P1077-A01

GF108,GT215/6/8 MXM V3.0 TYPE A 1024/2048MB 128/64-BIT DDR3 LVDS, QUAD DP, DVI, VGA

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SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	602-11077-base-sch	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL.
1	SKU0001	602-11077-0001-100	GF108 P1077 SKU1 2GB N11P-GS DDR3 8x 128Mx16
2	SKU0002	602-11077-0002-100	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
3	SKU0004	602-11077-0004-100	GF108 P1077 SKU4 1GB N11P-GE DDR3 8X 64MX16
4	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
5	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
6	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
7	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
8	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
9	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
10	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
11	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
12	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
13	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
14	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
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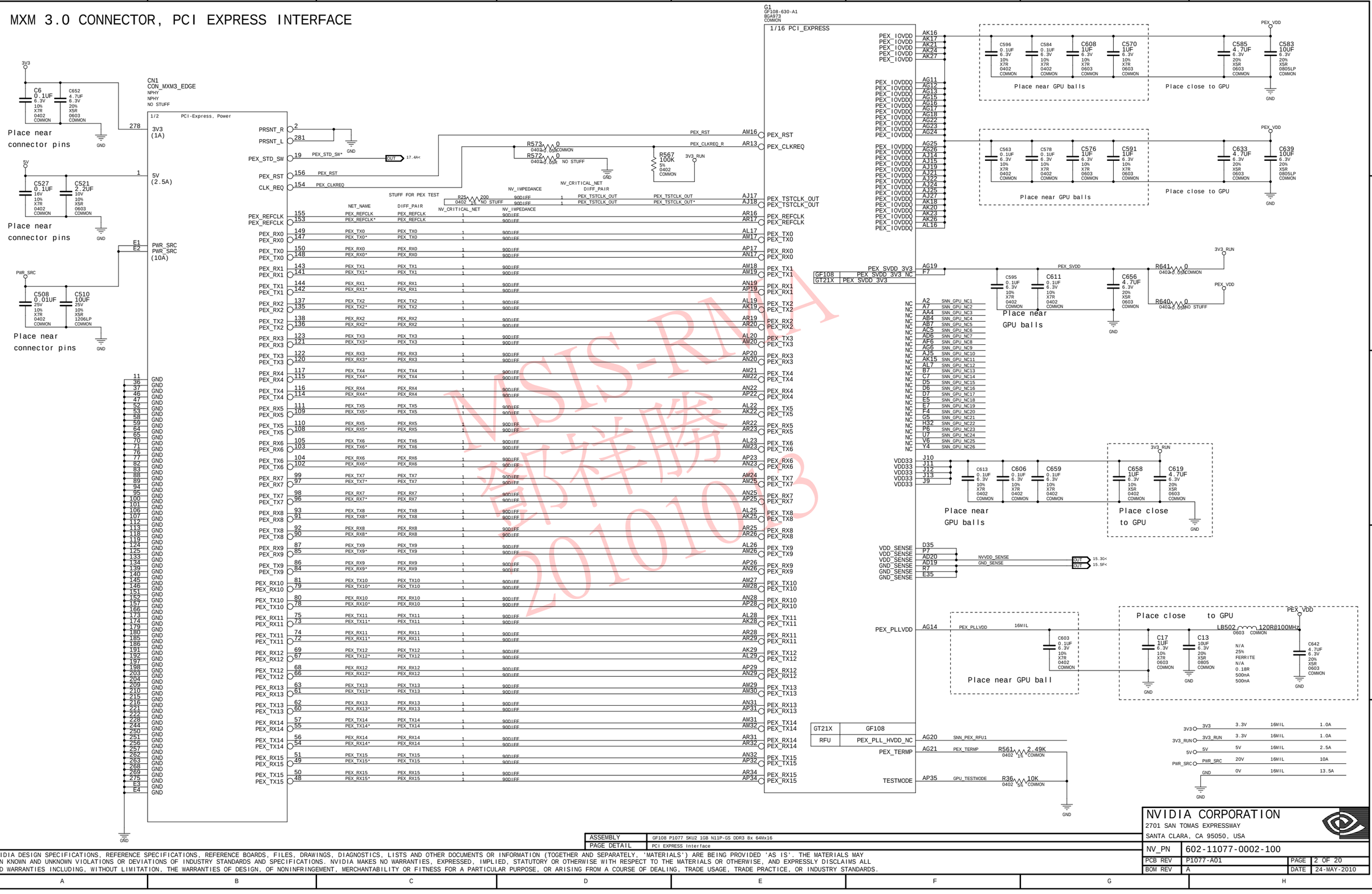
2. MXM 3.0 CONNECTOR, PCI EXPRESS INTERFACE



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PAGE DETAIL	PCI EXPRESS Interface

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3. GPU MEMORY INTERFACE

G1
GF108-630-A1
BGA973
COMMON

2/16 FBA

FBA_DATA<63..0>

0	FBA_DATA<0>	L32	FBA_D0
1	FBA_DATA<1>	N33	FBA_D1
2	FBA_DATA<2>	L33	FBA_D2
3	FBA_DATA<3>	N34	FBA_D3
4	FBA_DATA<4>	N35	FBA_D4
5	FBA_DATA<5>	P35	FBA_D5
6	FBA_DATA<6>	P33	FBA_D6
7	FBA_DATA<7>	P34	FBA_D7
8	FBA_DATA<8>	K35	FBA_D8
9	FBA_DATA<9>	K33	FBA_D9
10	FBA_DATA<10>	K34	FBA_D10
11	FBA_DATA<11>	H33	FBA_D11
12	FBA_DATA<12>	G34	FBA_D12
13	FBA_DATA<13>	G33	FBA_D13
14	FBA_DATA<14>	E34	FBA_D14
15	FBA_DATA<15>	E33	FBA_D15
16	FBA_DATA<16>	G31	FBA_D16
17	FBA_DATA<17>	F30	FBA_D17
18	FBA_DATA<18>	G30	FBA_D18
19	FBA_DATA<19>	G32	FBA_D19
20	FBA_DATA<20>	K30	FBA_D20
21	FBA_DATA<21>	K32	FBA_D21
22	FBA_DATA<22>	H30	FBA_D22
23	FBA_DATA<23>	K31	FBA_D23
24	FBA_DATA<24>	L31	FBA_D24
25	FBA_DATA<25>	L30	FBA_D25
26	FBA_DATA<26>	M32	FBA_D26
27	FBA_DATA<27>	N30	FBA_D27
28	FBA_DATA<28>	M30	FBA_D28
29	FBA_DATA<29>	P31	FBA_D29
30	FBA_DATA<30>	R32	FBA_D30
31	FBA_DATA<31>	R30	FBA_D31
32	FBA_DATA<32>	AG30	FBA_D32
33	FBA_DATA<33>	AG32	FBA_D33
34	FBA_DATA<34>	AH31	FBA_D34
35	FBA_DATA<35>	AF31	FBA_D35
36	FBA_DATA<36>	AF30	FBA_D36
37	FBA_DATA<37>	AE30	FBA_D37
38	FBA_DATA<38>	AC32	FBA_D38
39	FBA_DATA<39>	AD30	FBA_D39
40	FBA_DATA<40>	AN33	FBA_D40
41	FBA_DATA<41>	AL31	FBA_D41
42	FBA_DATA<42>	AM33	FBA_D42
43	FBA_DATA<43>	AL33	FBA_D43
44	FBA_DATA<44>	AK30	FBA_D44
45	FBA_DATA<45>	AK32	FBA_D45
46	FBA_DATA<46>	AJ30	FBA_D46
47	FBA_DATA<47>	AH30	FBA_D47
48	FBA_DATA<48>	AH33	FBA_D48
49	FBA_DATA<49>	AH35	FBA_D49
50	FBA_DATA<50>	AH34	FBA_D50
51	FBA_DATA<51>	AH32	FBA_D51
52	FBA_DATA<52>	AJ33	FBA_D52
53	FBA_DATA<53>	AL35	FBA_D53
54	FBA_DATA<54>	AM34	FBA_D54
55	FBA_DATA<55>	AM35	FBA_D55
56	FBA_DATA<56>	AF33	FBA_D56
57	FBA_DATA<57>	AE32	FBA_D57
58	FBA_DATA<58>	AF34	FBA_D58
59	FBA_DATA<59>	AE35	FBA_D59
60	FBA_DATA<60>	AE34	FBA_D60
61	FBA_DATA<61>	AE33	FBA_D61
62	FBA_DATA<62>	AB32	FBA_D62
63	FBA_DATA<63>	AC35	FBA_D63

FBA_DQM<7..0>

0	FBA_DQM<0>	P32	FBA_DQM0
1	FBA_DQM<1>	H34	FBA_DQM1
2	FBA_DQM<2>	J30	FBA_DQM2
3	FBA_DQM<3>	P30	FBA_DQM3
4	FBA_DQM<4>	AF32	FBA_DQM4
5	FBA_DQM<5>	AL32	FBA_DQM5
6	FBA_DQM<6>	AL34	FBA_DQM6
7	FBA_DQM<7>	AF35	FBA_DQM7

FBA_DQS_WP0	L34	FBA_DQS_WP0
FBA_DQS_WP1	H35	FBA_DQS_WP1
FBA_DQS_WP2	J32	FBA_DQS_WP2
FBA_DQS_WP3	N31	FBA_DQS_WP3
FBA_DQS_WP4	AE31	FBA_DQS_WP4
FBA_DQS_WP5	AJ32	FBA_DQS_WP5
FBA_DQS_WP6	AJ34	FBA_DQS_WP6
FBA_DQS_WP7	AC33	FBA_DQS_WP7
FBA_DQS_RN0	L35	FBA_DQS_RN0
FBA_DQS_RN1	G35	FBA_DQS_RN1
FBA_DQS_RN2	H31	FBA_DQS_RN2
FBA_DQS_RN3	N32	FBA_DQS_RN3
FBA_DQS_RN4	AD32	FBA_DQS_RN4
FBA_DQS_RN5	AJ31	FBA_DQS_RN5
FBA_DQS_RN6	AJ35	FBA_DQS_RN6
FBA_DQS_RN7	AC34	FBA_DQS_RN7

SNN_FBA_WDS0	P29	FBA_WCK0
SNN_FBA_WDS0*	R29	FBA_WCK0
SNN_FBA_WDS1	L29	FBA_WCK1
SNN_FBA_WDS1*	M29	FBA_WCK1
SNN_FBA_WDS2	AG29	FBA_WCK2
SNN_FBA_WDS2*	AH29	FBA_WCK2
SNN_FBA_WDS3	AD29	FBA_WCK3
SNN_FBA_WDS3*	AE29	FBA_WCK3

SNN_FB_VREF J27

GF108	GT21X
FB_VREF_NC	FB_VREF

GT21X	GF108
FBA_CMD25	FBA_CMD0
FBA_CMD23	FBA_CMD1
FBA_CMD2	FBA_CMD2
FBA_CMD0	FBA_CMD3
FBA_CMD10	FBA_CMD4
FBA_CMD26	FBA_CMD5
FBA_CMD14	FBA_CMD6
FBA_CMD7	FBA_CMD7
FBA_CMD1	FBA_CMD8
FBA_CMD22	FBA_CMD9
FBA_CMD20	FBA_CMD10
FBA_CMD24	FBA_CMD11
FBA_CMD18	FBA_CMD12
FBA_CMD9	FBA_CMD13
FBA_CMD29	FBA_CMD14
FBA_CMD8	FBA_CMD15
FBA_CMD27	FBA_CMD16
FBA_CMD15	FBA_CMD17
FBA_CMD11	FBA_CMD18
FBA_CMD16	FBA_CMD19
FBA_CMD28	FBA_CMD20
FBA_CMD3	FBA_CMD21
FBA_CMD17	FBA_CMD22
FBA_CMD5	FBA_CMD23
FBA_CMD4	FBA_CMD24
FBA_CMD21	FBA_CMD25
FBA_CMD6	FBA_CMD26
FBA_CMD13	FBA_CMD27
FBA_CMD19	FBA_CMD28
FBA_CMD12	FBA_CMD29
FBA_CMD30	FBA_CMD30
N/A	FBA_CMD31

GT21X	GF108
RFU	FB_DLLAVDD
RFU	FB_PLLAVDD

FBVDDQ

AA27 AA29 AA31 AB27 AB29 AC27 AD27 AE27 AJ28 B18 E21 G17 G18 G22 G8 G9 H29 J14 J15 J16 J17 J20 J21 J22 J23 J24 J29

C558 0.1UF 6.3V 10% X7R 0402 COMMON
C562 0.1UF 6.3V 10% X7R 0402 COMMON
C556 0.1UF 6.3V 10% X7R 0402 COMMON
Place under GPU WEST SIDE (FBA) near FBVDDQ balls
C557 4.7UF 6.3V 20% X5R 0603 COMMON
C560 4.7UF 6.3V 20% X5R 0603 COMMON
GND

FBA_CMD<30..0>

U30	FBA_CMD<0>	0	FBA_CMD0
V30	SNN_FBA_CMD<1>	1	FBA_CMD1
U31	FBA_CMD<2>	2	FBA_CMD2
V32	FBA_CMD<3>	3	FBA_CMD3
T35	FBA_CMD<4>	4	FBA_CMD4
U33	FBA_CMD<5>	5	FBA_CMD5
W32	FBA_CMD<6>	6	FBA_CMD6
W33	FBA_CMD<7>	7	FBA_CMD7
W31	FBA_CMD<8>	8	FBA_CMD8
W34	FBA_CMD<9>	9	FBA_CMD9
U34	FBA_CMD<10>	10	FBA_CMD10
U35	FBA_CMD<11>	11	FBA_CMD11
U32	FBA_CMD<12>	12	FBA_CMD12
T34	FBA_CMD<13>	13	FBA_CMD13
T33	FBA_CMD<14>	14	FBA_CMD14
W30	FBA_CMD<15>	15	FBA_CMD15
AB30	FBA_CMD<16>	16	FBA_CMD16
AA30	SNN_FBA_CMD<17>		
AB31	FBA_CMD<18>	18	FBA_CMD17
AA32	FBA_CMD<19>	19	FBA_CMD18
AB33	FBA_CMD<20>	20	FBA_CMD19
Y32	FBA_CMD<21>	21	FBA_CMD20
Y33	FBA_CMD<22>	22	FBA_CMD21
AB34	FBA_CMD<23>	23	FBA_CMD22
AB35	FBA_CMD<24>	24	FBA_CMD23
Y35	FBA_CMD<25>	25	FBA_CMD24
W35	FBA_CMD<26>	26	FBA_CMD25
Y34	FBA_CMD<27>	27	FBA_CMD26
Y31	FBA_CMD<28>	28	FBA_CMD27
Y30	FBA_CMD<29>	29	FBA_CMD28
W29	FBA_CMD<30>	30	FBA_CMD29
Y29	SNN_FBA_CMD<31>		FBA_CMD30
			FBA_CMD31

T32	FBA_CLK0	OUT	4.2D< 4.4F< 5.2D<
T31	FBA_CLK0*	OUT	4.2D< 4.4F< 5.2D<
AC31	FBA_CLK1	OUT	4.2A< 4.4F< 5.2A<
AC30	FBA_CLK1*	OUT	4.2A< 4.4F< 5.2A<

FBA_DEBUG0_CAS2 T30 FBA_DEBUG0
FBA_DEBUG1 T29 FBA_DEBUG1
R553 10K 0402 5% NO STUFF
R42 10K 0402 5% NO STUFF

FB_DLLAVDD AG27
FB_PLLAVDD AF27
FBA_PLLAVDD_GPU 16MIL 1.1V
C559 0.1UF 6.3V 10% X7R 0402 COMMON
C561 0.1UF 6.3V 10% X7R 0402 COMMON
GND
Place near GPU balls
PEX_VDD
LB1 30R@100MHz BEAD_0603 COMMON
C10 1UF 6.3V 10% X7R 0603 COMMON
C12 10UF 6.3V 20% X5R 0805 COMMON
10mR 5A
Place close to GPU
GND

FBA_CMD<30..0> OUT 4.1A< 4.1D< 4.5F< 5.1A< 5.1D<

FBA_DQM<7..0>

0	FBA_DQM<0>	A16	FBB_DQM0
1	FBA_DQM<1>	D10	FBB_DQM1
2	FBA_DQM<2>	F11	FBB_DQM2
3	FBA_DQM<3>	D15	FBB_DQM3
4	FBA_DQM<4>	D27	FBB_DQM4
5	FBA_DQM<5>	D34	FBB_DQM5
6	FBA_DQM<6>	A34	FBB_DQM6
7	FBA_DQM<7>	D28	FBB_DQM7

FBB_DQS_WP0	C14	FBB_DQS_WP0
FBB_DQS_WP1	A10	FBB_DQS_WP1
FBB_DQS_WP2	E10	FBB_DQS_WP2
FBB_DQS_WP3	D14	FBB_DQS_WP3
FBB_DQS_WP4	E26	FBB_DQS_WP4
FBB_DQS_WP5	D32	FBB_DQS_WP5
FBB_DQS_WP6	A32	FBB_DQS_WP6
FBB_DQS_WP7	B26	FBB_DQS_WP7
FBB_DQS_RN0	B14	FBB_DQS_RN0
FBB_DQS_RN1	B10	FBB_DQS_RN1
FBB_DQS_RN2	D9	FBB_DQS_RN2
FBB_DQS_RN3	E14	FBB_DQS_RN3
FBB_DQS_RN4	F26	FBB_DQS_RN4
FBB_DQS_RN5	D31	FBB_DQS_RN5
FBB_DQS_RN6	A31	FBB_DQS_RN6
FBB_DQS_RN7	A26	FBB_DQS_RN7

