MS-V060 -- G73, 128/256 Mb DDR3-136pin, VGA, DVI-I, SD/HDTV, VIVO

SUMMARY:

1. Base on V045-10 to Modify
2. BGA-136 DDRIII
3. Dual MS-11 for NVVDD and FBVDD

Rev History

110

110... remove U518

110... Change Infineon DDR3 16x32 -1.4

110... VID table change to 2.0V

110... Strapping change to 0001

110... Change GPU with HDCP and add HDCP ROM circuit

120

Remove GPU with HDCP and add HDCP ROM circuit

Add Q46

Change L7008 to 1u 40A

	Micro-Star International Co., LTD.	
	SUMMARY	
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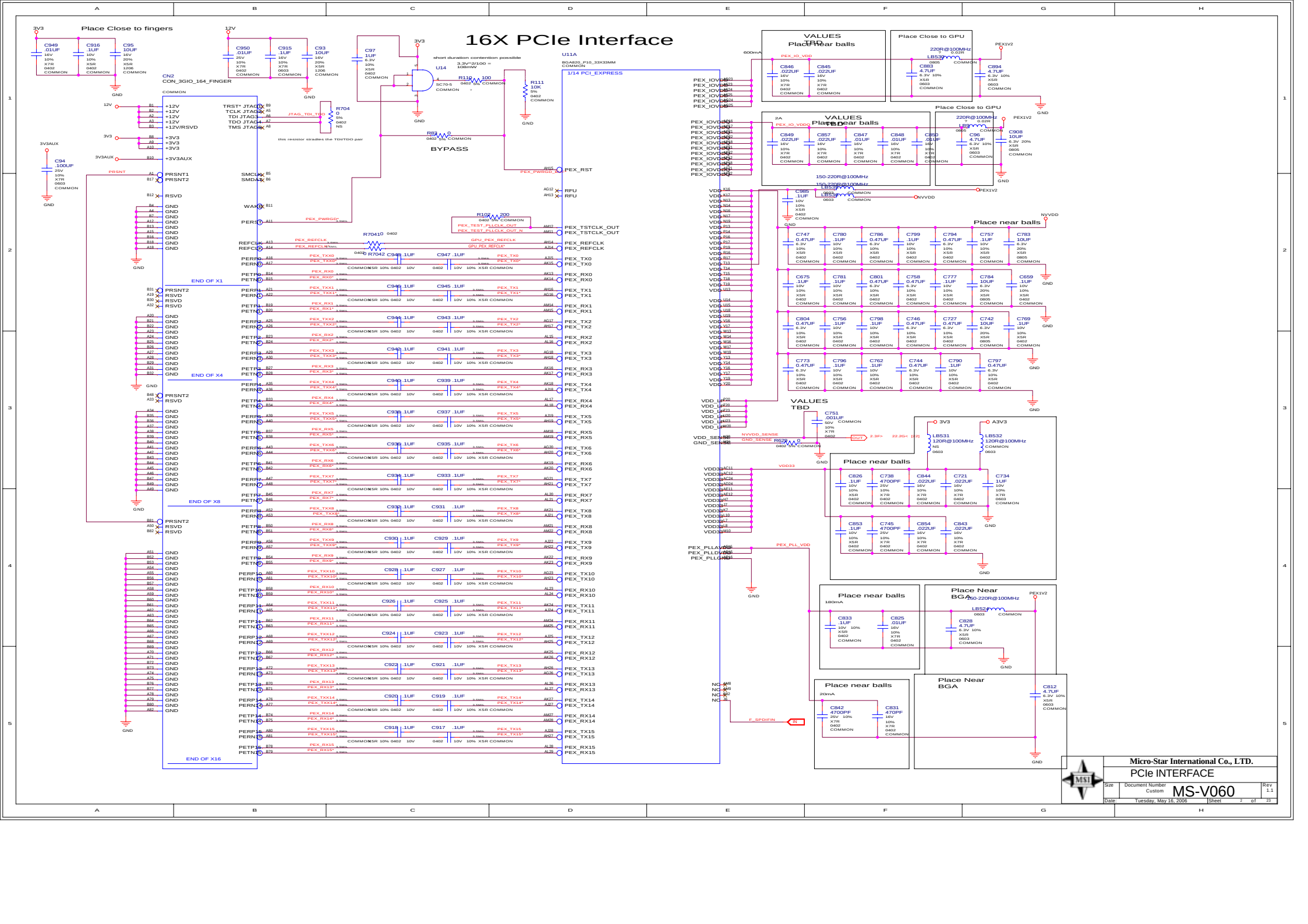
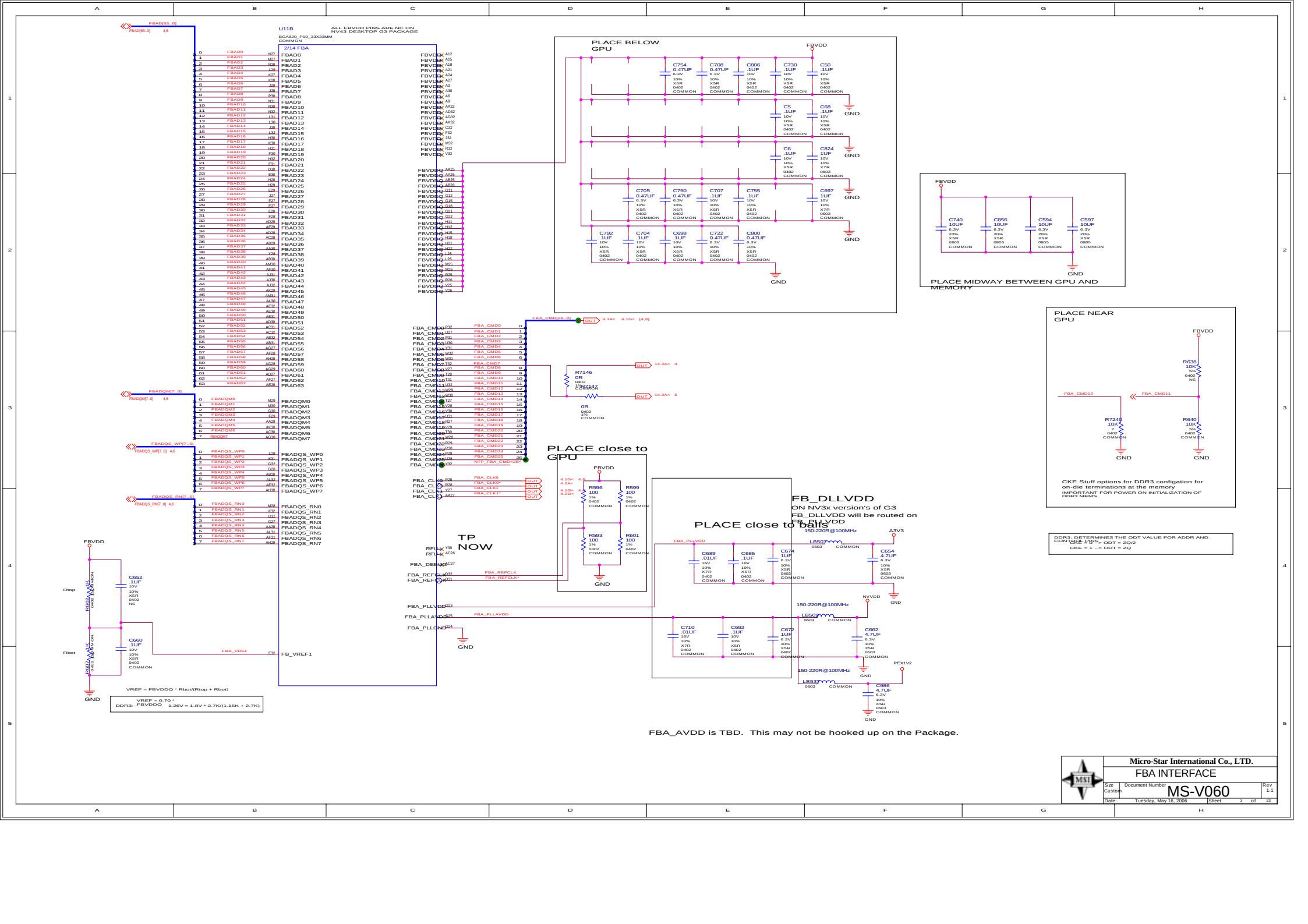

16X PCIe Interface
Place Close to fingers
CN2
CON_3GIO_164_FINGER
BYPASS
U11A
1/14 PCI_EXPRESS
END OF X1
END OF X4
END OF X8
END OF X16
VALUES TBD
Place near balls
Place Close to GPU
Place Near BGA
Micro-Star International Co., LTD.
PCIe INTERFACE
MS-V060
Rev 1.1
Tuesday, May 16, 2006


U11B
ALL FBVDD PINS ARE NC ON NV43 DESKTOP G3 PACKAGE
BGA820_P10_33X33MM
COMMON
2/14 FBA
PLACE BELOW GPU
PLACE MIDWAY BETWEEN GPU AND MEMORY
PLACE NEAR GPU
PLACE close to GPU
PLACE close to balls
FB_DLLVDD
ON NV3x version's of G3
FB_DLLVDD will be routed on FB_PLLVDD
TP NOW
CKE Stuff options for DDR3 configation for on-die terminations at the memory
IMPORTANT FOR POWER ON INITIALIZATION OF DDR3 MEMS
DDR3: DETERMINES THE ODT VALUE FOR ADDR AND CONTROL BUS
CKE = 0 --> ODT = ZQ/2
CKE = 1 --> ODT = ZQ
VREF = FBVDDQ * Rbot/(Rtop + Rbot)
VREF = 0.70 * FBVDDQ 1.26V = 1.8V * 2.7K/(1.15K + 2.7K)
FBA_AVDD is TBD. This may not be hooked up on the Package.
Micro-Star International Co., LTD.
FBA INTERFACE
MS-V060
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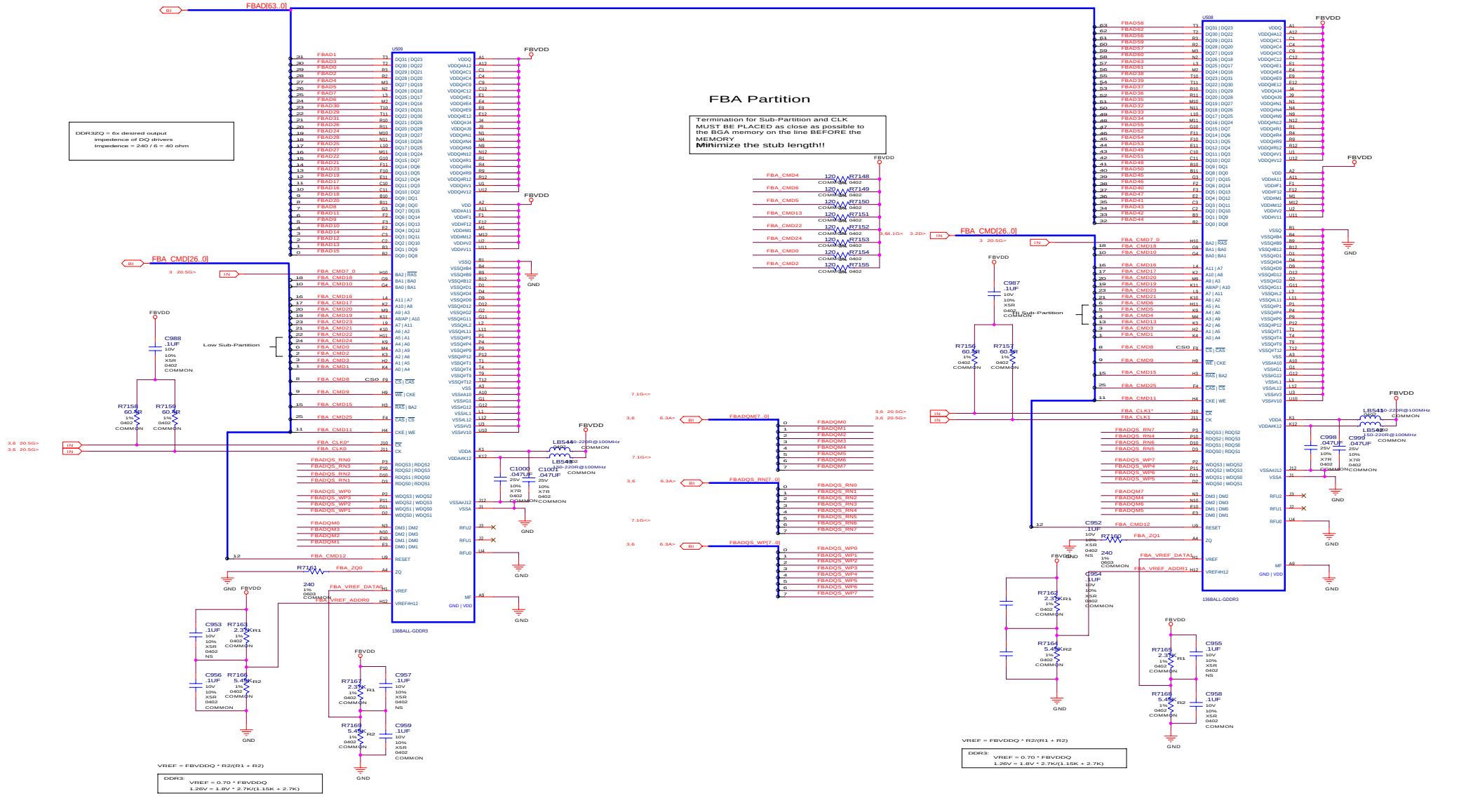
5 FrameBuffer: Partition A
8Mx32 BGA136 DDR3



