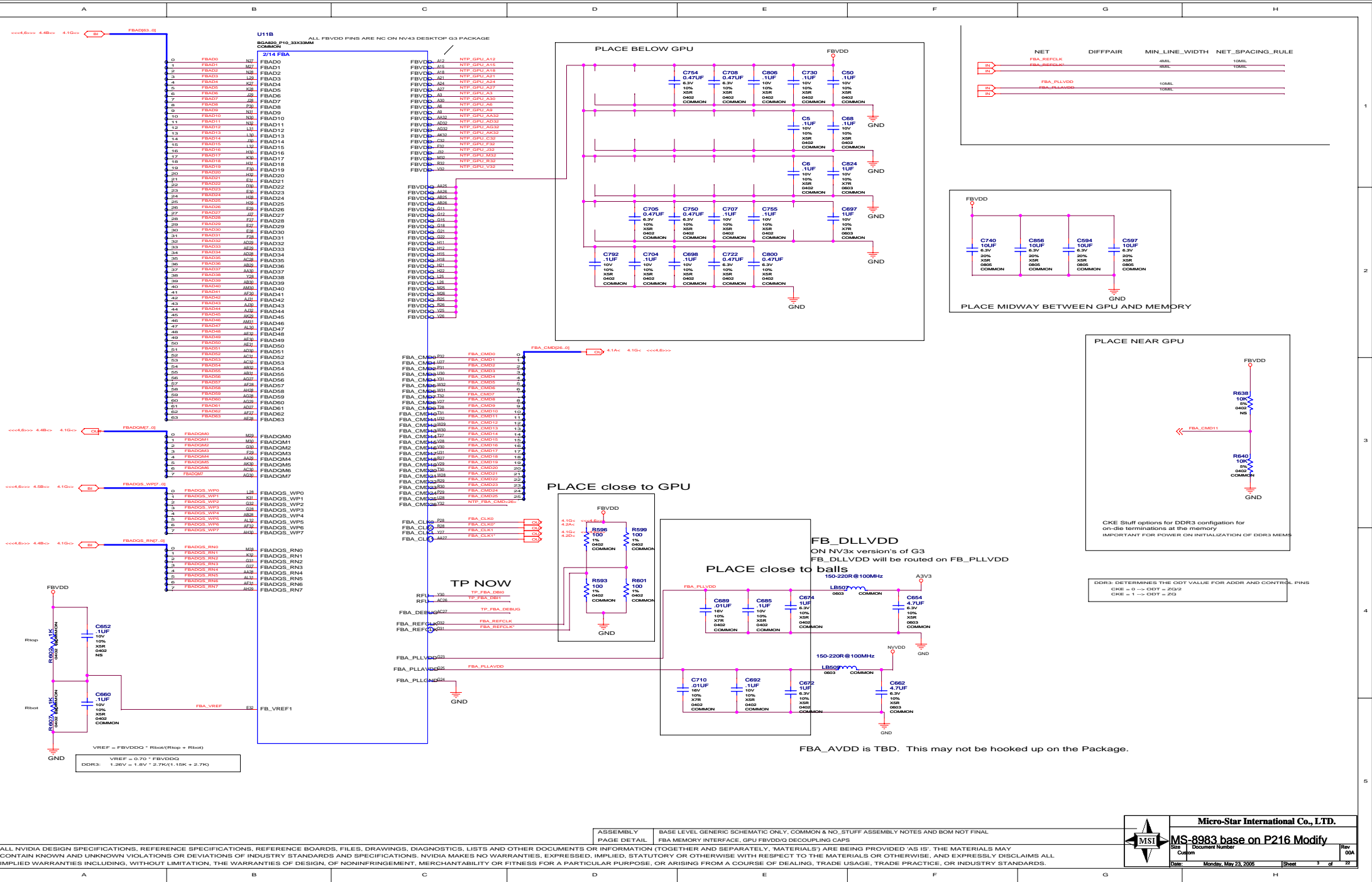


P216-A02 DESIGN -- NV43, 128 MB DDR3, VGA, DVI-I, SD/HDTV, VIVO

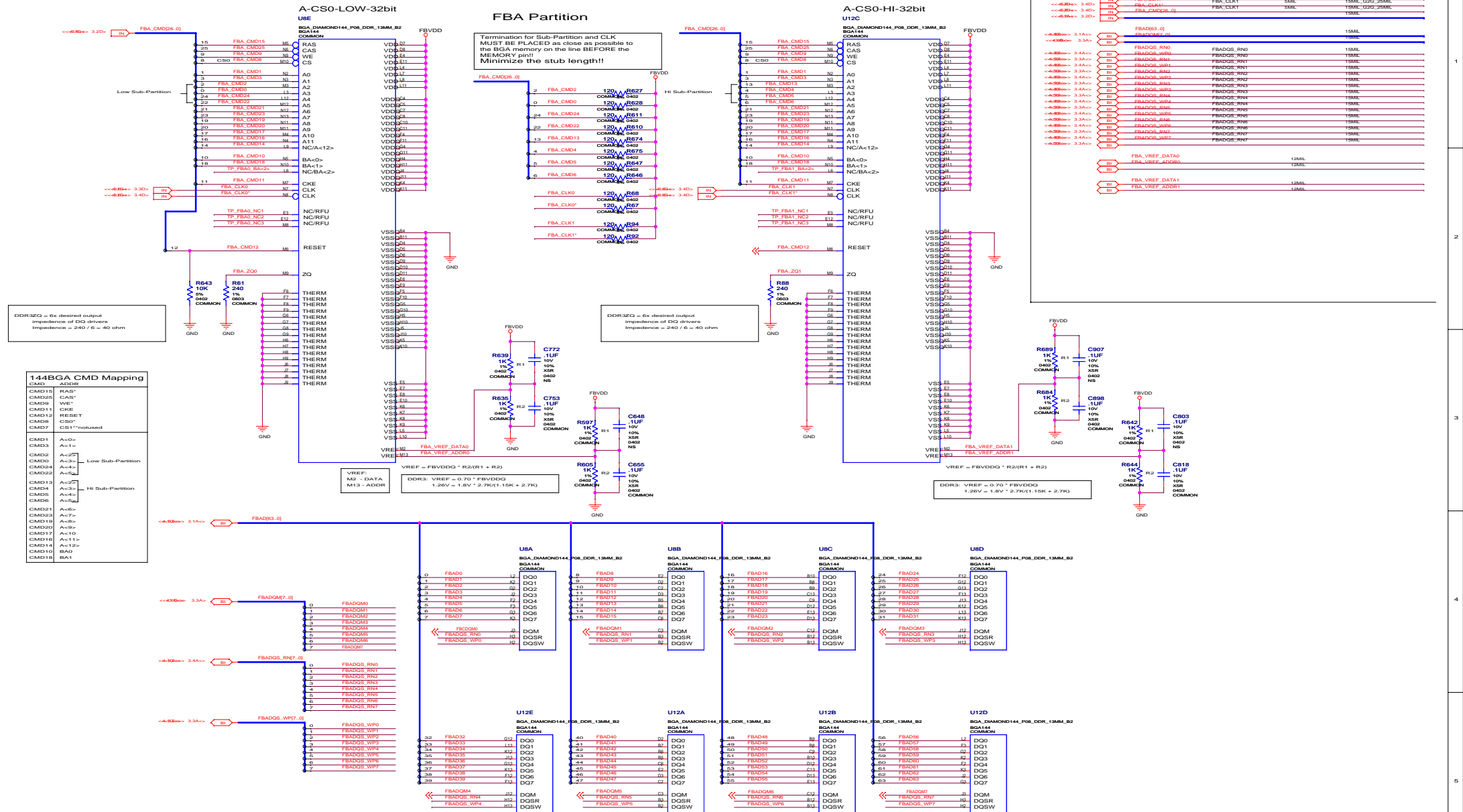
PAGE SUMMARY:

REV	VARIANT	NVPN	ASSEMBLY
B	BASE	602-10216-base-sch	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	000	602-10216-0000-200	NV43-U 500/500MHZ 128MB DDR3 8MX32 DVI+VGA+HDTVOUT
2	001	602-10216-0001-200	NV43-U 500/500MHZ 128MB DDR3 8MX32 DVI+VGA+HDTVIVO
3	002	602-10216-0002-200	NV43-U 350/350MHZ 128MB DDR3 8MX32 DVI+VGA+HDTVOUT
4	003	602-10216-0003-200	NV43-U 400/400MHZ 128MB DDR3 8MX32 DVI+VGA+HDTVOUT
5	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
6	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
7	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
8	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
9	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
10	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
11	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
12	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
13	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
14	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

X01



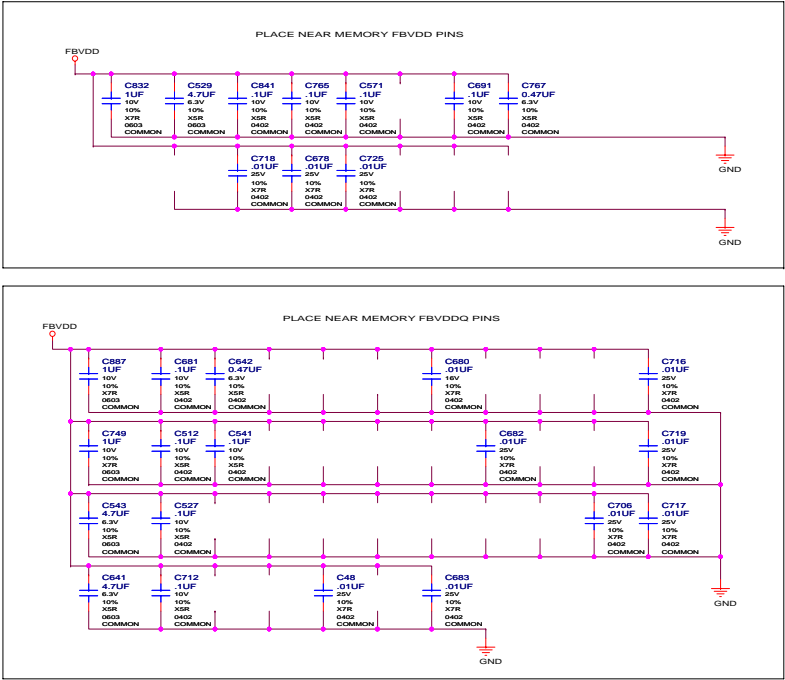
5 FrameBuffer: Partition A 8Mx32 BGA144 DDR3



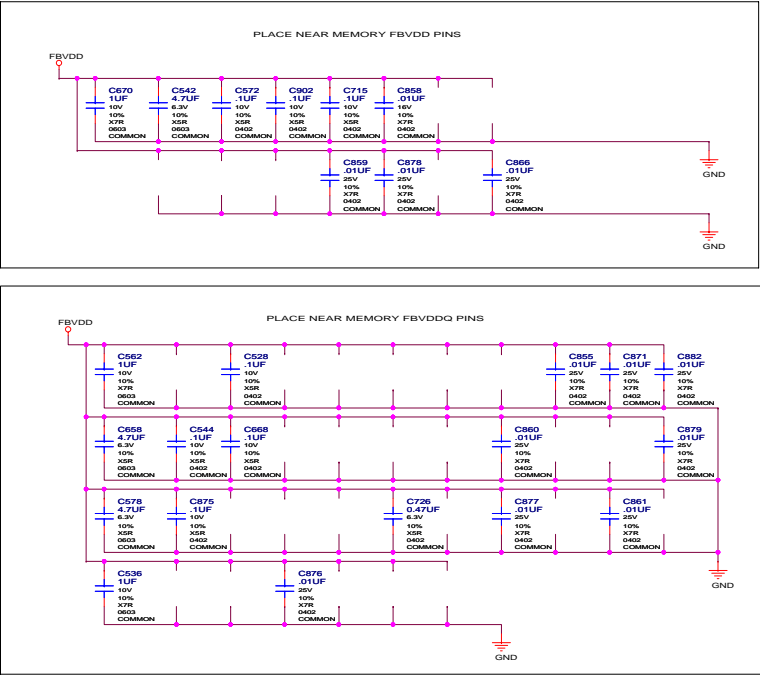
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FRAME BUFFER: PARTITION A DECOUPLING

Decoupling for FBA 0..31



Decoupling for FBA 32..63



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ASSEMBLY PAGE DETAIL BASE LEVEL GENERIC SCHEMATIC ONLY. COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
FBA MEMORY FBVDDQ DECOUPLING CAPS

