WARP FPGA BOARD

Version 2.2

Siddharth Gupta

Rice University

Title
WARP FPGA Board

Description
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2.2

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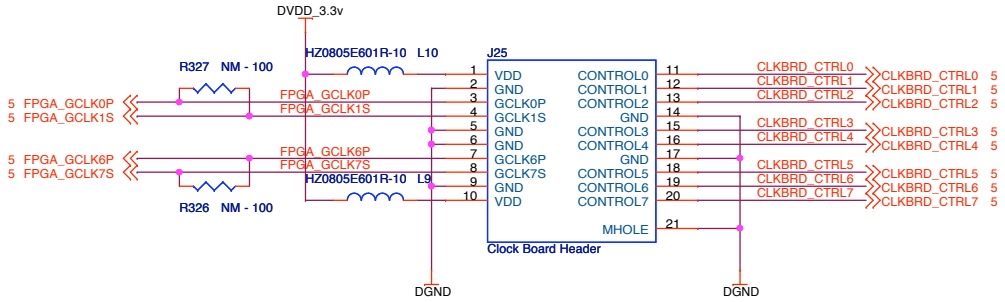

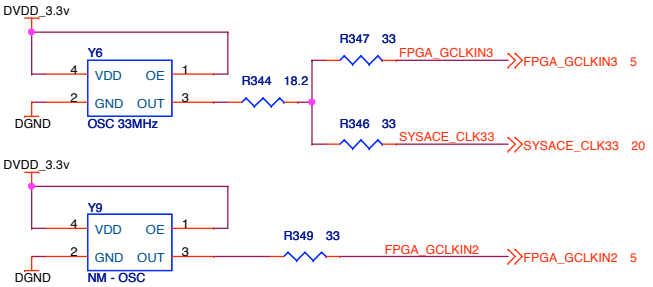

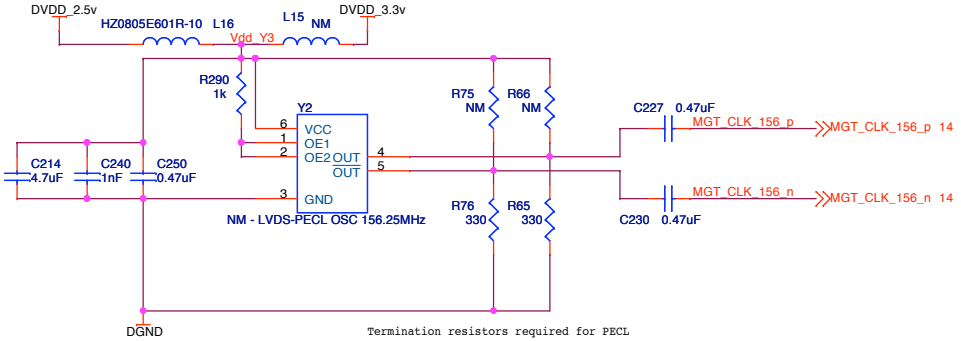

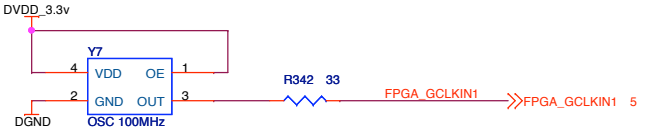

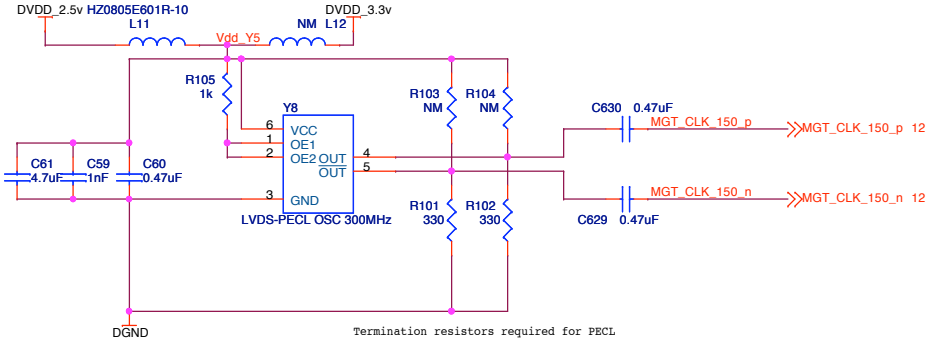

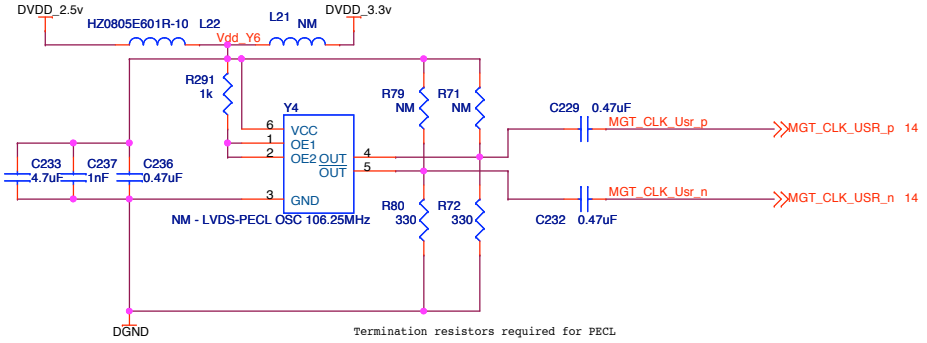

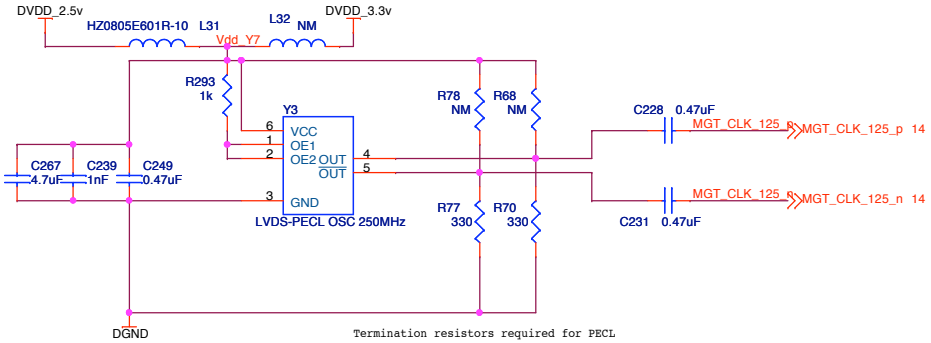

Rice University	
Title: WARP FPGA Board	
Description: Clocks for FPGA and MGTs	Rev: 2.2
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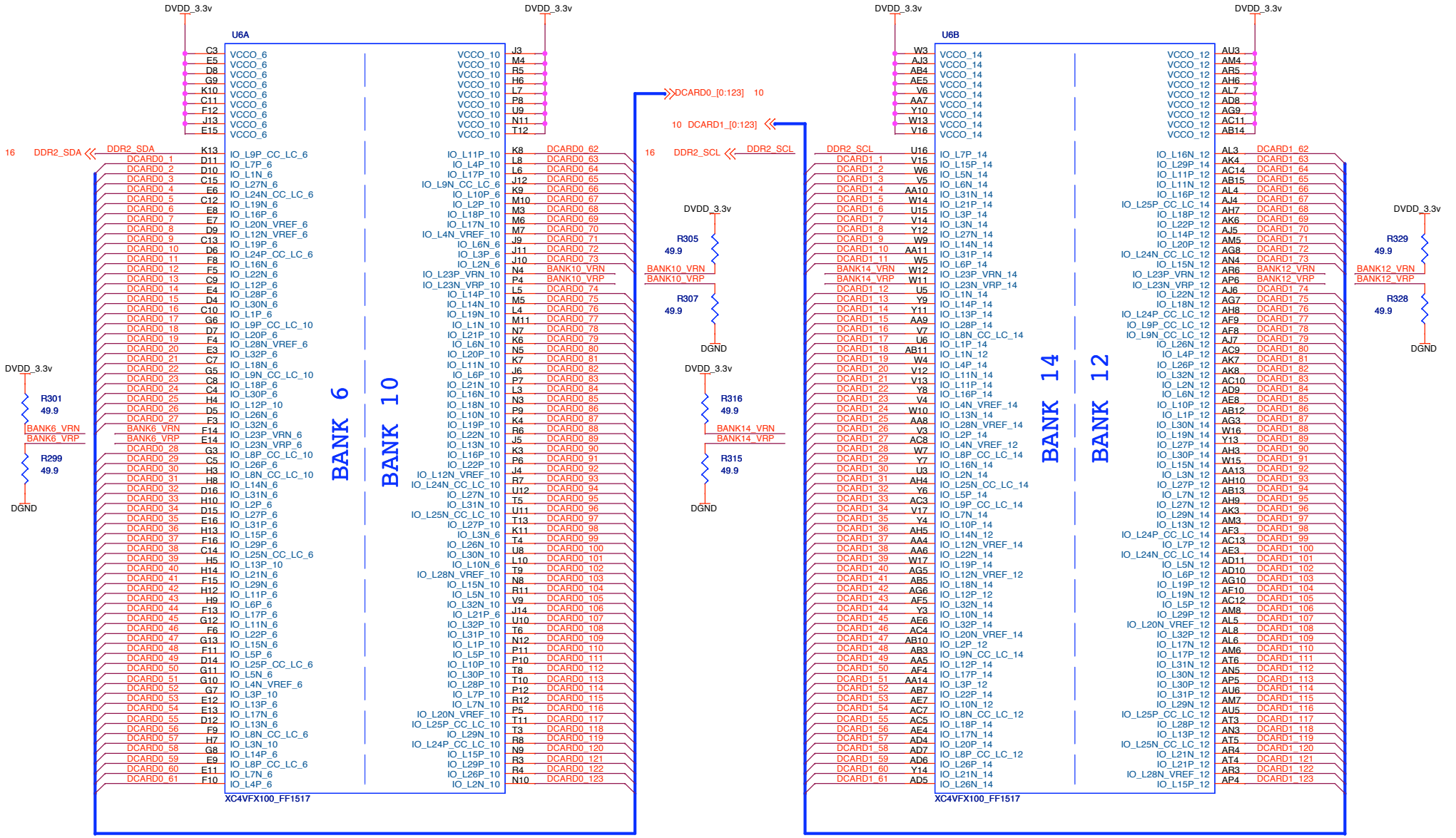

