

LCFC Confidential

GS55C MB Schematics Document

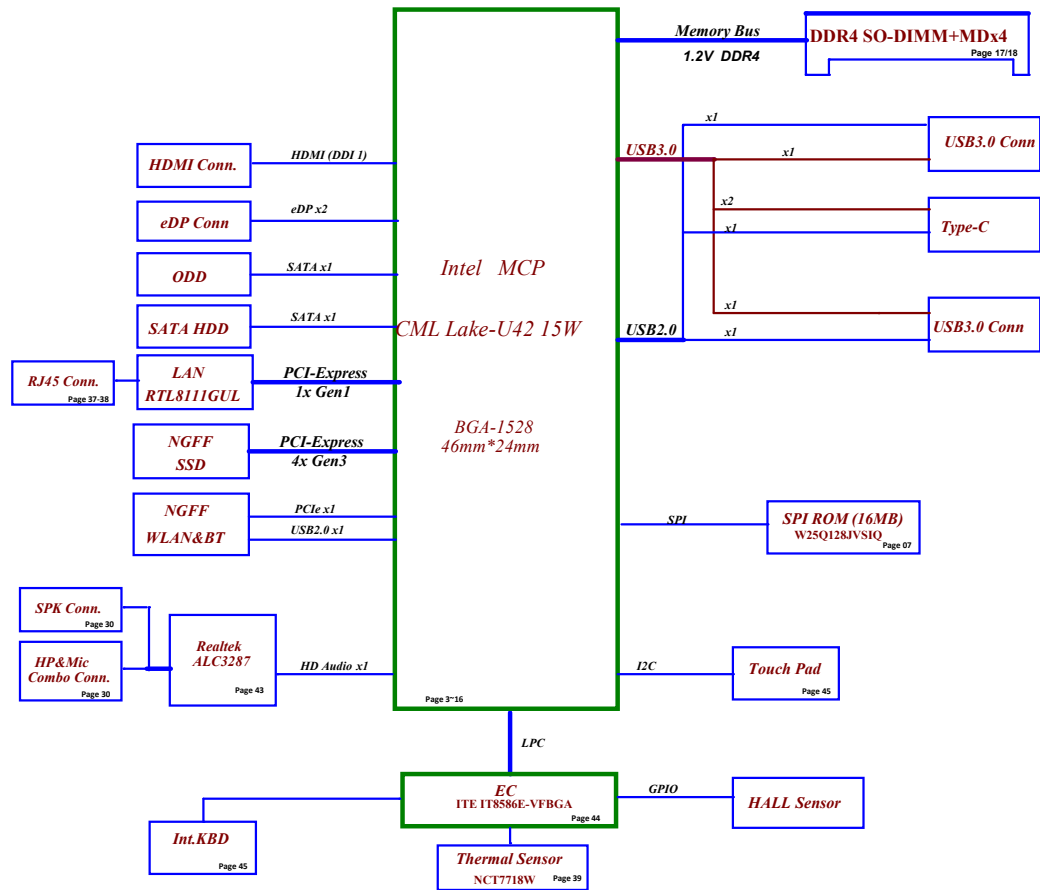
CML U42 with DDR4 + Nvidia N16S-GTR/N17S-G4

2019-08

REV: 0.1

<https://vintagelab.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	Cover Page	
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.				Doc Number	GS55C
				Date	Saturday, November 30, 2019
				Sheet	1 of 81



<https://vintagelibrary.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	Block Diagram	
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.				Doc Number	6855C
				Rev	0.1
				Issue	Saturday, November 30, 2019
				Sheet	2 of 81

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

Power Plane				
State	V20B+	+3VALW +5VALW +3VALW_PCH +1.8VALW +1.05VALW	+1.2V +2.5V_DDR +VCCST	+5VS +3VS +VCCIO +VCCSTG +VCCSA +VCC_GT +CPU_CORE +0.6VS
S0	O	O	O	O
S3	O	O	O	X
S3 Battery only	O	O	O	X
S5 S4 AC Only	O	O	X	X
S5 S4 Battery only	O	X	X	X
S5 S4 AC & Battery don't exist	X	X	X	X

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 NC
	4 NC
	5 NC
	6 NC
USB2.0	1 USB3.0 Conn Left
	2 NC
	3 USB3.0 Conn Right
	4 Finger Print
	5 Card reader
	6 NC
PCIE	7 Camera
	8 NC
	9 NC
	10 Bluetooth
	5-8 X4 DGPU
	9 Giga LAN
	10 NC
	11 SATA HDD
	12 WLAN
	13-16 X4 PCIE/SATA SSD

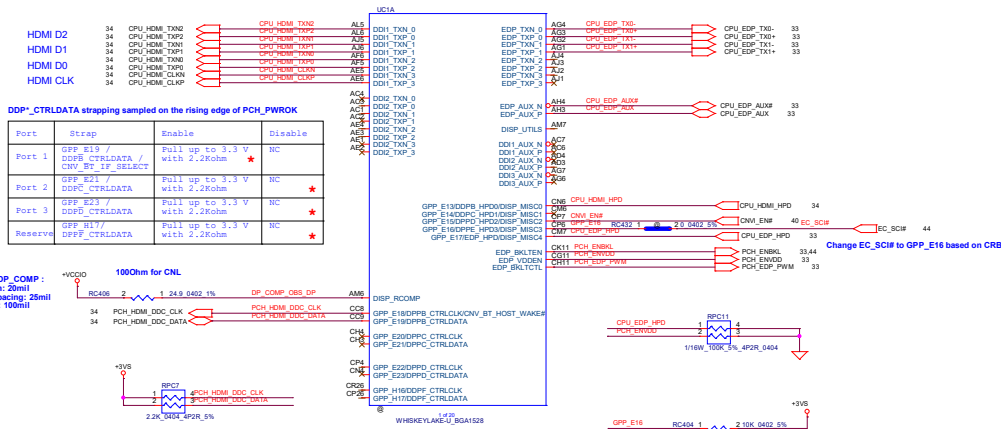
BOM Structure	BTO Item
8	Un-stuff
14@	For 14" part
15@	For 15" part
YOGA@	For YOGA530 part
530@	For 530S part
CD@	For C cost down
EMC@	For EMC part
EMC 15@	For EMC 15" part
EMC NS@	For EMC un-stuff part
EMC PX@	For EMC PX part
EMC PXNS@	For EMC PX un-stuff part
ME@	For ME part
OPT@	For NV GPU part
OPTN16@	For NV N16S-Q7B GPU part
OPTN17@	For NV N17S-Q1 GPU part
TS@	For touch screen part
TP@	For Touch Pad Part
UMA@	For UMA part

SMBUS Control Table

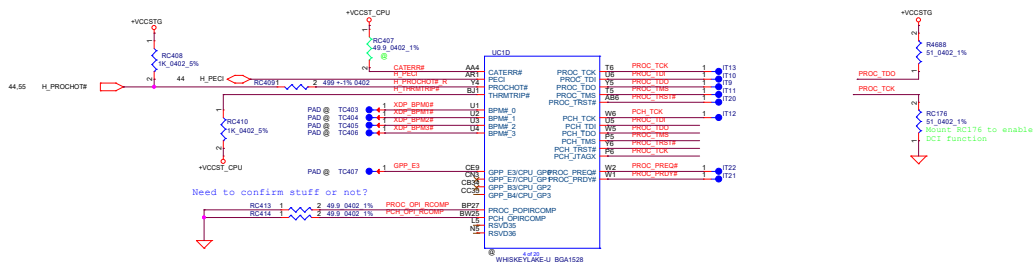
	SOURCE	BATT	Charger	DGPU	IT8586E	Memory Down	PCH	PMIC	SODIMM	Thermal Sensor	WLAN WIMAX
EC_SMB_CLK1 EC_SMB_DA1	IT8586E +3VL_EC	V	V	X	V +3VL_EC	X	X	X	X	X	X
EC_SMB_CLK2 EC_SMB_DA2	IT8586E +3VS	X	X	V +3VQ_AON	V +3VS	X	V +3VALW_PCH	X	X	V	X
EC_SMB_CLK3 EC_SMB_DA3	IT8586E +3VL_EC	X	X	X	V +3VL_EC	X	X	V	X	X	X
PCH_SMB_CLK PCH_SMB_DATA	PCH +3VALW_PCH	X	X	X	X	X	V +3VALW_PCH	X	V	X	V +3VS

EC SMBus1 address	EC SMBus2 address	EC SMBus3 address	PCH SM Bus address
Device Smart Battery Charger	Address need to update 0001 0010 b	Device Thermal Sensor(NCT7718W) PCH DGPU	Address need to update need to update need to update
Device Smart Battery Charger	Address need to update 0001 0010 b	Device Thermal Sensor(NCT7718W) PCH DGPU	Address need to update need to update need to update


Security Classification	LC Future Center Secret Data	Title
Issued Date	2019/07/20	Deciphered Date
2020/07/20		
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 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.		Notes List
Rev	Document Number	Rev
0.1	GS55C	0.1
Date	Saturday, November 16, 2019	Sheet 8 of 81

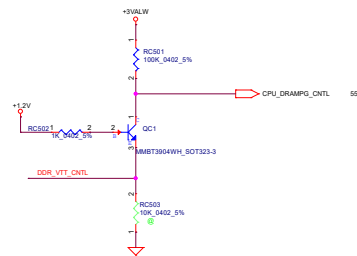
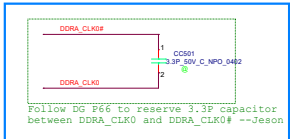



Vinafix.com

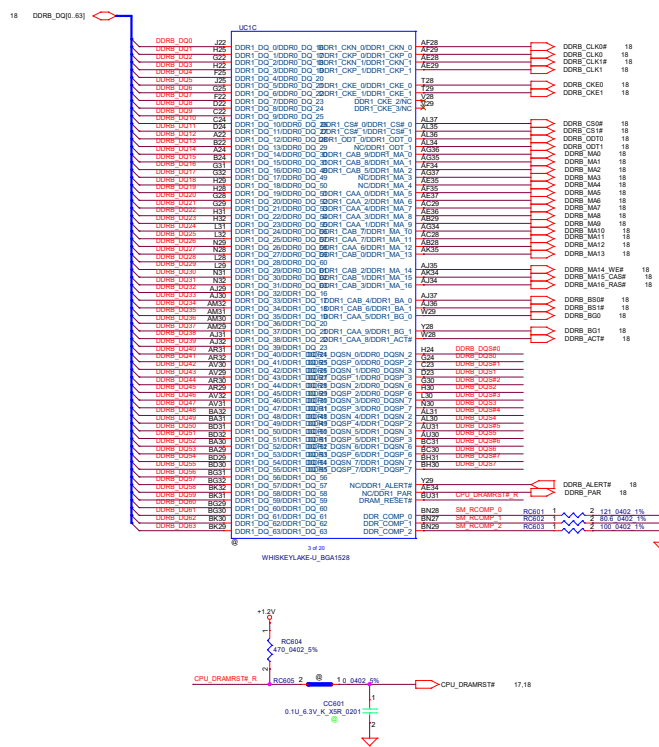



https://vinafix.com

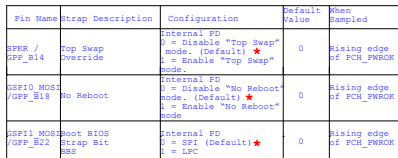
Security Classification		LC Future Center Secret Data		Title	
Issued Date		Deciphered Date		MCP (DDI,EDP)	
2019/07/20		2020/07/20			
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED 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.					
Size		Document Number		Rev	
		GS55C		0.1	
Date		Sunday, November 10, 2019		Sheet	
				4 of 61	




