Project Name :GK5CN5Z

Platform : CFL-H+N17P-GX

M/B Schematic Version Change List

Release Date	Version	PCB P/N	PCB Description	PCBA P/N	Note

Daughter Board Schematic Version Change List

Release Date	Version	PCB P/N	PCB Description	PCBA P/N	Note

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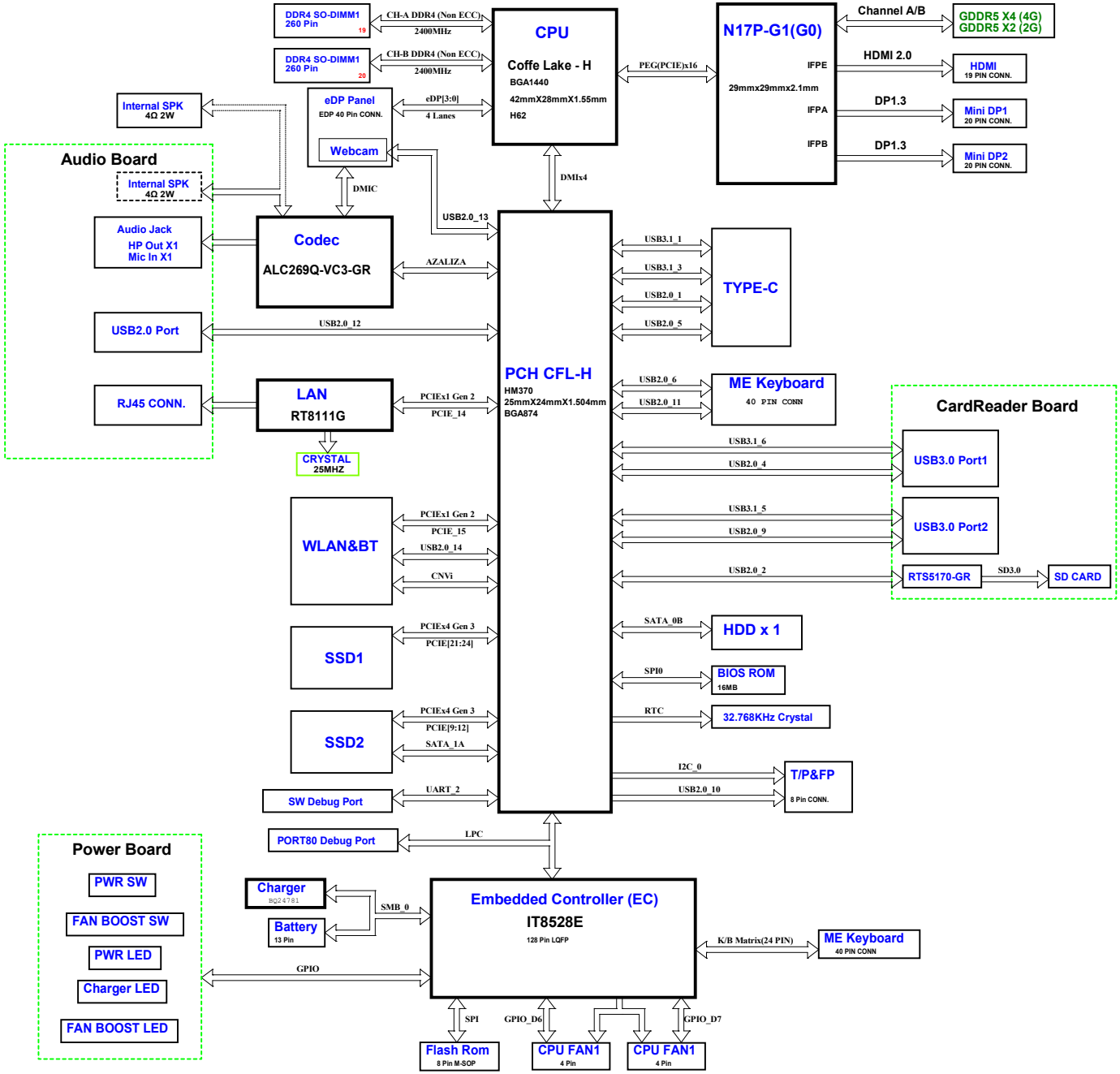
SYSTEM BLOCK DIAGRAM



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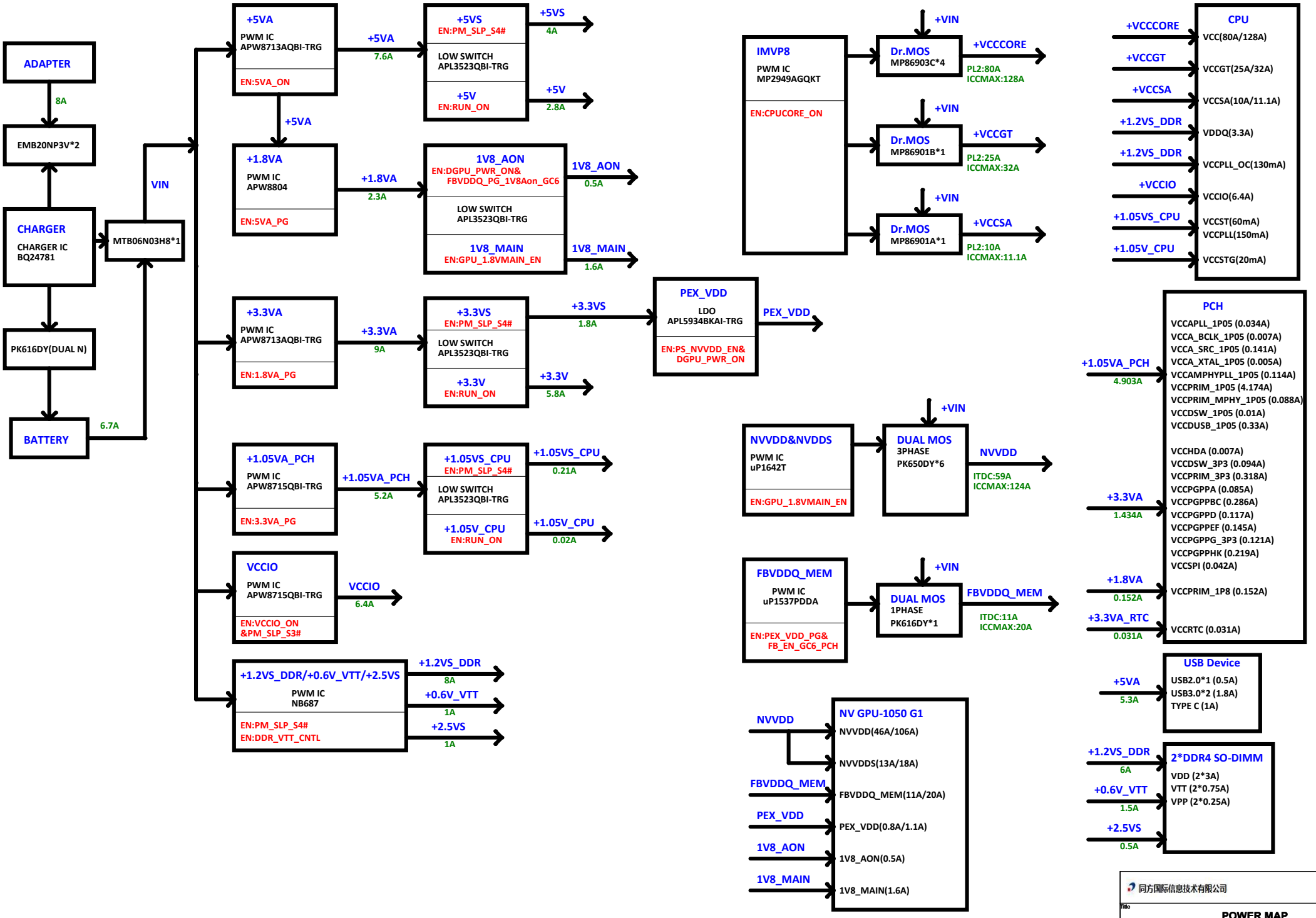

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Title	POWER MAP	
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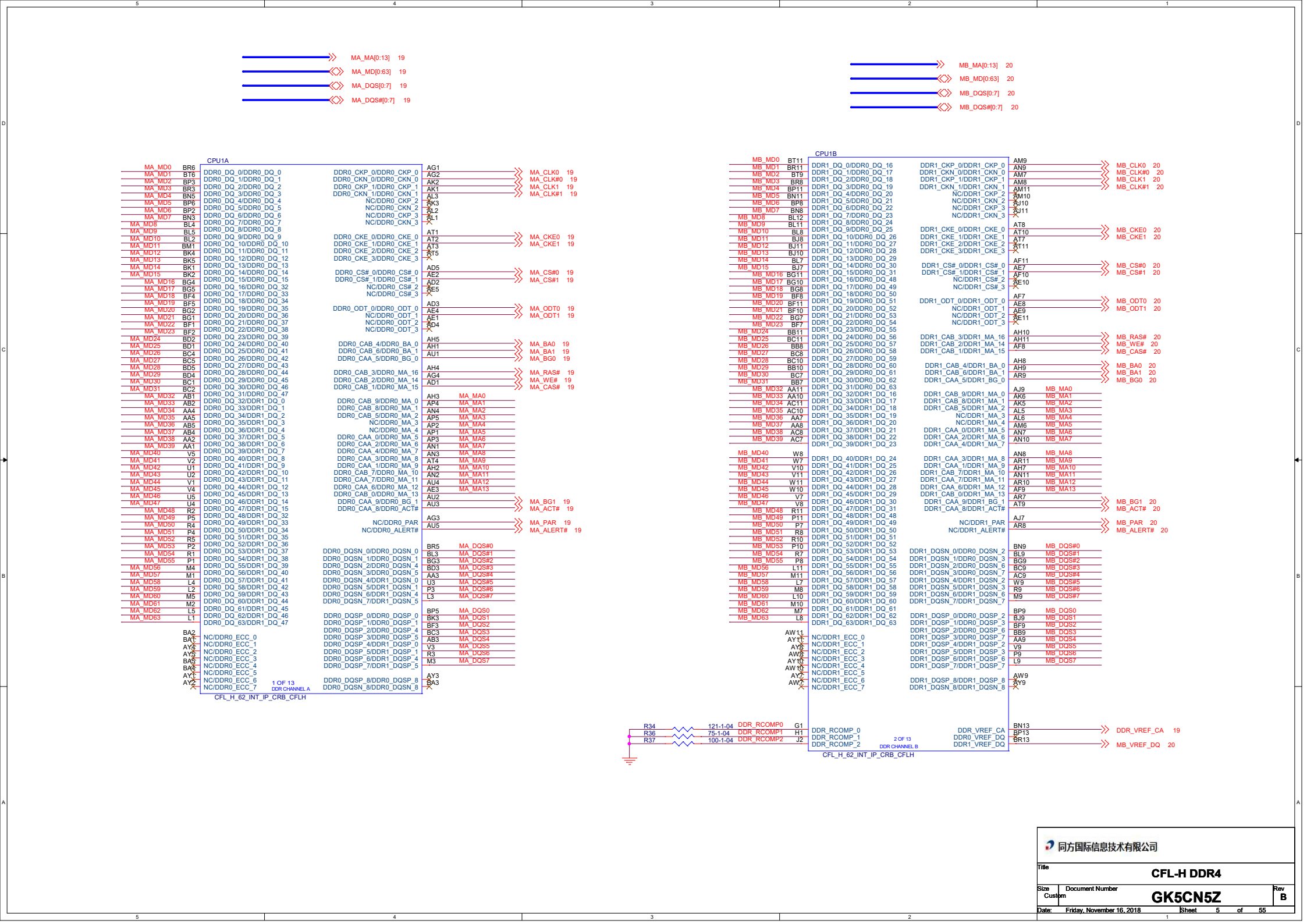
MA_MA[0:13] 19
MA_MD[0:63] 19
MA_DQS[0:7] 19
MA_DQS#[0:7] 19
MB_MA[0:13] 20
MB_MD[0:63] 20
MB_DQS[0:7] 20
MB_DQS#[0:7] 20
CPU1A
CPU1B
CFL_H_62_INT_IP_CRB_CFLH
1 OF 13
DDR CHANNEL A
2 OF 13
DDR CHANNEL B
DDR_RCOMP0
DDR_RCOMP1
DDR_RCOMP2
121-1-04
75-1-04
100-1-04
DDR_VREF_CA
DDR0_VREF_DQ
DDR1_VREF_DQ
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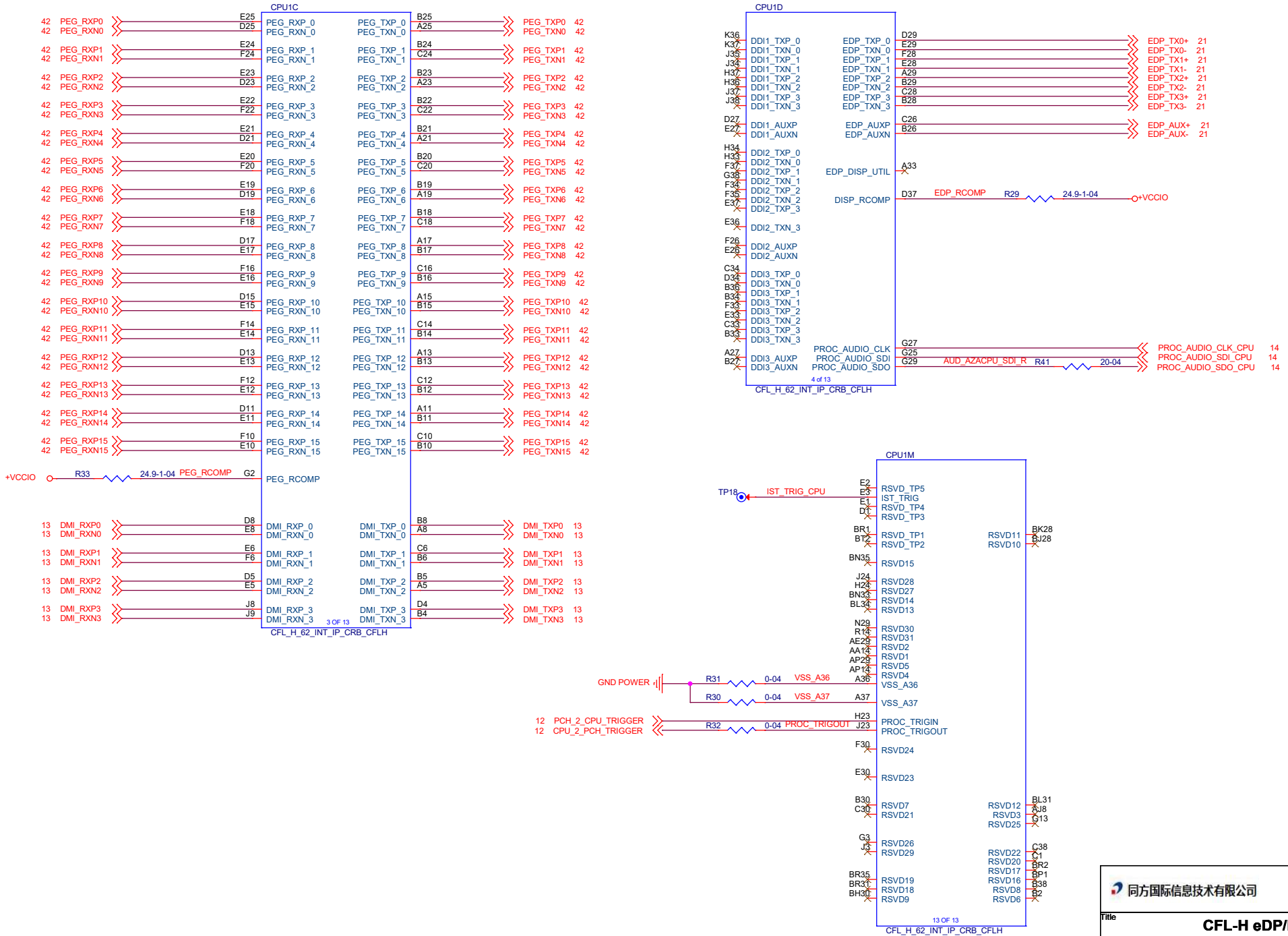
CPU1C
PEG_RXP0 PEG_RXN0 PEG_TXP0 PEG_TXN0
PEG_RXP1 PEG_RXN1 PEG_TXP1 PEG_TXN1
PEG_RXP2 PEG_RXN2 PEG_TXP2 PEG_TXN2
PEG_RXP3 PEG_RXN3 PEG_TXP3 PEG_TXN3
PEG_RXP4 PEG_RXN4 PEG_TXP4 PEG_TXN4
PEG_RXP5 PEG_RXN5 PEG_TXP5 PEG_TXN5
PEG_RXP6 PEG_RXN6 PEG_TXP6 PEG_TXN6
PEG_RXP7 PEG_RXN7 PEG_TXP7 PEG_TXN7
PEG_RXP8 PEG_RXN8 PEG_TXP8 PEG_TXN8
PEG_RXP9 PEG_RXN9 PEG_TXP9 PEG_TXN9
PEG_RXP10 PEG_RXN10 PEG_TXP10 PEG_TXN10
PEG_RXP11 PEG_RXN11 PEG_TXP11 PEG_TXN11
PEG_RXP12 PEG_RXN12 PEG_TXP12 PEG_TXN12
PEG_RXP13 PEG_RXN13 PEG_TXP13 PEG_TXN13
PEG_RXP14 PEG_RXN14 PEG_TXP14 PEG_TXN14
PEG_RXP15 PEG_RXN15 PEG_TXP15 PEG_TXN15
+VCCIO R33 24.9-1-04 PEG_RCOMP G2 PEG_RCOMP
DMI_RXP0 DMI_RXN0 DMI_TXP0 DMI_TXN0
DMI_RXP1 DMI_RXN1 DMI_TXP1 DMI_TXN1
DMI_RXP2 DMI_RXN2 DMI_TXP2 DMI_TXN2
DMI_RXP3 DMI_RXN3 DMI_TXP3 DMI_TXN3
3 OF 13
CFL_H_62_INT_IP_CRB_CFLH
CPU1D
DDI1_TXP_0 DDI1_TXN_0 DDI1_TXP_1 DDI1_TXN_1 DDI1_TXP_2 DDI1_TXN_2 DDI1_TXP_3 DDI1_TXN_3
DDI1_AUXP DDI1_AUXN
DDI2_TXP_0 DDI2_TXN_0 DDI2_TXP_1 DDI2_TXN_1 DDI2_TXP_2 DDI2_TXN_2 DDI2_TXP_3 DDI2_TXN_3
DDI2_AUXP DDI2_AUXN
DDI3_TXP_0 DDI3_TXN_0 DDI3_TXP_1 DDI3_TXN_1 DDI3_TXP_2 DDI3_TXN_2 DDI3_TXP_3 DDI3_TXN_3
DDI3_AUXP DDI3_AUXN
EDP_TXP_0 EDP_TXN_0 EDP_TXP_1 EDP_TXN_1 EDP_TXP_2 EDP_TXN_2 EDP_TXP_3 EDP_TXN_3
EDP_TX0+ 21 EDP_TX0- 21 EDP_TX1+ 21 EDP_TX1- 21 EDP_TX2+ 21 EDP_TX2- 21 EDP_TX3+ 21 EDP_TX3- 21
EDP_AUXP EDP_AUXN
EDP_AUX+ 21 EDP_AUX- 21
EDP_DISP_UTIL
DISP_RCOMP
D37 EDP_RCOMP R29 24.9-1-04 +VCCIO
PROC_AUDIO_CLK PROC_AUDIO_SDI PROC_AUDIO_SDO
PROC_AUDIO_CLK_CPU 14 PROC_AUDIO_SDI_CPU 14 PROC_AUDIO_SDO_CPU 14
AUD_AZACPU_SDI_R R41 20-04
4 of 13
CFL_H_62_INT_IP_CRB_CFLH
CPU1M
TP18 IST_TRIG_CPU
RSVD_TP5 IST_TRIG RSVD_TP4 RSVD_TP3
RSVD_TP1 RSVD_TP2
RSVD11 RSVD10
RSVD15
RSVD28 RSVD27 RSVD14 RSVD13
RSVD30 RSVD31 RSVD2 RSVD1 RSVD5 RSVD4
GND POWER
R31 0-04 VSS_A36
R30 0-04 VSS_A37
VSS_A36 VSS_A37
12 PCH_2_CPU_TRIGGER 12 CPU_2_PCH_TRIGGER
R32 0-04 PROC_TRIGOUT
PROC_TRIGIN PROC_TRIGOUT
RSVD24 RSVD23
RSVD7 RSVD21
RSVD12 RSVD3 RSVD25
RSVD26 RSVD29
RSVD22 RSVD20 RSVD17 RSVD16 RSVD8 RSVD6
RSVD19 RSVD18 RSVD9
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CFL_H_62_INT_IP_CRB_CFLH
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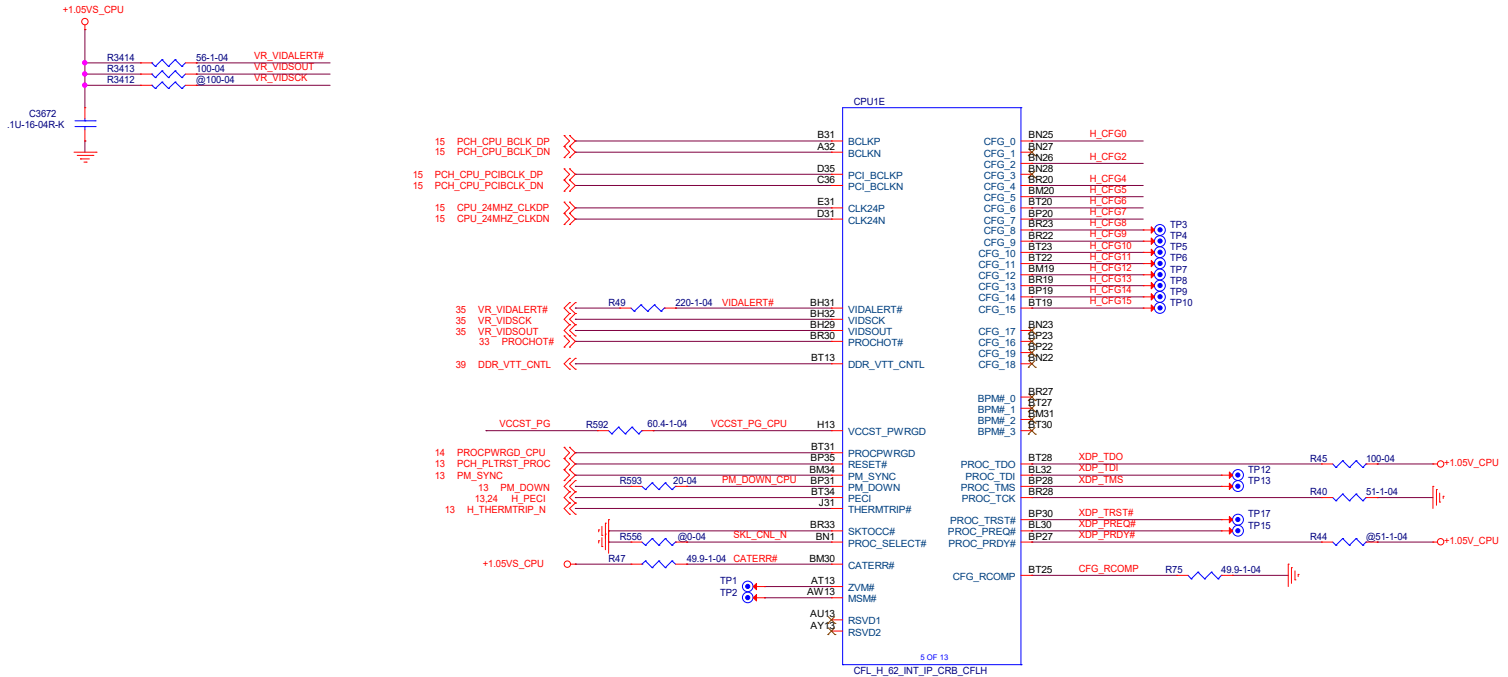

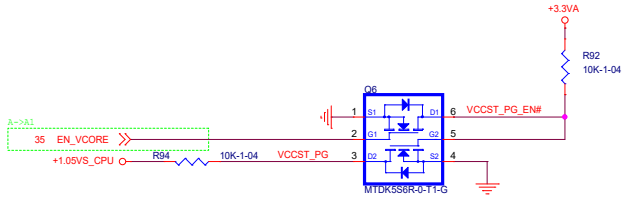

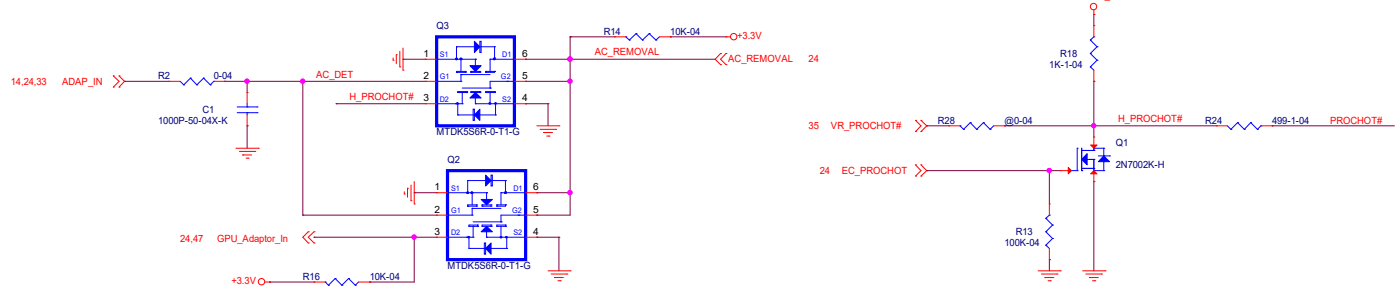

H_CFG0 (IPU)	Stall reset sequence after PCU PLL lock until de-asserted
0	Stall
1	Normal Operation：No stall. (Default)

H_CFG0 R180 @1K-1-04

H_CFG2 (IPU)	PCI Express* Static x16 Lane Numbering Reversal
0	Lane numbers reversed
1	Normal operation

H_CFG2 R181 1K-1-04

H_CFG4 (IPU)	eDP Presence strap
0	Enabled
1	Disabled

H_CFG4 R172 1K-1-04

H_CFG6 (IPU)	H_CFG5 (IPU)	PCI Express* Bifurcation
0	0	1 x8, 2 x4 PCI Express
0	1	reserved
1	0	2 x8 PCI Express
1	1	1 x16 PCI Express

H_CFG5 R174 @1K-1-04
H_CFG6 R173 @1K-1-04

H_CFG7 (IPU)	PEG Training
0	PEG Wait for BIOS for training
1	PEG Train immediately following RESET# de assertion (Default)

H_CFG7 R175 @1K-1-04

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Title: CFL-H MISC/CLK/JTAG/CFG

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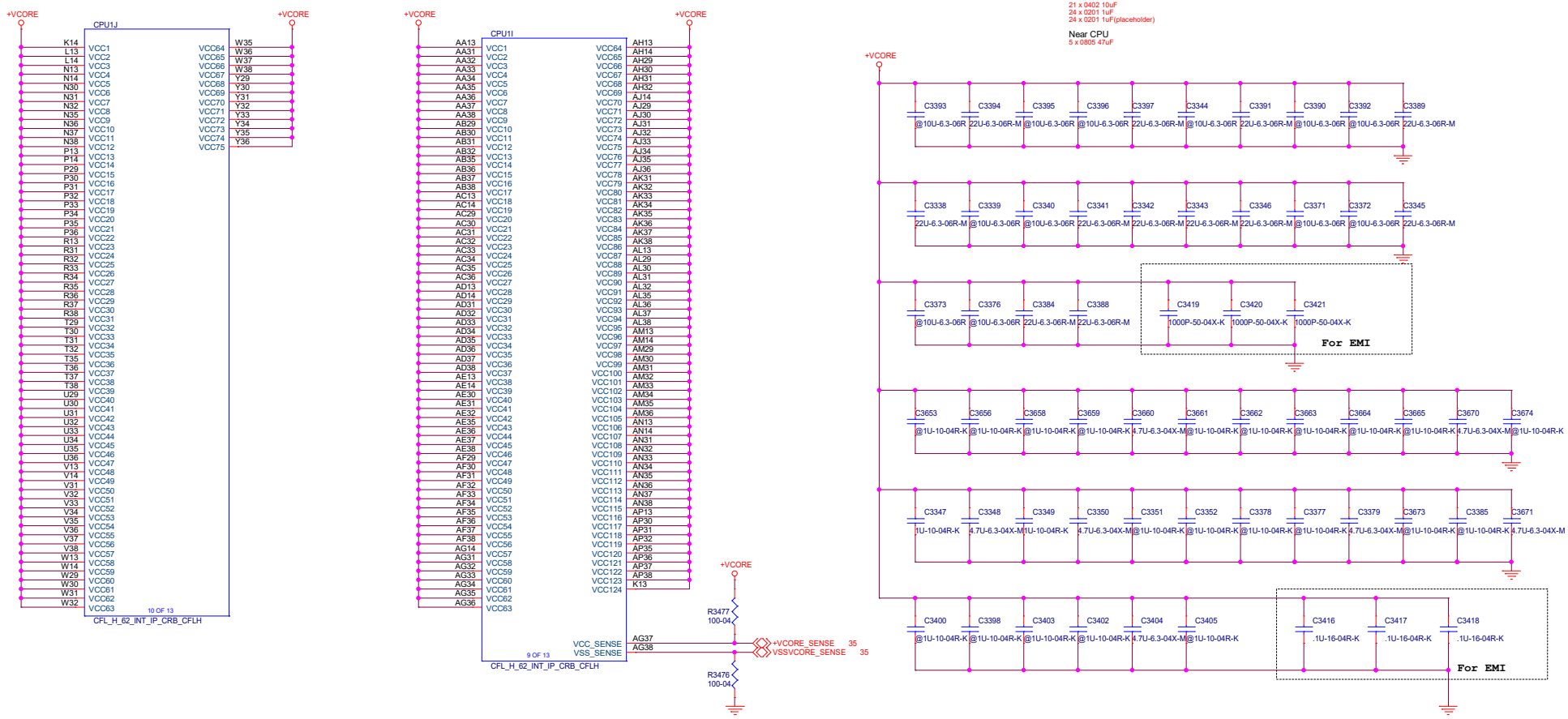

