C116-B, NV18B/NV31/NV34, 8MX16DDR, 128MB, Video IN/OUT, DVI-I, VGA

Page Overview

HISTORY:

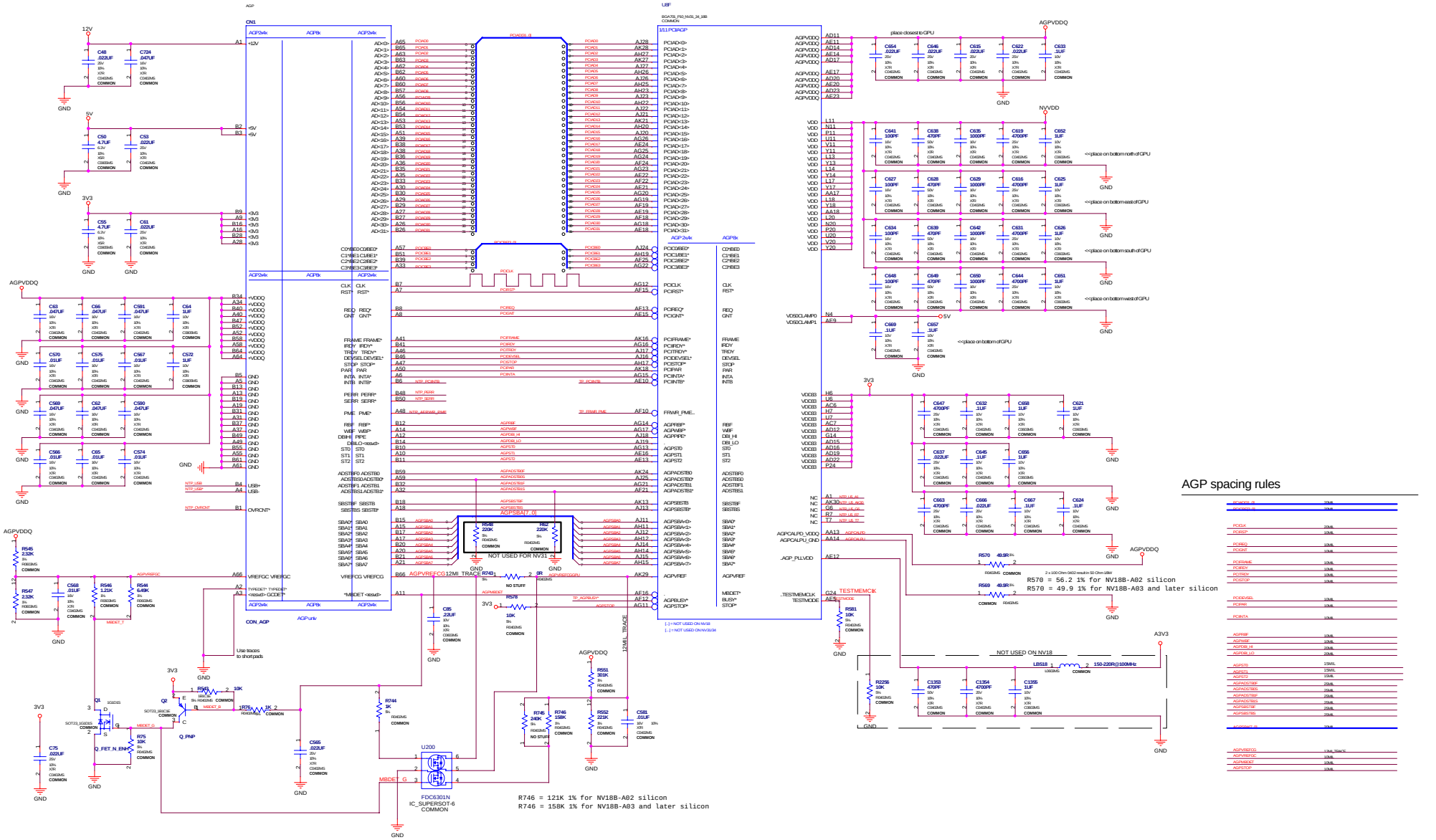
A00
B00

A00: INITIAL VERSION

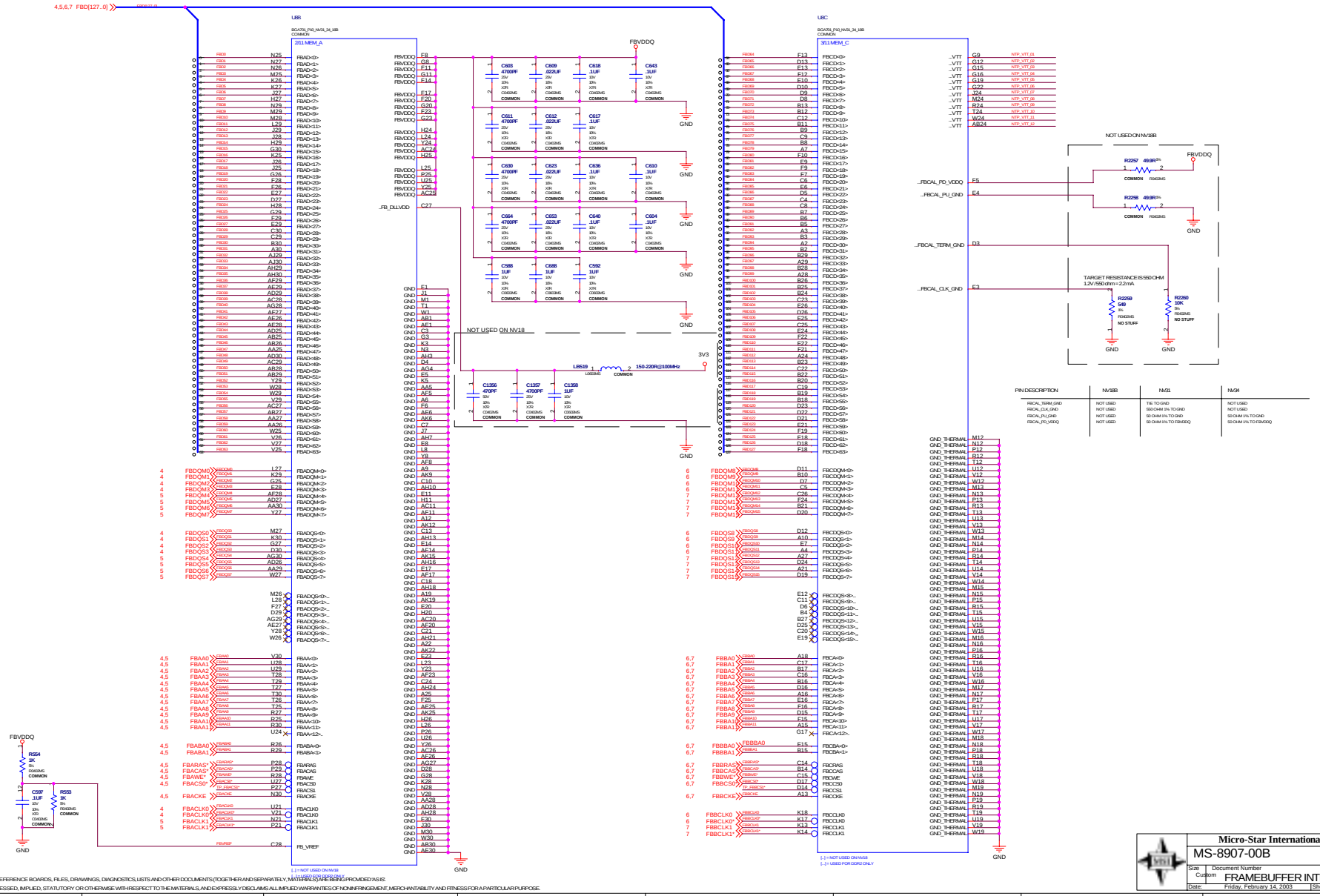
B00: ADD A.T.E. TEST POINTS
ADD CIRCUIT TO SUPPORT NV31/NV34
CONNECT W83785(U90 0) TO VGA THERMDA/C

Micro-Star International Co., LTD.		
Size: Custom	Document Number: MS-8907-00B	Rev: 00B
Date: Friday, February 14, 2003	Sheet 1 of 18	