Security Classification	LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Declassified Date	2020/07/20	
<p>THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL INFORMATION. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF LC FUTURE CENTER. THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT AS AUTHORIZED BY ANY THIRD PARTY 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.</p>				
Size	Document Number		<p>GS55C</p> <p>Date: September, 16th 2019 Sheet: 5 of 51</p>	Rev 0.1

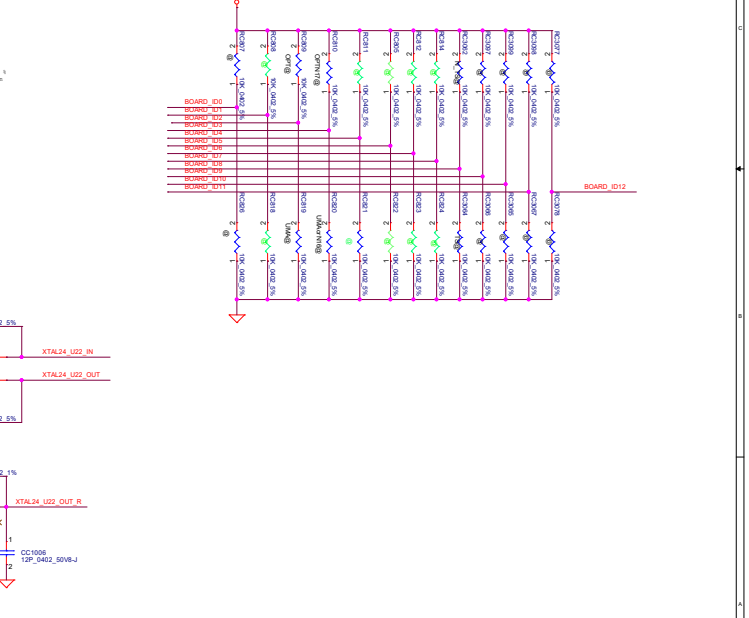
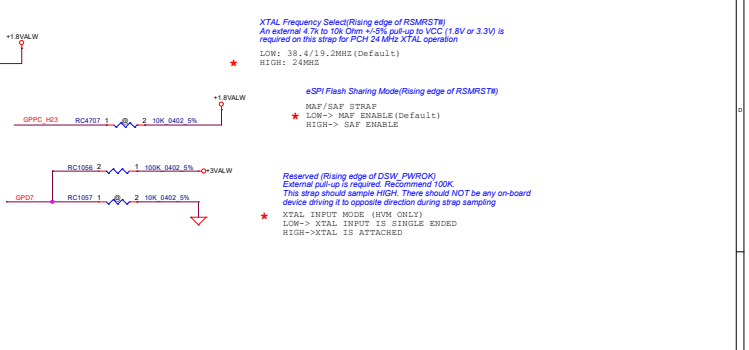


Security Classification	LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	
<p>THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF P&ID MANAGEMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. THIS SHEET OF ENGINEERING DRAWING CONTAINS INFORMATION THAT MAY BE USED OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.</p>			Size Date Document Number 2019 GS55C	Rev 51
			Sheet	6 of 61

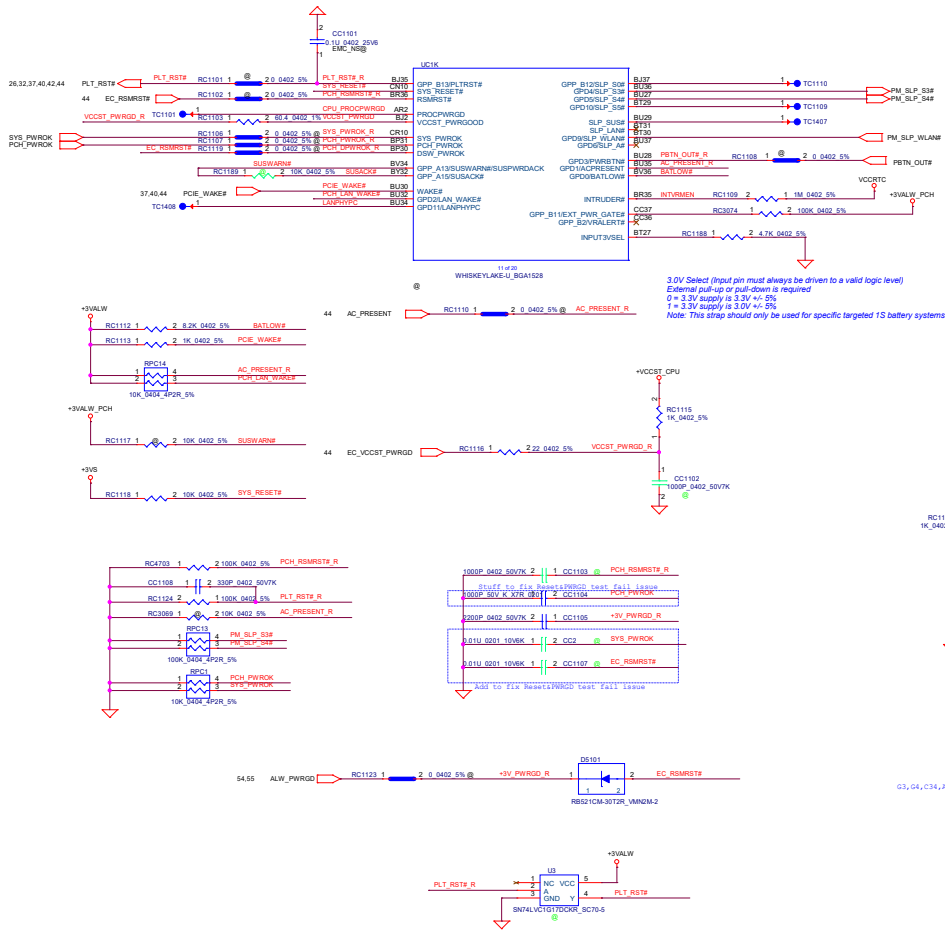


CNVi RGI_DT pin gets the pull-down resistor (1K ohm) from the internal CRF module when CNVi is enabled. There must not be any pull-down resistor connected on the board.

Security Classification	LC Future Center Secret Data		Title
Issued Date	2019/07/20	Deciphered Date	2020/07/20
<p>THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL INFORMATION. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF LC FUTURE CENTER. ANY UNAUTHORIZED REPRODUCTION OR DISCLOSURE OF THIS INFORMATION IS STRICTLY PROHIBITED AND WILL BE PUNISHED BY LAW. THIS SHEET IS THE PROPERTY OF LC FUTURE CENTER AND WILL BE RETURNED TO THE COMPANY UPON REQUEST. NO PART OF THIS SHEET IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF LC FUTURE CENTER.</p>			
Size	Document Number		Rev
	G555C		0.1
Date	Issuing Version		Sheet
	February, January 15, 2019		1 of 1

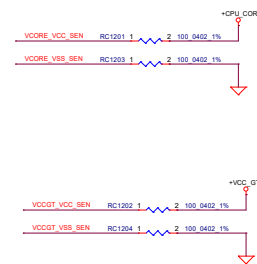
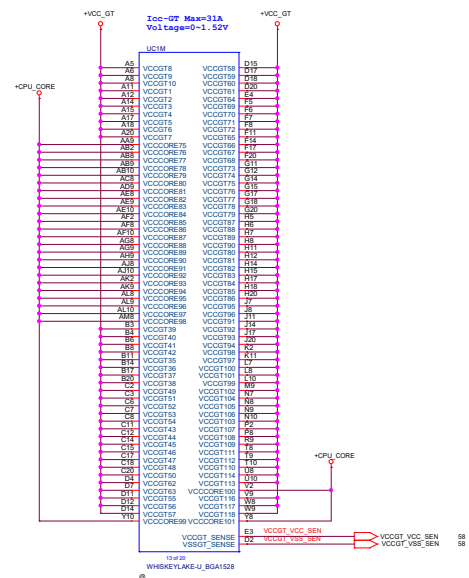
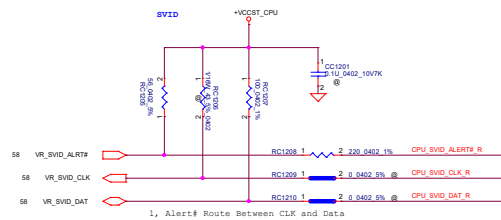
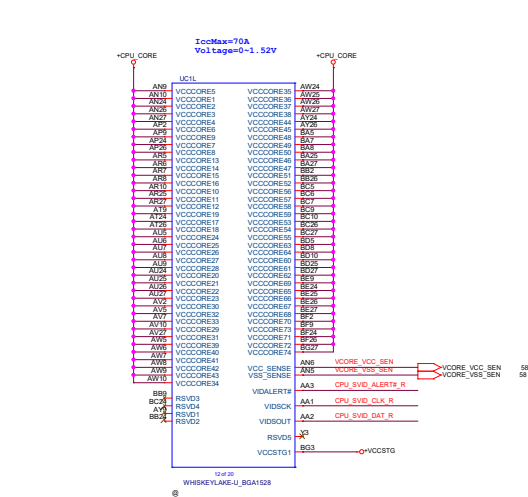


