PG161-A00

TU106 6GB GDDR6, 192b, X16

DVI-D/DP + DP + HDMI

TABLE OF CONTENTS

OrgName	Title : Table
	Engineer: James_Huang
Size: Custom	Project Name: CG165PI
	Rev: 1.00
Date: Monday, July 01, 2019	Sheet 1 of 39

Page2: Block Diagram

DP

HDMI

DP

DP

DVI

CO-LAYOUT

POWER SUPPLY

MEM D LO

MEM D HI

GPU

MEM A HI

MEM A LO

MEM C LO

MEM C HI

MEM B LO

MEM B HI

Power Supply:

Power Supply
NVVDD-PH5

Power Supply
NVVDD-PH4

Power Supply
NVVDD-PH3

Power Supply
NVVDD-PH2

Power Supply
NVVDD-PH1

Power Supply
FBVDDQ-PH2

Power Supply
FBVDDQ-PH1

Power Supply
5V

PEX_VDD

1V8

Fan

DP_PWR

EXT_12V 2x4 PWR

PEX_12V Finger

3V3 Finger

Title : Block Diagram
Engineer: James_Huang
OrgName
Size: Custom | Project Name: CG165PI | Rev: 1.00
Date: Monday, July 01, 2019 | Sheet 2 of 39

Page3: PCI Express

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
12V	12V		
3V3	3V3		
GND			

CN1
CON_X16
COMMON
CON_PCIEXP_X16_EDGE

B1 B2 A2 A3 B3 B8 A9 A10 B10 A1 B17 B12 B4 A4 B7 A12 B13 A15 B16 B18 A18 B31 A19 B30 A32 A20 B21 B22 A23 A24 B25 B26 A27 A28 B29 A31 B32 B48 A33 A34 B35 B36 A37 A38 B39 B40 A41 A42 B43 B44 A45 A46 B47 B49 A49 B81 A50 B82 A51 B52 B53 A54 A55 B56 B57 A58 A59 B60 B61 A62 A63 B64 B65 A66 A67 B68 B69 A70 A71 B72 B73 A74 A75 B76 B77 A78 A79 B80 A82

END OF X1
END OF X4
END OF X8
END OF X16

B9 A5 A6 A7 A8 B5 B6 B11 A11 A13 A14 A16 A17 B14 B15 A21 A22 B19 B20 A25 A26 B23 B24 A29 A30 B27 B28 A35 A36 B33 B34 A39 A40 B37 B38 A43 A44 B41 B42 A47 A48 B45 B46 A52 A53 B50 B51 A56 A57 B54 B55 A60 A61 B58 B59 A64 A65 B62 B63 A68 A69 B66 B67 A72 A73 B70 B71 A76 A77 B74 B75 A80 A81 B78 B79

SMB_PEX_CNET
SMB_PEX_TCLK
PEX_TDI_O
SMB_PEX_CNE
SMB_PEX_SMCLK
SMB_PEX_SMDAT
PEX_WAKE
PEX_RST
PEX_REFCLK
PEX_REFCLK#
PEX_TX0
PEX_TX0#
PEX_TX1
PEX_TX1#
PEX_TX2
PEX_TX2#
PEX_TX3
PEX_TX3#
PEX_TX4
PEX_TX4#
PEX_TX5
PEX_TX5#
PEX_TX6
PEX_TX6#
PEX_TX7
PEX_TX7#
PEX_TX8
PEX_TX8#
PEX_TX9
PEX_TX9#
PEX_TX10
PEX_TX10#
PEX_TX11
PEX_TX11#
PEX_TX12
PEX_TX12#
PEX_TX13
PEX_TX13#
PEX_TX14
PEX_TX14#
PEX_TX15
PEX_TX15#
PEX_RX0
PEX_RX0#
PEX_RX1
PEX_RX1#
PEX_RX2
PEX_RX2#
PEX_RX3
PEX_RX3#
PEX_RX4
PEX_RX4#
PEX_RX5
PEX_RX5#
PEX_RX6
PEX_RX6#
PEX_RX7
PEX_RX7#
PEX_RX8
PEX_RX8#
PEX_RX9
PEX_RX9#
PEX_RX10
PEX_RX10#
PEX_RX11
PEX_RX11#
PEX_RX12
PEX_RX12#
PEX_RX13
PEX_RX13#
PEX_RX14
PEX_RX14#
PEX_RX15
PEX_RX15#

C1178 0.22UF 0402 10V 10% X7R COMMON
C1177 0.22UF 0402 10V 10% X7R COMMON PEX_TX2 PEX_TX2*
C1176 0.22UF 0402 10V 10% X7R COMMON
C1175 0.22UF 0402 10V 10% X7R COMMON PEX_TX1 PEX_TX1*
C1174 0.22UF 0402 10V 10% X7R COMMON
C1173 0.22UF 0402 10V 10% X7R COMMON PEX_TX2 PEX_TX2*
C1172 0.22UF 0402 10V 10% X7R COMMON
C1170 0.22UF 0402 10V 10% X7R COMMON PEX_TX3 PEX_TX3*
C1169 0.22UF 0402 10V 10% X7R COMMON
C1167 0.22UF 0402 10V 10% X7R COMMON PEX_TX4 PEX_TX4*
C1166 0.22UF 0402 10V 10% X7R COMMON
C1165 0.22UF 0402 10V 10% X7R COMMON PEX_TX5 PEX_TX5*
C1164 0.22UF 0402 10V 10% X7R COMMON
C1162 0.22UF 0402 10V 10% X7R COMMON PEX_TX6 PEX_TX6*
C1158 0.22UF 0402 10V 10% X7R COMMON
C1156 0.22UF 0402 10V 10% X7R COMMON PEX_TX7 PEX_TX7*
C1155 0.22UF 0402 10V 10% X7R COMMON
C1154 0.22UF 0402 10V 10% X7R COMMON PEX_TX8 PEX_TX8*
C1153 0.22UF 0402 10V 10% X7R COMMON
C1151 0.22UF 0402 10V 10% X7R COMMON PEX_TX9 PEX_TX9*
C1150 0.22UF 0402 10V 10% X7R COMMON
C1149 0.22UF 0402 10V 10% X7R COMMON PEX_TX10 PEX_TX10*
C1148 0.22UF 0402 10V 10% X7R COMMON
C1147 0.22UF 0402 10V 10% X7R COMMON PEX_TX11 PEX_TX11*
C1144 0.22UF 0402 10V 10% X7R COMMON
C1143 0.22UF 0402 10V 10% X7R COMMON PEX_TX12 PEX_TX12*
C1142 0.22UF 0402 10V 10% X7R COMMON
C1141 0.22UF 0402 10V 10% X7R COMMON PEX_TX13 PEX_TX13*
C1139 0.22UF 0402 10V 10% X7R COMMON
C1137 0.22UF 0402 10V 10% X7R COMMON PEX_TX14 PEX_TX14*
C1135 0.22UF 0402 10V 10% X7R COMMON
C1133 0.22UF 0402 10V 10% X7R COMMON PEX_TX15 PEX_TX15*

35 OUT GOE_GPU_WAKE BK44
35 IN PEX_RST_BUF BK26
35 OUT GPU_PEX_CLKREQ BL26

G1A
TU104-400-A1
BGA2228
COMMON
1/22 PCI_EXPRESS

BB35 BB36 BC35 BC36 BD33 BD36 BB33 BC33 BB26 BB27 BB29 BB32 BC26 BC27 BC29 BC30 BC32 BD27 BB30

Place under GPU

C1104 1UF 6.3V 20% X5R 0201 COMMON
C1120 1UF 6.3V 20% X5R 0201 COMMON
C1059 1UF 6.3V 20% X5R 0201 COMMON
C1060 1UF 6.3V 20% X5R 0201 COMMON
C1115 10UF 6.3V 20% X6S 0603 COMMON
C1117 10UF 6.3V 20% X6S 0603 COMMON
C1058 1UF 6.3V 20% X5R 0201 COMMON
C1119 1UF 6.3V 20% X5R 0201 COMMON
C1075 1UF 6.3V 20% X5R 0201 COMMON
C1078 1UF 6.3V 20% X5R 0201 COMMON
C1152 10UF 6.3V 20% X6S 0603 COMMON
C1074 1UF 6.3V 20% X5R 0201 COMMON
C1076 1UF 6.3V 20% X5R 0201 COMMON
C1073 1UF 6.3V 20% X5R 0201 COMMON
C1072 1UF 6.3V 20% X5R 0201 COMMON
C1062 1UF 6.3V 20% X5R 0201 COMMON
C1092 1UF 6.3V 20% X5R 0201 COMMON
C1101 1UF 6.3V 20% X5R 0201 COMMON
C1071 1UF 6.3V 20% X5R 0201 COMMON
C1069 1UF 6.3V 20% X5R 0201 COMMON
C1070 1UF 6.3V 20% X5R 0201 COMMON
C1096 1UF 6.3V 20% X5R 0201 COMMON
C1099 1UF 6.3V 20% X5R 0201 COMMON
C1112 10UF 6.3V 20% X6S 0603 COMMON
C1012 10UF 6.3V 20% X6S 0603 COMMON
C1068 1UF 6.3V 20% X5R 0201 COMMON
C1098 1UF 6.3V 20% X5R 0201 COMMON
C1116 10UF 6.3V 20% X6S 0603 COMMON
C1067 1UF 6.3V 20% X5R 0201 COMMON
C1066 1UF 6.3V 20% X5R 0201 COMMON
C1065 1UF 6.3V 20% X5R 0201 COMMON
C1064 1UF 6.3V 20% X5R 0201 COMMON
C1051 1UF 6.3V 20% X5R 0201 COMMON
C1057 1UF 6.3V 20% X5R 0201 COMMON
C1019 10UF 6.3V 20% X6S 0603 COMMON
C1021 10UF 6.3V 20% X6S 0603 COMMON

Place between GPU and PS

PEX_VDD
C1171 10UF 10V 10% X5R 0805 COMMON
C1180 10UF 10V 10% X5R 0805 COMMON
C1175 10UF 10V 10% X5R 0805 COMMON
3x 10uF and 2x 22uF
C1182 22UF 6.3V 20% X5R 0603W COMMON
C1183 22UF 6.3V 20% X5R 0603W COMMON
1V8_AON
C1129 10UF 6.3V 20% X5R 0603 COMMON
C1134 10UF 6.3V 20% X5R 0603 COMMON
C1061 10UF 6.3V 20% X5R 0603 COMMON
3x 10uF and 2x 22uF
C1140 22UF 6.3V 20% X5R 0603W COMMON
C1136 22UF 6.3V 20% X5R 0603W COMMON

BL44 PEX_TERMP
R534 RES 2.49K OHM 1/16W (0402) 1% 0402 COMMON

12V 3V3 3V3_AUX GND
C1184 10UF 16V 10% X5R 0805
C124 4.7UF 16V 10% X5R 0603
C1183 0.1UF 16V 10% X7R 0402
C1180 10UF 6.3V 20% X6S 0603
C1179 0.1UF 16V 10% X7R 0402
PEX_PRSNT
SMB_PEX_PRSNT2_A
SMB_PEX_CLKREQ
SMB_PEX_PRSNT2_B
SMB_PEX_RSVD3
SMB_PEX_PRSNT2_C
SMB_PEX_RSVD8
SMB_PEX_RSVD9
SMB_PEX_RSVD8

Title :	PCIE				
OrgName	Engineer:	James_Huang			
Size	Project Name			Rev	
Custom	CG165PI			1.00	
Date:	Monday, July 01, 2019	Sheet	3	of	39

Page4: MEMORY: GPU Partition A/B

G1B
TU104-400-A1
BGA2228
COMMON

compatible

2/22 FBA

G1C
TU104-400-A1
BGA2228
COMMON

3/22 FBIB

5,6 BI FBA_D[63..0]

0	FBA_D0	U51
1	FBA_D1	U48
2	FBA_D2	U50
3	FBA_D3	U49
4	FBA_D4	R51
5	FBA_D5	R50
6	FBA_D6	R47
7	FBA_D7	U46
8	FBA_D8	V46
9	FBA_D9	Y45
10	FBA_D10	Y47
11	FBA_D11	Y46
12	FBA_D12	V50
13	FBA_D13	V47
14	FBA_D14	U52
15	FBA_D15	V51
16	FBA_D16	AJ44
17	FBA_D17	AG48
18	FBA_D18	AJ45
19	FBA_D19	AG49
20	FBA_D20	AF46
21	FBA_D21	AF47
22	FBA_D22	AF48
23	FBA_D23	AD47
24	FBA_D24	AD49
25	FBA_D25	AD48
26	FBA_D26	AC46
27	FBA_D27	AC47
28	FBA_D28	AA47
29	FBA_D29	AA46
30	FBA_D30	AA45
31	FBA_D31	Y44
32	FBA_D32	AW51
33	FBA_D33	BA52
34	FBA_D34	AW50
35	FBA_D35	BA51
36	FBA_D36	BA50
37	FBA_D37	BB50
38	FBA_D38	BA49
39	FBA_D39	AW49
40	FBA_D40	AV48
41	FBA_D41	AT49
42	FBA_D42	AT47
43	FBA_D43	AT48
44	FBA_D44	AT46
45	FBA_D45	AV51
46	FBA_D46	AV52
47	FBA_D47	AV49
48	FBA_D48	AJ48
49	FBA_D49	AJ46
50	FBA_D50	AJ47
51	FBA_D51	AK49
52	FBA_D52	AM47
53	FBA_D53	AM46
54	FBA_D54	AN48
55	FBA_D55	AN49
56	FBA_D56	AM44
57	FBA_D57	AM45
58	FBA_D58	AN45
59	FBA_D59	AN46
60	FBA_D60	AR48
61	FBA_D61	AN47
62	FBA_D62	AR47
63	FBA_D63	AR46

5,6 BI FBA_DBI[7..0]

0	FBA_DBI0	U47
1	FBA_DBI1	Y48
2	FBA_DBI2	AG47
3	FBA_DBI3	AC48
4	FBA_DBI4	BB51
5	FBA_DBI5	AV50
6	FBA_DBI6	AM48
7	FBA_DBI7	AR49

5,6 IN FBA_EDC[7..0]

0	FBA_EDC0	R48
1	FBA_EDC1	V48
2	FBA_EDC2	AF44
3	FBA_EDC3	AA48
4	FBA_EDC4	BB52
5	FBA_EDC5	AT50
6	FBA_EDC6	AK48
7	FBA_EDC7	AR51

W45
W47
W49
W51
W6
W8
Y14
Y15

GND

4,9 IN 1V8_FB_PLL

C923 1UF 6.3V 20% X5R 0201 COMMON
C788 1UF 6.3V 20% X5R 0201 COMMON

GND

AF42
L29

1V8_AON

LB501 30 OHM COMMON BEAD_0603

1V8_FB_PLL

C1001 10UF 6.3V 20% X6S 0603 COMMON
C1009 10UF 6.3V 20% X6S 0603 COMMON
C983 22UF 6.3V 20% X5R 0603W COMMON

OUT 4,9

GND

Y51	FBA_CMD0	0
Y52	FBA_CMD1	1
Y49	FBA_CMD2	2
AA52	FBA_CMD3	3
AA51	FBA_CMD4	4
AA50	FBA_CMD5	5
AC50	FBA_CMD6	6
AC51	FBA_CMD7	7
AC52	FBA_CMD8	8
AC49	FBA_CMD9	9
AD52	FBA_CMD10	10
AD51	FBA_CMD11	11
AD50	FBA_CMD12	12
AF50	FBA_CMD13	13
AF51	FBA_CMD14	14
AF52	FBA_CMD15	15
AN50	FBA_CMD16	16
AN51	FBA_CMD17	17
AN52	FBA_CMD18	18
AM49	FBA_CMD19	19
AM52	FBA_CMD20	20
AM51	FBA_CMD21	21
AM50	FBA_CMD22	22
AK50	FBA_CMD23	23
AK51	FBA_CMD24	24
AK52	FBA_CMD25	25
AJ49	FBA_CMD26	26
AJ52	FBA_CMD27	27
AJ51	FBA_CMD28	28
AJ50	FBA_CMD29	29
AG50	FBA_CMD30	30
AG51	FBA_CMD31	31
AF49	SNN_FBA_CMD32	
AG52	SNN_FBA_CMD33	
Y50	SNN_FBA_DEBUG0	
AR50	SNN_FBA_DEBUG1	

5,6 BI FBA_CMD[31..0]

AA44
AN44 SNN_FBA_DBG_RFU1
SNN_FBA_DBG_RFU2

AG45
AG46 FBA_CLK0 OUT 5
AK46 FBA_CLK0 OUT 5
AK45 FBA_CLK1 OUT 6
FBA_CLK1 OUT 6

U45
U44 FBA_WCK01 OUT 5
V45 FBA_WCK01 OUT 5
V44 SNN_FBA_WCK01
AC45 SNN_FBA_WCK01
AC44 FBA_WCK23 OUT 5
AD46 FBA_WCK23 OUT 5
AD45 SNN_FBA_WCK23
AV47 SNN_FBA_WCK23
AV46 FBA_WCK45 OUT 6
AW48 FBA_WCK45 OUT 6
AW47 SNN_FBA_WCK45
AR45 SNN_FBA_WCK45
AR44 FBA_WCK67 OUT 6
AT45 FBA_WCK67 OUT 6
AT44 SNN_FBA_WCK67

AN42 1V8_FB_PLL IN 4,9

C852 1UF 6.3V 20% X5R 0201 COMMON

GND

FBVDDQ

R518 10K 5 % 0402 COMMON
R532 10K 5 % 0402 COMMON
FBA_CMD11
FBA_CMD17
R293 10K 5 % 0402 COMMON
R295 10K 5 % 0402 COMMON

GND

0	FBB_D0	H32
1	FBB_D1	D32
2	FBB_D2	A33
3	FBB_D3	B32
4	FBB_D4	E32
5	FBB_D5	G32
6	FBB_D6	J30
7	FBB_D7	F32
8	FBB_D8	H36
9	FBB_D9	G36
10	FBB_D10	J36
11	FBB_D11	F36
12	FBB_D12	F33
13	FBB_D13	D33
14	FBB_D14	J32
15	FBB_D15	G33
16	FBB_D16	E45
17	FBB_D17	D45
18	FBB_D18	F45
19	FBB_D19	G45
20	FBB_D20	D42
21	FBB_D21	E42
22	FBB_D22	F42
23	FBB_D23	H41
24	FBB_D24	E41
25	FBB_D25	F39
26	FBB_D26	E39
27	FBB_D27	D39
28	FBB_D28	F38
29	FBB_D29	E38
30	FBB_D30	D36
31	FBB_D31	E36
32	FBB_D32	M50
33	FBB_D33	P48
34	FBB_D34	M51
35	FBB_D35	M49
36	FBB_D36	P47
37	FBB_D37	P52
38	FBB_D38	R46
39	FBB_D39	P46
40	FBB_D40	L50
41	FBB_D41	L51
42	FBB_D42	L52
43	FBB_D43	L49
44	FBB_D44	M46
45	FBB_D45	L47
46	FBB_D46	M48
47	FBB_D47	M47
48	FBB_D48	D48
49	FBB_D49	C50
50	FBB_D50	C48
51	FBB_D51	C49
52	FBB_D52	E49
53	FBB_D53	E50
54	FBB_D54	F49
55	FBB_D55	F48
56	FBB_D56	F50
57	FBB_D57	D52
58	FBB_D58	J50
59	FBB_D59	H48
60	FBB_D60	H51
61	FBB_D61	J51
62	FBB_D62	H49
63	FBB_D63	H52

7,8 BI FBB_DBI[7..0]

0	FBB_DBI0	C32
1	FBB_DBI1	E33
2	FBB_DBI2	E44
3	FBB_DBI3	G39
4	FBB_DBI4	P49
5	FBB_DBI5	L48
6	FBB_DBI6	D50
7	FBB_DBI7	H50

7,8 IN FBB_EDC[7..0]

0	FBB_EDC0	B33
1	FBB_EDC1	E35
2	FBB_EDC2	G44
3	FBB_EDC3	H38
4	FBB_EDC4	P50
5	FBB_EDC5	J48
6	FBB_EDC6	D51
7	FBB_EDC7	F51

Y16
Y17
Y18
Y19
Y20
Y21
Y22
Y23

GND

FBVDDQ

R513 10K 5 % 0402 COMMON
R502 10K 5 % 0402 COMMON
FBB_CMD11
FBB_CMD17
R309 10K 5 % 0402 COMMON
R310 10K 5 % 0402 COMMON

GND

B35	FBB_CMD0	0
A35	FBB_CMD1	1
D35	FBB_CMD2	2
A36	FBB_CMD3	3
B36	FBB_CMD4	4
C36	FBB_CMD5	5
C38	FBB_CMD6	6
B38	FBB_CMD7	7
A38	FBB_CMD8	8
D38	FBB_CMD9	9
A39	FBB_CMD10	10
B39	FBB_CMD11	11
C39	FBB_CMD12	12
C41	FBB_CMD13	13
B41	FBB_CMD14	14
A41	FBB_CMD15	15
B49	FBB_CMD16	16
A49	FBB_CMD17	17
A48	FBB_CMD18	18
D47	FBB_CMD19	19
A47	FBB_CMD20	20
B47	FBB_CMD21	21
C47	FBB_CMD22	22
C45	FBB_CMD23	23
B45	FBB_CMD24	24
A45	FBB_CMD25	25
D44	FBB_CMD26	26
A44	FBB_CMD27	27
B44	FBB_CMD28	28
C44	FBB_CMD29	29
C42	FBB_CMD30	30
B42	FBB_CMD31	31
D41	SNN_FBB_CMD32	
A42	SNN_FBB_CMD33	
C35	SNN_FBB_DEBUG0	
B50	SNN_FBB_DEBUG1	

7,8 BI FBB_CMD[31..0]

