

P684-A01 GT216/GT215 DESKTOP Low Profile

PCI -EXPRESSx16 DVI -I HDMI VGA DDR3

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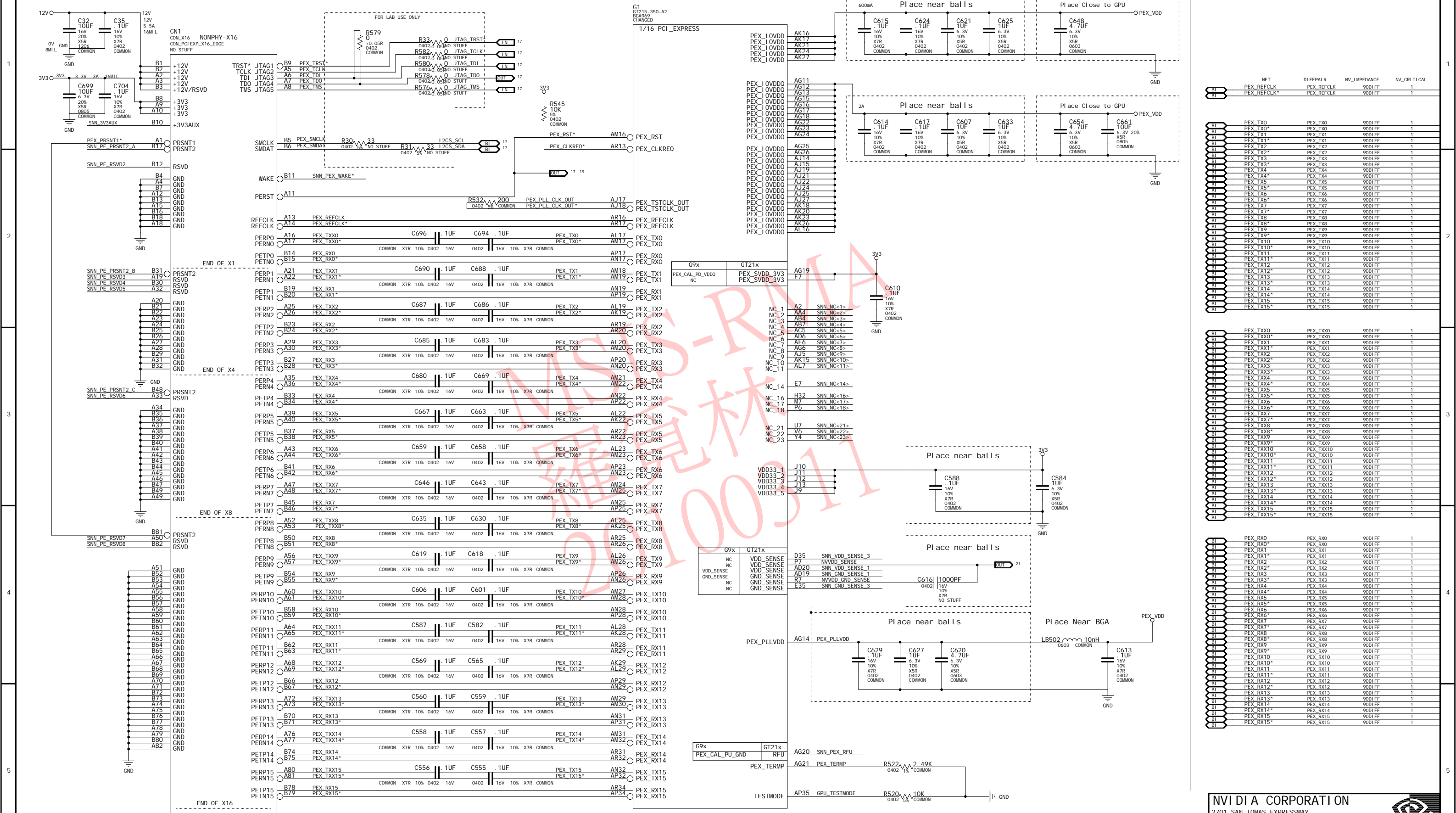
Page 20: FBVDDQ/PEXVDD POWER SUPPLY

Page 21: NVVDD POWER SUPPLY

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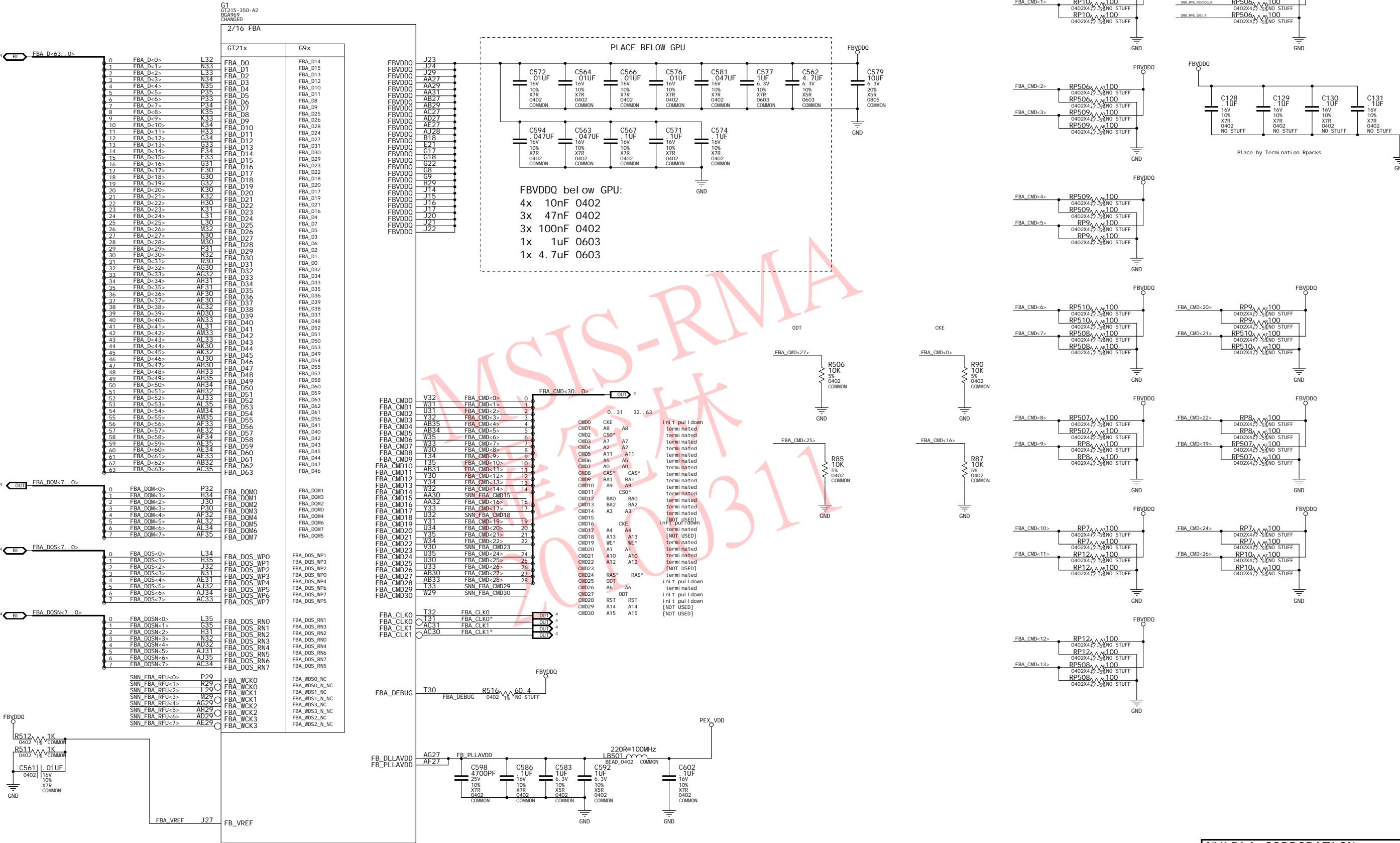
SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-10684-base-100	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	SKU0000	600-10684-0000-100	GT216-350 615/1335MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI -I /HDMI /VGA
2	SKU0011	600-10684-0011-100	GT215-350 540/1302MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI -I /HDMI /VGA
3	SKU0012	600-10684-0012-100	GT215-250 540/1302MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI -I /HDMI /VGA
4	SKU0013	600-10684-0013-100	GT215-250 NVS 540/1302MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI -I /HDMI /VGA
5	SKU0014	600-10684-0014-100	GT215-350 NVS 540/1302MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI -I /HDMI /VGA
6	SKU0005	600-10684-0005-100	GT216-205 475/1100MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI -I /HDMI /VGA
7	SKU0015	600-10684-0015-100	GT215-255 540/1302MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI -I /HDMI /VGA
8	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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10	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

PCI -EXPRESS I NTERFACE



NVI DI A CORPORATI ON 2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA			
NV_PN	600-10684-0015-100 A		
1D	p684a01	PAGE	2 of 21
NAME	Garrett Hall	DATE	30-OCT-2009