<https://vimeo.com/1000000000>



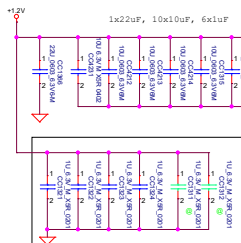
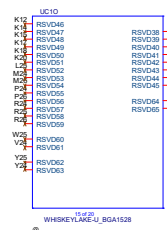
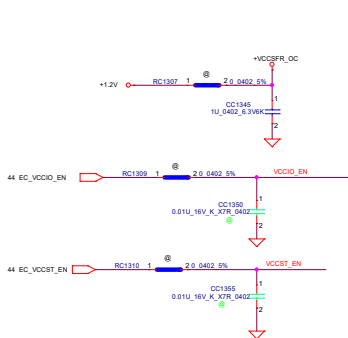
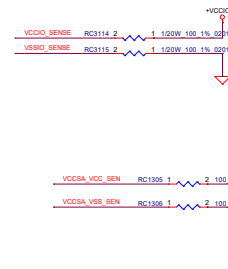
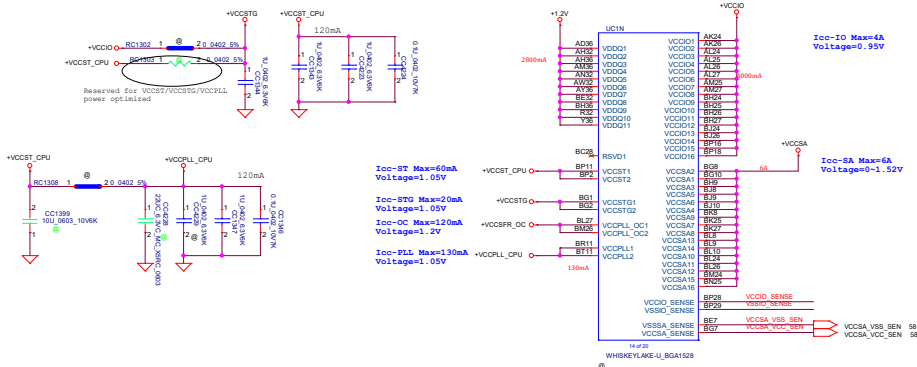
- **CFG[0]:** Stall reset sequence after PCU PLL lock until de-asserted:
 - 1 = (Default) Normal Operation; No stall
 - 0 = Stall
- **CFG[1]:** Reserved configuration lane.
- **CFG[2]:** PCI Express* Static x16 Lane Numbering Reversal.
 - 1 = Normal operation
 - 0 = Lane numbers reversed.
- **CFG[3]:** Reserved configuration lane.
- **CFG[4]:** eDP enable:
 - 1 = Disabled
 - 0 = Enabled
- **CFG[6:5]:** PCI Express* Bifurcation
 - 00 = 1 x8, 2 x4 PCI Express*
 - 01 = reserved
 - 10 = 2 x8 PCI Express*
 - 11 = 1 x16 PCI Express*
- **CFG[7]:** PEG Training:
 - 1 = (default) PEG Train immediately following RESET# de assertion.
 - 0 = PEG Wait for BIOS for training.
- **CFG[19:8]:** Reserved configuration lanes.

Security Classification			LC Future Center Secret Data		Title	
Issued Date			Deciphered Date		MCP (SYSTEM PWR MANG) 2.1.1	
2019/07/20			2020/07/20		G855C	
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 COMPUTER 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		6.1	
			Date		Saturday, November 16, 2019	
			Sheet		11 of 81	

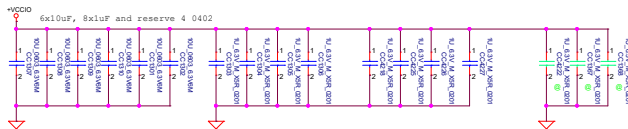


<https://vint>

Security Classification				LC Future Center Secret Data				Title			
Issued Date				Deciphered Date				MCP (CPU PWR1)			
2019/07/20				2020/07/20				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 REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF LC FUTURE CENTER.				Rev				6855C			
Date				Sheet				12 of 81			
Saturday, November 16, 2019				Sheet				12 of 81			





V _{DDQ}		
	4x 1uF 0402/0201	
	3x 10uF 0402	
	1x 22uF 0603	
	6x 10uF 0402	

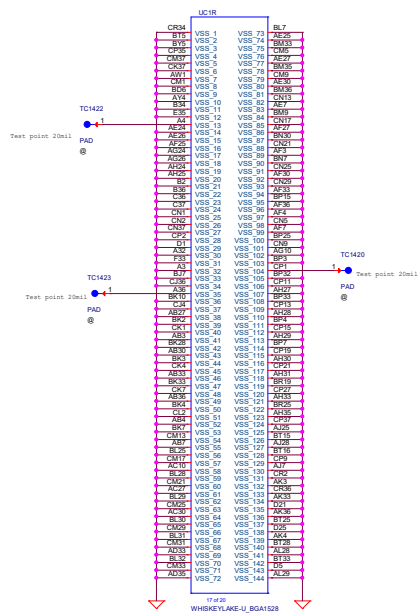
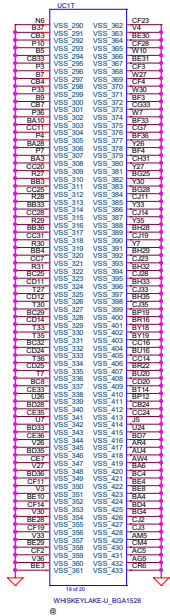
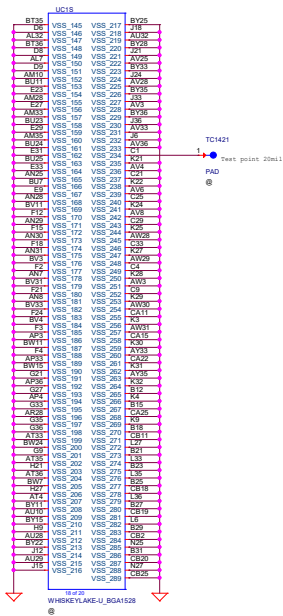


V _{CCIO}		
	4x 1uF 0201	
	6x 10uF 0402	
	4x 0402	

Security Classification	LC Future Center Secret Data	Title
Issued Date	2019/07/20	Deciphered Date
		2020/07/20
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. WHETHER THIS SHEET OR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.		MCP (CPU PWR2)
Rev	Document Number	Rev
		6855C
Date	Issued	16, 2019
		Sheet 13 of 81

2

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20		
<p>THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION THAT IS NOT TO BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF AEC 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.</p>					
Date	Saturday, November 16, 2019	Sheet	14	of 61	



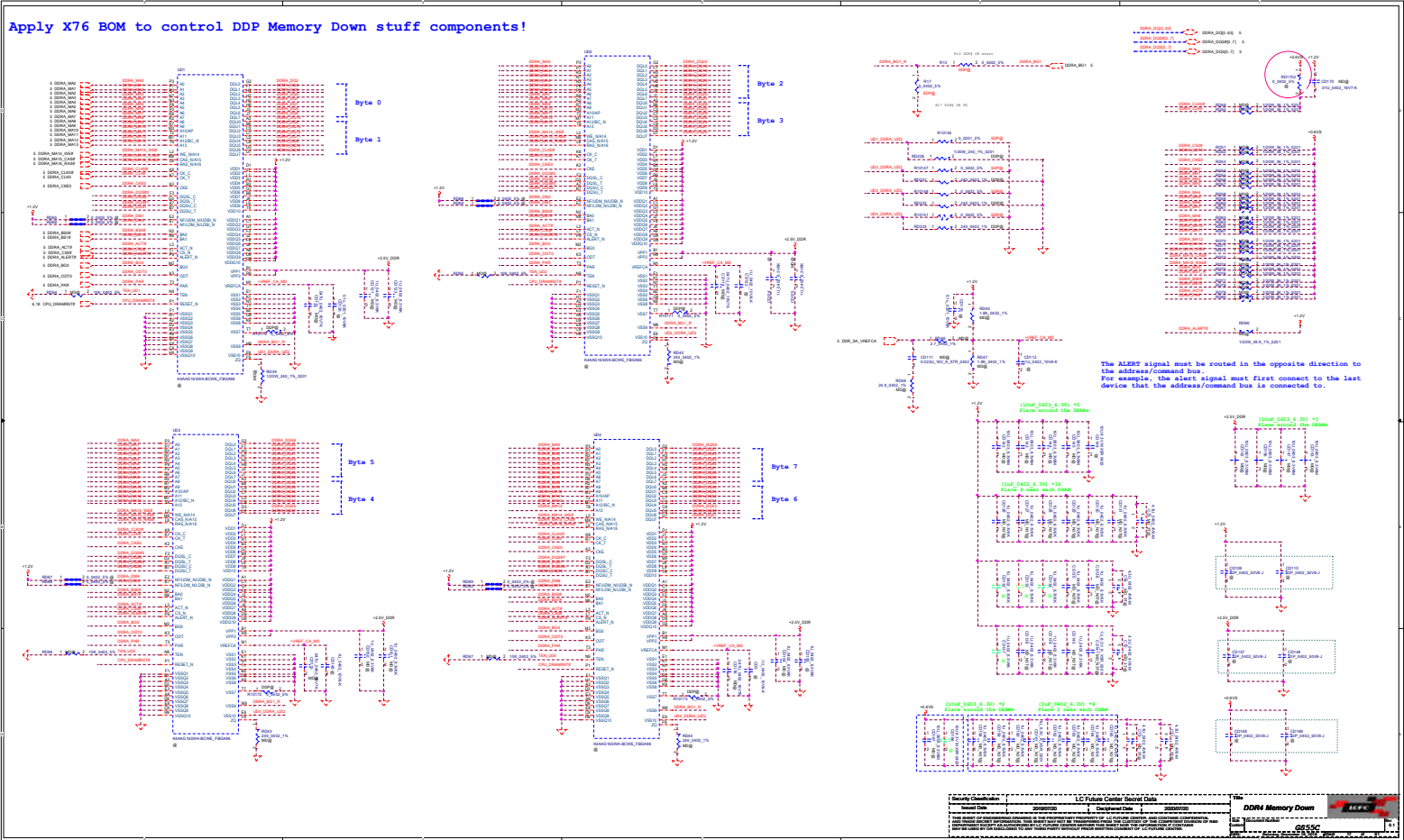
<https://vint>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	MCP (VSS)	
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 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
				GS55C	
				Date	Revision
				Saturday, November 16, 2019	Sheet 15 of 81

<https://vintagelibrary.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	XDP	
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 P&ID 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
				6	6855C
				Date	Sheet
				Saturday, November 16, 2019	16 of 81

