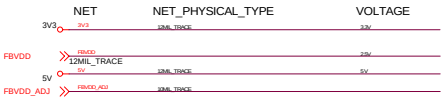
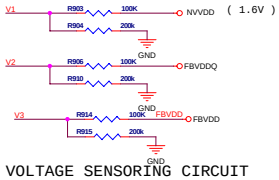
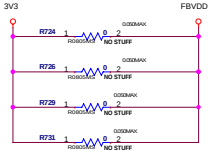
MECHANICS

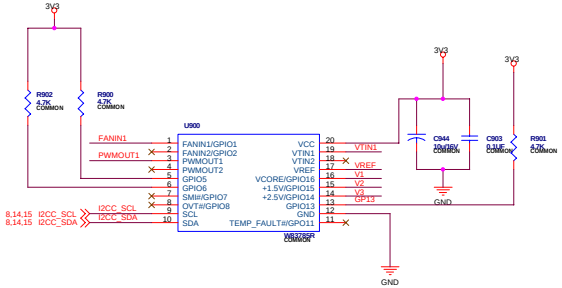


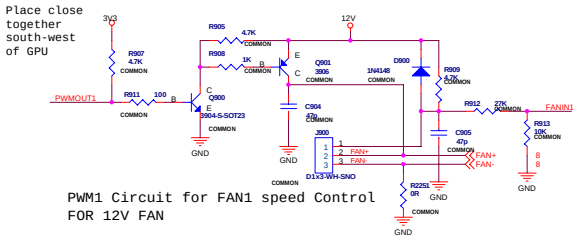
H/W Monitor Funtion



VOLTAGE SENSORING CIRCUIT

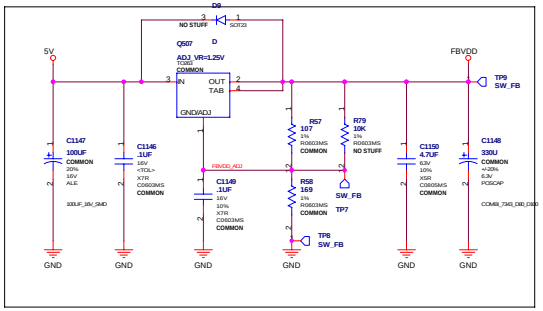






PWM1 Circuit for FAN1 speed Control
FOR 12V FAN

FBVDD Supply



FBVDD = VRef * (1+Rbot/ Rtop)

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

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

Micro-Star International Co., LTD.

MS-8893 base on C116 Modify

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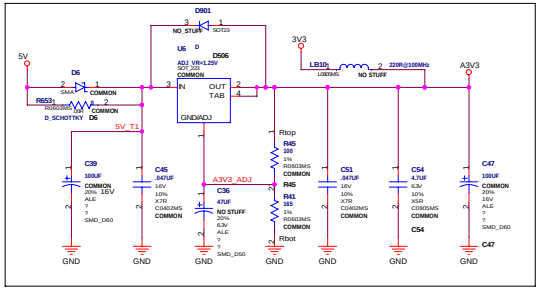
POWER SUPPLY

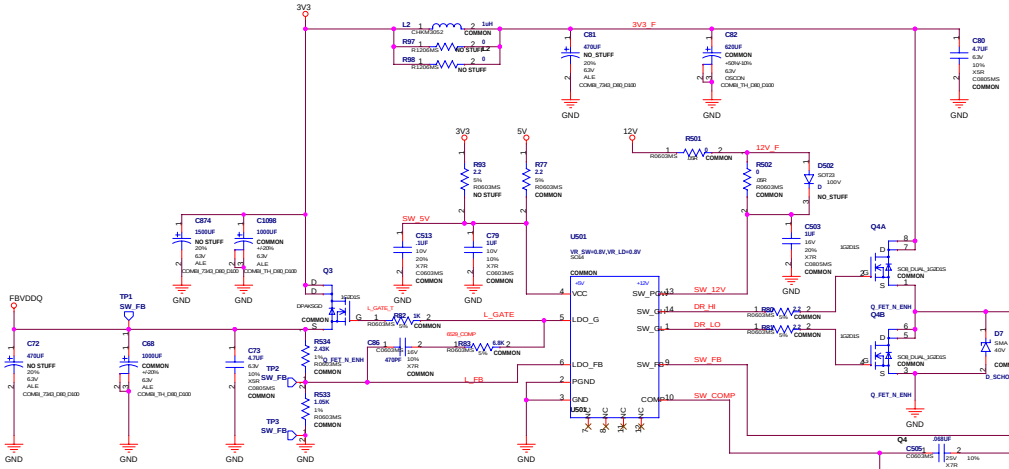
ANALOG 3V3



Vout = VRef * (1+Rbot/Rtop)

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

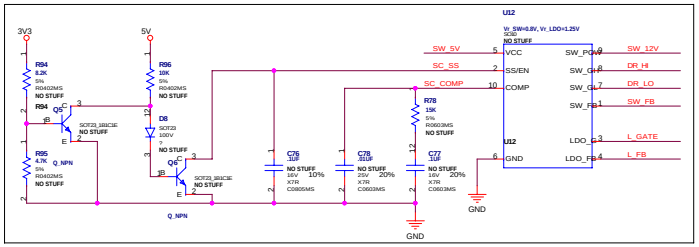
NVDD-SWITCHER / FBVDD-LDO CONTROLER ISL6529



FBVDDQ = VRef * (1+Rtop/ Rbot)

ISL6529	2.5V = 0.800V * (1+2.4k/1.13k)
SC2610	2.5V = 1.250V * (1+ 100/ 100)
ISL6529	2.8V = 0.800V * (1+2.67k/1.07k)

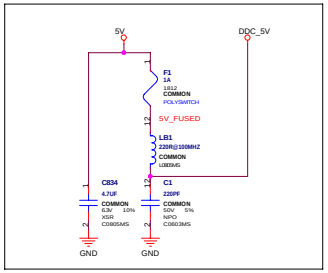
ALTERNATIVE TO ISL6529

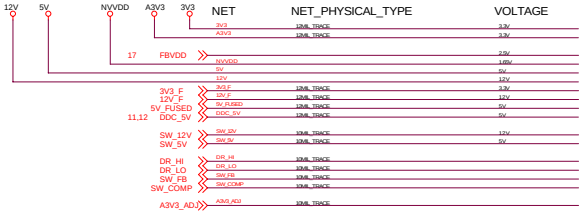


NVDD = VRef * (1+Rtop/ Rbot)

ISL6529	1.656V = 0.800V * (1+1070/1000)
SC2610	1.656V = 0.800V * (1+1070/1000)

