

CB-1 SWG LOGIC SCHEMATICS

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VER0.1
June/19/2012



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88.DC/DC VCC1R5VIDEO(VT356)
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97.BLANK
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EC Modify History

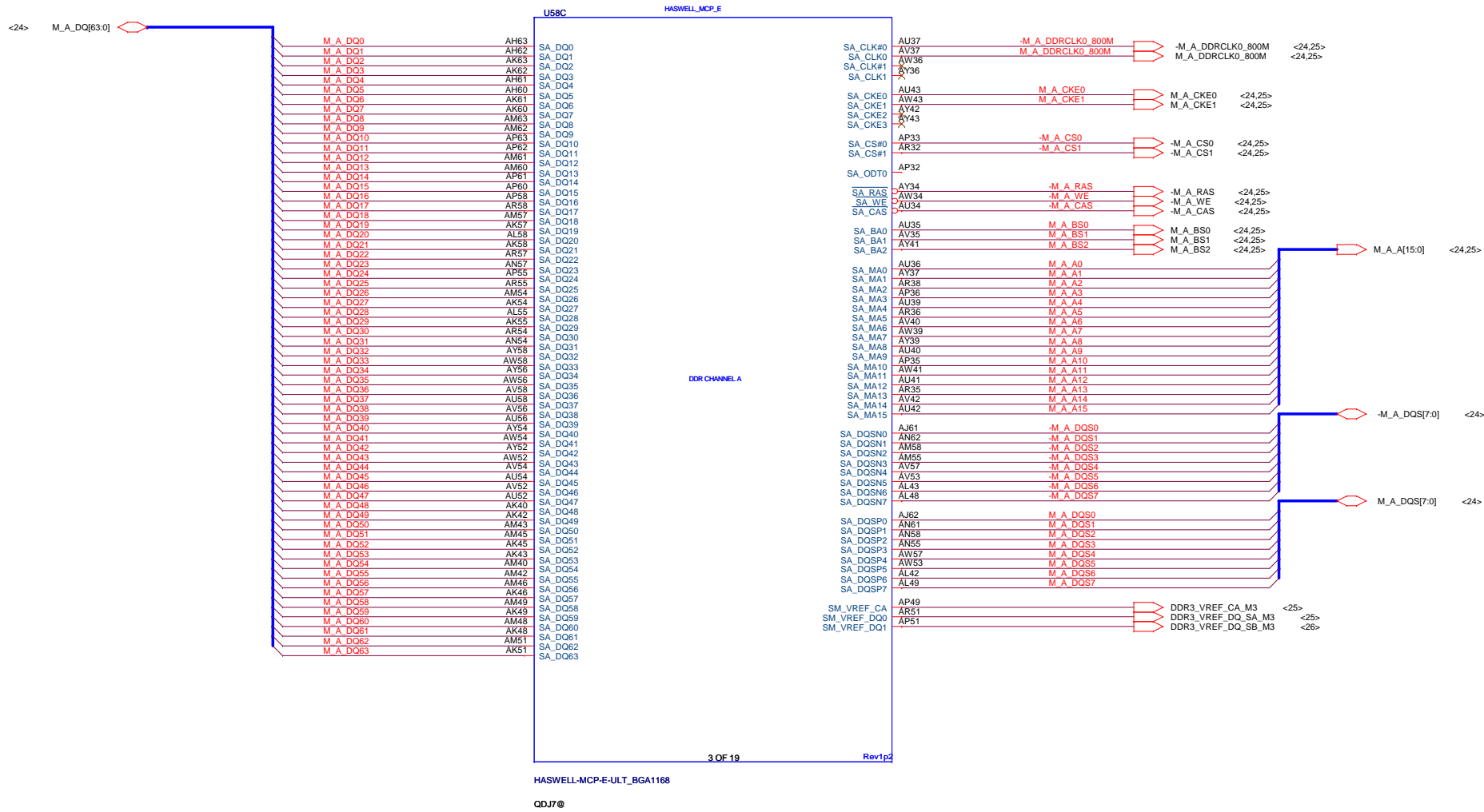
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2013/05/07	JVCB-1_SWG_SIT-SWG_ECR001-002	JV_CB-1_SWG_SIT_SCH_EC001-005_050701.pdf
2013/05/09	JVCB-1_SWG_SIT-SWG_ECR003	JV_CB-1_SWG_SIT_SCH_EC001-005_050901.pdf
2013/05/10	JVCB-1_SWG_SIT-SWG_ECR004	JV_CB-1_SWG_SIT_SCH_EC001-005_051001.pdf
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2013/05/14	JVCB-1_SWG_SIT-SWG_EC006	JV_CB-1_SWG_SIT_SCH_EC001-006_051402.pdf
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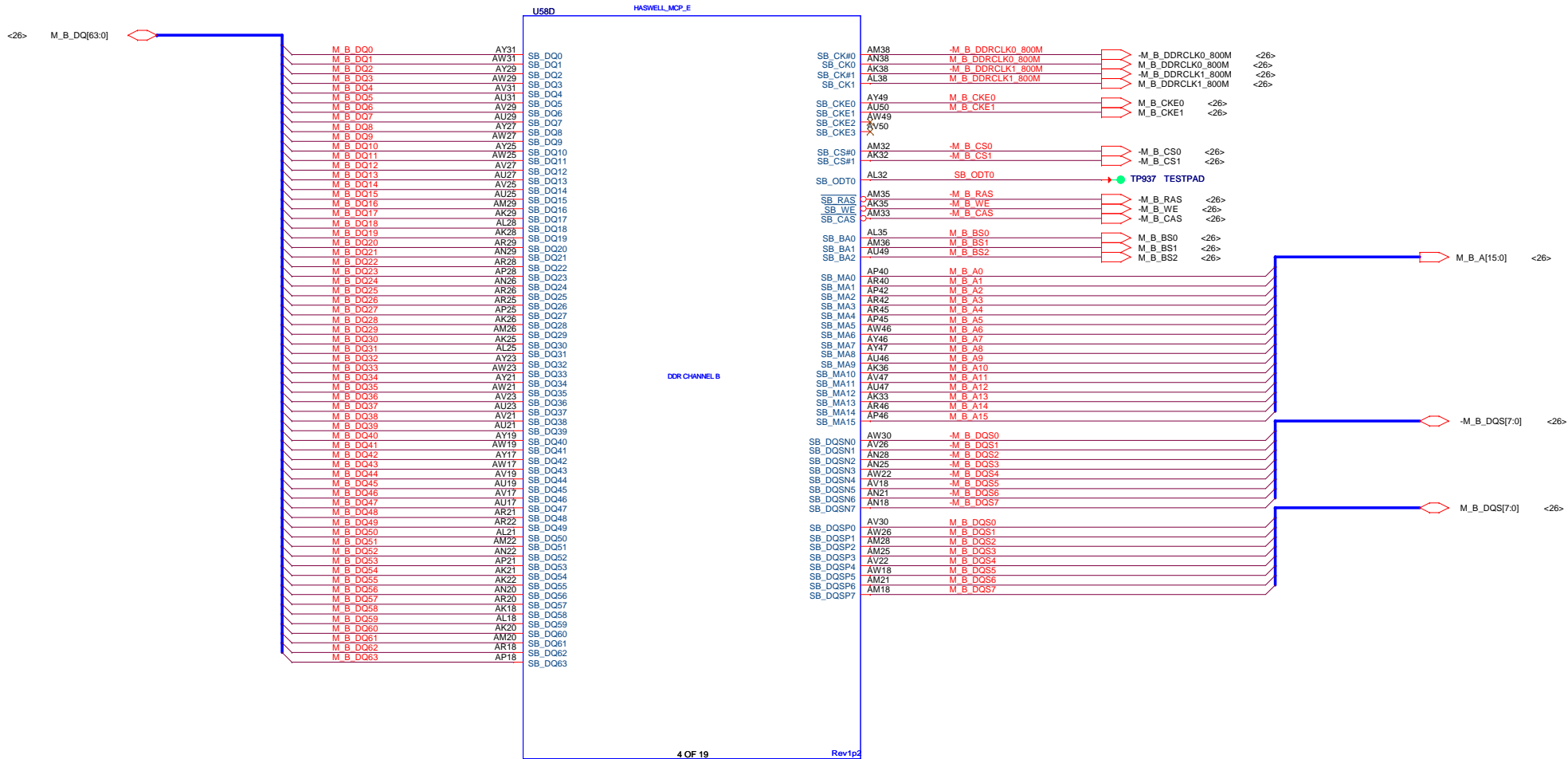
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2012/10/13	CB_1_SWG_SDV_EC013	JV_CB-1_SWG_SDV1_SCH_EC011-012_101201.pdf
2012/10/16	CB_1_SWG_SDV_EC014	JV_CB-1_SWG_SDV1_SCH_EC013_101501.pdf
2012/10/17	CB_1_SWG_SDV_EC015	JV_CB-1_SWG_SDV1_SCH_EC014_101601.pdf
2012/10/18	CB_1_SWG_SDV_EC016	JV_CB-1_SWG_SDV1_SCH_EC015_101701.pdf
2012/10/19	CB_1_SWG_SDV_EC017	JV_CB-1_SWG_SDV1_SCH_EC016_101801.pdf
2012/10/20	CB_1_SWG_SDV_EC018	JV_CB-1_SWG_SDV1_SCH_EC017_101901.pdf
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2012/10/31	CB_1_SWG_SDV_EC023	JV_CB-1_SWG_SDV1_SCH_EC022_103001.pdf
2012/10/32	CB_1_SWG_SDV_EC023-025	JV_CB-1_SWG_SDV1_SCH_EC023-024_103101.pdf
2012/11/15	CB_1_SWG_SDV_EC025-033	JV_CB-1_SWG_SDV1_SCH_EC025-032_111401.pdf
2012/11/23	CB_1_SWG_SDV_EC033-036	JV_CB-1_SWG_SDV1_SCH_EC025-035_112201.pdf
2012/11/27	CB_1_SWG_SDV_EC037	JV_CB-1_SWG_SDV1_SCH_EC036_112601.pdf
2012/12/05	CB_1_SWG_SDV_EC037-039	JV_CB-1_SWG_SDV1_SCH_EC037-038_120401.pdf

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COBAIN SWG



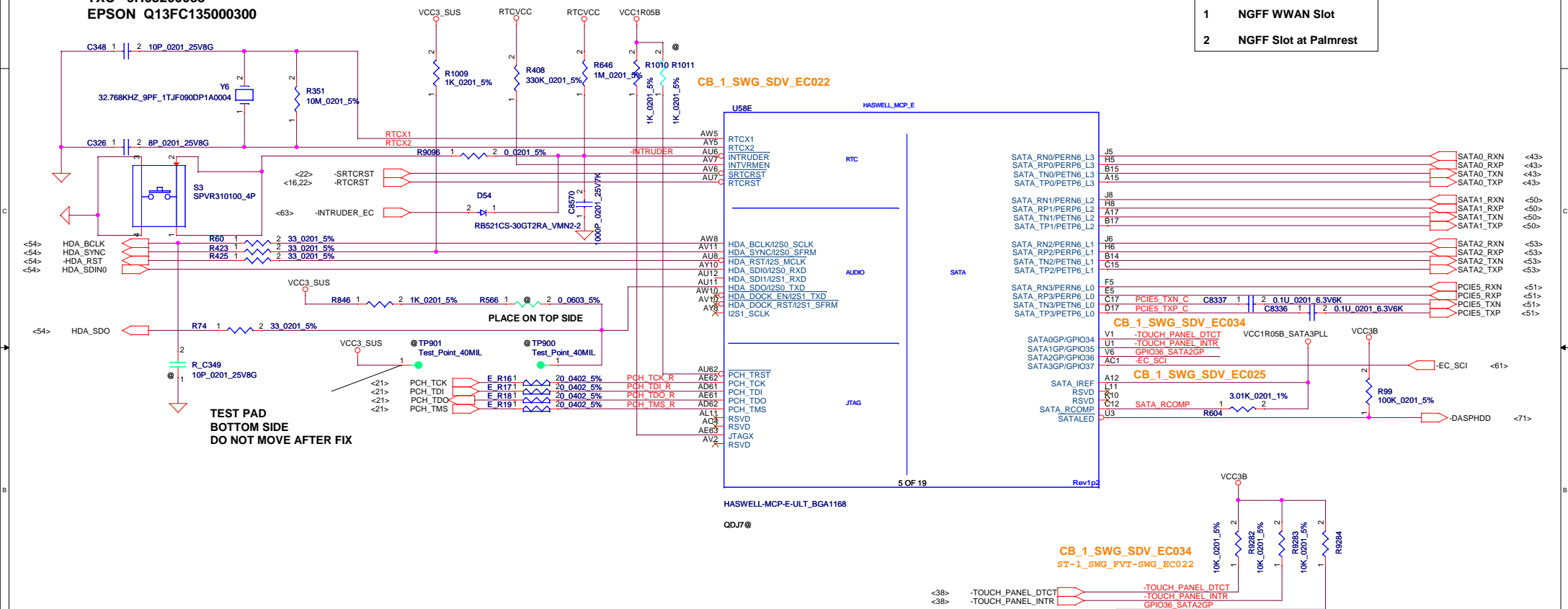



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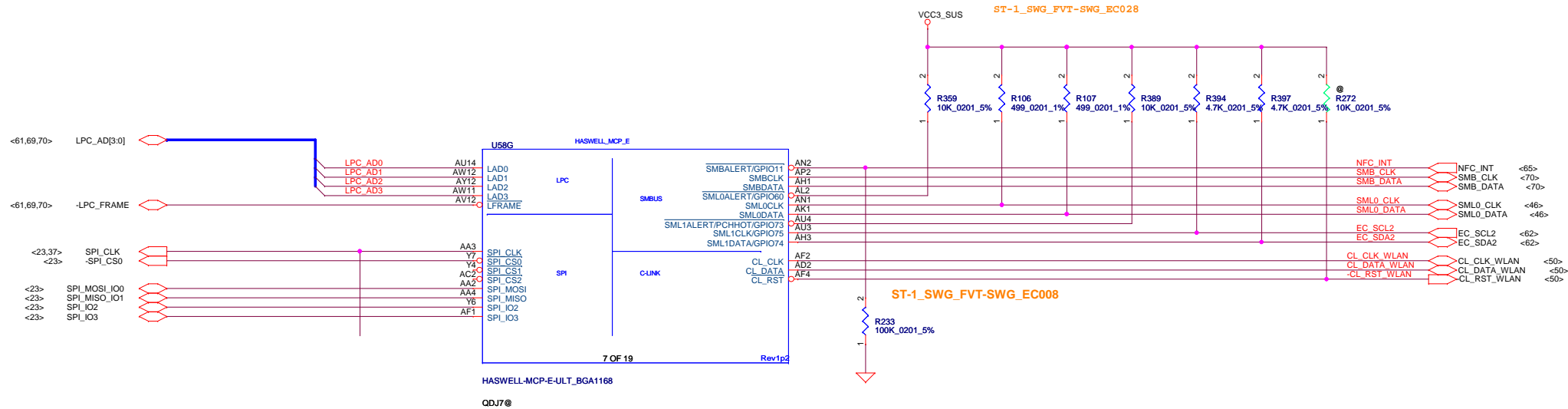
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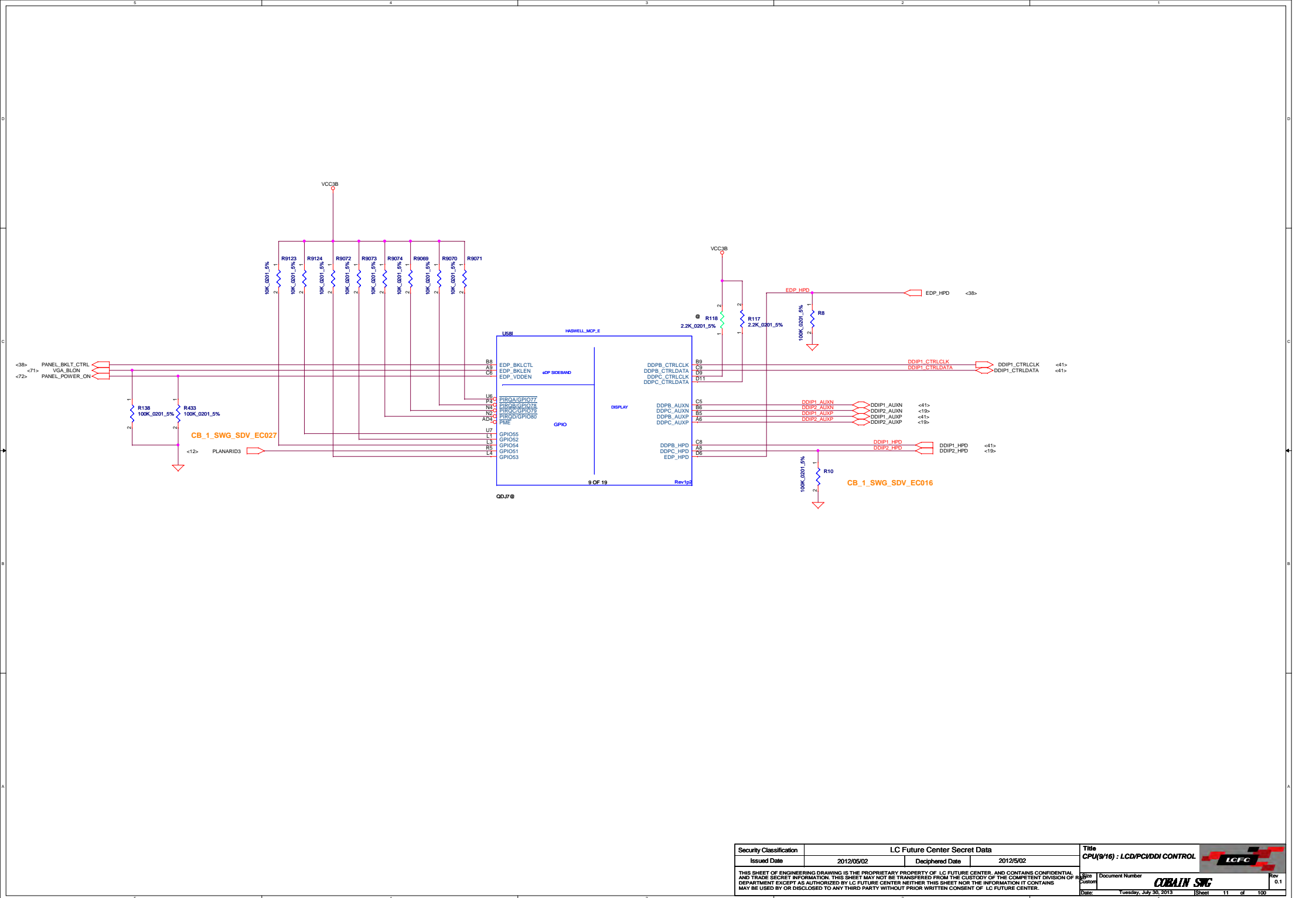
SATA Port Assignment	
0	HDD Connector
1	NGFF WWAN Slot
2	NGFF Slot at Palmrest



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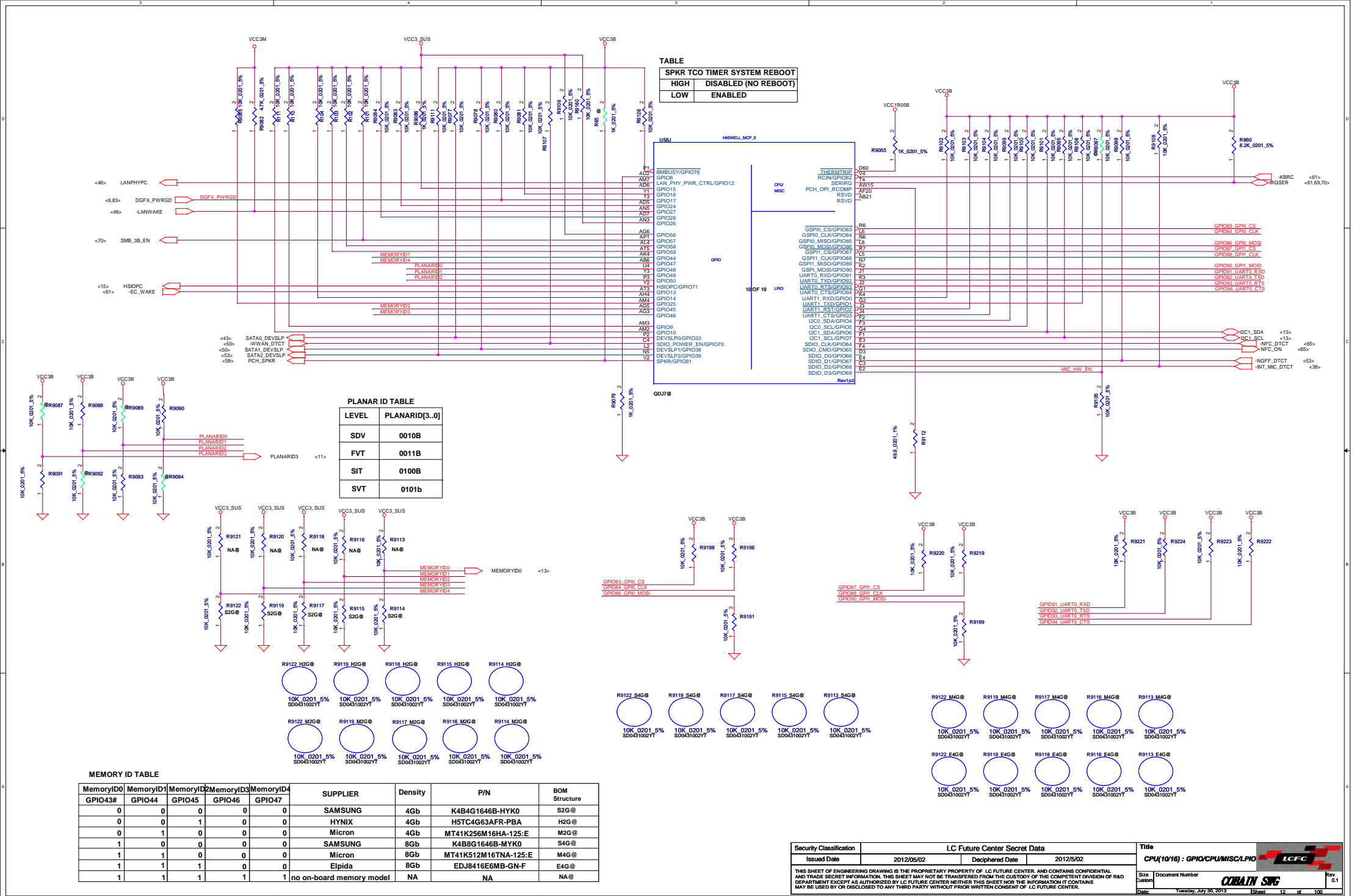


