CS16 T14 Logic Schematics

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: TITLE PAGE

Size	Document Number	Rev
Custom	C	0.1

Vindu-1

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Windu Block Diagram

Project Code: CT470

2015 Dec ' 16

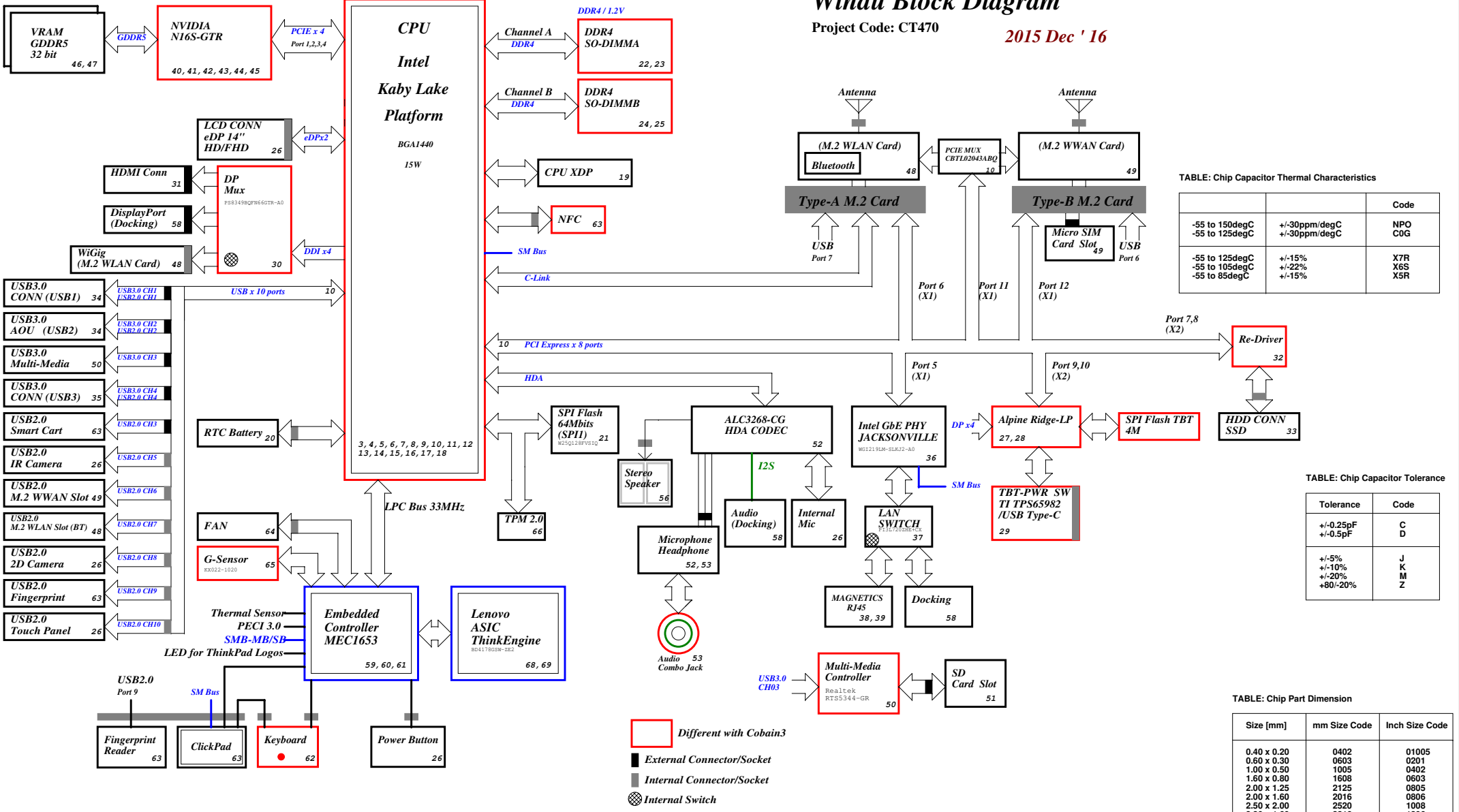

TABLE: Chip Capacitor Thermal Characteristics

		Code
-55 to 150degC -55 to 125degC	+/-30ppm/degC +/-30ppm/degC	NPO C0G
-55 to 125degC -55 to 105degC -55 to 85degC	+/-15% +/-22% +/-15%	X7R X6S X5R

TABLE: Chip Capacitor Tolerance

Tolerance	Code
+/-0.25pF +/-0.5pF	C D
+/-5% +/-10% +/-20% +80/-20%	J K M Z

TABLE: Chip Part Dimension

Size [mm]	mm Size Code	Inch Size Code
0.40 x 0.20	0402	01005
0.60 x 0.30	0603	0201
1.00 x 0.50	1005	0402
1.60 x 0.80	1608	0603
2.00 x 1.25	2125	0805
2.00 x 1.60	2016	0806
2.50 x 2.00	2520	1008
3.20 x 1.60	3216	1206
3.20 x 2.50	3225	1210
4.50 x 1.60	4516	1806
4.50 x 2.50	4525	1810
4.50 x 3.20	4532	1812
5.00 x 2.50	5025	2010
6.40 x 3.20	6432	2512

LOGIC

EC SMBus0 address

Device	Address
G-Senor (KX023)	0011 110Xb

PCH SM Bus address

Device		Address
CH-A	DDR DIMM0 (J53)	1001 0000b
CH-B	DDR DIMM1 (J43)	1001 0001b

PCH SM Bus0 address

Device	Address
Intel Lan_I219	0XC8

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Title: BLOCK DIAGRAM

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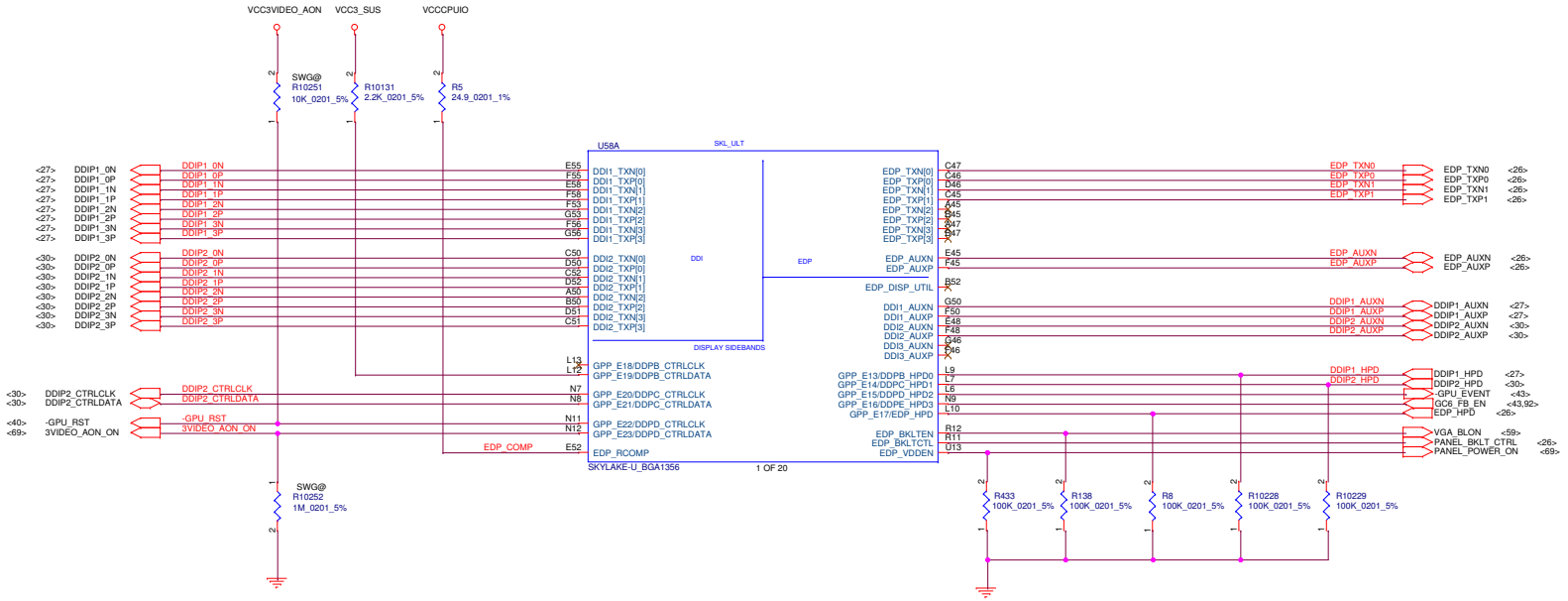

TABLE : Functional Strap

DDPB_CTRLDATA	
HIGH	**Port B is detected.**
LOW	**Port B is not detected.**
DDPC_CTRLDATA	
HIGH	**Port C is detected.**
LOW	**Port C is not detected.**

SkyLake

PCB	Non-VPRO		CPU_VPRO	
ZZZ	U58	U58	U58	U58
NM-A931	I5	I7	I5_VPRO	I7_VPRO
DAA00007520	SA00007GP30	SA00007GM30	SA00007GN20	SA00007GL30
SKY@	S_I5@	S_I7@	S_I5V@	S_I7V@

KabyLake

PCB	Non-VPRO			CPU_VPRO	
ZZZ	U58	U58	U58	U58	U58
NM-A931	I7-7500U	I5-7200U	I3-7100U	I7-7600U_VPRO	I5-7300U_VPRO
DAZ12D00100	SA000080420	SA000080320	SA000080720	SA000086N10	SA000086M10
KABY@	K_I7@	K_I5@	K_I3@	K_I7V@	K_I5V@

M/B -> DAA00007510
PWR/B -> DAA00007710
CAM/B -> DAA00007810

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Title: CPU(1/16) : DDI/EDP

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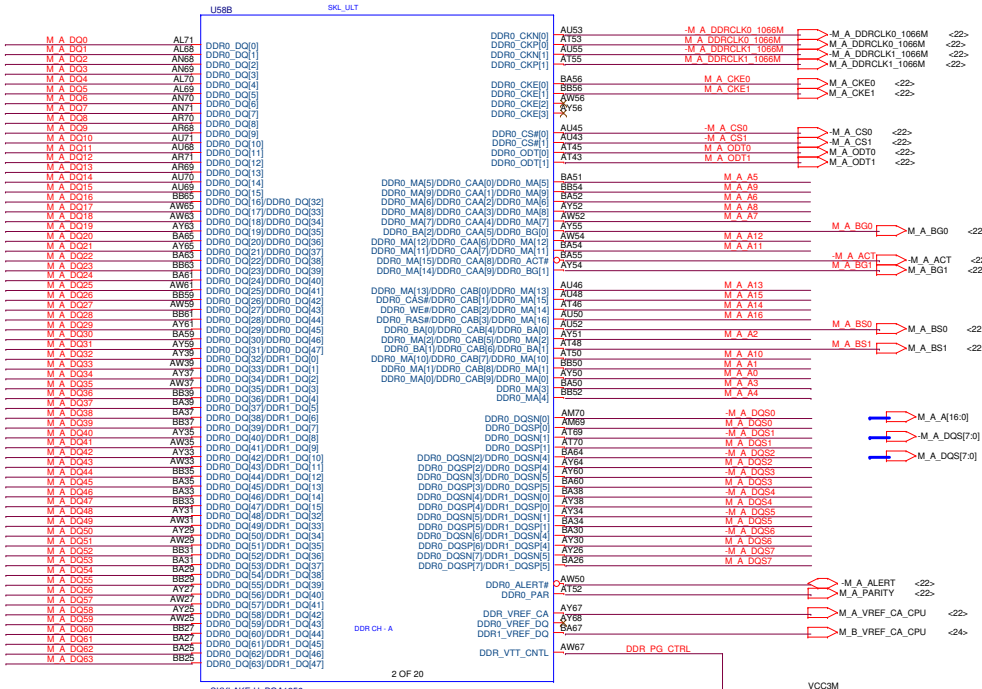
TABLE

	Pin	Interleave	Non-Interleave
Block 0	AL71 AL68 AN68 AN69 AL70 AL69 AN70 AN71 AR70 AR68 AU71 AU68 AR71 AR69 AU70 AU69	DDR0_DQ[0] DDR0_DQ[1] DDR0_DQ[2] DDR0_DQ[3] DDR0_DQ[4] DDR0_DQ[5] DDR0_DQ[6] DDR0_DQ[7] DDR0_DQ[8] DDR0_DQ[9] DDR0_DQ[10] DDR0_DQ[11] DDR0_DQ[12] DDR0_DQ[13] DDR0_DQ[14] DDR0_DQ[15]	DDR0_DQ[0] DDR0_DQ[1] DDR0_DQ[2] DDR0_DQ[3] DDR0_DQ[4] DDR0_DQ[5] DDR0_DQ[6] DDR0_DQ[7] DDR0_DQ[8] DDR0_DQ[9] DDR0_DQ[10] DDR0_DQ[11] DDR0_DQ[12] DDR0_DQ[13] DDR0_DQ[14] DDR0_DQ[15]
Block 2	BB65 AW65 AW63 AY63 BA65 AY65 BA63 BB63 BA61 AW61 BB59 AW59 BB61 AY61 BA59 AY59	DDR0_DQ[16] DDR0_DQ[17] DDR0_DQ[18] DDR0_DQ[19] DDR0_DQ[20] DDR0_DQ[21] DDR0_DQ[22] DDR0_DQ[23] DDR0_DQ[24] DDR0_DQ[25] DDR0_DQ[26] DDR0_DQ[27] DDR0_DQ[28] DDR0_DQ[29] DDR0_DQ[30] DDR0_DQ[31]	DDR0_DQ[32] DDR0_DQ[33] DDR0_DQ[34] DDR0_DQ[35] DDR0_DQ[36] DDR0_DQ[37] DDR0_DQ[38] DDR0_DQ[39] DDR0_DQ[40] DDR0_DQ[41] DDR0_DQ[42] DDR0_DQ[43] DDR0_DQ[44] DDR0_DQ[45] DDR0_DQ[46] DDR0_DQ[47]
Block 4	AY39 AW39 AY37 AW37 BB39 BA39 BA37 BB37 AY35 AW35 AY33 AW33 BB35 BA35 BA33 BB33	DDR0_DQ[32] DDR0_DQ[33] DDR0_DQ[34] DDR0_DQ[35] DDR0_DQ[36] DDR0_DQ[37] DDR0_DQ[38] DDR0_DQ[39] DDR0_DQ[40] DDR0_DQ[41] DDR0_DQ[42] DDR0_DQ[43] DDR0_DQ[44] DDR0_DQ[45] DDR0_DQ[46] DDR0_DQ[47]	DDR1_DQ[0] DDR1_DQ[1] DDR1_DQ[2] DDR1_DQ[3] DDR1_DQ[4] DDR1_DQ[5] DDR1_DQ[6] DDR1_DQ[7] DDR1_DQ[8] DDR1_DQ[9] DDR1_DQ[10] DDR1_DQ[11] DDR1_DQ[12] DDR1_DQ[13] DDR1_DQ[14] DDR1_DQ[15]
Block 6	AY31 AW31 AY29 AW29 BB31 BA31 BA29 BB29 AY27 AW27 AY25 AW25 BB27 BA27 BA25 BB25	DDR0_DQ[48] DDR0_DQ[49] DDR0_DQ[50] DDR0_DQ[51] DDR0_DQ[52] DDR0_DQ[53] DDR0_DQ[54] DDR0_DQ[55] DDR0_DQ[56] DDR0_DQ[57] DDR0_DQ[58] DDR0_DQ[59] DDR0_DQ[60] DDR0_DQ[61] DDR0_DQ[62] DDR0_DQ[63]	DDR1_DQ[32] DDR1_DQ[33] DDR1_DQ[34] DDR1_DQ[35] DDR1_DQ[36] DDR1_DQ[37] DDR1_DQ[38] DDR1_DQ[39] DDR1_DQ[40] DDR1_DQ[41] DDR1_DQ[42] DDR1_DQ[43] DDR1_DQ[44] DDR1_DQ[45] DDR1_DQ[46] DDR1_DQ[47]

LOGIC



TABLE

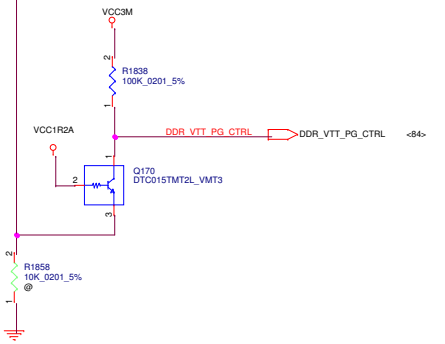
	Pin	Interleave	Non-Interleave
Block 0	AM70 AM69 AT69 AT70	DDR0_DQSN[0] DDR0_DQSP[0] DDR0_DQSN[1] DDR0_DQSP[1]	DDR0_DQSN[0] DDR0_DQSP[0] DDR0_DQSN[1] DDR0_DQSP[1]
Block 2	BA64 AY64 AY60 BA60	DDR0_DQSN[2] DDR0_DQSP[2] DDR0_DQSN[3] DDR0_DQSP[3]	DDR0_DQSN[4] DDR0_DQSP[4] DDR0_DQSN[5] DDR0_DQSP[5]
Block 4	BA38 AY38 AY34 BA34	DDR0_DQSN[4] DDR0_DQSP[4] DDR0_DQSN[5] DDR0_DQSP[5]	DDR1_DQSN[0] DDR1_DQSP[0] DDR1_DQSN[1] DDR1_DQSP[1]
Block 6	BA30 AY30 AY26 BA26	DDR0_DQSN[6] DDR0_DQSP[6] DDR0_DQSN[7] DDR0_DQSP[7]	DDR1_DQSN[4] DDR1_DQSP[4] DDR1_DQSN[5] DDR1_DQSP[5]

LOGIC

TABLE

Pin	DDR3L	LPDDR3	DDR4
BA51	DDR0_MA[5]	DDR0_CAA[0]	DDR0_MA[5]
BB54	DDR0_MA[9]	DDR0_CAA[1]	DDR0_MA[9]
BA52	DDR0_MA[6]	DDR0_CAA[2]	DDR0_MA[6]
AY52	DDR0_MA[8]	DDR0_CAA[3]	DDR0_MA[8]
AW52	DDR0_MA[7]	DDR0_CAA[4]	DDR0_MA[7]
AY55	DDR0_BA[2]	DDR0_CAA[5]	DDR0_BG[0]
AW54	DDR0_MA[12]	DDR0_CAA[6]	DDR0_MA[12]
BA54	DDR0_MA[11]	DDR0_CAA[7]	DDR0_MA[11]
BA55	DDR0_MA[15]	DDR0_CAA[8]	DDR0_ACT#
AY54	DDR0_MA[14]	DDR0_CAA[9]	DDR0_BG[1]
AU46	DDR0_MA[13]	DDR0_CAB[0]	DDR0_MA[13]
AU48	DDR0_CAS#	DDR0_CAB[1]	DDR0_MA[15]
AT46	DDR0_WE#	DDR0_CAB[2]	DDR0_MA[14]
AU50	DDR0_RAS#	DDR0_CAB[3]	DDR0_MA[16]
AU52	DDR0_BA[0]	DDR0_CAB[4]	DDR0_BA[0]
AY51	DDR0_MA[2]	DDR0_CAB[5]	DDR0_MA[2]
AT48	DDR0_BA[1]	DDR0_CAB[6]	DDR0_BA[1]
AT50	DDR0_MA[10]	DDR0_CAB[7]	DDR0_MA[10]
BB50	DDR0_MA[1]	DDR0_CAB[8]	DDR0_MA[1]
AY50	DDR0_MA[0]	DDR0_CAB[9]	DDR0_MA[0]
BA50	DDR0_MA[3]	Not Used	DDR0_MA[3]
BB52	DDR0_MA[4]	Not Used	DDR0_MA[4]

LOGIC



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Title: CPU(2/16) : DDR CHANNEL-A

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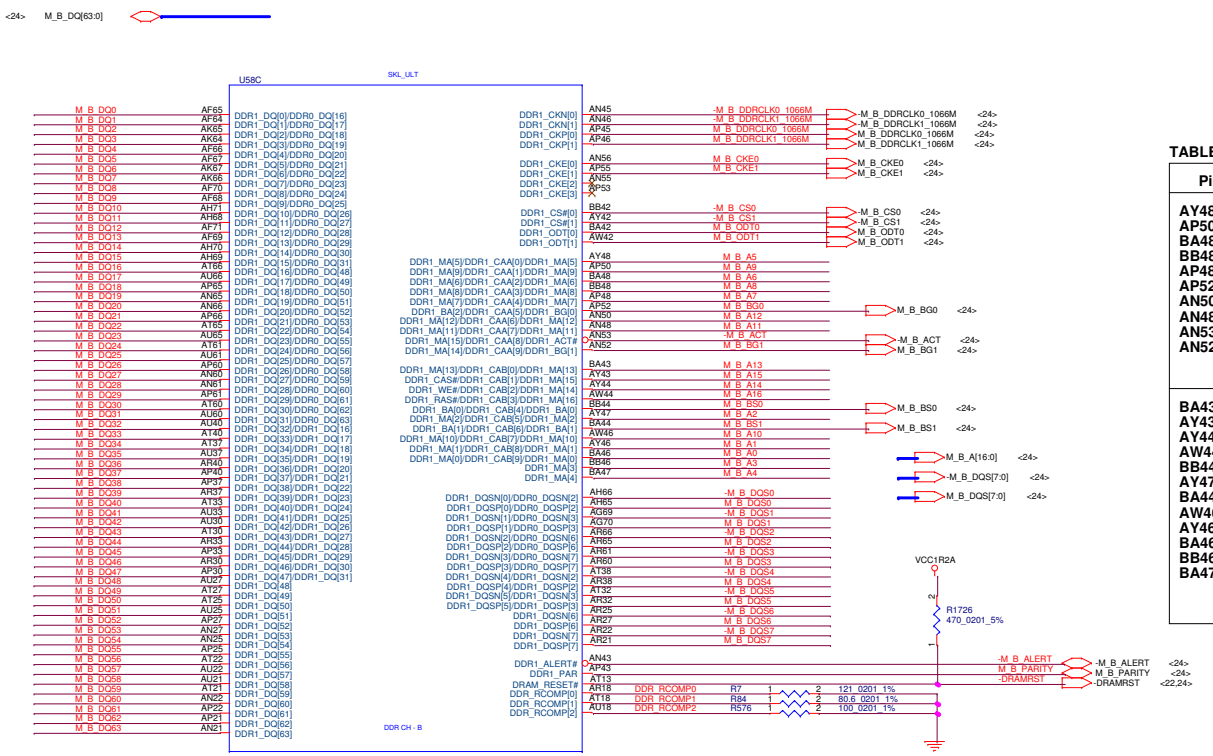
TABLE

	Pin	Interleave	Non-Interleave
Block 1	AF65 AF64 AK65 AK64 AF66 AF67 AK67 AK66 AF70 AF68 AH71 AH68 AF71 AF69 AH70 AH69	DDR1_DQ[0] DDR1_DQ[1] DDR1_DQ[2] DDR1_DQ[3] DDR1_DQ[4] DDR1_DQ[5] DDR1_DQ[6] DDR1_DQ[7] DDR1_DQ[8] DDR1_DQ[9] DDR1_DQ[10] DDR1_DQ[11] DDR1_DQ[12] DDR1_DQ[13] DDR1_DQ[14] DDR1_DQ[15]	DDR0_DQ[16] DDR0_DQ[17] DDR0_DQ[18] DDR0_DQ[19] DDR0_DQ[20] DDR0_DQ[21] DDR0_DQ[22] DDR0_DQ[23] DDR0_DQ[24] DDR0_DQ[25] DDR0_DQ[26] DDR0_DQ[27] DDR0_DQ[28] DDR0_DQ[29] DDR0_DQ[30] DDR0_DQ[31]
Block 3	AT66 AU66 AP65 AN65 AN66 AP66 AT65 AU65 AT61 AU61 AP60 AN60 AN61 AP61 AT60 AU60	DDR1_DQ[16] DDR1_DQ[17] DDR1_DQ[18] DDR1_DQ[19] DDR1_DQ[20] DDR1_DQ[21] DDR1_DQ[22] DDR1_DQ[23] DDR1_DQ[24] DDR1_DQ[25] DDR1_DQ[26] DDR1_DQ[27] DDR1_DQ[28] DDR1_DQ[29] DDR1_DQ[30] DDR1_DQ[31]	DDR0_DQ[48] DDR0_DQ[49] DDR0_DQ[50] DDR0_DQ[51] DDR0_DQ[52] DDR0_DQ[53] DDR0_DQ[54] DDR0_DQ[55] DDR0_DQ[56] DDR0_DQ[57] DDR0_DQ[58] DDR0_DQ[59] DDR0_DQ[60] DDR0_DQ[61] DDR0_DQ[62] DDR0_DQ[63]
Block 5	AU40 AT40 AT37 AU37 AR40 AP40 AP37 AR37 AT33 AU33 AU30 AT30 AR33 AP33 AR30 AP30	DDR1_DQ[32] DDR1_DQ[33] DDR1_DQ[34] DDR1_DQ[35] DDR1_DQ[36] DDR1_DQ[37] DDR1_DQ[38] DDR1_DQ[39] DDR1_DQ[40] DDR1_DQ[41] DDR1_DQ[42] DDR1_DQ[43] DDR1_DQ[44] DDR1_DQ[45] DDR1_DQ[46] DDR1_DQ[47]	DDR1_DQ[16] DDR1_DQ[17] DDR1_DQ[18] DDR1_DQ[19] DDR1_DQ[20] DDR1_DQ[21] DDR1_DQ[22] DDR1_DQ[23] DDR1_DQ[24] DDR1_DQ[25] DDR1_DQ[26] DDR1_DQ[27] DDR1_DQ[28] DDR1_DQ[29] DDR1_DQ[30] DDR1_DQ[31]
Block 7	AU27 AT27 AT25 AU25 AP27 AN27 AN25 AP25 AT22 AU22 AU21 AT21 AN22 AP22 AP21 AN21	DDR1_DQ[48] DDR1_DQ[49] DDR1_DQ[50] DDR1_DQ[51] DDR1_DQ[52] DDR1_DQ[53] DDR1_DQ[54] DDR1_DQ[55] DDR1_DQ[56] DDR1_DQ[57] DDR1_DQ[58] DDR1_DQ[59] DDR1_DQ[60] DDR1_DQ[61] DDR1_DQ[62] DDR1_DQ[63]	DDR1_DQ[48] DDR1_DQ[49] DDR1_DQ[50] DDR1_DQ[51] DDR1_DQ[52] DDR1_DQ[53] DDR1_DQ[54] DDR1_DQ[55] DDR1_DQ[56] DDR1_DQ[57] DDR1_DQ[58] DDR1_DQ[59] DDR1_DQ[60] DDR1_DQ[61] DDR1_DQ[62] DDR1_DQ[63]

LOGIC



TABLE

Pin	DDR3L	LPDDR3	DDR4
AY48 AP50 BA48 BB48 AP48 AP52 AN50 AN48 AN53 AN52	DDR1_MA[5] DDR1_MA[9] DDR1_MA[6] DDR1_MA[8] DDR1_MA[7] DDR1_BA[2] DDR1_MA[12] DDR1_MA[11] DDR1_MA[15] DDR1_MA[14]	DDR1_CAA[0] DDR1_CAA[1] DDR1_CAA[2] DDR1_CAA[3] DDR1_CAA[4] DDR1_CAA[5] DDR1_CAA[6] DDR1_CAA[7] DDR1_CAA[8] DDR1_CAA[9]	DDR1_MA[5] DDR1_MA[9] DDR1_MA[6] DDR1_MA[8] DDR1_MA[7] DDR1_BG[0] DDR1_MA[12] DDR1_MA[11] DDR1_ACT# DDR1_BG[1]
BA43 AY43 AY44 AW44 BB44 AY47 BA44 AW46 AY46 BA46 BB46 BA47	DDR1_MA[13] DDR1_CAS# DDR1_WE# DDR1_RAS# DDR1_BA[0] DDR1_MA[2] DDR1_BA[1] DDR1_MA[10] DDR1_MA[1] DDR1_MA[0] DDR1_MA[3] DDR1_MA[4]	DDR1_CAB[0] DDR1_CAB[1] DDR1_CAB[2] DDR1_CAB[3] DDR1_CAB[4] DDR1_CAB[5] DDR1_CAB[6] DDR1_CAB[7] DDR1_CAB[8] DDR1_CAB[9] Not Used Not Used	DDR1_MA[13] DDR1_MA[15] DDR1_MA[14] DDR1_MA[16] DDR1_BA[0] DDR1_MA[2] DDR1_BA[1] DDR1_MA[10] DDR1_MA[1] DDR1_MA[0] DDR1_MA[3] DDR1_MA[4]

LOGIC

TABLE

	Pin	Interleave	Non-Interleave
Block 1	AH66 AH65 AG69 AG70	DDR1_DQSN[0] DDR1_DQSP[0] DDR1_DQSN[1] DDR1_DQSP[1]	DDR0_DQSN[2] DDR0_DQSP[2] DDR0_DQSN[3] DDR0_DQSP[3]
Block 3	AR66 AR65 AR61 AR60	DDR1_DQSN[2] DDR1_DQSP[2] DDR1_DQSN[3] DDR1_DQSP[3]	DDR0_DQSN[6] DDR0_DQSP[6] DDR0_DQSN[7] DDR0_DQSP[7]
Block 5	AT38 AR38 AT32 AR32	DDR1_DQSN[4] DDR1_DQSP[4] DDR1_DQSN[5] DDR1_DQSP[5]	DDR1_DQSN[2] DDR1_DQSP[2] DDR1_DQSN[3] DDR1_DQSP[3]
Block 7	AR25 AR27 AR22 AR21	DDR1_DQSN[6] DDR1_DQSP[6] DDR1_DQSN[7] DDR1_DQSP[7]	DDR1_DQSN[6] DDR1_DQSP[6] DDR1_DQSN[7] DDR1_DQSP[7]

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Title: CPU(3/16) : DDR CHANNEL-B

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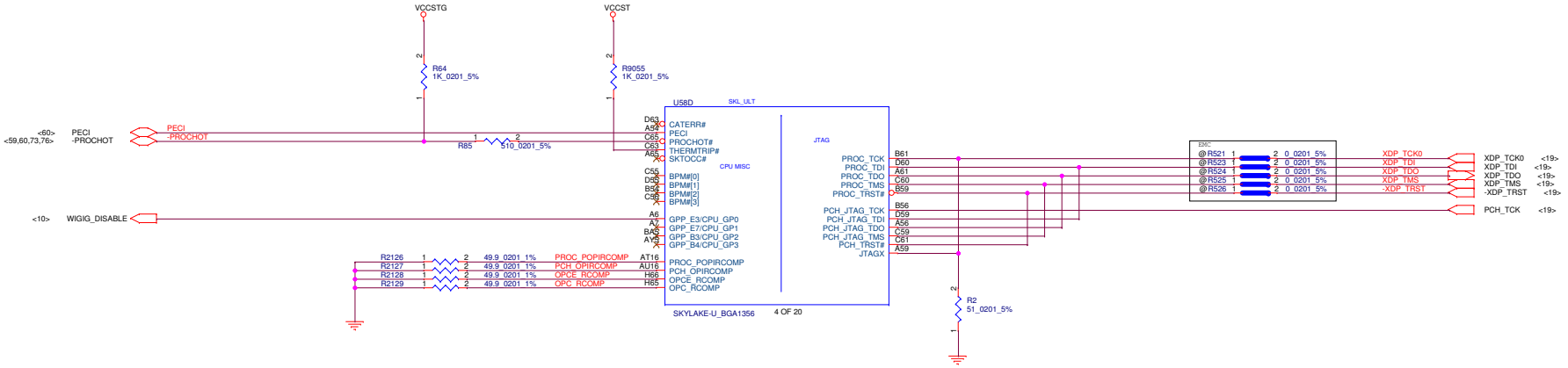

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Title: CPU(4/16) : MISC/JTAG

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TABLE : Functional Strap

SPI0_MOSI (Boot Halt)	
HIGH	Disabled (Default)
LOW	Enabled

TABLE : Functional Strap

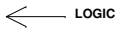
SPI0_MISO (JTAG ODT Disable)	
HIGH	Enabled (Default)
LOW	Disabled

TABLE : Functional Strap

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

TABLE : Functional Strap

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



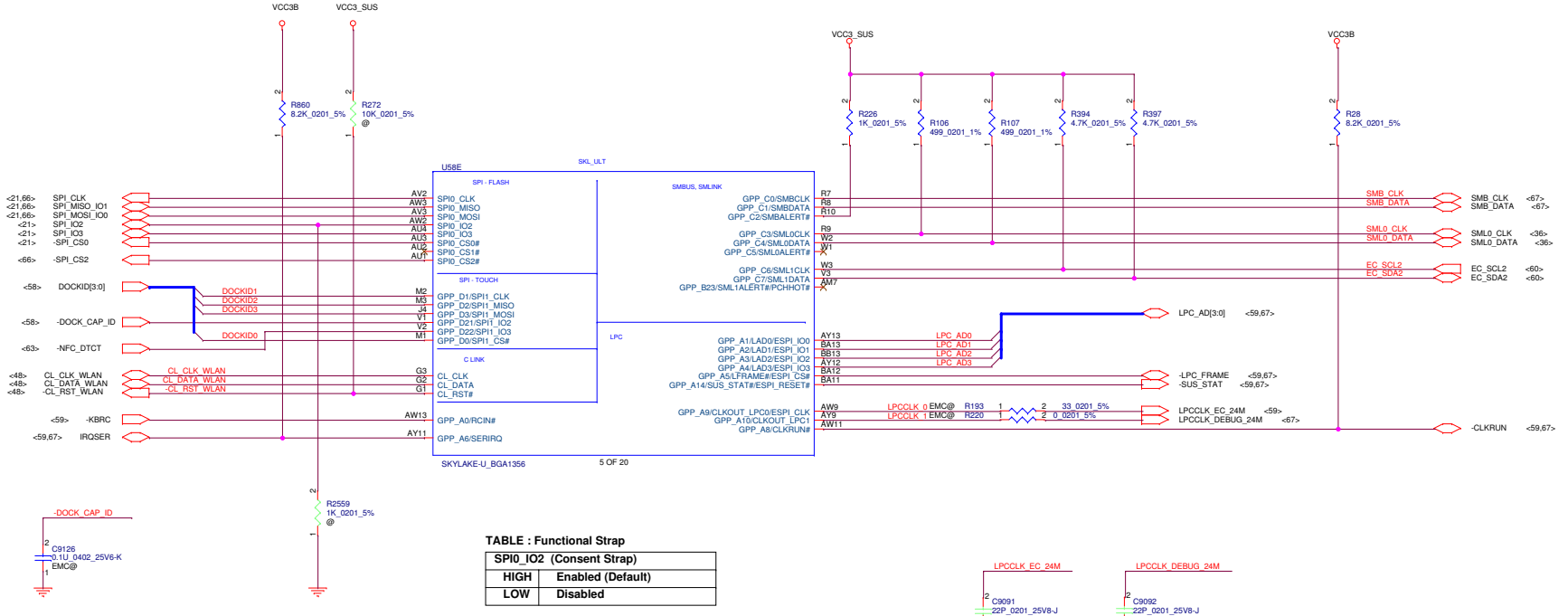


TABLE : Functional Strap

SPI0_IO2 (Consent Strap)	
HIGH	Enabled (Default)
LOW	Disabled

TABLE : Functional Strap

SPI0_IO3 (A0 Personality Strap)	
HIGH	Disabled (Default)
LOW	Enabled

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Title: CPU(5/16) : LPC/SPI/SMBUS/C-LINK

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TABLE : Functional Strap

GPP_B22/GSPI1_MOSI (Boot BIOS Destination)	
HIGH	Boot BIOS from LPC
LOW	Boot BIOS from SPI (Default)

LOGIC

TABLE : Functional Strap

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

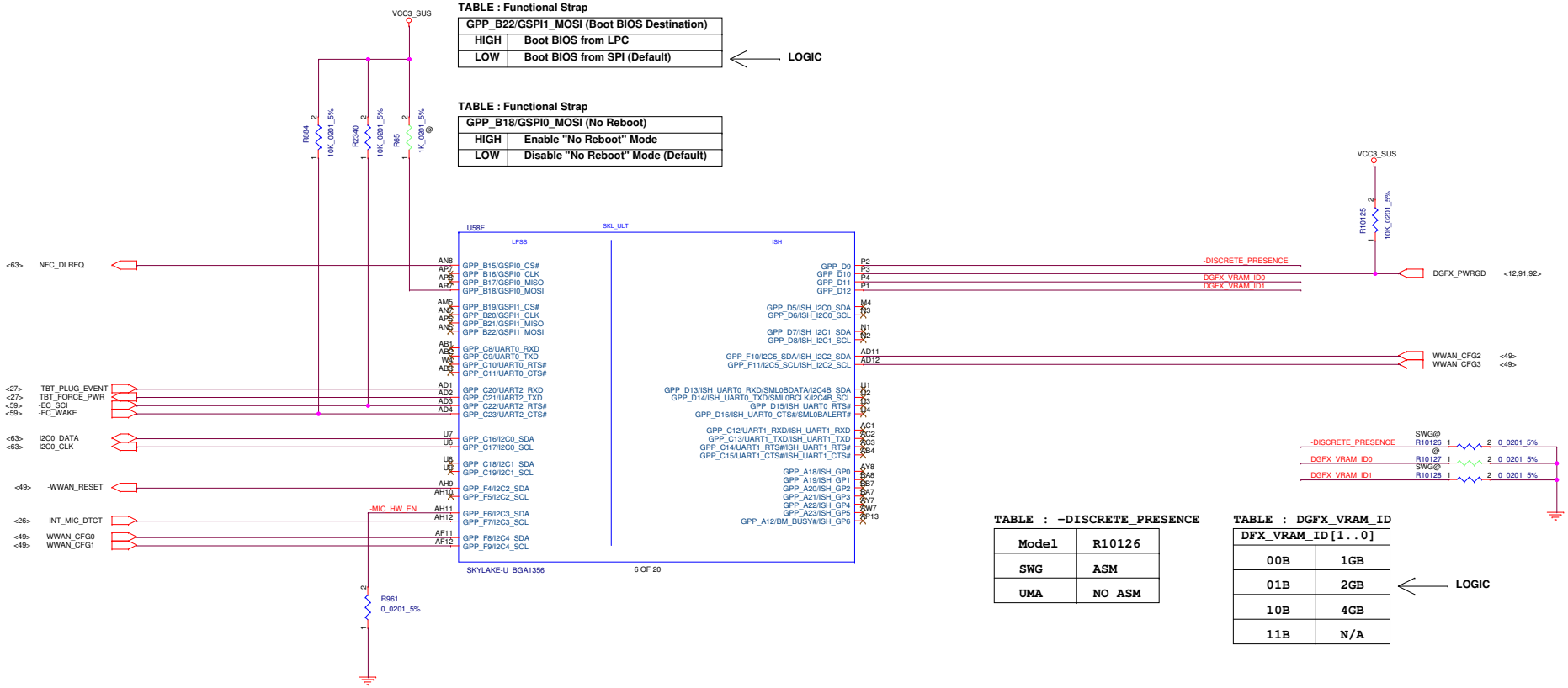

TABLE : -DISCRETE_PRESENCE

Model	R10126
SWG	ASM
UMA	NO ASM

TABLE : DGFX_VRAM_ID

DFX_VRAM_ID[1..0]	
00B	1GB
01B	2GB
10B	4GB
11B	N/A

LOGIC

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: CPU(6/16) : LPSS/ISH

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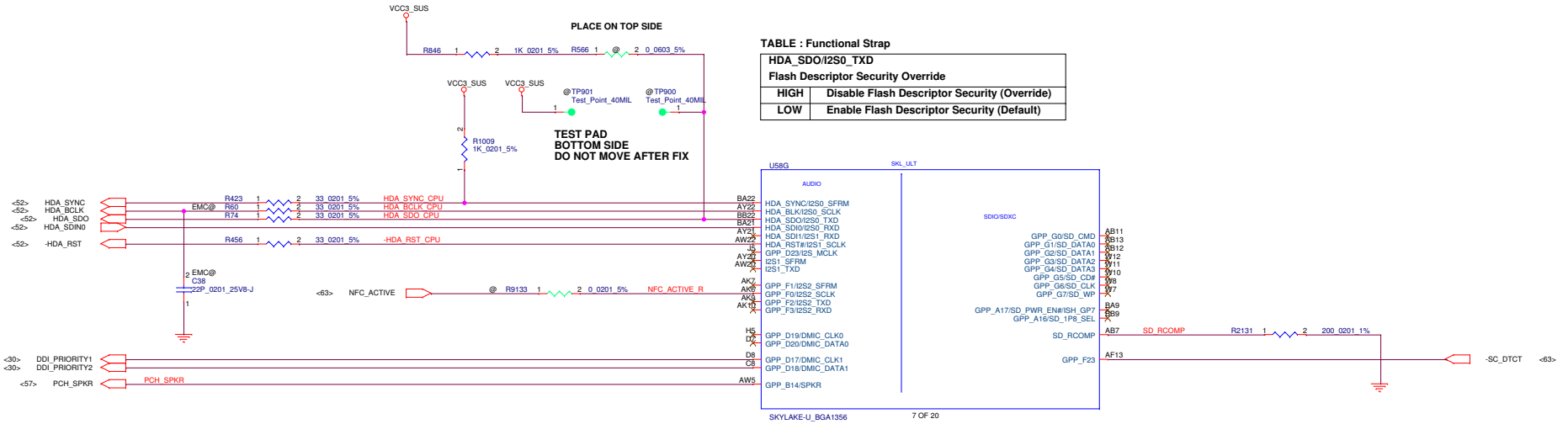