DDC 5V





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MS-8893 base on C116 Modify

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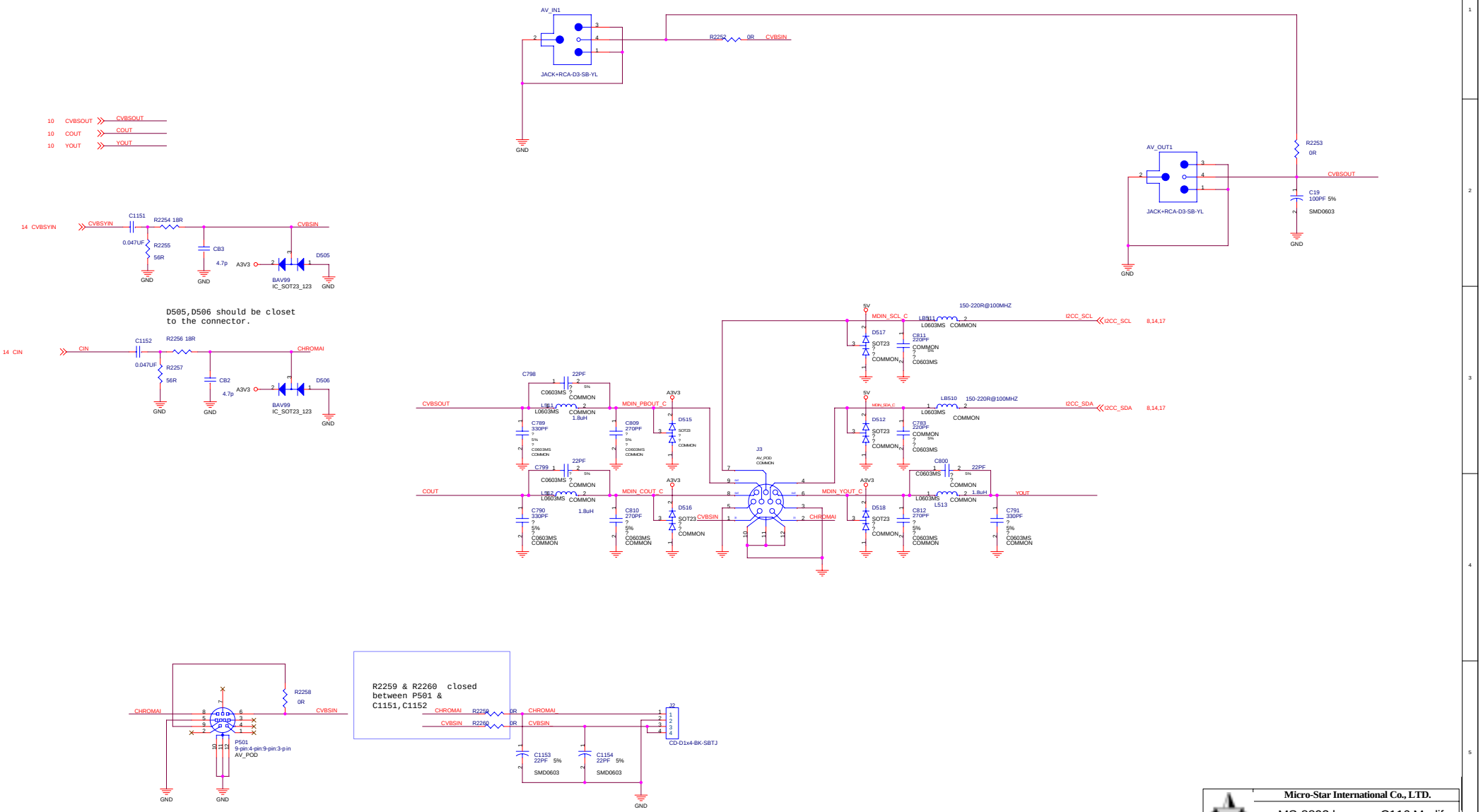
VIDEO IN/OUT CONNECTOR



Micro-Star International Co., LTD.			
MS-8893 base on C116 Modify			
Size: Custom	Document Number: VIDEO IN/OUT CONNECT		Rev: 00A
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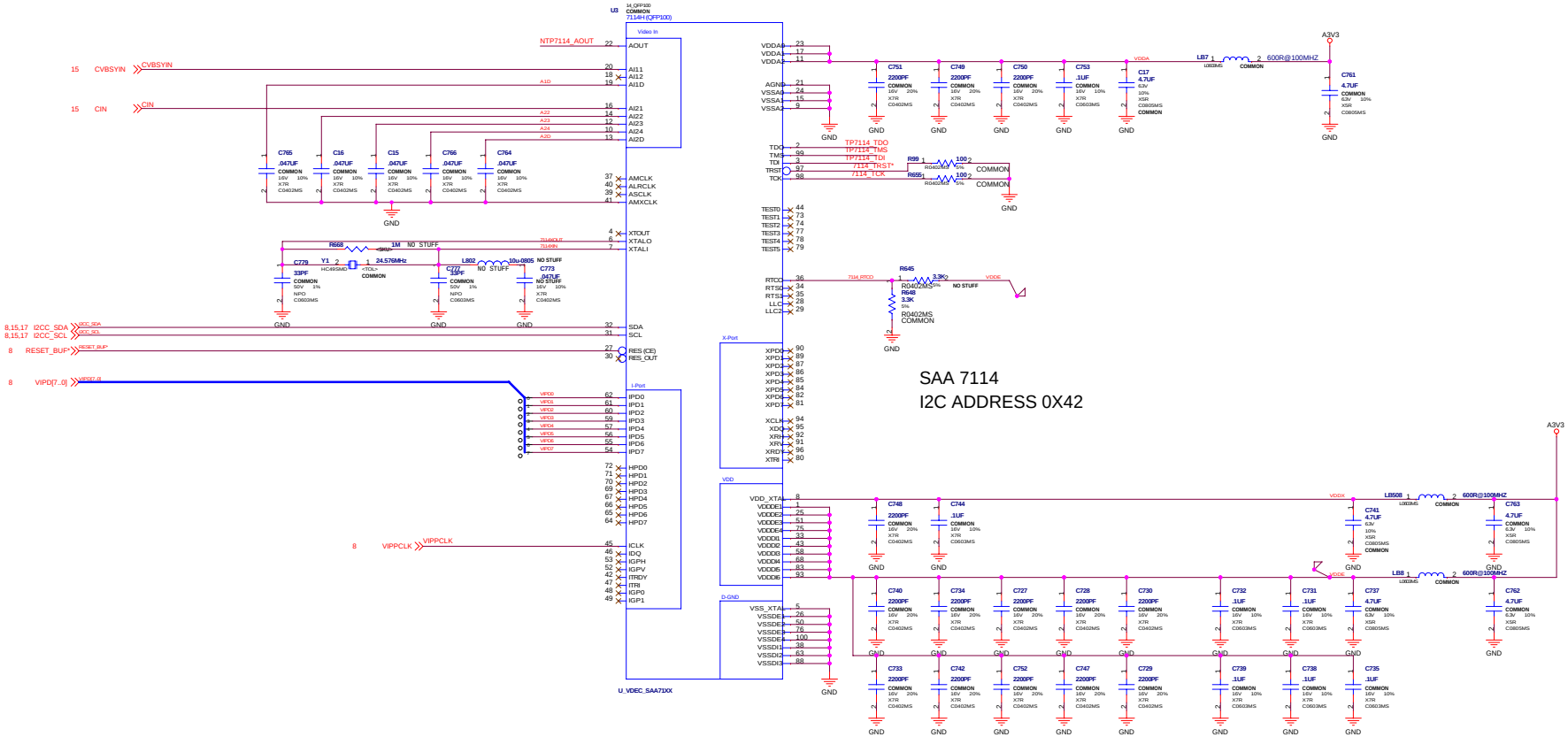
VIDEO CAPTURE



Micro-Star International Co., LTD.			
MS-8893 base on C116 Modify			
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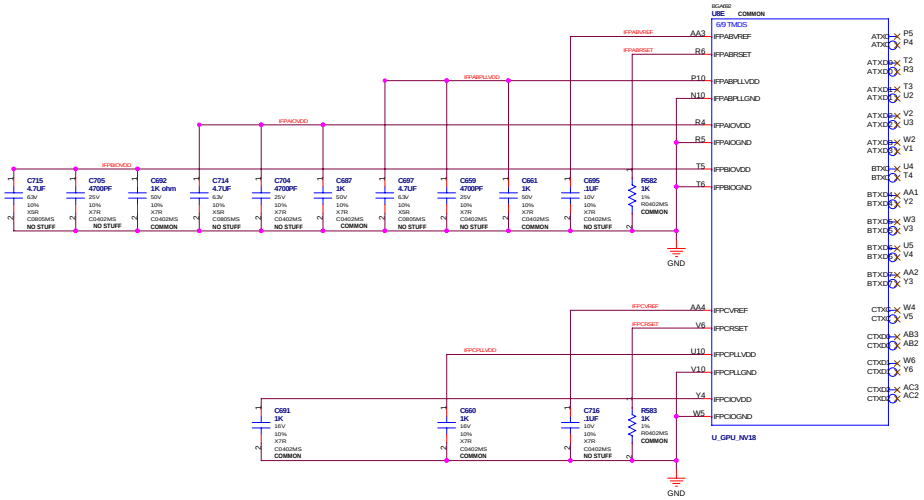
INTERNAL TMDS POWER AND DECOUPLING



Micro-Star International Co., LTD.