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Title	CFL-H VCORE	
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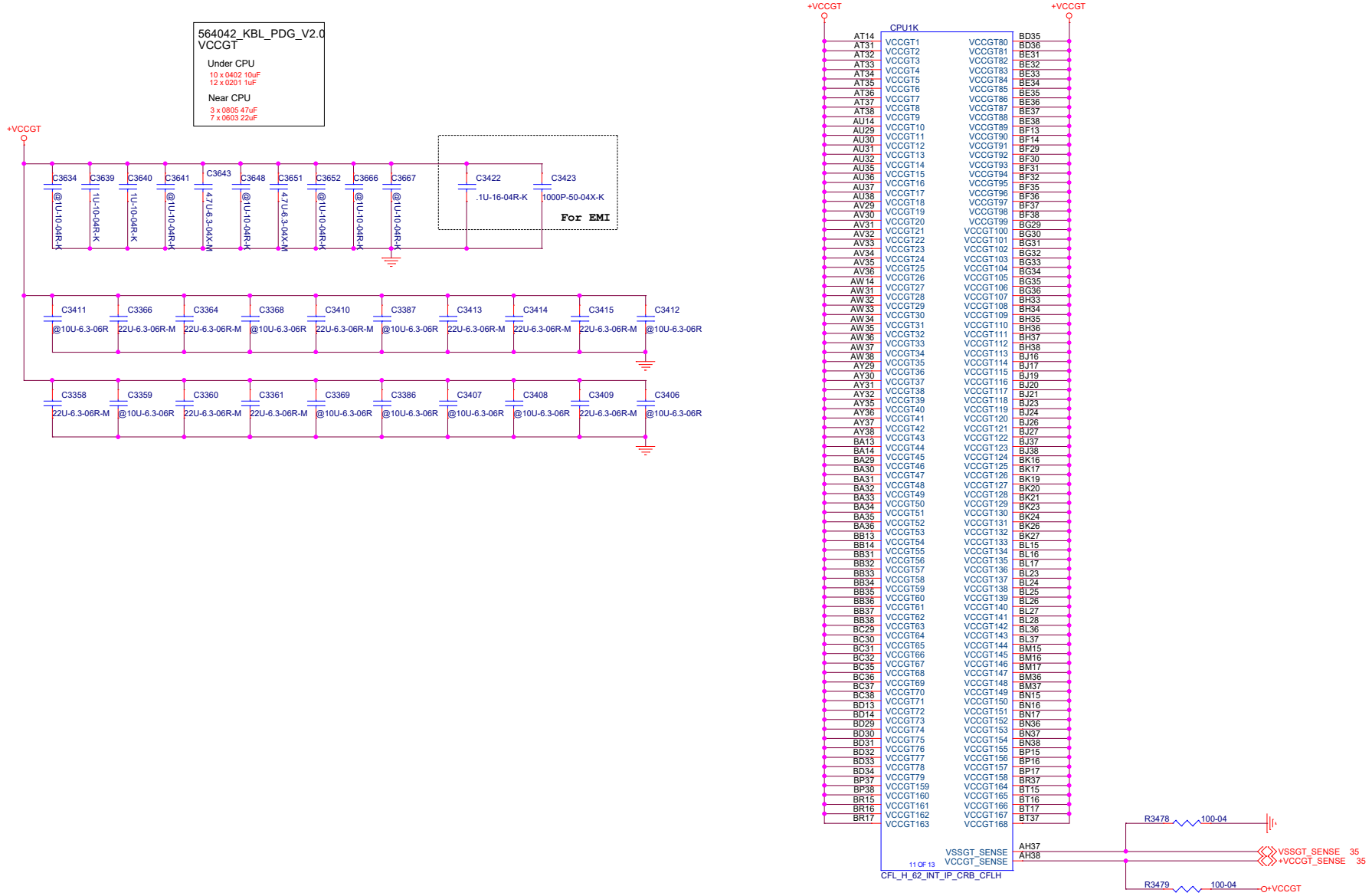

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Title	CFL-H VCCGT	
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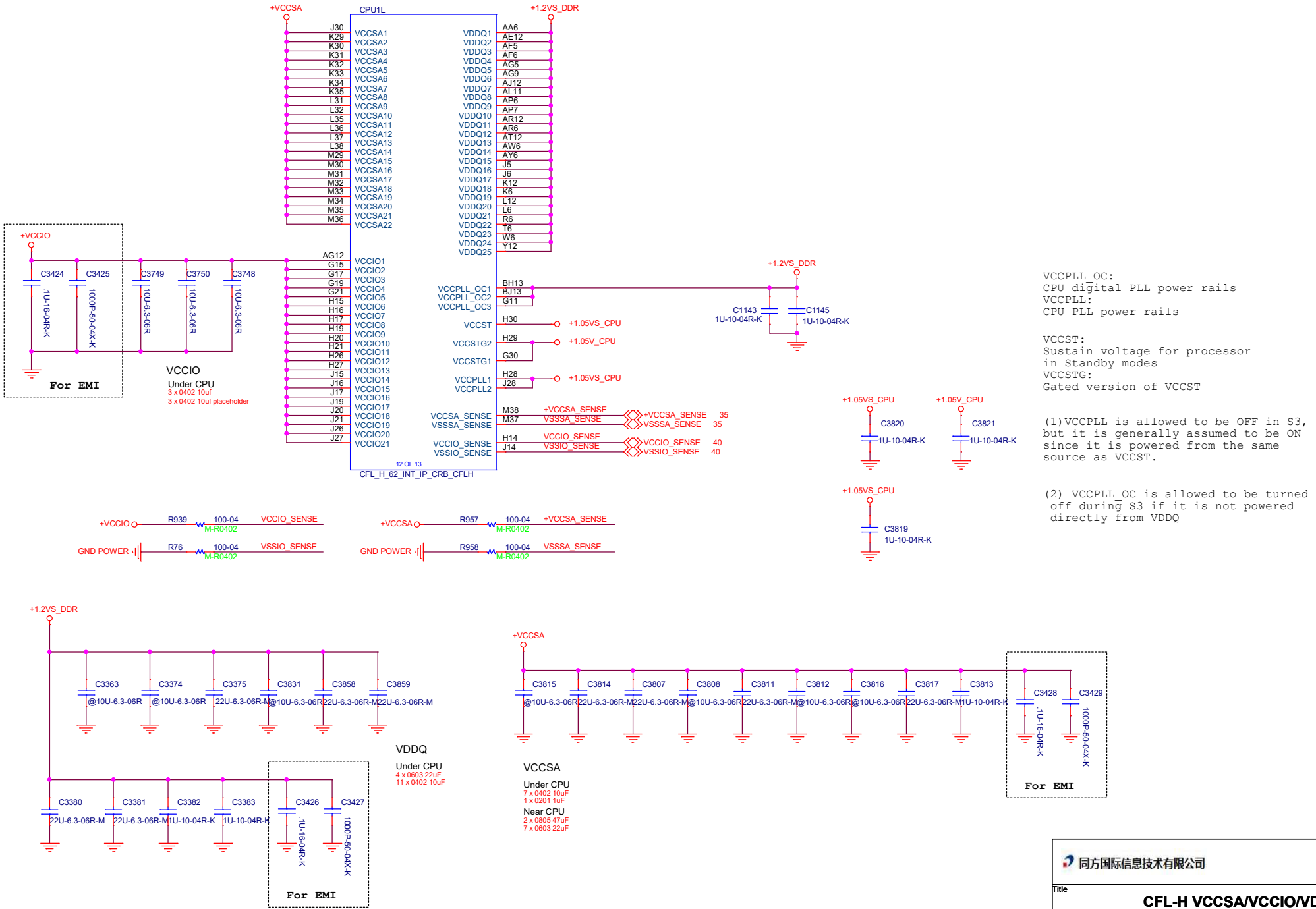

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Title	CFL-H VCCSA/VCCIO/VDDQ	
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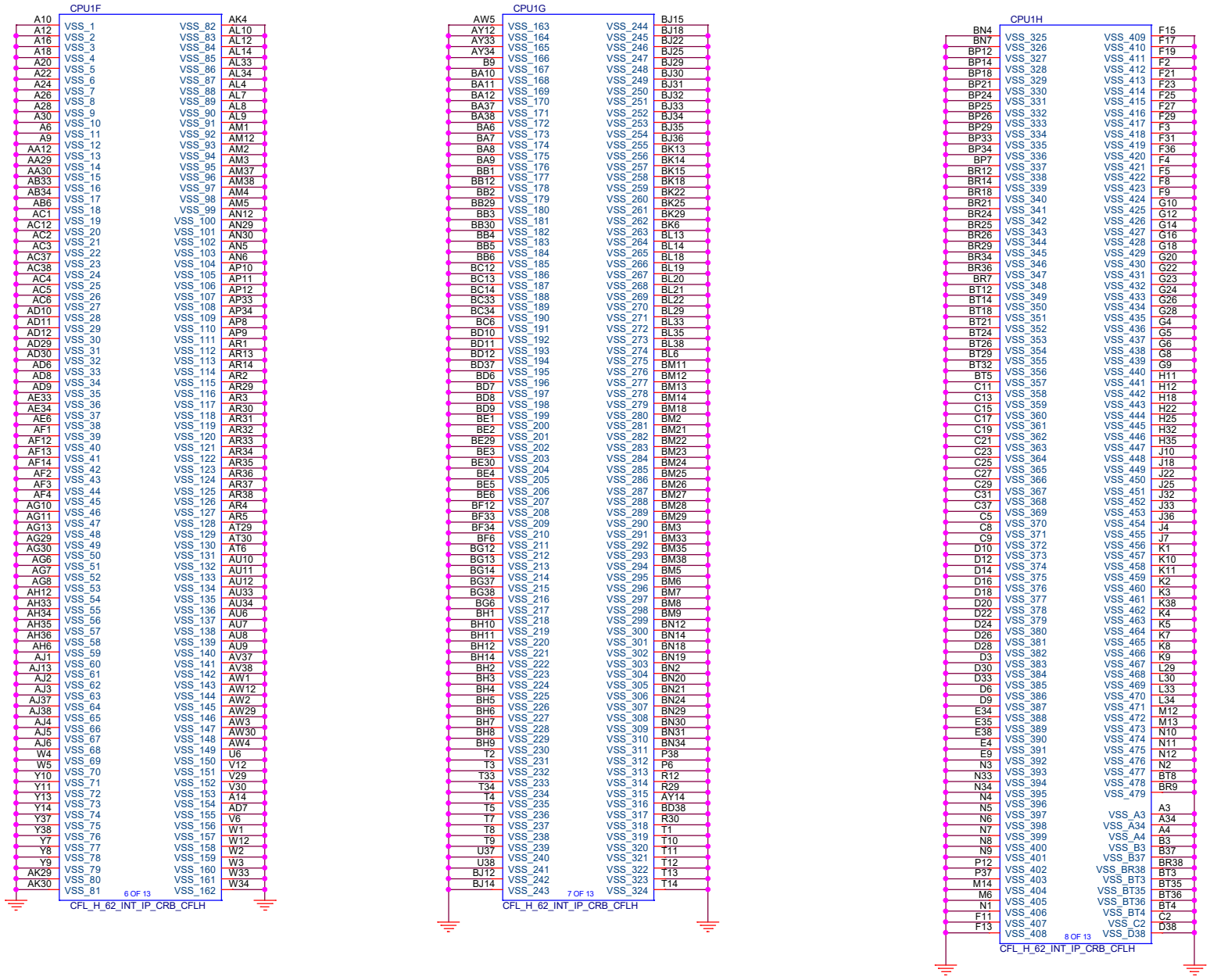

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Title	CFL-H GND	
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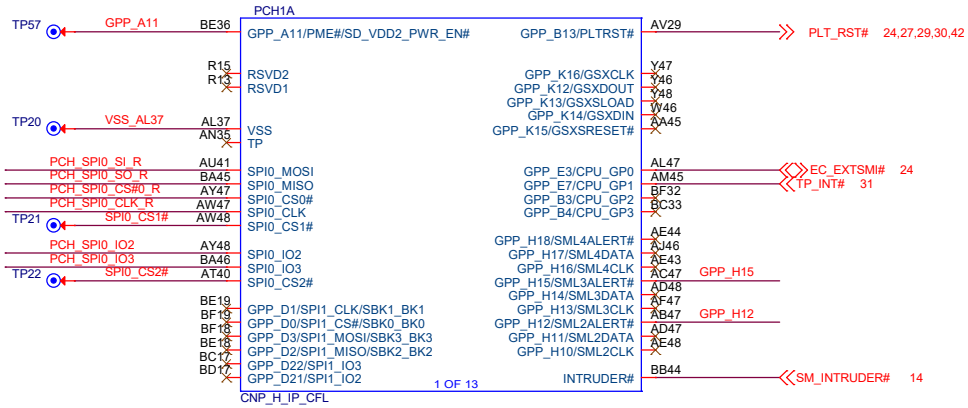
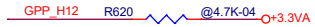
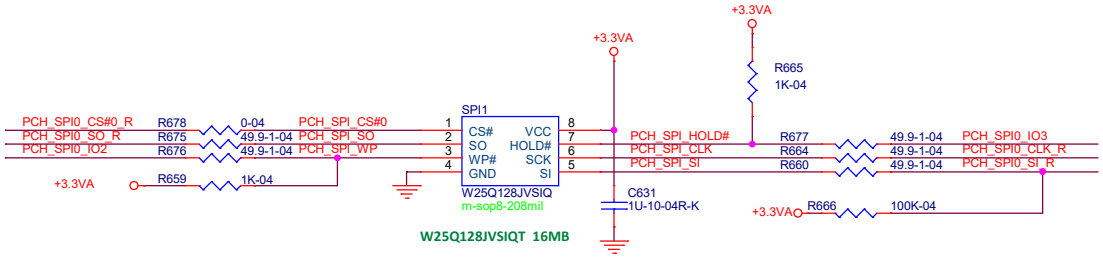


GPP_H15
External pull-up is required. Recommend 100K if pulled up to 3.3V or 75K if pulled up to 1.8V.

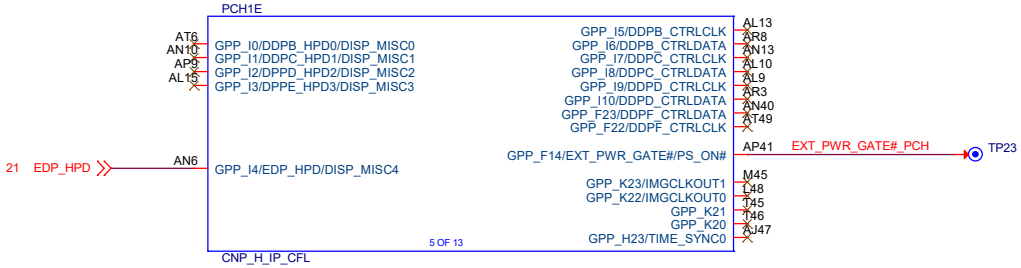
GPP_H12	eSPI Flash Sharing Mode
0	Master Attached Flash Sharing (MAFS) enabled (Default)
1	Slave Attached Flash Sharing (SAFS) enabled

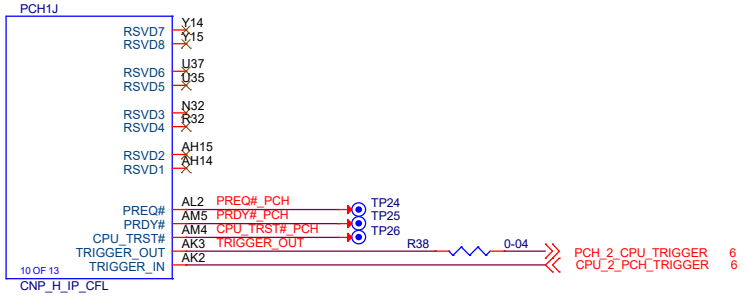




W25Q128JVSIQT 16MB

SPI0_MOSI
External pull-up is required. Recommend 100K if pulled up to 3.3V or 75K if pulled up to 1.8V.





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Title	CFL-H SPI/DDI CTRL/RSVD	
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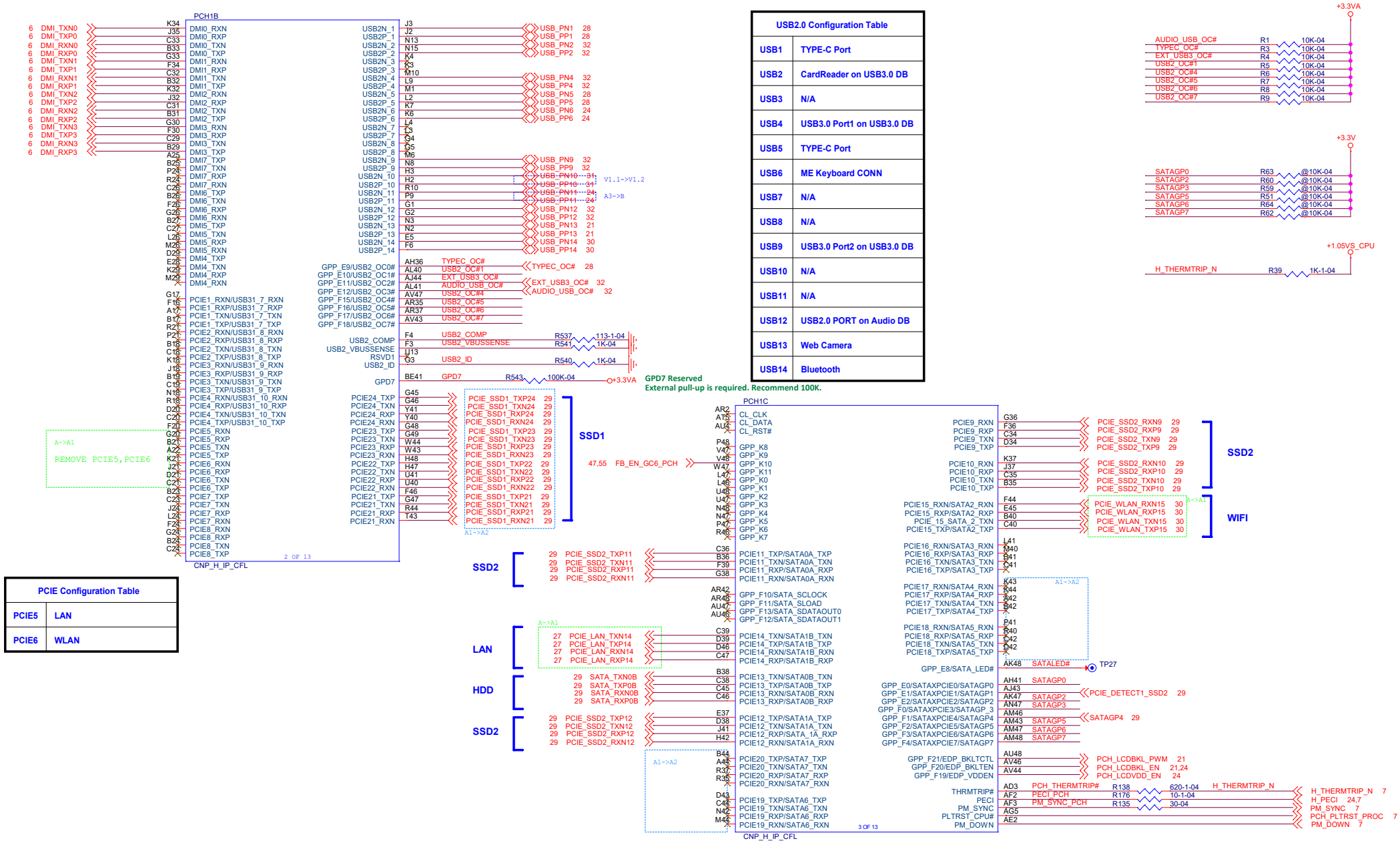

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Title	CFL-H DMI/PCIE/USB2/SATA		
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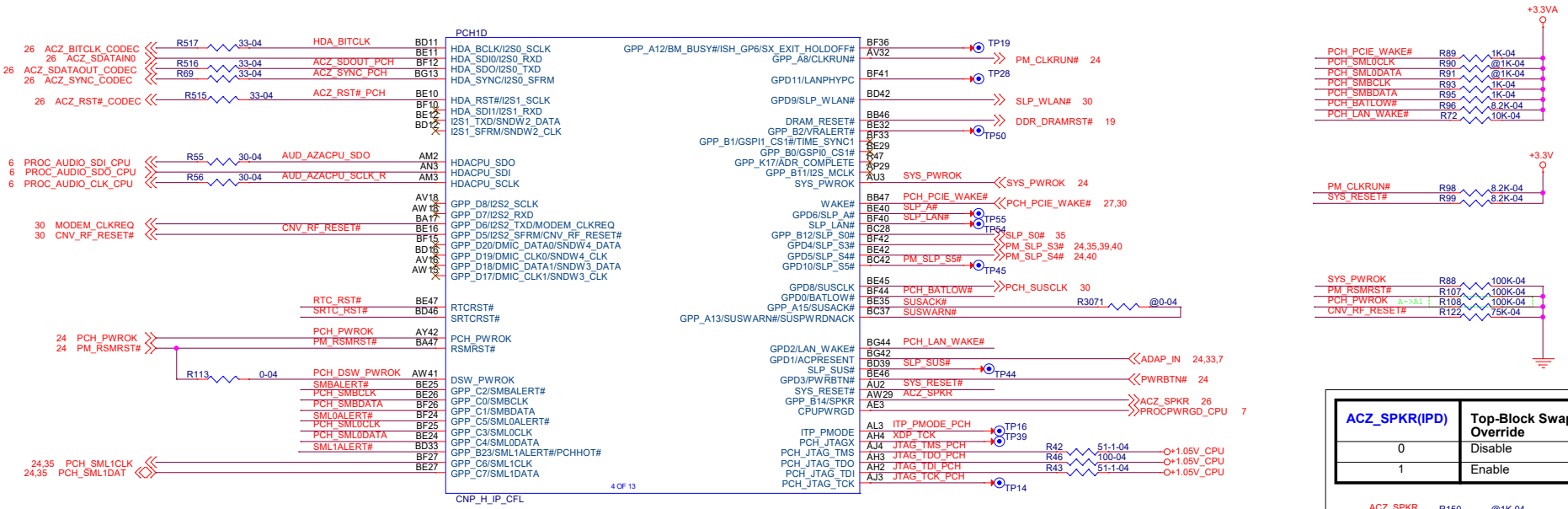


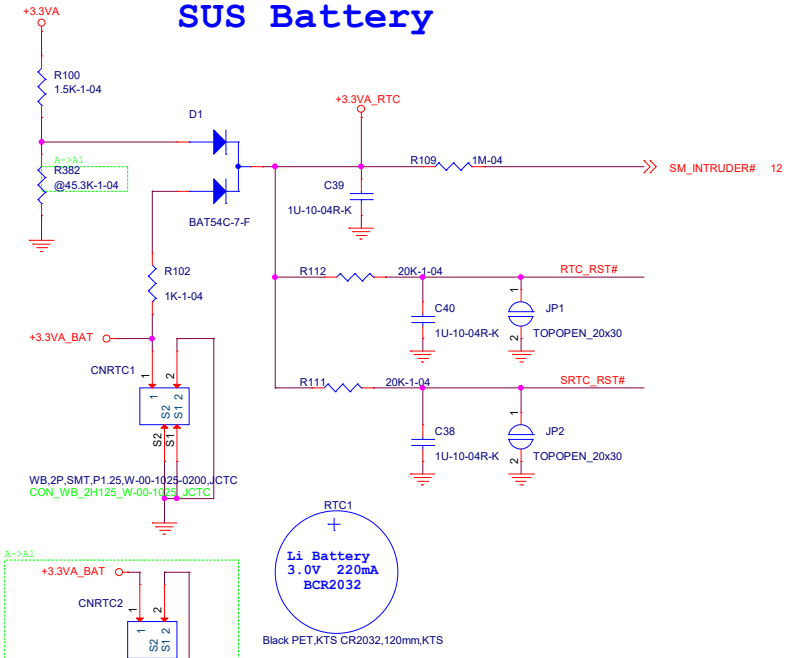
ACZ_SPKR(IPD)	Top-Block Swap Override
0	Disable
1	Enable

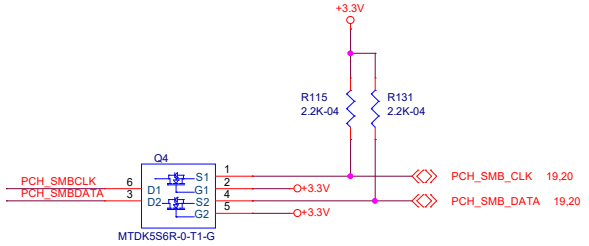
ACZ_SPKR R150 @1K-04 +3.3V

HDA_SDO (IPD)	Flash Descriptor Security Override
0	ME Enable security (Default)
1	ME Disabled security

+3.3VA R154 @1K-1-04 ACZ_SDOUT_PCH
24 MELOCK# R106 1K-1-04

SUS Battery





SMBALERT#(IPD)	Intel ME Crypto Transport Layer Security Confidentiality (TLS)
0	Disable (Default)
1	Enable

+3.3VA R67 @4.7K-04 SMBALERT#

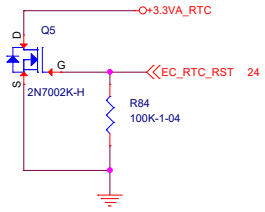
SML0ALERT#(IPD)	eSPI&LPC Select
0	LPC (Default)
1	eSPI

+3.3VA R77 @4.7K-04 SML0ALERT#

SML1ALERT#(IPD)	IntelR DCI-OOB
0	Disable (Default)
1	Enable

+3.3VA R78 @4.7K-04 SML1ALERT#

CLEAR CMOS



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Title	CFL-H PM/HDA/SMBUS/RTC	
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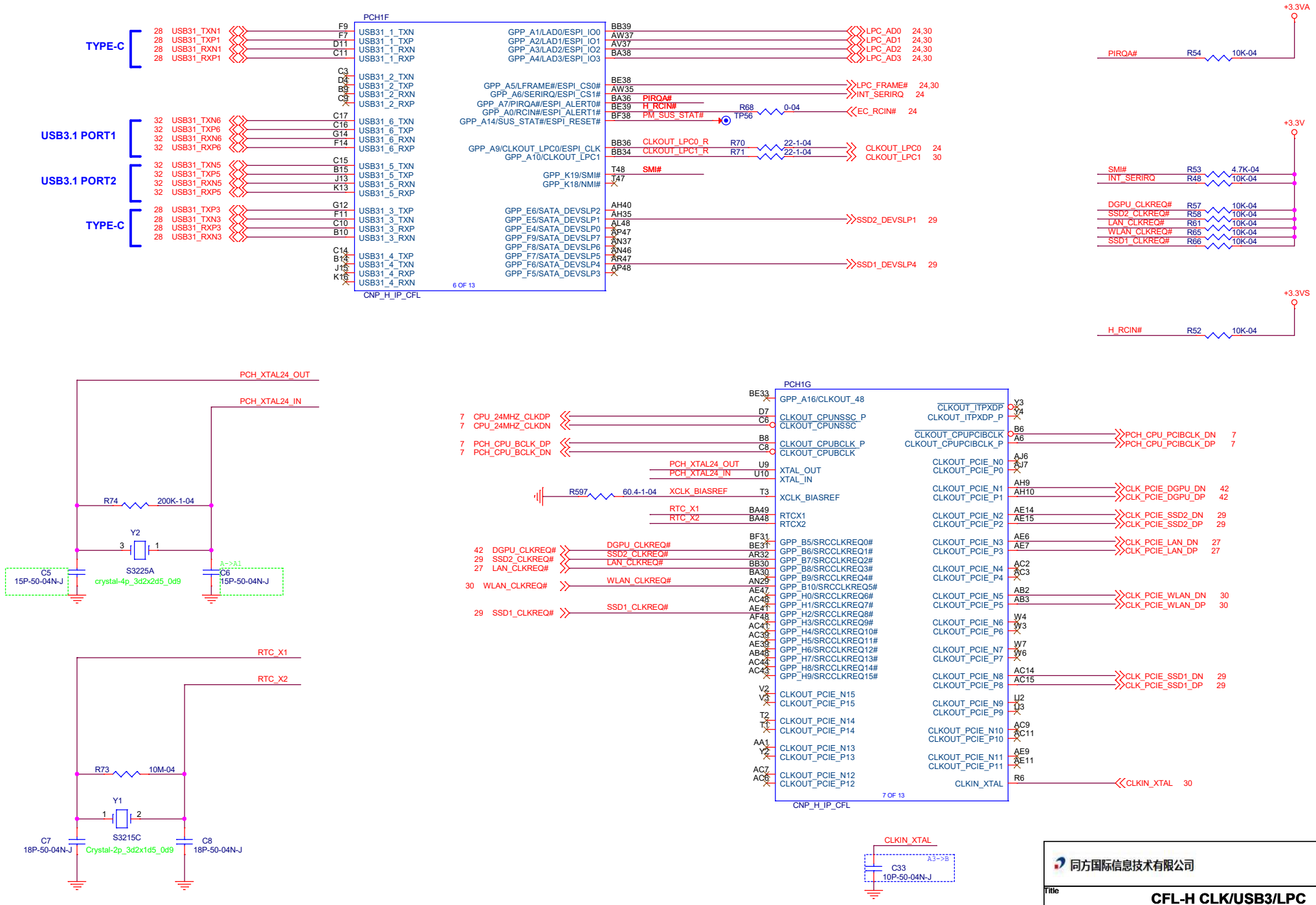

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Title	CFL-H CLK/USB3/LPC	
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GPP_B22/GSPI1_MOSI(IPD)	Boot BIOS Destination
0	SPI (Default)
1	LPC

+3.3VO — R545 @150K-04 — PCH_GSPI1_SI_R

GPP_B18/GSPI0_MOSI(IPD)	No Reboot Mode with TCO Disabled
0	Disabled (Default)
1	Enable

+3.3VO — R546 @4.7K-04 — GPP_B18

CNV_BRI_DT (IPD)	XTAL Frequency Select
0	38.4MHz XTAL frequency
1	24MHz XTAL frequency (Default)

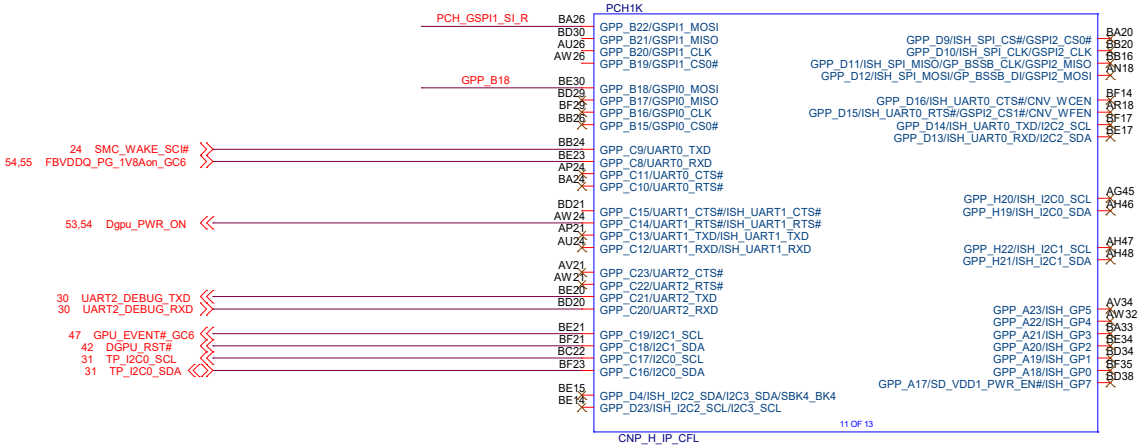
A3->B: +VCCPRIM_1P8 — R610 4.7K-04 — CNV_BRI_DT_PCH

