P262: NV44/G3-64, TSOP MEMORY x16

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-f0ppp-xxxx-vvv	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	0000	600-10262-0000-000	<UNDEFINED>
2	0001	600-10262-0001-000	<UNDEFINED>
3	0002	600-10262-0002-000	<UNDEFINED>
4	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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>

REV HISTORY

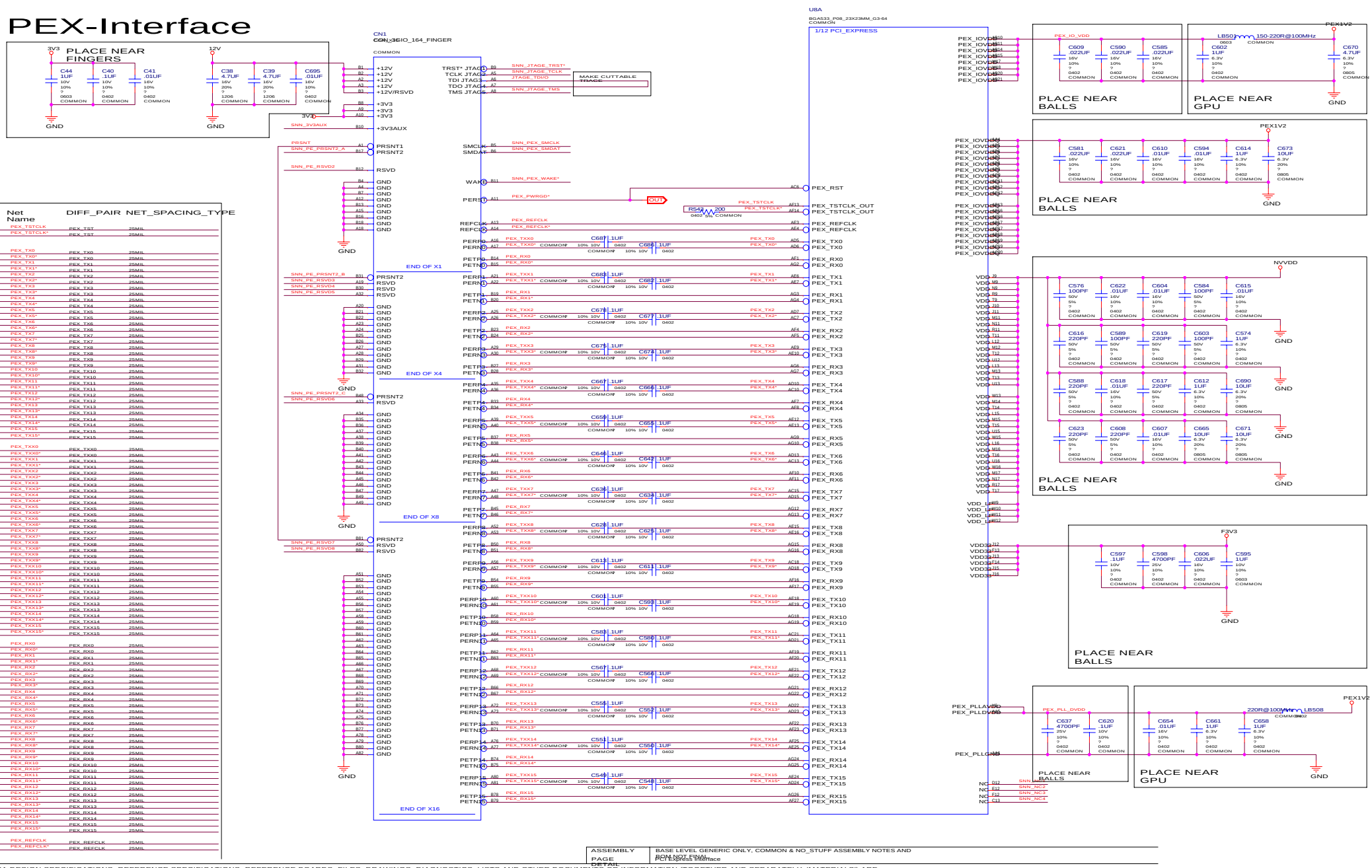
A01

- 9/22/2004:
  - Changed TMDS_PLLVDD to F1_VDD
  - Added bead option to PLLVDD rail of NV44
  - Changed RSET values for DACA and DACB
  - Changed DACB RSET FET to a dual package with GPIO11 control-Macrovision
  - Added F3V3 bypass to PLLVDD linear regulator
  - Changed location of R62

ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE	P2Z8
DETAIL	Overview

V001

PEX-Interface



Net Name	DIFF_PAIR	NET_SPACING_TYPE
PEX_TSTCLK	PEX_TST	25MIL
PEX_TSTCLK*	PEX_TST	25MIL
PEX_TX0	PEX_TX0	25MIL
PEX_TX0*	PEX_TX0	25MIL
PEX_TX1	PEX_TX1	25MIL
PEX_TX1*	PEX_TX1	25MIL
PEX_TX2	PEX_TX2	25MIL
PEX_TX2*	PEX_TX2	25MIL
PEX_TX3	PEX_TX3	25MIL
PEX_TX3*	PEX_TX3	25MIL
PEX_TX4	PEX_TX4	25MIL
PEX_TX4*	PEX_TX4	25MIL
PEX_TX5	PEX_TX5	25MIL
PEX_TX5*	PEX_TX5	25MIL
PEX_TX6	PEX_TX6	25MIL
PEX_TX6*	PEX_TX6	25MIL
PEX_TX7	PEX_TX7	25MIL
PEX_TX7*	PEX_TX7	25MIL
PEX_TX8	PEX_TX8	25MIL
PEX_TX8*	PEX_TX8	25MIL
PEX_TX9	PEX_TX9	25MIL
PEX_TX9*	PEX_TX9	25MIL
PEX_TX10	PEX_TX10	25MIL
PEX_TX10*	PEX_TX10	25MIL
PEX_TX11	PEX_TX11	25MIL
PEX_TX11*	PEX_TX11	25MIL
PEX_TX12	PEX_TX12	25MIL
PEX_TX12*	PEX_TX12	25MIL
PEX_TX13	PEX_TX13	25MIL
PEX_TX13*	PEX_TX13	25MIL
PEX_TX14	PEX_TX14	25MIL
PEX_TX14*	PEX_TX14	25MIL
PEX_TX15	PEX_TX15	25MIL
PEX_TX15*	PEX_TX15	25MIL
PEX_TXX0	PEX_TXX0	25MIL
PEX_TXX0*	PEX_TXX0	25MIL
PEX_TXX1	PEX_TXX1	25MIL
PEX_TXX1*	PEX_TXX1	25MIL
PEX_TXX2	PEX_TXX2	25MIL
PEX_TXX2*	PEX_TXX2	25MIL
PEX_TXX3	PEX_TXX3	25MIL
PEX_TXX3*	PEX_TXX3	25MIL
PEX_TXX4	PEX_TXX4	25MIL
PEX_TXX4*	PEX_TXX4	25MIL
PEX_TXX5	PEX_TXX5	25MIL
PEX_TXX5*	PEX_TXX5	25MIL
PEX_TXX6	PEX_TXX6	25MIL
PEX_TXX6*	PEX_TXX6	25MIL
PEX_TXX7	PEX_TXX7	25MIL
PEX_TXX7*	PEX_TXX7	25MIL
PEX_TXX8	PEX_TXX8	25MIL
PEX_TXX8*	PEX_TXX8	25MIL
PEX_TXX9	PEX_TXX9	25MIL
PEX_TXX9*	PEX_TXX9	25MIL
PEX_TXX10	PEX_TXX10	25MIL
PEX_TXX10*	PEX_TXX10	25MIL
PEX_TXX11	PEX_TXX11	25MIL
PEX_TXX11*	PEX_TXX11	25MIL
PEX_TXX12	PEX_TXX12	25MIL
PEX_TXX12*	PEX_TXX12	25MIL
PEX_TXX13	PEX_TXX13	25MIL
PEX_TXX13*	PEX_TXX13	25MIL
PEX_TXX14	PEX_TXX14	25MIL
PEX_TXX14*	PEX_TXX14	25MIL
PEX_TXX15	PEX_TXX15	25MIL
PEX_TXX15*	PEX_TXX15	25MIL
PEX_RX0	PEX_RX0	25MIL
PEX_RX0*	PEX_RX0	25MIL
PEX_RX1	PEX_RX1	25MIL
PEX_RX1*	PEX_RX1	25MIL
PEX_RX2	PEX_RX2	25MIL
PEX_RX2*	PEX_RX2	25MIL
PEX_RX3	PEX_RX3	25MIL
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PEX_RX4	PEX_RX4	25MIL
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PEX_RX12	PEX_RX12	25MIL
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PEX_RX13	PEX_RX13	25MIL
PEX_RX13*	PEX_RX13	25MIL
PEX_RX14	PEX_RX14	25MIL
PEX_RX14*	PEX_RX14	25MIL
PEX_RX15	PEX_RX15	25MIL
PEX_RX15*	PEX_RX15	25MIL
PEX_REFCLK	PEX_REFCLK	25MIL
PEX_REFCLK*	PEX_REFCLK	25MIL

ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND
PAGE	BOM NOT FINAL
DETAIL	PCI Express Interface

GPU: FB-Interface

U8B
BGA533_P08_23X23MM_G3-64
COMMON
2/12 FRAME_BUFFER

FBD[31..0] → FBD0..FBD31 → FB_DQ0..FB_DQ31
FBD[63..32] → FBD32..FBD63 → FB_DQ32..FB_DQ63
FBDQM[7..0] → FBDQM0..FBDQM7 → FB_DQM0..FB_DQM7
FBDQS[7..0] → FBDQS0..FBDQS7 → FB_DQS_WP0..FB_DQS_WP7
SNN_FBDQS<0>*..SNN_FBDQS<7>* → FB_DQS_RN0..FB_DQS_RN7
FB_VTT E15 F15 F16 J17 H18 L19 N19 R19 U19 W19
FB_VDDQ E17 F19 J19 M19 T19 J22 L22 P22 U22 Y22
FB_CMD[26..0] → FB_CMD0..FB_CMD26
FBACLK0 L24 → FBACLK0* K23 → FBACLK1 M22 → FBACLK1* N22
FB_CAL_PD_VDDQ D23 ← FBCAL_PD_VDDQ
FB_CAL_PU_GND B23 ← FBCAL_PU_GND
FB_CAL_TERM_GND B15 ← FBCAL_TERM_GND
FB_DEBUG K22 ← SNN_FBA_DEBUG
FB_REFCLK M23 ← SNN_FBA_REFCLK
FB_REFCLK* M24 ← SNN_FBA_REFCLK*
FB_PLLVDD D14 ← FBA_PLLVDD
FB_PLLAVDD D13 ← FBA_PLLAVDD
FB_PLLGND C15 → GND
FB_VREF A16 ← FBVREF

R530 1K 1% 0402 COMMON (Rt)
R532 1K 1% 0402 COMMON (Rb)
C596 .1UF 10V 10% ? 0402 COMMON
FBVREF = FBVDDQ * Rb/(Rt + Rb)
VREF = 0.5 * FBVDDQ
DDR: 1.25V = 2.5V * 1K/(1K + 1K)

R531 49.9 1% 0402 COMMON
R535 49.9 1% 0402 COMMON
R527 0 0402 5% COMMON

PLACE NEAR BGA

C573 .01UF 16V 10% ? 0402 COMMON
C587 .01UF 16V 10% ? 0402 COMMON
C571 .01UF 16V 10% ? 0402 COMMON
C572 .01UF 16V 10% ? 0402 COMMON
C547 4.7UF 16V 10% ? 0805 COMMON
C575 4.7UF 6.3V 10% ? 0805 COMMON
FBVDDQ
GND
FBVTT connected to FBVDDQ for unterminated DDR1

