P699-B01: GT215/6/8 MXM V3.0 TYPE A
512/1024MB 128/64-BIT DDR3
LVDS, QUAD DP, DVI, VGA

Table of Contents:

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-10699-base-sch	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL.
1	SKU0001	600-10699-0001-100	P699-A00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
2	SKU0002	600-10699-0002-100	P699-A00 SKU2 GT216-600 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
3	SKU0003	600-10699-0003-100	P699-A00 SKU3 GT218-730 MXM3.0 TYPE-A 512 MB 4pcs 64Mx16
4	SKU0005	600-10699-0005-100	P699-A00 SKU5 GT216-640 MXM3.0 TYPE-A 1024 MB 8pcs 64Mx16
5	SKU501	600-50699-0501-100	P699-A00 SKU501 GT216-950 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
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7	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
8	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	Cover Page

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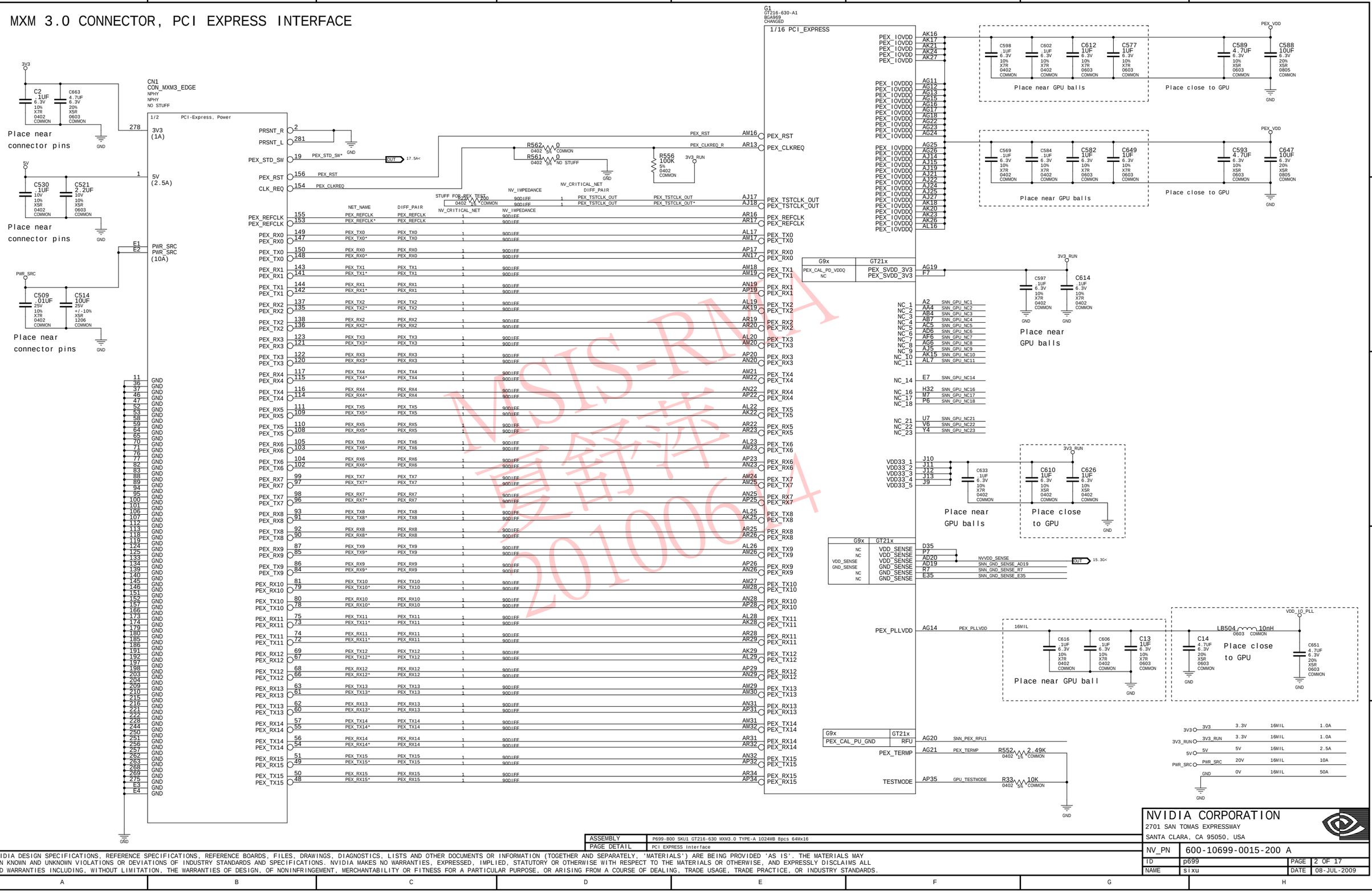
2. MXM 3.0 CONNECTOR, PCI EXPRESS INTERFACE



ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	PCI EXPRESS Interface

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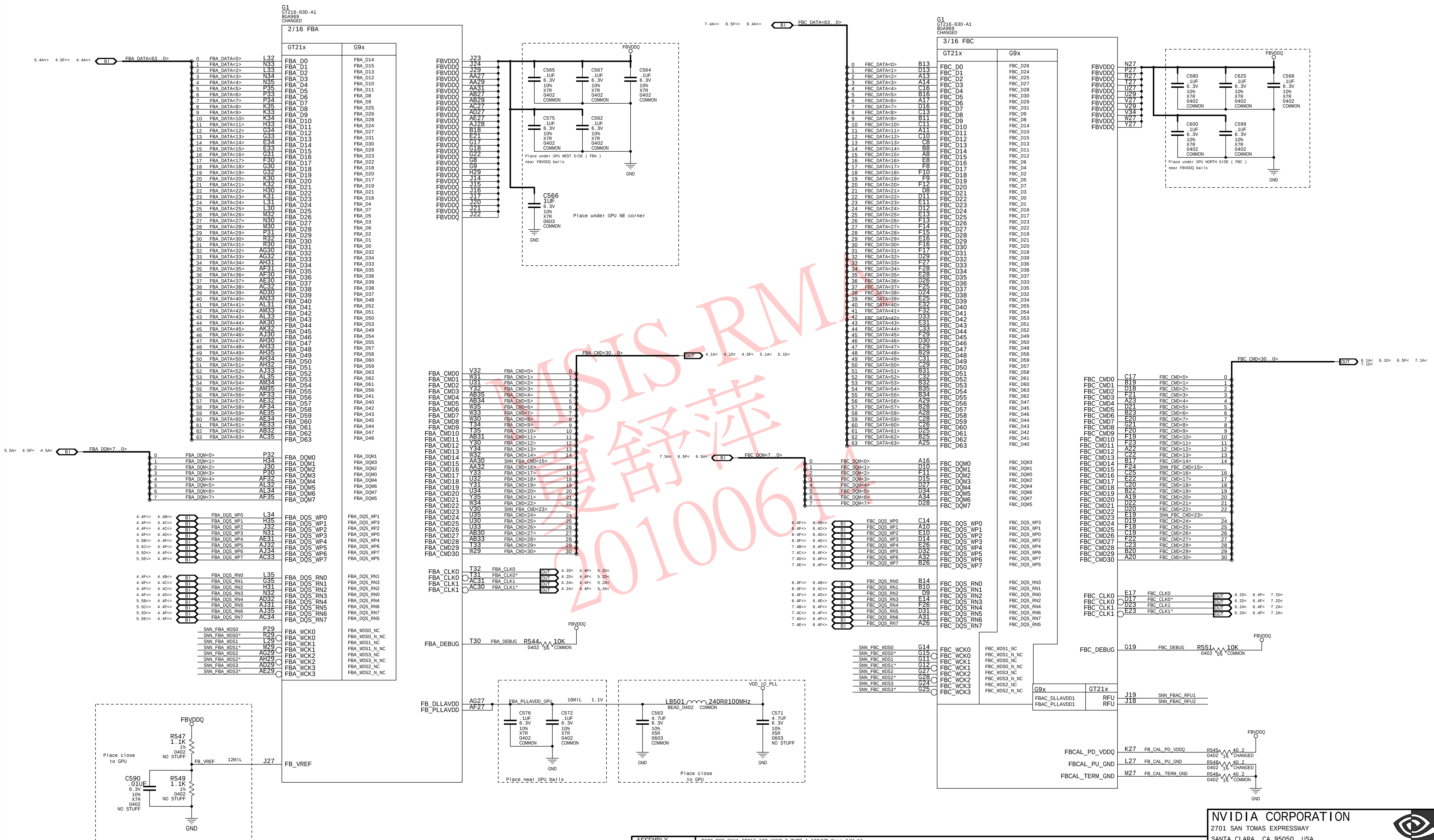
3. GPU MEMORY INTERFACE



ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	Frame Buffer GPU Interface

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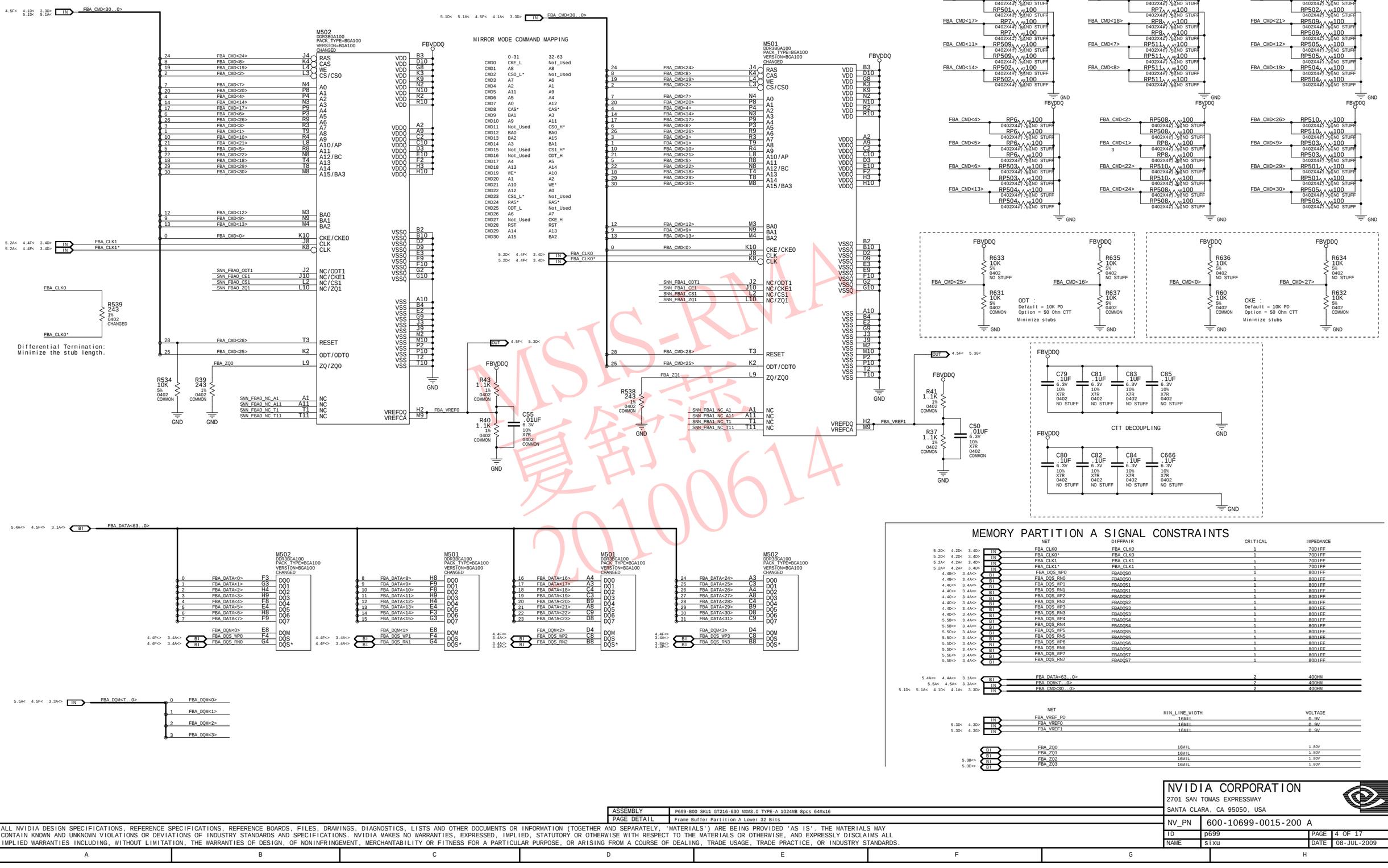
4. MEMORY PARTITION A LOWER 32 BITS