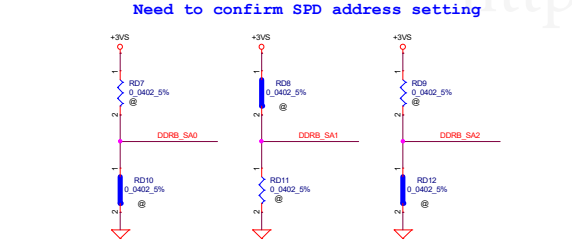
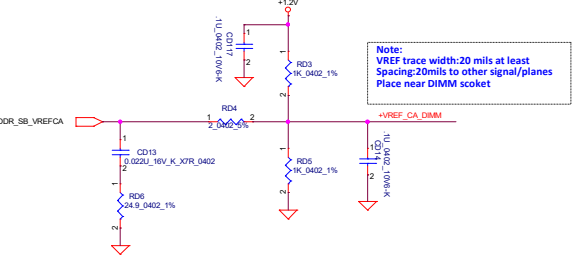
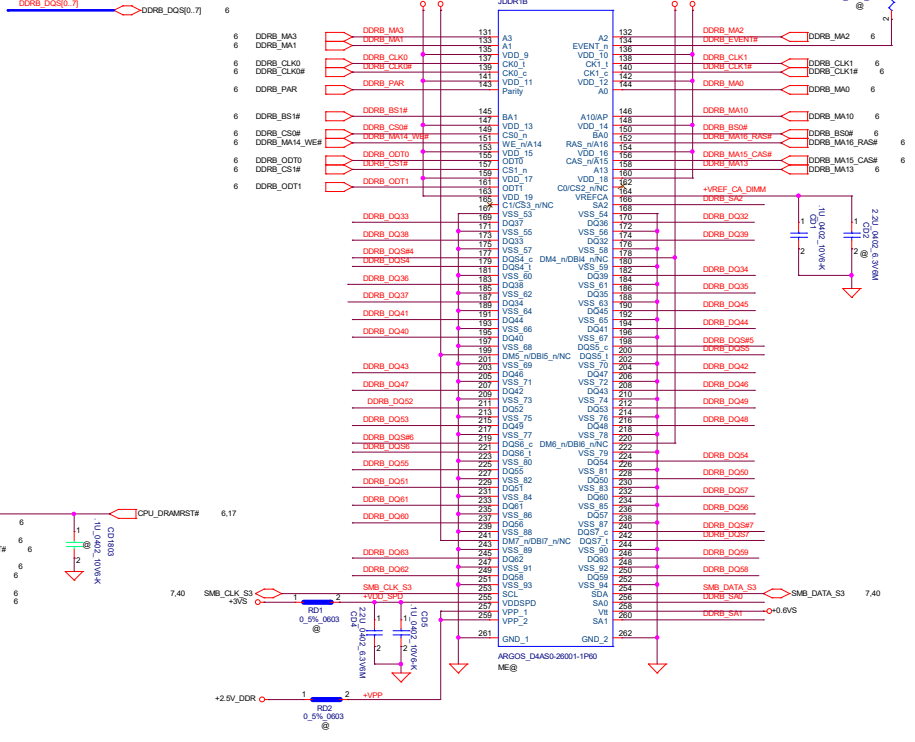
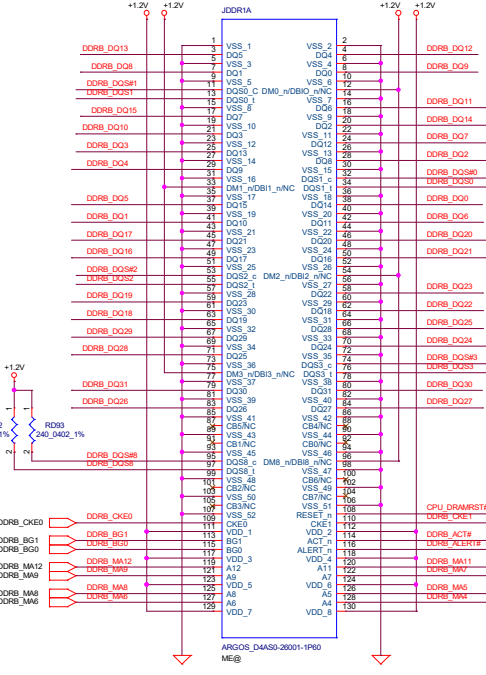




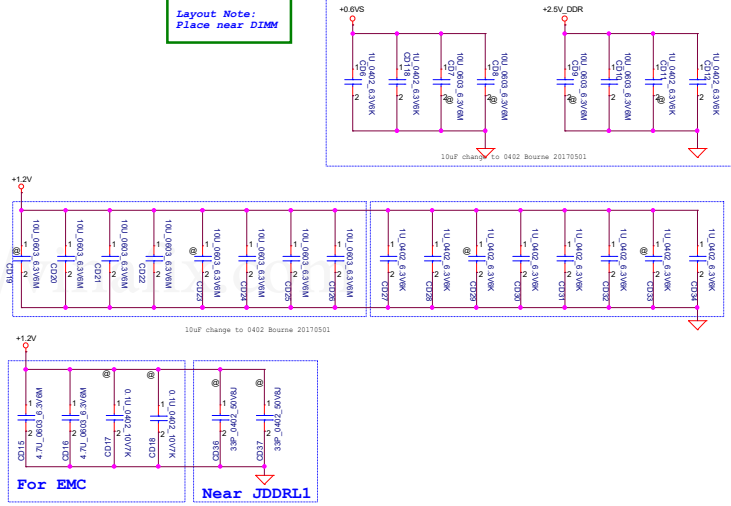
<https://vinafix.com>

DDR4 SO-DIMM

DDR8_DQ[0..63] → DDR8_DQ[0..63] 6
 DDR8_DS[0..7] → DDR8_DS[0..7] 6
 DDR8_DS[8..15] → DDR8_DS[8..15] 6



SPD Address = 0xA4(follow CRB)



Security Classification	LC Future Center Secret Data		Title
Issued Date	2019/07/20	Deciphered Date	2020/07/20
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 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.			Doc Number
			GS55C
			Rev 0.1
			Date: Saturday, November 16, 2019 Sheet 18 of 61

<https://vintagelibrary.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	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 P&ID 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	6855C
				Date	Sheet
				Saturday, November 16, 2019	19 of 81



<https://vintagelibrary.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	GPU_PCIE Interface	
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 P&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
				C	6855C
				Date	Sheet
				Saturday, November 16, 2019	20 of 81



<https://vintagelibrary.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	GPU MEM Interface	
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 P&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
				C	6855C
				Date	Sheet
				Saturday, November 16, 2019	21 of 81




<https://vintagelcfc.com>

Security Classification	LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	GPU +VGA_CORE,FBVDDG LCFC	
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
				GS55C
			Date	Rev
			Saturday, November 16, 2019	0.1
			Sheet	22 of 81

<https://vintagelibrary.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	GPU_AON/MAIN PWR/SEQ 2N/4C	
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 P&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
				8	6855C
				Date	Sheet
				Saturday, November 16, 2019	23 of 81

<https://vint>

Security Classification	LC Future Center Secret Data		Title						
Issued Date	2019/07/20	Deciphered Date	2020/07/20		GPU_GND				
<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 WRITER THE SHEET FOR 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				
			6	6855C	0.1				
			Date	Issued by	Reviewed by	Sheet	24	of	81

<https://vintagelibrary.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	GPU_STRAP/DP/HDMI	
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 P&ID 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	6855C
				Date	Sheet
				Saturday, November 16, 2019	25 of 81



<https://vintag.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	GPU_GPIO/ITAG	
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
				C	6855C
				Date	Sheet
				Saturday, November 16, 2019	26 of 81



<https://vintagelibrary.com>

Security Classification	LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	GPU_GDDR5_Rank0_R31:0 LCFC	
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 P&ID 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
			6	GS55C
			Scale	Saturday, November 16, 2019 Sheet 27 of 81
			Rev	0.1

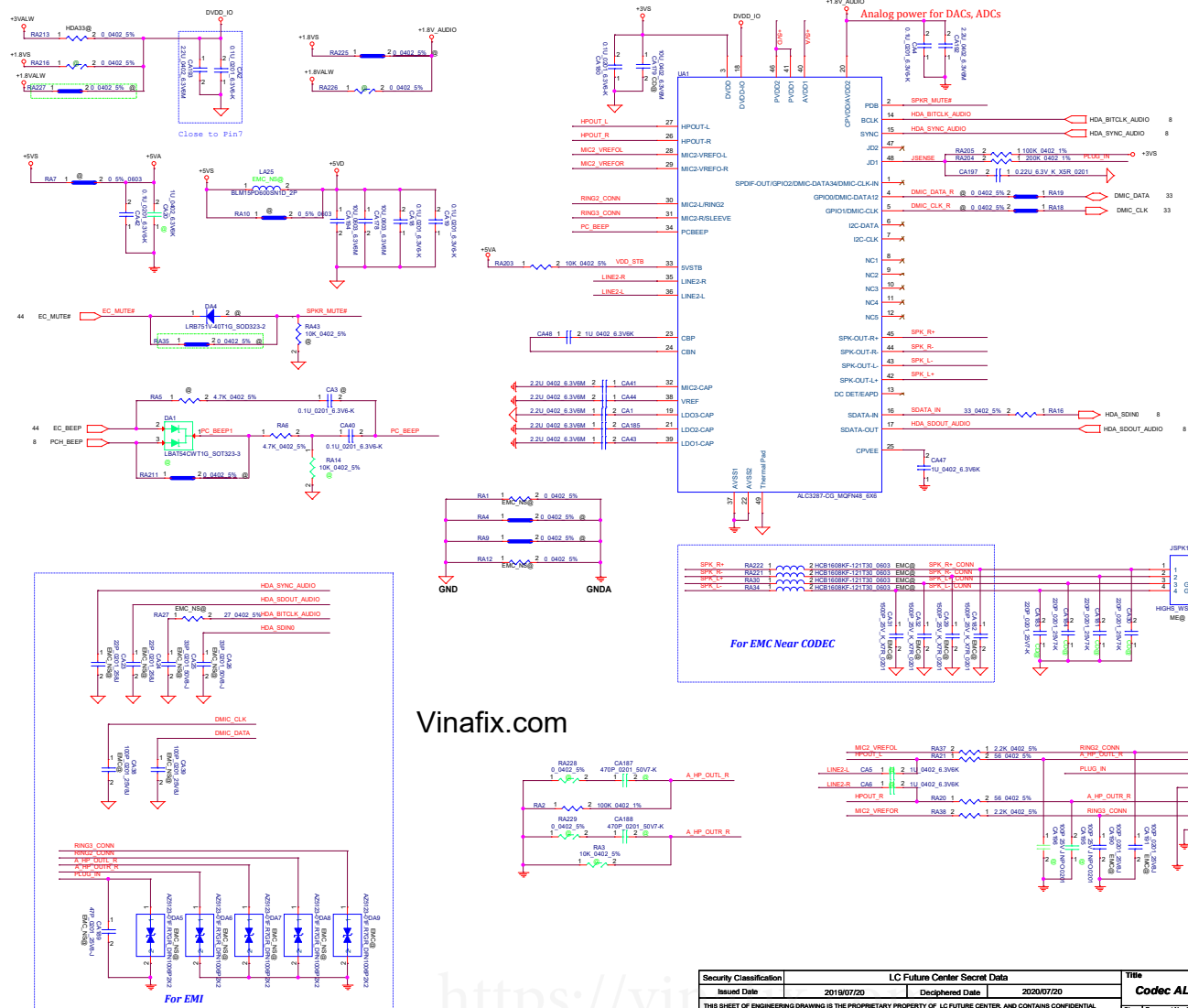
<https://vintagelcfc.com>

Security Classification	LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	GPU_GDDR5_Rank0_f64:37 LCFC	
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 P&ID 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
			6	GS55C
			Scale	Saturday, November 16, 2019 Sheet 28 of 81
			Rev	0.1

<https://vintagelibrary.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	GPU_MISC	
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 P&ID 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	6855C
				Date	Sheet
				Saturday, November 16, 2019	29 of 81



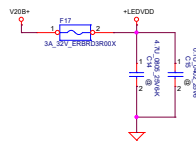
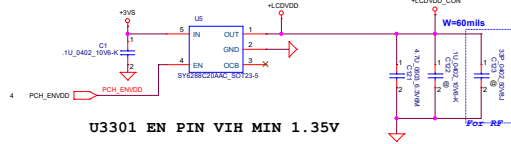


