MS-V067 VER 0A

P501-A01 DESIGN -- G73, 256 MB DDR2, VGA, DVI-I, HDTV

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Page 18: POWER SUPPLY: TMDS IOVDD,5V,A3V3

Page 19: PowerSupplyI: NVVDD, A2V5

Page 20: PowerSupplyIII: FBVDDQ, PLLVDD

REV HISTORY

Base on P501_A01 modify

- 4/13/2006:

1.PAGE:12 INTERNAL TMDS LINK C/D
Add DVI circuit

2.PAGE:19/20 :Power modify 6549 circuit
pin to pin RT9259/9259A

3.PAGE:11/12 :TMDS Link
Add EMI solution

- 4/14/2006:

1.PAGE:12 INTERNAL TMDS LINK C/D
Add DVI dual link circuit

2.PAGE:19/20 :Power modify 6549 circuit
reserve C840/C841 High side gate to phase

- 4/17/2006:

1.PAGE:19/20 :Power modify 6549 circuit
Change 6549 Footprint SSOP16 to SOP14

2.Change IC,L footprint to MSI Data Base

- 4/20/2006:

1.PAGE:18 :
Add FM1~FM6 for ME
Add C884~C850 for EMC suggestion reserve

2.PAGE:19 :Remove D9/R18 SC2621A Only

ssu	VARIANT	NVPN	ASSEMBLY
B	0000	600-10501-0000-100	G73 400/350MHz 256MB 128bit DDR2 16MX16 DVI-I+VGA+HDTVOUT
1	0001	600-10501-0001-100	G73-V 375/350MHZ 256MB 128bit DDR2 16MX16 DVI-I+VGA+HDTVOUT
2	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
3	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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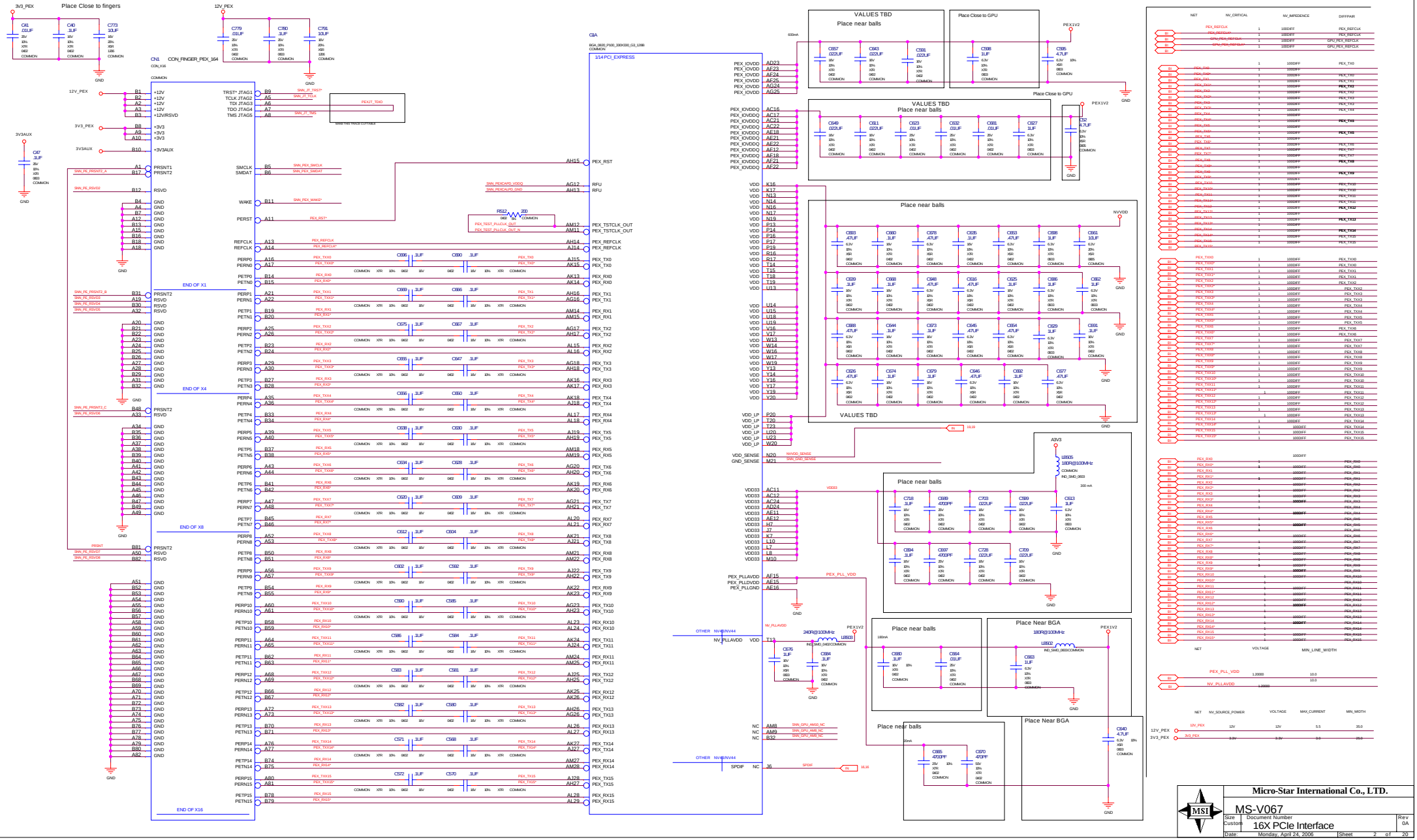
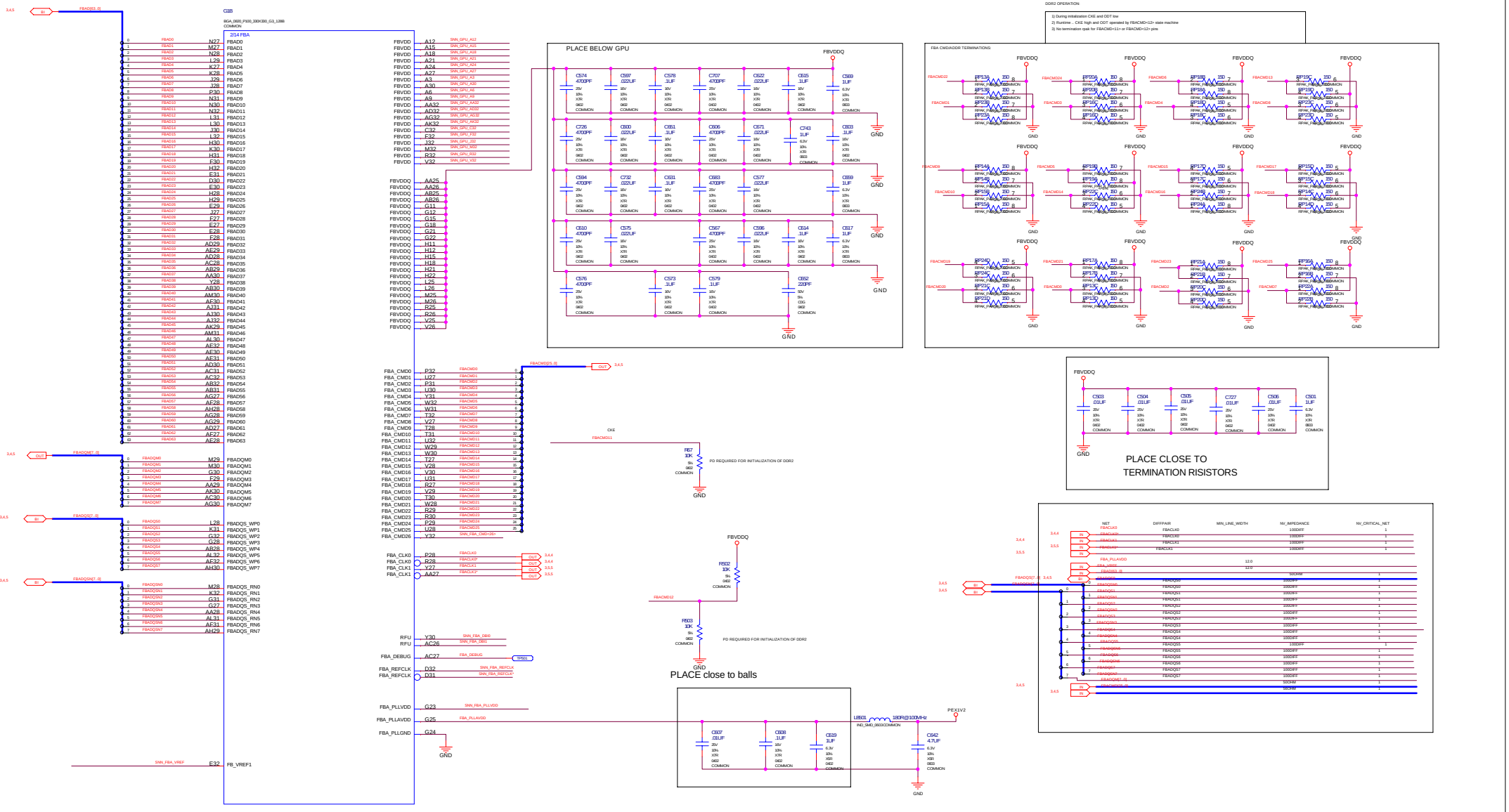
16X PCIe Interface



