MS-V041 VER 31

NV43-PCIE NV43 256MB/128bit, BGA 16MX16 DDR2,VGA,DVI-I,TV-OUT(HT-10)

P295-A00 DESIGN NV43 300/267MHZ 128MB/256MB/512MB DDR2 84-FBGA

PAGE SUMMARY:

DDR2 84-FBGA Clock setting 350MHZ

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	602-10295-BASE-SCH	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	SKU000	602-10295-0000-000	GF-6600-A04 GEN 300/267MHZ 256MB 84-FBGA DDR2 16MX16 VGA+DVI-I+HDTV
2	SKU001	602-10295-0001-000	GF-6600-A04 GEN 300/267MHZ 128MB 84-FBGA DDR2 8MX16 VGA+DVI-I+HDTV
3	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
4	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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REV HISTORY

A00

-08/04/2005:

1.Page18: change power solution to RT9218 for NVVDD & FBVDDQ

10S

-08/04/2005:

1.Page18: Move C913~C916 out form C910,C911 & Move C930,C931 out form C929

2.Page19: Add C940 near C36

3.Page19: Remove C16, C35, C55

B00

-12/06/2005:

1.ADD G73 circuit

C00

-04/26/2006:

1.Remove NV43 reserve circuit

2.Page14: Add SPDIF circuit

3.Page15: Add TMDS Dual_Link A/B

4.Page17: Add MIOA Feature SLI CON

5.Page18,19: Modify Power solution same as P345

C01

-06/26/2006:

