

PY-Note Block Diagram

Project Code: DP710
PCB(Raw Card): 1.0

PCB Layer Stackup

- L1:TOP
- L2:GND
- L3:Signal
- L4:PWR
- L5:Signal
- L6:Signal
- L7:GND
- L8:Signal
- L9:GND
- L10:BOTTOM

Battery Charger
BQ24780SRUYR 88

INPUTS	OUTPUTS
DOCK_PWR20	M-BAT-PWR

System DC/DC
TPS51285BRUKR 90

VINT20	VCC5M
VCC5M	VCC3M

CPU DC/DC
M: NCP81205MNTXG 91
S: NCP81382MNTXG 92, 93, 94

VINT20	VCCPCUCORE
VCCPCUCORE	VCCGFXCORE
VCCGFXCORE	VCCSA

VCCCPUIO
NB681GD-C623-Z 95

VCC5M	VCCCPUIO
-------	----------

VCCIR0_SUS
TPS51362RVER 96

VCC5M	VCCIR0_SUS
-------	------------

VCCIR2A/VCC0R6B +SMDDR_VREF_DIMM
TPS51716RUKR 99

VINT20	+SMDDR_VREF_DIMM
VCC0R6B	VCCIR2A

VCCIR8B
BD9B300MUV-E2 98

VCC5M	VCCIR8B
-------	---------

VCC2R5A
BD91364AMUU-ZE2 100

VCC5M	VCC2R5A
-------	---------

VCCOPC/VCC0EPIO(44e)
NB681GD-C623-Z 101
NB681GD-C623-Z 103

VCC5M	VCCOPC
VCC5M	VCC0EPIO

VCCGTX (44e)
NCP81210MNTXG 102

VINT20	VCCGTX
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TABLE: SYSTEM POWER STATE

Power state to be determined

EC SMBus0 address

Device	Address
Smart Battery	0001 011X b

EC SMBus1 address

Device	Address
G-Senor (LIS3DH)	0011 000Xb
G-Senor (KX023)	0011 110Xb

EC SMBus2 address

Device	Address
Charge Controller	0001 0010

EC SMBus10 address

Device	Address
Master VGA	0x9E

PCH SM Bus address

Device	Address
CH-A P DDR DIMM0	1001 0000b
CH-A S DDR DIMM1	1001 0001b
CH-B P DDR DIMM2	1001 0010b
CH-B S DDR DIMM3	1001 0011b

PCH SM Bus0 address

Device	Address
Intel Lan_I219	0XC8

Schematics Mark Definition

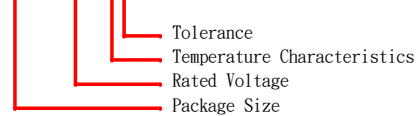
BOM Structure	4+2 CPU	4+4e CPU	Note
@	NO ASM	NO ASM	
EMC@	ASM	ASM	EMC
RF@	ASM	ASM	RF
ME@	ASM	ASM	ME
PRxxx, PCxxx, PLxxx	ASM	ASM	Power
42@	ASM	NO ASM	4+2 CPU
44e@	NO ASM	ASM	4+4e CPU

Any other mark like below is prohibited on Payton/Walter.
 ESD@, EMI@, EMC_NS@, EMC_PX@, EMC_OPT@, CONN@,
 CONN_NS@... RH, CH, LH(PCH related RLC)..

Capacitor Naming Note

Ceramic Capacitors:

0.1U_0402_6.3VXX



Temperature Characteristics:

Symbol	0	1	2	3	4	5	6	7	8	9	A
Code	Z5U	Z5V	Z5P	Y5U	Y5V	Y5P	X5R	X7R	NPO	COG	X6S

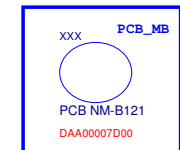
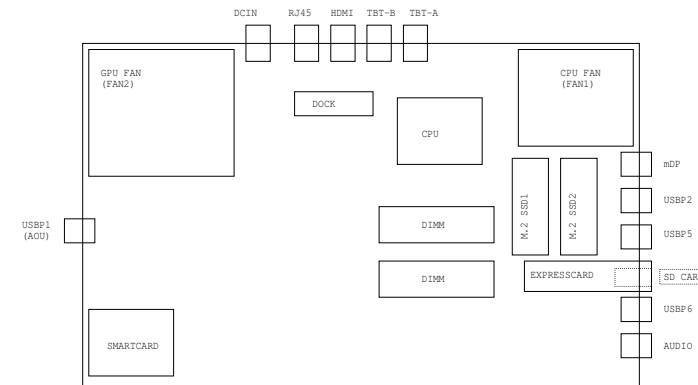
B	C	D	E	F	G	H	I	J	K	L
BJ	CH	CJ	CK	SH	SJ	UJ	UK	SL	X5S	NOJ

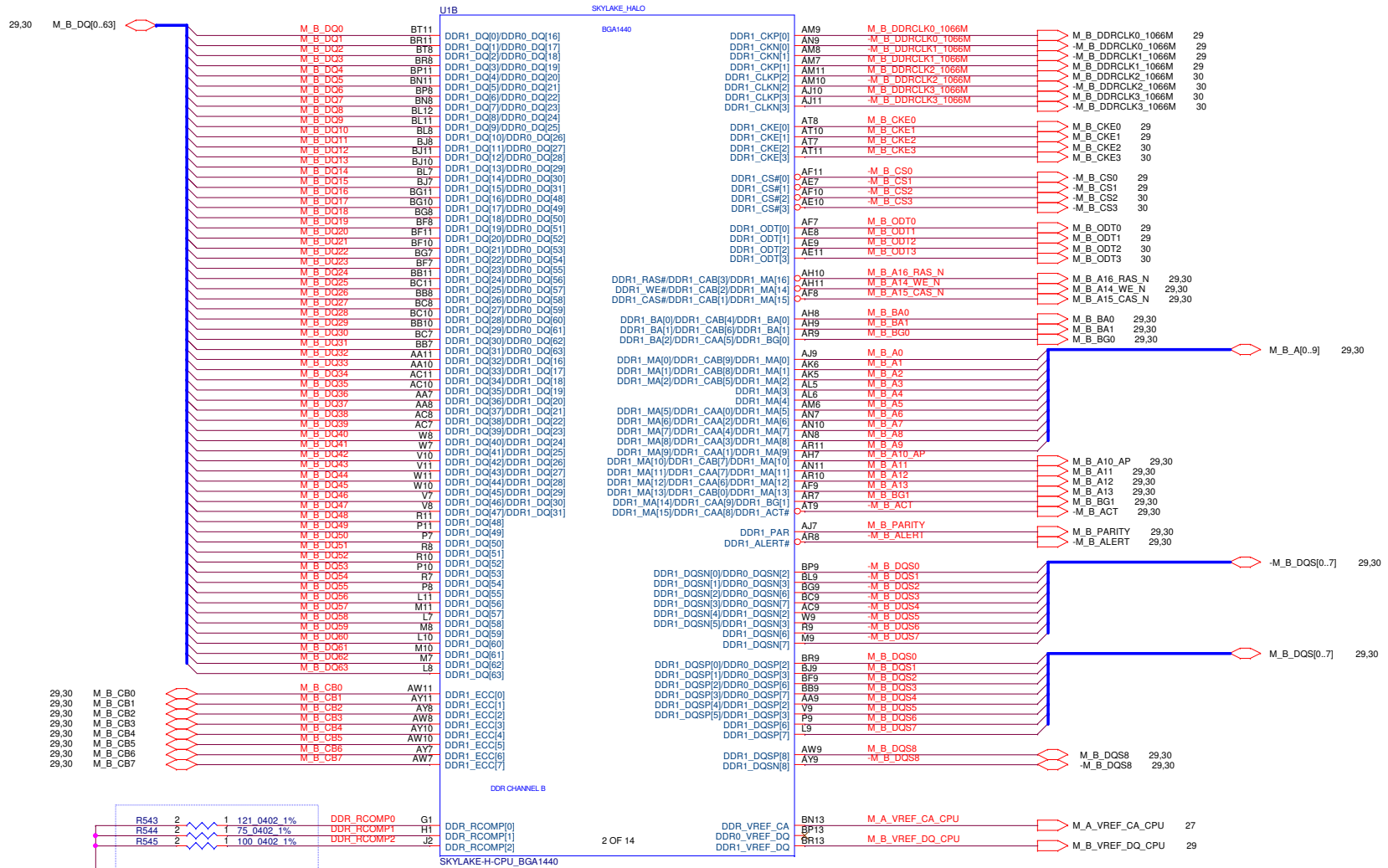
Tolerance:

Symbol	A	B	C	D	F	G	H	J	K	M	N
Tolerance	+/-0.05PF	+/-0.1PF	+/-0.25PF	+/-0.5PF	+/-1%	+/-2%	+/-3%	+/-5%	+/-10%	+/-20%	+/-30%

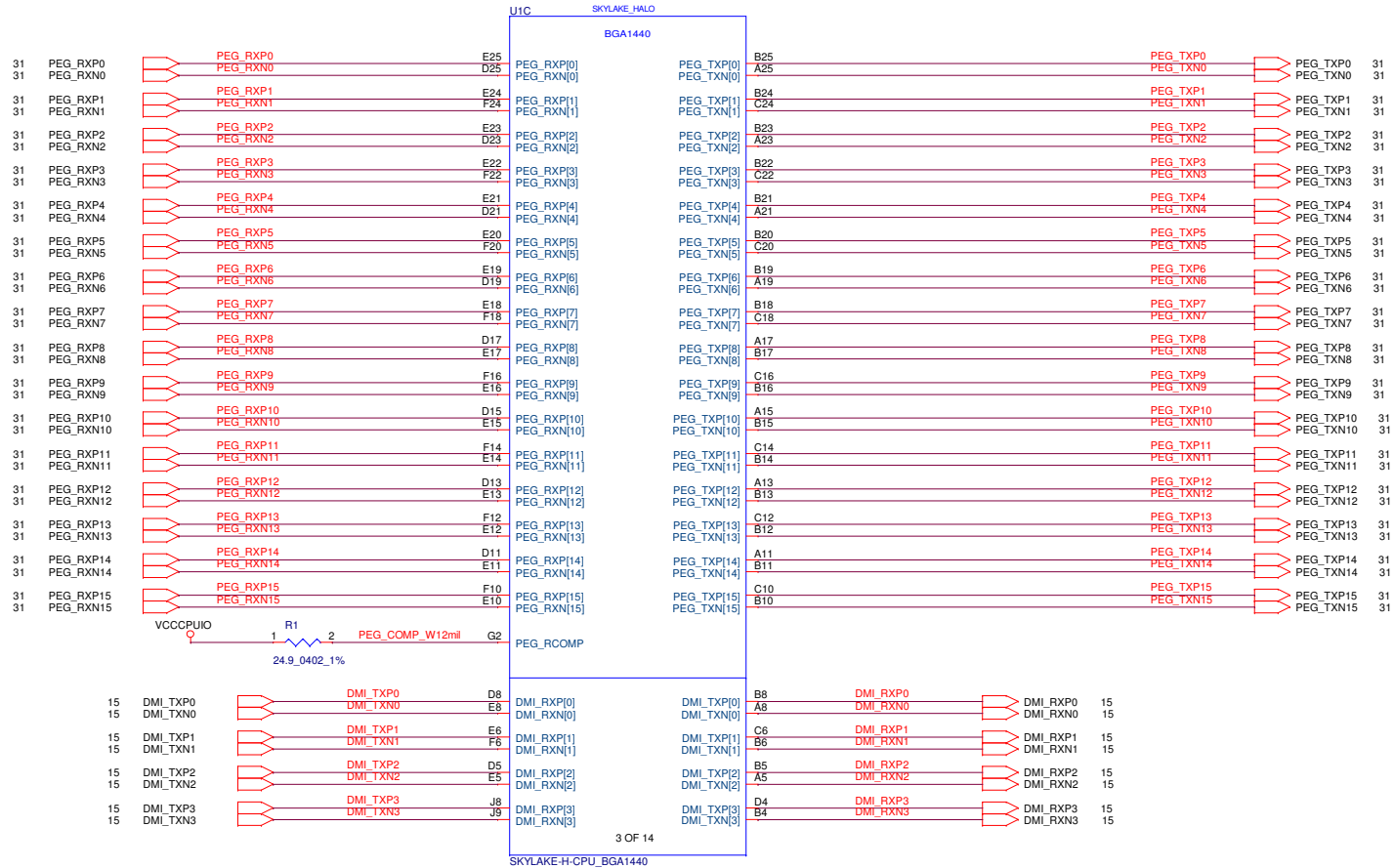
Symbol	P	Q	V	X	Z	S	Y
Tolerance	+100, -0%	+30, -10%	+20, -10%	+40, -20%	+80, -20%	+50, -20%	-30% ~ 10%

TABLE: SYSTEM COMPONENT PLACEMENT (AS OF 2014 Dec 8)



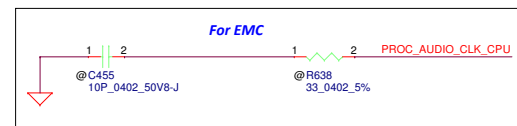
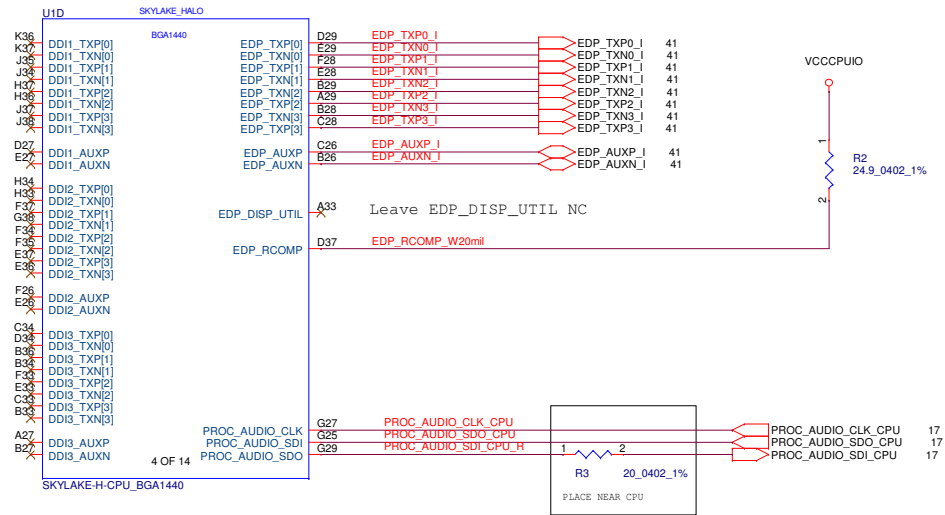


DDR_VREF_CA: Connected to VREF_CA on DIMM CH-A
 DDR0_VREF_DQ: NC
 DDR1_VREF_DQ: Connected to VREF_CA on DIMM CH-B

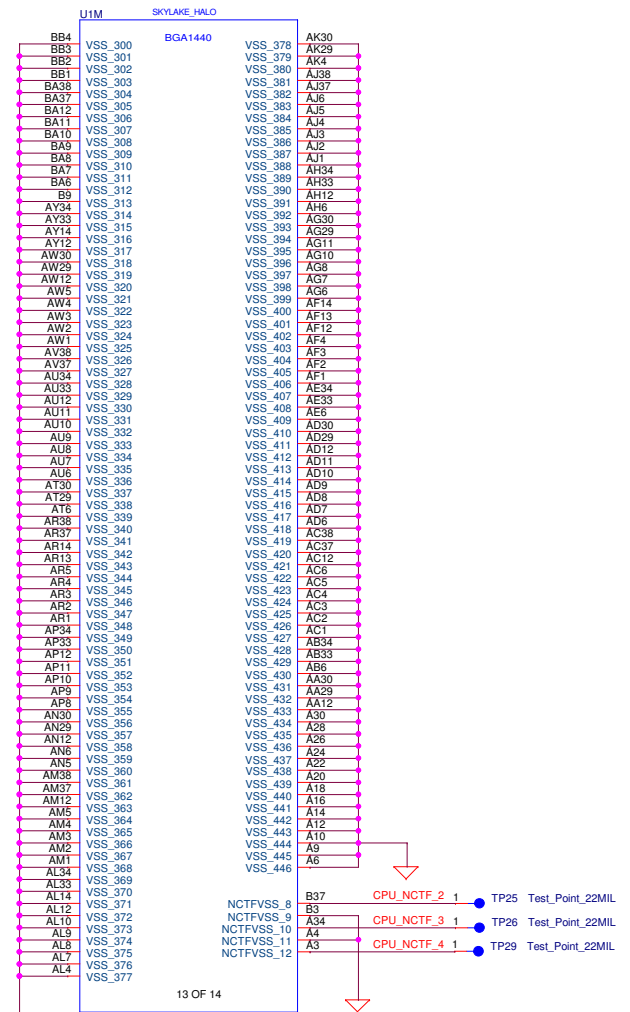
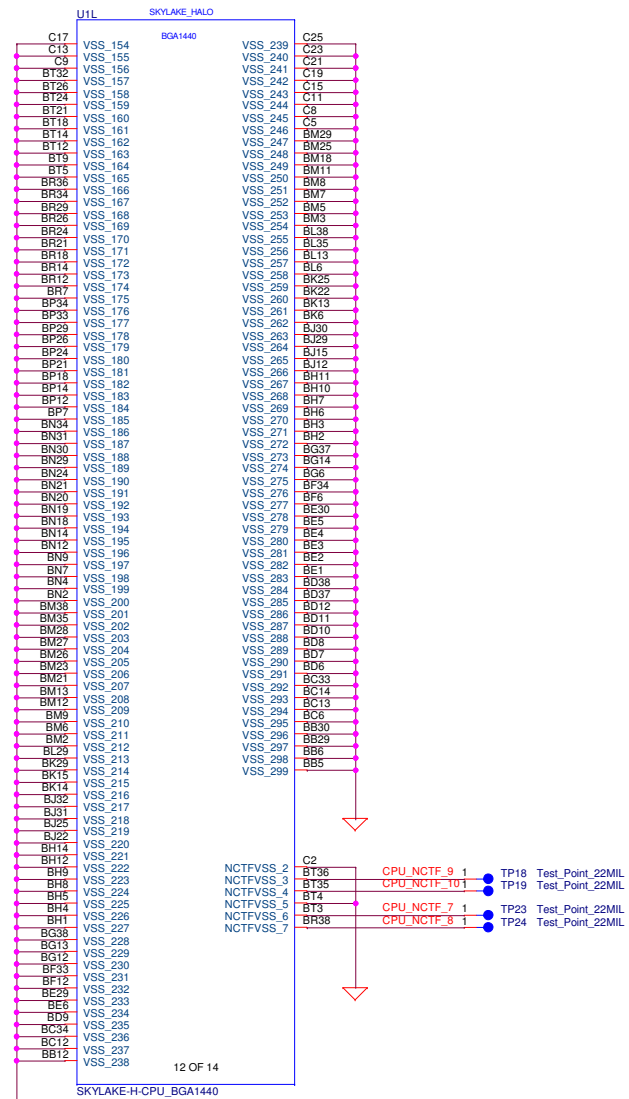
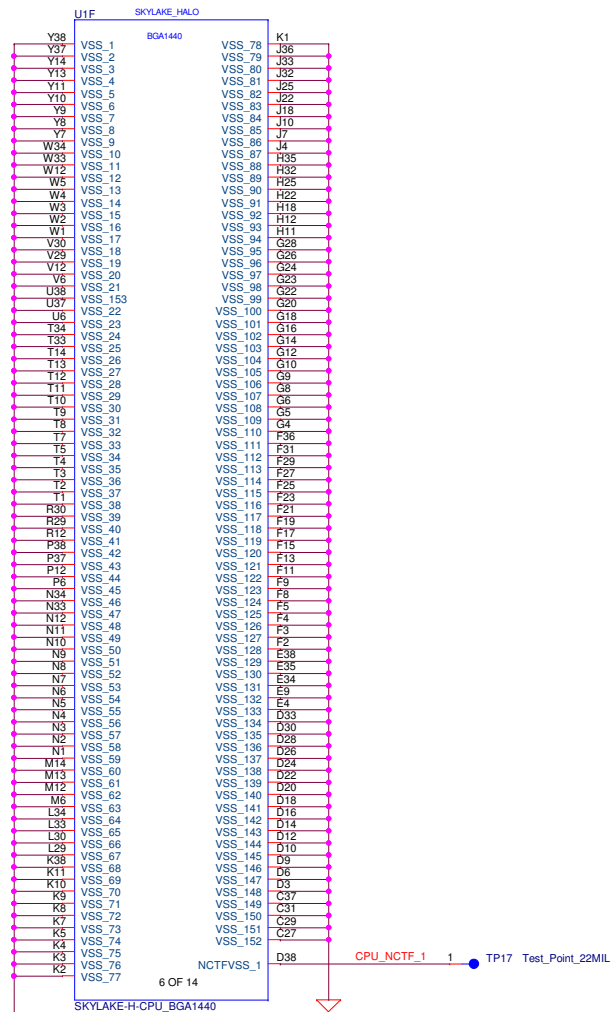


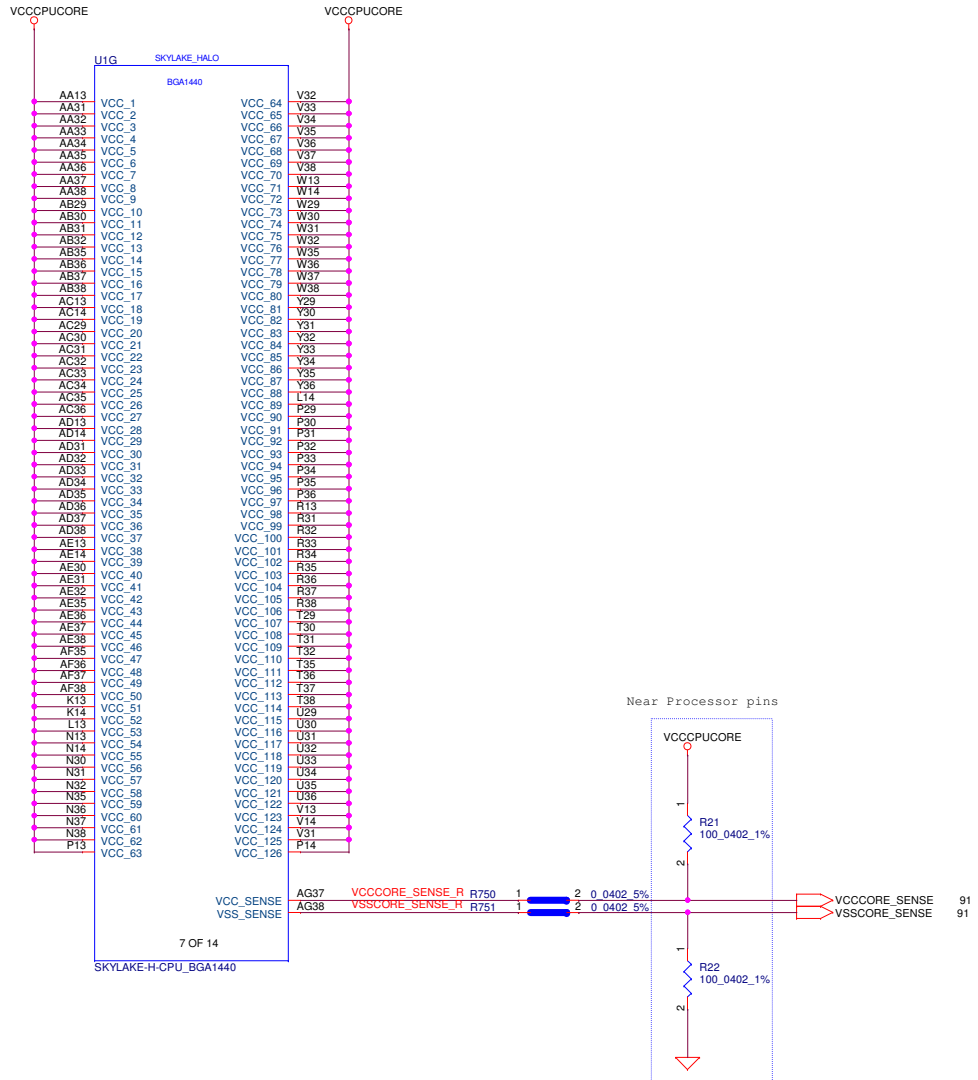
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Title		
CPU SKL-H : PEG/DMI		
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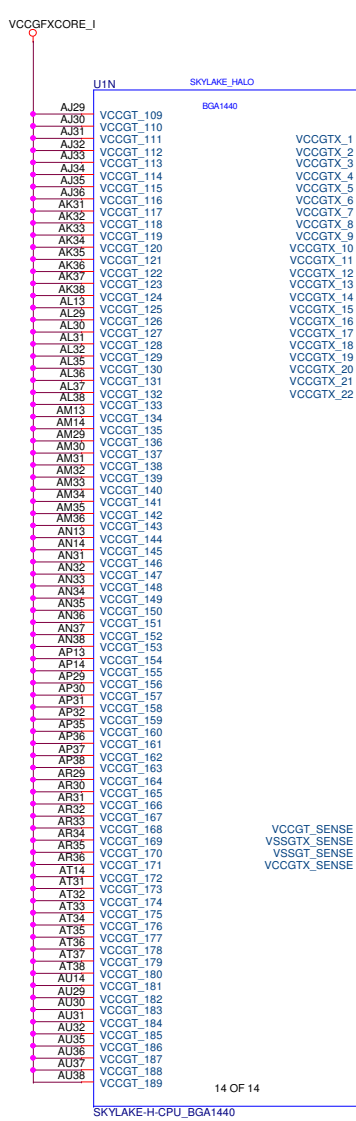
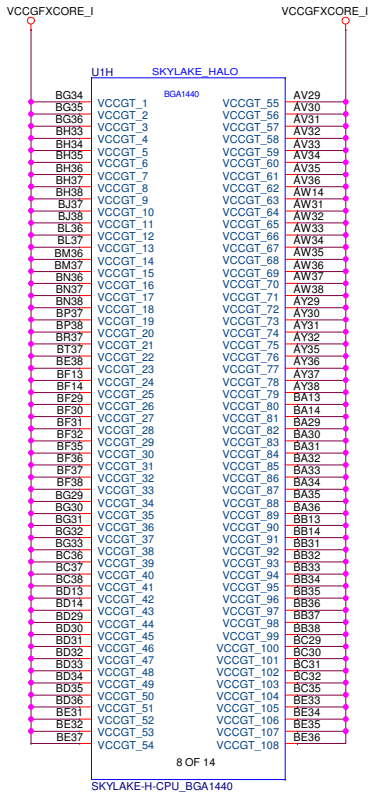




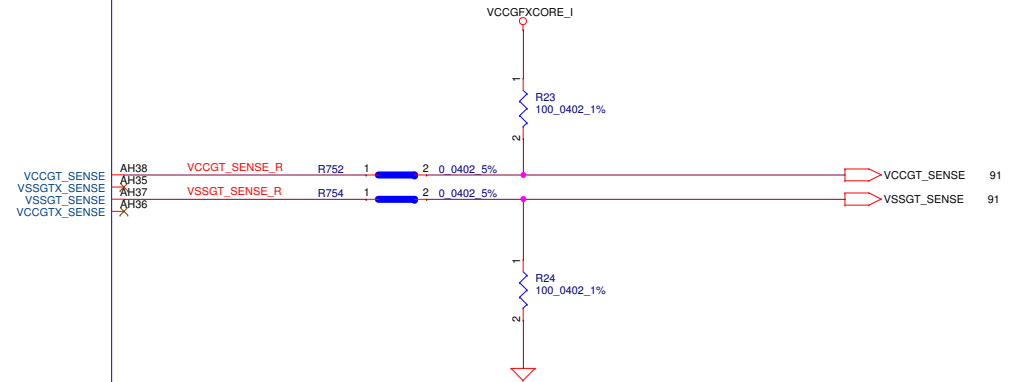
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Issued Date	2015/07/16	Deciphered Date	2016/01/16
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Title		CPU SKL-H : VCC	
Size	Document Number	Rev	
Custom	PAYTON	0.1	
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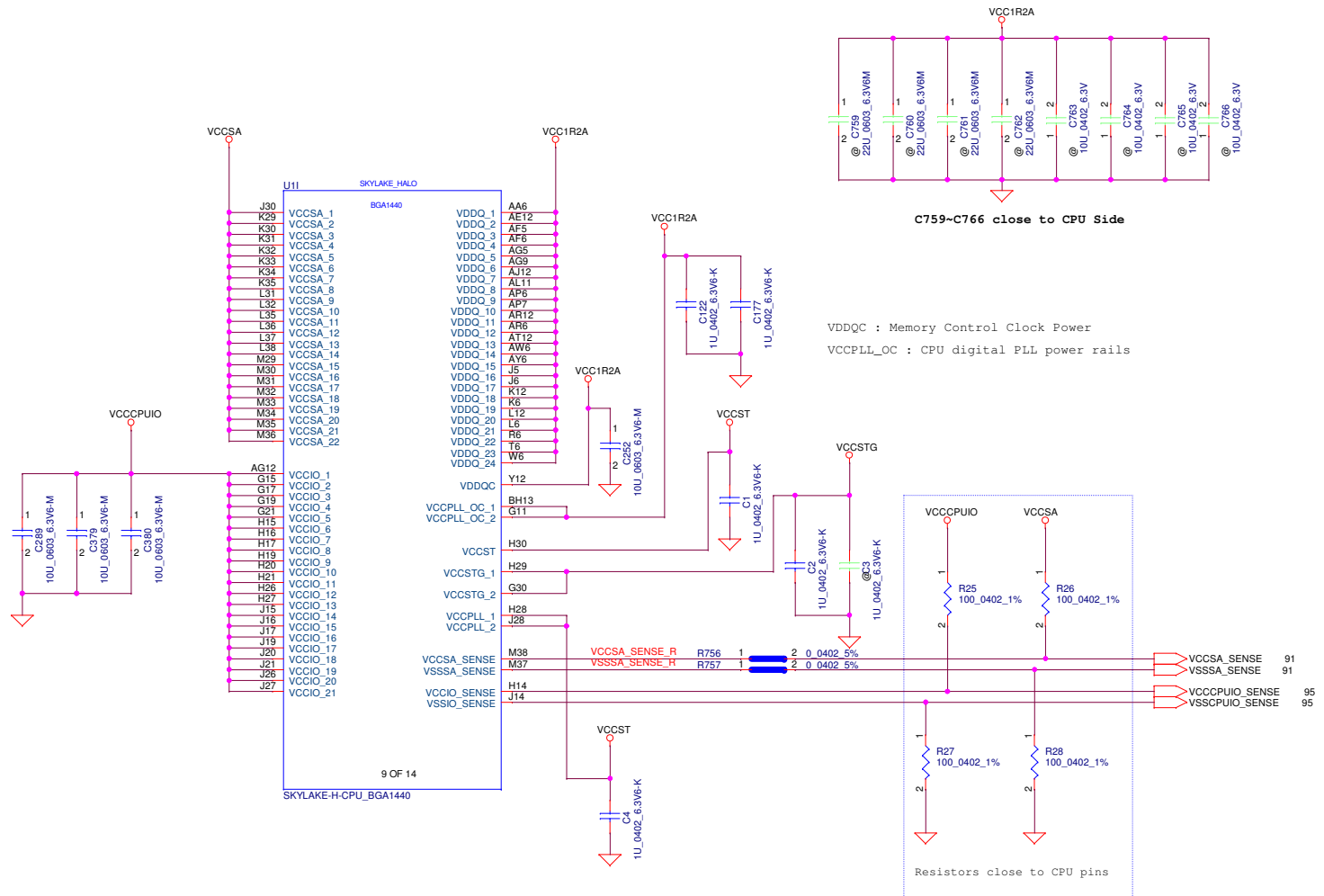




42: NC (NC by DCDC side)
44e: VCCGTX



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Rev 0.1


U1J SKYLAKE_HALO

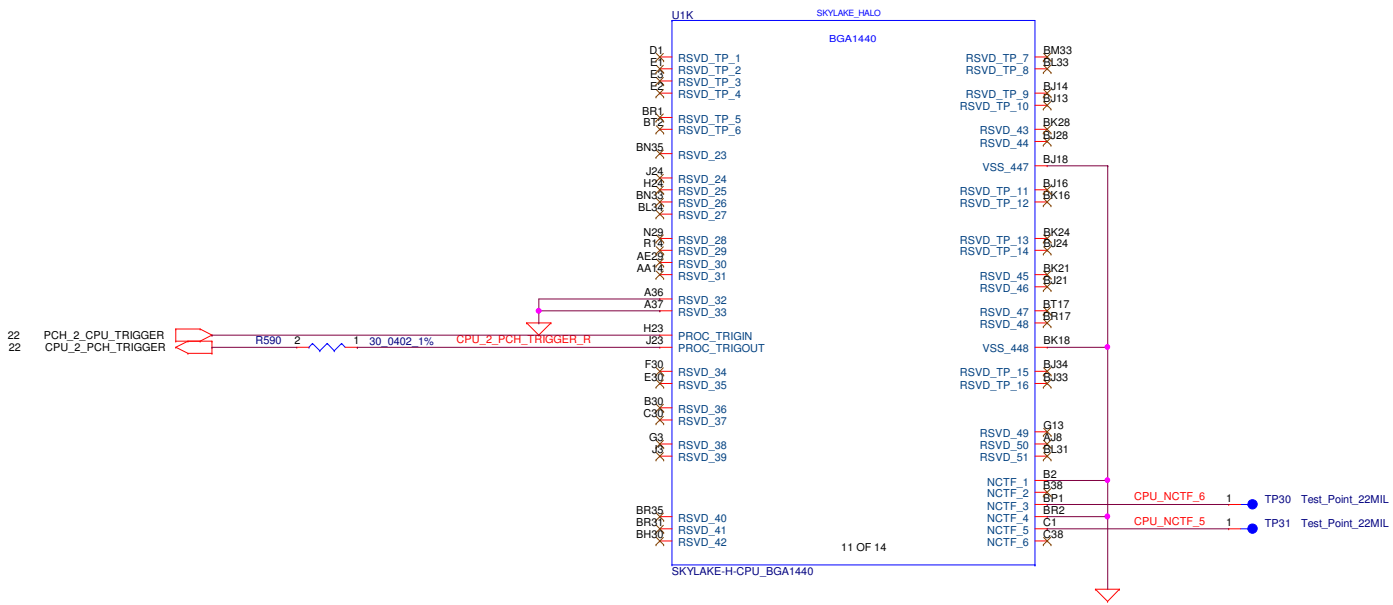
BGA1440

- BJ17 VCCOPC_1
- BJ19 VCCOPC_2
- BK17 VCCOPC_3
- BK19 VCCOPC_4
- BK23 VCCOPC_5
- BL16 VCCOPC_6
- BL17 VCCOPC_7
- BL18 VCCOPC_8
- BL19 VCCOPC_9
- BL23 VCCOPC_10
- BL21 VCCOPC_11
- BM17 VCCOPC_12
- BN17 VCCOPC_13
- BN18 VCCOPC_14
- BJ23 RSVD_1
- BJ26 RSVD_2
- BJ27 RSVD_3
- BK23 RSVD_4
- BK28 RSVD_4
- BK27 RSVD_5
- BL23 RSVD_6
- BL24 RSVD_7
- BL25 RSVD_8
- BL26 RSVD_9
- BL27 RSVD_10
- BL28 RSVD_11
- BM23 RSVD_12
- BM24 RSVD_13
- BL15 VCCOPC_SENSE
- BM16 VSSOPC_SENSE
- BL22 RSVD_14
- BM22 RSVD_15
- BP15 VCCEOPIO_1
- BR16 VCCEOPIO_2
- BT17 VCCEOPIO_3
- BP16 RSVD_16
- BR16 RSVD_17
- BT16 RSVD_18
- BN15 VCCEOPIO_SENSE
- BM16 VSSEPIO_SENSE
- BP17 RSVD_19
- BN16 RSVD_20
- BM14 VCC_OPC_1P8_1
- BL14 VCC_OPC_1P8_2
- BJ35 RSVD_21
- BJ36 RSVD_22
- AT13 ZVM#
- AW13 MSM#
- AU13 ZVM2#
- AY13 MSM2#
- BT29 OPC_RCOMP
- BR25 OPC_RCOMP
- BP25 OPC_RCOMP2

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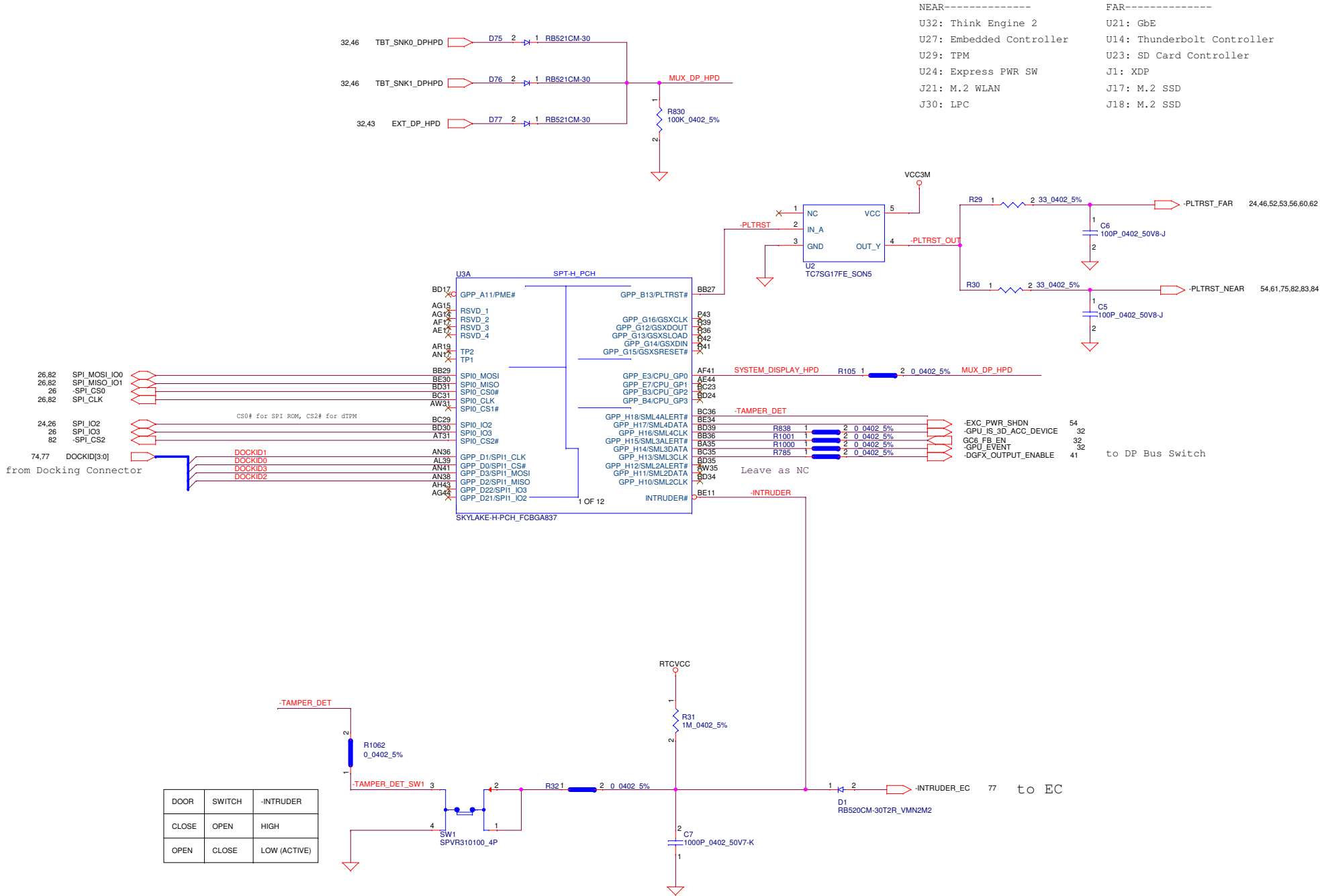
SKYLAKE-H-CPU_BGA1440

