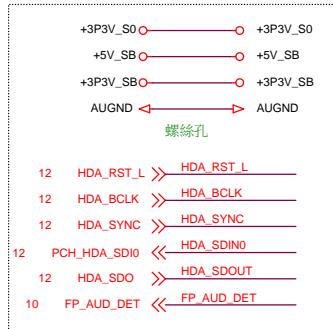
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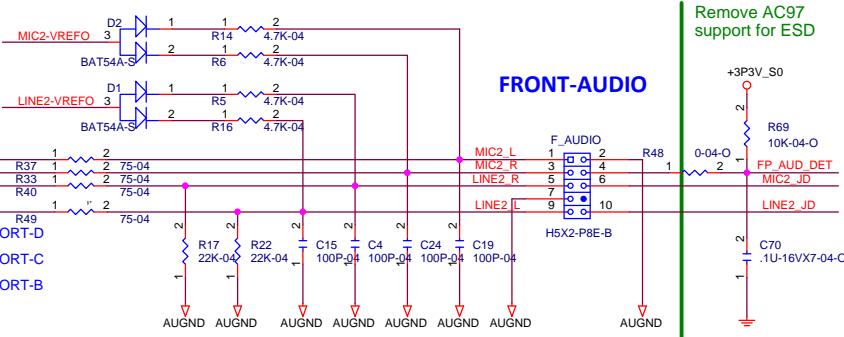
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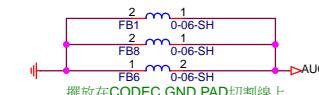
External Connection



AUDIO_JACK_13P-COLAY_2

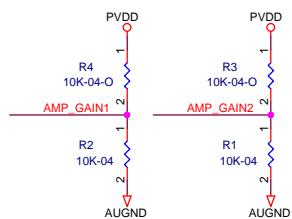
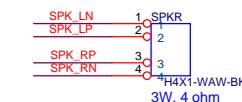
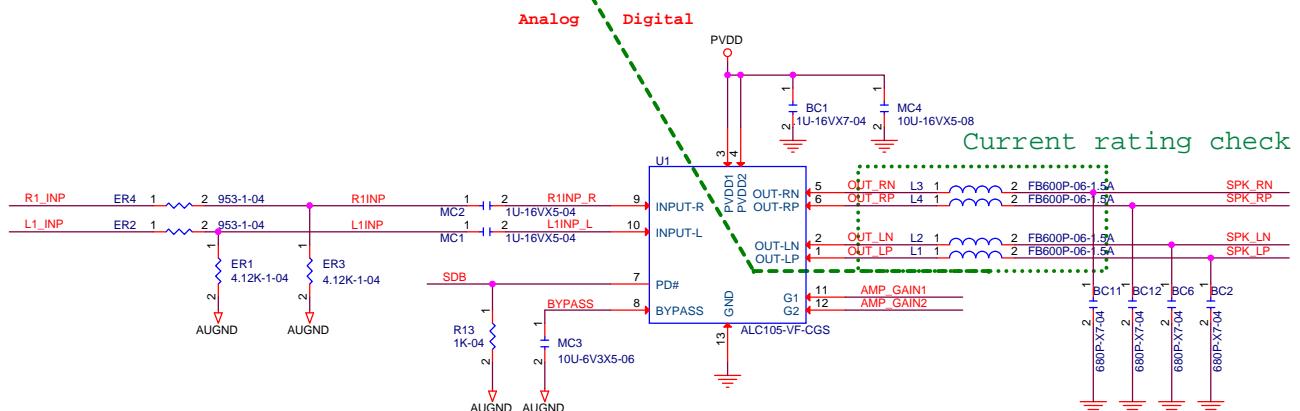
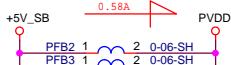