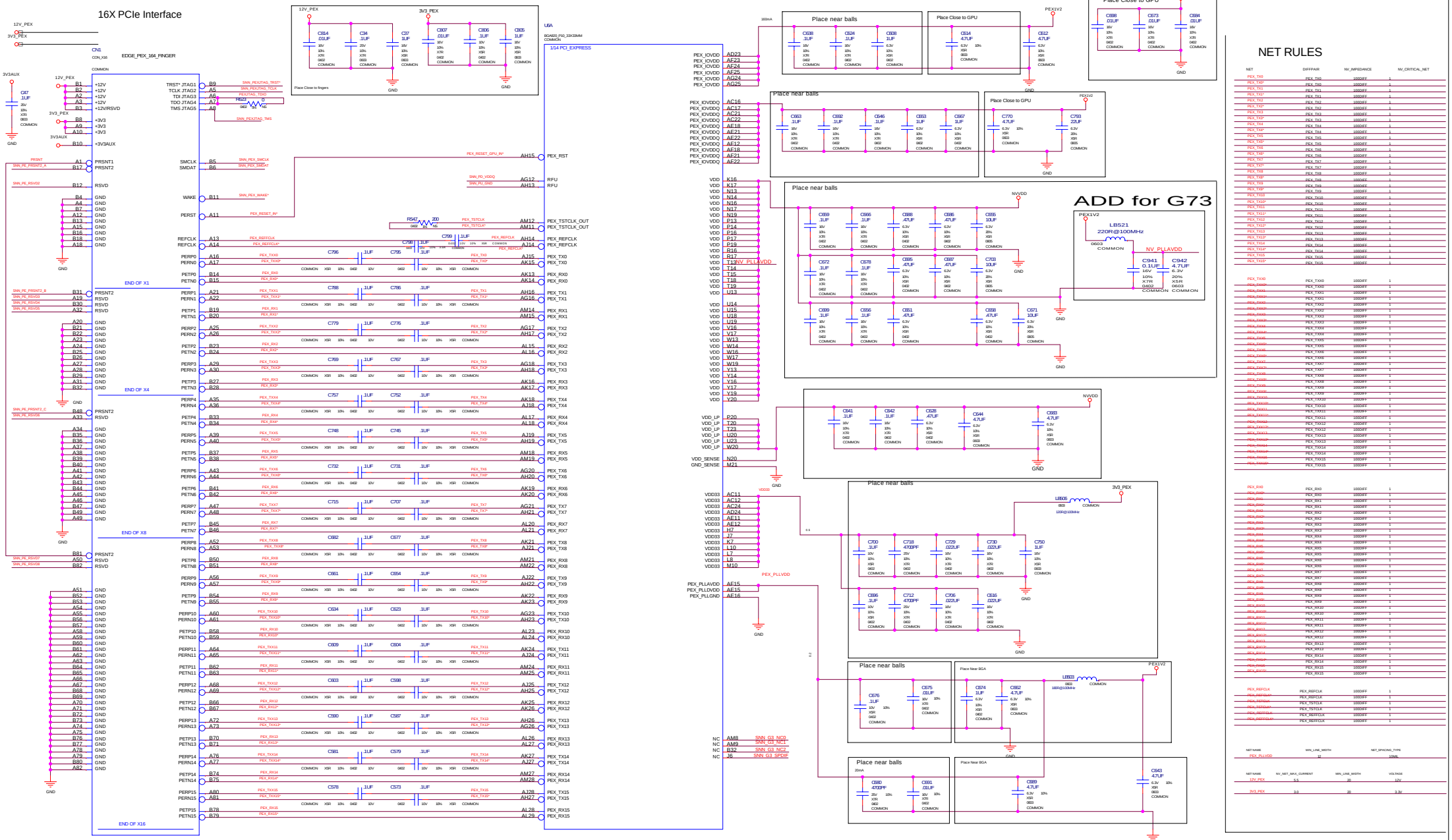
1.Page18:Add MIOA SLI referenc power

2.Page18:Add R0805 NVVDD to PEX1V2

3.Page18:Add NVVDD Choke Footprint

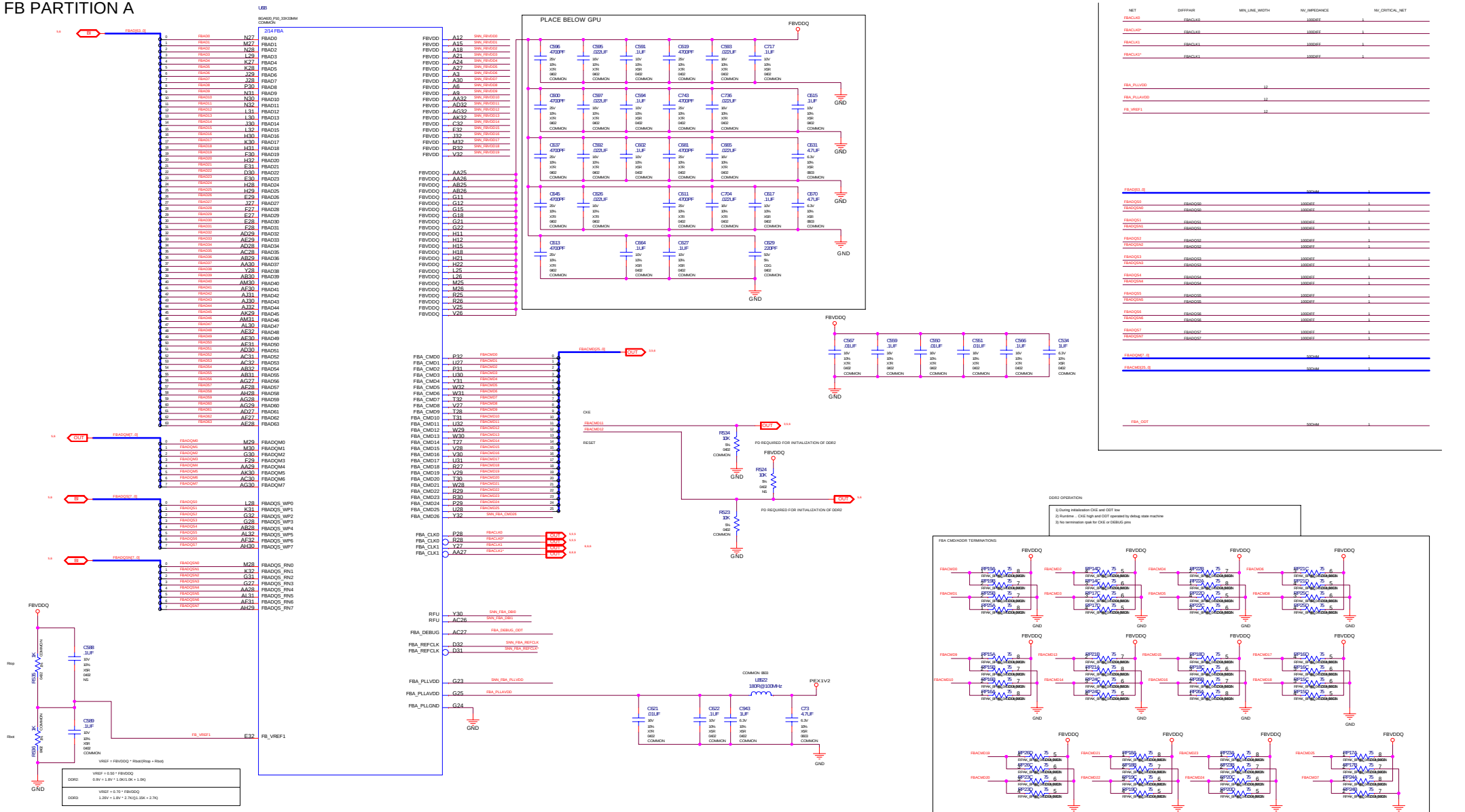
4.Page15/16:Add Bridge R for EMI

02 PCI EXPRESS, NVVDD, VDD33



03 FB BANK A, FBVDDQ DECOUPLING

FB PARTITION A



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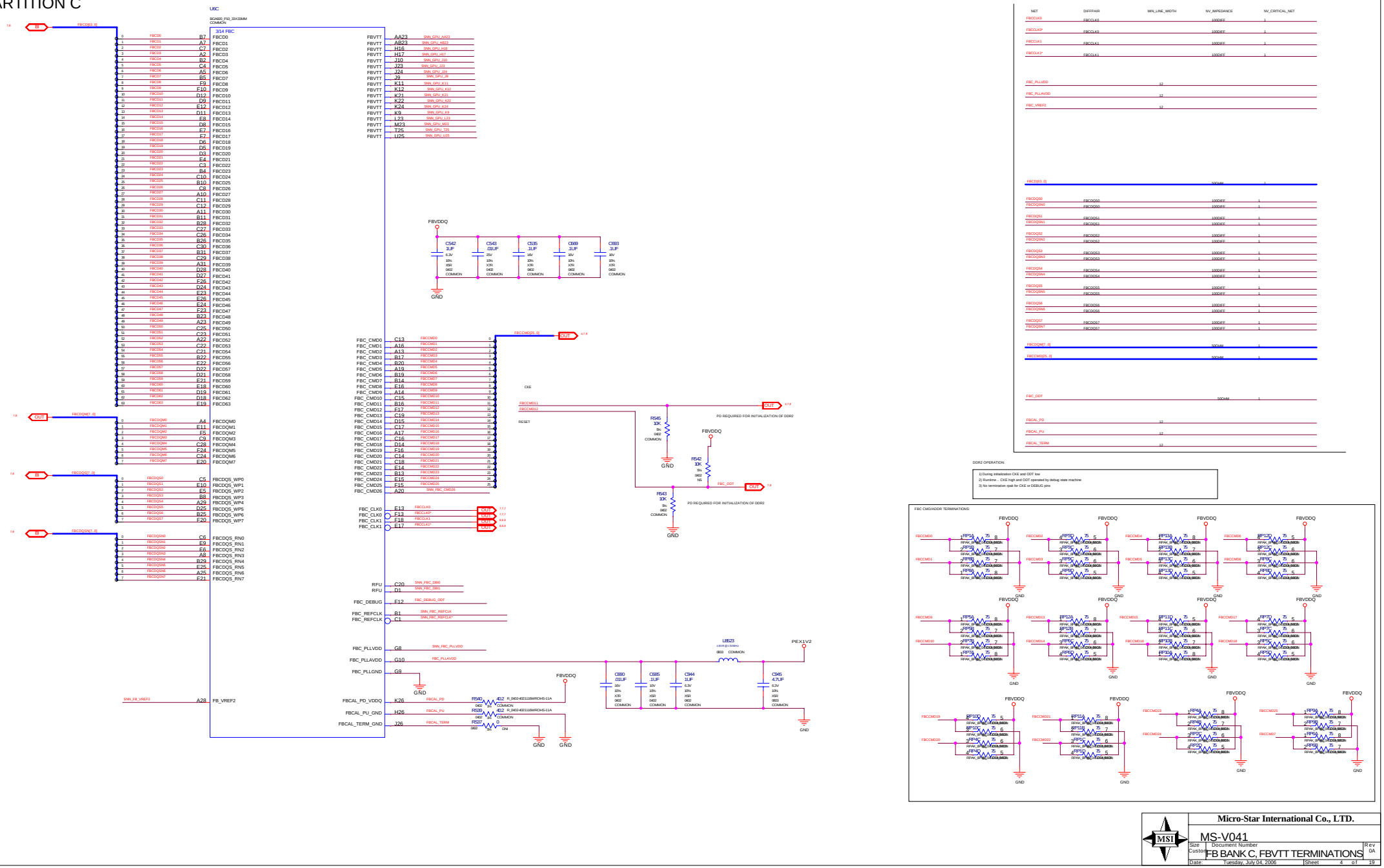
Size: Custom	Document Number: FB BANK A,FBVDDQ DECOUPLING	Rev: 0A
Date: Tuesday, July 04, 2006	Sheet 3 of 19	

04 FB BANK C, FBVTT TERMINATIONS

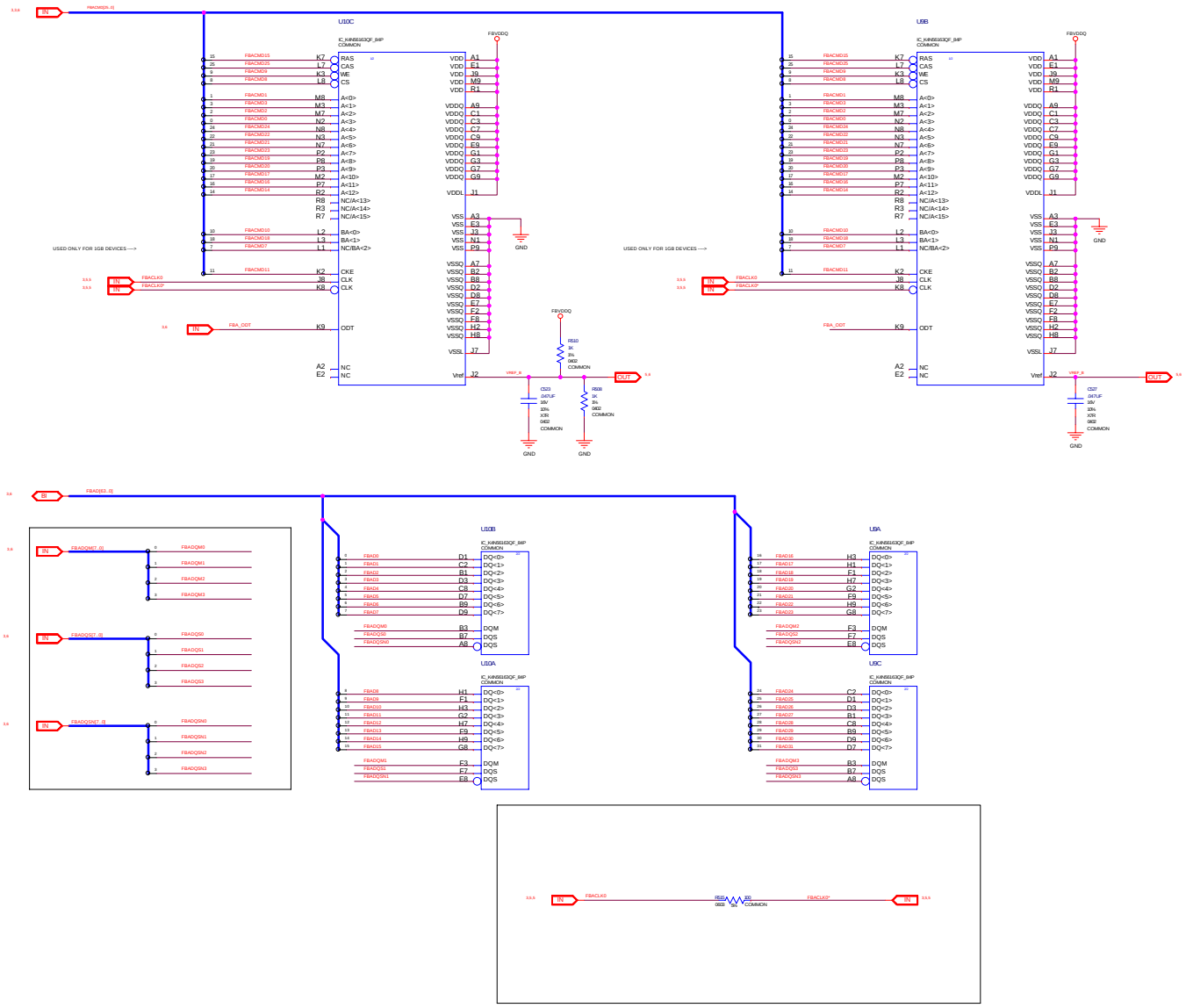
FB PARTITION C

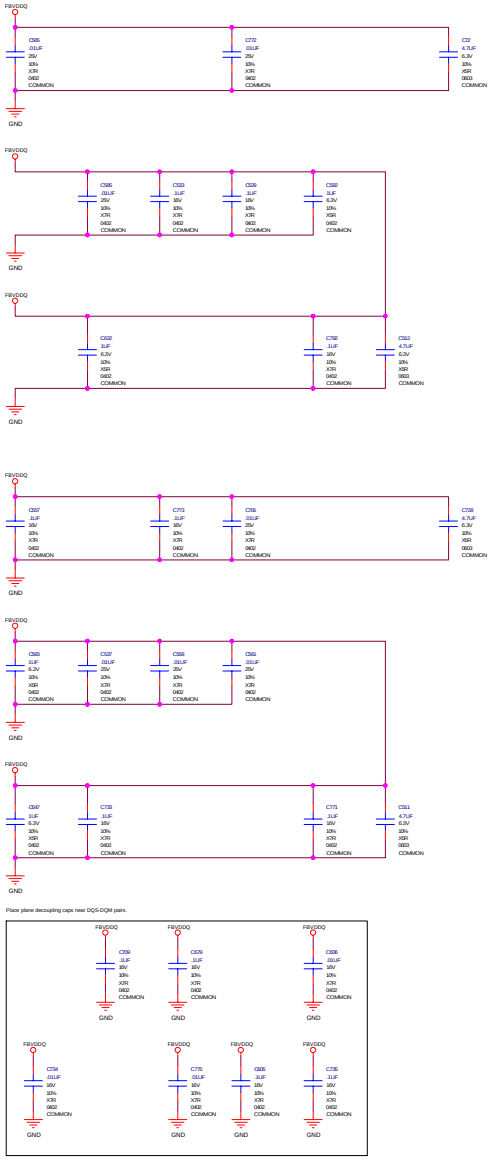


05 MEMORY PARTITION A 0..31

FBA MEMORY 1st bank 0..31

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY





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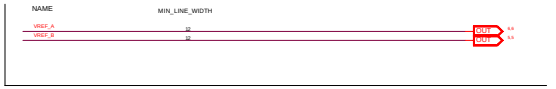
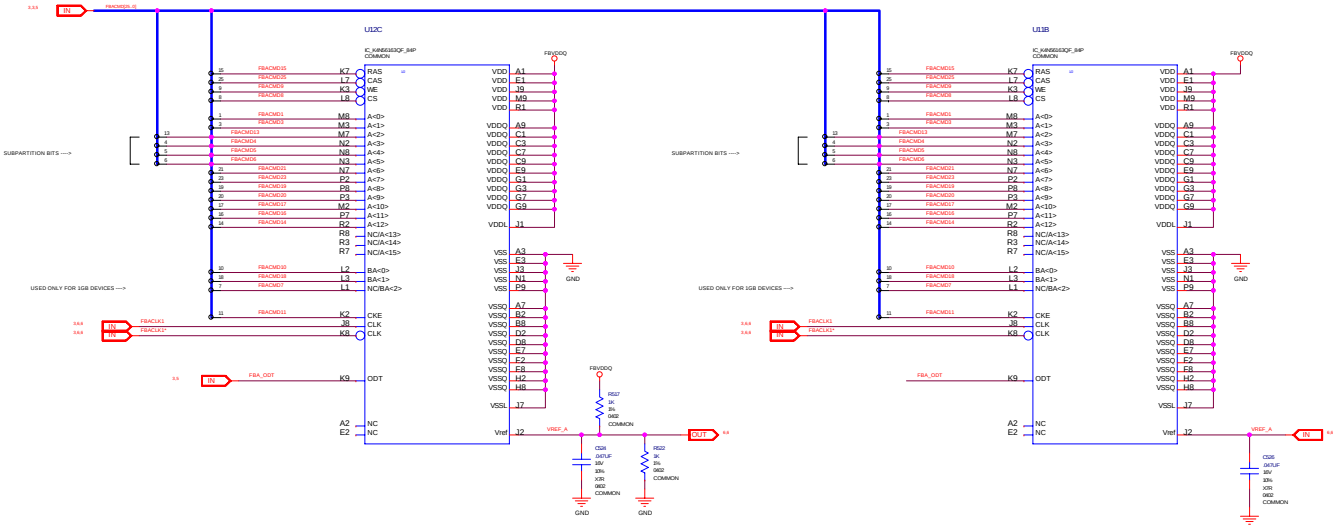
Size: Custom	Document Number: MEMORY PARTITION A 0..31		Rev: 0A
Date: Tuesday, July 04, 2006		Sheet 5 of 19	