SNN_FBB_WDS0	G14	FBB_WCK0
SNN_FBB_WDS0*	G15	FBB_WCK0
SNN_FBB_WDS1	G11	FBB_WCK1
SNN_FBB_WDS1*	G12	FBB_WCK1
SNN_FBB_WDS2	G27	FBB_WCK2
SNN_FBB_WDS2*	G28	FBB_WCK2
SNN_FBB_WDS3	G24	FBB_WCK3
SNN_FBB_WDS3*	G25	FBB_WCK3

FBVDDQ
N27 P27 R27 T27 U27 U29 V27 V29 V34 W27 V27

C566 0.1UF 6.3V 10% X7R 0402 COMMON
C623 0.1UF 6.3V 10% X7R 0402 COMMON
C599 0.1UF 6.3V 10% X7R 0402 COMMON
C572 4.7UF 6.3V 20% X5R 0603 COMMON
C593 4.7UF 6.3V 20% X5R 0603 COMMON
Place under GPU NORTH SIDE (FBC) near FBVDDQ balls
GND

G1
GF108-630-A1
BGA973
COMMON

3/16 FBB

FBB_CMD<30..0>

GT21X	GF108
FBB_CMD25	FBB_CMD0
FBB_CMD23	FBB_CMD1
FBB_CMD2	FBB_CMD2
FBB_CMD0	FBB_CMD3
FBB_CMD10	FBB_CMD4
FBB_CMD26	FBB_CMD5
FBB_CMD14	FBB_CMD6
FBB_CMD7	FBB_CMD7
FBB_CMD1	FBB_CMD8
FBB_CMD22	FBB_CMD9
FBB_CMD20	FBB_CMD10
FBB_CMD24	FBB_CMD11
FBB_CMD18	FBB_CMD12
FBB_CMD9	FBB_CMD13
FBB_CMD29	FBB_CMD14
FBB_CMD8	FBB_CMD15
FBB_CMD27	FBB_CMD16
FBB_CMD15	FBB_CMD17
FBB_CMD11	FBB_CMD18
FBB_CMD16	FBB_CMD19
FBB_CMD28	FBB_CMD20
FBB_CMD3	FBB_CMD21
FBB_CMD17	FBB_CMD22
FBB_CMD5	FBB_CMD23
FBB_CMD4	FBB_CMD24
FBB_CMD21	FBB_CMD25
FBB_CMD6	FBB_CMD26
FBB_CMD13	FBB_CMD27
FBB_CMD19	FBB_CMD28
FBB_CMD12	FBB_CMD29
FBB_CMD30	FBB_CMD30
N/A	FBB_CMD31

F18	FBB_CMD<0>	0	FBB_CMD0
E19	SNN_FBB_CMD<1>	1	FBB_CMD1
D18	FBB_CMD<2>	2	FBB_CMD2
C17	FBB_CMD<3>	3	FBB_CMD3
F19	FBB_CMD<4>	4	FBB_CMD4
C19	FBB_CMD<5>	5	FBB_CMD5
B17	FBB_CMD<6>	6	FBB_CMD6
E20	FBB_CMD<7>	7	FBB_CMD7
B19	FBB_CMD<8>	8	FBB_CMD8
D20	FBB_CMD<9>	9	FBB_CMD9
A19	FBB_CMD<10>	10	FBB_CMD10
D19	FBB_CMD<11>	11	FBB_CMD11
C20	FBB_CMD<12>	12	FBB_CMD12
F20	FBB_CMD<13>	13	FBB_CMD13
B20	FBB_CMD<14>	14	FBB_CMD14
G21	FBB_CMD<15>	15	FBB_CMD15
F22	FBB_CMD<16>	16	FBB_CMD16
F24	SNN_FBB_CMD<17>		
F23	FBB_CMD<18>	18	FBB_CMD17
C25	FBB_CMD<19>	19	FBB_CMD18
C23	FBB_CMD<20>	20	FBB_CMD19
F21	FBB_CMD<21>	21	FBB_CMD20
E22	FBB_CMD<22>	22	FBB_CMD21
D21	FBB_CMD<23>	23	FBB_CMD22
A23	FBB_CMD<24>	24	FBB_CMD23
D22	FBB_CMD<25>	25	FBB_CMD24
B23	FBB_CMD<26>	26	FBB_CMD25
C22	FBB_CMD<27>	27	FBB_CMD26
B22	FBB_CMD<28>	28	FBB_CMD27
A22	FBB_CMD<29>	29	FBB_CMD28
A20	FBB_CMD<30>	30	FBB_CMD29
G20	SNN_FBB_CMD<31>		FBB_CMD30
			FBB_CMD31

E17	FBB_CLK0	OUT	6.2D< 6.4F< 7.2D<
D17	FBB_CLK0*	OUT	6.2D< 6.4F< 7.2D<
D23	FBB_CLK1	OUT	6.2A< 6.4F< 7.2A<
E23	FBB_CLK1*	OUT	6.2A< 6.4F< 7.2A<

FBB_DEBUG0_CAS2 G19 FBB_DEBUG0
FBB_DEBUG1 G16 FBB_DEBUG1
R559 10K 0402 5% NO STUFF
R28 10K 0402 5% NO STUFF

FBB_CAL_PD_VDDQ K27 FBB_CAL_PD_VDDQ R552 40.2 0402 1% COMMON
FBB_CAL_PU_GND L27 FBB_CAL_PU_GND R557 40.2 0402 1% COMMON
FBB_CAL_TERM_GND M27 FBB_CAL_TERM_GND R554 60.4 0402 1% COMMON
GND

FBB_DATA<63..0> 7.4A<> 6.5F<> 6.4A<>

FBB_DQM<7..0> 7.5A< 6.5F< 6.5A<>

FBB_CMD<30..0> OUT 6.1A< 6.1D< 6.5F< 7.1A< 7.1D<

ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	Frame Buffer GPU Interface

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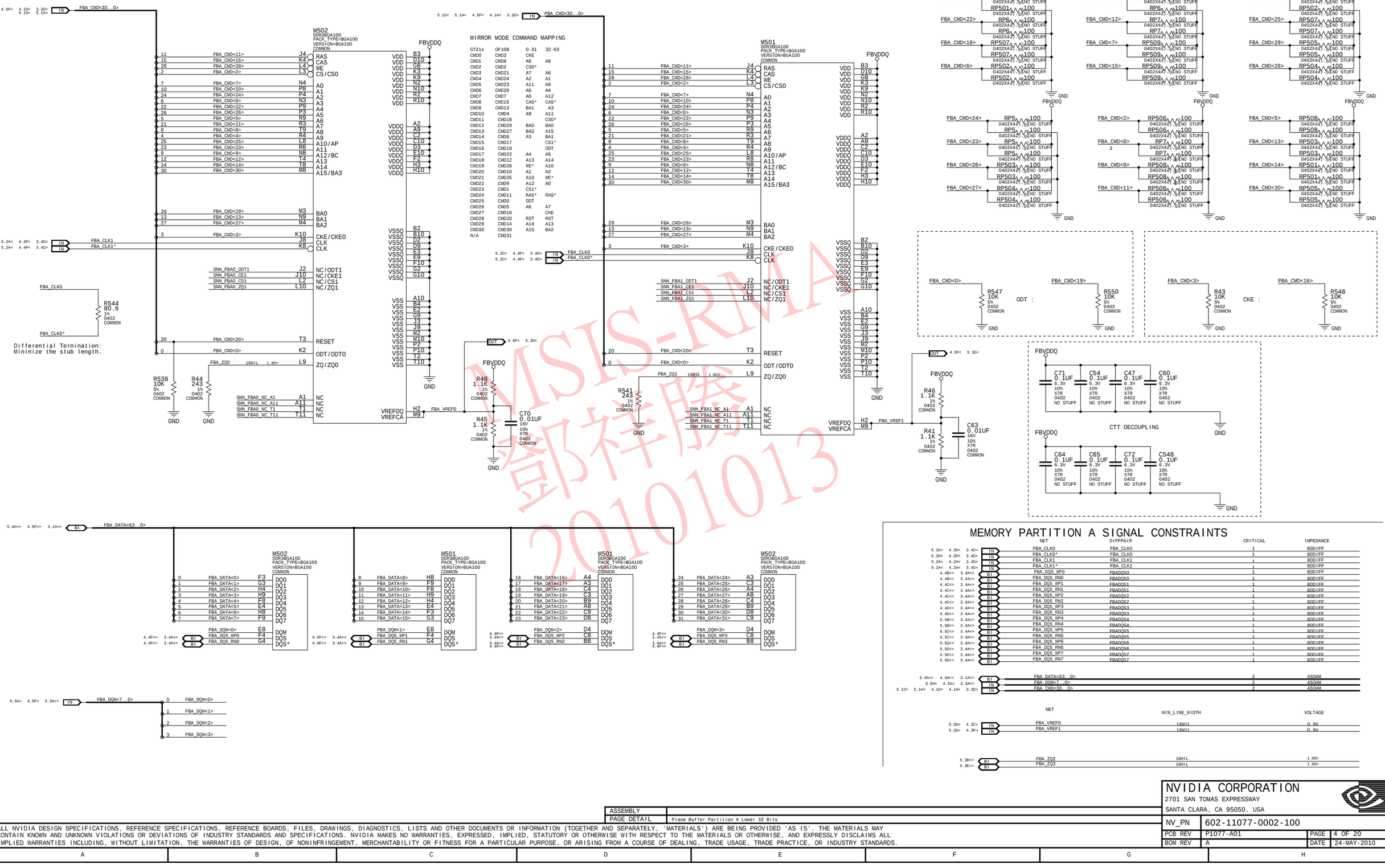
4. MEMORY PARTITION A LOWER 32 BITS



MEMORY PARTITION A SIGNAL CONSTRAINTS

NET	DIFFPAIR	CRITICAL	IMPEDANCE
FBA_CLK0	FBA_CLK0	1	80DIFF
FBA_CLK0*	FBA_CLK0	1	80DIFF
FBA_CLK1	FBA_CLK1	1	80DIFF
FBA_CLK1*	FBA_CLK1	1	80DIFF
FBA_DQS_WP0	FBADQS0	1	80DIFF
FBA_DQS_RN0	FBADQS0	1	80DIFF
FBA_DQS_WP1	FBADQS1	1	80DIFF
FBA_DQS_RN1	FBADQS1	1	80DIFF
FBA_DQS_WP2	FBADQS2	1	80DIFF
FBA_DQS_RN2	FBADQS2	1	80DIFF
FBA_DQS_WP3	FBADQS3	1	80DIFF
FBA_DQS_RN3	FBADQS3	1	80DIFF
FBA_DQS_WP4	FBADQS4	1	80DIFF
FBA_DQS_RN4	FBADQS4	1	80DIFF
FBA_DQS_WP5	FBADQS5	1	80DIFF
FBA_DQS_RN5	FBADQS5	1	80DIFF
FBA_DQS_WP6	FBADQS6	1	80DIFF
FBA_DQS_RN6	FBADQS6	1	80DIFF
FBA_DQS_WP7	FBADQS7	1	80DIFF
FBA_DQS_RN7	FBADQS7	1	80DIFF

NET	CRITICAL	IMPEDANCE
FBA_DATA<63..0>	2	45OHM
FBA_DQM<7..0>	2	45OHM
FBA_CMD<30..0>	2	45OHM

NET	MIN_LINE_WIDTH	VOLTAGE
FBA_VREF0	16MIL	0.9V
FBA_VREF1	16MIL	0.9V
FBA_ZQ0	16MIL	1.80V
FBA_ZQ1	16MIL	1.80V

ASSEMBLY	
PAGE DETAIL	Frame Buffer Partition A Lower 32 Bits

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5. MEMORY PARTITION A UPPER 32 BITS

MIRROR MODE COMMAND MAPPING

GT21x	GF108	0-31	32-63
CMD0	CMD3	CKE	
CMD1	CMD8	A8	A8
CMD2	CMD2	CS0*	
CMD3	CMD21	A7	A6
CMD4	CMD24	A2	A1
CMD5	CMD23	A11	A9
CMD6	CMD26	A5	A4
CMD7	CMD7	A0	A12
CMD8	CMD15	CAS*	CAS*
CMD9	CMD13	BA1	A3
CMD10	CMD4	A9	A11
CMD11	CMD18		CS0*
CMD12	CMD29	BA0	BA0
CMD13	CMD27	BA2	A15
CMD14	CMD6	A3	BA1
CMD15	CMD17		CS1*
CMD16	CMD19		ODT
CMD17	CMD22	A4	A5
CMD18	CMD12	A13	A14
CMD19	CMD28	WE*	A10
CMD20	CMD10	A1	A2
CMD21	CMD25	A10	WE*
CMD22	CMD9	A12	A0
CMD23	CMD1	CS1*	
CMD24	CMD11	RAS*	RAS*
CMD25	CMD0	ODT	
CMD26	CMD5	A6	A7
CMD27	CMD16		CKE
CMD28	CMD20	RST	RST
CMD29	CMD14	A14	A13
CMD30	CMD30	A15	BA2
N/A	CMD31		

5.1D< 4.5F< 4.1D< 4.1A< 3.3D> IN FBA_CMD<30..0>

M4 DDR3BGA100 PACK_TYPE=BGA100 VERSTION=BGA100 COMMON

FBVDDQ

11	FBA_CMD<11>	J4	RAS
15	FBA_CMD<15>	K4	CAS
25	FBA_CMD<25>	L4	WE
18	FBA_CMD<18>	L3	CS/CS0
9	FBA_CMD<9>	N4	A0
24	FBA_CMD<24>	P8	A1
10	FBA_CMD<10>	P4	A2
13	FBA_CMD<13>	N3	A3
26	FBA_CMD<26>	P9	A4
22	FBA_CMD<22>	P3	A5
21	FBA_CMD<21>	R9	A6
5	FBA_CMD<5>	R3	A7
8	FBA_CMD<8>	T9	A8
23	FBA_CMD<23>	R4	A9
28	FBA_CMD<28>	L8	A10/AP
4	FBA_CMD<4>	R8	A11
7	FBA_CMD<7>	N8	A12/BC
14	FBA_CMD<14>	T4	A13
12	FBA_CMD<12>	T8	A14
27	FBA_CMD<27>	M8	A15/BA3
29	FBA_CMD<29>	M3	BA0
6	FBA_CMD<6>	N9	BA1
30	FBA_CMD<30>	M4	BA2
16	FBA_CMD<16>	K10	CKE/CKE0
	FBA_CLK1	J8	CLK
	FBA_CLK1*	K8	CLK
	SNN_FBA2_ODT1	J2	NC/ODT1
	SNN_FBA2_CE1	J10	NC/CKE1
	SNN_FBA2_CS1	L2	NC/CS1
	SNN_FBA2_ZQ1	L10	NC/ZQ1
20	FBA_CMD<20>	T3	RESET
19	FBA_CMD<19>	K2	ODT/ODT0
4.5F<> BI	FBA_ZQ2	L9	ZQ/ZQ0
	SNN_FBA2_NC_A1	A1	NC
	SNN_FBA2_NC_A11	A11	NC
	SNN_FBA2_NC_T1	T1	NC
	SNN_FBA2_NC_T11	T11	NC
	FBA_VREF0	H2	VREFDQ
		M9	VREFCA

VDD B3, D10, G8, K3, K9, N2, N10, R2, R10

VDDQ A2, A9, C2, C10, D3, E10, F2, H3, H10

VSSQ B2, B10, D2, D9, E3, E9, F10, G2, G10

VSS A10, B4, E2, G9, J3, J9, M2, M10, P2, P10, T2, T10

R40 243 1% 0402 COMMON

GND

4.3C> IN FBA_VREF0 4.5F<

FBA_CLK1

R545 80.6 1% 0402 COMMON

FBA_CLK1*

Differential Termination:
Minimize the stub length.

