P229-B01 DESIGN

PAGE SUMMARY:

8981 Ver : 00A modify P229-B01 Summary

Page 11. Add Video in connect to mini-din 10 pin & remove J5.

Page 12. Add DVI-I common choke.

Page 13. Connect net MIOBD 2 , MIOBD 6 & MIOBD 7 to BUS.

Page 15. Modify Power ,PWM change to ISL6549.

Page 16. Add Video function.

REVISION HISTORY:

X1 Initial Release

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-10229-BASE-SCH	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES
1	nv43dvivgatv128m16x	600-10229-0002-101	P229-B01 NV43 GEN DVI-I/VGA/S-VIDEO 128MB
2	nv43dvivgatv128m8x	600-10229-0003-101	P229-B01 NV43 GEN DVI-I/VGA/HDTV 128MB 8Mx16
3	43gldvivgatv128m8x	600-50229-0001-101	P229-B01 NV43-GL GEN DVI-I/VGA/HDTV 128MB
4	nv43dvivgatv256m16x	600-10229-0004-101	P229-B01 NV43 GEN DVI-I/VGA/HDTV 256MB 16Mx16
5	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
6	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
7	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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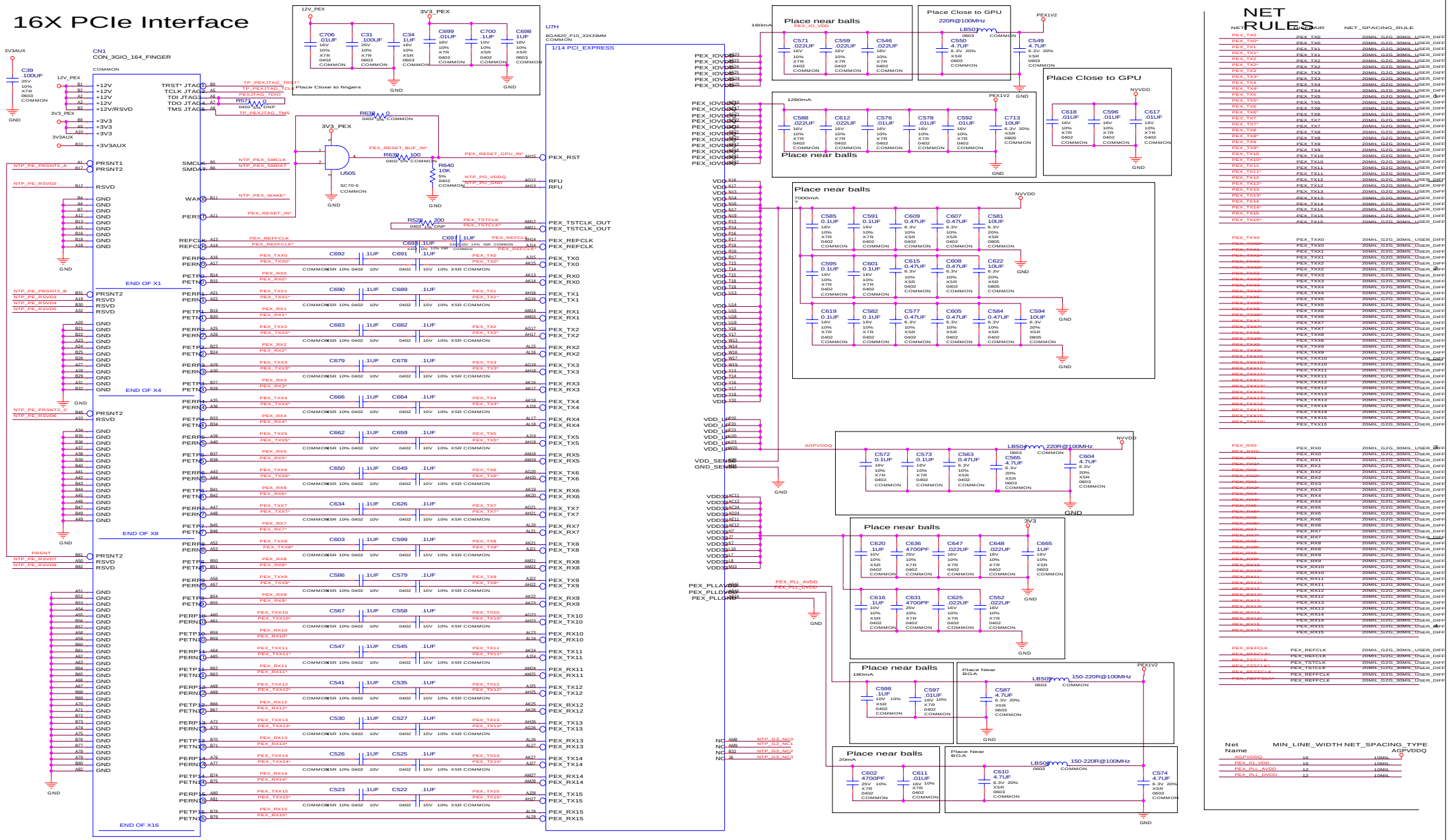
16X PCIe Interface



NET RULES

NET_NAME	DIFF_PAIR	NET_SPACING_RULE
PEX_TX0	PEX_TX0	20MIL_G2G_30MIL_USER_DIFF
PEX_TX0*	PEX_TX0	20MIL_G2G_30MIL_USER_DIFF
PEX_TX1	PEX_TX1	20MIL_G2G_30MIL_USER_DIFF
PEX_TX1*	PEX_TX1	20MIL_G2G_30MIL_USER_DIFF
PEX_TX2	PEX_TX2	20MIL_G2G_30MIL_USER_DIFF
PEX_TX2*	PEX_TX2	20MIL_G2G_30MIL_USER_DIFF
PEX_TX3	PEX_TX3	20MIL_G2G_30MIL_USER_DIFF
PEX_TX3*	PEX_TX3	20MIL_G2G_30MIL_USER_DIFF
PEX_TX4	PEX_TX4	20MIL_G2G_30MIL_USER_DIFF
PEX_TX4*	PEX_TX4	20MIL_G2G_30MIL_USER_DIFF
PEX_TX5	PEX_TX5	20MIL_G2G_30MIL_USER_DIFF
PEX_TX5*	PEX_TX5	20MIL_G2G_30MIL_USER_DIFF
PEX_TX6	PEX_TX6	20MIL_G2G_30MIL_USER_DIFF
PEX_TX6*	PEX_TX6	20MIL_G2G_30MIL_USER_DIFF
PEX_TX7	PEX_TX7	20MIL_G2G_30MIL_USER_DIFF
PEX_TX7*	PEX_TX7	20MIL_G2G_30MIL_USER_DIFF
PEX_TX8	PEX_TX8	20MIL_G2G_30MIL_USER_DIFF
PEX_TX8*	PEX_TX8	20MIL_G2G_30MIL_USER_DIFF
PEX_TX9	PEX_TX9	20MIL_G2G_30MIL_USER_DIFF
PEX_TX9*	PEX_TX9	20MIL_G2G_30MIL_USER_DIFF
PEX_TX10	PEX_TX10	20MIL_G2G_30MIL_USER_DIFF
PEX_TX10*	PEX_TX10	20MIL_G2G_30MIL_USER_DIFF
PEX_TX11	PEX_TX11	20MIL_G2G_30MIL_USER_DIFF
PEX_TX11*	PEX_TX11	20MIL_G2G_30MIL_USER_DIFF
PEX_TX12	PEX_TX12	20MIL_G2G_30MIL_USER_DIFF
PEX_TX12*	PEX_TX12	20MIL_G2G_30MIL_USER_DIFF
PEX_TX13	PEX_TX13	20MIL_G2G_30MIL_USER_DIFF
PEX_TX13*	PEX_TX13	20MIL_G2G_30MIL_USER_DIFF
PEX_TX14	PEX_TX14	20MIL_G2G_30MIL_USER_DIFF
PEX_TX14*	PEX_TX14	20MIL_G2G_30MIL_USER_DIFF
PEX_TX15	PEX_TX15	20MIL_G2G_30MIL_USER_DIFF
PEX_TX15*	PEX_TX15	20MIL_G2G_30MIL_USER_DIFF

NET_NAME	DIFF_PAIR	NET_SPACING_RULE
PEX_TX0*	PEX_TX0*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX1	PEX_TX1	20MIL_G2G_30MIL_USER_DIFF
PEX_TX1*	PEX_TX1*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX2	PEX_TX2	20MIL_G2G_30MIL_USER_DIFF
PEX_TX2*	PEX_TX2*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX3	PEX_TX3	20MIL_G2G_30MIL_USER_DIFF
PEX_TX3*	PEX_TX3*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX4	PEX_TX4	20MIL_G2G_30MIL_USER_DIFF
PEX_TX4*	PEX_TX4*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX5	PEX_TX5	20MIL_G2G_30MIL_USER_DIFF
PEX_TX5*	PEX_TX5*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX6	PEX_TX6	20MIL_G2G_30MIL_USER_DIFF
PEX_TX6*	PEX_TX6*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX7	PEX_TX7	20MIL_G2G_30MIL_USER_DIFF
PEX_TX7*	PEX_TX7*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX8	PEX_TX8	20MIL_G2G_30MIL_USER_DIFF
PEX_TX8*	PEX_TX8*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX9	PEX_TX9	20MIL_G2G_30MIL_USER_DIFF
PEX_TX9*	PEX_TX9*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX10	PEX_TX10	20MIL_G2G_30MIL_USER_DIFF
PEX_TX10*	PEX_TX10*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX11	PEX_TX11	20MIL_G2G_30MIL_USER_DIFF
PEX_TX11*	PEX_TX11*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX12	PEX_TX12	20MIL_G2G_30MIL_USER_DIFF
PEX_TX12*	PEX_TX12*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX13	PEX_TX13	20MIL_G2G_30MIL_USER_DIFF
PEX_TX13*	PEX_TX13*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX14	PEX_TX14	20MIL_G2G_30MIL_USER_DIFF
PEX_TX14*	PEX_TX14*	20MIL_G2G_30MIL_USER_DIFF
PEX_TX15	PEX_TX15	20MIL_G2G_30MIL_USER_DIFF
PEX_TX15*	PEX_TX15*	20MIL_G2G_30MIL_USER_DIFF