Rice University	
Title: WARP FPGA Board	
Description: Daughtercards 0-1 FPGA I/O	Rev: 2.2
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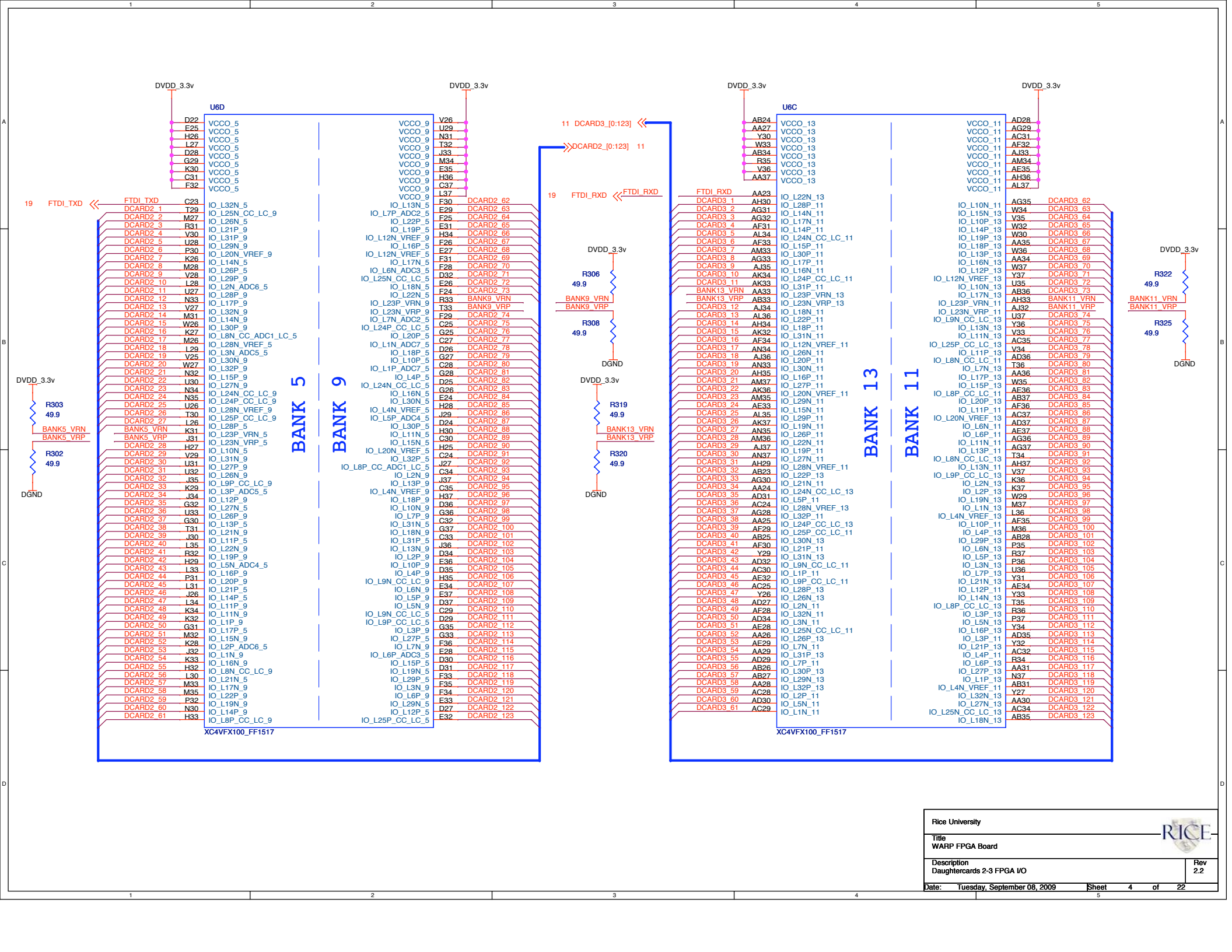
U6D
U6C
DVDD_3.3v
DGND
FTDI_TXD
FTDI_RXD
DCARD2_[0:123]
DCARD3_[0:123]
BANK5_VRN
BANK5_VRP
BANK9_VRN
BANK9_VRP
BANK13_VRN
BANK13_VRP
BANK11_VRN
BANK11_VRP
R303 49.9
R302 49.9
R306 49.9
R308 49.9
R319 49.9
R320 49.9
R322 49.9
R325 49.9
BANK 5
BANK 9
BANK 13
BANK 11
XC4VFX100_FF1517
Rice University
Title
WARP FPGA Board
Description
Daughtercards 2-3 FPGA I/O
Rev
2.2
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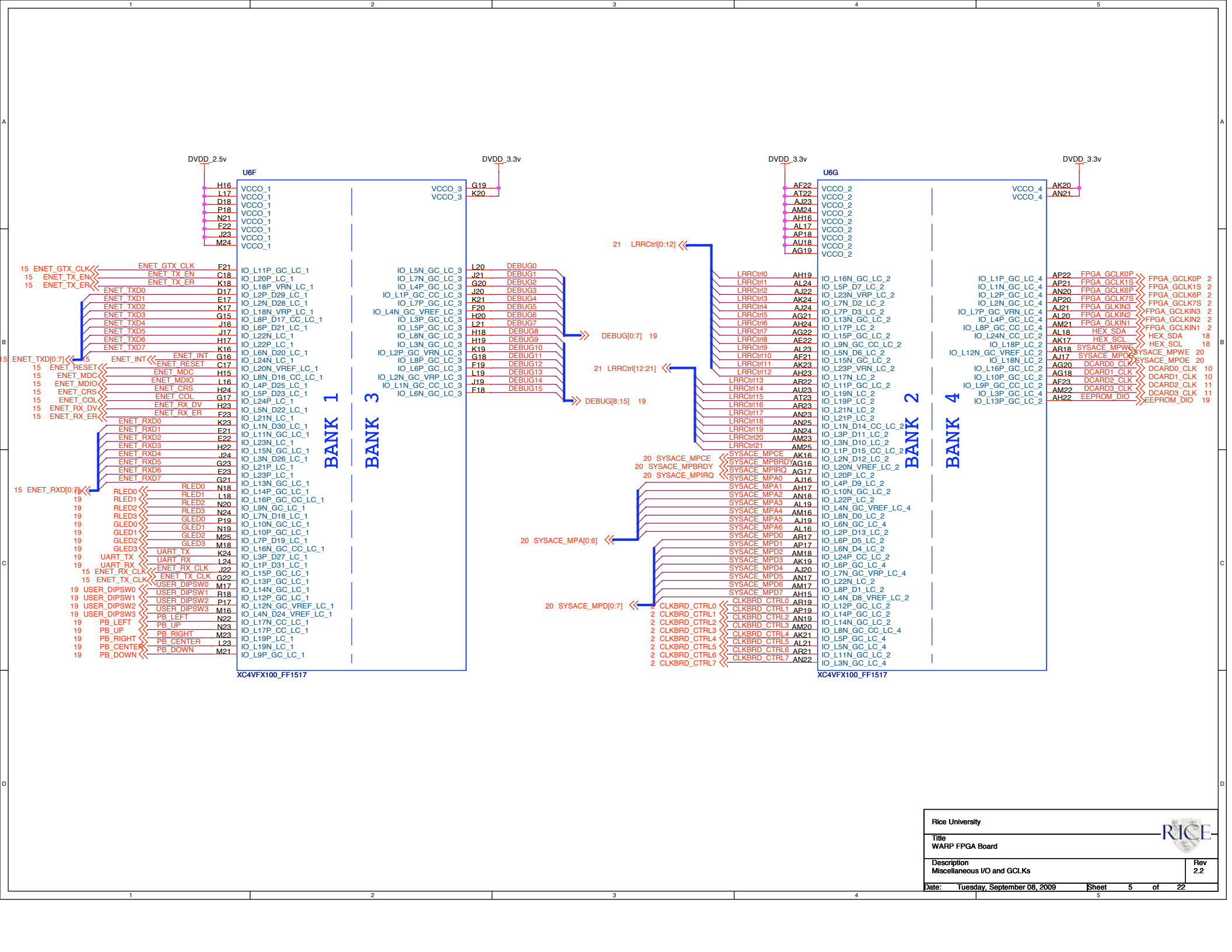