GPU: FB-Interface A



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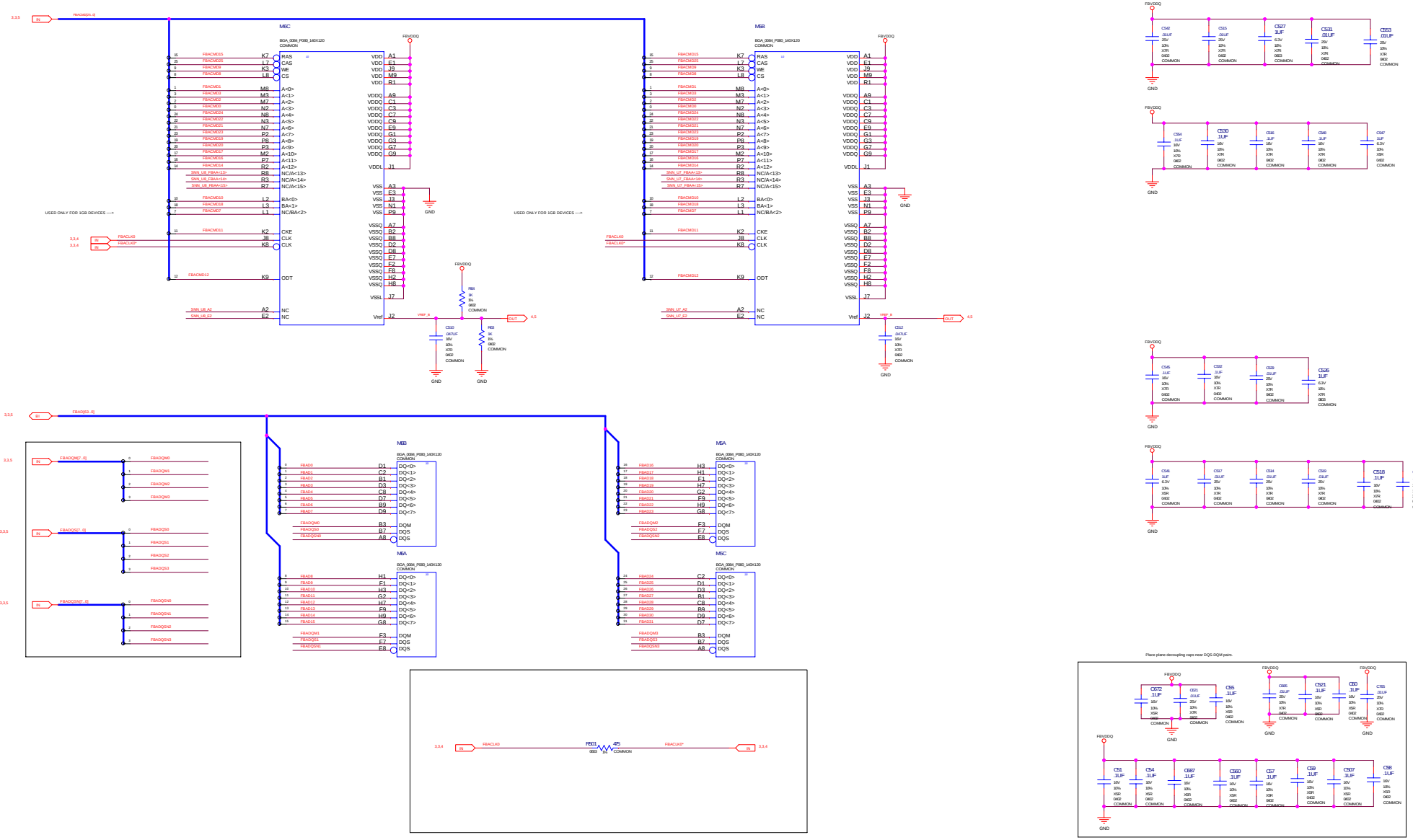
FBA MEMORY 1st bank 0..31

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



Place plane decoupling caps near DQS-DQM pairs.

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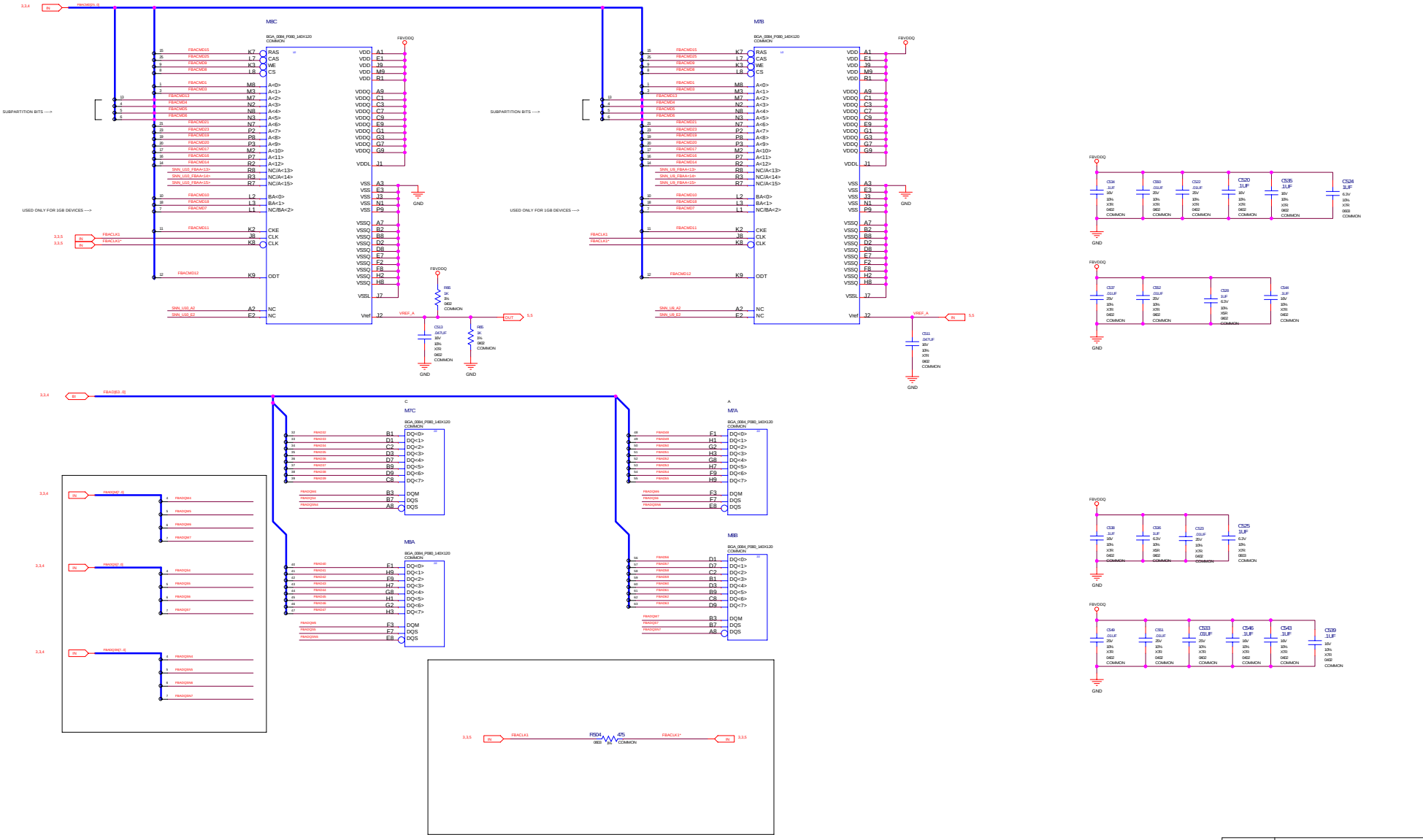
FBA MEMORY 1st bank 32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



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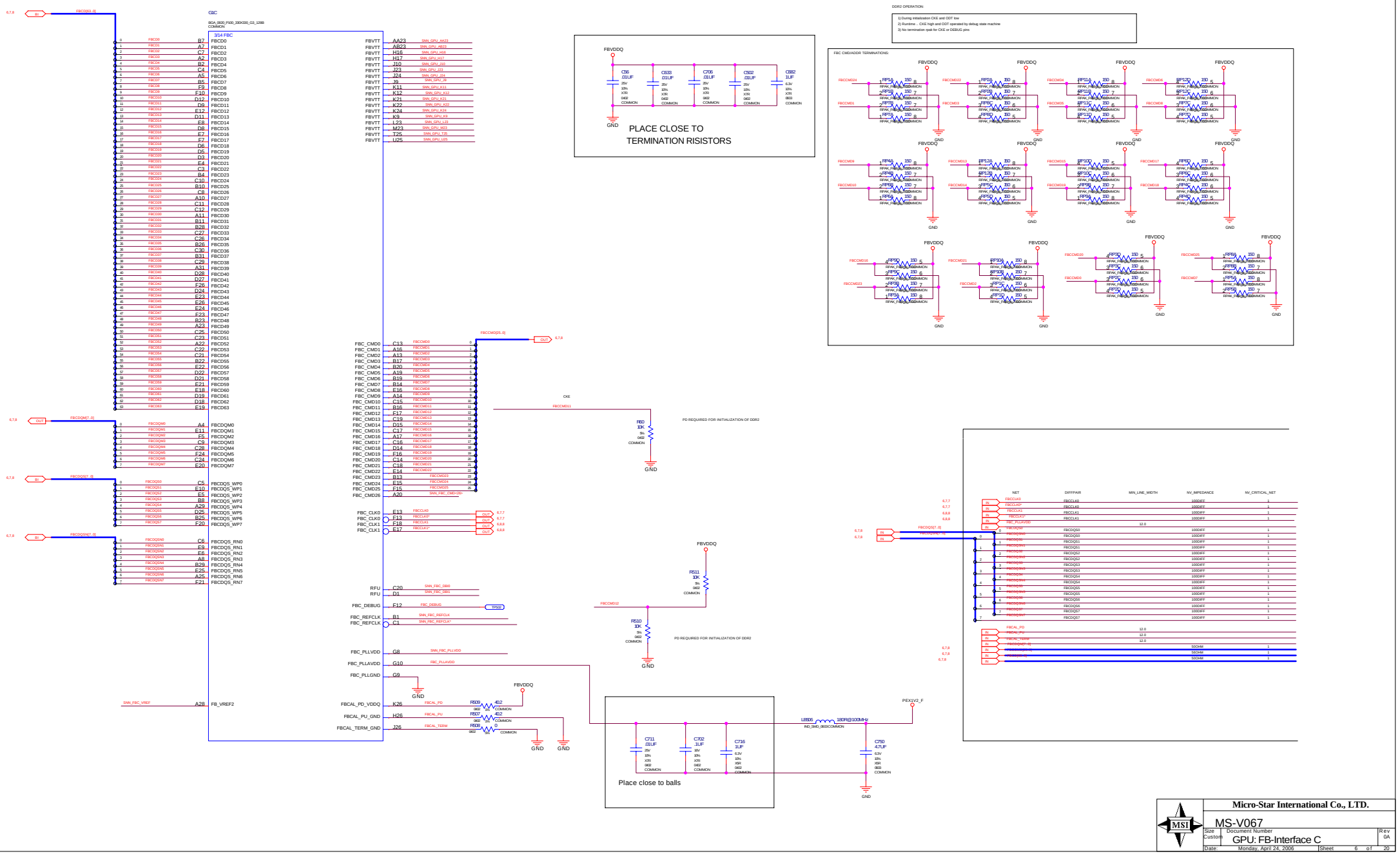
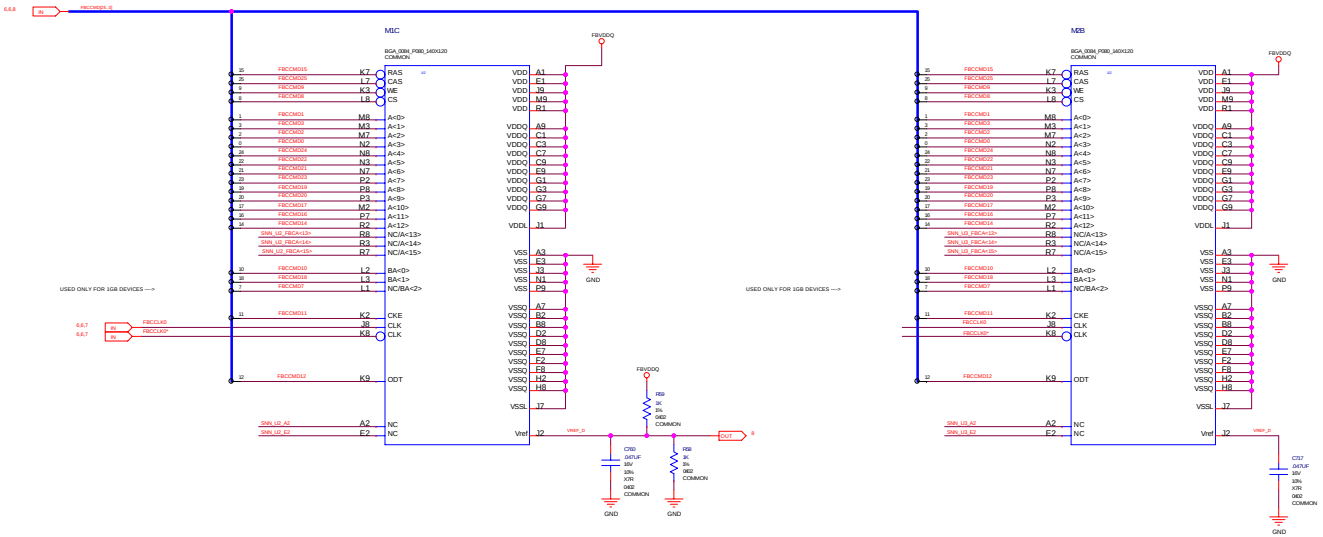
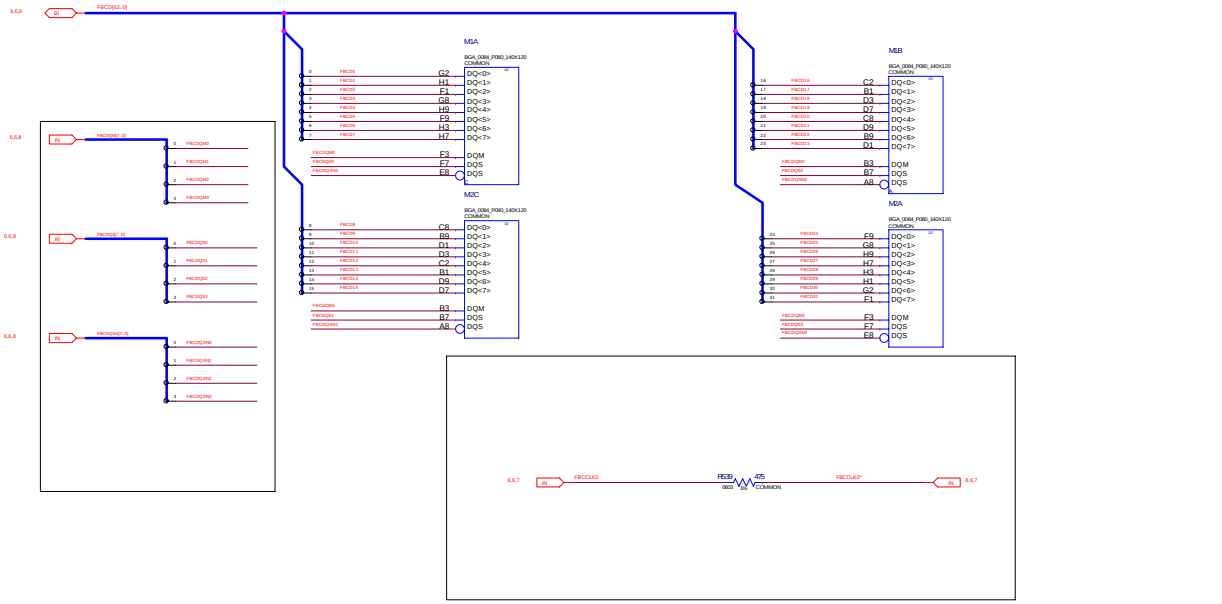
GPU: FB-Interface C

