

COMPAL CONFIDENTIAL

NorthBay MLK 14 UMA(Non TR)

MODEL NAME :FDZ41

PCB NO :LA-J371P

BOM P/N :431ADB31L0x

Comet Lake U42 V1

2020-03-16

REV : 1.0 (A00)

@ : Nopop Component
EMI@ : EMI Component
@EMI@ : EMI Nopop Component
ESD@ : ESDComponent
@ESD@ : ESD Nopop Component
RF@ : RF Component
@RF@ : RF Nopop Component
CONN@ : Connector Component
DS3@ : Deep sleep support
NDS3@ : non Deep sleep support
CXDP@ : XDP Component
VPRO@ : vPro Component
NVPRO@ : Non-vPro Component
WWAN@ : WWAN Component
WWANRF@ : WWAN RF Component
TGSSD@ : Intel Teton Glacier storage Component
JUMP@ : Jump solder and short
@JUMP@ : Jump no solder

SATAPERI@ : Pericom SATA repeater support
SATATI@ : TI SATA repeater support
SATAPARA@ : Parade SATA repeater support

MB PCB

Part Number	Description
DA8001KN000	PCB 20K LA-J371P REV0 M/S 1 S

Layout Dell logo



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REV:X01
PWB:8578V
<https://realschematic.com>

Power CKT :NorthbayMLK14UU_NTR_MB_LA-J371P_CML_A00_PWR_20200304
GPIO map : X11_CML_U_CSLP GPIO map Rev0.7_20190919

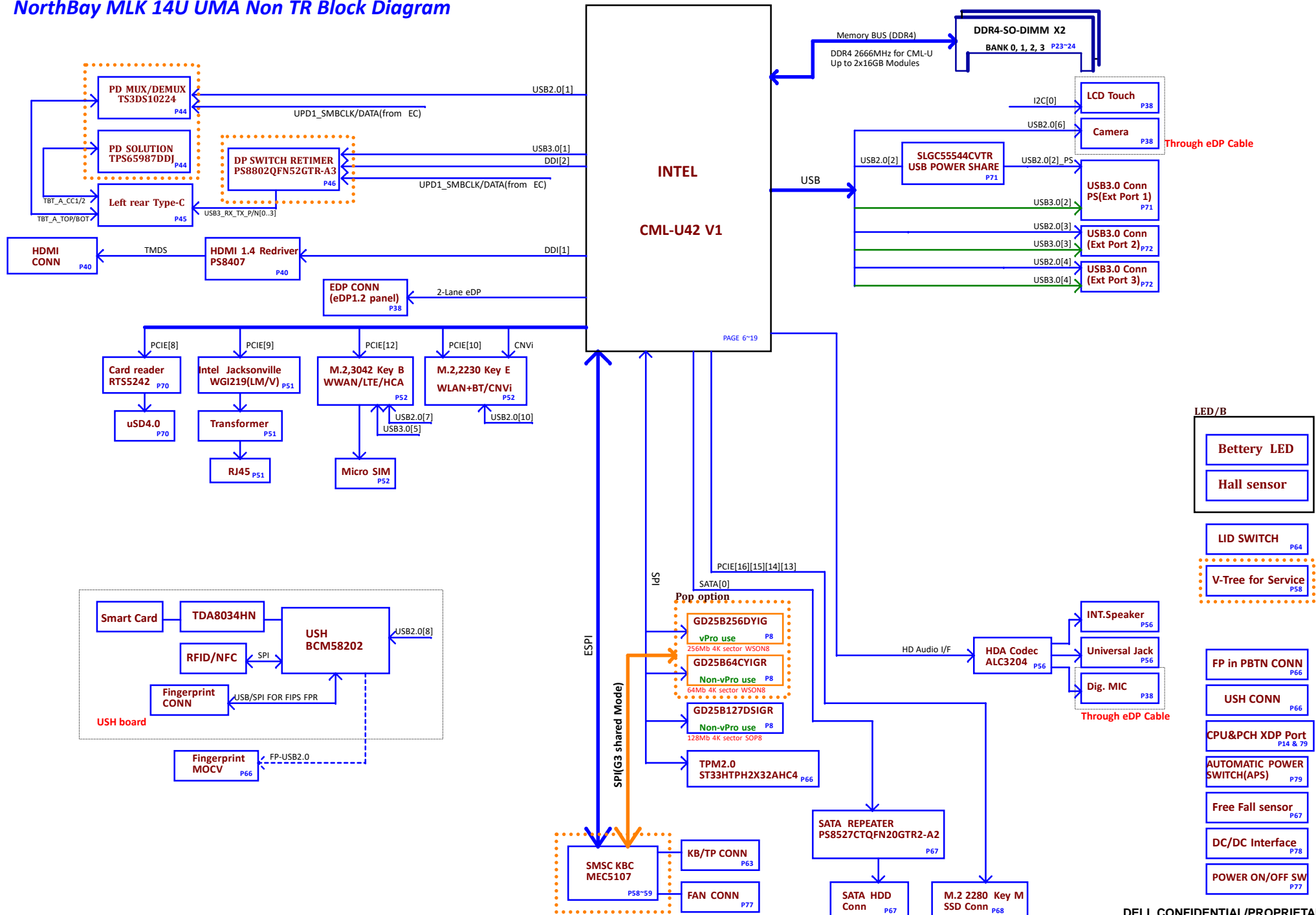
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Cover Sheet		
Title	Document Number	Rev
	LA-J371P	0.3
Date: Monday, March 16, 2020	Sheet 1 of 107	

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NorthBay MLK 14U UMA Non TR Block Diagram



POWER STATES

State \ Signal	SLP S3#	SLP S4#	SLP S5#	SLP A#	ALWAYS PLANE	M PLANE	SUS PLANE	RUN PLANE	CLOCKS
S0 (Full ON) / M0	HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON	ON
S0ix/Moff	LOW	HIGH	HIGH	HIGH	ON	ON	ON	OFF	OFF
S4 (Suspend to DISK) / M3	LOW	LOW	HIGH	HIGH	ON	ON	OFF	OFF	OFF
S5 (SOFT OFF) / M3	LOW	LOW	LOW	HIGH	ON	ON	OFF	OFF	OFF
S0ix (Suspend to RAM) / M-OFF	HIGH	HIGH	HIGH	LOW	ON	OFF	ON	OFF	OFF
S4 (Suspend to DISK) / M-OFF	LOW	LOW	HIGH	LOW	ON	OFF	OFF	OFF	OFF
S5 (SOFT OFF) / M-OFF	LOW	LOW	LOW	LOW	ON	OFF	OFF	OFF	OFF

USB3.0	GbE	PCIE	SATA	DESTINATION
USB3.0-1		PCIE-1		Type-C
USB3.0-2		PCIE-2		JUSB1
USB3.0-3		PCIE-3		JUSB2
USB3.0-4		PCIE-4		JUSB3
USB3.0-5		PCIE-5		M.2 3042(LTE)
USB3.0-6		PCIE-6		NA
		PCIE-7		
		PCIE-8		Card Reader
		PCIE-9		LOM
		PCIE-10		M.2 2230(WLAN)
		PCIE-11	SATA-0	HDD
		PCIE-12	SATA-1	M.2 3042(LTE)
		PCIE-13		M.2 2280 SSD (PCIex4 or SATA)
		PCIE-14		
		PCIE-15	SATA-1*	
		PCIE-16	SATA-2	

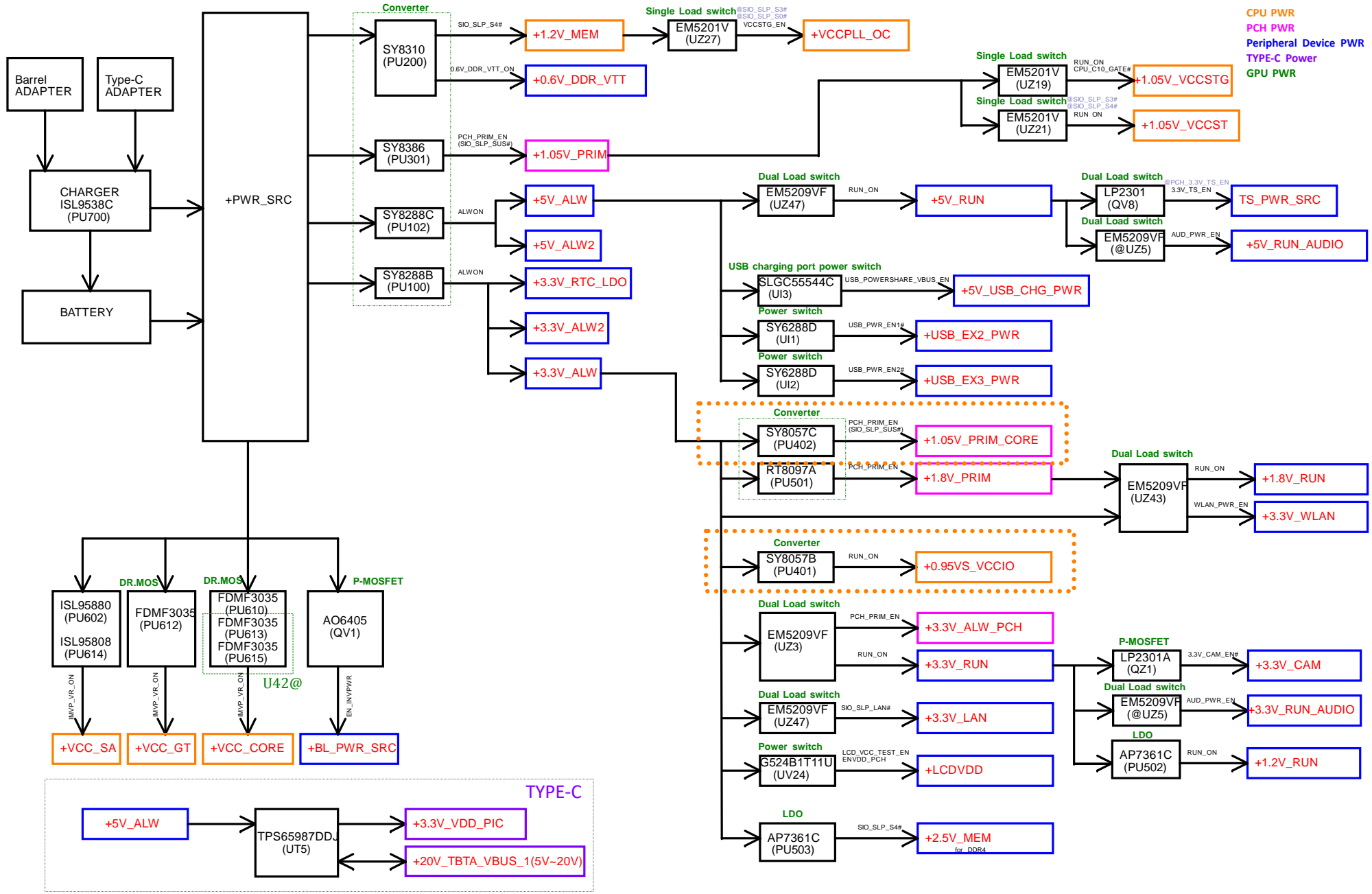
USB PORT#	DESTINATION
1	Type-C(LEFT)
2	JUSB1(RIGHT)
3	JUSB2(LEFT)
4	JUSB3(RIGHT)
5	NA
6	Camera
7	M2 3042(WWAN)
8	USH
9	Reserved for FPR in PB
10	M.2 2230(BT)

PM TABLE

State \ power plane	+5V_ALW +3.3V_ALW +3.3V_ALW_DSW +3.3V_ALW_PCH +RTC_CELL +1.8V_PRIM +5V_ALW2 +3.3V_ALW2 +3.3V_RTC_LDO +1.05V_PRIM	+1.2V_MEM +2.5V_MEM +1.05V_VCCSTG	+5V_RUN +3.3V_RUN +0.6V_DDR_VTT +1.8V_RUN +1.2V_RUN
S0	ON	ON	ON
S0ix	ON	ON	OFF
S5 S4/AC	ON	OFF	OFF
S5 S4/AC doesn't exist	ON	OFF	OFF

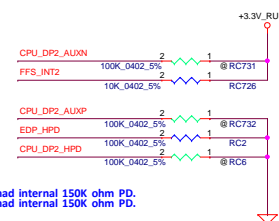
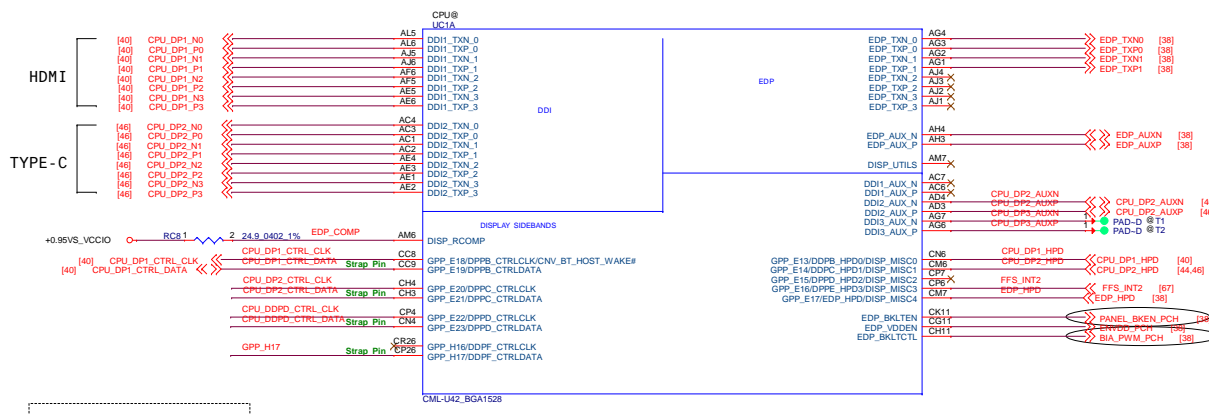
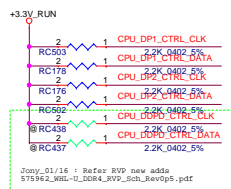
Figure 105. High Speed I/O (HSIO) Lane Multiplexing in PCH-LP (U)

Flex I/O Lane	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
High Speed I/O (HSIO) Type and Lane	USB3.1 Gen1/Gen2 #1	USB3.1 Gen1/Gen2 #2	USB3.1 Gen1/Gen2 #3	USB3.1 Gen1/Gen2 #4	USB3.1 Gen1/Gen2 #5	USB3.1 Gen1/Gen2 #6	PCIE* #7	PCIE* #8	PCIE* #9	PCIE* #10	PCIE* #11	PCIE* #12	PCIE* #13	PCIE* #14	PCIE* #15	PCIE* #16
	PCIE* #1	PCIE* #2	PCIE* #3	PCIE* #4	PCIE* #5	PCIE* #6	GbE	GbE	GbE		SATA 0	SATA 1a	GbE	GbE	SATA 1b	SATA 2
Intel® RST Support	No Support				No Support				Yes				Yes			



[illegible]

For 2 LANE EDP



```
CPU_DP1_HPD PS8407 side HPD had internal 150K ohm PD
CPU_DP2_HPD PS8802 side HPD had internal 150K ohm PD
```

COMPENSATION PU FOR eDP
CAD Note:
Trace width=5 mils
Isolation Spacing=25mil,
Max length=100 mils.

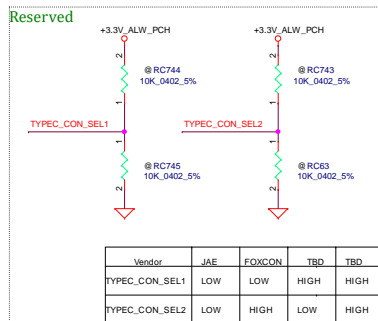
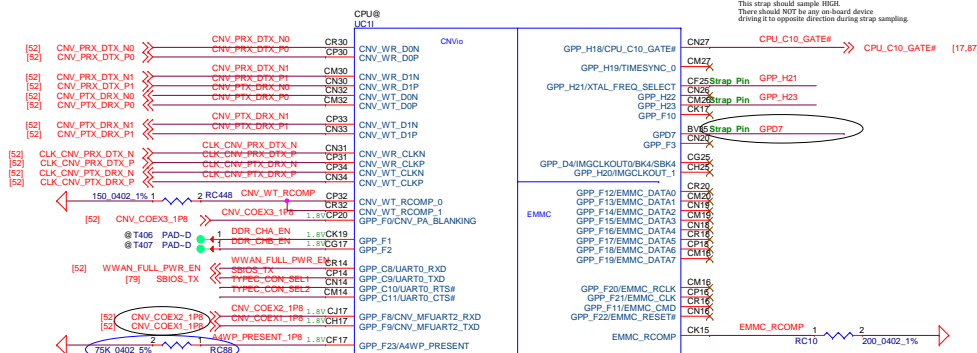
Display Port B Detected	
HIGH	detected
LOW(DEFAULT)	not detected

WEAK INTERNAL PD 20K	
GPP E21	
Display Port C Detected	
HIGH	detected
LOW(DEFAULT)	not detected

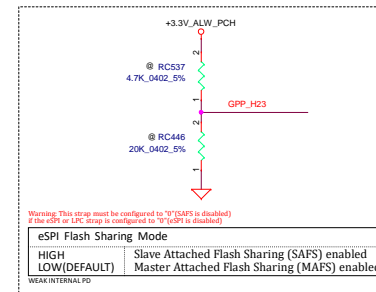
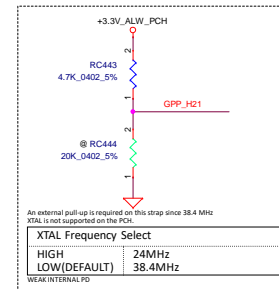
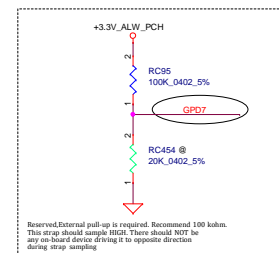
Display Port D Detected	
HIGH	detected
LOW(DEFAULT)	not detected

Table 2-12. DDI Ports Availability (Sheet 1 of 2)

Ports	Port Name in VBT	D-Processor Line ^{A,1}
DO00 - eDP	Port A	Yes
DO01	Port B	Yes
DO02	Port C	Yes
DO03	Port D	No ^A



Vendor	JAE	FOXCON	TBD	TBD
TYPEC_CON_SEL1	LOW	LOW	HIGH	HIGH
TYPEC_CON_SEL2	LOW	HIGH	LOW	HIGH



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Title **MOR(1/14)DRI FEB 2212 FINNO**

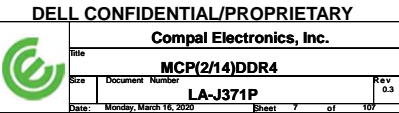
MCP(1/14)DDI,EDP,CSI2,EMMC	
Size	Document Number

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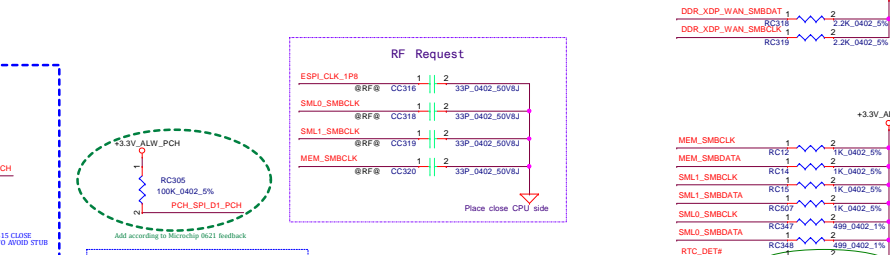
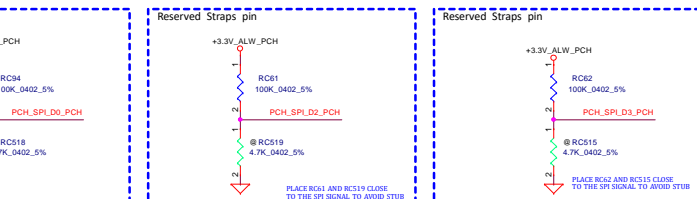
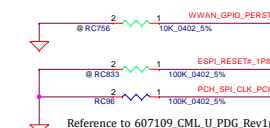
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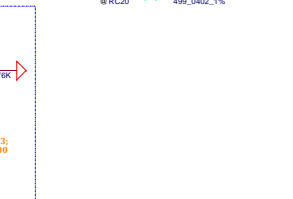
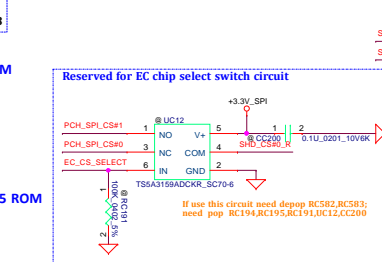
<https://realschematic.com>



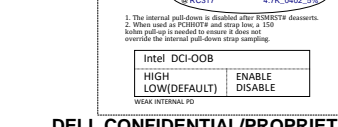
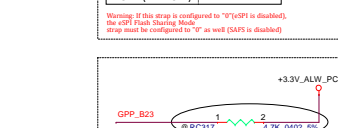
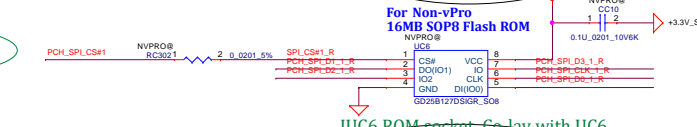
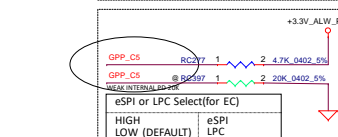
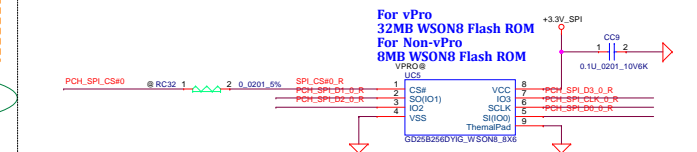
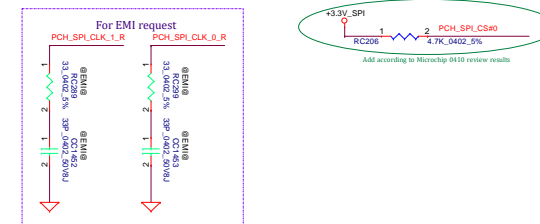
RC11 and RC505 need pop when use XDP



DOM choice need follow ARD approved list

[illegible]

[11] VCCDSW_EN_Q << 1 3 << PCH_RSMRST# [58,63,79]



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MCP(3/14)SPI,SMB,LPC

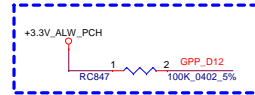
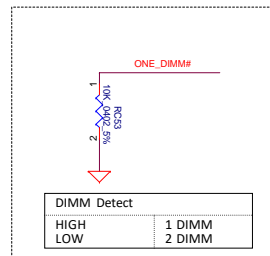
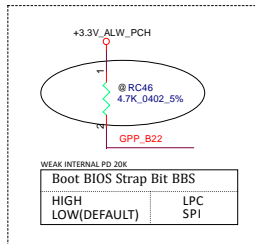
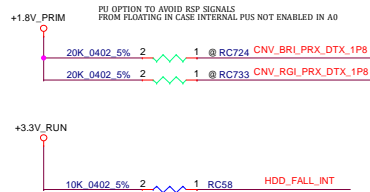
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[66] TPM_PIRQ#

RC455 1 2 TPM_PIRQ#_A7
RC456 1 2 TPM_PIRQ#_B20
0_0201_5%
0_0201_5%



Pinmux Diagram for i.MX6UL

Left Side (General I/O):

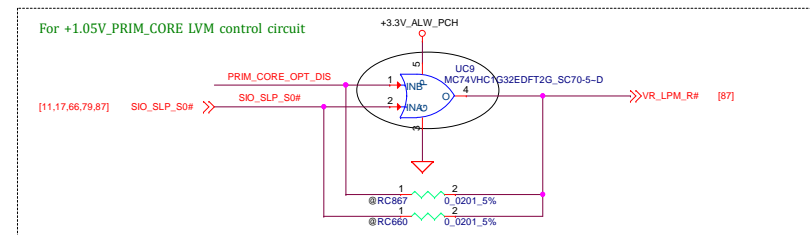
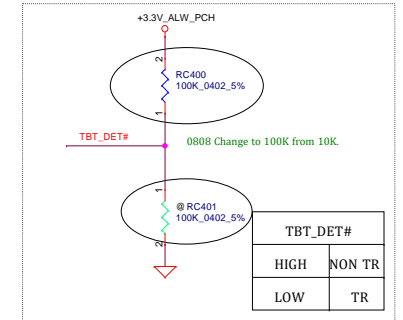
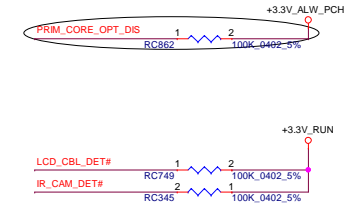
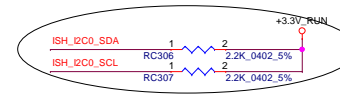
- GPP_D6/ISH, SPI_C5/GSPI2_C5/GP1_D10/ISH, SPI_C1/GSPI2_C1/GP1_D11/ISH, SPI_MISO/GSPI2_MISO, GPP_D12/ISH, SPI_MOSI/GSPI2_MOSI
- GPP_D6/ISH_I2C0_SDA, GPP_D6/ISH_I2C0_SCL
- GPP_D7/ISH_I2C1_SDA, GPP_D6/ISH_I2C1_SCL
- GPP_H10/I2C5_SDA/ISH_I2C2_SDA, GPP_H11/I2C5_SCL/ISH_I2C2_SCL
- GPP_D13/ISH_UART0_RXD, GPP_D15/ISH_UART0_RT1S/GSPI2_C5/H1, GPP_D16/ISH_UART0_CTS/SMILABLER7#
- GPP_C12/UART1_RXD/ISH_UART1_RXD, GPP_C13/UART1_TXD/ISH_UART1_TXD, GPP_C14/UART1_RTS/H1/ISH_UART1_RTS#, GPP_C15/UART1_CTS/H1/ISH_UART1_CTS#
- GPP_A18/ISH_GP0, GPP_A19/ISH_GP1, GPP_A20/ISH_GP2, GPP_A21/ISH_GP3, GPP_A22/ISH_GP4, GPP_A23/ISH_GP5
- GPP_A12/ISH_GP6/BM_BUSY#/SX_EXT_HOLDOFF#

Right Side (Camera and Display):

- IR_CAM_DET#
- IR_CAM_DET# [38]
- GPP_D12
- ISH_I2C0_SDA, ISH_I2C0_SCL
- I2C0 reserved for FFS use
- ISH_I2C1_ALS_SDA ↑, ISH_I2C1_ALS_SCL ↑
- PAD-D @401, PAD-D @402
- TS_RST# [38]
- TOUCH_SCREEN_DET# [38]
- PCN_HDD_EN, LCD_CBL_DET#
- PCN_HDD_EN [67], LCD_CBL_DET# [38]