MEMORY PARTITION A SIGNAL CONSTRAINTS

	NET	DIFFPAIR	CRITICAL	IMPEDANCE
5.2D< 4.2D< 3.4D> IN	FBA_CLK0	FBA_CLK0	1	70DIFF
5.2D< 4.2D< 3.4D> IN	FBA_CLK0*	FBA_CLK0	1	70DIFF
5.2A< 4.2A< 3.4D> IN	FBA_CLK1	FBA_CLK1	1	70DIFF
5.2A< 4.2A< 3.4D> IN	FBA_CLK1*	FBA_CLK1	1	70DIFF
4.4B<> 3.4A<> BI	FBA_DQS_WP0	FBADQS0	1	80DIFF
4.4B<> 3.4A<> BI	FBA_DQS_RN0	FBADQS0	1	80DIFF
4.4C<> 3.4A<> BI	FBA_DQS_WP1	FBADQS1	1	80DIFF
4.4C<> 3.4A<> BI	FBA_DQS_RN1	FBADQS1	1	80DIFF
4.4C<> 3.4A<> BI	FBA_DQS_WP2	FBADQS2	1	80DIFF
4.4C<> 3.4A<> BI	FBA_DQS_RN2	FBADQS2	1	80DIFF
4.4D<> 3.4A<> BI	FBA_DQS_WP3	FBADQS3	1	80DIFF
4.4D<> 3.4A<> BI	FBA_DQS_RN3	FBADQS3	1	80DIFF
5.5B<> 3.4A<> BI	FBA_DQS_WP4	FBADQS4	1	80DIFF
5.5B<> 3.4A<> BI	FBA_DQS_RN4	FBADQS4	1	80DIFF
5.5C<> 3.4A<> BI	FBA_DQS_WP5	FBADQS5	1	80DIFF
5.5C<> 3.4A<> BI	FBA_DQS_RN5	FBADQS5	1	80DIFF
5.5D<> 3.4A<> BI	FBA_DQS_WP6	FBADQS6	1	80DIFF
5.5D<> 3.4A<> BI	FBA_DQS_RN6	FBADQS6	1	80DIFF
5.5E<> 3.4A<> BI	FBA_DQS_WP7	FBADQS7	1	80DIFF
5.5E<> 3.4A<> BI	FBA_DQS_RN7	FBADQS7	1	80DIFF
5.4A<> 4.4A<> 3.1A<> BI	FBA_DATA<63..0>		2	40OHM
5.5A< 4.5A< 3.3A<> IN	FBA_DQM<7..0>		2	40OHM
5.1D< 5.1A< 4.1D< 4.1A< 3.3D> IN	FBA_CMD<30..0>		2	40OHM

	NET	MIN_LINE_WIDTH	VOLTAGE
IN	FBA_VREF_PD	16MIL	0.9V
5.3D< 4.3D> IN	FBA_VREF0	16MIL	0.9V
5.3G< 4.3G> IN	FBA_VREF1	16MIL	0.9V
BI	FBA_ZQ0	16MIL	1.80V
BI	FBA_ZQ1	16MIL	1.80V
5.3B<> BI	FBA_ZQ2	16MIL	1.80V
5.3E<> BI	FBA_ZQ3	16MIL	1.80V

ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	Frame Buffer Partition A Lower 32 Bits

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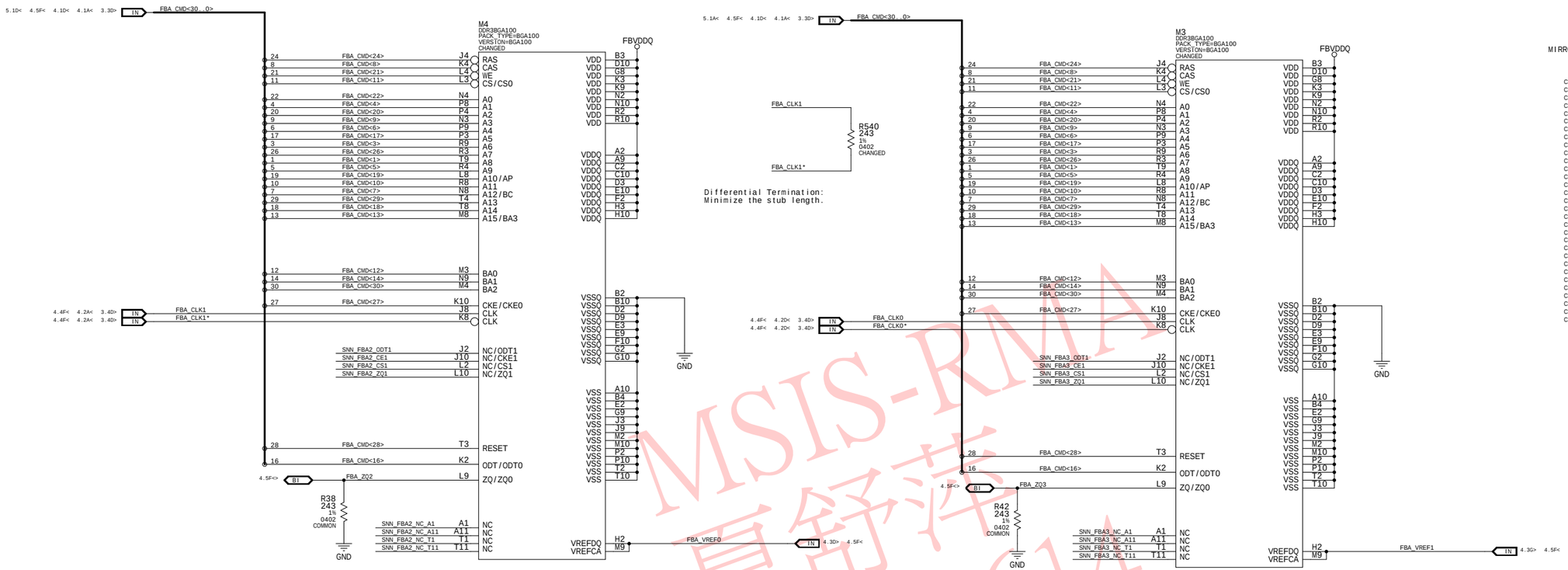
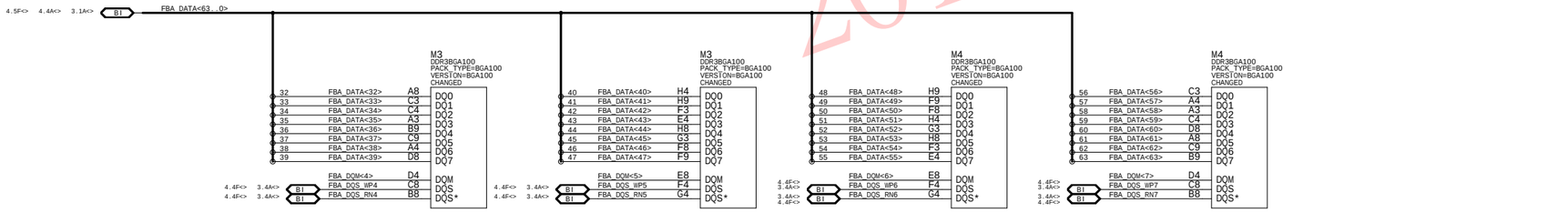
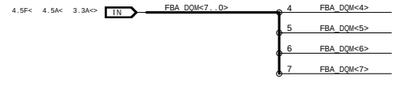
5. MEMORY PARTITION A UPPER 32 BITS



MIRROR MODE COMMAND MAPPING

	0-31	32-63
CMD0	CKE_L	Not_Used
CMD1	A8	A8
CMD2	CS0_L*	Not_Used
CMD3	A7	A6
CMD4	A2	A1
CMD5	A11	A9
CMD6	A5	A4
CMD7	A0	A12
CMD8	CAS*	CAS*
CMD9	BA1	A3
CMD10	A9	A11
CMD11	Not_Used	CS0_H*
CMD12	BA0	BA0
CMD13	BA2	A15
CMD14	A3	BA1
CMD15	Not_Used	CS1_H*
CMD16	Not_Used	ODT_H
CMD17	A4	A5
CMD18	A13	A14
CMD19	WE*	A10
CMD20	A1	A2
CMD21	A10	WE*
CMD22	A12	A0
CMD23	CS1_L*	Not_Used
CMD24	RAS*	RAS*
CMD25	ODT_L	Not_Used
CMD26	A6	A7
CMD27	Not_Used	CKE_H
CMD28	RST	RST
CMD29	A14	A13
CMD30	A15	BA2





ASSEMBLY	P699-B00 SKU1 GT216-630 NXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	Frame Buffer Partition A Upper 32 Bits

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6. MEMORY PARTITION C LOWER 32 BITS