PARTITION A FRAME BUFFER INTERFACE

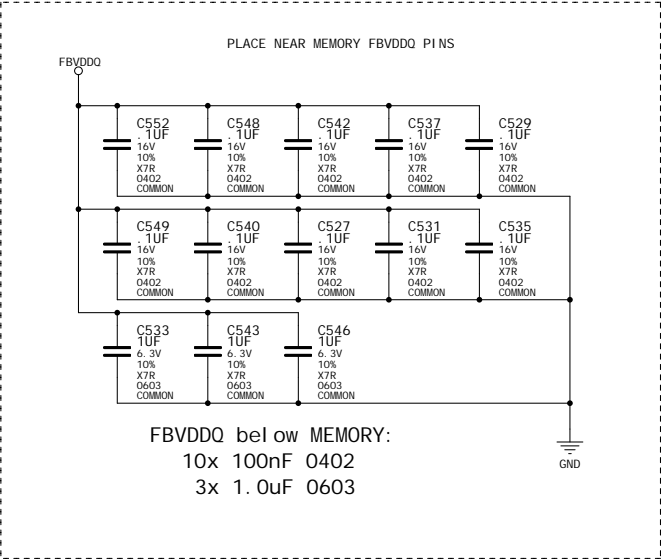


PARTITION A MEMORY

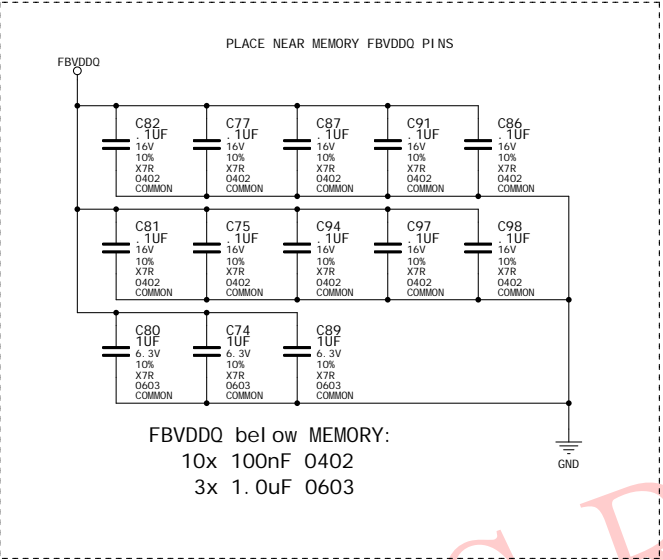


FBA DECOUPLING CAPS & NVVDD DECOUPLING CAPS

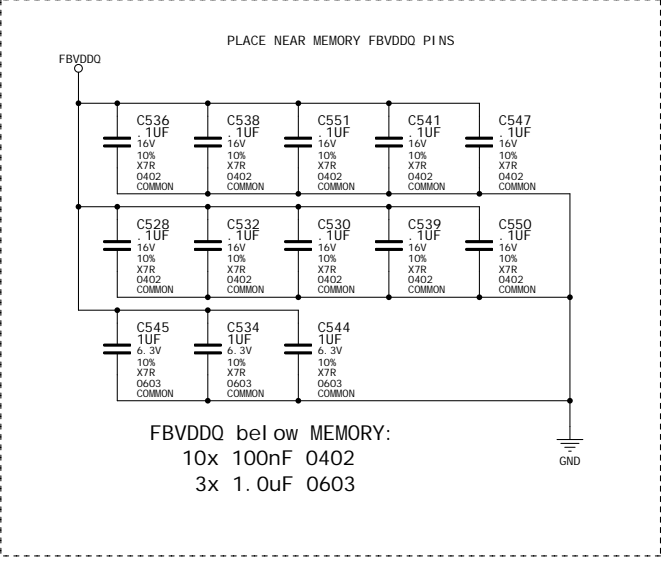
Decoupling for FBA 0..15



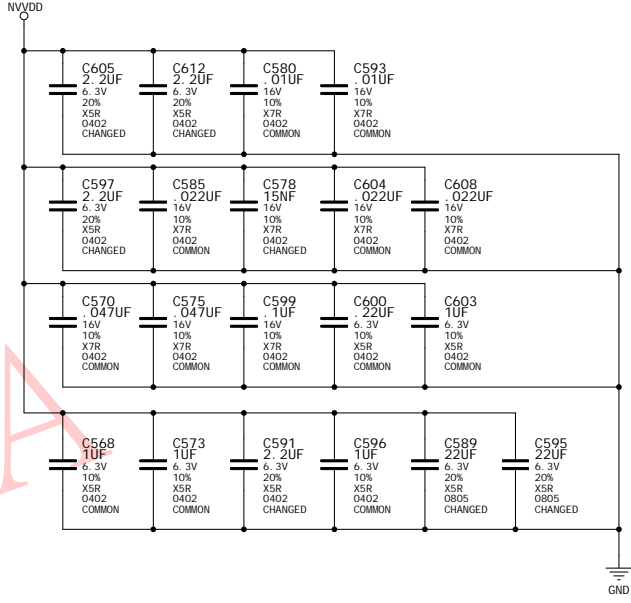
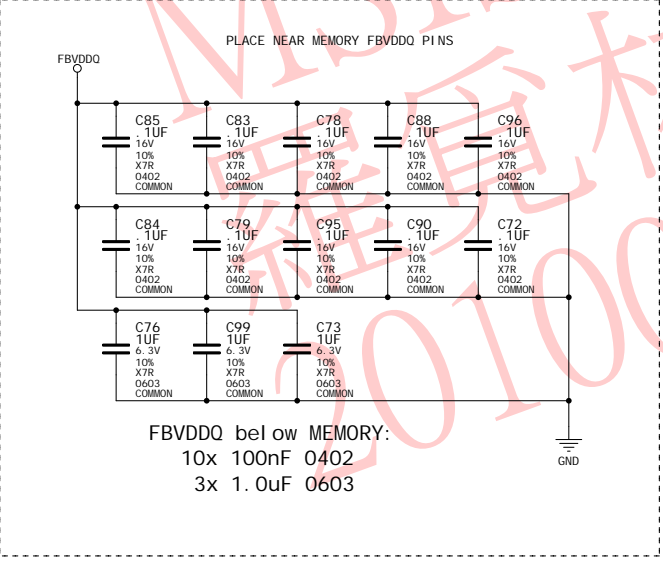
Decoupling for FBA 16..31



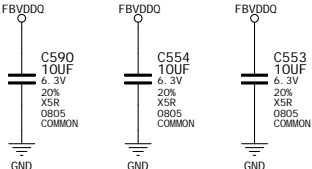
Decoupling for FBA 32..47



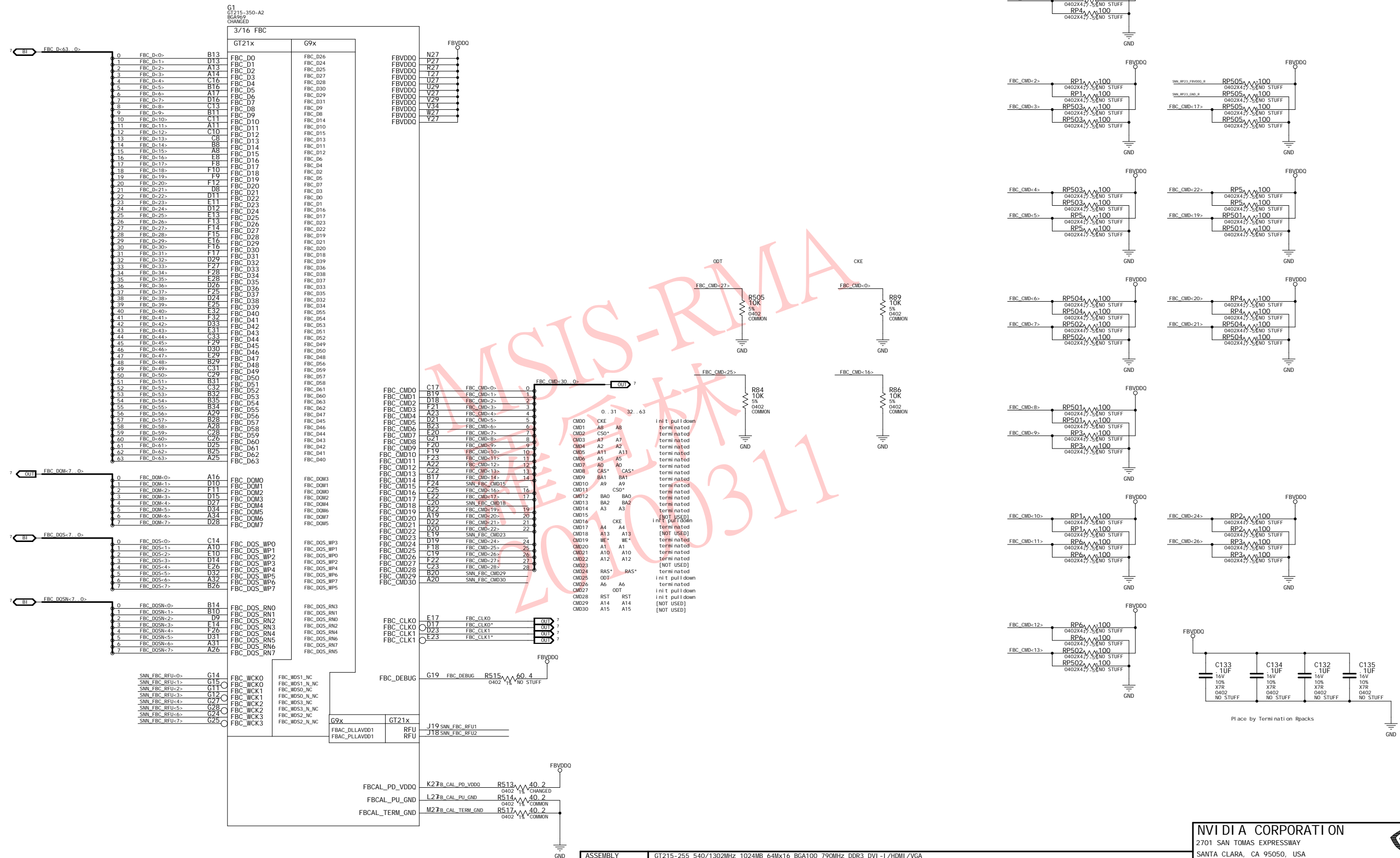
Decoupling for FBA 48..63



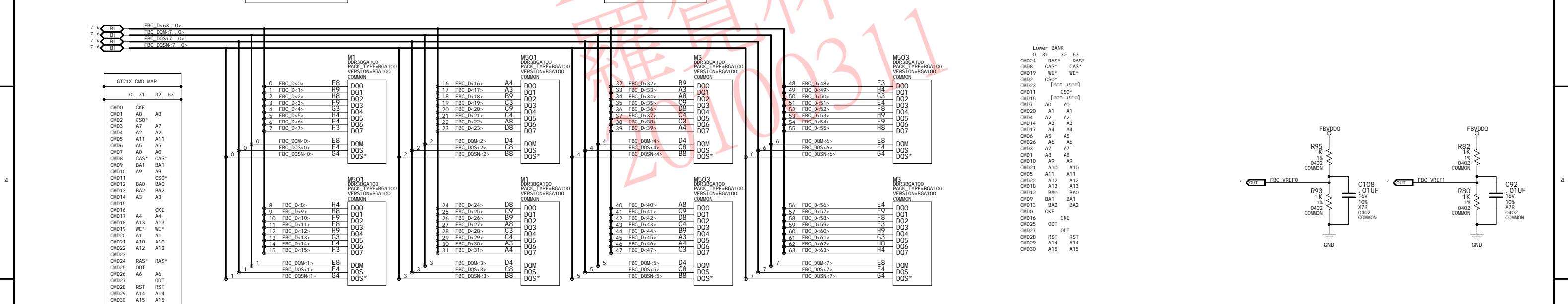
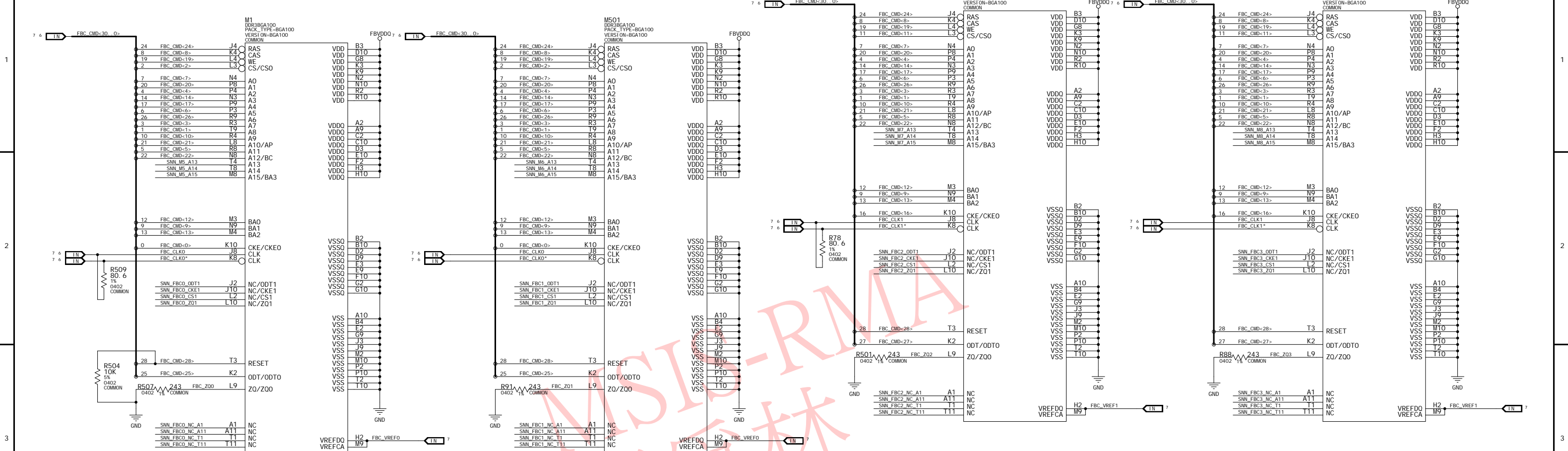
G1 GT215-250-A2 BGA969 CHANGED		16/16 NVVDQ	
AB11	VDD	P21	VDD
AB13	VDD	P23	VDD
AB15	VDD	P25	VDD
AB17	VDD	R11	VDD
AB19	VDD	R12	VDD
AB21	VDD	R13	VDD
AB23	VDD	R14	VDD
AB25	VDD	R15	VDD
AC11	VDD	R16	VDD
AC12	VDD	R17	VDD
AC13	VDD	R18	VDD
AC14	VDD	R19	VDD
AC15	VDD	R20	VDD
AC16	VDD	R21	VDD
AC17	VDD	R22	VDD
AC18	VDD	R23	VDD
AC19	VDD	R24	VDD
AC20	VDD	R25	VDD
AC21	VDD	T12	VDD
AC22	VDD	T14	VDD
AC23	VDD	T16	VDD
AC24	VDD	T18	VDD
AC25	VDD	T20	VDD
AD12	VDD	T22	VDD
AD14	VDD	T24	VDD
AD16	VDD	V11	VDD
AD18	VDD	V13	VDD
AD22	VDD	V15	VDD
AD24	VDD	V17	VDD
L11	VDD	V21	VDD
L12	VDD	V23	VDD
L13	VDD	V25	VDD
L14	VDD	W11	VDD
L15	VDD	W12	VDD
L16	VDD	W13	VDD
L17	VDD	W14	VDD
L18	VDD	W15	VDD
L19	VDD	W16	VDD
L20	VDD	W17	VDD
L21	VDD	W18	VDD
L22	VDD	W19	VDD
L23	VDD	W20	VDD
L24	VDD	W21	VDD
L25	VDD	W22	VDD
M12	VDD	W23	VDD
M14	VDD	W24	VDD
M16	VDD	Y11	VDD
M18	VDD	Y12	VDD
M20	VDD	Y14	VDD
M22	VDD	Y16	VDD
M24	VDD	Y18	VDD
P11	VDD	Y20	VDD
P13	VDD	Y22	VDD
P15	VDD	Y24	VDD
P17	VDD		
P19	VDD		



