

P1060-A02

GF106 ULTRA, 128-BIT GDDR5 IN x16 MODE

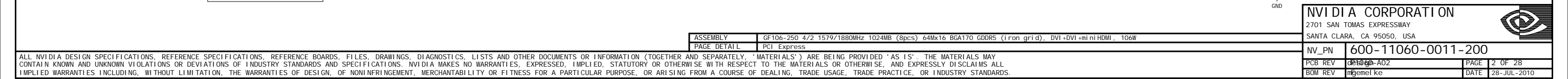
DVI -I -DL + DVI -I -DL/DP + mini HDMI

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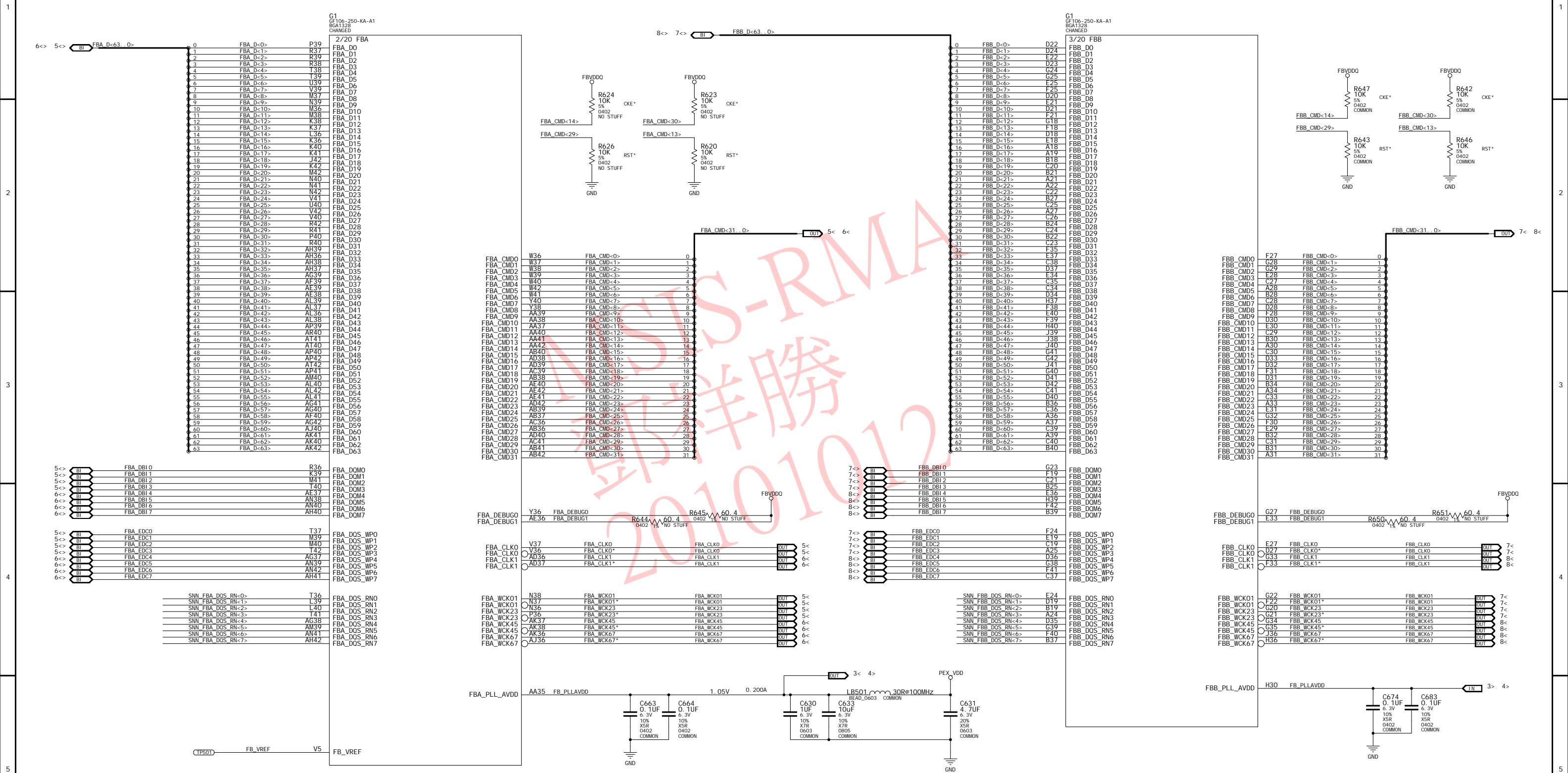
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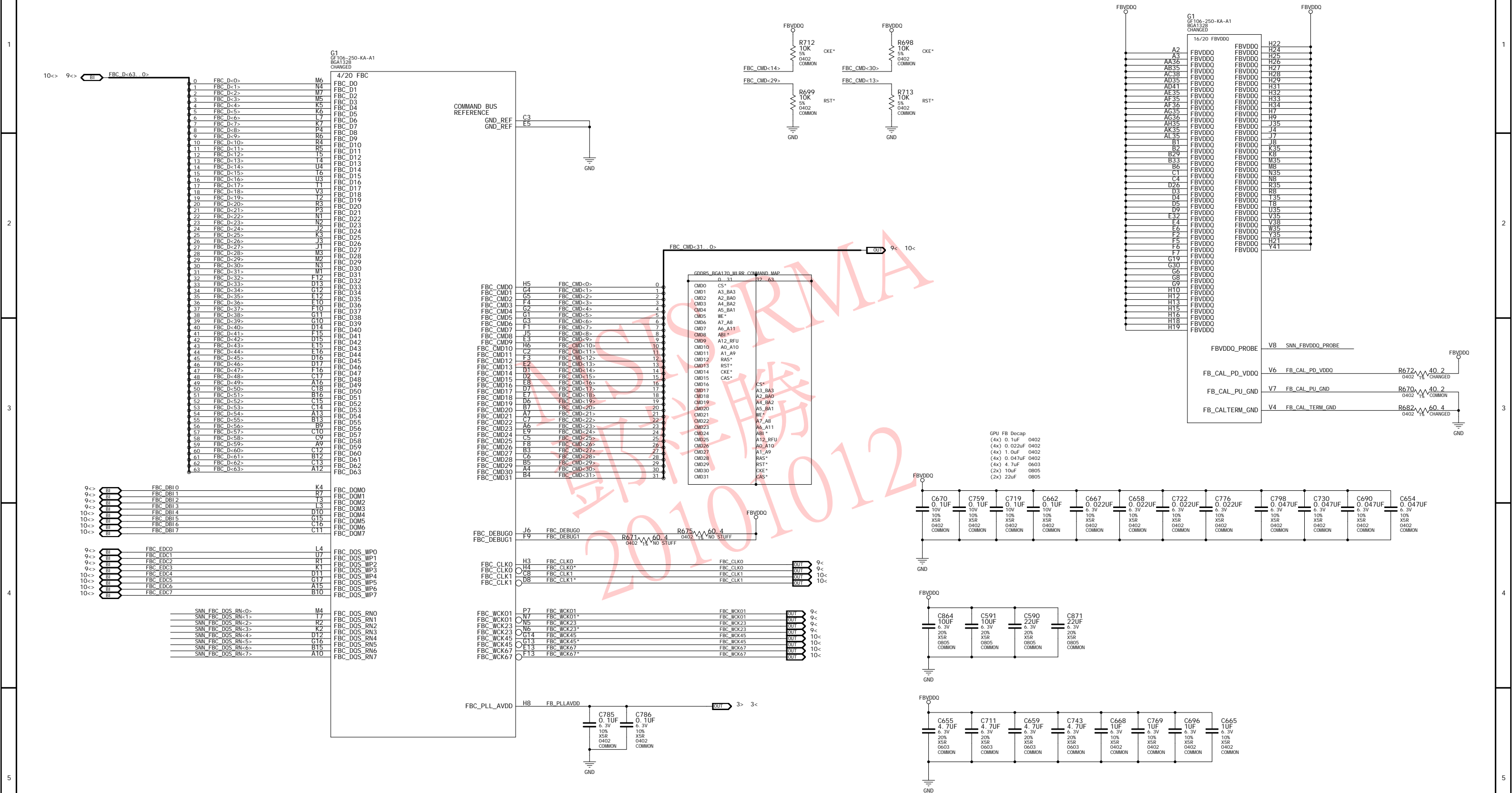
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B	BASE	600-11060-base-200	P1060 BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO-STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	SKU0001	600-11060-0001-200	GF106-275 4/2 1600MHz/2000MHz 1024MB (8pcs)64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, 140W
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5	SKU0005	600-11060-0005-200	GF106-275 4/2 1600MHz/2000MHz 1024MB (8pcs)64Mx16 BGA170 GDDR5 on FBB/FBC, DVI+DP+mini HDMI, 140W
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11	SKU0011	600-11060-0011-200	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, 106W
12	SKU0031	600-11060-0031-200	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, 106W
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15	SKU0021	600-11060-0021-200	GF106-160 3/3 1579/1880MHz 1563MB (12pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, TBDW



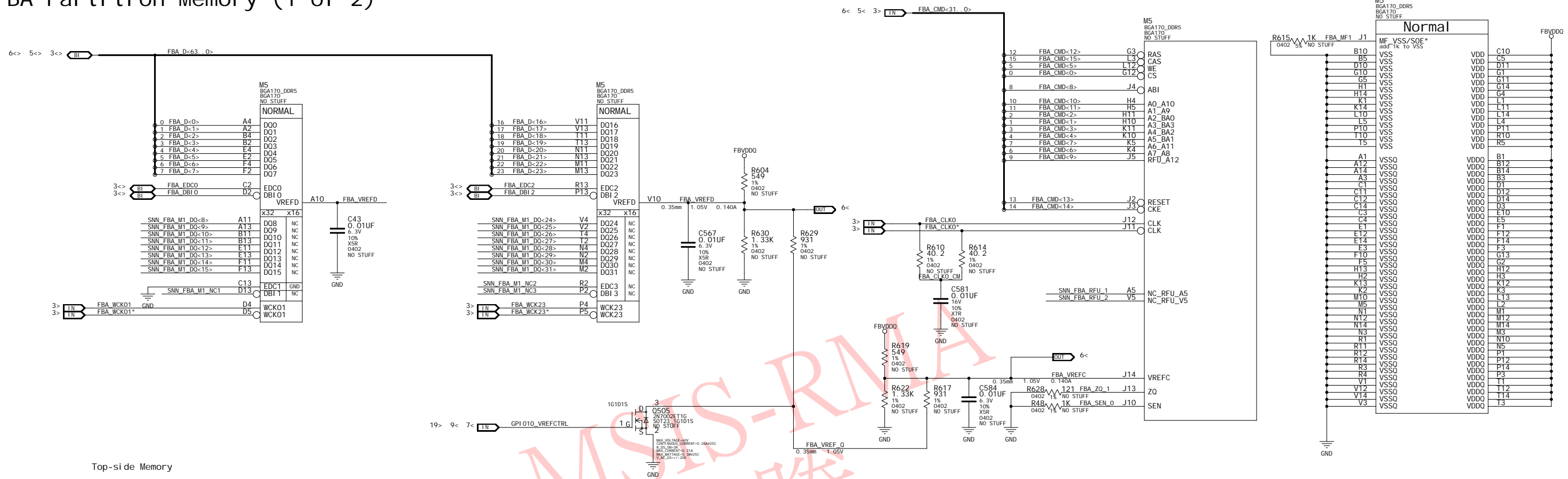
MEMORY: GPU FB Parti ti on A and B



MEMORY: GPU FB Partition C AND GPU FB Decap

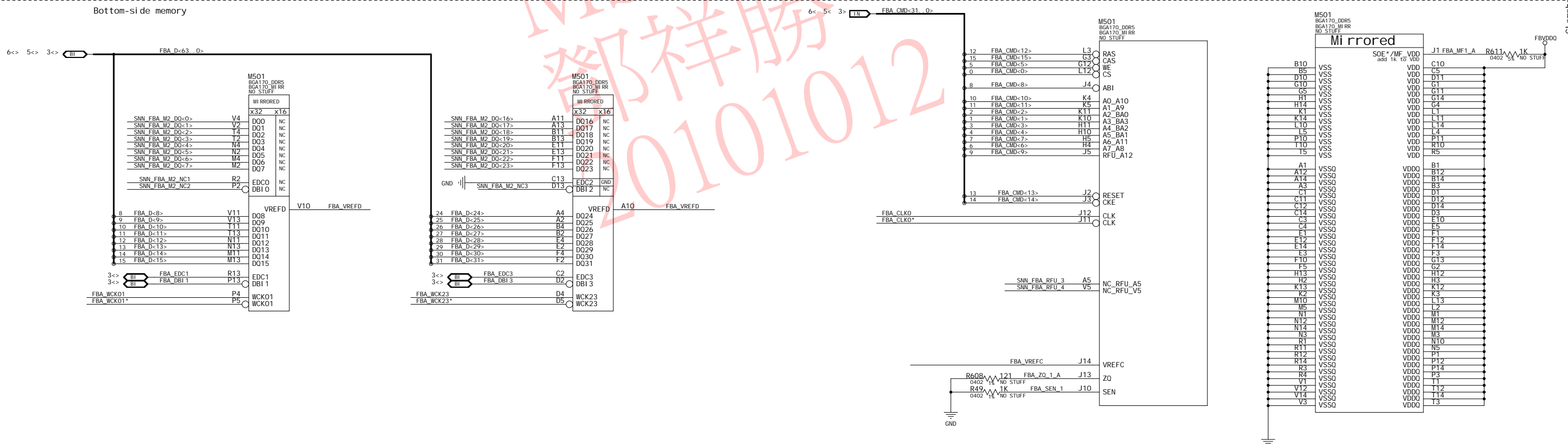


FBA Partition Memory (1 of 2)