J35
J41 SNN_FBB_DBG_RFU1
SNN_FBB_DBG_RFU2

H42
G42 FBB_CLK0 OUT 7
F47 FBB_CLK0 OUT 7
E47 FBB_CLK1 OUT 8
FBB_CLK1 OUT 8

J33
H33 FBB_WCK01 OUT 7
G35 FBB_WCK01 OUT 7
H35 SNN_FBB_WCK01
J39 SNN_FBB_WCK01
H39 FBB_WCK23 OUT 7
F41 FBB_WCK23 OUT 7
G41 SNN_FBB_WCK23
L46 SNN_FBB_WCK23
L45 FBB_WCK45 OUT 8
M44 FBB_WCK45 OUT 8
M45 SNN_FBB_WCK45
H47 SNN_FBB_WCK45
H46 FBB_WCK67 OUT 8
J47 FBB_WCK67 OUT 8
J46 SNN_FBB_WCK67

L38 1V8_FB_PLL IN 4,9

C779 1UF 6.3V 20% X5R 0201 COMMON

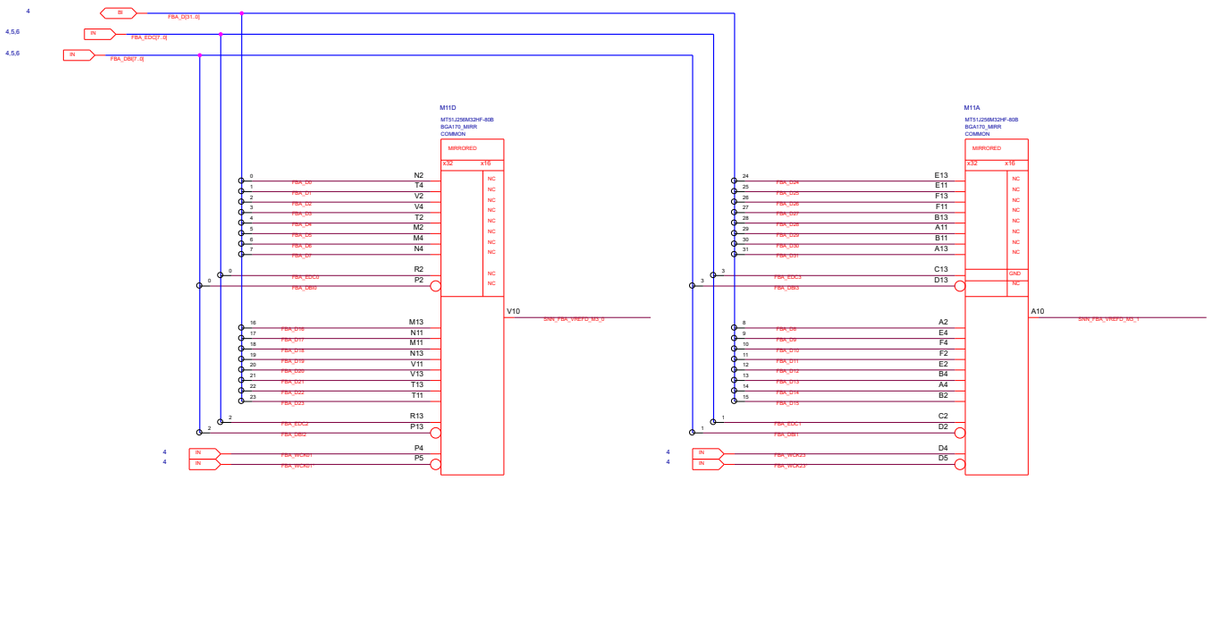
GND

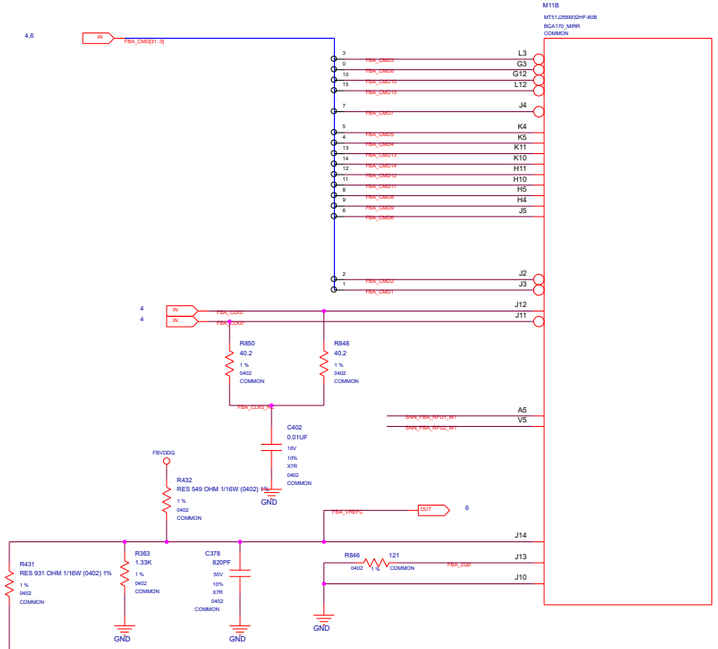
GDDR5 CMD Mapping

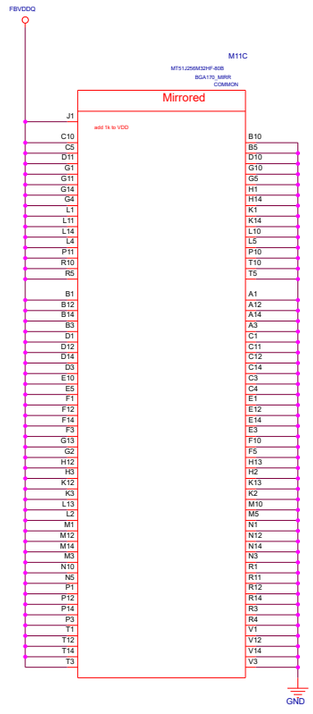
CMD	32_ID3
CMD0	
CMD1	
CMD2	
CMD3	
CMD4	
CMD5	
CMD6	
CMD7	
CMD8	
CMD9	
CMD10	
CMD11	
CMD12	
CMD13	
CMD14	
CMD15	
CMD16	CAS*
CMD17	CKE*
CMD18	RST*
CMD19	RAS*
CMD20	A1_A9
CMD21	A0_A10
CMD22	A12_RFU
CMD23	ABI*
CMD24	A6_A11
CMD25	A7_A8
CMD26	WE*
CMD27	A5_BA1
CMD28	A4_BA2
CMD29	A2_BA0
CMD30	A3_BA3
CMD31	CS*

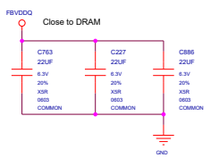
Title :	MEM GPU A/B
OrgName	
Engineer:	James_Huang
Size: Custom	Project Name: CG165PI
Rev:	1.00
Date:	Monday, July 01, 2019
Sheet	4 of 39

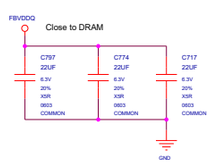
Page5: MEMORY: FBA Partition 31..0

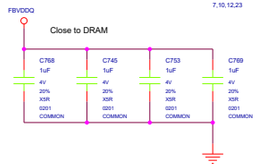


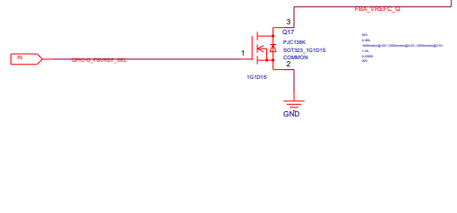


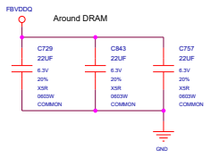


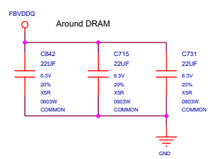


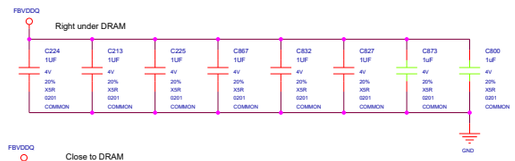


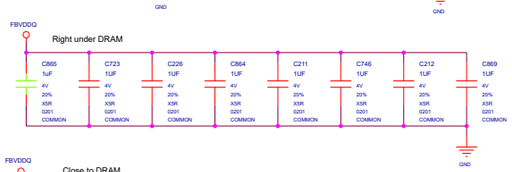


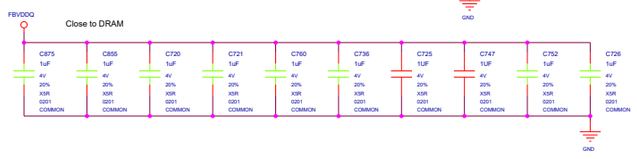


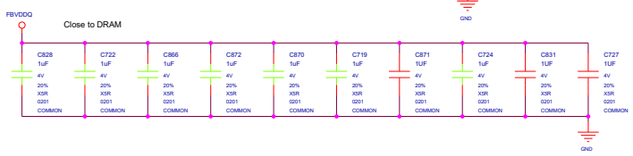






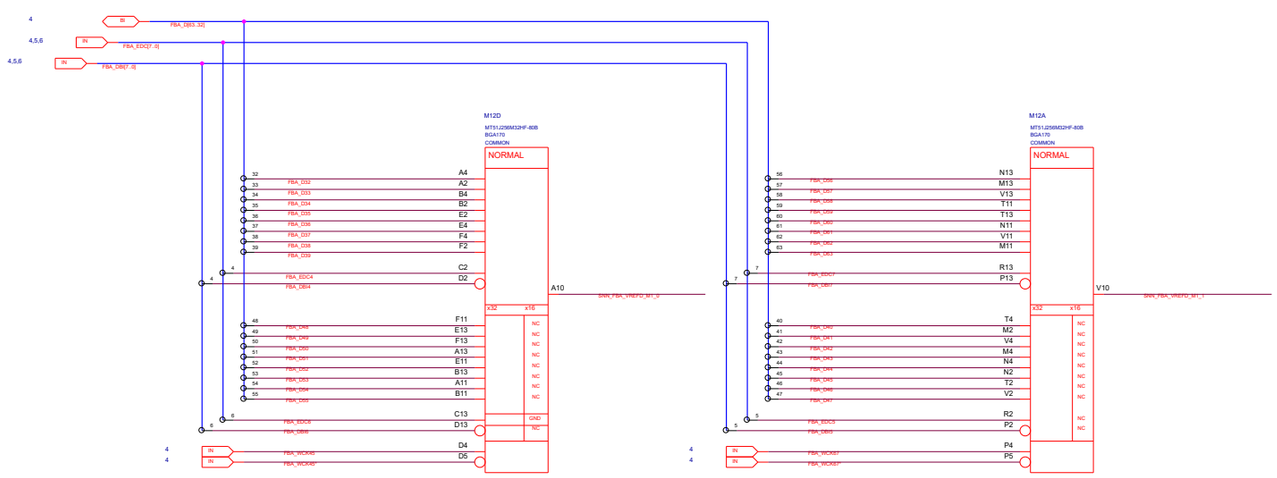


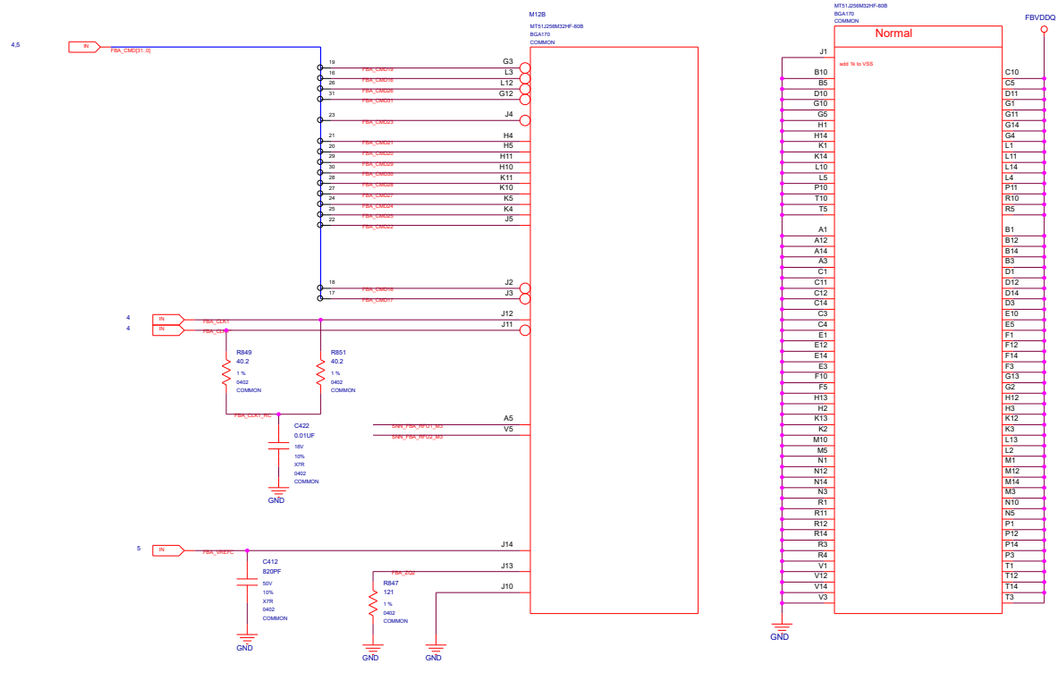


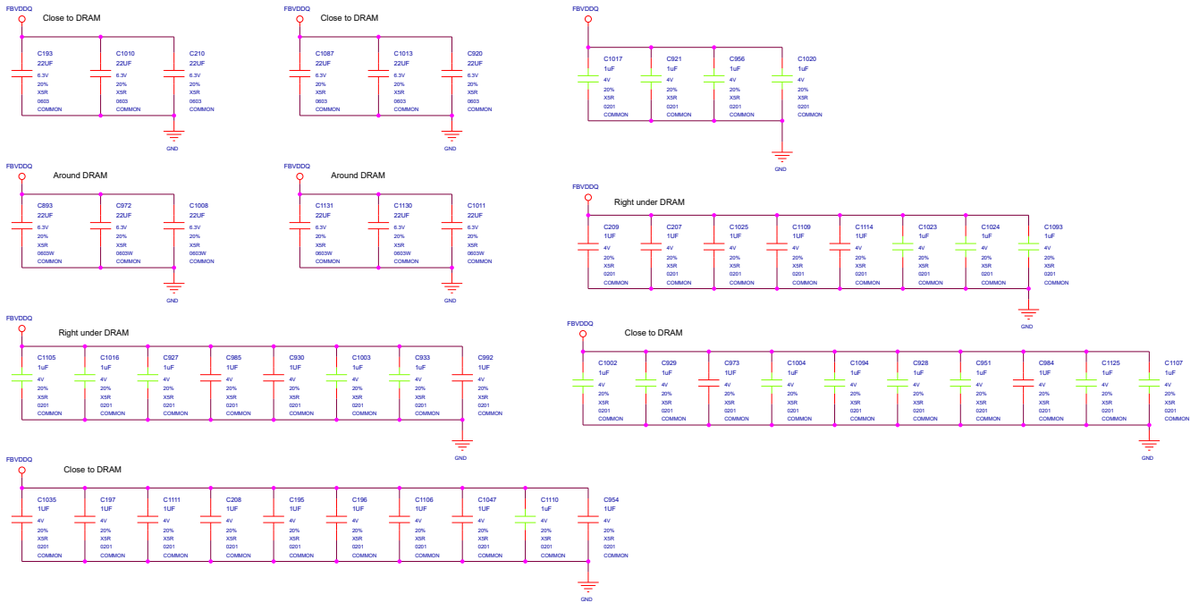


ASUS	Title :	MEM FBA	
OrgName	Engineer:	James_Huang	
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019	Sheet 5 of 39		

Page6: MEMORY: FBA Partition 63..32







Title :	MEM FBA 2		
OrgName		Engineer:	James_Huang
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019		Sheet 6 of 39	

Page7: MEMORY: FBB Partition 31..0

M9D
MT51J256M32HF-80B
BGA170_MIRR
COMMON
MIRRORED
x32 x16

M9A
MT51J256M32HF-80B
BGA170_MIRR
COMMON
MIRRORED
x32 x16

M9B
MT51J256M32HF-80B
BGA170_MIRR
COMMON

M9C
MT51J256M32HF-80B
BGA170_MIRR
COMMON
Mirrored
add 1k to VDD

V10
A10
A5

R315 40.2 1 % 0402 COMMON
R316 40.2 1 % 0402 COMMON
C271 0.01UF 16V 10% X7R 0402 COMMON
R314 RES 549 OHM 1/16W (0402) 1%
R312 RES 931 OHM 1/16W (0402) 1%
R313 1.33K 1 % 0402 COMMON
C270 820PF 50V 10% X7R 0402 COMMON
R317 121 0402 1 % COMMON

Q15 PJC138K SOT323_1G1D1S COMMON

Close to DRAM

C509 22UF 6.3V 20% X5R 0603 COMMON
C519 22UF 6.3V 20% X5R 0603 COMMON
C247 22UF 6.3V 20% X5R 0603 COMMON

C666 22UF 6.3V 20% X5R 0603 COMMON
C590 22UF 6.3V 20% X5R 0603 COMMON
C608 22UF 6.3V 20% X5R 0603 COMMON

C559 1uF 4V 20% X5R 0201 COMMON
C508 1uF 4V 20% X5R 0201 COMMON
C641 1uF 4V 20% X5R 0201 COMMON
C635 1uF 4V 20% X5R 0201 COMMON

Around DRAM

C1053 22uF 6.3V 20% X5R 0603W COMMON
C1121 22UF 6.3V 20% X5R 0603W COMMON
C696 22UF 6.3V 20% X5R 0603W COMMON

C564 22UF 6.3V 20% X5R 0603W COMMON
C577 22UF 6.3V 20% X5R 0603W COMMON
C645 22UF 6.3V 20% X5R 0603W COMMON

Right under DRAM

C262 1UF 4V 20% X5R 0201 COMMON
C251 1UF 4V 20% X5R 0201 COMMON
C623 1UF 4V 20% X5R 0201 COMMON
C619 1UF 4V 20% X5R 0201 COMMON
C557 1uF 4V 20% X5R 0201 COMMON
C599 1UF 4V 20% X5R 0201 COMMON
C625 1UF 4V 20% X5R 0201 COMMON
C679 1UF 4V 20% X5R 0201 COMMON

Right under DRAM

C561 1uF 4V 20% X5R 0201 COMMON
C658 1uF 4V 20% X5R 0201 COMMON
C567 1UF 4V 20% X5R 0201 COMMON
C669 1uF 4V 20% X5R 0201 COMMON
C576 1UF 4V 20% X5R 0201 COMMON
C587 1UF 4V 20% X5R 0201 COMMON
C618 1UF 4V 20% X5R 0201 COMMON
C513 1uF 4V 20% X5R 0201 COMMON

Close to DRAM

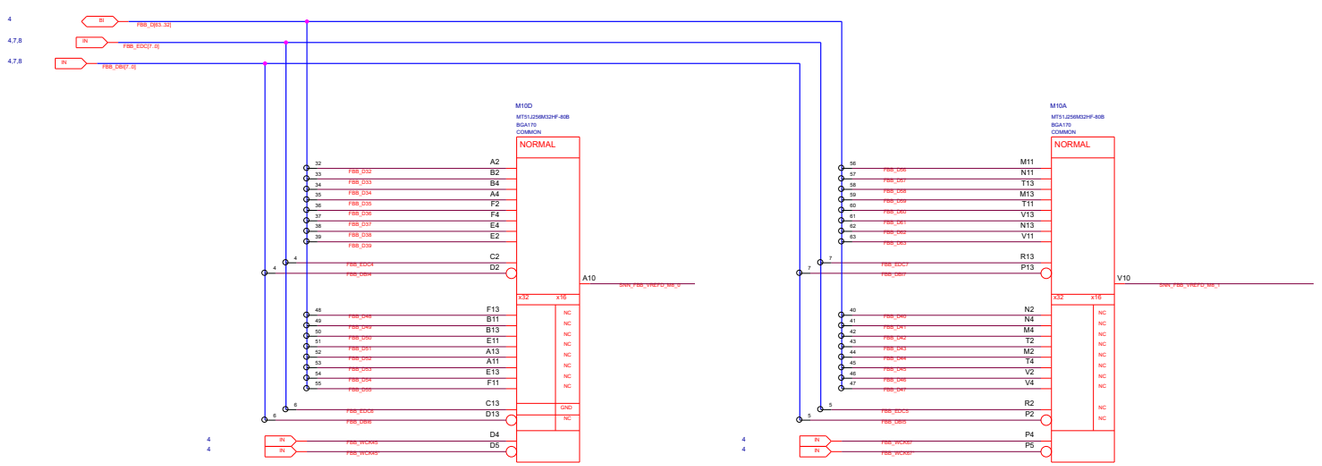
C546 1uF 4V 20% X5R 0201 COMMON
C652 1UF 4V 20% X5R 0201 COMMON
C523 1uF 4V 20% X5R 0201 COMMON
C610 1UF 4V 20% X5R 0201 COMMON
C547 1uF 4V 20% X5R 0201 COMMON
C515 1uF 4V 20% X5R 0201 COMMON
C529 1uF 4V 20% X5R 0201 COMMON
C657 1uF 4V 20% X5R 0201 COMMON
C543 1uF 4V 20% X5R 0201 COMMON
C672 1uF 4V 20% X5R 0201 COMMON