Remove AC97 support for ESD



Amplifier ALC105

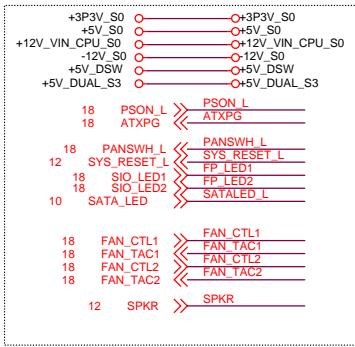
21 MONO_R
21 MONO_L
21 AMP-DEPOP SDB



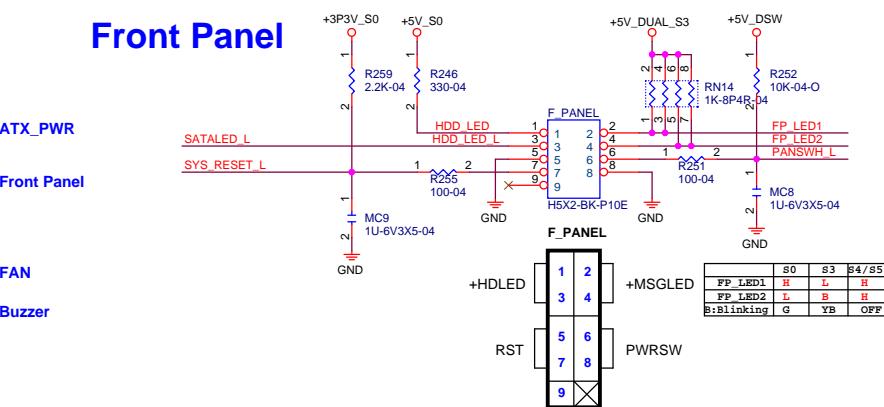
Output Gain Table

G2	G1	SE-input Stereo-output Gain
0	0	11dB
0	1	14dB
1	0	19dB
1	1	25dB

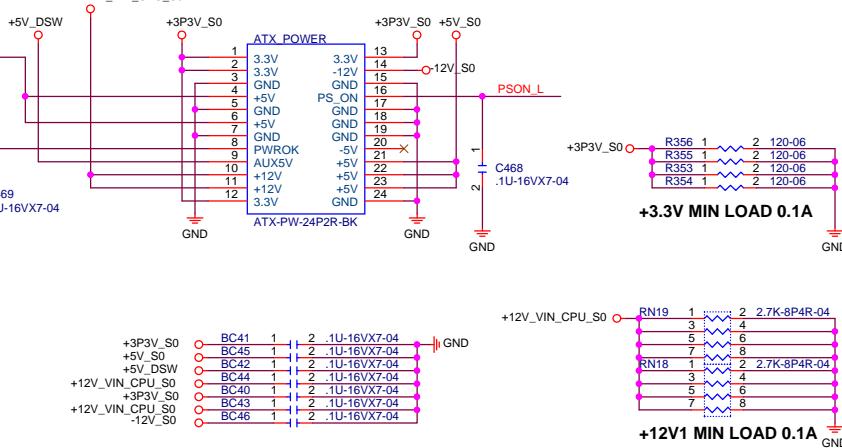
External Connection



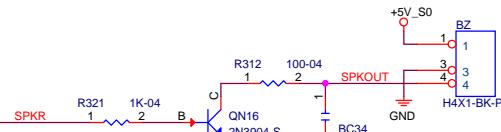
Front Panel



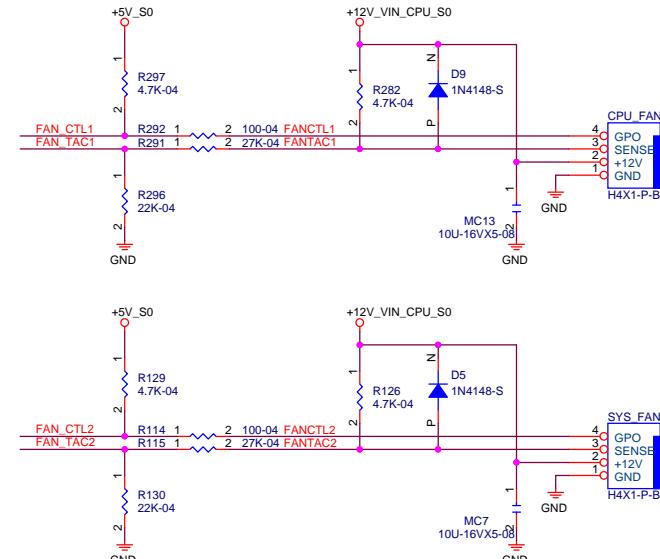
ATX CONNECTOR



BUZZER HEADER

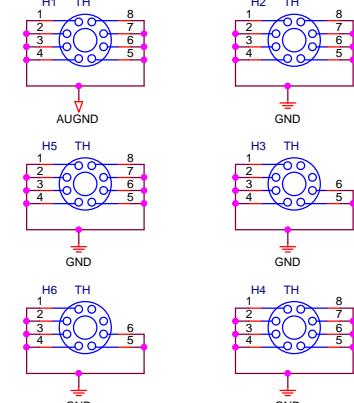
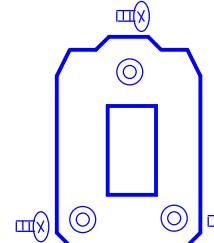
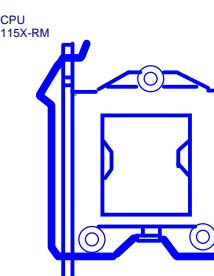
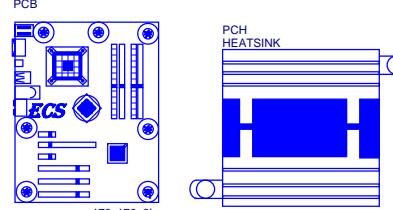


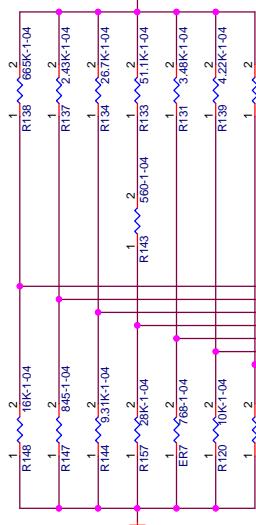
FANs



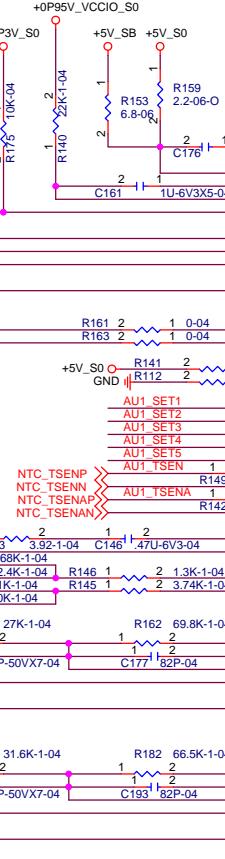
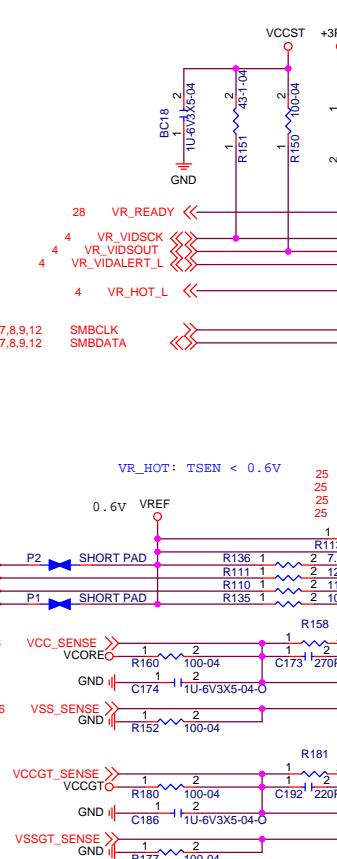
Hole/ PCB/104