Rice University	
Title: WARP FPGA Board	
Description: Miscellaneous I/O and GCLKs	Rev: 2.2
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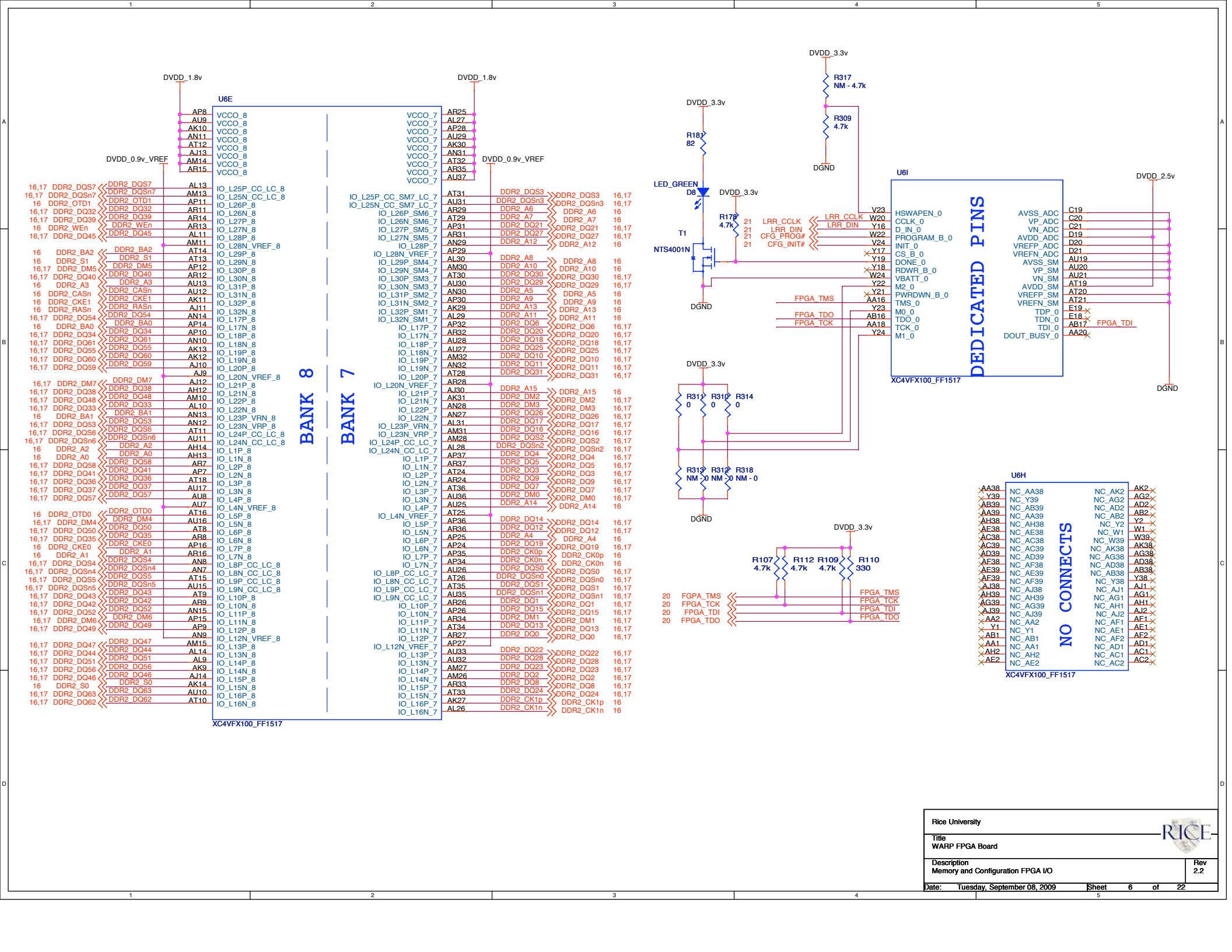