TABLE		
SPKR TCO TIMER SYSTEM REBOOT		
HIGH	DISABLED (NO REBOOT)	
LOW	ENABLED	

PLANAR ID TABLE	
LEVEL	PLANARID[3..0]
SDV	0010B
FVT	0011B
SIT	0100B
SVT	0101b

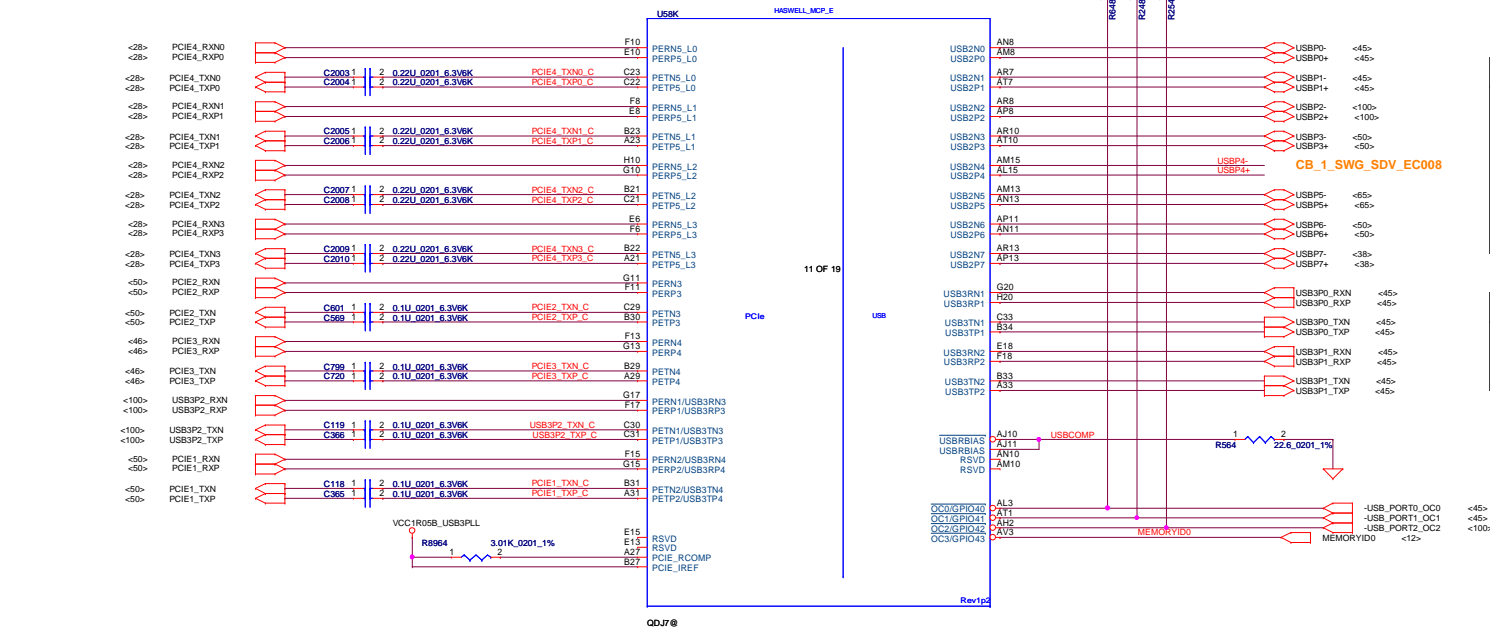
MEMORY ID TABLE					SUPPLIER	Density	P/N	BOM Structure
MemoryID0	MemoryID1	MemoryID2	MemoryID3	MemoryID4				
GPIO43#	GPIO44	GPIO45	GPIO46	GPIO47				
0	0	0	0	0	SAMSUNG	4Gb	K4B4G1646B-MYK0	S2G @
0	0	1	0	0	HYNIX	4Gb	H5TC4G63AFR-PBA	H2G @
0	1	0	0	0	Micron	4Gb	MT41K256M16HA-125:E	M2G @
1	0	0	0	0	SAMSUNG	8Gb	K4B8G1646B-MYK0	S4G @
1	1	0	0	0	Micron	8Gb	MT41K512M16TNA-125:E	M4G @
1	1	1	0	0	Elpida	8Gb	EDJ8416E6MB-GN-F	E4G @
1	1	1	1	1	no on-board memory model	NA	NA	NA @

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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	USB3 2	USB3P1
Port 3	PCIE 1/USB3 3	USB3 3	USB3P2
Port 4	PCIE 2/USB3 4	PCIE 2	PCIE1
Port 5	PCIE 3	PCIE 3	PCIE2
Port 6	PCIE 4	PCIE 4	PCIE3
Port 7	PCIE 5 L0	PCIE 5 L0	PCIE4_0
Port 8	PCIE 5 L1	PCIE 5 L1	PCIE4_1
Port 9	PCIE 5 L2	PCIE 5 L2	PCIE4_2
Port 10	PCIE 5 L3	PCIE 5 L3	PCIE4_3
Port 11	PCIE 6 L0	PCIE 6 L0	PCIE5
Port 12	SATA 2/PCIE 6 L1	SATA 2	SATA2
Port 13	SATA 1/PCIE 6 L2	SATA 1	SATA1
Port 14	SATA 0/PCIE 6 L3	SATA 0	SATA0

Update PCIe Port Assignment.

PCIe Port Assignment	
1	NGFF WLAN Slot Port1
2	NGFF WLAN Slot Port0
3	GbE PHY
4 (x4)	Discrete GPU
5 (x1)	Media Card Controller

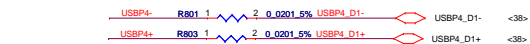


CB_1_SWG_SDV_EC009

USB Port Assignment	
0	USB 3.0 System Port (AOU)
1	USB 3.0 System Port (Debug)
2	USB3.0 System Port (3rd USB)
3	NGFF WWAN Slot
4	Smart Card Slot/Touch Panel
5	Fingerprint Reader
6	NGFF WLAN Slot
7	USB Camera

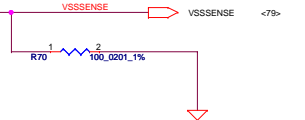
USB 3.0 Port Assignment	
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1	USB 3.0 System Port (Debug)
2	USB3.0 System Port (3rd USB)

CB_1_SWG_SDV_EC029
CB_1_SWG_SDV_EC008
CB_1_SWG_SDV_EC028

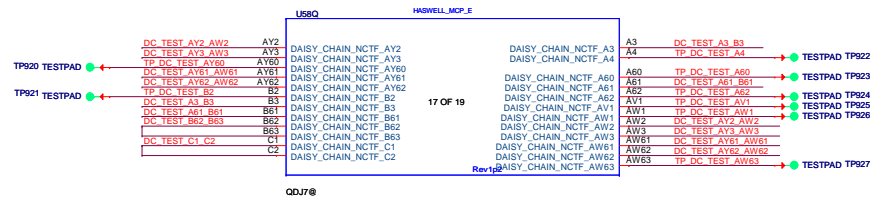


Device Selection	
0	Smart Card Slot
1	Touch Panel

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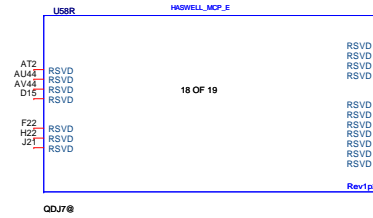
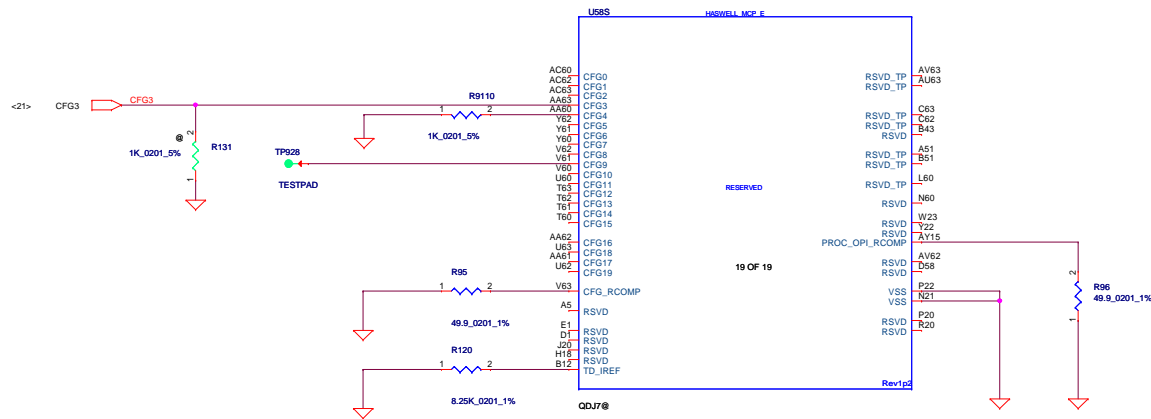
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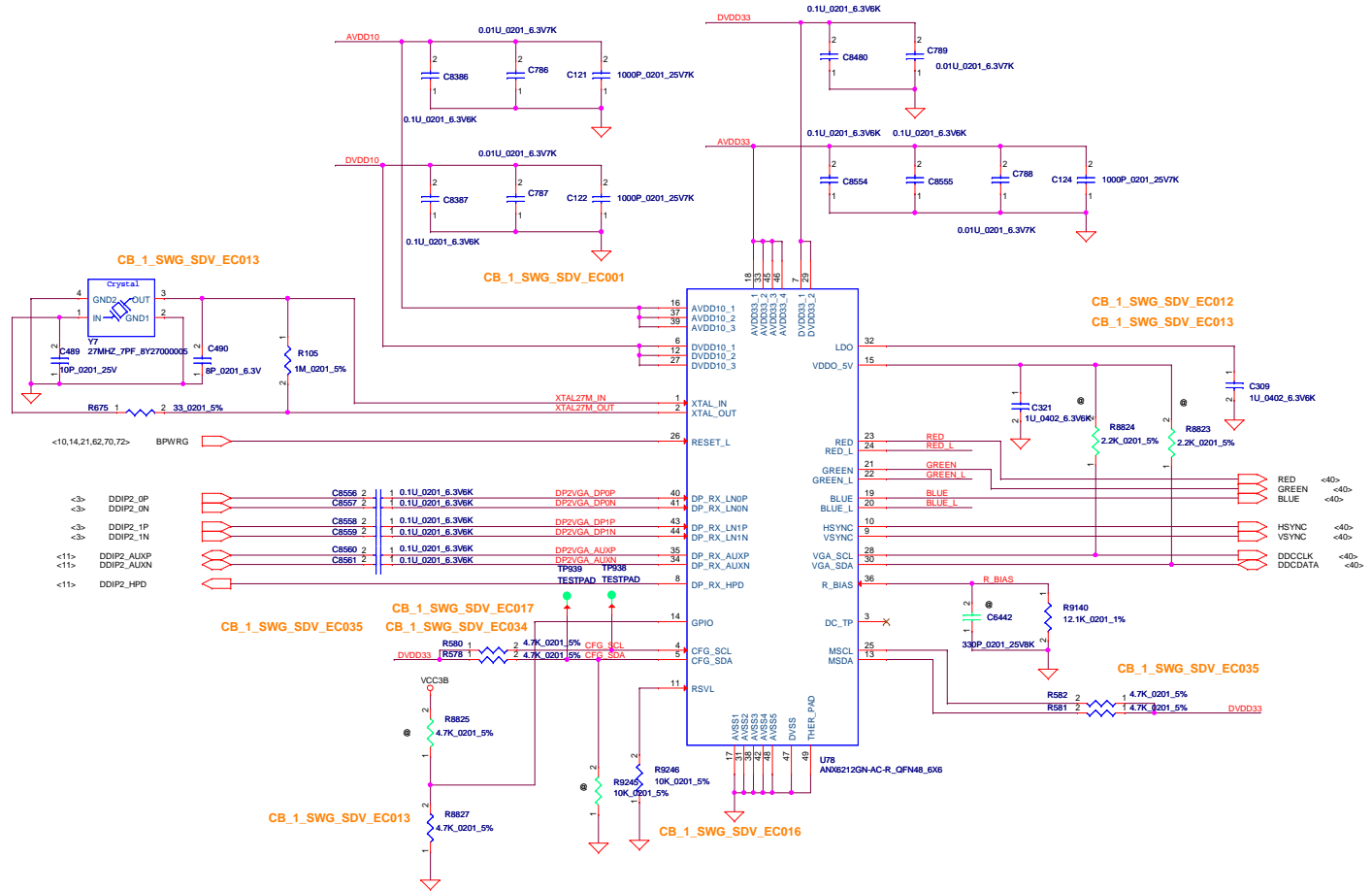
Table

CFG4: Display Port Presence
1: Disabled
0: Enabled

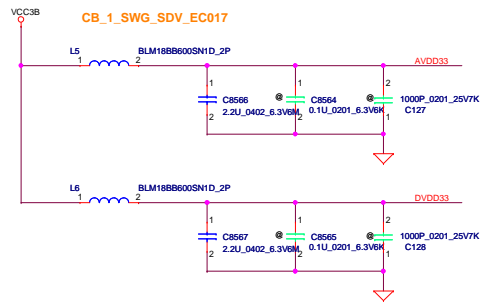


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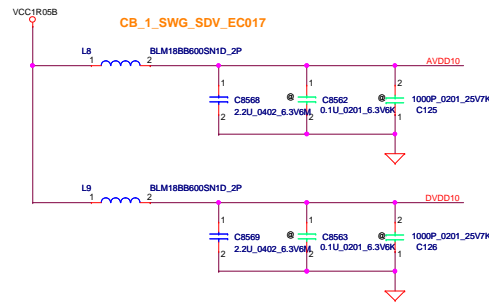
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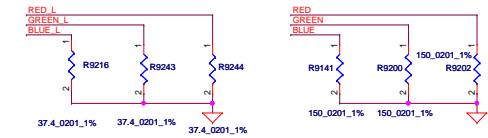
Max 130mA

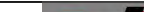



Max 130mA




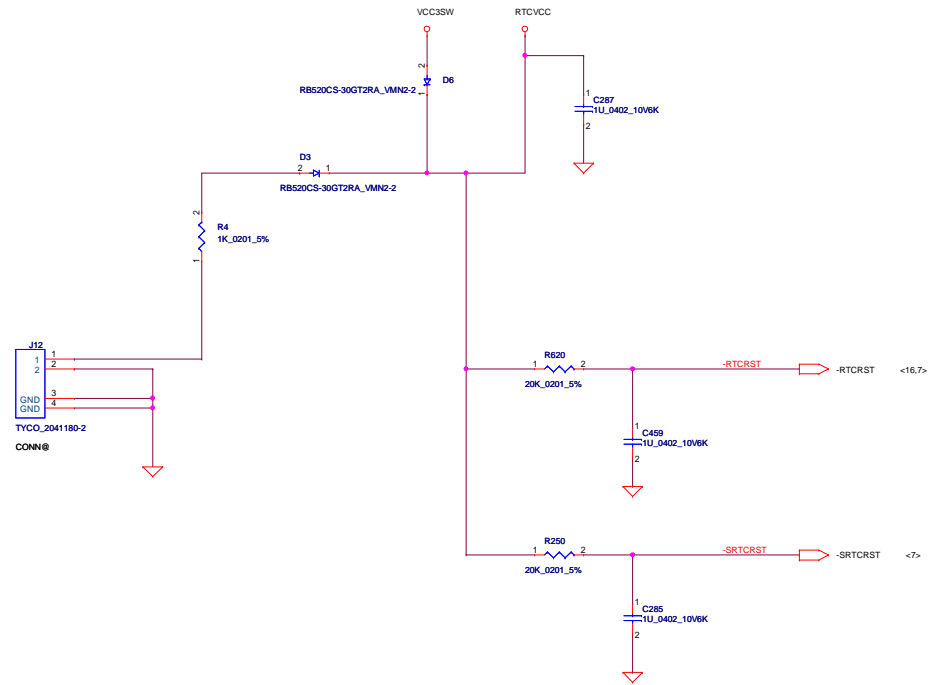
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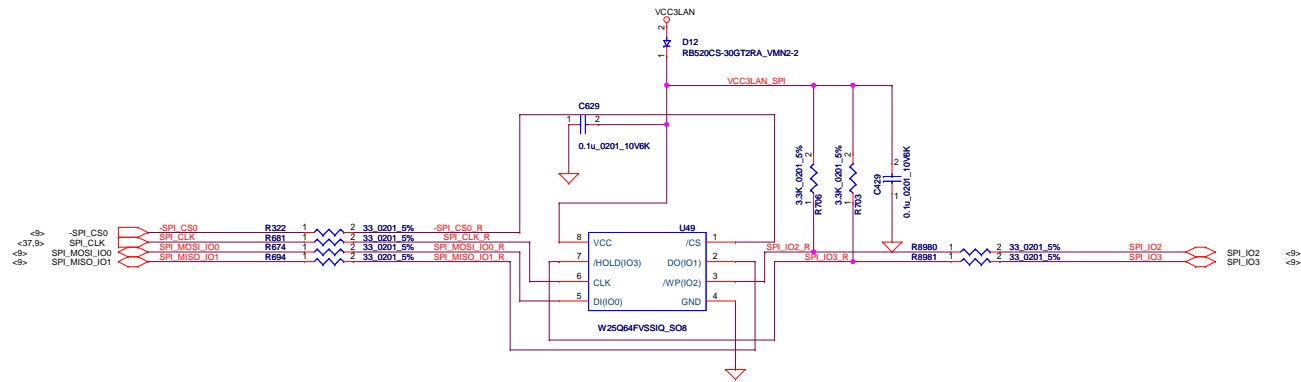
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Issued Date		2012/07/01		Deciphered Date		2014/07/01				RTC BATTERY	
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TABLE

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		

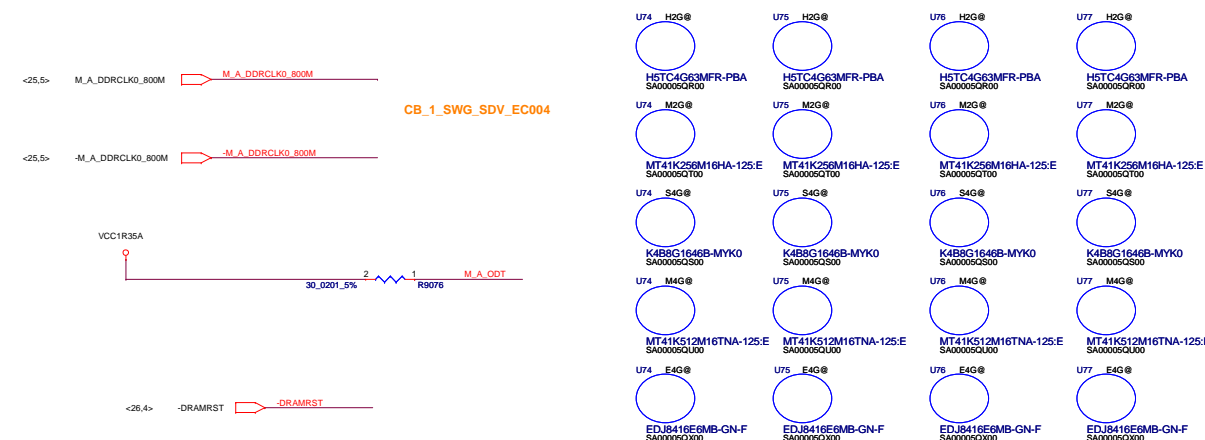
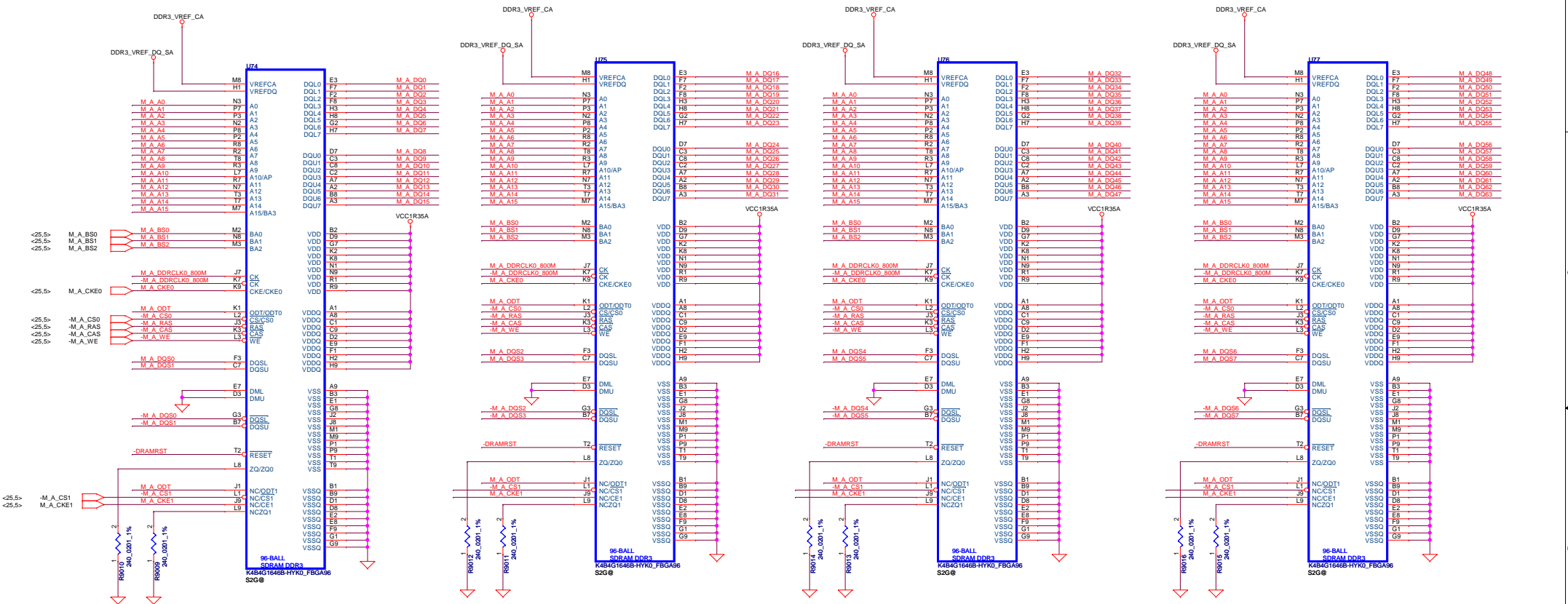
U49 SPI ROM

vPro Model (16MB)		Non-vPro Model (8MB)	
WINBOND	W25Q128FVSIQ	WINBOND	W25Q64FVSSIQ
MACRONIX	MX25L12875FM2I-10G	MACRONIX	MX25L6475EM2I-10G
MICRON	N25Q128A13ESEC0F	MICRON	N25Q064A13ESEC0F