PLACE BELOW GPU

C564 4700PF 25V 10% ? 0402 COMMON
C582 .022UF 16V 10% ? 0402 COMMON
C557 .1UF 10V 10% ? 0402 COMMON
C577 4700PF 25V 10% ? 0402 COMMON
C561 .1UF 10V 10% ? 0402 COMMON
C568 1UF 6.3V 10% ? 0402 COMMON
C586 4700PF 25V 10% ? 0402 COMMON
C559 .022UF 16V 10% ? 0402 COMMON
C553 .1UF 10V 10% ? 0402 COMMON
C578 4700PF 25V 10% ? 0402 COMMON
C558 .022UF 16V 10% ? 0402 COMMON
C554 .1UF 10V 10% ? 0402 COMMON
C569 4700PF 25V 10% ? 0402 COMMON
C560 .022UF 16V 10% ? 0402 COMMON
C556 .1UF 10V 10% ? 0402 COMMON
C570 .022UF 16V 10% ? 0402 COMMON
C562 .1UF 10V 10% ? 0402 COMMON
C579 1UF 6.3V 10% ? 0402 COMMON
FBVDDQ
GND

PLACE NEAR BALLS

C592 .01UF 16V 10% ? 0402 COMMON
C600 .01UF 16V 10% ? 0402 COMMON

PLACE NEAR GPU

C591 1UF 6.3V 10% ? 0402 COMMON
C79 4.7UF 6.3V 10% ? 0805 COMMON
C599 1UF 6.3V 10% ? 0402 COMMON
C77 4.7UF 6.3V 10% ? 0805 COMMON
LB502 220R@100MHz 0402 COMMON
F3V3
NVVDD
GND
FBA_PLLAVDD not needed for MEP19/NV37MCM

X-Caps for FB_CMD BUS

C133 .01UF 16V 10% ? 0402 COMMON
C132 .01UF 16V 10% ? 0402 COMMON
C502 .01UF 16V 10% ? 0402 COMMON
C501 .01UF 16V 10% ? 0402 COMMON
FBVDDQ
GND

LABTESTPOINTS

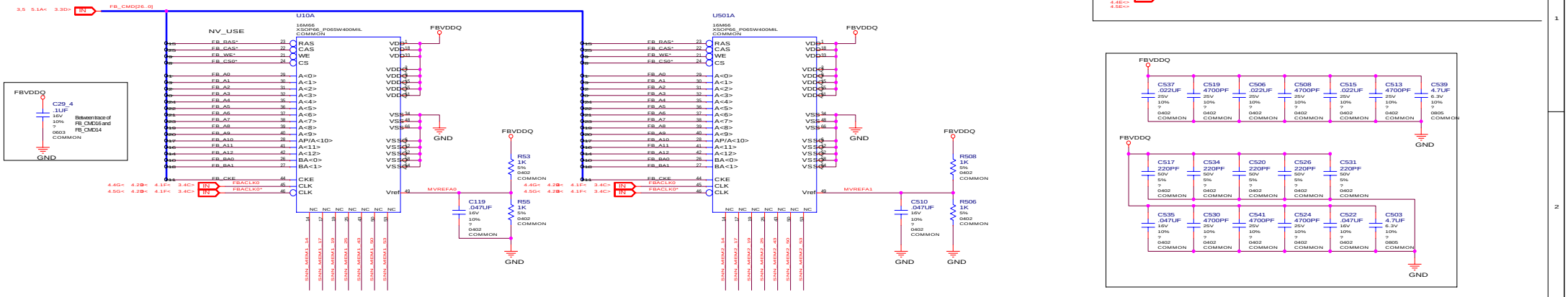
FBDQS0 FBDQS1 FBDQS2 FBDQS3 FBDQS4 FBDQS5 FBDQS6 FBDQS7
TP50 TP51 TP52 TP53 TP54 TP55 TP56 TP57 TP4 TP3 TP2

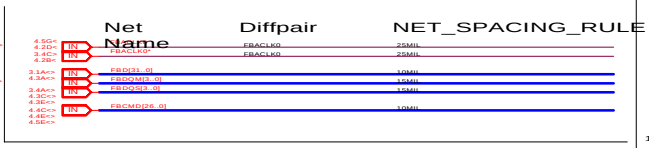
Net Name — NET_SPACING_RULE

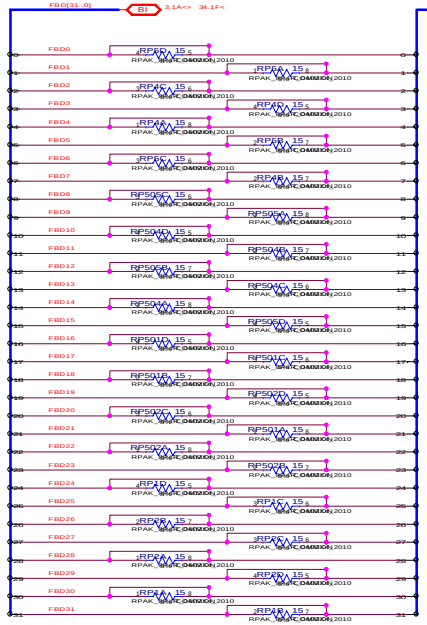
Net Name	NET_SPACING_RULE
FBVDDQ	10MIL
FBCAL_PU_GND	10MIL
FBCAL_TERM_GND	10MIL
FB_PLLVDD	10MIL
FBA_PLLAVDD	10MIL
FBVREF	10MIL

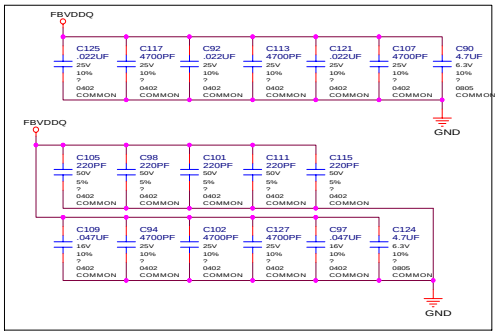
ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND
PAGE	BOM NOT FINAL
DETAIL	Frame Buffer Interface