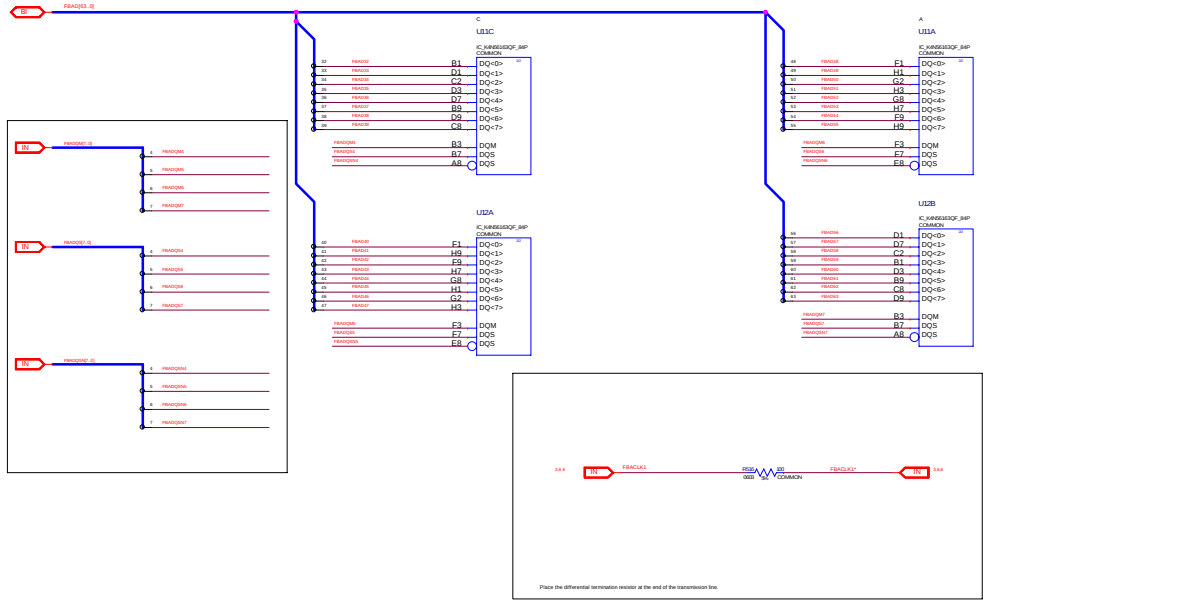
06 MEMORY PARTITION A 32..63

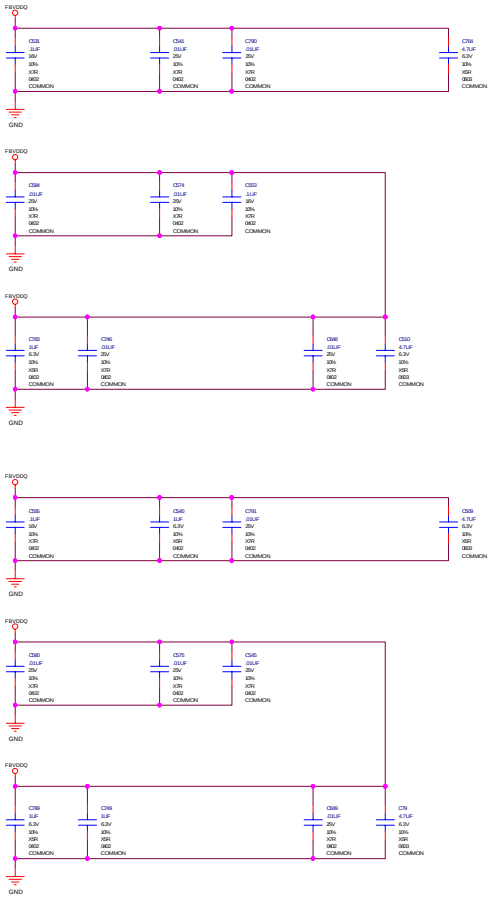
FBA MEMORY 1st bank 32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY









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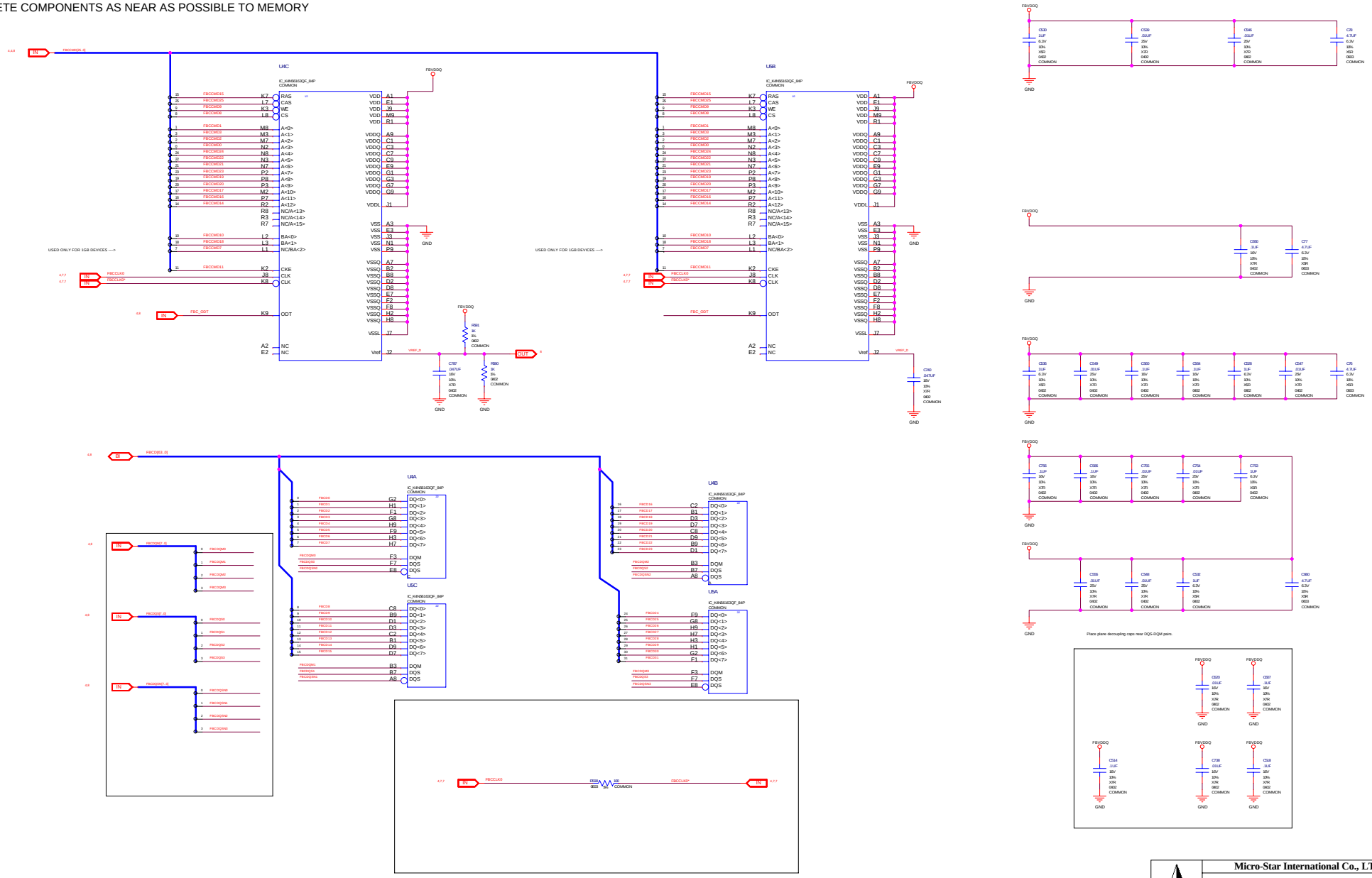
Size: Custom	Document Number: MEMORY PARTITION A 32..63		Rev: 0A
Date: Tuesday, July 04, 2006		Sheet 6 of 19	

07 MEMORY PARTITION C 0..31

FBC MEMORY 2nd bank 0..31

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



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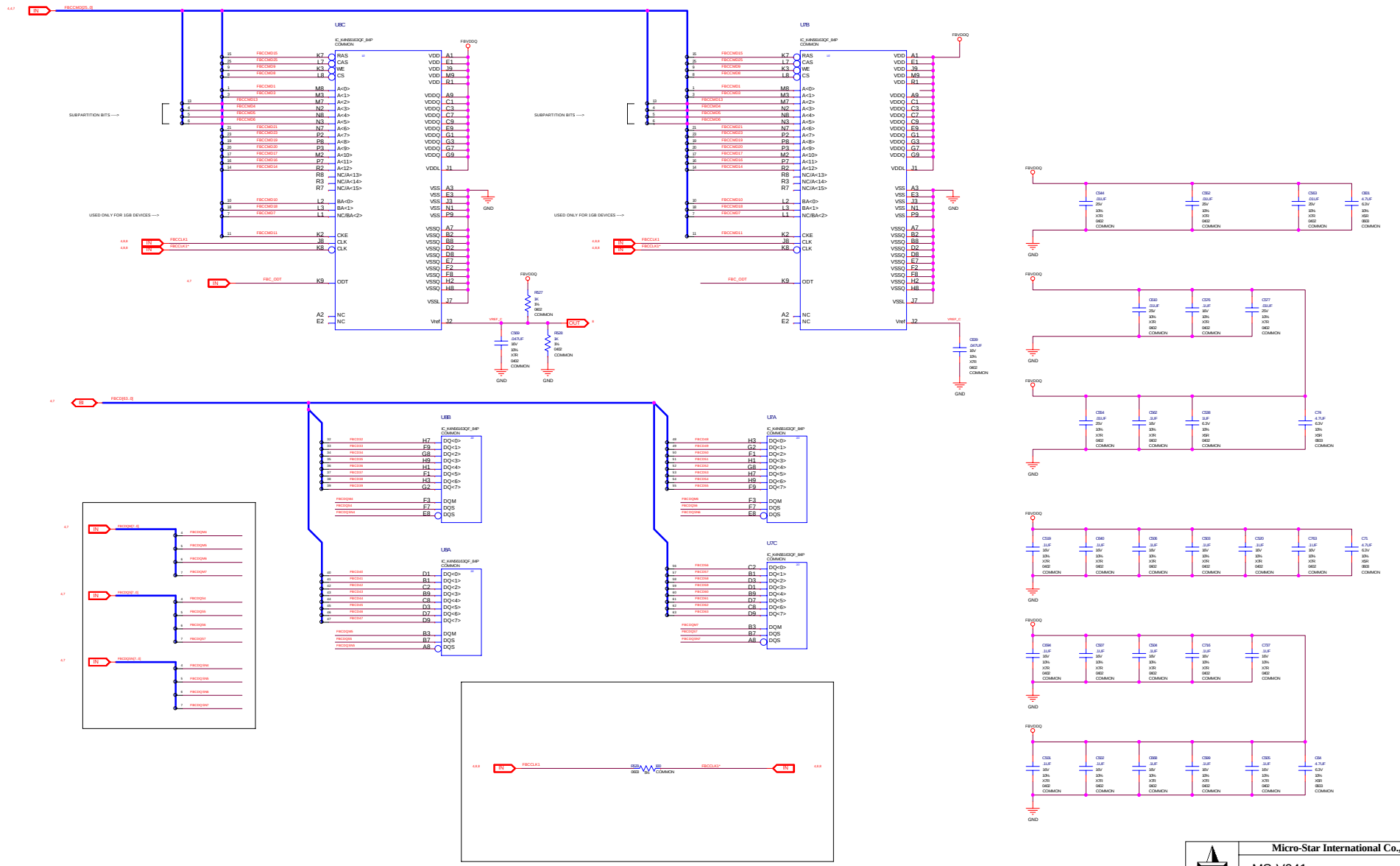
Size: Custom | Document Number: MEMORY PARTITION C 0..31 | Rev: 0A