NET_NAME	DIFF_PAIR	NET_SPACING_RULE
PEX_RX0	PEX_RX0	20MIL_G2G_30MIL_USER_DIFF
PEX_RX0*	PEX_RX0*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX1	PEX_RX1	20MIL_G2G_30MIL_USER_DIFF
PEX_RX1*	PEX_RX1*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX2	PEX_RX2	20MIL_G2G_30MIL_USER_DIFF
PEX_RX2*	PEX_RX2*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX3	PEX_RX3	20MIL_G2G_30MIL_USER_DIFF
PEX_RX3*	PEX_RX3*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX4	PEX_RX4	20MIL_G2G_30MIL_USER_DIFF
PEX_RX4*	PEX_RX4*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX5	PEX_RX5	20MIL_G2G_30MIL_USER_DIFF
PEX_RX5*	PEX_RX5*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX6	PEX_RX6	20MIL_G2G_30MIL_USER_DIFF
PEX_RX6*	PEX_RX6*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX7	PEX_RX7	20MIL_G2G_30MIL_USER_DIFF
PEX_RX7*	PEX_RX7*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX8	PEX_RX8	20MIL_G2G_30MIL_USER_DIFF
PEX_RX8*	PEX_RX8*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX9	PEX_RX9	20MIL_G2G_30MIL_USER_DIFF
PEX_RX9*	PEX_RX9*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX10	PEX_RX10	20MIL_G2G_30MIL_USER_DIFF
PEX_RX10*	PEX_RX10*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX11	PEX_RX11	20MIL_G2G_30MIL_USER_DIFF
PEX_RX11*	PEX_RX11*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX12	PEX_RX12	20MIL_G2G_30MIL_USER_DIFF
PEX_RX12*	PEX_RX12*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX13	PEX_RX13	20MIL_G2G_30MIL_USER_DIFF
PEX_RX13*	PEX_RX13*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX14	PEX_RX14	20MIL_G2G_30MIL_USER_DIFF
PEX_RX14*	PEX_RX14*	20MIL_G2G_30MIL_USER_DIFF
PEX_RX15	PEX_RX15	20MIL_G2G_30MIL_USER_DIFF
PEX_RX15*	PEX_RX15*	20MIL_G2G_30MIL_USER_DIFF

NET_NAME	DIFF_PAIR	NET_SPACING_RULE
PEX_REFCLK	PEX_REFCLK	20MIL_G2G_30MIL_USER_DIFF
PEX_REFCLK*	PEX_REFCLK*	20MIL_G2G_30MIL_USER_DIFF
PEX_TSTCLK	PEX_TSTCLK	20MIL_G2G_30MIL_USER_DIFF
PEX_TSTCLK*	PEX_TSTCLK*	20MIL_G2G_30MIL_USER_DIFF
PEX_REFFCLK	PEX_REFFCLK	20MIL_G2G_30MIL_USER_DIFF
PEX_REFFCLK*	PEX_REFFCLK*	20MIL_G2G_30MIL_USER_DIFF

Net Name	MIN_LINE_WIDTH	NET_SPACING_TYPE
AGPVDDQ	16	10MIL
PEX_IO_VDD	16	10MIL
PEX_PLL_AVDD	12	10MIL
PEX_PLL_DVDD	12	10MIL

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MS-8981 base on P229 modify

Size	Document Number	Rev
Custom	PCI Express Interface	100
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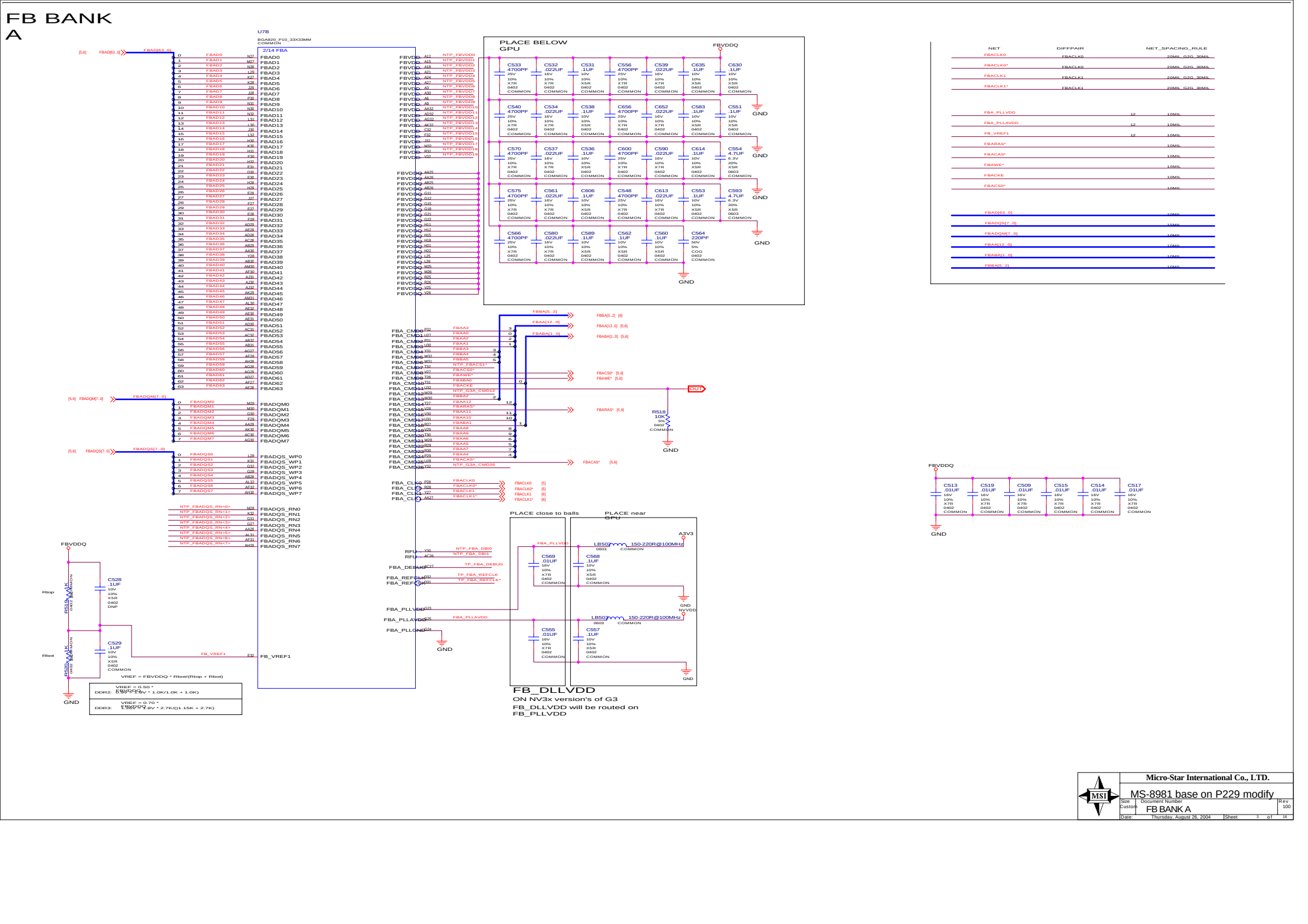
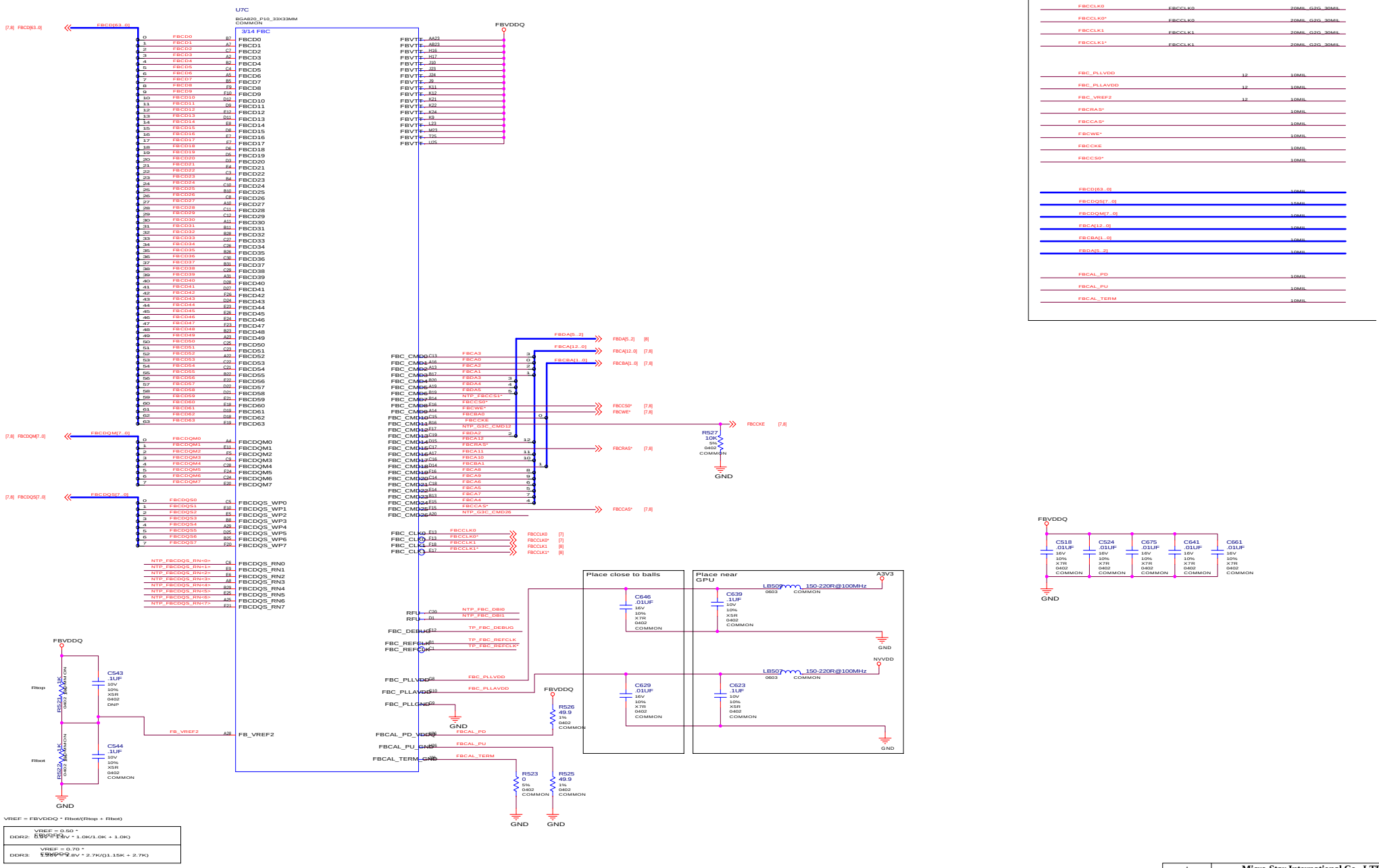
FB BANK A