MEMORY PARTITION C SIGNAL CONSTRAINTS

	NET	DIFFPAIR	CRITICAL	IMPEDANCE
IN	FBC_CLK0	FBC_CLK0	1	70DIFF
IN	FBC_CLK0*	FBC_CLK0*	1	70DIFF
IN	FBC_CLK1	FBC_CLK1	1	70DIFF
IN	FBC_CLK1*	FBC_CLK1	1	70DIFF
BI	FBC_DQS_WP0	FBCDQS0	1	80DIFF
BI	FBC_DQS_RN0	FBCDQS0	1	80DIFF
BI	FBC_DQS_WP1	FBCDQS1	1	80DIFF
BI	FBC_DQS_RN1	FBCDQS1	1	80DIFF
BI	FBC_DQS_WP2	FBCDQS2	1	80DIFF
BI	FBC_DQS_RN2	FBCDQS2	1	80DIFF
BI	FBC_DQS_WP3	FBCDQS3	1	80DIFF
BI	FBC_DQS_RN3	FBCDQS3	1	80DIFF
BI	FBC_DQS_WP4	FBCDQS4	1	80DIFF
BI	FBC_DQS_RN4	FBCDQS4	1	80DIFF
BI	FBC_DQS_WP5	FBCDQS5	1	80DIFF
BI	FBC_DQS_RN5	FBCDQS5	1	80DIFF
BI	FBC_DQS_WP6	FBCDQS6	1	80DIFF
BI	FBC_DQS_RN6	FBCDQS6	1	80DIFF
BI	FBC_DQS_WP7	FBCDQS7	1	80DIFF
BI	FBC_DQS_RN7	FBCDQS7	1	80DIFF

BI	FBC_DATA<63..0>	2	40OHM
IN	FBC_DQM<7..0>	2	40OHM
IN	FBC_CMD<27..0>	2	40OHM

	NET	MIN_LINE_WIDTH	VOLTAGE
IN	FBC_VREF_PD	16MIL	0.9V
IN	FBC_VREF0	16MIL	0.9V
IN	FBC_VREF1	16MIL	0.9V
BI	FBC_ZQ0	16MIL	1.80V
BI	FBC_ZQ1	16MIL	1.80V
BI	FBC_ZQ2	16MIL	1.80V
BI	FBC_ZQ3	16MIL	1.80V

ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	Frame Buffer Partition C Lower 32 Bits

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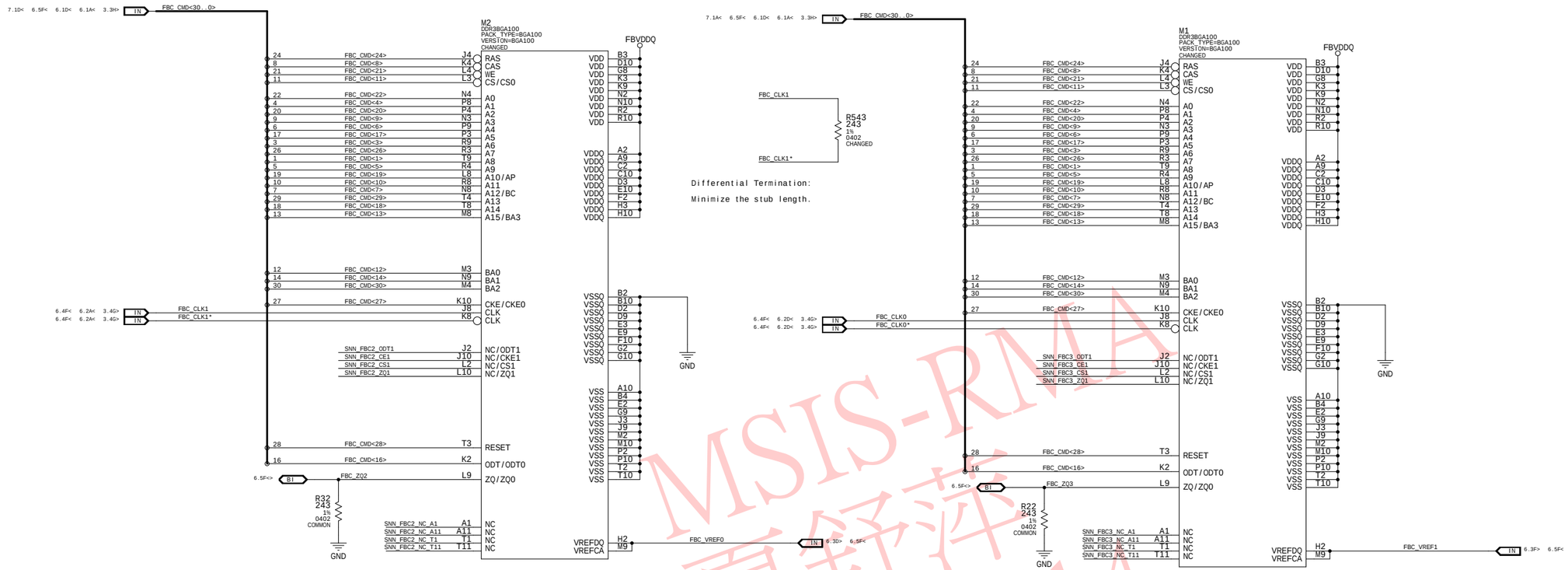
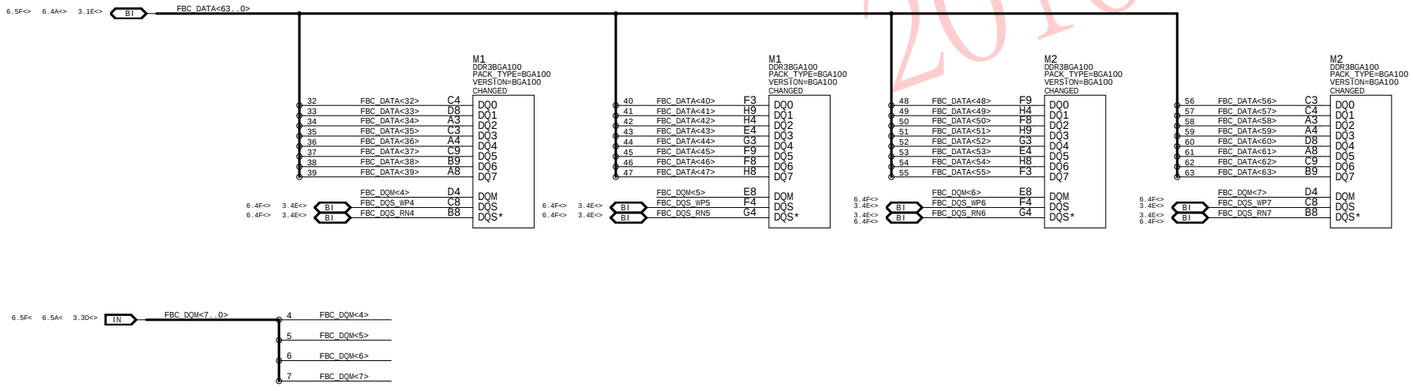
7. MEMORY PARTITION C UPPER 32 BITS



MIRROR MODE COMMAND MAPPING

	0-31	32-63
CMD0	CKE_L	Not_Used
CMD1	A8	A8
CMD2	CS0_L*	Not_Used
CMD3	A7	A6
CMD4	A2	A1
CMD5	A11	A9
CMD6	A5	A4
CMD7	A0	A12
CMD8	CAS*	CAS*
CMD9	BA1	A3
CMD10	A9	A11
CMD11	Not_Used	CS0_H*
CMD12	BA0	BA0
CMD13	BA2	A15
CMD14	A3	BA1
CMD15	Not_Used	CS1_H*
CMD16	Not_Used	ODT_H
CMD17	A4	A5
CMD18	A13	A14
CMD19	WE*	A10
CMD20	A1	A2
CMD21	A10	WE*
CMD22	A12	A0
CMD23	CS1_L*	Not_Used
CMD24	RAS*	RAS*
CMD25	ODT_L	Not_Used
CMD26	A6	A7
CMD27	Not_Used	CKE_H
CMD28	RST	RST
CMD29	A14	A13
CMD30	A15	BA2



ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	Frame Buffer Partition C Upper 32 Bits

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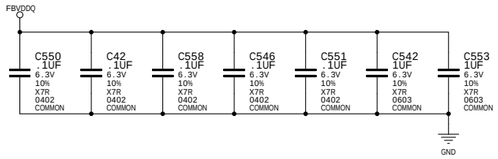
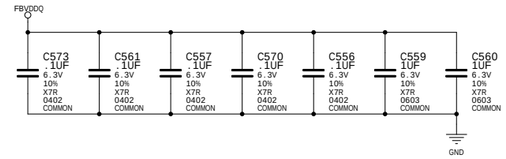
8. MEMORY DECOUPLING CAPS

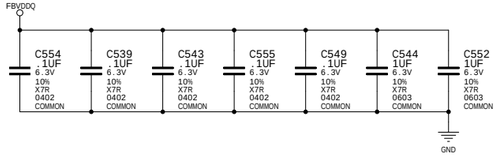
DECOUPLING CAPS FOR ONE MEMORY OF PARTION A LOWER BITS 0-15



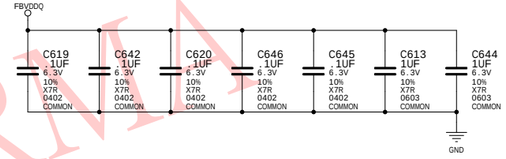
DECOUPLING CAPS FOR ONE MEMORY OF PARTION C LOWER BITS 0-15



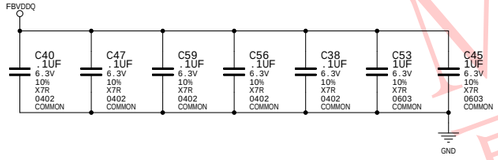
DECOUPLING CAPS FOR ONE MEMORY OF PARTION A LOWER BITS 16-31



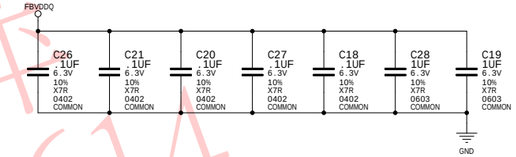
DECOUPLING CAPS FOR ONE MEMORY OF PARTION C LOWER BITS 16-31



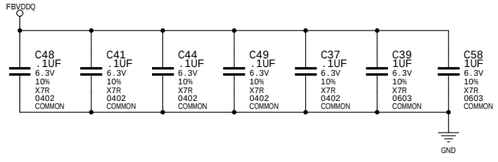
DECOUPLING CAPS FOR ONE MEMORY OF PARTION A UPPER BITS 32-47



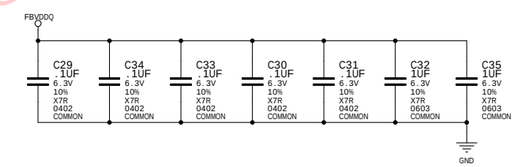
DECOUPLING CAPS FOR ONE MEMORY OF PARTION C UPPER BITS 32-47



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	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	Memory Decoupling Caps