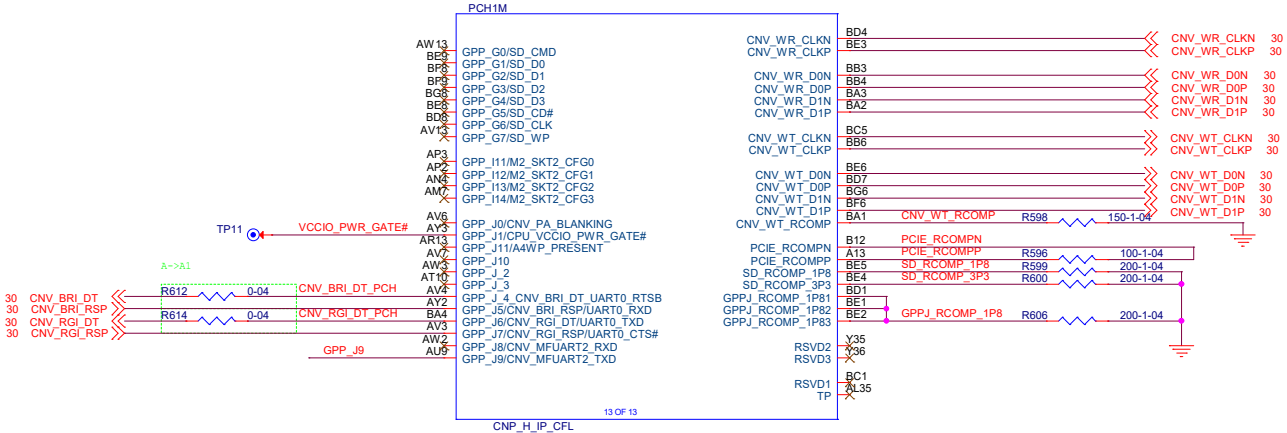
CNV_RGI_DT	M.2 CNV Mode Select
0	Integrated CNVi enable
1	Integrated CNVi disable

A3->B: +VCCPRIM_1P8 — R613 20K-04 — CNV_RGI_DT_PCH; R617 @100K-04

GPP_J9	VCCPSPI Rail select
0	VCCSPI is connected to 3.3V
1	VCCSPI is connected to 1.8V

A3->B: +VCCPRIM_1P8 — R611 @4.7K-04 — GPP_J9





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Title	CFL-H CNV/UART/I2C	
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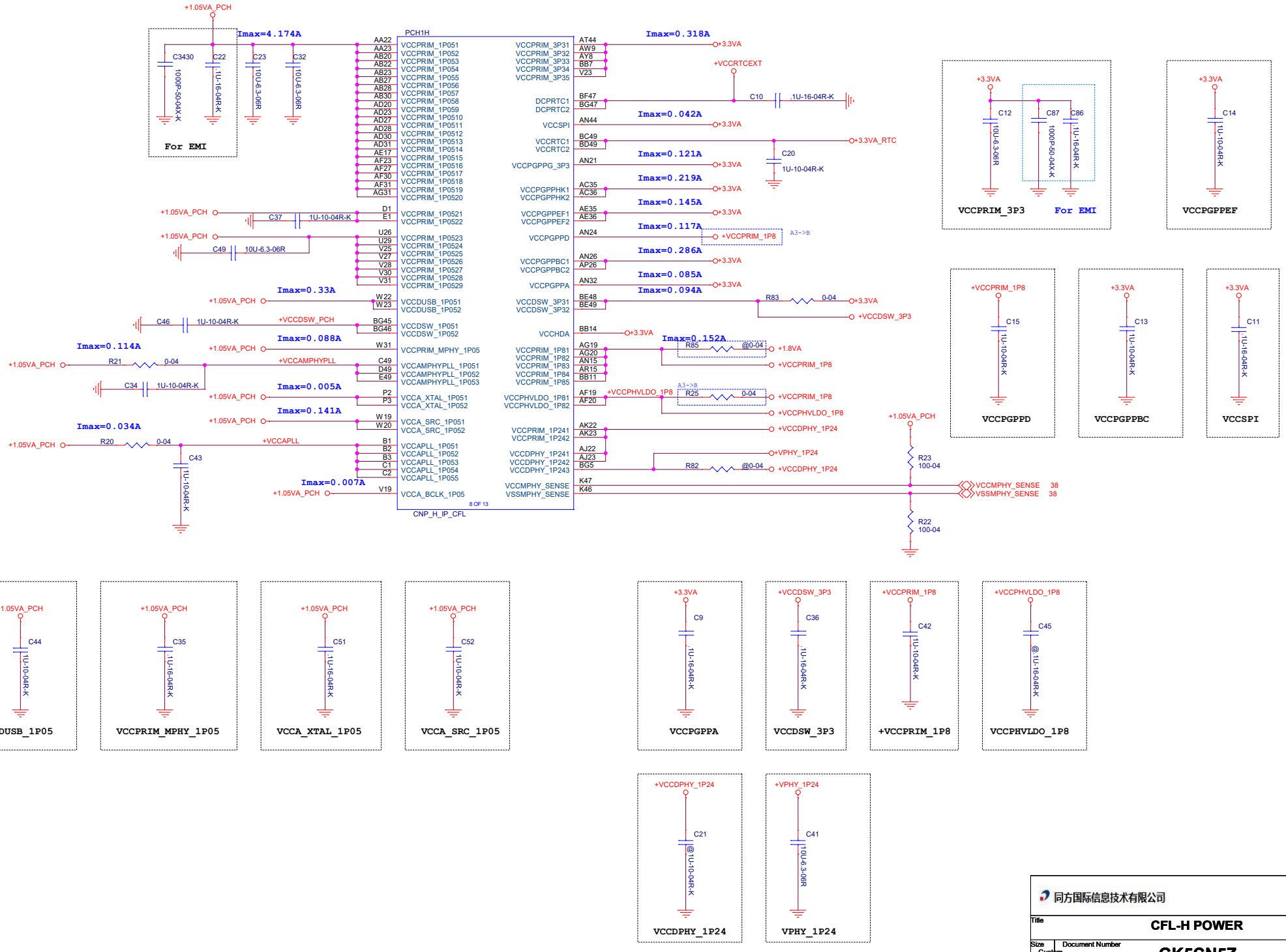

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Title	CFL-H POWER	
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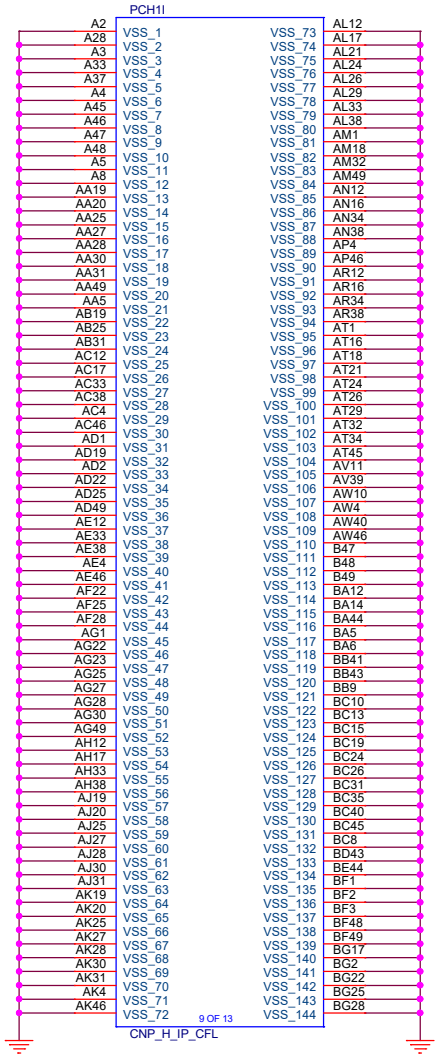

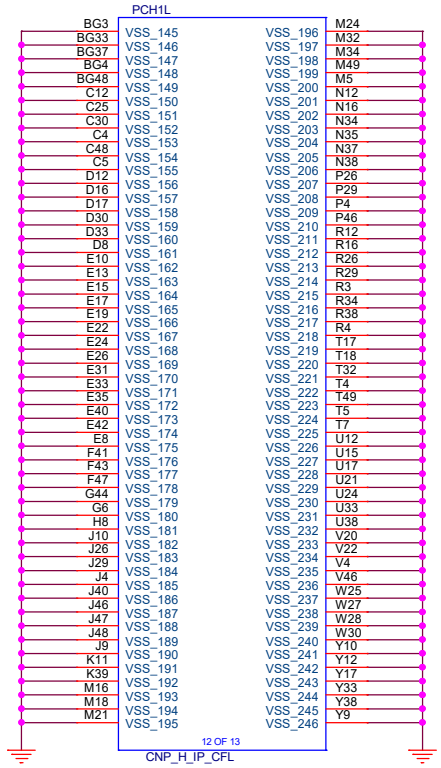

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Title	CFL-H GND	
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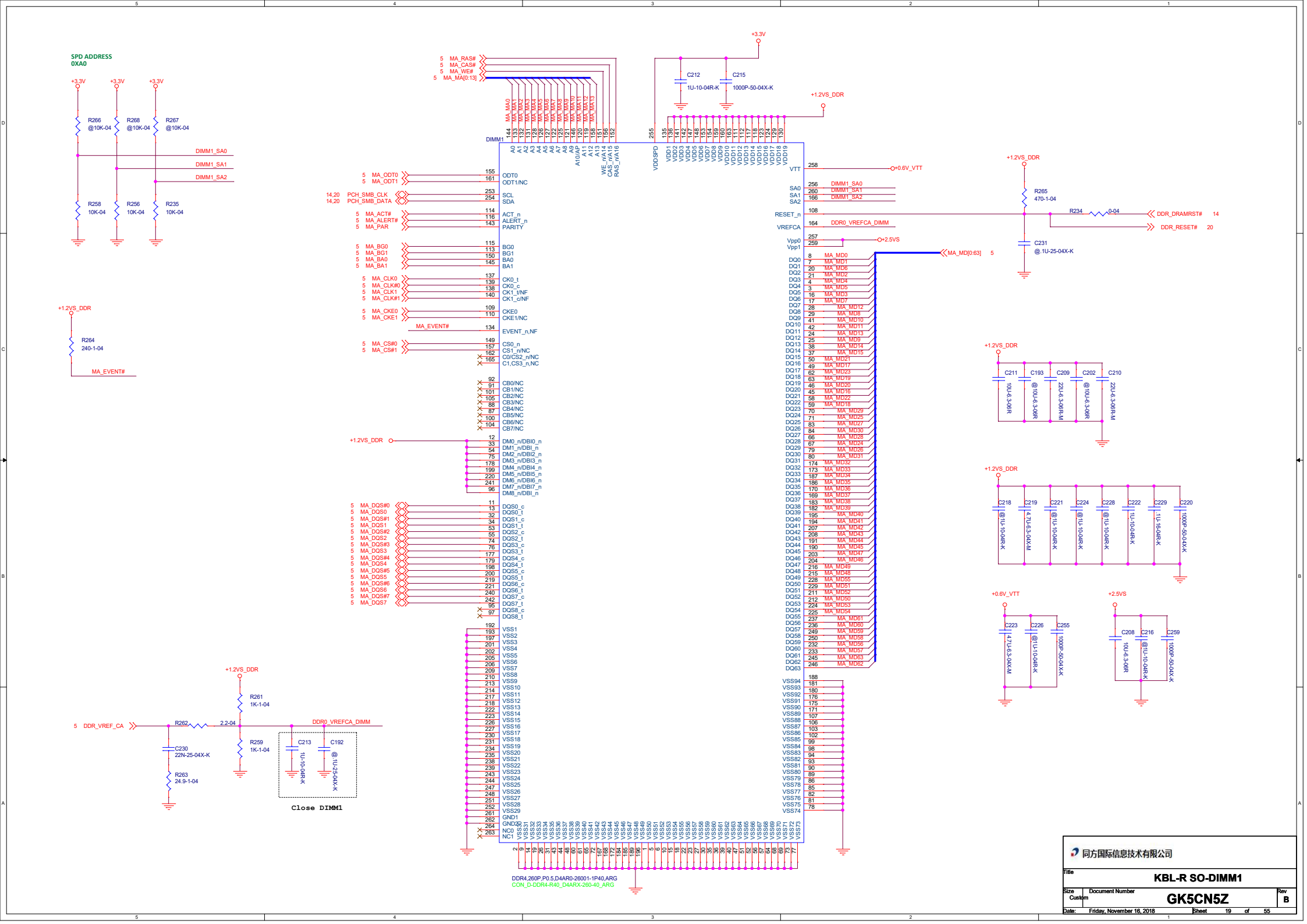

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Title	KBL-R SO-DIMM1	
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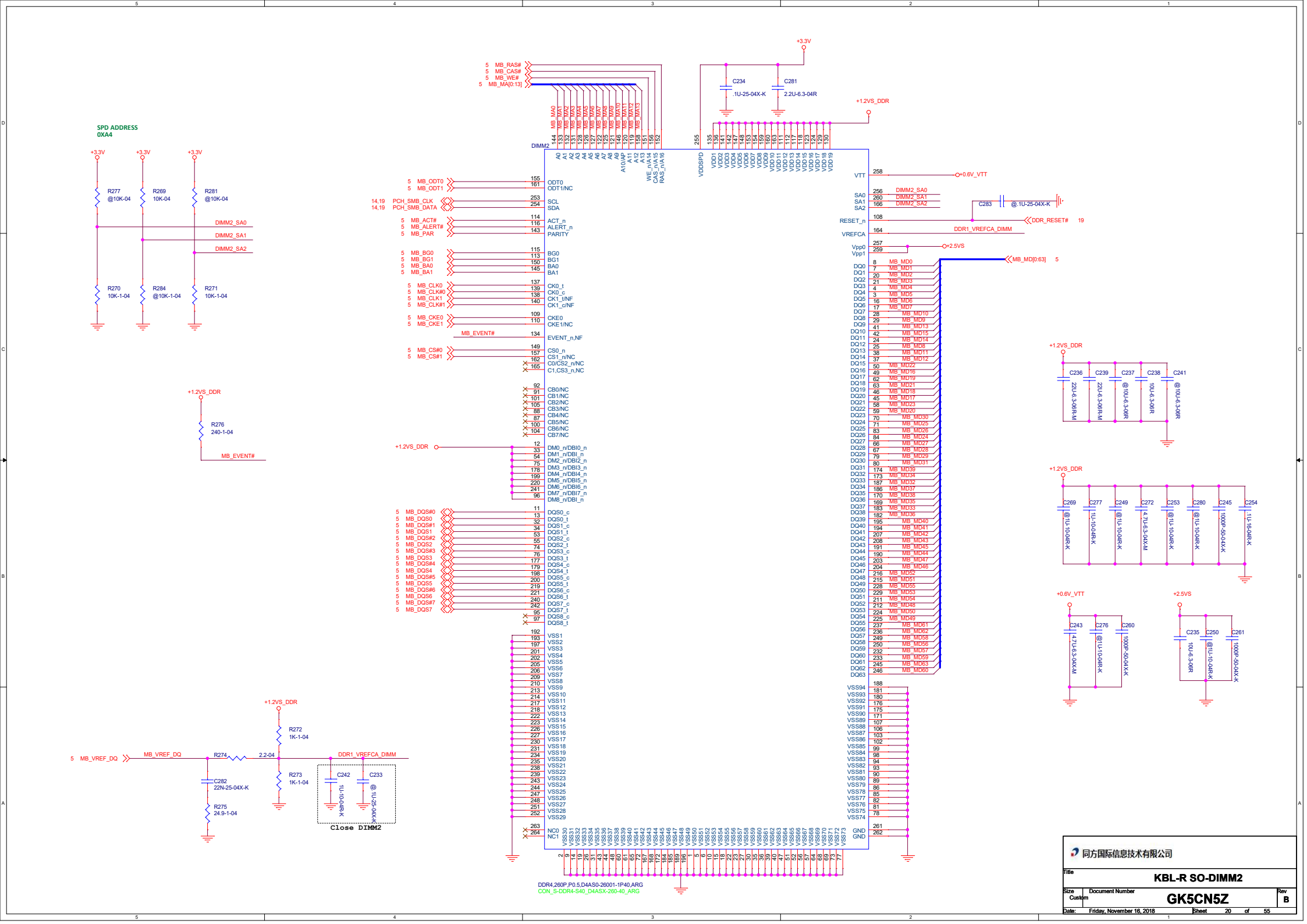
SPD ADDRESS
0XA4
DIMM2
Close DIMM2
DDR4,260P,P0.5,D4AS0-26001-1P40,ARG
CON_S-DDR4-S40_D4ASX-260-40_ARG
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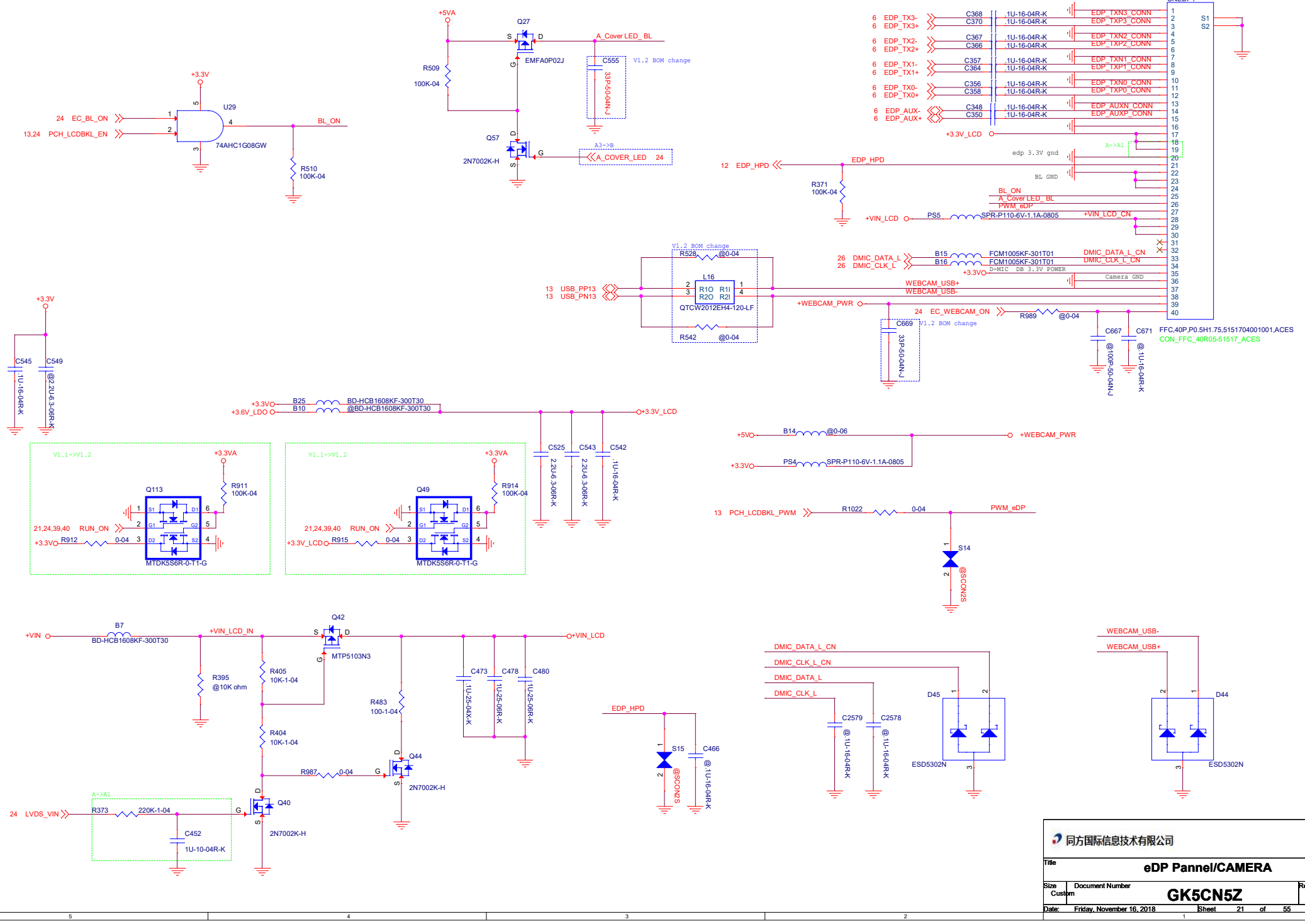
EMFA0P02J MOS SPEC
ID=-3A, 100 miniOHM@Pulse width=300us



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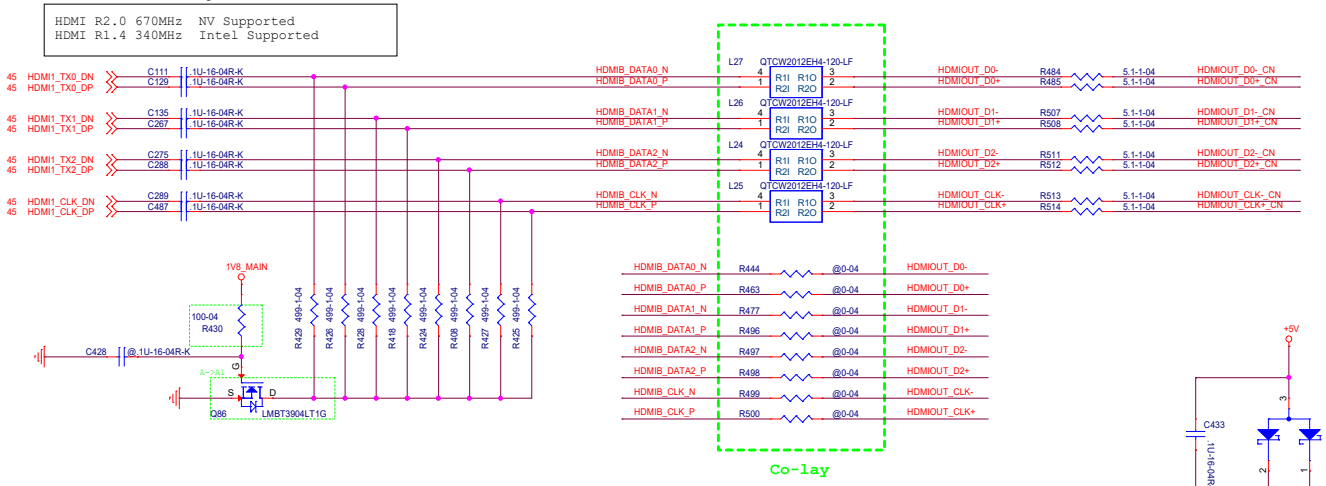
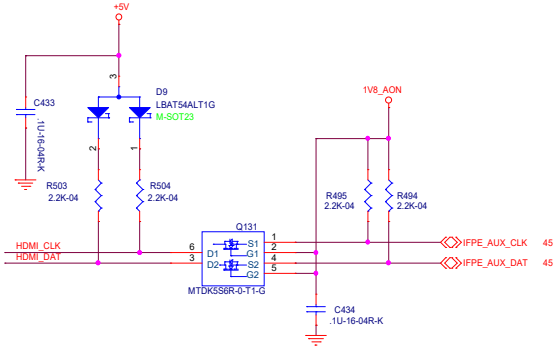
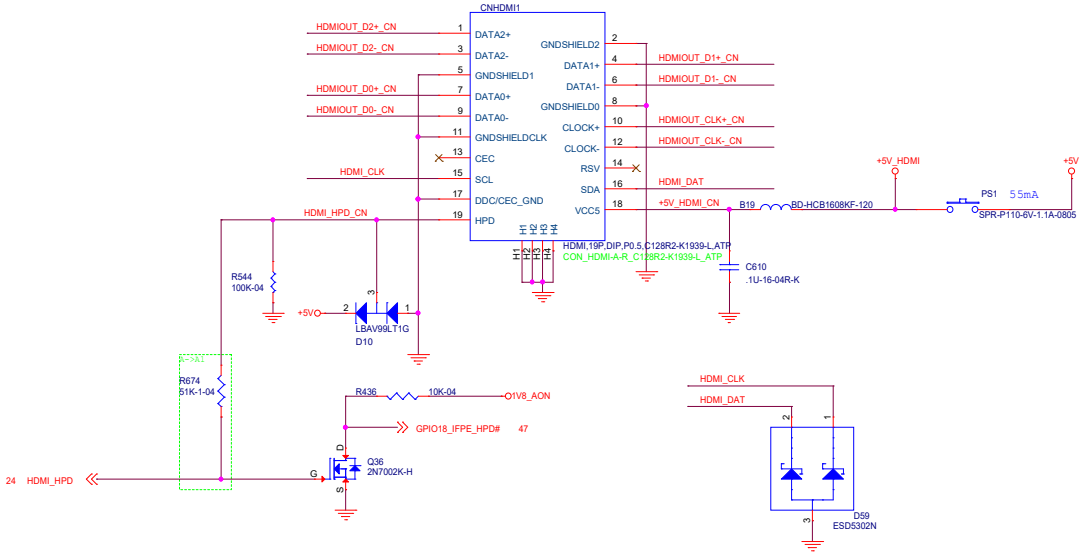
HDMI 2.0 Max =18Gbps, 4K resolution at 60HZ

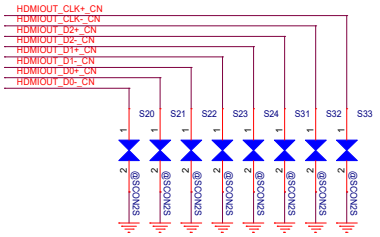
HDMI R2.0 670MHz NV Supported
HDMI R1.4 340MHz Intel Supported