Top-si de Memory

Bottom-side memory



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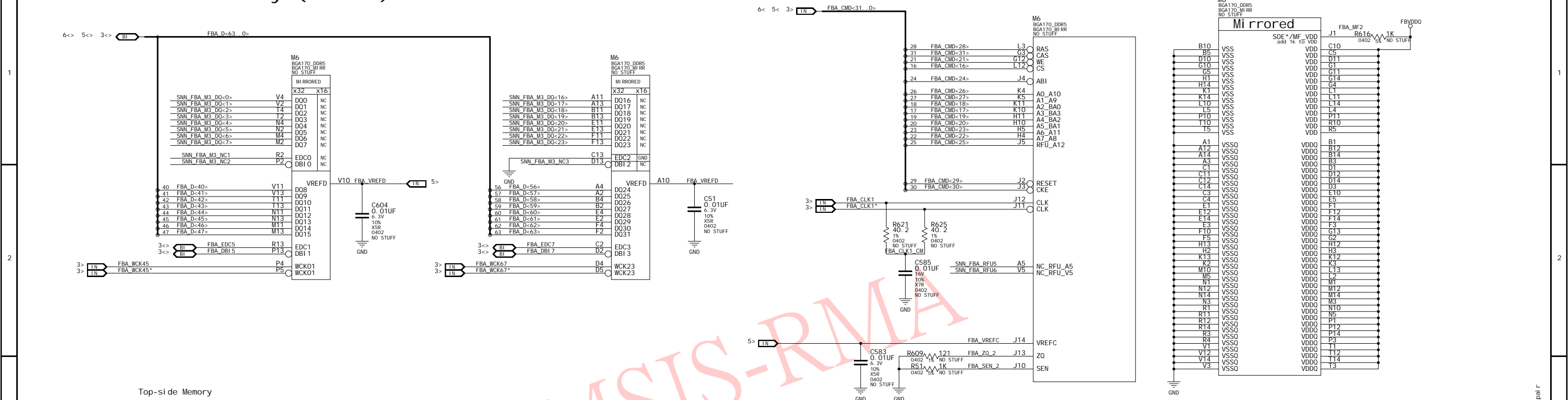
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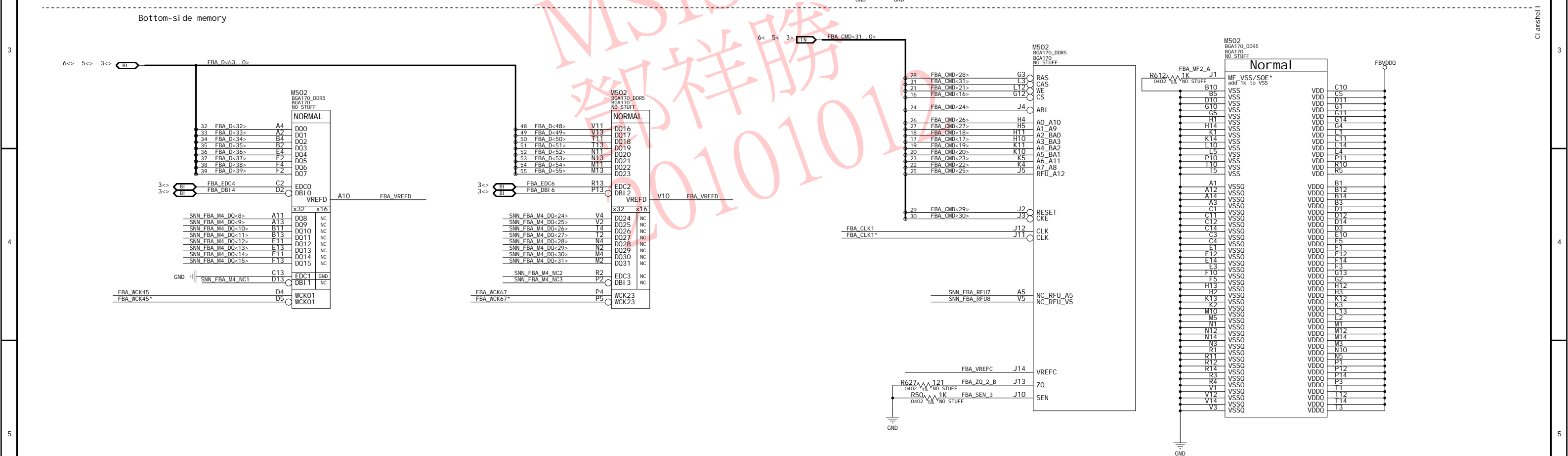
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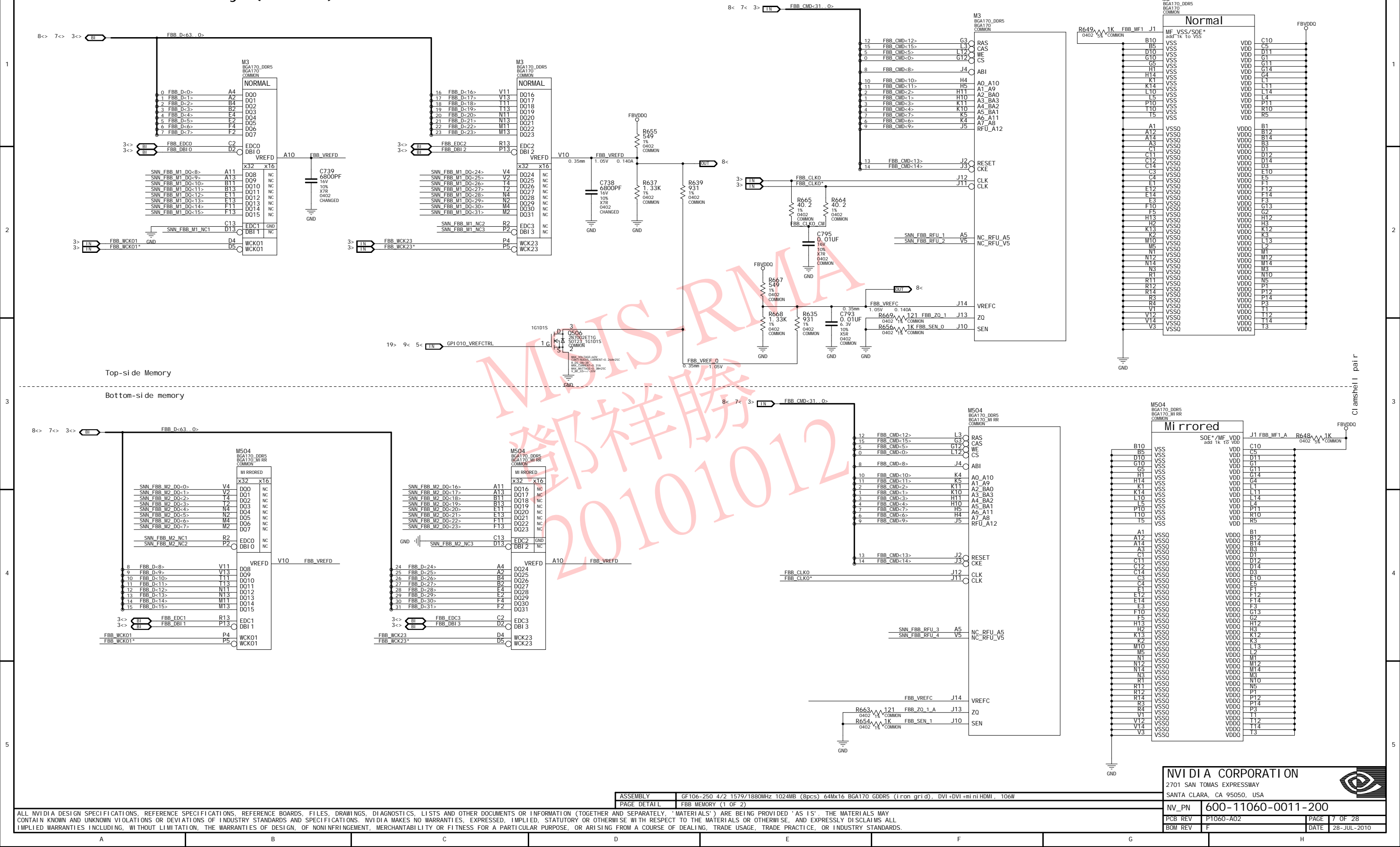
FBA Partition Memory (2 of 2)



1000



FBB Parti ti on Memory (1 of 2)



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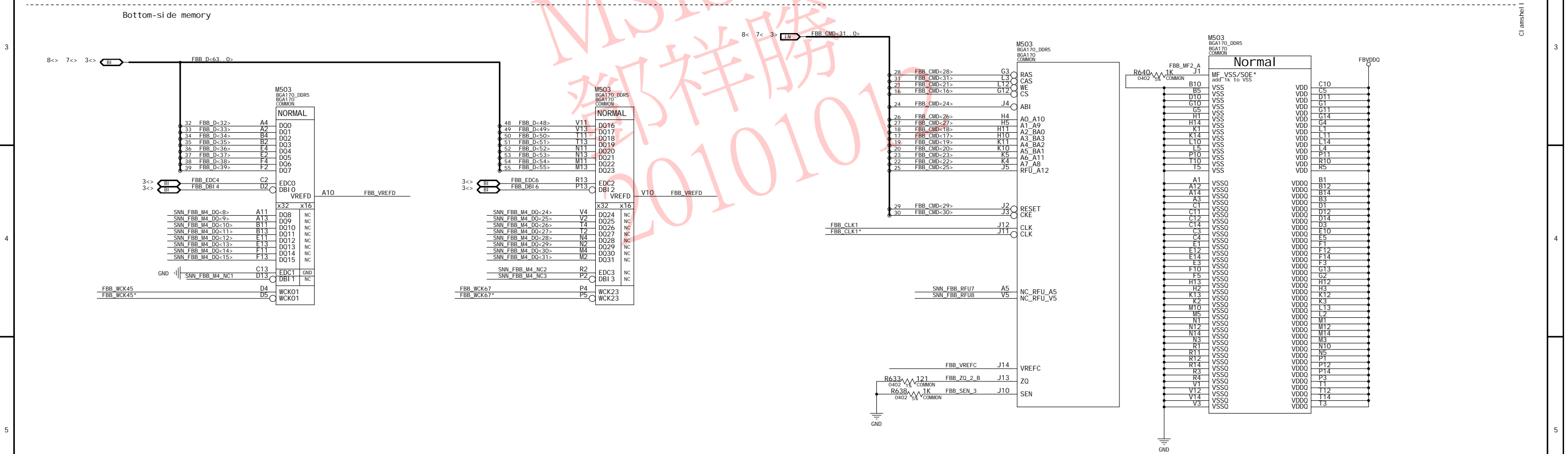
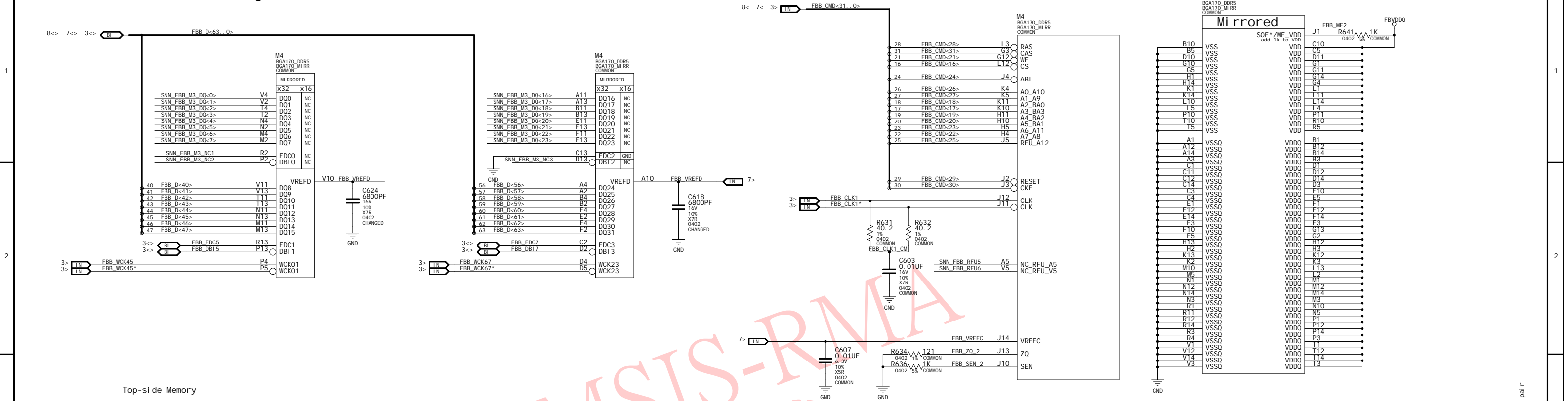
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ASSEMBLY	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, 106W
PAGE DETAIL	FBB MEMORY (1 OF 2)

FBB Partition Memory (2 of 2)



FBC Parti ti on Memory (1 of 2)

1

2

3

4

5

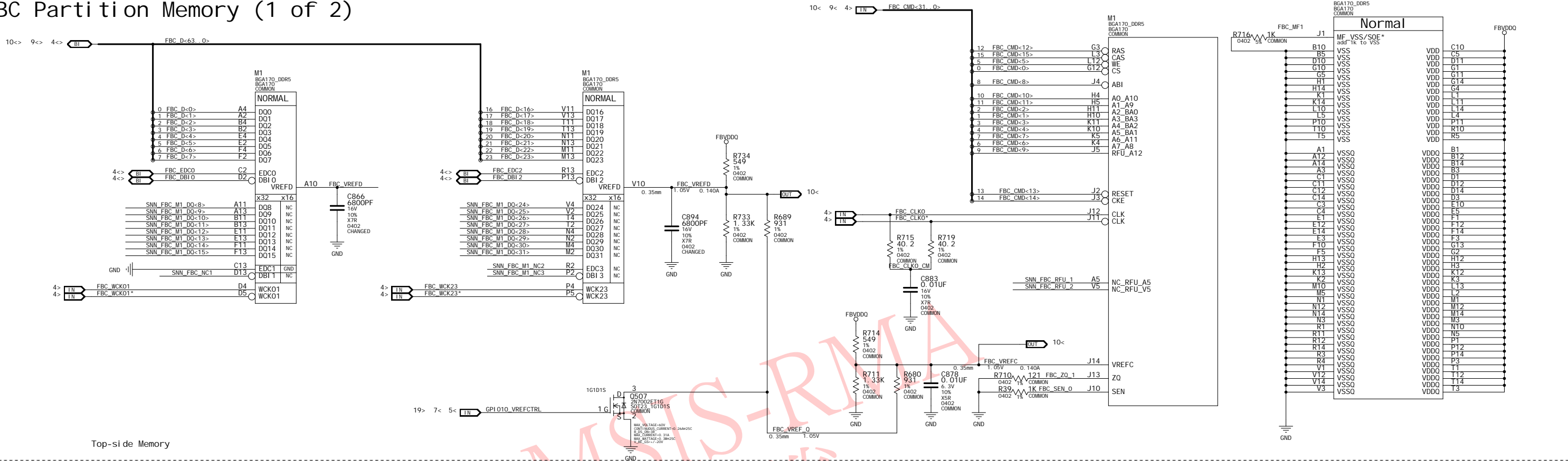
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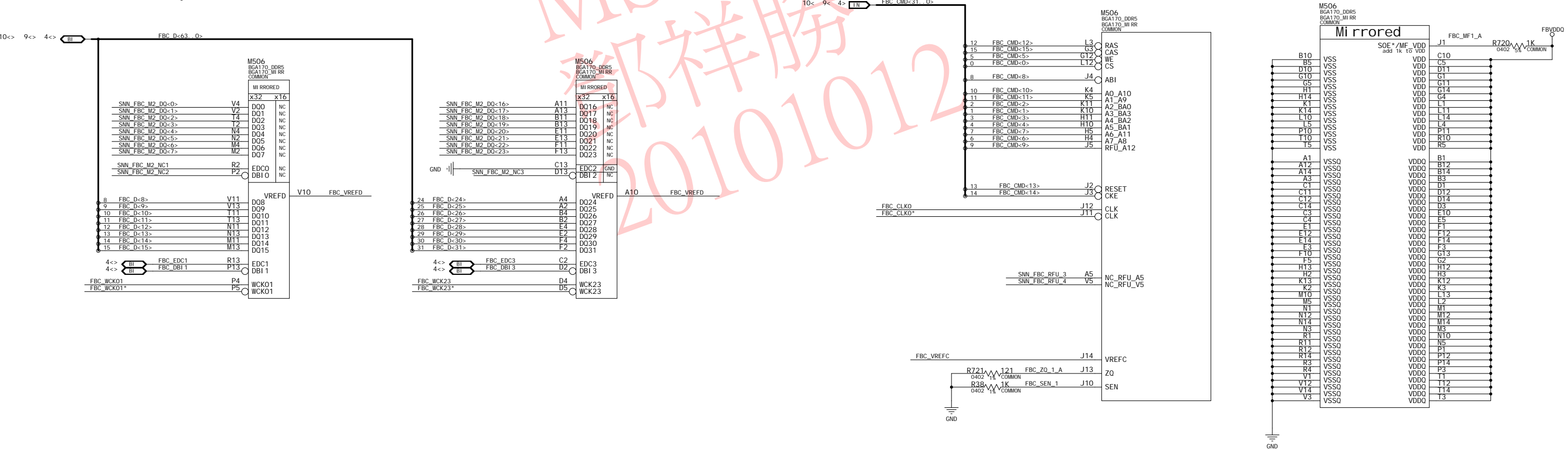
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4