Date: Tuesday, July 04, 2006 | Sheet 7 of 19

08 MEMORY PARTITION C 32..63

FBC MEMORY 2nd bank 32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



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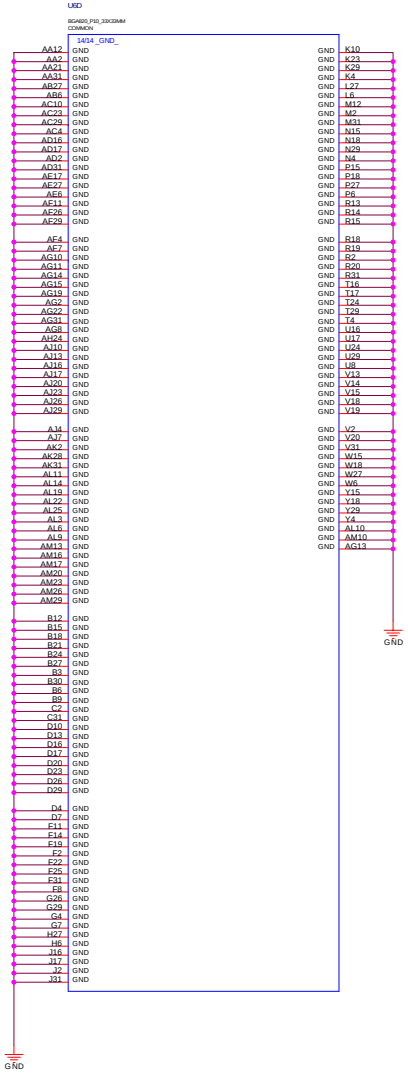
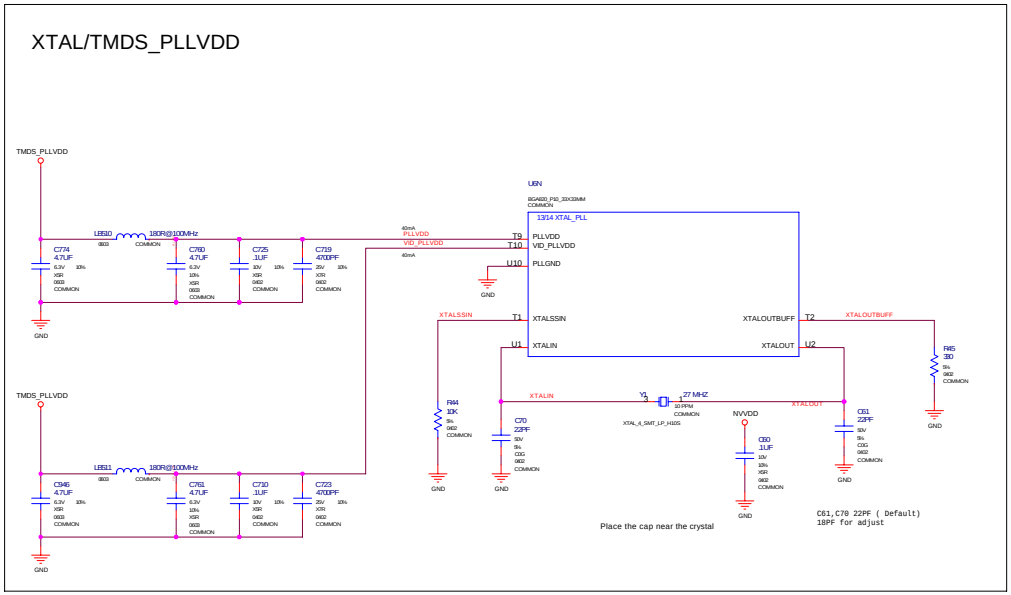
MS-V041

Size: Custom | Document Number: MEMORY PARTITION C 32..63 | Rev: 0A

Date: Tuesday, July 04, 2006 | Sheet 8 of 19

09 GPU GND / TMDS_PLLVDD





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MS-V041			
Size: Custom	Document Number: GPU GND		Rev: 0A
Date: Tuesday, July 04, 2006		Sheet 9 of 19	

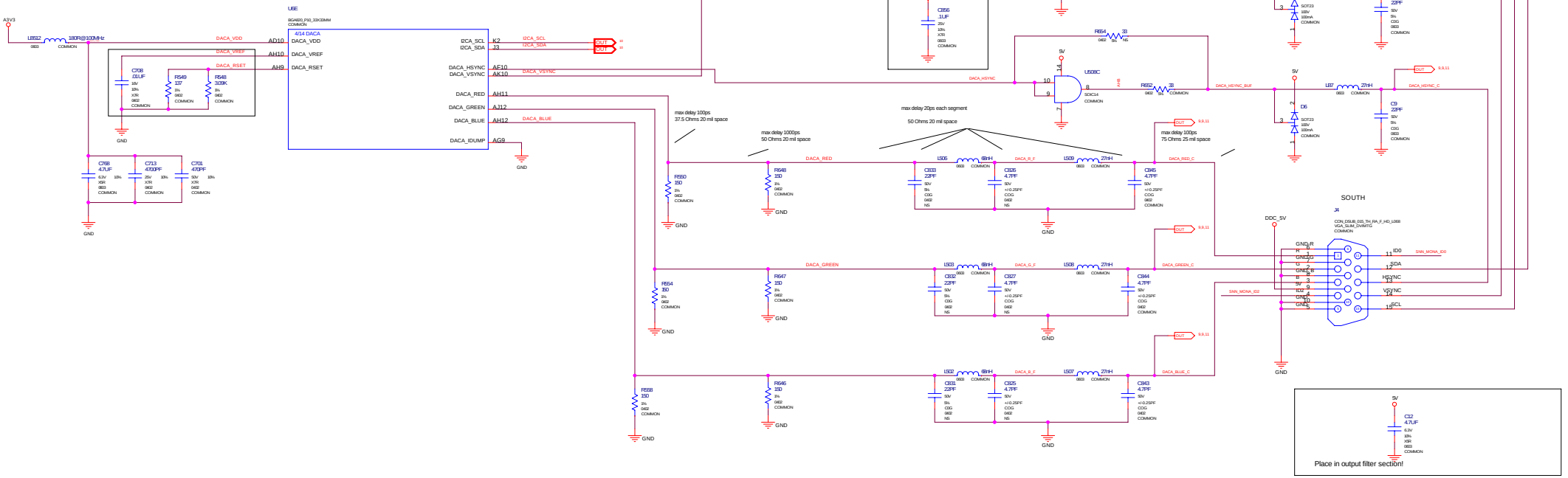
10 DACA - VGA

NET_NAME	MIN_LINE_WIDTH	NV_CRITICAL_NET	NV_IMPEDANCE
I2CA_SCL			
I2CA_SDA			
DACA_HSYNC		2	50OHM
DACA_VSYNC		2	50OHM
DACA_HSYNC_BUF		2	50OHM
DACA_VSYNC_BUF		2	50OHM
DACA_VSYNC_C		2	50OHM
DACA_HSYNC_C		2	50OHM
AVB		2	50OHM
A VB		2	50OHM
DACA_RED		1	50OHM
DACA_GREEN		1	50OHM
DACA_BLUE		1	50OHM
DACA_G_F		1	50OHM
DACA_R_F		1	50OHM
DACA_RED_C		1	50OHM
DACA_GREEN_C		1	50OHM
DACA_BLUE_C		1	50OHM
DACA_VDD	12		
DACA_VREF	12		
DACA_RSET	12		

Note that this impedance is the highest one on the x-net for a 4-layer stackup

Change for G73

C708 0.1u
R549 124ohm
R548 1.78Kohm



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MS-V041	
Size: Custom	Document Number: DACA - VGA
Rev: 0A	
Date: Tuesday, July 04, 2006	Sheet 10 of 19

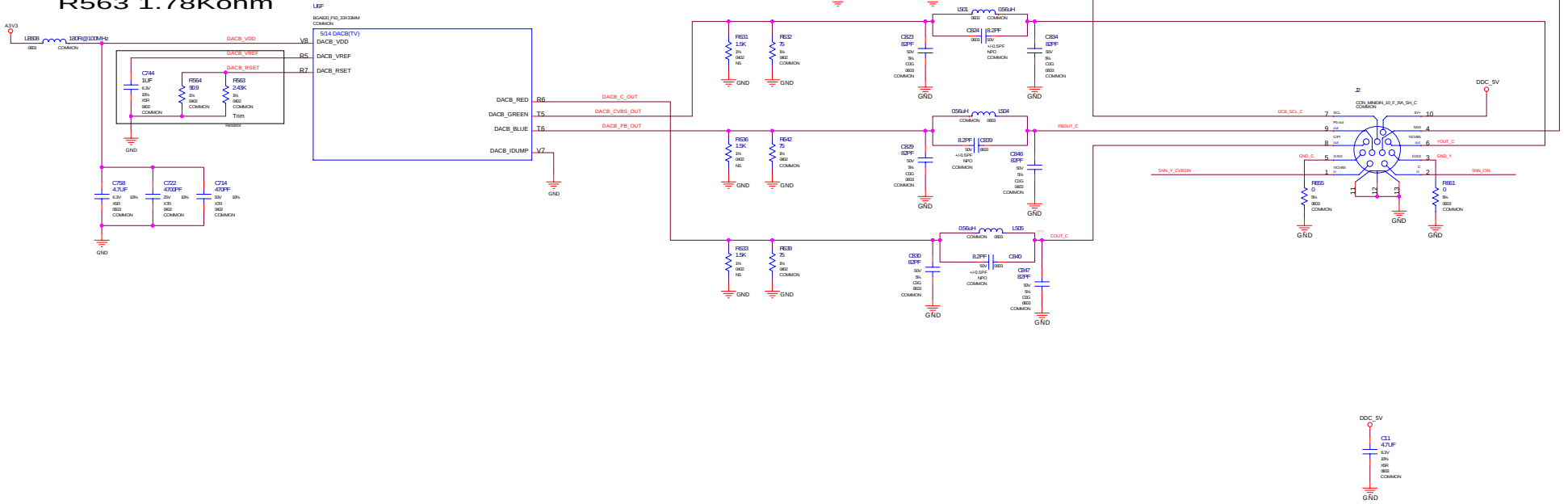
11 DACB - TVOUT, VIDEO IN

NET_NAME	MIN_LINE_WIDTH	NV_CRITICAL_NET	NV_IMPEDANCE
DACB_C_OUT		1	56OHM
DACB_CVBS_OUT		1	56OHM
DACB_PB_OUT		1	56OHM
COUT_C		1	56OHM
YOUT_C		1	56OHM
PBOUT_C		1	56OHM
DACB_VDD	12		
DACB_VREF	12		
DACB_RSET	12		
TVRSET	12		
GND_C	12		
GND_Y	12		