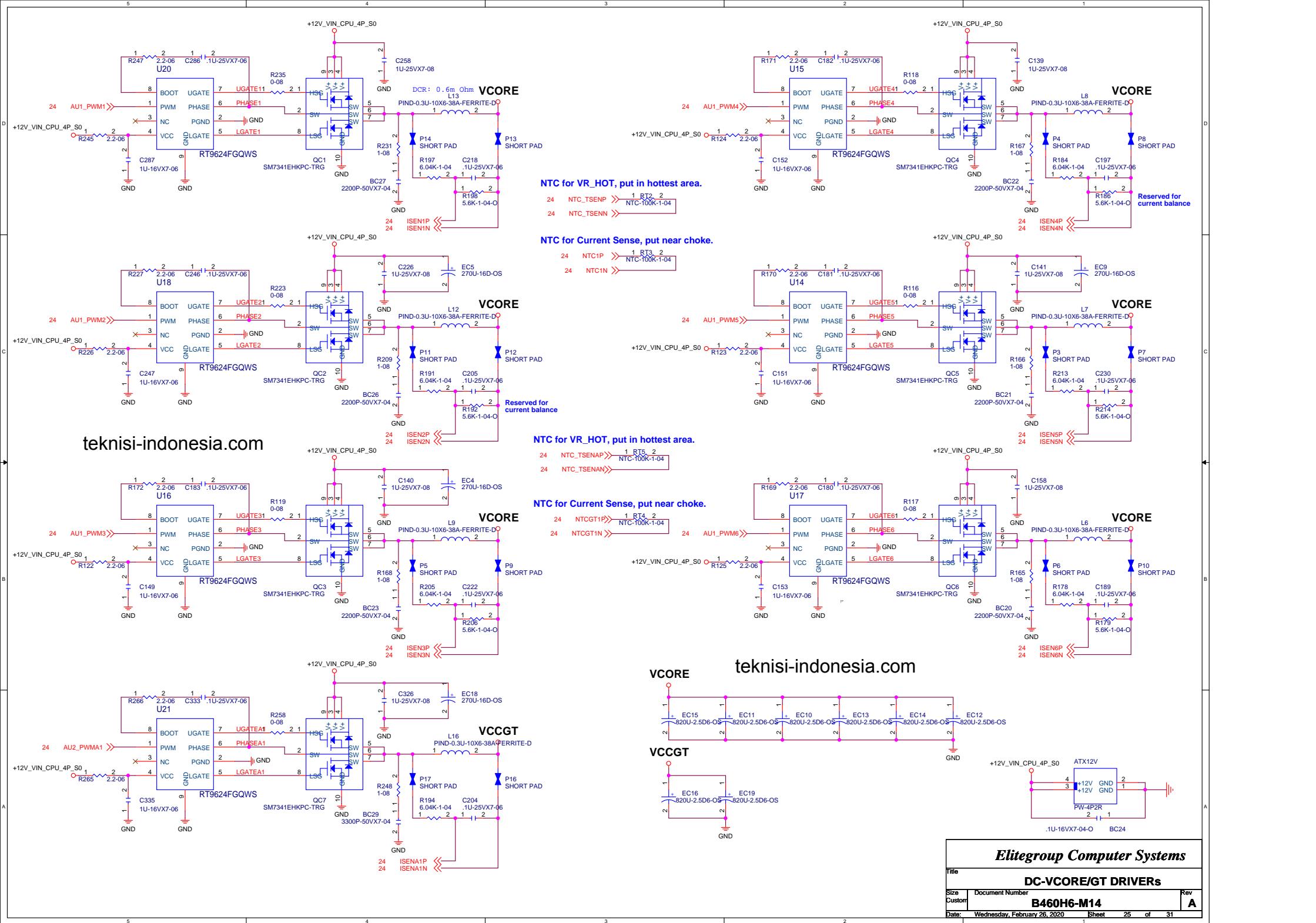
305 * 244 = 9 Hole (1+8)
 244 * 244 = 8 Hole (1+7)
 305 * 220-170 = 6 Hole (1+5)
 244-220 * 220-170 = 6 Hole (1+5)
 210-170 * 220-170 = 4 Hole (1+3)