5



Bottom-side memory



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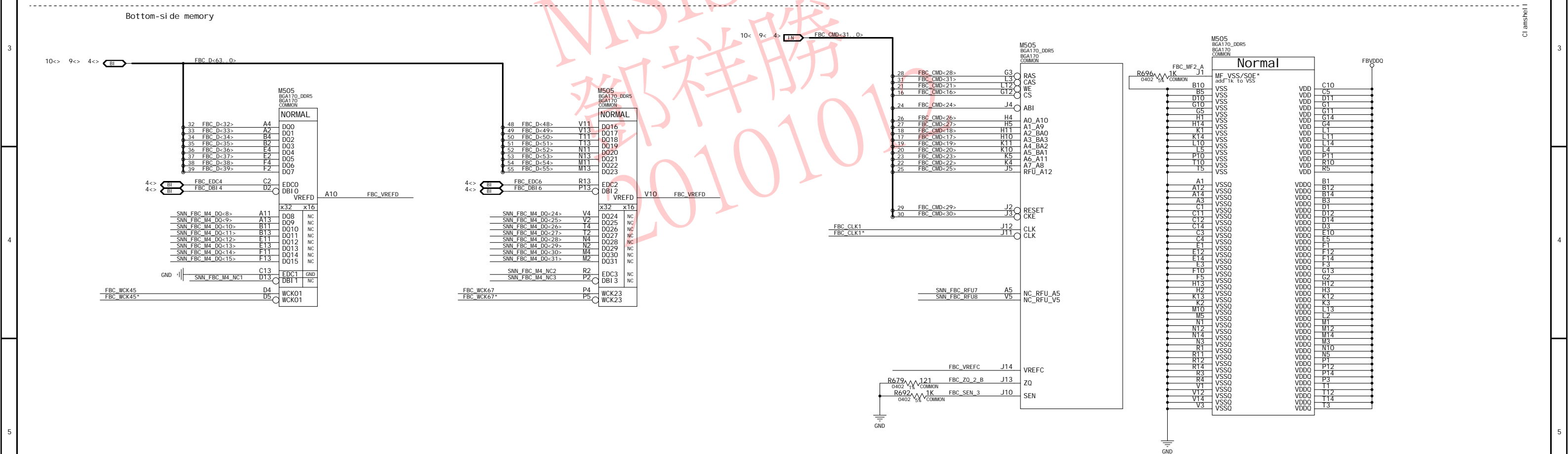
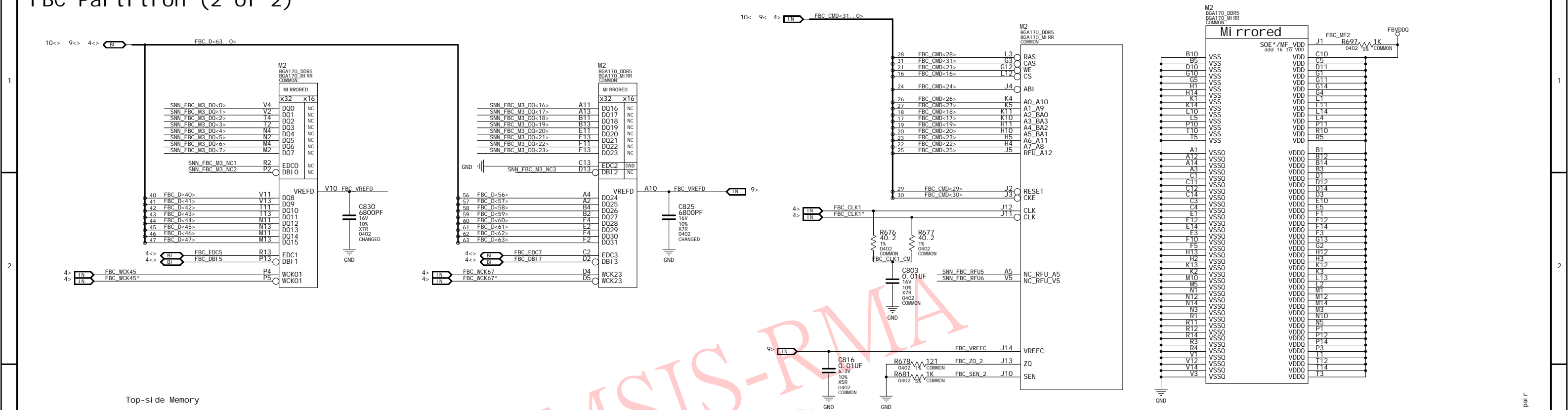
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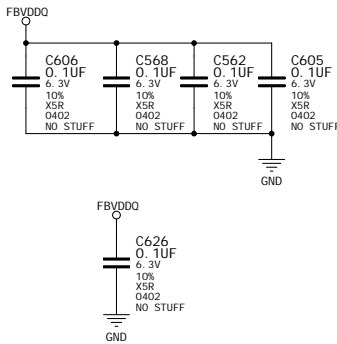
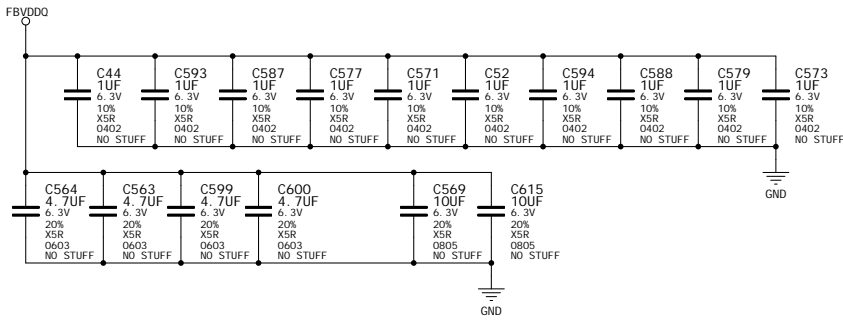
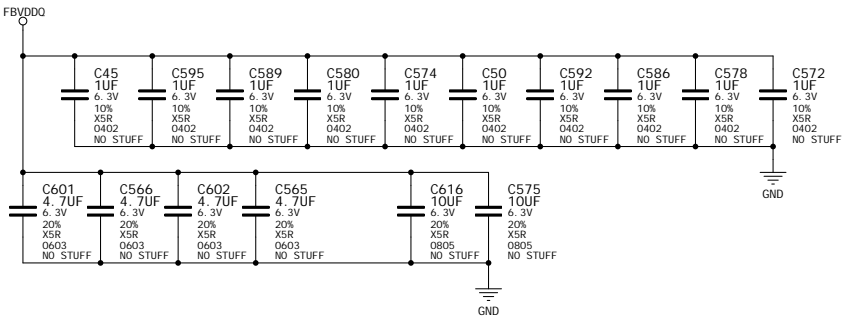
ASSEMBLY	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mi ni HDMI , 106W
PAGE DETAIL	FBC MEMORY (1 OF 2)

FBC Parti ti on (2 of 2)

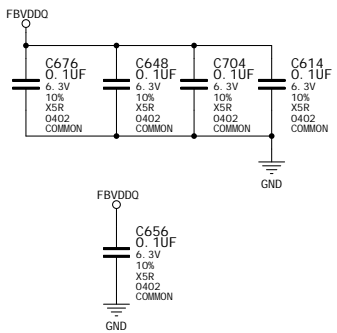
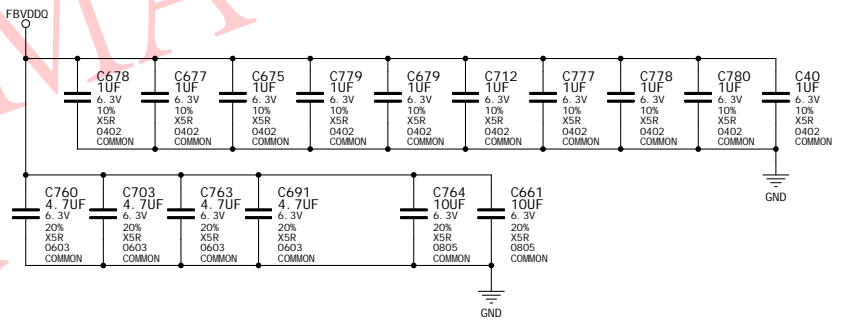
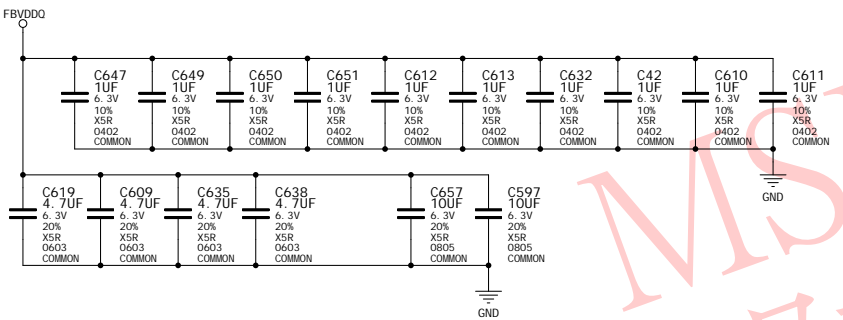


FB MEMORY DECAP

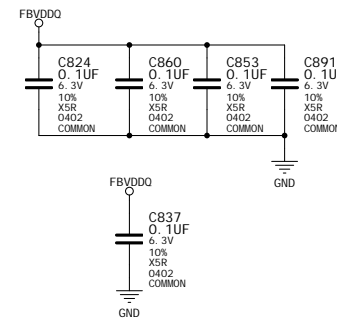
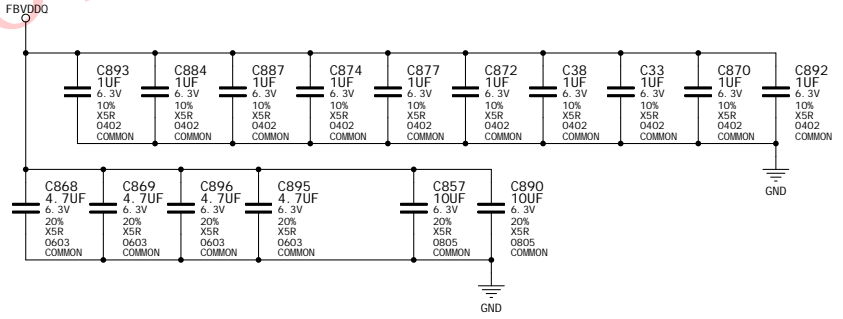
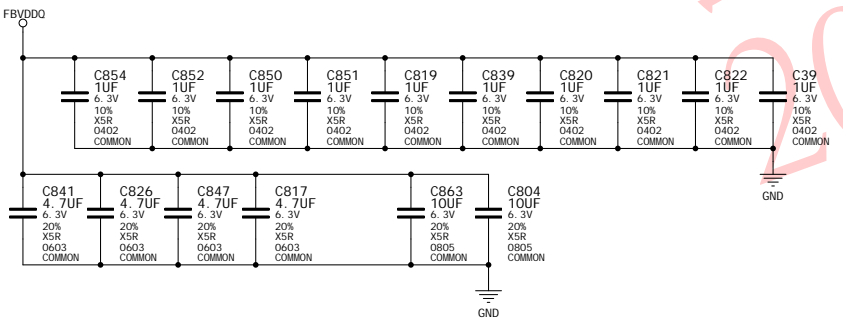
FBA