MS-8893 base on C116 Modify

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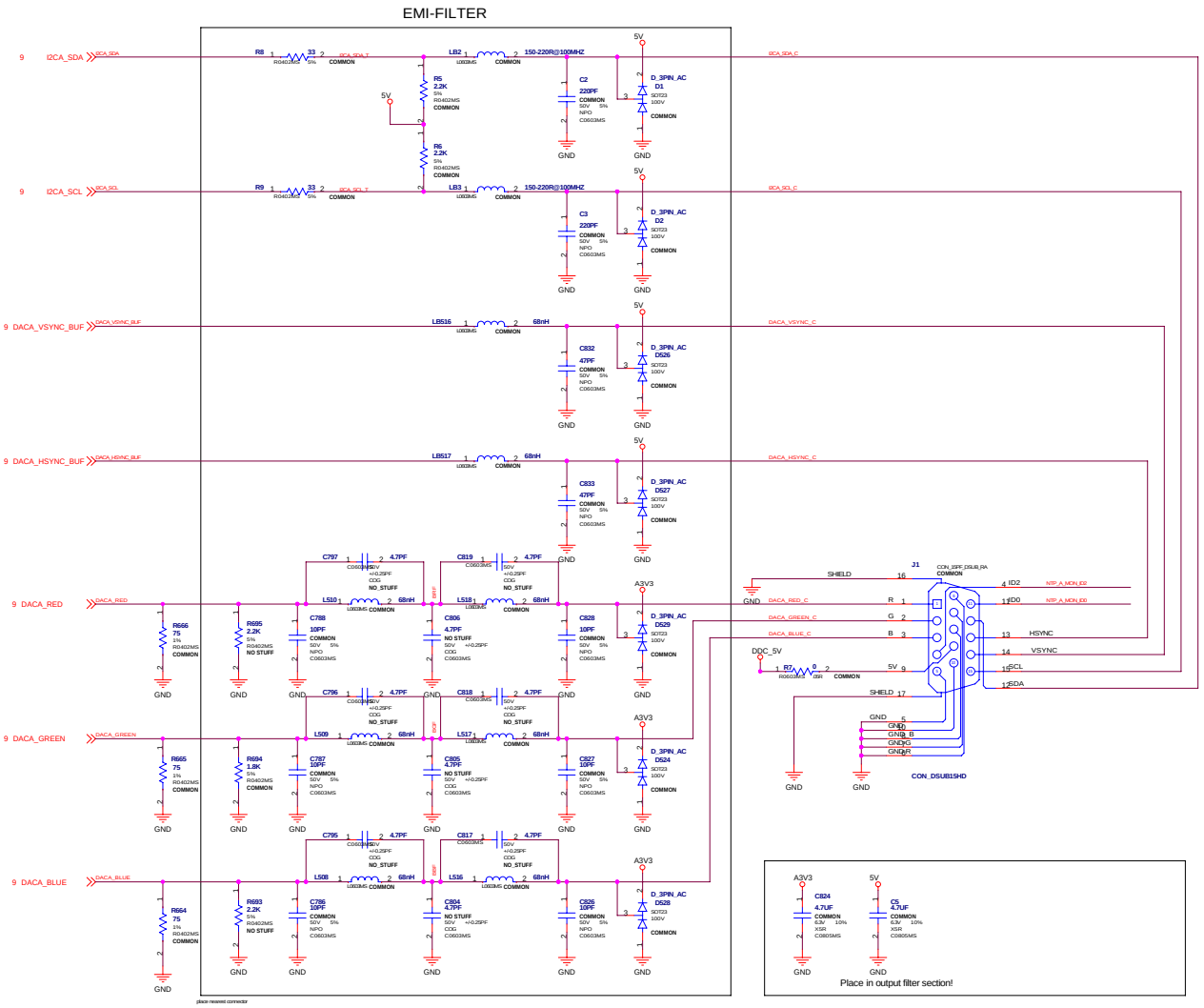
DACB output



NET	Diffpair	NET_SPACING_RULE
ARF	ARF	20MIL_G2C_20MIL
AGF	AGF	20MIL_G2C_20MIL
ABF	ABF	20MIL_G2C_20MIL
DACA_RED_C	DACA_RED_C	20MIL_G2C_20MIL
DACA_GREEN_C	DACA_GREEN_C	20MIL_G2C_20MIL
DACA_BLUE_C	DACA_BLUE_C	20MIL_G2C_20MIL

Micro-Star International Co., LTD.	
MS-8893 base on C116 Modify	
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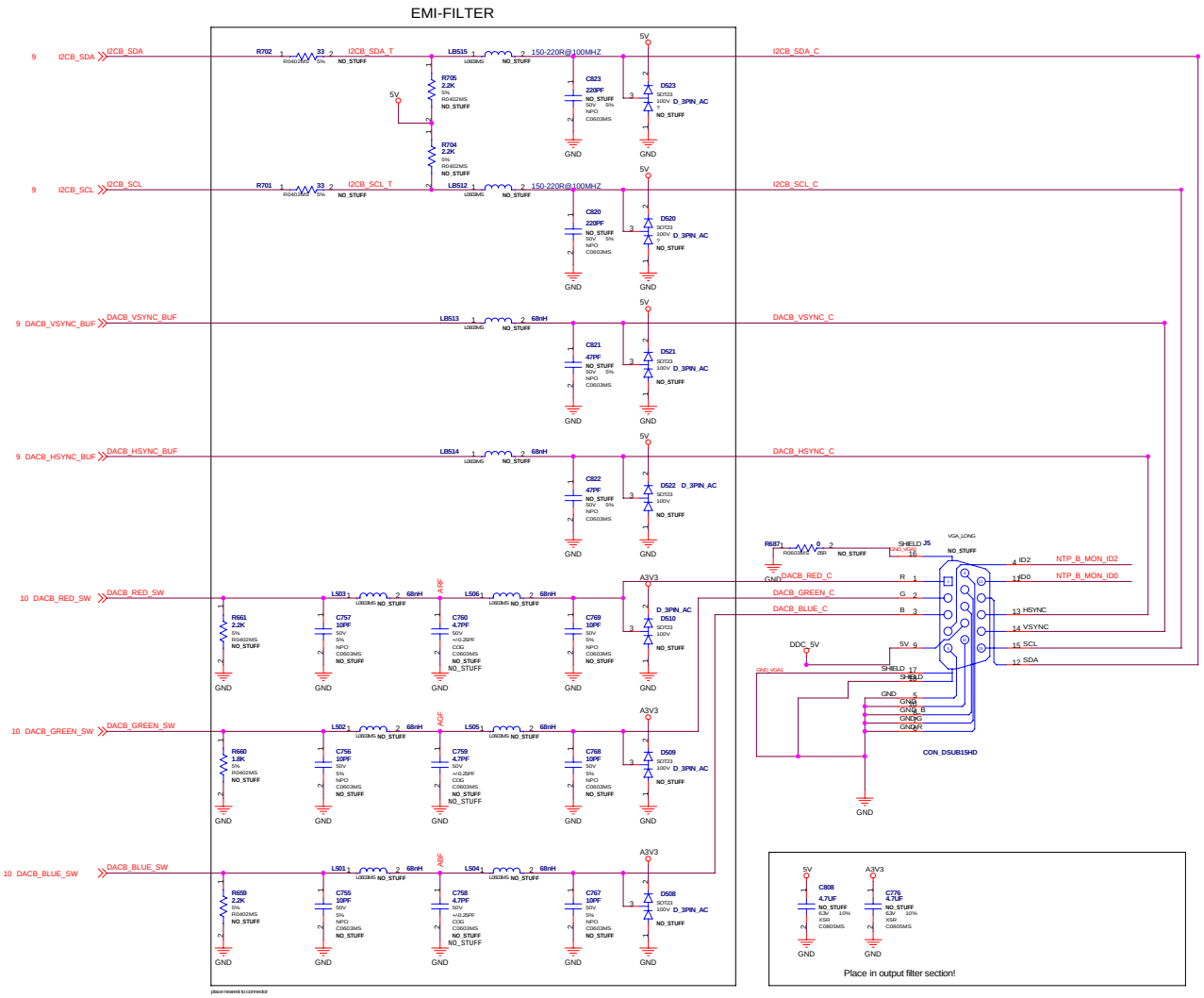
DACA output