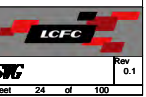
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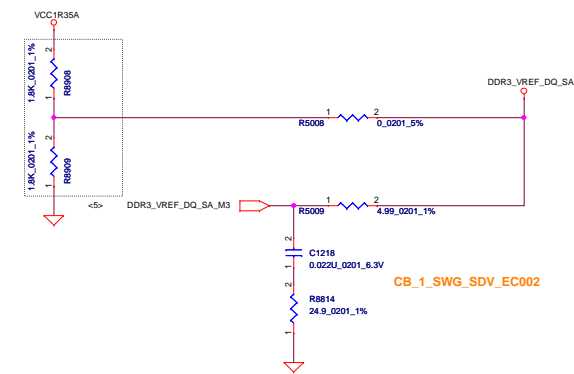
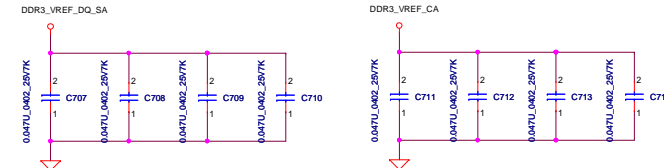
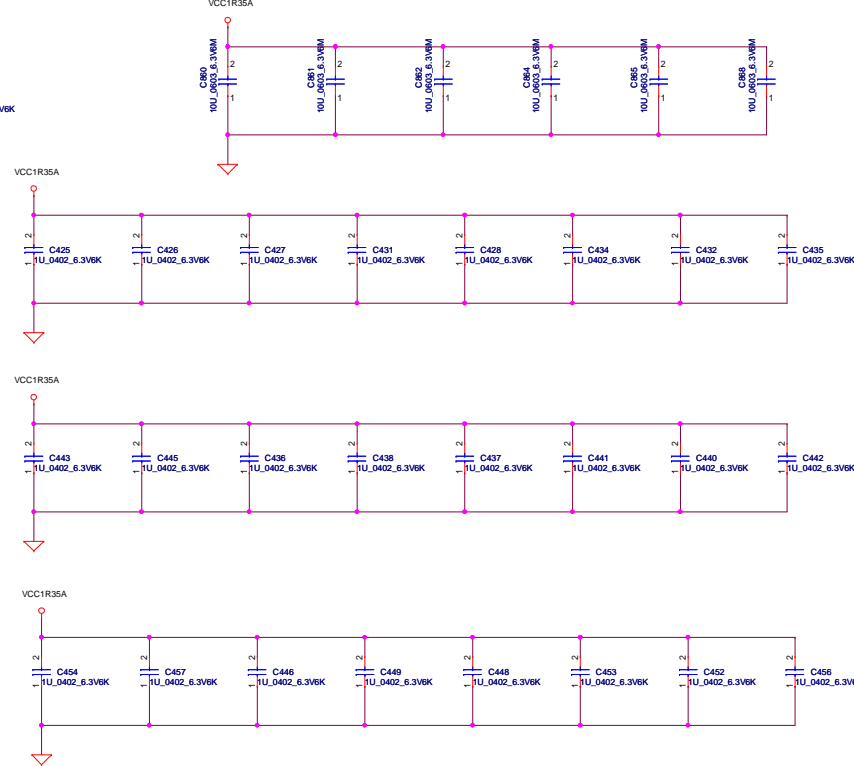
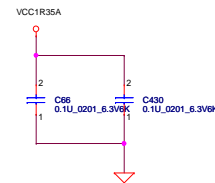
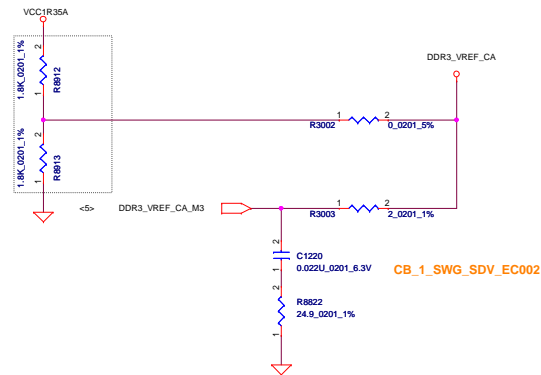
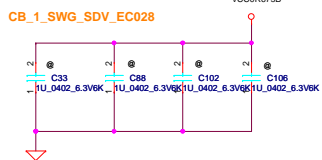
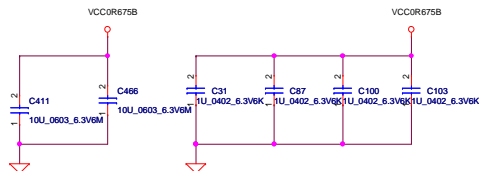
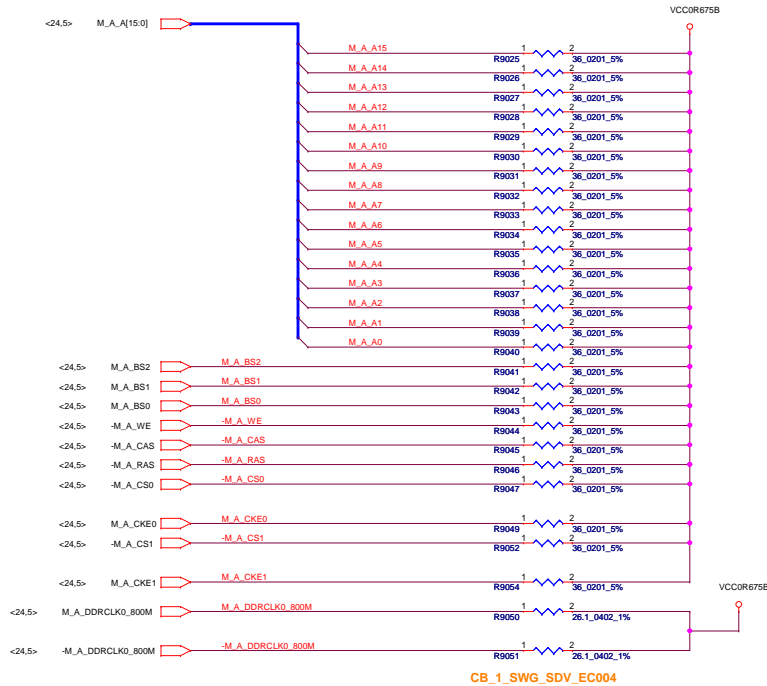
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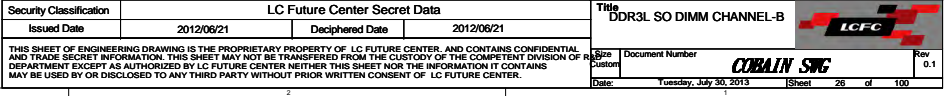
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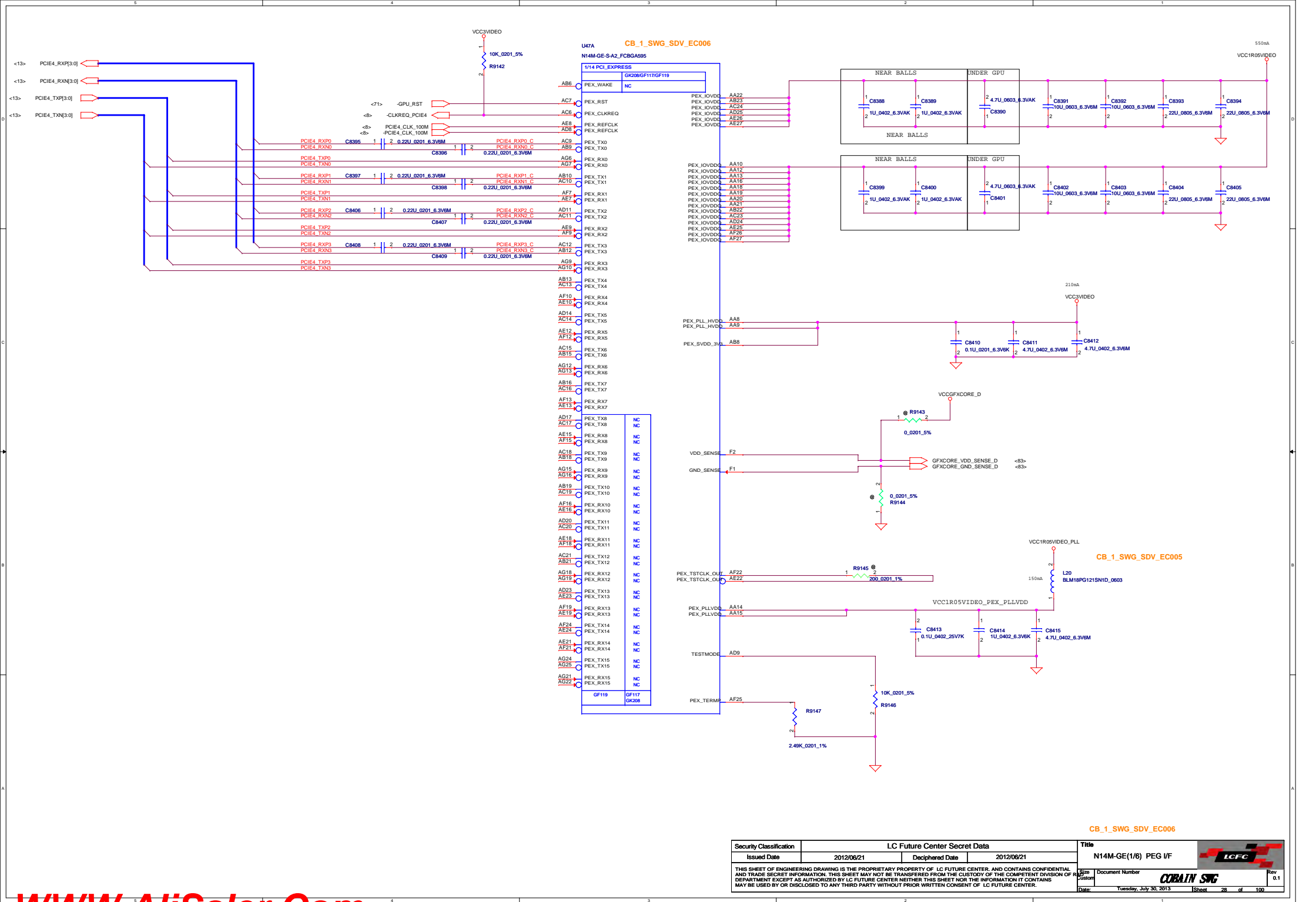
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Issued Date				Deciphered Date		2012/06/21	
2012/06/21				2012/06/21		DDR3L BASE MEMORY CH-A (1/2)	
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				Date		Tuesday, July 31, 2013	
				Sheet		24 of 100	




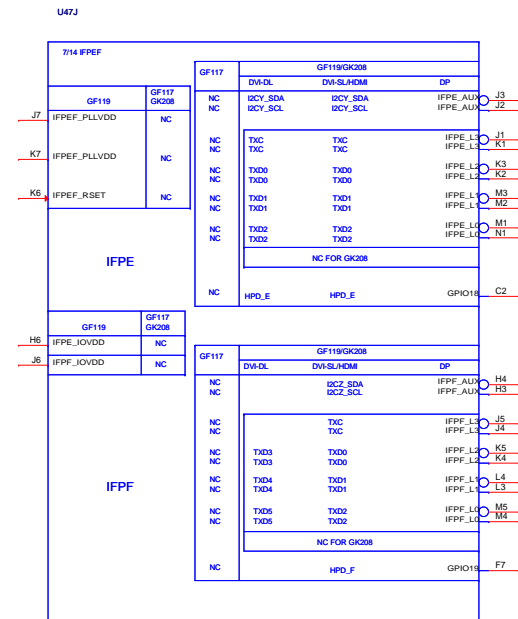
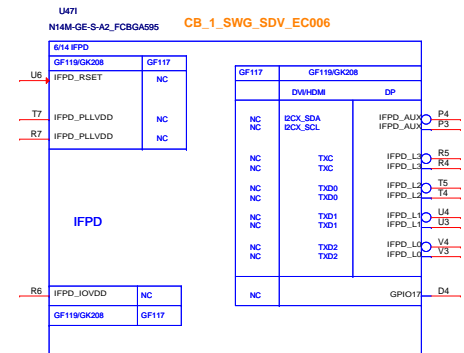
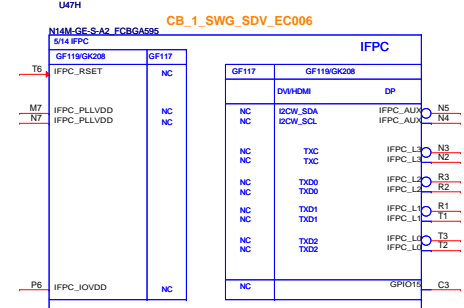
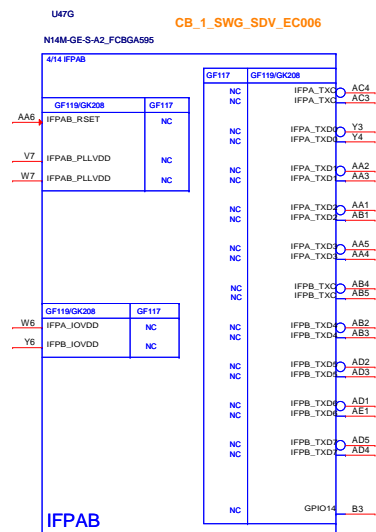




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Date:	Tuesday, July 30, 2013		Sheet	28 of 100	



CB_1_SWG_SDV_EC006

N14M-GE-S-A2_FCBGA595

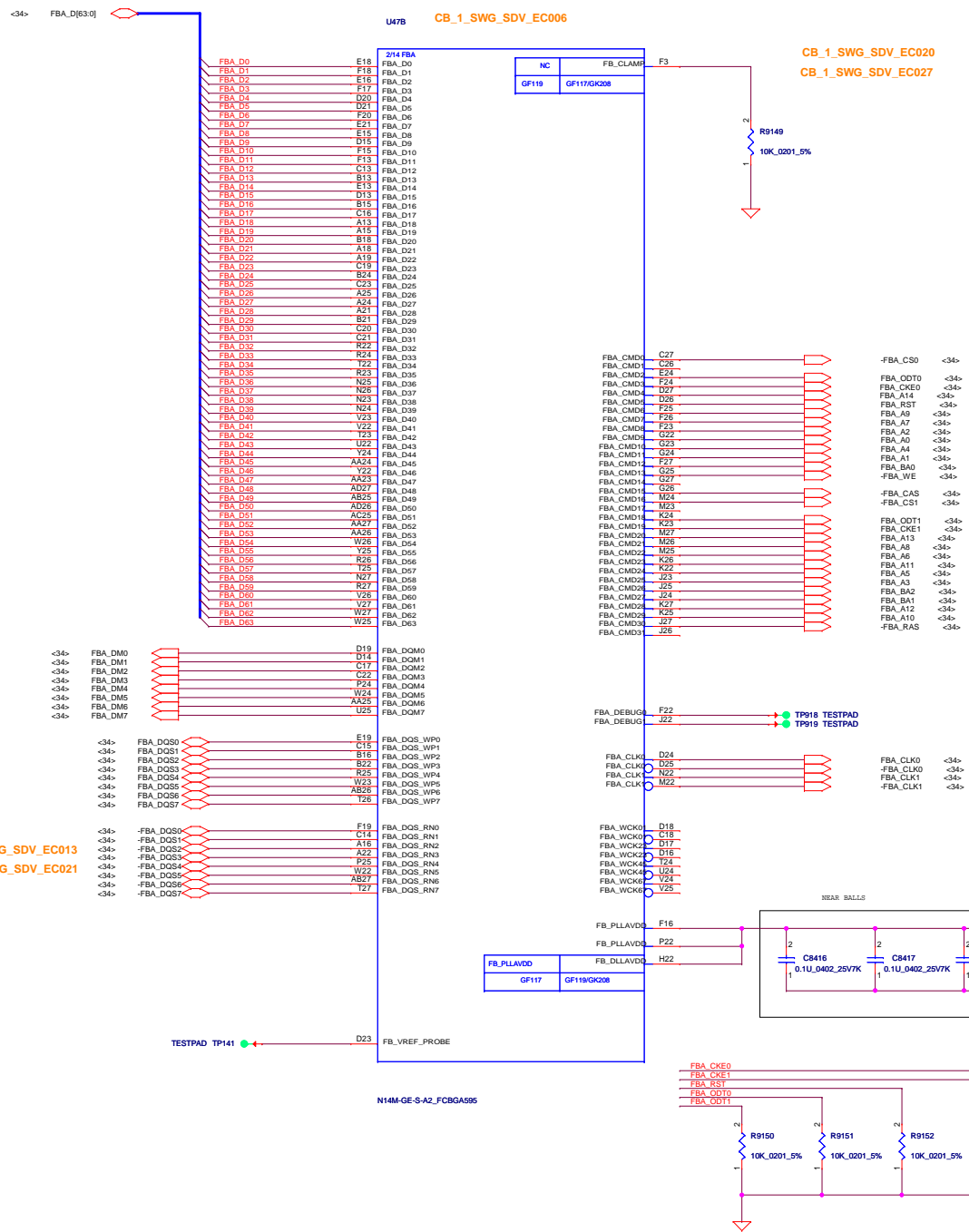
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Security Classification	LC Future Center Secret Data		Title	
Issued Date	2012/05/02	Deciphered Date	2012/05/02	N14M-GE(2/6) DIGITAL OUT IF
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Date: Tuesday, July 30, 2013				Sheet 29 of 100



Rev 0.1

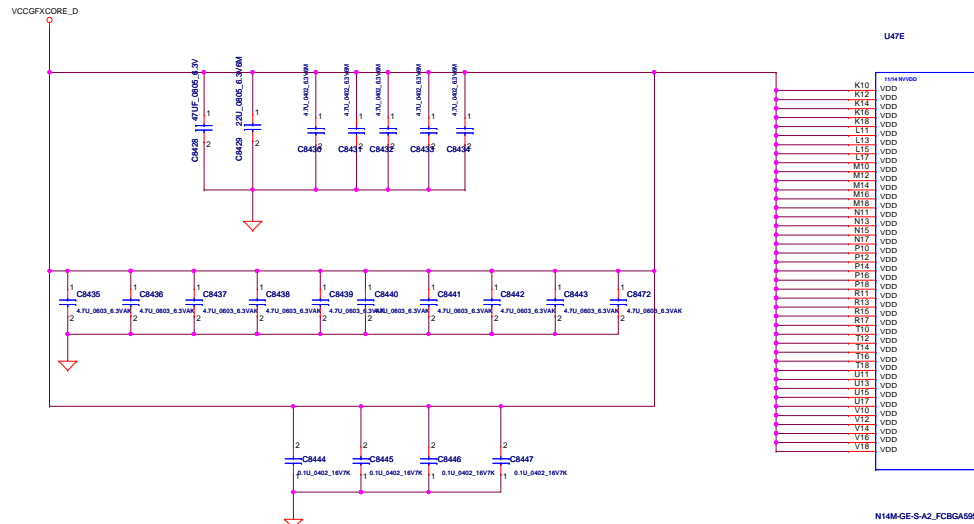
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LCFC

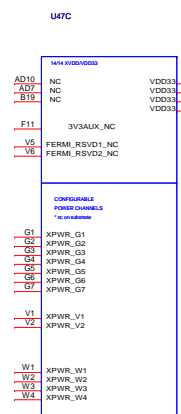




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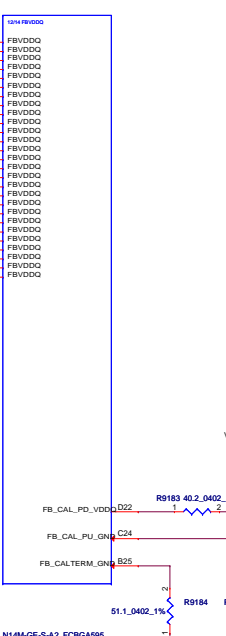


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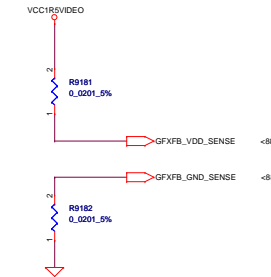


N14M-GE-S-A2_FCBGA595

U47D CB_1_SWG_SDV_EC006



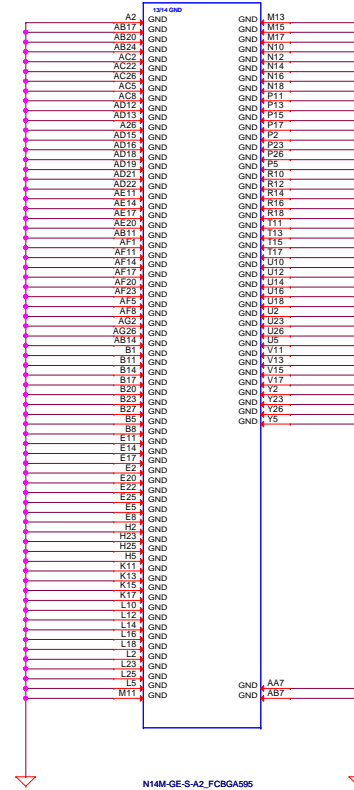
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CB_1_SWG_SDV_EC006

Security Classification		LC Future Center Secret Data		Title	
Issued Date		2012/06/21		N14M-GE(5/6) POWER	
Deciphered Date		2012/06/21		Size	
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U47F CB_1_SWG_SDV_EC006



CB_1_SWG_SDV_EC006



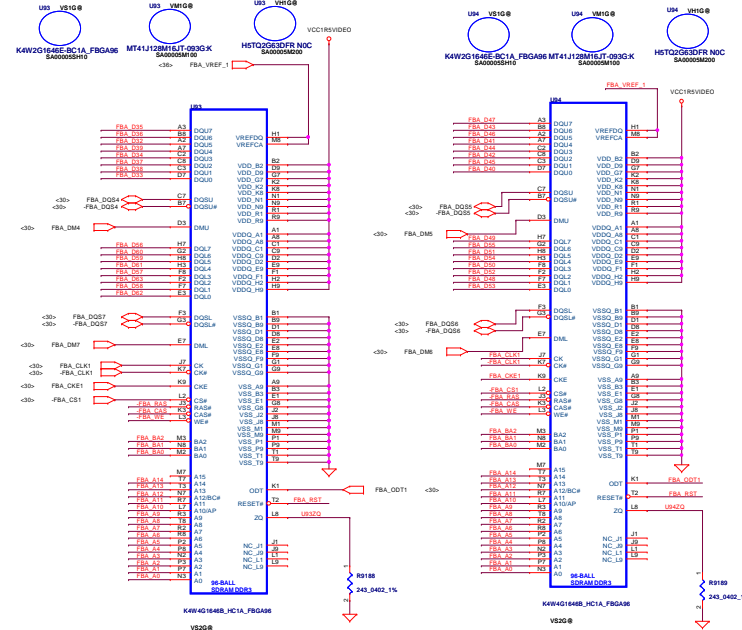
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Customer		Date		Tuesday, July 30, 2013		Sheet			
						33 of 100		0.1	

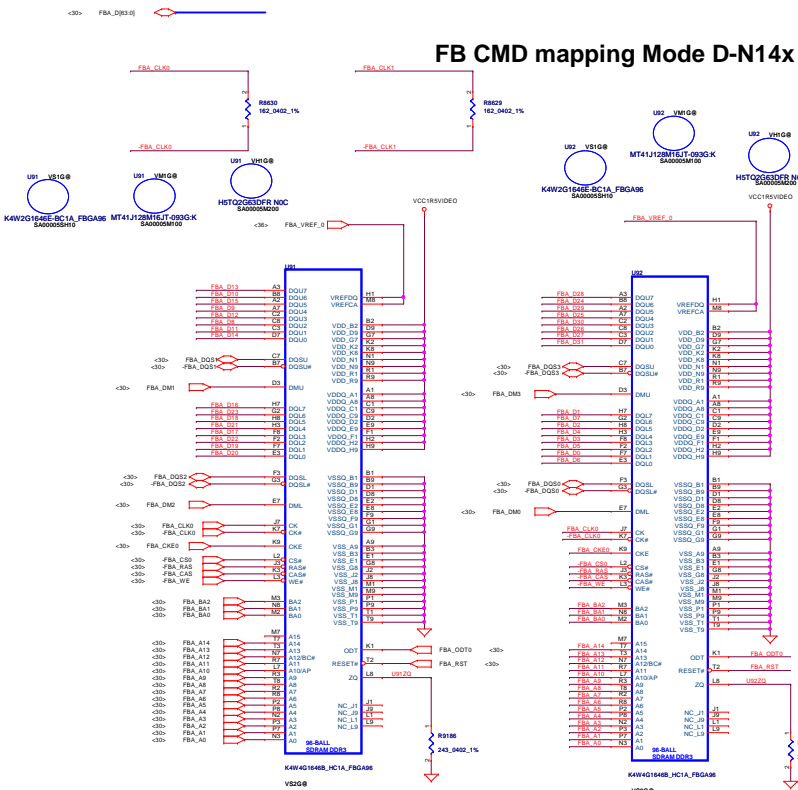
TABLE
DDR3 VIDEO MEMORY

	Micron 2GBITS (128Mx16)	HYNIX 2GBITS(128Mx16)	SAMSUNG 2GBITS(128Mx16)	SAMSUNG 4GBITS(256Mx16)	HYNIX 4GBITS(256Mx16)
U91 U92 U93 U94	MT41J128M16JT-093G-K	H5TQ2G63DFR N0C	K4W201646E-BC1A	K4W4G1646B-HC1A	TBD
BOM Structure	VM1G@	VH1G@	VS1G@	VS2G@	

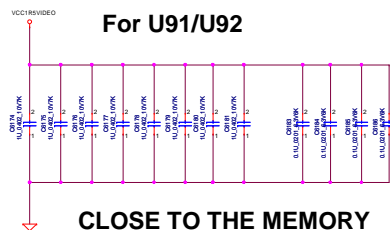
Notification
Sting-1 accepts 1GB support with DDR3. But Sting-1 has potential of 2GB support.
So we should check up 2GB(K4W4G1646B-HC1A) placement. K4W4G1646B-HC1A has largest X axis length (10mm) in VRAM.
MT41J128M16JT-093G-K has largest Y axis length (14mm). So estimation package size is most largest case (10mm * 14mm).



