LCFC Confidential

HS460&HS560&HS760(NM-XXXX) MB Schematics Document

Tiger Lake UP3 with DDR4 + Slot-DIMM

2020-06

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 TRANSFERED 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.

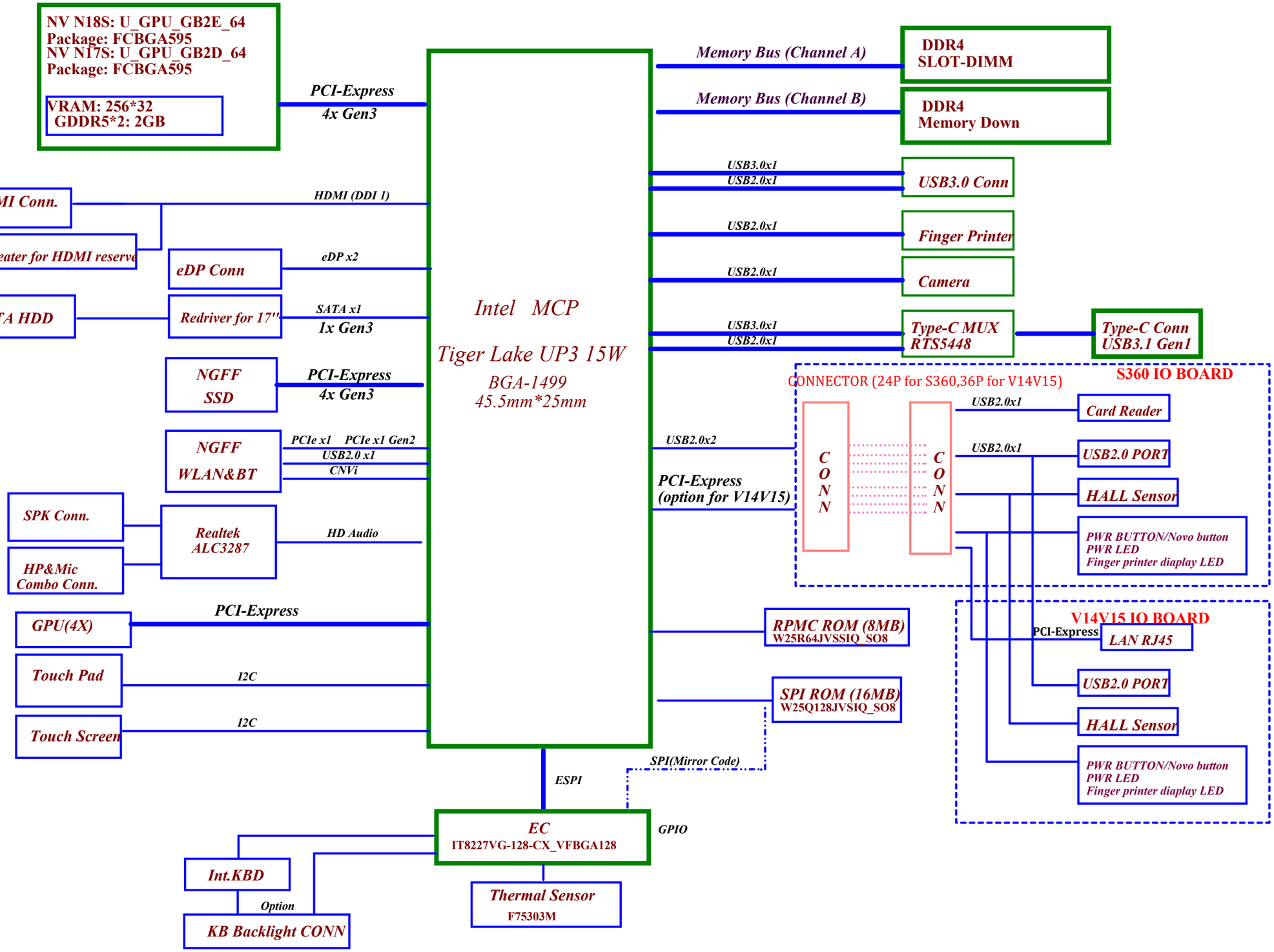
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

Title: S360-TGL

LCFC

Size: C | Document Number: Cover Page | Rev: 0.1

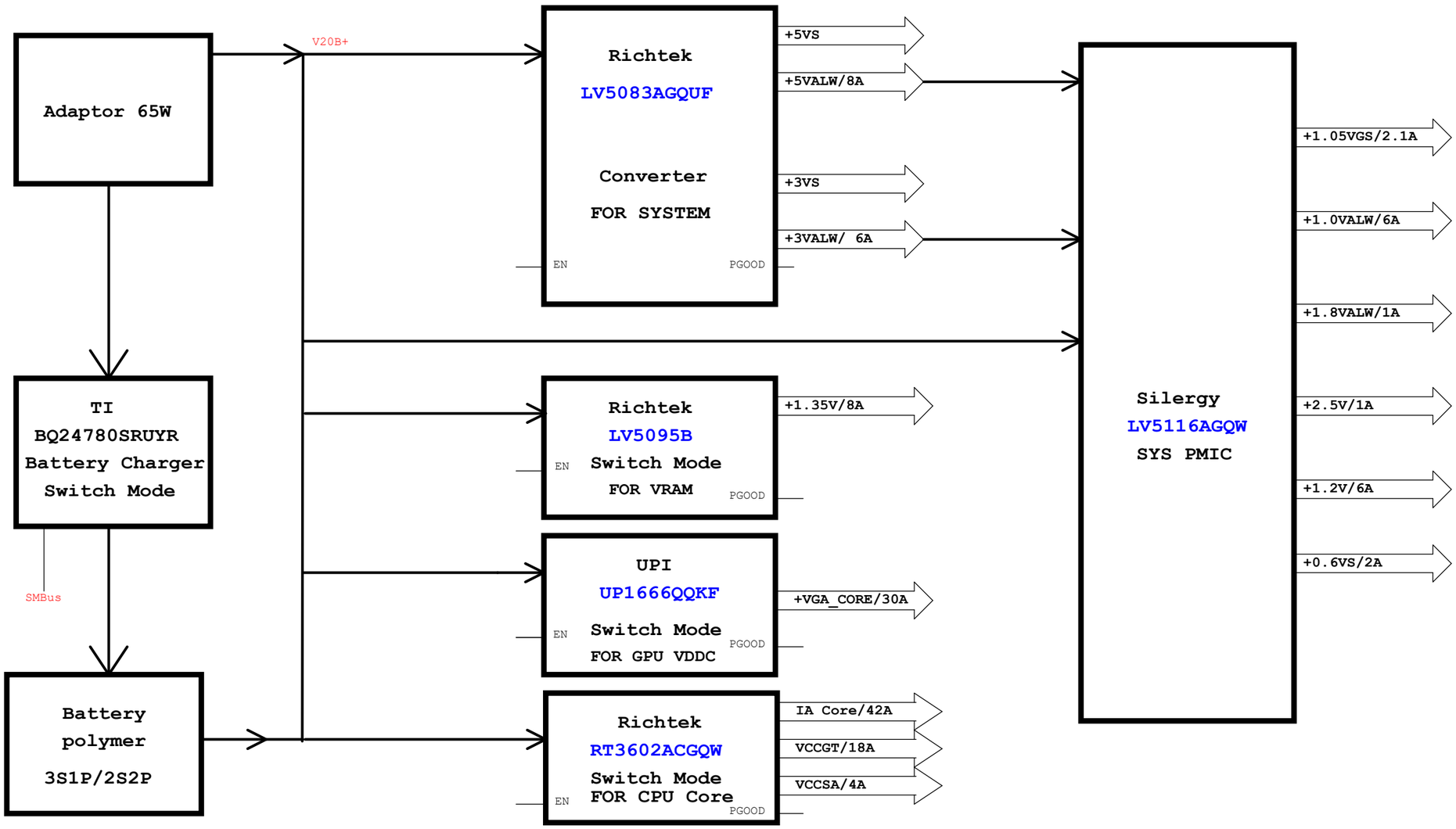
Date: Tuesday, November 10, 2020 | Sheet 1 of 110



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size C	Document Number	Block Diagram EE	Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 2 of 110		



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 TRANSFERED 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.

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

Title: *S360-TGL*

LCFC

Size: C | Document Number: *Block Diagram PWR* | Rev: 0.1

Date: Tuesday, November 10, 2020 | Sheet 3 of 110

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
	2	USB3.0 Conn
	3	NC
	4	NC
	5	NC
	6	NC
USB2.0	1	USB3.0 Conn
	2	NC
	3	USB3.0 Conn
	4	USB2.0 conn
	5	Card reader
	6	Touch Screen
	7	Camera
	8	NC
	9	NC
	10	Bluetooth
PCIE	5~8 X4	DGPU
	9	WLAN
	10	NC
	11	SATA HDD
	12	NC
	13~16 X4	PCIE/SATA SSD

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

www.teknisi-indonesia.com

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size C	Document Number	PWR Map/SMBUS/HSIO	Rev 0.1
Date:	Tuesday, November 10, 2020	Sheet 4 of 110	

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: *S360-TGL*

LCFC

Size	Document Number	Rev
C	Notes For VGA	0.1

Date: Tuesday, November 10, 2020 | Sheet 5 of 110

Virtual Symbol

PCB

ZZZ1 — PCB 21M NM-D472 REV1 M/B — DA800018210 — HS460_DIS@
ZZZ2 — PCB 21M NM-D472 REV1 M/B — DA800018210 — HS560_DIS@
ZZZ3 — PCB 21N NM-D473 REV1 M/B — DA800018310 — HS760_DIS@
ZZZ4 — PCB 21R NM-D475 REV1 M/B — DA800018510 — HV460_DIS@
ZZZ5 — PCB 21R NM-D475 REV1 M/B — DA800018510 — HV560_DIS@
ZZZ30 — PCB 21M NM-D471 REV1 M/B — DA800018110 — HS460_UMA@
ZZZ31 — PCB 21M NM-D471 REV1 M/B — DA800018110 — HS560_UMA@
ZZZ32 — PCB 21M NM-D471 REV1 M/B — DA800018110 — HS760_UMA@
ZZZ33 — PCB 21R NM-D474 REV1 M/B — DA800018410 — HV460_UMA@
ZZZ34 — PCB 21R NM-D474 REV1 M/B — DA800018410 — HV560_UMA@

CPU

UC1 — I3@ — S IC FH8069004531502 QVBG B1 3G BGA 1449 — SA0000AY330
UC1 — I5@ — S IC FH8069004530601 QVBD B1 2.4G BGA — SA0000AY230
UC1 — I7@ — S IC FH8069004529905 QVBA B1 2.8G BGA — SA0000AWZ30
UC1 — CEL@ — S IC FH8069004531901 QVBS B1 1.8G BGA 1449 — SA0000B4C20
UC1 — PEN@ — S IC FH8069004531802 QVBK B1 2G BGA 1449 — SA0000B4920
UC1 — I3NPU22@ — S IC FH8069004531602 QVBH B1 3G BGA 1449 — SA0000AY340
UC1 — I5NPU42@ — S IC FH8069004531301 QVBE B1 2.4G BGA — SA0000AY240

GPU

UG1 — OPT17@ — S IC N17S-G5-A1 BGA 595P GPU MP — SA0000AEQ20
UG1 — OPT18@ — S IC N18S-G5-A1 BGA 603P GPU MP — SA0000AQJ40
PR6816 — 1/16W 22.6K +-1% 0402 — SD000019W00 — OPT17@
PR6816 — 1/16W 23.2K +-1% 0402 — SD00001NZ00 — OPT18@

DRAM MD

@ — D16Gb MIC 3200 MT40A1G16KD-062E:E — SA0000ADK00
@ — D8Gb MIC 3200 MT40A512M16TB-062E:J — SA00009R510
@ — D8Gb SAM 3200 K4A8G165WC-BCWE — SA0000AC810
@ — D16Gb HYX 3200 H5ANAG6NCMR-XNC — SA0000AC520
@ — D8Gb HYX 3200 H5AN8G6NDJR-XNC — SA0000AT510
@ — D16Gb SAM 3200 K4AAG165WA-BCWE — SA0000AC020
@ — S IC D4 512MX16/3200 SDQC8G8W16XCWE9N1T FBGA 96P — SA0000BC800

VRAM

@ — S IC D5 256M32/2000 K4G80325FC-HC2 — SA00007Z720
@ — S IC D5 256MX32 H5GC8H24AJR-R2C — SA00009FV00
@ — S IC D5 256MX32 MT51J256M32HF-80:B — SA00007Z930

X76

DRAM SODIM

Re-Driver

UK1 — S IC PI3EQX6741STZDEX TQFN SATA REDRIVER — SA0000600400 — SATA_6741@

Virtual Symbol_Power

15W

PR1045 — 16.9K_0402_1% — SD0341692BJ — 15W@
PR1044 — 24.3K_0402_1% — SD000011300 — 15W@
PR1043 — 11.8K_0201_1% — SD000019S0T — 15W@
PR1039 — 1/16W_42.2K_1%_0402 — SD0344222BJ — 15W@
PR1008 — 1/20W_200K_1%_0402 — SD0342003BT — 15W@
PR1021 — 19.6K_0402_1% — SD000003S8J — 15W@
PR1011 — 17BK_0402_1% — SD0341783BT — 15W@
PR1024 — 1/20W_5.45K_1%_0201 — SD000013J8T — 15W@

25W

PR1045 — 12.1K_0402_1% — SD0341212BJ — 25W@
PR1044 — 21.5K_0402_1% — SD0342152BJ — 25W@
PR1043 — 1/20W_14.3K_1%_0201 — SD000010R00 — 25W@
PR1039 — 25K_0402_1% — SD0342002BJ — 25W@
PR1008 — 1/20W_93.1K_1%_0402 — SD0349312BJ — 25W@
PR1021 — 22.6K_0402_1% — SD000019W00 — 25W@
PR1011 — 19.6K_0402_1% — SD000003S8J — 25W@
PR1024 — 1/20W_14K_1%_0201 — SD00001VD00 — 25W@

GPU Power Solution

PU2000 — RT_OPT@ — RT8816CGQW WQFN 20P PWM — SA0000B3F00
PU2000 — UPI_OPT@ — UP1666QQKF WQFN 20P CONTROLLER — SA0000B5000

HDMI Royalty

ZZZ38 — HDMI@ — HDMI PN — RC0000004QJ

D8G_MIC_S@ — ZZZ6 — MIC D8G S360 X764BF1200P
D8G_SAM_S@ — ZZZ7 — SAM D8G S360 X764BF1200Q
D8G_HYX_S@ — ZZZ8 — HYX D8G S360 X764BF1200M
D4G_SAM_S@ — ZZZ9 — SAM D4G S360 X764BF1200K
D4G_MIC_S@ — ZZZ10 — MIC D4G S360 X764BF1200N
D4G_HYX_S@ — ZZZ11 — HYX D4G S360 X764BF1200R
D4G_SMT_S@ — ZZZ35 — SMT D4G S360 X764BF1200L
SSAMV2GN17@ — ZZZ12 — SAM V2G N17 S360 X764BF1200J
SMICV2GN18@ — ZZZ13 — MIC V2G N18 S360 X764BF1200G
SMICV2GN17@ — ZZZ14 — MIC V2G N17 S360 X764BF1200E
SHYNV2GN18@ — ZZZ15 — HYN V2G N18 S360 X764BF1200H
SHYNV2GN17@ — ZZZ16 — HYN V2G N17 S360 X764BF1200F
SSAMV2GN18@ — ZZZ17 — SAM V2G N18 S360 X764BF1200D

D8G_MIC_V@ — ZZZ23 — MIC D8G V14V15 X764BE1200K
D4G_SMT_V@ — ZZZ36 — SMT D4G V14V15 X764BE1200L
D8G_SAM_V@ — ZZZ20 — SAM D8G V14V15 X764BE1200M
D8G_HYX_V@ — ZZZ22 — HYX D8G V14V15 X764BE1200R
D4G_SAM_V@ — ZZZ19 — SAM D4G V14V15 X764BE1200Q
D4G_MIC_V@ — ZZZ21 — MIC D4G V14V15 X764BE1200N
D4G_HYX_V@ — ZZZ18 — HYN D4G V14V15 X764BE1200P
VSAMV2GN17@ — ZZZ24 — SAM V2G N17 V14V15 X764BE1200J
VMICV2GN17@ — ZZZ25 — MIC V2G N17 V14V15 X764BE1200E
VHYXV2GN17@ — ZZZ26 — HYX V2G N17 V14V15 X764BE1200G
VHYXV2GN18@ — ZZZ27 — HYX V2G N18 V14V15 X764BE1200F
VMICV2GN18@ — ZZZ28 — MIC V2G N18 V14V15 X764BE1200H
VSAMV2GN18@ — ZZZ29 — SAM V2G N18 V14V15 X764BE1200D

BOM Structure

BOM Structure	Description
@	Un-stuff
FHD@	For FHD Panel Part
HDR@	For HDR Panel Part
14@	For GYG41 part
15@	For GYG51 part
8M_ROM@	For 8G BIOS ROM part
AMP@	For external Amplifier solution part
AMP_NS@	For external Amplifier solution un-stuff part
AMP_PWR@	For discrete Amplifier power solution part
ANS@	For power ANS solution part
USM@	For power USM solution part
BL@	For Key Board Backlight part
CD@	For C cost down
CHANNELA@	For Memory Channel A part
DDPA@	For Memory Channel A DDP part
SDPA@	For Memory Channel A SDP part
DDPB@	For Memory Channel B DDP part
SDPB@	For Memory Channel B SDP part
NPI@	For NPI Phase part
MP@	For MP Phase Part
PCIE4@	For PCIE Gen4 part
EMC@	For EMC part
EMC_15@	For GYG51 EMC part
EMC_NS@	For EMC un-stuff part
RF_NS@	For RF Un-Stuff part
AOAC@	For AOAC part
CNVI@	For CNVi WLAN part
ME@	For ME part
OPT@	For NV GPU part
OPTN16@	For NV N16S-GTR GPU part
OPTN17@	For NV N17S-G1 GPU part
TS@	For touch screen part
TP@	For TOuch Pad Part
UMA@	For UMA part

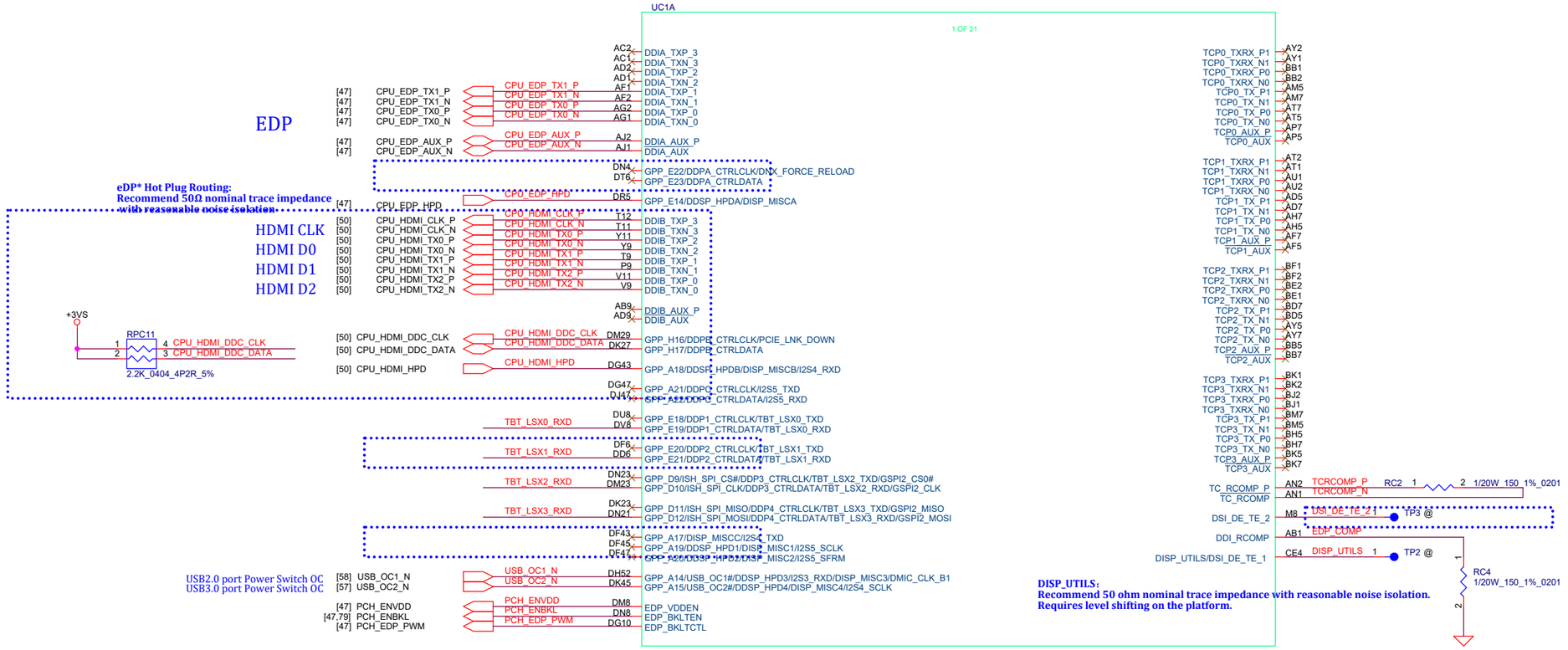
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL — LCFC

Size: D — Document Number: Notes For BOM — Rev: 0.1

Date: Wednesday, November 18, 2020 — Sheet 8 of 110



the diffrent with Base:

1.S540 no HDMI,S360&V14&V15 Ues HDMI;

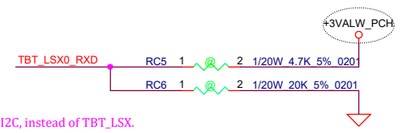
2.S540 Use TCP for TBT,S360&V14&V15 no USE

3.S540 Use GPP_E22&E23,S360&V14&V15 no USE

4.S540 Stuff RC12,S360&V14&V15----- @

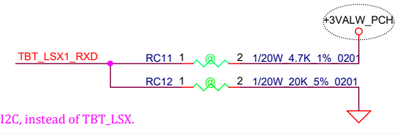
5.S540 No TP3, S360&V14&V15 reserve

GPP_E19 /TBT_LSX0_RXD:
DDP1 I2C /TBT_LSX0 /BBSB_LS0 pins VCC configuration
Rising edge of RSMRST#
This strap has a 20 kohm ± 30% internal pull-down.
0 = DDP1 I2C / TBT_LSX0 / BBSB_LS0 pins at 1.8V
1 = DDP1 I2C / TBT_LSX0 / BBSB_LS0 pins at 3.3V
Notes: 1. The internal pull-down is disabled after RSMRST# de-asserts.
2. This signal is in the primary well.
3. An external pull-up resistor is required if the pin is used as HDMI Display I2C, instead of TBT_LSX.

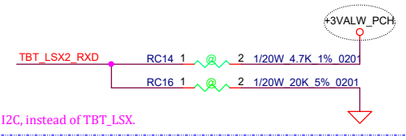


Confirmed with Intel Kaiyin follow TGP EDS 20200103

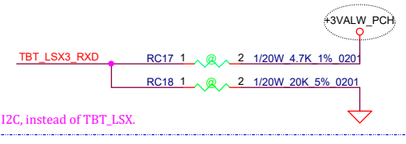
GPP_E21 /TBT_LSX1_RXD:
DDP2 I2C /TBT_LSX1 /BBSB_LS1 pins VCC configuration
Rising edge of RSMRST#
This strap has a 20 kohm ± 30% internal pull-down.
0 = DDP2 I2C / TBT_LSX1 / BBSB_LS1 pins at 1.8V
1 = DDP2 I2C / TBT_LSX1 / BBSB_LS1 pins at 3.3V
Notes: 1. The internal pull-down is disabled after RSMRST# de-asserts.
2. This signal is in the primary well.
3. An external pull-up resistor is required if the pin is used as HDMI Display I2C, instead of TBT_LSX.

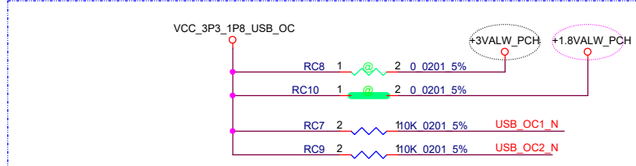


GPP_D10 /TBT_LSX2_RXD:
DDP3 I2C /TBT_LSX2 /BBSB_LS2 pins VCC configuration
Rising edge of RSMRST#
This strap has a 20 kohm ± 30% internal pull-down.
0 = DDP3 I2C / TBT_LSX2 / BBSB_LS2 pins at 1.8V
1 = DDP3 I2C / TBT_LSX2 / BBSB_LS2 pins at 3.3V
Notes: 1. The internal pull-down is disabled after RSMRST# de-asserts.
2. This signal is in the primary well.
3. An external pull-up resistor is required if the pin is used as HDMI Display I2C, instead of TBT_LSX.



GPP_D12 /TBT_LSX3_RXD:
DDP4 I2C /TBT_LSX3 /BBSB_LS3 pins VCC configuration
Rising edge of RSMRST#
This strap has a 20 kohm ± 30% internal pull-down.
0 = DDP4 I2C / TBT_LSX3 / BBSB_LS3 pins at 1.8V
1 = DDP4 I2C / TBT_LSX3 / BBSB_LS3 pins at 3.3V
Notes: 1. The internal pull-down is disabled after RSMRST# de-asserts.
2. This signal is in the primary well.
3. An external pull-up resistor is required if the pin is used as HDMI Display I2C, instead of TBT_LSX.

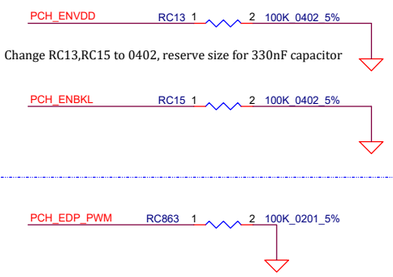




For Glitch Free
Cap or pull-down resistor is required depending on panel power sequencing spec or power delivery

Option 1:Cap Implementation
330 nF for 3.3v Ramp Rate from 5-50ms
33 nF for 3.3V Ramp Rate Less than 5ms

Option 2:Pull-down Resistor Implementation
100K for 3.3V Signaling Mode
75K for 1.8V Signaling Mode



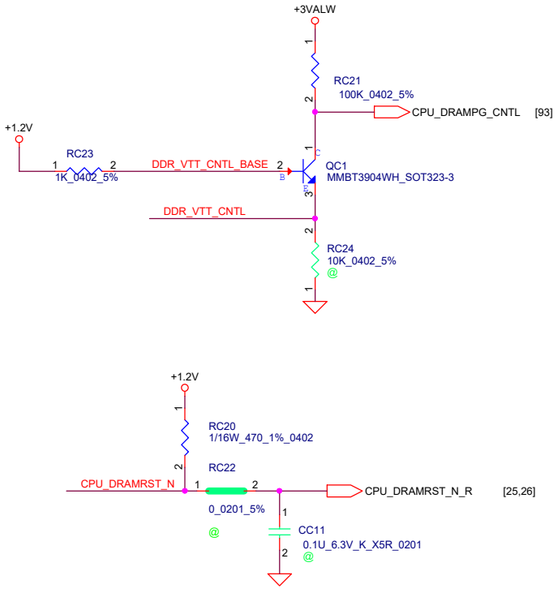
Primary Well Group A (Per-Pad 1.8 V)
Primary Well Group B (Per-Pad 3.3 V)
Primary Well Group C (Per-Pad 3.3 V)
Primary Well Group D (Per-Pad 3.3 V)
Primary Well Group E (Per-Pad 3.3 V)
Primary Well Group F (Per-Pad 1.8 V)
Primary Well Group H (Per-Pad 3.3 V)
Primary Well Group R (Per-Family 1.8 V)
Primary Well Group S (Per-Family 1.8 V)
Primary Well Group T (Per-Pad 1.8 V or 3.3 V) - Applied to TGL PCH UP3 Only
Primary Well Group U (Per-Pad 1.8 V or 3.3 V) - Applied to TGL PCH UP3 Only
Deep Sleep Well Group (3.3 V Only)(GPD0~GPD11)

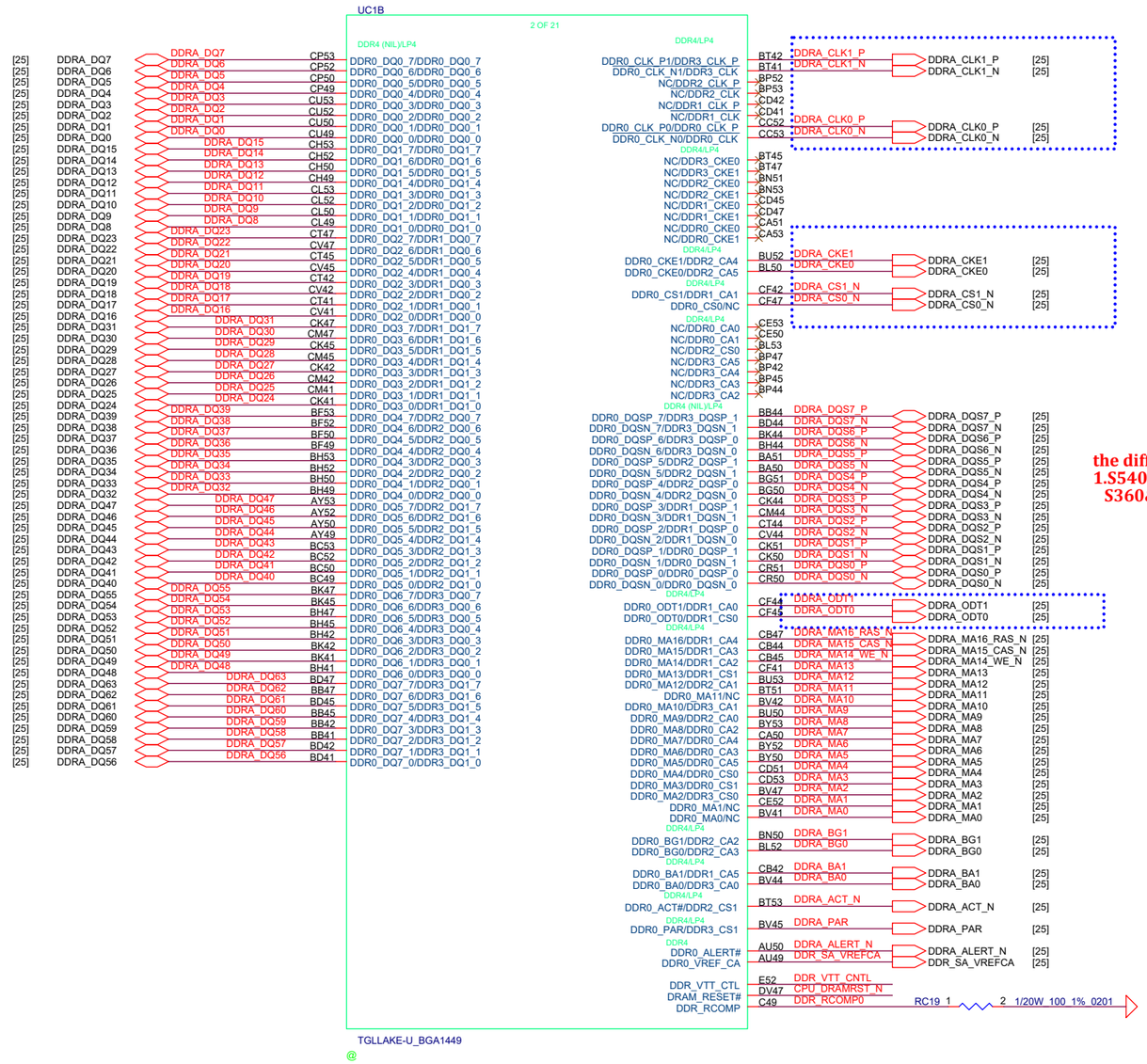
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		LCFC
Size C	Document Number DDI/EDP		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 7 of 110		

SLOT DIMM





the diffrent with Base:
1.S540 BT42&BT41BU52&CF42*CF44---- NC,
S360&V14V15 use For SO-DIMM

teknisi-indonesia.com

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size C	Document Number	DDR4-Chanel-A	Rev <RevCode>
Date: Tuesday, November 10, 2020	Sheet 8 of 110		

Memory Down

[26]	DDRB_DQ7	DDRB_DQ7	AL53	DDR1_DQ0_7/DDR4_DQ0_7	DDR1_CLK_P1/DDR7_CLK_P	R41	
[26]	DDRB_DQ6	DDRB_DQ6	AL52	DDR1_DQ0_6/DDR4_DQ0_6	DDR1_CLK_N1/DDR7_CLK	R42	
[26]	DDRB_DQ5	DDRB_DQ5	AL50	DDR1_DQ0_5/DDR4_DQ0_5	NC/DDR6_CLK_P	M52	
[26]	DDRB_DQ4	DDRB_DQ4	AL49	DDR1_DQ0_4/DDR4_DQ0_4	NC/DDR6_CLK	M53	
[26]	DDRB_DQ3	DDRB_DQ3	AP53	DDR1_DQ0_3/DDR4_DQ0_3	NC/DDR5_CLK_P	AC42	
[26]	DDRB_DQ2	DDRB_DQ2	AP52	DDR1_DQ0_2/DDR4_DQ0_2	NC/DDR5_CLK	AC41	
[26]	DDRB_DQ1	DDRB_DQ1	AP50	DDR1_DQ0_1/DDR4_DQ0_1	DDR1_CLK_P0/DDR4_CLK_P	Y52	DDRB_CLK0_P
[26]	DDRB_DQ0	DDRB_DQ0	AP49	DDR1_DQ0_0/DDR4_DQ0_0	DDR1_CLK_N0/DDR4_CLK	Y53	DDRB_CLK0_N
[26]	DDRB_DQ15	DDRB_DQ15	AF53	DDR1_DQ1_7/DDR4_DQ1_7	DDR4/LP4		
[26]	DDRB_DQ14	DDRB_DQ14	AF52	DDR1_DQ1_6/DDR4_DQ1_6	NC/DDR7_CKE0	R47	
[26]	DDRB_DQ13	DDRB_DQ13	AF50	DDR1_DQ1_5/DDR4_DQ1_5	NC/DDR7_CKE1	R45	
[26]	DDRB_DQ12	DDRB_DQ12	AF49	DDR1_DQ1_4/DDR4_DQ1_4	NC/DDR6_CKE0	K51	
[26]	DDRB_DQ11	DDRB_DQ11	AH53	DDR1_DQ1_3/DDR4_DQ1_3	NC/DDR6_CKE1	K53	
[26]	DDRB_DQ10	DDRB_DQ10	AH52	DDR1_DQ1_2/DDR4_DQ1_2	NC/DDR5_CKE0	AC47	
[26]	DDRB_DQ9	DDRB_DQ9	AH50	DDR1_DQ1_1/DDR4_DQ1_1	NC/DDR5_CKE1	AC45	
[26]	DDRB_DQ8	DDRB_DQ8	AH49	DDR1_DQ1_0/DDR4_DQ1_0	NC/DDR4_CKE0	W51	
[26]	DDRB_DQ23	DDRB_DQ23	AR41	DDR1_DQ2_7/DDR5_DQ0_7	NC/DDR4_CKE1	W53	
[26]	DDRB_DQ22	DDRB_DQ22	AV42	DDR1_DQ2_6/DDR5_DQ0_6	DDR4/LP4		
[26]	DDRB_DQ21	DDRB_DQ21	AR42	DDR1_DQ2_5/DDR5_DQ0_5	DDR1_CKE1/DDR6_CA4	P52	
[26]	DDRB_DQ20	DDRB_DQ20	AV41	DDR1_DQ2_4/DDR5_DQ0_4	DDR1_CKE0/DDR6_CA5	J50	DDRB_CKE0
[26]	DDRB_DQ19	DDRB_DQ19	AR45	DDR1_DQ2_3/DDR5_DQ0_3	DDR4/LP4		
[26]	DDRB_DQ18	DDRB_DQ18	AV45	DDR1_DQ2_2/DDR5_DQ0_2	DDR1_CS1/DDR5_CA1	AE42	
[26]	DDRB_DQ17	DDRB_DQ17	AR47	DDR1_DQ2_1/DDR5_DQ0_1	DDR1_CS0/NC	AE47	DDRB_CS0_N
[26]	DDRB_DQ16	DDRB_DQ16	AV47	DDR1_DQ2_0/DDR5_DQ0_0	DDR4/LP4		
[26]	DDRB_DQ31	DDRB_DQ31	AJ41	DDR1_DQ3_7/DDR5_DQ1_7	NC/DDR7_CA5	N42	
[26]	DDRB_DQ30	DDRB_DQ30	AJ42	DDR1_DQ3_6/DDR5_DQ1_6	NC/DDR7_CA4	N45	
[26]	DDRB_DQ29	DDRB_DQ29	AL41	DDR1_DQ3_5/DDR5_DQ1_5	NC/DDR7_CA3	N44	
[26]	DDRB_DQ28	DDRB_DQ28	AL42	DDR1_DQ3_4/DDR5_DQ1_4	NC/DDR7_CA2	N47	
[26]	DDRB_DQ27	DDRB_DQ27	AJ45	DDR1_DQ3_3/DDR5_DQ1_3	NC/DDR6_CS0	J53	
[26]	DDRB_DQ26	DDRB_DQ26	AJ47	DDR1_DQ3_2/DDR5_DQ1_2	NC/DDR4_CA1	AC50	
[26]	DDRB_DQ25	DDRB_DQ25	AL45	DDR1_DQ3_1/DDR5_DQ1_1	NC/DDR4_CA0	AC53	
[26]	DDRB_DQ24	DDRB_DQ24	AL47	DDR1_DQ3_0/DDR5_DQ1_0	DDR4 (NIL)/LP4		
[26]	DDRB_DQ39	DDRB_DQ39	A43	DDR1_DQ4_7/DDR6_DQ0_7	DDR1_DQSP_7/DDR7_DQSP_1	K36	DDRB_DQS7_P
[26]	DDRB_DQ38	DDRB_DQ38	B43	DDR1_DQ4_6/DDR6_DQ0_6	DDR1_DQSN_7/DDR7_DQSN_1	K38	DDRB_DQS7_N
[26]	DDRB_DQ37	DDRB_DQ37	D43	DDR1_DQ4_5/DDR6_DQ0_5	DDR1_DQSP_6/DDR7_DQSP_0	G44	DDRB_DQS6_P
[26]	DDRB_DQ36	DDRB_DQ36	E44	DDR1_DQ4_4/DDR6_DQ0_4	DDR1_DQSN_6/DDR7_DQSN_0	J44	DDRB_DQS6_N
[26]	DDRB_DQ35	DDRB_DQ35	A46	DDR1_DQ4_3/DDR6_DQ0_3	DDR1_DQSP_5/DDR6_DQSP_1	D39	DDRB_DQS5_P
[26]	DDRB_DQ34	DDRB_DQ34	B46	DDR1_DQ4_2/DDR6_DQ0_2	DDR1_DQSN_5/DDR6_DQSN_1	C39	DDRB_DQS5_N
[26]	DDRB_DQ33	DDRB_DQ33	D46	DDR1_DQ4_1/DDR6_DQ0_1	DDR1_DQSP_4/DDR6_DQSP_0	C45	DDRB_DQS4_P
[26]	DDRB_DQ32	DDRB_DQ32	E47	DDR1_DQ4_0/DDR6_DQ0_0	DDR1_DQSN_4/DDR6_DQSN_0	D45	DDRB_DQS4_N
[26]	DDRB_DQ47	DDRB_DQ47	E38	DDR1_DQ5_7/DDR6_DQ1_7	DDR1_DQSP_3/DDR5_DQSP_1	AJ44	DDRB_DQS3_P
[26]	DDRB_DQ46	DDRB_DQ46	D38	DDR1_DQ5_6/DDR6_DQ1_6	DDR1_DQSN_3/DDR5_DQSN_1	AL44	DDRB_DQS3_N
[26]	DDRB_DQ45	DDRB_DQ45	B38	DDR1_DQ5_5/DDR6_DQ1_5	DDR1_DQSP_2/DDR5_DQSP_0	AV44	DDRB_DQS2_P
[26]	DDRB_DQ44	DDRB_DQ44	A38	DDR1_DQ5_4/DDR6_DQ1_4	DDR1_DQSN_2/DDR5_DQSN_0	AR44	DDRB_DQS2_N
[26]	DDRB_DQ43	DDRB_DQ43	E41	DDR1_DQ5_3/DDR6_DQ1_3	DDR1_DQSP_1/DDR4_DQSP_1	AG51	DDRB_DQS1_P
[26]	DDRB_DQ42	DDRB_DQ42	D40	DDR1_DQ5_2/DDR6_DQ1_2	DDR1_DQSN_1/DDR4_DQSN_1	AG50	DDRB_DQS1_N
[26]	DDRB_DQ41	DDRB_DQ41	B40	DDR1_DQ5_1/DDR6_DQ1_1	DDR1_DQSP_0/DDR4_DQSP_0	AN51	DDRB_DQS0_P
[26]	DDRB_DQ40	DDRB_DQ40	A40	DDR1_DQ5_0/DDR6_DQ1_0	DDR1_DQSN_0/DDR4_DQSN_0	AN50	DDRB_DQS0_N
[26]	DDRB_DQ55	DDRB_DQ55	G42	DDR1_DQ6_7/DDR7_DQ0_7	DDR4/LP4		
[26]	DDRB_DQ54	DDRB_DQ54	G41	DDR1_DQ6_6/DDR7_DQ0_6	DDR1_ODT1/DDR5_CA0	AE44	
[26]	DDRB_DQ53	DDRB_DQ53	J41	DDR1_DQ6_5/DDR7_DQ0_5	DDR1_ODT0/DDR5_CS0	AE45	DDRB_ODT0
[26]	DDRB_DQ52	DDRB_DQ52	J42	DDR1_DQ6_4/DDR7_DQ0_4	DDR4/LP4		
[26]	DDRB_DQ51	DDRB_DQ51	G45	DDR1_DQ6_3/DDR7_DQ0_3	DDR1_MA16/DDR5_CA4	AA47	DDRB_MA16_RAS_N
[26]	DDRB_DQ50	DDRB_DQ50	J45	DDR1_DQ6_2/DDR7_DQ0_2	DDR1_MA15/DDR5_CA3	AA44	DDRB_MA15_CAS_N
[26]	DDRB_DQ49	DDRB_DQ49	G47	DDR1_DQ6_1/DDR7_DQ0_1	DDR1_MA14/DDR5_CA2	AA45	DDRB_MA14_WE_N
[26]	DDRB_DQ48	DDRB_DQ48	J47	DDR1_DQ6_0/DDR7_DQ0_0	DDR1_MA13/DDR5_CS1	AE41	DDRB_MA13
[26]	DDRB_DQ63	DDRB_DQ63	G38	DDR1_DQ7_7/DDR7_DQ1_7	DDR1_MA12/DDR6_CA1	P53	DDRB_MA12
[26]	DDRB_DQ62	DDRB_DQ62	G36	DDR1_DQ7_6/DDR7_DQ1_6	DDR1_MA11/NC	N51	DDRB_MA11
[26]	DDRB_DQ61	DDRB_DQ61	H36	DDR1_DQ7_5/DDR7_DQ1_5	DDR1_MA10/DDR7_CA1	U42	DDRB_MA10
[26]	DDRB_DQ60	DDRB_DQ60	H38	DDR1_DQ7_4/DDR7_DQ1_4	DDR1_MA9/DDR6_CA0	P50	DDRB_MA9
[26]	DDRB_DQ59	DDRB_DQ59	N36	DDR1_DQ7_3/DDR7_DQ1_3	DDR1_MA8/DDR4_CA2	U53	DDRB_MA8
[26]	DDRB_DQ58	DDRB_DQ58	L36	DDR1_DQ7_2/DDR7_DQ1_2	DDR1_MA7/DDR4_CA4	W50	DDRB_MA7
[26]	DDRB_DQ57	DDRB_DQ57	L38	DDR1_DQ7_1/DDR7_DQ1_1	DDR1_MA6/DDR4_CA3	U52	DDRB_MA6
[26]	DDRB_DQ56	DDRB_DQ56	N38	DDR1_DQ7_0/DDR7_DQ1_0	DDR1_MA5/DDR4_CA5	U50	DDRB_MA5
					DDR1_MA4/DDR4_CS0	AA51	DDRB_MA4
					DDR1_MA3/DDR4_CS1	AA53	DDRB_MA3
					DDR1_MA2/DDR7_CS0	U47	DDRB_MA2
					DDR1_MA1/NC	AC52	DDRB_MA1
					DDR1_MA0/NC	U41	DDRB_MA0
					DDR4/LP4		
					DDR1_BG1/DDR6_CA2	K50	DDRB_BG1
					DDR1_BG0/DDR6_CA3	J52	DDRB_BG0
					DDR4/LP4		
					DDR1_BA1/DDR5_CA5	AA42	DDRB_BA1
					DDR1_BA0/DDR7_CA0	U44	DDRB_BA0
					DDR1_ACT#/DDR6_CS1	N53	DDRB_ACT_N
					DDR1_PAR/DDR7_CS1	U45	DDRB_PAR
					DDR1_ALERT#	AU53	DDRB_ALERT_N
					DDR1_VREF_CA	AU52	DDR_SB_VREFCA

DDRB_CLK0_P	[26]
DDRB_CLK0_N	[26]
DDRB_CKE0	[26]
DDRB_CS0_N	[26]
DDRB_DQS7_P	[26]
DDRB_DQS7_N	[26]
DDRB_DQS6_P	[26]
DDRB_DQS6_N	[26]
DDRB_DQS5_P	[26]
DDRB_DQS5_N	[26]
DDRB_DQS4_P	[26]
DDRB_DQS4_N	[26]
DDRB_DQS3_P	[26]
DDRB_DQS3_N	[26]
DDRB_DQS2_P	[26]
DDRB_DQS2_N	[26]
DDRB_DQS1_P	[26]
DDRB_DQS1_N	[26]
DDRB_DQS0_P	[26]
DDRB_DQS0_N	[26]
DDRB_ODT0	[26]
DDRB_MA16_RAS_N	[26]
DDRB_MA15_CAS_N	[26]
DDRB_MA14_WE_N	[26]
DDRB_MA13	[26]
DDRB_MA12	[26]
DDRB_MA11	[26]
DDRB_MA10	[26]
DDRB_MA9	[26]
DDRB_MA8	[26]
DDRB_MA7	[26]
DDRB_MA6	[26]
DDRB_MA5	[26]
DDRB_MA4	[26]
DDRB_MA3	[26]
DDRB_MA2	[26]
DDRB_MA1	[26]
DDRB_MA0	[26]
DDRB_BG1	[26]
DDRB_BG0	[26]
DDRB_BA1	[26]
DDRB_BA0	[26]
DDRB_ACT_N	[26]
DDRB_PAR	[26]
DDRB_ALERT_N	[26]
DDR_SB_VREFCA	[26]

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		LCFC
Size C	Document Number	DDR4-Chanel-B	Rev <RevCode>
Date:	Tuesday, November 10, 2020	Sheet 9 of 110	

+VCC1.05_OUT_FET

RC25 1 @ 2 1K_0201_5% DBG_PMODE

RC26 1 @ 2 1K_0201_5% DBG_PMODE

DBG_PMODE(Reserved): Rising edge of RSMRST#
This strap has a 20 kohm ± 30% internal pull-up.
This strap should sample high. There should NOT be any on-board device driving it to opposite direction during strap sampling.
Notes:
1. The internal pull-up is disabled after RSMRST# deasserts.
2. This signal is in the primary well.
Confirmed with Intel Kaiyin, follow PDG 20200103

+VCCSTG_TERM

RC38 1 2 51_0402_5% PCH_JTAG_TDO
RC40 1 @ 2 51_0402_5% CPU_JTAG_TDI
RC41 1 @ 2 51_0402_5% CPU_JTAG_TMS
RC36 1 2 51_0402_5% CPU_JTAG_TCK
RC35 1 @ 2 51_0402_5% CPU_JTAG_TRST_N
RC37 1 @ 2 51_0402_5% PCH_JTAG_TCK

CPU_JTAG_TCK RC48 1 2@ PCH_JTAG_JTAGX
CPU_JTAG_TRST_N RC2331 2@ PCH_JTAG_TRST_N
CPU_JTAG_TMS RC2341 2@ PCH_JTAG_TMS
CPU_JTAG_TDO RC2351 2@ PCH_JTAG_TDO
CPU_JTAG_TDI RC2361 2@ PCH_JTAG_TDI
0_0201_5%

UC1U

21 OF 21

[79] [20,79] PCH_PECI H_PROCHOT_N
RC39 1 2 1/20W_499_1%_0201 H_PROCHOT_N_R
PCH_CATERR_N M7 CATERR#
PCH_PECI BK9 PECI
E2 PROCHOT#
PCH_H_THRMTRIP_N M5 THRMTRIP#
RC42 1 2 1/20W_49.9_1%_0201 PROC_OPI_RCOMP CT39 PROC_POPIRCOMP
RC43 1 2 1/20W_49.9_1%_0201 PCH_OPI_RCOMP CB9 PCH_OPIRCOMP
CW12 TP_1
CM39 TP_2
DBG_PMODE DF4 DBG_PMODE
DB42 GPP_B4/CPU_GP3
DB41 GPP_B3/CPU_GP2
DF8 GPP_E7/CPU_GP1
[79] EC_PCH_SCI_N EC_PCH_SCI_N DU5 GPP_E3/CPU_GP0
GPP_H2 DF31 GPP_H2
GPP_H1 DV32 GPP_H1
GPP_H0 DW32 GPP_H0
DJ27 GPP_H19/TIME_SYNC0

PROC_TRST# K4 CPU_JTAG_TRST_N
PROC_TMS B9 CPU_JTAG_TMS
PROC_TDO D12 CPU_JTAG_TDO
PROC_TDI A12 CPU_JTAG_TDI
PROC_TCK B6 CPU_JTAG_TCK
PCH_JTAGX D8 PCH_JTAG_JTAGX
PCH_TMS A9 PCH_JTAG_TMS
PCH_TDO E12 PCH_JTAG_TDO
PCH_TDI B12 PCH_JTAG_TDI
PCH_TCK A7 PCH_JTAG_TCK
PCH_TRST# H4 PCH_JTAG_TRST_N
PROC_PREQ# C11 PROC_PREQ_N 1 TP11 @
PROC_PRDY# D11 PROC_PRDY_N 1 TP12 @
G1 CPU_EAR
EAR_N/EAR_N_TEST_NCTF
GPP_F7 DT15 GPP_F7
GPP_F9 DR15
GPP_F10 DT14 GPP_F10

TGLLAKE-U_BGA1449
@

UC1D
4 OF 21
DV24 RSVD_2
DW47 RSVD_3
DW49 RSVD_4
A48 RSVD_5
TGLLAKE-U_BGA1449
@

+VCCSTG_TERM Follow CRB,Page35

RC44 1 2 1K_0201_5% H_PROCHOT_N

+VCCST_CPU

RC45 1 2 1K_0201_5% PCH_H_THRMTRIP_N

+3VS

RC47 1 2 10K_0201_5% EC_PCH_SCI_N

the diffrent with Base:
1.S540 CM39 PIN---- NC,S360&V14V15 Reserve TP9;
2.S540 DB42 PIN For TBT_FORCE_PWR,S360&V14V15 --NC

+3VALW_PCH

RC27 @ 1/20W_4.7K_5%_0201
RC28 @ 1/20W_4.7K_5%_0201
RC29 @ 1/20W_4.7K_5%_0201
GPP_H0
GPP_H1
GPP_H2
RC31 @ 1/20W_20K_5%_0201
RC32 @ 1/20W_20K_5%_0201
RC33 @ 1/20W_20K_5%_0201

GPP_H0: Boot Strap 1
GPP_H1: Boot Strap 2
GPP_H2: Boot Strap 3
Boot Strap, Rising edge of RSMRST#
These straps has a 20 kohm ± 30% internal pull-down.
They are bit [3:1] of a total of 4-bit encoded pin straps for boot configuration.
Refer to Boot Strap 0 (on GPP_C5) for the encoding.
Notes: 1. The internal pull-down is disabled after RSMRST# de-asserts.
2. This signal is in the primary well.