NET	Diffpair	NET_SPACING_RULE
BRF	BRF	20MIL_G2G_30MIL
BGF	BGF	20MIL_G2G_30MIL
BBF	BBF	20MIL_G2G_30MIL
DACB_RED_C	DACB_RED_C	20MIL_G2G_30MIL
DACB_GREEN_C	DACB_GREEN_C	20MIL_G2G_30MIL
DACB_BLUE_C	DACB_BLUE_C	20MIL_G2G_30MIL

Micro-Star International Co., LTD.			
MS-8893 base on C116 Modify			
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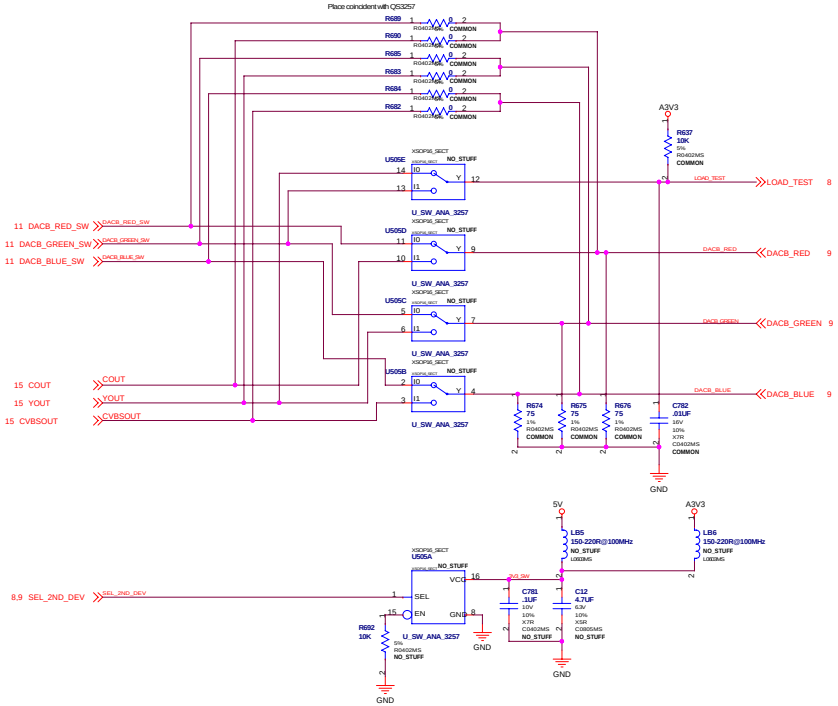
DACB SWITCH BETWEEN VGA OUT AND TV OUT

NET	Diffpair	NET_SPACING_RULE
11 DACB_RED_SW	DACB_RED_SW	20MIL GSG 30MIL
11 DACB_GREEN_SW	DACB_GREEN_SW	20MIL GSG 30MIL
11 DACB_BLUE_SW	DACB_BLUE_SW	20MIL GSG 30MIL
MINIDIN_COUT	MINIDIN_COUT	20MIL GSG 30MIL
MINIDIN_Y_CVBSOUT	MINIDIN_Y_CVBSOUT	20MIL GSG 30MIL
MINIDIN_PBOUT	MINIDIN_PBOUT	20MIL GSG 30MIL



Micro-Star International Co., LTD.

MS-8893 base on C116 Modify

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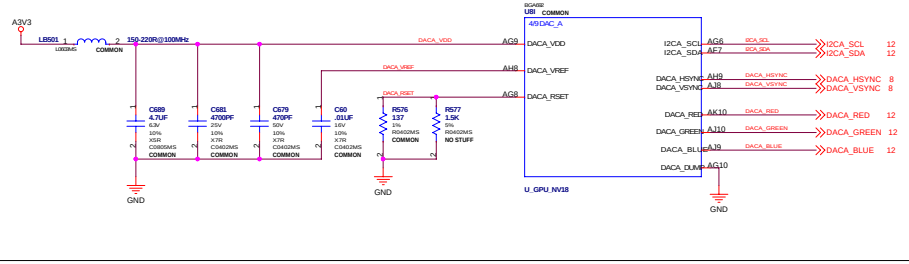
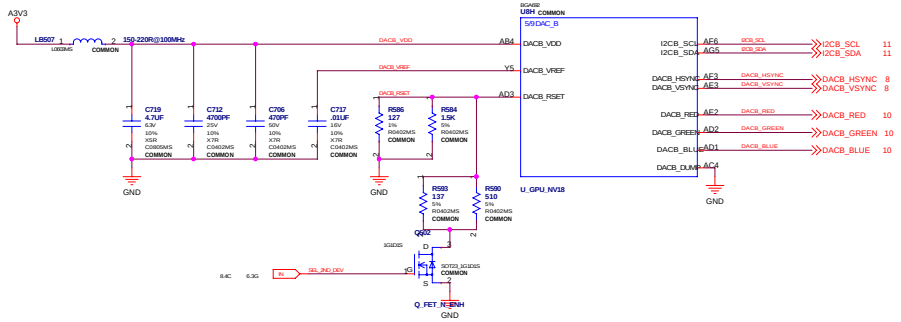
NV18 DAC_A, DAC_B, PLL, SYNC AMPL