NV18 AGP SECTION AND AGP CONNECTOR

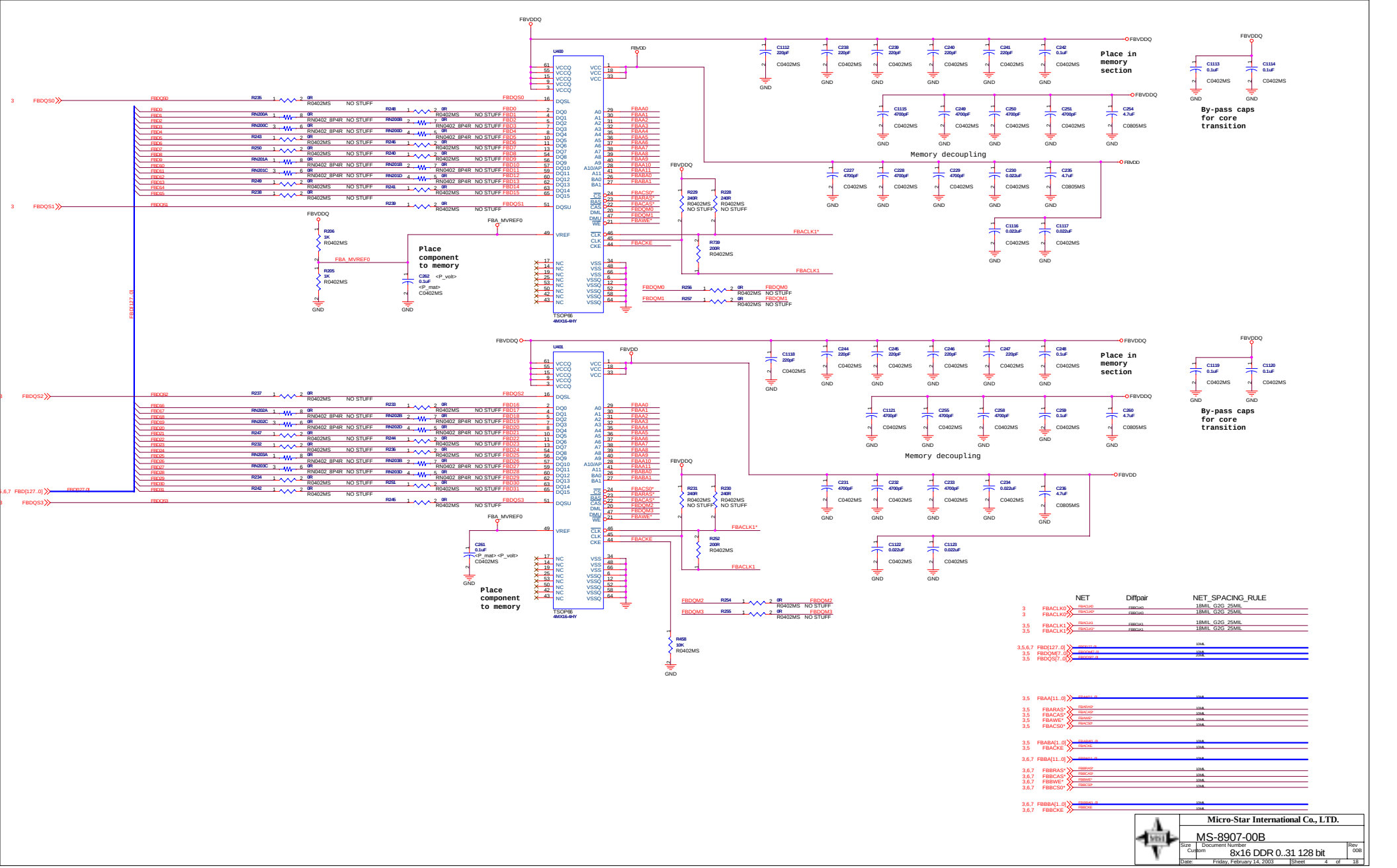


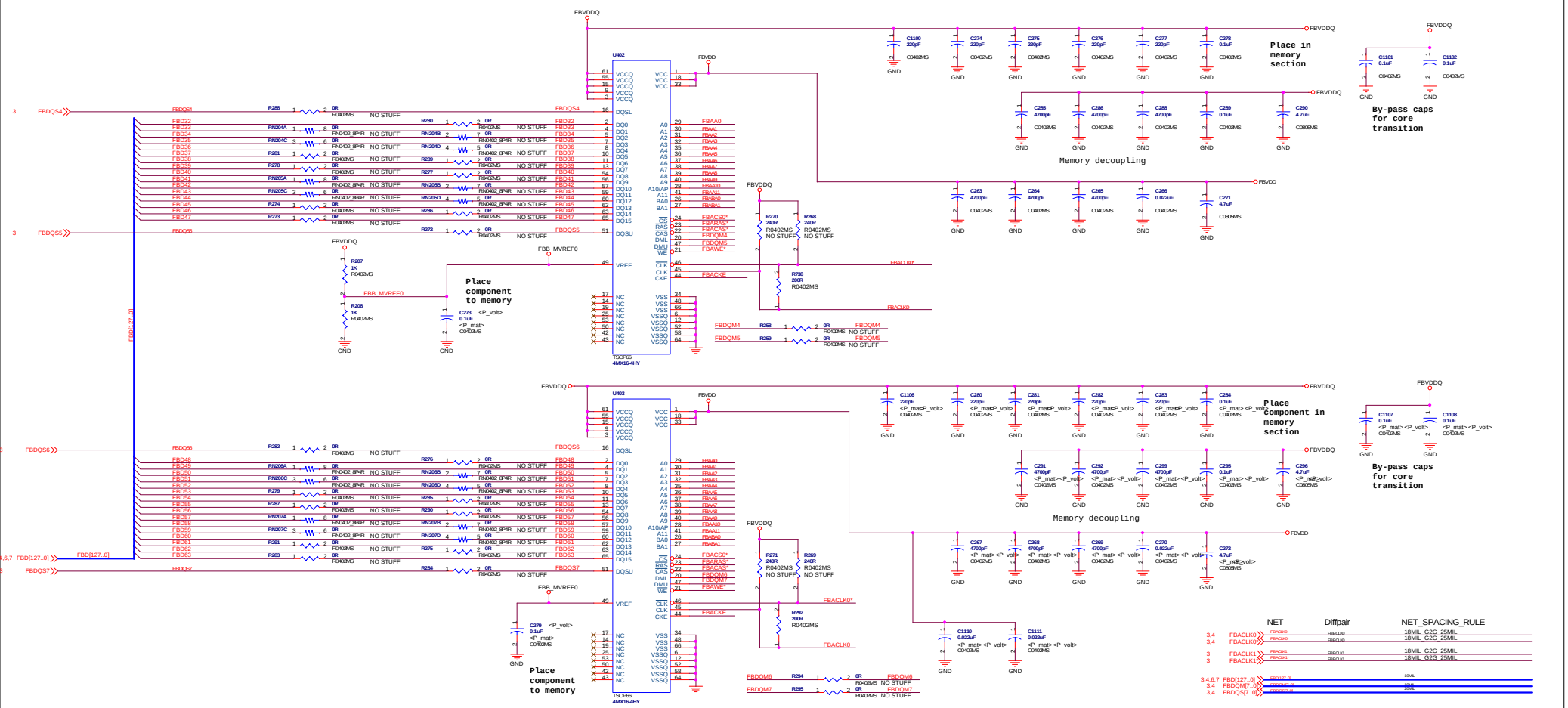
NV18 FRAMEBUFFER INTERFACE AND DECOUPLING



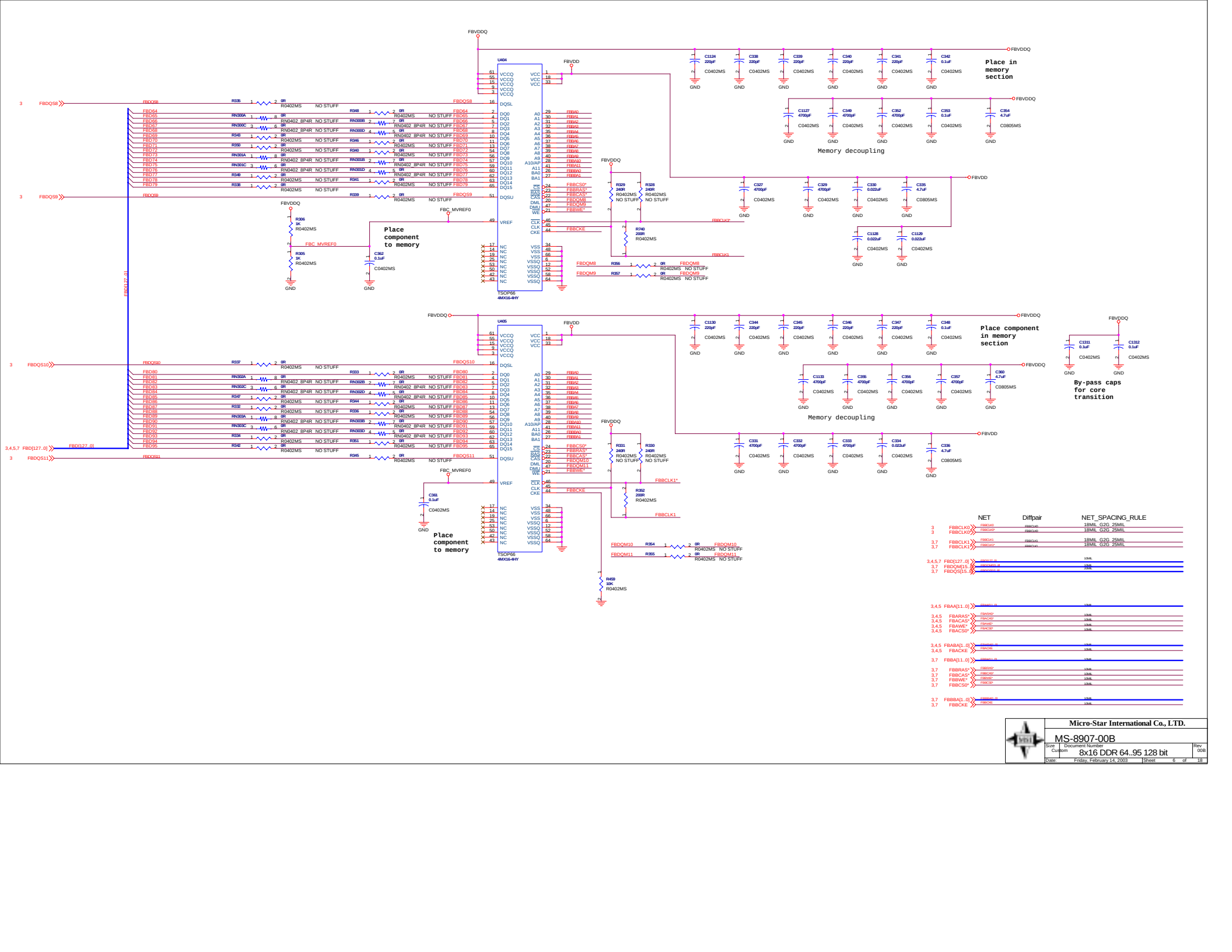
ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS (TOGETHER AND SEPARATELY, MATERIALS) ARE BEING PROVIDED AS IS.
NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Micro-Star International Co., LTD.	
MS-8907-00B	
Size: Custom	Document Number: FRAMEBUFFER INTERFACE
Rev: 00B	
Date: Friday, February 14, 2003	Sheet 3 of 18