0000 = Master Attached Flash Configuration (BIOS / CSME on SPI). eSPI is enabled
0010 = Master Attached Flash Configuration (BIOS / CSME on SPI). eSPI is disabled
0100 = BIOS on eSPI Peripheral Channel; CSME on master attached SPI
1000 = Slave Attached Flash Configuration (BIOS / CSME on eSPI attached device).
1100 = BIOS on eSPI peripheral Channel; CSME on slave attached SPI.

PDG Page116，CRB,Page35

+VCCST_CPU
RC46 1K_0201_5%
PCH_CATERR_N

Place at C/S side for Debug easy

EC can not support, Delete --20200227

+VCCSTG_CPU

EAR
Stall CPU reset sequence until de-asserted:
- 1 = (Default) Normal Operation; No stall.
- 0 = Stall;
Follow PDG Page118

RC30 1K_0201_5%
CPU_EAR
RC34 @ 1K_0201_5%

GPP_F7 RC50 1 @ 2 1/20W_20K_5%_0201
GPP_F10 RC49 1 @ 2 1/20W_20K_5%_0201

GPP_F7 and GPP_F10:
Reserved, Rising edge of RSMRST#
This strap has a 20 kohm ± 30% internal pull-down.
This strap should sample LOW. There should NOT be any onboard device driving it to opposite direction during strap sampling.
Notes: 1. The internal pull-down is disabled after RSMRST# de-asserts.
2. This signal is in the primary well.

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

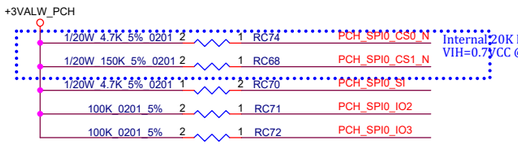
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	MISC/JTAG	<RevCode>

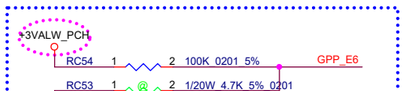
Date: Tuesday, November 10, 2020 Sheet 10 of 110



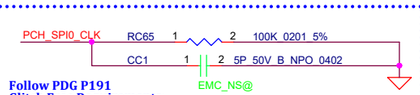
Internal 20K PD @PCH
VIH=0.7VCC @SPI ROM

SPI0_MOSI(PCH_SPI_SI):
Rising edge of RSMRST#
External pull-up is required. Recommend 4.7 kohm pull up.
This strap should sample HIGH. There should NOT be any onboard device driving it to opposite direction during strap sampling.

SPI0_IO2 and SPI0_IO3:
Rising edge of RSMRST#
External pull-up is required.
Recommend 100K if pulled up to 3.3V or 75K if pulled up to 1.8V.
This strap should sample HIGH. There should NOT be any onboard device driving it to opposite direction during strap sampling.



GPP_E6:
JTAG ODT Disable
Rising edge of RSMRST#
This strap does not have an internal pull-up or pull-down.
External pull-up is recommended
0=> JTAG ODT is disabled
1=> JTAG ODT is enabled



Follow PDG P191
Glitch Free Requirements:
Cap or pull-down resistor is required

100K for 3.3V Signaling Mode
75K for 1.8V Signaling Mode

BIOS SPI operates at 3.3V

UC1E

5 OF 21

[27] PCH_SPI0_CLK — PCH_SPI0_CLK — DJ37 — SPI0_CLK
[27] PCH_SPI0_IO3 — PCH_SPI0_IO3 — DG35 — SPI0_IO3
[27] PCH_SPI0_IO2 — PCH_SPI0_IO2 — DJ39 — SPI0_IO2
[27] PCH_SPI0_SO — PCH_SPI0_SO — DJ33 — SPI0_MISO
[27] PCH_SPI0_SI — PCH_SPI0_SI — DJ35 — SPI0_MOSI
[27] PCH_SPI0_CS1_N — PCH_SPI0_CS1_N — DF35 — SPI0_CS1#
[27] PCH_SPI0_CS0_N — PCH_SPI0_CS0_N — DG37 — SPI0_CS0#
DF39 — SPI0_CS2#

ID4 — DJ6 — GPP_E11/THC0_SPI1_CLK
ID2 — DN5 — GPP_E2/THC0_SPI1_IO3
ID1 — DR9 — GPP_E1/THC0_SPI1_IO2
ID5 — DM6 — GPP_E12/THC0_SPI1_IO1
ID6 — DK6 — GPP_E13/THC0_SPI1_IO0
ID3 — DK8 — GPP_E10/THC0_SPI1_CS#
DV11 — GPP_E8/SATA_LED#
ID7 — DM9 — GPP_E17/THC0_SPI1_INT#
GPP_E6 — DT8 — GPP_E6/THC0_SPI1_RST#

ID8 — DN15 — GPP_F11/THC1_SPI2_CLK
ID12 — DK13 — GPP_F15/GSXSRESET#/THC1_SPI2_IO3
ID11 — DM13 — GPP_F14/GSXDIN/THC1_SPI2_IO2
ID10 — DN13 — GPP_F13/GSXSLOAD/THC1_SPI2_IO1
ID9 — DJ15 — GPP_F12/GSXDOUT/THC1_SPI2_IO0
ID13 — DK15 — GPP_F16/GSXCLK/THC1_SPI2_CS#
ID15 — DN10 — GPP_F18/THC1_SPI2_INT#
ID14 — DV14 — GPP_F17/THC1_SPI2_RST#

DH3 — CL_CLK
DH4 — CL_DATA
DF2 — CL_RST#

TGLLAKE-U_BGA1449

@

GPP_C0/SMBCLK — DK21 — PCH_SMB_CLK
GPP_C1/SMBDATA — DM19 — PCH_SMB_DATA
GPP_C2/SMBALERT# — DN19 — PCH_SMB_ALERT_N

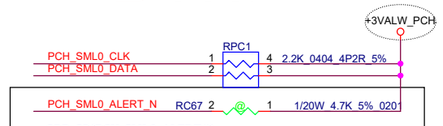
GPP_C3/SML0CLK — DK19 — PCH_SML0_CLK
GPP_C4/SML0DATA — DM17 — PCH_SML0_DATA
GPP_C5/SML0ALERT# — DN17 — PCH_SML0_ALERT_N

GPP_C6/SML1CLK — DK17 — PCH_SML1_CLK
GPP_C7/SML1DATA — DJ17 — PCH_SML1_DATA
GPP_B23/SML1ALERT#/PCHHOT#/GSPI1_CS1# — CY50 — PCH_SML1_ALERT_N

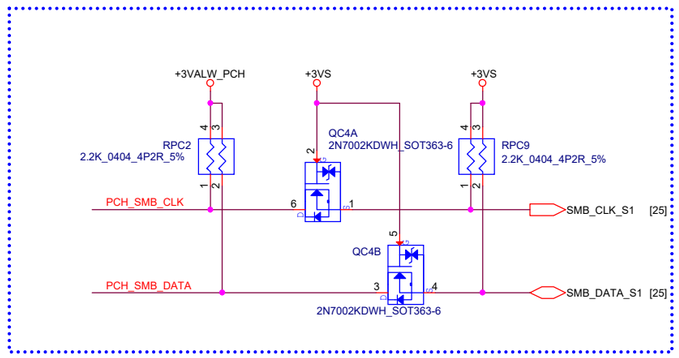
GPP_A5/ESPI_CLK — DN53 — ESPI_CLK_R RC55 2 1 1/20W 49.9 1% 0201 — LPC_ESPI_CLK [79]
GPP_A3/ESPI_IO3/SUSACK# — DJ53 — ESPI_IO3_R RC56 1 2 1/20W 15 5% 0201 — LPC_ESPI_IO3 [79]
GPP_A2/ESPI_IO2/SUSWARN#_SUSPWRDNACK — DH50 — ESPI_IO2_R RC57 1 2 1/20W 15 5% 0201 — LPC_ESPI_IO2 [79]
GPP_A1/ESPI_IO1 — DP50 — ESPI_IO1_R RC59 1 2 1/20W 15 5% 0201 — LPC_ESPI_IO1 [79]
GPP_A0/ESPI_IO0 — DP52 — ESPI_IO0_R RC61 1 2 1/20W 15 5% 0201 — LPC_ESPI_IO0 [79]
GPP_A4/ESPI_CS# — DK52 — ESPI_CS_N_R RC63 2@ — LPC_ESPI_CS_N [79]
GPP_A6/ESPI_RESET# — DL50 — LPC_ESPI_RST_N 0 0201 5% — LPC_ESPI_RST_N [79]

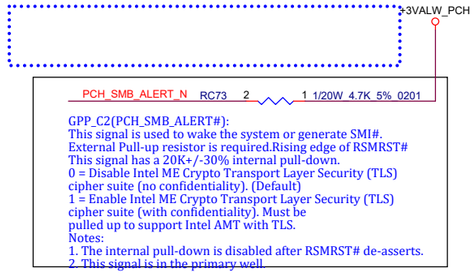
eSPI operates at 1.8V only

DIMM



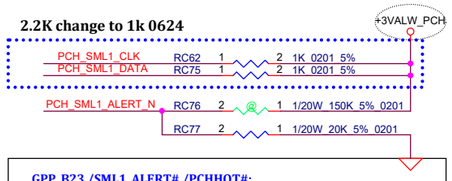
GPP_C5(PCH_SML0_ALERT#):
Rising edge of RSMRST#
This signal has a 20K+/-30% internal pull-down.
0 = Enable eSPI. (Default)
1 = Disable eSPI.
Notes:
1. The internal pull-down is disabled after RSMRST# de-asserts.
2. This signal is in the primary well





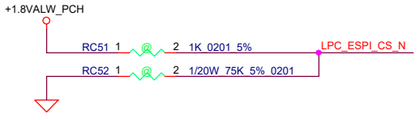
GPP_C2(PCH_SMB_ALERT#):
This signal is used to wake the system or generate SMI#.
External Pull-up resistor is required.Rising edge of RSMRST#
This signal has a 20K+/-30% internal pull-down.
0 = Disable Intel ME Crypto Transport Layer Security (TLS) cipher suite (no confidentiality). (Default)
1 = Enable Intel ME Crypto Transport Layer Security (TLS) cipher suite (with confidentiality). Must be pulled up to support Intel AMT with TLS.
Notes:
1. The internal pull-down is disabled after RSMRST# de-asserts.
2. This signal is in the primary well.

2.2K change to 1k 0624

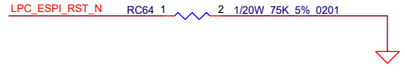


GPP_B23 /SML1_ALERT# /PCHHOT#:
CPUNSSC Clock Frequency
Rising edge of RSMRST#
This strap has a 20 kohm ± 30% internal pull-down.
0 = 38.4 MHz clock (direct from crystal) (default)
1 = 19.2 MHz clock (derived from 38.4 MHz crystal)
Notes: 1. The internal pull-down is disabled after RSMRST# de-asserts.
2. When used as PCHHOT# and strap low, a 150K pull-up is needed to ensure it does not override the internal pull-down strap sampling.
3. This signal is in the primary well.

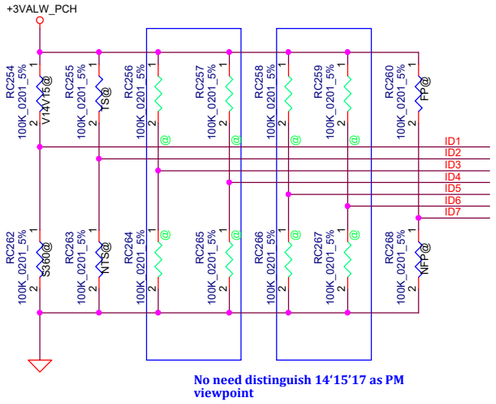
the diffrent with Base:
1.S540 PCH_SPI0_CS1_N RC74 ---4.7K;PCH_SPI0_CS0_N RC68 ---150K;
S360&V14V15----Opposite
2.S540 SMBUS---NC
S360&V14V15----To SO-DIMM;
3.S540 SML1---To TBT
S360&V14V15----NC



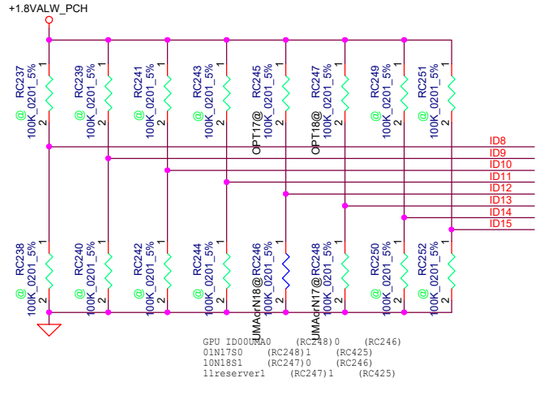
Glitch Free Requirements P163 Site for cap or pull-down resistor only.



BOARD ID



No need distinguish 14'15'17 as PM viewpoint



GPU_ID0 0UMA 0 (RC248) 0 (RC246)
01N17S0 (RC248) 1 (RC425)
10N18S1 (RC247) 0 (RC246)
11reserver1 (RC247) 1 (RC425)

Board ID Table 1: 3.3V Level

Board ID1	GPP_E1	0	S360	No Use
		1	V14V15	
Board ID2	GPP_E2	0	Non-TS	No Use
		1	TS	
Board ID3	GPP_E10 H	00	FHD	***
		01	UHD	No Use
Board ID4	GPP_E11 L	10	FHD HDR	***
		11	Reserved	No Use
Board ID5	GPP_E12 H	00	13"	No Use
		01	14"	***
Board ID6	GPP_E13 L	10	15"	***
		11	17"	No Use
Board ID7	GPP_E17	0	Non-FPR	No Use
		1	FPR	

Board ID Table 1: 1.8V Level

Board ID8	GPP_F11 H	00	Samsung	***
		01	Micro	***
Board ID9	GPP_F12 L	10	Hynix	***
		11		No Use
Board ID10	GPP_F13 H	00	4G	No Use
		01	8G	***
Board ID11	GPP_F14 L	10	12G	***
		11	16G	***
Board ID12	GPP_F15 H	00	UMA	No Use
		01	DIS	Reserved for dGPU
Board ID13	GPP_F16 L	10		
		11		
Board ID14	GPP_F17	00		No Use
		01		Reserved for Project
Board ID15	GPP_F18	10		
		11		

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

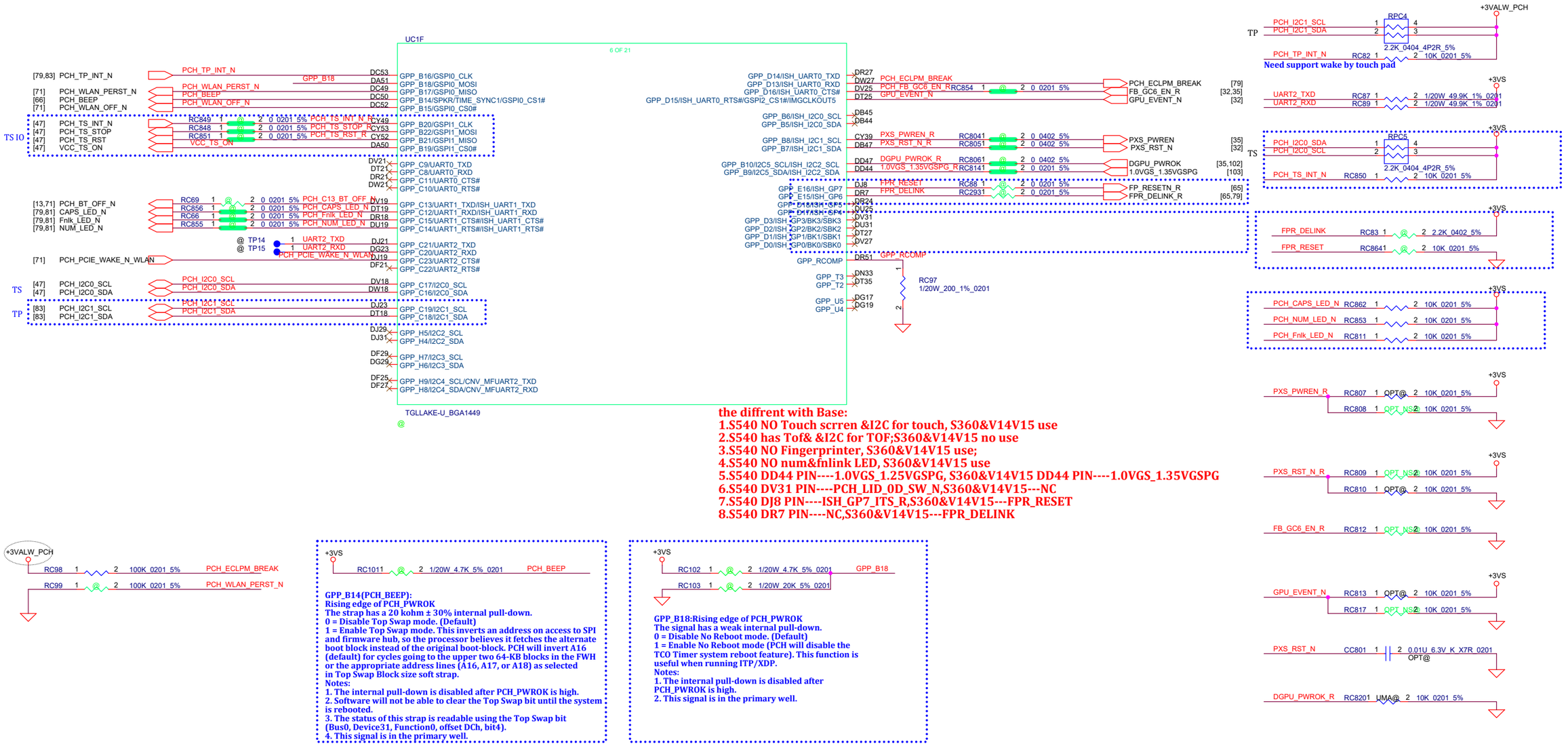
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: S360-TGL

LCFC

Size: C | Document Number: SPI/ESPI/SMB/CL | Rev: 0.1

Date: Tuesday, November 10, 2020 | Sheet 11 of 111



the diffrent with Base:

1.S540 NO Touch scrren &I2C for touch, S360&V14V15 use
2.S540 has Tof& &I2C for TOF;S360&V14V15 no use
3.S540 NO Fingerprinter, S360&V14V15 use;
4.S540 NO num&fnlink LED, S360&V14V15 use
5.S540 DD44 PIN----1.0VGS_1.25VGSPG, S360&V14V15 DD44 PIN----1.0VGS_1.35VGSPG
6.S540 DV31 PIN----PCH_LID_0D_SW_N,S360&V14V15---NC
7.S540 DJ8 PIN----ISH_GP7_ITS_R,S360&V14V15---FPR_RESET
8.S540 DR7 PIN----NC,S360&V14V15---FPR_DELINK

GPP_B14(PCH_BEEP):
Rising edge of PCH_PWROK
The strap has a 20 kohm ± 30% internal pull-down.
0 = Disable Top Swap mode. (Default)
1 = Enable Top Swap mode. This inverts an address on access to SPI and firmware hub, so the processor believes it fetches the alternate boot block instead of the original boot-block. PCH will invert A16 (default) for cycles going to the upper two 64-KB blocks in the FWH or the appropriate address lines (A16, A17, or A18) as selected in Top Swap Block size soft strap.
Notes:
1. The internal pull-down is disabled after PCH_PWROK is high.
2. Software will not be able to clear the Top Swap bit until the system is rebooted.
3. The status of this strap is readable using the Top Swap bit (Bus0, Device31, Function0, offset DCh, bit4).
4. This signal is in the primary well.

GPP_B18:Rising edge of PCH_PWROK
The signal has a weak internal pull-down.
0 = Disable No Reboot mode. (Default)
1 = Enable No Reboot mode (PCH will disable the TCO Timer system reboot feature). This function is useful when running ITP/XDP.
Notes:
1. The internal pull-down is disabled after PCH_PWROK is high.
2. This signal is in the primary well.

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

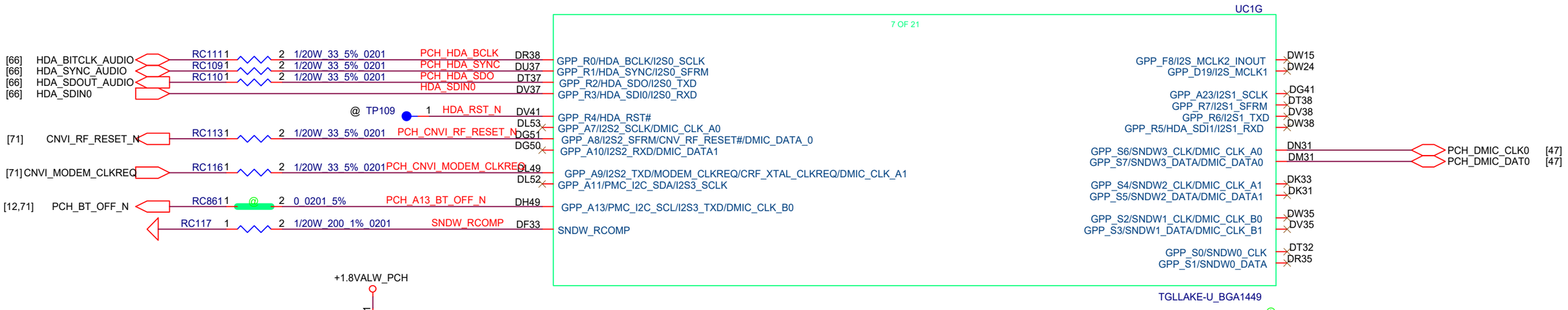
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

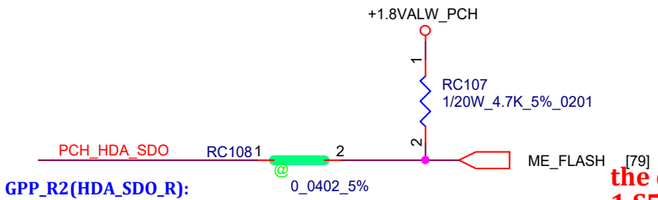
Title: S360-TGL

LCFC

Size	Document Number	Rev
C	I2C/ISH/UART/GPIO	0.1

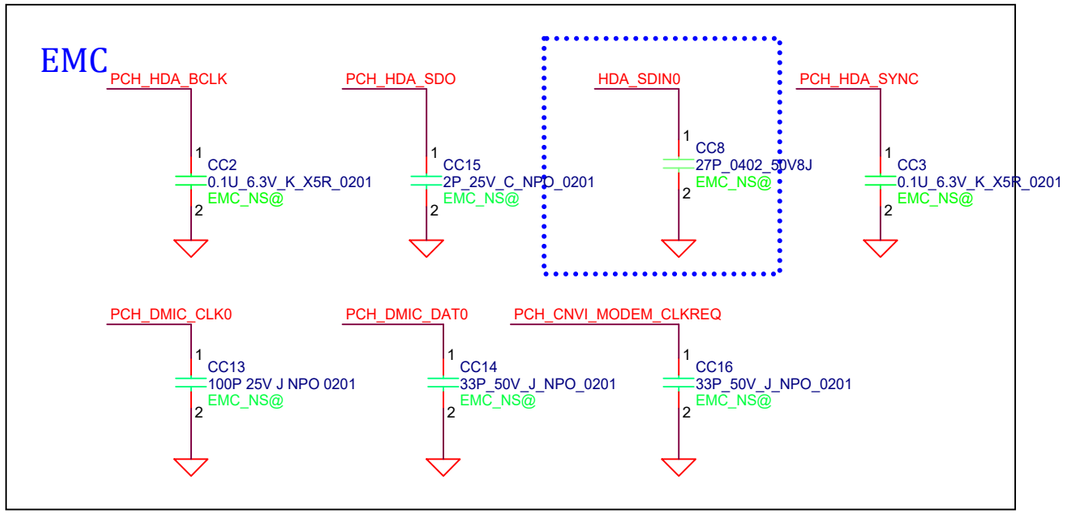
Date: Tuesday, November 10, 2020 Sheet 12 of 110

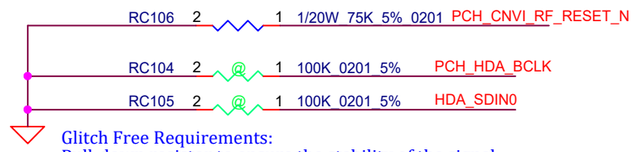




GPP_R2(HDA_SDO_R):
This signal has a 20K ±30% internal pull-down.
0 = Enable security measures defined in the Flash Descriptor. (Default)
1 = Disable Flash Descriptor Security (override). This strap should only be asserted high using external Pull-up in manufacturing/debug environments ONLY.
Notes:
1. The internal pull-down is disabled after PCH_PWROK is high.
2. This signal is in the primary well.

the diffrent with Base:
1.S540 PCH_DMIC_CLK0 CC13 Stuff,S360&V14V15---NC:
2.S540 PCH_HDA_SDI no EMC reserve,S360&V14V15 reserve CC8





Glitch Free Requirements:
Pull-down resistor to ensure the stability of the signal during platform bootup

Option 1:Cap Implementation
NA for 3.3v Ramp Rate from 5-50ms
NA for 3.3V Ramp Rate Less than 5ms

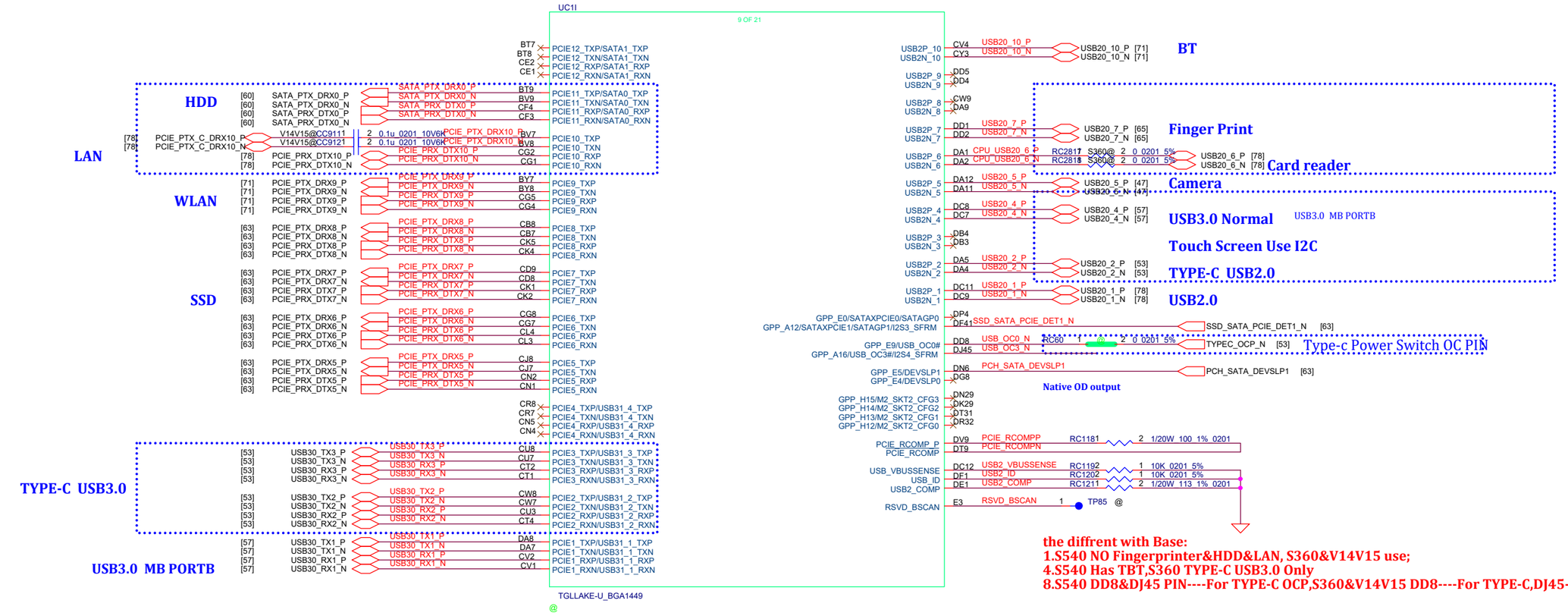
Option 2:Pull-down Resistor Implementation
NA for 3.3V Signaling Mode
75K for 1.8V Signaling Mode

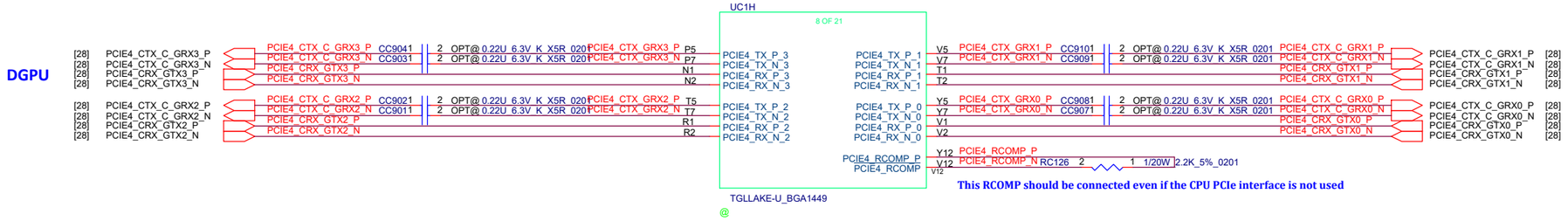
www.teknisi-indonesia.com

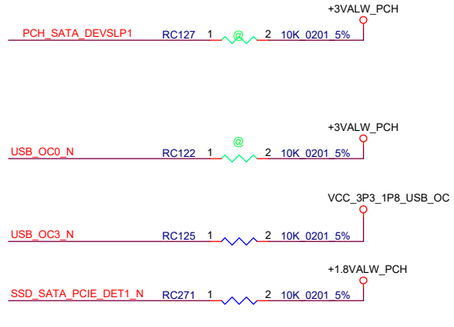
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size B	Document Number AUDIO		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 13 of 110		



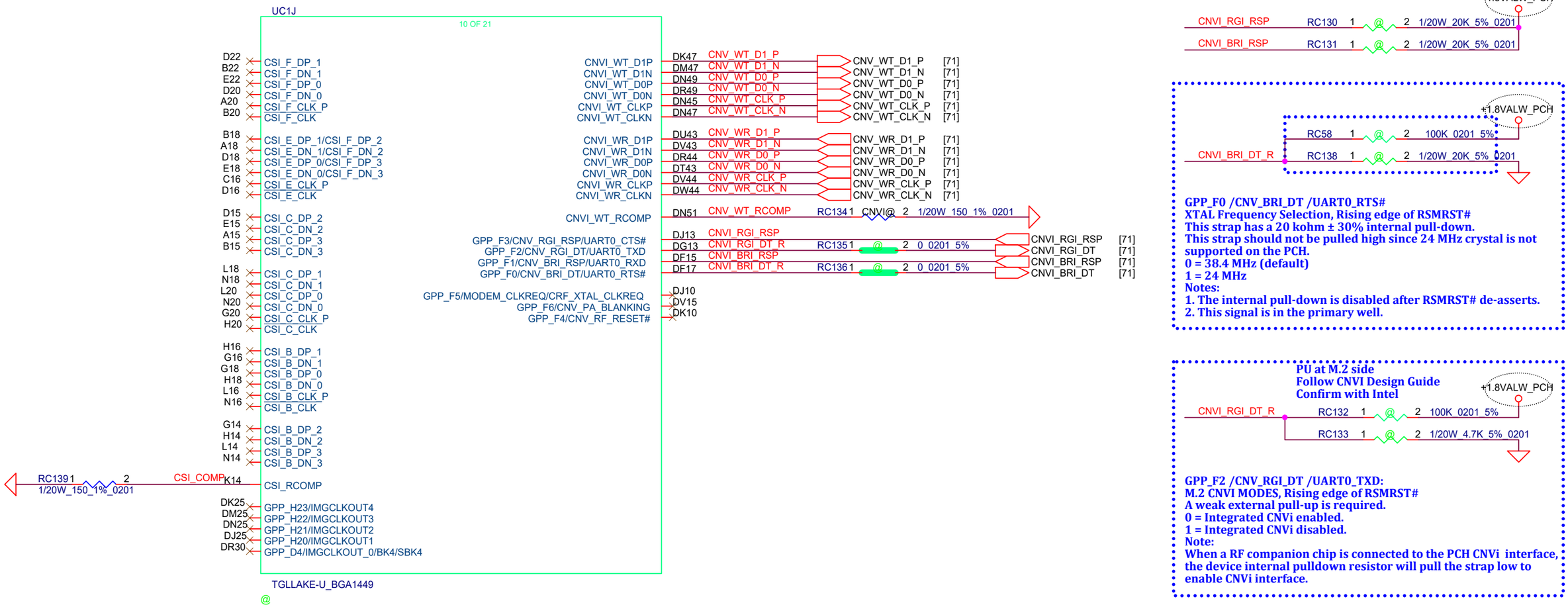




Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size C	Document Number	PCIE/USB/SATA	Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 14 of 110		

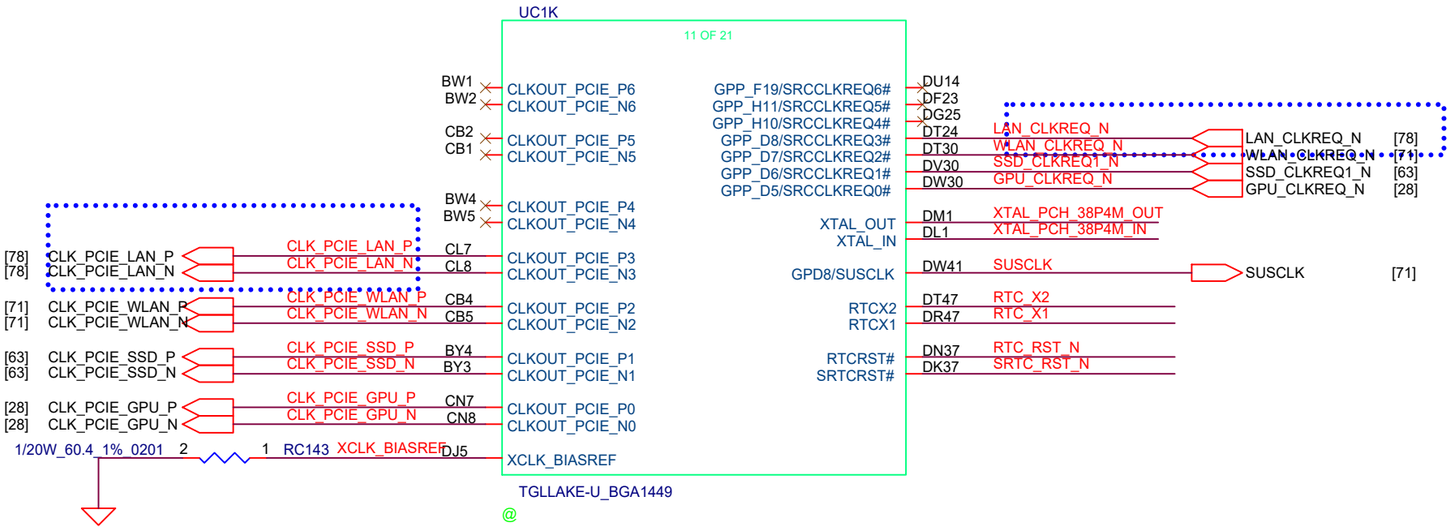


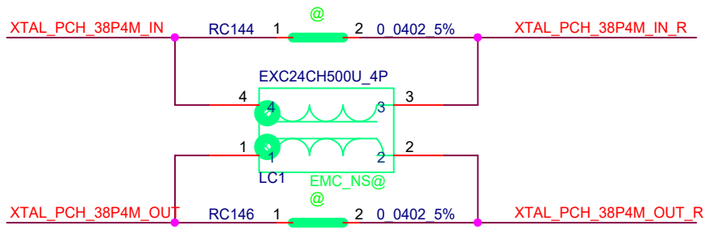
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

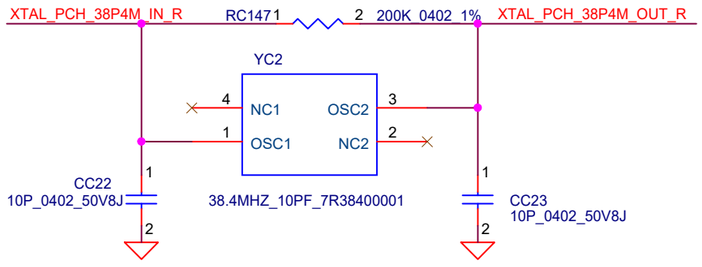
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

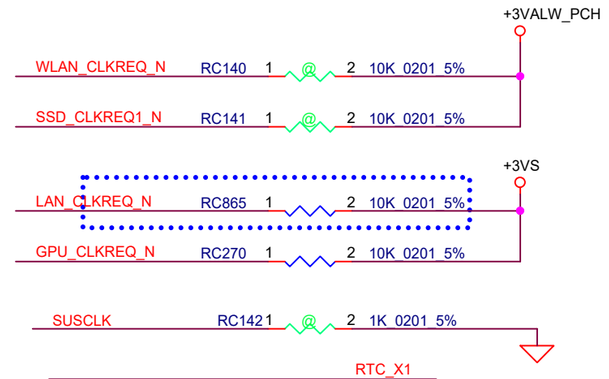
Title	S360-TGL		
Size B	Document Number	CSI-2/CNVI	Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 15 of 110		

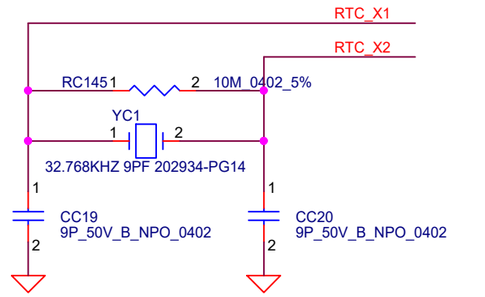
CLKOUT_PCIE_P /N [6,5,4, 2,1] = Support up to PCIe Gen3
CLKOUT_PCIE_P /N [3, 0] = Support up to PCIe Gen4

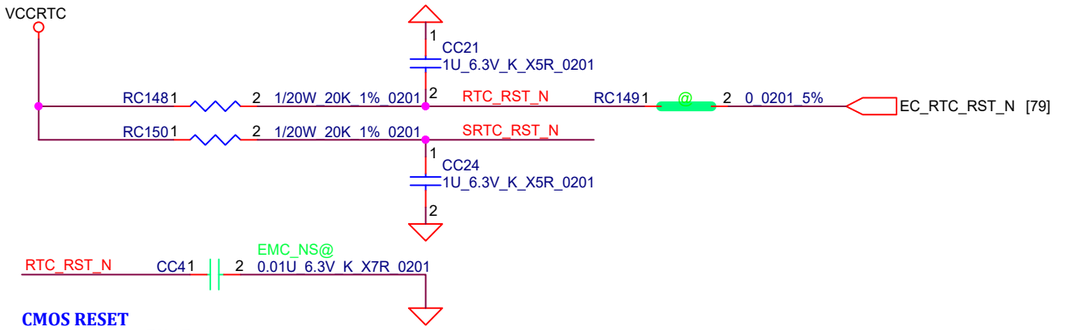












CMOS RESET
SAVE CMOS = PU (Default)
CLEAR CMOS = PD

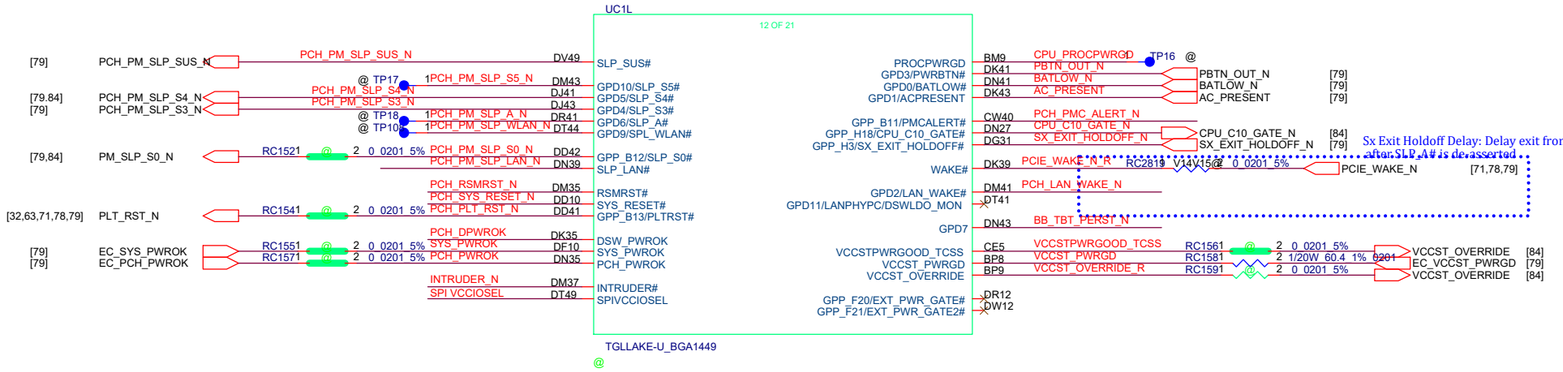
ME RESET
SAVE ME = PU (Default)
CLEAR ME = PD

the diffrent with Base:
1.S540 NO LAN, S360&V14V15 use LAN CLK&CLKREQ;
2.S540 GPU_CLKREQ_N Pull 3VS, SSD&WLAN_CLKREQ_N Pull +3VALW_PCH;
S360&V14V15GPU_CLKREQ_N Pull 3VS, SSD&WLAN&LAN_CLKREQ_N Pull +3VALW_PCH