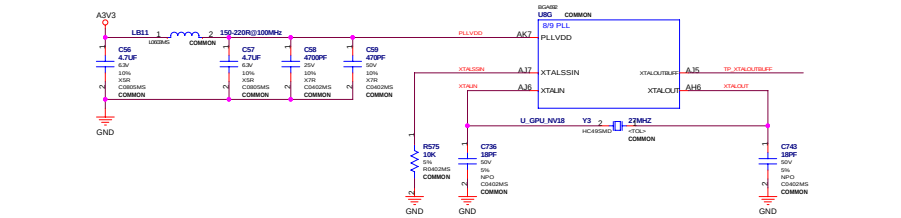
NV18 DAC_A



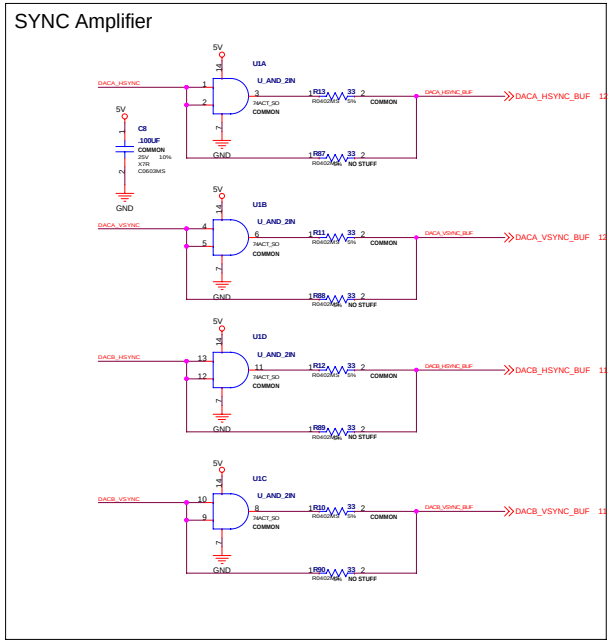
NV18 DAC_B with RSet select



NV18 PLL



SYNC Amplifier



NET	NET_PHYSICAL_TYPE	VOLTAGE
DACA_VDD	XML_TRACE	3.3V
DACA_VREF	XML_TRACE	
DACA_RSET	XML_TRACE	
DACB_VDD	XML_TRACE	3.3V
DACB_VREF	XML_TRACE	
DACB_RSET	XML_TRACE	
PLLVDD	XML_TRACE	3.3V

NET	Diffpair	NET_SPACING_RULE
12 DACA_RED	DACA_RED	20MIL_G2G_30MIL
12 DACA_GREEN	DACA_GREEN	20MIL_G2G_30MIL
12 DACA_BLUE	DACA_BLUE	20MIL_G2G_30MIL
10 DACB_RED	DACB_RED	20MIL_G2G_30MIL
10 DACB_GREEN	DACB_GREEN	20MIL_G2G_30MIL
10 DACB_BLUE	DACB_BLUE	20MIL_G2G_30MIL

Micro-Star International Co., LTD.
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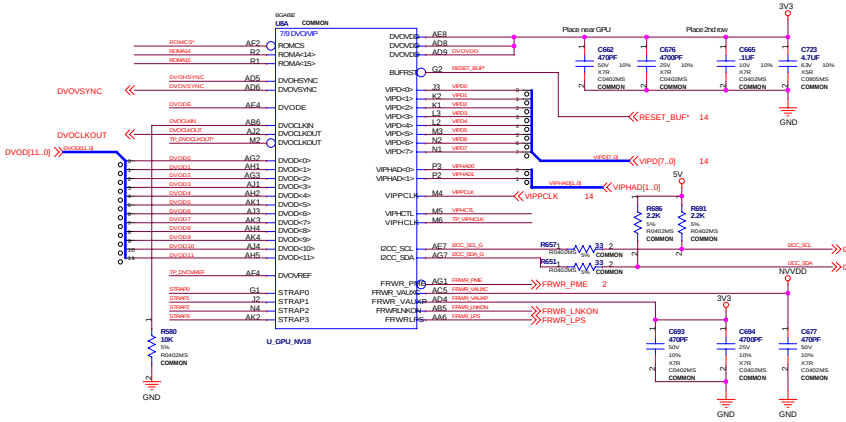
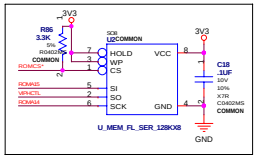
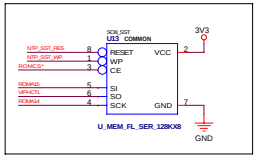
NV18 STRAPPING, I/O INTERFACE, BIOS, FAN CONTROL AND TEMP SENSOR



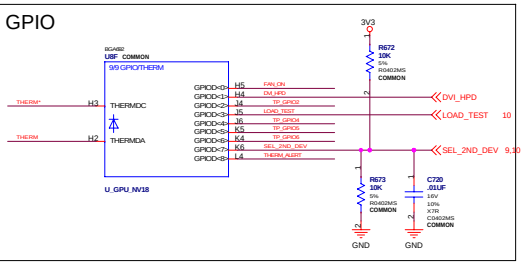
BIOS (serial)



BIOS (alternative)

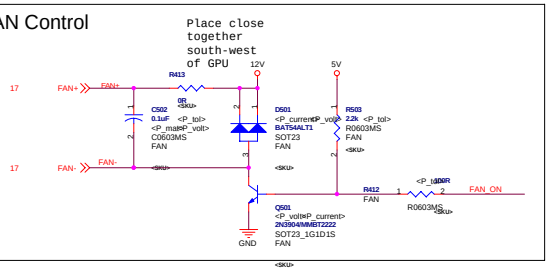


NV18 GPIO

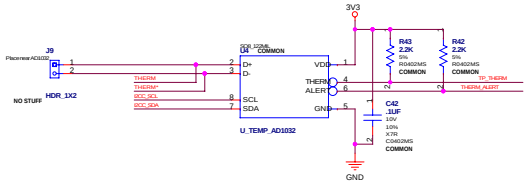


FAN Control

Place close together south-west of GPU



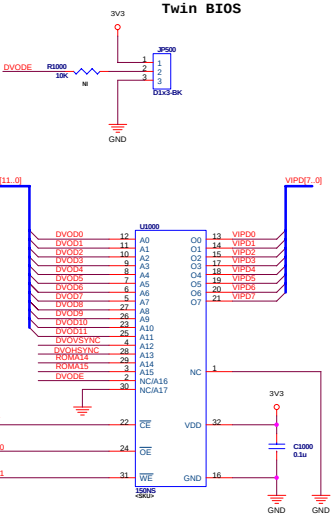
TEMP Sensor



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[3:0]	0000:2Mx32:SDR 0001:4Mx16:SDR 0010:RFU 0011:RFU 0100:RFU 0101:4Mx32:SDR 0110:8Mx16:SDR 0111:2Mx32:SDR 1000:2Mx32:DDR 1001:2Mx16:DDR 1010:4Mx16:DDR 1011:8Mx16:DDR 1100:RFU 1101:4Mx32:DDR 1110:RFU 1111:4Mx32:DDR
03: RAM_CFG_1			
04: RAM_CFG_2			
05: RAM_CFG_3			
06: CRYSTAL_0		CRYSTAL[3:0]	00:13.500Mhz 01:14.318181Mhz 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: AGPMxBx			
10: AGP_SBA		AGP_SBA	0:SBA-enabled 1:SBA-disabled
11: AGP_FASTWR			
12: PCI_DEVID_0		PCI_DEVID[3:0]	0000:0x0180 ... 1111:0x018F
13: PCI_DEVID_1			
14: BUS_TYPE		BUS_TYPE[0]	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_SST45VF 11:RFU
30: ROM_TYPE_1			
01: 1394_EN_0		1394[0]	0:disabled 1:enabled

Twin BIOS



NET	NET_PHYSICAL_TYPE	VOLTAGE
FAN_RETURN	12MIL_TRACE	3.3V
THERM	12MIL_TRACE	
THERM*	12MIL_TRACE	

NET	Diffpair	NET_SPACING_RULE
THERM	THERM*	10MIL
THERM*		10MIL
DVOD[11..0]	DVOCLKOUT	10MIL
DVOCLKOUT		20MIL_CSC_10MIL
DVODE		10MIL
DVOHSYNC		10MIL
DVOVSYNC		10MIL
14 VIPD[7..0]	VIPPCLK	10MIL
14 VIPPCLK		20MIL_CSC_10MIL