PARTITION C FRAME BUFFER INTERFACE



PARTITION C MEMORY

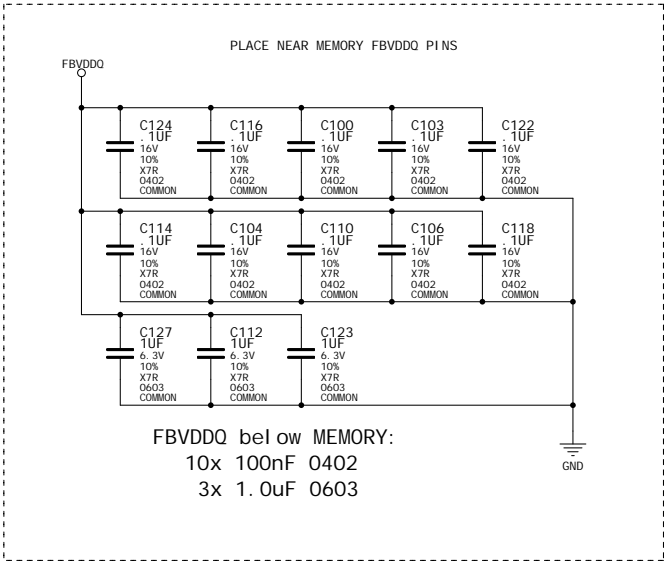


NET	DI FFPAIR	NV_I MPEDANCE	NV_CRI TI CAL_NET
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1 FBC_DQS<1>	FBC_DQS<1>	800LFF	1
2 FBC_DQS<2>	FBC_DQS<2>	800LFF	1
3 FBC_DQS<3>	FBC_DQS<3>	800LFF	1
4 FBC_DQS<4>	FBC_DQS<4>	800LFF	1
5 FBC_DQS<5>	FBC_DQS<5>	800LFF	1
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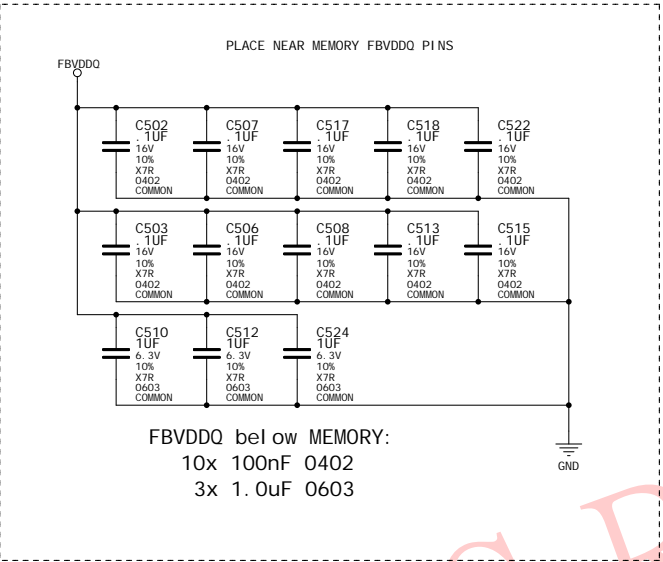
NET	DI FFPAIR	NV_I MPEDANCE	NV_CRI TI CAL_NET
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1 FBC_DQS<1>	FBC_DQS<1>	800LFF	1
2 FBC_DQS<2>	FBC_DQS<2>	800LFF	1
3 FBC_DQS<3>	FBC_DQS<3>	800LFF	1
4 FBC_DQS<4>	FBC_DQS<4>	800LFF	1
5 FBC_DQS<5>	FBC_DQS<5>	800LFF	1
6 FBC_DQS<6>	FBC_DQS<6>	800LFF	1
7 FBC_DQS<7>	FBC_DQS<7>	800LFF	1

FBC DECOUPLING CAPS & NVVDD DECOUPLING CAPS

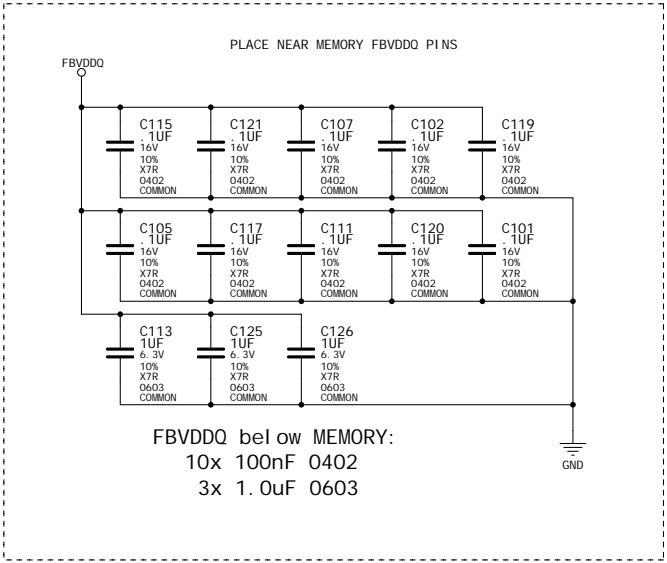
Decoupling for FBC 0..15



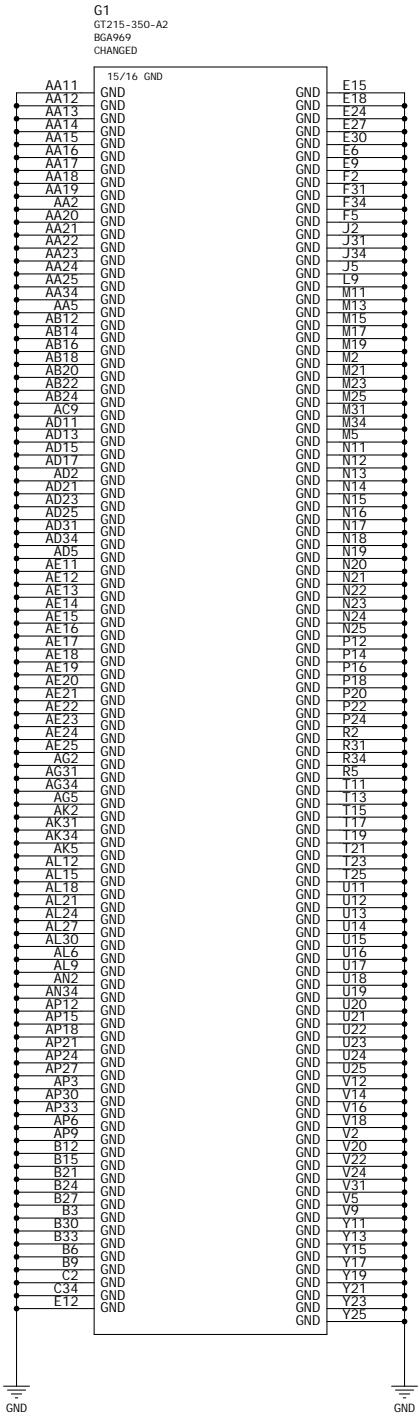
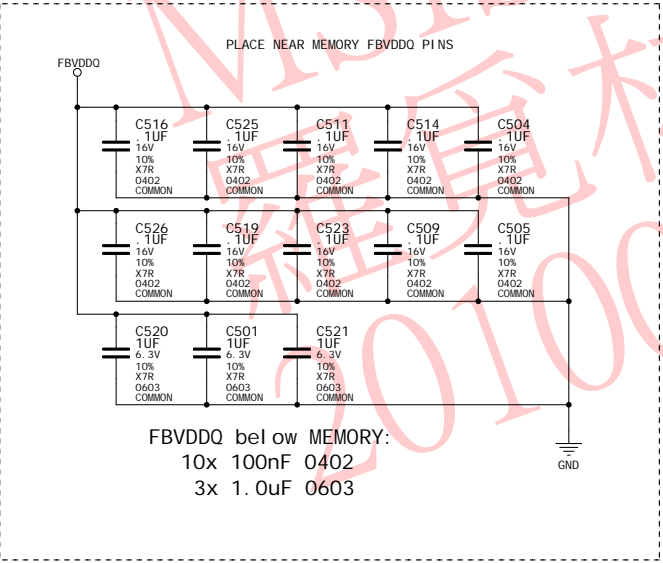
Decoupling for FBC 16..31