Legend:

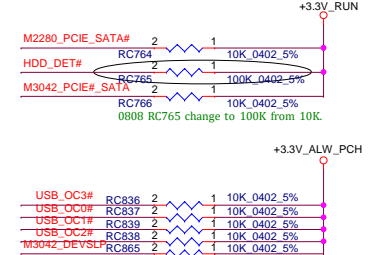
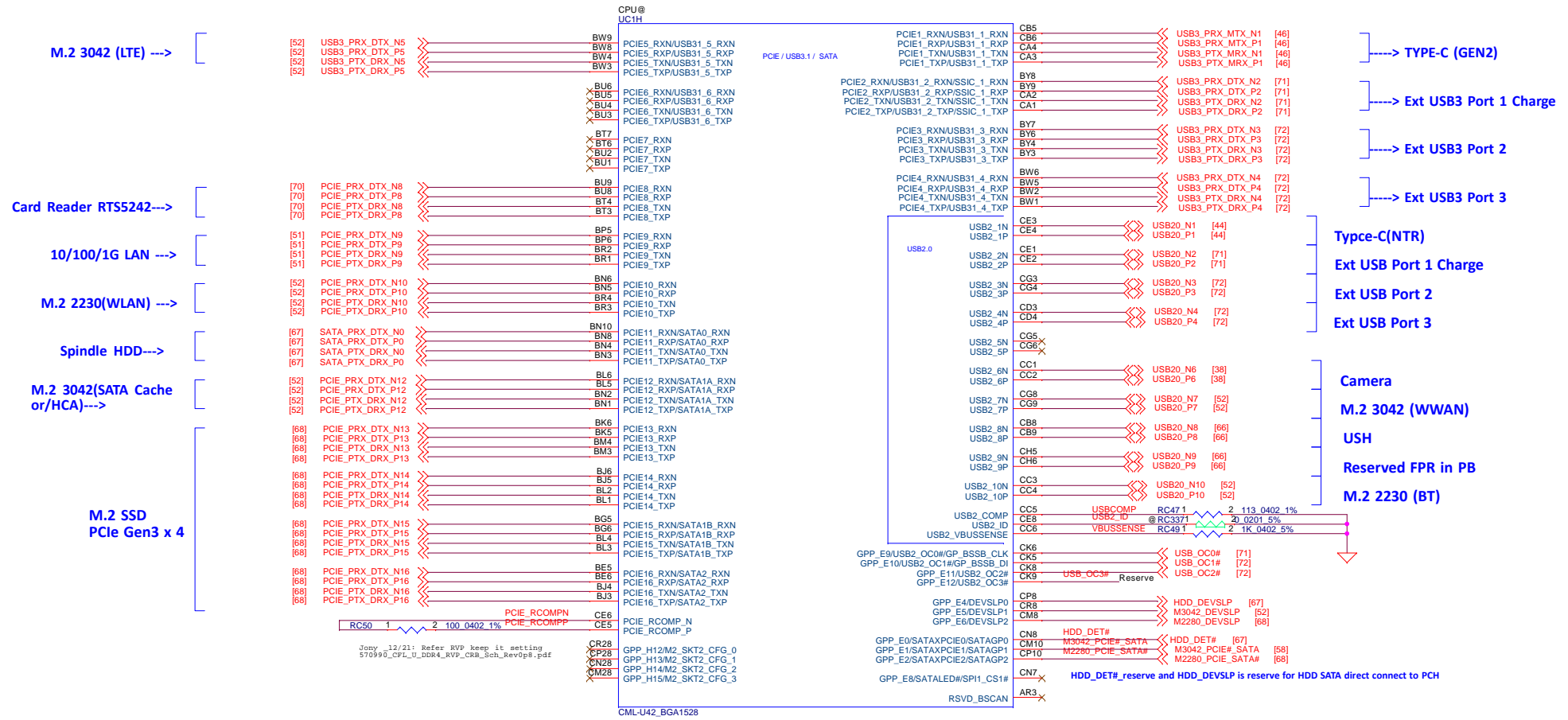
- Blue: General I/O
- Red: Camera
- Green: Display
- Pin types: I/O, Camera, Display



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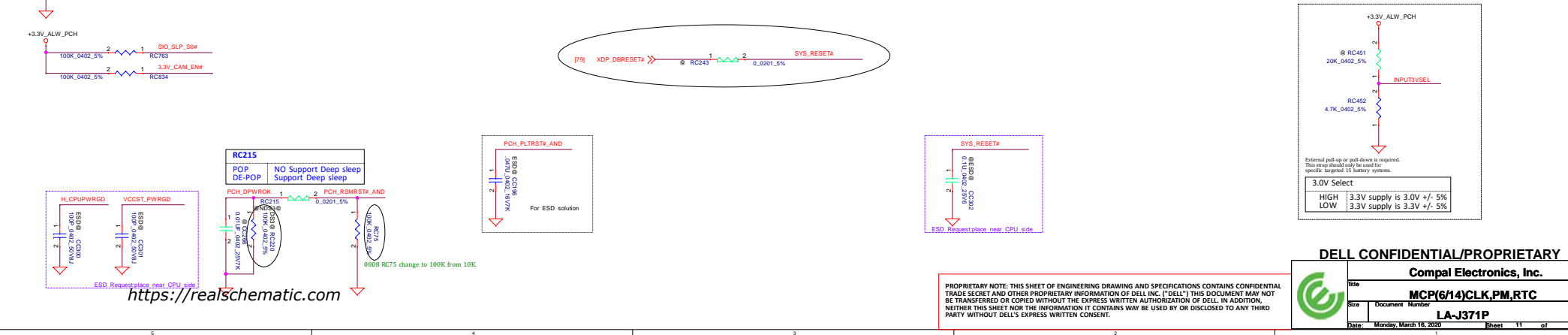
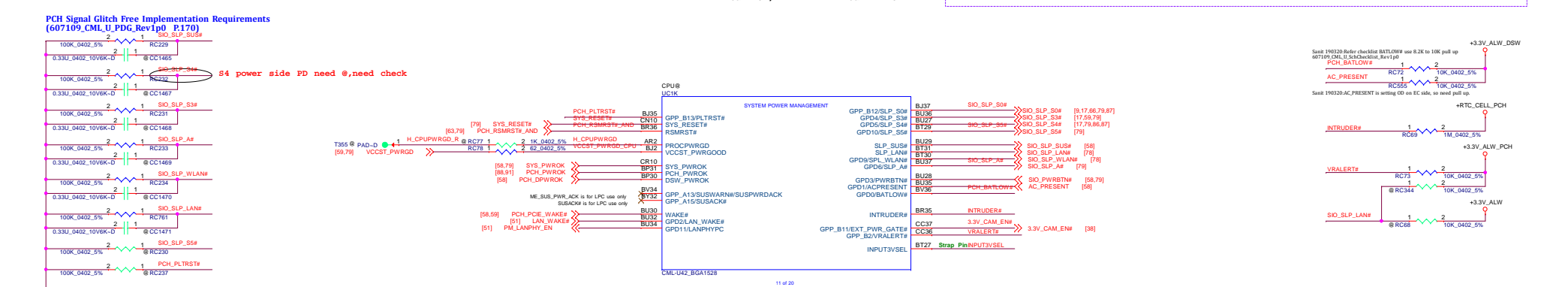
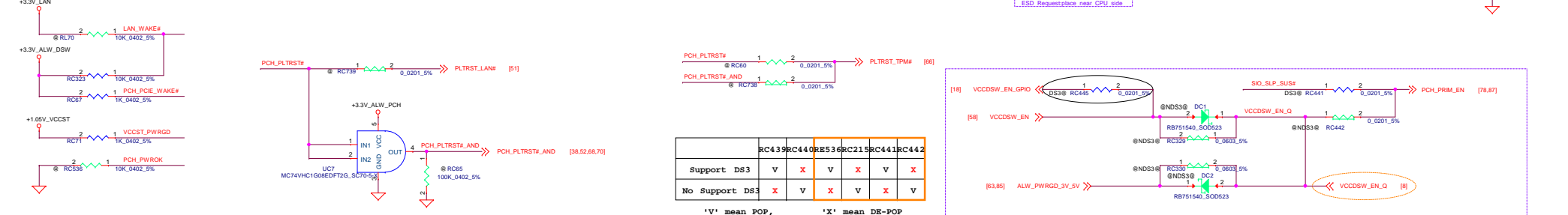
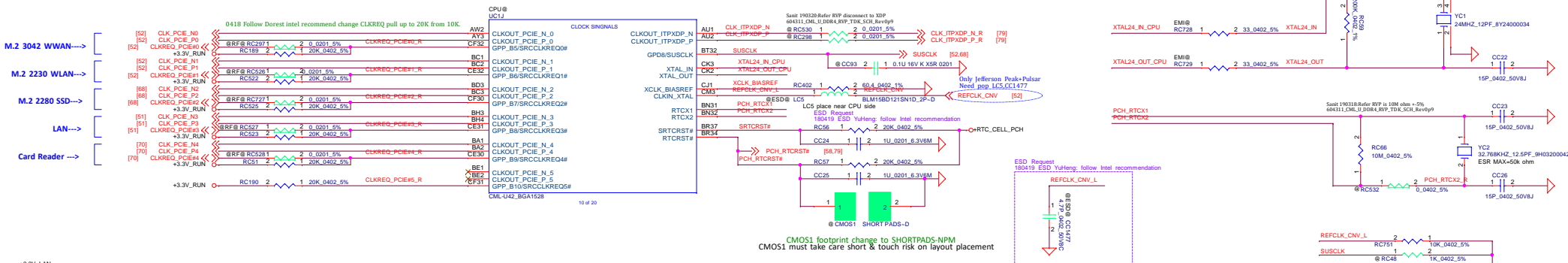
NTR,NB MLK UMA(follow NBMLK 190509 port map)

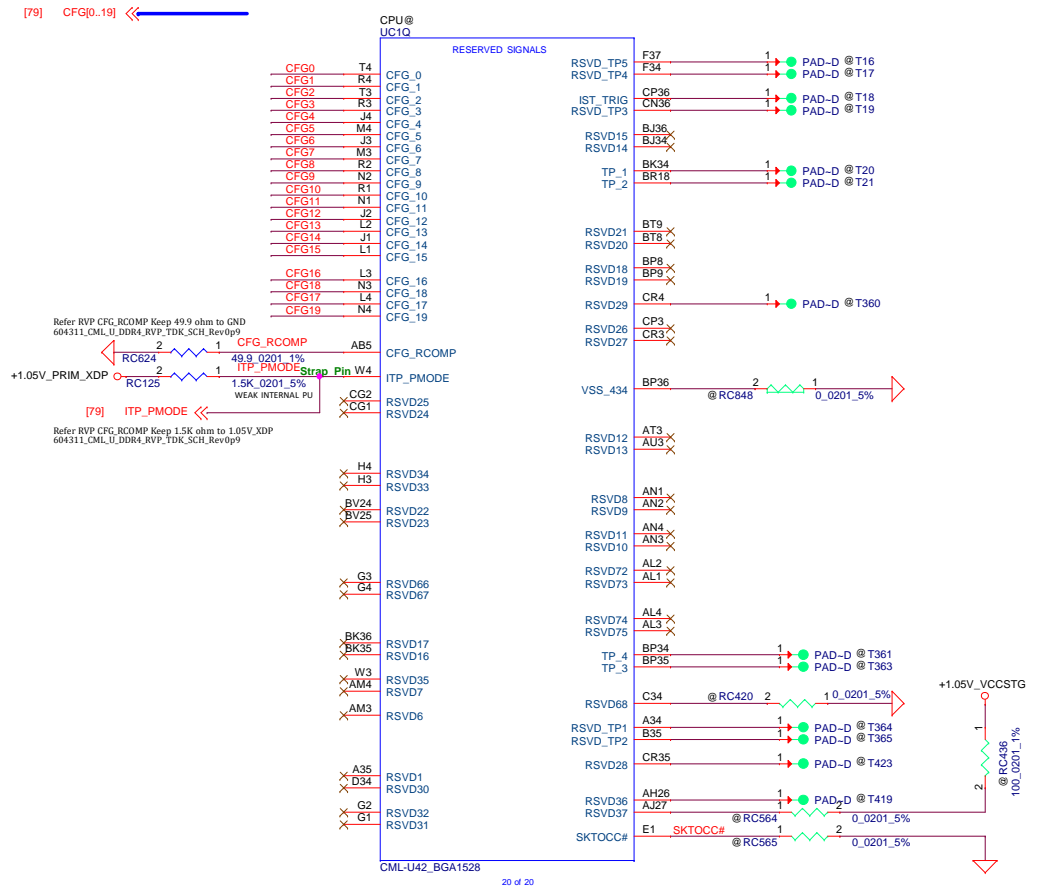
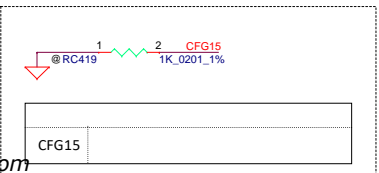
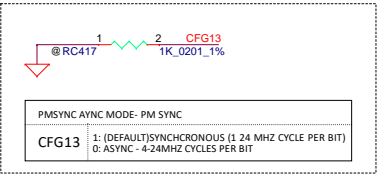
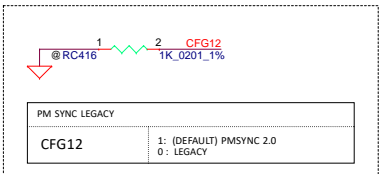
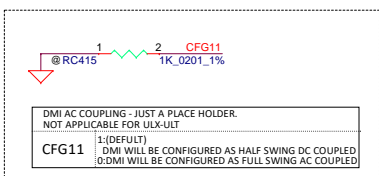
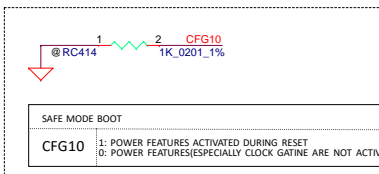
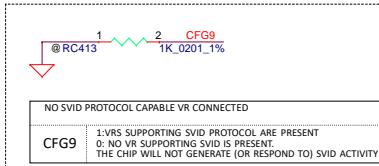
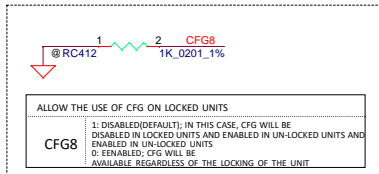
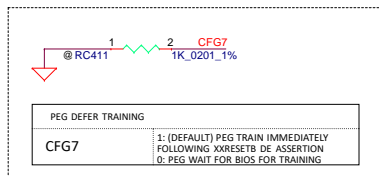
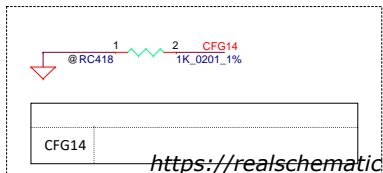
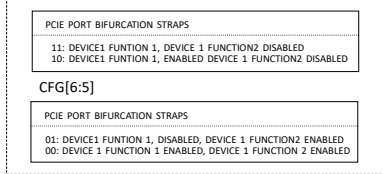
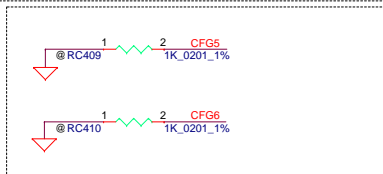
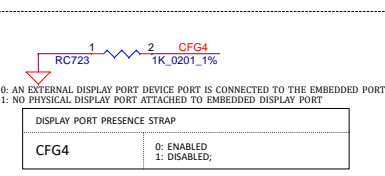
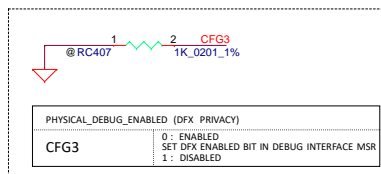
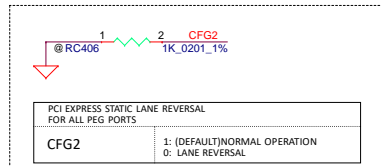
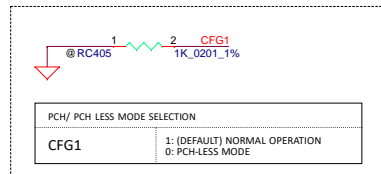
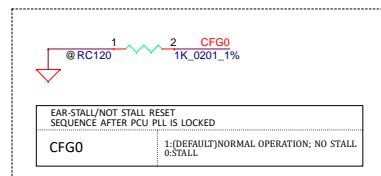


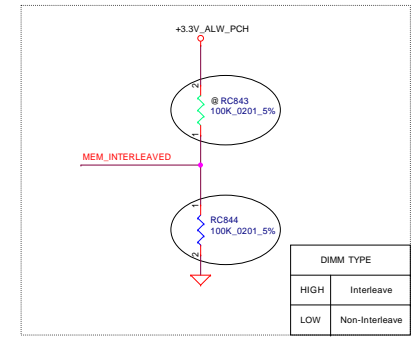
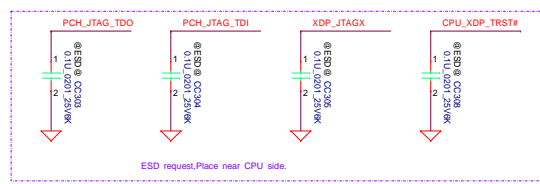
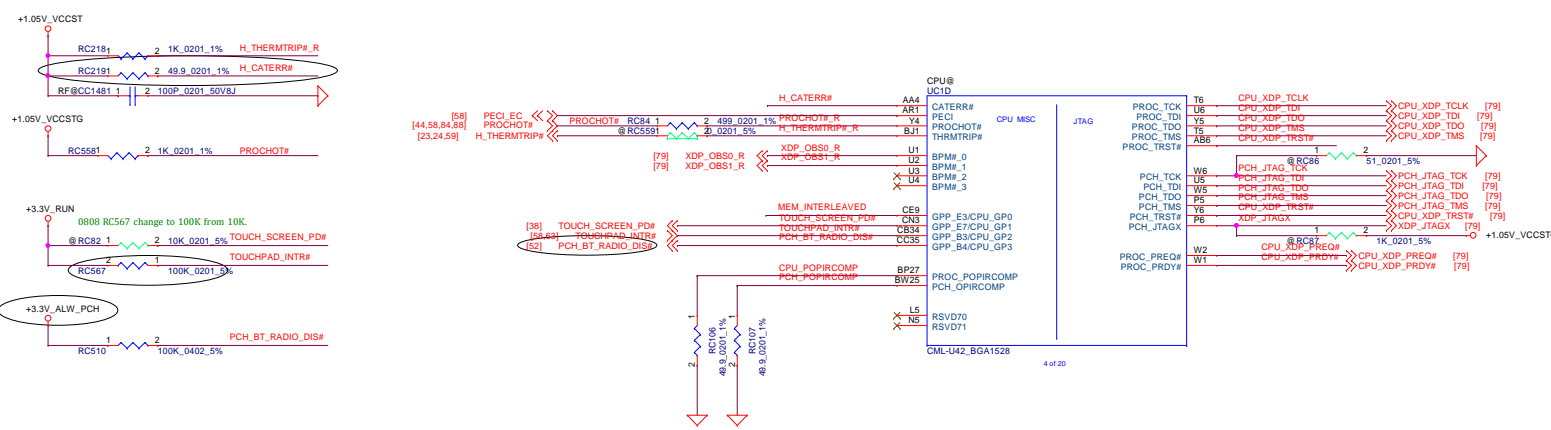
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Title MCP(5/14)PCIE,USB,SATA			
Size	Document Number	Rev 0.3	
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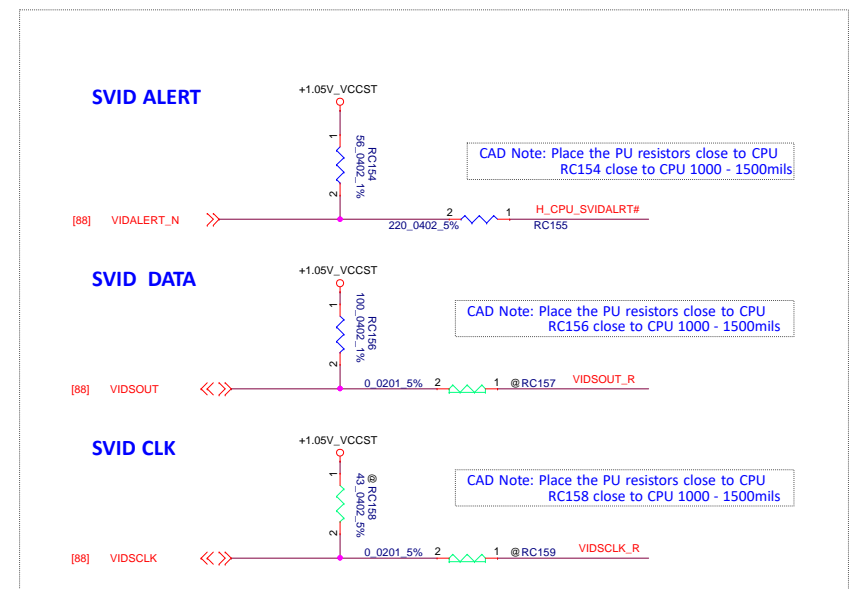
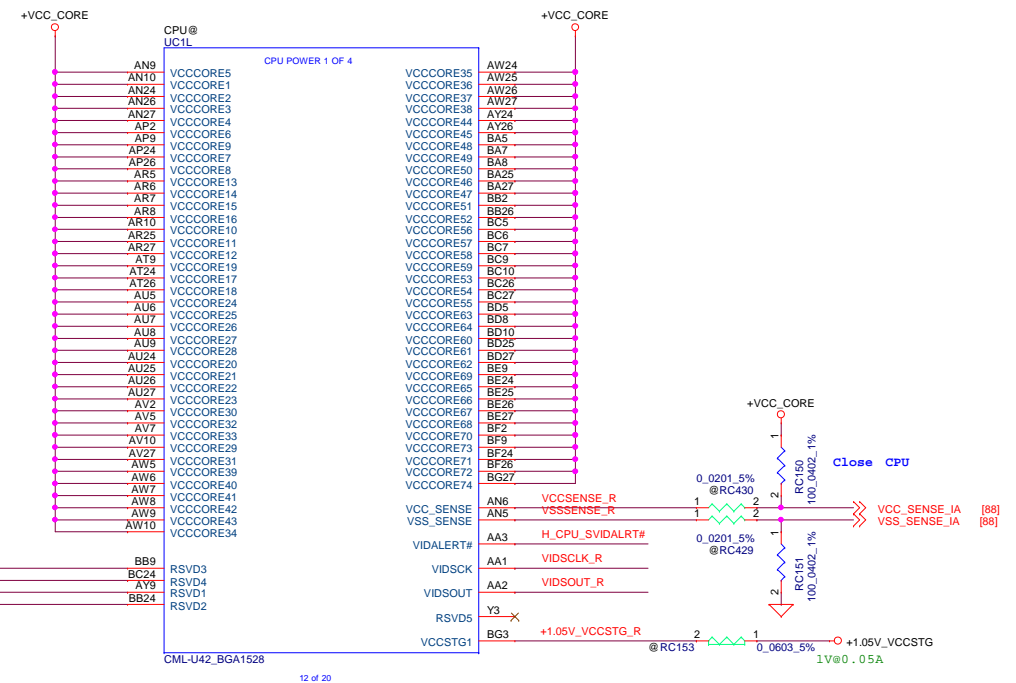
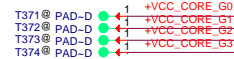