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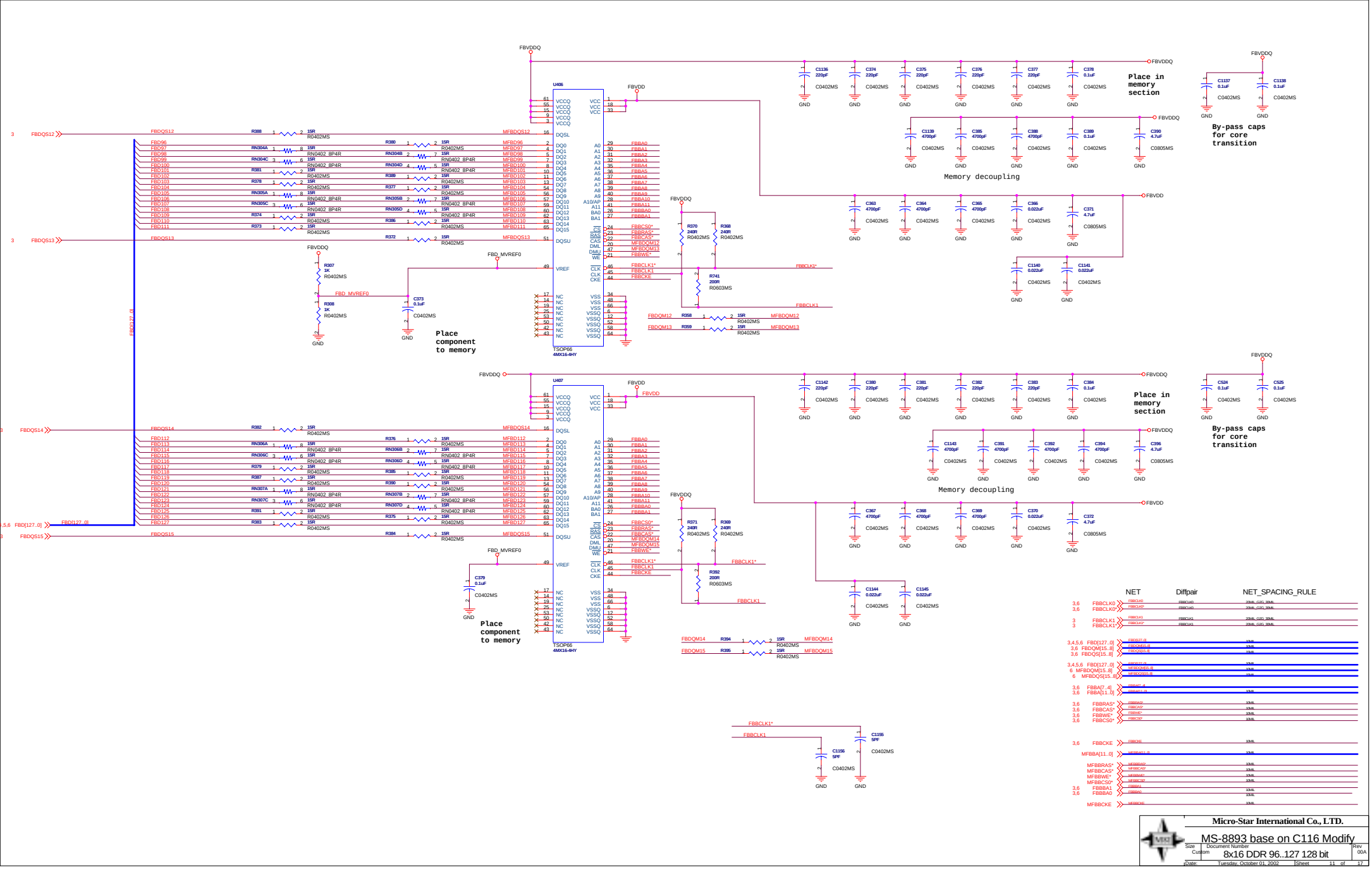