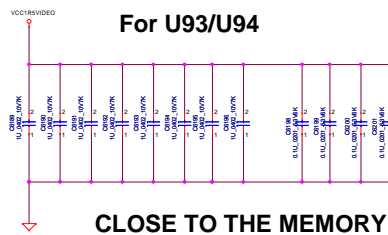
FB CMD mapping Mode D-N14x



For U91/U92



For U93/U94



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Rev	0.1	Docu	0.1
Date	2012/06/21	Drawn	34

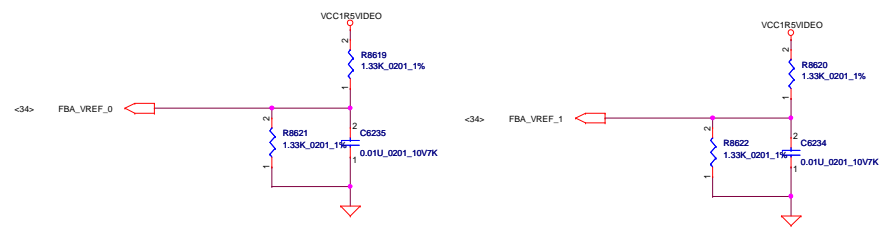



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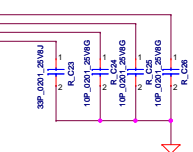
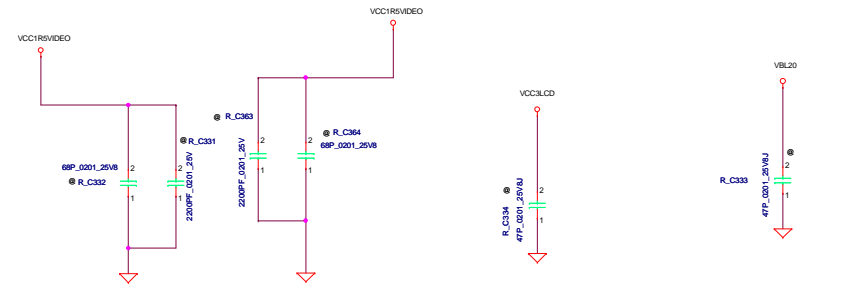
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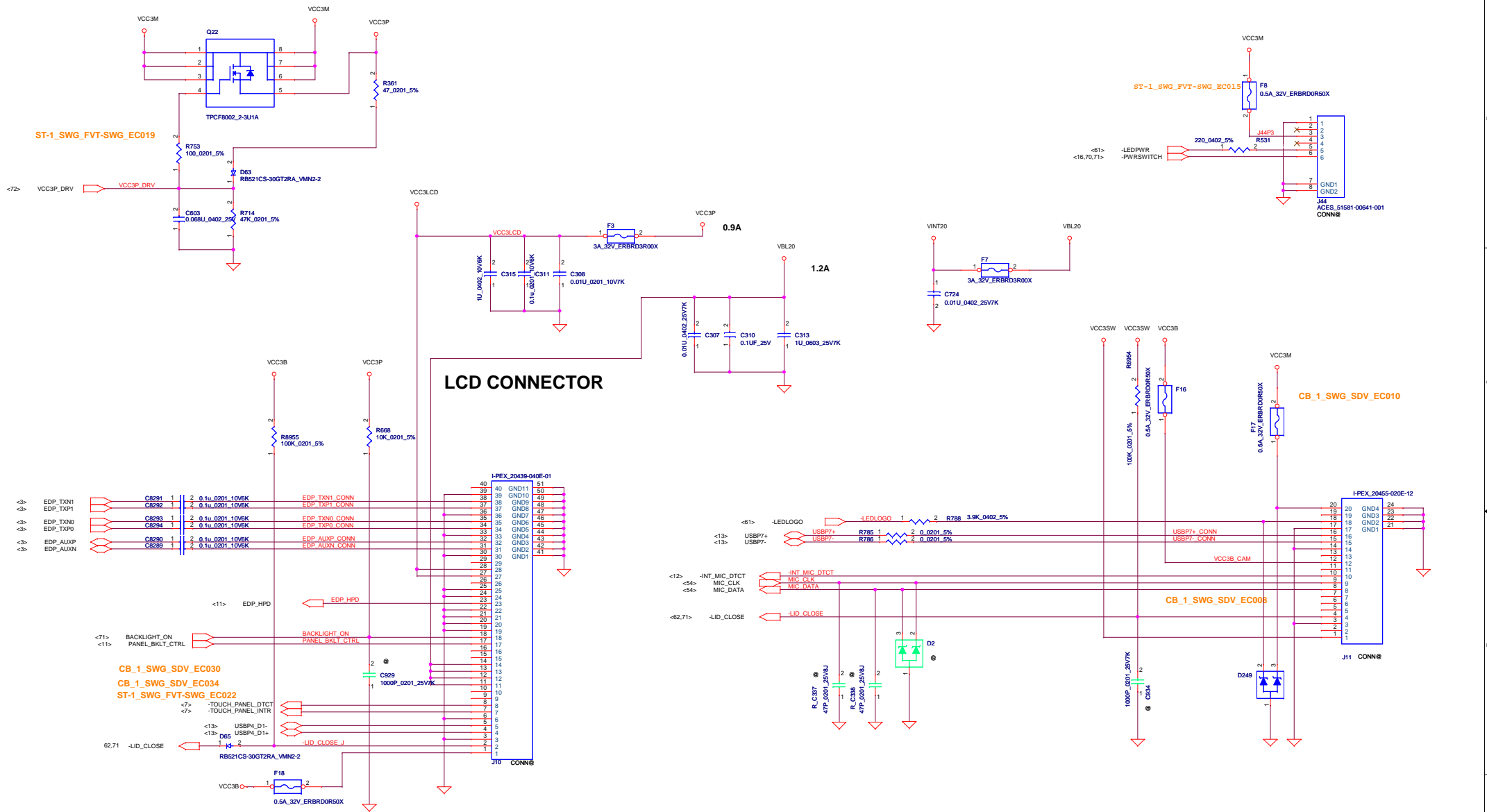
COBAIN SWG




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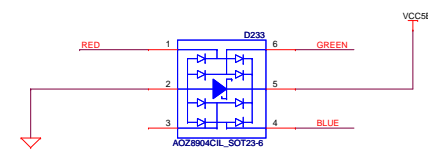


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Date:				Tuesday, July 30, 2013		Sheet 37 of 100	

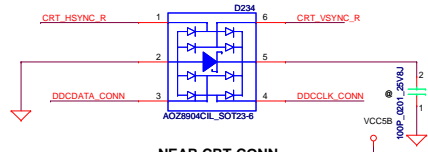


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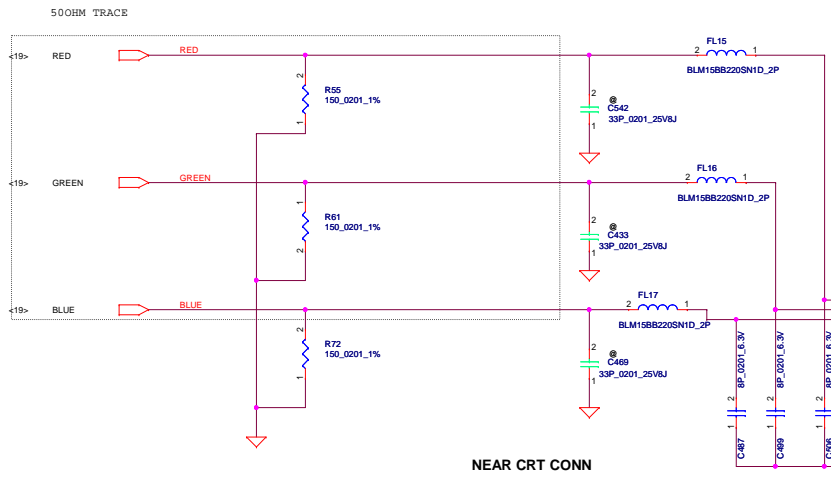
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NEAR CRT CONN



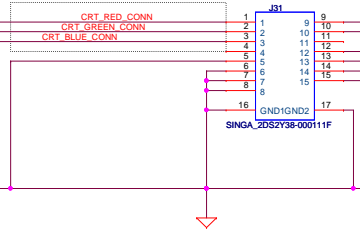
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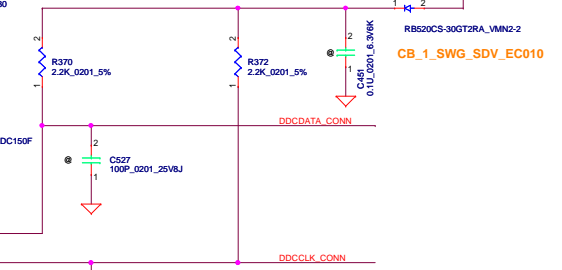
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CB_1_SWG_SDV_EC017

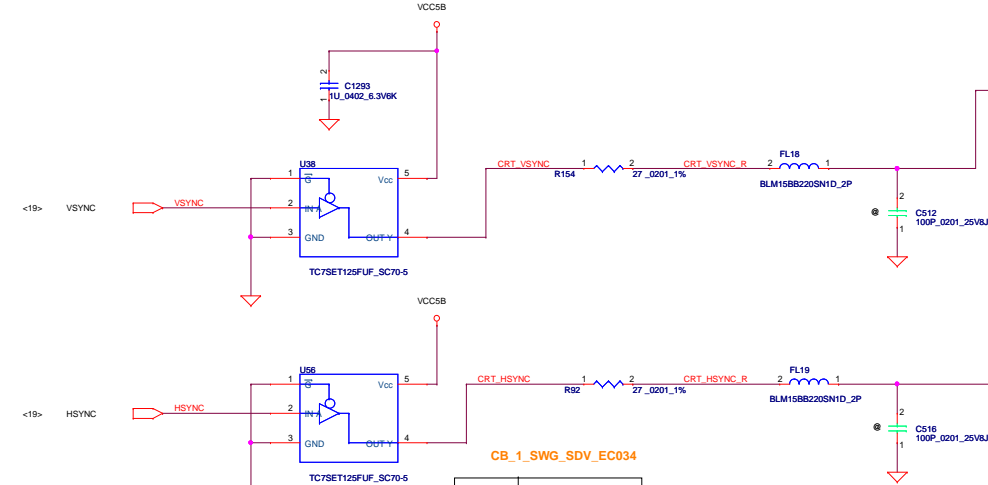
50OHM TRACE



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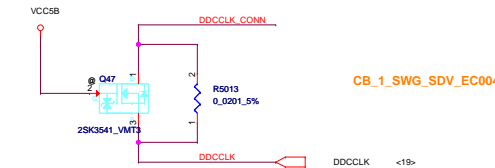


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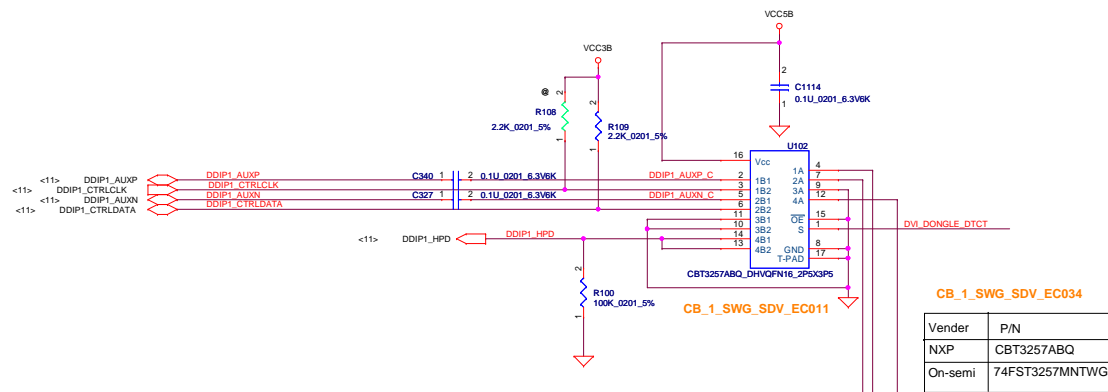


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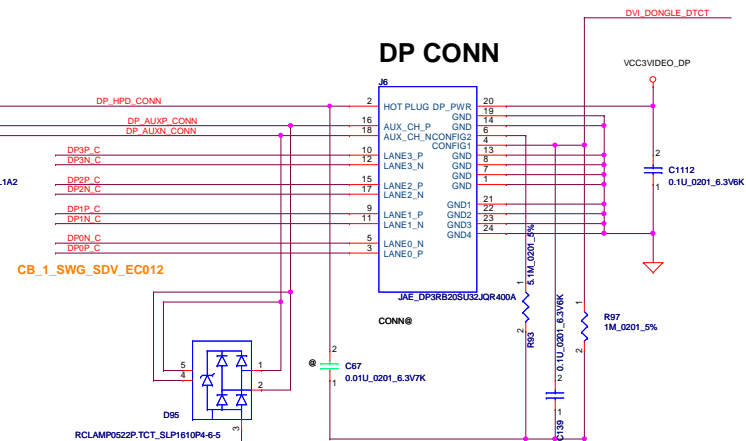
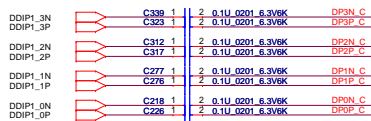
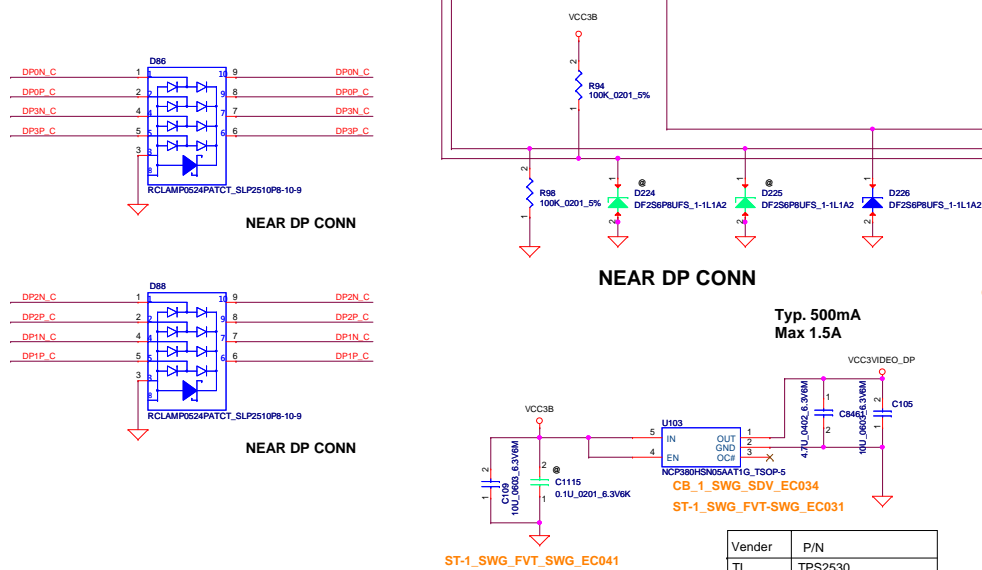
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TOSHIBA	TC7SET125FU
NXP	74AHCT1G125GW



CB_1_SWG_SDV_EC004



Vender	P/N
NXP	CBT3257ABQ
On-semi	74FST3257MNTWG



Vender	P/N
TI	TPS2530
On-semi	NCP380HSN05AAT1G

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Title	DISPLAY PORT CONNECTOR
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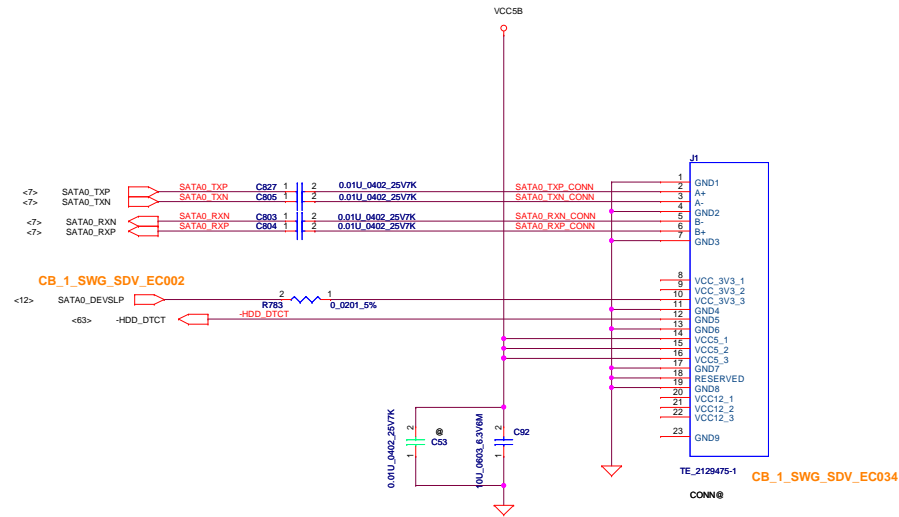
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				0.1	COBAIN SWG
				Date	Tuesday, July 30, 2013
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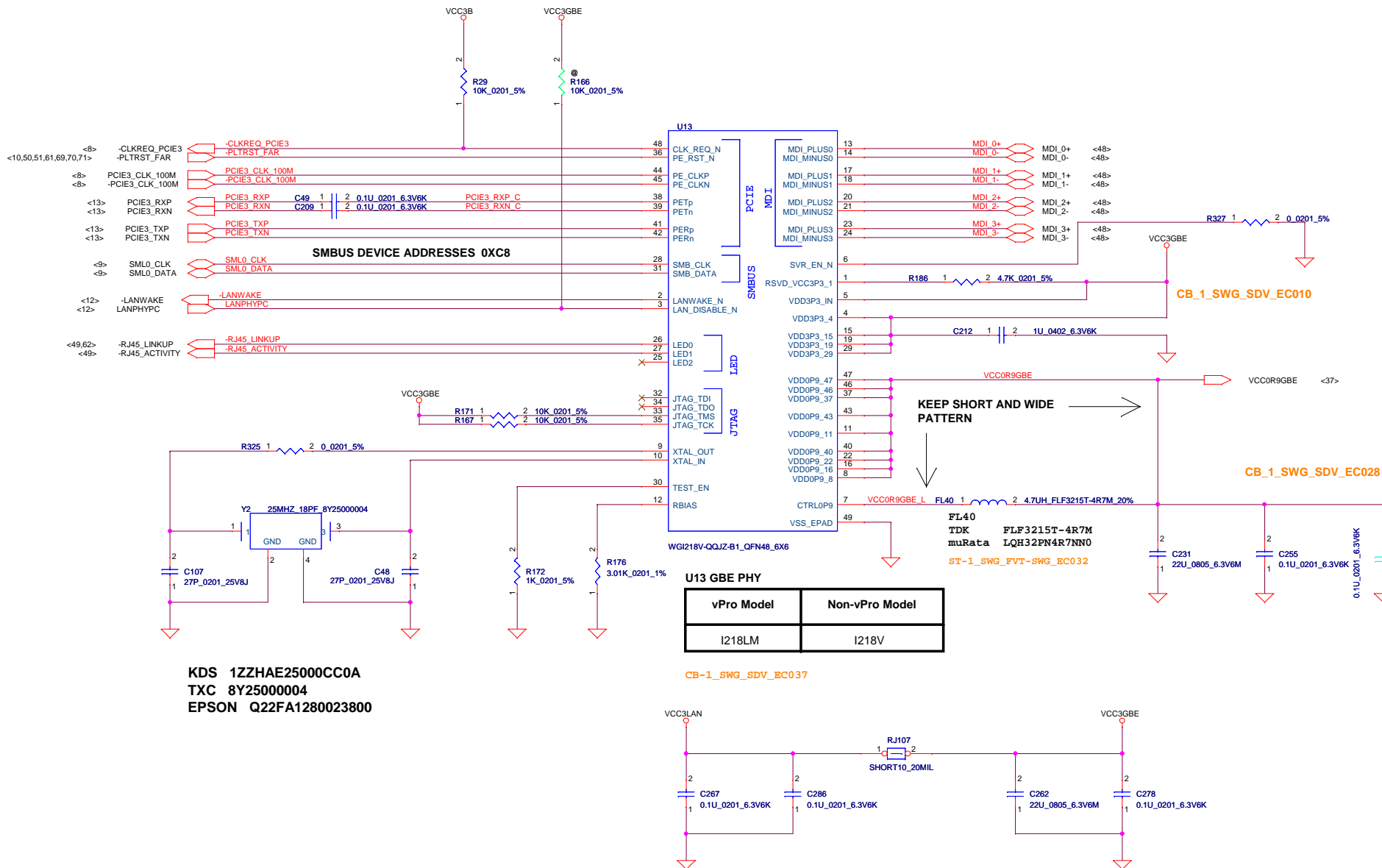




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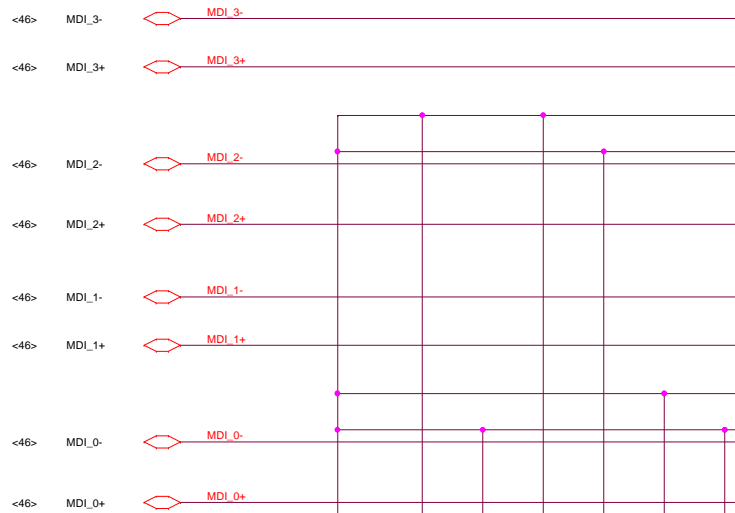




KDS 1ZZHAE2500CC0A
TXC 8Y25000004
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				Date:	Tuesday, July 30, 2013	Sheet	47 of 100



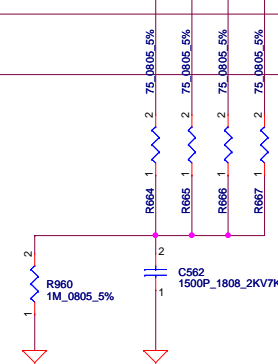
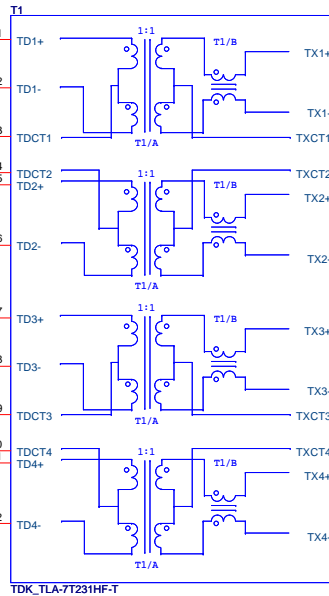
THE WIDTH OF THESE TRACE SHOULD BE WIDER THAN 35MIL TO PREVENT VOLTAGE DROP.

C303 SHOULD BE PLACED AS CLOSE TO MAGNETICS AS POSSIBLE.