Micro-Star International Co., LTD.			
FB A1			
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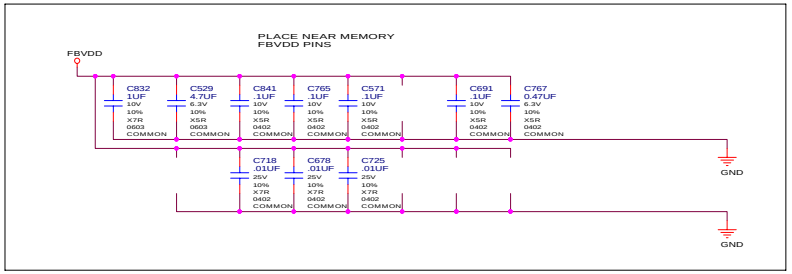
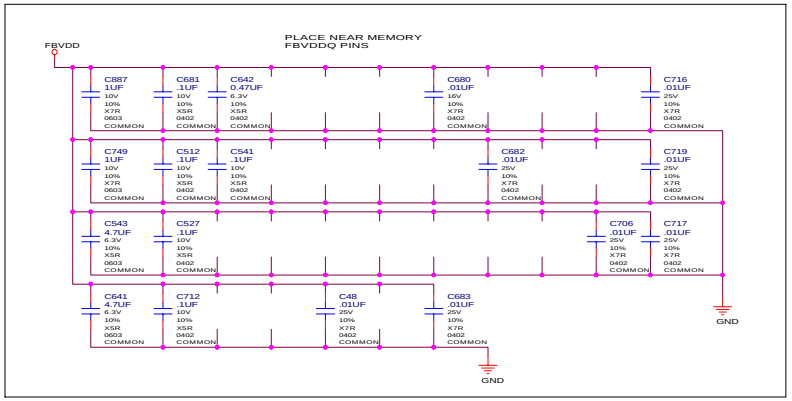
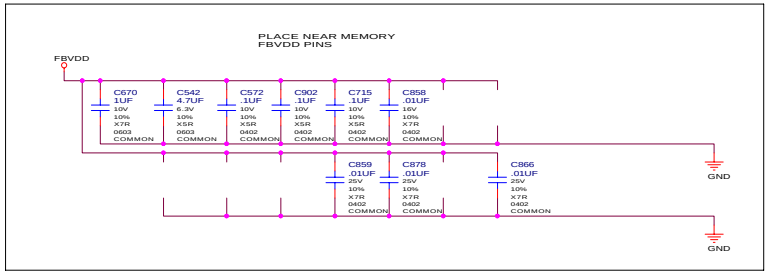
FRAME BUFFER: PARTITION A DECOUPLING

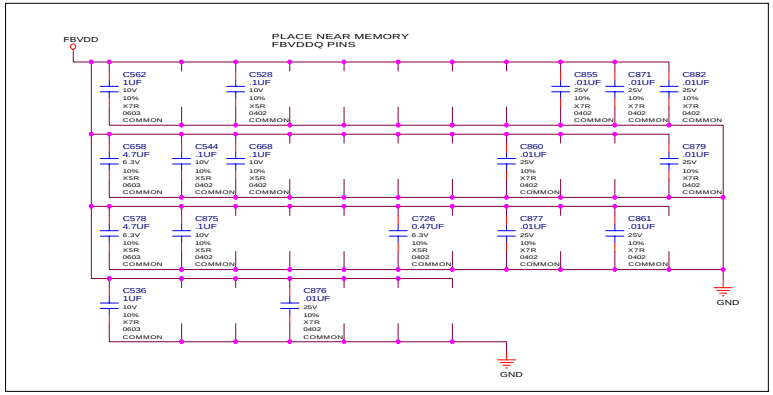
Decoupling for FBA 0..31





Decoupling for FBA 32..63





Micro-Star International Co., LTD.	
FBA DECOUPLING	
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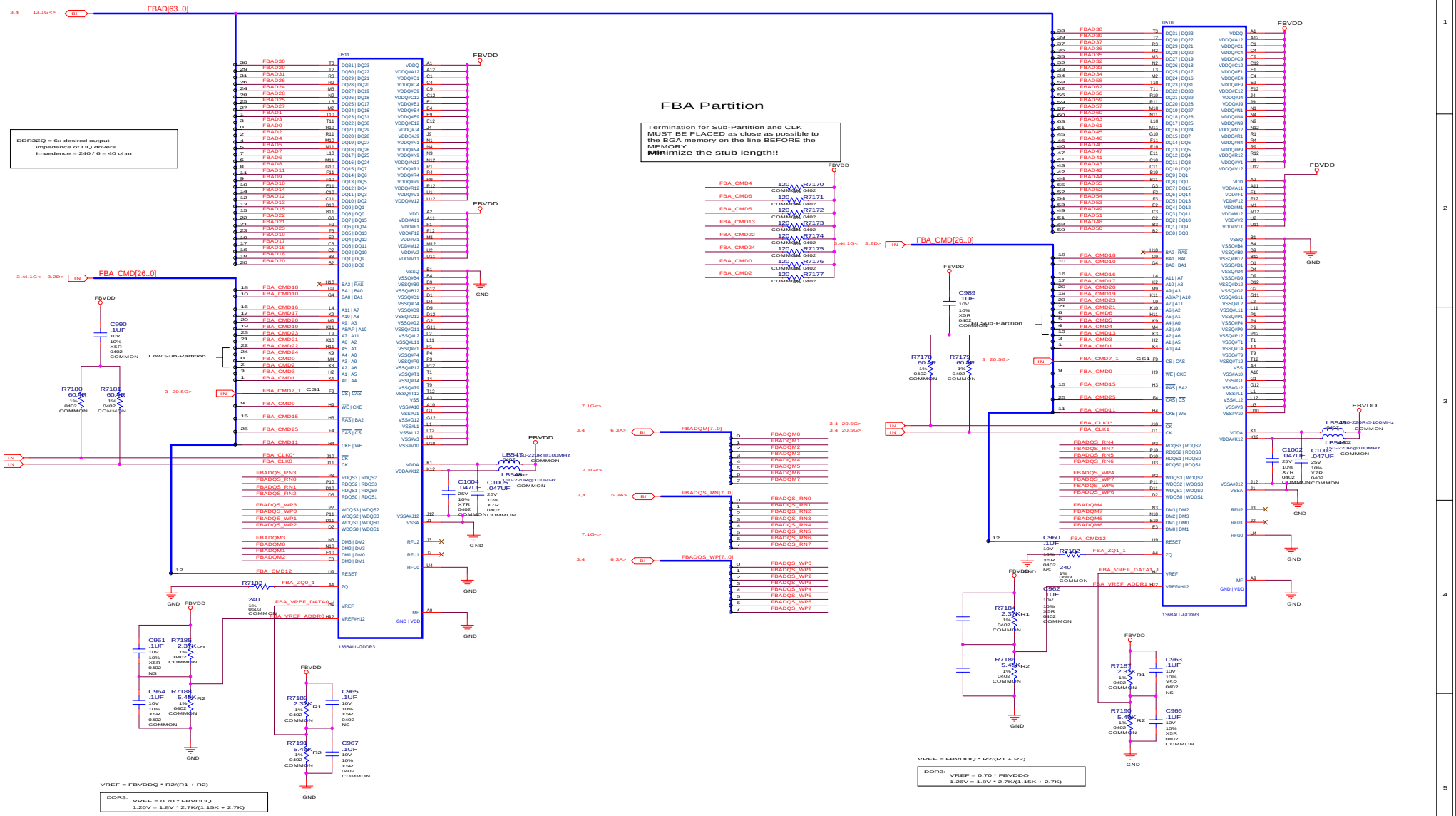
5 FrameBuffer: Partition A
8Mx32 BGA136 DDR3



