


LCFC Confidential

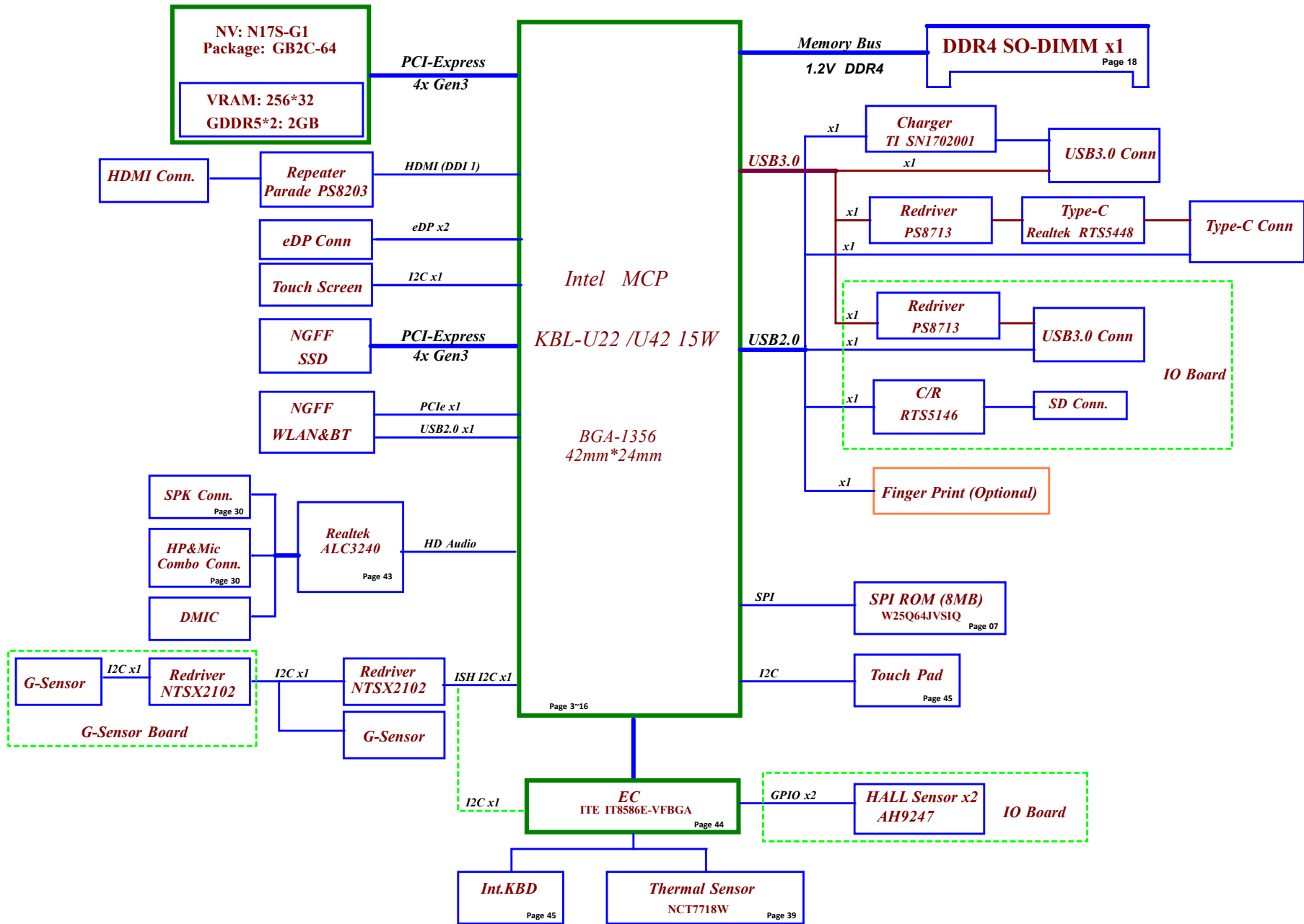
EYG10/ES430/ES530 MB Schematics Document

KBL-U22/U42 with DDR4 + Nvidia N16S-GTR/N17S-G1

2018-01

REV:1.0

Security Classification	LC Future Center Secret Data				Title		
Issued Date	2015/08/20		Deciphered Date	2016/08/20		Cover Page	
<small>THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.</small>							
Size	Document Number						Rev
Custom	EYG10 ES430 ES530						1.0
Date: Tuesday, January 09, 2018 Sheet 1 of 60							



Voltage Rails (0 --> Means ON , X --> Means OFF)

<div>Power Plane</div> <div>State</div>				
	V20B+	+3VALW +5VALW +3VALW_PCH +1.8VALW +1.0VALW	+1.2V +2.5V_DDR +VCCST	+5VS +3VS +VCCIO +VCCSTG +VCCSA +VCC_GT +CPU_CORE +0.6VS
S0	0	0	0	0
S3	0	0	0	X
S3 Battery only	0	0	0	X
S5 S4 AC Only	0	0	X	X
S5 S4 Battery only	0	X	X	X
S5 S4 AC & Battery don't exist	X	X	X	X

SMBUS Control Table

	SOURCE	BATT	Charger	DGPU	IT8586E	Memory Down	PCH	PMIC	SODIMM	Thermal Sensor	WLAN WiMAX
EC_SMB_CK1 EC_SMB_DA1	IT8586E +3VL_EC	V	V	X	V +3VL_EC	X	X	X	X	X	X
EC_SMB_CK2 EC_SMB_DA2	IT8586E +3VS	X	X	V +3VG_AON	V +3VS	X	V +3VALW_PCH	X	X	V	X
EC_SMB_CK3 EC_SMB_DA3	IT8586E +3VL_EC	X	X	X	V +3VL_EC	X	X	V	X	X	X
PCH_SMB_CLK PCH_SMB_DATA	PCH +3VALW_PCH	X	X	X	X	X	V +3VALW_PCH	X	V +3VS	X	V +3VS

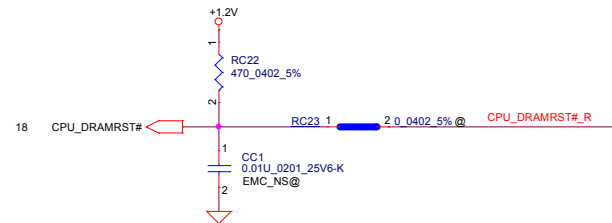
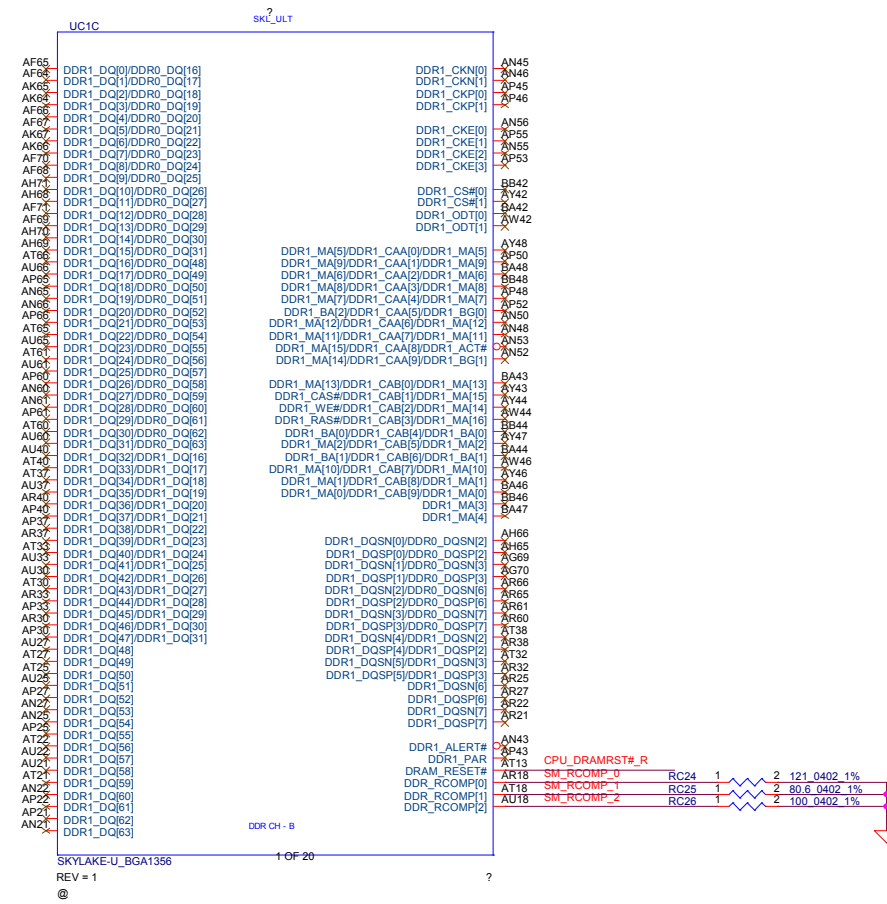
EC SMBus1 address EC SMBus2 address EC SMBus3 address PCH SM Bus address


Device	Address	Device	Address	Device	Address	Device	Address
Smart Battery	need to update	Thermal Sensor(NCT7718W)	1001_100xb	DDR4 SODIMM	need to update	Wlan	need to update
Charger	0001 0010 b	DGPU	need to update				

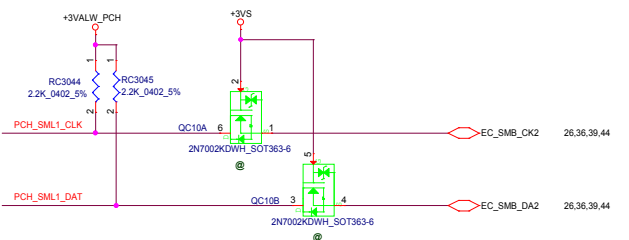
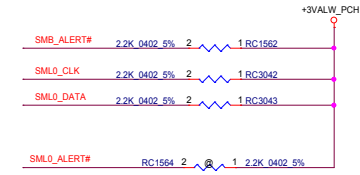
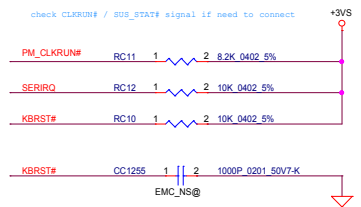
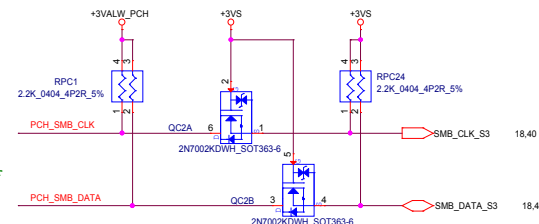
STATE	SIGNAL	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
Full ON		HIGH	HIGH	HIGH	ON	ON	ON	ON
S3 (Suspend to RAM)		LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)		LOW	LOW	LOW	ON	OFF	OFF	OFF
S5 (Soft OFF)		LOW	LOW	LOW	ON	OFF	OFF	OFF

HSIO PORT		Function
USB3.0	1	USB3.0 Conn Right
	2	USB3.0 Conn Left
	3	USB Type-C
	4	NC
	5	NC
	6	NC
USB2.0	1	USB3.0 Conn Left
	2	USB Type-C
	3	USB3.0 Conn Right
	4	Finger Print
	5	Card reader
	6	Touch Panel
PCIE	7	Bluetooth
	8	Camera
	9	NC
	10	NC
	1~4 X4	DGPU
	5	WLAN
	6	NC
	7~8 X2	SSD-2
	9~12 X4	SSD-1

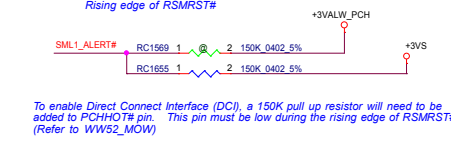
BOM Structure	BTO Item
@	Un-stuff
14@	For 14" part
15@	For 15" part
YOGA@	For YOGA530 part
530@	For 530S part
CD@	For C cost down
EMC@	For EMC part
EMC_15@	For EMC 15" part
EMC_NS@	For EMC un-stuff part
EMC_PX@	For EMC PX part
EMC_PXNS@	For EMC PX nu-stuff part
ME@	For ME part
OPT@	For NV GPU part
OPTN16@	For NV N16S-GTR GPU part
OPTN17@	For NV N17S-G1 GPU part
TS@	For touch screen part
TP@	For Touch Pad Part
UMA@	For UMA part

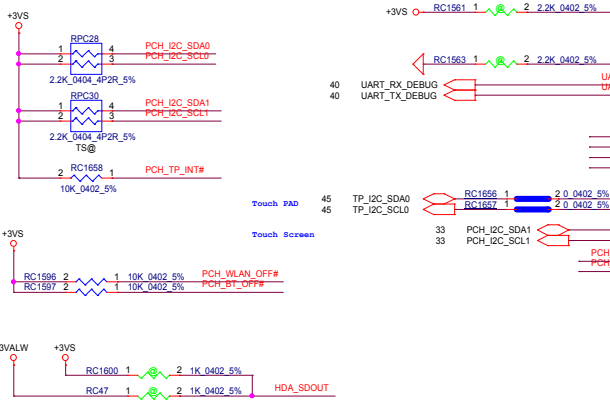
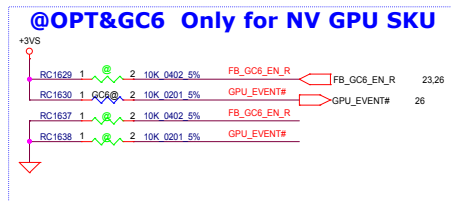


Security Classification		LC Future Center Secret Data				Title			
Issued Date	2015/08/20	Deciphered Date	2016/08/20		MCP (DDR4)				
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.									
Size Custom	Document Number		EYG10 ES430 ES530					Rev	1.0
Date:	Tuesday, January 09, 2018		Sheet	6		of		60	

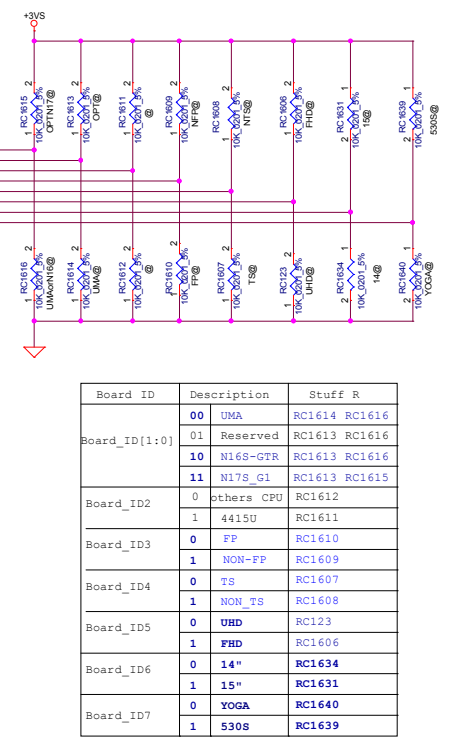
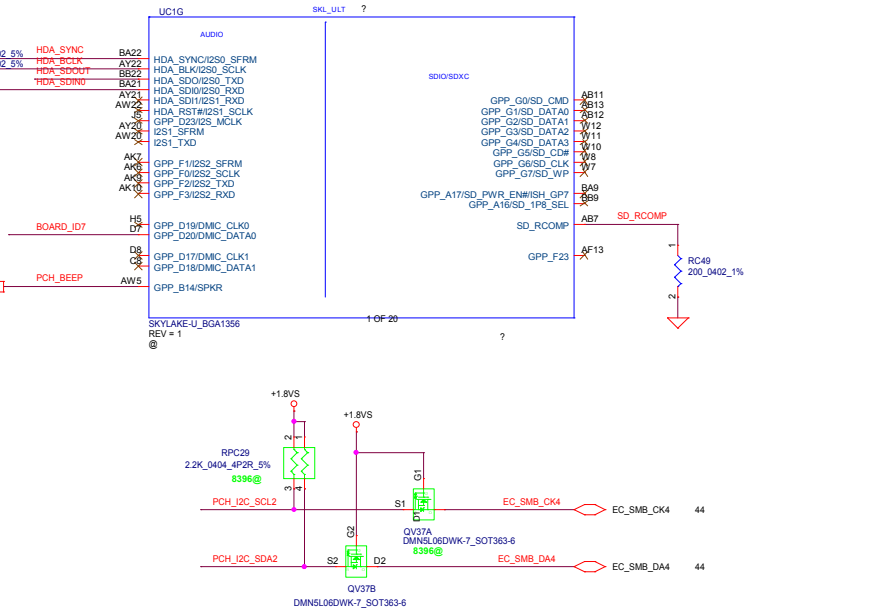
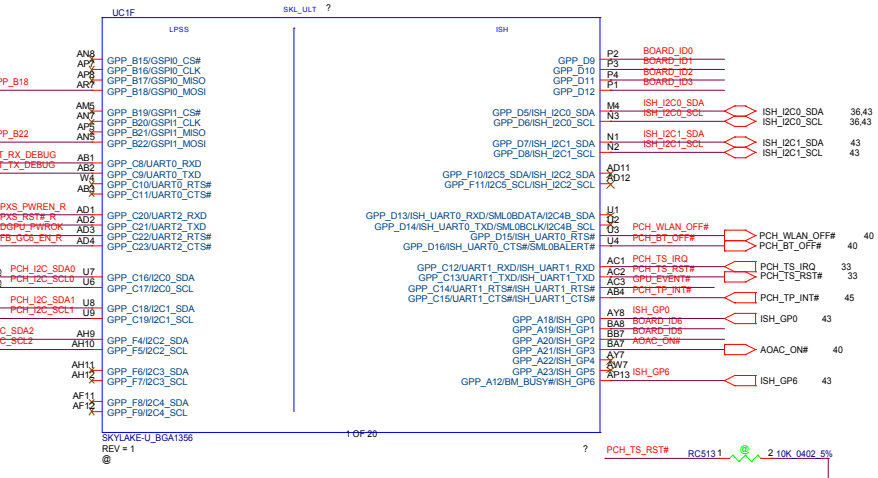


This signal has a weak internal pull-down.
0 = LPC IS is selected for EC. (Default)
1 = eSPI is selected for EC.
Notes:
1. The internal pull-down is disabled after RSMRST# de-asserts.
2. This signal is in the primary wsl
Rising edge of RSMRST#




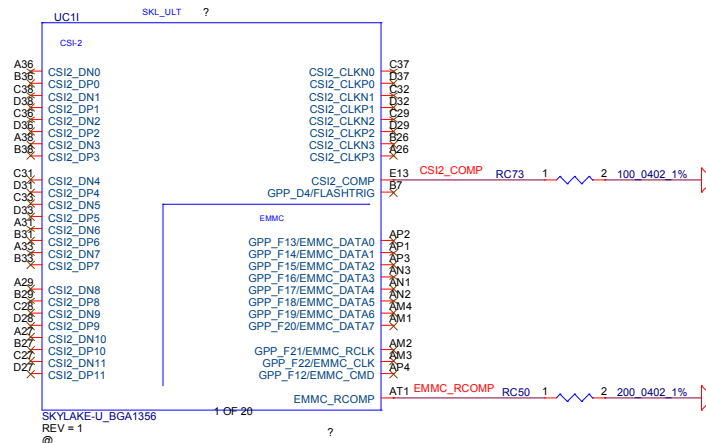


HDA_SDO This signal has a weak internal pull-down.
 0 = Enable security measures defined in the Flash Descriptor.
 1 = Disable Flash Descriptor Security(override). This strap should only be asserted high during external pull-up in manufacturing/debug environments **ONLY**.