HDMI CONN





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Title	HDMI	
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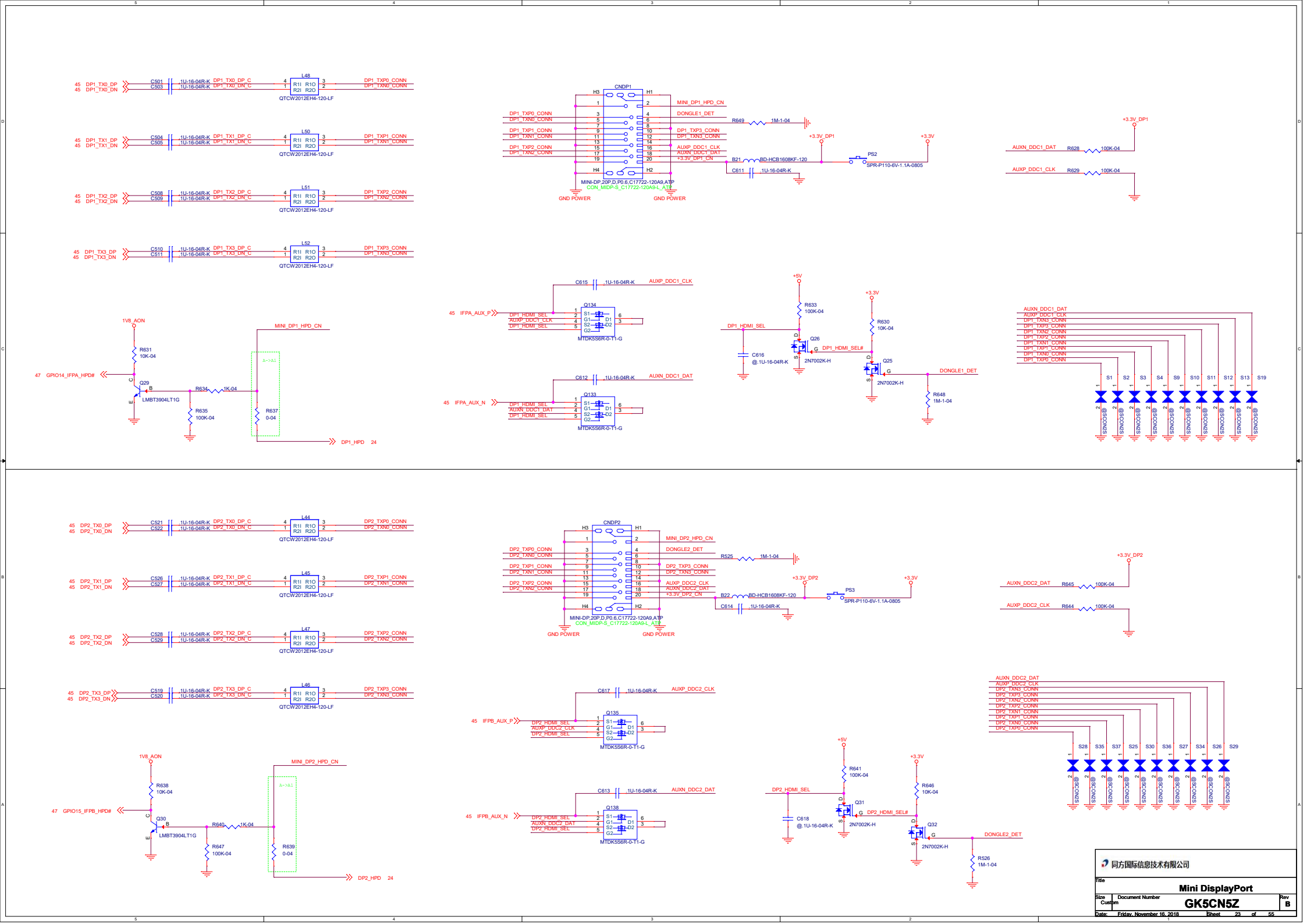
45 DP1_TX0_DP
45 DP1_TX0_DN
C501 .1U-16-04R-K DP1_TX0_DP_C
C503 .1U-16-04R-K DP1_TX0_DN_C
L48
R1I R1O
R2I R2O
QTCW2012EH4-120-LF
DP1_TXP0_CONN
DP1_TXN0_CONN
45 DP1_TX1_DP
45 DP1_TX1_DN
C504 .1U-16-04R-K DP1_TX1_DP_C
C505 .1U-16-04R-K DP1_TX1_DN_C
L50
DP1_TXP1_CONN
DP1_TXN1_CONN
45 DP1_TX2_DP
45 DP1_TX2_DN
C508 .1U-16-04R-K DP1_TX2_DP_C
C509 .1U-16-04R-K DP1_TX2_DN_C
L51
DP1_TXP2_CONN
DP1_TXN2_CONN
45 DP1_TX3_DP
45 DP1_TX3_DN
C510 .1U-16-04R-K DP1_TX3_DP_C
C511 .1U-16-04R-K DP1_TX3_DN_C
L52
DP1_TXP3_CONN
DP1_TXN3_CONN
CNDP1
H3
H1
H4
H2
MINI_DP1_HPD_CN
DONGLE1_DET
DP1_TXP3_CONN
DP1_TXN3_CONN
AUXP_DDC1_CLK
AUXN_DDC1_DAT
+3.3V_DP1_CN
MINI-DP.20P.D.P0.6.C17722-120A9.ATP
CON_MIDP-S_C17722-120A9-L_ATP
GND POWER
R649 1M-1-04
+3.3V_DP1
+3.3V
B21 BD-HCB1608KF-120
C611 .1U-16-04R-K
PS2
SPR-P110-6V-1.1A-0805
AUXN_DDC1_DAT
R628 100K-04
AUXP_DDC1_CLK
R629 100K-04
1V8_AON
R631 10K-04
47 GPIO14_IFPA_HPD#
Q29
B
C
E
LMBT3904LT1G
R634 1K-04
R635 100K-04
A->A1
R637 0-04
MINI_DP1_HPD_CN
DP1_HPD 24
C615 .1U-16-04R-K
AUXP_DDC1_CLK
45 IFPA_AUX_P
Q134
DP1_HDMI_SEL
AUXP_DDC1_CLK
DP1_HDMI_SEL
MTDK5S6R-0-T1-G
C612 .1U-16-04R-K
AUXN_DDC1_DAT
45 IFPA_AUX_N
Q133
DP1_HDMI_SEL
AUXN_DDC1_DAT
DP1_HDMI_SEL
MTDK5S6R-0-T1-G
+5V
R633 100K-04
DP1_HDMI_SEL
C616 @.1U-16-04R-K
Q26
2N7002K-H
DP1_HDMI_SEL#
+3.3V
R630 10K-04
Q25
2N7002K-H
DONGLE1_DET
R648 1M-1-04
AUXN_DDC1_DAT
AUXP_DDC1_CLK
DP1_TXN3_CONN
DP1_TXP3_CONN
DP1_TXN2_CONN
DP1_TXP2_CONN
DP1_TXN1_CONN
DP1_TXP1_CONN
DP1_TXN0_CONN
DP1_TXP0_CONN
S1 S2 S3 S4 S9 S10 S11 S12 S13 S19
SJ-SCONZS
45 DP2_TX0_DP
45 DP2_TX0_DN
C521 .1U-16-04R-K DP2_TX0_DP_C
C522 .1U-16-04R-K DP2_TX0_DN_C
L44
R1I R1O
R2I R2O
QTCW2012EH4-120-LF
DP2_TXP0_CONN
DP2_TXN0_CONN
45 DP2_TX1_DP
45 DP2_TX1_DN
C526 .1U-16-04R-K DP2_TX1_DP_C
C527 .1U-16-04R-K DP2_TX1_DN_C
L45
DP2_TXP1_CONN
DP2_TXN1_CONN
45 DP2_TX2_DP
45 DP2_TX2_DN
C528 .1U-16-04R-K DP2_TX2_DP_C
C529 .1U-16-04R-K DP2_TX2_DN_C
L47
DP2_TXP2_CONN
DP2_TXN2_CONN
45 DP2_TX3_DP
45 DP2_TX3_DN
C519 .1U-16-04R-K DP2_TX3_DP_C
C520 .1U-16-04R-K DP2_TX3_DN_C
L46
DP2_TXP3_CONN
DP2_TXN3_CONN
CNDP2
H3
H1
H4
H2
MINI_DP2_HPD_CN
DONGLE2_DET
DP2_TXP3_CONN
DP2_TXN3_CONN
AUXP_DDC2_CLK
AUXN_DDC2_DAT
+3.3V_DP2_CN
MINI-DP.20P.D.P0.6.C17722-120A9.ATP
CON_MIDP-S_C17722-120A9-L_ATP
GND POWER
R525 1M-1-04
+3.3V_DP2
+3.3V
B22 BD-HCB1608KF-120
C614 .1U-16-04R-K
PS3
SPR-P110-6V-1.1A-0805
AUXN_DDC2_DAT
R645 100K-04
AUXP_DDC2_CLK
R644 100K-04
1V8_AON
R638 10K-04
47 GPIO15_IFPB_HPD#
Q30
B
C
E
LMBT3904LT1G
R640 1K-04
R647 100K-04
A->A1
R639 0-04
MINI_DP2_HPD_CN
DP2_HPD 24
C617 .1U-16-04R-K
AUXP_DDC2_CLK
45 IFPB_AUX_P
Q135
DP2_HDMI_SEL
AUXP_DDC2_CLK
DP2_HDMI_SEL
MTDK5S6R-0-T1-G
C613 .1U-16-04R-K
AUXN_DDC2_DAT
45 IFPB_AUX_N
Q138
DP2_HDMI_SEL
AUXN_DDC2_DAT
DP2_HDMI_SEL
MTDK5S6R-0-T1-G
+5V
R641 100K-04
DP2_HDMI_SEL
C618 @.1U-16-04R-K
Q31
2N7002K-H
DP2_HDMI_SEL#
+3.3V
R646 10K-04
Q32
2N7002K-H
DONGLE2_DET
R526 1M-1-04
AUXN_DDC2_DAT
AUXP_DDC2_CLK
DP2_TXN3_CONN
DP2_TXP3_CONN
DP2_TXN2_CONN
DP2_TXP2_CONN
DP2_TXN1_CONN
DP2_TXP1_CONN
DP2_TXN0_CONN
DP2_TXP0_CONN
S28 S35 S37 S25 S30 S36 S27 S34 S26 S29
SJ-SCONZS
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Title
Mini DisplayPort
Size
Custom
Document Number
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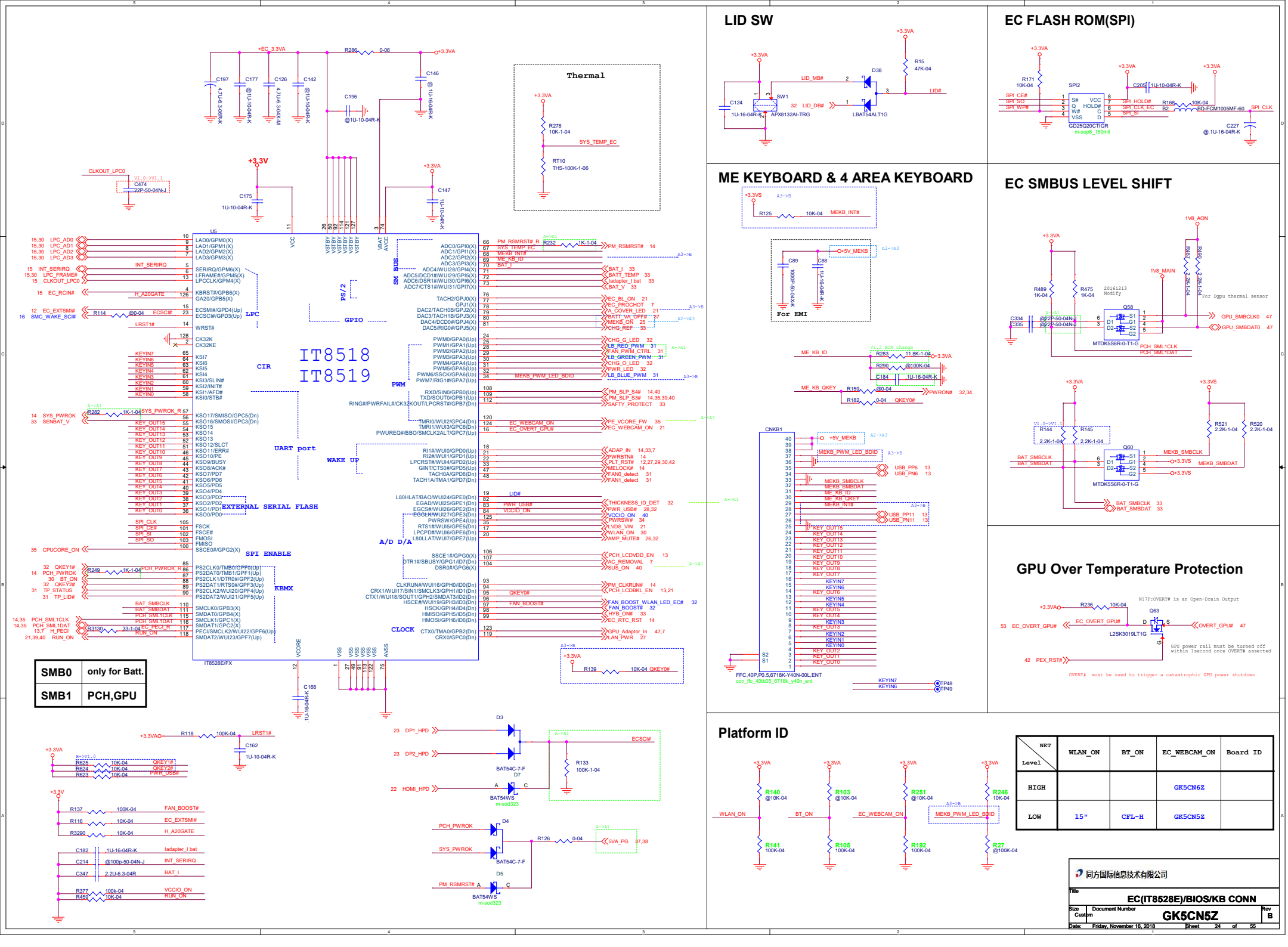

NET / Level	WLAN_ON	BT_ON	EC_WEBCAM_ON	Board ID
HIGH			GK5CN6Z	
LOW	15"	CFL-H	GK5CN5Z	

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Title: EC(IT8528E)/BIOS/KB CONN

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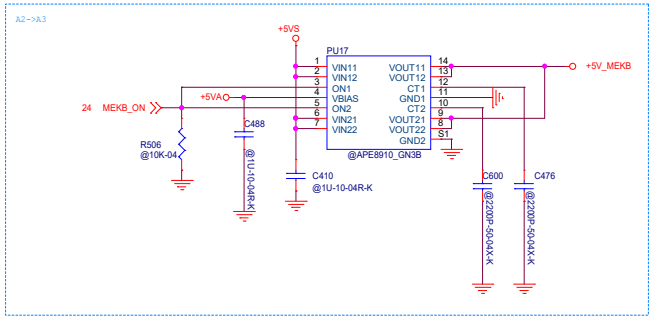

Title	GK5CNXX-10L	
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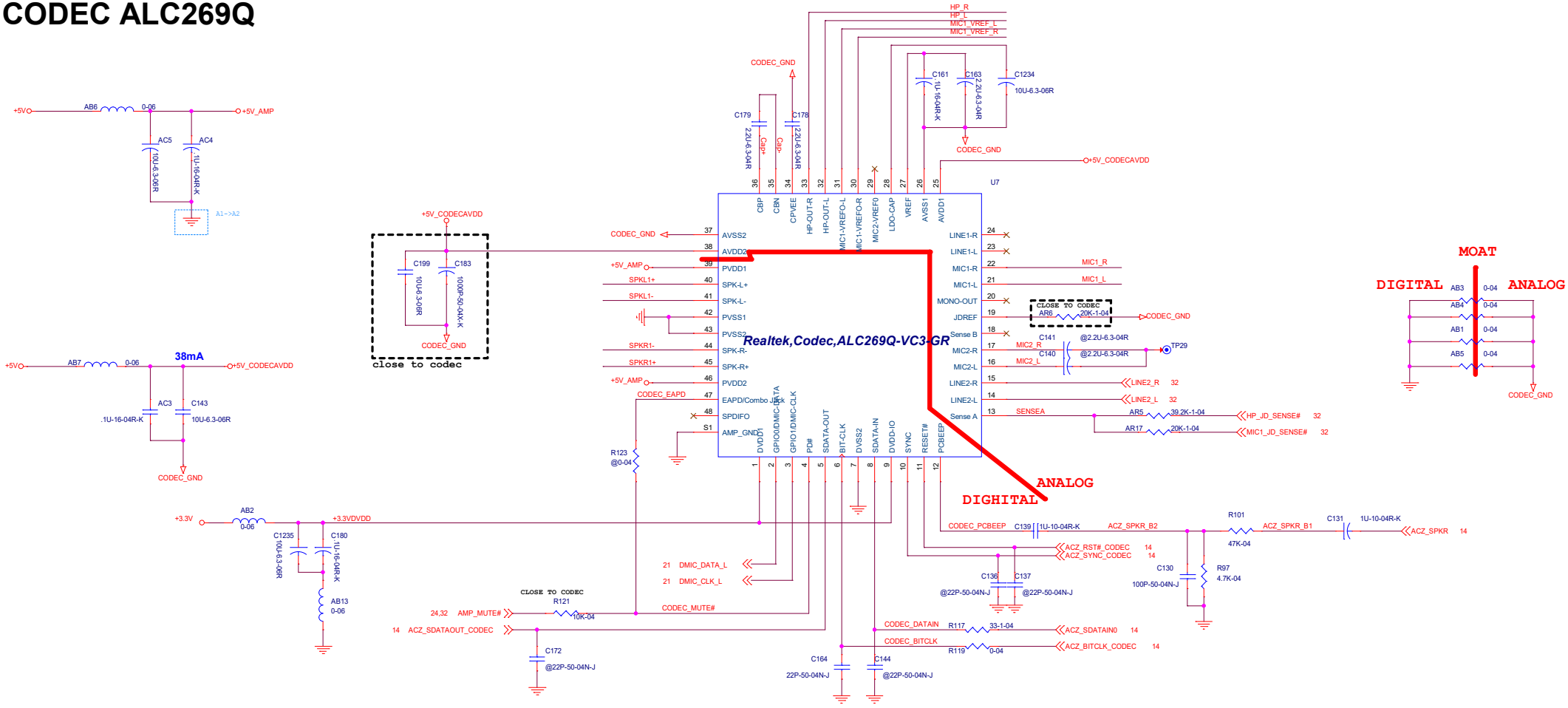
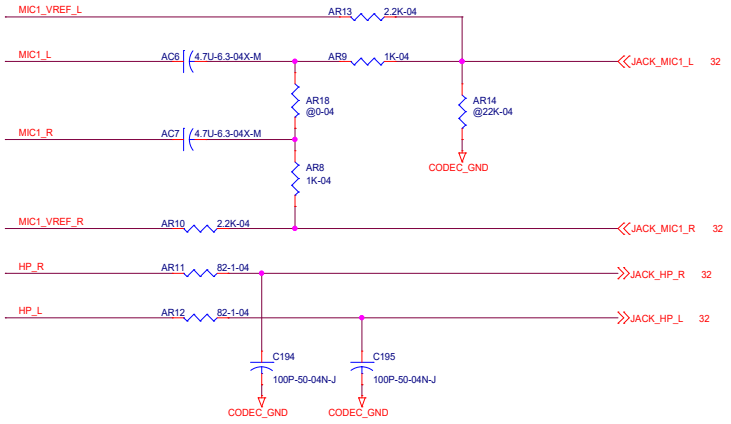
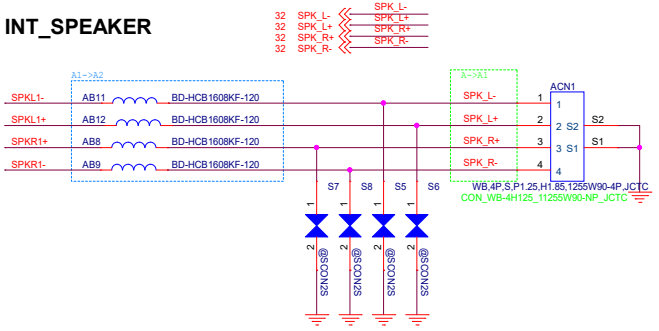
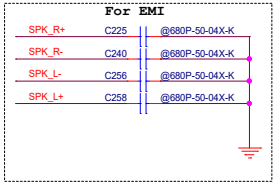
CODEC ALC269Q





INT_SPEAKER





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Title	AUDIO(ALC269Q)/SPK	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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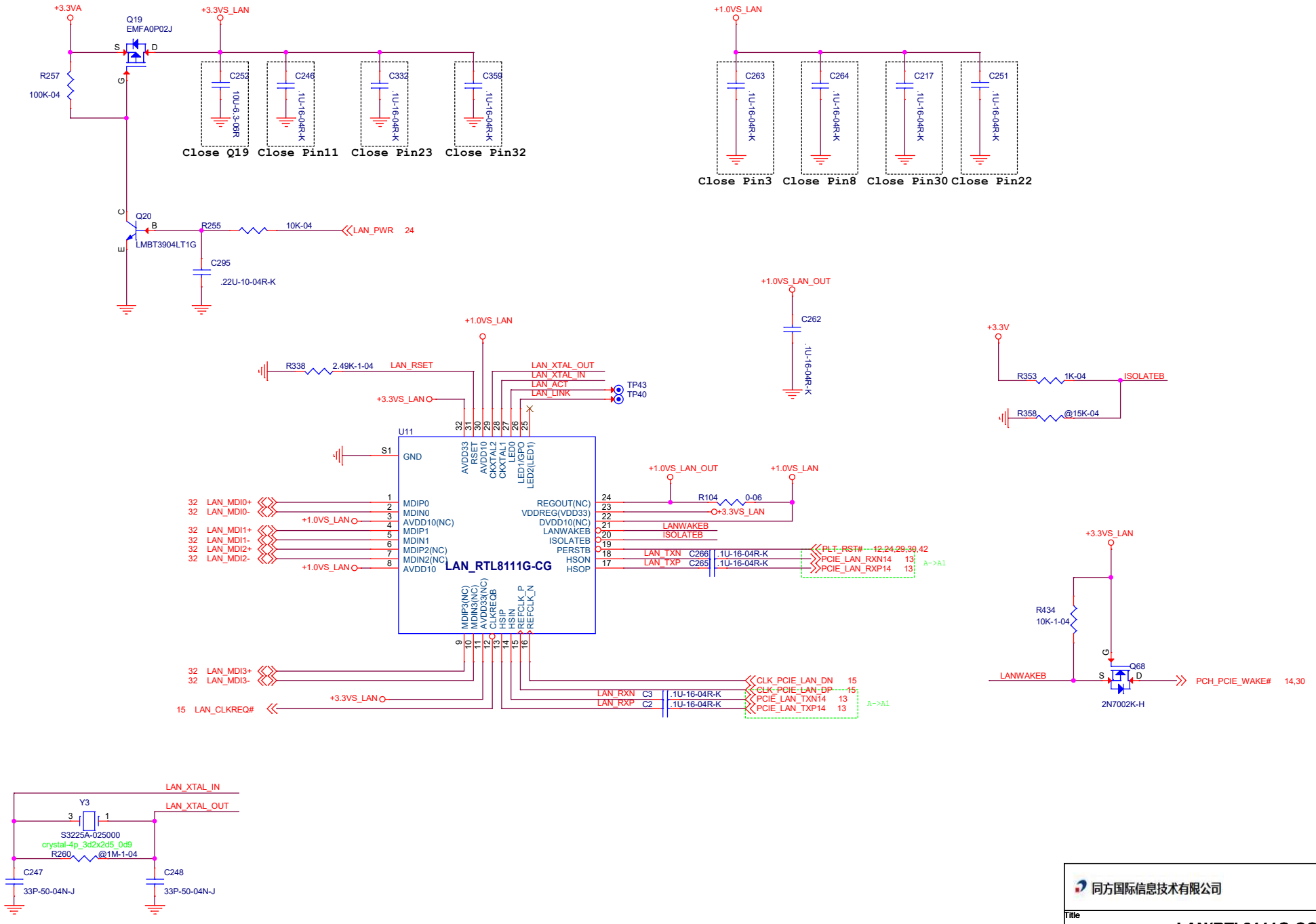

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Title	LAN(RTL8111G-CG)		
Size: Custom	Document Number: GK5CN5Z		Rev: B
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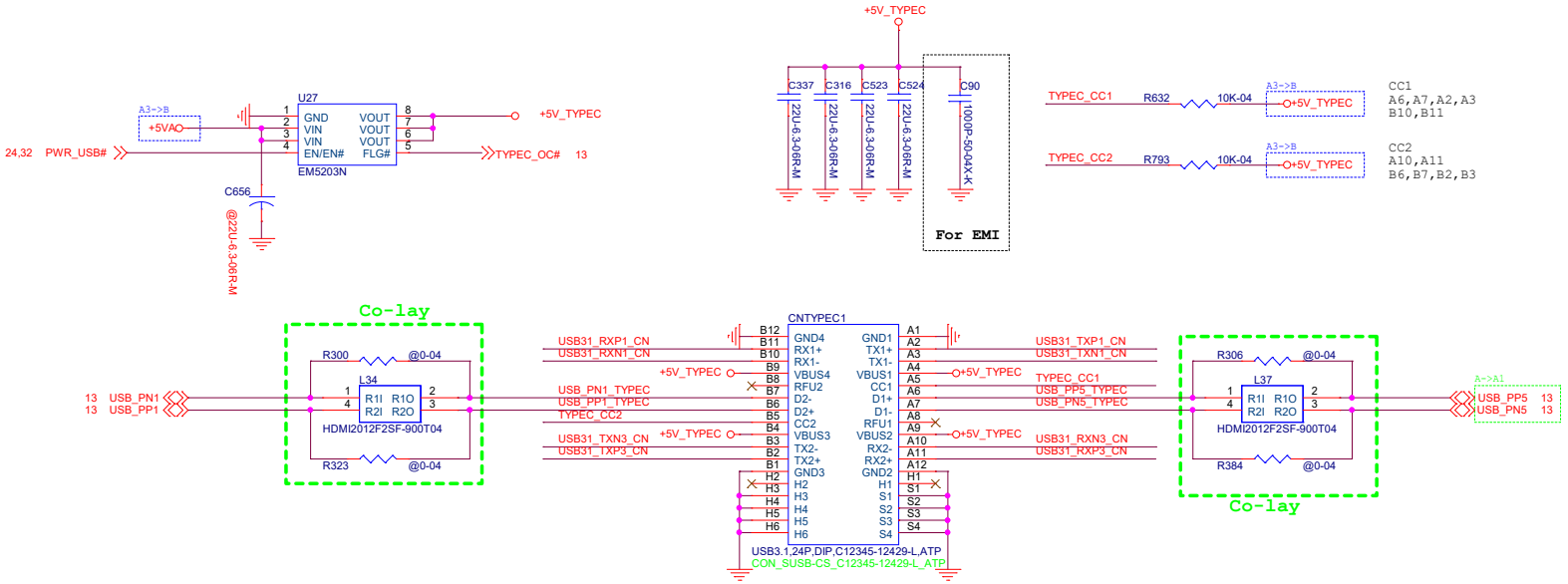
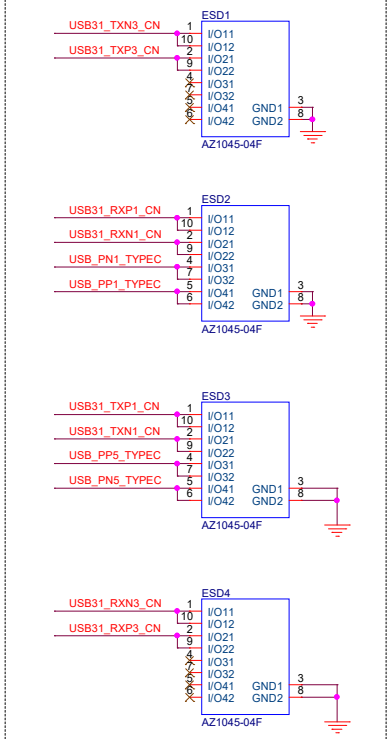
USB3.0 TYPE-C



ESD



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Title	USB3.1 TYPE-C	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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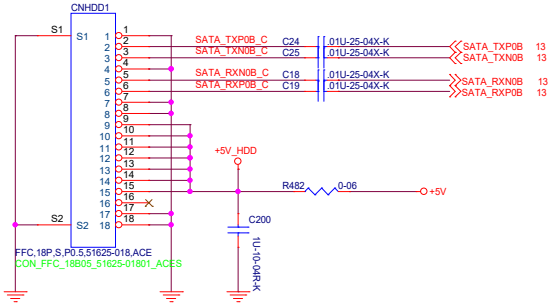
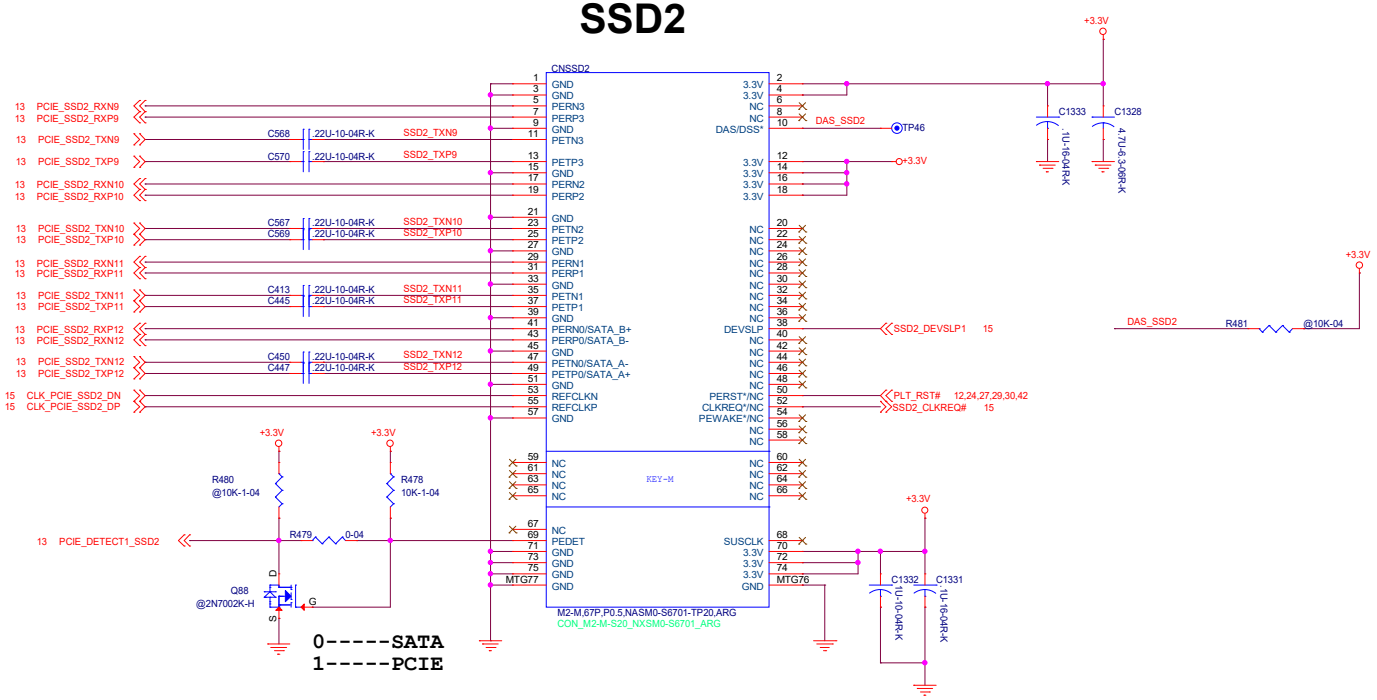
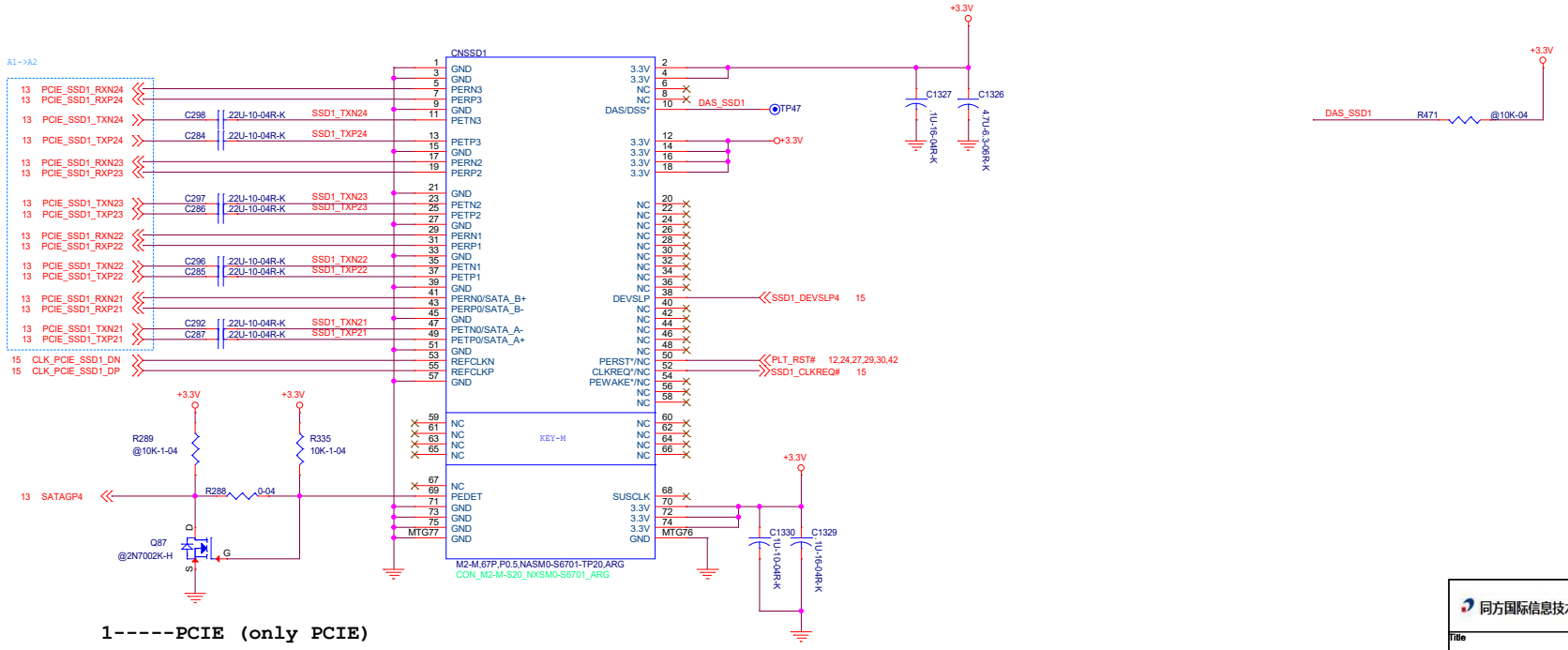
SATA-HDD