FBB

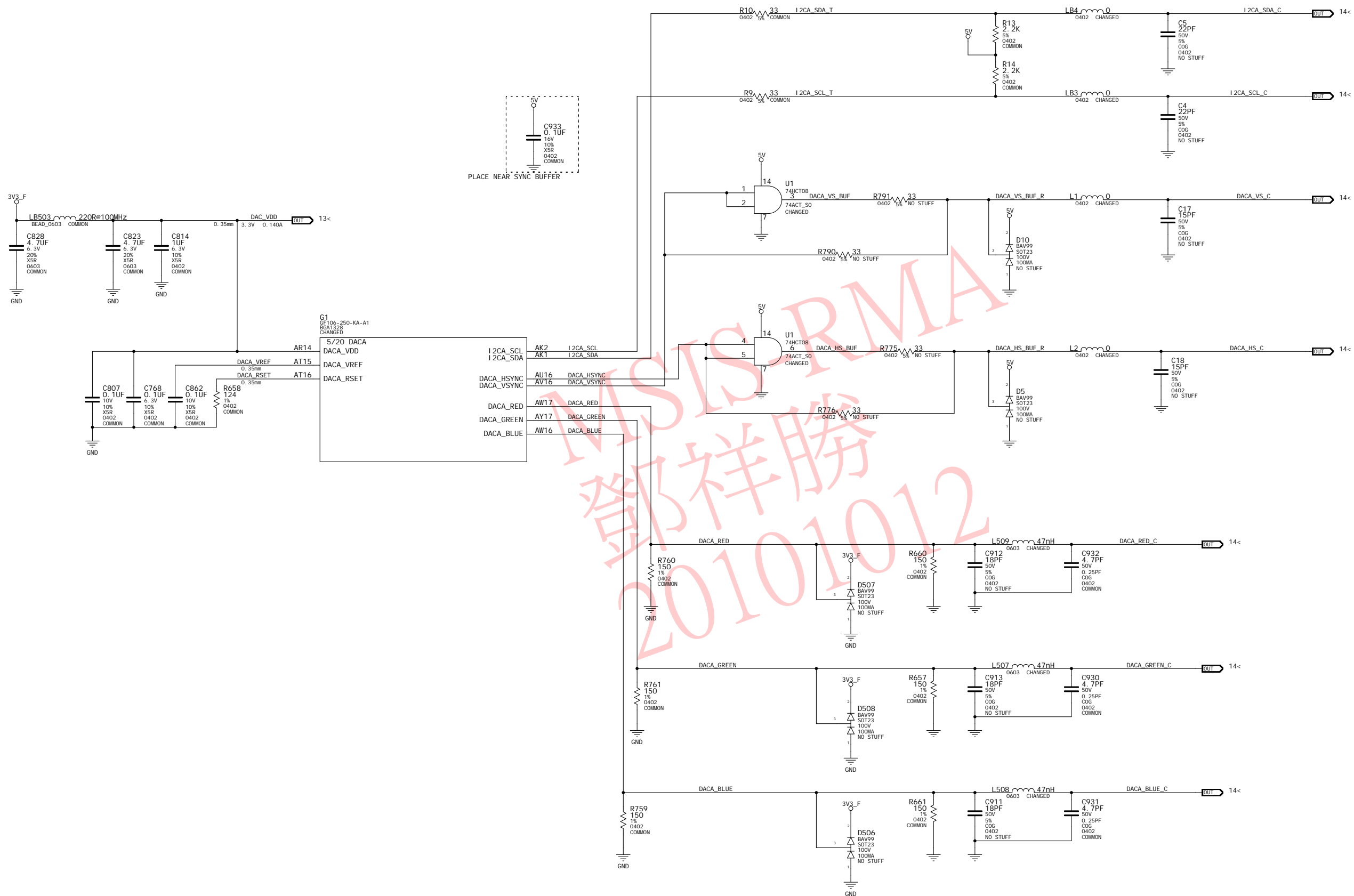



FBC



DACA for South DVI Interface

DACA RGB-FILTER

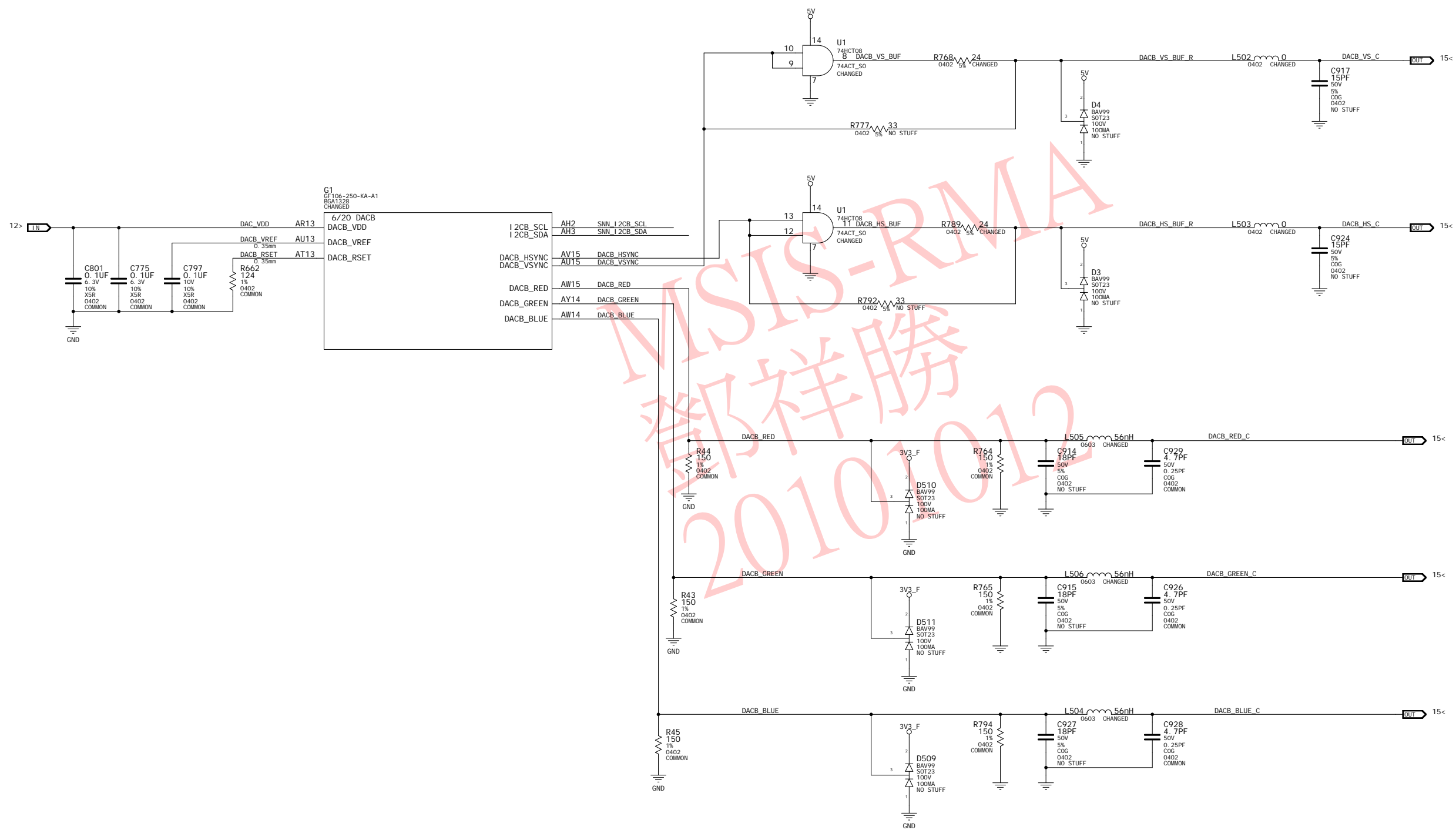


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DACB for Mid DVI Interface

DACB RGB-FILTER

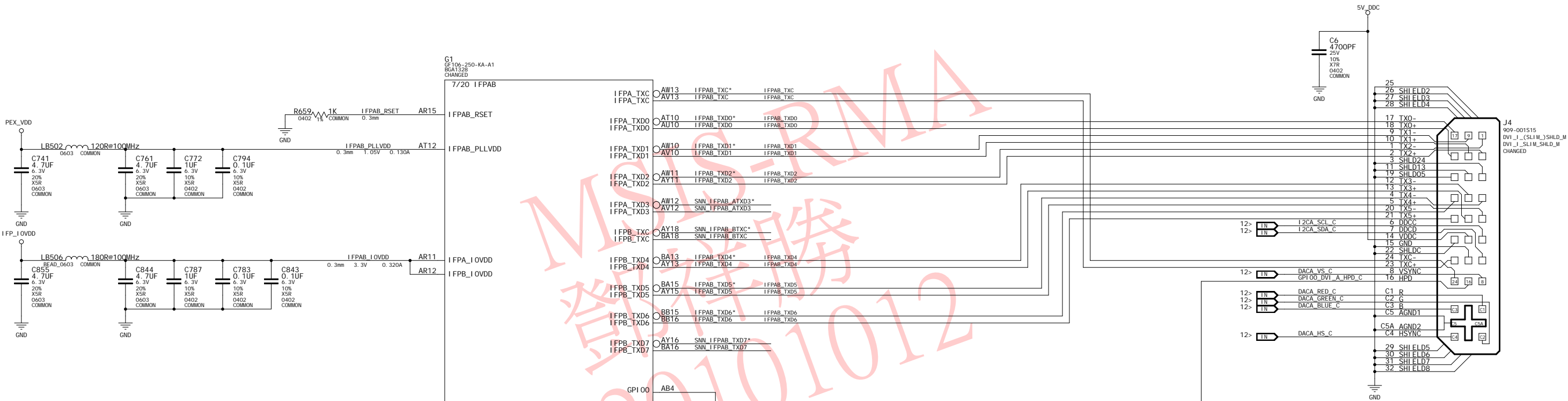


ASSEMBLY	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, 106W
PAGE DETAIL	DACB Interface for DVI Connector, Mi d

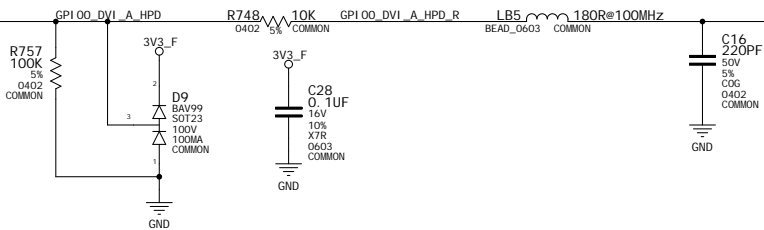
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I FP A/B Interface -- DVI Connector, South



DVI AB Hotplug Detection



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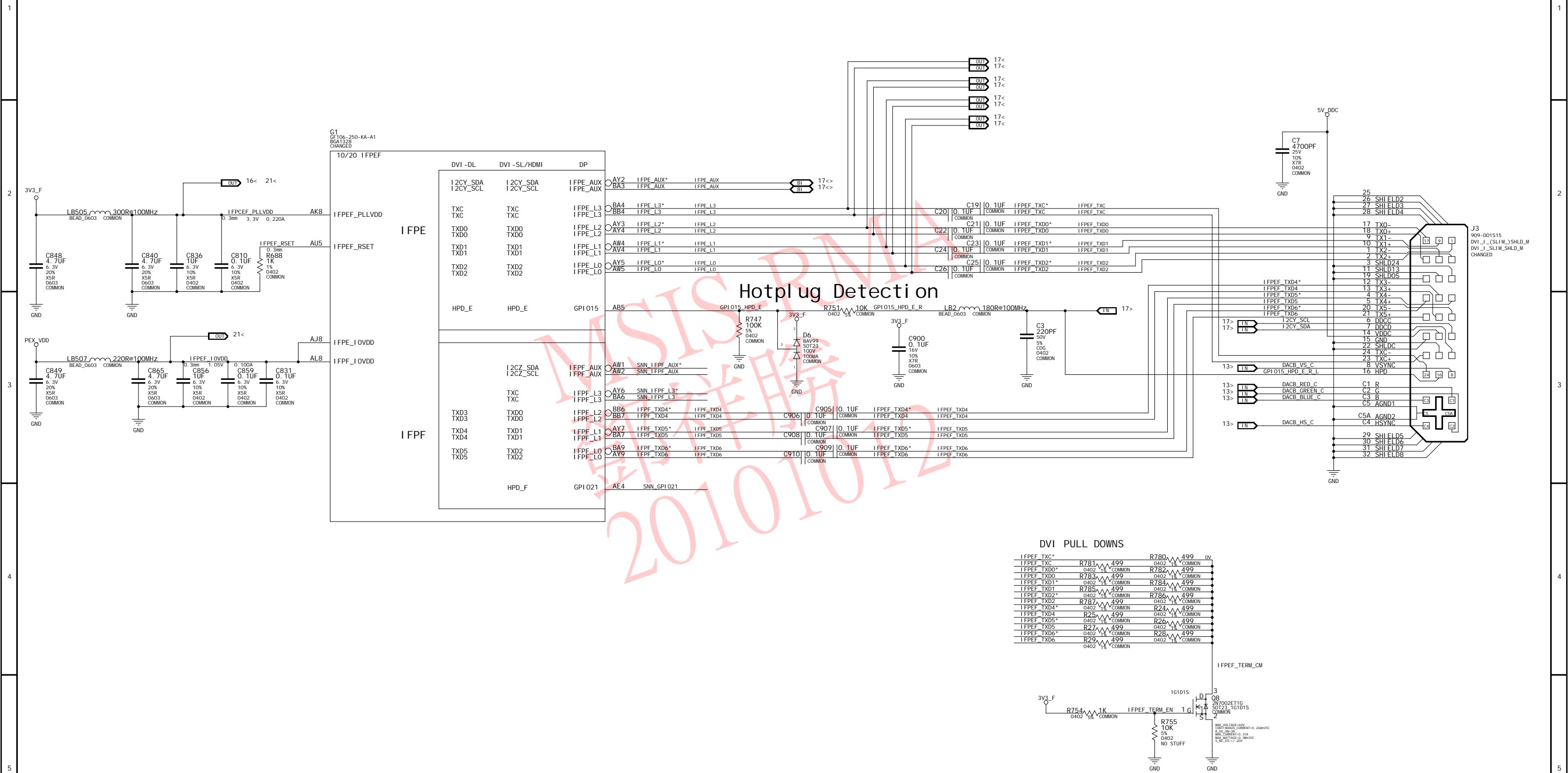
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IFP E/F Interface -- DVI Connector, Mid



ASSEMBLY	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, 106W
PAGE DETAIL	1FP E/F Interface -- DVI Connector, Mid