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Custom		0.1			





- NEAR----- FAR-----
- U32: Think Engine 2
 - U27: Embedded Controller
 - U29: TPM
 - U24: Express PWR SW
 - J21: M.2 WLAN
 - J30: LPC
 - U21: GbE
 - U14: Thunderbolt Controller
 - U23: SD Card Controller
 - J1: XDP
 - J17: M.2 SSD
 - J18: M.2 SSD

from Docking Connector

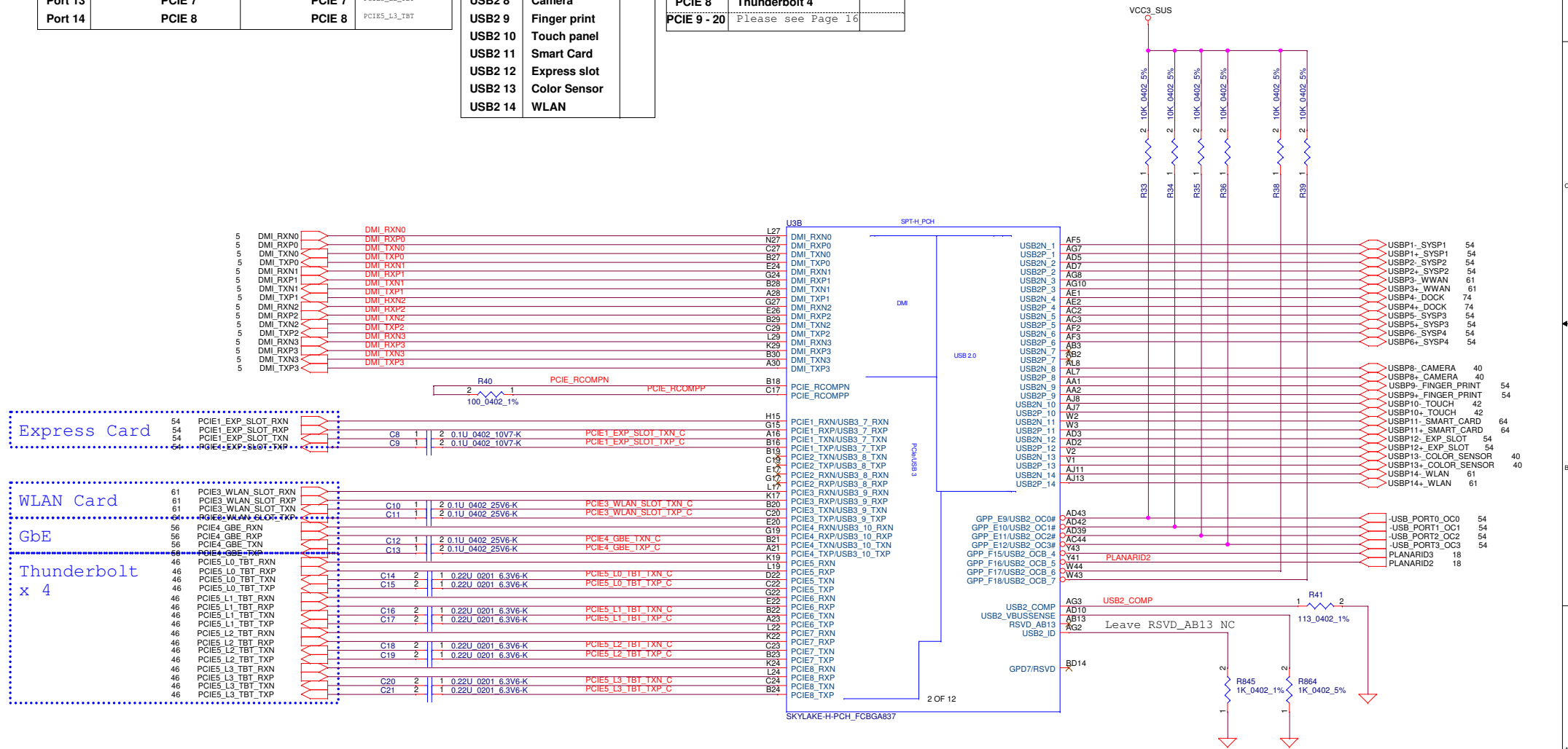
DOOR	SWITCH	-INTRUDER
CLOSE	OPEN	HIGH
OPEN	CLOSE	LOW (ACTIVE)

Flexible I/O Configuration (v0.51)			
I/O	High Speed Signals	Configuration	Net Name
Port 1 - 6		Please see Page 19	
Port 7	USB3 7 / PCIE 1	USB3 7 or PCIE 1	PCIE1_EXP_SLOT
Port 8	USB3 8 / PCIE 2	USB3 8	
Port 9	USB3 9 / PCIE 3	PCIE 3	PCIE3_WLAN_SLOT
Port 10	USB3 10 / PCIE 4 (GbE)	GbE	PCIE4_GBE
Port 11	PCIE 5 (GbE)	PCIE 5	PCIE5_L0_TBT
Port 12	PCIE 6	PCIE 6	PCIE5_L1_TBT
Port 13	PCIE 7	PCIE 7	PCIE5_L2_TBT
Port 14	PCIE 8	PCIE 8	PCIE5_L3_TBT

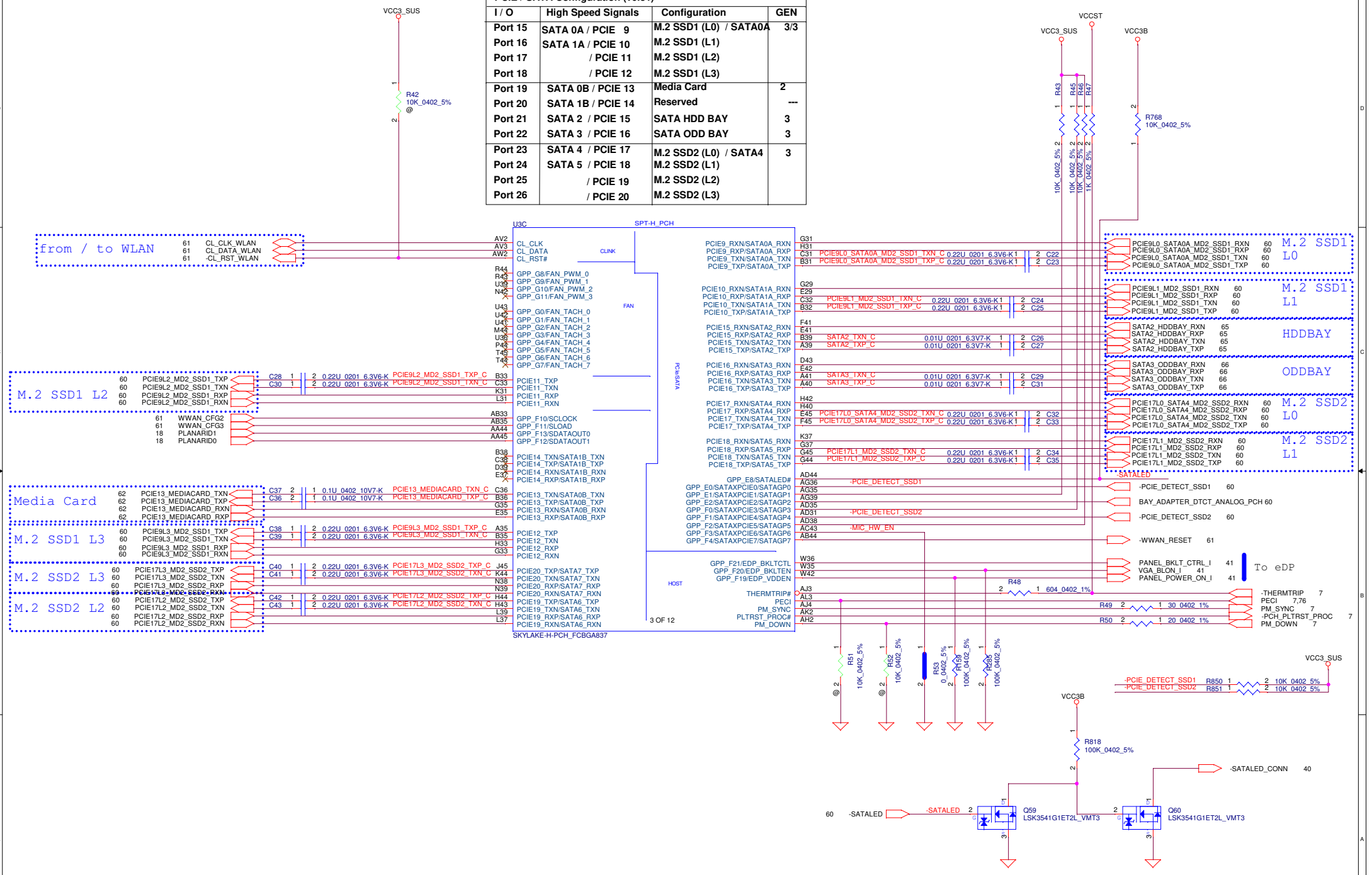
USB2.0 Configuration (v0.51)		
USB2 #	Assignment	OCx #
USB2 1	System Port 1	0
USB2 2	System Port 2	1
USB2 3	WWAN	
USB2 4	DOCK	
USB2 5	System Port 3	2
USB2 6	System Port 4	3
USB2 7	Reserved	
USB2 8	Camera	
USB2 9	Finger print	
USB2 10	Touch panel	
USB2 11	Smart Card	
USB2 12	Express slot	
USB2 13	Color Sensor	
USB2 14	WLAN	

PCIE Configuration (v0.51)		
PCIE #	High Speed Signals	GEN
PCIE 1	Express slot	2
PCIE 2		
PCIE 3	WLAN Card	2
PCIE 4	GbE	
PCIE 5	Thunderbolt 1	3
PCIE 6	Thunderbolt 2	
PCIE 7	Thunderbolt 3	
PCIE 8	Thunderbolt 4	
PCIE 9 - 20	Please see Page 16	

USB3.0 Configuration (v0.51)	
USB 3#	High Speed Signals
USB3 1 - 6	Please see Page 19
USB3 7	
USB3 8	
USB3 9	
USB3 10	



I / O	High Speed Signals	Configuration	GEN
Port 15	SATA 0A / PCIE 9	M.2 SSD1 (L0) / SATA0A	3/3
Port 16	SATA 1A / PCIE 10	M.2 SSD1 (L1)	
Port 17	/ PCIE 11	M.2 SSD1 (L2)	
Port 18	/ PCIE 12	M.2 SSD1 (L3)	
Port 19	SATA 0B / PCIE 13	Media Card	2
Port 20	SATA 1B / PCIE 14	Reserved	---
Port 21	SATA 2 / PCIE 15	SATA HDD BAY	3
Port 22	SATA 3 / PCIE 16	SATA ODD BAY	3
Port 23	SATA 4 / PCIE 17	M.2 SSD2 (L0) / SATA4	3
Port 24	SATA 5 / PCIE 18	M.2 SSD2 (L1)	
Port 25	/ PCIE 19	M.2 SSD2 (L2)	
Port 26	/ PCIE 20	M.2 SSD2 (L3)	



U3C	SPT-H PCH	GEN
AV2	CL_CLK	G31
AV3	CL_DATA	H31
AW2	CL_RST#	C31
		B31
		C22
		C23
		C24
		C25
		C26
		C27
		C29
		C31
		C32
		C33
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		C98
		C99
		C100

TABLE : Functional Strap

HDA_SDO	
Flash Descriptor Security Override	
HIGH	Disable Flash Descriptor Security (Override)
LOW	Enable Flash Descriptor Security (Default)

HDA_SDO is used to update the Descriptor and/or the ME regions of the SPI after MFG Done bit is set.

TABLE : Functional Strap

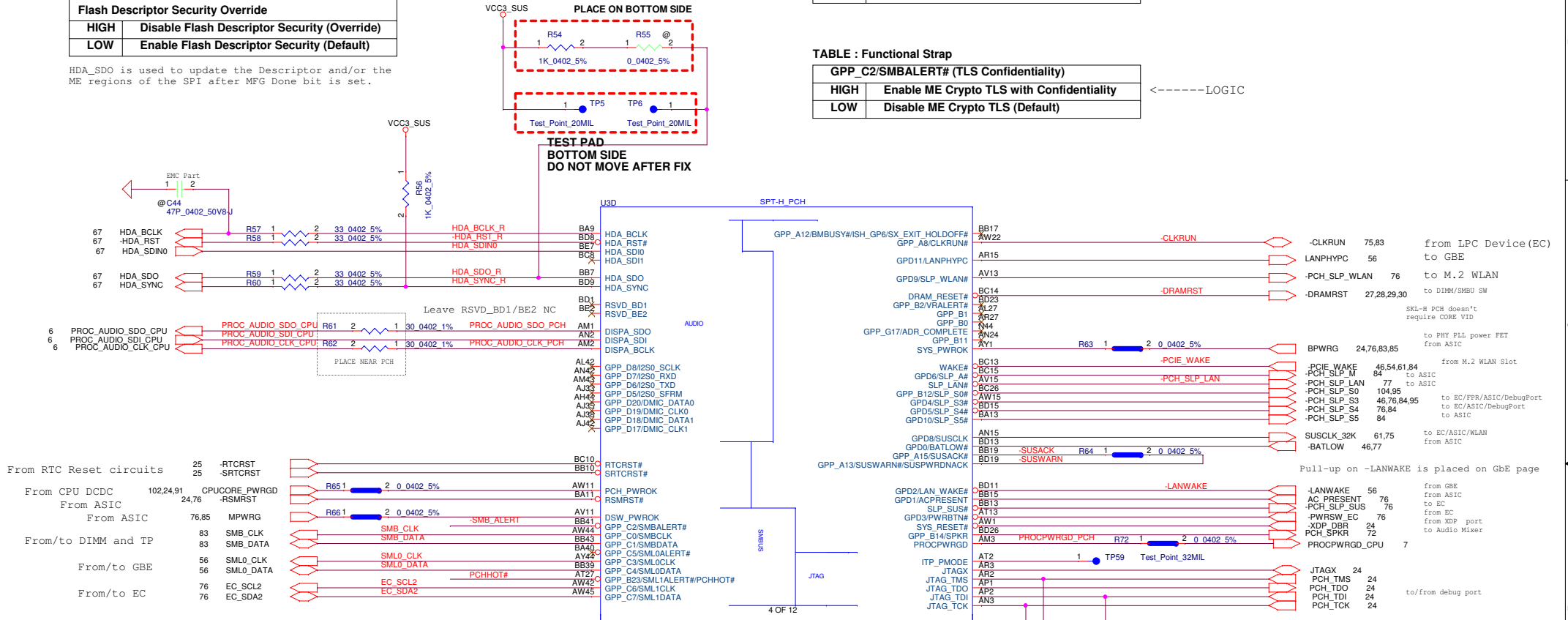
GPP_C5/SML0ALERT# (LPC or eSPI)	
HIGH	eSPI is selected
LOW	LPC is selected(Default)

<-----LOGIC

TABLE : Functional Strap

GPP_C2/SMBALERT# (TLS Confidentiality)	
HIGH	Enable ME Crypto TLS with Confidentiality
LOW	Disable ME Crypto TLS (Default)

<-----LOGIC



From RTC Reset circuits 25 -RTCRST
25 -SRTCST

From CPU DCDC 102,24,91 CPUCORE_PWRGD
24,76 -RSMRST

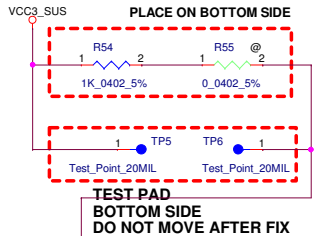
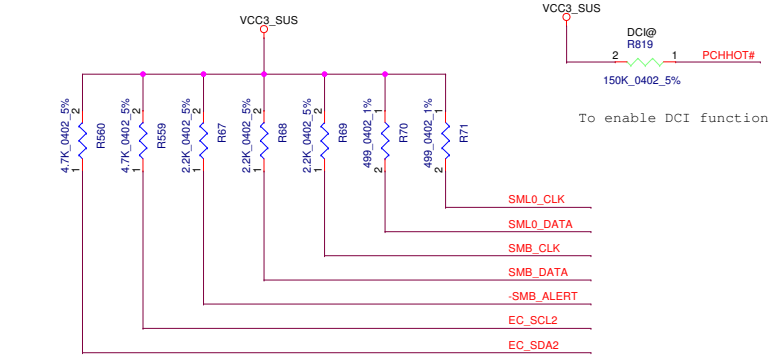
From ASIC 76,85 MPWRG

83 SMB_CLK
83 SMB_DATA

From/to DIMM and TP 56 SML0_CLK
56 SML0_DATA

From/to GBE 56 LANWAKE

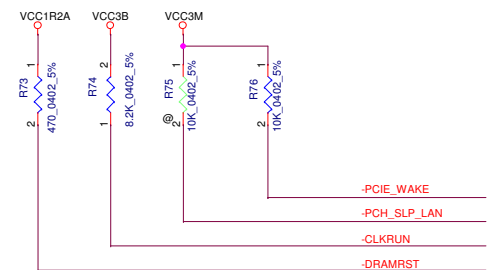
From/to EC 76 EC_SCL2
76 EC_SDA2



Signal	Value	Source
-CLKRUN	75,83	from LPC Device (EC) to GBE
LANPHYPC	56	to M.2 WLAN
-PCH_SLP_WLAN	76	to DIMM/SMBU SW
-DRAMRST	27,28,29,30	SKL-H PCH doesn't require CORE VID
BPWRG	24,76,83,85	to PHY PLL power FET from ASIC
-PCIE_WAKE	46,54,61,84	from M.2 WLAN Slot
-PCH_SLP_LAN	77	to ASIC
-PCH_SLP_S0	104,95	to EC/FPR/ASIC/DebugPort
-PCH_SLP_S3	46,76,84,95	to EC/ASIC/DebugPort
-PCH_SLP_S4	76,84	to ASIC
-PCH_SLP_S5	84	to ASIC
SUSCLK_32K	61,75	to EC/ASIC/WLAN
-BATLOW	46,77	from ASIC
-LANWAKE	56	from GBE
AC_PRESENT	76	from EC
-PCH_SLP_SUS	76	from EC
-PWRSW_EC	76	from XDP port
-XDP_DBR	72	to Audio Mixer
PROC_PWRGD_CPU	7	
JTAGX	24	
JTAG_TMS	24	
PCH_TDO	24	to/from debug port
PCH_TDI	24	
PCH_TCK	24	

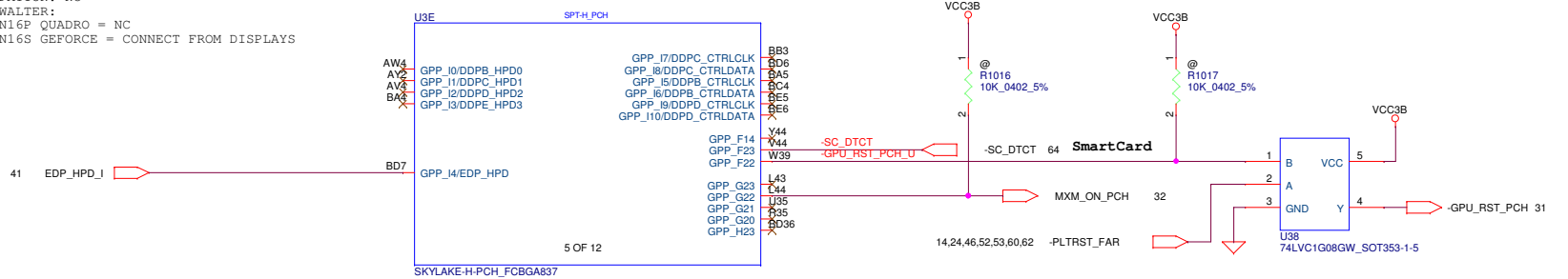
TABLE : Functional Strap

GPP_B14/SPKR (Top Swap Override)	
HIGH	Enable "Top Swap" Mode
LOW	Disable "Top Swap" Mode (Default by internal PD)



DDP[B:D]_HPD[0:2]
 PAYTON: NC
 WALTER:
 N16P QUADRO = NC
 N16S GEFORCE = CONNECT FROM DISPLAYS

DDP[B:C]_CTRLCLK/DATA
 PAYTON: NC
 WALTER:
 N16P QUADRO = NC
 N16S GEFORCE = CONNECT FROM DISPLAYS



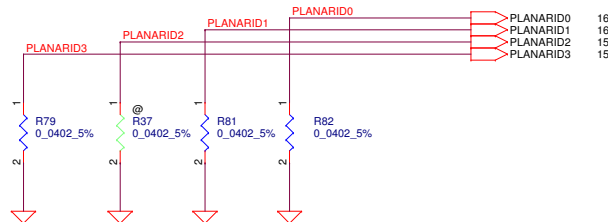
GPP_H23
 PAYTON: NC
 WALTER: -DGFY_WITH_DISPLAYOUT (INPUT)
 N16P QUADRO = LOW
 N16S GEFORCE = HIGH

TABLE

	PLANAR ID			
	3	2	1	0
	R79	R37	R81	R82
1	NA	NA	NA	NA
0	ASM	ASM	ASM	ASM

TABLE

LEVEL	PLANARID[3..0]	CPU	PCH
4+2 SDV	0001b	ES ()	ES ()
4+2 FVT	0010b	ES ()	ES ()
4+2 SIT	0011b	QS ()	QS ()
4+2 SVT	0100b	QS ()	QS ()
4+2 SOVP	0101b	Prod	Prod
Reserved	1000b		
Reserved	1001b		
Reserved	1010b		
Reserved	1011b		

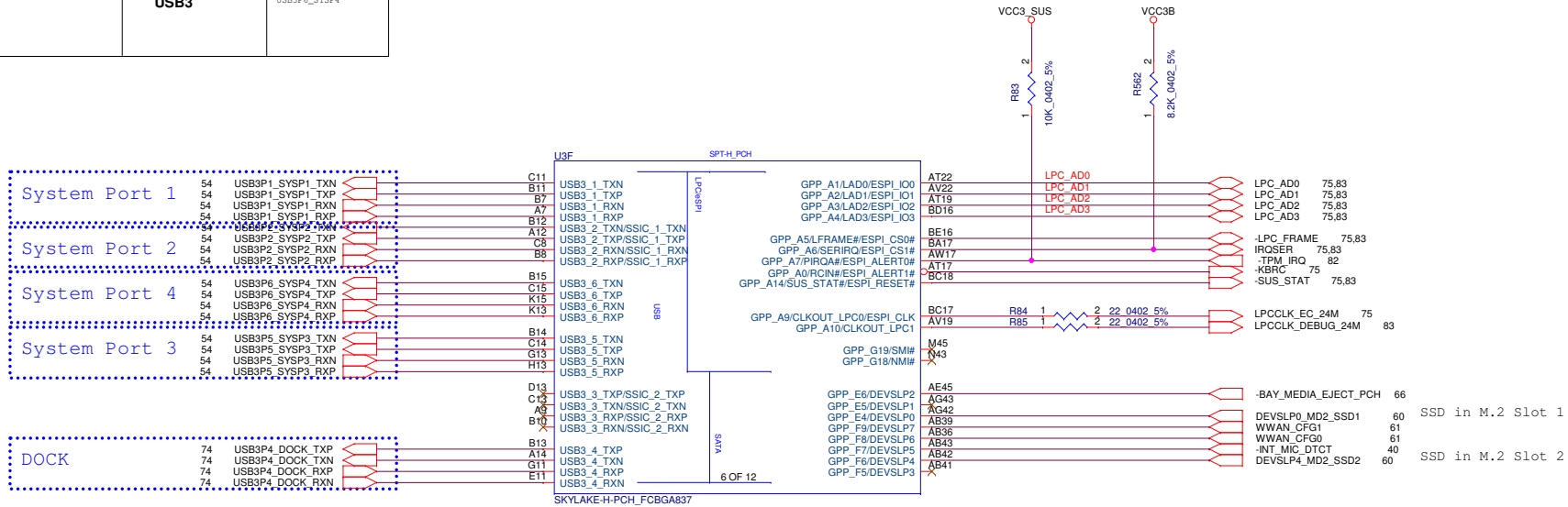


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LCFC

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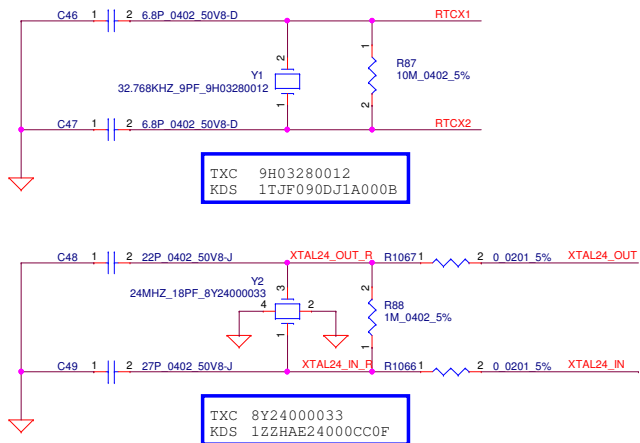
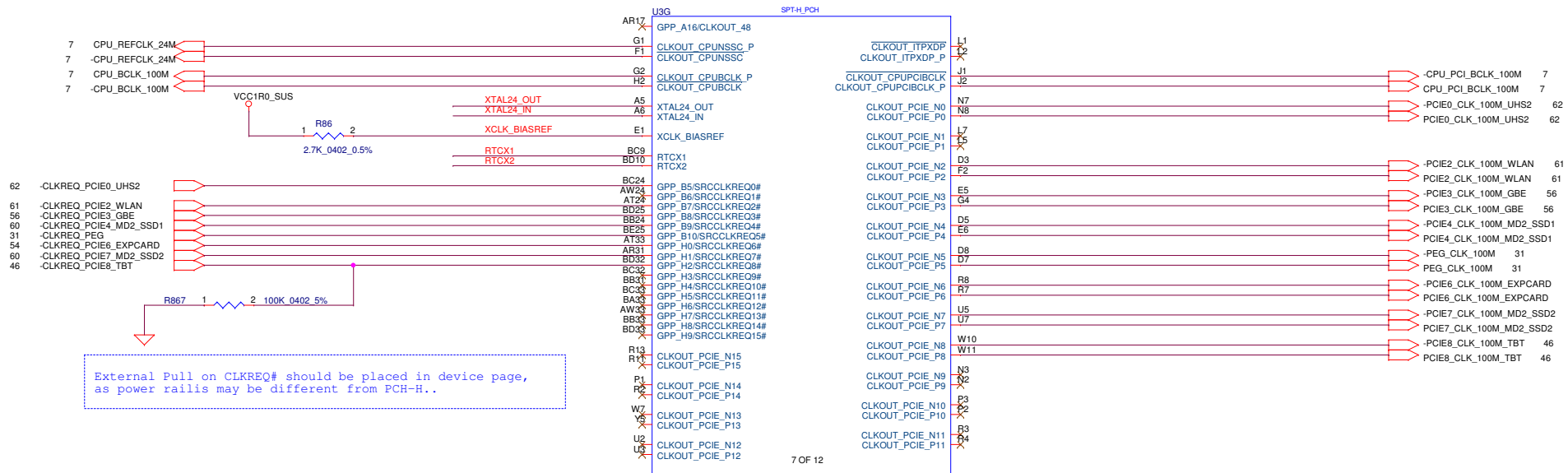
Flexible I/O Configuration (v0.51)			
I/O	High Speed Signals	Configuration	Net Name
Port 1	USB3 1 Capable of OTG	USB3	USB3P1_SYSP1
Port 2	USB2 3 / SSIC 1	USB3	USB3P2_SYSP2
Port 3	USB3 3 / SSIC 2	USB3 or SSIC	USB3P3_WWAN
Port 4	USB3 4	USB3	USB3P4_DOCK
Port 5	USB3 5	USB3	USB3P5_SYSP3
Port 6	USB3 6	USB3	USB3P6_SYSP4



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Title		LCFC	
PCH SKL-H : USB3/LPC		Size	Document Number
		Custom	
Date:	Wednesday, December 07, 2016	Sheet	19 of 111
Rev	0.1		

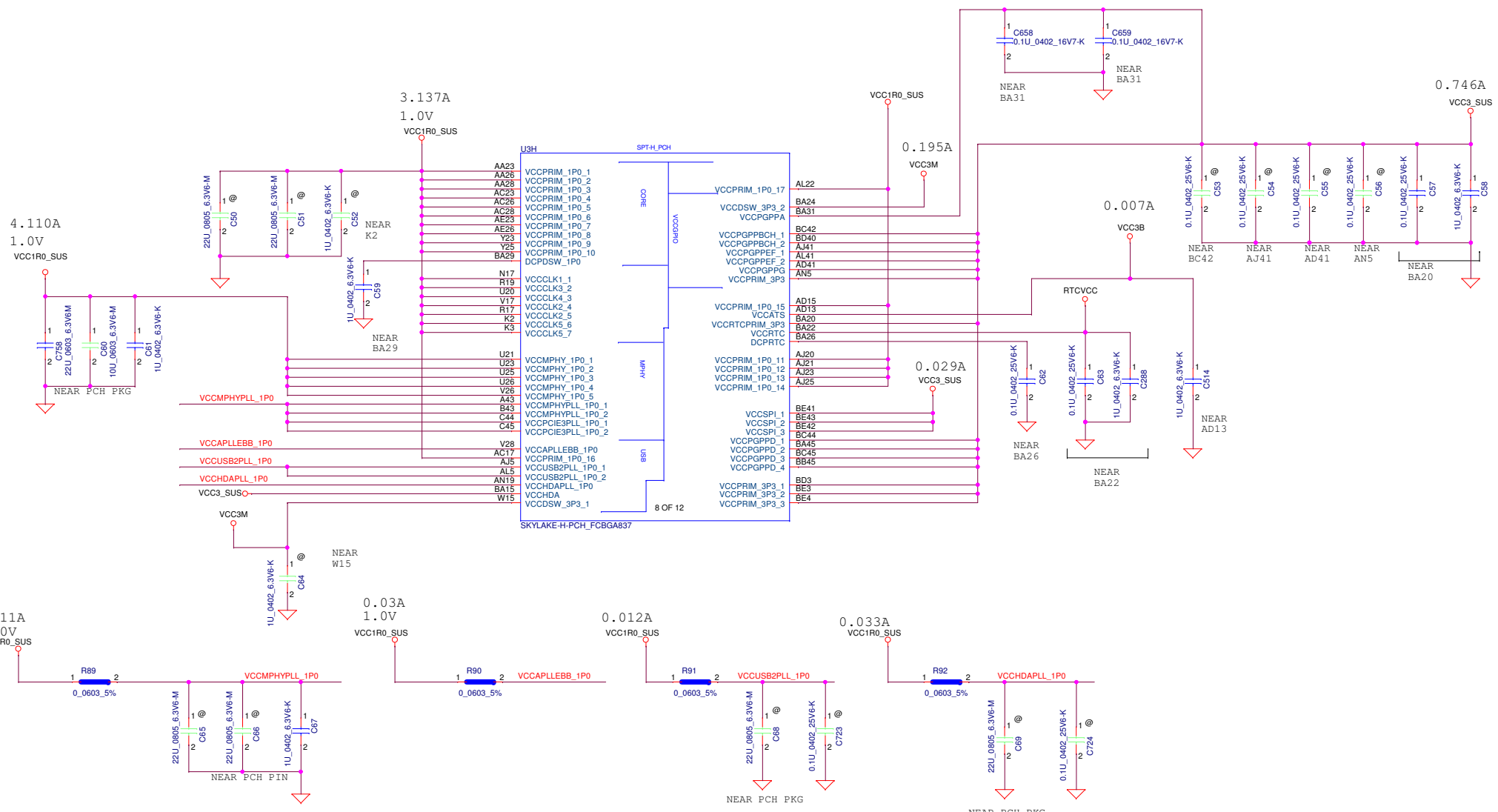
R86 Need change to 2.71K_0.5%



PCIE Clock Assignment

- Clock 0 : UHS II
- Clock 1 : NA
- Clock 2 : Wireless LAN M.2 Slot
- Clock 3 : Giga Bit Ethernet
- Clock 4 : PCIe SSD on M.2 Slot
- Clock 5 : Discrete GFX (MXM or Onboard)
- Clock 6 : Express Slot
- Clock 7 : PCIe SSD on M.2 Slot
- Clock 8 : Thunderbolt
- Clock 9 - 15 : NA

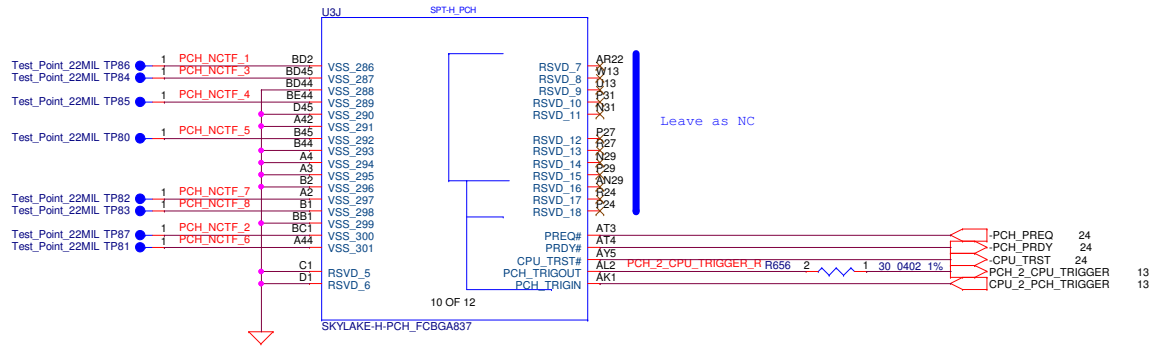
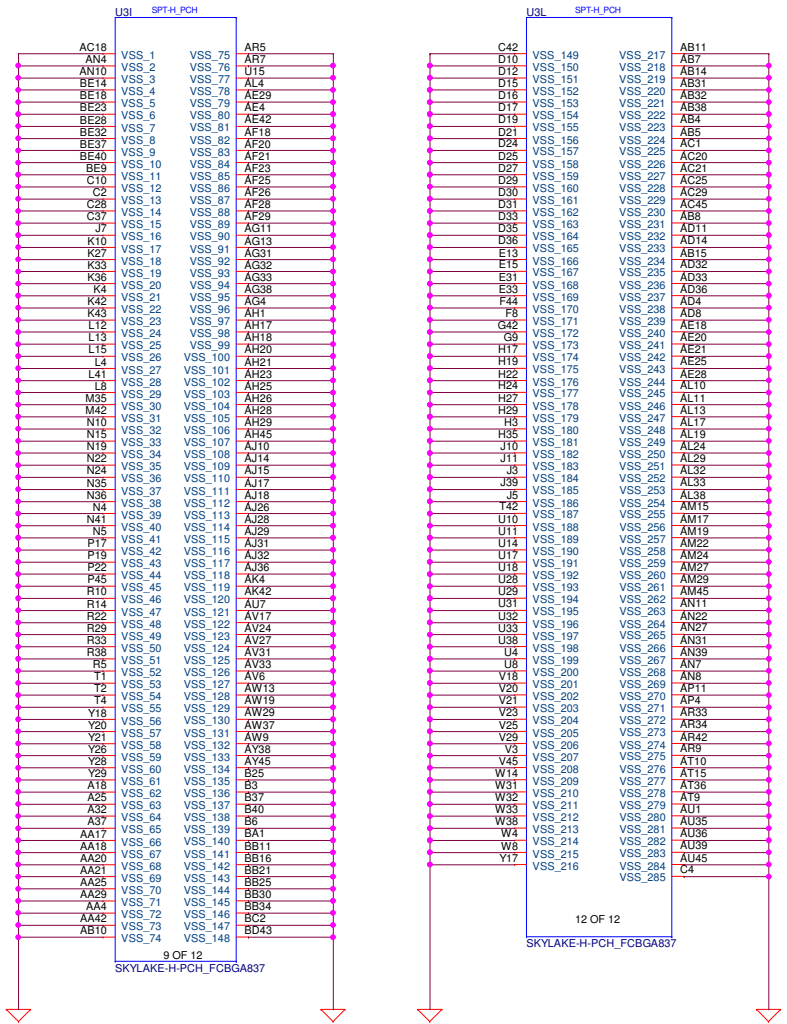
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Issued Date	2015/07/16	Deciphered Date	2016/01/16	PCH SKL-H : CLK	
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Custom		Wednesday, December 07, 2016 Sheet		20	of 111



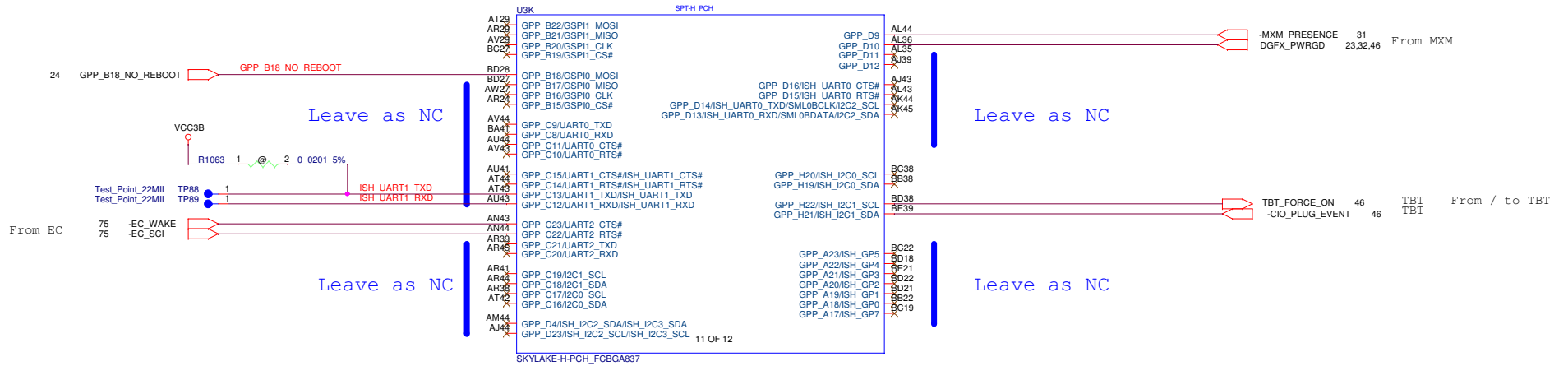
Note 1: Ampere in this page means Iccmax current described in SKL PCH H EDS r0.91 page 57.