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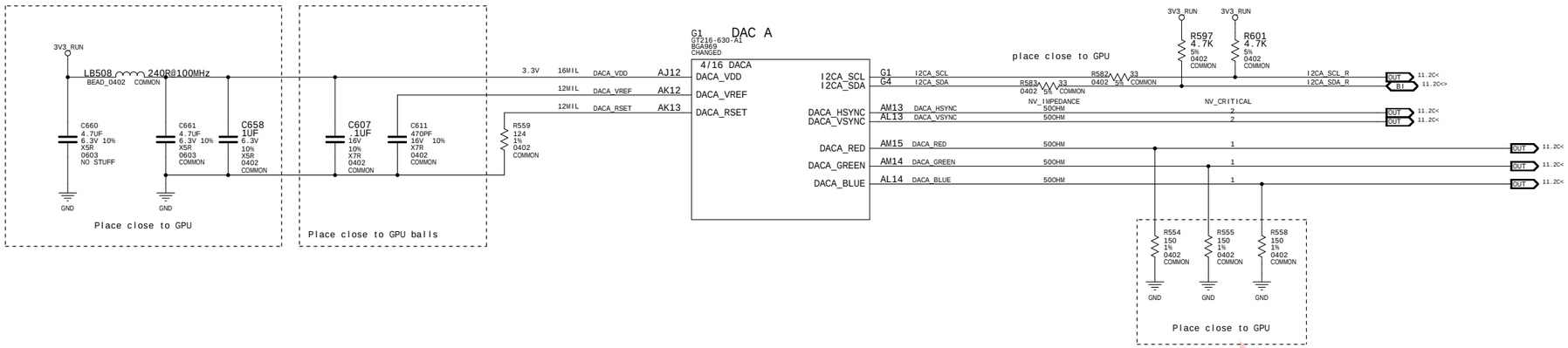
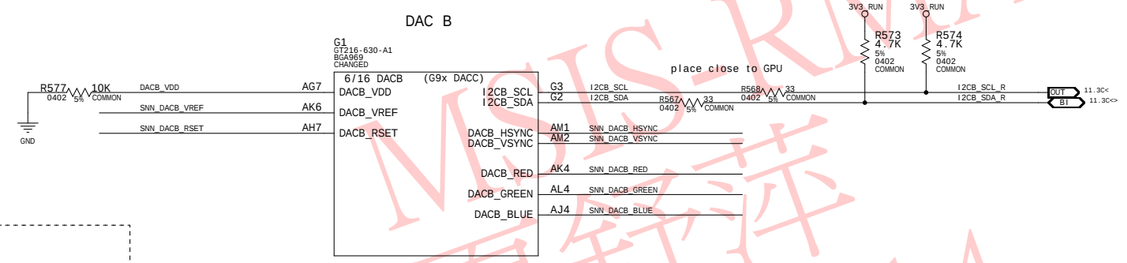
9. DAC_A, DAC_B, SPREAD, PLL, CRYSTAL

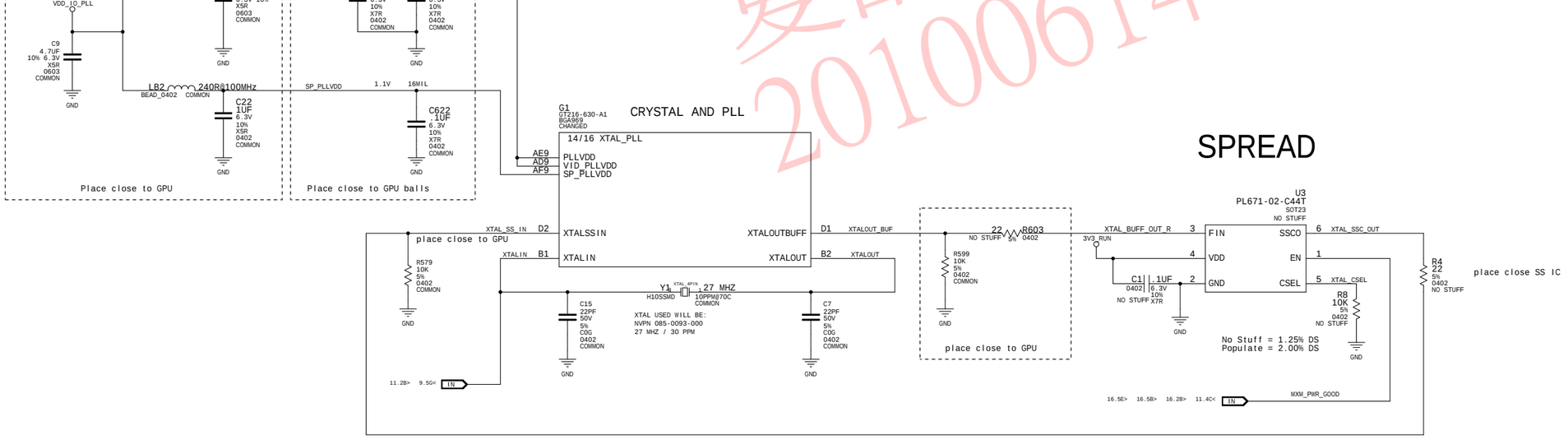
DAC A



DAC B

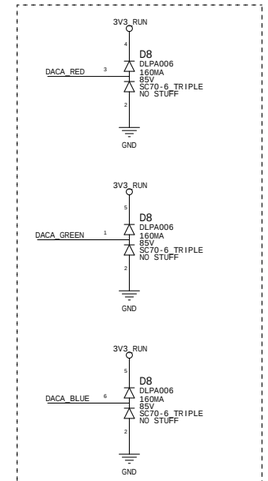


CRYSTAL AND PLL

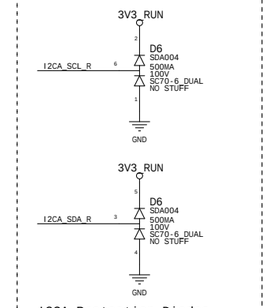


SPREAD

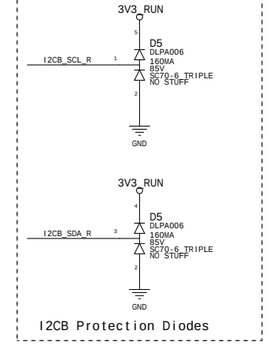
DAC Protection Diodes



I2CA Protection Diodes



I2CB Protection Diodes



NV_NET_NAME	NV_IMPEDANCE	NV_CRITICAL_NET
OUT 11.2B> XTALOUT	50OHM	1
IN 9.5B< XTALIN	50OHM	1
OUT XTALOUT_BUF	50OHM	2
IN XTAL_SSC_OUT	50OHM	2

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PAGE DETAIL	DAC_A, DAC_B, SPREAD, PLL, CRYSTAL

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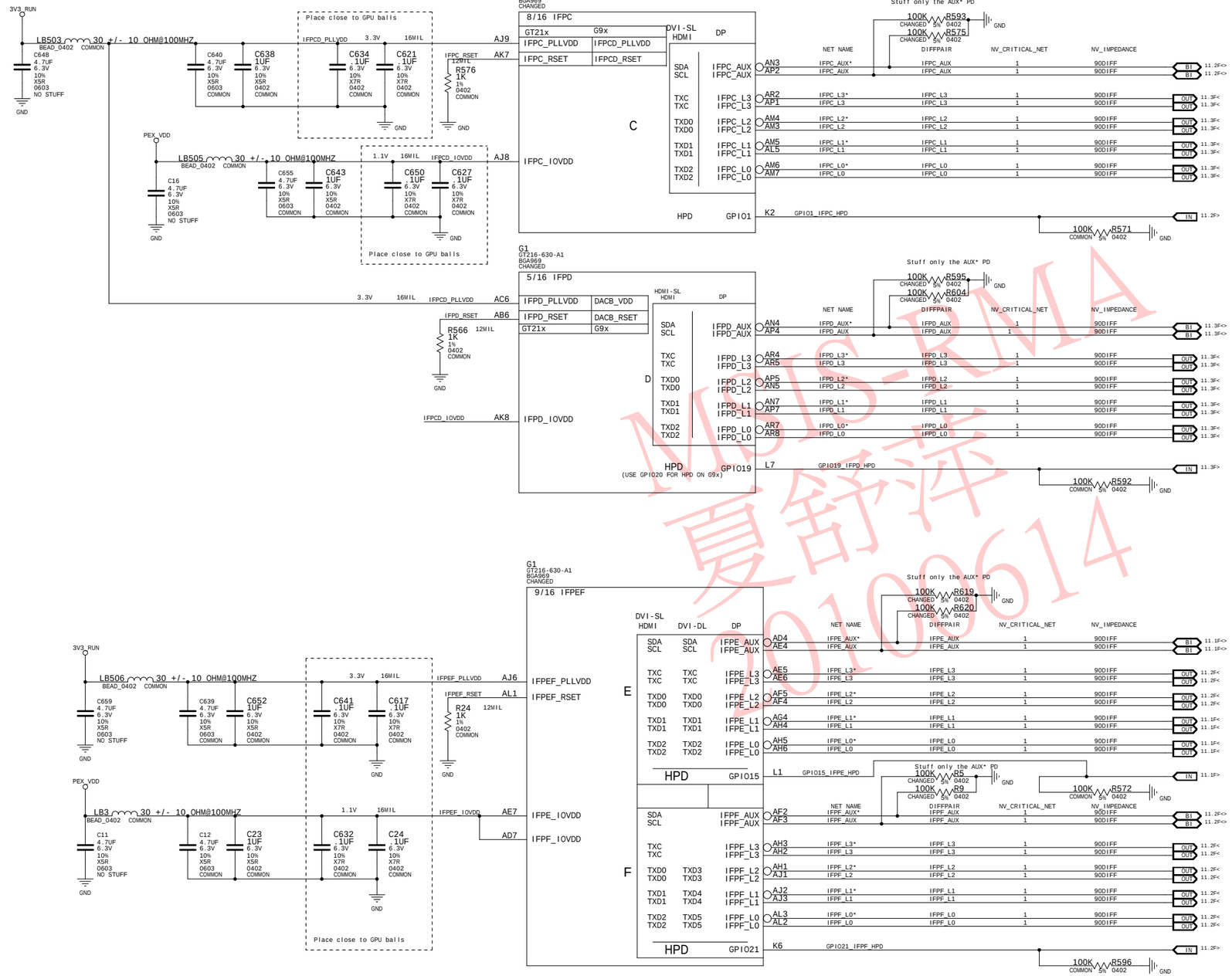
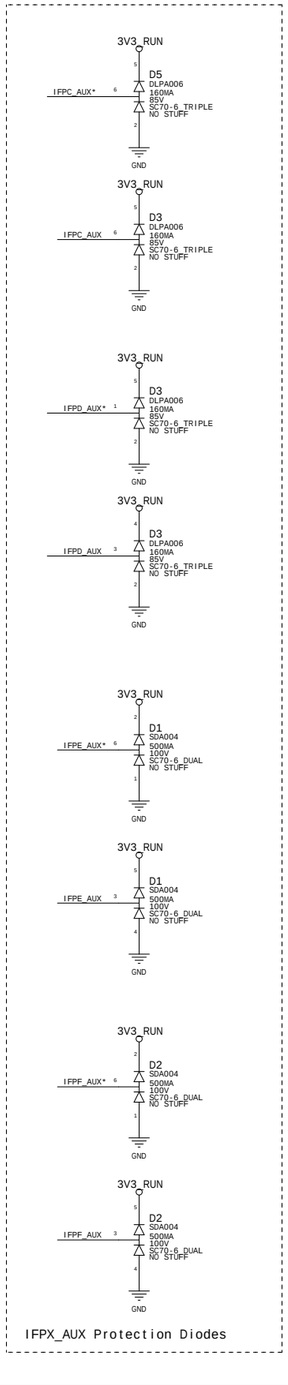
10. DP LINKS CD, LINK EF