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FB A2	
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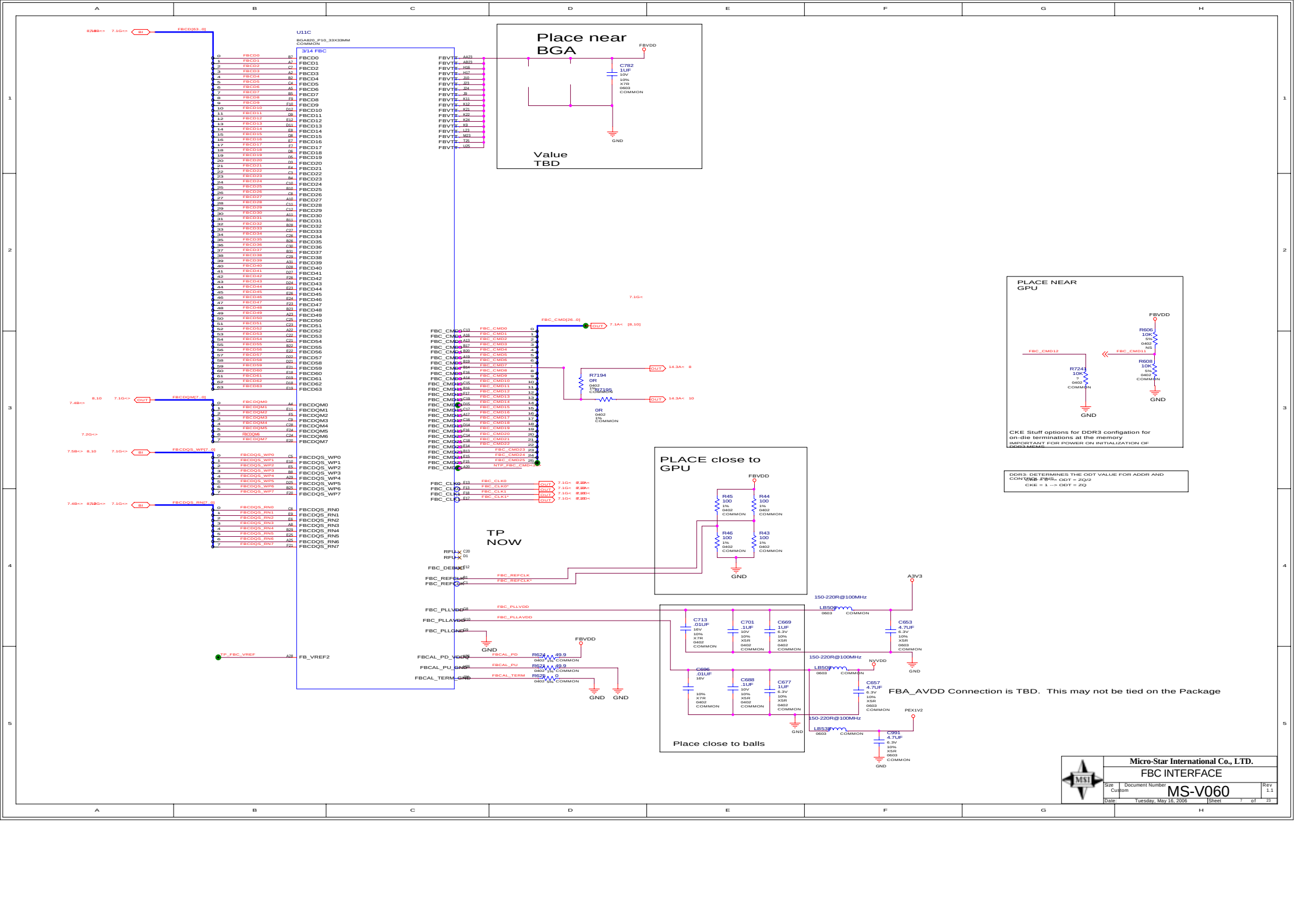
U11C
BGA820_P10_33X33MM
COMMON
3/14 FBC
FBCD[63..0]
FBCDQM[7..0]
FBCDQS_WP[7..0]
FBCDQS_RN[7..0]
FBC_CMD[26..0]
Place near BGA
FBVDD
C782 1UF 10V 10% X7R 0603 COMMON
GND
Value TBD
PLACE NEAR GPU
R606 10K 5% 0402 NS
R608 10K 5% 0402 COMMON
R7241 10K 5% 0402 COMMON
CKE Stuff options for DDR3 configation for on-die terminations at the memory
IMPORTANT FOR POWER ON INITIALIZATION OF DDR3 MEMS
DDR3: DETERMINES THE ODT VALUE FOR ADDR AND CONTROL PINS
CKE = 0 -> ODT = 2Q/2
CKE = 1 -> ODT = 2Q
R7194 0R 0402 1% COMMON
R7195 0R 0402 1% COMMON
TP NOW
PLACE close to GPU
R45 100 1% 0402 COMMON
R44 100 1% 0402 COMMON
R46 100 1% 0402 COMMON
R43 100 1% 0402 COMMON
A3V3
150-220R@100MHz
C713 .01UF 16V 10% X7R 0402 COMMON
C701 1UF 10V 10% X5R 0402 COMMON
C669 1UF 6.3V 10% X5R 0402 COMMON
C653 4.7UF 6.3V 10% X5R 0603 COMMON
C686 .01UF 16V
C688 1UF 10V 10% X5R 0402 COMMON
C677 1UF 6.3V 10% X5R 0402 COMMON
C657 4.7UF 6.3V 10% X5R 0603 COMMON
C991 4.7UF 6.3V 10% X5R 0603 COMMON
NVVDD
PEX1V2
Place close to balls
FBA_AVDD Connection is TBD. This may not be tied on the Package
R624 49.9 1% COMMON
R625 0 5% COMMON
Micro-Star International Co., LTD.
FBC INTERFACE
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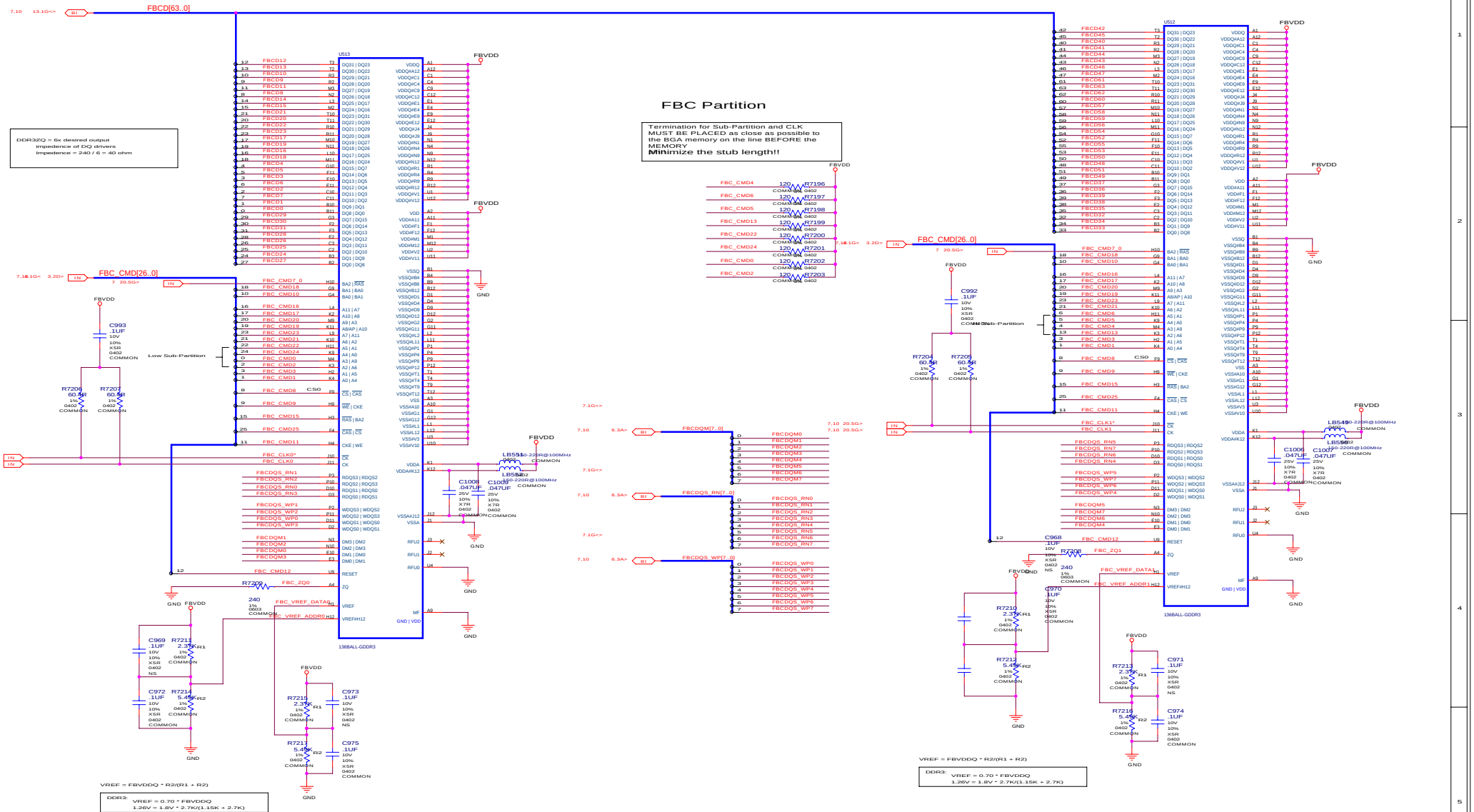
FRAMEBUFFER: PARTITION
C 8Mx32 BGA136 DDR3



Micro-Star International Co., LTD.
FB C1
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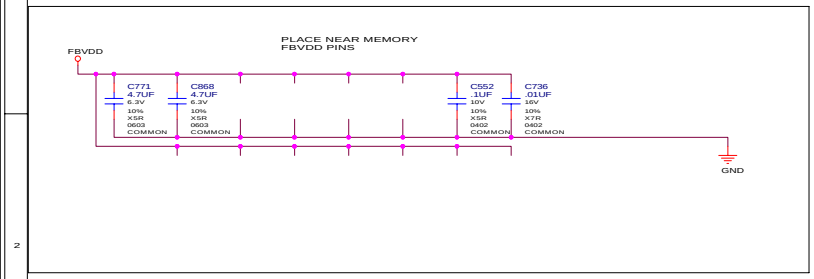
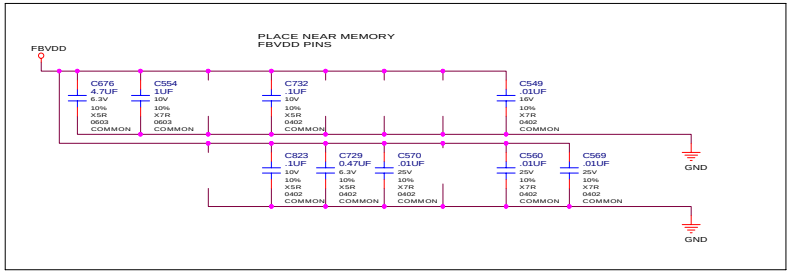
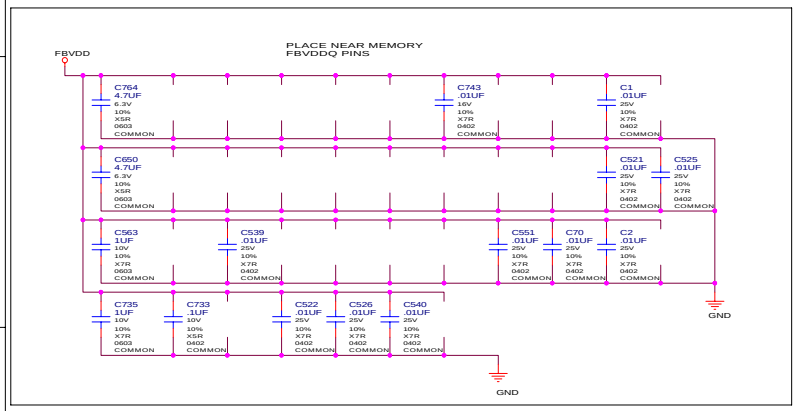
FRAMEBUFFER: PARTITION C DECOUPLING

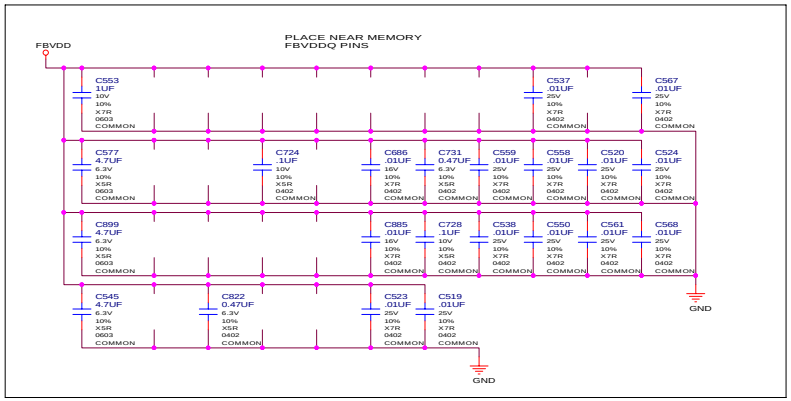
Decoupling for FBC 0..31

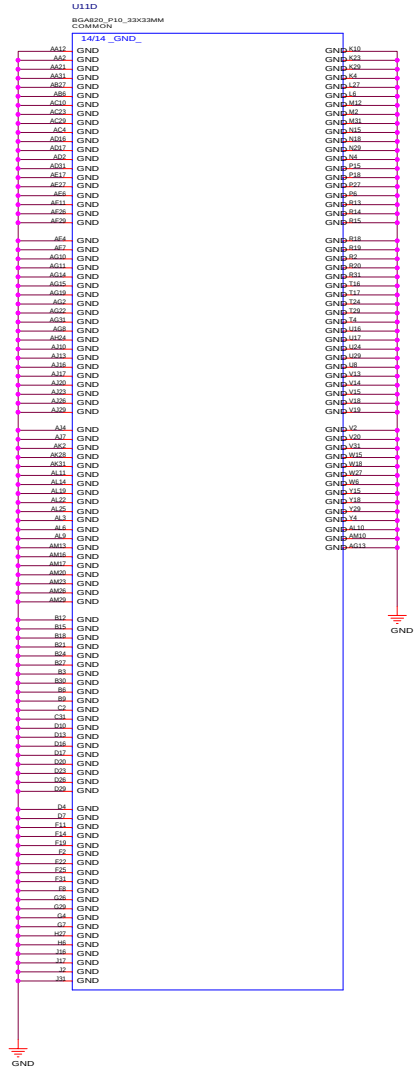


Decoupling for FBC 32..63









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FBC DECOUPLING	
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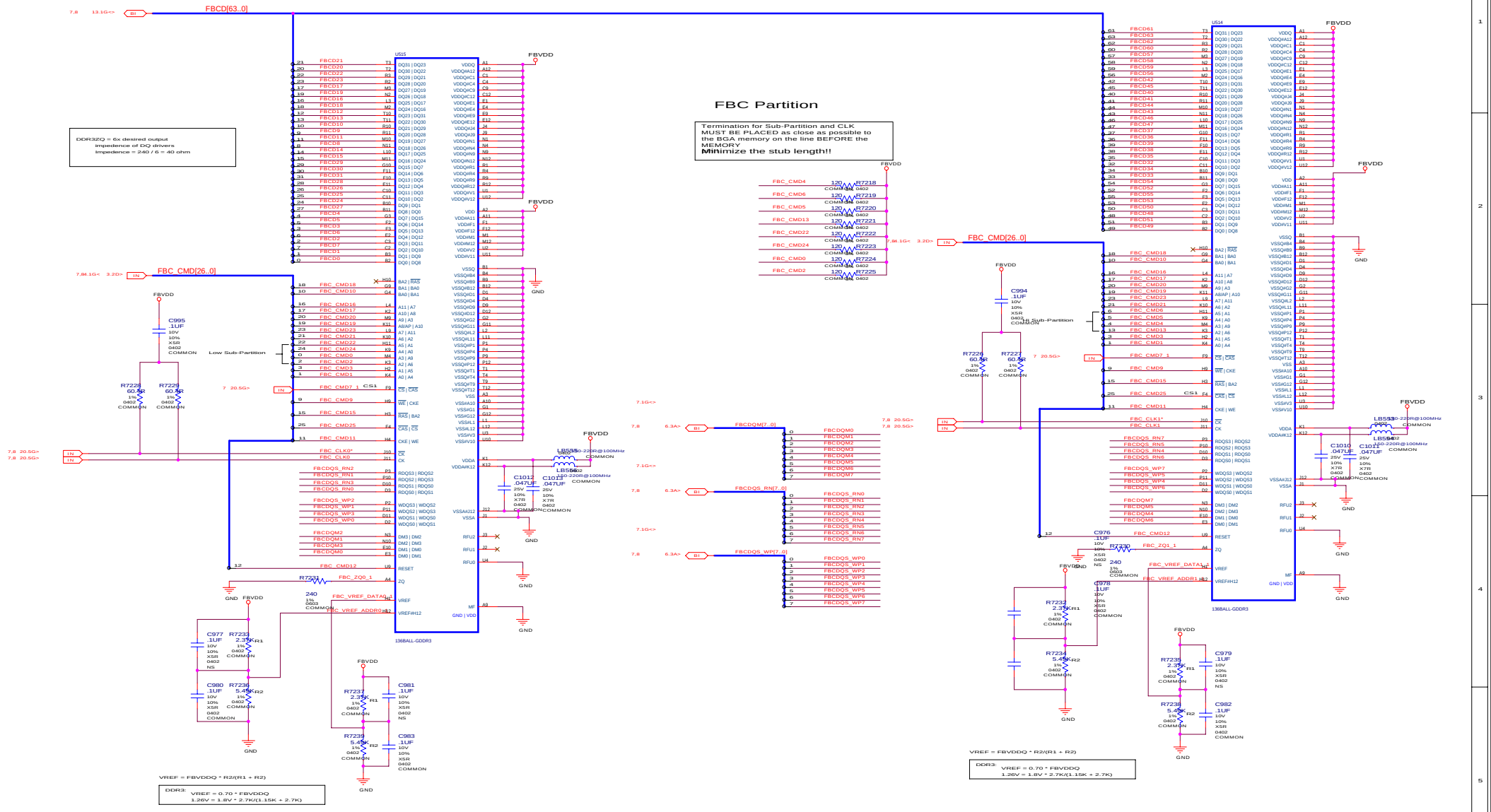
FRAMEBUFFER: PARTITION C 8Mx32 BGA136 DDR3