TABLE : Functional Strap

HDA_SDO/I2S0_TXD Flash Descriptor Security Override	
HIGH	Disable Flash Descriptor Security (Override)
LOW	Enable Flash Descriptor Security (Default)

TABLE : Functional Strap

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

LOGIC

Security Classification	LC Future Center Secret Data		
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Title: CPU(7/16) : AUDIO/SDXC

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Flexible I/O Configuration			
I/O	High Speed Signals	Configuration	Net Name
Port 1	USB3 1	USB3 1	USB3P0
Port 2	USB3 2/SSIC	USB3 2	USB3P1
Port 3	USB3 3	USB3 3	USB3P2
Port 4	USB3 4	USB3 4	USB3P3
Port 5	USB3 5/PCIE 1	PCIE 1 (x4)	PCIE0
Port 6	USB3 6/PCIE 2	PCIE 2 (x4)	PCIE0
Port 7	PCIE 3 (GbE)	PCIE 3 (x4)	PCIE0
Port 8	PCIE 4 (GbE)	PCIE 4 (x4)	PCIE0
Port 9	PCIE 5 (GbE)	PCIE 5 (GbE)	PCIE4
Port 10	PCIE 6	PCIE 6	PCIE5
Port 11	PCIE 7/SATA 0	PCIE 7 (x2)	PCIE6_L1
Port 12	PCIE 8/SATA 1A	GPIO STRAP	PCIE6_L0_SATA1
Port 13	PCIE 9 (GbE)	PCIE 9 (x2)	PCIE8_L0
Port 14	PCIE 10 (GbE)	PCIE 9 (x2)	PCIE8_L1
Port 15	PCIE 11/SATA 1B	PCIE 11 (x2)	PCIE10_L0
Port 16	PCIE 12/SATA 2	GPIO STRAP	PCIE10_L1_SATA2

PCIe Port Assignment	
0 (x4)	Discrete GPU
4	GbE PHY
5	M.2 WLAN Slot Port 0
6 (x2)	Optane x2 or M.2 WLAN Slot Port 1x 1
8 (x2)	Alpine Ridge-LP
10 (x2)	Main Storage x 2

SATA Port Assignment	
0	(PCIE 7)
1A	SATA SSD on WWAN slot
1B	(PCIE 11)
2	SATA SSD Main Storage

TABLE of USB3.0 SW (U189)		
Vendor	P/N	LCFC P/N
NXP	CBTL02042ABQ	SA00005R500
PERICOM	PI3PCIE3212ZBE	SA00005RJ00
TOSHIBA	TC7PCI3212MT	SA000066600

	WWAN Slot							
	Optane		SATA Cache		WWAN Card		None	
WIGIG_DISABLE	L	H	L	H	L	H	L	H
-WWAN_SSD_DTCT	L	L	L	L	H	H	H	H
SEL(U189)	L	L	L	L	H	H	H	H
XSD(U189)	L	L	L	L	L	H	L	H
PCIE6_L0_SATA1	To M.2 Socket2	To M.2 Socket2	To M.2 Socket2	To M.2 Socket2	To M.2 Socket1	Disconnect	To M.2 Socket1	Disconnect

USB 2.0 Port Assignment	
0	USB 3.0 System Port / Docking
1	USB 3.0 System Port (AOU)
2	Smart Card Slot
3	USB 3.0 System Port (3rd Port)
4	IR Camera
5	M.2 WWAN Slot
6	NGFF WLAN Slot
7	USB Camera
8	Fingerprint Reader
9	Touch Panel

USB 3.0 Port Assignment	
0	USB 3.0 System Port / Docking
1	USB 3.0 System Port (AOU)
2	Media Card Controller
3	USB 3.0 System Port (3rd Port)
4	(PCIE 1)
5	(PCIE 2)

TABLE of USB3.0 SW (U160)		
Vendor	P/N	LCFC P/N
NXP	CBTL02042ABQ	SA00005R500
PERICOM	PI3PCIE3212ZBE	SA00005RJ00
TOSHIBA	TC7PCI3212MT	SA000066600

TABLE of USB2.0 SW (U161)		
Vendor	P/N	LCFC P/N
PERICOM	PI3USB102ZMEX	SA00005RH00
NXP	NX3DV42GU	SA00005RI00

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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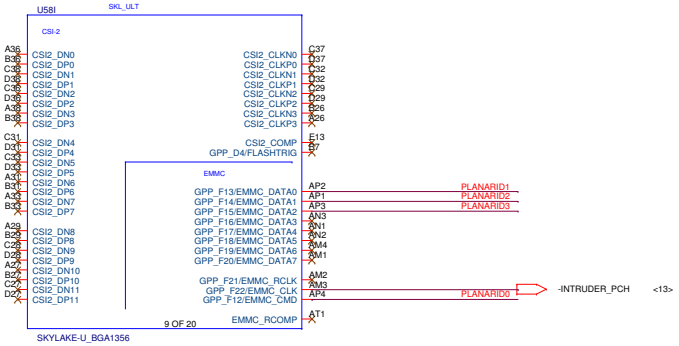
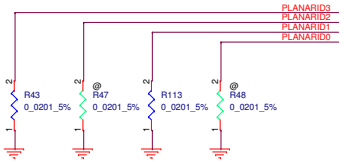
Title: CPU(8/16) : PCIE/USB/SATA

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 10 of 98





TABLE

LEVEL	PLANAR ID			
	3	2	1	0
	R43	R47	R113	R48
1	NA	NA	NA	NA
0	ASM	ASM	ASM	ASM

TABLE

LEVEL	PLANARID[3..0]
SDV	0000B
FVT	0001B
FVT-2	0010B
SIT	0011B
SIT-R	0100B
SVT	0101B

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: CPU(9/16) : CSI-2/EMMC

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 11 of 98

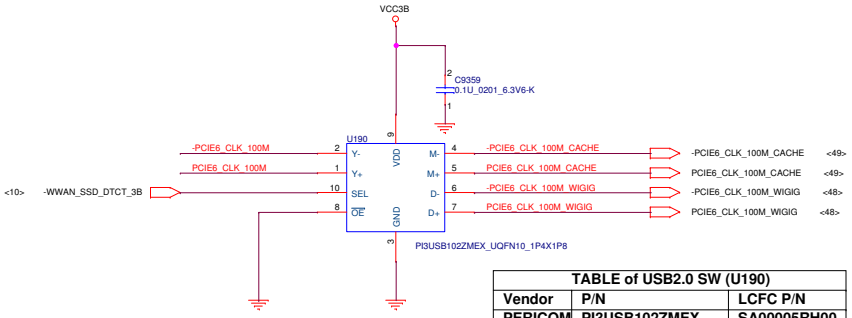
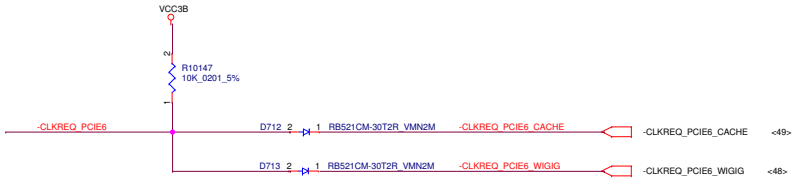
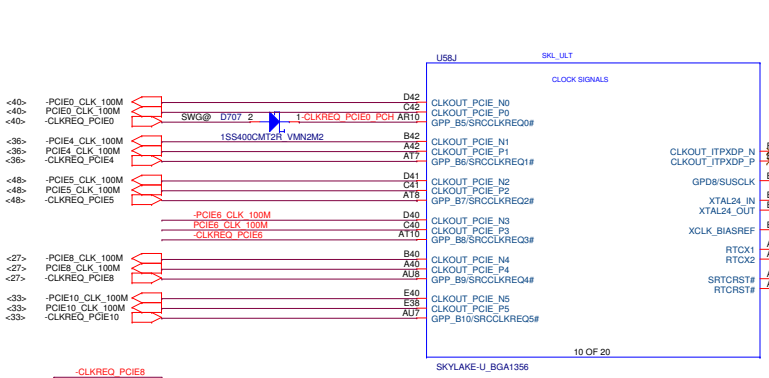
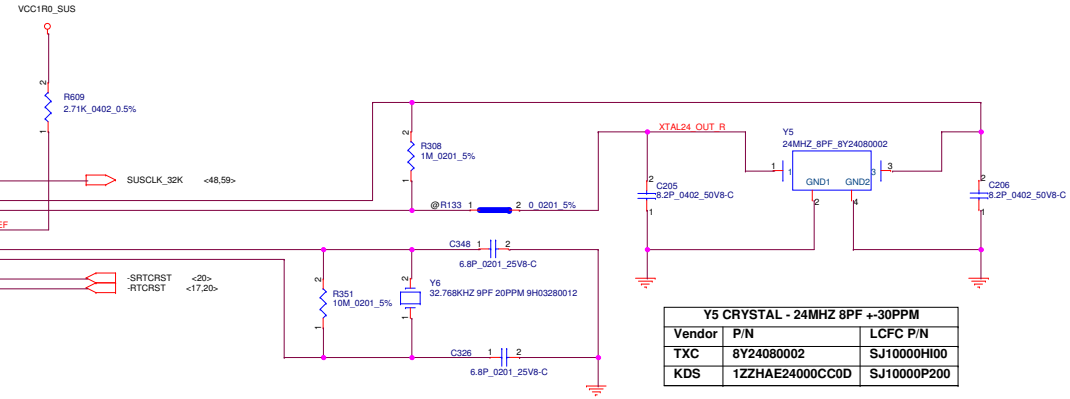


TABLE of USB2.0 SW (U190)		
Vendor	P/N	LCFC P/N
PERICOM	PI3USB102ZMEX	SA00005RH00
NXP	NX3DV42GU	SA00005RI00

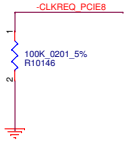


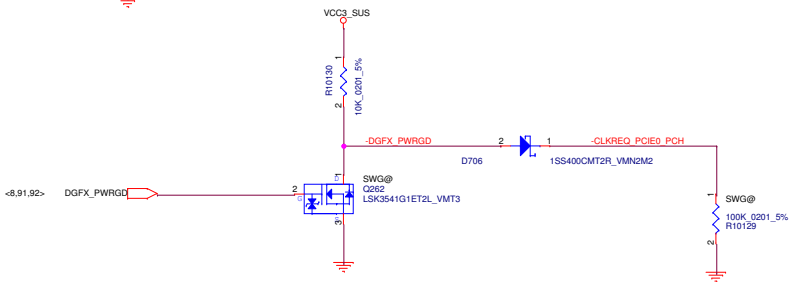




Y5 CRYSTAL - 24MHZ 8PF +-30PPM		
Vendor	P/N	LCFC P/N
TXC	8Y24080002	SJ10000HI00
KDS	1ZZHAE24000CC0D	SJ10000P200

Y6 CRYSTAL 32.768KHZ 9PF 20PPM		
Vendor	P/N	LCFC P/N
TXC	9H03280012	SJ10000J900
KDS	1TJF090DJ1A000B	SJ100069400





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Issued Date	2015/11/02	Deciphered Date	2015/8/10

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Title: CPU(10/16) : CLOCK SIGNALS

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 12 of 98

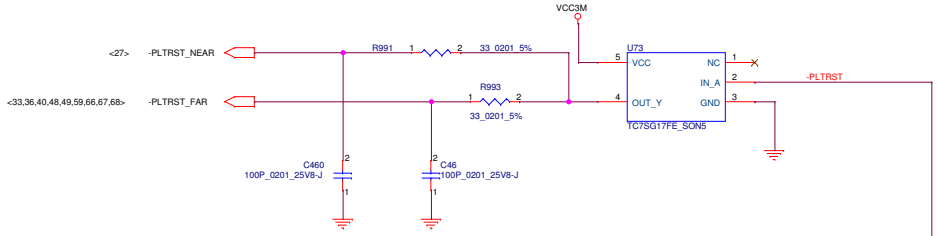
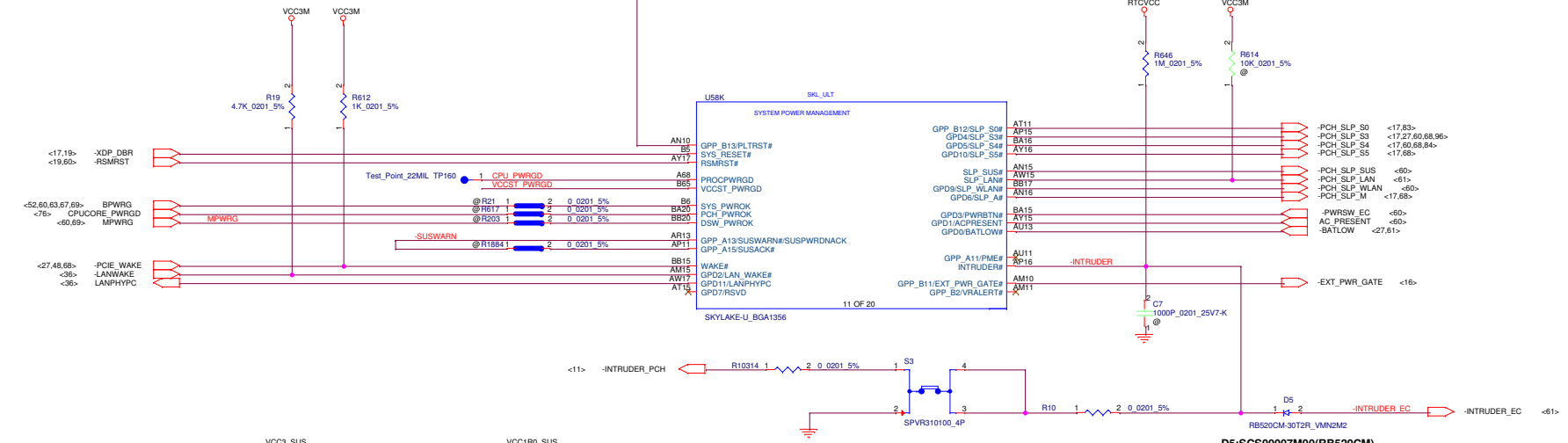
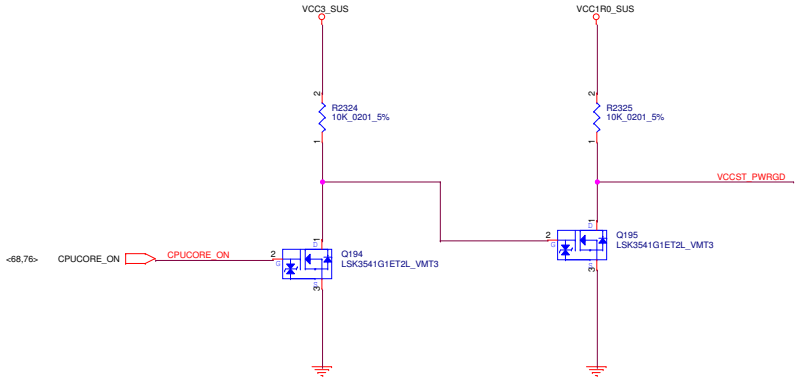


TABLE of U73		
Vendor	P/N	LCFC P/N
TOSHIBA	TC7SG17FE	SA00005T00J
ON	NL17SZ17XV5T2G	SA00005OU00
TI	SN74LVC1G17DRLR	SA00005MG00



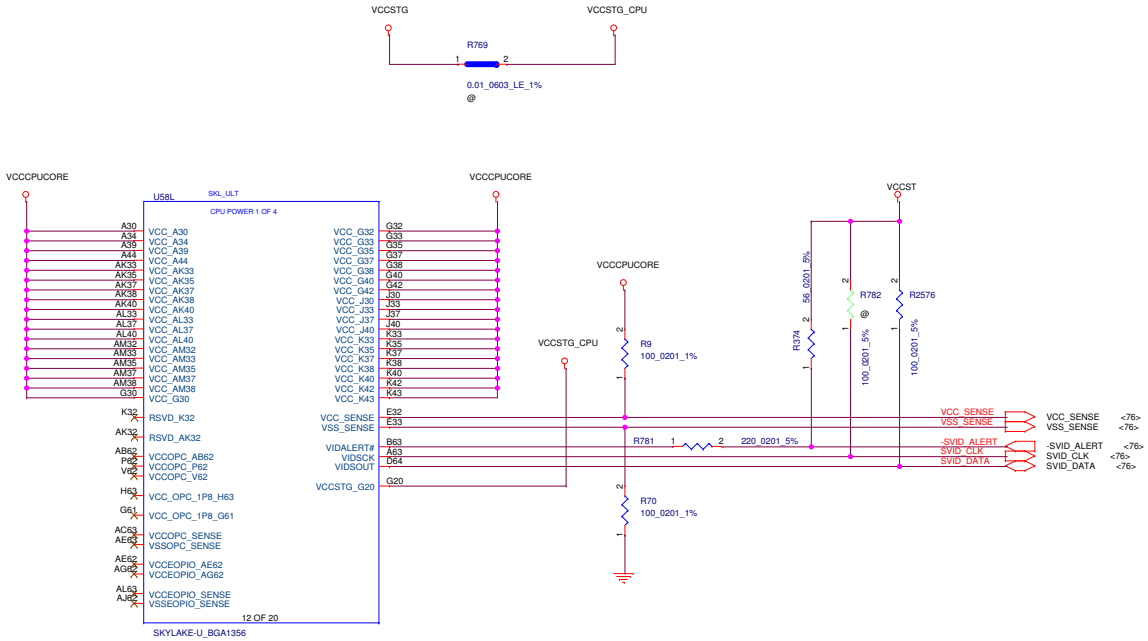


Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: CPU(11/16) : SYSTEM PM

Size: Custom | Document Number: C | Rev: 0.1

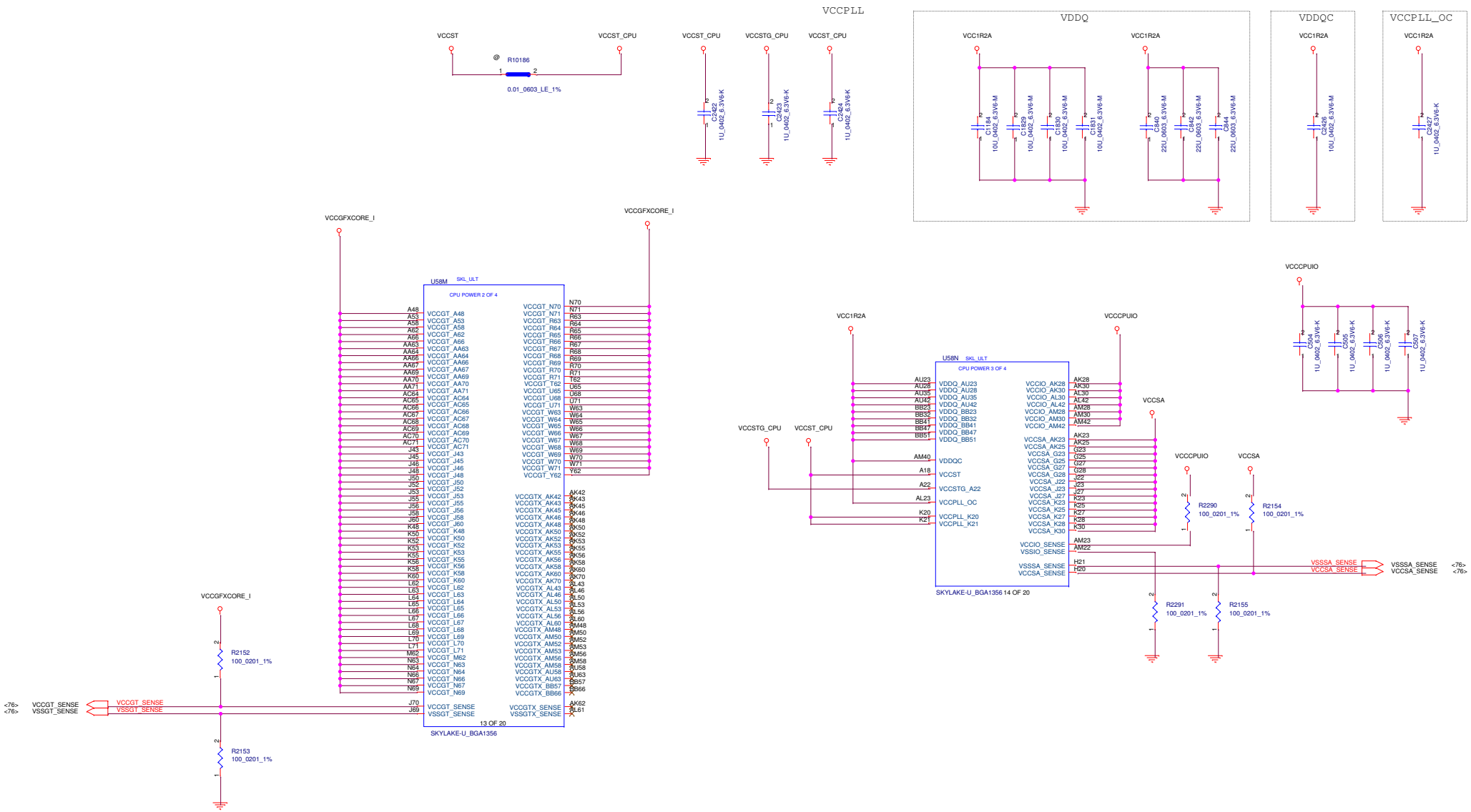
Date: Wednesday, November 02, 2016 | Sheet 13 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: CPU(12/16) : CPU POWER (1/2)

Size: Custom	Document Number: C		Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 14 of 98		



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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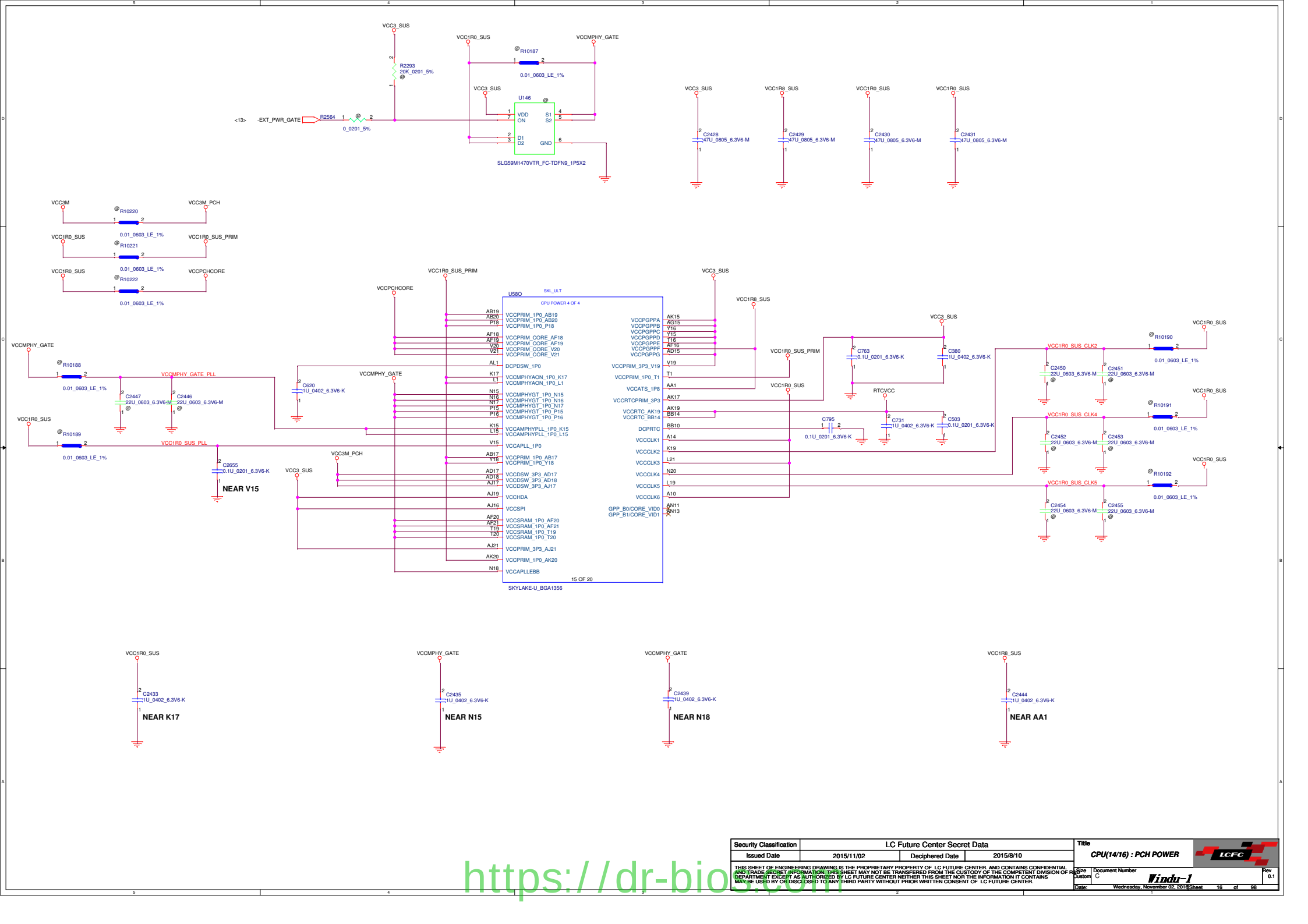
Title: CPU(13/16) : CPU POWER (2/2)

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 15 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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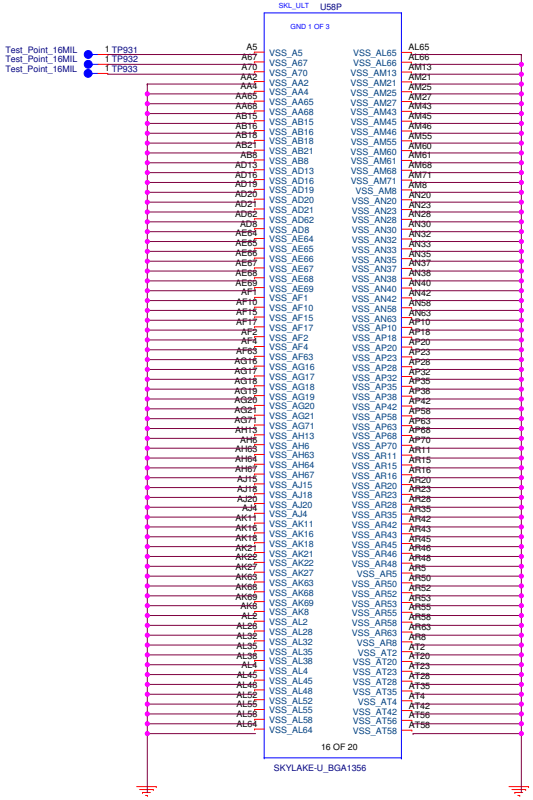
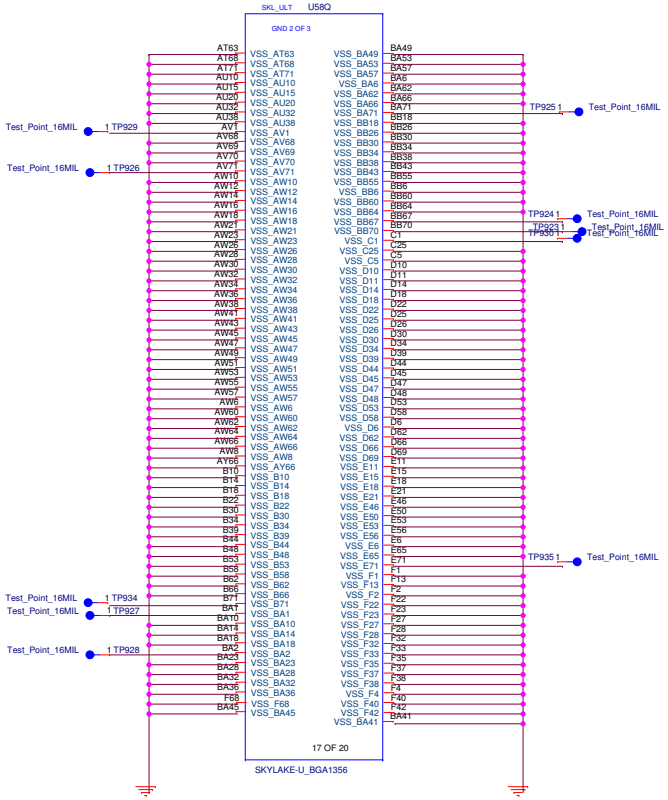
Title: CPU(14/16) : PCH POWER

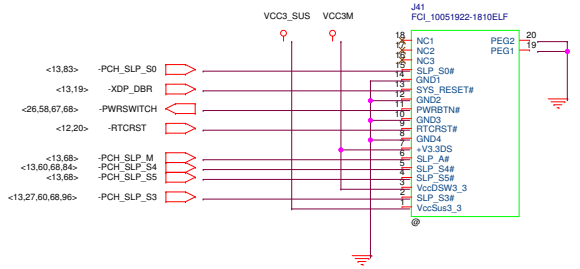
Size: Custom | Document Number: C | Rev: 0.1

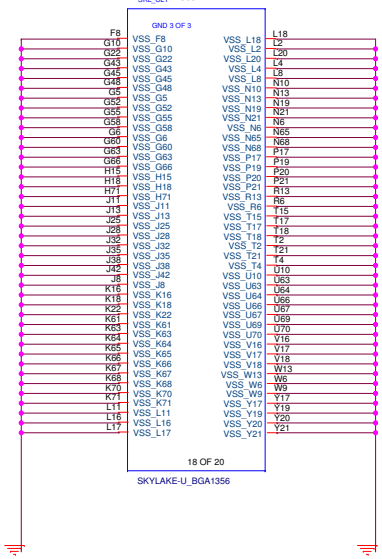
Date: Wednesday, November 02, 2016 | Sheet 16 of 98

APS/PETS Interface









Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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Title: CPU(15/16) : GND

LCFC

Size	Document Number	Rev
Custom C	Vindu-1	0.1

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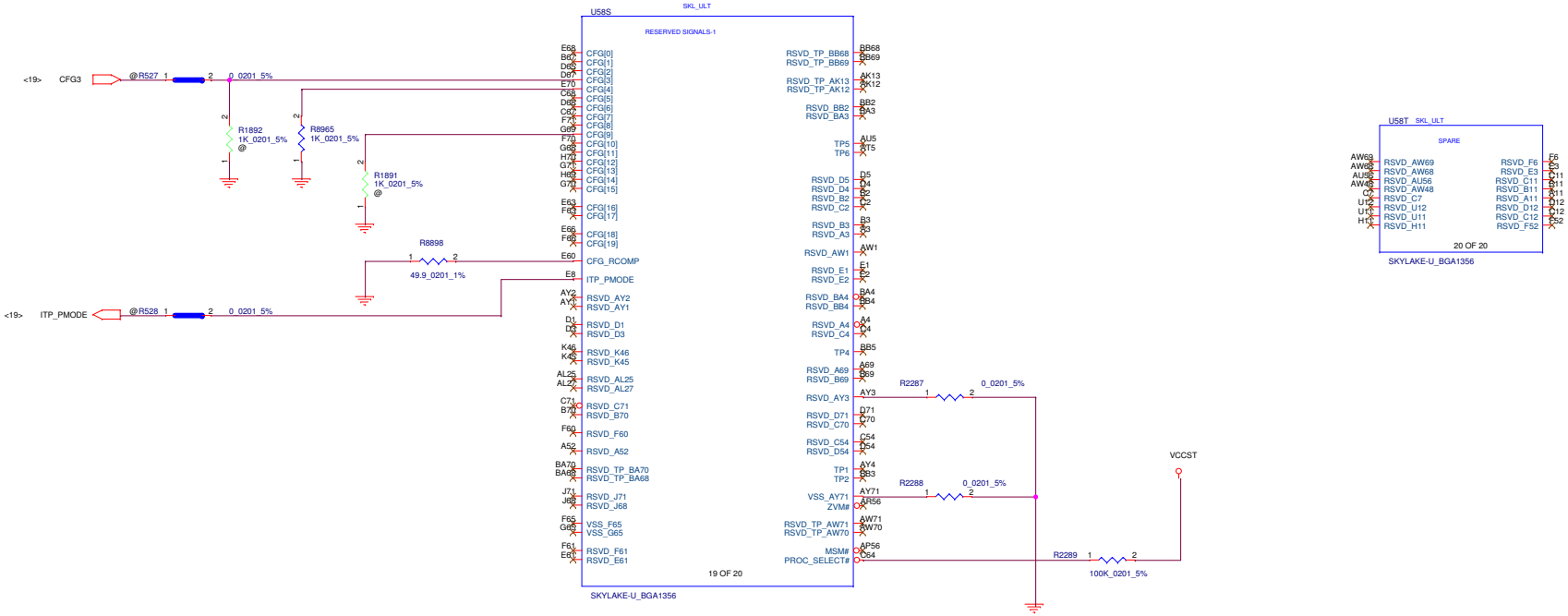
TABLE

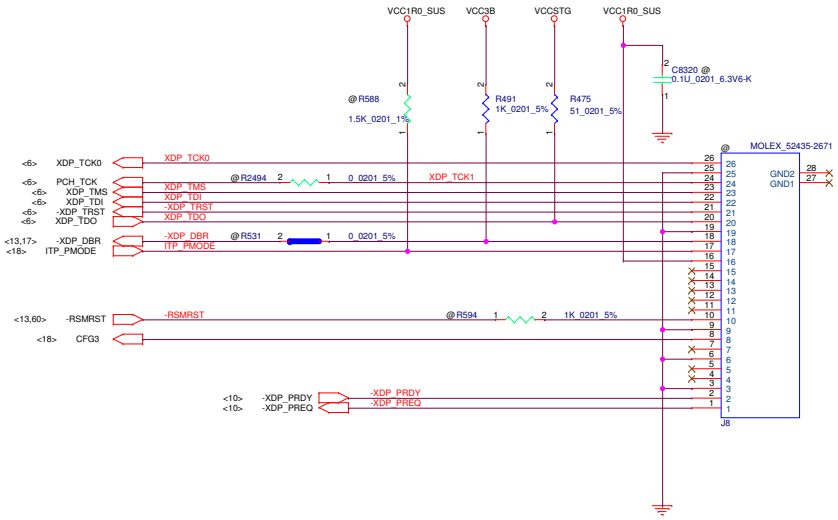
CFG0 : Stall Reset Sequence **after PCU PLL Lock until de-asserted** **1 : No Stall** **0 : Stall**
CFG3 : MSR Privacy Bit Feature **1 : MSR (C80h) bit[0] setting** **0 : MSR (C80h) bit[0] overridden**
CFG4 : eDP Enable **1 : Disabled** **0 : Enabled**
CFG9 : SVID Bus Communication **1 : Enabled** **0 : Disabled**



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: **CPU(16/16) : CFG/RESERVED**

Size: Custom	Document Number: C	Rev: 0.1	
Date: Wednesday, November 02, 2016	Sheet 18 of 98		



TABLE

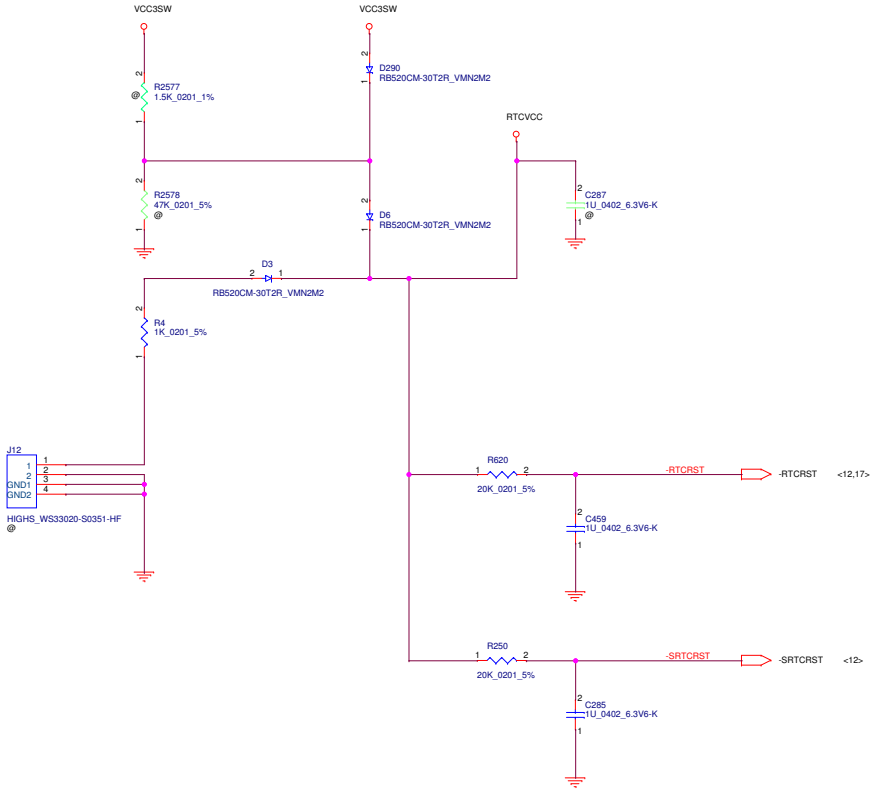
Logic	Ref Des	Merged	DCI 2.0
Page 6	R2	ASM	ASM
Page 7	R2559	ASM	NO_ASM
Page 18	R1892	ASM	NO_ASM
Page 19	J8	ASM	NO_ASM
	C8320	ASM	NO_ASM
	R475	ASM	ASM
	R491	ASM	ASM
	R588	ASM	NO_ASM
	R594	ASM	NO_ASM
	R2494	ASM	NO_ASM

