LCFC NM-C952

GS55C MB Schematics Document

CML U42 with DDR4 + Nvidia N16S-GTR/N17S-G3

2019-08

REV:0.1

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: *Cover Page*

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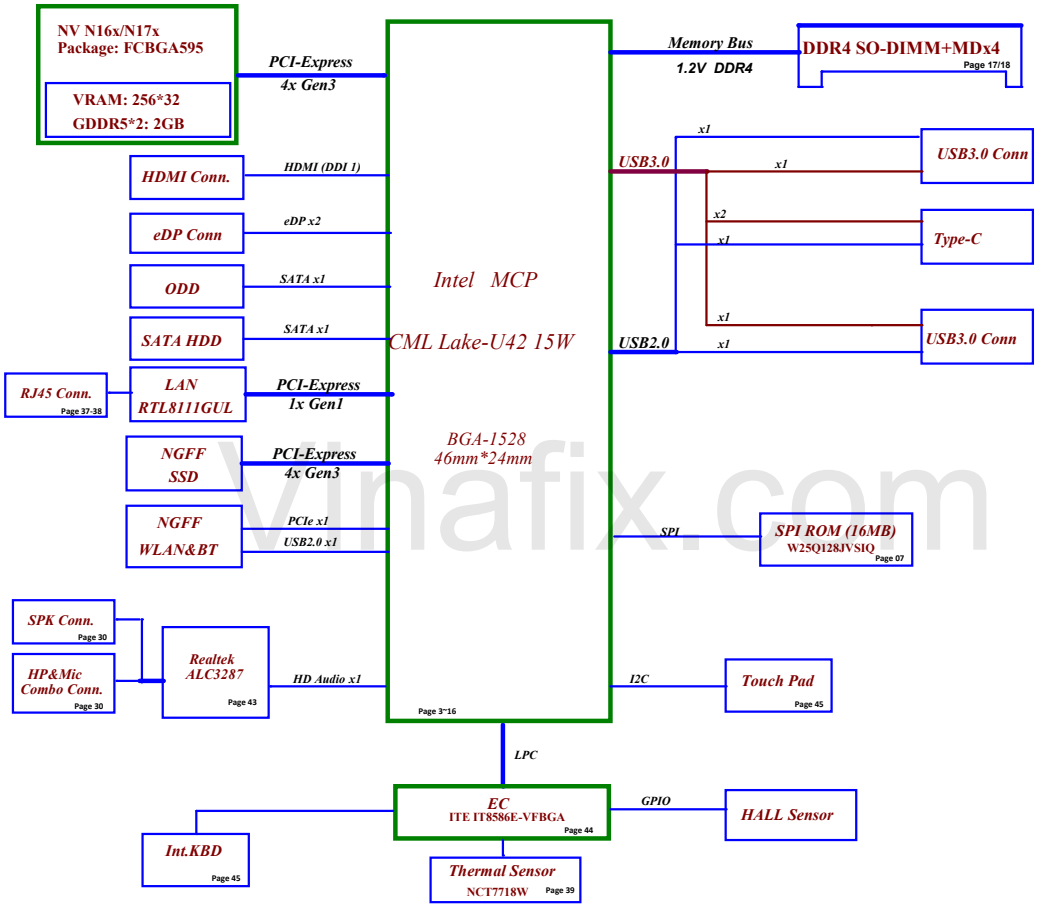

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Title	Block Diagram		
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Voltage Rails (O --> Means ON , X --> Means OFF)

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

Vinafix

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
	7	Camera
	8	NC
	9	NC
	10	Bluetooth
PCIE	5~8 X4	DGPU
	9	Giga LAN
	10	NC
	11	SATA HDD
	12	WLAN
	13~16 X4	PCIE/SATA SSD

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

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

Device	Address
Smart Battery	need to update
Charger	0001 0010 b

EC SMBus2 address

Device	Address
Thermal Sensor(NCT7718W)	1001_100xb
PCH	need to update
DGPU	need to update

EC SMBus3 address

Device	Address
PMIC	need to update

PCH SM Bus address

Device	Address
DDR4 SODIMM	need to update
Wlan	Reserved

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Title	Notes List		
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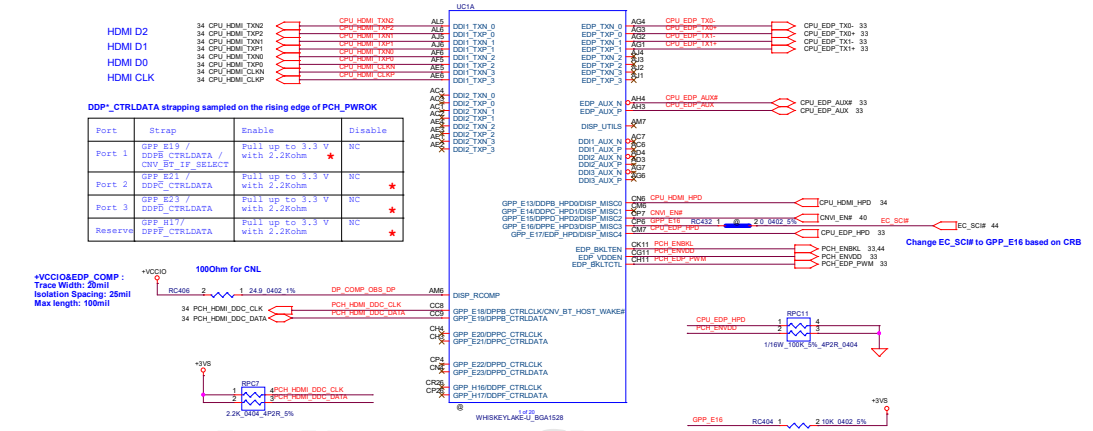

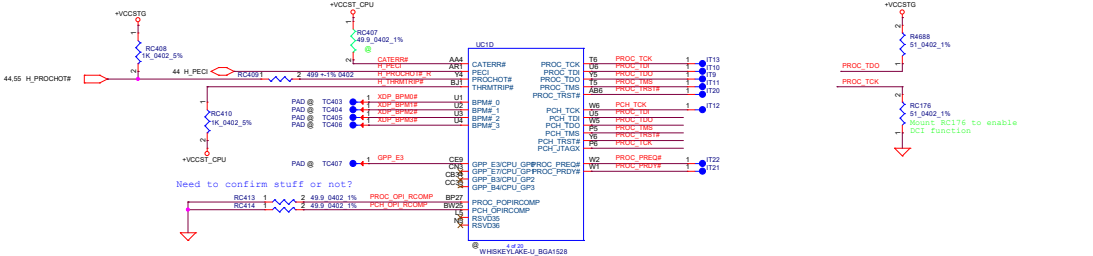

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Title: MCP (DDI,EDP)

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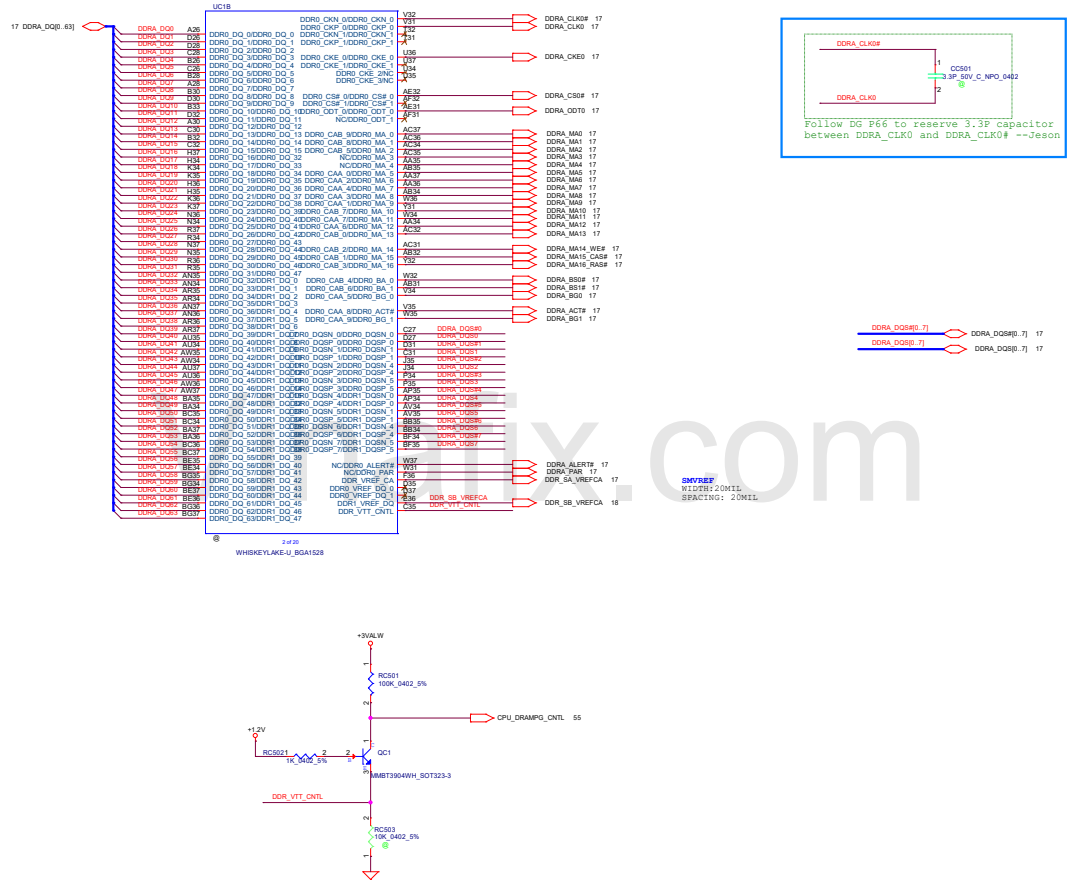

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Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: MCP (DDR4)

Size	Document Number	Rev
C	GS55C	0.1

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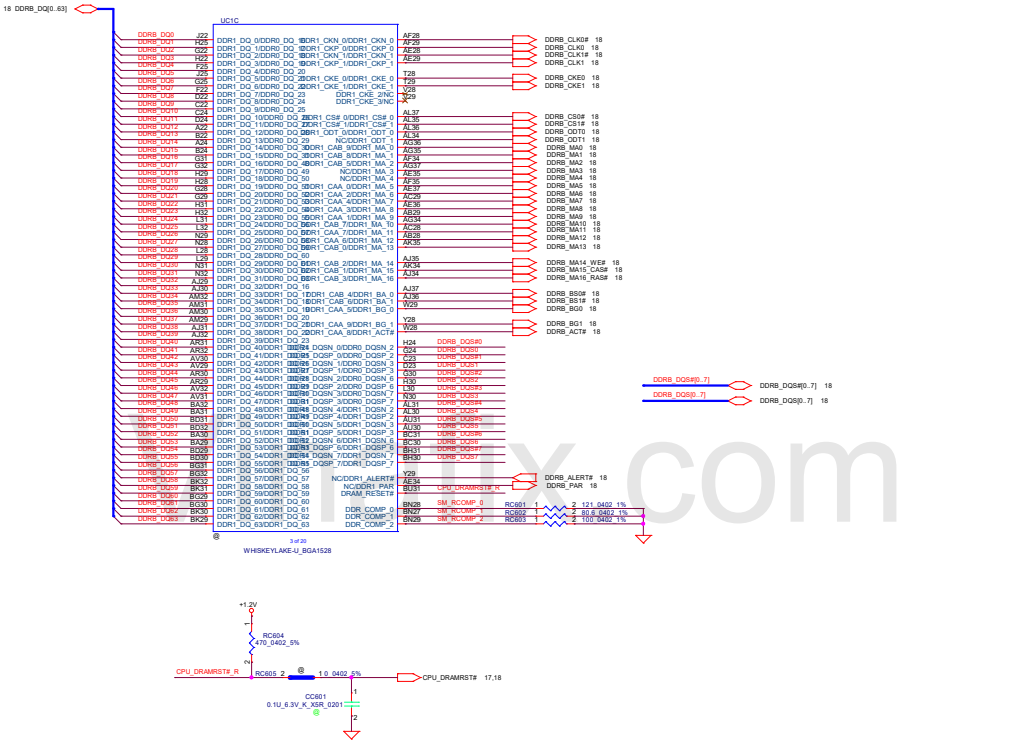

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Title: MCP (DDR4)

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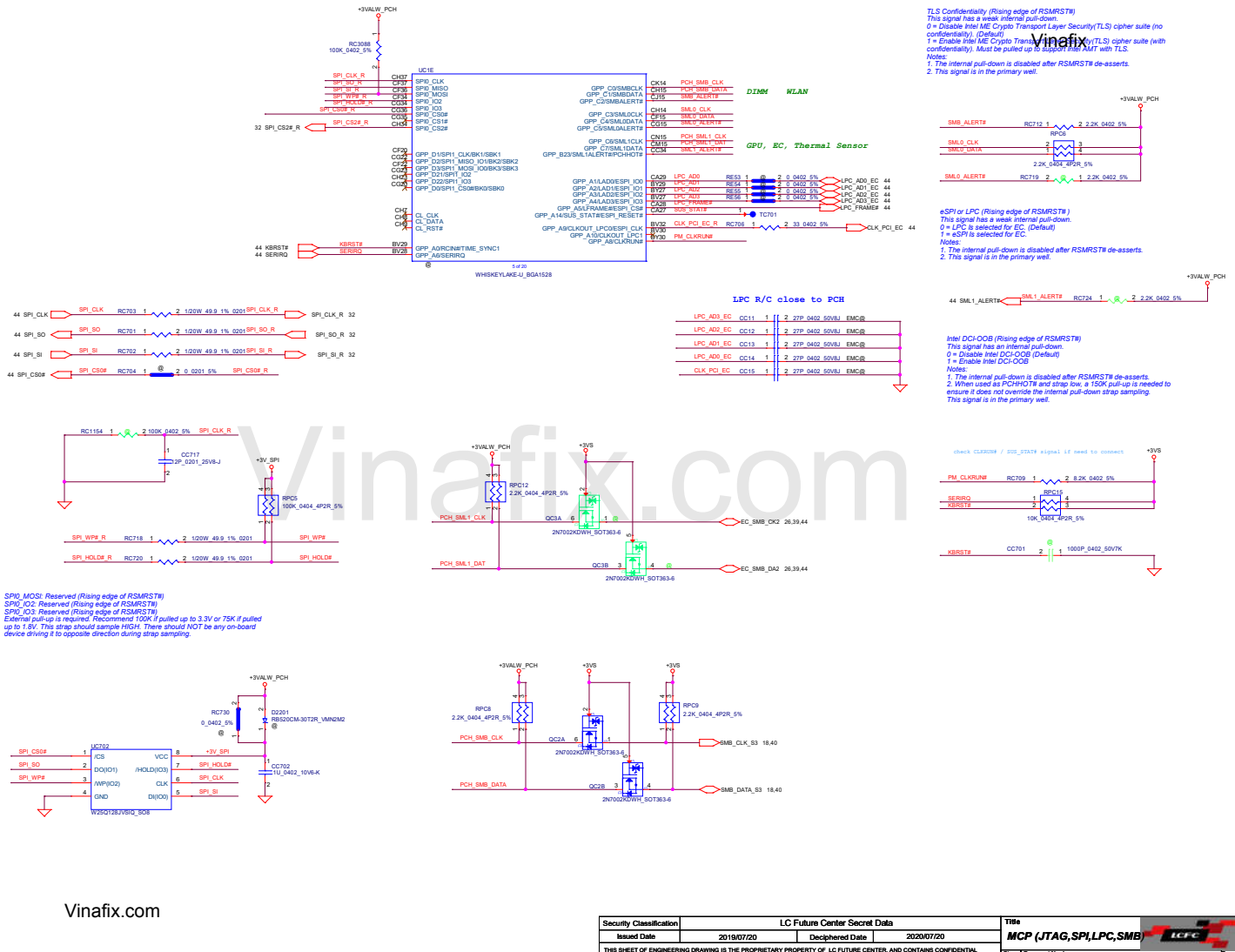

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Title	MCP (JTAG,SPI,LPC,SMB)		
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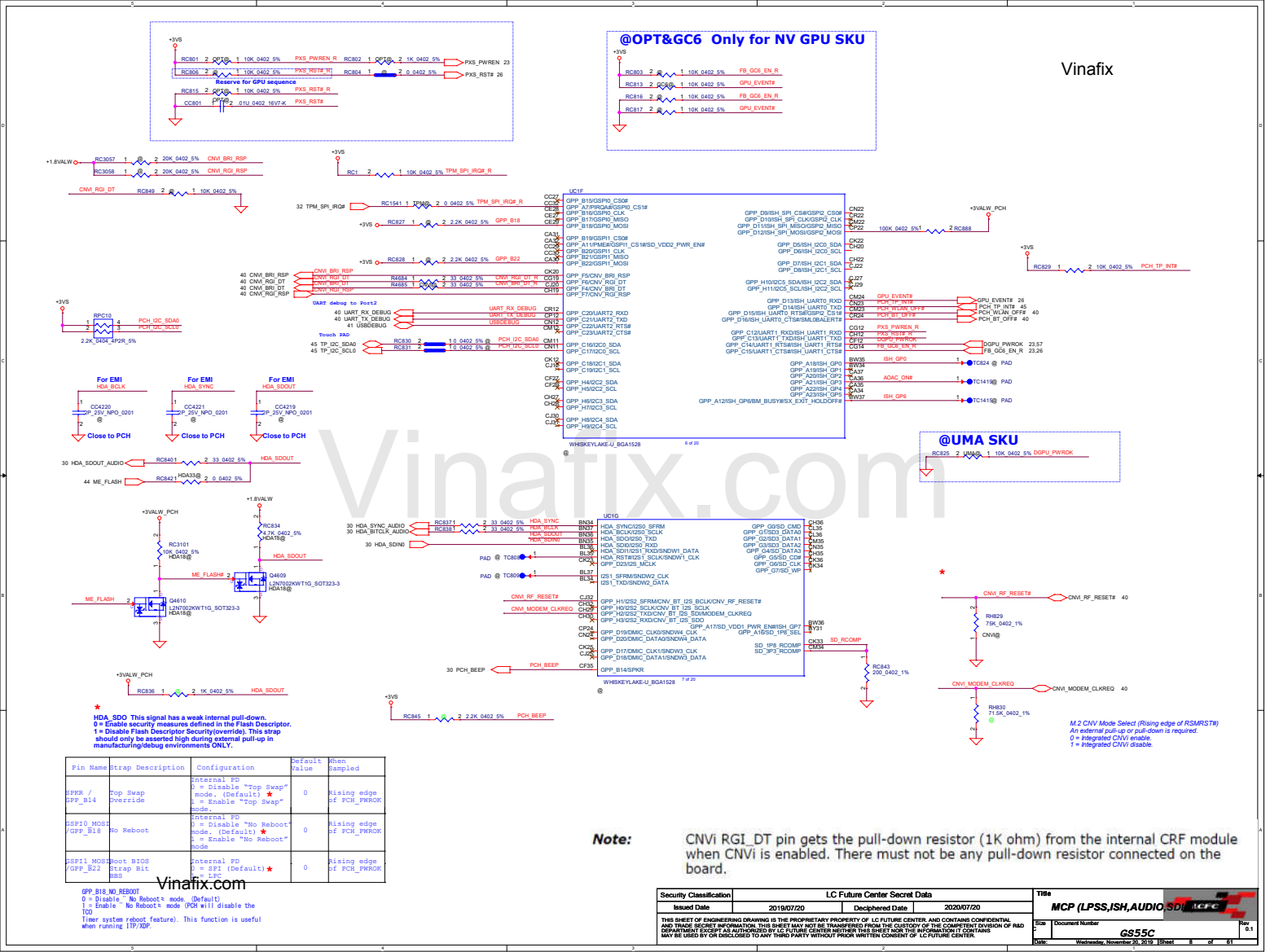

Pin Name	Strap Description	Configuration	Default Value	When Sampled
SPKR / GPP_B14	Top Swap Override	Internal PD 0 = Disable "Top Swap" mode. (Default) ★ 1 = Enable "Top Swap" mode.	0	Rising edge of PCH_PWROK
GSPI0_MOSI /GPP_B18	No Reboot	Internal PD 0 = Disable "No Reboot" mode. (Default) ★ 1 = Enable "No Reboot" mode	0	Rising edge of PCH_PWROK
GSPI1_MOSI /GPP_B22	Boot BIOS Strap Bit SBS	Internal PD 0 = SPI (Default) ★ 1 = LPC	0	Rising edge of PCH_PWROK