Rice University	
Title: WARP FPGA Board	
Description: Memory and Configuration FPGA I/O	Rev: 2.2
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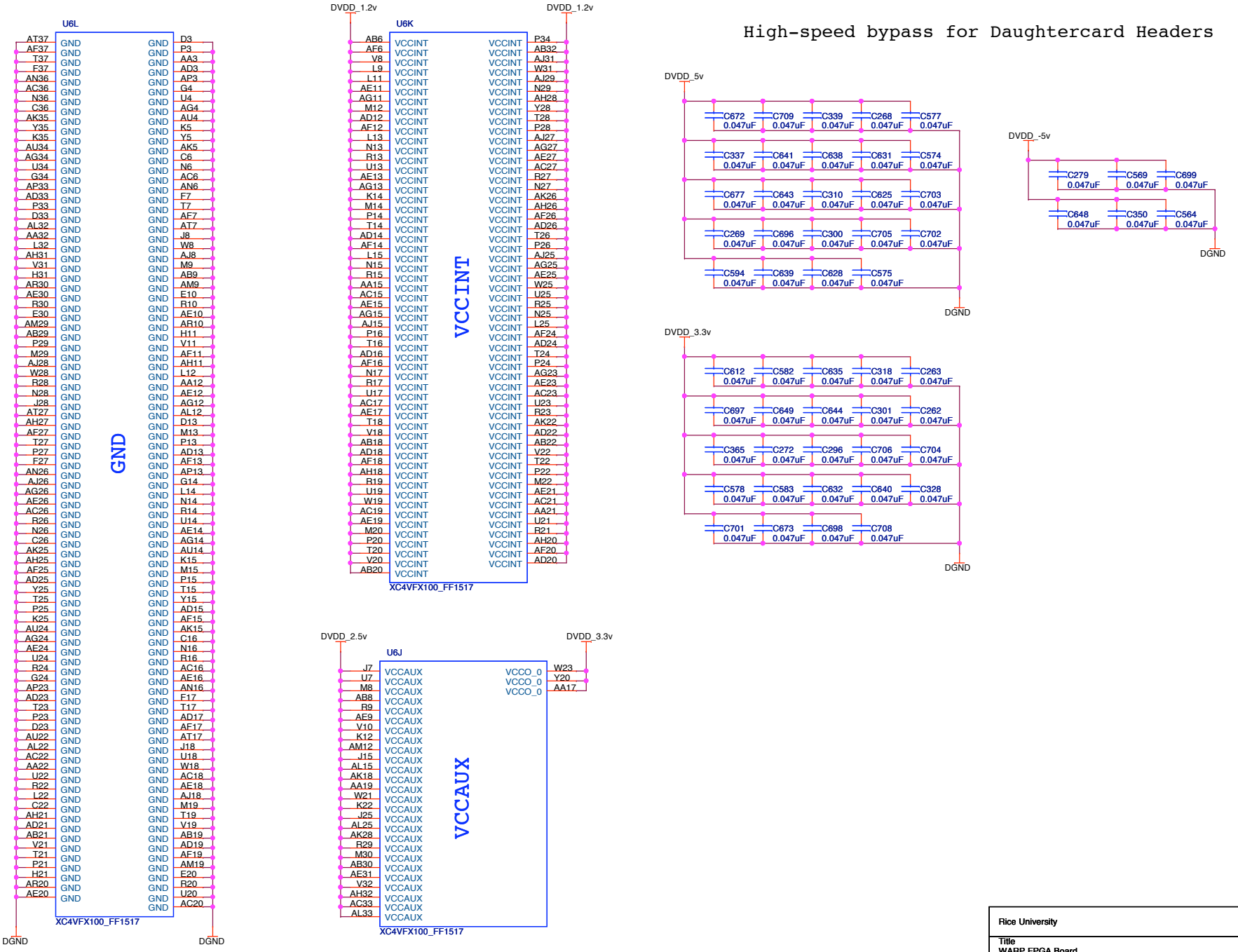
High-speed bypass for Daughtercard Headers
U6L
GND
XC4VFX100_FF1517
U6K
VCCINT
XC4VFX100_FF1517
U6J
VCCAUX
XC4VFX100_FF1517
DVDD_1.2v
DVDD_1.2v
DVDD_2.5v
DVDD_3.3v
DVDD_5v
DVDD_-5v
DVDD_3.3v
DGND
DGND
DGND
DGND
DGND
C672 C709 C339 C268 C577
C337 C641 C638 C631 C574
C677 C643 C310 C625 C703