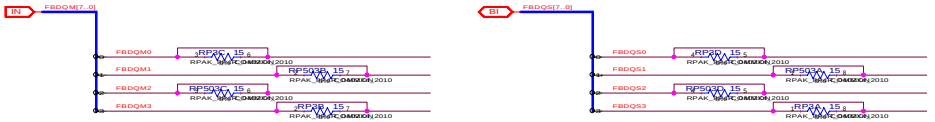
Memory Bit 0..31

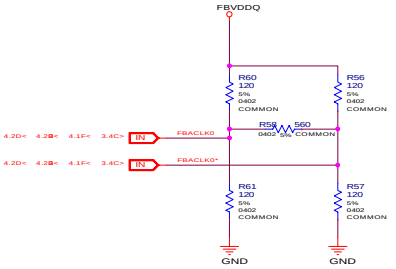








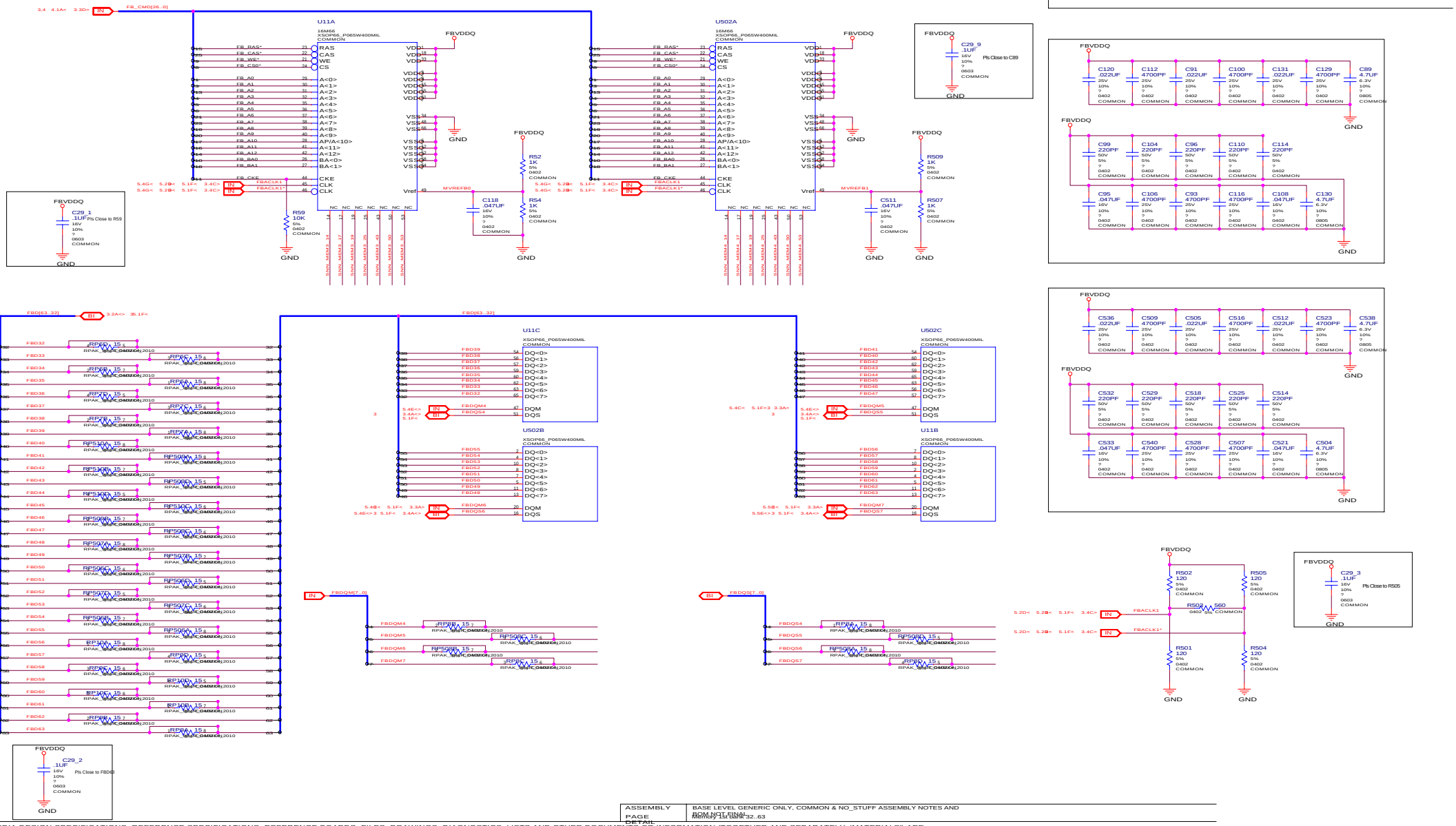




ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND
PAGE	BOM NOT FINAL
DETAIL	Memory 1st Bank D..31

Memory
Bit 32..63

Net Name	Diffpair	NET_SPACING_RULE
FBACLK1*	FBACLK1	25MIL
FBACLK1	FBACLK1	25MIL
FBD[63..32]		10MIL
FBDQM[7..4]		15MIL
FBDQS[7..4]		15MIL



ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND
PAGE	BOM NOT FINAL
DETAIL	Memory 1a Bank 32..63

DAC-A, DB15 Connector

Net Name	MIN_LINE_WIDTH	NET_SPACING_TYPE
I2CA_SDA	12MIL	10MIL
DACA_HSYNC		10MIL
DACA_VSYNC		10MIL
DACA_RED		20MIL
DACA_GREEN		20MIL
DACA_BLUE		20MIL
DACA_VDD		10MIL
DACA_R_F		20MIL
DACA_G_F		20MIL
DACA_B_F		20MIL
DACA_RED_C		20MIL
DACA_GREEN_C		20MIL
DACA_BLUE_C		20MIL