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

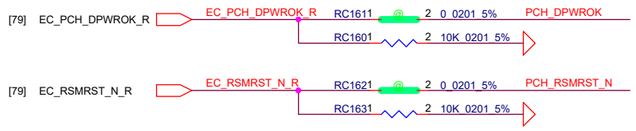
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

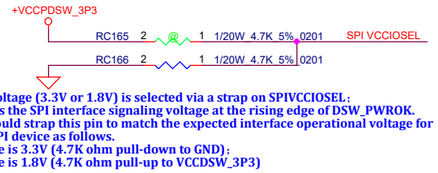
Title	S360-TGL		
Size B	Document Number CLOCK SIGNALS		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 16 of 110		



the diffrent with Base:
1.S540 DM41 no LAN, S360&V14V15 Lan to page78;
2.1.S540 PCH_PM_SLP_WLAN_N no reserve,S360&V14V15 reserve RC186

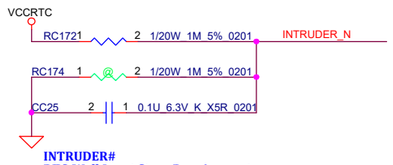
DSW_PWROK and RSMRST# are always separate power good signals





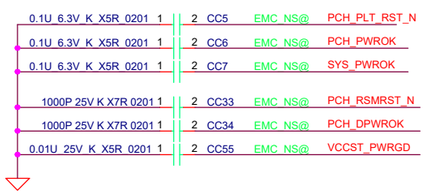
The VCCSPI voltage (3.3V or 1.8V) is selected via a strap on SPIVCCIOSEL:
This strap sets the SPI interface signaling voltage at the rising edge of DSW_PWROK.
Designers should strap this pin to match the expected interface operational voltage for their target SPI device as follows.
0 = SPI voltage is 3.3V (4.7K ohm pull-down to GND);
1 = SPI voltage is 1.8V (4.7K ohm pull-up to VCCDSW_3P3)

CAD NOTE:
INPUT3VSEL: 3V SELECT STRAP
LOW-> 3.3V +/-5%
HIGH->3.0V +/-5%

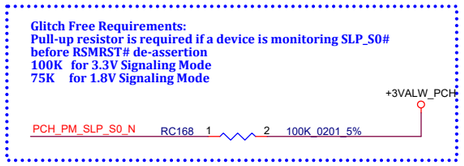


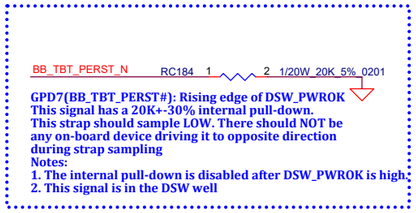
INTRUDER#
RTC-Well Input Strap Requirements
should have a weak external pull-up to VccRTC

FOR EMC

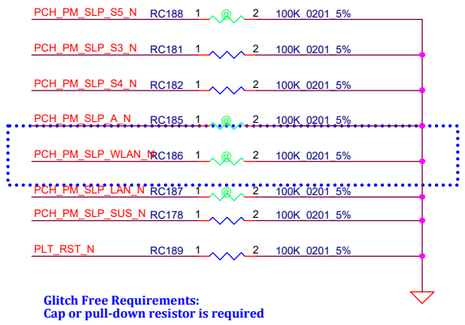


Glitch Free Requirements:
Pull-up resistor is required if a device is monitoring SLP_S0# before RSMRST# de-assertion
100K for 3.3V Signaling Mode
75K for 1.8V Signaling Mode





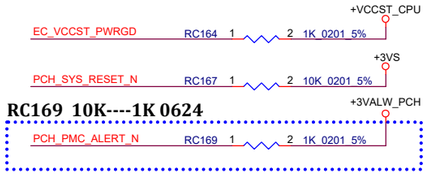
GPD7(BB_TBT_PERST#): Rising edge of DSW_PWROK
This signal has a 20K+-30% internal pull-down.
This strap should sample LOW. There should NOT be any on-board device driving it to opposite direction during strap sampling
Notes:
1. The internal pull-down is disabled after DSW_PWROK is high.
2. This signal is in the DSW well

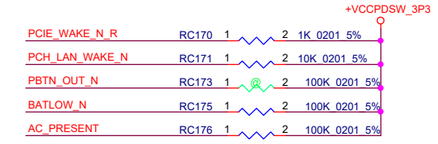


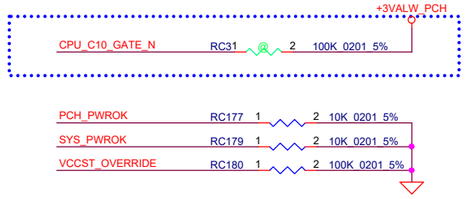
Glitch Free Requirements:
Cap or pull-down resistor is required

Option 1:Cap Implementation
330 nF for 3.3v Ramp Rate from 5-50ms
33 nF for 3.3V Ramp Rate Less than 5ms

Option 2:Pull-down Resistor Implementation
100K for 3.3V Signaling Mode
75K for 1.8V Signaling Mode





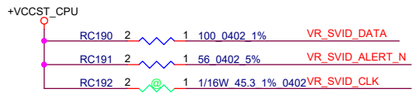


www.teknisi-indonesia.com

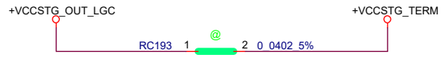
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

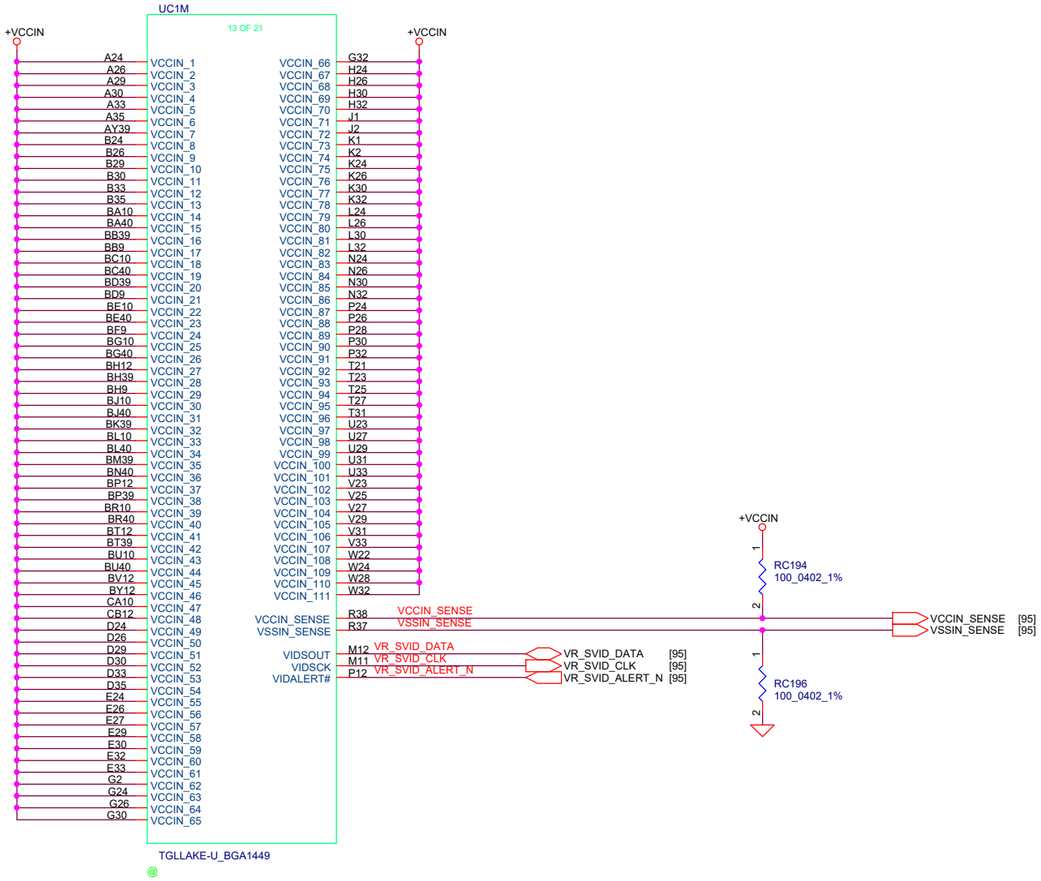
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

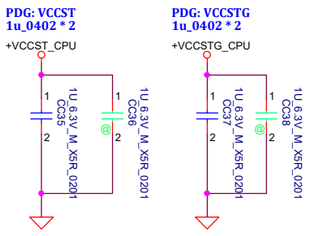
Title	S360-TGL		LCFC
Size C	Document Number	SYSTEM PM	Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 17 of 110		

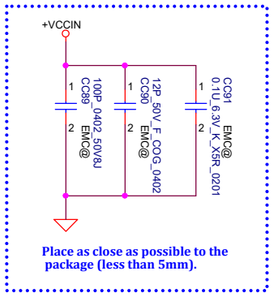


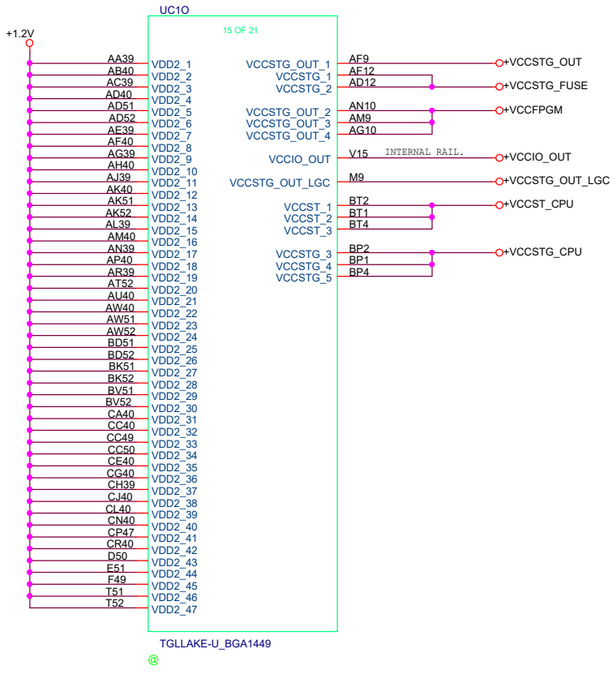
CAD NOTE:
Alert signal must be routed between Clk and Data signals to minimize Cross-Talk.











Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
C	CPU Power(1/2)	0.1

Date: Tuesday, November 10, 2020 Sheet 18 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

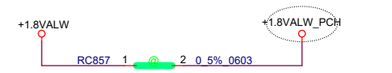
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

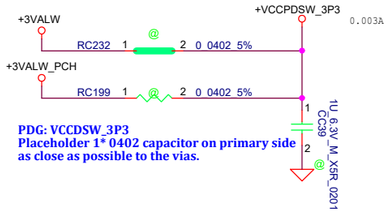
Title: *S360-TGL*

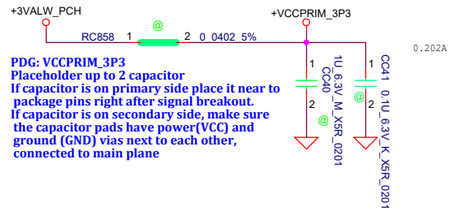
LCFC

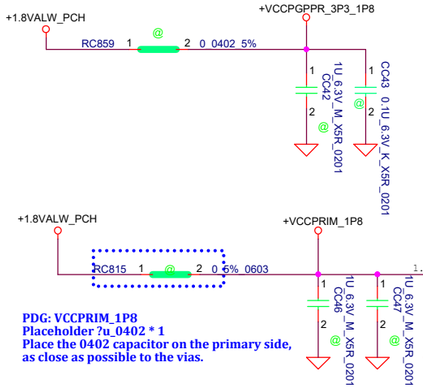
Size	Document Number	Rev
C	CPU Power(2/2)	0.1

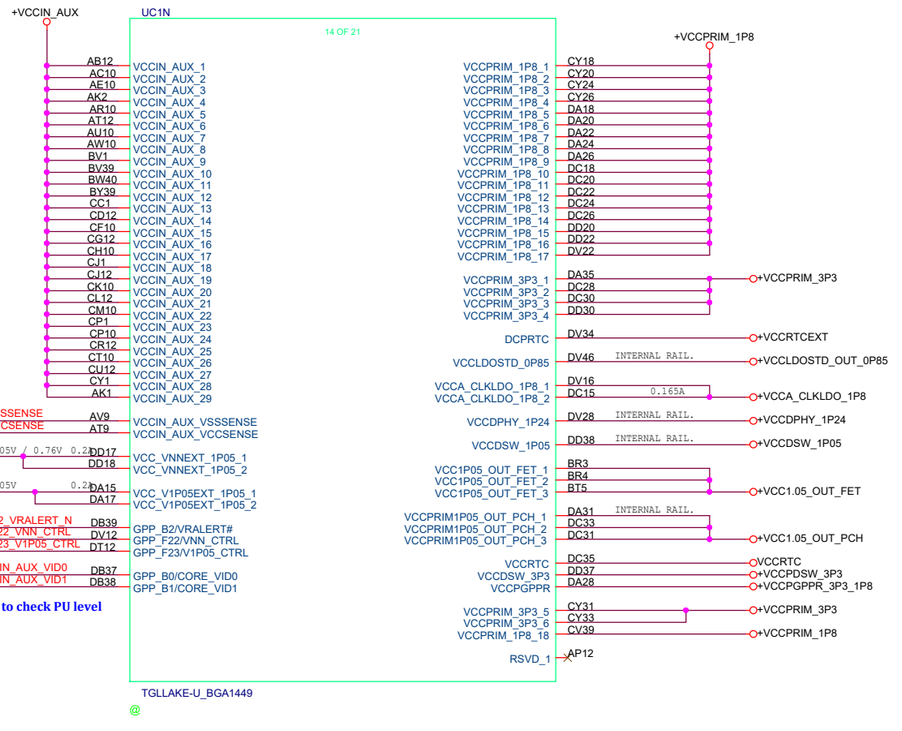
Date: Tuesday, November 10, 2020 Sheet 19 of 110

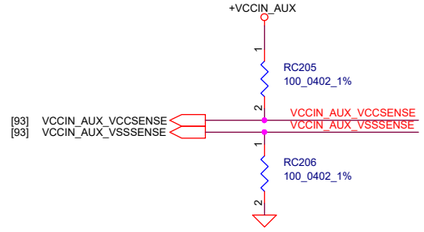


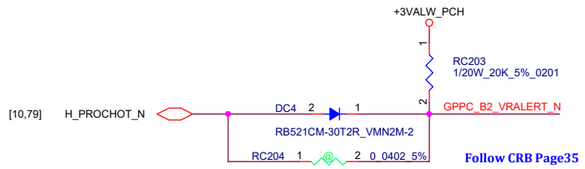




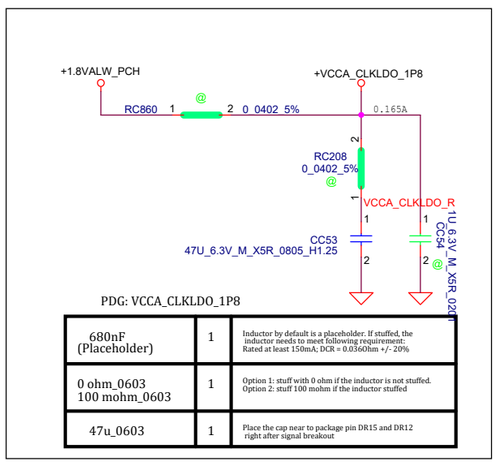




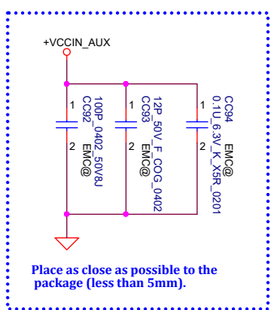


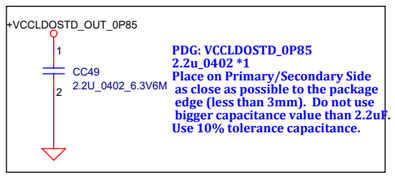


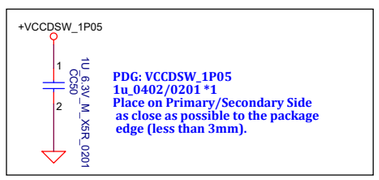
the diffrent with Base:
1.S540 +1.8VALW_PCH To +VCCPRIM_1P8 directly , S360&V14V15 use RC815;

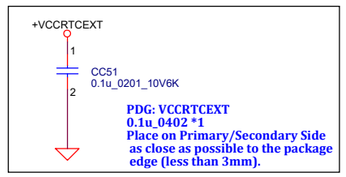


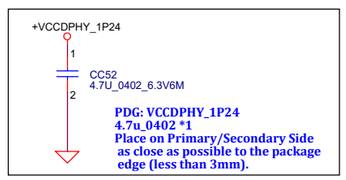
680nF (Placeholder)	1	Inductor by default is a placeholder. If stuffed, the inductor needs to meet following requirement: Rated at least 150mA; DCR = 0.0360hm +/- 20%
0 ohm_0603 100 mohm_0603	1	Option 1: stuff with 0 ohm if the inductor is not stuffed. Option 2: stuff 100 mohm if the inductor stuffed
47u_0603	1	Place the cap near to package pin DR15 and DR12 right after signal breakout

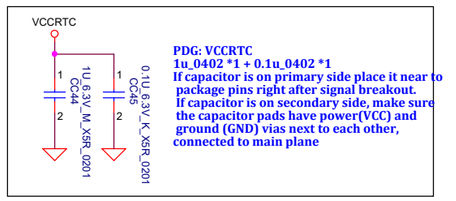


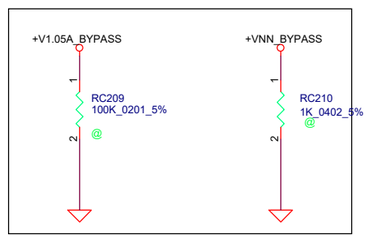








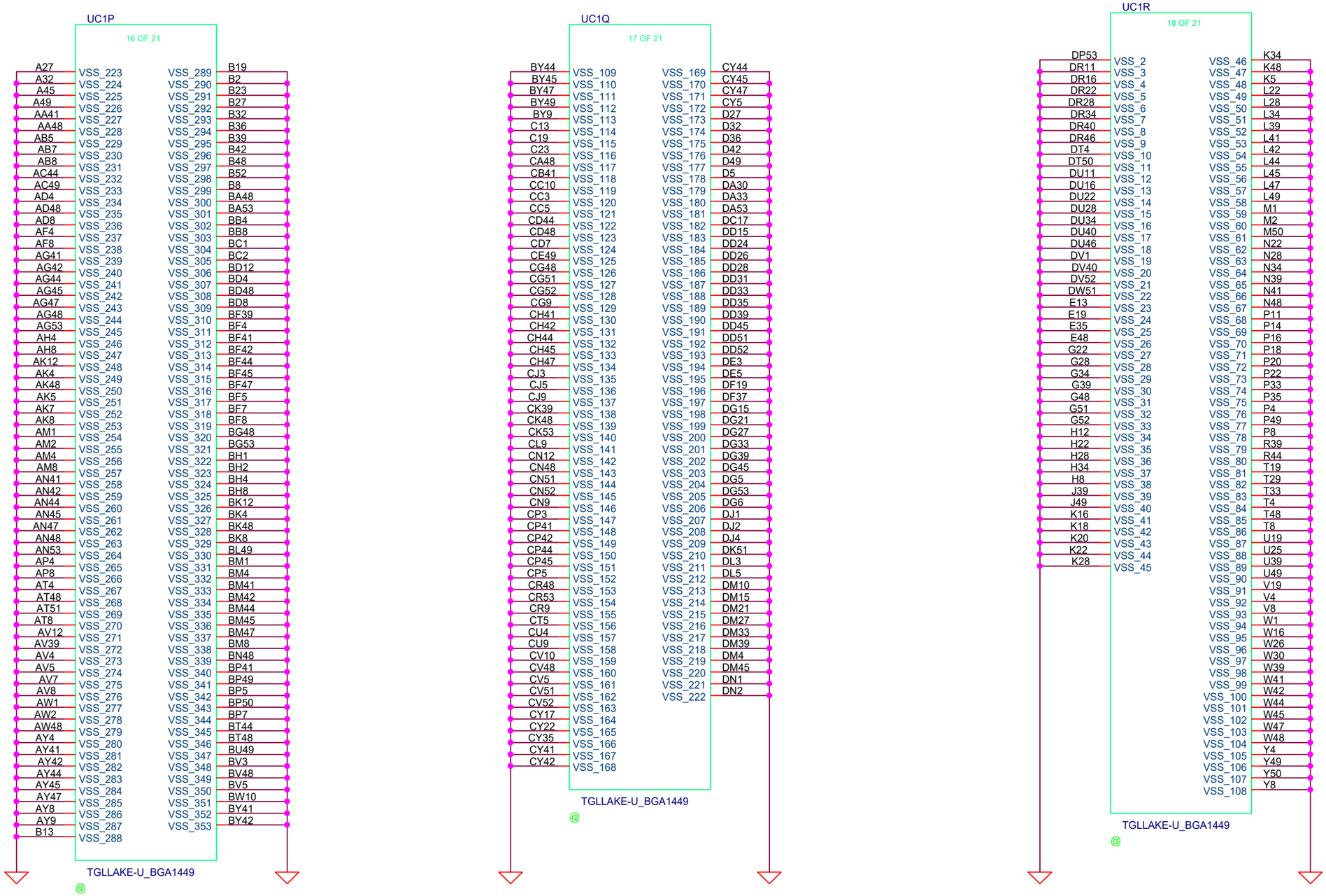




Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL	LCFC	
Size C	Document Number PCH Power		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 20 of 110		



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	PCH Power	0.1

Date: Tuesday, November 10, 2020 Sheet 21 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

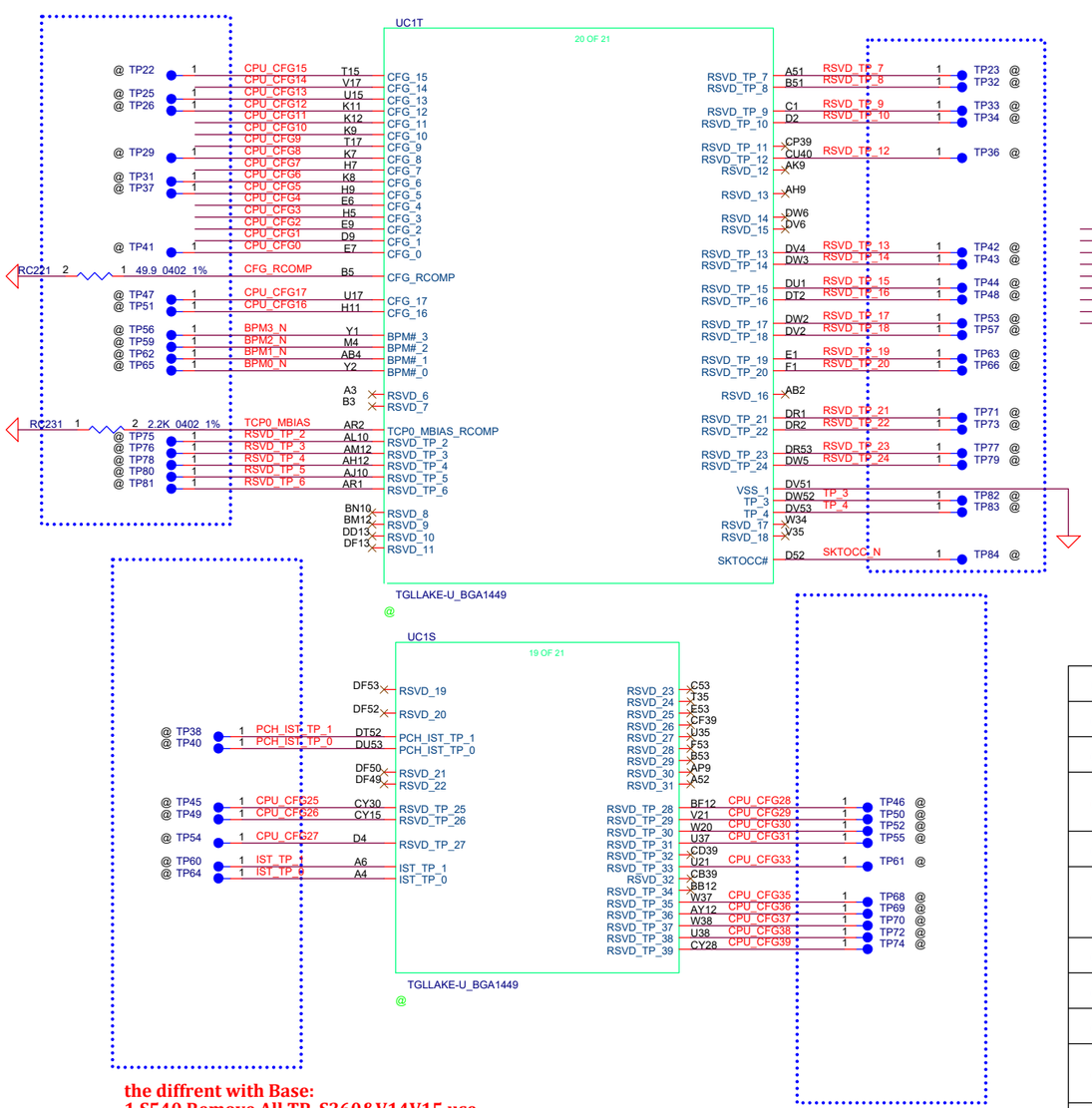
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

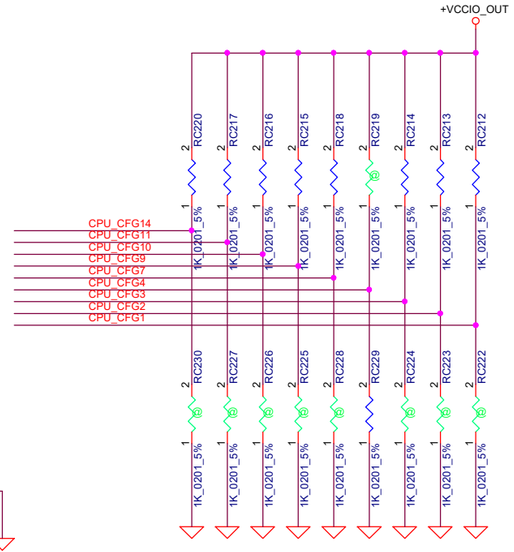
Title: ***S360-TGL***

LCFC

Size	Document Number	Rev
B	***PCH PWR_Reserved***	0.1

Date: Tuesday, November 10, 2020 Sheet 22 of 110





the diffrent with Base:
1.S540 Remove All TP, S360&V14V15 use

Pin Name	Strap Description	Configuration	Default Value
CFG[0]	RSVD	None	
CFG[3:1]	RSVD	Pull-up to VCCIO	1Kohm
CFG[4]	eDP enable strap 1 = Disabled 0 = Enabled	Pull-up to VCCIO / Pull-down Platform design dependent	1Kohm
CFG[6:5]	RSVD	None	
CFG[7]	PEG deferred link training 1 = (default) PEG Trainimmediately following RESET# de-assertion. 0 = PEG Wait for BIOS for training.	Pull-up to VCCIO / Pull-down Platform design dependent	1Kohm
CFG[8]	RSVD	None	
CFG[11:9]	RSVD	Pull-up to VCCIO	1Kohm
CFG[13:12]	RSVD	None	
CFG[14]	PEG60 Lane Reversal 1 = Normal(Default) 0 = Reversed	Pull-up to VCCIO / Pull-down Platform design dependent	1Kohm
CFG[17:15]	RSVD	None	

CPU PCIe Gen4 Bifurcation and Lane Reversal Mapping

Bifurcation	CFG Signals	Lanes			
	CFG [14]	0	1	2	3
1x4	1	0	1	2	3
1x4(Reversed)	0	3	2	1	0

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title		
S360-TGL	LCFC	
Size C	Document Number PCH PWR_Reserved	Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 23 of 110	

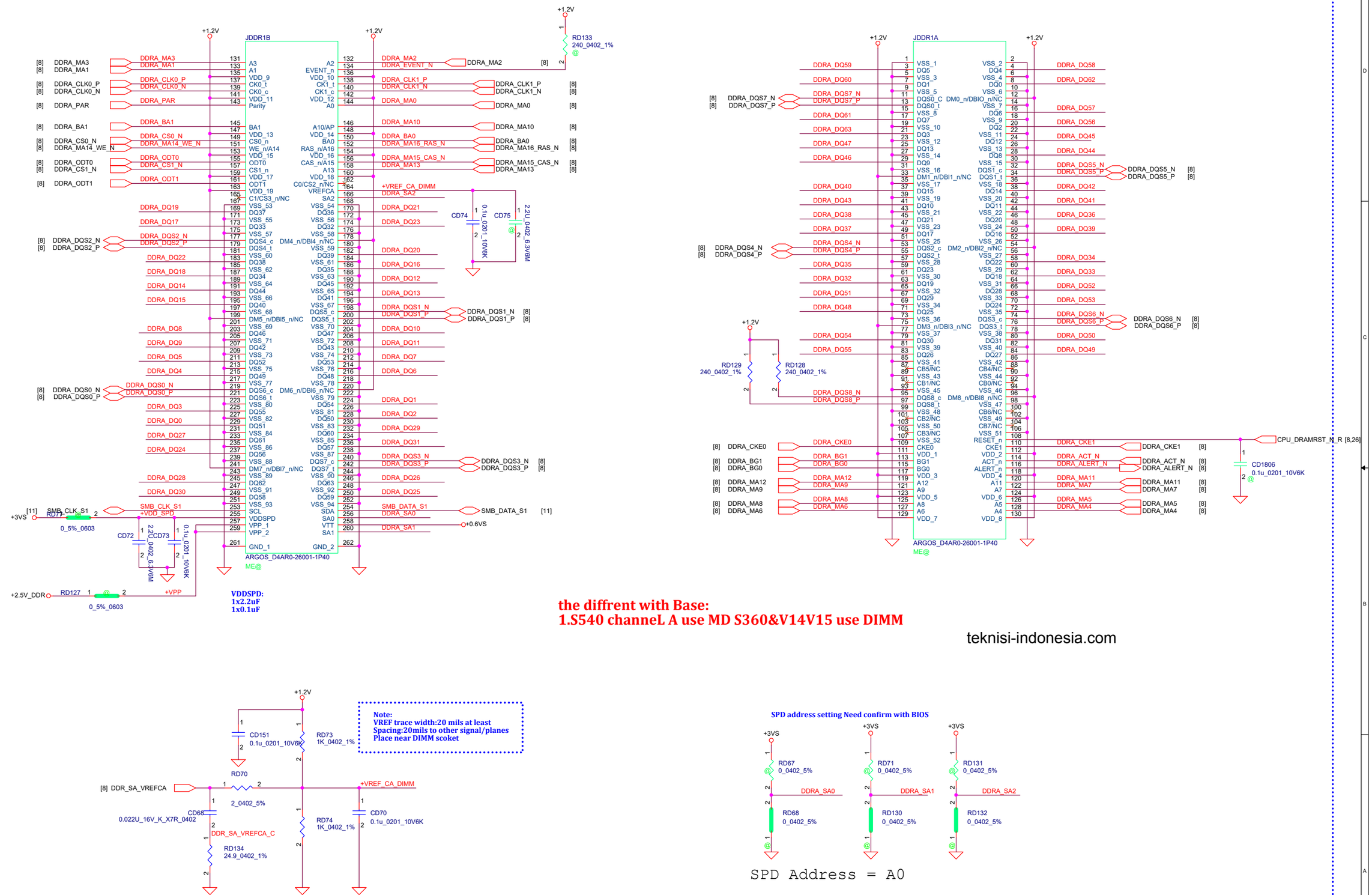
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: ***S360-TGL***

LCFC

Size	Document Number	Rev
B	***XDP***	0.1

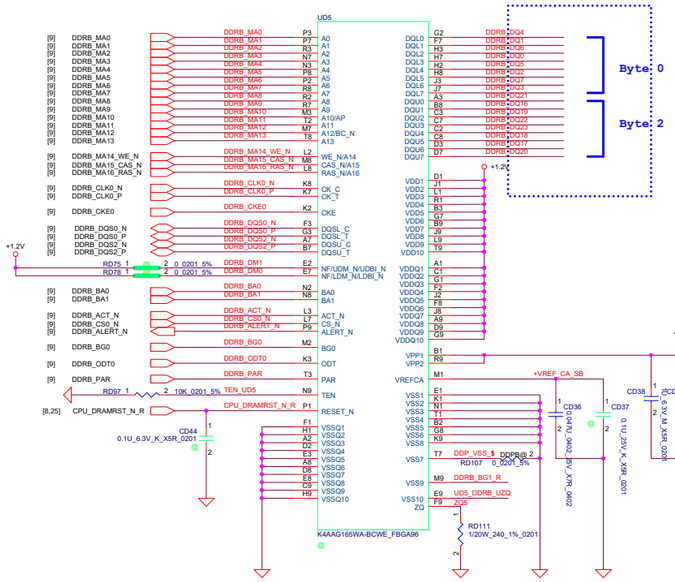


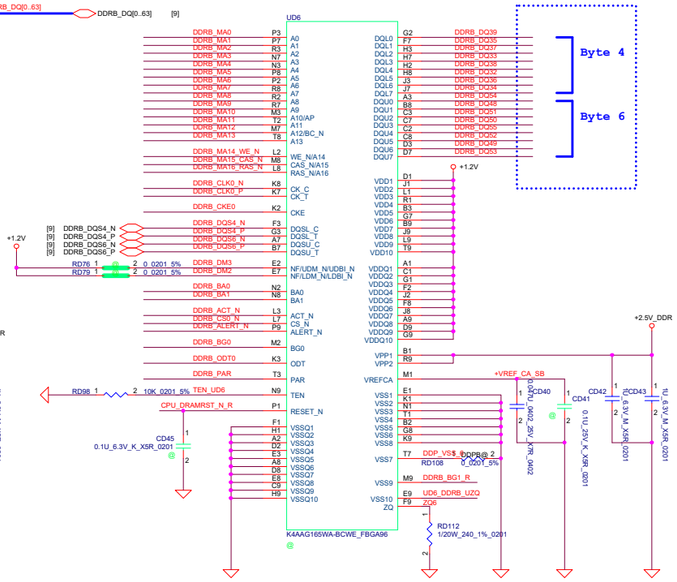
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

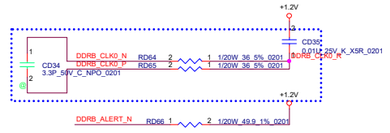
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title	S360-TGL	LCFC	
Size C	Document Number Memory_CHA		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 25 of 110		

Apply X76 BOM to control SDP Memory Down stuff components!

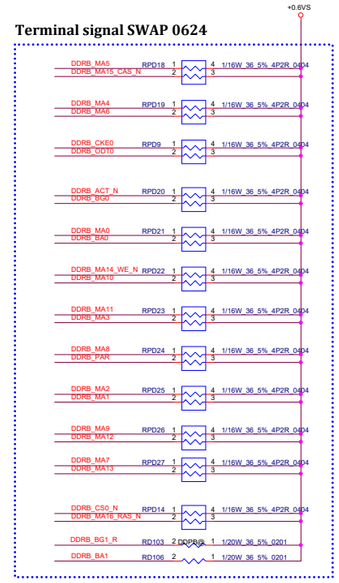


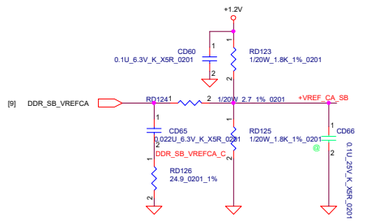


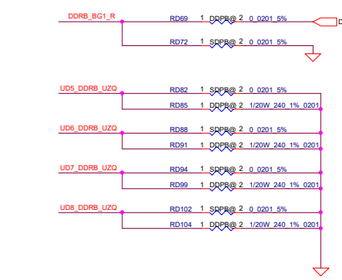


the diffrent with Base:
1.S360&V14V15 UD5&UD6&UD7&UD8 DQ SWAP;
Rtt Resister Packs Rtt need change(manual) 36ohm SD300005100
3.S540 CD73~CD78 1.2v cap emc_ns@ for RF&EMC, S360&V14V15 No add

Terminal signal SWAP 0624



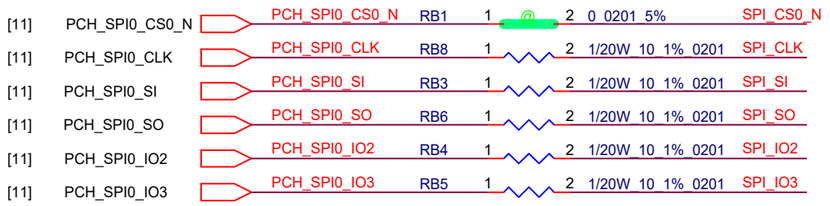


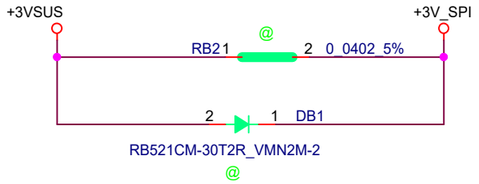


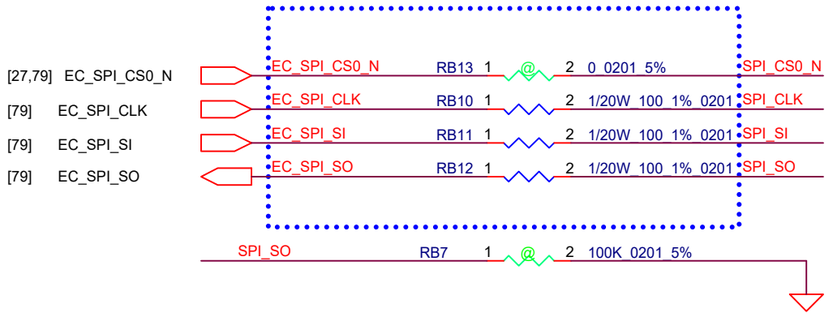
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

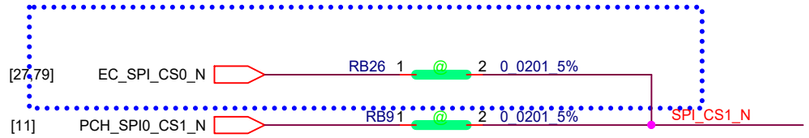
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

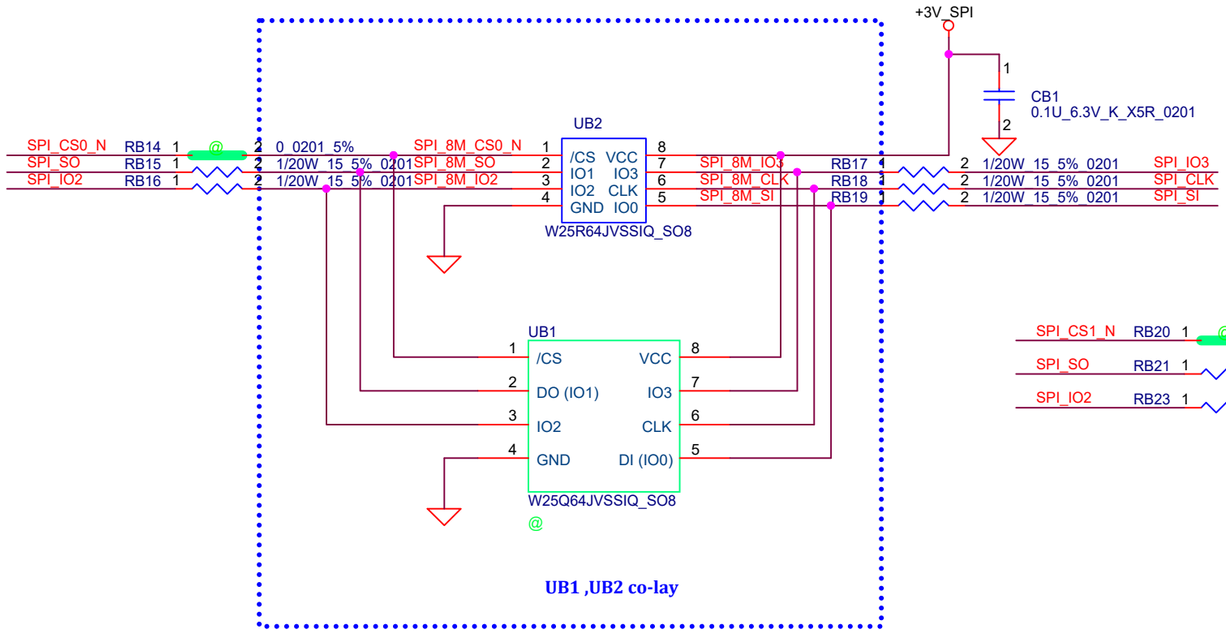
Title	S360-TGL	LCFC	
Size D	Document Number Memory_CHB		Rev 1.1
Date: Wednesday, November 11, 2020	Sheet 26 of 110		

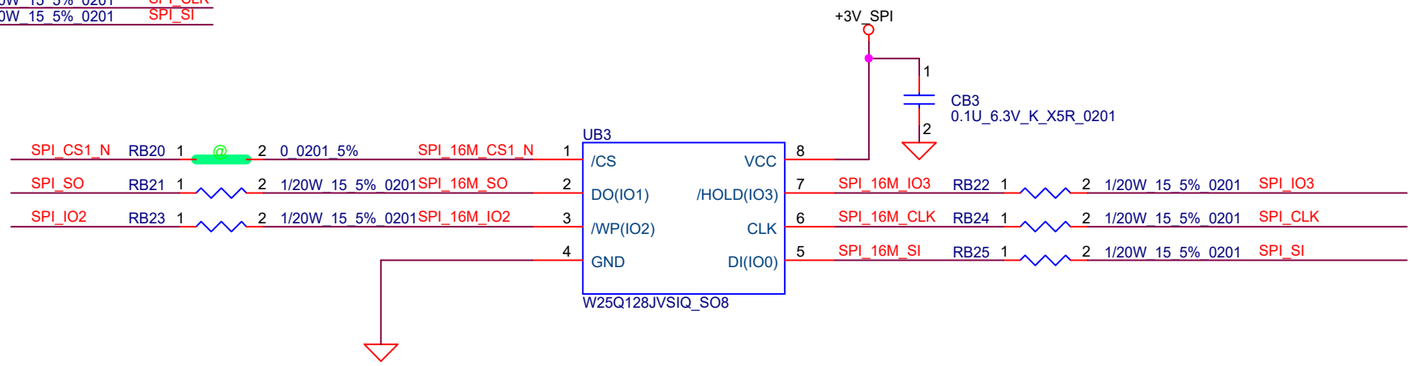










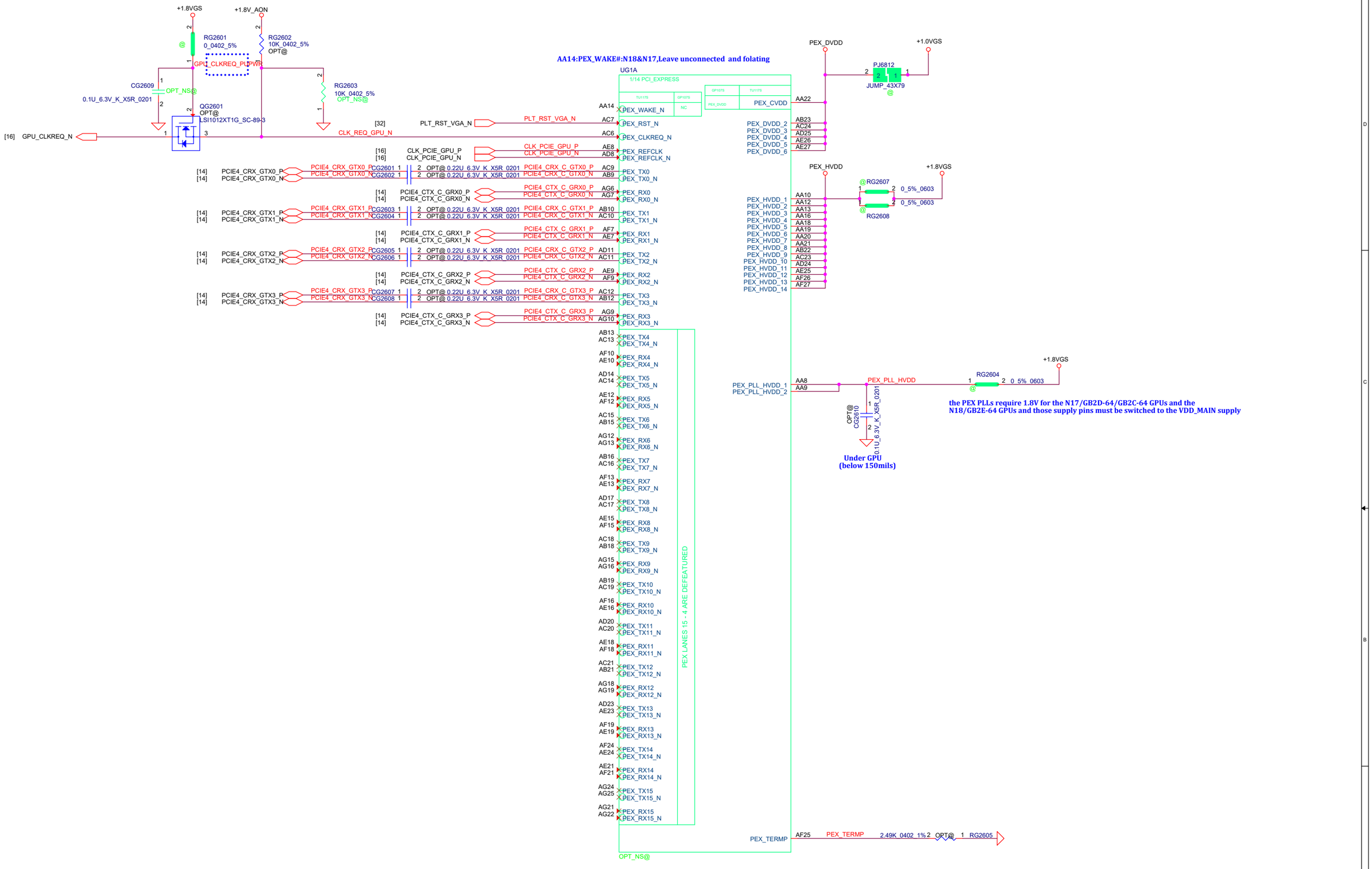


the diffrent with Base:
1.UB1&UB2 ROM CO-LAYOUT
2.RB13,RB26 Stuff different as co-layout diffrent