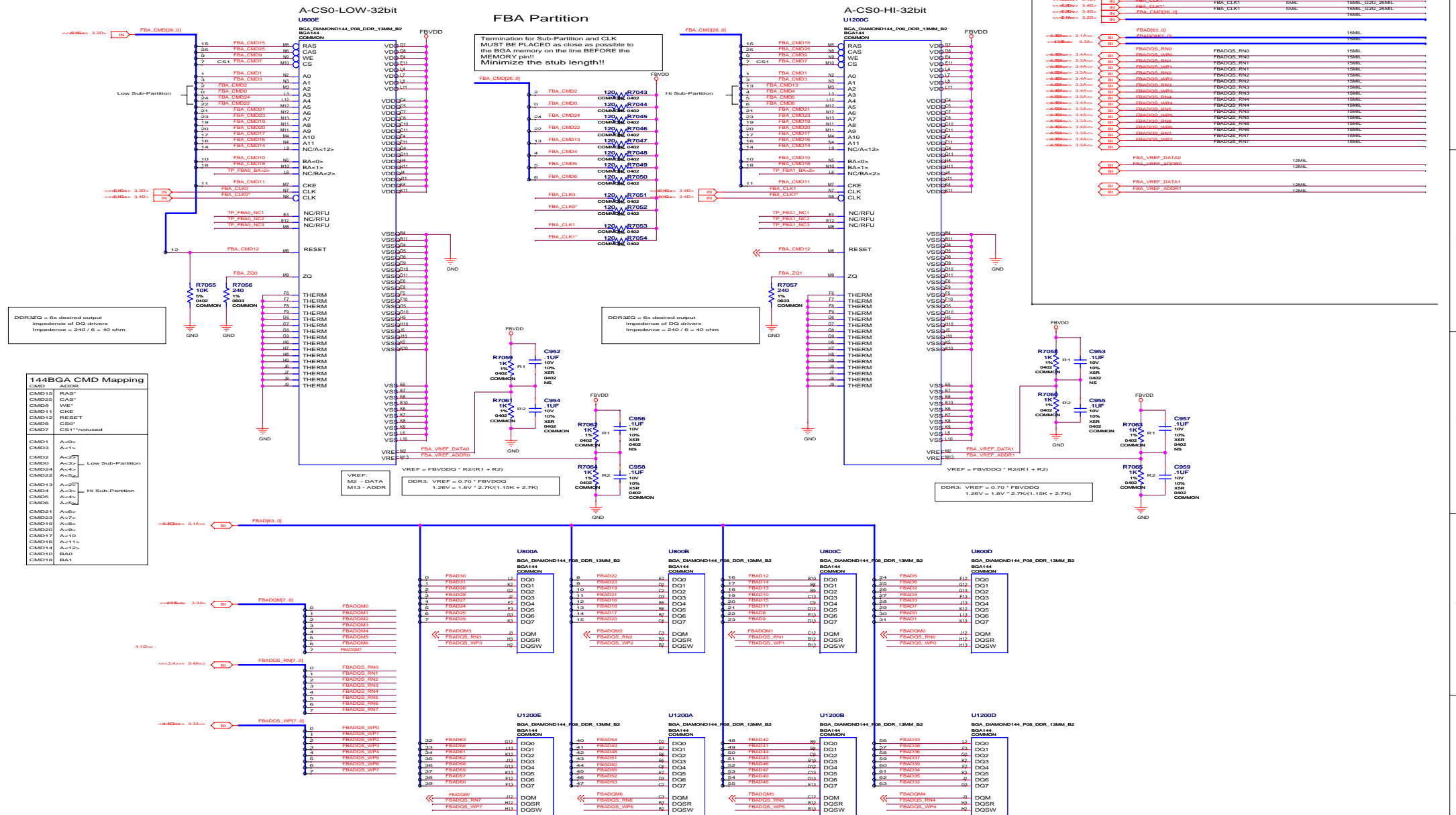


Micro-Star International Co., LTD.

MS-8983 base on P216 Modify

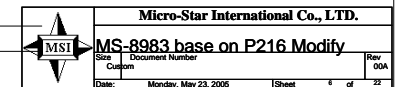
Document Number Rev 00A
Date: Monday, May 23, 2005 Sheet 5 of 22

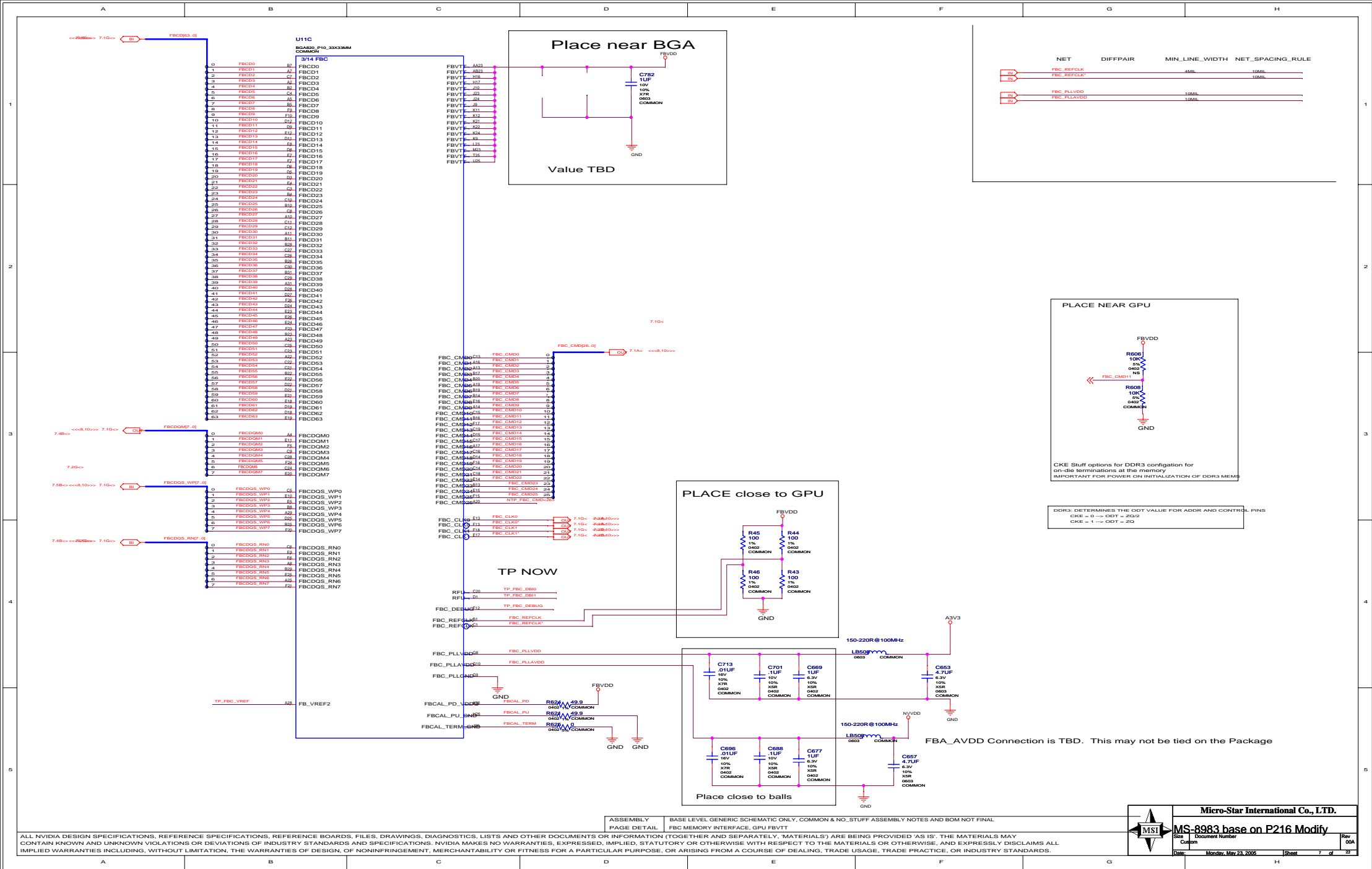
5 FrameBuffer: Partition A 8Mx32 BGA144 DDR3



ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	FBA 8Mx32 DDR3 MEMORIES, FBA COMMAND BUS PU'S, FBA CLK PU'S

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FRAMEBUFFER: PARTITION C 8Mx32 BGA144 DDR3

A-CS0-LOW-32bit

USE

BGA_DIAMOND144_P08_DDR_13MM_B2

BGA144 COMMON

FBVDD

FBVDD

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FBC Partition

Termination for Sub-Partition and CLK
MUST BE PLACED as close as possible to the BGA memory on the line BEFORE the MEMORY pin!!
Minimize the stub length!!