5.1A< 4.5F< 4.1D< 4.1A< 3.3D> IN FBA_CMD<30..0>

M3 DDR3BGA100 PACK_TYPE=BGA100 VERSTION=BGA100 COMMON

FBVDDQ

11	FBA_CMD<11>	J4	RAS
15	FBA_CMD<15>	K4	CAS
25	FBA_CMD<25>	L4	WE
18	FBA_CMD<18>	L3	CS/CS0
9	FBA_CMD<9>	N4	A0
24	FBA_CMD<24>	P8	A1
10	FBA_CMD<10>	P4	A2
13	FBA_CMD<13>	N3	A3
26	FBA_CMD<26>	P9	A4
22	FBA_CMD<22>	P3	A5
21	FBA_CMD<21>	R9	A6
5	FBA_CMD<5>	R3	A7
8	FBA_CMD<8>	T9	A8
23	FBA_CMD<23>	R4	A9
28	FBA_CMD<28>	L8	A10/AP
4	FBA_CMD<4>	R8	A11
7	FBA_CMD<7>	N8	A12/BC
14	FBA_CMD<14>	T4	A13
12	FBA_CMD<12>	T8	A14
27	FBA_CMD<27>	M8	A15/BA3
29	FBA_CMD<29>	M3	BA0
6	FBA_CMD<6>	N9	BA1
30	FBA_CMD<30>	M4	BA2
16	FBA_CMD<16>	K10	CKE/CKE0
4.4F< 4.2D< 3.4D> IN	FBA_CLK0	J8	CLK
4.4F< 4.2D< 3.4D> IN	FBA_CLK0*	K8	CLK
	SNN_FBA3_ODT1	J2	NC/ODT1
	SNN_FBA3_CE1	J10	NC/CKE1
	SNN_FBA3_CS1	L2	NC/CS1
	SNN_FBA3_ZQ1	L10	NC/ZQ1
20	FBA_CMD<20>	T3	RESET
19	FBA_CMD<19>	K2	ODT/ODT0
4.5F<> BI	FBA_ZQ3	L9	ZQ/ZQ0
	SNN_FBA3_NC_A1	A1	NC
	SNN_FBA3_NC_A11	A11	NC
	SNN_FBA3_NC_T1	T1	NC
	SNN_FBA3_NC_T11	T11	NC
	FBA_VREF1	H2	VREFDQ
		M9	VREFCA

VDD B3, D10, G8, K3, K9, N2, N10, R2, R10

VDDQ A2, A9, C2, C10, D3, E10, F2, H3, H10

VSSQ B2, B10, D2, D9, E3, E9, F10, G2, G10

VSS A10, B4, E2, G9, J3, J9, M2, M10, P2, P10, T2, T10

R47 243 1% 0402 COMMON

GND

4.3F> IN FBA_VREF1 4.5F<

4.5F<> 4.4A<> 3.1A<> BI FBA_DATA<63..0>

M3 DDR3BGA100 PACK_TYPE=BGA100 VERSTION=BGA100 COMMON

32	FBA_DATA<32>	A8	DQ0
33	FBA_DATA<33>	C3	DQ1
34	FBA_DATA<34>	C4	DQ2
35	FBA_DATA<35>	A3	DQ3
36	FBA_DATA<36>	B9	DQ4
37	FBA_DATA<37>	C9	DQ5
38	FBA_DATA<38>	A4	DQ6
39	FBA_DATA<39>	D8	DQ7
	FBA_DQM<4>	D4	DQM
4.4F<> 3.4A<> BI	FBA_DQS_WP4	C8	DQS
4.4F<> 3.4A<> BI	FBA_DQS_RN4	B8	DQS*

M3 DDR3BGA100 PACK_TYPE=BGA100 VERSTION=BGA100 COMMON

40	FBA_DATA<40>	H4	DQ0
41	FBA_DATA<41>	H9	DQ1
42	FBA_DATA<42>	F3	DQ2
43	FBA_DATA<43>	E4	DQ3
44	FBA_DATA<44>	H8	DQ4
45	FBA_DATA<45>	G3	DQ5
46	FBA_DATA<46>	F8	DQ6
47	FBA_DATA<47>	F9	DQ7
	FBA_DQM<5>	E8	DQM
4.4F<> 3.4A<> BI	FBA_DQS_WP5	F4	DQS
4.4F<> 3.4A<> BI	FBA_DQS_RN5	G4	DQS* 3.4A<> 4.4F<>

M4 DDR3BGA100 PACK_TYPE=BGA100 VERSTION=BGA100 COMMON

48	FBA_DATA<48>	H9	DQ0
49	FBA_DATA<49>	F9	DQ1
50	FBA_DATA<50>	F8	DQ2
51	FBA_DATA<51>	H4	DQ3
52	FBA_DATA<52>	G3	DQ4
53	FBA_DATA<53>	H8	DQ5
54	FBA_DATA<54>	F3	DQ6
55	FBA_DATA<55>	E4	DQ7
	FBA_DQM<6>	E8	DQM
3.4A<> 4.4F<> BI	FBA_DQS_WP6	F4	DQS
BI	FBA_DQS_RN6	G4	DQS* 4.4F<> 3.4A<>

M4 DDR3BGA100 PACK_TYPE=BGA100 VERSTION=BGA100 COMMON

56	FBA_DATA<56>	C3	DQ0
57	FBA_DATA<57>	A4	DQ1
58	FBA_DATA<58>	A3	DQ2
59	FBA_DATA<59>	C4	DQ3
60	FBA_DATA<60>	D8	DQ4
61	FBA_DATA<61>	A8	DQ5
62	FBA_DATA<62>	C9	DQ6
63	FBA_DATA<63>	B9	DQ7
	FBA_DQM<7>	D4	DQM
3.4A<> 4.4F<> BI	FBA_DQS_WP7	C8	DQS
BI	FBA_DQS_RN7	B8	DQS*

4.5F< 4.5A< 3.3A<> IN FBA_DQM<7..0>

4	FBA_DQM<4>
5	FBA_DQM<5>
6	FBA_DQM<6>
7	FBA_DQM<7>

ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	Frame Buffer Partition A Upper 32 Bits

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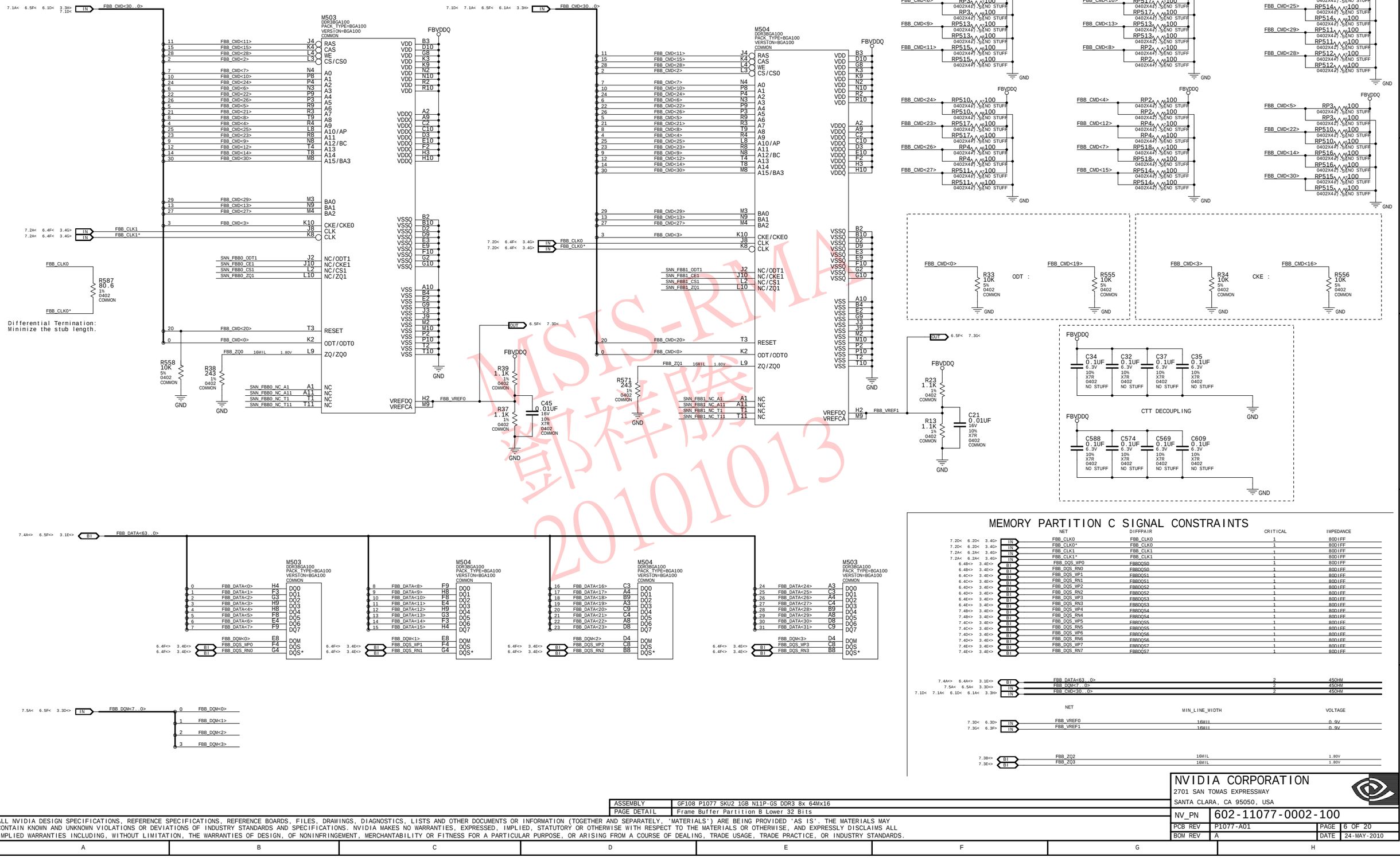
6. MEMORY PARTITION B LOWER 32 BITS



MEMORY PARTITION C SIGNAL CONSTRAINTS

NET	DIFFPAIR	CRITICAL	IMPEDANCE
FBB_CLK0	FBB_CLK0	1	80DIFF
FBB_CLK0*	FBB_CLK0	1	80DIFF
FBB_CLK1	FBB_CLK1	1	80DIFF
FBB_CLK1*	FBB_CLK1	1	80DIFF
FBB_DQS_WP0	FBBDQS0	1	80DIFF
FBB_DQS_RN0	FBBDQS0	1	80DIFF
FBB_DQS_WP1	FBBDQS1	1	80DIFF
FBB_DQS_RN1	FBBDQS1	1	80DIFF
FBB_DQS_WP2	FBBDQS2	1	80DIFF
FBB_DQS_RN2	FBBDQS2	1	80DIFF
FBB_DQS_WP3	FBBDQS3	1	80DIFF
FBB_DQS_RN3	FBBDQS3	1	80DIFF
FBB_DQS_WP4	FBBDQS4	1	80DIFF
FBB_DQS_RN4	FBBDQS4	1	80DIFF
FBB_DQS_WP5	FBBDQS5	1	80DIFF
FBB_DQS_RN5	FBBDQS5	1	80DIFF
FBB_DQS_WP6	FBBDQS6	1	80DIFF
FBB_DQS_RN6	FBBDQS6	1	80DIFF
FBB_DQS_WP7	FBBDQS7	1	80DIFF
FBB_DQS_RN7	FBBDQS7	1	80DIFF

NET		CRITICAL	IMPEDANCE
FBB_DATA<63..0>		2	45OHM
FBB_DQM<7..0>		2	45OHM
FBB_CMD<30..0>		2	45OHM

NET	MIN_LINE_WIDTH	VOLTAGE
FBB_VREF0	16MIL	0.9V
FBB_VREF1	16MIL	0.9V
FBB_ZQ2	16MIL	1.80V
FBB_ZQ3	16MIL	1.80V

ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	Frame Buffer Partition B Lower 32 Bits

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7. MEMORY PARTITION B UPPER 32 BITS

MIRROR MODE COMMAND MAPPING

GT21x	GF108	0-31	32-63
CMD0	CMD3	CKE	
CMD1	CMD8	A8	A8
CMD2	CMD2	CS0*	
CMD3	CMD21	A7	A6
CMD4	CMD24	A2	A1
CMD5	CMD23	A11	A9
CMD6	CMD26	A5	A4
CMD7	CMD7	A0	A12
CMD8	CMD15	CAS*	CAS*
CMD9	CMD13	BA1	A3
CMD10	CMD4	A9	A11
CMD11	CMD18		CS0*
CMD12	CMD29	BA0	BA0
CMD13	CMD27	BA2	A15
CMD14	CMD6	A3	BA1
CMD15	CMD17		CS1*
CMD16	CMD19		ODT
CMD17	CMD22	A4	A5
CMD18	CMD12	A13	A14
CMD19	CMD28	WE*	A10
CMD20	CMD10	A1	A2
CMD21	CMD25	A10	WE*
CMD22	CMD9	A12	A0
CMD23	CMD1	CS1*	
CMD24	CMD11	RAS*	RAS*
CMD25	CMD0	ODT	
CMD26	CMD5	A6	A7
CMD27	CMD16		CKE
CMD28	CMD20	RST	RST
CMD29	CMD14	A14	A13
CMD30	CMD30	A15	BA2
N/A	CMD31		

Differential Termination:

Minimize the stub length.

ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	Frame Buffer Partition B Upper 32 Bits

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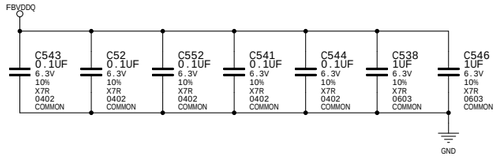
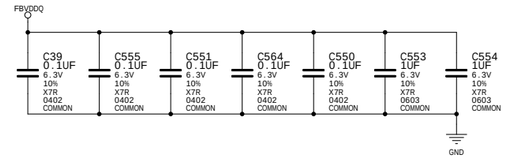
8. MEMORY DECOUPLING CAPS

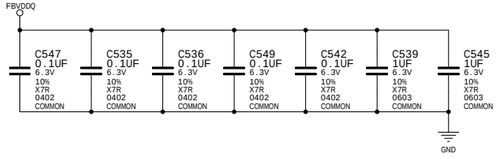
DECOUPLING CAPS FOR ONE MEMORY OF PARTION A LOWER BITS 0-15



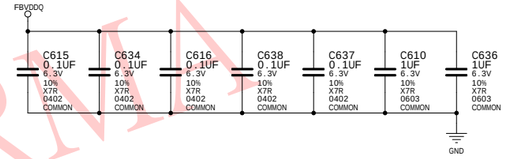
DECOUPLING CAPS FOR ONE MEMORY OF PARTION B LOWER BITS 0-15



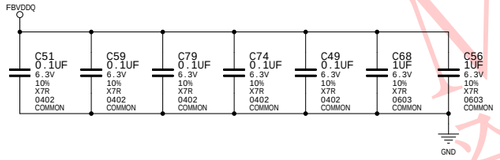
DECOUPLING CAPS FOR ONE MEMORY OF PARTION A LOWER BITS 16-31



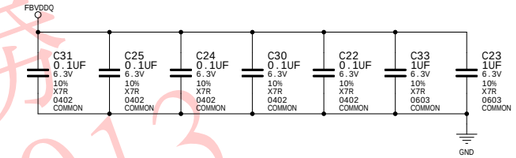
DECOUPLING CAPS FOR ONE MEMORY OF PARTION B LOWER BITS 16-31



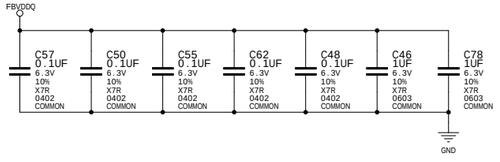
DECOUPLING CAPS FOR ONE MEMORY OF PARTION A UPPER BITS 32-47



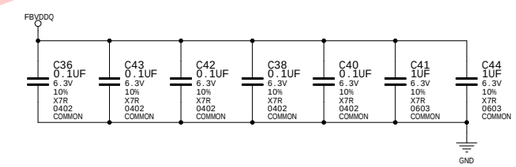
DECOUPLING CAPS FOR ONE MEMORY OF PARTION B UPPER BITS 32-47



DECOUPLING CAPS FOR ONE MEMORY OF PARTION A UPPER BITS 48-63



DECOUPLING CAPS FOR ONE MEMORY OF PARTION C UPPER BITS 48-63



ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	Memory Decoupling Caps

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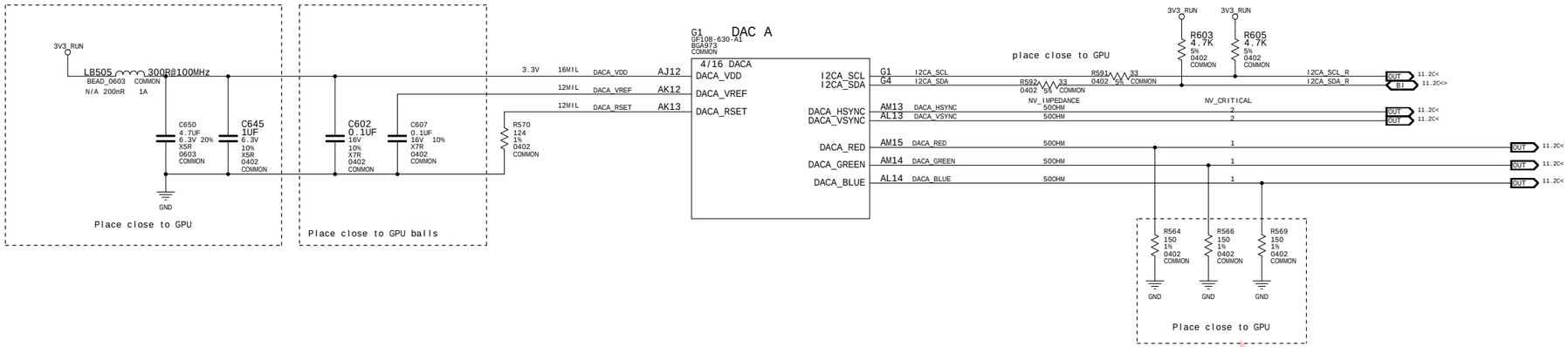
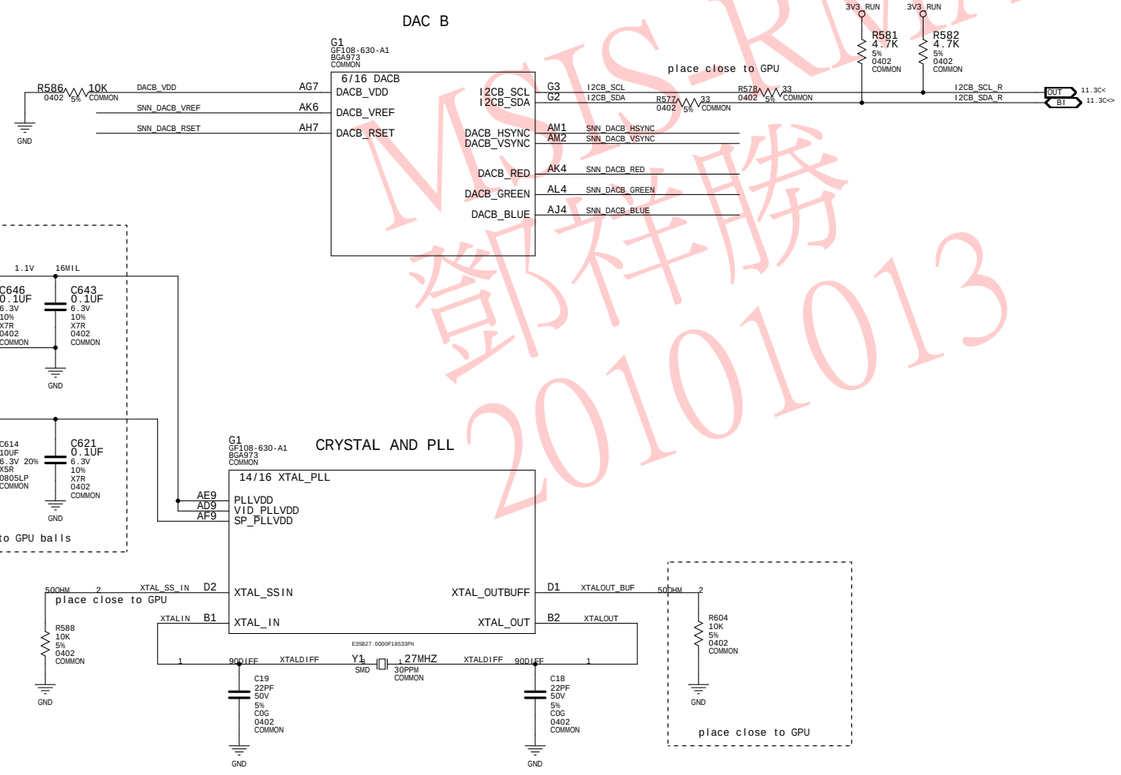
9. DAC_A, DAC_B, PLL, CRYSTAL





ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	DAC_A, DAC_B, SPREAD, CRYSTAL

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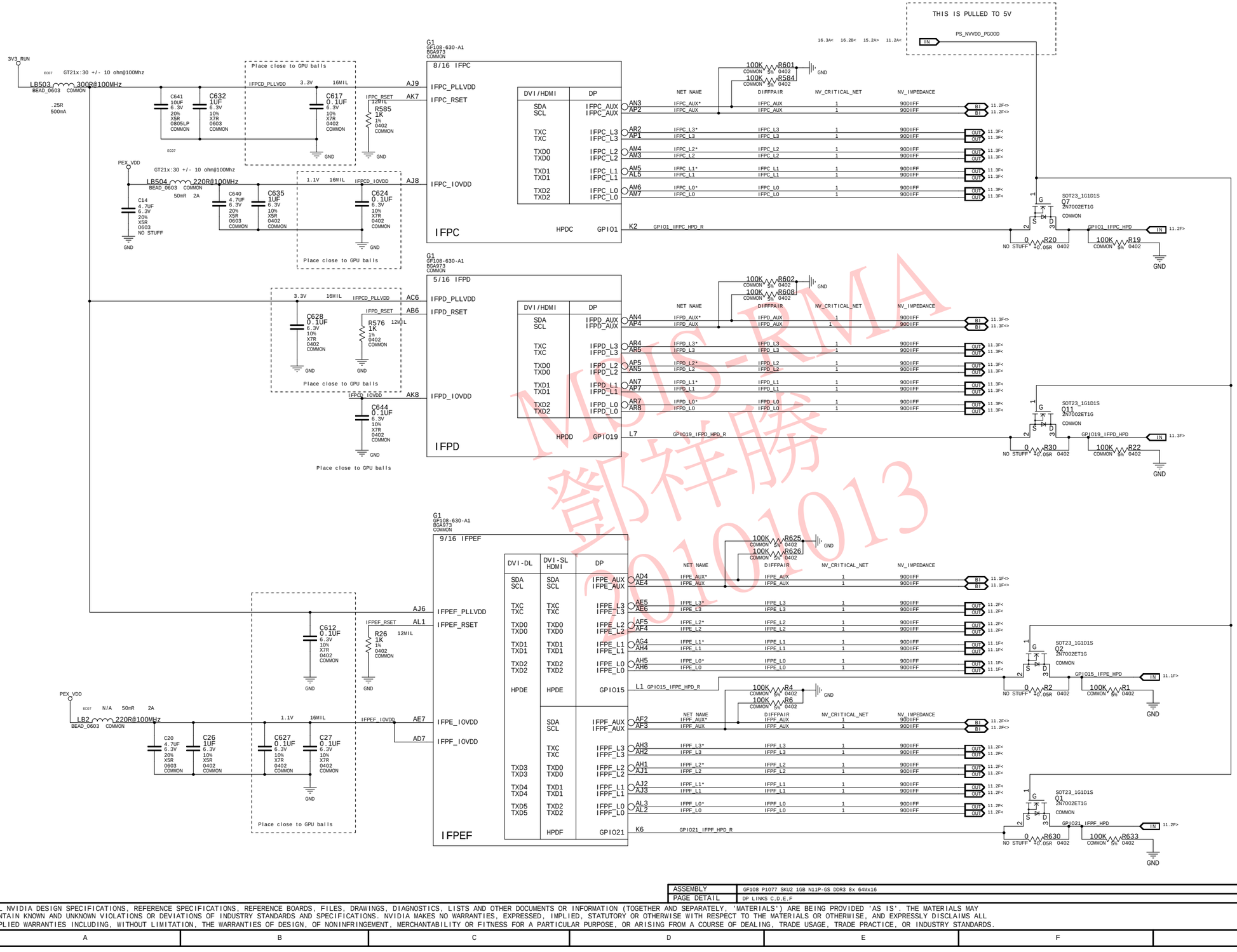
10. DP LINKS CD, LINK EF



ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	DP LINKS C,D,E,F

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11. MXM CONNECTOR

MXM CONNECTOR

CN1
CON_MXM3_EDGE
(N)PHY
NPHY
NO STUFF

2/2 IO - LVDS,DP/DVI,VGA,TV

Stuff Ra and Rc if OEM6 is used for Stereo 3D

Stuff Rb if MXM_GIPO2 is used for Stereo 3D

12.4E> IN GPIO23_STEREO_OUT
Ra 0 R560 NO STUFF +0.05R 0402
Rb 0 R563 NO STUFF +0.05R 0402
12.3E<> BI GPIO11_MXM2
Rc 0 R565 COMMON +0.05R 0402

SNN_MXM_OEM38 38 OEM0
SNN_MXM_OEM39 39 OEM1
SNN_MXM_OEM40 40 OEM2
SNN_MXM_OEM41 41 OEM3
SNN_MXM_OEM42 42 OEM4
SNN_MXM_OEM43 43 OEM5
GPIO23_STEREO_OUT_R 44 OEM6
SNN_MXM_OEM45 45 OEM7

12.4E<> BI GPIO17_MXM0 26 GPIO0
12.4E<> BI GPIO18_MXM1 28 GPIO1
GPIO11_MXM2_R 30 GPIO2

	VGA	SDTV	HDTV
9.1F> IN DACA_RED 168	VGA_RED	C	Pr
9.1F> IN DACA_GREEN 170	VGA_GREEN	Y	Y
9.1F> IN DACA_BLUE 172	VGA_BLUE	CVBS	Pb

9.1F> IN DACA_VSYNC 162 VGA_VSYNC
9.1F> IN DACA_HSYNC 164 VGA_HSYNC

9.1F> IN I2CA_SCL_R 160 VGA_DDC_CLK
9.1F<> BI I2CA_SDA_R 158 VGA_DDC_DAT

16.2B< 15.2A> 10.1F< 10.3A< IN PS_NVVDD_PGOOD

SOT23_1G1D1S 0503 NTR4003NT1G COMMON
12.3E> IN GPIO8_THERM_SHDWN*
R539 0 NO STUFF +0.05R 0402
R540 100K 5% 0402 COMMON 3V3

SOT23_1G1D1S 0505 NTR4003NT1G COMMON
12.3E> IN GPIO9_THERM_ALERT*
R549 0 NO STUFF +0.05R 0402
R542 100K 5% 0402 COMMON 3V3

SNN_MXM_WAKE 4 WAKE
SNN_HDMI_CEC_C 29 HDMI_CEC
17.5D< OUT MXM_VGA_DISABLE* 21 VGA_DISABLE

13.3H< OUT GPIO0_IFPAB_HPD 31 DVI_HPD
9.3F> IN I2CB_SCL_R 35 LVDS_DDC_CLK
9.3F<> BI I2CB_SDA_R 33 LVDS_DDC_DAT

12.3G> IN GPIO3_PPEN 23 PNL_PWR_EN
12.3G> IN GPIO4_BLEN 25 PNL_BL_EN
12.3G> IN GPIO2_BL_PWM 27 PNL_BL_PWM

12.2A<> BI SMB_DATA 32 SMB_DAT
12.2A< OUT SMB_CLK 34 SMB_CLK

GPIO8_THERM_SHDWN_R* 20 TH_OVERT
GPIO9_THERM_ALERT_R* 22 TH_ALERT
12.4E> IN MXM_TH_PWM 24 TH_PWM

16.3A> 16.2B> IN MXM_PWR_GOOD 6 PWR_GOOD

15.5F< 13.2A< OUT MXM_PWR_EN R537 1K 0402 1% COMMON
MXM_PWR_EN_R 8 PWR_EN

12.3F< OUT GPIO12_AC_BATT* 18 PWR_LEVEL

C534 1000PF 50V 10% X7R 0402 COMMON
GND
ESD Protection for MOSFET Gates

SNN_RSVD_0 10 RSVD
SNN_RSVD_1 12 RSVD
SNN_RSVD_2 14 RSVD
SNN_RSVD_3 16 RSVD

12.3B>	OUT	JTAG_TDO	0402X4	RP1 0	NO STUFF N/A	JTAG_TDO_R	159
12.3B<	IN	JTAG_TDI	0402X4	RP1 0	NO STUFF N/A	JTAG_TDI_R	161
12.3B<	OUT	JTAG_TCLK	0402X4	RP1 0	NO STUFF N/A	JTAG_TCLK_R	163
12.3B<	OUT	JTAG_TMS	0402X4	RP1 0	NO STUFF N/A	JTAG_TMS_R	165
12.3B>	OUT	JTAG_TRST	0402	R562 0	NO STUFF +0.05R	JTAG_TRST_R	167

SNN_RSVD_9 227 RSVD
SNN_RSVD_10 229 RSVD
SNN_RSVD_11 231 RSVD
SNN_RSVD_12 233 RSVD
SNN_RSVD_13 235 RSVD
SNN_RSVD_14 237 RSVD
SNN_RSVD_15 238 RSVD
STRAP2_R 239 RSVD
SNN_RSVD_17 240 RSVD
ROM_SCLK_R 241 RSVD
SNN_RSVD_19 242 RSVD
SNN_RSVD_20 243 RSVD
STRAP0_R 245 RSVD
SNN_RSVD_22 247 RSVD
SNN_RSVD_23 249 RSVD

Not for use with a compliant MXM 3.0 module
Not for production (test only) no need for
TP(s) on the resistro side

17.1C< 13.4C<	OUT	STRAP2	R648 0 0402 +0.05R	NO STUFF	SNN_RSVD_17
17.3C< 13.4C<	OUT	ROM_SCLK	R647 0 0402 +0.05R	NO STUFF	ROM_SCLK_R
17.1C< 13.4C<	OUT	STRAP0	R646 0 0402 +0.05R	NO STUFF	SNN_RSVD_22

DP_A_HPD	276	GPIO15_IFPE_HPD	OUT 10.4G<
DP_A_AUX	277	IFPE_AUX*	BI 10.4F<>
DP_A_AUX	279	IFPE_AUX	BI 10.4F<>
DP_A_L0	253	IFPE_L0*	IN 10.4F>
DP_A_L0	255	IFPE_L0	IN 10.4F>
DP_A_L1	259	IFPE_L1*	IN 10.4F>
DP_A_L1	261	IFPE_L1	IN 10.4F>
DP_A_L2	265	IFPE_L2*	IN 10.4F>
DP_A_L2	267	IFPE_L2	IN 10.4F>
DP_A_L3	271	IFPE_L3*	IN 10.4F>
DP_A_L3	273	IFPE_L3	IN 10.4F>
DP_B_HPD	274	GPIO21_IFPF_HPD	OUT 10.5G<
DP_B_AUX	270	IFPF_AUX*	BI 10.4F<>
DP_B_AUX	272	IFPF_AUX	BI 10.4F<>
DP_B_L0	246	IFPF_L0*	IN 10.5F>
DP_B_L0	248	IFPF_L0	IN 10.5F>
DP_B_L1	252	IFPF_L1*	IN 10.5F>
DP_B_L1	254	IFPF_L1	IN 10.5F>
DP_B_L2	258	IFPF_L2*	IN 10.5F>
DP_B_L2	260	IFPF_L2	IN 10.5F>
DP_B_L3	264	IFPF_L3*	IN 10.5F>
DP_B_L3	266	IFPF_L3	IN 10.5F>
DP_C_HPD	234	GPIO1_IFPC_HPD	OUT 10.2G<
DP_C_AUX	223	IFPC_AUX*	BI 10.1F<>
DP_C_AUX	225	IFPC_AUX	BI 10.1F<>
DP_C_L0	199	IFPC_L0*	IN 10.2F>
DP_C_L0	201	IFPC_L0	IN 10.2F>
DP_C_L1	205	IFPC_L1*	IN 10.2F>
DP_C_L1	207	IFPC_L1	IN 10.2F>
DP_C_L2	211	IFPC_L2*	IN 10.2F>
DP_C_L2	213	IFPC_L2	IN 10.2F>
DP_C_L3	217	IFPC_L3*	IN 10.1F>
DP_C_L3	219	IFPC_L3	IN 10.1F>
DP_D_HPD	236	GPIO19_IFPD_HPD	OUT 10.3G<
DP_D_AUX	230	IFPD_AUX*	BI 10.2F<>
DP_D_AUX	232	IFPD_AUX	BI 10.2F<>
DP_D_L0	206	IFPD_L0*	IN 10.3F>
DP_D_L0	208	IFPD_L0	IN 10.3F>
DP_D_L1	212	IFPD_L1*	IN 10.3F>
DP_D_L1	214	IFPD_L1	IN 10.3F>
DP_D_L2	218	IFPD_L2*	IN 10.3F>
DP_D_L2	220	IFPD_L2	IN 10.3F>
DP_D_L3	224	IFPD_L3*	IN 10.3F>
DP_D_L3	226	IFPD_L3	IN 10.3F>
LVDS_UTX0	195	IFPB_TXD4	IN 13.2H>
LVDS_UTX0	193	IFPB_TXD4*	IN 13.2H>
LVDS_UTX1	189	IFPB_TXD5	IN 13.2H>
LVDS_UTX1	187	IFPB_TXD5*	IN 13.2H>
LVDS_UTX2	183	IFPB_TXD6	IN 13.2H>
LVDS_UTX2	181	IFPB_TXD6*	IN 13.2H>
LVDS_UTX3	177	IFPB_TXD7	IN 13.2H>
LVDS_UTX3	175	IFPB_TXD7*	IN 13.2H>
LVDS_UCLK	171	IFPB_TXC	IN 13.3H>
LVDS_UCLK	169	IFPB_TXC*	IN 13.3H>
LVDS_LTX0	202	IFPA_TXD0	IN 13.1H>
LVDS_LTX0	200	IFPA_TXD0*	IN 13.1H>
LVDS_LTX1	196	IFPA_TXD1	IN 13.2H>
LVDS_LTX1	194	IFPA_TXD1*	IN 13.2H>
LVDS_LTX2	190	IFPA_TXD2	IN 13.2H>
LVDS_LTX2	188	IFPA_TXD2*	IN 13.2H>
LVDS_LTX3	184	IFPA_TXD3	IN 13.2H>
LVDS_LTX3	182	IFPA_TXD3*	IN 13.2H>
LVDS_LCLK	178	IFPA_TXC	IN 13.2H>
LVDS_LCLK	176	IFPA_TXC*	IN 13.2H>