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

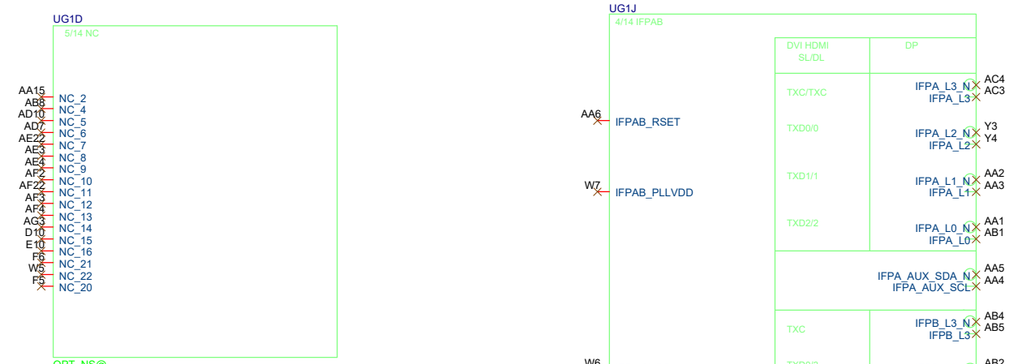
Title	S360-TGL		
Size B	Document Number SPI ROM/TPM		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 27 of 110		

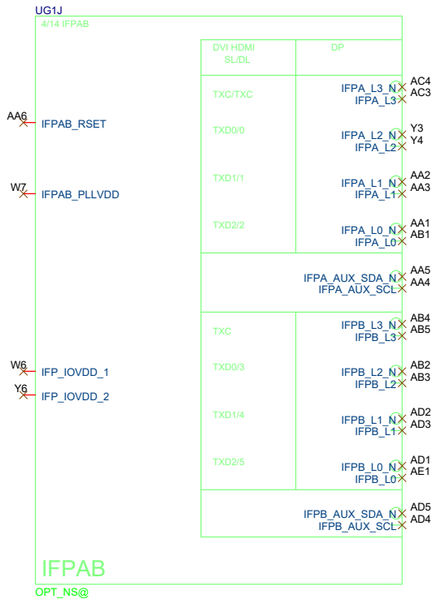


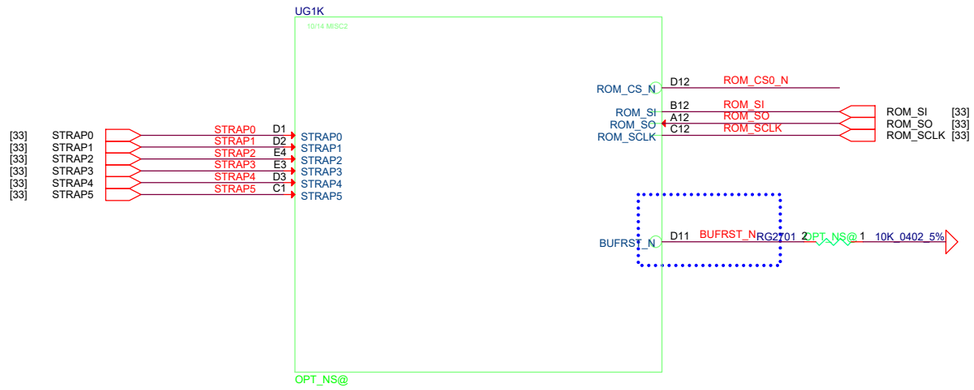
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

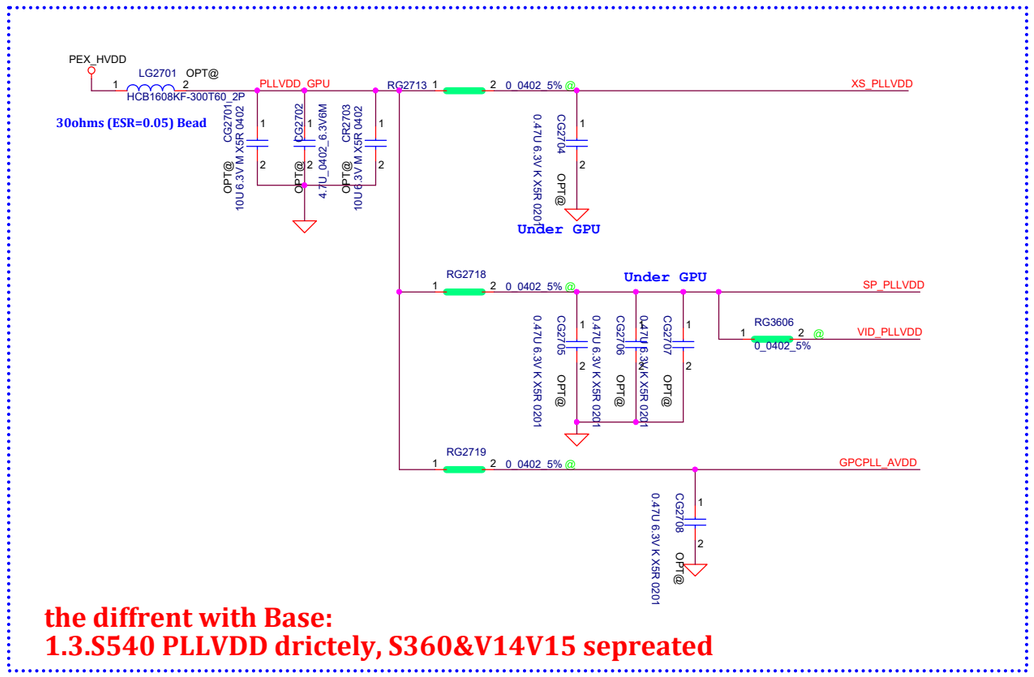
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title	S360-TGL		
Size C	Document Number GPU_PCIE Interface		Rev 0.1
Date: Thursday, November 12, 2020	Sheet 28 of 110		

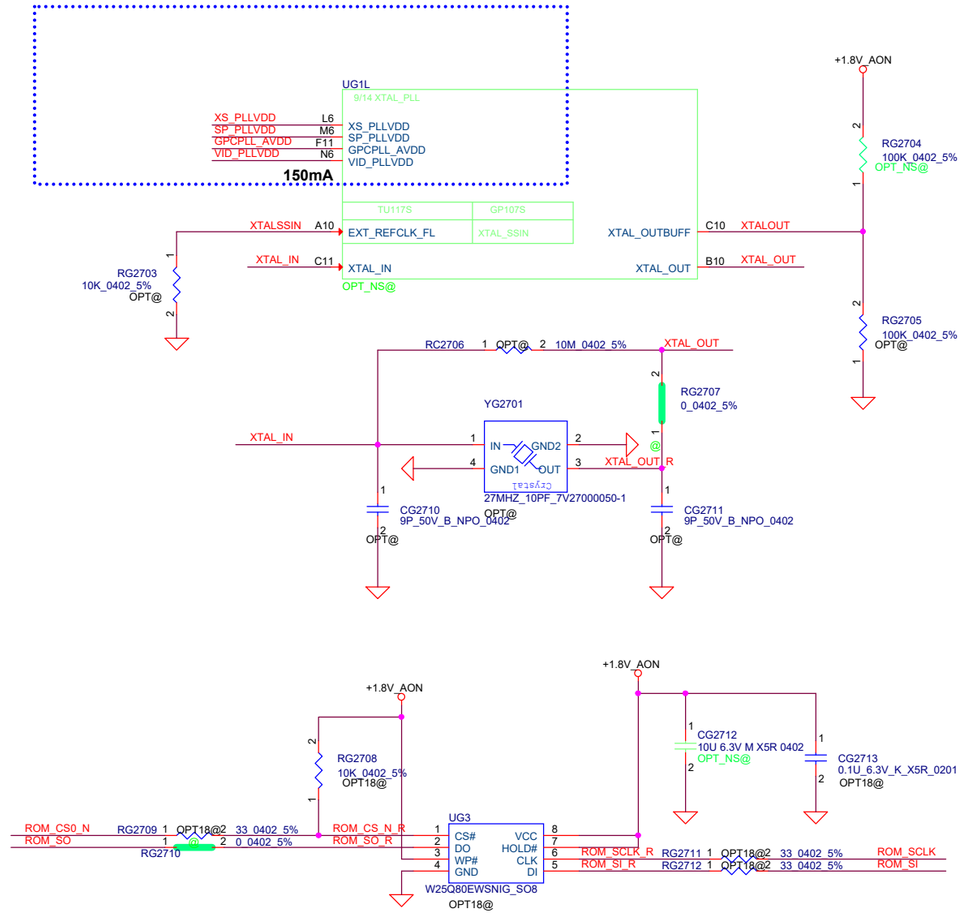








the diffrent with Base:
1.3.S540 PLLVDD drictely, S360&V14V15 sepreated

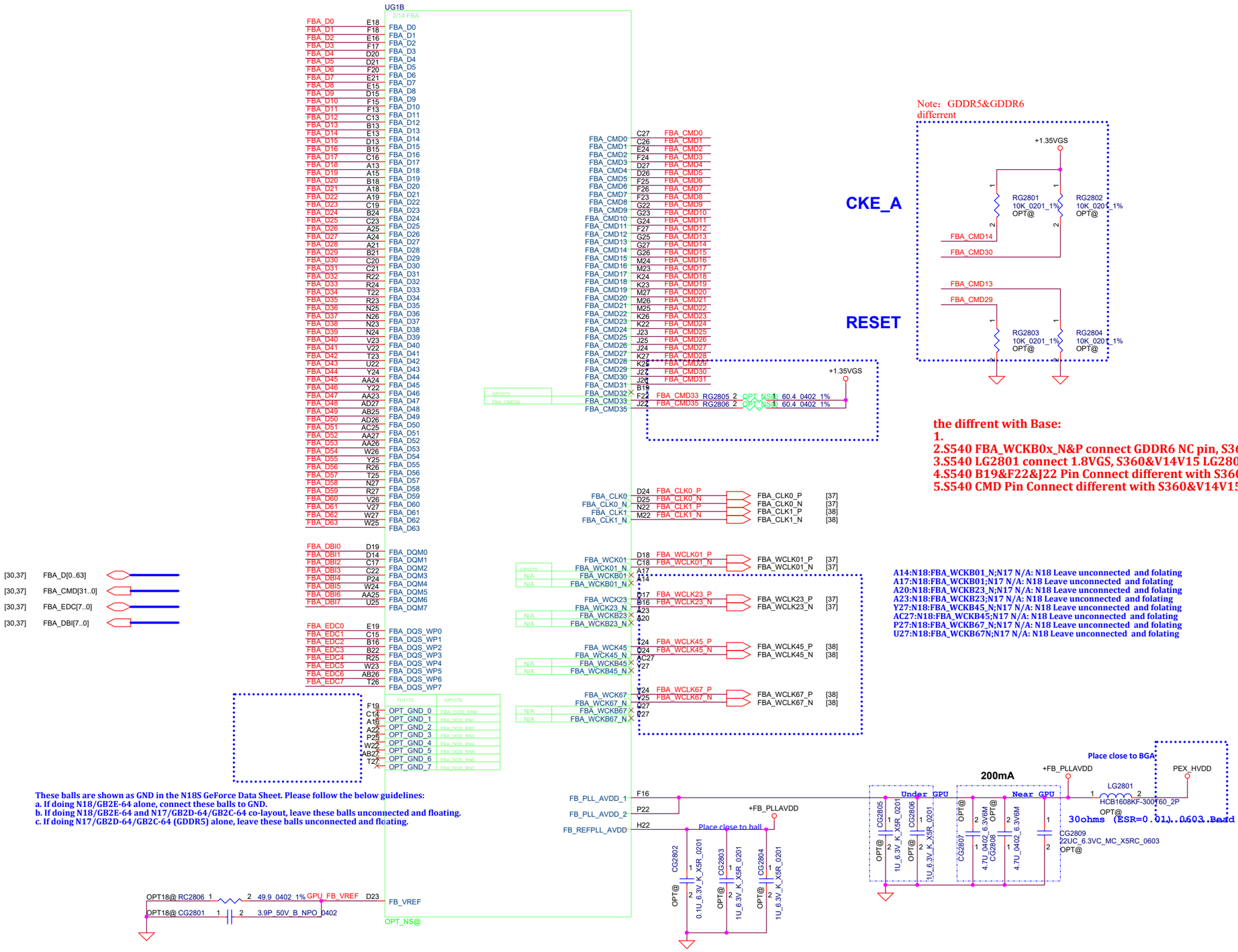


www.teknisi-indonesia.com

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size	C	Document Number	GPU_Display Interface
Rev	0.1		
Date:	Wednesday, November 11, 2020	Sheet	29 of 110



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

LCFC

Size: C | Document Number: GPU_MEM Interface(A/B) | Rev: P

Date: Tuesday, November 17, 2020 | Sheet 30 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

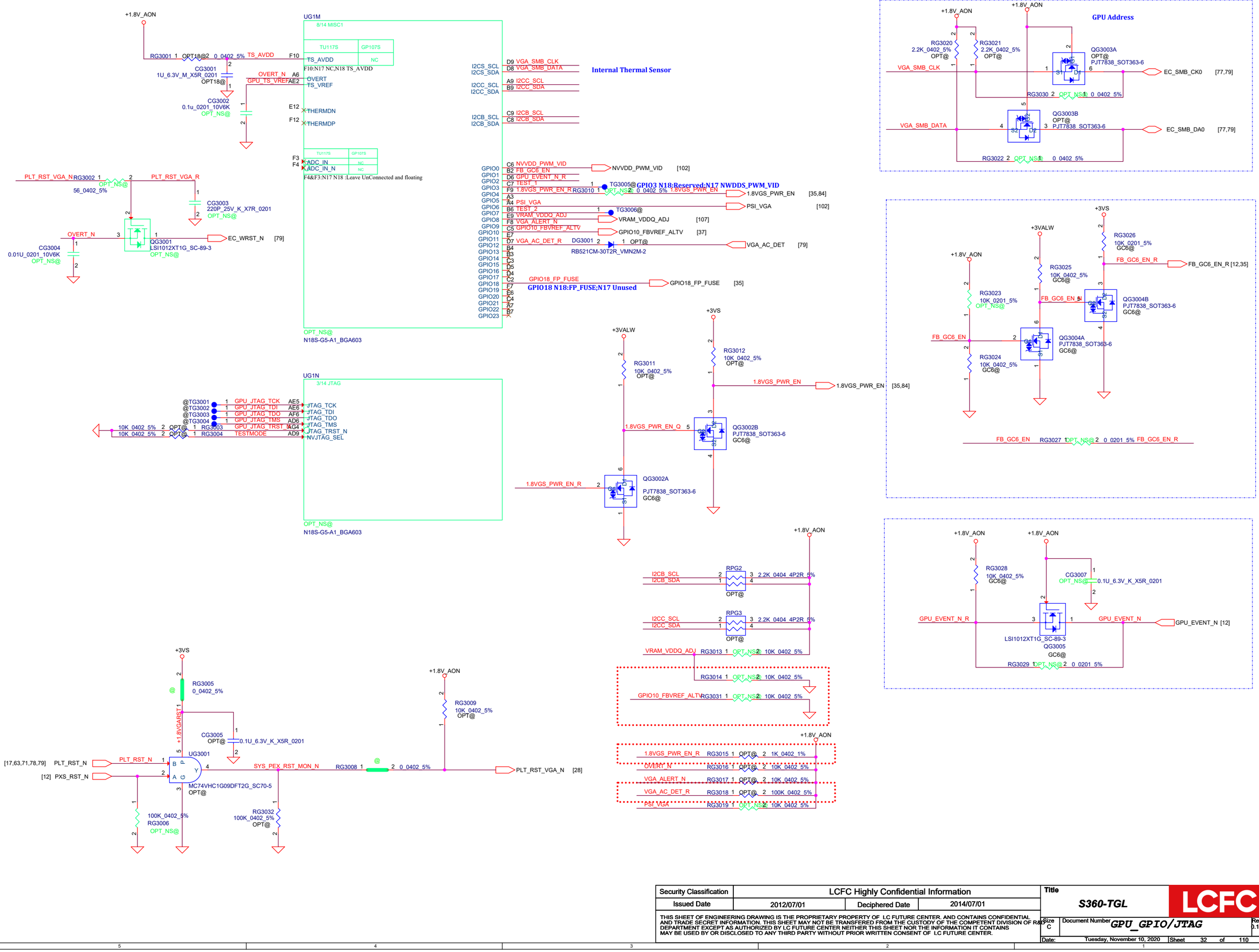
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: S360-TGL

LCFC

Size	Document Number	Rev
B	GPU_MEM Interface(C/D)	0.1

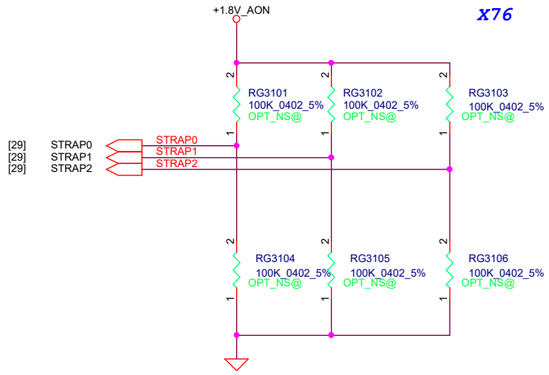
Date: Tuesday, November 10, 2020 Sheet 31 of 110



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

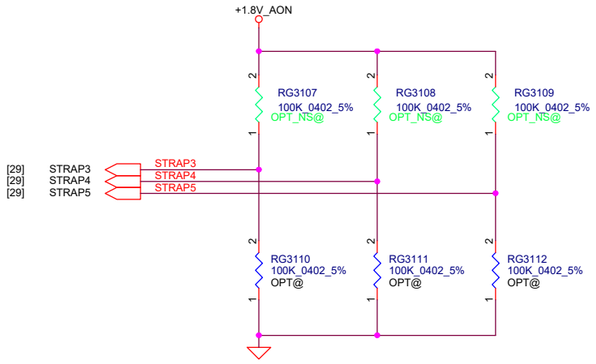
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER.NEITHER THIS SHEET NOR THE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

Title	S360-TGL		
Size C	Document Number GPU_GPIO/JTAG		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 32 of 110		



VRAMCFG

GPU	FB Memory (GDDR5)		STRAP	STRAP2	STRAP1	STRAP0
N18S	Micron 8Gb	MT51J256M32HF-80:B	0x1	L	L	H
	Hynix 8Gb	H5GC8H24AJR-R2C	0x2	L	H	L
	Samsung 8Gb	K4G80325FC-HC25	0x4	H	L	L
GPU	FB Memory (GDDR5)		STRAP	STRAP2	STRAP1	STRAP0
N17S	Micron 8Gb	MT51J256M32HF-80:B	0x9	L	M	L
	Hynix 8Gb	H5GC8H24AJR-R2C	0xA	L	M	H
	Samsung 8Gb	K4G80325FC-HC25	0xB	L	H	M



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

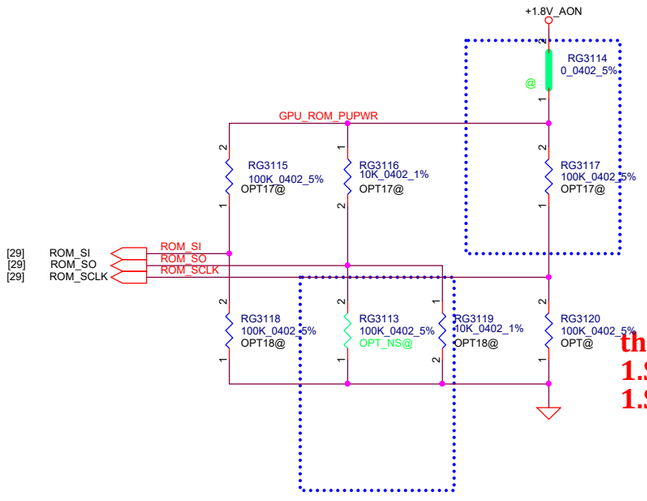
1: VGA_DEVICE ENABLE
0: VGA_DEVICE DISABLE

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)



	ROM_SO	ROM_SI	ROM_SCLK	SOR_EXPOSED[3:0]	
N18S-G5	L	L	L	XXX0	1:ENABLE 0:DISABLE SOR0/1/2/3 DISABLE
N17S-G5	H	H	M	0000	1::DISABLE SOR0/1/2/3 DISABLE

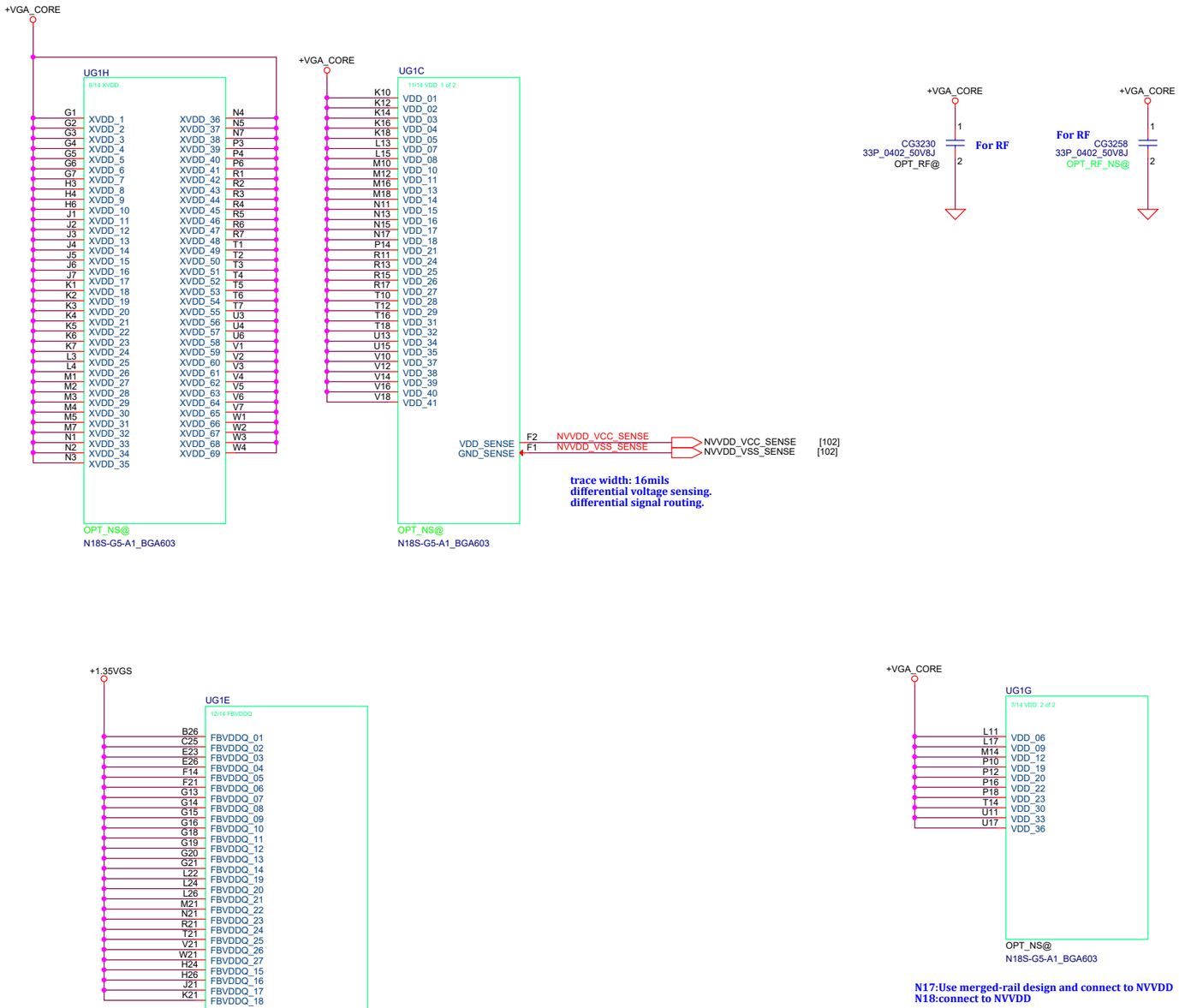
N18:ROM_SO&ROM_SI&ROM_SCLK Pull down to Enable The failsafe_OVERT* function
N17:SOR_EXPOSED[3:0]

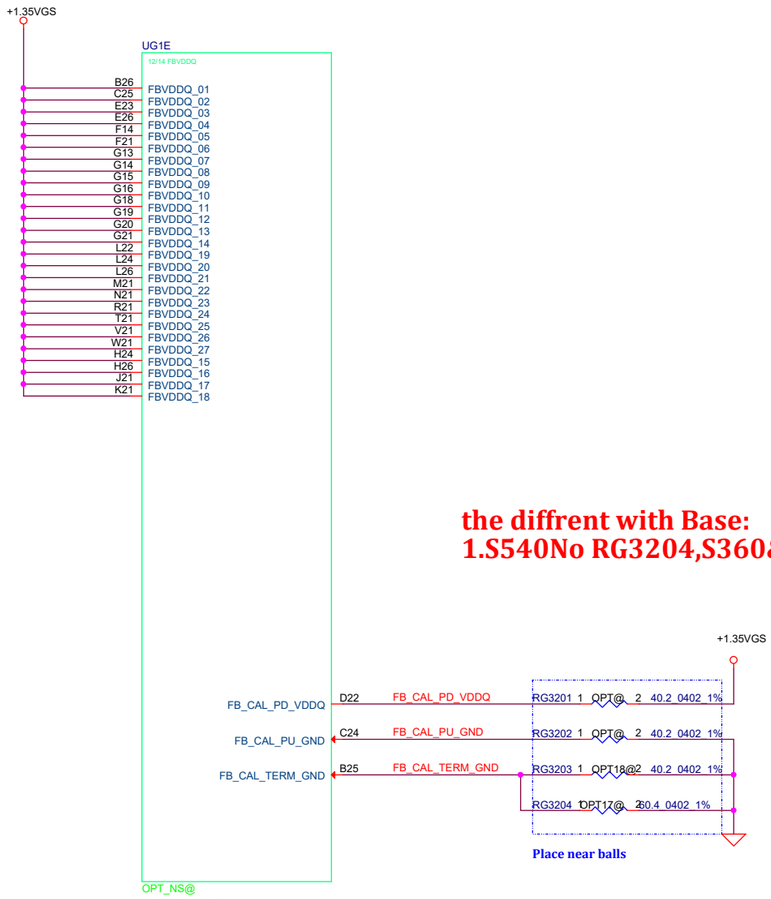
the diffrent with Base:
1.S540 RG3117---- OPT_NS@,S360&V14V15 RG3117---- OPT17@
1.S540 No RG3113,S360&V14V15 RG3113---- OPT17@

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title			
S360-TGL			LCFC
Size C	Document Number GPU_Strap		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 33 of 110		





N17:Use merged-rail design and connect to NVVDD
N18:connect to NVVDD

the diffrent with Base:
1.S540No RG3204,S360&V14V15 RG3204---- OPT17@

Place near balls

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	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

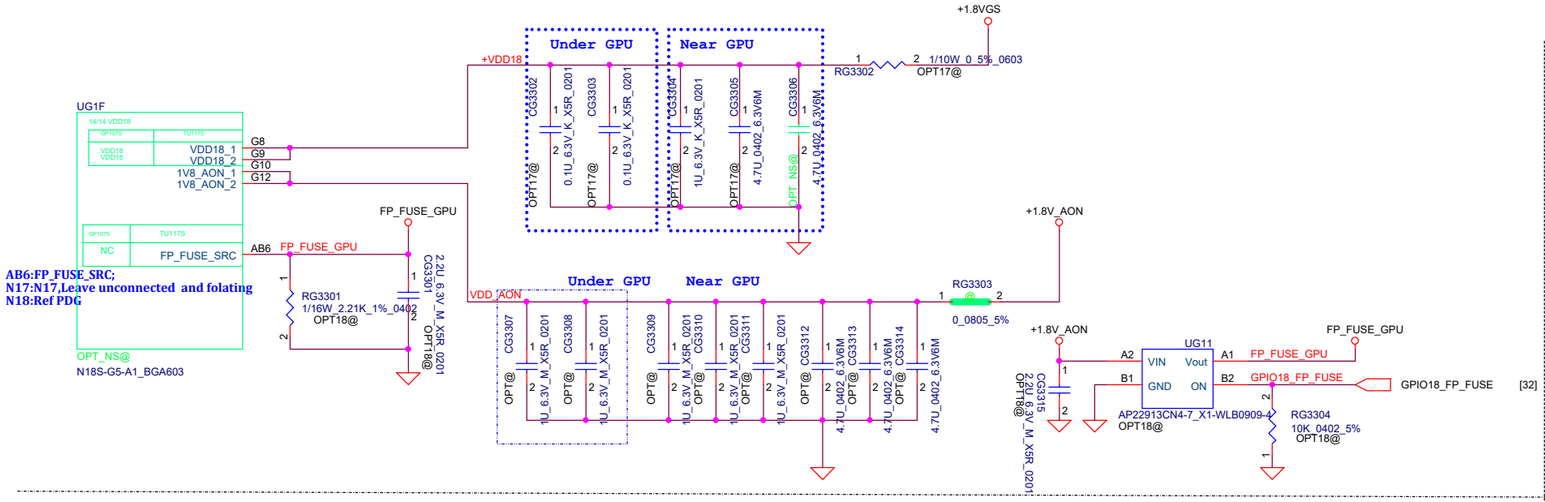
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

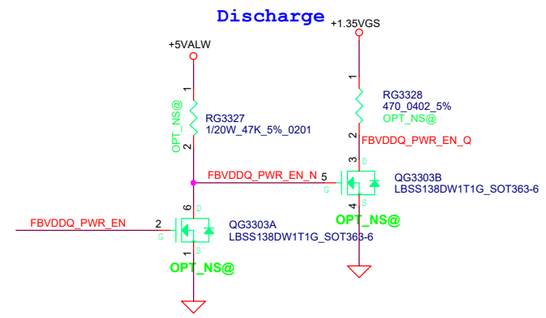
Title: S360-TGL

LCFC

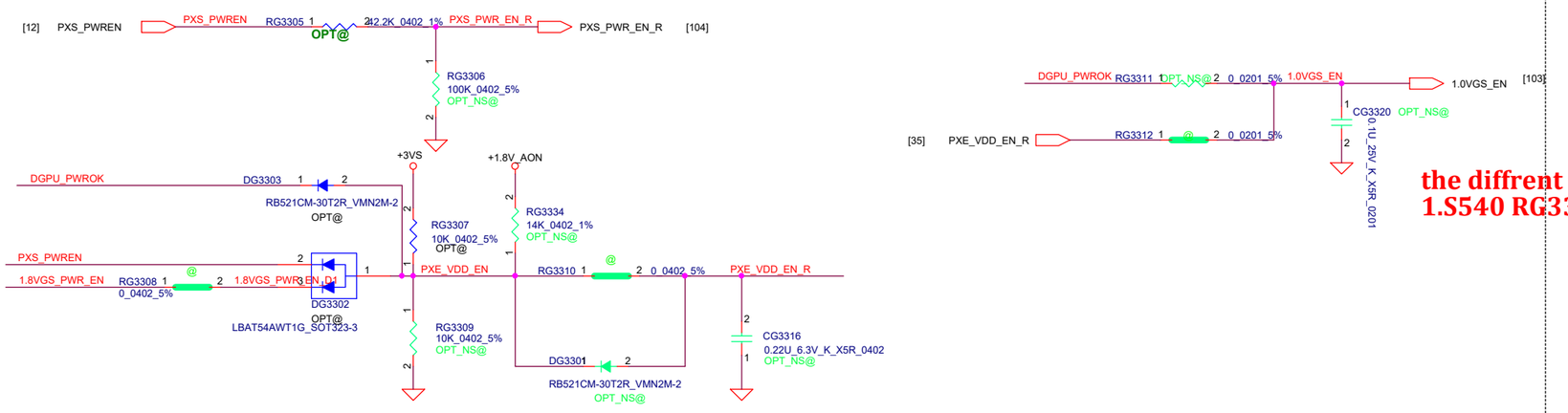
Size: C | Document Number: GPU_PWR1 | Rev: 0.1

Date: Tuesday, November 10, 2020 | Sheet 34 of 110

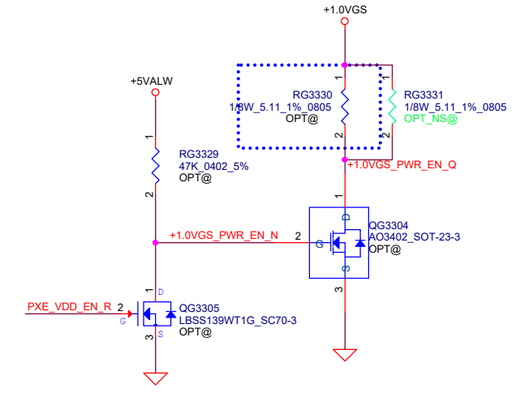




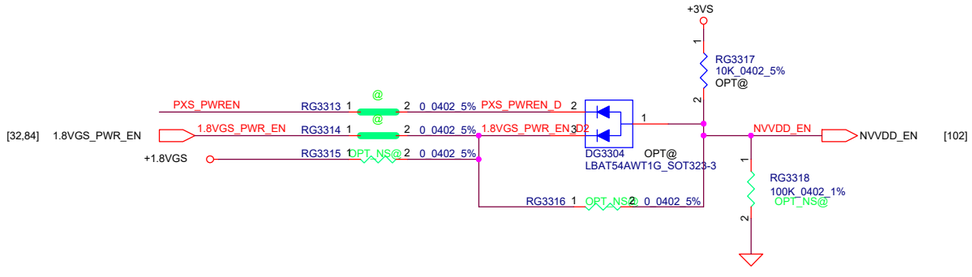
PXE_VDD & +1.8V_AON&1.0VGS

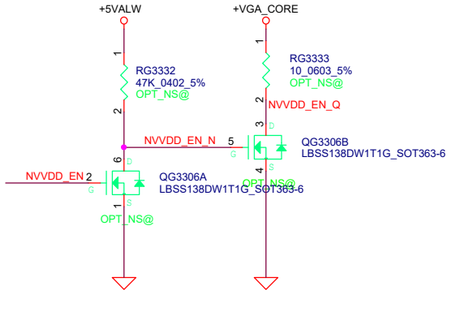


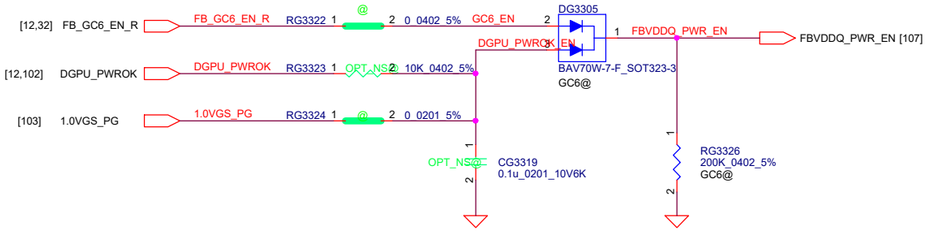
the diffrent with Base:
1.S540 RG3330----OPT_NS@,S360&V14V15 RG3330----OPT@



+VGA_CORE&+1.25VGS







Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

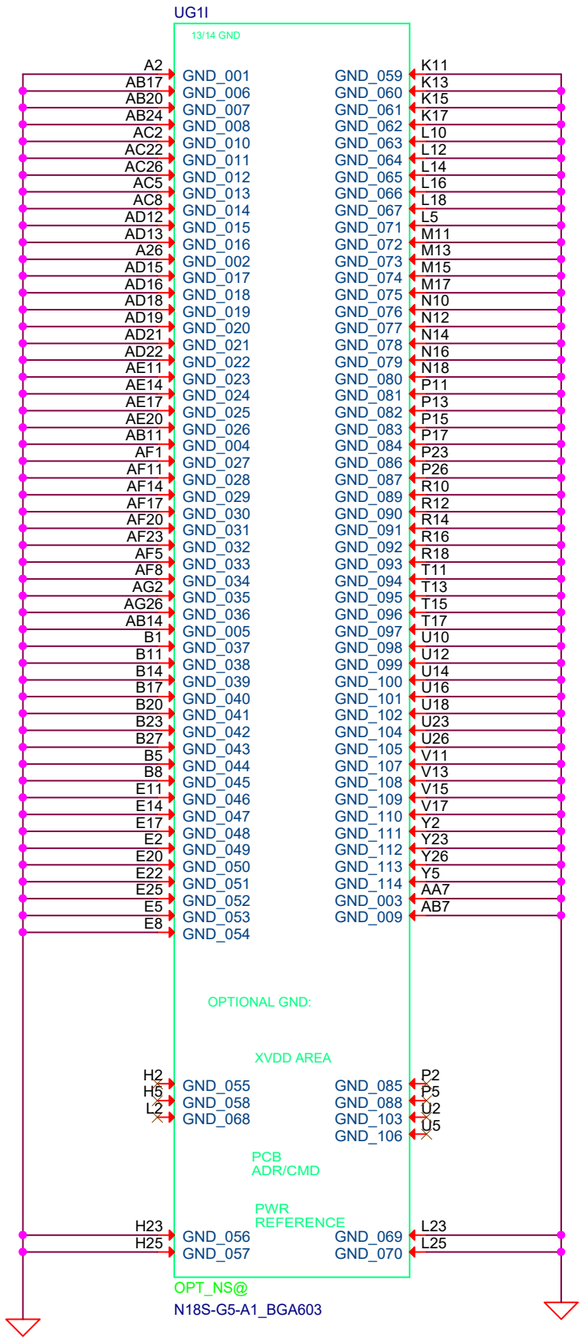
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: S360-TGL

LCFC

Size: C | Document Number: GPU_PWR2 | Rev: 0.1

Date: Wednesday, November 18, 2020 | Sheet 35 of 110



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL	LCFC
Size B	Document Number GPU_GND	Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 36 of 110	

Lower 32 bits

N18S_GDDR5_A_[31_0]

the diffrent with Base:
1.S540 GDDR6,S360&V14V15 GDDR5

MF=0 No Mirror

UG4

		MF=0	MF=1	MF=1	MF=0		
FBA_EDC0	C2			DQ24	DQ0	A4	FBA_D0
FBA_EDC1	C13	EDC0	EDC3	DQ25	DQ1	A2	FBA_D1
FBA_EDC2	R13	EDC1	EDC2	DQ26	DQ2	B4	FBA_D2
FBA_EDC3	R2	EDC2	EDC1	DQ27	DQ3	B2	FBA_D3
		EDC3	EDC0	DQ28	DQ4	E4	FBA_D4
				DQ29	DQ5	E2	FBA_D5
				DQ30	DQ6	F4	FBA_D6
FBA_DBI0	D2			DQ31	DQ7	F2	FBA_D7
FBA_DBI1	D13	DBI0#	DBI3#	DQ16	DQ8	A11	FBA_D8
FBA_DBI2	P13	DBI1#	DBI2#	DQ17	DQ9	A13	FBA_D9
FBA_DBI3	P2	DBI2#	DBI1#	DQ18	DQ10	B11	FBA_D10
		DBI3#	DBI0#	DQ19	DQ11	B13	FBA_D11
FBA_CLK0_P	J12			DQ20	DQ12	E11	FBA_D12
FBA_CLK0_N	J11	CK		DQ21	DQ13	E13	FBA_D13
FBA_CMD14	J3	CK#		DQ22	DQ14	F11	FBA_D14
		CKE#		DQ23	DQ15	F13	FBA_D15
				DQ8	DQ16	U11	FBA_D20
FBA_CMD2	H11			DQ9	DQ17	U13	FBA_D19
FBA_CMD4	K10	BA0/A2	BA2/A4	DQ10	DQ18	T11	FBA_D22
FBA_CMD3	K11	BA1/A5	BA3/A3	DQ11	DQ19	T13	FBA_D18
FBA_CMD1	H10	BA2/A4	BA0/A2	DQ12	DQ20	N11	FBA_D23
		BA3/A3	BA1/A5	DQ13	DQ21	N13	FBA_D16
				DQ14	DQ22	M11	FBA_D21
FBA_CMD6	K4			DQ15	DQ23	M13	FBA_D17
FBA_CMD11	H5	A8/A7	A10/A0	DQ0	DQ24	U4	FBA_D30
FBA_CMD10	H4	A9/A1	A11/A6	DQ1	DQ25	U2	FBA_D31
FBA_CMD7	K5	A10/A0	A8/A7	DQ2	DQ26	T4	FBA_D25
FBA_CMD9	J5	A11/A6	A9/A1	DQ3	DQ27	T2	FBA_D24
		A12/RFU/NC		DQ4	DQ28	N4	FBA_D29
	A5			DQ5	DQ29	N2	FBA_D26
	U5	VPP/NC1		DQ6	DQ30	M4	FBA_D28
		VPP/NC2		DQ7	DQ31	M2	FBA_D27
FBA_MF0	J1	MF					
FBA_SEN0	J10	SEN					
FBA_ZQ0	J13	ZQ					
FBA_CMD8	J4						
FBA_CMD12	G3	ABI#					
FBA_CMD0	G12	RAS#	CAS#				
FBA_CMD15	L3	CS#	WE#				
FBA_CMD5	L12	CAS#	RAS#				
		WE#	CS#				
FBA_WCLK01_N	D5						
FBA_WCLK01_P	D4	WCK01#	WCK23#				
		WCK01	WCK23				
FBA_WCLK23_N	P5						
FBA_WCLK23_P	P4	WCK23#	WCK01#				
		WCK23	WCK01				
	A10						
	U10	VREFD1					
FBA_VREFC	J14	VREFD2					
		VREFC					
FBA_CMD13	J2						
		RESET#					
	H1						
	K1	VSS1					
	B5	VSS2					
	G5	VSS3					
	L5	VSS4					
	T5	VSS5					
	B10	VSS6					
	D10	VSS7					
	G10	VSS8					
	L10	VSS9					
	P10	VSS10					
	T10	VSS11					
	H14	VSS12					
	K14	VSS13					
		VSS14					
	G1						
	L1	VDD1					
	G4	VDD2					
	L4	VDD3					
	C5	VDD4					
	R5	VDD5					
	C10	VDD6					
	R10	VDD7					
	D11	VDD8					
	G11	VDD9					
	L11	VDD10					
	P11	VDD11					
	G14	VDD12					
	L14	VDD13					
		VDD14					
					VDDQ1	B1	
					VDDQ2	D1	
					VDDQ3	F1	
					VDDQ4	M1	
					VDDQ5	P1	
					VDDQ6	T1	
					VDDQ7	G2	
					VDDQ8	L2	
					VDDQ9	B3	
					VDDQ10	D3	
					VDDQ11	F3	
					VDDQ12	H3	
					VDDQ13	K3	
					VDDQ14	M3	
					VDDQ15	P3	
					VDDQ16	T3	
					VDDQ17	E5	
					VDDQ18	N5	
					VDDQ19	E10	
					VDDQ20	N10	
					VDDQ21	B12	
					VDDQ22	D12	
					VDDQ23	F12	
					VDDQ24	H12	
					VDDQ25	K12	
					VDDQ26	M12	
					VDDQ27	P12	
					VDDQ28	T12	
					VDDQ29	G13	
					VDDQ30	L13	
					VDDQ31	B14	
					VDDQ32	D14	
					VDDQ33	F14	
					VDDQ34	M14	
					VDDQ35	P14	
					VDDQ36	T14	
					VSSQ1	A1	
					VSSQ2	C1	
					VSSQ3	E1	
					VSSQ4	N1	
					VSSQ5	R1	
					VSSQ6	U1	
					VSSQ7	H2	
					VSSQ8	K2	
					VSSQ9	A3	
					VSSQ10	C3	
					VSSQ11	E3	
					VSSQ12	N3	
					VSSQ13	R3	
					VSSQ14	U3	
					VSSQ15	C4	
					VSSQ16	R4	
					VSSQ17	F5	
					VSSQ18	M5	
					VSSQ19	F10	
					VSSQ20	M10	
					VSSQ21	C11	
					VSSQ22	R11	
					VSSQ23	A12	
					VSSQ24	C12	
					VSSQ25	E12	
					VSSQ26	N12	
					VSSQ27	R12	
					VSSQ28	U12	
					VSSQ29	H13	
					VSSQ30	K13	
					VSSQ31	A14	
					VSSQ32	C14	
					VSSQ33	E14	
					VSSQ34	N14	
					VSSQ35	R14	
					VSSQ36	U14	