Note 2: Decoupling capacitors refers SKL H PDG r0.71 page 526.
SKL H RVP11 schematics r0.7 also referred.

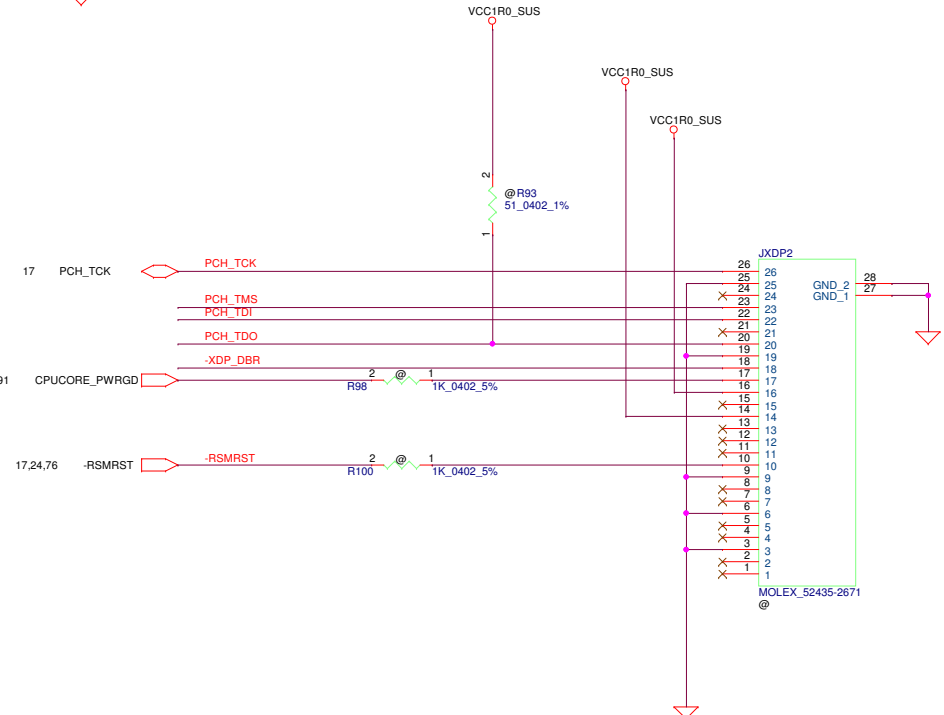
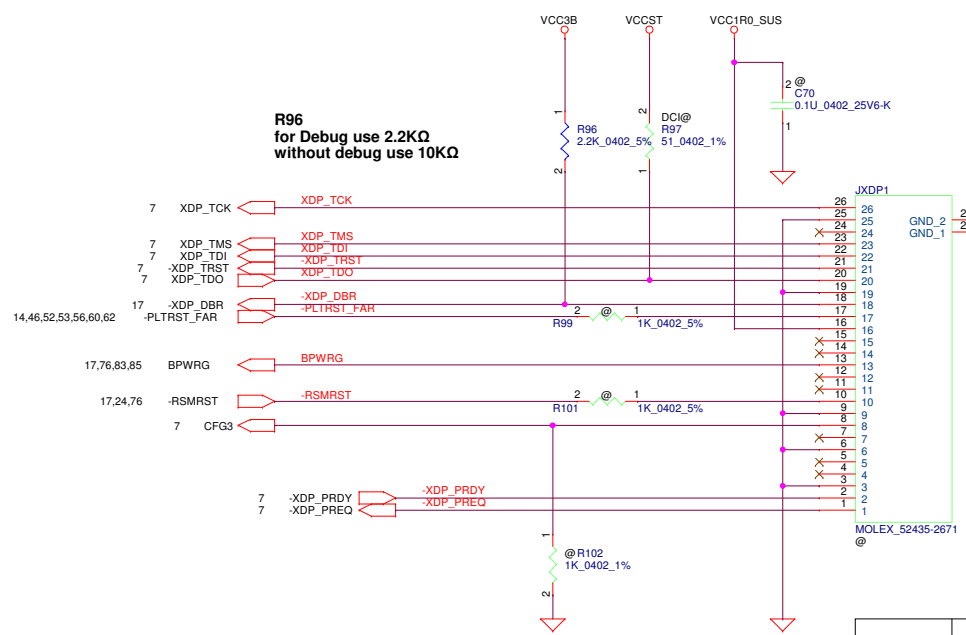
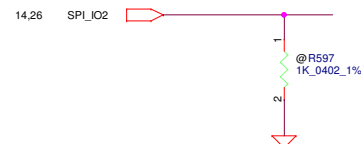
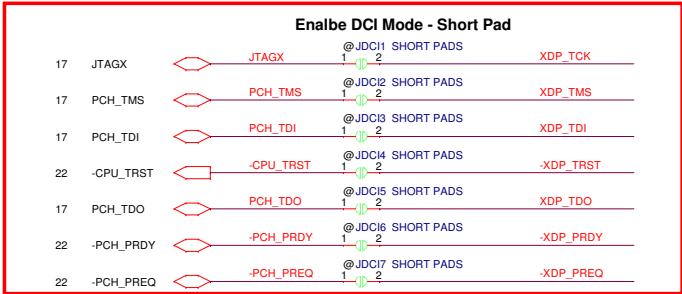
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Issued Date	2015/07/16	Deciphered Date	2016/01/16	PCH SKL-H : POWER	
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Custom	PAYTON				Rev 0.1



	PAYTON	WALTER
GPP_D9	-MXM_PRESENCE	-DISCRETE_PRESENCE



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Issued Date	2015/07/16	Deciphered Date	2016/01/16	PCH SKL-H : GSPI/UART/I2C LCFC	
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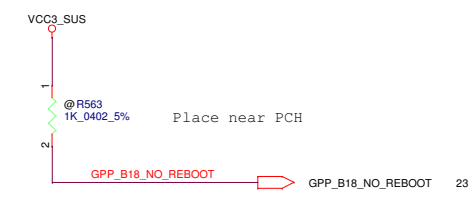


	No use	Individual Port	DCI 2.0 w/o connector
R591	NO ASM	NO ASM	ASM
R593	NO ASM	NO ASM	ASM
R594	NO ASM	NO ASM	ASM
R595	NO ASM	NO ASM	ASM
R596	NO ASM	NO ASM	ASM
R657	NO ASM	NO ASM	ASM
R658	NO ASM	NO ASM	ASM
R102	NO ASM	ASM	NO ASM
R597	NO ASM	ASM	NO ASM
R18	NO ASM	ASM	ASM
R297	NO ASM	ASM	NO ASM

	No use	Individual Port	DCI 2.0 w/o connector
R97	NO ASM	ASM	ASM
J1	NO ASM	ASM	NO ASM
C70	NO ASM	ASM	NO ASM
R96	ASM	ASM	ASM
R101	NO ASM	ASM	NO ASM
R93	NO ASM	ASM	NO ASM
J2	NO ASM	ASM	NO ASM
R98	NO ASM	ASM	NO ASM
R100	NO ASM	ASM	NO ASM

TABLE : Functional Strap

GPP_B18/GSPI0_MOSI (No Reboot)		R563
HIGH	Enable "No Reboot" Mode	ASM
LOW	Disable "No Reboot" Mode (Default)	NO ASM



SHEET 7

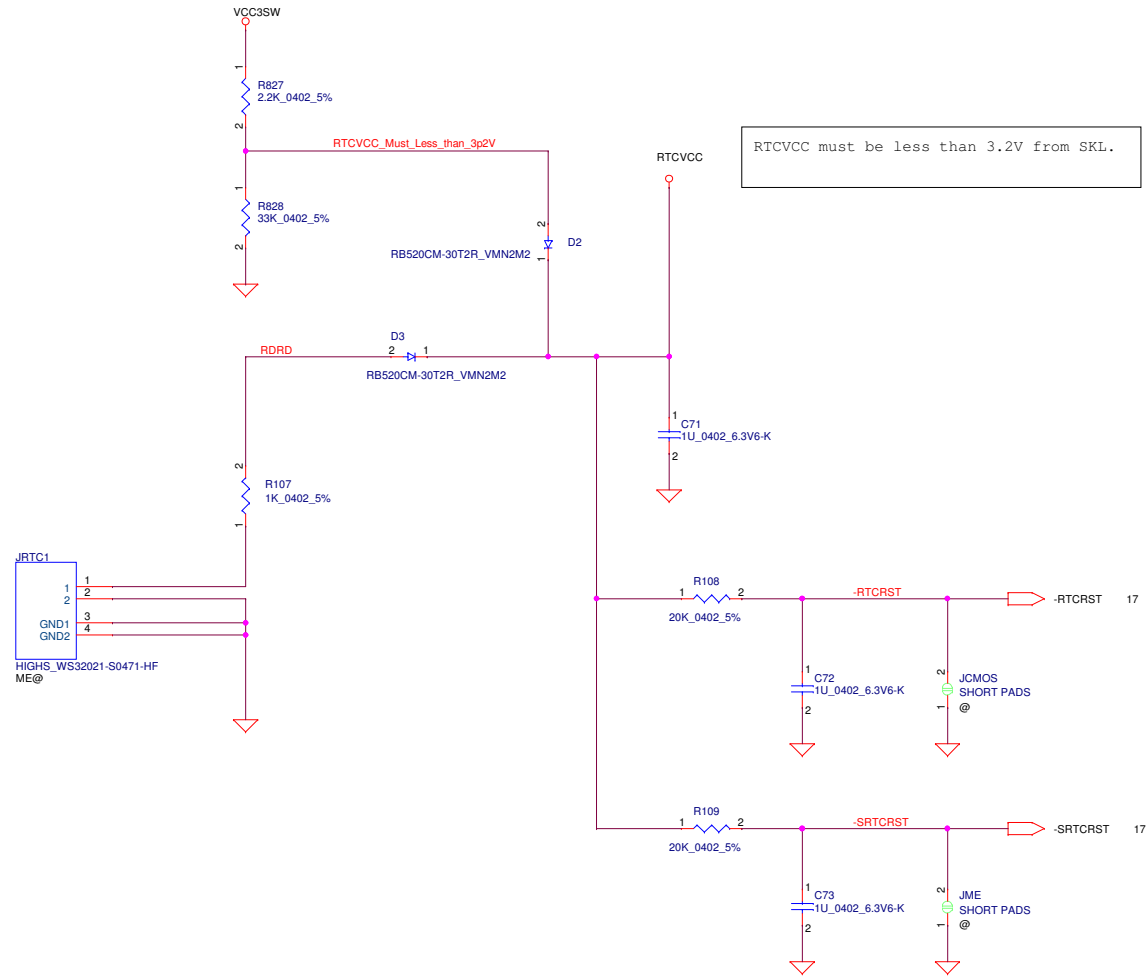
SHEET 17

R820	NO ASM	ASM	NO ASM
R821	NO ASM	ASM	NO ASM
R822	NO ASM	ASM	NO ASM


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Title	XDP CONNECTOR	
Size	Document Number	Rev
Custom	PAYTON	0.1
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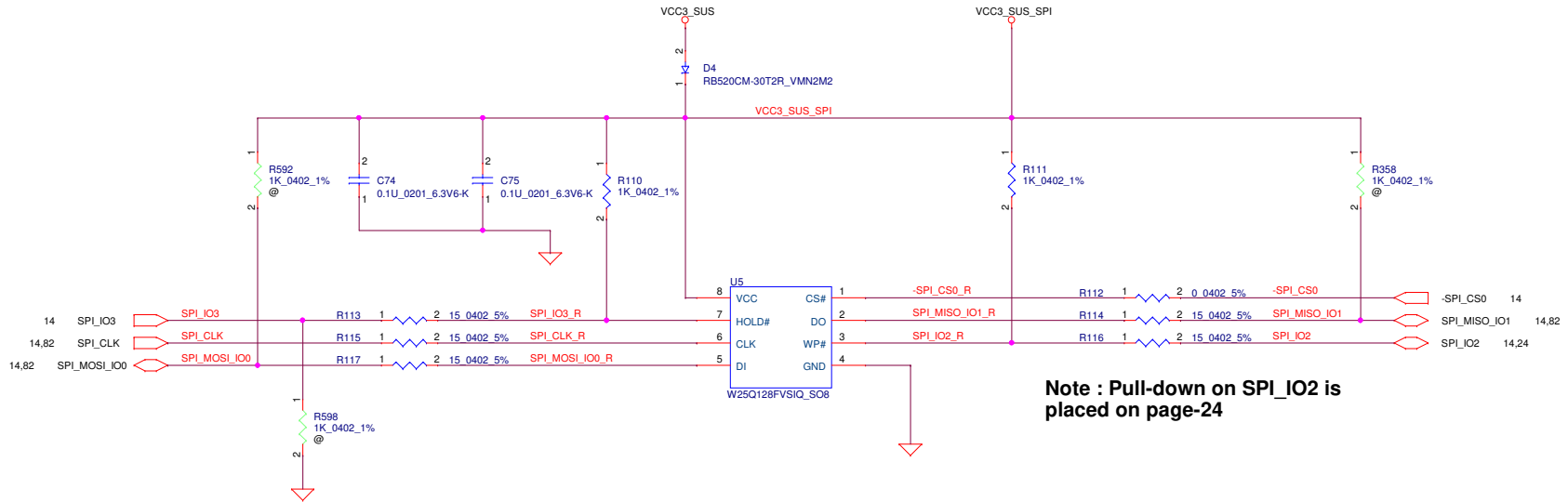


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Title		
RTC BATTERY		
Size	Document Number	Rev
Custom		0.1
Date:	Wednesday, December 07, 2016 Sheet 25 of 111	

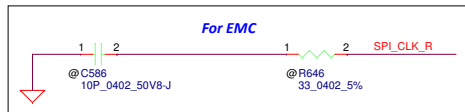
	R110	R598	U5	R592	R358
PRE ES1/ ES2	NO ASM	ASM	QE="1"	ASM	ASM
AFTER QS	ASM	NO ASM	QE=Don't Care	NO ASM	NO ASM

← LOGIC



TABLE

SF100 PIN HEADER INTERFACE (TOP VIEW)							
1	VCC	D12.1	GND	GND	2		
3	CS#	R322.2	R681.2	CLK	4		
5	MISO	R694.2	R674.2	MOSI	6		
7	(KEY)	N/A	N/A	(RESET)	8		



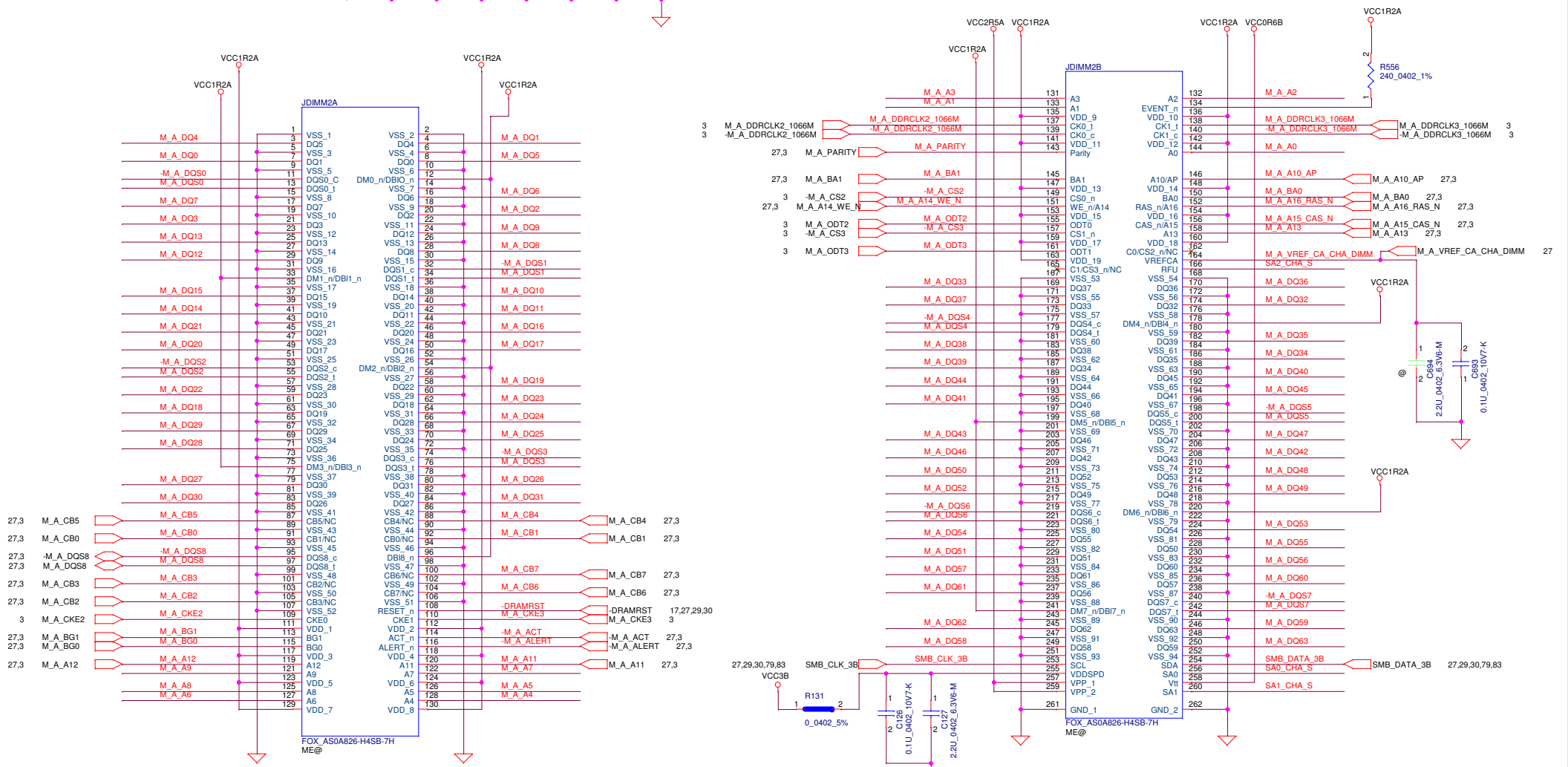
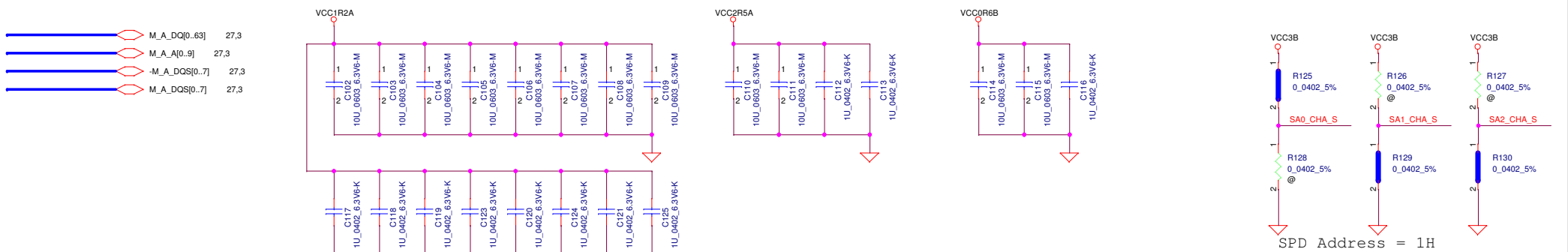
U5 SPI ROM

vPRO model(16MB)	
WINBOND	W25Q128FVSIQ
MACRONIX	MX25L12873FM2L-10G
MICRON	N25Q128A13ESEDFF

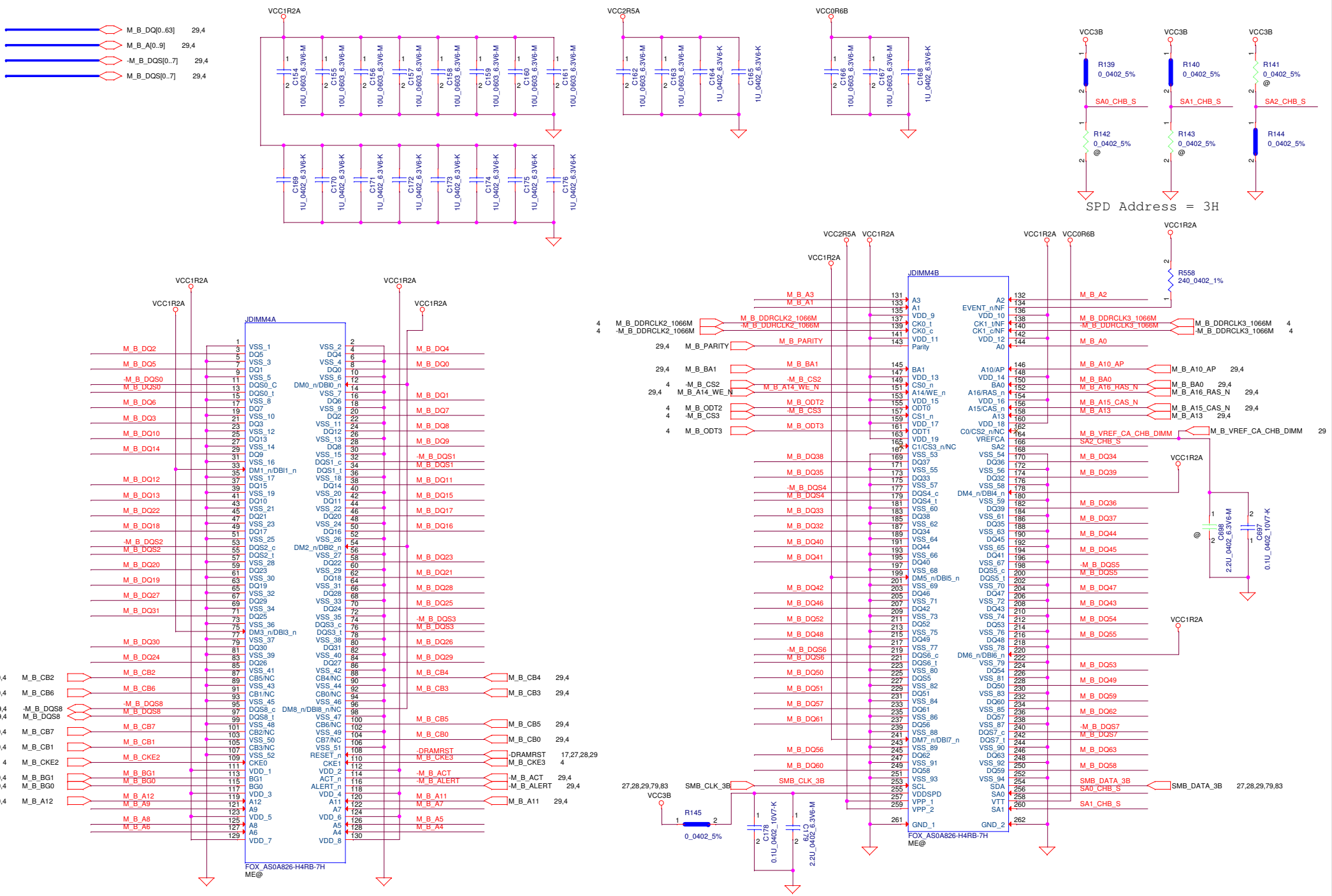
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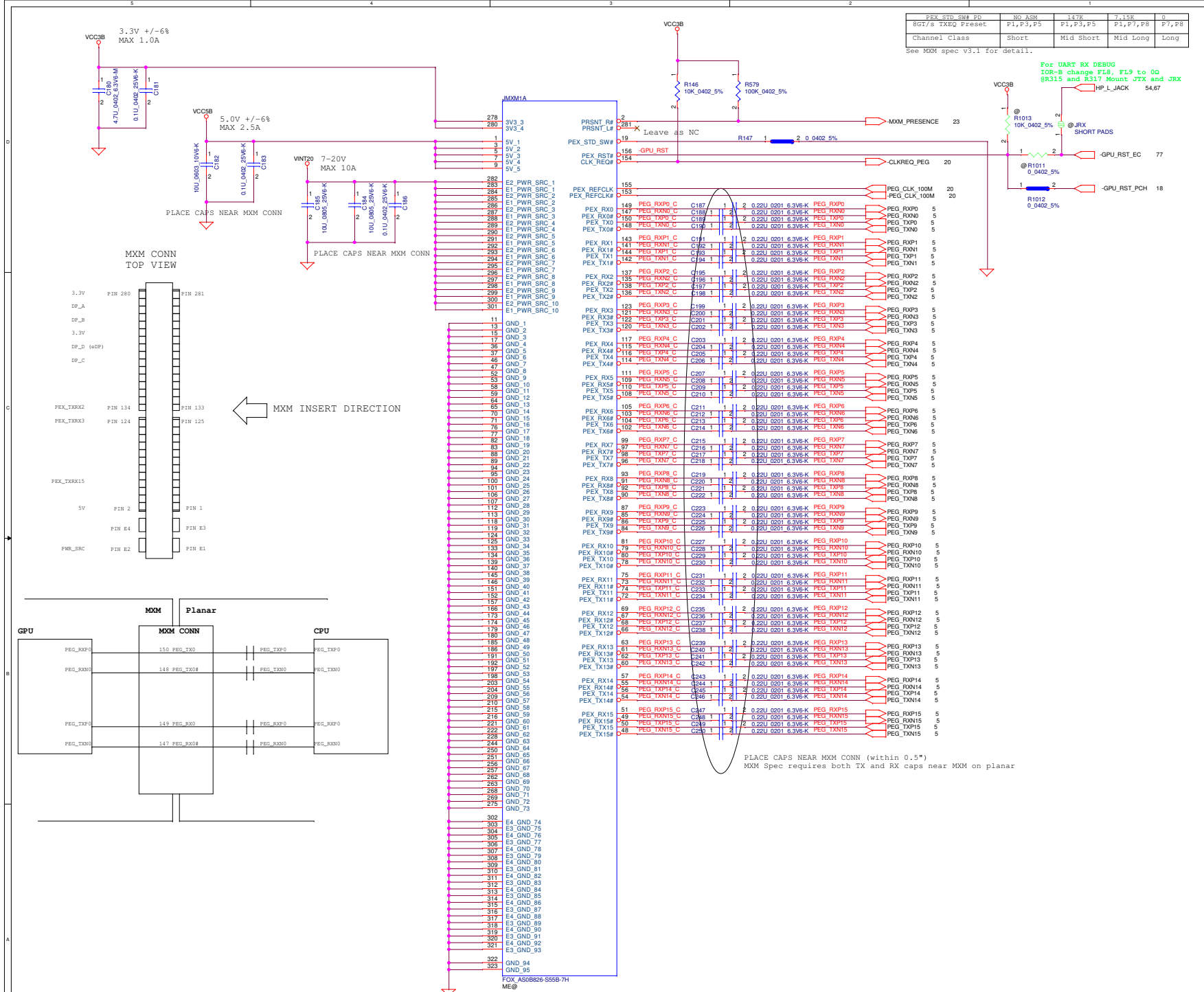
Title	SPI FLASH	
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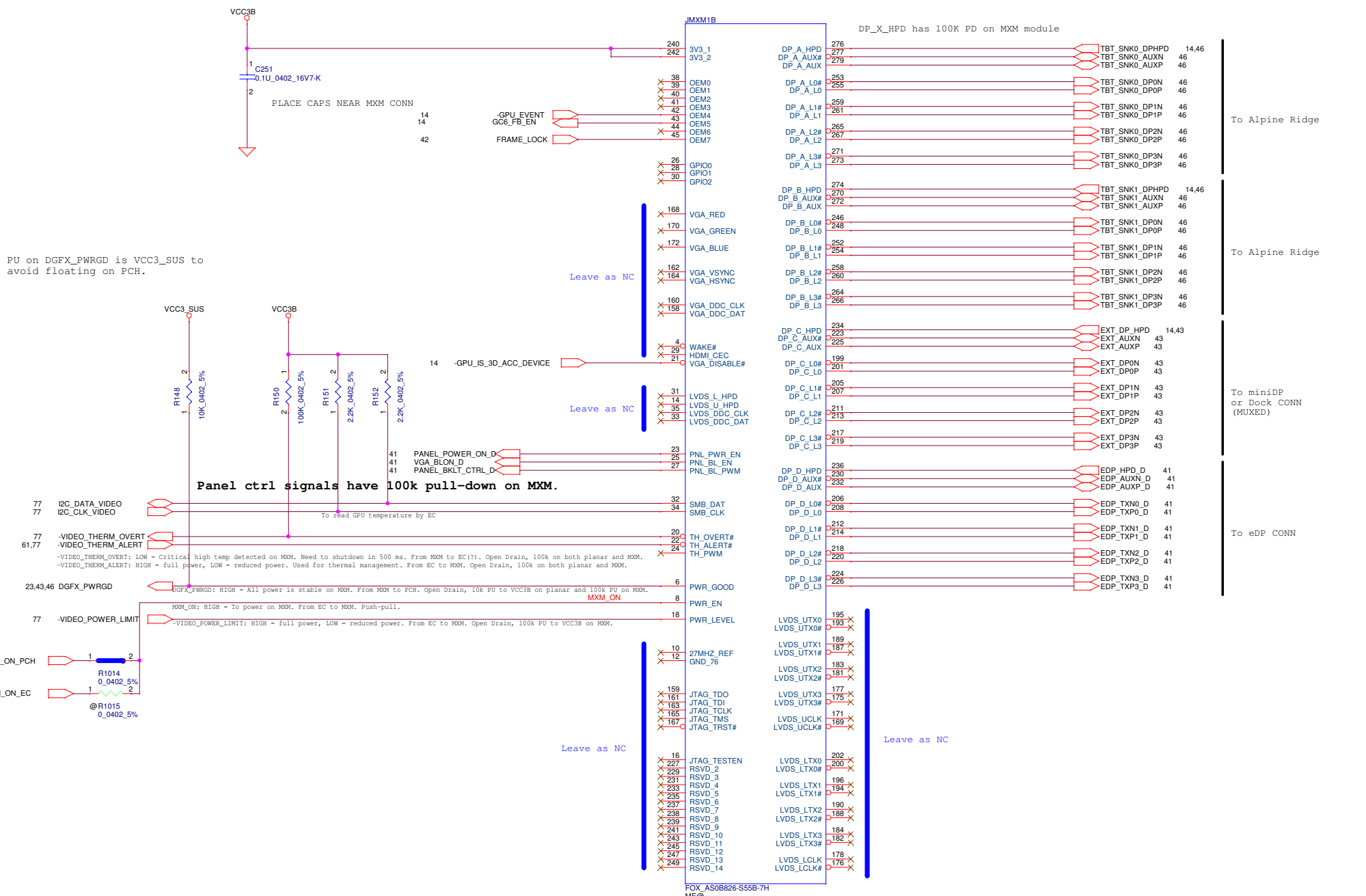


PEX STD SWF PD	NO ASM	147K	7.15K	0
SGT/s TXEQ Preset	F1,P3,P5	F1,P3,P5	F1,P7,P8	P7,P8
Channel Class	Short	Mid Short	Mid Long	Long

See MXM spec v3.1 for detail 1.

For UART RX DEBUG
IOR-B change FL8, FL9 to 0Ω
(R315 and R317 Mount J7X and JRX
HP_L_JACK 54.67

PLACE CAPS NEAR MXM CONN (within 0.5")
MXM Spec requires both TX and RX caps near MXM on planar




PU on DGFX_PWRGD is VCC3_SUS to avoid floating on PCH.

Panel ctrl signals have 100k pull-down on MXM.

DP_X_HPD has 100K PD on MXM module

MXM OEM / GPIO PIN3	N16E-Q1/-Q3/-Q5		N16M-Q2	
	Signal Name	I/O Tpye	Signal Name	I/O Tpye
OEM4	GPU_EVENT#	Bi-Dir	GPU_EVENT#	Bi-Dir
OEM5	GC6_FB_EN	IN	GC6_FB_EN	IN
OEM6	GPIO19_STEREO	OUT	GPIO7_STEREO	OUT
OEM7	FRAMELOCK	IN	FRAMELOCK#	IN
GPIO0	GPIO26	Tri-state	NC(Default)	NC
GPIO1	NC	NC	GPIO1	Tri-state
GPIO2	GPIO25	Tri-state	NC(Default)	NC


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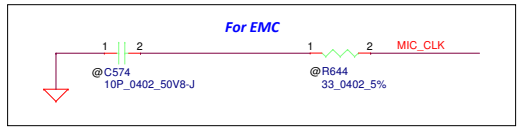
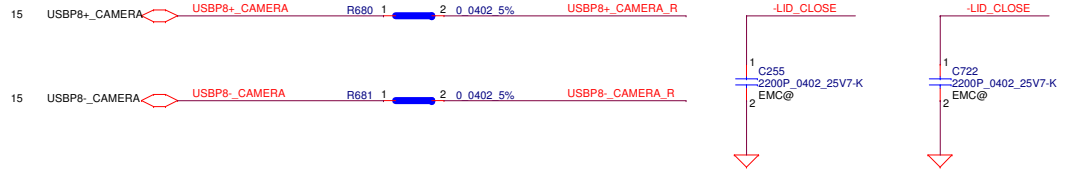
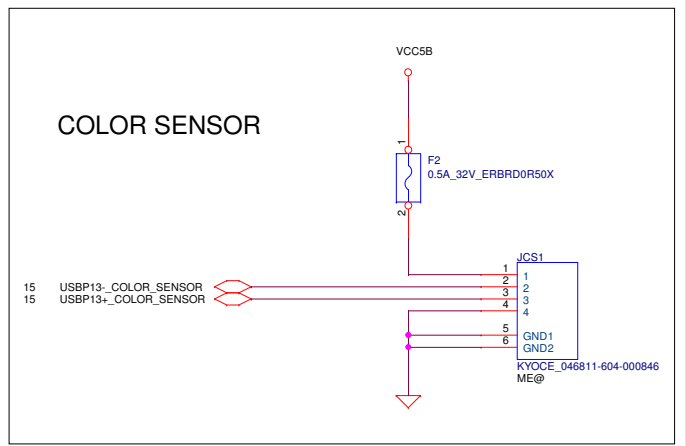
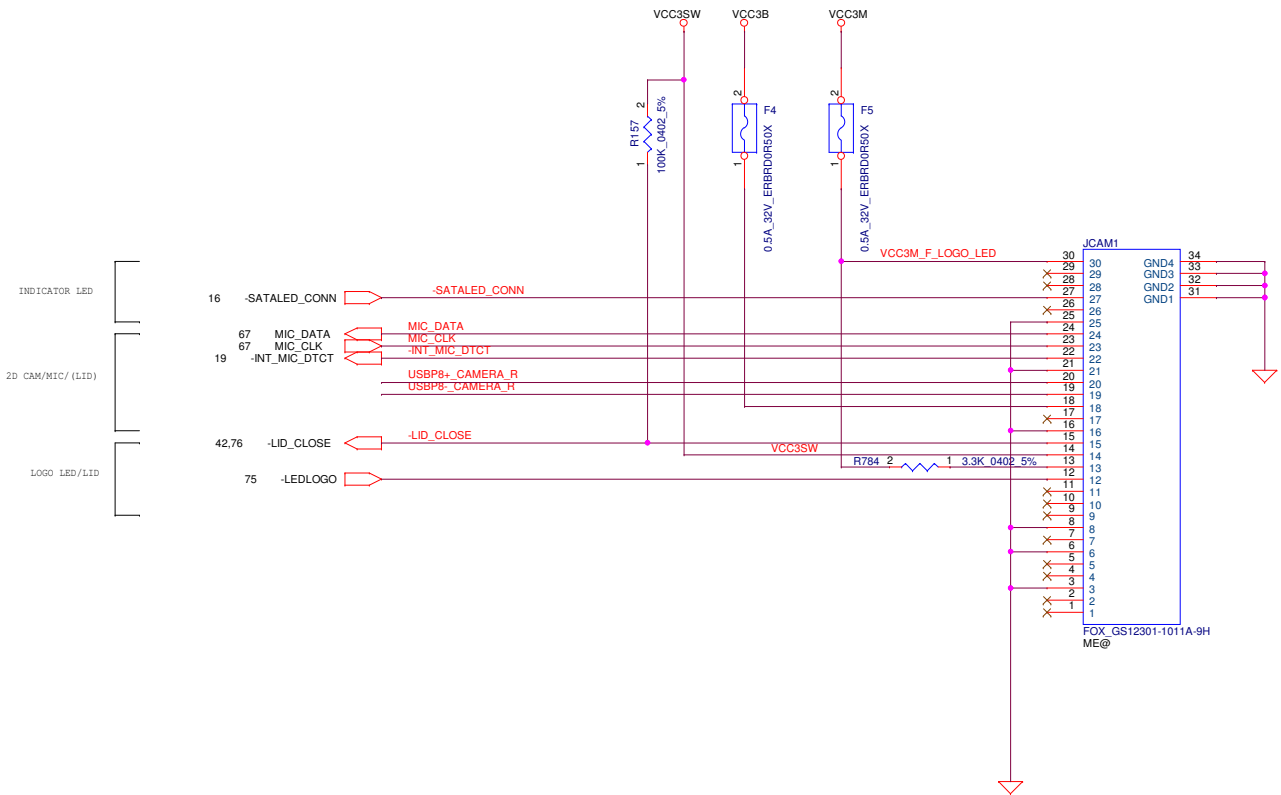
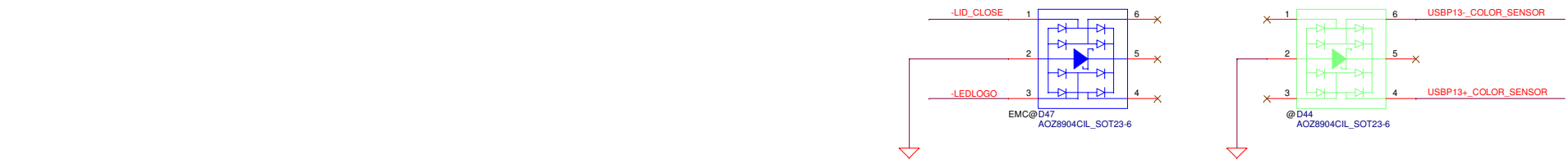
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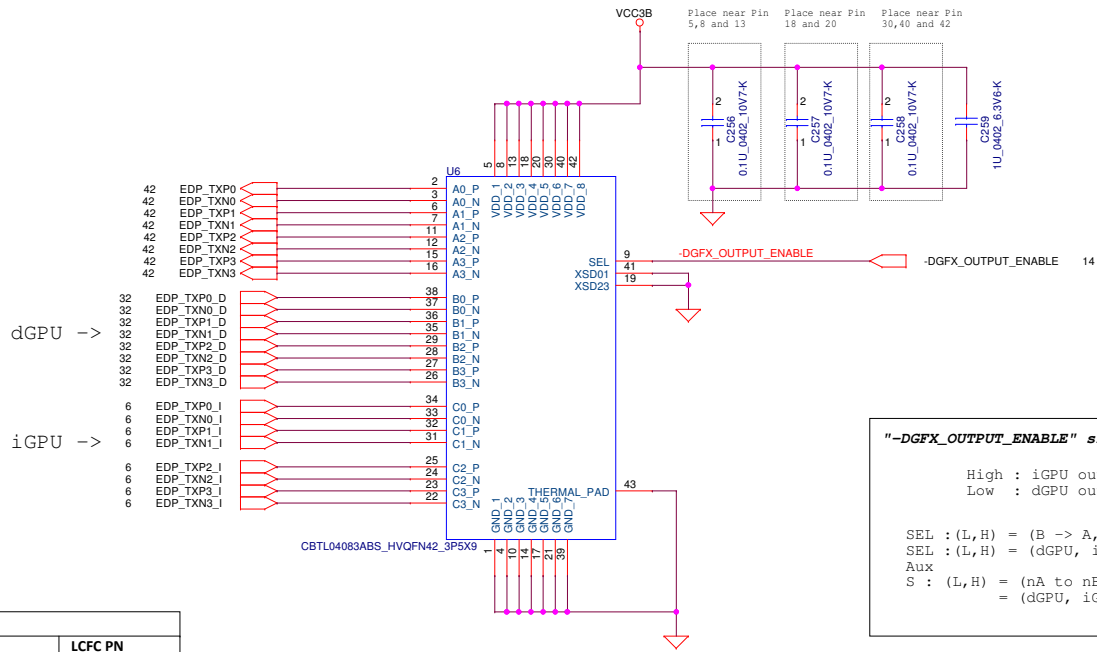
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				Rev 0.1