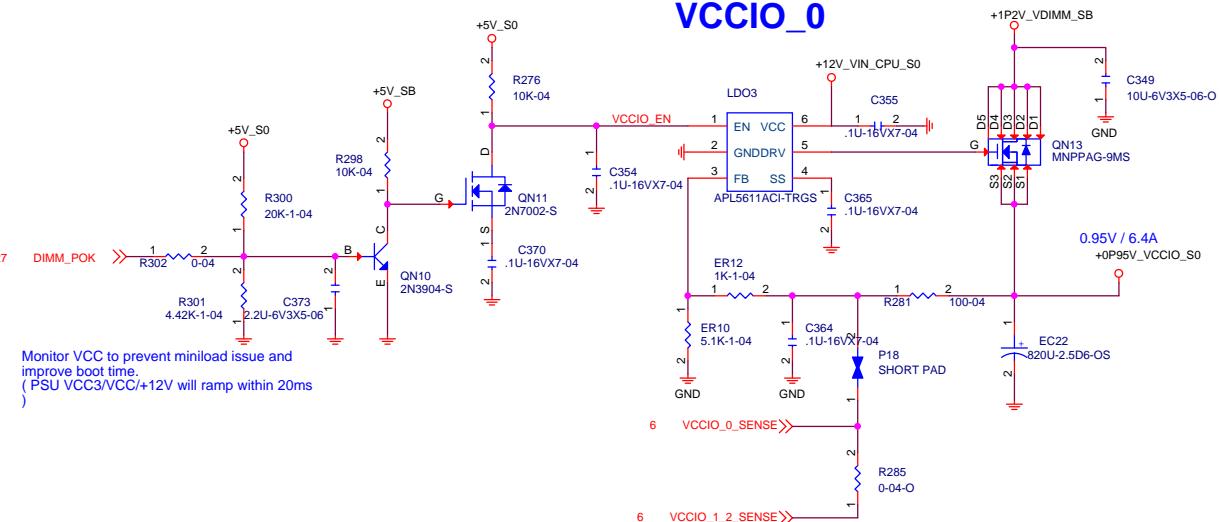


Iccmax_IA=210A
Iccmax_GT=35A



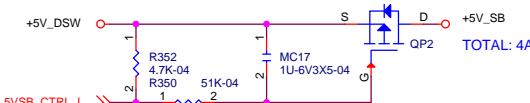


VCCIO_0

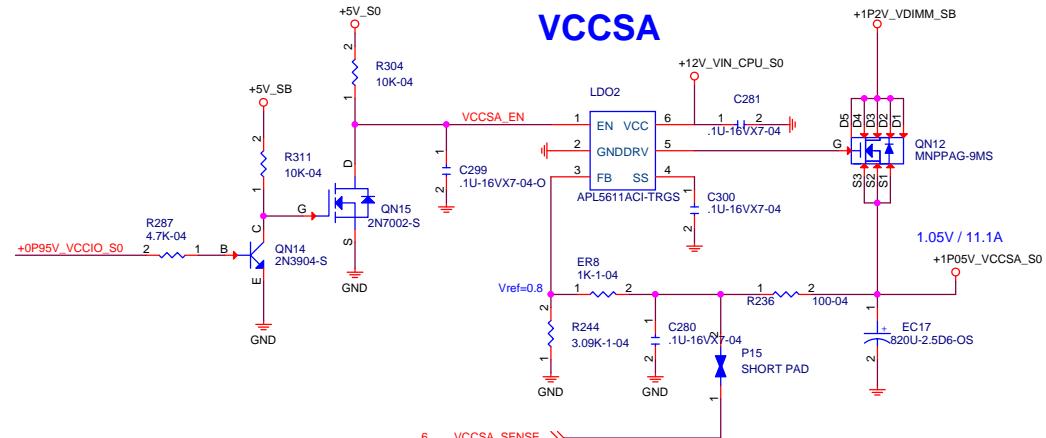


EuP

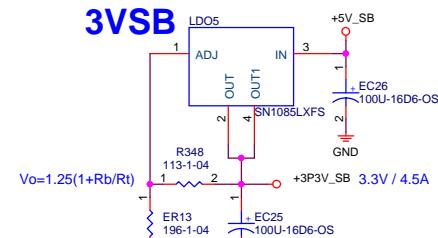
5VSB



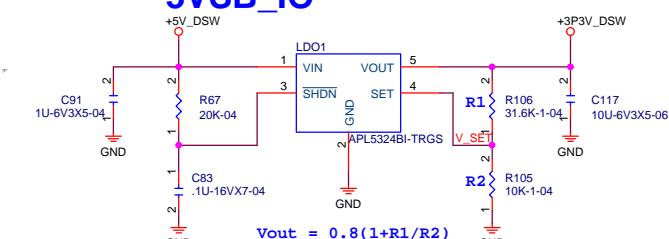
VCCSA



3VSB



3VSB_IO



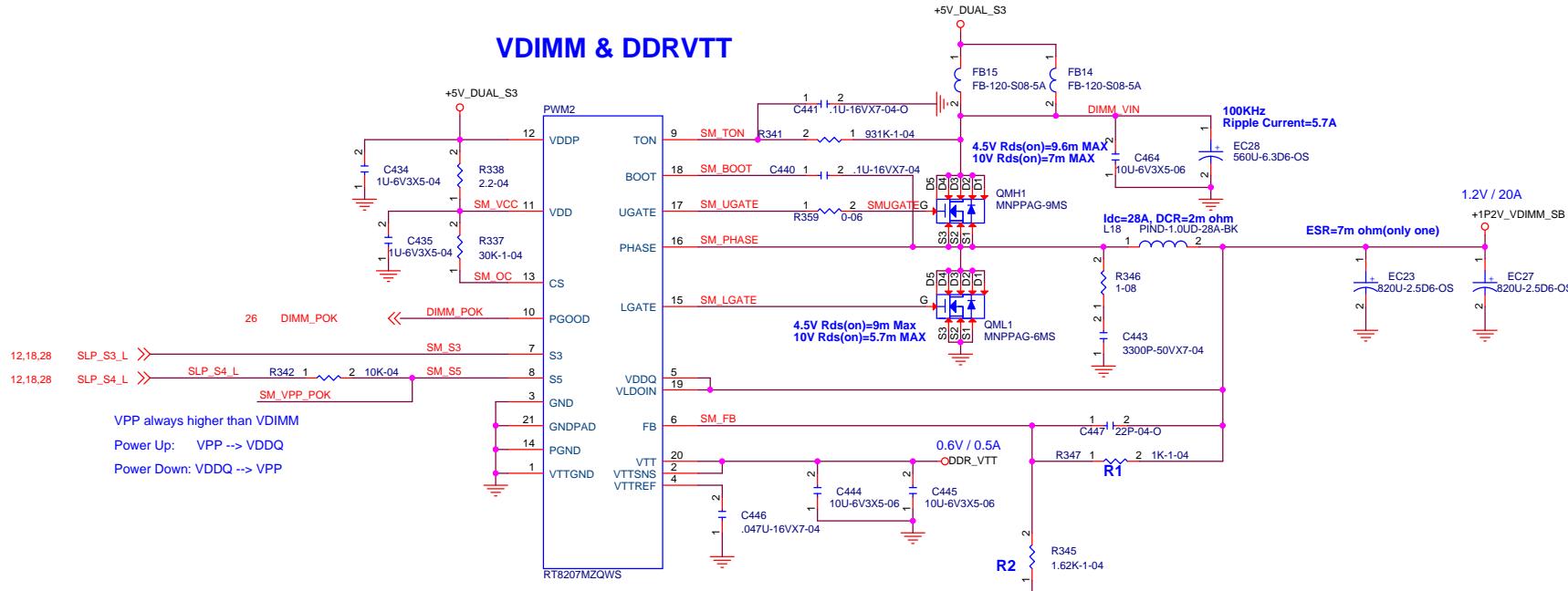