Note that this is the highest impedance on the xnet

Change for G73

C744 0.1u
R564 124ohm
R563 1.78Kohm



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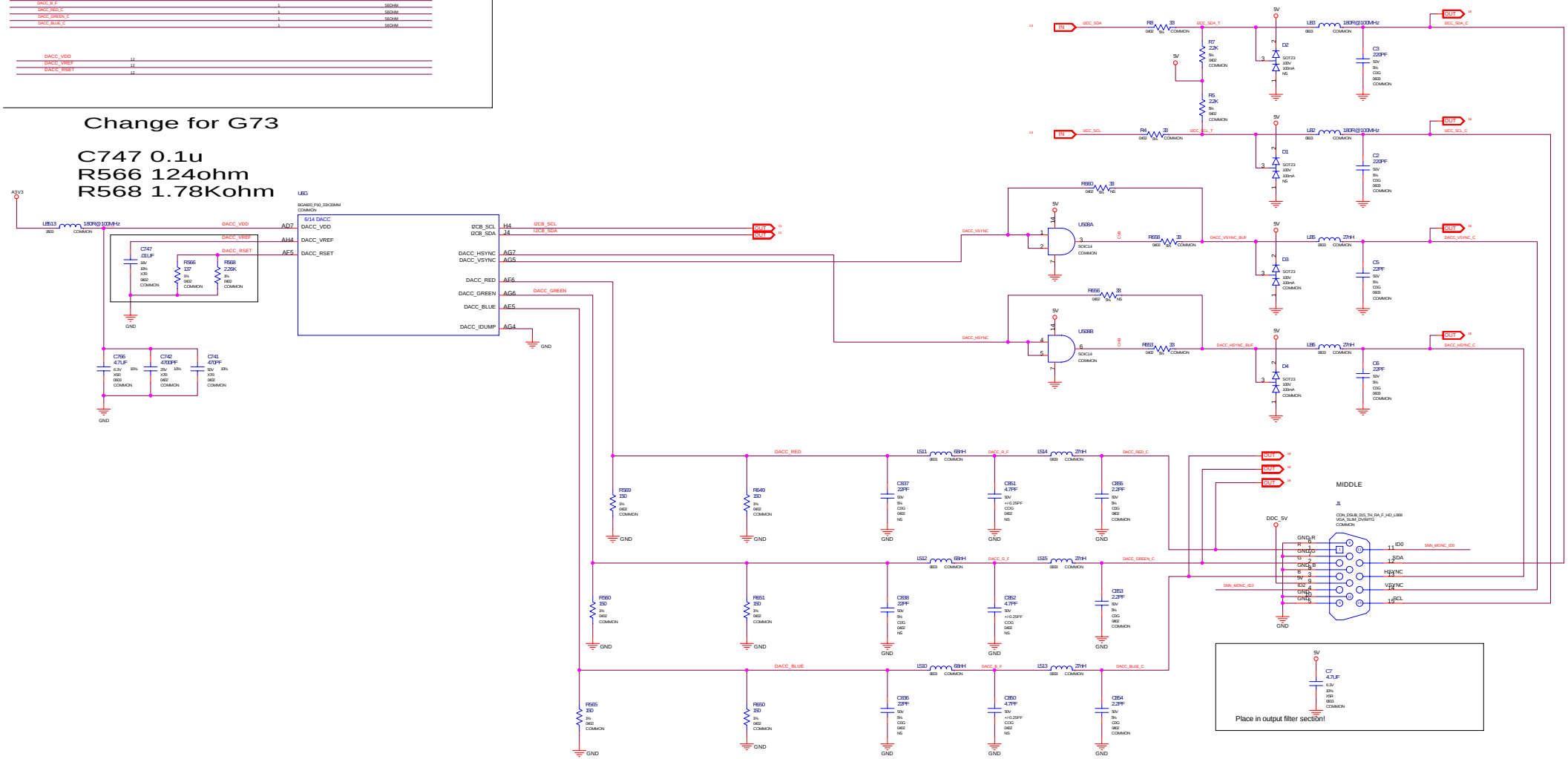
MS-V041		
Size: Custom	Document Number: DACB - TVOUT, VIDEO IN	Rev: 0A
Date: Tuesday, July 04, 2006	Sheet 11 of 19	

12 DACC - VGA

NET_NAME	MIN_LINE_WIDTH	NET_SPACING_RULE	NV_CRITICAL_NET	NV_IMPEDANCE
I2CB_SCL				
I2CB_SDA				
DACC_HSYNC		2		50OHM
DACC_VSYNC		2		50OHM
DACC_HSYNC_BUF		2		50OHM
DACC_VSYNC_BUF		2		50OHM
DACC_VSYNC_C		2		50OHM
DACC_HSYNC_C		2		50OHM
CHB		2		50OHM
CVB		2		50OHM
DACC_RED		1		50OHM
DACC_GREEN		1		50OHM
DACC_BLUE		1		50OHM
DACC_R_F		1		50OHM
DACC_G_F		1		50OHM
DACC_B_F		1		50OHM
DACC_RED_C		1		50OHM
DACC_GREEN_C		1		50OHM
DACC_BLUE_C		1		50OHM
DACC_VDD		12		
DACC_VREF		12		
DACC_RSET		12		

Change for G73

C747 0.1u
R566 124ohm
R568 1.78Kohm



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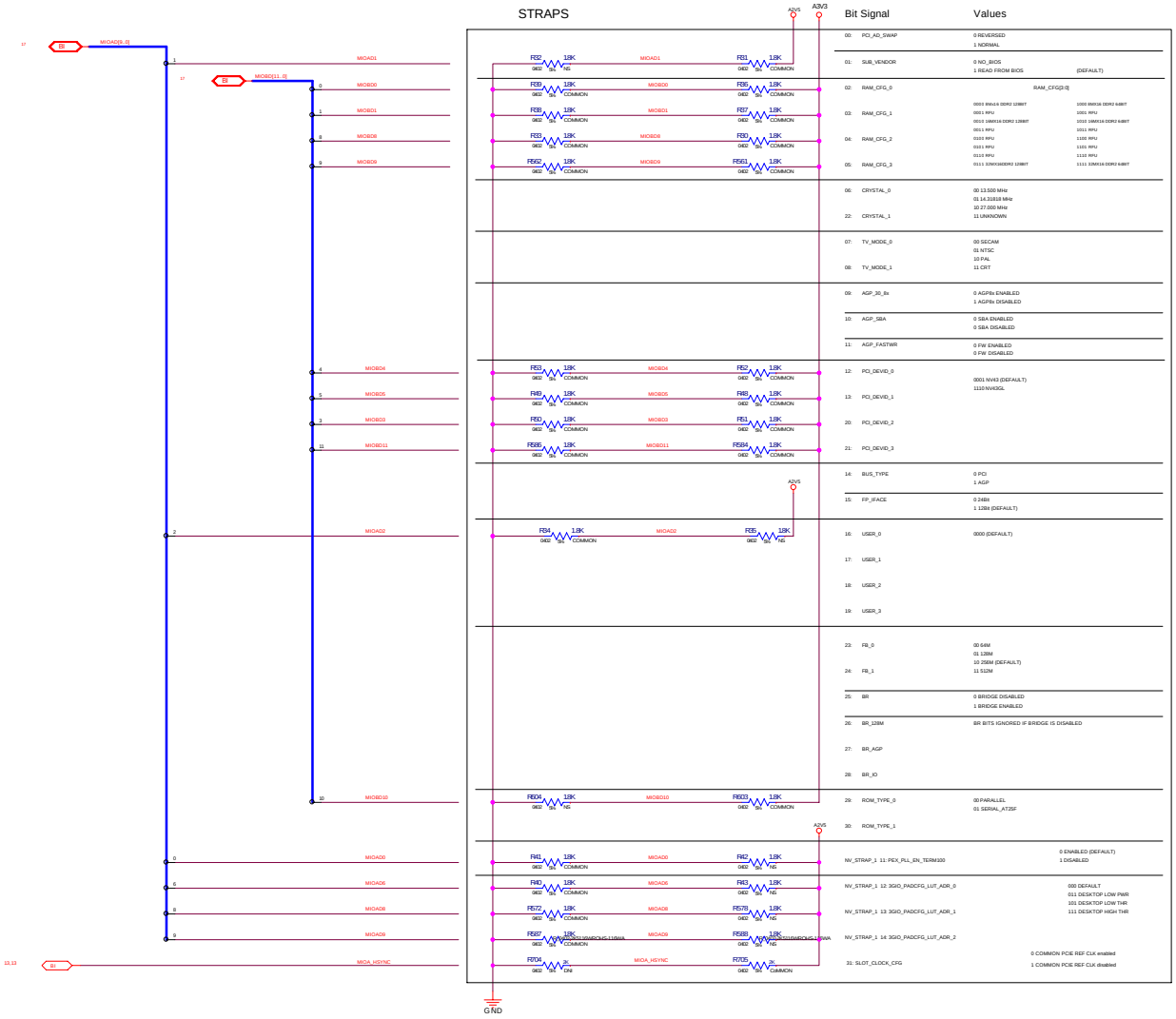
MS-V041	
Size: Custom	Document Number: DACC - VGA
Rev: 0A	
Date: Tuesday, July 04, 2006	Sheet 12 of 19

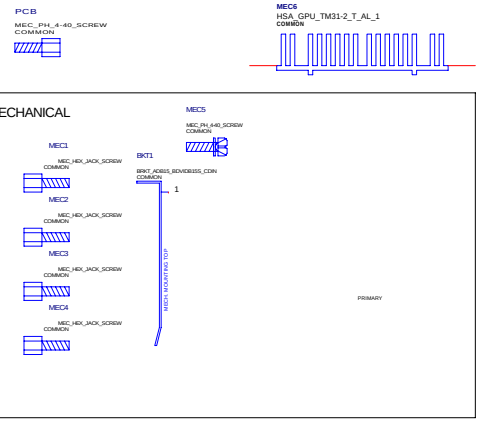
13 STRAPS, FANSINK, MECHANICALS

Overlap pads to save space and to prevent assembly of both resistors.