Board ID	Description	Stuff R
Board_ID[1:0]	00 UMA	RC1614 RC1616
	01 Reserved	RC1613 RC1616
	10 N168-GTR	RC1613 RC1616
	11 N178_G1	RC1613 RC1615
Board_ID2	0 others CPU	RC1612
	1 4415U	RC1611
Board_ID3	0 FP	RC1610
	1 NON-FP	RC1609
Board_ID4	0 TS	RC1607
	1 NON_TS	RC1608
Board_ID5	0 UHD	RC123
	1 FHD	RC1606
Board_ID6	0 14"	RC1634
	1 15"	RC1631
Board_ID7	0 YOGA	RC1640
	1 530S	RC1639

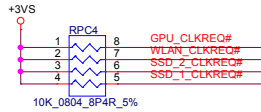
Security Classification		LC Future Center Secret Data		Title			
Issued Date	2015/08/20	Deciphered Date	2016/08/20	Size	Document Number	Rev	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				EYG10 ES430 ES530		10	
				Date:	Tuesday, January 09, 2018	Sheet	8 of 60



@DIS For NV GPU SKU

PCIE CLK0 DGPU

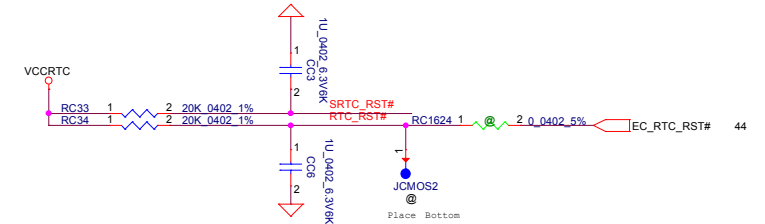
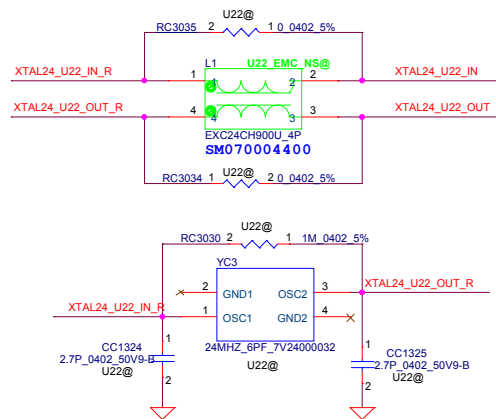
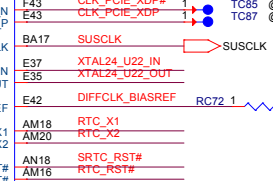
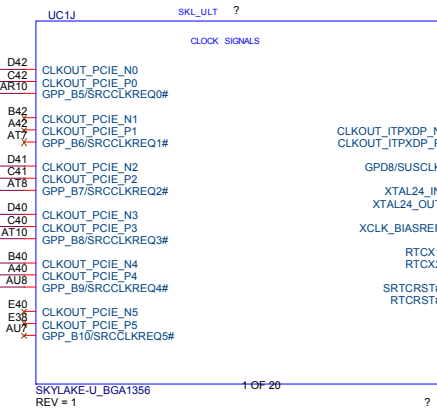
20 CLK_PCIE_GPU#
20 CLK_PCIE_GPU#
20 GPU_CLKREQ#



WLAN

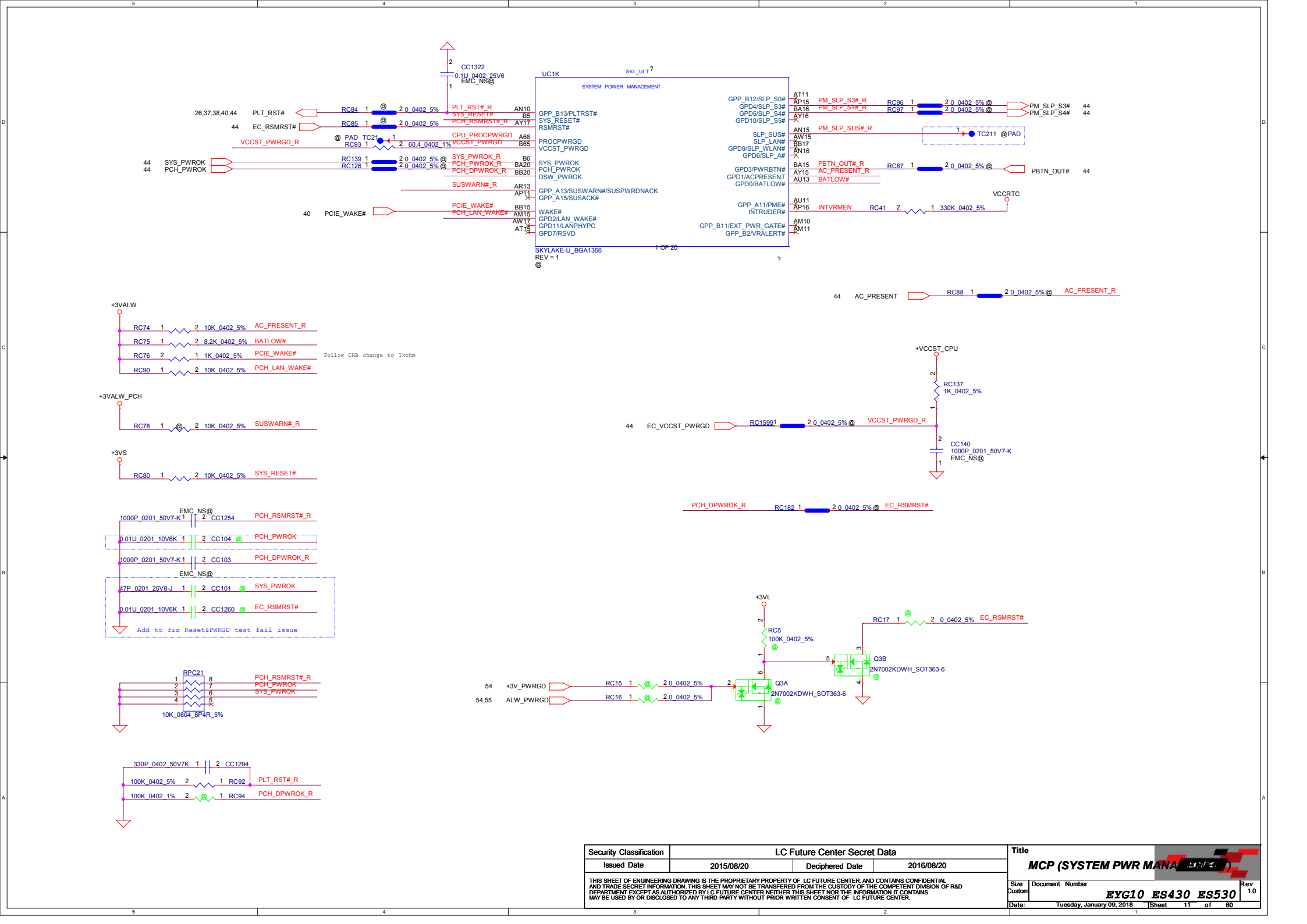
SSD-2

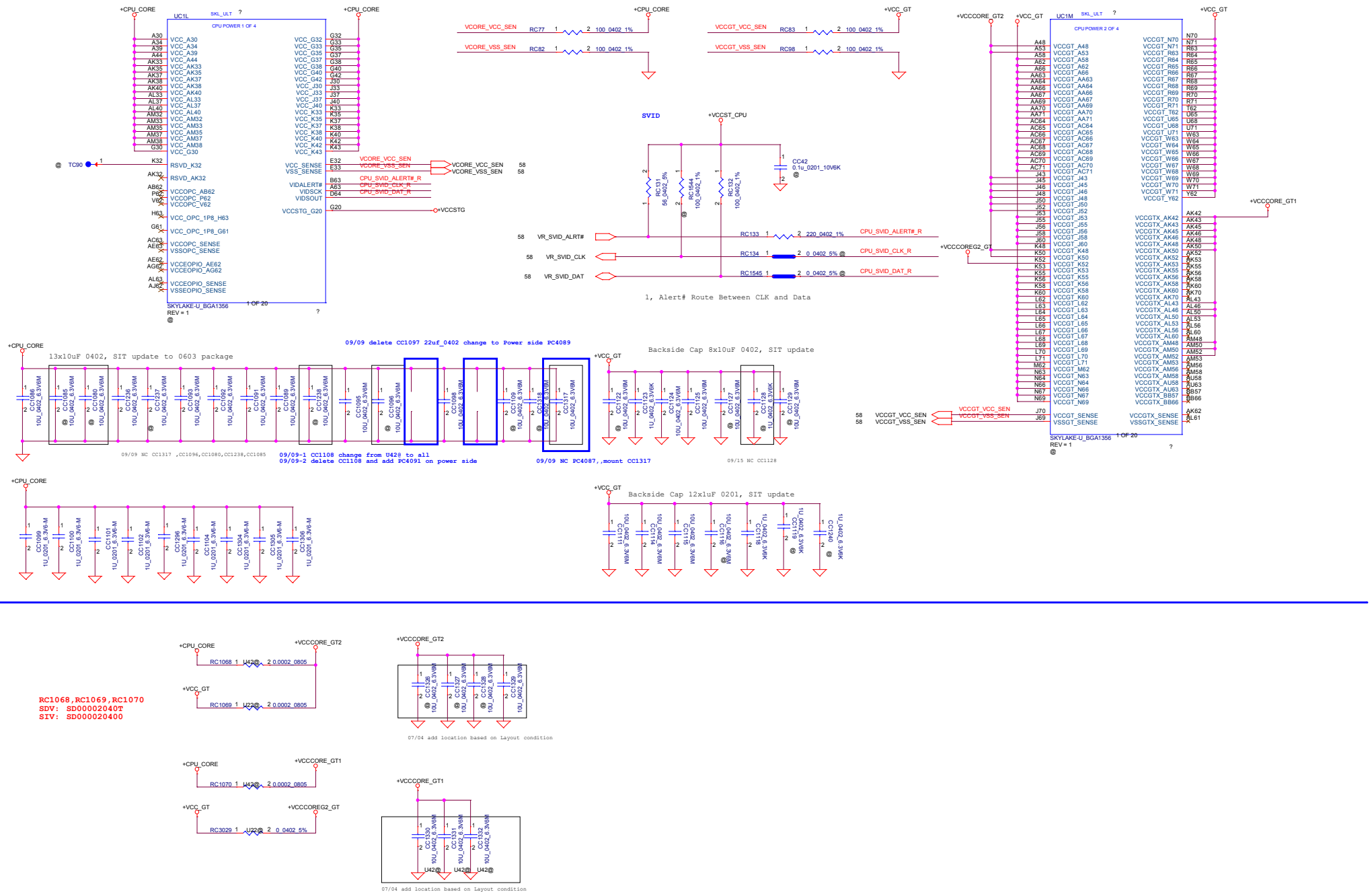
SSD-1

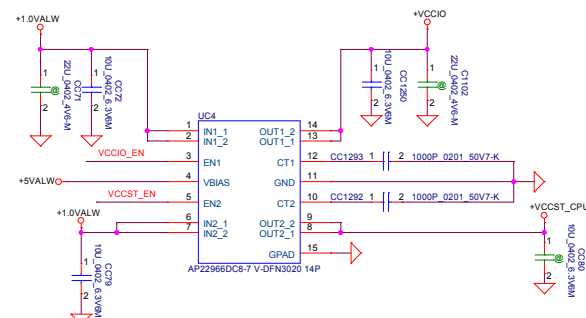
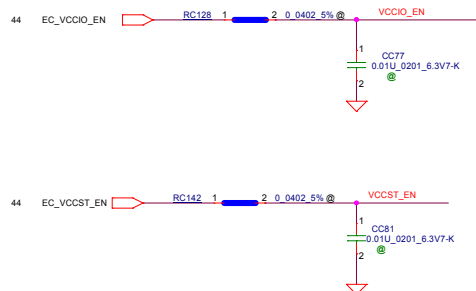
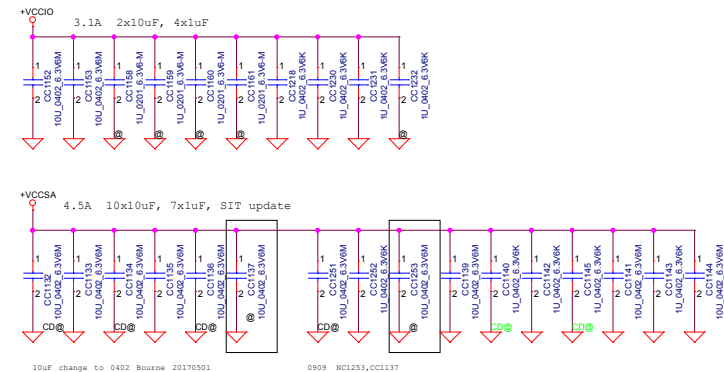



Security Classification			
LC Future Center Secret Data			
Issued Date	2015/08/20	Deciphered Date	2016/08/20
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.			

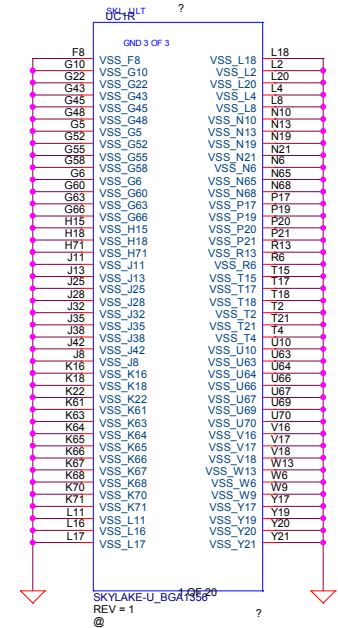
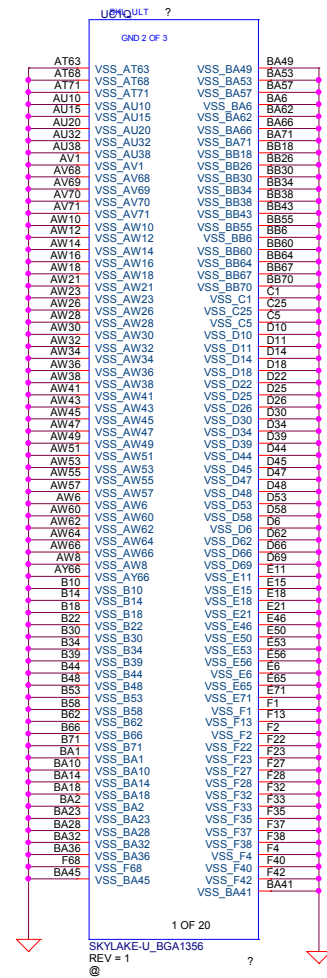
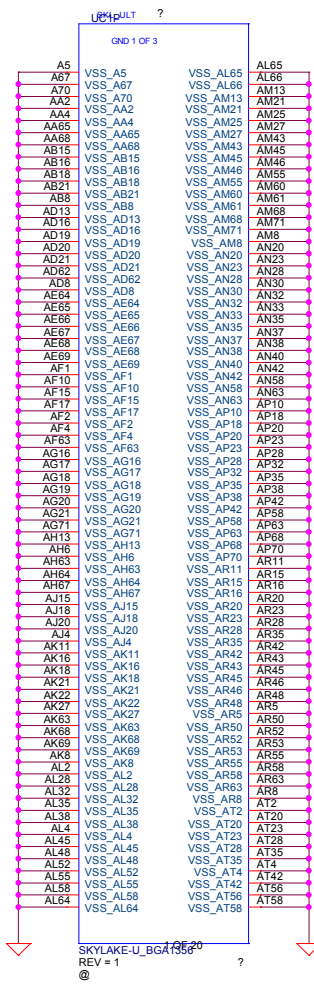
Title			
MCP (CSI2,EMMC,CLOCK) IFC			
Size	Document	Number	Rev
Custom		EYG10 ES430 ES530	1.0
Date:	Tuesday, January 09, 2018	Sheet	10 of 60

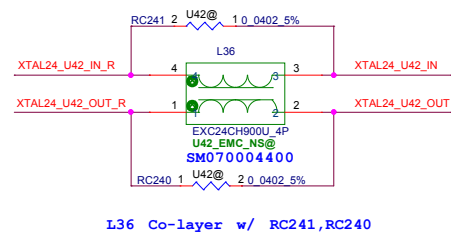
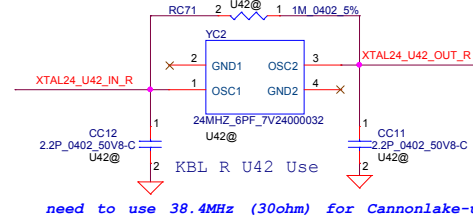
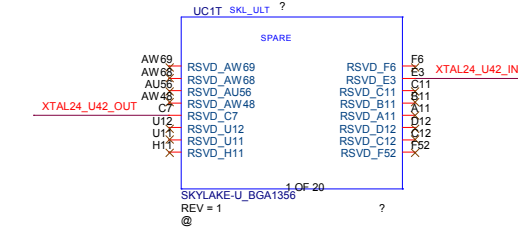
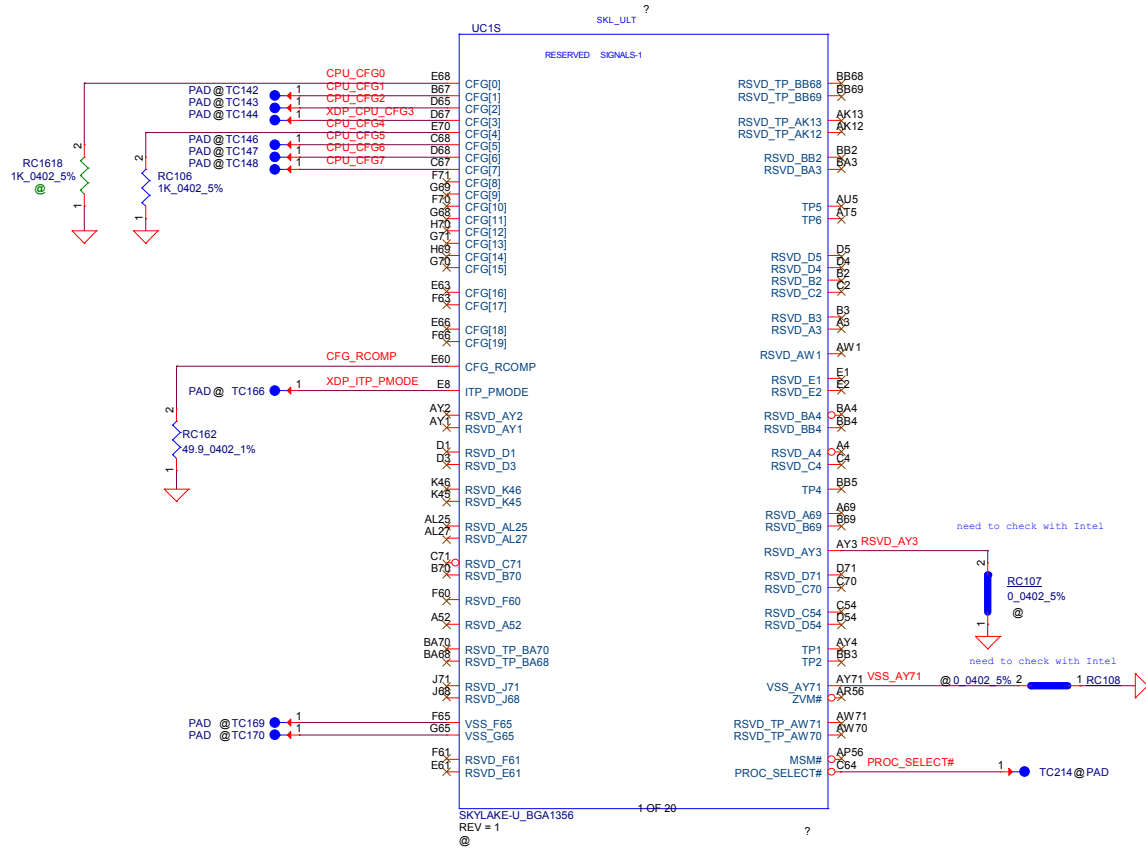







Security Classification	LC Future Center Secret Data			Title	
Issued Date	2015/08/20	Deciphered Date	2016/08/20	MCP (CPU PWR2)	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF RAD DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				Size Document Number EYG10 ES430 ES530	
				Date Tuesday, January 09, 2016	Rev 1.0