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PAGE DETAIL	DP LINKS C,D,E,F

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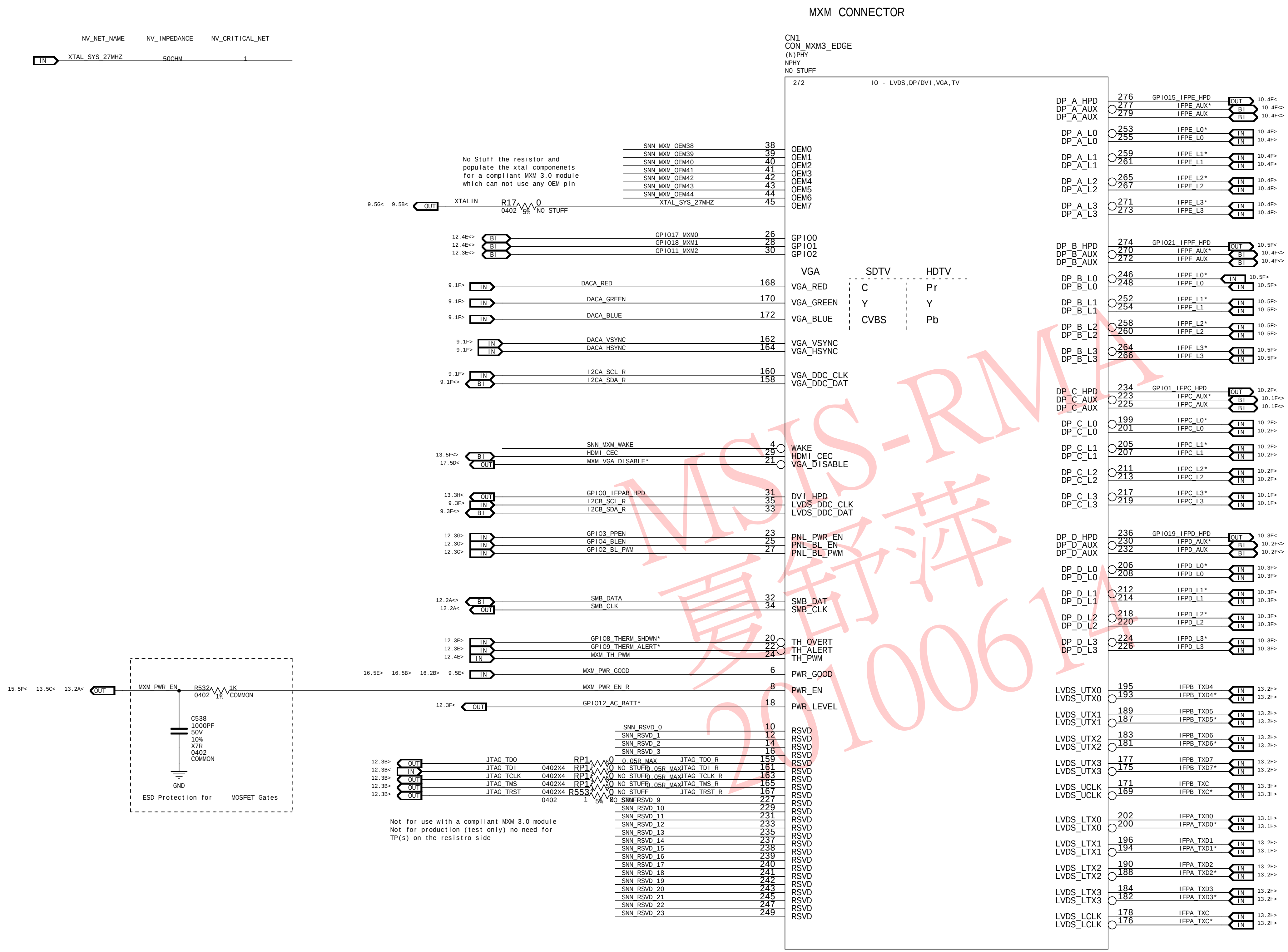
11. MXM CONNECTOR


MXM CONNECTOR
NV_NET_NAME NV_IMPEDANCE NV_CRITICAL_NET
IN XTAL_SYS_27MHZ 50OHM 1
CN1
CON_MXM3_EDGE
(N)PHY
NPHY
NO STUFF
2/2 IO - LVDS,DP/DVI,VGA,TV
No Stuff the resistor and populate the xtal componenets for a compliant MXM 3.0 module which can not use any OEM pin
9.5G< 9.5B< OUT XTALIN R17 0 0402 5% NO STUFF
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
SNN_MXM_OEM44 44 OEM6
XTAL_SYS_27MHZ 45 OEM7
12.4E<> BI GPIO17_MXM0 26 GPIO0
12.4E<> BI GPIO18_MXM1 28 GPIO1
12.3E<> BI GPIO11_MXM2 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
SNN_MXM_WAKE 4 WAKE
13.5F<> BI HDMI_CEC 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
12.3E> IN GPIO8_THERM_SHDWN* 20 TH_OVERT
12.3E> IN GPIO9_THERM_ALERT* 22 TH_ALERT
12.4E> IN MXM_TH_PWM 24 TH_PWM
16.5E> 16.5B> 16.2B> 9.5E< IN MXM_PWR_GOOD 6 PWR_GOOD
15.5F< 13.5C< 13.2A< OUT MXM_PWR_EN R532 1K 0402 1% COMMON MXM_PWR_EN_R 8 PWR_EN
C538 1000PF 50V 10% X7R 0402 COMMON
GND
ESD Protection for MOSFET Gates
12.3F< OUT GPIO12_AC_BATT* 18 PWR_LEVEL
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 RP1 0 0.05R_MAX JTAG_TDO_R 159 RSVD
12.3B< IN JTAG_TDI 0402X4 RP1 0 NO STUFF 0.05R_MAX JTAG_TDI_R 161 RSVD
12.3B> OUT JTAG_TCLK 0402X4 RP1 0 NO STUFF 0.05R_MAX JTAG_TCLK_R 163 RSVD
12.3B> OUT JTAG_TMS 0402X4 RP1 0 NO STUFF 0.05R_MAX JTAG_TMS_R 165 RSVD
12.3B> OUT JTAG_TRST 0402X4 R553 0 NO STUFF JTAG_TRST_R 167 RSVD
0402 5% NO STUFF
Not for use with a compliant MXM 3.0 module
Not for production (test only) no need for
TP(s) on the resistro side
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
SNN_RSVD_16 239 RSVD
SNN_RSVD_17 240 RSVD
SNN_RSVD_18 241 RSVD
SNN_RSVD_19 242 RSVD
SNN_RSVD_20 243 RSVD
SNN_RSVD_21 245 RSVD
SNN_RSVD_22 247 RSVD
SNN_RSVD_23 249 RSVD
DP_A_HPD 276 GPIO15_IFPE_HPD OUT 10.4F<
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 10.5F<
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 10.2F<
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 10.3F<
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 13.1H>
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>

ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	MXM Connector, IO-Section

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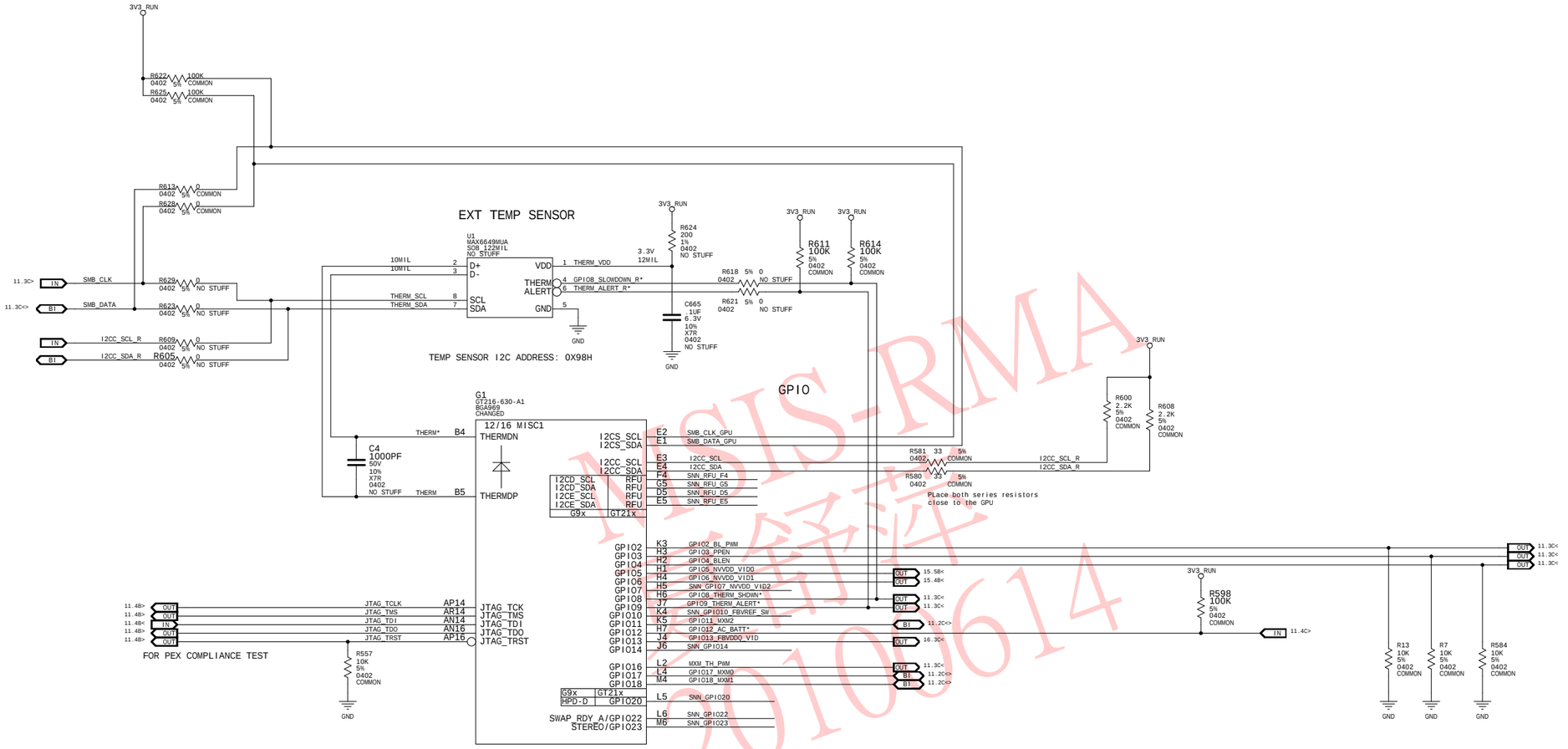
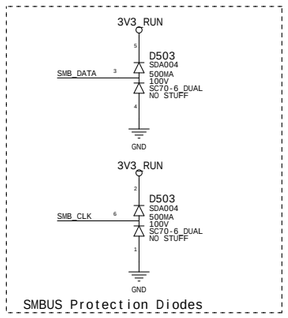
12. GPIO, JTAG, TEMP SENSOR





ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	GPIOs, JTAG, Thermal Sensor

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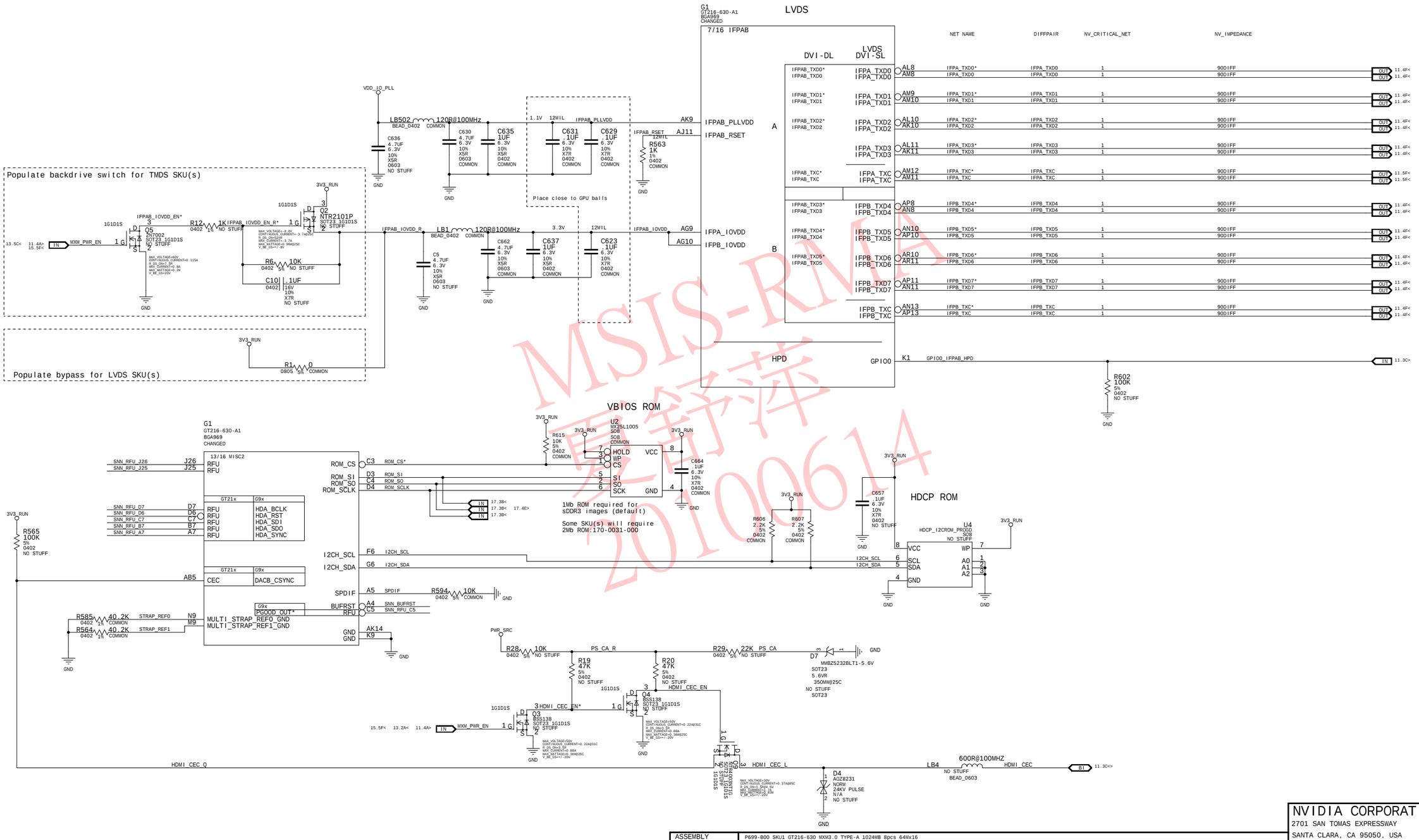
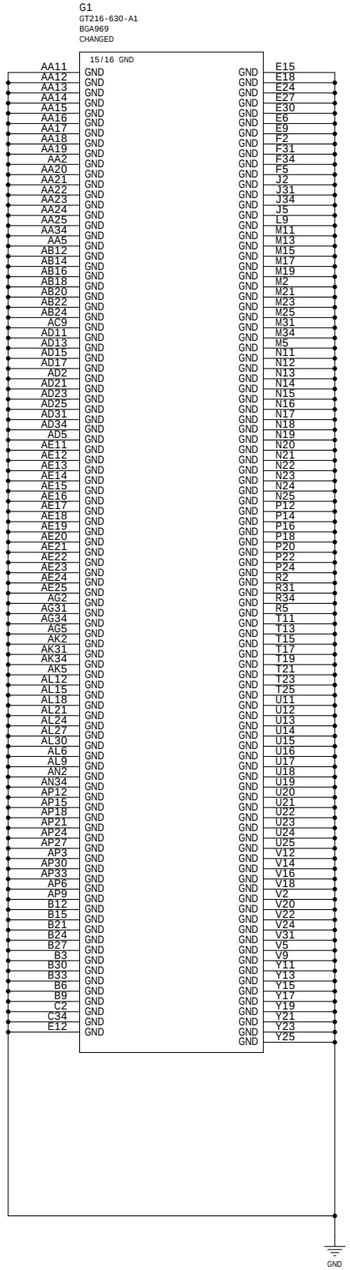
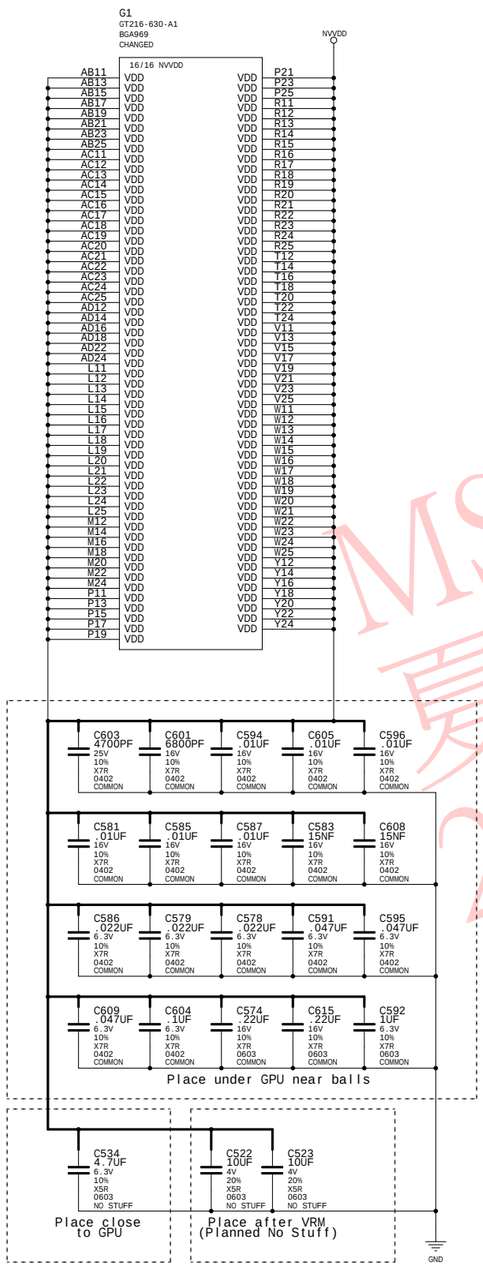
13. LVDS, VBIOS, HDCP ROM, CEC

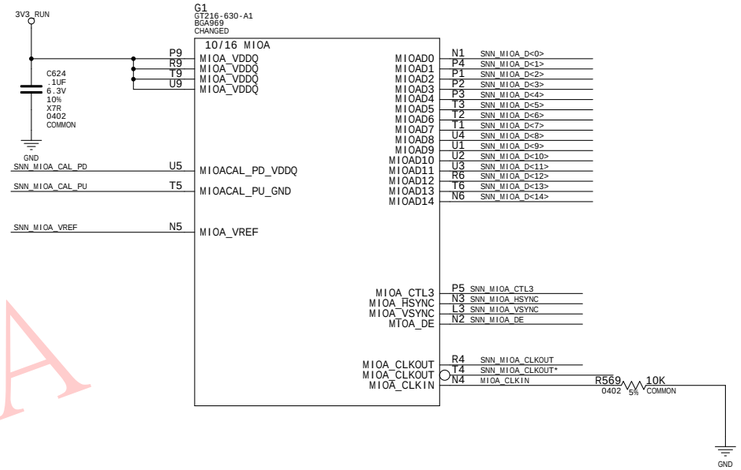


14. MIOA, MIOB, GPU VDD/DCPLNG/GND

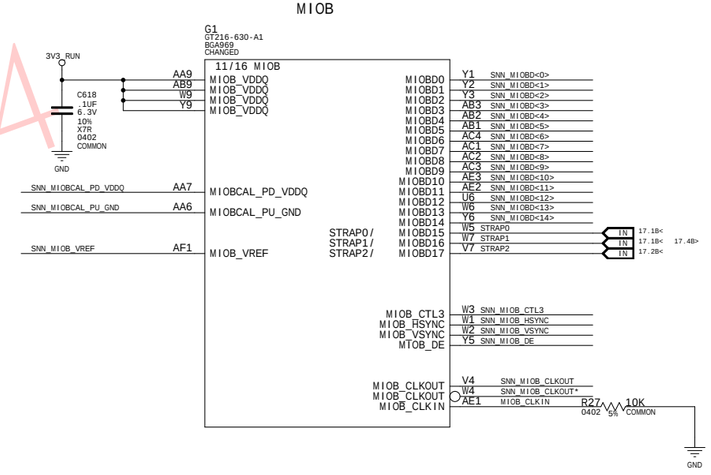




MIOA



MIOB



ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	MIOA, MIOB, GPU VDD\DCPLNG\GND