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A-CS0-HI-32bit

USE

BGA_DIAMOND144_P08_DDR_13MM_B2

BGA144 COMMON

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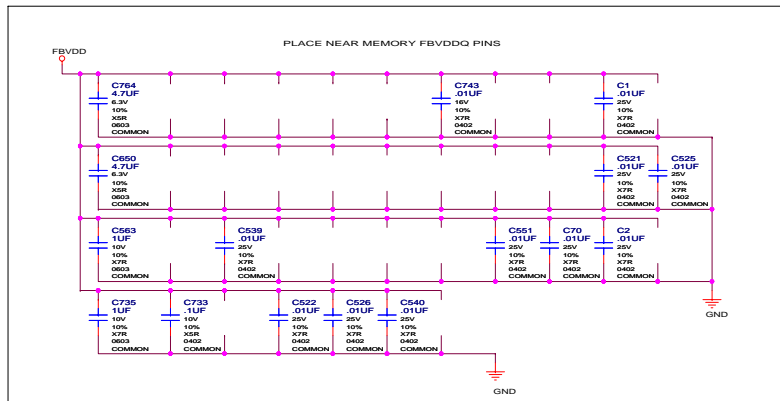
FBVDD

FBVDD

FBVDD

FBVDD

Decoupling for FBC 0..31



PLACE NEAR MEMORY FBVDD PINS

FBVDD

C676
4.7uF
6.3V
10%
XGR
0603
COMMON

C554
1uF
10V
10%
X7R
0603
COMMON

C732
1uF
10V
10%
XGR
0402
COMMON

C549
0.1uF
16V
10%
X7R
0402
COMMON

CR23
1uF
10V
10%
XGR
0402
COMMON

C729
0.47uF
6.3V
10%
XGR
0402
COMMON

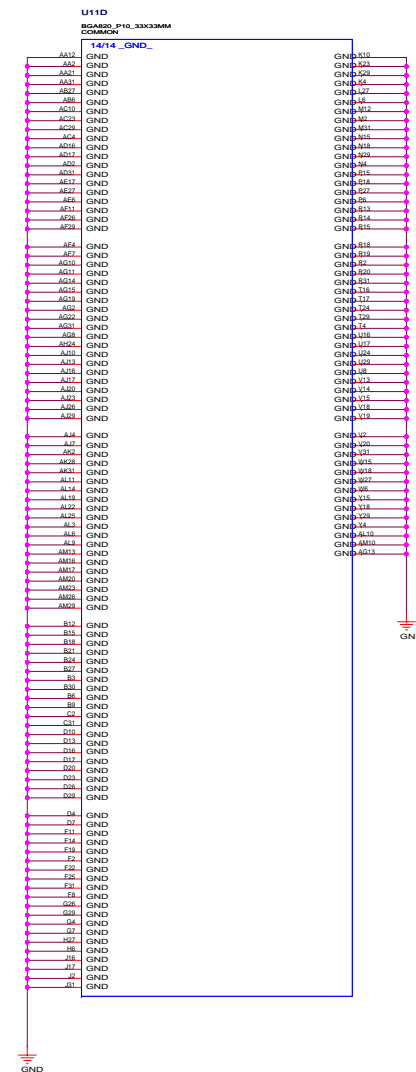
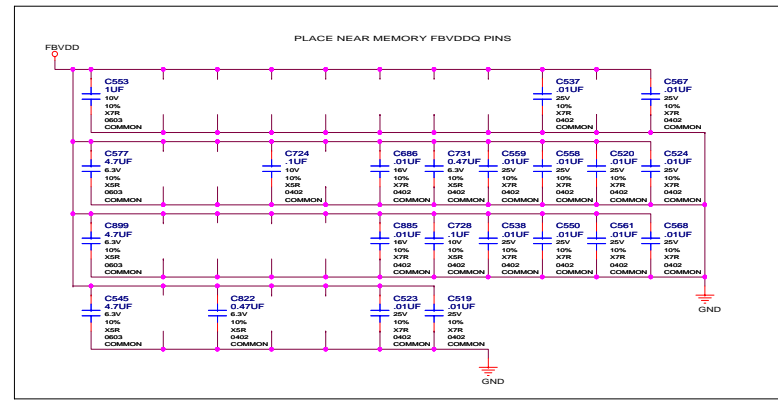
C570
0.1uF
25V
10%
X7R
0402
COMMON

C560
0.1uF
25V
10%
X7R
0402
COMMON

C569
0.1uF
25V
10%
X7R
0402
COMMON

GND

GND



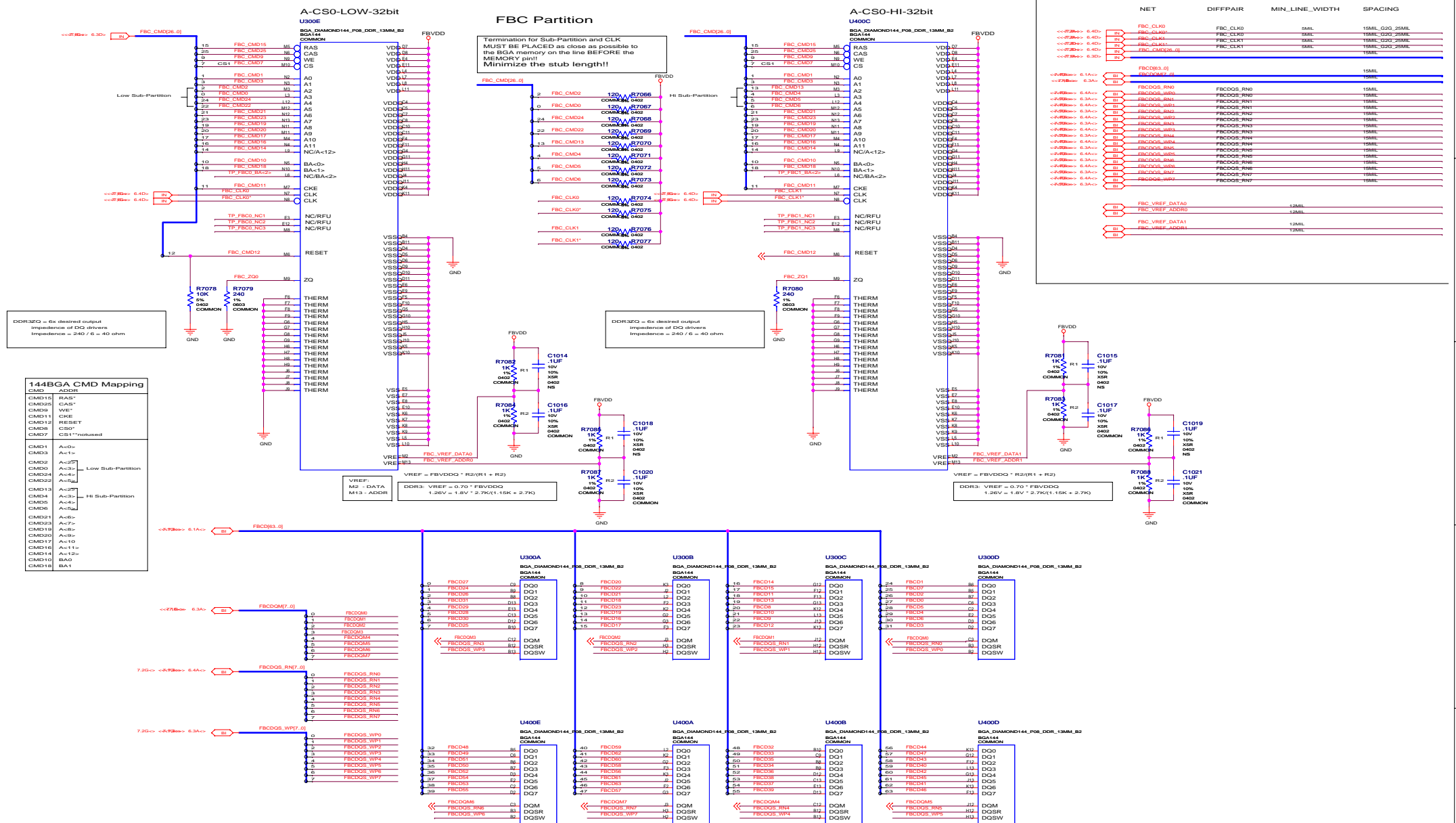
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MS-8983 base on P216 Modify