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Title: MCP (LPSS,ISH,AUDIO,SDI)

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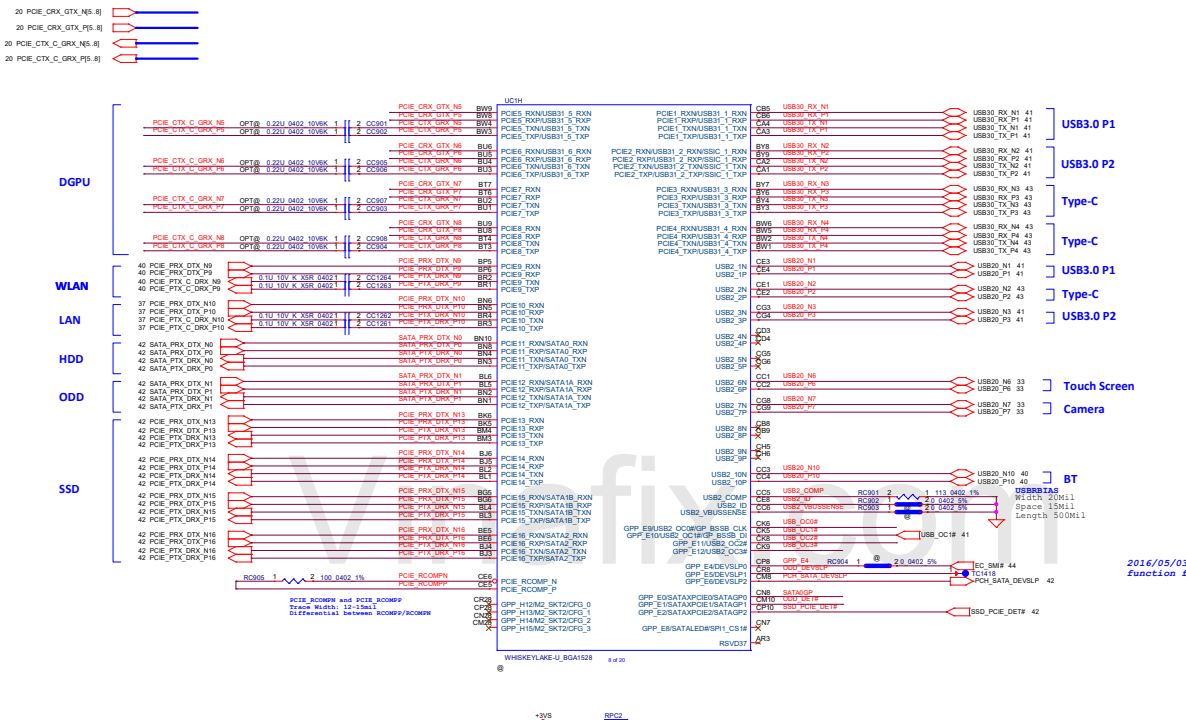

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Title: MCP (PCIE,SATA,USB3,USB2)

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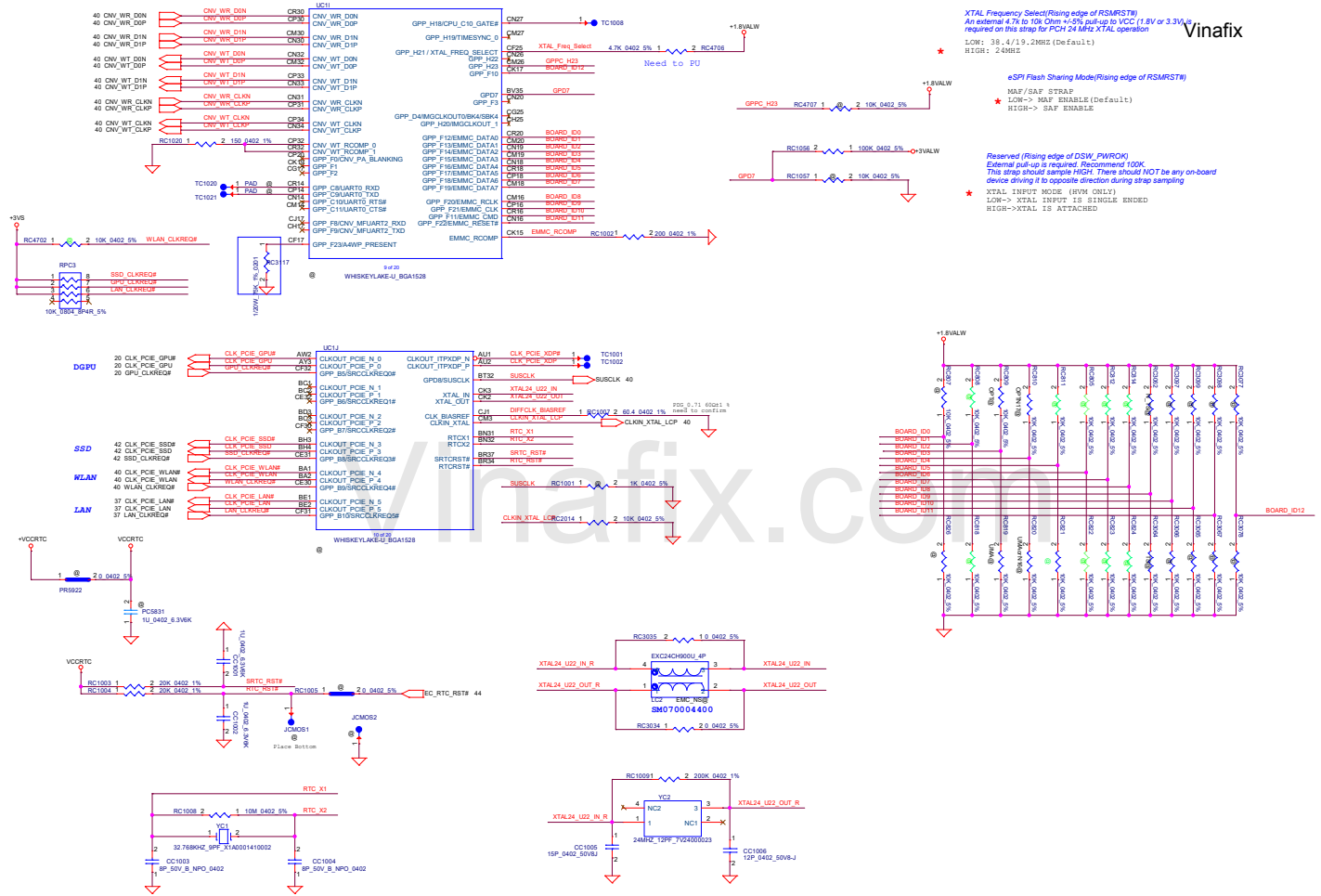

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Title: MCP (CSI2,EMMC,CLOCK)

Size	Document Number	Rev
C	GS55C	0.1

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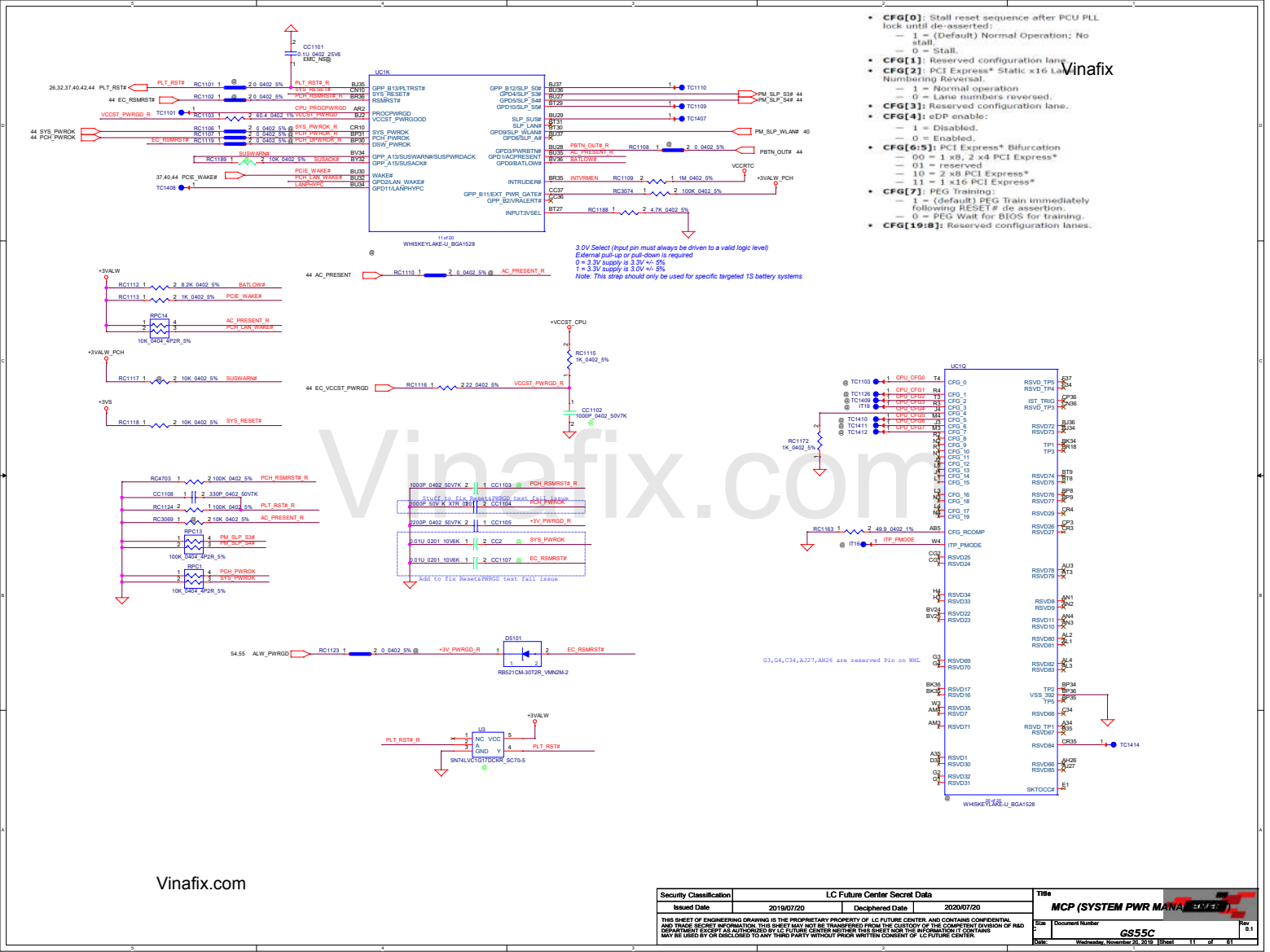
CFG[0]: Stall reset sequence after PCU PLL lock until de-asserted:
— 1 = (Default) Normal Operation; No stall.
— 0 = Stall.
CFG[1]: Reserved configuration lane.
CFG[2]: PCI Express* Static x16 Lane Numbering Reversal.
— 1 = Normal operation
— 0 = Lane numbers reversed.
CFG[3]: Reserved configuration 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.
Vinafix
3.0V Select (Input pin must always be driven to a valid logic level)
External pull-up or pull-down is required
0 = 3.3V supply is 3.3V +/- 5%
1 = 3.3V supply is 3.0V +/- 5%
Note: This strap should only be used for specific targeted 1S battery systems
UC1K
WHISKEYLAKE-U_BGA1528
UC1Q
WHISKEYLAKE-U_BGA1528
G3,G4,C34,AJ27,AH26 are reserved Pin on WHL
Stuff to fix ResetPWRGD test fail issue
Add to fix ResetPWRGD test fail issue
RBS21CM-30T2R_VMN2M-2
SN74LVC1G17DCKR_SC70-5
Vinafix.com
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Title
MCP (SYSTEM PWR MANAGEMENT)
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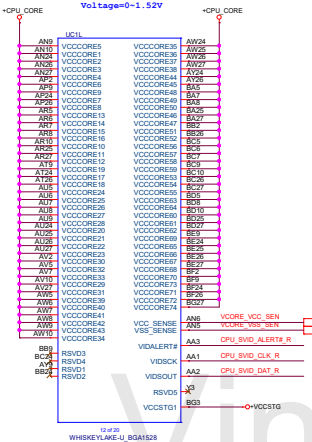

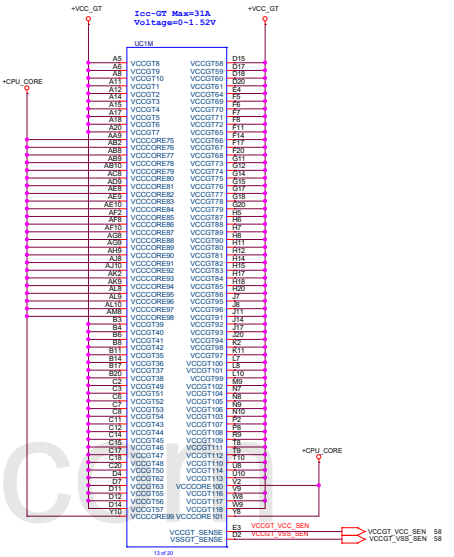

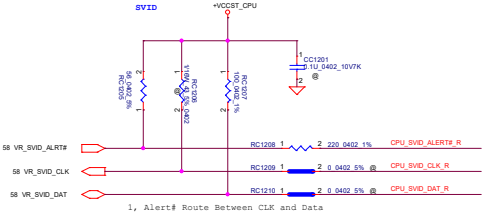

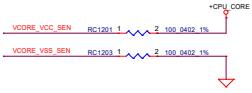

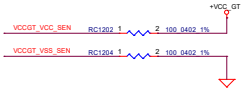

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Title: MCP (CPU PWR1)

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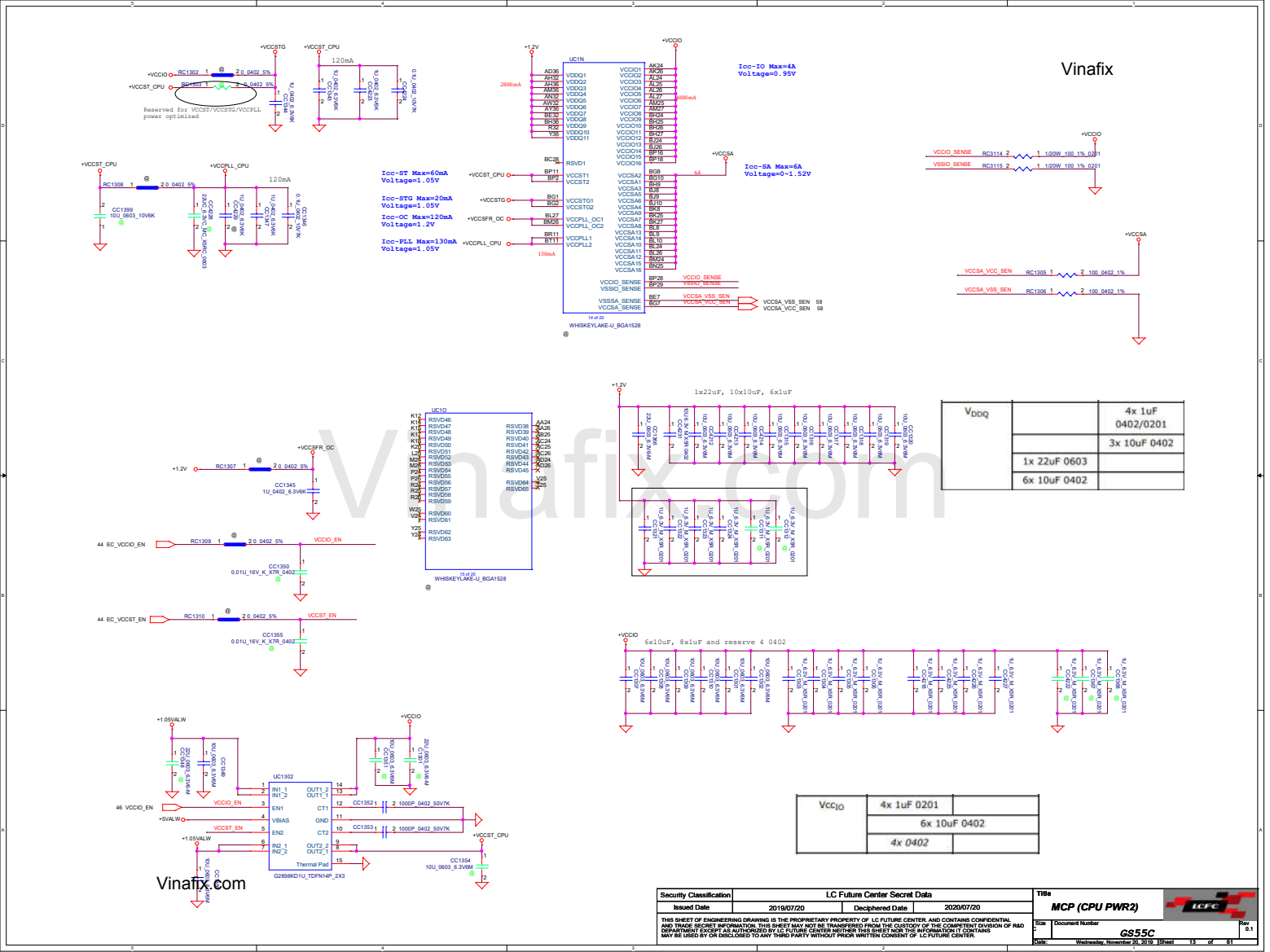

V_{DDQ}		4x 1uF 0402/0201
		3x 10uF 0402
	1x 22uF 0603	
	6x 10uF 0402	

V_{CCIO}	4x 1uF 0201	
	6x 10uF 0402	
	4x 0402	

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Title: MCP (CPU PWR2)

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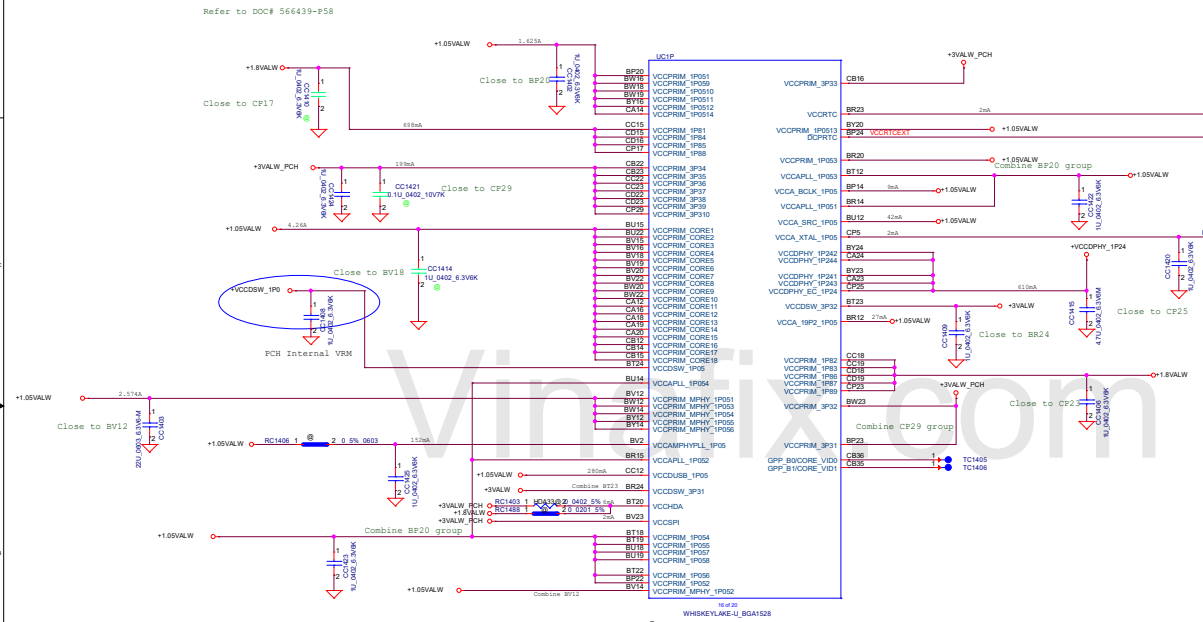