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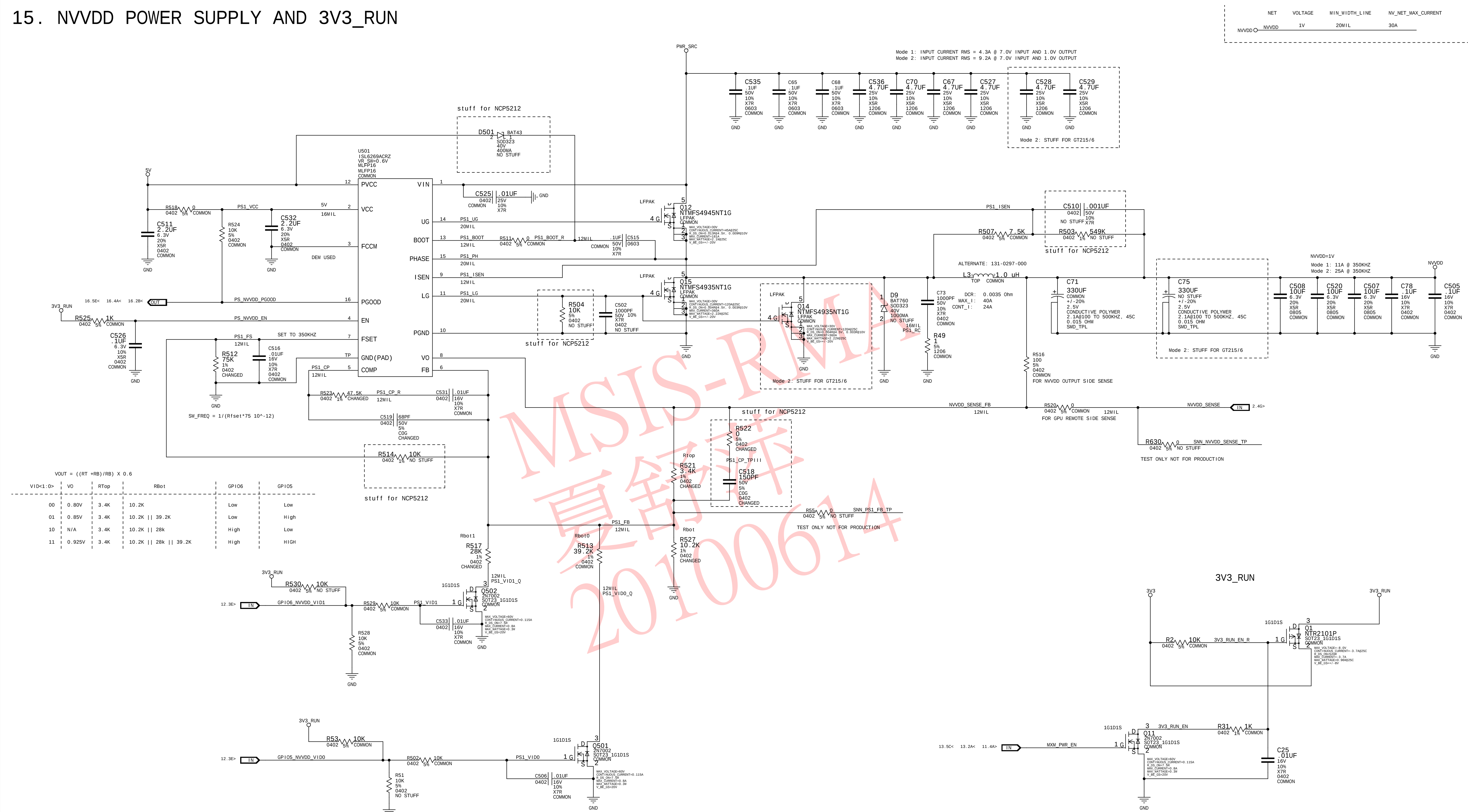
15. NVVDD POWER SUPPLY AND 3V3_RUN



NET VOLTAGE MIN_WIDTH_LINE NV_NET_MAX_CURRENT
NVVDD NVVDD 1V 20MIL 30A
PWR_SRC
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
C535 .1UF 50V 10% X7R 0603 COMMON
C65 .1UF 50V 10% X7R 0603 COMMON
C68 .1UF 50V 10% X7R 0603 COMMON
C536 4.7UF 25V 10% X5R 1206 COMMON
C70 4.7UF 25V 10% X5R 1206 COMMON
C67 4.7UF 25V 10% X5R 1206 COMMON
C527 4.7UF 25V 10% X5R 1206 COMMON
C528 4.7UF 25V 10% X5R 1206 COMMON
C529 4.7UF 25V 10% X5R 1206 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
PVCC VIN VCC UG BOOT FCCM PHASE ISEN LG PGOOD EN FSET PGND GND(PAD) VO COMP FB
5V
R518 0 0402 5% COMMON
PS1_VCC
C511 2.2UF 6.3V 20% X5R 0402 COMMON
R524 10K 5% 0402 COMMON
C532 2.2UF 6.3V 20% X5R 0402 COMMON
16MIL
DEM USED
C525 .01UF 0402 25V 10% X7R COMMON
PS1_UG 20MIL
PS1_BOOT 12MIL
R511 0 0402 5% COMMON PS1_BOOT_R 12MIL
.1UF C515 50V 10% X7R 0603 COMMON
PS1_PH 20MIL
PS1_ISEN 12MIL
PS1_LG 20MIL
LFPAK
Q12 NTMFS4945NT1G LFPAK COMMON
MAX_VOLTAGE=30V CONTINUOUS_CURRENT=45A@25C R_DS_ON=0.013R@4.5V, 0.009R@10V MAX_CURRENT=181A MAX_WATTAGE=2.1W@25C V_BE_GS=+/-20V
Q15 NTMFS4935NT1G LFPAK COMMON
MAX_VOLTAGE=30V CONTINUOUS_CURRENT=120A@25C R_DS_ON=0.004R@4.5V, 0.003R@10V MAX_CURRENT=360A MAX_WATTAGE=2.22W@25C V_BE_GS=+/-20V
Q14 NTMFS4935NT1G LFPAK COMMON
R504 10K 5% 0402 NO STUFF
C502 1000PF 50V 10% X7R 0402 NO STUFF
16.5E< 16.4A< 16.2B< OUT PS_NVVDD_PGOOD
3V3_RUN
R525 1K 0402 5% COMMON PS_NVVDD_EN
C526 .1UF 6.3V 10% X5R 0402 COMMON
PS1_FS 12MIL SET TO 350KHZ
R512 75K 1% 0402 CHANGED
C516 .01UF 16V 10% X7R 0402 COMMON
SW_FREQ = 1/(Rfset*75 10^-12)
PS1_CP 12MIL TP
R523 47.5K 0402 1% CHANGED PS1_CP_R 12MIL
C531 .01UF 0402 16V 10% X7R COMMON
C519 68PF 0402 50V 5% COG CHANGED
R514 10K 0402 1% NO STUFF
D9 BAT760 SOD323 40V 1000MA NO STUFF
16MIL PS1_RC
C73 1000PF 50V 10% X7R 0402 COMMON
R49 1 5% 1206 COMMON
ALTERNATE: 131-0297-000
L3 1.0 uH TOP COMMON
DCR: 0.0035 Ohm
MAX_I: 40A
CONT_I: 24A
PS1_ISEN
C510 .001UF 0402 50V 10% X7R NO STUFF
R507 7.5K 0402 5% COMMON
R503 549K 0402 1% NO STUFF
NVVDD=1V
Mode 1: 11A @ 350KHZ
Mode 2: 25A @ 350KHZ
C71 330UF COMMON +/-20% 2.5V CONDUCTIVE POLYMER 2.1A@100 TO 500KHZ, 45C 0.015 OHM SMD_TPL
C75 330UF NO STUFF +/-20% 2.5V CONDUCTIVE POLYMER 2.1A@100 TO 500KHZ, 45C 0.015 OHM SMD_TPL
C508 10UF 6.3V 20% X5R 0805 COMMON
C520 10UF 6.3V 20% X5R 0805 COMMON
C507 10UF 6.3V 20% X5R 0805 COMMON
C78 .1UF 16V 10% X7R 0402 COMMON
C505 .1UF 16V 10% X7R 0402 COMMON
NVVDD
R516 100 5% 0402 COMMON FOR NVVDD OUTPUT SIDE SENSE
NVVDD_SENSE_FB 12MIL
R520 0 0402 5% COMMON 12MIL FOR GPU REMOTE SIDE SENSE
NVVDD_SENSE IN 2.4G>
R630 0 0402 5% NO STUFF SNN_NVVDD_SENSE_TP
TEST ONLY NOT FOR PRODUCTION
R522 0 5% 0402 CHANGED
Rtop
R521 3.4K 1% 0402 CHANGED
PS1_CP_TPIII
C518 150PF 50V 5% COG 0402 CHANGED
R55 0 0402 5% NO STUFF SNN_PS1_FB_TP
TEST ONLY NOT FOR PRODUCTION
PS1_FB 12MIL
Rbot1 R517 28K 1% 0402 CHANGED
Rbot0 R513 39.2K 1% 0402 COMMON
Rbot R527 10.2K 1% 0402 CHANGED
12MIL PS1_VID1_Q
12MIL PS1_VID0_Q
Q502 2N7002 SOT23_1G1D1S COMMON
Q501 2N7002 SOT23_1G1D1S COMMON
MAX_VOLTAGE=60V CONTINUOUS_CURRENT=0.115A R_DS_ON=7.5R MAX_CURRENT=0.8A MAX_WATTAGE=0.3W V_BE_GS=20V
R530 10K 0402 5% NO STUFF
12.3E> IN GPIO6_NVVDD_VID1
R529 10K 0402 5% COMMON PS1_VID1
C533 .01UF 0402 16V 10% X7R COMMON
R528 10K 5% 0402 COMMON
R53 10K 0402 5% COMMON
12.3E> IN GPIO5_NVVDD_VID0
R502 10K 0402 5% COMMON PS1_VID0
R51 10K 5% 0402 NO STUFF
C506 .01UF 0402 16V 10% X7R COMMON
3V3_RUN
3V3
R2 10K 0402 5% COMMON 3V3_RUN_EN_R
Q1 NTR2101P SOT23_1G1D1S COMMON
MAX_VOLTAGE=-8.0V CONTINUOUS_CURRENT=-3.7A@25C R_DS_ON=52mR MAX_CURRENT=-3.7A MAX_WATTAGE=0.96W@25C V_BE_GS=+/-8V
13.5C< 13.2A< 11.4A> IN MXM_PWR_EN
Q11 2N7002 SOT23_1G1D1S COMMON
3V3_RUN_EN
R31 1K 0402 1% COMMON
C25 .01UF 16V 10% X7R 0402 COMMON
GND

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

VID<1:0>	VO	RTop	RBot	GPIO6	GPIO5
00	0.80V	3.4K	10.2K	Low	Low
01	0.85V	3.4K	10.2K || 39.2K	Low	High
10	N/A	3.4K	10.2K || 28k	High	Low
11	0.925V	3.4K	10.2K || 28k || 39.2K	High	HIGH

ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	NVVDD Power Supply and 3V3_RUN