Reference 605693-cml-u42v1-processorline-balloutmechanicalspecification-rev0p5

+VCC_CORE: 0.55~1.5V, 29A
+VCC_EDRAM: 1V, 2.5A

+V1.8S_EDRAM: 1.8V, 50mA - REMOVE
+VCC_EOPIO: 0.8~1V, 2A - REMOVE



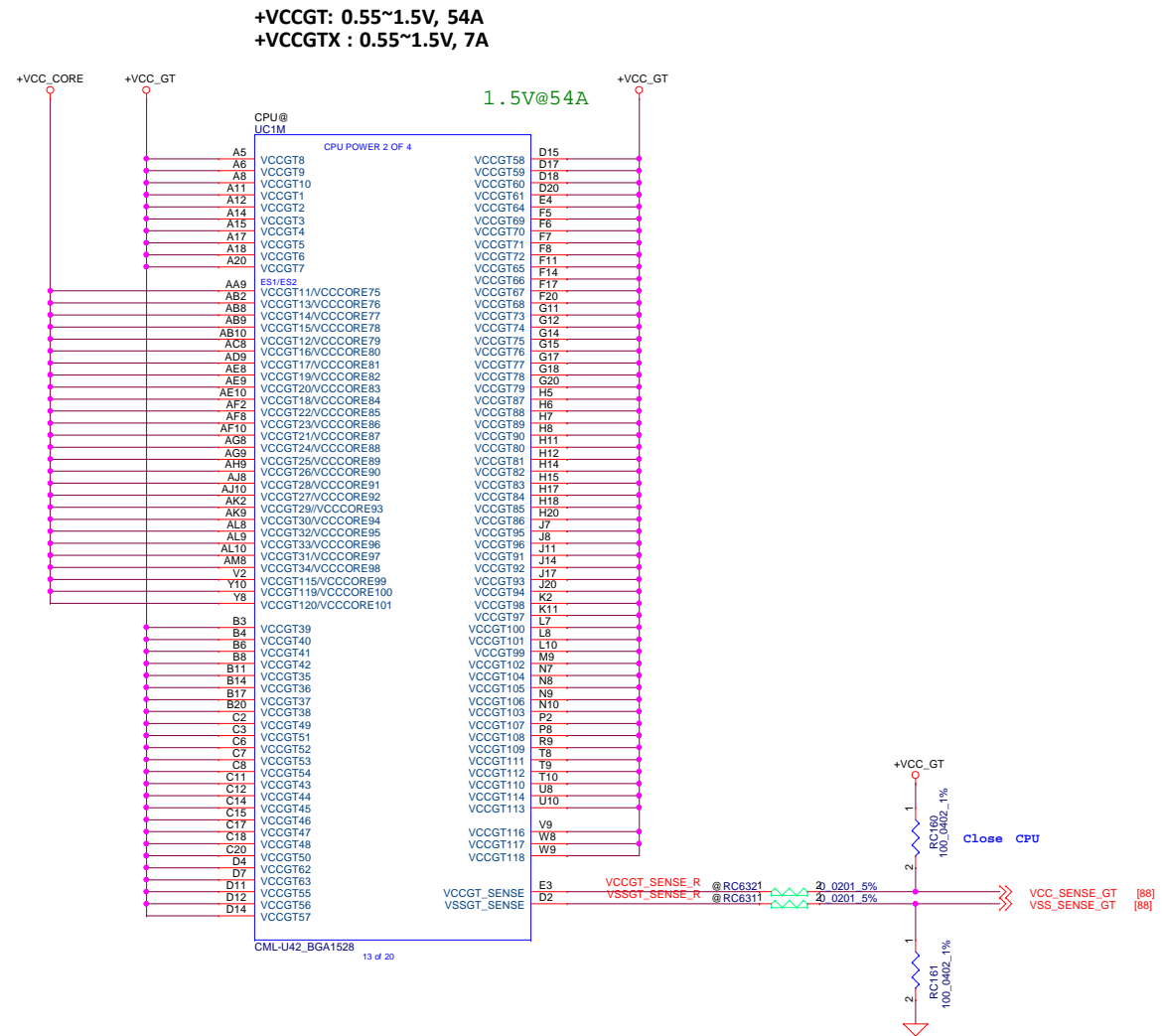
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Size	Document Number	Rev
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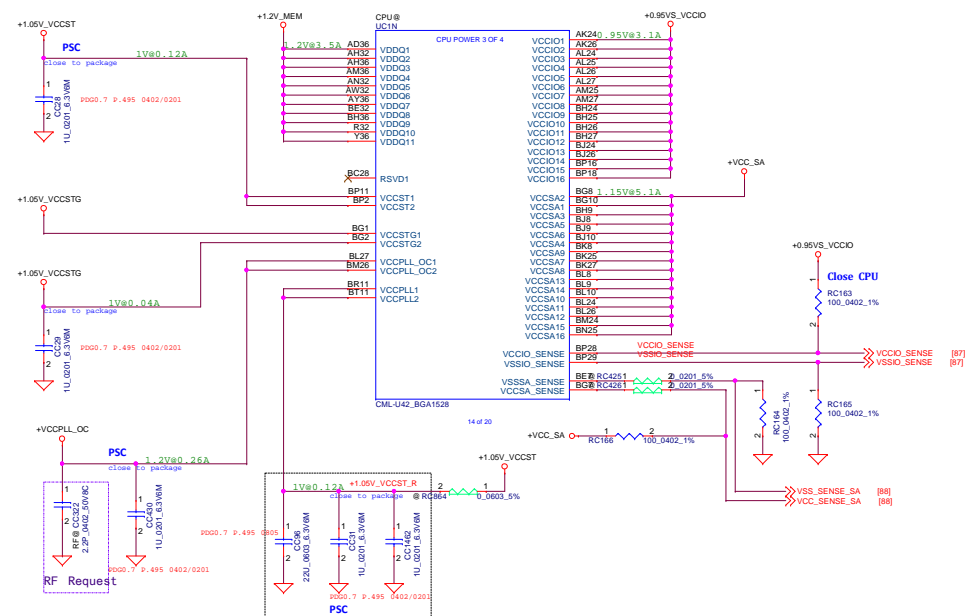
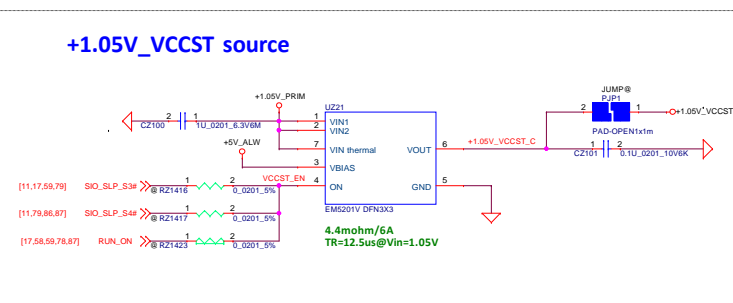
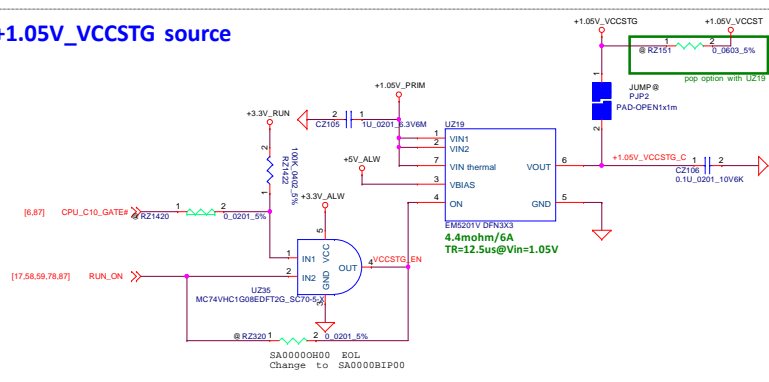
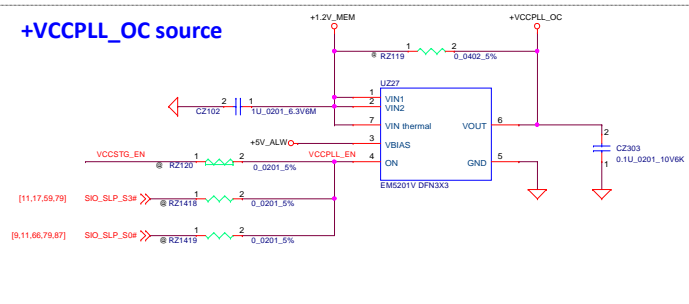
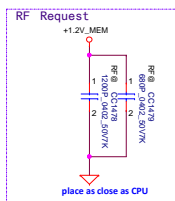
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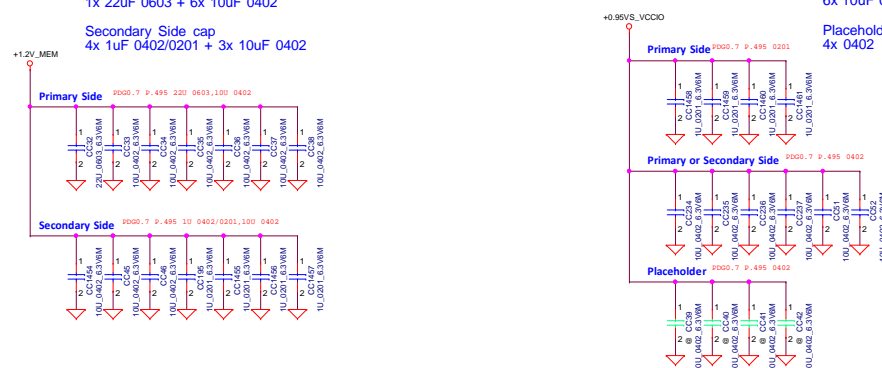


+1.2V_DDR: 1.2V, 3.5A
+1.05V_VCCST: 1.5V, 120mA
+1.05V_VCCSTG: 1.5V, 40mA
+VCCPLL_OC: 1.2V, 260mA
+0.95VS_VCCIO: 0.85~0.95V, 3.1A
+VCC_SA: 1.15V, 5.1A



CML_U PDG rev1.0 P.537
VDDQ:
Primary Side cap
1x 22uF 0603 + 6x 10uF 0402

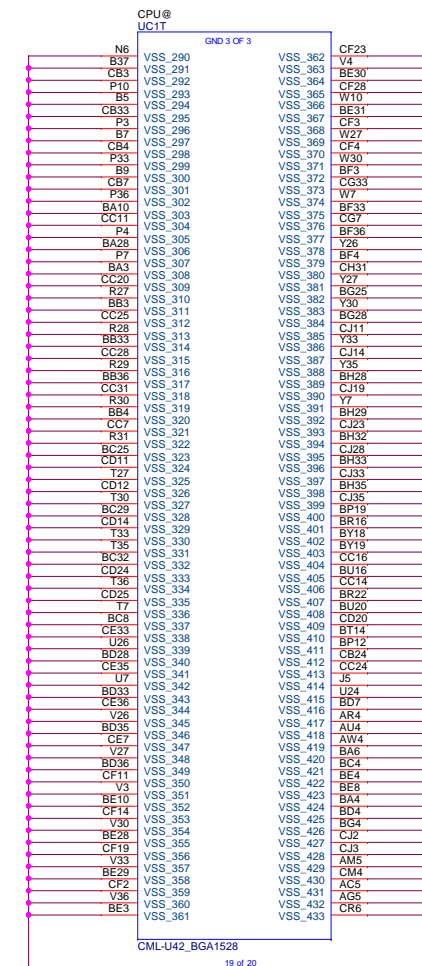
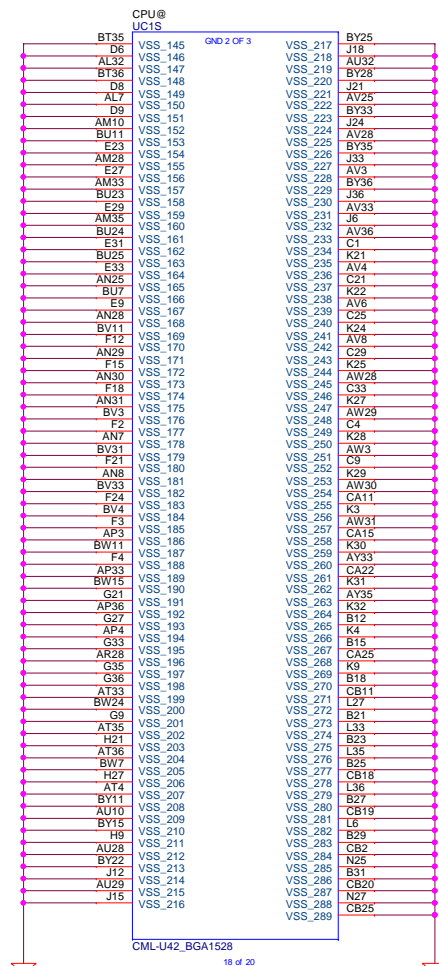
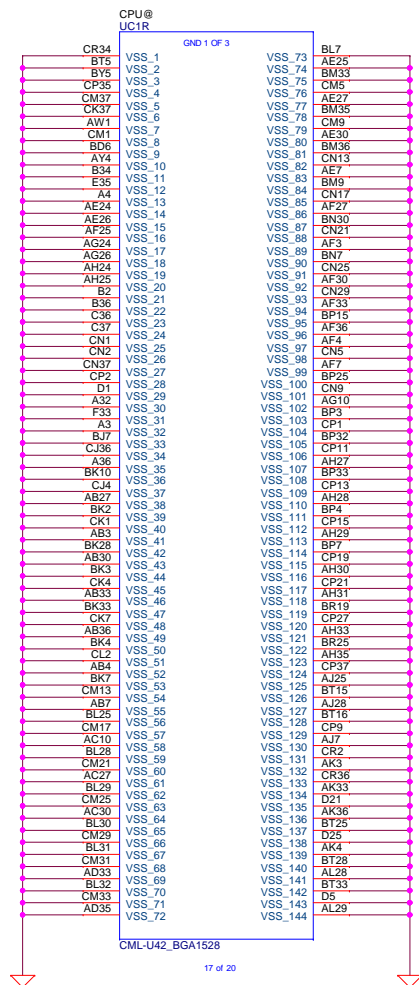
Secondary Side cap
4x 1uF 0402/0201 + 3x 10uF 0402



CML_U PDG rev1.0 P.537
VCCIO:
Primary Side cap
4x 1uF 0201

Primary or Secondary Side
6x 10uF 0402

Placeholder Only
4x 0402



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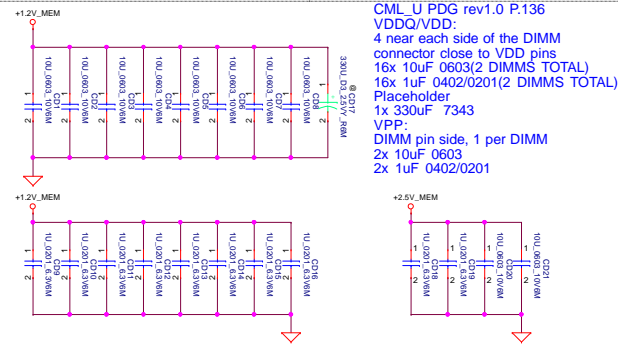
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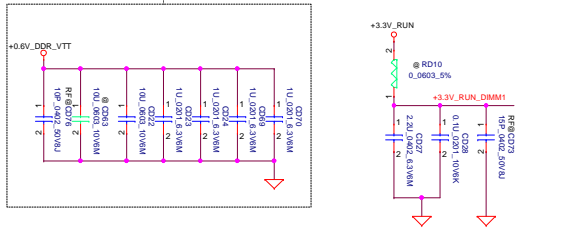
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 [7] DDR_A_DQ[0..63] <<>>
 [7] DDR_A_DQS[0..7] <<>>
 [7] DDR_A_MA[0..16] <<>>

Layout Note:
Place near JDIMM1



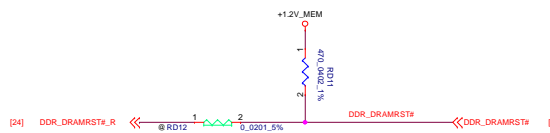
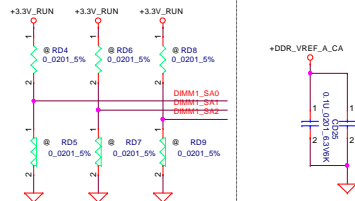
CML_U PDG rev1.0 P.136
 VTT:
 Place on VTT plane close to SODIMM
 2x 10uF 0603(1 cap stuffed, 1 placeholder)
 4x 1uF 0402/0201
 VDDSPD:
 Place close to DIMM
 2x 0.1uF 0402/0201
 2x 2.2uF 0402

Layout Note:
Place near JDIMM1.258

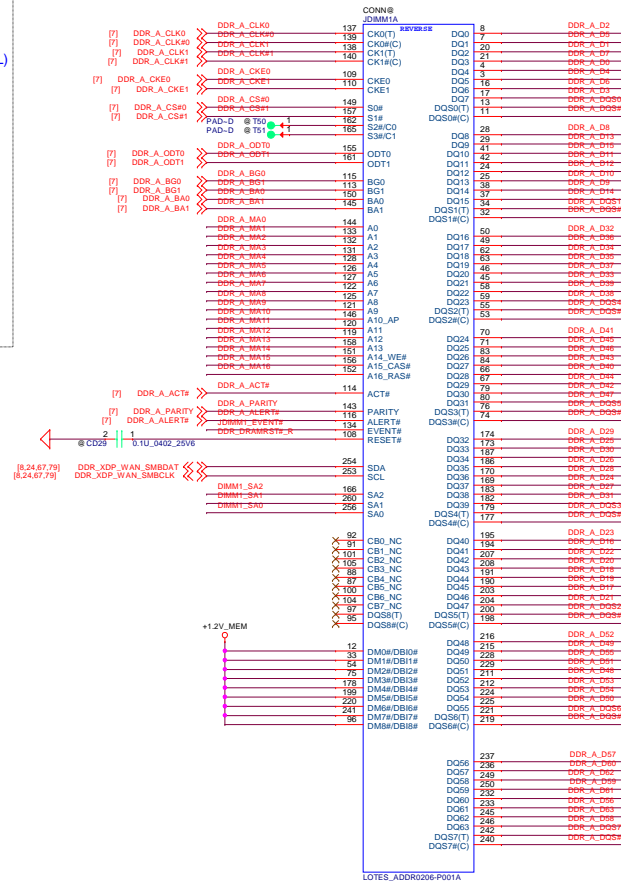


DIMM Select

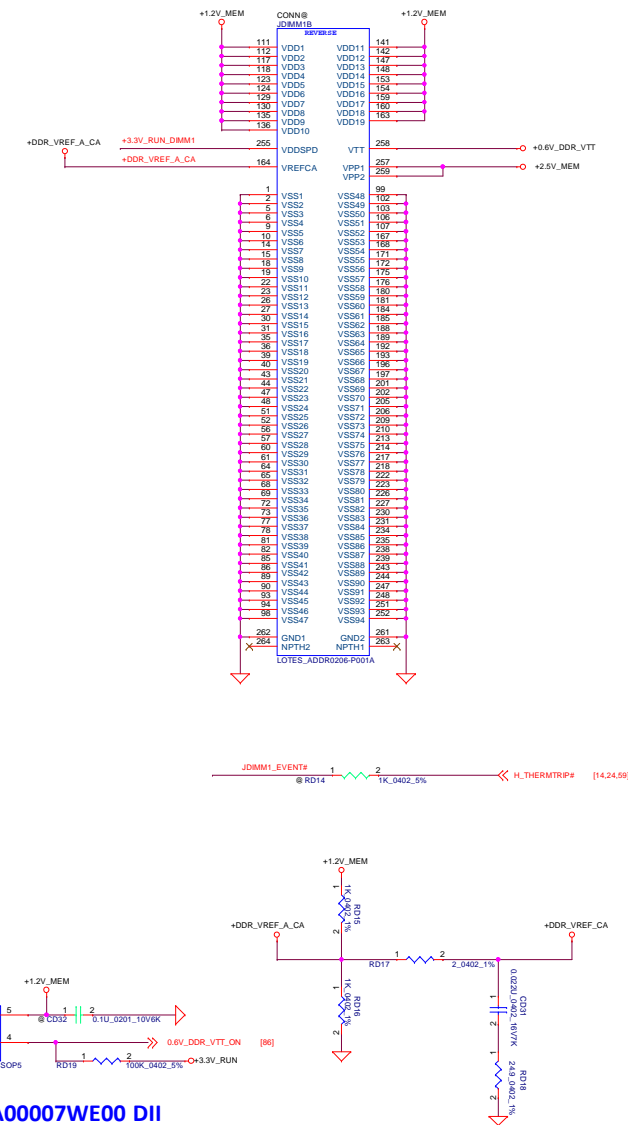
	SA0	SA1	SA2
DIMM1	0	0	0
DIMM2	1	0	0
DIMM3	0	1	0
DIMM4	1	1	0



Link LOTES_ADDR0206-P001A02 done 0410



6/8 Change to SA0007WE00 DII



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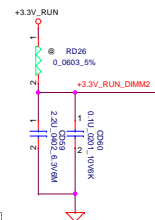
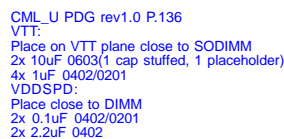