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FB C2	
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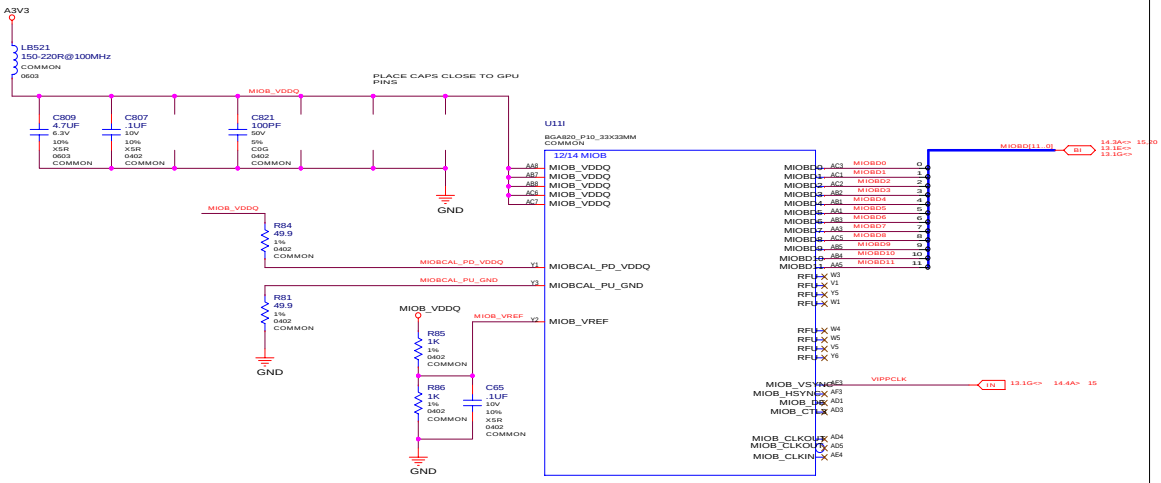
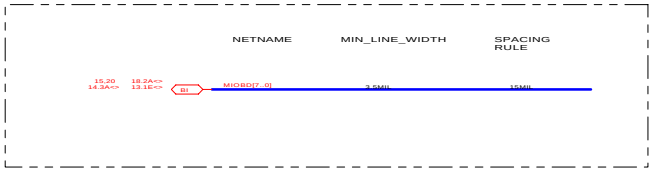
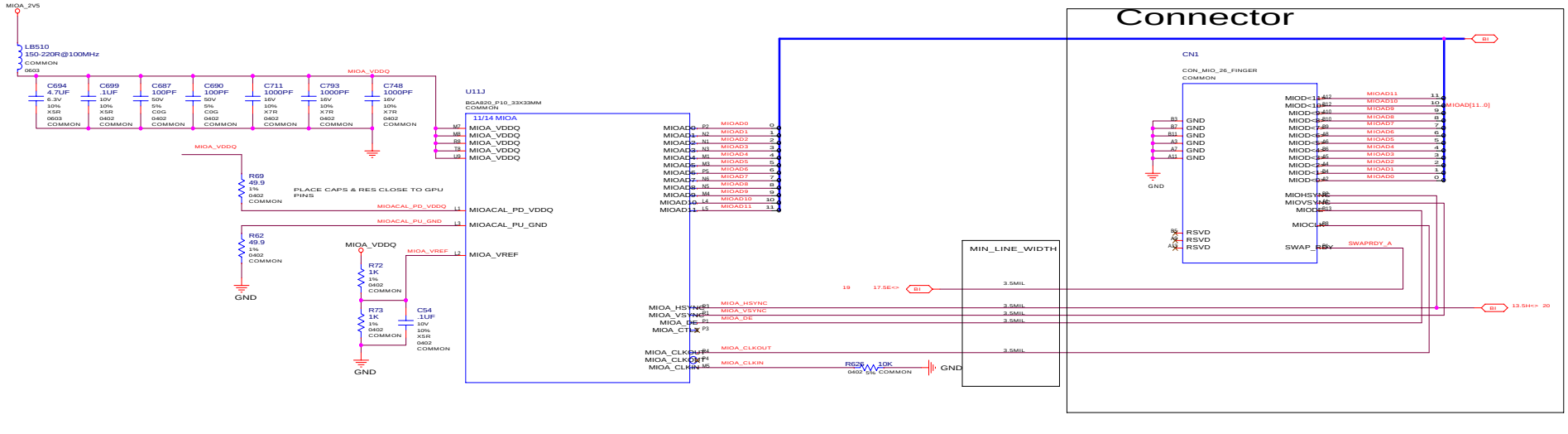
G3 VIP/MIOB





G3 MIOA



Feature Connector

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MIOA/MIOB			
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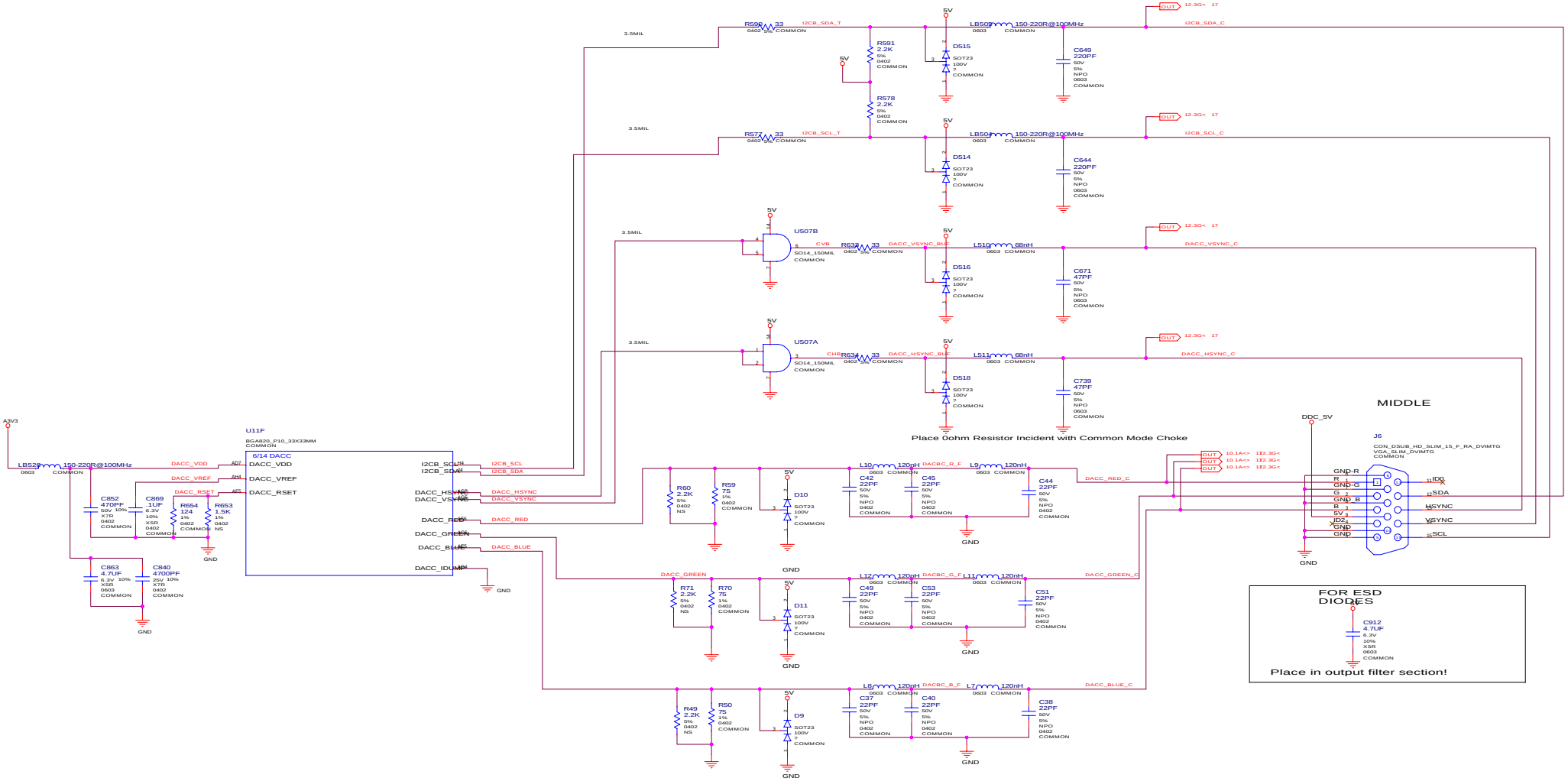
Secondary Display (DACC), Slim DB15

DACC RGB-FILTER



Micro-Star International Co., LTD.	
DACC	
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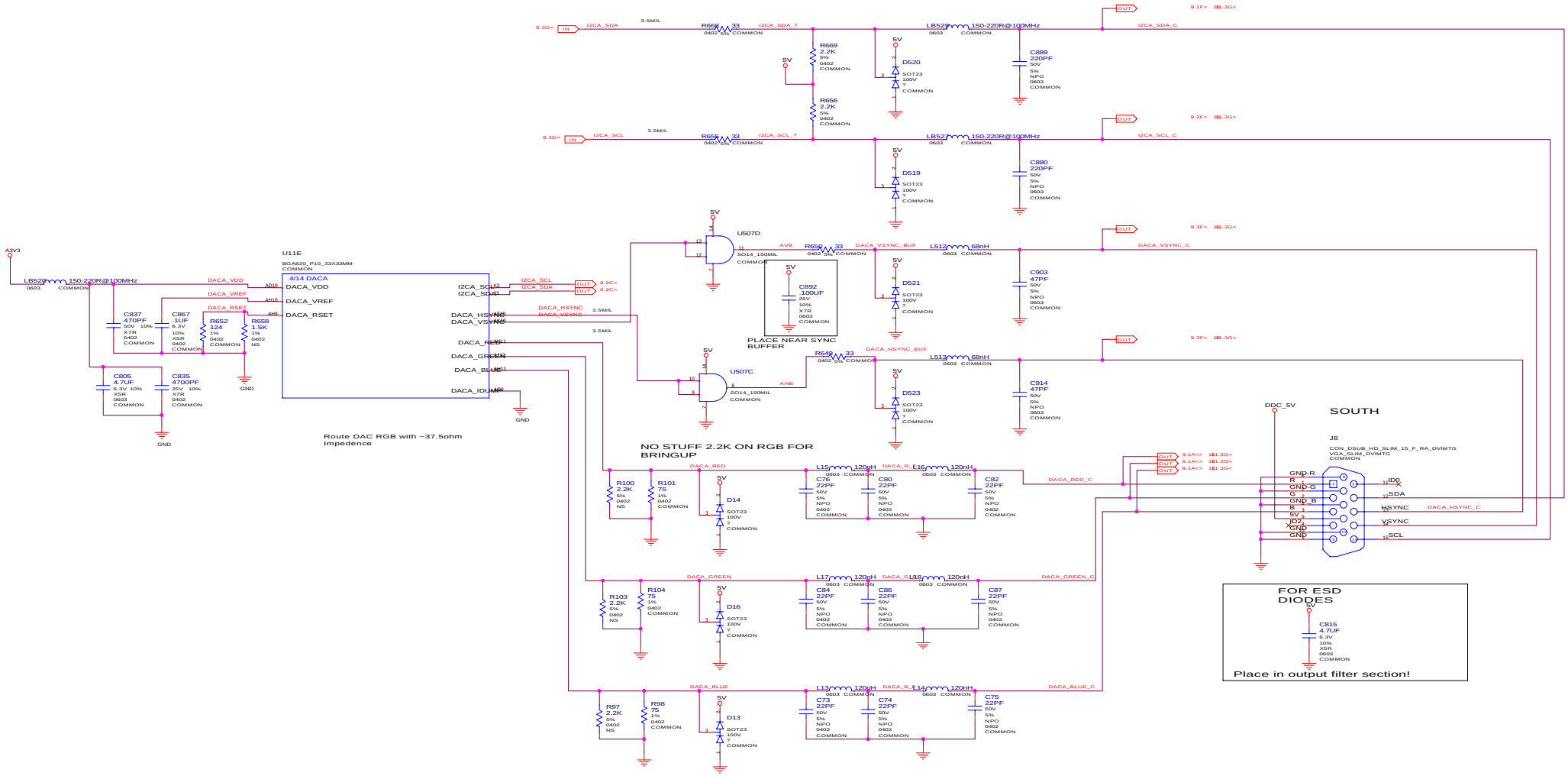
Primary Display (DACA), Slim DB15