Elitegroup Computer Systems

Title DC-VCCSA/VCCIO/EuP

Size Custom Document Number B460H6-M14 Rev A

Date: Wednesday, February 26, 2020 Sheet 26 of 31

VDIMM & DDRVTT



S3 S5 Truth Table

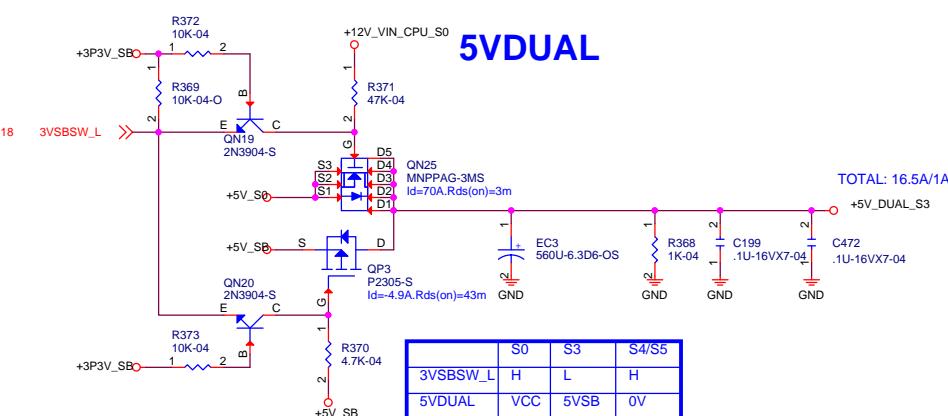
STATE	S3	S5	VDDQ	VTTREF	VTT
S0	H	H	OUTPUT	OUTPUT	OUTPUT
S3	L	H	OUTPUT	OUTPUT	HIGH-Z
S4 / S5	L	L	DISCHARGE	DISCHARGE	DISCHARGE