ESD REASON

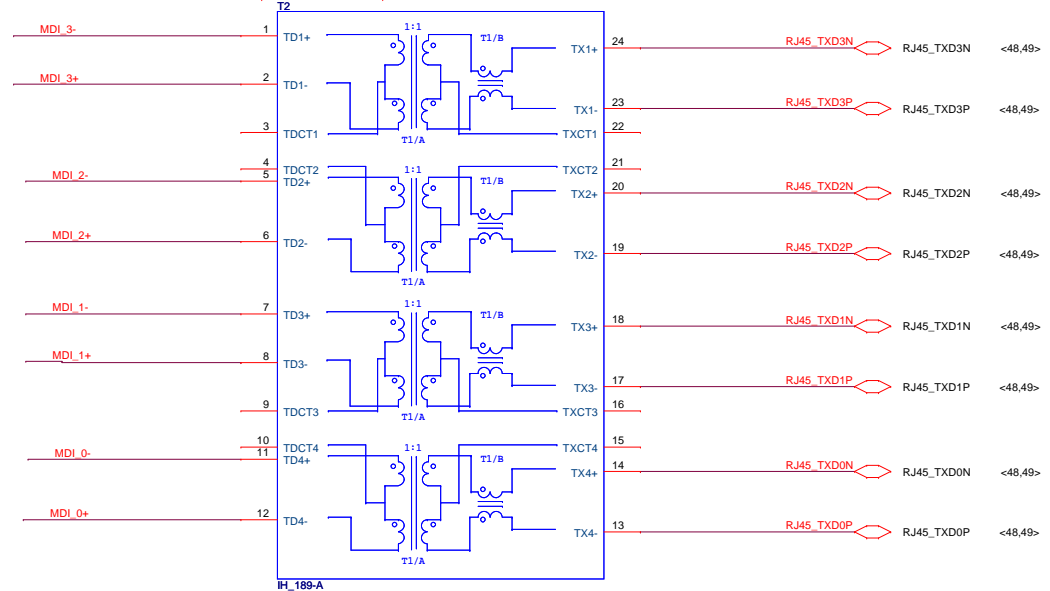
Vendor	P/N
TDK	TLA-7T231HF-T
Timag	IH-115-F
Bothand	NA69LF



ST-1_SWG_FVT-SWG_EC017
ST-1_SWG_FVT-SWG_EC033

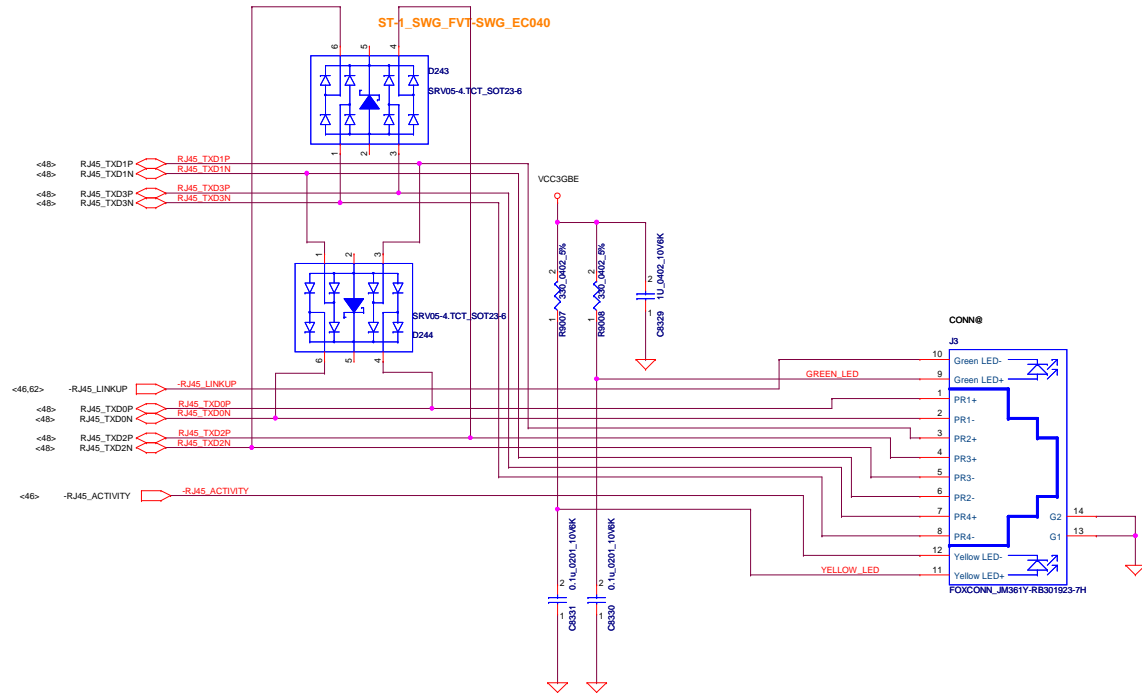



PATTERN MUST BE SHORT AND WIDE.

HIGH VOLTAGE 1500PF CAP IS OPTIONAL



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				Custom		Tuesday, July 30, 2013		0.1
						Sheet 48 of 100		



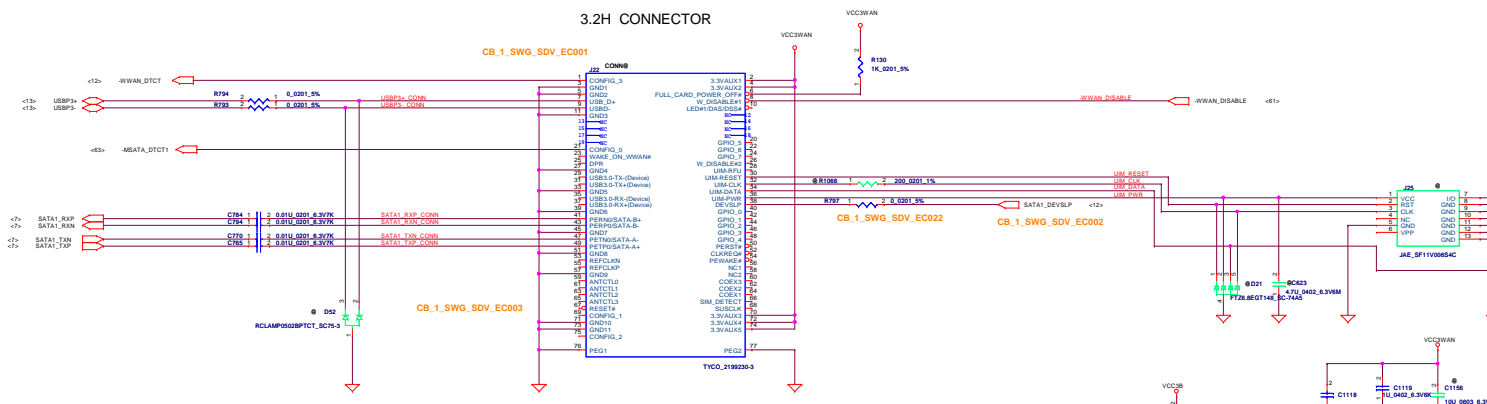
Security Classification		LC Future Center Secret Data		Title		
Issued Date	2012/05/02	Deciphered Date	2012/05/02	RJ45 CONNECTOR		
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Document Number		COBAIN SWG		Size	49 of 100	
Date		Tuesday, July 31, 2012		Rev		0.1



COBAIN SWG

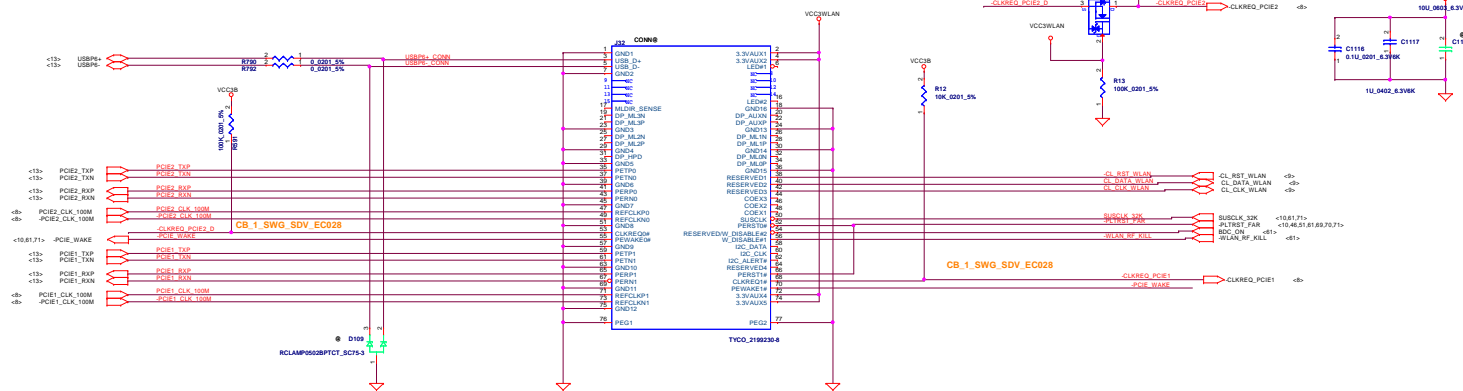
TYPE-B NGFF CCARD FOR WWAN/SSD

3.2H CONNECTOR



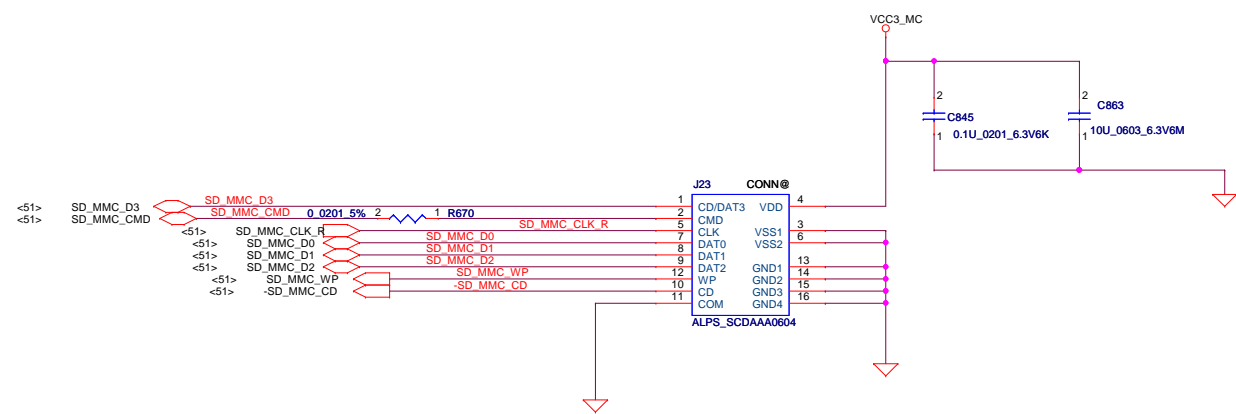
TYPE-A NGFF CCARD FOR WLAN

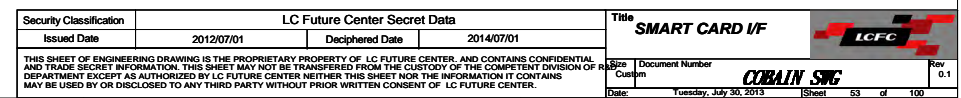
3.2H CONNECTOR



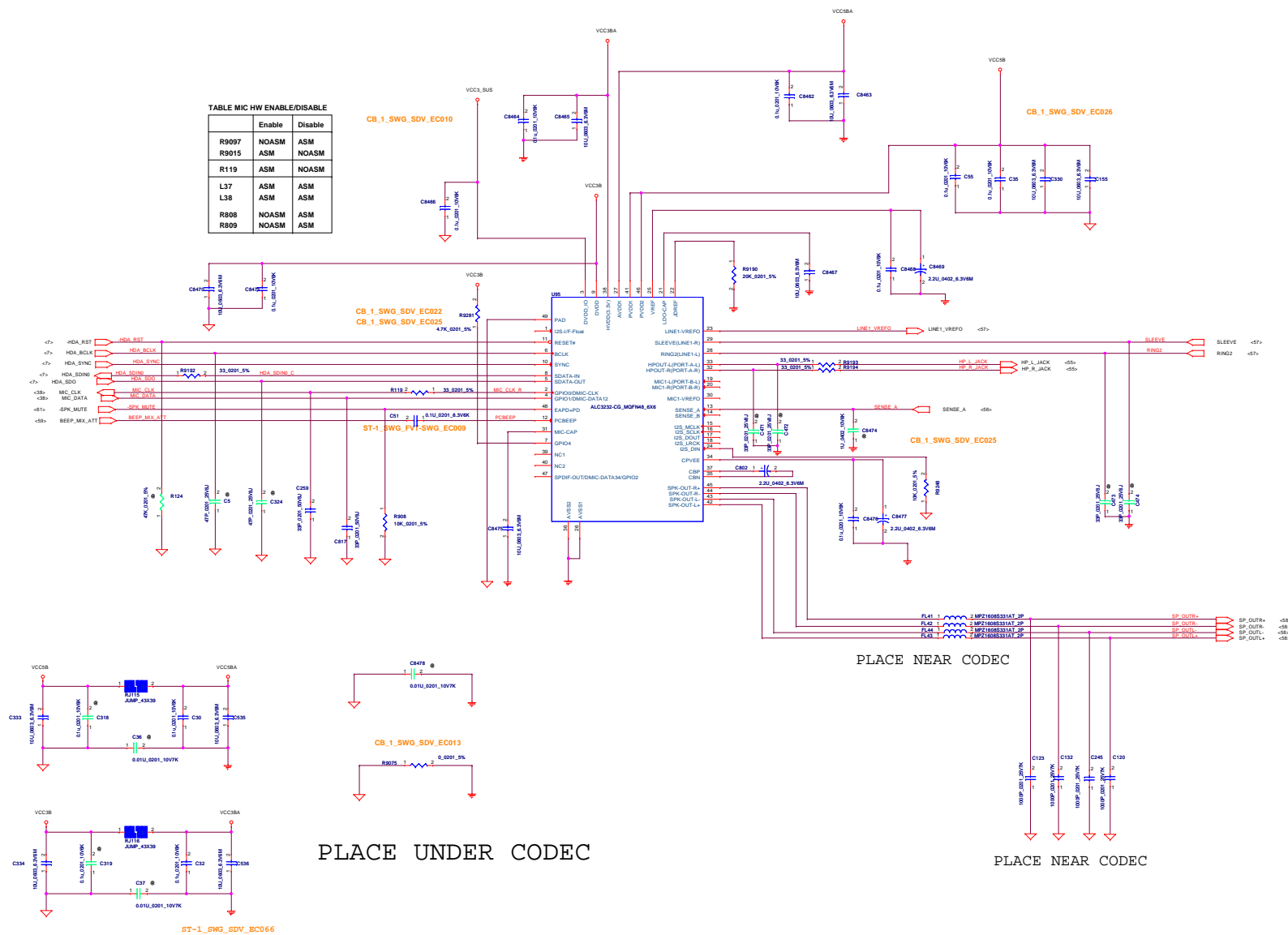
Security Classification	LC Future Center Secret Data		This
Issued Date	2013/06/21	Designated Date	2013/06/21
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Size	Drawing Number		REV
Scale	Drawing Date		0.1

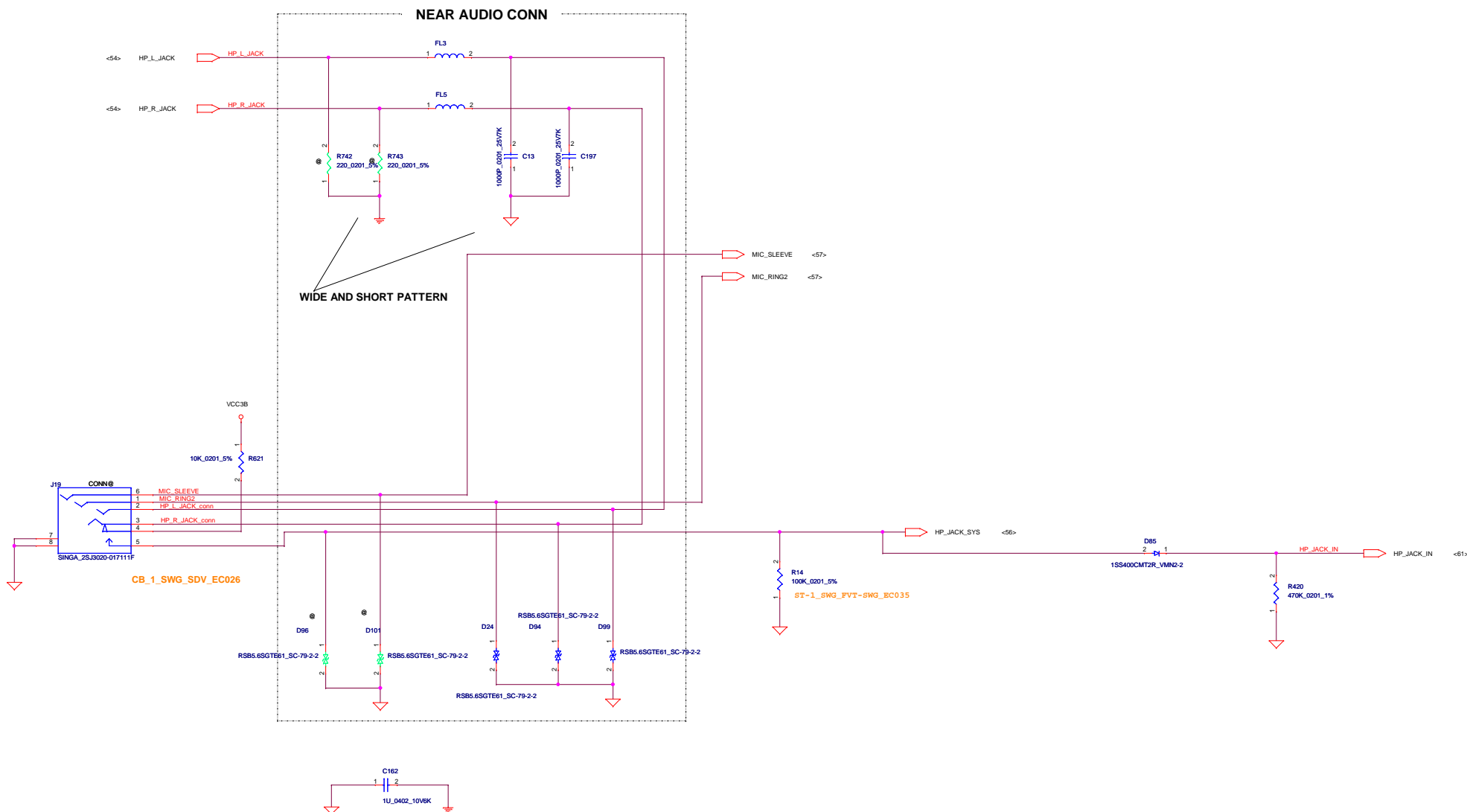
COBALT SRC





	Enable	Disable
R9097	NOASM	ASM
R9015	ASM	NOASM
R119	ASM	NOASM
L37	ASM	ASM
L38	ASM	ASM
R808	NOASM	ASM
R809	NOASM	ASM

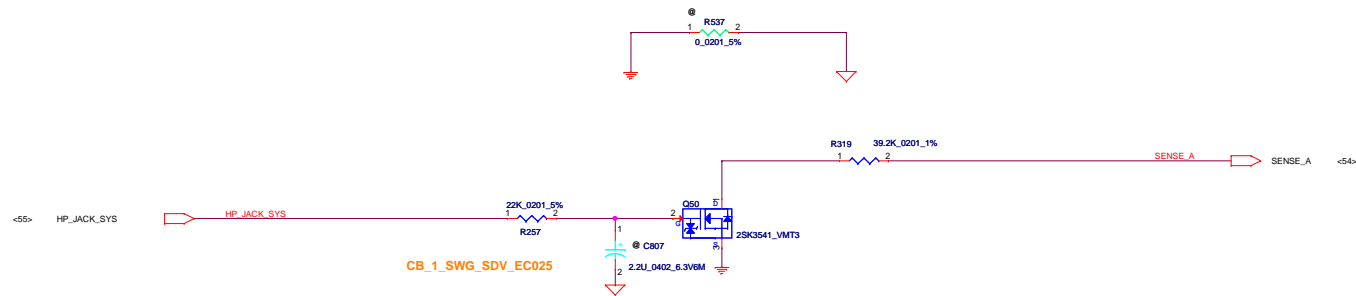




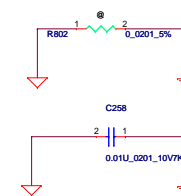
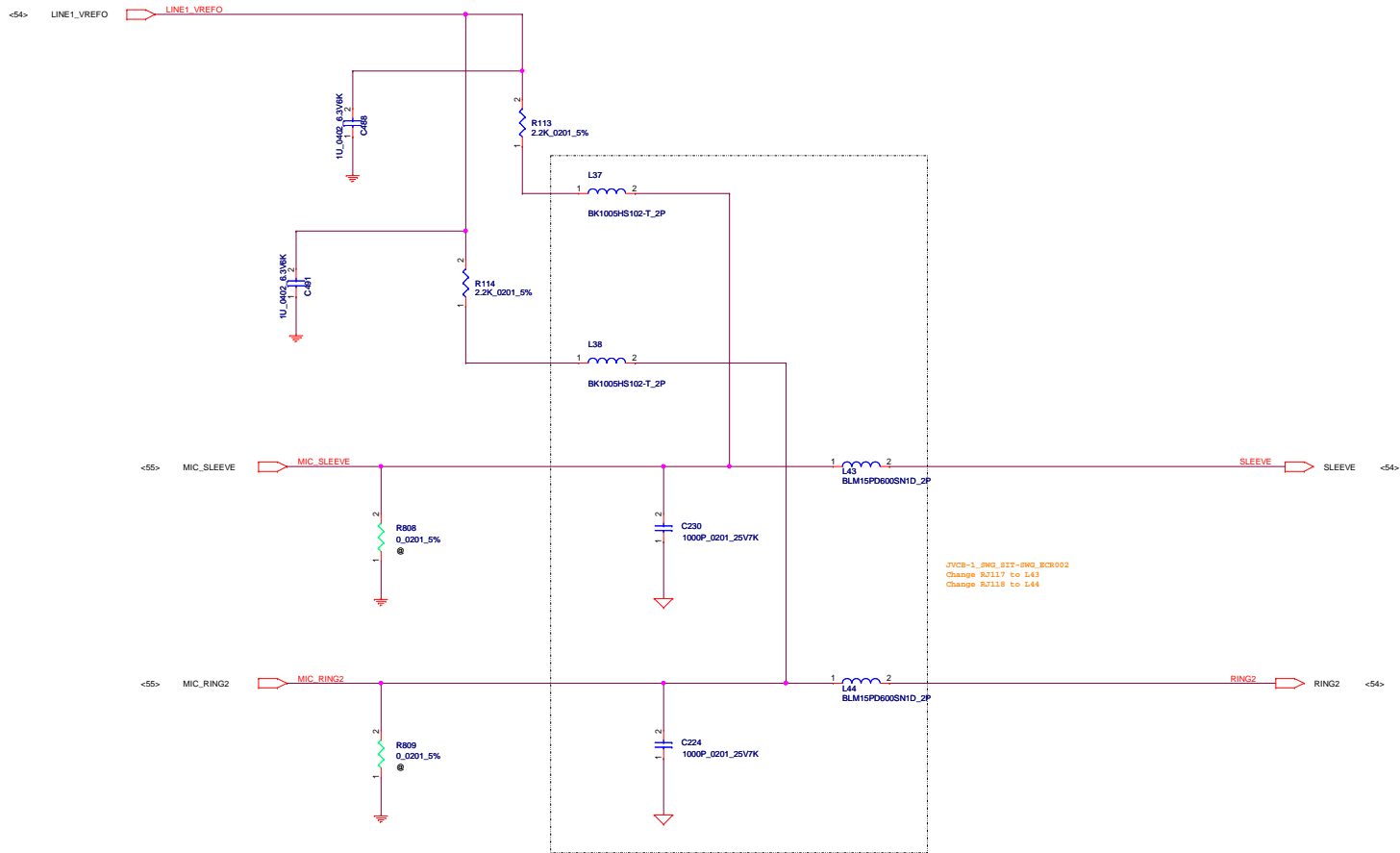
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				Date	Rev
				Tuesday, July 30, 2013	0.1
				Sheet	55 of 100