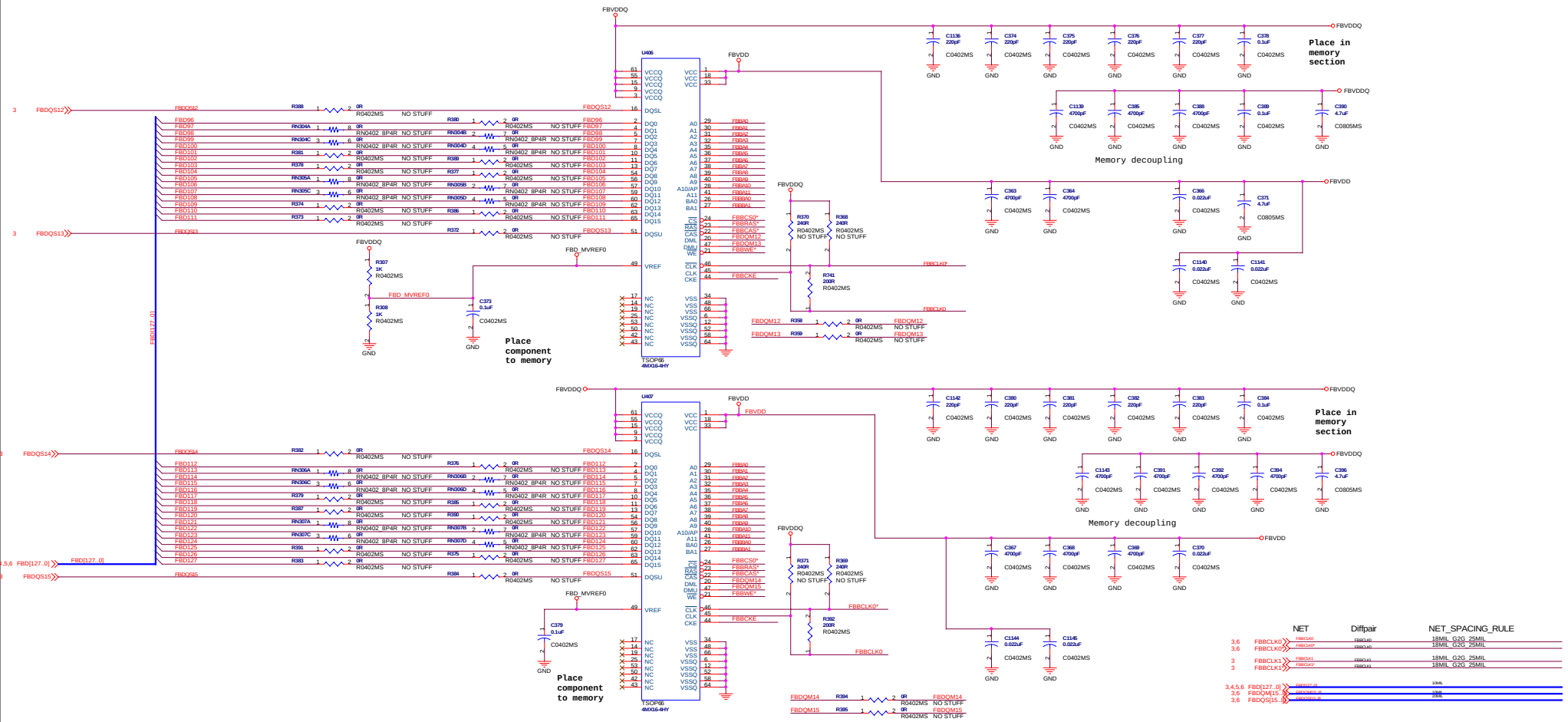

FBVDDQ
U400
TSOP66
4M/016-64Y
Place component to memory
Memory decoupling
Place in memory section
By-pass caps for core transition
FBA_MVREF0
FBACLK1*
FBACLK1
FBACKE
U401
NET
Diffpair
NET_SPACING_RULE
3 FBACLK0
3 FBACLK0*
3.5 FBACLK1
3.5 FBACLK1*
3.5,6,7 FBD[127..0]
3.5 FBDQM[7..0]
3.5 FBDQS[7..0]
3.5 FBAA[11..0]
3.5 FBARAS*
3.5 FBACAS*
3.5 FBAWE*
3.5 FBACS0*
3.5 FBABA[1..0]
3.5 FBACKE
3.6,7 FBBA[11..0]
3.6,7 FBBRAS*
3.6,7 FBBCAS*
3.6,7 FBBWE*
3.6,7 FBBCS0*
3.6,7 FBBBA[1..0]
3.6,7 FBBCKE
10MIL
18MIL G2G 25MIL
Micro-Star International Co., LTD.
MS-8907-00B
Size Custom
Document Number
8x16 DDR 0..31 128 bit
Rev 00B
Date: Friday, February 14, 2003
Sheet 4 of 18



Micro-Star International Co., LTD.		
MS-8907-00B		
Size: Custom	Document Number: 8x16 DDR 32..63 128 bit	Rev: 00B
Date: Friday, February 14, 2003	Sheet 5 of 18	

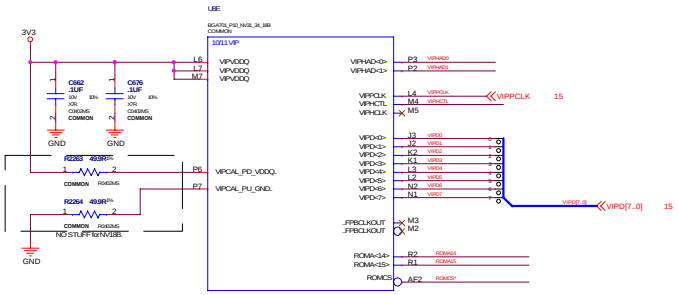


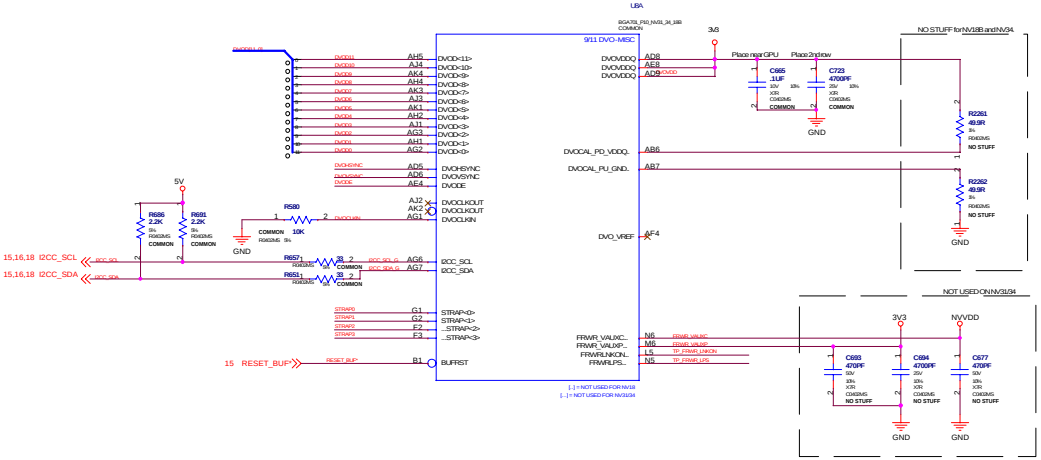
Micro-Star International Co., LTD.	
MS-8907-00B	
Size: Custom	Document Number: 8x16 DDR 64..95 128 bit
Rev: 0C	
Date: Friday, February 14, 2003	Sheet 6 of 18