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Title: MCP (PCH PWR)

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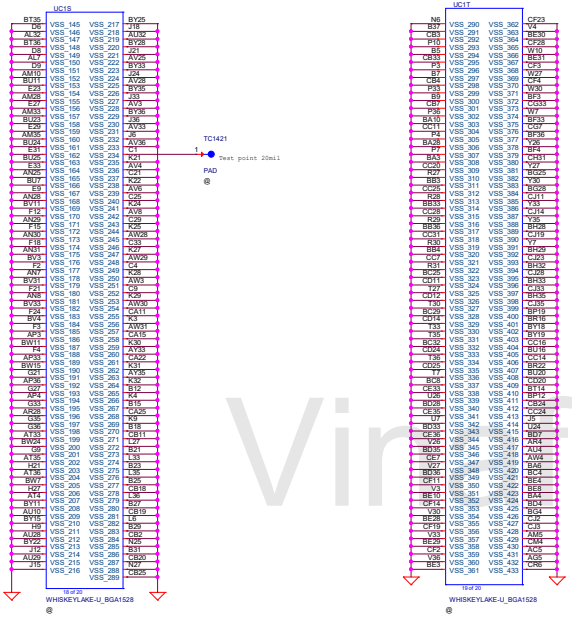

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Title	MCP (VSS)		
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Title: ***XDP***

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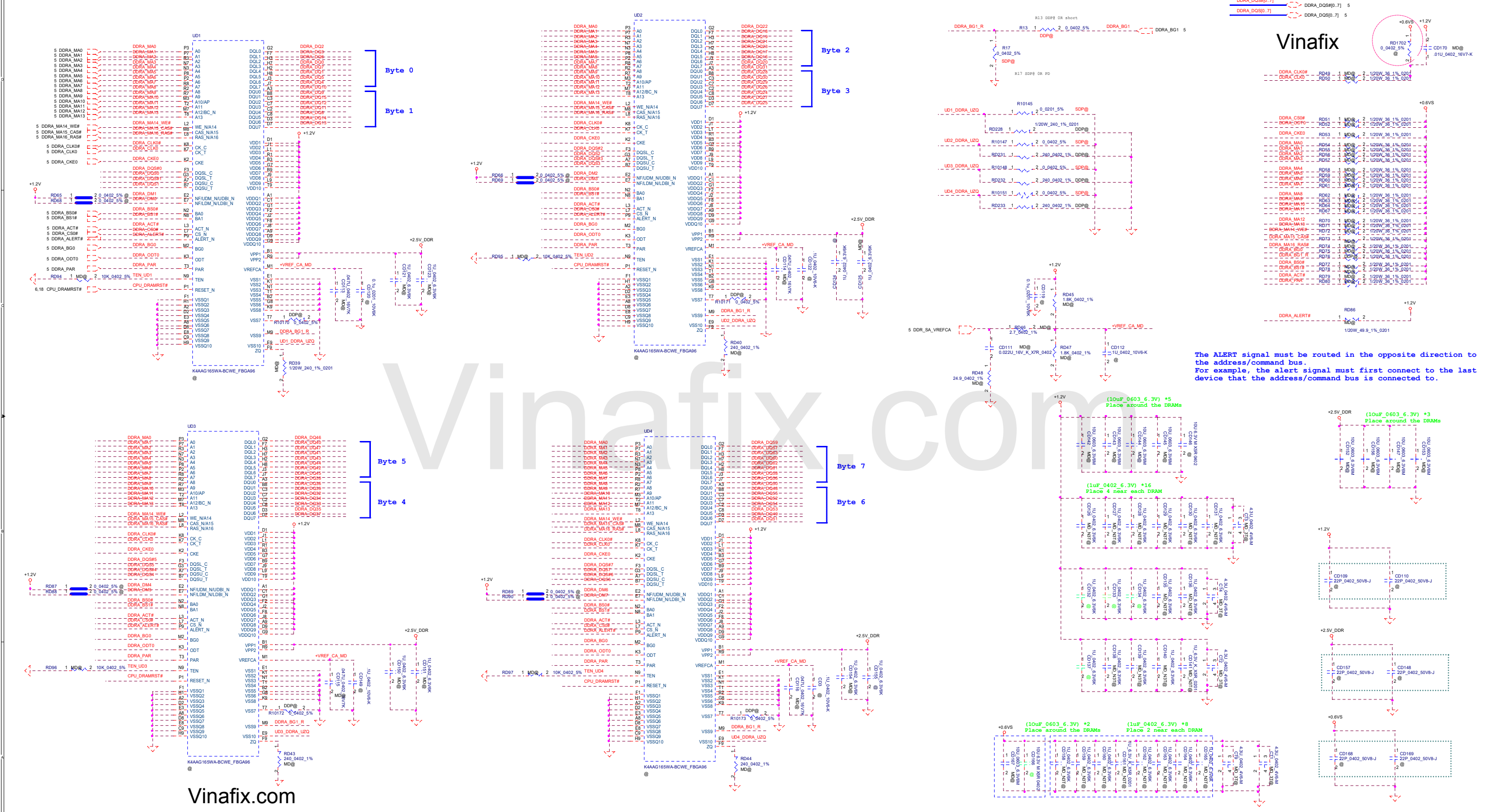
Apply X76 BOM to control DDP Memory Down stuff components!



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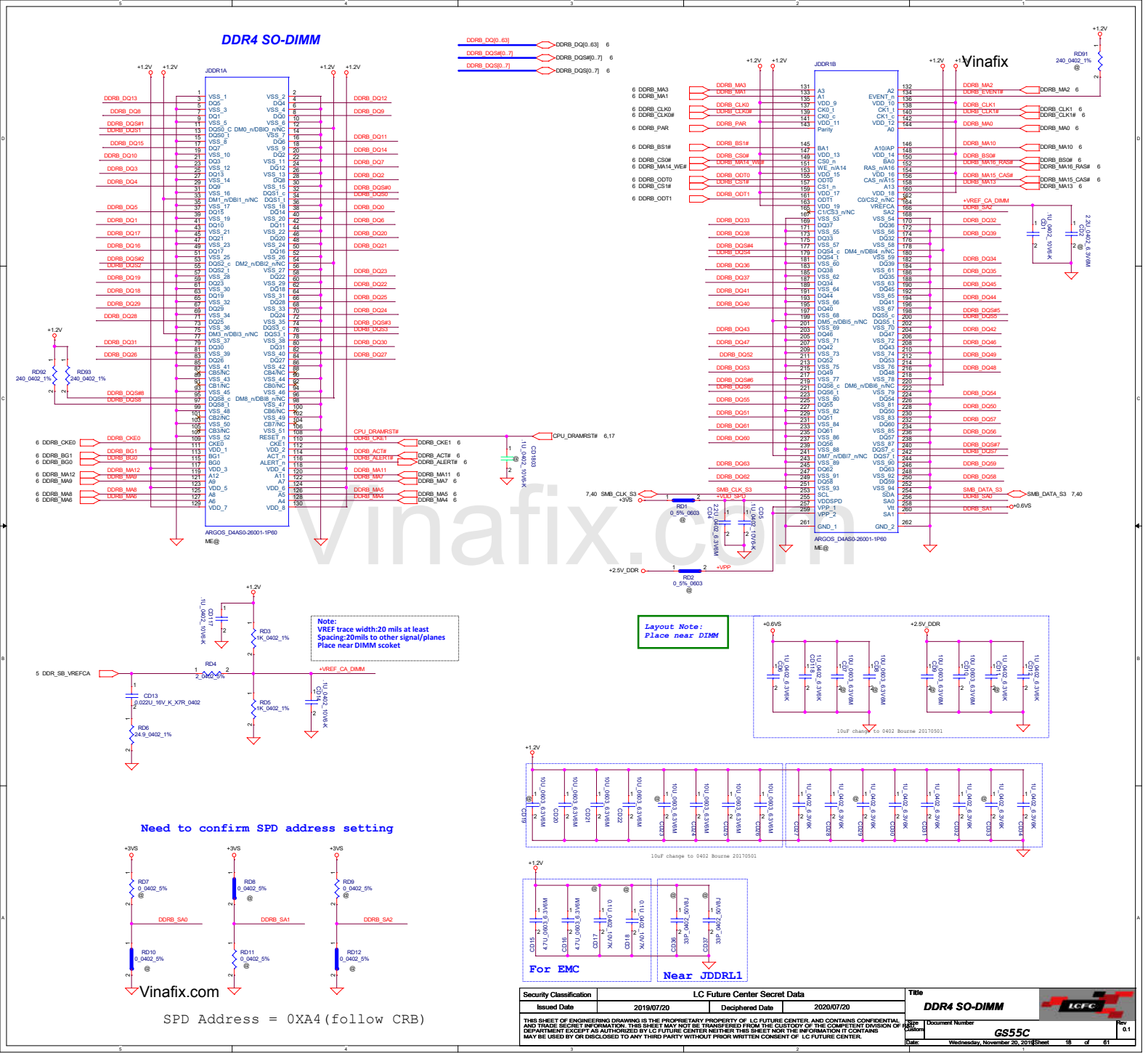
Title: DDR4 Memory Down
Size: Custom | Document Number: GS55C | Rev: 0.1



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Title	DDR4 SO-DIMM
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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	Reserved(keep pull-up and pull-down footprint and not stuff by default)			
STRAP2	+3VGS				
STRAP3	+3VGS				
STRAP4	+3VGS				

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Title: VGA Notes List

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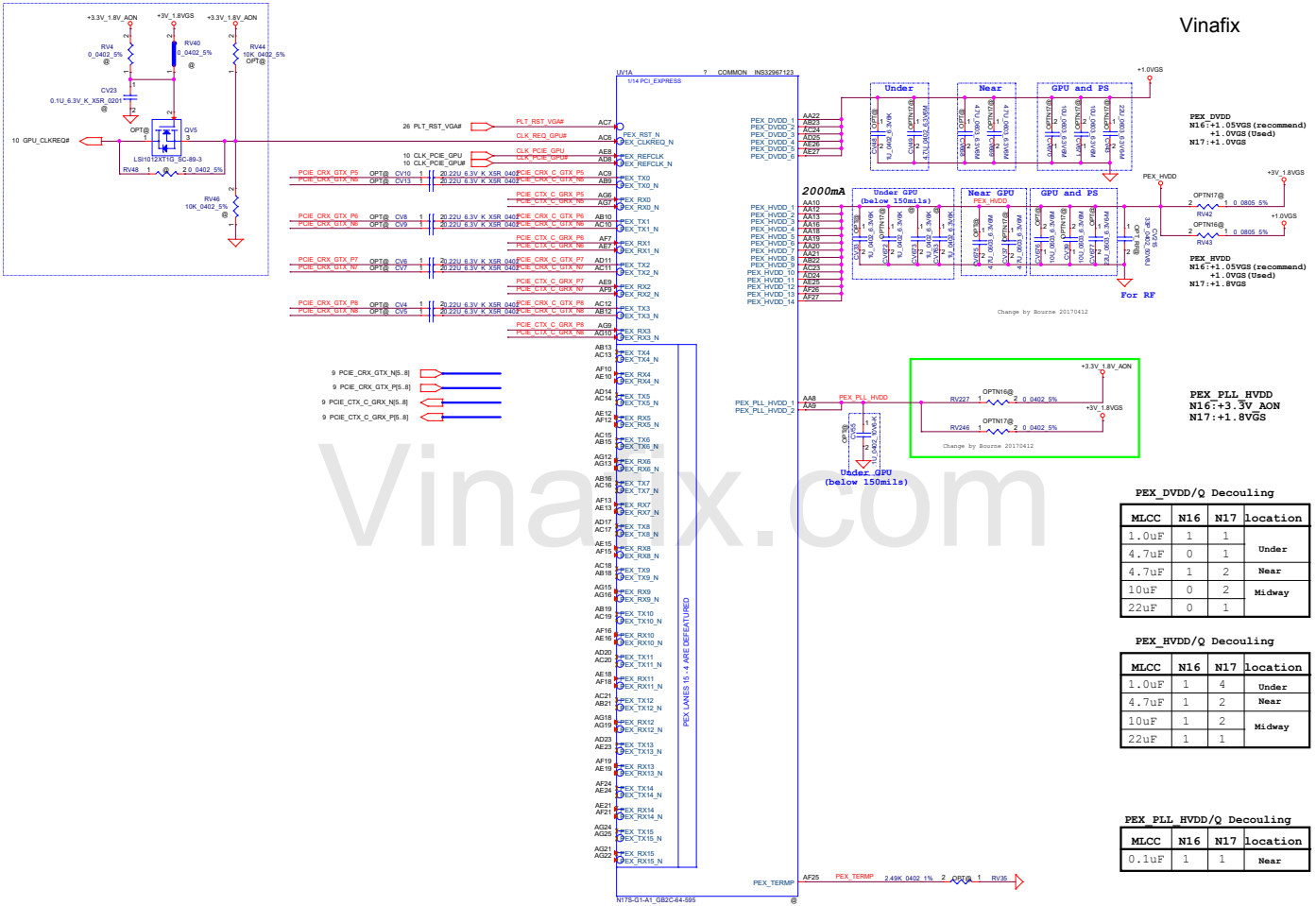

PEX_DVDD/Q Decouling

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

PEX_HVDD/Q Decouling

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 Decouling

MLCC	N16	N17	location
0.1uF	1	1	Near

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Title: **GPU_PCIE Interface**

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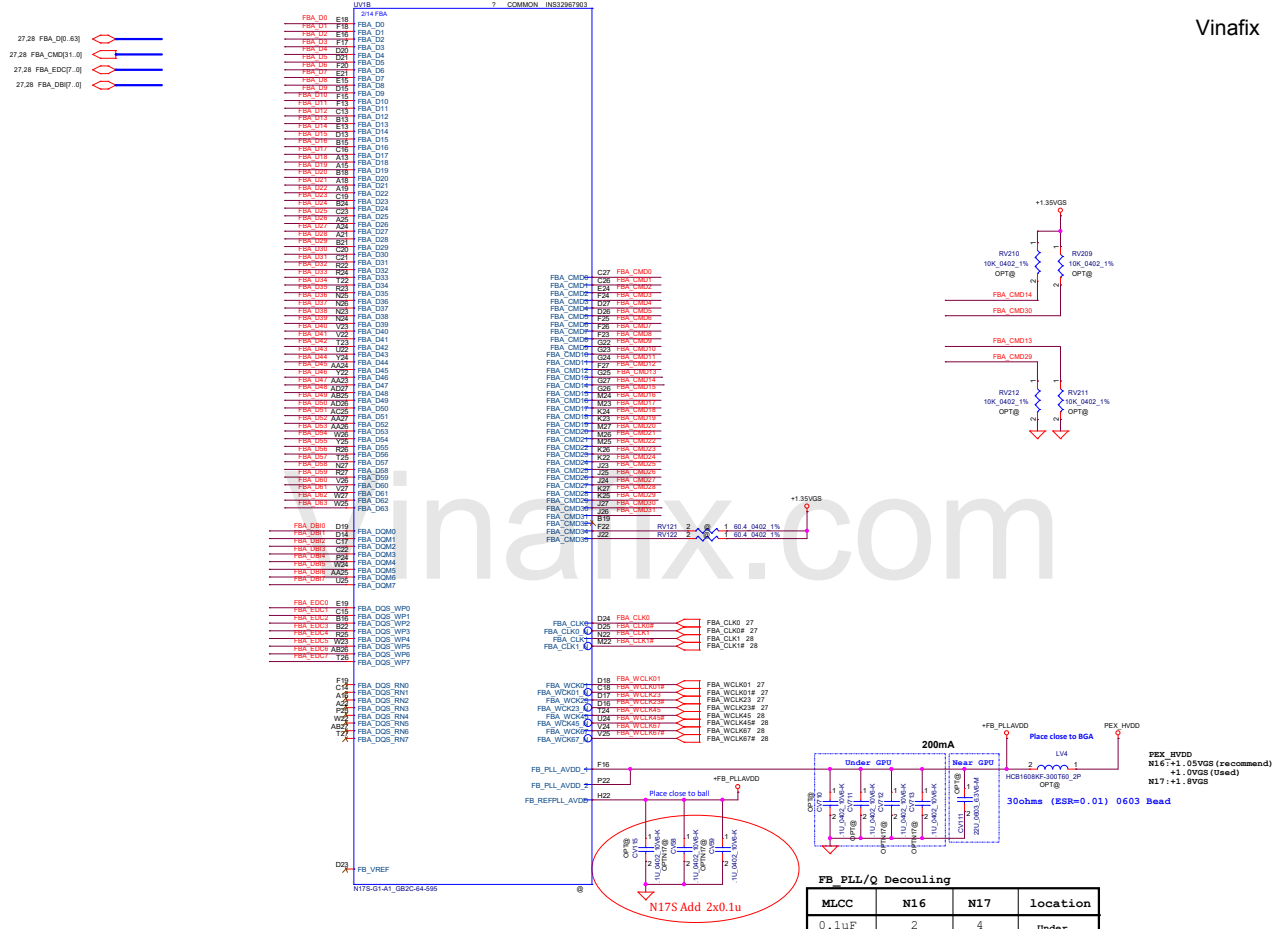
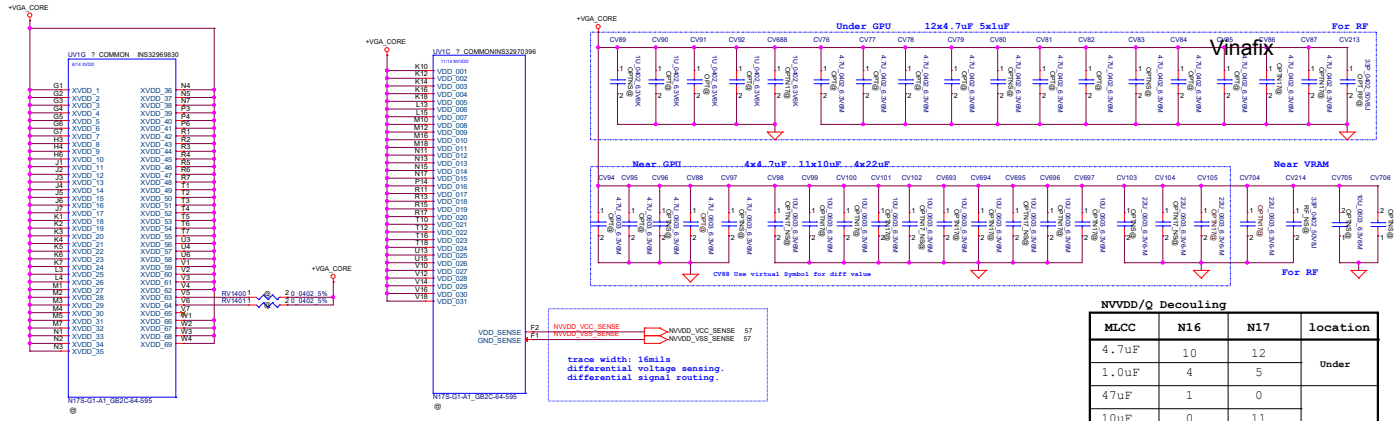


Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

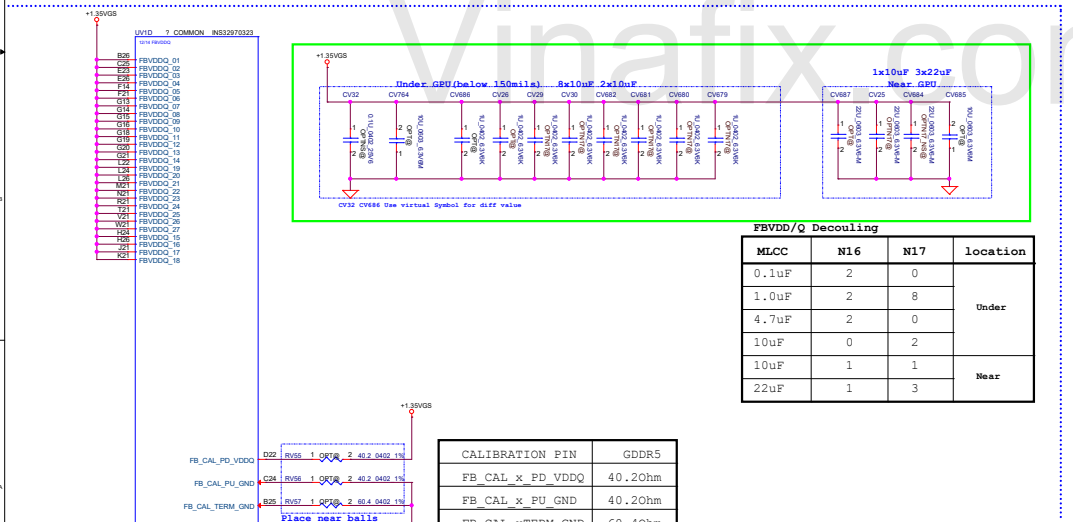
Title: GPU_MEM Interface

Size: C	Document Number: GS55C		Rev: 0.1
Date: Wednesday, November 20, 2019	Sheet 21 of 61		