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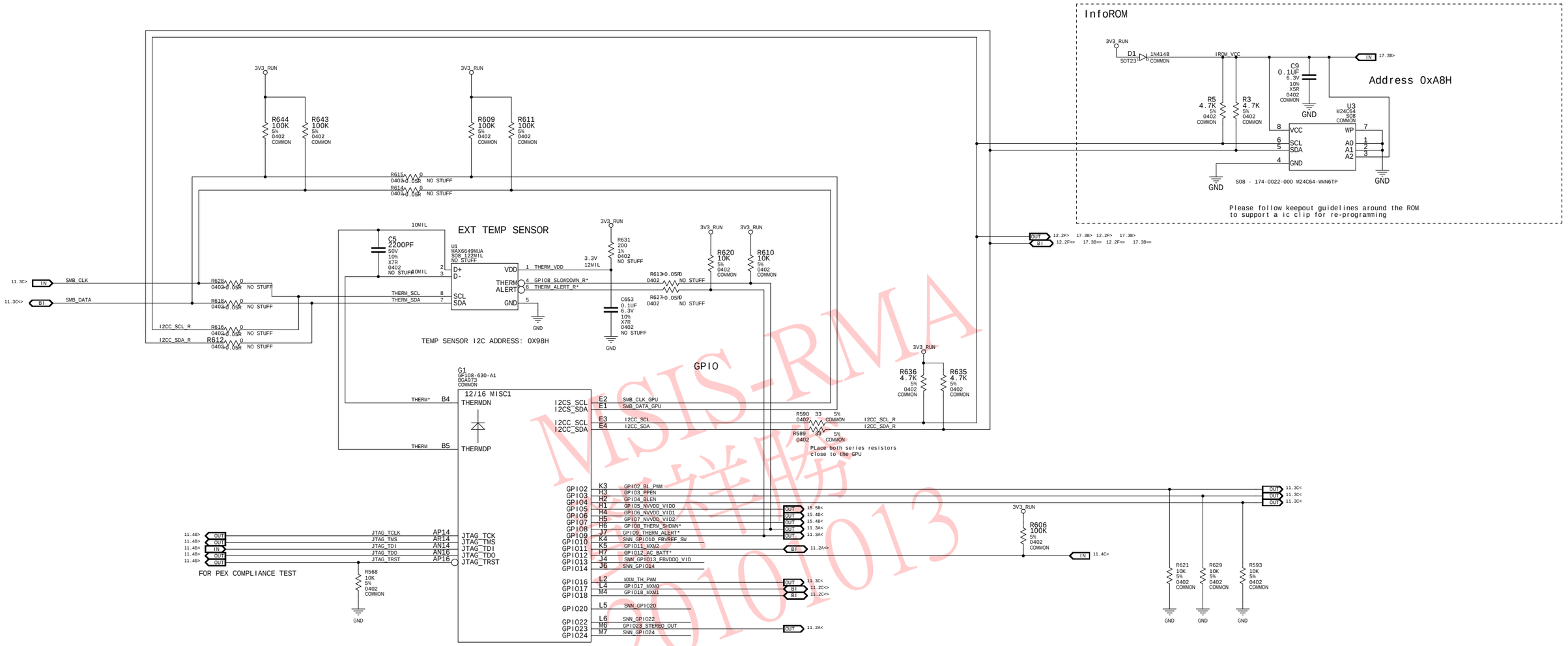
ASSEMBLY	GF108 P1077 5KU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	MXM Connector, IO-Section
NV_PN	602-11077-0002-100
PCB REV	P1077-A01
PAGE	11 OF 20
BOM REV	A
DATE	24-MAY-2010

12. GPIO, JTAG, TEMP SENSOR, Info ROM



ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	GPIOs, JTAG, Thermal Sensor,Info ROM

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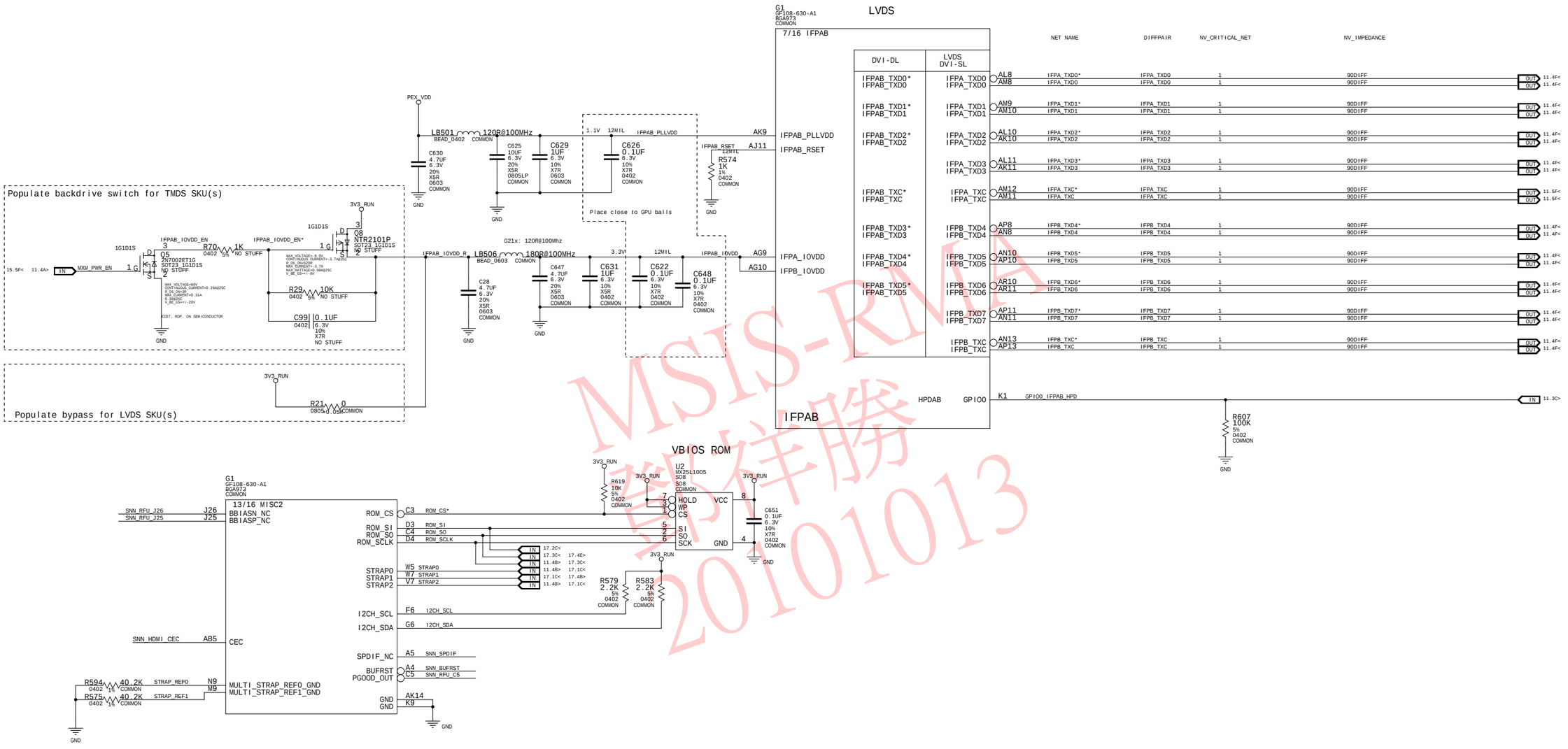
NV_PN	602-11077-0002-100		
PCB REV	P1077-A01	PAGE	12 OF 20
BOM REV	A	DATE	24-MAY-2010

13. LVDS, VBIOS



ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	LVDS, VBIOS

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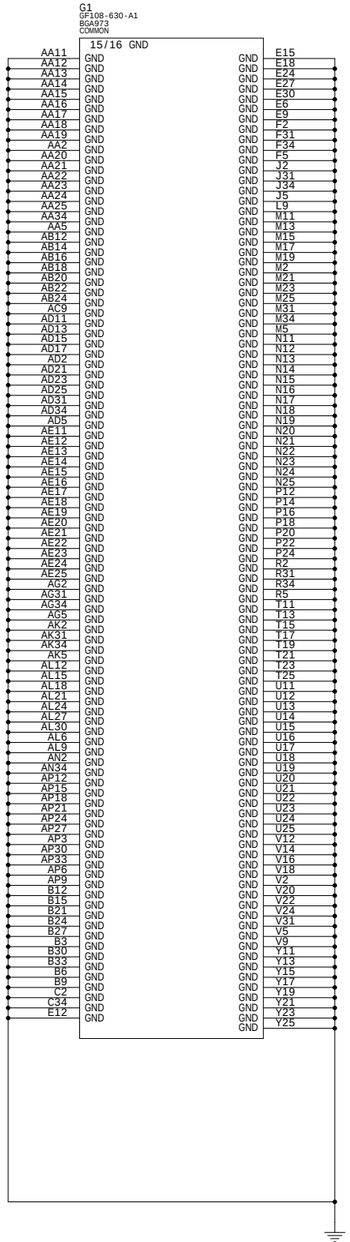
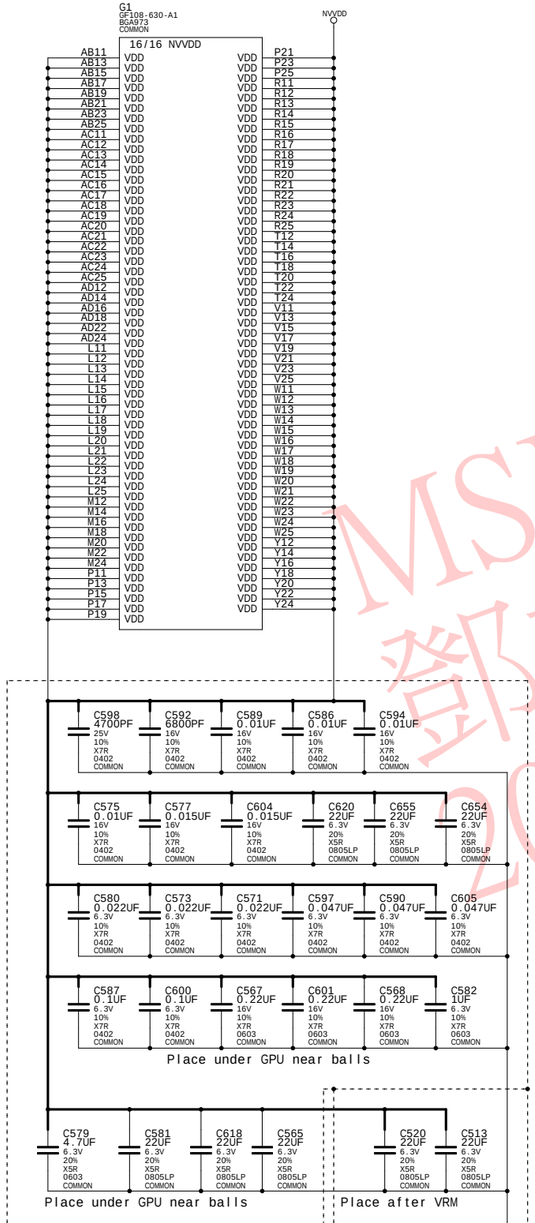
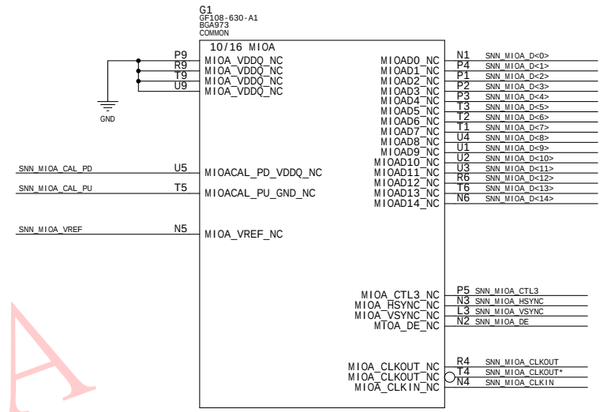
14. MIOA, MIOB, GPU VDD/DCPLNG/GND

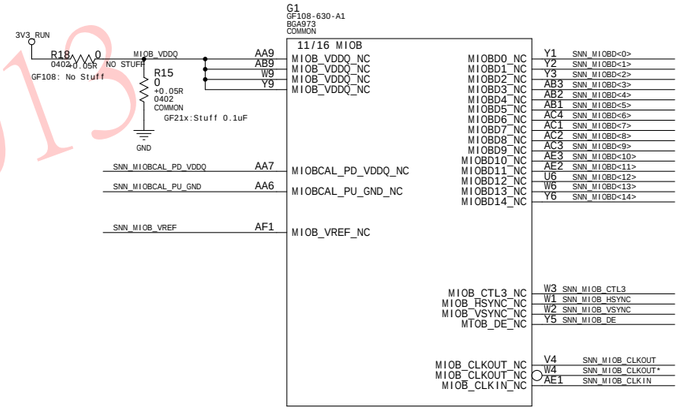




MIOA



MIOB



ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	MIOA, MIOB, GPU VDD\DCPLNG\GND

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NV_PN	602-11077-0002-100		
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15. NVVDD POWER SUPPLY AND 3V3_RUN

NET	VOLTAGE	MIN_WIDTH_LINE	NV_NET_MAX_CURRENT
NVVDD	1V	20MIL	30A

Mode 1: INPUT CURRENT RMS = 4.3A @ 7.0V INPUT AND 1.0V OUTPUT
Mode 2: INPUT CURRENT RMS = 9.2A @ 7.0V INPUT AND 1.0V OUTPUT

PWR_SRC

C531 0.1UF 50V 10% X7R 0603 COMMON
C82 0.1UF 50V 10% X7R 0603 COMMON
C84 0.1UF 50V 10% X7R 0603 COMMON
C532 4.7UF 25V 10% X6S 1206LP COMMON
C89 4.7UF 25V 10% X6S 1206LP COMMON
C86 4.7UF 25V 10% X6S 1206LP COMMON
C524 4.7UF 25V 10% X6S 1206LP COMMON
C525 4.7UF 25V 10% X6S 1206LP COMMON
C526 4.7UF 25V 10% X6S 1206LP COMMON
Mode 2: STUFF FOR GT215/6

stuff for NCP5212
D501 BAT43 SOD323 40V 400MA NO STUFF

U501 ISL6269ACRZ VR_SW=0.6V MLFP16 MLFP16 COMMON

5V
R518 0 0402 0.05W COMMON
C507 1uF 16V 10% X5R 0402 COMMON
PS1_VCC 5V 16MIL
R527 10K 5% 0402 COMMON
C529 1uF 16V 10% X5R 0402 COMMON
DEM USED

PVCC 12 | VCC 2 | FCCM 3 | PGOOD 16 | EN 4 | FSET 7 | GND(PAD) TP | COMP 5
VIN 1 | UG 14 | BOOT 13 | PHASE 15 | ISEN 9 | LG 11 | PGND 10 | VO 8 | FB 6

C522 0.01UF 0402 25V 10% X7R COMMON
PS1_UG 20MIL
PS1_BOOT 12MIL
R512 0 0402 0.05W COMMON
PS1_BOOT_R 12MIL
C515 0.1UF 50V 10% X7R 0603 COMMON
PS1_PH 20MIL
PS1_ISEN 12MIL
PS1_LG 20MIL

LFPAK Q13 MDU2657 LFPAK COMMON
MAX_VOLTAGE=30V CONTINUOUS_CURRENT=0.7A R_DS_ON=3R1@10V, 0.0113R@4.5V MAX MAX_WATTAGE=0.5W V_GE_GS=+/-20V
LFPAK Q15 MDU2654 LFPAK COMMON
MAX_VOLTAGE=30V CONTINUOUS_CURRENT=0.26A R_DS_ON=3R1@10V, 0.0045R@4.5V MAX MAX_WATTAGE=0.5W V_GE_GS=+/-20V

16.3A< 16.2B< 11.2A< 10.1E<
3V3_RUN
R528 1K 0402 1% COMMON
PS_NVVDD_PGOOD
PS_NVVDD_EN
C523 0.1UF 6.3V 10% X7R 0402 COMMON
PS1_FS 12MIL
SET TO 350KHZ
R511 38.3K 1% 0402 COMMON
C514 0.01UF 16V 10% X7R 0402 COMMON
SW_FREQ = 1/(Rfset*75 10^-12)
PS1_CP 12MIL
R526 26.7K 1% COMMON
PS1_CP_R 12MIL
C528 4700PF 25V 10% X7R COMMON
C517 33PF 50V 5% C0G COMMON
R520 10K 0402 1% NO STUFF
stuff for NCP5212

R504 10K 5% 0402 NO STUFF
C502 1000PF 50V 10% X7R 0402 NO STUFF
stuff for NCP5212

LFPAK Q16 MDU2654 LFPAK COMMON
Mode 2: STUFF FOR GT215/6

C506 1000PF 0402 50V 10% X7R NO STUFF
R503 549K 0402 1% NO STUFF
stuff for NCP5212
PS1_ISEN
R508 7.5K 1% 0402 COMMON

ALTERNATE: 131-0516-000
L3 0.47uH SMD_13MM COMMON
C91 1000PF 50V 10% X7R 0402 COMMON
DCR: 0.002 R
MAX_I: 55A
CONT_I: 32A
16MIL PS1_RC
R56 1 5% 1206 COMMON
C87 330UF COMMON +/-20% 2.5V CONDUCTIVE POLYMER 2.1A@100 TO 500KHZ, 45C 0.015 OHM SMD_TPL
C93 330UF COMMON +/-20% 2.5V CONDUCTIVE POLYMER 2.1A@100 TO 500KHZ, 45C 0.015 OHM SMD_TPL
Mode 2: STUFF FOR GT215/6
R516 100 5% 0402 COMMON FOR NVVDD OUTPUT SIDE SENSE

NVVDD=1V
Mode 1: 11A @ 350KHZ
Mode 2: 25A @ 350KHZ
C511 10UF 6.3V 20% X5R 0805LP COMMON
C519 10UF 6.3V 20% X5R 0805LP COMMON
C512 10UF 6.3V 20% X5R 0805LP COMMON
C97 10UF 6.3V 20% X5R 0805LP COMMON
C11 220UF NO STUFF +/-20% 2.5V POSCAP 100 TO 500 KHZ 0.070 OHM SMD_3528
1A@45C,
NVVDD

NVVDD_SENSE_FB 12MIL
R523 0 0402 0.05W COMMON 12MIL
FOR GPU REMOTE SIDE SENSE
NVVDD_SENSE <IN 2.4G>
R513 0 0402 0.05W NVVDD_SENSE_TP NO STUFF OUT 17.1A<
TEST ONLY NOT FOR PRODUCTION

R525 10K 1% 0402 NO STUFF PS1_CP_TPIII
C516 0.22UF 10V 10% X5R 0402 NO STUFF
stuff for NCP5212

Rtop
R524 3.4K 1% 0402 COMMON

PS1_FB
R54 0 0402 0.05W NO STUFF PS1_FB_TP OUT 17.1A<
TEST ONLY NOT FOR PRODUCTION

VOUT = ((RT +RB)/RB) X 0.6

VID<1:0>	VO	RTop	RBot	GPIO6	GPIO5
00	0.825V	3.4K	9.09K	Low	Low
01	0.900V	3.4K	9.09K || 26.7K	Low	High
10	0.950V	3.4K	9.09K || 16.2k	High	Low
11	1.025V	3.4K	9.09K || 16.2k || 26.7K	High	HIGH

Note: Actual RT/RBx values are SKU dependent so they may be different than above.