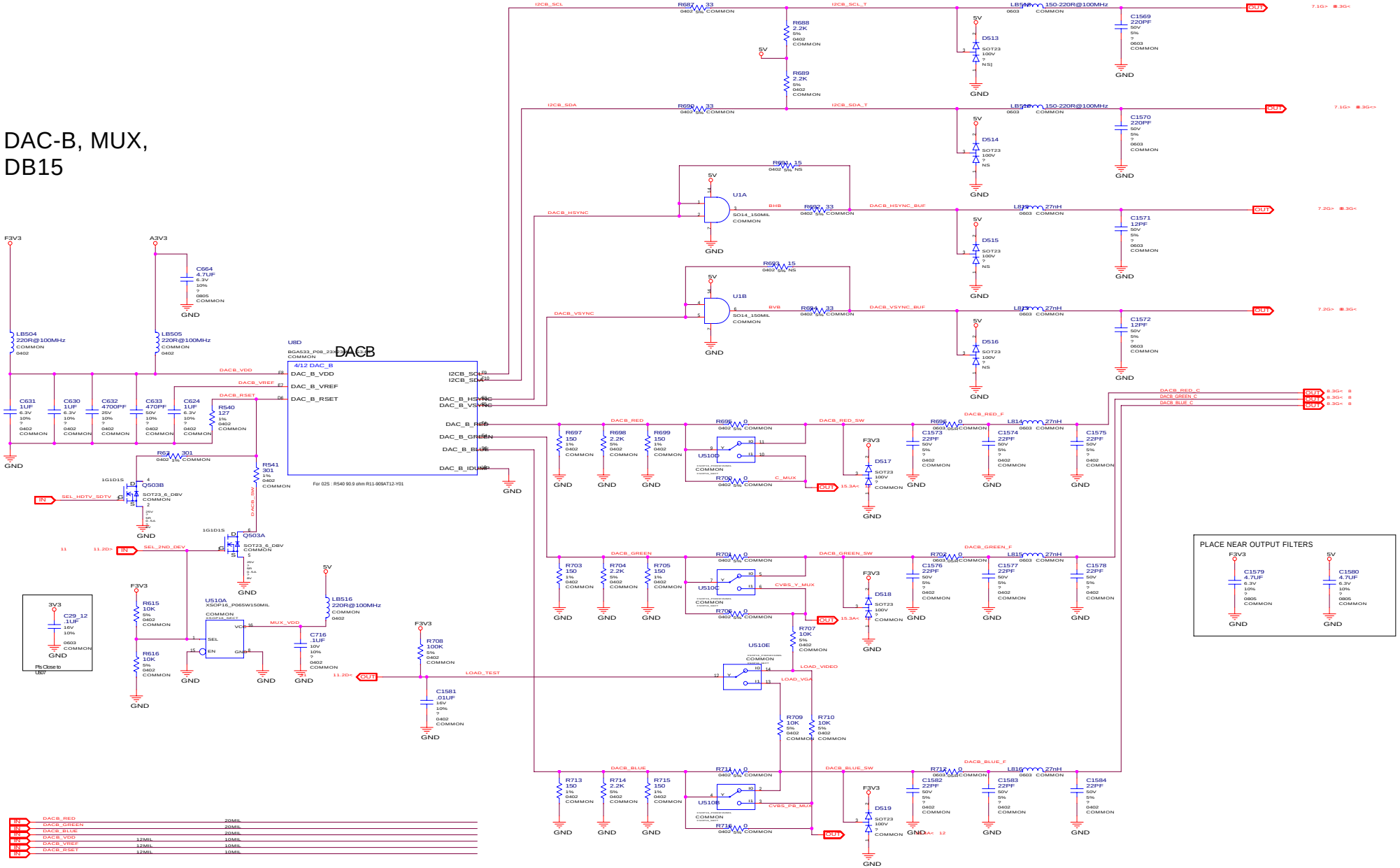
CAP for Sync Buffer

PLACE NEAR OUTPUT FILTERS

DDC_5V

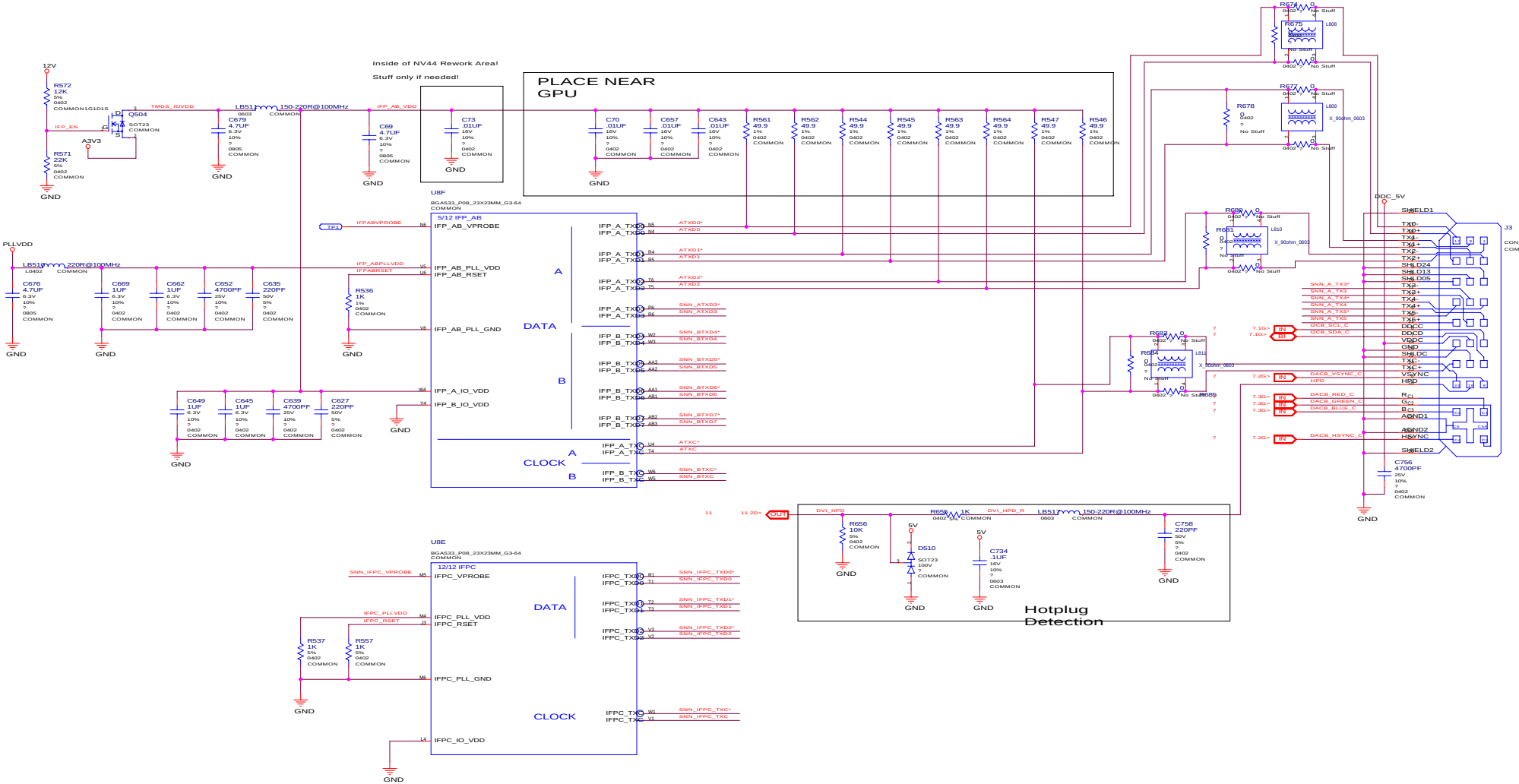
ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND
PAGE DETAIL	DACA, DACB, DACC, Sync Buffers