Micro-Star International Co., LTD.	
MS-8981 base on P229 modify	
Size: Custom	Document Number: FB BANK A
Rev: 100	
Date: Thursday, August 26, 2004	Sheet 3 of 16

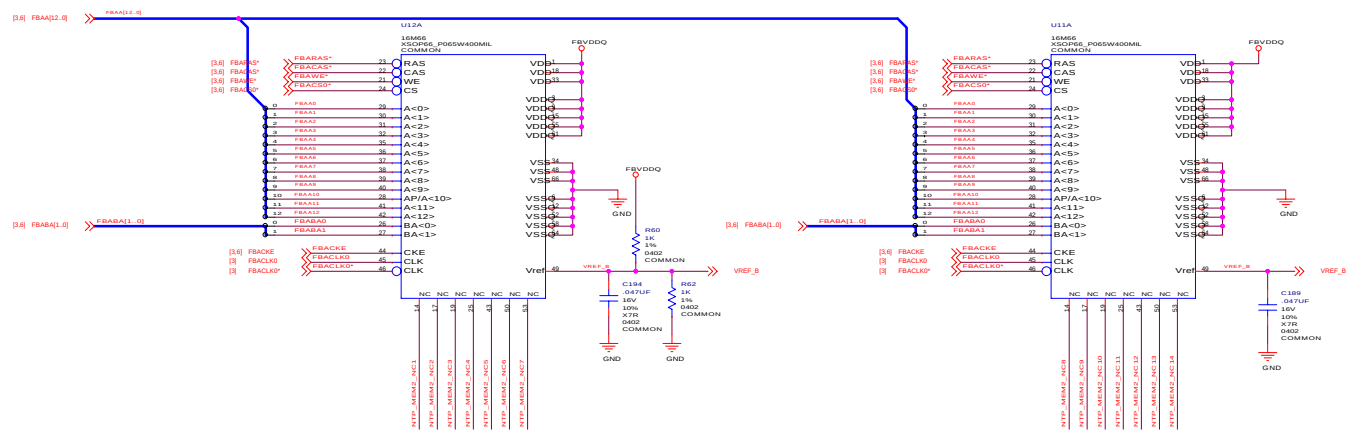
FB BANK C

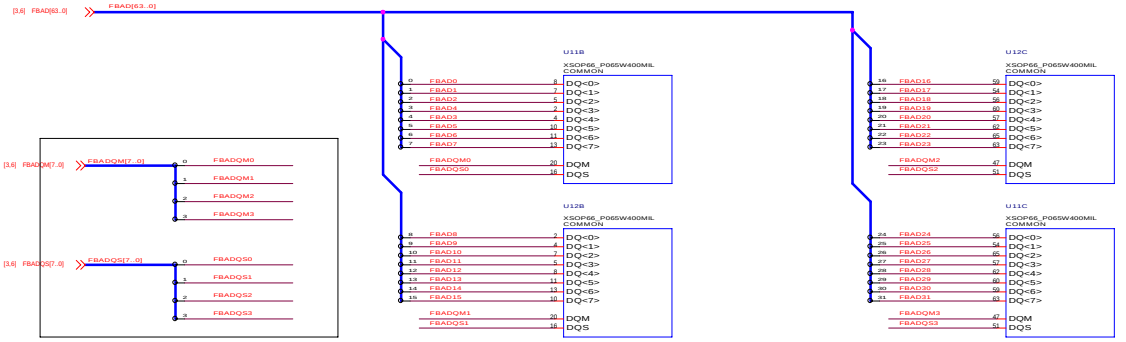


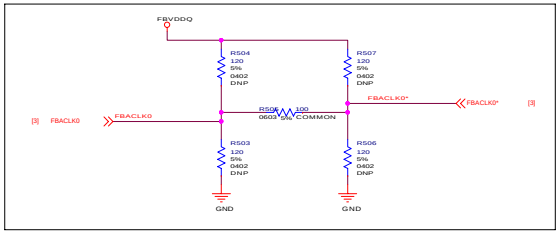
Micro-Star International Co., LTD.	
MS-8981 base on P229 modify	
Size: Custom	Document Number: FB BANK C
Rev: 100	
Date: Thursday, August 26, 2004	Sheet 4 of 16

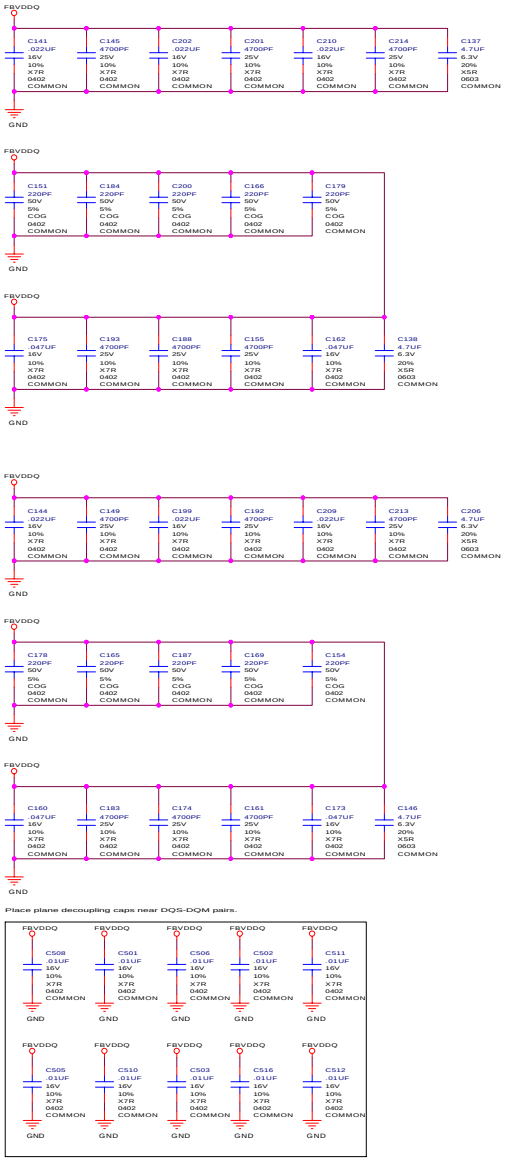
MEMORY 1st bank
0..31

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY









Micro-Star International Co., LTD.			
MS-8981 base on P229 modify			
Size: Custom	Document Number: Memory 1st bank 0..31		Rev: 100
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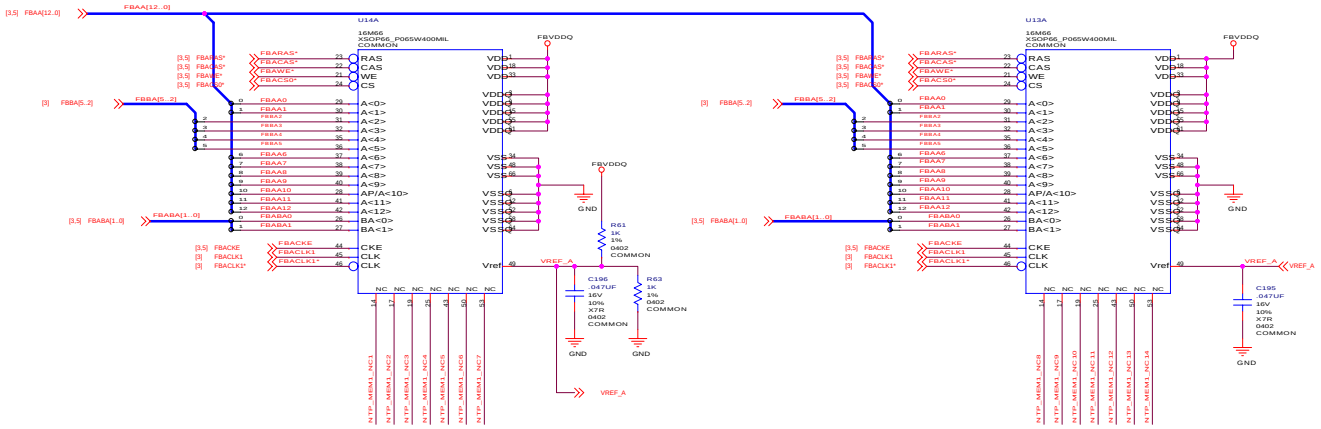
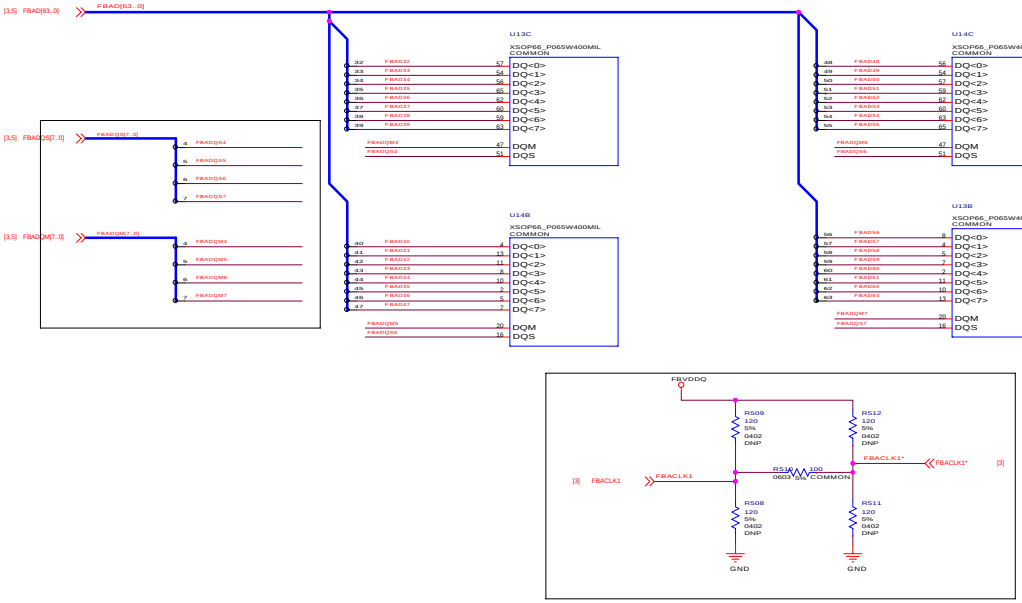
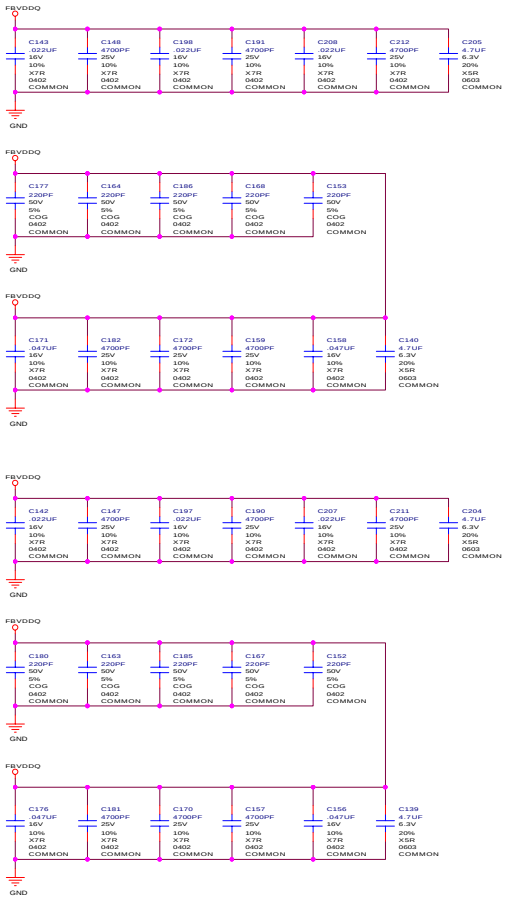
MEMORY 1st bank
32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE
TO MEMORY