C269 C696 C300 C705 C702
C594 C639 C628 C575
C279 C569 C699
C648 C350 C564
C612 C582 C635 C318 C263
C697 C649 C644 C301 C262
C365 C272 C296 C706 C704
C578 C583 C632 C640 C328
C701 C673 C698 C708
0.047uF
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Title
WARP FPGA Board
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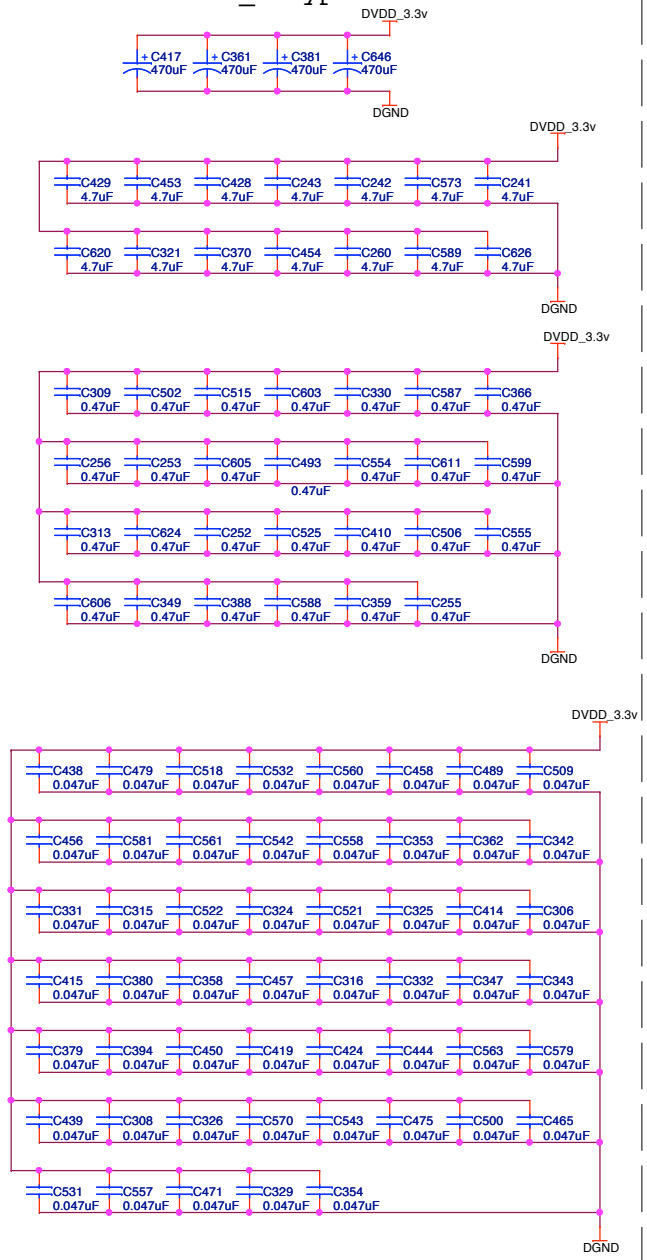
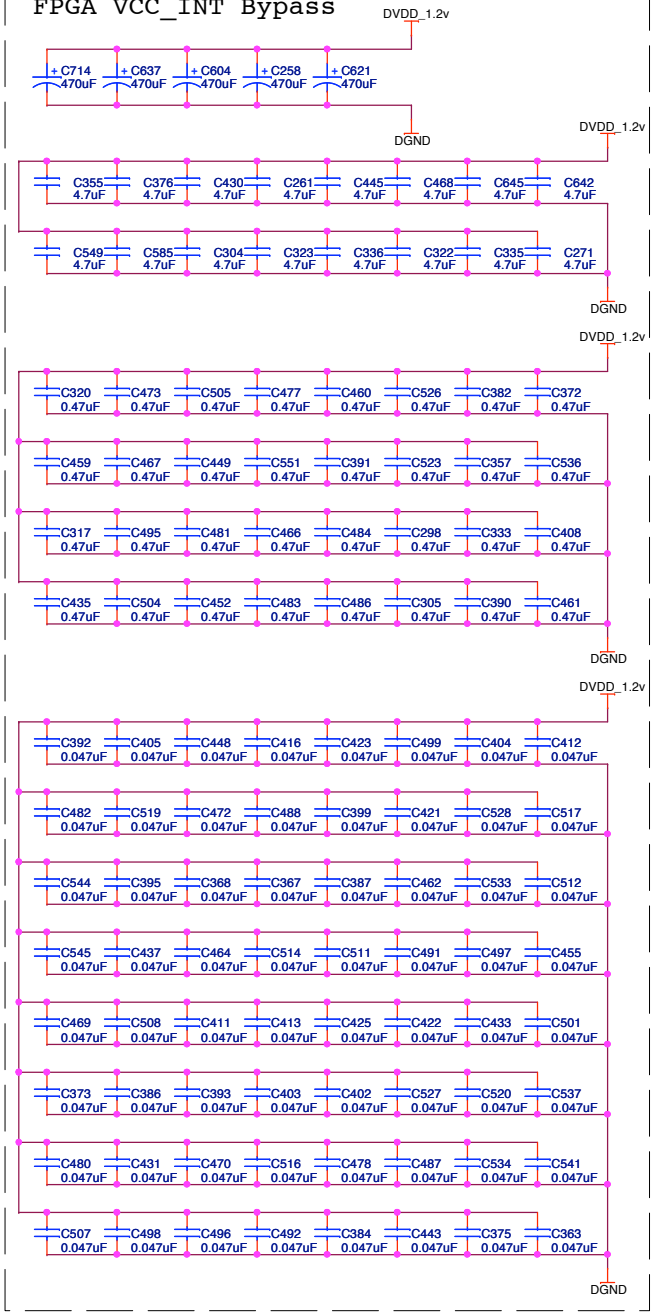
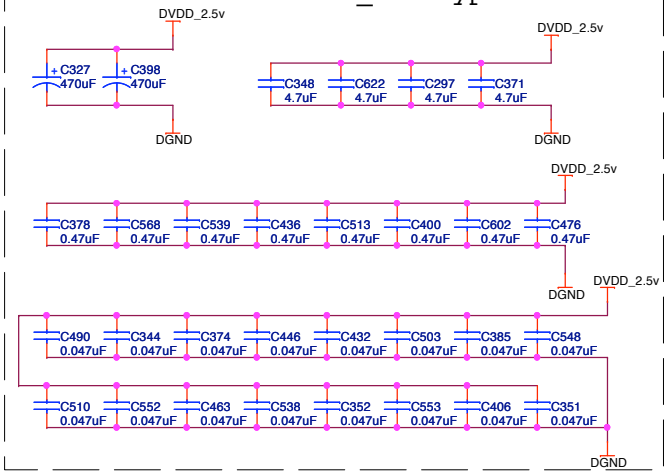
FPGA VCCO_x Bypass 3.3v