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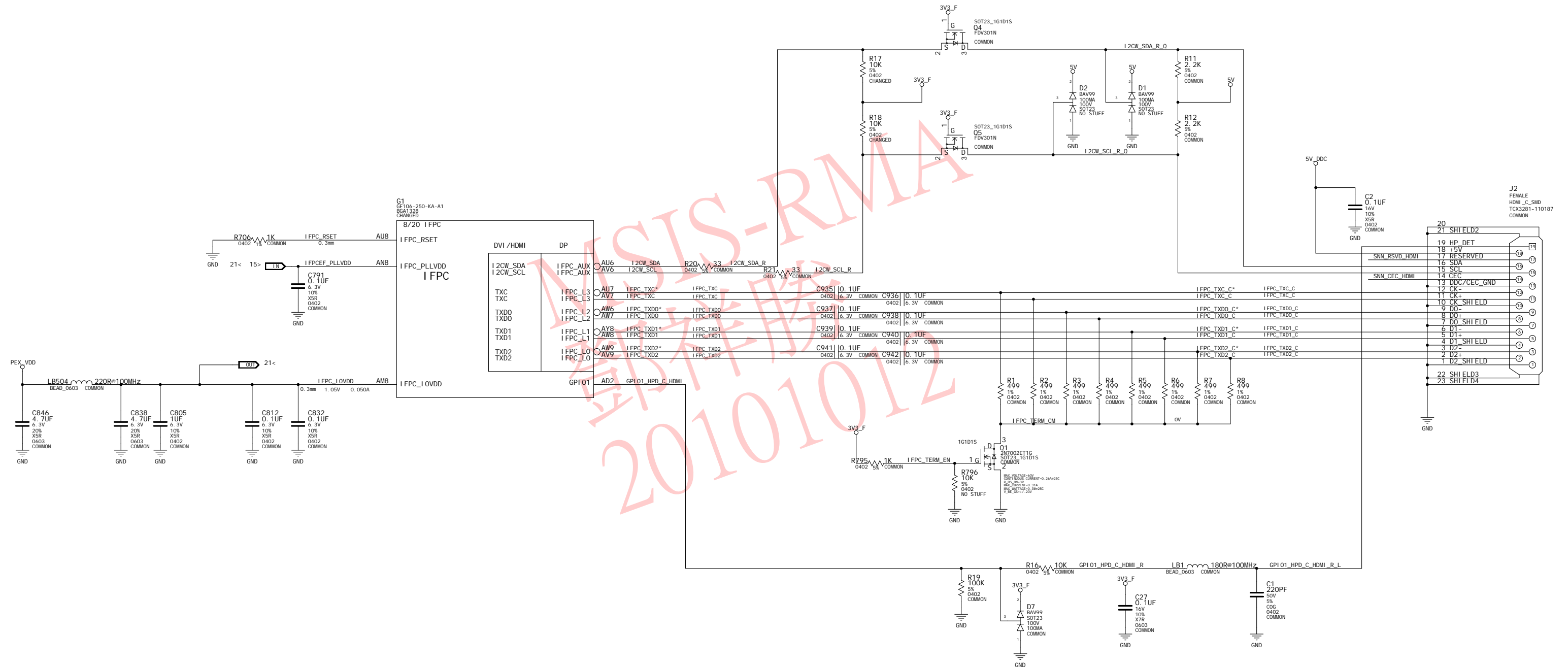
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IFP C Interface -- mini HDMI, North



ASSEMBLY	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, 106W
PAGE DETAIL	1FPC Interface -- HDMI

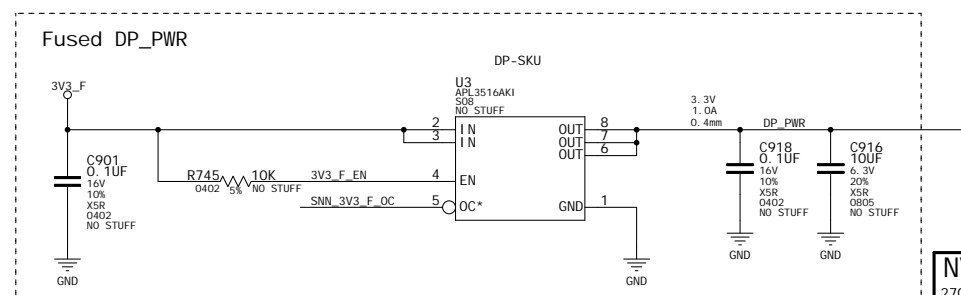
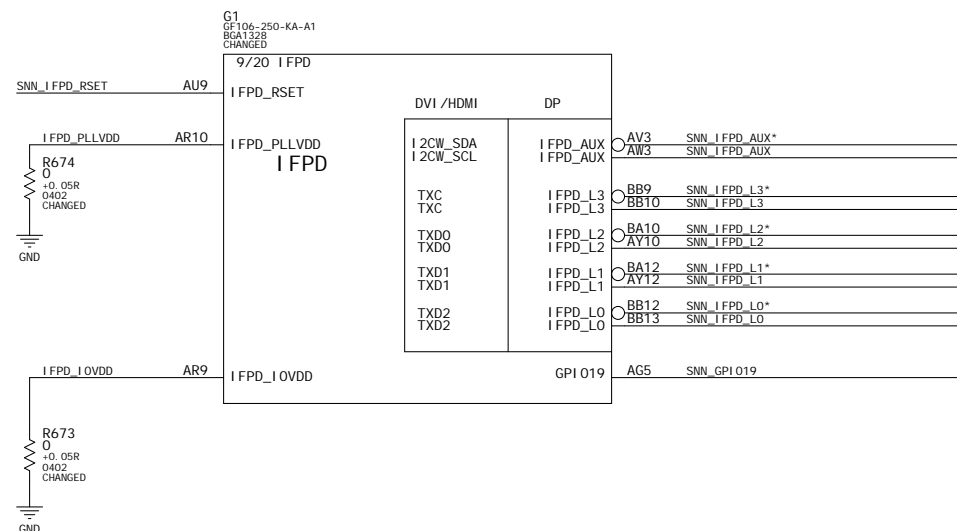
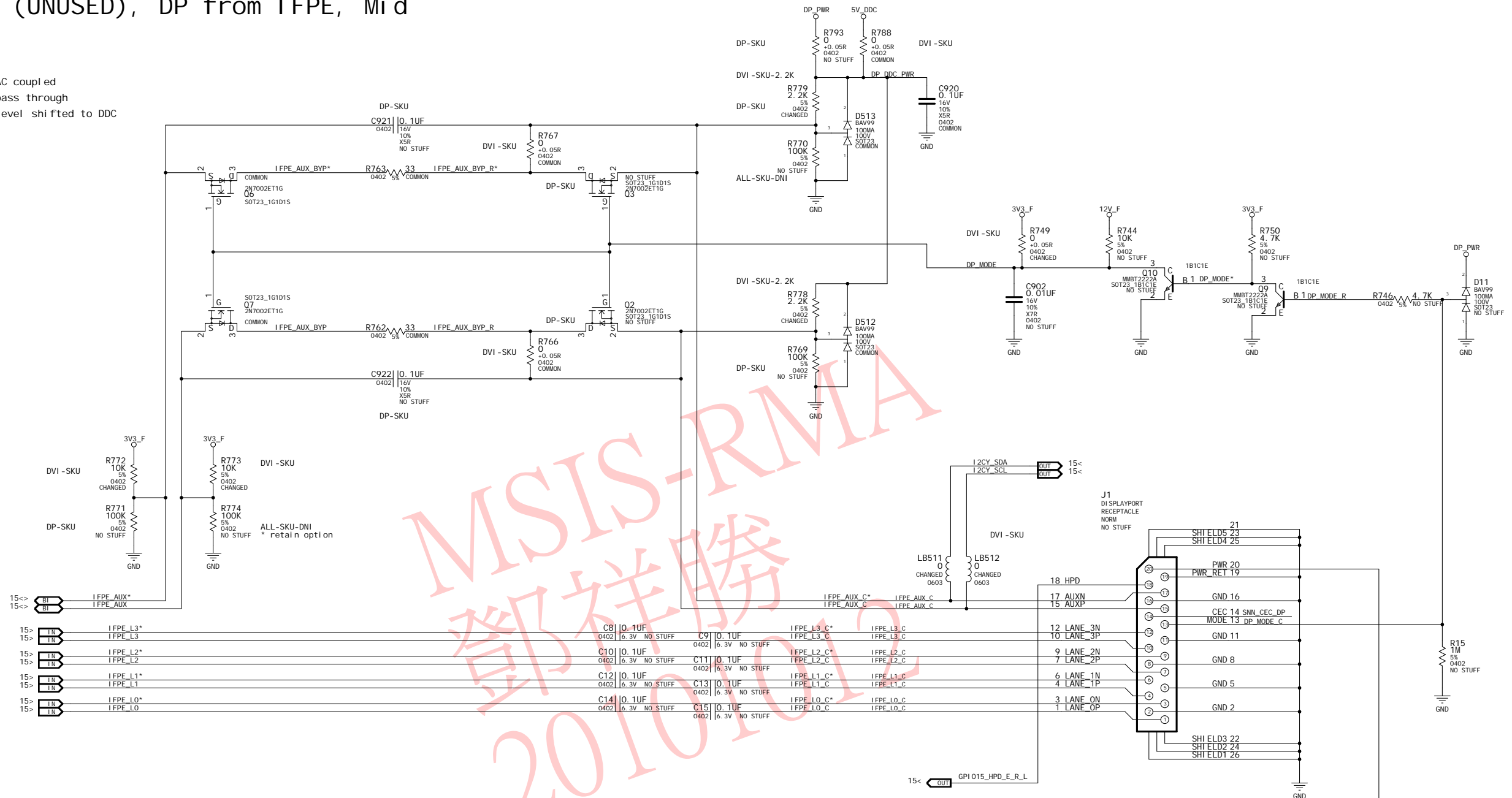
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IFPD INTERFACE (UNUSED), DP from IFPE, Mid

Three cases to be considered:

1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through
3. DP AUX to DVI connector: AUX level shifted to DDC

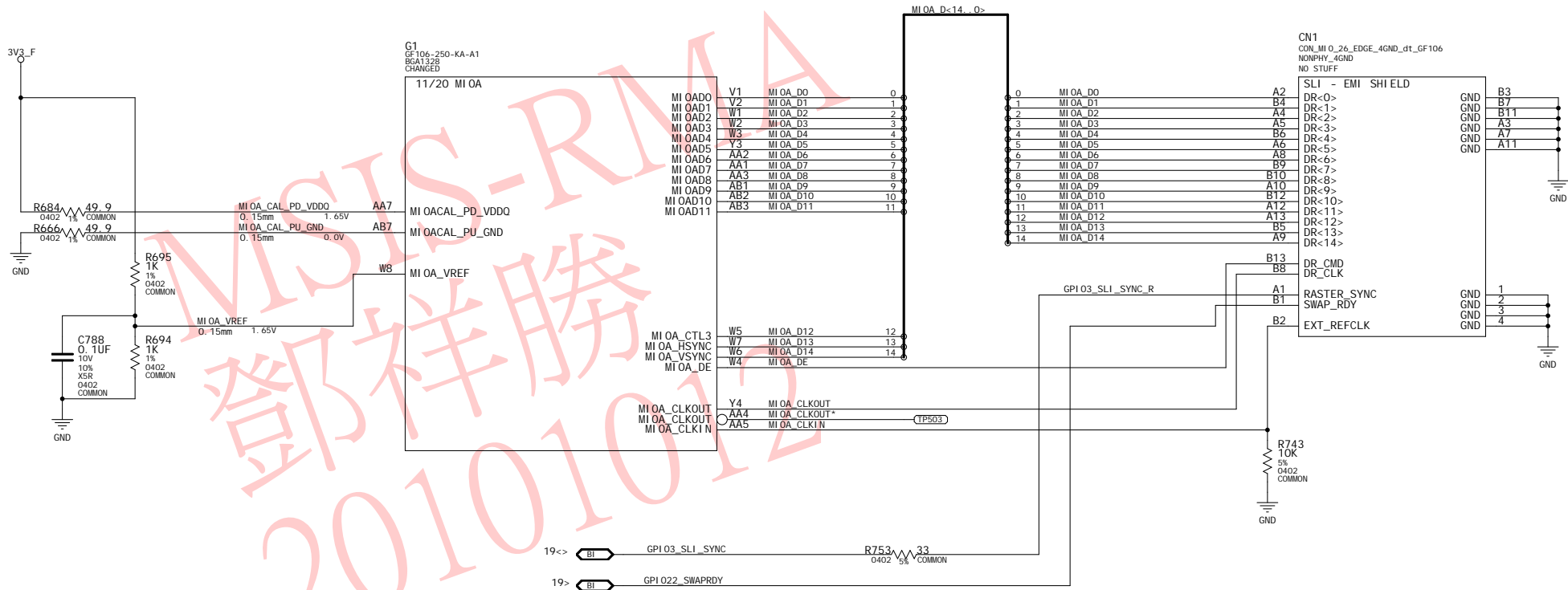


ASSEMBLY	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+miniHDMI, 106W
PAGE DETAIL	DP FROM IFPE, and IFPD (UNUSED)

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MIO A Interface, SLI



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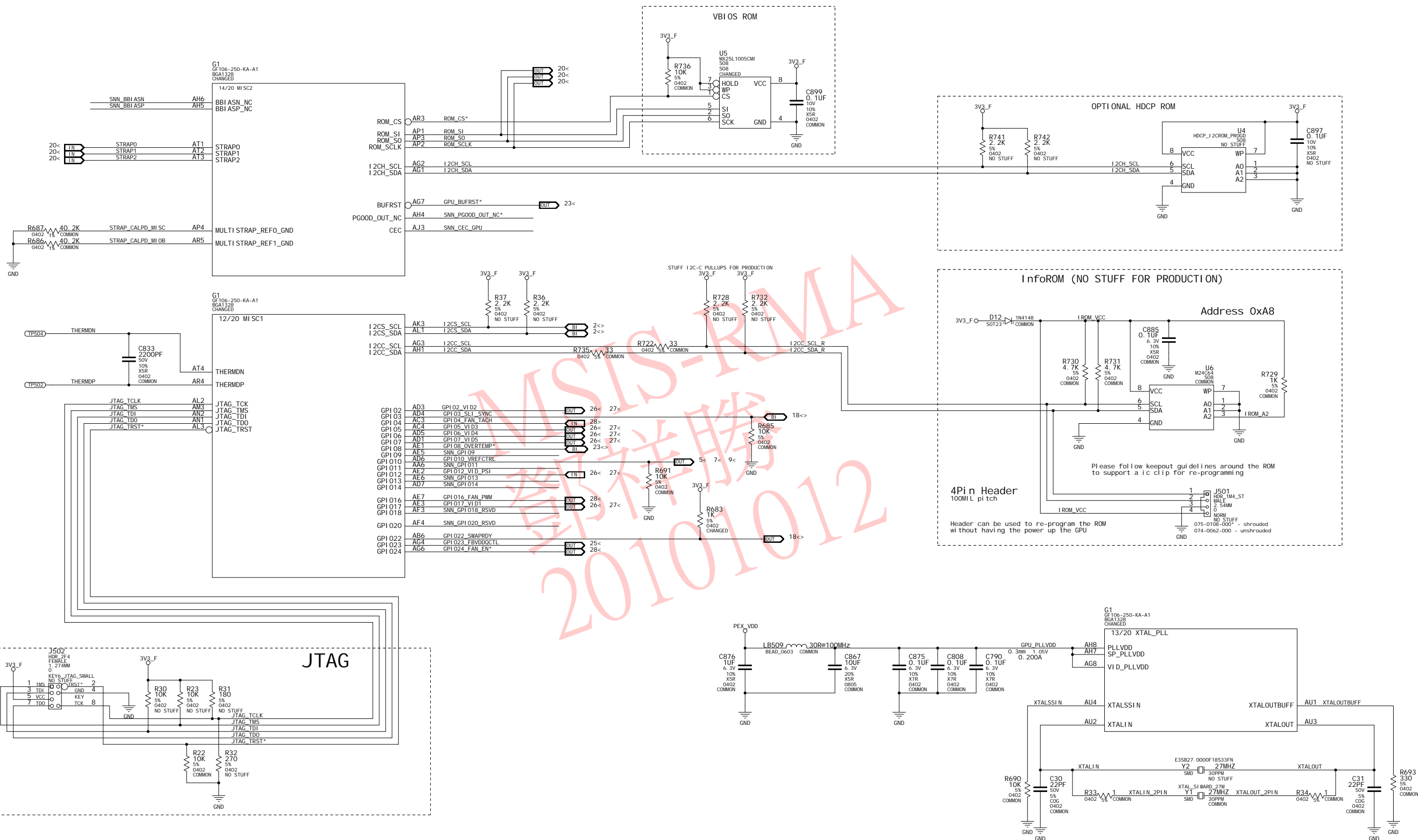