170-BALL
SGRAM GDDR5
OPT_NS@
H5GQ1H24AFR-T2L_BGA170

BYTE0 BYTE1 BYTE2 BYTE3

[30,37] FBA_D[0..63]
[30,37] FBA_CMD[31..0]
[30,37] FBA_EDC[7..0]
[30,37] FBA_DBI[7..0]

RG3501 1 OPT@ 2 1/20W_1K_1%_0201 FBA_MF0
RG3502 1 OPT@ 2 1/20W_1K_1%_0201 FBA_SEN0
RG3503 1 OPT@ 2 121_0402_1% FBA_ZQ0

[30] FBA_CLK0_P — FBA_CLK0_P — RG3504 1 OPT@ 2 40.2 0402_1%
[30] FBA_CLK0_N — FBA_CLK0_N — RG3505 1 OPT@ 2 40.2 0402_1%
FBA_CLK0_C
CG3502 0.01U_0201_10V6K OPT@

[30] FBA_WCLK01_N
[30] FBA_WCLK01_P
[30] FBA_WCLK23_N
[30] FBA_WCLK23_P

FBA_VREFC
CG3501 820P_0402_25V7 OPT@

+1.35VGS
RG3506 1/16W_549_1%_0402 OPT@
FBA_VREFC
RG3507 1.33K_0402_1% OPT@

+1.35VGS

FBA_VREFC
RG3508 931_0402_1% OPT@
GPIO10_FBVREF_Q
[32] GPIO10_FBVREF_ALTV
QG3501 LBSS139WT1G_SC70-3 OPT@
RG3509 100K_0402_5% OPT@

www.teknisi-indonesia.com

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

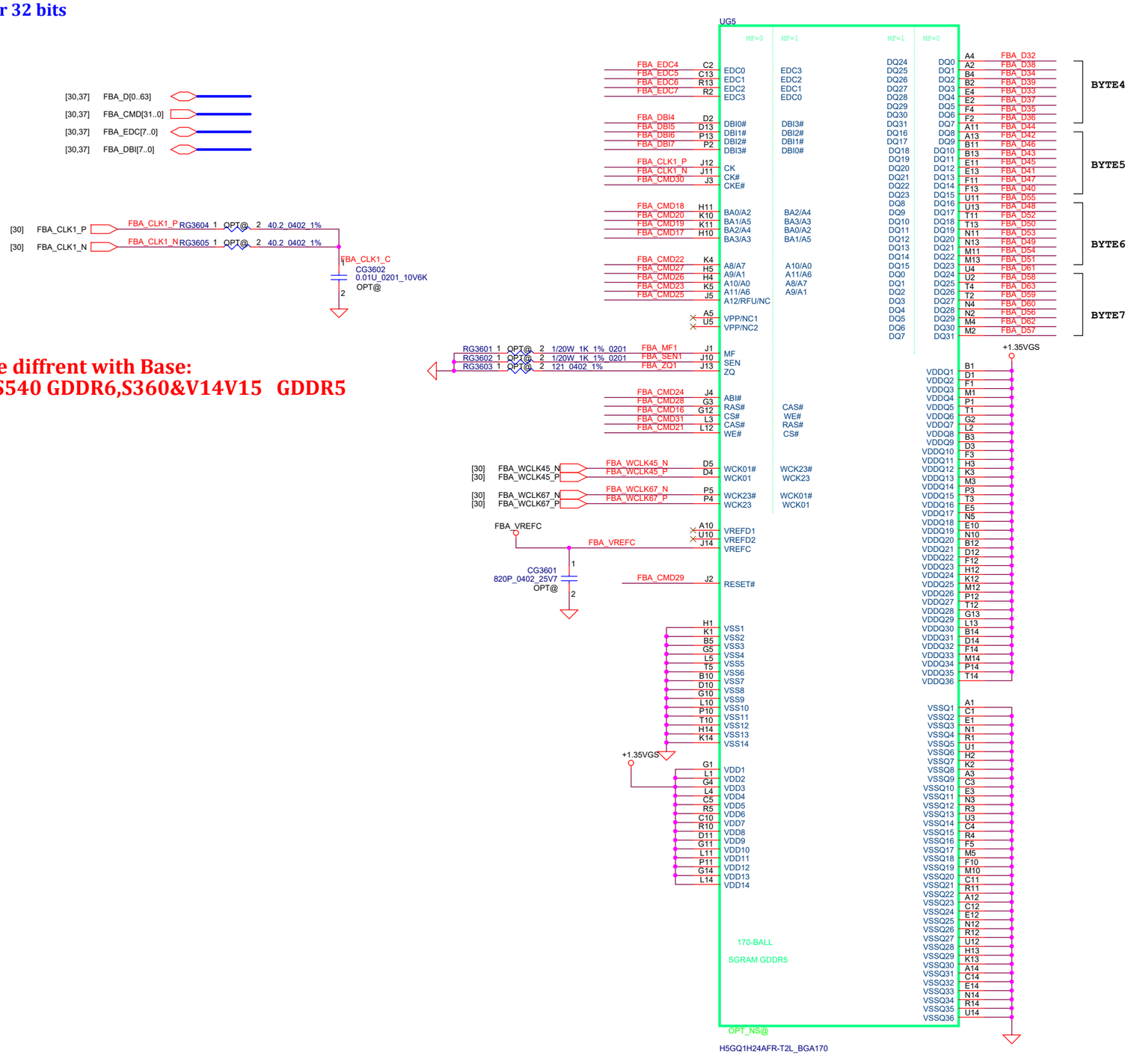
Title: S360-TGL
LCFC
Size: C
Document Number: VRAM_A_[31:0]
Rev: 0.1
Date: Tuesday, November 10, 2020
Sheet 37 of 110

N18S_GDDR5_B_[63_32]

upper 32 bits

MF=0 No Mirror

the diffrent with Base:
1.S540 GDDR6,S360&V14V15 GDDR5



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title			
S360-TGL			LCFC
Size C	Document Number VRAM_A_[64:32]		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 38 of 110		

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	VRAM_B_[31:0]	0.1

Date: Tuesday, November 10, 2020 Sheet 39 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	VRAM_B_[64:32]	0.1

Date: Tuesday, November 10, 2020 Sheet 40 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	VRAM_C_[31:0]	0.1

Date: Tuesday, November 10, 2020 Sheet 41 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	VRAM_C_[64:32]	0.1

Date: Tuesday, November 10, 2020 Sheet 42 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	VRAM_D_[31:0]	0.1

Date: Tuesday, November 10, 2020 Sheet 43 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	VRAM_D_[64:32]	0.1

Date: Tuesday, November 10, 2020 Sheet 44 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	eDP MUX	0.1

Date: Tuesday, November 10, 2020 Sheet 45 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

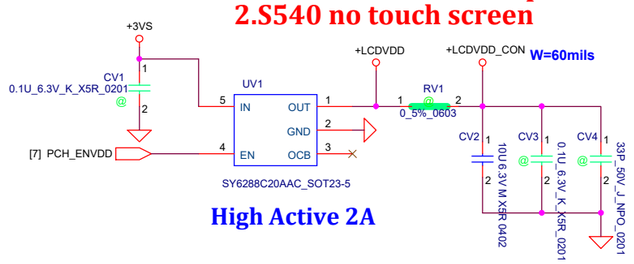
Title: ***S360-TGL***

LCFC

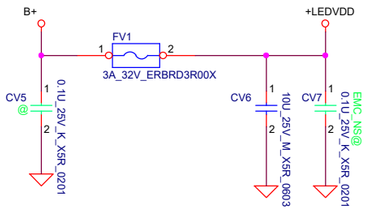
Size	Document Number	Rev
B	***NV DDS LOGIC***	0.1

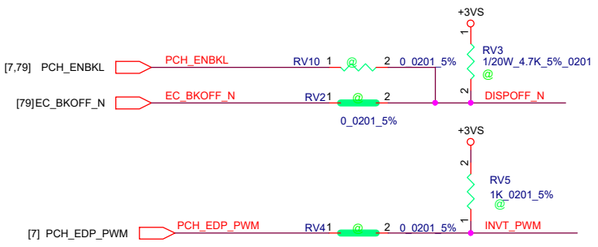
LCD EDP Display

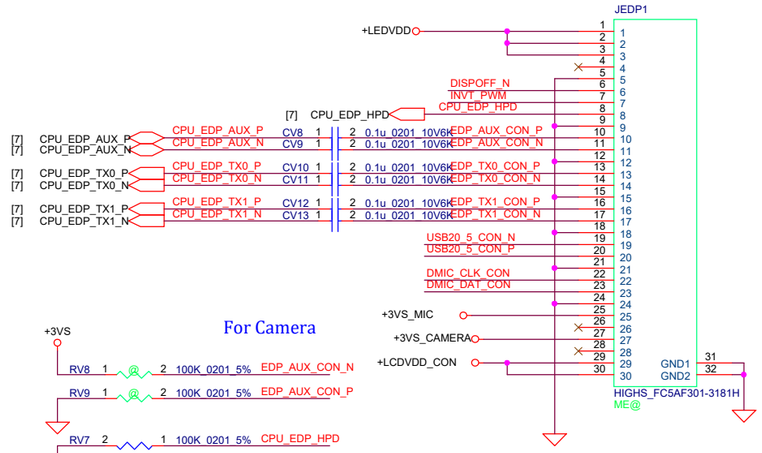
the diffrent with Base:
1.S540 EDP connector pindefine different with S360&V14V15
2.S540 no touch screen



High Active 2A

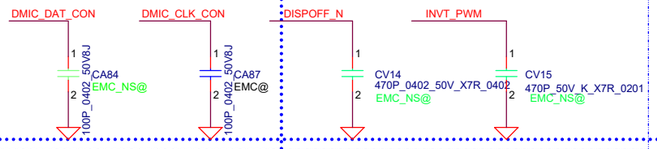




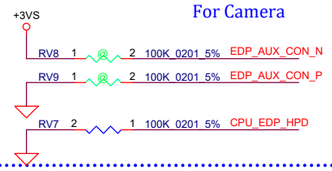


EMC

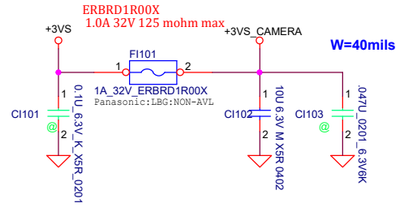
close to connector

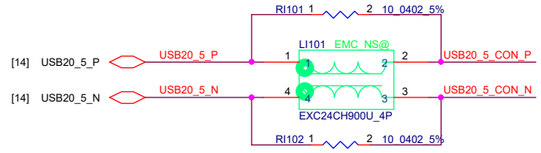


For Camera



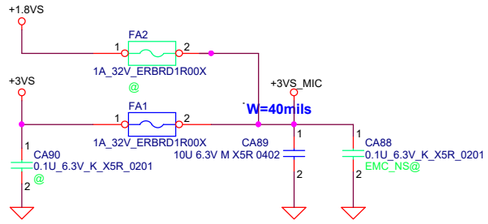
Camera



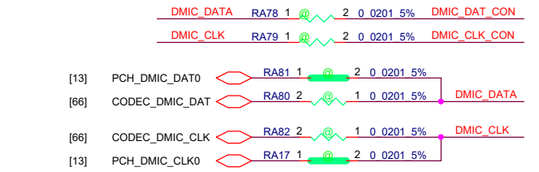


teknisi-indonesia.com

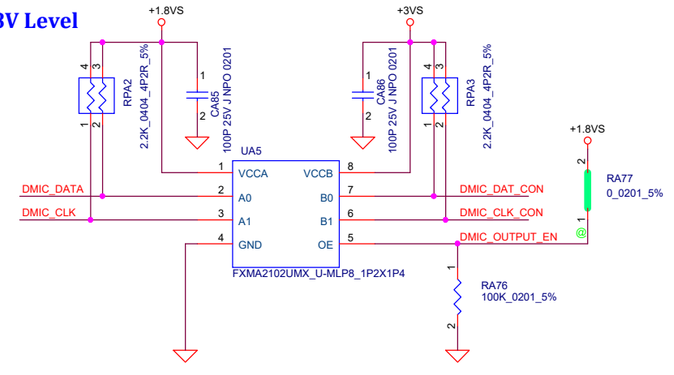
DMIC



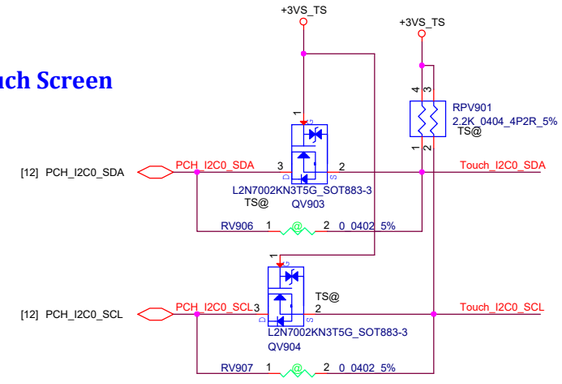
DMIC 3.3V Level

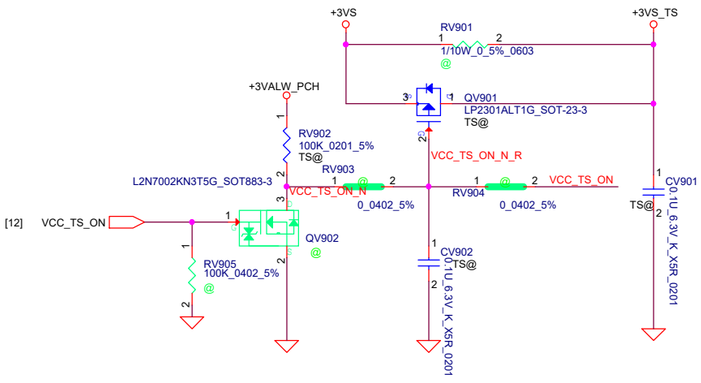


DMIC 1.8V Level

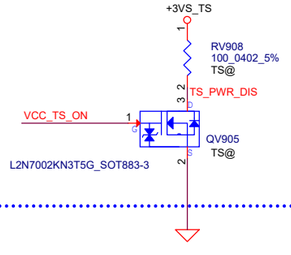


Touch Screen

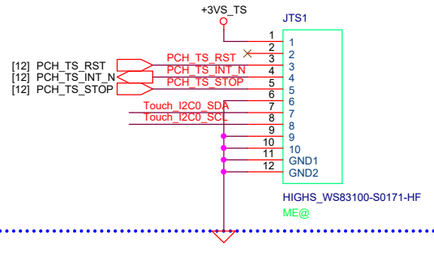




TS DISCHARGER



confirm Pin define with ME



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size	C	Document Number	eDP_DDI/CAM/DMIC/ISH
Rev	0.1		
Date:	Thursday, November 19, 2020	Sheet	47 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title

S360-TGL

LCFC

Size	Document Number	Rev
B	***DP***	0.1

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

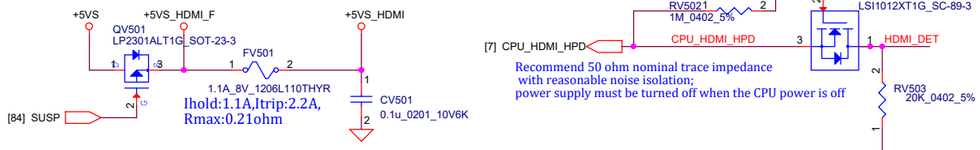
Title: **S360-TGL**

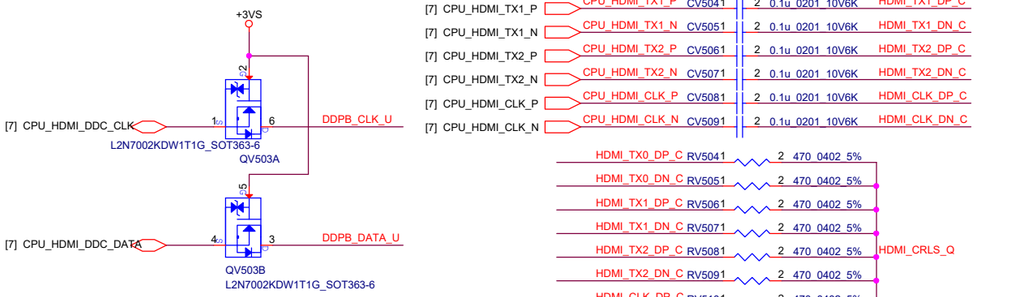
LCFC

Size	Document Number	Rev
B	HDMI_RETIMER	0.1

Date: Tuesday, November 10, 2020 Sheet 49 of 110

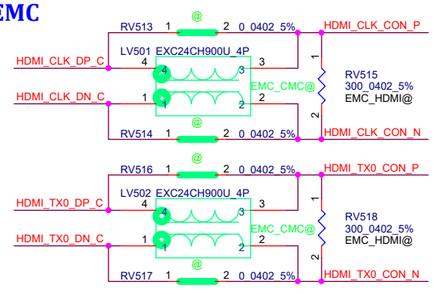
HDMI Power

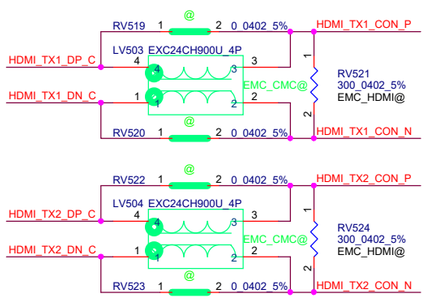


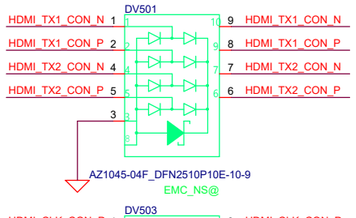


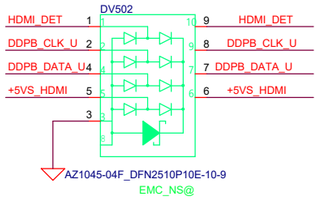
the diffrent with Base:
1.S540 No HDMI,S360&V14V15 have

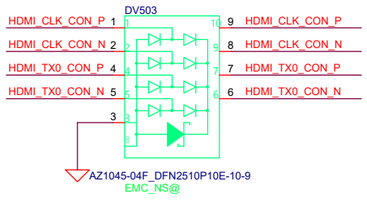
EMC

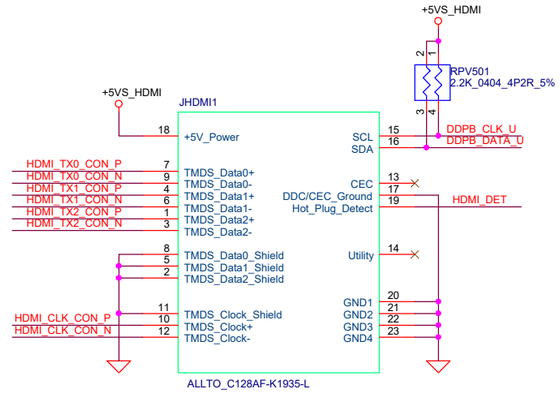












Conector list USE C128AF-K1939-L,Gold Plating diffrent

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size C	Document Number HDMI_CONN		Rev 0.1
Date: Wednesday, November 18, 2020	Sheet 50 of 110		

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	TYPEC_Controller_PortA	0.1

Date: Tuesday, November 10, 2020 Sheet 51 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

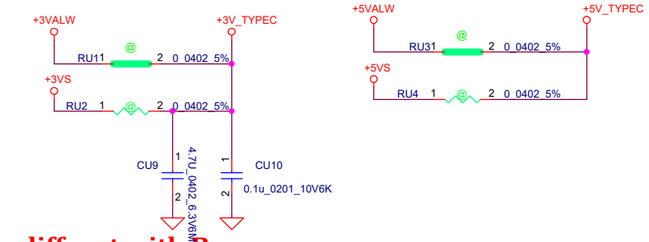
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: **S360-TGL**

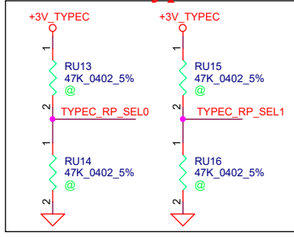
LCFC

Size	Document Number	Rev
B	TYPEC_MUX_PortA	0.1

Date: Tuesday, November 10, 2020 Sheet 52 of 110

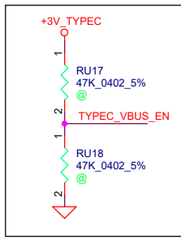


the diffrent with Base:
1.S540 No type-c USB3.0 only,S360&V14V15 have



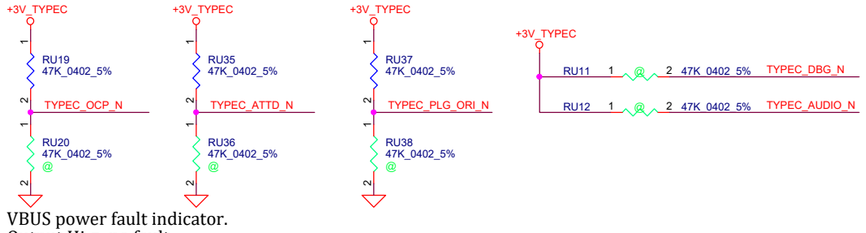
Type-C current mode selection
{RP_SEL1,RP_SEL0}
2'b00: Standard USB mode.
2'b01: Standard USB mode.
2'b10: 1.5A current mode.
2'b11: 3A current mode
PCB pull selection if not connected to SOC

38W DC change 1.5A

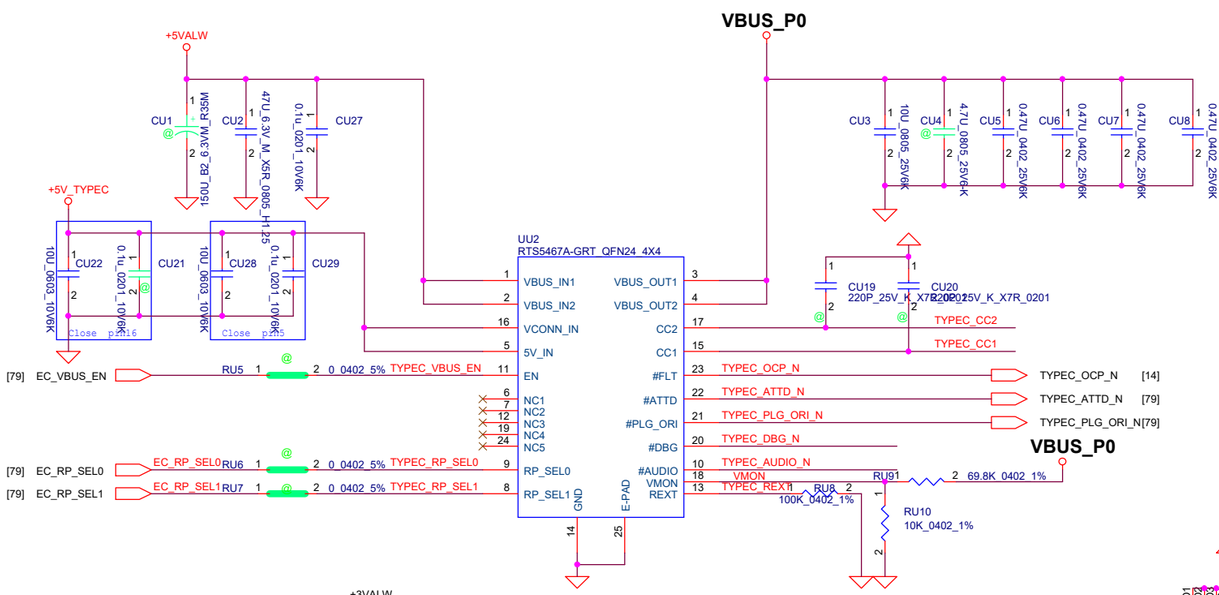


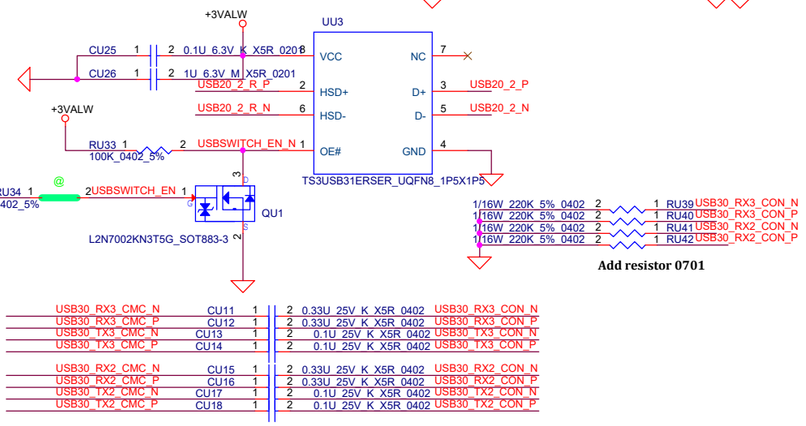
Chip enable control.High acitve.PCB pulled up if not connected to SOC

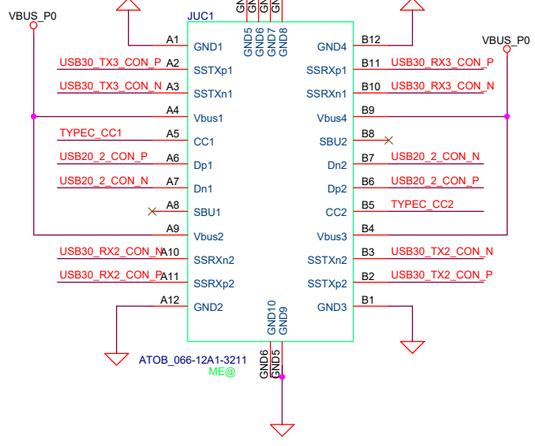
Power switch enable pin	Note
Low Active	RU18 mount
High Active	RU17 mount

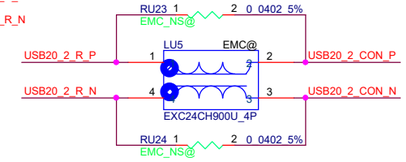


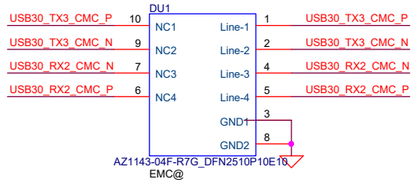
VBUS power fault indicator.
Output Hi-z: no fault.
Drive Low: VBUS power switch is in current limit state or IC is in over temperature condition.
PCB pulled up(1)
if connected to external controller.
Leave floating if not used.

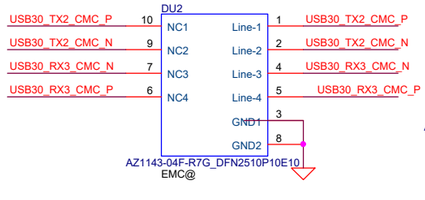


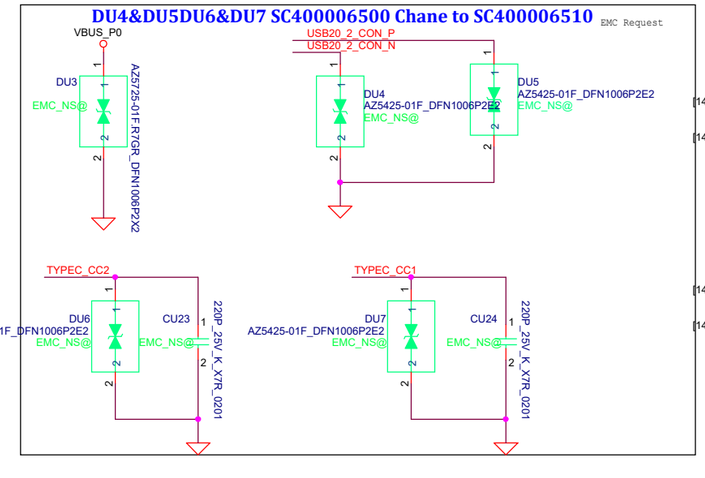


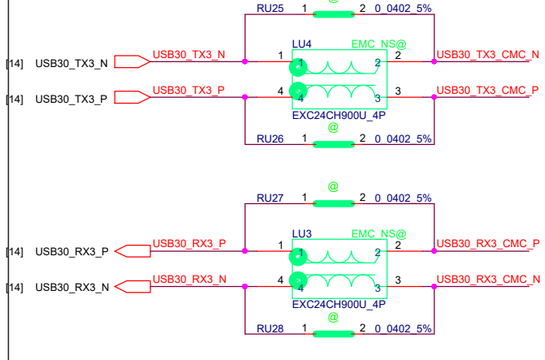


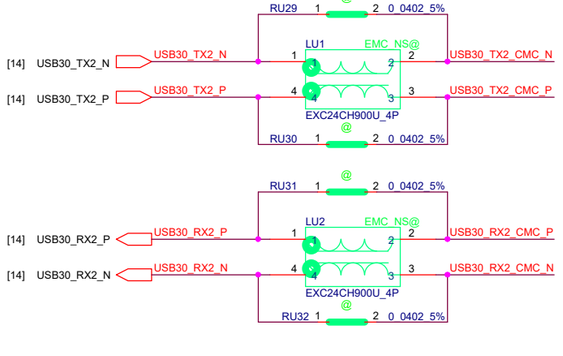












Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL
LCFC
Size: C
Document Number: TYPEC CONN PortA
Rev: 0.1
Date: Tuesday, November 17, 2020
Sheet 53 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	TYPEC_Controller_PortB	0.1

Date: Tuesday, November 10, 2020 Sheet 54 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	TYPEC_MUX_PortB	0.1

Date: Tuesday, November 10, 2020 Sheet 55 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

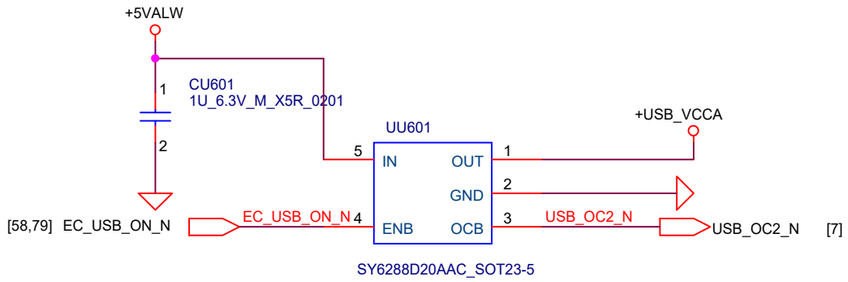
Title: **S360-TGL**

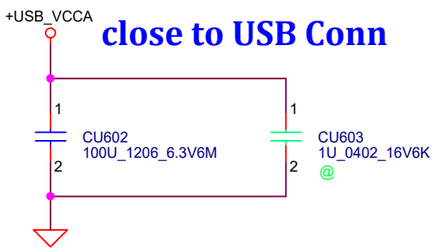
LCFC

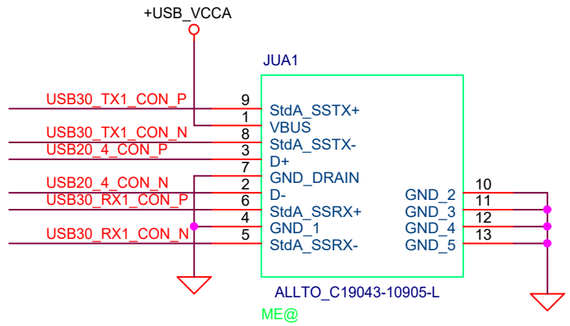
Size	Document Number	Rev
B	TYPEC CONN PortB	0.1

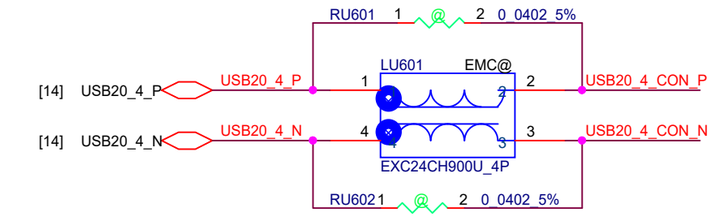
Date: Tuesday, November 10, 2020 Sheet 56 of 110

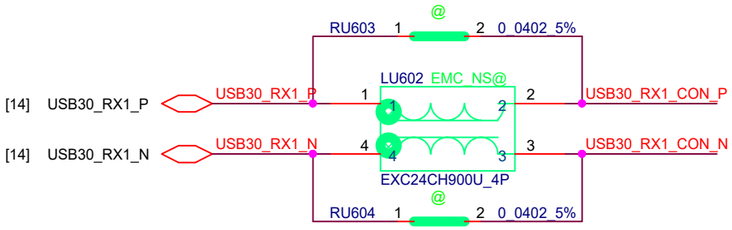
USB3.0 PORT

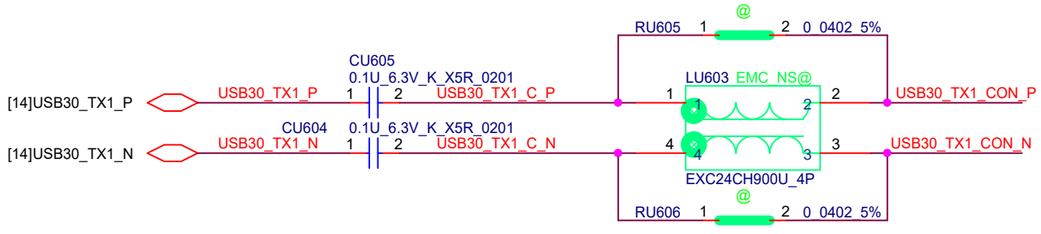




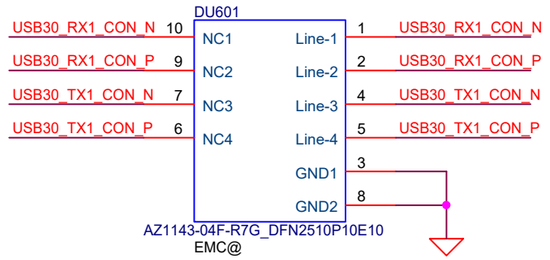


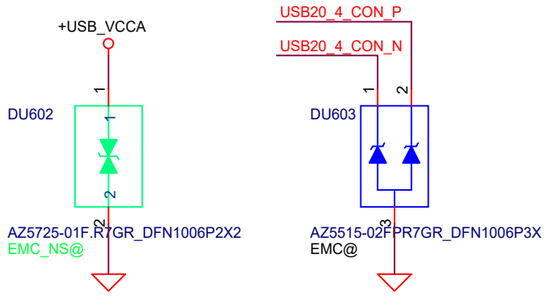






EMC close to USB Conn





Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

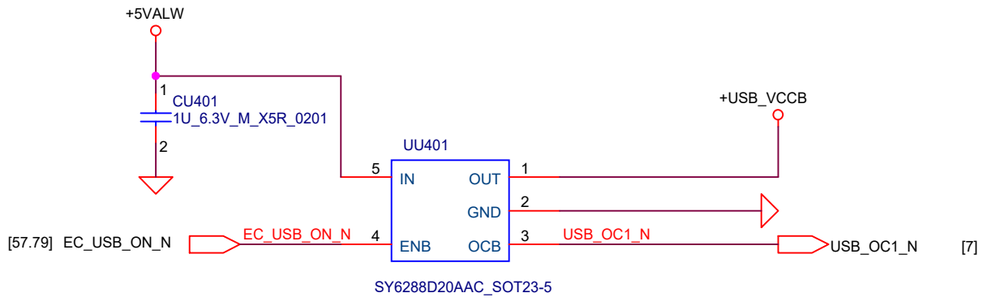
LCFC

Size	Document Number	Rev
B	USBA PortA	0.1

Date: Tuesday, November 10, 2020 Sheet 57 of 110

USB2.0 Port and CMC&TVS&CAP MOVE to SUB Board

USB2.0 PORT



Low Active 2A

the diffrent with Base:
1.S540 No USB2.0 only,S360&V14V15 have

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

LCFC

Size	Document Number	Rev
B	USBA PortB	0.1

Date: Tuesday, November 10, 2020 Sheet 58 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	USBA PortC	0.1

Date: Tuesday, November 10, 2020 Sheet 59 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

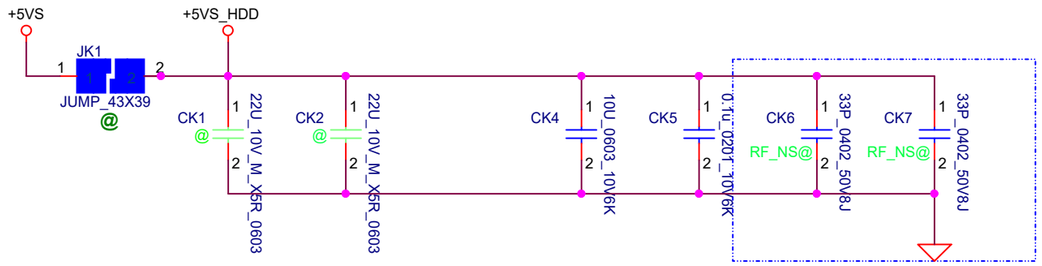
Title: ***S360-TGL***

LCFC

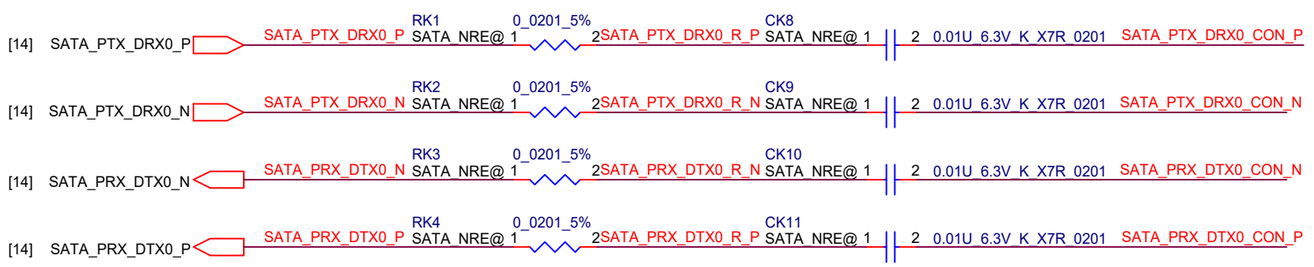
Size	Document Number	Rev
B	***USB HUB***	0.1

Date: Tuesday, November 10, 2020 Sheet 60 of 110

HDD Power



HDD Without Redriver

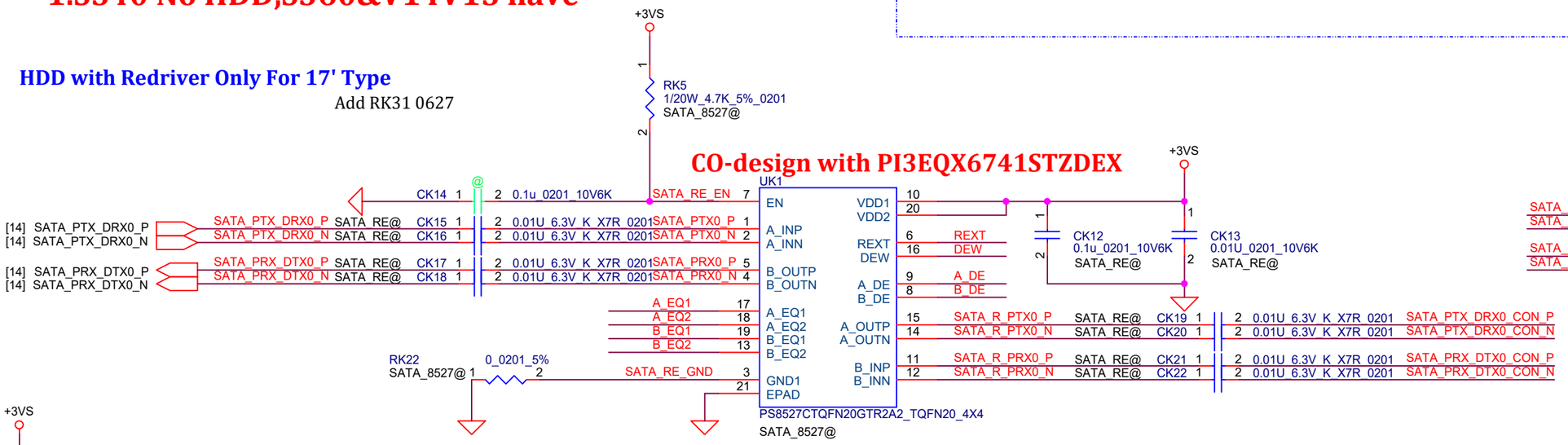


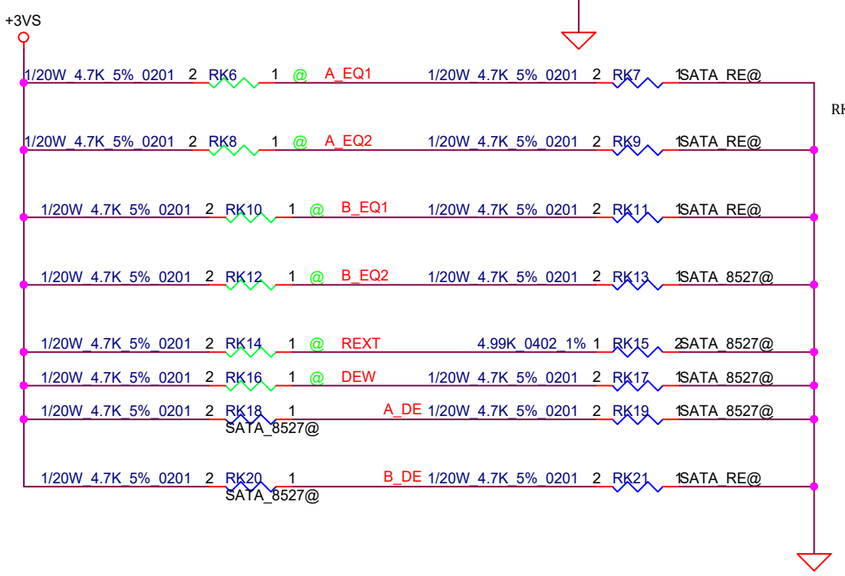
the diffrent with Base:
1.S540 No HDD,S360&V14V15 have

teknisi-indonesia.com

HDD with Redriver Only For 17' Type

Add RK31 0627





RK6,RK7,RK26,RK27 avoid the two IC different EQ level ,reserve

A_EQ Equalization adjustment
A_EM Output emphasis adjustment for Channel A. Allows analog resistive adjustment of emphasis
A_OS Channel A output swing adjustment. Allows analog resistive adjustment of output swing leve

REXT：external res for output swiing adjustment it canbe left open or tie to GND,internally generated bias current be used and the output is as default swing setting;

the pin canbe connected 4.99k to GND,the output swing willbe at the default value with Reference to the ex RES

DEW:De-emphasis width setting for A&B

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title			
S360-TGL			
Size B	Document Number HDD		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 61 of 110		

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

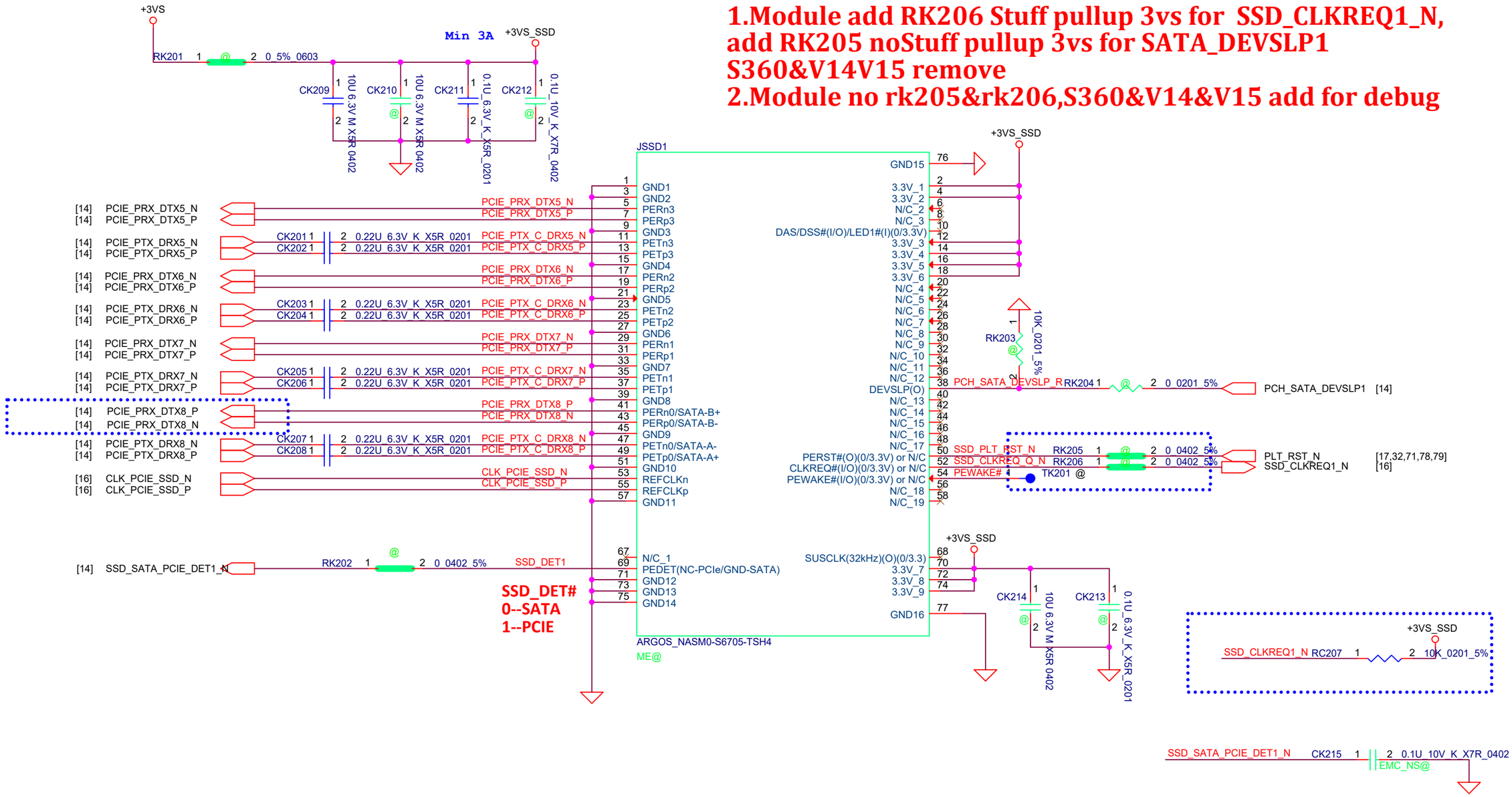
Title: ***S360-TGL***

LCFC

Size	Document Number	Rev
B	***ODD***	0.1

Date: Tuesday, November 10, 2020 Sheet 62 of 110

the diffrent with Base MODULE:
1.Module add RK206 Stuff pullup 3vs for SSD_CLKREQ1_N, add RK205 noStuff pullup 3vs for SATA_DEVSLP1
S360&V14V15 remove
2.Module no rk205&rk206,S360&V14&V15 add for debug