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FRAMEBUFFER: PARTITION C 8Mx32 BGA144 DDR3




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2




	Micro-Star International Co., LTD.		
	MS-8983 base on P216 Modify		
	Size	Document Number	Rev
	Custom		00A
	Date: Monday, May 23, 2005	Sheet 12 of 22	



1

DACA RGB-FILTER

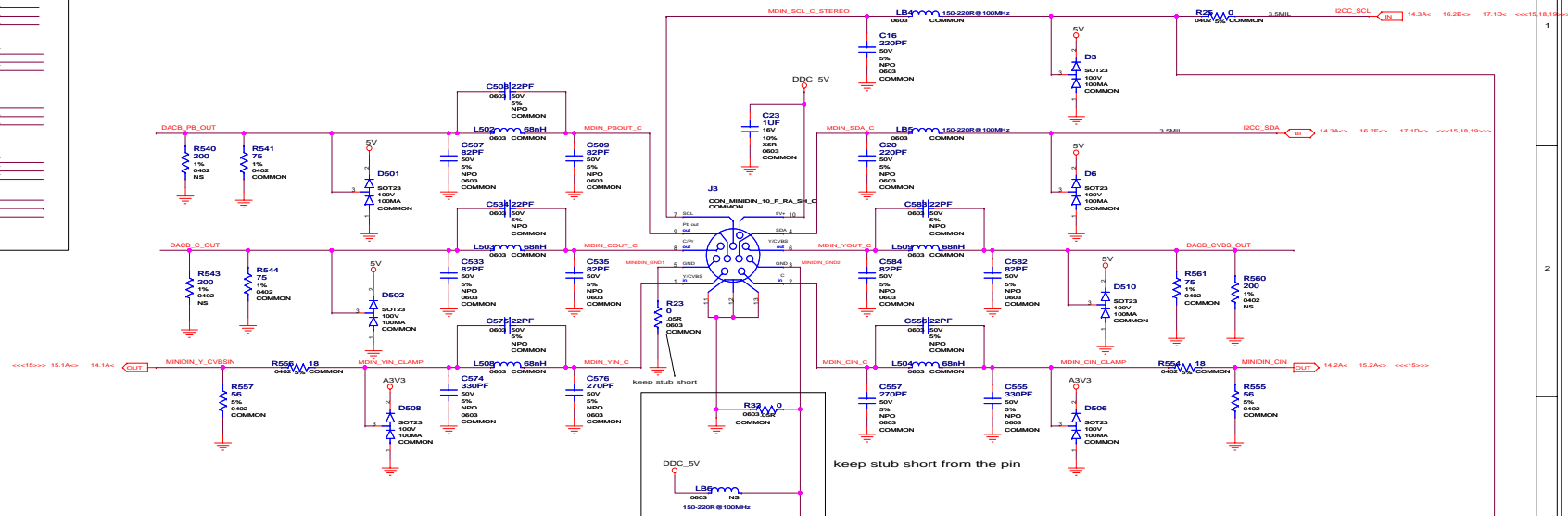


	Micro-Star International Co., LTD.		
	MS-8983 base on P216 Modify		
	Size	Document Number	Rev
	Custom		00A
Date: Monday, May 23, 2005		Sheet	13 of 22

DACB .. MiniDIN VIDEO IN/OUT CONNECTOR /STEREO GLASSES

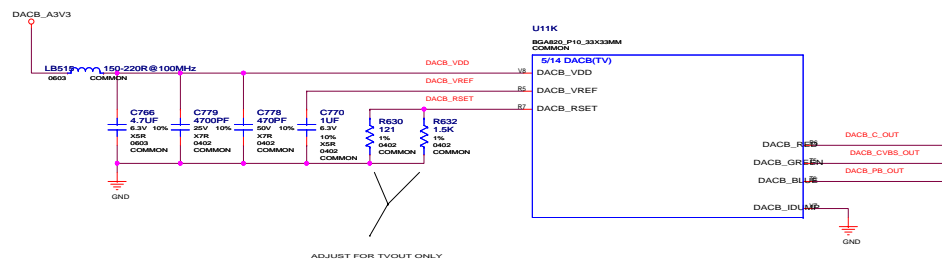
	NET_NAME	MIN_LINE_WIDTH	IMPEDANCE	NET_SPACING_RULE
	DACB_C_OUT			20MIL
CU	DACB_PWB_OUT	1111-86-R0448-1-37.50 ohm±3%		20MIL
CU	DACB_PWB_OUT	1111-TS-R0611-1-37.50 ohm±3%		20MIL
CU	DACB_PWB_OUT	1111-TS-R0431-1-37.50 ohm±3%		20MIL
	MDIN_PBDUT_C			20MIL
BI	MDIN_PBDUT_C			20MIL
BI	MDIN_PBDUT_C			20MIL
BI	MDIN_PBDUT_C			20MIL
	MININ_Y_CVBSIN			20MIL
CU	MDIN_Y_CVBSIN			20MIL
CU	MDIN_Y_CVBSIN			20MIL
CU	MDIN_Y_CVBSIN			20MIL
	MDIN_CIN_C			20MIL
CU	MDIN_CIN_C			20MIL
CU	MDIN_CIN_C			20MIL
CU	MDIN_CIN_C			20MIL
	DACB_VDD	125MIL		
IN	DACB_VDD	125MIL		
IN	DACB_VDD	125MIL		
IN	DACB_VDD	125MIL		

FILTER NOTES:
SD: USE L=1.8UH
HD: USE L=?