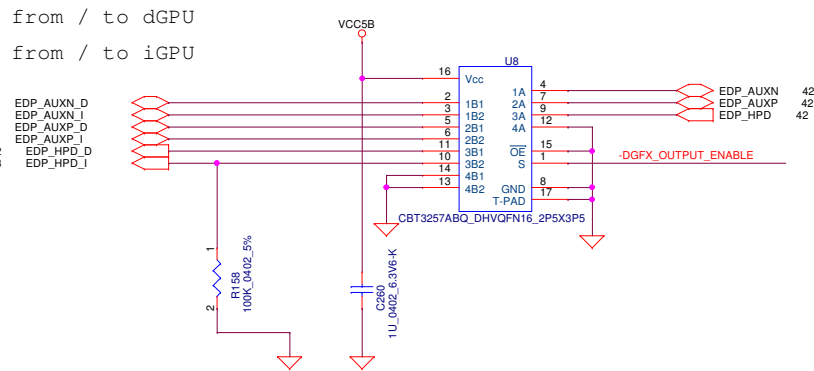
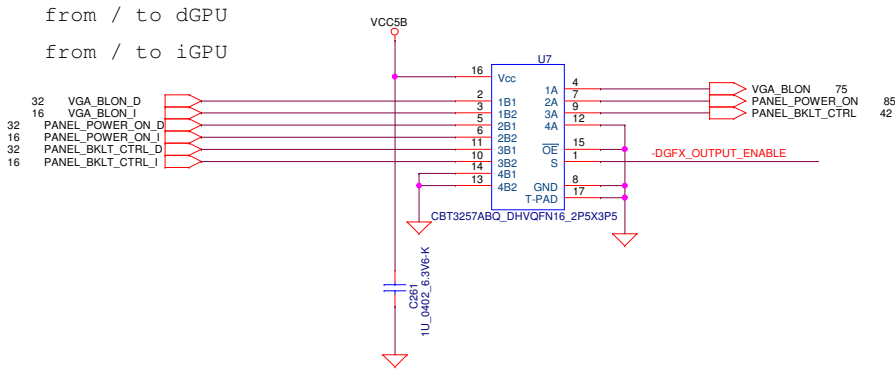


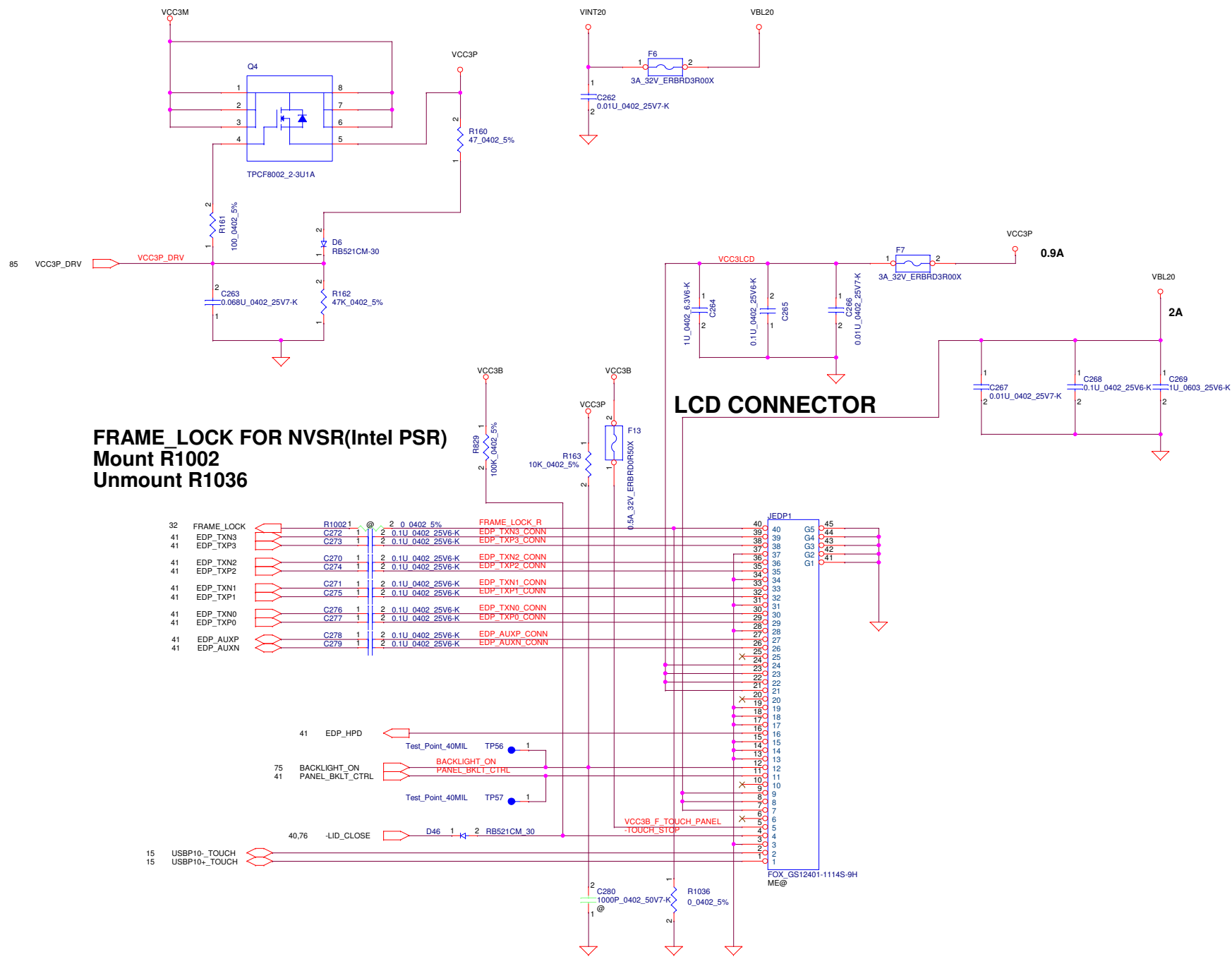
"-DGFx_OUTPUT_ENABLE" signal controls DOCK DP Bus switch

High : iGPU output is selected.
 Low : dGPU output is selected.

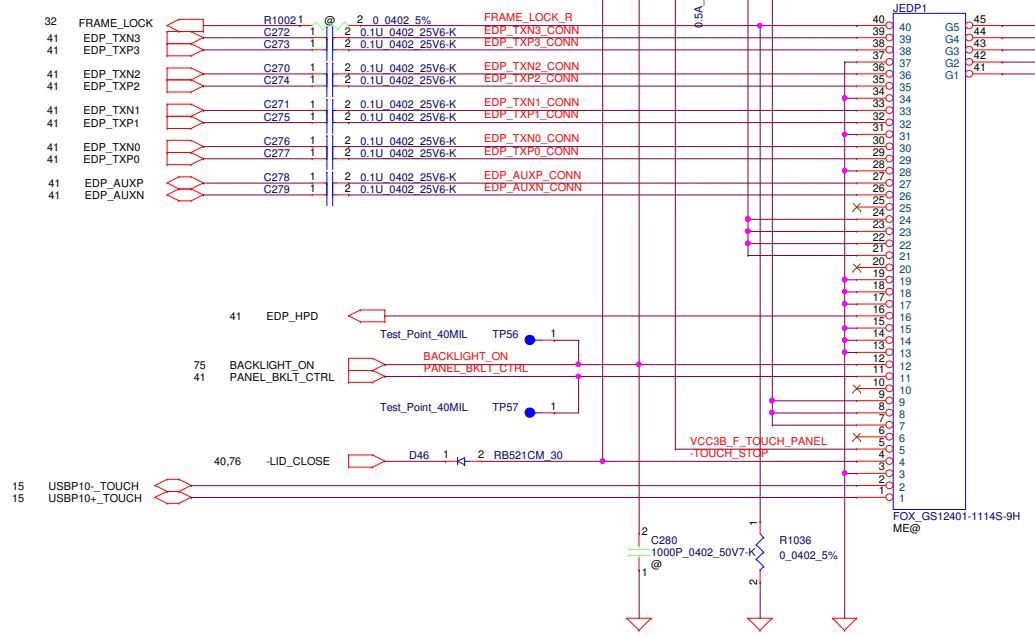
SEL : (L,H) = (B -> A, C ->A)
 SEL : (L,H) = (dGPU, iGPU)
 Aux
 S : (L,H) = (nA to nB1, nA to nB2)
 = (dGPU, iGPU)

DOCK DP Switch		
Vendor	Vendor PN	LCFC PN
NXP	CBTL04083ABS	
Pericom	PI3PCIE3412ZHE+DAX	





**FRAME LOCK FOR NVSR(Intel PSR)
Mount R1002
Unmount R1036**



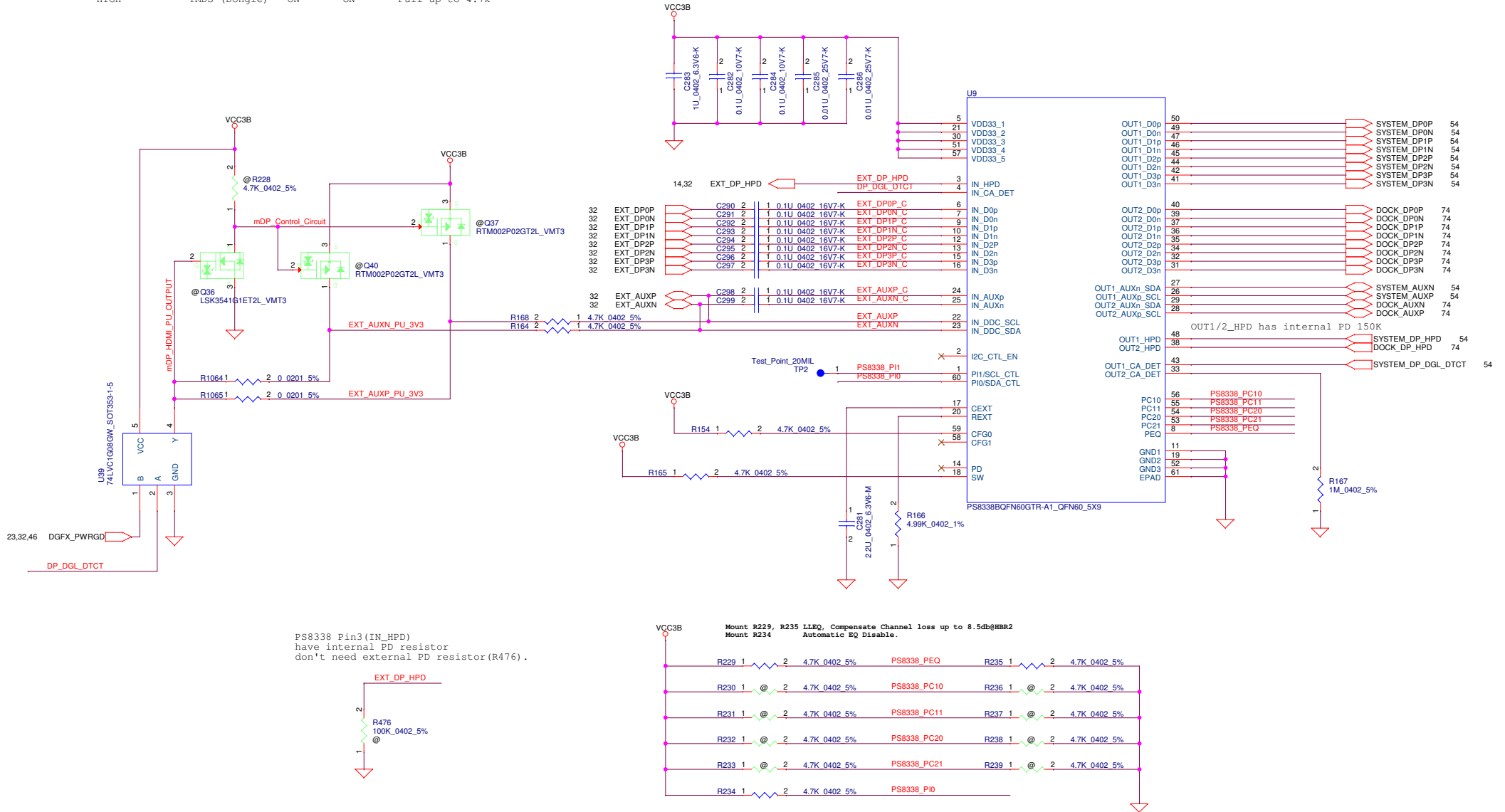
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Issued Date	2015/07/16	Deciphered Date
		2016/01/16

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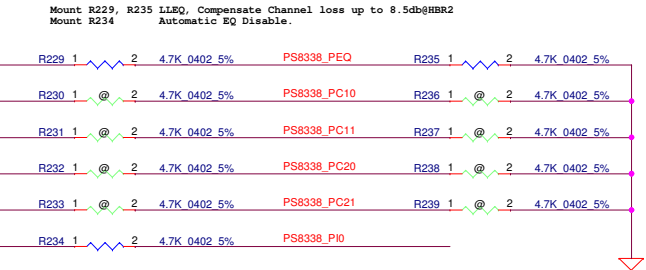
Title		LCFC	
LCD CONNECTOR		Size	Document Number
Custom		PAYTON	
Date:	Wednesday, December 07, 2015	Sheet	42 of 111
Rev	0.1		

Circuit to turn on/off pull up resistors on AUXP/AUXN to support DP dongles.

DP_DGL_DTCT	DP MODE	2SK3541	RTM002	AUXP/N
LOW	DP (Native)	OFF	OFF	No pull-up
HIGH	TMD5 (Dongle)	ON	ON	Pull up to 4.7k



PS8338 Pin3(IN_HPDP) have internal PD resistor don't need external PD resistor (R476).



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Title		
DP DEMUX		
Size	Document Number	
Custom		
Date:	Wednesday, December 07, 2016	Sheet 43 of 111



A
B
C
D


5

4

3

2

1

Security Classification	LC Future Center Secret Data		Title		
Issued Date	2015/07/16	Deciphered Date	2016/01/16		DISPLAY PORT CONNECTOR
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			Date:	Wednesday, December 07, 2016	Sheet 44 of 111

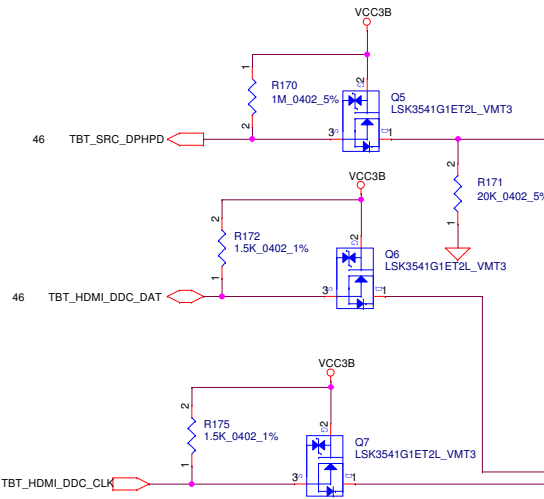
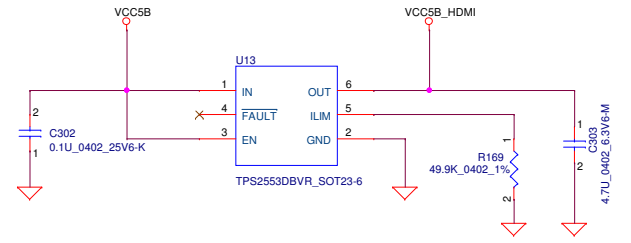
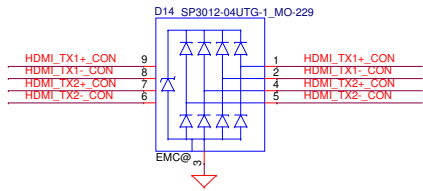
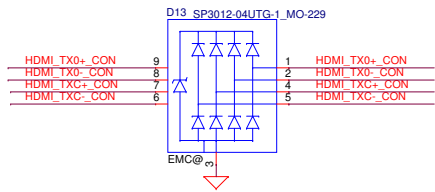
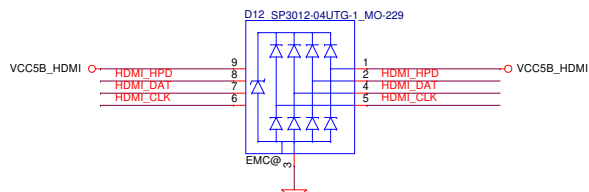
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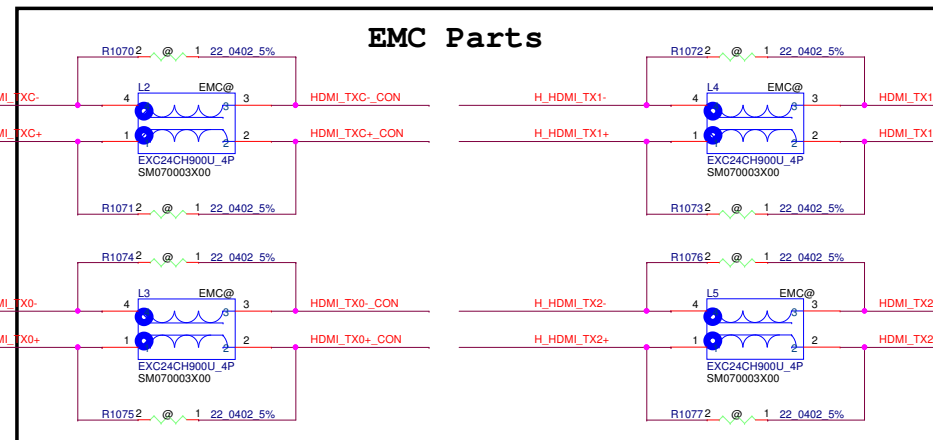
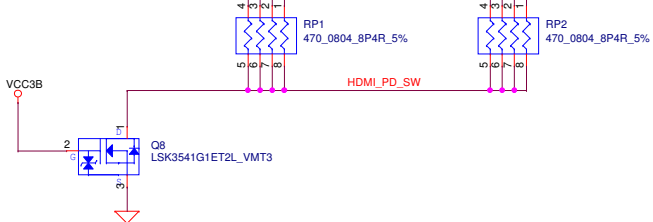
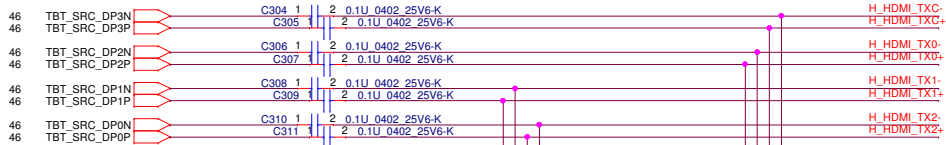
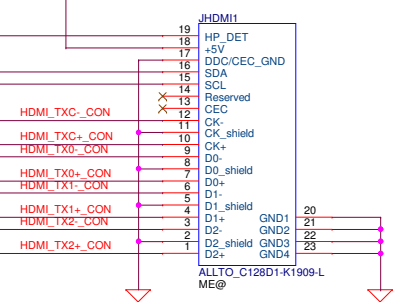
2

1

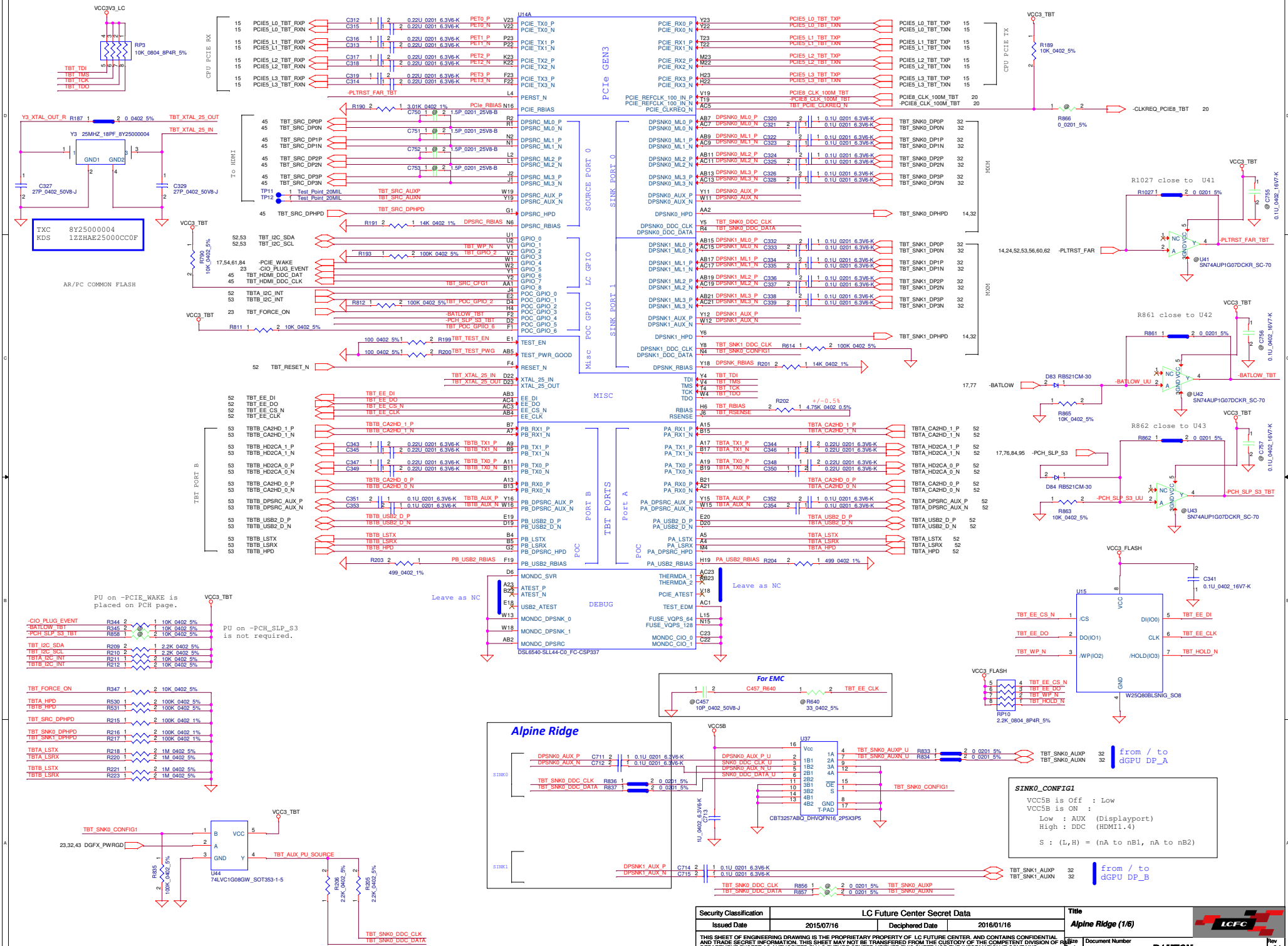


No need diode here because TPS2553 has reverse voltage protection function.

HDMI CONN. 6Gbps



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LC Future Center Secret Data				HDMI CONNECTOR			
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Date: Wednesday, December 07, 2016				Sheet 45 of 111			



-C10 PLUG EVENT
 -BATLOW_TBT
 -PCH_SLP_S3_TBT
 TBT_I2C_SDA
 TBT_I2C_SCL
 TBT_I2C_INT
 TBT_I2C_IN
 TBT_I2C_OUT

TBT_FORCE_ON
 TBT_HPD
 TBT_SRC_DPDP
 TBT_SNK0_DPDP
 TBT_SNK1_DPDP
 TBT_SNK0_DP2P
 TBT_SNK1_DP2P
 TBT_SNK0_DP3P
 TBT_SNK1_DP3P
 TBT_SNK0_DP4P
 TBT_SNK1_DP4P


TBT_FORCE_ON R347 1 2 10K 0.402 5%
 TBT_HPD R530 1 2 100K 0.402 5%
 TBT_SRC_DPDP R215 1 2 100K 0.402 1%
 TBT_SNK0_DPDP R216 1 2 100K 0.402 1%
 TBT_SNK1_DPDP R217 1 2 100K 0.402 1%
 TBT_SNK0_DP2P R218 1 2 1M 0.402 5%
 TBT_SNK1_DP2P R219 1 2 1M 0.402 5%
 TBT_SNK0_DP3P R220 1 2 1M 0.402 5%
 TBT_SNK1_DP3P R221 1 2 1M 0.402 5%
 TBT_SNK0_DP4P R222 1 2 1M 0.402 5%

TBT_SNK0_CONFIG1
 TBT_SNK1_CONFIG1
 TBT_SNK0_DDC_CLK
 TBT_SNK1_DDC_CLK


SINKO_CONFIG1
 VCC5B is Off : Low
 VCC5B is ON :
 Low : AUX (Displayport)
 High : DDC (HDMI1.4)
 S : (L, H) = (nA to nB1, nA to nB2)

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			Custom	PAYTON	0.1
			Date:	Wednesday, December 07, 2016	Sheet 48 of 111


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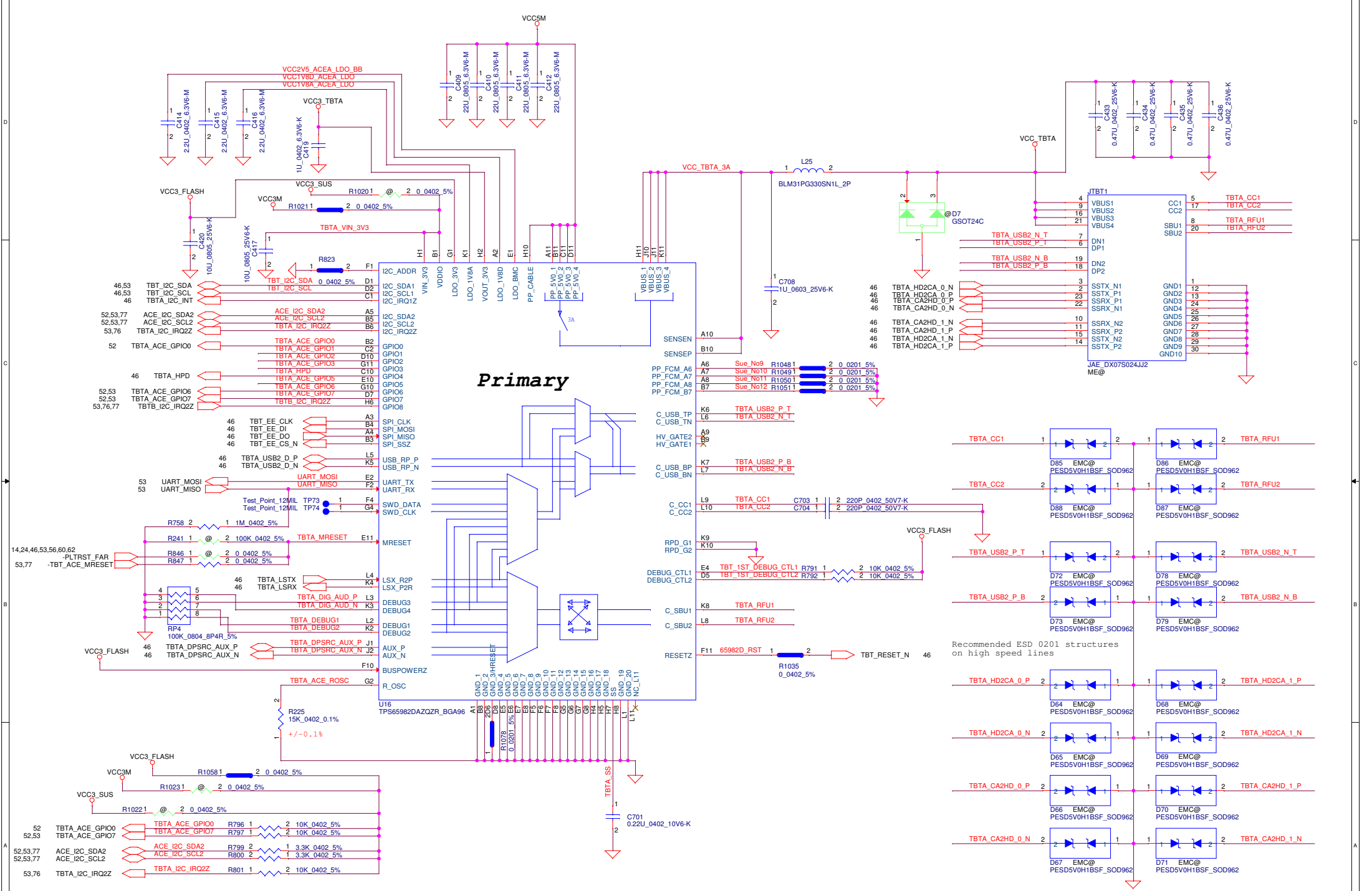
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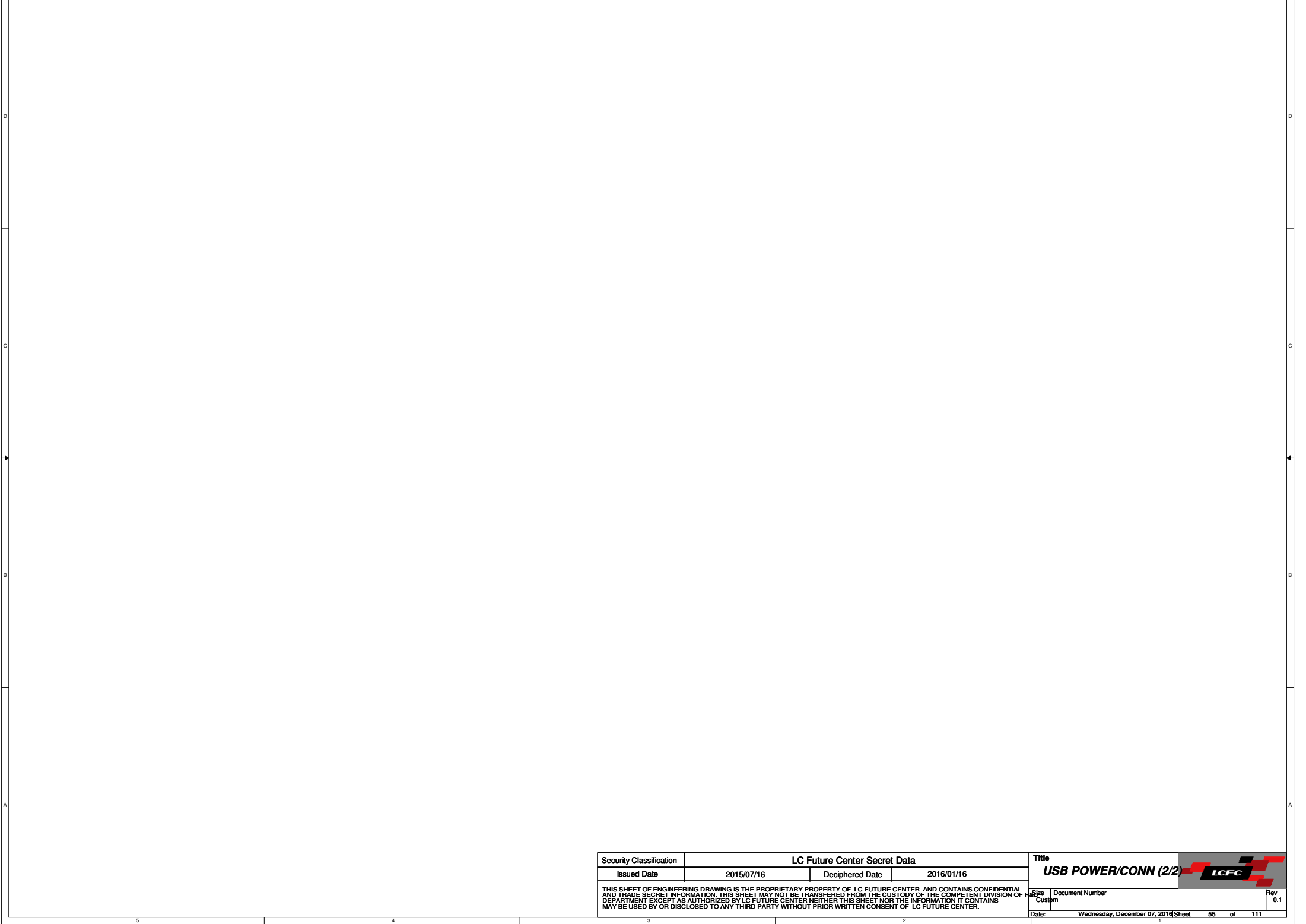
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Issued Date	2015/07/16	Deciphered Date	2016/01/16		Alpine Ridge (6/6)	
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				Date:	Wednesday, December 07, 2016	Sheet 51 of 111



Primary

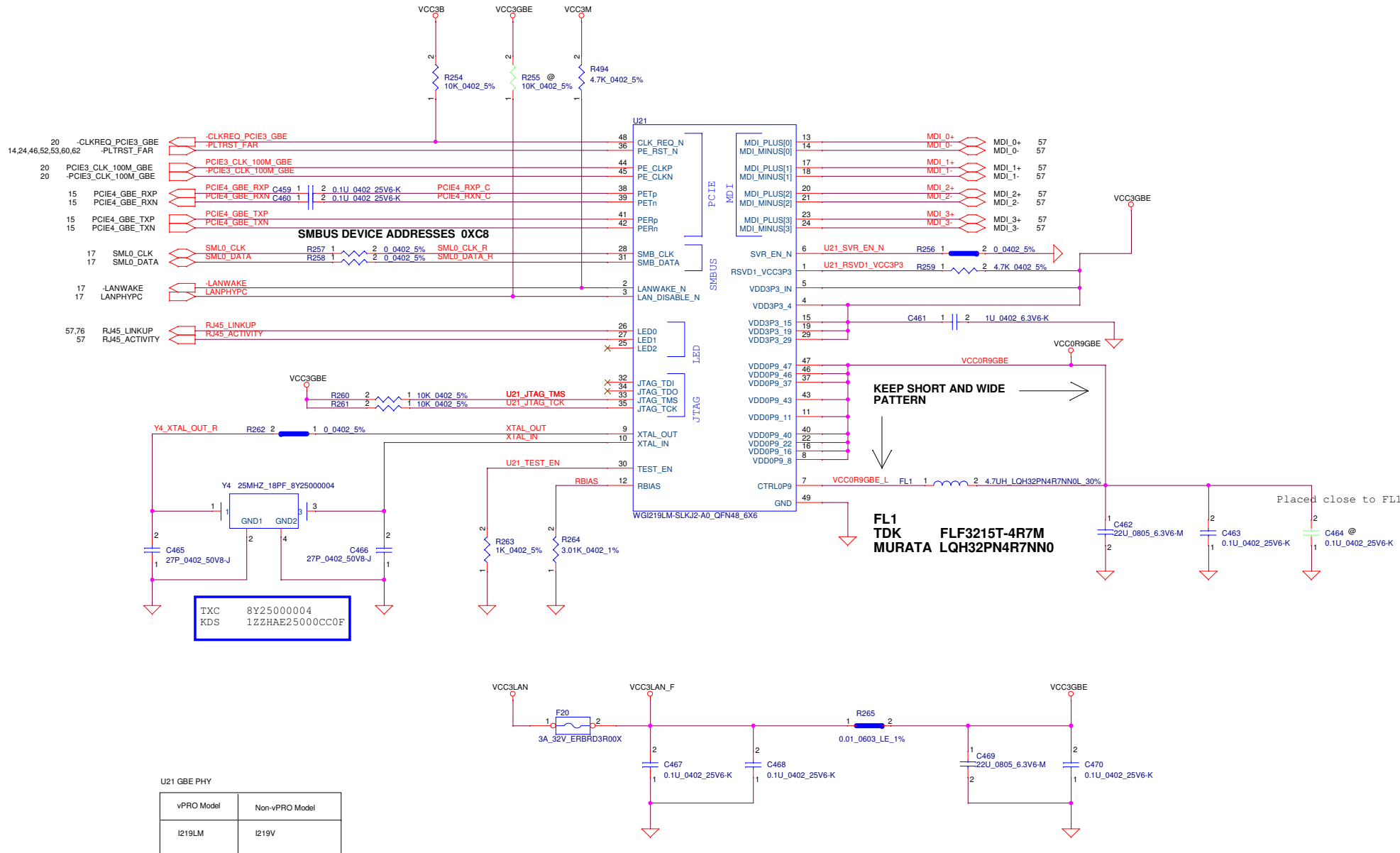
Security Classification	LC Future Center Secret Data	
Issued Date	2015/07/16	Deciphered Date
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Title		Thunderbolt Power TPS65982/USB Type-C	
Size	Document Number	Date: Wednesday, December 07, 2016 Sheet 52 of 111	
Custom	PAYTON	Rev	0.1