DAC-B, MUX, DB15



Internal TMDS, DVI-Connector

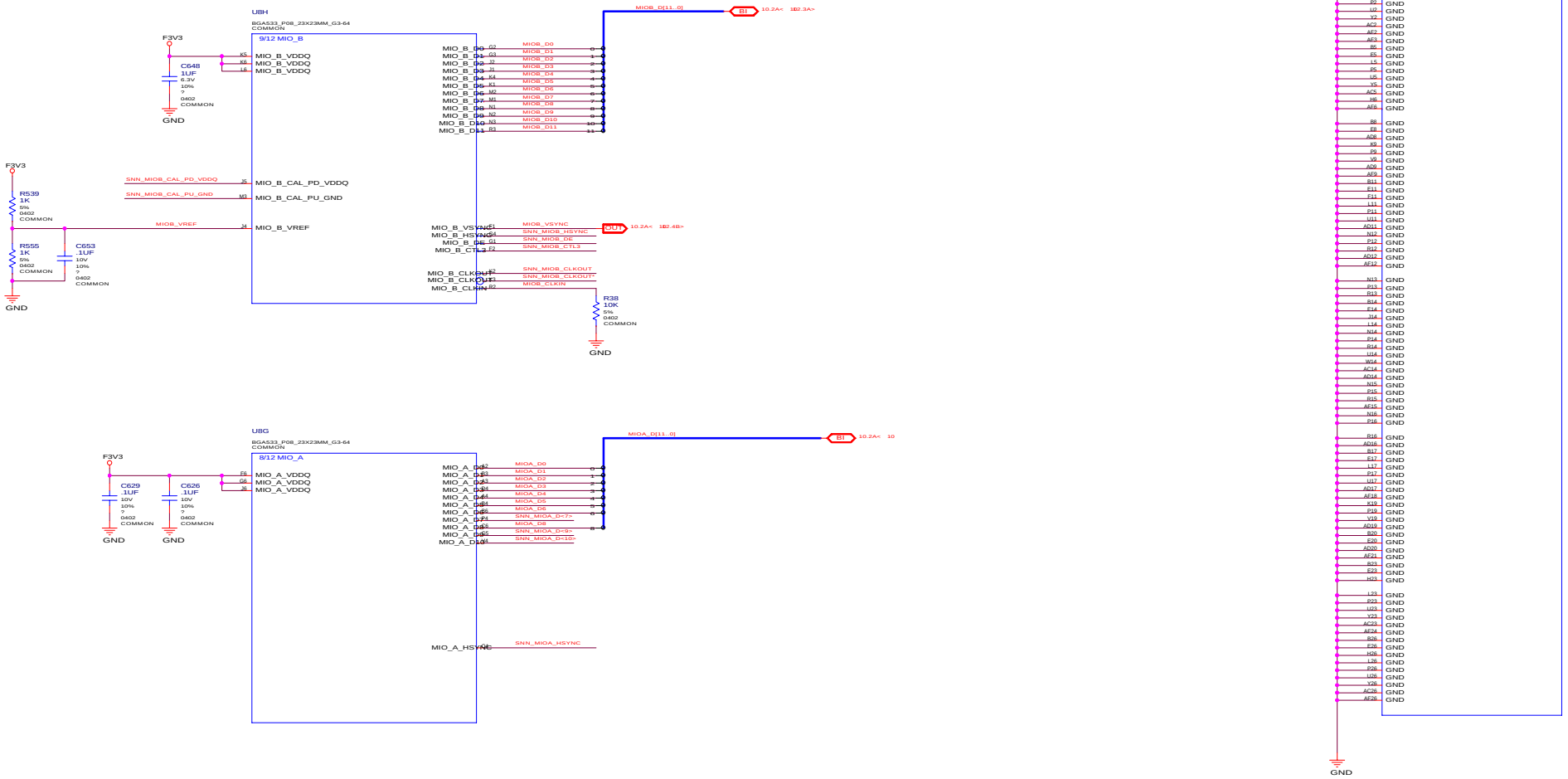
Net Name	Diffpair	NET_SPACING_RULE	Voltage
IFP_ABPLLVDD			3.3V
IFP_AB_VDD			3.3V
ATXC	ATXC	25MIL	
ATXC*	ATXC	25MIL	
ATXD0	ATXD0	25MIL	
ATXD0*	ATXD0	25MIL	
ATXD1	ATXD1	25MIL	
ATXD1*	ATXD1	25MIL	
ATXD2	ATXD2	25MIL	
ATXD2*	ATXD2	25MIL	



ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND
PAGE	BOM NOT FINAL
DETAIL	TMDS Interface