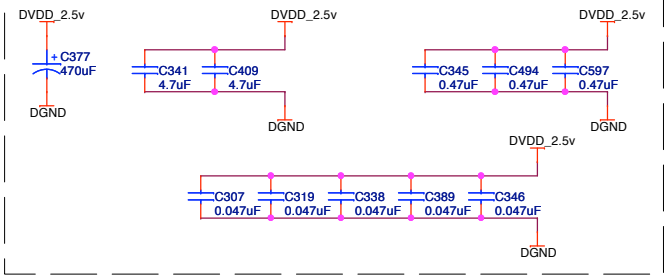
FPGA VCC_INT Bypass



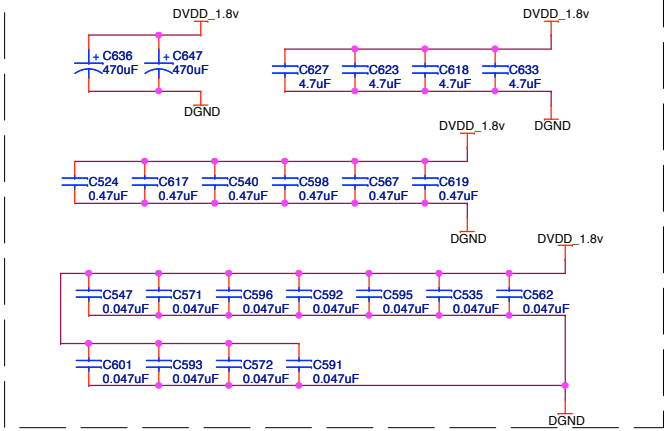
FPGA VCC_AUX Bypass



FPGA VCCO_x Bypass 2.5v



FPGA VCCO_x Bypass 1.8v



Rice University		
Title: WARP FPGA Board		
Description: Bypass Capacitors for FPGA Power Planes		Rev: 2.2
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Overlapping duplicate regulators with one set TH and one set SMT