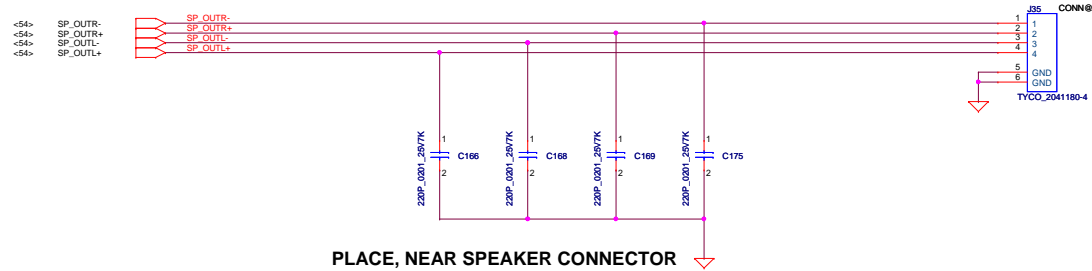


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Issued Date	2012/05/02	Deciphered Date	2012/5/02	AUDIO JACK SENSE	
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				Date Tuesday, July 30, 2013	Rev 0.1
				Sheet 58	of 100

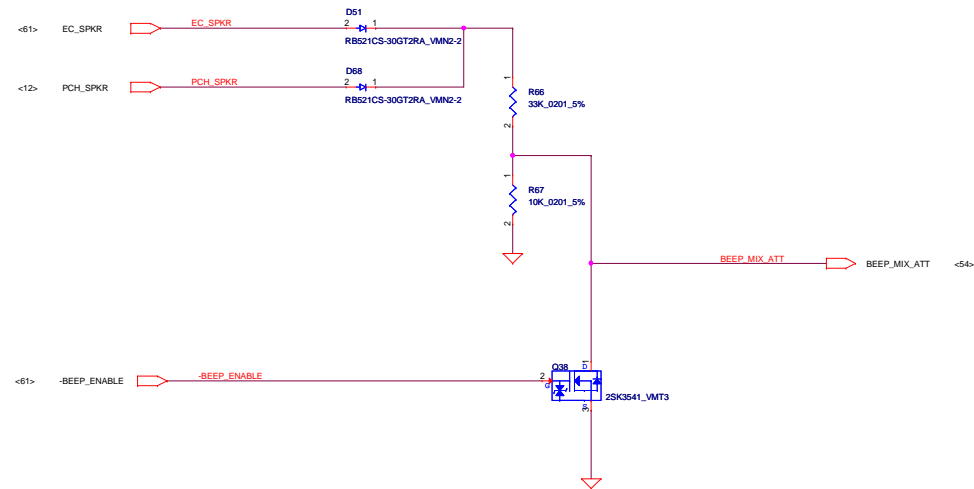




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Issued Date	2012/05/02	Deciphered Date	2012/5/02	AUDIO SPEAKER	
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				Date Tuesday, July 30, 2013	Sheet 58 of 100



COBATN STG

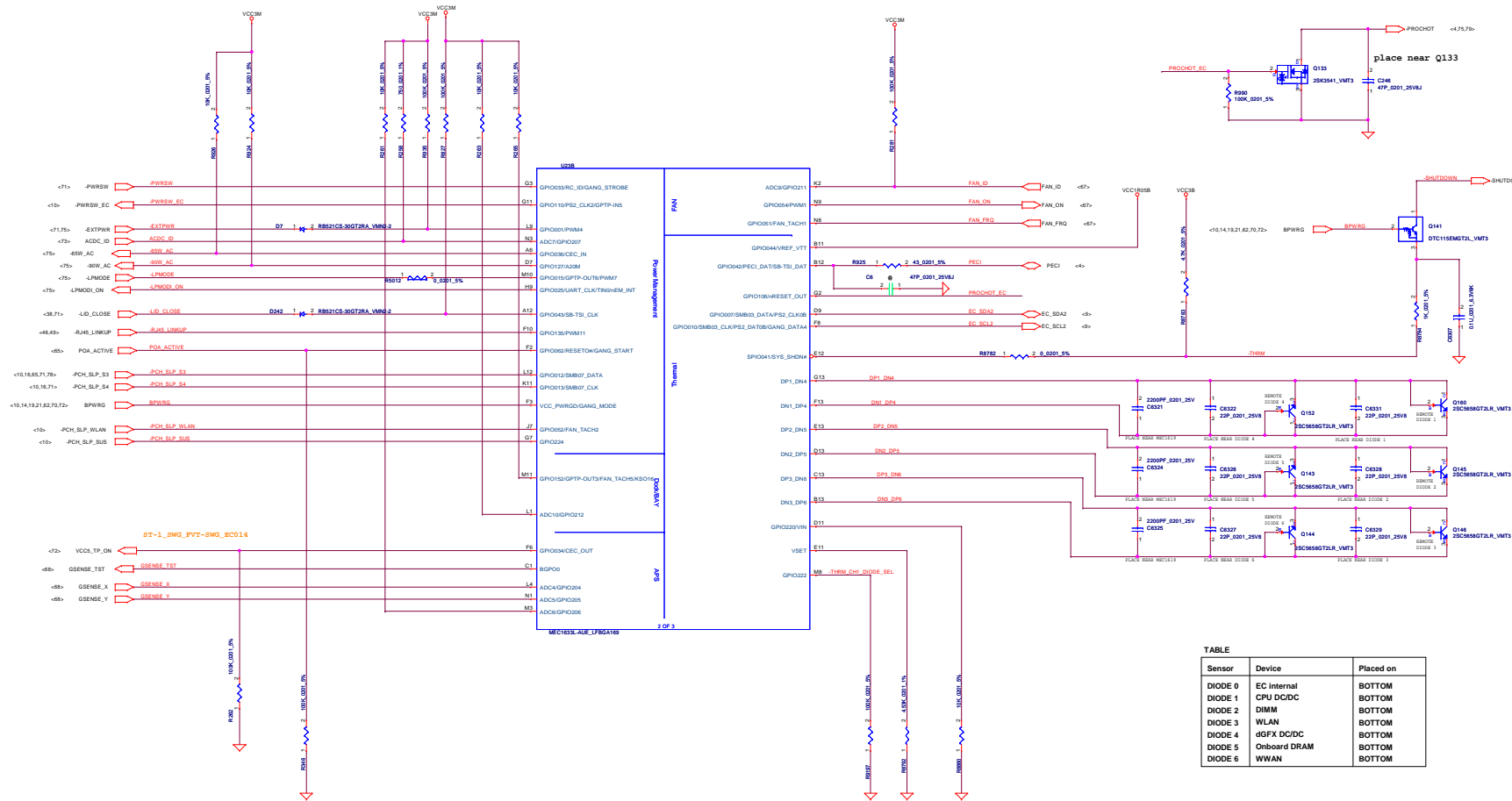


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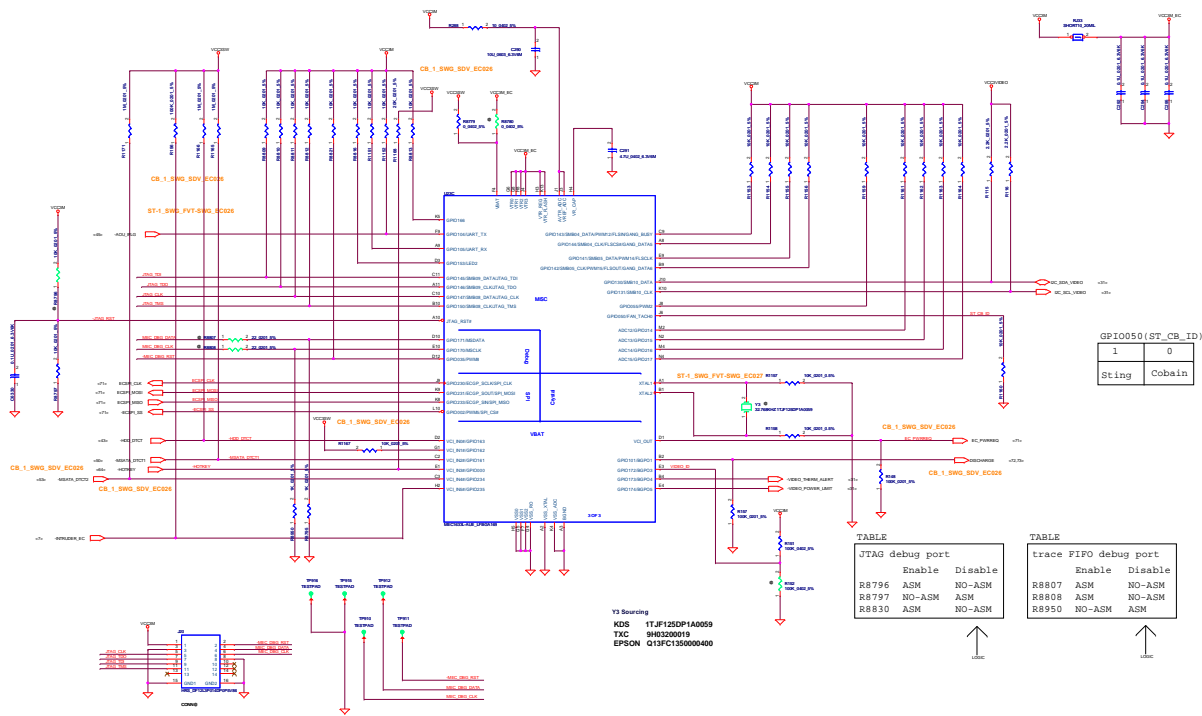
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Issued Date	2012/05/02	Deciphered Date	2012/5/02	BLANK	
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COBAIN SWG



Sensor	Device	Placed on
DIODE 0	EC Internal	BOTTOM
DIODE 1	CPU DC/DC	BOTTOM
DIODE 2	DMM	BOTTOM
DIODE 3	WLAN	BOTTOM
DIODE 4	dSFX DC/DC	BOTTOM
DIODE 5	Onboard DRAM	BOTTOM
DIODE 6	WWAN	BOTTOM



GPIO050(ST_CB_ID)

1	0
Sting	Cobain

TABLE

JTAG debug port

	Enable	Disable
R8796	ASM	NO-ASM
R8797	NO-ASM	ASM
R8830	ASM	NO-ASM

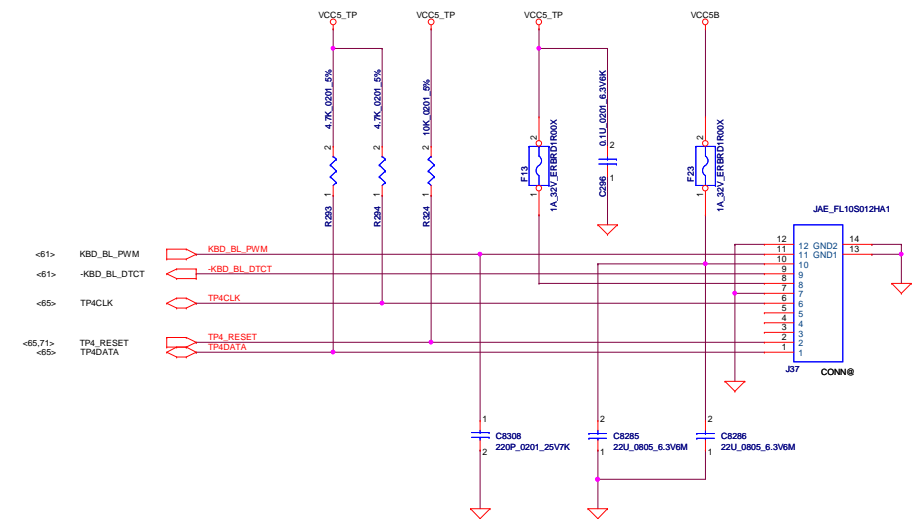
↑
L00C

TABLE

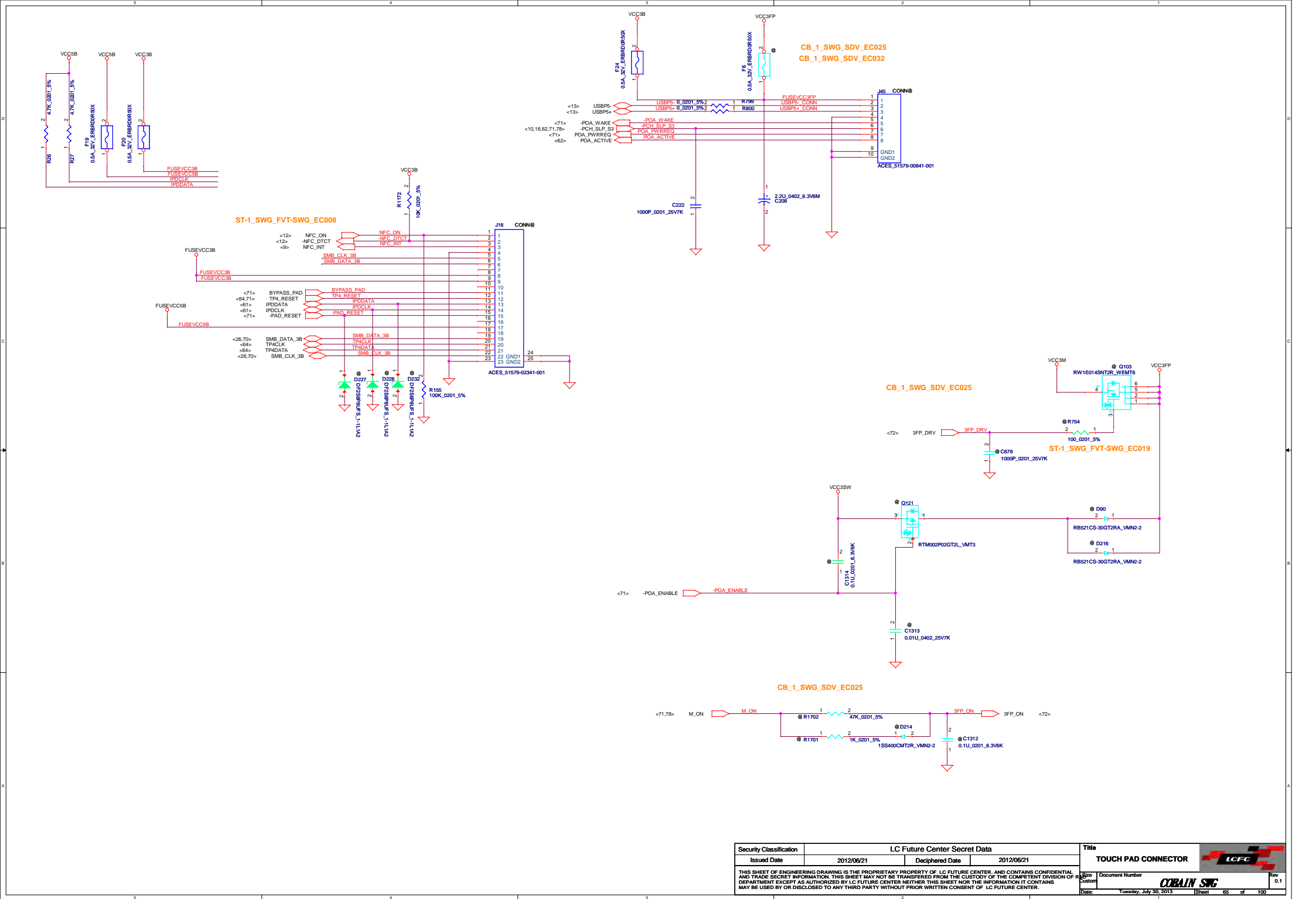
trace FIFO debug port

	Enable	Disable
R8807	ASM	NO-ASM
R8808	ASM	NO-ASM
R8950	NO-ASM	ASM


↑
L00C

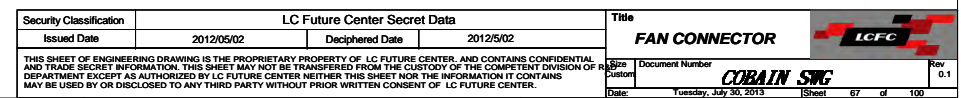


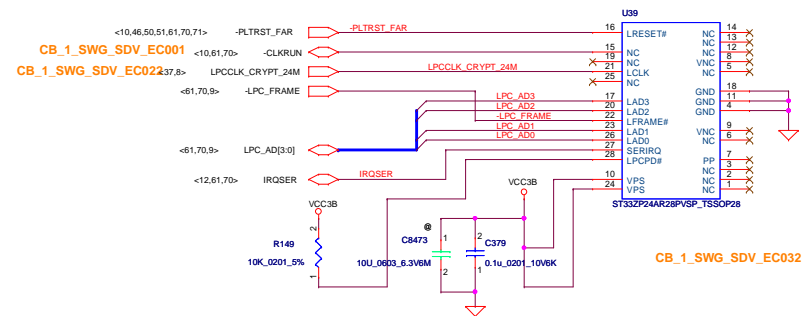
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Date: Tuesday, July 30, 2013					Sheet 66 of 100





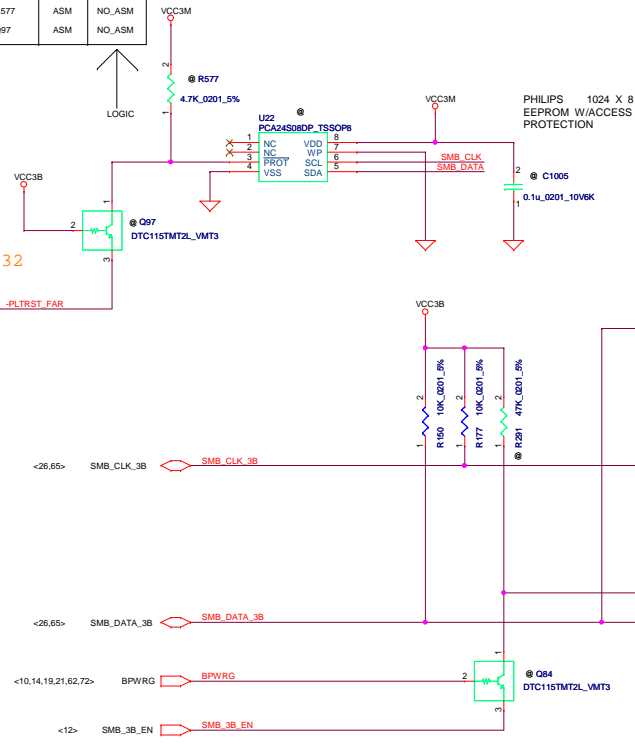
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TABLE

EEPROM	U22	U23
U22	ASM	NO_ASM
C1005	ASM	NO_ASM
R577	ASM	NO_ASM
Q97	ASM	NO_ASM

LOGIC

ST-1_SWG_SDV_EC132



TABLE

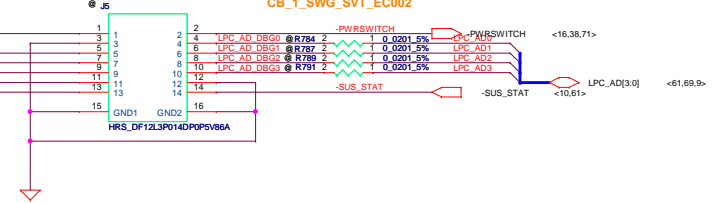
REF	DES	ENABLE	DISABLE
J5	ASM	NO_ASM	
R220	ASM	NO_ASM	

LOGIC

CB_1_SWG_SDV_EC022

<37,8> LPCCLK_DEBUG_24M
 <61,69,9> -LPC_FRAME
 <10,61,69> -CLKRUN
 <12,61,69> -IRQSER
 <10,21> -PLTRST_NEAR
 <71,72,87,92> B_ON

CB_1_SWG_SDV_EC028
 CB_1_SWG_SVT_EC002

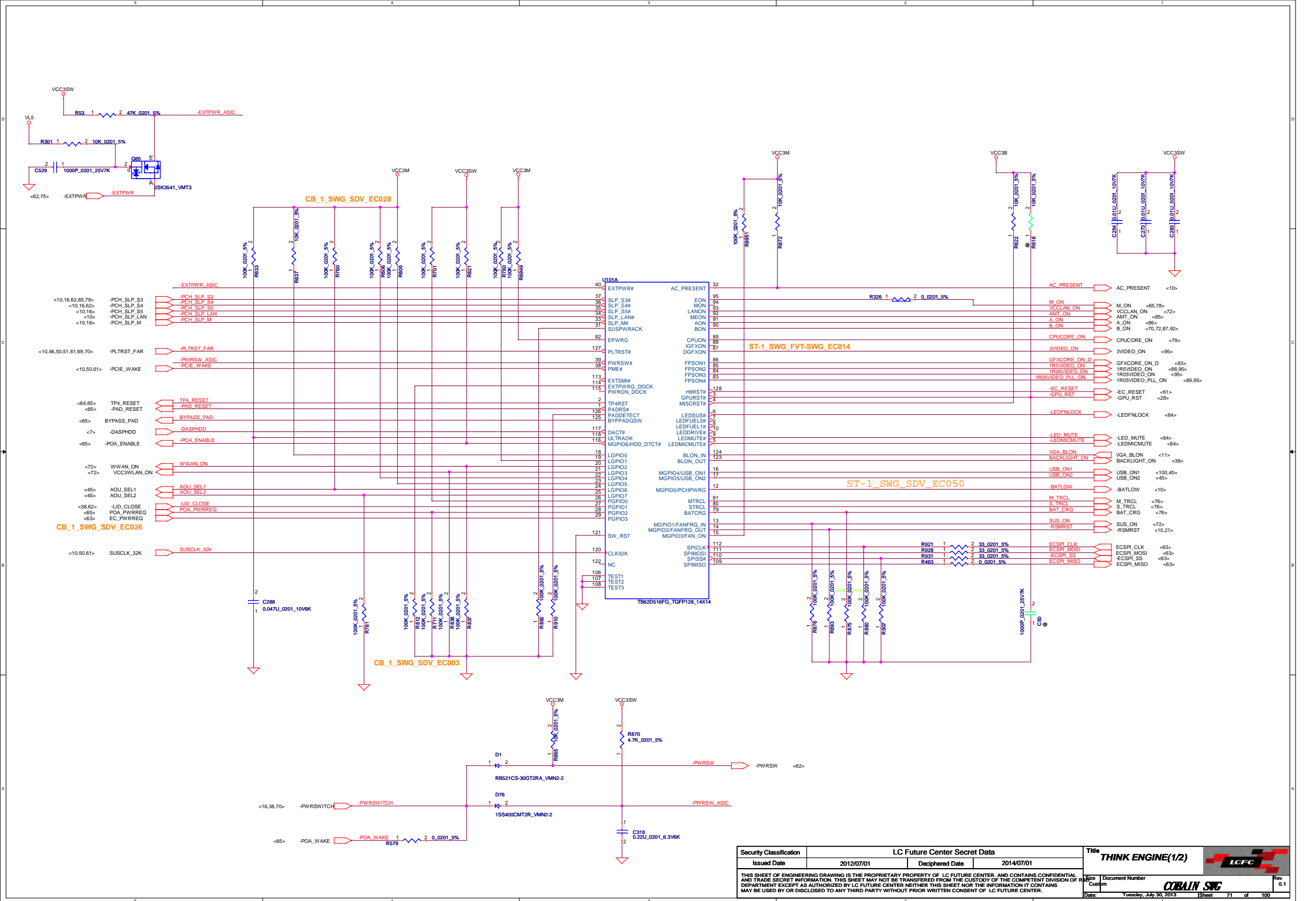


TABLE

EEPROM	U22	U23
U21	ASM	NO_ASM
U31	ASM	NO_ASM
C25	ASM	NO_ASM
R291	ASM	NO_ASM
Q84	ASM	NO_ASM
R8941	NO_ASM	ASM
R8940	NO_ASM	ASM
R30	ASM	NO_ASM
R45	ASM	NO_ASM

LOGIC

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Issued Date	2012/05/02	Deciphered Date	2012/05/02	EEPROM/SMBUS SW	
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Date:				Wednesday, July 30, 2013	Sheet 70 of 100