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MI SC: GPI O, I 2C, ROM, HDCP, and XTAL



ASSEMBLY	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, 106W
PAGE DETAIL	MI SC: GPIO, I2C, ROM, HDCP, and XTAL

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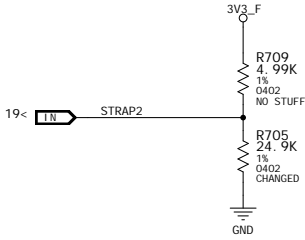
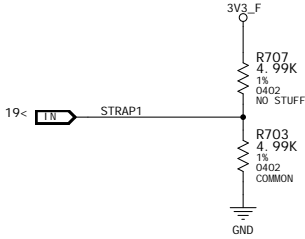
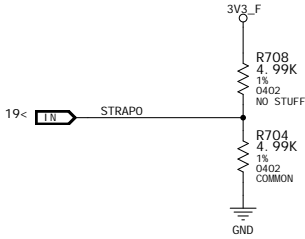
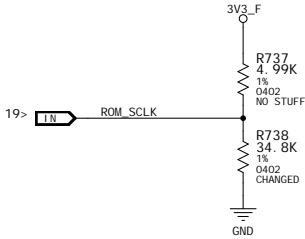
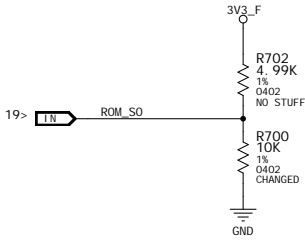
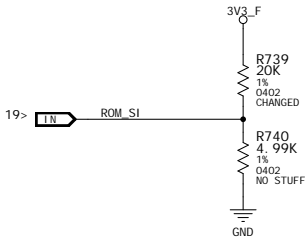
PCB REV	P1060-A02
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Strap Configuration



ROM_SO	VGA_DEVICE SMB_ALT_ADDR FB_D_BAR_SIZE XCLK_417	LSP MSD	1: VGA_DEVICE 0: 0x9E (POR) 0: 256MB (POR) 0: 277MHz	PU PD 10K
ROM_SI	RAM_CFG[3:0]		0xF: 64Mx16 128-bit Samsung 0xE: 64Mx16 128-bit Hynix 0x7: 64Mx16 192-bit Samsung 0x6: 64Mx16 192-bit Hynix	45K Or 35K Or 45K 35K
ROM_SCLK	PEX_PLL_EN_TERM100 SLOT_CLK_CONFIG SUB_VENDOR PCI_DEVICE_EXT	LSP MSD	0: DISABLED (POR) 1: GPU and MCH COMMON REFCLK 1: VBIOS ROM IS PRESENT 0: PCDEVID[4]	35K
STRAP0	USER_BIT[3:0]		0x0: DEFAULT	5K
STRAP1	3GIO_PADCFG_LUT_ADDR[3:0]		0x0: Desktop (high swing)	5K
STRAP2	PCI_DEVICE[3:0]		0x1: PCI_DEVICE_0X0DC1	10K

Multi-level Strap Resistor Values
Strap PU/PD Rval (kohm)
0 PD 5
1 PD 10
2 PD 15
3 PD 20
4 PD 25
5 PD 30
6 PD 35
7 PD 45
8 PU 5
9 PU 10
10 PU 15
11 PU 20
12 PU 25
13 PU 30
14 PU 35
15 PU 45

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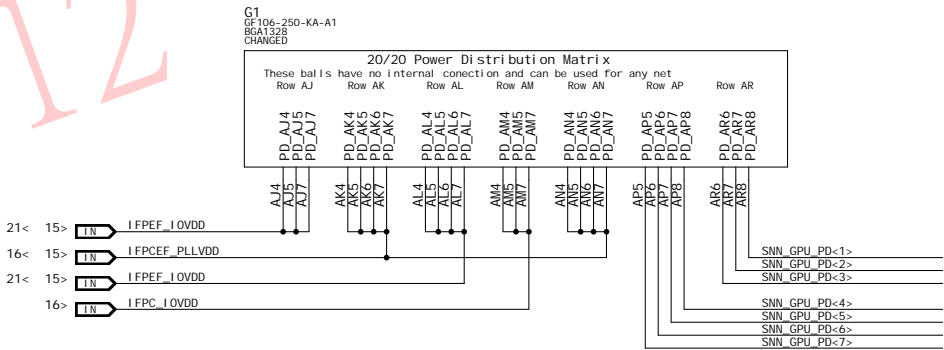
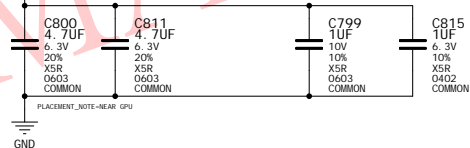
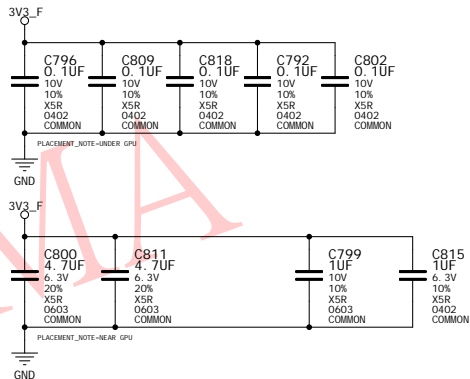
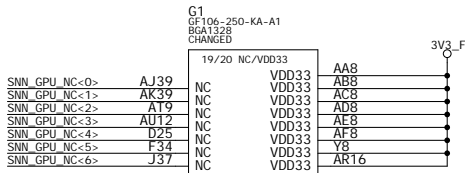
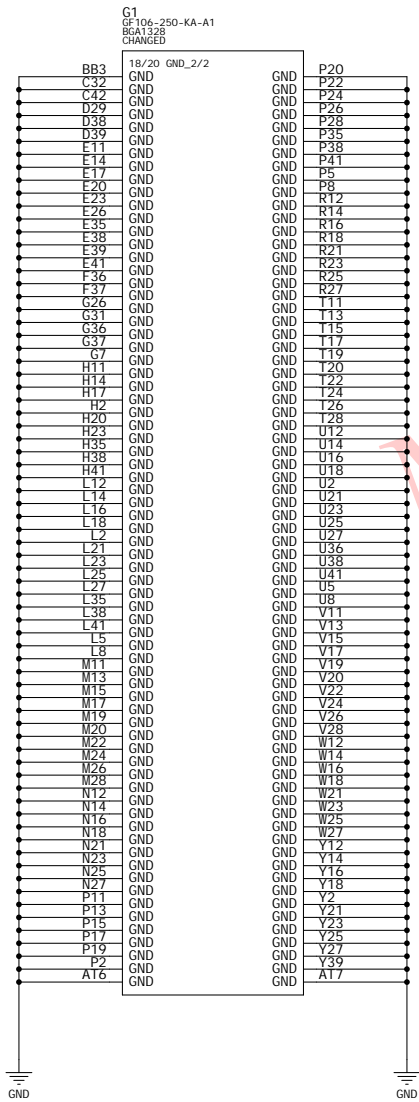
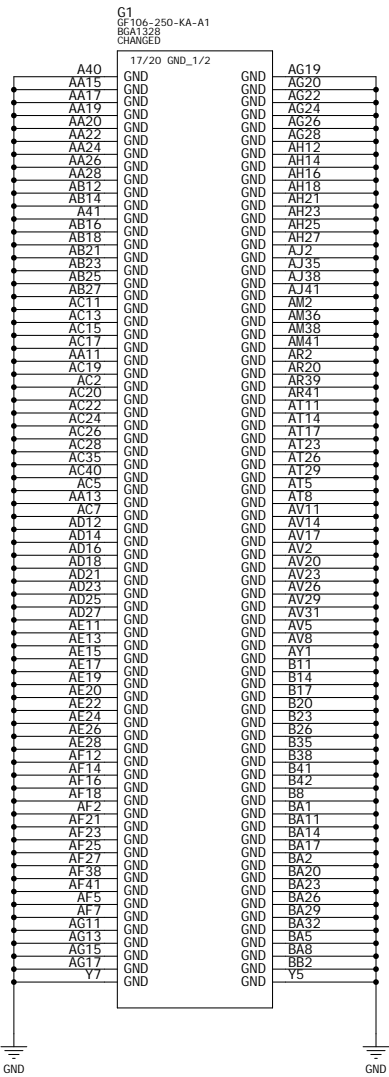
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BOM REV F DATE 28-JUL-2010

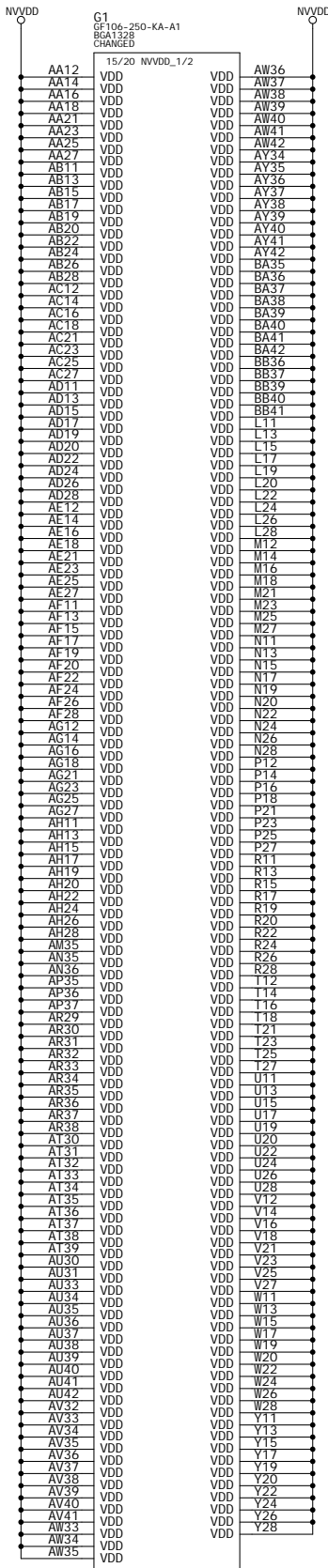
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PWR and GND Signals



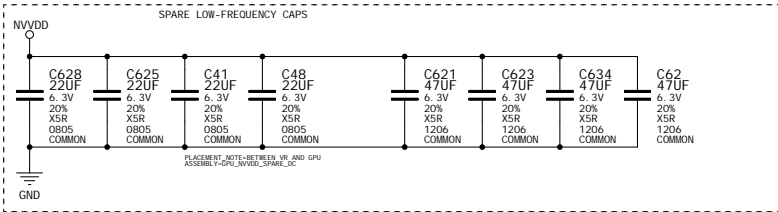
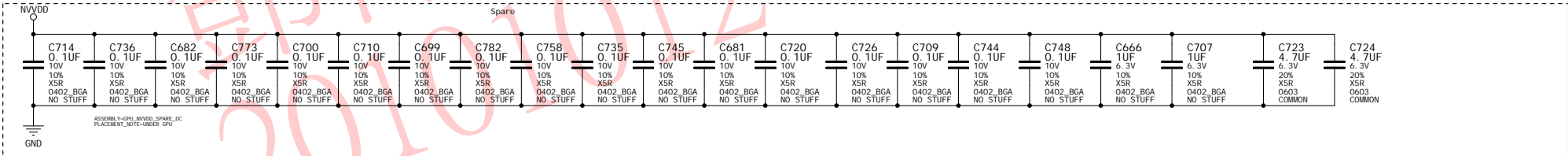
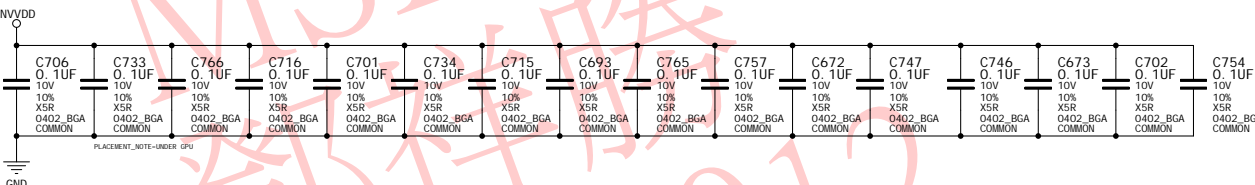
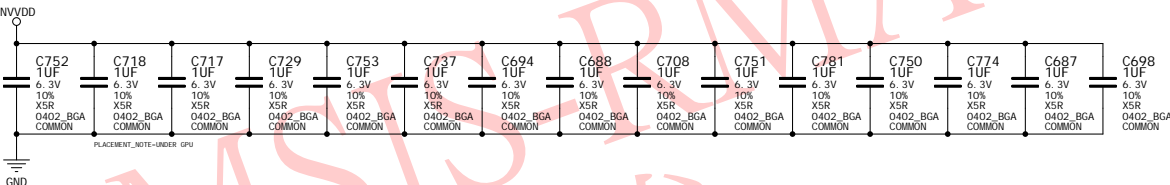
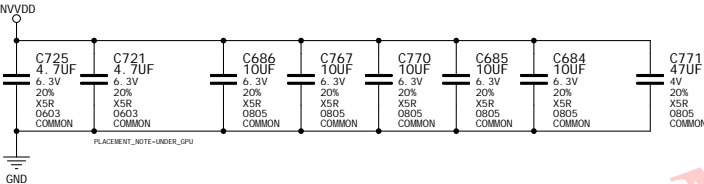
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NVVDD Decoupling