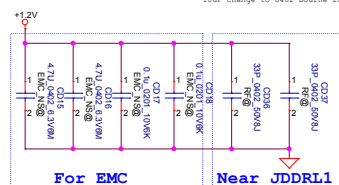
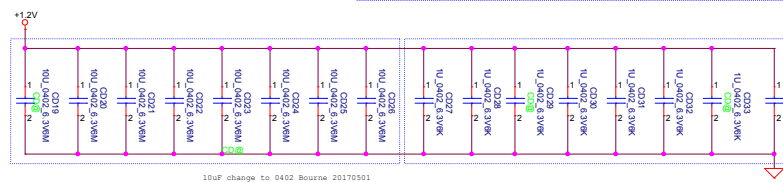
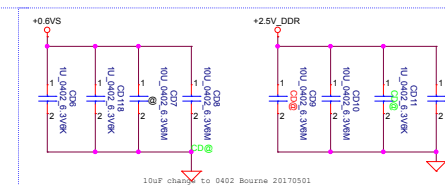
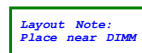
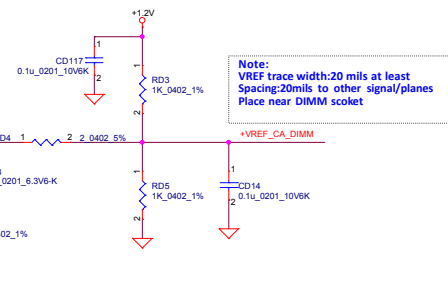
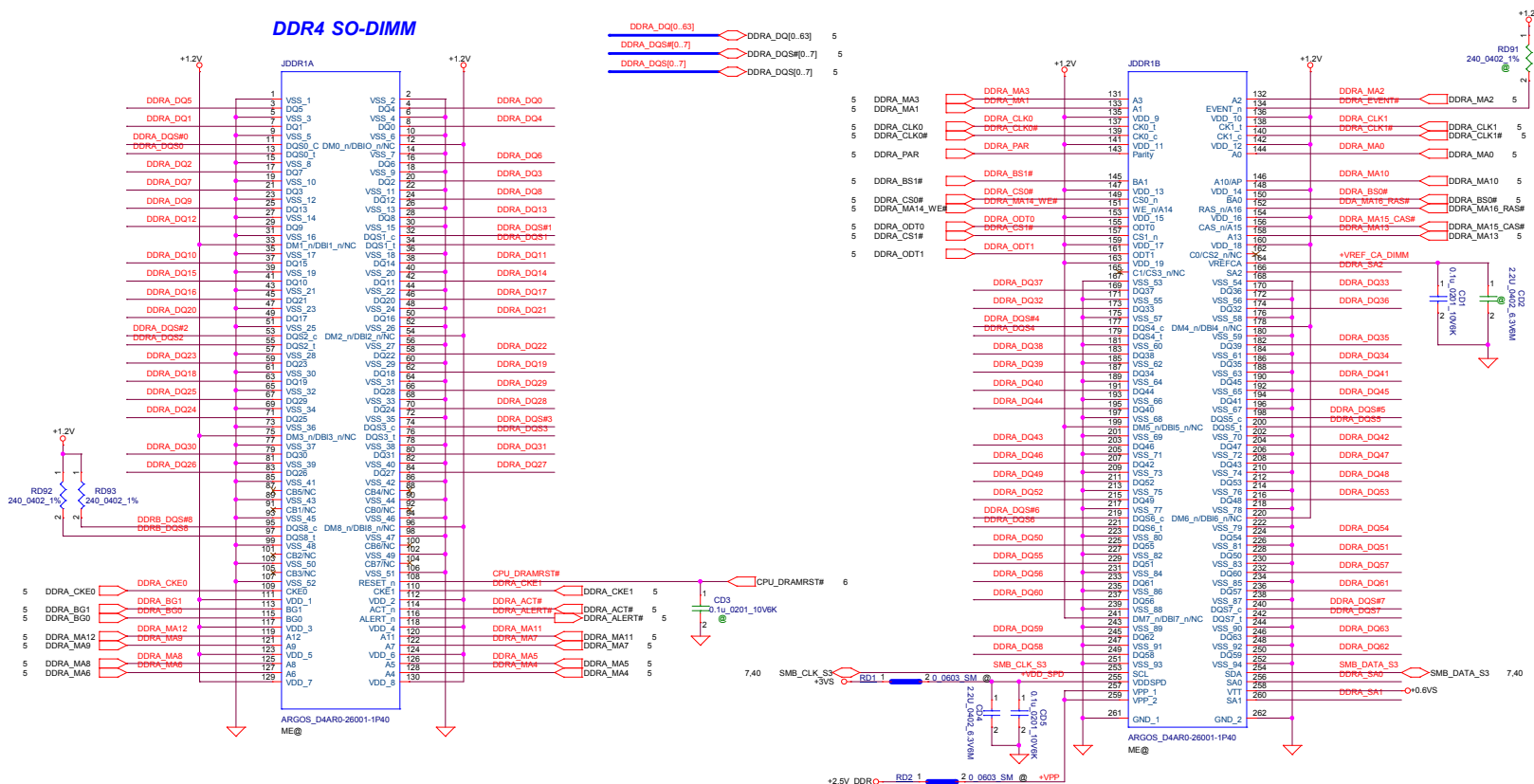


Pin Name	Strap	Description	Configuration	Default Value
CFG[4]		Display Port Presence strap	- 1 = eDP Disabled - 0 = eDP Enabled★	1


Security Classification		LC Future Center Secret Data		Title	
Issued Date		2015/08/20		MCP (CFG,RESERVED)	
Deciphered Date		2016/08/20		Size Document Number	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.		2015/08/20		EYG10 ES430 ES530	
Date		Tuesday, January 09, 2018		Sheet 16 of 60	

Security Classification	LC Future Center Secret Data		Title	
Issued Date	2016/12/14	Deciphered Date	2017/12/13	
<small>THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSMITTED FROM THE CUSTODY OF THE COMPLETER DURING OR AFTER THE SHEET'S USE. ANY DISCLOSURE OF THIS INFORMATION TO ANY OTHER PERSON WITHOUT THE WRITTEN CONSENT OF LC FUTURE CENTER IS PROHIBITED.</small>				
Size	Document	Number	BYG10 ES430 ES530	
Date	Tuesday, January 10, 2018		Sheet	17 of 31

DDR4 SO-DIMM



SPD Address = A0

Security Classification	LC Future Center Secret Data		Title	
Issued Date	2015/08/20	Deciphered Date	2016/08/20	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D OR DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF LC FUTURE CENTER. ANY REPRODUCTION MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.			Size Custom	Document Number EYG10 ES430 ES530
			Date:	Tuesday, January 13, 2016 10:42:39 AM

N16x GPIO

GPIO	I/O	ACTIVE	Function Description
GPIO0	OUT	-	GPU Core VDD PWM control signal
GPIO1	OUT	N/A	FB Enable for GC6 2.0
GPIO2	OUT	N/A	
GPIO3	OUT	N/A	
GPIO4	OUT	N/A	
GPIO5	OUT	N/A	GPU power sequencing--3V3_MAIN_EN
GPIO6	IN	-	GPU wake signal for GC6 2.0
GPIO7	OUT	N/A	
GPIO8	I/O	-	System side PCIe reset Monitor
GPIO9	I/O	N/A	2.2K Pull-up
GPIO10	OUT		FBVREF_ALTV for GDDR5
GPIO11	OUT	-	
GPIO12	IN		AC Power Detect Input (10K pull High)
GPIO13	OUT	-	Phase Shedding
GPIO14	IN	N/A	
GPIO15	IN	N/A	
GPIO16		N/A	
GPIO17	IN	N/A	
GPIO18	IN	N/A	
GPIO19	IN	N/A	
GPIO20		N/A	
GPIO21	OUT		GPU PCIe self-reset control
OVERT	OUT		Active Low Thermal Catastrophic Over Temperature

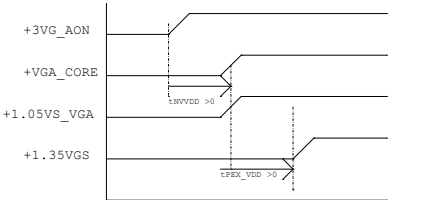
Performance Mode P0 TDP and EDP-Continuous current (GDDR5)

	GPU	Mem	Min Core Clk	NVVDD			FBVDD (1.35V)		FBVDDQ (GPU+Mem) (1.35V)		(1.05V) (6)		Other (3.3V)	
Products	(W)	(W)	(MHz)	(V)	(A)	(W)	(A)	(W)	(A)	(W)	(mA)	(W)	(mA)	(W)
N16S-GMR	16	1.6	849	TBD	19	TBD	2	TBD	4.2	TBD	800	TBD	60	TBD
N16S-GTR	18	1.7	967		26.5		2		4.2		800		60	

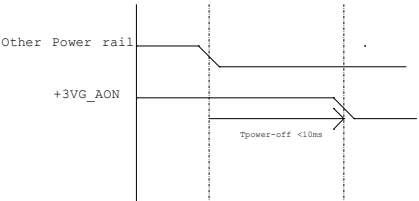
N16x Multi-level Straps

Physical Strapping pin	Power Rail	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0
ROM_SCLK	+3VGS	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
ROM_SI	+3VGS	RAM_CFG[3]	RAM_CFG[2]	RAM_CFG[1]	RAM_CFG[0]
ROM_SO	+3VGS	DEVID_SEL	PCIE_CFG	SMB_ALT_ADDR	VGA_DEVICE
STRAP0	+3VGS	Reserved(keep pull-up and pull-down footprint and stuff 50Kohm pull-up)			
STRAP1	+3VGS				
STRAP2	+3VGS	Reserved(keep pull-up and pull-down footprint and not stuff by default)			
STRAP3	+3VGS				
STRAP4	+3VGS				

N15V-GM Power Sequence

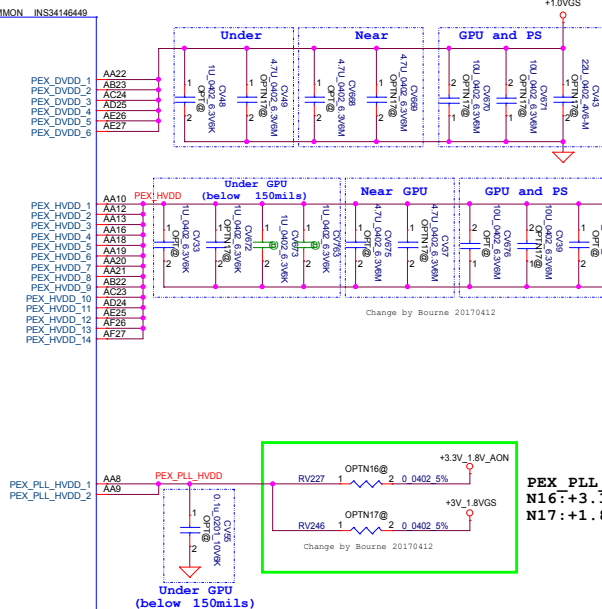
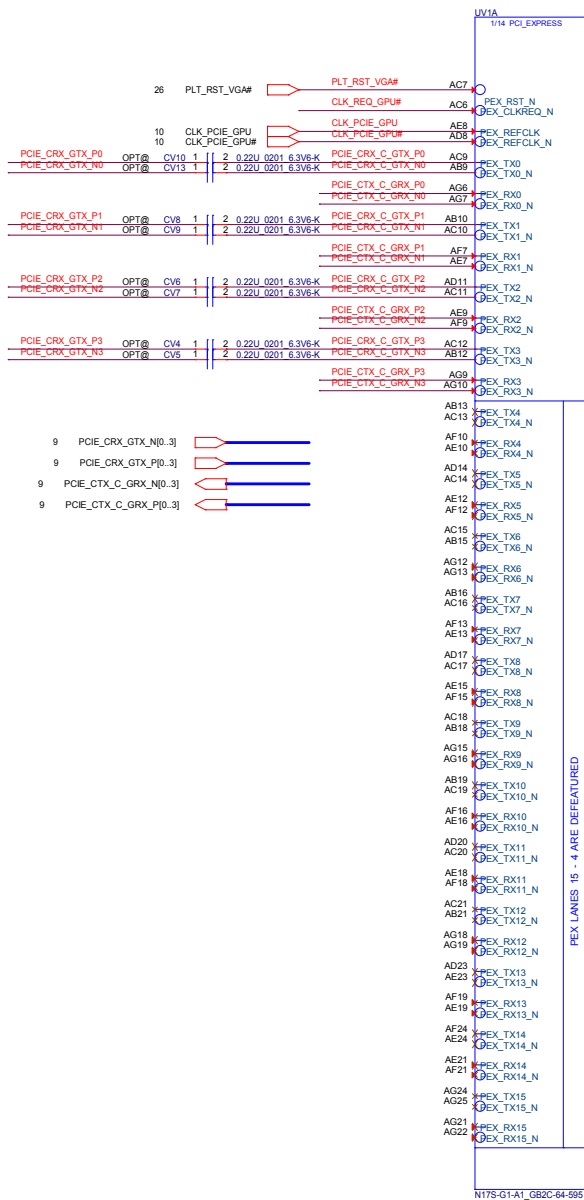


1. all power rail ramp up time should be larger than 40us-6ms



1.all GPU power rails should be turned off within 10ms
2. Optimus system VDD33 avoids drop down earlier than NVDD and FBVDDQ

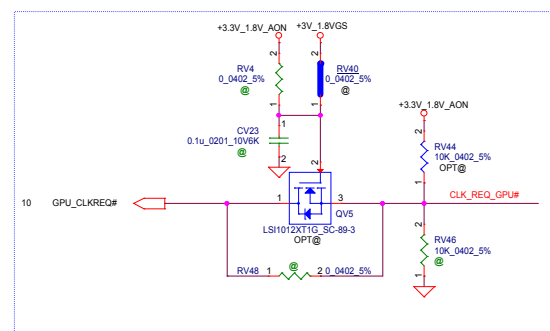
Security Classification	LC Future Center Secret Data			Title	
Issued Date	2015/08/20	Deciphered Date	2016/08/20	VGA Notes List	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF RAD DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				Size	Document Number
				C	EGY10 ES430 ES530
				Date:	Tuesday, January 05, 2018
				Sheet	19 of 60
				Rev	1.0



PEX_VDD0
N16: +1.05VGS (recommend)
+1.0VGS (Used)
N17: +1.0VGS

PEX_HVDD
N16: +1.05VGS (recommend)
+1.0VGS (Used)
N17: +1.8VGS

PEX_PLL HVDD
N16: +3.3V AON
N17: +1.8VGS



PEX_VDD0/Q Decoupling

MLCC	N16	N17	location
1.0uF	1	1	Under
4.7uF	0	1	Near
4.7uF	1	2	Midway
10uF	0	2	Midway
22uF	0	1	

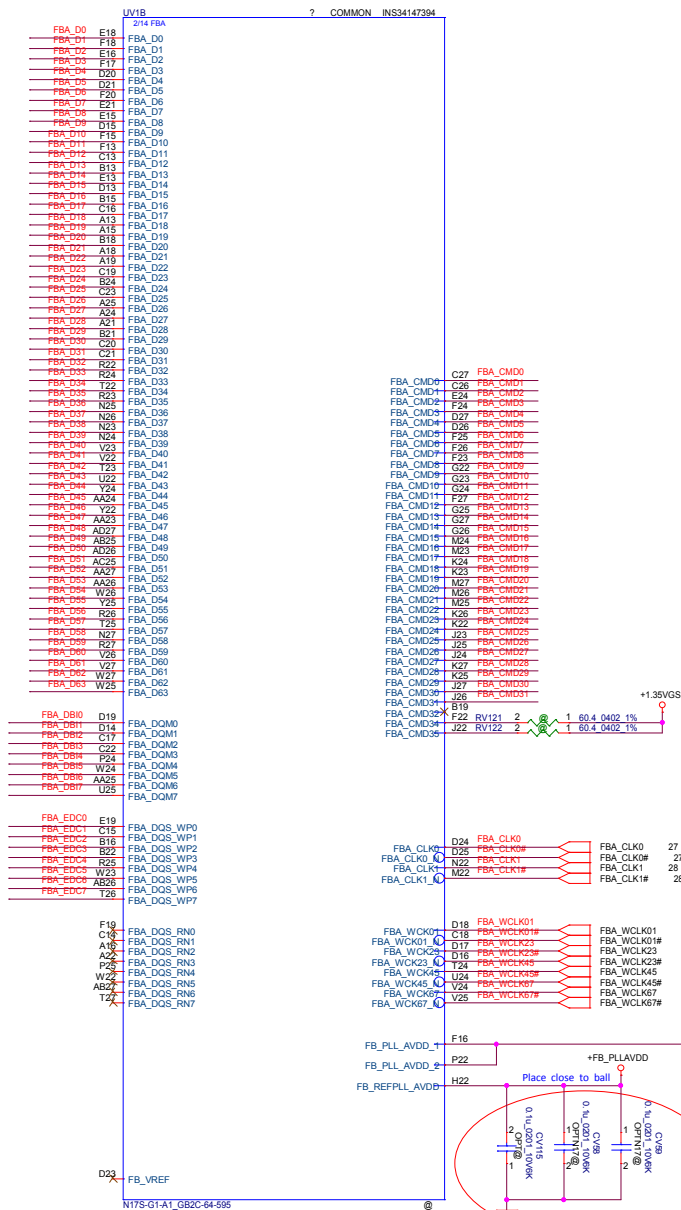
PEX_HVDD/Q Decoupling

MLCC	N16	N17	location
1.0uF	1	4	Under
4.7uF	1	2	Near
10uF	1	2	Midway
22uF	1	1	

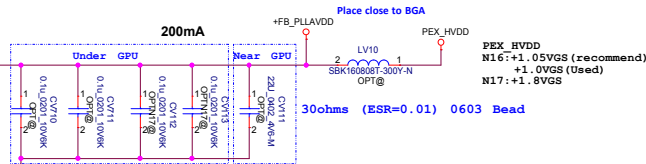
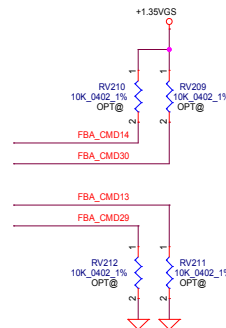
PEX_PLL HVDD/Q Decoupling

MLCC	N16	N17	location
0.1uF	1	1	Near

27.28 FBA_D[0..63]
27.28 FBA_CMD[31..0]
27.28 FBA_EDC[7..0]
27.28 FBA_DBI[7..0]

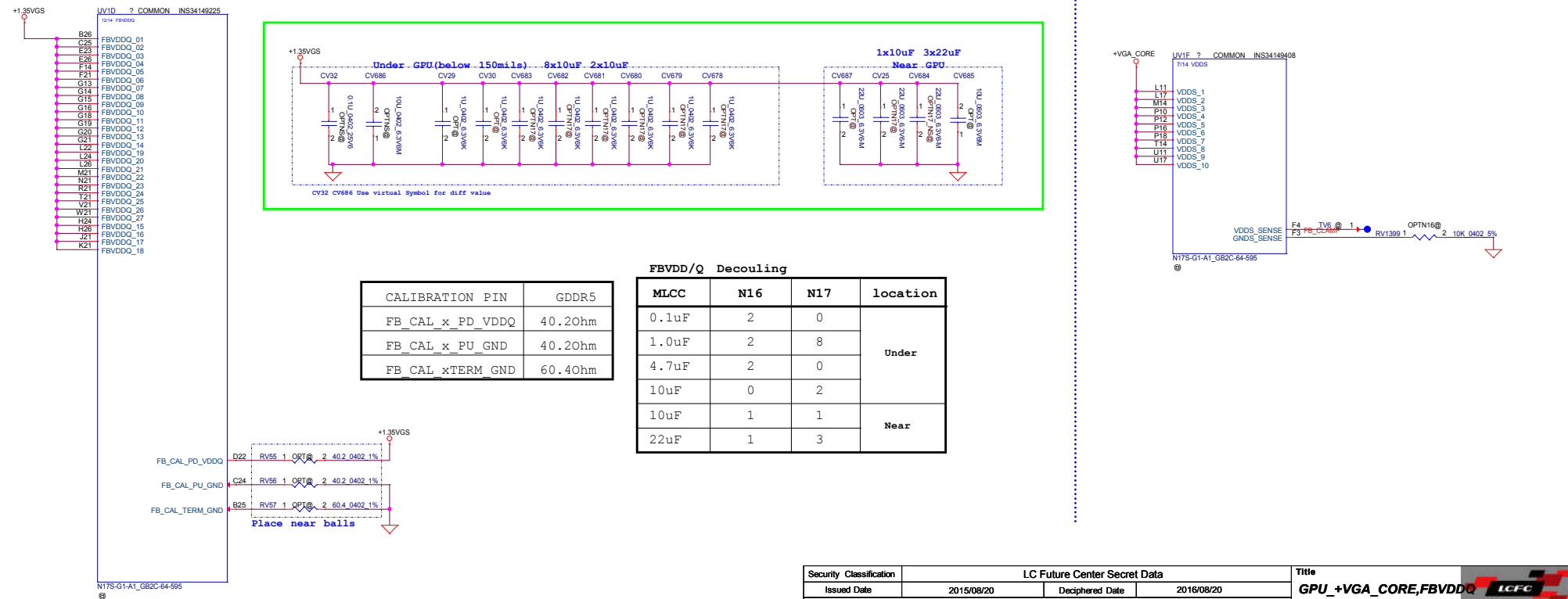
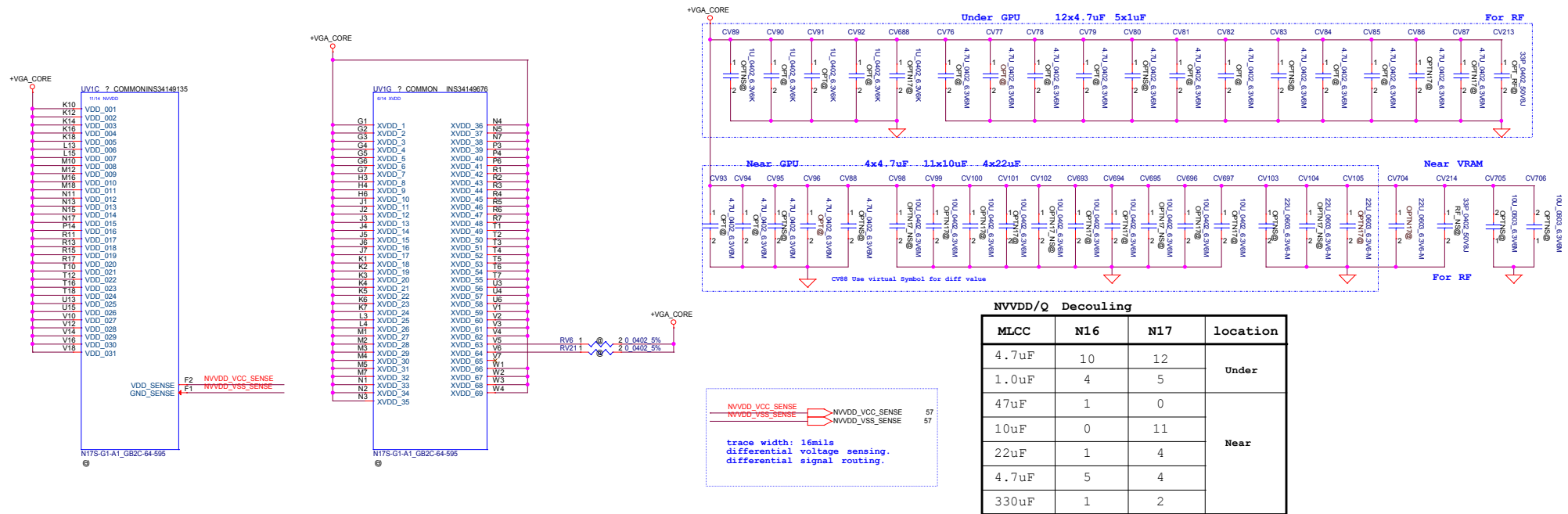