Company	Micro-Star International Co., LTD.
Title	MS-8893 base on C116 Modify
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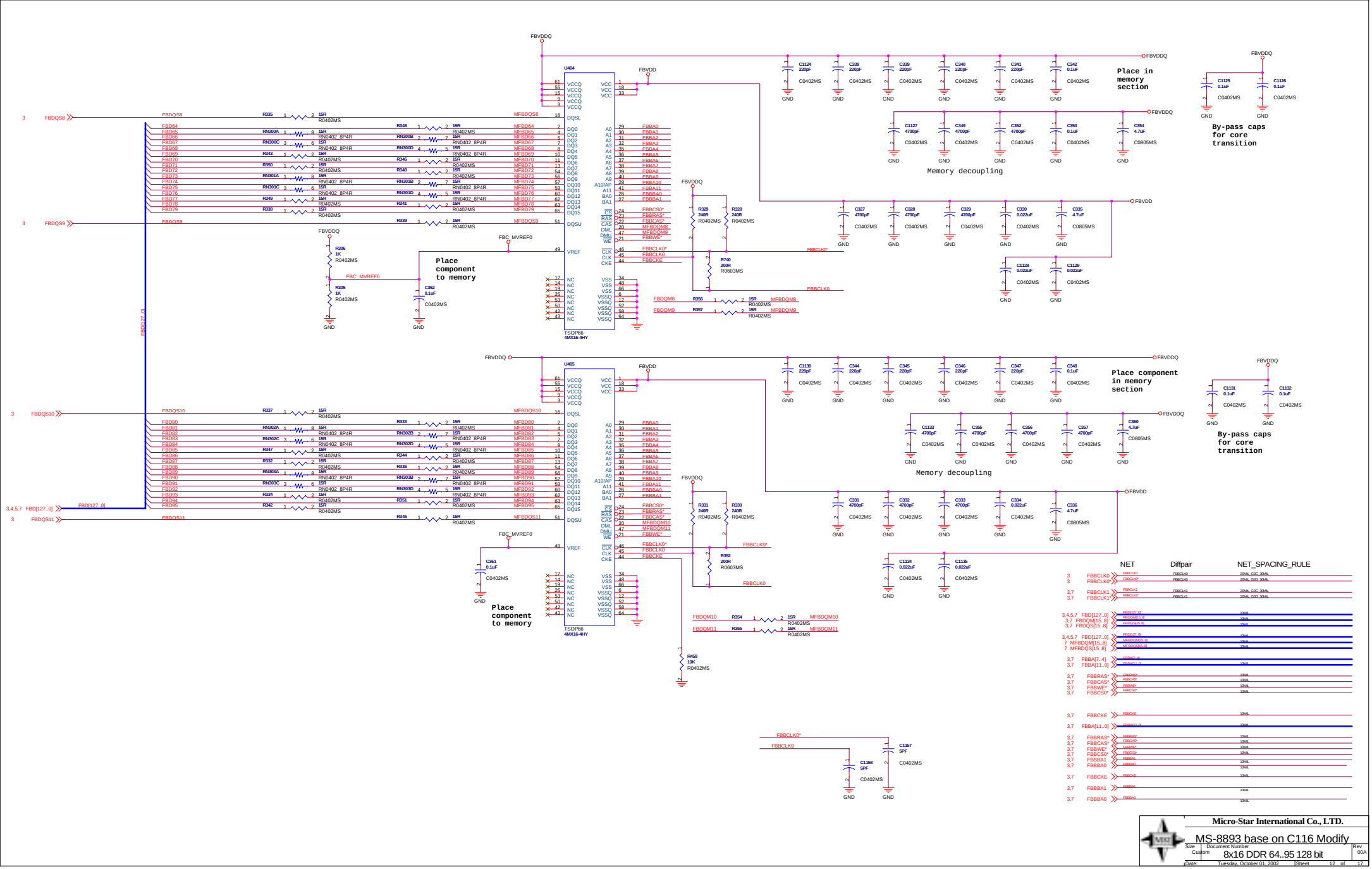
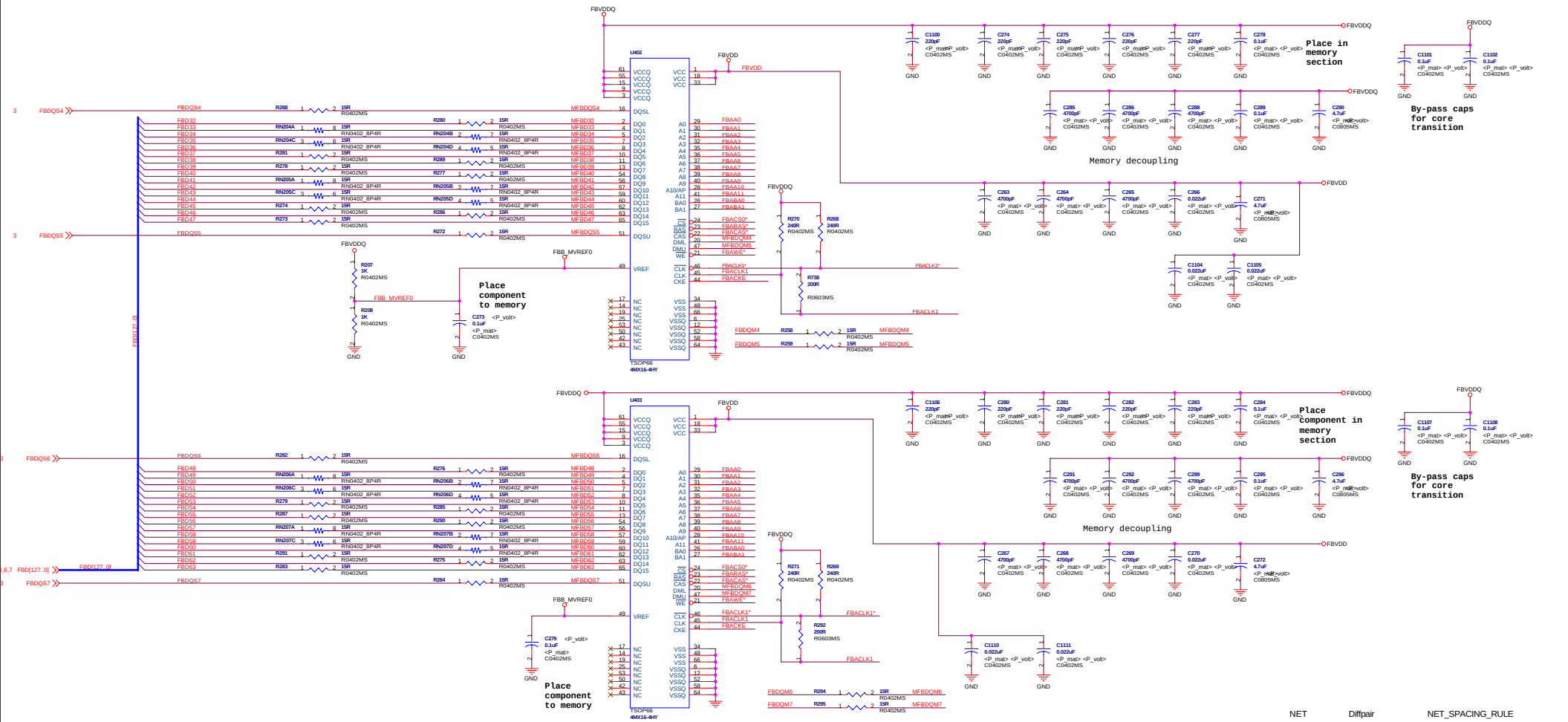

FBVDDQ
U404
TSOP66
4MX16-4HY
FBDQS8
FBDQS9
FBDQS10
FBDQS11
FBD[127..0]
FBC_MVREF0
FBBCLK0*
FBBCLK0
FBBCKE
FBDQM8
FBDQM9
FBDQM10
FBDQM11
Place component to memory
Place component in memory section
Memory decoupling
By-pass caps for core transition
NET
Diffpair
NET_SPACING_RULE
Micro-Star International Co., LTD.
MS-8893 base on C116 Modify
8x16 DDR 64..95 128 bit
Tuesday, October 01, 2002



NET	Diffpair	NET_SPACING_RULE
3,4 FBACLK0	FBACLK0	20MIL_SIG_XML
3,4 FBACLK0*	FBACLK0*	20MIL_SIG_XML
3 FBACLK1	FBACLK1	20MIL_SIG_XML
3 FBACLK1*	FBACLK1*	20MIL_SIG_XML
3,4,6,7 FBD[127..0]	FBD[127..0]	10MIL
3,4 FBDQM[7..0]	FBDQM[7..0]	10MIL
3,4 FBDQS[7..0]	FBDQS[7..0]	10MIL
3,4,6,7 FBD[127..0]	FBD[127..0]	10MIL
4 MFBDQM[7..0]	MFBDQM[7..0]	10MIL
4 MFBDQS[7..0]	MFBDQS[7..0]	10MIL
3,4 FBAA[11..0]	FBAA[11..0]	10MIL
3,4 FBARAS*	FBARAS*	10MIL
3,4 FBACAS*	FBACAS*	10MIL
3,4 FBAWE*	FBAWE*	10MIL
3,4 FBACS0*	FBACS0*	10MIL
3 FBACS1*	FBACS1*	10MIL
3,4 FBABA[1..0]	FBABA[1..0]	10MIL
3,4 FBACKE	FBACKE	10MIL

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Custom	8x16 DDR 32..63 128 bit	00A