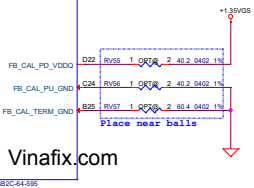
NVVDD/Q Decoupling

MLCC	N16	N17	location
4.7uF	10	12	Under
1.0uF	4	5	
47uF	1	0	Near
10uF	0	11	
22uF	1	4	
4.7uF	5	4	
330uF	1	2	



FBVDD/Q Decoupling

MLCC	N16	N17	location
0.1uF	2	0	Under
1.0uF	2	8	
4.7uF	2	0	
10uF	0	2	
10uF	1	1	Near
22uF	1	3	



CALIBRATION PIN	GDDR5
FB_CAL_x_PD_VDDQ	40.2Ohm
FB_CAL_x_PU_GND	40.2Ohm
FB_CAL_xTERM_GND	60.4Ohm

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: GPU_+VGA_CORE,FBVDDQ

Size	Document Number	Rev
C	GS55C	0.1

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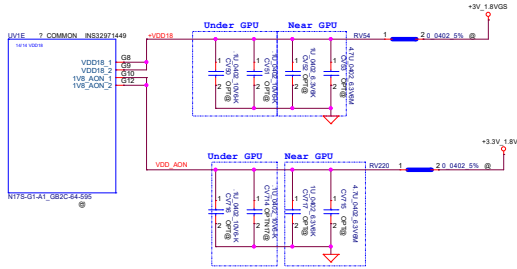
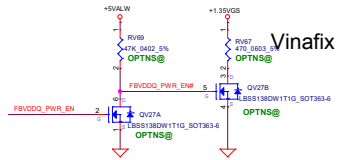


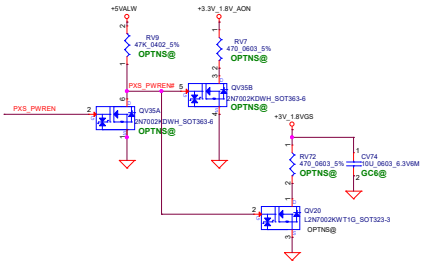
N16 3V3_MAIN(N17 VDD_18) Decoupling

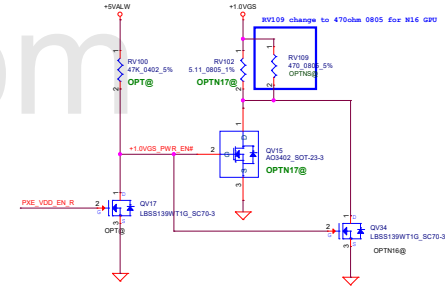
MLCC	N16	N17	location
0.1uF	2	2	Under
1.0uF	1	1	Near
4.7uF	1	1	

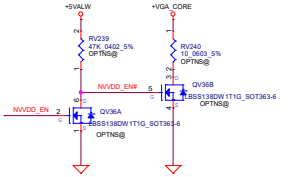
N16 3V3_AON(N17 1V8_AON) Decoupling

MLCC	N16	N17	location
0.1uF	1	2	Under
1.0uF	1	1	Near
4.7uF	1	1	

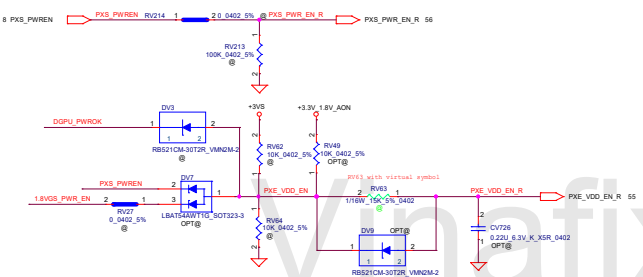




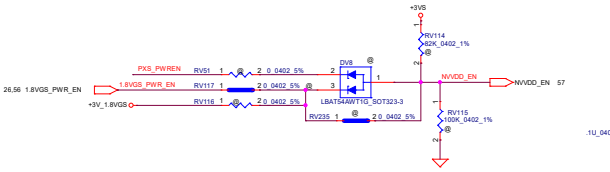


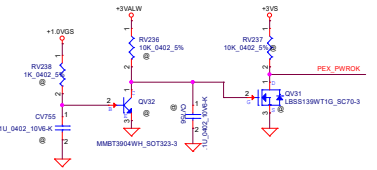


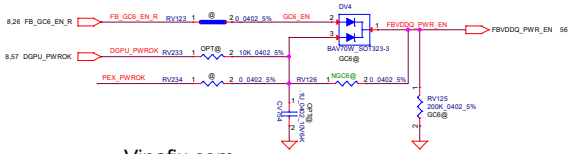
PXE_VDD & 1V8_AON



+1.8VG_AON TO +1.8VGS







Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: GPU_AON/MAIN PWR/SEQ

Size	Document Number	Rev
C	GS55C	0.1
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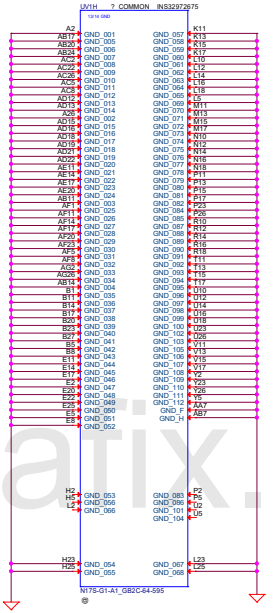

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: GPU_GND

Size: C	Document Number: GS55C	Rev: 0.1
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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

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	

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: GPU_STRAP/DP/HDMI

Size: C | Document Number: GS55C | Rev: 0.1

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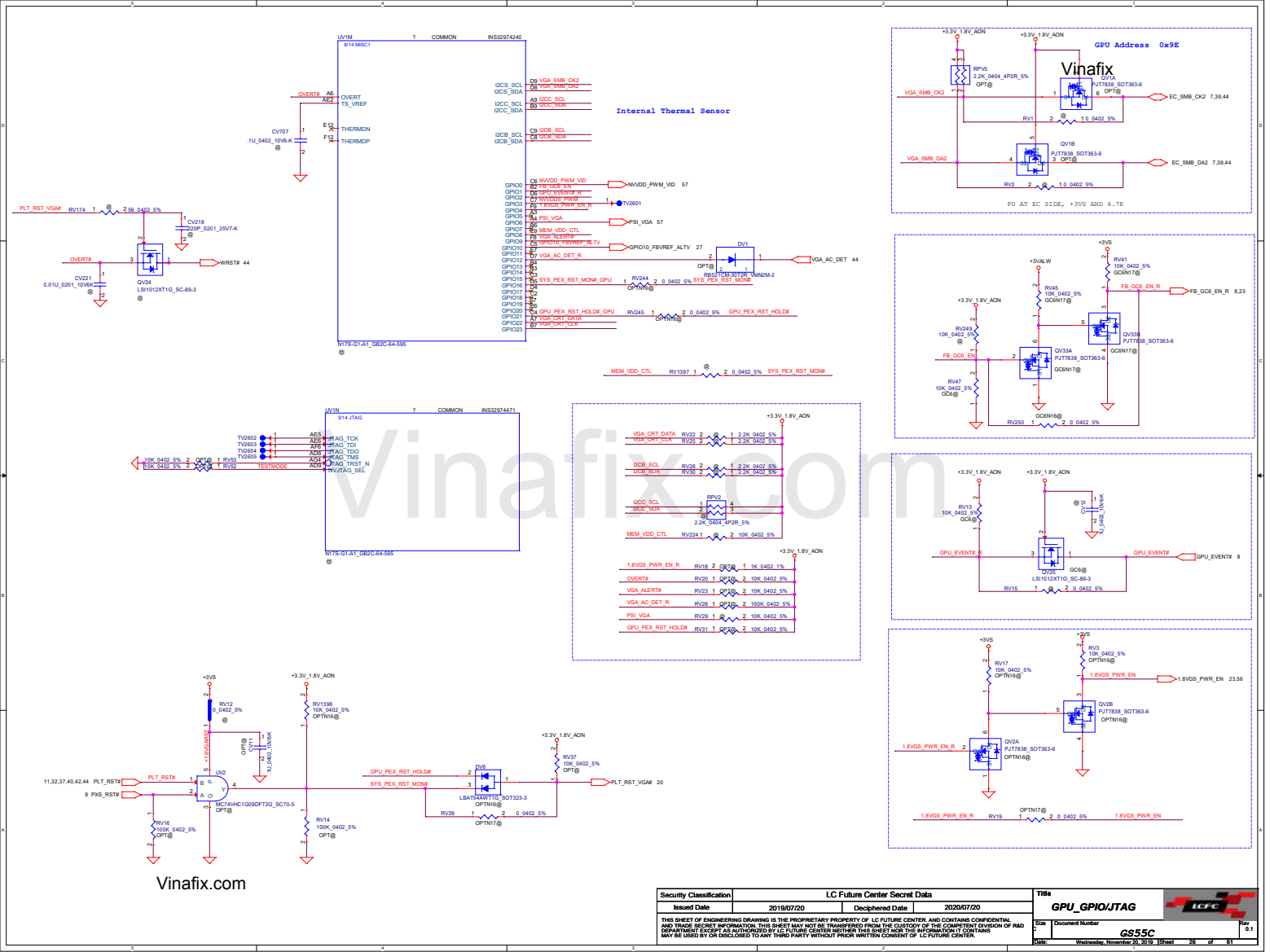

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Issued Date	2019/07/20	Deciphered Date	2020/07/20

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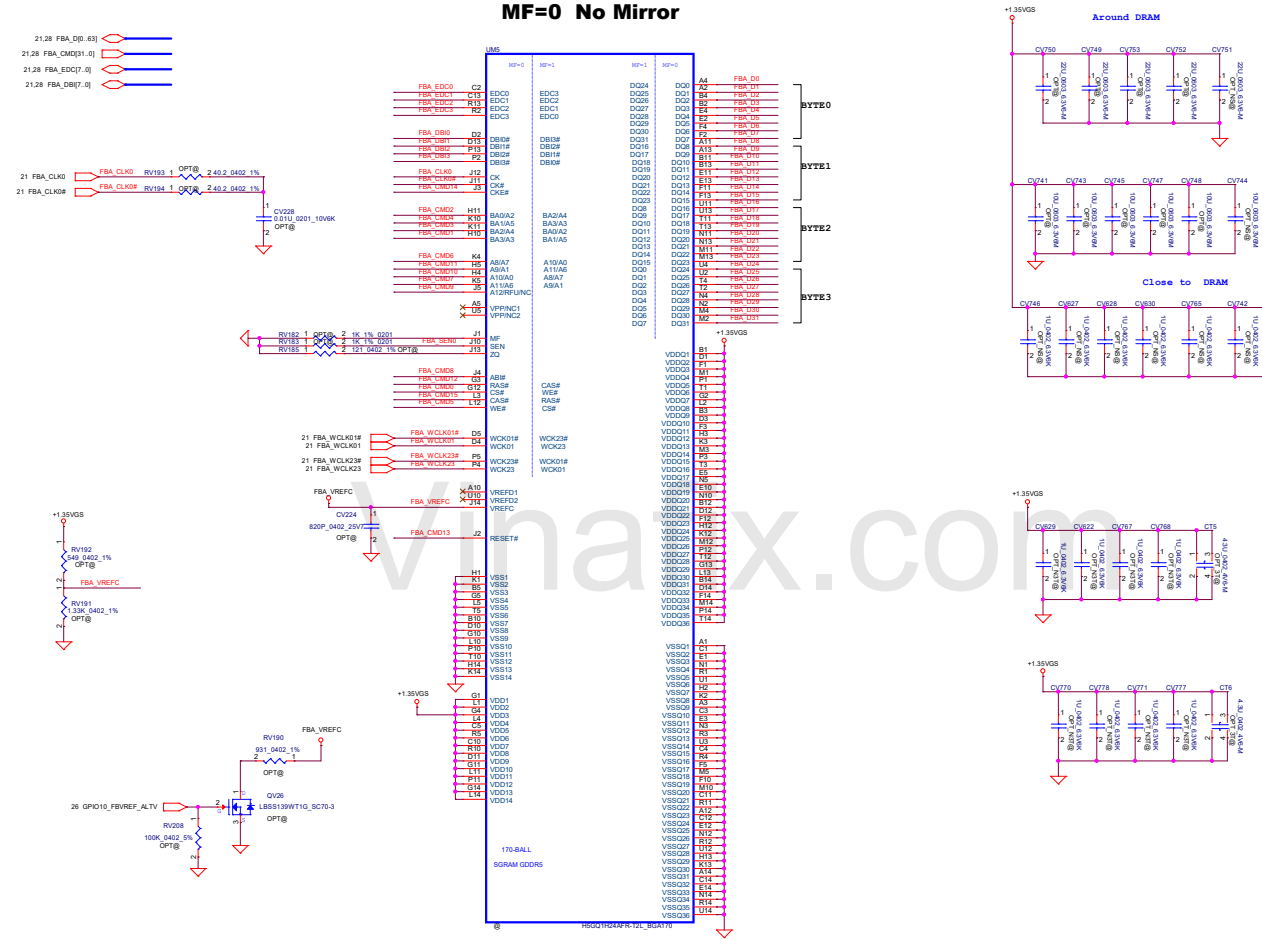
Title: GPU_GPIO/JTAG

Size	Document Number	Rev
C	GS55C	0.1

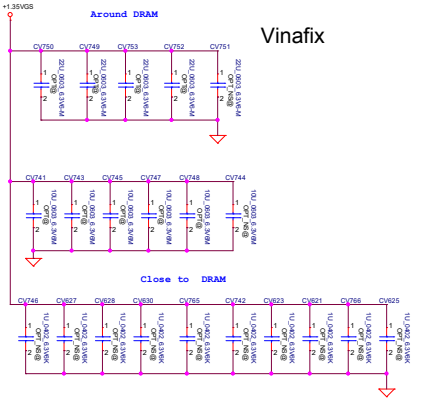
Date: Wednesday, November 20, 2019 Sheet 28 of 61

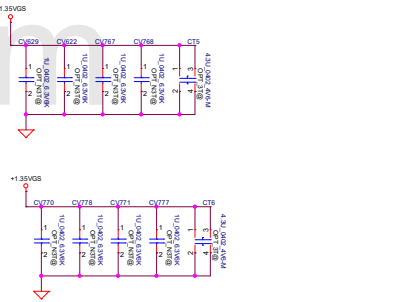
Lower 32 bits

MF=0 No Mirror



Vinafix





Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: GPU_GDDR5_Rank0_[31:0]

Size: C | Document Number: GS55C | Rev: 0.1

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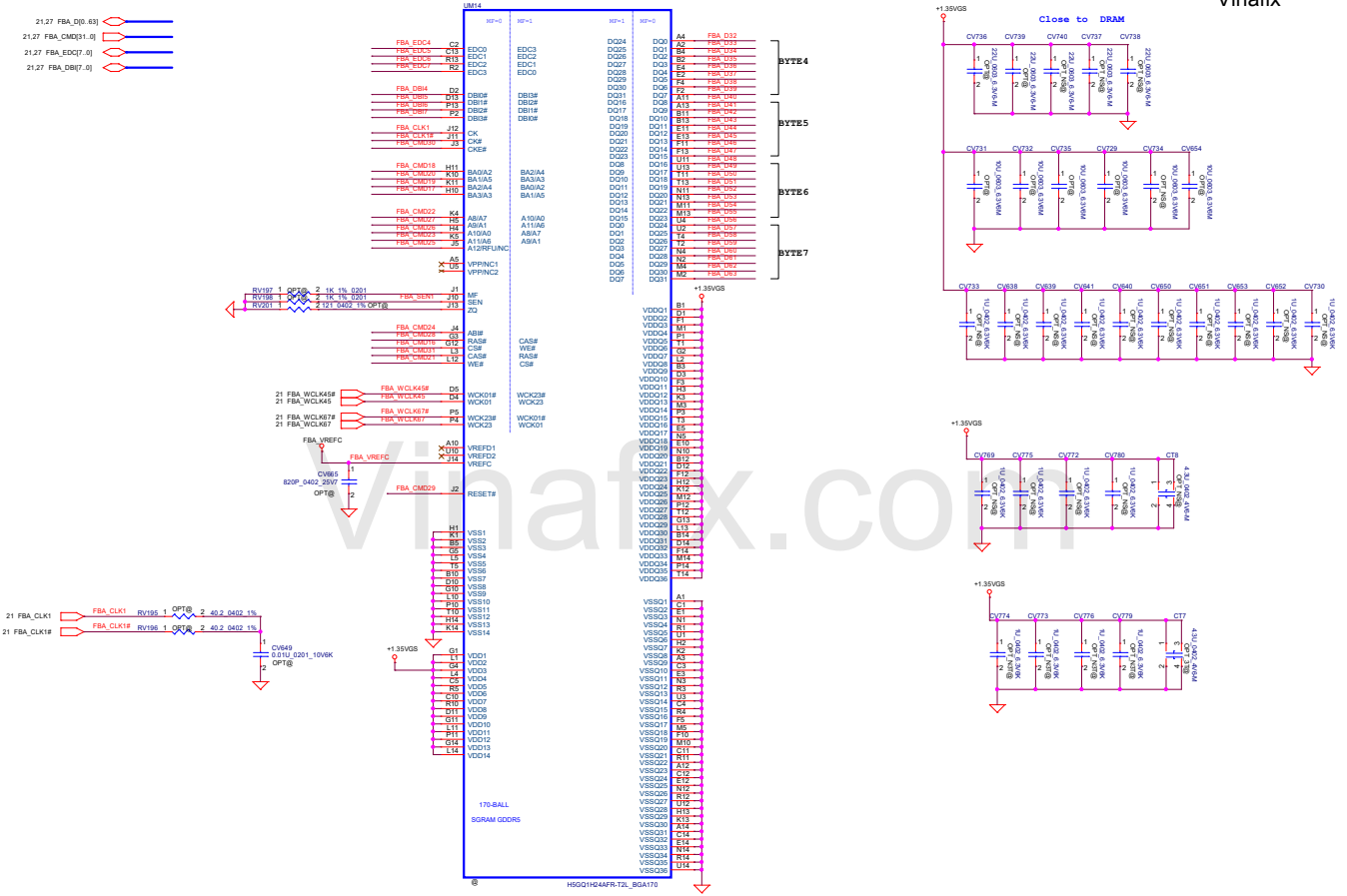
upper 32 bits

MF=0 No Mirror

Vinafix



Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

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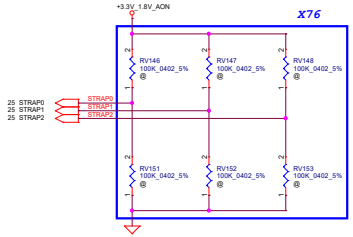
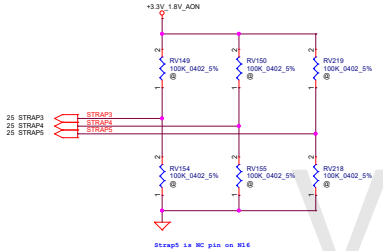
Title: GPU_GDDR5_Rank0_[64:32]

Size	Document Number	Rev
C	GS55C	0.1

Date: Wednesday, November 20, 2019 Sheet 28 of 61



GPU	FB Memory (GDDR5)		RAMCFG[4:0]	STRAP2	STRAP1	STRAP0
8Gb	Samsung 2Gb	K4G80325FC-HC25	0(0x0000)	L	L	L
	Micron 2Gb	MT51J256M32HF-80	1(0x0001)	L	L	H
	Hynix 2Gb	H5GC8H24AJR-R2C	2(0x0010)	L	H	L