Layout

Ground — Signal — High logic voltage





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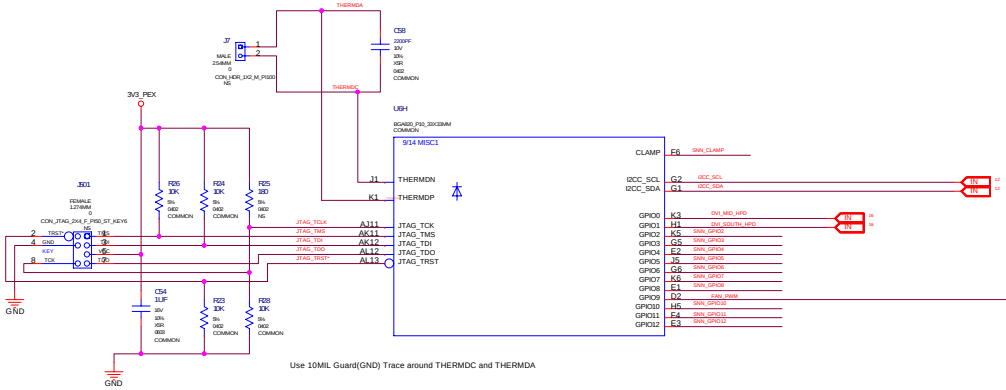
MS-V041			
Size: Custom	Document Number: STRAPS, FANSINK, MECHANICALS		Rev: 0A
Date: Tuesday, July 04, 2006		Sheet 13 of 19	

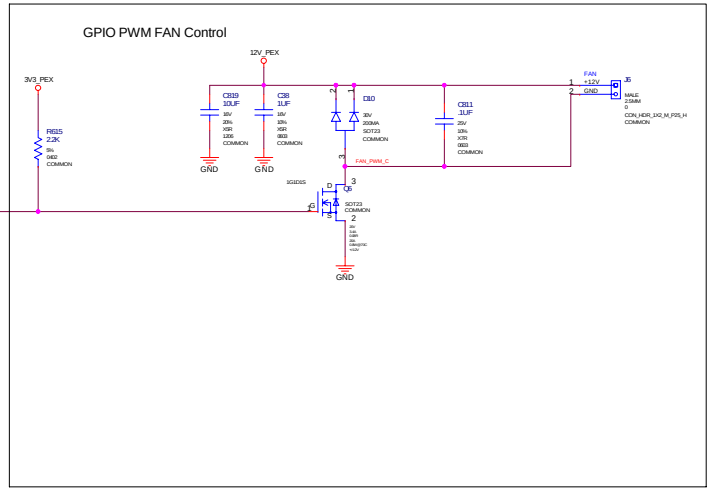
14 GPIO, HDCP, VBIOS, FAN CON

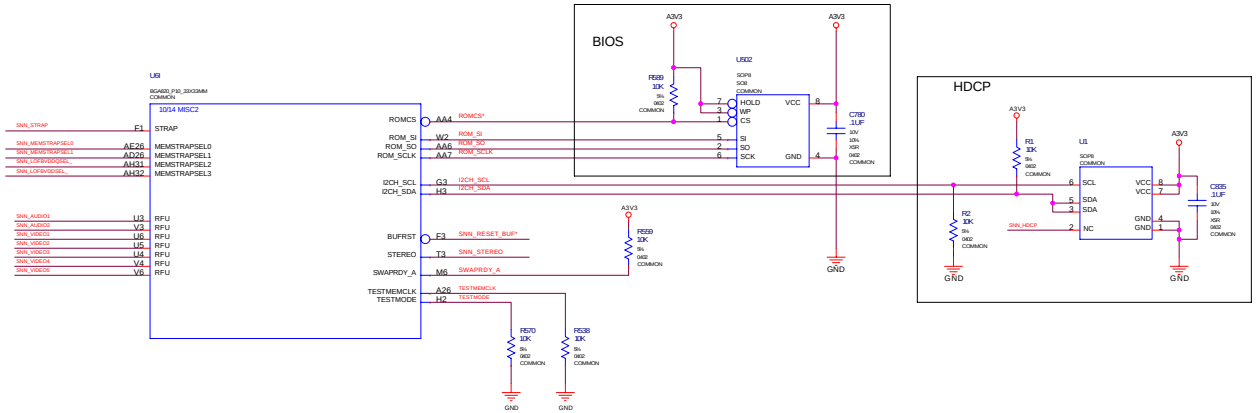
JTAG, GPIO, BIOS ROM

GPIO Assignment Table

GPIO	I/O	FUNCTION
0	IN	DVI MID HOTPLUG DET
1	IN	RESERVED
2	IN	RESERVED
3	IN	RESERVED
4	IN	RESERVED
5	IN	RESERVED
6	IN	RESERVED
7	IN	RESERVED
8	IN	THERM ALERT/SLOW
9	OUT	FAN CONTROL
10	IN	RESERVED
11	OUT	HDTV/SDTV SELECT
12	IN	RESERVED







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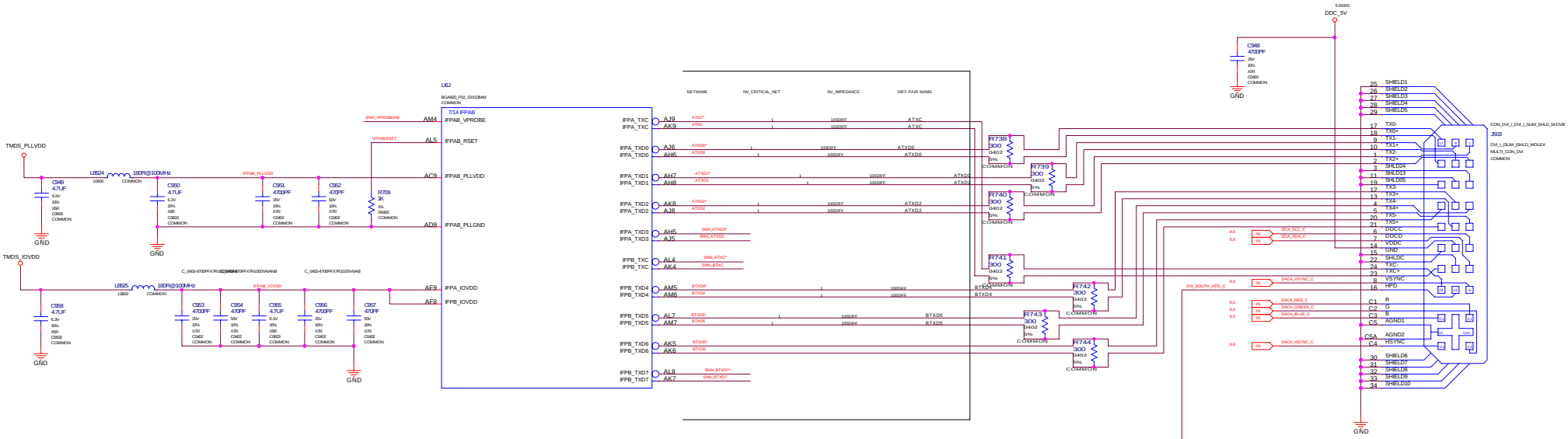
MS-V041		
Size: Custom	Document Number: GPIO, HDCP, VBIOS, FAN CON	Rev: 0A
Date: Tuesday, July 04, 2006	Sheet 14 of 19	

15 INTERNAL TMDS LINK A/B

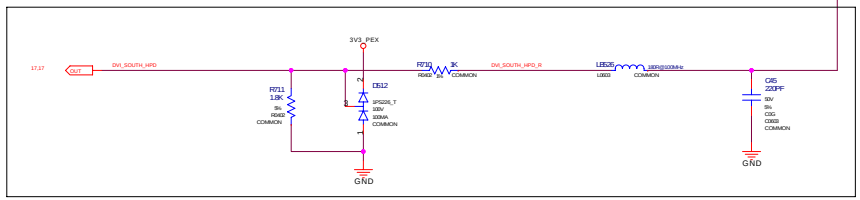
IFPAB NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
IFPAB_RSET	1	50OHM	
DVI_SOUTH_HPD_C	1	50OHM	
DVI_SOUTH_HPD_R	1	50OHM	

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
IFPAB_PLLVDD	2.20000	0.04	16.0
IFPAB_IOVDD	2.20000	0.24	16.0