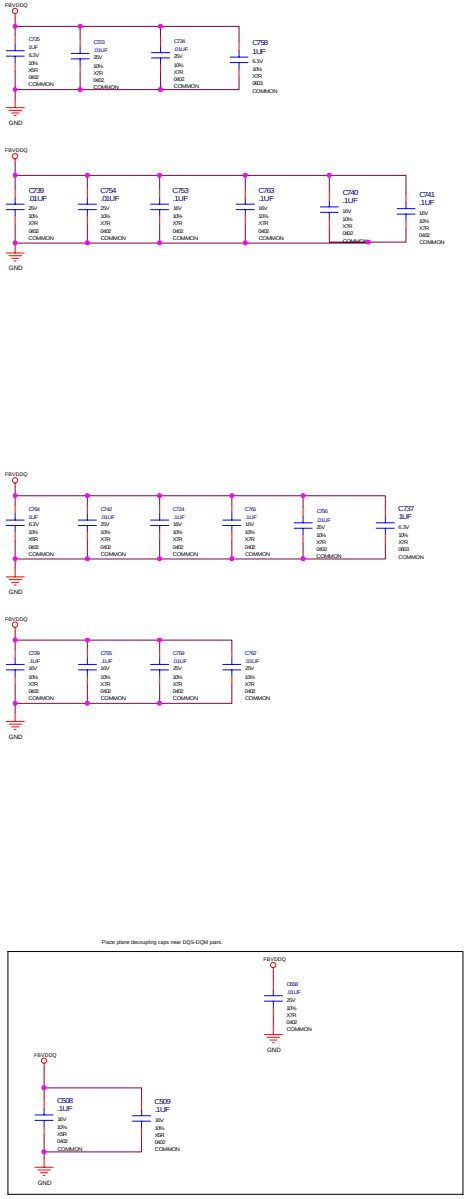


FBC MEMORY 2nd bank 0..31

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY







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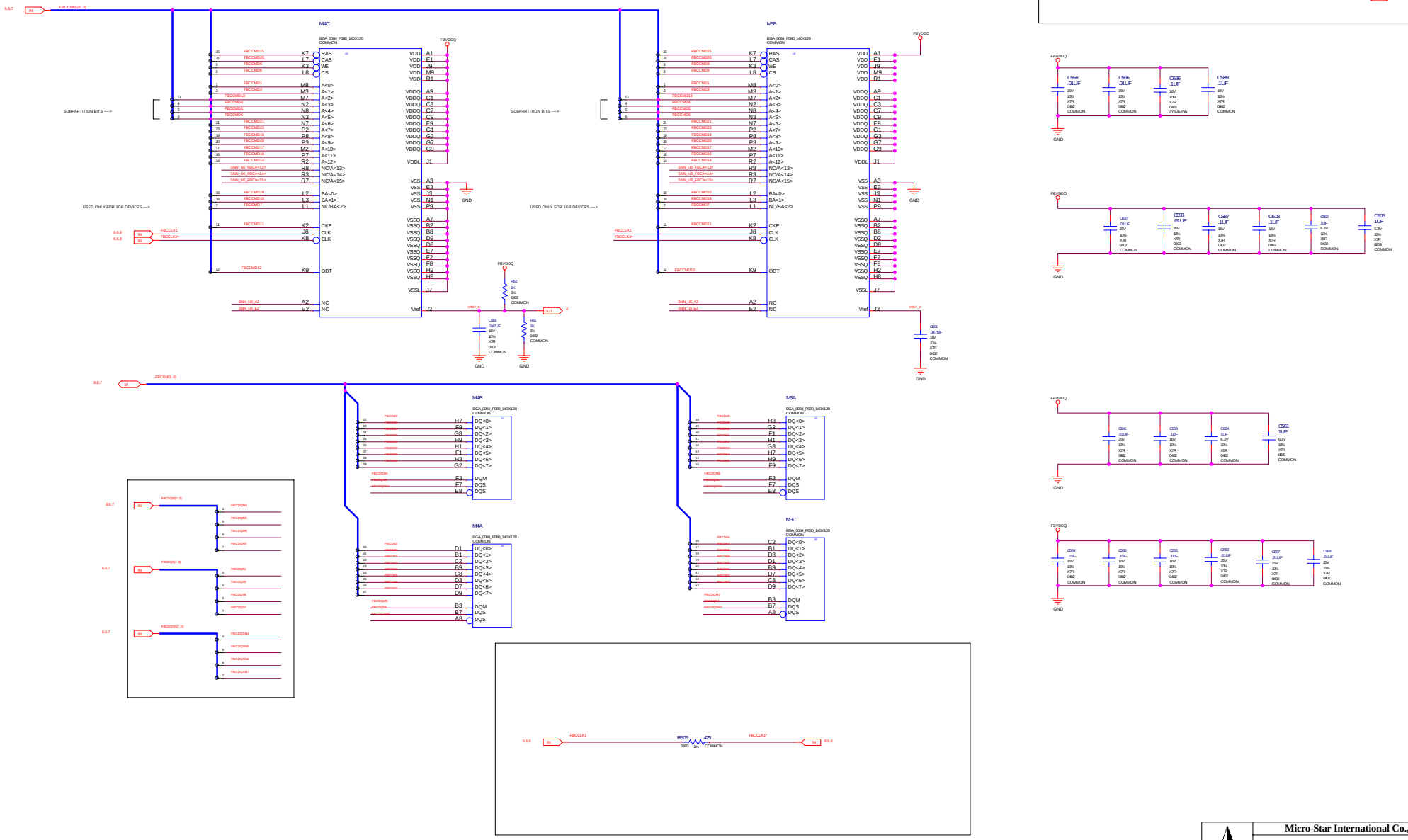
FBC MEMORY 2nd bank 32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