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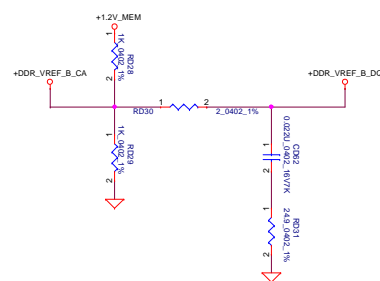
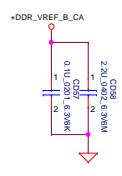
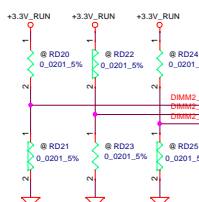
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```
[7] DDR_B_DQS#[0..7] <<>>
[7] DDR_B_D[0..63] <<>>
[7] DDR_B_DQS[0..7] <<>>
[7] DDR_B_MA[0..16] >>>
```

Layout Note:
Place near JDIMM2



	SA0	SA1	SA2
DIMM1	0	0	0
DIMM2	1	0	0
DIMM3	0	1	0
DIMM4	1	1	0




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Title		GPU DC/DC Interface	
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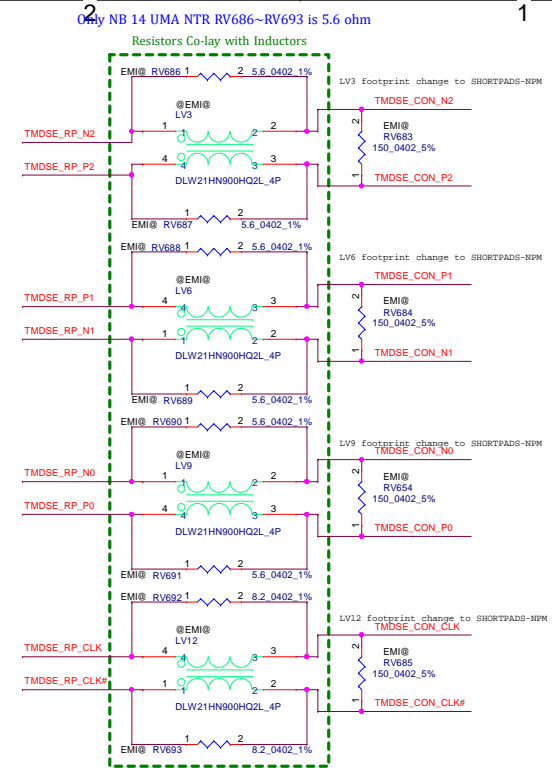
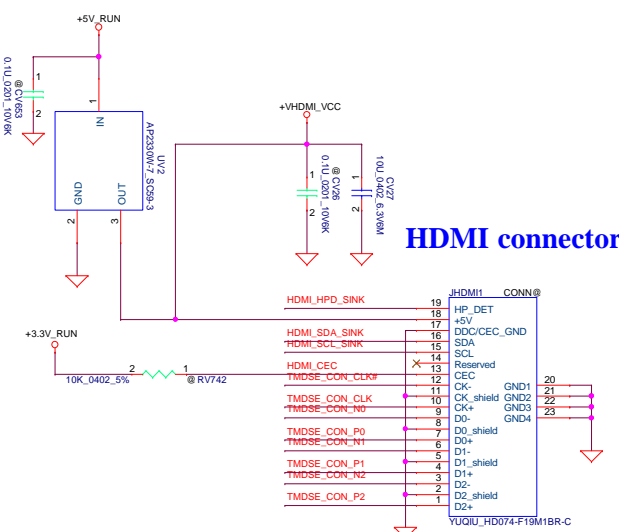
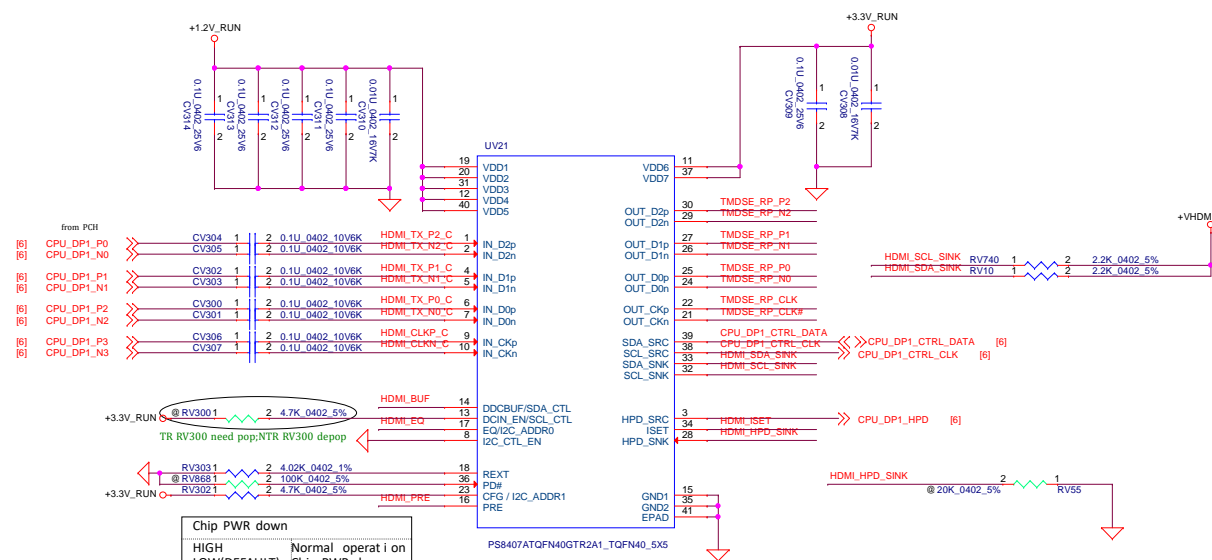
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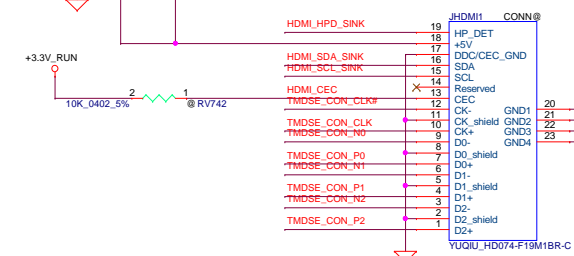


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HDMI connector



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HDMI CONN

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TMD5 output swing adjustment; Internal pull up at ~150kΩ, 3.3V / 0
 L: Default, 100mV
 H: Increase +13%
 M: Reduce -13%

Output pre-emphasis setting; Internal pull down at ~150kΩ, 3.3V / 0
 L: No pre-emphasis (default)
 H: 1.6dB pre-emphasis
 M: 2.5dB pre-emphasis

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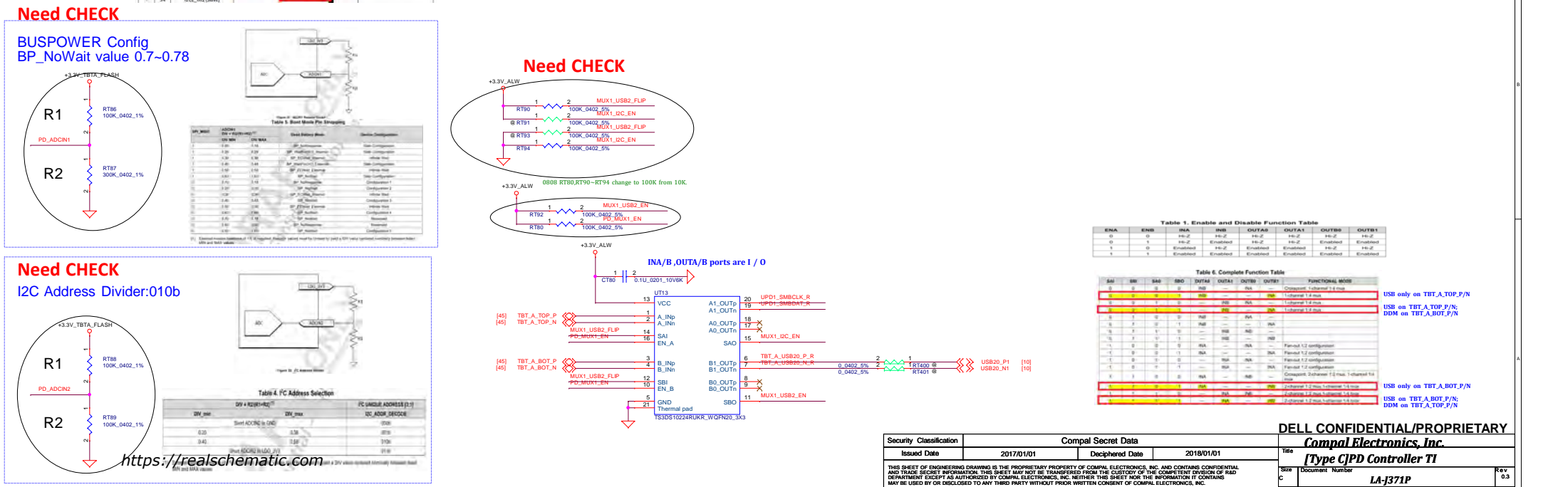
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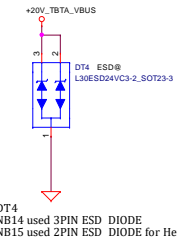
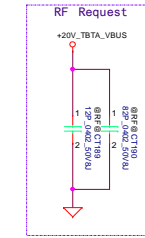
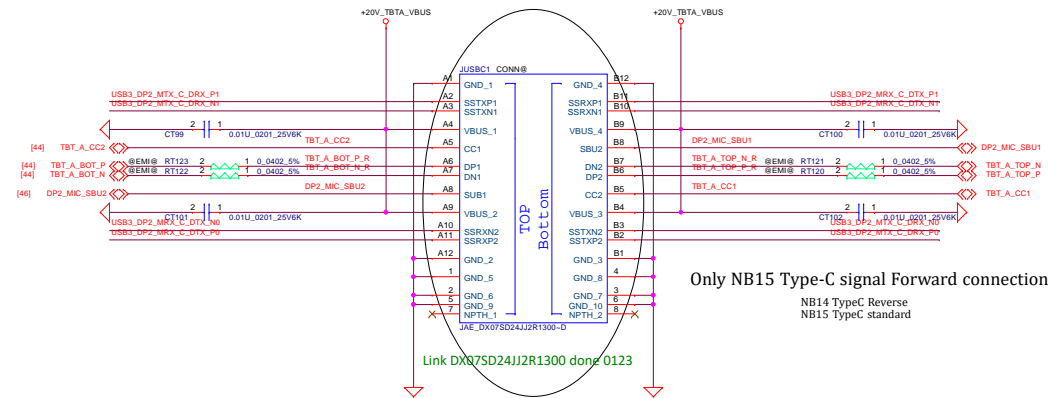
Compal Electronics, Inc.

Title		TBT-AR-VCC/VSS	
Size	Document Number	LA-J371P	Rev 0.3
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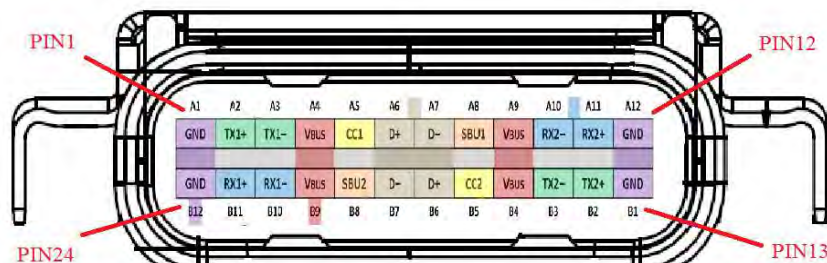
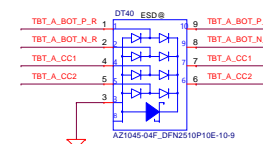
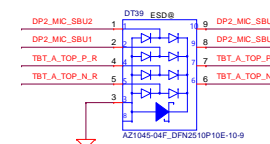
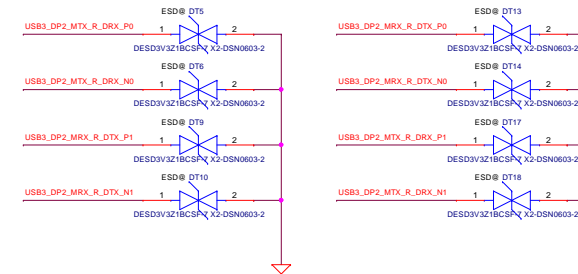
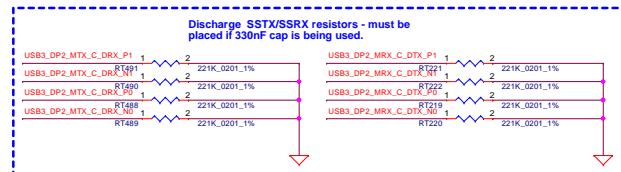
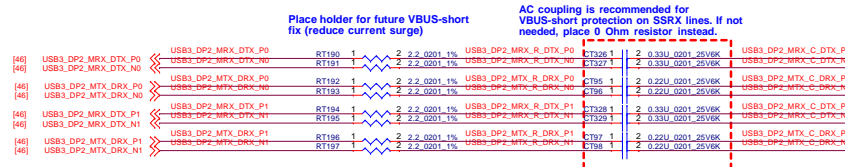


For Non TR Config

JAE X11 DX07SD24JJ4 with X10 DX07SD24JJ2 same layout

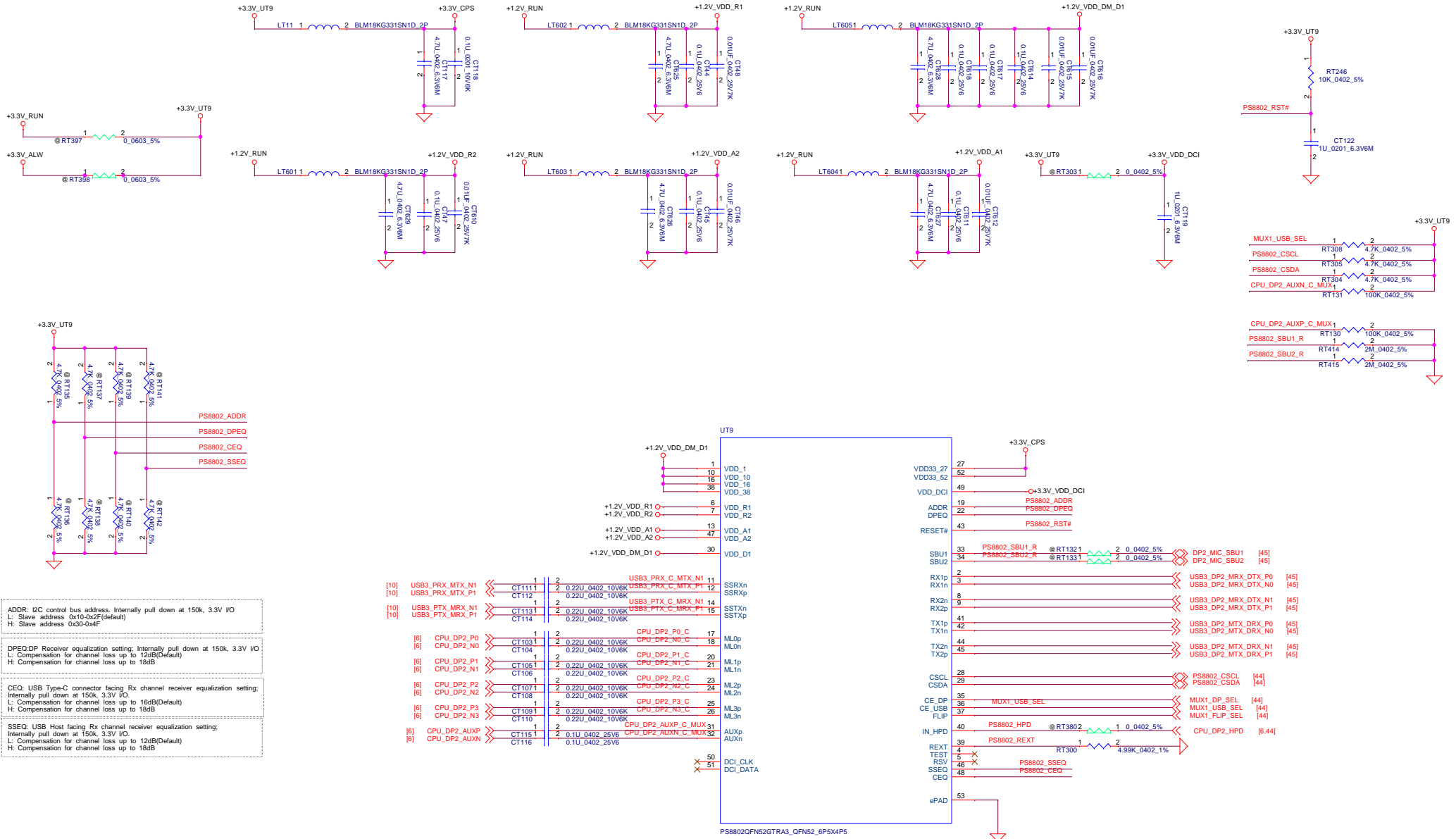


DT4
NB14 used 3PIN ESD DIODE
NB15 used 2PIN ESD DIODE for Height limit



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Security Classification		Compal Secret Data		DELL CONFIDENTIAL/PROPRIETARY Compal Electronics, Inc.	
Issued Date	2017/01/01	Deciphered Date	2018/01/01	Title	USB 3.0 CONN TYPE C
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				Dwg	LA-J371P
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ADDR: I2C control bus address. Internally pull down at 150k, 3.3V I/O
L: Slave address 0x10-0x2F(default)
H: Slave address 0x30-0x4F

DPEQ:DP Receiver equalization setting. Internally pull down at 150k, 3.3V I/O
L: Compensation for channel loss up to 12dB(Default)
H: Compensation for channel loss up to 18dB

CEQ: USB Type-C connector facing Rx channel receiver equalization setting.
Internally pull down at 150k, 3.3V I/O.
L: Compensation for channel loss up to 12dB(Default)
H: Compensation for channel loss up to 18dB

SSEQ: USB Host facing Rx channel receiver equalization setting.
Internally pull down at 150k, 3.3V I/O.
L: Compensation for channel loss up to 12dB(Default)
H: Compensation for channel loss up to 18dB

[10]	USB3_PRX_MTX_N1	1	2	0.22u_0402_10V6K	USB3_PRX_C_MTX_N1	11	11	SSRXn
[10]	USB3_PRX_MTX_P1	1	2	0.22u_0402_10V6K	USB3_PRX_C_MTX_P1	12	12	SSRXp
[10]	USB3_PTX_MRX_N1	1	2	0.22u_0402_10V6K	USB3_PTX_C_MRX_N1	14	14	SSTXn
[10]	USB3_PTX_MRX_P1	1	2	0.22u_0402_10V6K	USB3_PTX_C_MRX_P1	15	15	SSTXp
[6]	CPU_DP2_P0	1	2	0.22u_0402_10V6K	CPU_DP2_P0_C	17	17	ML0p
[5]	CPU_DP2_N0	1	2	0.22u_0402_10V6K	CPU_DP2_N0_C	18	18	ML0n
[6]	CPU_DP2_P1	1	2	0.22u_0402_10V6K	CPU_DP2_P1_C	20	20	ML1p
[6]	CPU_DP2_N1	1	2	0.22u_0402_10V6K	CPU_DP2_N1_C	21	21	ML1n
[6]	CPU_DP2_P2	1	2	0.22u_0402_10V6K	CPU_DP2_P2_C	23	23	ML2p
[6]	CPU_DP2_N2	1	2	0.22u_0402_10V6K	CPU_DP2_N2_C	24	24	ML2n
[6]	CPU_DP2_P3	1	2	0.22u_0402_10V6K	CPU_DP2_P3_C	25	25	ML3p
[6]	CPU_DP2_N3	1	2	0.22u_0402_10V6K	CPU_DP2_N3_C	26	26	ML3n
[6]	CPU_DP2_AUXP	1	2	0.1u_0402_25V6	CPU_DP2_AUXP_C_MUX31	31	31	AUXp
[6]	CPU_DP2_AUXN	1	2	0.1u_0402_25V6	CPU_DP2_AUXN_C_MUX32	32	32	AUXn
[6]	CPU_DP2_AUXN	1	2	0.1u_0402_25V6	CPU_DP2_AUXN_C_MUX32	32	32	AUXn

change from SA0000AIM20(A2) to SA0000AIM30(A3)

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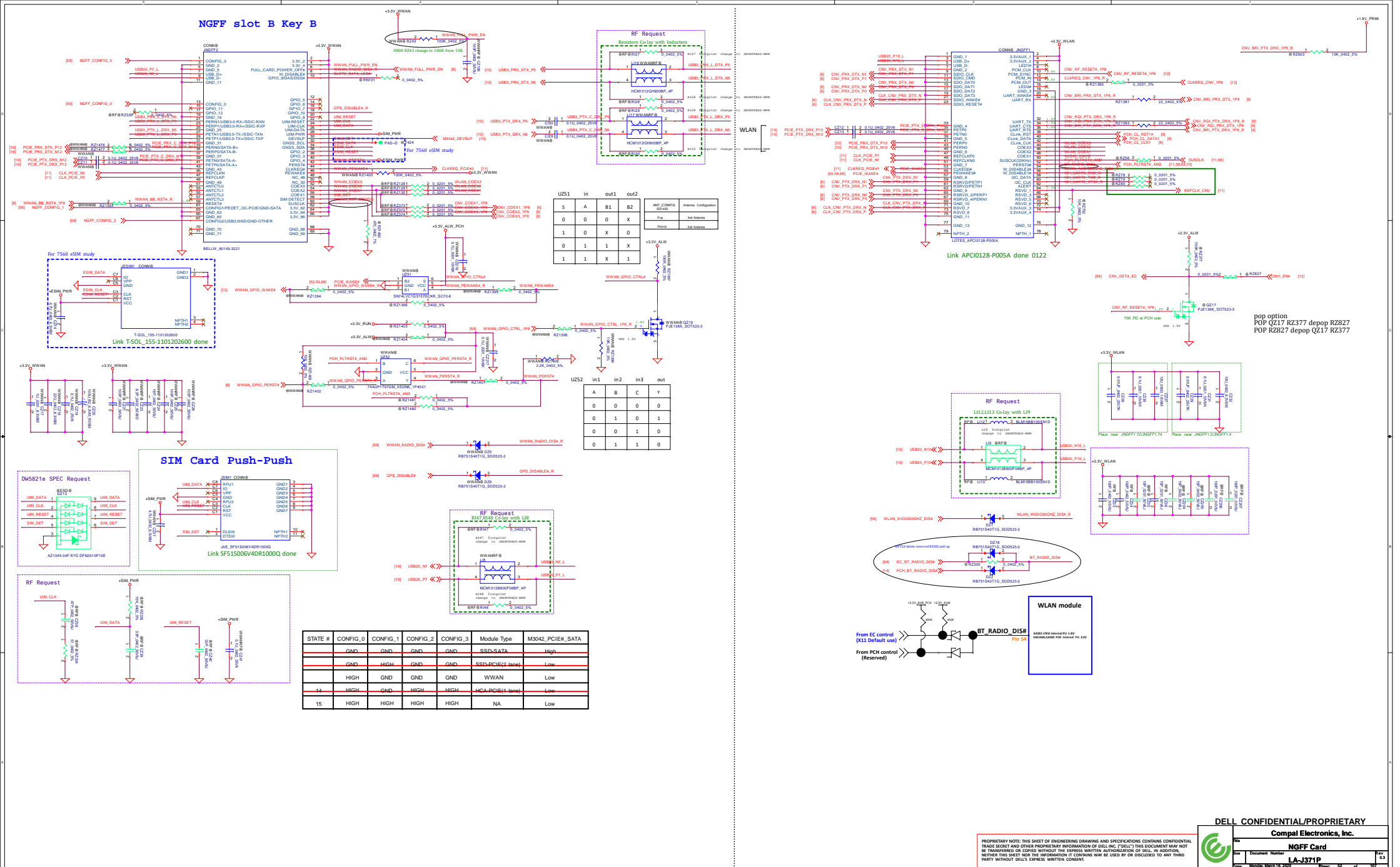
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NGFF slot B Key B



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PCIE/SATA DEMUX		
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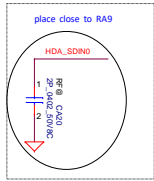
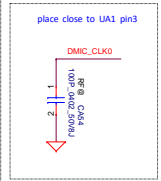
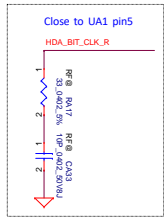
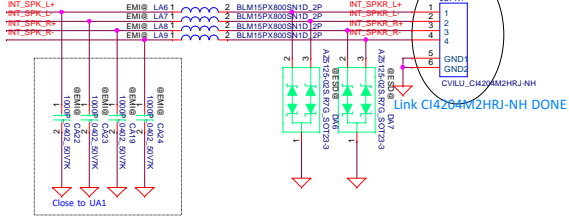


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Title		
PCIE device		
Size	Document Number	Rev
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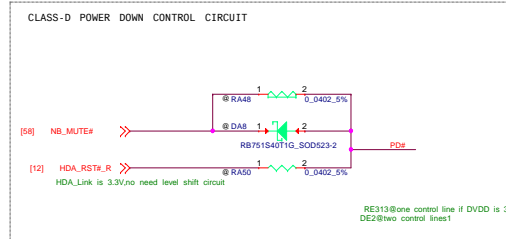
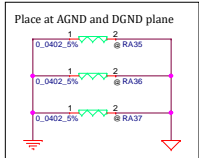
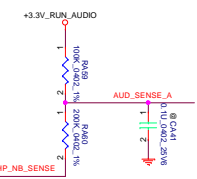
1W x 1ch, 4ohm (Transducer spec is 8Ohm0.5Watt per unit, there are two transducer units in one speaker box)

Internal Speakers Header

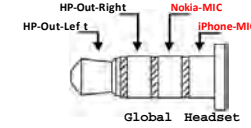
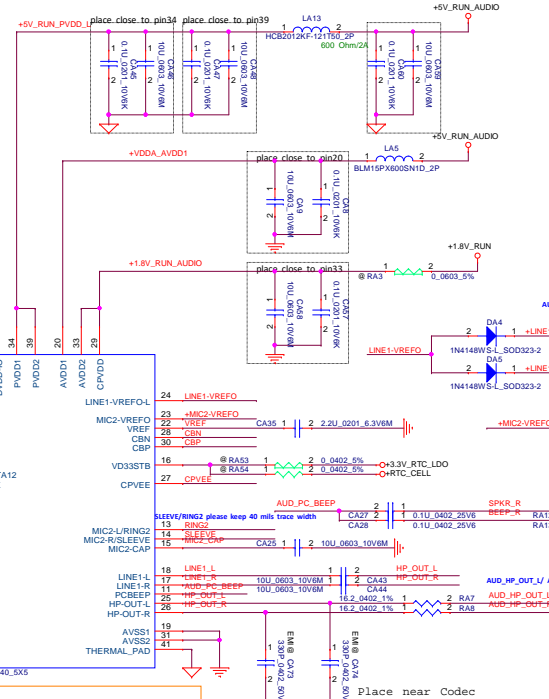
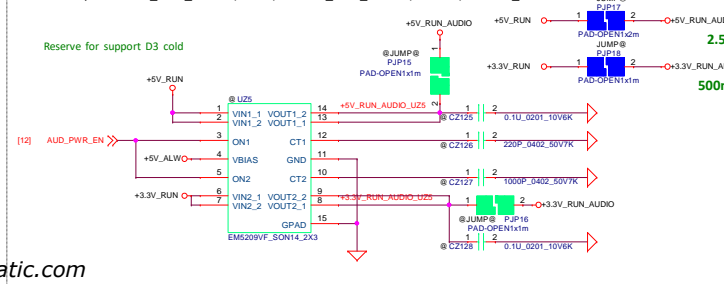
40 mils trace keep 20 mil spacing



Place closely to Pin 12.

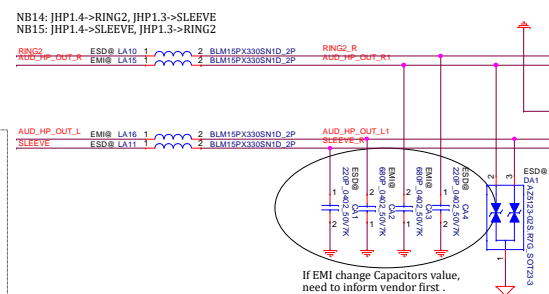


Power sequence +5V_RUN_AUDIO(501us) > +3.3V_RUN_AUDIO(1204 us) > +1.5V_RUN



Universal Jack

Add this Filter to avoid other components/chips be influenced



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Codec ALC3204

LA-J371P

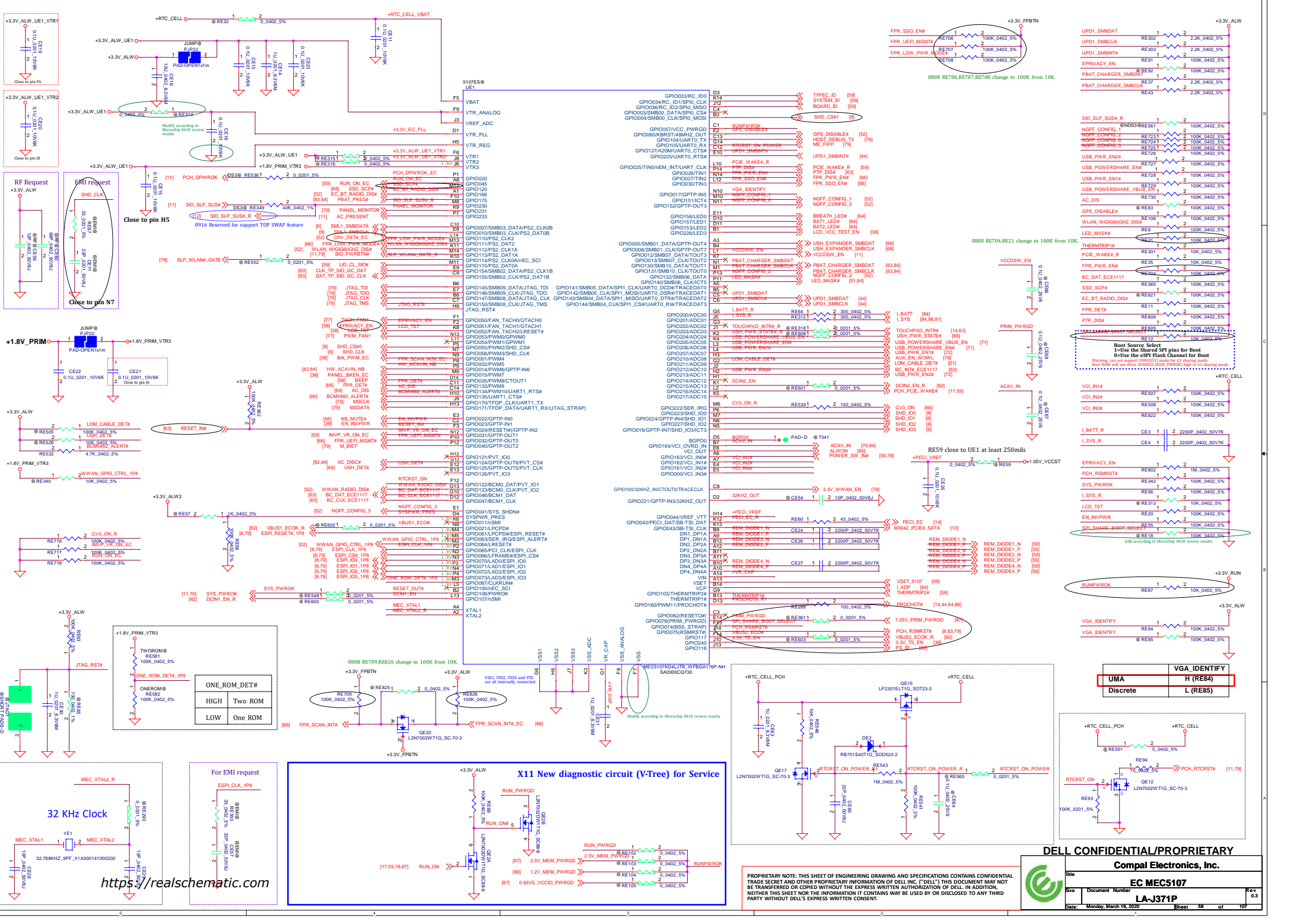
Date: Monday, March 16, 2020 Sheet 56 of 107

Reserve

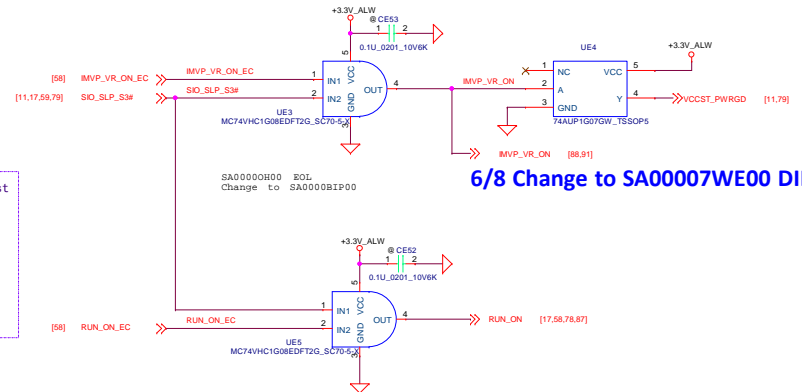
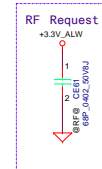
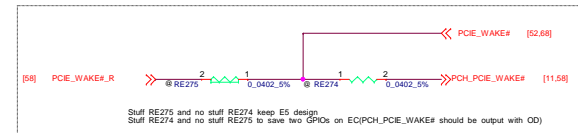
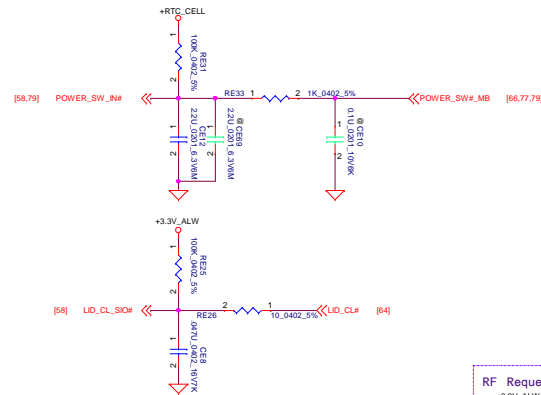