MGT Power Regulators

MGT Power Supply for VTTRX/TX

MGT Power Supply for AVCCAUXMGT

MGT Power Supply for AVCCAUXTX/RX

Test Points

Power LEDs

Rice University	
Title: WARP FPGA Board	
Description: Power Regulators for Board	Rev: 2.2
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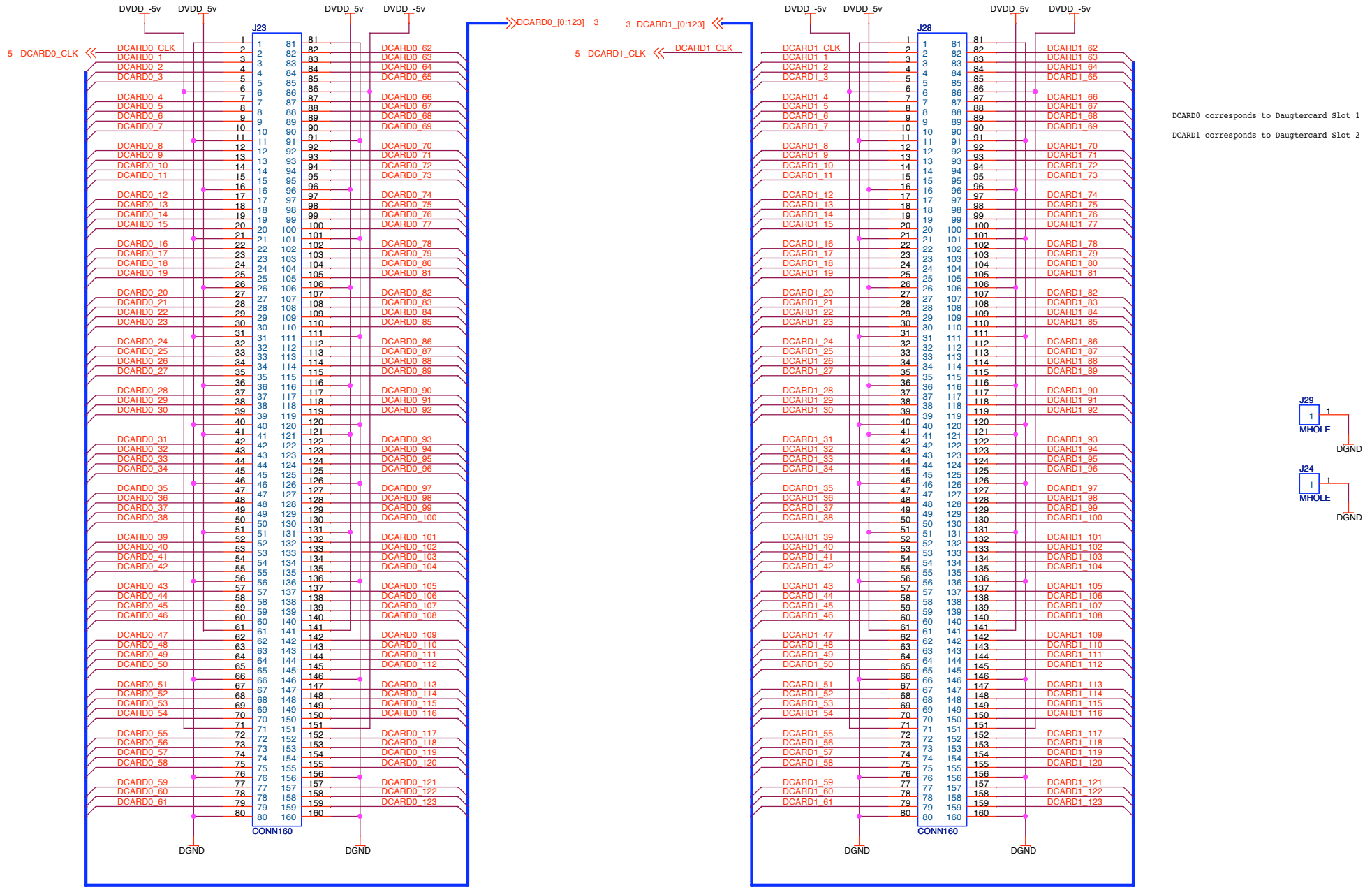

Rice University	
Title: WARP FPGA Board	
Description: Daughtercard Headers 0-1	Rev: 2.2
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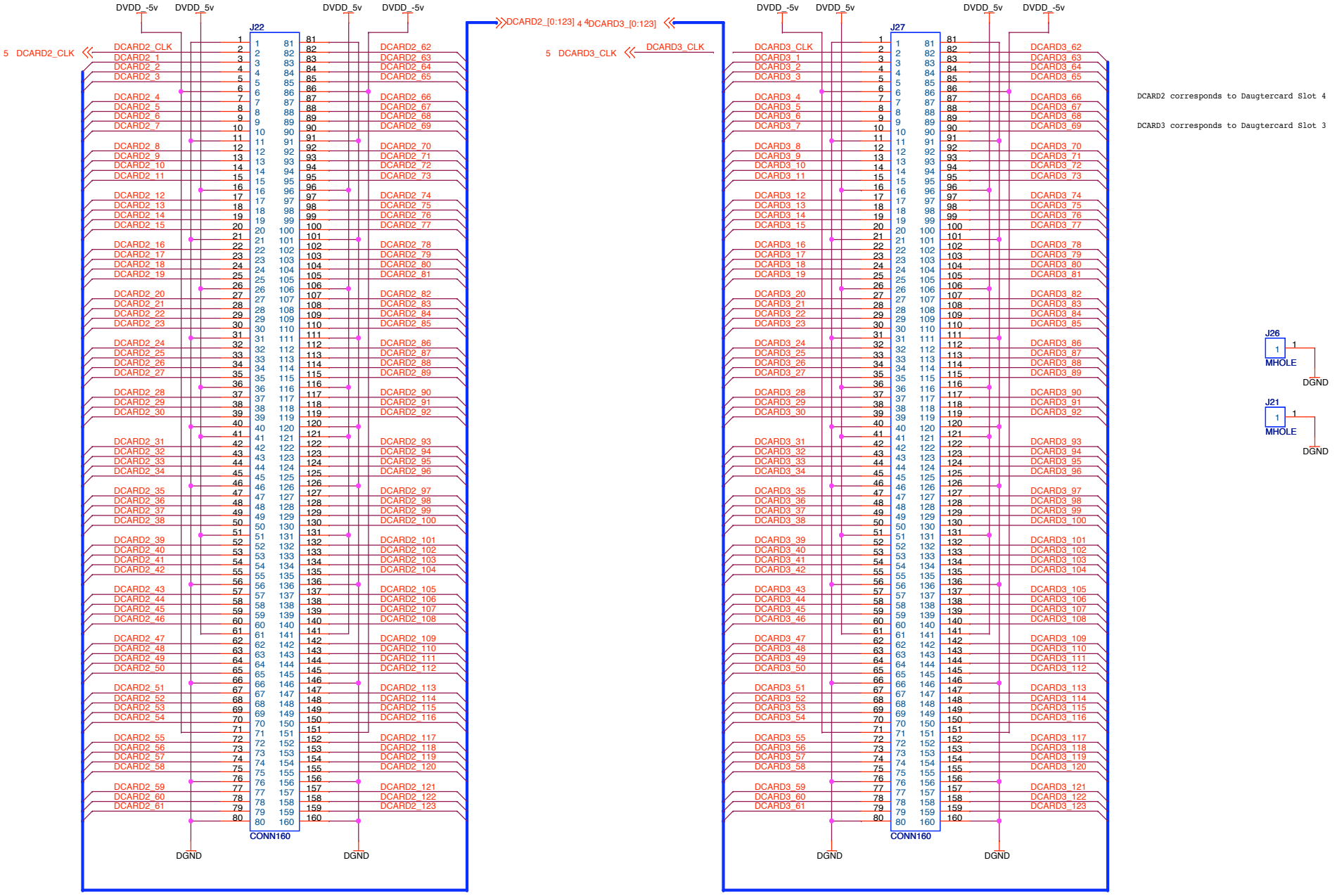