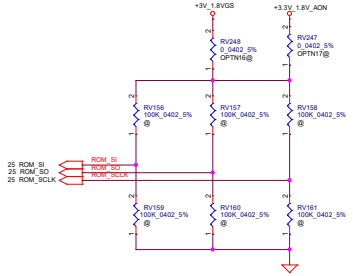
STRAP5	STRAP4	STRAP3	SMB_ALT_ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE
L	L	L	0	0	0	0

1: SMB_ALT_ADDR ENABLE
0: SMB_ALT_ADDR DISABLE

1: DEVID_SEL REBRAND
0: DEVID_SEL ORIGNAL

1: PCIE_CFG LOW POWER
0: PCIE_CFG HIGH POWER

1: VGA_DEVICE ENABLE
0: VGA_DEVICE DISABLE



	ROM_SO	ROM_SI	ROM_SCLK	SOR_EXPOSED[3:0]
N17S-G1	H	H	M	0000
N16S-GTR				

1:ENABLE 0:DISABLE

SOR0/1/2/3 DISABLE

DEVID_SEL	
0	(Default)
1	

PCIE_CFG	
0	(Default)
1	

SMBUS_ALT_ADDR	
0	0x9E (Default)
1	0x9C (Multi-GPU usage)

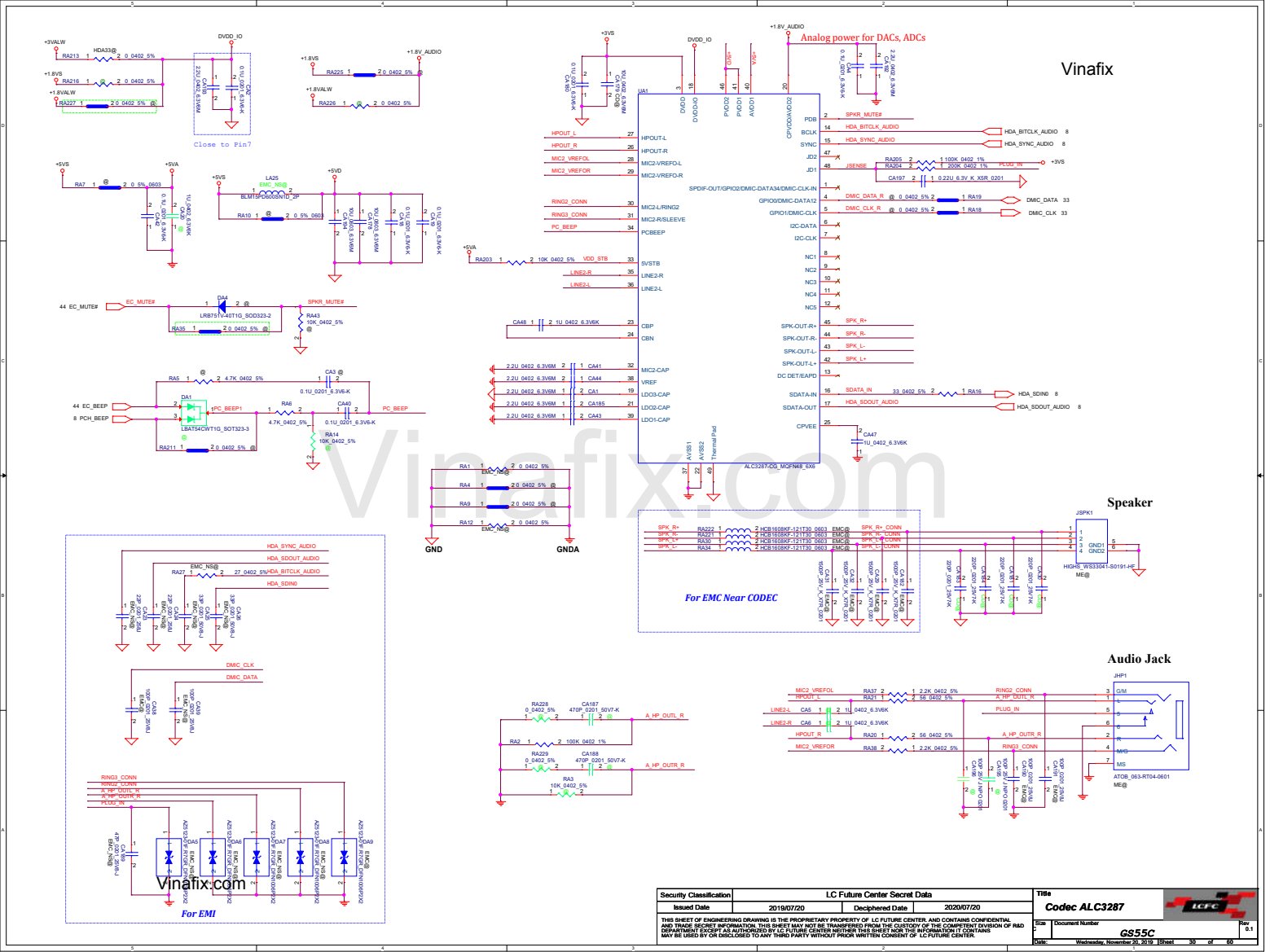
VGA_DEVICE	
0	3D Device (Class Code 302h)
1	VGA Device (Default)

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: GPU_MISC

Size	Document Number	Rev
C	GS55C	0.1

Date: Wednesday, November 20, 2019 Sheet 29 of 61



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Title: **Codec ALC3287**

Size	Document Number	Rev
C	GS55C	0.1

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Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: **Codec ALC3287**

Size	Document Number	Rev
C	GS55C	0.1

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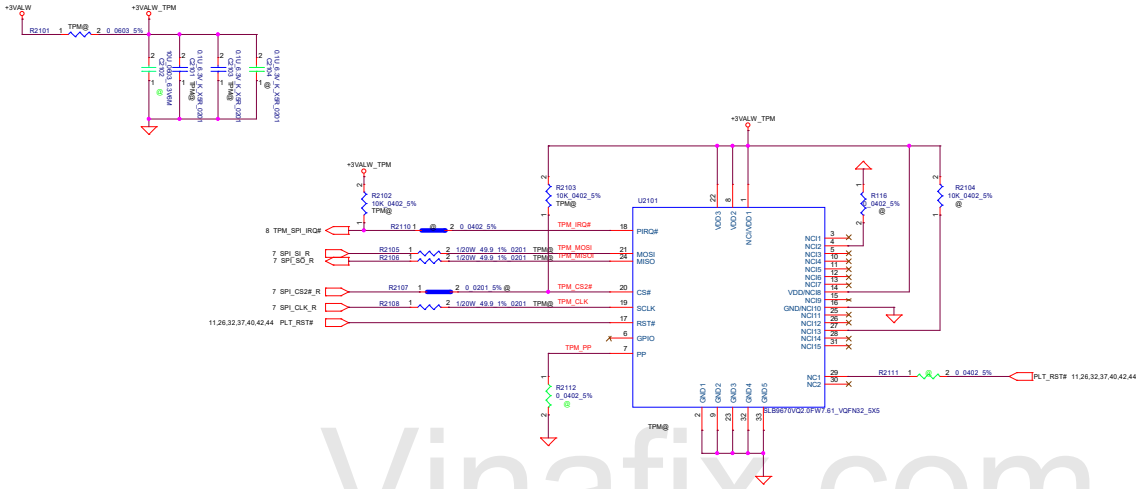

TABLE

Pin No	TCG PTP Spec (v38)	Infineon SLB9670VQ2.0 FW 7.61	ST Micro ST33HTPH2E32AHB4	Nuvoton NPCT750LABYX	NATIONZ Z32H330TC
1	VDD	NC/VDD	NC	VSB	VDD
2	GND	GND	GND	NC	GND
3	GPIO	NC	NC	NC	NC
4	GPIO	NC	NC	PP/GPIO6	NC
5	NC	NC	NC	NC	NC
6	VNC/GPIO	GPIO	GPIO	GPIO3	NC
7	GPIO/VDD	PP	PP	NC	PP
8	VDD	VDD	NC	VHIO	VDD
9	GND	GND	NC	NC	GND
10	VNC	NC	NC	NC	NC
11	NC	NC	NC	NC	NC
12	NC	NC	NC	NC	NC
13	VNC/GPIO	NC	NC	GPIO4	NC
14	VDD	NC/VDD	NC	NC	VDD
15	NC	NC	NC	NC	NC
16	GND	NC/GND	NC	GND	GND
17	SPI_RST#	RST#	SPI_RST#	PLTRST#	SPI_RST#
18	SPI_PIRQ#	PIRQ#	SPI_PIRQ#	PIRQ#/GPIO2	SPI_PIRQ#
19	SPI_CLK	SCLK	SPI_CLK	SCLK	SPI_CLK
20	SPI_CS#	CS#	SPI_CS#	SCS#/GPIO5	SPI_CS#
21	MOSI	MOSI	MOSI	MOSI/GPIO7	MOSI
22	VDD	VDD	VPS	VHIO	VDD
23	GND	GND	NC	GND	GND
24	MISO	MISO	MISO	MISO	MISO
25	NC	NC	NC	NC	NC
26	NC	NC	NC	NC	NC
27	NC	NC	NC	NC	NC
28	NC	NC	NC	NC	NC
29	VNC/GPIO	NC	NC	SDA/GPIO0	NC
30	VNC/GPIO	NC	NC	SCL/GPIO1	NC
31	VNC	NC	NC	NC	NC
32	GND	GND	NC	NC	GND

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title	TPM		
Size	C	Document Number	GS55C
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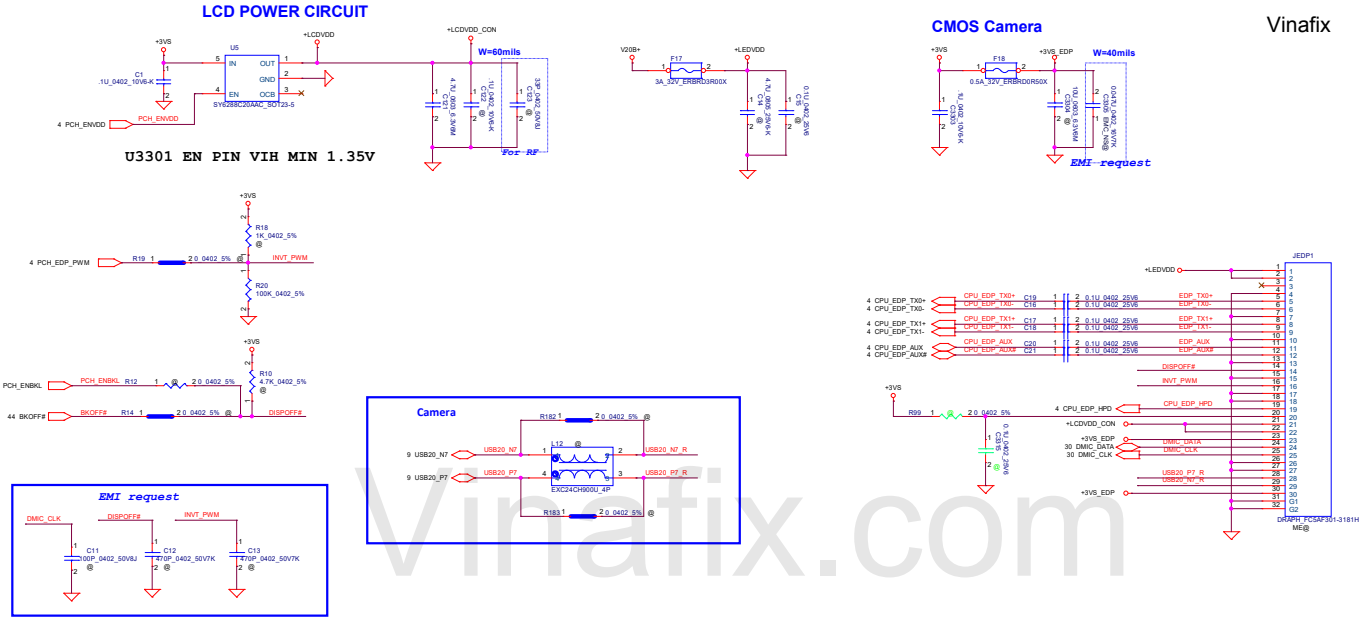
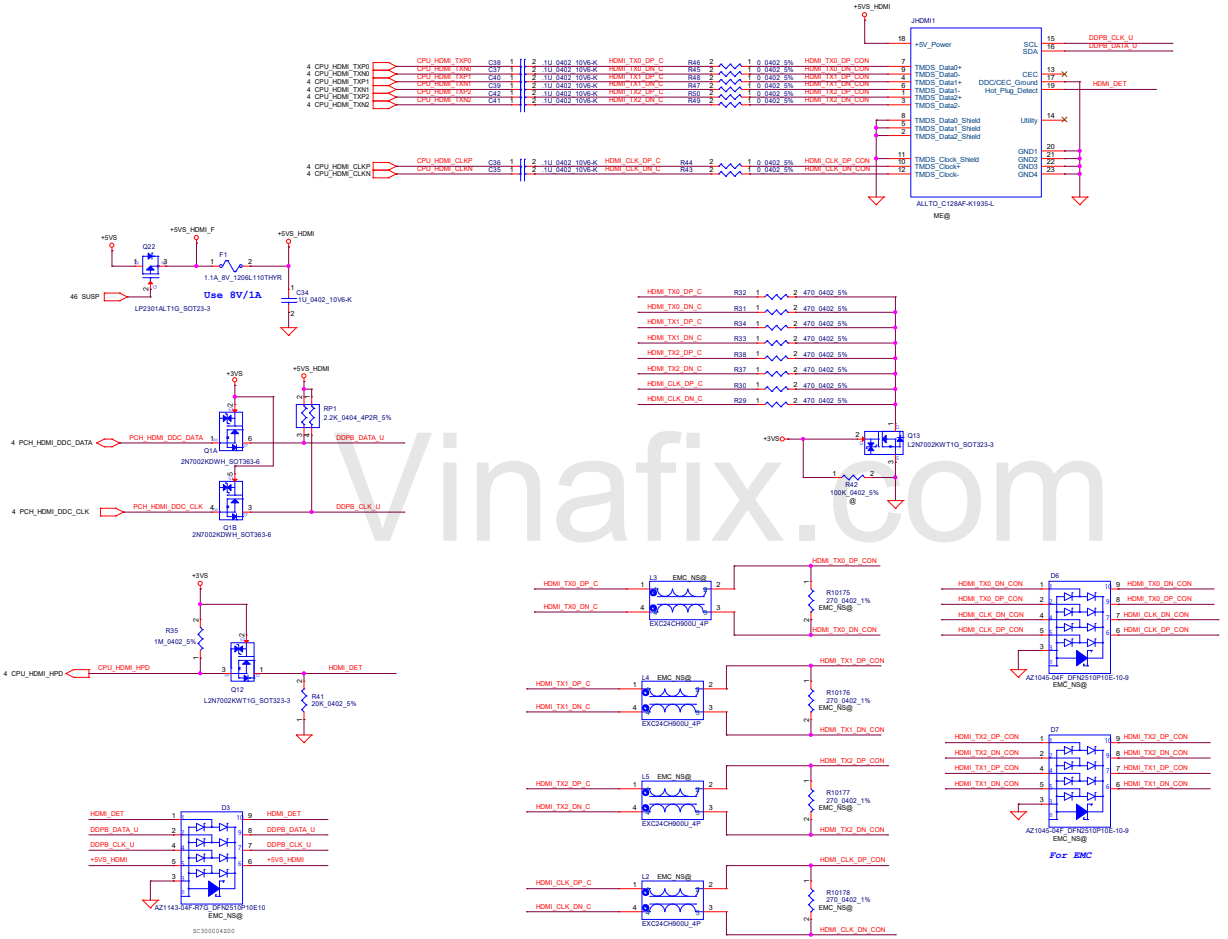


Vinafix

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title	eDP/CAMERA.		
Size	Document Number		Rev
C	GS55C		0.1
Date:	Thursday, November 21, 2019	Sheet	33 of 61



Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title	HDMI_CONN		
Size	Document Number		Rev
C	GS55C		0.1
Date:	Wednesday, November 20, 2019	Sheet	34 of 61

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: ***Blank***

Size	Document Number	Rev
C	GS55C	0.1

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Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: **HALL Sensor**

Size	Document Number	Rev
C	GS55C	0.1

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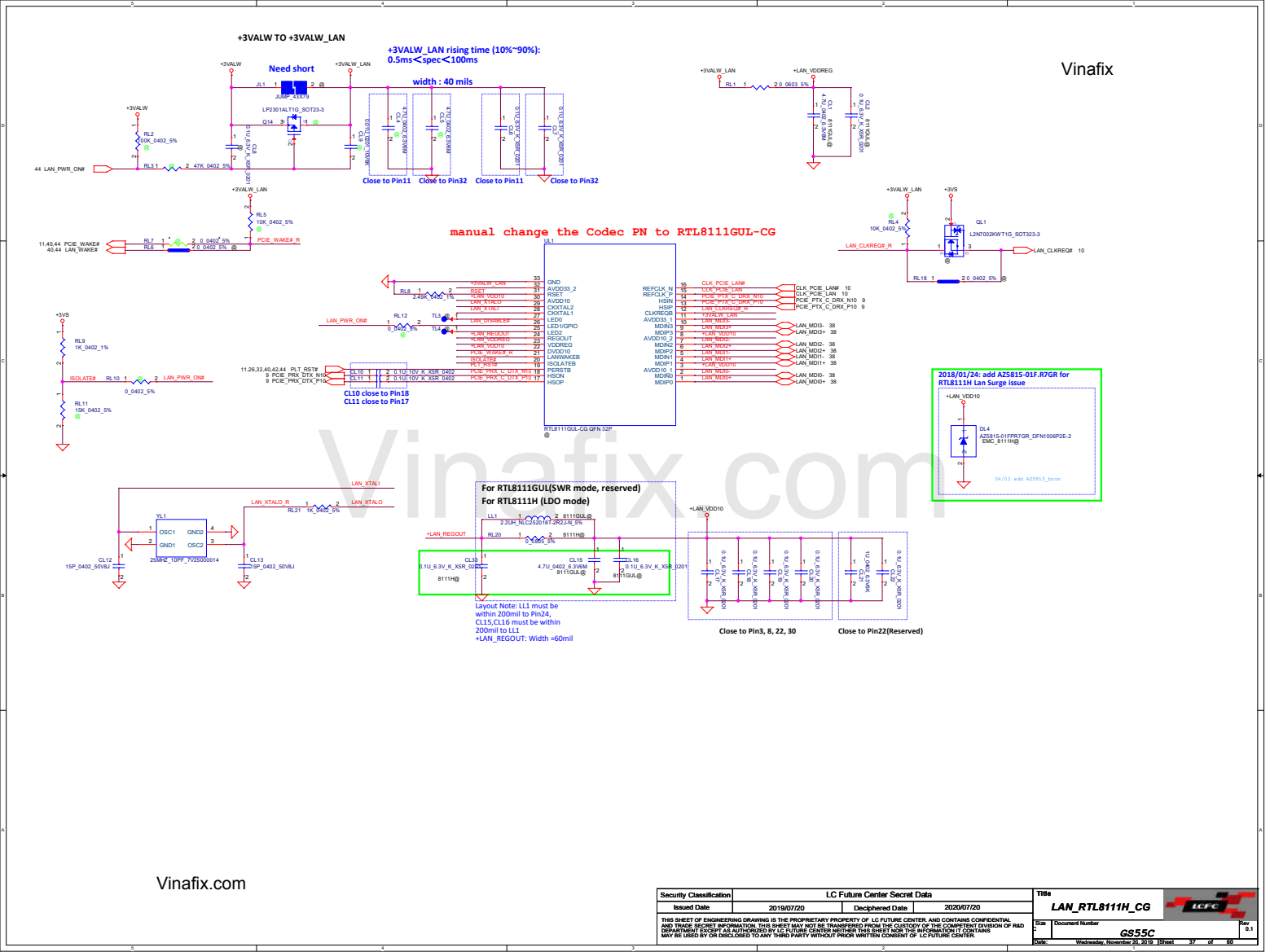