SSD2



SSD1



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Title	HDD/SSD	
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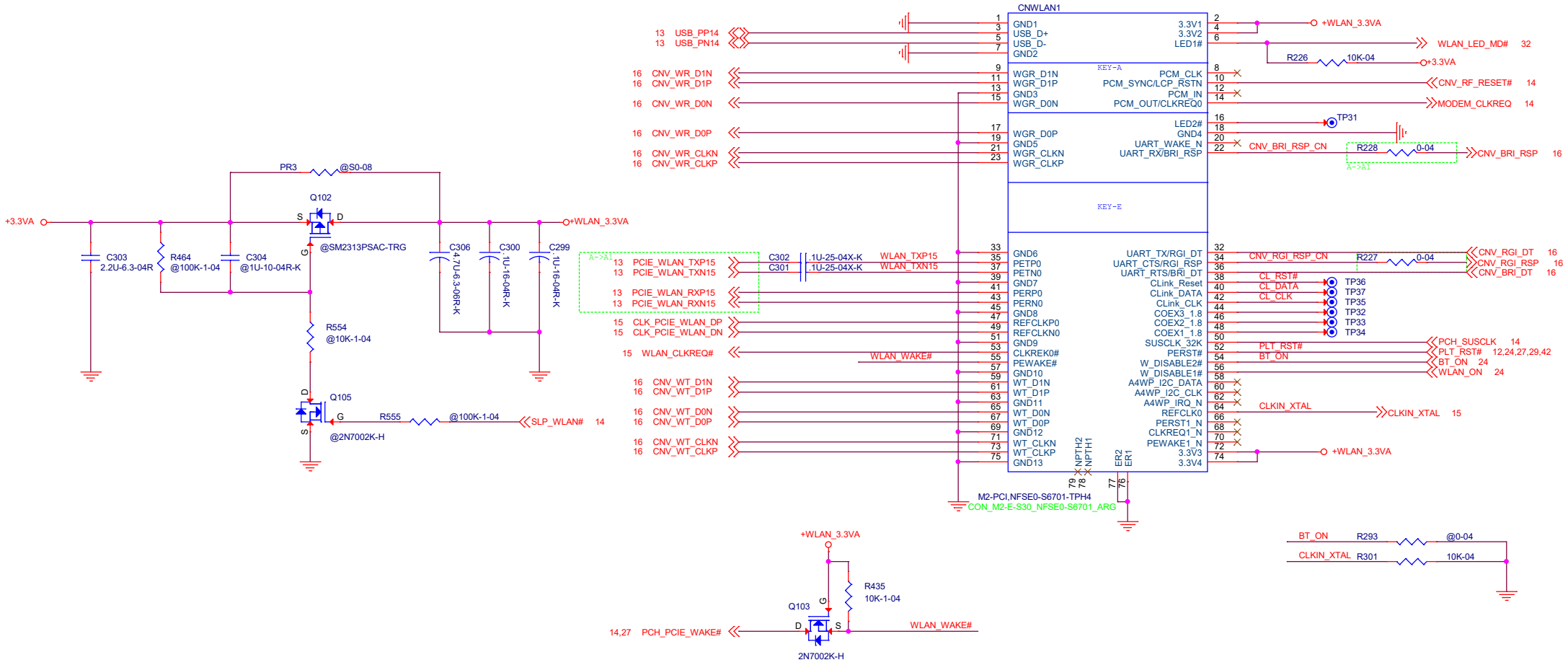
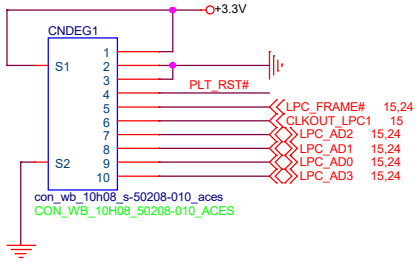
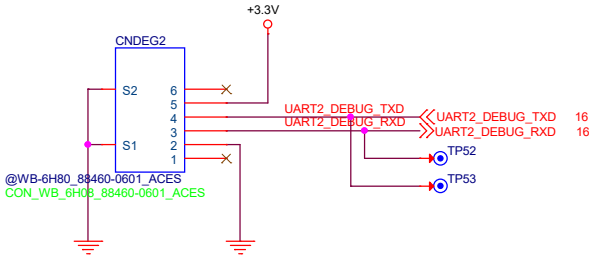
WLAN CONN

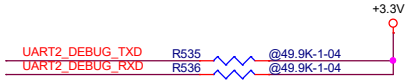


LPC debug port



UART debug port





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Title	WLAN/UART DEBUG/LPC DEBUG	
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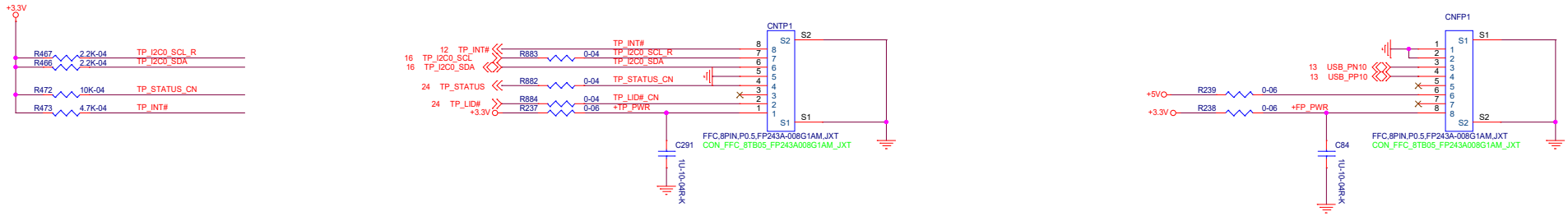
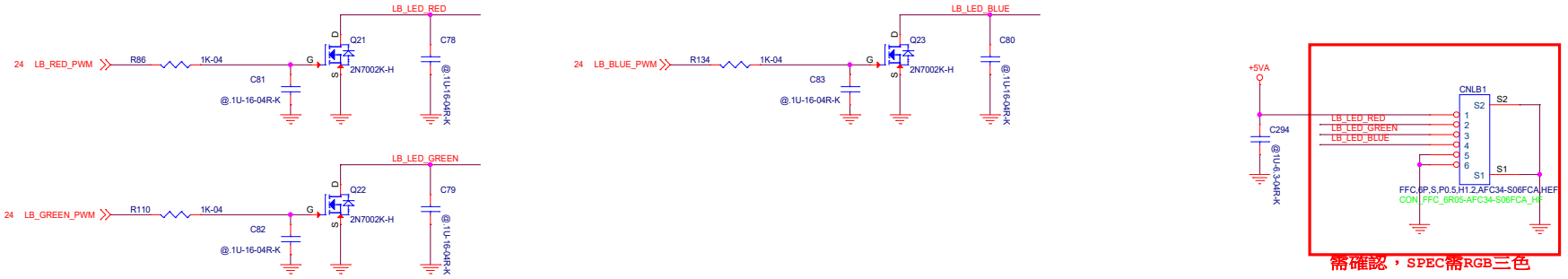
Touch Pad&Finger Print

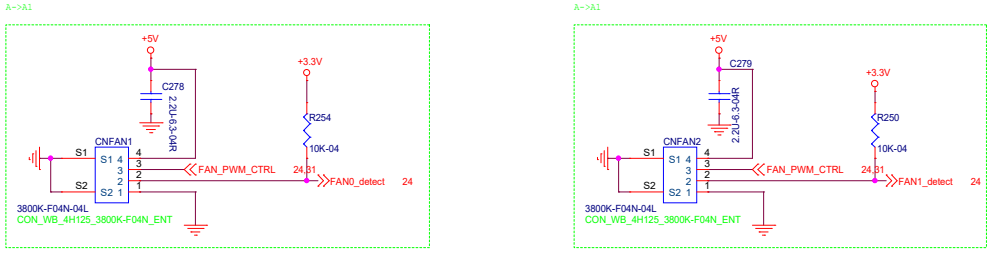


Light bar Control



需確認，SPEC需RGB三色

FAN CONTROLLER



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Title	TP/CP/FAN/LB	
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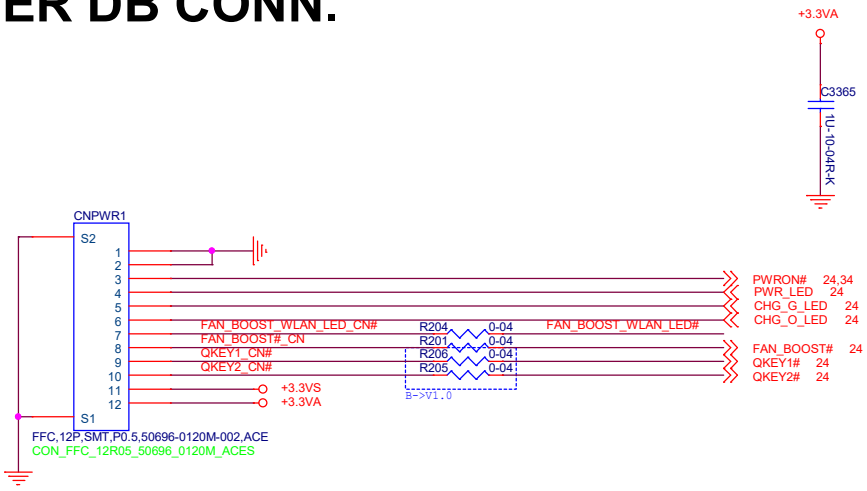
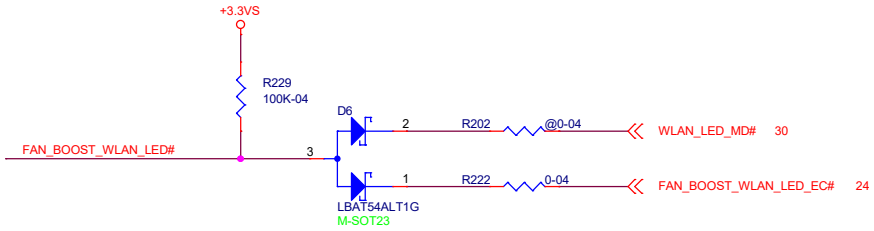
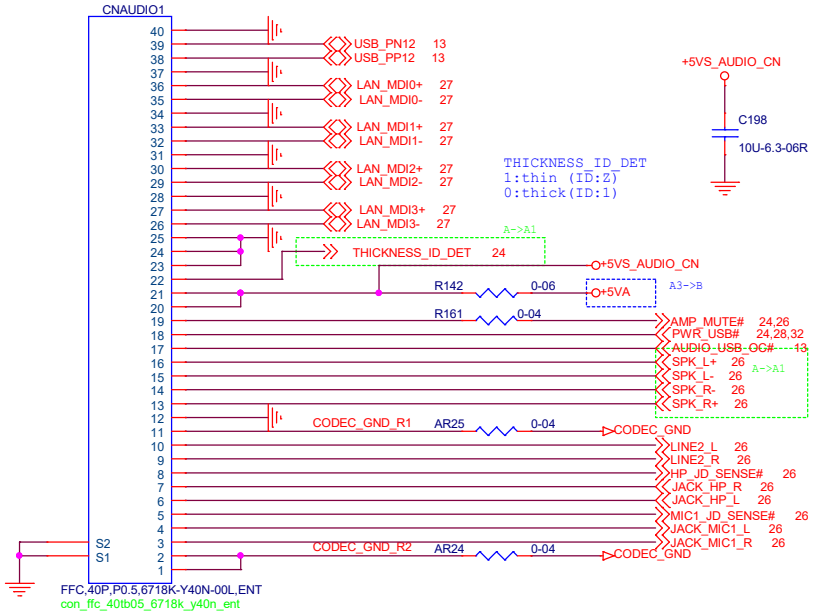
POWER DB CONN.

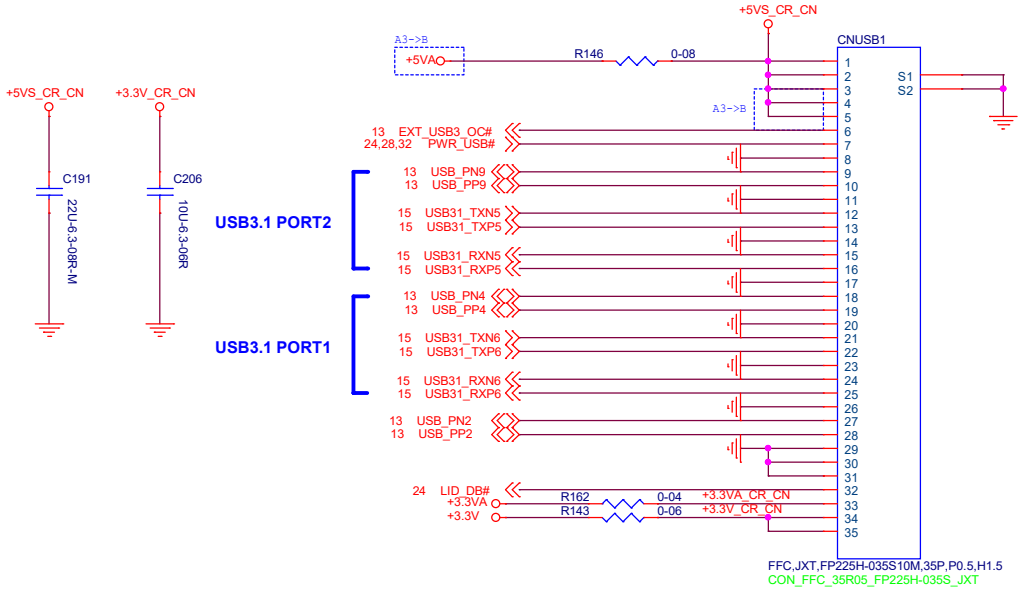




Audio&LAN DB CONN.



USB3.0 DB CONN.



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Title	PWR_DB/USB3.0 DB/Audio DB	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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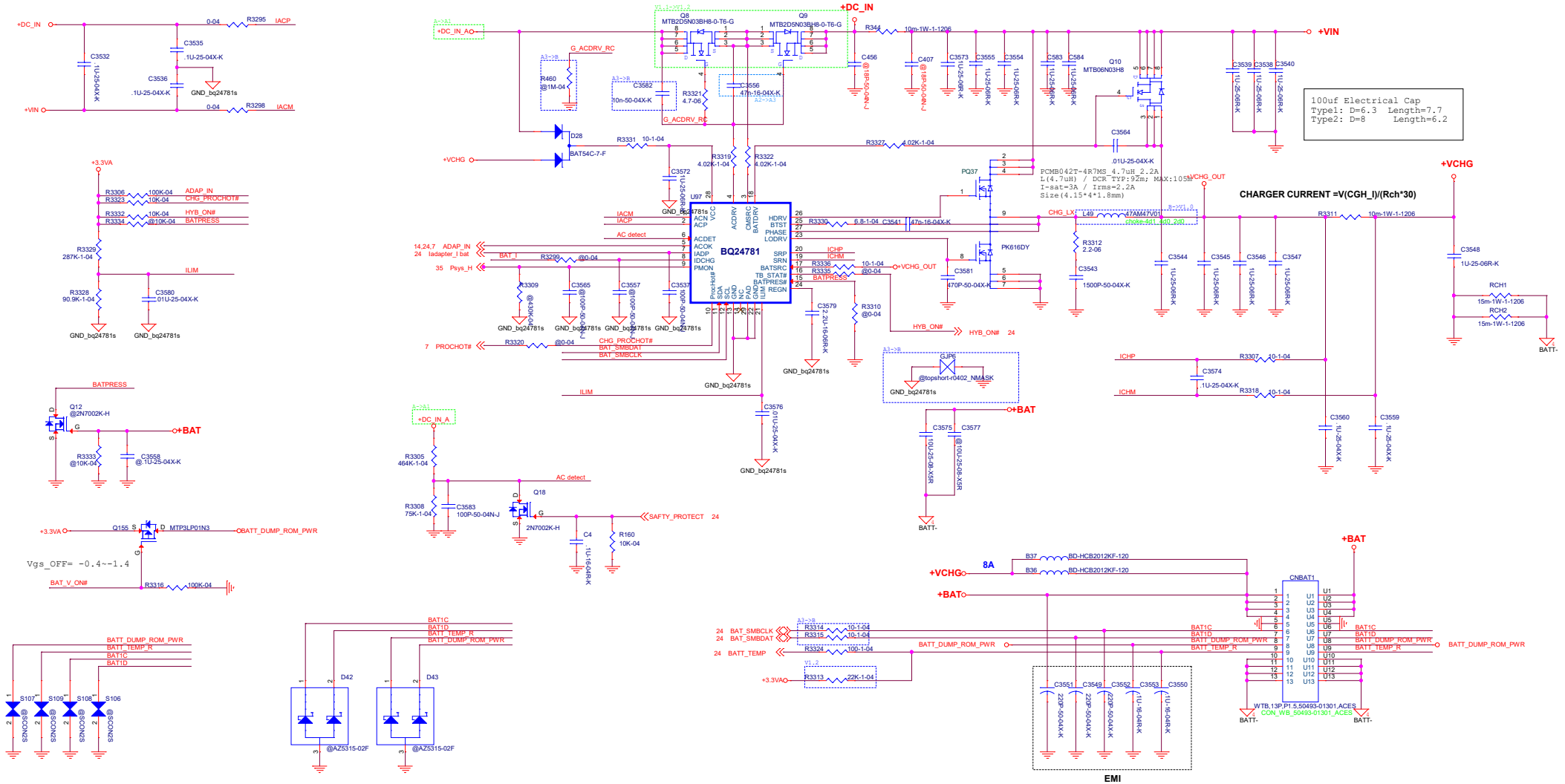
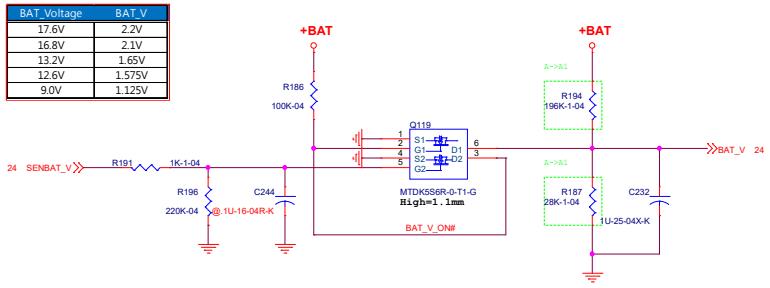
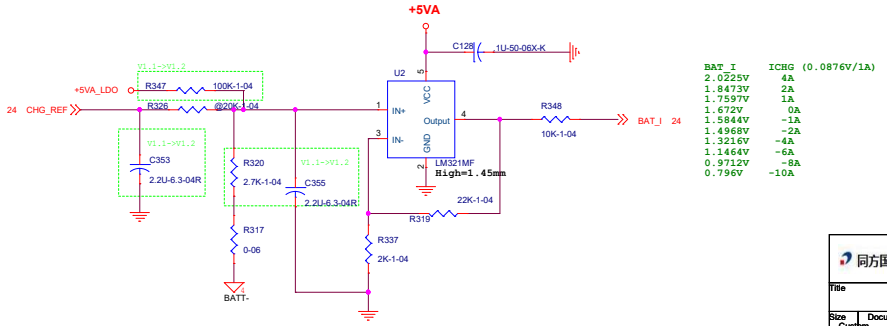


Battery Voltage Detect

BAT_Voltage	BAT_V
17.6V	2.2V
16.8V	2.1V
13.2V	1.65V
12.6V	1.575V
9.0V	1.125V



Battery Current Detect



BAT_I	ICHG (0.0876V/1A)
2.0225V	4A
1.8473V	2A
1.7597V	1A
1.672V	0A
1.5844V	-1A
1.4968V	-2A
1.3216V	-4A
1.1464V	-6A
0.9712V	-8A
0.796V	-10A

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Title	BATT IN/CHARGER(BQ24781)	
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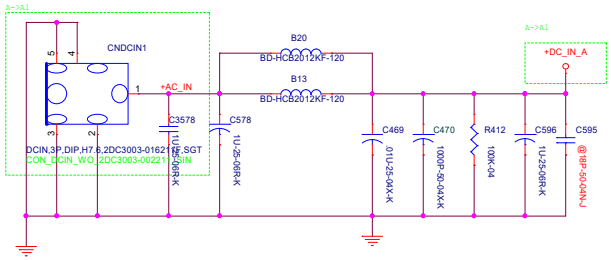
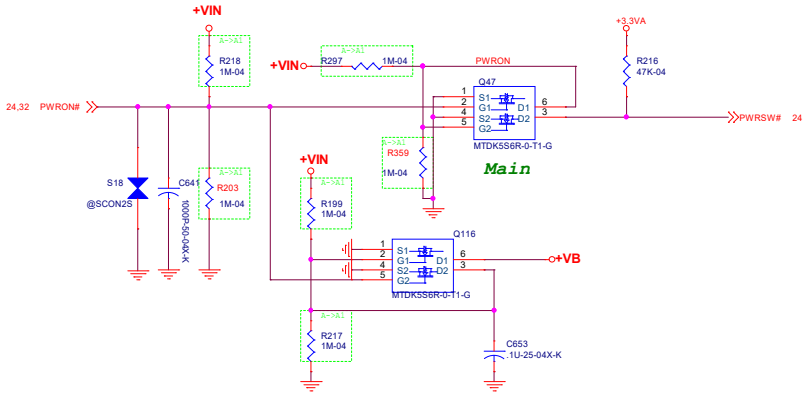
+DC_IN

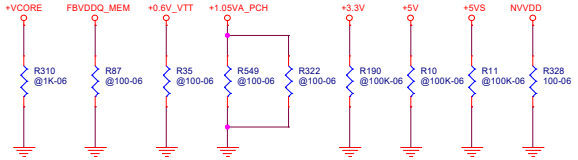


EMB20NP3V
ID=-13A TC=100 deg
Ipulse=-72A
Avalanche=-10A
9watt 1ms
15Watt 0.1ms

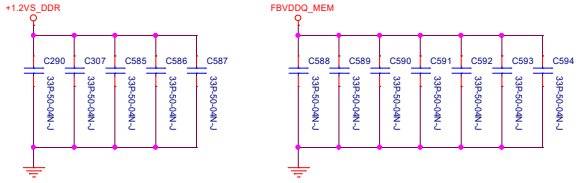
POWER SW

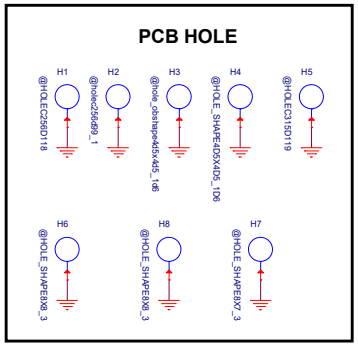


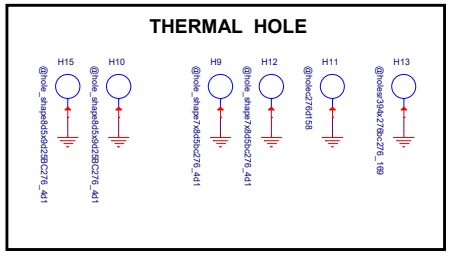
Discharge Resistor



For RF







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Title	DC IN/PWR_SW/H-S CAP/SCREW	
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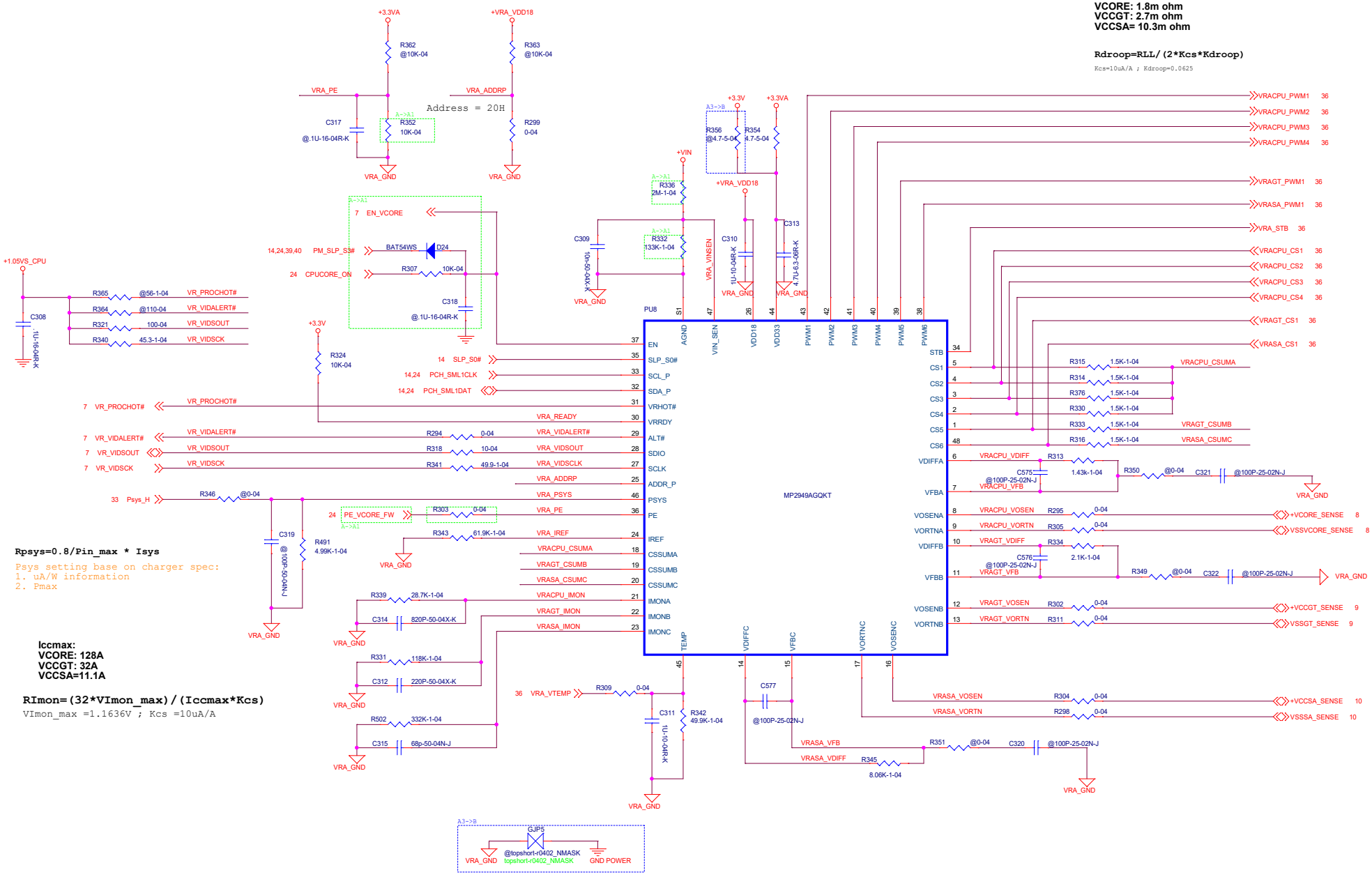

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Title	POWER VR CONTROLLER		
Size: Custom	Document Number: GK5CN5Z		Rev: B
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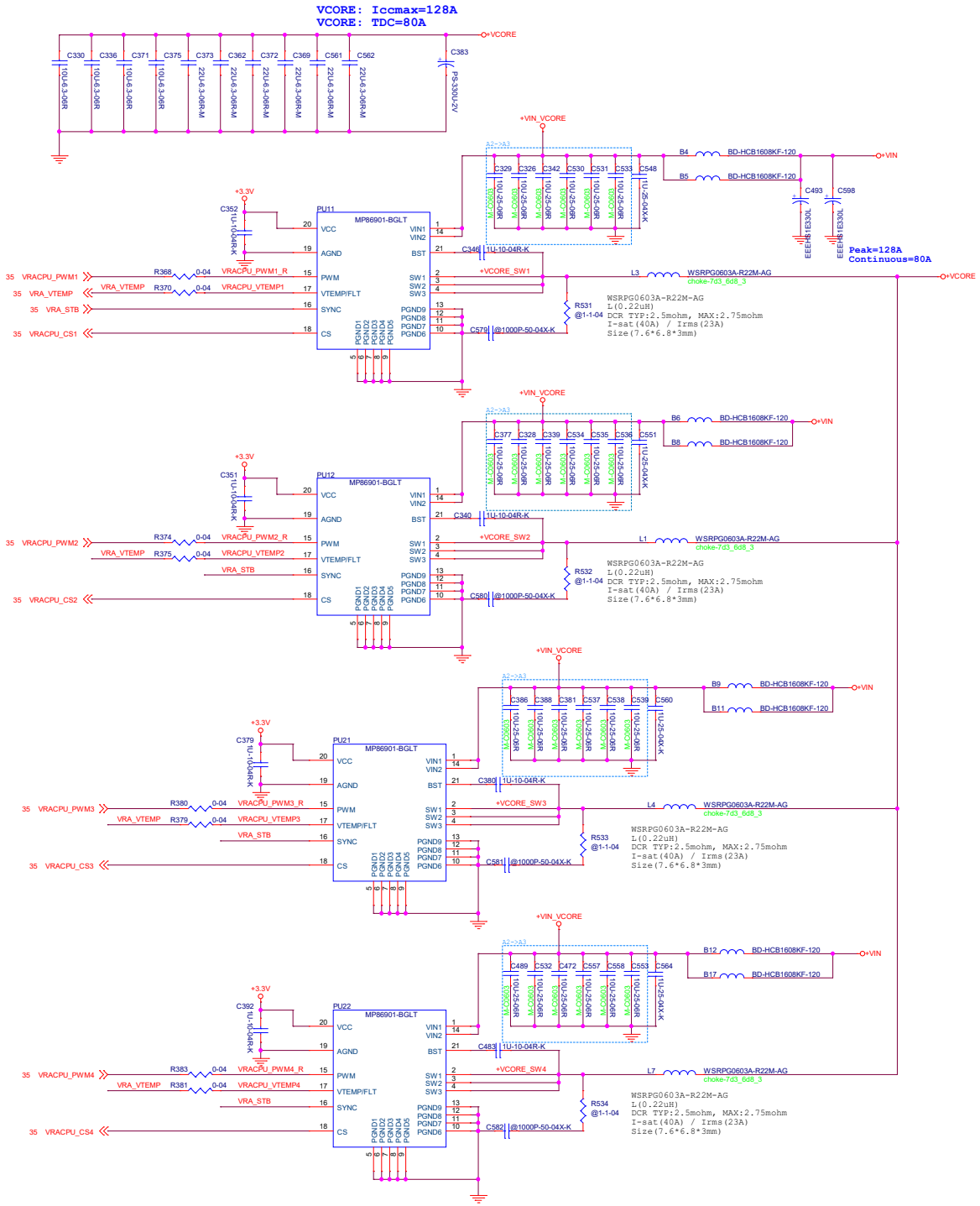
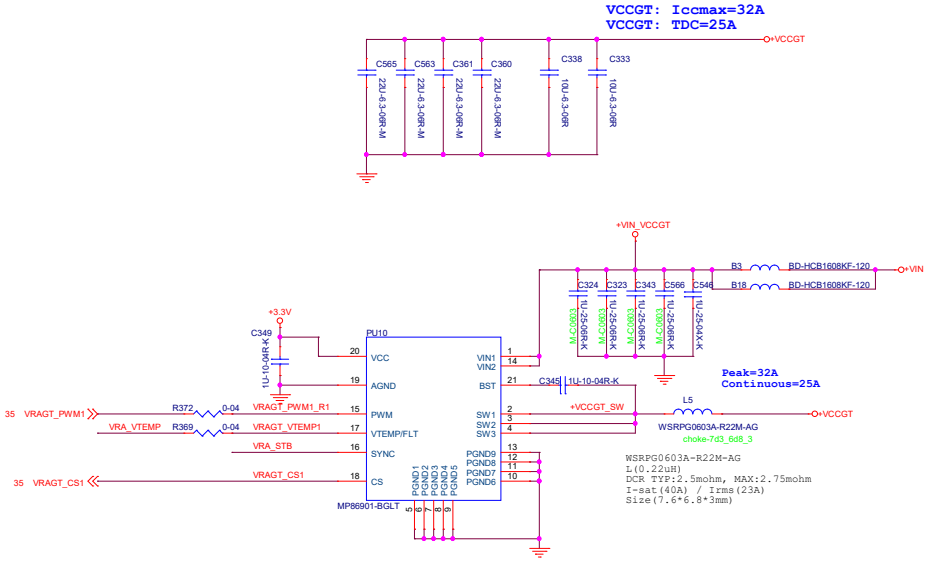
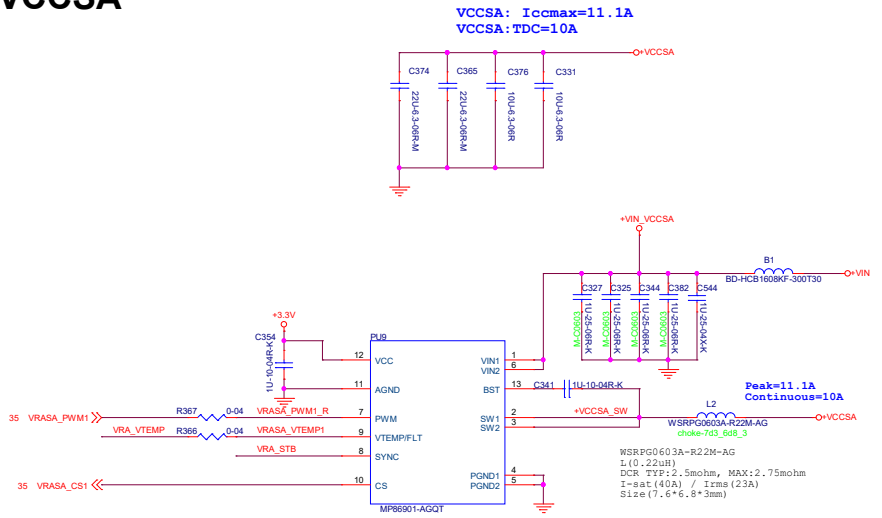
+VCORE