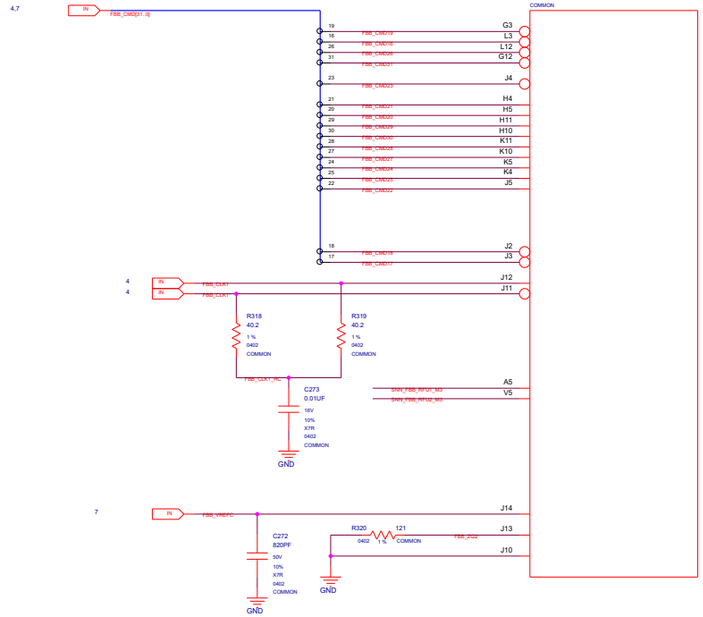
Close to DRAM

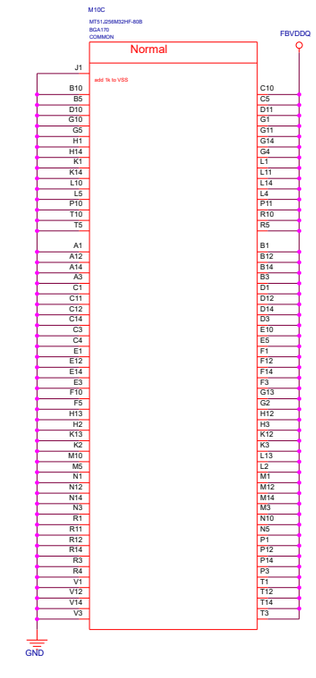
C255 1UF 4V 20% X5R 0201 COMMON
C244 1UF 4V 20% X5R 0201 COMMON
C258 1UF 4V 20% X5R 0201 COMMON
C588 1UF 4V 20% X5R 0201 COMMON
C241 1UF 4V 20% X5R 0201 COMMON
C536 1uF 4V 20% X5R 0201 COMMON
C664 1uF 4V 20% X5R 0201 COMMON
C676 1uF 4V 20% X5R 0201 COMMON
C634 1uF 4V 20% X5R 0201 COMMON
C642 1uF 4V 20% X5R 0201 COMMON

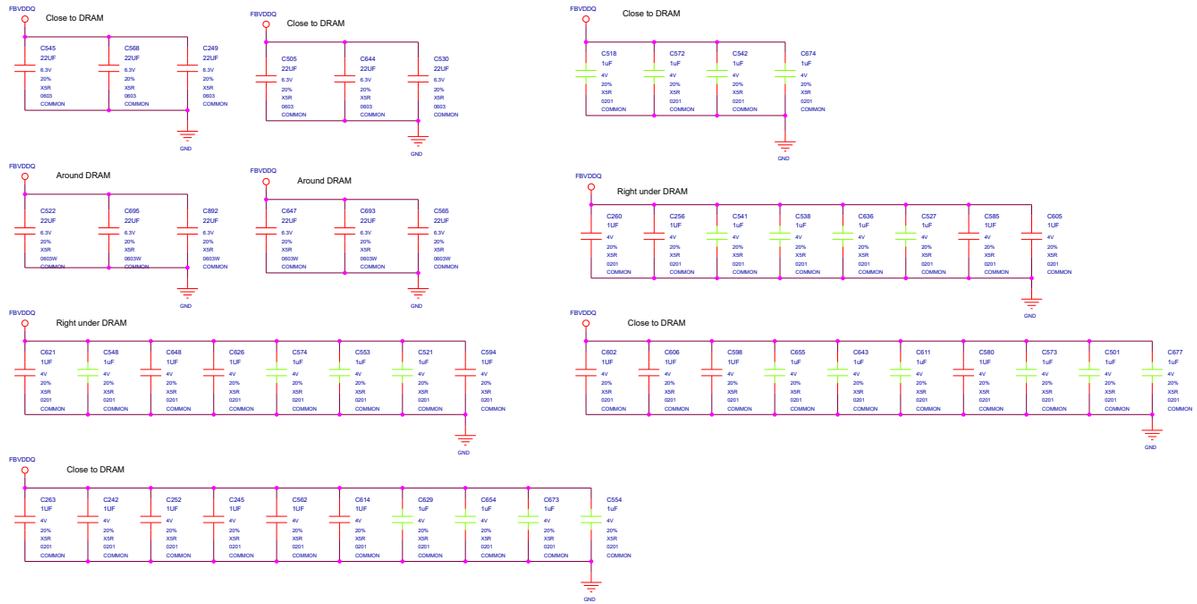
Title :	MEM FBB
Engineer:	James_Huang
OrgName	
Size	Custom
Project Name	CG165PI
Rev	1.00
Date:	Monday, July 01, 2019
Sheet	7 of 39

Page8: MEMORY: FBB Partition 63..32









Title :	MEM FBB2
OrgName	
Engineer:	James_Huang
Size	Custom
Project Name	CG165PI
Rev	1.00
Date:	Monday, July 01, 2019
Sheet	8 of 39

Page10: MEMORY: GPU Partition C/D

G1D
TU104-400-A1
BGA3228
COMMON

4/22 FBC

10,11 FBC_DB[63..0]

0	FBC_D0	C6
1	FBC_D1	D6
2	FBC_D2	A6
3	FBC_D3	B6
4	FBC_D4	B4
5	FBC_D5	A4
6	FBC_D6	B3
7	FBC_D7	C4
8	FBC_D8	D9
9	FBC_D9	C9
10	FBC_D10	E9
11	FBC_D11	B9
12	FBC_D12	B8
13	FBC_D13	A8
14	FBC_D14	F6
15	FBC_D15	E6
16	FBC_D16	F18
17	FBC_D17	G18
18	FBC_D18	E18
19	FBC_D19	H18
20	FBC_D20	D15
21	FBC_D21	E15
22	FBC_D22	G17
23	FBC_D23	H17
24	FBC_D24	J15
25	FBC_D25	H15
26	FBC_D26	E14
27	FBC_D27	F14
28	FBC_D28	H11
29	FBC_D29	G11
30	FBC_D30	F11
31	FBC_D31	E11
32	FBC_D32	J29
33	FBC_D33	F30
34	FBC_D34	H29
35	FBC_D35	G30
36	FBC_D36	B30
37	FBC_D37	A30
38	FBC_D38	H30
39	FBC_D39	C30
40	FBC_D40	D27
41	FBC_D41	J26
42	FBC_D42	F27
43	FBC_D43	G27
44	FBC_D44	C27
45	FBC_D45	B27
46	FBC_D46	A27
47	FBC_D47	G29
48	FBC_D48	H20
49	FBC_D49	D18
50	FBC_D50	G20
51	FBC_D51	E20
52	FBC_D52	F23
53	FBC_D53	E21
54	FBC_D54	D21
55	FBC_D55	E23
56	FBC_D56	G24
57	FBC_D57	H26
58	FBC_D58	F24
59	FBC_D59	G26
60	FBC_D60	F26
61	FBC_D61	D26
62	FBC_D62	B26
63	FBC_D63	C26

10,11 FBC_DBI[7..0]

0	FBC_DBI0	A5
1	FBC_DBI1	C8
2	FBC_DBI2	J18
3	FBC_DBI3	F12
4	FBC_DBI4	D29
5	FBC_DBI5	E27
6	FBC_DBI6	F20
7	FBC_DBI7	E26

10,11 FBC_EDC[7..0]

0	FBC_EDC0	D5
1	FBC_EDC1	D8
2	FBC_EDC2	E17
3	FBC_EDC3	E12
4	FBC_EDC4	E30
5	FBC_EDC5	B29
6	FBC_EDC6	G21
7	FBC_EDC7	E24

Y24 Y25 Y26 Y27 Y28 Y29 Y30 Y31

GND

FBC_CMD[31..0] 10,11

0	FBC_CMD0	C11
1	FBC_CMD1	B11
2	FBC_CMD2	A11
3	FBC_CMD3	D11
4	FBC_CMD4	A12
5	FBC_CMD5	B12
6	FBC_CMD6	C12
7	FBC_CMD7	C14
8	FBC_CMD8	B14
9	FBC_CMD9	A14
10	FBC_CMD10	D14
11	FBC_CMD11	A15
12	FBC_CMD12	B15
13	FBC_CMD13	C15
14	FBC_CMD14	C17
15	FBC_CMD15	B17
16	FBC_CMD16	B24
17	FBC_CMD17	A24
18	FBC_CMD18	D23
19	FBC_CMD19	A23
20	FBC_CMD20	B23
21	FBC_CMD21	C23
22	FBC_CMD22	C21
23	FBC_CMD23	B21
24	FBC_CMD24	A21
25	FBC_CMD25	D20
26	FBC_CMD26	A20
27	FBC_CMD27	B20
28	FBC_CMD28	C20
29	FBC_CMD29	C18
30	FBC_CMD30	B18
31	FBC_CMD31	A18
	SHN_FBC_CMD32	A17
	SHN_FBC_CMD33	D17
	SHN_FBC_DEBUG2	A9
	SHN_FBC_DEBUG1	C24

J14 SHN_FBC_DBG_RFU1
J23 SHN_FBC_DBG_RFU2

G15	FBC_CKN0	OUT 10
F15	FBC_CKP0	OUT 10
H21	FBC_CKN1	OUT 11
J21	FBC_CKP1	OUT 11

F8	FBC_WCK01	OUT 10
G8	FBC_WCK01*	OUT 10
G9	SHN_FBC_WCKSEL1	
F9	SHN_FBC_WCKSEL1*	
H12	FBC_WCK23	OUT 10
G12	FBC_WCK23*	OUT 10
G14	SHN_FBC_WCKSEL2	
H14	SHN_FBC_WCKSEL2*	
J27	FBC_WCK45	OUT 11
H27	FBC_WCK45*	OUT 11
E29	SHN_FBC_WCKSEL3	
F29	SHN_FBC_WCKSEL3*	
G23	FBC_WCK67	OUT 11
H23	FBC_WCK67*	OUT 11
H24	SHN_FBC_WCKSEL4	
J24	SHN_FBC_WCKSEL4*	

L17 TYE_FB_PLL 4,9

C1000 1UF 6.3V 20% X5R 0201 COMMON

GND

GDDR5 CMD Mapping

CMD	32..63
CMD0	
CMD1	
CMD2	
CMD3	
CMD4	
CMD5	
CMD6	
CMD7	
CMD8	
CMD9	
CMD10	
CMD11	
CMD12	
CMD13	
CMD14	
CMD15	
CMD16	CAS*
CMD17	CKE*
CMD18	RST*
CMD19	RAS*
CMD20	A1_A3
CMD21	A0_A10
CMD22	A12_RFU
CMD23	ABI*
CMD24	A6_A11
CMD25	A7_A8
CMD26	WE*
CMD27	A5_BA1
CMD28	A4_BA2
CMD29	A2_BA0
CMD30	A3_BA3
CMD31	CS*

F8VDDQ

R514 10K 5 % 0402 COMMON
R503 10K 5 % 0402 COMMON
R311 10K 5 % 0402 COMMON
R306 10K 5 % 0402 COMMON

FBC_CMD1 FBC_CMD17
FBC_CMD2 FBC_CMD18

GND

G1E
TU104-400-A1
BGA3228
COMMON

5/22 FBD

12,13 FBD_DB[63..0]

0	FBD_D0	AK8
1	FBD_D1	AK4
2	FBD_D2	AK2
3	FBD_D3	AK3
4	FBD_D4	AK5
5	FBD_D5	AK6
6	FBD_D6	AK9
7	FBD_D7	AK7
8	FBD_D8	AG4
9	FBD_D9	AF9
10	FBD_D10	AG6
11	FBD_D11	AG7
12	FBD_D12	AJ4
13	FBD_D13	AJ5
14	FBD_D14	AJ6
15	FBD_D15	AG5
16	FBD_D16	Y6
17	FBD_D17	Y5
18	FBD_D18	V5
19	FBD_D19	Y4
20	FBD_D20	AA6
21	FBD_D21	AA5
22	FBD_D22	AC5
23	FBD_D23	AC4
24	FBD_D24	AD7
25	FBD_D25	AC6
26	FBD_D26	AF6
27	FBD_D27	AD6
28	FBD_D28	AF7
29	FBD_D29	AF8
30	FBD_D30	AF2
31	FBD_D31	AF3
32	FBD_D32	F4
33	FBD_D33	E1
34	FBD_D34	F3
35	FBD_D35	F5
36	FBD_D36	D2
37	FBD_D37	D1
38	FBD_D38	C3
39	FBD_D39	C2
40	FBD_D40	J5
41	FBD_D41	J4
42	FBD_D42	L8
43	FBD_D43	J2
44	FBD_D44	F1
45	FBD_D45	F2
46	FBD_D46	H4
47	FBD_D47	H5
48	FBD_D48	V7
49	FBD_D49	V8
50	FBD_D50	V6
51	FBD_D51	V9
52	FBD_D52	U4
53	FBD_D53	R5
54	FBD_D54	R6
55	FBD_D55	U8
56	FBD_D56	P6
57	FBD_D57	R9
58	FBD_D58	P4
59	FBD_D59	P5
60	FBD_D60	L7
61	FBD_D61	L6
62	FBD_D62	L4
63	FBD_D63	L5

12,13 FBD_DBI[7..0]

0	FBD_DBI0	AJ1
1	FBD_DBI1	AG1
2	FBD_DBI2	AA7
3	FBD_DBI3	AD5
4	FBD_DBI4	D3
5	FBD_DBI5	H3
6	FBD_DBI6	U5
7	FBD_DBI7	M9

12,13 FBD_EDC[7..0]

0	FBD_EDC0	AJ3
1	FBD_EDC1	AG2
2	FBD_EDC2	AA9
3	FBD_EDC3	AF4
4	FBD_EDC4	E3
5	FBD_EDC5	H2
6	FBD_EDC6	U6
7	FBD_EDC7	M5

Y32 Y33 Y34 Y35 Y36 Y37 Y38 Y39

GND

FBD_CMD[31..0] 12,13

0	FBD_CMD0	AD2
1	FBD_CMD1	AD1
2	FBD_CMD2	AD4
3	FBD_CMD3	AC1
4	FBD_CMD4	AC2
5	FBD_CMD5	AC3
6	FBD_CMD6	AA3
7	FBD_CMD7	AA2
8	FBD_CMD8	AA1
9	FBD_CMD9	AA4
10	FBD_CMD10	Y1
11	FBD_CMD11	Y2
12	FBD_CMD12	Y3
13	FBD_CMD13	V3
14	FBD_CMD14	V2
15	FBD_CMD15	V1
16	FBD_CMD16	L3
17	FBD_CMD17	L2
18	FBD_CMD18	L1
19	FBD_CMD19	M4
20	FBD_CMD20	M1
21	FBD_CMD21	M2
22	FBD_CMD22	M3
23	FBD_CMD23	P3
24	FBD_CMD24	P2
25	FBD_CMD25	P1
26	FBD_CMD26	R4
27	FBD_CMD27	R1
28	FBD_CMD28	R2
29	FBD_CMD29	R3
30	FBD_CMD30	U3
31	FBD_CMD31	U2
	SHN_FBD_CMD32	V4
	SHN_FBD_CMD33	U1
	SHN_FBD_DEBUG2	AD3
	SHN_FBD_DEBUG1	J3

AC9 SHN_FBD_DBG_RFU1
P9 SHN_FBD_DBG_RFU2

Y8	FBD_CLK0	OUT 12
Y7	FBD_CLK0*	OUT 12
R8	FBD_CLK1	OUT 13
R7	FBD_CLK1*	OUT 13

AJ8	FBD_WCK01	OUT 12
AJ7	FBD_WCK01*	OUT 12
AG8	SHN_FBD_WCKSEL1	
AG9	SHN_FBD_WCKSEL1*	
AD8	FBD_WCK23	OUT 12
AD9	FBD_WCK23*	OUT 12
AC7	SHN_FBD_WCKSEL2	
AC8	SHN_FBD_WCKSEL2*	
J6	FBD_WCK45	OUT 13
J7	FBD_WCK45*	OUT 13
H7	SHN_FBD_WCKSEL3	
H6	SHN_FBD_WCKSEL3*	
P8	FBD_WCK67	OUT 13
P7	FBD_WCK67*	OUT 13
M7	SHN_FBD_WCKSEL4	
M8	SHN_FBD_WCKSEL4*	

V11 TYE_FB_PLL 4,9

C795 1UF 6.3V 20% X5R 0201 COMMON

GND

F8VDDQ

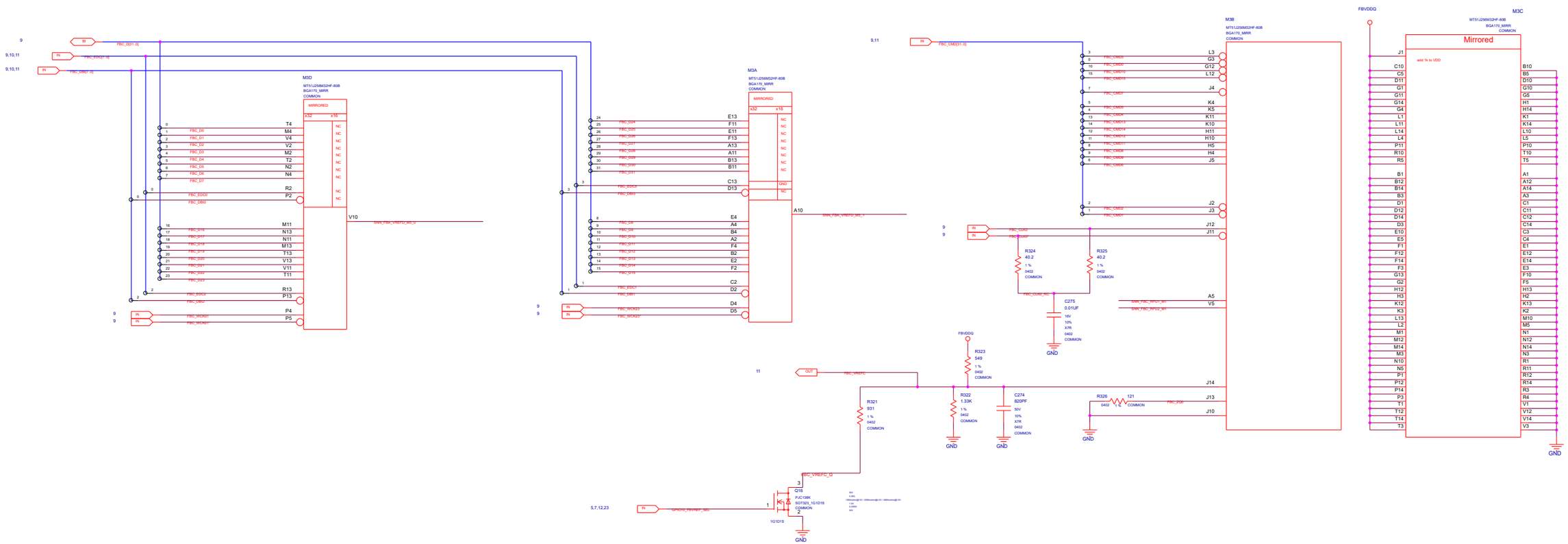
R531 10K 5 % 0402 COMMON
R517 10K 5 % 0402 COMMON
R296 10K 5 % 0402 COMMON
R294 10K 5 % 0402 COMMON

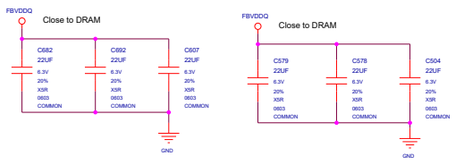
FBD_CMD1 FBD_CMD17
FBD_CMD2 FBD_CMD18

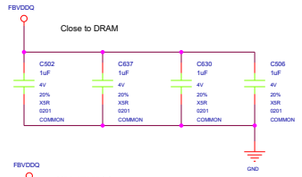
GND

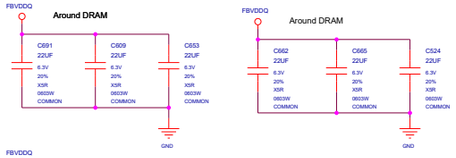
OrgName		Title :	MEM GPU FB
		Engineer:	James_Huang
Size	Project Name		Rev
Custom	CG165PI		1.00
Date:	Monday, July 01, 2019	Sheet 9	of 39