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: XDP CONNECTOR

Size	Document Number	Rev
Custom	C	0.1

Date: Wednesday, November 02, 2016 Sheet 19 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

Title: RTC BATTERY

Size: Custom | Document Number: Yindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 20 of 98

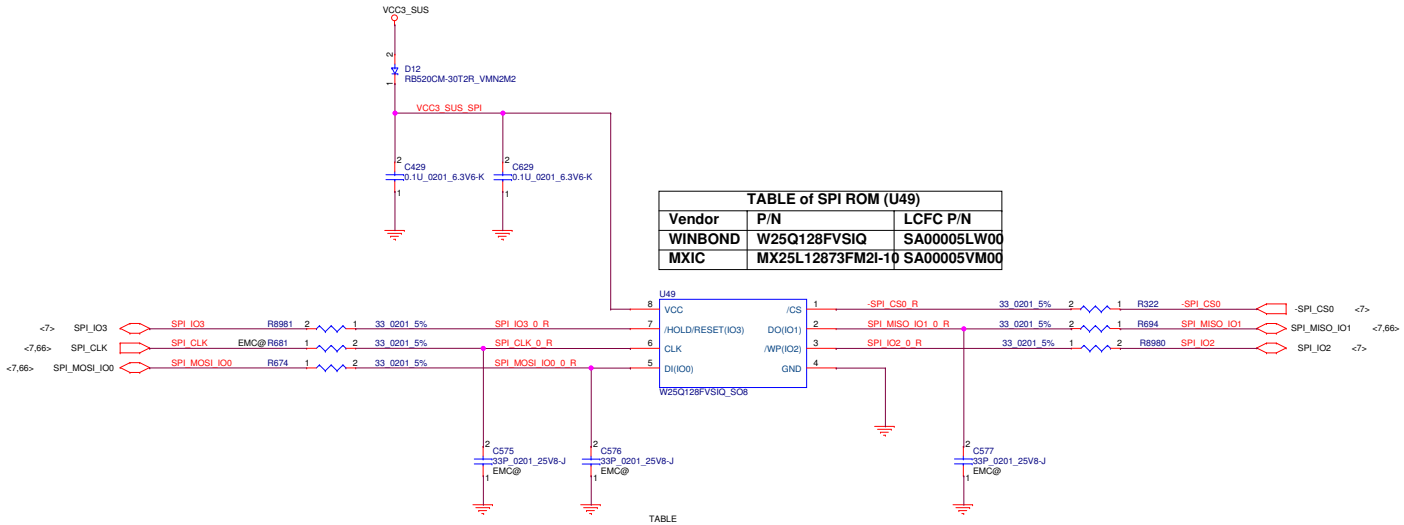


TABLE of SPI ROM (U49)

Vendor	P/N	LCFC P/N
WINBOND	W25Q128FVSIQ	SA00005LW00
MXIC	MX25L12873FM2I-10	SA00005VM00

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

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

Title: SPI FLASH

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

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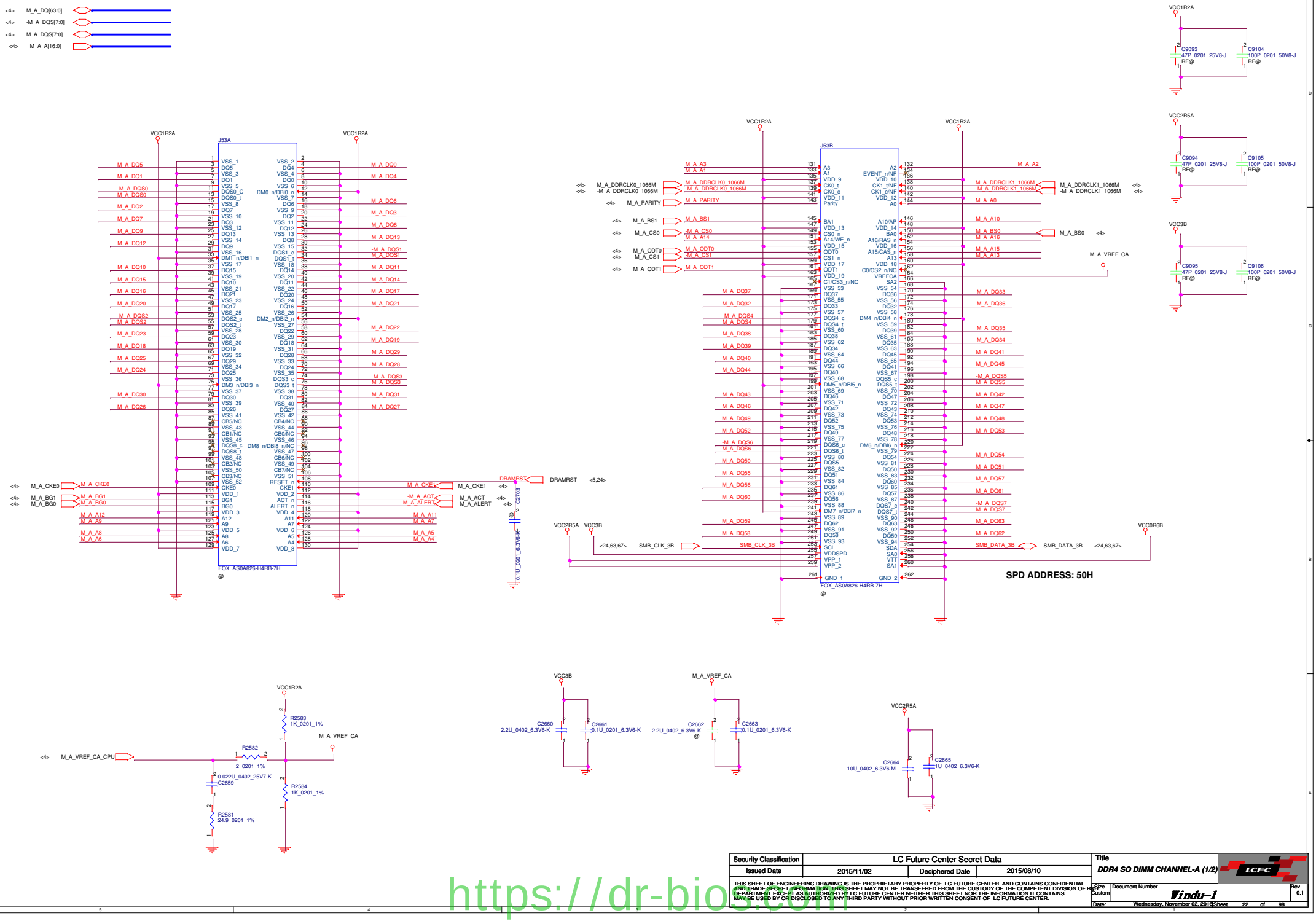
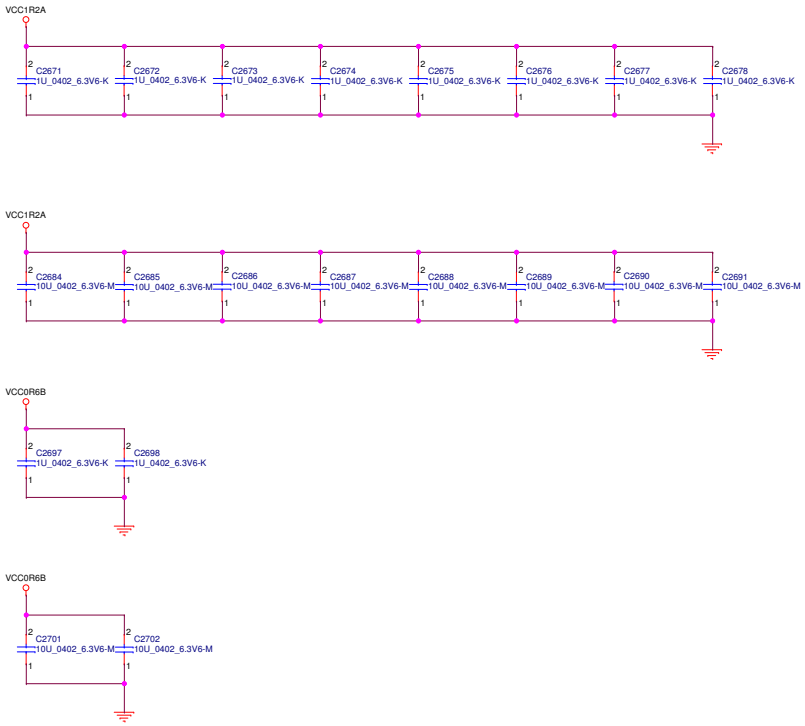


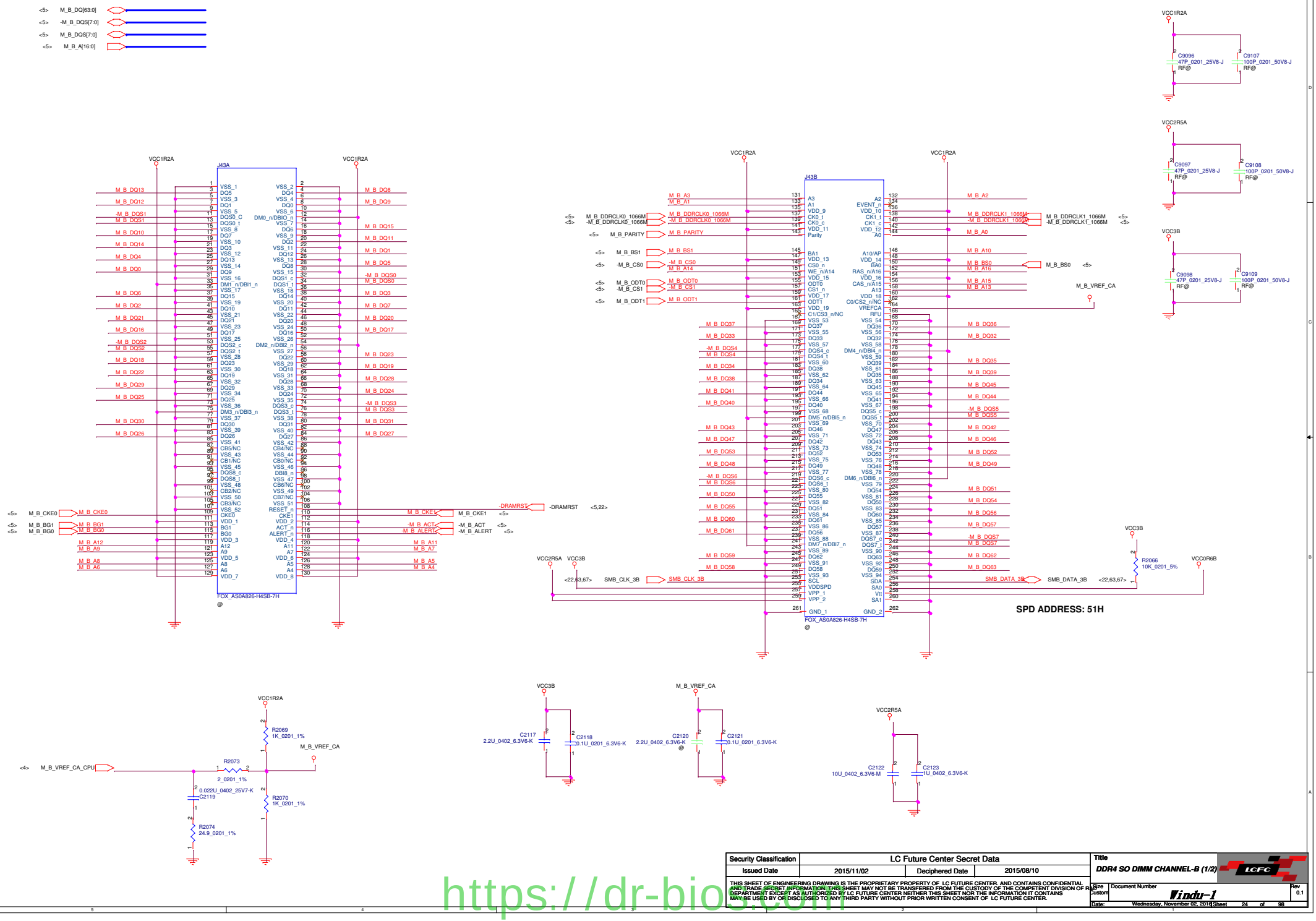


Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

Title: DDR4 SO DIMM CHANNEL-A (2/2)

Size	Document Number	Rev
Custom	Vindu-1	0.1

Date: Wednesday, November 02, 2016 Sheet 23 of 98

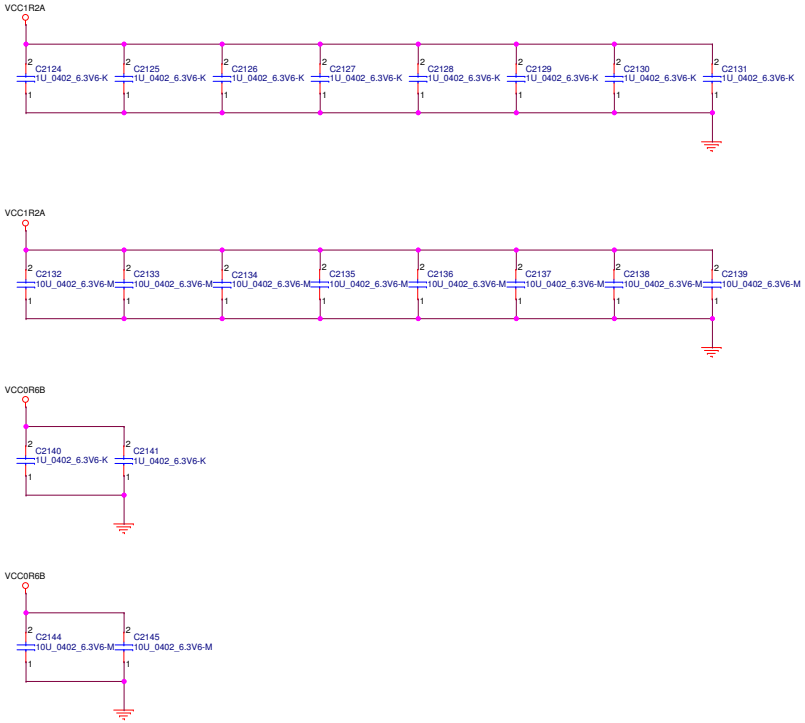


Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

Title: DDR4 SO DIMM CHANNEL-B (1/2)

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 24 of 98

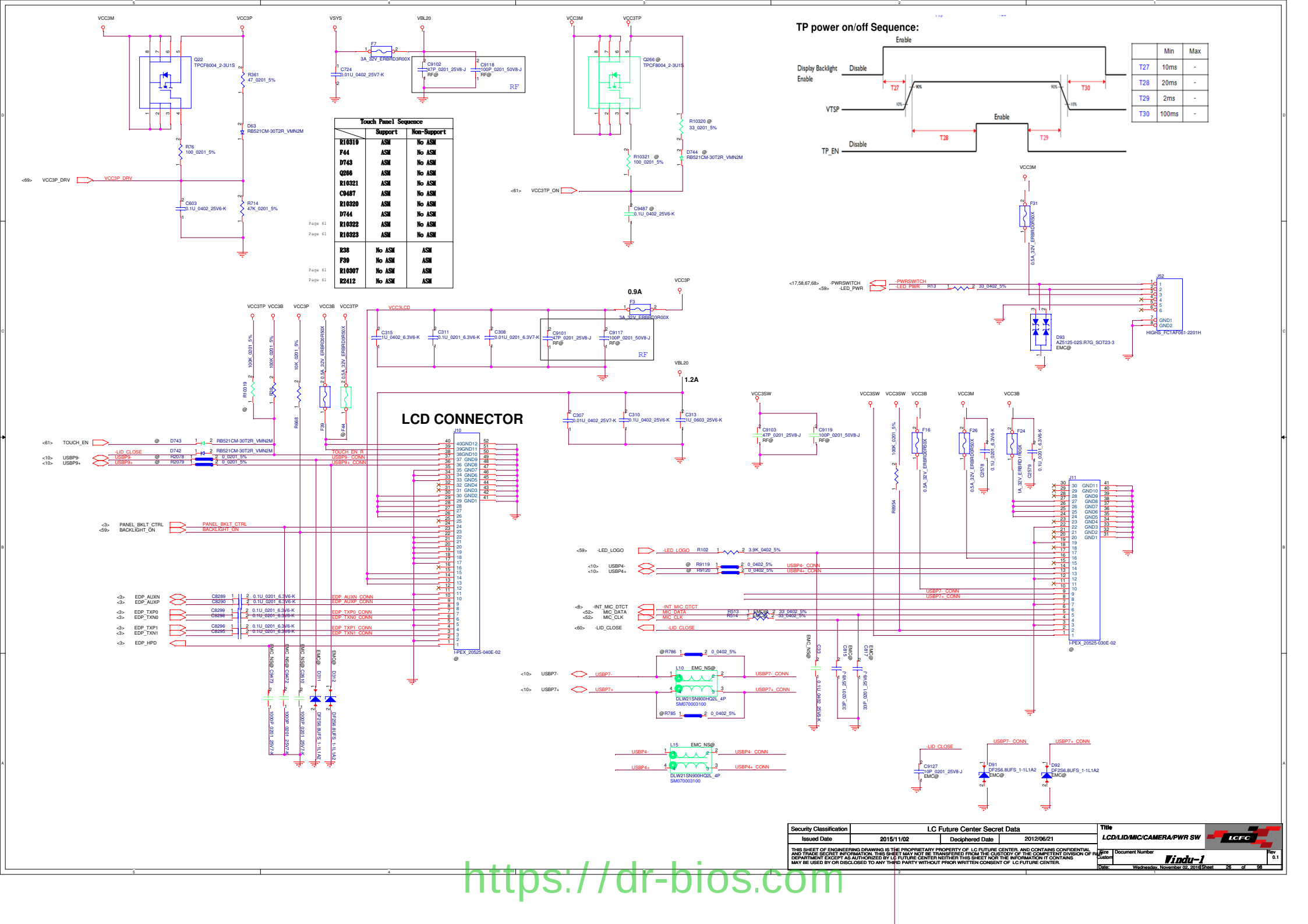


Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

Title: DDR4 SO DIMM CHANNEL-B (2/2)

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 25 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2012/06/21

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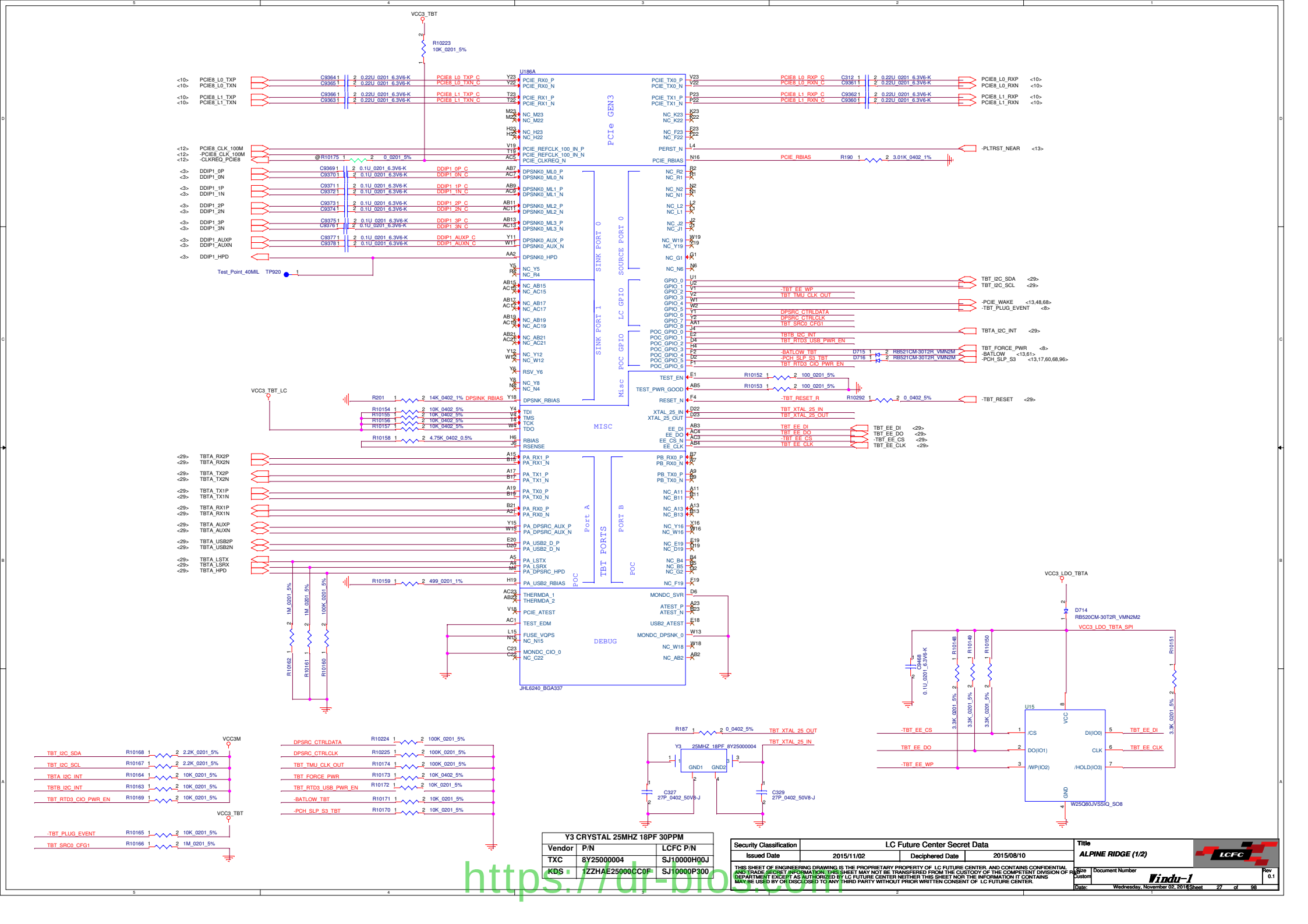
Title: LCD/LID/MIC/CAMERA/PWR SW

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 26 of 98



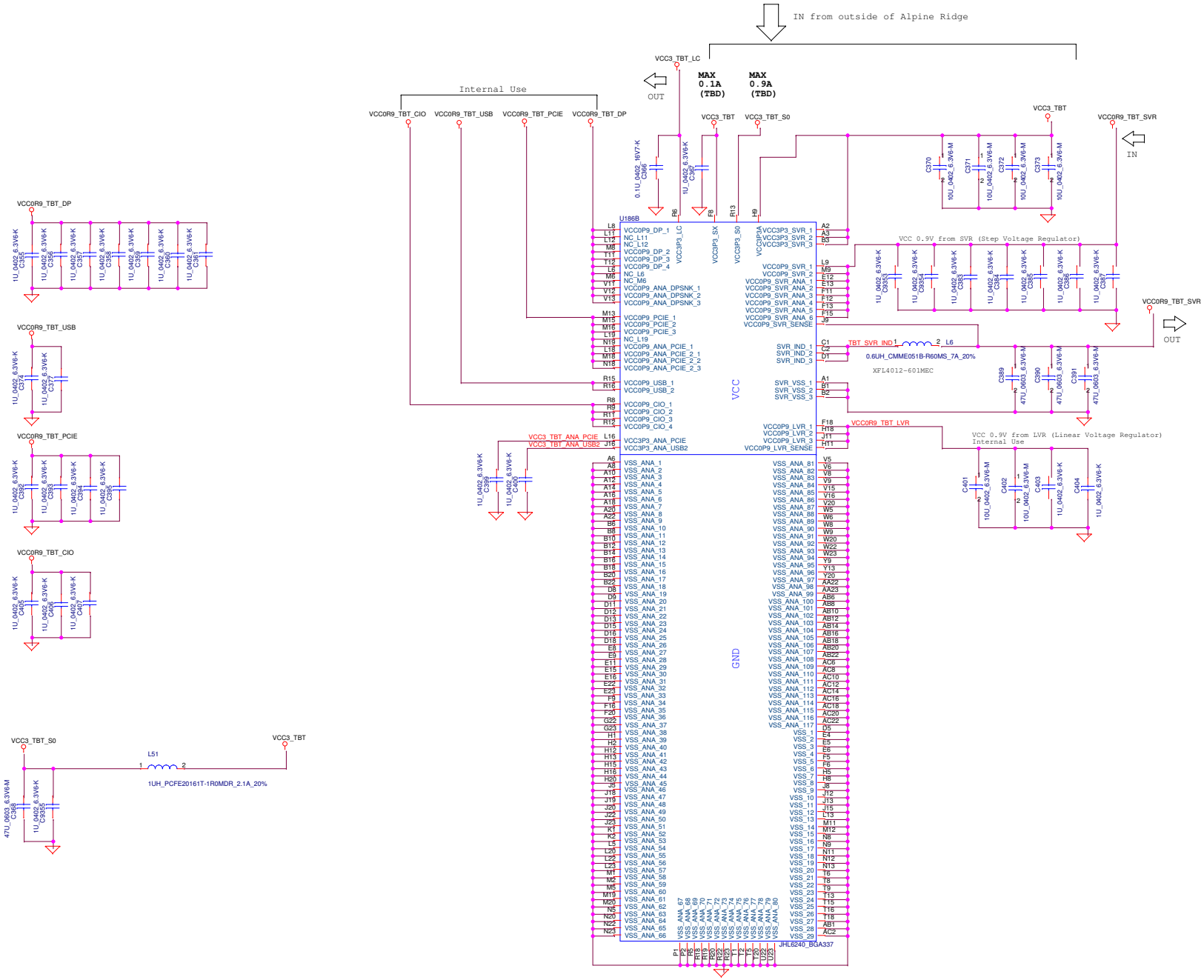
Y3 CRYSTAL 25MHZ 18PF 30PPM		
Vendor	P/N	LCFC P/N
TXC	8Y25000004	SJ10000H00J
KDS	1ZZHAE25000CC0F	SJ10000P300

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

Title: ALPINE RIDGE (1/2)

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 27 of 98



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Issued Date	2015/11/02	Deciphered Date	2015/08/10

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Title: ALPINE RIDGE (2/2)

LCFC

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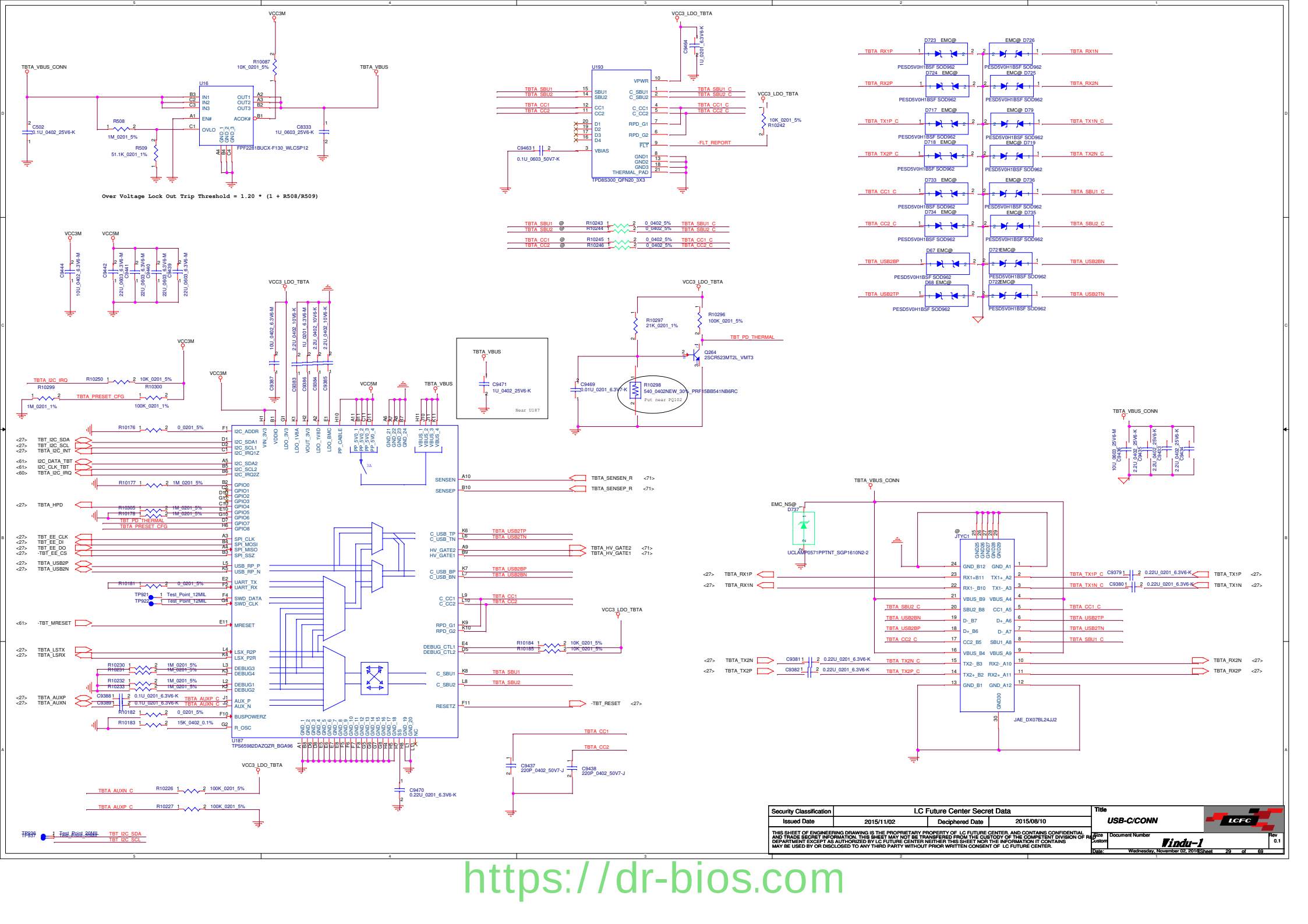
Date: Wednesday, November 02, 2016 | Sheet 28 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

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Title: USB-C/CONN

Size: Custom | Document Number: Windu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 29 of 68

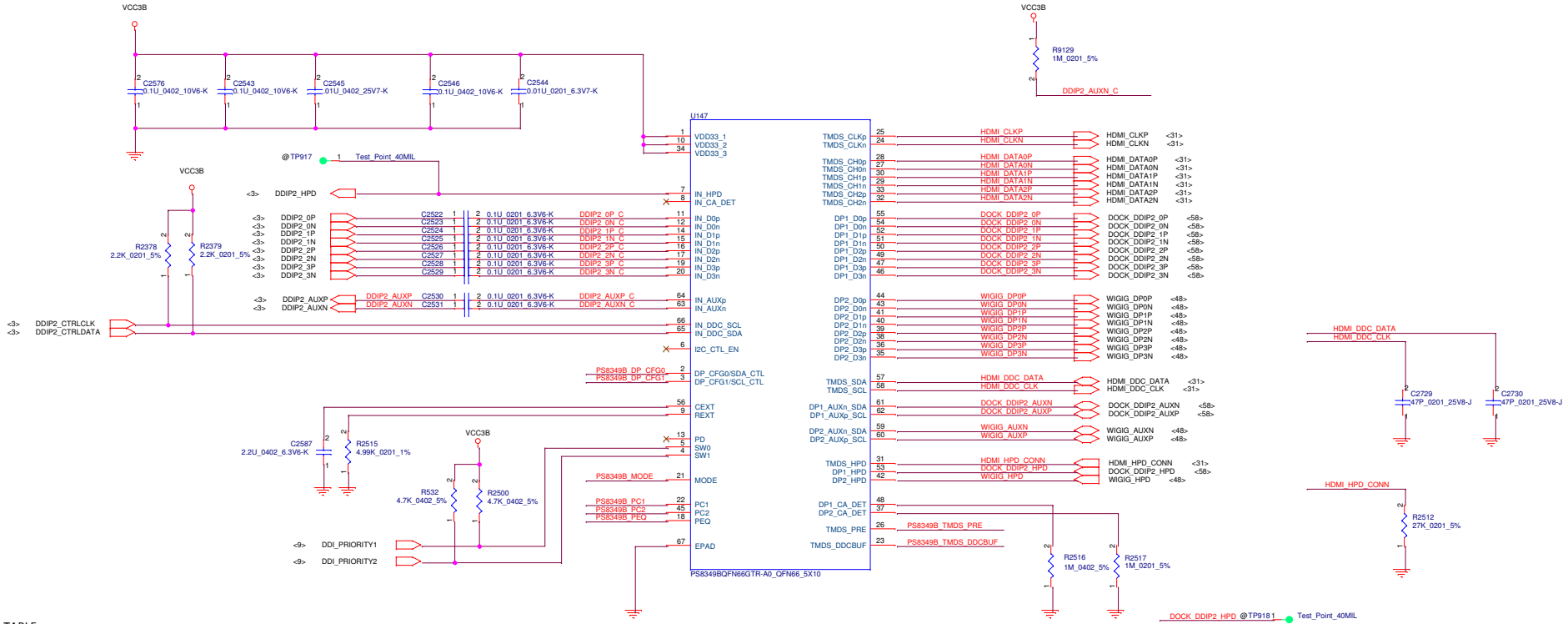
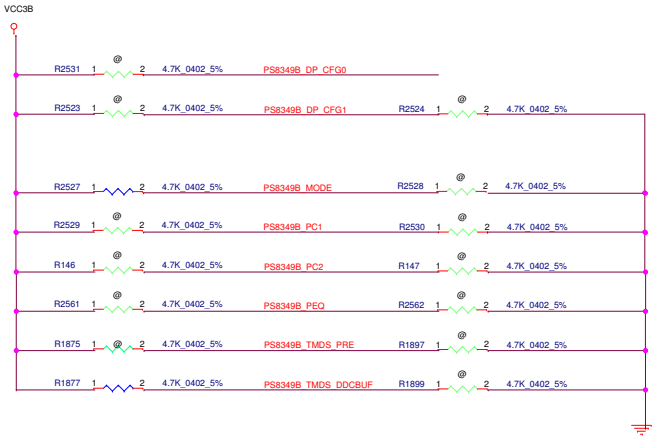


TABLE:

SW1	SW0	Port Priority Sequence	
L	L	DP1 Port > DP2 Port > TMDS Port	
L	H	DP1 Port > TMDS Port > DP2 Port	← DEFAULT
H	L	TMDS Port > DP2 Port > DP1 Port	
H	H	TMDS Port > DP1 Port > DP2 Port	

MODE =	
H : Automatic Switching mode, HDMI ID Enabled	← DEFAULT
L : Automatic Switching mode, HDMI ID Disabled	



For PARADE Debug use.