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Title		Audio Amplifier	
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Date:	Monday, March 16, 2020		Sheet 57 of 107



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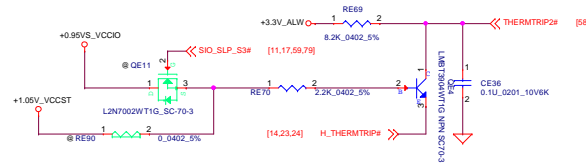


RE343	CE62	REV	RE79	CE40	REV	RE300	CE47	PANEL SIZE
* 240K	4700p	Single Port ACE w/o TR	240K	4700p	X00	240K	4700p	11"
130K	4700p	Single Port ACE w/TR	130K	4700p	X01	130K	4700p	12"
62K	4700p	Dual Port ACE w/o TR	62K	4700p	X02	62K	4700p	13"
33K	4700p	Dual Port ACE w/TR	33K	4700p	X03	* 33K	4700p	14"
8.2K	4700p	Dual Port ACE (w/TR +w/o TR)	8.2K	4700p	reserved	8.2K	4700p	15"
4.3K	4700p	.	* 4.3K	4700p	A00	4.3K	4700p	17"
2K	4700p		2K	4700p		2K	4700p	15P
1K	4700p		1K	4700p		1K	4700p	

TYPEC_ID rise time is measured from 0%~63.2%.

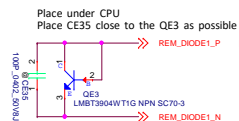
BOARD_ID rise time is measured from 0%~63.2%.

SYSTEM_ID rise time is measured from 0%~63.2%.

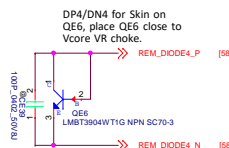


Thermal diode mapping

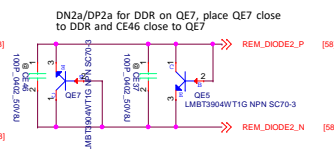
5107 Channel	Location
DP1/DN1	CPU (QE3)
DP2/DN2	M2 2280 (QE5)
DN2a/DP2a	DDR (QE7)
DP3/DN3	NA
DP4/DN4	CPU VR (QE6)



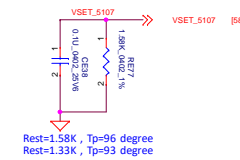
DP2/DN2 for M2 2280 on QE5, place QE5 close to JNGFF3 and CE37 close to QE5



DP4/DN4 for 5107 on QE6, place QE6 close to Vcore VR choke.



DN2a/DP2a for DDR on QE7, place QE7 close to DDR and CE46 close to QE7



Rest=1.58K, Tp=96 degree

Rest=1.33K, Tp=93 degree

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MEC5107 support

LA-J371P

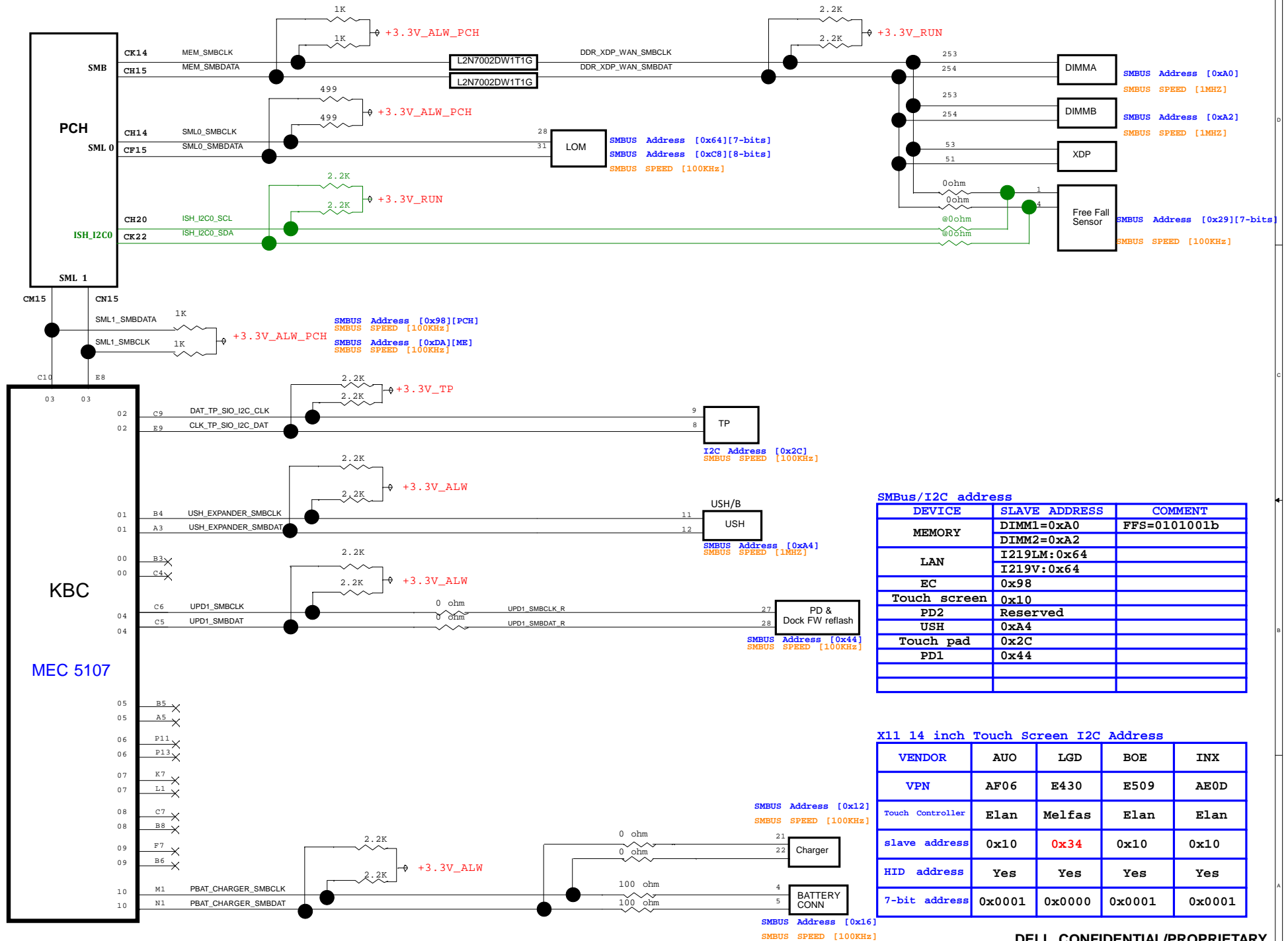
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Size	Document Number	LA-J371P	Rev 0.3
Date:	Monday, March 16, 2020	Sheet 60 of 107	



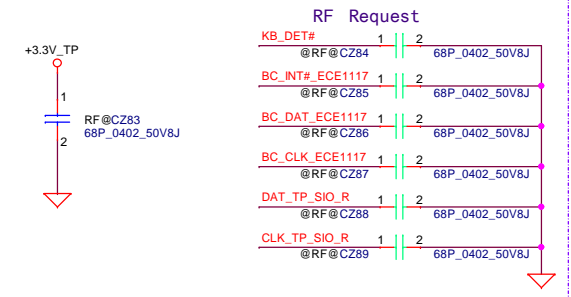
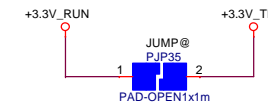
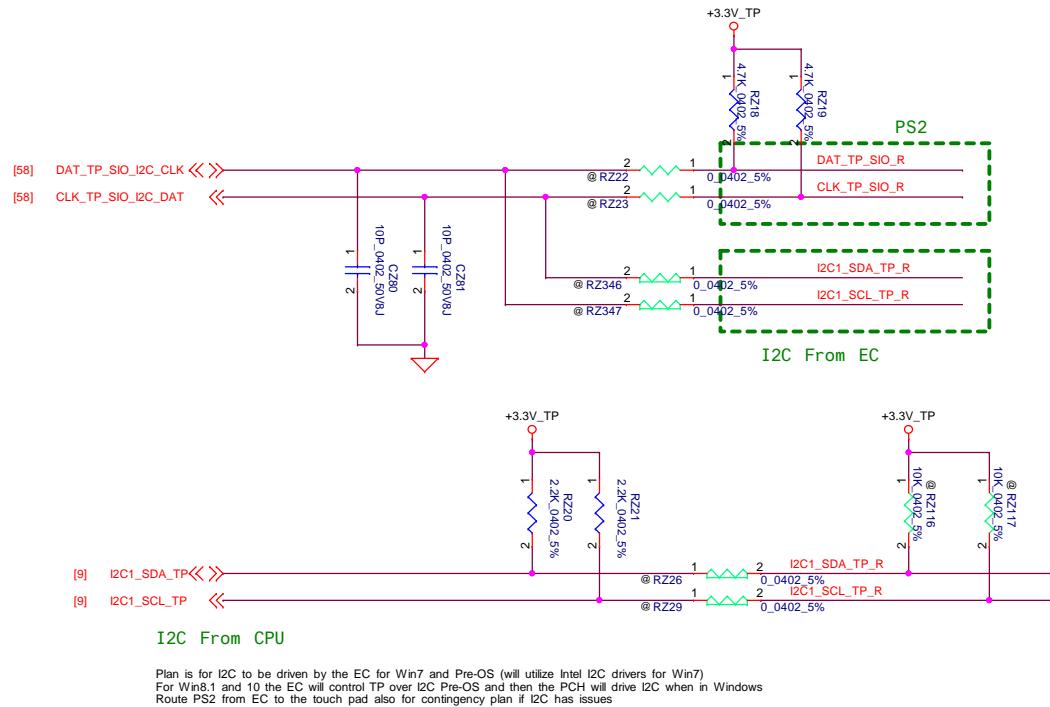
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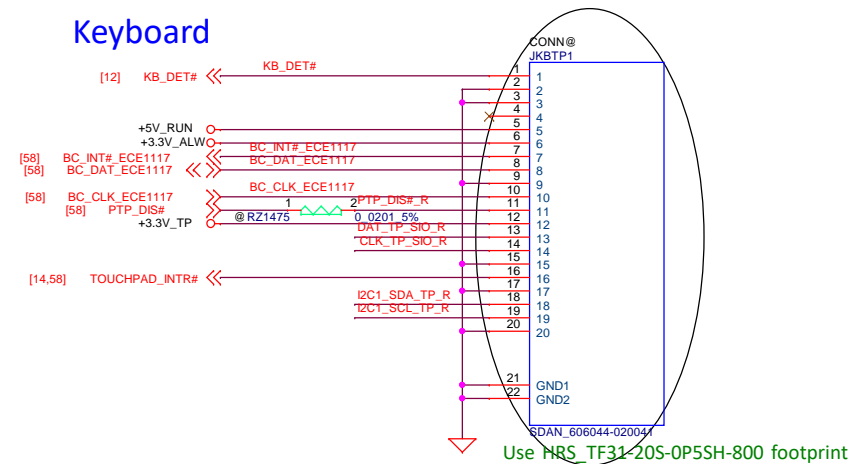


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Title		LED (Controller)	
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Date:	Monday, March 16, 2020		Sheet 62 of 107

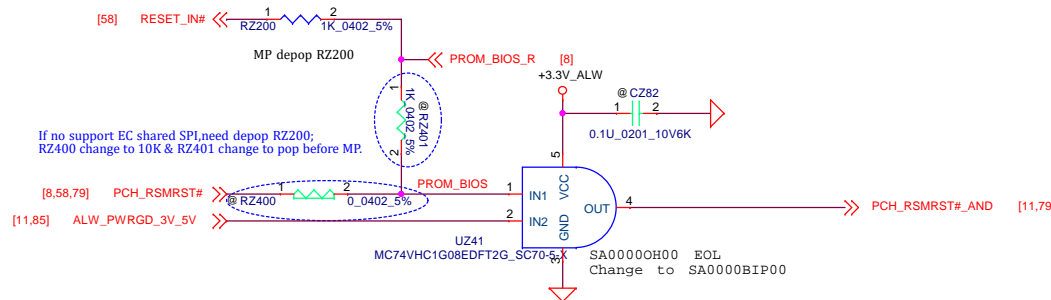
Touch Pad



Keyboard



RSMRST circuit



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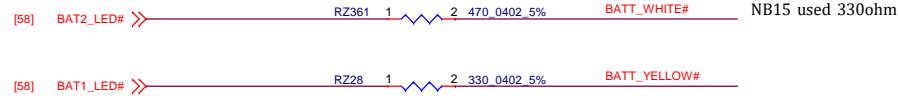
Compal Electronics, Inc.



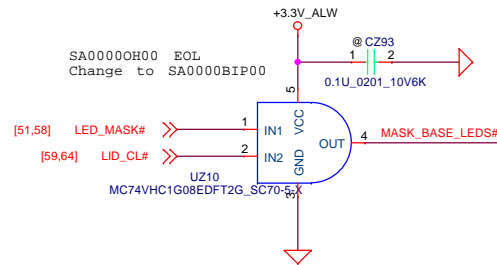
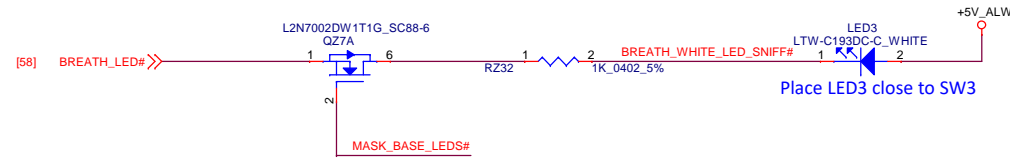
Title			
Keyboard			
Size	Document Number		Rev
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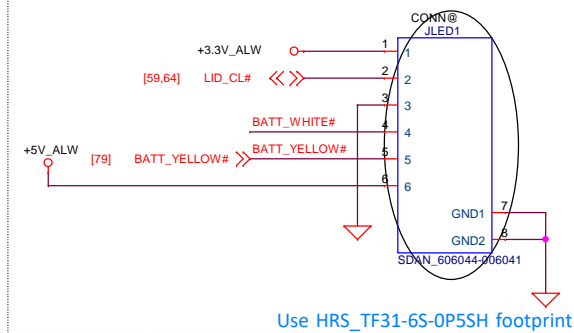
Battery LED



Breath LED



LED board CONN



LED Circuit Control Table

	LED_MASK#	LID_CL#
Mask All LEDs (Unobtrusive mode)	0	X
Mask Base MB LEDs (Lid Closed)	1	0
Do not Mask LEDs (Lid Opened)	1	1

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Title	LED & LID		
Size	Document Number	LA-J371P	
Date:	Monday, March 16, 2020	Sheet	64 of 107
Rev	0.3		

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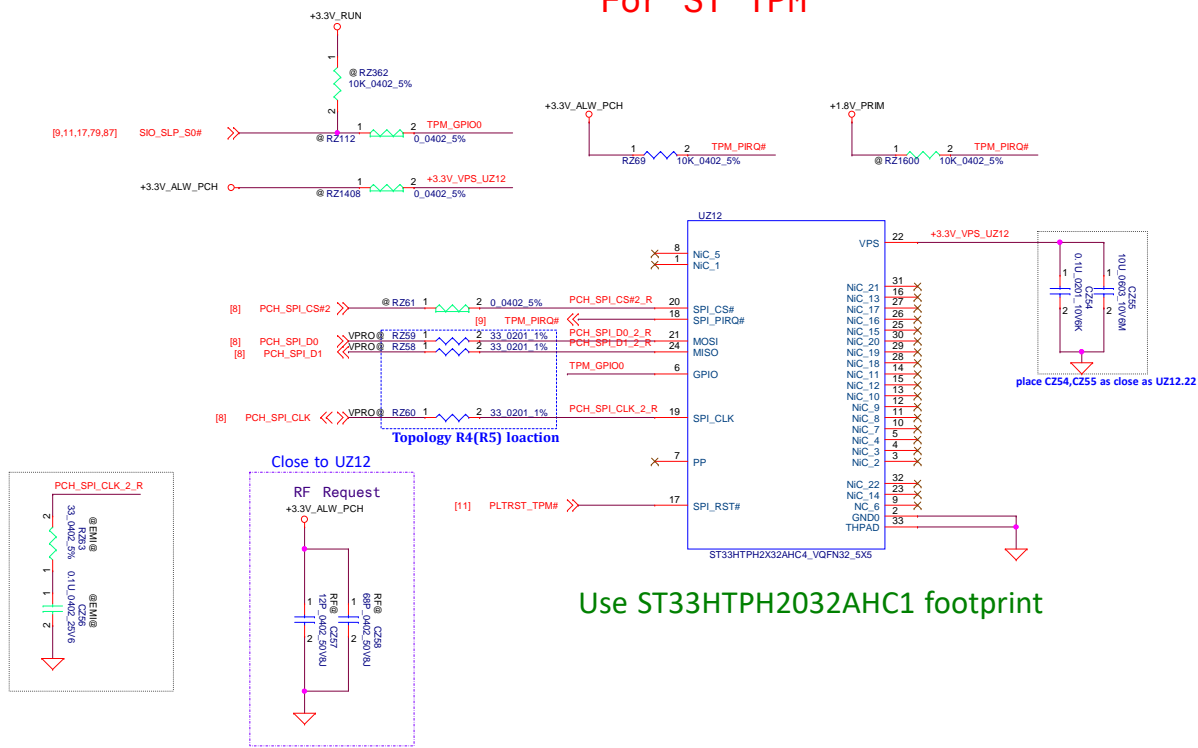
Reserve

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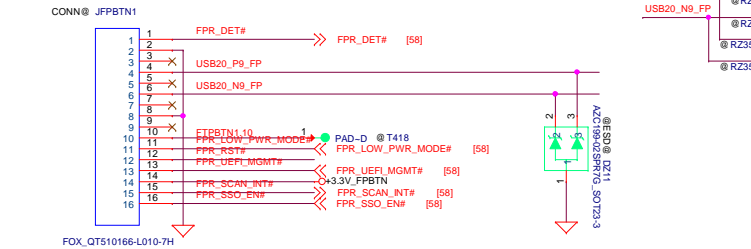
DELL CONFIDENTIAL/PROPRIETARY		
Compal Electronics, Inc.		
Title		
KB/TP/LED/LID		
Size	Document Number	Rev
	LA-J371P	0.3
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For ST TPM

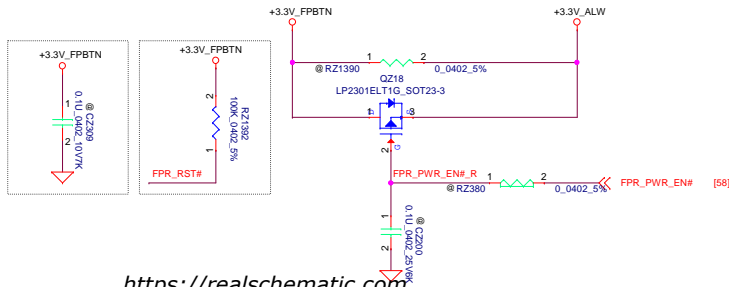


FP in PWR BUTTON connector

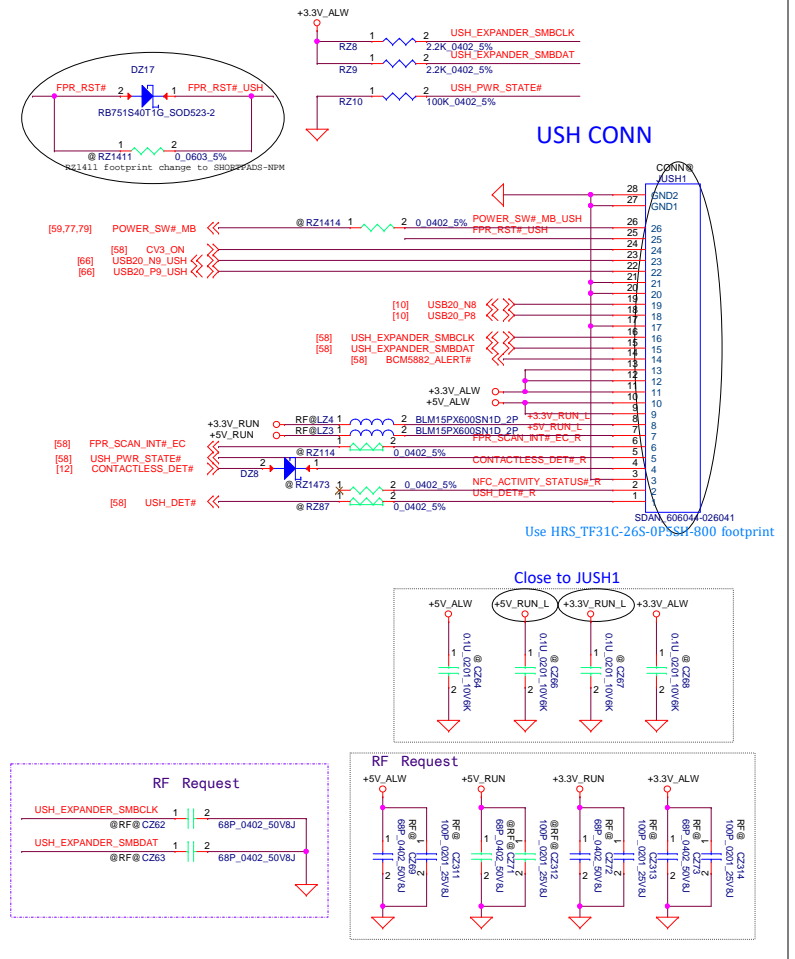
NEED CONFIRM MODULE PINDEFINE



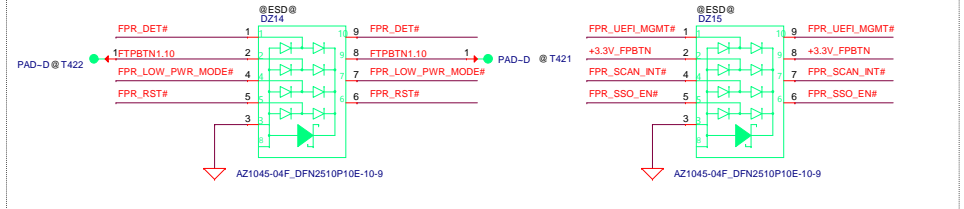
Link FOX_QT510166-L010-7H done



Compal MB CONN	Symbol	Signal	FPR Symbol
2		GND	1
4		USB DP(D+)	2
6		USB DM(D-)	3
8		GND	4
10		RESERVED	5
12		FP RESET#	6
14		+3.3V_FPBTN	7
16		FPR_SSO_EN#	8
15		FPR_SCAN_INT#	9
13		FPR_UEFI_MGMT#	10
11		FPR_LOW_PWR_MODE#	11
9		NA	12
7		NA	13
5		NA	14
3		NA	15
1		FPR_DET(GND)	16



ESD Request



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USH & TPM & FP

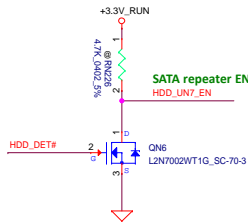
LA-J371P

Rev	
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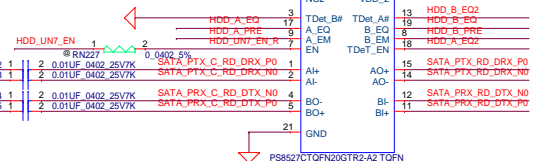
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SATA Repeater



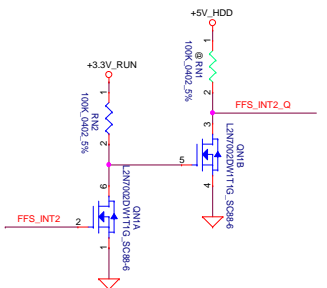
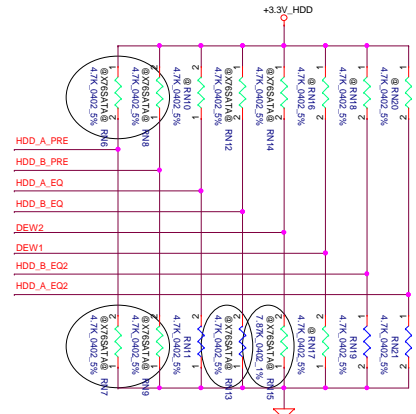
Change CPN/Part Description

SATA Repeater BOM control by X76 at P.104

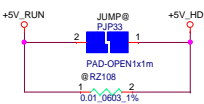
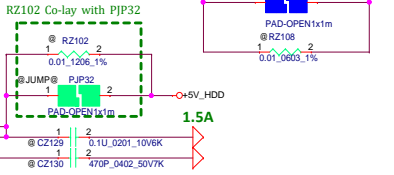
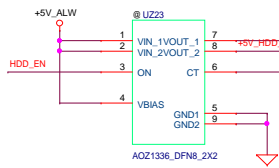
	HDD_A_EQ PIN17	HDD_B_EQ PIN19	HDD_A_EQ2 PIN18	HDD_B_EQ2 PIN13	DEW1 PIN16	DEW2 PIN6	HDD_A_PRE PIN9	HDD_B_PRE PIN8
Pericom PI3EQX6741ST	PD (RN11)	PD (RN13)	PD (RN21)	PD (RN19)	NC	NC	PD (RN7)	PD (RN9)
TI SN75LVCP601	PD (RN11)	NC	PD (RN21)	PD (RN19)	NC (IPU)	NC (IPU)	PH (RN6)	PH (RN8)
* Parade PS8527C	PD (RN11)	PD (RN13)	PD (RN21)	PD (RN19)	NC (1/2 VDD)	PD (RN15)	NC (1/2 VDD)	NC (1/2 VDD)

			A_EQ	B_EQ		A_EM	B_EM
2nd	Pericom	0 NC 1	3dB 6dB 9dB	3dB 6dB 9dB	0 NC 1	0dB 1.5dB	0dB 1.5dB
3rd	TI	0 NC 1	7dB 0dB 14dB	7dB 0dB 14dB	0 NC 1	0dB -4dB -2dB	0dB -4dB -2dB
* Main	Parade	EQ2 EQ1 (M = VDD/2) 0 M 0 0 0 1 M M M 0 M 1 1 M 1 0 1 1	2.4dB 7.4dB 14.4dB 12.2dB 9.4dB 13.3dB 6.2dB 11.2dB 5dB	2.4dB 7.4dB 14.4dB 12.2dB 9.4dB 13.3dB 6.2dB 11.2dB 5dB	0 M 1	0dB -3.5dB -1.5dB	0dB -3.5dB -1.5dB

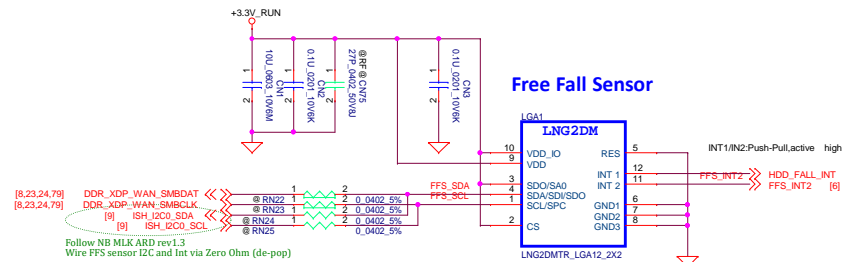
* red color is current setting



+5V_HDD source

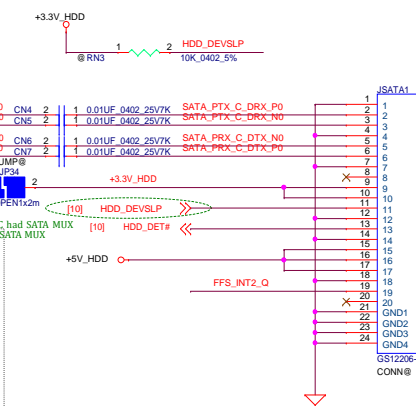


Free Fall Sensor



Command	SAD[6:1]	SAD[0] = SA6	R/W	SAD+R/W
Read	010100	0	1	01010001 (S1H)
Write	010100	0	0	01010000 (S0H)
Read	010100	1	1	01010001 (S2H)
Write	010100	1	0	01010000 (S0H)

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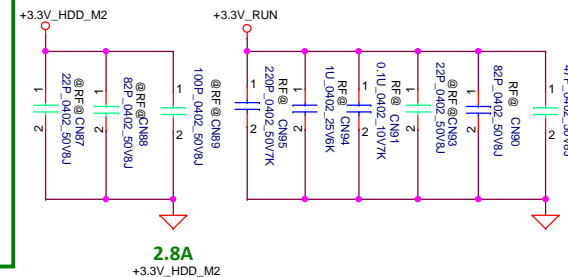
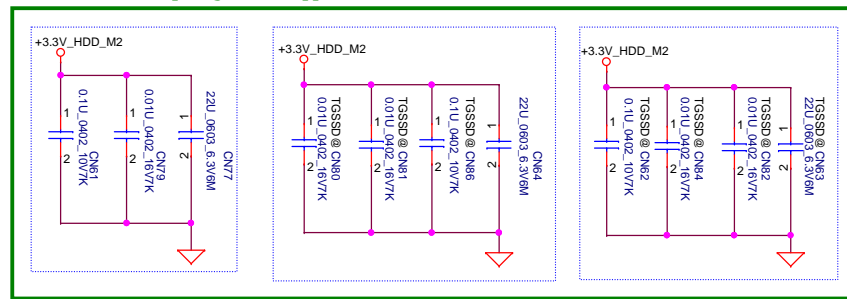
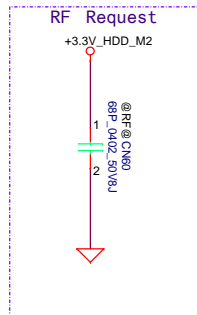
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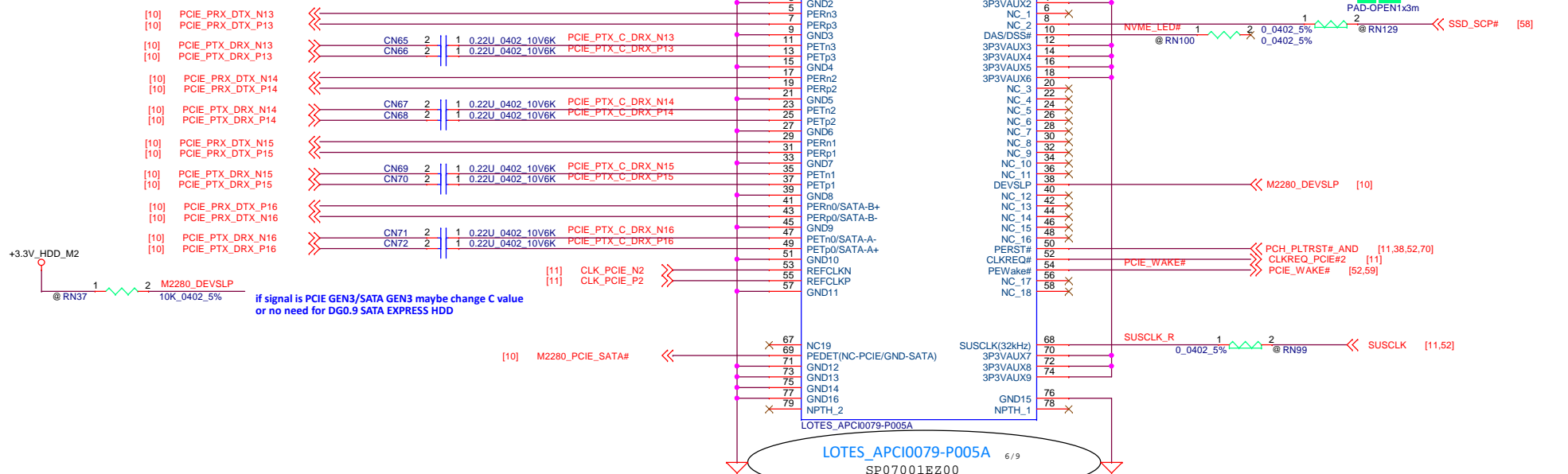