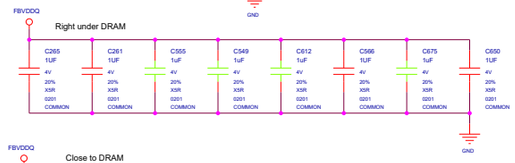
Page10: MEMORY: FBC Partition 31..0

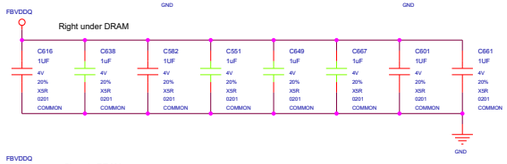


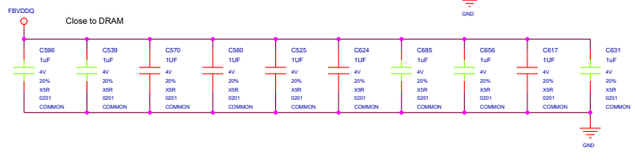


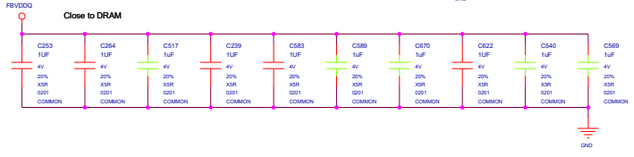






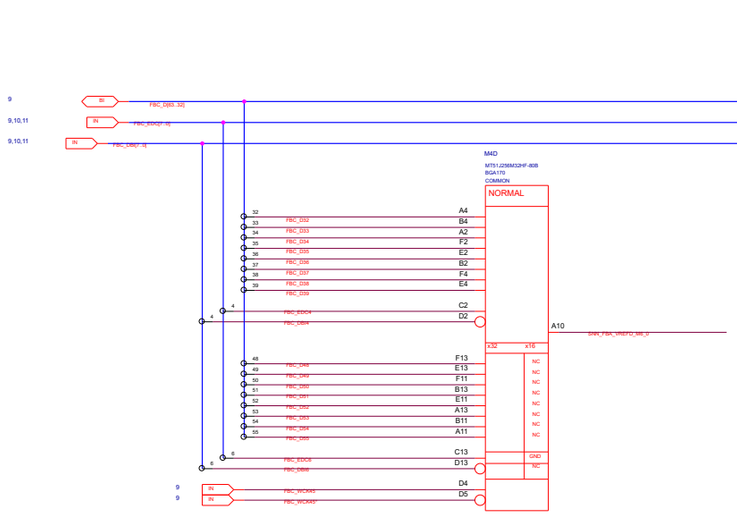


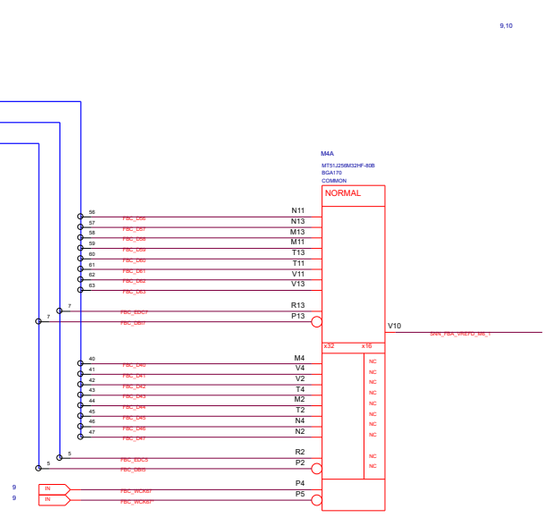


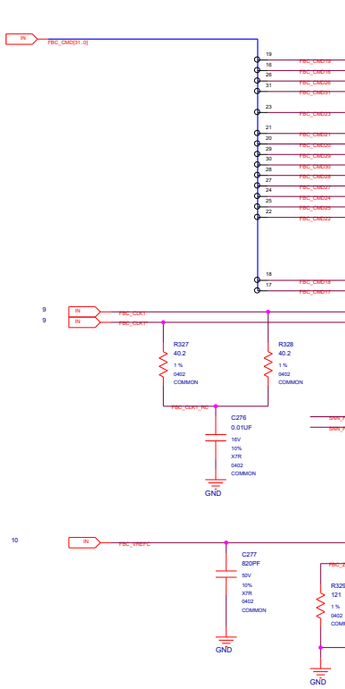


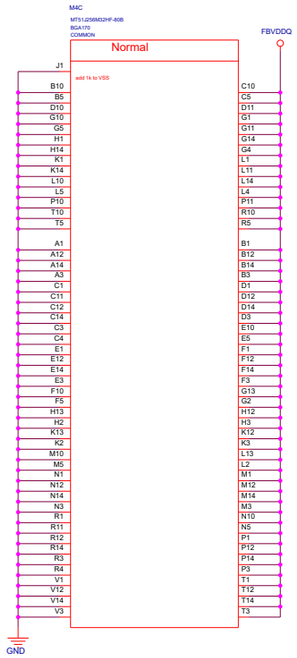
Title :	MEM FBC		
OrgName	Engineer:	James_Huang	
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019	Sheet 10 of 39		

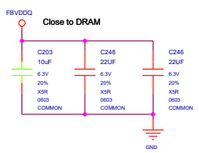
Page11: MEMORY: FBC Partition 63..32

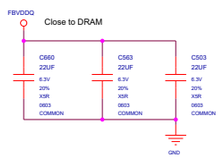


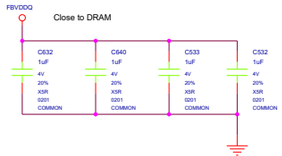


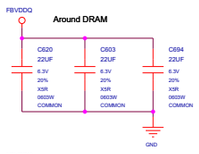


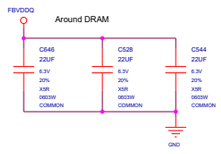


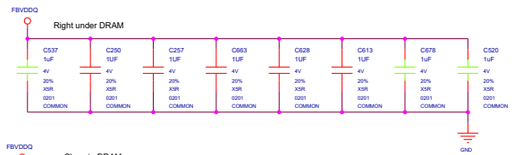


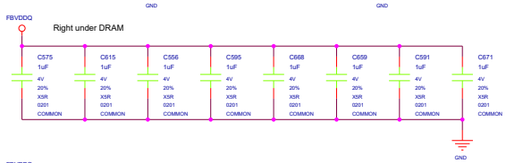


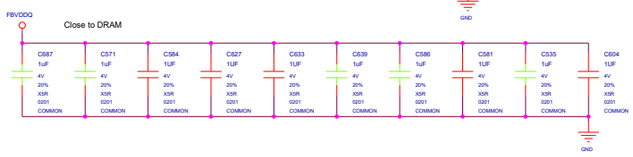


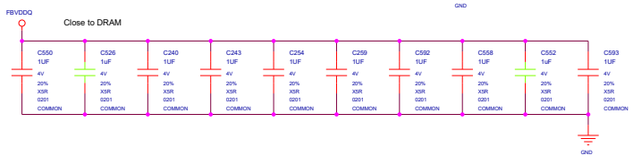






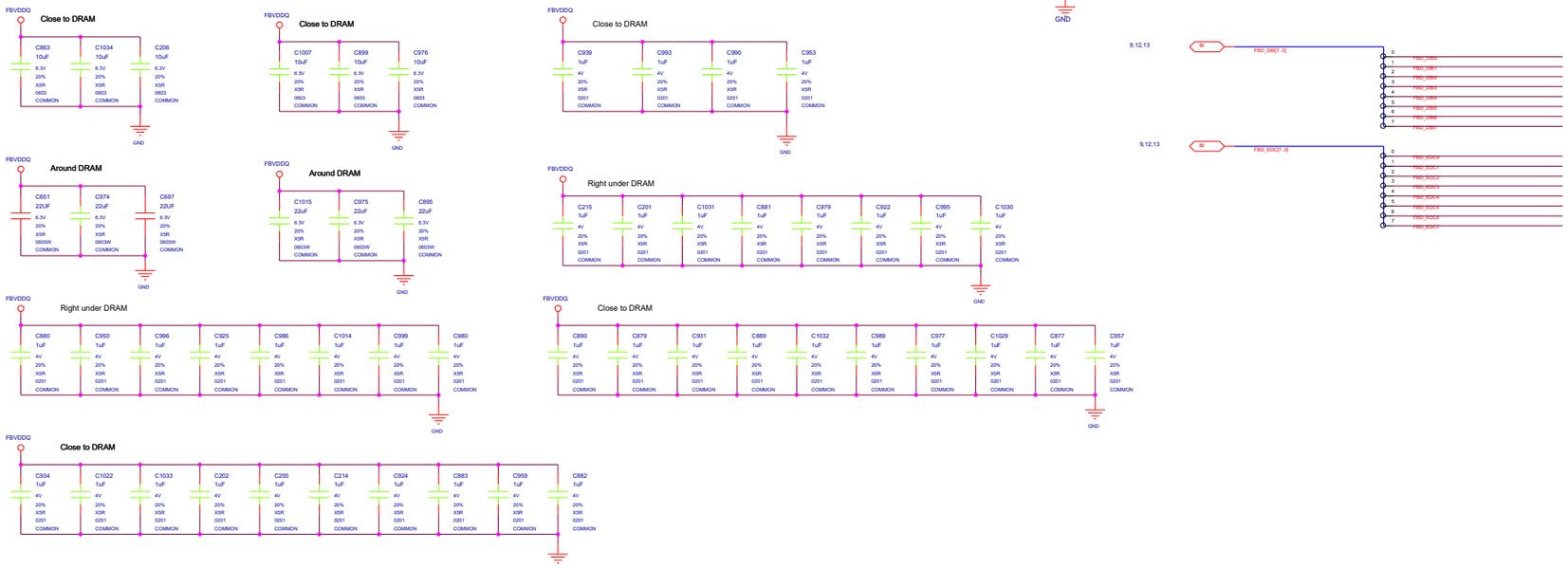






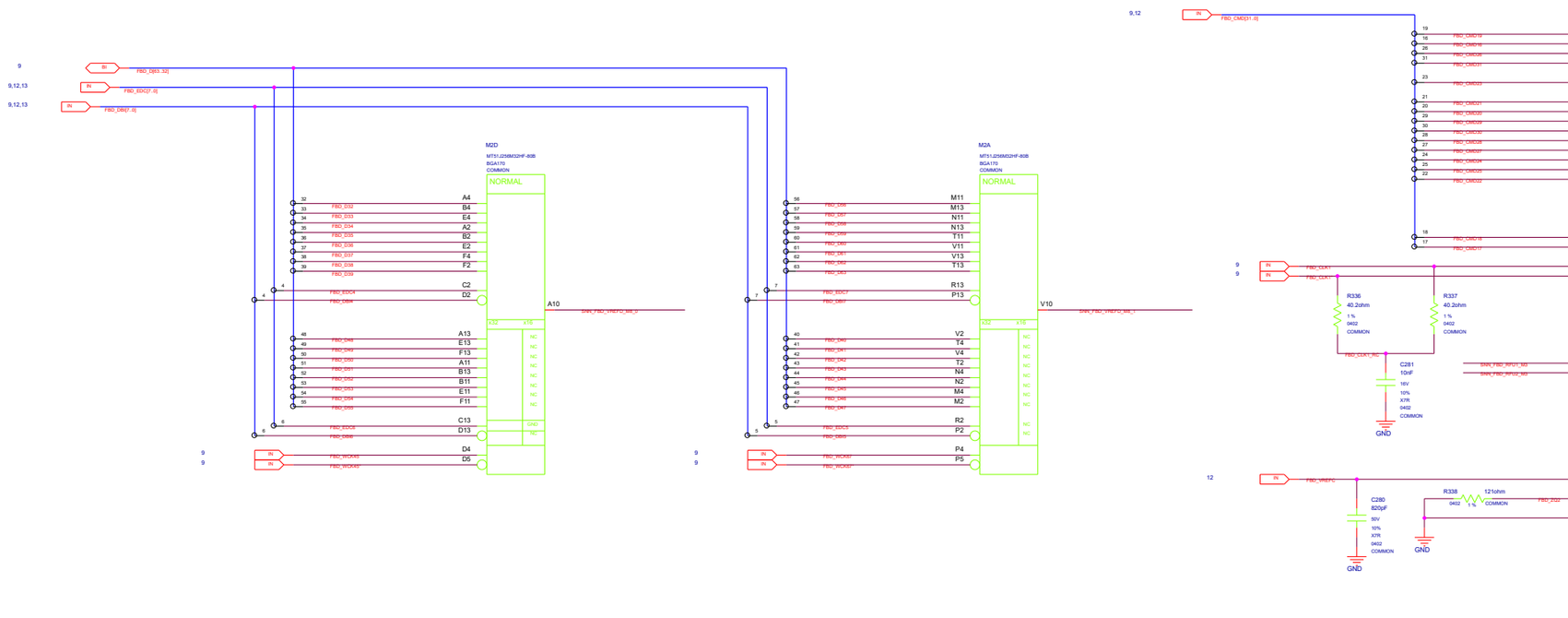
OrgName	Title : MEM FBC2		
	Engineer: James_Huang		
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019	Sheet 11 of 39		

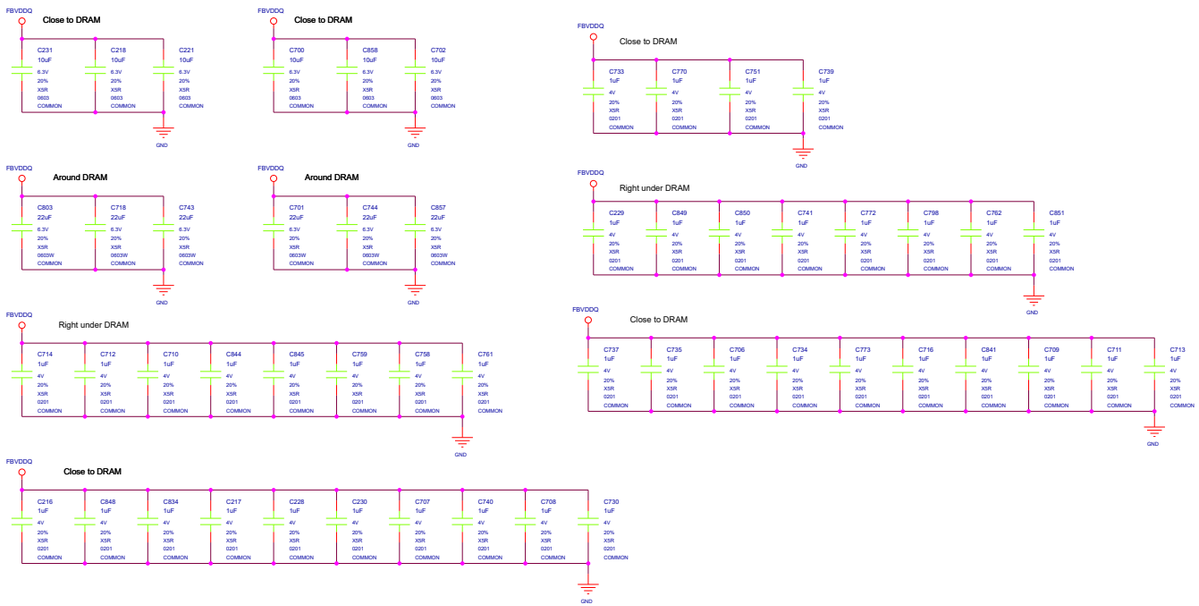
Page12: MEMORY: FBD Partition 31..0



Title :	MEM FBD
OrgName	Engineer: James_Huang
Size: Custom	Project Name: CG165PI
Rev:	1.00
Date: Monday, July 01, 2019	Sheet 12 of 39

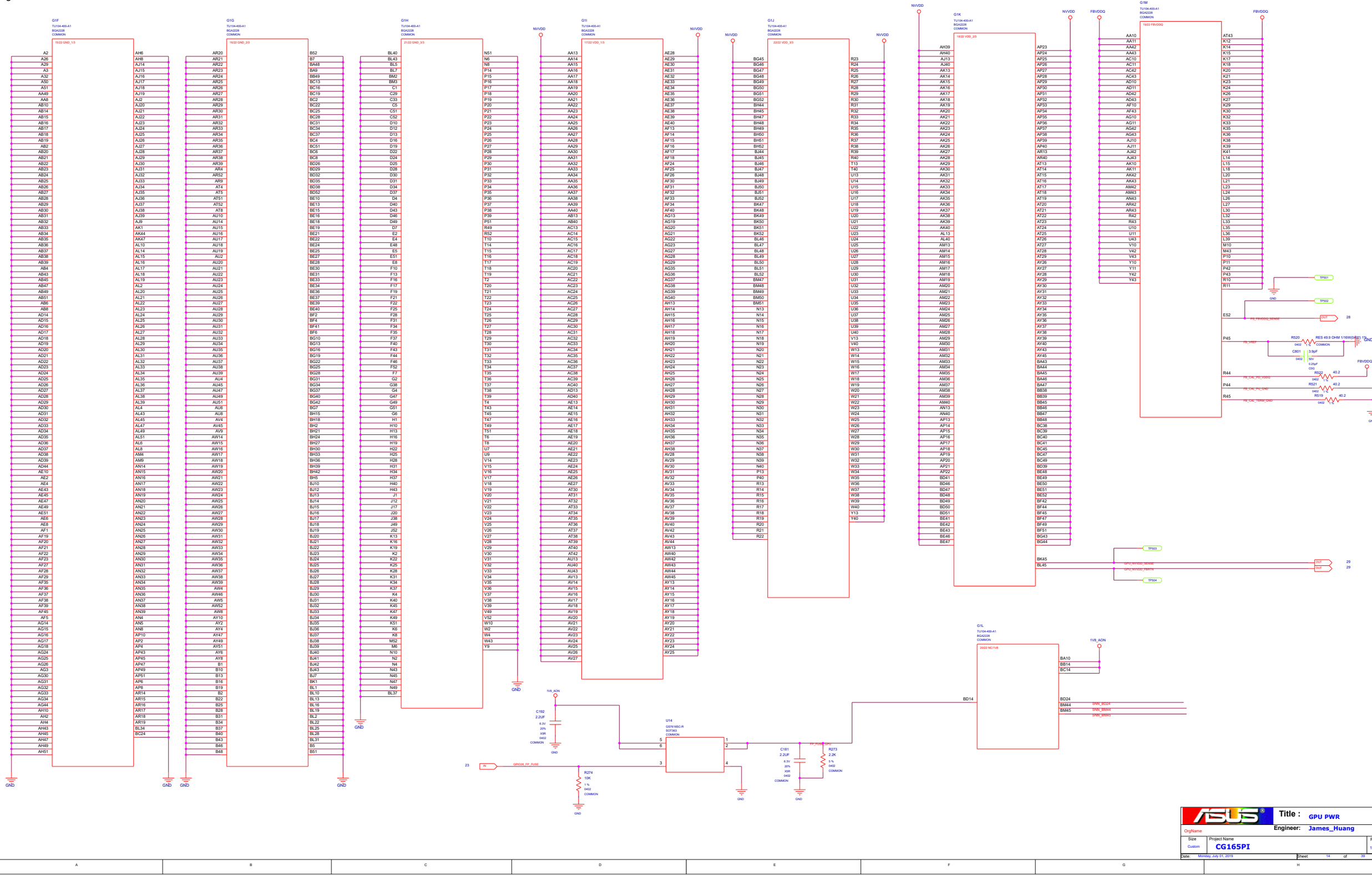
Page13: MEMORY: FBD Partition 63..32





OrgName	Title : MEM FBD		
	Engineer: James_Huang		
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019		Sheet 13 of 39	

Page15: GPU PWR and GND

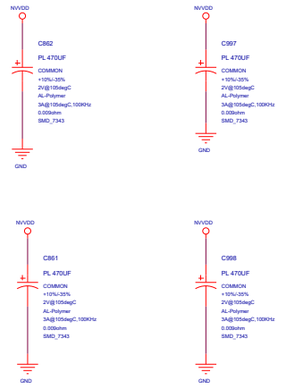


Title :	GPU PWR
Engineer:	James_Huang
OrgName	
Size	Custom
Project Name	CG165PI
Rev	1.00
Date:	Monday, July 01, 2019
Sheet	14 of 39