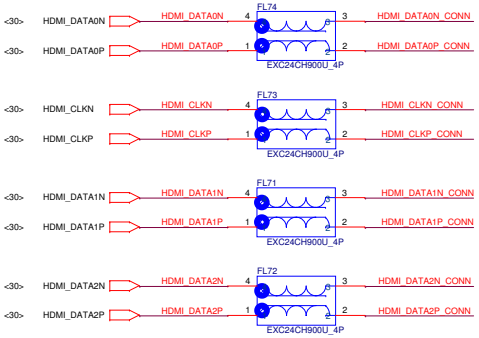
HDMI_CLKN	@ R91211	2 180_0402_1%	HDMI_CLKP
HDMI_DATA0N	@ R91231	2 180_0402_1%	HDMI_DATA0P
HDMI_DATA1N	@ R91251	2 180_0402_1%	HDMI_DATA1P
HDMI_DATA2N	@ R91271	2 180_0402_1%	HDMI_DATA2P

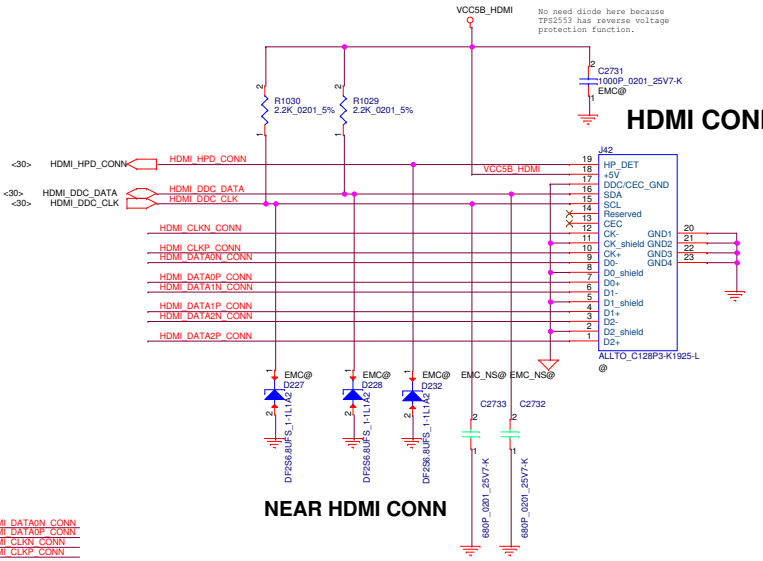
Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

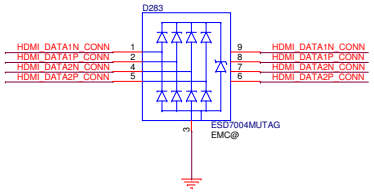
Title: DDI DEMUX/HDMI LEVEL SHIFTE

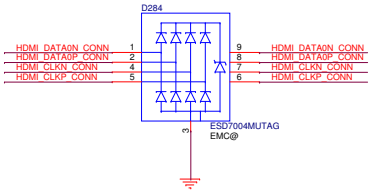
Size: Custom | Document Number | Rev: 0.1

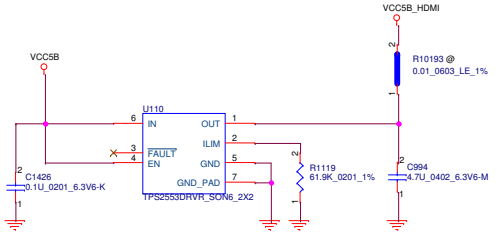
Date: Wednesday, November 02, 2016 | Sheet 30 of 98











Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2013/08/05

Title: HDMI CONNECTOR

Size: Custom	Document Number: Vindu-1	Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 31 of 98	

TABLE: PI3EQX862 Input Equalization Setting (EQ_A & EQ_B)

	@3GHz	@4GHz
GND	7 dB	8 dB
Open	4 dB (Default)	5 dB (Default)
VDD	10 dB	11 dB

← LOGIC

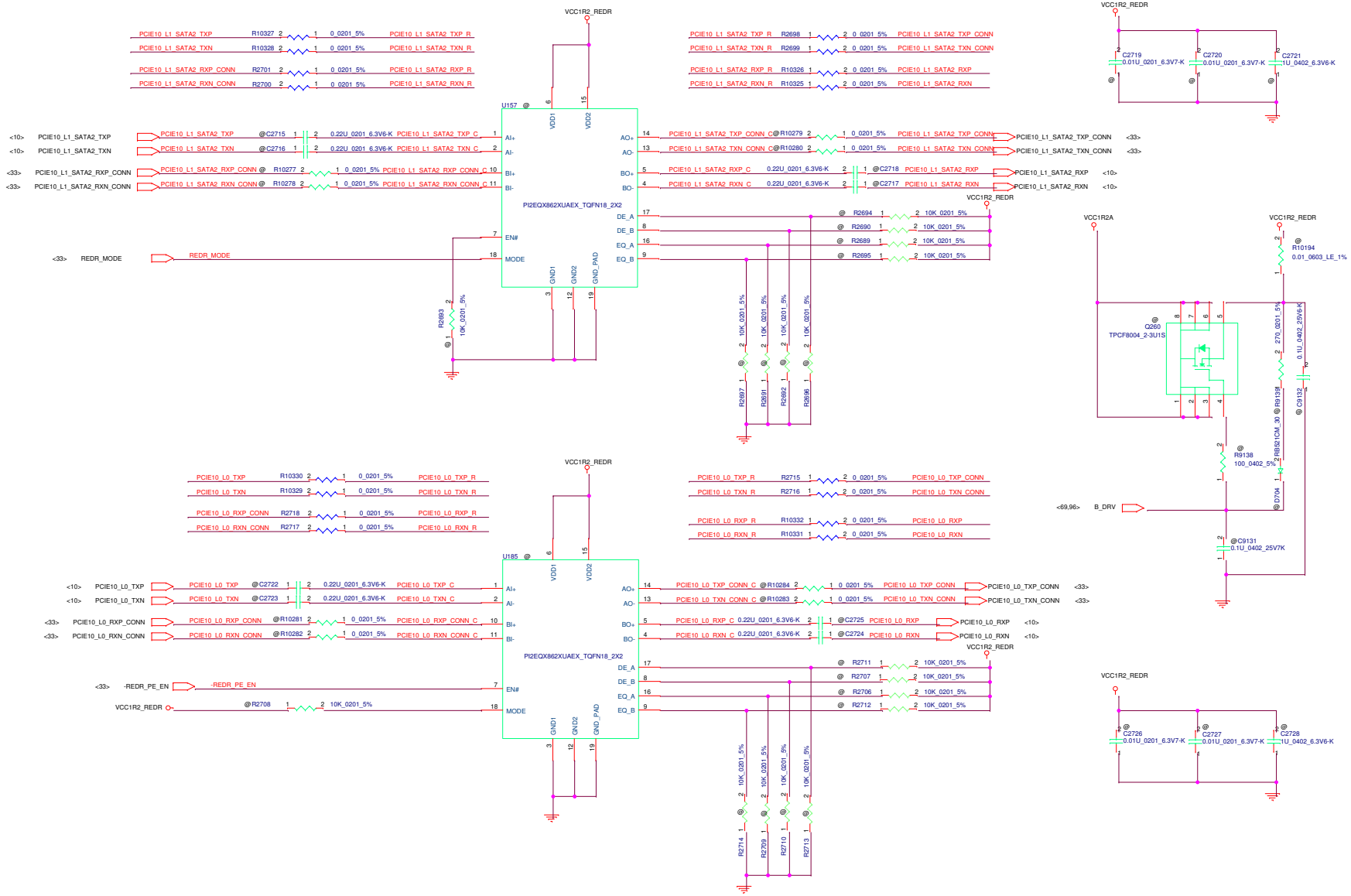
TABLE: PI3EQX862 Output De-emphasis Setting (DE_A & DE_B)

GND	-2.5 dB
Open	0 dB (Default)
VDD	-4 dB

← LOGIC

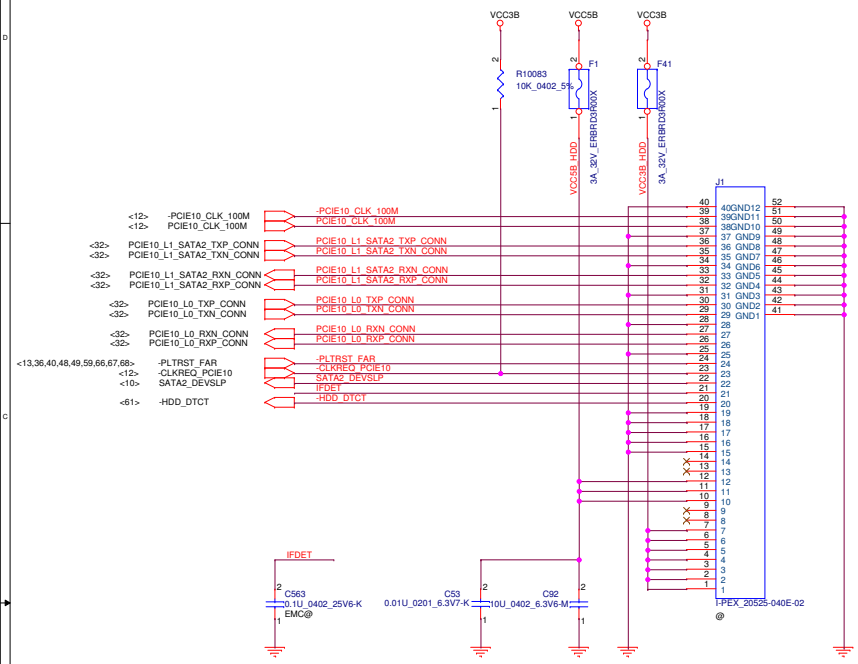
TABLE: Mode Configuration Table

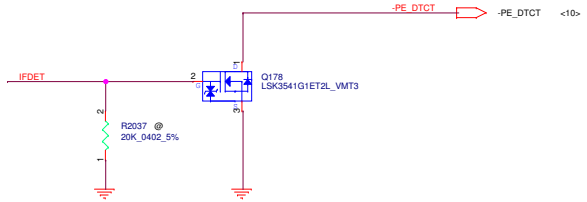
EN#	MODE	Mode
Low	Low	SATA Application
Low	High	PCIe Application
High	X	Disable

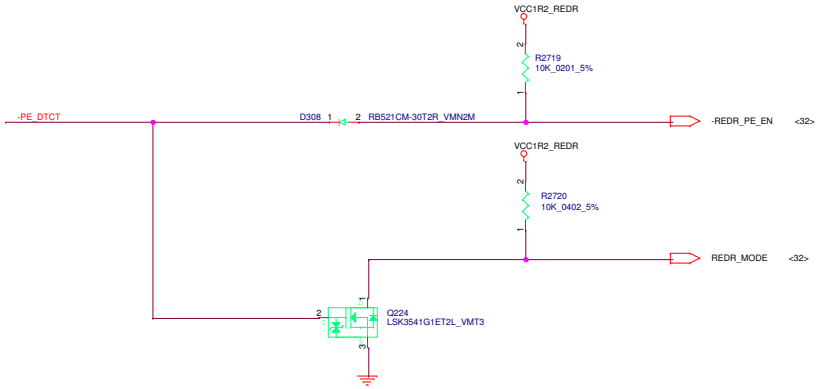


Security Classification	LC Future Center Secret Data	Title	STORAGE I/F REDRIVER
Issued Date	2015/11/02	Deciphered Date	2015/08/10
Size: Custom	Document Number: Vindu-1		Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 32 of 98		

IFDET
SATA Device GND
PCIe Device 5K PU to Vsource







Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

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Title: SATA EXPRESS CONNECTOR

LCFC

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Date: Wednesday, November 02, 2016 | Sheet 33 of 98

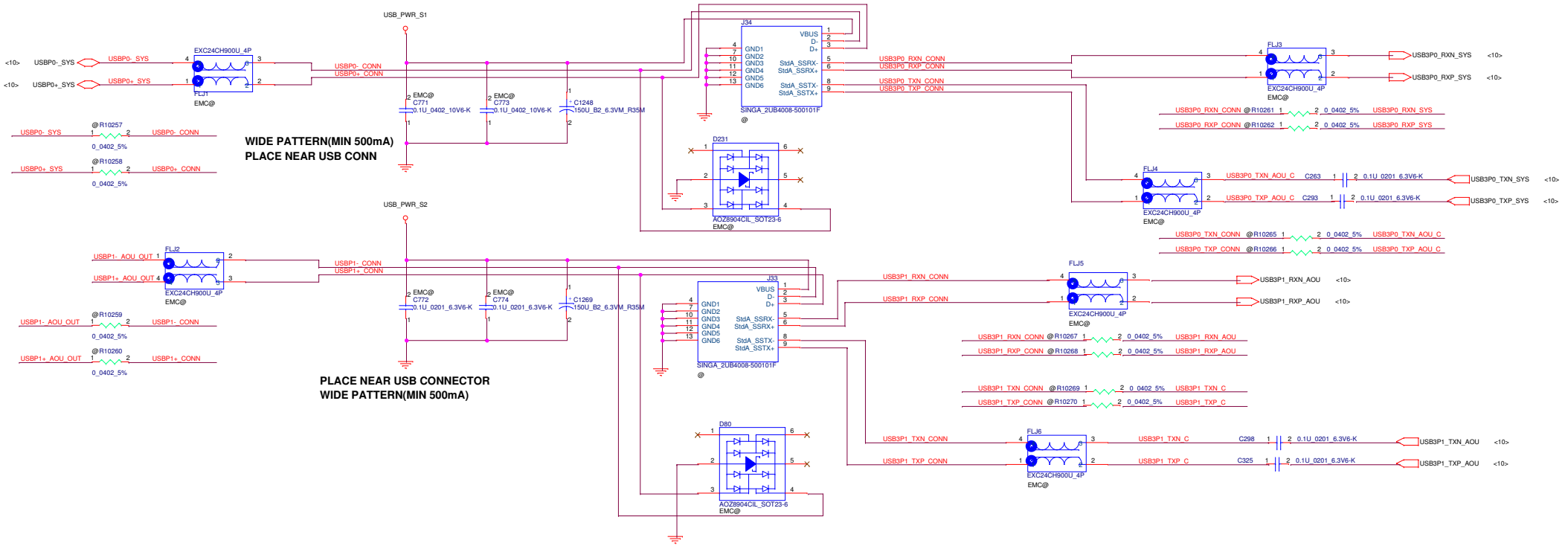

TABLE of USB Charge IC (U88)		
Vendor	P/N	LCFC P/N
TI	TPS2546RTER	SA00005TD00
Pericom	PI5USB2546ZHEX	SA000066I00

TABLE of USB3.0 Single (U53)		
Vendor	P/N	LCFC P/N
TI	TPS2069CDGNR	SA00005TE00
Rohm	BD82032FVJ-GE2	SA000084S00

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

Title: USB POWER/CONN (1/2)

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 34 of 98

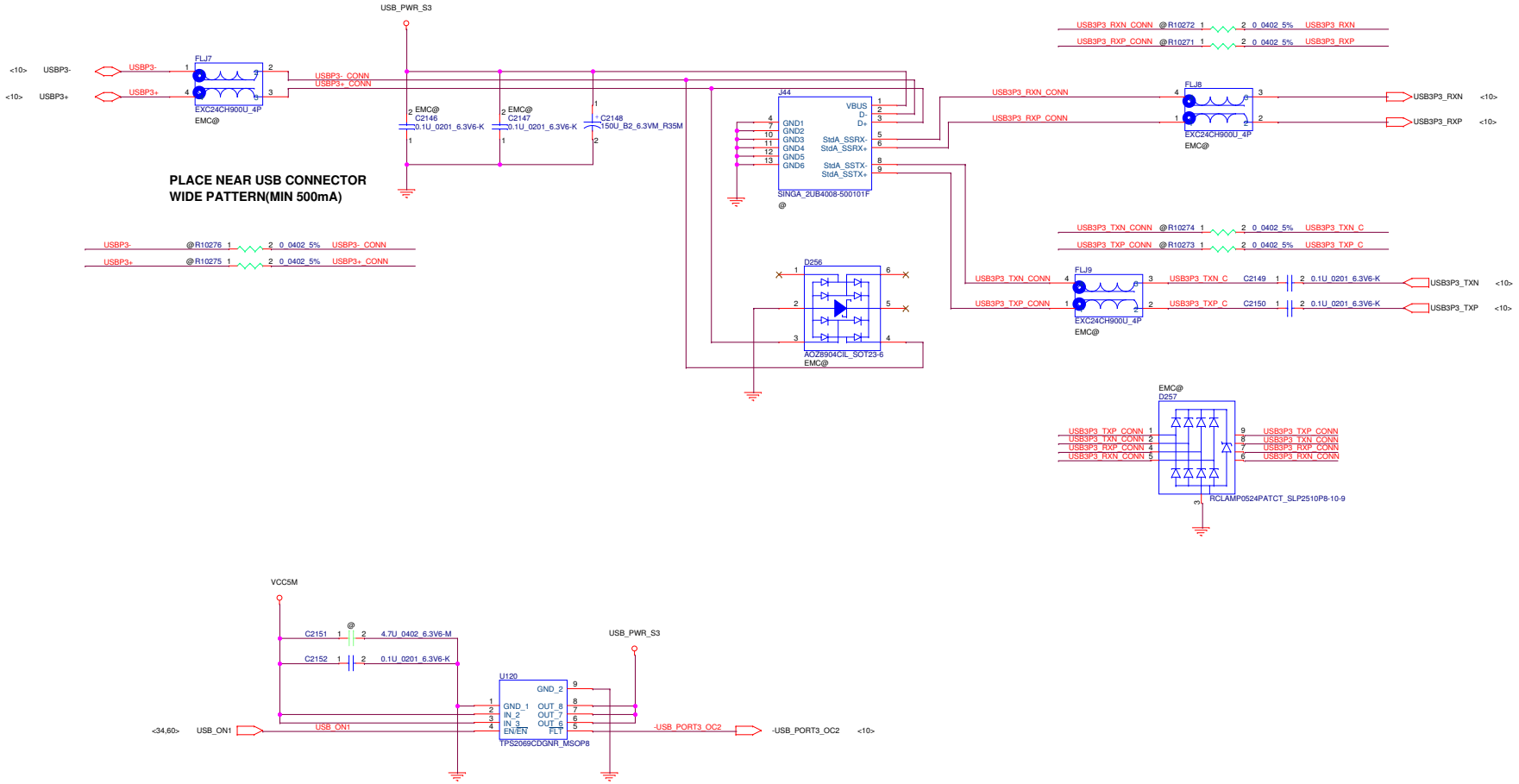

TABLE of USB3.0 Single (U120)		
Vendor	**P/N**	**LCFC P/N**
TI	**TPS2069CDGNR**	**SA00005TE00**
Rohm	**BD82032FVJ-GE2**	**SA000084S00**

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

Title: **USB POWER/CONN (2/2)**

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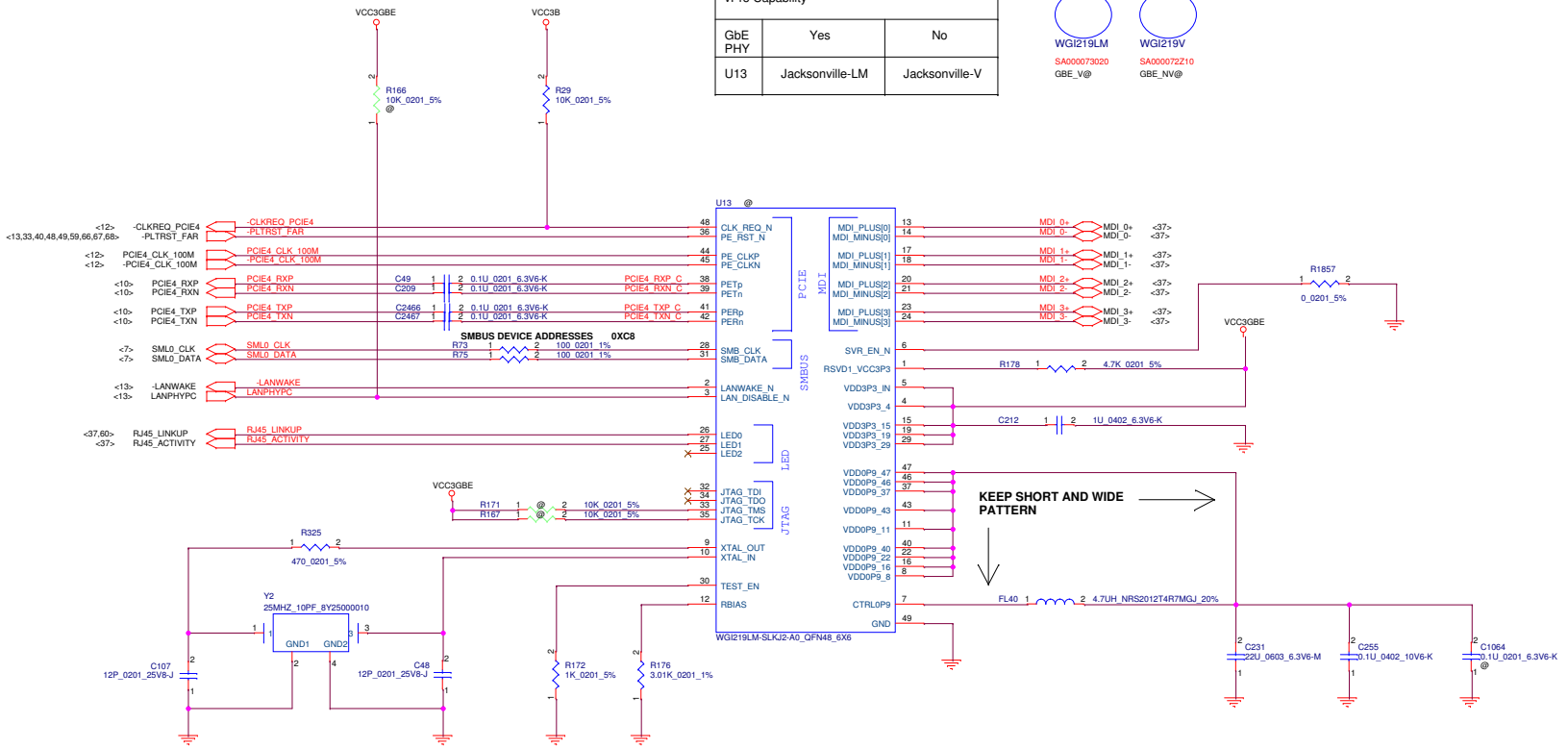
Date: Wednesday, November 02, 2016	Sheet 35 of 98	

TABLE

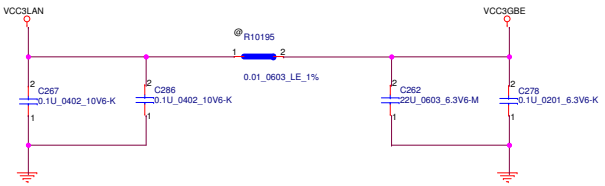
vPro Capability		
GbE PHY	Yes	No
U13	Jacksonville-LM	Jacksonville-V

U13 WGI219LM SA000073020 GBE_V@

U13 WGI219V SA000072Z10 GBE_NV@



Y2 CRYSTAL - 25MHz 10pF 30ppm		
Vendor	P/N	LCFC P/N
TXC	8Y25000010	SJ10000FY10
KDS	1ZZHAE25000CC0B	SJ10000MN00



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

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Title: GBE JACKSONVILLE

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 36 of 98

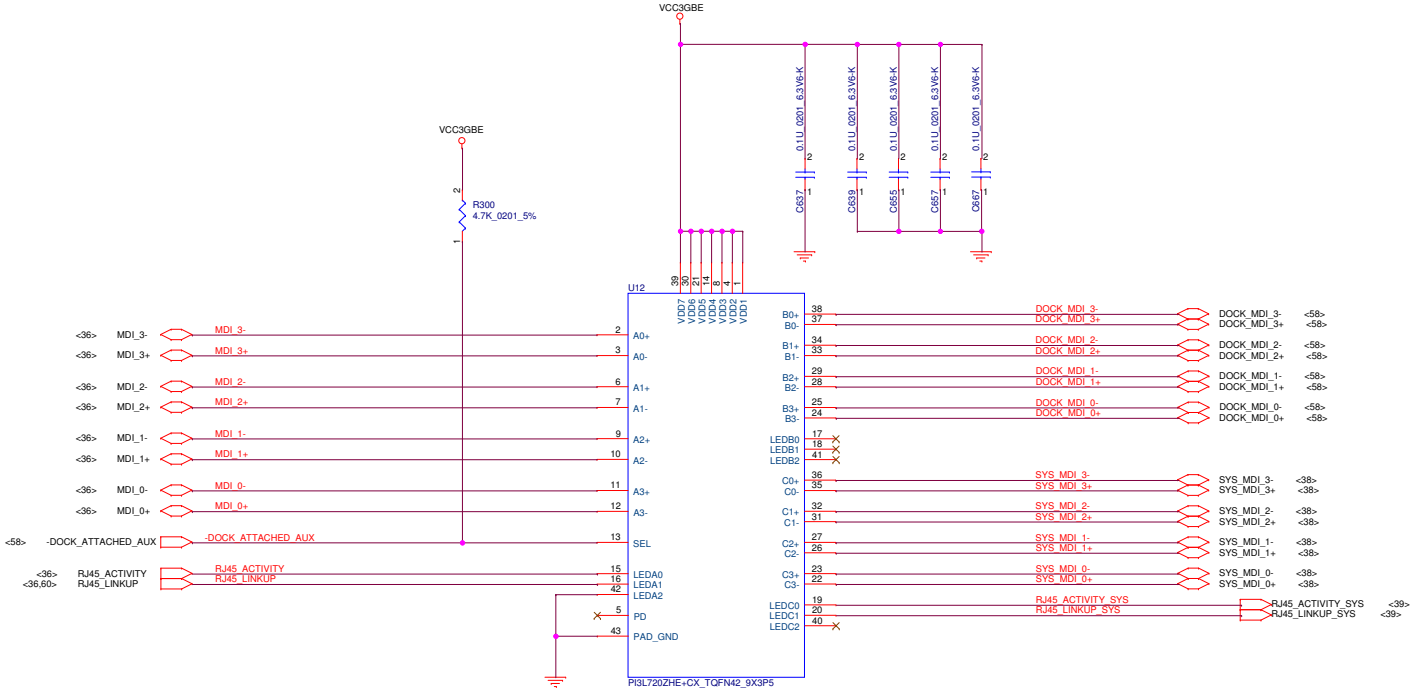

TABLE of LAN Switch (U12)		
Vendor	**P/N**	**LCFC P/N**
PERICOM	**PI3L720ZHE+CX**	**SA00007E900**
TI	**TS3L501ERUAR**	**SA000072400**

Security Classification	LC Future Center Secret Data	Title	GBE LAN SWITCH
Issued Date	Deciphered Date		

Size: C	Document Number: Windu-1	Rev: 0.1	
Date: Wednesday, November 02, 2016	Sheet 37 of 98		

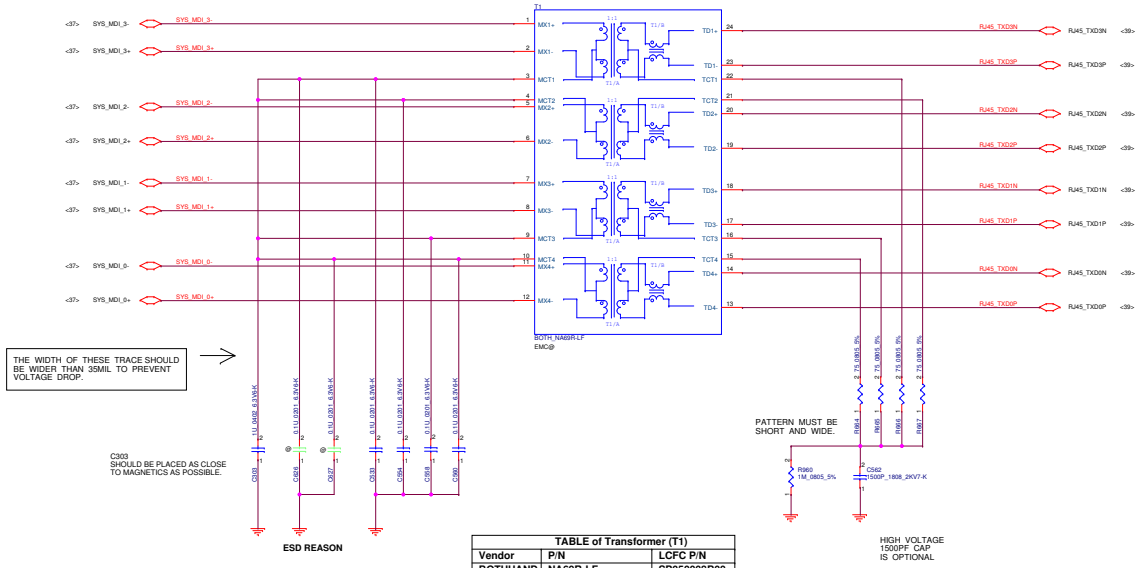

TABLE of Transformer (T1)		
Vendor	P/N	LCFC P/N
BOTHHAND	NA69R-LF	SP050008B00
TAIMAG	IH-189-A	SP050007V0J

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

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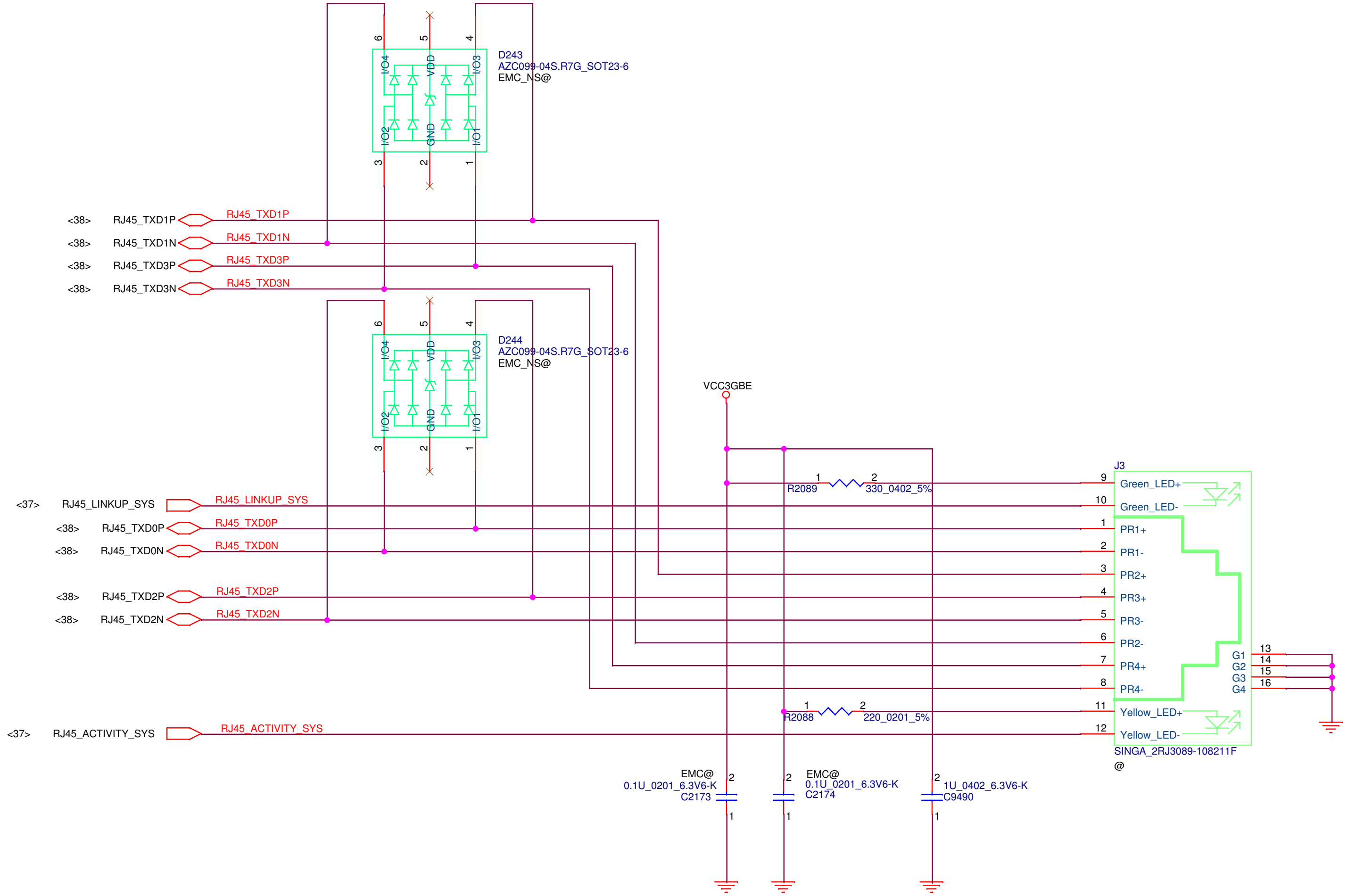
Title: GBE MAGNETICS

Size: D | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2011 | Sheet 38 of 88



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/08/10

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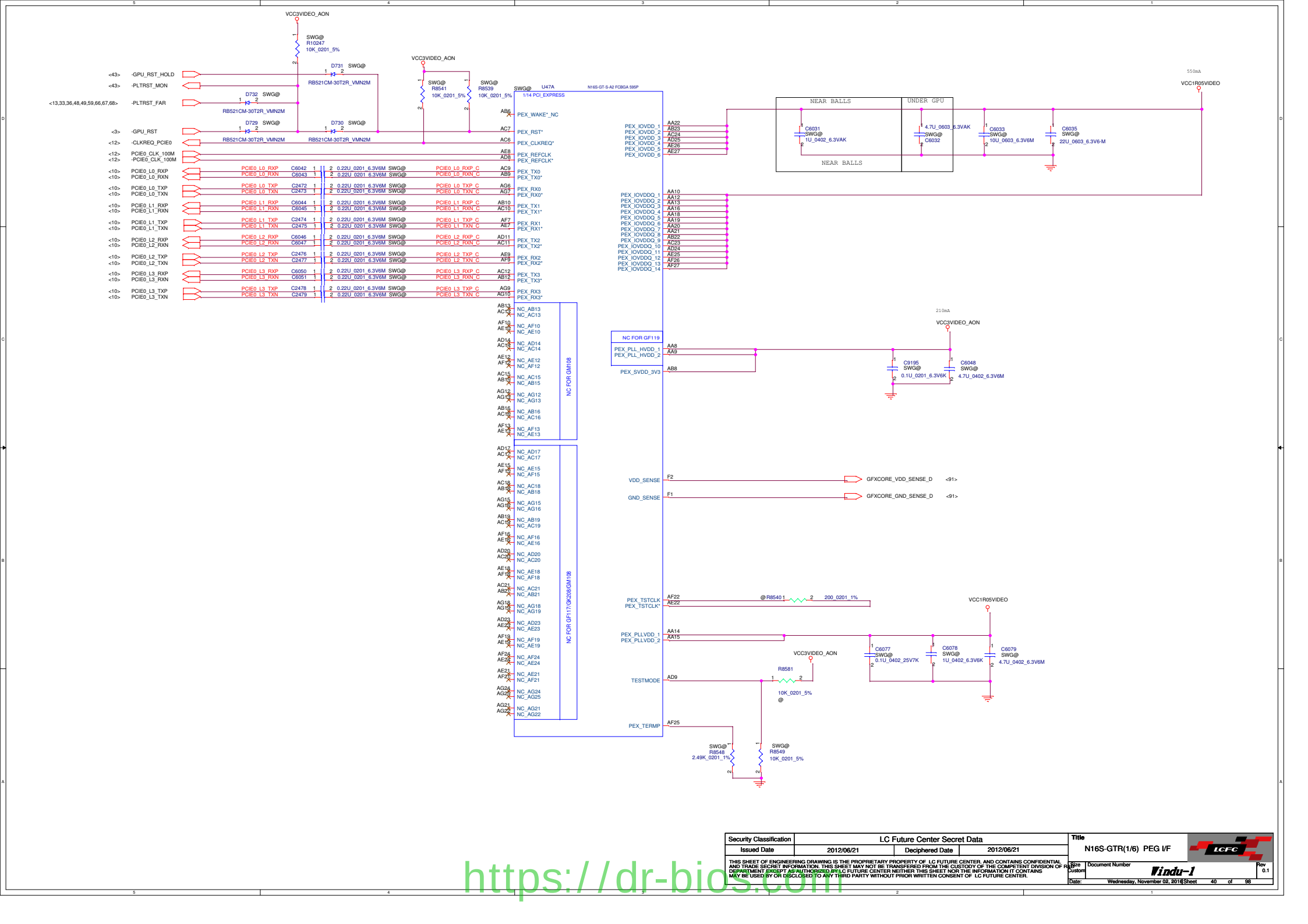
Title: **RJ45 CONNECTOR**

LCFC

Size: Custom | Document Number: Windu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 39 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2012/06/21	Deciphered Date	2012/06/21

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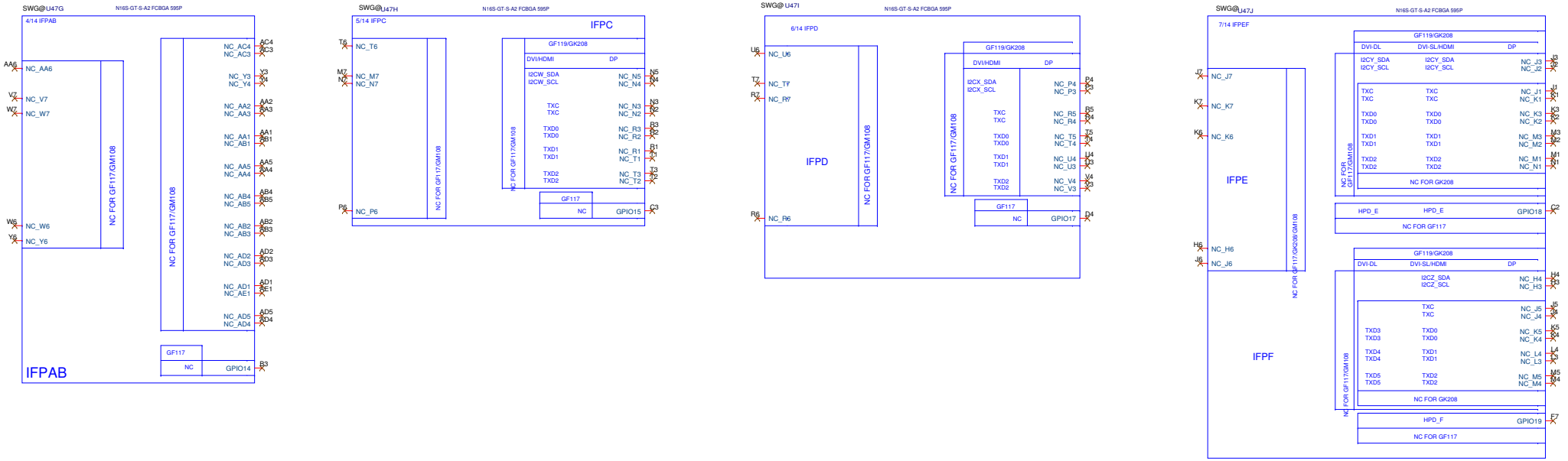
Title: N16S-GTR(1/6) PEG I/F

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

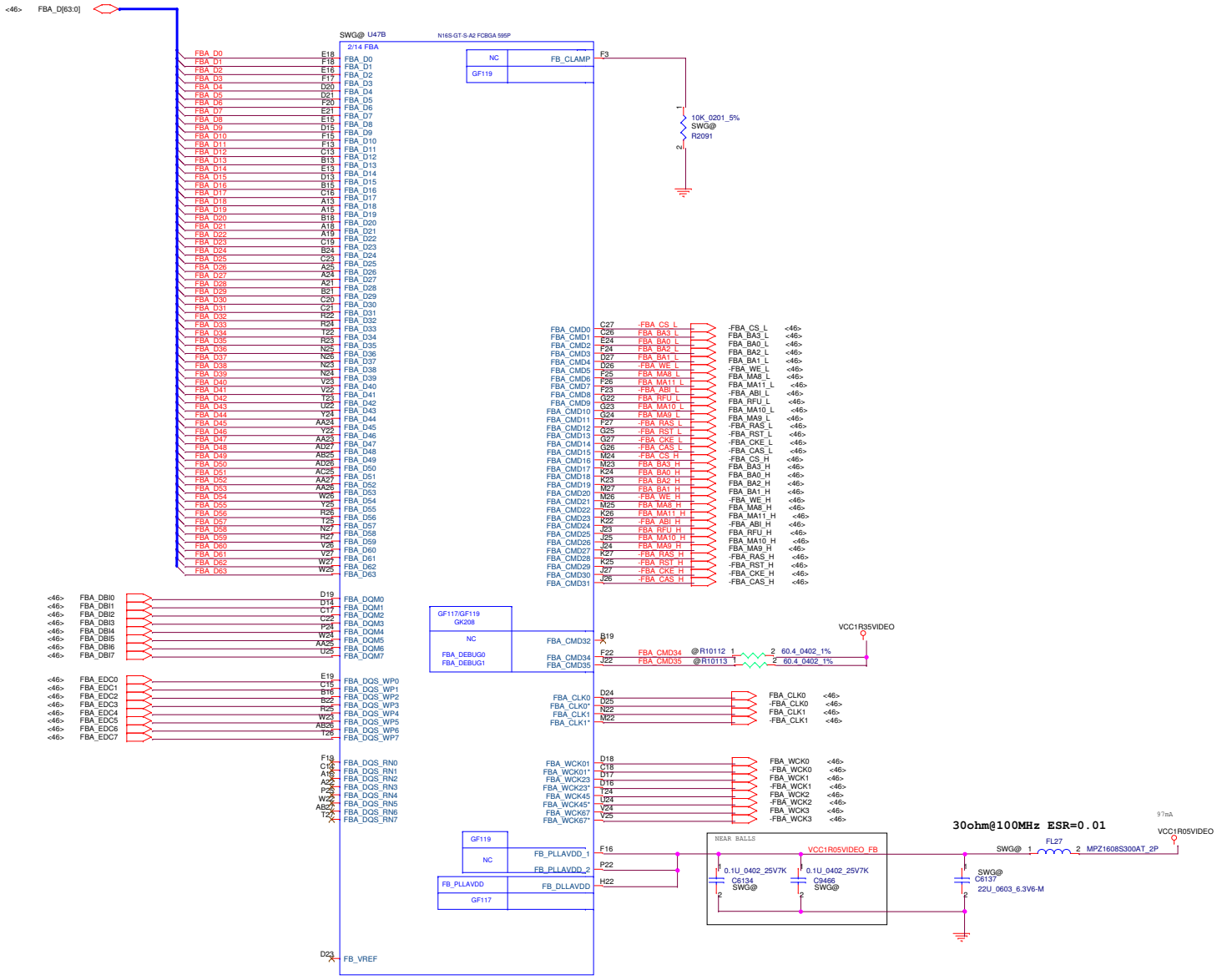
Date: Wednesday, November 02, 2016 | Sheet 40 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2012/05/02	Deciphered Date	2012/5/02

Title: N16S-GTR(2/6) DIGITAL OUT I/F

Size: Custom	Document Number: Vindu-1	Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 41 of 98	