$$V_{out} = 0.75 \times \{1 + (R1/R2)\}$$

$$QCP = R_{CS} \times 10\mu A / R_{DS(on)}$$

$$f = (V_{in} - 0.5) / (3.85p * V_{in} * R_{ton})$$

OCP 太高

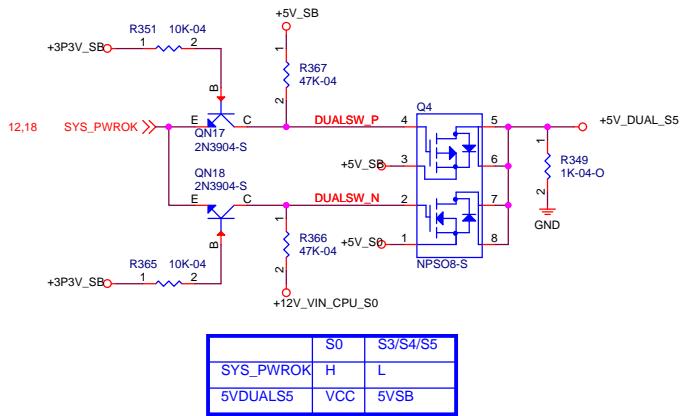


5VDUAL

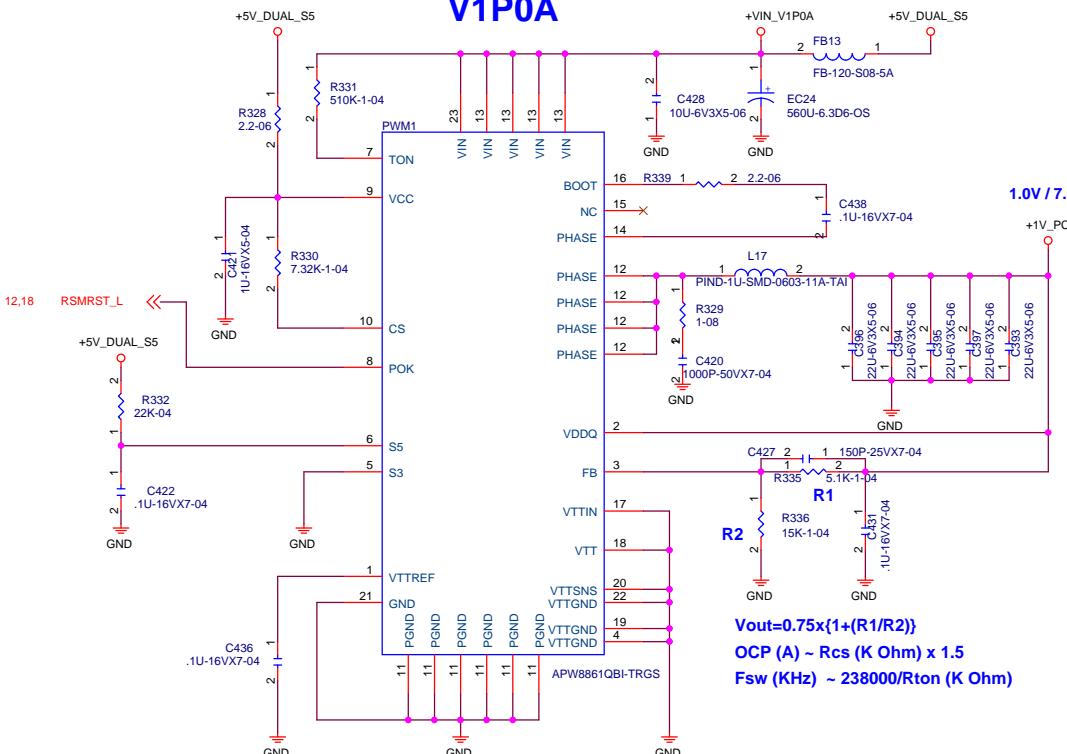


$$V_{out}=0.8 \times \{1 + (R1/R2)\}$$

5VDUAL S5

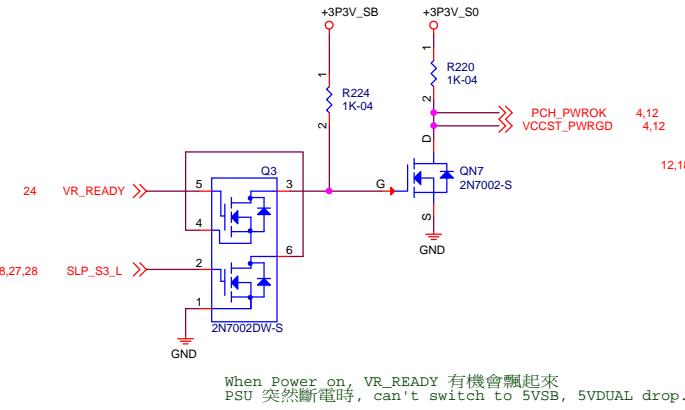


V1P0A

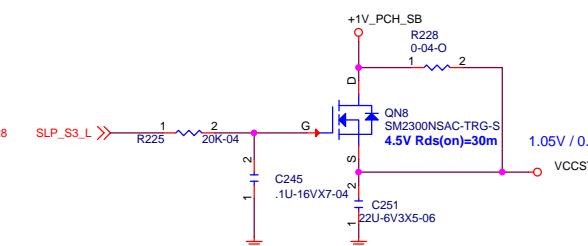


$$\begin{aligned} \text{Vout} &= 0.75x\{1+(R1/R2)\} \\ \text{OCP (A)} &\sim Rcs (\text{K Ohm}) \times 1.5 \\ \text{Fsw (KHz)} &\sim 238000/Rton (\text{K Ohm}) \end{aligned}$$