NET_PHYSICAL_TYPE	NET_SPACING_TYPE		
VREF_A	12	10MIL	VREF_A
VREF_B	12	10MIL	VREF_B [5]

Micro-Star International Co., LTD.		
MS-8981 base on P229 modify		
Size: Custom	Document Number: Memory 1st 32..63	Rev: 100
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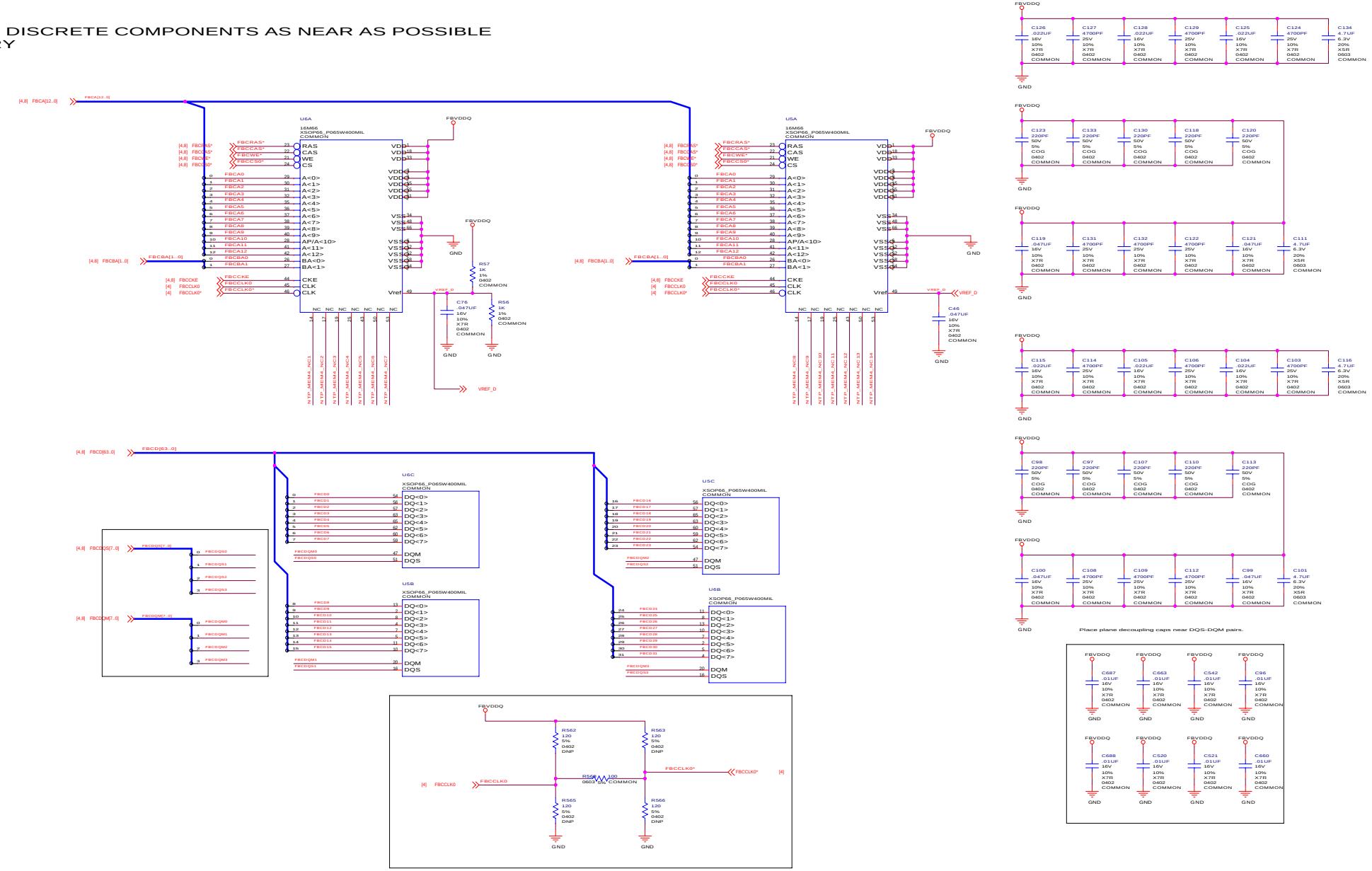
MEMORY 2nd bank
0..31

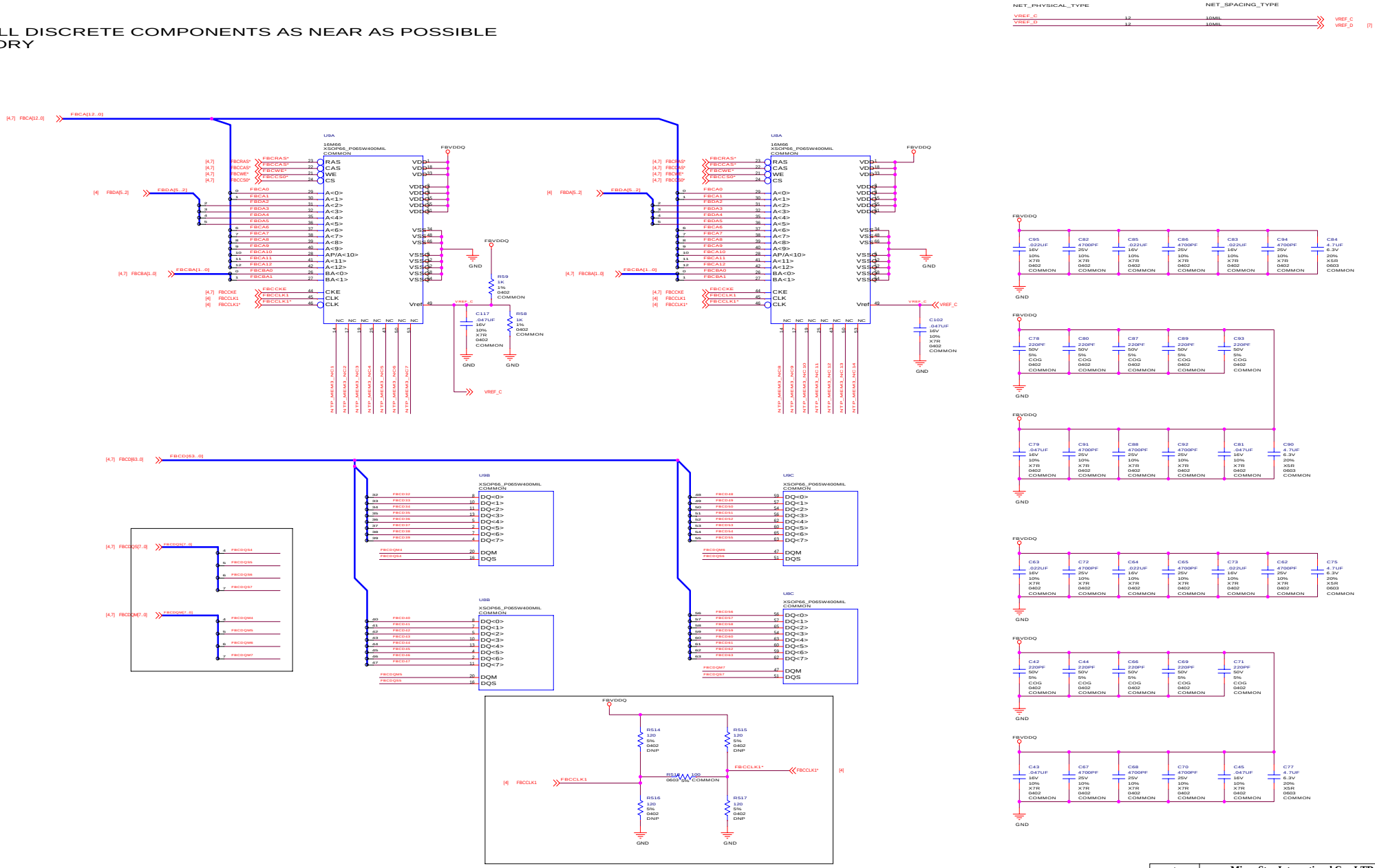
PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



Micro-Star International Co., LTD.			
MS-8981 base on P229 modify			
Size: Custom	Document Number: Memory 2nd bank 0..31		Rev: 100
Date: Thursday, August 26, 2004	Sheet 7 of 16		