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Add Power Decoupling for support Intel Teton Glacier



2280 SSD NGFF slot C Key M



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M2 2280 Socket

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Document Number

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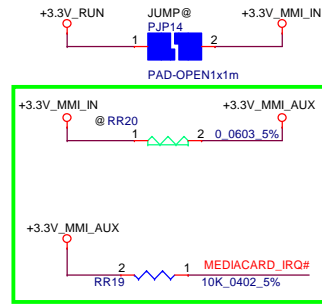
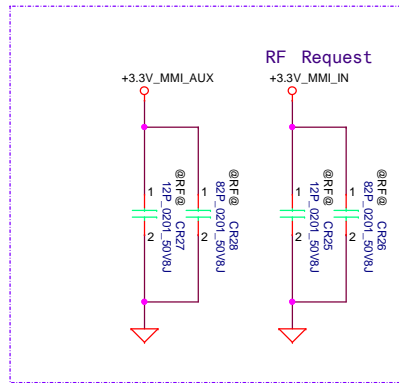
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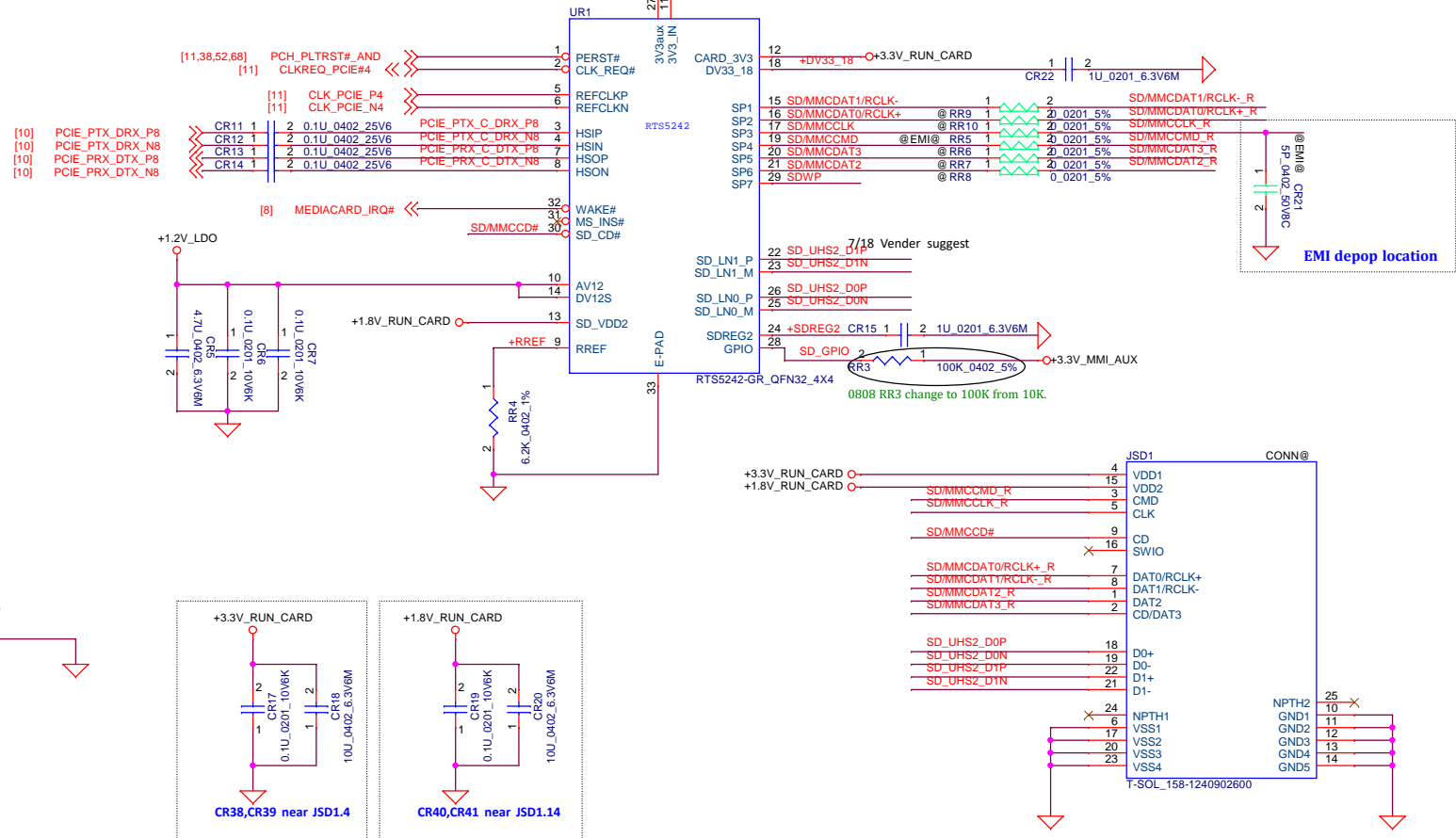
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Compal Electronics, Inc.			
Title		eMMC/UFS	
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For PCIE Interface



support D3 Hot(if D3 cold PIN11,PIN27 need Add MOS on/off 3V3AUX)

7/18 Vender suggest.



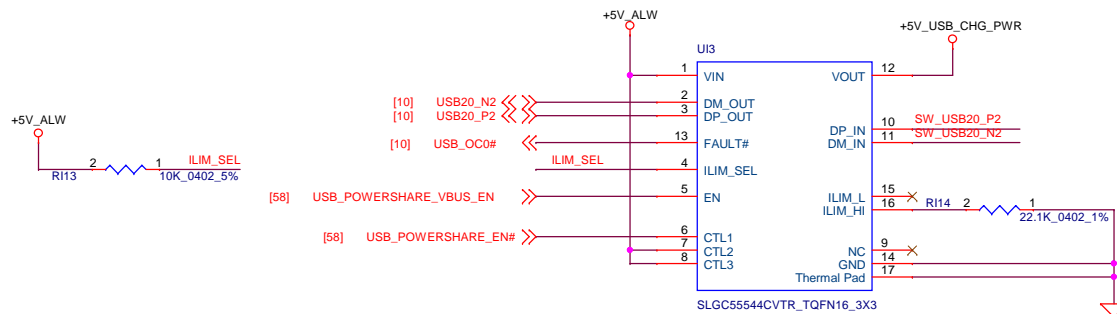
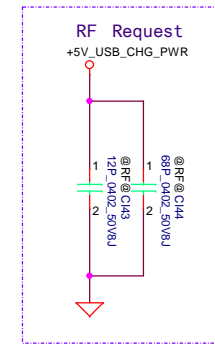
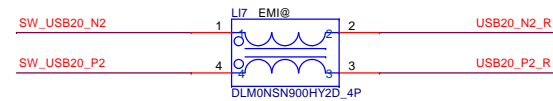
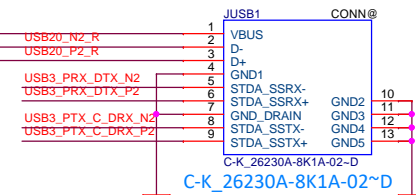
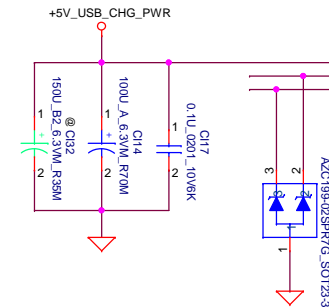
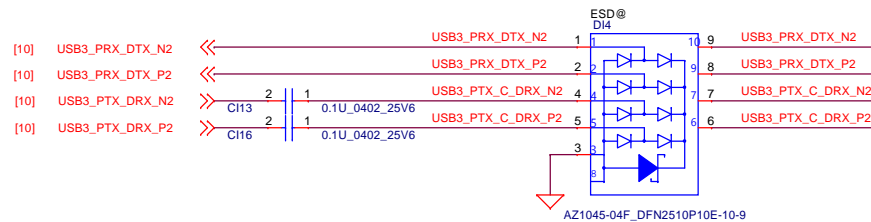
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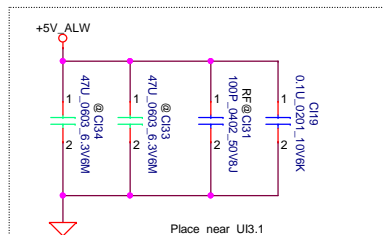
Card Reader RTS5242

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Link Seligro SA000097E10 Done
MAIN:SLGC55544CVTR



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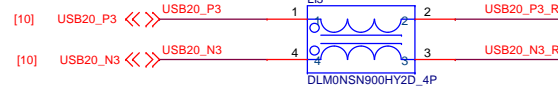
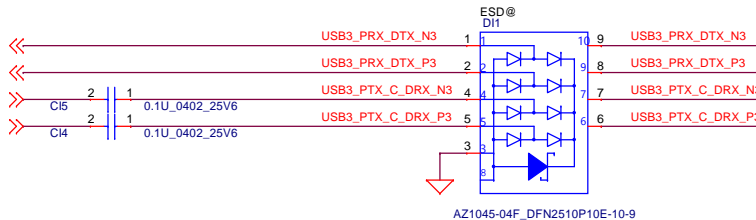
Compal Electronics, Inc.

JUSB1+PS

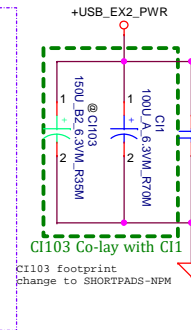
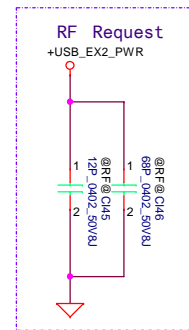
LA-J371P

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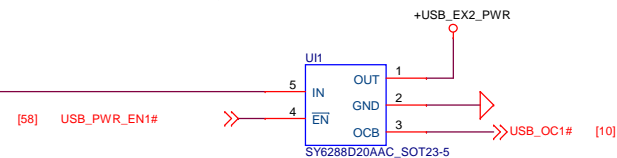
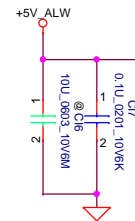
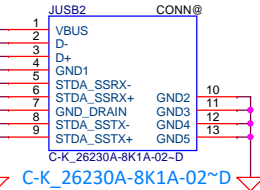
[10] USB3_PRX_DTX_N3
[10] USB3_PRX_DTX_P3
[10] USB3_PTX_DRX_N3
[10] USB3_PTX_DRX_P3



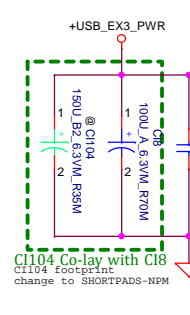
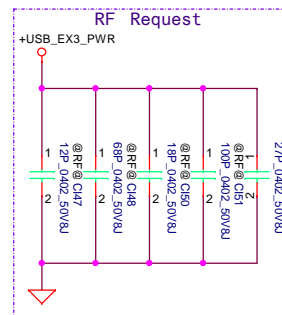
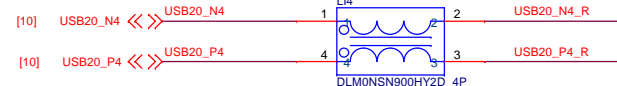
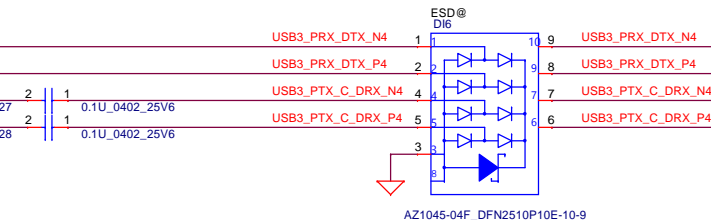
DFB request:
main SM070003Z00 (INPAQ_MCM1012B900F06BP_4P)
Footprint use 2nd source SM070004400 (PANAS_EXC24CQ900U_4P)
Pitch change from 0.5mm to 0.55mm



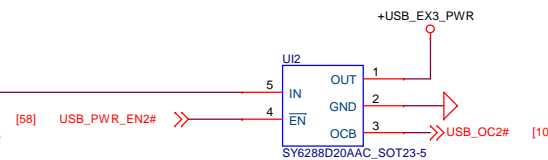
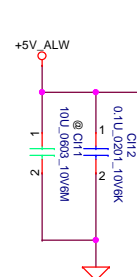
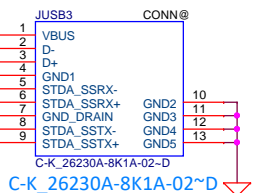
+USB_EX2_PWR
DI2
NB14: DI2.2 contact USB20_N3_R
NB15: DI2.2 contact USB20_P3_R



[10] USB3_PRX_DTX_N4
[10] USB3_PRX_DTX_P4
[10] USB3_PTX_DRX_N4
[10] USB3_PTX_DRX_P4



+USB_EX3_PWR
JUSB3
NB14: DI2.2 contact USB20_N4_R
NB15: DI2.2 contact USB20_P4_R



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Compal Electronics, Inc.

Title: **JUSB2&JUSB3**

Size: Document Number: **LA-J371P** Rev: 0.3

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USB2/USB3 DB		
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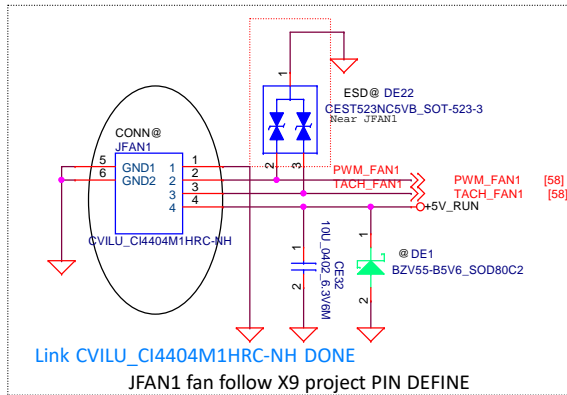
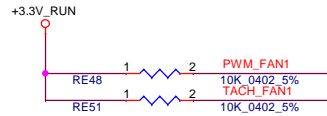
DELL CONFIDENTIAL/PROPRIETARY			
Compal Electronics, Inc.			
Title		USB	
Size	Document Number		Rev
	LA-J371P		0.3
Date:	Monday, March 16, 2020		Sheet 75 of 107

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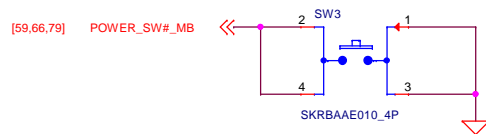
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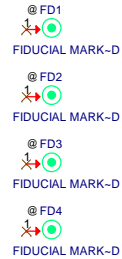
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Compal Electronics, Inc.			
Title	USB		
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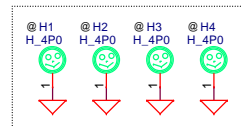
POWER & INSTANT ON SWITCH TOP



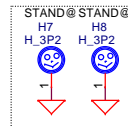
Fiducial Mark



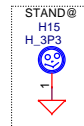
CPU



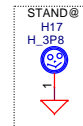
NGFF Standoff



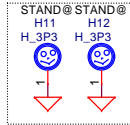
FP Standoff



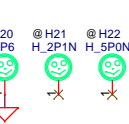
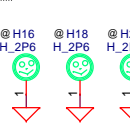
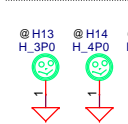
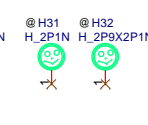
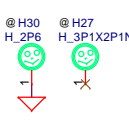
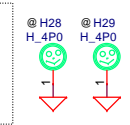
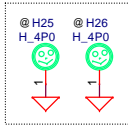
Markup Standoff



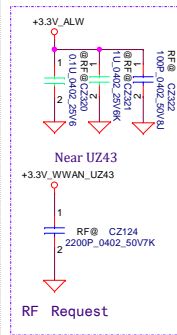
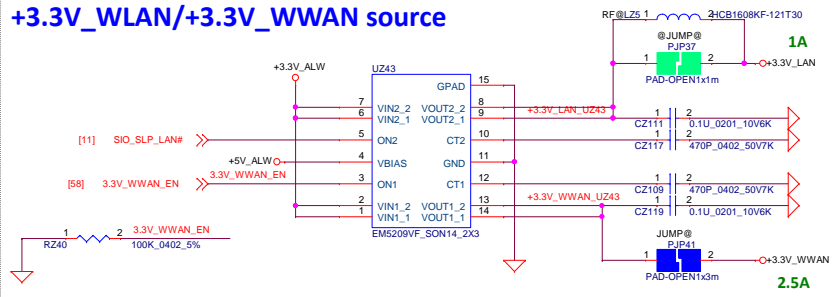
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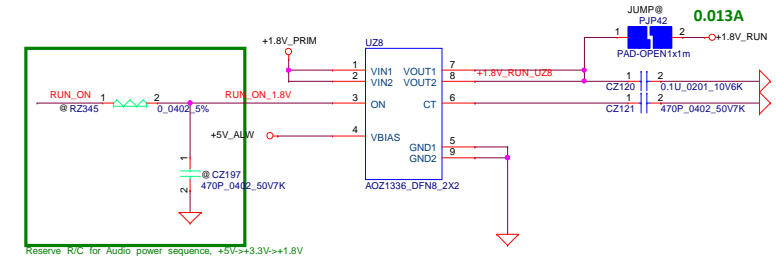
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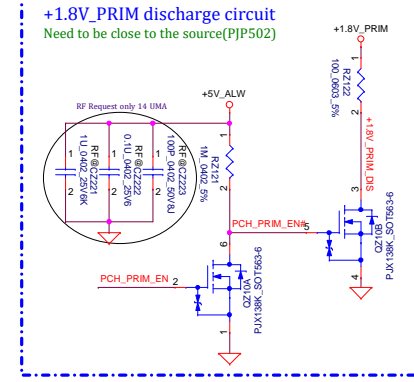
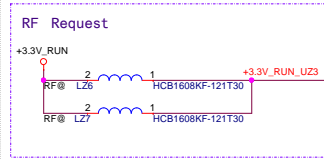
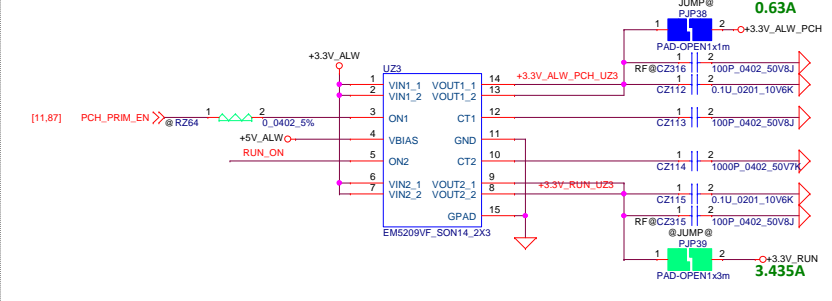
+3.3V_WLAN/+3.3V_WWAN source



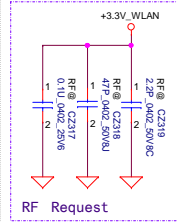
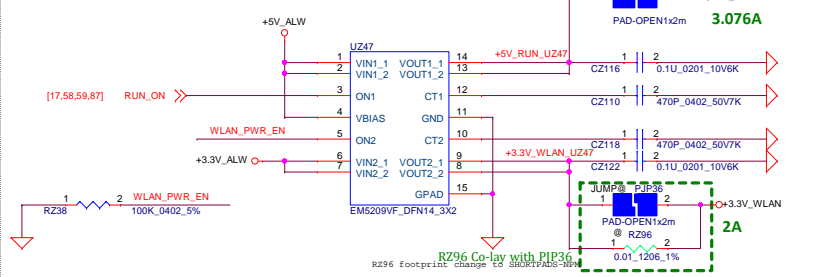
+1.8V_RUN source



+3.3V_ALW_PCH/+3.3V_RUN source

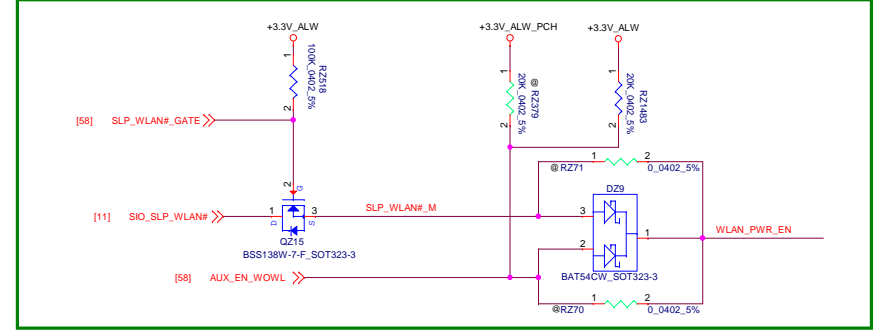


+5V_RUN/+3.3V_WLAN source



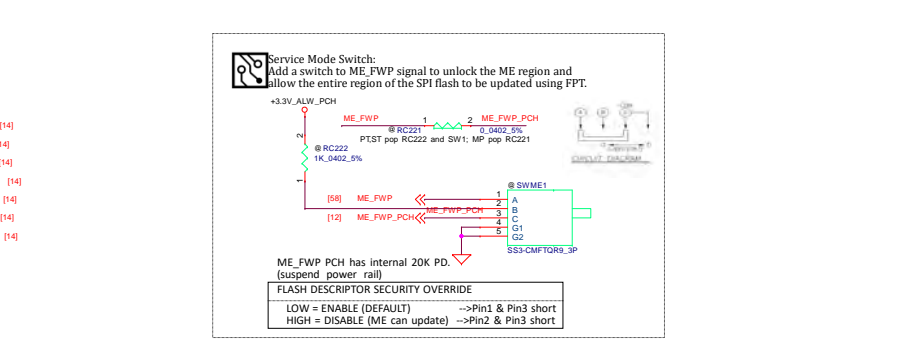
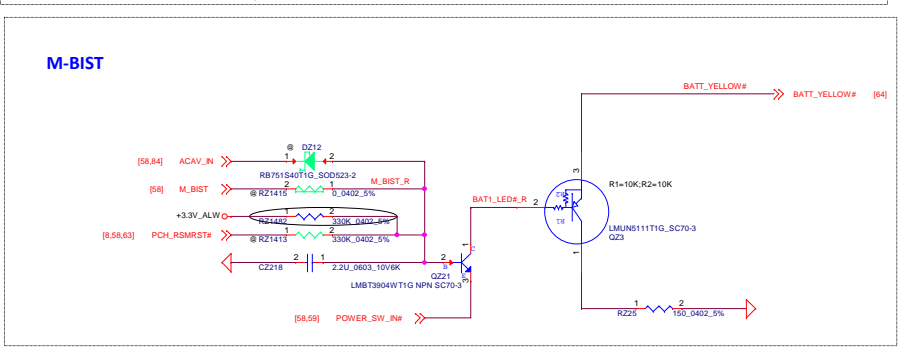
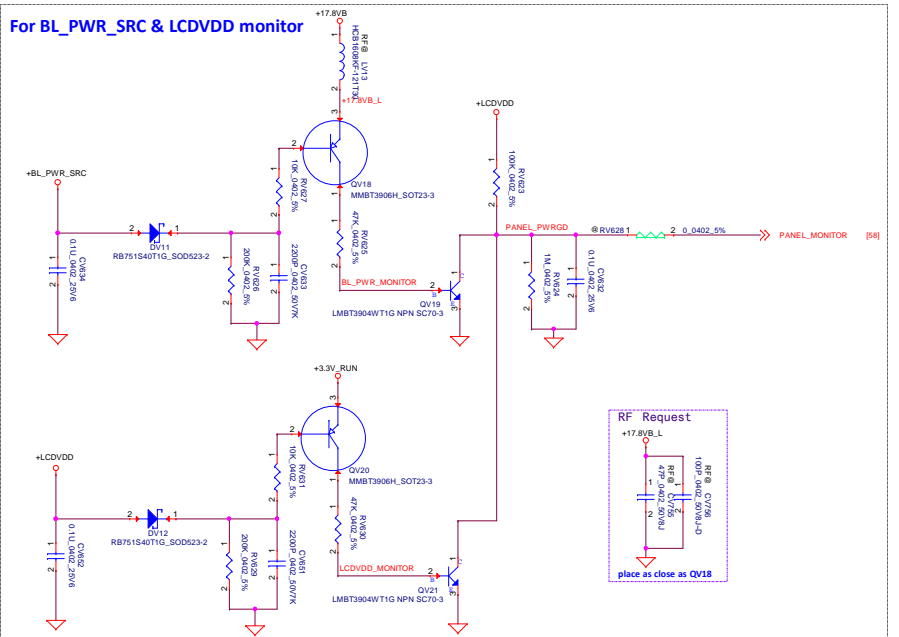
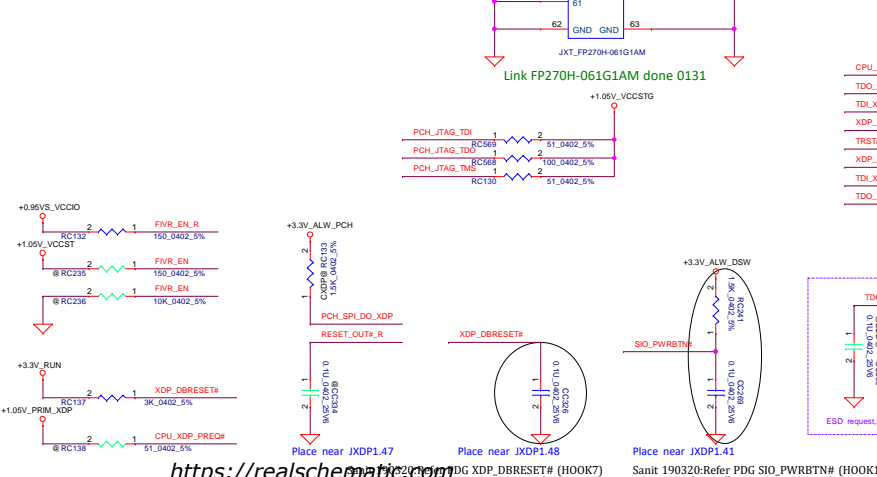
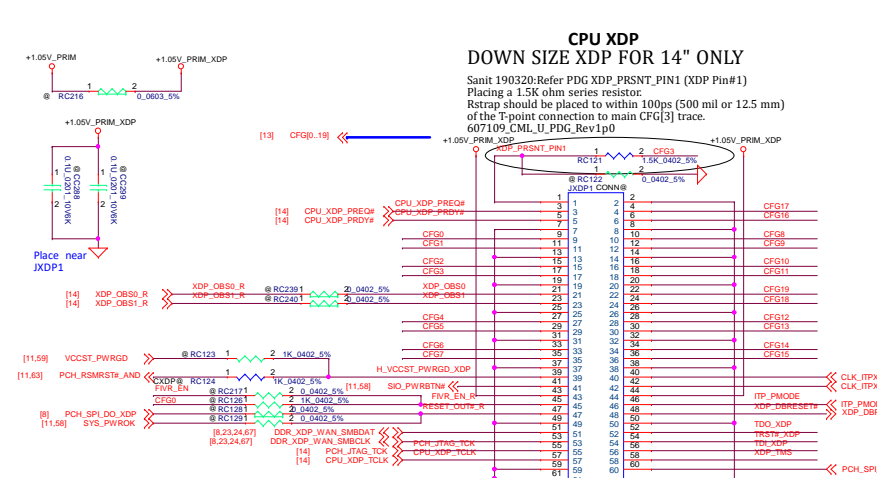
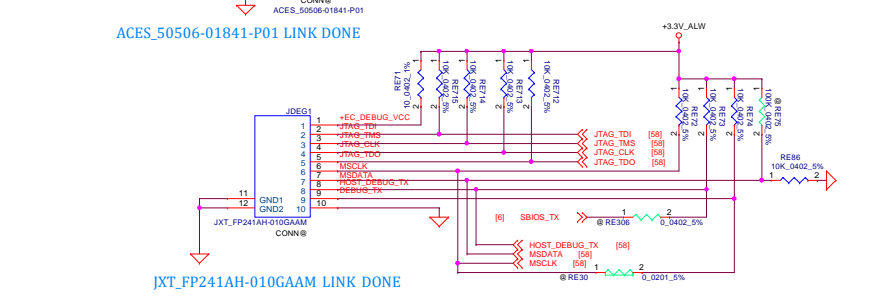
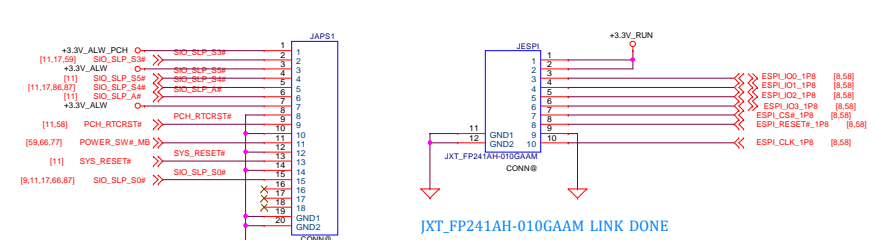
Delete reserved for SSD storage protection power gate control circuit

EC request to reserve OR gate for WLAN power enable



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Power control			
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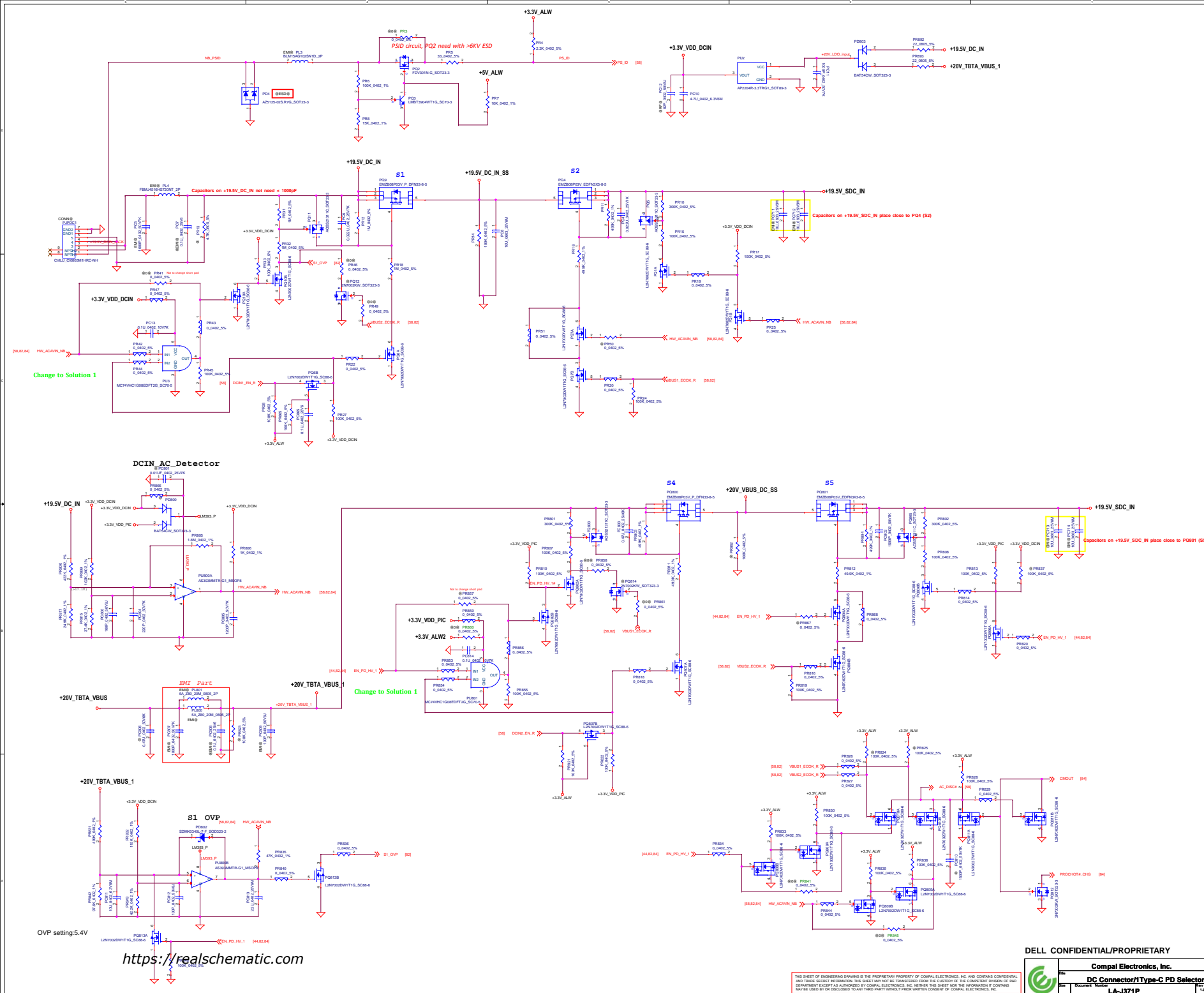
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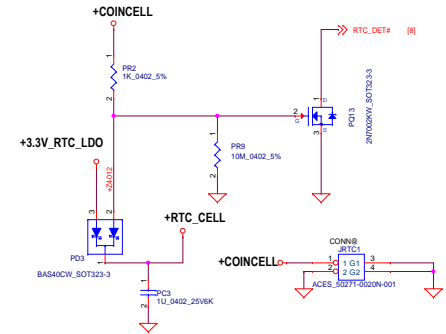
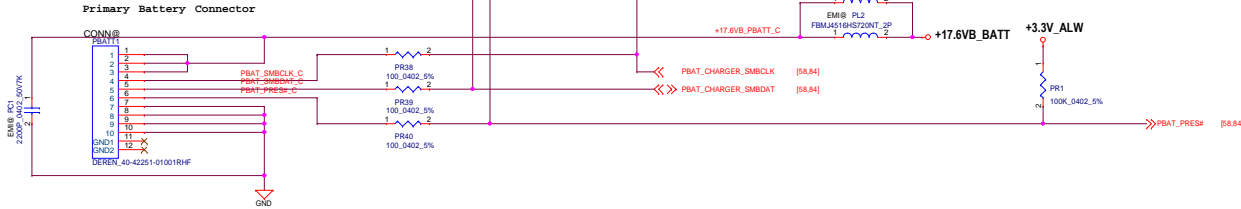
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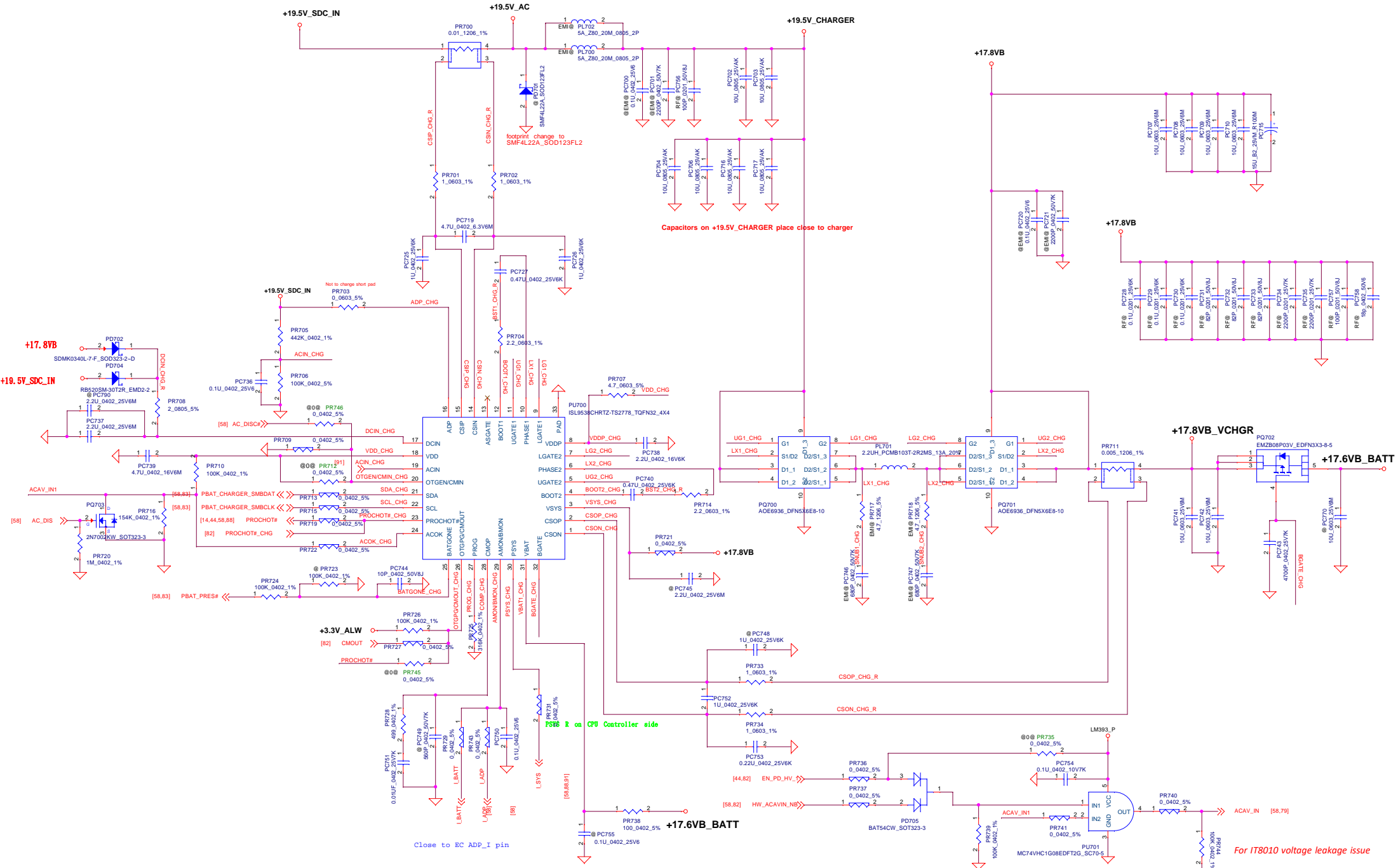


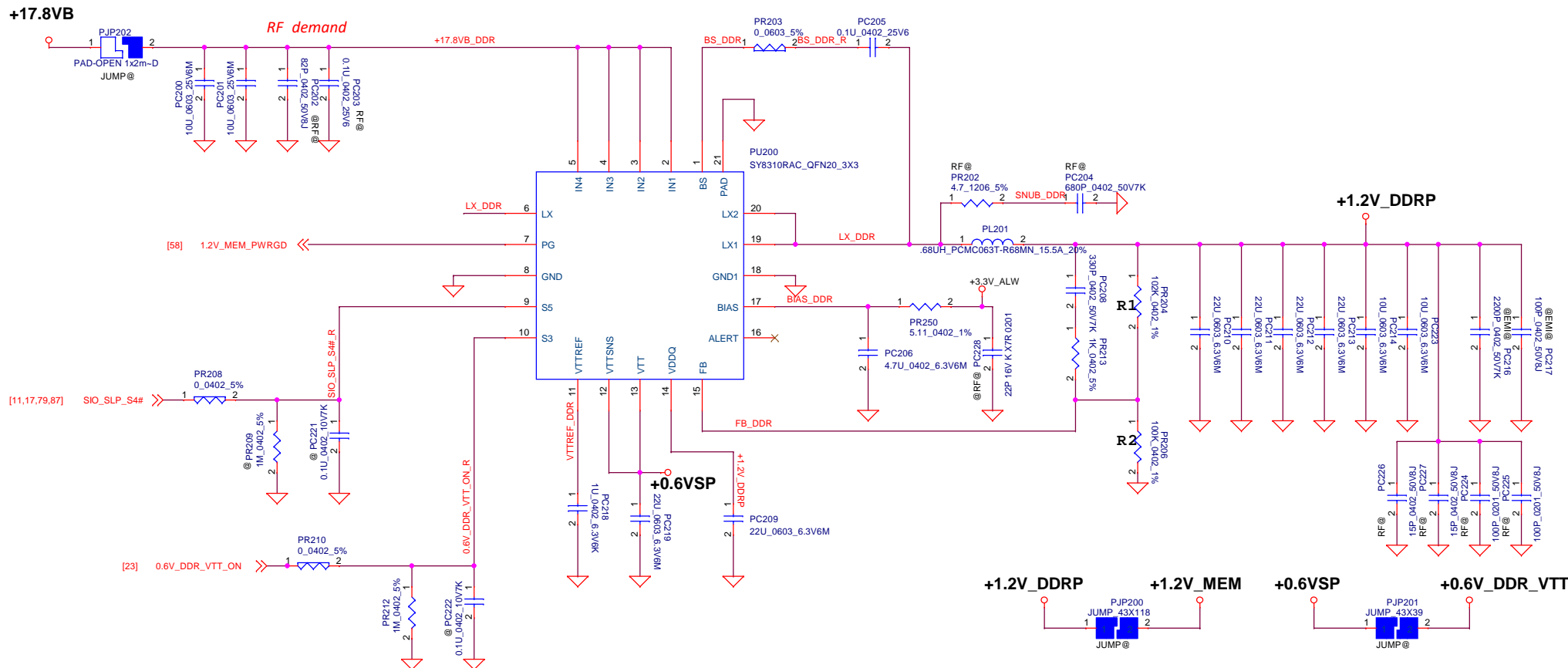
Compal Electronics, Inc.		
Title		
PWR-Block Diagram		
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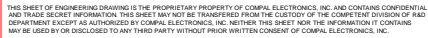


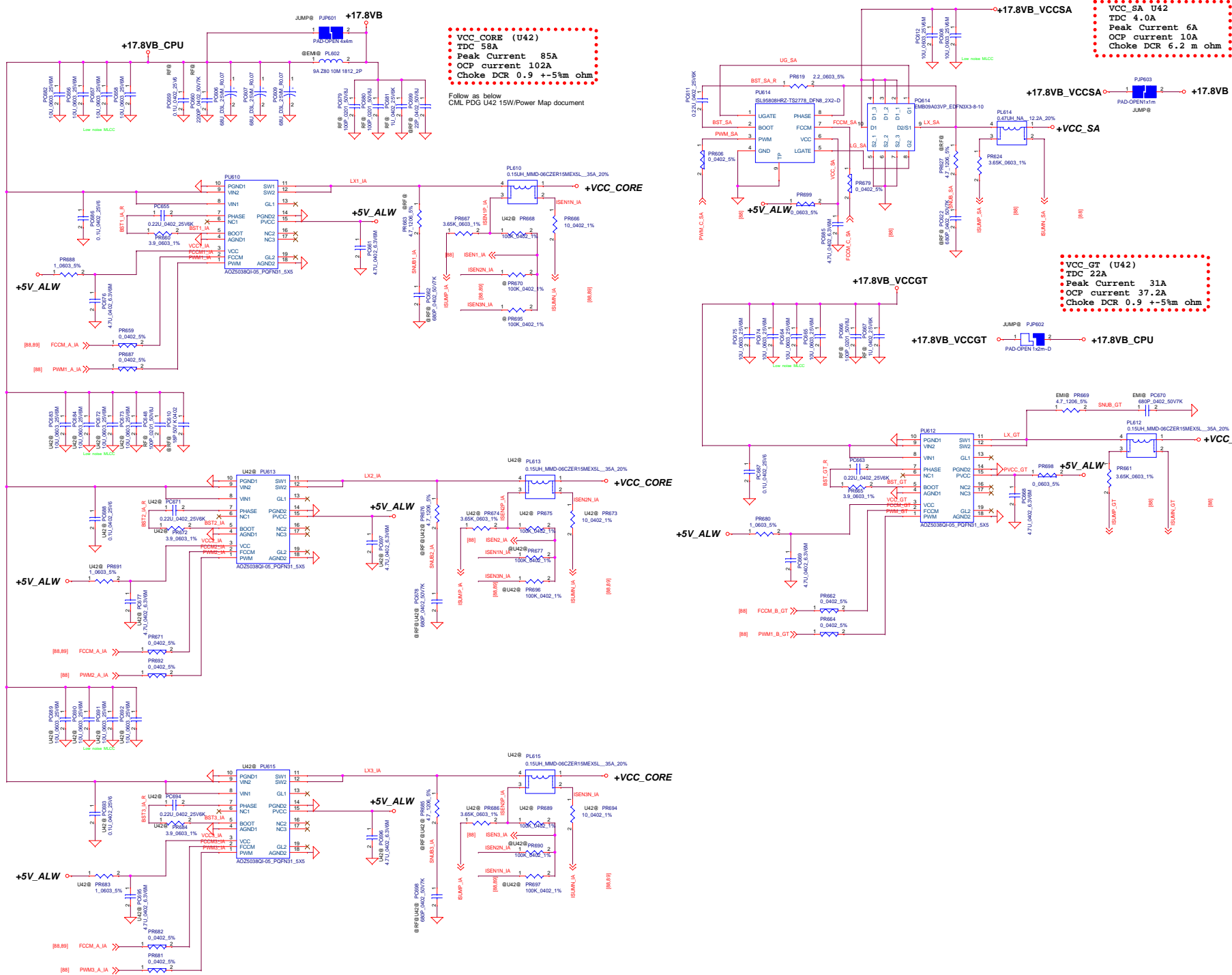
Mode	S3	S5	VOUT	VIT
Normal	H	H	on	on
Stadby	L	H	on	off
Shutdown	L	L	off	off

Note: S3 - sleep ; S5 - power off

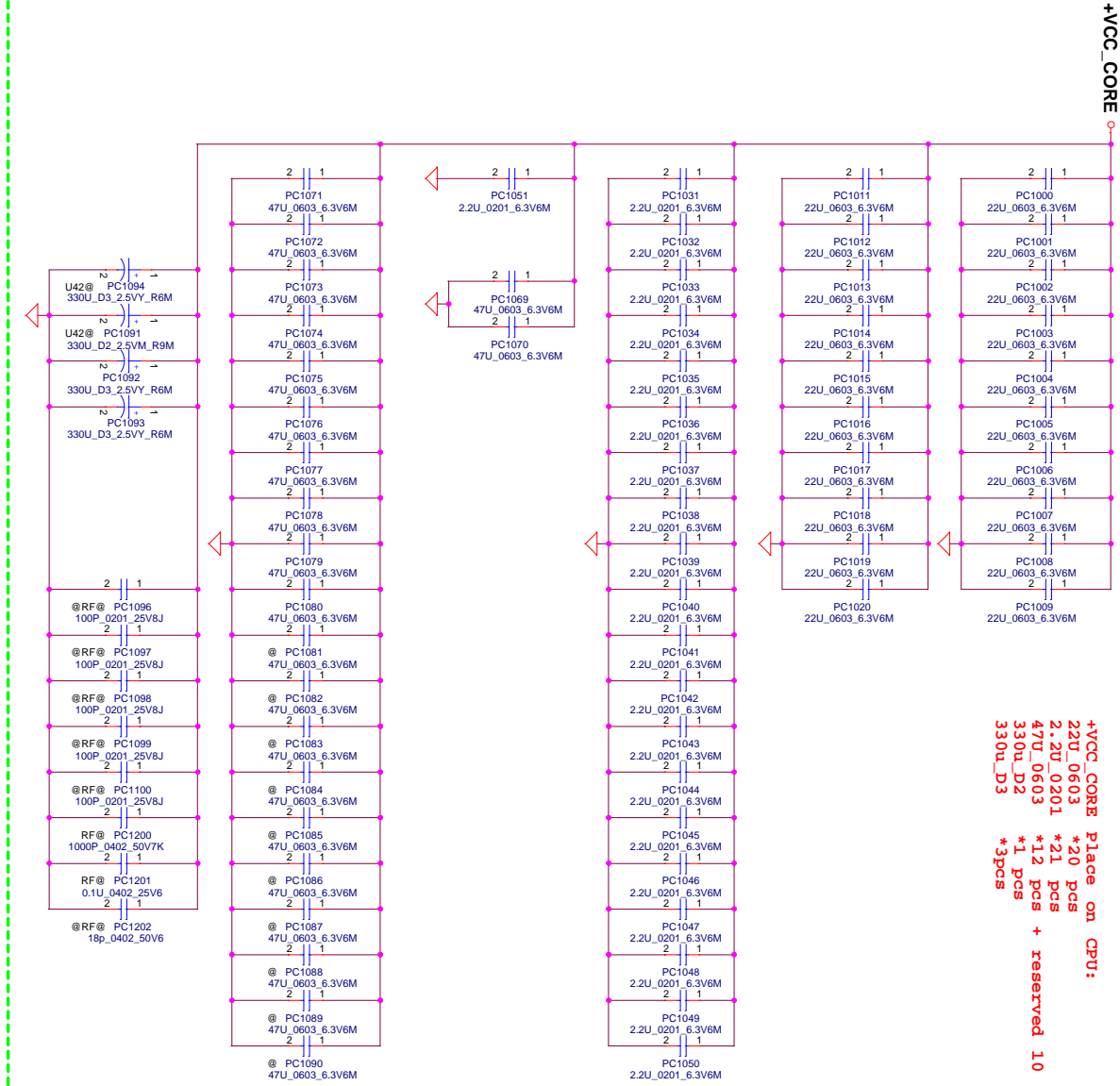
+1.2V_DDR
TDC 5.41A
Peak Current 7.73A
OCP Current 16A Fix by IC

0.6Volt +/- 5%
TDC 1.05A
Peak Current 1.5A
OCP Current 2A (fix)