GF106 NVVDD Decap Guidelines

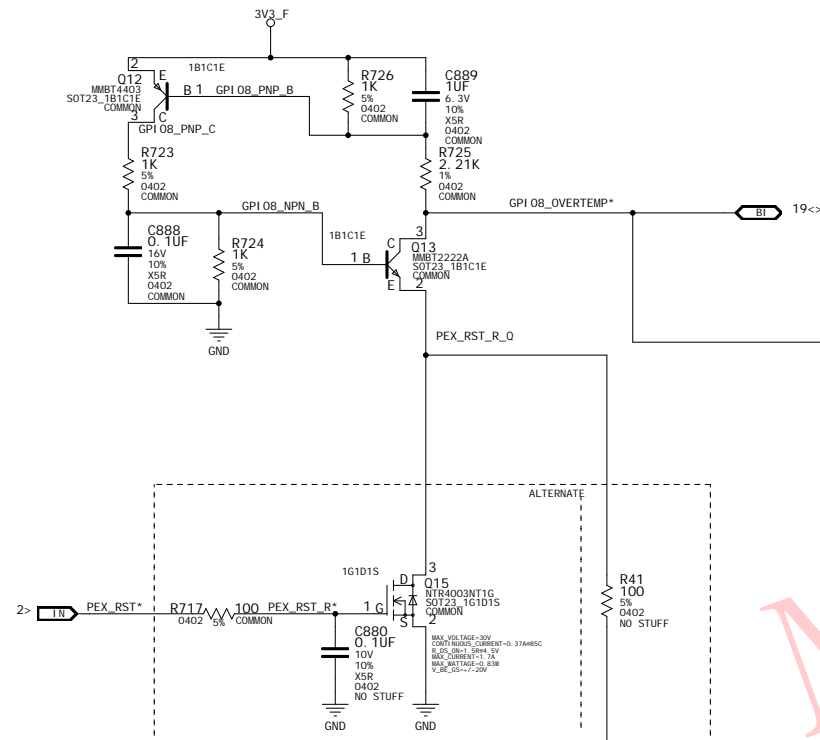
- (16x) 0.1uF 0402 X5R under GPU
- (15x) 1.0uF 0402 X5R under GPU
- (2x) 4.7uF 0603 X5R under or near GPU
- (5x) 10uF 0805 X5R under or near GPU
- (1x) 47uF 0805 X5R under or near GPU



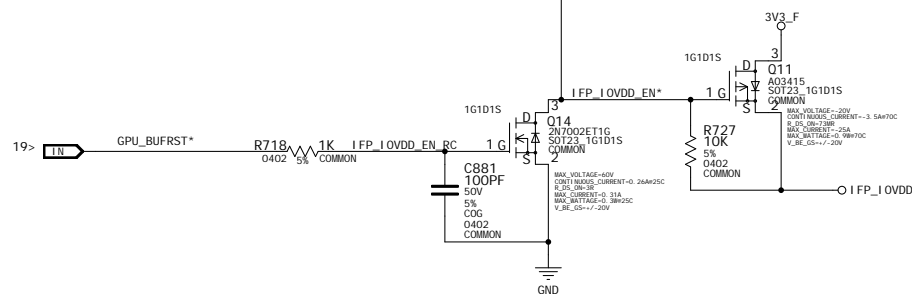
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Power Sequencing, Thermal Protection, and I FP_I OVDD Power Supply

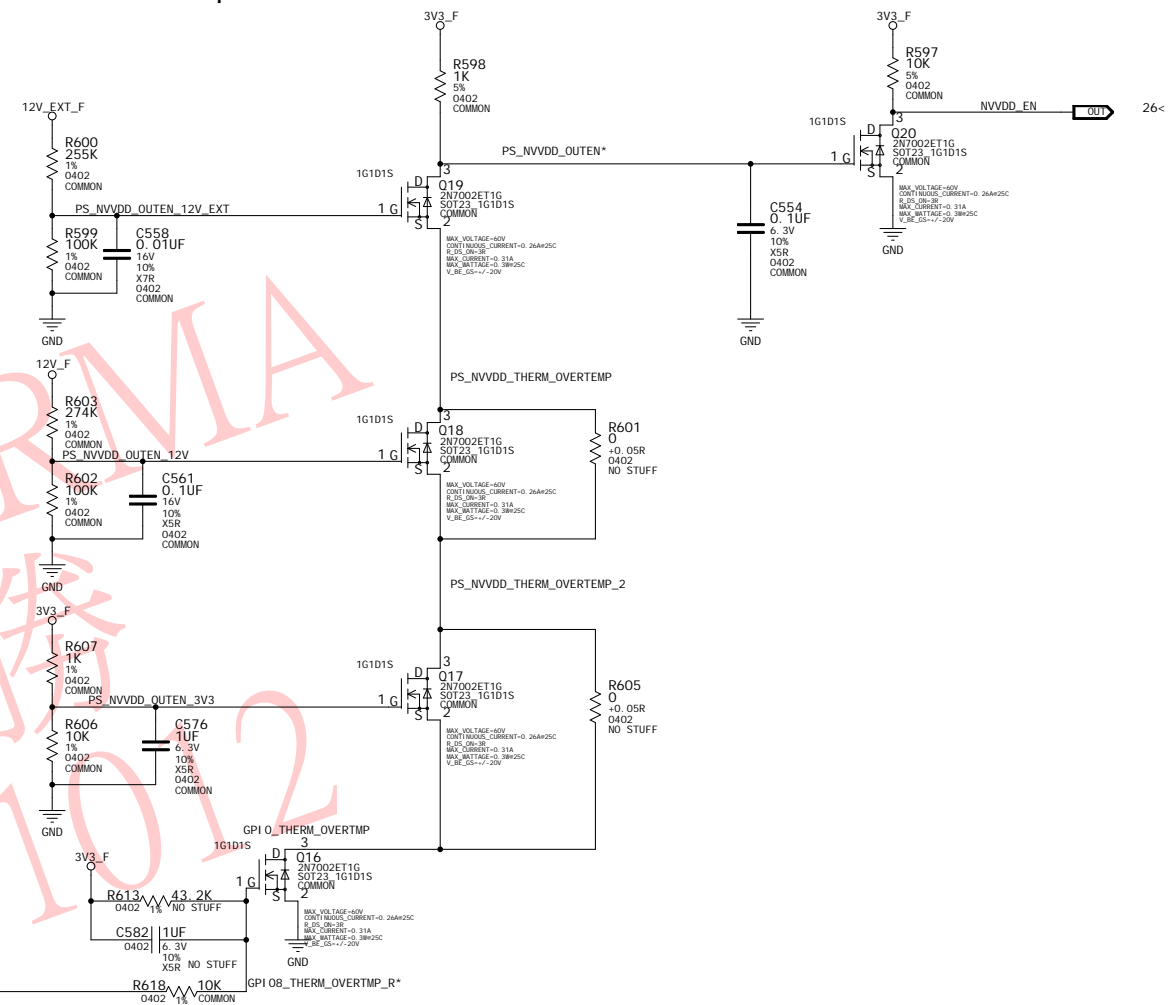
Thermal Protection (Latch)



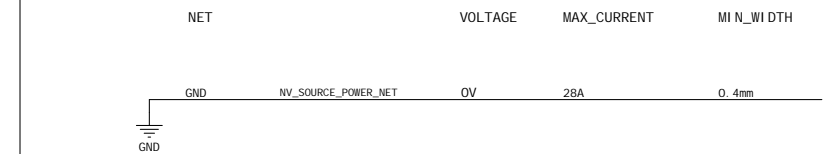
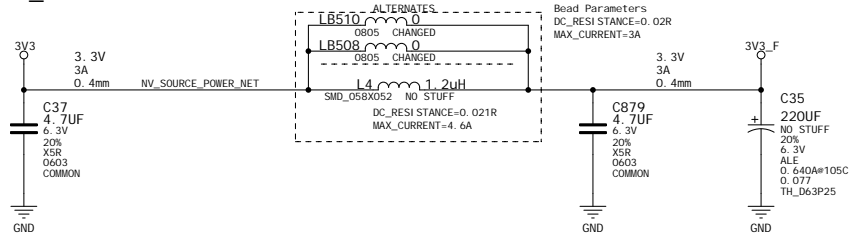
IFP_I0VDD Backdrive Prevention



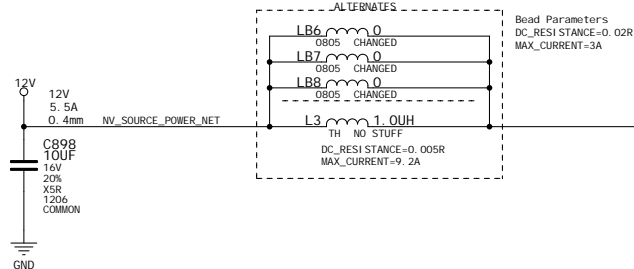
NVVDD Sequence



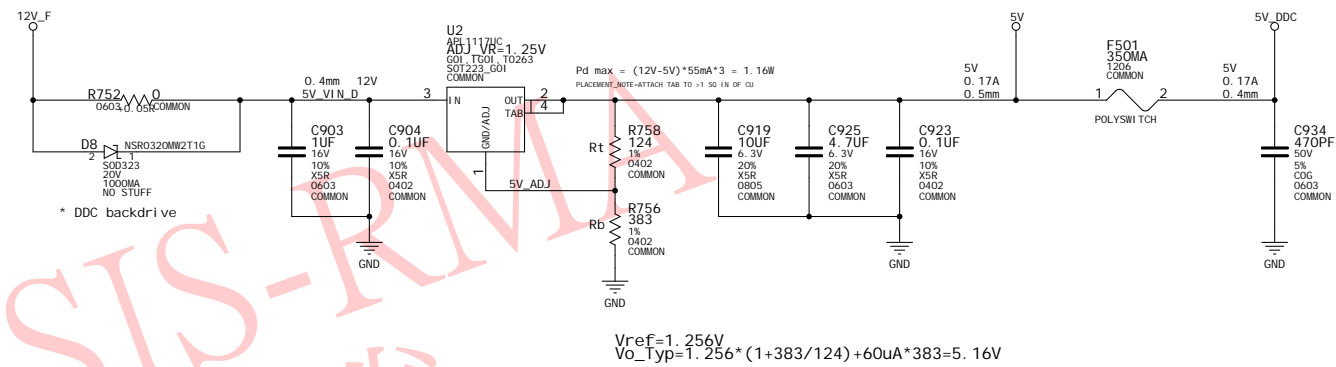
PS I: 3V3, 12V, and 12V_EXT Power Supply Filter, 5V, DDC VOLTAGE


$$3V3_F = 3.3V @ 2.4A$$


12V Power Supply Filter

$$12V_F = 12V @ 5.5A$$


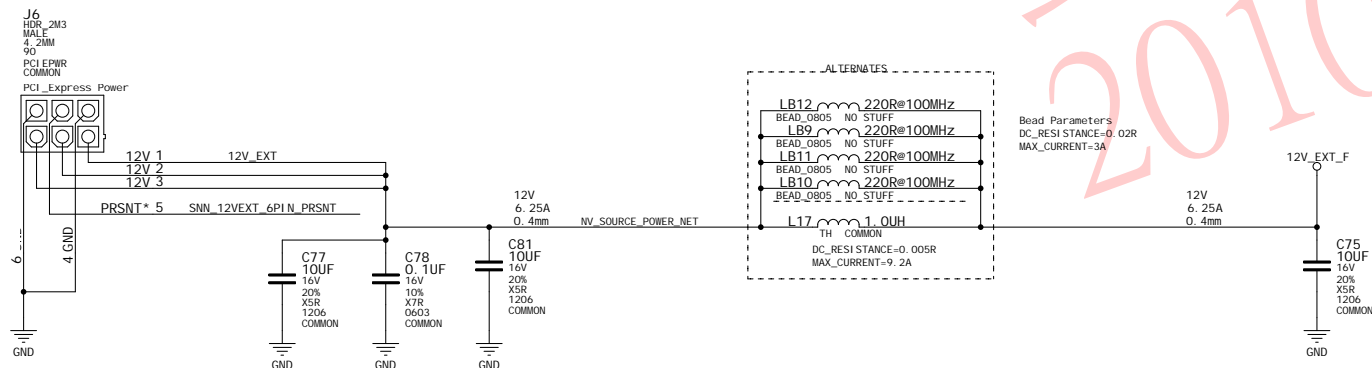
5V POWER SUPPLY, DDC POWER



12V_EXT Power Connector

12V_EXT Power Supply Filter

12V_EXT_F = 12V @ 6A



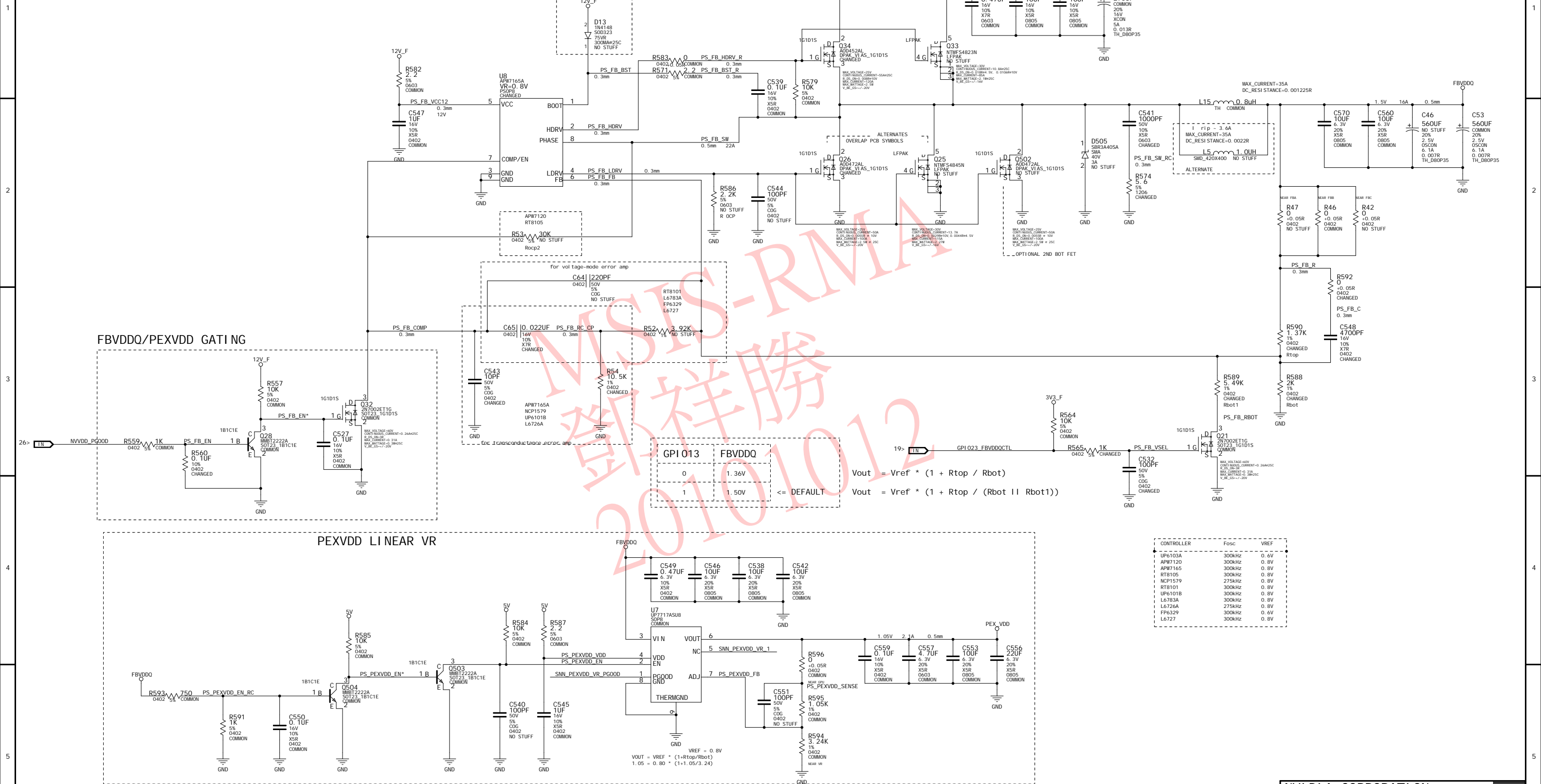
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NV_PN 600-11060-0011-200			
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PS 11: FBVDDQ, PEX_VDD