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

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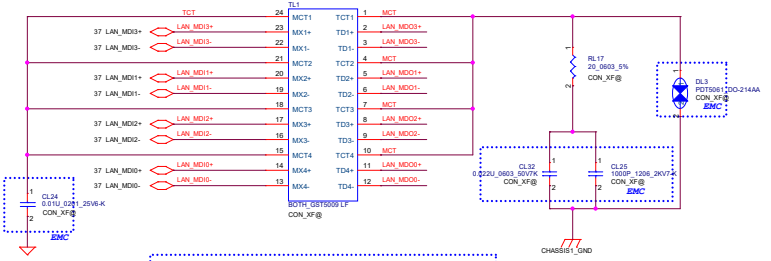
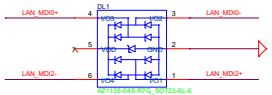
Title	LAN_RTL8111H_CG		
Size: C	Document Number: GS55C		Rev: 0.1
Date: Wednesday, November 20, 2019	Sheet 37 of 60		

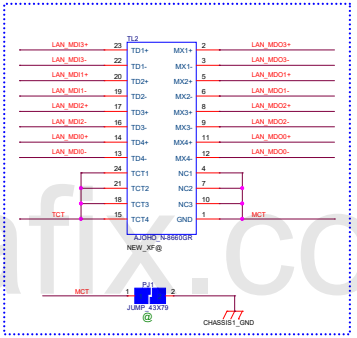
Vinafix

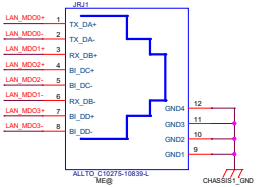




Place Close to TL1

EMC





Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: LAN_Transformer

Size: C | Document Number: GS55C | Rev: 0.1

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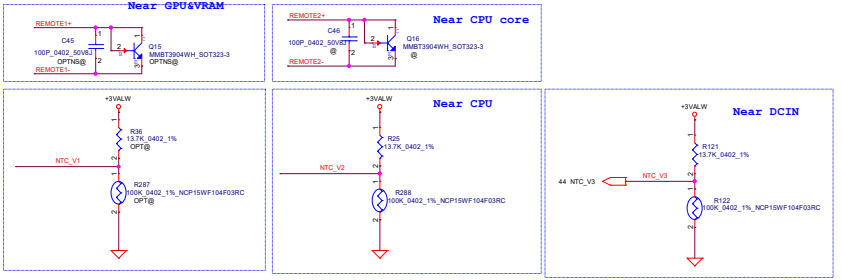
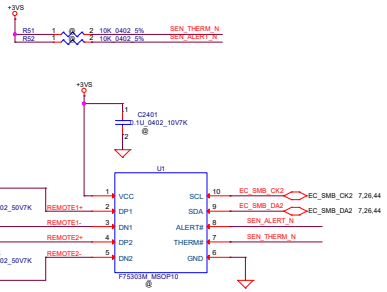
SMSC thermal sensor placed near DIMM

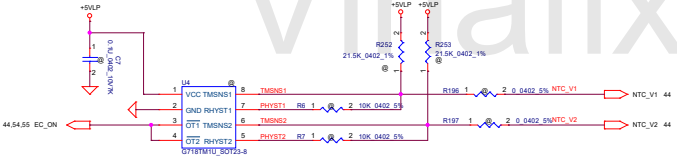
```
REMOTE+/- R, REMOTE1+/-, REMOTE2+/-:
Trace width/space:10/10 mil
Trace length:<8"
```

Vinafix

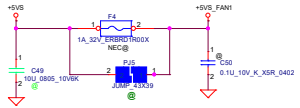


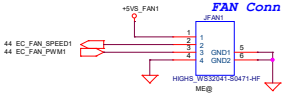


HW thermal sensor



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





Vinafix.com

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Title	
	Thermal sensor/FAN CONN
Size: C	Document Number: GS55C
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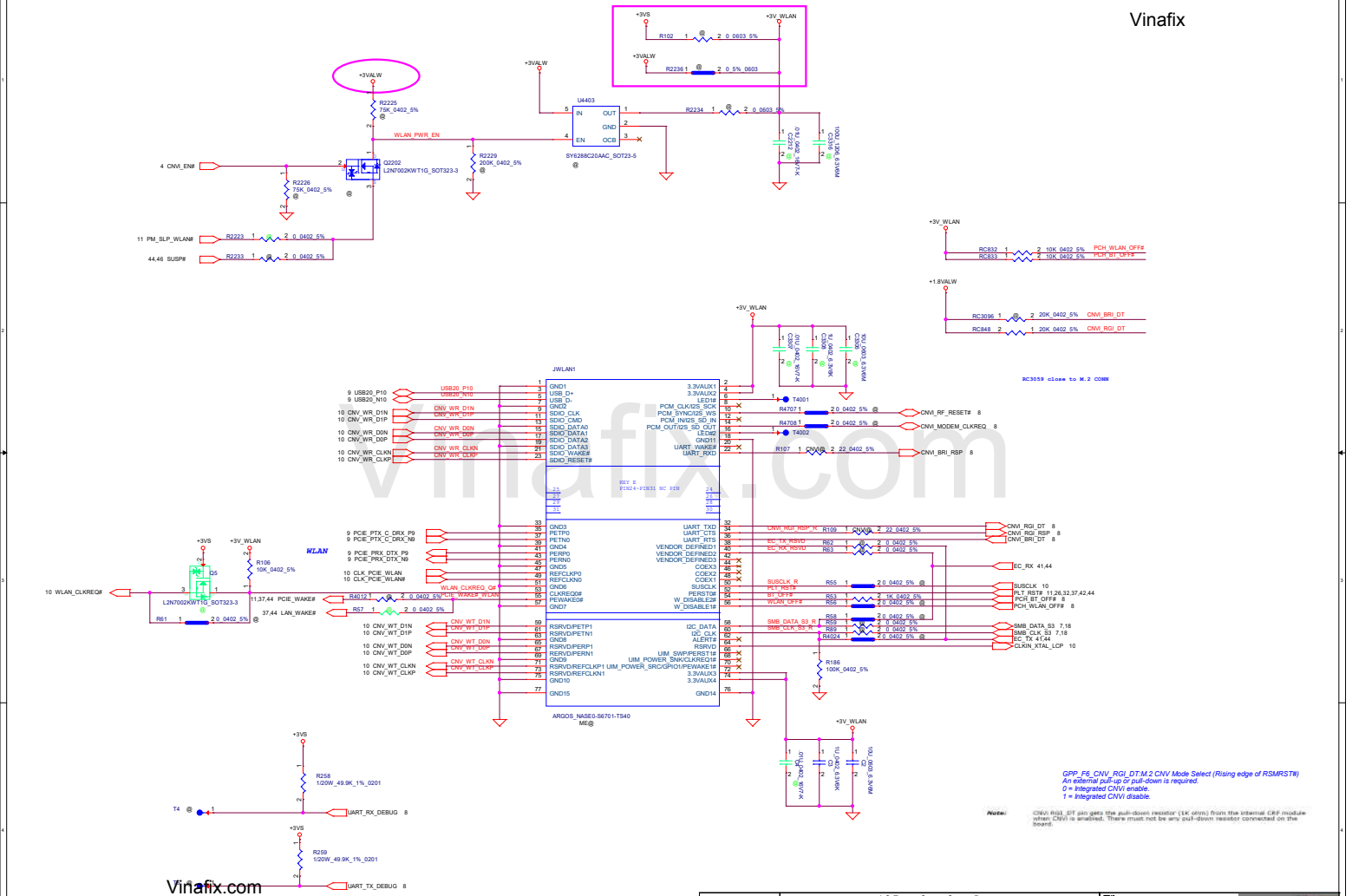
Mini-Express Card(WLAN/WiMAX)

Vinafix



Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title	NGFF_WLAN		
Size	Document Number		Rev
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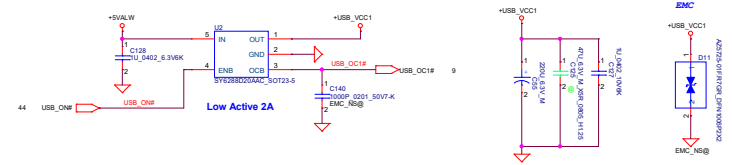
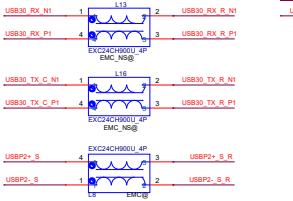
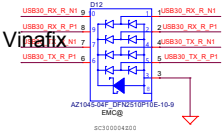
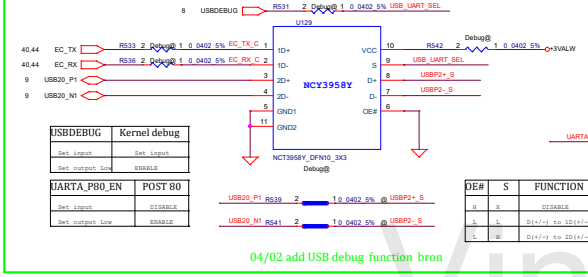
LEFT SIDE USB3.0 PORT x2







For USB Debug Function

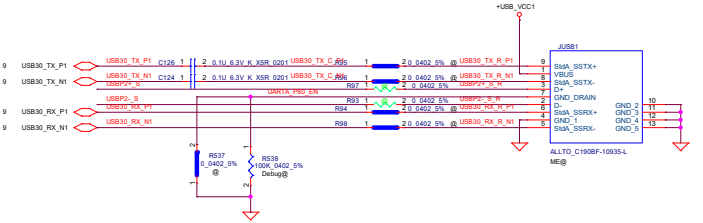


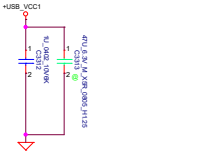
USBDEBUG	Kernel debug
Set input	Set input
Set output Low	ENABLE

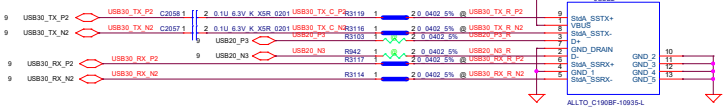
UARTA_P80_EN	POST 80
Set input	DISABLE
Set output Low	ENABLE

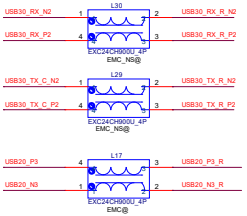
OE#	S	FUNCTION
H	X	DISABLE
L	L	D1(+/-) to 1D(+/-)
L	H	D1(+/-) to 2D(+/-)

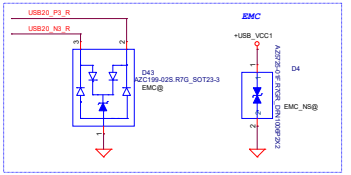
04/02 add USB debug function bron

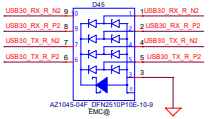












Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title			
USB3.0 PORT (LEFT)			
Size: C	Document Number: GS55C		Rev: 0.1
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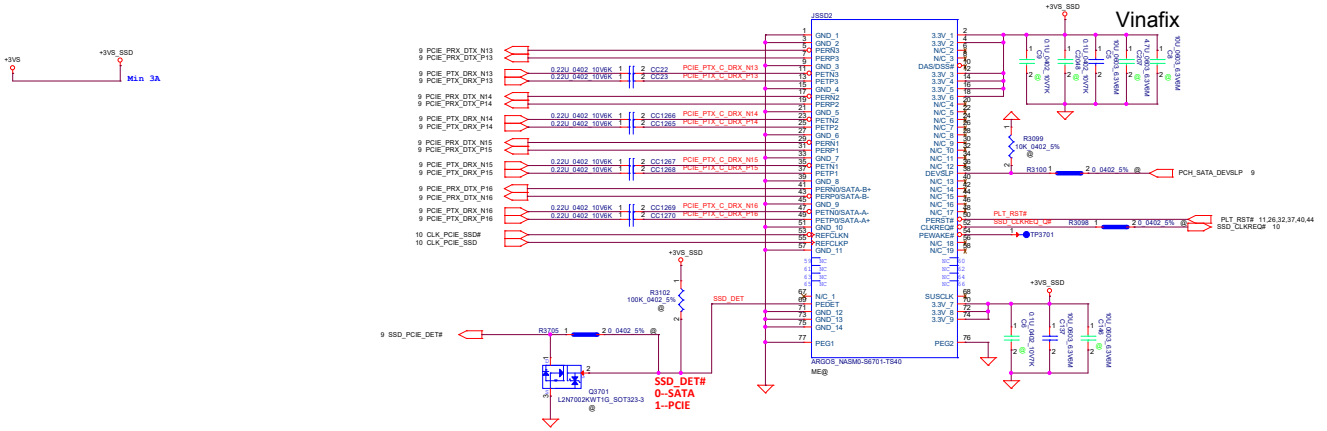
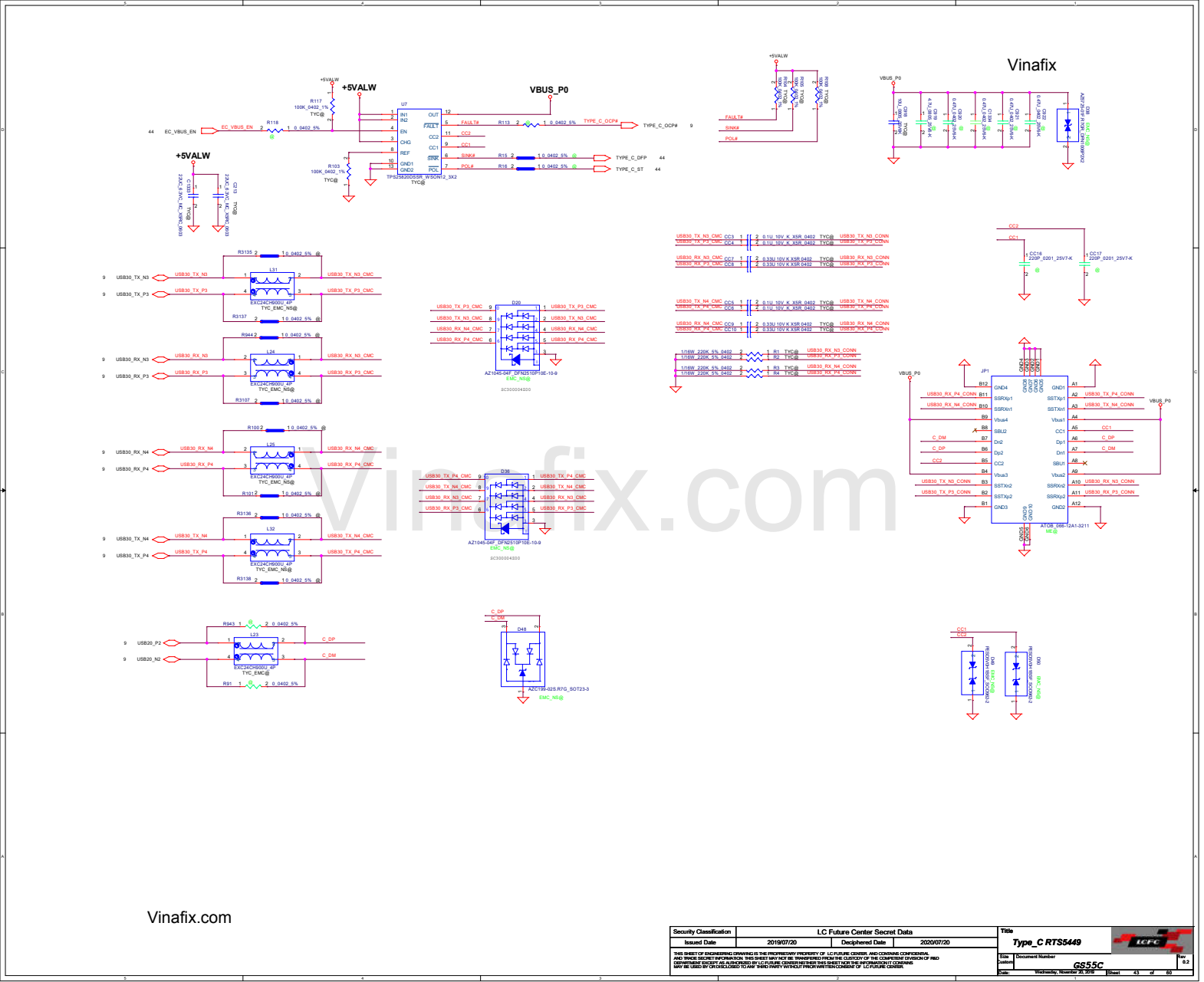


SATA HDD Conn.

ODD Conn.

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title	Blank		
Size	Document Number		Rev
C	GS55C		0.1
Date:	Wednesday, November 20, 2019	Sheet	42 of 61


Vinafix
+5VALW
VBUS_P0
TYPE_C_OCP#
TYPE_C_DFP
TYPE_C_ST
EC_VBUS_EN
TPS25820DSSR_WSON12_3X2
USB30_TX_N3
USB30_TX_P3
USB30_RX_N3
USB30_RX_P3
USB30_TX_N4
USB30_TX_P4
USB30_RX_N4
USB30_RX_P4
USB20_P2
USB20_N2
C_DP
C_DM
EXC24CH900U_4P
AZ1045-04F_DFN2510P10E-10-9
AZC199-02S.R7G_SOT23-3
ATGB-088-12A1-3211
Vinafix.com
Security Classification
LC Future Center Secret Data
Issued Date
2019/07/20
Deciphered Date
2020/07/20
Title
Type_C RTS5449
Size
Custom
Document Number
GS55C
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0.2
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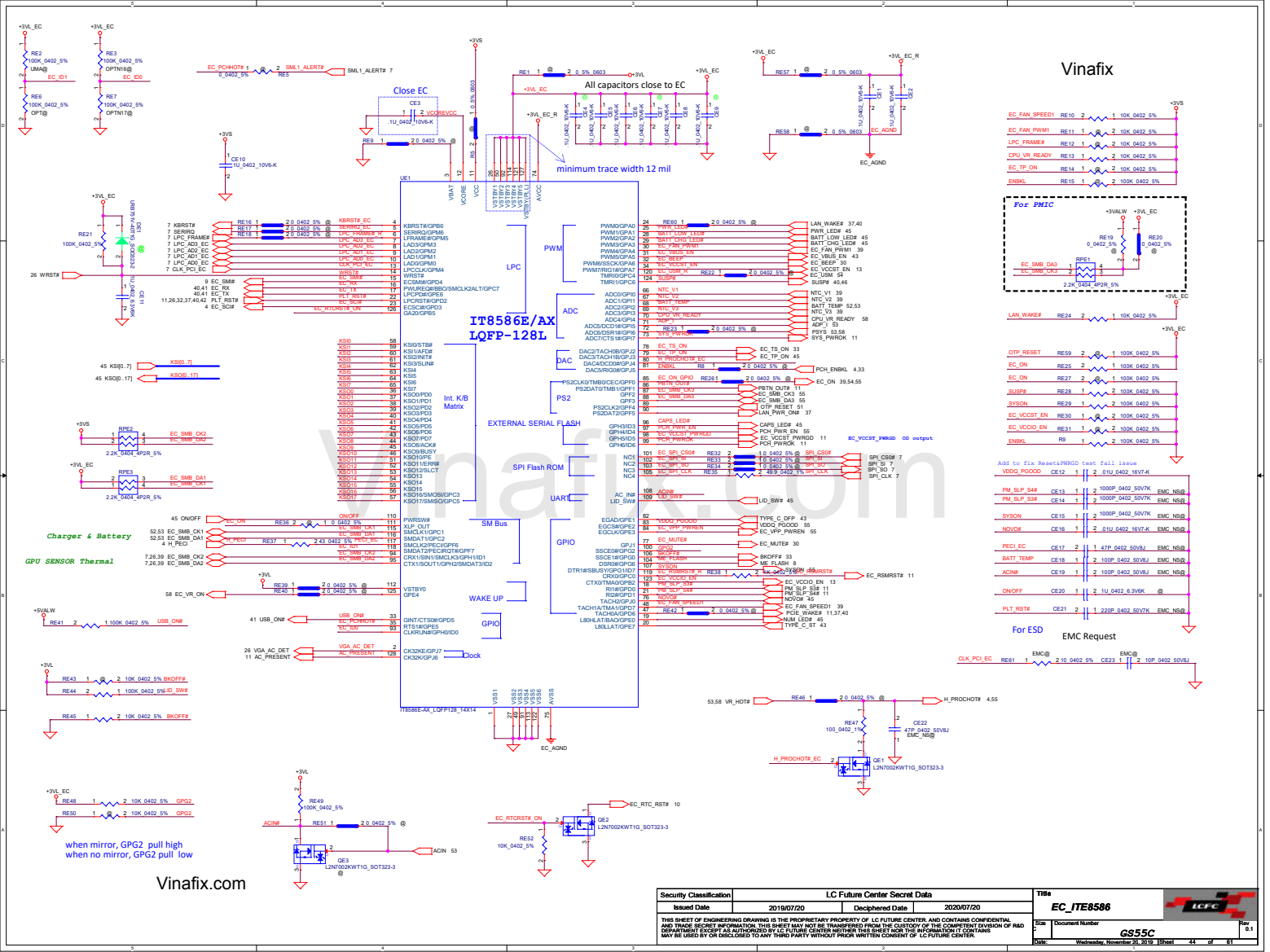