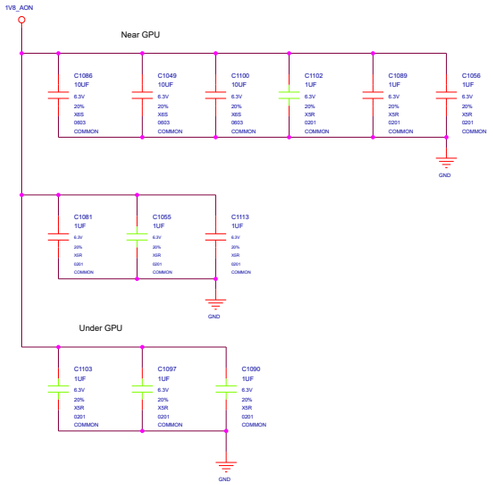
Page15: GPU Decoupling 1

FBVDDQ

NVVDD



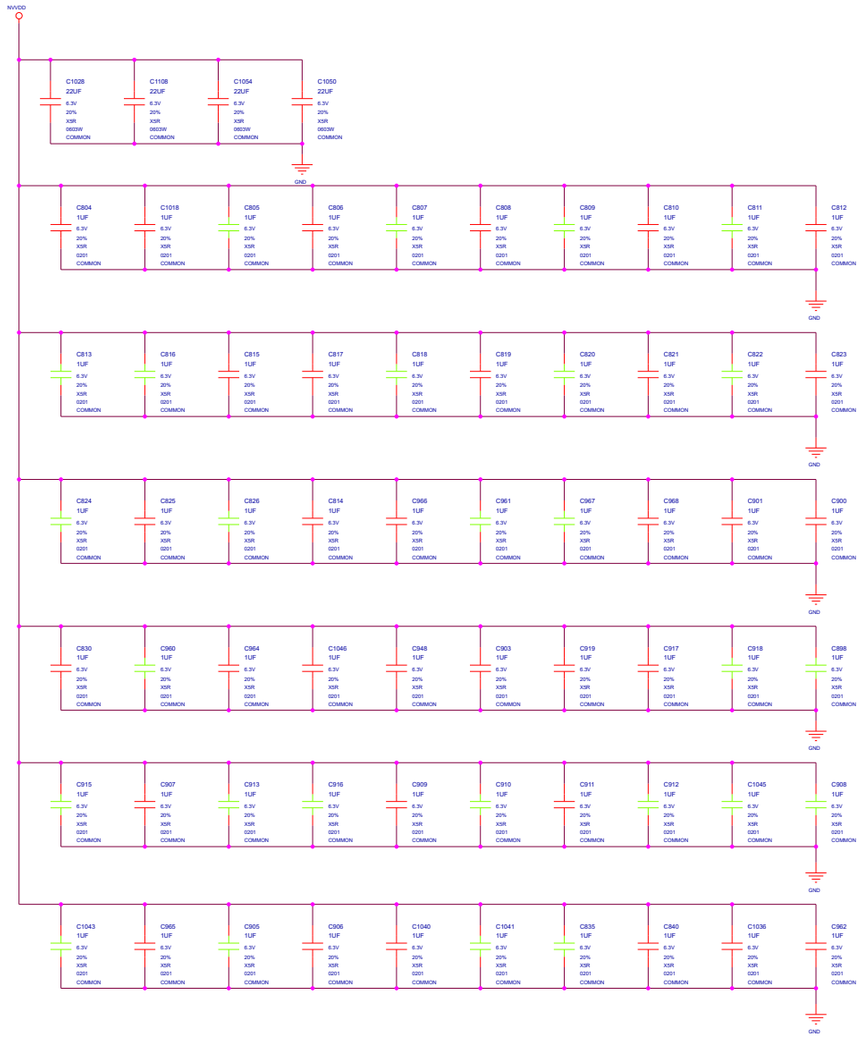
1V8_AON

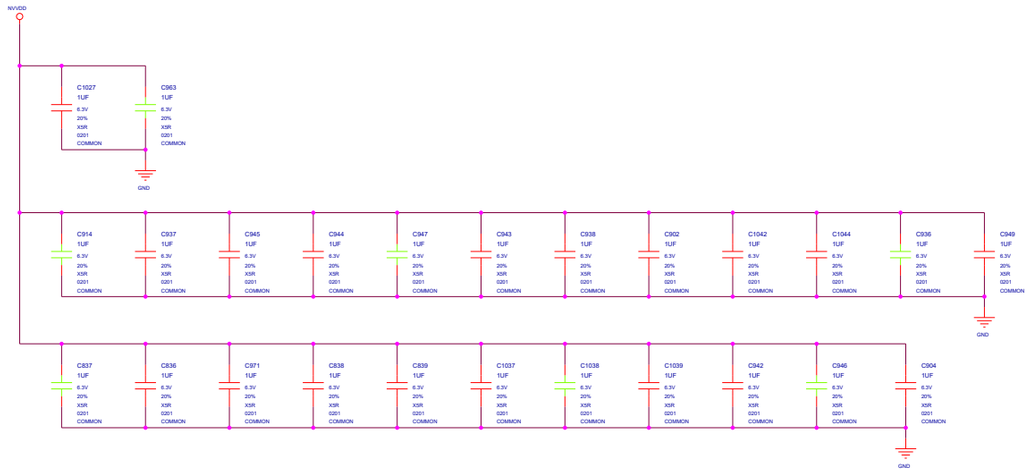


OrgName	Title : GPU Decoupling	
	Engineer: James_Huang	
Size: Custom	Project Name: CG165PI	Rev: 1.00
Date: Monday, July 01, 2019	Sheet 15 of 39	

Page16: GPU Decoupling 2

NVVDD





Title :	GPU Decoupling2
Engineer:	James_Huang
OrgName	
Size: Custom	Project Name: CG165PI
Rev:	1.00
Date:	Monday, July 01, 2019
Sheet	16 of 39

Page17: IFPAB DVI-D-DL

IFPAB DVI-D-DL CO-LAYOUT WITH 2x DP

G1N
TU104-400-A1
BGA2228
COMMON

compatible

7/22 IFPAB

DL-DVI | DVI/HDMI | DP

IFPAB

8x CAPS CO-LAYOUT

6x CAPS CO-LAYOUT

Under the GPU

Near the GPU

Under the GPU

PLACE CLOSE
TO CONNECTOR

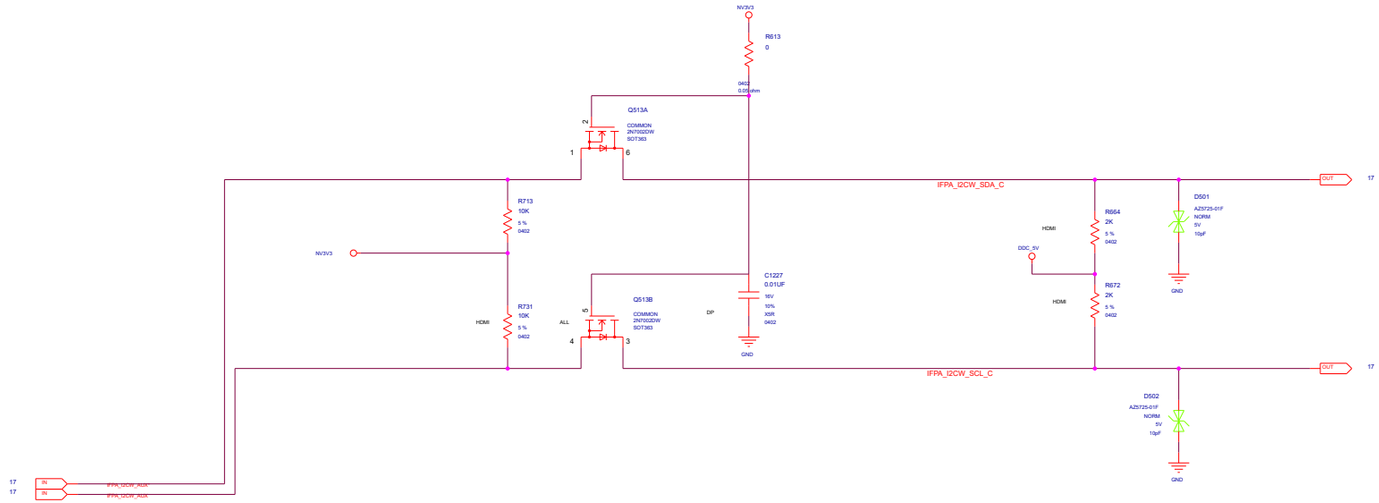
DDC_5V

C1205
MLCC 100PF/50V (0402) NP0 WOS
50V
5%
C0G
0402
COMMON

90 OHM EL5
90 OHM EL6
90 OHM EL7
90 OHM EL8
90 OHM EL9
90 OHM EL10
90 OHM EL11

J5
DVI-D CON 24P R/A F W/O/S DIP/S

Title : IFPAB DVI-DL
Engineer: James Huang
OrgName
Size: Custom
Project Name: CG165PI
Rev: 1.00
Date: Monday, July 01, 2019
Sheet 17 of 39

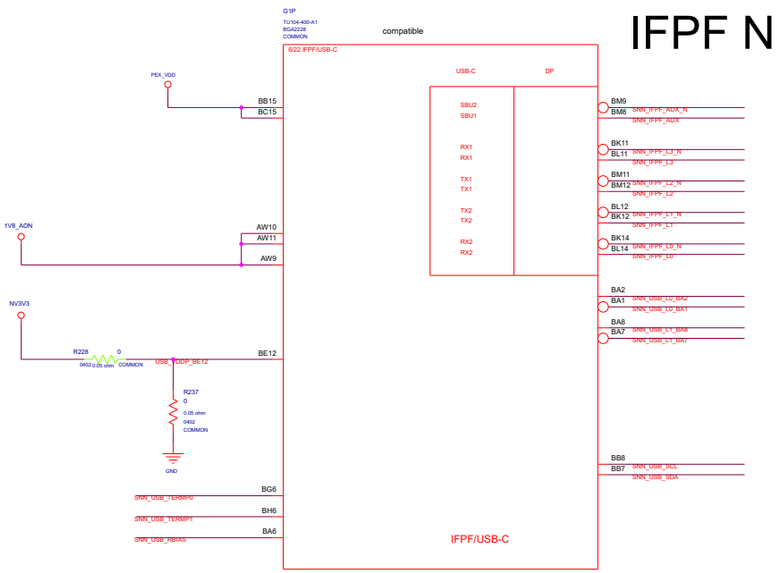


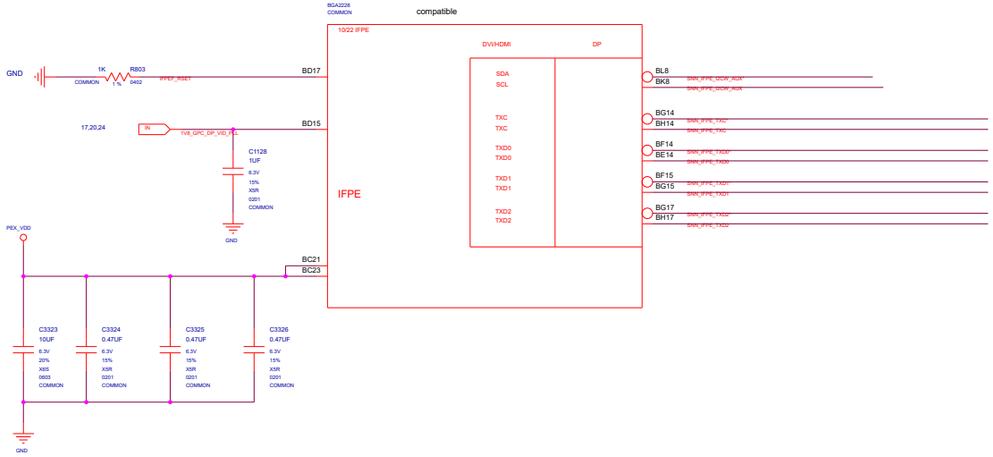
IFPA DP CO-LAYOUT WITH IFPAB DVI-D-DL

Title :	IO IFPA DP		
Engineer:	James_Huang		
OrgName			
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019	Sheet 18 of 39		

Page20: IFPE IFPF USB-C NC

IFPF NC

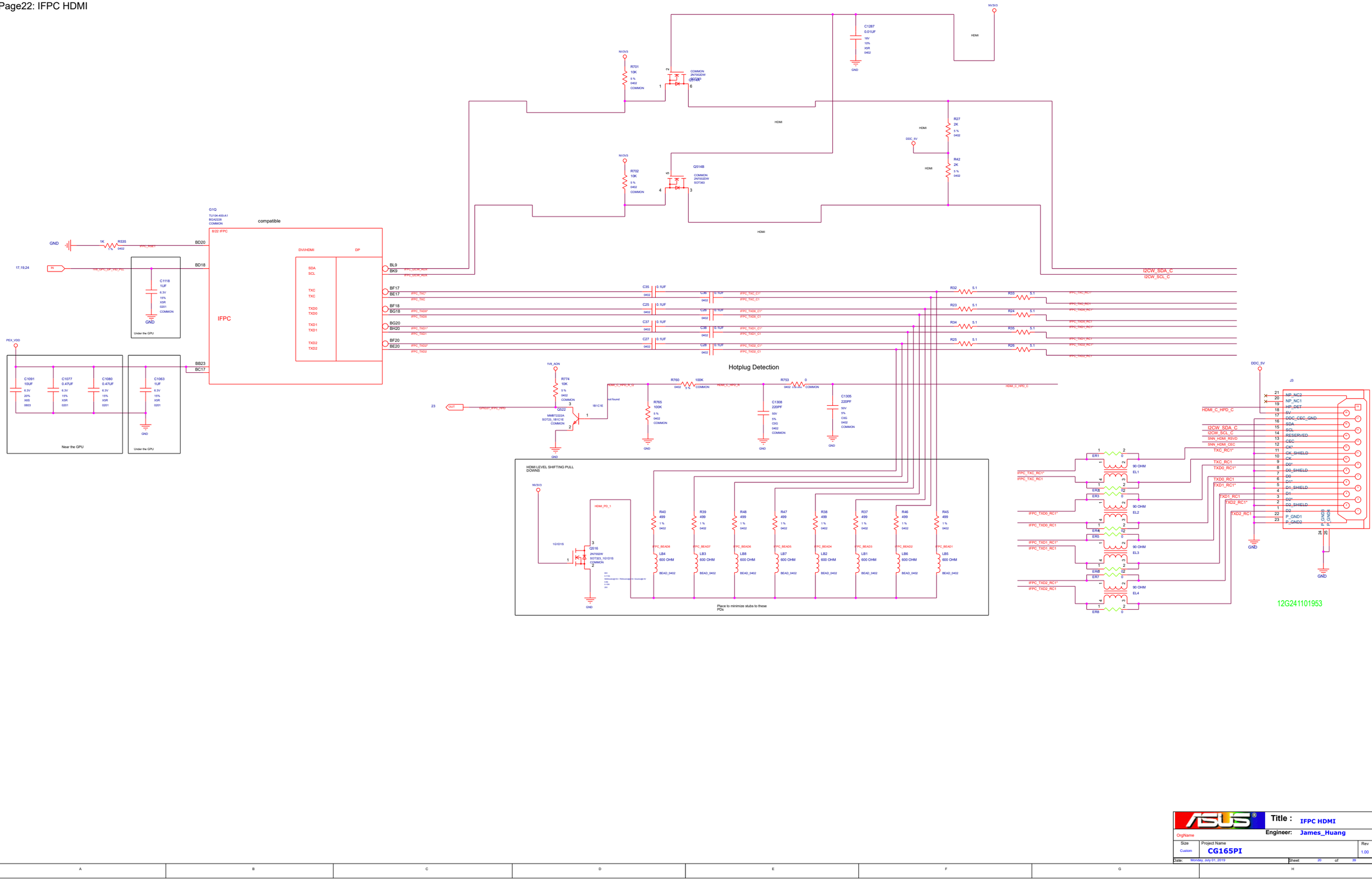




Title :	IFPE NC
Engineer:	James_Huang
OrgName	
Size	Custom
Project Name	CG165PI
Rev	1.00
Date:	Monday, July 01, 2019
Sheet	19 of 39

21-OCT-2018

Page22: IFPC HDMI

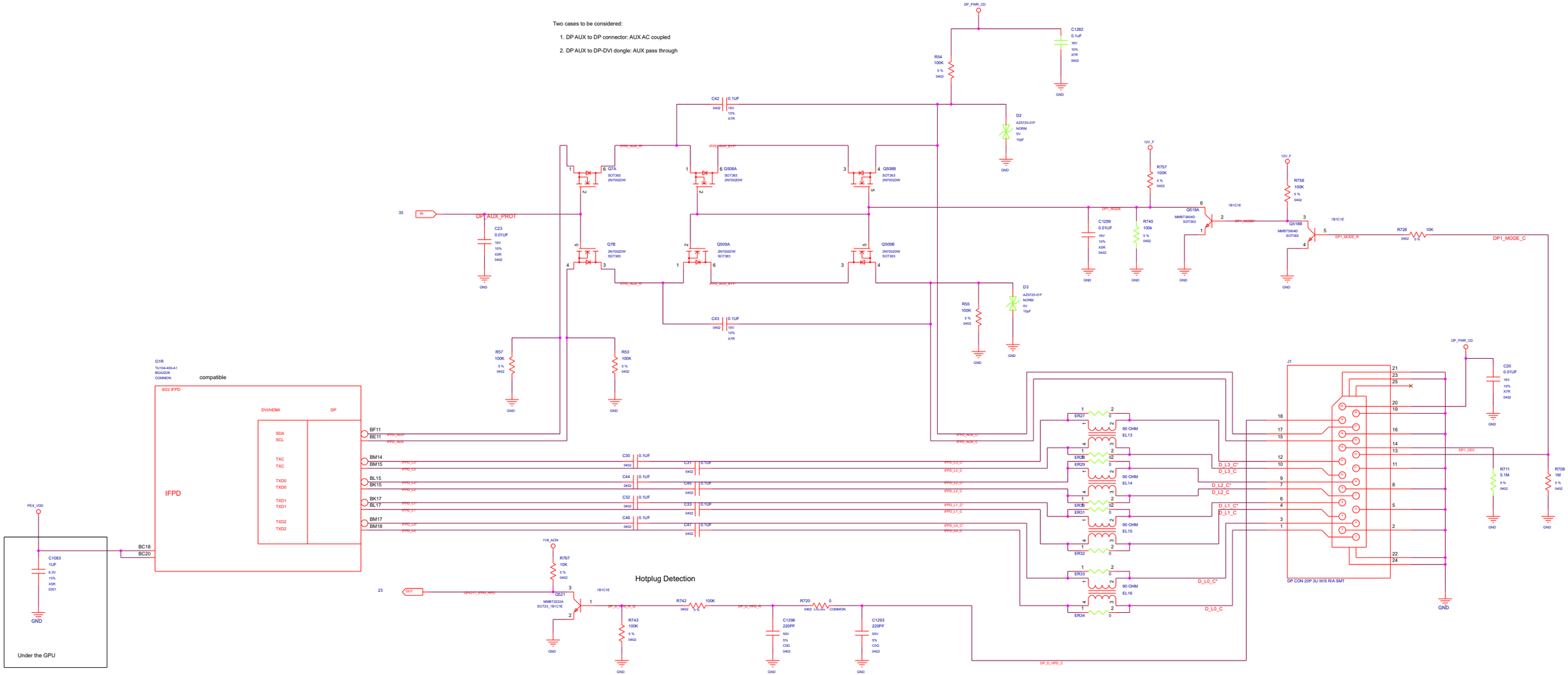


Title :	IFPC HDMI
Engineer:	James_Huang
OrgName	
Size	Custom
Project Name	CG165PI
Rev	1.00
Date:	Monday, July 01, 2019
Sheet	20 of 39

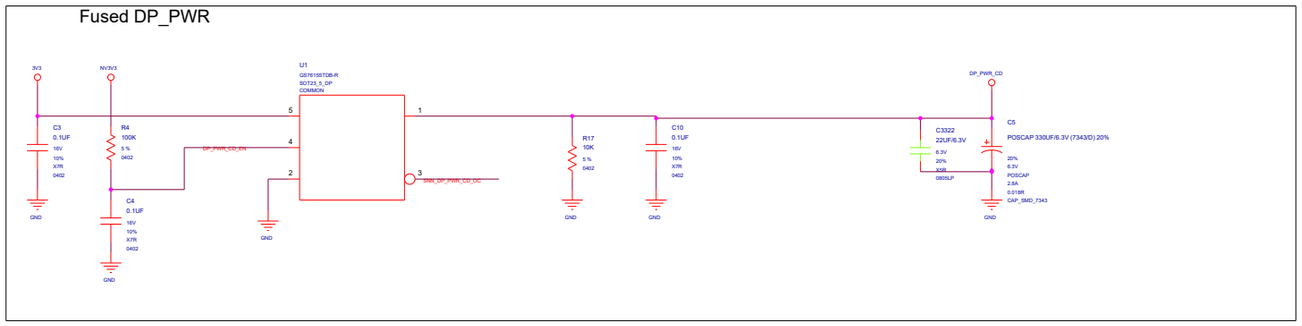
Page21: IFPD DP

Two cases to be considered:

1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through

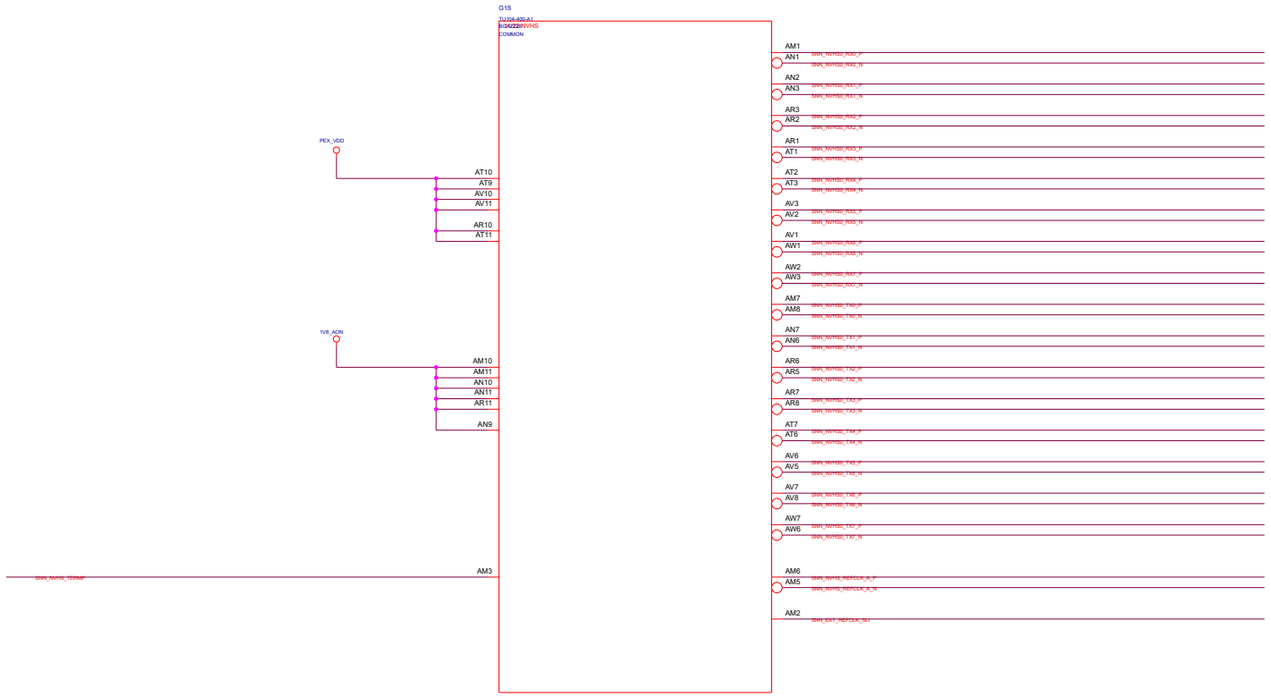


Fused DP_PWR



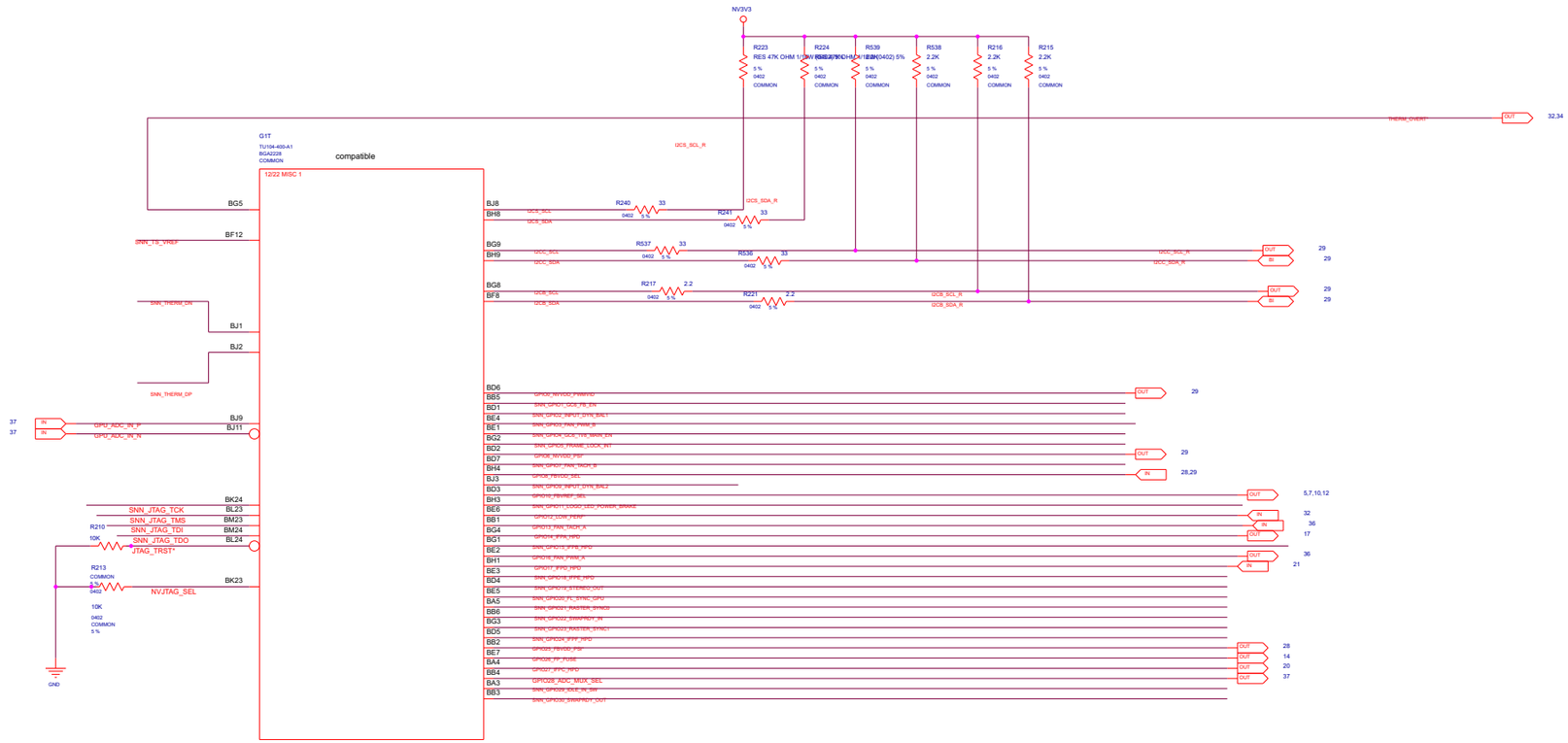
Title :	IFPD DP
Engineer:	James_Huang
OrgName	
Size: Custom	Project Name: CG165PI
Rev	1.00
Date: Monday, July 01, 2019	Sheet 21 of 39

Page22: NVHS Interface and Frame Lock



Title :	NVHS Interface
OrgName	Engineer: James_Huang
Size: Custom	Project Name: CG165PI
Rev:	1.00
Date: Monday, July 01, 2019	Sheet 22 of 39

Page23: MISC1: Fan, Thermal, JTAG, GPIO



OrgName	Title : MISC1		
	Engineer: James_Huang		
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019	Sheet 23 of 39		

Page26: MISC2: ROM, XTAL, Straps

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]
L	L	L	00000
L	L	H	00001
L	H	L	00010
L	H	H	00011
H	H	L	00110
H	H	H	00111
L	L	M	01000

RAMCFG[4:0]	DENSITY	WIDTH	VENDOR	DIE
00000	8Gb	256-bit	Samsung	C
00001	8Gb	256-bit	Micron	A之前 B
00010	8Gb	256-bit	Hynix	M
00011	8Gb	256-bit	Samsung	C
00100	8Gb	256-bit	Micron	A
00101	8Gb	256-bit	Hynix	M
00110	16Gb	256-bit	Samsung	M
00111				

ROM_SO	ROM_SI	ROM_SCLK	DUMMY[2:0],FS_OVERT	1:ENABLE 0:DISABLE	
L	L	L	XXX1	FS_OVERT ENABLE	DEFAULT
L	L	M	XXX0	FS_OVERT DISABLE	

STRAP5	STRAP4	STRAP3	SMB_ALT_ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE
M	H	H	1	1	1	1
M	H	L	1	1	1	0
M	L	H	1	1	0	1
M	L	L	1	1	0	0
L	H	M	1	0	1	1
L	M	H	1	0	1	0
L	M	L	1	0	0	1
L	L	M	1	0	0	0
H	H	H	0	1	1	1
H	H	L	0	1	1	0
H	L	H	0	1	0	1
H	L	L	0	1	0	0
L	H	H	0	0	1	1
L	H	L	0	0	1	0
L	L	H	0	0	0	1 DEFAULT
L	L	L	0	0	0	0

H=High :Tied to 1.8V

M=Middle:Tied to 0.9V

L=Low :Tied to 0V

1:SMB_ALT_ADDR ENABLE

0:SMB_ALT_ADDR DISABLE

1:DEVID_SEL REBRAND

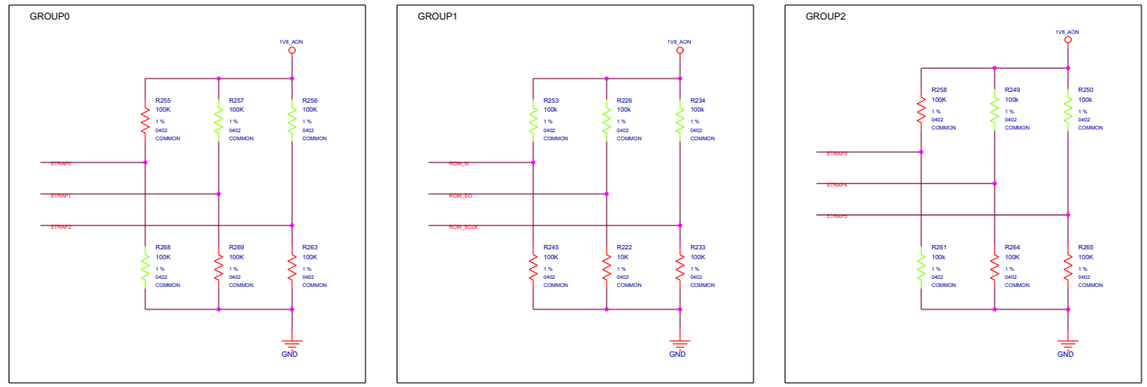
0:DEVID_SEL ORIGNAL

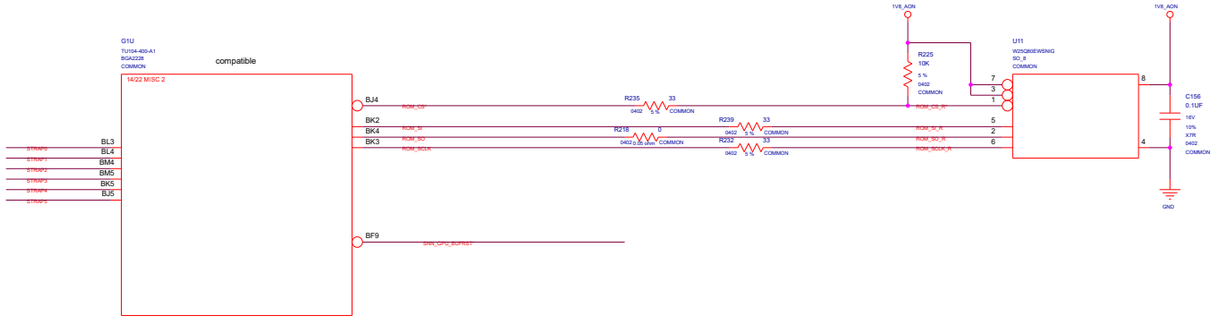
1:PCIE_CFG LOW POWER

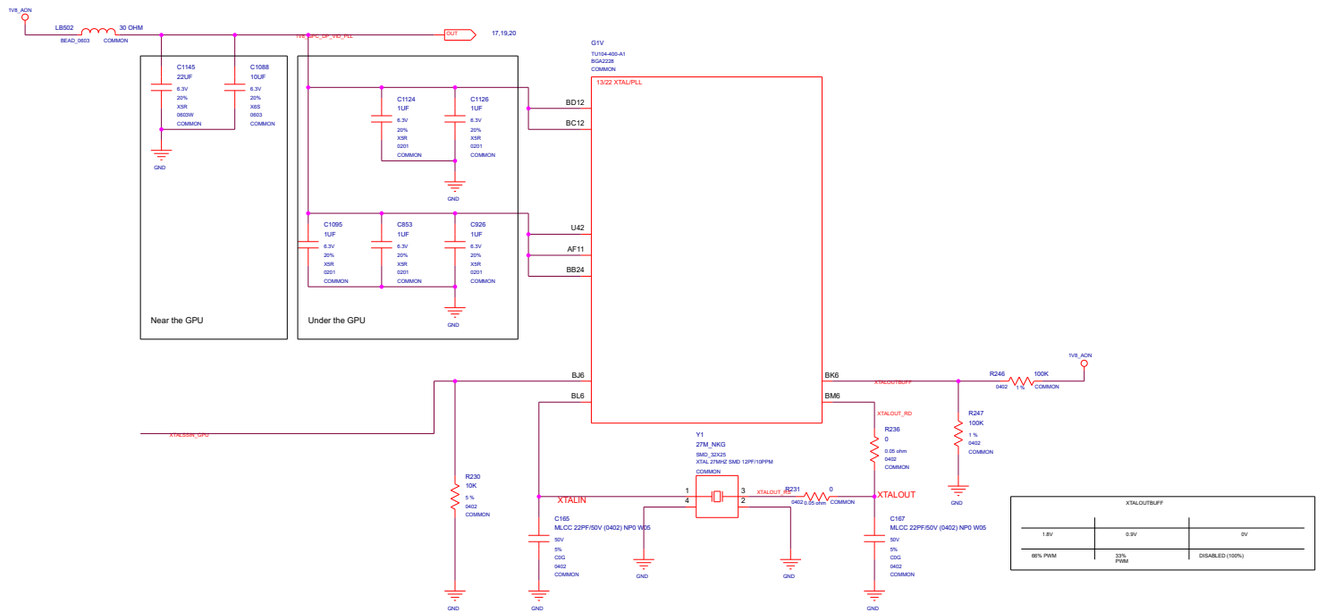
0:PCIE_CFG HIGH POWER

1:VGA_DEVICE ENABLE

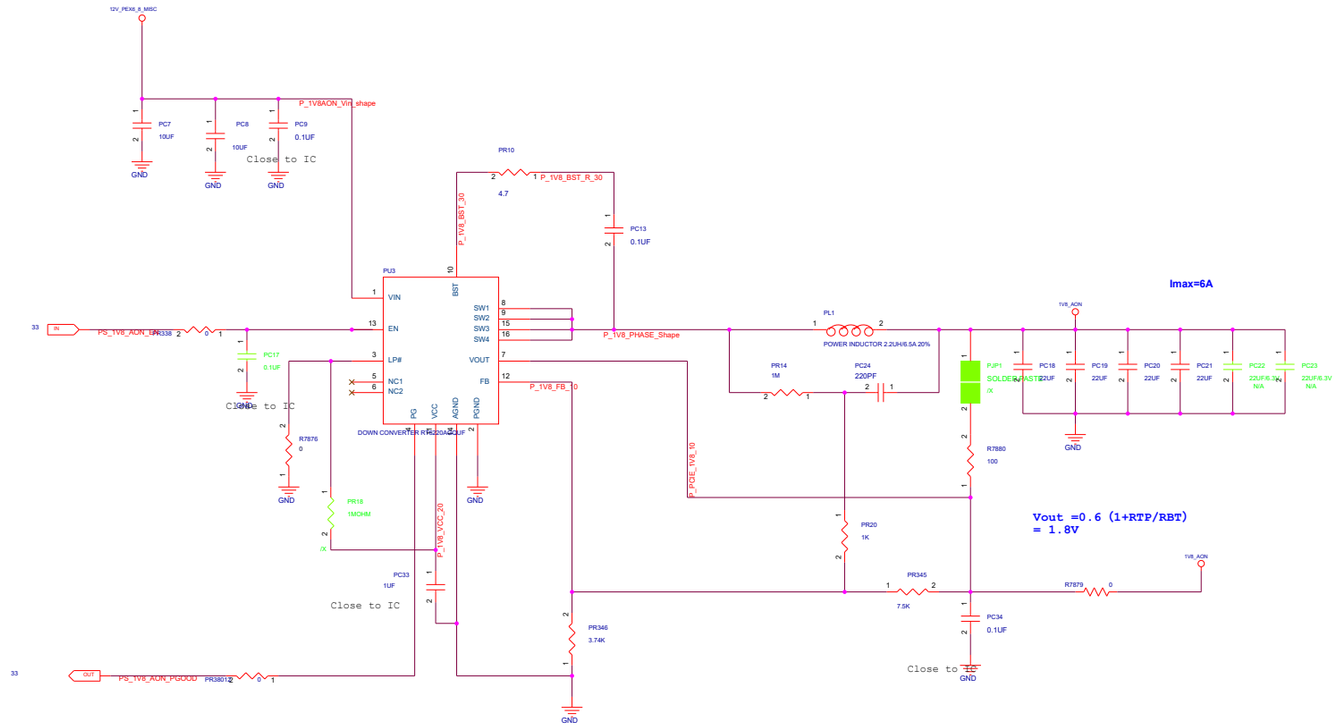
0:VGA_DEVICE DISABLE





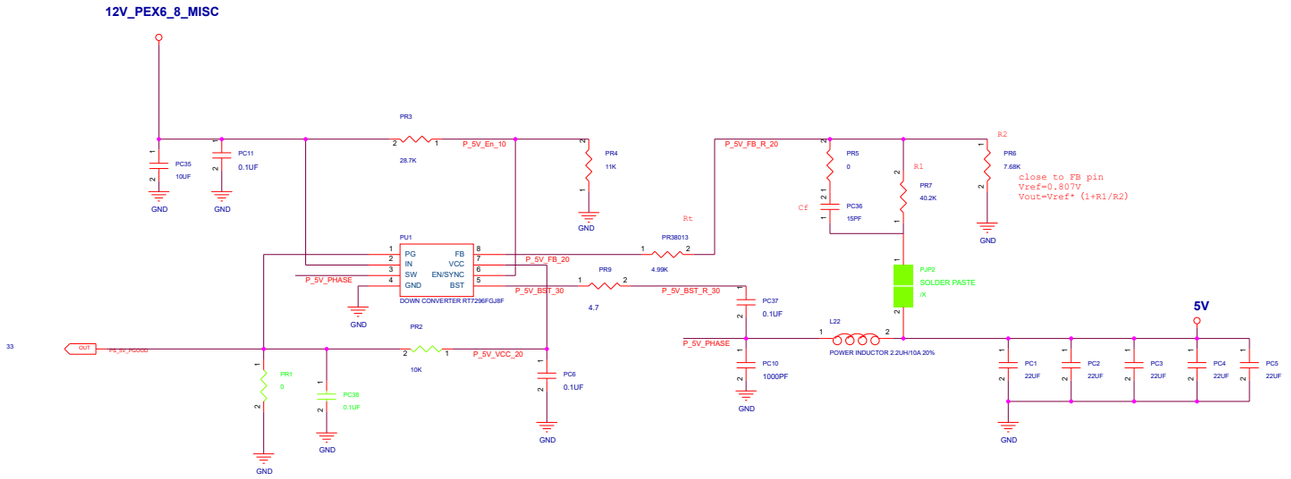


OrgName	Title : MISC2		
	Engineer: James_Huang		
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019		Sheet 24 of 39	



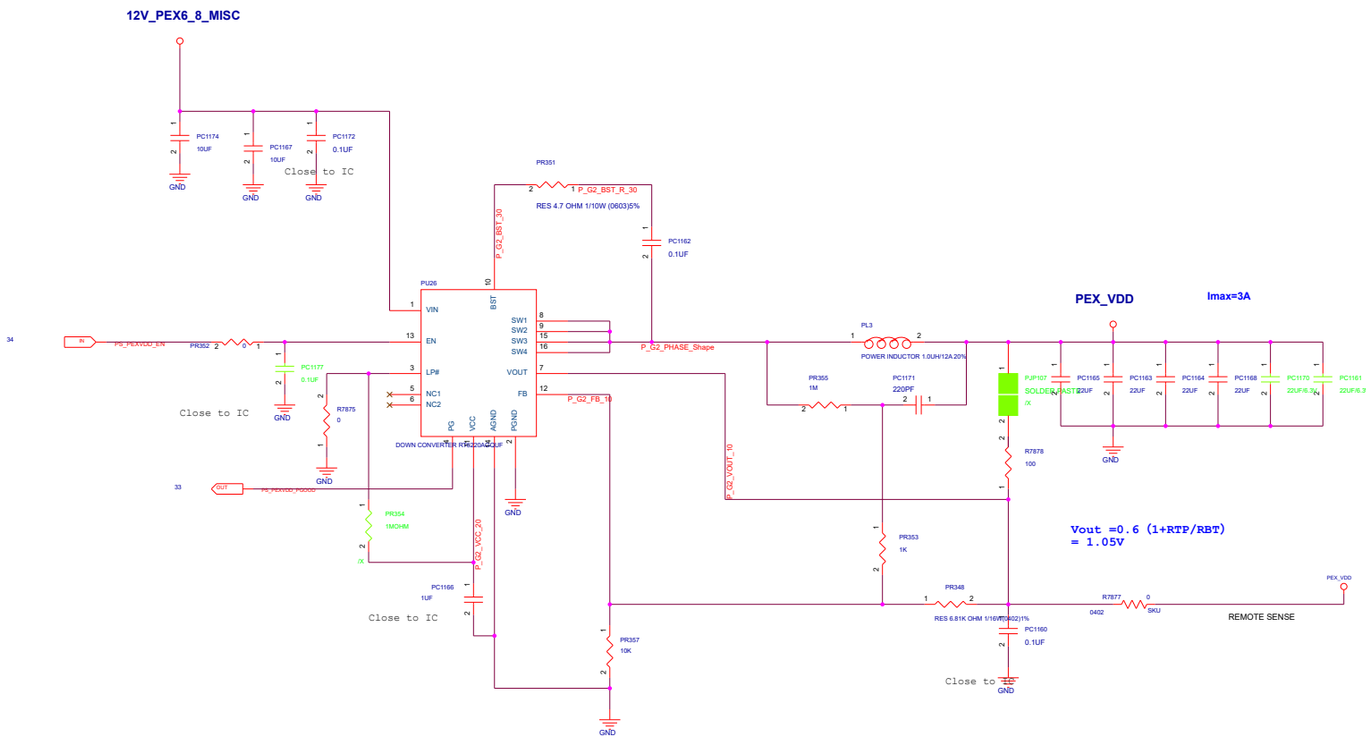
ASUS	Title :	1V8_AON	
OrgName	Engineer:	James_Huang	
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019	Sheet 25 of 39		

Page26: PS: 5V



OrgName	Title : 5V		
	Engineer: James_Huang		
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019	Sheet 26 of 39		