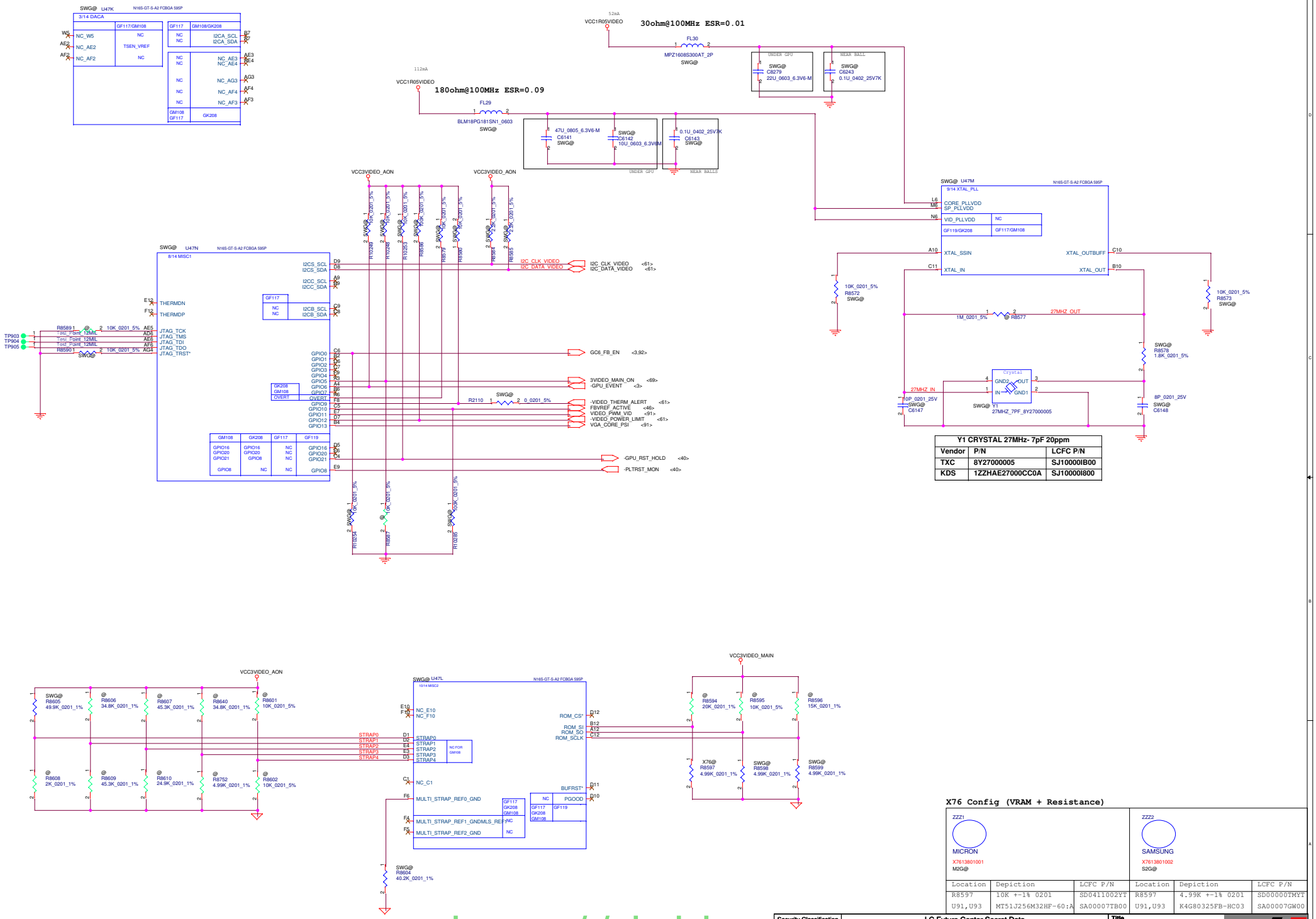


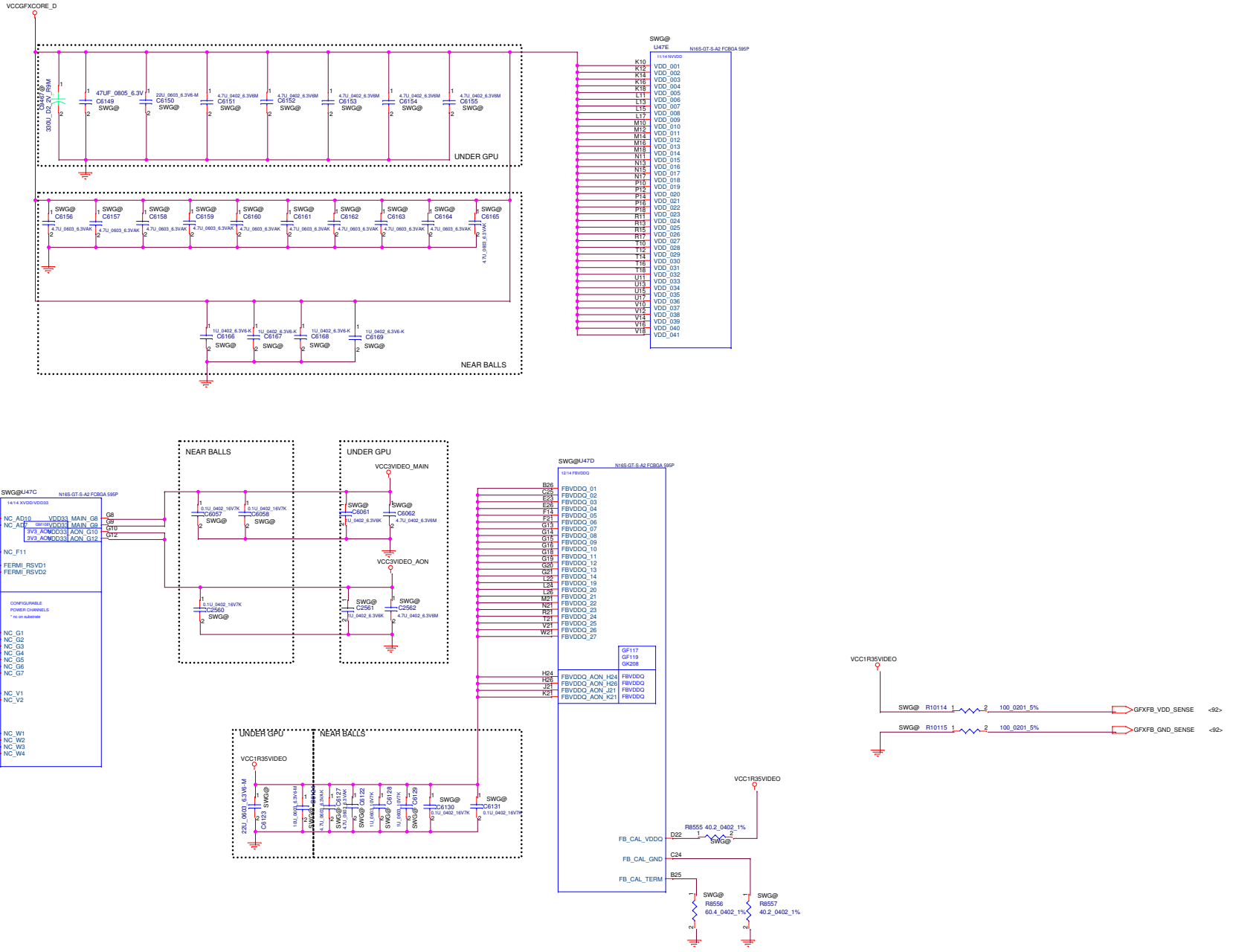
Security Classification	LC Future Center Secret Data		
Issued Date	2012/06/21	Deciphered Date	2012/06/21

Title: N16S-GTR(3/6) VRAM I/F

Size: Custom | Document Number: Windu-1 | Rev: 0.1

Date: Wednesday, November 02, 2011 | Sheet 42 of 98





Security Classification	LC Future Center Secret Data		
Issued Date	2012/06/21	Deciphered Date	2012/06/21

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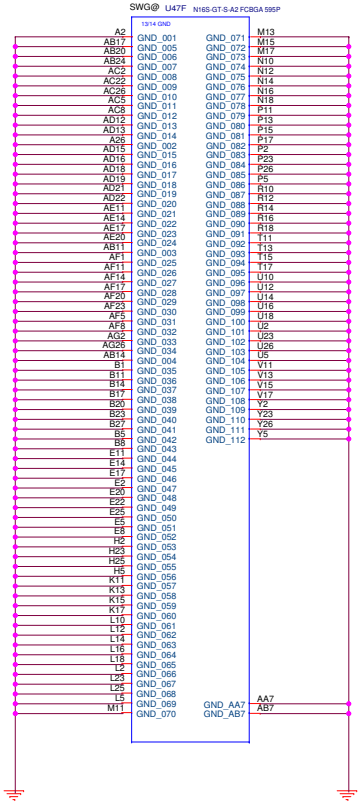
Title: N16S-GTR(5/6) POWER

Size	Document Number	Rev
Custom	Vindu-1	0.1

Date: Wednesday, November 02, 2016 Sheet 44 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2012/06/21	Deciphered Date	2012/06/21

Title: N16S-GTR(6/6) GND

LCFC

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 45 of 98

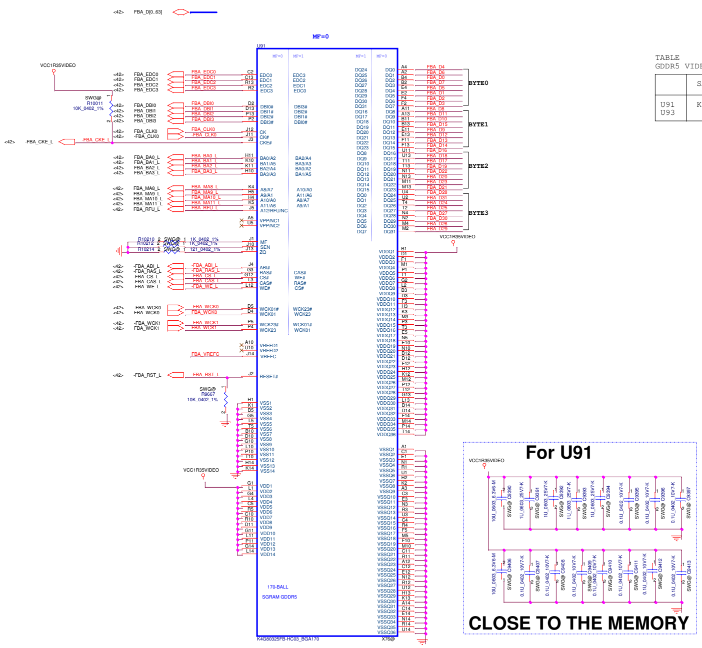
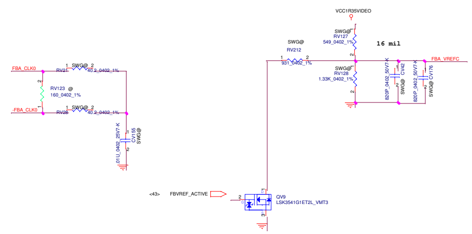
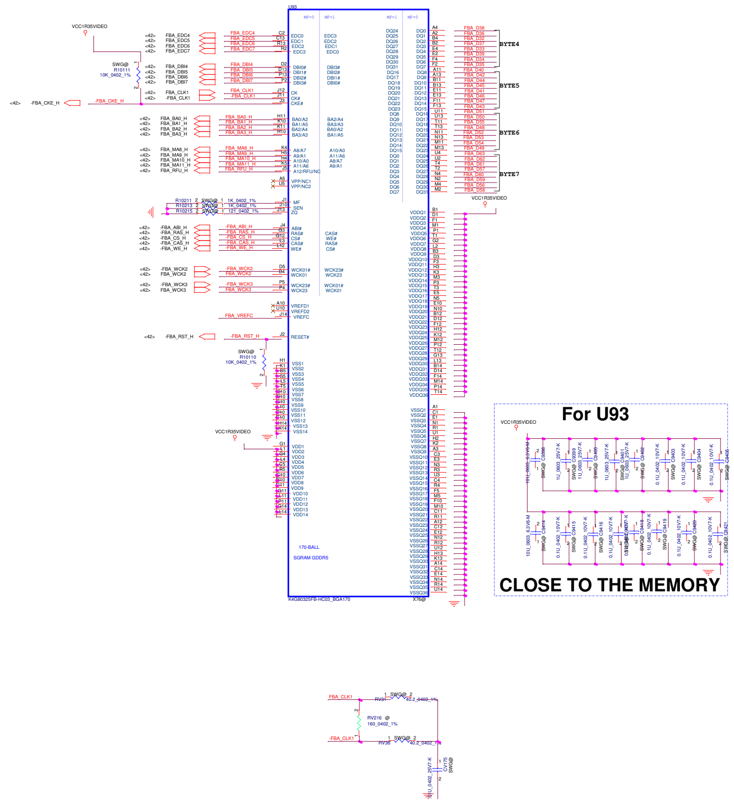


TABLE
GDDR5 VIDEO MEMORY

	SAMSUNG 8GBITS	MICRON 8GBITS
U91 U93	K4G80325FB-HC03	MT51J256M32HF-60:A

LOGIC





Security Classification	LC Future Center Secret Data		
Issued Date	2012/06/21	Deciphered Date	2012/06/21

Title: VRAM CHANNEL-A

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 |

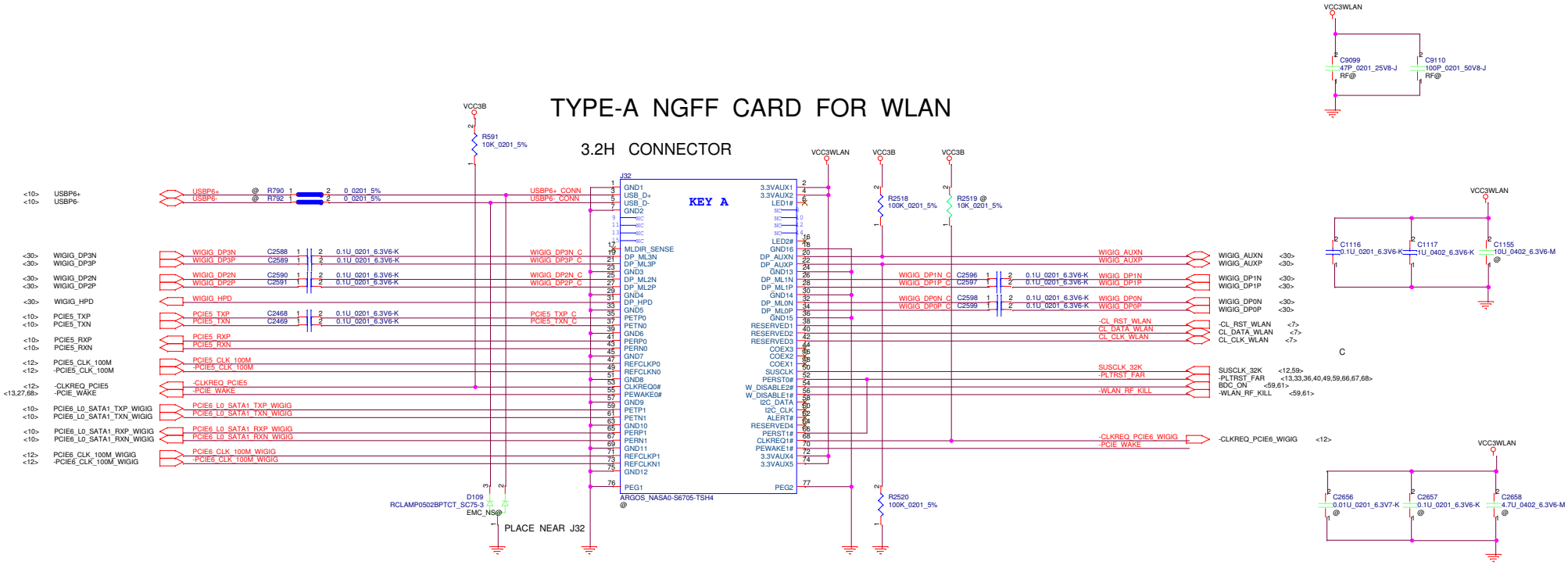
Security Classification	LC Future Center Secret Data		
Issued Date	2012/05/02	Deciphered Date	2012/5/02

Title: **MEMORY TERMINATION**

Size: Custom	Document Number: Vindu-1	Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 47 of 98	

TYPE-A NGFF CARD FOR WLAN

3.2H CONNECTOR



Title: M.2 SOCKET 1 MODULE I/F

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

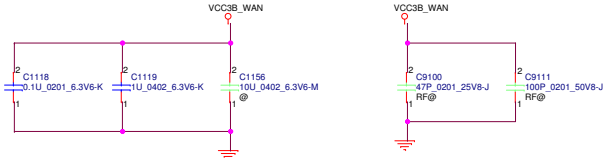
Date: Wednesday, November 02, 2016 | Sheet 48 of 98

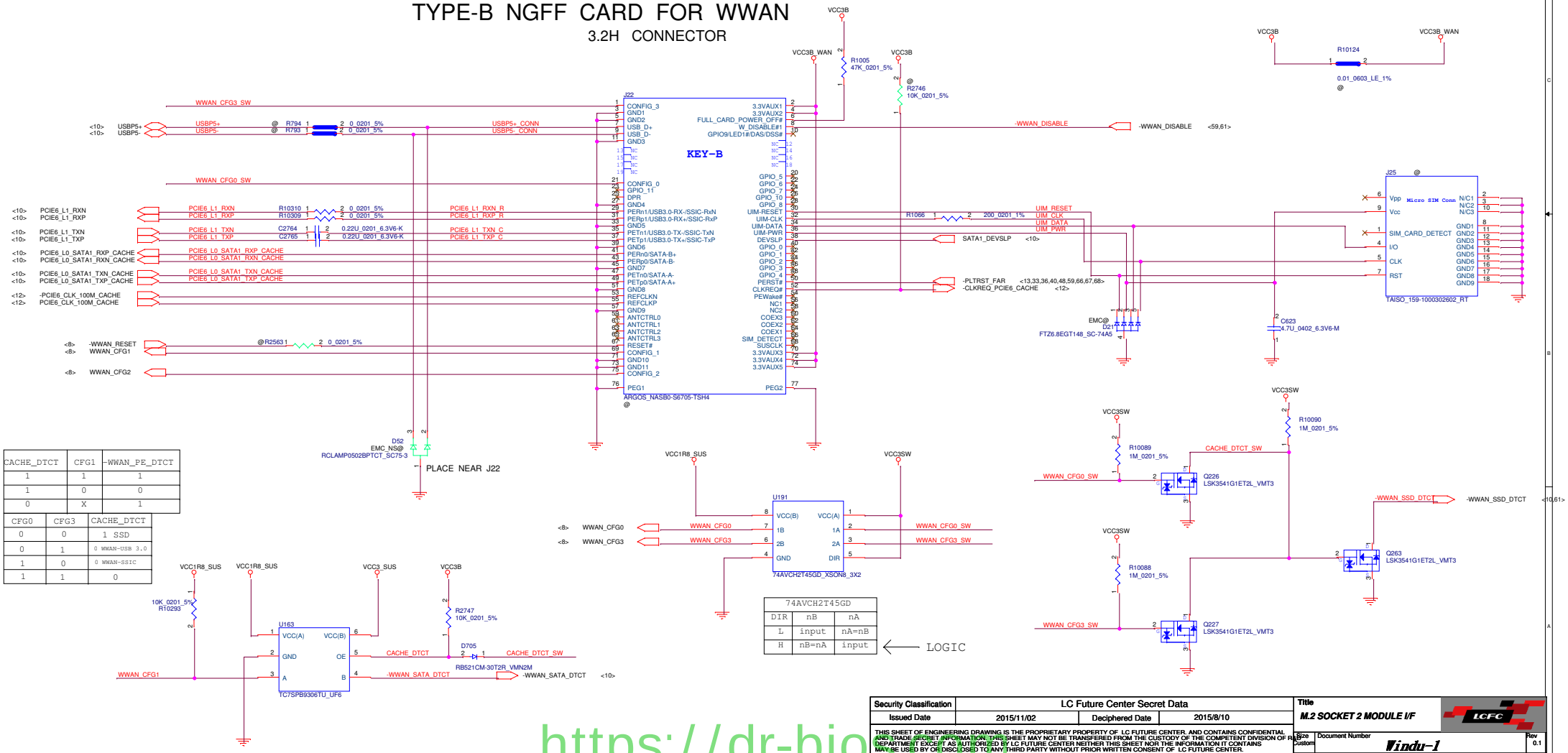
TABLE:

State #	Module Configuration Decodes				Module Type and Main Host Interface	Port Configuration
	CONFIG_0 (Pin 21)	CONFIG_3 (Pin 1)	CONFIG_2 (Pin 75)	CONFIG_1 (Pin 69)		
0	GND	GND	GND	GND	SSD - SATA	N/A
1	GND	GND	GND	NC	SSD - PCIe	N/A
2	GND	GND	NC	GND	WWAN - PCIe	0
3	GND	GND	NC	NC	WWAN - PCIe	1
4	GND	NC	GND	GND	WWAN - USB 3.0	0
5	GND	NC	GND	NC	WWAN - USB 3.0	1
6	GND	NC	NC	GND	WWAN - USB 3.0	2
7	GND	NC	NC	NC	WWAN - USB 3.0	3
8	NC	GND	GND	GND	WWAN - SSIC	0
9	NC	GND	GND	NC	WWAN - SSIC	1
10	NC	GND	NC	GND	WWAN - SSIC	2
11	NC	GND	NC	NC	WWAN - SSIC	3
12	NC	NC	GND	GND	WWAN - PCIe	2
13	NC	NC	GND	NC	WWAN - PCIe	3
14	NC	NC	NC	GND	RFU	N/A
15	NC	NC	NC	NC	No Module Present	N/A

TYPE-B NGFF CARD FOR WWAN

3.2H CONNECTOR





CACHE_DTCT	CFG1	-WWAN_PE_DTCT
1	1	1
1	0	0
0	X	1

CFG0	CFG3	CACHE_DTCT
0	0	1 SSD
0	1	0 WWAN-USB 3.0
1	0	0 WWAN-SSIC
1	1	0

74AVCH2T45GD		
DIR	nB	nA
L	input	nA=nB
H	nB=nA	input

LOGIC

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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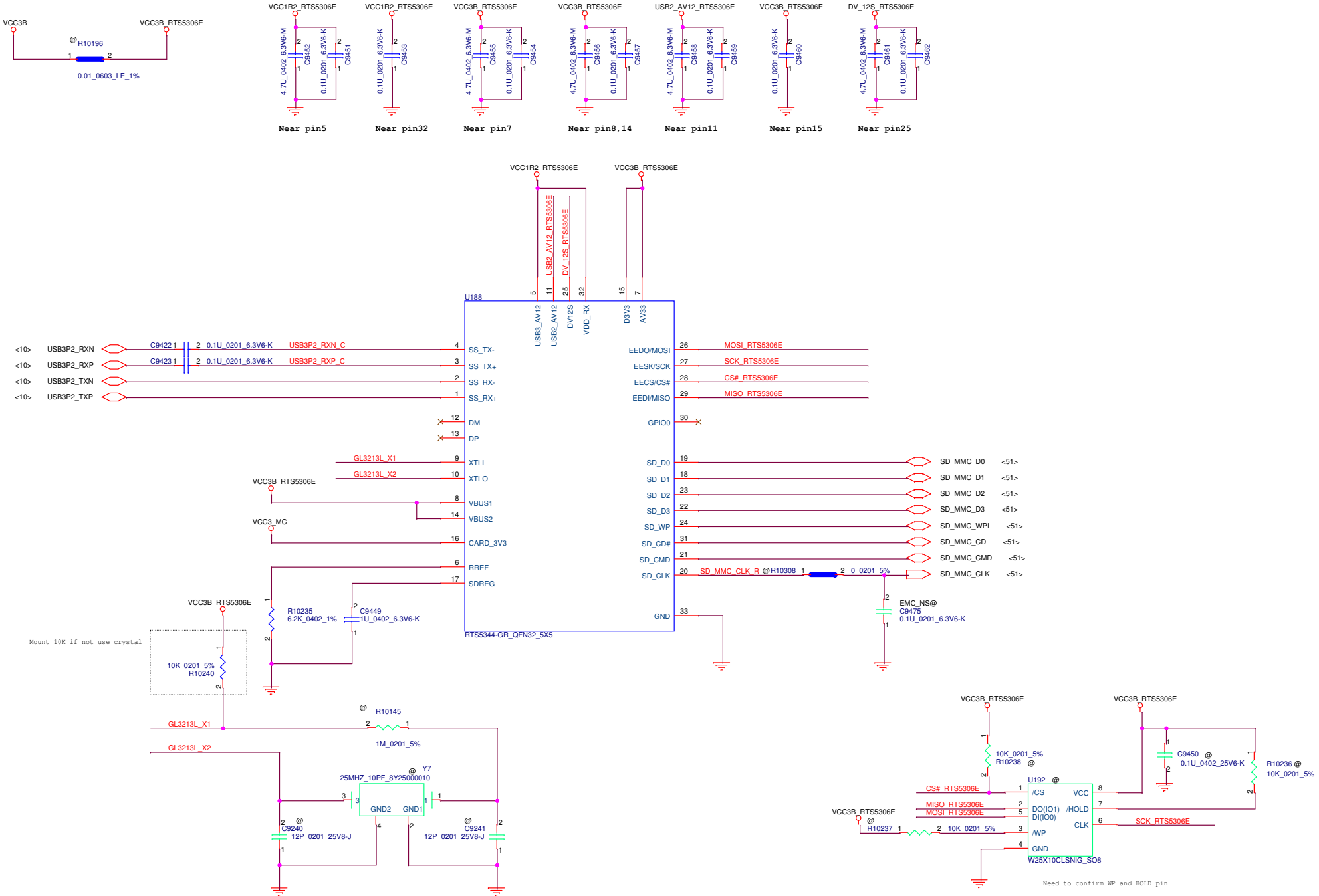
Title: M.2 SOCKET 2 MODULE I/F

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 49 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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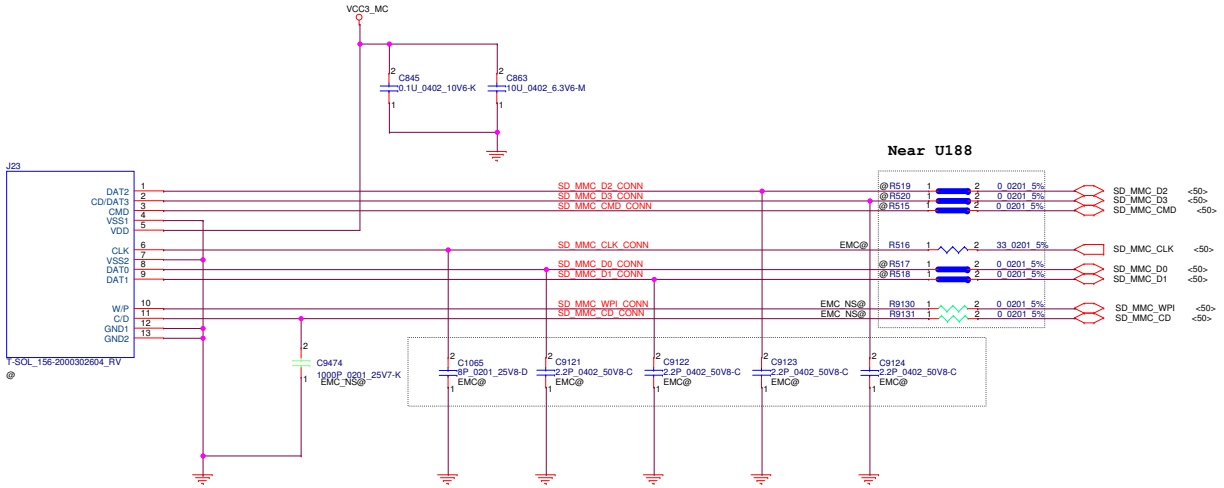
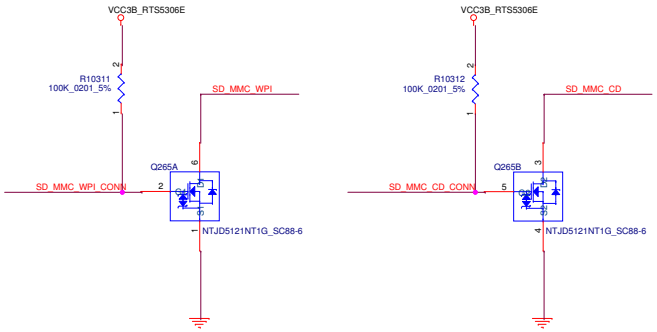
Title: MEDIA CARD CONTROLLER

Size: Custom | Document Number: Windu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 50 of 98





Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: MEDIA CARD INTERFACE

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 51 of 98

TABLE

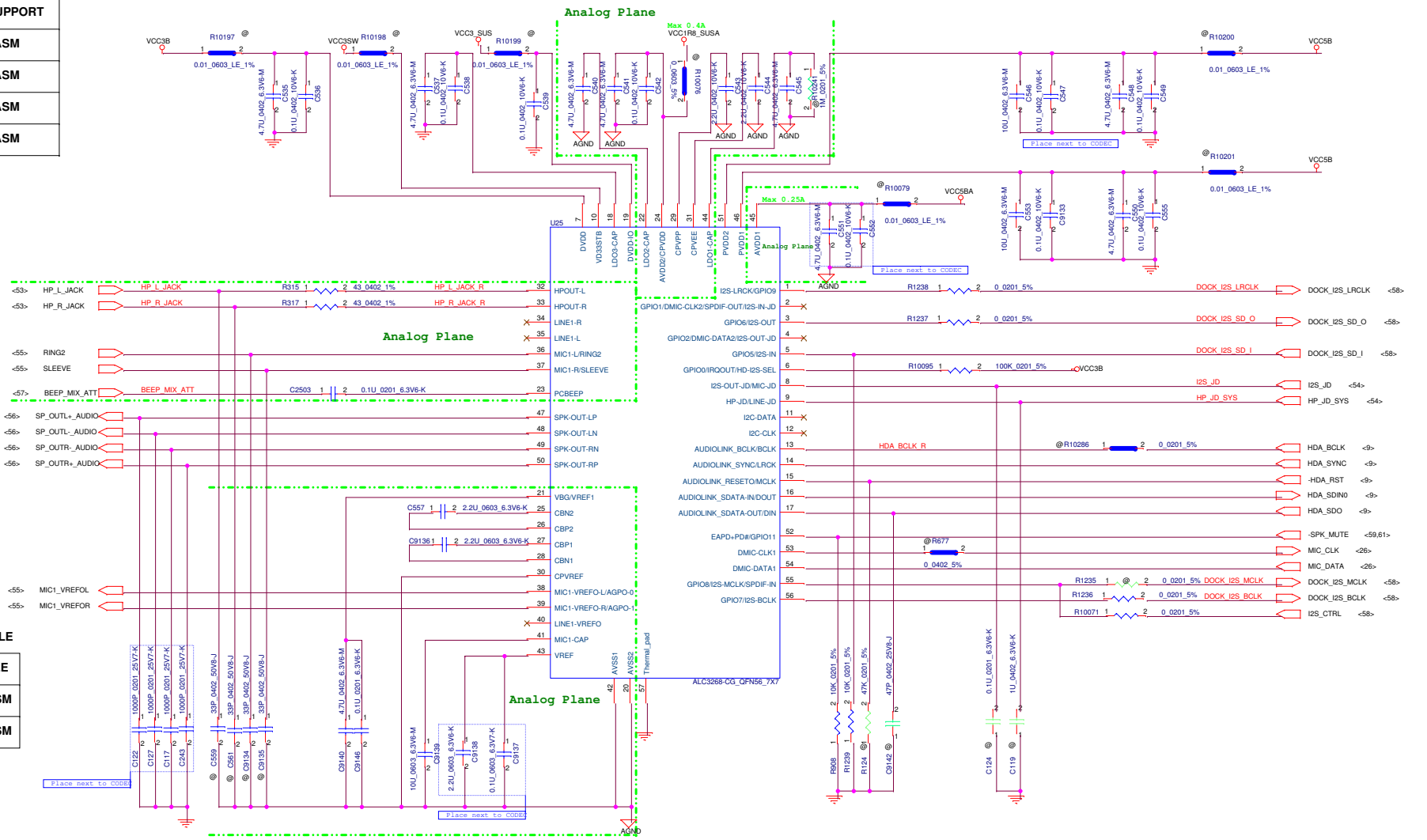
Dock support		
	SUPPORT	NON-SUPPORT
R1235	NO ASM	NO ASM
R1236	ASM	NO ASM
R1237	ASM	NO ASM
R1238	ASM	NO ASM

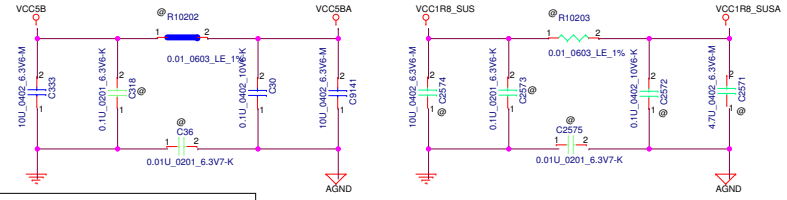
LOGIC

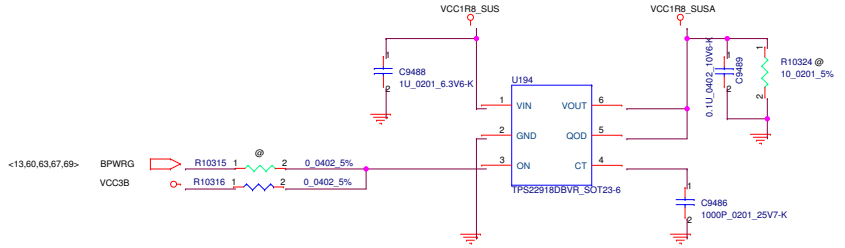
TABLE MIC HW ENABLE/DISABLE

	ENABLE	DISABLE
R961	ASM	NO ASM
R677	ASM	NO ASM

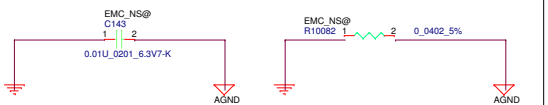
LOGIC







PLACE UNDER ALC3268



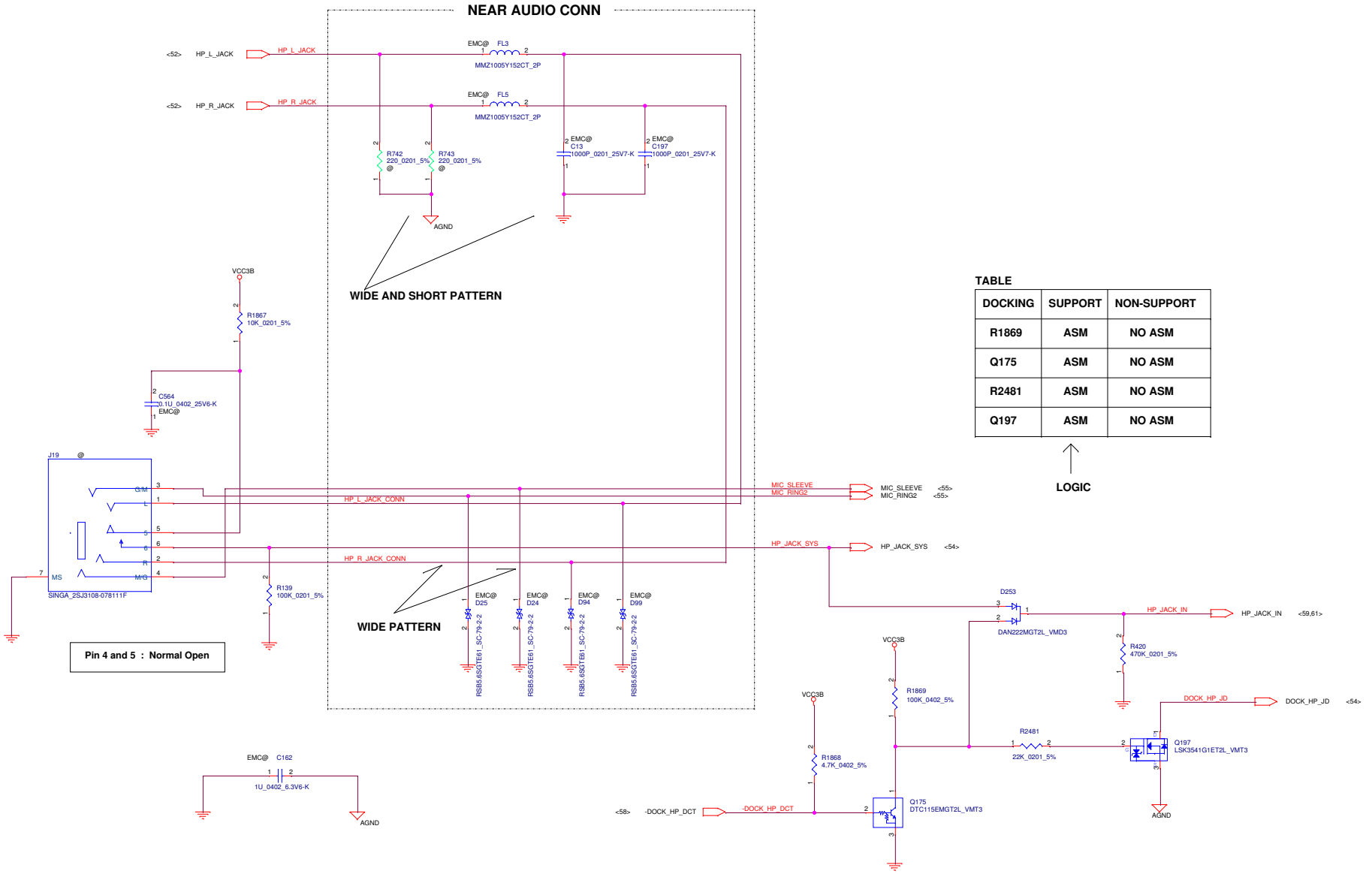
Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: **AUDIO ALC3245**

LCFC

Size: Custom | Document Number: Vindu-1 | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 52 of 98



TABLE

DOCKING	SUPPORT	NON-SUPPORT
R1869	ASM	NO ASM
Q175	ASM	NO ASM
R2481	ASM	NO ASM
Q197	ASM	NO ASM

LOGIC

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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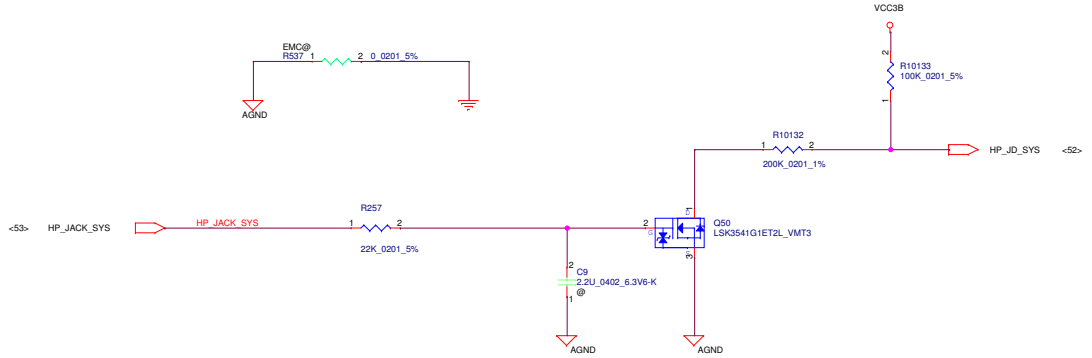
Title: AUDIO CONNECTOR