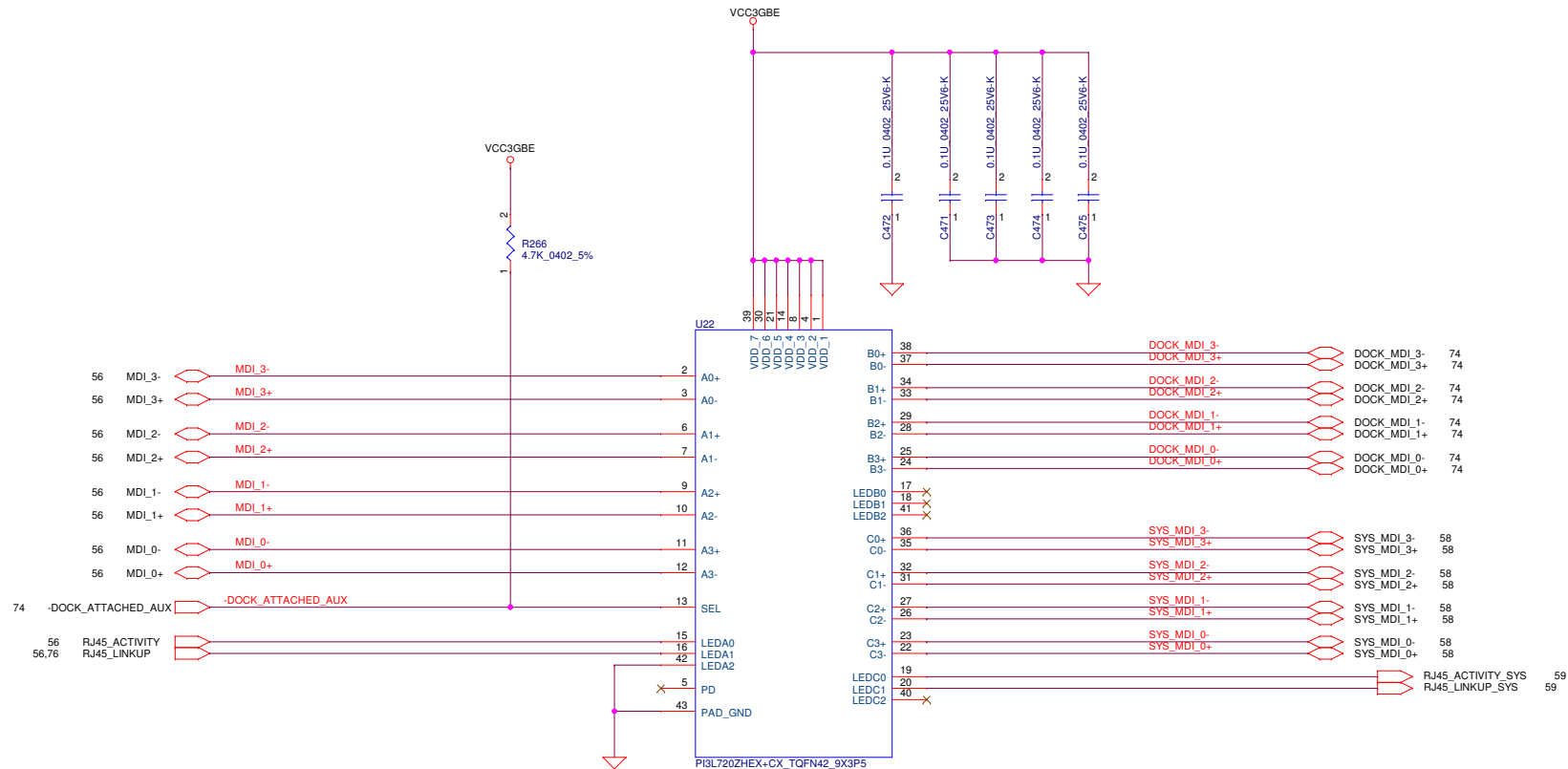
Security Classification		LC Future Center Secret Data		Title	
Issued Date	2015/07/16	Deciphered Date	2016/01/16	USB POWER/CONN (2/2)	
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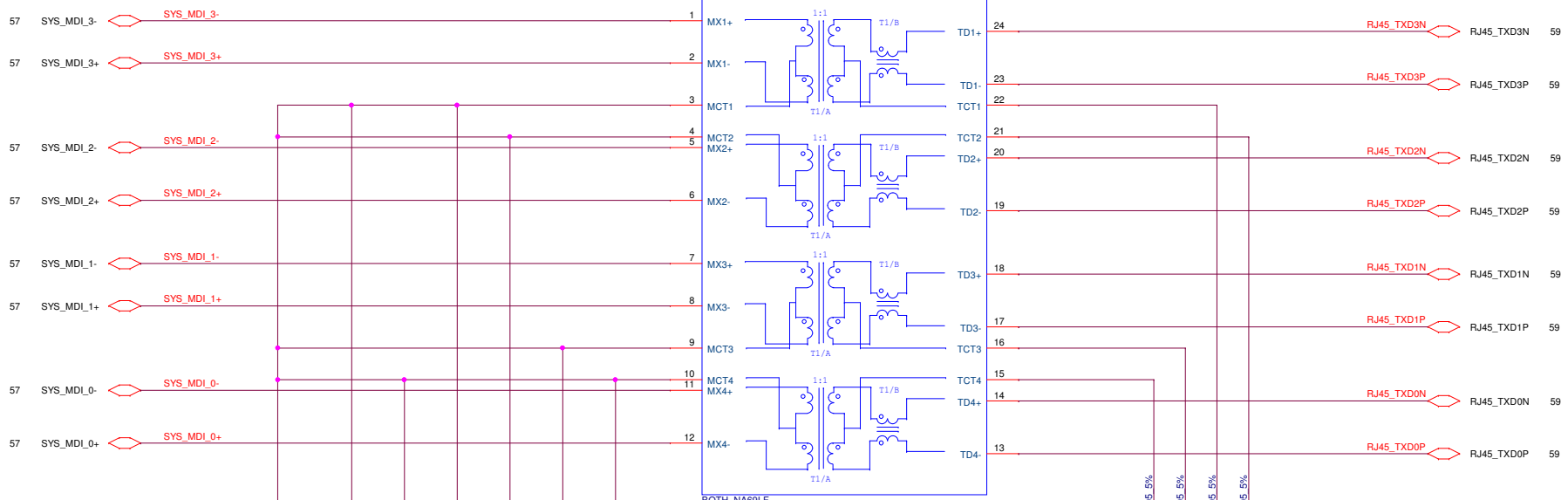
U21 GBE PHY

vPRO Model	Non-vPRO Model
I219LM	I219V



U22

Vendor	P/N
Pericom TI	PI3L720ZHEX+CX TS3L501E



THE WIDTH OF THESE TRACE SHOULD BE WIDER THAN 35MIL TO PREVENT VOLTAGE DROP.

C303 SHOULD BE PLACED AS CLOSE TO MAGNETICS AS POSSIBLE.

ESD REASON

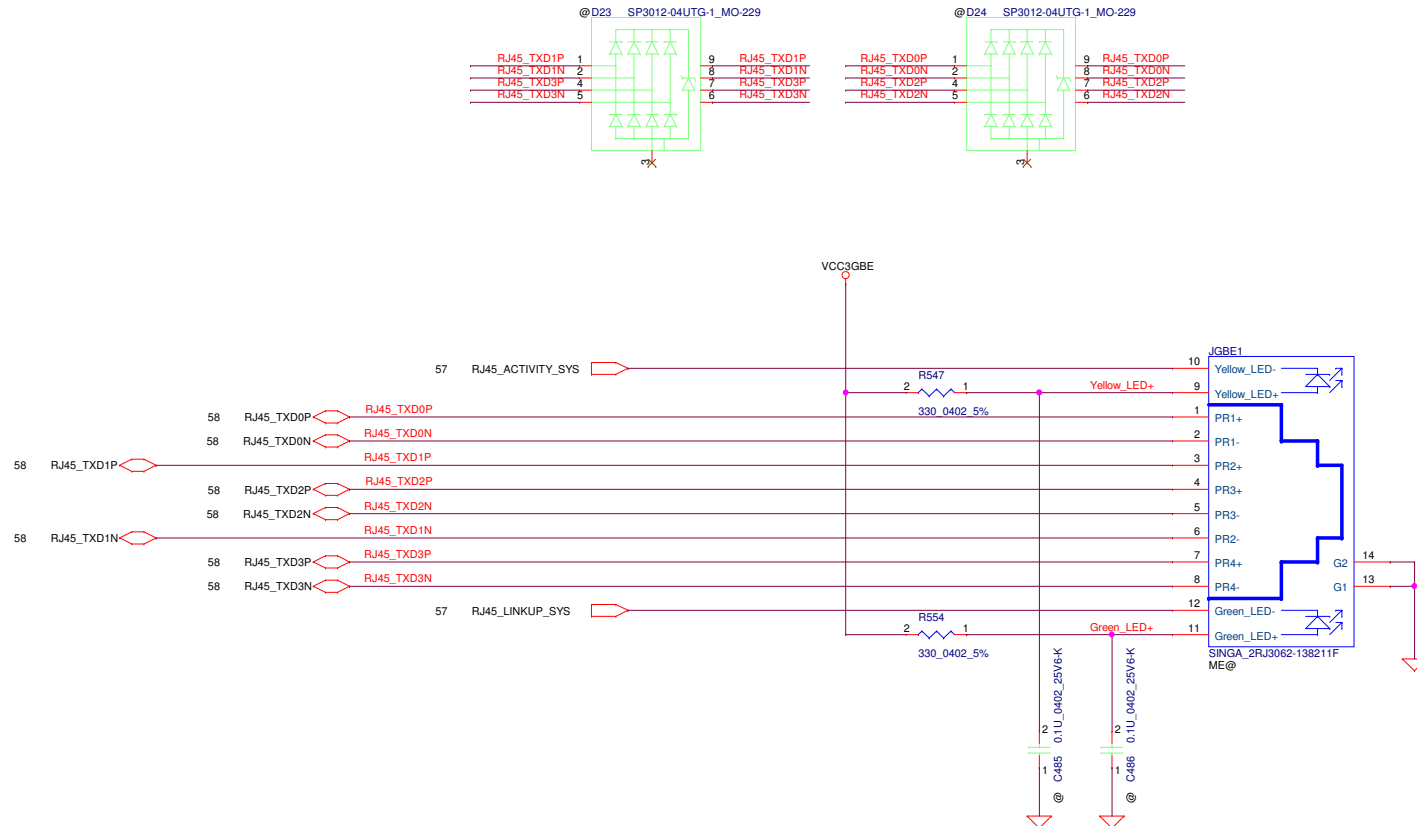
Change R267-R270 from 1/8W to 1/2W for PAL EMC-026 test

PATTERN MUST BE SHORT AND WIDE.

HIGH VOLTAGE 1500PF CAP IS OPTIONAL

Vendor	P/N
Timag	IH-115-F
Bothhand	NA69LF

D23, D24 EMC Parts



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Title		
RJ45 CONNECTOR		
Size	Document Number	
Custom		
Date:	Wednesday, December 07, 2016	Rev
	Sheet	0.1
	59	111

PRTC3

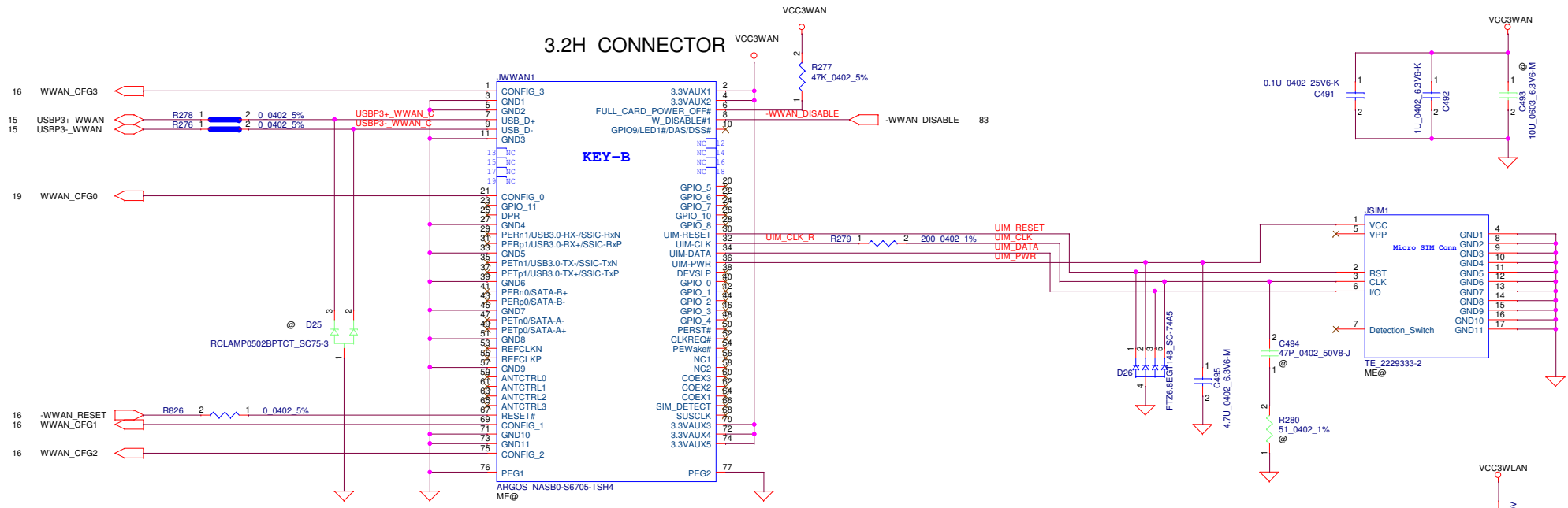


BATT CR2032 3V 225MAH

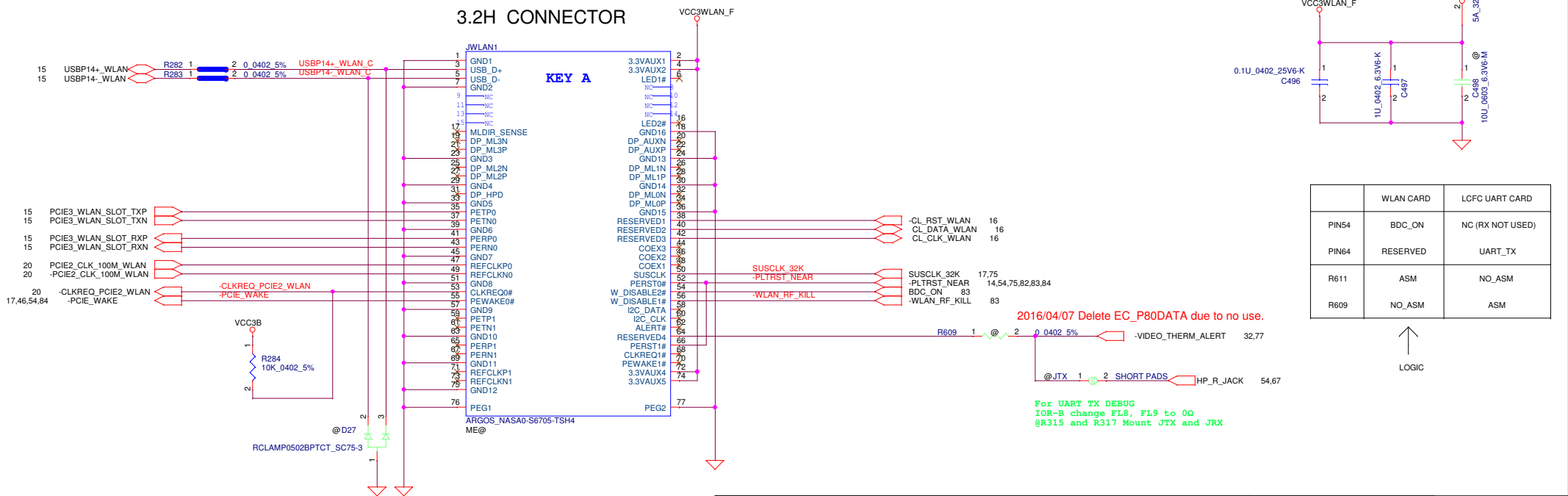
RTC@

Security Classification		LC Future Center Secret Data		Title		
Issued Date	2013/11/08	Deciphered Date	2013/11/08	Load BOM Only(RTC BATT) 		
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				5		0.2
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TYPE-B NGFF CCARD FOR WWAN



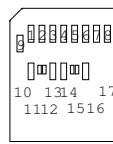
TYPE-A NGFF CCARD FOR WLAN



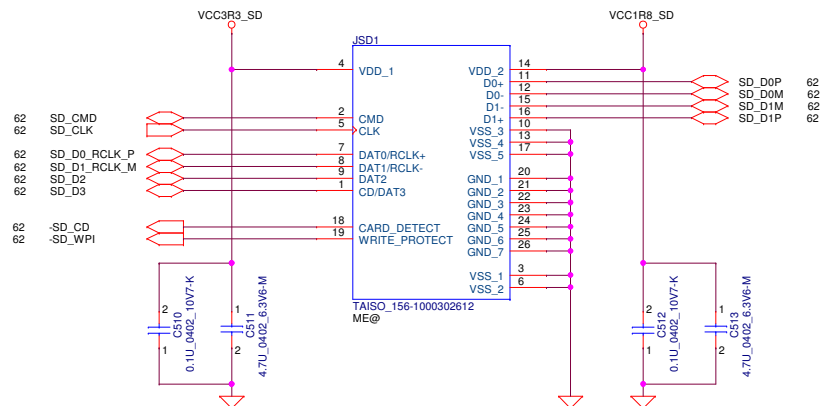
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Custom	PAYTON	0.1	
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Pin No	Normal type	UHS-II SD Slot	SD Mode	UHS II Mode
1		CD/DAT3		
2		CMD		
3		VSS1		
4		VDD		VDD1
5		CLK		
6		VSS2		
7		DAT0	RCLKP	
8		DAT1	RCLKM	
9		DAT2		
10			VSS3	
11			DOP	
12			DOM	
13			VSS4	
14			VDD2	
15			DIM	
16			DIP	
17			VSS5	
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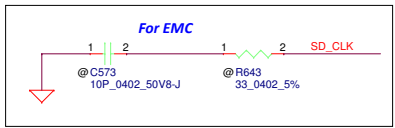
Bottom View



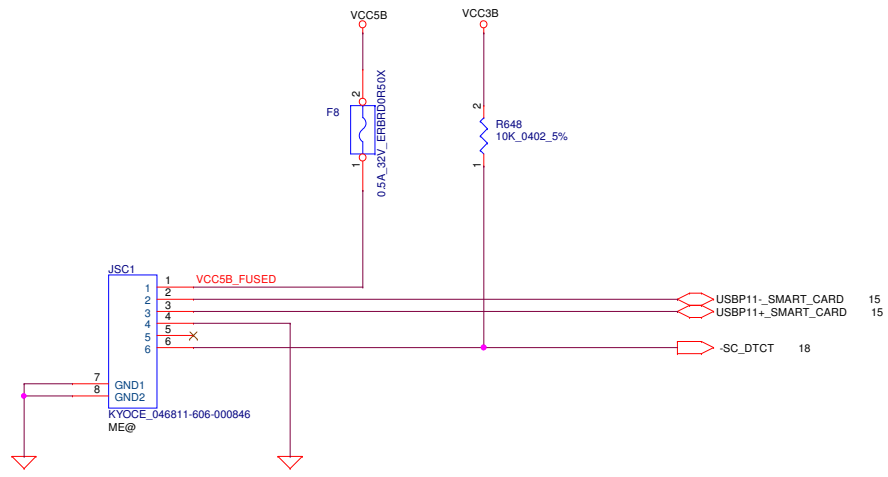
UHS II Interface	UHS I Interface
4 VDD1 3.3V	1 CD/DAT3
7 RCLKP	2 CMD
8 RCLKM	3 VSS1
10 VSS3	4 VDD 3.3V
11 DOP	5 CLK
12 DOM	6 VSS2
13 VSS4	7 DAT0
14 VDD2 1.8V	8 DAT1
15 DIM	9 DAT2
16 DIP	
17 VSS5	




CD : Low => Insertion Card
 High => No Card
 WP : Low => Write Protection On
 High => Write Protection Off or No Card

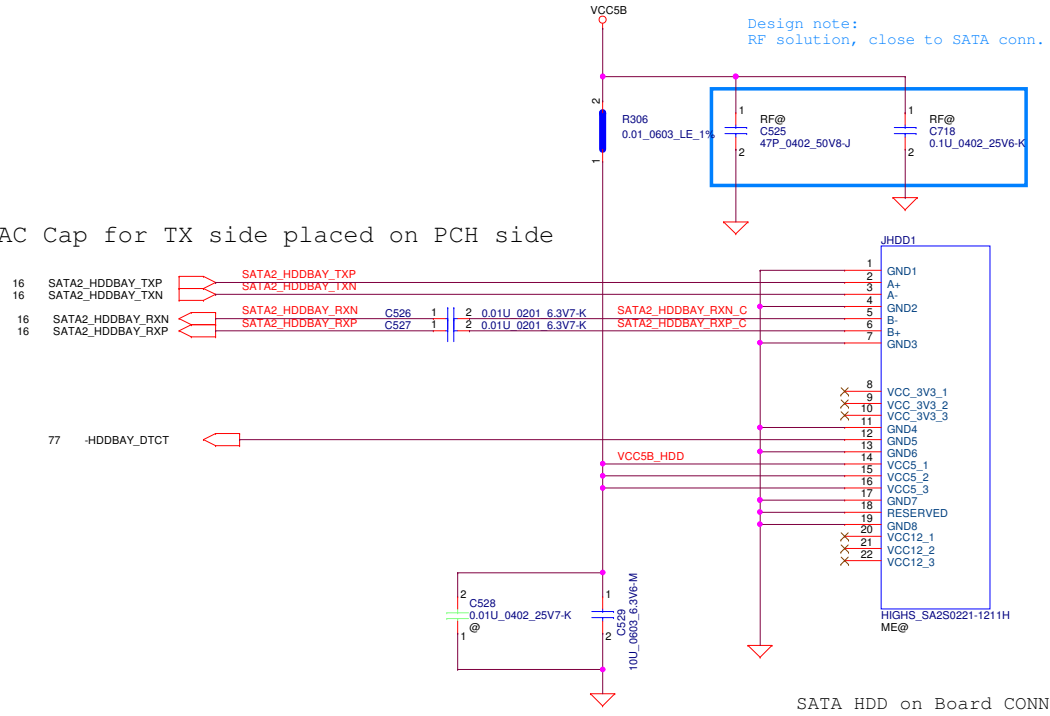


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			Document Number PAYTON	Rev 0.1
			Date: Wednesday, December 07, 2016 Sheet	63 of 111





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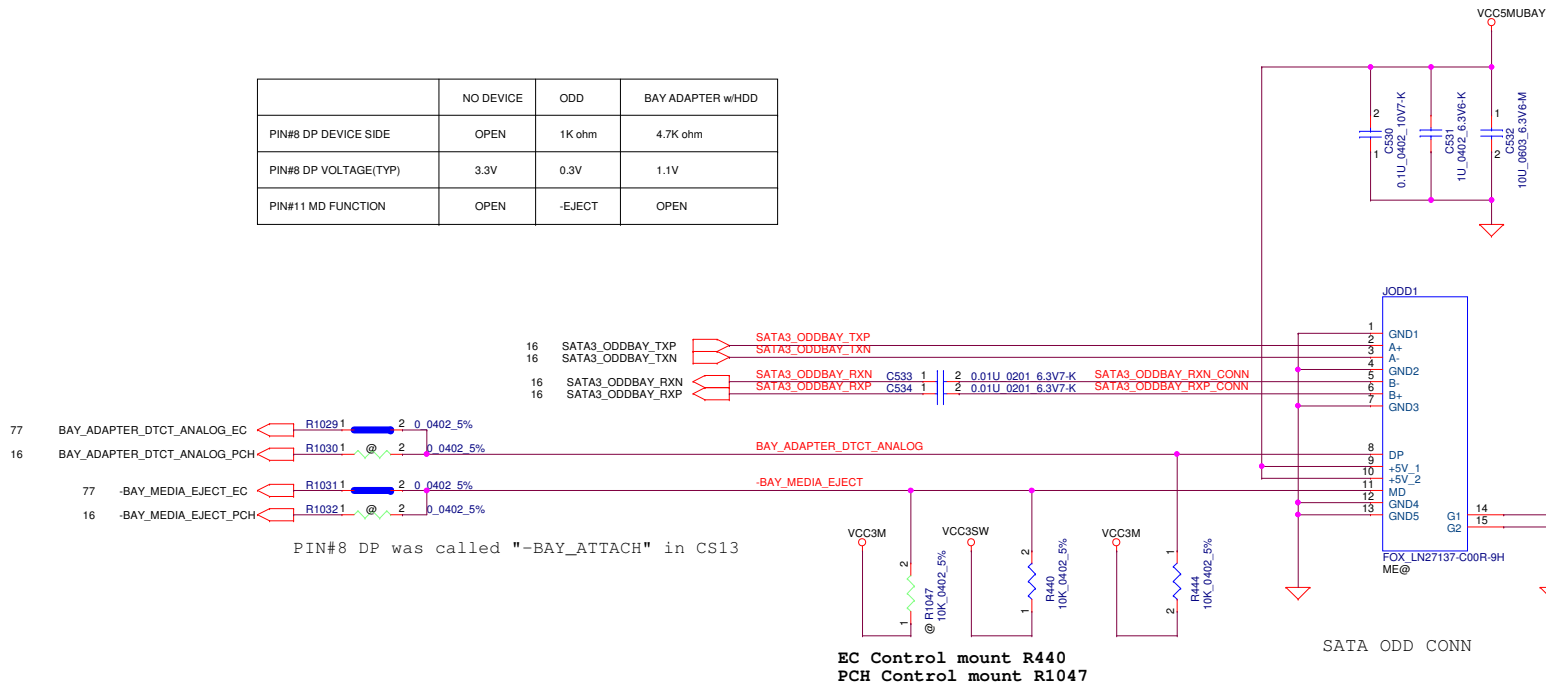
AC Cap for TX side placed on PCH side



SATA HDD on Board CONN

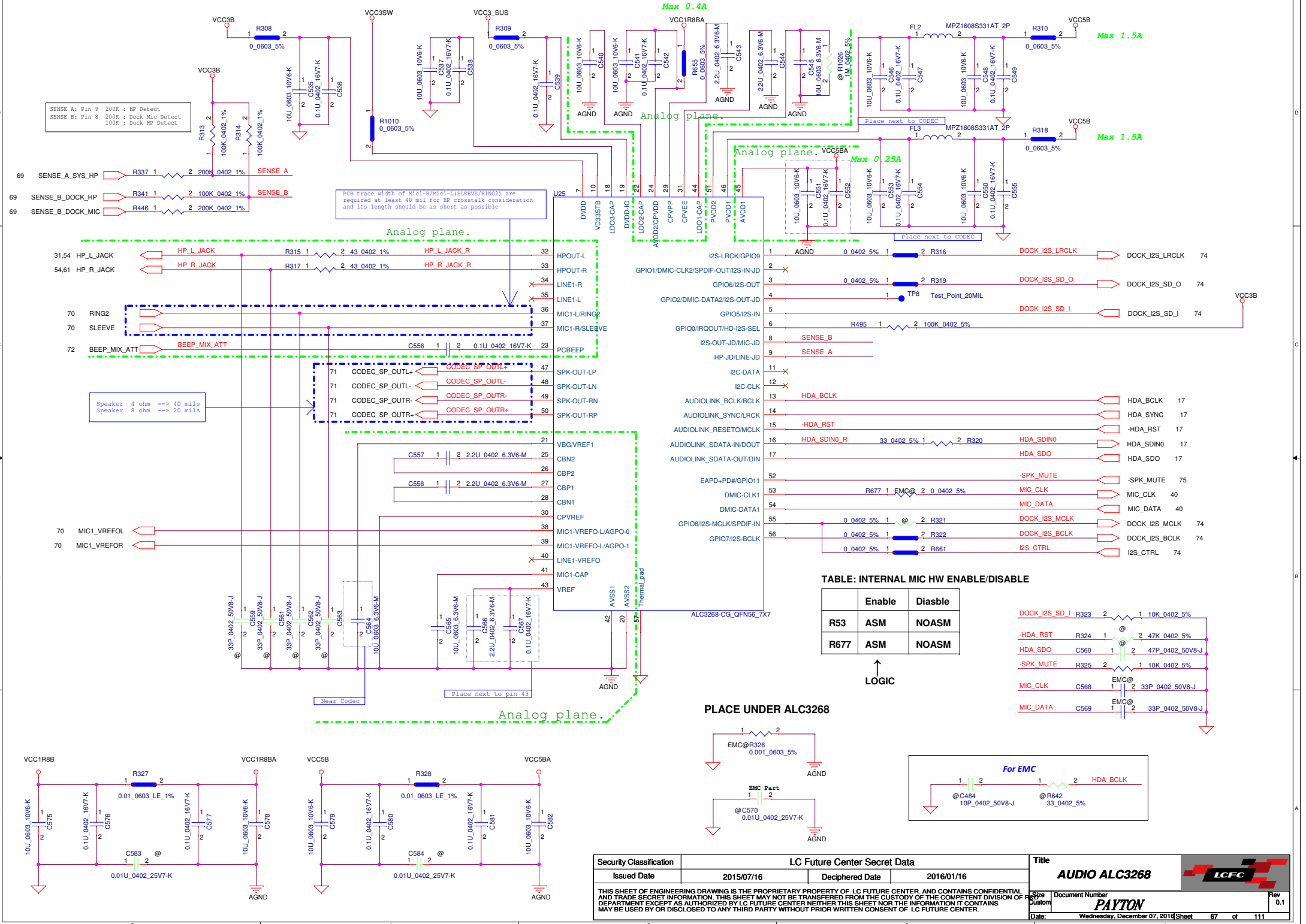
Security Classification	LC Future Center Secret Data		Title	
Issued Date	2015/07/16	Deciphered Date	2016/01/16	
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Size	Document Number			Rev
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Date:	Wednesday, December 07, 2016			Sheet 65 of 111

	NO DEVICE	ODD	BAY ADAPTER wHDD
PIN#8 DP DEVICE SIDE	OPEN	1K ohm	4.7K ohm
PIN#8 DP VOLTAGE(TYP)	3.3V	0.3V	1.1V
PIN#11 MD FUNCTION	OPEN	-EJECT	OPEN



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Title		LCFC	
SATA ODD CONN		Size	Document Number
		Custom	
Date:	Wednesday, December 07, 2016	Sheet	66 of 111
Rev	0.1		



PCB trace width of Mic1-R/Mic1-L (SLEEVE/RING2) are required at least 40 mil for HP crosstalk consideration and its length should be as short as possible

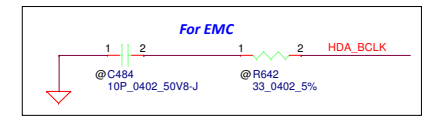
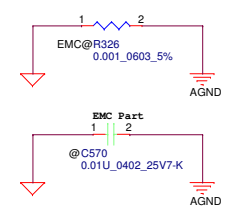
Speaker 4 ohm ==> 40 mils
 Speaker 8 ohm ==> 20 mils

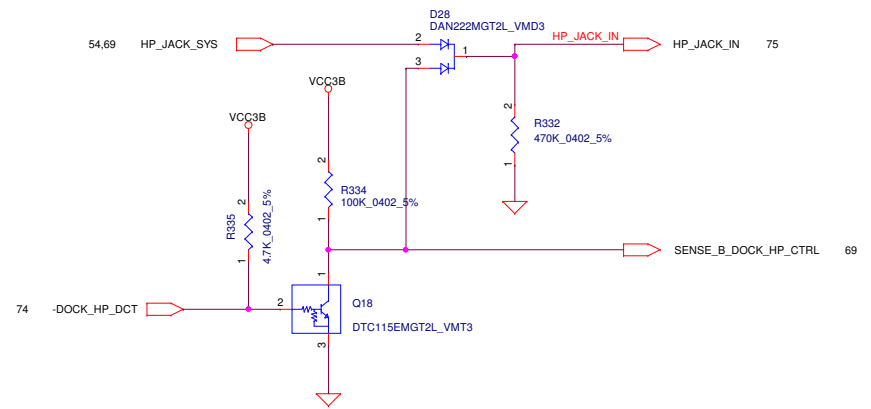
TABLE: INTERNAL MIC HW ENABLE/DISABLE

	Enable	Disable
R53	ASM	NOASM
R677	ASM	NOASM

LOGIC

PLACE UNDER ALC3268





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Title		
AUDIO CONNECTOR		
Size	Document Number	Rev
Custom	PAYTON	0.1
Date:	Wednesday, December 07, 2016	Sheet 68 of 111

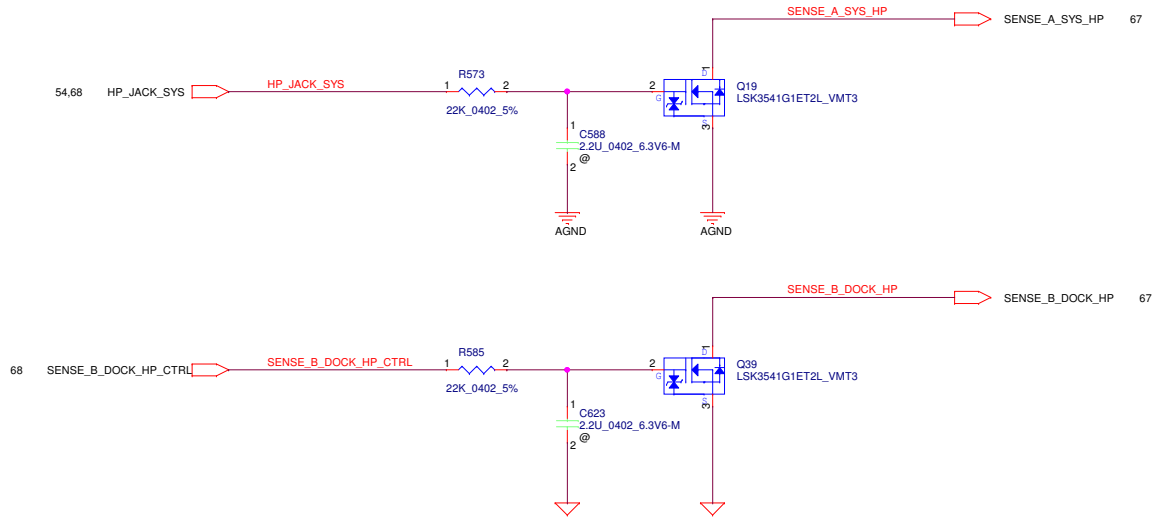
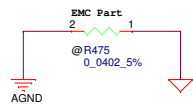
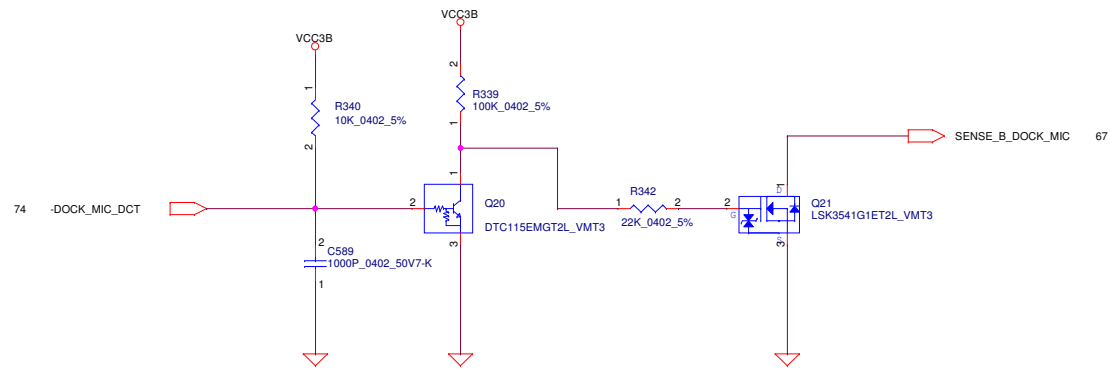


TABLE: DOCK MIC HW ENABLE/DISABLE

	Enable	Diasble
R340	ASM	NOASM
R446	ASM	NOASM
R339	ASM	NOASM
Q20	ASM	NOASM
R342	ASM	NOASM
Q21	ASM	NOASM

↑
LOGIC



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Title	AUDIO JACK SENSE	
Size	Document Number	Rev
Custom	PAYTON	0.1
Date:	Wednesday, December 07, 2016	Sheet 69 of 111