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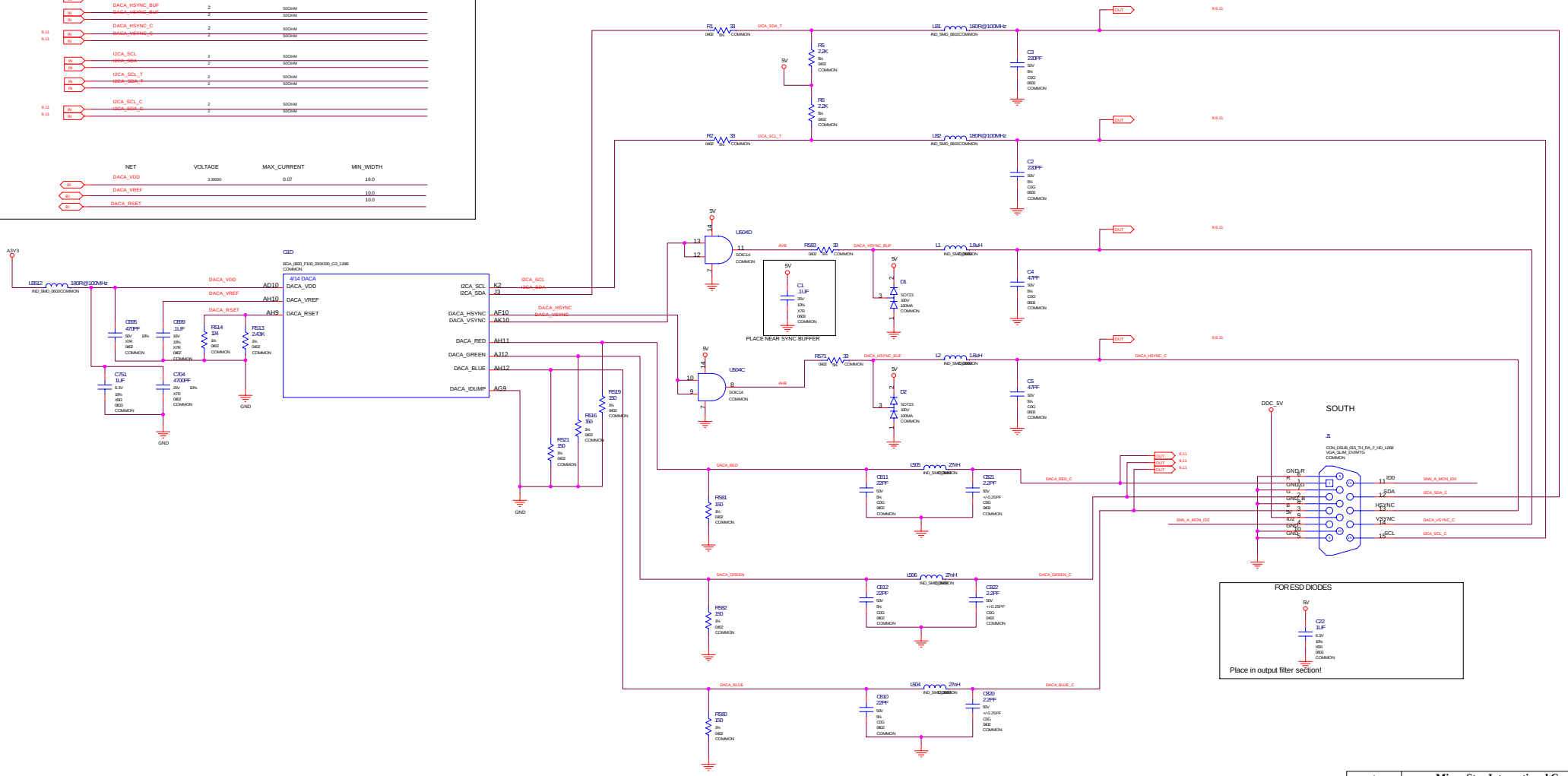
Primary Display (DACA), Slim DB15

DACA NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
DACA_RED	1	56OHM	
DACA_GREEN	1	56OHM	
DACA_BLUE	1	56OHM	
DACA_RED_C	1	56OHM	
DACA_GREEN_C	1	56OHM	
DACA_BLUE_C	1	56OHM	
DACA_HSYNC	2	50OHM	
DACA_VSYNC	2	50OHM	
A VB	2	50OHM	
A HB	2	50OHM	
DACA_HSYNC_BUF	2	50OHM	
DACA_VSYNC_BUF	2	50OHM	
DACA_HSYNC_C	2	50OHM	
DACA_VSYNC_C	2	50OHM	
I2CA_SCL	2	50OHM	
I2CA_SDA	2	50OHM	
I2CA_SCL_T	2	50OHM	
I2CA_SDA_T	2	50OHM	
I2CA_SCL_C	2	50OHM	
I2CA_SDA_C	2	50OHM	

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
DACA_VDD	3.30000	0.07	16.0
DACA_VREF			10.0
DACA_RSET			10.0

DACA RGB-FILTER



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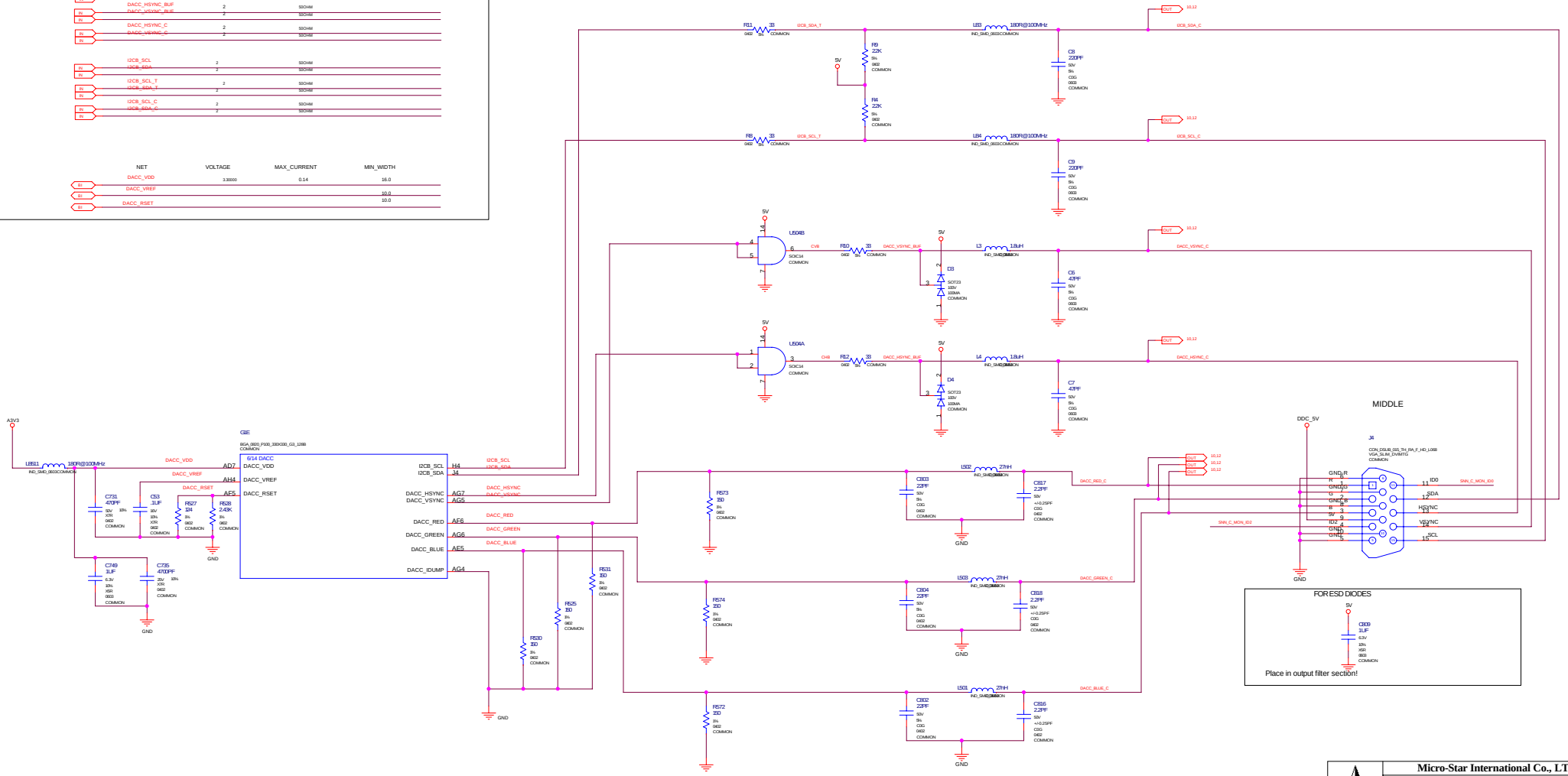
Secondary Display (DACC), DB15

DACC NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
DACC_RED	1	50OHM	
DACC_GREEN	1	50OHM	
DACC_BLUE	1	50OHM	
DACC_RED_C	1	50OHM	
DACC_GREEN_C	1	50OHM	
DACC_BLUE_C	1	50OHM	
DACC_HSYNC	2	50OHM	
DACC_VSYNC	2	50OHM	
CVB	2	50OHM	
CHB	2	50OHM	
DACC_HSYNC_BUF	2	50OHM	
DACC_VSYNC_BUF	2	50OHM	
DACC_HSYNC_C	2	50OHM	
DACC_VSYNC_C	2	50OHM	
I2CB_SCL	2	50OHM	
I2CB_SDA	2	50OHM	
I2CB_SCL_T	2	50OHM	
I2CB_SDA_T	2	50OHM	
I2CB_SCL_C	2	50OHM	
I2CB_SDA_C	2	50OHM	

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
DACC_VDD	3.30000	0.14	16.0
DACC_VREF			10.0
DACC_RSET			10.0