FBVDDQ, 10.3A @ 1.5V
PEXVDD, 2.1A @ 1.05V


$I_{rms} \sim 4.1A$ @ $1.5V/12.5A(300kHz, 0.8\mu H)$



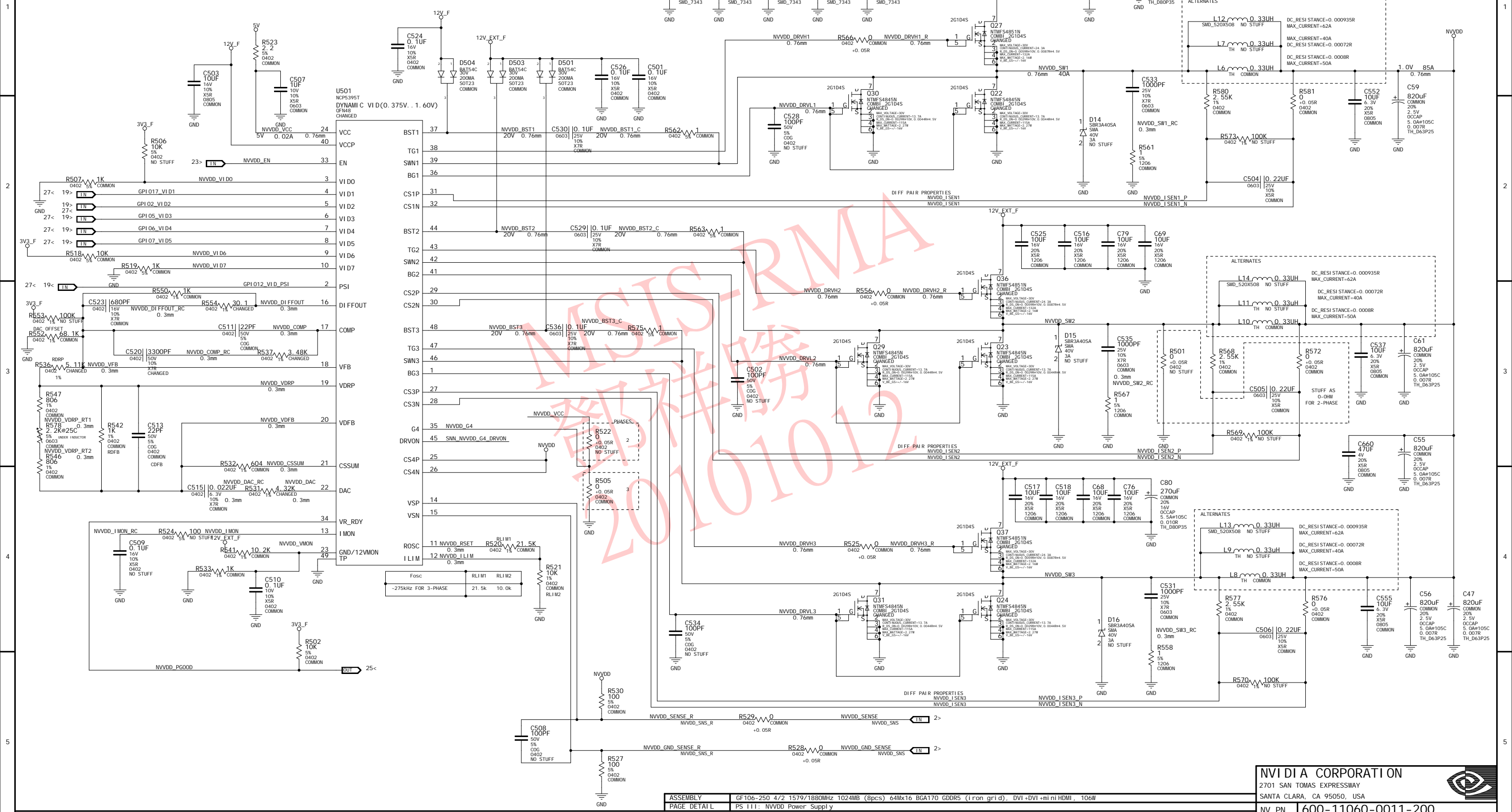
CONTROLLER	Fosc	VREF
UP6103A	300KHz	0.6V
APW7120	300KHz	0.8V
APW7165	300KHz	0.8V
RT8105	300KHz	0.8V
NCP1579	275KHz	0.8V
RT8101	300KHz	0.8V
UP6101B	300KHz	0.8V
L6783A	300KHz	0.8V
L6726A	275KHz	0.8V
FP6329	300KHz	0.6V
L6727	300KHz	0.8V

ASSEMBLY	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI, 106W
PAGE DETAIL	PS 11: PEX_VDD, FBVDDQ

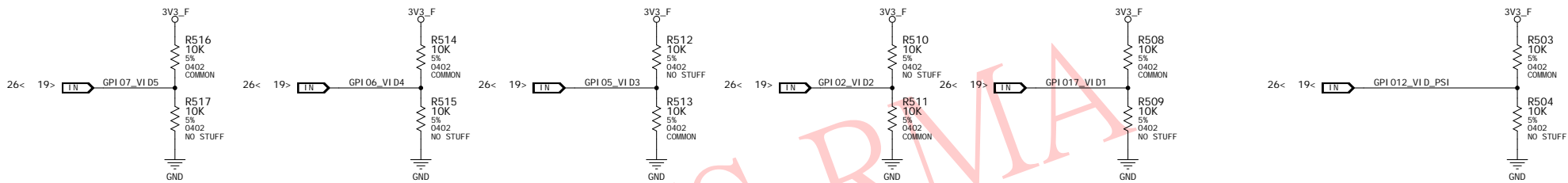
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NV_PN	600-11060-0011-200			
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PS 111: NVVDD Power Supply
2-PHASE OR 3-PHASE DESIGN
(UNSTUFF PHASE 2 FOR 2-PHASE CONFIG)



PS IV: NVAPI VID



NVDD Voltage (VID0-stopped, i.e. 1)					
GPI07_VID5	GPI06_VID4	GPI05_VID3	GPI02_VID2	GPI017_VID1	NVDD
0	0	0	0	0	1.2125
0	0	0	0	1	1.2000
0	0	0	1	0	1.1875
0	0	0	1	1	1.1750
0	0	1	0	0	1.1625
0	0	1	0	1	1.1500
0	0	1	1	0	1.1375
0	0	1	1	1	1.1250
0	1	0	0	0	1.1125
0	1	0	0	1	1.1000
0	1	0	1	0	1.0875
0	1	0	1	1	1.0750
0	1	1	0	0	1.0625
0	1	1	0	1	1.0500
0	1	1	1	0	1.0375
0	1	1	1	1	1.0250
1	0	0	0	0	1.0125
1	0	0	0	1	1.0000
1	0	0	1	0	0.9875
1	0	0	1	1	0.9750
1	0	1	0	0	0.9625
1	0	1	0	1	0.9500
1	0	1	1	0	0.9375
1	0	1	1	1	0.9250
1	1	0	0	0	0.9125
1	1	0	0	1	0.9000
1	1	0	1	0	0.8875
1	1	0	1	1	0.8750
1	1	1	0	0	0.8625
1	1	1	0	1	0.8500
1	1	1	1	0	0.8375
1	1	1	1	1	0.8250

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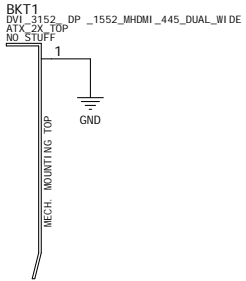
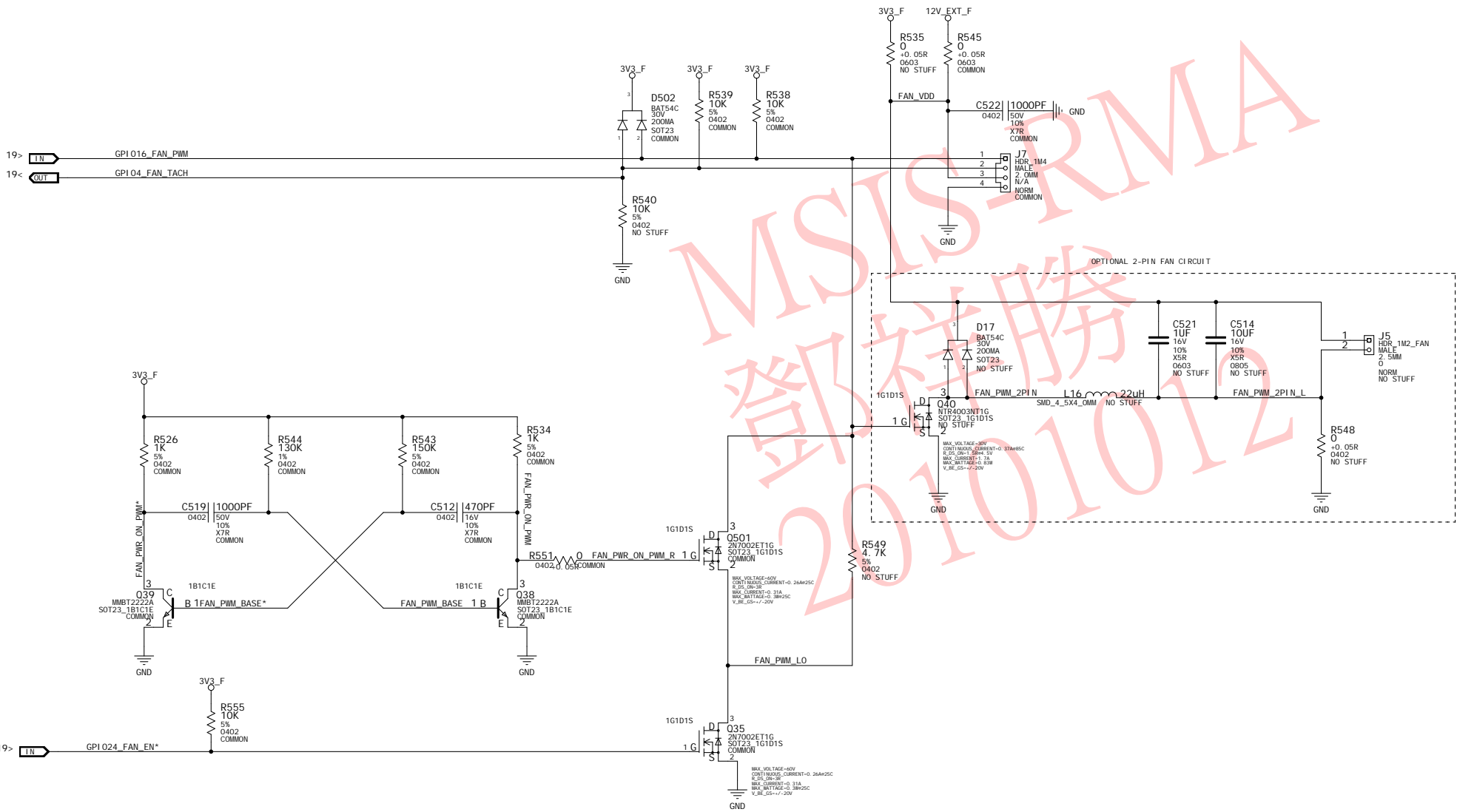
PCB REV P1060-A02 PAGE 27 OF 28

BOM REV F DATE 28-JUL-2010

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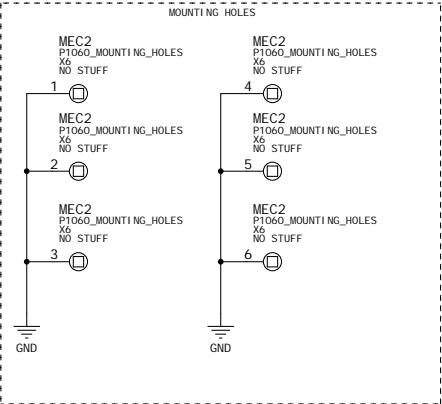
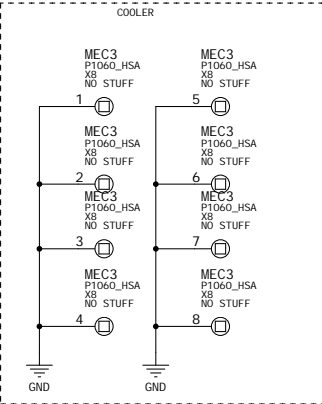
Thermal , Mechani cal , and Bracket

Mechani cal



SPECIAL MECHANIC
No connected mounting pins

MEC1
PEX_RET_BRKOFF
NORTH
NO STUFF



BOARD STIFFENER
No connected mounting pins

MEC501
GPU_STIFFENER_GF106
NORTH
NO STUFF

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ASSEMBLY	GF106-250 4/2 1579/1880MHz 1024MB (8pcs) 64Mx16 BGA170 GDDR5 (iron grid), DVI+DVI+mini HDMI , 106W
PAGE DETAIL	Thermal and Mechanical

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BOM REV	F	DATE	28-JUL-2010