MEMORY 2nd bank
32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



Micro-Star International Co., LTD.			
MS-8981 base on P229 modify			
Size: Custom	Document Number: Memory 2nd bank 32..63		Rev: 100
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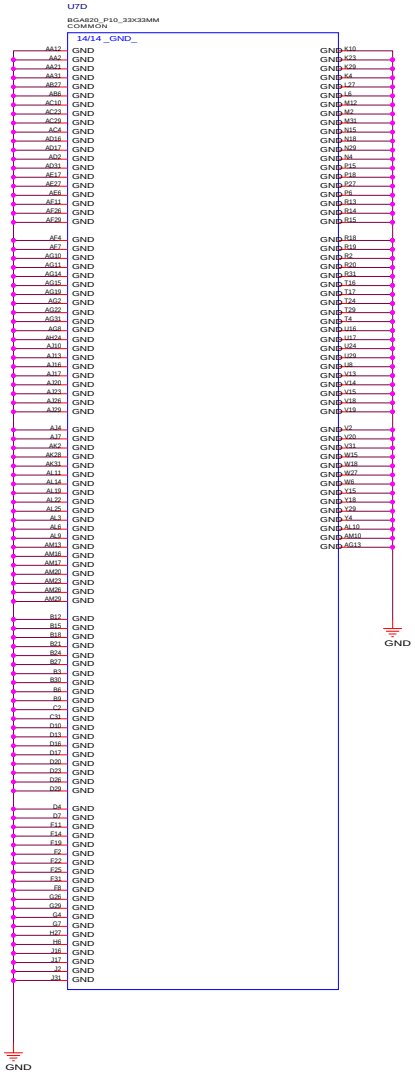
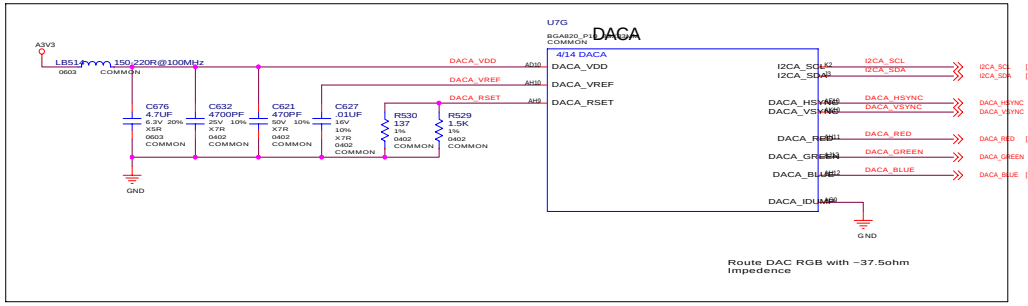
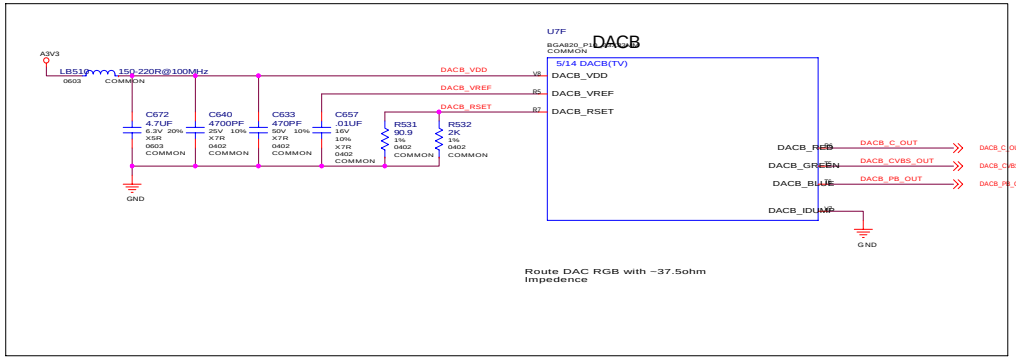
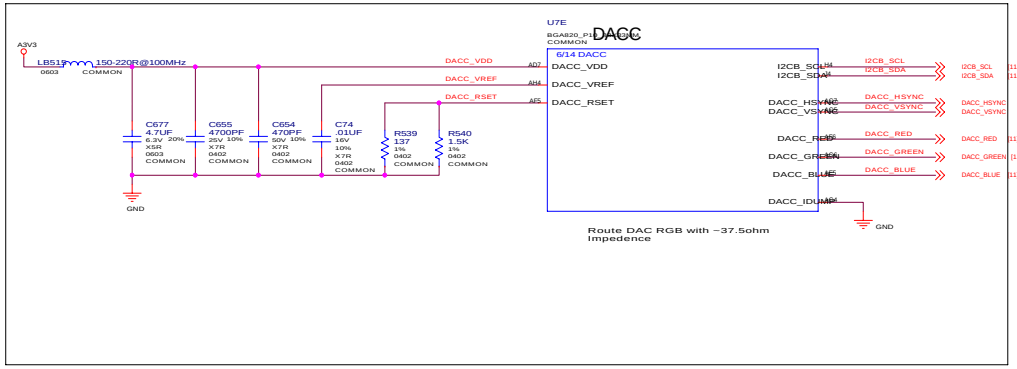
GND,DACA,DACB,DACC





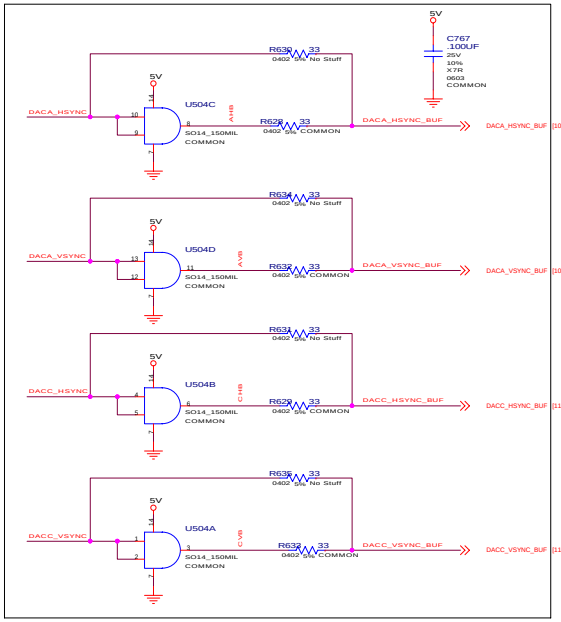




NET RULES

NET_NAME	MIN_LINE_WIDTH	NET_SPACING_RULE	IMPEDANCE
I2CA_SCL		10MIL	
I2CA_SDA		10MIL	
DACA_HSYNC		10MIL	
DACA_VSYNC		10MIL	
DACA_RED		20MIL	U6.AH11-R617.1.37.50 OHM.2%
DACA_GREEN		20MIL	U6.AJ12-R616.1.37.50 OHM.2%
DACA_BLUE		20MIL	U6.AH12-R615.1.37.50 OHM.2%
DACA_VDD	12	10MIL	
DACA_VREF	12	10MIL	
DACA_RSET	12	10MIL	
DACB_C_OUT		20MIL	U6.R6-R641.1.37.50 OHM.2%
DACB_CVBS_OUT		20MIL	U6.T5-R608.1.37.50 OHM.2%
DACB_PB_OUT		20MIL	U6.T6-R633.1.37.50 OHM.2%
DACB_VDD	12	10MIL	
DACB_VREF	12	10MIL	
DACB_RSET	12	10MIL	
DACC_HSYNC		10MIL	
DACC_VSYNC		10MIL	
DACC_RED		20MIL	U6.AF6-R623.1.37.50 OHM.2%
DACC_GREEN		20MIL	U6.AG6-R627.1.37.50 OHM.2%
DACC_BLUE		20MIL	U6.AF5-R620.1.37.50 OHM.2%
DACC_VDD	12	10MIL	
DACC_VREF	12	10MIL	
DACC_RSET	12	10MIL	
TV_RSET_SEL	12	10MIL	
I2CB_SDA		10MIL	
I2CB_SCL		10MIL	
SEL_2ND_DEV		10MIL	
AHB		10MIL	
AVB		10MIL	
DACA_HSYNC_BUF		10MIL	
DACA_VSYNC_BUF		10MIL	
CHB		10MIL	
CVB		10MIL	
DACC_HSYNC_BUF		10MIL	
DACC_VSYNC_BUF		10MIL	

DACA & DACC Sync Buffers



Micro-Star International Co., LTD.			
MS-8981 base on P229 modify			
Size: Custom	Document Number: GND,DACA, DACB, DACC		Rev: 100
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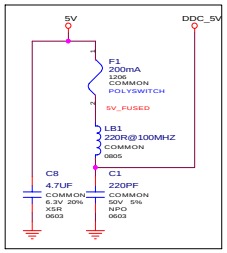
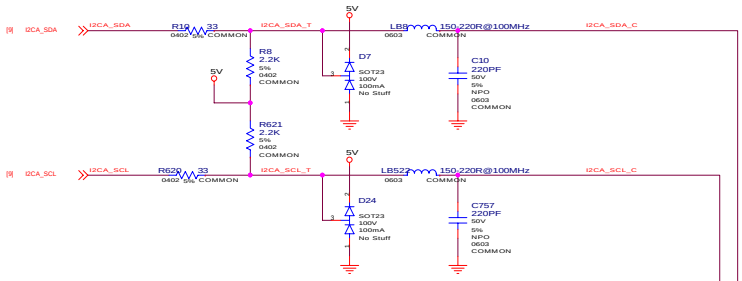
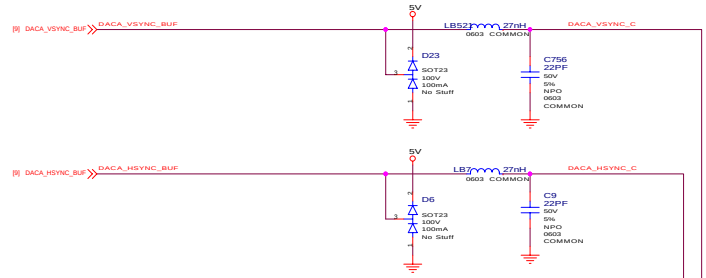
VGA
DACA

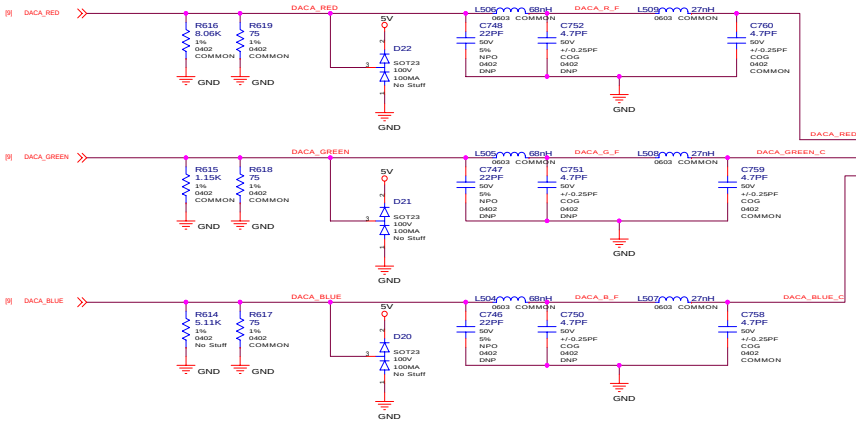
DDC
5V

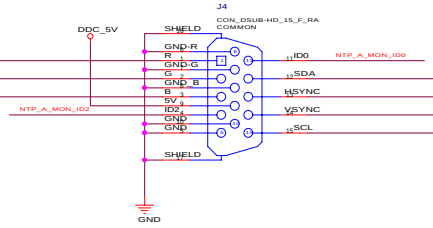


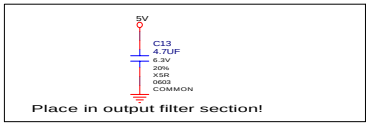
Changed the FUSE to 200mA







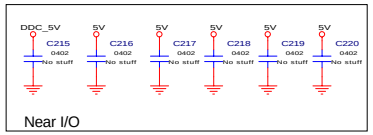


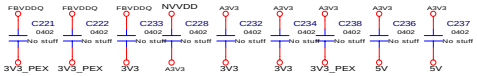


NET_NAME	NET_SPACING_RULE
DACA_R_F	20MIL
DACA_G_F	20MIL
DACA_B_F	20MIL
DACA_RED_C	20MIL
DACA_GREEN_C	20MIL
DACA_BLUE_C	20MIL
DACA_VSYNC_C	10MIL
DACA_HSYNC_C	10MIL

	MIN_LINE_WIDTH	VOLTAGE
5V_FUSED	16	5V
5V	16	5V
DDC_5V	16	5V
A3V3	16	3.3V
GND	16	0V

EMI Reserve Cap.