<https://vintagelibrary.com>

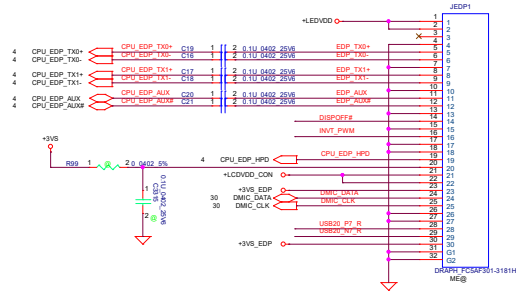
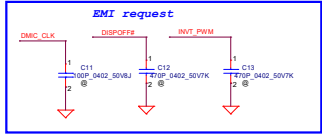
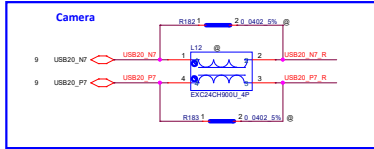
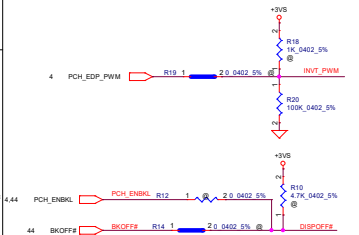
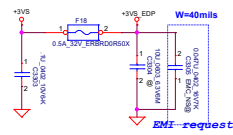
Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	Codex ALC3287	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF P&ID 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
				6	6855C
				Date	Sheet
				Saturday, November 16, 2019	81 of 86



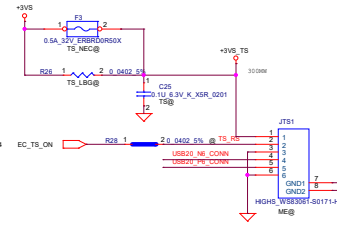
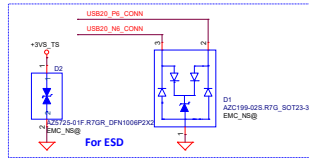
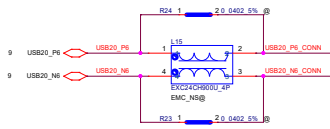
LCD POWER CIRCUIT



CMOS Camera



Touch Screen



<https://vint>

Security Classification	LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	eDP/CAMERA.
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 COMPUTER AND PERIPHERALS 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.				Rev 0.1
Doc No	Document Number	6855C	Issue	Issued, November 16, 2019
Sheet	88	of	81	



<https://vintagelibrary.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	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 P&ID 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
				6	GS55C
Date				Saturday, November 16, 2019	Sheet 35 of 81

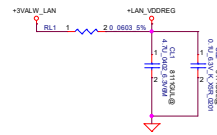
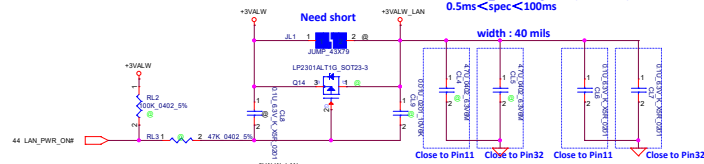


<https://vintagelibrary.com>

Security Classification	LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	HALL 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 P&ID 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 0.1
Size	Document Number		6855C	
Scale	Saturday, November 16, 2019		Sheet	36 of 81

+3VALW TO +3VALW_LAN

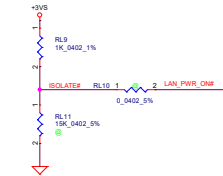
+3VALW_LAN rising time (10%~90%):
0.5ms<spec<100ms



11.40.44 PCIE_WAKE#
40.44 LAN_WAKE#

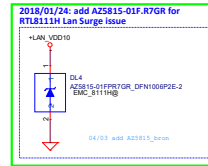
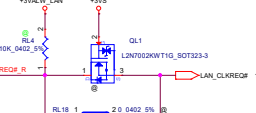
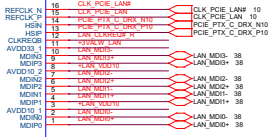
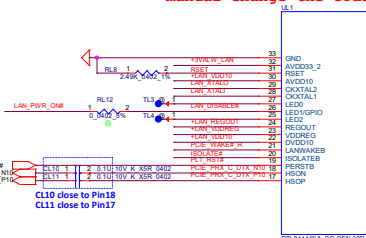
PCIE_WAKE# R
PCIE_WAKE# R

manual change the Codec PN to RTL8111GUL-CG



11.26.32.40.42.44 PLT RET#
9 PCIE_PRO_DTX_N#
9 PCIE_PRO_DTX_P#

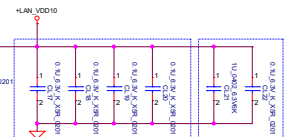
CL10 close to Pin18
CL11 close to Pin17



For RTL8111GUL(SWR mode, reserved)
For RTL8111H (LDO mode)



Layout Note: LL1 must be
within 200mil to Pin24,
CL15,CL16 must be within
200mil to LL1
+LAN_REGOUT: Width =50mil




Close to Pin3, 8, 22, 30

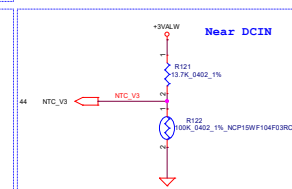
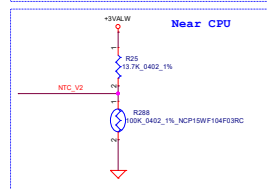
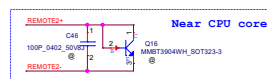
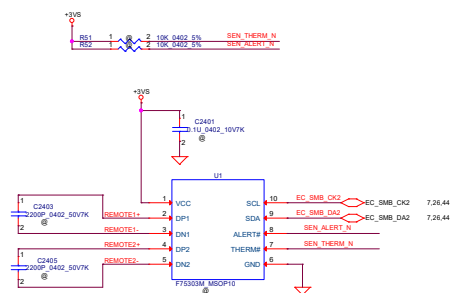
Close to Pin22(Reserved)

https://v

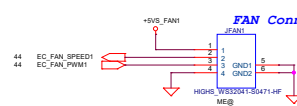
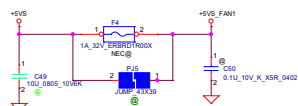
Security Classification		LC Future Center Secret Data		Title	
Issued Date		Deciphered Date		LAN_RTL8111H_CG	
2019/07/20		2020/07/20		Rev 0.1	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. WITHOUT THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT WRITTEN CONSENT OF LC FUTURE CENTER.					
S/N		Document Number		G855C	
Date		Saturday, November 16, 2019		Sheet 97 of 99	

Security Classification	LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL INFORMATION. THIS INFORMATION IS NOT TO BE DISCLOSED OR TRANSMITTED TO ANY OTHER PARTY WITHOUT THE WRITTEN CONSENT OF LC FUTURE CENTER. THE CUSTOMER OF THE CONFIDENTIAL DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED OR BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.			Size Document Number GS55C Date Saturday, November 16, 2019 Sheet 38 of 60	

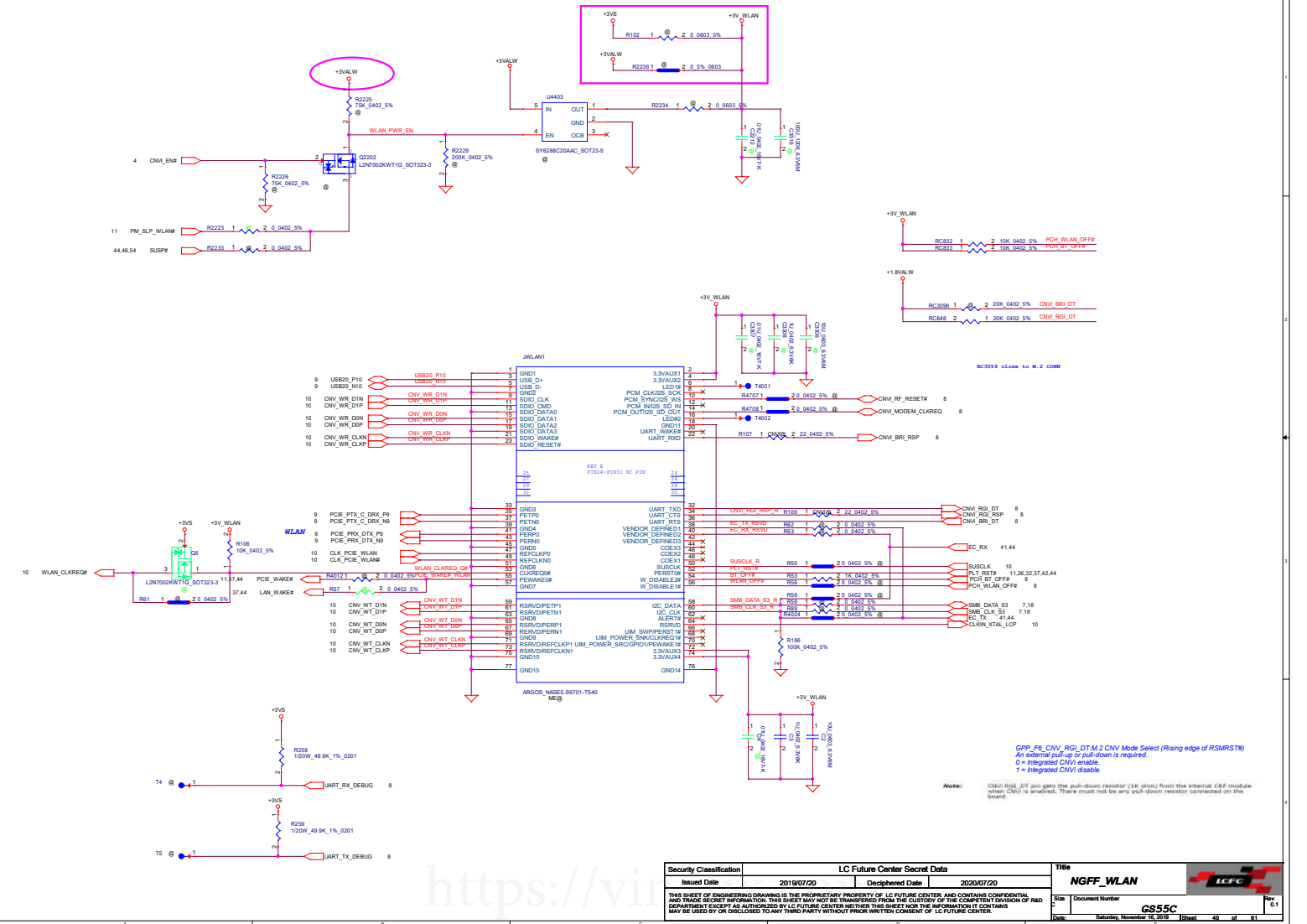
```
REMOTE+/- R, REMOTE1+/-, REMOTE2+/-:  
Trace width/space:10/10 mil  
Trace length:<8"
```