PLACE NEAR CONNECTOR

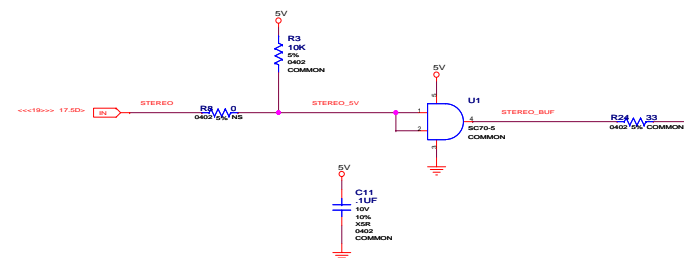
**For STEREO GLASSES 3pin MiniDIN only:
Stuff bead!
And replace 0 Ohm resistor with 220PF cap!**



ADJUST FOR TVOUT ONLY

STEREO GLASSES BUFFER

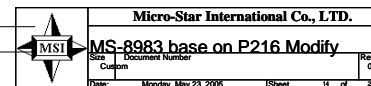
Place close to MiniDIN connector!



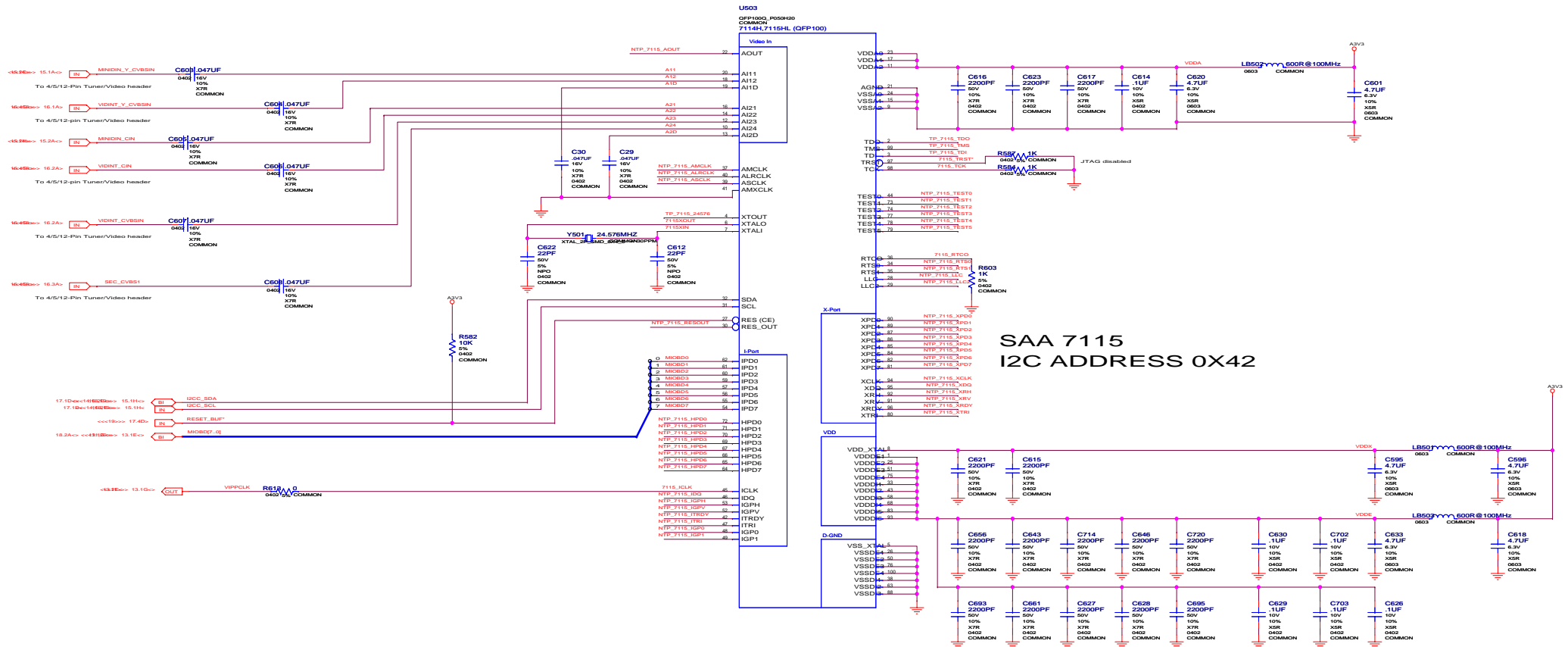
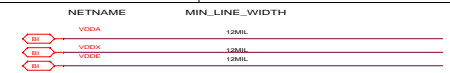
FOR DEBUG PURPOSES ONLY .. DEFAULT IS NO STUFF

ASSEMBLY PAGE DETAIL	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL DACB FILTERS. MINIDIN CONNECTOR NORTH
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PHILIPS VIDEO CAPTURE



SAA 7115
I2C ADDRESS 0X42

ASSEMBLY	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	PHILIPS SAA7115 VIDEO DECODER

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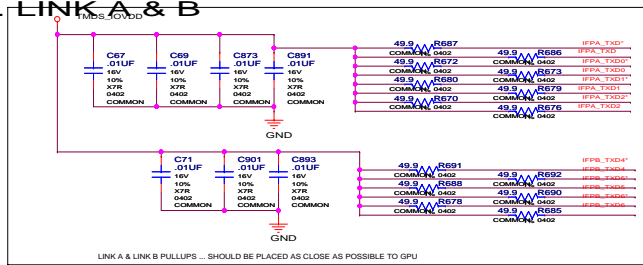


Micro-Star International Co., LTD.