Hotplug Detection



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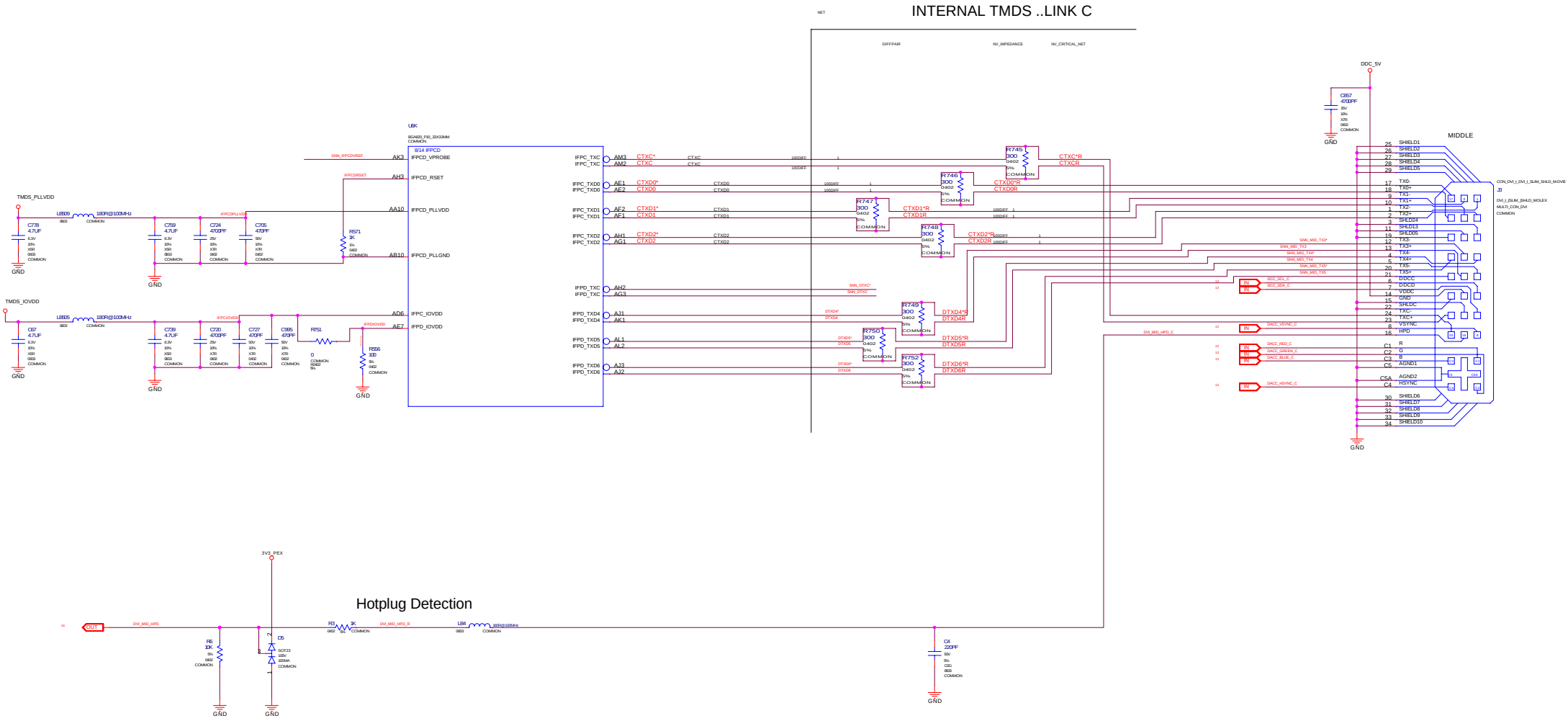
MS-V041	
Size: Custom	Document Number: INTERNAL TMDS LINK A/B
Rev: 0A	
Date: Tuesday, July 04, 2006	Sheet 15 of 19

16 INTERNAL TMDS LINK C/D

NET	MIN_LINE_WIDTH	VOLTAGE
IFPCDVREF	12	3.3V
IFPCDPLLVDD	12	3.3V
IFPCIOVDD	12	3.3V
IFPIOVDD	12	3.3V
IFPCDRSET	12	

INTERNAL TMDS ..LINK C

Hotplug Detection



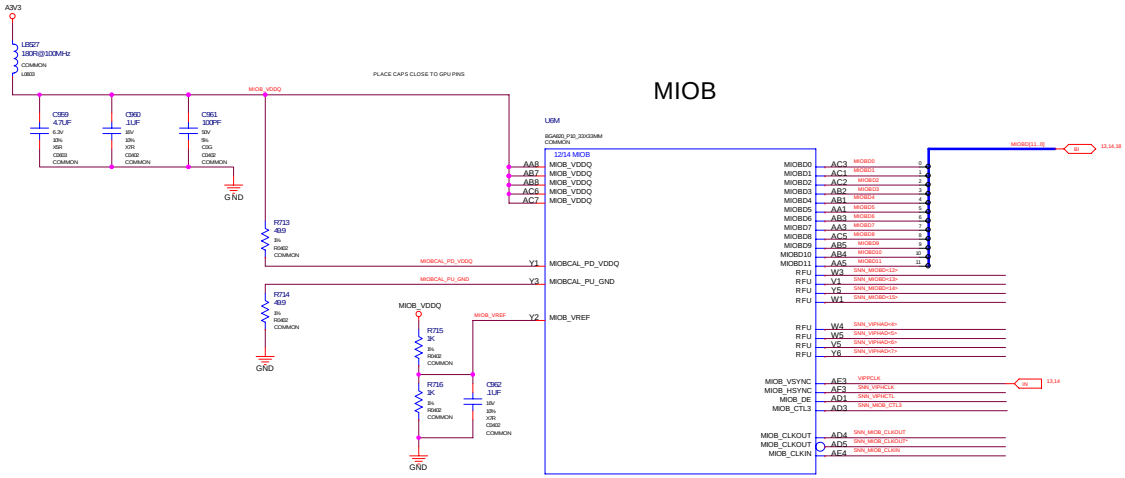
17 MIOA, MIOB, NVPLL

MIO NET RULES

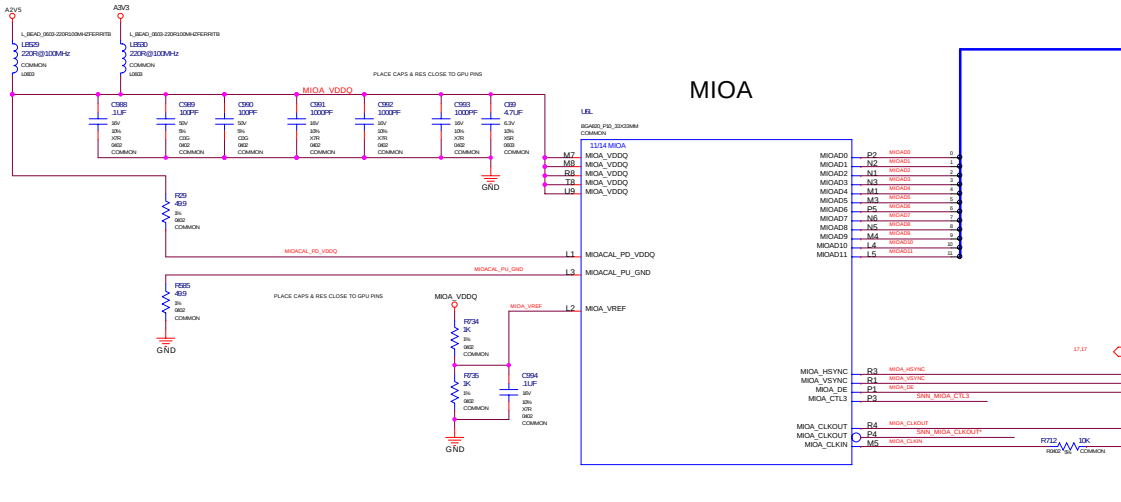
NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
MIOAD[11..0]	2	50OHM	
MIOA_CLKIN	2	50OHM	
MIOA_CLKOUT	2	50OHM	
MIOA_DE	2	50OHM	
MIOA_HSYNC	2	50OHM	
MIOA_VSYNC	2	50OHM	
MIOBD[11..0]	2	50OHM	
VIPPCLK	2	50OHM	

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
MIOA_VDDQ	2.50000	0.8	12.0
MIOA_VREF	1.25000		12.0
MIOACAL_PD_VDDQ	2.50000		12.0
MIOACAL_PU_GND	0.000000		12.0
MIOB_VDDQ	3.30000	0.05	12.0
MIOB_VREF	1.65000		12.0
MIOBCAL_PD_VDDQ	3.30000		12.0
MIOBCAL_PU_GND	0.000000		12.0

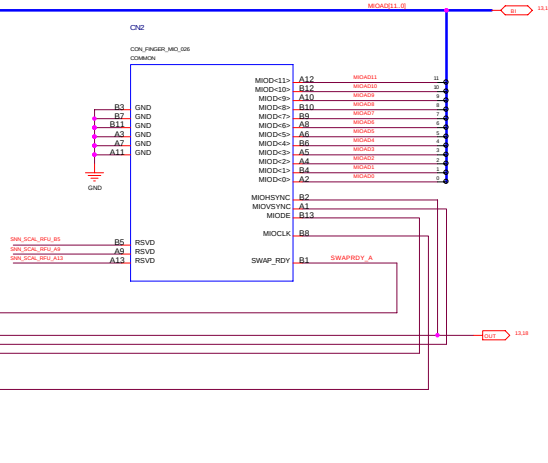
MIOB

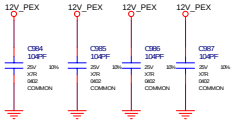


MIOA



Feature Connector





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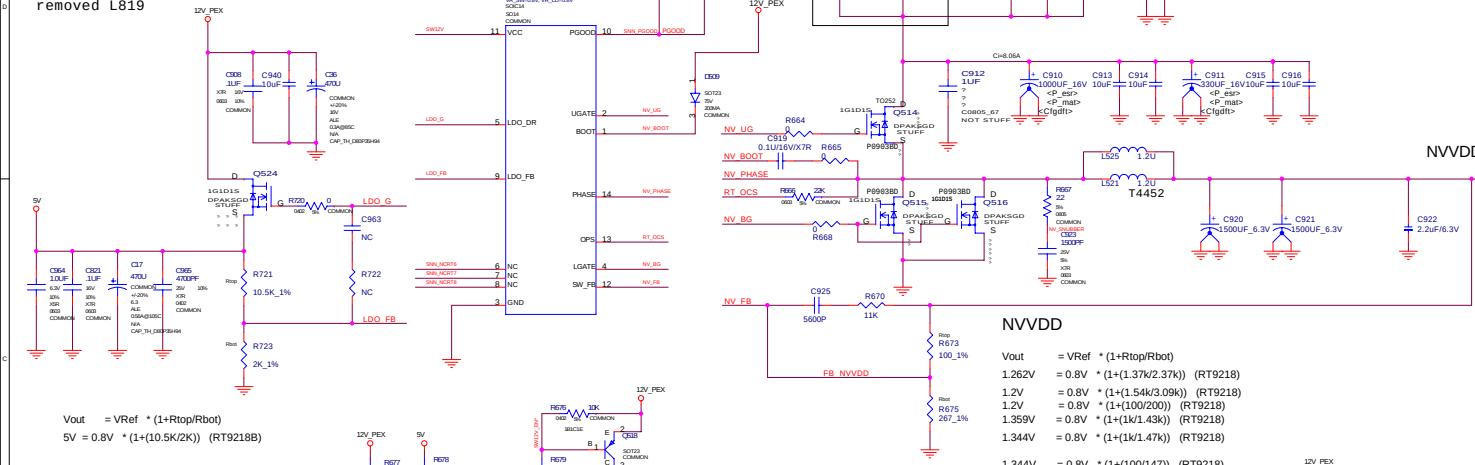
MS-V041			
Size: Custom	Document Number: MIOA, MIOB, NVPLL		Rev: 0A
Date: Tuesday, July 04, 2006	Sheet 17 of 19		