DACC RGB-FILTER



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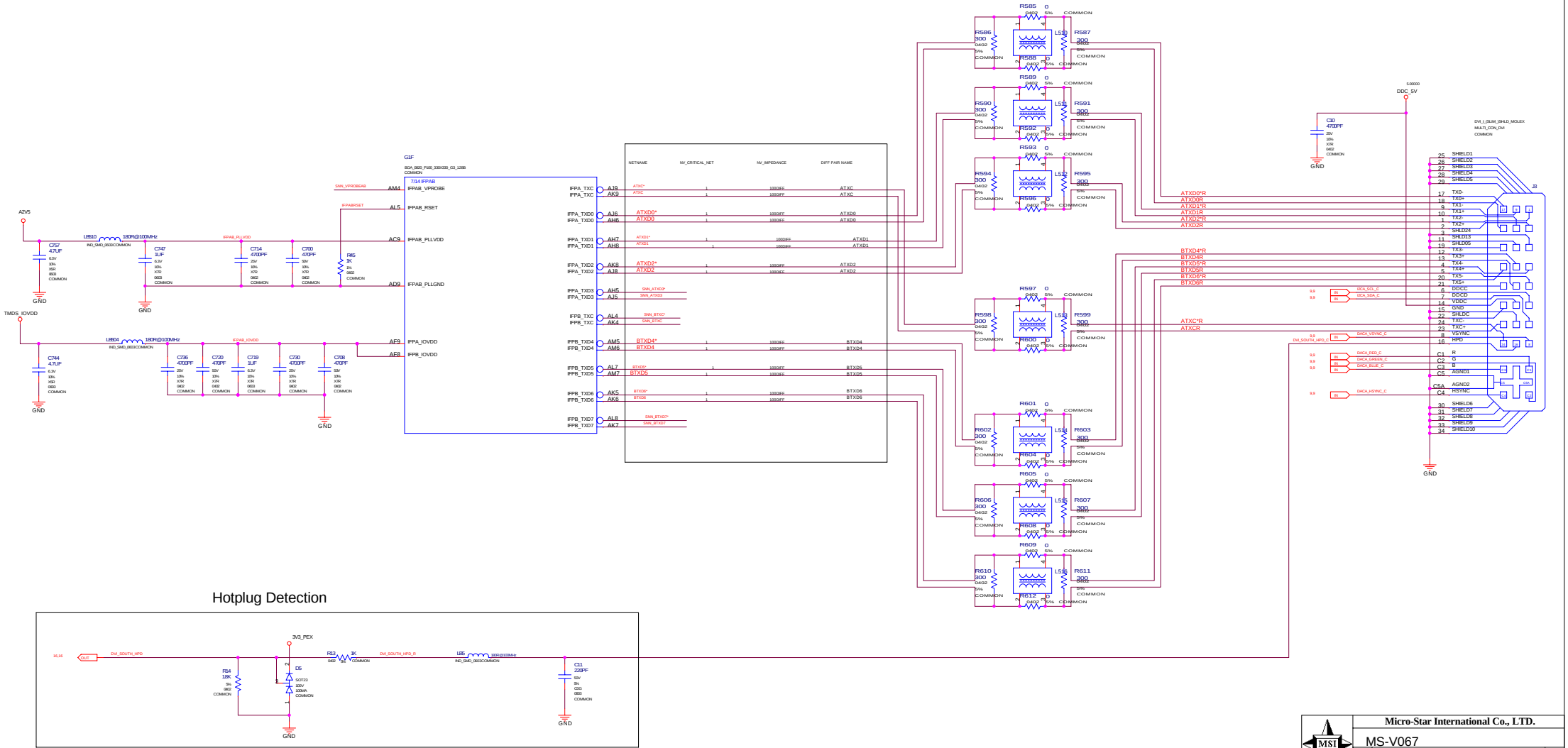
INTERNAL TMDS .. LINK A & B

IFPAB NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
IFPAB_PLLVDD	3.30000	0.04	16.0
IFPAB_IOVDD	3.30000	0.24	16.0
IFPABRSET			12.0
DVI_SOUTH_HPD_C	1	50OHM	
DVI_SOUTH_HPD_R	1	50OHM	



Hotplug Detection

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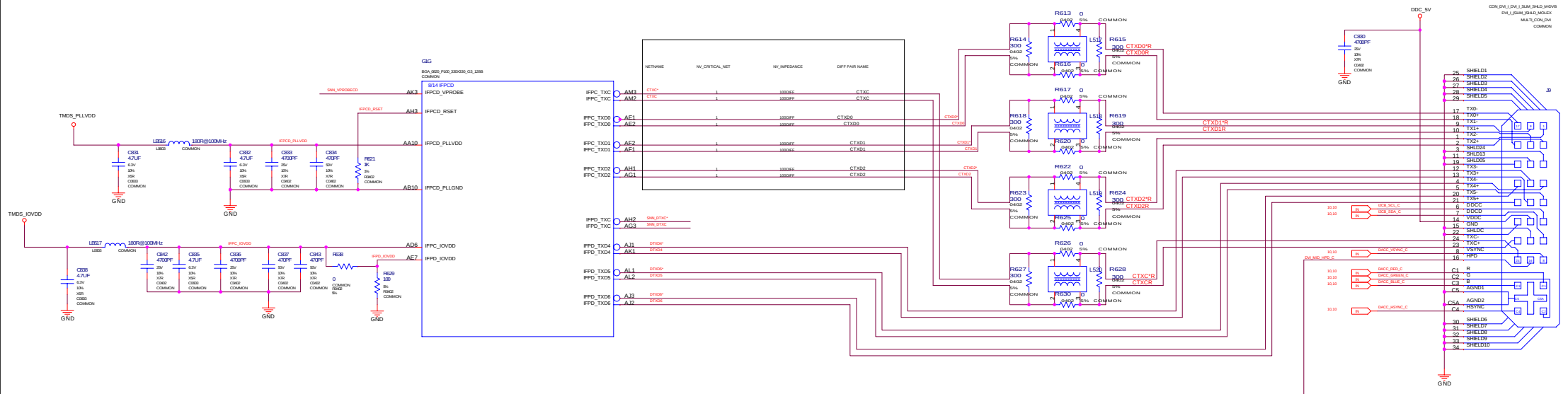
INTERNAL TMDS .. LINK C

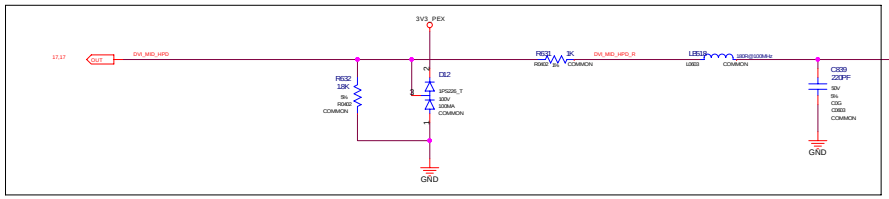
IFPAB NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
IFPCD_RSET	1	50OHM	
DVI_MID_HPD_C	1	50OHM	
DVI_MID_HPD_R	1	50OHM	

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
IFPCD_PLLVDD	3.30000	0.04	16.0
IFPC_IOVDD	3.30000	0.12	16.0
IFPD_IOVDD	1.20000	0.12	16.0



Hotplug Detection



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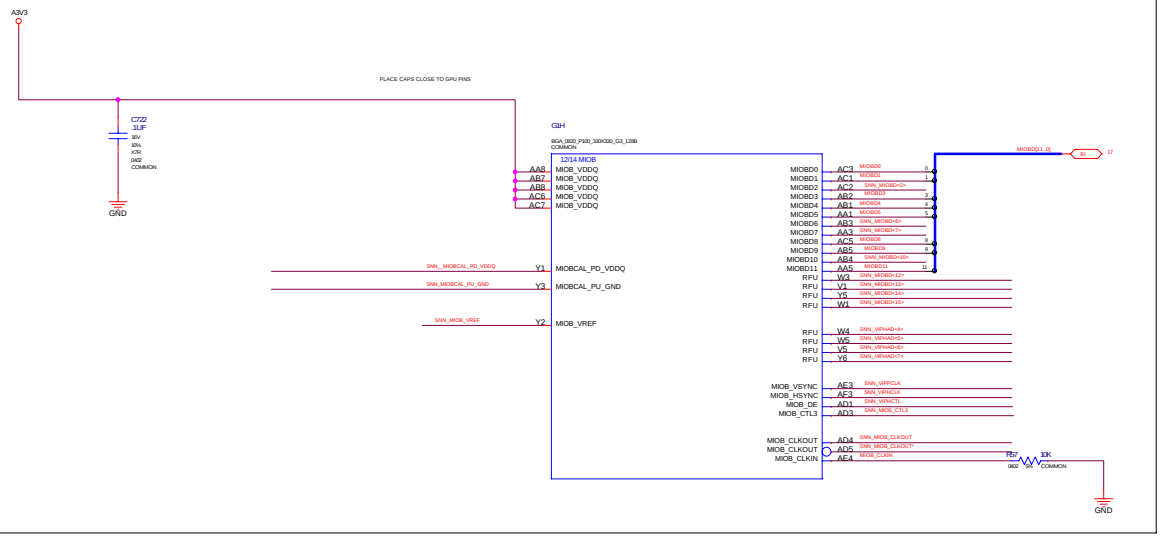
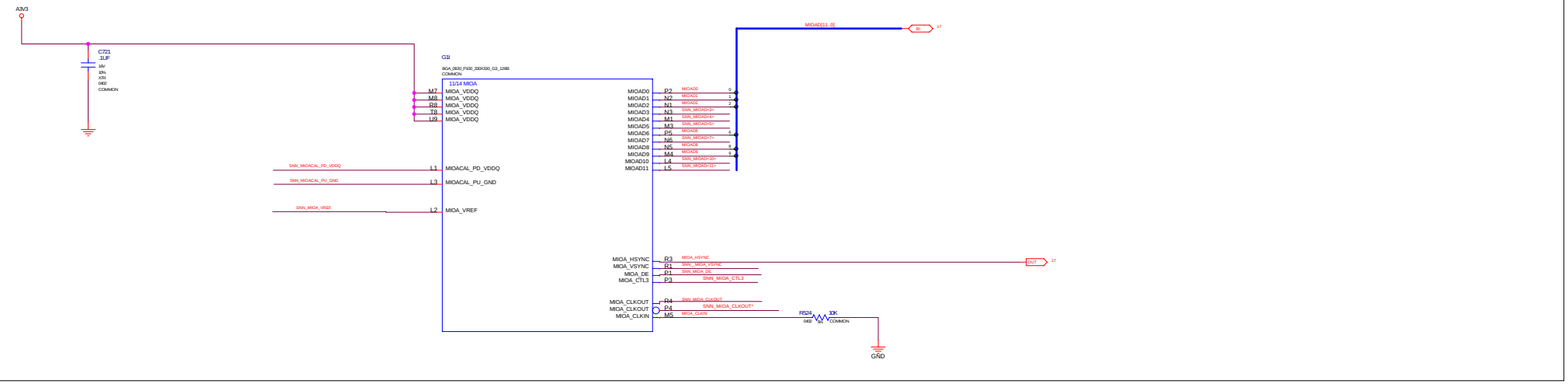
G3 VIP/MIOB/MIOA