+VCCGT



+VCCSA



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Title	POWER VCORE/VCCGT/VCCSA		
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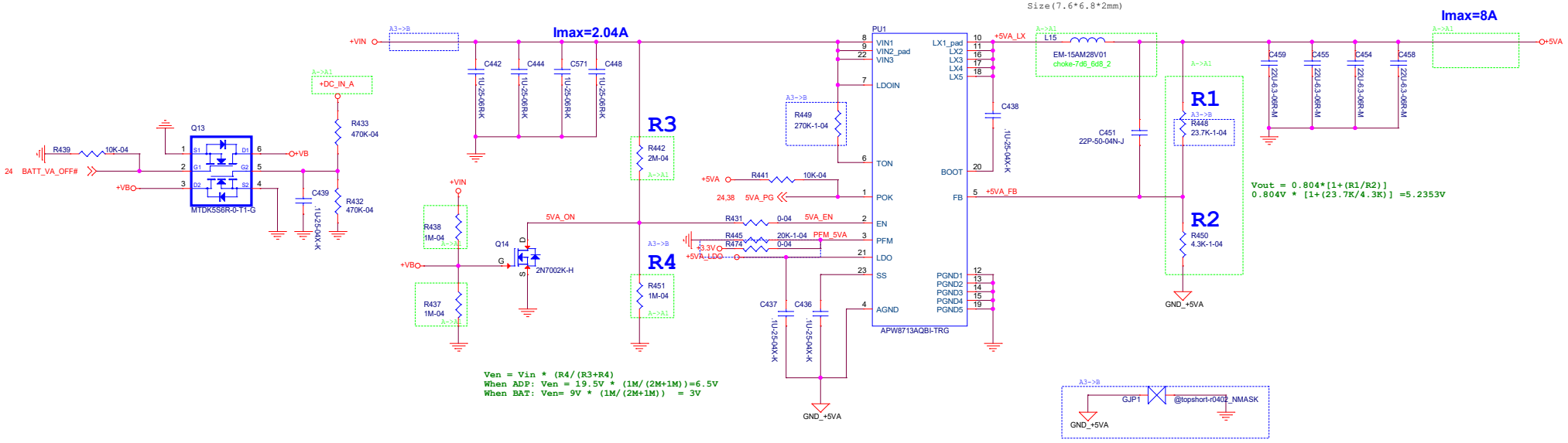
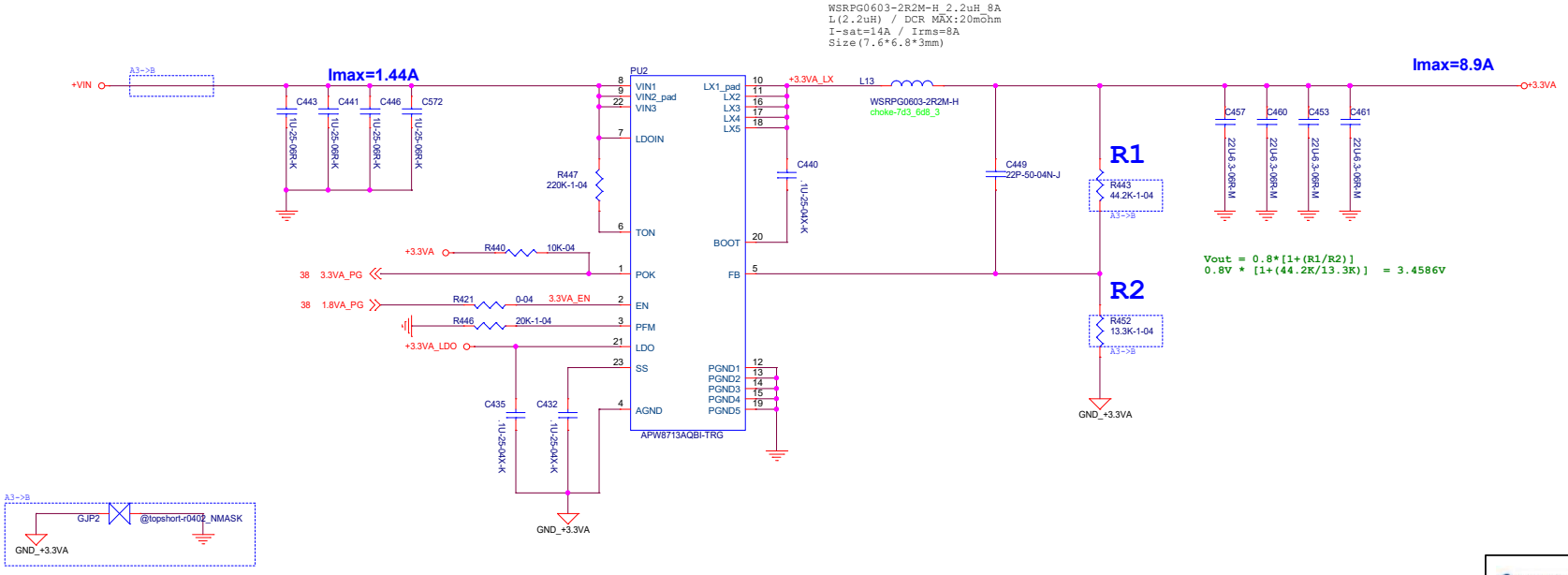
+5VA



+3.3VA



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Title	POWER +5VA/+3.3VA	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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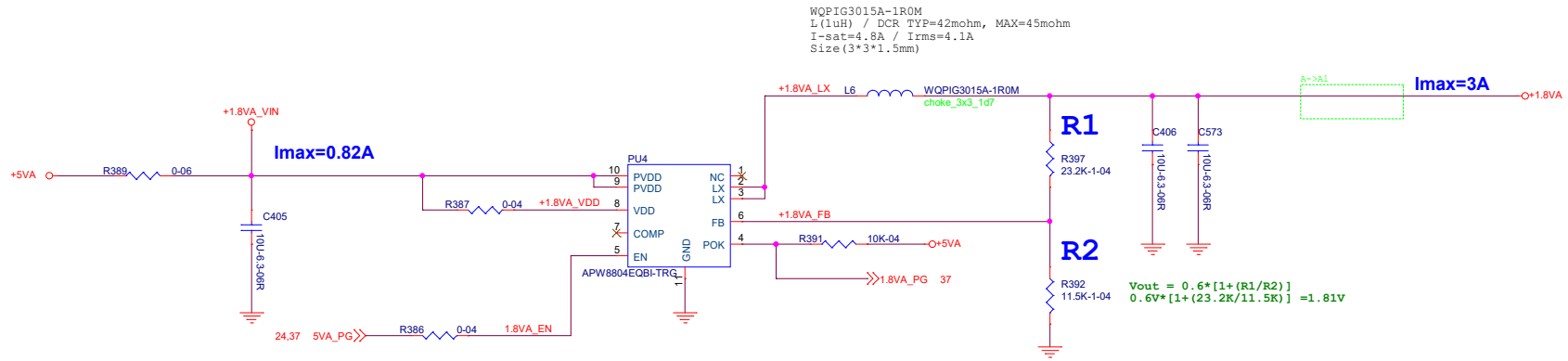
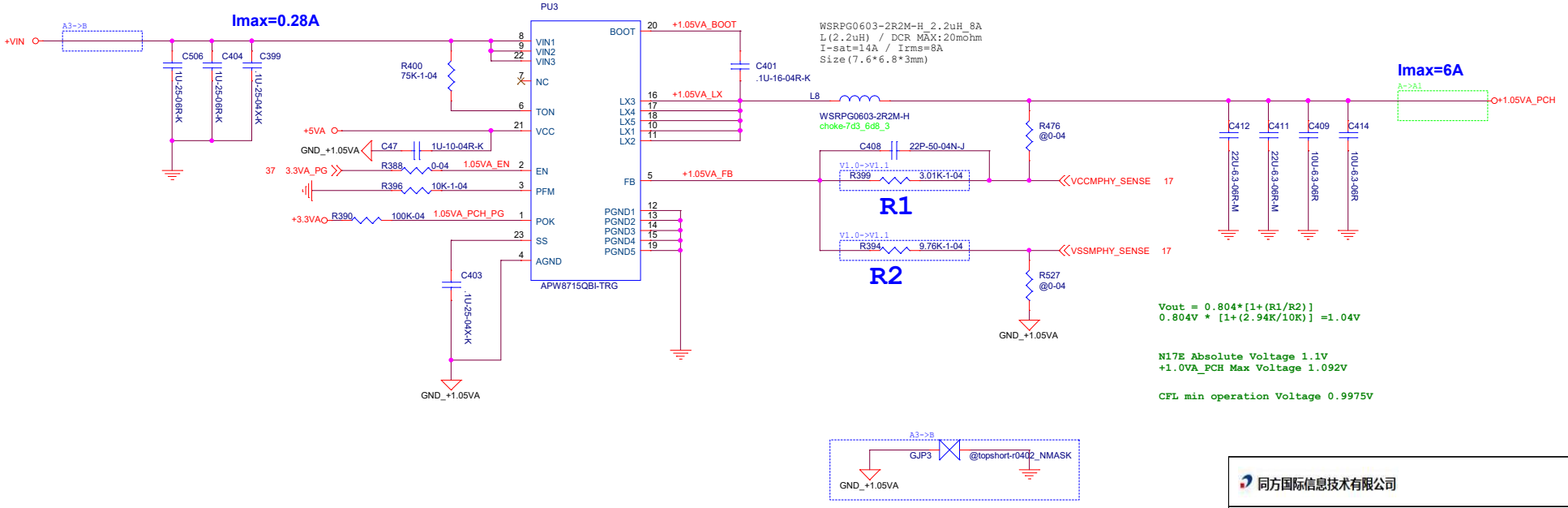
+1.8VA



+1.05VA_PCH



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Title	POWER +1.8VA/+1.05VA_PCH	
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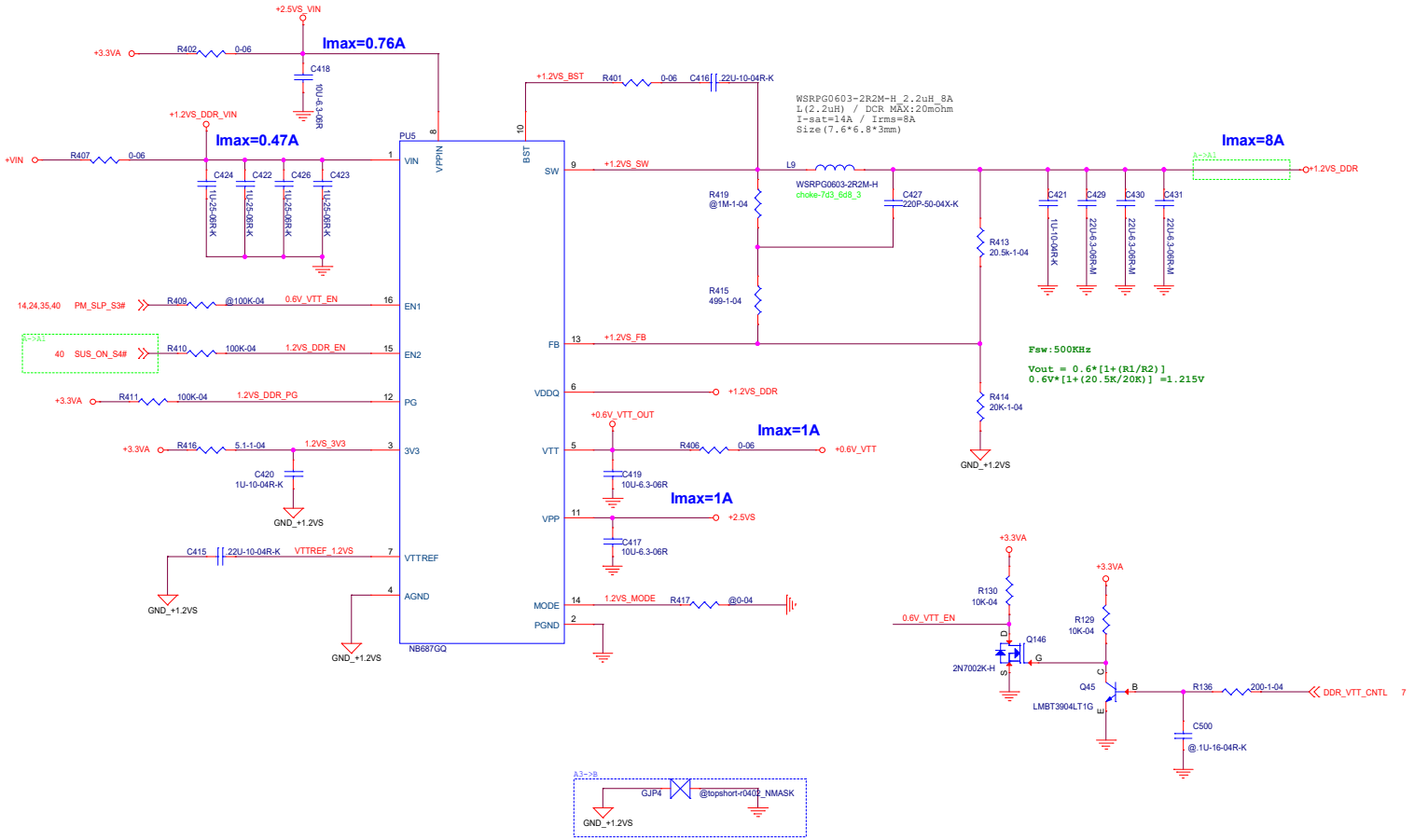
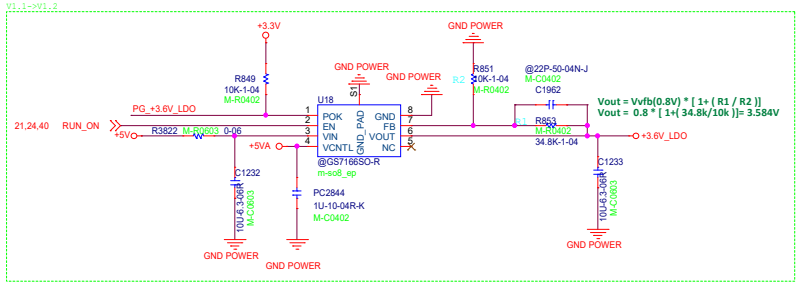
+1.2VS_DDR/+2.5VS/+0.6V_VTT





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Title	POWER +1.2VS_DDR/2.5VS/VTT	
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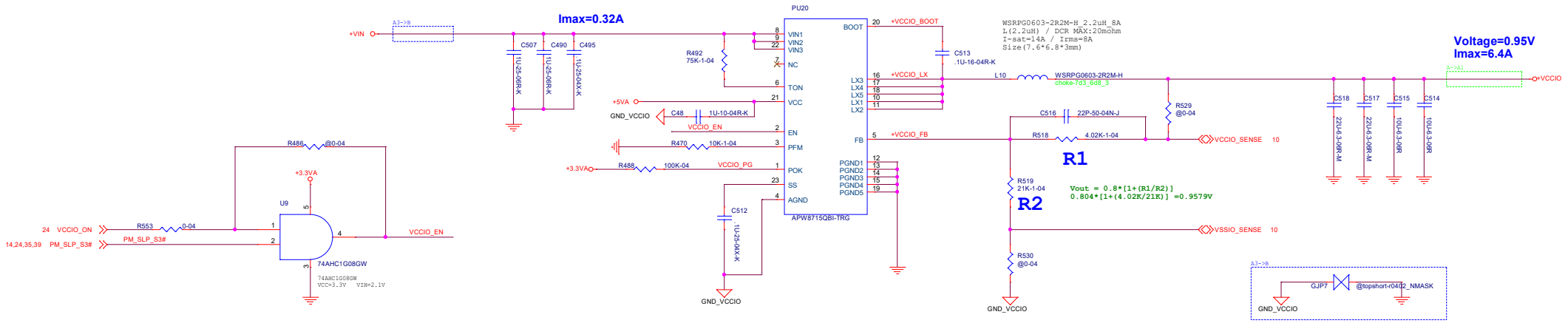
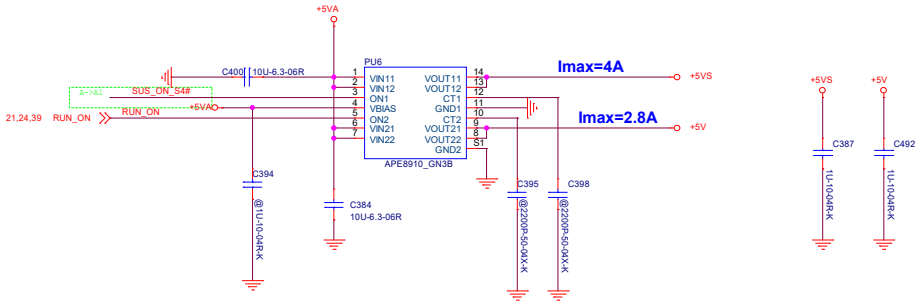
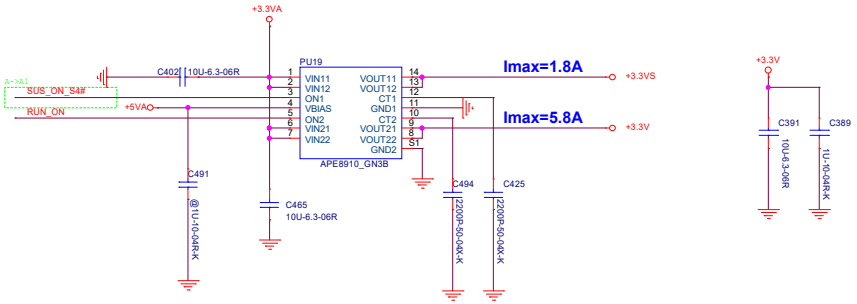
+VCCIO