Size: Custom | Document Number: C | Rev: 0.1

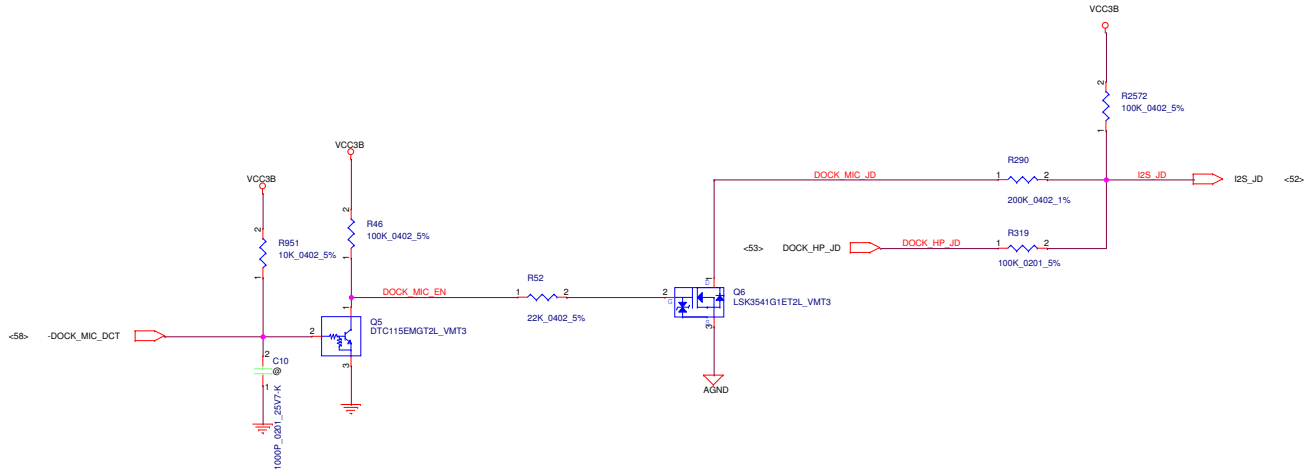
Date: Wednesday, November 02, 2016 | Sheet 53 of 98



TABLE

DOCKING	SUPPORT		NON SUPPORT
MIC HW	ENABLE	DISABLE	
R951	ASM	NO ASM	NO ASM
R290	ASM	NO ASM	NO ASM
R46	ASM	NO ASM	NO ASM
Q5	ASM	NO ASM	NO ASM
R52	ASM	NO ASM	NO ASM
Q6	ASM	NO ASM	NO ASM
R319	ASM	ASM	NO ASM
R2572	ASM	ASM	NO ASM

LOGIC

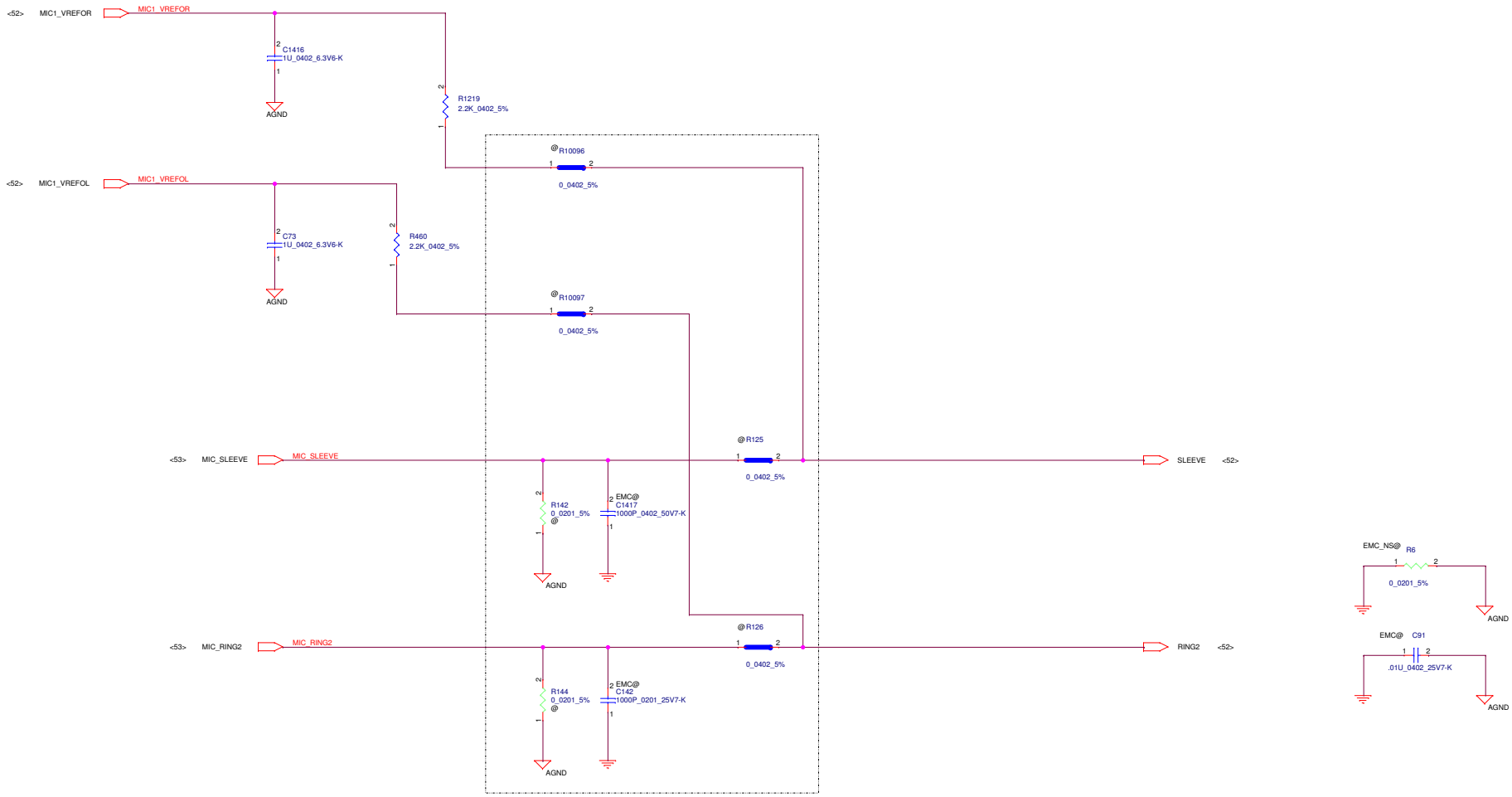


Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: AUDIO JACK SENSE

Size	Document Number	Rev
Custom	C	0.1

Date: Wednesday, November 02, 2016 Sheet 54 of 98



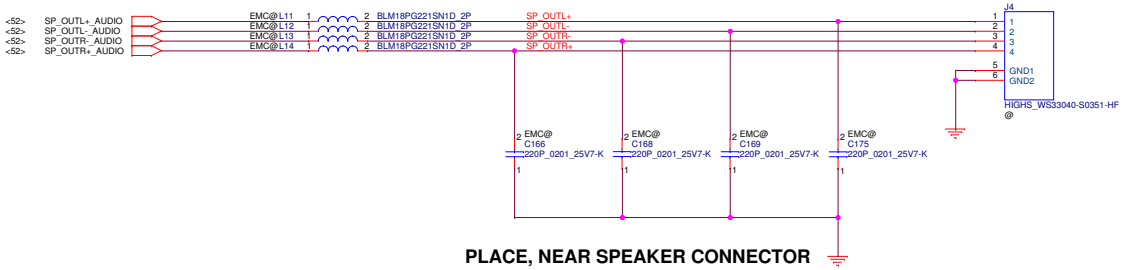
NEAR EXT MIC CONN

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: AUDIO EXT MIC I/F

Size	Document Number	Rev
Custom	C	0.1

Date: Wednesday, November 02, 2016 Sheet 55 of 98



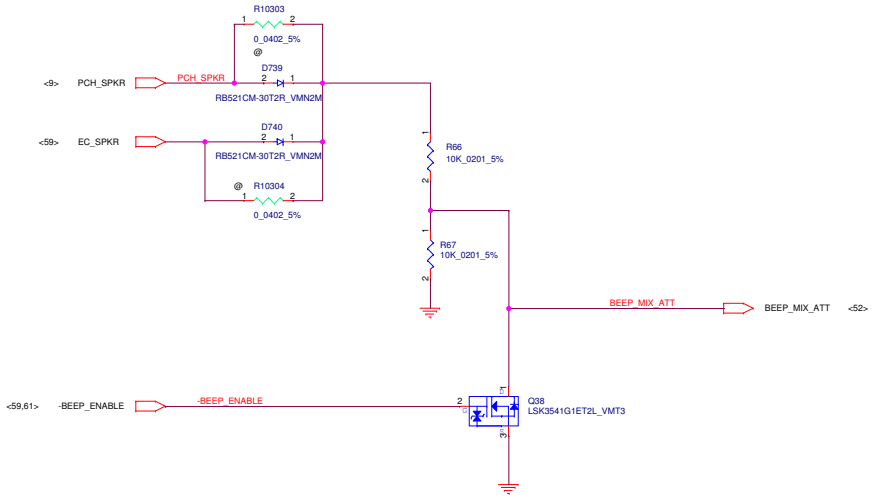
PLACE, NEAR SPEAKER CONNECTOR

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: AUDIO SPEAKER

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 56 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: AUDIO BEEP

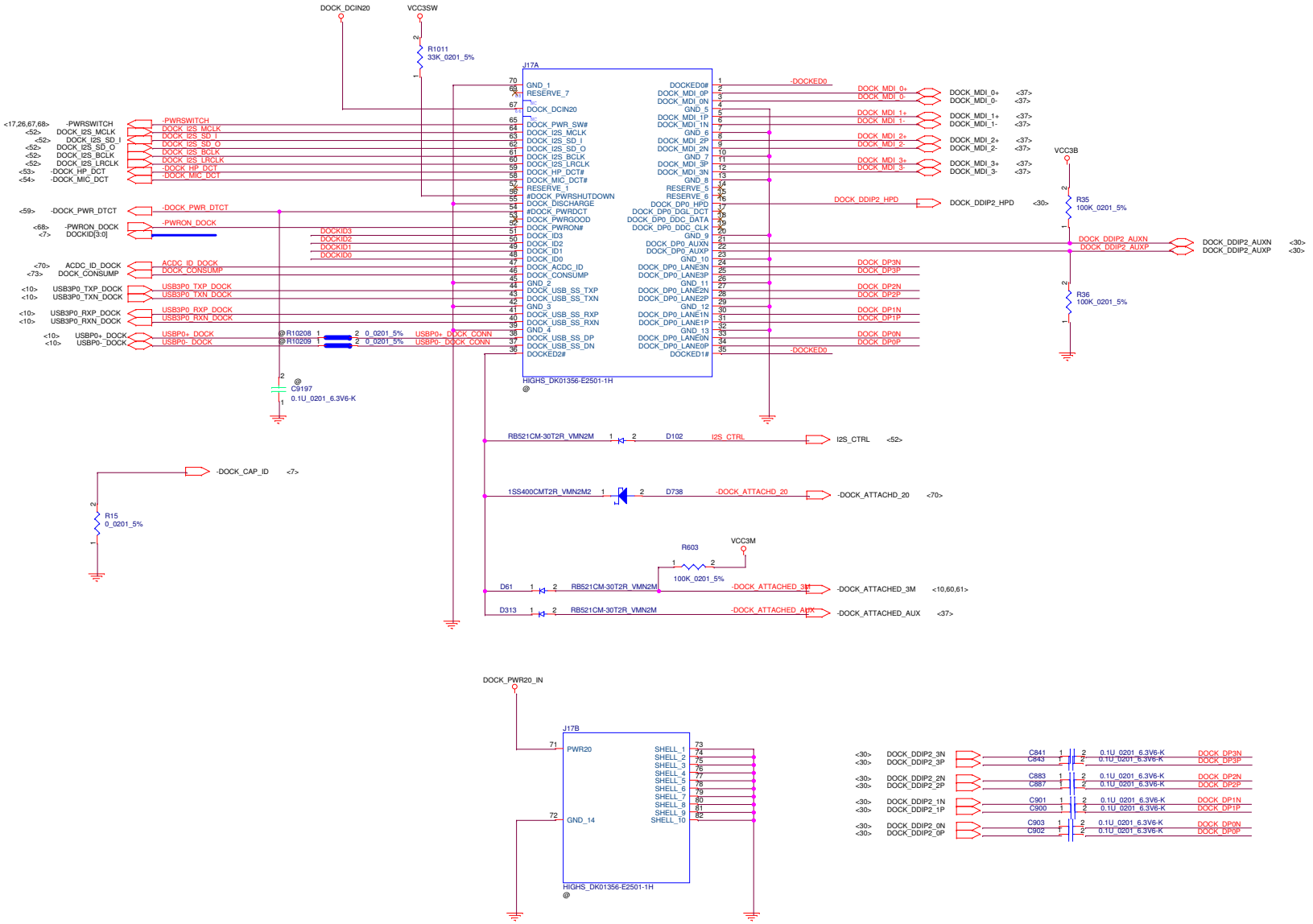
Size	Document Number	Rev
Custom	C	0.1

Date: Wednesday, November 02, 2016 Sheet 57 of 98

LOGIC

TABLE

ID	DOCKING SUPPORT	NON-SUPPORT
J17	ASM	NO ASM
R1011	ASM	NO ASM
D2	ASM	NO ASM
R603	ASM	ASM
D61	ASM	NO ASM
D102	ASM	NO ASM
C24	ASM	NO ASM
Q85	ASM	NO ASM
R95	ASM	NO ASM
R731	ASM	NO ASM
R657	ASM	NO ASM
C841	ASM	NO ASM
C843	ASM	NO ASM
C883	ASM	NO ASM
C887	ASM	NO ASM
C901	ASM	NO ASM
C900	ASM	NO ASM
C903	ASM	NO ASM
C902	ASM	NO ASM
R35	ASM	NO ASM
R36	ASM	NO ASM
R15	ASM	NO_ASM



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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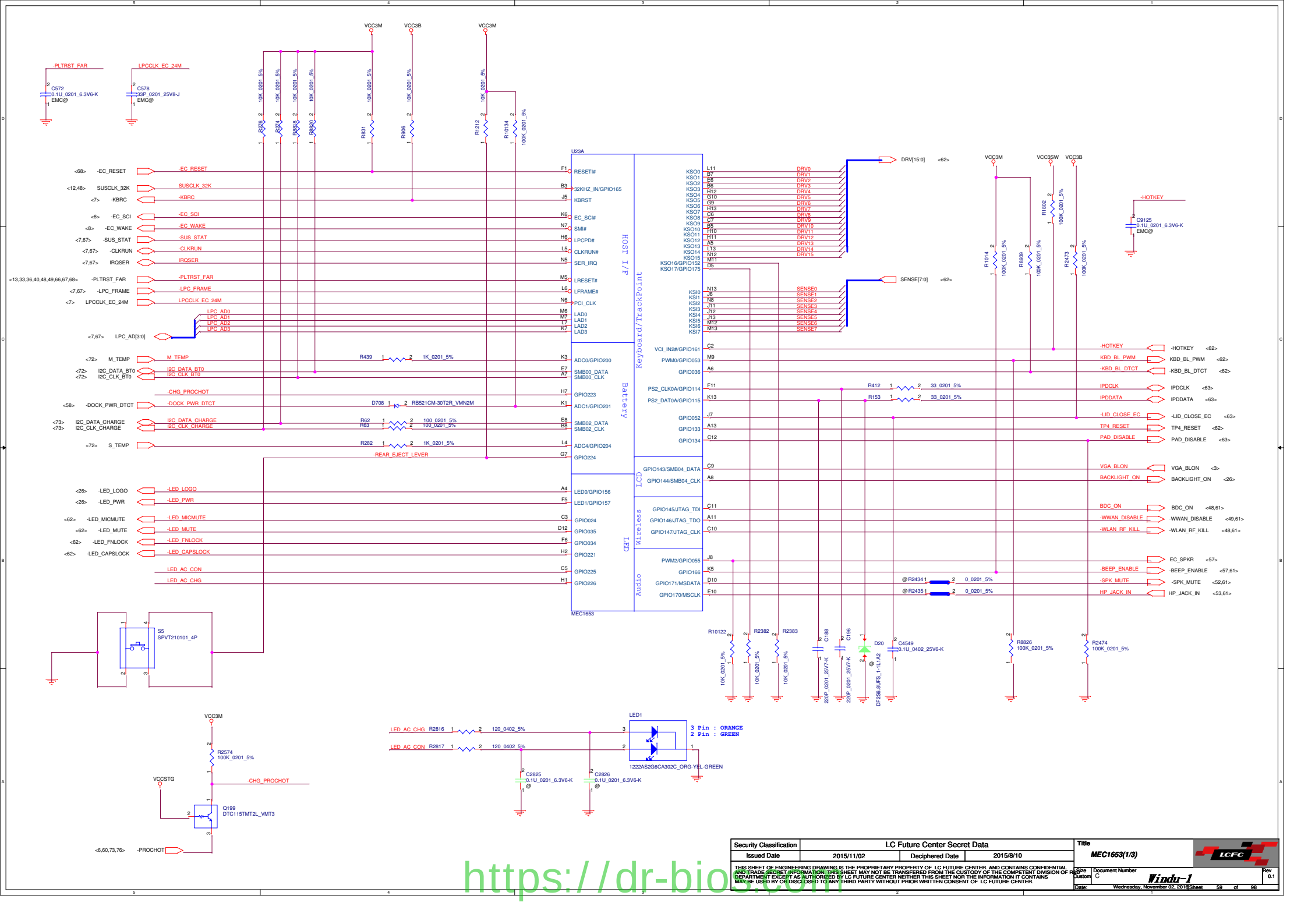
Title: DOCKING CONNECTOR

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 58 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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Title: MEC1653(1/3)

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 59 of 98

R258: 750_1% for New AC Adapter

place near Q133

TABLE Sensor	Device	Placed on
DIODE0	EC internal	TOP
DIODE1	CPU DC/DC	BOTTOM
DIODE2	WWAN	BOTTOM
DIODE3	WLAN	BOTTOM
DIODE4	FAN	BOTTOM
DIODE5	dGPU DC/DC	BOTTOM
DIODE6	DIMM	BOTTOM

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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Title	MEC1653(2/3)		
Size: Custom	Document Number: Windu-1		Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 60 of 98		

Trace FIFO Debug Port

	Enable	Disable
R2434	22_5%	0_5%
R2435	22_5%	0_5%
R420	NO_ASM	ASM

TABLE : VIDEO_ID

	R263	R10123
SWG	NO_ASM	ASM
UMA	ASM	NO_ASM

JTAG Debug Port

	Enable	Disable
R8796	ASM	NO_ASM
R8797	NO_ASM	ASM
R2429	ASM	NO_ASM
R2430	ASM	NO_ASM
R2431	ASM	NO_ASM
R10318	ASM	NO_ASM
R10288	ASM	NO_ASM
R10289	ASM	NO_ASM
R10290	ASM	NO_ASM
R10291	ASM	NO_ASM

Cover with green paint in SVT

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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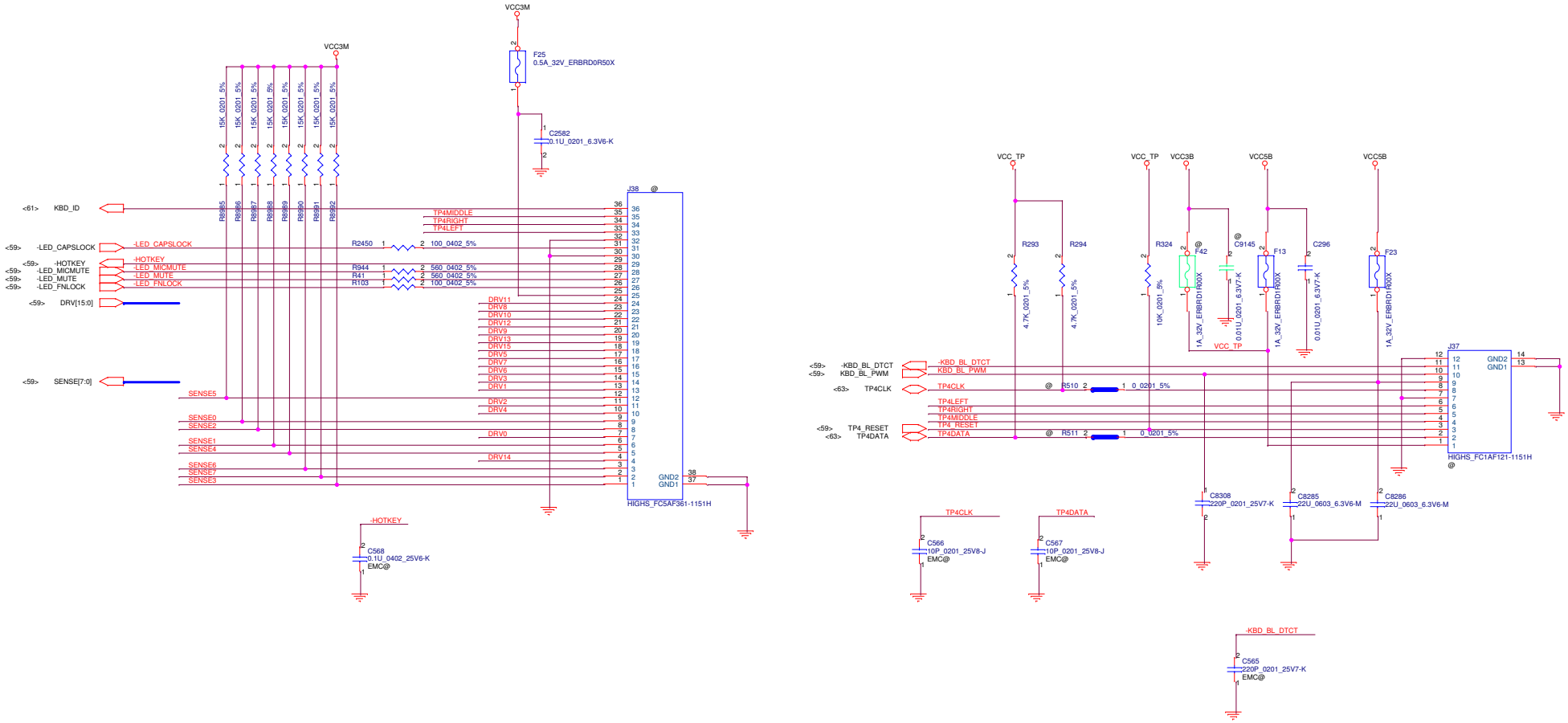
Title: MEC1653(3/3)

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 61 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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Title: KEYBOARD/TRACK POINT

Size	Document Number	Rev
Custom	C	0.1

Date: Wednesday, November 02, 2016 Sheet 62 of 98

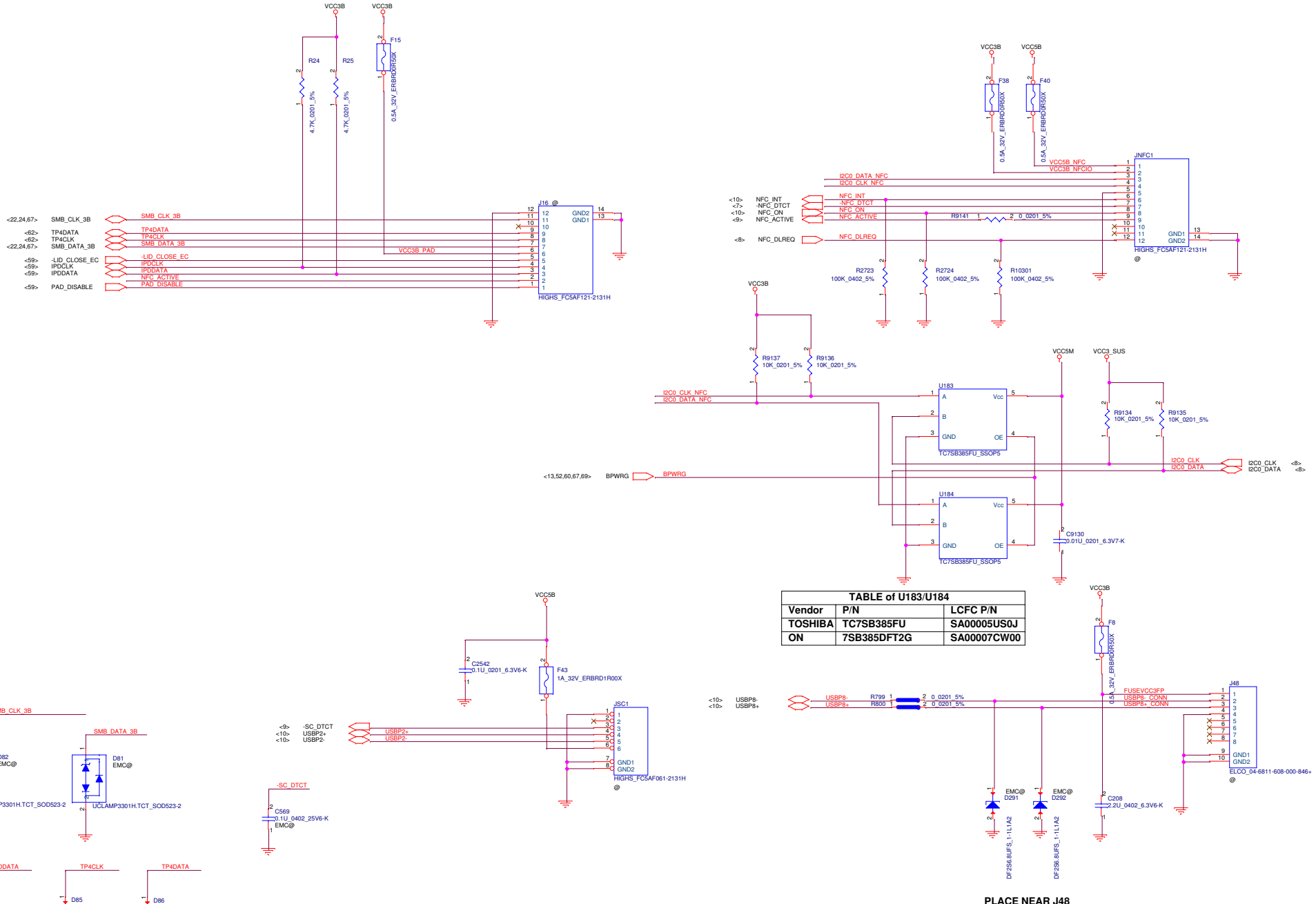

TABLE of U183/U184		
Vendor	P/N	LCFC P/N
TOSHIBA	TC7SB385FU	SA00005US0J
ON	7SB385DFT2G	SA00007CW00

PLACE NEAR J48

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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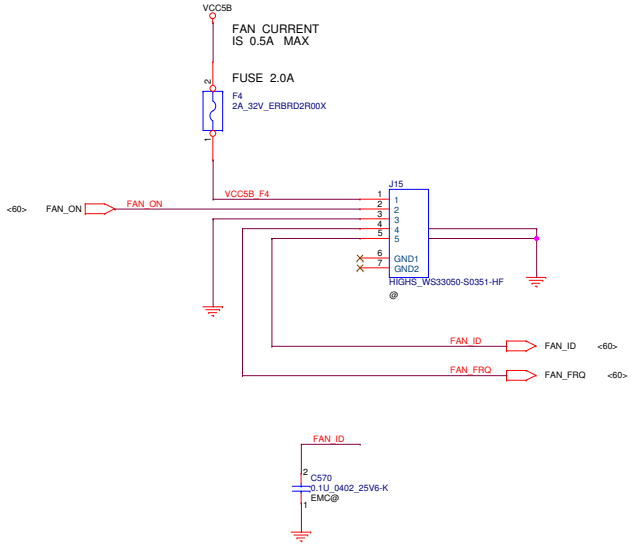
Title: TOUCH PAD/NFC/FPR

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 05, 2014 | Sheet 63 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: FAN CONNECTOR

Size: Custom	Document Number: C	Rev: 0.1	
Date: Wednesday, November 02, 2016	Sheet 64 of 98		

TABLE

P/N	ADDR_SEL	Address
BMA255	H L	30h (W) & 31h (R) 32h (W) & 33h (R)
KX022-1020	H L	3Eh (W) & 3Fh (R) 3Ch (W) & 3Dh (R)

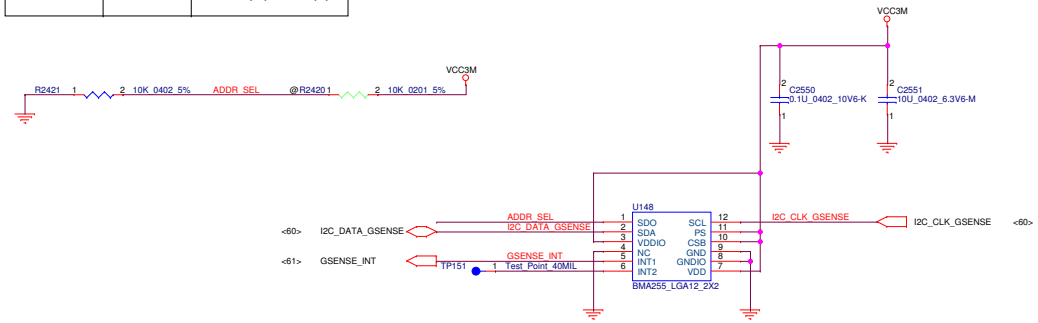


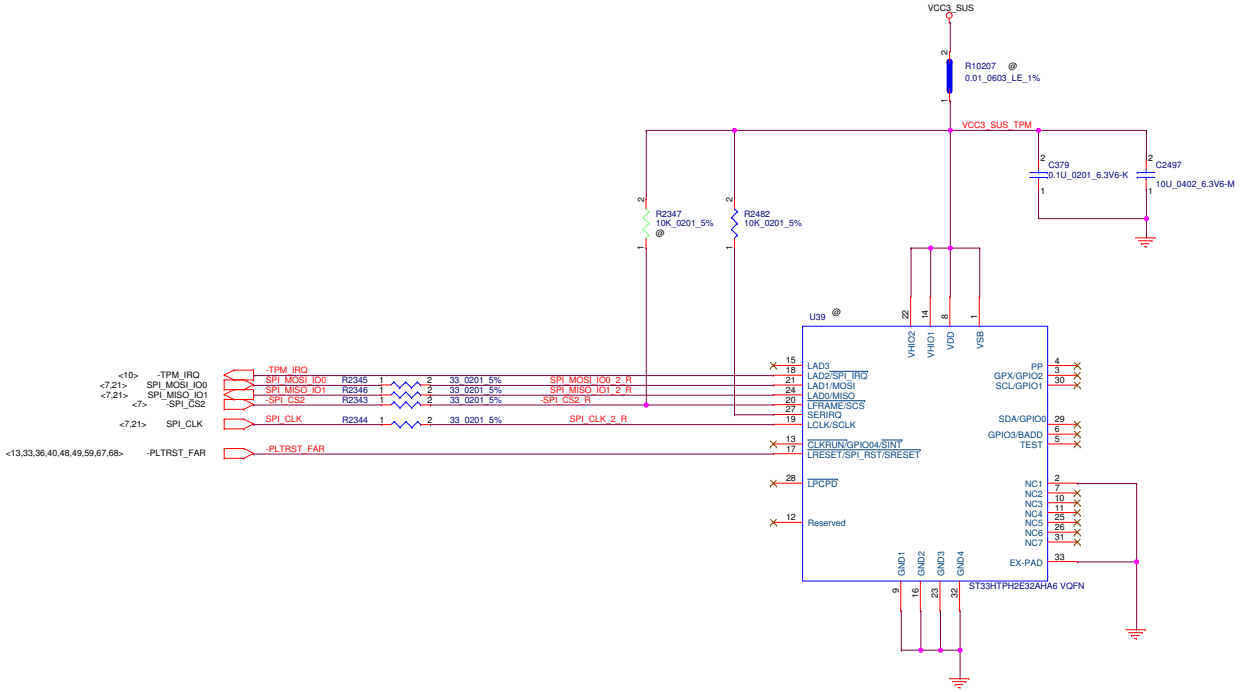
TABLE of G-Sersor (U148)		
Vendor	P/N	LCFC P/N
BOSCH	BMA255	SA00005YJ00
Kionix	KX022-1020	SA000081E00

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: APS G-SENSOR

Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 65 of 98



TABLE

Pin No	TCG PTP Spec (v38)	Infineon SLB9670VQ2.0 FW 7.60 SA000075L20	ST Micro ST33HTPH2E32AHA6 SA000081F00
1	VDD	VDD	NC
2	GND	GND	GND
3	GPIO	NC	NC
4	GPIO	NC	PP
5	NC	NC	NC
6	VNC/GPIO	GPIO	NC
7	GPIO/VDD	PP	GPIO
8	VDD	VDD	NC
9	GND	GND	NC
10	VNC	NC	NC
11	NC	NC	NC
12	NC	NC	NC
13	VNC/GPIO	NC	NC
14	VDD	NC	NC
15	NC	NC	NC
16	GND	NC	NC
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	NC
24	MISO	MISO	MISO
25	NC	NC	NC
26	NC	NC	NC
27	NC	NC	NC
28	NC	NC	NC
29	VNC/GPIO	NC	NC
30	VNC/GPIO	NC	NC
31	VNC	NC	NC
32	GND	GND	NC

TPM2.0

U39

NM-A931

SA000081F00

TPM20@

TPM1.2

U39

NM-A931

SA000075L00

TPM12@

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: DISCRETE TPM 2.0

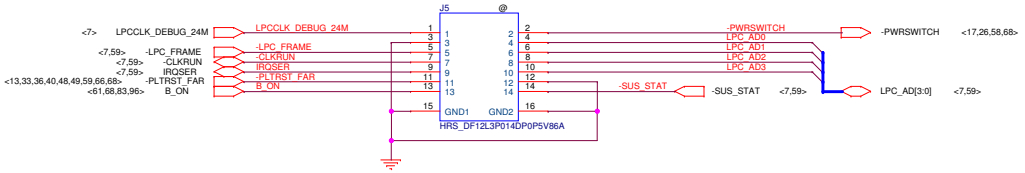
Size: Custom | Document Number: C | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 66 of 98

TABLE

REF DES	ENABLE	DISABLE
J5	ASM	NO_ASM
R220	ASM	NO_ASM

LOGIC



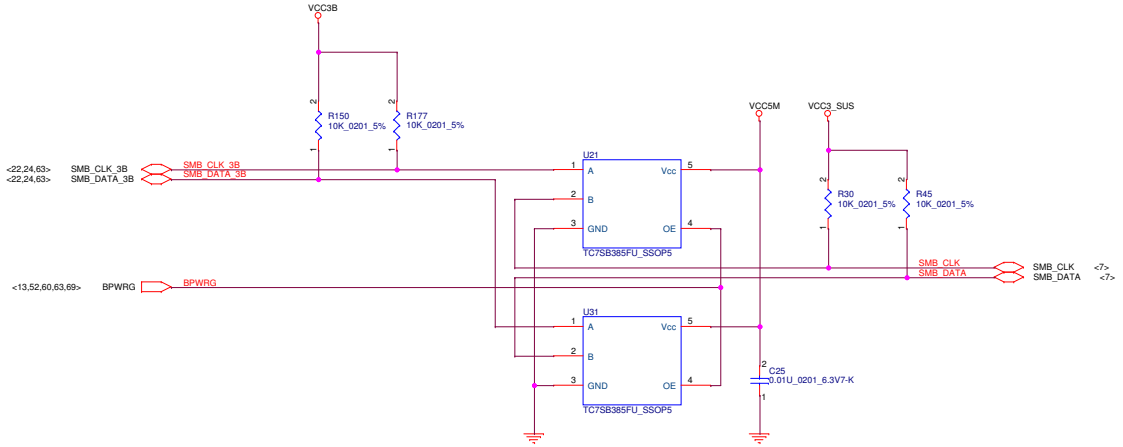


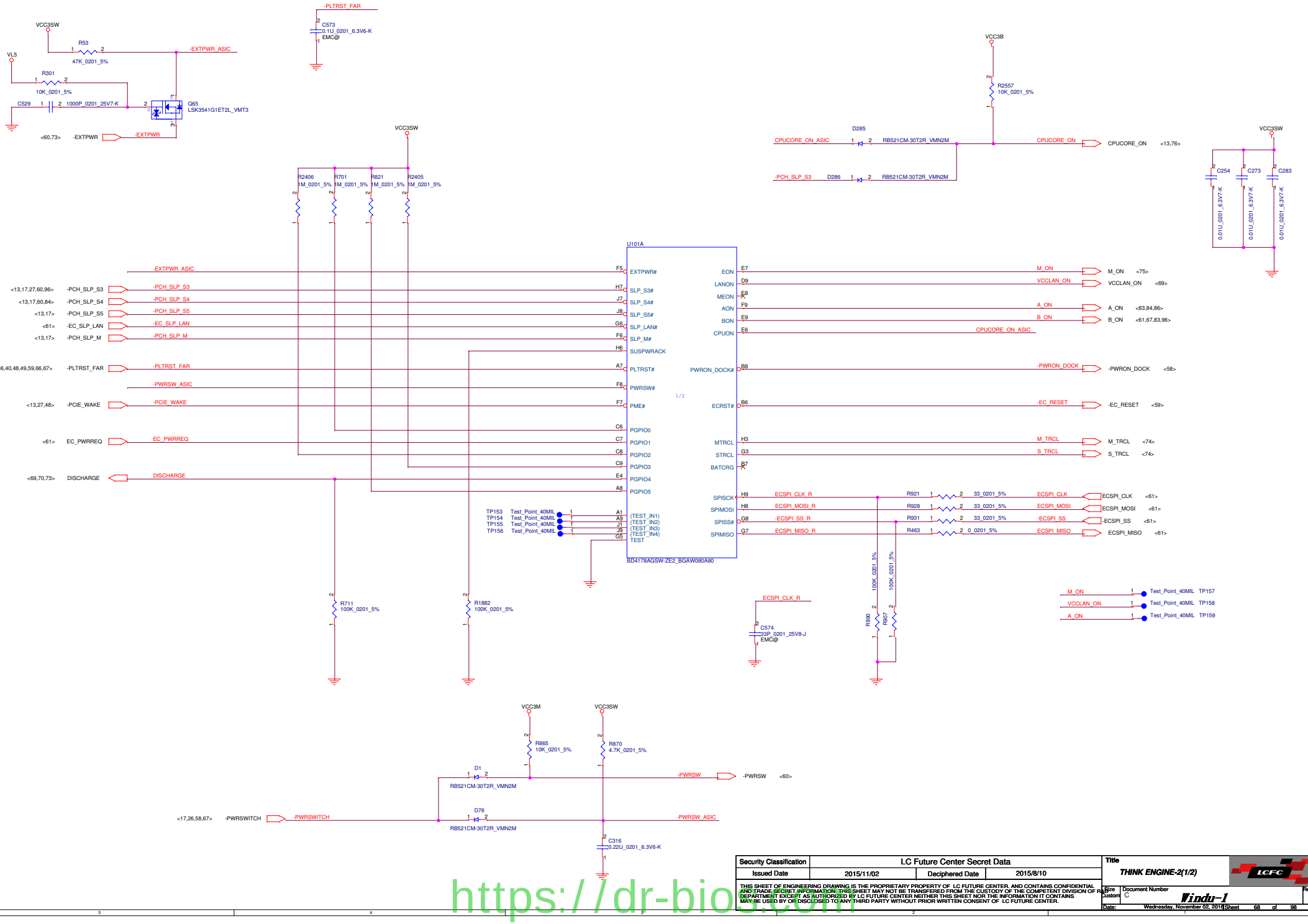
TABLE of U21/U31		
Vendor	P/N	LCFC P/N
TOSHIBA	TC7SB385FU	SA00005US0J
ON	7SB385DFT2G	SA00007CW00

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: SMBUS SWITCH/LPC DEBUG PORT

Size	Document Number	Rev
Custom	C	0.1

Date: Wednesday, November 02, 2016 Sheet 67 of 98



Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

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Title: THINK ENGINE-2(1/2)