N17S Add 2x0.1u



FB_PLL/Q Decoupling

MLCC	N16	N17	location
0.1uF	2	4	Under
22uF	1	1	Near

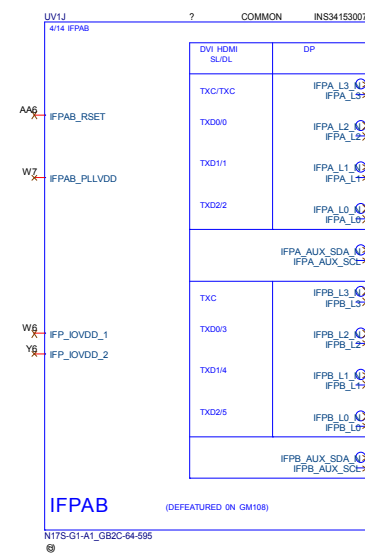
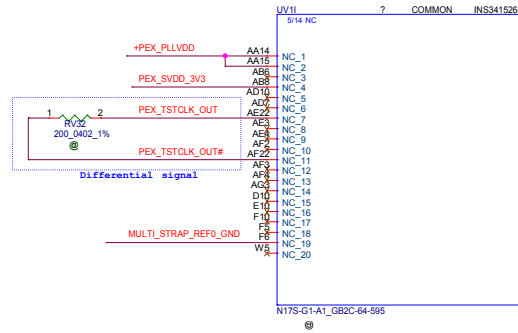
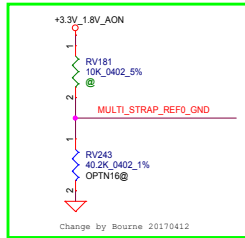
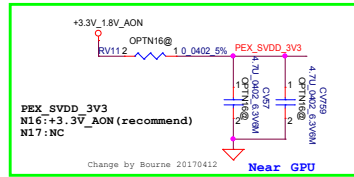
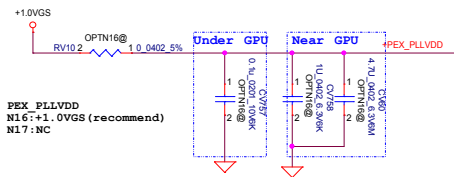


PEX_PLLVDD/Q Decoupling

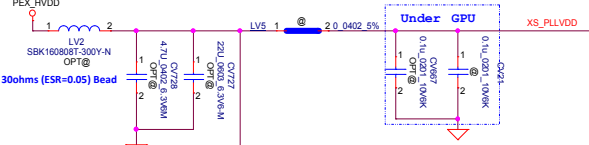
MLCC	N16	N17	location
1.0uF	1	NA	Under
1uF	1	NA	Near
4.7uF	1	NA	

PEX_SVDD/Q Decoupling

MLCC	N16	N17	location
4.7uF	2	NA	Near



PEX_HVDD Decoupling



XS_PLLVDD/Q Decoupling

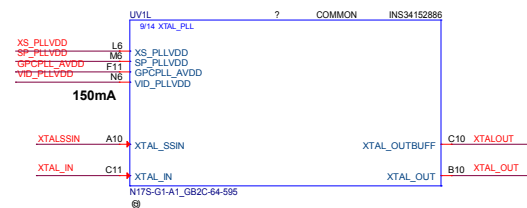
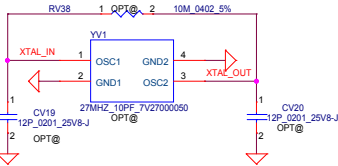
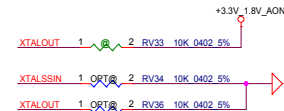
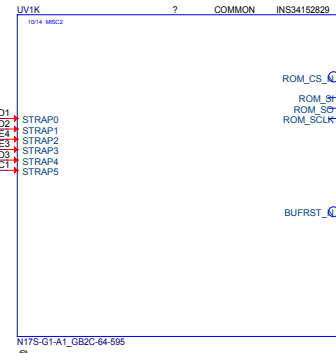
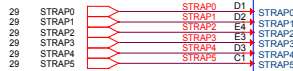
MLCC	N16	N17	location
0.1uF	1	1	Under
22uF	1	0	Near

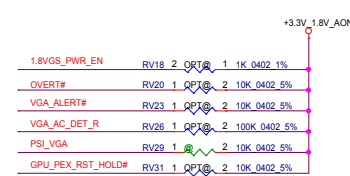
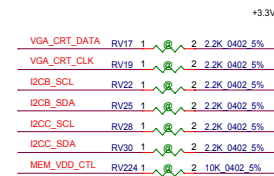
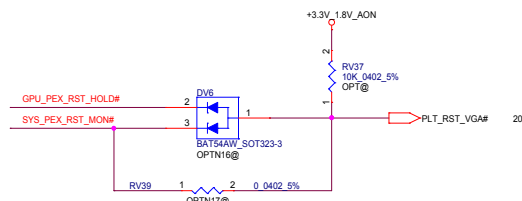
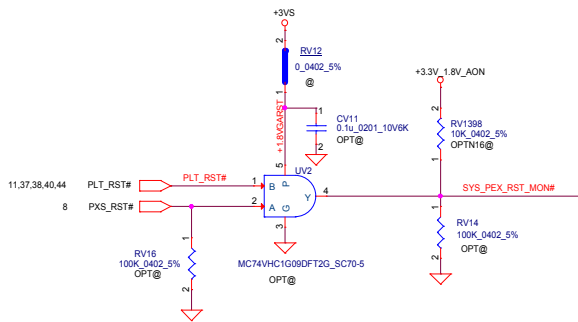
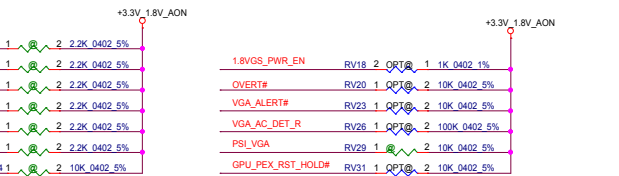
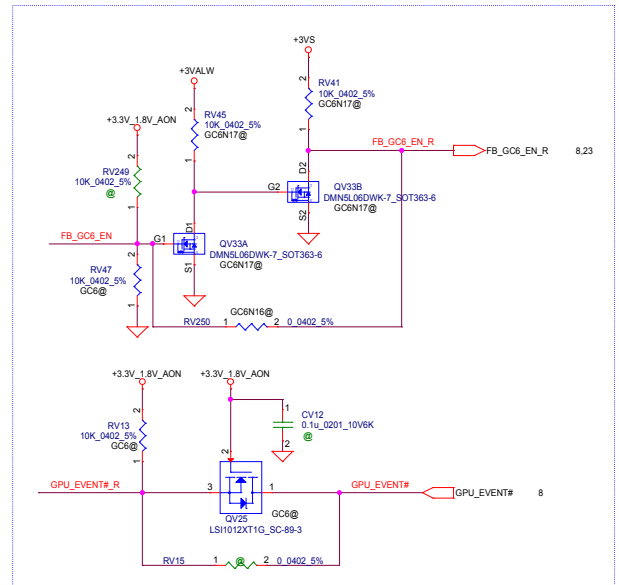
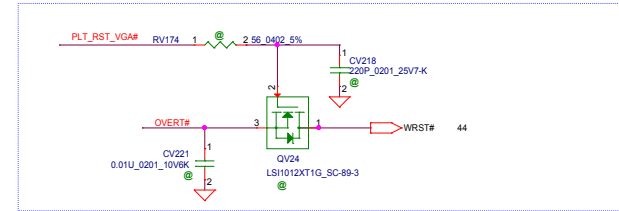
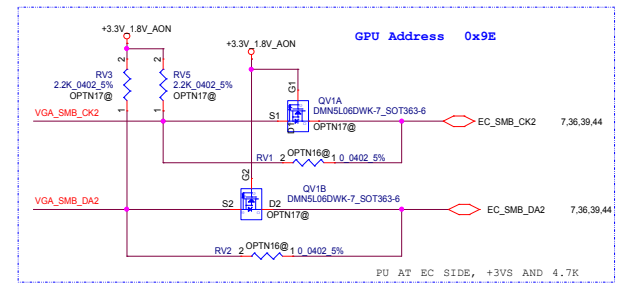
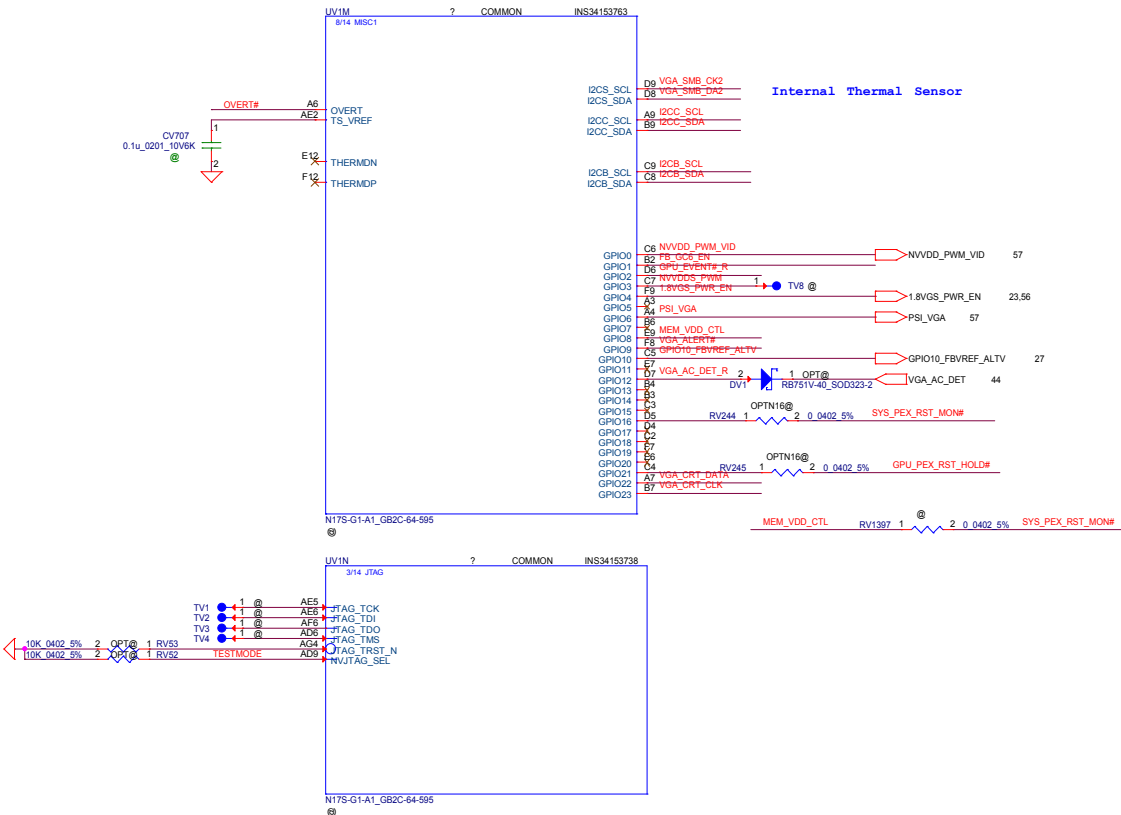
SP_PLLVDD & VID_PLLVDD/Q Decoupling

MLCC	N16	N17	location
0.1uF	2	2	Under
10uF	1	0	Near
47uF	1	0	

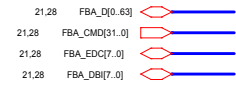
GPCPLL_AVDD/Q Decoupling

MLCC	N16	N17	location
0.1uF	NA	1	Under
4.7uF	NA	1	Near
22uF	NA	1	

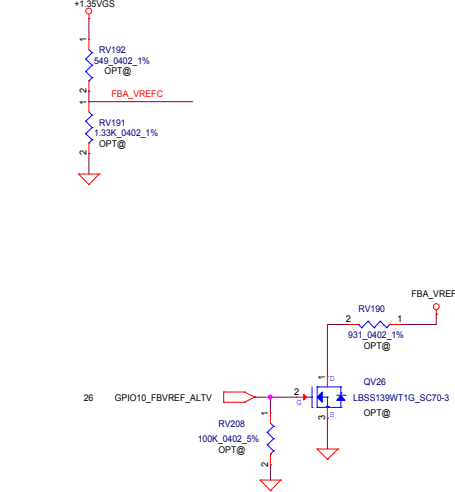
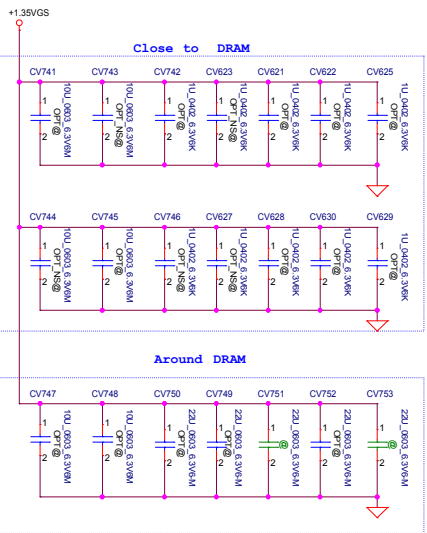
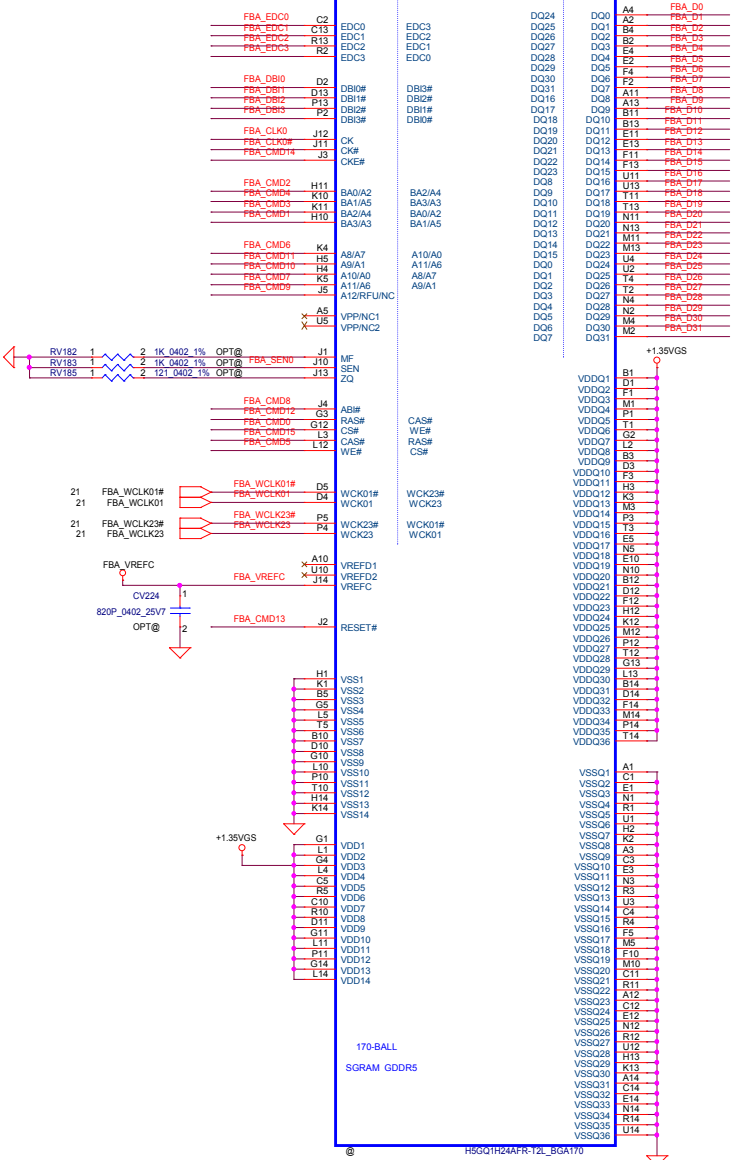
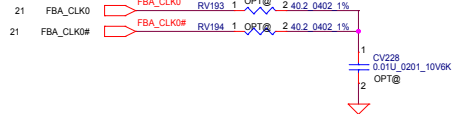


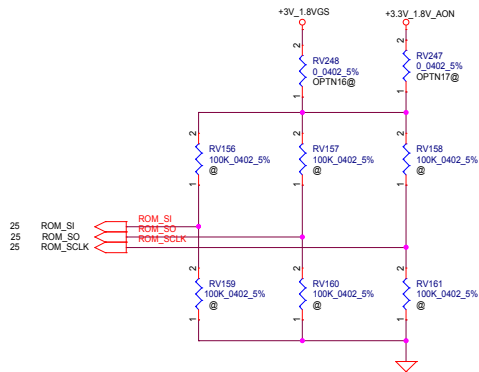
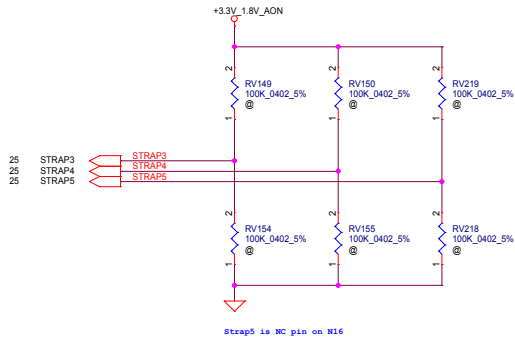
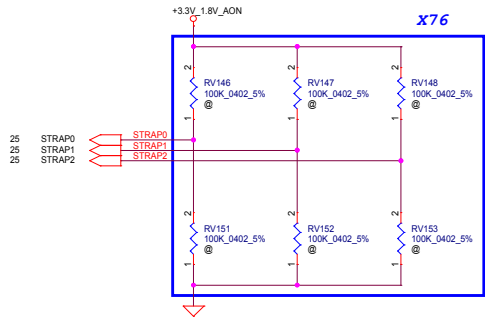