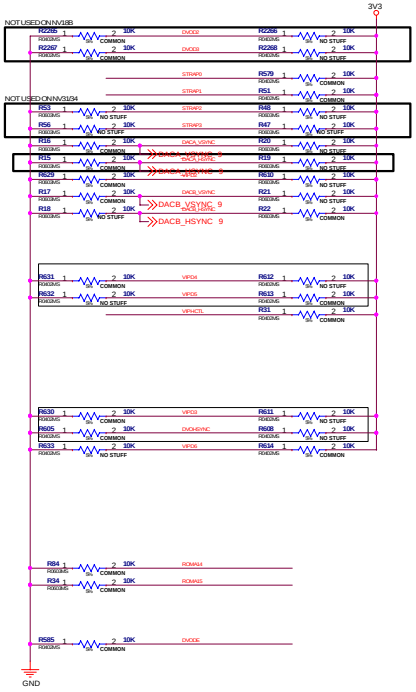


Micro-Star International Co., LTD.	
MS-8907-00B	
Size: Custom	Document Number: 8x16 DDR 96..127 128 bit
Rev: 00B	
Date: Friday, February 14, 2003	Sheet 7 of 18

NV18 STRAPPING, I/O INTERFACE, BIOS, FAN CONTROL AND TEMP SENSOR

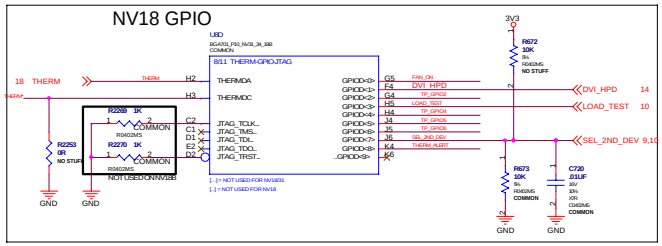


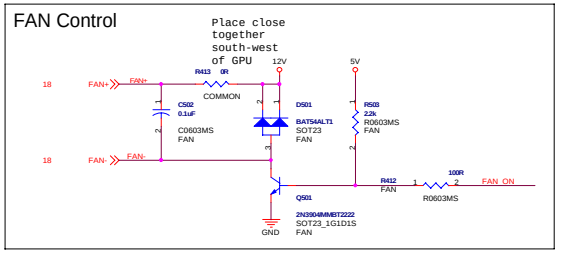


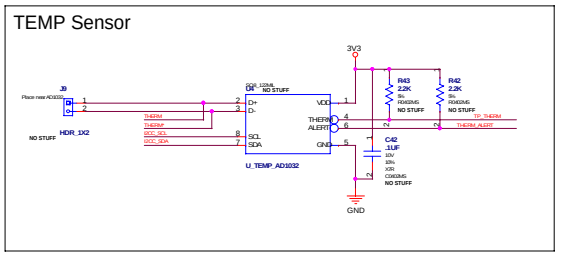


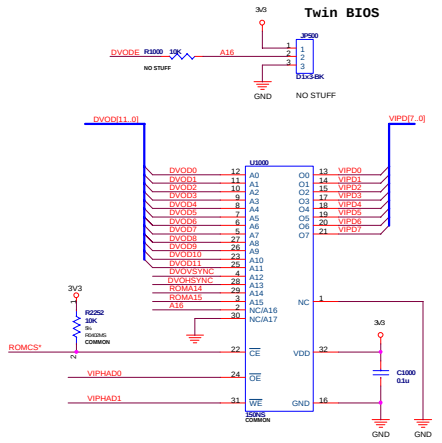
STRAPPING OPTIONS

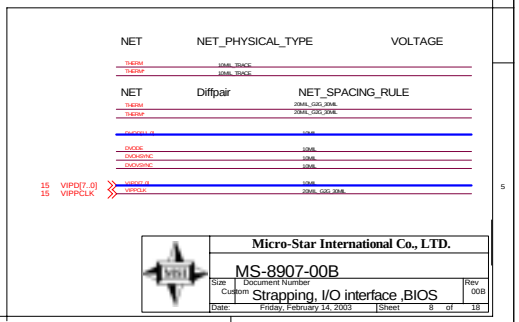
Bit	Signal	VALUE_ID	VALUEs	
00: PCI_AD_SWAP		PCI_AD	0 REVERSED 1 NORMAL	
01: SUB_VENDOR		SUB_VENDOR	0 NO_BIOS 1 read from BIOS	
02: RAM_CFG_0		RAMCFG[1:0]	0000 2Mx32 SDR 0001 4Mx32 SDR 0010 RFU 0011 RFU 0100 RFU 0101 8Mx32 SDR 0110 8Mx32 DDR 0111 16Mx32 DDR	1000 2Mx32 DDR 1001 2Mx64 DDR 1010 4Mx64 DDR 1011 8Mx64 DDR 1100 8Mx32 DDR 1101 4Mx32 DDR 1110 RFU 1111 4Mx32 DDR
03: RAM_CFG_1				
04: RAM_CFG_2				
05: RAM_CFG_3				
06: CRYSTAL_0		CRYSTAL[1:0]	00 13.5MHz 01 14.318MHz 10 27.000MHz 11 unknown	
07: TV_MODE_0		TVMODE[1:0]	00 SECAM 01 NTSC 10 PAL 11 CRT	
08: TV_MODE_1				
09: AGPvddq				
10: AGP_SBA		AGP_SBA	0 SBA enabled 1 SBA disabled	
11: AGP_FASTWR				
12: PCI_DEVID_0		PCI_DEVID[5:0]	0000 0x0180 ... 1111 0x018F	
13: PCI_DEVID_1				
14: BUS_TYPE		BUS_TYPE[3]	0 PCI 1 AGP	
15: FP_IFACE				
16: USER_0				
17: USER_1				
18: USER_2				
19: USER_3				
20: PCI_DEVID_2				
21: PCI_DEVID_3				
22: CRYSTAL_1				
23: FB_0				
24: FB_1				
25: BR				
26: BR_128M				
27: BR_AGP				
28: BR_IO				
29: ROM_TYPE_0		ROM_TYPE[1:0]	00 Parallel 01 Serial_AT25F 10 Serial_S25FL64P 11 RFU	
30: ROM_TYPE_1				
01: 1394_EN_0		1394[0]	0 disabled 1 enabled	











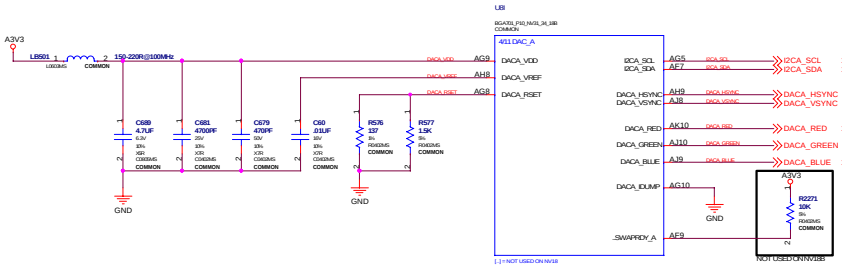
Micro-Star International Co., LTD.			
MS-8907-00B			
Size: Custom	Document Number: Strapping, I/O interface ,BIOS		Rev: 00B
Date: Friday, February 14, 2003		Sheet 8 of 18	

NV18 DAC_A, DAC_B, PLL, SYNC AMPL

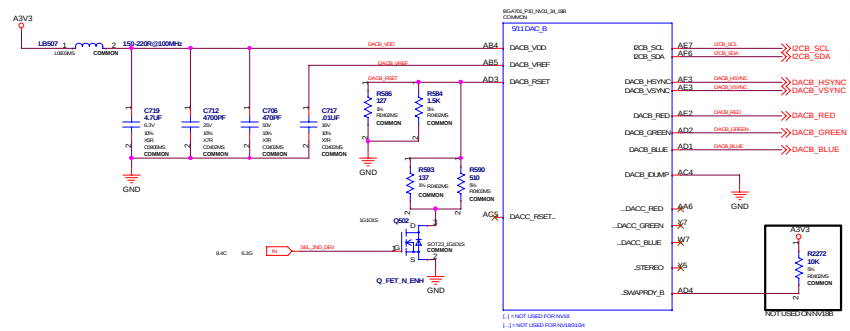
NET	NET_PHYSICAL_TYPE	VOLTAGE
DACA_VDD	12MIL_TRACE	3.3V
DACA_VREF	5MIL_TRACE	
DACA_RSET	5MIL_TRACE	
DACB_VDD	12MIL_TRACE	3.3V
DACB_VREF	5MIL_TRACE	
DACB_RSET	5MIL_TRACE	
PLLVDD	12MIL_TRACE	3.3V

NET	IMPEDANCE	NET_SPACING_RULE
12 DACA_RED	DACA_RED 37.5 OHM	20MIL_G2G_20MIL
12 DACA_GREEN	DACA_GREEN 37.5 OHM	20MIL_G2G_20MIL
12 DACA_BLUE	DACA_BLUE 37.5 OHM	20MIL_G2G_20MIL
10 DACB_RED	DACB_RED 37.5 OHM	20MIL_G2G_20MIL
10 DACB_GREEN	DACB_GREEN 37.5 OHM	20MIL_G2G_20MIL
10 DACB_BLUE	DACB_BLUE 37.5 OHM	20MIL_G2G_20MIL