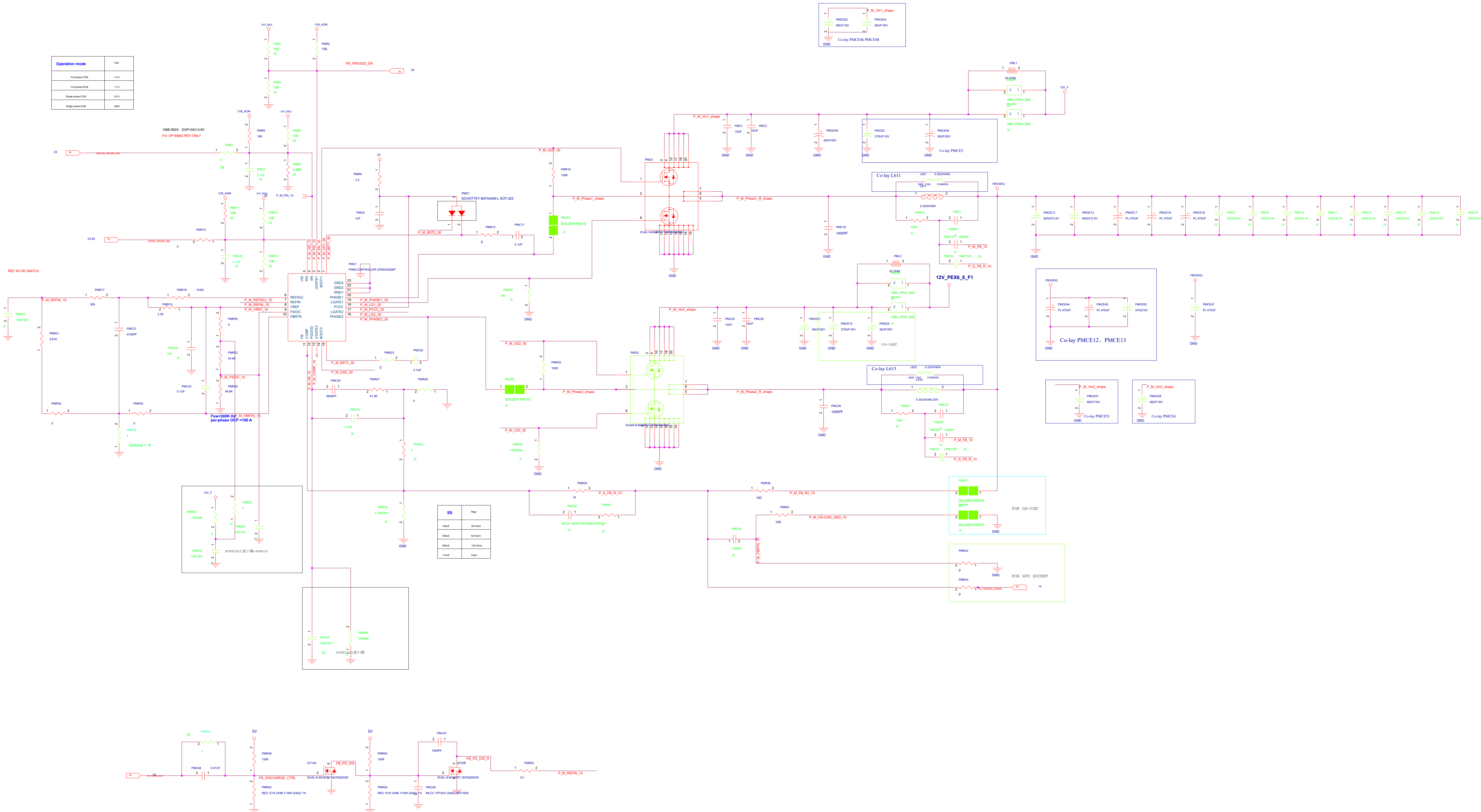
PEX Switcher



Title :	PS_PEX
Engineer:	James_Huang
OrgName	
Size	Custom
Project Name	CG165PI
Rev	1.00
Date:	Monday, July 01, 2019
Sheet	27 of 39

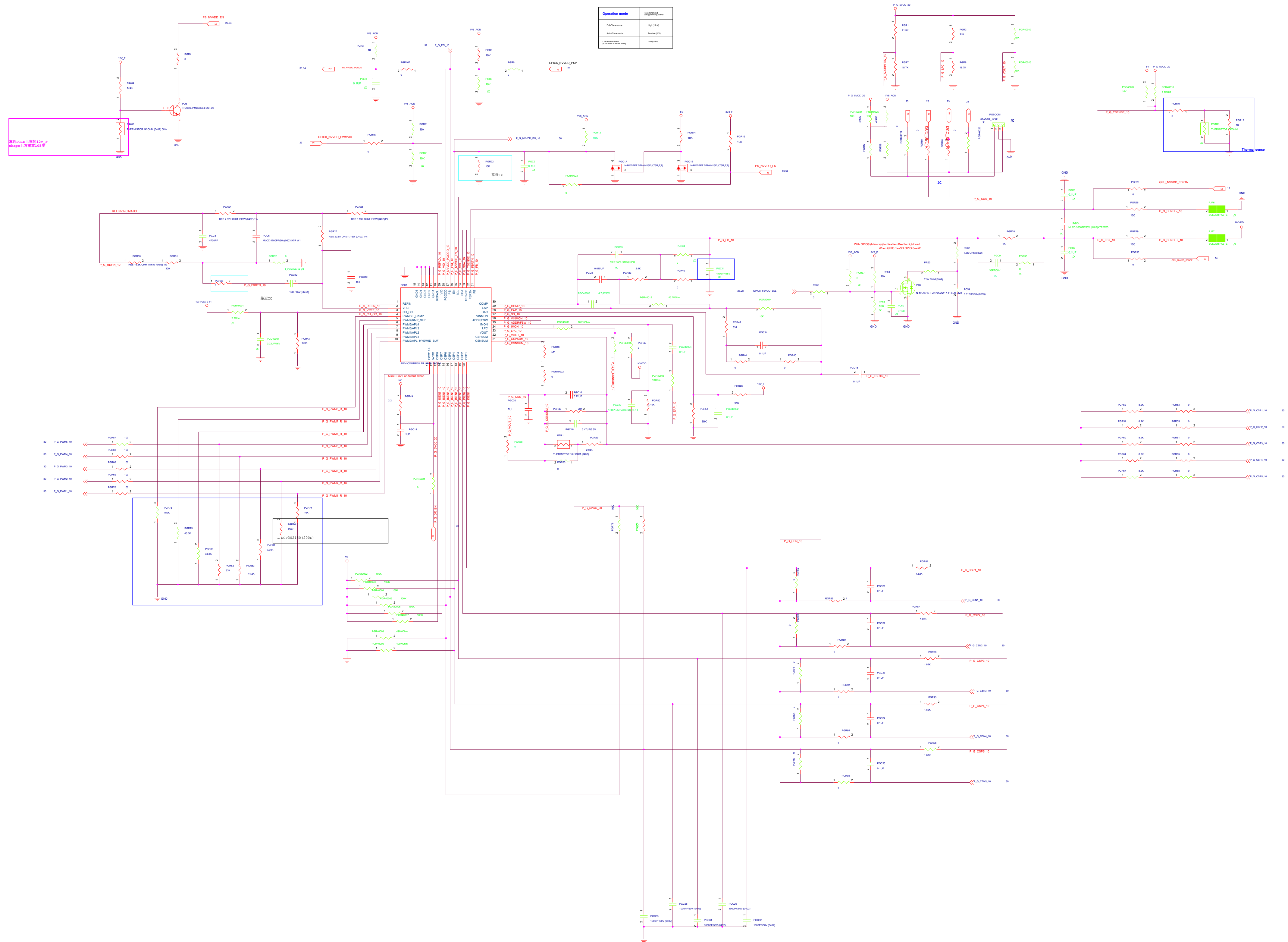
Page28: PS: FBVDDQ

Operation mode	Vpsi
Full phase CCM	1.8 V
Full phase DCM	1.2 V
Single phase CCM	0.6 V
Single phase DCM	GND

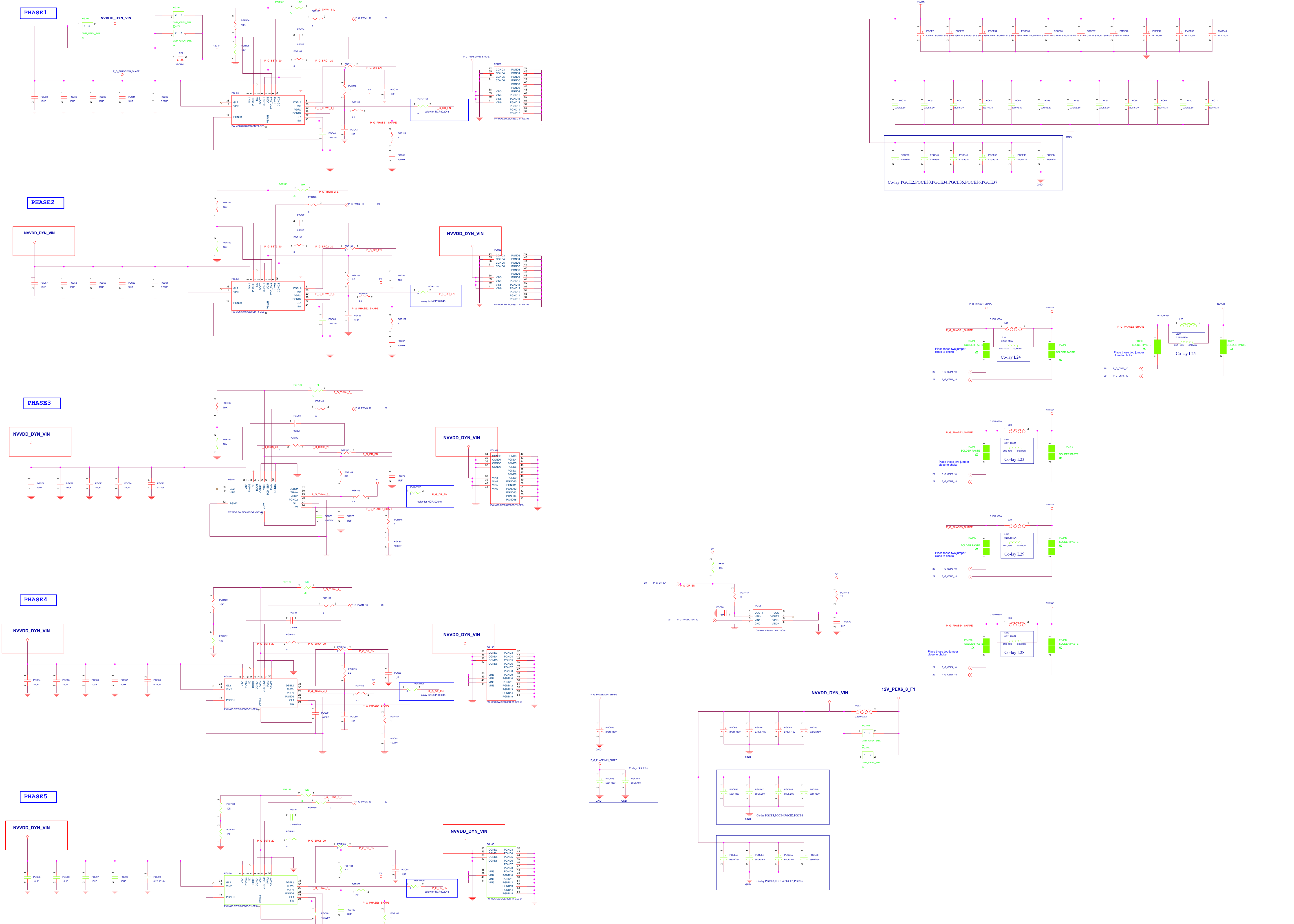


SS	Rlg2
150uS	30 Kohm
450uS	62 Kohm
900uS	120 Kohm
1.5mS	Open

Page29: PS: NVVDD CTR OVR3i



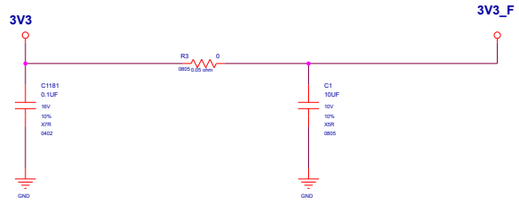
Title :	NVVDD Controller		
OrgName	Engineer:	James_Huang	
Size: E	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019		Sheet 29 of 39	



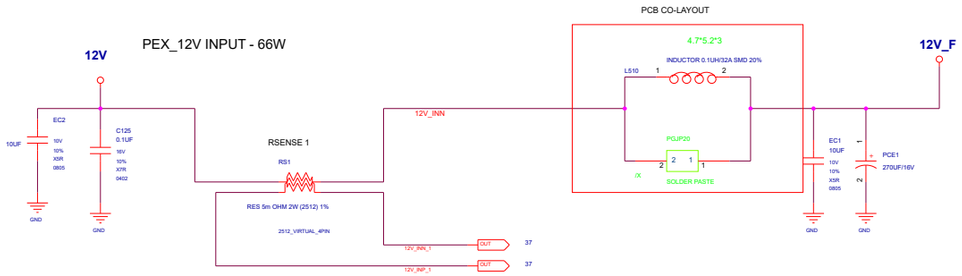
Title :	NVVDD MOS	
OrgName	Engineer:	James_Huang
Size: Custom	Project Name: CG165PI	Rev: 1.00
Date: Monday, July 01, 2019	Sheet 30	of 39

Page31: PS: Inputs, Filtering, and Monitoring

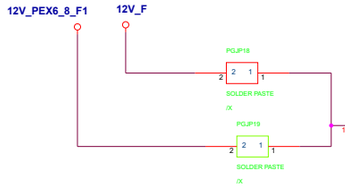
PEX 3V3 INPUT - 10W



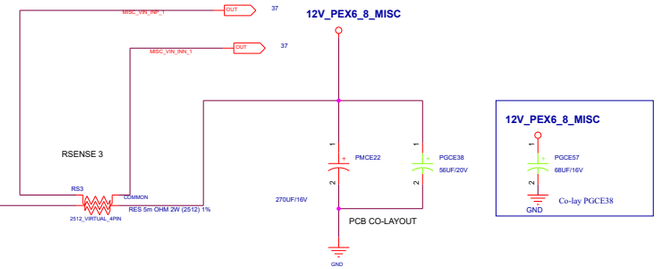
PEX_12V INPUT - 66W



12V_PEX6_8_F1 / 12V_F

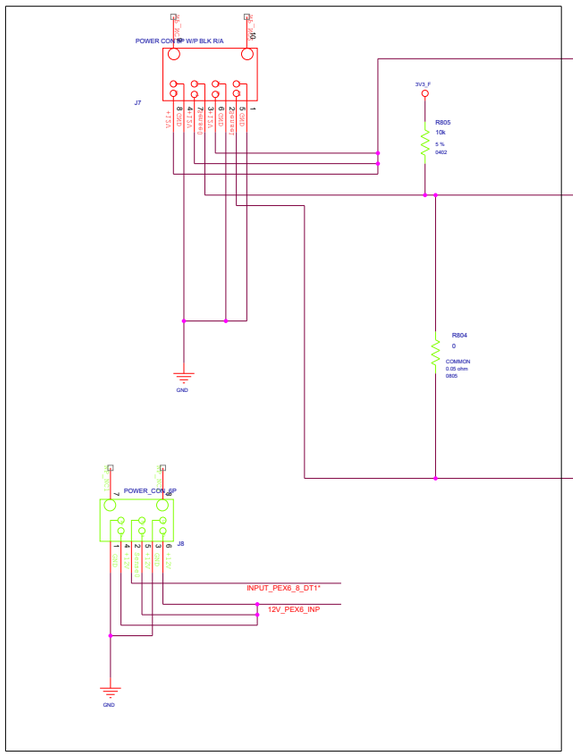


RSENSE 3 / 12V_PEX6_8_MISC

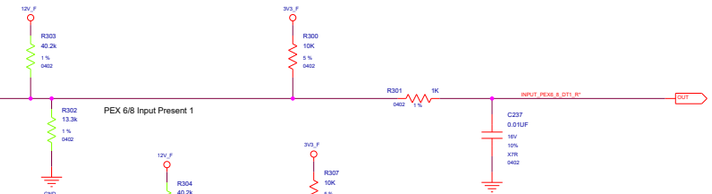


12V_PEX6_8_MISC

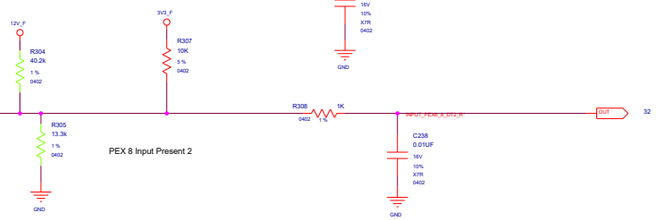
PEX8 INPUT 1 - 2x4 PCIE CON 150W



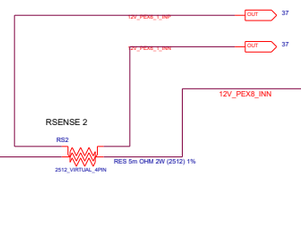
PEX 6/8 Input Present 1



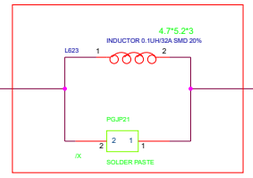
PEX 8 Input Present 2



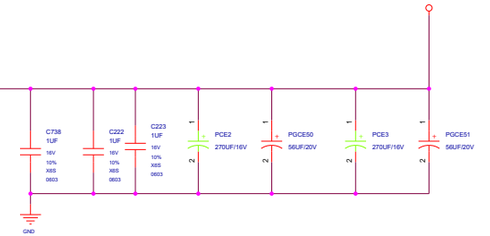
RSENSE 2 / 12V_PEX8_INN



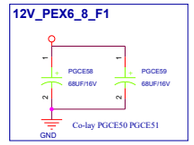
PCB CO-LAYOUT



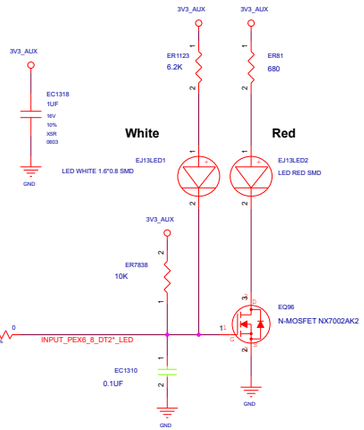
12V_PEX6_8_F1



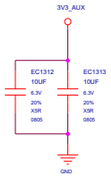
PCB CO-LAYOUT / 12V_PEX6_8_F1



White / Red



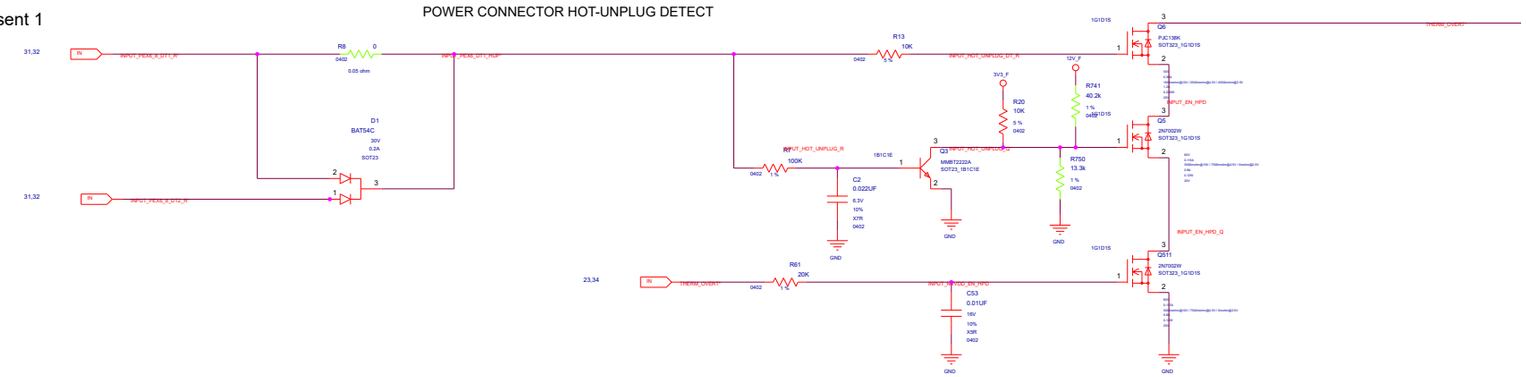
3V3_AUX



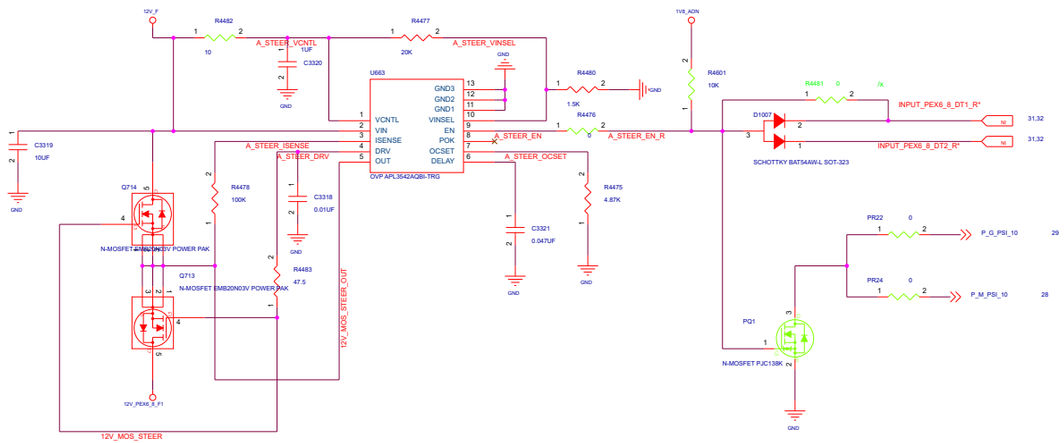
ASUS	Title : PS INPUT	
OrgName	Engineer: James_Huang	
Size: Custom	Project Name: CG165PI	Rev: 1.00
Date: Monday, July 01, 2019	Sheet 31 of 39	

Page32: PS: HOT-UNPLUG, UNDER POWER BOOT, CURRENT STEERING

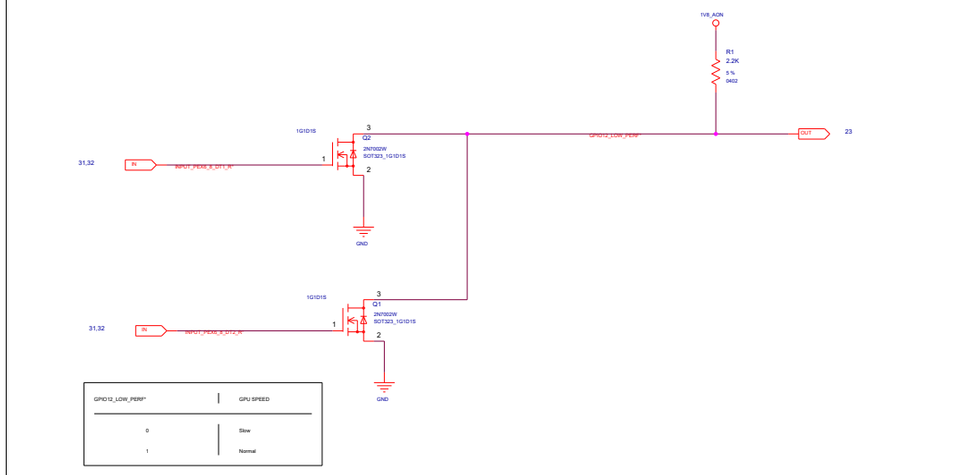
PEX Input Present 1



12V CURRENT STEERING (UNDER POWER BOOT):