18 Power Supply (RT9218)
NVVDD,5V,FBVDDQ,PEX1V2

NV-Standard use FBVDDQ ,
Can't use RT9218 PGood power sequence

BOM added L821,C905
removed L819

NVVDD & 5V

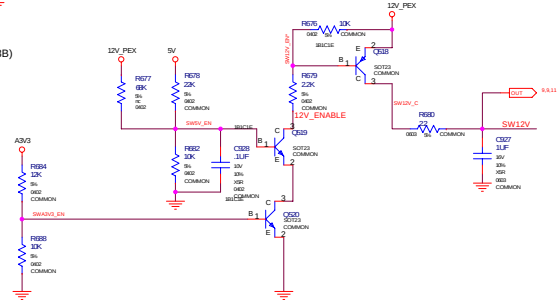


NVVDD

Vout = VRef * (1+Rtop/Rbot)
1.262V = 0.8V * (1+(1.37k/2.37k)) (RT9218)
1.2V = 0.8V * (1+(1.54k/3.09k)) (RT9218)
1.2V = 0.8V * (1+(100/200)) (RT9218)
1.359V = 0.8V * (1+(1k/1.43k)) (RT9218)
1.344V = 0.8V * (1+(1k/1.47k)) (RT9218)

1.344V = 0.8V * (1+(100/147)) (RT9218)
1.3V = 0.8V * (1+(100/160)) (RT9218) default
1.099V = 0.8V * (1+(100/267)) (RT9218) default

Vout = VRef * (1+Rtop/Rbot)
5V = 0.8V * (1+(10.5K/2K)) (RT9218B)

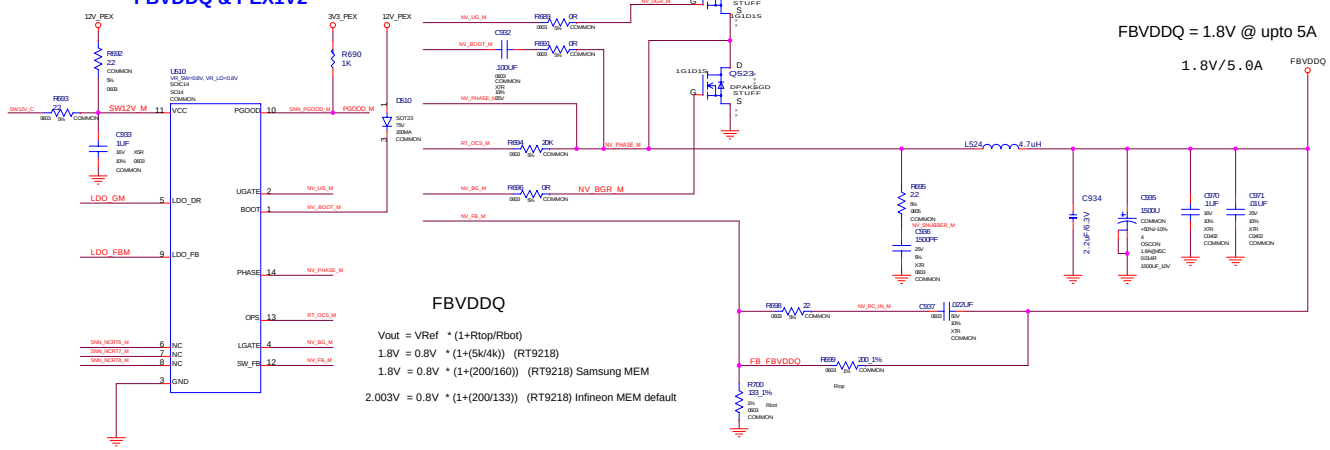


FBVDDQ & PEX1V2

Choose RT9218 PGood power sequence

Added BOM R883,R904

Removed R905

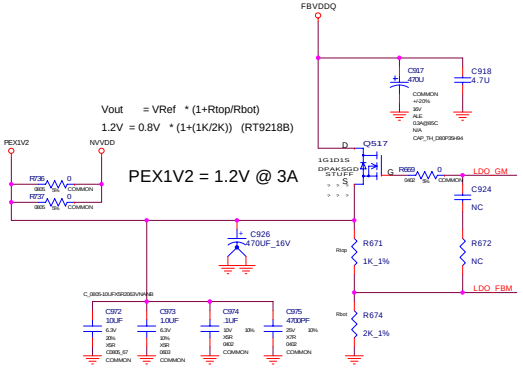


FBVDDQ

Vout = VRef * (1+Rtop/Rbot)
1.8V = 0.8V * (1+(5k/4k)) (RT9218)
1.8V = 0.8V * (1+(200/160)) (RT9218) Samsung MEM
2.003V = 0.8V * (1+(200/133)) (RT9218) Infineon MEM default

Vout = VRef * (1+Rtop/Rbot)
1.2V = 0.8V * (1+(1K/2K)) (RT9218B)

PEX1V2 = 1.2V @ 3A

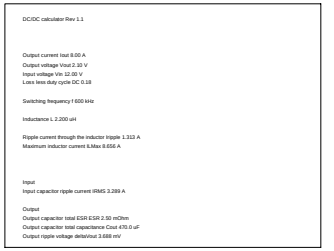


Net Name / MIN_LINE_WIDTH / VOLTAGE

Net Name	MIN_LINE_WIDTH	VOLTAGE
5V	16	5V
NVVDD	16	1.35V
12V_PEX	20	12V
PEX1V2	20	1.2V
12V_PEX_FLTRD	20	12V
FBVTT	20	1.5

DRIVE3_1V2	20
UGATE_1	20
LGATE_1	20
UGATE_2	20
LGATE_2	20
NODE_1	20
NODE_2	20
12V_RR	10
ISL12V_VCC	20
COMP1_NVVDD	10
FB1_NVVDD	10
COMP2_5V	10
FB2_5V	10
FB3_1V2	10
REFIN_5V	10
ISL_REFOUT	10
VREF_3V3	10
FB3_RC	10
BOOT_1	20
BOOT_2	20
FREQ_SET	10
SS_NVVDD	10
SS_5V	10
SS_1V2	10
UGATE_1_RG	20
UGATE_2_RG	20
COMP1_RC	10
COMP2_RC	10
NVVDD_RC	10
5V_RC	10
NODE_1_SNUB	20
NODE_2_SNUB	20
CLGATE_1	20
BOOST	20
5VBOOST	20

FM1 FM2 FM3 FM4 FM5 FM6



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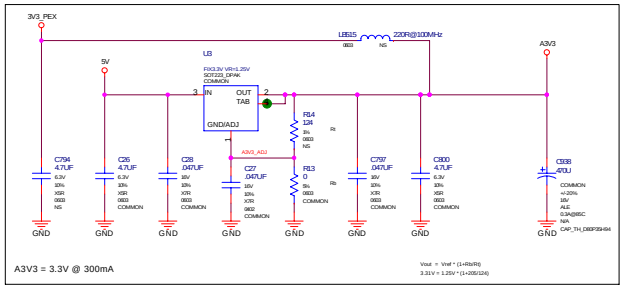
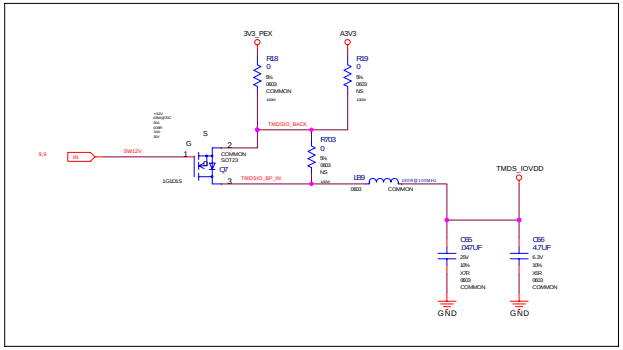
MS-V041
Size: Custom | Document Number: NVDD,PEX1V2,FBVDDQ | Rev 0A
Date: Tuesday, July 04, 2006 | Sheet 18 of 19

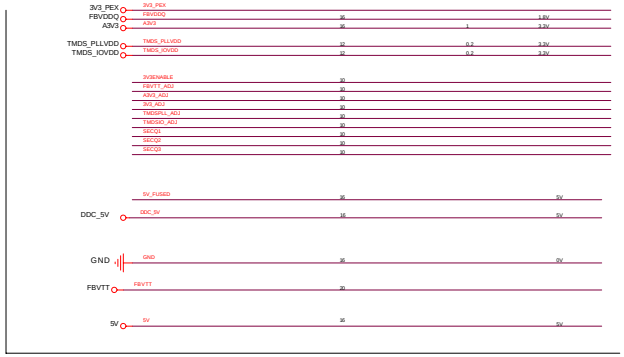
19 Others Power Supply (Linears)
A3V3,A2V5,TMDS_PLLVDD,TMDS_IOVDD

A3V3

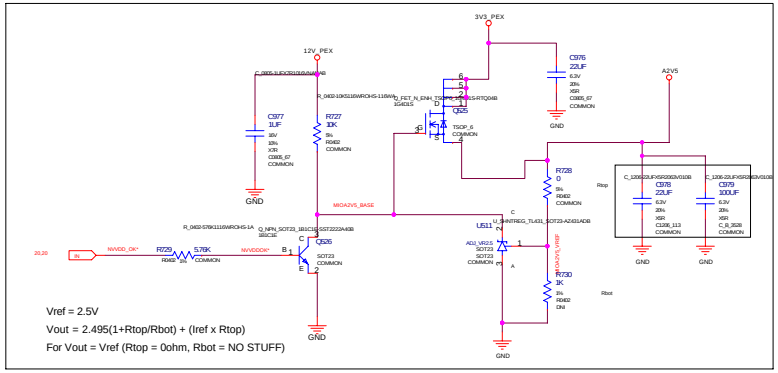


TMDS IO SUPPLY WITH BACKDRIVE PROTECTION

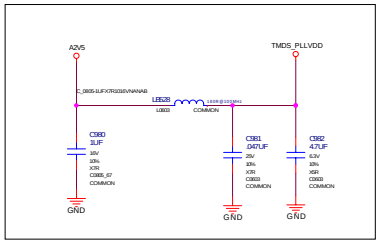




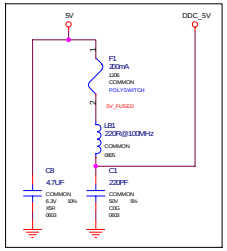
A2V5



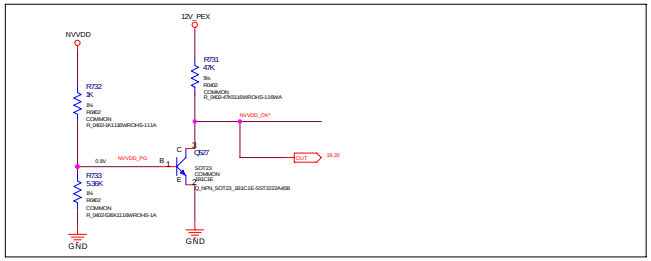
TMDS PLL Supply



DDC 5V



Power Sequencing for FBVDDQ & A2V5



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Size: Custom	Document Number: Others Power Supply (Linears)	Rev: 0A
Date: Tuesday, July 04, 2006	Sheet 19 of 19	