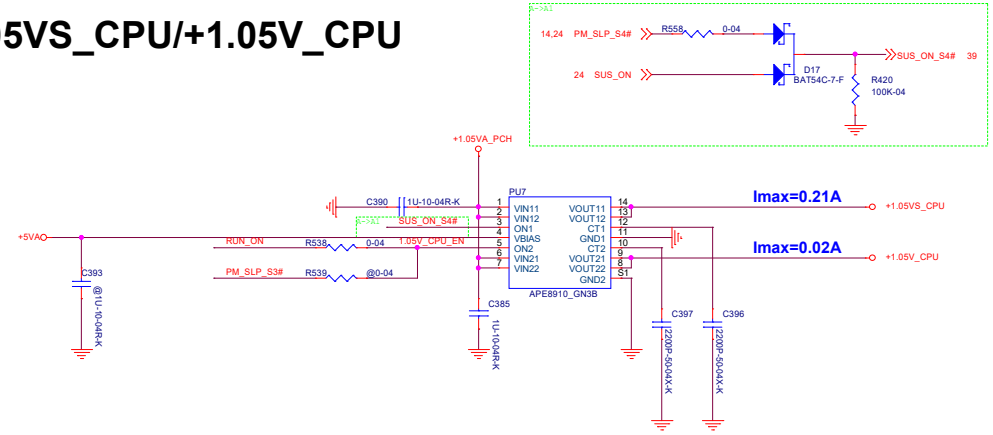
+5VS/+5V

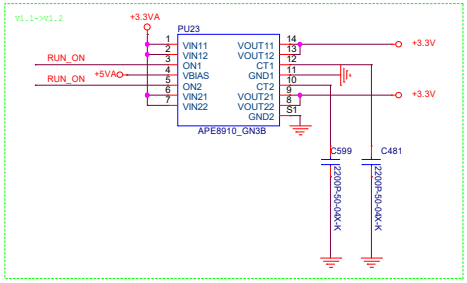


+3.3VS/+3.3V



+1.05VS_CPU/+1.05V_CPU





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Title	POWER +VCCIO/+VS PWR/+V PWR	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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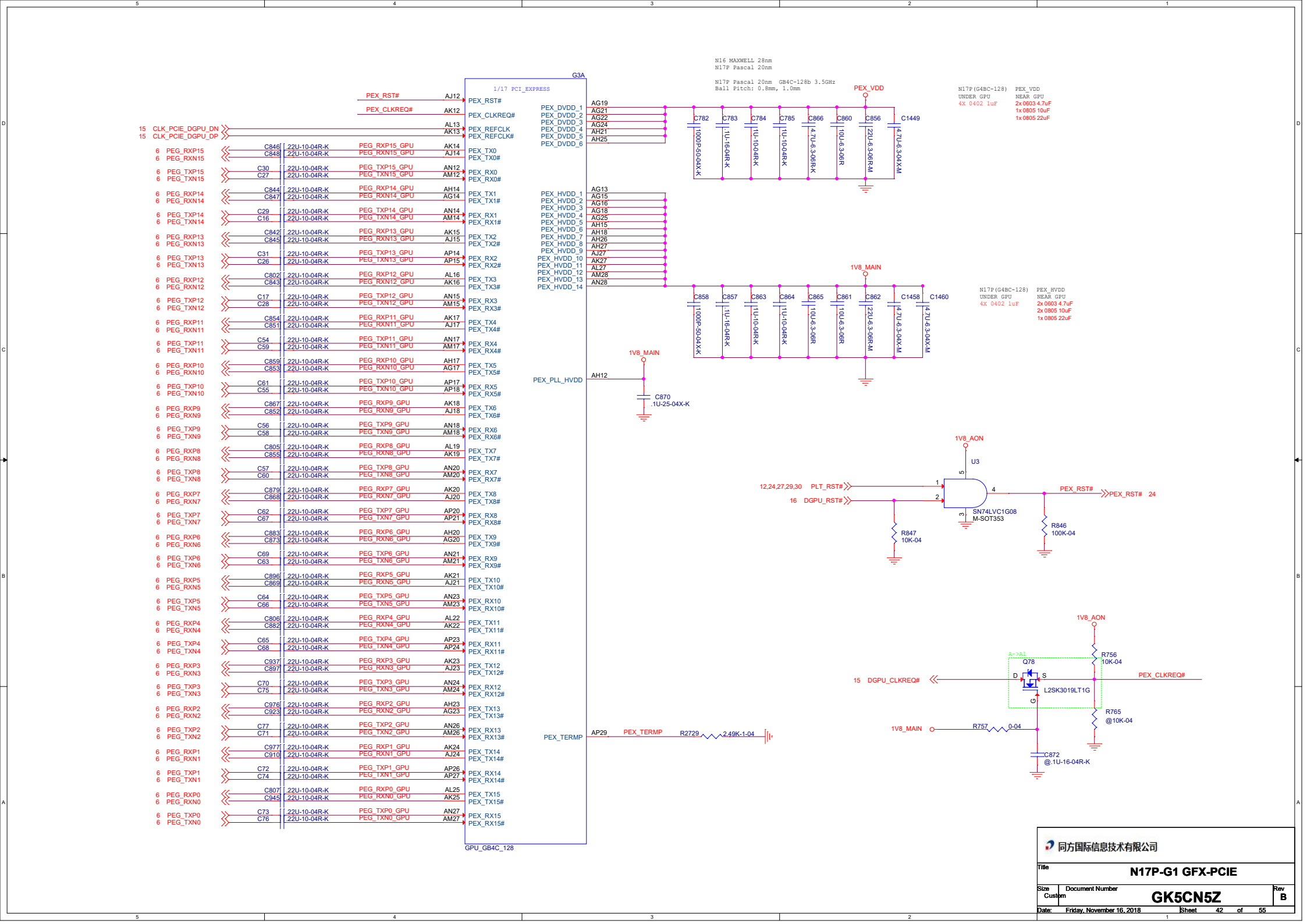
N16 MAXWELL 28nm
N17P Pascal 20nm
N17P Pascal 20nm GB4C-128b 3.5GHz
Ball Pitch: 0.8mm, 1.0mm
G3A
1/17 PCI_EXPRESS
GPU_GB4C_128
PEX_RST# AJ12
PEX_CLKREQ# AK12
AL13 PEX_REFCLK
AK13 PEX_REFCLK#
15 CLK_PCIE_DGPU_DN
15 CLK_PCIE_DGPU_DP
PEX_VDD
PEX_DVDD_1 AG19
PEX_DVDD_2 AG21
PEX_DVDD_3 AG22
PEX_DVDD_4 AG24
PEX_DVDD_5 AH21
PEX_DVDD_6 AH25
C782 100P-50-04X-K
C783 1U-16-04R-K
C784 1U-10-04R-K
C785 1U-10-04R-K
C866 4.7U-6.3-06R-K
C860 10U-6.3-06R
C856 22U-6.3-06R-M
C1449 4.7U-6.3-04X-M
N17P(G4BC-128) UNDER GPU 4X 0402 1uF
PEX_VDD NEAR GPU 2x 0603 4.7uF 1x 0805 10uF 1x 0805 22uF
1V8_MAIN
PEX_HVDD_1 AG13
PEX_HVDD_2 AG15
PEX_HVDD_3 AG16
PEX_HVDD_4 AG18
PEX_HVDD_5 AG25
PEX_HVDD_6 AH15
PEX_HVDD_7 AH18
PEX_HVDD_8 AH26
PEX_HVDD_9 AH27
PEX_HVDD_10 AJ27
PEX_HVDD_11 AK27
PEX_HVDD_12 AL27
PEX_HVDD_13 AM28
PEX_HVDD_14 AN28
C858 100P-50-04X-K
C857 1U-16-04R-K
C863 1U-10-04R-K
C864 1U-10-04R-K
C865 10U-6.3-06R
C861 10U-6.3-06R
C862 22U-6.3-06R-M
C1458 4.7U-6.3-04X-M
C1460 4.7U-6.3-04X-M
N17P(G4BC-128) UNDER GPU 4X 0402 1uF
PEX_HVDD NEAR GPU 2x 0603 4.7uF 2x 0805 10uF 1x 0805 22uF
1V8_MAIN
PEX_PLL_HVDD AH12
C870 .1U-25-04X-K
1V8_AON
U3
SN74LVC1G08 M-SOT353
12,24,27,29,30 PLT_RST#
16 DGPU_RST#
PEX_RST#
PEX_RST# 24
R847 10K-04
R846 100K-04
1V8_AON
Q78
L2SK3019LT1G
15 DGPU_CLKREQ#
PEX_CLKREQ#
R756 10K-04
R765 @10K-04
1V8_MAIN
R757 0-04
C872 @.1U-16-04R-K
PEX_TERMP AP29
R2729 2.49K-1-04
C846 22U-10-04R-K PEG_RXP15_GPU AK14 PEX_TX0
C848 22U-10-04R-K PEG_RXN15_GPU AJ14 PEX_TX0#
C30 22U-10-04R-K PEG_TXP15_GPU AN12 PEX_RX0
C27 22U-10-04R-K PEG_TXN15_GPU AM12 PEX_RX0#
C844 22U-10-04R-K PEG_RXP14_GPU AH14 PEX_TX1
C847 22U-10-04R-K PEG_RXN14_GPU AG14 PEX_TX1#
C29 22U-10-04R-K PEG_TXP14_GPU AN14 PEX_RX1
C16 22U-10-04R-K PEG_TXN14_GPU AM14 PEX_RX1#
C842 22U-10-04R-K PEG_RXP13_GPU AK15 PEX_TX2
C845 22U-10-04R-K PEG_RXN13_GPU AJ15 PEX_TX2#
C31 22U-10-04R-K PEG_TXP13_GPU AP14 PEX_RX2
C26 22U-10-04R-K PEG_TXN13_GPU AP15 PEX_RX2#
C802 22U-10-04R-K PEG_RXP12_GPU AL16 PEX_TX3
C843 22U-10-04R-K PEG_RXN12_GPU AK16 PEX_TX3#
C17 22U-10-04R-K PEG_TXP12_GPU AN15 PEX_RX3
C28 22U-10-04R-K PEG_TXN12_GPU AM15 PEX_RX3#
C854 22U-10-04R-K PEG_RXP11_GPU AK17 PEX_TX4
C851 22U-10-04R-K PEG_RXN11_GPU AJ17 PEX_TX4#
C54 22U-10-04R-K PEG_TXP11_GPU AN17 PEX_RX4
C59 22U-10-04R-K PEG_TXN11_GPU AM17 PEX_RX4#
C859 22U-10-04R-K PEG_RXP10_GPU AH17 PEX_TX5
C853 22U-10-04R-K PEG_RXN10_GPU AG17 PEX_TX5#
C61 22U-10-04R-K PEG_TXP10_GPU AP17 PEX_RX5
C55 22U-10-04R-K PEG_TXN10_GPU AP18 PEX_RX5#
C867 22U-10-04R-K PEG_RXP9_GPU AK18 PEX_TX6
C852 22U-10-04R-K PEG_RXN9_GPU AJ18 PEX_TX6#
C56 22U-10-04R-K PEG_TXP9_GPU AN18 PEX_RX6
C58 22U-10-04R-K PEG_TXN9_GPU AM18 PEX_RX6#
C805 22U-10-04R-K PEG_RXP8_GPU AL19 PEX_TX7
C855 22U-10-04R-K PEG_RXN8_GPU AK19 PEX_TX7#
C57 22U-10-04R-K PEG_TXP8_GPU AN20 PEX_RX7
C60 22U-10-04R-K PEG_TXN8_GPU AM20 PEX_RX7#
C879 22U-10-04R-K PEG_RXP7_GPU AK20 PEX_TX8
C868 22U-10-04R-K PEG_RXN7_GPU AJ20 PEX_TX8#
C62 22U-10-04R-K PEG_TXP7_GPU AP20 PEX_RX8
C67 22U-10-04R-K PEG_TXN7_GPU AP21 PEX_RX8#
C883 22U-10-04R-K PEG_RXP6_GPU AH20 PEX_TX9
C873 22U-10-04R-K PEG_RXN6_GPU AG20 PEX_TX9#
C69 22U-10-04R-K PEG_TXP6_GPU AN21 PEX_RX9
C63 22U-10-04R-K PEG_TXN6_GPU AM21 PEX_RX9#
C896 22U-10-04R-K PEG_RXP5_GPU AK21 PEX_TX10
C869 22U-10-04R-K PEG_RXN5_GPU AJ21 PEX_TX10#
C64 22U-10-04R-K PEG_TXP5_GPU AN23 PEX_RX10
C66 22U-10-04R-K PEG_TXN5_GPU AM23 PEX_RX10#
C806 22U-10-04R-K PEG_RXP4_GPU AL22 PEX_TX11
C882 22U-10-04R-K PEG_RXN4_GPU AK22 PEX_TX11#
C65 22U-10-04R-K PEG_TXP4_GPU AP23 PEX_RX11
C68 22U-10-04R-K PEG_TXN4_GPU AP24 PEX_RX11#
C937 22U-10-04R-K PEG_RXP3_GPU AK23 PEX_TX12
C897 22U-10-04R-K PEG_RXN3_GPU AJ23 PEX_TX12#
C70 22U-10-04R-K PEG_TXP3_GPU AN24 PEX_RX12
C75 22U-10-04R-K PEG_TXN3_GPU AM24 PEX_RX12#
C976 22U-10-04R-K PEG_RXP2_GPU AH23 PEX_TX13
C923 22U-10-04R-K PEG_RXN2_GPU AG23 PEX_TX13#
C77 22U-10-04R-K PEG_TXP2_GPU AN26 PEX_RX13
C71 22U-10-04R-K PEG_TXN2_GPU AM26 PEX_RX13#
C977 22U-10-04R-K PEG_RXP1_GPU AK24 PEX_TX14
C910 22U-10-04R-K PEG_RXN1_GPU AJ24 PEX_TX14#
C72 22U-10-04R-K PEG_TXP1_GPU AP26 PEX_RX14
C74 22U-10-04R-K PEG_TXN1_GPU AP27 PEX_RX14#
C807 22U-10-04R-K PEG_RXP0_GPU AL25 PEX_TX15
C945 22U-10-04R-K PEG_RXN0_GPU AK25 PEX_TX15#
C73 22U-10-04R-K PEG_TXP0_GPU AN27 PEX_RX15
C76 22U-10-04R-K PEG_TXN0_GPU AM27 PEX_RX15#
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同方国际信息技术有限公司
Title
N17P-G1 GFX-PCIE
Size Custom
Document Number GK5CN5Z
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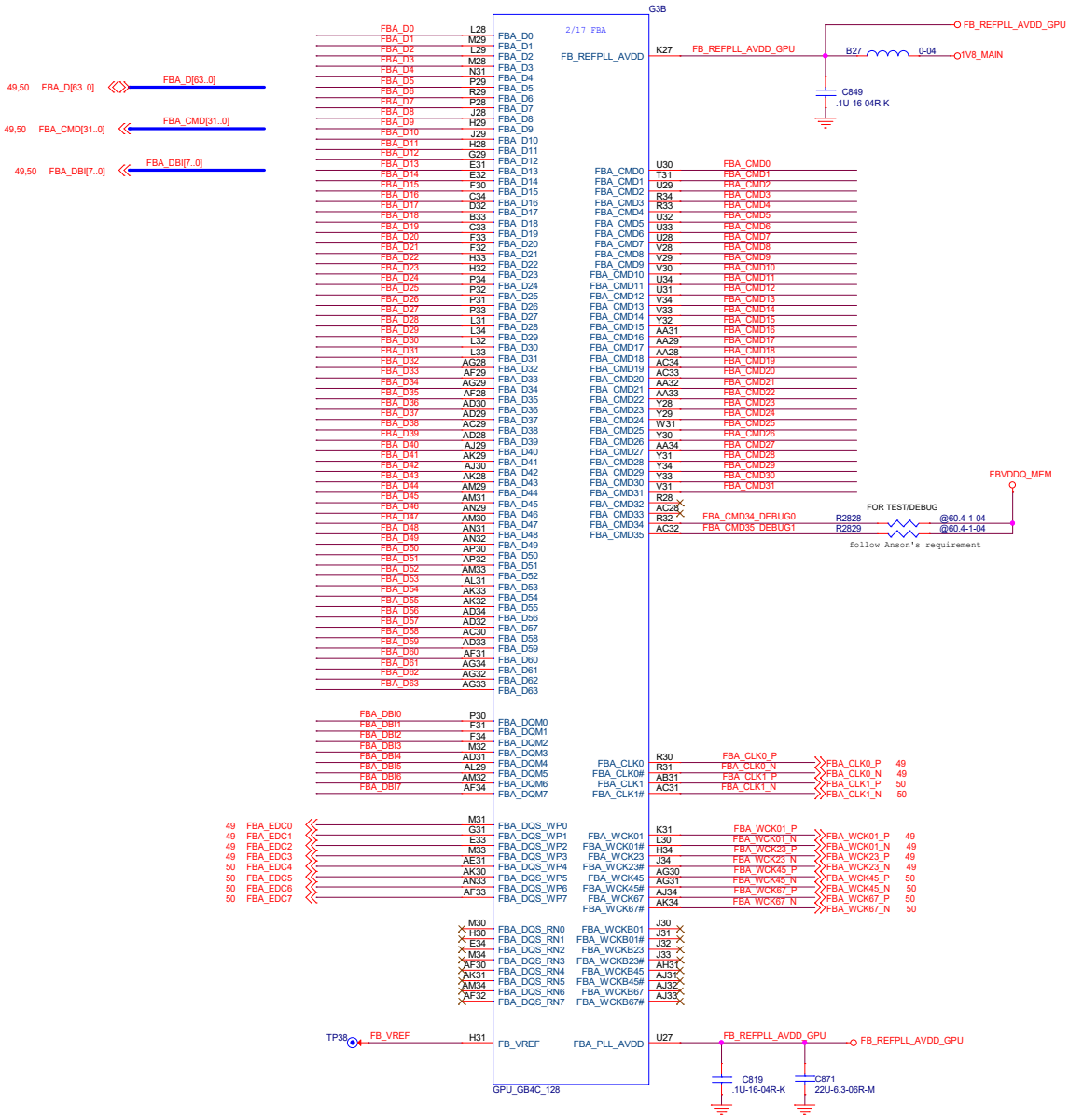
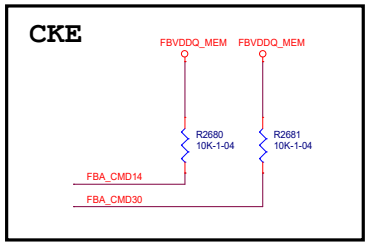
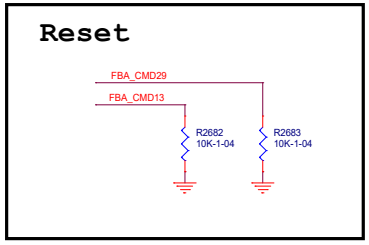


Table 9.4 GDDR5 Command Mapping (GB4C-128 packages)

Command Ball on GPU		DRAM Signal Definition
For DRAM(s) tied to DQ[31:0]	For DRAM(s) tied to DQ[63:32]	
FBA_CMD0	FBA_CMD16	CS*
FBA_CMD1	FBA_CMD17	A3_BA3
FBA_CMD2	FBA_CMD18	A2_BA0
FBA_CMD3	FBA_CMD19	A4_BA2
FBA_CMD4	FBA_CMD20	A5_BA1
FBA_CMD5	FBA_CMD21	WE*
FBA_CMD6	FBA_CMD22	A7_A8
FBA_CMD7	FBA_CMD23	A6_A11
FBA_CMD8	FBA_CMD24	ABI*
FBA_CMD9	FBA_CMD25	A12_RFU
FBA_CMD10	FBA_CMD26	A0_A10
FBA_CMD11	FBA_CMD27	A1_A9
FBA_CMD12	FBA_CMD28	RAS*
FBA_CMD13	FBA_CMD29	RST*
FBA_CMD14	FBA_CMD30	CKE*
FBA_CMD15	FBA_CMD31	CAS*





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Title	N17P-G1 FrameBuffer A	
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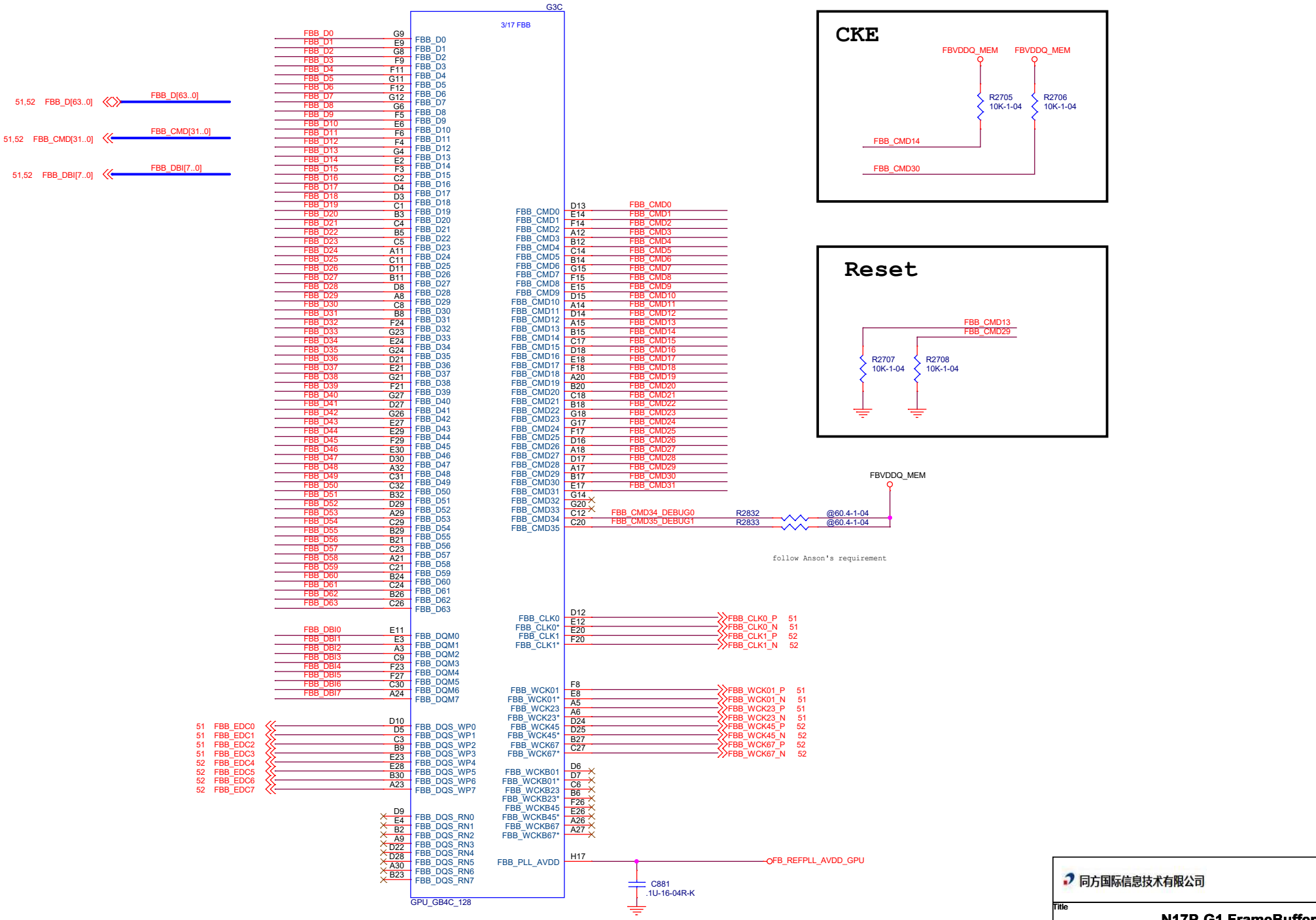

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Title	N17P-G1 FrameBuffer B	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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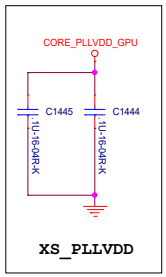

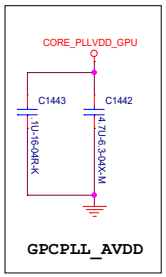

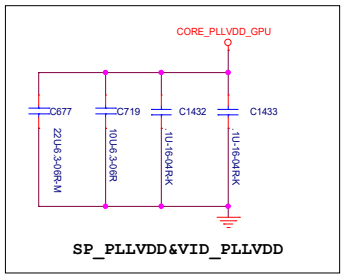

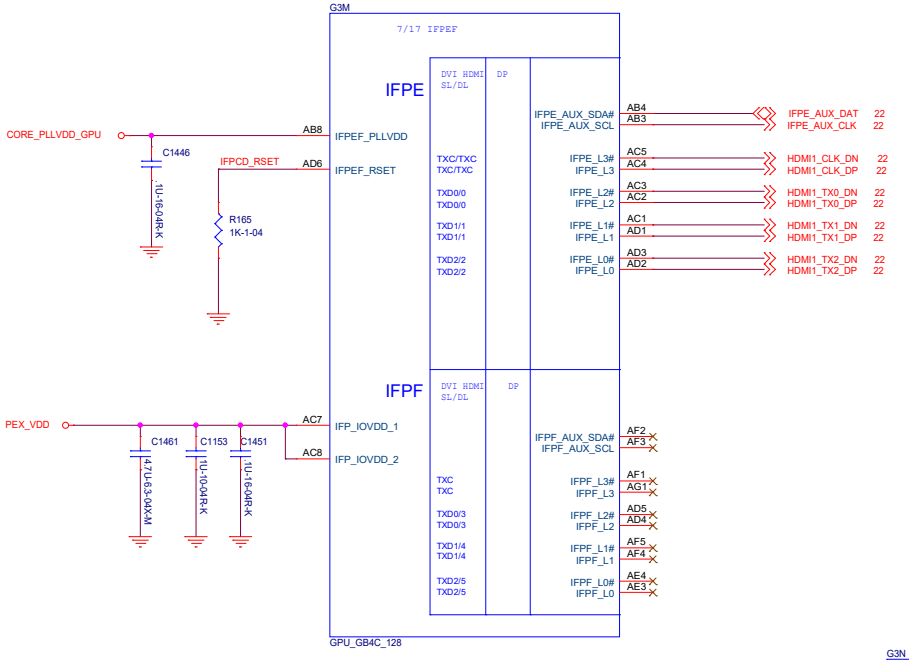

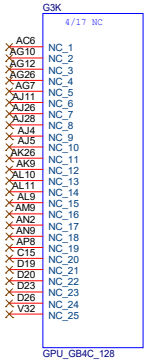

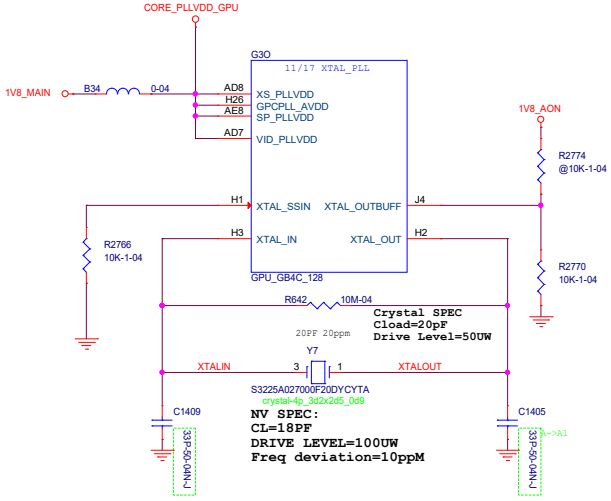

$$CL\_trim = 2 \times CLoad^{2} - (Cstray + Ci)$$

$$CL\_trim = 2 * Cload - (3+5) =$$

Where:

- C_{Load} is the crystal load capacitance (from data sheet of XTAL used)
- C_{stray} as ~ 3pF (Stray capacitance of XTAL pads and any significant trace routing)
- C_i is pin capacitance (5 pF)

Typical CL_trim = 25 pF when crystal load = 18 pF, stray Capacitance = 3 pF, and XTAL pins capacitance = 5 pF

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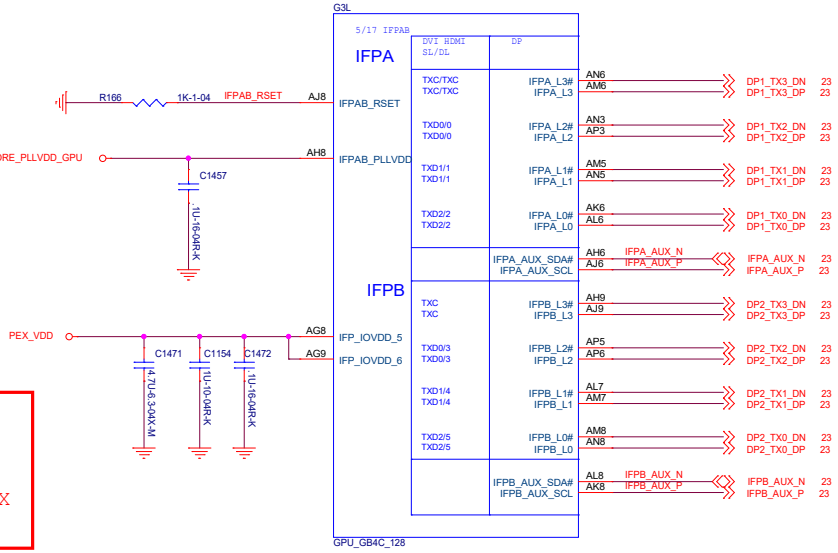

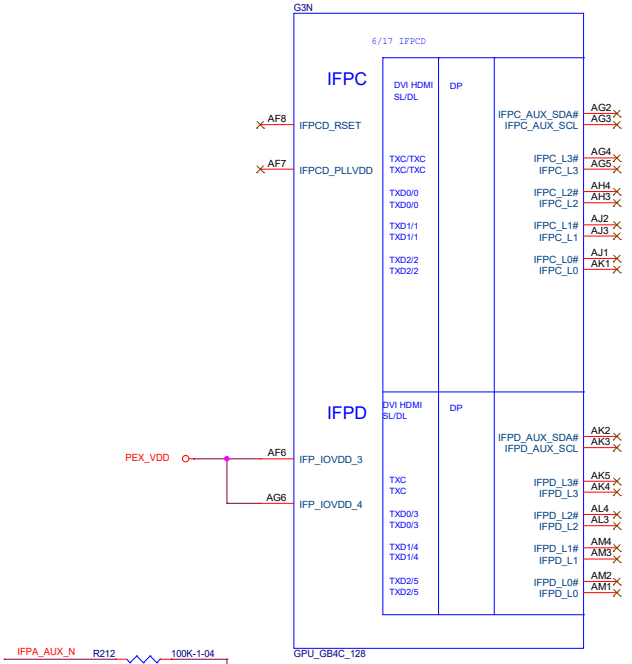

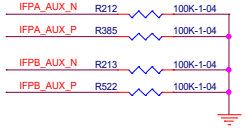

Hardware Design Guide Page282:
For IFPA/B/C/D/E/F
If an IFP link is not used,
it should be NC including power rail
and signal and references associated with LINKX

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Title	N17P-G1 XTAL/IFP[A:F]	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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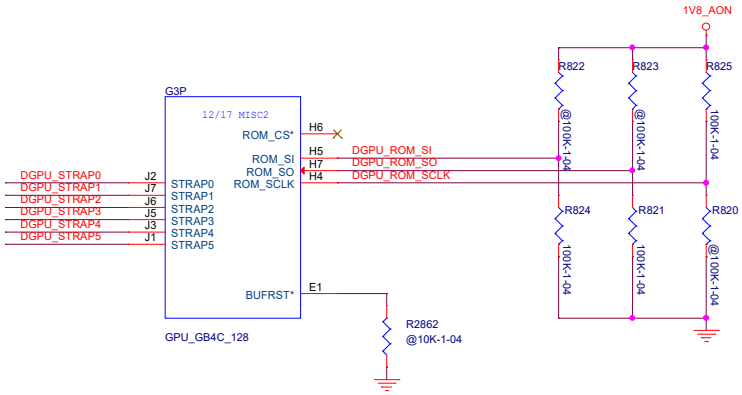

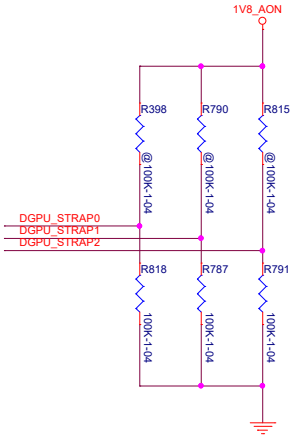

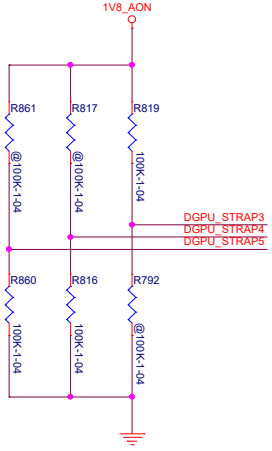

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Title	N17P-G1 STRAP/Serial ROM	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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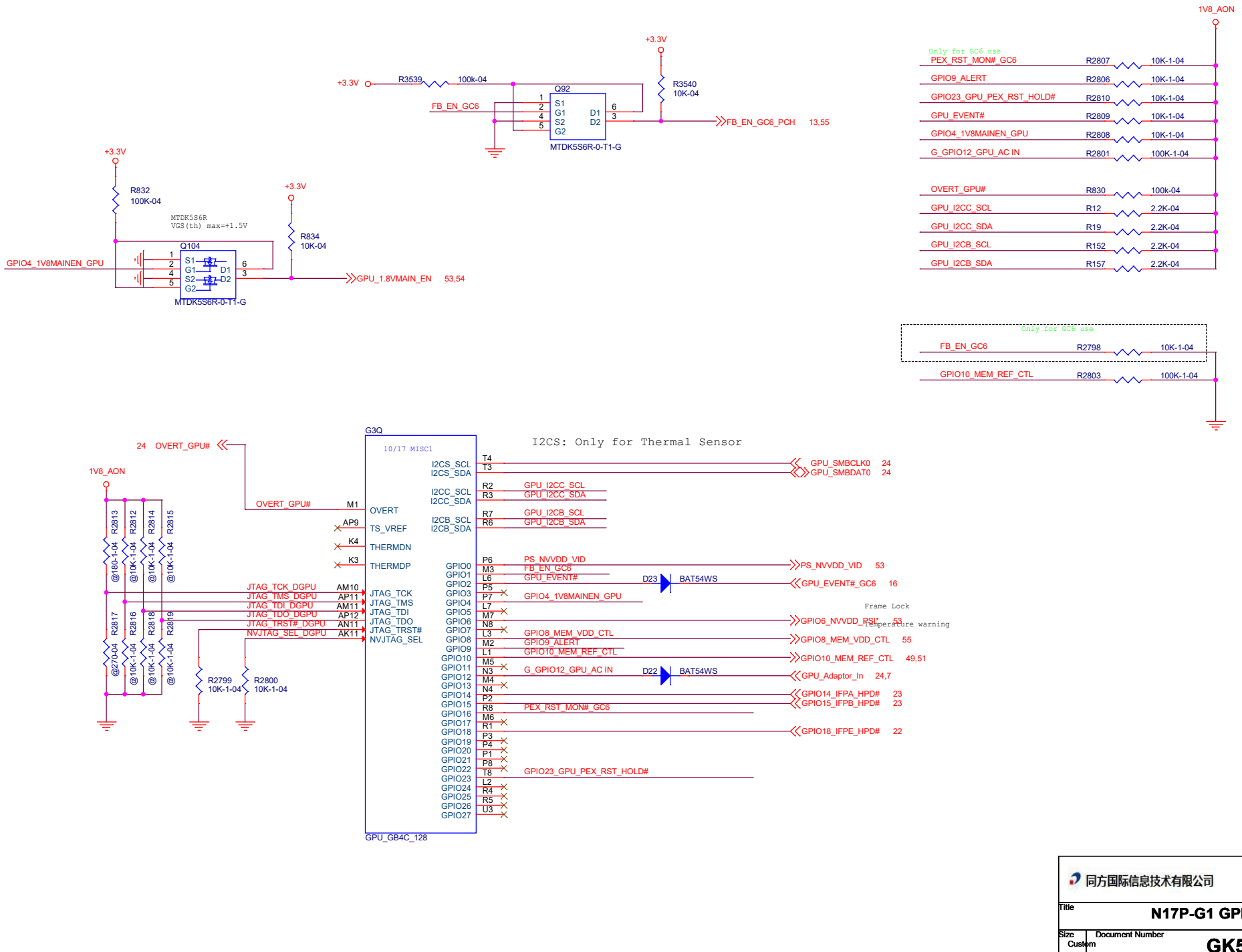