Lower 32 bits



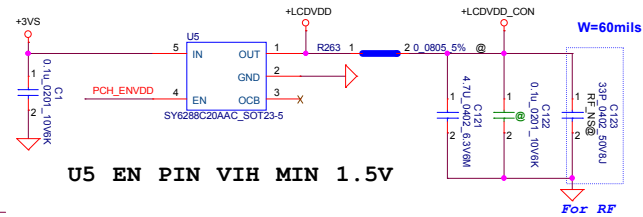
MF=0 No Mirror





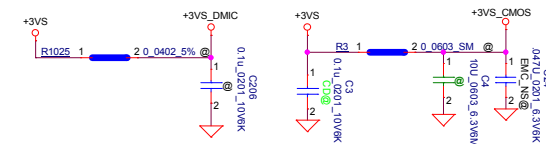
5	4	3	2	1																														
D				D																														
C				C																														
B				B																														
A				A																														
<table><tr><td>Security Classification</td><td colspan="3">LC Future Center Secret Data</td><td>Title</td></tr><tr><td>Issued Date</td><td>2015/08/20</td><td>Deciphered Date</td><td>2016/08/20</td><td>Blank</td></tr><tr><td colspan="4">THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.</td><td></td></tr><tr><td>Size</td><td>Document</td><td>Number</td><td colspan="2">Rev</td></tr><tr><td>Custom</td><td></td><td>EYG10 ES430 ES530</td><td colspan="2">1.0</td></tr><tr><td>Date:</td><td colspan="3">Tuesday, January 09, 2018</td><td>Sheet 32 of 60</td></tr></table>					Security Classification	LC Future Center Secret Data			Title	Issued Date	2015/08/20	Deciphered Date	2016/08/20	Blank	THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.					Size	Document	Number	Rev		Custom		EYG10 ES430 ES530	1.0		Date:	Tuesday, January 09, 2018			Sheet 32 of 60
Security Classification	LC Future Center Secret Data			Title																														
Issued Date	2015/08/20	Deciphered Date	2016/08/20	Blank																														
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.																																		
Size	Document	Number	Rev																															
Custom		EYG10 ES430 ES530	1.0																															
Date:	Tuesday, January 09, 2018			Sheet 32 of 60																														
5	4	3	2	1																														

LCD POWER CIRCUIT

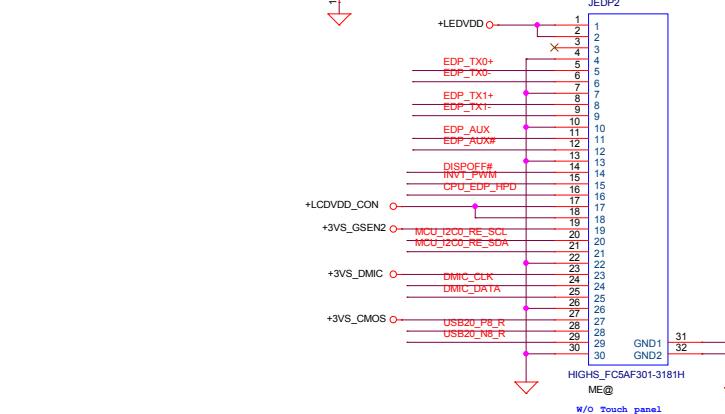
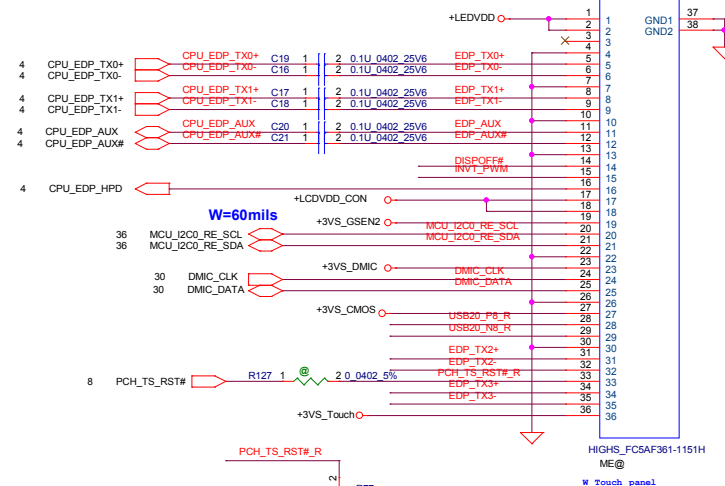
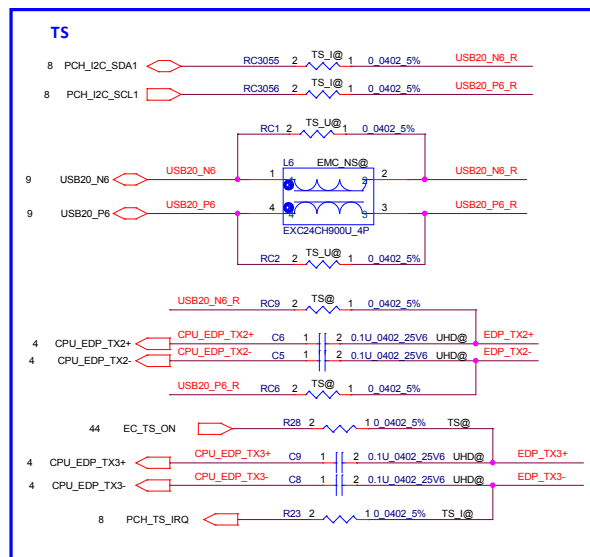
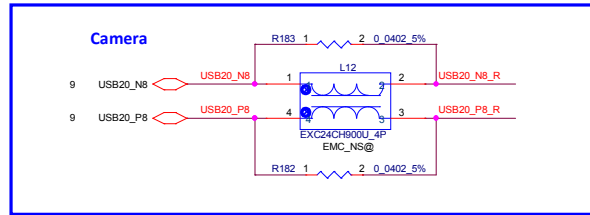
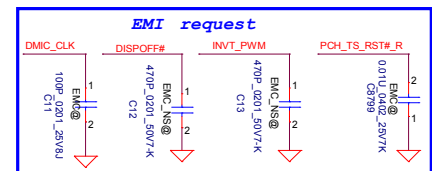
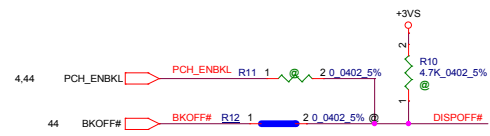
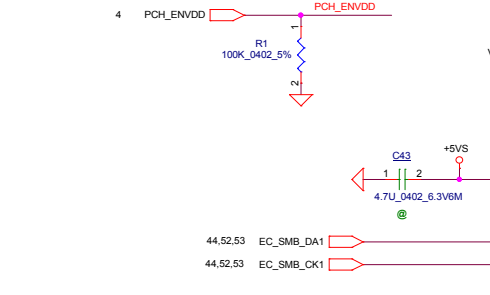
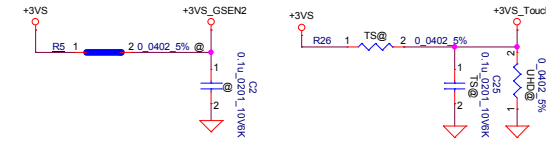


U5 EN PIN VIH MIN 1.5V

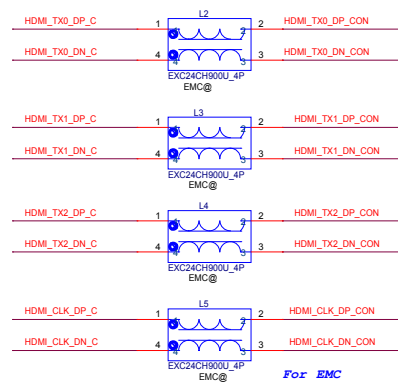
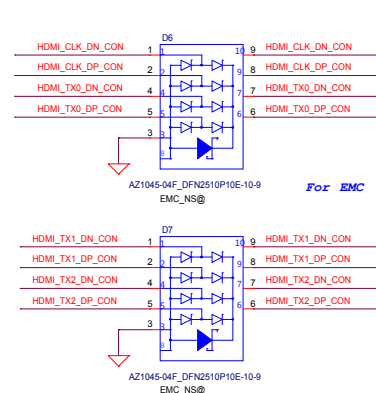
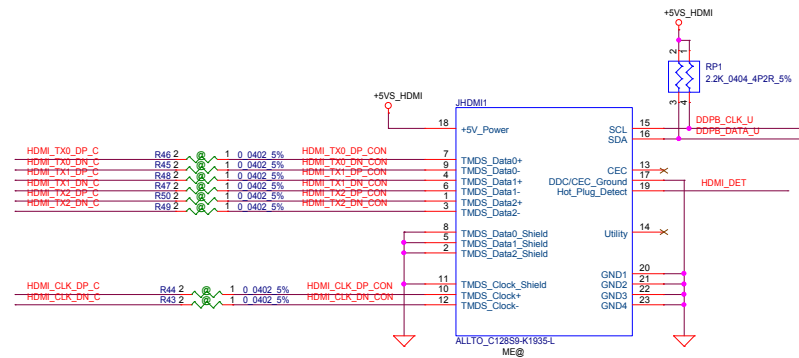
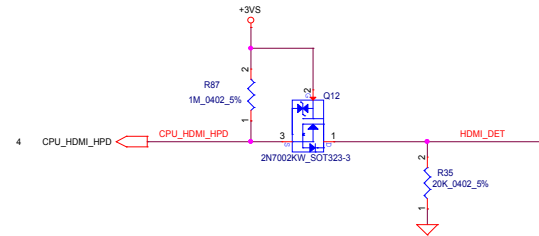
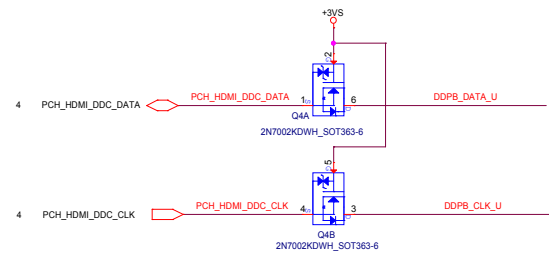
CMOS Camera

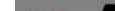



Touch



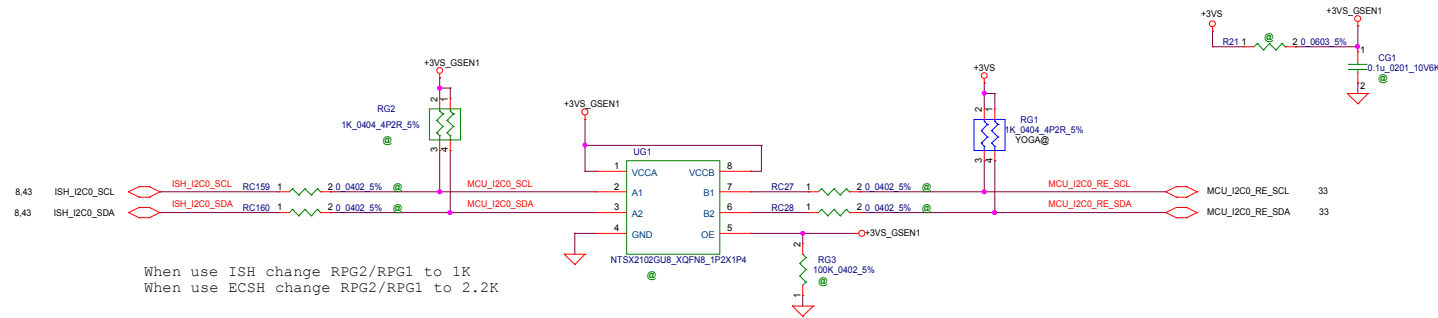
Security Classification		LC Future Center Secret Data		Title	
Issued Date		2015/08/20		eDP/CAMERA/TS_CONN	
Deciphered Date		2016/08/20		Size Document Number	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF RAD DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.		Date: Tuesday, January 09, 2018		Rev 1.0	
Sheet 33		c1		80	



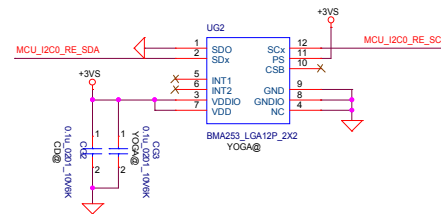
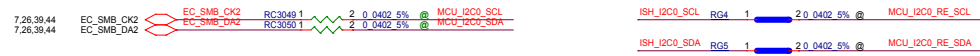
Title		HDMI_CONN				Rev
Size	Document Number	EYG10 ES430 ES530				1.
Custom	Date	Tuesday, January 09, 2018	Sheet	34	of	60

Security Classification		LC Future Center Secret Data		Title		
Issued Date	2015/08/20	Deciphered Date	2016/08/20	Blank		
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D CENTER OF THE FUTURE CENTER OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				Size Document Number EYG10 ES430 ES530		
				Date:	Tuesday, January 09, 2018	Rev 1.0 Sheet 35 of 60

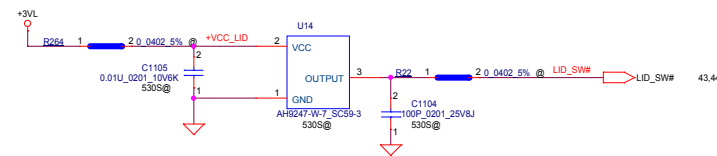
G-SENSOR

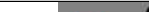


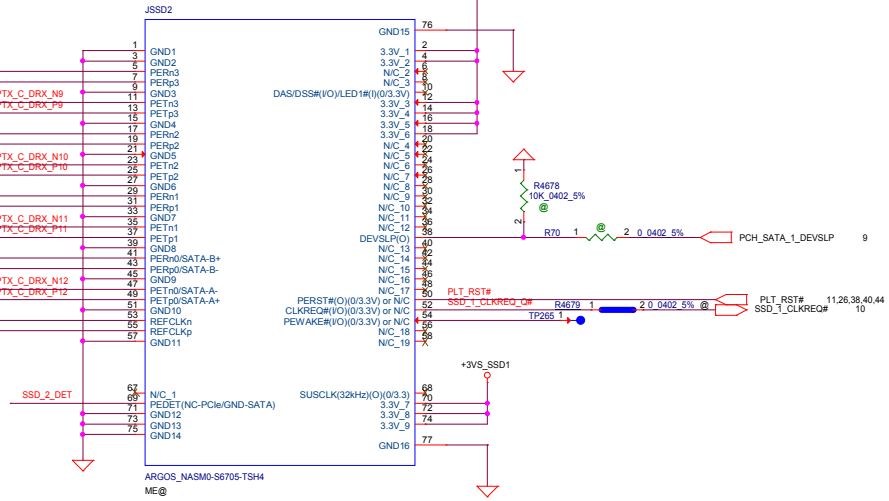
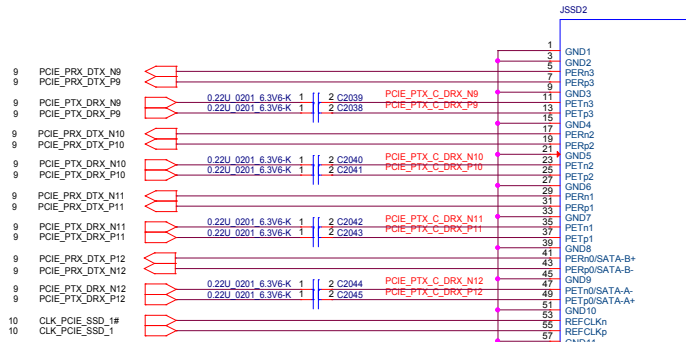
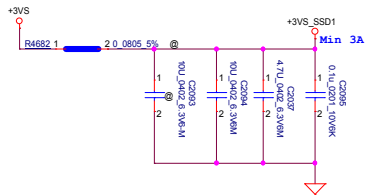
When use ISH change RPG2/RPG1 to 1K
When use ECSH change RPG2/RPG1 to 2.2K



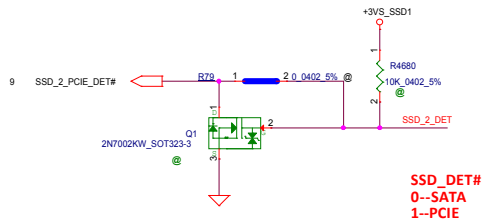
LID switch



Security Classification	LC Future Center Secret Data			Title	
Issued Date	2015/08/20	Deciphered Date	2016/08/20	HALL/G Sensor	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF RAD DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.					
Size Custom	Document Number			EYG10 ES430 ES530	Rev 1.
Date:	Tuesday, January 09, 2018			Sheet	38 of 60

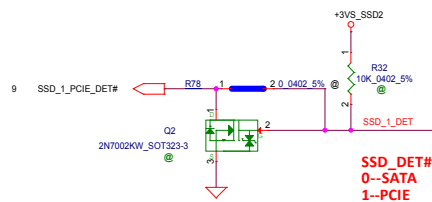
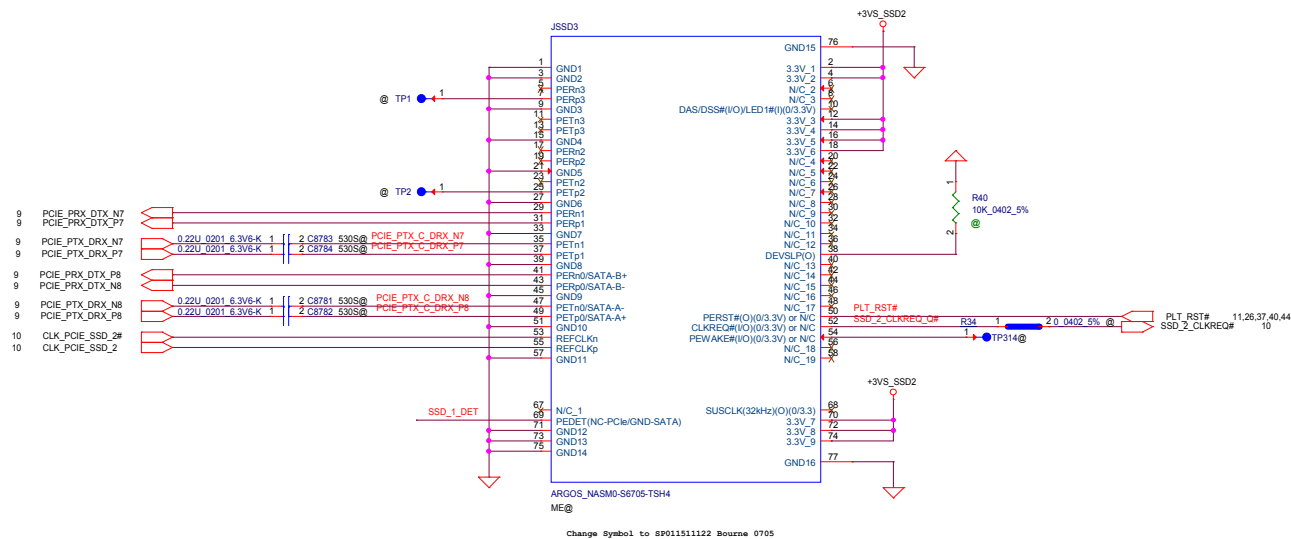
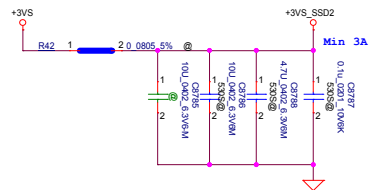


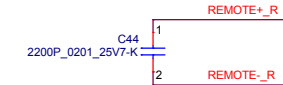
Change Symbol to SP01151122 Bourne 0705



SSD_DET#
0--SATA
1--PCIE

Security Classification	LC Future Center Secret Data		Title	NGFF_SSD_1	
Issued Date	2015/08/20	Deciphered Date	2016/08/20	Size	Document Number
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF RAD DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				Rev	1.0
				Date:	Tuesday, January 05, 2018
				Sheet	37 of 60





```
REMOTE+/- R, REMOTE1+/-, REMOTE2+/-:  
Trace width/space:10/10 mil  
Trace length:<8"
```