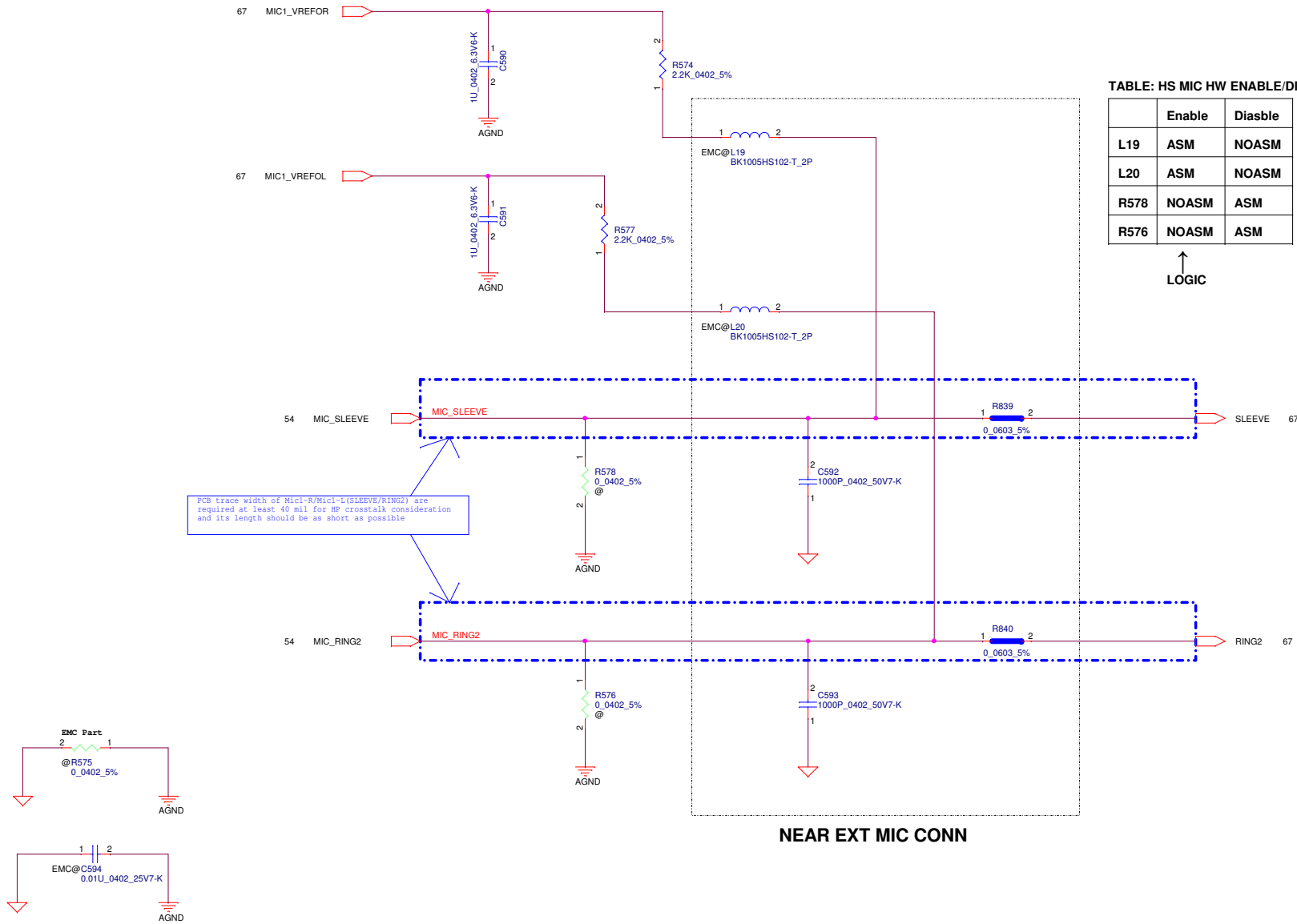


TABLE: HS MIC HW ENABLE/DISABLE

	Enable	Diisable
L19	ASM	NOASM
L20	ASM	NOASM
R578	NOASM	ASM
R576	NOASM	ASM

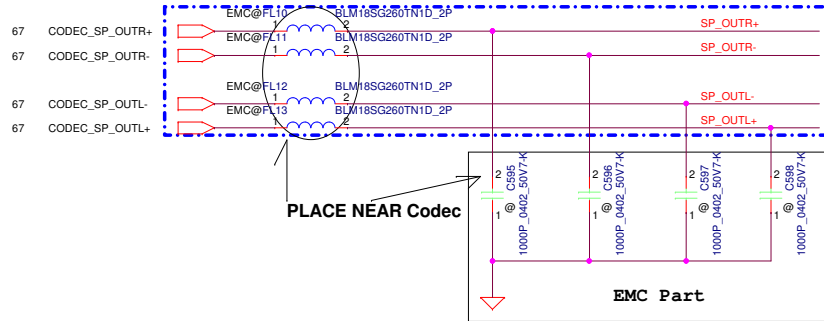
↑
LOGIC

NEAR EXT MIC CONN

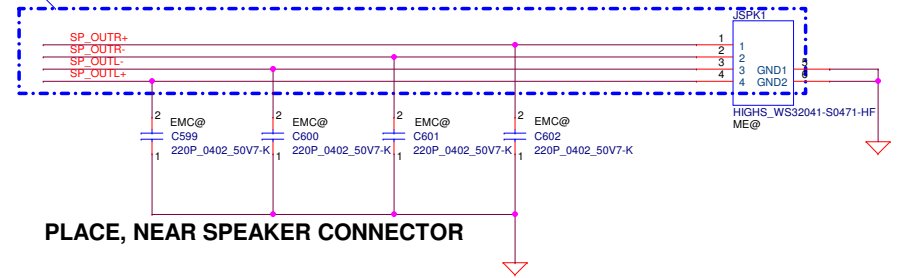
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Issued Date	2015/07/16	Deciphered Date 2016/01/16
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Title		
AUDIO EXT MIC I/F		
Size	Document Number	Rev
Custom		0.1
Date:	Wednesday, December 07, 2016	Sheet 70 of 111

ALC3268 speaker output part

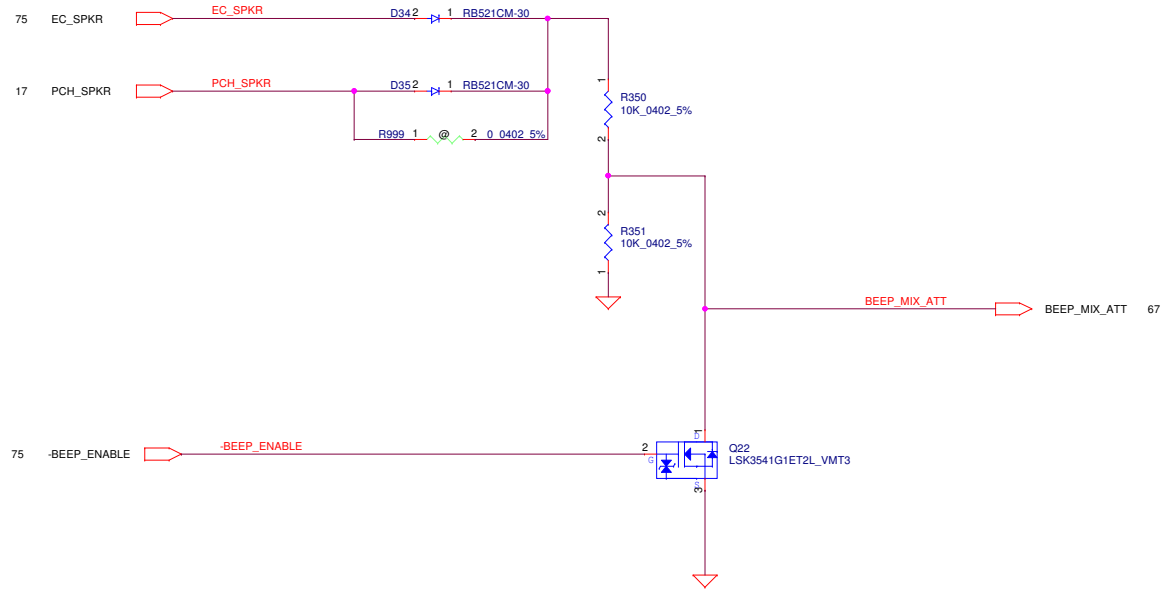


Speaker 4 ohm --> 40 mils
Speaker 8 ohm --> 20 mils



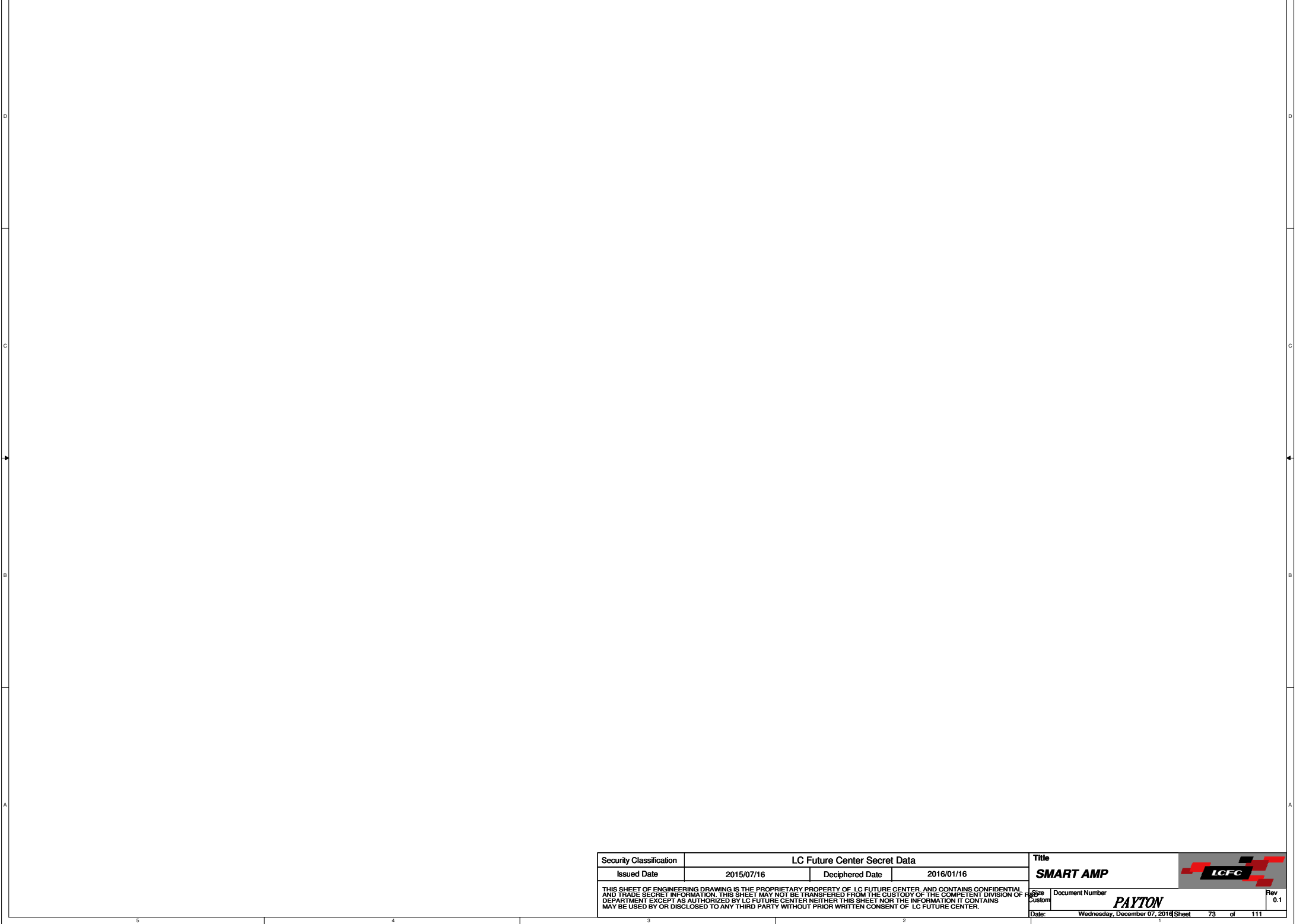
Security Classification	LC Future Center Secret Data		Title	 AUDIO SPEAKER
Issued Date	2015/07/16	Deciphered Date	2016/01/16	
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				Rev 0.1

D34 for Enhanced PC Beep function.
 No use mount R999, unmount D34, D35



Security Classification		LC Future Center Secret Data		Title	
Issued Date	2015/07/16	Deciphered Date	2016/01/16	AUDIO BEEP	
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				Custom	PAYTON
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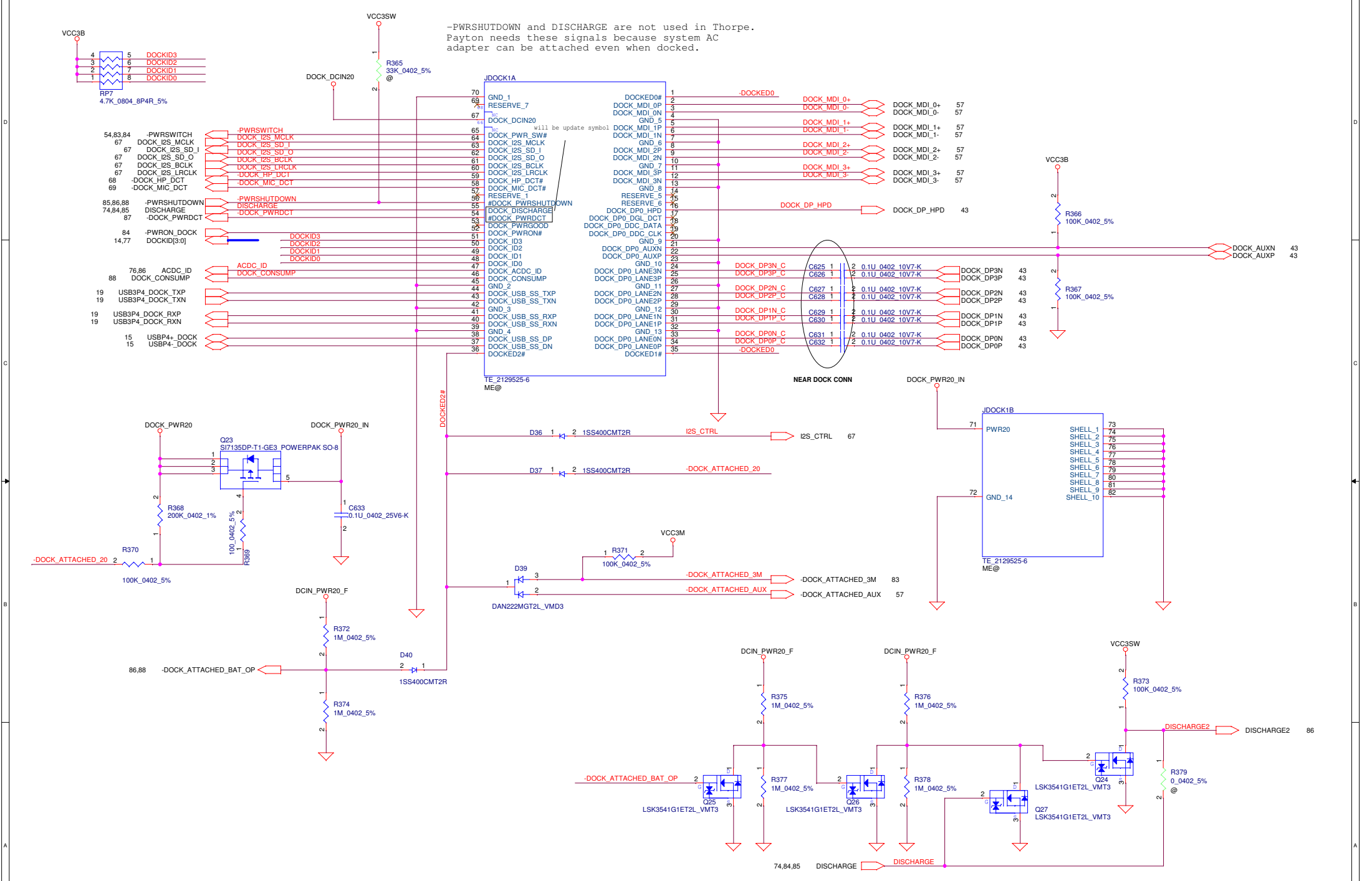




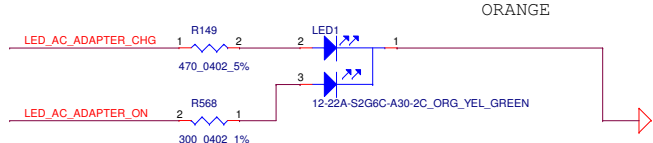
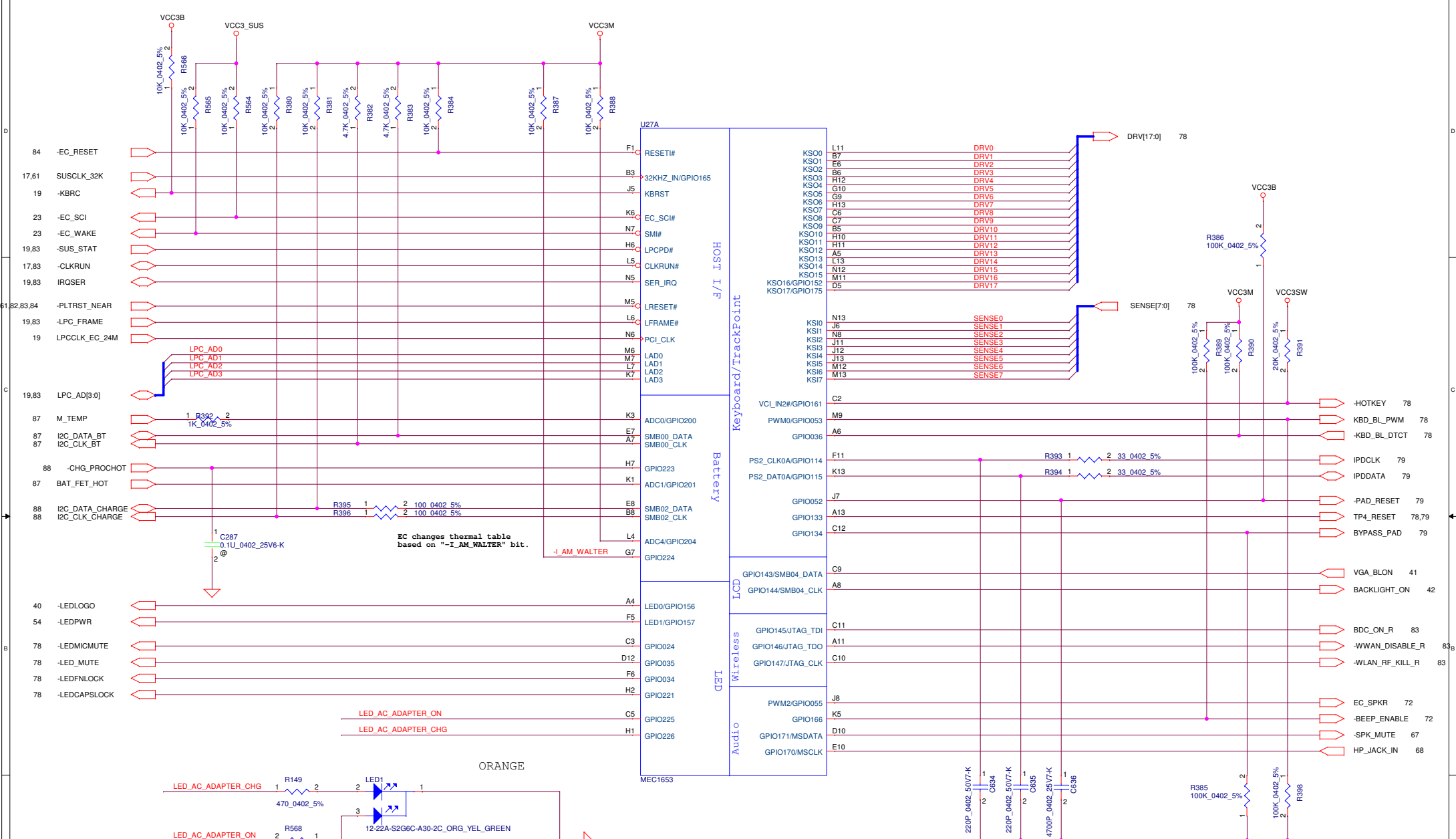
Security Classification		LC Future Center Secret Data		Title	
Issued Date	2015/07/16	Deciphered Date	2016/01/16	SMART AMP	
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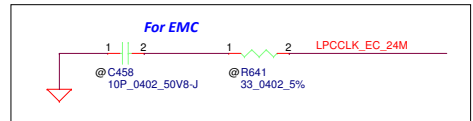
-PWRSHUTDOWN and DISCHARGE are not used in Thorpe. Payton needs these signals because system AC adapter can be attached even when docked.



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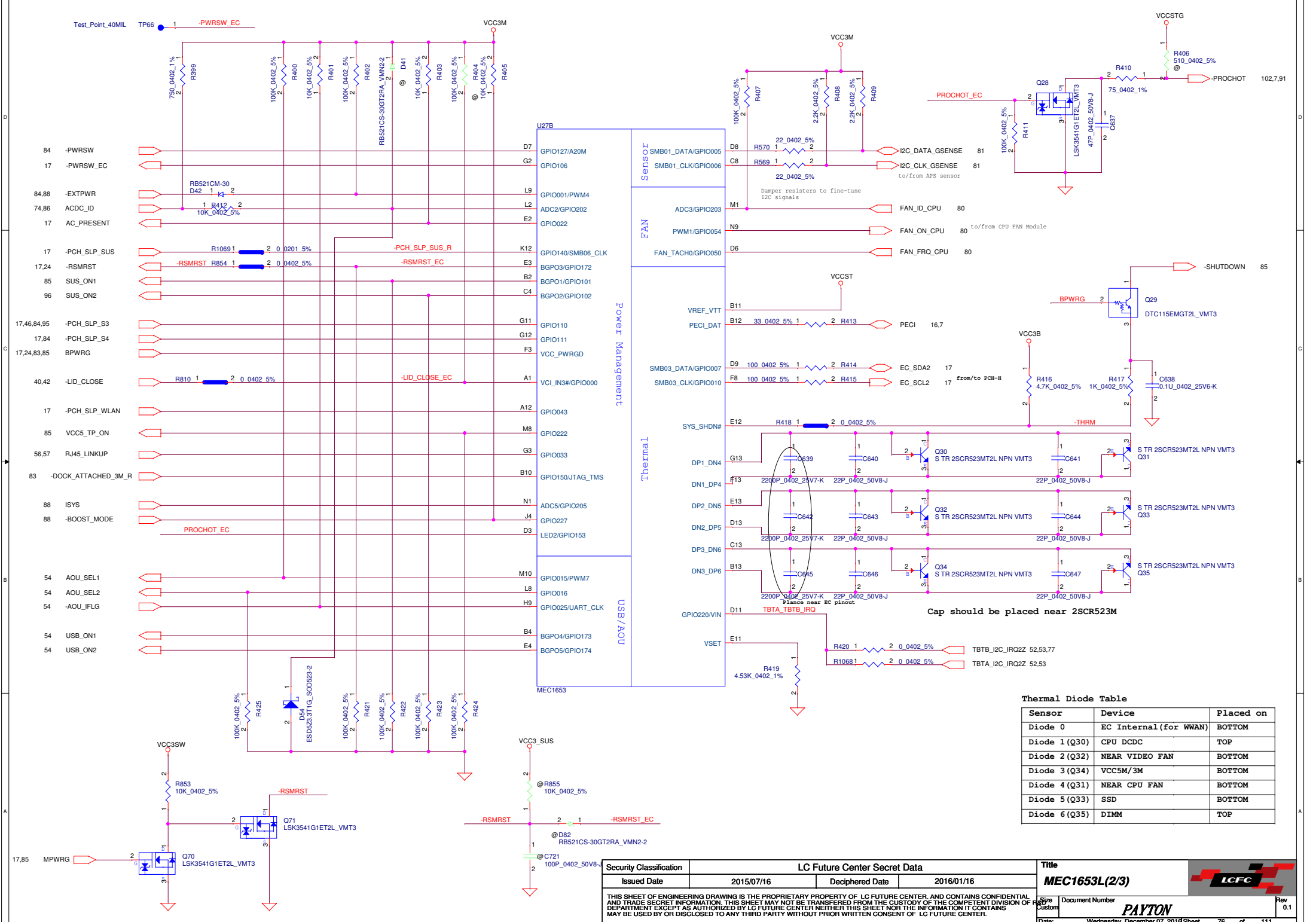


Place near DC-IN CONNECTOR (MB EDGE)



Thorpe has 0 ohm jumpers on MSDATA/MSCLK but it's not required on Payton because LNV/LCFC won't use it. (CT_20140903)

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2015/07/16	Deciphered Date	2016/01/16	MEC1653L(1/3)	
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84	-PWRSW		D7	GPIO127/A20M
17	-PWRSW_EC		G2	GPIO106
84,88	-EXTPWR		L9	GPIO001/PWM4
74,86	ACDC_ID		L2	ADC2/GPIO202
17	AC_PRESENT		E2	GPIO022
17	-PCH_SLP_SUS		K12	GPIO140/SMB06_CLK
17,24	-RSMRST		E3	BGPO3/GPIO172
85	SUS_ON1		B2	BGPO1/GPIO101
96	SUS_ON2		C4	BGPO2/GPIO102
17,46,84,95	-PCH_SLP_S3		G11	GPIO110
17,84	-PCH_SLP_S4		G12	GPIO111
17,24,83,85	BPWRG		F3	VCC_PWRGD
40,42	-LID_CLOSE		A1	VCL_IN3#/GPIO000
17	-PCH_SLP_WLAN		A12	GPIO043
85	VCC5_TP_ON		M8	GPIO222
56,57	RJ45_LINKUP		G3	GPIO033
83	-DOCK_ATTACHED_3M_R		B10	GPIO150/JTAG_TMS
88	ISYS		N1	ADC5/GPIO205
88	-BOOST_MODE		J4	GPIO227
			D3	LED2/GPIO153
54	AOU_SEL1		M10	GPIO015/PWM7
54	AOU_SEL2		L8	GPIO016
54	-AOU_IFLG		H9	GPIO025/UART_CLK
54	USB_ON1		B4	BGPO4/GPIO173
54	USB_ON2		E4	BGPO5/GPIO174

U27B	D7	GPIO127/A20M	Sensor
	G2	GPIO106	
	L9	GPIO001/PWM4	FAN
	L2	ADC2/GPIO202	
	E2	GPIO022	
	K12	GPIO140/SMB06_CLK	Power Management
	E3	BGPO3/GPIO172	
	B2	BGPO1/GPIO101	
	C4	BGPO2/GPIO102	Thermal
	G11	GPIO110	
	G12	GPIO111	
	F3	VCC_PWRGD	
	A1	VCL_IN3#/GPIO000	
	A12	GPIO043	
	M8	GPIO222	
	G3	GPIO033	
	B10	GPIO150/JTAG_TMS	
	N1	ADC5/GPIO205	
	J4	GPIO227	USB/AOU
	D3	LED2/GPIO153	
MEC1653	M10	GPIO015/PWM7	
	L8	GPIO016	
	H9	GPIO025/UART_CLK	
	B4	BGPO4/GPIO173	
	E4	BGPO5/GPIO174	

Thermal Diode Table

Sensor	Device	Placed on
Diode 0	EC Internal (for WWAN)	BOTTOM
Diode 1 (Q30)	CPU DCDC	TOP
Diode 2 (Q32)	NEAR VIDEO FAN	BOTTOM
Diode 3 (Q34)	VCC5M/3M	BOTTOM
Diode 4 (Q31)	NEAR CPU FAN	BOTTOM
Diode 5 (Q33)	SSD	BOTTOM
Diode 6 (Q35)	DIMM	TOP

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Title
MEC1653L(2/3)

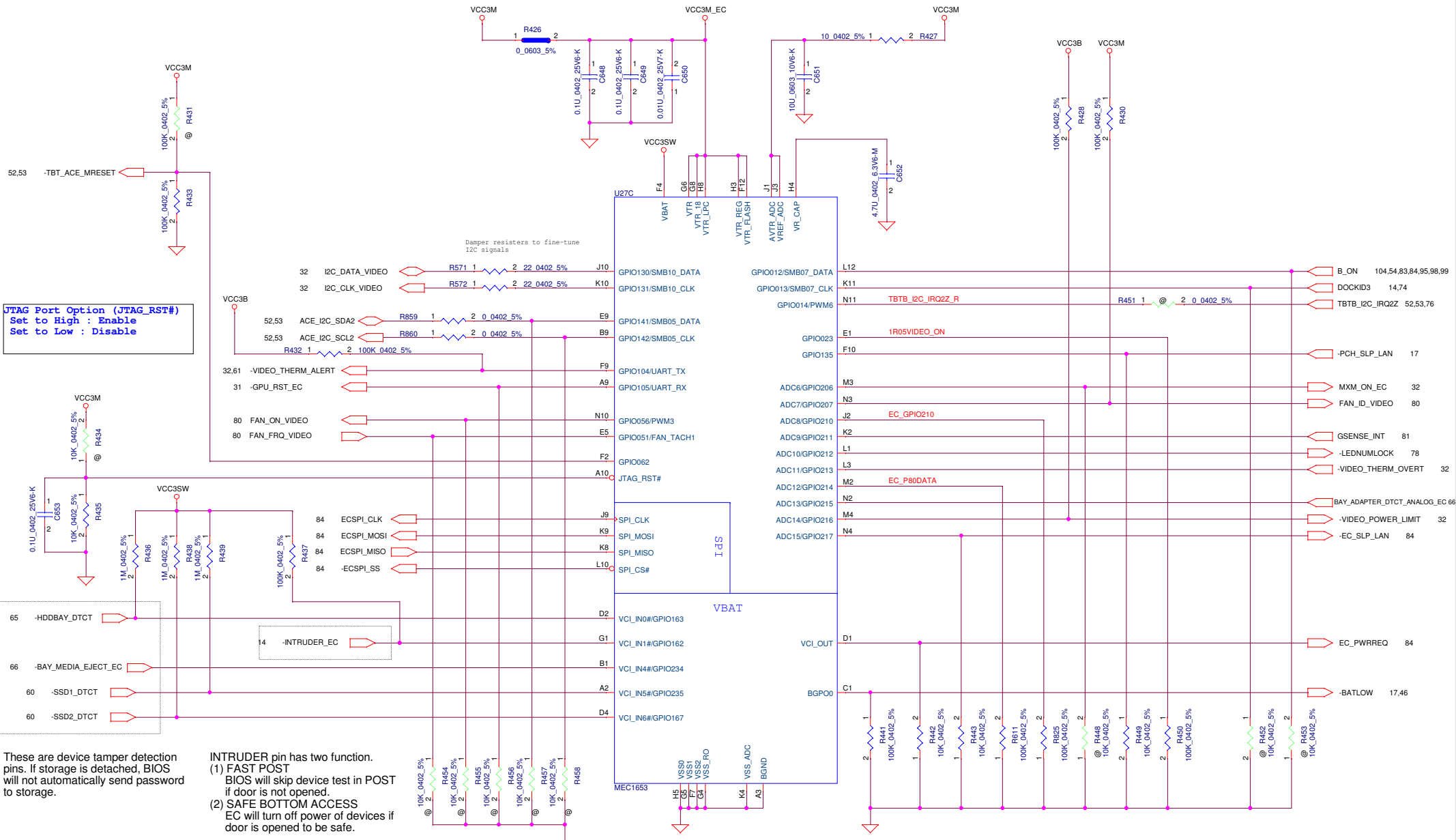
Size
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Document Number
PAYTON

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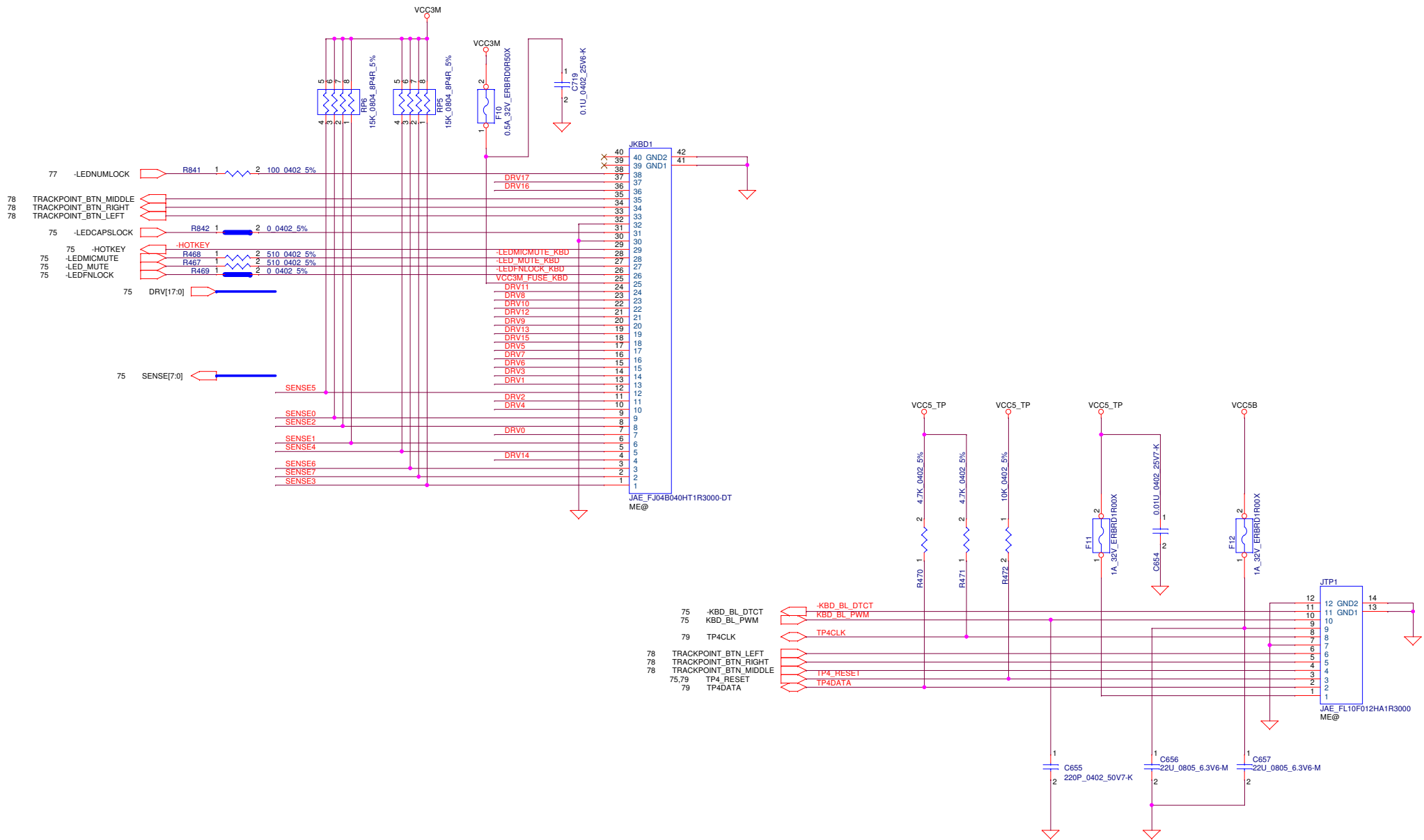
JTAG Port Option (JTAG_RST#)
 Set to High : Enable
 Set to Low : Disable

These are device tamper detection pins. If storage is detached, BIOS will not automatically send password to storage.

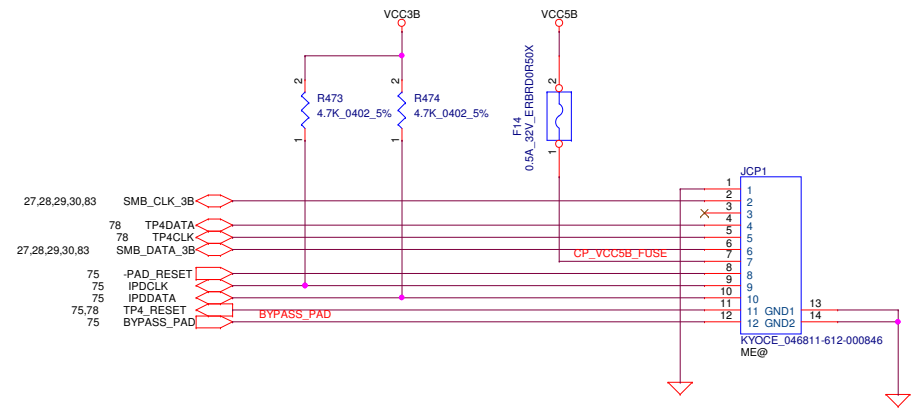
INTRUDER pin has two function.
 (1) FAST POST
 BIOS will skip device test in POST if door is not opened.
 (2) SAFE BOTTOM ACCESS
 EC will turn off power of devices if door is opened to be safe.