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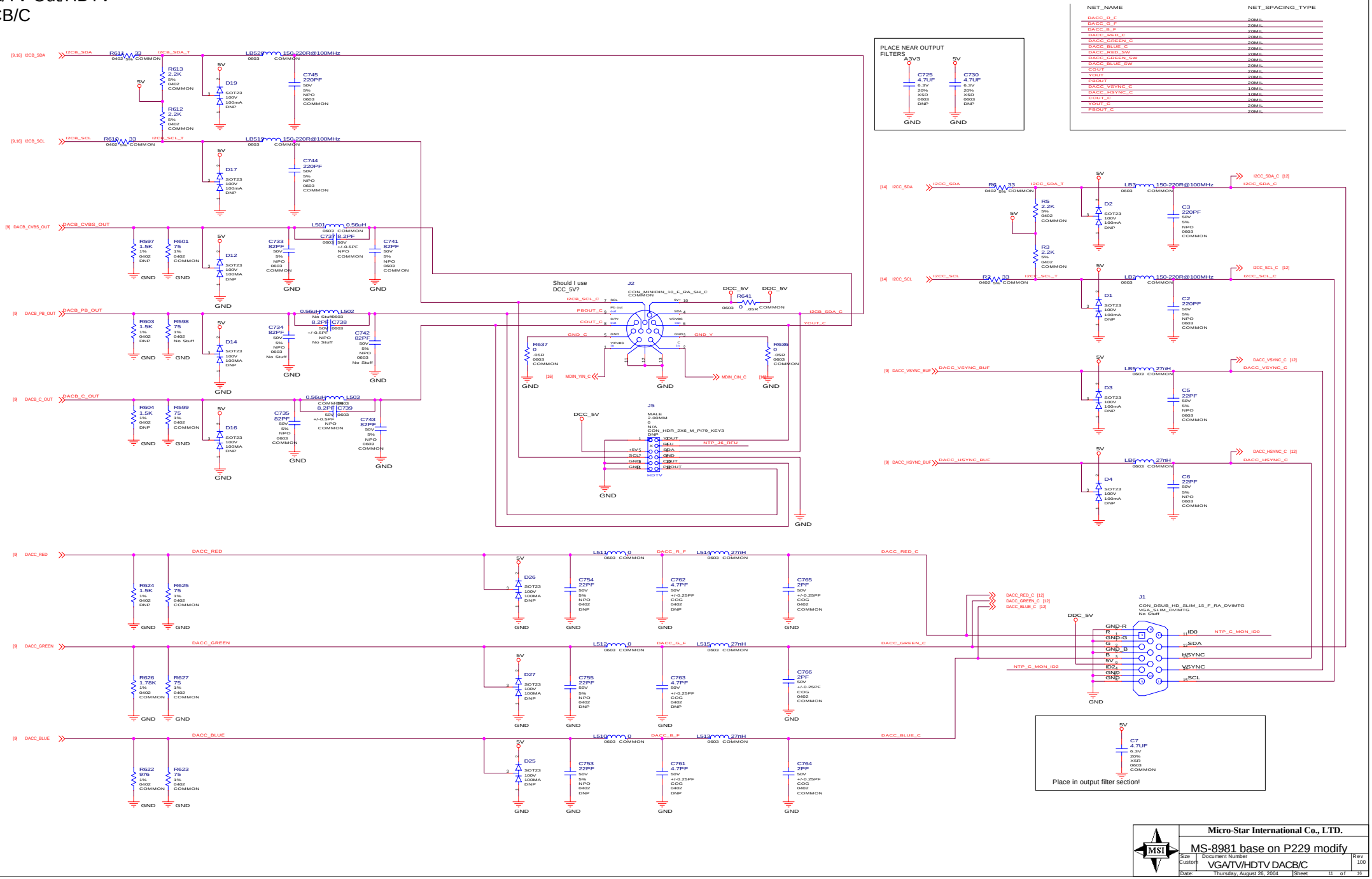
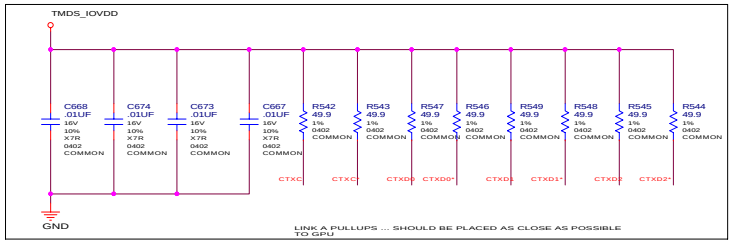
VGA/TV Out/HDTV
DACB/C



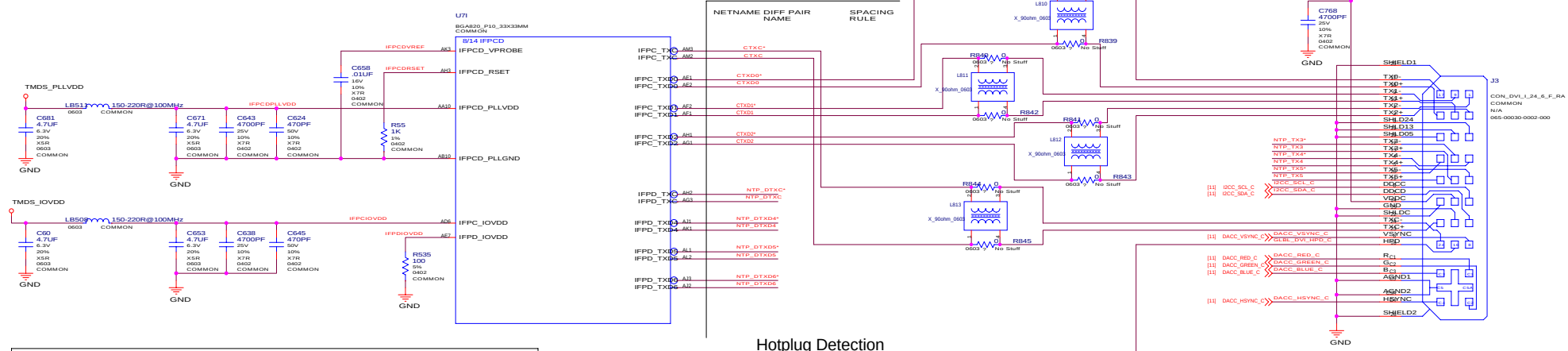
INTERNAL TMDS

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

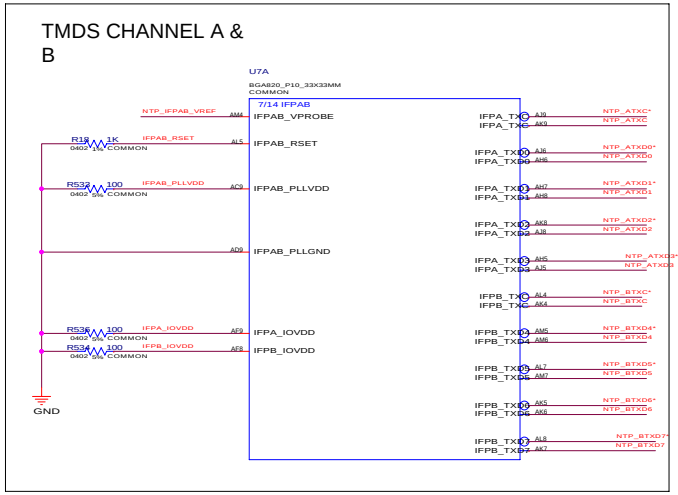
NETNAME	DIFF PAIR NAME	SPACING RULE
CTXC*	CTXC	20MIL_G2G_30MIL
CTXC	CTXC	20MIL_G2G_30MIL
CTXD0*	CTXD0	20MIL_G2G_30MIL
CTXD0	CTXD0	20MIL_G2G_30MIL
CTXD1*	CTXD1	20MIL_G2G_30MIL
CTXD1	CTXD1	20MIL_G2G_30MIL
CTXD2*	CTXD2	20MIL_G2G_30MIL
CTXD2	CTXD2	20MIL_G2G_30MIL



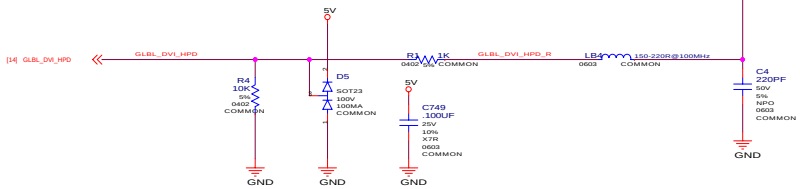
INTERNAL TMDS ..LINK C/D



TMDS CHANNEL A & B



Hotplug Detection



If no diodes stuffed shoud I stuff this?