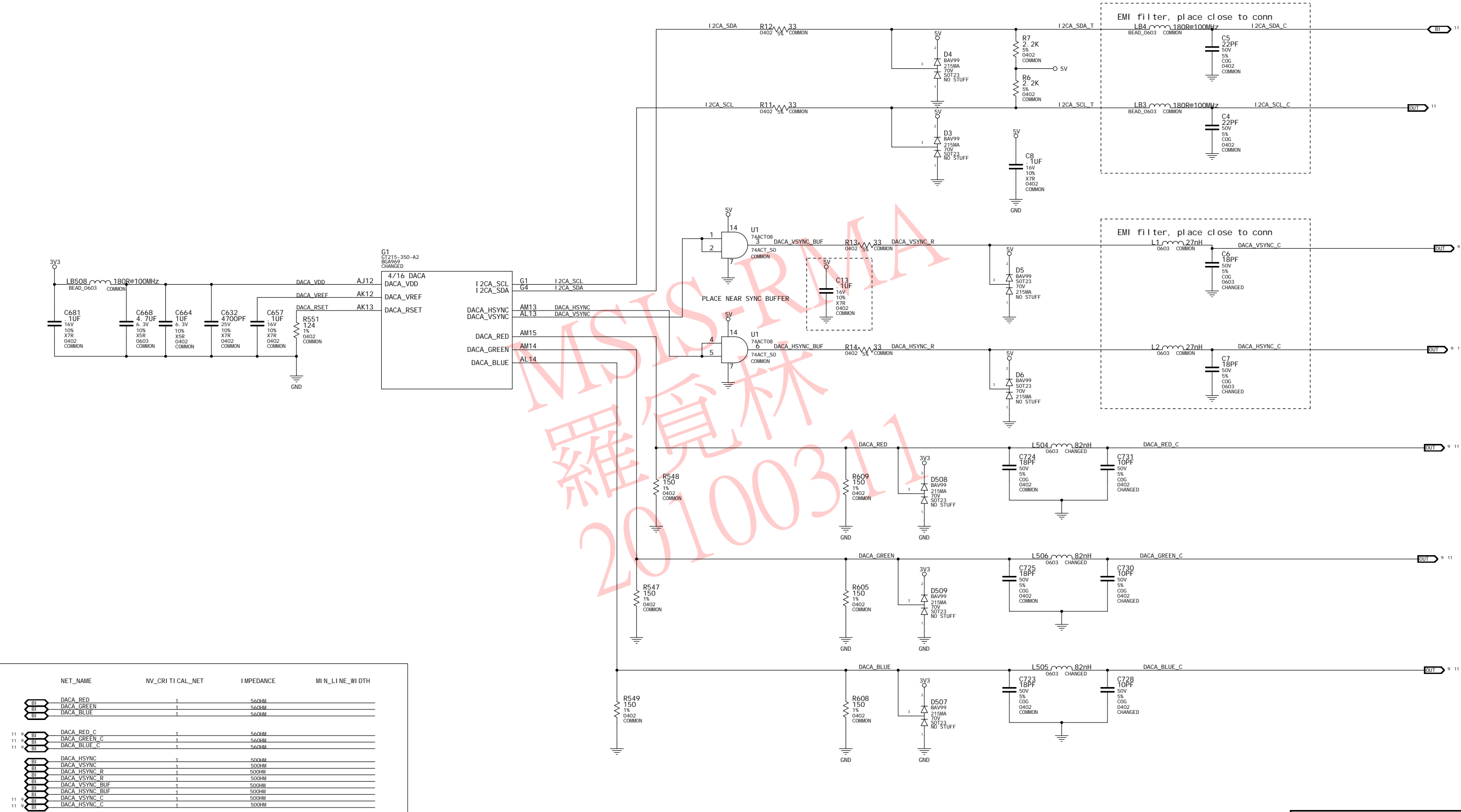
Decoupling for FBC 32..47



Decoupling for FBC 48..63



DACA (SOUTH DVI -I)



NET_NAME	NV_CRI TI CAL_NET	I MPEDANCE	MI N_LI NE_WI DTH
DACA_RED	1	560HM	
DACA_GREEN	1	560HM	
DACA_BLUE	1	560HM	
DACA_RED_C	1	560HM	
DACA_GREEN_C	1	560HM	
DACA_BLUE_C	1	560HM	
DACA_HSYNC	1	500HM	
DACA_VSYNC	1	500HM	
DACA_HSYNC_R	1	500HM	
DACA_VSYNC_R	1	500HM	
DACA_VSYNC_BUF	1	500HM	
DACA_HSYNC_BUF	1	500HM	
DACA_VSYNC_C	1	500HM	
DACA_HSYNC_C	1	500HM	

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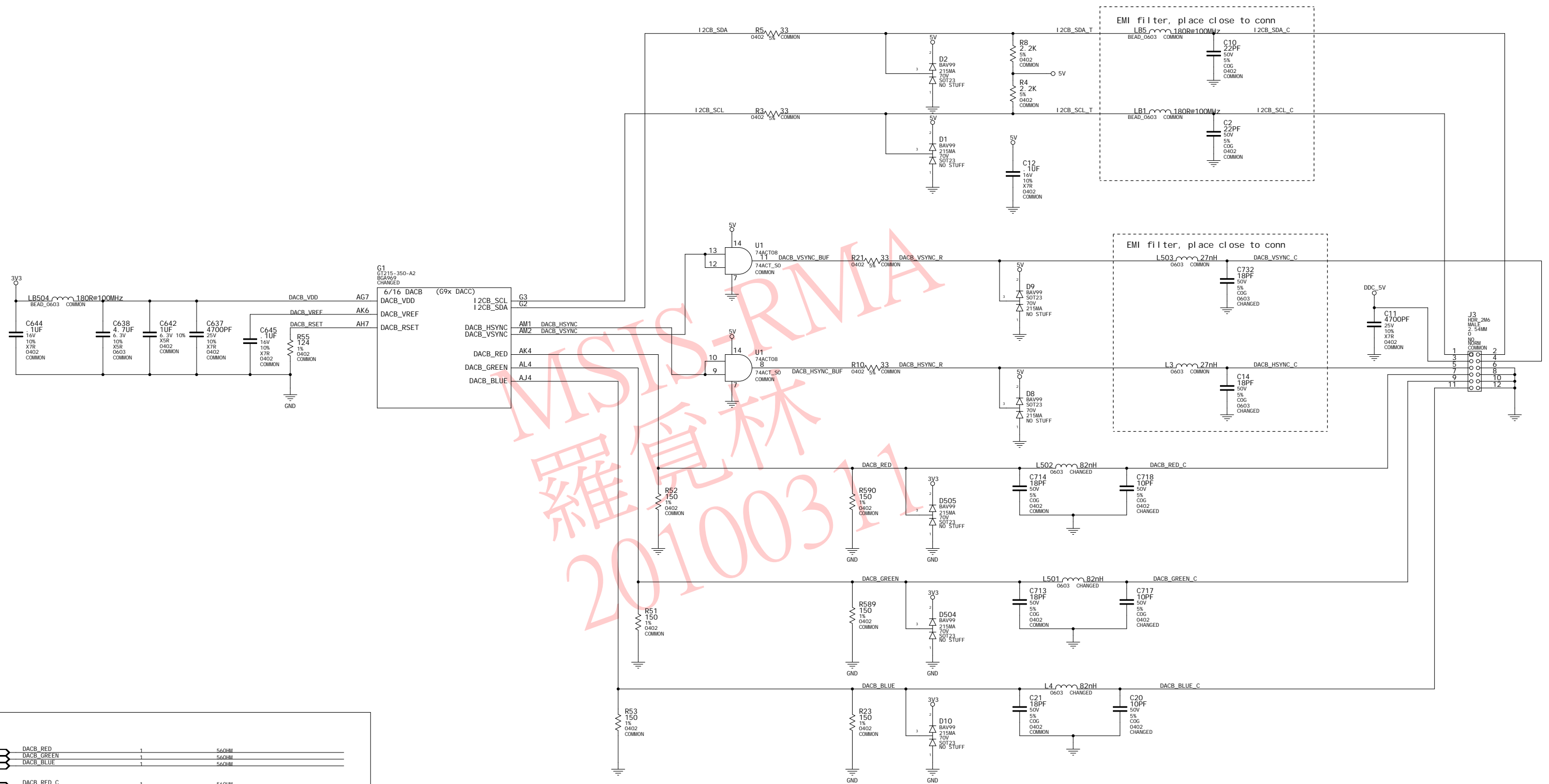
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DATE

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DACB (cable-up VGA)



[BI]	DACB_RED	1	560HM
[BI]	DACB_GREEN	1	560HM
[BI]	DACB_BLUE	1	560HM
[BI]	DACB_RED_C	1	560HM
[BI]	DACB_GREEN_C	1	560HM
[BI]	DACB_BLUE_C	1	560HM
[BI]	DACB_HSYNC	1	500HM
[BI]	DACB_VSYNC	1	500HM
[BI]	DACB_HSYNC_R	1	500HM
[BI]	DACB_VSYNC_R	1	500HM
[BI]	DACB_VSYNC_BUF	1	500HM
[BI]	DACB_HSYNC_BUF	1	500HM
[BI]	DACB_VSYNC_C	1	500HM
[BI]	DACB_HSYNC_C	1	500HM

ASSEMBLY	GT215-255 540/1302MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI -I /HDMI /VGA
PAGE DETAIL	DACB (cable up VGA)

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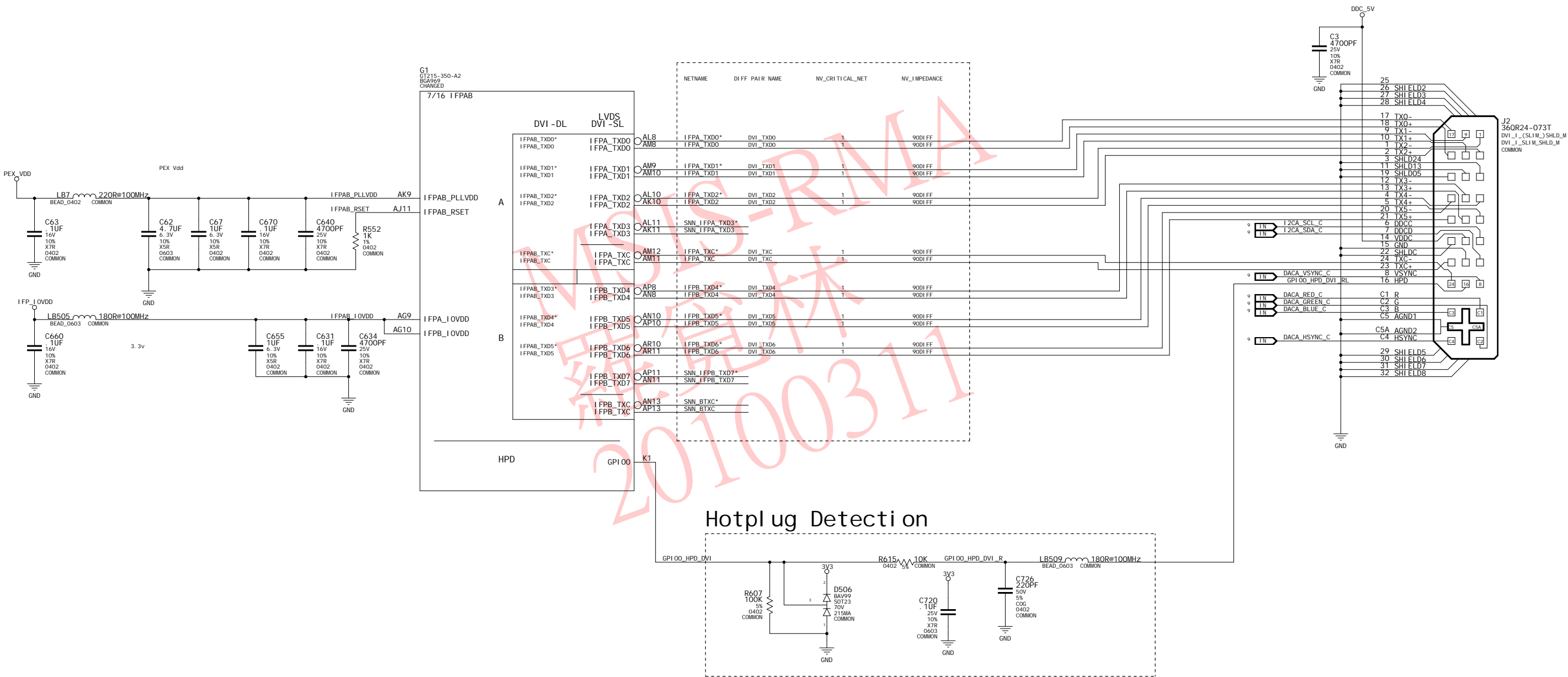
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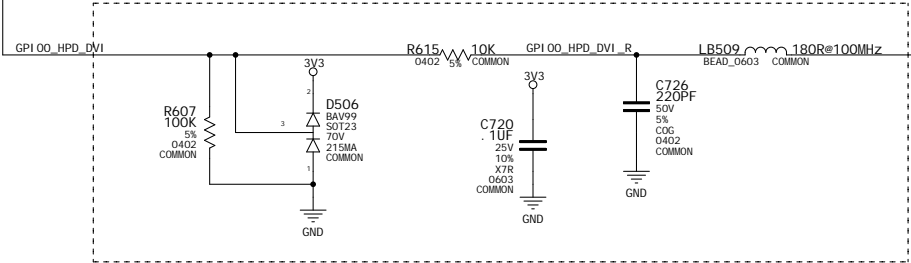
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I FP AB (SOUTH DVI -I)