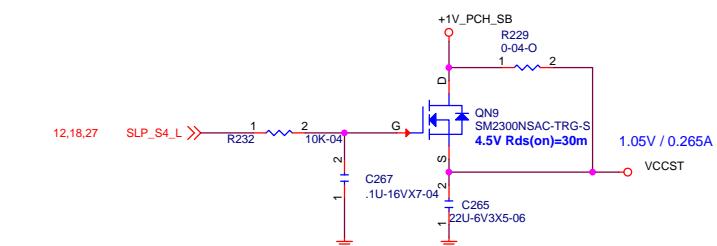
POWER ON/DOWN SEQUENCE

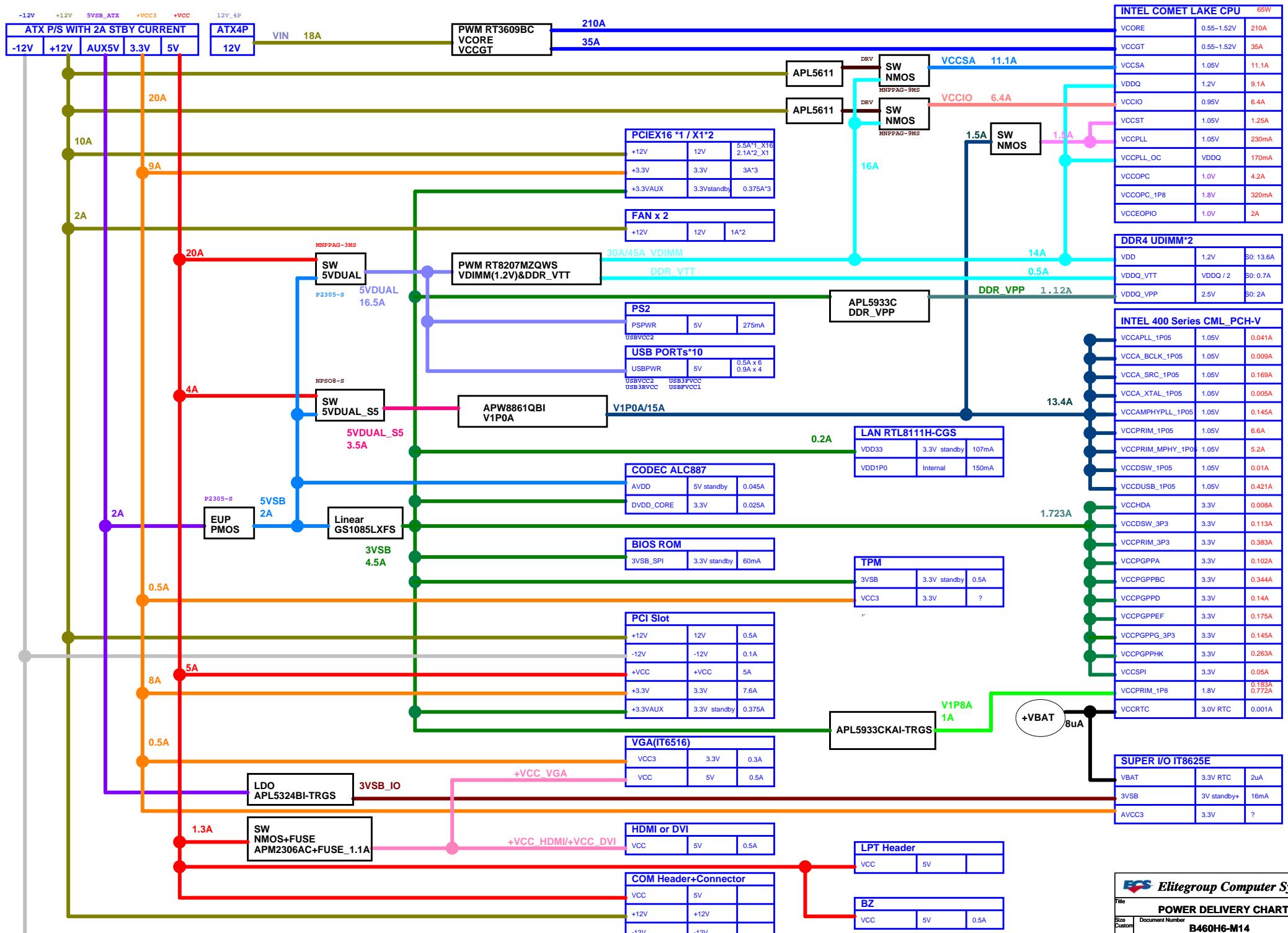


VCCSTG



VCCST



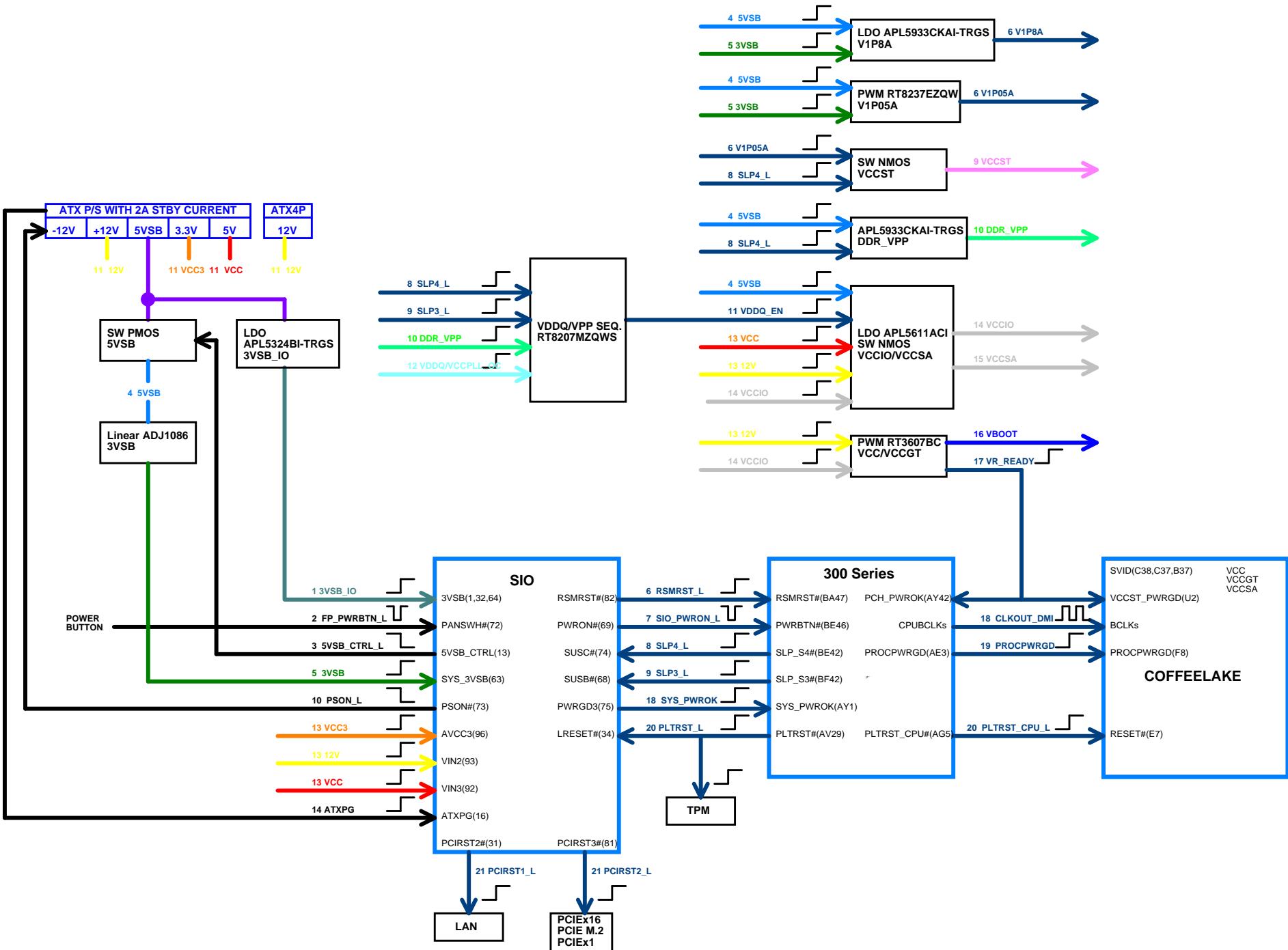


ECS Elitegroup Computer Systems

Engg. & Computer Sys.