LCFC

Size: Custom	Document Number: C	Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 68 of 98	

R413, R422 : Need Anti-surge Chip Resistors

REFER TO VCPIN25 CIRCUIT

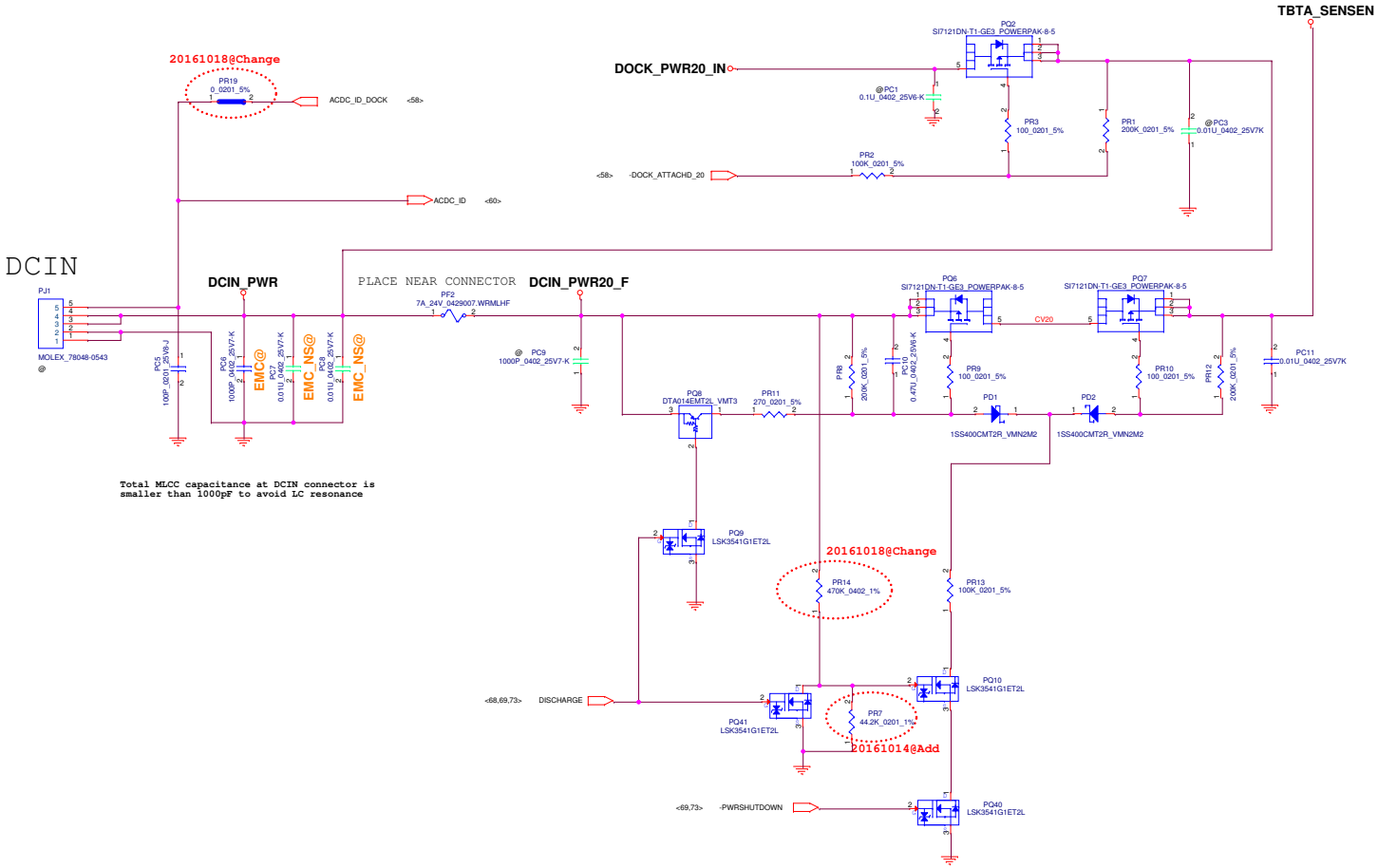
ID	Target
RT5	DOCK PWR20_F to VIN20_IN_FET (PQ2)
RT9	DCIN_PWR20_F to VINT20_IN_FET (PQ6,PQ7)
RT8	TBTA_VBUS to VINT20_IN_FET (PQ11,PQ12)
RT6	VCCCPUCORE DrMOS (PU402)
RT7	VCCGFXCORE DrMOS (PU403)
RT15	CPU Die (U58)
RT1	VCCGFXCORE_D DrMOS (PQ601,PQ602)
RT2	VCC3M Switching FET (PQ203)
RT3	VCC5M Switching FET (PQ201)
RT11	M_BAT_PWR to BAT_PWR_FET (PQ17,PQ18)
RT4	S_BAT_PWR to S_BAT_PWR_FET (PQ19,PQ20)
RT14	VSYS_OUT to VSYS_FET (PQ108)
RT13	Battery Charge Discharge FET (PQ103)
RT10	Battery Charge BUCK FET (PQ101)
RT12	Battery Charge BOOST FET (PQ102)

Security Classification	LC Future Center Secret Data		
Issued Date	2015/11/02	Deciphered Date	2015/8/10

Title: THINK ENGINE-2(2/2)

Size: Custom | Document Number: C | Rev: 0.1

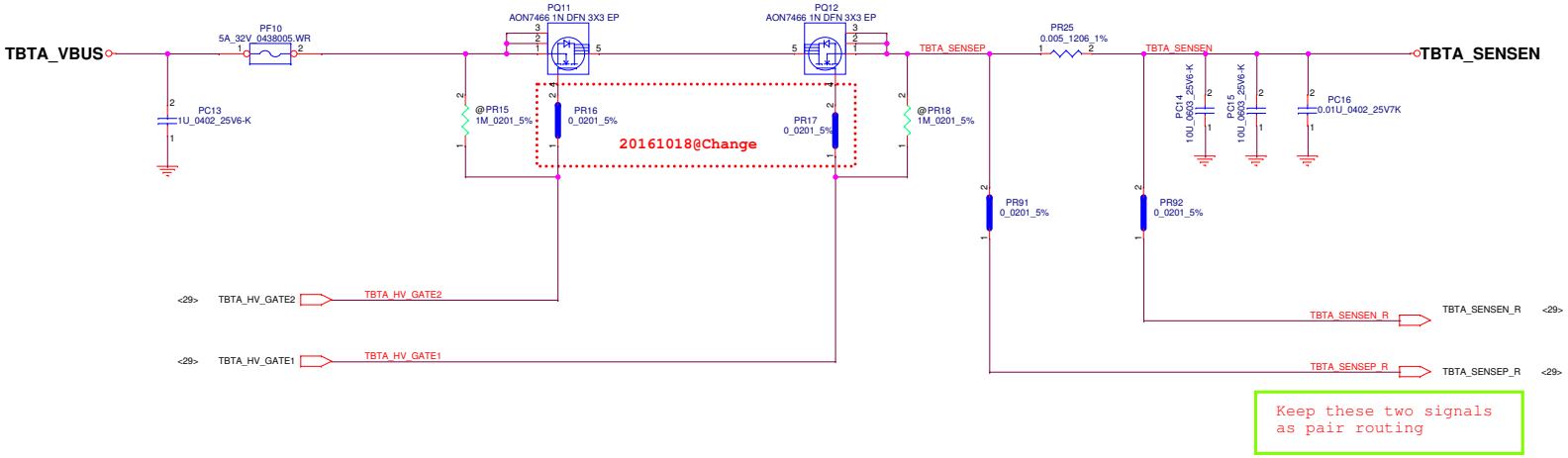
Date: Wednesday, November 02, 2016 | Sheet 69 of 98



Security Classification	LC Future Center Secret Data	Title	DC-IN
Issued Date	Deciphered Date	Size: Custom	Document Number: Windu Intel
		Date: Wednesday, November 02, 2016	Sheet 70 of 98

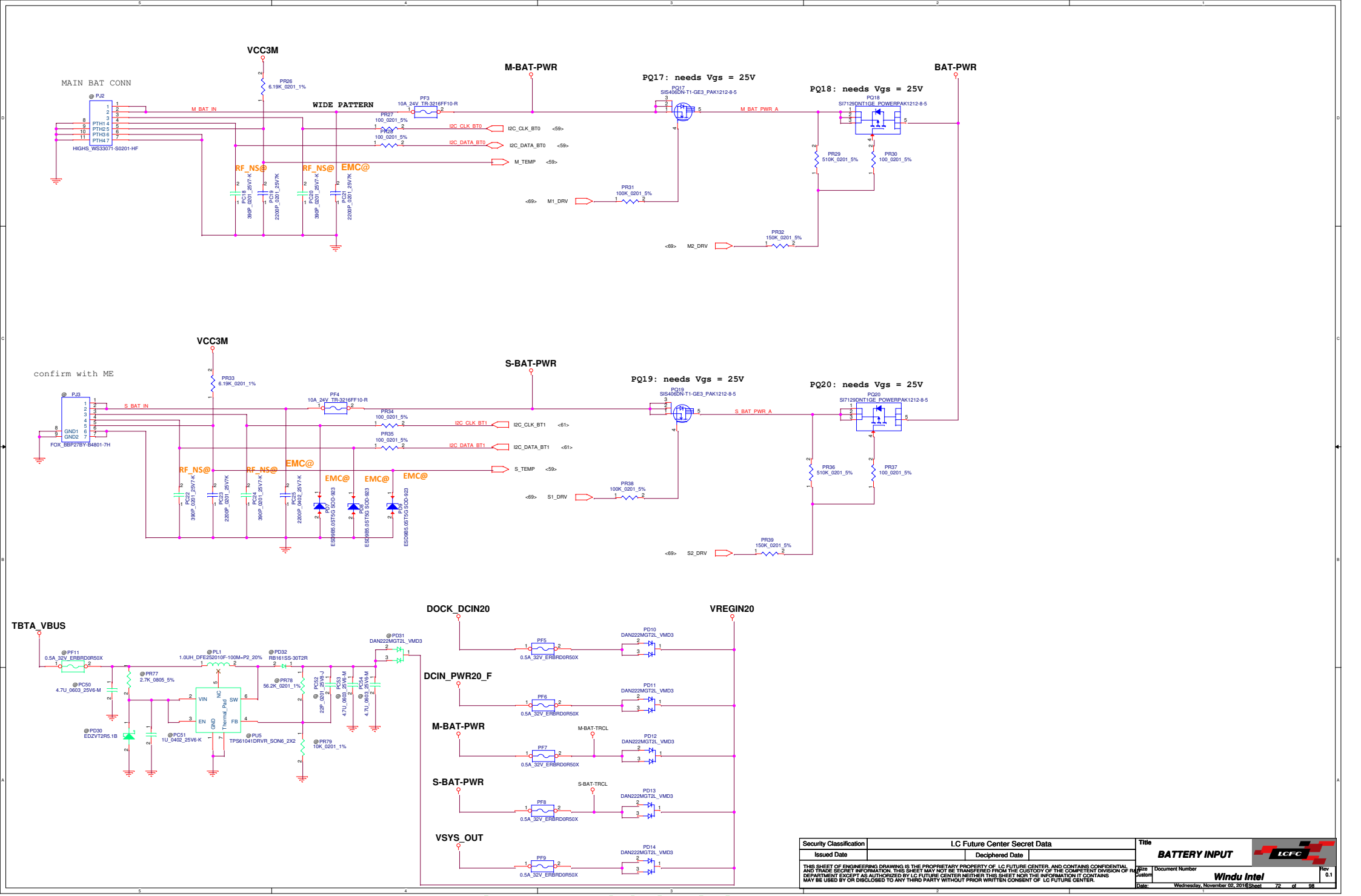
Table PQ11、PQ12

1st : AON7466	AOS
2nd :SIS406DN	VISHAY



Security Classification	LC Future Center Secret Data	Title	Typ-C
Issued Date	Deciphered Date		

Size C	Document Number	Windu Intel	Rev 0.1
Date: Wednesday, November 02, 2016	Sheet 71 of 98		



Security Classification	LC Future Center Secret Data		
Issued Date		Deciphered Date	

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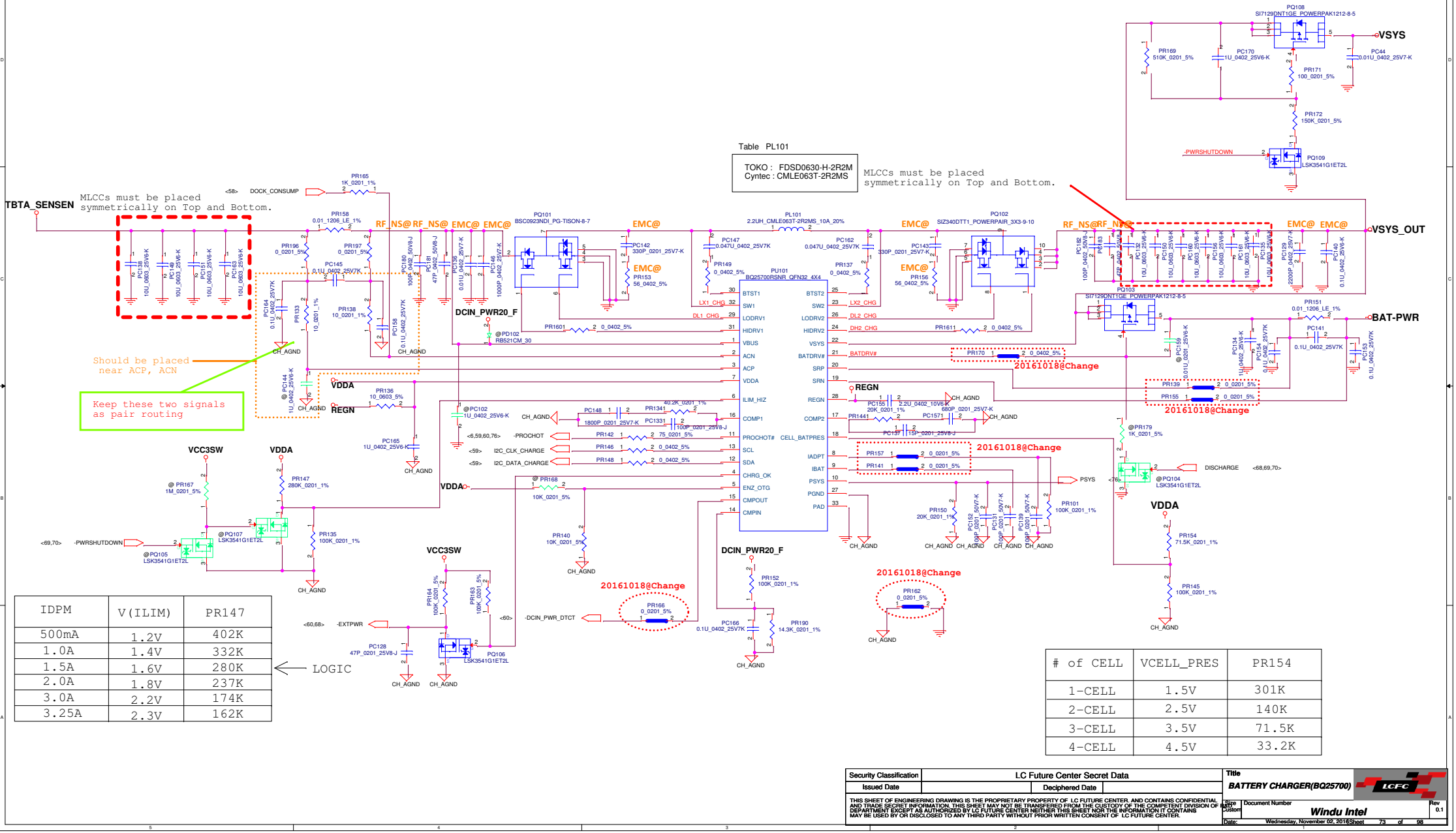
Title	BATTERY INPUT		
Size: Custom	Document Number: Windu Intel		Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 72 of 98		



IDPM	V(ILIM)	PR147
500mA	1.2V	402K
1.0A	1.4V	332K
1.5A	1.6V	280K
2.0A	1.8V	237K
3.0A	2.2V	174K
3.25A	2.3V	162K

# of CELL	VCELL_PRES	PR154
1-CELL	1.5V	301K
2-CELL	2.5V	140K
3-CELL	3.5V	71.5K
4-CELL	4.5V	33.2K

Security Classification	LC Future Center Secret Data	Title	BATTERY CHARGER(BQ25700)
Issued Date	Deciphered Date		

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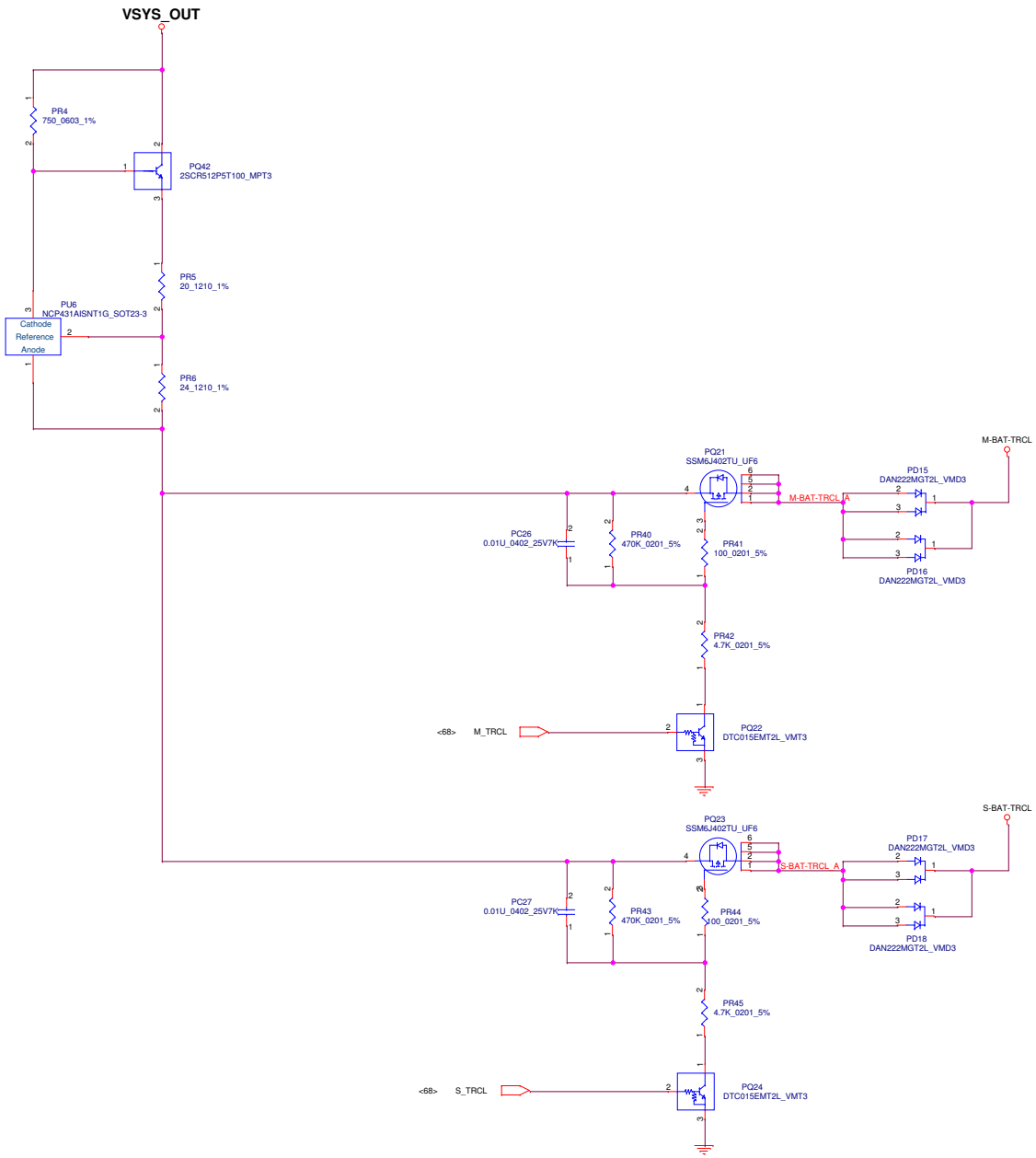
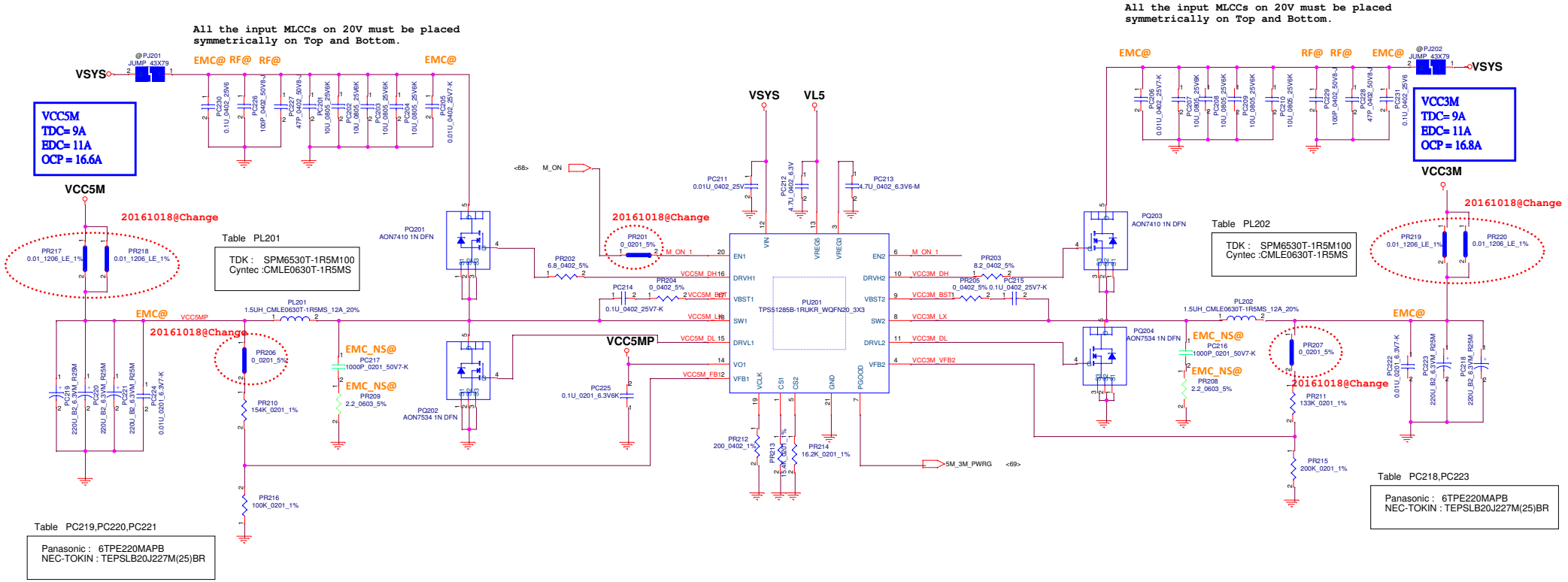


Security Classification	LC Future Center Secret Data		
Issued Date		Deciphered Date	

Title	CHARGER SELECTOR		
Size: Custom	Document Number: Windu Intel		Rev: 0.24
Date: Wednesday, November 02, 2016	Sheet 74 of 98		



Security Classification	LC Future Center Secret Data		Title: DC/DC VCC5M/VCC3M(TPS51285B)
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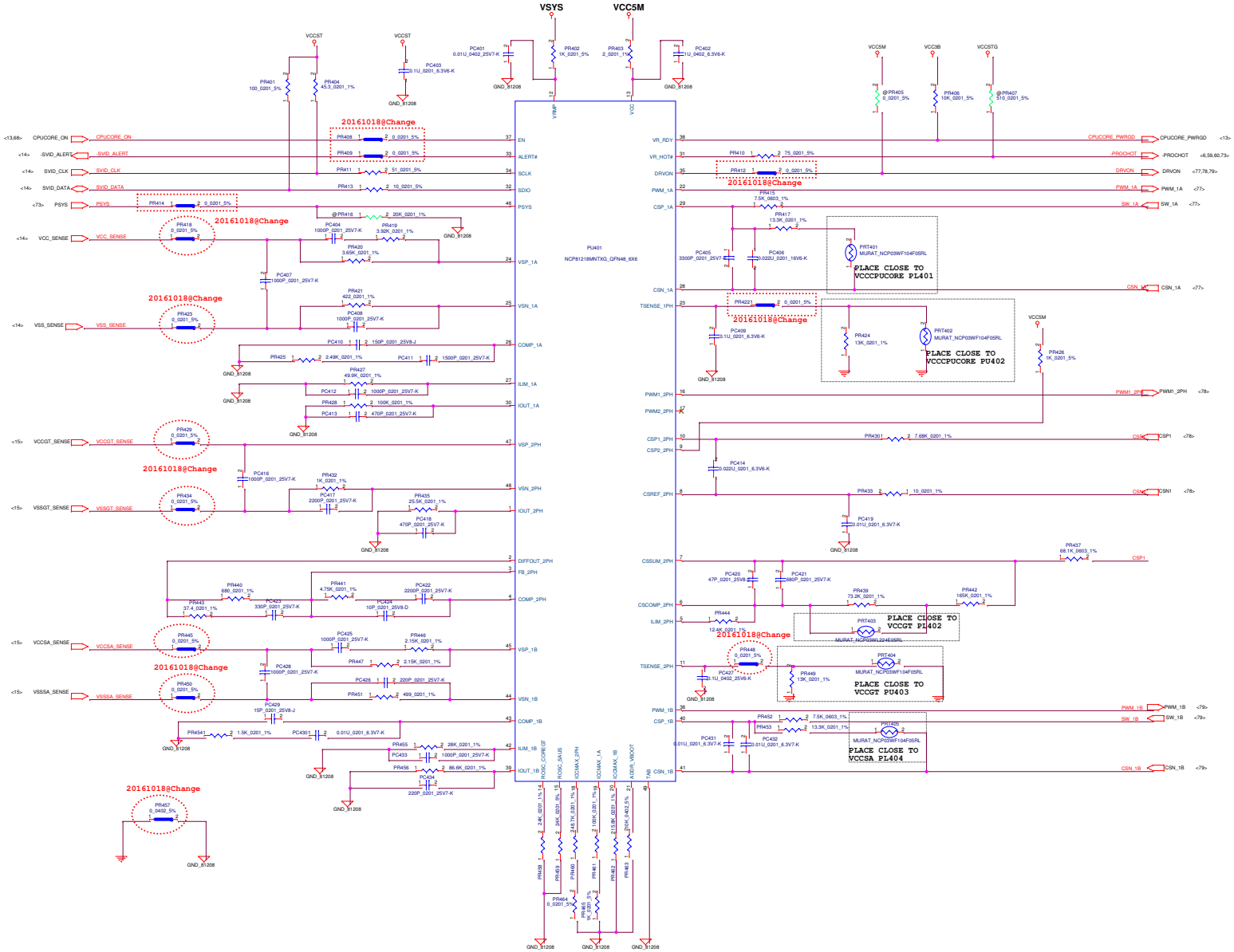
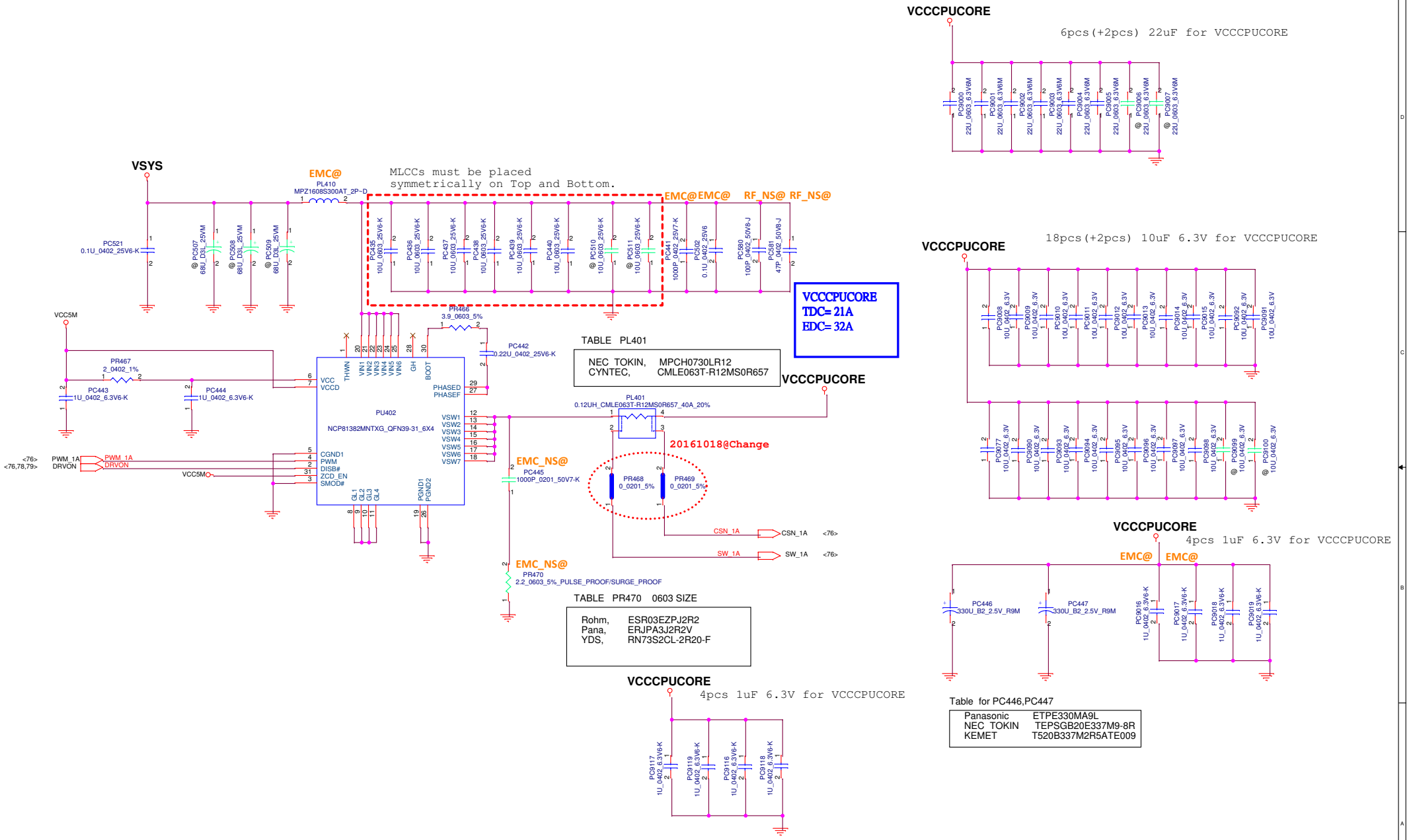
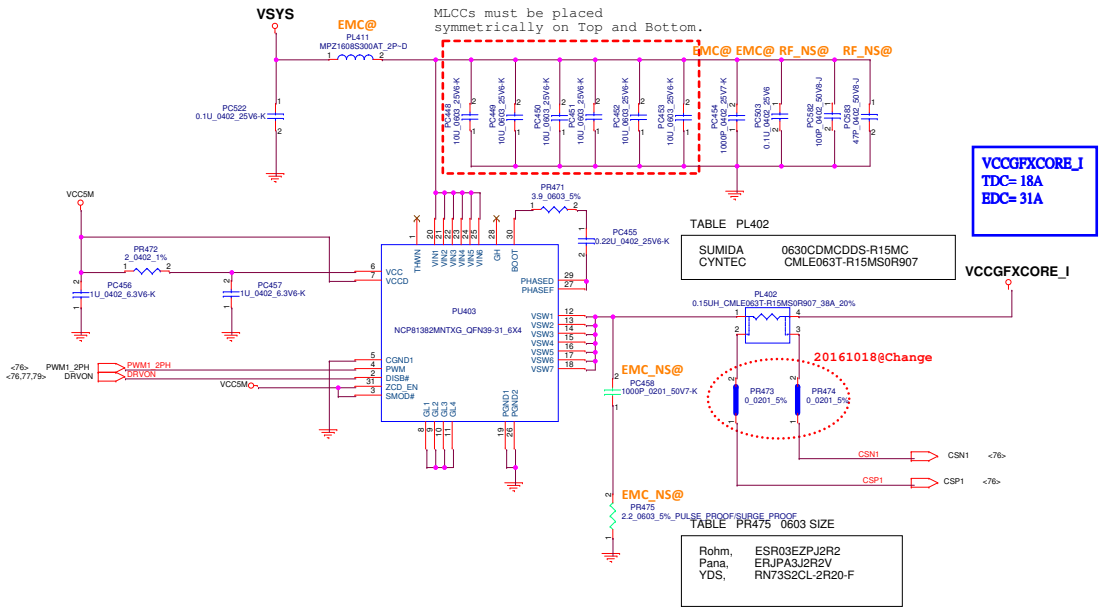
Date: Wednesday, November 02, 2016	Sheet 75 of 98		



Title	DC/DC IMVP8(NCP81208)		
Size	Document Number		Rev
D	Windu Intel		0.1
Date:	Wednesday, November 02, 2016	Sheet	76 of 88





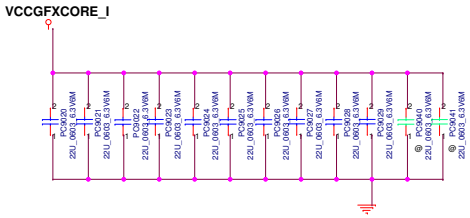
VCCGFXCORE_I
TDC= 18A
EDC= 31A

TABLE PL402

SUMIDA	0630CDMCDDS-R15MC
CYNTEC	CMLE063T-R15MS0R907

TABLE PR475 0603 SIZE

Rohm,	ESR03EZPJ2R2
Pana,	ERJPA3J2R2V
YDS,	RN73S2CL-2R20-F



14pcs(+8pcs) 22uF for VCCGFXCORE_I

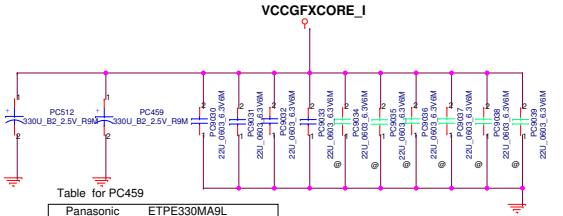
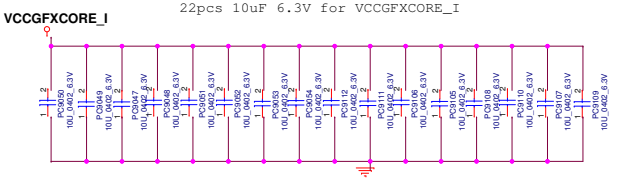
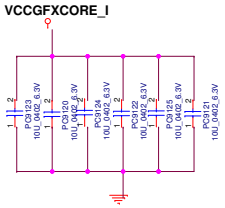


Table for PC459

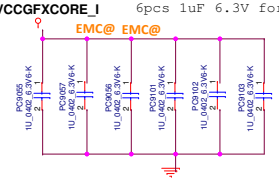
Panasonic	ETPE330MA9L
NEC TOKIN	TEPSGB20E337M9-8R
KEMET	T520B337M2R5ATE009

22pcs 10uF 6.3V for VCCGFXCORE_I





VCCGFXCORE_I 6pcs 1uF 6.3V for VCCGFXCORE_I



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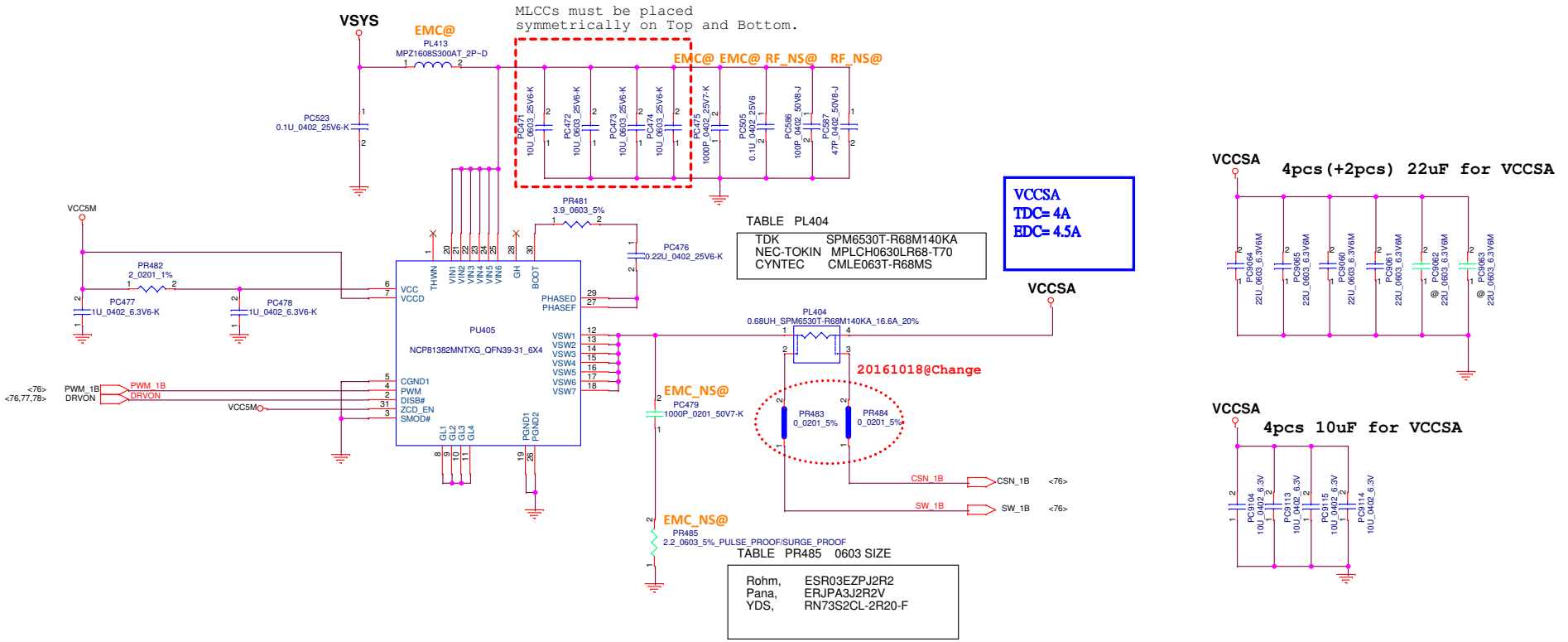

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Title: DC/DC VCCSA(NCP81380)

Size	Document Number	Rev
Custom	Windu Intel	0.1

Date: Wednesday, November 02, 2016 Sheet 79 of 98

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Issued Date		Deciphered Date	

Title: BLANK		
Size: Custom	Document Number: Windu Intel	Rev: 0.1
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Security Classification	LC Future Center Secret Data		
Issued Date		Deciphered Date	

Title: BLANK		LCFC
Size: Custom	Document Number: Windu Intel	Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 81 of 98	