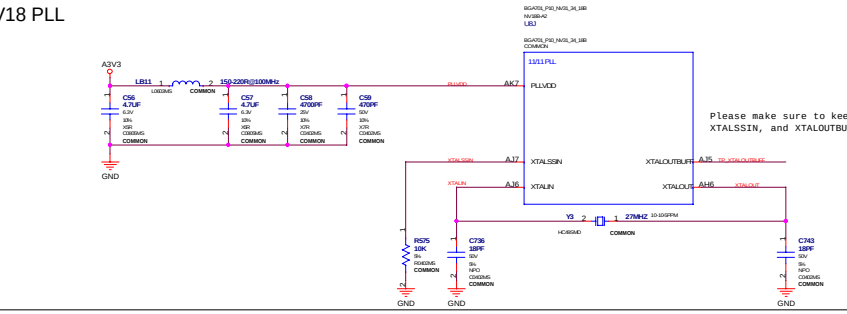
NV18 DAC_A



NV18 DAC_B with RSet select

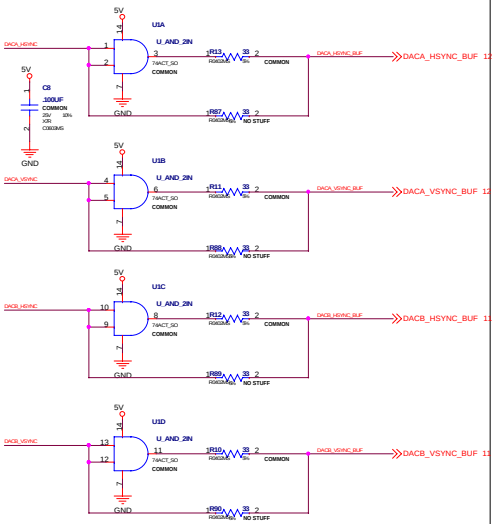


NV18 PLL



Please make sure to keep all components and nets related to pins XTALIN, XTALOUT, XTALSSIN, and XTALOUTBUFF away from everything else (place all on TOP).

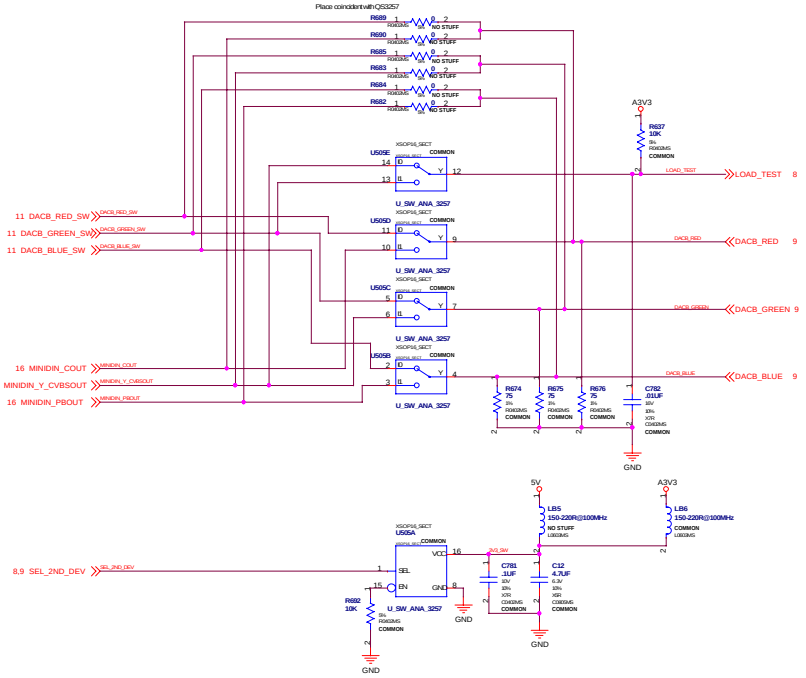
SYNC Amplifier



Micro-Star International Co., LTD.		
MS-8907-00B		
Size: Custom	Document Number: DAC_A,DAC_B,PLL,SYNC AMPL	Rev: 00B
Date: Friday, February 14, 2003	Sheet 9 of 18	

DACB SWITCH BETWEEN VGA OUT AND TV OUT

NET	IMPEDANCE	NET_SPACING_RULE
11 DACB_RED_SW	37.5 OHM	20MIL GDG 20MIL
11 DACB_GREEN_SW	37.5 OHM	20MIL GDG 20MIL
11 DACB_BLUE_SW	37.5 OHM	20MIL GDG 20MIL
16 MINIDIN_COUT	37.5 OHM	20MIL GDG 20MIL
16 MINIDIN_Y_CVBSOUT	37.5 OHM	20MIL GDG 20MIL
16 MINIDIN_PBOUT	37.5 OHM	20MIL GDG 20MIL

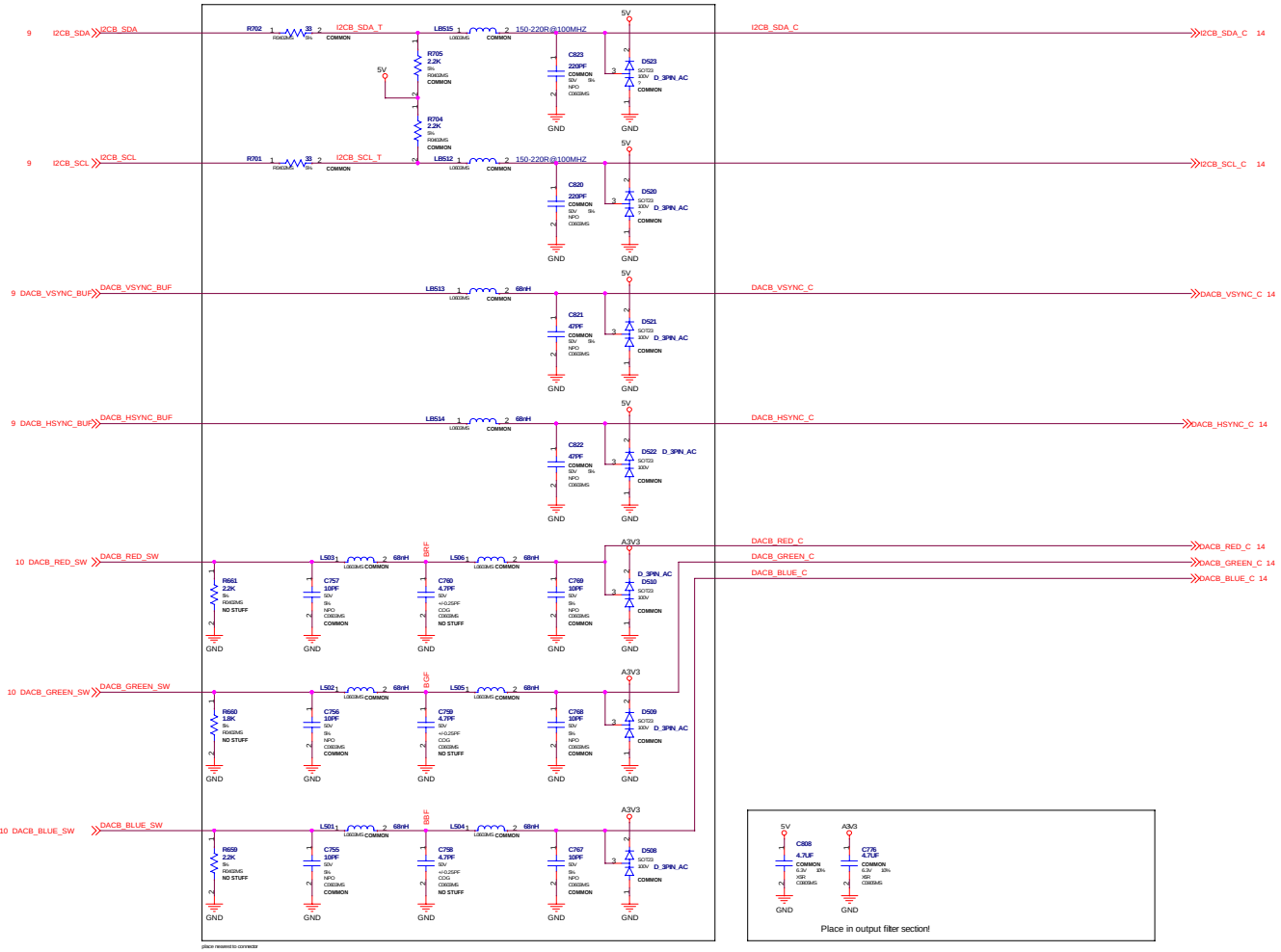


Micro-Star International Co., LTD.
MS-8907-00B
Size: Custom | Document Number: SWITCH BETWEEN VGA AND TV-OUT | Rev: 00B
Date: Friday, February 14, 2003 | Sheet 10 of 18

DACB output

NET	IMPEDANCE	NET_SPACING_RULE
BRF	37.5 OHM	20MIL_G2C_20MIL
BGF	37.5 OHM	20MIL_G2C_20MIL
BBF	37.5 OHM	20MIL_G2C_20MIL
DACB_RED_C	10MIL_TRACE	20MIL_G2C_20MIL
DACB_GREEN_C	10MIL_TRACE	20MIL_G2C_20MIL
DACB_BLUE_C	10MIL_TRACE	20MIL_G2C_20MIL