G3 VIP/MIOB



G3 MIOA



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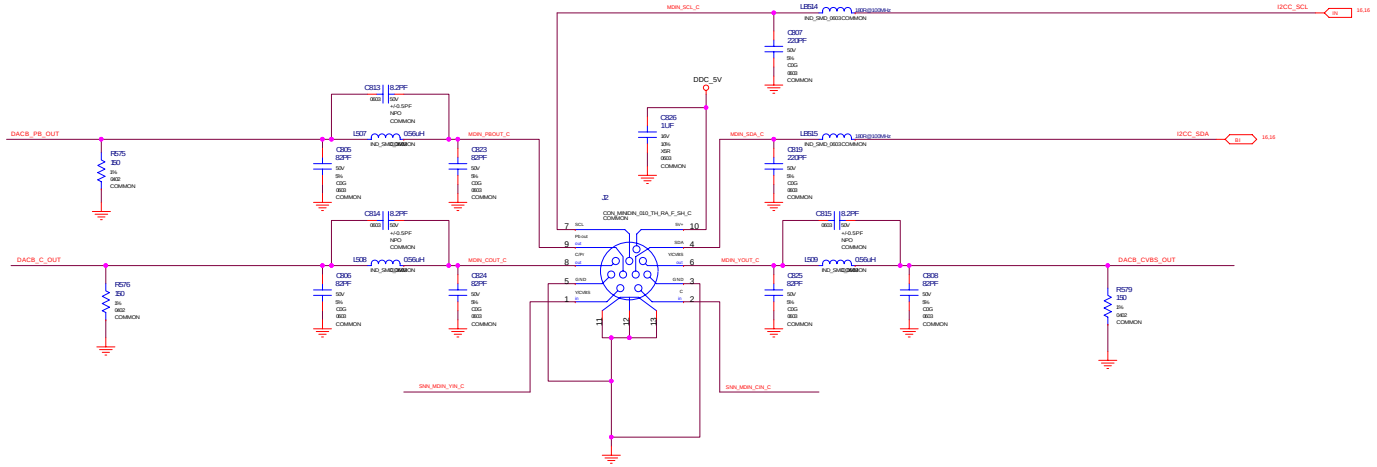
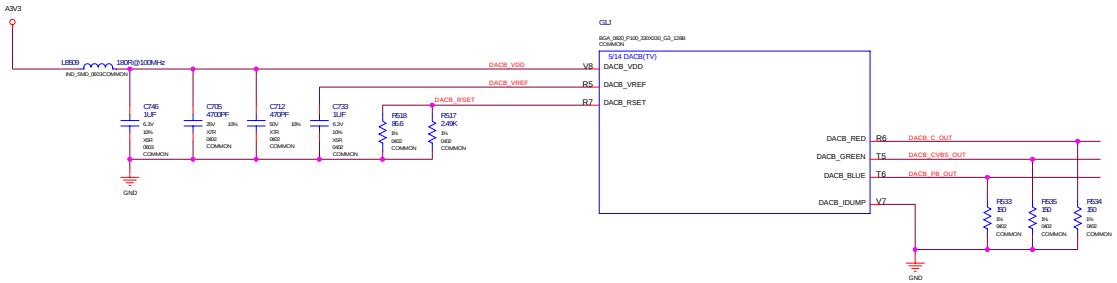
DACB .. MiniDIN VIDEO OUT CONNECTOR

DACB NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
DACB_C_OUT	1	50OHM	
MDIN_COUT_C	1	50OHM	
DACB_CVBS_OUT	1	50OHM	
MDIN_YOUT_C	1	50OHM	
DACB_PB_OUT	1	50OHM	
MDIN_PBOUT_C	1	50OHM	
MDIN_SCL_C	2	50OHM	
MDIN_SDA_C	2	50OHM	

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
DACB_VDD	3.30000	0.07	16.0
DACB_VREF			16.0
DACB_RSET			16.0





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Size: Custom	Document Number: DACB .. MiniDIN VIDEO OUT	Rev: 0A
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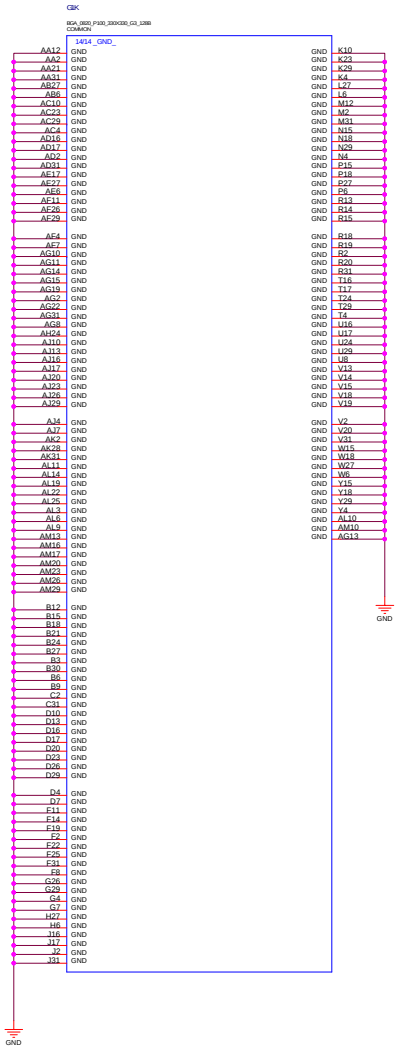
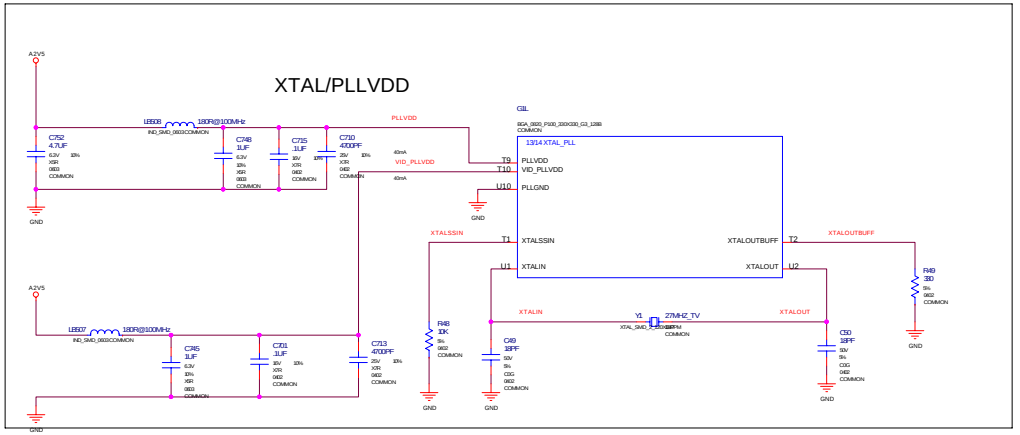
GND/XTAL/PLLVDD





NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
XTALIN	1	50OHM	
XTALOUT	1	50OHM	

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
PLL_VDD	2.5V	0.3	12MIL
VID_PLLVDD	2.5V	0.3	12.0

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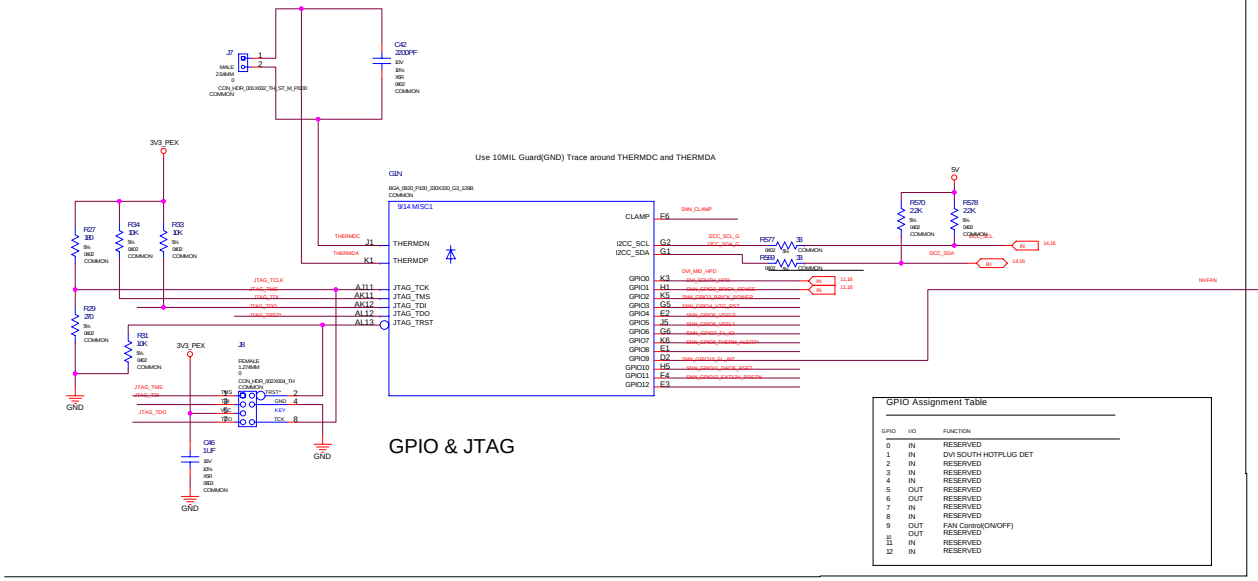
GPIO / JTAG / HDCP / BIOS / SPDIF

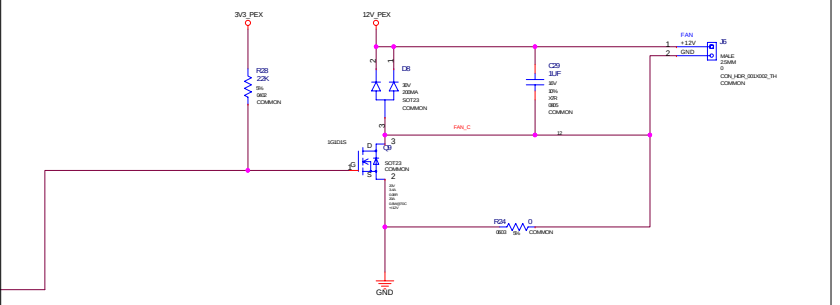


GPIO & JTAG

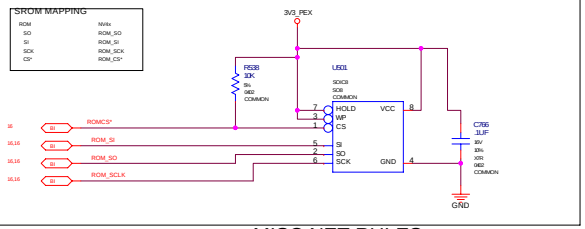
GPIO Assignment Table

GPIO	I/O	FUNCTION
0	IN	RESERVED
1	IN	DVI SOUTH HOTPLUG DET
2	IN	RESERVED
3	IN	RESERVED
4	IN	RESERVED
5	OUT	RESERVED
6	OUT	RESERVED
7	IN	RESERVED
8	IN	RESERVED
9	OUT	FAN Control(ON/OFF)
10	OUT	RESERVED
11	IN	RESERVED
12	IN	RESERVED