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size B	Document Number SSD		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 63 of 110		

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title

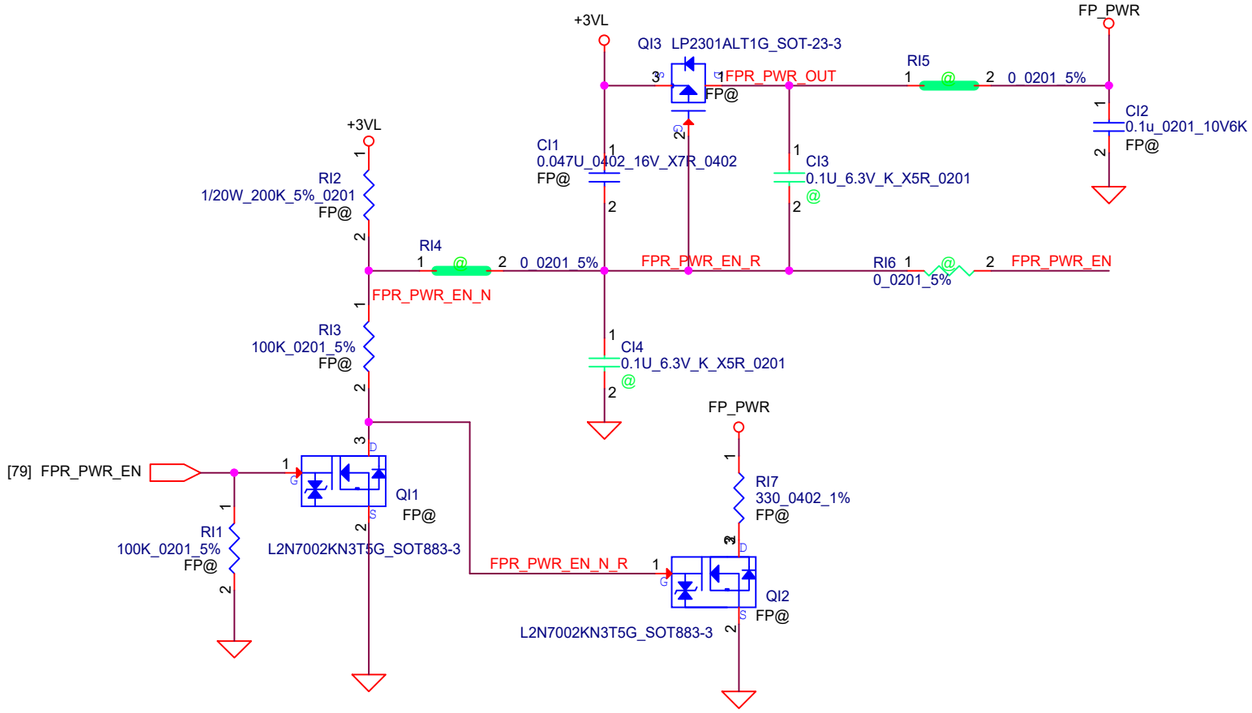
S360-TGL

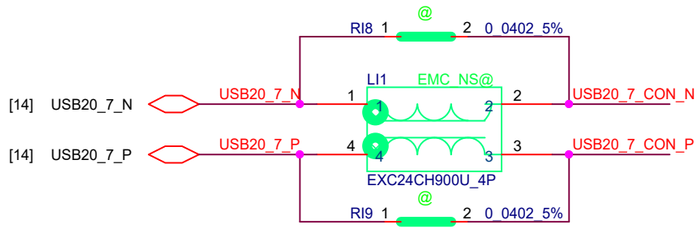
LCFC

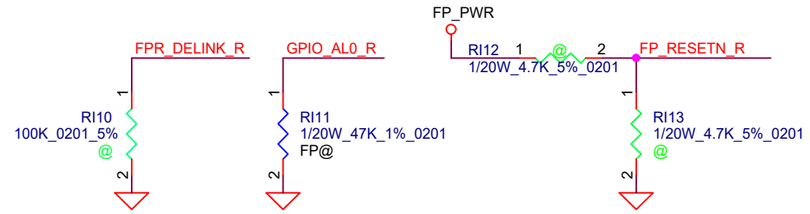
Size	Document Number	Rev
B	***EMMC***	0.1

Date: Tuesday, November 10, 2020 Sheet 64 of 110

FP Power Control

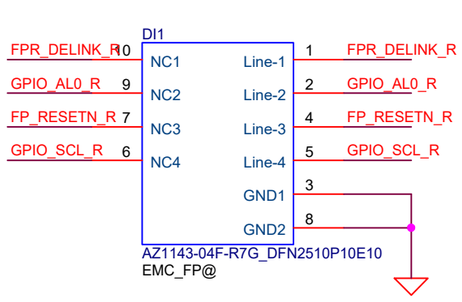


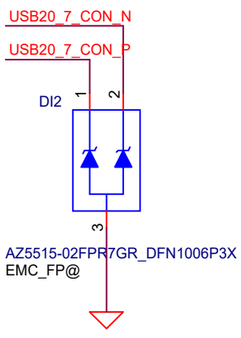


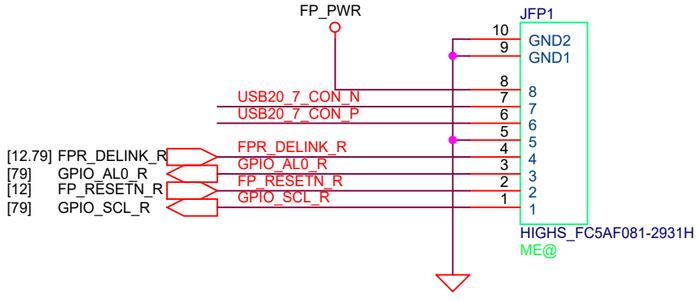


the diffrent with Base:
1.S540 No Fingerprinter,S360&V14V15 have

EMC
close to Conn







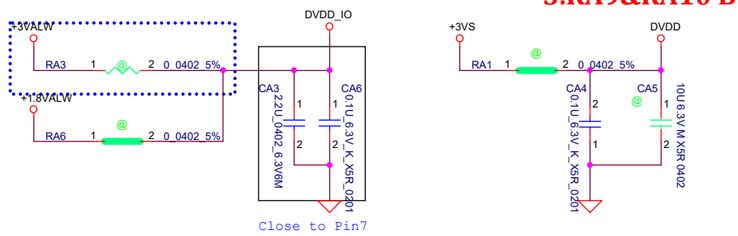
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

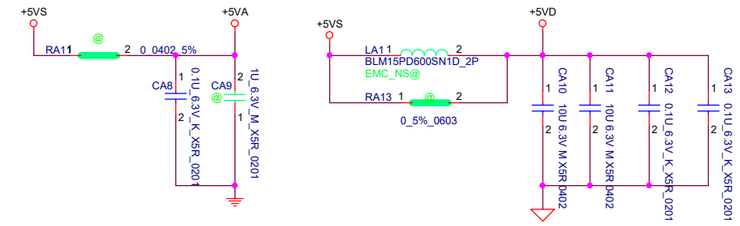
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

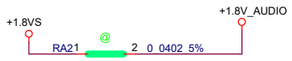
Title	S360-TGL		LCFC
Size B	Document Number FPR		Rev 0.1
Date: Tuesday, November 17, 2020	Sheet 65 of 110		

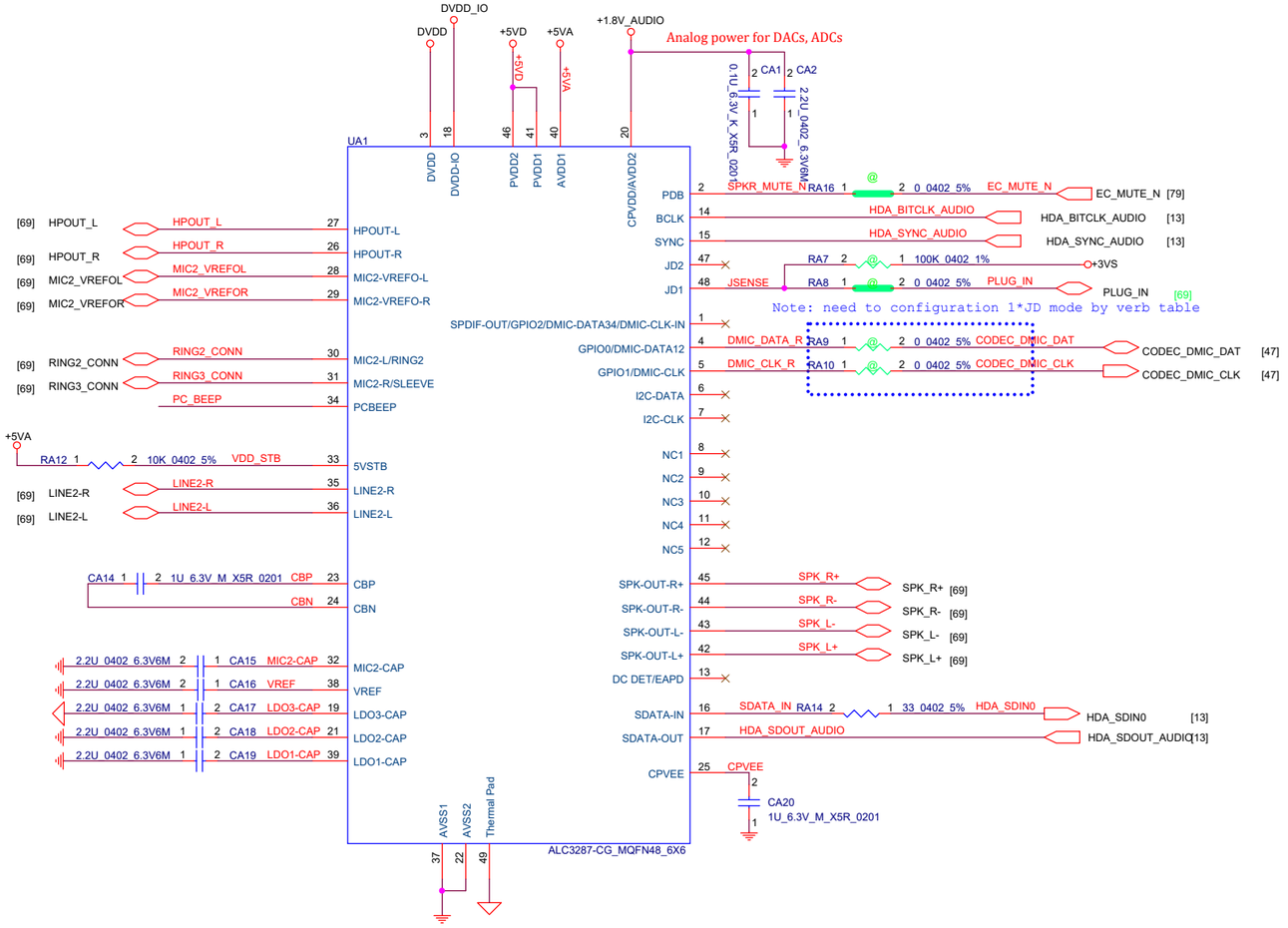
the diffrent with Base MODULE:
1.Module no ra3 to DVDD_IO,S360&V14&V15 reserve
2.Module no ra5 CA21 to EC_BEEP,S360&V14&V15 reserve
3.RA9&RA10 BOMStructure different with module

Note: DVDD-IO must be equal to or smaller than DVDD

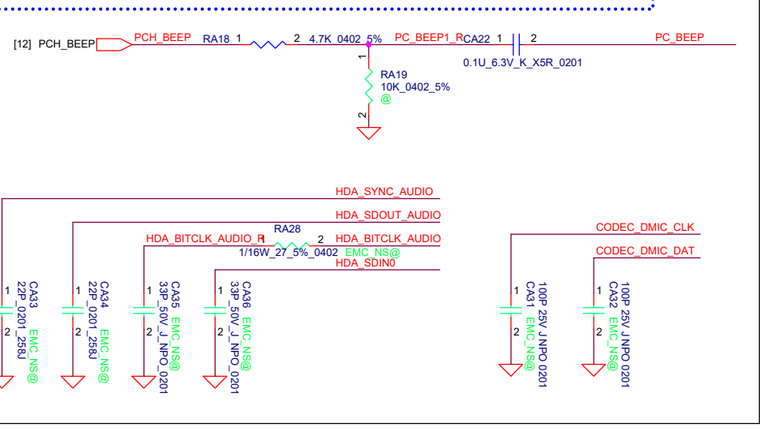


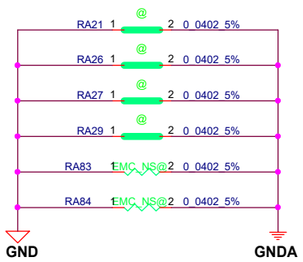






Note: power beep function is removed from BIOS spec





Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

LCFC

Size: C | Document Number: Audio Codec | Rev: 0.1

Date: Wednesday, November 11, 2020 | Sheet 66 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	Audio Amplifier	0.1

Date: Tuesday, November 10, 2020 Sheet 67 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

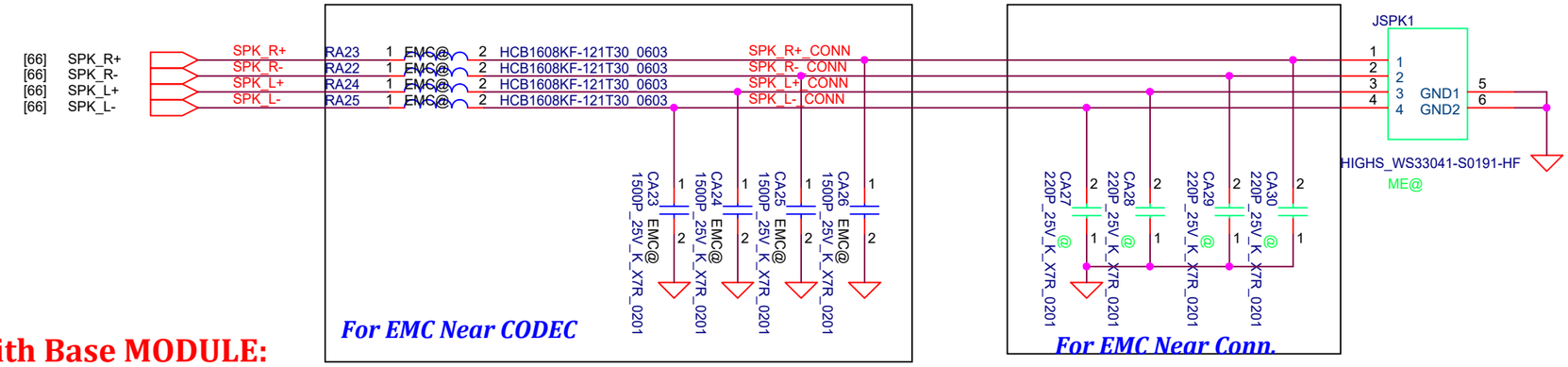
Title: **S360-TGL**

LCFC

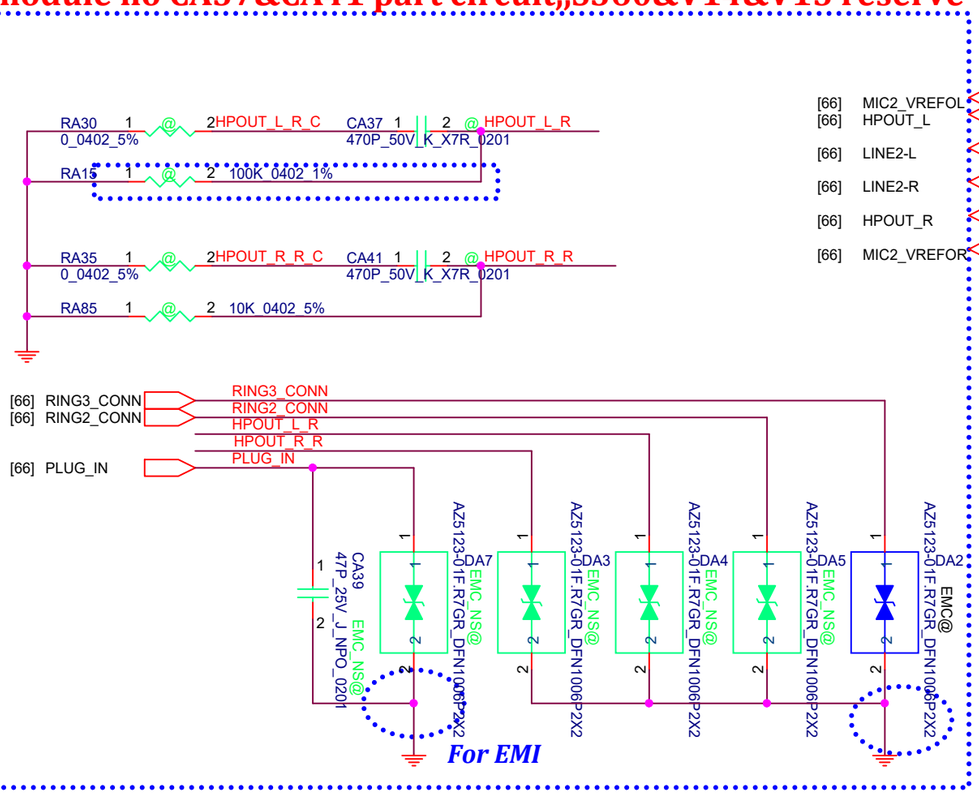
Size	Document Number	Rev
B	Audio DSP	0.1

Date: Tuesday, November 10, 2020 Sheet 68 of 110

Speaker

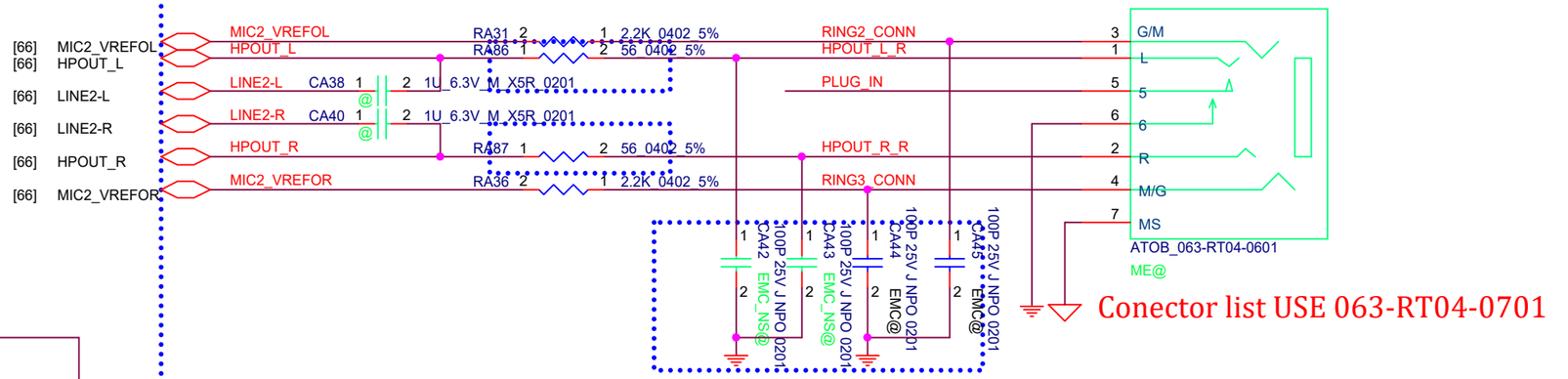


the diffrent with Base MODULE:
1.S360&V14&V15 RA86&RA87 VALUE different with module,
Module have RA85&RA88,S360&V14&V15 Remove
2.for EMC TVS EMC_NS@ type different with module
3.GND type different
4.module no CA37&CA41 part circuit,,S360&V14&V15 reserve



6pin&7pin audio jack comon design,stuff 6pin default;
need vitrual symbol control

Audio Jack



Conector list USE 063-RT04-0701

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size B	Document Number Audio SPK/Jack		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 69 of 110		

Card reader Circuit MOVE to SUB Board S360

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

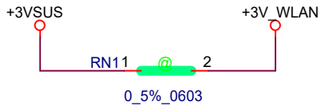
Title: *S360-TGL*

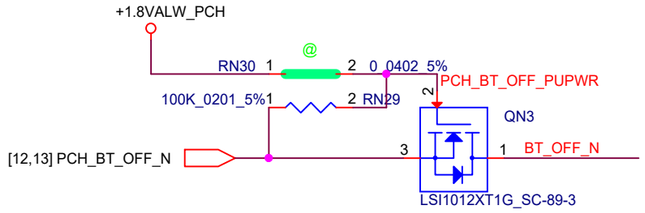
LCFC

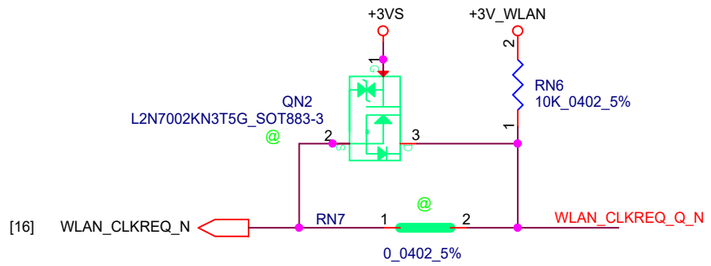
Size	Document Number	Rev
B	*Card Reader*	0.1

Date: Tuesday, November 10, 2020 Sheet 70 of 110

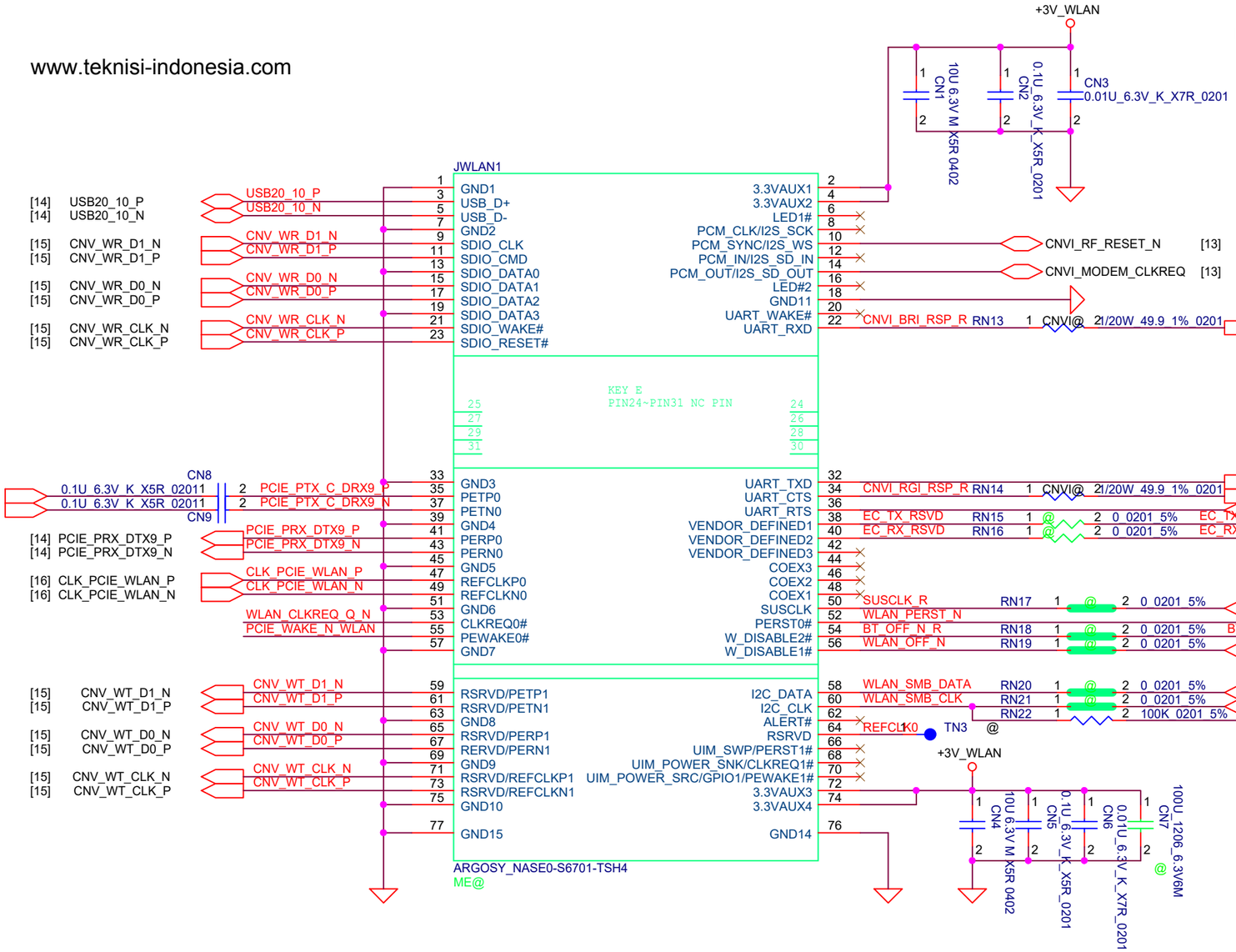
WLAN

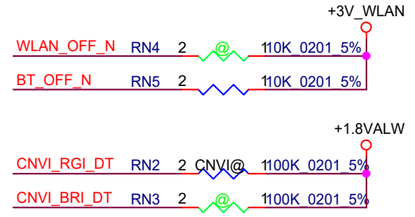


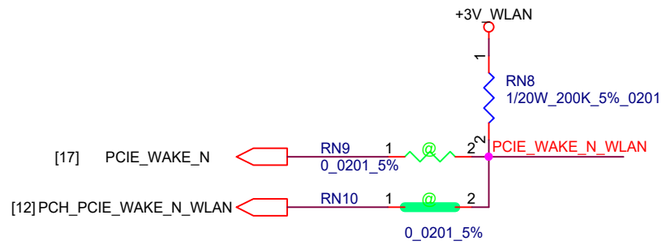


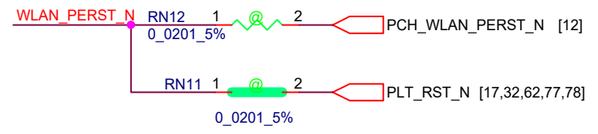


www.teknisi-indonesia.com









Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size B	Document Number WLAN		Rev 0.1
Date: Tuesday, November 17, 2020	Sheet 71 of 110		

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: ***S360-TGL***

LCFC

Size	Document Number	Rev
B	***WWAN***	0.1

Date: Tuesday, November 10, 2020 Sheet 72 of 110

LAN Circuit MOVE to SUB Board in V360 DB

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: *S360-TGL*

LCFC

Size	Document Number	Rev
B	*LAN Chipset*	0.1

Date: Tuesday, November 10, 2020 Sheet 73 of 110

LAN Circuit MOVE to SUB Board in V360 DB

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

LCFC

Size	Document Number	Rev
B	LAN Transformer	0.1

Date: Tuesday, November 10, 2020 Sheet 74 of 110

LAN Circuit MOVE to SUB Board in V360 DB

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

LCFC

Size	Document Number	Rev
B	LAN_CONN	0.1

Date: Tuesday, November 10, 2020 Sheet 75 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

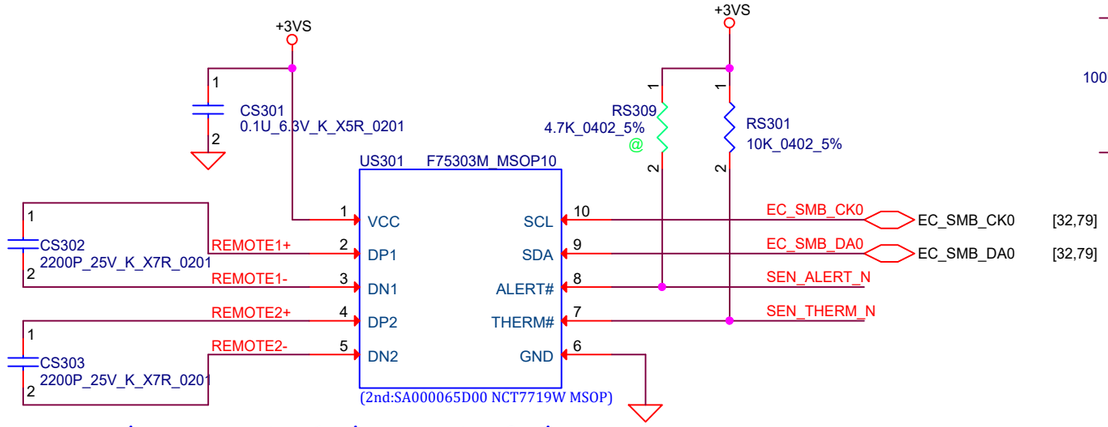
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: ***S360-TGL***

LCFC

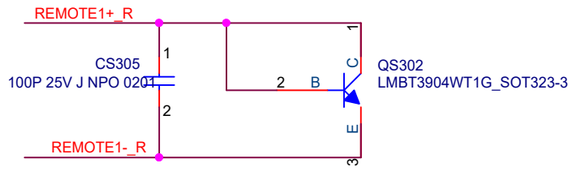
Size	Document Number	Rev
B	***Sensor***	0.1

Date: Tuesday, November 10, 2020 Sheet 76 of 110

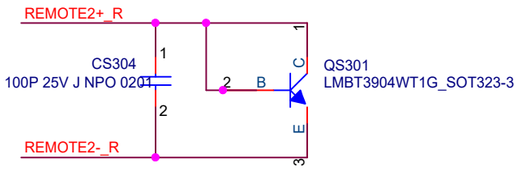


REMOTE+/-_R, REMOTE1+/-, REMOTE2+/-:
Trace width/space:10/10 mil
Trace length:<8"

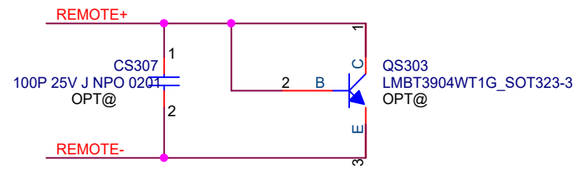
Near CHARGER



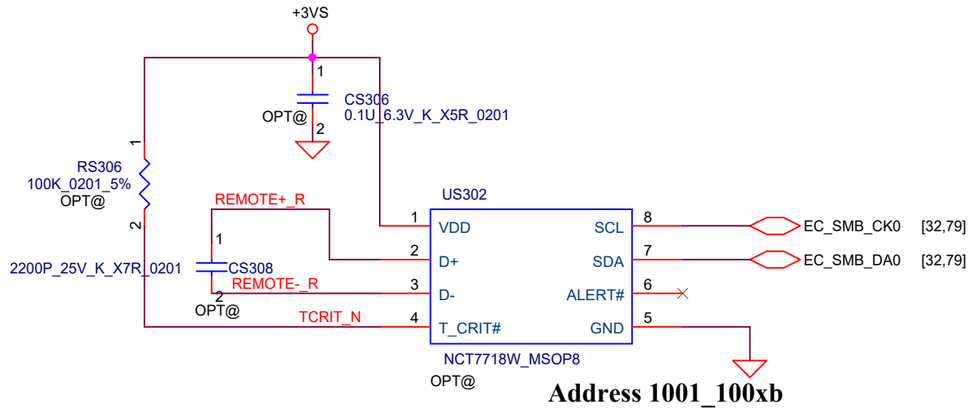
Near CPU



Near GPU



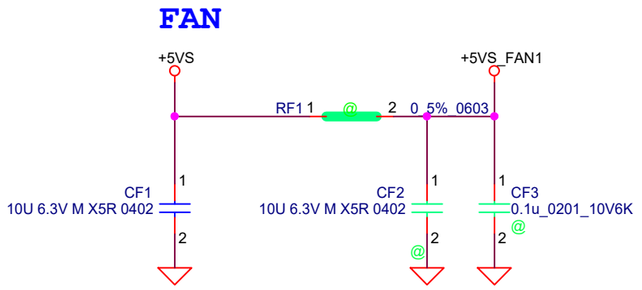
the diffrent with Base MODULE:
1.Module no RS309,S360 &V14V15 add RS309 location



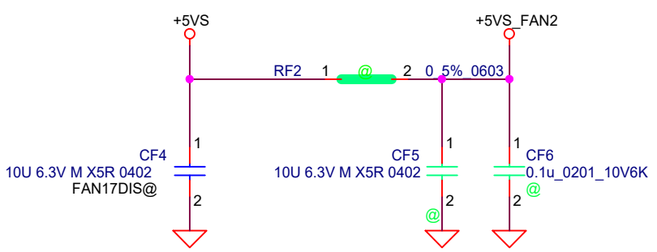
Address 1001_100xb

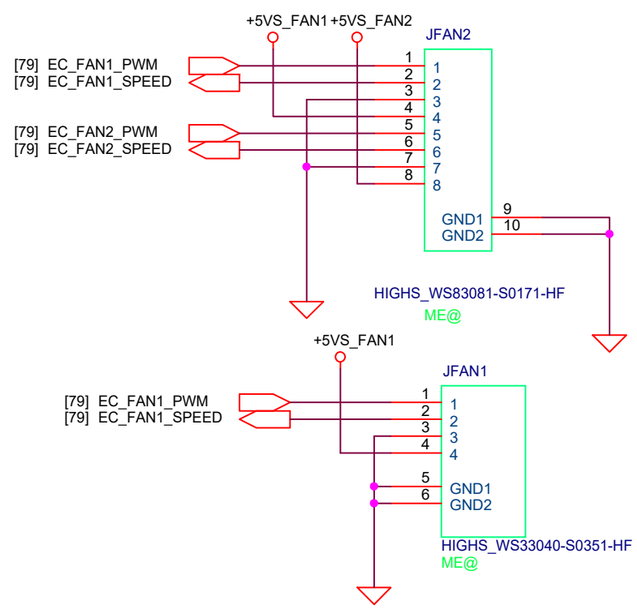
REMOTE+/-_R, REMOTE1+/-, REMOTE2+/-:
Trace width/space:10/10 mil
Trace length:<8"

FAN



FAN





Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

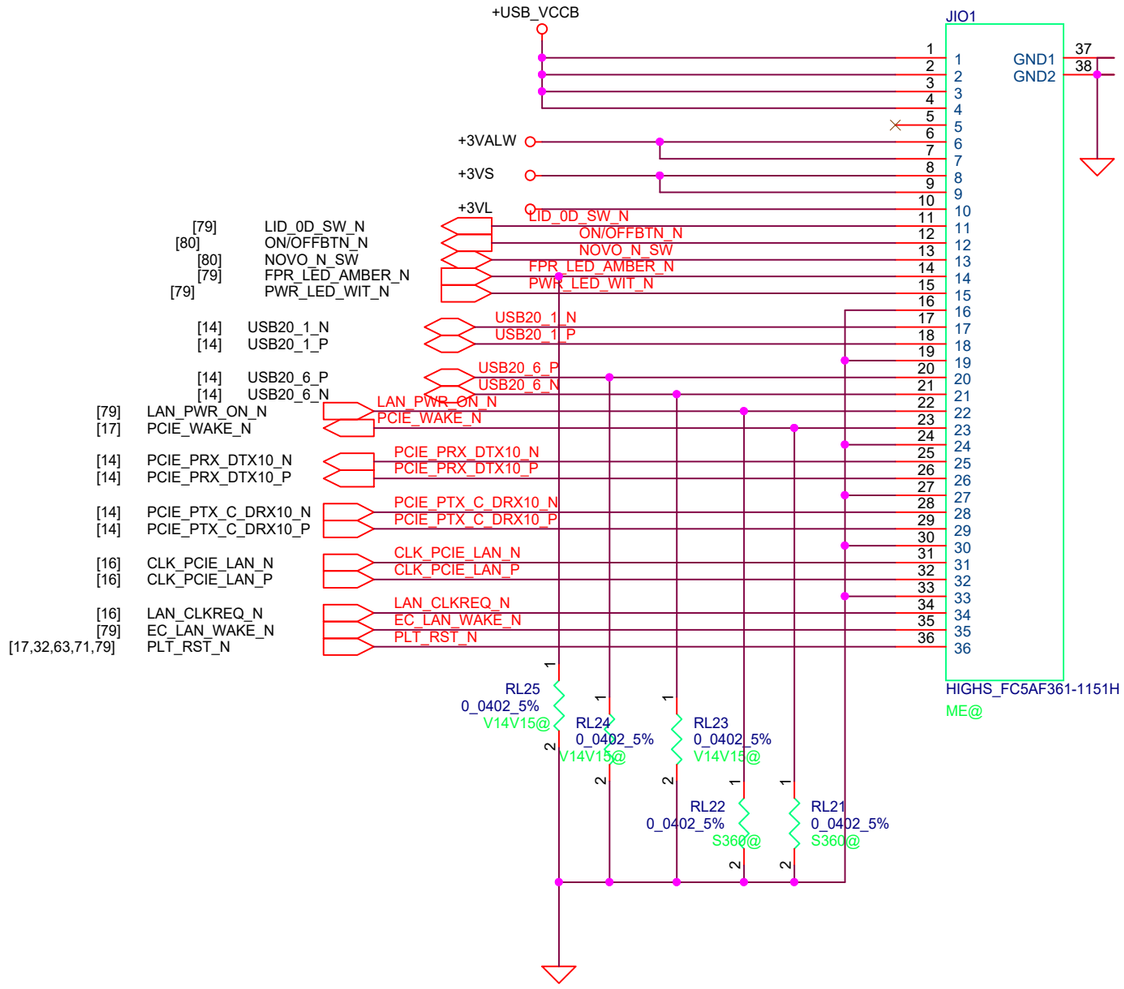
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

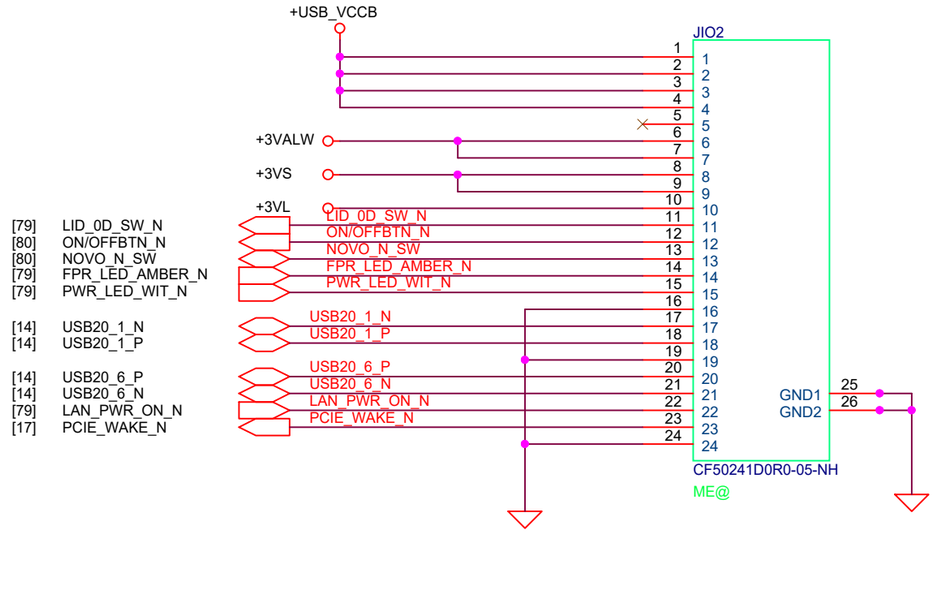
Title	S360-TGL		
Size B	Document Number Thermal		Rev 0.1
Date: Wednesday, November 11, 2020	Sheet 77 of 110		

FPC+cable+Wire

USB2.0_1 For USB2.0 Connector;
USB2.0_6 For S360 Card Reader

3VALW for LED&V360 Lanchip Power;
3VS for S360 Card Reader, V360 ISOLATE_N





Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size B	Document Number Sub Board CONN		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 78 of 110		

All capacitors close to EC

IT8227 VFBGA

IT8227VG-128-CX_VFBGA128

LPC

CIR

UART port

EXTERNAL SERIAL FLASH

SPI ENABLE

KBMX

SM BUS

PS/2

PWM

WAKE UP

A/D D/A

CLOCK

GPIO

Battery/Charge

GPU/Thermal

PD/PMIC

when mirror, GPG2 pull high
when no mirror, GPG2 pull low

GPA0&1:Output(Drive or Source/sink 8/16mA)

Emergency Power Loss Early De-assertion of DSW_PWROK control circuit

The EC output 0 V and 3.3 V, processor input DC levels are 0 V and 1.0 V.
An inverting logic level shifter must be used;
PDG page115

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

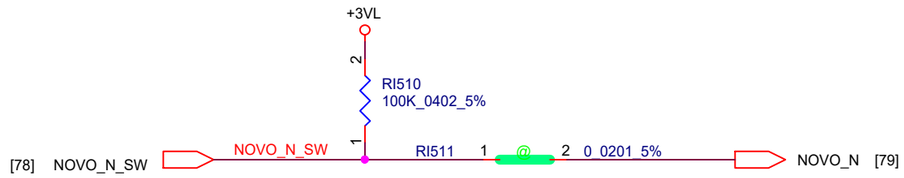
Title: S360-TGL

LCFC

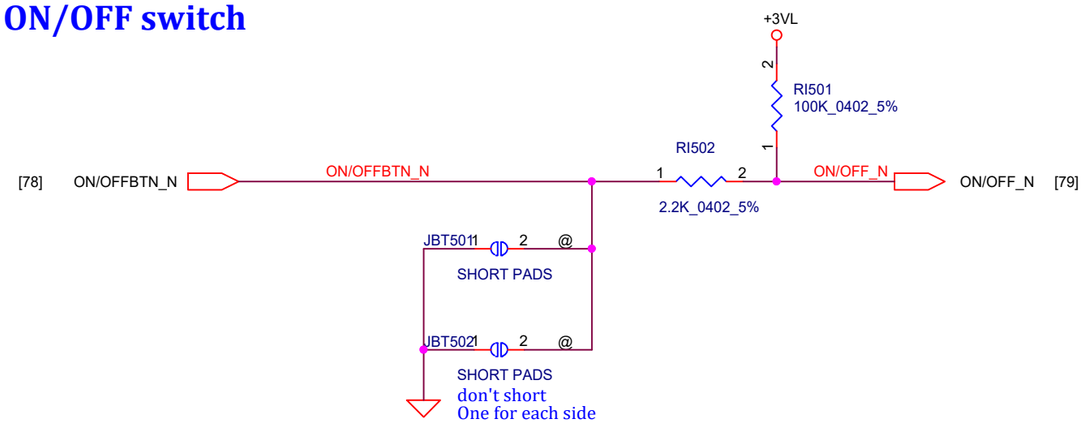
Size: D | Document Number: EC | Rev: 0.1

Date: Tuesday, November 17, 2020 | Sheet 79 of 110

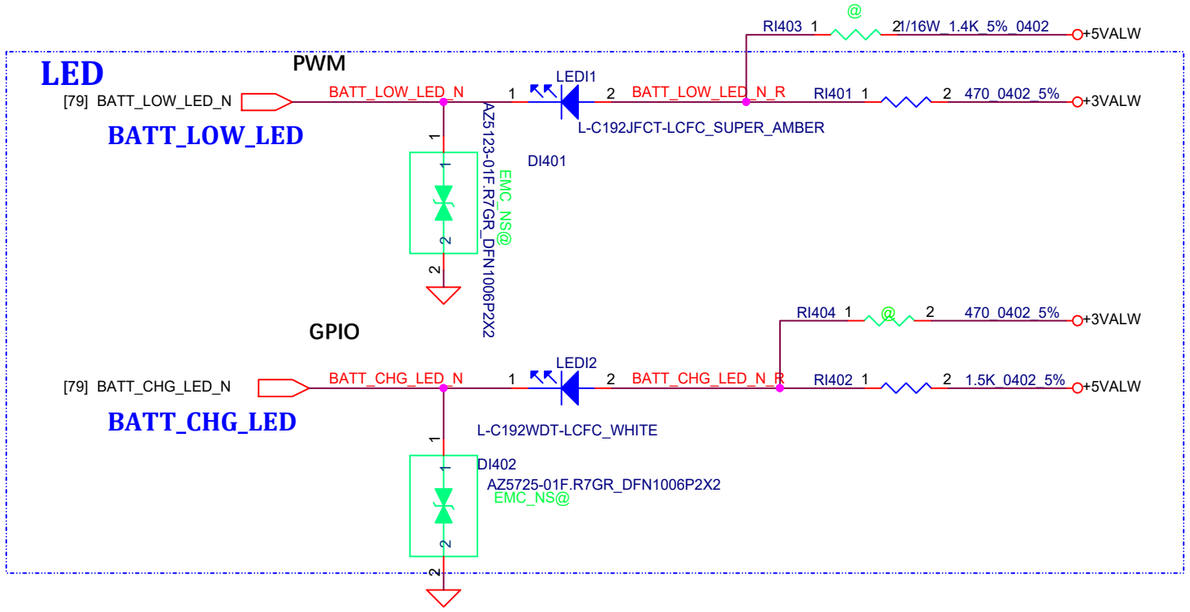
NOVO switch



ON/OFF switch



LED



the diffrent with module:
1.modulel mos control LED,S360&V14V15 NO NEED

LED	Stute	LED Behavior
Power Button	System on	White_on(battery: 21%~100%)
		Amber_on(battery: 0%~20%)
	Standby LID closed	White_on(battery: 21%~100%)
		Amber_Blink_3S(battery: 0%~20%)
	System off	OFF
Charging	Battery only	OFF
	Charging	Amber_on(battery: 1%~90%)
		White_on(battery: 91%~100%)