EMI-FILTER

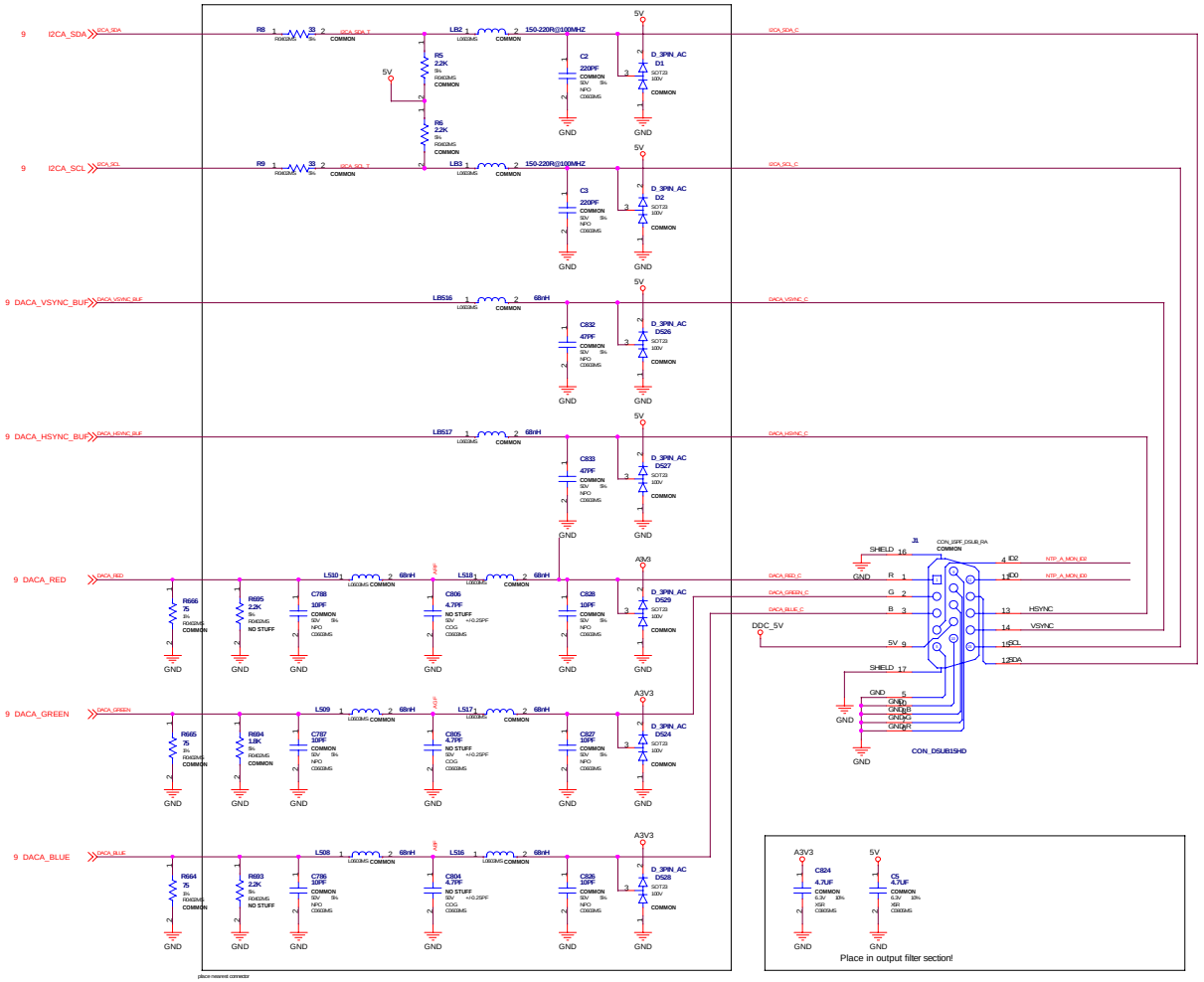


Micro-Star International Co., LTD.			
MS-8907-00B			
Size: Custom	Document Number: DAC B CONNECT		Rev: 00B
Date: Friday, February 14, 2003		Sheet 11 of 18	

DACB output

NET	IMPEDANCE	NET_SPACING_RULE
A3F	37.5 OHM	20MIL_GSG_30MIL
A3F	37.5 OHM	20MIL_GSG_30MIL
A3F	37.5 OHM	20MIL_GSG_30MIL
DACA_RED_C	10MIL_TRACE	20MIL_GSG_30MIL
DACA_GREEN_C	10MIL_TRACE	20MIL_GSG_30MIL
DACA_BLUE_C	10MIL_TRACE	20MIL_GSG_30MIL

EMI-FILTER



Micro-Star International Co., LTD.

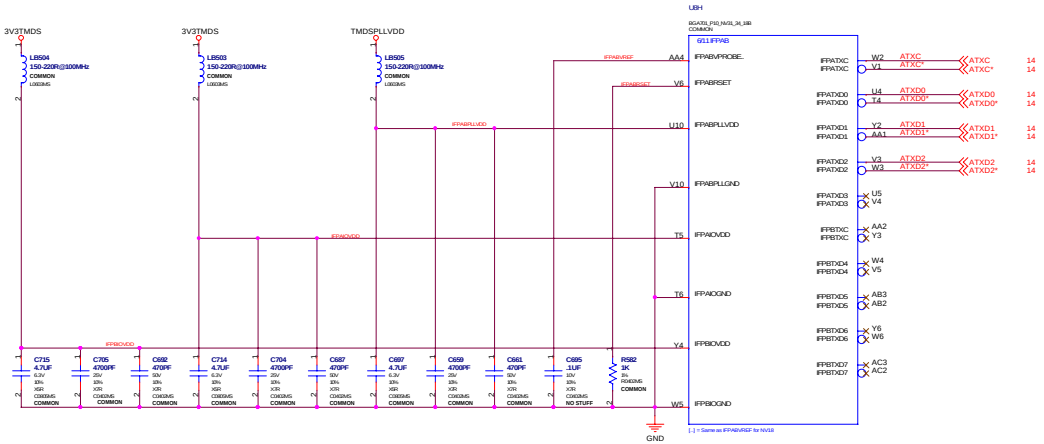
MS-8907-00B

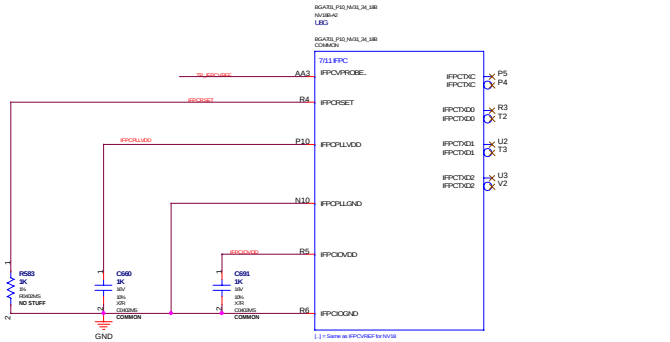
Size: Custom | Document Number: DAC A CONNECT | Rev: 00B

Date: Friday, February 14, 2003 | Sheet 12 of 18

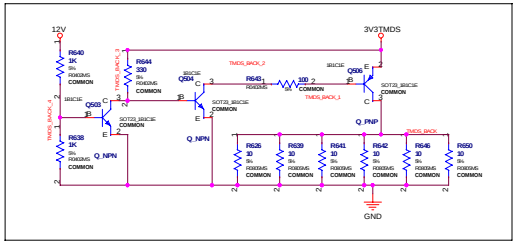
INTERNAL TMDS POWER AND DECOUPLING

NET	NET_PHYSICAL_TYPE	VOLTAGE
IFPABVREF	12MIL_TRACE	3.3V
IFPABPLLVDD	12MIL_TRACE	3.3V
IFPAIOVDD	12MIL_TRACE	3.3V
IFPBIOVDD	12MIL_TRACE	3.3V
IFPCPLLVDD	12MIL_TRACE	3.3V
IFPCIOVDD	12MIL_TRACE	3.3V
TMDS_BACK	12MIL_TRACE	3.3V



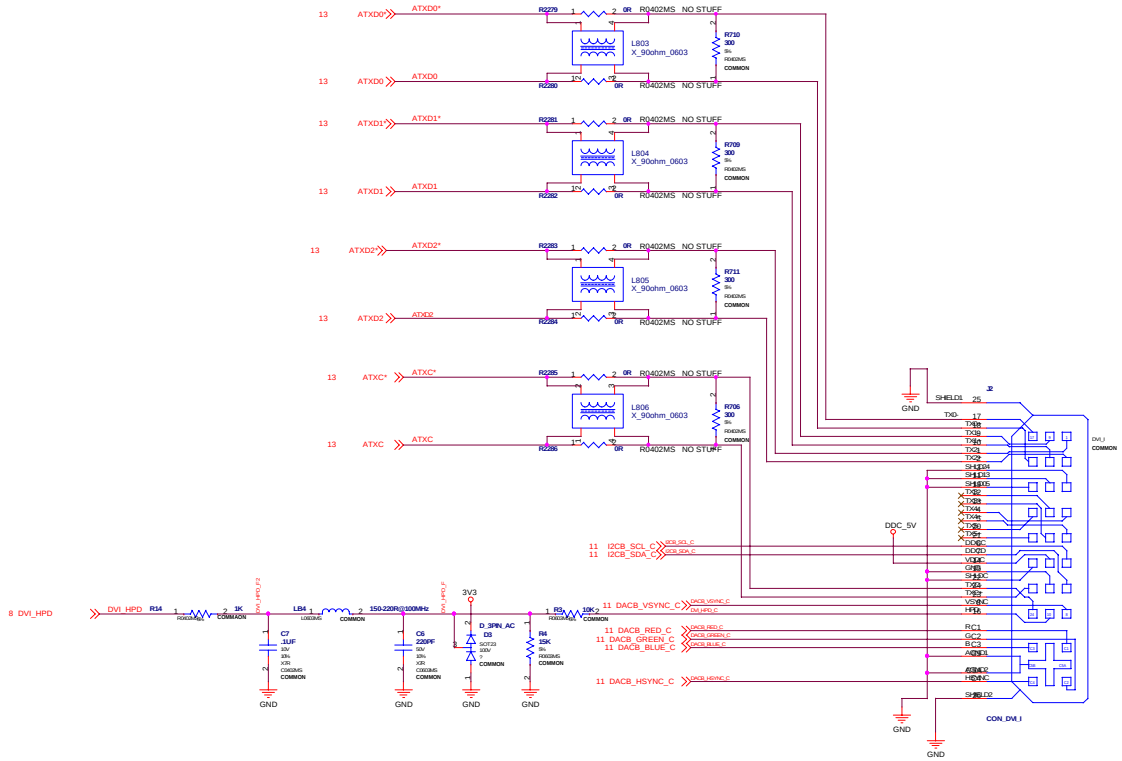


TMDS backdrive prevention



Micro-Star International Co., LTD.			
MS-8907-00B			
Size: Custom	Document Number: TMDS POWER AND DECOUPING		Rev: 00B
Date: Friday, February 14, 2003		Sheet 13 of 18	