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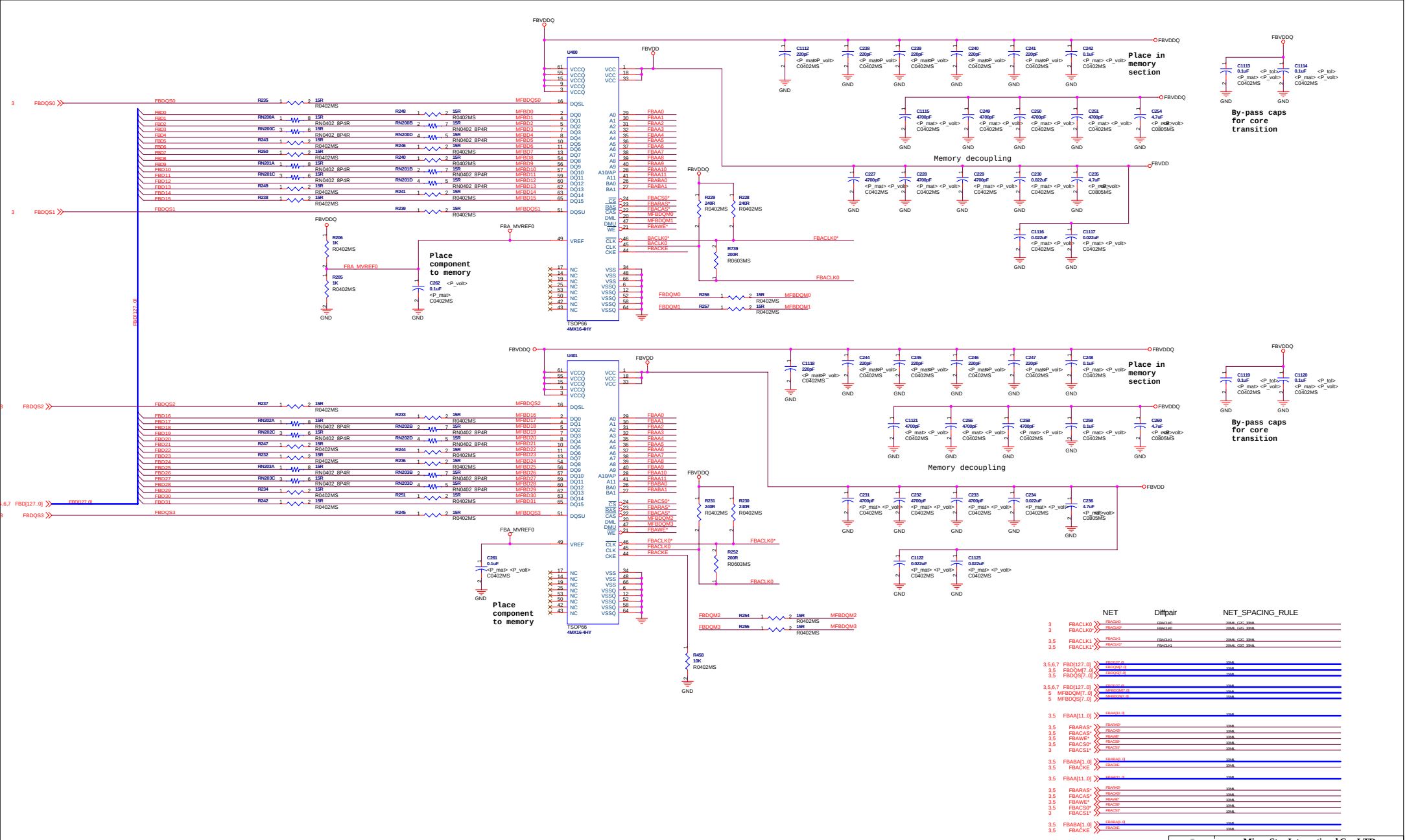
FBVDDQ
FBVDD
U400
U401
TSOP66
4MX16-4HY
Place component to memory
Place in memory section
By-pass caps for core transition
Memory decoupling
FBA_MVREF0
FBACLK0*
FBACLK0
FBACKE
FBDQM0
FBDQM1
FBDQM2
FBDQM3
FBDQS0
FBDQS1
FBDQS2
FBDQS3
FBD[127..0]
GND
NET
Diffpair
NET_SPACING_RULE
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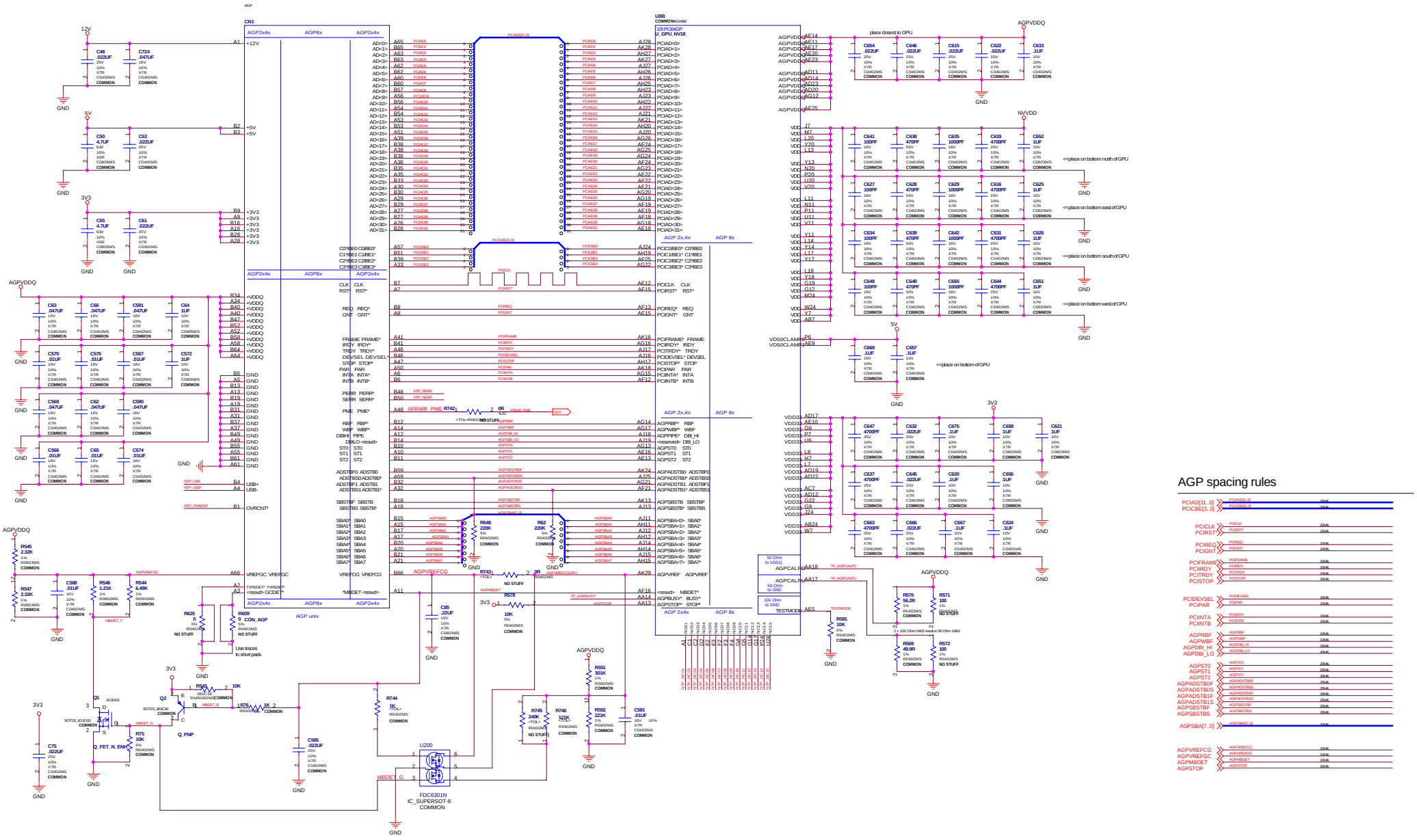
NV18 FRAMEBUFFER INTERFACE AND DECOUPLING

NV18 AGP SECTION AND AGP CONNECTOR



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C116, NV18, 8MX16DDR, 128MB, Video IN/OUT, DVI-I, VGA

Page Overview

A00

HISTORY:

X00:	INITIAL VERSION
X01	Remove R117, C87, C131, C143 for CKE
	Change C736, C743 to 18pf capacitors.
	Remove C1099 - additional Capacitor for AGPVREFcg
	Changed AGPVREFcg circuit.

C116 Base on P112 to Modify.

1. Change page 4~7 & page 18 Reference.
2. Change J1 foot print from silm type to stand D-SUB.
3. Remove I1394 function.
4. ~~Page 2, change voltage C75.1 & Q2.E from 3V3 to A3V3.~~
5. Page 8, Add Twin Bios for MSI function.
6. Page 16 ,replace INTERNAL VIDEO CAPTURE CONNECTOR.
7. Page 17 ,ADD C874 & C1098 ALE CAP. (DUAL-LAY)
8. Page 18 , Add H/W Monitor founction for MSI .
9. Page 2 change Q508, Q509 footprint from SOT23 to SOT-6 U200 package.

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