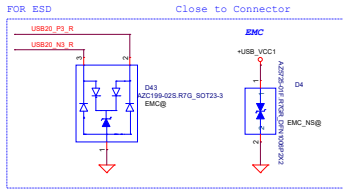
over temperature threshold:
 $RSET = 3 * RTMH$
 $92 / -30C$
 Hysteresis temperature threshold.
 $RHYS = (RSET * RTML) / (3 * RTML - RSET)$
 $56 / -30C$

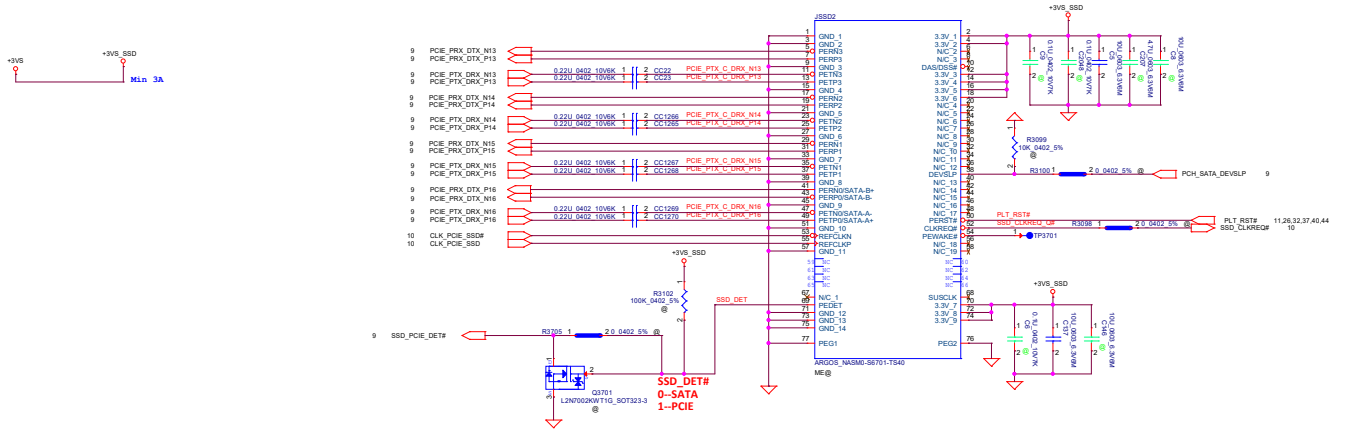


Mini-Express Card(WLAN/WiMAX)

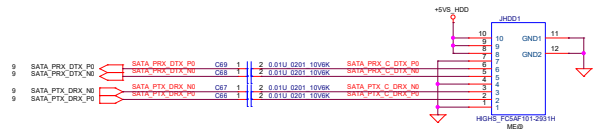
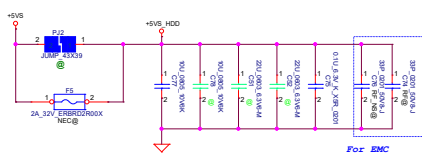


04/02 add USB debug function bron

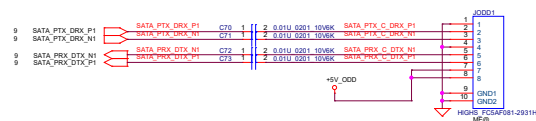
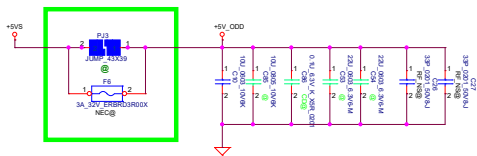





SATA HDD Conn.



ODD Conn.

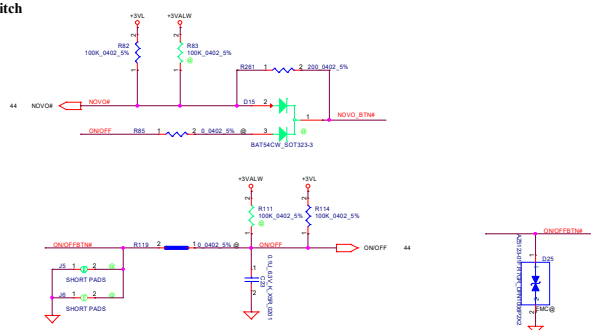


<https://v>

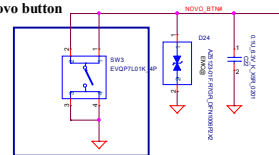
Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	Blank	
<p>THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE 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.</p>					
		CS55C			
Rev	Document Number	Date		Sheet	Rev
0.1		Tuesday, November 19, 2019		42	0.1



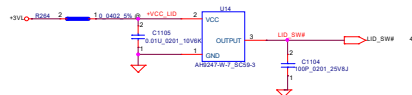
ON/OFF switch



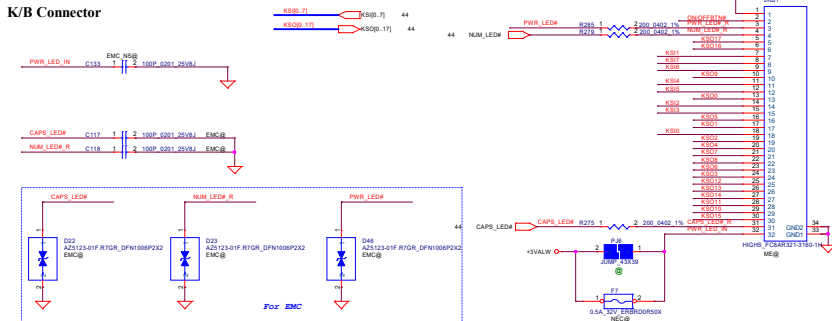
Novo button



LID switch



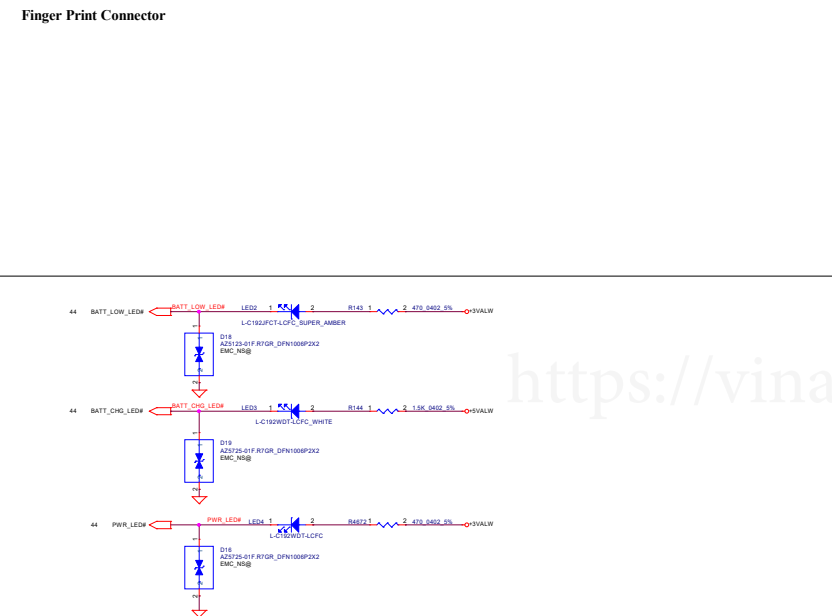
K/B Connector



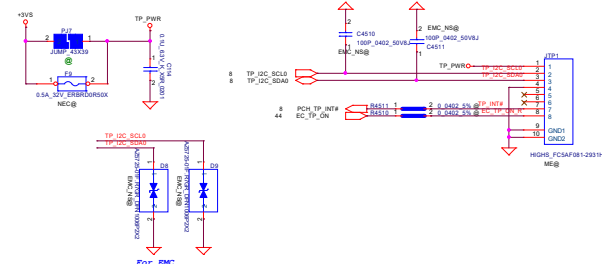
KB Backlight Connector



Finger Print Connector



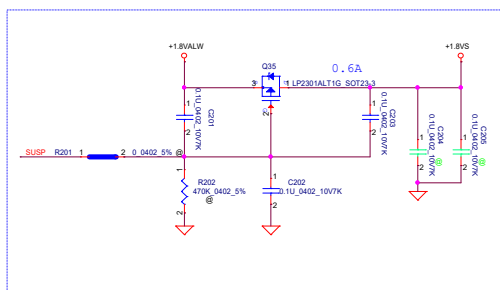
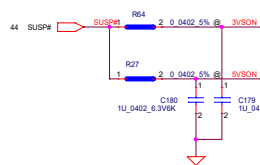
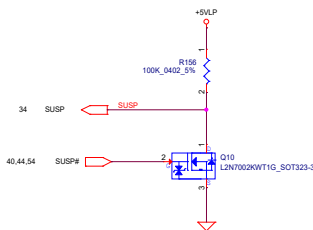
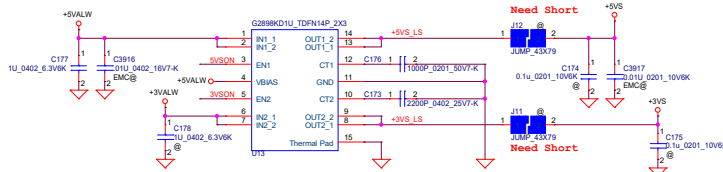
TP/B Connector



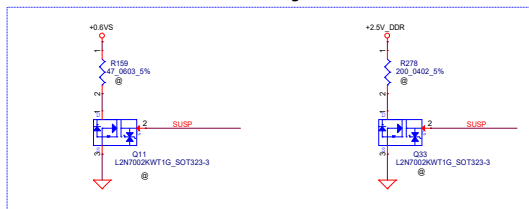
<https://vinafix.com>

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	KBD/PWR/IO/LED/TP Conn. LC-F-C	
THIS SET OF ENGINEERING DRAWINGS IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND COMPANY CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS DRAWING IS NOT TO BE REPRODUCED OR USED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF LC FUTURE CENTER. ANY REPRODUCTION OR USE OF THIS DRAWING WITHOUT THE WRITTEN CONSENT OF LC FUTURE CENTER IS STRICTLY PROHIBITED. ANY REPRODUCTION OR USE OF THIS DRAWING WITHOUT THE WRITTEN CONSENT OF LC FUTURE CENTER IS STRICTLY PROHIBITED. ANY REPRODUCTION OR USE OF THIS DRAWING WITHOUT THE WRITTEN CONSENT OF LC FUTURE CENTER IS STRICTLY PROHIBITED.					
Rev	01	Doc Number	GS55C		
Rev	01	Doc Number	GS55C		

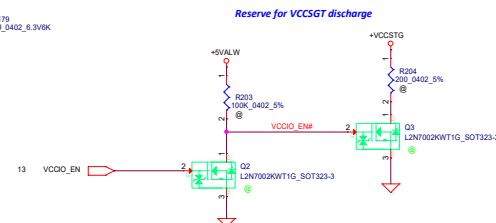
+3VS, C173 --> 2.74ms
+5VS, C176 --> 2.03ms
VIN 5V and 3.3V (VBIAS=5V), IMAX(per channel)=6A, Rds=16mohm