V001

MIOA, MIOB Interface, LPC-ROM

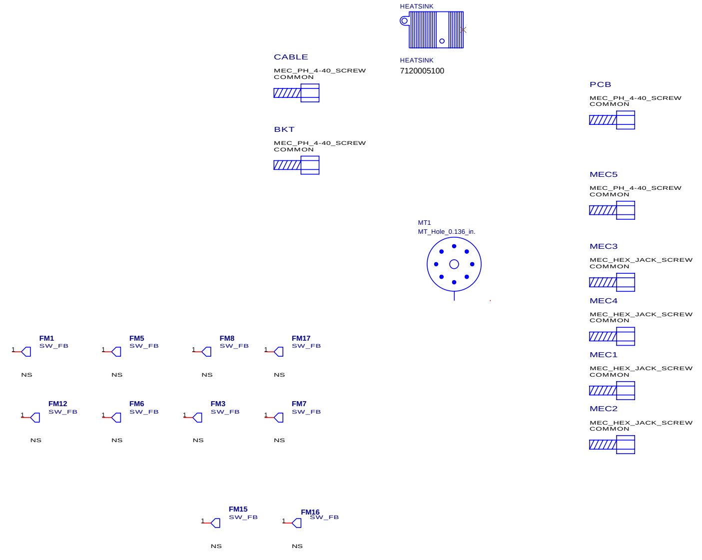


ASSEMBLY	LPC_ROM
PAGE	MIOA, MIOB Interface,
DETAIL	LPC-ROM

STRAPS, Mechanical Parts

NV44 STRAPS

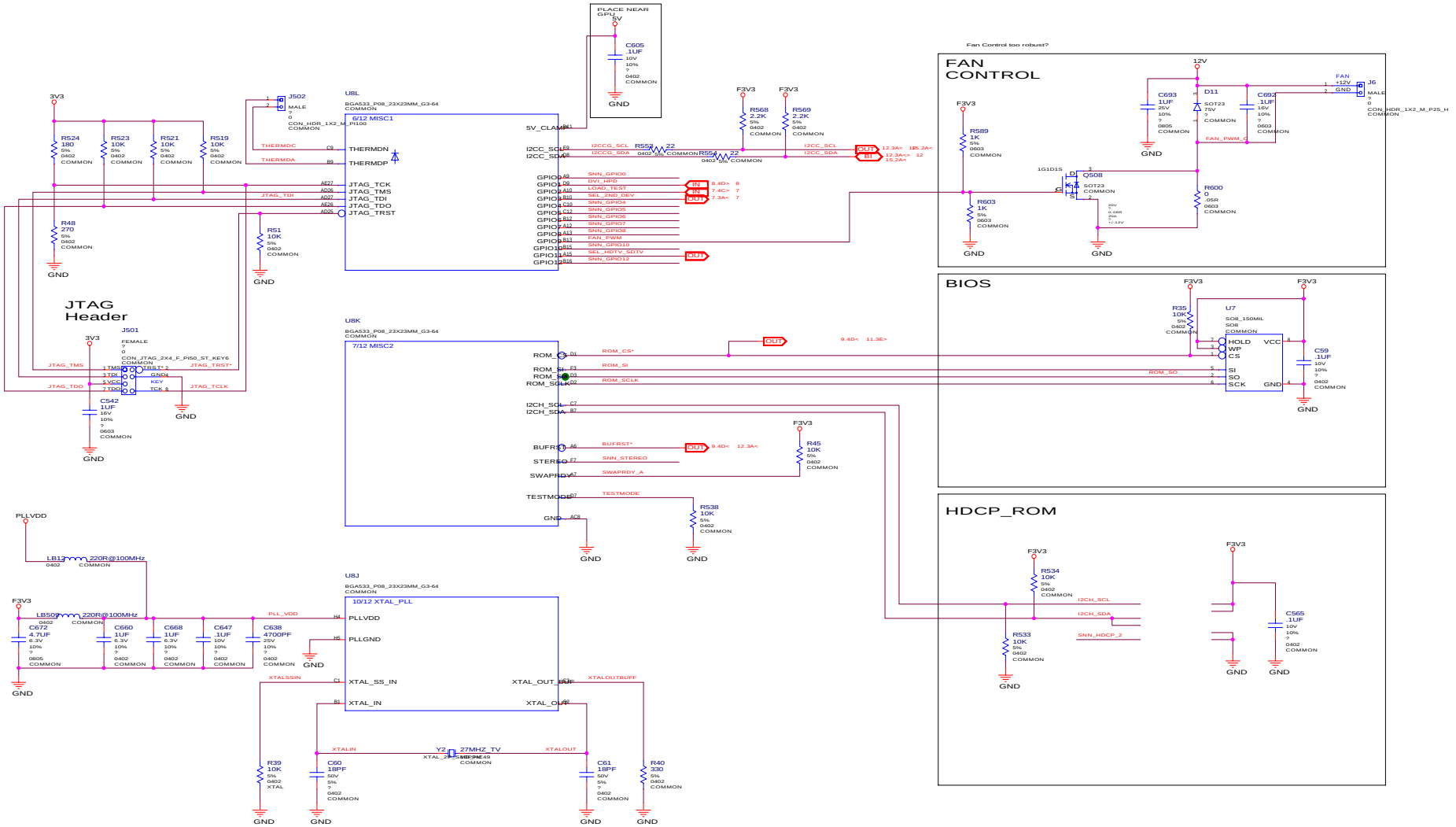
Bit Signal	Values	
00: PCI_AD_SWAP	0 REVERSED 1 NORMAL	
01: SUB_VENDOR	0 NO_BIOS 1 READ FROM BIOS	
02: RAM_CFG_0 03: RAM_CFG_1 04: RAM_CFG_2 05: RAM_CFG_3	0000 RFU 0001 8Mx16DDR TSOP 0010 RFU 0011 RFU 0100 RFU 0101 RFU 0110 16Mx16DDR TSOP 0111 RFU	1000 RFU 1001 RFU 1010 RFU 1011 RFU 1100 RFU 1101 RFU 1110 RFU 1111 RFU
06: CRYSTAL_0 22: CRYSTAL_1	00 13.500 MHz 01 14.31818 MHz 10 27.000 MHz 11 UNKNOWN	
07: TV_MODE_0 08: TV_MODE_1	00 SECAM 01 NTSC 10 PAL 11 CRT	
09: AGP_30_8x	0 AGP8x ENABLED 1 AGP8x DISABLED	
10: AGP_SBA	0 SBA ENABLED 0 SBA DISABLED	
11: AGP_FASTWR	0 FW ENABLED 0 FW DISABLED	
12: PCI_DEVID_0 13: PCI_DEVID_1 20: PCI_DEVID_2 21: PCI_DEVID_3	1100 (default 0x00FC)	
14: BUS_TYPE	0 PCI 1 AGP	
15: FP_IFACE	0 24Bit 1 12Bit (DEFAULT)	
23: FB_0 24: FB_1	00 64M 01 128M 10 256M (DEFAULT) 11 512M	
25: BR	0 BRIDGE DISABLED 1 BRIDGE ENABLED	
26: BR_128M 27: BR_AGP 28: BR_IO	BR BITS IGNORED IF BRIDGE IS DISABLED	
29: ROM_TYPE_0 30: ROM_TYPE_1	00 PARALLEL 01 SERIAL_AT25F 10 SERIAL_SST45VF 11 LPC	
16: USER_0 17: USER_1 18: USER_2 19: USER_3	0000 (DEFAULT)	
PEX_PLL_EN_TERM100		
3GIO_PADCFG_LUT_ADDR[0]		
3GIO_PADCFG_LUT_ADDR[1]		



ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	STRAPS, Mechanical Parts

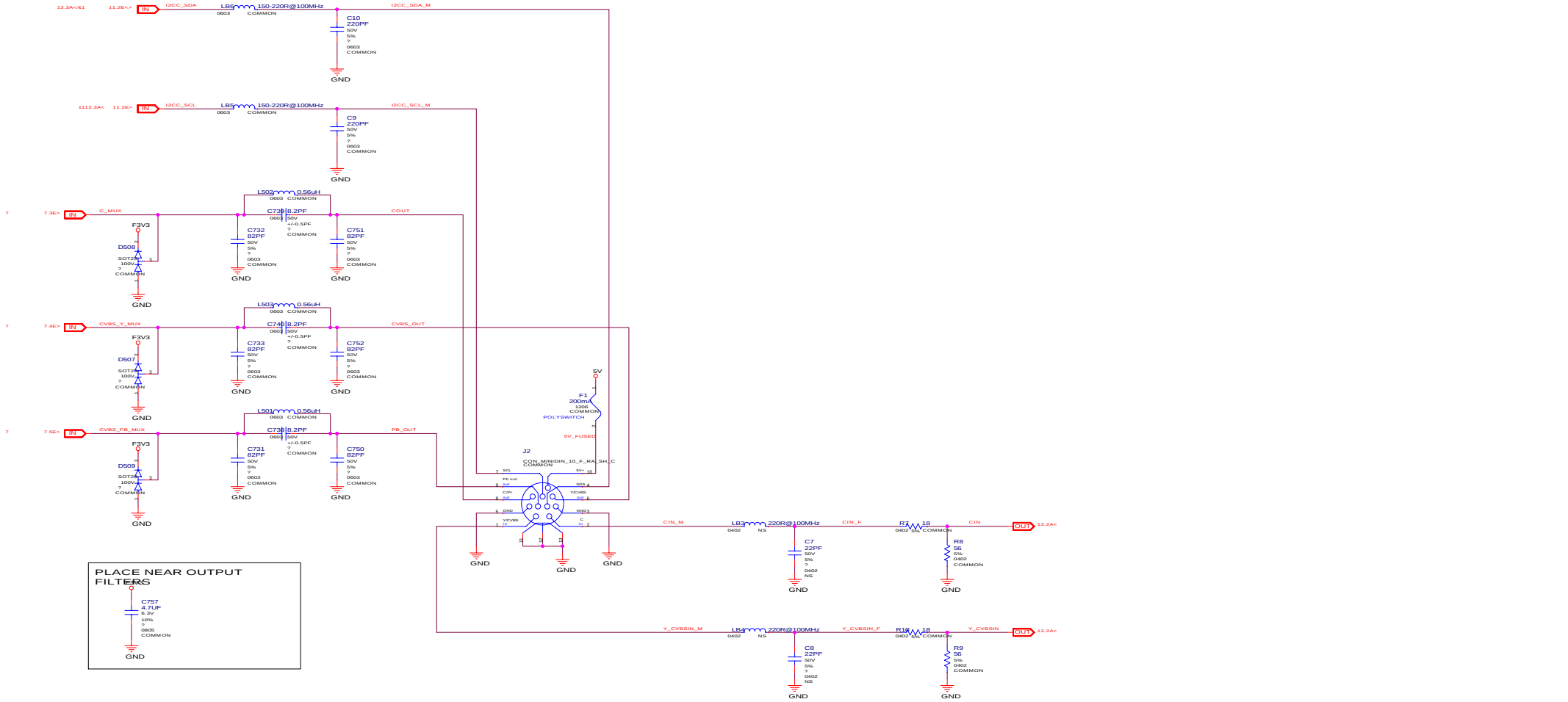
XTAL, GPIO, BIOS, Fan Control, JTAG Headers

Net Name	NET_PHYSICAL_TYPE	NET_SPACING_RULE
PLLVDD	XTALOUT	5MIL_TRACE	20MIL
	PLLVDD	5MIL_TRACE	20MIL
	DISP_PLLVDD	12MIL_TRACE	10MIL
		12MIL_TRACE	10MIL



ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND
PAGE DETAIL	XTAL, GPIO, BIOS, Fan Control, JTAG Headers

VIDEO CONNECTORS:
MiniDIN, 2x6 HDR



ASSEMBLY	BASE LEVEL GENERIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
PAGE DETAIL	VIDEO CONNECTORS: MiniDIN, 2x6 HDR

PowerSupplyII: 5V, DDC5V, A3V3, F3V3, TMDS_PLLVDD