DACA
RGB-FILTER



Micro-Star International Co., LTD.	
DACA	
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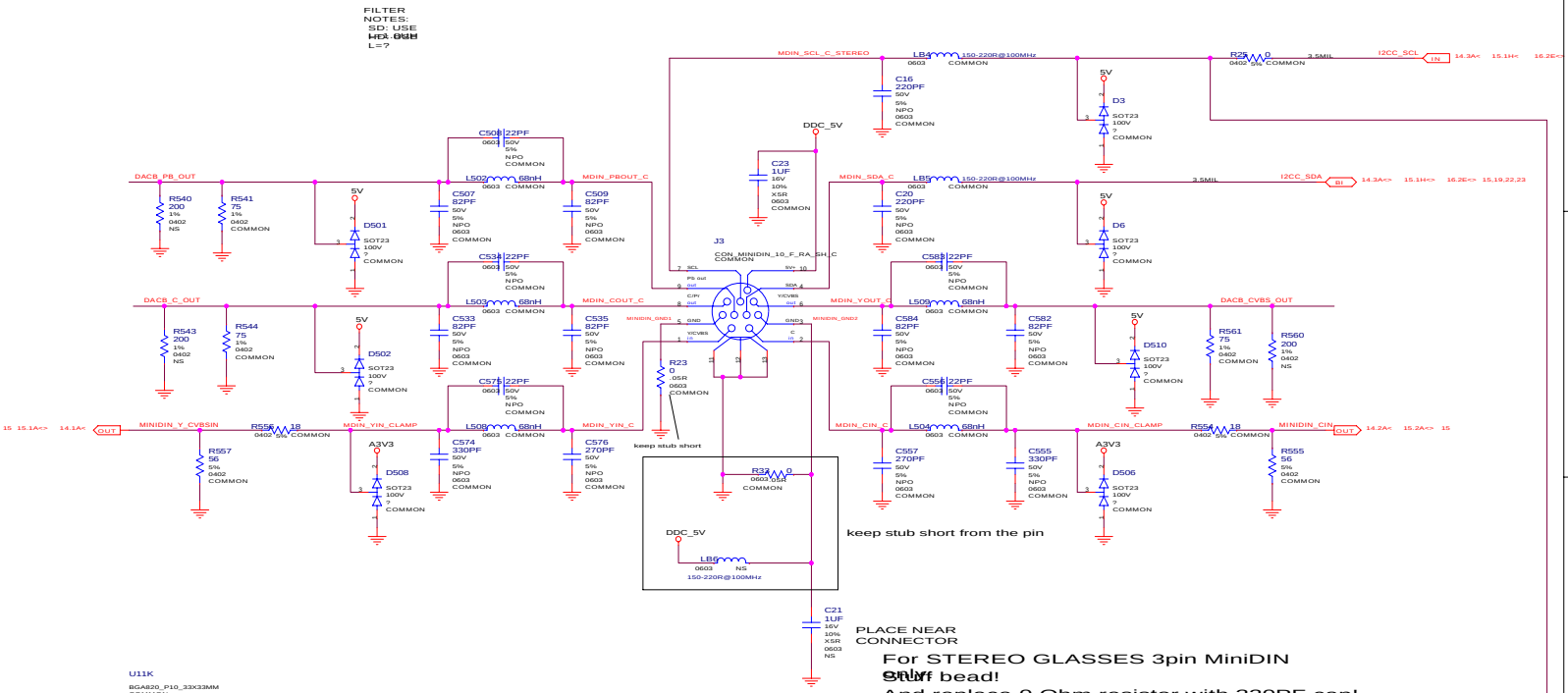
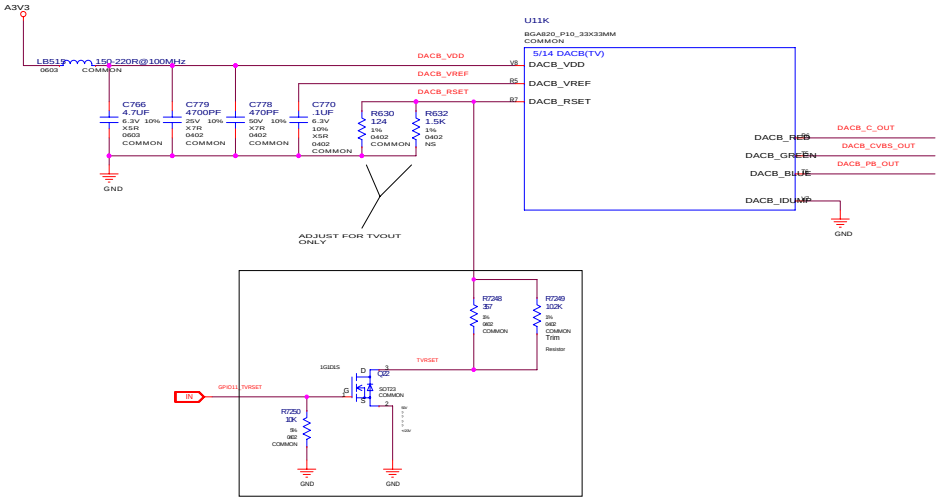
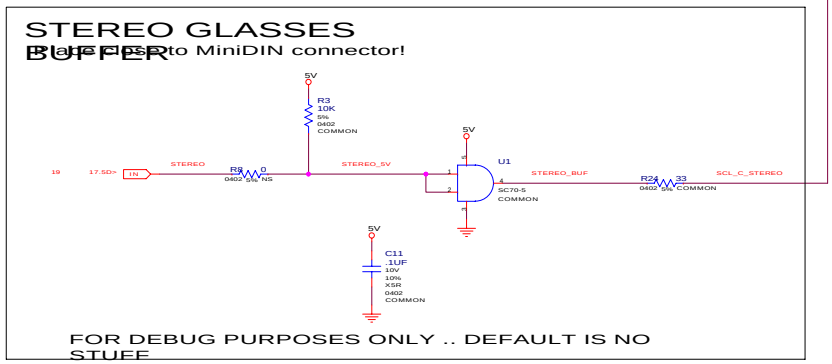
DACB .. MiniDIN VIDEO IN/OUT CONNECTOR /STEREO GLASSES







Micro-Star International Co., LTD.		
DACB		
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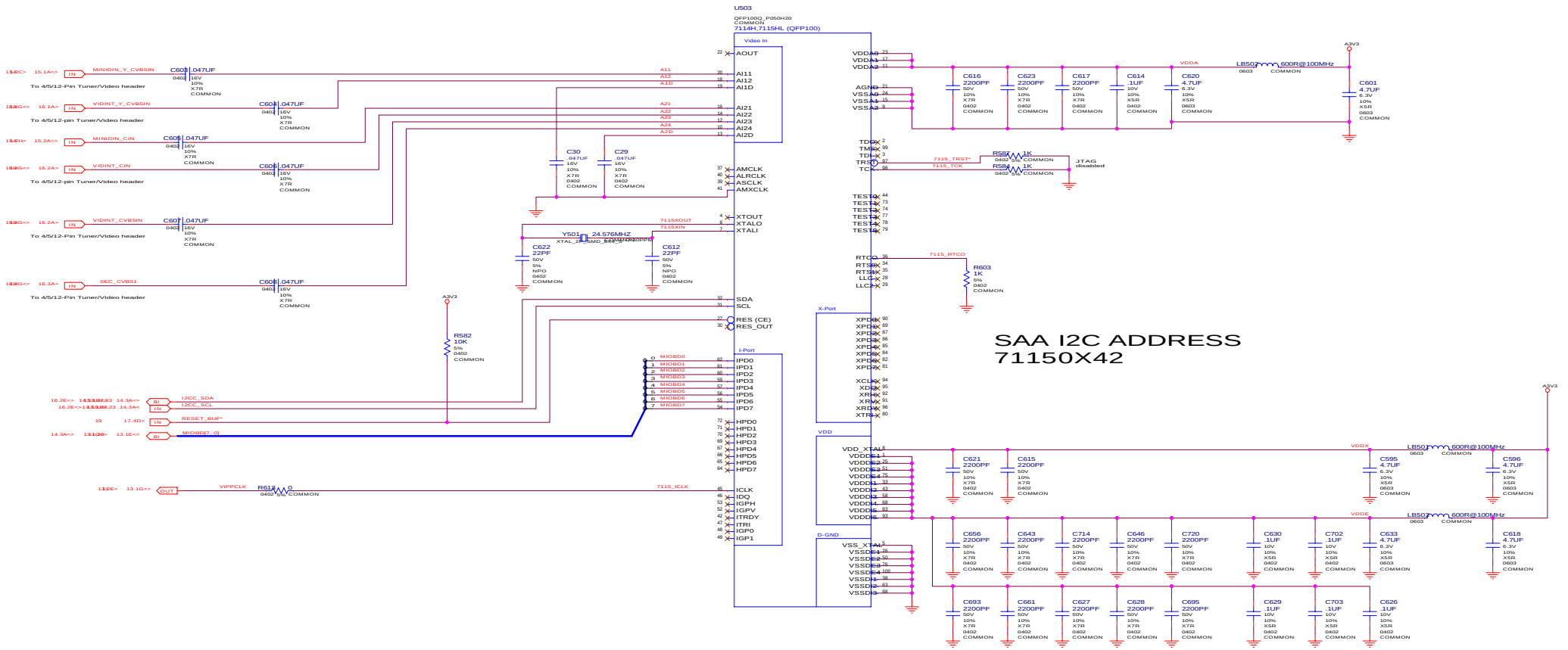
PHILIPS
VIDEO
CAPTURE



Micro-Star International Co., LTD.	
VIDEO CAPTURE	
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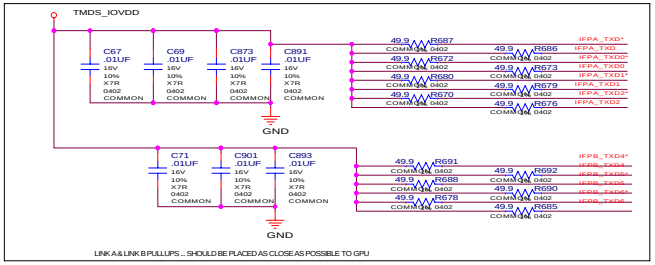
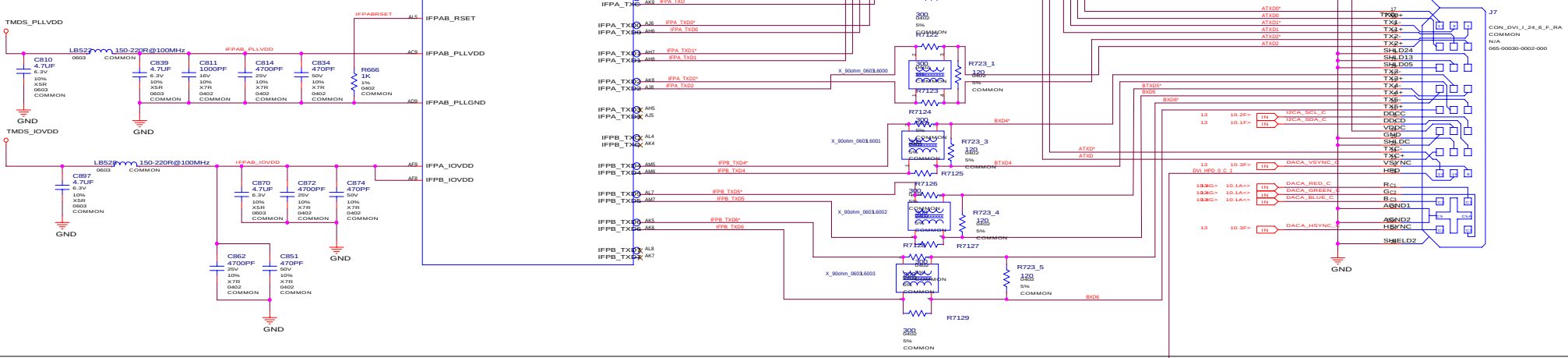
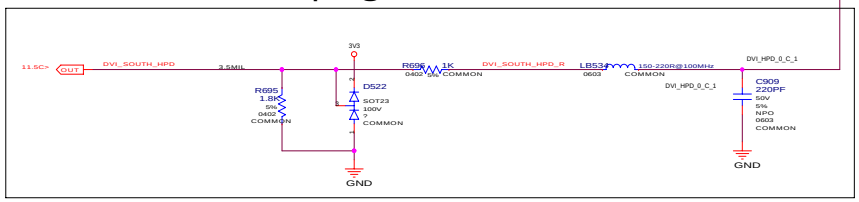
INTERNAL TMDS .. LINK A & B