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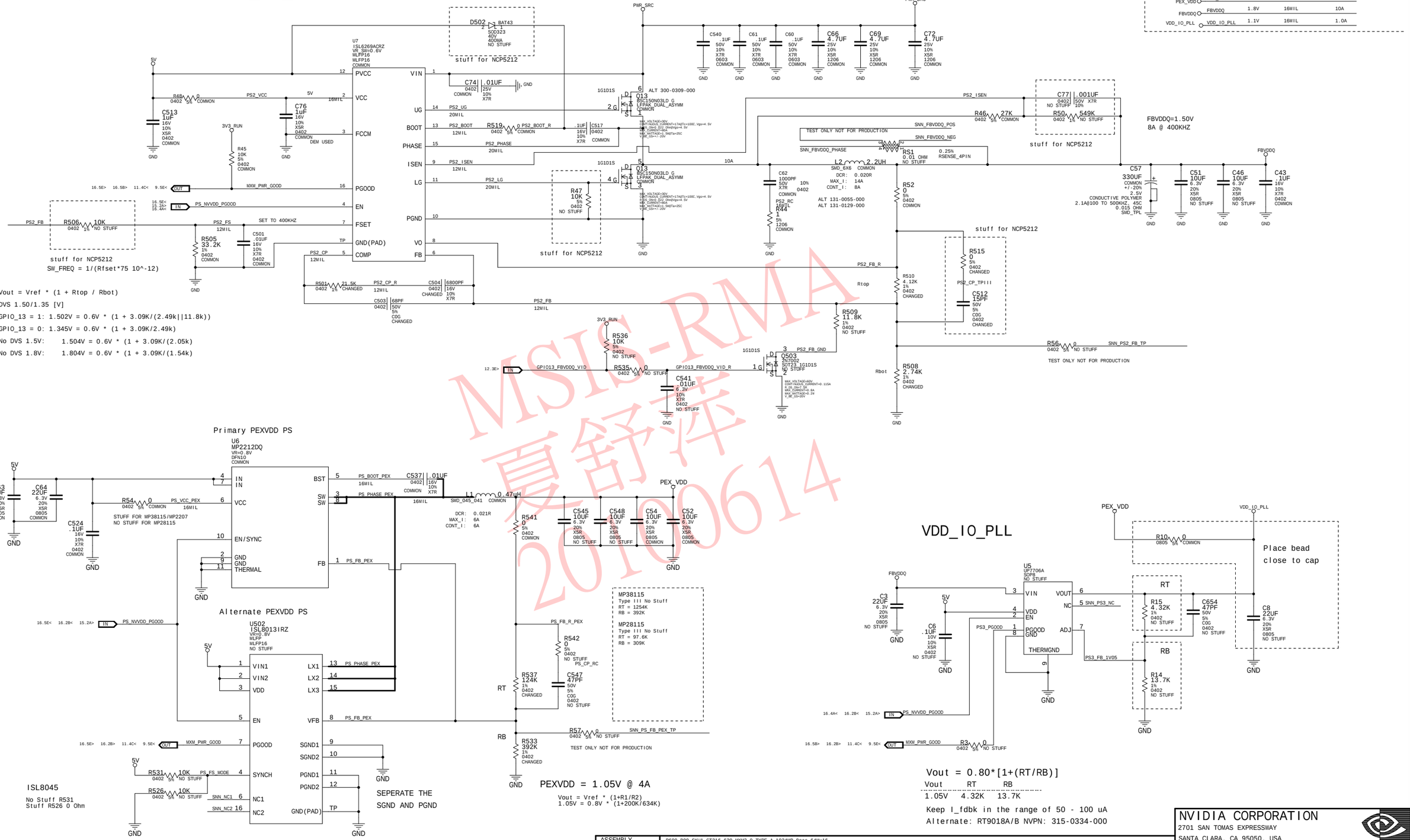
16. FBVDDQ,PEXVDD,AND VDD_IO_PLL POWER SUPPLIES

INPUT CURRENT RMS = 3.6A @ 7.0V INPUT / 1.5V output

NET	VOLTAGE	MIN_WIDTH_LINE	NV_NET_MAX_CURRENT
PEX_VDD	1.1V	16MIL	4.0A
FBVDDQ	1.8V	16MIL	10A
VDD_IO_PLL	1.1V	16MIL	1.0A



ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	FBVDDQ, PEXVDD, and VDD_IO_PLL Power Supplies

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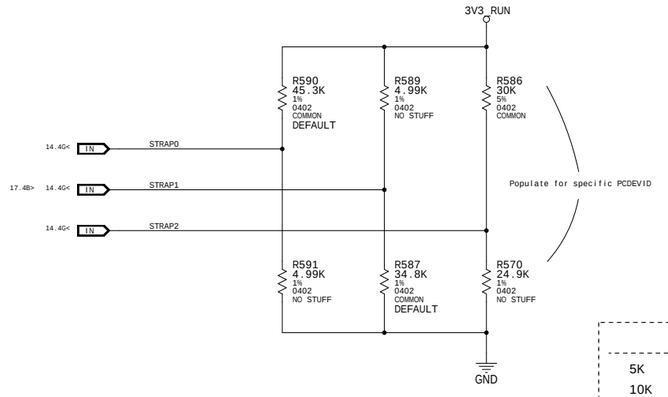
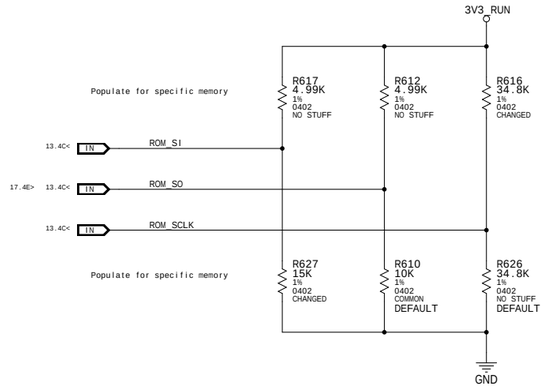
17. STRAPS, MOUNTING HOLES



	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



STRAP0	USER_BIT0 USER_BIT1 USER_BIT2 USER_BIT3	Default All SKU(s): 0xF = 45K PU LVDS Panel EDID Mode
STRAP1	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 0x6: Mobile default (low swing) - 35k PD
STRAP2	PCI_DEVID_0 PCI_DEVID_1 PCI_DEVID_2 PCI_DEVID_3	PCDEVID_3:0] Definitions (Note Actual DEVID set also depends on PCI_DEVID_4)
ROM_SO	VGA_DEVICE	0: 3D DEVICE 1: VGA DEVICE Set at HW reset by the Device Detect Circuit
ROM_SI	SMB_ALT_ADDR	0: Thermal Sensor ADR = 0x9E 0x1 = 10K PD
	FB_0_BAR_SIZE	0: Default
ROM_SCLK	XCLK_417	0: Default
	RAM_CFG_0 RAM_CFG_1 RAM_CFG_2 RAM_CFG_3	RAM_CFG[3:0] Definitions
	PEX_PLL_EN_TERM100	0: DISABLED
	SLOT_CLK_CONFIG	1: GPU and MCH COMMON REFCLK 0x6 = 35K PD PCDEVID_EXT=0 0xE = 35K PU PCDEVID_EXT=1
	SUB_VENDOR	1: VBIOS ROM IS PRESENT
	PCI_DEVID_EXT	0: PCDEVID[4] = 0 or 1 (SKU Specific)

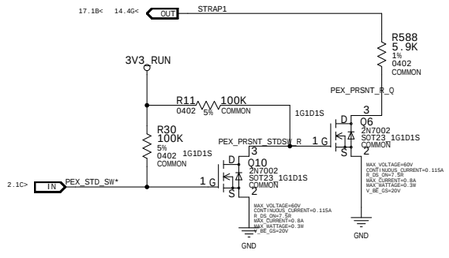
PCI_DEVID_0	GT218			GT216			GT215
PCI_DEVID_1	1000	5K PU	GT218-700	1000	5K PU	GT216-600	TBD
PCI_DEVID_2	0100	25K PD	GT218-730	0100	25K PD	GT216-630	
PCI_DEVID_3				1100	25K PU	GT216-640	
				1100	25K PU	GT216-950	

RAM_CFG_0	GT218 64Mx16			GT215/6		
RAM_CFG_1	0000	5K PD	Reserved	0001		Reserved
RAM_CFG_2	0001	10K PD	QIMONDA	0001	64Mx16 128-bit 10K PD	Qimonda
RAM_CFG_3	0010	15K PD	HYNIX	0010	64Mx16 128-bit 15K PD	Hynix
	0011	20K PD	SAMSUNG	0011	64Mx16 128-bit 20K PD	Samsung
	GT218 128Mx16			0100		Reserved
	0100	25k PD	Reserved	0101	32Mx16 128-bit 30K PD	Qimonda
	0101	30k PD	QIMONDA	0110	32Mx16 128-bit 35K PD	Hynix
	0110	35k PD	HYNIX	0111	32Mx16 128-bit 45K PD	Samsung
	0111	45K PD	SAMSUNG			

1001		Reserved		
1001	64Mx16 64-bit 10K PU	Qimonda		
1010	64Mx16 64-bit 15K PU	Hynix		
1011	64Mx16 64-bit 20K PU	Samsung		
1100		Reserved		
1101	128Mx16 64-bit 30K PU	Qimonda		
1110	128Mx16 64-bit 35K PU	Hynix		
1111	128Mx16 64-bit 45K PU	Samsung		

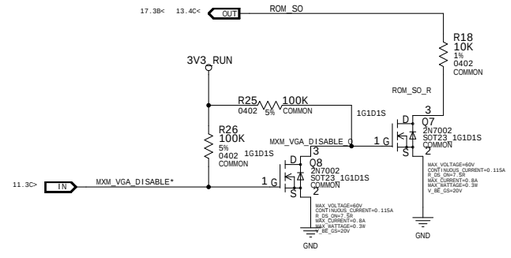
* 32Mx16 MAY BE 64Mx16 run at 1/2 density

PEX_PADCFG DETECT

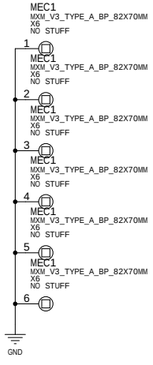


PEX_PRSNT_STDSW*	R_STRAP1	3_GIO_PADCFG_LUT<3..0>
FLOAT	35k	0x6 MOBILE_DEFAULT
GND	5k (35k ll 5.9k)	0x0 DESKTOP_DEFAULT

DEVICE DETECT



VGA_DISABLE#	R_ROM_SO	MODE
FLOAT	10k	0x1 VGA MODE
GND	5k (10k ll 10k)	0x0 3D ACCELERATOR



ASSEMBLY	P699-B00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	STRAPS and MOUNTING HOLES

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NV_PN	600-10699-0015-200 A		
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NAME	sixu	DATE	08-JUL-2009