POWER DELIVERY CHART

Document Number B460H6-M14



DIMM

Name	CH	SPD address
DIMM1	Channel A	0xA0
DIMM2	Channel B	0xA4

DDI

Name	Type	Port	DDC	AUX
DDI1	HDMI	PortB	PortB	N/A
DDI2	DVI	PortC	PortC	N/A
DDI3(VGA)	DP	PortD	N/A	PortD

Clock	Function	Mapping	CLKREQ
CLOCKOUT_ITPXDP	Disable	N/A	N/A
CLOCKOUT_PCIE_0	PCIEX1	CLKREQ0	Enable
CLOCKOUT_PCIE_1	PCIEX1	CLKREQ1	Enable
CLOCKOUT_PCIE_2	Disable	CLKREQ2	Disable
CLOCKOUT_PCIE_3	PCIEX16	CLKREQ3	Enable
CLOCKOUT_PCIE_4	Disable	CLKREQ4	Disable
CLOCKOUT_PCIE_5	Disable	CLKREQ5	Disable
CLOCKOUT_PCIE_6	PCI BREDGE	CLKREQ6	Disable
CLOCKOUT_PCIE_7	Disable	CLKREQ7	Disable
CLOCKOUT_PCIE_8	M.2 SSD	CLKREQ8	Disable
CLOCKOUT_PCIE_9	Disable	CLKREQ9	Disable
CLOCKOUT_PCIE_10	Disable	CLKREQ10	Disable
CLOCKOUT_PCIE_11	Disable	CLKREQ11	Disable
CLOCKOUT_PCIE_12	Disable	CLKREQ12	Disable
CLOCKOUT_PCIE_13	Disable	CLKREQ13	Disable
CLOCKOUT_PCIE_14	Disable	CLKREQ14	Disable
CLOCKOUT_PCIE_15	LAN	CLKREQ15	Disable
CLK_LPC0 (24MHz)	Disable	CLKRUN	Disable
CLK_LPC1 (24MHz)	SIO	CLKRUN	Disable

PCH

Peripheral	IC
LAN	RTL8111H
VGA	IT6516BFN
SIO	IT8625E

Function	Usage
ISH	Disable
CNVi	Disable
Deep Sx (DSW)	Disable
GPIO1/2	Disable
UART0/1/2	Disable
I2C0/1/2	Disable
SPI1	Disable
SD	Disable
INTRUDER	Enable

SIO

SIO	Index/Data	Clock
IT8625E	2E/2F	24MHz

Function	Usage	Action
COM1	enable	
COM2	enable	
LPT	enable	
KB	enable	
MS	enable	
3VSB_SW	enable	enter S3 = enable, enter S5 = disable
5VSB_CTRL	enable	enter S5 = enable, exit S5= disable

Fan	Control by	Monitor by
CPU_FAN	FAN_CTRL1	CPU_TEMP
SYS_FAN	FAN_CTRL2	CPU_TEMP

Temp	Input port	Sense by
CPU_TEMP	PECI	
SYS_TEMP	TMPIN1	NTC

Voltage	Input port	Divider	Usage
VCORE	VIN0	Direct connect	H/W monitor
VDIMM	VIN1	Direct connect	H/W monitor
+12V	VIN2	10K/2K	PWRGD
+VCC	VIN3	15K/10K	H/W monitor
5VSB	VIN4	16.2K/8.87K	Use for 5VSB_SEN
+VCC3	VIN6	6.49K/10K	H/W monitor

GPIO	GPI/GPO	Usage	Action
GP22	GPO	FP_LED1	S0: H S3: L S4/S5: H
GP10	GPO	FP_LED2	S0: L S3: B S4/S5: H
GP47	GPI	GFX select	H:default BIOS L:onboard VGA

Flex I/O

Name	Usage	Combo Config	Topology	Length
USB1	USB3.0		Direct Connect	7.6"
USB2	USB3.0		Direct Connect	7.3"
USB3	USB3.0		Cable Connect	3.2"
USB4	USB3.0		Cable Connect	3.3"
USB5	X			
USB6	X			
PCIE1/USB7	X			
PCIE2/USB8	X			
PCIE3/USB9	X			
PCIE4/USB10	X			
PCIE5	LAN		Direct Connect	5.8"
PCIE6	PCIEX1		Direct Connect	4.1"
PCIE7	PCIEX1		Direct Connect	4.5"
PCIE8	PCI BRIDGE		Direct Connect	3.6"
PCIE9/SATA0	X			
PCIE10/SATA1	X			
PCIE11	M.2 SSD 2 lanes			M.2 2.6"
PCIE12	M.2 SSD 2 lanes			M.2 2.5"
PCIE13/SATA0	SATA1	SATA	Cable Connect	3.2"
PCIE14/SATA1	SATA2	SATA	Cable Connect	2.7"
PCIE15/SATA2	SATA3	SATA	Cable Connect	3.4"
PCIE16/SATA3	SATA4	SATA	Cable Connect	3.0"
PCIE17/SATA4	X			
PCIE18/SATA5	X			
PCIE19	X			
PCIE20	X			
PCIE21	X			
PCIE22	X			
PCIE23	X			
PCIE24	X			

PCH GPIO

GPIO	GPI/GPO	Usage	Action
GPP_B11	GPO	ME disable	H: ME disable L: ME enable (default)
GPD2	GPI	COM_RI	L: Wakeup
GPP_A11	PME	SIO_PME	L: Wakeup
GPP_C16	GPO	patch KVM	DOS: H enter Win: L
GPP_F5	GP1	F_AUDIO Detect	H: AC97 L:HDA (reserved only)
GPP_C23	GPIO	TPM IRQ	Reserved only
GPP_C18	GPIO	BOM select	reserved
GPP_C20	GPIO	BOM select	reserved
GPP_C22	GPIO	BOM select	reserved

USB2.0

Name	Location	Topology	Length
USB1	FUSB1	Internal Cable	3.0"
USB2	FUSB1	Internal Cable	3.0"
USB3	USB3F	Internal Cable	4.0"
USB4	USBLAN	Back Panel	6.4"
USB5	USB3R	Back Panel	7.5"
USB6	USBLAN	Back Panel	6.6"
USB7	USB3R	Back Panel	7.5"
USB8	FUSB2	Internal Cable	3.0"
USB9	USB3F	Internal Cable	4.2"
USB10	FUSB2	Internal Cable	3.0"
USB11	X		
USB12	X		
USB13	X		
USB14	X		