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



Hotplug Detection



Micro-Star International Co., LTD.			
TMDS LINK A & B			
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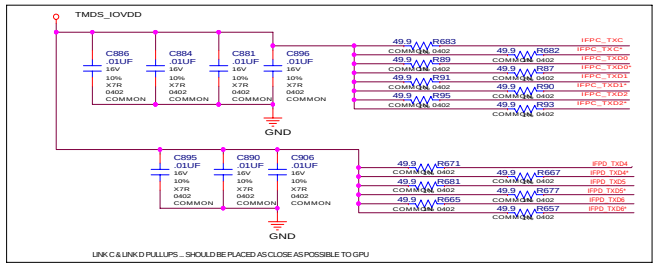
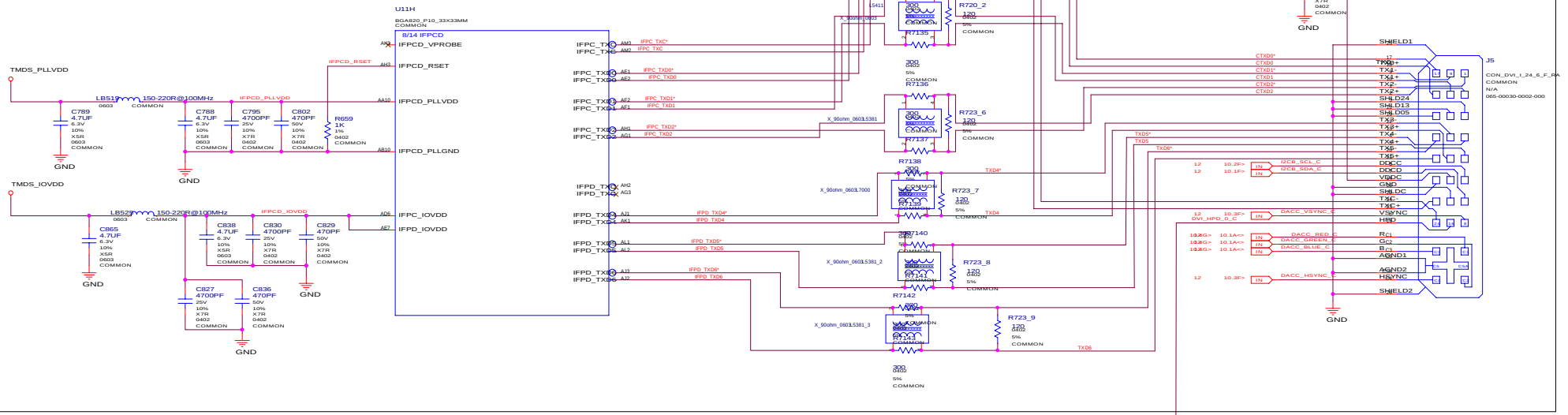
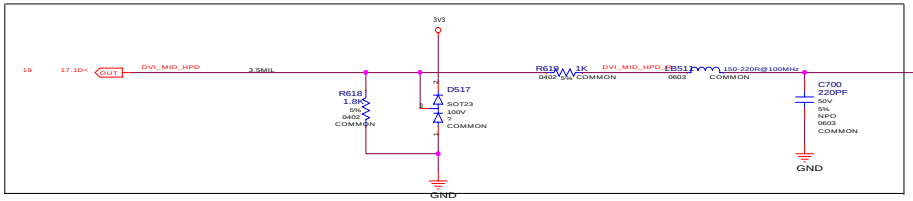
INTERNAL TMDS
.. LINK C & D





Hotplug Detection



Micro-Star International Co., LTD.		
TMDS LINK C & D		
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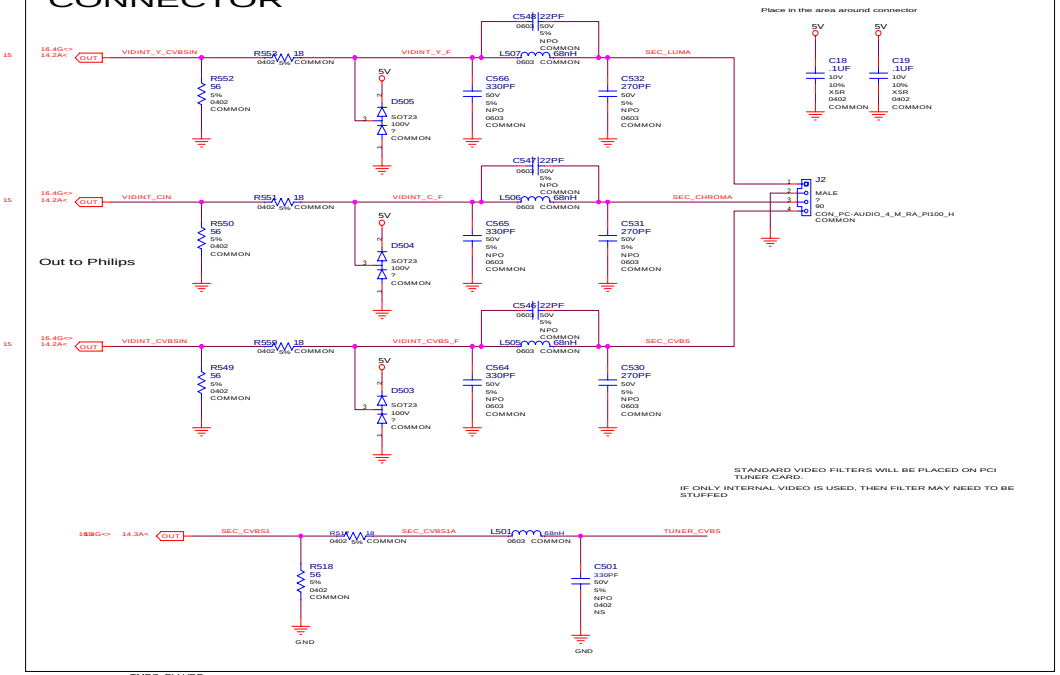
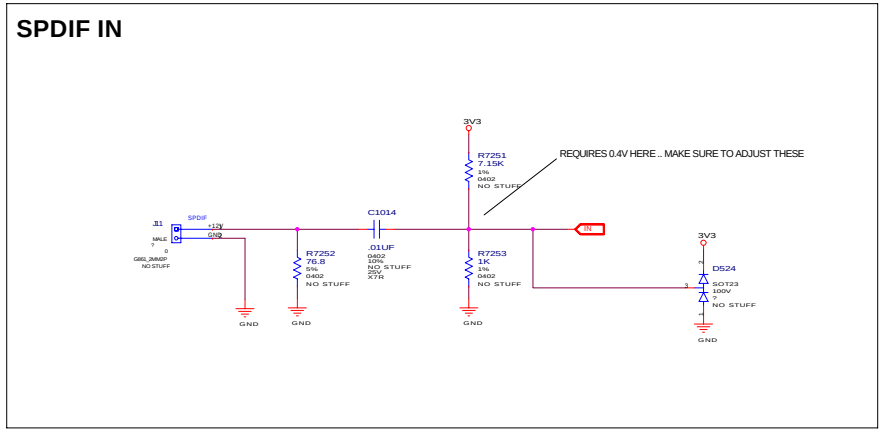
4-Pin Video In, 12-pin Video In connectors

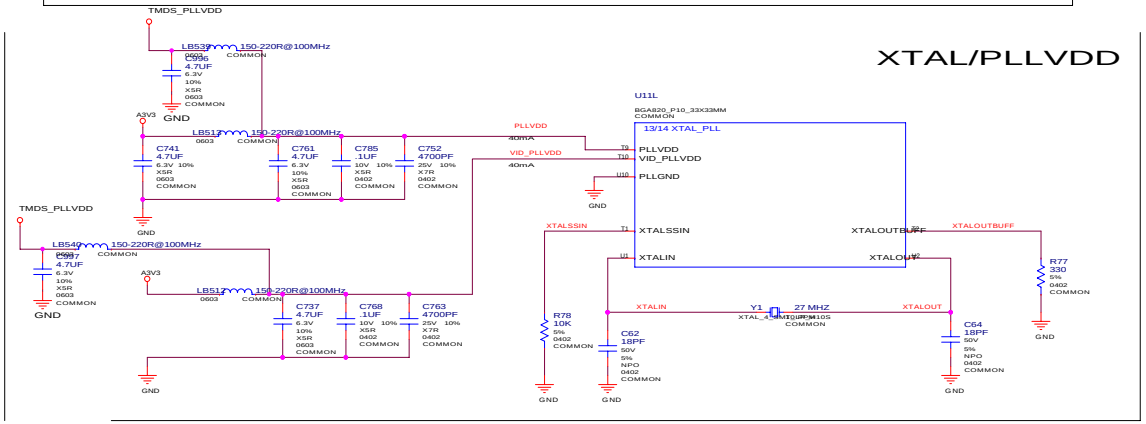
EXTERNAL 4-PIN VIDEO IN CONNECTOR



SPDIF IN



XTAL/PLLVDD



Micro-Star International Co., LTD.	
4-Pin Video-In/SPDIF IN	
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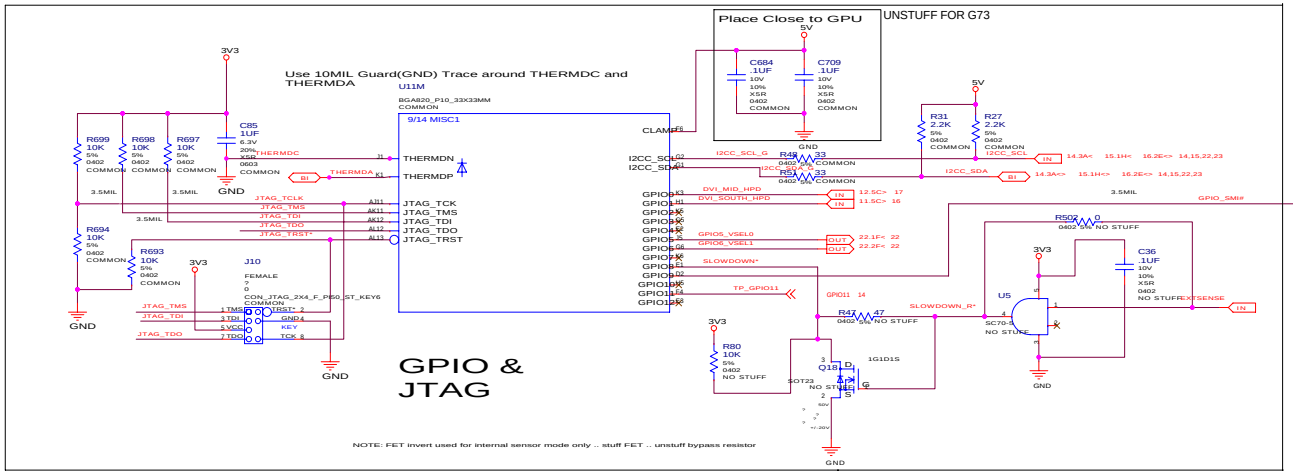
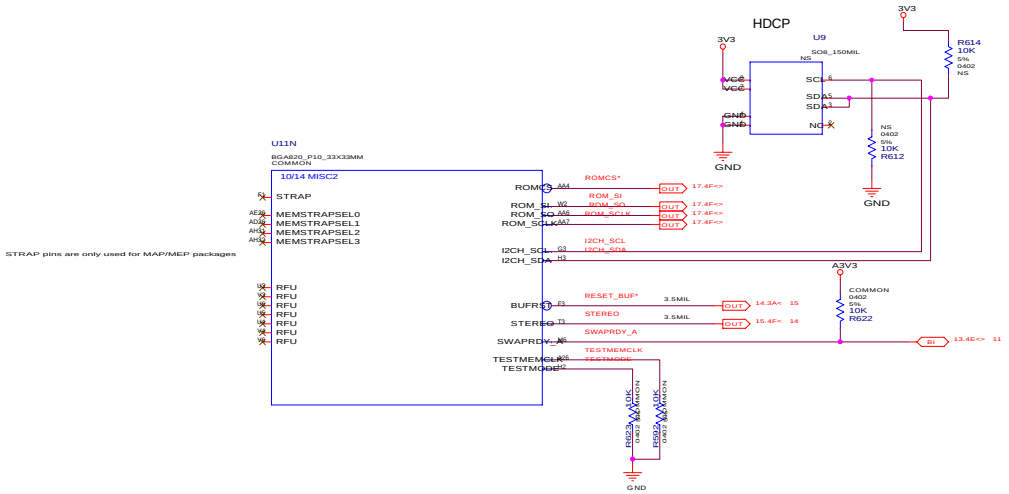
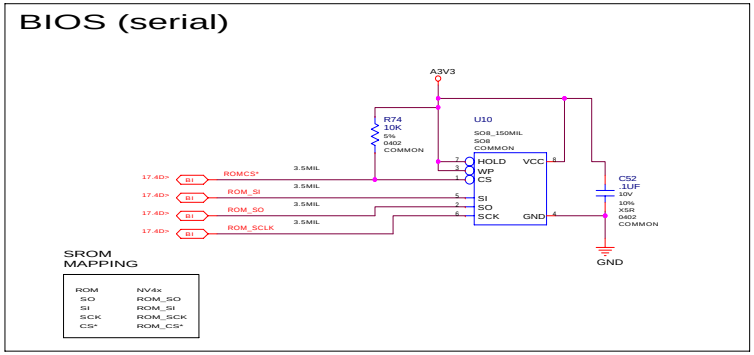