3V3_RUN
R638 10K 5% 0402 NO STUFF
R637 10K 0402 5% NO STUFF
R639 10K 5% 0402 NO STUFF
12.3E> IN GPIO7_NVVDD_VID2
PS1_VID2
PS1_VID2_Q 12MIL
Rbot2
R642 20.5K 0402 1% NO STUFF
Q507 2N7002ET1G SOT23_1G1D1S NO STUFF
C657 0.01UF 0402 16V 10% X7R NO STUFF
R519 16.2K 1% 0402 COMMON
Rbot1
R514 26.7K 1% 0402 COMMON
Rbot0
Rbot
R531 9.09K 1% 0402 COMMON
PS1_VID1_Q 12MIL
12MIL PS1_VID0_Q

R533 10K 0402 5% COMMON
12.3E> IN GPIO6_NVVDD_VID1
R532 10K 0402 5% COMMON
PS1_VID1
Q502 2N7002ET1G SOT23_1G1D1S COMMON
R530 10K 5% 0402 NO STUFF
C530 0.01UF 0402 16V 10% X7R COMMON

R61 10K 0402 5% NO STUFF
12.3E> IN GPIO5_NVVDD_VID0
R502 10K 0402 5% COMMON
PS1_VID0
Q501 2N7002ET1G SOT23_1G1D1S COMMON
C505 0.01UF 0402 16V 10% X7R COMMON
R58 10K 5% 0402 COMMON
GND_SENSE_R
R517 0 0402 0.05W COMMON GND_SENSE <IN 2.4G>
R509 100 5% 0402 COMMON

3V3_RUN
3V3
R31 100K 0402 5% COMMON 3V3_RUN_EN_R
C29 1UF 0402 6.3V 10% X5R COMMON
Q9 NTR2101P SOT23_1G1D1S COMMON
13.2A< 11.4A< IN MXM_PWR_EN
Q10 2N7002ET1G SOT23_1G1D1S COMMON
3V3_RUN_EN
R32 2K 0402 5% COMMON

ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	NVVDD Power Supply and 3V3_RUN

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16. FBVDDQ,PEXVDD,AND VDD_IO_PLL POWER SUPPLIES

NET	VOLTAGE	MIN_WIDTH_LINE	NV_NET_MAX_CURRENT
PEX_VDD	1.1V	16MIL	4.0A
FBVDDQ	1.8V	16MIL	10A

U6
ISL6269ACRZ
VR_SS=0.6V
MLPP16
MLFP16
COMMON

PVCC 12 · VCC 2 · FCCM 3 · PGOOD 16 · EN 4 · FSET 7 · GND(PAD) TP · COMP 5 · VIN 1 · UG 14 · BOOT 13 · PHASE 15 · ISEN 9 · LG 11 · PGND 10 · VO 8 · FB 6

5V
R55 0 0402 0.05R COMMON
PS2_VCC
C92 1UF 16V 10% X5R 0402 COMMON
C95 1UF 16V 10% X5R 0402 COMMON DEM USED
3V3_RUN
R52 10K 5% 0402 COMMON
16.3A> 11.4C< OUT MXM_PWR_GOOD
15.2A> 16.1C< 16.2A< 16.3A< IN PS_NVVDD_PGOOD
PS2_FB R507 10K 0402 1% NO STUFF
stuff for NCP5212
SW_FREQ = 1/(Rfset*75 10^-12)
PS2_FS 12MIL SET TO 400KHZ
R505 33.2K 1% 0402 COMMON
C501 0.01UF 16V 10% X7R 0402 COMMON
PS2_CP 12MIL
R501 33.2K 0402 1% COMMON PS2_CP_R 12MIL
C504 680PF 16V 10% X7R 0402 COMMON
C503 33PF 50V 5% C0G 0402 COMMON
PS2_FB 12MIL

D502 BAT43 SOD323 40V 400MA NO STUFF
stuff for NCP5212
C94 0.01UF 0402 25V 10% X7R COMMON GND
PS2_UG 20MIL
PS2_BOOT 12MIL
R522 0 PS2_BOOT_R 0402 0.05R COMMON
0.1UF 16V 10% X7R C518 0402 COMMON
PS2_PHASE 20MIL
PS2_ISEN 12MIL
PS2_LG 20MIL

LFPAK
Q12 EMB12N03V DFN3X3 COMMON
MAX VOLTAGE=30V CONTINUOUS CURRENT=18.5A@25C R_DS_ON=0.015@10V, 0.016@4.5V MAX CURRENT=74A V_GS_TH=0.7~1.25@4.5V V_BE_SS=20V
LFPAK
Q14 EMB09N03V DFN3X3 COMMON
MAX VOLTAGE=30V CONTINUOUS CURRENT=20A@25C R_DS_ON=0.009@10V, 0.012@4.5V MAX CURRENT=80A V_GS_TH=0.7~1.5V V_BE_SS=20V
R53 5% 0402 NO STUFF
stuff for NCP5212

PWR_SRC
C540 0.1UF 50V 10% X7R 0603 COMMON
C77 0.1UF 50V 10% X7R 0603 COMMON
C76 0.1UF 50V 10% X7R 0603 COMMON
C85 4.7UF 25V 10% X6S 1206LP COMMON
C88 4.7UF 25V 10% X6S 1206LP COMMON
C90 4.7UF 25V 10% X6S 1206LP COMMON
GND

PS2_ISEN
R521 8.2K 0402 5% COMMON
C96 1000PF 0402 50V X7R NO STUFF
R57 549K 0402 1% NO STUFF
stuff for NCP5212

FBVDDQ=1.50V
6A @ 400KHZ
10A
L2 2.2UH SMD_6X6 COMMON DCR: 0.020R MAX_I: 14A CONT_I: 8A
ALT 131-0055-000
ALT 131-0129-000
C83 1000PF 50V 10% X7R 0402 COMMON
PS2_RC 499FL
R49 1 5% 1206 COMMON
R60 0 +0.05R 0402 COMMON
PS2_FB_R
Rtop
R510 3.09K 1% 0402 COMMON
stuff for NCP5212
R515 10K 1% 0402 NO STUFF
PS2_CP_TPIII
C509 0.22UF 10V 10% X5R 0402 NO STUFF
R59 0 0402 0.05R NO STUFF PS2_FB_TP OUT 17.2A<
TEST ONLY NOT FOR PRODUCTION
Rbot
R506 2.05K 1% 0402 COMMON

FBVDDQ
C66 10UF 6.3V 20% X5R 0805LP COMMON
C58 10UF 6.3V 20% X5R 0805LP COMMON
C53 0.1UF 6.3V 10% X7R 0402 COMMON
C73 330UF COMMON +/-20% 2.5V CONDUCTIVE POLYMER 2.1A@100 TO 500KHZ, 45C 0.015 OHM SMD_TPL

Vout = Vref * (1 + Rtop / Rbot)
No DVS 1.5V: 1.504V = 0.6V * (1 + 3.09K/(2.05k)
No DVS 1.8V: 1.804V = 0.6V * (1 + 3.09K/(1.54k)

PEX_VDD

15.2A> 11.2A< 16.1C< 16.3A< IN PS_NVVDD_PGOOD
16.3A> 16.2B< 11.4C< OUT MXM_PWR_GOOD

3V3_RUN
R12 10K 5% 0402 NO STUFF
PEX_VDD
R8 10K 5% 0402 NO STUFF
Q4 MMBT2222A SOT23_1B1C1E NO STUFF PS_PGOOD_PEX
Q3 MMBT2222A SOT23_1B1C1E NO STUFF PS_PGOOD_PEX
1B1C1E
GND

5V
C81 4.7UF 6.3V 20% X5R 0603 NO STUFF
C80 4.7UF 6.3V 20% X5R 0603 NO STUFF
GND

RT=330k => 1MHZ
>VIN-0.4V OFF
PS_1V05_FS
R546 10K 0402 NO STUFF
R543 332K 1% 0402 NO STUFF
1G1D1S
Q504 2N7002ET1G SOT23_1G1D1S NO STUFF PS_1V05_EN*
MAX VOLTAGE=60V CONTINUOUS CURRENT=0.26A@25C MAX CURRENT=0.31A MAX_WATTAGE=0.3W@25C V_GE_GS=+/-20V
PS_NVVDD_PGOOD
GND

U5
RT8015A
VR=0.8V
DFN10
NO STUFF
IN IN VDD SHDN/RT GND PGND THERMAL
SW SW COMP FB
DFN10
RT8015A
MP9115
BS5012
RT8015

PS_1V05_SNUB
R50 1 0603 5% NO STUFF
C75 1000PF 0402 50V 10% X7R NO STUFF
0.021R 6A
PS_1V05_PHASE
L1 0.47uH SMD_045_041 NO STUFF
PEX_VDD
PS_1V05_CP
R535 30K 0402 5% NO STUFF PS_1V05_CP_RC
C537 1000PF 0402 50V 10% X7R NO STUFF
C533 22PF 0402 50V 5% C0G NO STUFF
PS_1V05_FB_1
R51 0 0402 0.05R NO STUFF
R534 3.57K 0402 1% NO STUFF PS_1V05_FB_0
R645 0 +0.05R 0402 NO STUFF
PS_1V05_FB_1_R
R529 11.5K 1% 0402 NO STUFF
R536 0 0402 0.05R NO STUFF PS_1V05_FB_TP OUT 17.2A<
C61 0.1UF 6.3V 10% X7R 0402 NO STUFF
C69 10UF 6.3V 20% X5R 0805 COMMON
C67 10UF 6.3V 20% X5R 0805 COMMON

RT9025-1KGSP
APL5920KAI-TRG
uP7706AU8
uP7704U8
PS_NVVDD_PGOOD
1.05V @ 1.7A
U4
APL5920
SOP8
COMMON
VIN VOUT VCNTL EN POK NC FB GND GND
FBVDDQ 5V PEX_VDD
C4 10UF 6.3V 20% X5R 0805 COMMON
C1 1UF 6.3V 10% X5R 0402 COMMON
MXM_PWR_GOOD
SNN_PS_PEXVDD_NC
C8 0.1UF 6.3V 10% X7R 0402 COMMON
PS_1V05_FB
R9 3.57K 1% 0402 COMMON
R7 11.5K 1% 0402 COMMON
C2 0.1UF 6.3V 10% X7R 0402 COMMON
C7 10UF 6.3V 20% X5R 0805 COMMON
C3 10UF 6.3V 20% X5R 0805 COMMON
Vout = Vref * (1+Rtop/Rbot)
1.05 = 0.8 * (1+3.57k/11.5k)
GND

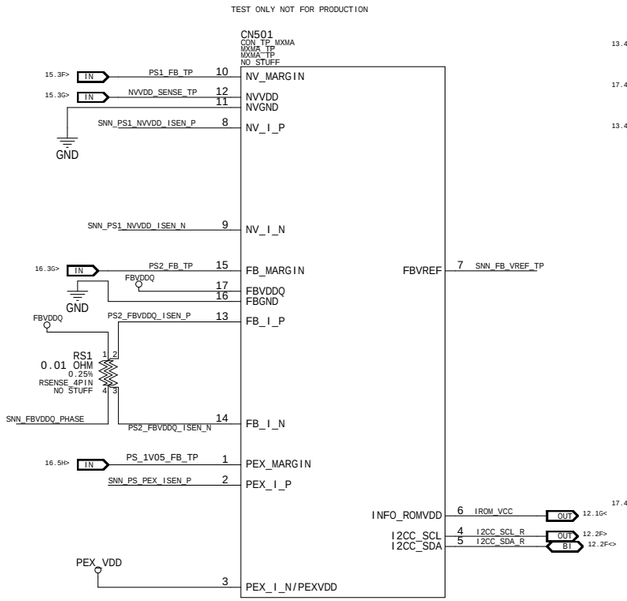
Switcher Option

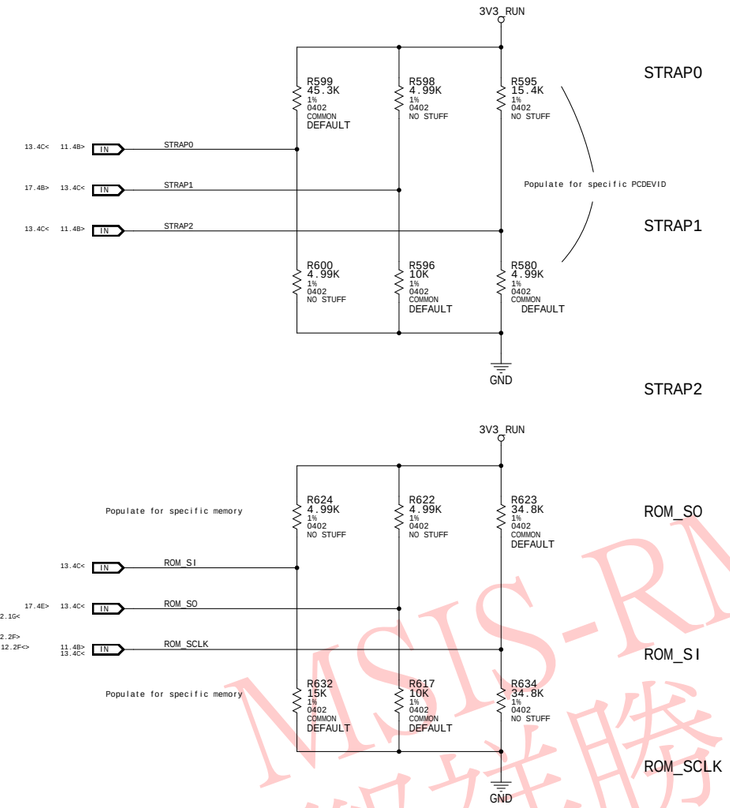
ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	FBVDDQ, PEXVDD, and VDD_IO_PLL Power Supplies

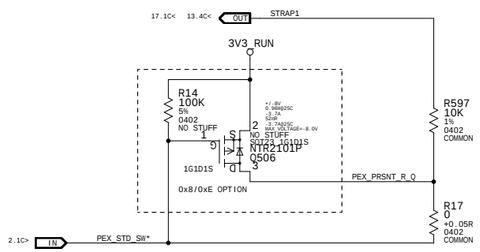
NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

NV_PN	602-11077-0002-100		
PCB REV	P1077-A01	PAGE	16 OF 20
BOM REV	A	DATE	24-MAY-2010

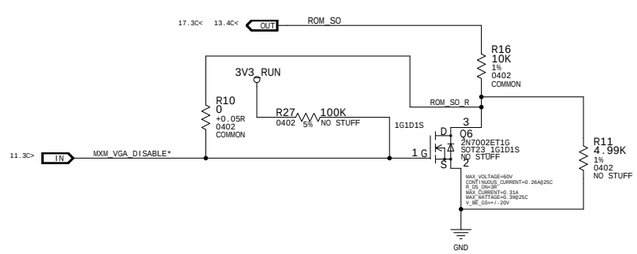
17. STRAPS, MOUNTING HOLES



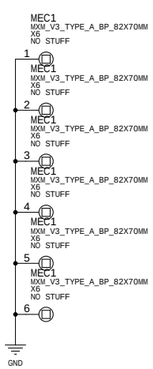




PEX_PRSNT_STDSW*	R_STRAP1	3_GIO_PADCFG_LUT<3..0>
FLOAT	10kPD	0x1 MOBILE_DEFAULT
GND	5kPD (10k ll 10k)	0x0 DESKTOP_DEFAULT
FLOAT	34.8kPU	0xE MOBILE_DEFAULT
GND	5kPU (34.8K//5.9k)	0x8 DESKTOP_DEFAULT