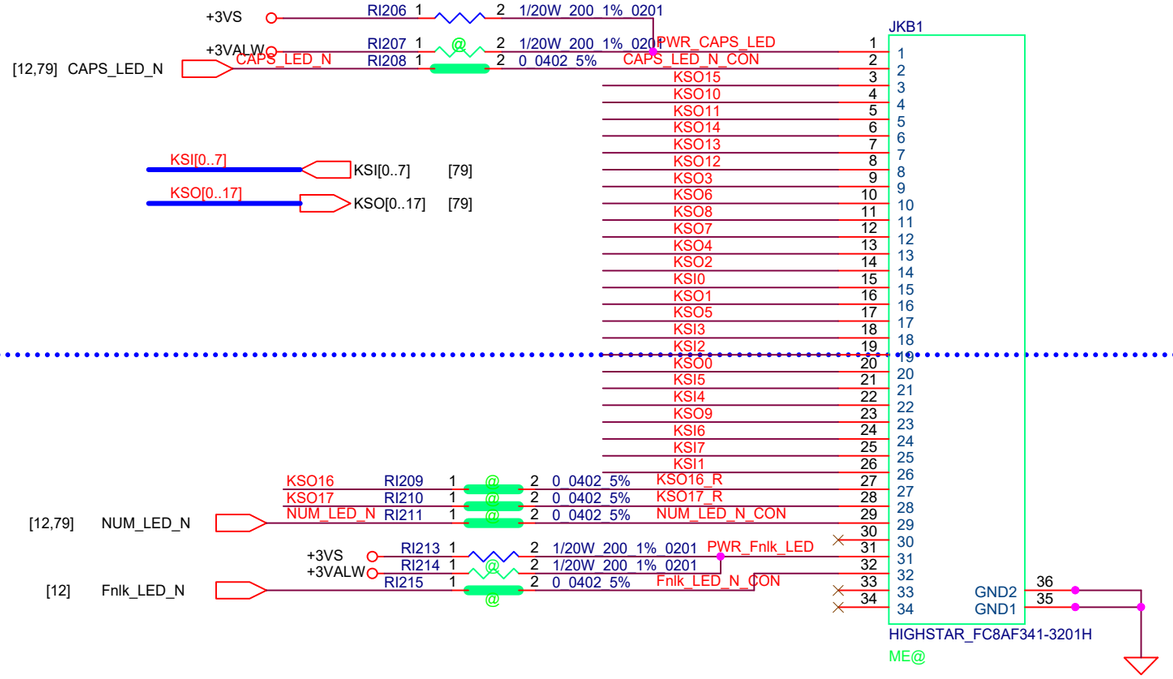
The Power LED move to SUB board LENS

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

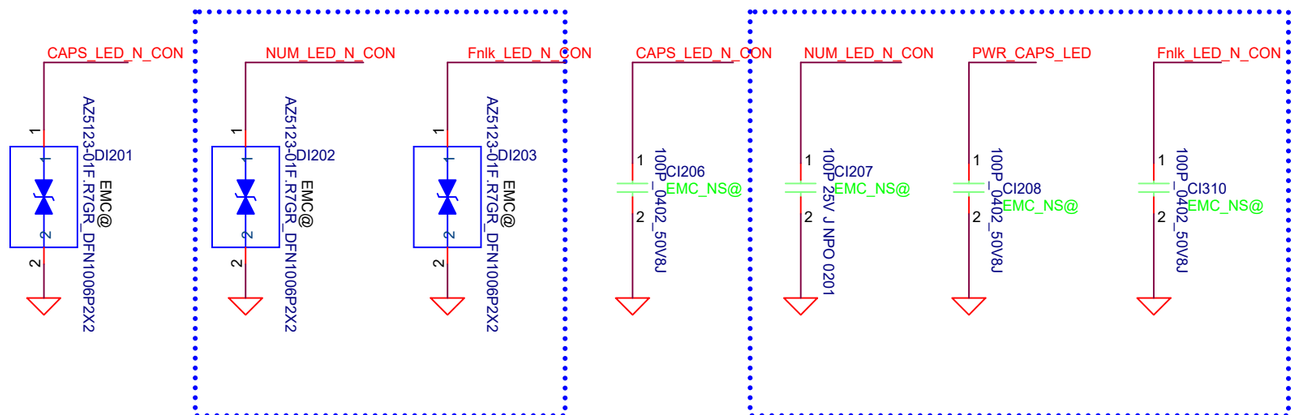
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title			
S360-TGL			
Size B	Document Number LED/Button		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 80 of 110		

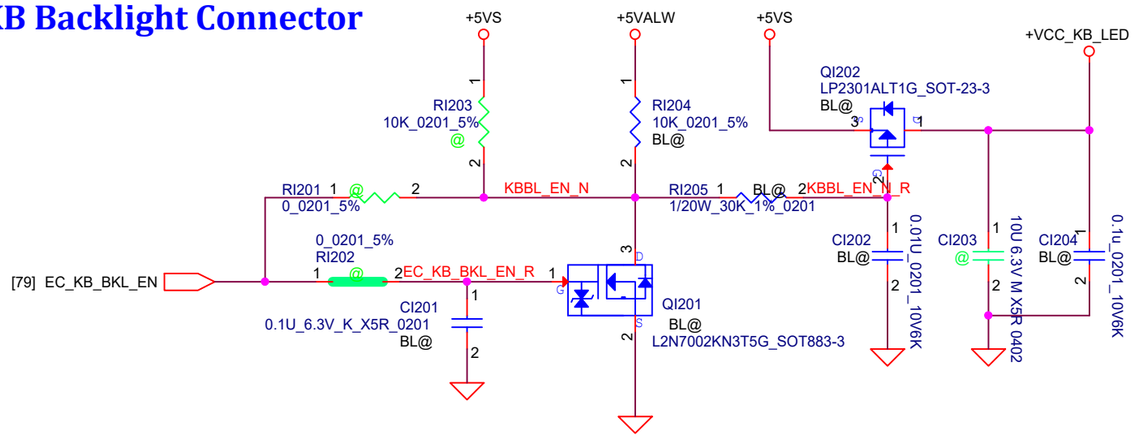
K/B Connector

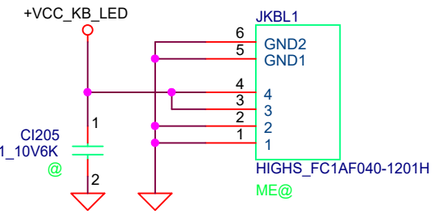


EMC
close to Conn



KB Backlight Connector





the diffrent with module:
1.modulel No 15 KB,S360&V14V15 have

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size B	Document Number KB/KBBL CONN		Rev 0.1
Date: Tuesday, November 17, 2020	Sheet 81 of 110		

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

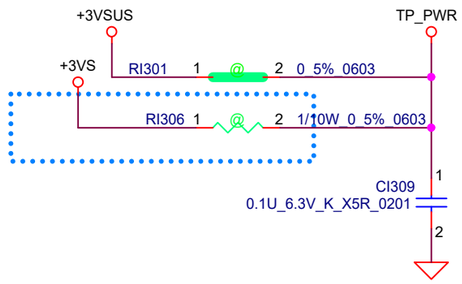
Size	Document Number	Rev
B	Anti Ghost KB	0.1

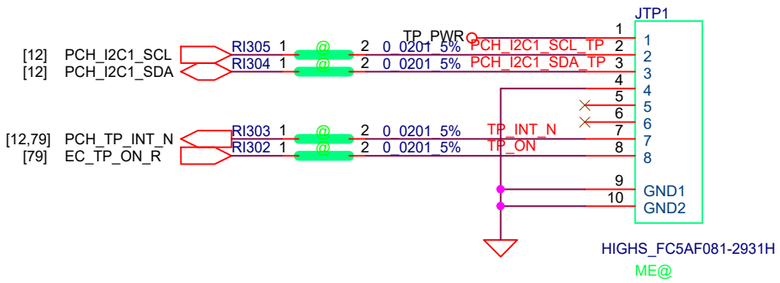
Date: Tuesday, November 10, 2020 Sheet 82 of 110

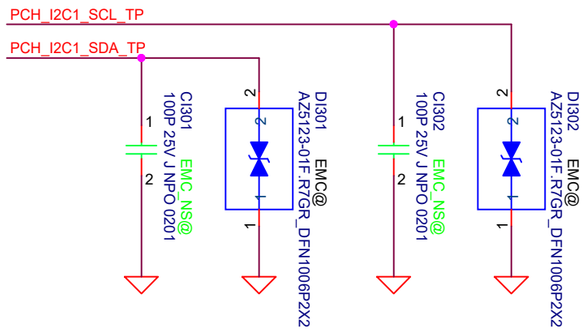
the diffrent with Base MODULE:
1.Module no RI306,S360&V14&V15 Rerserve

Touch Pad

Need support wake up by touch pad
Follow latest UE spec



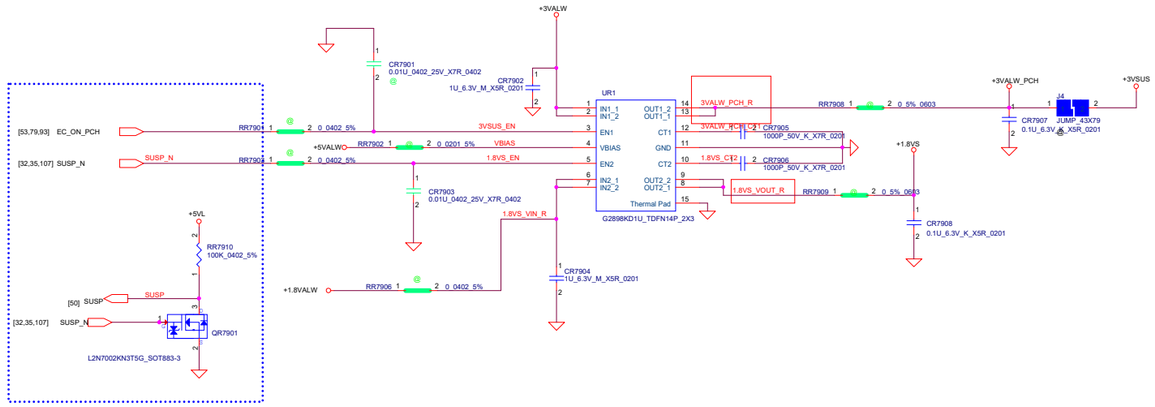


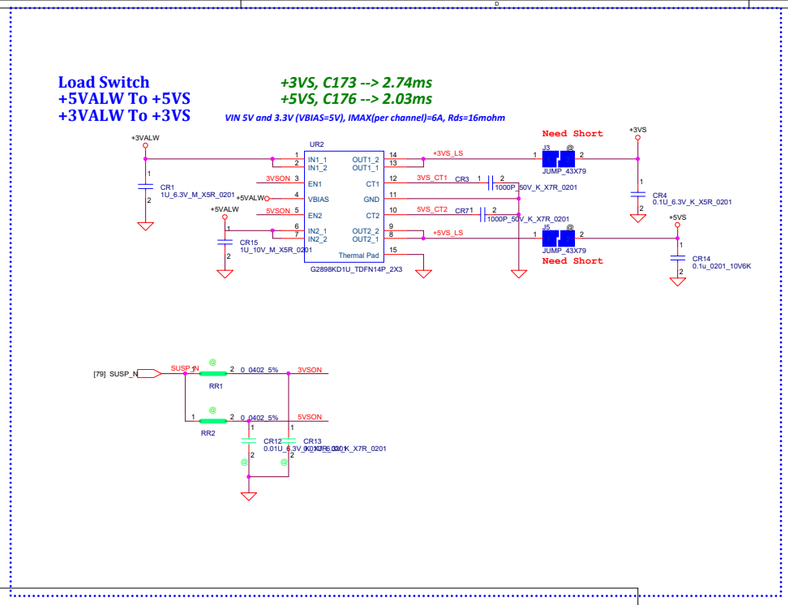


Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

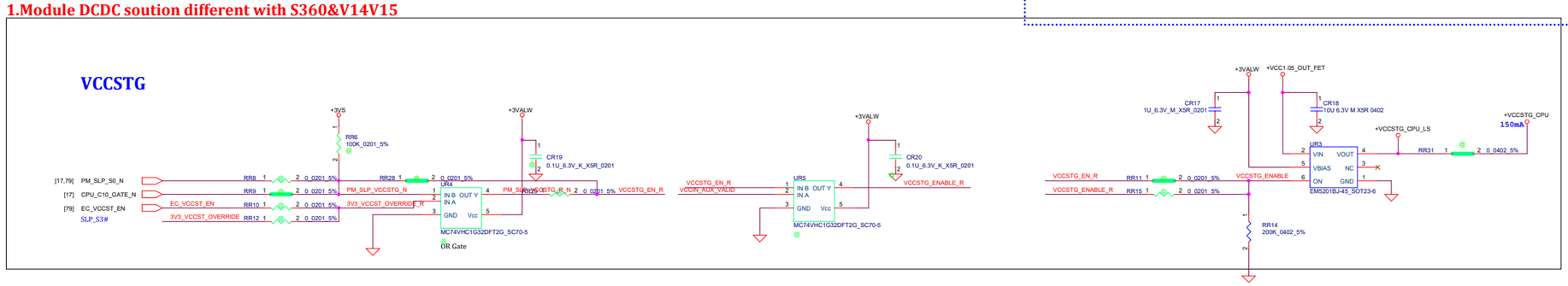
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title		
S360-TGL	LCFC	
Size B	Document Number: TouchPad CONN	Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 83 of 110	



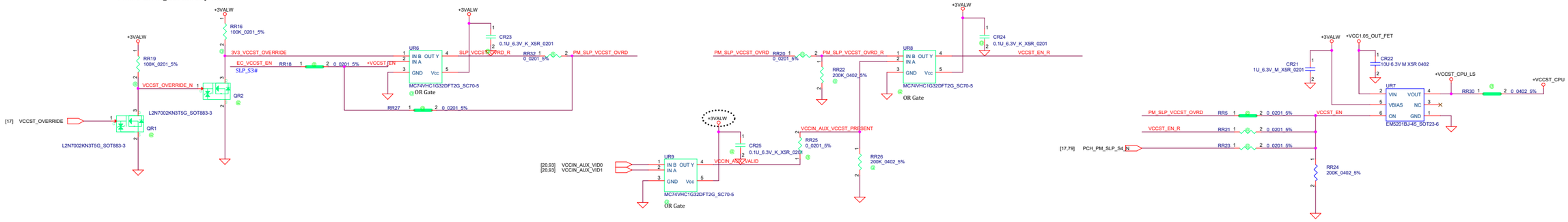


the diffrent with Base MODULE:
1.Module DCDC soution different with S360&V14V15



VCCST

VCCST EN Signal modify 0624



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

LCFC

Size	Document Number	Rev
D	DCDC SYSTEM PWR	0.1

Date: Tuesday, November 17, 2020 Sheet 84 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

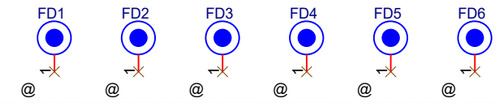
Title: **S360-TGL**

LCFC

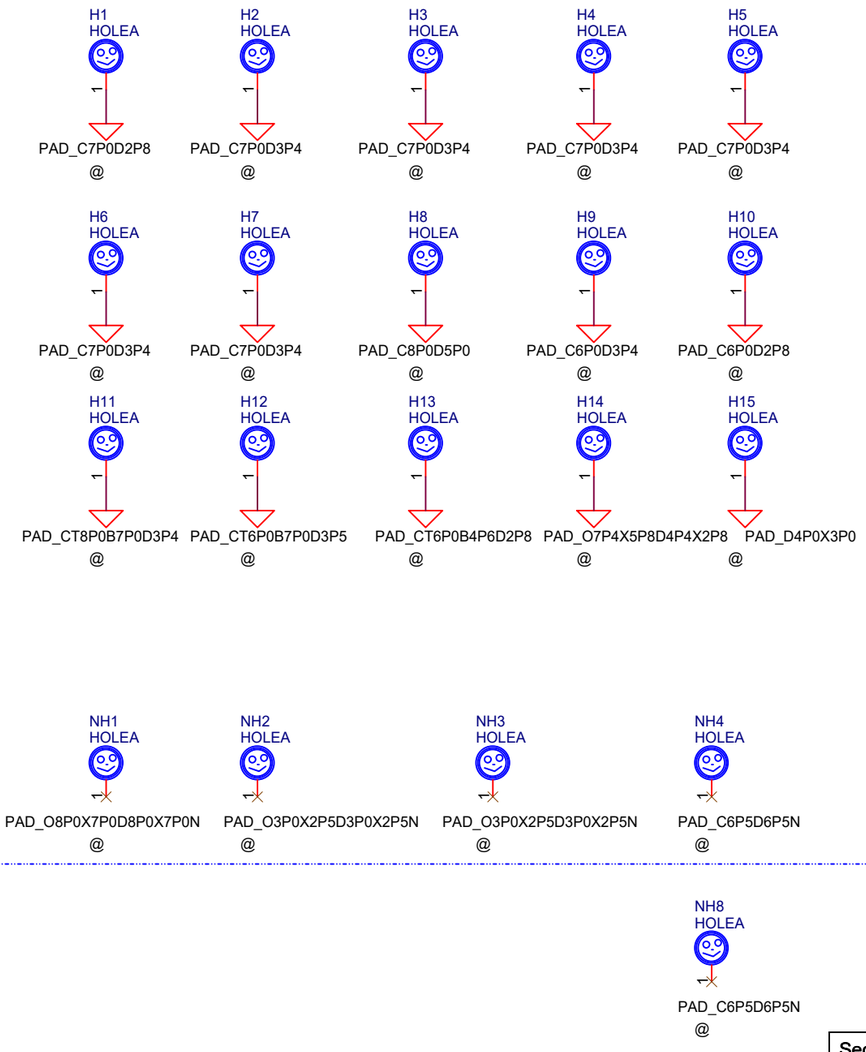
Size	Document Number	Rev
B	DCDC MS PWR	0.1

Date: Tuesday, November 10, 2020 Sheet 85 of 110

PCB Fedical Mark PAD

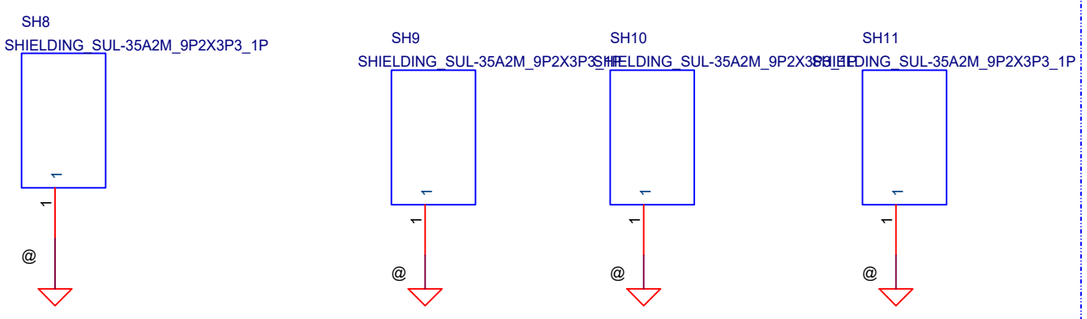


Hole

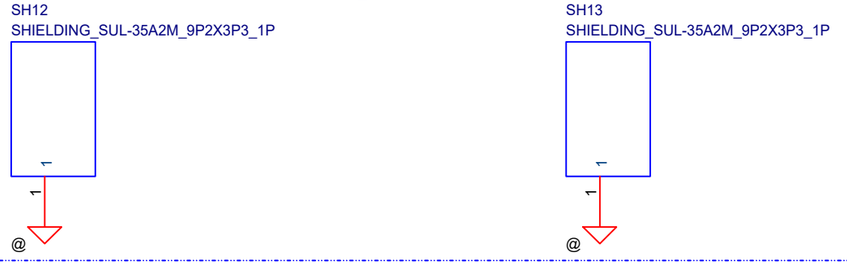


MD Shielding

SO-DIMM Shielding



GPU or VRAM Shielding



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

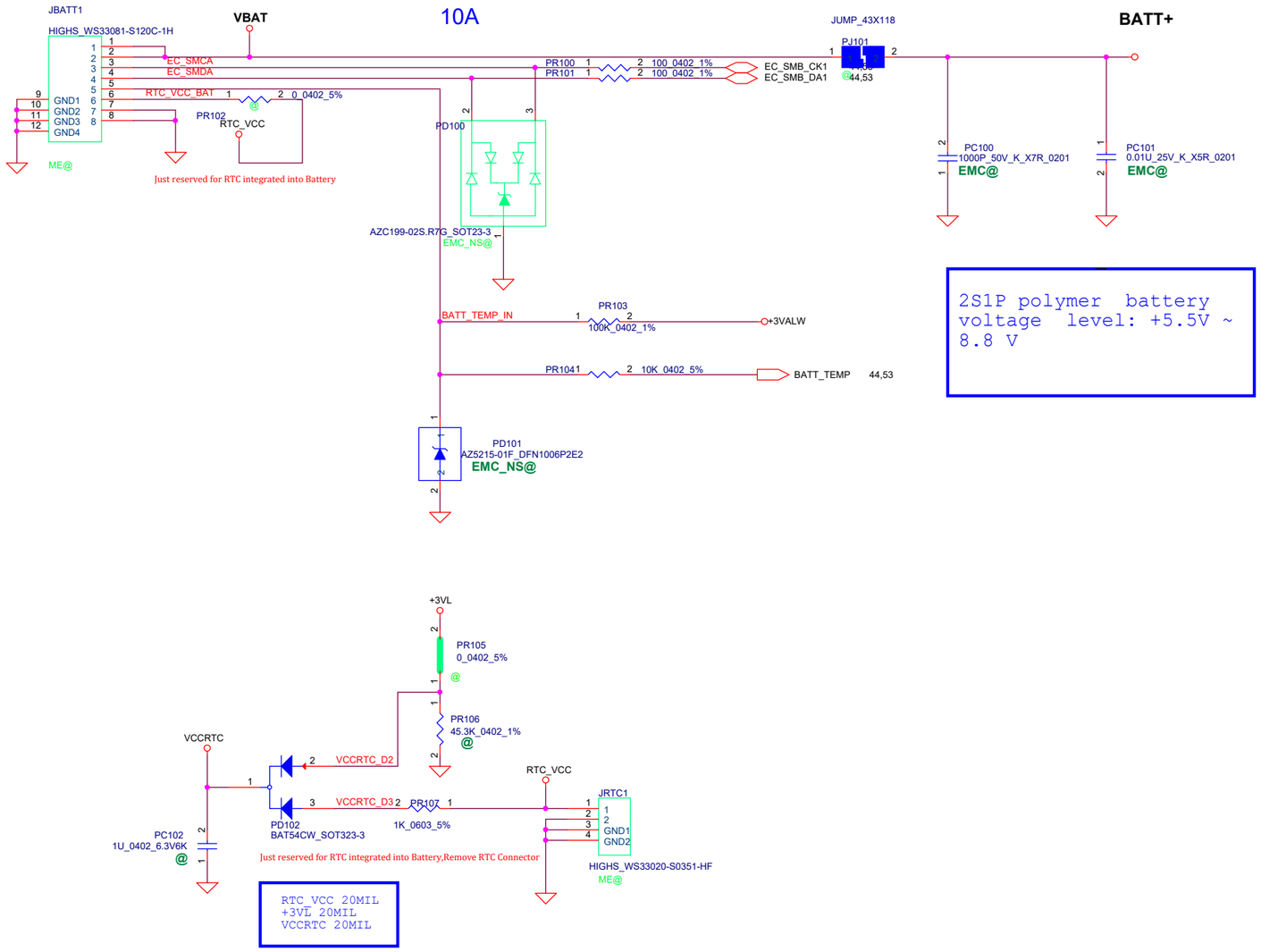
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	Hole/Shielding	0.1

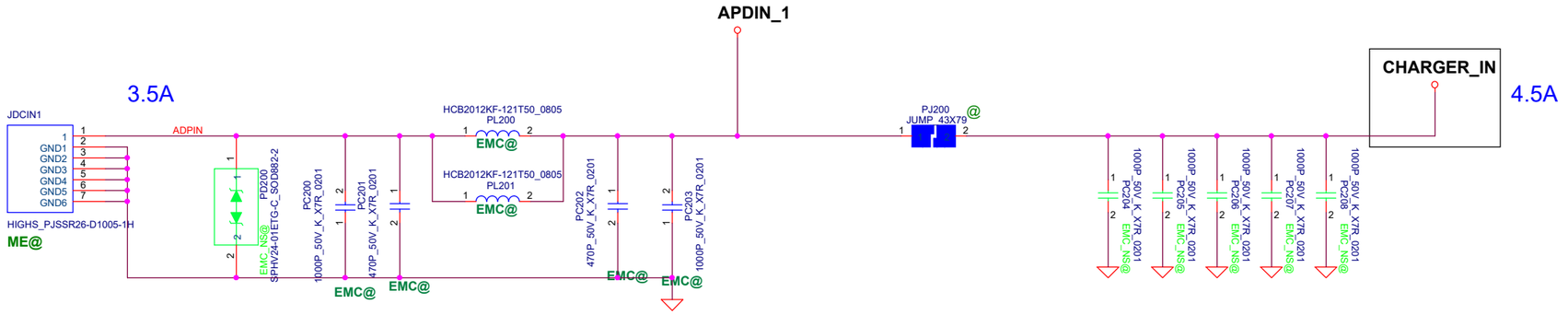
Date: Tuesday, November 10, 2020 Sheet 86 of 110

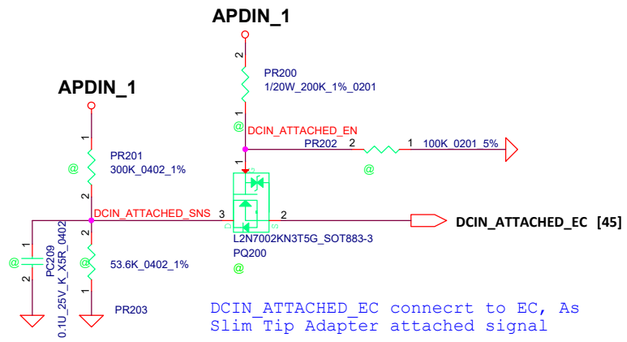


Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		LCFC
Size C	Document Number PWR_DCIN/RTC		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 87 of 110		





Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

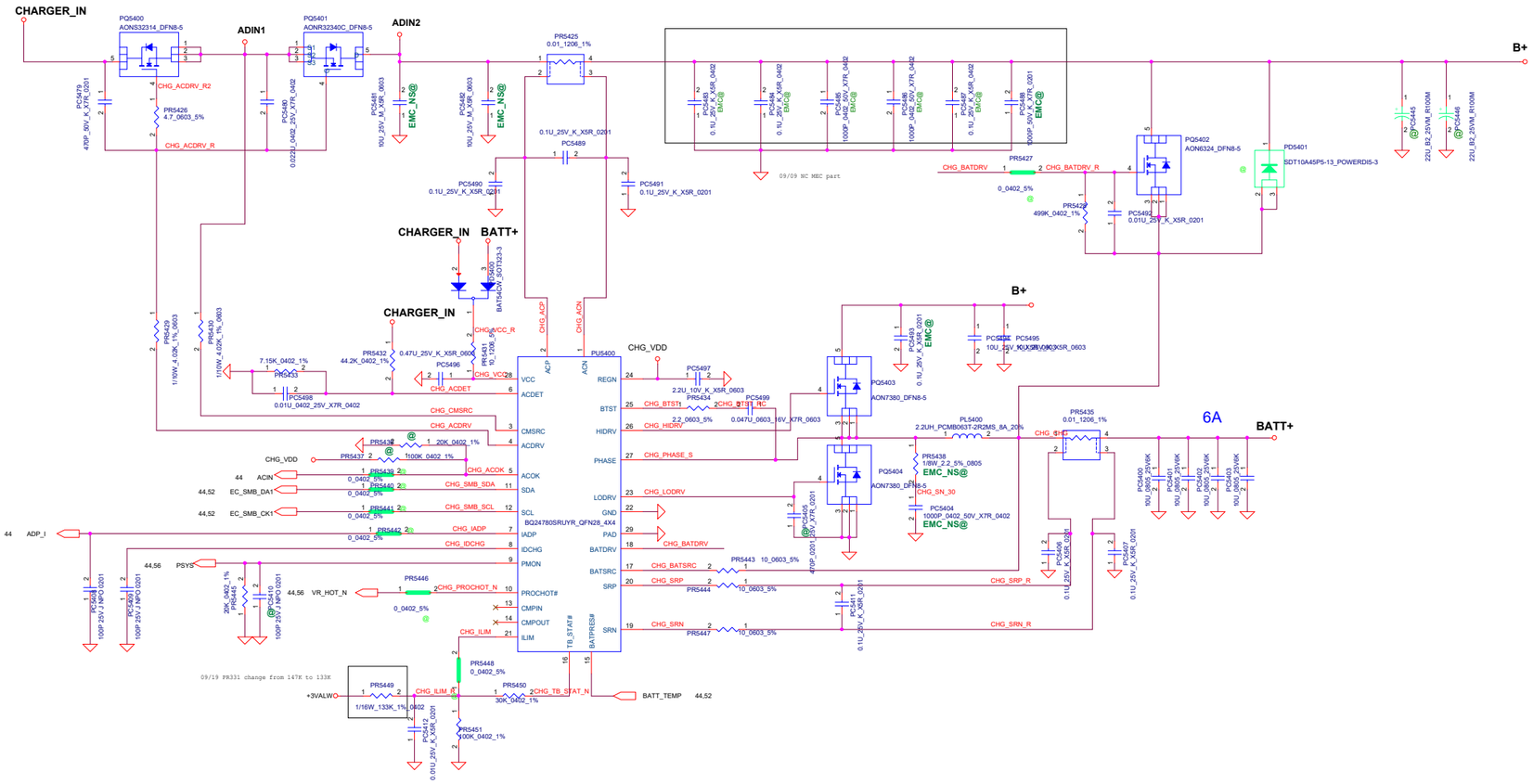
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: S360-TGL

LCFC

Size	Document Number	Rev
C	PWR_ACIN	0.1

Date: Tuesday, November 17, 2020 Sheet 88 of 110



IDPM	V(ILIM)	PR5320
500mA	1.2V	402K
1.0A	1.4V	332K
1.5A	1.6V	280K
2.0A	1.8V	237K
3.0A	2.2V	174K
3.25A	2.3V	162K
4.0A	2.6V	162K

← LOGIC

VILIM=1V+40x(VACP-VACN)=1+40xIDPMxRAC

IND IN USE	PR5333
1uH	93K
2.2uH	137K
3.3uH	169K

← LOGIC

# of CELL	VCELL_PRES	PR5322
1-CELL	1.5V	301K
2-CELL	2.4V	150K
3-CELL	3.3V	82K
4-CELL	4.5V	33.2K

← LOGIC

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL		
Size	Document Number		Rev
D	PWR CHARGER		0.1
Date:	Wednesday, November 18, 2020	Sheet	89 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

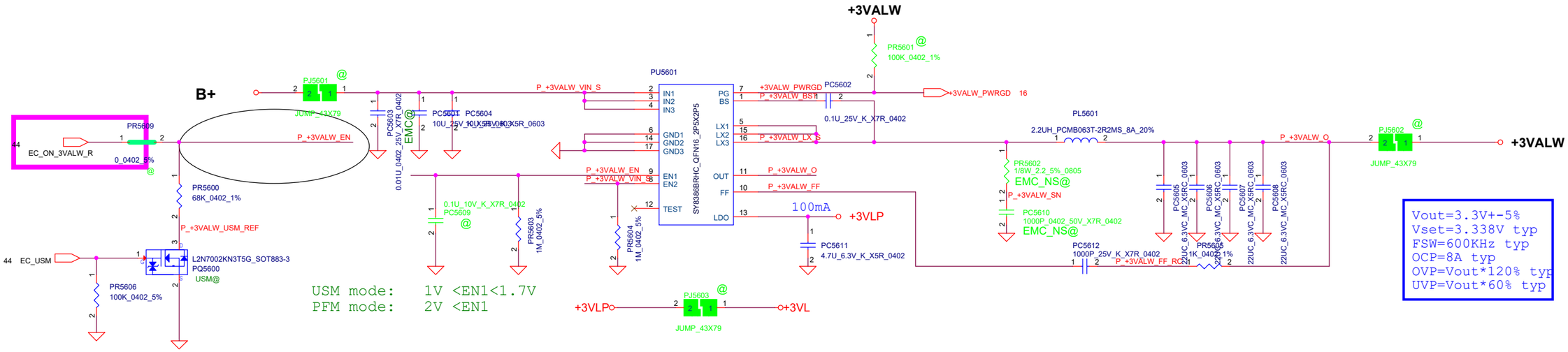
Title

S360-TGL

LCFC

Size	Document Number	Rev
B	***PWR DCC***	0.1

Date: Tuesday, November 10, 2020 Sheet 90 of 110



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

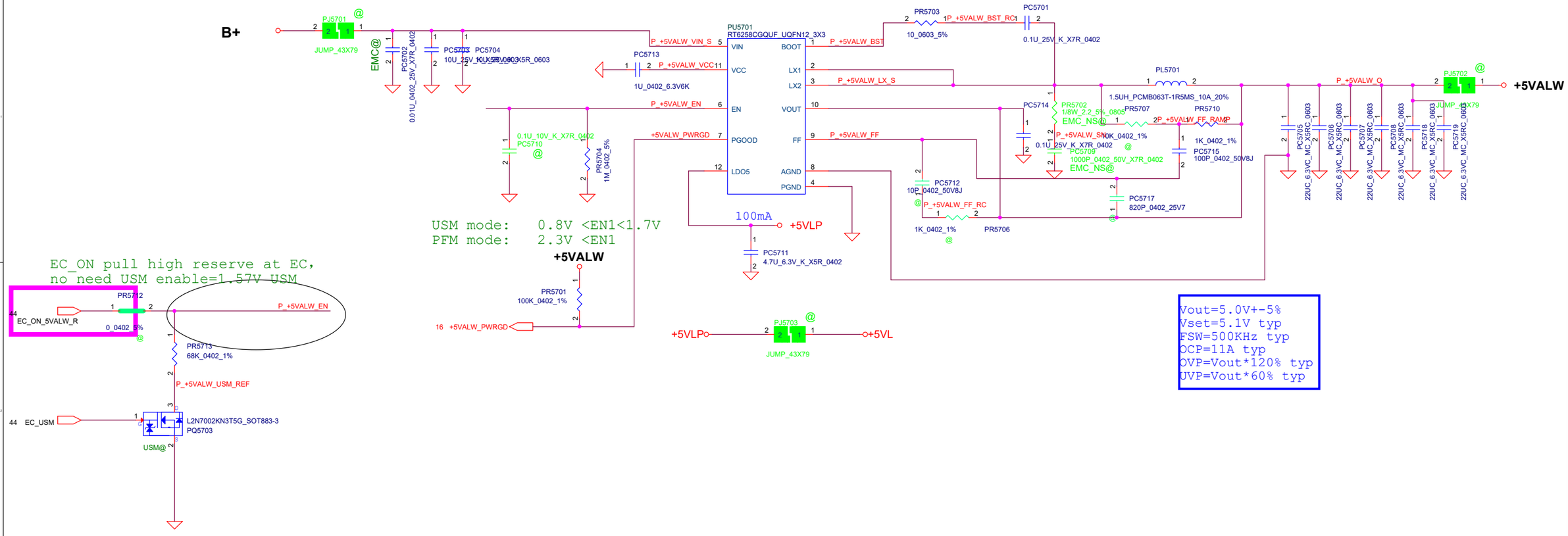
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: *S360-TGL*

LCFC

Size	Document Number	Rev
C	*PWR_3VALW*	0.1

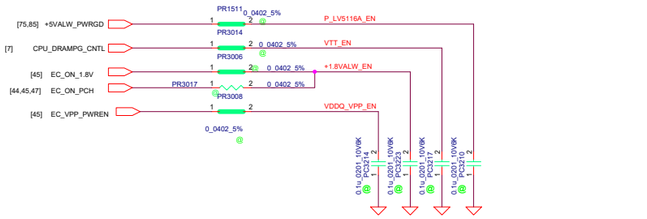
Date: Tuesday, November 17, 2020 Sheet 91 of 110

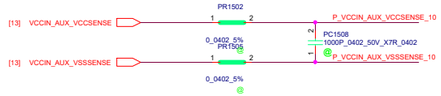


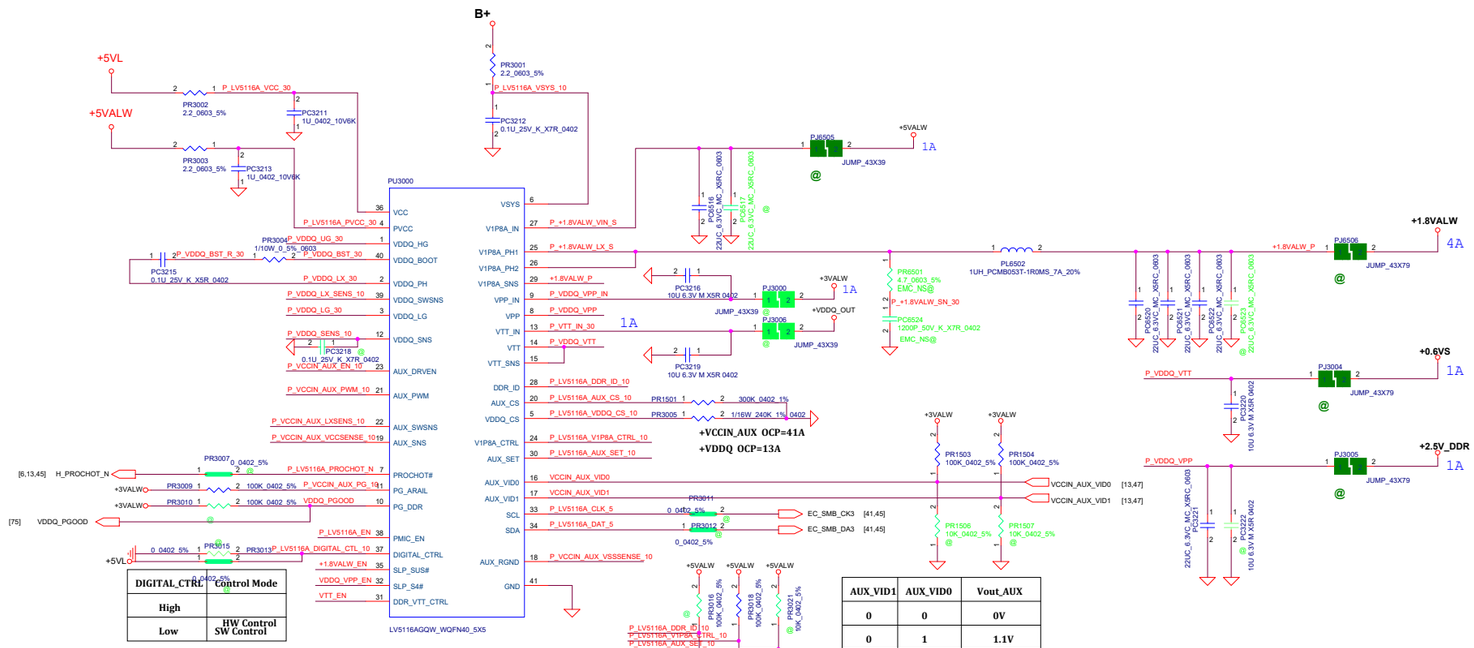
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL	LCFC
Size C	Document Number PWR_5VALW	Rev 0.1
Date: Wednesday, November 18, 2020	Sheet 92 of 110	







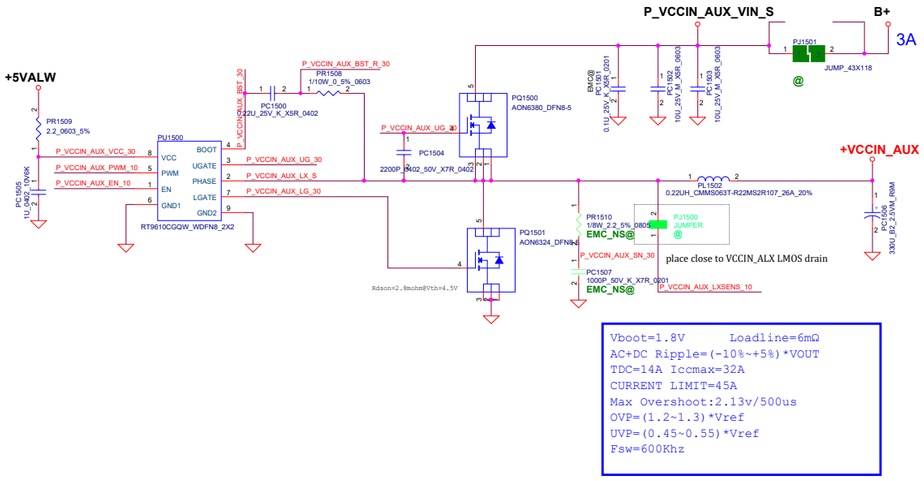
DIGITAL_CTRL	Control Mode
High	
Low	HW Control SW Control

AUX_SET	VCCIN_AUX Internal RAMP
High	RAMP1
Low	RAMP2
Floating	RAMP3

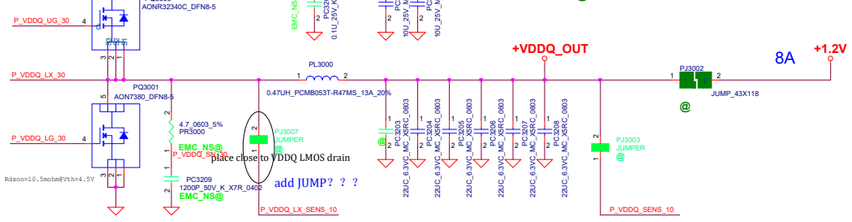
AUX_VID1	AUX_VID0	Vout_AUX
0	0	0V
0	1	1.1V
1	0	1.65V
1	1	1.8V

DDR_ID	Type	VPP	VDDQ	VTT/VDDQTX
Low	DDR4	2.5V	1.2V	VDDQ/2(VTT)
Floating	LPDDR4	1.8V	1.1V	--
High	LPDDR4X	1.8V	1.1V	0.6V(VDDQTX)

DIGITAL_CTRL	V1P8A_CTRL	V1P8A Sequence
High	Low	V1P8A follow PMIC_EN
High	High	V1P8A follow SLP_SUS#
Low	Low	V1P8A follow PMIC_EN
Low	High	V1P8A follow I2C



Vboot=1.8V Loadline=6mΩ
AC+DC Ripple=(-10%~+5%)*VOUT
TDC=14A Iccmax=32A
CURRENT LIMIT=45A
Max Overshoot:2.13v/500us
OVP=(1.2~1.3)*Vref
UVP=(0.45~0.55)*Vref
Fsw=600Khz



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

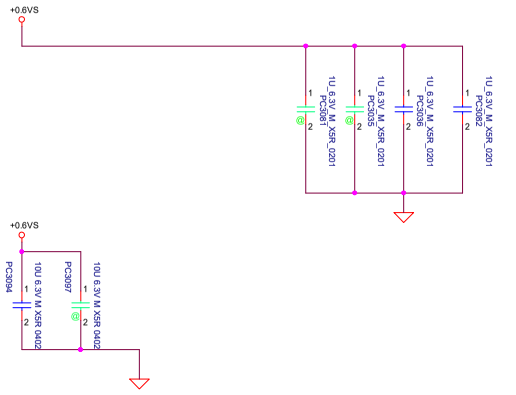
LCFC

Size: D | Document Number: PWR Memory PWR | Rev: 0.1

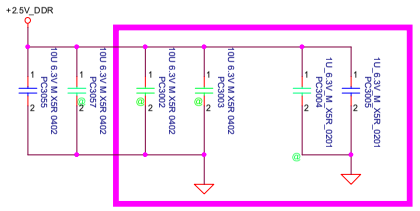
Date: Tuesday, November 10, 2020 | Sheet 93 of 110

CHANNELA SLOT DIMM decoupling

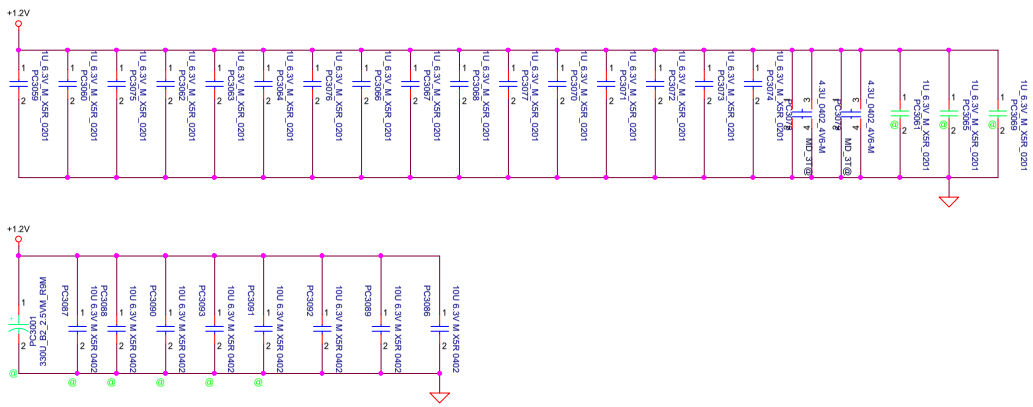
VTT
PDG 2 Channel SODIMM: 2*10UF(0603,1 placeholder)+4*1UF(0402)
S360: channel A:1*10UF(0402)+ 2*1UF(0201)



VPP
PDG 2 Channel SODIMM: 2*10UF(0603)+2*1UF(0402)
S360: channel A:1*10UF(0402)+ 1*1UF(0201)