For DisCharge




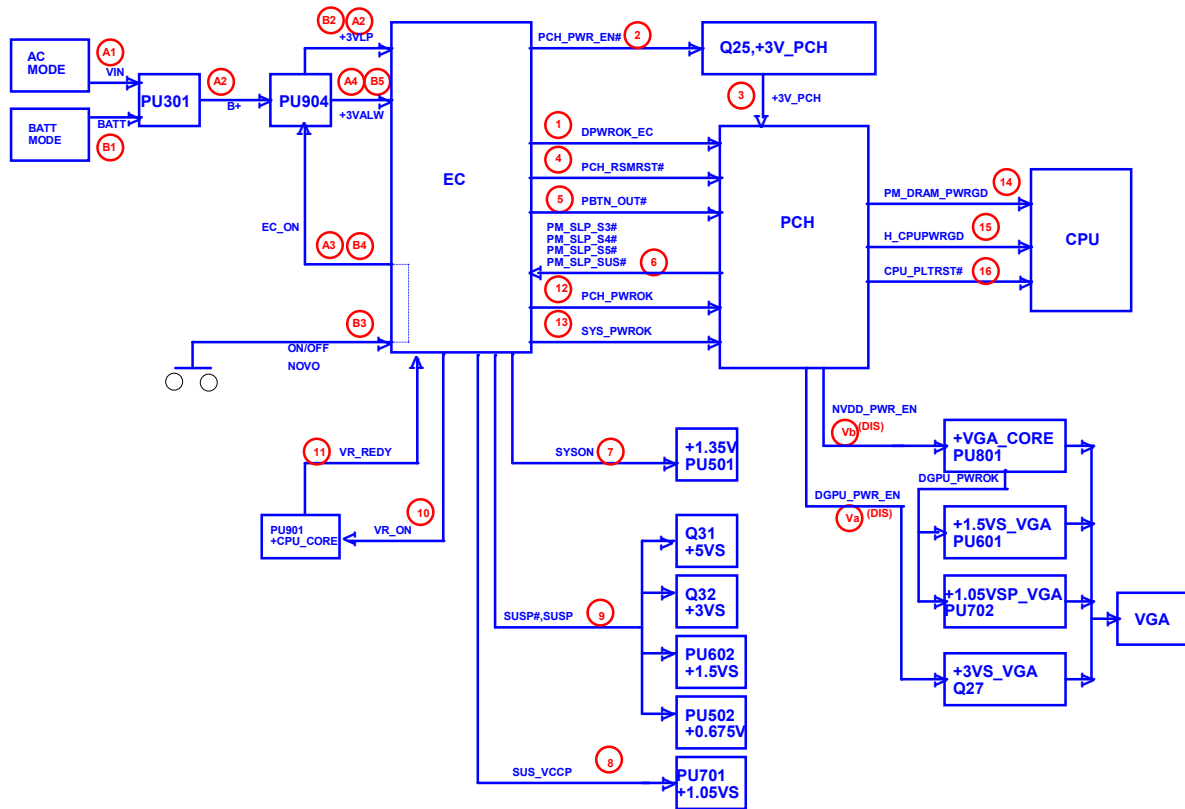
08/29: Need double check enable signal and the resistance



As long as VccST and VccSTG are power gated separately, the following requirements are critical to prevent system failure on Whiskey Lake:


1. VccSTG should have a discharge circuit, either integrated into its load switch or externally on the motherboard. The recommended nominal $R_{\text{discharge}} \leq 300\Omega$ to GND. The discharge circuit should be activated when the VccSTG load switch is disabled.
2. If VccST/VccPLL has a discharge circuit, either integrated into its load switch or externally on the motherboard, then VccSTG nominal $R_{\text{discharge}} \leq \text{VccST/VccPLL } R_{\text{discharge}}$.
3. The total capacitance on VccSTG \leq total capacitance on VccST/VccPLL.

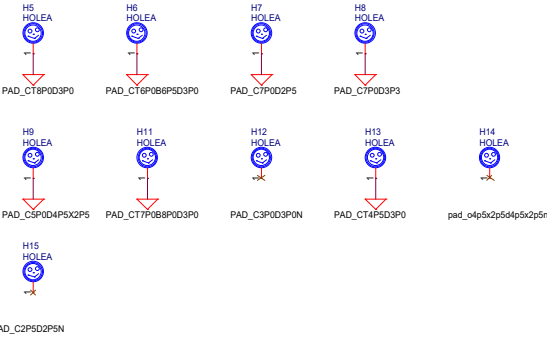
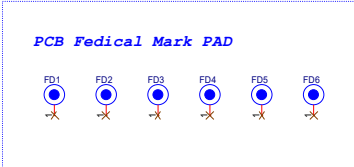
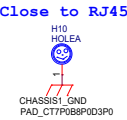
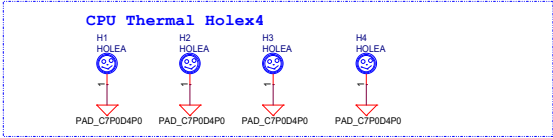
Security Classification		L.C. Future Center Secret Data		Title		
Issued Date	2019/07/20	Deciphered Date	2020/07/20	DC V TO VS INTERFACE		
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF L.C. FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D OR REPRODUCED OR DISCLOSED BY ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF L.C. FUTURE CENTER.				Size Date		Rev 0.1
				GS55C Date Saturday, November 16, 2019 Sheet 46 of 81		




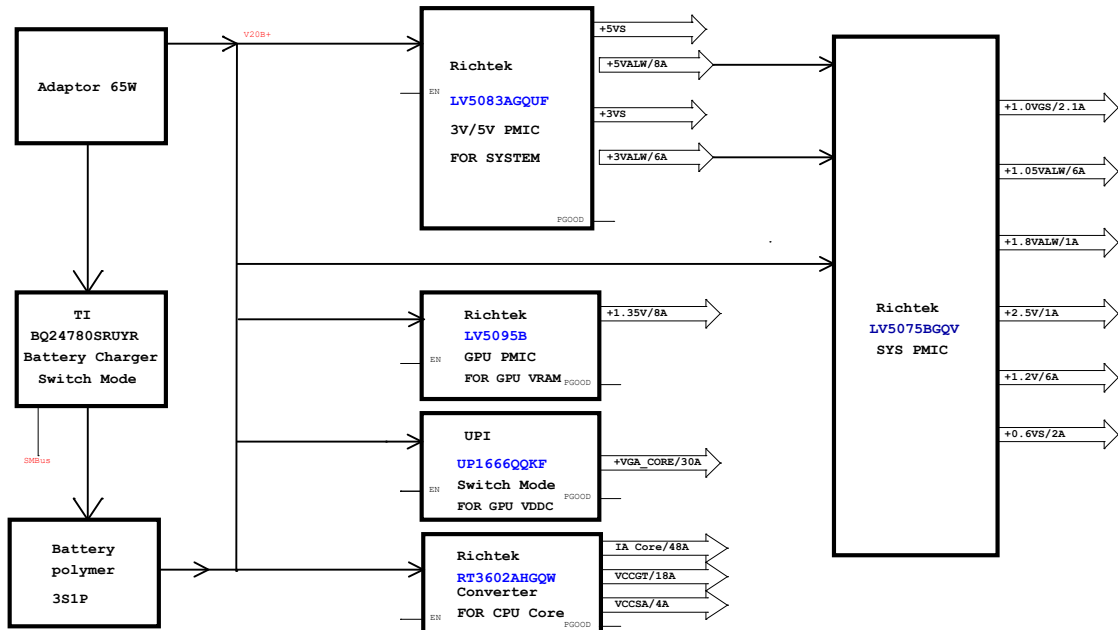
Security Classification	LC Future Center Secret Data		Title
Issued Date	2019/07/20	Deciphered Date	2020/07/20
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF 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.			Power sequence block
Size	Document Number	Rev	0.1
Custom	GS55C	Date	Saturday, November 16, 2019
Sheet	47	of	61

<https://vir...>

Security Classification	LC Future Center Secret Data		Title		
Issued Date	2019/07/20	Deciphered Date	2020/07/20		Virtual symbol
<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 WRITER THE SHEET FOR 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
			A	6855C	0.1
Date			Thursday, November 18, 2010	Sheet	48 of 81

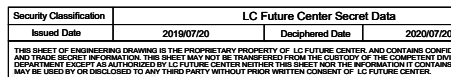


Security Classification	LC Future Center Secret Data			Title			
Issued Date	2019/07/20	Deciphered Date	2020/07/20	Hole			
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE 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	Rev
						GS55C	0.1
Date:						Saturday, November 16, 2019	Sheet 49 of 61

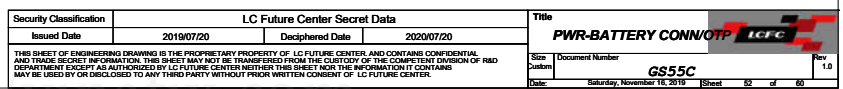


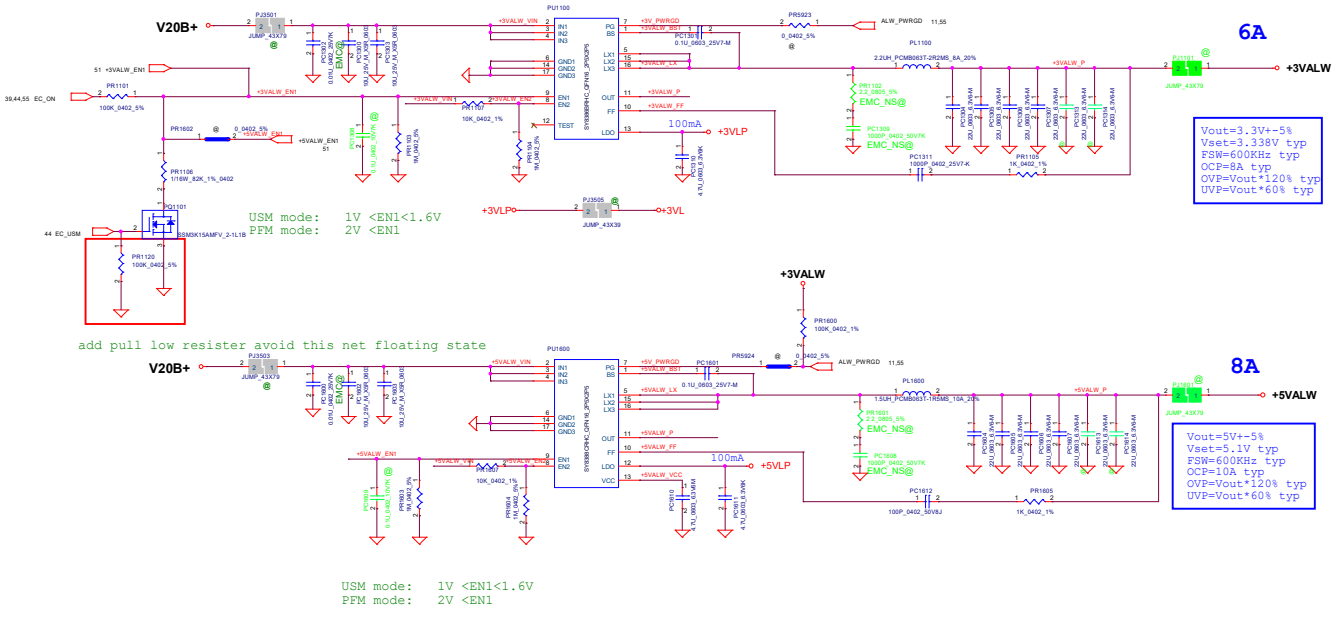
Security Classification	LC Future Center Secret Data		Title
Issued Date	2019/07/20	Deciphered Date	2020/07/20
THIS SHEET OF INFORMATION CONTAINS THE PROPRIETARY INFORMATION OF LC FUTURE CENTER AND CONTAINS INFORMATION AND SHEET OF INFORMATION. THIS SHEET MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF LC FUTURE CENTER. ANY REUSE OR DISSEMINATION OF THIS INFORMATION WITHOUT THE WRITTEN PERMISSION OF LC FUTURE CENTER IS PROHIBITED.			PWR-Power Diagram
Issue Number	GS55C		01
Date	Security Number	Revised	01 of 01