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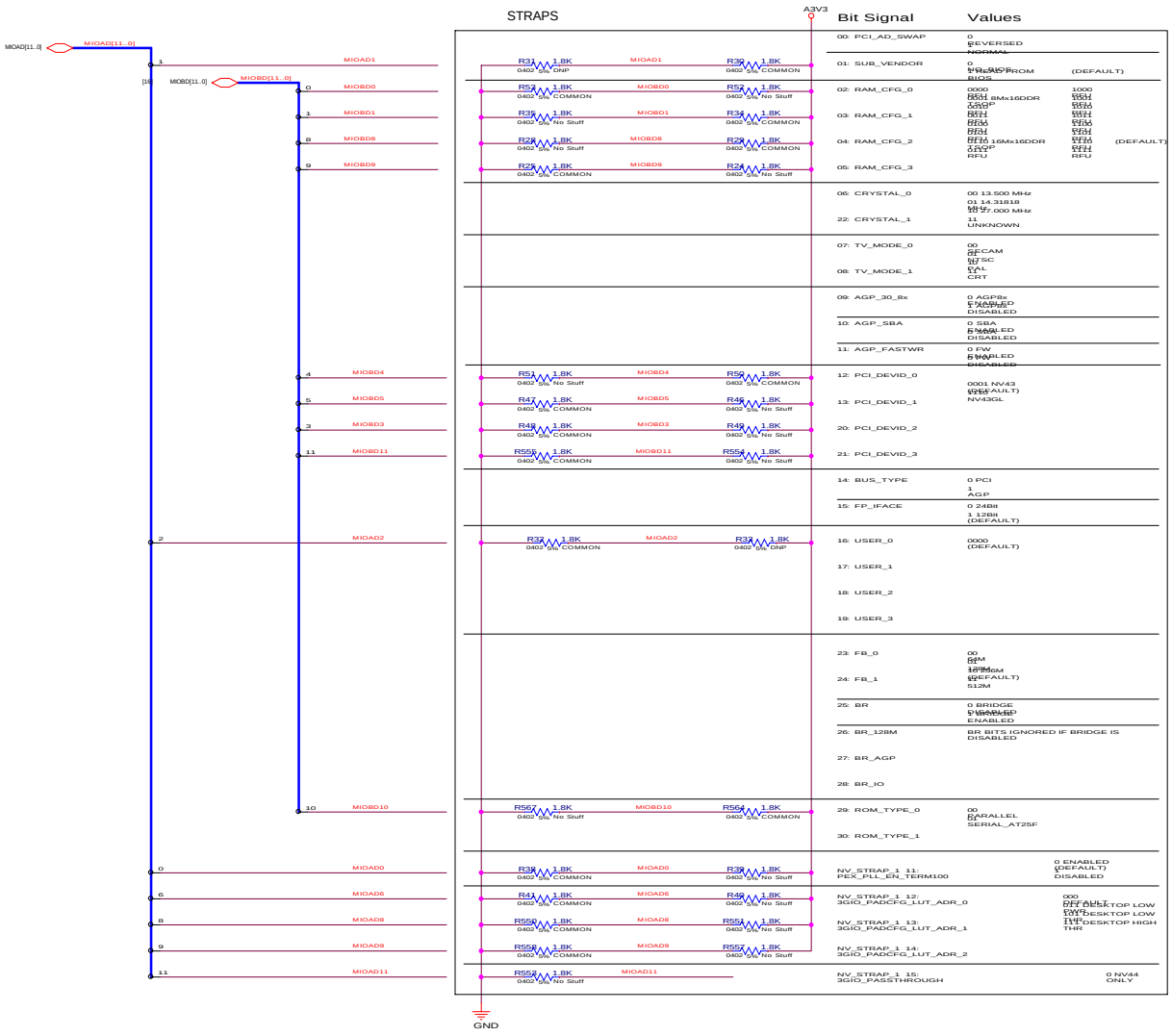
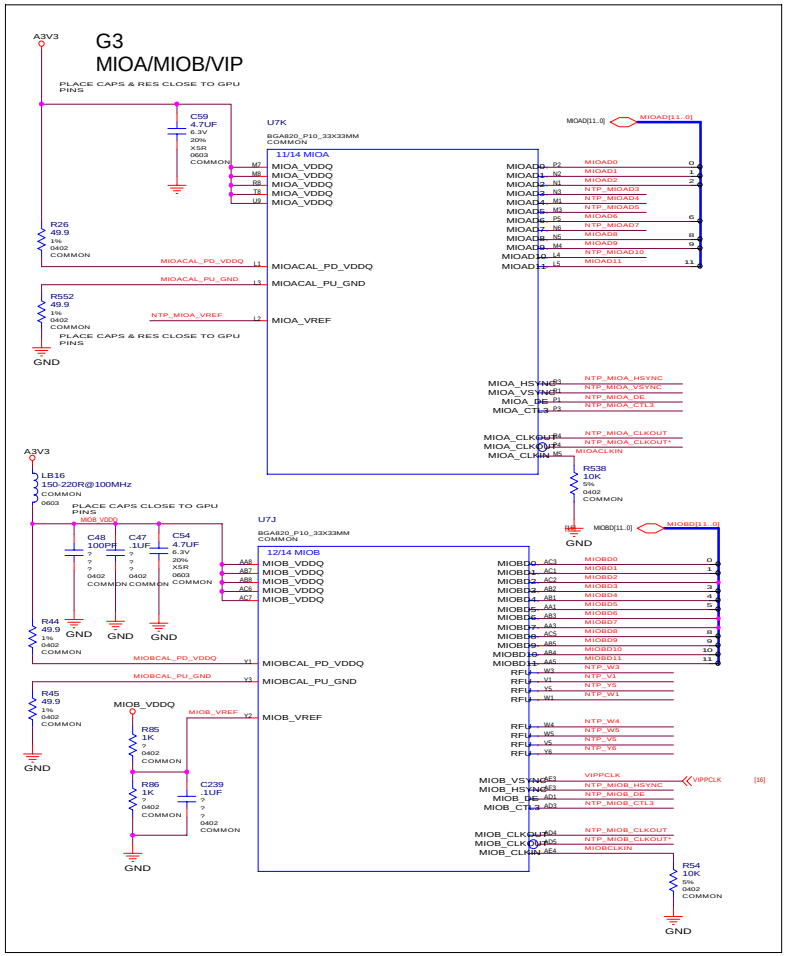
STRAPS, MIOA/MIOB

STRAPS



MIOs



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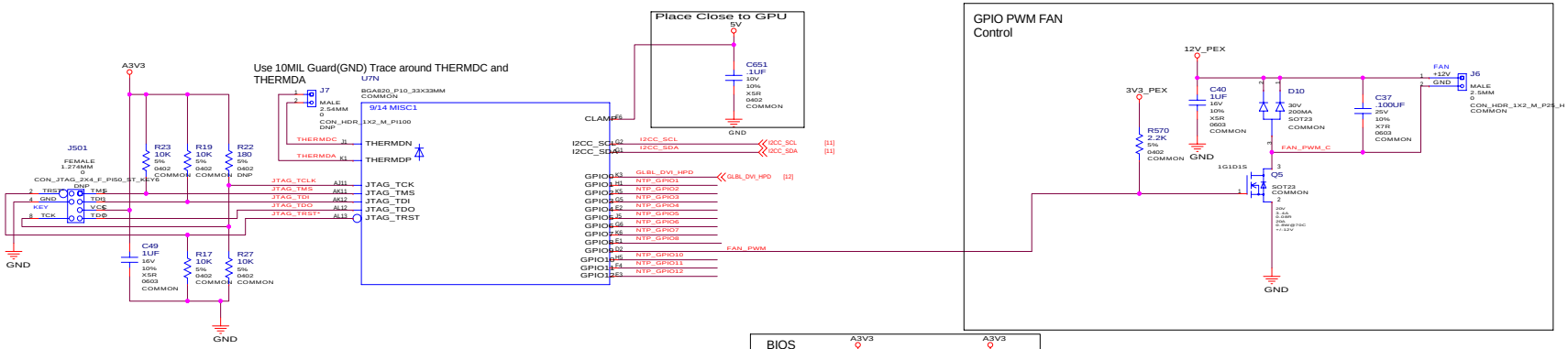
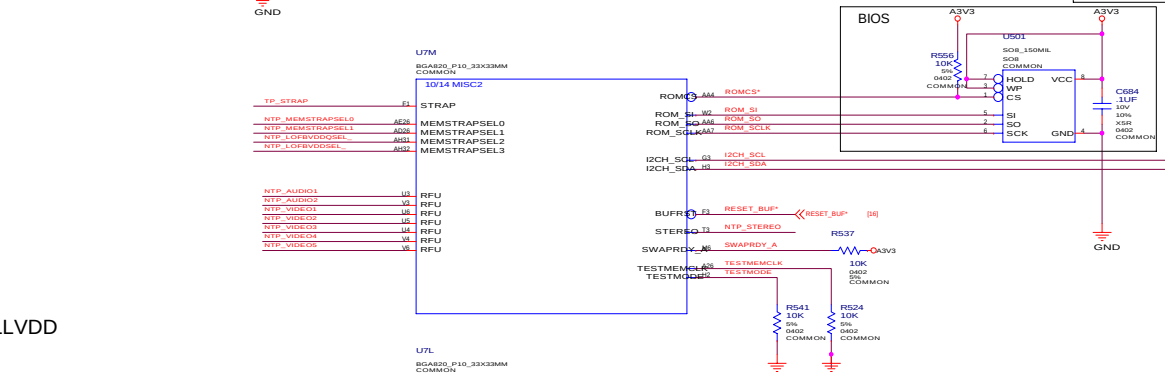
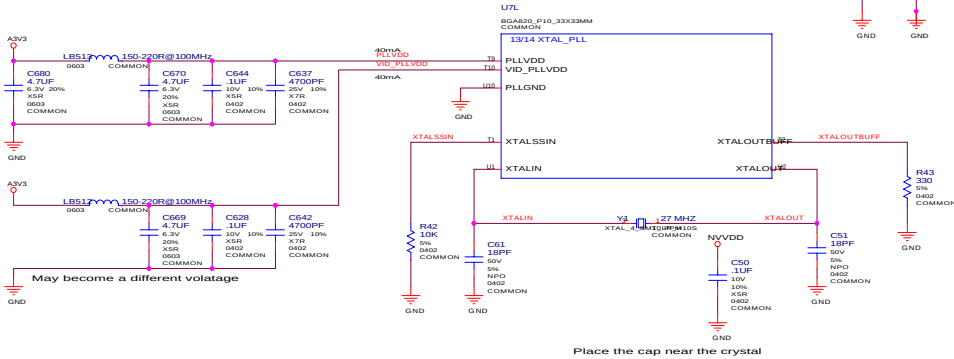
XTAL, GPIO, ROM