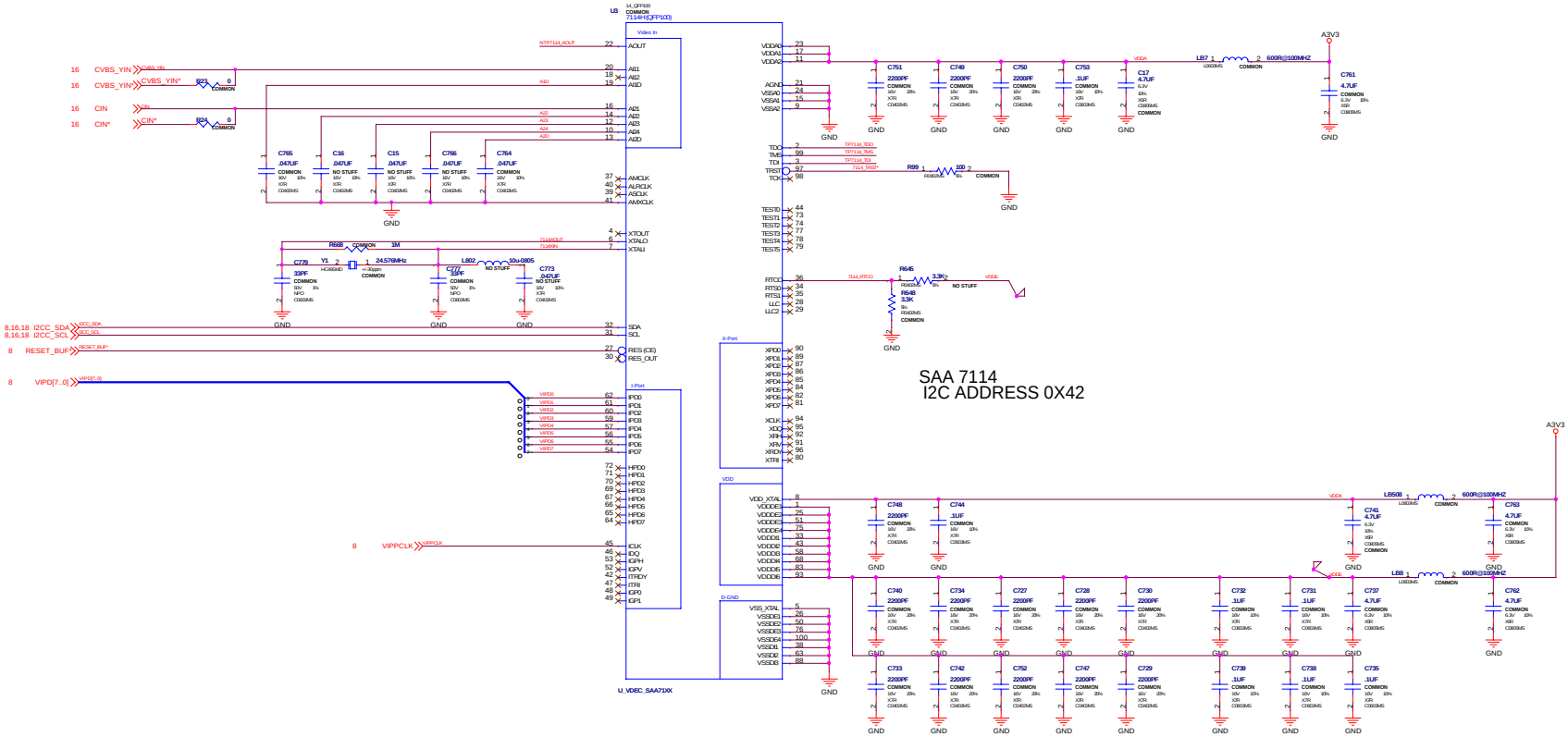
DVI_I OUTPUT



NET	Diffpair	NET_SPACING_RULE
ATXD0*	ATXD0	18MIL GSG 25MIL
ATXD0	ATXD0*	18MIL GSG 25MIL
ATXD1*	ATXD1	18MIL GSG 25MIL
ATXD1	ATXD1*	18MIL GSG 25MIL
ATXD2*	ATXD2	18MIL GSG 25MIL
ATXD2	ATXD2*	18MIL GSG 25MIL
ATXC*	ATXC	18MIL GSG 25MIL
ATXC	ATXC*	18MIL GSG 25MIL

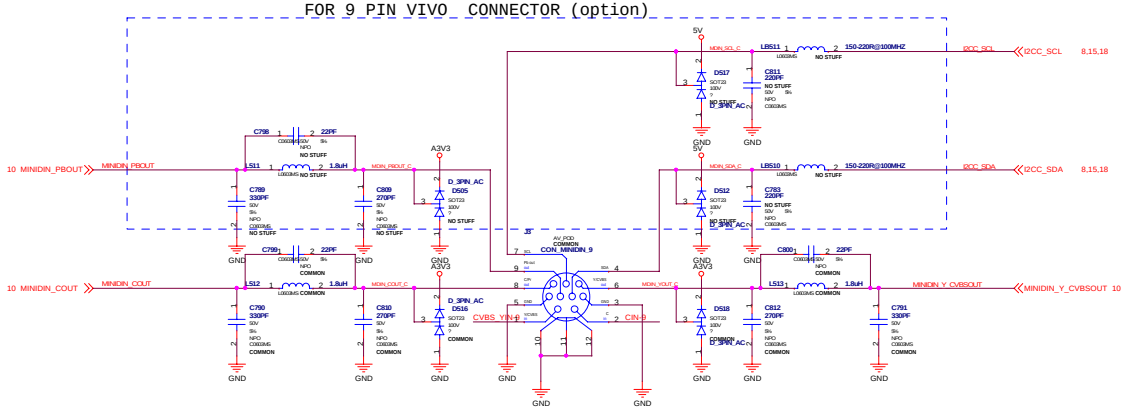
Micro-Star International Co., LTD.	
MS-8907-00B	
Size: Custom	Document Number: DVI CONNECT
Rev: 00B	
Date: Friday, February 14, 2003	Sheet 14 of 18

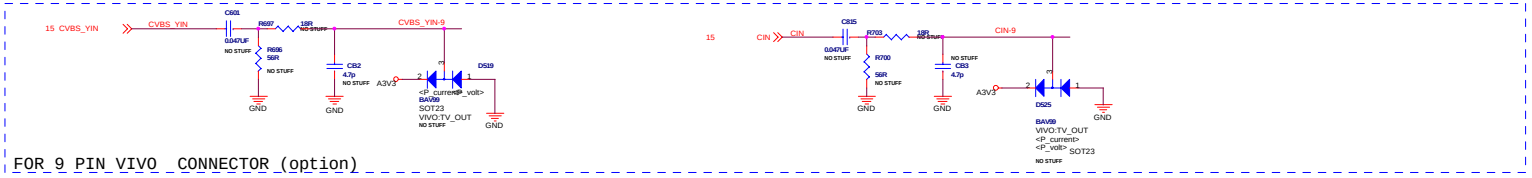
VIDEO CAPTURE

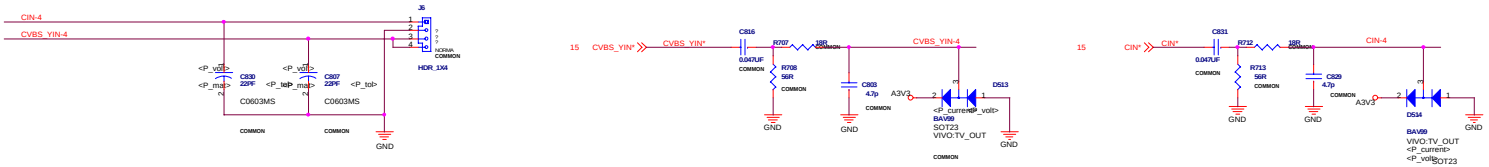


Micro-Star International Co., LTD.			
MS-8907-00B			
Size: Custom	Document Number: VIDEO CAPTURE		Rev: 00B
Date: Friday, February 14, 2003		Sheet 15 of 18	