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Size	C
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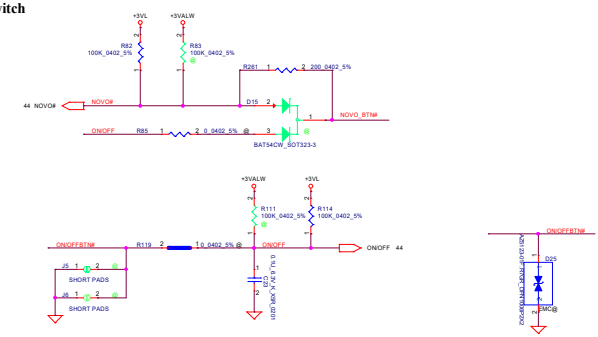
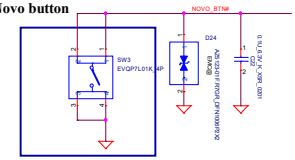
ON/OFF switch

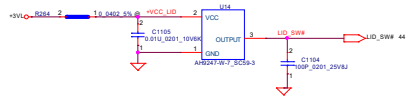


Novo button

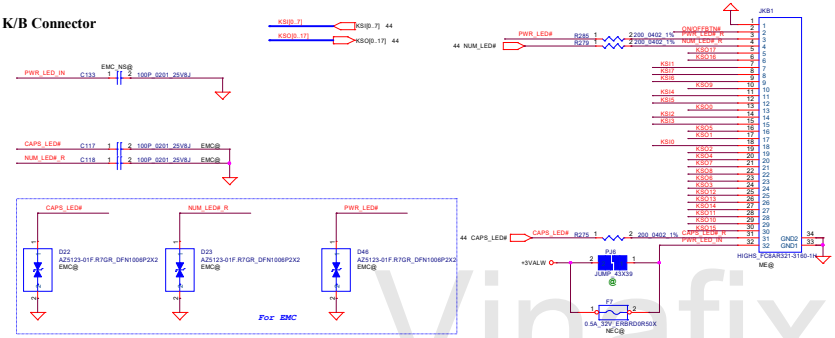


Vinafix

LID switch



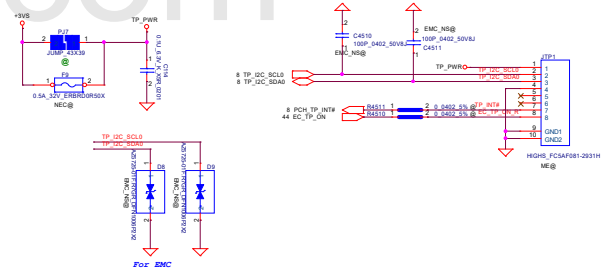
K/B Connector

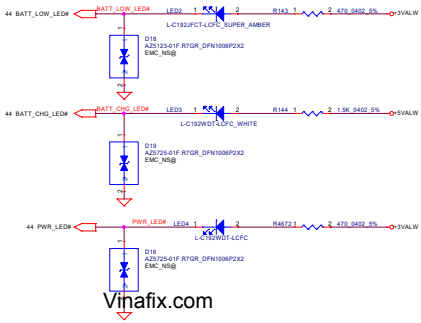


KB Backlight Connector

Finger Print Connector

TP/B Connector





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Title: KBD/PWR/IO/LED/TP Conn.

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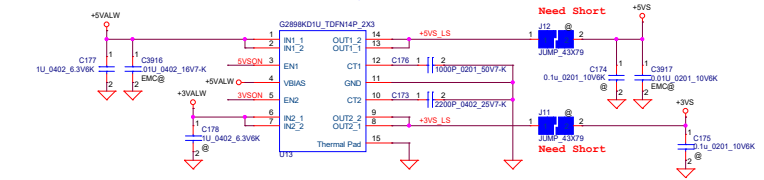
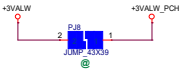
Load Switch
+5VALW To +5VS
+3VALW To +3VS

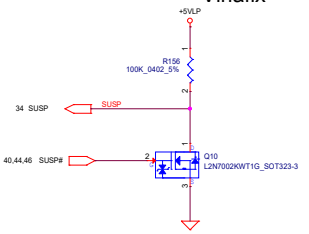
+3VS, C173 --> 2.74ms
+5VS, C176 --> 2.03ms

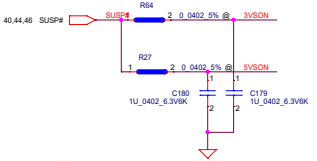
VIN 5V and 3.3V (VBIAS=5V), IMAX(per channel)=6A, Rds=16mohm

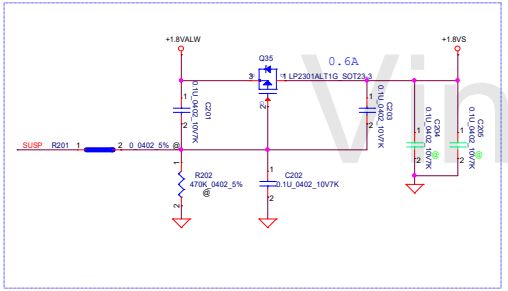




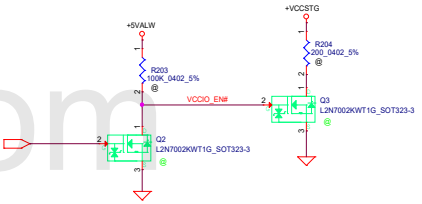
Vinafix



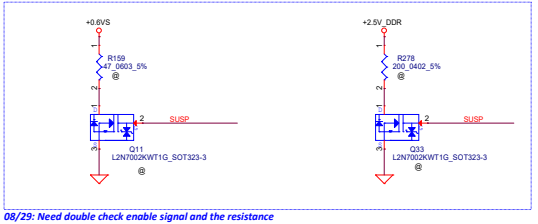




Reserve for VCCSGT discharge



For DisCharge



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

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12.1.4 VccSTG Rail Discharge Requirements

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 $R_{discharge}$ <= 300Ω 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 $R_{discharge}$ <= VccST/VccPLL $R_{discharge}$.
3. The total capacitance on VccSTG <= total capacitance on VccST/VccPLL.

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Title: **DC V TO VS INTERFACE**

LCFC

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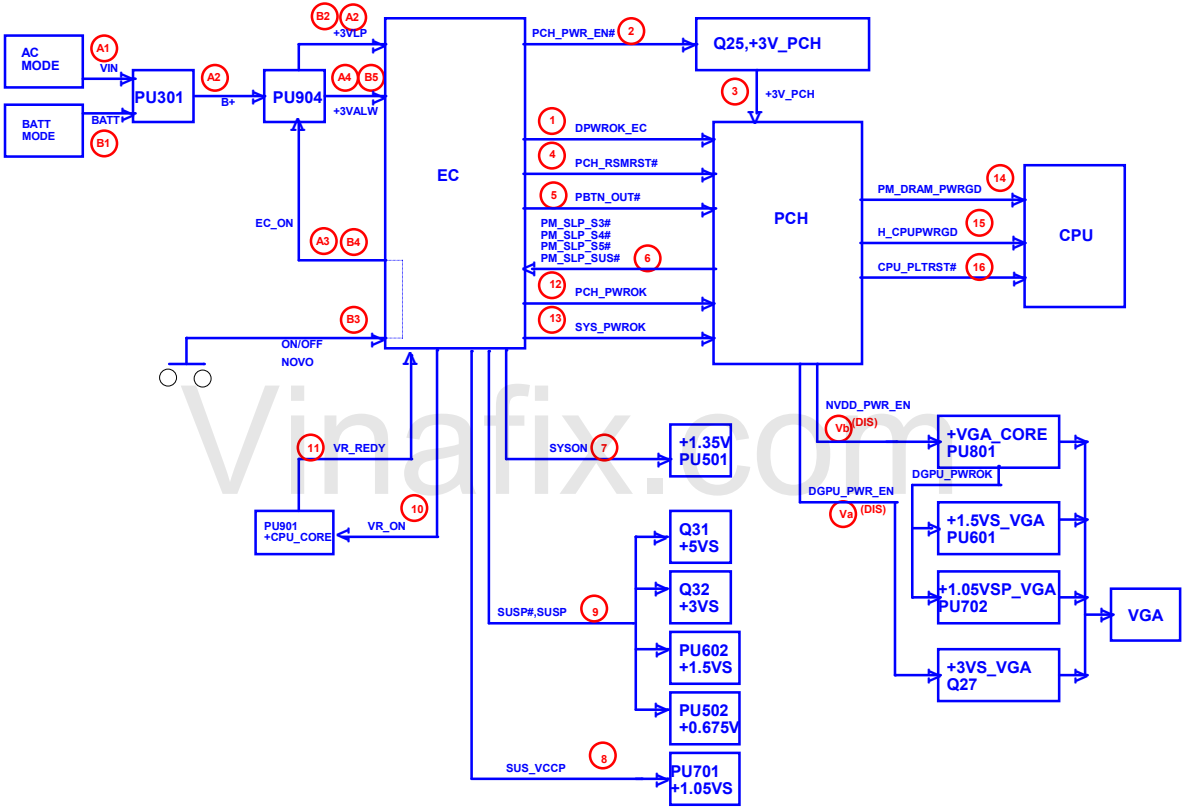

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: **Power sequence block**

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Title: ***Virtual symbol***

Size	Document Number	Rev
C	GS55C	0.1

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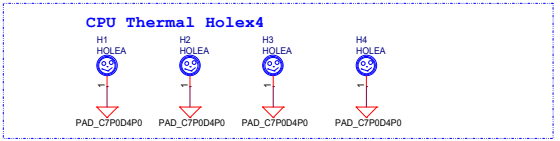

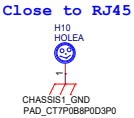

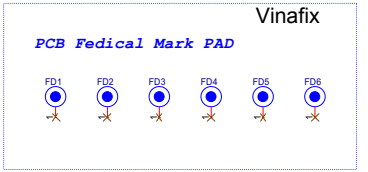

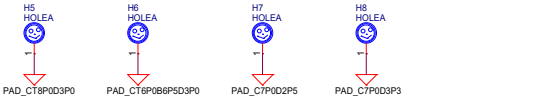

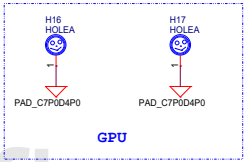

Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: **Hole**

Size	Document Number	Rev
B	GS55C	0.1

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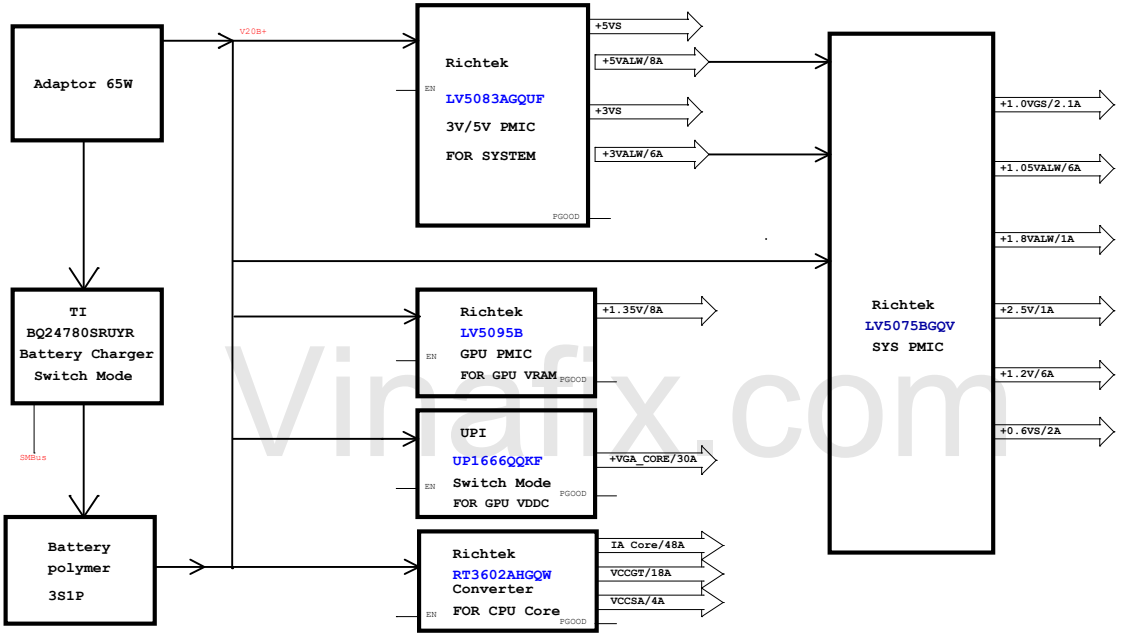
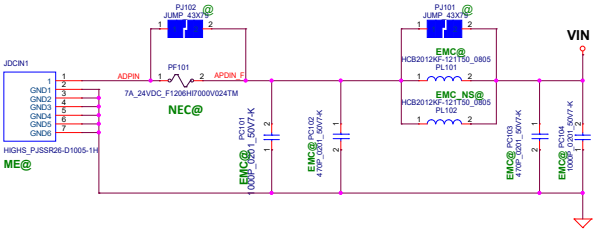


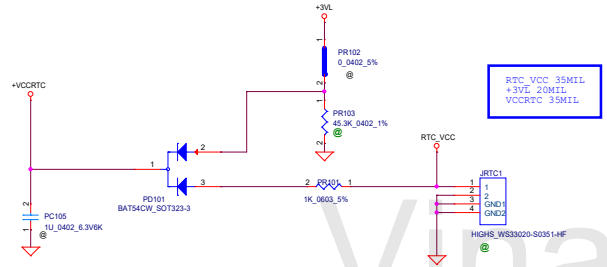
Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: PWR-Power Diagram

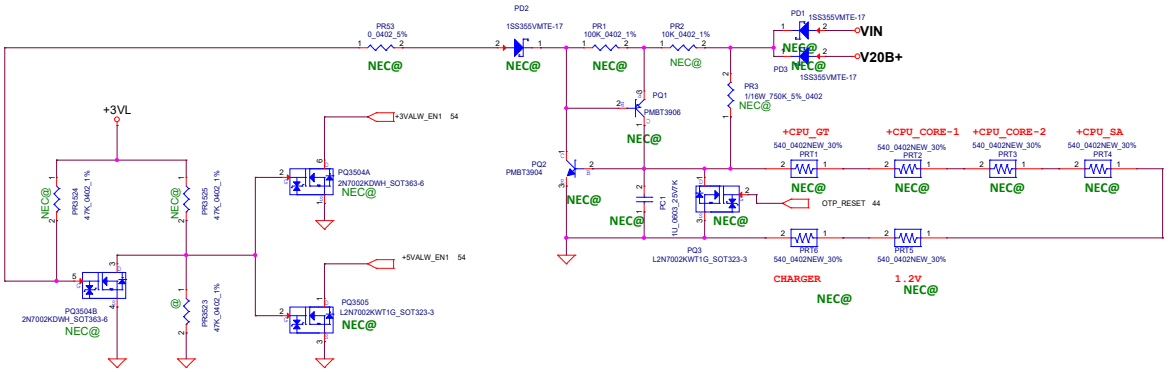
Size	Document Number	Rev
Custom	GS55C	0.3
Date: Wednesday, November 20, 2019	Sheet 50 of 61	

Vinafix



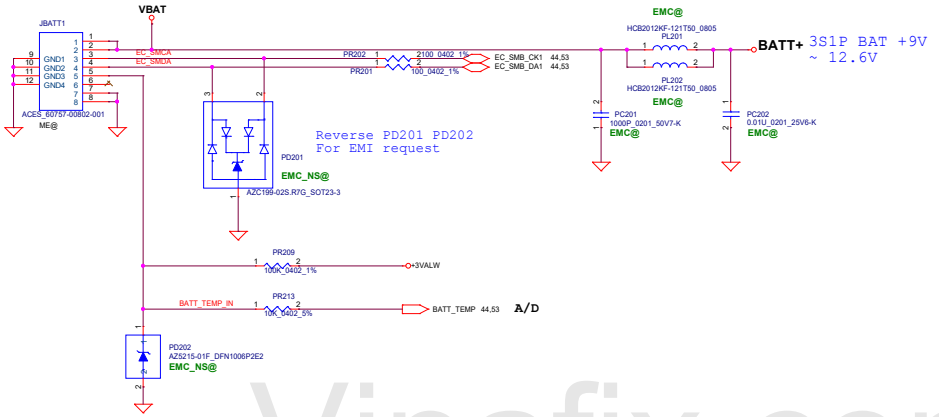


OTP



Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

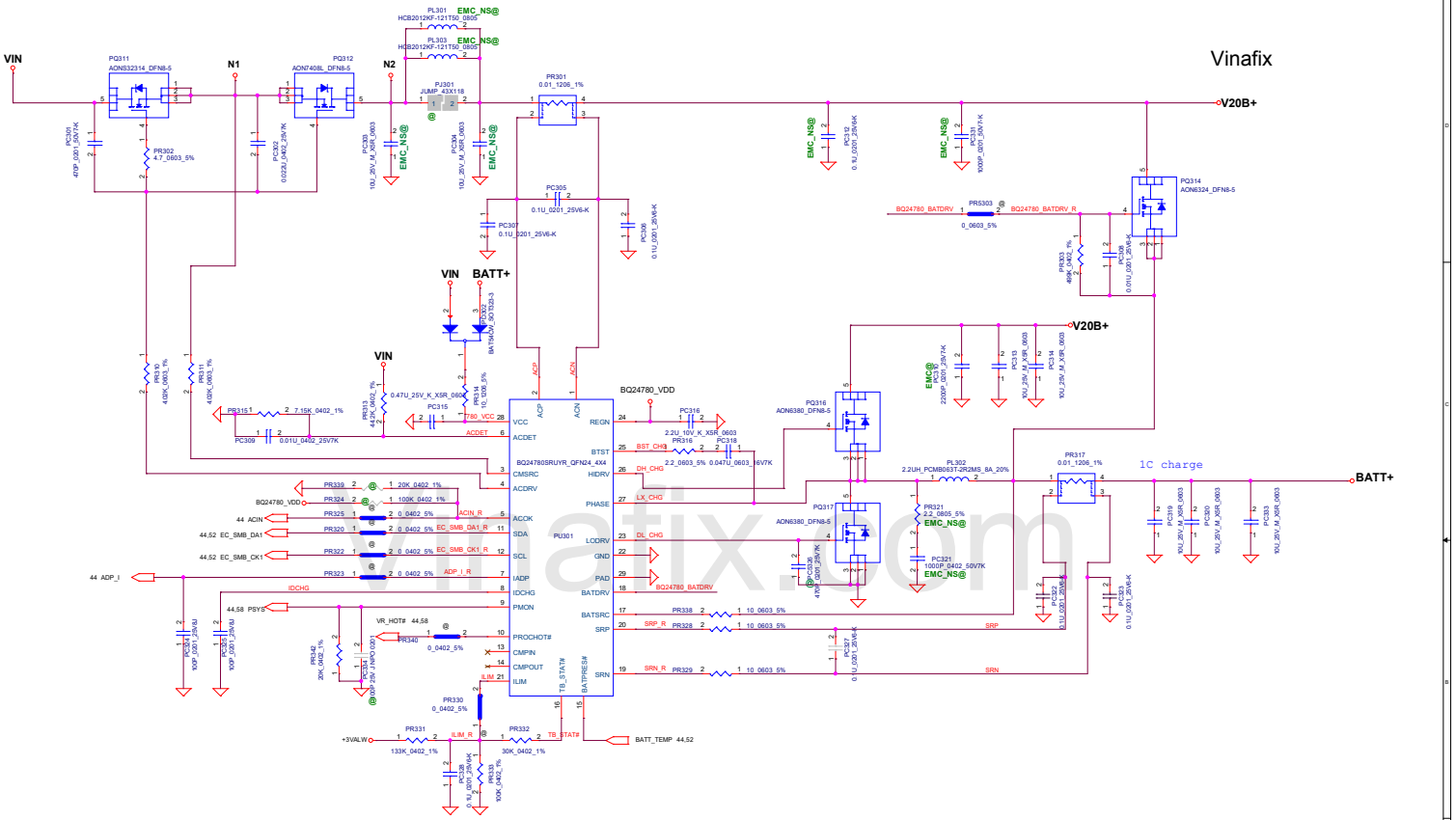
Title	PWR-DCIN / RTC charger		
Size: Custom	Document Number: GS55C		Rev: 0.1
Date: Wednesday, November 20, 2019	Sheet 51 of 61		



Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: PWR-BATTERY CONN/OTP

Size	Document Number	Rev
Custom	GS55C	1.0
Date: Wednesday, November 20, 2019	Sheet 52 of 60	



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

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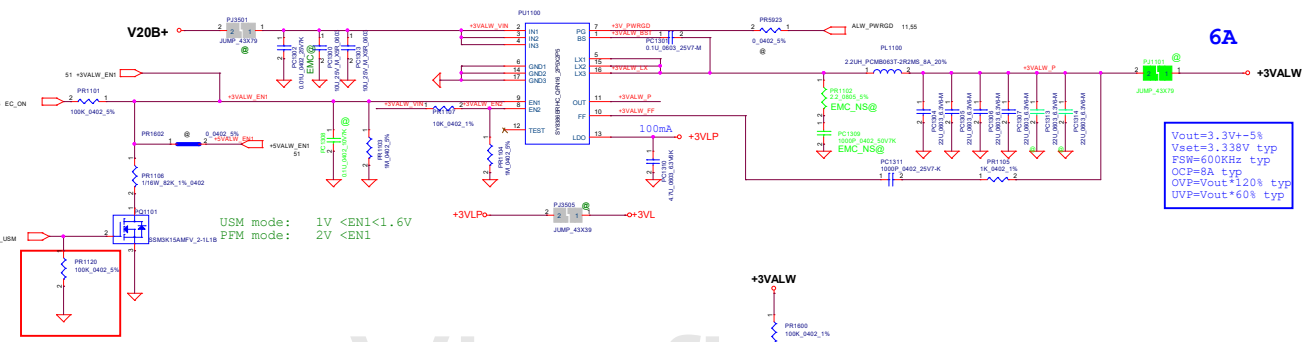
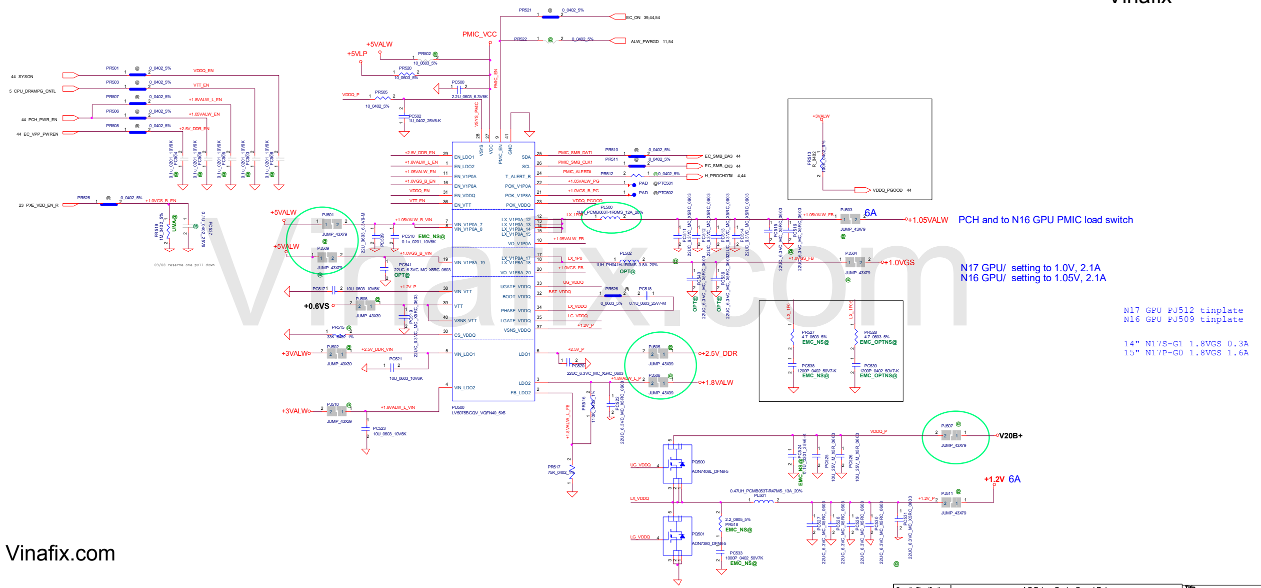
Title	PWR-CHARGER		
Size: C	Document Number: GS55C		Rev: 1.0
Date: Wednesday, November 20, 2019	Sheet 53 of 60		



Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

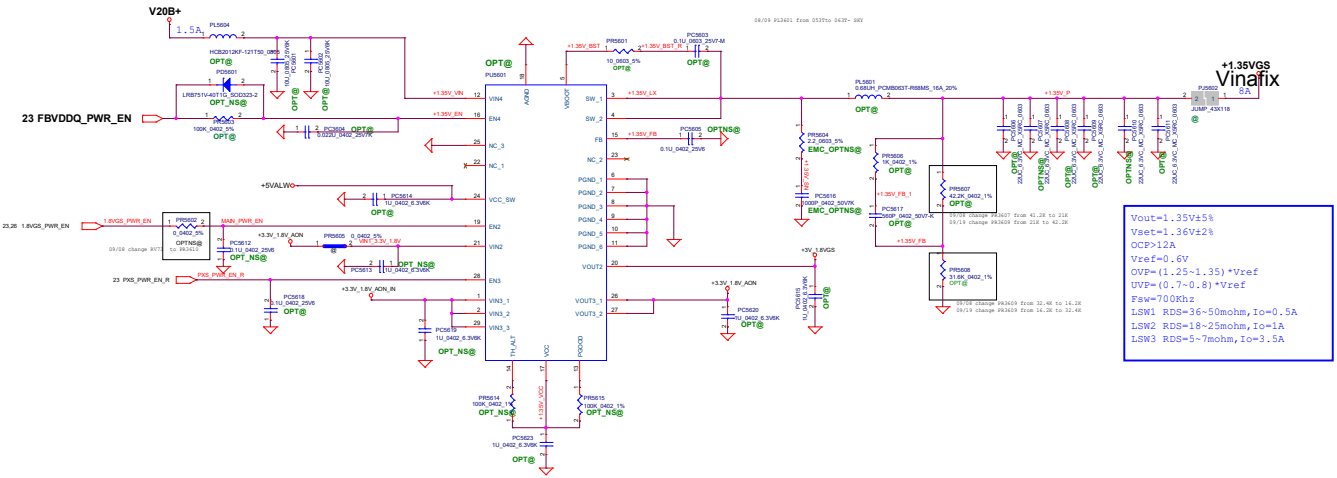
Title	PWR_3VALW/5VALW		
Size: Custom	Document Number: GS55C		Rev: 6.1
Date: Wednesday, November 20, 2019	Sheet 54 of 60		

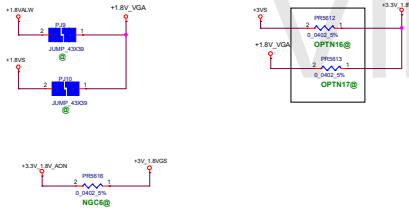


Security Classification	LC Future Center Secret Data		
Issued Date	2019/07/20	Deciphered Date	2020/07/20

Title: PWR PMIC-DDR4/1.0ALW/

Size: Custom | Document Number: GS55C | Rev: 0.1





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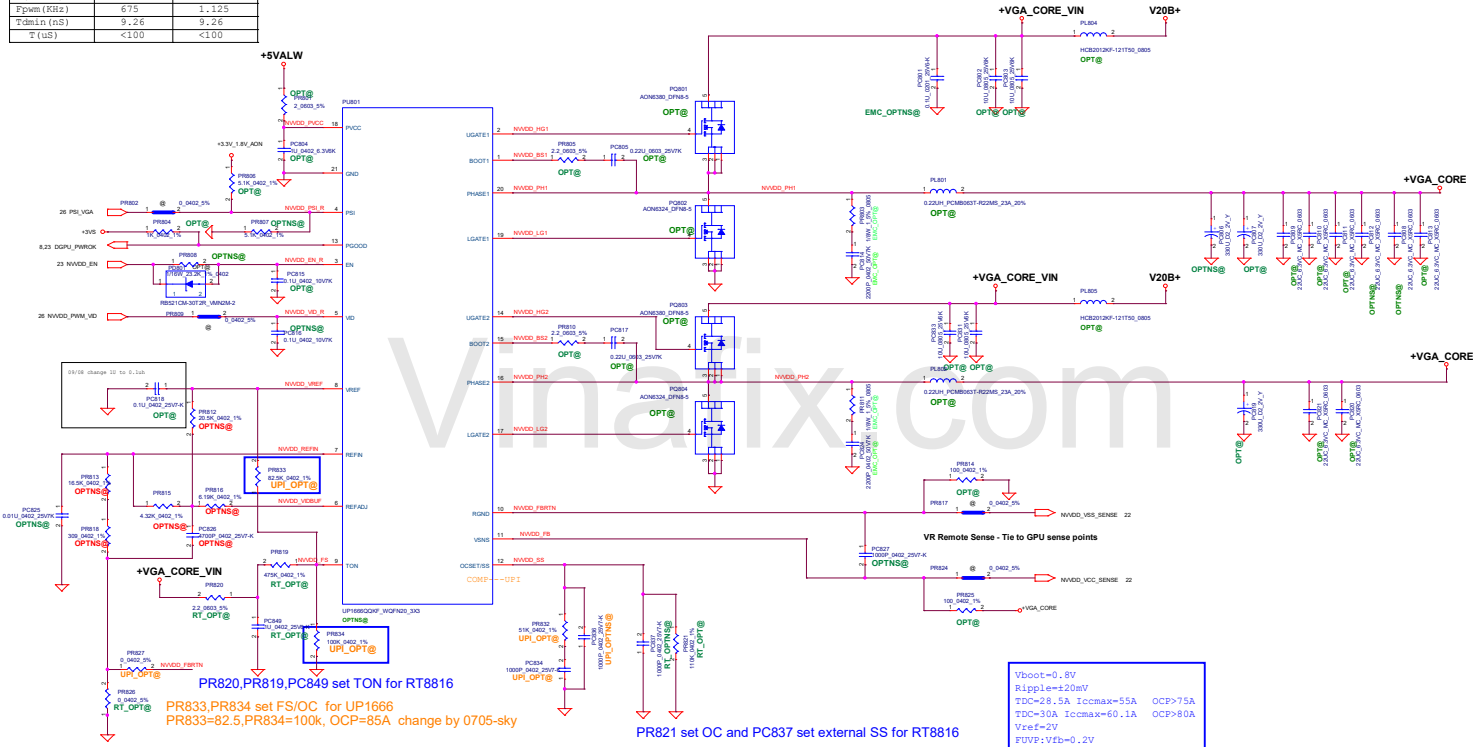
PWM-VID Specification		
	N17 Config	N16 Config B
Vmin(V)	0.3	0.6
Vmax(V)	1.3	1.2
Vboot(V)	0.8	0.9
Vstep(mV)	6.25	6.25
N(level)	160	96
Fpwm(KHz)	675	1.125
Tdmin(nS)	9.26	9.26
T(uS)	<100	<100

RT8816 PSI	UP1666 PSI	Phase Configuration
1.6V~5.5V	1.6~5.5V	2Phase CCM
1.08~1.35V	1~1.4V	2Phase DEM
0.7~0.88V	0.4V~0.8V	1Phase CCM
0~0.4V	0~0.2V	1Phase DEM

Vinafix



PR816,PR812,PR815,PR813,PR818,PC826 BOM structure control for N16 or N17

Component	Value	N17	N16
R1(KΩ)	PR816	6.19	10
R2(KΩ)	PR812	20.5	20
R3(KΩ)	PR815	4.32	2
R4(KΩ)	PR813	16.5	18
R5(KΩ)	PR818	0.309	0
C(nF)	PC826	4.7	2.7

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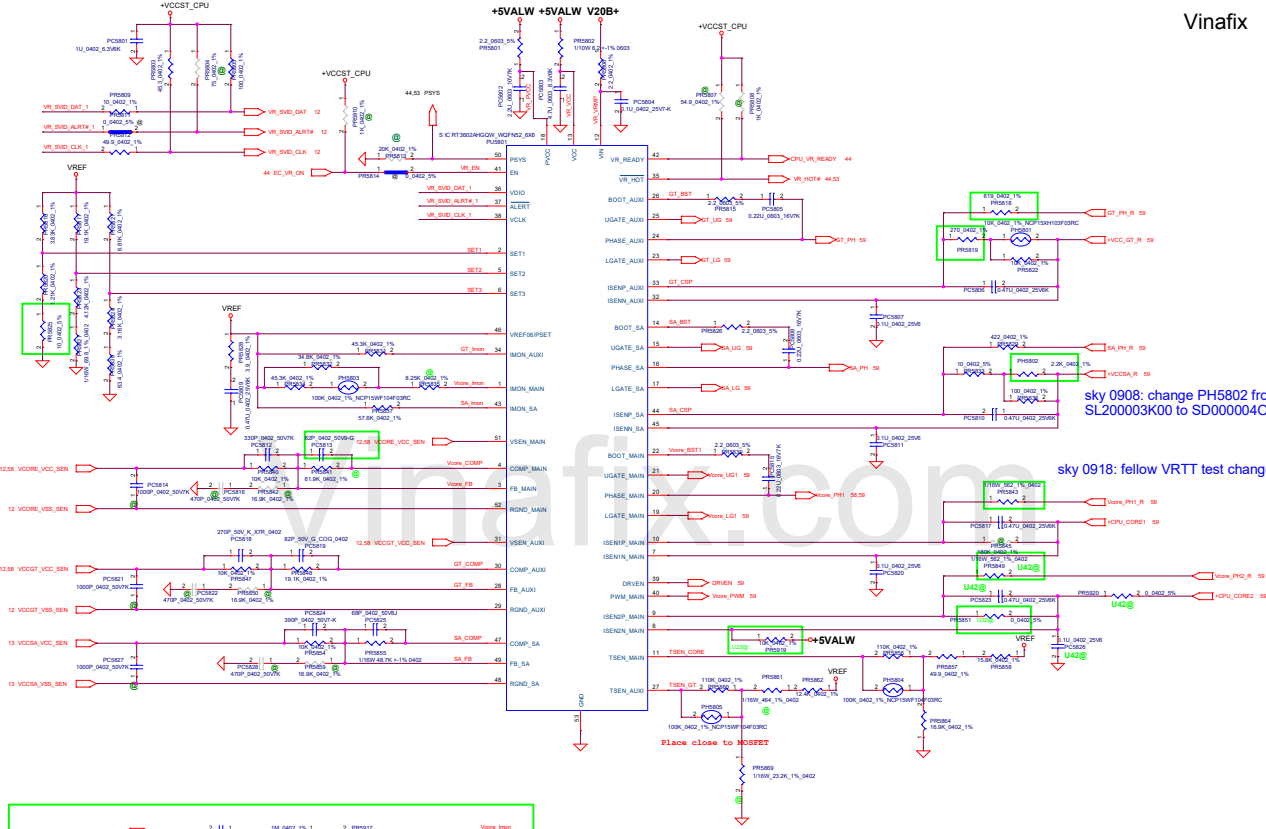

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Issued Date	2019/07/20	Deciphered Date	2020/07/20

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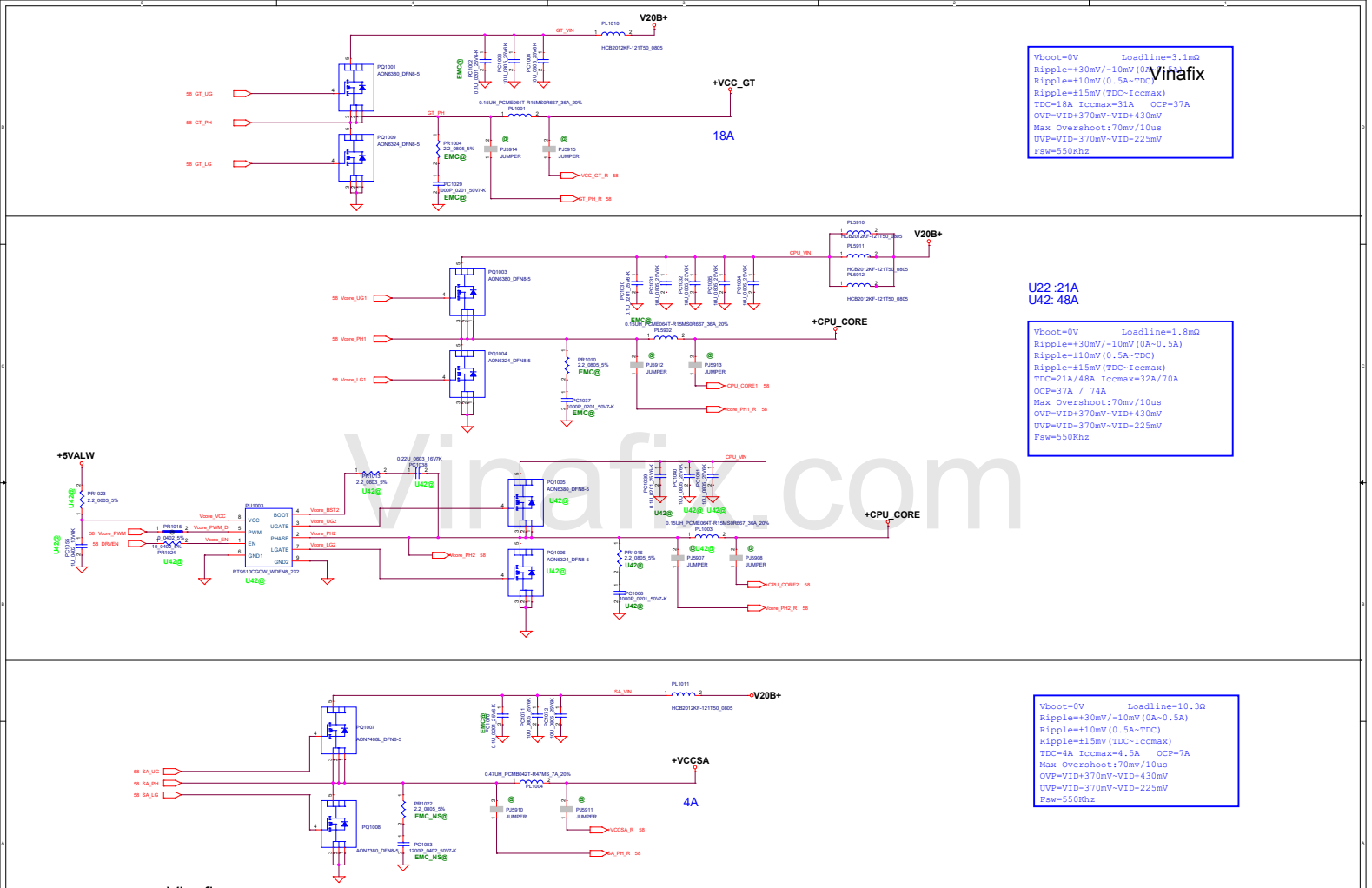

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Title: PWR-VGA_CORE

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Title: PWR-Decoupling Cap

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Title: NGFF_SSD_1

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