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Title	N17P-G1 GPIO/Thermal/I2C	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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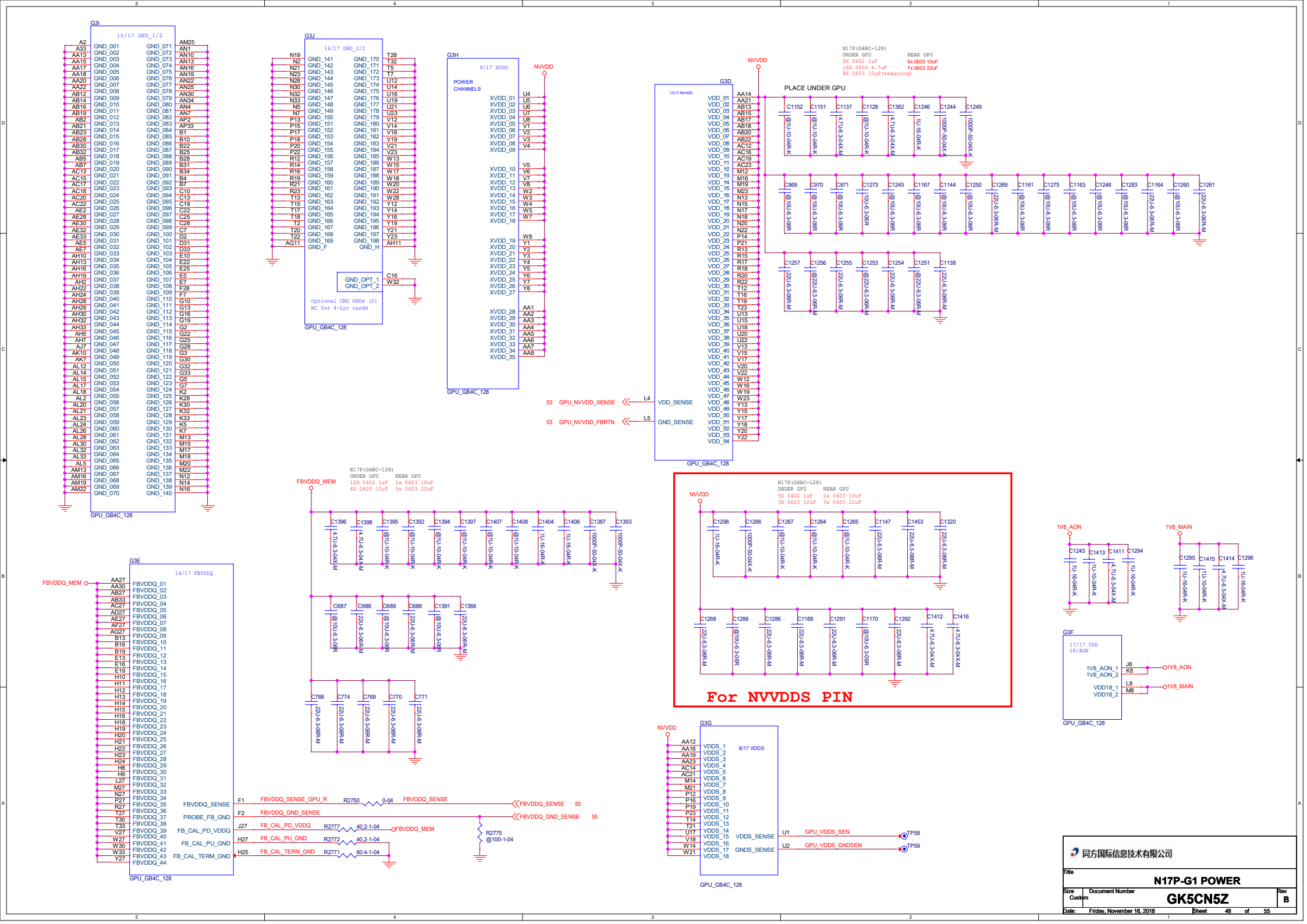
G3I
15/17 GND_1/2
GPU_GB4C_128
G3J
16/17 GND_2/2
GPU_GB4C_128
G3H
9/17 XVDD
POWER CHANNELS
NVVDD
GPU_GB4C_128
G3D
13/17 NVVDD
NVVDD
GPU_GB4C_128
N17P(G4BC-128)
UNDER GPU
8X 0402 1uF
16X 0603 4.7uF
8X 0603 10uF(reducing)
NEAR GPU
9x 0603 10uF
7x 0603 22uF
PLACE UNDER GPU
C1152 C1151 C1137 C1128 C1382 C1246 C1244 C1249
C969 C970 C971 C1273 C1245 C1167 C1144 C1250 C1269 C1161 C1275 C1163 C1248 C1283 C1164 C1260 C1261
C1257 C1256 C1255 C1253 C1254 C1251 C1138
53 GPU_NVVDD_SENSE
53 GPU_NVVDD_FBRTN
L4
L5
VDD_SENSE
GND_SENSE
FBVDDQ_MEM
N17P(G4BC-128)
UNDER GPU
12X 0402 1uF
4X 0603 10uF
NEAR GPU
2x 0603 10uF
5x 0603 22uF
C1396 C1398 C1395 C1392 C1394 C1397 C1407 C1408 C1404 C1406 C1387 C1393
C687 C686 C689 C688 C1391 C1388
C768 C774 C769 C770 C771
NVVDD
N17P(G4BC-128)
UNDER GPU
5X 0402 1uF
5X 0603 10uF
NEAR GPU
2x 0603 10uF
3x 0603 22uF
C1298 C1266 C1267 C1264 C1265 C1147 C1453 C1320
C1268 C1288 C1286 C1169 C1291 C1170 C1292 C1412 C1416
For NVVDDS PIN
1V8_AON
C1243 C1413 C1411 C1294
1V8_MAIN
C1295 C1415 C1414 C1296
G3F
17/17 VDD
18/AON
1V8_AON_1
1V8_AON_2
VDD18_1
VDD18_2
J8
K8
L8
M8
1V8_AON
1V8_MAIN
GPU_GB4C_128
G3E
14/17 FBVDDQ
FBVDDQ_MEM
FBVDDQ_SENSE
PROBE_FB_GND
FB_CAL_PD_VDDQ
FB_CAL_PU_GND
FB_CAL_TERM_GND
F1 FBVDDQ_SENSE_GPU_R R2750 0-04 FBVDDQ_SENSE
F2 FBVDDQ_GND_SENSE
J27 FB_CAL_PD_VDDQ R2777 40.2-1-04
H27 FB_CAL_PU_GND R2772 40.2-1-04
H25 FB_CAL_TERM_GND R2771 60.4-1-04
FBVDDQ_SENSE 55
FBVDDQ_GND_SENSE 55
R2775 @100-1-04
FBVDDQ_MEM
GPU_GB4C_128
G3G
8/17 VDDS
NVVDD
VDDS_SENSE
GNDS_SENSE
U1 GPU_VDDS_SEN TP58
U2 GPU_VDDS_GNDSEN TP59
GPU_GB4C_128
同方国际信息技术有限公司
Title
N17P-G1 POWER
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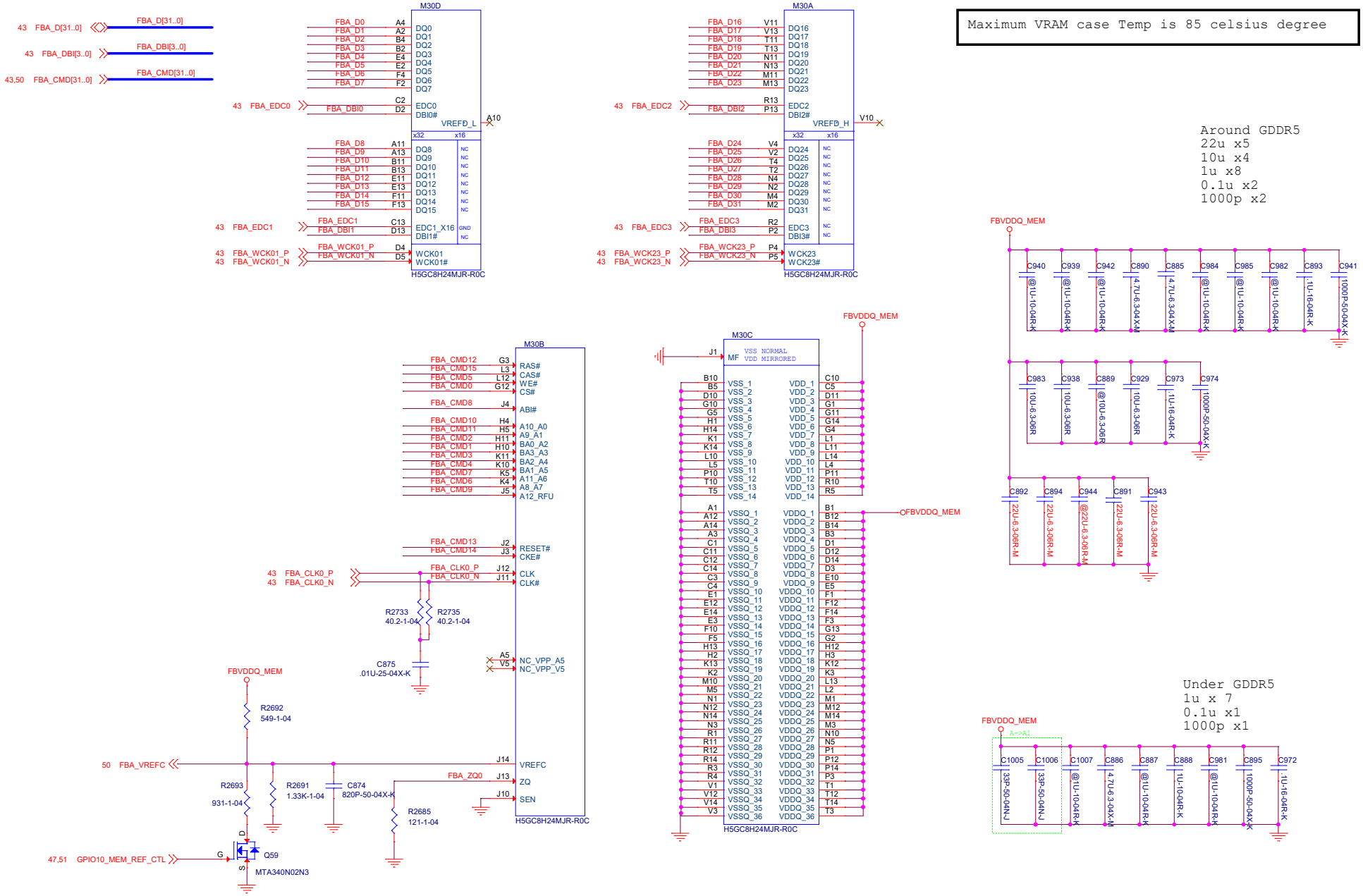
Maximum VRAM case Temp is 85 celsius degree



Around GDDR5
22u x5
10u x4
1u x8
0.1u x2
1000p x2

Under GDDR5
1u x 7
0.1u x1
1000p x1

同方国际信息技术有限公司

Title	N17P-G1 VRAM1_FrameBuffer A		
Size	Document Number		Rev
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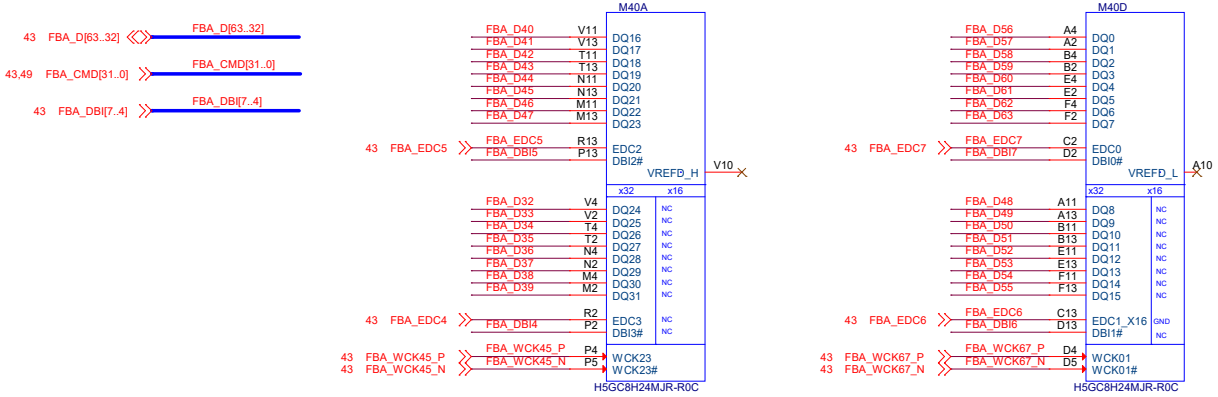
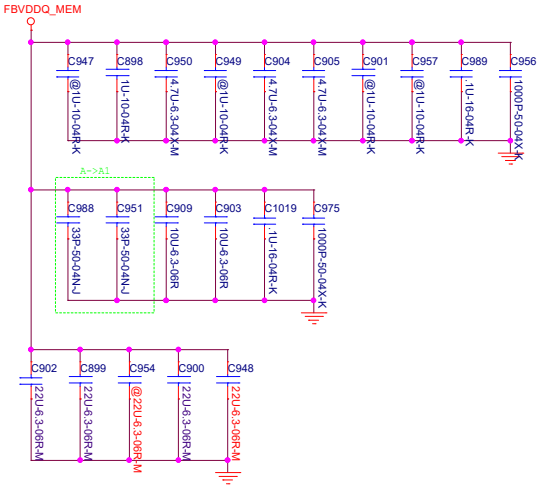
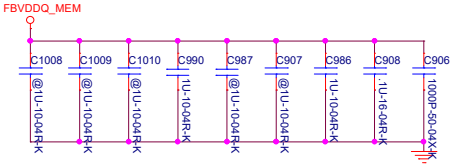
Maximum VRAM case Temp is 85 celcisus degree



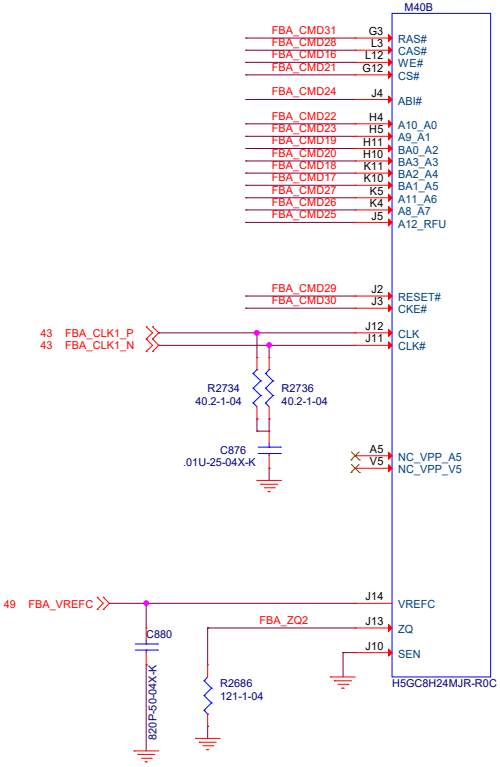
Around GDDR5
22u x5
10u x4
1u x8
0.1u x2
1000p x2

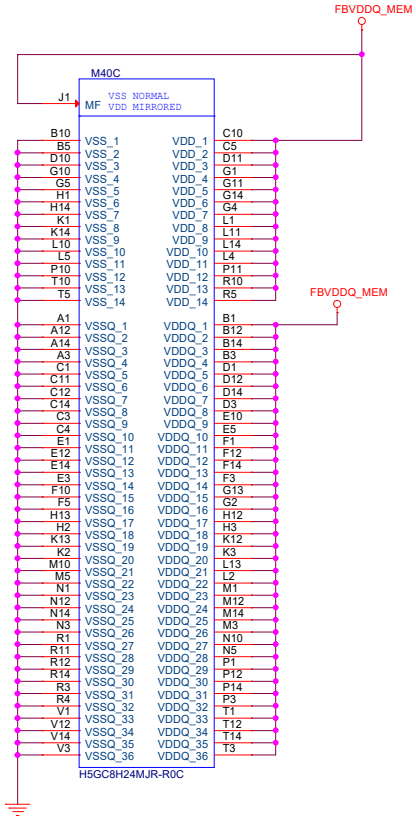


Under GDDR5
1u x 7
0.1u x1
1000p x1



Mirroed: MF pull high
Non-mirrored : MF pull GND





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Title: N17P-G1 VRAM2_FrameBuffer A

Size	Document Number	Rev
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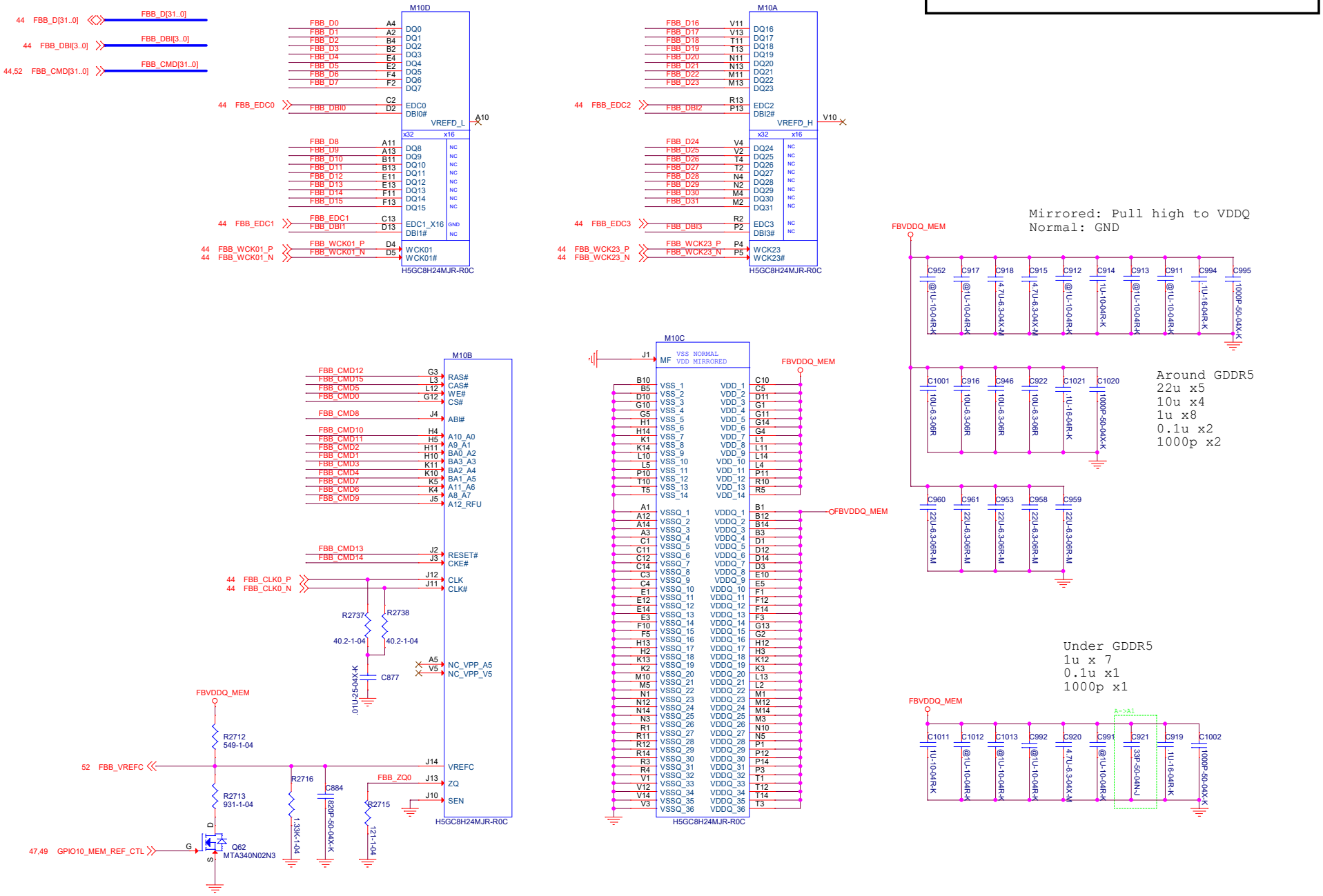
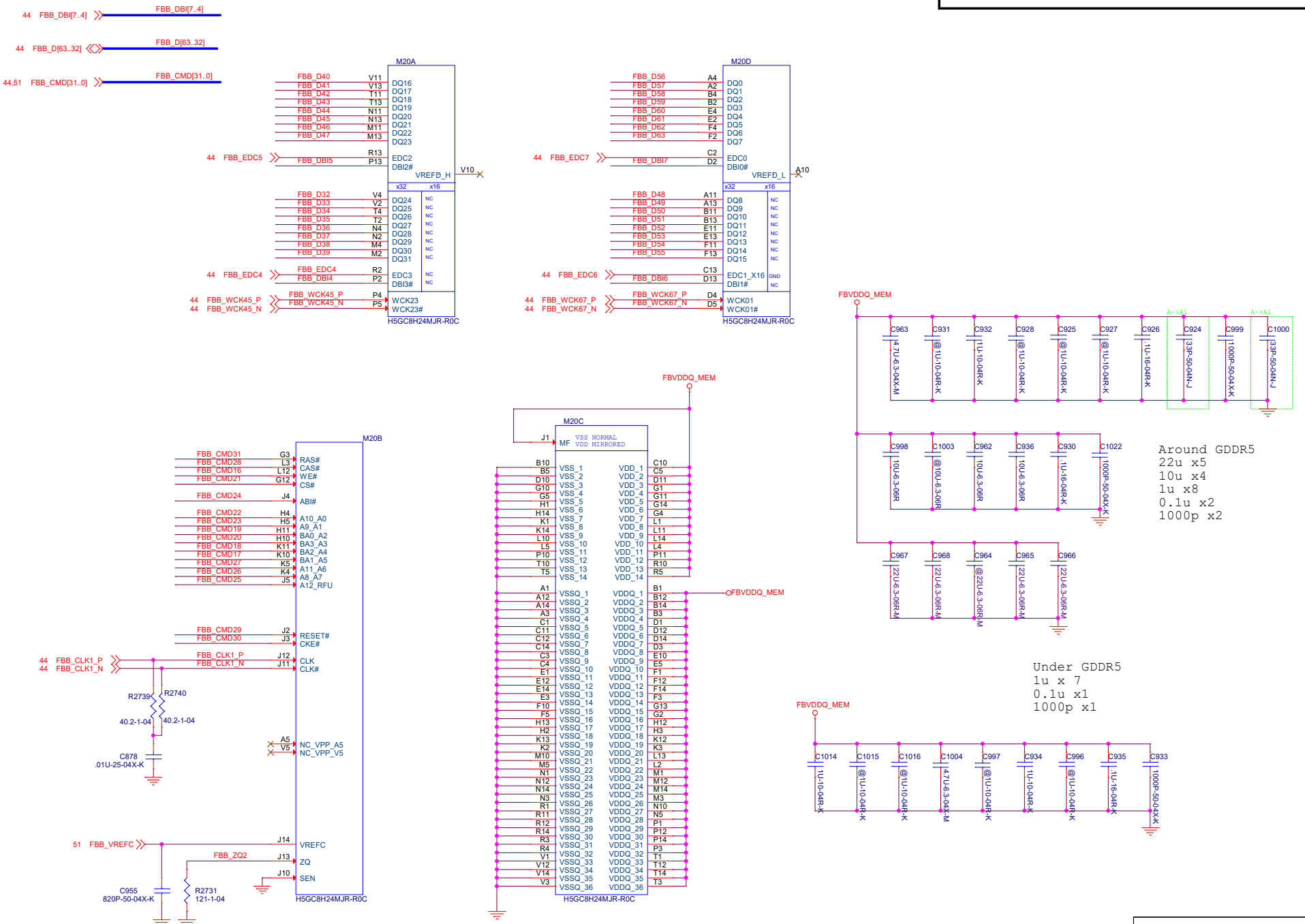
Maximum VRAM case Temp is 85 celcisus degree



同方国际信息技术有限公司

Title	N17P-G1 VRAM3_FrameBuffer B	
Size: Custom	Document Number: GK5CN5Z	Rev: B
Date: Friday, November 16, 2018	Sheet 51 of 55	

Maximum VRAM case Temp is 85 celcisus degree



同方国际信息技术有限公司

Title	N17P-G1 VRAM4_FrameBuffer B	
Size: Custom	Document Number: GK5CN5Z	Rev: B
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BOM option

uP9509	UPI1642T
R971=300K R955=150ohm C2552=1000pF R959=30K R988=22K R979=1Kohm R984=1Kohm R985=510ohm	R971=82K R955=140ohm C2552=4700pF R959=NC R988=NC R979=14.3Kohm R984=14.3Kohm R985=14.3Kohm

PSI	Mode
1.8V	Multi phase CCM
1.2V	Multi phase DCM
0.6V	Single-Phase CCM
0	Single-Phase DCM

PVCC POR Threshold=4.1V

TON:Set the on-time of the upper MOSFET

VEN_L<=0.6V
VEN_H>=1.2V

PWM VID:
VID=06 Vout=0.7V(MIN)
VID=30h Vout=1.2V(MAX)

REF=2V
Isource=10mA

REFIN=Vcore

High side
Rds(on) TYP:10m MAX:14m
ID@TA=8A

Low side
Rds(on) TYP:2.1m MAX:3.8m
ID@TA=17A

Voltage=0.3V~1.3V
NVVDD+NVVDDS:
G1 Iccmax=124A/TDC=59A
G0 Iccmax=100A/TDC=50A

WSRPG0603A-R22M-AG
L(0.22uH)
DCR TYP:2.5mohm, MAX:2.75mohm
I-sat(40A) / Irms(23A)
Size(7.6*6.8*3mm)

PS-330U-2V
ESR TYP:9ohm / Ripple Irms:3A
Size(7.5*4.5*2.1mm)

FSW:300KHz
IOCP:150A

Vol step:6.25mv
Boot vol:0.8v

Rg2	slew rate
15K	150us
20K	500us
30K	1ms
Open	1.5ms

OVP: Vfb>1.5 * Vrefin
UVP: Vfb <0.5 * Vrefin
OTP: 150 degree
OCP: 20mV<=Vcc<=200mV

Place Near Power chip

Place Near Power chip

Place Near Power chip

NVVDD Discharge

同方国际信息技术有限公司			
File	N17P-G1 NVVDD		
Size: Custom	Document Number: GK5CN5Z		Rev: B
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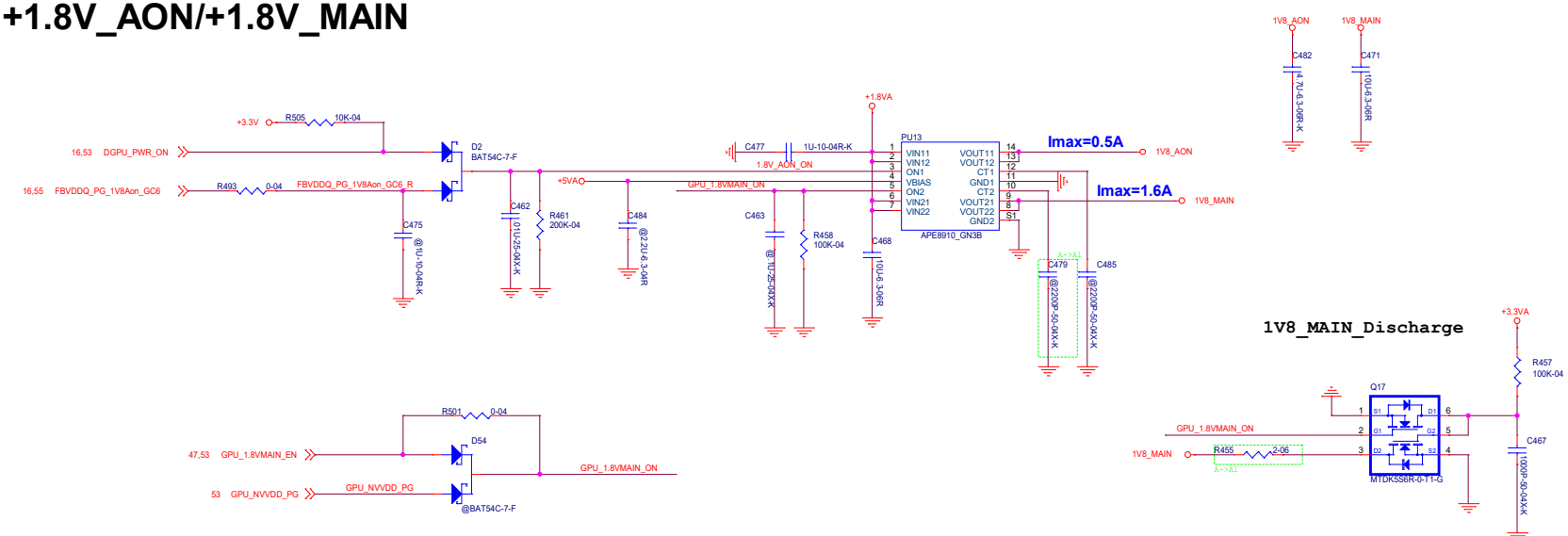
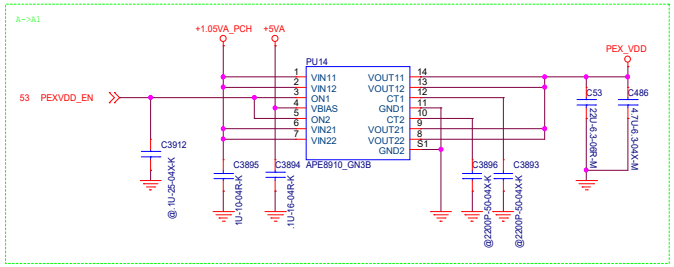
+1.8V_AON/+1.8V_MAIN

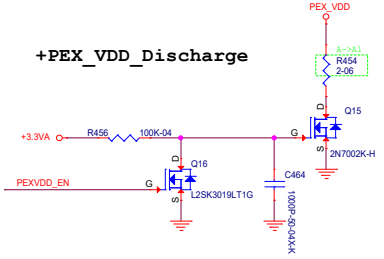


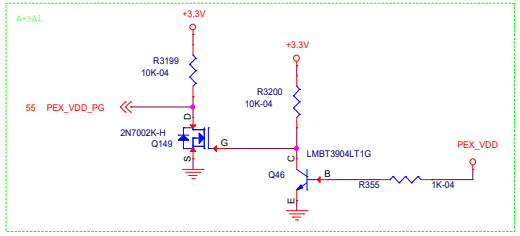
1V8_MAIN_Discharge

PEX_VDD



+PEX_VDD_Discharge





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Title	N17P-G1 1V8_AON/1V8_MAIN/PEX	
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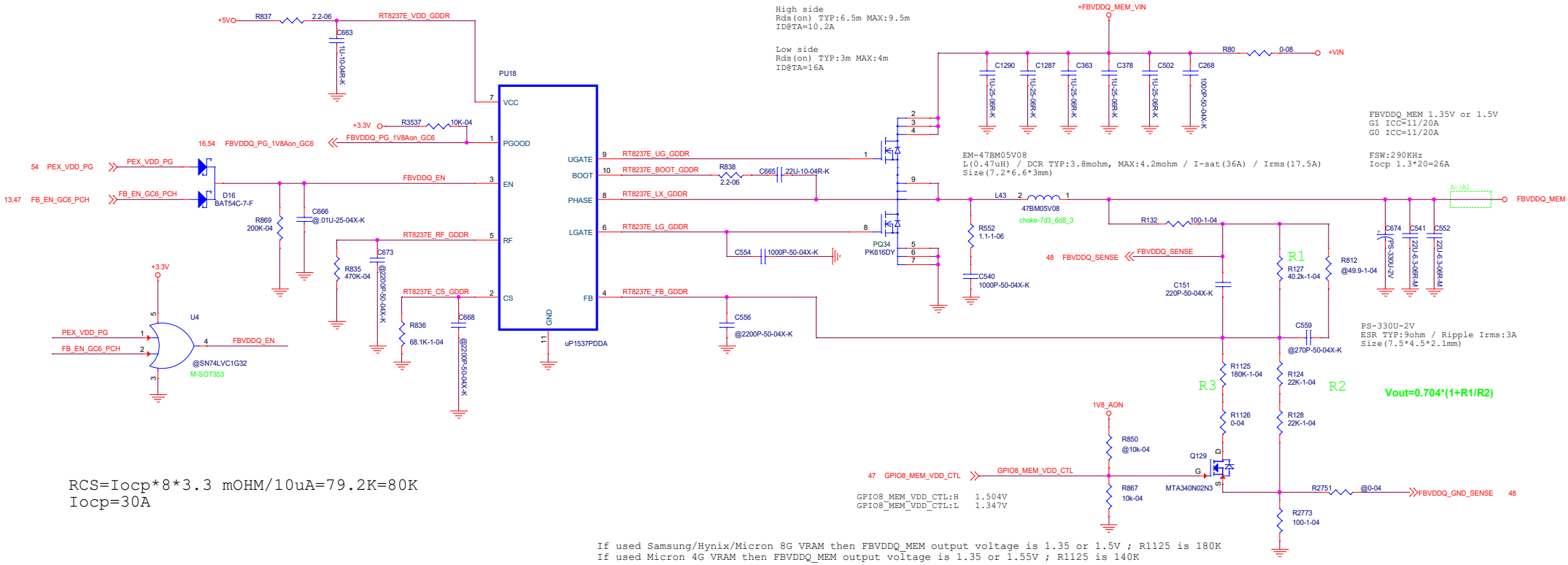
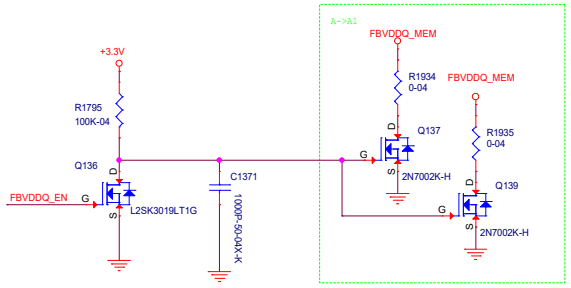
FBVDDQ_MEM



RCS=Iocp*8*3.3 mOHM/10uA=79.2K=80K
Iocp=30A

If used Samsung/Hynix/Micron 8G VRAM then FBVDDQ_MEM output voltage is 1.35 or 1.5V ; R1125 is 180K
If used Micron 4G VRAM then FBVDDQ_MEM output voltage is 1.35 or 1.55V ; R1125 is 140K

FBVDDQ_MEM_Discharge



同方国际信息技术有限公司

Title	N17P-G1 FBVDDQ_MEM	
Size: Custom	Document Number: GK5CN5Z	Rev: B
Date: Friday, November 16, 2018	Sheet 55 of 56	