VIDEO IN/OUT CONNECTOR



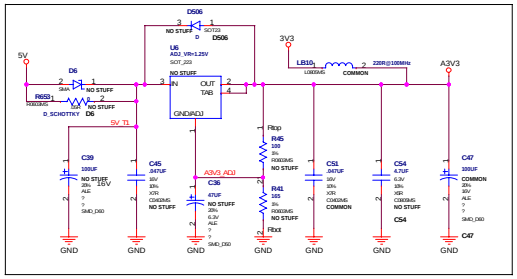




Micro-Star International Co., LTD.		
MS-8907-00B		
Size: Custom	Document Number: VIDEO IN/OUT CONNECT	Rev: 00B
Date: Friday, February 14, 2003	Sheet 16 of 18	

POWER SUPPLY

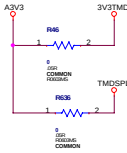
ANALOG 3V3

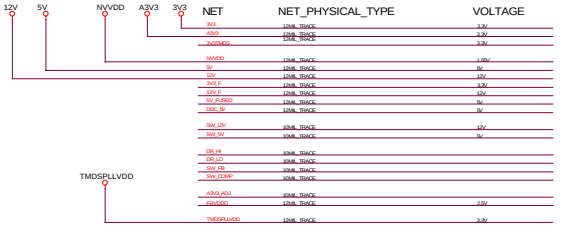


Vout = VRef * (1+Rbot/Rtop)

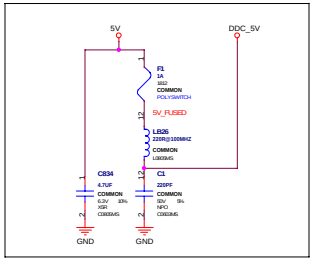
3.31V = 1.25V * (1+(165/100))

TMDS 3V3 Supply
TMDS PLL Supply

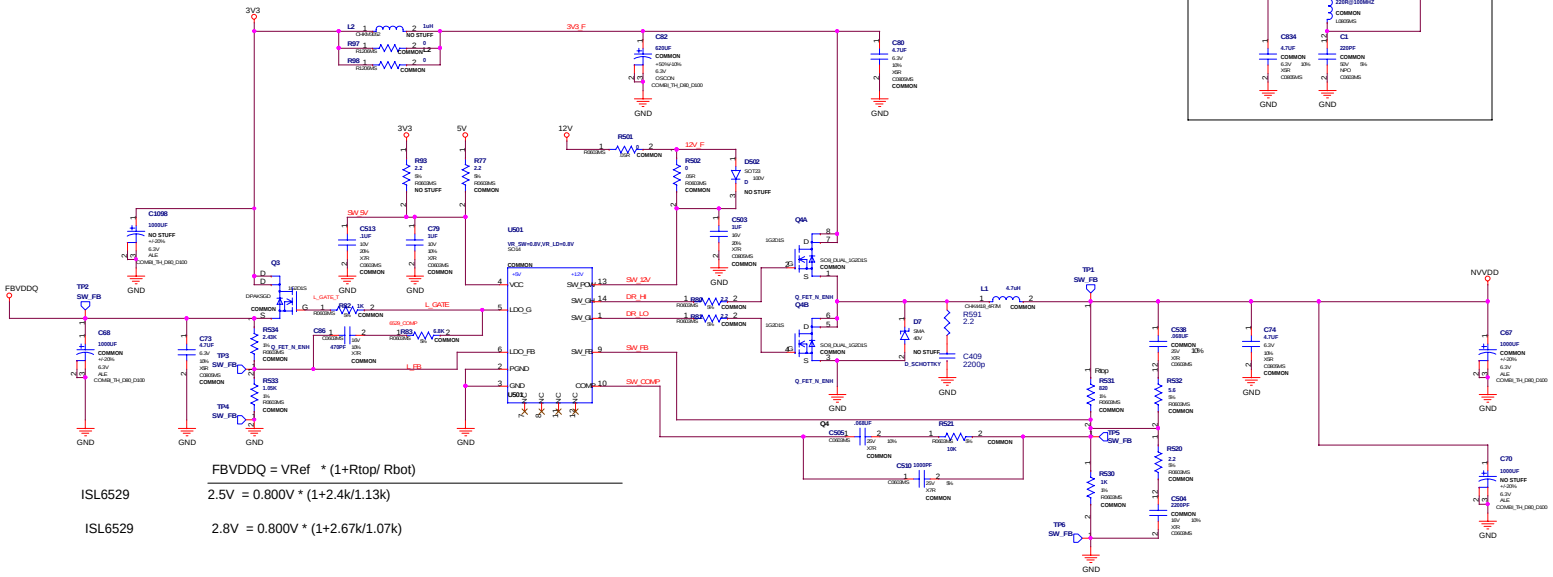




DDC 5V



NVDD-SWITCHER / FBVDD-LDO CONTROLER ISL6529



FBVDDQ = VRef * (1+Rtop/ Rbot)

ISL6529 2.5V = 0.800V * (1+2.4k/1.13k)

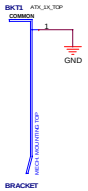
ISL6529 2.8V = 0.800V * (1+2.67k/1.07k)

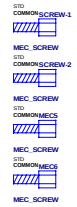
NVVDD = VRef * (1+Rtop/ Rbot)

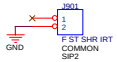
ISL6529 1.656V = 0.800V * (1+1070/1000)

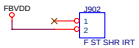
Micro-Star International Co., LTD.
MS-8907-00B
Size: Custom | Document Number | Rev: 00B
POWER SUPPLY
Date: Friday, February 14, 2003 | Sheet 17 of 18

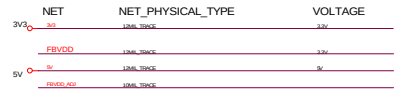
MECHANICS



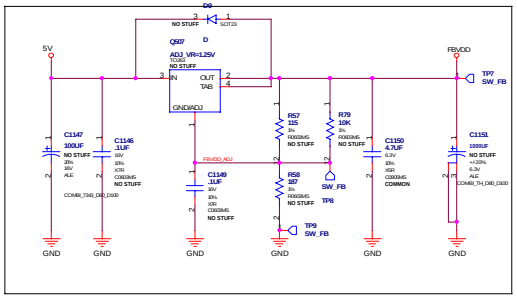








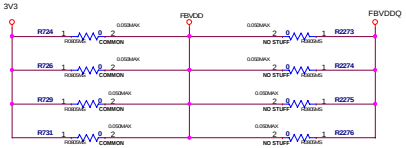
FBVDD Supply

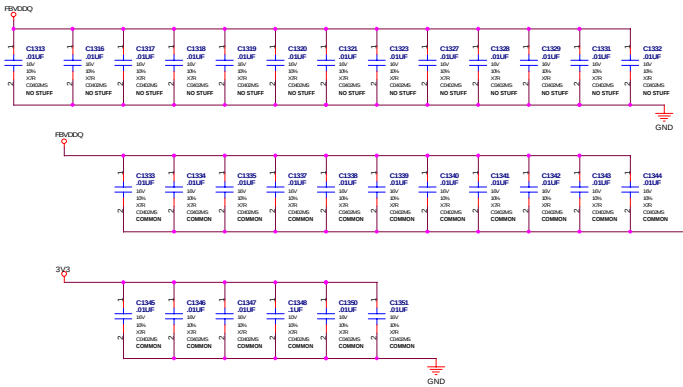


FBVDD = VRef * (1+Rbot/ Rtop)

3.315V = 1.250V * (1+ 165/ 100)

3.300V = 1.250V * (1+ 187/ 115)

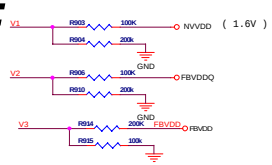




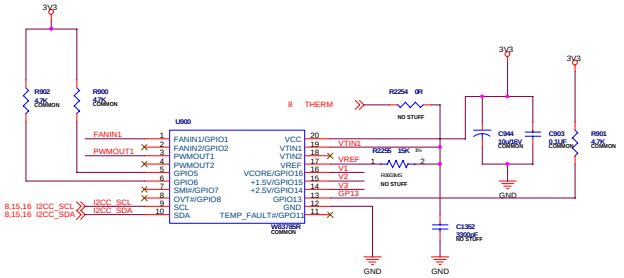
H/W Monitor Funtion

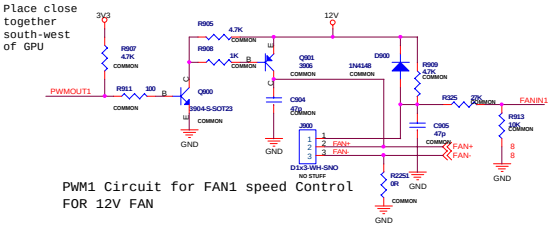
NO STUFF

EXCEPT J7



VOLTAGE SENSORING CIRCUIT





PWM1 Circuit for FAN1 speed Control
FOR 12V FAN

Micro-Star International Co., LTD.		
MS-8907-00B		
Size: Custom	Document Number: MECHANICS	Rev: 00B
Date: Friday, February 14, 2003	Sheet 18 of 18	