GPIO Assignment Table

GPIO	I/O	FUNCTION
0	IN	DVI MID HOTPLUG DET
1	IN	DVI SOUTH HOTPLUG DET
2	IN	RESERVED
3	IN	RESERVED
4	IN	TUNER IRQ
5	OUT	NVVDD VOLTAGE SELECT 0
6	OUT	NVVDD VOLTAGE SELECT 1
7	IN	RESERVED
8	IN	RESERVED
9	OUT	PWM FAN
10	IN	RESERVED
11	IN	TVRSET
12	IN	RESERVED





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GPIO/ROM/HDCP ROM	
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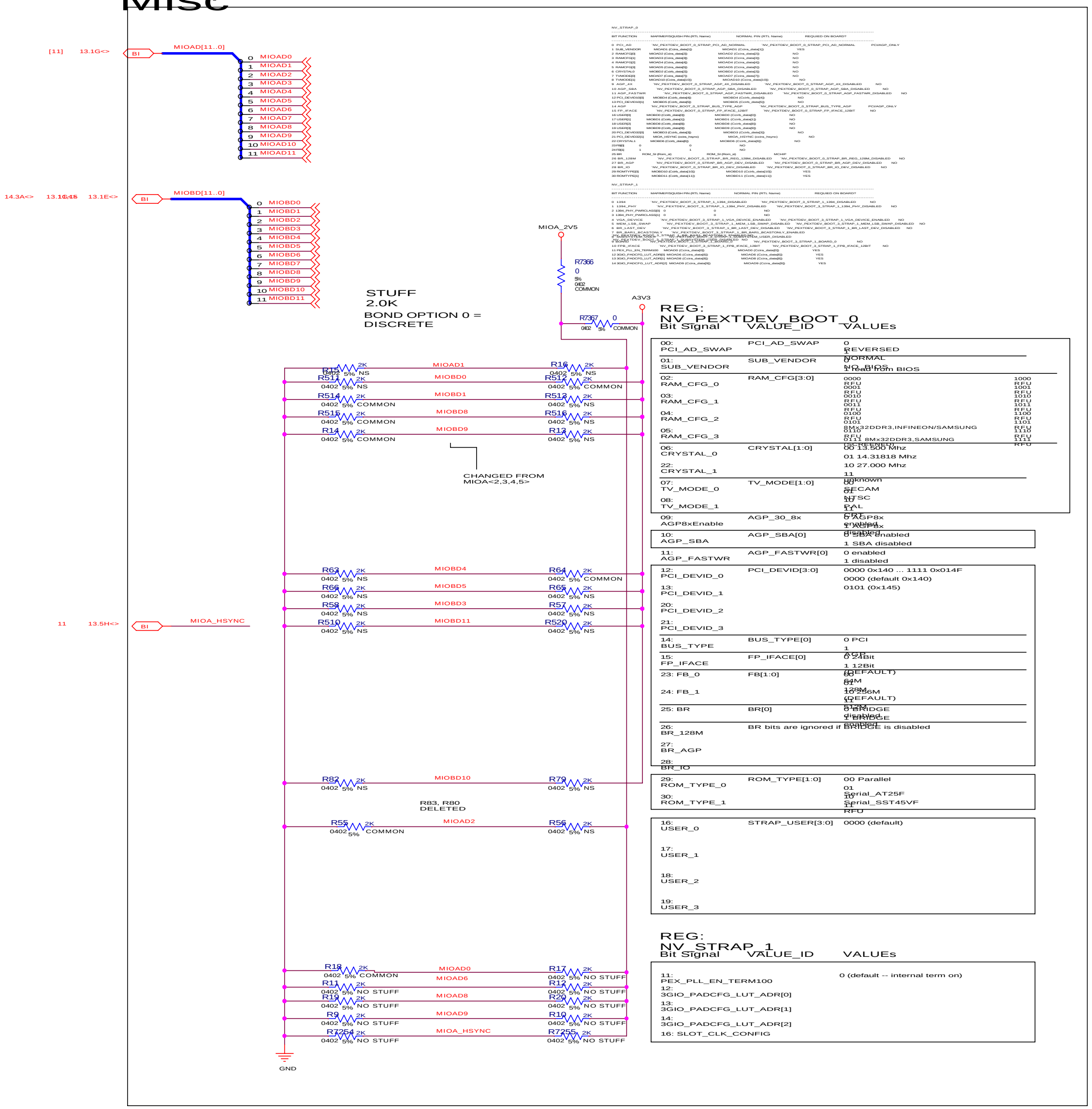
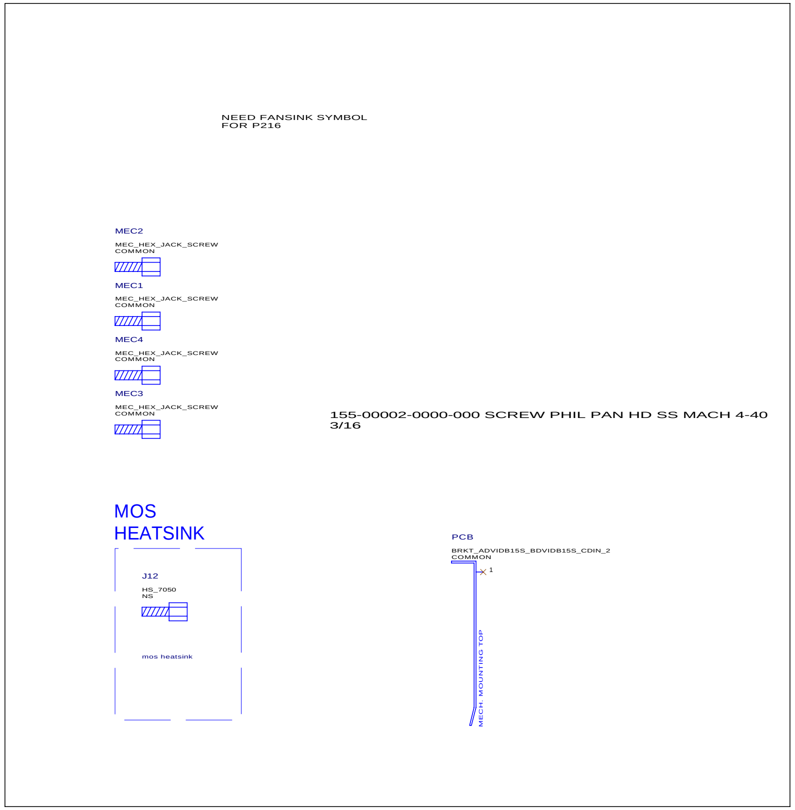
BIOS, Straps, Misc

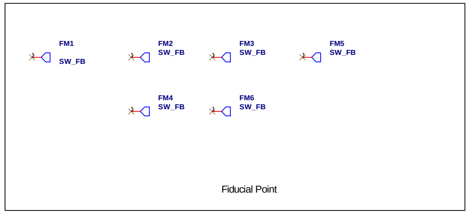
Straps

Assembly: BIOS



Mechanical parts





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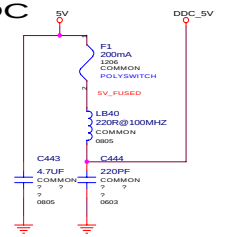
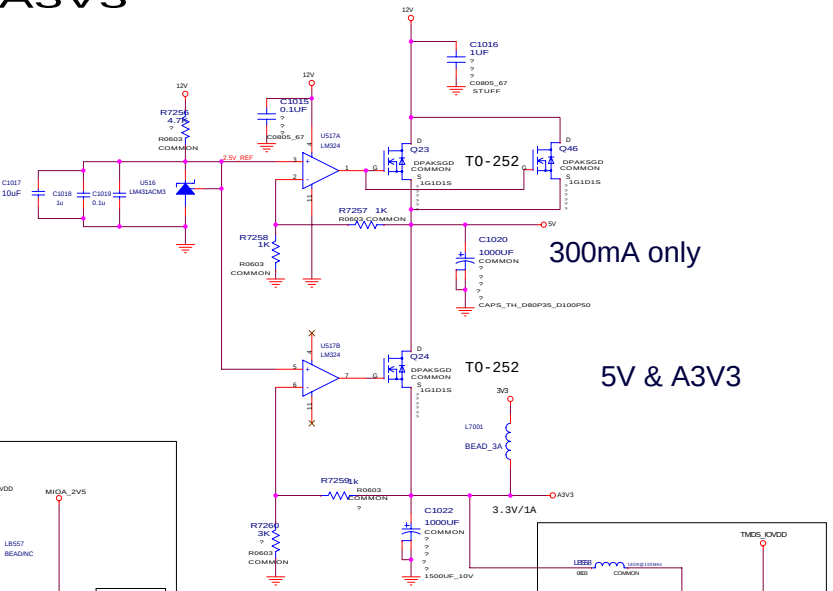
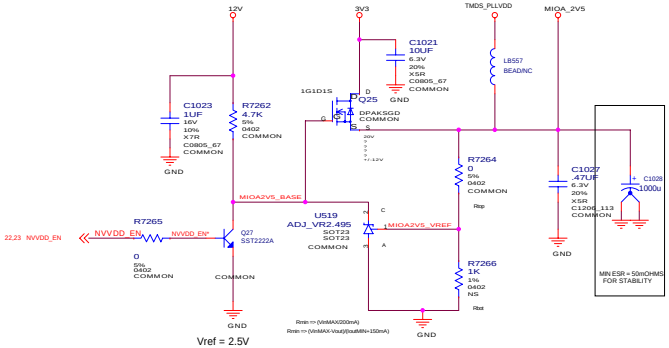
Power Supply TMDS/A3V3