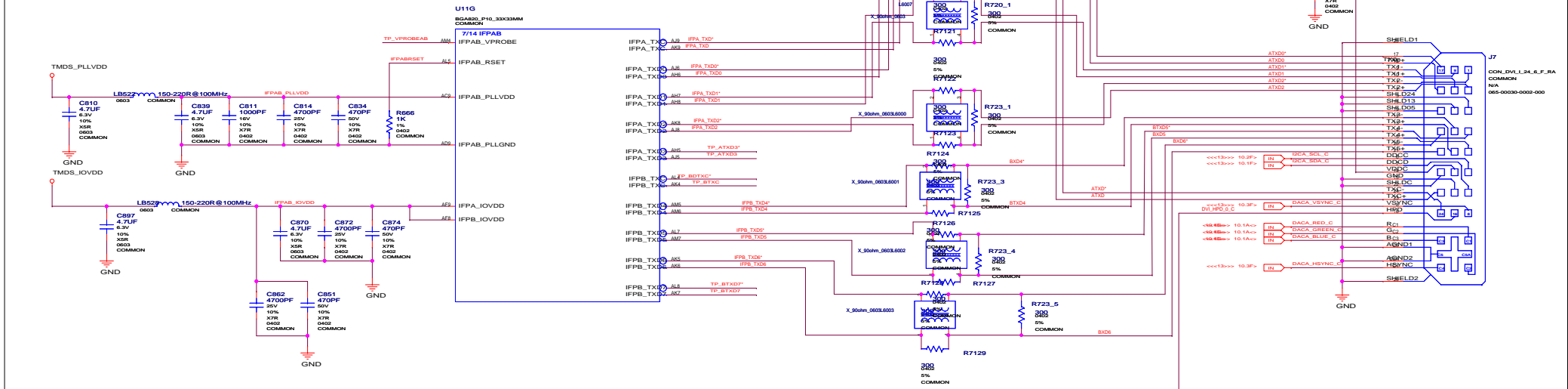
MS-8983 base on P216 Modify

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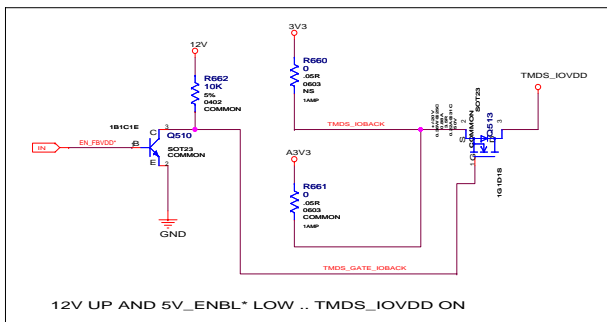
INTERNAL TMDS .. LINK A & B



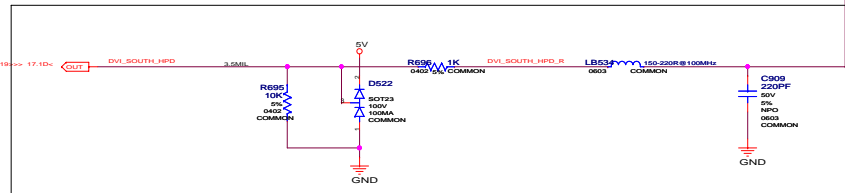
NOTE: GPU HAS ON DIE PULL UPS ON TMDS LINES .. EXTERNAL PULLUPS ADDED (FOR CYA) IN CASE ON-DIE CURRENT DRAW IS EXCESSIVE



TMDS_IOVDD BACKDRIVE PREVENTION



Hotplug Detection



NETNAME	MIN_LINE_WIDTH	VOLTAGE
TMDS_PLLVDD	12MIL	3.3V
TMDS_PLLVDD	12MIL	3.3V
TMDS_IOVDD	12MIL	3.3V
TMDS_I0VDD	12MIL	3.3V
IFPABSET	12MIL	
TMDS_I0BACK	12MIL	

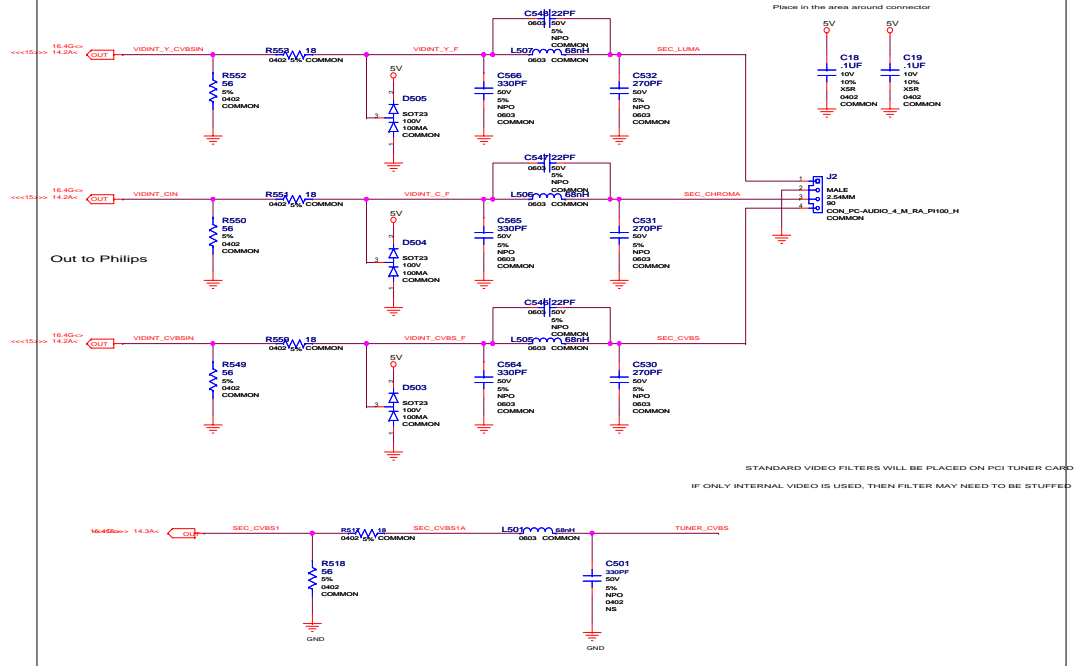
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ASSEMBLY PAGE DETAIL
BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
TMDS LINK A/B & PUs, TMDS IO BACKDRIVE PREVENTION/DVI CONNECTOR SOUTH

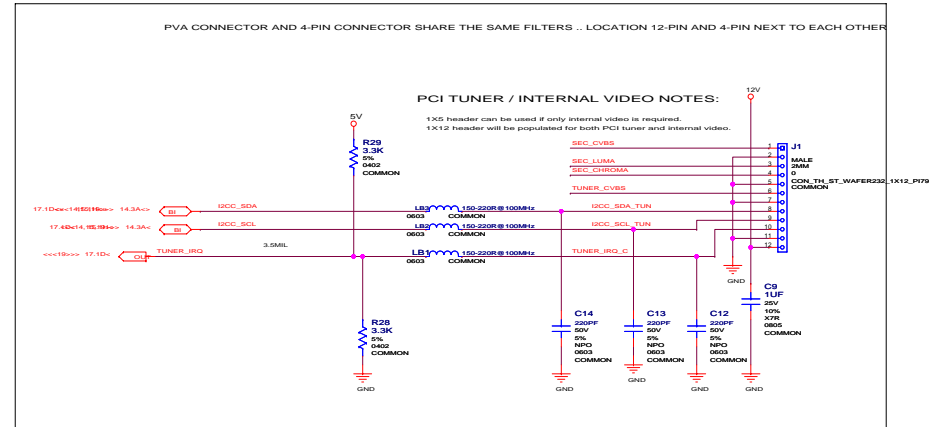
Micro-Star International Co., LTD.	
MSI	MS-8983 base on P216 Modify
Doc Number	Rev 00A
Date: Monday, May 21, 2006	Sheet 11 of 22