PD on -PCH_SLP_LAN is NO_ASM on Thorpe but keep for Payton for the case of Hi-Z in PCH side. (CT_20150428)

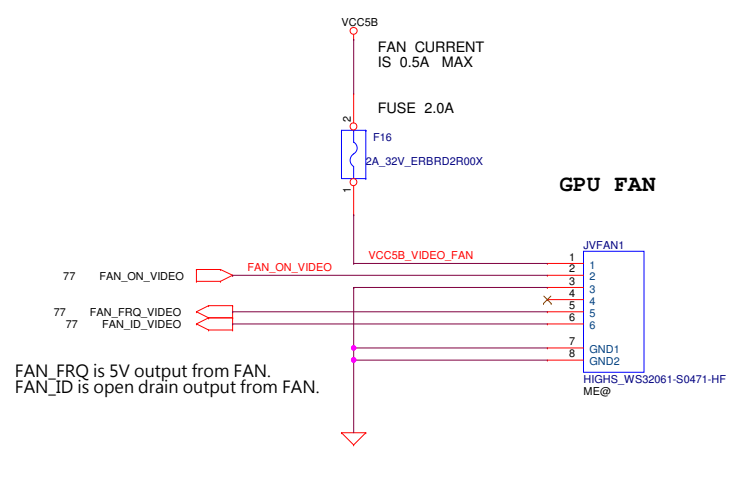
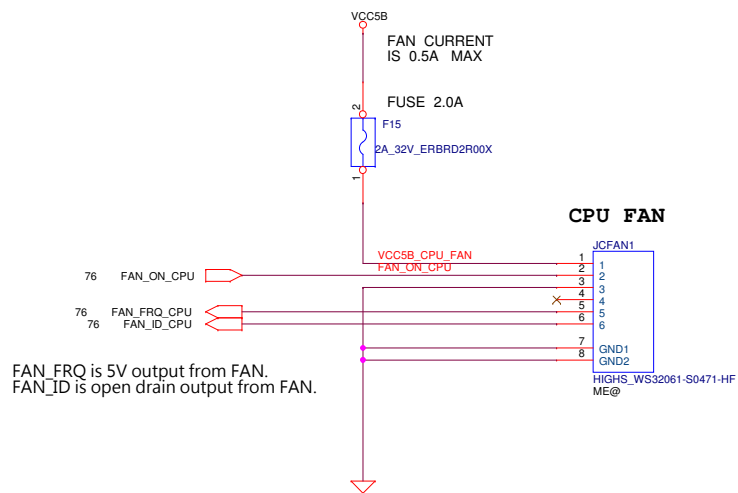
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Issued Date	2015/07/16	Deciphered Date	2016/01/16
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Issued Date	2015/07/16	Deciphered Date	2016/01/16	KEYBOARD CONNECTOR	
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Issued Date	2015/07/16	Deciphered Date	2016/01/16	TOUCH PAD		
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				Custom	PAYTON	0.1
				Date:	Wednesday, December 07, 2016	Sheet 79 of 111



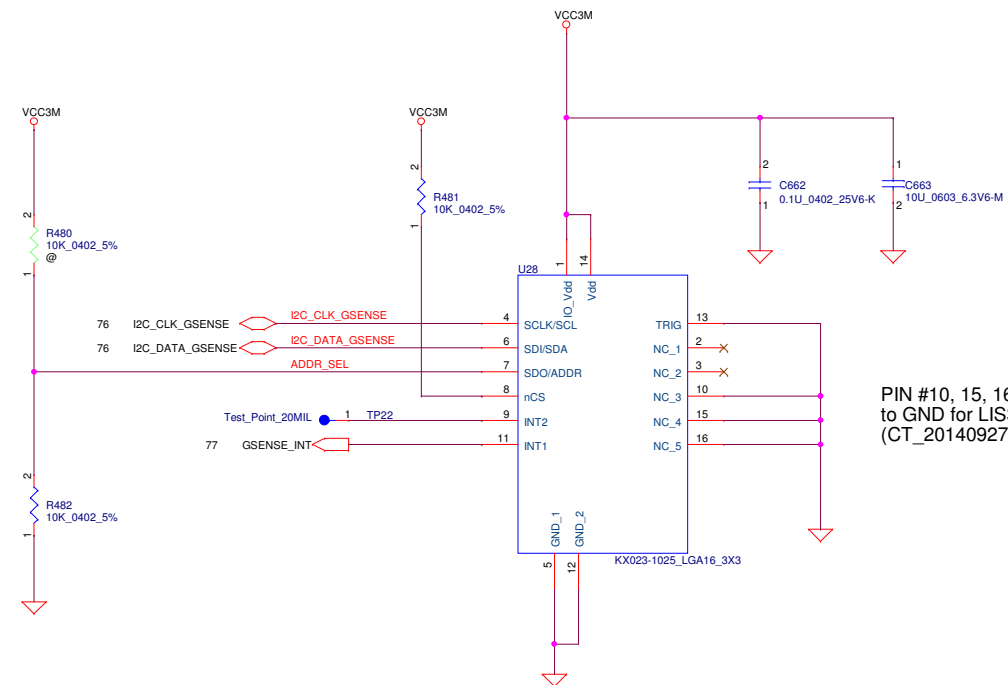
Security Classification	LC Future Center Secret Data		Title	 FAN CONNECTOR
Issued Date	2015/07/16	Deciphered Date	2016/01/16	
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TABLE


CS	Mode Selection
H	I2C Mode
L	SPI Mode

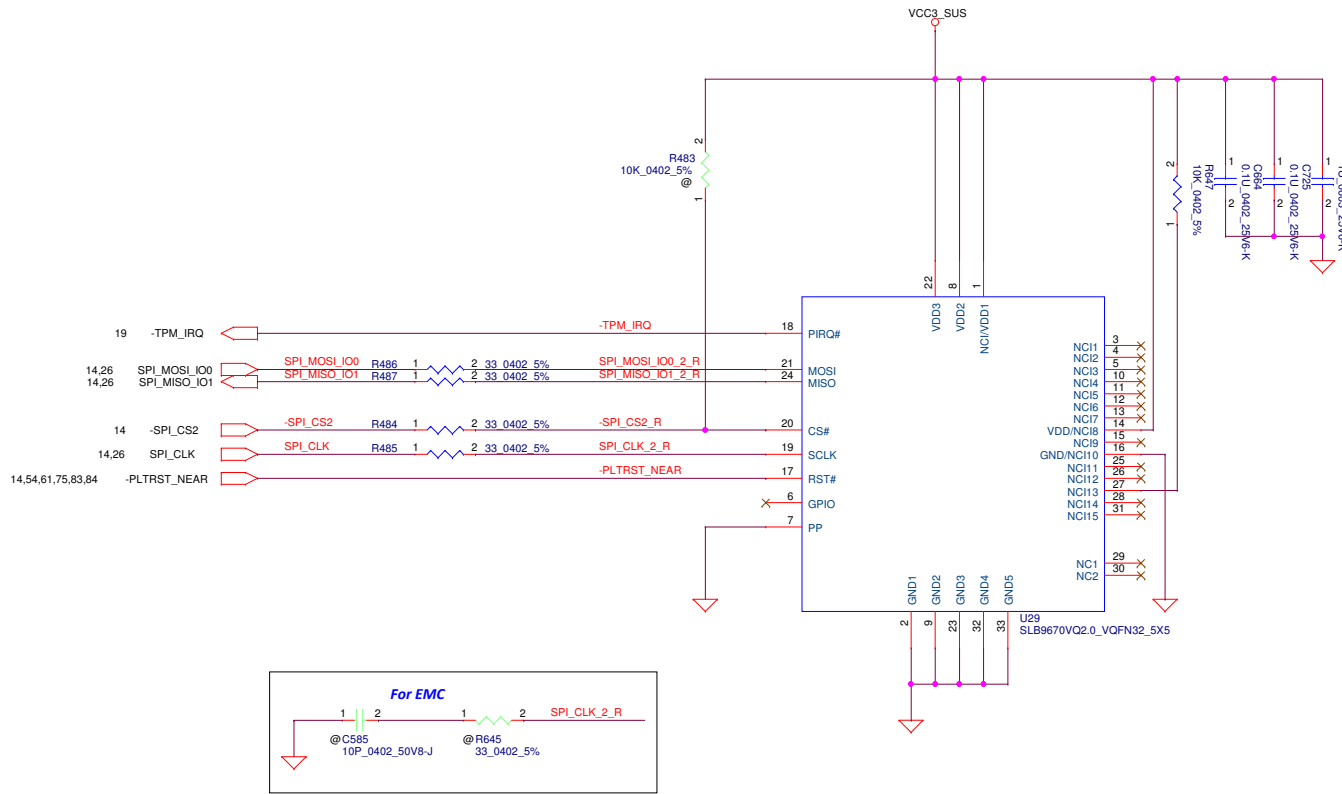
TABLE

P/N	ADDR_SEL	Address
LIS3DH	H	32h (W) & 33h (R)
	L	30h (W) & 31h (R)
KX023-1025	H	3Eh (W) & 3Fh (R)
	L	3Ch (W) & 3Dh (R)



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Title		
G-SENSOR		
Size	Document Number	Rev
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Date:	Wednesday, December 07, 2016	Sheet 81 of 111



TABLE

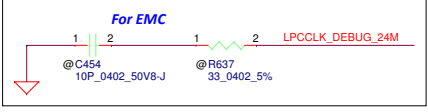
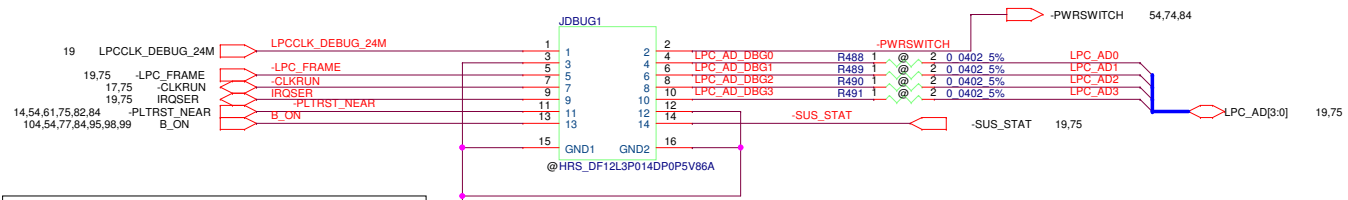
Pin No	TCG PTP Spec (v38)	Infinion SLB9670VQ2.0	ST ST33HTPH2E32AAE6
1	VDD	VDD	NIC
2	GND	GND	GND
3	GPIO	NCI	NCI
4	GPIO	NCI	NCI
5	NC	NCI	NCI
6	VNC/GPIO	GPIO	NC
7	GPIO/VDD	PP	PP
8	VDD	VDD	NCI
9	GND	GND	NCI
10	VNC	NCI	NCI
11	NC	NCI	NCI
12	NC	NCI	NCI
13	VNC/GPIO	NCI	NCI
14	VDD	NCI/VDD	NCI
15	NC	NCI	NCI
16	GND	NCI/GND	NCI
17	SPI_RST#	RST#	SPI_RST#
18	SPI_PIRQ#	PIRQ#	SPI_PIRQ#
19	SPI_CLK	SCLK	SPI_CLK
20	SPI_CS#	CS#	SPI_CS#
21	MOSI	MOSI	MOSI
22	VDD	VDD	VPS
23	GND	GND	NCI
24	MISO	MISO	MISO
25	NC	NCI	NCI
26	NC	NCI	NCI
27	NC	NCI	NCI
28	NC	NCI	NCI
29	VNC/GPIO	NC	NCI
30	VNC/GPIO	NC	NCI
31	VNC	NCI	NCI
32	GND	GND	NCI

Infinion NCI : Not Connected Internally
 ST NIC : Not Internally connected

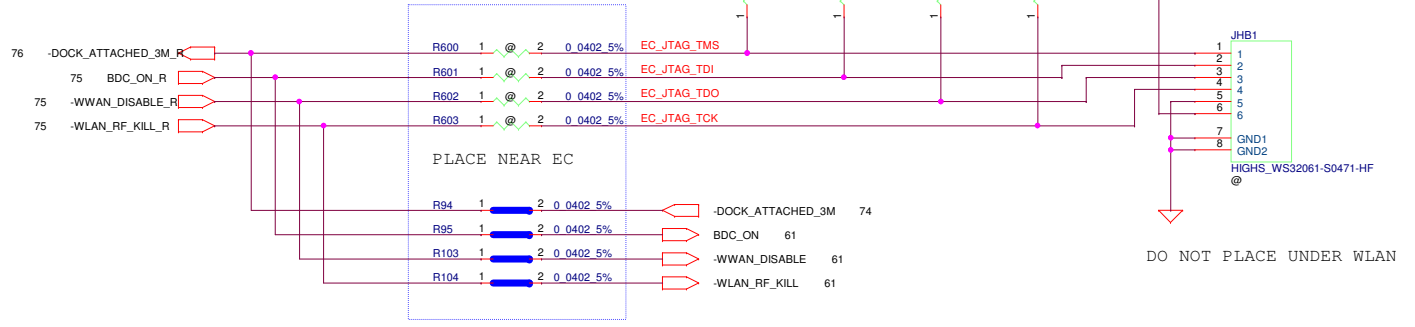
LPC Debug Port

	ENABLE	DISABLE
J30	ASM	NO_ASM
R488	ASM	NO_ASM
R489	ASM	NO_ASM
R490	ASM	NO_ASM
R491	ASM	NO_ASM

↑
LOGIC

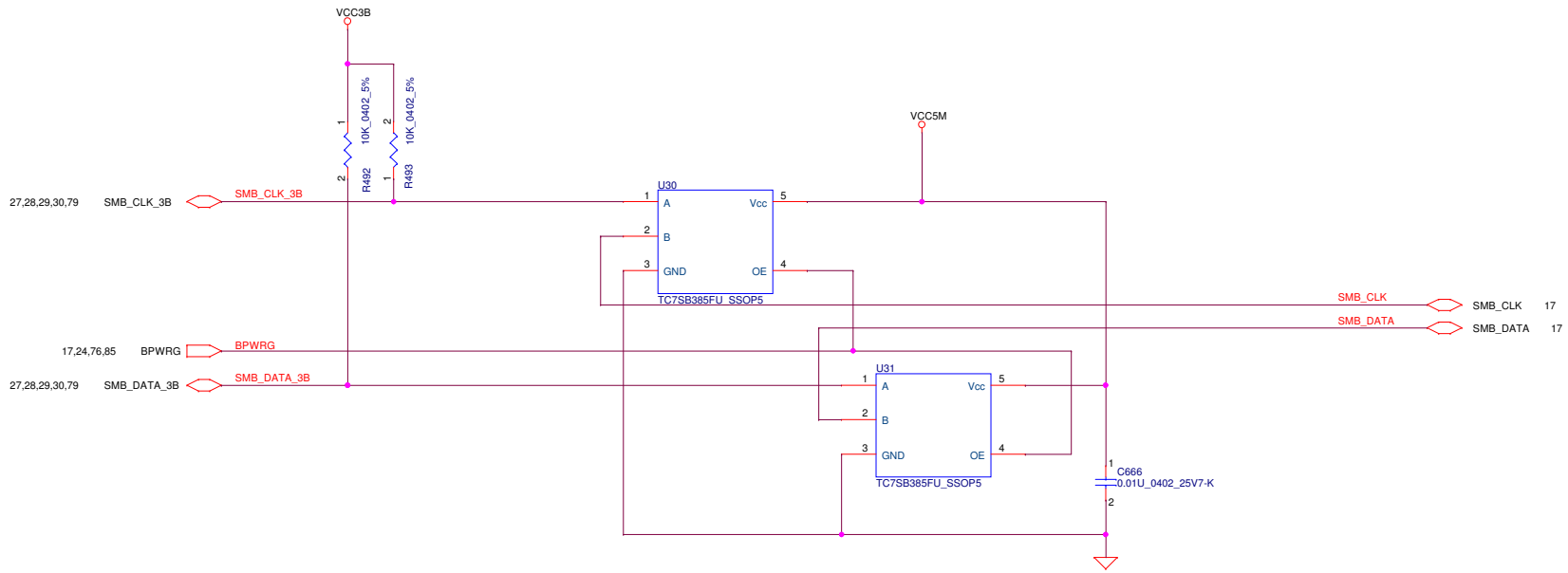


JTAG can work in MHz order

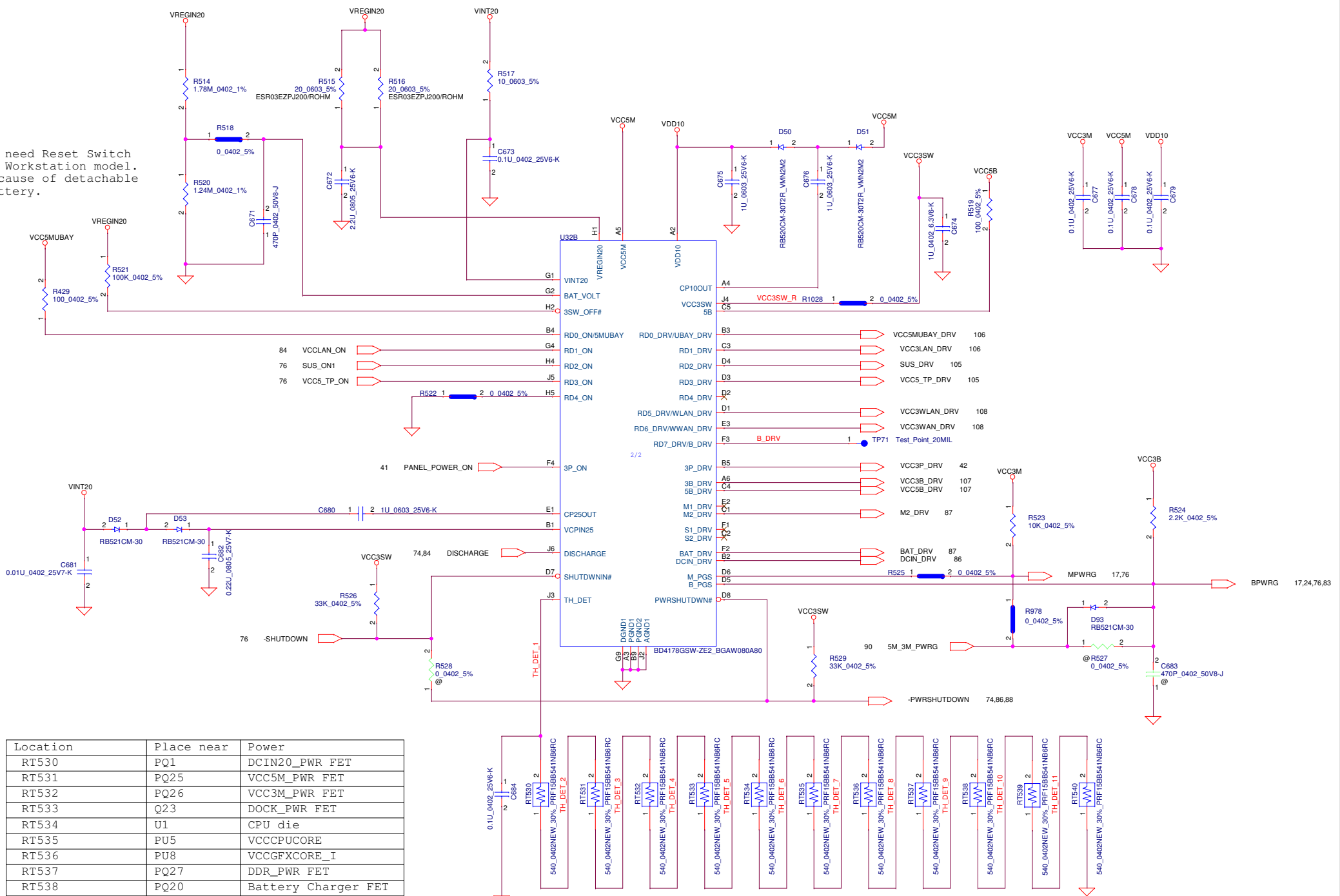


JTAG DEBUG CONN FOR EC
 PAYTON PRE DV ONLY

Page : 77
 JTAG Port Option (JTAG_RST#)
 Set to High : Enable
 Set to Low : Disable



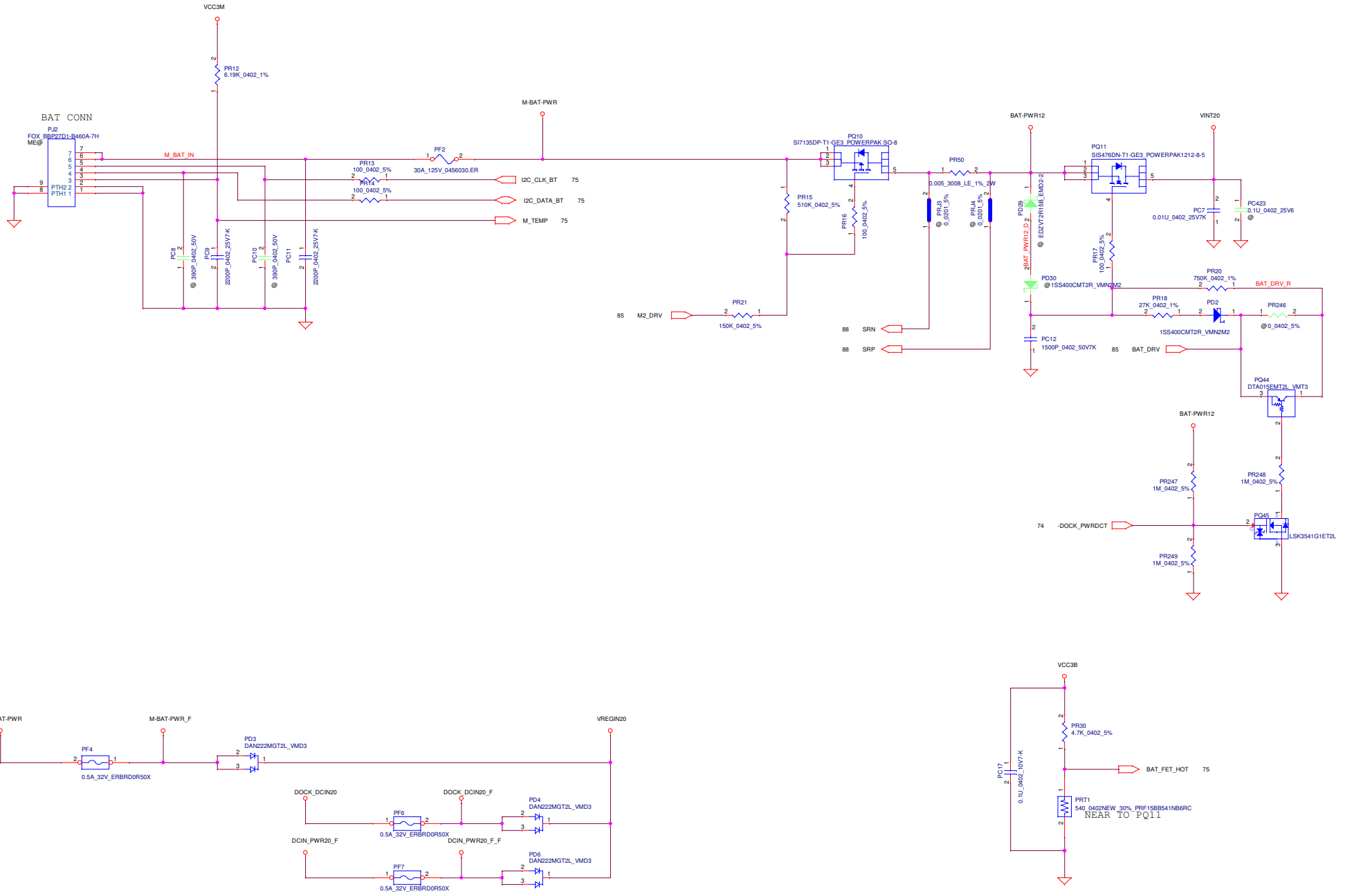
No need Reset Switch on Workstation model. Because of detachable battery.




Location	Place near	Power
RT530	PQ1	DCIN20_PWR FET
RT531	PQ25	VCC5M_PWR FET
RT532	PQ26	VCC3M_PWR FET
RT533	Q23	DOCK_PWR FET
RT534	U1	CPU die
RT535	PU5	VCCCPUCORE
RT536	PU8	VCCGFXCORE_I
RT537	PQ27	DDR_PWR FET
RT538	PQ20	Battery Charger FET
RT539	PQ46	Charge FET
RT540	PQ10	M_BAT_PWR FET
PRT1 (BAT_FET_HOT)	PQ11	BAT_IN


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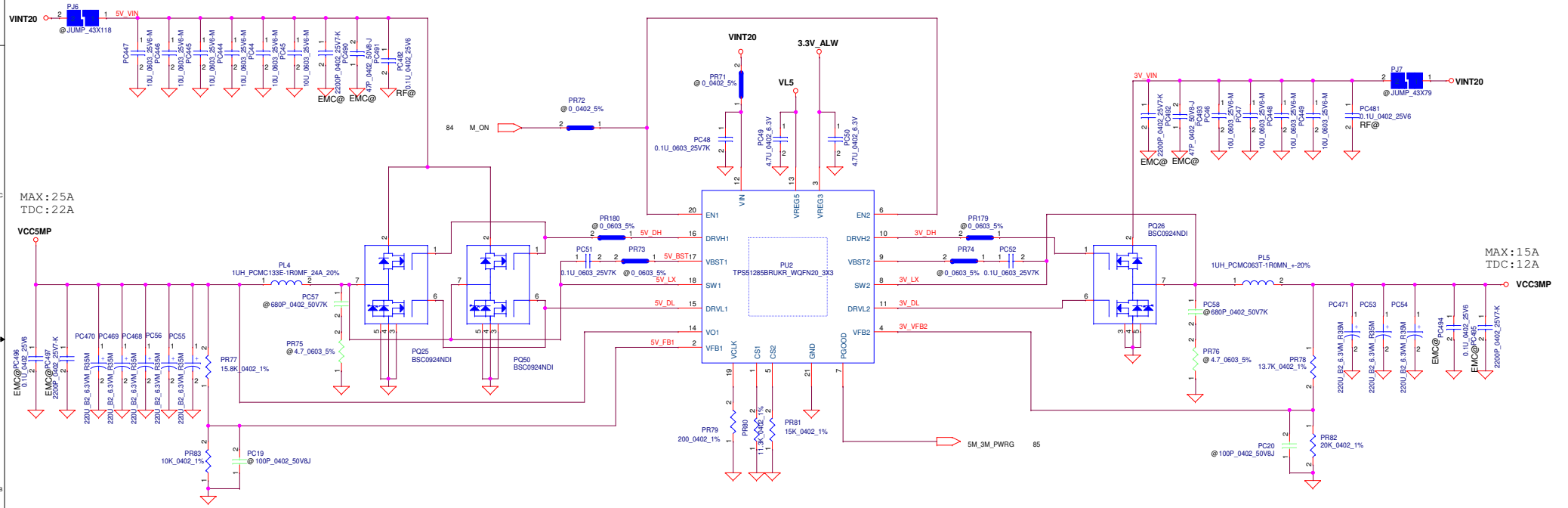





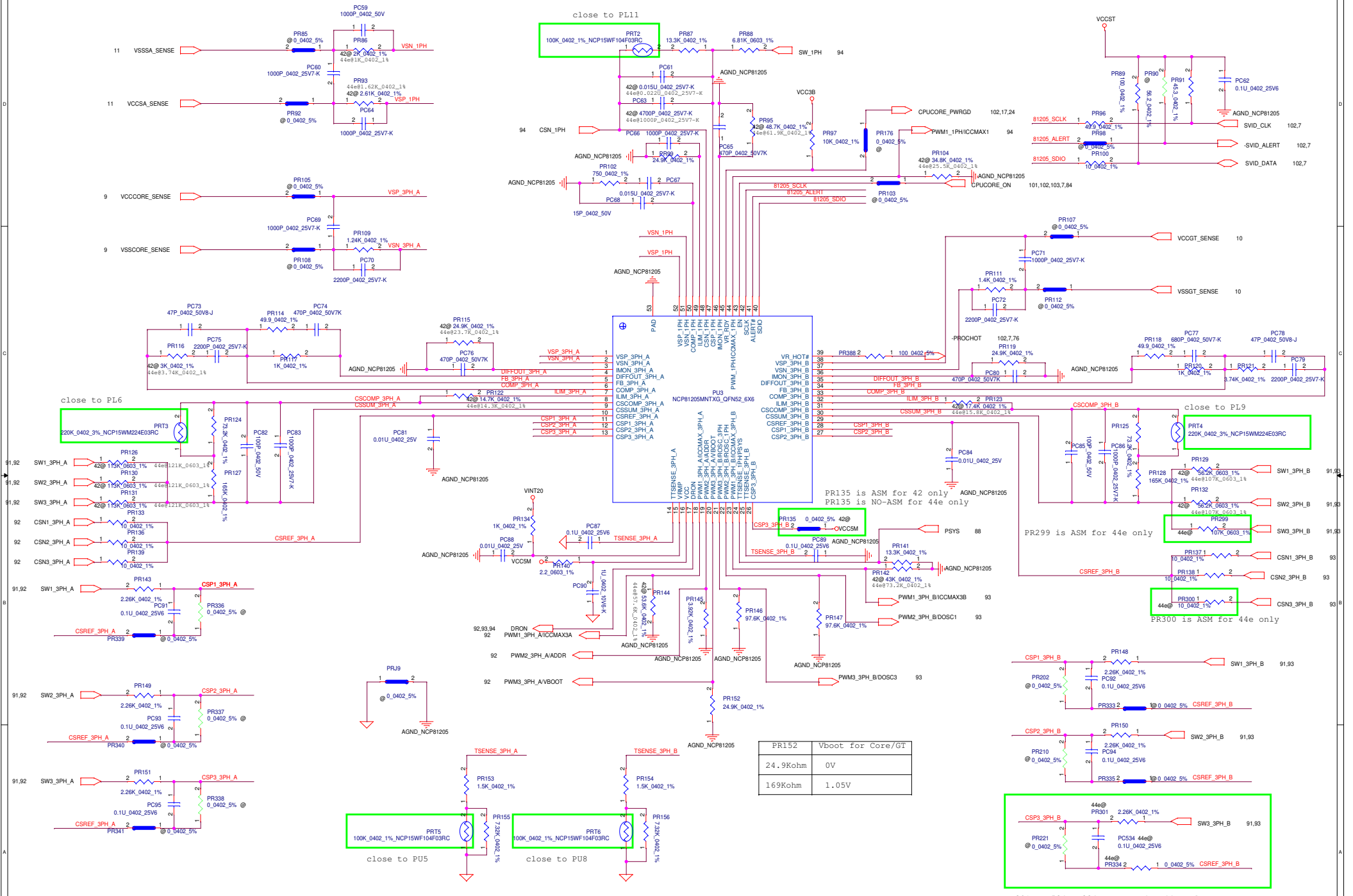
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PR135 is ASM for 42 only
 PR135 is NO-ASM for 44e only

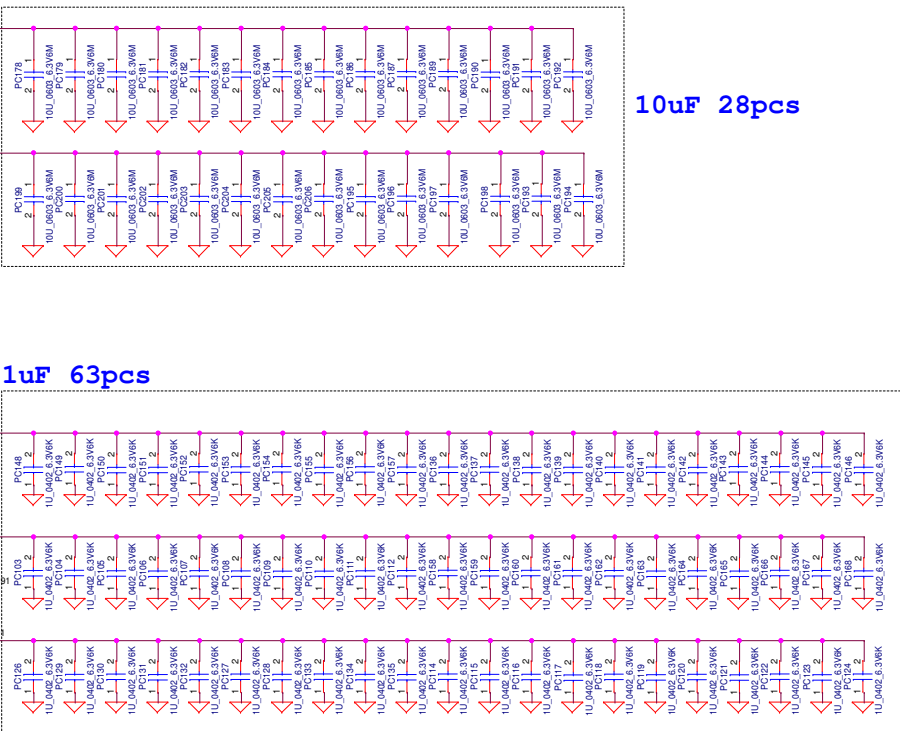
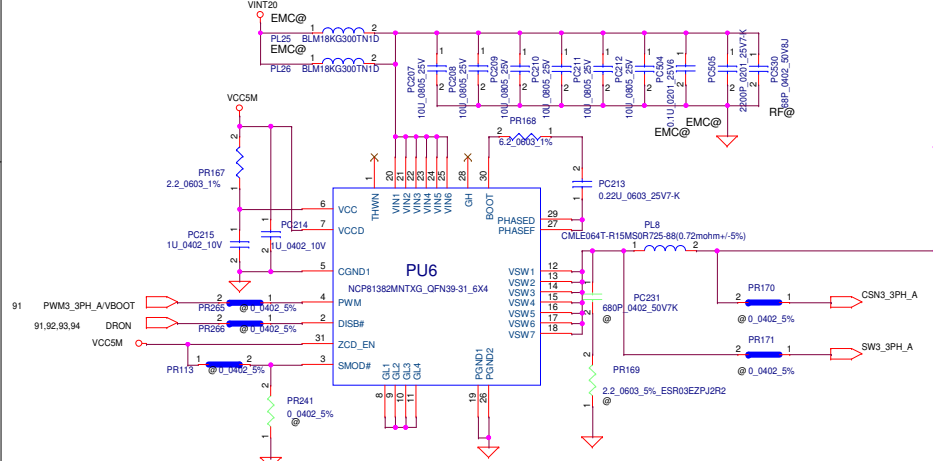
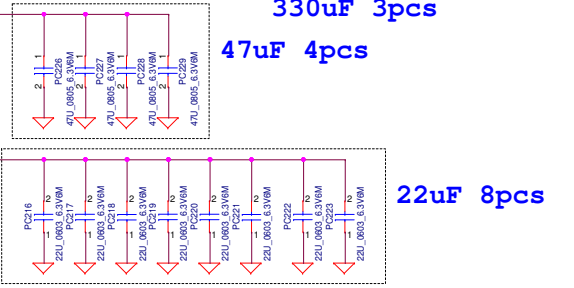
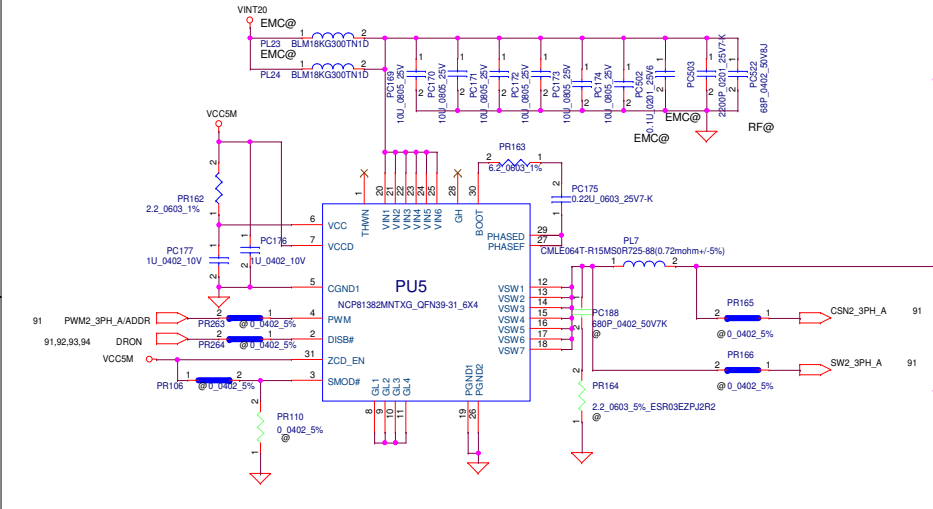
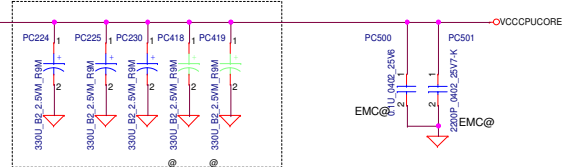
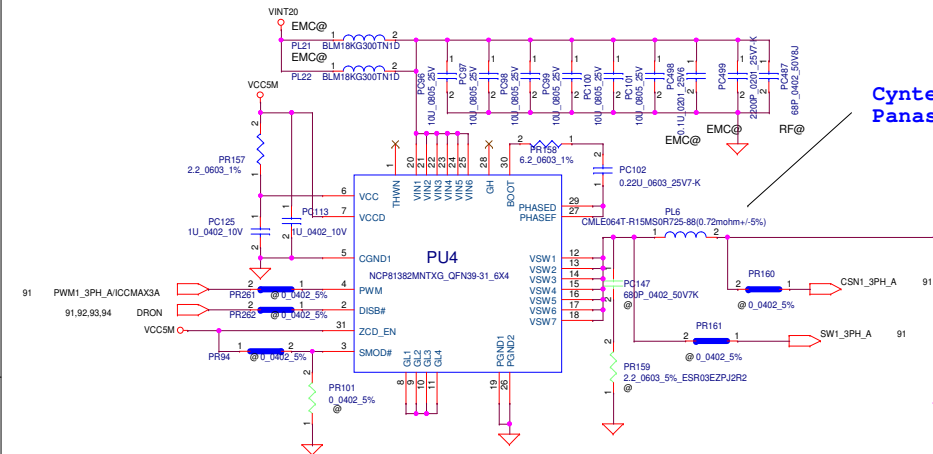
PR299 is ASM for 44e only

PR300 is ASM for 44e only

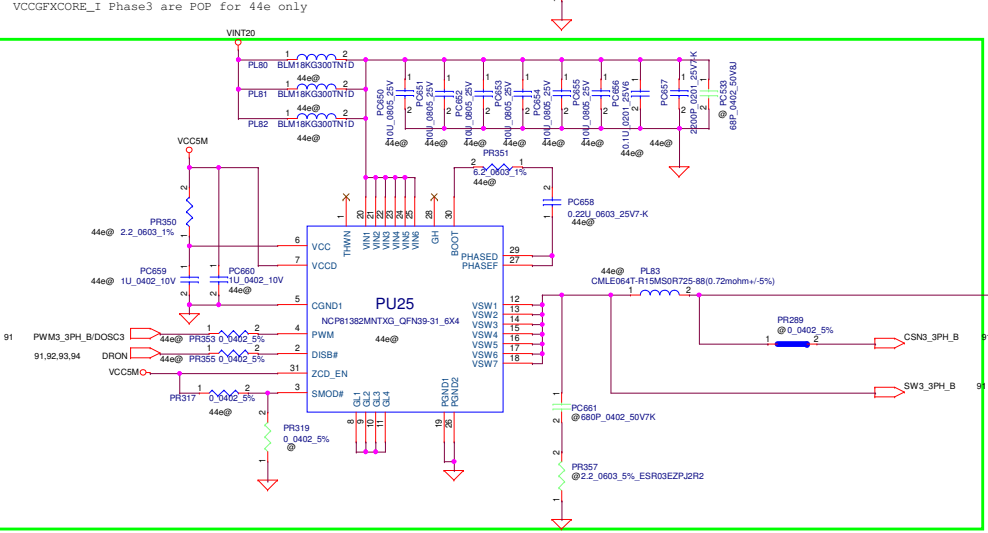
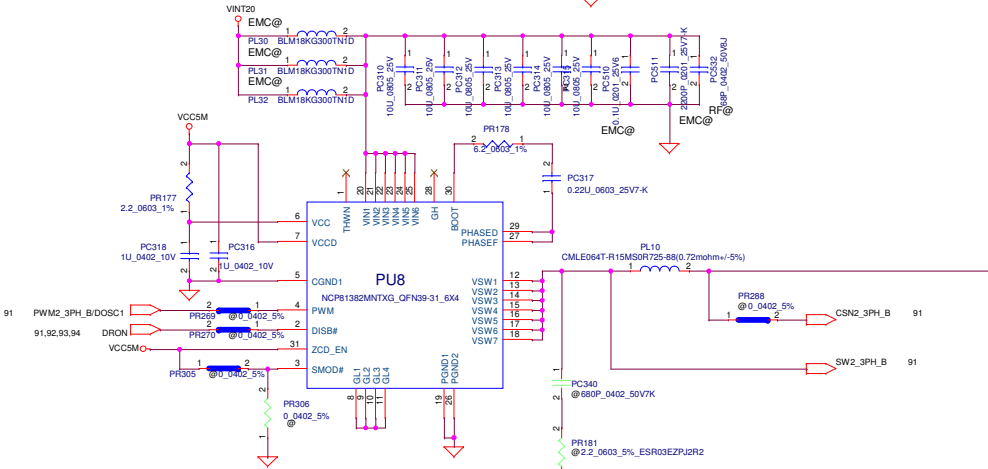
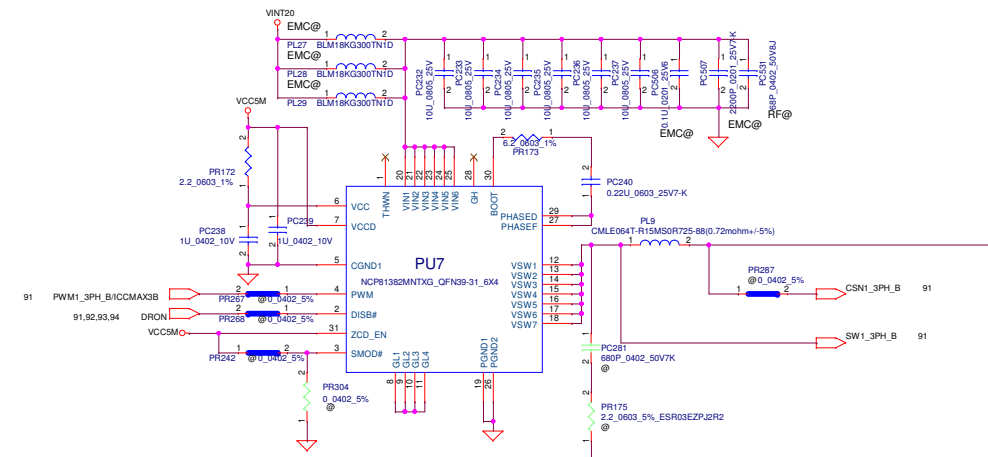
PR301, PC534, PR334 are ASM for 44e only