Hotplug Detection



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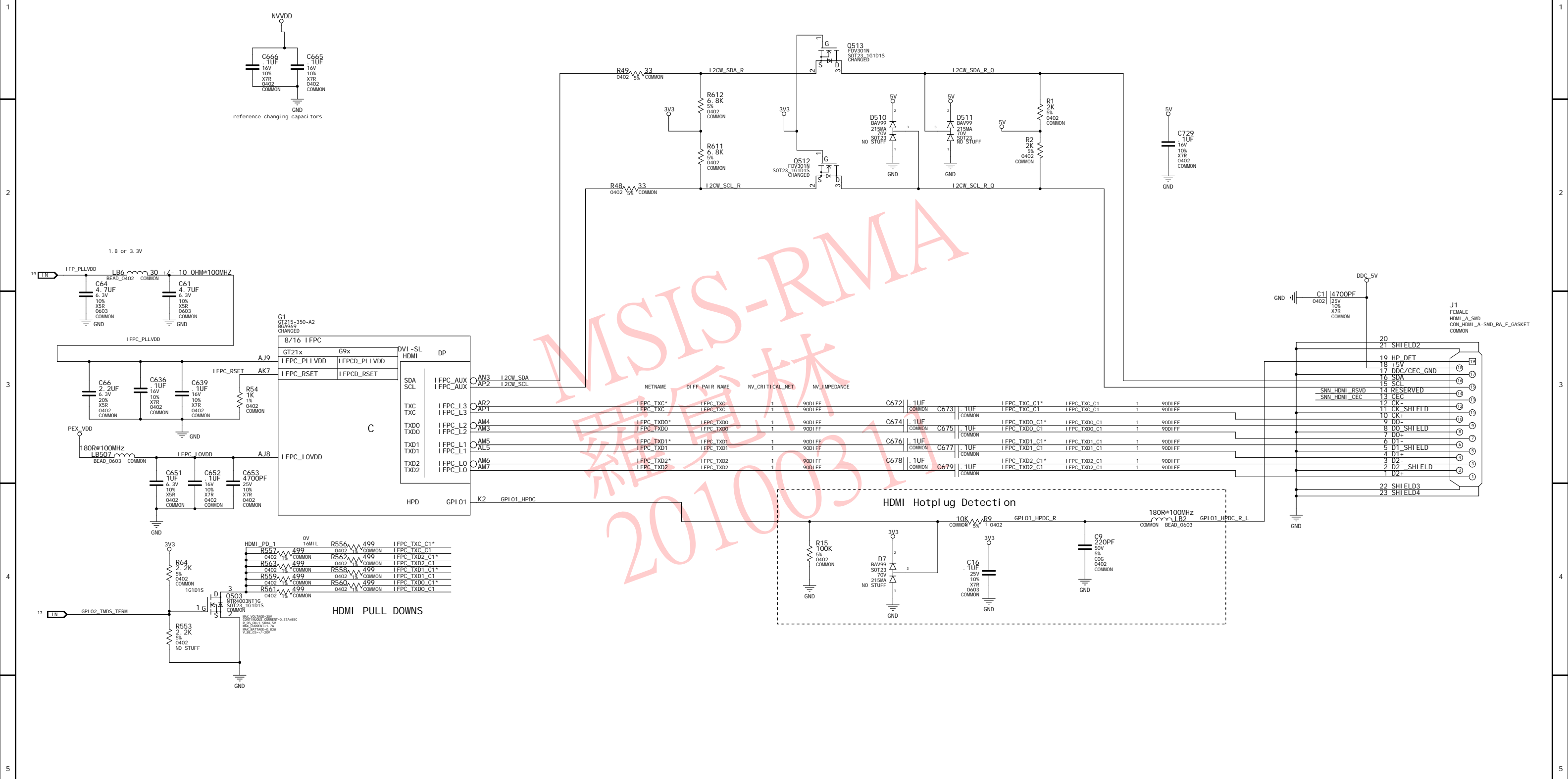
ASSEMBLY	GT215-255 540/1302MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI-I/HDMI/VGA
PAGE DETAIL	I FP AB (SOUTH DVI -I)

NV_PN 600-10684-0015-100 A

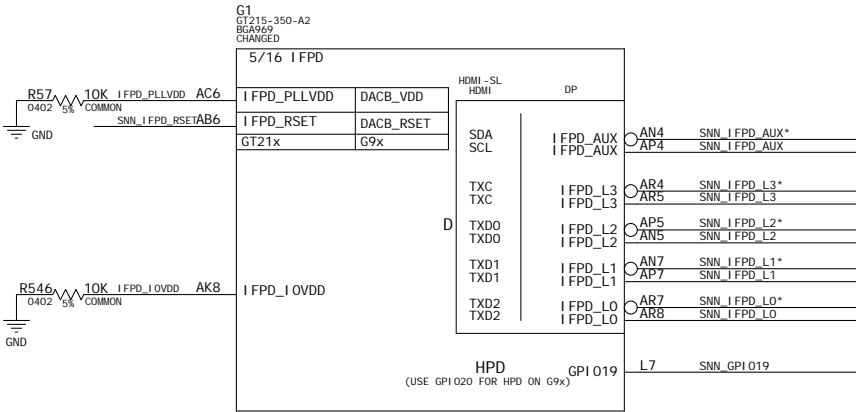
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I FP C (NORTH HDMI)



I F P D (UNUSED)



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NET	PAIR	NV_CRITICAL	IMPEDANCE
I F P E _ A U X _ B Y P	I F P E _ A U X _ B Y P	1	90DI FF
I F P E _ A U X _ B Y P *	I F P E _ A U X _ B Y P	1	90DI FF

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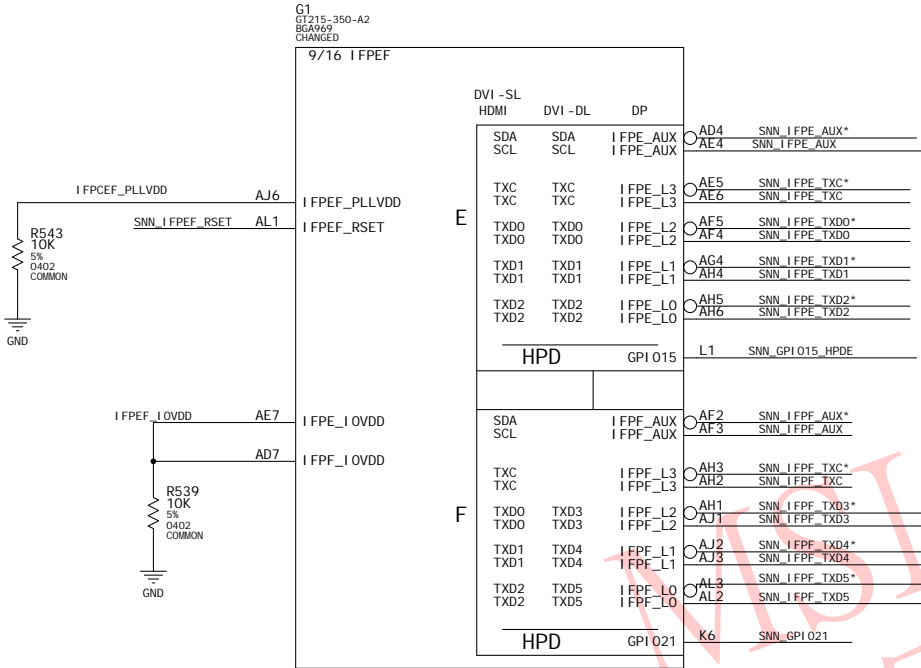


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NAME	Garrett Hall	DATE	30-OCT-2009

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I FP EF (unused)



NET	PAI R	NV_CRI TI CAL	I MPEDANCE
I FPEF_TXC*	I FPEF_TXC	1	900I FF
I FPEF_TXC	I FPEF_TXC	1	900I FF
I FPE_TXC*	I FPE_TXC	1	900I FF
I FPE_TXC	I FPE_TXC	1	900I FF
I FPE_TXD0*	I FPE_TXD0	1	900I FF
I FPE_TXD0	I FPE_TXD0	1	900I FF
I FPE_TXD1*	I FPE_TXD1	1	900I FF
I FPE_TXD1	I FPE_TXD1	1	900I FF
I FPE_TXD2*	I FPE_TXD2	1	900I FF
I FPE_TXD2	I FPE_TXD2	1	900I FF
I FPF_TXD3*	I FPF_TXD3	1	900I FF
I FPF_TXD3	I FPF_TXD3	1	900I FF
I FPF_TXD4*	I FPF_TXD4	1	900I FF
I FPF_TXD4	I FPF_TXD4	1	900I FF
I FPF_TXD5*	I FPF_TXD5	1	900I FF
I FPF_TXD5	I FPF_TXD5	1	900I FF
I FPEF_TXD3*	I FPEF_TXD3	1	900I FF
I FPEF_TXD3	I FPEF_TXD3	1	900I FF
I FPEF_TXD4*	I FPEF_TXD4	1	900I FF
I FPEF_TXD4	I FPEF_TXD4	1	900I FF
I FPEF_TXD5*	I FPEF_TXD5	1	900I FF
I FPEF_TXD5	I FPEF_TXD5	1	900I FF
I FPEF_TXD0*	I FPEF_TXD0	1	900I FF
I FPEF_TXD0	I FPEF_TXD0	1	900I FF
I FPEF_TXD1*	I FPEF_TXD1	1	900I FF
I FPEF_TXD1	I FPEF_TXD1	1	900I FF
I FPEF_TXD2*	I FPEF_TXD2	1	900I FF
I FPEF_TXD2	I FPEF_TXD2	1	900I FF
I FPE_AUX*	I FPE_AUX	1	900I FF
I FPE_AUX	I FPE_AUX	1	900I FF