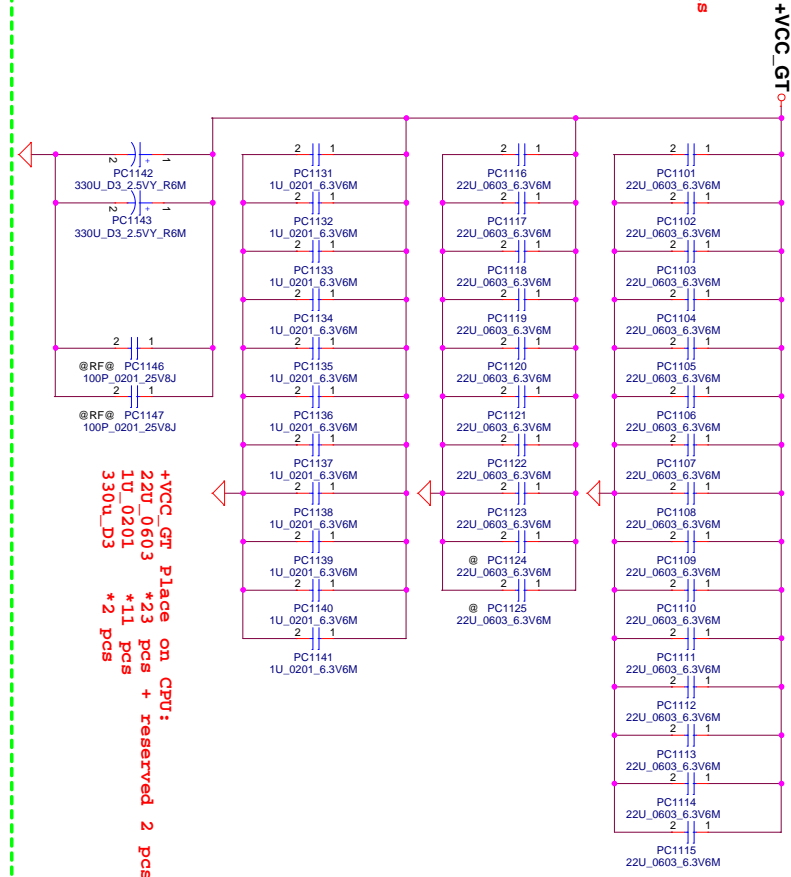


+VCC_CORE



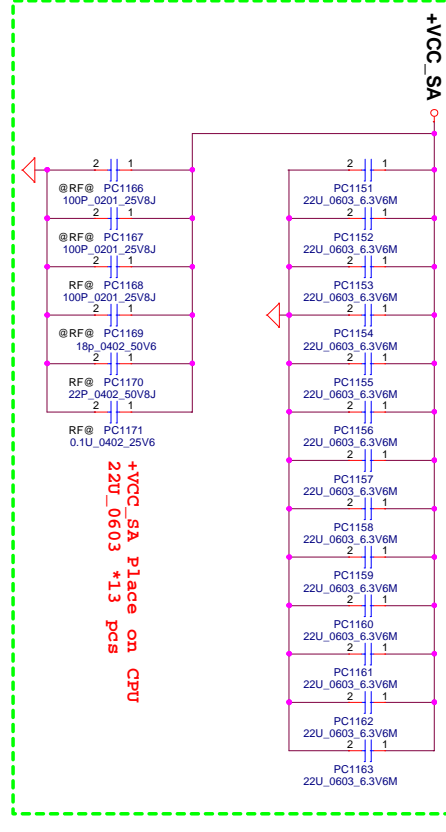
+VCC_CORE Place on CPU:
22U_0603 *20 pcs
2.2U_0201 *21 pcs
47U_0603 *12 pcs + reserved 10 pcs
330U_D2 *1 pcs
330U_D3 *3 pcs

+VCC_GT



+VCC_GT Place on CPU:
22U_0603 *23 pcs + reserved 2 pcs
1U_0201 *11 pcs
330U_D3 *2 pcs

+VCC_SA



+VCC_SA Place on CPU
22U_0603 *13 pcs

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Compal Electronics, Inc.

Size

CPU Decoupling CAP

Document Number

LA-J371P

Rev

1.0

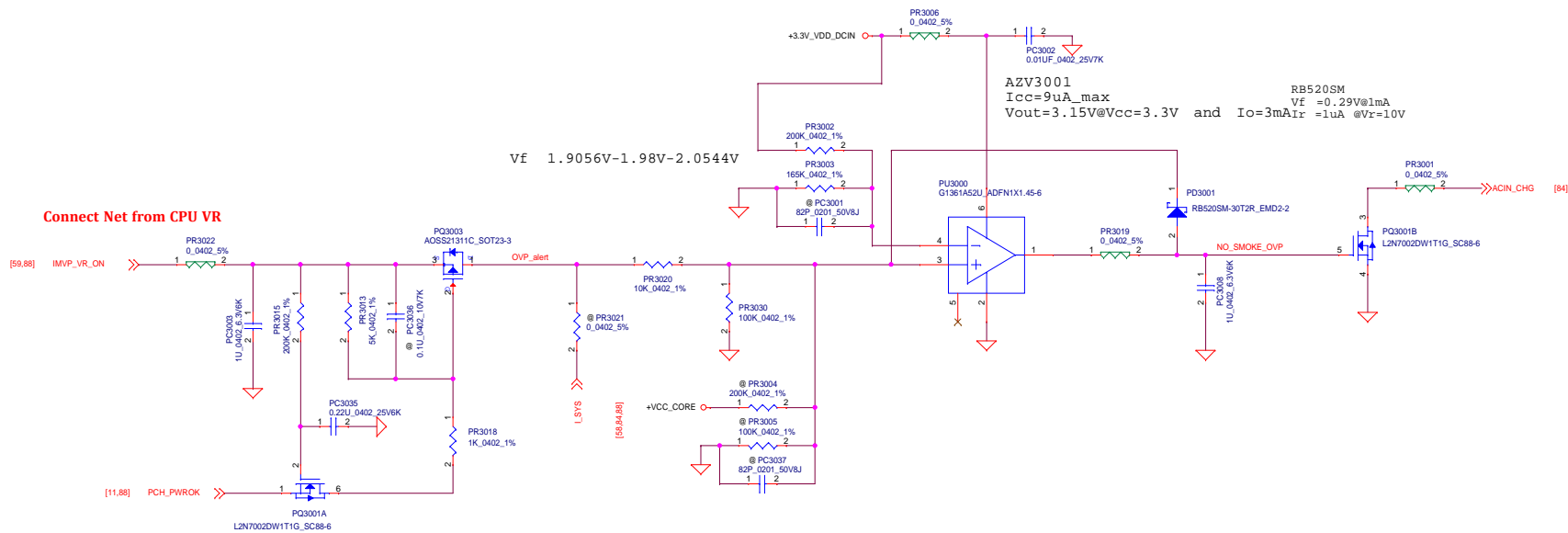
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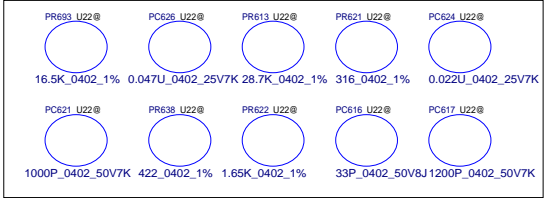
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U22



Location	U22	[1phase]	U42	[3phase]	U62	[3phase]
PC626	V	0.047U	V	0.047U	V	0.047U
PR613	V	28.7K	V	63.4K	V	63.4K
PR621	V	316	V	316	V	316
PC624	V	0.022U	V	0.1U	V	0.1U
PR638	V	422	V	453	V	453
PR622	V	1.65K	V	3.09K	V	3.09K
PC616	V	33P	V	68P	V	68P
PC617	V	1200P	V	1200P	V	1200P
PR693	V	16.5K	V	11K	V	11K
PC621	V	1000P	V	680P	V	680P

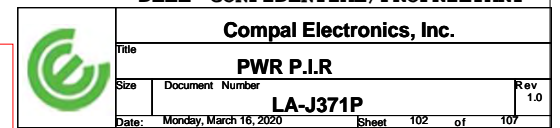


Version Change List (P. I. R. List)					
Item	Page #	Date	Issue Description	Solution Description	Rev.
12	P.84	9/18	Modify charger OTG pin source net-name for AC PROCHOT# circuit study	PR746 pin 1 netname change from HW_ACAVIN_NB to AC_DISC#	X01
13	P.82	9/19	Power path solution back to Gen10	1. PR25,PC4,PQ1,PR51,PR10,PQ5,PR17,PR15,PR19,PR814,PR802,PC802,PR820,PR808,PQ806,PR868,PR813,PQ805 change to pop 2. PR50, PR867 change to depop	X01
14	P.84	9/19	Charger ISL9538C DCIN & VSYS pin for vendor request	1. PC745 change to 2.2uF_0402_25V 2. Add PC790 2.2U_0402_25V	X01
15	P.84 P.85 P.86 P.87 P.93 P.94 P.95	9/23	Downsize MLCC for RF part	Change from 100P_50V_0402 to 100P_50V_0201 PC133,PC134,PC135,PC137,PC138,PC139,PC140,PC224,PC225,PC303,PC409,PC756,PC1301,PC1347,PC1413,PC1414,PC1415,PC1420,PC1526,PC1600	X01
16	P.86 P.87 P.89 P.94 P.95	9/25	Snubber R change from 1/2W to 1/4W for sourcer cost down plan	PR202 , PR303 , PR669, PR1402, PR1601 change from 1/2W 4.7 +-5% 1206 to 1/4W 4.7 +-5% 1206	X01
17	P.96	10/04	Modify PG Alert Detection protect circuit	Change PR3003 from 120K_0402_1% to 165K_0402_1% for comparator reference voltage V(-) 1.5V	X01
18	P.88	10/04	CPU VR PROCHOT# pin series R value for follow intel PDG	PR678 change from 0_0402_5% to 100_0402_1%	X01
19	P.88	10/07	CPU VR controller tune value	1. PC626 change to 0.047uF for U42 IA Cn 2. PC646 change to 0.047uF for GT Cn 3. PC647 change to 680p for GT Slew rate 4. PR649 change to 2k for SA LoadLine 5. PR613 chagne to 28.7K for U22 IA IMON 6. PR623 change to 2K for U22 IA Slew rate 7. PC621 change to 1nF for U22 IA Slew rate 8. PC624 change to 0.022u for U22 IA Cn 9. PC1091 & PC1094 add U42@ config for U22 IA decoupling	X01
20	P.84	10/15	Modify Charger ISL9538C VSYS pin cap for vendor request	Un-stuff PC745	X01
21	P.93	10/17	GPU MOS change for improve GPU thermal	PQ1300, PQ1301 change from AOE6936 to AOE6930	X01
22	P.84 P.85 P.86 P.87	10/17	MLCC change to depop for RF request	PC728,PC729,PC730,PC731,PC732,PC733,PC734,PC735,PC756,PC135,PC136,PC142,PC143,PC100,PC103,PC131,PC133,PC134,PC115,PC116,PC132,PC140,PC141,PC202.PC203,PC224,PC225,PC409 change to depop for RF request	X01
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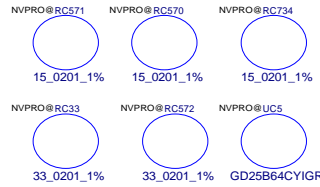
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UC5 ROM SPI_CLK,SPI_IO[0:1],SPI_IO[2:3]



TPM SPI_CLK,SPI_IO[0:1]



LAN Clarkvillie



EC SHD_CLK,SHD_IO[0:1],SHD_IO[2:3]



EC Chip



PCH ROM SPI_CLK,SPI_IO[0:1],SPI_IO[2:3]



FOR UN7 SATA REPEATER BOM OPTION

VENDER	Part Number(R1)	(HDD_B_EQ, DEW2, HDD_A_PRE, HDD_B_PRE)	H: RN12 L: RN13	H: RN14 L: RN15	H: RN6 L: RN7	H: RN8 L: RN9	FOR SATA X76
Pericom	PI3EQX6741ST SA00004H100	(L, NC, L, L)	SATAPERI@ UN7 PI3EQX6741STZDEX TQFN	SATAPERI@ RN13 4.7K_0402_5%	SATAPERI@ RN7 4.7K_0402_5%	SATAPERI@ RN9 4.7K_0402_5%	
TI	SN75LVCP601 SA00003ZX00	(NC, NC, H, H)	SATATI@ UN7 SN75LVCP601RTJR QFN20		SATATI@ RN6 4.7K_0402_5%	SATATI@ RN8 4.7K_0402_5%	
Parade	PS8527C SA00007JU10	(L, L, NC, NC)	SATAPARA@ UN7 PS8527CTQFN20GTR2-A2 TQFN	SATAPARA@ RN13 4.7K_0402_5%	SATAPARA@ RN15 4.7K_0402_5%		

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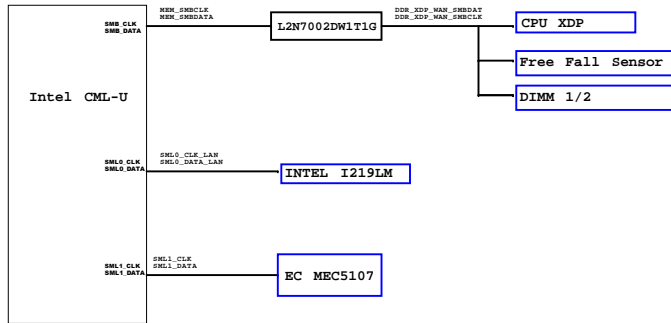
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SMBUS Block Diagram



PROCHOT# Topology

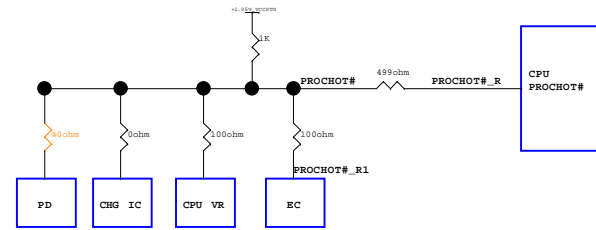


Figure 228. SPI0 3-Load(2 Flash and 1 TPM) EC G3 Flash Sharing with Wire-OR Topology

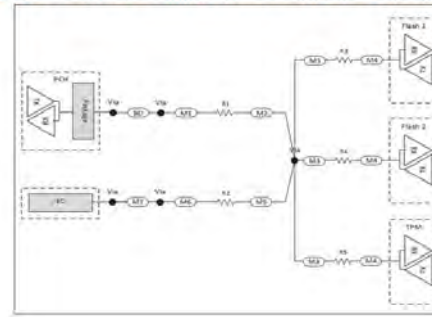


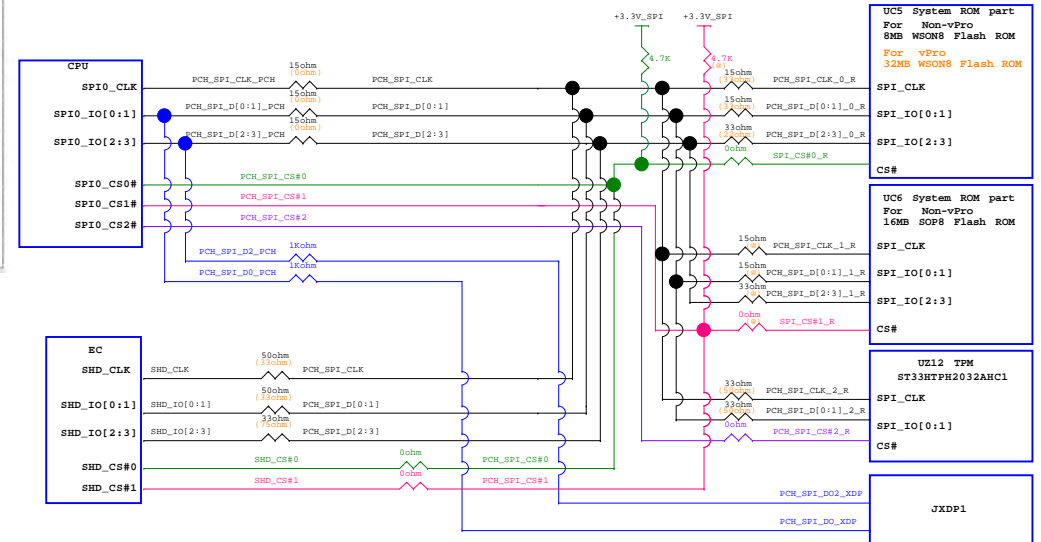
Table 222. SPI0 3-Load(2 Flash and 1 TPM) EC G3 Flash Sharing with Wire-OR Topology Routing Guidelines

Segment	Time Type	Reference	Via Count	Max Length, mm
SPI0_CLK	MSD	VSD	1	12.7
SPI0_IO[0:1]	MSD	VSD	1	12.7
SPI0_IO[2:3]	MSD	VSD	1	12.7
SPI0_CS#0	MSD	VSD	1	12.7
SPI0_CS#1	MSD	VSD	1	12.7
SPI0_CS#2	MSD	VSD	1	12.7

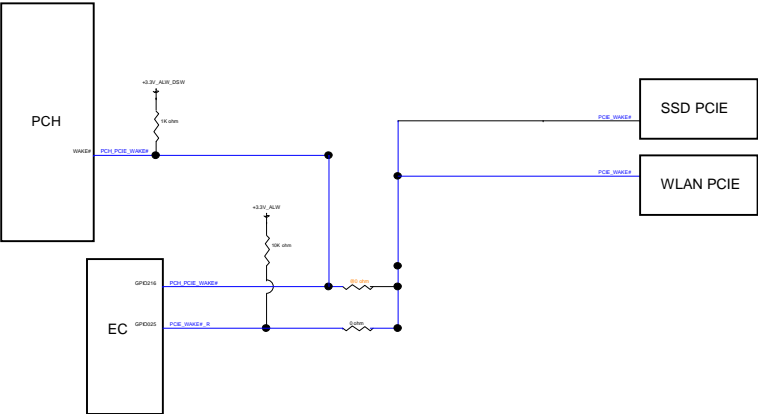
Segment	Time Type	Reference	Via Count	Max Length, mm
SPI0_CLK	MSD	VSD	1	12.7
SPI0_IO[0:1]	MSD	VSD	1	12.7
SPI0_IO[2:3]	MSD	VSD	1	12.7
SPI0_CS#0	MSD	VSD	1	12.7
SPI0_CS#1	MSD	VSD	1	12.7
SPI0_CS#2	MSD	VSD	1	12.7

- Notes:
1. If number of vias can be allowed.
 2. Consideration should be given to the following:
 3. Design guidelines support 20MHz, 30MHz, 50MHz.
 4. EC and PCH (Flash) recommendation: Data between M0, M1 and M2+M3 shall not exceed 12.7 inch (0.5 inch).
 5. R1 resistor should be placed with 15 ohm for 5.0V and 33 ohm for 1.8V. To be placed on SPI0_CLK, SPI0_IO[0:1], SPI0_IO[2:3] and SPI0_CS#0, SPI0_CS#1, SPI0_CS#2.
 6. R2 resistor should be placed with 15 ohm for 5.0V and 33 ohm for 1.8V. To be placed on SPI0_CLK, SPI0_IO[0:1], SPI0_IO[2:3] and SPI0_CS#0, SPI0_CS#1, SPI0_CS#2.