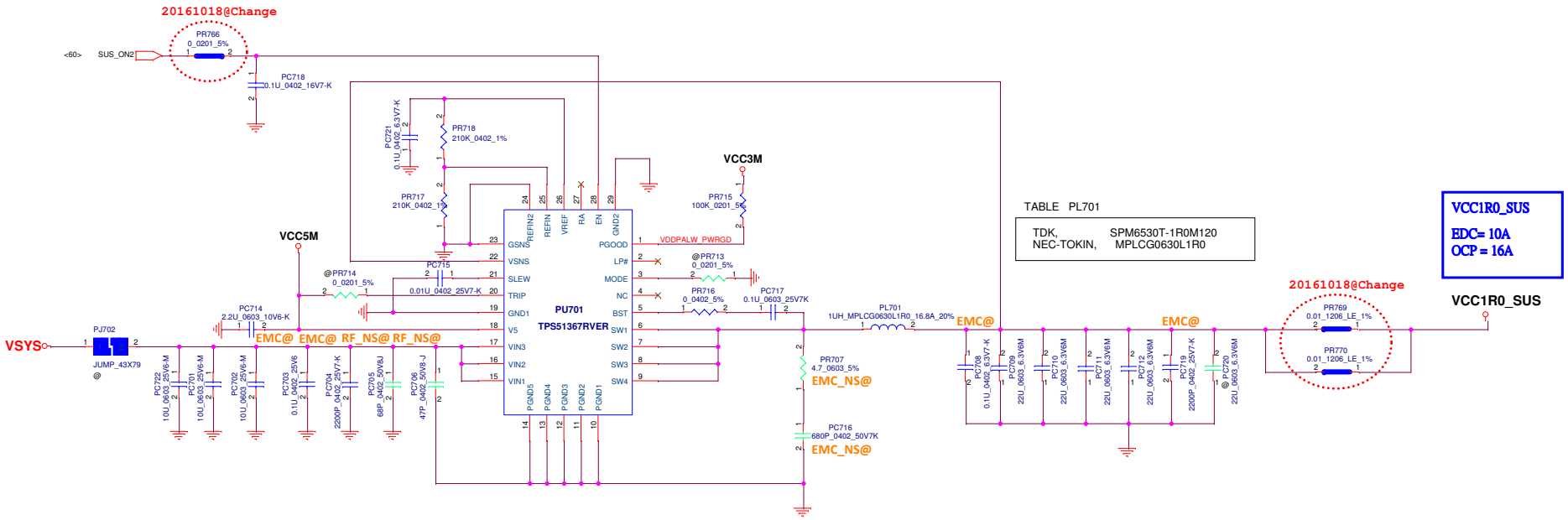

TABLE PL701

TDK,	SPM6530T-1R0M120
NEC-TOKIN,	MPLCG0630L1R0

Mode	Frequency
GND	400KHz
Float	800KHz

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Issued Date		Deciphered Date	

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Title: DC/DC VCC1R0_SUS(TPS51367RVER)

Size: Custom | Document Number: Windu Intel | Rev: 0.1

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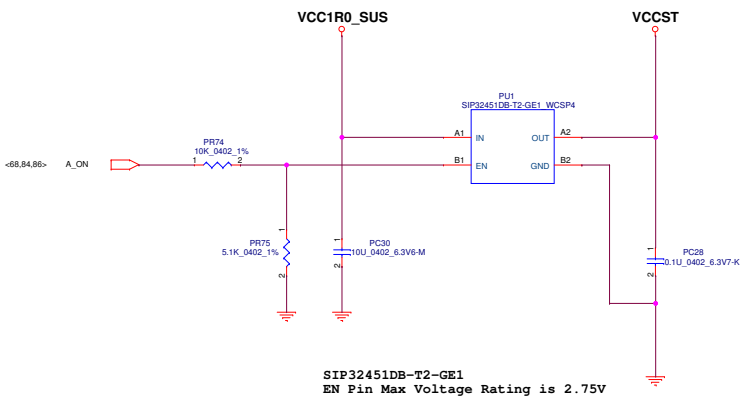
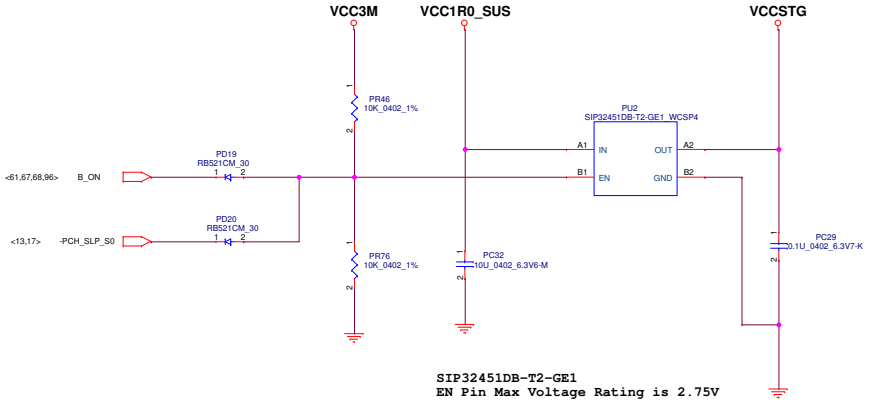
T_on<65us



SIP32451DB-T2-GE1
EN Pin Max Voltage Rating is 2.75V

T_on<65us



SIP32451DB-T2-GE1
EN Pin Max Voltage Rating is 2.75V

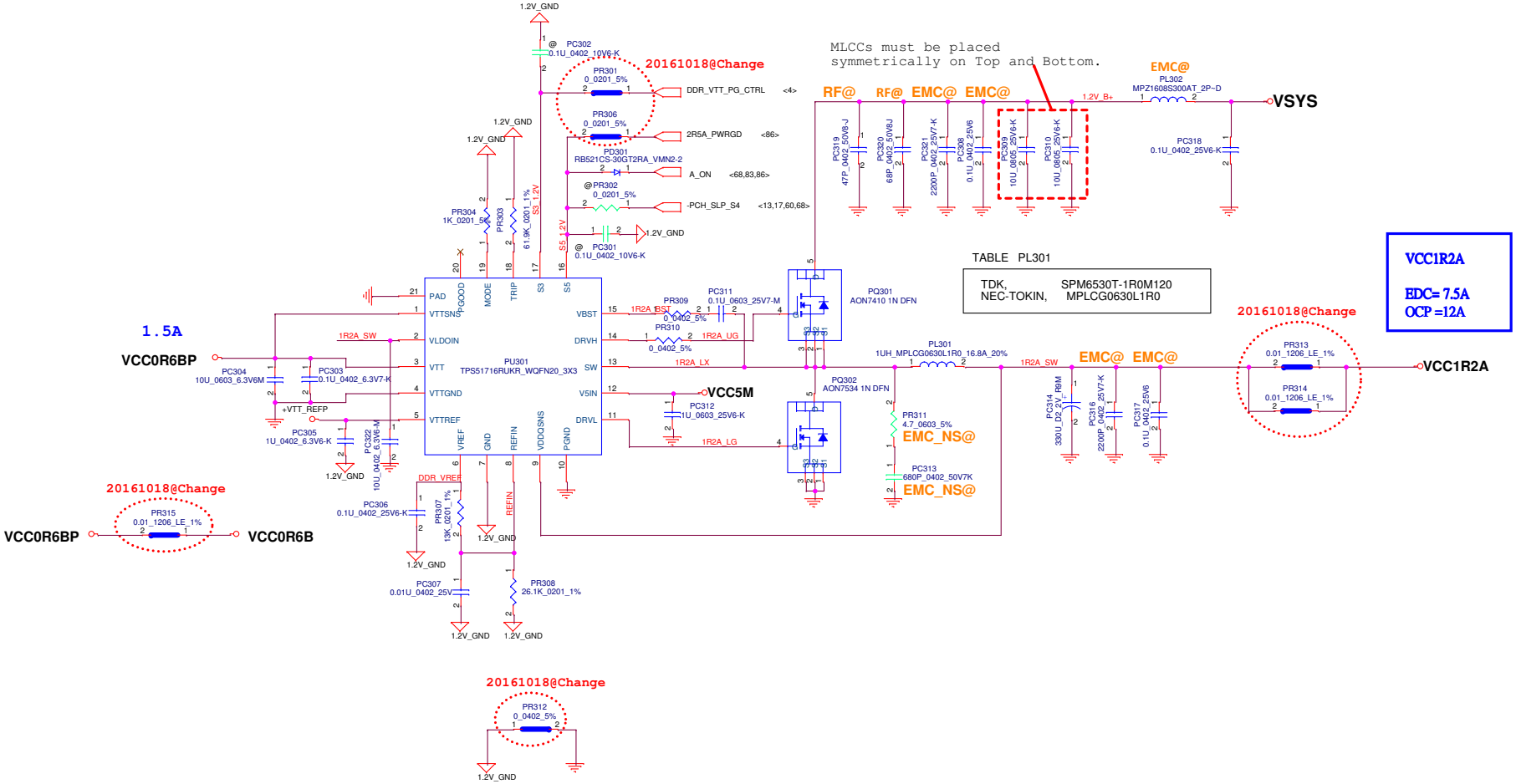
Security Classification	LC Future Center Secret Data		
Issued Date		Deciphered Date	

Title: LOAD SW VCCST & VCCSTG

LCFC

Size: Custom | Document Number: Windu Intel | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 83 of 98



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Size: Custom	Document Number: Windu Intel	Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 84 of 98	

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Issued Date		Deciphered Date	

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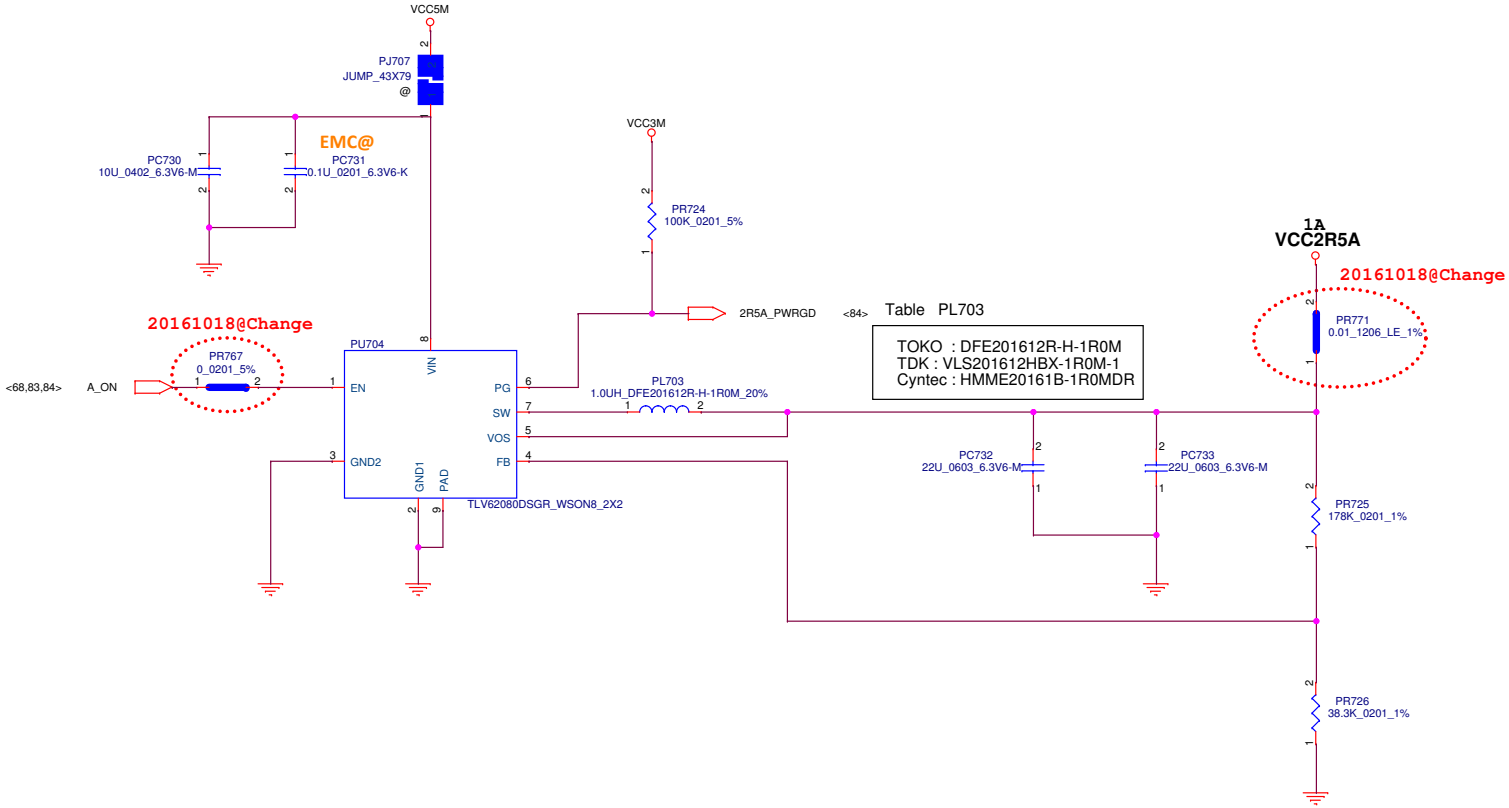
Size: Custom	Document Number: Windu Intel	Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 85 of 98	

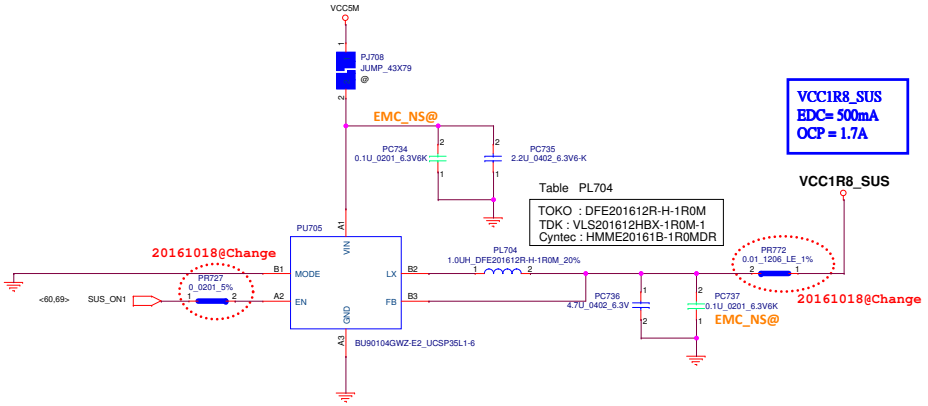


Security Classification	LC Future Center Secret Data		
Issued Date		Deciphered Date	

Title: *DC/DC VCC2R5A(TLV62080)*

Size: Custom | Document Number: *Windu Intel* | Rev: 0.1

Date: Wednesday, November 02, 2016 | Sheet 86 of 98



Security Classification	LC Future Center Secret Data		
Issued Date		Deciphered Date	

Title	DC/DC VCC1R8_SUS(BU90104GWZ		
Size: Custom	Document Number: Windu Intel		Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 87 of 98		

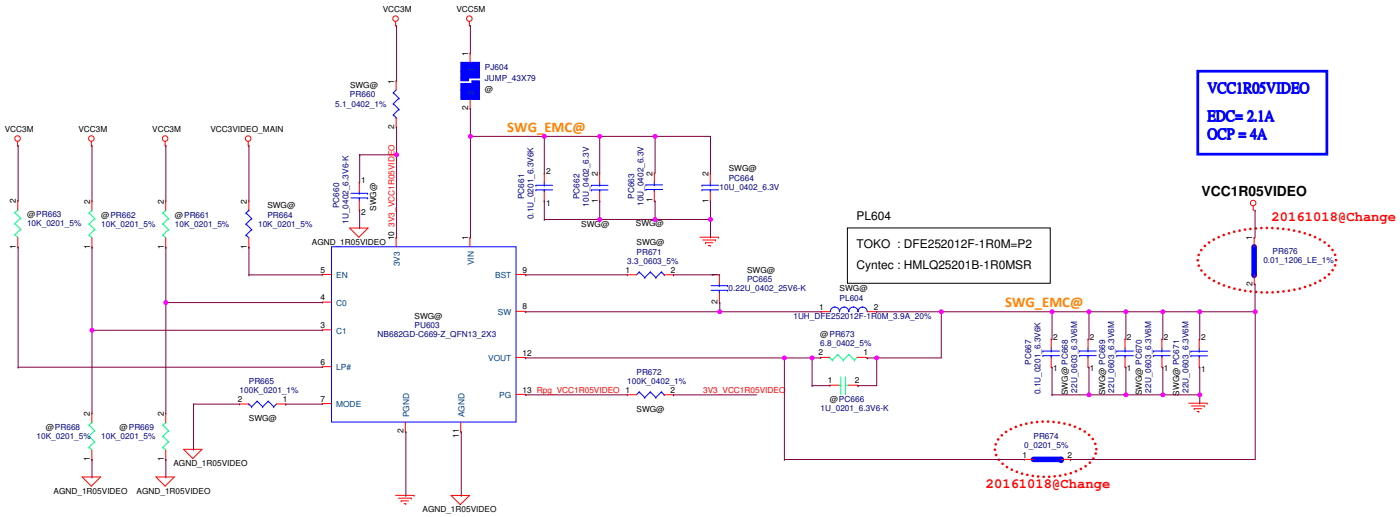
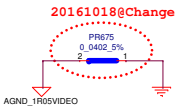


TABLE : NB682 MODE M3 (100K)

LP#	C1	C0	VOUT
0	X	X	0V
1	0	0	0.8V
1	0	1	0.95V
1	1	0	1V
1	1	1	1.05V

← Logic



Security Classification	LC Future Center Secret Data		
Issued Date		Deciphered Date	

Title	DC/DC VCC1R05VIDEO(NB682)		
Size: Custom	Document Number: Windu Intel		Rev: 0.1
Date: Wednesday, November 02, 2016	Sheet 88 of 98		

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Issued Date		Deciphered Date	

Title	BLANK		
Size: Custom	Document Number: Windu Intel		Rev: 0.1
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Security Classification	LC Future Center Secret Data		
Issued Date	2012/11/01	Deciphered Date	2013/12/31

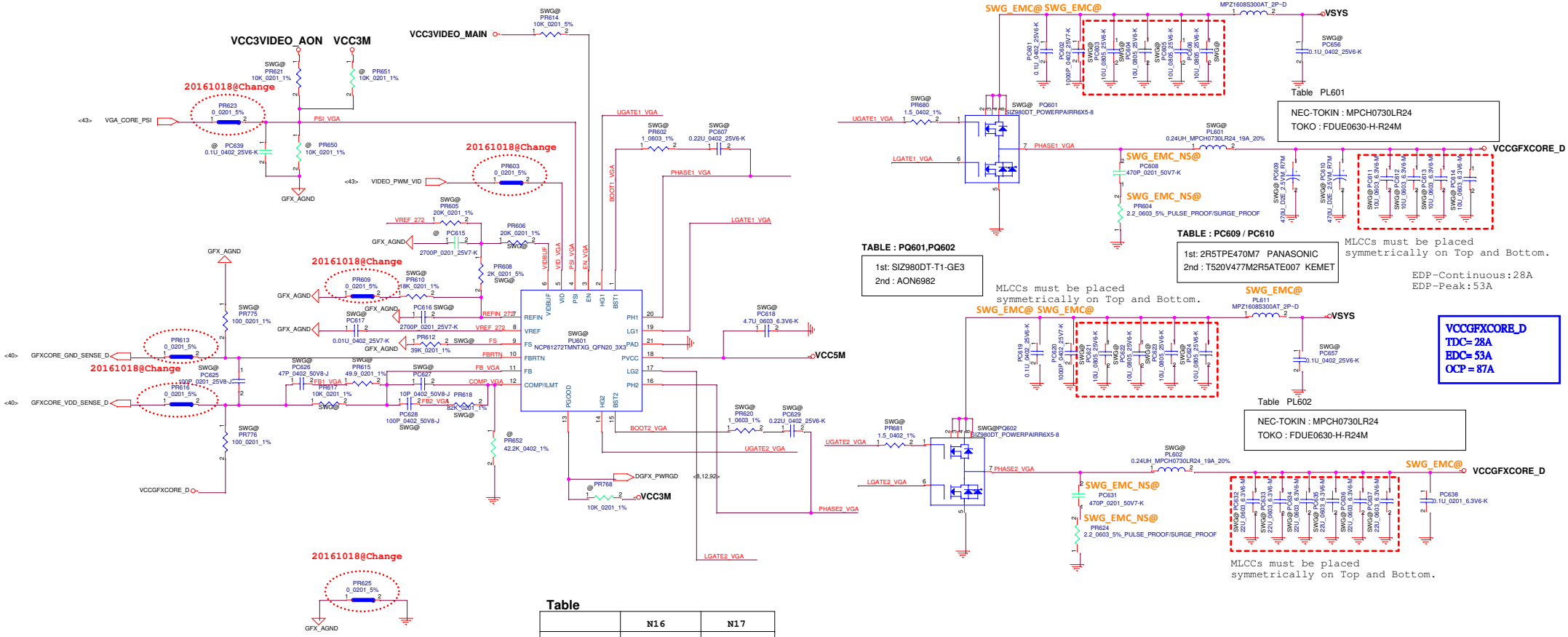
Title: BLANK

Size: Custom | Document Number: Windu Intel | Rev: 0.24

Date: Wednesday, November 02, 2016 | Sheet 90 of 98

Table PR621

N16	N17
10K_1%	NO_ASM



Table

	N16	N17
PU601	NCP81272T	NCP81278T
PR652	No_ASM	42.2K_1%
OCP setting	87A Typ	94A Typ

MLCCs must be placed symmetrically on Top and Bottom.

MLCCs must be placed symmetrically on Top and Bottom.

MLCCs must be placed symmetrically on Top and Bottom.

MLCCs must be placed symmetrically on Top and Bottom.

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Issued Date	2012/11/01
Deciphered Date	2013/12/31

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Title: DC/DC VCCGFXCORE_D (NCP81272)

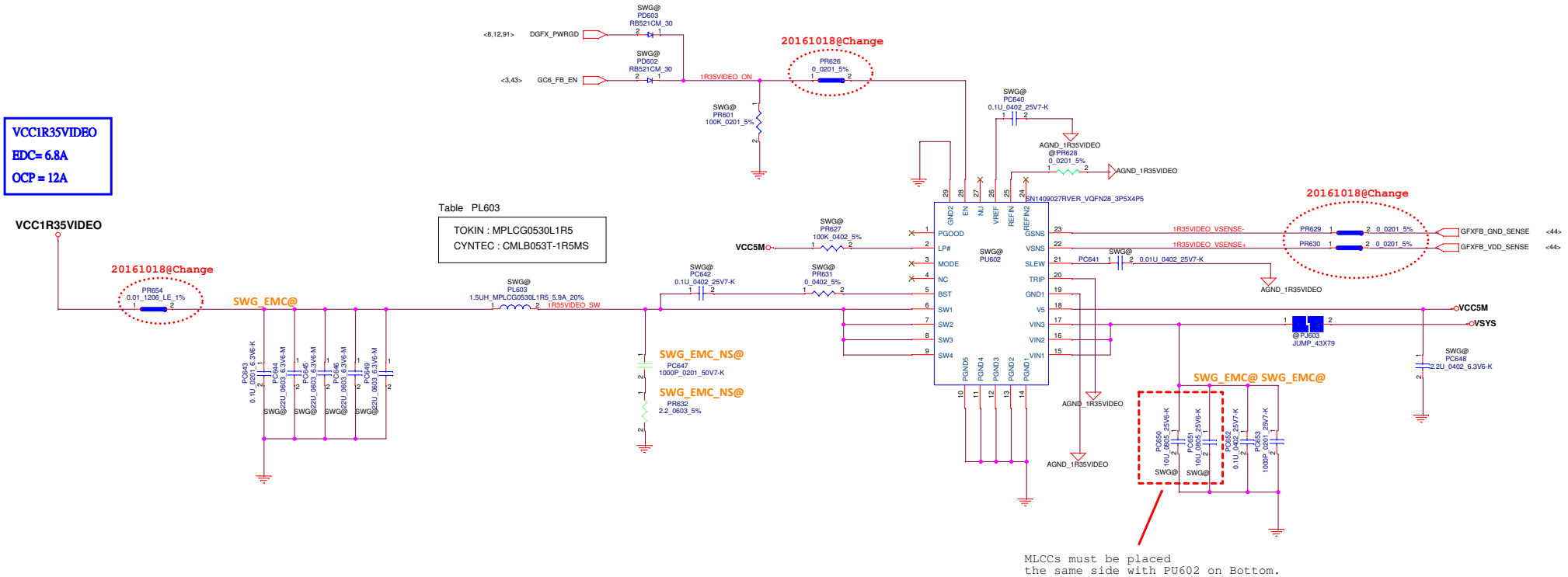
Size: Custom | Document Number: Windu Intel | Rev: 0.24

Date: Wednesday, November 02, 2016 | Sheet 91 of 98

VCC1R35VIDEO
EDC= 6.8A
OCP = 12A

Table PL603

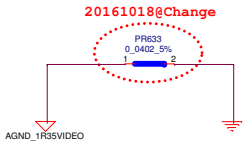
TOKIN : MPLCG0530L1R5
CYNTEC : CMLB053T-1R5MS

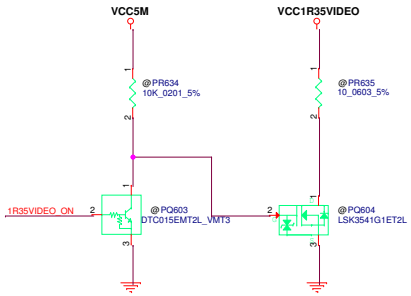


MLCCs must be placed
the same side with PU602 on Bottom.

TABLE SN1409027

REFIN	REFIN2	VOUT(V)	
GND	GND	1.05V	
Float	GND	1.20V	
GND	Float	1.50V	
Float	Float	1.35V	← LOGIC





Security Classification	LC Future Center Secret Data		
Issued Date	2012/11/01	Deciphered Date	2013/12/31

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Size: Custom | Document Number: Windu Intel | Rev: 0.24

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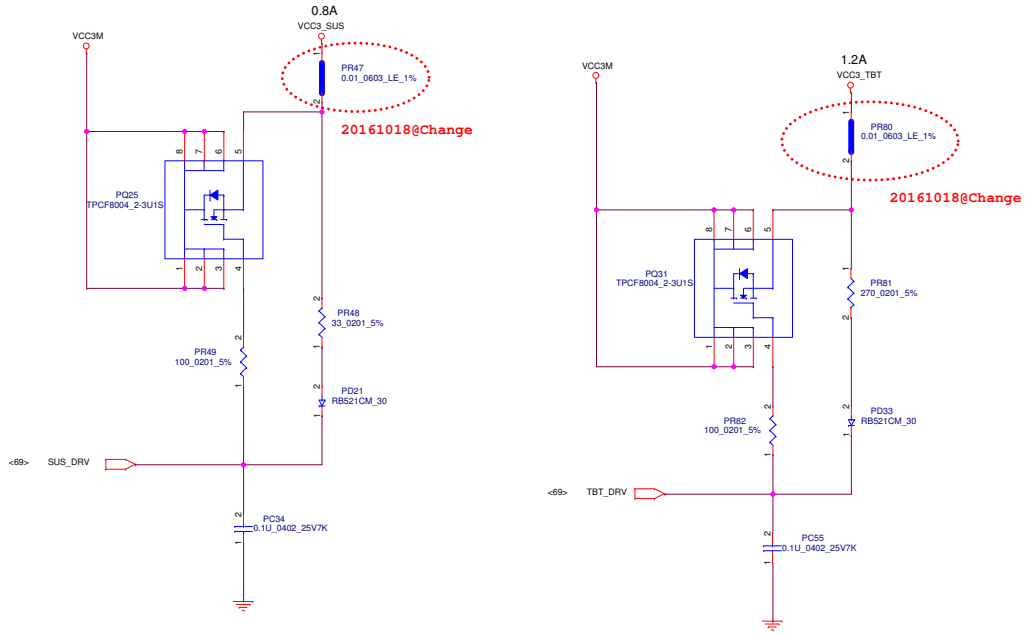

Security Classification	LC Future Center Secret Data		
Issued Date	2012/11/01	Deciphered Date	2013/12/31

Title: **LOAD SW PCH SUS**

Size	Document Number	Rev
Custom	**Windu Intel**	0.24

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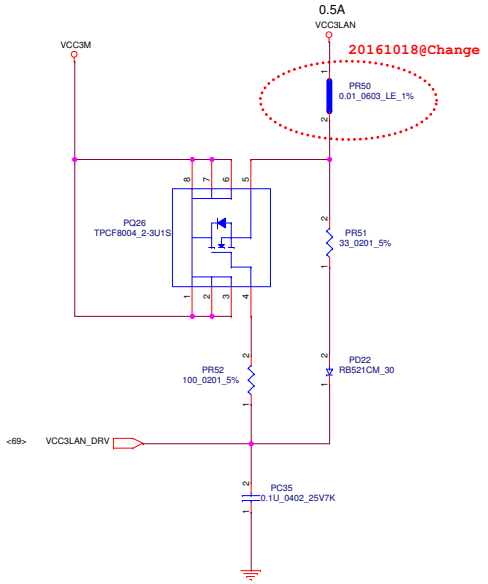

Security Classification	LC Future Center Secret Data		
Issued Date	2012/11/01	Deciphered Date	2013/12/31

Title: LOAD SW LAN

Size: Custom | Document Number: Windu Intel | Rev: 0.24

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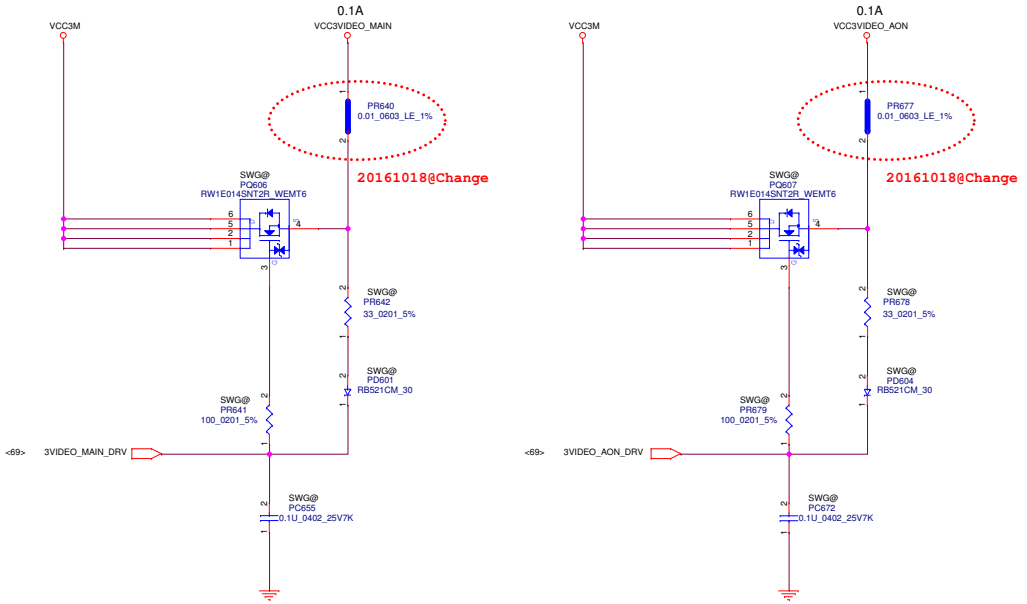

Security Classification	LC Future Center Secret Data		
Issued Date	2012/11/01	Deciphered Date	2013/12/31

Title: **LOAD SW VIDEO**

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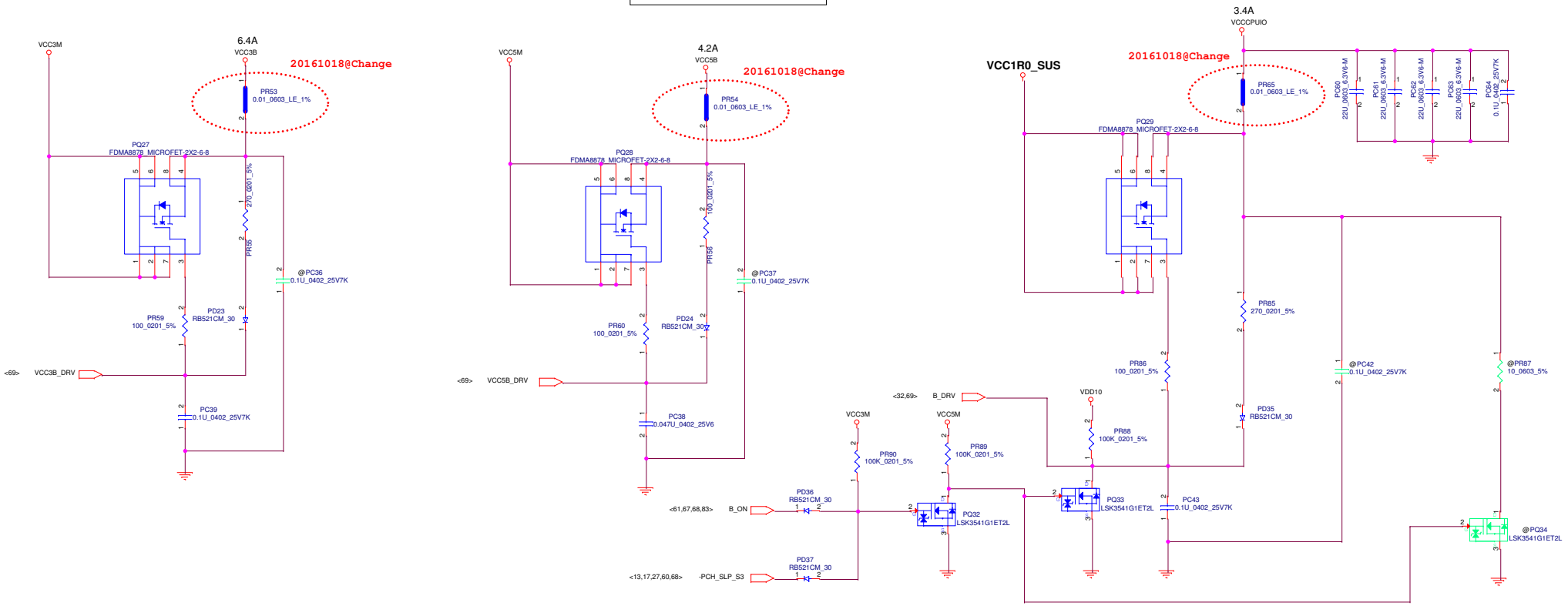
Table for PQ27、PQ28、PQ29

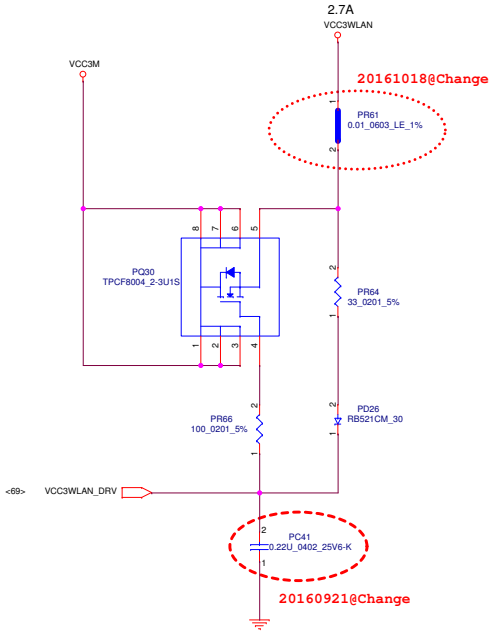
FAIRCHILD	FDMA8878
VISHAY	SIA462DJ



Security Classification	LC Future Center Secret Data		
Issued Date	2012/11/01	Deciphered Date	2013/12/31

Title: **LOAD SW B**

Size: Custom	Document Number: **Windu Intel**	Rev: 0.24
Date: Wednesday, November 02, 2016	Sheet 96 of 98	



TABLE

AOAC	YES	NO
PR70	NO-ASM	ASM
PQ35	ASM	NO-ASM
PR72	ASM	NO-ASM
PR74	ASM	NO-ASM
PC40	ASM	NO-ASM
PD23	ASM	NO-ASM

LOGIC

Security Classification	LC Future Center Secret Data		
Issued Date	2012/11/01	Deciphered Date	2013/12/31

Title: LOAD SW WWAN & WLAN

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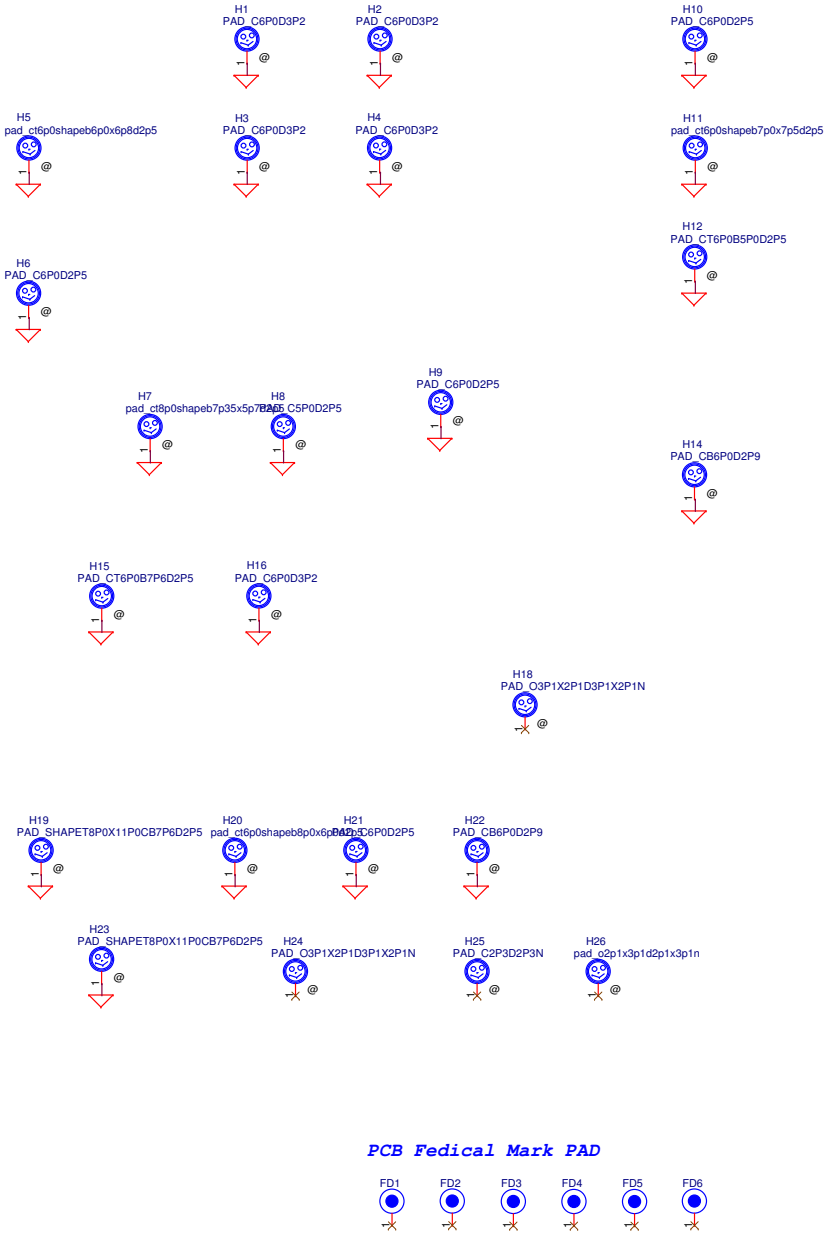

Security Classification	LC Future Center Secret Data		
Issued Date	2014/07/01	Deciphered Date	2015/12/31

Title: **SCREW**

Size: Custom	Document Number: Windu-1	Rev: 0.1
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