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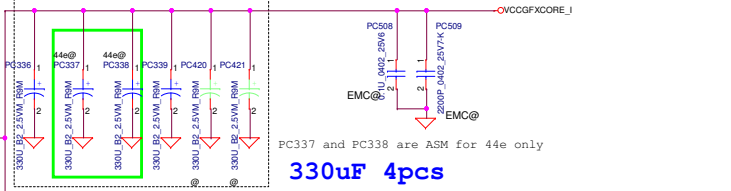
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Panasonic : ETQP4LR15AFM
 H42-45W
 MAX : 68A, TDC : 56A, OCP : 81.6A
 H44e-45W
 MAX : 74A, TDC : 56A, OCP : 88.8A



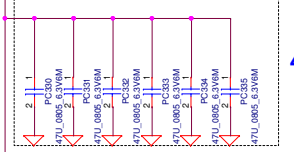
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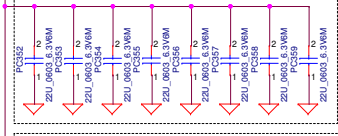
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 MAX: 55A, TDC: 39A, OCP: 66A
 H44e-45W
 MAX: 94A, TDC: 80A, OCP: 112.8A



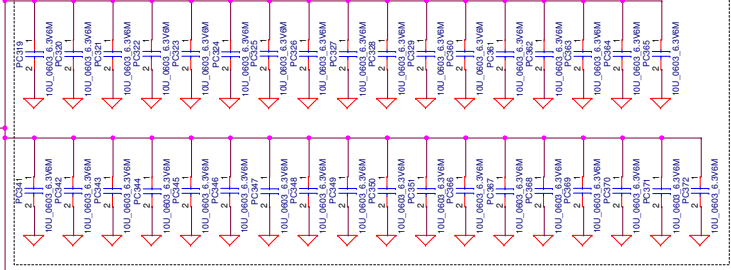
330uF 4pcs

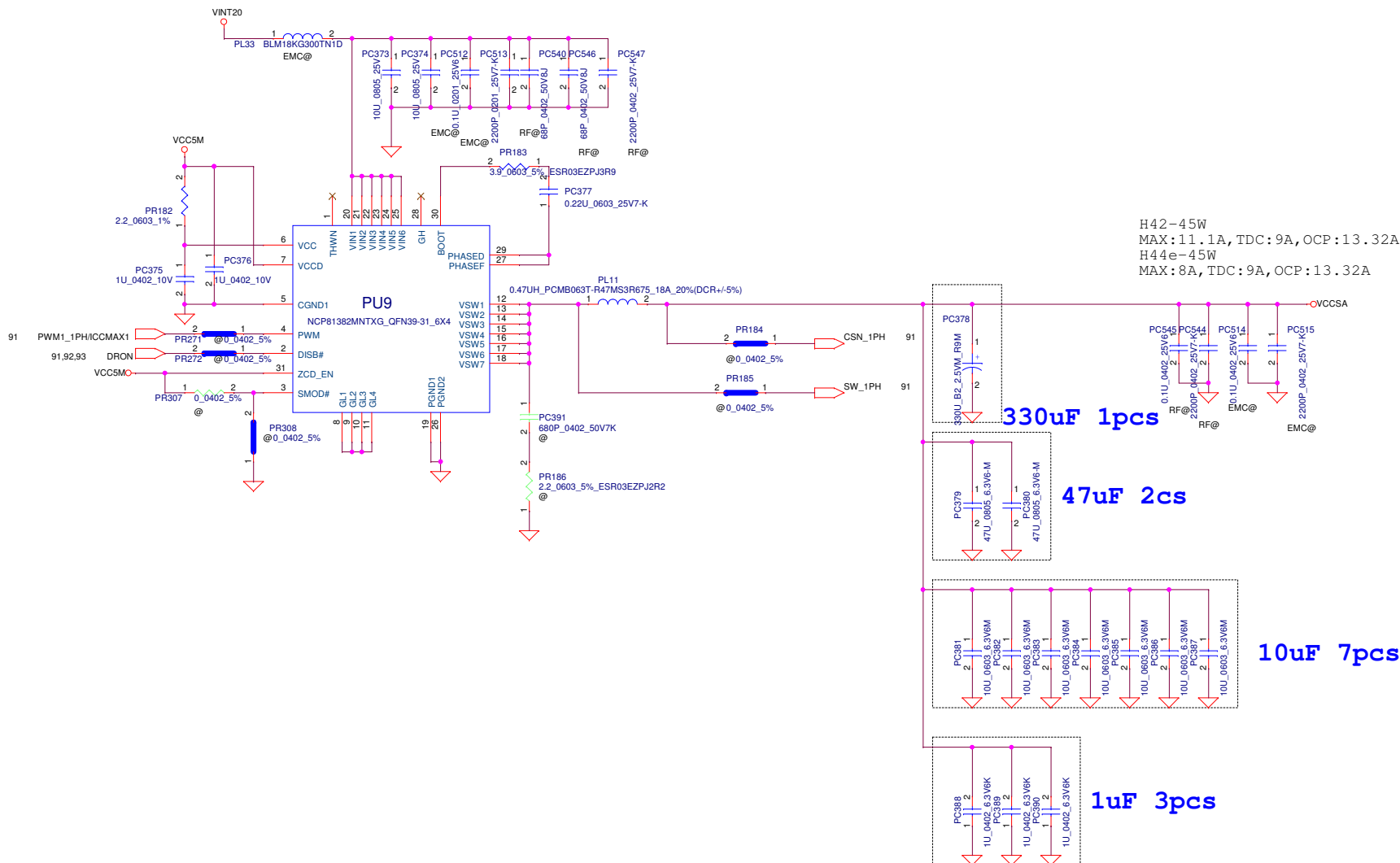


47uF 6pcs



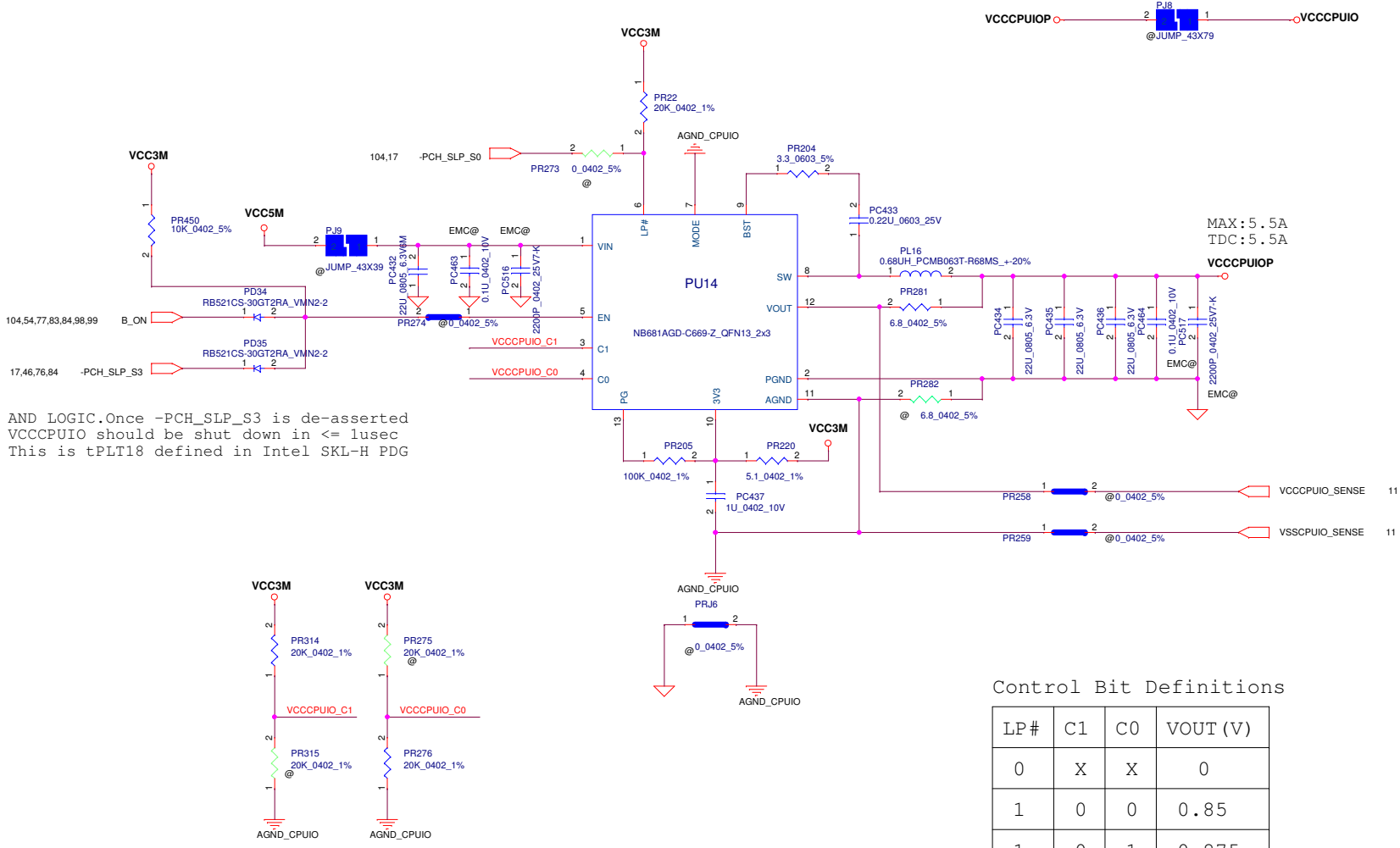
22uF 8pcs





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AND LOGIC. Once -PCH_SLP_S3 is de-asserted VCCCPUIO should be shut down in <= lusec
 This is tPLT18 defined in Intel SKL-H PDG

Control Bit Definitions

LP#	C1	C0	VOUT (V)
0	X	X	0
1	0	0	0.85
1	0	1	0.875
1	1	0	0.95
1	1	1	0.975

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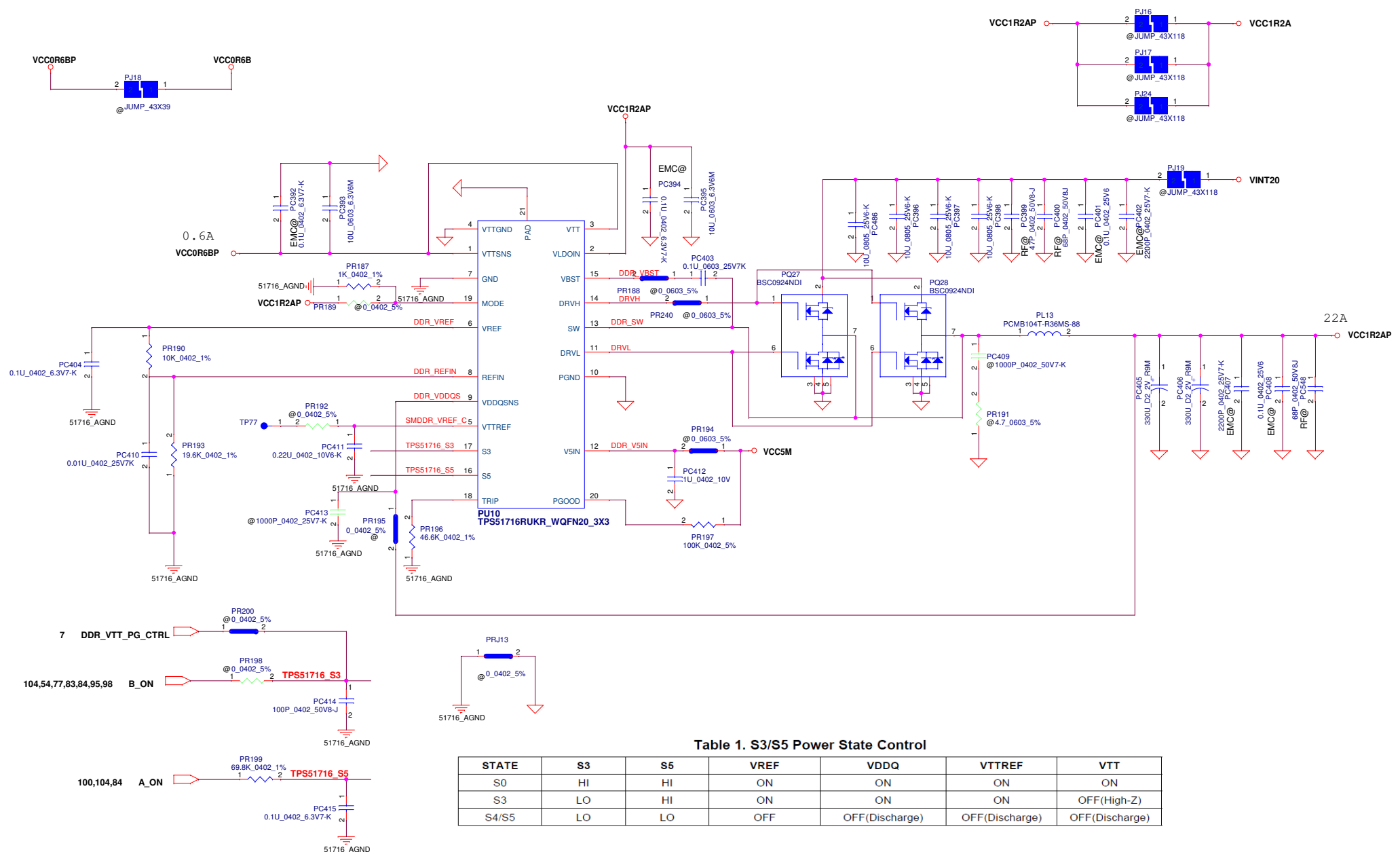
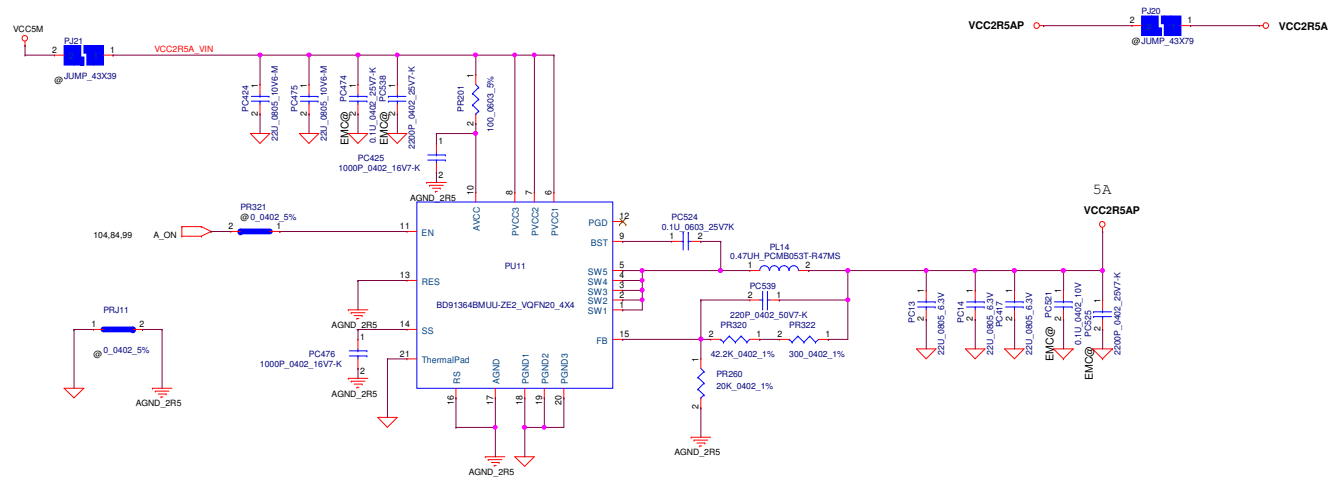



Table 1. S3/S5 Power State Control

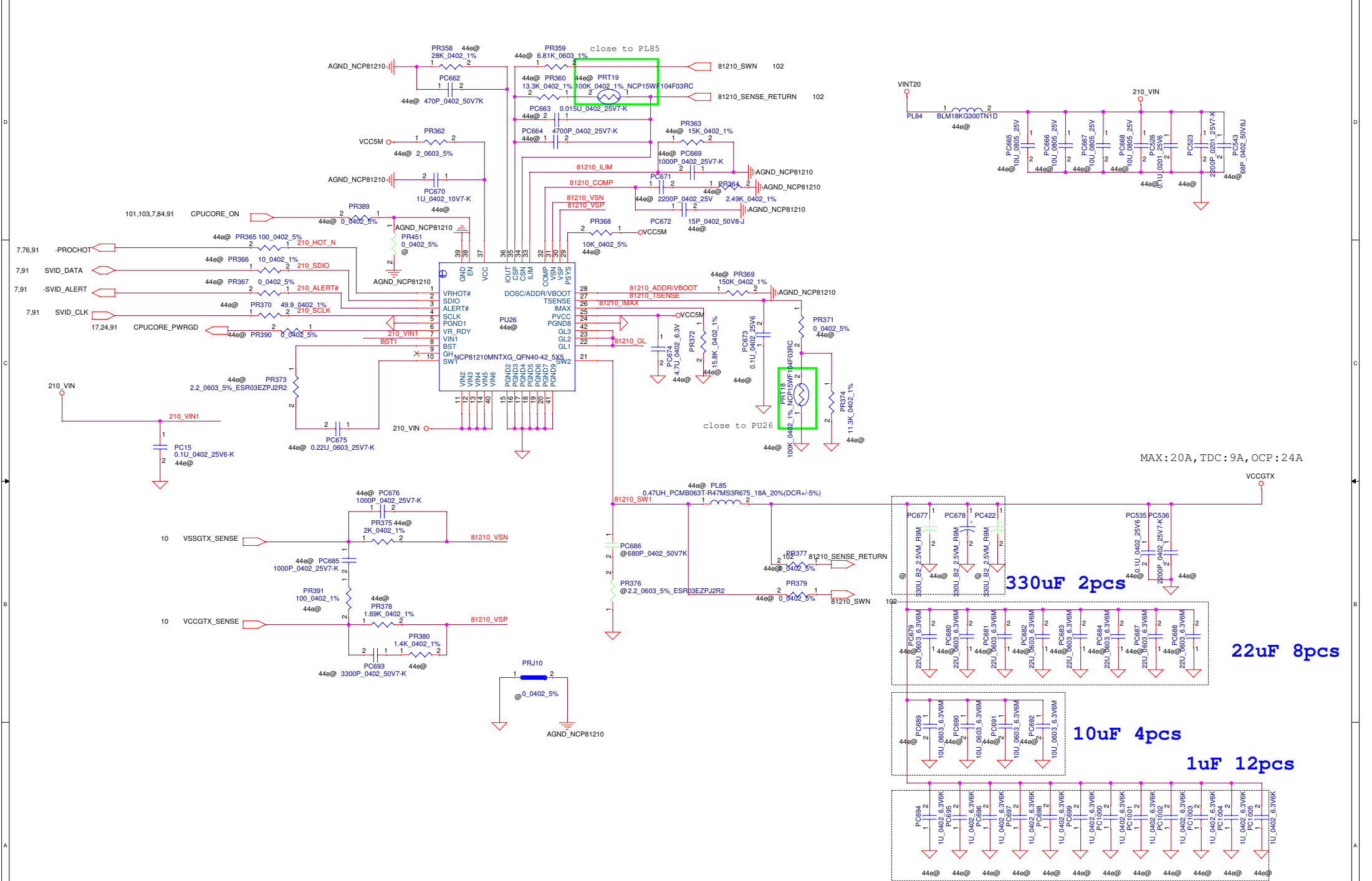
STATE	S3	S5	VREF	VDDQ	VTTREF	VTT
S0	HI	HI	ON	ON	ON	ON
S3	LO	HI	ON	ON	ON	OFF(High-Z)
S4/S5	LO	LO	OFF	OFF(Discharge)	OFF(Discharge)	OFF(Discharge)



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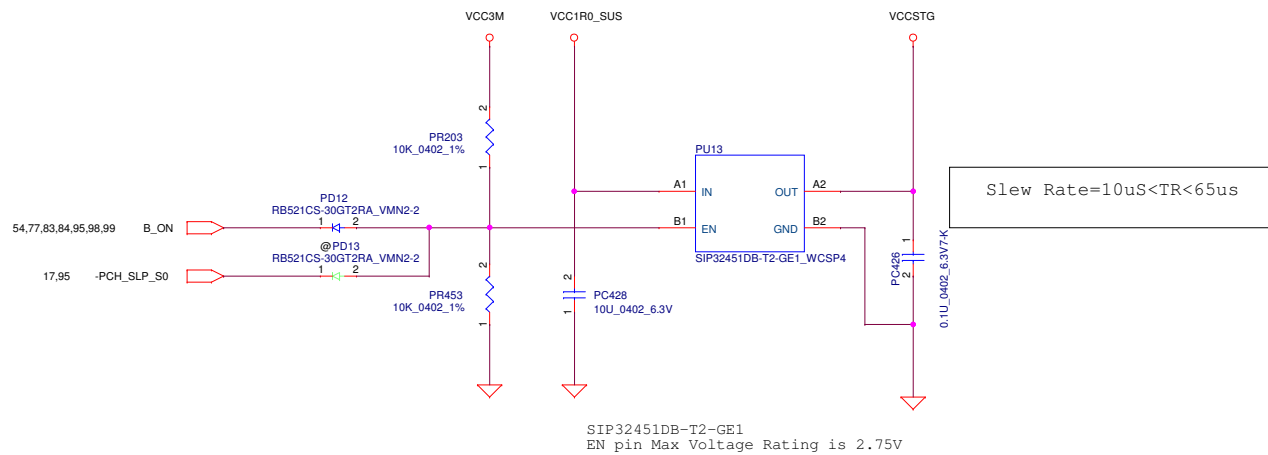
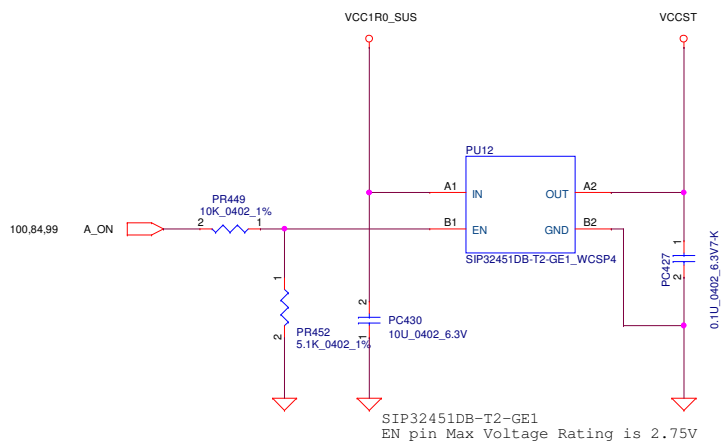



MAX: 20A, TDC: 9A, OCP: 24A

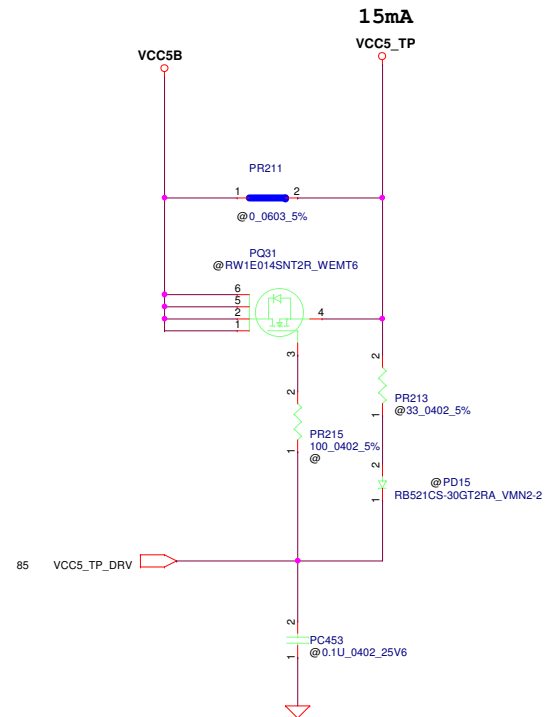
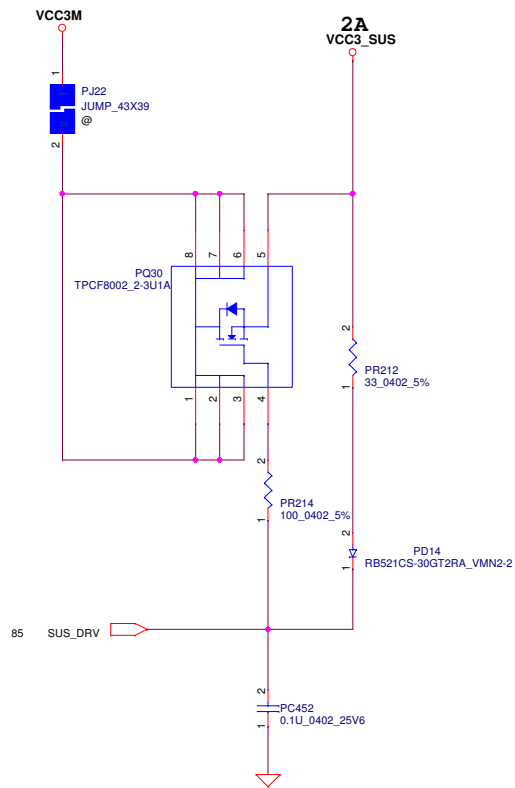
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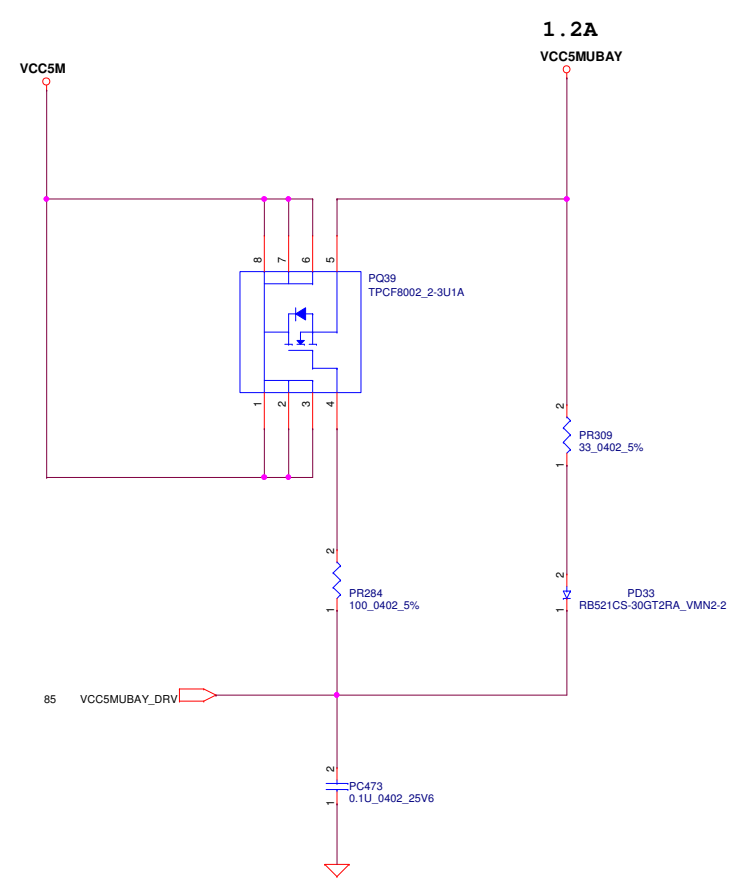
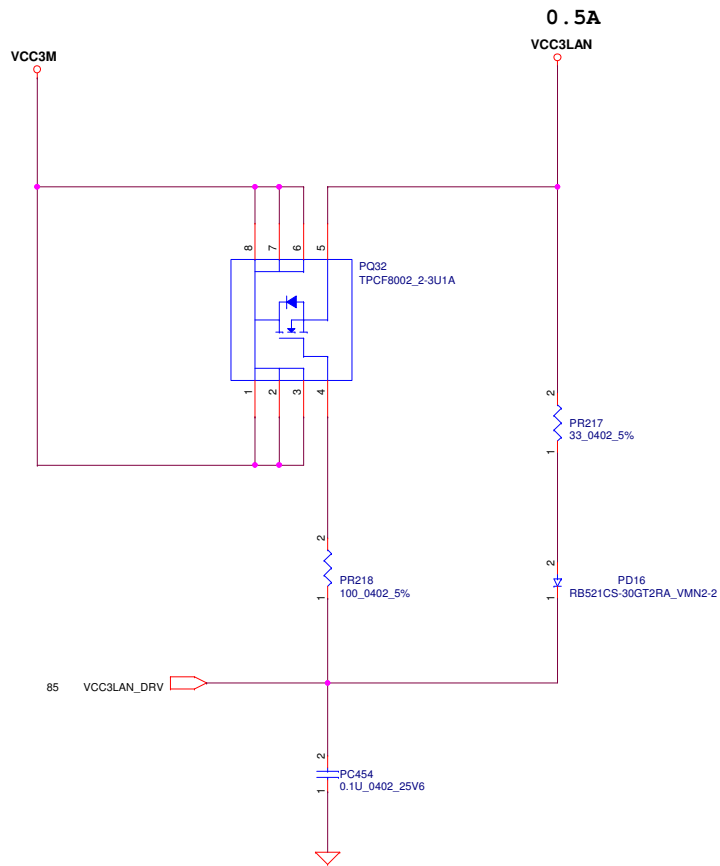


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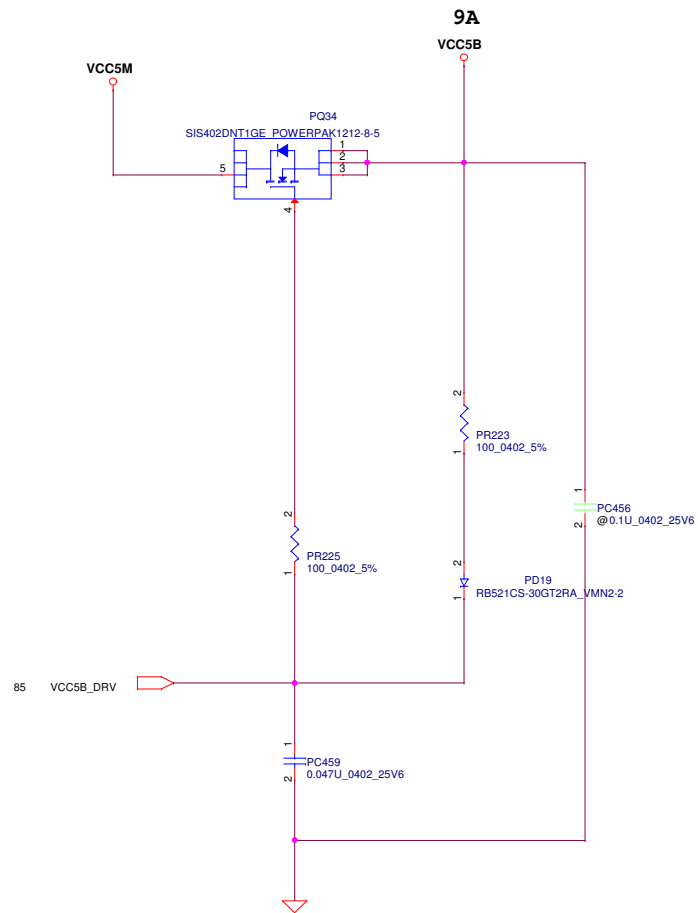
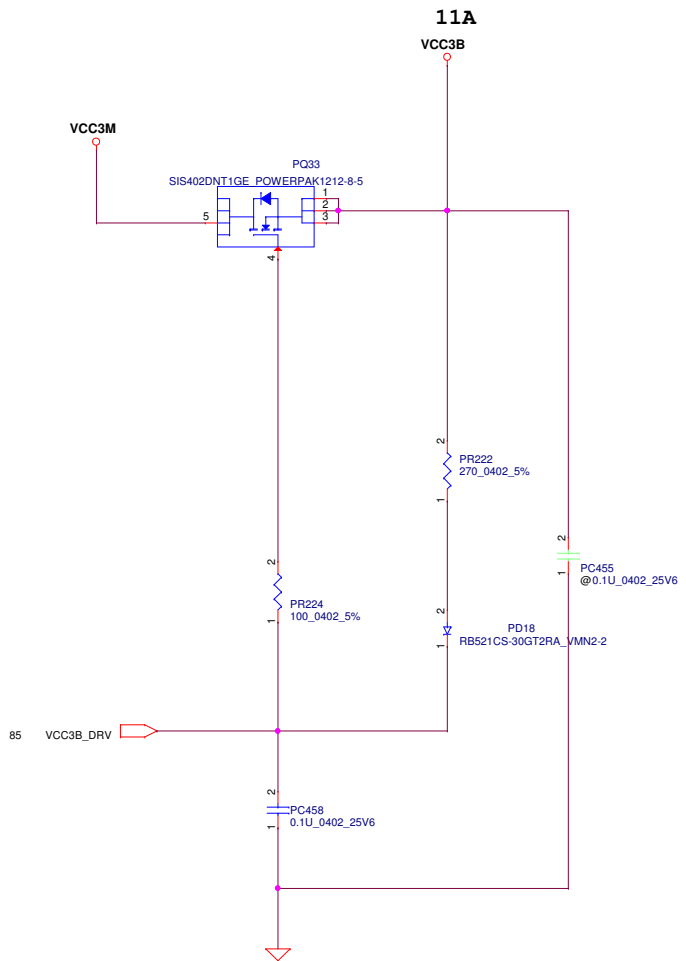
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LOAD SW PCH SUS/TRACK POINT		
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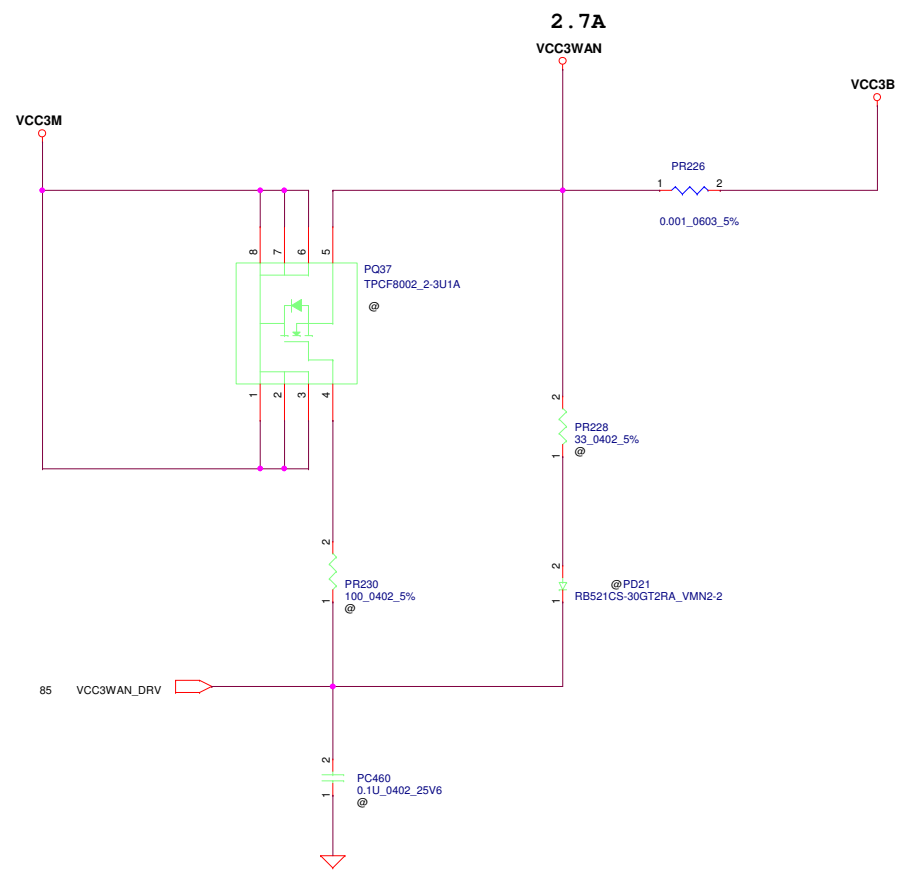
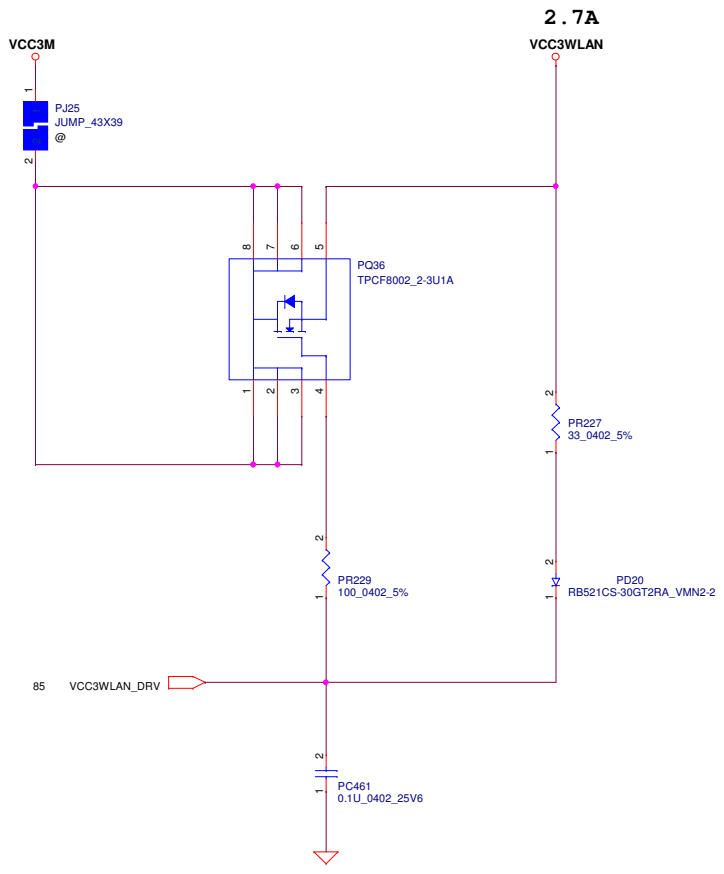
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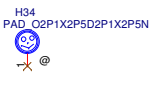
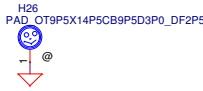
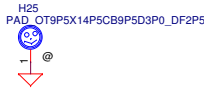
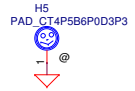
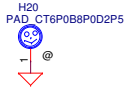


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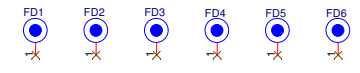




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