 7. R3 resistor should be placed with 15 ohm for 5.0V and 33 ohm for 1.8V. To be placed on SPI0_CLK, SPI0_IO[0:1], SPI0_IO[2:3] and SPI0_CS#0, SPI0_CS#1, SPI0_CS#2.
 8. R4 resistor should be placed with 15 ohm for 5.0V and 33 ohm for 1.8V. To be placed on SPI0_CLK, SPI0_IO[0:1], SPI0_IO[2:3] and SPI0_CS#0, SPI0_CS#1, SPI0_CS#2.
 9. R5 resistor should be placed with 15 ohm for 5.0V and 33 ohm for 1.8V. To be placed on SPI0_CLK, SPI0_IO[0:1], SPI0_IO[2:3] and SPI0_CS#0, SPI0_CS#1, SPI0_CS#2.
 10. R6 resistor should be placed with 15 ohm for 5.0V and 33 ohm for 1.8V. To be placed on SPI0_CLK, SPI0_IO[0:1], SPI0_IO[2:3] and SPI0_CS#0, SPI0_CS#1, SPI0_CS#2.
 11. R7 resistor should be placed with 15 ohm for 5.0V and 33 ohm for 1.8V. To be placed on SPI0_CLK, SPI0_IO[0:1], SPI0_IO[2:3] and SPI0_CS#0, SPI0_CS#1, SPI0_CS#2.
 12. R8 resistor should be placed with 15 ohm for 5.0V and 33 ohm for 1.8V. To be placed on SPI0_CLK, SPI0_IO[0:1], SPI0_IO[2:3] and SPI0_CS#0, SPI0_CS#1, SPI0_CS#2.
 13. R9 resistor should be placed with 15 ohm for 5.0V and 33 ohm for 1.8V. To be placed on SPI0_CLK, SPI0_IO[0:1], SPI0_IO[2:3] and SPI0_CS#0, SPI0_CS#1, SPI0_CS#2.
 14. Minimum length for M0, M1 and M2: 2.54mm.
 15. Minimum length for M2, M3 and M4: 2.54mm.
 16. Length matching between CLK and DATA/CS# signals: 2.54mm.
 17. Track spacing between DATA and DATA signals: 0.254mm.
 18. Track spacing between CLK and DATA/CS# signals: 0.254mm.

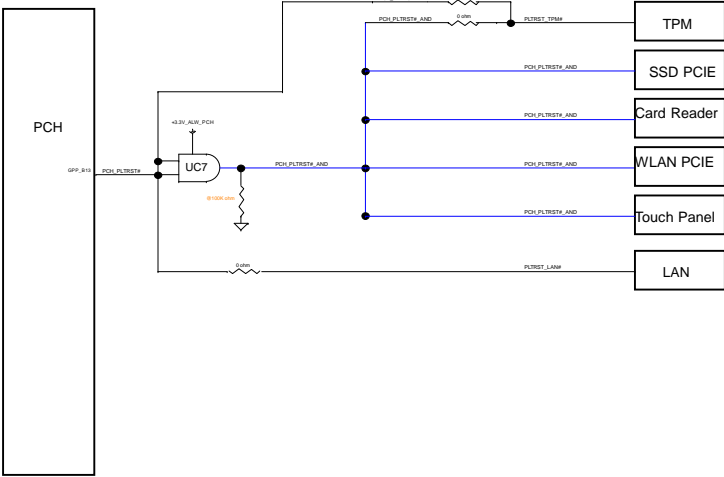
EC G3 SPI Flash Sharing with Wire-OR Non-Vpro / Vpro Topology



PCH_PCIE_WAKE# Topology




PCH_PLTRST# Topology



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Version Change List (P. I. R. List)									
Item Page#		Date	Issue Description	Solution Description	Rev.				
1	42, 44, 58	2019/6/17	Add TBT reset AND gate circuit according to Dell release the latest version of the CML-TR-TB-2P_Ref file(Only TR)	Add location UT35,RT102~RT105 Change location RT110(0_0402_5%) to pop from depop. Change RT110 pin2 net TBT_RESET_N_EC to TBT_RESET_N_PD. Change RE95 100K_0402_5% pull down to depop from pop. Change UT1 pin E5 net TBT_RESET_N_EC to TBT_RESET#_AND.	0.1				
2	58	2019/7/1	Modified according to X11 GPIO MAP rev0.4 20190628	Delete EC side GPIO217 net LAN_WAKE#. Change net EPRIVACY_EN to GPIO217 from GPIO214. Delete GPIO067 net ENABLE_DS#_1P8. Delete location RE549,RE550 100K_0402_5% pull up / pull down.	0.1				
3	58,52	2019/7/8	1.Modified according to X11 GPIO MAP rev0.5 20190705	1.Change net EPRIVACY_EN to GPIO051 from GPIO217. Change net TBT_RESET_N_EC to GPIO217 from GPIO051. Delete net WWAN_WAKE#,WWAN_WAKE#_D. Delete location RZ132,RZ133,QC8. Change net CNV_DET#_EC to GPIO110 from GPIO054.	0.1				
4	52,9	2019/7/8	Add study only 7560 eSIM circuit	Add location JESM1,CZ74. Delete reserved location RZ76,RZ77. Delete net ISH_I2C2_SDA,ISH_I2C2_SCL,ISH_I2C2_SDA_R,ISH_I2C2_SCL_R. Delete location RC363,RC362 ISH_I2C2_SDA,ISH_I2C2_SCL pull up 1K_0402_5%. Add net +ESIM_PWR,ESIM_RESET,ESIM_CLK,ESIM_DATA,ESIM_DET.	0.1				
5	78	2019/7/15	Add +1.8V_PRIM discharge circuit to meet Intel tPCH35 timing	Add location QZ10,RZ121,RZ122.	0.1				
6	6	2019/7/17	Modified according to X11 GPIO MAP rev0.5 20190705	Change net name A4WP_PRESENT to A4WP_PRESENT_1P8.	0.1				
7	8	2019/7/17	1.Modified according to X11 GPIO MAP rev0.5 20190705 2.Add VIA part for VIA for Auto TLCT.	1.Change RTC_DET# offpage to input from output. Delete GPP_A8 net GPP_A8 and reserved location RC849 8.2K_0402_5% pull up. 2.Add location VIA1~VIA5 on PCH_SPI_CLK,PCH_SPI_D[0..3] net.	0.1				
8	14,9, 52,58	2019/7/29	Add reserved PCH control Bluetooth GPIO solution	Add location RE581,RE582 100K_0402_5%,BOM Structure change to TWOROM@,ONEROM@. Add GPIO067 net ONE_ROM_DET#_1P8. Change net name RESET_OUT to RESET_OUT#.	0.1				
9	14	2019/09/16	Modified PCH_BT_RADIO_DIS# pull up power rail to correct	Modified location RC510 pull up power rail to +3.3V_ALW_PCH from +3.3V_ALW.	0.2				
10	52	2019/09/16	Modified BT_RADIO_DIS# circuit	Delete reserved location RZ301 0_0402_5%. Add reserved location RZ302 pull up 100K_0402_5% to +3.3V_WLAN on EC_BT_RADIO_DIS# net. Moved DZ2 to between PCH_BT_RADIO_DIS# and BT_RADIO_DIS# from BT_RADIO_DIS# and BT_RADIO_DIS#_R. Delete net BT_RADIO_DIS#_R. Change JNGFF1 pin 54 net to BT_RADIO_DIS# from BT_RADIO_DIS#_R.	0.2				
11	38	2019/09/18	1.Add reserved LCDVDD enable RC delay circuit 2.Modified according to RF team request(Only 15UU NTR)	1.Add location RV180 0_0402_5%. Add reserved location CV80 1U_0402_6.3V6K. Add net LCD_PWR_EN_R. 2.Add reserved location CA90 18P_0402_50V8J on DMIC0.	0.2				
12	38,9	2019/09/26	Add reserved Touch reset circuit	Add location RZ310 0_0402_5%. Add reserved location RZ311 0_0402_5%. Add net TS_RST#_R on JIRTS1 pin1. Add net TS_RST# on PCH GPP_D13.	0.2				
13	51	2019/10/05	1.Modified according to LAN schematic checklist(544506-intel-ethernet-connection-i219-design-checklist-rev1-2) 2.Modified part symbol to reasonable	1. Add location CL280 1U_0201_6.3V6M on +3.3V_LAN_OUT. Change location CL4 to 22U_0603_6.3V6M from 10U_0603_10V6M and change to pop from depop.	0.2				
14	52	2019/10/05	Modified BT_RADIO_DIS# circuit	Add reserved location DZ16 between on EC_BT_RADIO_DIS# and BT_RADIO_DIS#.	0.2				
15	66	2019/11/18	Fix leakage issue	USH schematic add DZ17 and remove RZ1411 SD028000080 (S RES 1/16W 0 +-5% 0402)	0.3				
16	8	2019/11/22	Modify touchscreen schematic	Change location JUC5 and JUC6 footprint to ACES_509500084N00_8P-S from ACES_509500084N00_8P-T	0.3				
17	18,40 52,66	2020/1/20	Modify Co-lay part to -NPM	Change location LC1,LV3,LV6,LV9,LV12,RI47,RI48,RZ1411 footprint to -NPM	1.0				
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					 Compal Electronics, Inc. Title EE P.I.R Size LA-J371P Date: Monday, March 16, 2020 Sheet 107 of 107				
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