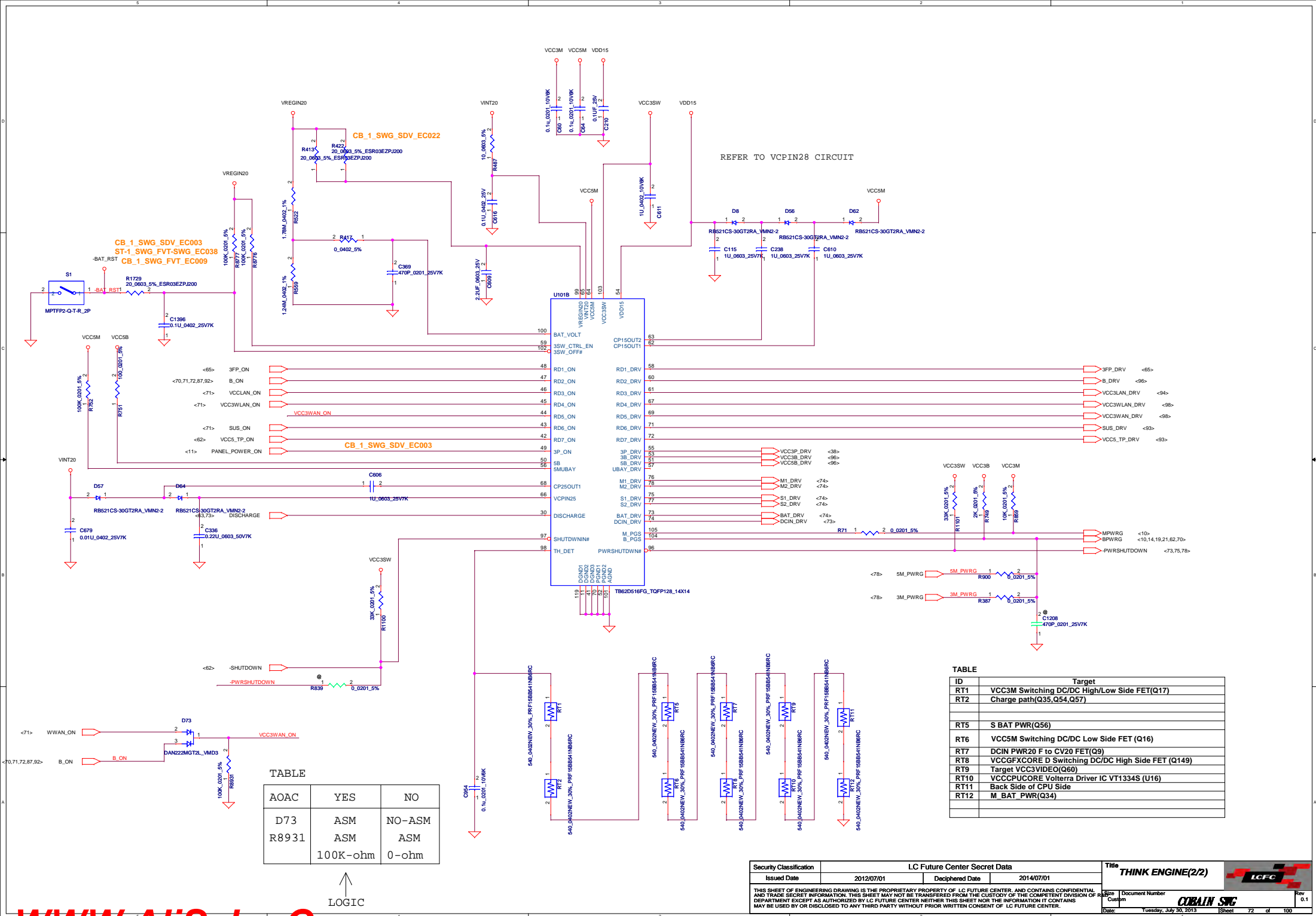


TABLE		
AOAC	YES	NO
D73	ASM	NO-ASM
R8931	ASM	ASM
	100K-ohm	0-ohm

TABLE	
ID	Target
RT1	VCC3M Switching DC/DC High/Low Side FET(Q17)
RT2	Charge path(Q35,Q54,Q57)
RT5	S BAT PWR(Q56)
RT6	VCC5M Switching DC/DC Low Side FET (Q16)
RT7	DCIN PWR20 F to CV20 FET(Q9)
RT8	VCCGFCORE D Switching DC/DC High Side FET (Q149)
RT9	Target VCC3VIDEQ(Q60)
RT10	VCCCPUCORE Volterra Driver IC VT1334S (U16)
RT11	Back Side of CPU Side
RT12	M BAT PWR(Q34)

Security Classification

LC Future Center Secret Data

Issued Date

2012/07/01

Deciphered Date

2014/07/01

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THIS

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LCFC

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0.1

Date

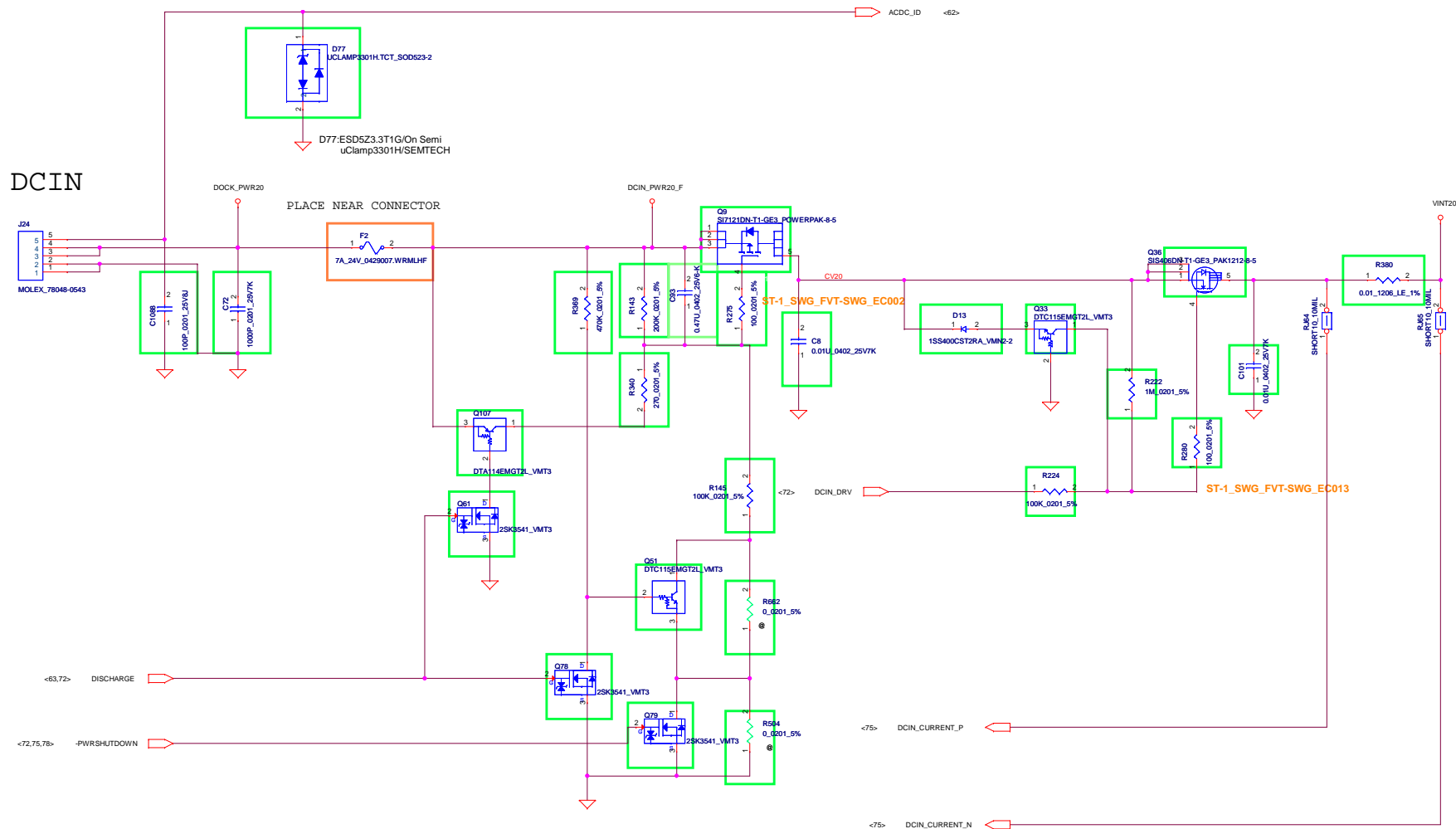
Tuesday, July 30, 2013

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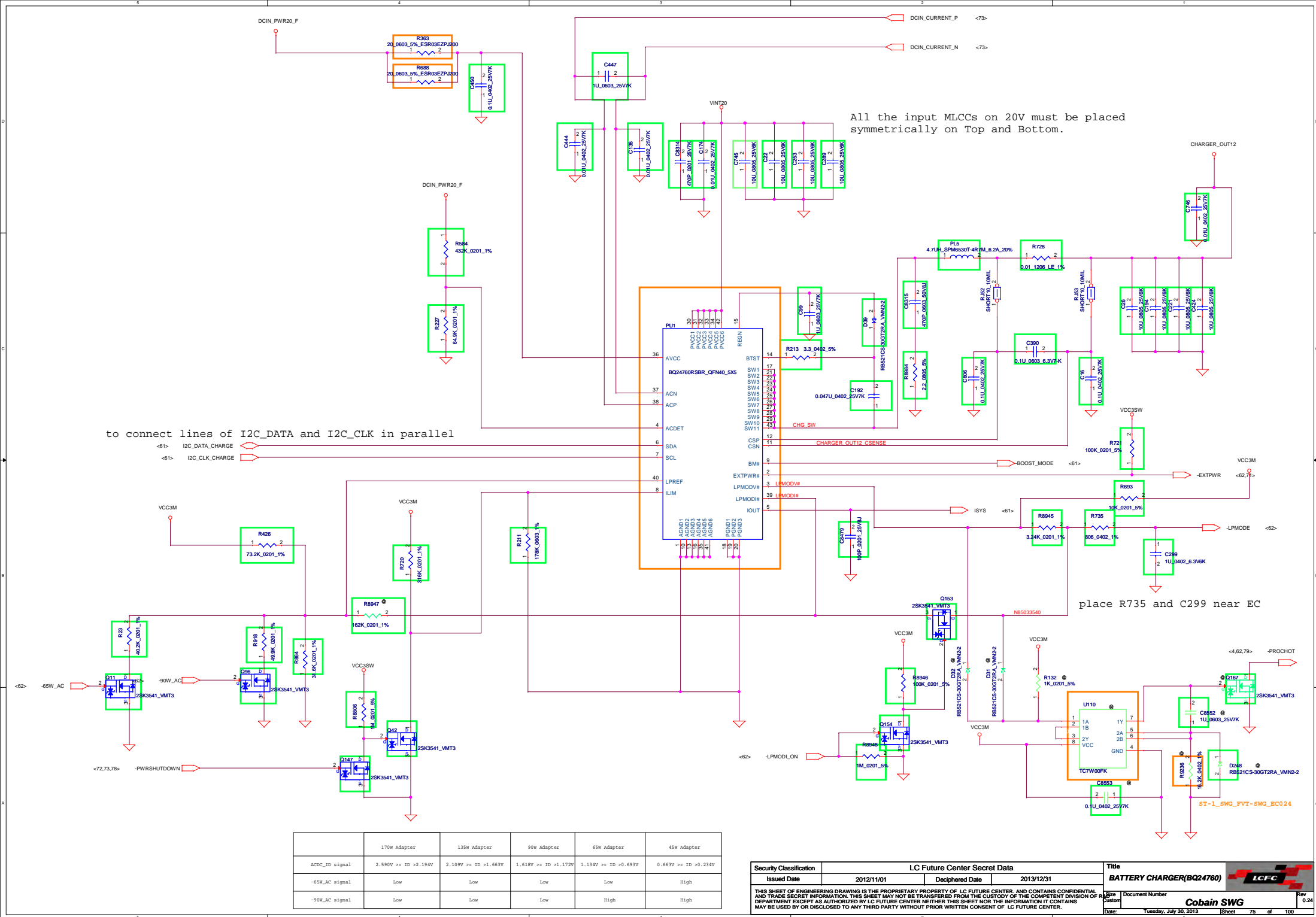
DCIN

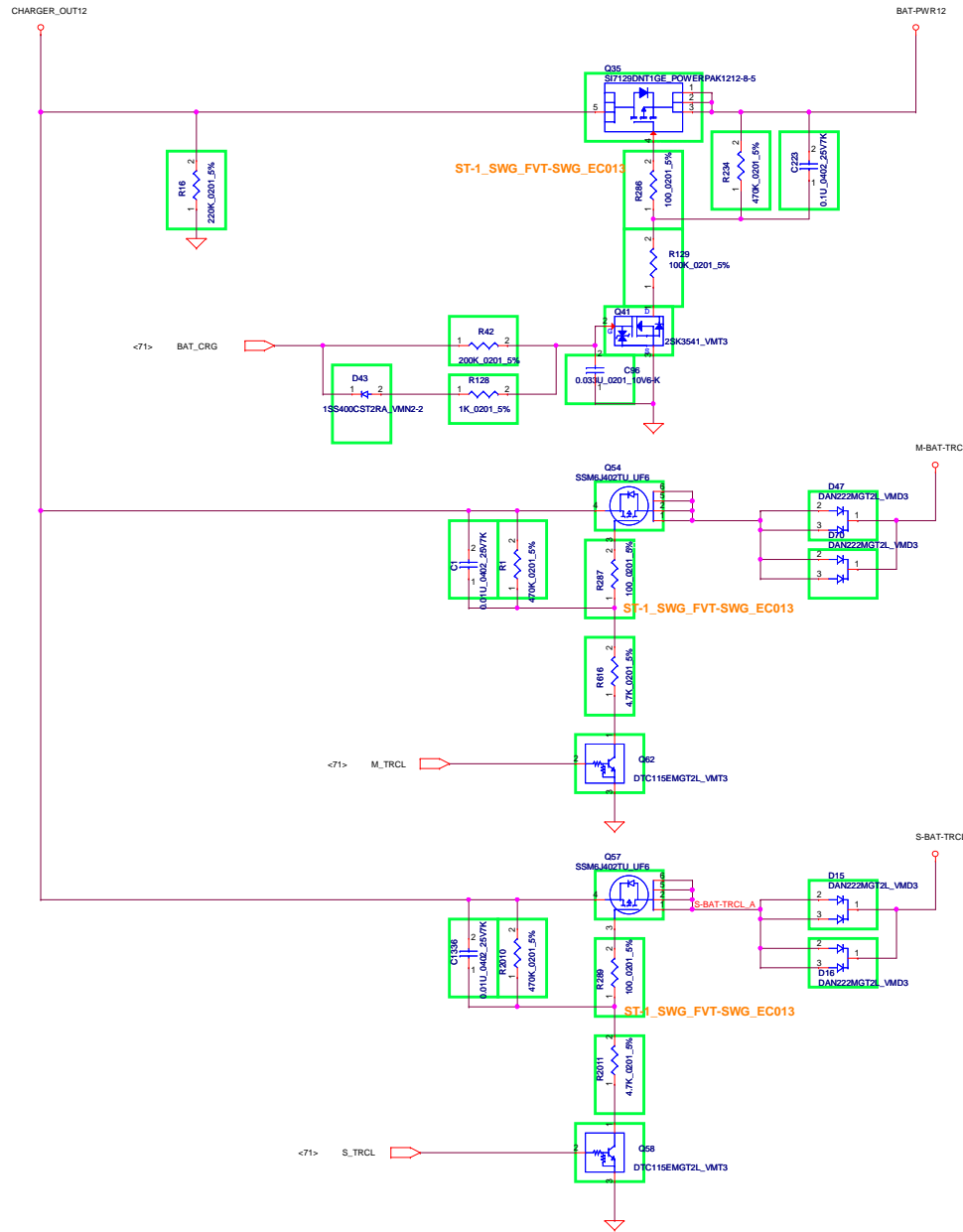


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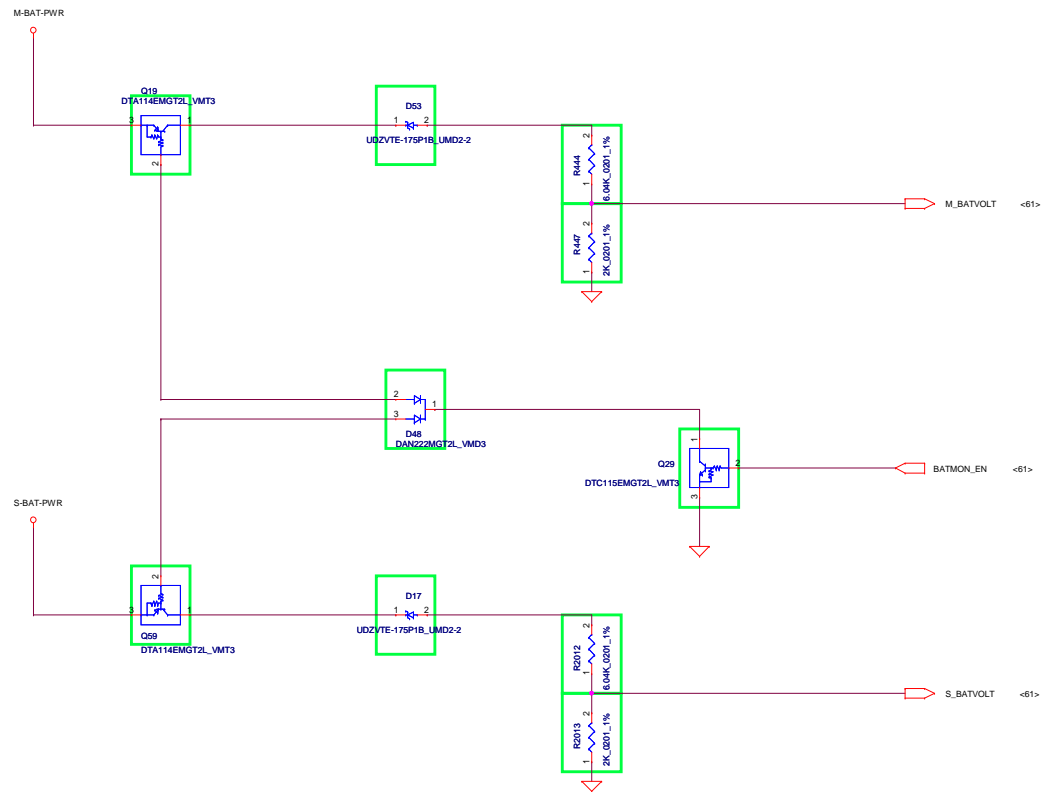
PEAK SHIFT	YES	NO
R662	NO-ASM	ASM
R369	ASM	NO-ASM
Q78	ASM	NO-ASM
Q51	ASM	NO-ASM

LOGIC





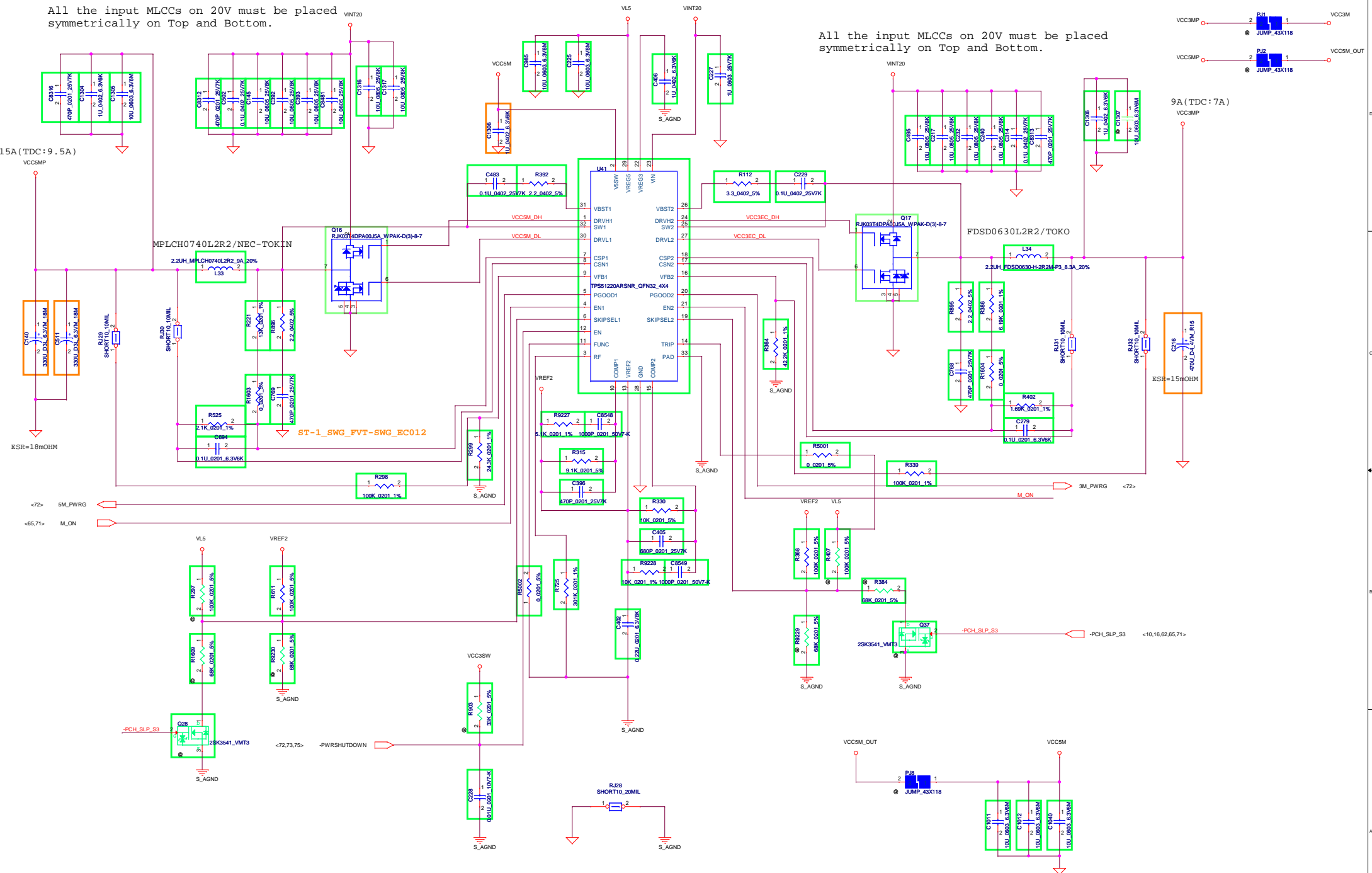
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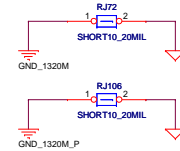
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				Cobain SWG		0.24


All the input MLCCs on 20V must be placed symmetrically on Top and Bottom.

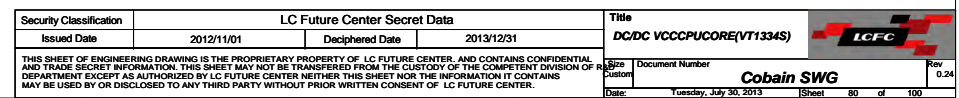
All the input MLCCs on 20V must be placed symmetrically on Top and Bottom.