<https://vinafix.com>



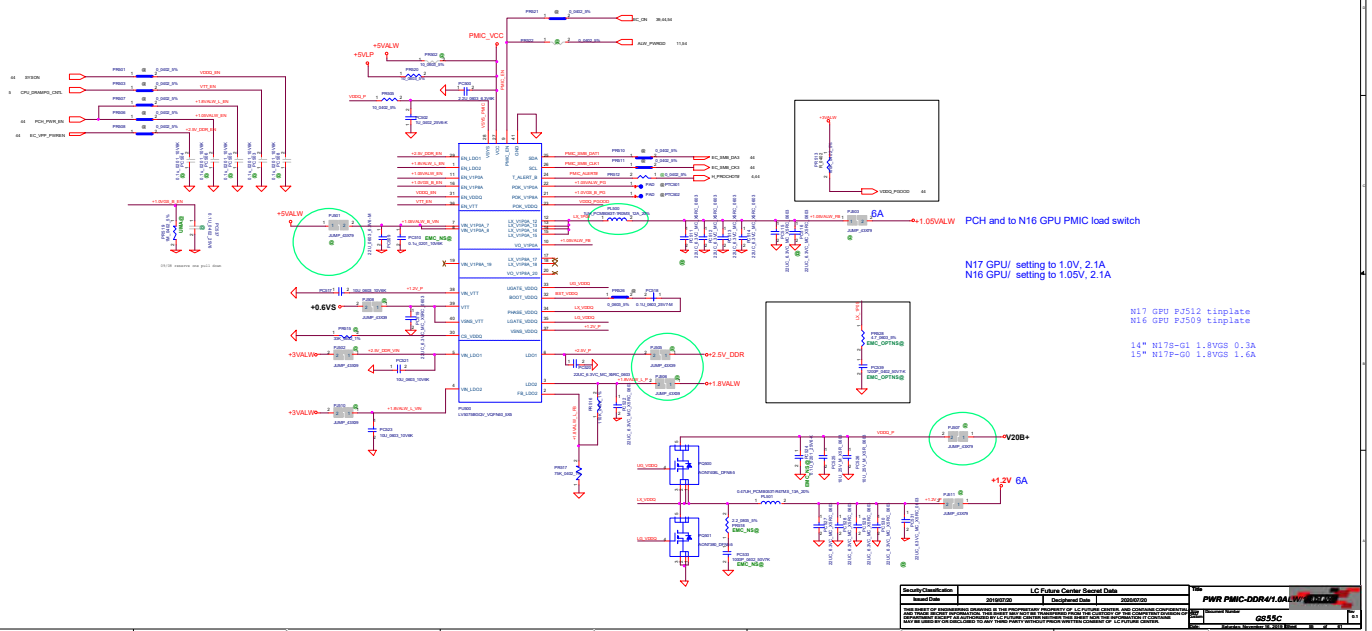
Title		PWR-DCIN / RTC charger 	
Size	Document Number	Rev	
Custom	GS55C	0.1	
Date:	Saturday, November 16, 2019	Sheet	51 of 61





Security Classification		LC Future Center Secret Data		Title	
Issued Date		Deciphered Date		PWR_3VALW/5VALW	
2019/07/20		2020/07/20		Rev	
				Document Number	
				GS55C	
				Page	
				54 of 60	

<https://vinafix.com>




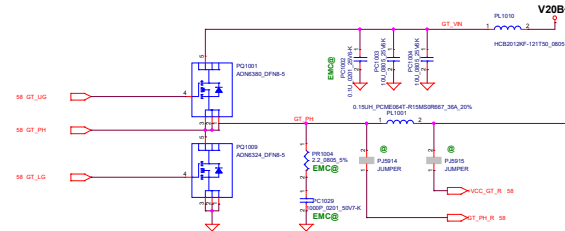
<https://vinafix.com>

Security Classification	LC Future Center Secret Data		Title
Issued Date	2019/07/20	Deciphered Date	2020/07/20
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 TRANSMITTED OUTSIDE THE CUSTODY OF THE CONFIDENTIAL GROUP OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THE SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.			Doc. Number PWR-VGA-PMC
			Doc. Number G855C
			Doc. Number G855C

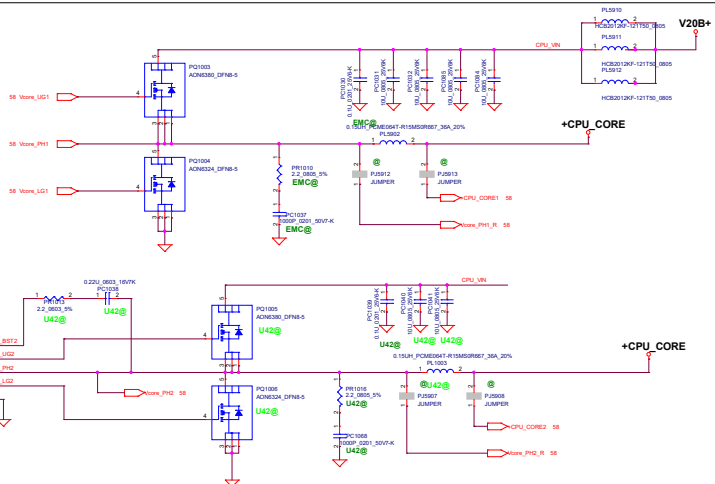


<https://vinafix.com>

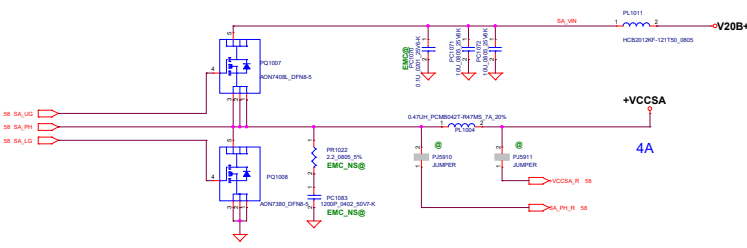
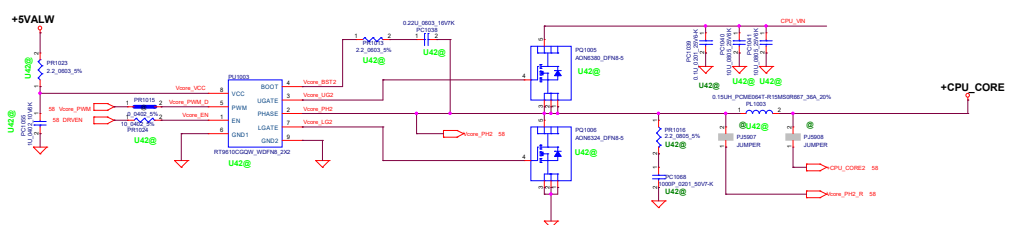
Security Classification	LC Future Center Secret Data		Title		
Issued Date	20180720	Declassified Date	20300102		
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MUST NOT BE TRANSMITTED FROM THE CUSTODY OF THE COMPETENT DIVISION OF THE GOVERNMENT, EXPORT AS AUTHORIZED BY LC FUTURE CENTER, NEITHER THIS SHEET NOR THE INFORMATIONAL CONTENTS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				Doc. Number	PWR-VGA_CORE
				Rev	GS55C
				Scale	Security Required 16-2015 Sheet 01 of 01



Vboot=0V Loadline=3.1mΩ
 Ripple=+30mV/-10mV (0A-0.5A)
 Ripple=+10mV (0.5A-TDC)
 Ripple=+15mV (TDC-Iccmax)
 TDC=18A Iccmax=31A OCP=37A
 OVP=VID+370mV-VID+430mV
 Max Overshoot:70mV/10us
 UVF=VID-370mV-VID-225mV
 Fsw=550Khz



U22 :21A
 U42 :48A
 Vboot=0V Loadline=1.8mΩ
 Ripple=+30mV/-10mV (0A-0.5A)
 Ripple=+10mV (0.5A-TDC)
 Ripple=+15mV (TDC-Iccmax)
 TDC=21A/48A Iccmax=32A/70A
 OCP=37A / 74A
 Max Overshoot:70mV/10us
 OVP=VID+370mV-VID+430mV
 UVF=VID-370mV-VID-225mV
 Fsw=550Khz




Vboot=0V Loadline=10.3Ω
 Ripple=+30mV/-10mV (0A-0.5A)
 Ripple=+10mV (0.5A-TDC)
 Ripple=+15mV (TDC-Iccmax)
 TDC=4A Iccmax=4.5A OCP=7A
 Max Overshoot:70mV/10us
 OVP=VID+370mV-VID+430mV
 UVF=VID-370mV-VID-225mV
 Fsw=550Khz

Security Classification			LC Future Center Secret Data		Title	
Issued Date	20190720	Declassify Date	20200720		PWR-VGA_CORE	
THIS DOCUMENT CONTAINS INFORMATION THAT IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS NOT TO BE RELEASED TO THE PUBLIC OR TO ANY OTHER ENTITY WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE U.S. GOVERNMENT. IT IS THE POLICY OF THE U.S. GOVERNMENT TO PROTECT THE CONFIDENTIALITY OF THIS INFORMATION AND TO PREVENT THE UNAUTHORIZED DISCLOSURE OF THIS INFORMATION TO THE PUBLIC OR TO ANY OTHER ENTITY WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE U.S. GOVERNMENT.						
Doc ID	Document Number	Doc ID	Document Number	Doc ID	Document Number	Doc ID
	G855C		G855C		G855C	

<https://vinafix.com>

<https://vint>

Security Classification	LC Future Center Secret Data		Title	
Issued Date	2019/07/20	Deciphered Date	2020/07/20	
<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 WRITER THE SHEET FOR 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
			6	6855C
			Date	Thursday, November 18, 2010
			Sheet	61 of 60