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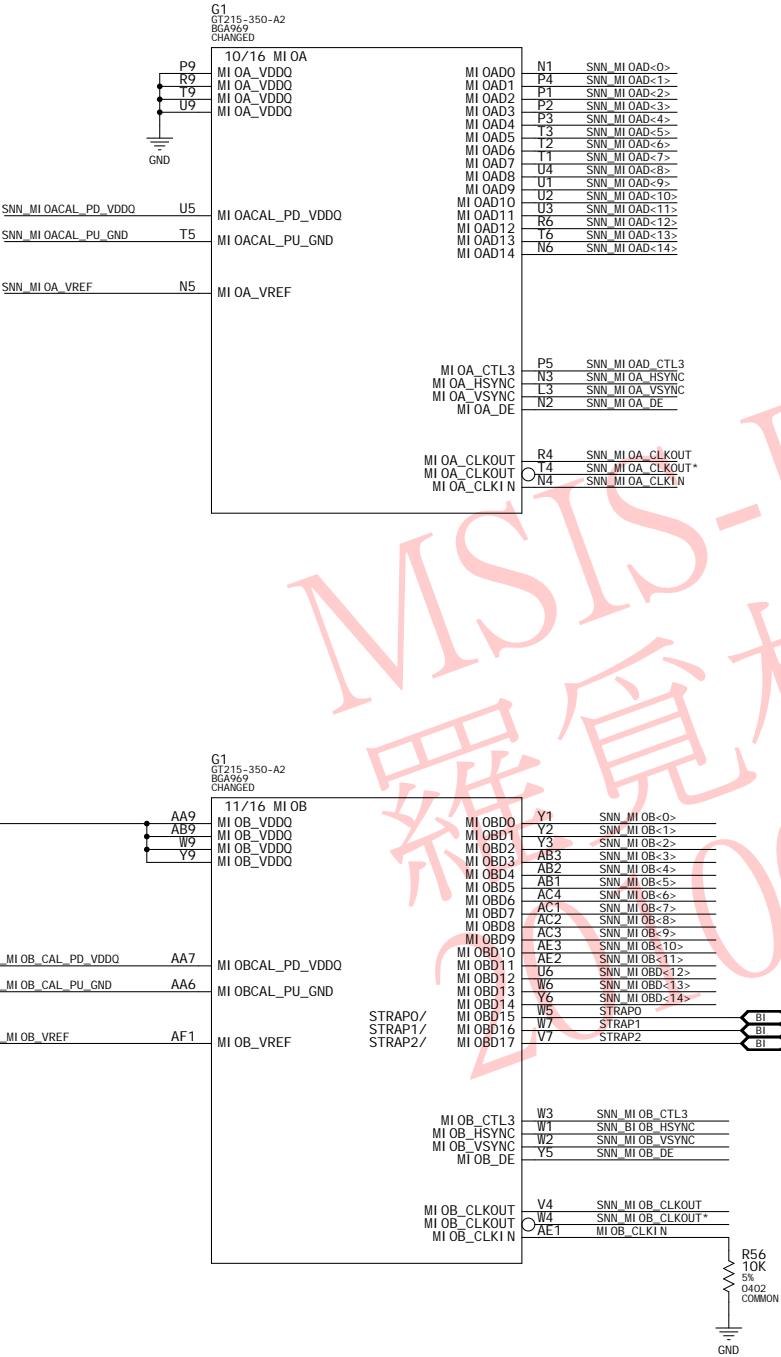


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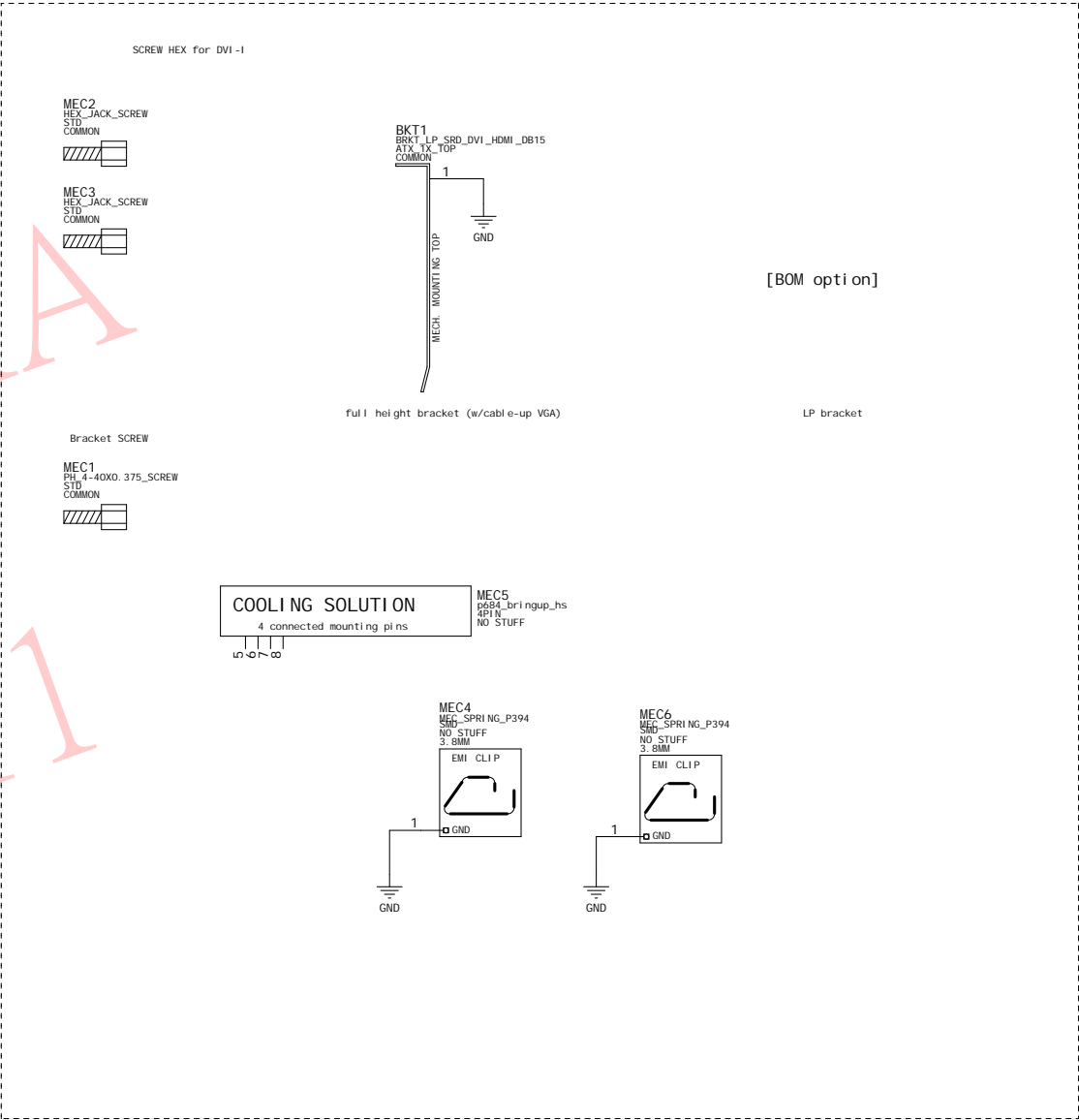
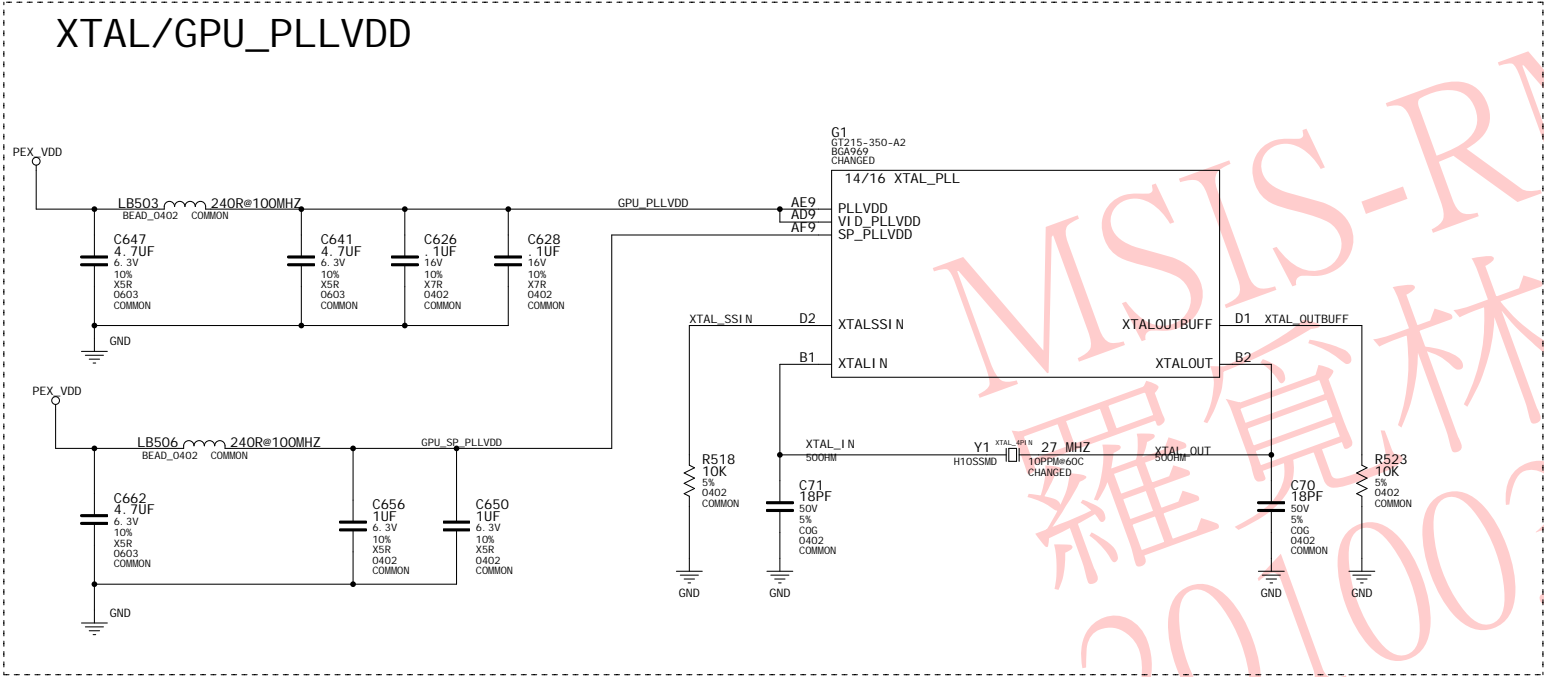
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NAME	Garrett Hall	DATE	30-OCT-2009

ASSEMBLY	GT215-255 540/1302MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI -I /HDMI /VGA
PAGE DETAIL	I FP EF (unused)