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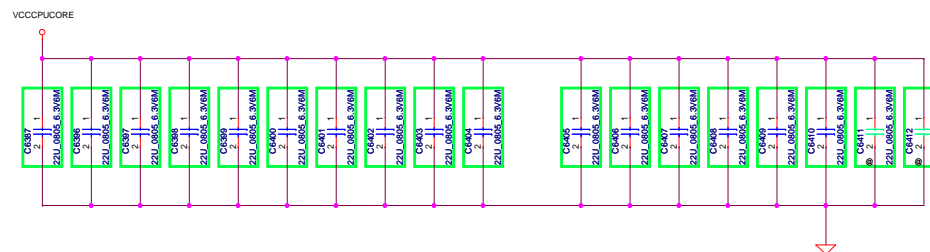
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16pcs 22uF for VCCCPUCORE of 25W ULT CPU
 (14pcs 22uF for VCCCPUCORE of 15W ULT CPU)

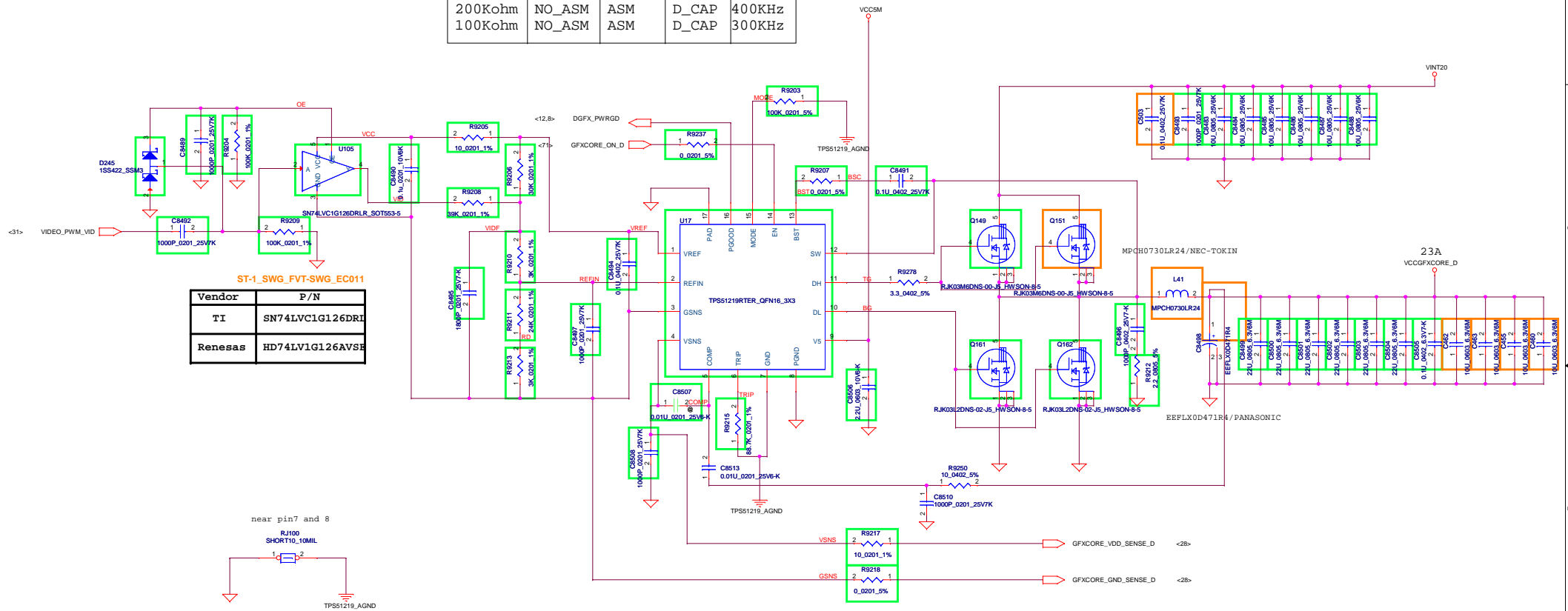
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Cobain SWG


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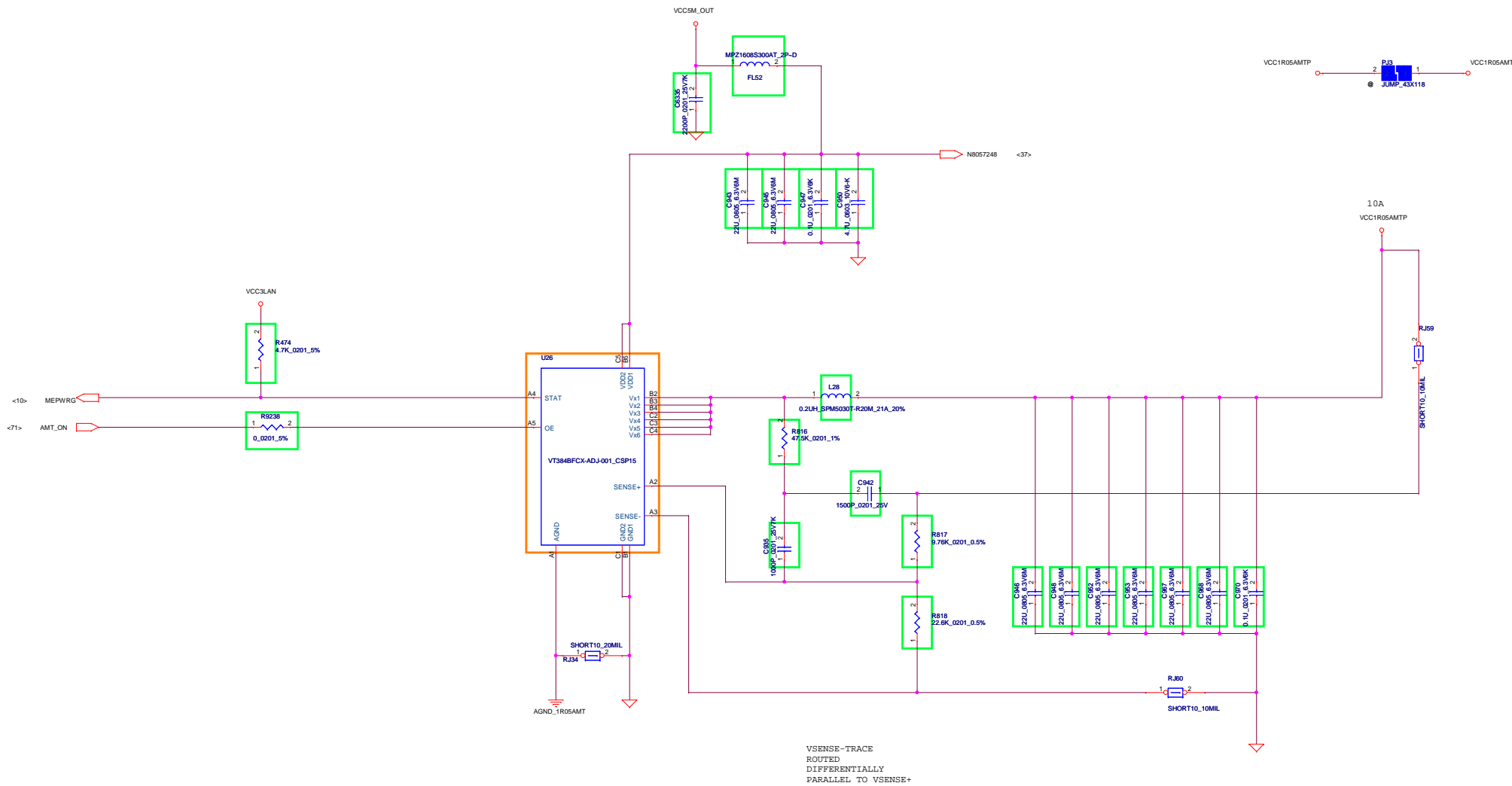
R9203	C8507	C8513	mode	sw freq
1Kohm	ASM	NO_ASM	D_CAP2	500KHz
200Kohm	NO_ASM	ASM	D_CAP	400KHz
100Kohm	NO_ASM	ASM	D_CAP	300KHz



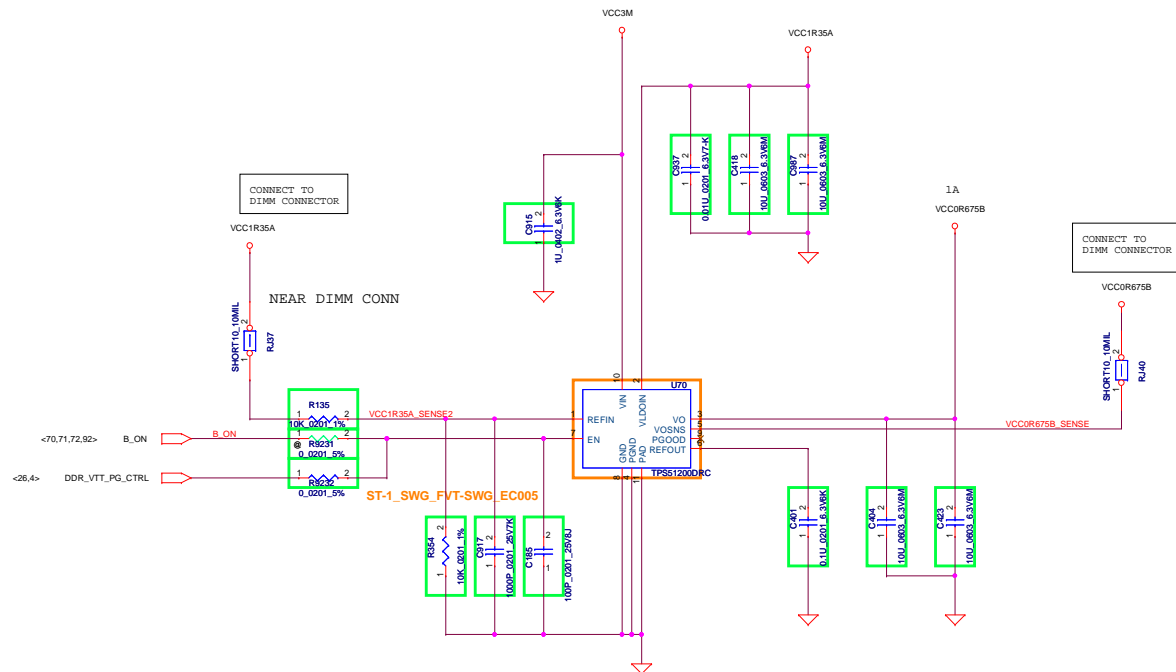
Vendor	P/N
TI	SN74LVC1G126DR
Renesas	HD74LV1G126AVSE

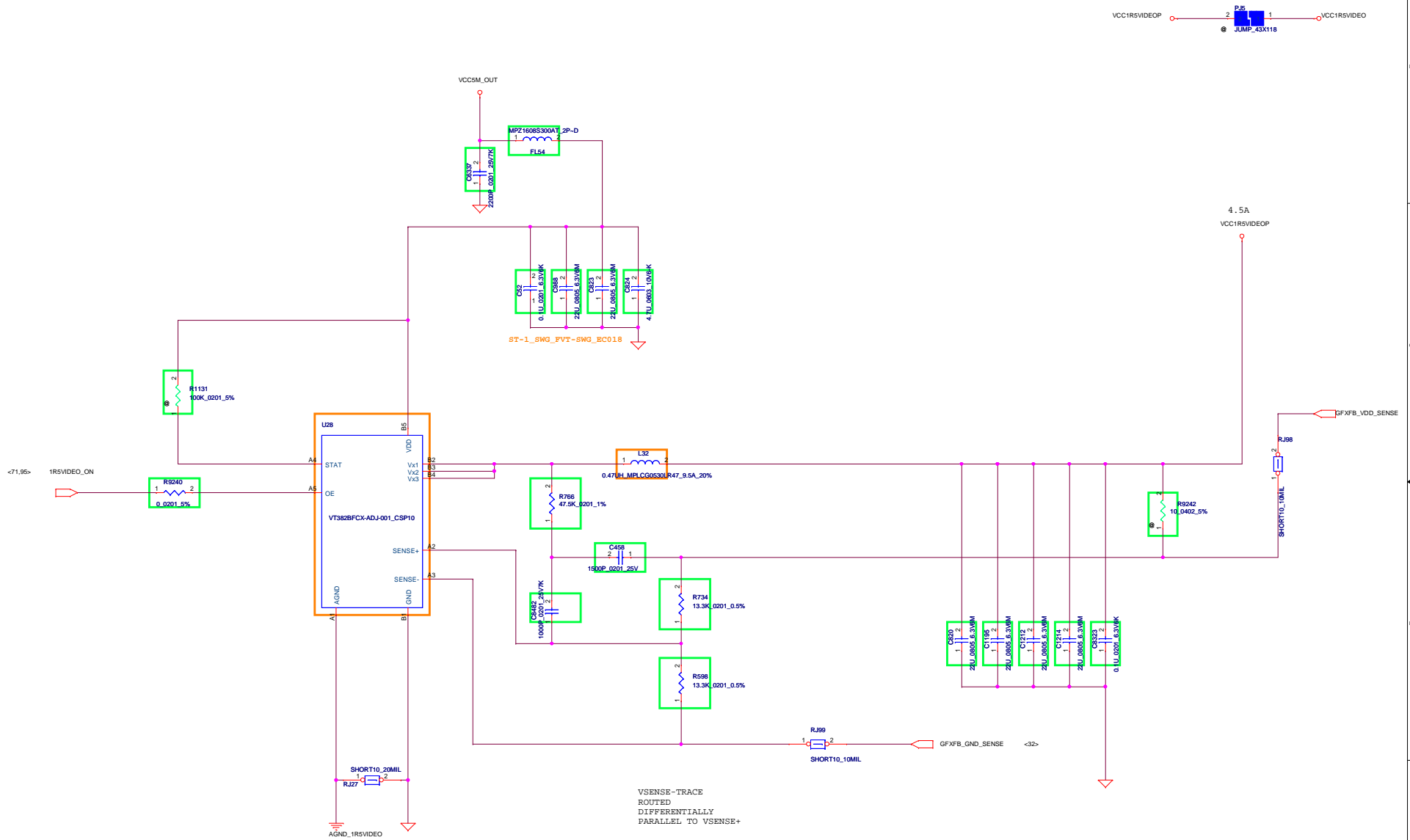
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				Date	Tuesday, July 30, 2013		

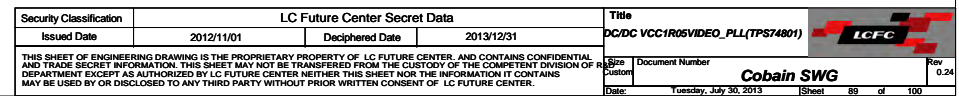


$$V_{out} = 0.75 \times (1 + R_{817}/R_{818})$$





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Issued Date	2012/11/01	Deciphered Date	2013/12/31	DC/DC VCC1R5VIDEO(VT382)	
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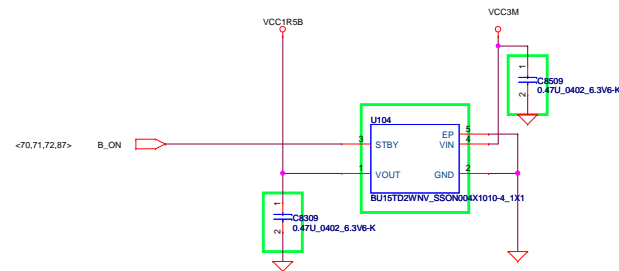
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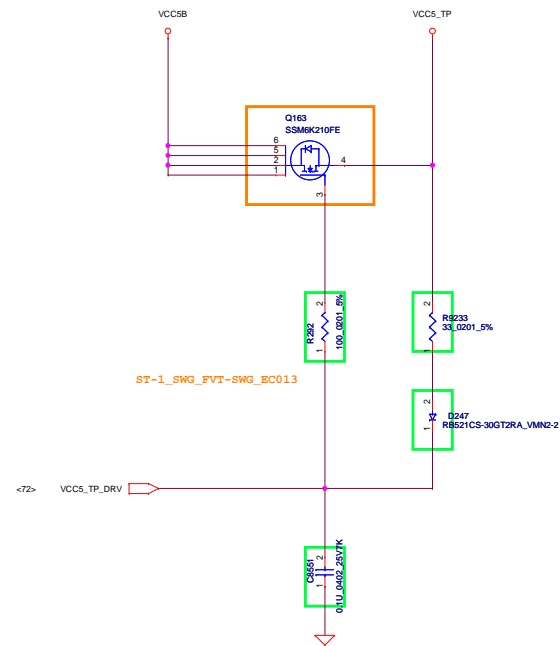
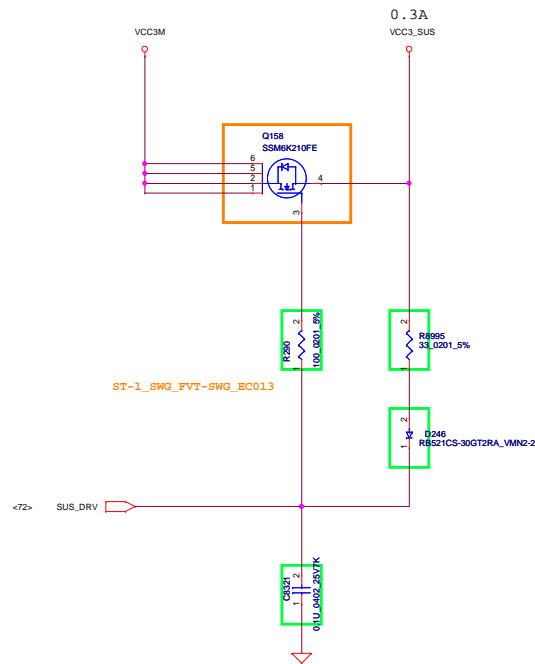
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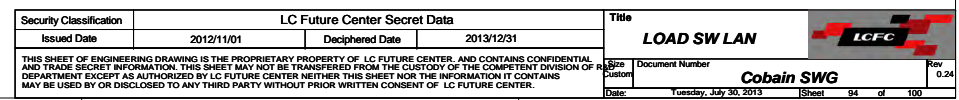


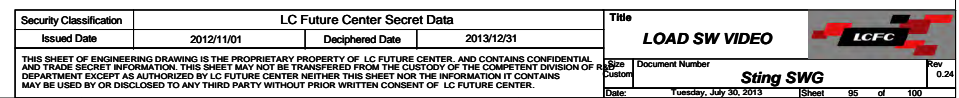


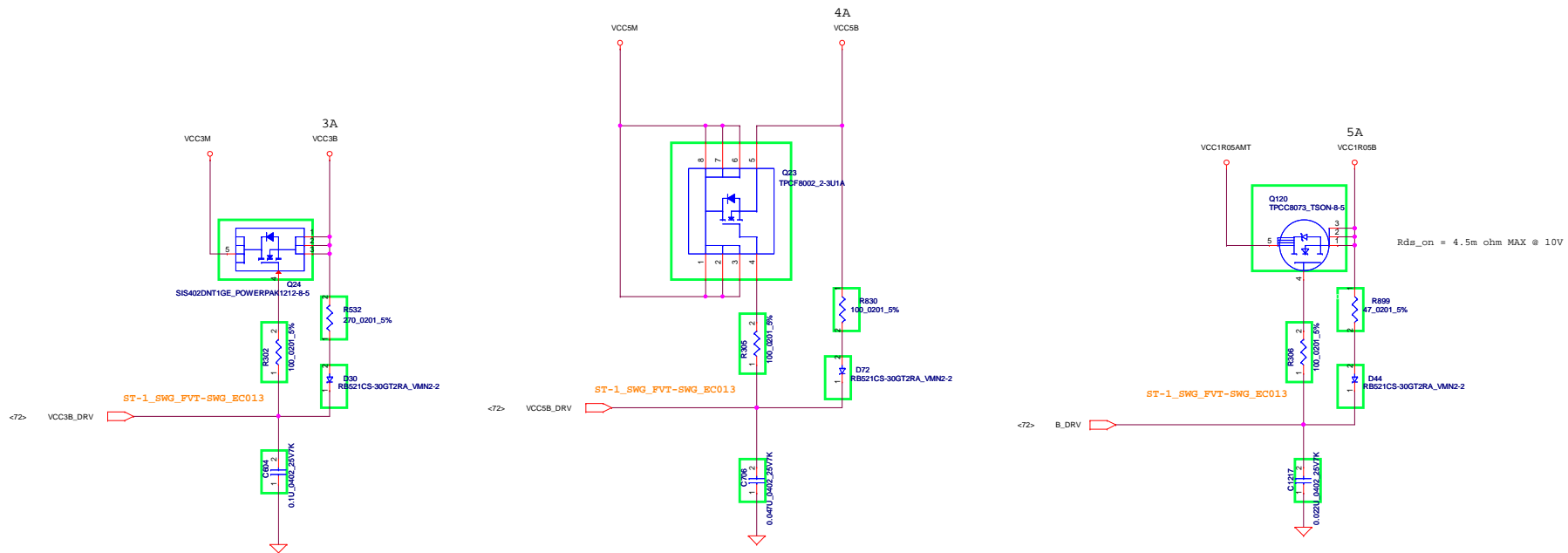
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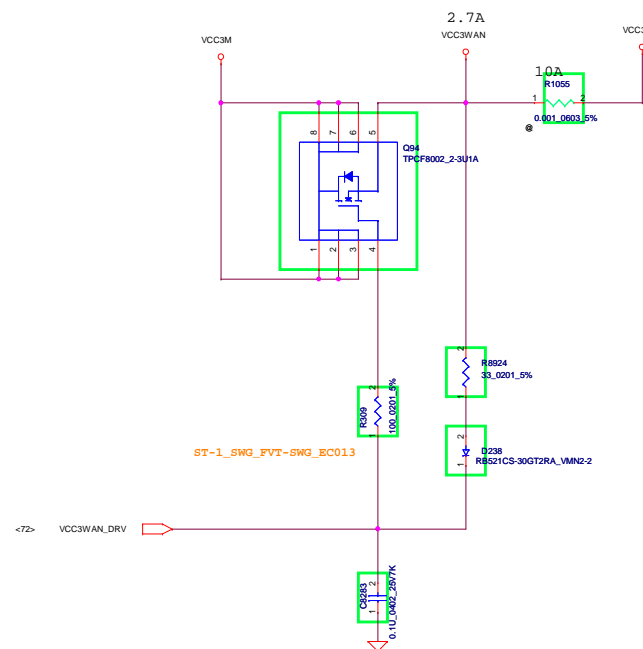
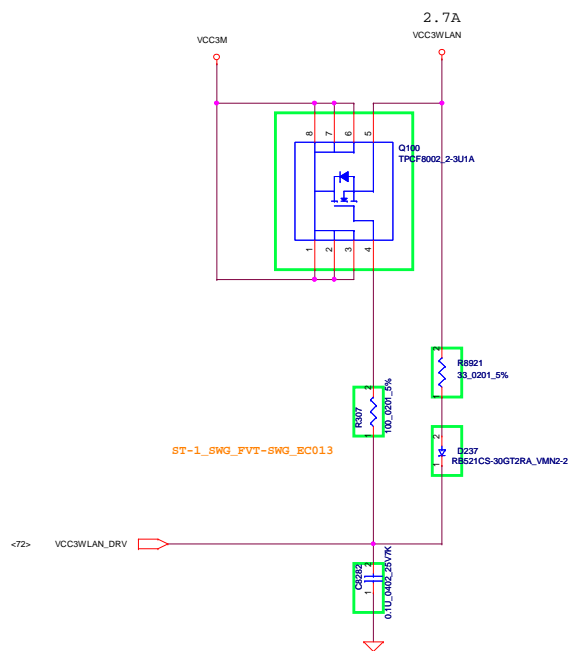
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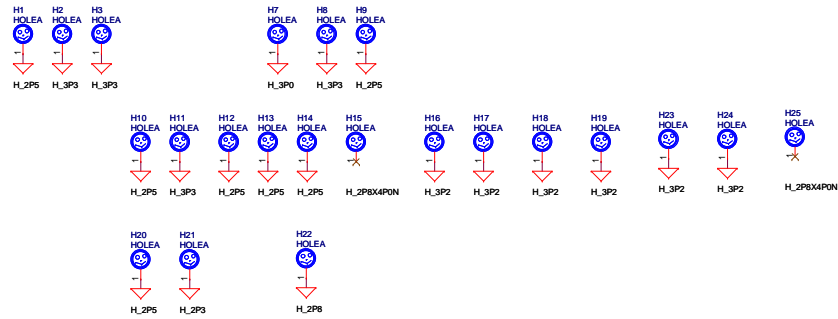


TABLE

AOAC	YES	NO
R1055	NO-ASM	ASM
Q94	ASM	NO-ASM
R8924	ASM	NO-ASM
R8926	ASM	NO-ASM
C8283	ASM	NO-ASM
D238	ASM	NO-ASM

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FID
Board Area

FID
Component Area



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