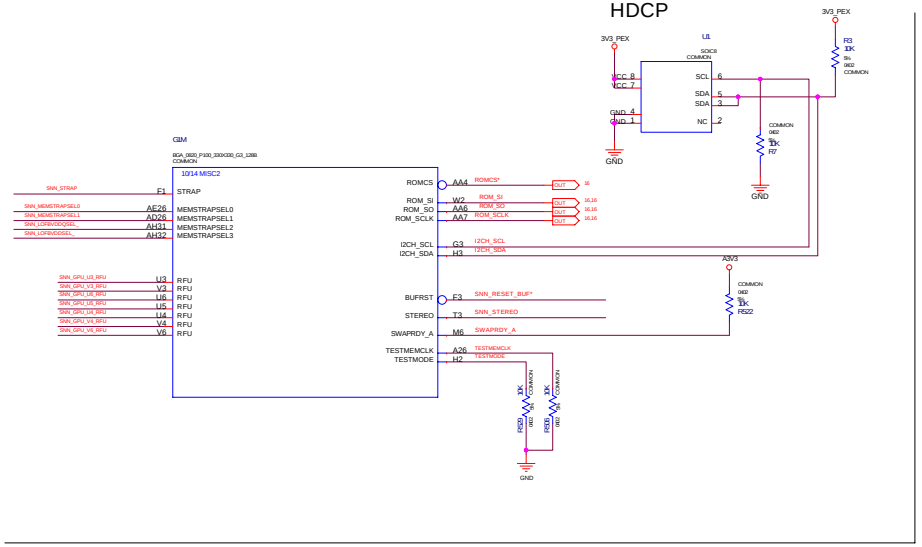
GPIO ON/OFF FAN Control



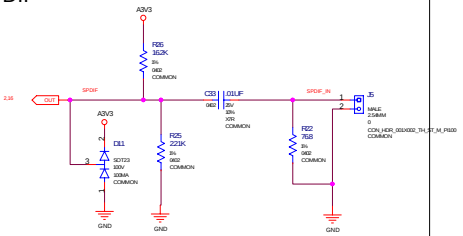
BIOS (serial)



HDCP



SPDIF



MISC NET RULES

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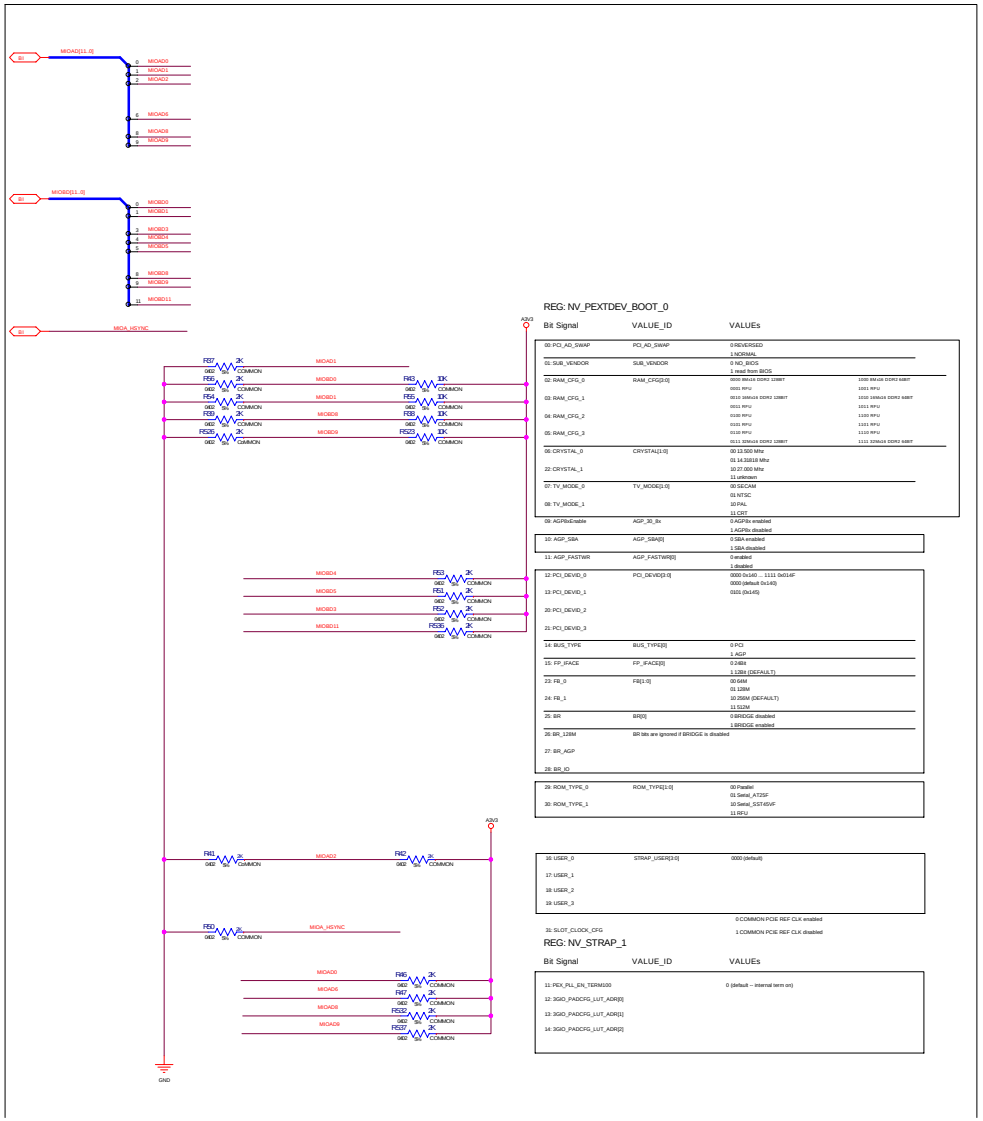
STRAPS, Mechanical Parts

Straps

Assembly: BIOS



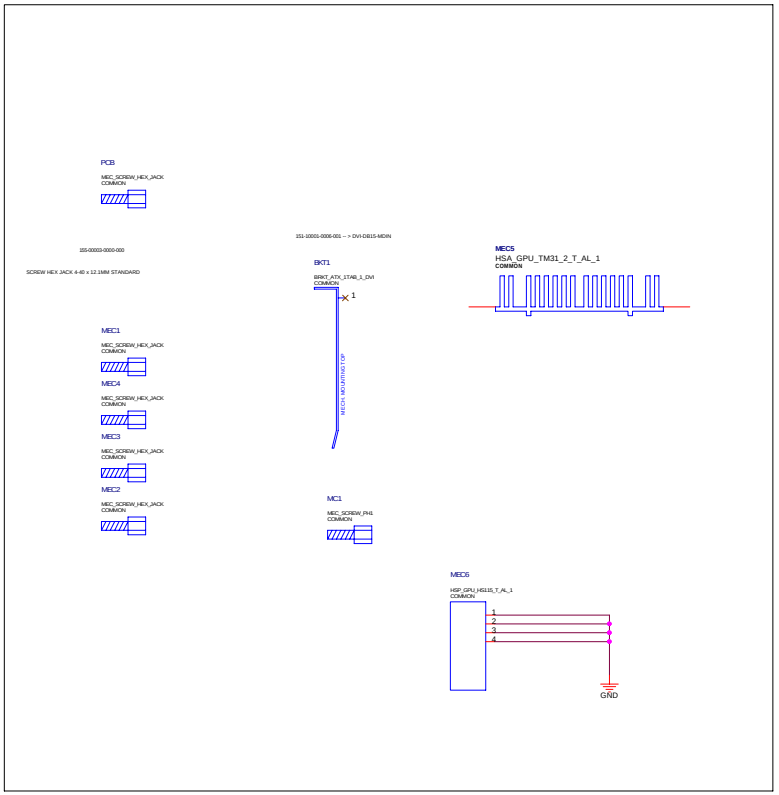
REG: NV_PEXTDEV_BOOT_0

Bit Signal	VALUE_ID	VALUEs	
00: PCI_AD_SWAP	PCI_AD_SWAP	0 REVERSED 1 NORMAL	
01: SUB_VENDOR	SUB_VENDOR	0 NO_BIOS 1 read from BIOS	
02: RAM_CFG_0	RAM_CFG[3:0]	0000 8Mx16 DDR2 128BIT 0001 RFU 0010 16Mx16 DDR2 128BIT 0011 RFU 0100 RFU 0101 RFU 0110 RFU 0111 32Mx16 DDR2 128BIT	1000 8M x16 DDR2 64BIT 1001 RFU 1010 16Mx16 DDR2 64BIT 1011 RFU 1100 RFU 1101 RFU 1110 RFU 1111 32Mx16 DDR2 64BIT
03: RAM_CFG_1			
04: RAM_CFG_2			
05: RAM_CFG_3			
06: CRYSTAL_0	CRYSTAL[1:0]	00 13.500 Mhz 01 14.318180 Mhz 10 27.000 Mhz 11 unknown	
22: CRYSTAL_1			
07: TV_MODE_0	TV_MODE[1:0]	00 SECAM 01 NTSC 10 PAL 11 CRT	
08: TV_MODE_1			
09: AGPBlkEnable	AGP_30_8x	0 AGPBx enabled 1 AGPBx disabled	
10: AGP_SBA	AGP_SBA[0]	0 SBA enabled 1 SBA disabled	
11: AGP_FASTWR	AGP_FASTWR[0]	0 enabled 1 disabled	
12: PCI_DEVID_0	PCI_DEVID[3:0]	0000 0x140 ... 1111 0x014F 0000 (default 0x140)	
13: PCI_DEVID_1		0101 (0x145)	
20: PCI_DEVID_2			
21: PCI_DEVID_3			
14: BUS_TYPE	BUS_TYPE[3]	0 PCI 1 AGP	
15: FP_IFACE	FP_IFACE[0]	0 24Bit 1 12Bit (DEFAULT)	
23: FB_0	FB[1:0]	00 64M 01 128M	
24: FB_1		10 256M (DEFAULT) 11 512M	
25: BR	BR[0]	0 BRIDGE disabled 1 BRIDGE enabled	
26: BR_128M	BR bits are ignored if BRIDGE is disabled		
27: BR_AGP			
28: BR_ID			
29: ROM_TYPE_0	ROM_TYPE[1:0]	00 Parallel 01 Serial_AT25F 10 Serial_SST45VF 11 RFU	
30: ROM_TYPE_1			
16: USER_0	STRAP_USER[3:0]	0000 (default)	
17: USER_1			
18: USER_2			
19: USER_3			
31: SLOT_CLOCK_CFG		0 COMMON PCIE REF CLK enabled 1 COMMON PCIE REF CLK disabled	

REG: NV_STRAP_1

Bit Signal	VALUE_ID	VALUEs
11: PEX_PLL_EN_TERM100		0 (default – internal term on)
12: 3GIO_PADCFG_LUT_ADR[0]		
13: 3GIO_PADCFG_LUT_ADR[1]		
14: 3GIO_PADCFG_LUT_ADR[2]		