DDC 5V

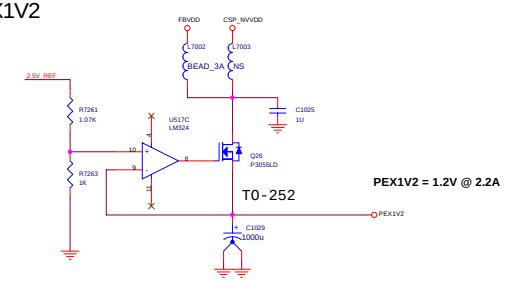


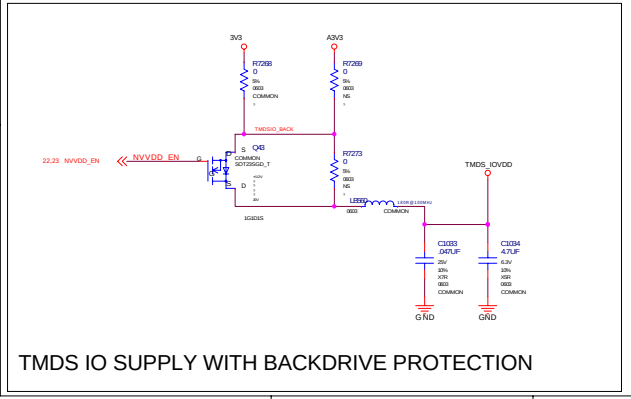


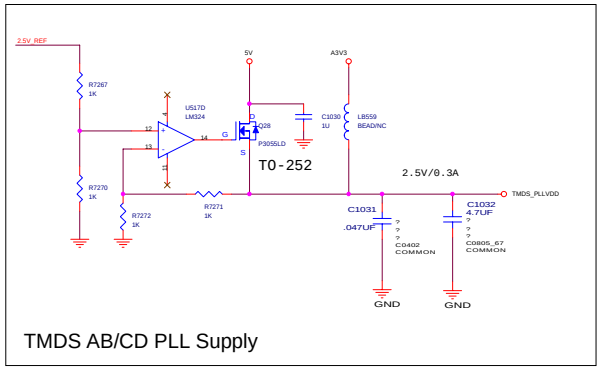
MIOA_VDDQ



PEX1V2







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Linear Power	
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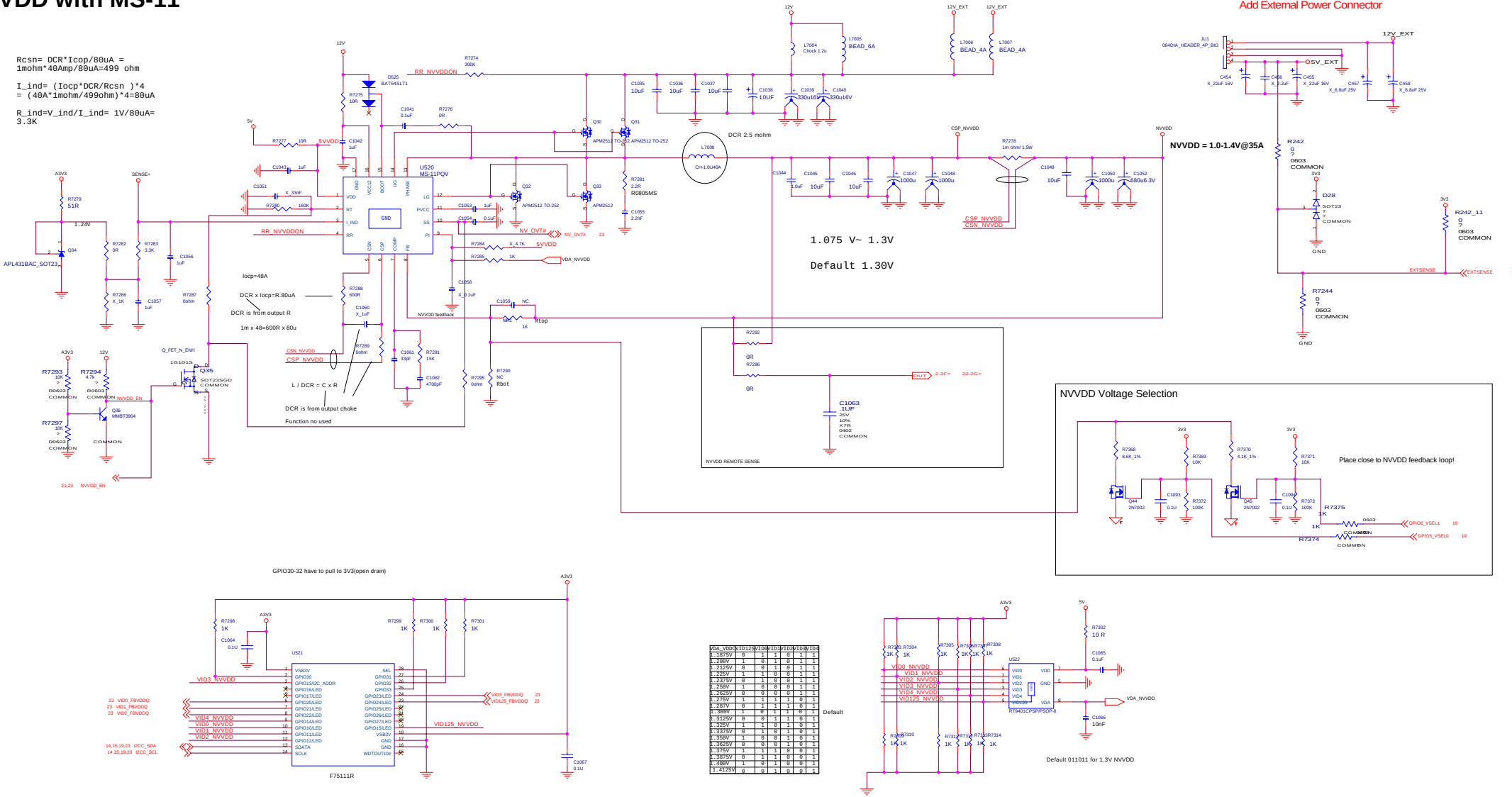
NVVDD with MS-11



VDA_VDDQ	VID125	VID4	VID3	VID2	VID1	VID0
1.1875V	0	1	1	0	1	1
1.200V	1	0	1	0	1	1
1.2125V	0	0	1	0	1	1
1.225V	1	1	0	0	1	1
1.2375V	0	1	0	0	1	1
1.250V	1	0	0	0	1	1
1.2625V	0	0	0	0	1	1
1.275V	1	1	1	0	1	1
1.287V	0	1	1	0	1	1
1.300V	1	0	1	0	1	1
1.3125V	0	0	1	0	1	1
1.325V	1	1	0	0	1	1
1.3375V	0	1	0	0	1	1
1.350V	1	0	0	0	1	1
1.3625V	0	0	0	0	1	1
1.375V	1	1	1	0	0	1
1.3875V	0	1	1	0	0	1
1.400V	1	0	1	0	0	1
1.4125V	0	0	1	0	0	1

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NVVDD with MS-11			
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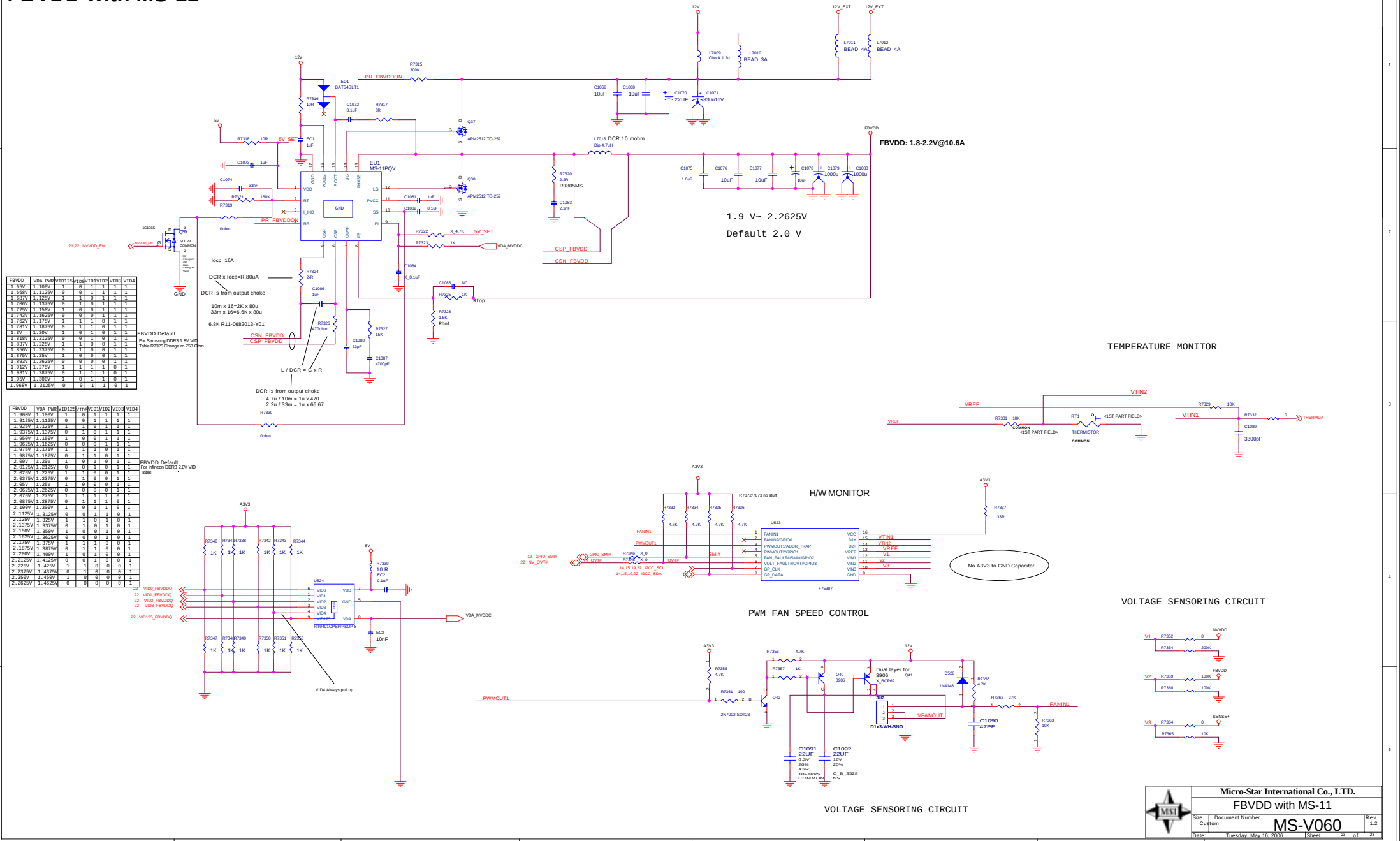
FBVDD with MS-11



FBVDD	VDA_PWR	VID125	VID6	VID1	VID2	VID3	VID4
1.65V	1.100V	1	0	1	1	1	1
1.668V	1.1125V	0	0	1	1	1	1
1.687V	1.125V	1	1	0	1	1	1
1.706V	1.1375V	0	1	0	1	1	1
1.725V	1.150V	1	0	0	1	1	1
1.743V	1.1625V	0	0	0	1	1	1
1.762V	1.175V	1	1	1	0	1	1
1.781V	1.1875V	0	1	1	0	1	1
1.8V	1.20V	1	0	1	0	1	1
1.818V	1.2125V	0	0	1	0	1	1
1.837V	1.225V	1	1	0	0	1	1
1.856V	1.2375V	0	1	0	0	1	1
1.875V	1.25V	1	0	0	0	1	1
1.893V	1.2625V	0	0	0	0	1	1
1.912V	1.275V	1	1	1	1	0	1
1.931V	1.2875V	0	1	1	1	0	1
1.95V	1.300V	1	0	1	1	0	1
1.968V	1.3125V	0	0	1	1	0	1

FBVDD Default
For Samsung DDR3 1.8V VID Table R7325 Change ro 750 Ohm

FBVDD	VDA_PWR	VID125	VID6	VID1	VID2	VID3	VID4
1.900V	1.100V	1	0	1	1	1	1
1.9125V	1.1125V	0	0	1	1	1	1
1.925V	1.125V	1	1	0	1	1	1
1.9375V	1.1375V	0	1	0	1	1	1
1.950V	1.150V	1	0	0	1	1	1
1.9625V	1.1625V	0	0	0	1	1	1
1.975V	1.175V	1	1	1	0	1	1
1.9875V	1.1875V	0	1	1	0	1	1
2.00V	1.20V	1	0	1	0	1	1
2.0125V	1.2125V	0	0	1	0	1	1
2.025V	1.225V	1	1	0	0	1	1
2.0375V	1.2375V	0	1	0	0	1	1
2.05V	1.25V	1	0	0	0	1	1
2.0625V	1.2625V	0	0	0	0	1	1
2.075V	1.275V	1	1	1	1	0	1
2.0875V	1.2875V	0	1	1	1	0	1
2.100V	1.300V	1	0	1	1	0	1
2.1125V	1.3125V	0	0	1	1	0	1
2.125V	1.325V	1	1	0	1	0	1
2.1375V	1.3375V	0	1	0	1	0	1
2.150V	1.350V	1	0	0	1	0	1
2.1625V	1.3625V	0	0	0	1	0	1
2.175V	1.375V	1	1	1	0	0	1
2.1875V	1.3875V	0	1	1	0	0	1
2.200V	1.400V	1	0	1	0	0	1
2.2125V	1.4125V	0	0	1	0	0	1
2.225V	1.425V	1	1	0	0	0	1
2.2375V	1.4375V	0	1	0	0	0	1
2.250V	1.450V	1	0	0	0	0	1
2.2625V	1.4625V	0	0	0	0	0	1

FBVDD Default
For Infineon DDR3 2.0V VID Table

VOLTAGE SENSORING CIRCUIT

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FBVDD with MS-11	
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