MI OA & MI OB



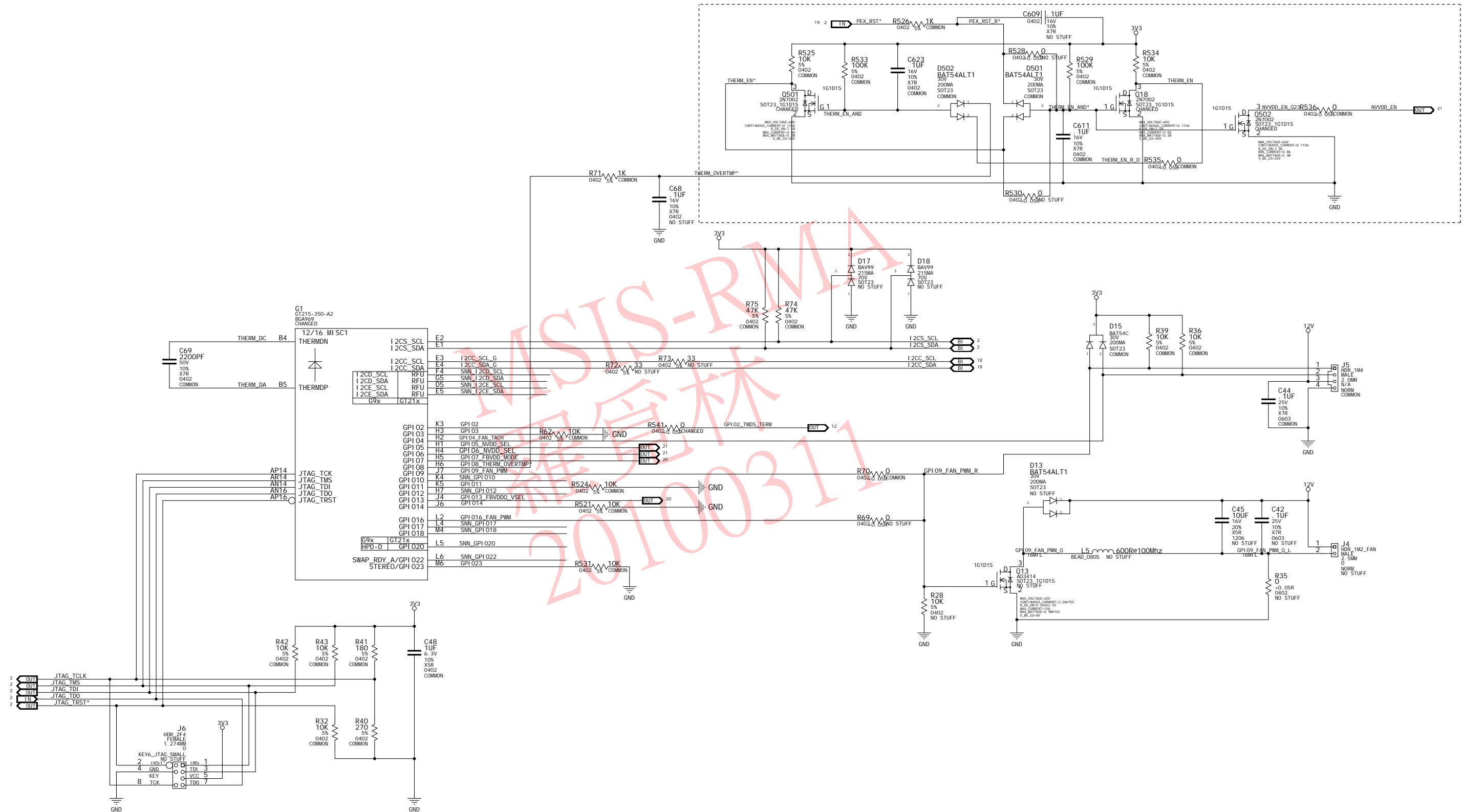
XTAL, MECHANICALS, THERMALS



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FAN CONTROL, GPIO, JTAG

OVERTEMP LATCH



ASSEMBLY	GT215-255 540/1302MHz 1024MB 64Mx16 BGA100 790MHz DDR3 DVI-I /HDMI /VGA
PAGE DETAIL	FAN CONTROL, GPIO, JTAG

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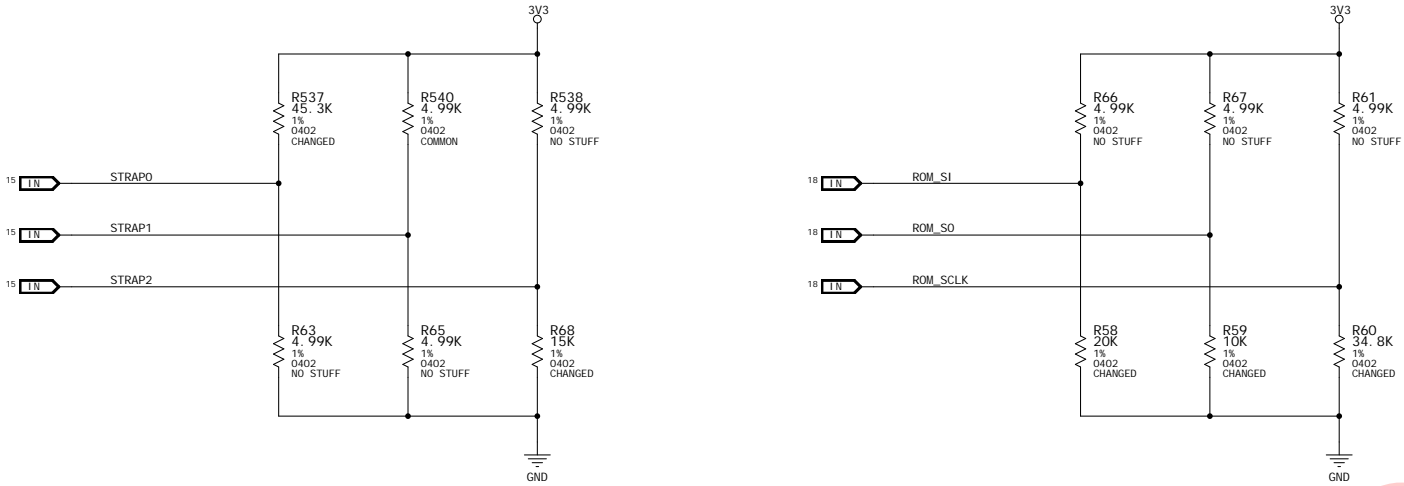


NV_PN	600-10684-0015-100 A
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NAME	Garrett Hall	DATE	30-OCT-2009

BIOS ROM, HDCP ROM, STRAPPING OPTIONS

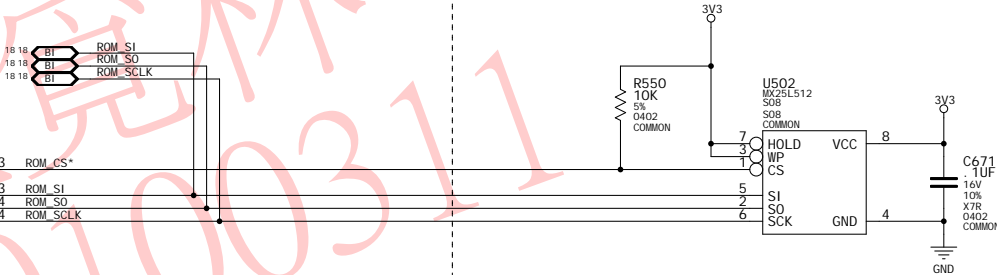
STRAPPING OPTIONS



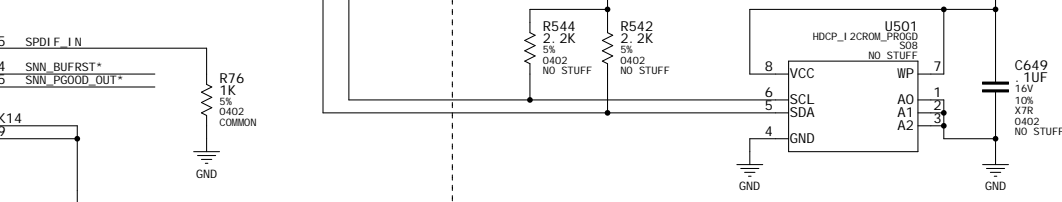
Strap0	USER[3:0]	EDID: 1111	45k pull up		
Strap1	3G10PADCFG[3:0]	sku0: 0000	5k pull down	0 5k PD	8 5k PU
		sku11, 12, 13, 14: 1000	5k pull up	1 10k PD	9 10k PU
				2 15k PD	10 15k PU
Strap2	PCI_DEV1D[3:0]	GT216-350: 0A20	5k pull down	3 20k PD	11 20k PU
		GT215-350: 0CA3	20k pull down	4 25k PD	12 25k PU
		GT215-250: 0CA2	15k pull down	5 30k PD	13 30k PU
		GT215-250 NVS: 0CA6	35k pull down	6 35k PD	14 35k PU
		GT215-350 NVS: 0CA7	45k pull down	7 45k PD	15 45k PU
		GT216-205: 0A22	15k pull down		
		GT215-255: 0CA2	15k pull down		

ROM_SI	RAMCFG[3:0]	64Mx16 DDR3 Hynix: 0010	15k pull down
		64Mx16 DDR3 Samsung: 0011	20k pull down
ROM_SO	3: XCLK_417		
	2: FB[0]		
	1: SMB_ALT_ADDR	0001	10k PD
	0: VGA_DEVICE		
ROM_SCLK	3: PCI_DEV_EXT		
	2: SUB_VENDOR	0110	35k PD
	1: SLOT_CLK_CFG		
	0: PEX_PLL_EN_TERM100		

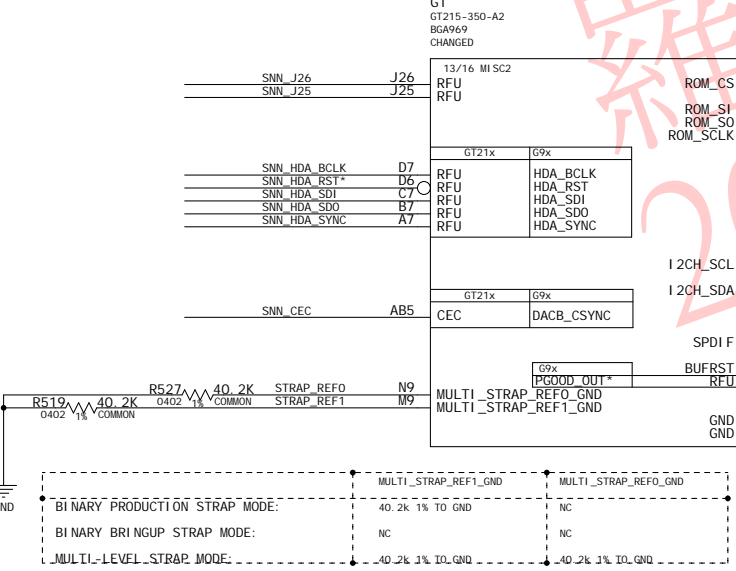
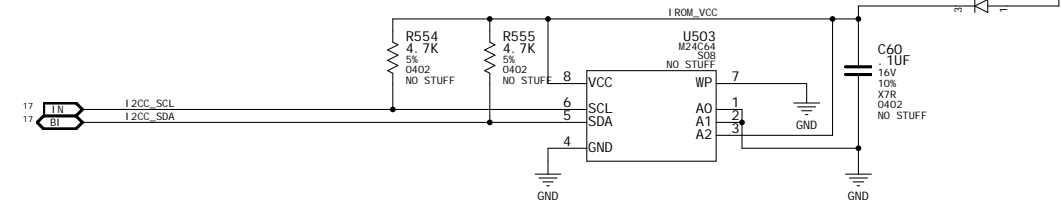
BIOS ROM(serial)