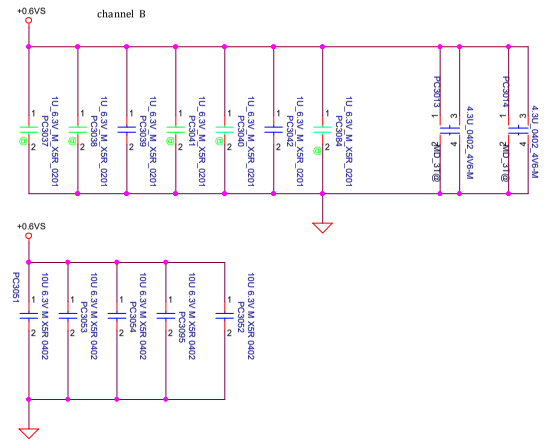


VDDQ
PDG 2 Channel SODIMM: 1*330UF(7343)+16*10UF(0603)+16*1UF(0402)
S360: channel A:8*10UF(0402)+ 16*1UF(0201)

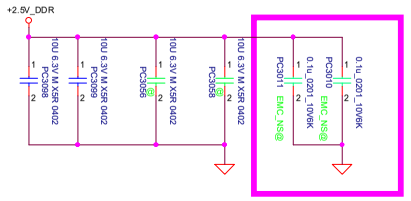


CHANNELB MD decoupling

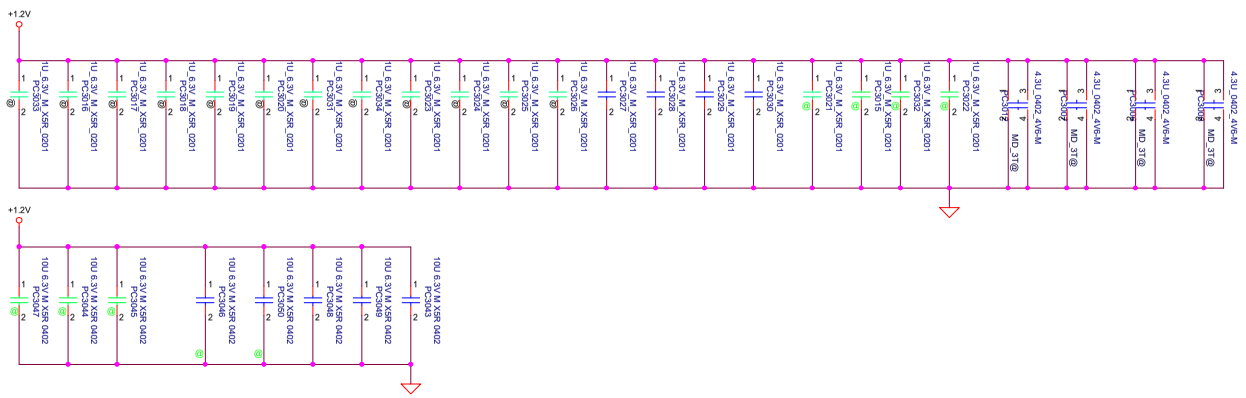
VTT
PDG 2 Channel MD: 4*10UF(0603)+16*1UF(0402)
S360: channel B:2*10UF(0402)+ 2*1UF(0201)+2*4.3UF3T(P24)



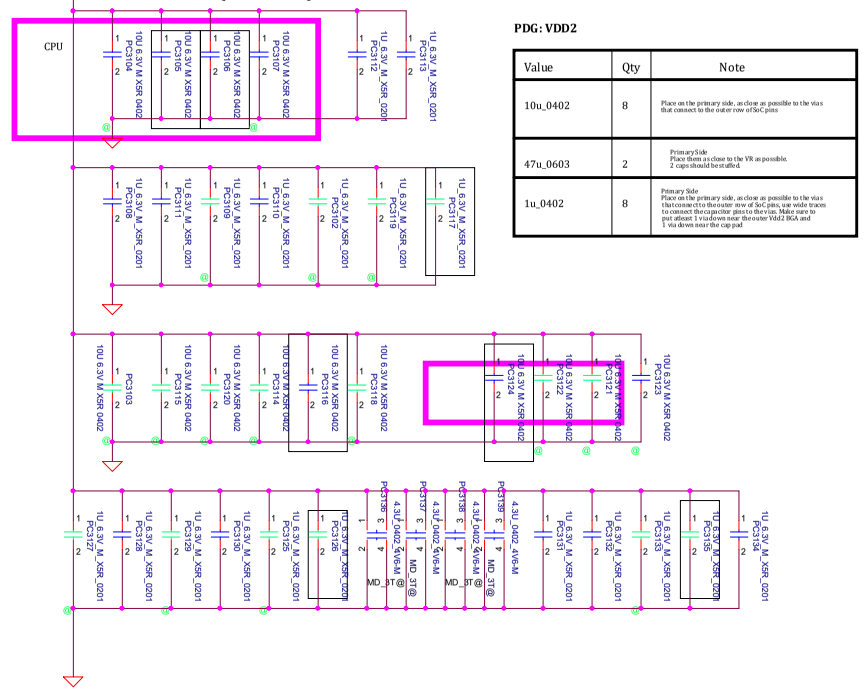
VPP
PDG 2 Channel MD: 5*10UF(0603)+16*1UF(0402)
S360: channel B: 2*10UF(0402)+8*1UF(0201)(P26)



VDDQ
PDG 2 Channel MD: 10*10UF(0603)+32*1UF(0402)
S360: channel B:5*10UF(0402)+ 4*1UF(0201)+3*4.3UF3T



VDD2
+1.2V PDG: 2*47UF(0603)+ 8*10UF(0402)+8*1UF(0402) **CHANGE VDD2 MLCC 0625**
S360: 4*22UF(0603 P93)+ 6*10UF+9*1UF



PDG: VDD2

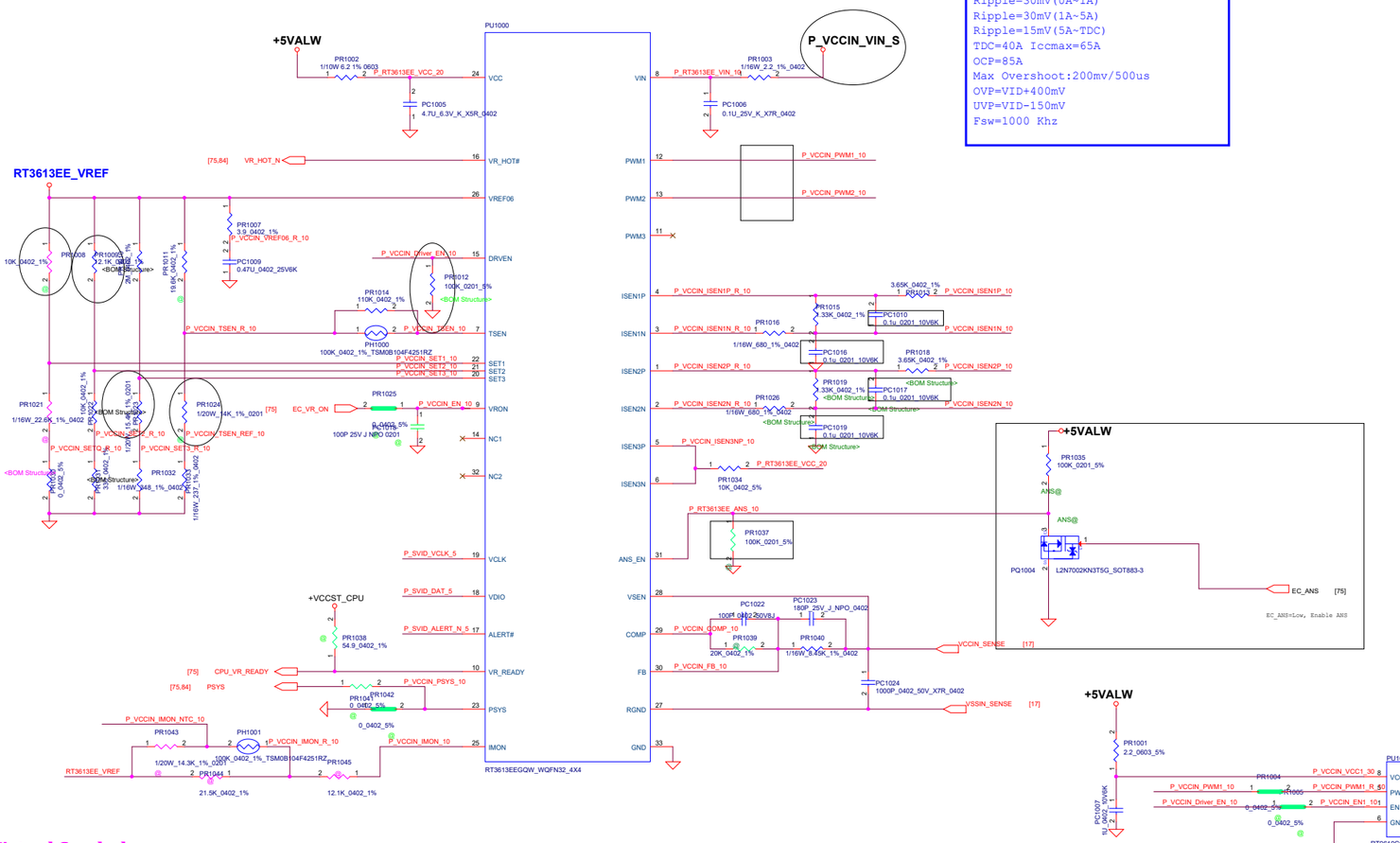
Value	Qty	Note
10u_0402	8	Place on the primary side, as close as possible to the vias that connect to the outer row of SoC pins
47u_0603	2	Primary Side Place as close to the VR as possible. 2 caps should be stuffed.
1u_0402	8	Primary Side Place on the primary side, as close as possible to the vias that connect to the outer row of SoC pins, use wide traces to minimize inductance. Place the caps such that they are not offset. 1 via down near the outer VDD2 BGA and 1 via down near the cap pad

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

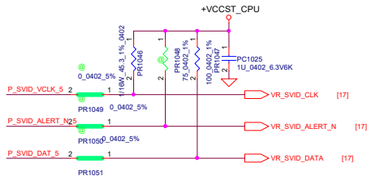
Title	S360-TGL	LCFC	
Size D	Document Number	PWR Memory PWR Decoupling	Rev A1
Date: Tuesday, November 10, 2020	Sheet 94 of 110		

Vboot=1.8V Loadline= 2mohm
Ripple=30mV(0A~1A)
Ripple=30mV(1A~5A)
Ripple=15mV(5A~TDC)
TDC=40A Iccmax=65A
OCP=85A
Max Overshoot:200mv/500us
OVP=VID+400mV
UVP=VID-150mV
Fsw=1000 Khz



Virtual Symbol

	15W		25W	
PR1045	16.8K	SD03416928J	12.1K	SD03412128J
PR1044	24.3K	SD000011300	21.5K	SD03421528J
PR1043	11.8K	SD000019S0T	14.3K	SD00001DR00
PR1039	42.2K	SD03442228J	20K	SD03420028J
PR1008	200K	SD03420038T	93.1K	SD04110J28J
PR1021	19.6K	SD00000358J	22.6K	SD000019W00
	2.37K	SD03423718J	3.65K	SD00000DN0J
	1.8K	SD00000R58J	1.33K	SD00000RF0J
PR1011	178K	SD03417838T	19.6K	SD00000358J
PR1024	8.45K	SD000013J8T	14K	SD00001VD00



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

LCFC

Size: D | Document Number: PWR CPU PWR Controller | Rev: 0.1

Date: Tuesday, November 17, 2020 | Sheet 95 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

LCFC

Size	Document Number	Rev
B	PWR_CPU_PWR1	0.1

Date: Tuesday, November 10, 2020 Sheet 96 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: **S360-TGL**

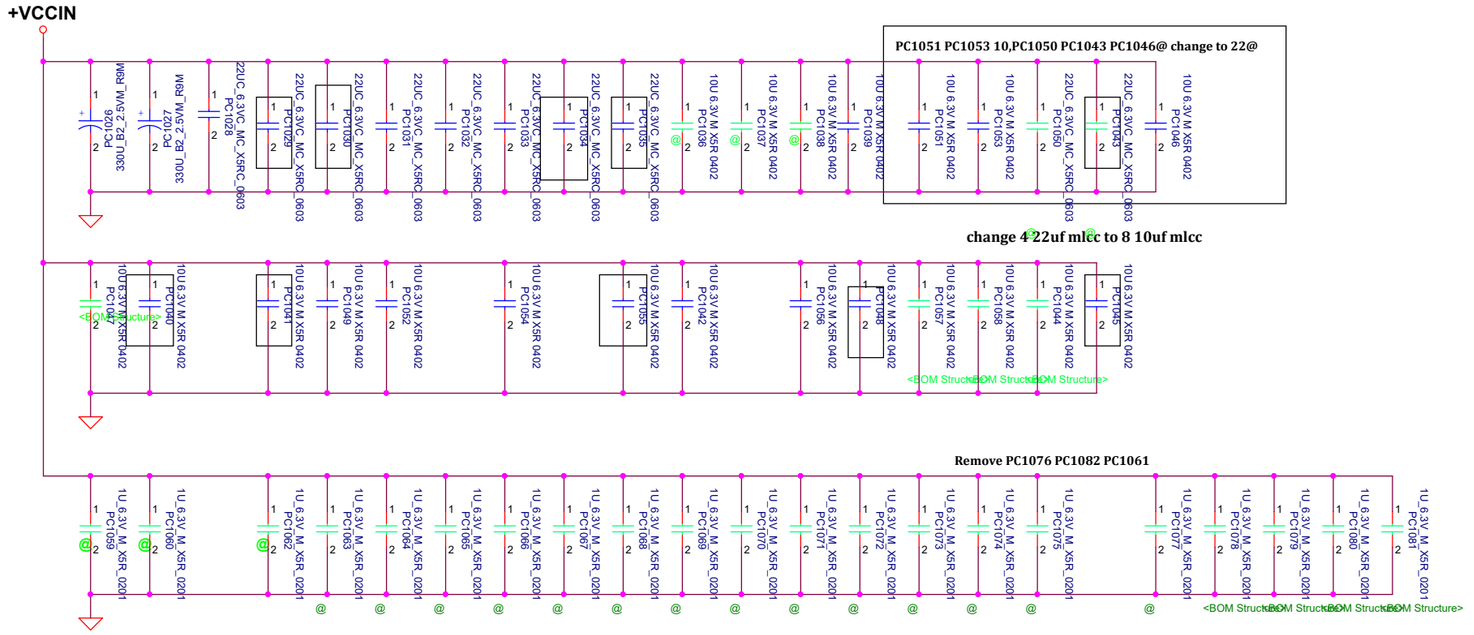
LCFC

Size	Document Number	Rev
B	PWR_CPU_PWR2	0.1

Date: Tuesday, November 10, 2020 Sheet 97 of 110

CHANGE VCCIN MLCC 0625

VCCIN
PDG: 2*220UF(7343)+ 8*22UF(0603)+12*10UF(0402)
S360: 2*330UF(B2)+ 10*22UF(0603)+10*10UF(0402)+3*1UF(0201)



PDG: VCCIN

Value	Qty	Note
10u_0402	12	Secondary Side Put them as directly below the BGAs as possible.
220u_7343	2	Primary Side MLCC cap recommendation based on VR solution with 150kHz VR bandwidth or 600kHz switching frequency, assuming BW=1/4 of Fsw. Place board caps as close as possible to package in this order where 0402 to be closest to package pins: VR->7343->0603->0402->Package
220u_7343 (Place holder)	2	
22u_0603	8	

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

LCFC

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

Date: Tuesday, November 10, 2020 | Sheet 98 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title

S360-TGL

LCFC

Size	Document Number	Rev
B	***PWR_PCH_PWR1***	0.1

Date: Tuesday, November 10, 2020 Sheet 99 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title

S360-TGL

LCFC

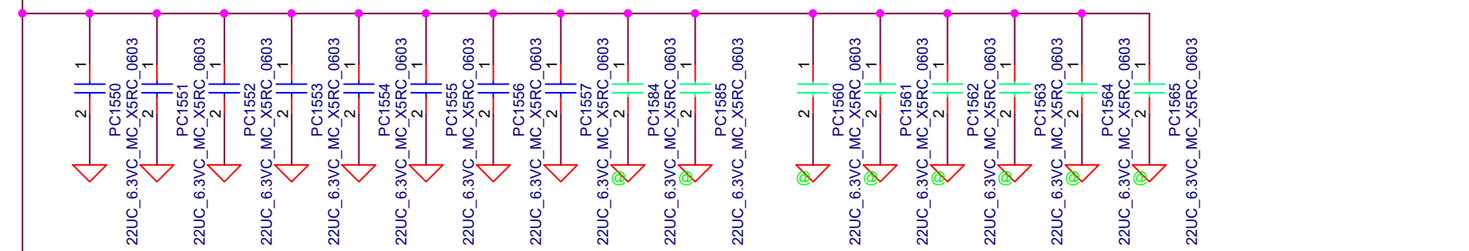
Size	Document Number	Rev
B	***PWR_PCH_PWR2***	0.1

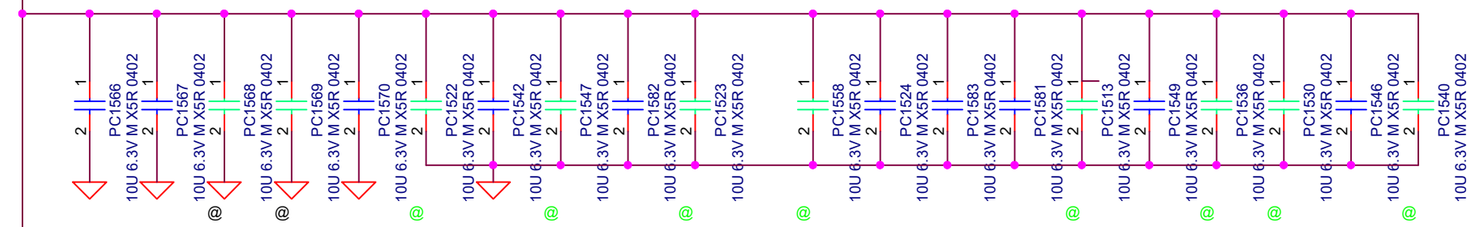
Date: Tuesday, November 10, 2020 Sheet 100 of 110

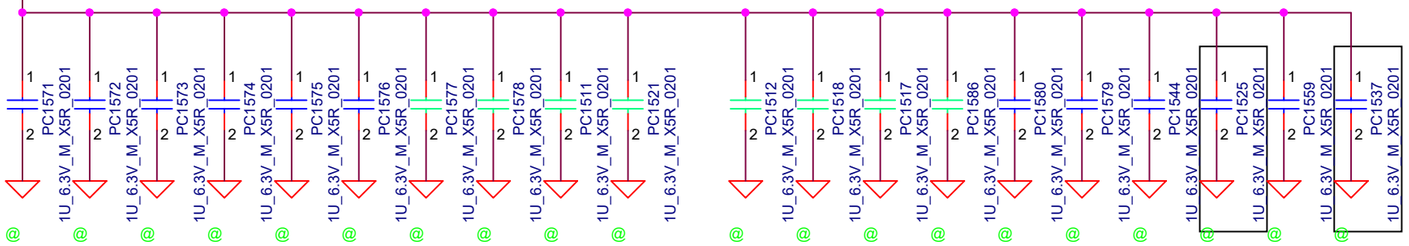
+VCCIN_AUX

VCCIN_AUX
PDG: 1*220UF+ 3*47UF+12*22UF+25*10UF
S360: 1*330UF(P93)+ 8*22UF+10*10UF*0*1UF

CHANGE VCCIN_AUX 1UF(6---12) MLCC 0625







Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: ***S360-TGL***

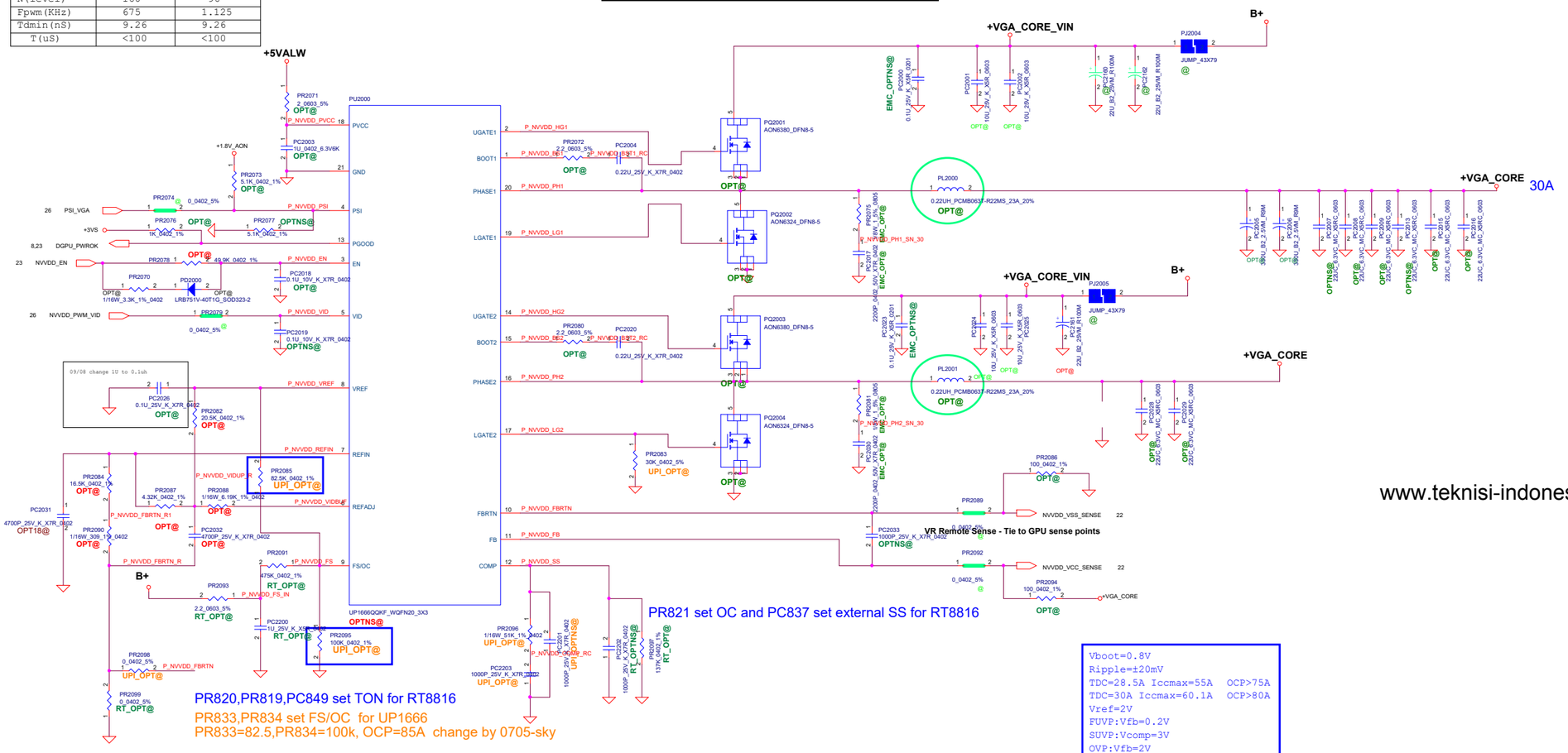
LCFC

Size	Document Number	Rev
B	***PWR_PCH_PWR_Decoupling***	0.1

Date: Tuesday, November 10, 2020 Sheet 101 of 110

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



www.teknisi-indonesia.com

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

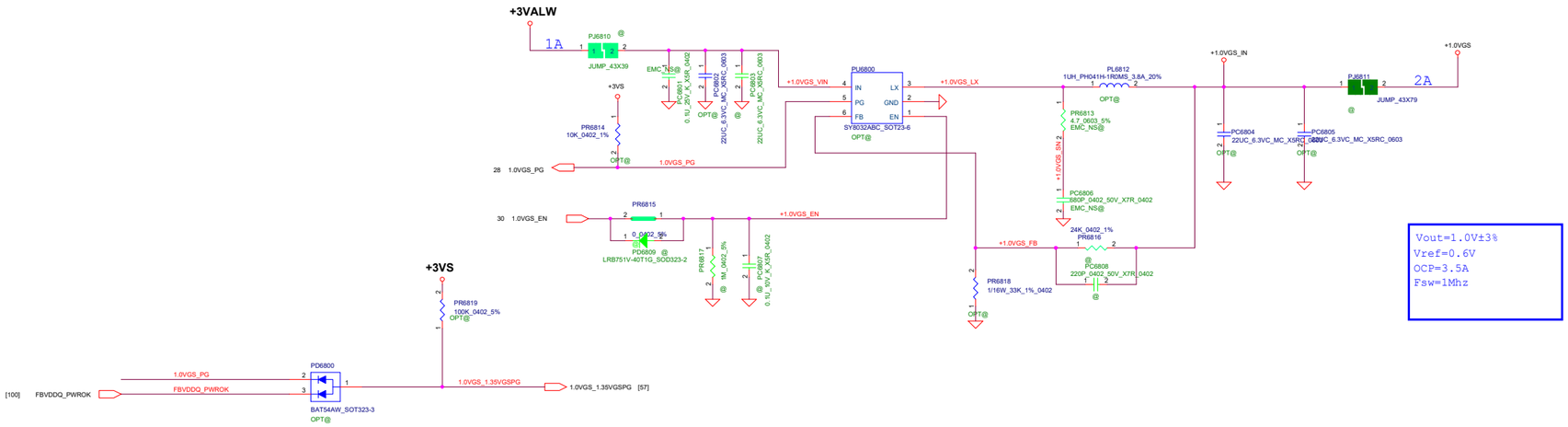
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE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

Title: S360-TGL

LCFC

Size: D | Document Number: PWR GPU PWR Controller | Rev: 0.1

Date: Monday, November 16, 2020 | Sheet 102 of 110



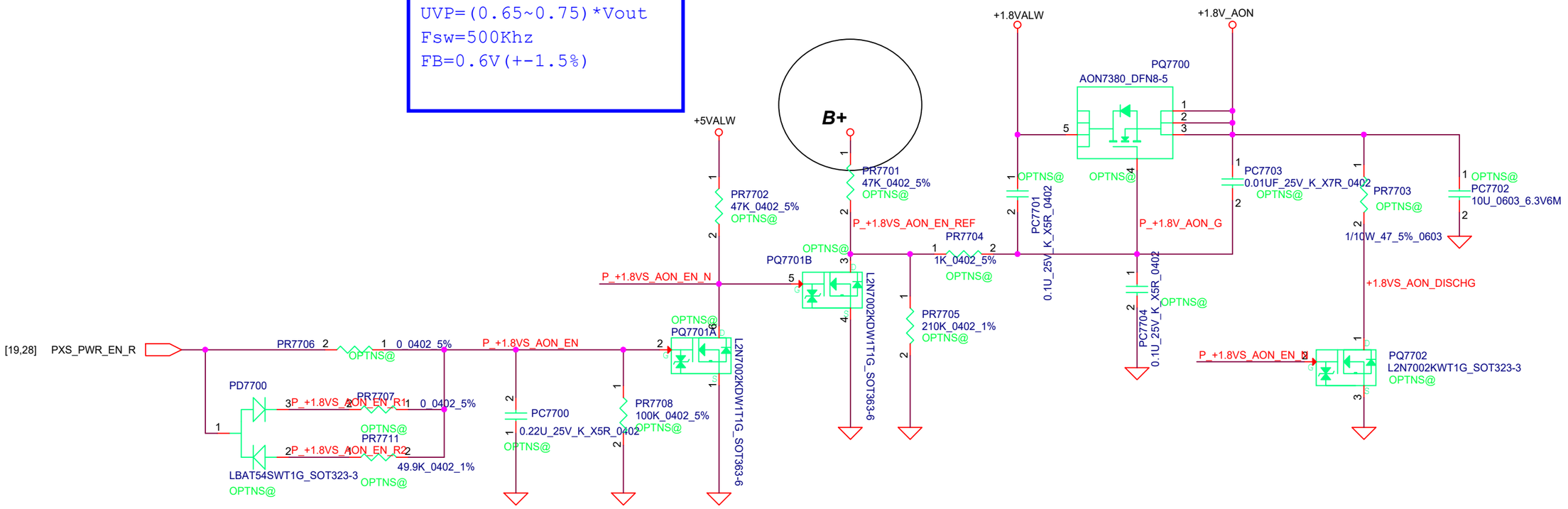
Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title			
S360-TGL			LCFC
Size: D	Document Number: PWR GPU PWR1		Rev: 0.1
Date: Tuesday, November 10, 2020	Sheet 103 of 110		

Vout:
P5=1.2V±3%
P0=1.25V±3%
TDC=11A

PK-PK :55mV
EDP-c=11A EDP-p=20A
OCP=26A
OVP=(1.2~1.3)*Vout
UVP=(0.65~0.75)*Vout
Fsw=500Khz
FB=0.6V(+-1.5%)



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL

LCFC

Size	Document Number	Rev
B	PWR_GPU_PWR2	0.1

Date: Tuesday, November 10, 2020 | Sheet 104 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title

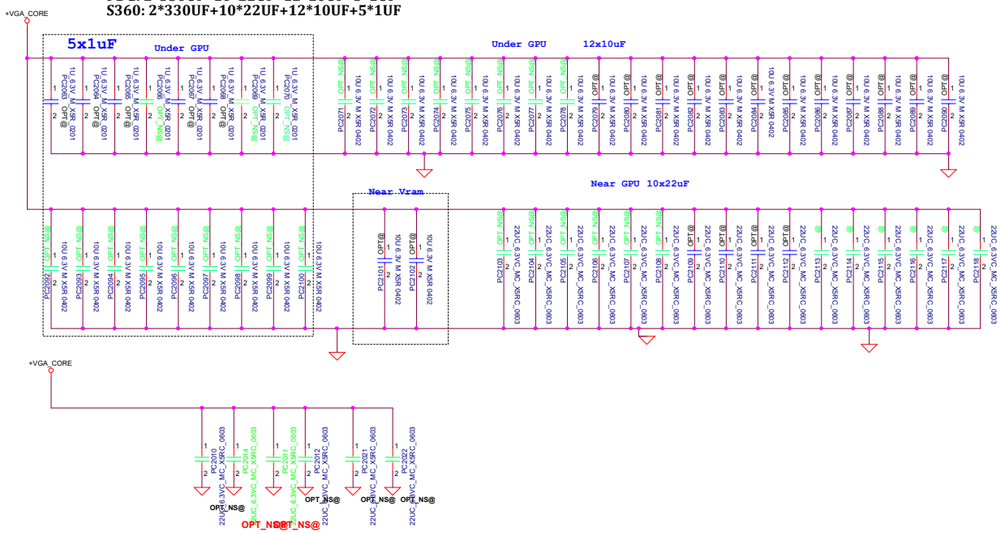
S360-TGL

LCFC

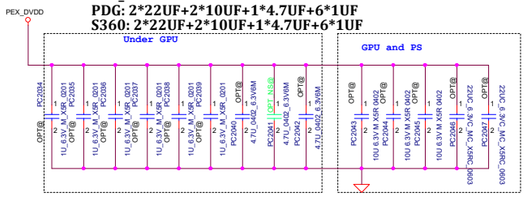
Size	Document Number	Rev
B	***PWR_GPU_PWR_Monitor***	0.1

Date: Tuesday, November 10, 2020 Sheet 105 of 110

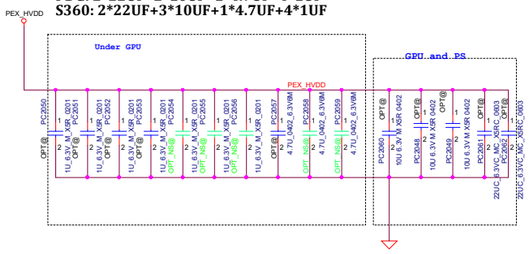
NVVDD
PDG: 2*330UF+10*22UF+12*10UF+5*1UF
S360: 2*330UF+10*22UF+12*10UF+5*1UF



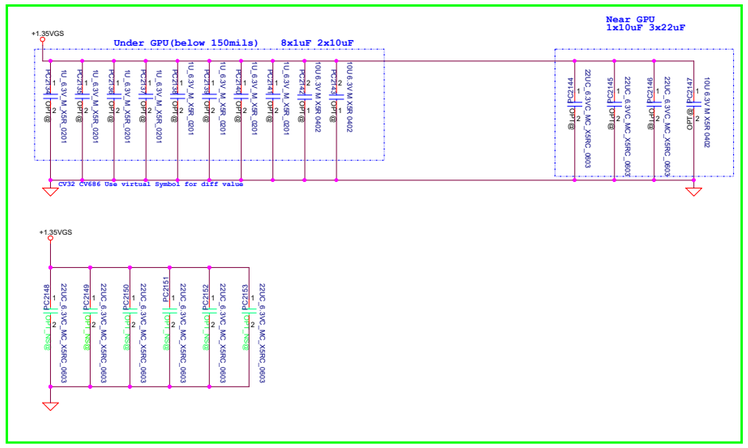
PEX_DVDD
PDG: 2*22UF+2*10UF+1*4.7UF+6*1UF
S360: 2*22UF+2*10UF+1*4.7UF+6*1UF



PEX_HVDD
PDG: 2*22UF+2*10UF+1*4.7UF+4*1UF
S360: 2*22UF+3*10UF+1*4.7UF+4*1UF



FBVDD
PDG: 3*22UF+3*10UF+8*1UF
S360: 3*22UF+3*10UF+8*1UF



XS_PLLVDD(N18:XSN_PLLVDD) Decouling

MLCC		N18/GB2E-64		N17S	location
0.1uF	X7R	0402	0	1	Under
0.47uF	X6S	0201	1	0	
Bead 30ohm@100Mhz (ESR=0.5ohm)		0402	0	0	Near

SP_PLLVDD&VID_PLLVDD Decouling

MLCC		N18/GB2E-64		N17S	location
0.1uF	X7R	0402	0	2	Under
0.47uF	X6S	0201	2	0	
Bead 30ohm@100Mhz (ESR=0.2ohm)		0603	0	0	Near

GPCPLL_AVDD Decouling

MLCC		N18/GB2E-64		N17S	location
0.1uF	X7R	0402	0	1	Under
0.47uF	X6S	0201	1	0	
4.7uF	X6S	0603	1	1	Near
22uF	X5R	0805	0	1	
Bead 30ohm@100Mhz (ESR=0.2ohm)			1	1	

VDD_AON&VDD_MAIN Decouling
N17 VDD18(N18 NC)

MLCC		N18/GB2E-64		N17S	location
0.1uF	X7R	0402	NA	2	Under
1.0uF	X6S	0603	NA	1	Near
4.7uF	X6S	0603	NA	1	

1V8_AON

MLCC		N18/GB2E-64		N17S	location
0.1uF	X7R	0402	0	2	Under
0.47uF	X6S	0201W	4	0	
1uF	X6S	0201/0402	0	1	Near
0.47uF	X6S	0201W	6	0	
4.7uF	X6S	0603	3	1	

NVVDD Decouling

MLCC		N18/GB2E-64		N17s	location
10uF	X6S	0603	12	12	Under
4.7uF	X6S	0603	0	0	
1.0uF	X6S	0201/0402	5	5	Near
0.47uF	X6S	0201/0402	0	0	
4.7uF	X6S	0805	0	4	
10uF	X6S	0805	0	11	
22uF	X6S	0805	10	4	
330uF	POS	7343	2	2	

FBVDDQ Decouling

MLCC		N18/GB2E-64		N17S	location
0.47uF	X6S	0201	0	0	Under
1.0uF	X6S	0201/0402	8	8	
10uF	X6S	0603	2	2	
10uF	X6S	0603	1	1	Near
22uF	X6S	0603	3	3	

FBPLL Decouling

MLCC		N18/GB2E-64		N17S	location
0.47uF	X6S	0201	3	0	Under
0.1uF	X7R	0402	0	4	
4.7uF	X6S	0603	2	0	Near
22uF	X5R	0603	0	1	
22uF	X6S	0805	1	0	
Bead 30ohm (ESR=0.01ohm)		0603	1	1	

PEX _DVDD Decouling

MLCC		N18/GB2E-64		N17S	location
1.0uF	X6S	0201/0402	6	1	Under
4.7uF	X6S	0603	1	1	
4.7uF	X6S	0603	0	2	Near
10uF	X6S	0805	2	2	
22uF	X6S	0805	2	1	Midway between GPU and power supply

PEX _HVDD Decouling

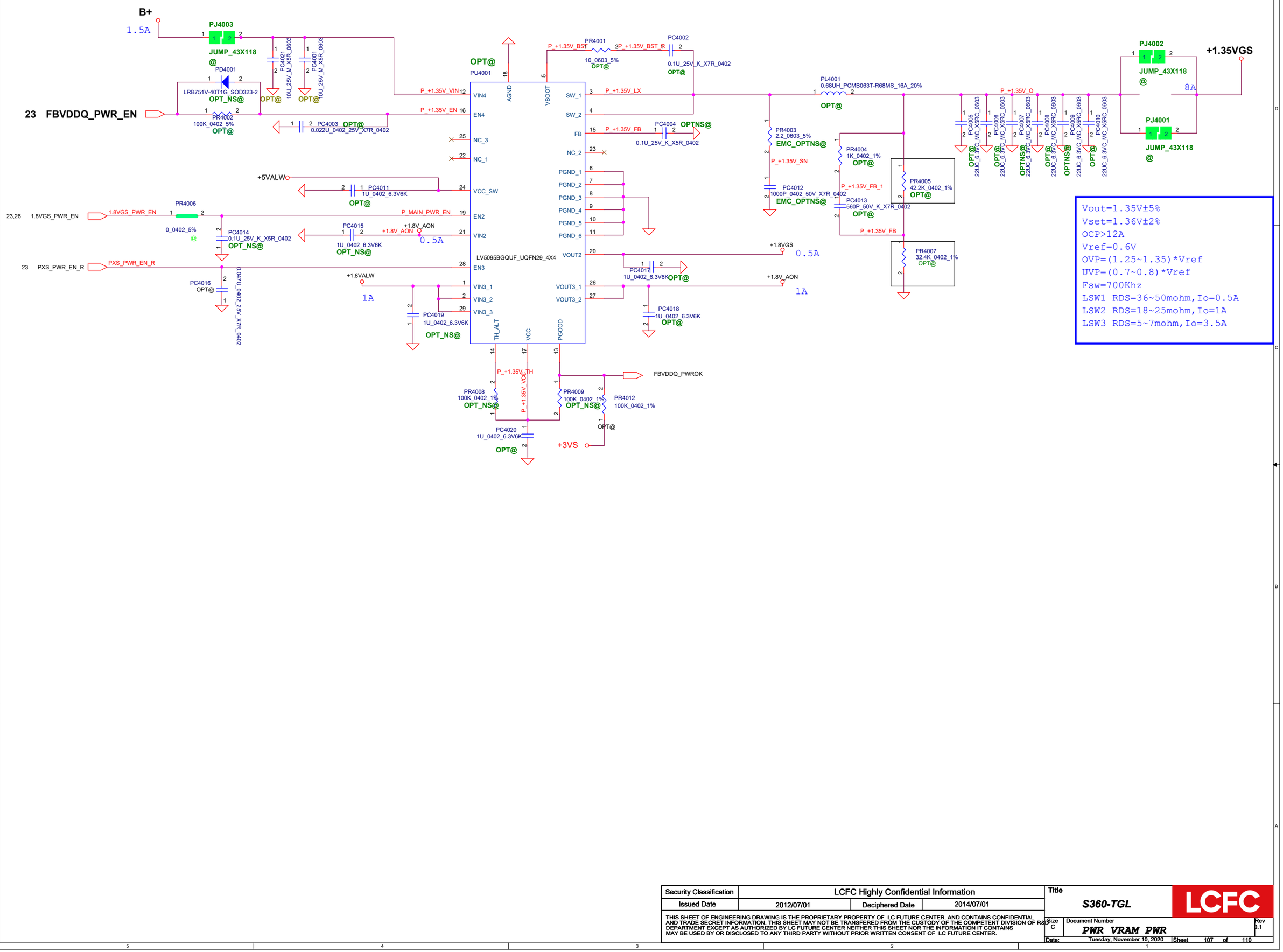
MLCC		N18/GB2E-64		N17S	location
1.0uF	X6S	0201/0402	4	4	Under
4.7uF	X6S	0603	1	0	
4.7uF	X6S	0603	0	2	Near
10uF	X6S	0805	2	2	
22uF	X6S	0805	2	1	Midway between GPU and power supply

PEX _PLL_HVDD Decouling

MLCC		N18/GB2E-64		N17S	location
0.1uF	X7R	0402	0	1	Under
0.47uF	X6S	0201	1	0	

Security Classification: LCFC Highly Confidential Information
Issued Date: 2012/07/01 Deciphered Date: 2014/07/01
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: S360-TGL
Size: D
Document Number: PWR GPU PWR Decoupling
Rev: 0.1
Date: Tuesday, November 10, 2020
Sheet 106 of 110



Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title: *S360-TGL*

LCFC

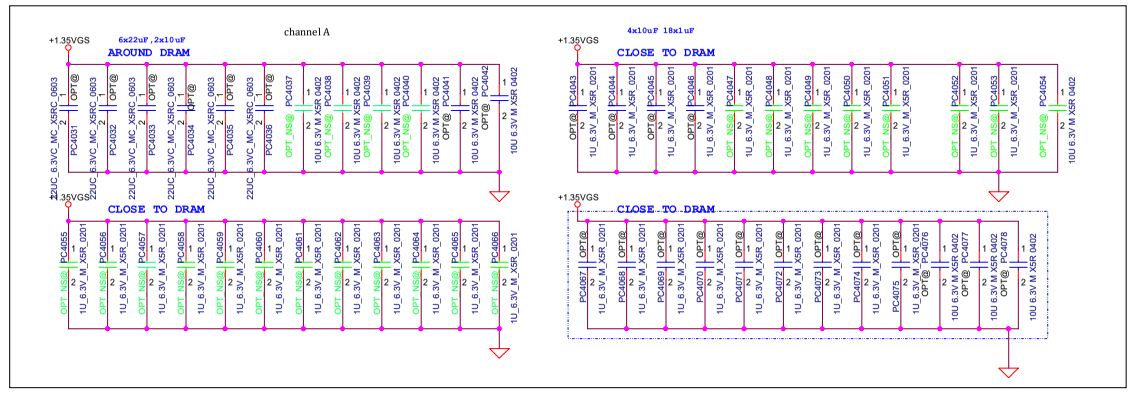
Size: C | Document Number: *PWR VRAM PWR* | Rev: 0.1

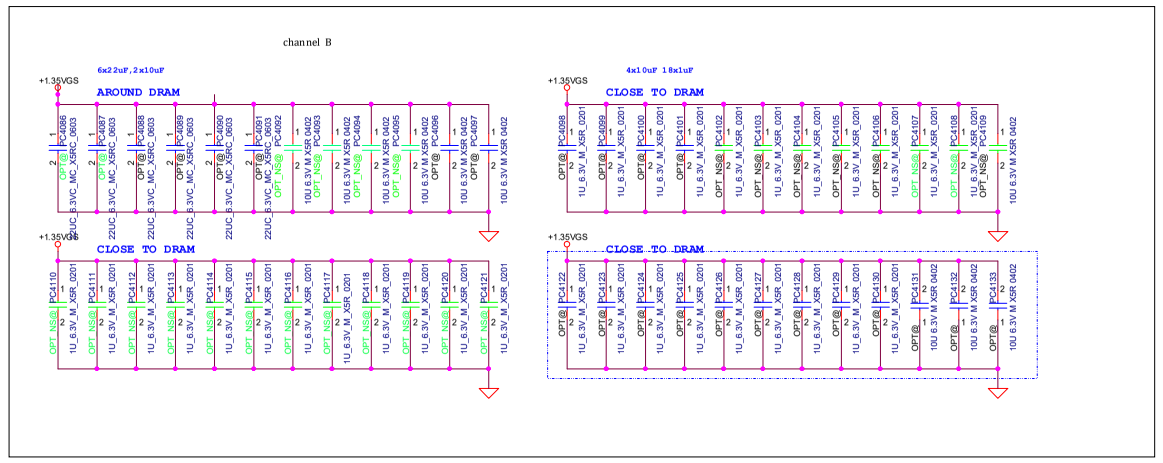
Date: Tuesday, November 10, 2020 | Sheet 107 of 110

VRAM side
FBVDD:
PDG: 3*22UF+3*10UF+8*1UF
S350: 3*22UF+3*10UF+8*1UF

FBVDDQ Decouling

MLCC		N18/GB2E-64	N17	location
0.47uF	X6S	0201	0	
1.0uF	X6S	0201/0402	8	Under
10uF	X6S	0603	2	
10uF	X6S	0603	1	
22uF	X6S	0603	3	Near





Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title	S360-TGL	LCFC	
Size D	Document Number PWR VRAM PWR Decouping		Rev 0.1
Date: Tuesday, November 10, 2020	Sheet 108 of 110		

2020/05/22
1.P30:RC2807---RC2806
2.P33:Add RG3102;
3.P34:RG3204 40.2OHM---60.4ohm
4.P35:DG3303 OPT_NS@---OPT@;
DG3304 OPT_NS@---OPT@;
DG3301 OPT@---OPT_NS@;
CG3316:OPT@---OPT_NS@;
RG3317:OPT_NS@---OPT@;
RG3316:OPT@---OPT_NS@
5.P53:Remove RU34,RU35,RU36,RU37；
6.P08:DDRA_CLK1_N&P change ball BT41,BT42
7.P63:Remove RK207,QK201,CK216,CK215 change;
8.P25:DDR-DQ&DQS follow S350
9.Page66:SPKR_MUTE_N change to EC_MUTE_N
10.P86:add SH12~15 for GPU clip

2020/06/09
1.Compare the Connector list with 0601 version
change SSD &KB &HDD CONN，remove JTP

2020/06/11
1.page2 modify blockDiagram EE
2.page7 add RC863,remove Page47 RV6,
3.page11&79 ESPI_Xxxx net name change LPC_ESP_Xxxx
4.page14 RC863 change RC60

2020/06/16
1.EC_USB_ON_N swap pin&override

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 TRANSFERED 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.

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

Title: S360-TGL

LCFC

Size: D | Document Number: Change List EE | Rev: 0.1

Date: Tuesday, November 10, 2020 | Sheet 109 of 110

Security Classification	LCFC Highly Confidential Information		
Issued Date	2012/07/01	Deciphered Date	2014/07/01

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 TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.

Title

S360-TGL

LCFC

Size	Document Number	Rev
B	***Change List PWR***	0.1

Date: Tuesday, November 10, 2020 Sheet 110 of 110