VGA_DISABLE#	R_ROM_SO	MODE
FLOAT	10k	0x1 VGA MODE
GND	5k (10k ll 10k)	0x0 3D ACCELERATOR
GND	15k (5k + 10k)	0x2 3D Device with SMB_ALT_ADDR



	GND	3V3
5K	0000	1000
10K	0001	1001
15K	0010	1010
20K	0011	1011
25K	0100	1100
30K	0101	1101
35K	0110	1110
45K	0111	1111

USER_BIT0
USER_BIT1
USER_BIT2
USER_BIT3

Default All SKU(s):
0xF = 45K PU
LVDS Panel EDID Mode

3GIO_PADCFG_LUT_ADR0
3GIO_PADCFG_LUT_ADR1
3GIO_PADCFG_LUT_ADR2
3GIO_PADCFG_LUT_ADR3

Set at HW reset by the PEX_PADCFG Circuit
0x0: Desktop default (normal swing) - 5k PD
0x1: Mobile default (low swing) - 10k PD

PCDEVID_3:0] Definitions (Note Actual DEVID set also depends on PCI_DEVID_4)

PCI_DEVID_0
PCI_DEVID_1
PCI_DEVID_2
PCI_DEVID_3

GT218			GT216			GF108		
1000	5K PU	GT218-700	1000	5K PU	GT216-600	0000	5K PD	GF108-630
0100	25K PD	GT218-730	0100	25K PD	GT216-630			
			1100	25K PU	GT216-640			
			1100	25K PU	GT216-950			

VGA_DEVICE — 0: 3D DEVICE; 1: VGA DEVICE — Set at HW reset by the Device Detect Circuit

---

SMB_ALT_ADDR — 0: Thermal Sensor ADR = 0x9E

0x1 = 10K PD

FB_0_BAR_SIZE — 0: Default

XCLK_417 — 0: Default

RAM_CFG[3:0] Definitions

RAM_CFG_0
RAM_CFG_1
RAM_CFG_2
RAM_CFG_3

GF108 64Mx16		
0000	5K PD	Reserved
0001	10K PD	Reserved
0010	15K PD	HYNIX
0011	20K PD	SAMSUNG

GT108 128Mx16		
0100	25k PD	Reserved
0101	30k PD	Reserved
0110	35k PD	HYNIX
0111	45K PD	SAMSUNG

DEFAULT

GT215/6			
0001	Reserved	1001	Reserved
0001	64Mx16 128-bit 10K PD Qimonda	1001	64Mx16 64-bit 10K PU Qimonda
0010	64Mx16 128-bit 15K PD Hynix	1010	64Mx16 64-bit 15K PU Hynix
0011	64Mx16 128-bit 20K PD Samsung	1011	64Mx16 64-bit 20K PU Samsung
0100	Reserved	1100	Reserved
0101	32Mx16 128-bit 30K PD Qimonda	1101	128Mx16 64-bit 30K PU Qimonda
0110	32Mx16 128-bit 35K PD Hynix	1110	128Mx16 64-bit 35K PU Hynix
0111	32Mx16 128-bit 45K PD Samsung	1111	128Mx16 64-bit 45K PU Samsung

* 32Mx16 MAY BE 64Mx16 run at 1/2 density

PEX_PLL_EN_TERM100 — 0: DISABLED

SLOT_CLK_CONFIG — 1: GPU and MCH COMMON REFCLK

SUB_VENDOR — 1: VBIOS ROM IS PRESENT

0x6 = 35K PD PCDEVID_EXT=0
0xE = 35K PU PCDEVID_EXT=1

PCI_DEVID_EXT — 0: PCDEVID[4] = 0 or 1 (SKU Specific)

ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE_DETAIL	STRAPS and MOUNTING HOLES

NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

NV_PN	602-11077-0002-100		
PCB REV	P1077-A01	PAGE	17 OF 20
BOM REV	A	DATE	24-MAY-2010

```
Title:         Basenet Report
Design:        p1077_a01
Date:          May 21 21:03:21 2010

Base nets and synonyms for
p1077_a01_lib.P1077_A01(@p1077_a01_lib.p
1077_a01(sch_1))
Base Signal         Location([Zone][dir])

3V3                 2.5H
3V3_RUN             2.5H
3V3_RUN_EN          15.4G
3V3_RUN_EN_R        15.4G
5V                  2.5H
DACA_BLUE           9.1F> 11.2C<
DACA_GREEN          9.1F> 11.2C<
DACA_HSYNC          9.1F> 11.2C<
DACA_RED            9.1F> 11.2C<
DACA_RSET           9.1C
DACA_VDD            9.1C
DACA_VREF           9.1C
DACA_VSYNC          9.1F> 11.2C<
DACB_VDD            9.3B
FBA_CLK0            3.4D> 4.2A 4.2D<
                    4.4F< 5.2D<
FBA_CLK0*           3.4D> 4.2D< 4.3A
                    4.4F< 5.2D<
FBA_CLK1            3.4D> 4.2A< 4.4F<
                    5.1D 5.2A<
FBA_CLK1*           3.4D> 4.2A< 4.4F<
                    5.2A< 5.2D
FBA_CMD<0>          3.3C 4.2F 4.3B 4.3D
FBA_CMD<30..0>      3.3D> 4.1A< 4.1D<
                    4.5F< 5.1A< 5.1D<
FBA_CMD<2>          3.3C 4.1B 4.1D 4.1G
FBA_CMD<3>          3.3C 4.2B 4.2D 4.2G
FBA_CMD<4>          3.3C 4.1B 4.1D 4.1G
                    5.2B 5.2E
FBA_CMD<5>          3.3C 4.1B 4.1D 4.1H
                    5.2B 5.2E
FBA_CMD<6>          3.3C 4.1B 4.1D 4.1F
                    5.2B 5.2E
FBA_CMD<7>          3.3C 4.1B 4.1D 4.1G
                    5.2B 5.2E
FBA_CMD<8>          3.3C 4.1B 4.1D 4.1G
                    5.2B 5.2E
FBA_CMD<9>          3.3C 4.2B 4.2D 4.2G
                    5.1B 5.1E
FBA_CMD<10>         3.3C 4.1B 4.1D 4.1F
                    5.1B 5.1E
FBA_CMD<11>         3.3C 4.1B 4.1D 4.2G
                    5.1B 5.1E
FBA_CMD<12>         3.3C 4.1G 4.2B 4.2D
                    5.2B 5.2E
FBA_CMD<13>         3.3C 4.1H 4.2B 4.2D
                    5.1B 5.1E
FBA_CMD<14>         3.3C 4.2B 4.2D 4.2H
                    5.2B 5.2E
FBA_CMD<15>         3.3C 4.1B 4.1D 4.1G
                    5.1B 5.1E
FBA_CMD<16>         3.3C 4.2H 5.2B 5.2E
FBA_CMD<18>         3.3C 4.1F 5.1B 5.1E
FBA_CMD<19>         3.3C 4.2G 5.3B 5.3E
FBA_CMD<20>         3.3C 4.3B 4.3D 5.3B
                    5.3E
FBA_CMD<21>         3.3C 4.1B 4.1D 4.1H
                    5.2B 5.2E
FBA_CMD<22>         3.3C 4.1B 4.1D 4.1F
                    5.1B 5.2E
FBA_CMD<23>         3.3C 4.1B 4.1F 4.2D
                    5.2B 5.2E
FBA_CMD<24>         3.3C 4.1B 4.1D 4.1F
                    5.1B 5.1E
FBA_CMD<25>         3.4C 4.1B 4.1H 4.2D
                    5.1B 5.1E
FBA_CMD<26>         3.4C 4.1B 4.1D 4.2F
                    5.1B 5.1E
FBA_CMD<27>         3.4C 4.2B 4.2D 4.2F
                    5.2B 5.2E
FBA_CMD<28>         3.4C 4.1B 4.1D 4.1H
                    5.2B 5.2E
FBA_CMD<29>         3.4C 4.1H 4.2B 4.2D
                    5.2B 5.2E
FBA_CMD<30>         3.4C 4.2B 4.2D 4.2H
                    5.2B 5.2E
FBA_DATA<0>         3.1B 4.4B
FBA_DATA<63..0>     3.1A<> 4.4A<> 4.5F<>
                    5.4A<>
FBA_DATA<1>         3.1B 4.4B
FBA_DATA<2>         3.1B 4.4B
FBA_DATA<3>         3.1B 4.4B
FBA_DATA<4>         3.1B 4.4B
FBA_DATA<5>         3.1B 4.4B
FBA_DATA<6>         3.1B 4.4B
FBA_DATA<7>         3.1B 4.4B
FBA_DATA<8>         3.1B 4.4C
FBA_DATA<9>         3.1B 4.4C
FBA_DATA<10>        3.1B 4.4C
FBA_DATA<11>        3.1B 4.4C
FBA_DATA<12>        3.1B 4.4C
FBA_DATA<13>        3.1B 4.4C
```

```
FBA_DATA<14>        3.1B 4.4C
FBA_DATA<15>        3.1B 4.4C
FBA_DATA<16>        3.1B 4.4D
FBA_DATA<17>        3.2B 4.4D
FBA_DATA<18>        3.2B 4.4D
FBA_DATA<19>        3.2B 4.4D
FBA_DATA<20>        3.2B 4.4D
FBA_DATA<21>        3.2B 4.4D
FBA_DATA<22>        3.2B 4.4D
FBA_DATA<23>        3.2B 4.4D
FBA_DATA<24>        3.2B 4.4E
FBA_DATA<25>        3.2B 4.4E
FBA_DATA<26>        3.2B 4.4E
FBA_DATA<27>        3.2B 4.4E
FBA_DATA<28>        3.2B 4.4E
FBA_DATA<29>        3.2B 4.4E
FBA_DATA<30>        3.2B 4.4E
FBA_DATA<31>        3.2B 4.4E
FBA_DATA<32>        3.2B 5.4B
FBA_DATA<33>        3.2B 5.4B
FBA_DATA<34>        3.2B 5.4B
FBA_DATA<35>        3.2B 5.4B
FBA_DATA<36>        3.2B 5.4B
FBA_DATA<37>        3.2B 5.4B
FBA_DATA<38>        3.2B 5.4B
FBA_DATA<39>        3.2B 5.4B
FBA_DATA<40>        3.2B 5.4C
FBA_DATA<41>        3.2B 5.4C
FBA_DATA<42>        3.2B 5.4C
FBA_DATA<43>        3.2B 5.4C
FBA_DATA<44>        3.2B 5.4C
FBA_DATA<45>        3.2B 5.4C
FBA_DATA<46>        3.2B 5.4C
FBA_DATA<47>        3.3B 5.4C
FBA_DATA<48>        3.3B 5.4D
FBA_DATA<49>        3.3B 5.4D
FBA_DATA<50>        3.3B 5.4D
FBA_DATA<51>        3.3B 5.4D
FBA_DATA<52>        3.3B 5.4D
FBA_DATA<53>        3.3B 5.4D
FBA_DATA<54>        3.3B 5.4D
FBA_DATA<55>        3.3B 5.4D
FBA_DATA<56>        3.3B 5.4E
FBA_DATA<57>        3.3B 5.4E
FBA_DATA<58>        3.3B 5.4E
FBA_DATA<59>        3.3B 5.4E
FBA_DATA<60>        3.3B 5.4E
FBA_DATA<61>        3.3B 5.4E
FBA_DATA<62>        3.3B 5.4E
FBA_DATA<63>        3.3B 5.4E
FBA_DEBUG0          3.4C
FBA_DEBUG1          3.4C
FBA_DQM<0>          3.3B 4.4B 4.5B
FBA_DQM<7..0>       3.3A<> 4.5A< 4.5F<
                    5.5A<
FBA_DQM<1>          3.3B 4.4C 4.5B
FBA_DQM<2>          3.3B 4.4D 4.5B
FBA_DQM<3>          3.3B 4.4E 4.5B
FBA_DQM<4>          3.3B 5.4B 5.5B
FBA_DQM<5>          3.3B 5.4C 5.5B
FBA_DQM<6>          3.3B 5.4D 5.5B
FBA_DQM<7>          3.3B 5.4E 5.5B
FBA_DQS_RN0         3.4A<> 4.4B<> 4.4F<>
FBA_DQS_RN1         3.4A<> 4.4C<> 4.4F<>
FBA_DQS_RN2         3.4A<> 4.4C<> 4.4F<>
FBA_DQS_RN3         3.4A<> 4.4D<> 4.4F<>
FBA_DQS_RN4         3.4A<> 4.4F<> 5.5B<>
FBA_DQS_RN5         3.4A<> 4.4F<> 5.5C<>
FBA_DQS_RN6         3.4A<> 4.4F<> 5.5D<>
FBA_DQS_RN7         3.4A<> 4.4F<> 5.5E<>
FBA_DQS_WP0         3.4A<> 4.4B<> 4.4F<>
FBA_DQS_WP1         3.4A<> 4.4C<> 4.4F<>
FBA_DQS_WP2         3.4A<> 4.4C<> 4.4F<>
FBA_DQS_WP3         3.4A<> 4.4D<> 4.4F<>
FBA_DQS_WP4         3.4A<> 4.4F<> 5.5B<>
FBA_DQS_WP5         3.4A<> 4.4F<> 5.5C<>
FBA_DQS_WP6         3.4A<> 4.4F<> 5.5D<>
FBA_DQS_WP7         3.4A<> 4.4F<> 5.5E<>
FBA_PLLAVDD_GPU     3.5C
FBA_VREF0           4.3C> 4.5F< 5.3D<
FBA_VREF1           4.3F> 4.5F< 5.3G<
FBA_ZQ0             4.3B
FBA_ZQ1             4.3D
FBA_ZQ2             4.5F<> 5.3B<>
FBA_ZQ3             4.5F<> 5.3E<>
FBB_CLK0            3.4G> 6.2A 6.2D<
                    6.4F< 7.2D<
FBB_CLK0*           3.4G> 6.2A 6.2D<
                    6.4F< 7.2D<
FBB_CLK1            3.4G> 6.2A< 6.4F<
                    7.1D 7.2A<
FBB_CLK1*           3.4G> 6.2A< 6.4F<
                    7.1D 7.2A<
FBB_CMD<0>          3.3G 6.2F 6.3B 6.3D
FBB_CMD<30..0>      3.3H> 6.1A< 6.1D<
                    6.5F< 7.1A< 7.1D<
FBB_CMD<2>          3.3G 6.1B 6.1D 6.1F
FBB_CMD<3>          3.3G 6.2B 6.2D 6.2G
FBB_CMD<4>          3.3G 6.1B 6.1D 6.1G
                    7.2B 7.2E
FBB_CMD<5>          3.3G 6.1B 6.1D 6.1H
```

```
                    7.1B 7.1E
FBB_CMD<6>          3.3G 6.1B 6.1D 6.1F
                    7.2B 7.2E
FBB_CMD<7>          3.3G 6.1B 6.1D 6.2G
                    7.2B 7.2E
FBB_CMD<8>          3.3G 6.1B 6.1D 6.1G
                    7.1B 7.2E
FBB_CMD<9>          3.3G 6.1F 6.2B 6.2D
                    7.1B 7.1E
FBB_CMD<10>         3.3G 6.1B 6.1D 6.1G
                    7.1B 7.1E
FBB_CMD<11>         3.3G 6.1B 6.1D 6.1F
                    7.1B 7.1E
FBB_CMD<12>         3.3G 6.1G 6.2B 6.2D
                    7.2B 7.2E
FBB_CMD<13>         3.3G 6.1G 6.2B 6.2D
                    7.1B 7.1E
FBB_CMD<14>         3.3G 6.2B 6.2D 6.2H
                    7.2B 7.2E
FBB_CMD<15>         3.3G 6.1B 6.1D 6.2G
                    7.1B 7.1E
FBB_CMD<16>         3.3G 6.2H 7.2B 7.2E
FBB_CMD<18>         3.3G 6.1G 7.1B 7.1E
FBB_CMD<19>         3.3G 6.2F 7.3B 7.3E
FBB_CMD<20>         3.3G 6.3B 6.3D 7.3B
                    7.3E
FBB_CMD<21>         3.3G 6.1B 6.1D 6.1H
                    7.1B 7.1E
FBB_CMD<22>         3.3G 6.1B 6.1D 6.1H
                    7.1B 7.1E
FBB_CMD<23>         3.3G 6.1B 6.1F 6.2D
                    7.2B 7.2E
FBB_CMD<24>         3.4G 6.1B 6.1D 6.1F
                    7.1B 7.1E
FBB_CMD<25>         3.4G 6.1B 6.1H 6.2D
                    7.1B 7.1E
FBB_CMD<26>         3.4G 6.1B 6.1D 6.2F
                    7.1B 7.1E
FBB_CMD<27>         3.4G 6.2B 6.2D 6.2F
                    7.2B 7.2E
FBB_CMD<28>         3.4G 6.1B 6.1D 6.1H
                    7.2B 7.2E
FBB_CMD<29>         3.4G 6.1H 6.2B 6.2D
                    7.2B 7.2E
FBB_CMD<30>         3.4G 6.2B 6.2D 6.2H
                    7.2B 7.2E
FBB_DATA<0>         3.1E 6.4B
FBB_DATA<63..0>     3.1E<> 6.4A<> 6.5F<>
                    7.4A<>
FBB_DATA<1>         3.1E 6.4B
FBB_DATA<2>         3.1E 6.4B
FBB_DATA<3>         3.1E 6.4B
FBB_DATA<4>         3.1E 6.4B
FBB_DATA<5>         3.1E 6.4B
FBB_DATA<6>         3.1E 6.4B
FBB_DATA<7>         3.1E 6.4B
FBB_DATA<8>         3.1E 6.4C
FBB_DATA<9>         3.1E 6.4C
FBB_DATA<10>        3.1E 6.4C
FBB_DATA<11>        3.1E 6.4C
FBB_DATA<12>        3.1E 6.4C
FBB_DATA<13>        3.1E 6.4C
FBB_DATA<14>        3.1E 6.4C
FBB_DATA<15>        3.1E 6.4C
FBB_DATA<16>        3.2E 6.4D
FBB_DATA<17>        3.2E 6.4D
FBB_DATA<18>        3.2E 6.4D
FBB_DATA<19>        3.2E 6.4D
FBB_DATA<20>        3.2E 6.4D
FBB_DATA<21>        3.2E 6.4D
FBB_DATA<22>        3.2E 6.4D
FBB_DATA<23>        3.2E 6.4D
FBB_DATA<24>        3.2E 6.4E
FBB_DATA<25>        3.2E 6.4E
FBB_DATA<26>        3.2E 6.4E
FBB_DATA<27>        3.2E 6.4E
FBB_DATA<28>        3.2E 6.4E
FBB_DATA<29>        3.2E 6.4E
FBB_DATA<30>        3.2E 6.4E
FBB_DATA<31>        3.2E 6.4E
FBB_DATA<32>        3.2E 7.4B
FBB_DATA<33>        3.2E 7.4B
FBB_DATA<34>        3.2E 7.4B
FBB_DATA<35>        3.2E 7.4B
FBB_DATA<36>        3.2E 7.4B
FBB_DATA<37>        3.2E 7.4B
FBB_DATA<38>        3.2E 7.4B
FBB_DATA<39>        3.2E 7.4B
FBB_DATA<40>        3.2E 7.4C
FBB_DATA<41>        3.2E 7.4C
FBB_DATA<42>        3.2E 7.4C
FBB_DATA<43>        3.2E 7.4C
FBB_DATA<44>        3.2E 7.4C
FBB_DATA<45>        3.2E 7.4C
FBB_DATA<46>        3.3E 7.4C
FBB_DATA<47>        3.3E 7.4C
FBB_DATA<48>        3.3E 7.4D
FBB_DATA<49>        3.3E 7.4D
FBB_DATA<50>        3.3E 7.4D
FBB_DATA<51>        3.3E 7.4D
FBB_DATA<52>        3.3E 7.4D
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FBB_DATA<54>        3.3E 7.4D
FBB_DATA<55>        3.3E 7.4D
FBB_DATA<56>        3.3E 7.4E
FBB_DATA<57>        3.3E 7.4E
FBB_DATA<58>        3.3E 7.4E
FBB_DATA<59>        3.3E 7.4E
FBB_DATA<60>        3.3E 7.4E
FBB_DATA<61>        3.3E 7.4E
FBB_DATA<62>        3.3E 7.4E
FBB_DATA<63>        3.3E 7.4E
FBB_DEBUG0          3.4G
FBB_DEBUG1          3.4G
FBB_DQM<0>          3.3E 6.4B 6.5B
FBB_DQM<7..0>       3.3D<> 6.5A< 6.5F<
                    7.5A<
FBB_DQM<1>          3.3E 6.4C 6.5B
FBB_DQM<2>          3.3E 6.4D 6.5B
FBB_DQM<3>          3.3E 6.4E 6.5B
FBB_DQM<4>          3.3E 7.4B 7.5B
FBB_DQM<5>          3.3E 7.4C 7.5B
FBB_DQM<6>          3.3E 7.4D 7.5B
FBB_DQM<7>          3.3E 7.4E 7.5B
FBB_DQS_RN0         3.4E<> 6.4B<> 6.4F<>
FBB_DQS_RN1         3.4E<> 6.4C<> 6.4F<>
FBB_DQS_RN2         3.4E<> 6.4D<> 6.4F<>
FBB_DQS_RN3         3.4E<> 6.4E<> 6.4F<>
FBB_DQS_RN4         3.4E<> 6.4F<> 7.4B<>
FBB_DQS_RN5         3.4E<> 6.4F<> 7.4C<>
FBB_DQS_RN6         3.4E<> 6.4F<> 7.4D<>
FBB_DQS_RN7         3.4E<> 6.4F<> 7.4E<>
FBB_DQS_WP0         3.4E<> 6.4B<> 6.4F<>
FBB_DQS_WP1         3.4E<> 6.4C<> 6.4F<>
FBB_DQS_WP2         3.4E<> 6.4D<> 6.4F<>
FBB_DQS_WP3         3.4E<> 6.4E<> 6.4F<>
FBB_DQS_WP4         3.4E<> 6.4F<> 7.4B<>
FBB_DQS_WP5         3.4E<> 6.4F<> 7.4C<>
FBB_DQS_WP6         3.4E<> 6.4F<> 7.4D<>
FBB_DQS_WP7         3.4E<> 6.4F<> 7.4E<>
FBB_VREF0           6.3D> 6.5F< 7.3D<
FBB_VREF1           6.3F> 6.5F< 7.3G<
FBB_ZQ0             6.3B
FBB_ZQ1             6.3D
FBB_ZQ2             6.5F<> 7.3B<>
FBB_ZQ3             6.5F<> 7.3E<>
FBVDDQ              16.1G
FB_CAL_PD_VDDQ      3.5G
FB_CAL_PU_GND       3.5G
FB_CAL_TERM_GND     3.5G
GND_SENSE           2.4G> 15.5F<
GND_SENSE_R         15.5E
GPIO0_IFPAB_HPD     11.3C> 13.3H<
GPIO1_IFPC_HPD      10.2G< 11.2F>
GPIO1_IFPC_HPD_R    10.2D
GPIO2_BL_PWM        11.3C< 12.3G>
GPIO3_PPEN          11.3C< 12.3G>
GPIO4_BLEN          11.3C< 12.3G>
GPIO5_NVVDD_VID0    12.3E> 15.5B<
GPIO6_NVVDD_VID1    12.3E> 15.4B<
GPIO7_NVVDD_VID2    12.3E> 15.4B<
GPIO8_SLOWDOWN_R*   12.2C
GPIO8_THERM_SHDWN*  11.3A< 12.3E>
GPIO8_THERM_SHDWN_  11.3C
R*
GPIO9_THERM_ALERT*  11.3A< 12.3E>
GPIO9_THERM_ALERT_  11.3C
R*
GPIO11_MXM2         11.2A<> 12.3E<>
GPIO11_MXM2_R       11.2C
GPIO12_AC_BATT*     11.4C> 12.3F<
GPIO15_IFPE_HPD     10.4G< 11.1F>
GPIO15_IFPE_HPD_R   10.4D
GPIO17_MXM0         11.2C<> 12.4E<>
GPIO18_MXM1         11.2C<> 12.4E<>
GPIO19_IFPD_HPD     10.3G< 11.3F>
GPIO19_IFPD_HPD_R   10.3D
GPIO21_IFPF_HPD     10.5G< 11.2F>
GPIO21_IFPF_HPD_R   10.5D
GPIO23_STEREO_OUT   11.2A< 12.4E>
GPIO23_STEREO_OUT_  11.2C
R
GPU_PLLVDD          9.3B
GPU_TESTMODE        2.5F
I2CA_SCL            9.1D
I2CA_SCL_R          9.1F> 11.2C<
I2CA_SDA            9.1D
I2CA_SDA_R          9.1F<> 11.2C<>
I2CB_SCL            9.3D
I2CB_SCL_R          9.3F> 11.3C<
I2CB_SDA            9.3D
I2CB_SDA_R          9.3F<> 11.3C<>
I2CC_SCL            12.3D
I2CC_SCL_R          12.2F> 12.2F> 17.3B>
I2CC_SDA            12.3D
I2CC_SDA_R          12.2F<> 12.2F<>
                    17.3B<>
I2CH_SCL            13.4C
I2CH_SDA            13.4C
IFPAB_IOVDD         13.2D
IFPAB_IOVDD_EN      13.2A
IFPAB_IOVDD_EN*     13.2B
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IFPAB_PLLVDD        13.2D
IFPAB_RSET          13.2D
IFPA_TXC            11.5F< 13.2H>
IFPA_TXC*           11.5F< 13.2H>
IFPA_TXD0           11.4F< 13.1H>
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IFPA_TXD2           11.4F< 13.2H>
IFPA_TXD2*          11.4F< 13.2H>
IFPA_TXD3           11.4F< 13.2H>
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IFPB_TXC*           11.4F< 13.3H>
IFPB_TXD4           11.4F< 13.2H>
IFPB_TXD4*          11.4F< 13.2H>
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IFPB_TXD5*          11.4F< 13.2H>
IFPB_TXD6           11.4F< 13.2H>
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IFPB_TXD7*          11.4F< 13.2H>
IFPCD_IOVDD         10.2B 10.3B
IFPCD_PLLVDD        10.1B 10.2B
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IFPC_L2             10.2F> 11.3F<
IFPC_L2*            10.2F> 11.3F<
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IFPC_RSET           10.1B
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IFPD_L0*            10.3F> 11.3F<
IFPD_L1             10.3F> 11.3F<
IFPD_L1*            10.3F> 11.3F<
IFPD_L2             10.3F> 11.3F<
IFPD_L2*            10.3F> 11.3F<
IFPD_L3             10.3F> 11.3F<
IFPD_L3*            10.3F> 11.3F<
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IFPEF_RSET          10.4B
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IFPE_L2*            10.4F> 11.2F<
IFPE_L3             10.4F> 11.2F<
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IFPF_L2*            10.5F> 11.2F<
IFPF_L3             10.5F> 11.2F<
IFPF_L3*            10.5F> 11.2F<
IROM_VCC            12.1G< 17.3B>
JTAG_TCLK           11.4B> 12.3B>
JTAG_TCLK_R         11.4D
JTAG_TDI            11.4B< 12.3B<
JTAG_TDI_R          11.4D
JTAG_TDO            11.4B> 12.3B>
JTAG_TDO_R          11.4D
JTAG_TMS            11.4B> 12.3B>
JTAG_TMS_R          11.4D
JTAG_TRST           11.4B> 12.3B>
JTAG_TRST_R         11.4D
MIOB_VDDQ           14.3E
MXM_PWR_EN          11.4A> 13.2A< 15.5F<
MXM_PWR_EN_R        11.4C
MXM_PWR_GOOD        11.4C< 16.2B> 16.3A>
                    16.3A>
MXM_TH_PWM          11.3C< 12.4E>
MXM_VGA_DISABLE*    11.3C> 17.5D<
NVVDD               15.1G
NVVDD_SENSE         2.4G> 15.3G<
NVVDD_SENSE_FB      15.3F
NVVDD_SENSE_TP      15.3G> 17.1A<
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PEX_CLKREQ_R        2.1E
PEX_PLLVDD          2.4F
PEX_PRSNT_R_Q       17.4B
PEX_REFCLK          2.2C
PEX_REFCLK*         2.2C
PEX_RST             2.1B 2.1E
PEX_RX0             2.2C
PEX_RX0*            2.2C
PEX_RX1             2.2C
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```
PEX_RX1*            2.2C
PEX_RX2             2.2C
PEX_RX2*            2.2C
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PEX_RX3*            2.3C
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PEX_RX4*            2.3C
PEX_RX5             2.3C
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PEX_RX6*            2.3C
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PEX_RX13*           2.5C
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PEX_RX15*           2.5C
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PEX_TERMP           2.5F
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PEX_TSTCLK_OUT*     2.2D
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PEX_TX0*            2.2C
PEX_TX1             2.2C
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PEX_TX13            2.4C
PEX_TX13*           2.4C
PEX_TX14            2.5C
PEX_TX14*           2.5C
PEX_TX15            2.5C
PEX_TX15*           2.5C
PEX_VDD             16.1G
PS1_BOOT            15.2C
PS1_BOOT_R          15.2C
PS1_CP              15.2B
PS1_CP_R            15.3C
PS1_CP_TPIII        15.3E
PS1_FB              15.3D
PS1_FB_TP           15.3F> 17.1A<
PS1_FS              15.2B
PS1_ISEN            15.2C 15.2F
PS1_LG              15.2C
PS1_PH              15.2C
PS1_RC              15.2E
PS1_UG              15.2C
PS1_VCC             15.2B
PS1_VID0            15.4D
PS1_VID0_Q          15.4E
PS1_VID1            15.4D
PS1_VID1_Q          15.4D
PS1_VID2            15.4C
PS1_VID2_Q          15.3C
PS2_BOOT            16.1C
PS2_BOOT_R          16.1D
PS2_CP              16.2B
PS2_CP_R            16.2C
PS2_CP_TPIII        16.2F
PS2_FB              16.2A 16.2D
PS2_FBVDDQ_ISEN_N   17.2A
PS2_FBVDDQ_ISEN_P   17.2A
PS2_FB_R            16.2E
PS2_FB_TP           16.3G> 17.2A<
PS2_FS              16.2B
PS2_ISEN            16.1F 16.2C
PS2_LG              16.2C
PS2_PHASE           16.1C
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PS2_RC              16.2E
PS2_UG              16.1C
PS2_VCC             16.1B
PS_1V05_CP          16.4F
PS_1V05_CP_RC       16.4G
PS_1V05_EN*         16.4E
PS_1V05_FB          16.5B
PS_1V05_FB_0        16.4G
PS_1V05_FB_1        16.4G
PS_1V05_FB_1_R      16.5F
PS_1V05_FB_TP       16.5H> 17.2A<
PS_1V05_FS          16.4E
PS_1V05_PHASE       16.4F
PS_1V05_SNUB        16.4G
PS_NVVDD_EN         15.2B
PS_NVVDD_PGOOD      10.1E< 11.2A< 15.2A>
                    16.2B< 16.3A< 16.3A<
                    16.3A<
PS_PGOOD_PEX        16.4D
PS_PGOOD_PEX*       16.3D
PWR_SRC             2.5H
ROM_CS*             13.3C
ROM_SCLK            11.4B> 13.4C< 17.3C<
ROM_SCLK_R          11.4C
ROM_SI              13.4C< 17.2C<
ROM_SO              13.4C< 17.3C< 17.4E>
ROM_SO_R            17.4E
SMB_CLK             11.3C> 12.2A<
SMB_CLK_GPU         12.3D
SMB_DATA            11.3C<> 12.2A<>
SMB_DATA_GPU        12.3D
SNN_BUFRST          13.4C
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SNN_DACB_GREEN      9.3D
SNN_DACB_HSYNC      9.3D
SNN_DACB_RED        9.3D
SNN_DACB_RSET       9.3B
SNN_DACB_VREF       9.3B
SNN_DACB_VSYNC      9.3D
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SNN_FBA0_CS1        4.2B
SNN_FBA0_NC_A1      4.3B
SNN_FBA0_NC_A11     4.3B
SNN_FBA0_NC_T1      4.3B
SNN_FBA0_NC_T11     4.3B
SNN_FBA0_ODT1       4.2B
SNN_FBA0_ZQ1        4.2B
SNN_FBA1_CE1        4.2D
SNN_FBA1_CS1        4.2D
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SNN_FBA1_NC_A11     4.3D
SNN_FBA1_NC_T1      4.3D
SNN_FBA1_NC_T11     4.3D
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U
SNN_FBA_PLLAVDD_GP  3.5C
U
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SNN_FBA_WDS2*       3.4B
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SNN_FBB0_ODT1       6.2B
SNN_FBB0_ZQ1        6.2B
SNN_FBB1_CE1        6.2D
SNN_FBB1_CS1        6.2D
SNN_FBB1_NC_A1      6.3D
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ASSEMBLY	GF108 P1077 SKU2 1GB N11P-GS DDR3 8x 64Mx16
PAGE DETAIL	<edit here to insert page detail>

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SNN_FBB1_NC_A11	6.3D
SNN_FBB1_NC_T1	6.3D
SNN_FBB1_NC_T11	6.3D
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SNN_FBB1_ZQ1	6.2D
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SNN_FBB_WDS2*	3.4E
SNN_FBB_WDS3	3.4E
SNN_FBB_WDS3*	3.4E
SNN_FBVDDQ_PHASE	17.2A
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SNN_FB_VREF_TP	17.2B
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SNN_GPIO13_FBVDDQ_VID	12.3D
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SNN_GPIO20	12.4D
SNN_GPIO22	12.4D
SNN_GPIO24	12.4D
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SNN_GPU_NC7	2.2F
SNN_GPU_NC8	2.2F
SNN_GPU_NC9	2.2F
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SNN_GPU_NC11	2.3F
SNN_GPU_NC12	2.3F
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SNN_GPU_NC14	2.3F
SNN_GPU_NC15	2.3F
SNN_GPU_NC16	2.3F
SNN_GPU_NC17	2.3F
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SNN_GPU_NC20	2.3F
SNN_GPU_NC21	2.3F
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SNN_GPU_NC25	2.3F
SNN_GPU_NC26	2.3F
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SNN_HDMI_CEC_C	11.3C
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SNN_MIOA_CAL_PU	14.2E
SNN_MIOA_CLKIN	14.2G
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SNN_MIOA_CLKOUT*	14.2G
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SNN_MIOA_D<0>	14.1G
SNN_MIOA_D<1>	14.1G
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