HDCP I2C EEROM



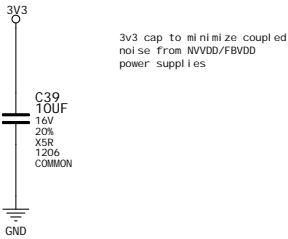
INFOROM



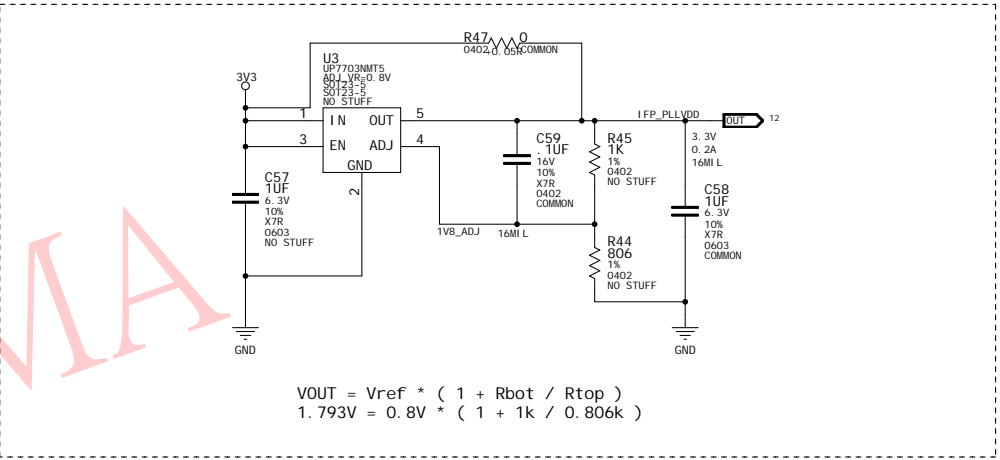
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NV_PN	600-10684-0015-100 A		
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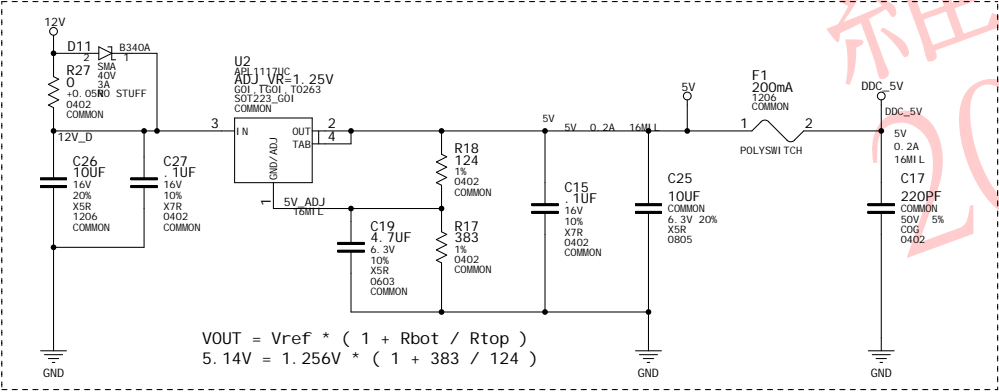
LINEAR POWER SUPPLIES



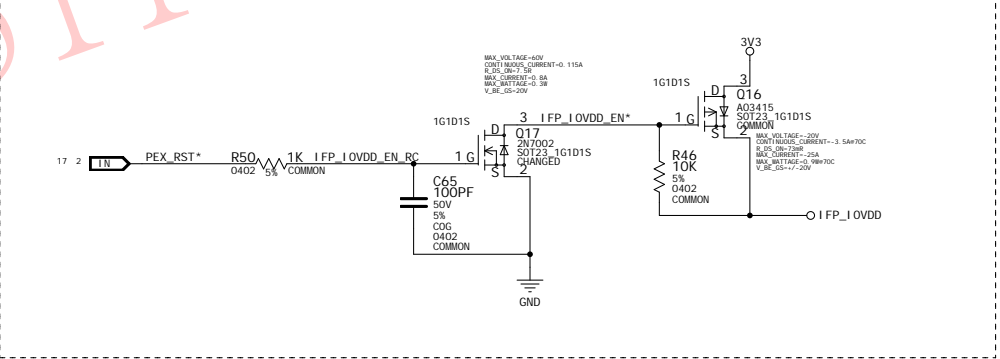
IFP_PLLVDD SUPPLY



5V & DDC_5V REGULATOR

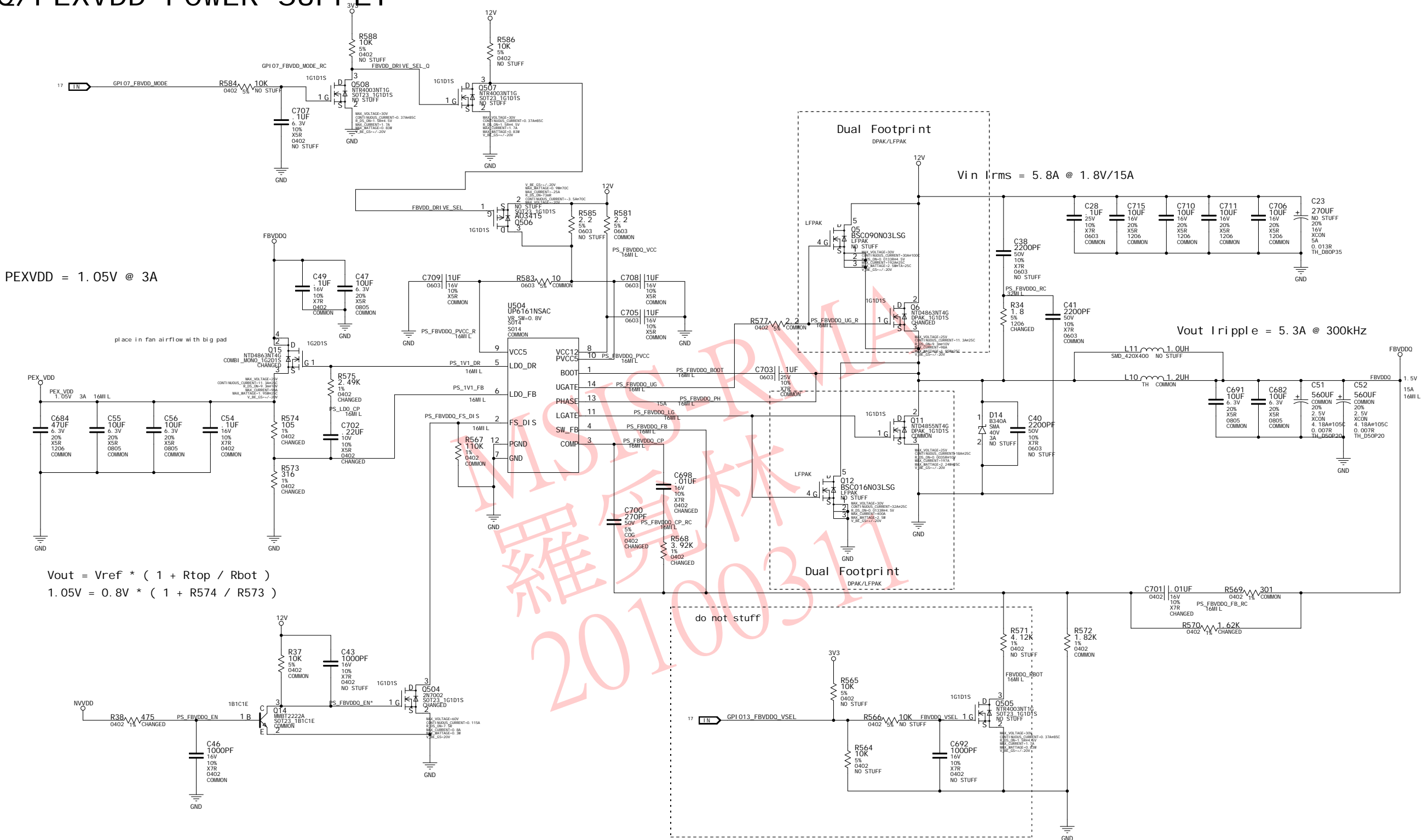


IFP_IOVDD BACKDRIVE PREVENTION



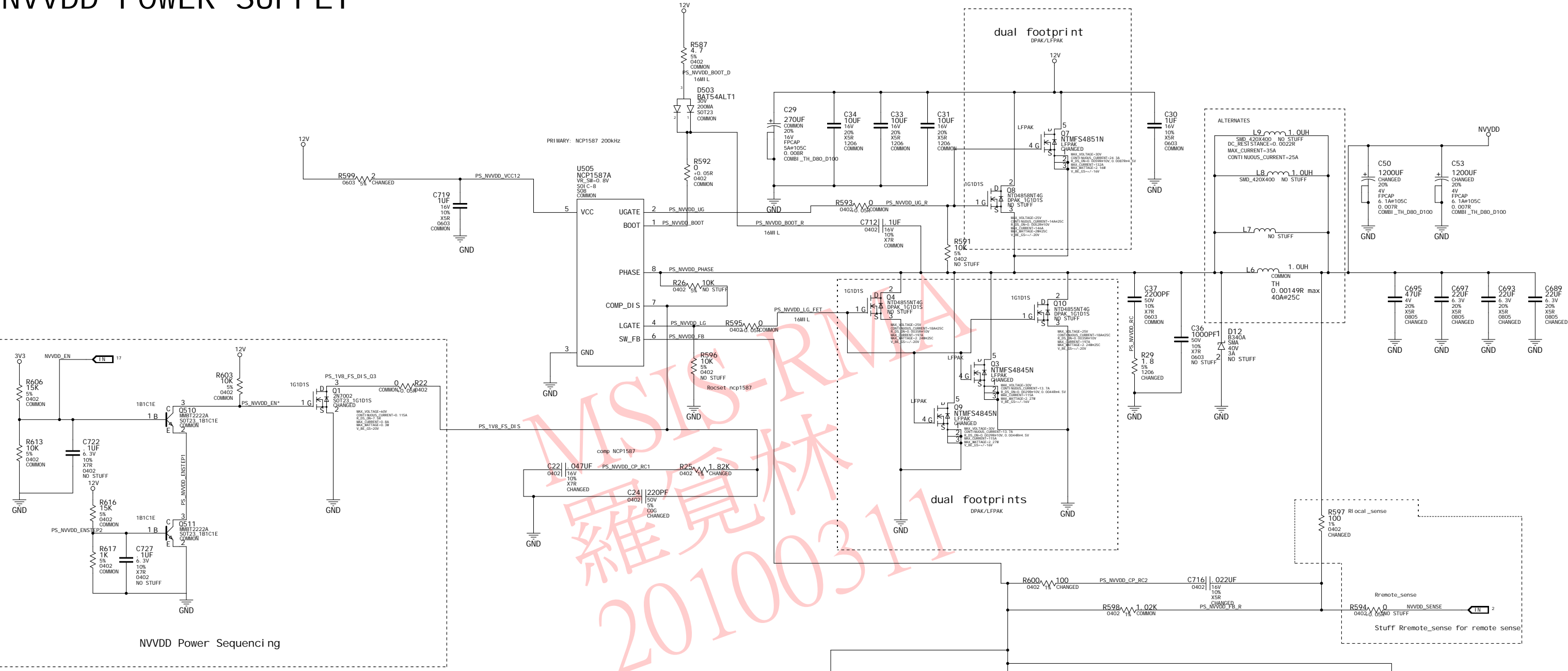
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FBVDDQ/PEXVDD POWER SUPPLY



$$FBVDDQ = V_{ref} * (1 + R_{top} / R_{bot})$$
$$1.50V = 0.8V * (1 + R570 / R572) @ GPI013 = 0 \text{ [DEFAULT]}$$

NVVDD POWER SUPPLY



Net Name MI N LINE WIDTH VOLTAGE NV_NET_MAX_CURRENT

NVVDD	NVVDD	16MI L	1V	20A
PS_NVVDD_VCC5		16MI L		
PS_NVVDD_VCC12		16MI L		
PS_NVVDD_VVCC5		16MI L		
PS_NVVDD_BOOT		16MI L		
PS_NVVDD_UG		16MI L		
PS_NVVDD_PHASE		16MI L		
PS_NVVDD_LG		16MI L		
PS_NVVDD_FB		12MI L		
PS_NVVDD_CP		12MI L		
PS_NVVDD_UG_R		16MI L		
PS_NVVDD_CP_RC1		12MI L		
PS_NVVDD_CP_RC2		12MI L		
PS_NVVDD_FB_R		12MI L		
PS_NVVDD_RC		12MI L		