4-Pin Video In, 12-pin Video In connectors

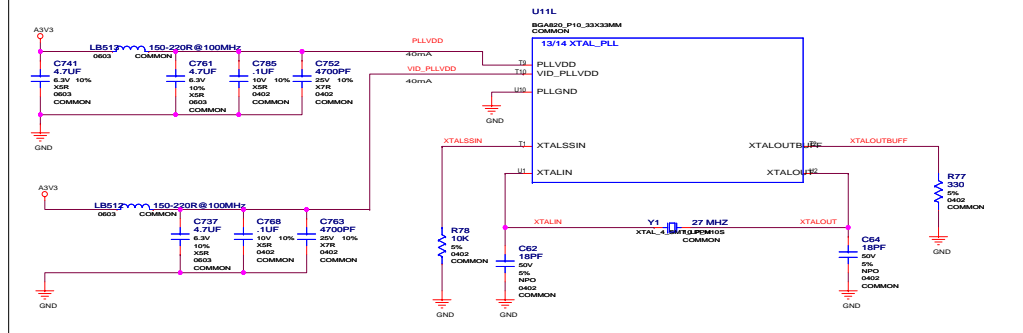
EXTERNAL 4-PIN VIDEO IN CONNECTOR



EXTERNAL 12-PIN PVA CONNECTOR



XTAL/PLLVD



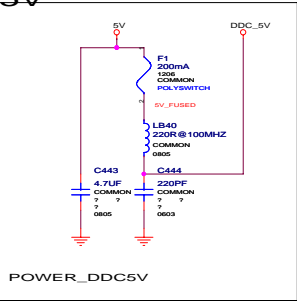
NETNAME	MIN_LINE_WIDTH	NET_SPACING_RULE
VIDINT_Y_CVBSIN	14.3A	20MIL
VIDINT_CN	14.3A	20MIL
VIDINT_CVBSIN	14.3A	20MIL
SEC_CVBS1	14.3A	20MIL
VIDINT_Y_F	14.3A	20MIL
VIDINT_C_F	14.3A	20MIL
VIDINT_CVBS1A	14.3A	20MIL
SEC_LUMA	14.3A	20MIL
SEC_CHROMA	14.3A	20MIL
TUNER_CVBS	14.3A	20MIL
XTALIN	2MIL	20MIL
XTALOUT	2MIL	20MIL
PLVDD	12MIL	20MIL
VID_PLVDD	12MIL	20MIL

ASSEMBLY PAGE DETAIL BASE LEVEL GENERIC SCHEMATIC ONLY. COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL 4-PIN & 12-PIN VIDEO HEADERS, XTAL.

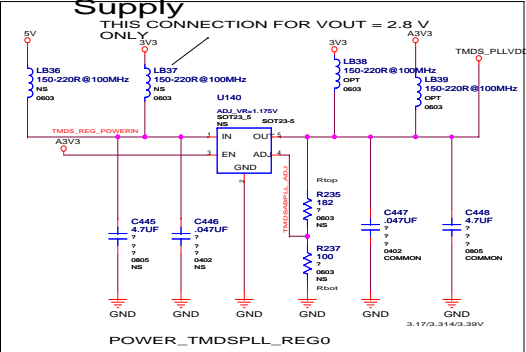
Micro-Star International Co., LTD.	
MSI	MS-8983 base on P216 Modify
Size	Document Number
Customer	Rev 00A
Date	Monday, May 23, 2005
Sheet	1 of 2

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Power Supply ...
TMD5/A3V3/FBVDD
DDC
5V

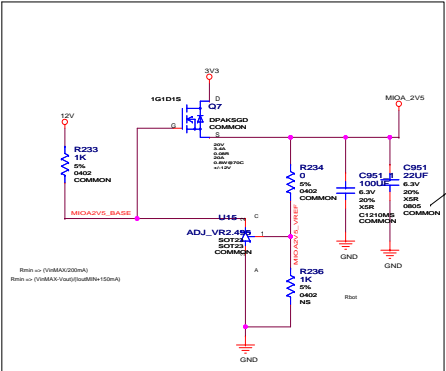


TMD5 AB/CD PLL
Supply



$V_{out} = V_{ref} * (1 + R_{top}/R_{bot})$
 $3.31V = 1.175V * (1 + (100/182))$

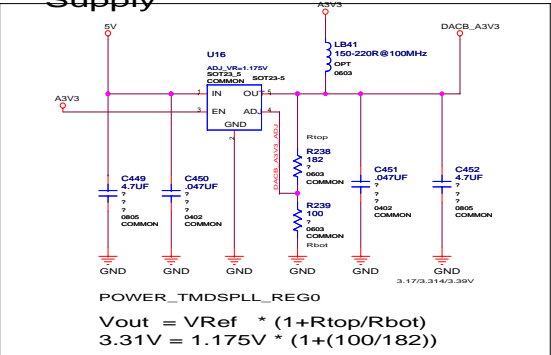
MIOA_VDDQ



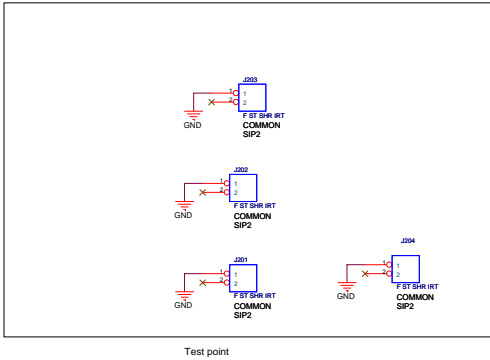
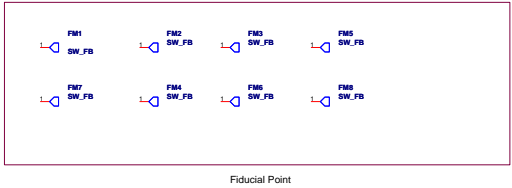
$V_{ref} = 2.5V$
 $V_{out} = 2.495(1 + R_{top}/R_{bot}) + (I_{ref} + R_{top})$
For $V_{out} = V_{ref}$ ($R_{top} = 0\Omega$, $R_{bot} = NO\ STUFF$)

NETNAME	MIN_LINE_WIDTH	VOLTAGE
DDC_5V	12MIL	5V
3V3	12MIL	3.3V
5V	12MIL	5V
TMD5AB/CD PLLVDD	12MIL	3.3V
TMD5_PLLVDD	12MIL	3.3V
12V	30MIL	12V
MIOA_2V5	12MIL	2.5V
MIOA_VREF	10MIL	2.5V
GND	30MIL	0V
DACB_A3V3_ADJ	10MIL	3.3V
DACB_A3V3	12MIL	3.3V

DACB
Supply



$V_{out} = V_{ref} * (1 + R_{top}/R_{bot})$
 $3.31V = 1.175V * (1 + (100/182))$



ISL6549 for Nvidia NV4x Graphic card power ckt