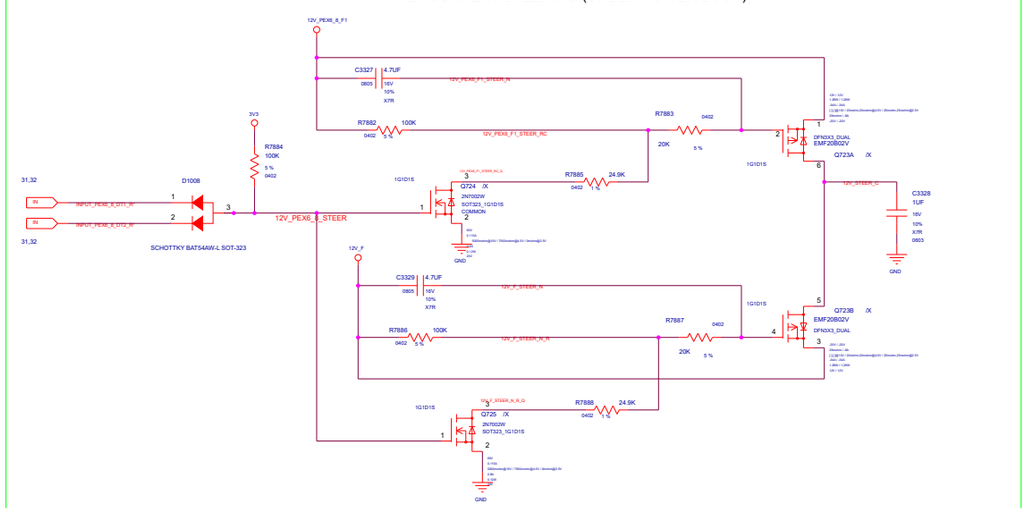


PEX Input - Power Level/PSI* Control



NVidia Solution

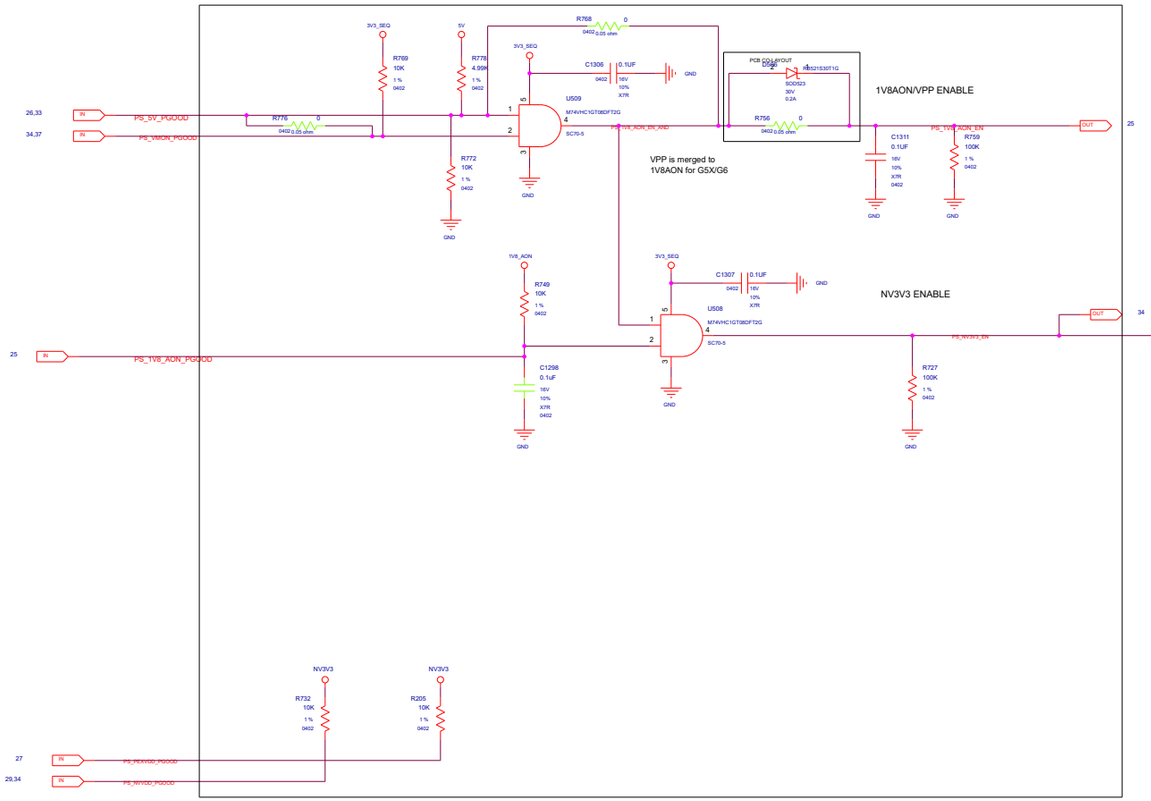
12V CURRENT STEERING (UNDER POWER BOOT):



OrgName	
Title :	PS STEERING
Engineer:	James_Huang
Size	Custom
Project Name	CG165PI
Rev	1.00
Date:	Monday, July 01, 2019
Sheet	32 of 39

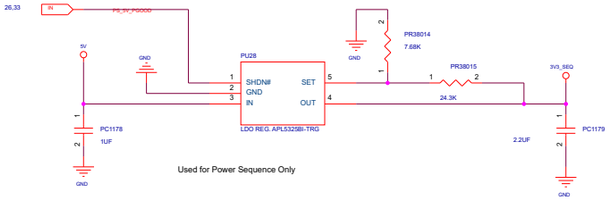
Page33: SEQ:5V,1V8,NV3V3 ENABLE

1V8AON/VPP ENABLE



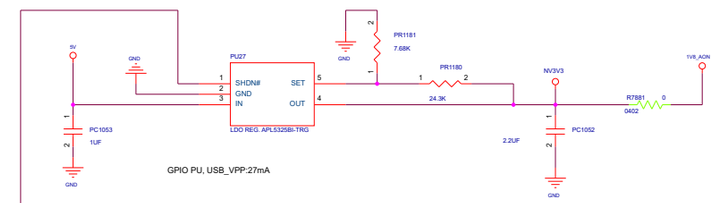
NV3V3 ENABLE

3V3_SEQ



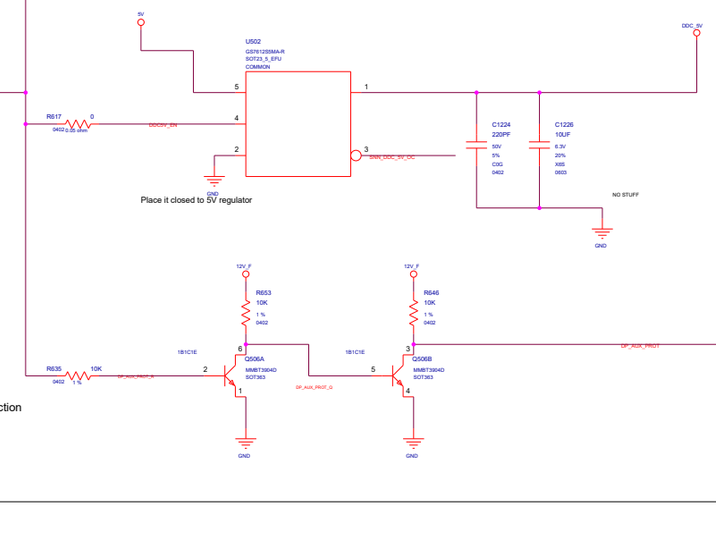
Used for Power Sequence Only

NV3V3



GPIO PU, USB_VPP:27mA

DDC5V

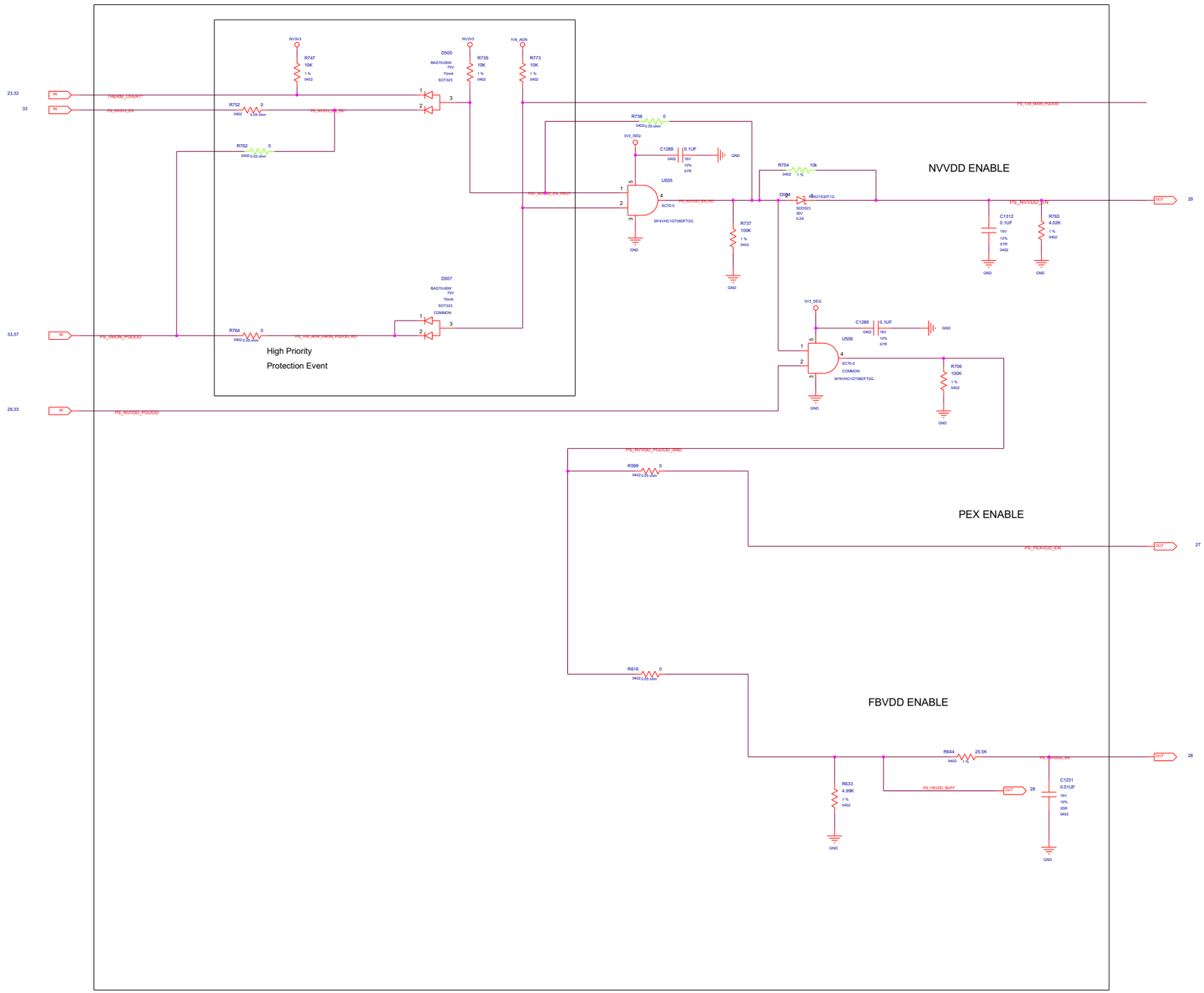


Place it closed to 5V regulator

DP_AUX Protection

OrgName		Title :	SEQ_5V
		Engineer:	James_Huang
Size	Project Name		Rev
Custom	CG165PI		1.00
Date:	Monday, July 01, 2019	Sheet	33 of 39

Page44: SEQ:NV,PEX,FB ENABLE



Title : SEQ_NV
OrgName
Engineer: James_Huang
Size: Custom
Project Name: CG165PI
Rev: 1.00
Date: Monday, July 01, 2019
Sheet 34 of 39

Page35: SEQUENCE:MISC

PEX_CLKREQ*

PU ON GPU SIDE

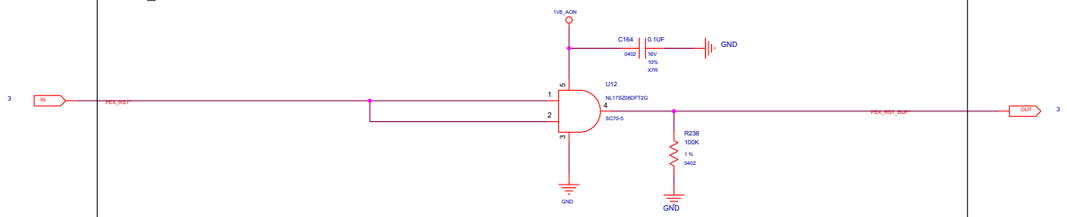
NC ON GOLD FINGER SIDE

GPU_WAKE*

PU ON GPU SIDE

NC ON GOLD FINGER SIDE

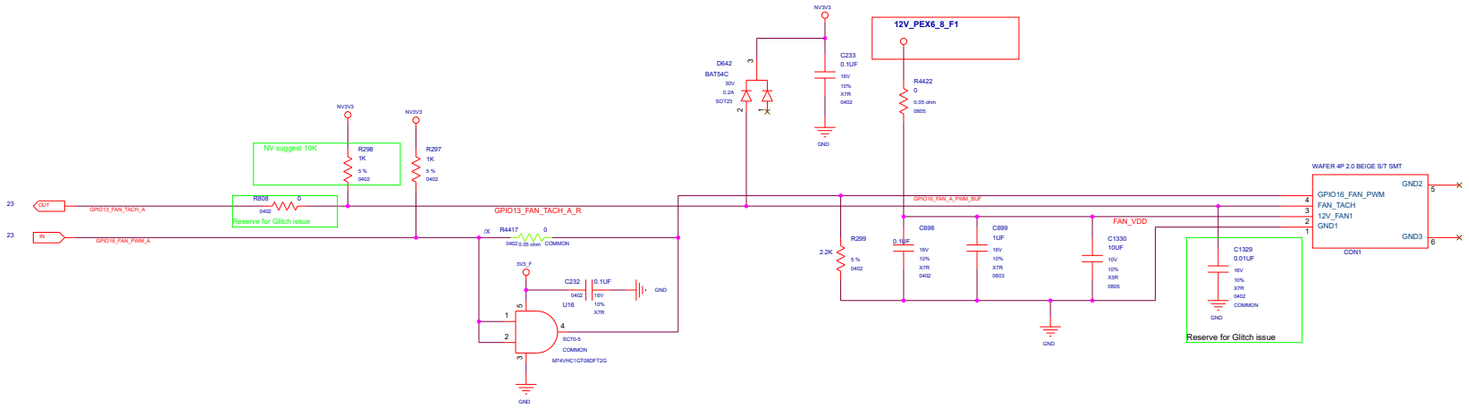
PEX_RST# LOGIC



OrgName	Title : SEQ_MISC		
	Engineer: James_Huang		
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019	Sheet 35 of 39		

Page36: FAN

Add PWM FAN Solution

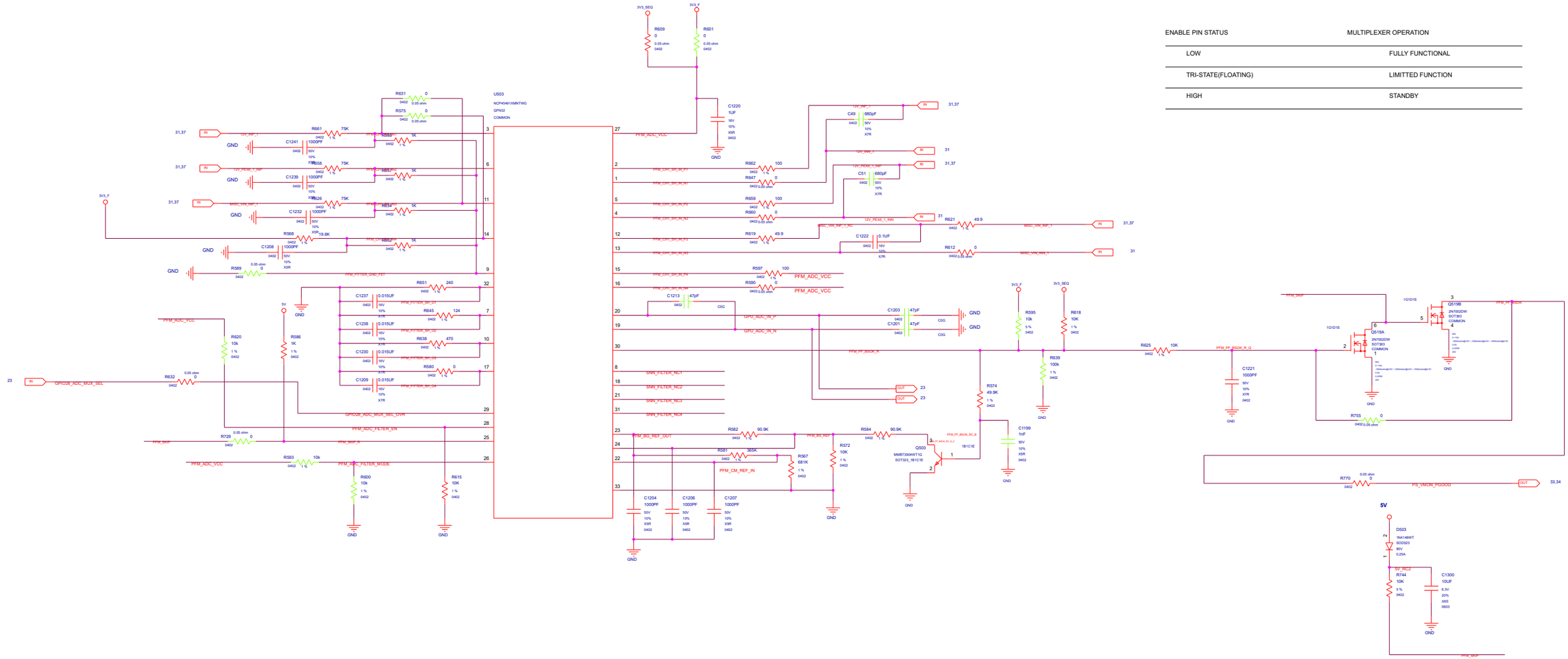


Title :	FAN
Engineer:	James_Huang
OrgName	
Size: Custom	Project Name: CG165PI
Rev	1.00
Date: Monday, July 01, 2019	Sheet 36 of 39

Page37:OVRM PWR SENSE

MODE PIN STATUS	MULTIPLEXER OPERATION
LOW	DEVICE A
TRI-STATE(FLOATING)	STAND-ALONE
HIGH	DEVICE B

ENABLE PIN STATUS	MULTIPLEXER OPERATION
LOW	FULLY FUNCTIONAL
TRI-STATE(FLOATING)	LIMITTED FUNCTION
HIGH	STANDBY

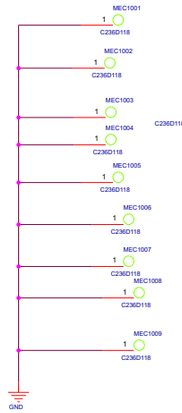


Title :	PS_Filter
OrgName	Engineer: James_Huang
Size: Custom	Project Name: CG165PI
Rev: 1.00	
Date: Monday, July 01, 2019	Sheet 37 of 39

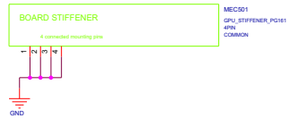
Page52: MECH

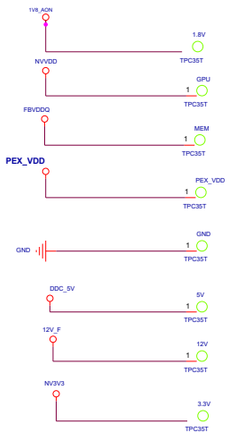
Bracket:

MOUNTING HOLES FOR HS:



BACK STIFFENER:





OrgName	Title : MECH		
	Engineer: James_Huang		
Size: Custom	Project Name: CG165PI		Rev: 1.00
Date: Monday, July 01, 2019	Sheet 38 of 39		

ASUS VGA PCB Logo

LOGO1
1 CE
CE
/X

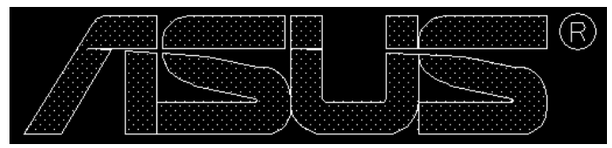
LOGO8
1 UKRAINE
UKRAINE
/X

LOGO2
1 VCCI
VCCI
/X

LOGO9
1 PCB MADE IN CHINA
PCB_MADE_IN_CHINA
/X

LOGO3
1 EMI_D33005_H
EMI_D33005_H
/X

LOGO10
1 MARK_L
S_MARK_L
/X



LOGO4
1 FCC
FCC
/X

LOGO11
1 WEEE_LOGO
WEEE_LOGO
/X

LOGO5
1 RCM
RCM
/X

LOGO6
1 CAN ICES-3(B)/NMB-3(B)
CAN_ICES_3B_NMB_3B
/X

LOGO7
1 KC R-R-MSQ-XXXXXXXXXXXXX
KC_R_R_LOGO
/X

ASUSTEK COMPUTER INC		Title :	PCB Logo
		Engineer:	Tomo
Size	Project Name	ASUS VGA Logo	Rev 1.00
Date: Monday, July 01, 2019		Sheet 39 of 39	