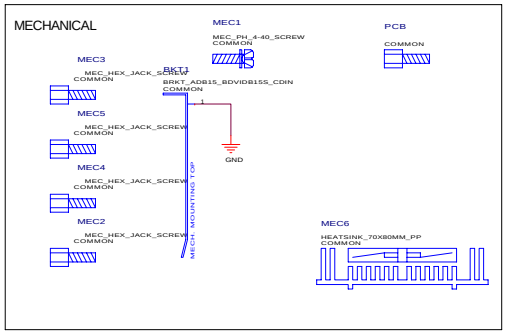
NET	MIN_LIN_WIDTH	NET_SPACING_RULE
XTALIN		20MIL
XTALOUT		20MIL
PLLVDD	12	10MIL
VID_PLLVDD	12	10MIL
FAN_PWM		20MIL
FAN_PWM_B		20MIL
FAN_PWM_C		20MIL
THERMDC	10	
THERMDA	10	





XTAL/PLLVDD





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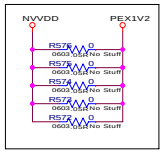
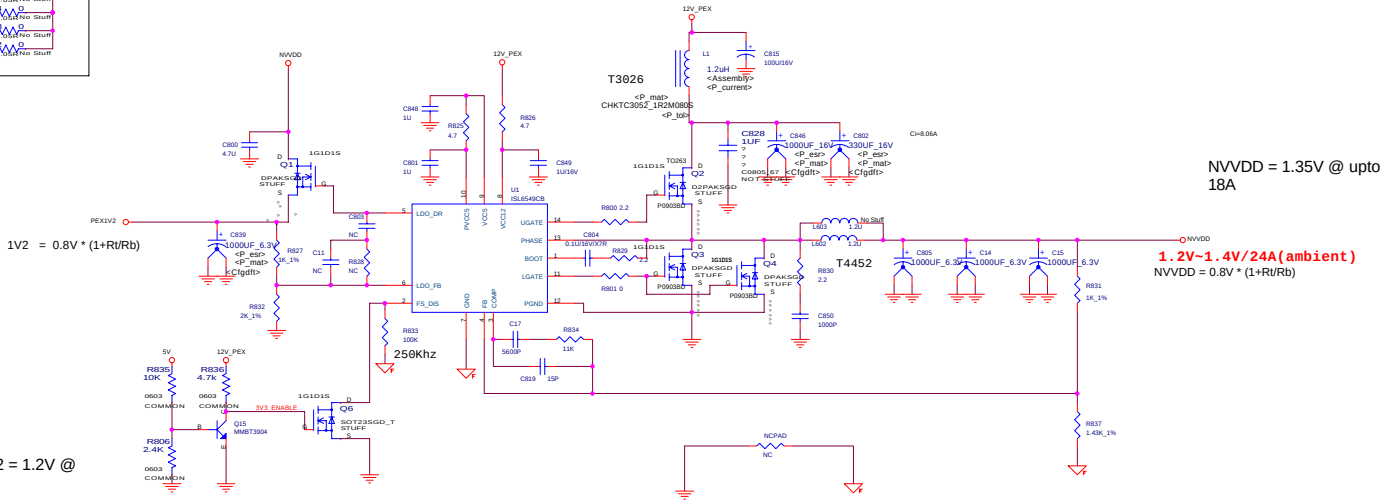
Power Supply II (ISL6549)

Net Name	MIN_LINE_WIDTH		VOLTAGE
5V	16	3	5V
NVVDD	16	20	1.35V
12V_PEX	20	6	12V
PEX1V2	20	4	1.2V
12V_PEX_FLTRD	20	6	12V
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		
FB1_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		

1V2 NVVDD bypass



NVVDD & PEX1V2



1V2 = 0.8V * (1+Rt/Rb)

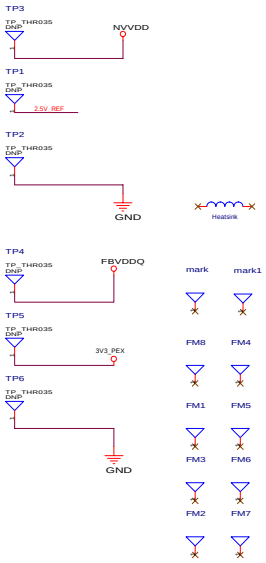
NVVDD = 1.35V @ upto 18A

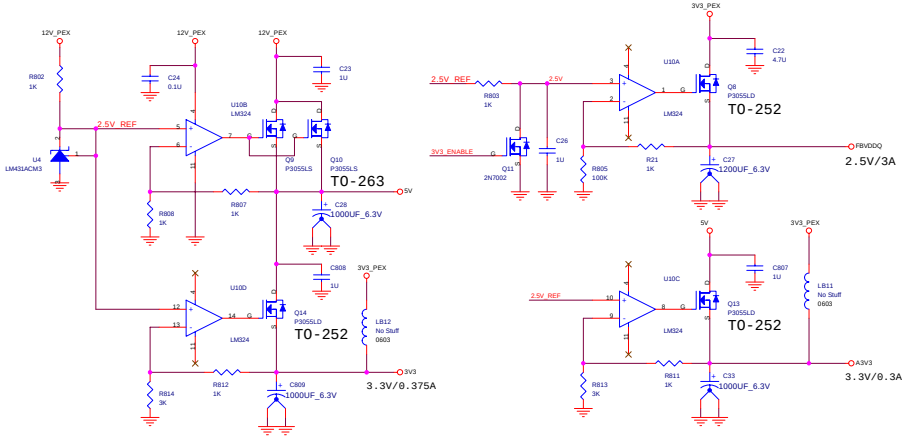
1.2V~1.4V/24A(ambient)

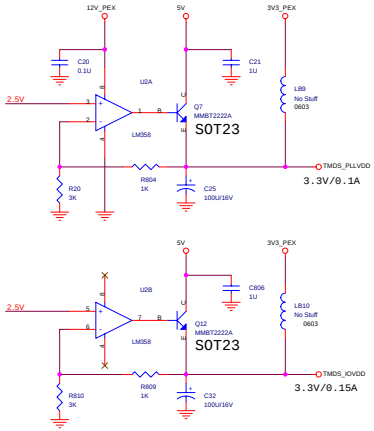
NVVDD = 0.8V * (1+Rt/Rb)

PEX1V2 = 1.2V @ 3A

5V & 3V3







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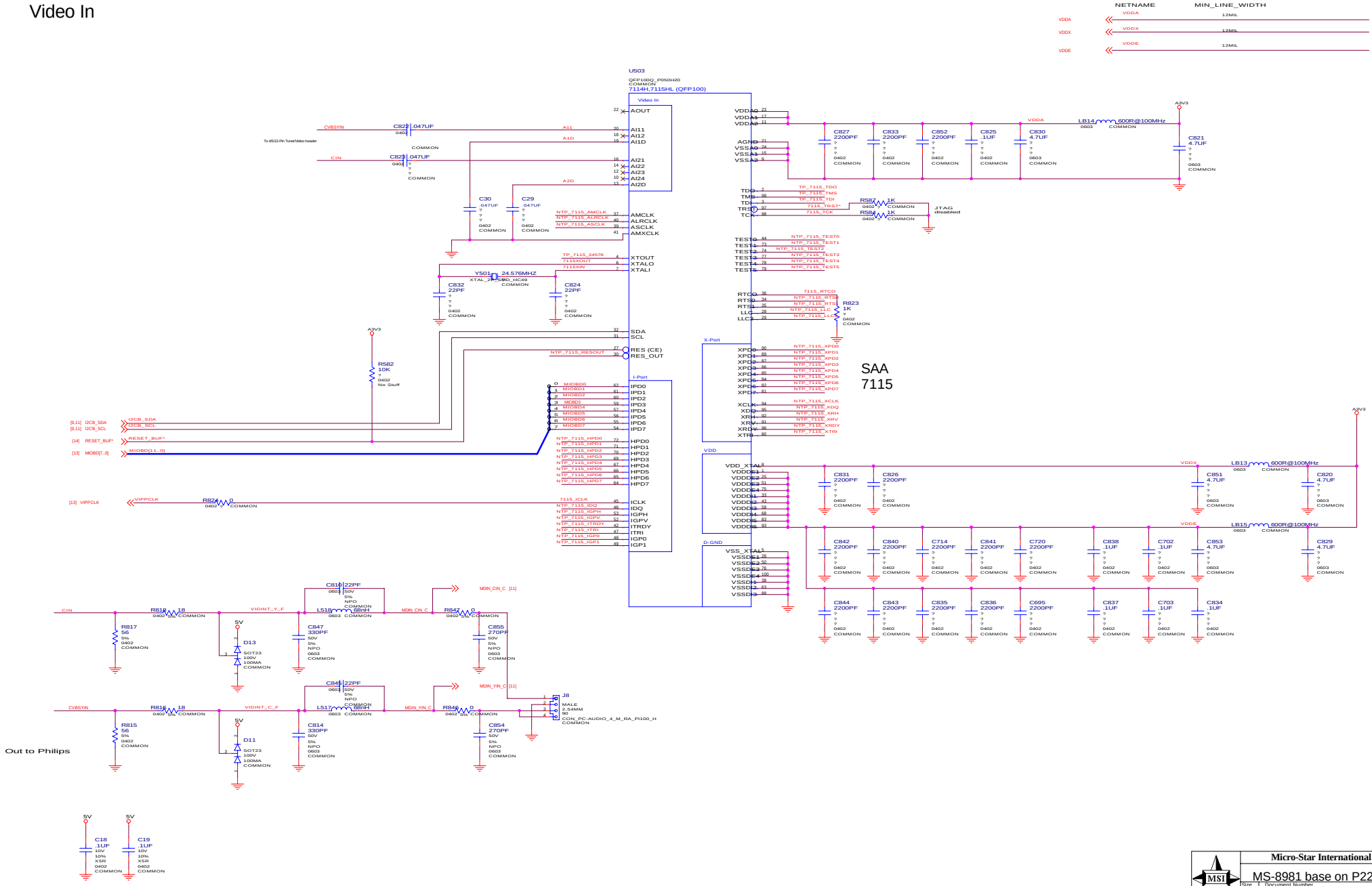
Video In


NETNAME
MIN_LINE_WIDTH
VDDA 12MIL
VDDX 12MIL
VDDE 12MIL
U503
QFP100Q_P050H20
COMMON
7114H,7115HL (QFP100)
Video In
SAA
7115
X-Port
I-Port
D-GND
VDD
JTAG
disabled
Out to Philips
Micro-Star International Co., LTD.
MS-8981 base on P229 modify
Video In
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