U1

1 VDD

2 D+

3 SCL

4 D-
T_CRIT#

5 GND

6 ALERT#

7 SDA

8 EC_SMB_CK2

EC_SMB_CK2 7.26,36,44

EC_SMB_DA2 7.26,36,44

3V3

C47 10u_0201_10V6K

3V3

R51 10K_0402_5%

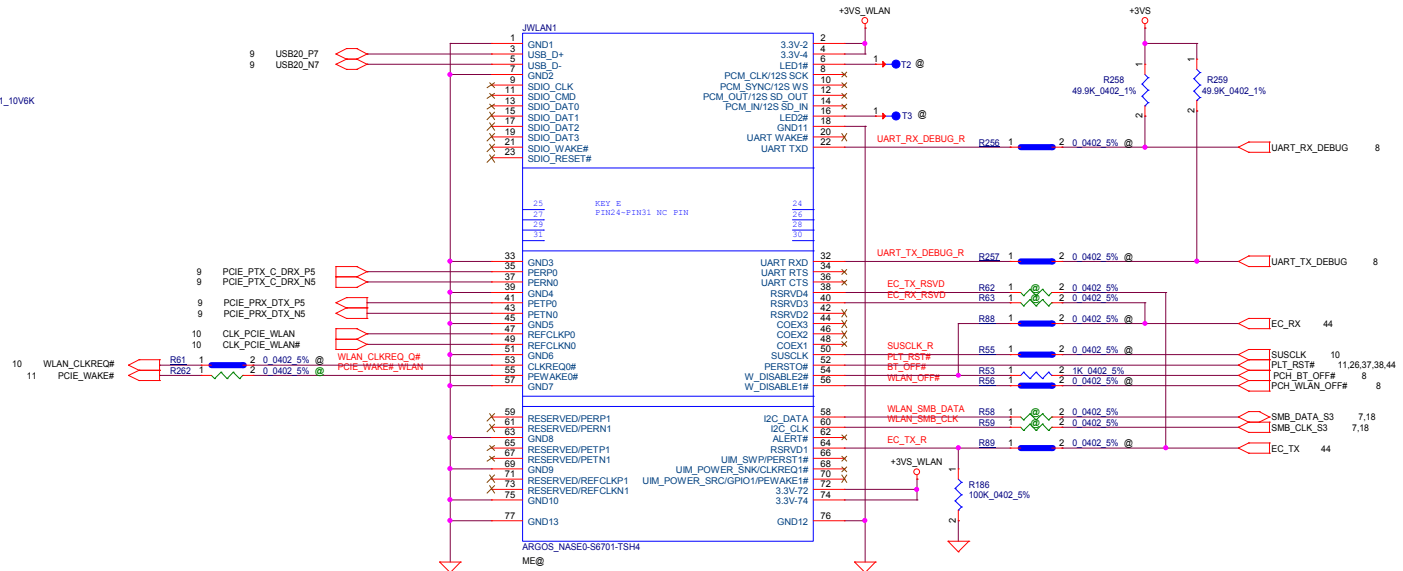
NCT7718W_MSP08


FAN Conn

Pin 1: +5VS_FAN1
 Pin 2: EC_FAN_PWM1
 Pin 3: EC_FAN_SPEED1
 Pin 4: GND1
 Pin 5: GND2
 Pin 6: ME@

Component: CIVL_C1804M2HR0-NH

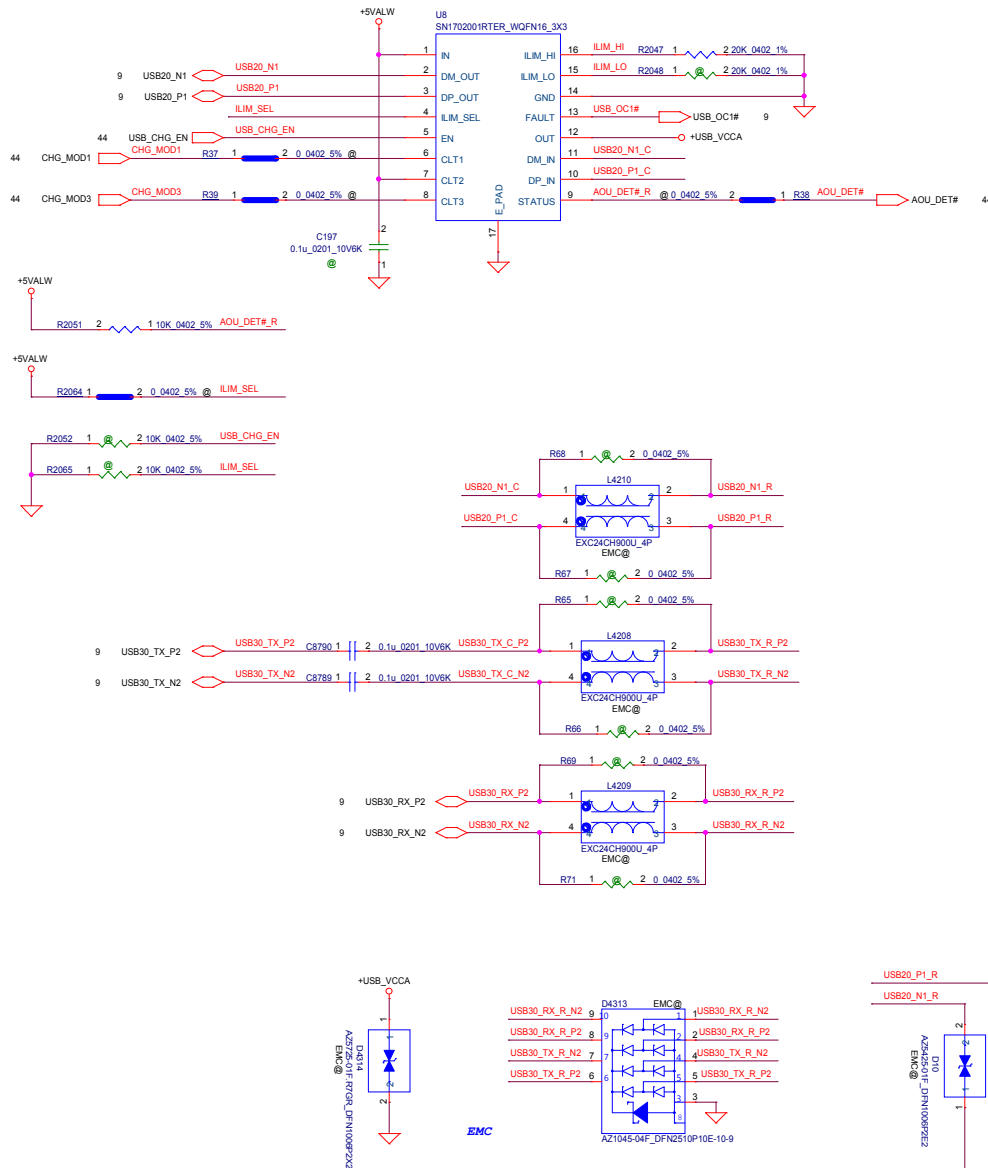
Date: Tuesday, January 09, 2018 Sheet 39 of 60

[illegible]

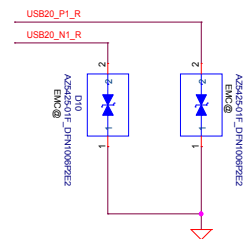
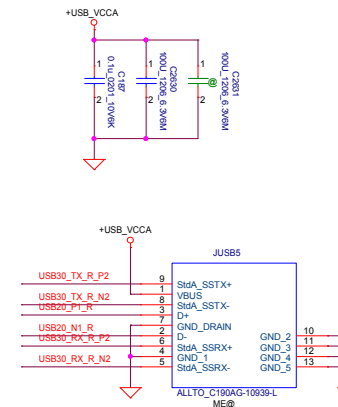
Security Classification		LC Future Center Secret Data		Title			
Issued Date		Deciphered Date		NGFF_WLAN			
2016/12/14		2017/12/13		Size		Document Number	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF RAD DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				EYG10 ES430 ES530		Rev 1.0	
				Date: Tuesday, January 09, 2018		Sheet 40 of 60	


RIGHT SIDE USB3.0 PORT x1

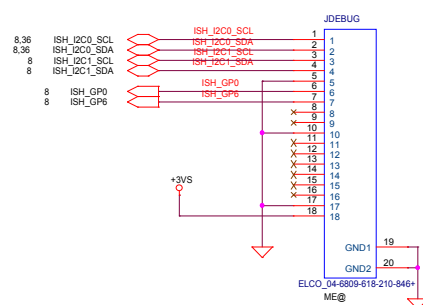
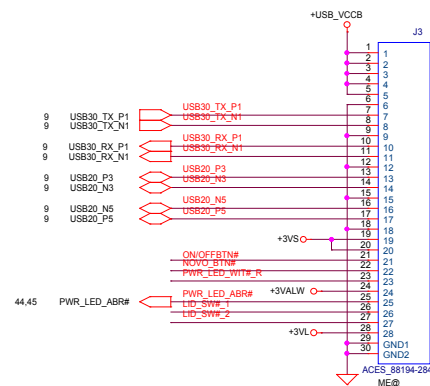
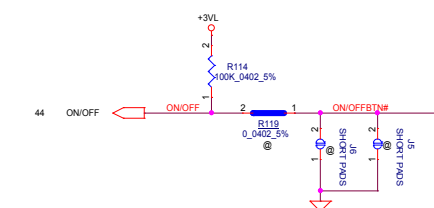
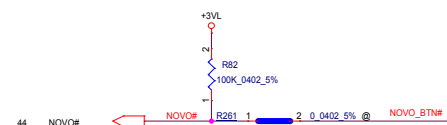
USB charger
2.2A




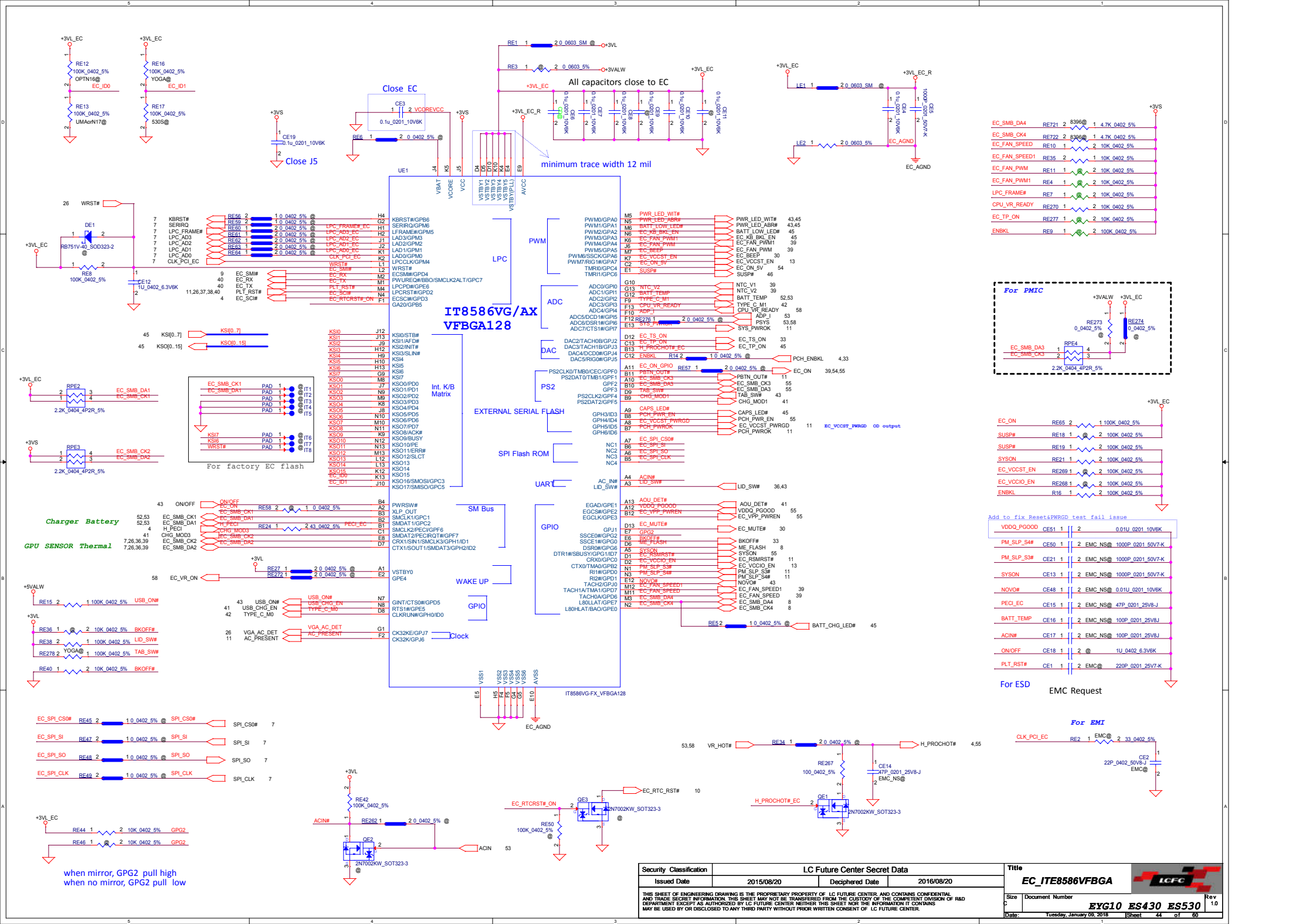
CLT1	CLT2	CLT3	ILIM_SEL	MOD	
0	0	0	X	DCH	OUT held low
1	1	1	1	CDP	Data Connected and Port Power Mgt. Function Active
1	1	1	0	SDP2	Data Connected
1	1	0	X	SDP1	Data Connected
0	1	0	X	SDP1	Data Connected
1	0	0	X	DCP_Short	Device Forced to stay in DCP BC 1.2 charging mode
1	0	1	X	DCP_Divider	Device Forced to stay in DCP Divider 1 Charging Mode
0	1	1	X	DCP_Auto	Data Disconnected and Port Power Mgt. Function Active
0	0	1	X	DCP_Auto	Data Disconnected and Power Wake Function Active

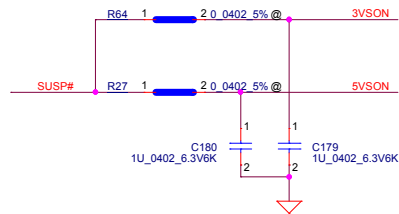


Security Classification	LC Future Center Secret Data			Title	
Issued Date	2015/08/20	Deciphered Date	2016/08/20	USB3 PORT_LEFT	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				Size Custom	
				Document Number EYG1 ES430 ES530	Rev. 1.0
				Date: Tuesday, January 09, 2018	Sheet 41 of 60



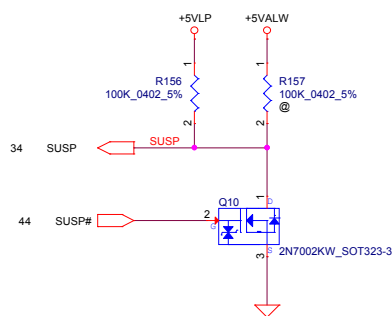
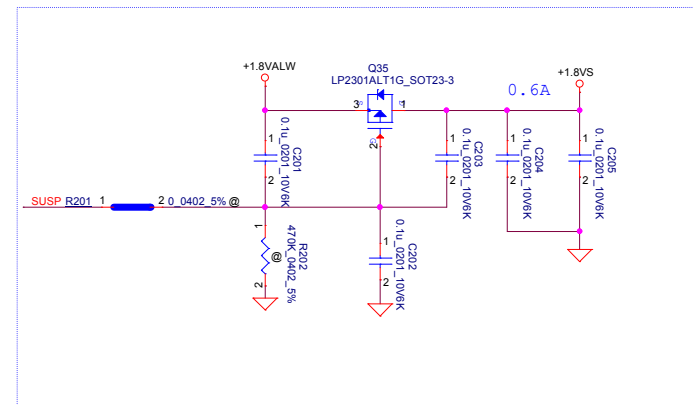
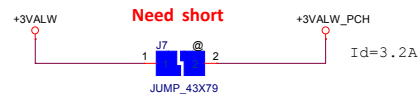
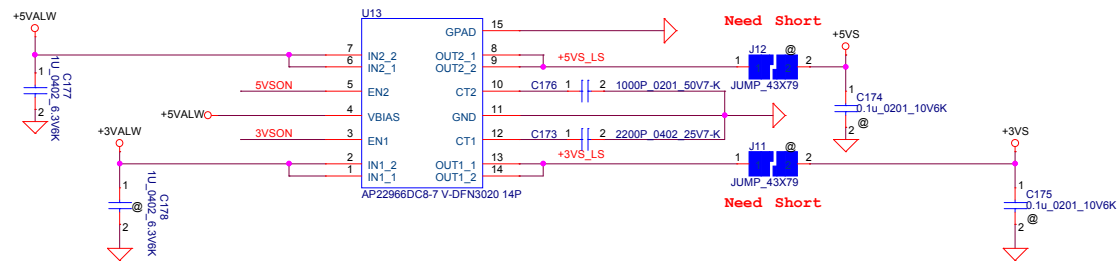
Security Classification	LC Future Center Secret Data			Title	
Issued Date	2015/08/20	Deciphered Date	2016/08/20	<i>I/O_DB_CONN</i>	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				Size Document Number <i>EYG10 ES430 ES530</i>	
				Date: <i>Tuesday, January 05, 2018</i>	Rev: <i>1</i>



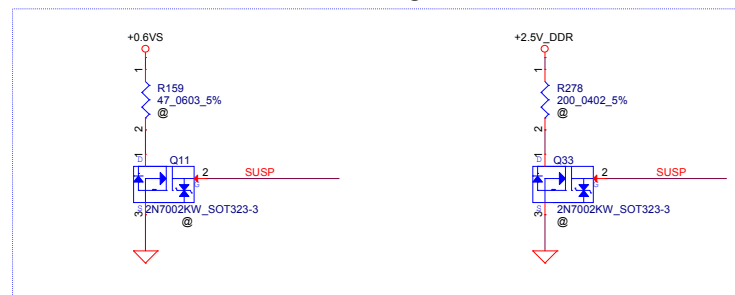


Load Switch
+5VALW To +5VS
+3VALW To +3VS

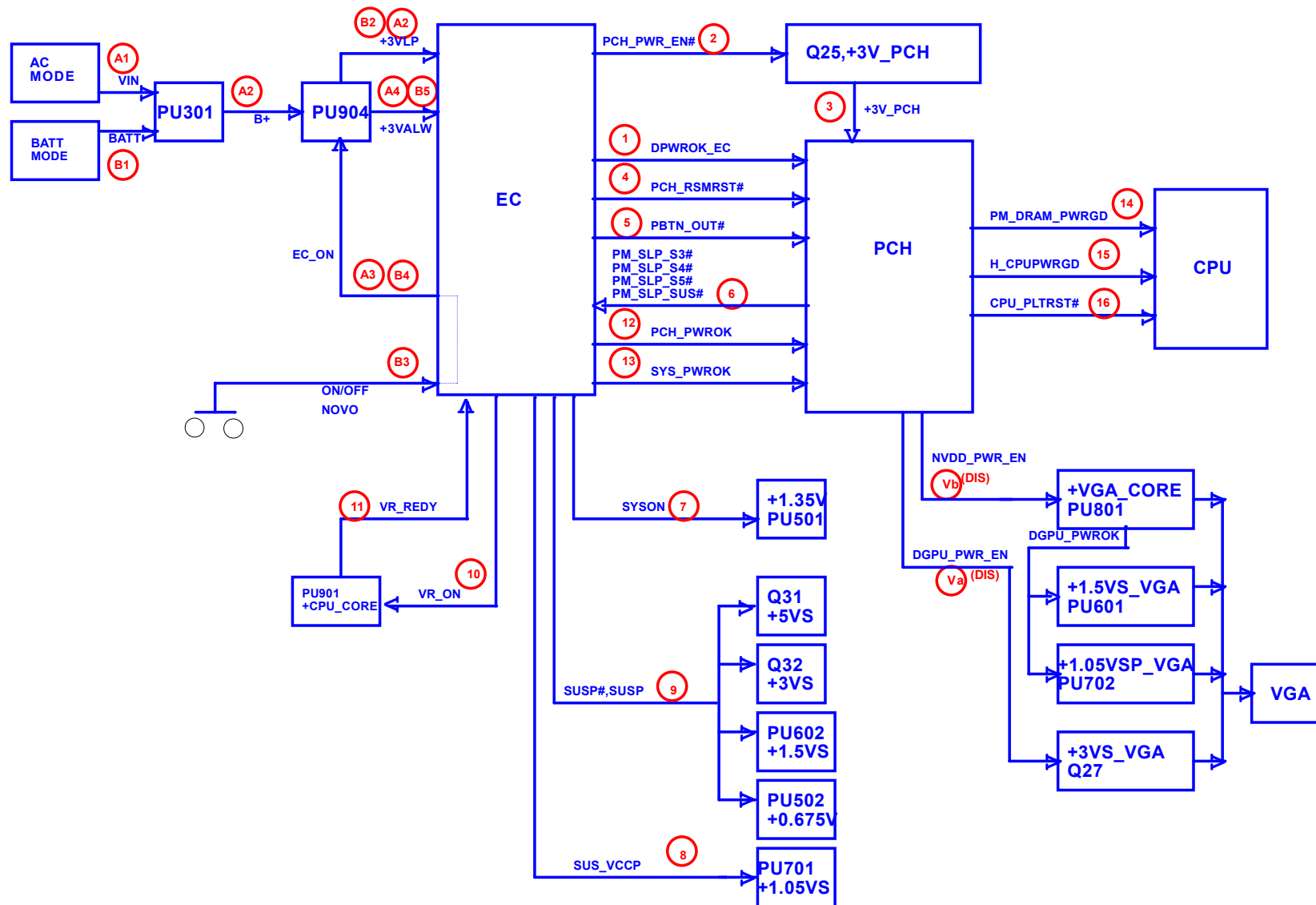
+3VS, C173 --> 2.74ms
+5VS, C176 --> 2.03ms
VIN 5V and 3.3V (VBIAS=5V), IMAX(per channel)=6A, Rds=16mohm