Mechanical parts



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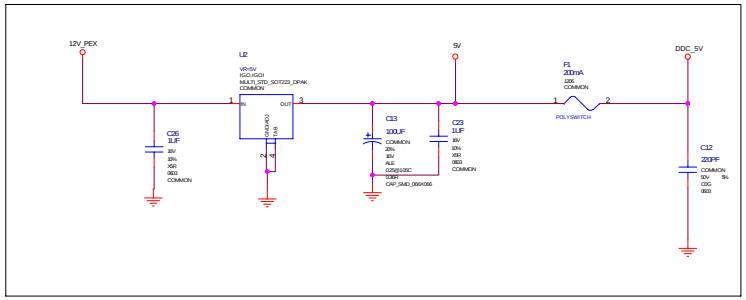
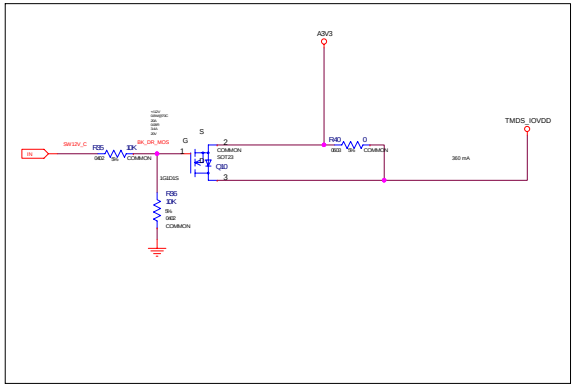
Power Supply:TMDS_IOVDD/A3V3/5V

NETNAME	MAX_CURRENT	MIN_LINE_WIDTH	VOLTAGE
DDC_5V	0.1	12.0	5.00000
A2V5	0.96	25.0	2.50000
TMDS_IOVDD	0.24	20.0	3.30000
A3V3	0.4	20.0	3.30000
GND		35.0	0.000000

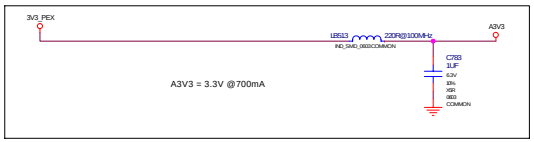
DDC 5V



TMDS IO SUPPLY WITH BACKDRIVE PROTECTION



A3V3 Power Supply

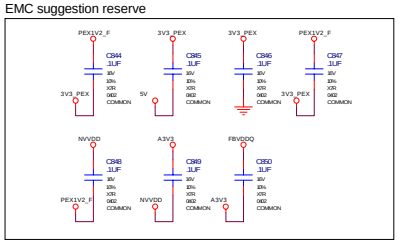


FM1 FM4

FM2 FM5

FM3 FM6

EMC suggestion reserve



MSI	Micro-Star International Co., LTD.		
	MS-V067		
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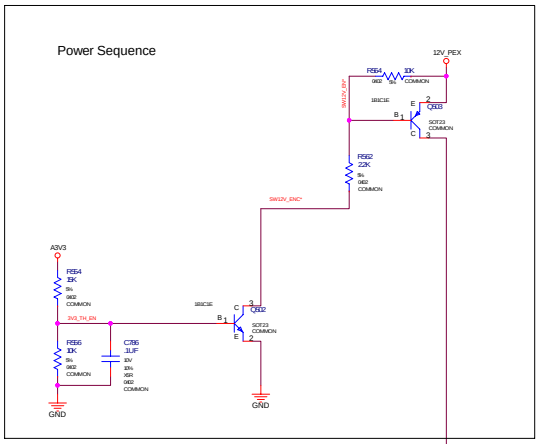
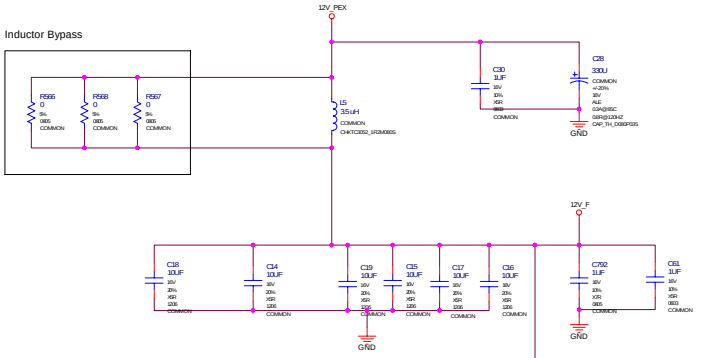
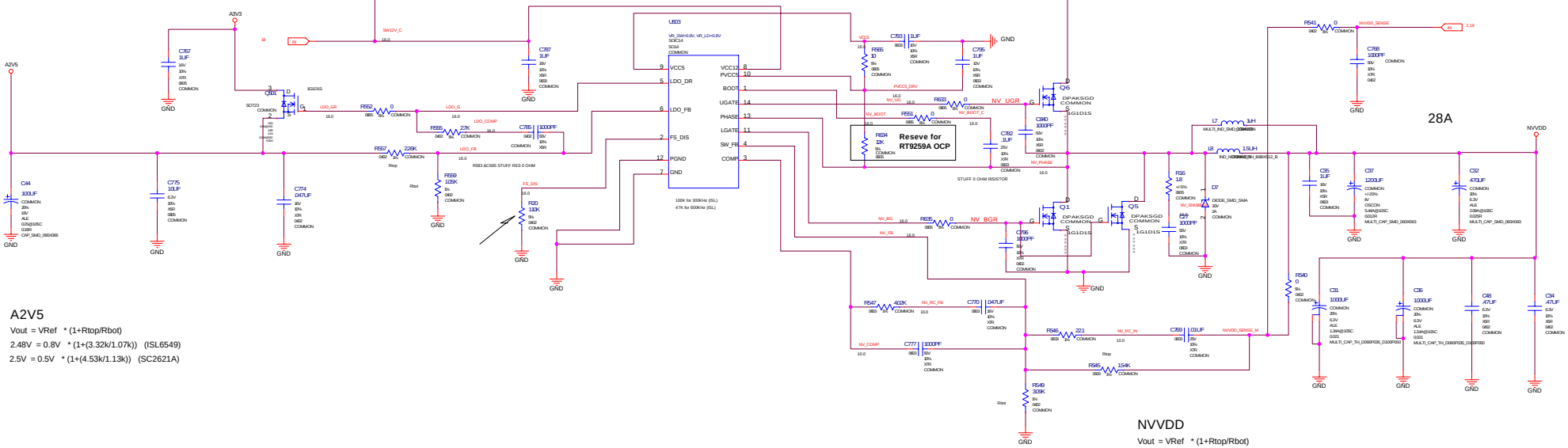
PowerSupplyI: NVVDD, A2V5

Net Name	LINE_WIDTH	Current	Voltage
12V_F	36MIL	3	12V
NVVDD PEX1V2	36MIL 24MIL	15 1.5	1.2V 1.05000
NVVDD_SENSE	16MIL	0.5	1.2V
NVVDD_SENSE_M	16MIL	0.5	1.2V





ISL6549(SC2621A)



A2V5

Vout = VRef * (1+Rtop/Rbot)

2.48V = 0.8V * (1+(3.32k/1.07k)) (ISL6549)

2.5V = 0.5V * (1+(4.53k/1.13k)) (SC2621A)

NVVDD

Vout = VRef * (1+Rtop/Rbot)

1.2V = 0.8V * (1+(1.54k/3.09k)) (ISL6549)

1.2V = 0.5V * (1+(14.7k/10.5k)) (SC2621A)

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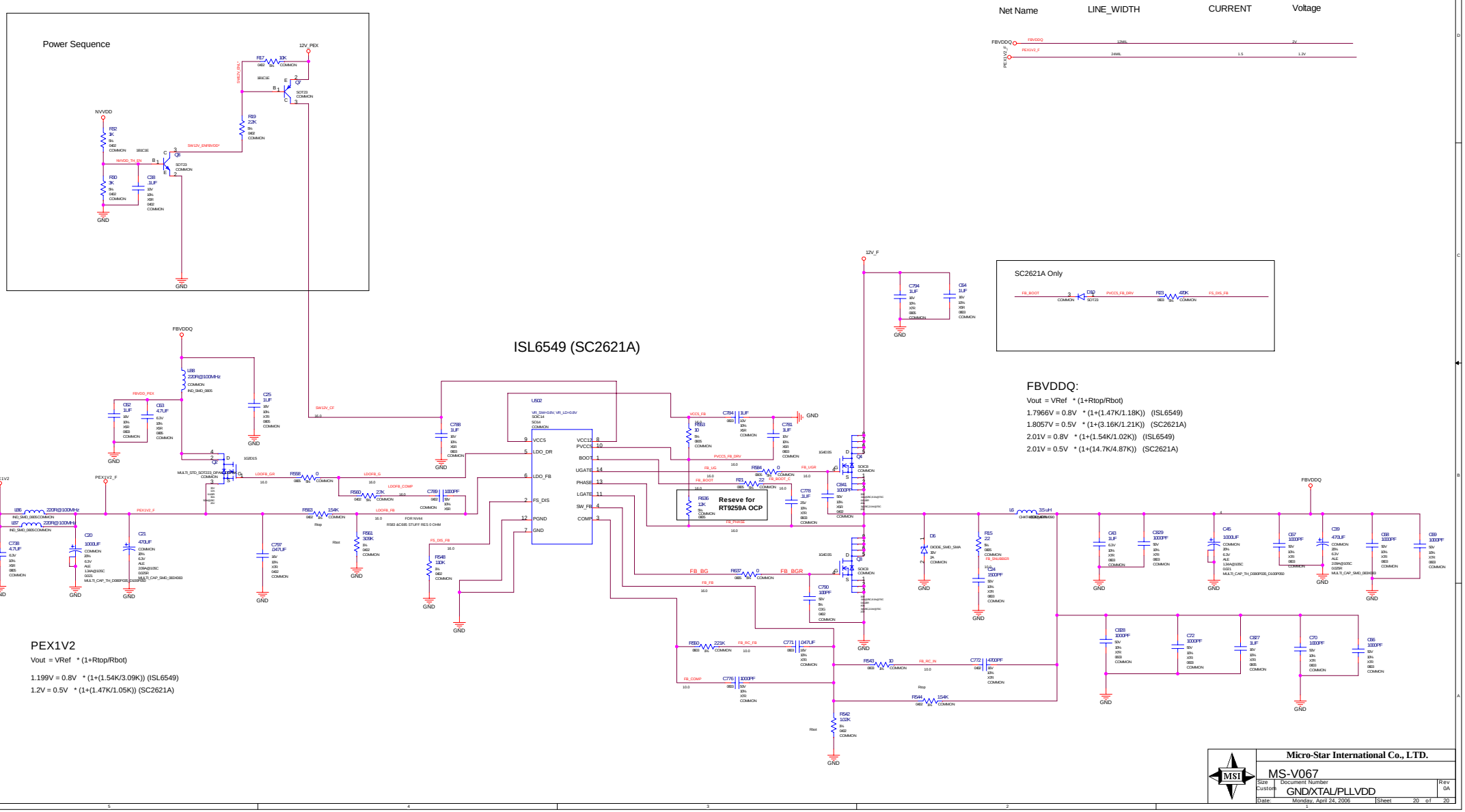
PowerSupplyIII: FBVDDQ,PEX1V2



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