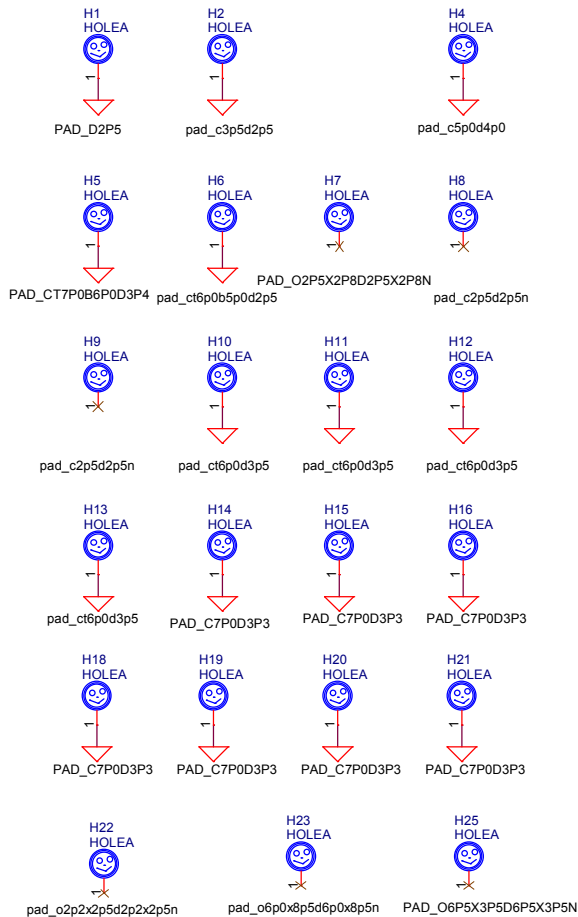
For DisCharge



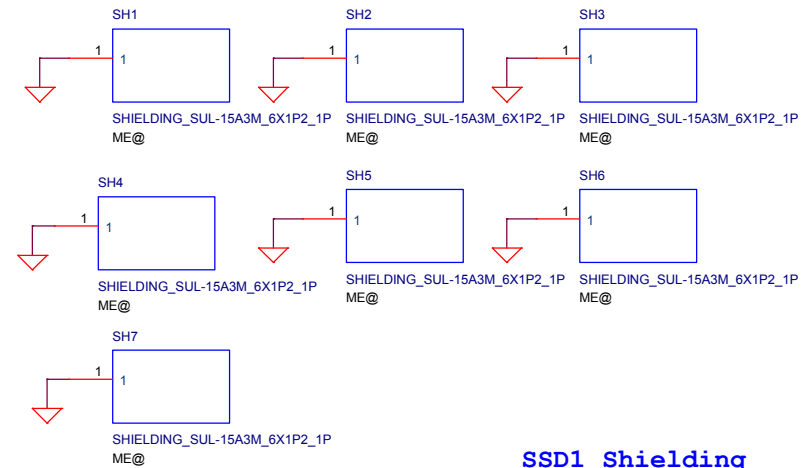
08/29: Need double check enable signal and the resistance



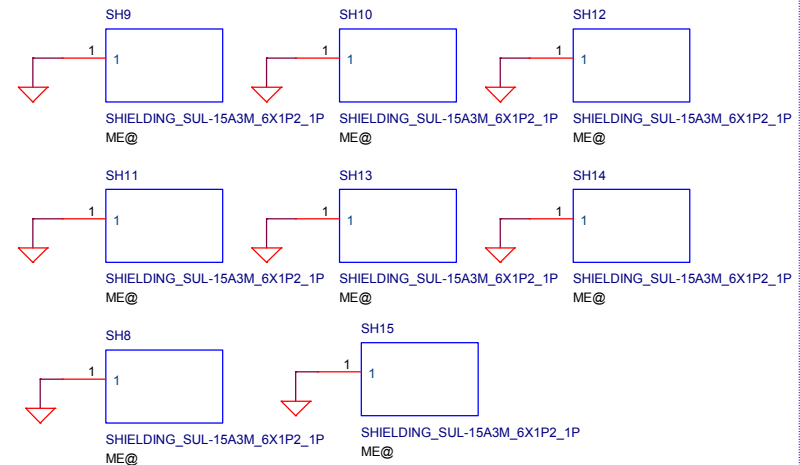
Hole




PCB Fedical Mark PAD

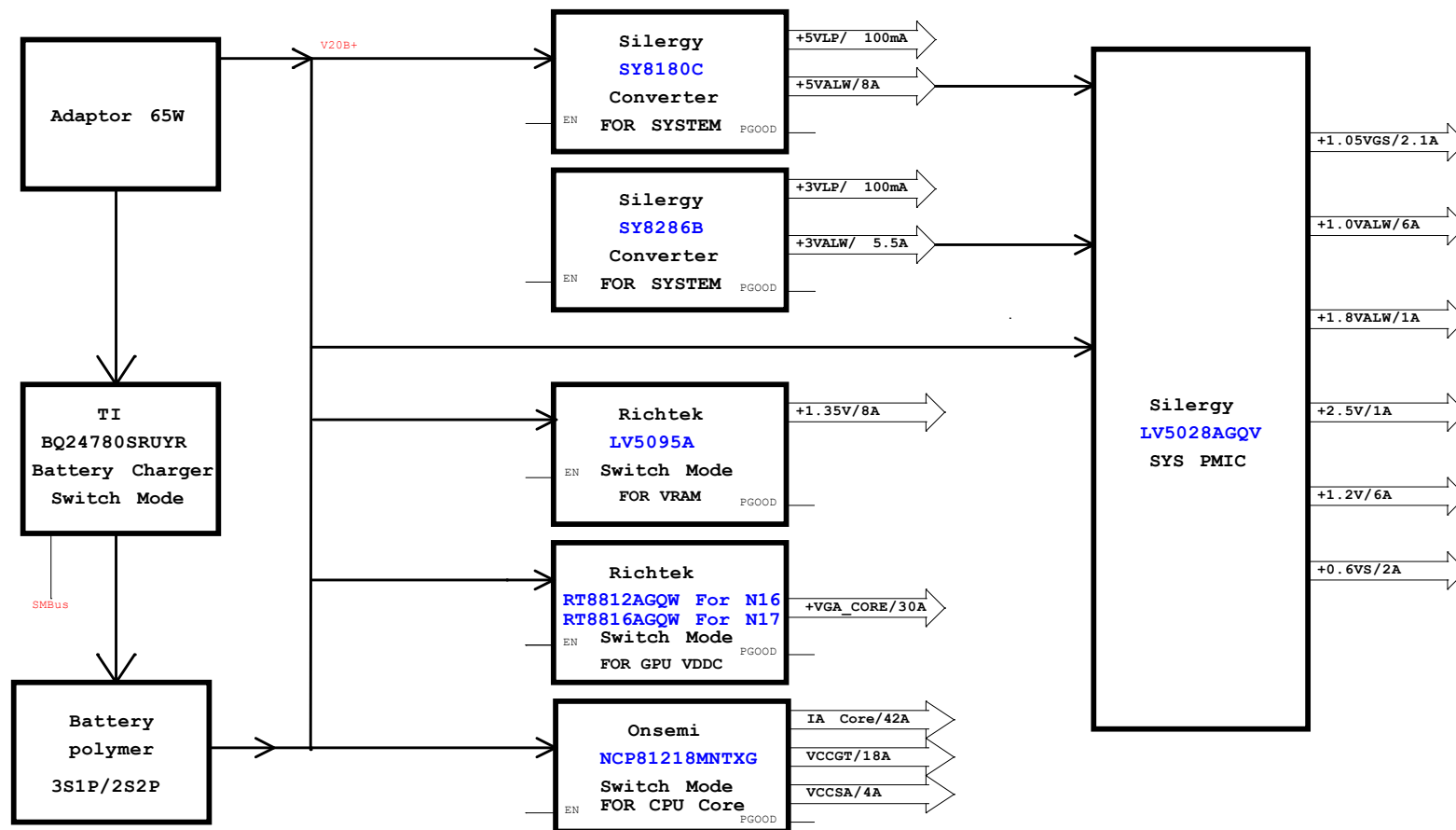


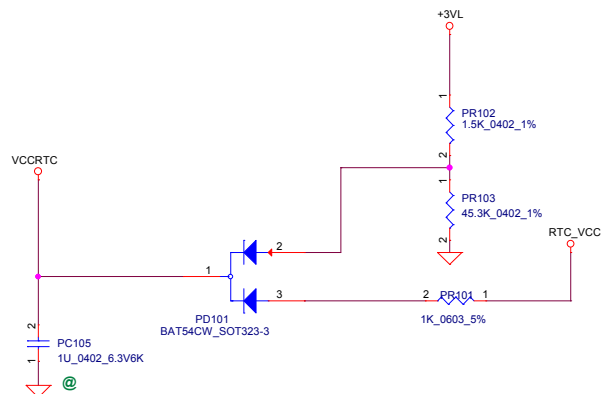
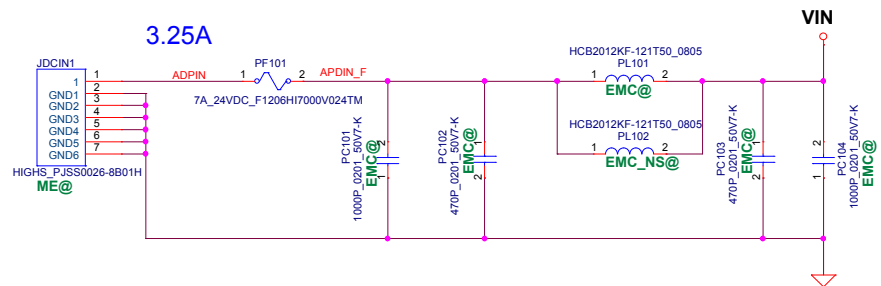
SSD1 Shielding



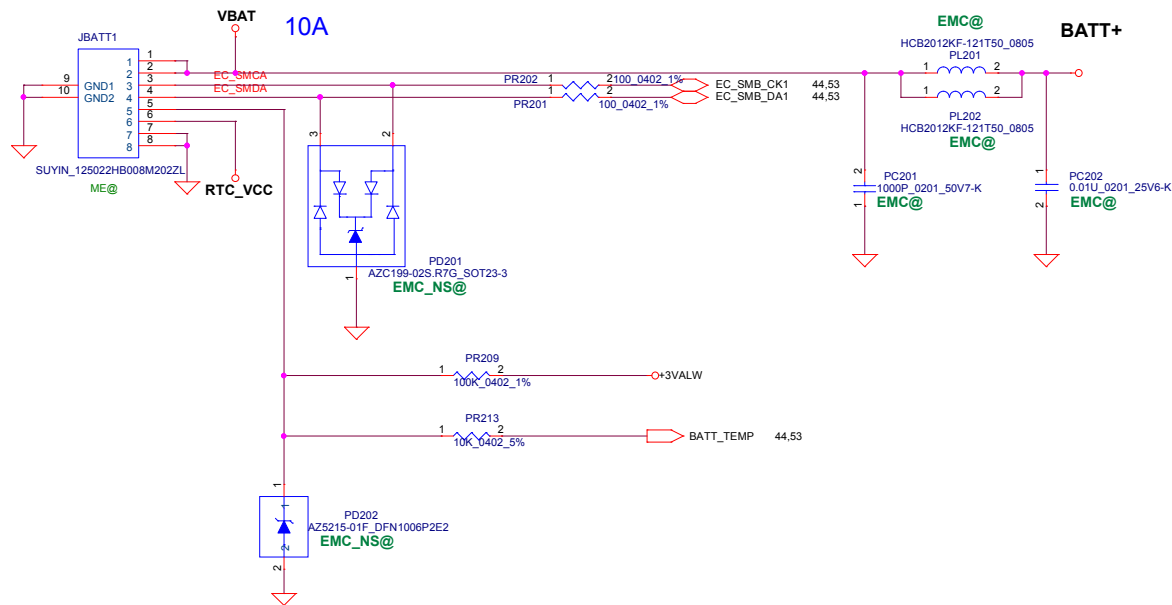
DDR Shielding

Security Classification		LC Future Center Secret Data		Title		
Issued Date	2015/08/20	Deciphered Date	2016/08/20	Hole		
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				Size	Document Number	
					EYG10 ES430 ES530	Rev 1.0
Date: Tuesday, January 09, 2018				Sheet 49 of 60		

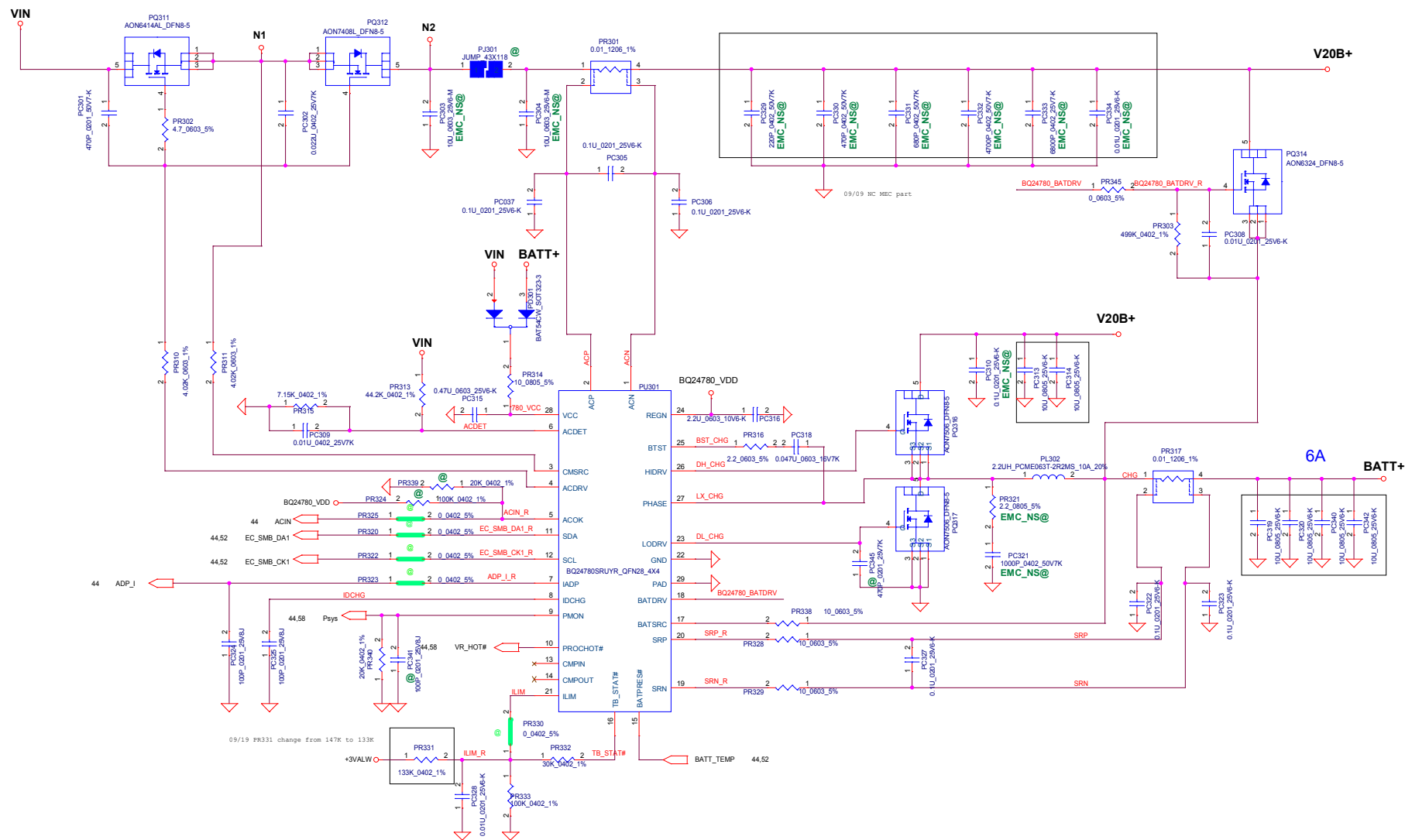




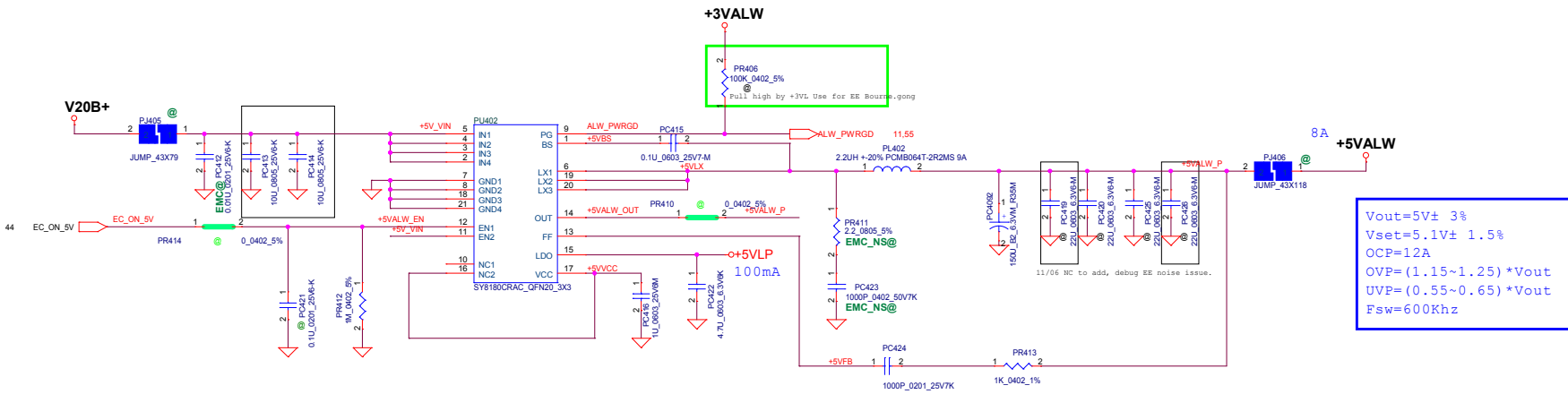
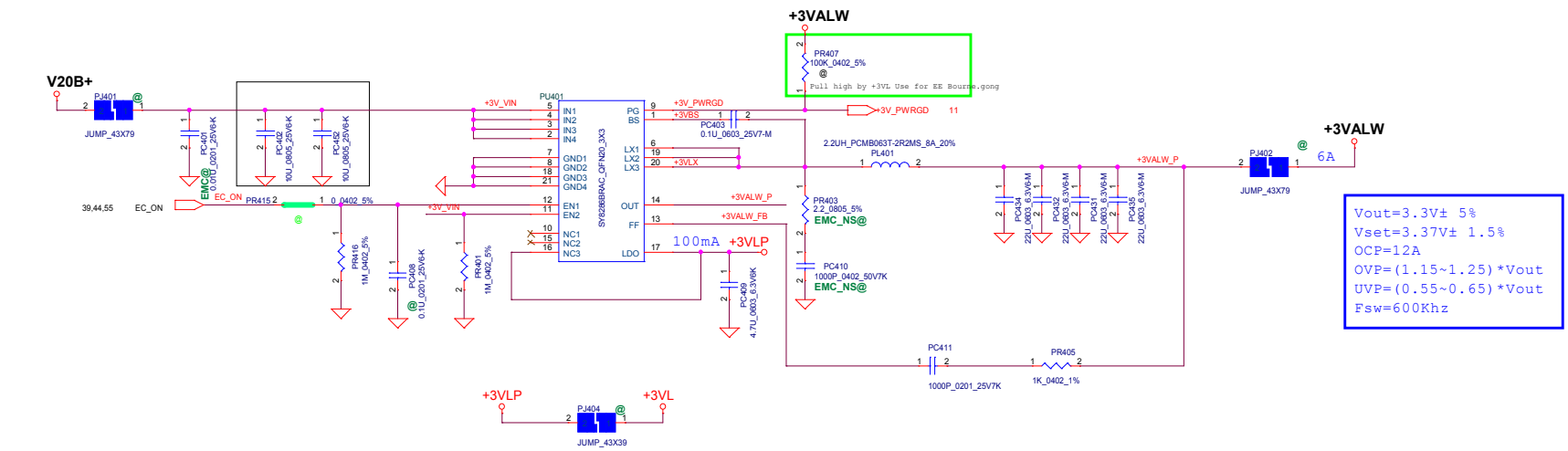
RTC_VCC 20MIL
+3VL 20MIL
VCCRTC 20MIL

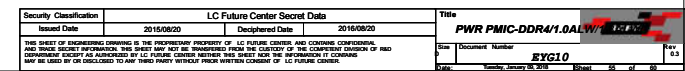


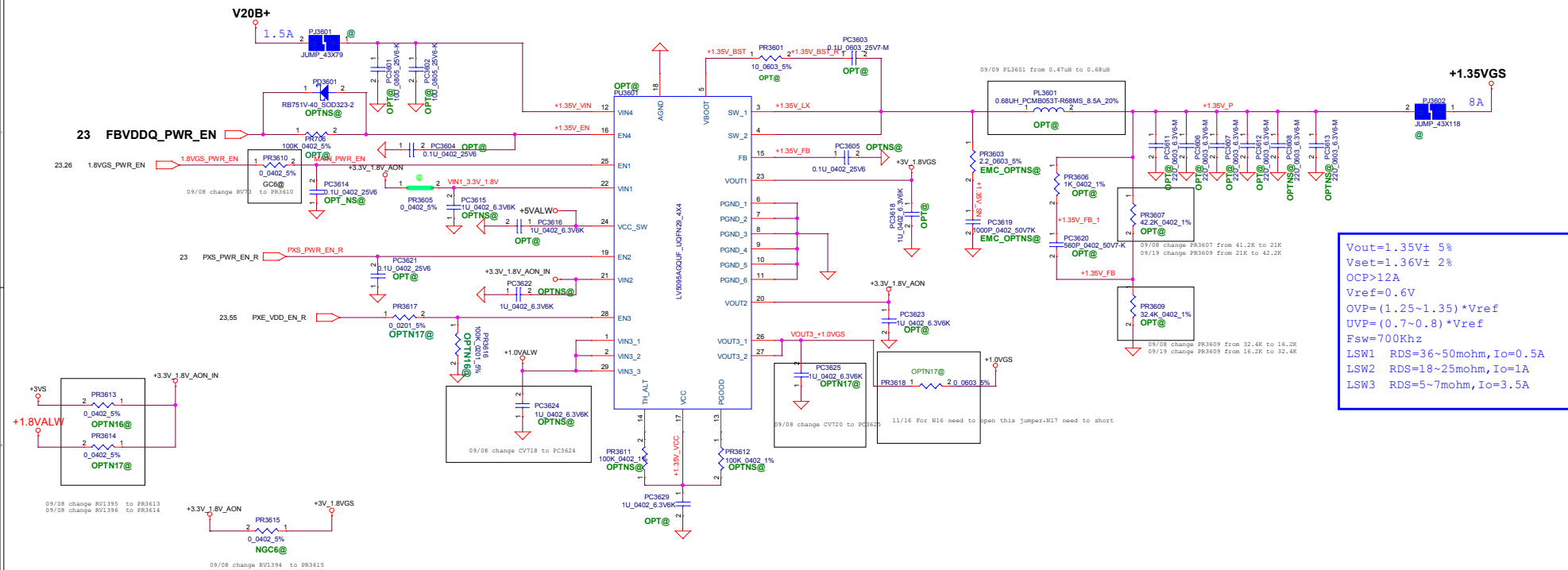
2S1P polymer battery
voltage level: +5.5V ~
8.8 V



ACDECT setting 17.2V
 Charge current limit HW=7A
 DC discharge limit =26A
 Discharge current limit HW=9A during Turbo boost



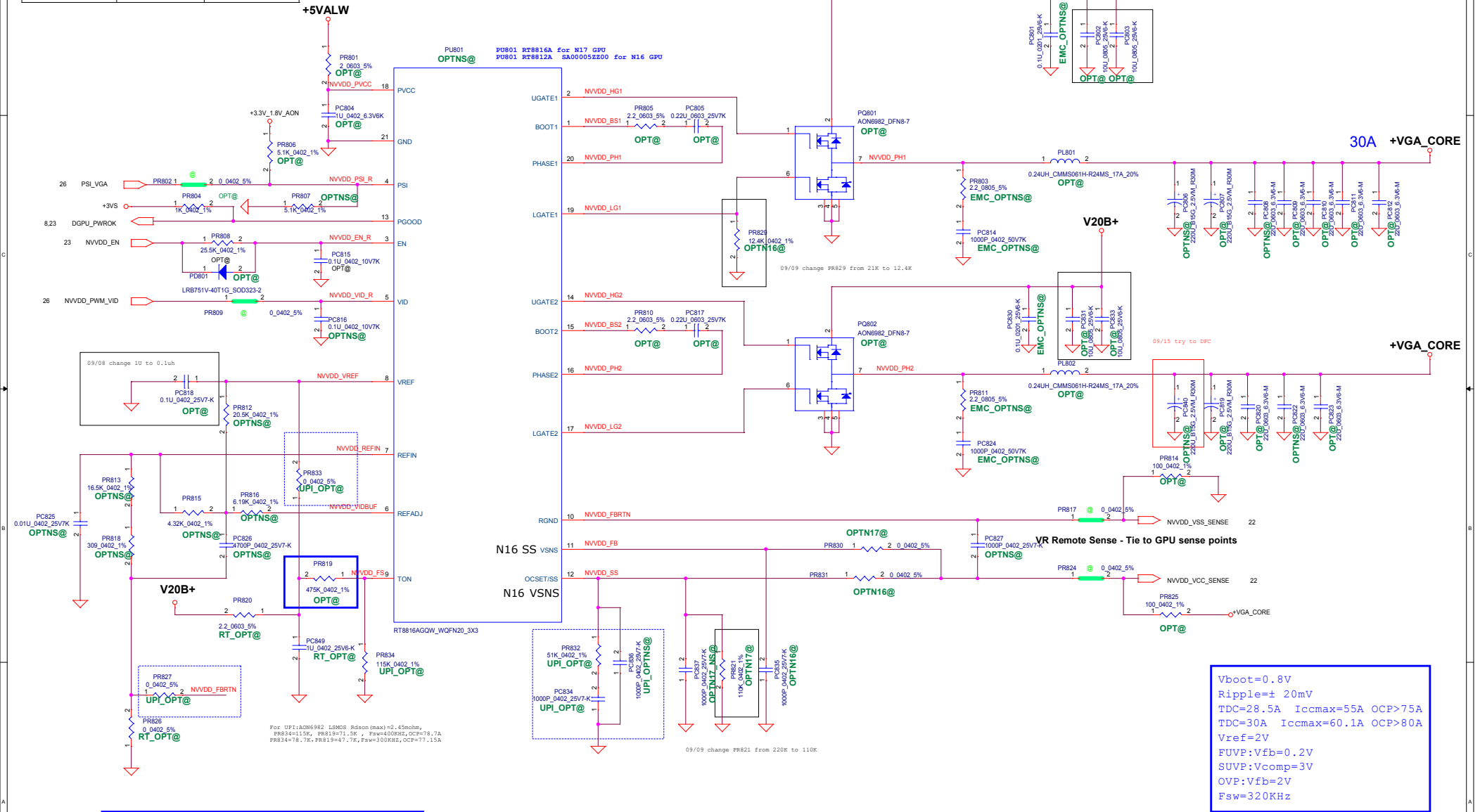




PWM-VID Specification			
	N17 Config	N16 Config	B
Vmin(V)	0.3	0.6	
Vmax(V)	1.3	1.2	
Vboot(V)	0.8	0.9	
Vstep(mV)	6.25	6.25	
N(level)	160	96	
Fpwm(KHz)	675	1.125	
Tdmin(nS)	9.26	9.26	
T(uS)	<100	<100	

Component	Value	N17	N16S-GTR
R1(K Ω)	PR816	6.19	20
R2(K Ω)	PR812	20.5	20
R3(K Ω)	PR815	4.32	2
R4(K Ω)	PR813	16.5	18
R5(K Ω)	PR818	0.309	0
C(nF)	PC826	4.7	2.7

RT8816 PSI	RT8812 PSI	Phase Configuration
1.6V~5.5V	2.4~5.5V	2Phase CCM
1.08~1.35V		2Phase DEM
0.7~0.88V	1.2~1.8V	1Phase CCM
0~0.4V	0~0.8V	1Phase DEM



Security Classification	LC Future Center Secret Data	
Issued Date	2015/08/20	Deciphered Date
		2016/08/20

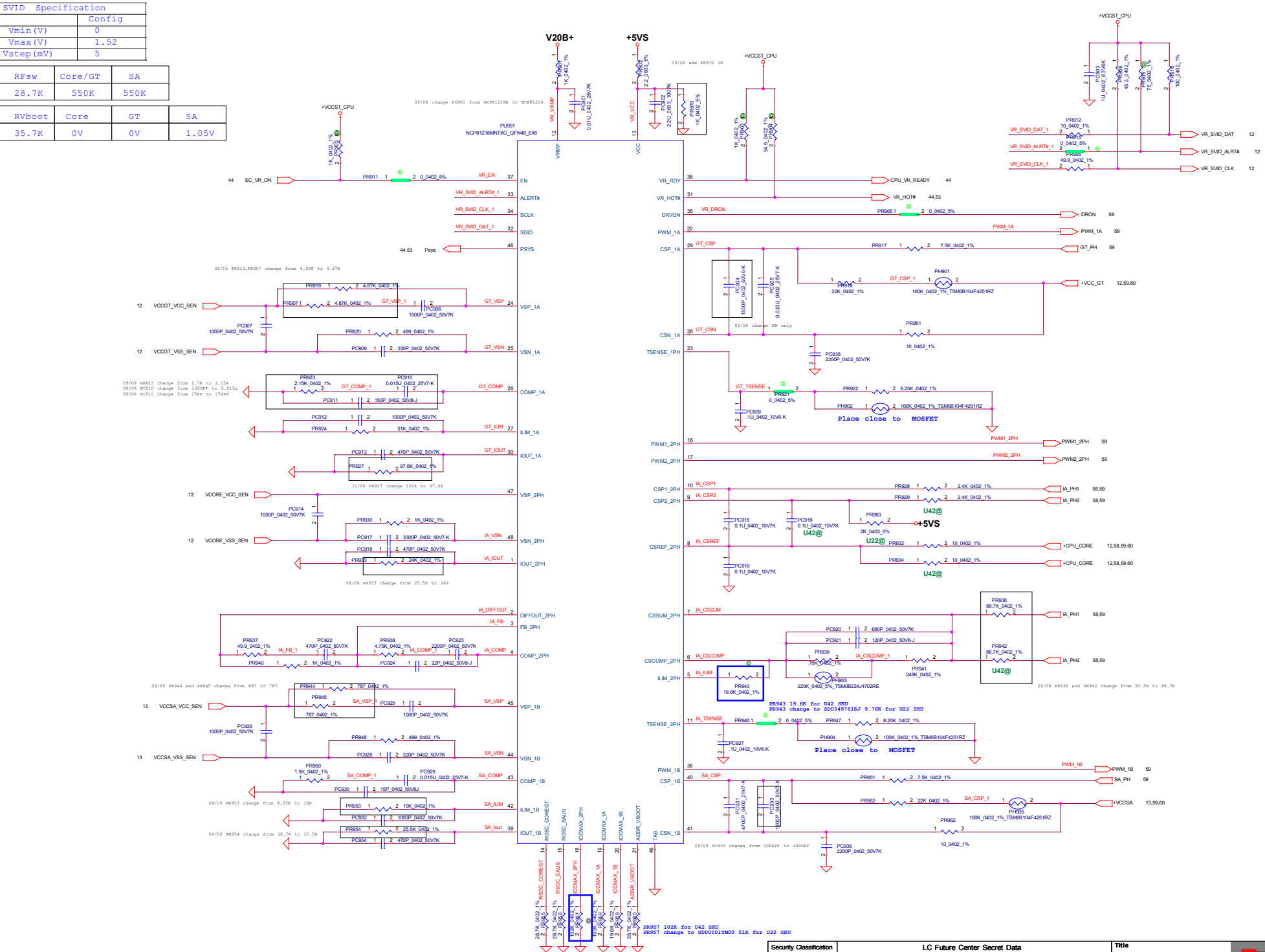
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF RAD DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title		PWR-VGA_CORE	
Size	Document Number	EYG10	
Date:	Tuesday, January 05, 2016	Sheet	57 of 60

SVID Specification	
Config	
Vmin(V)	0
Vmax(V)	1.52
Vstep(mV)	5

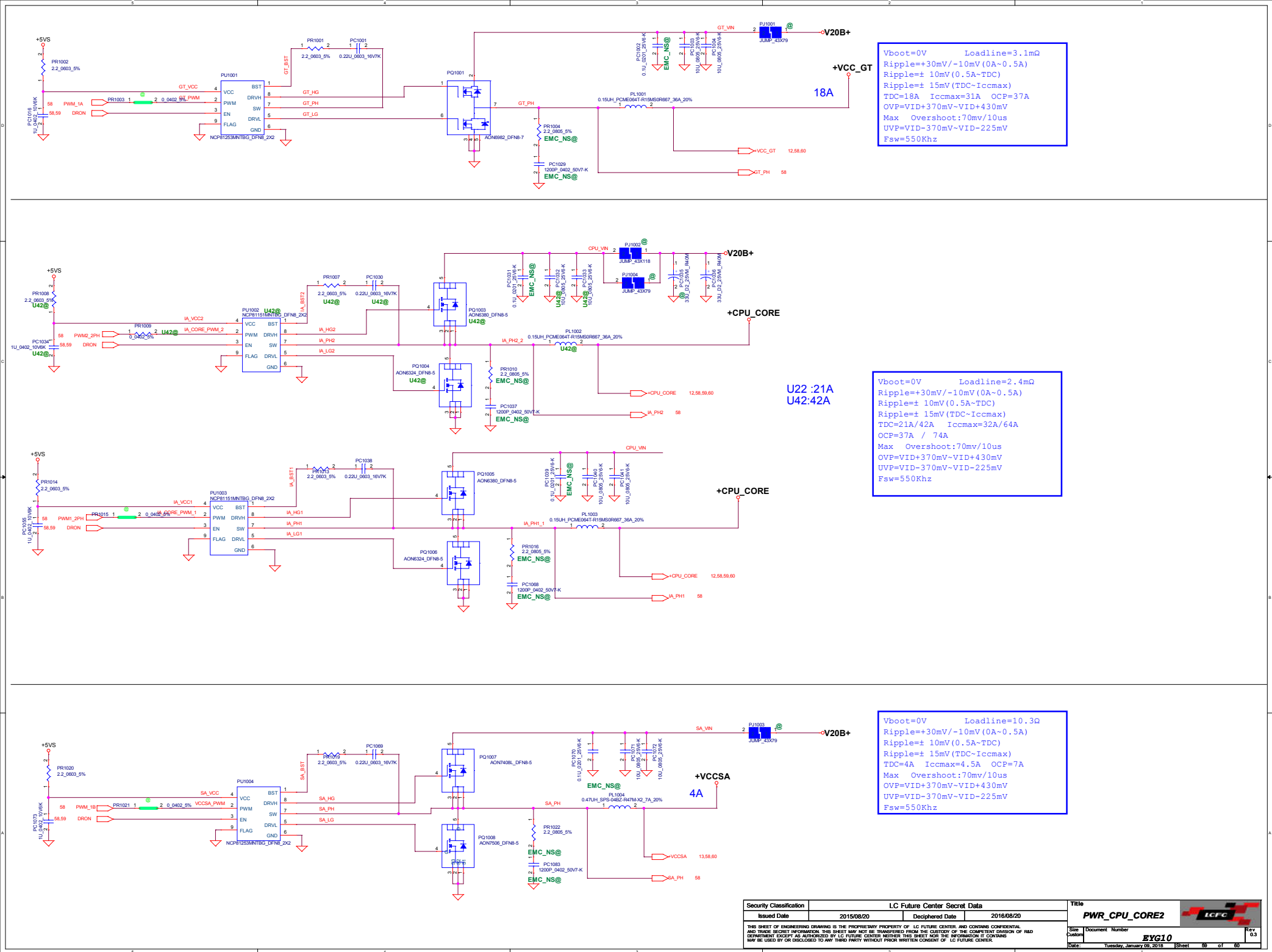
RFsw	Core/GT	SA
28.7K	550K	550K

RVboot	Core	GT	SA
35.7K	0V	0V	1.05V



Security Classification	LC Future Center Secret Data		
Issued Date	2015/08/20	Deciphered Date	2016/08/20
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.			

Title		
PWR-CPU_CORE1		
Size	Document Number	Rev 0.3
Custom	EYG10	
Date:	Tuesday, January 09, 2018	Sheet 58 of 60




1106 NC PC4028,PC4010
0915 NC PC4008,PC4025,PC4026,
0915 NC PC4007,PC4027

CPU CORE U42 only: 5PCS 22U 0402 4V

09/09 NC PC4070,PC4068 10UF,mount PC4035,PC4037 10uf

```
09/09 PC4086 from U42 22uf to U42 22uf/u22 10uf
PC4080 from U42 10uf to U42 22uf/U22 10uf
PC4038 from U22 22uf to U22 22uf/U42 10uf
```

+VCCSA

Security Classification	LC Future Center Secret Data			Title	
Issued Date	2015/08/20	Deciphered Date	2016/08/20	PWR-CPU Decoupling Cap	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF RAD DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.					
Size Custom	Document Number			EYG10	Rev
Date:	Tuesday, January 05, 2018			Sheet	60 of 1

5	4	3	2	1																								
D				D																								
C				C																								
B				B																								
A				A																								
<table><tr><td colspan="2">Security Classification</td><td colspan="2">LC Future Center Secret Data</td><td>Title</td></tr><tr><td>Issued Date</td><td>2015/08/20</td><td>Deciphered Date</td><td>2016/08/20</td><td>NGFF_SSD_1</td></tr><tr><td colspan="4">THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.</td><td><table><tr><td>Size</td><td>Document Number</td><td>Rev</td></tr><tr><td>C</td><td>EYG10</td><td>0.3</td></tr><tr><td>Date:</td><td>Tuesday, January 09, 2018</td><td>Sheet 61 of 60</td></tr></table></td></tr></table>					Security Classification		LC Future Center Secret Data		Title	Issued Date	2015/08/20	Deciphered Date	2016/08/20	NGFF_SSD_1	THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				<table><tr><td>Size</td><td>Document Number</td><td>Rev</td></tr><tr><td>C</td><td>EYG10</td><td>0.3</td></tr><tr><td>Date:</td><td>Tuesday, January 09, 2018</td><td>Sheet 61 of 60</td></tr></table>	Size	Document Number	Rev	C	EYG10	0.3	Date:	Tuesday, January 09, 2018	Sheet 61 of 60
Security Classification		LC Future Center Secret Data		Title																								
Issued Date	2015/08/20	Deciphered Date	2016/08/20	NGFF_SSD_1																								
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				<table><tr><td>Size</td><td>Document Number</td><td>Rev</td></tr><tr><td>C</td><td>EYG10</td><td>0.3</td></tr><tr><td>Date:</td><td>Tuesday, January 09, 2018</td><td>Sheet 61 of 60</td></tr></table>	Size	Document Number	Rev	C	EYG10	0.3	Date:	Tuesday, January 09, 2018	Sheet 61 of 60															
Size	Document Number	Rev																										
C	EYG10	0.3																										
Date:	Tuesday, January 09, 2018	Sheet 61 of 60																										
5	4	3	2	1																								