Rice University

Title
WARP FPGA Board

Description
Daughtercard Headers (2-3)

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2.2

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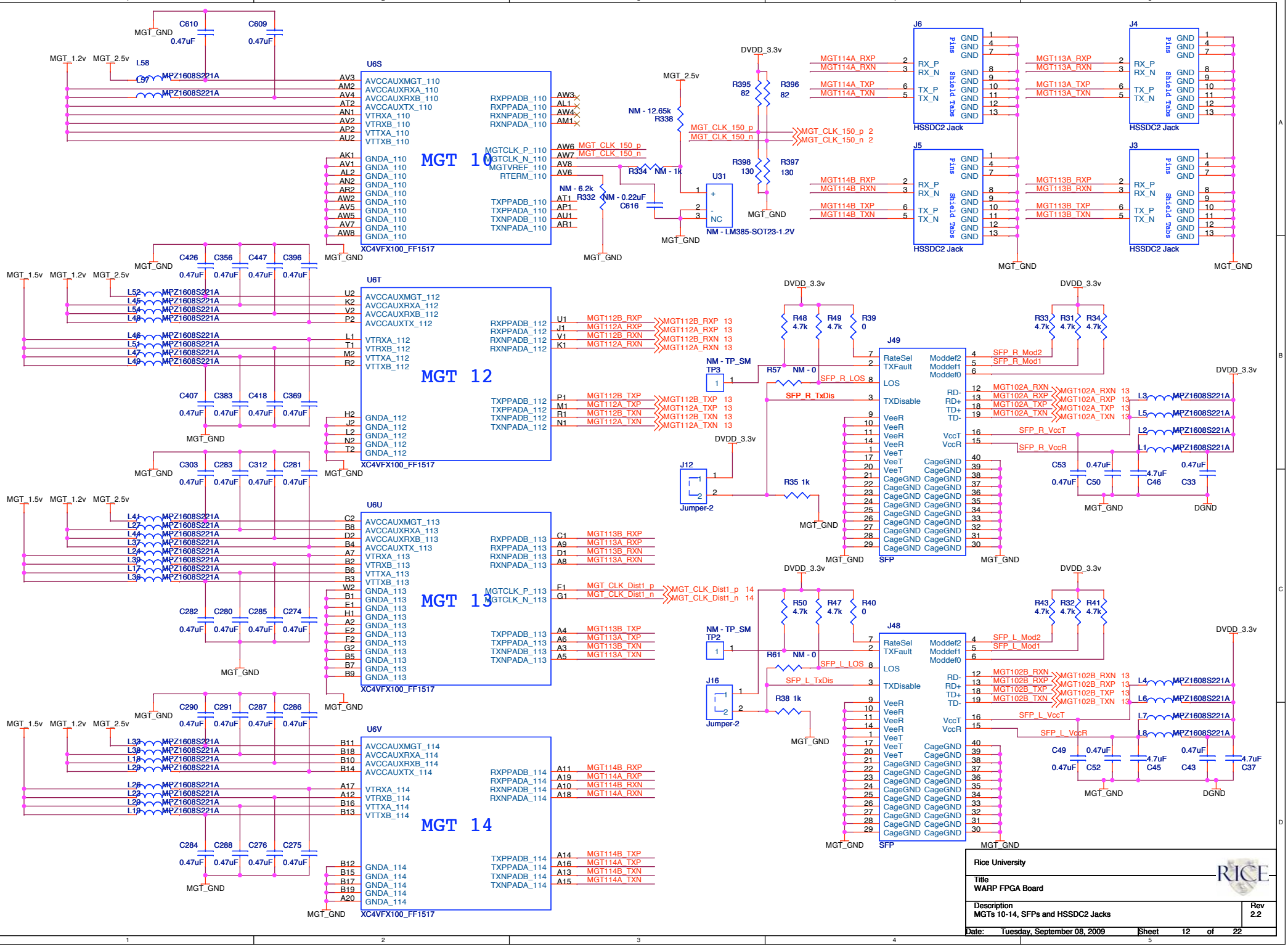
MGT 10
MGT 12
MGT 13
MGT 14
XC4VFX100_FF1517
HSSDC2 Jack
SFP
NM - LM385-SOT23-1.2V
Jumper-2
NM - TP_SM
MGT_GND
DVDD_3.3v
MGT_1.2v
MGT_1.5v
MGT_2.5v
Rice University
WARP FPGA Board
MGTs 10-14, SFPs and HSSDC2 Jacks
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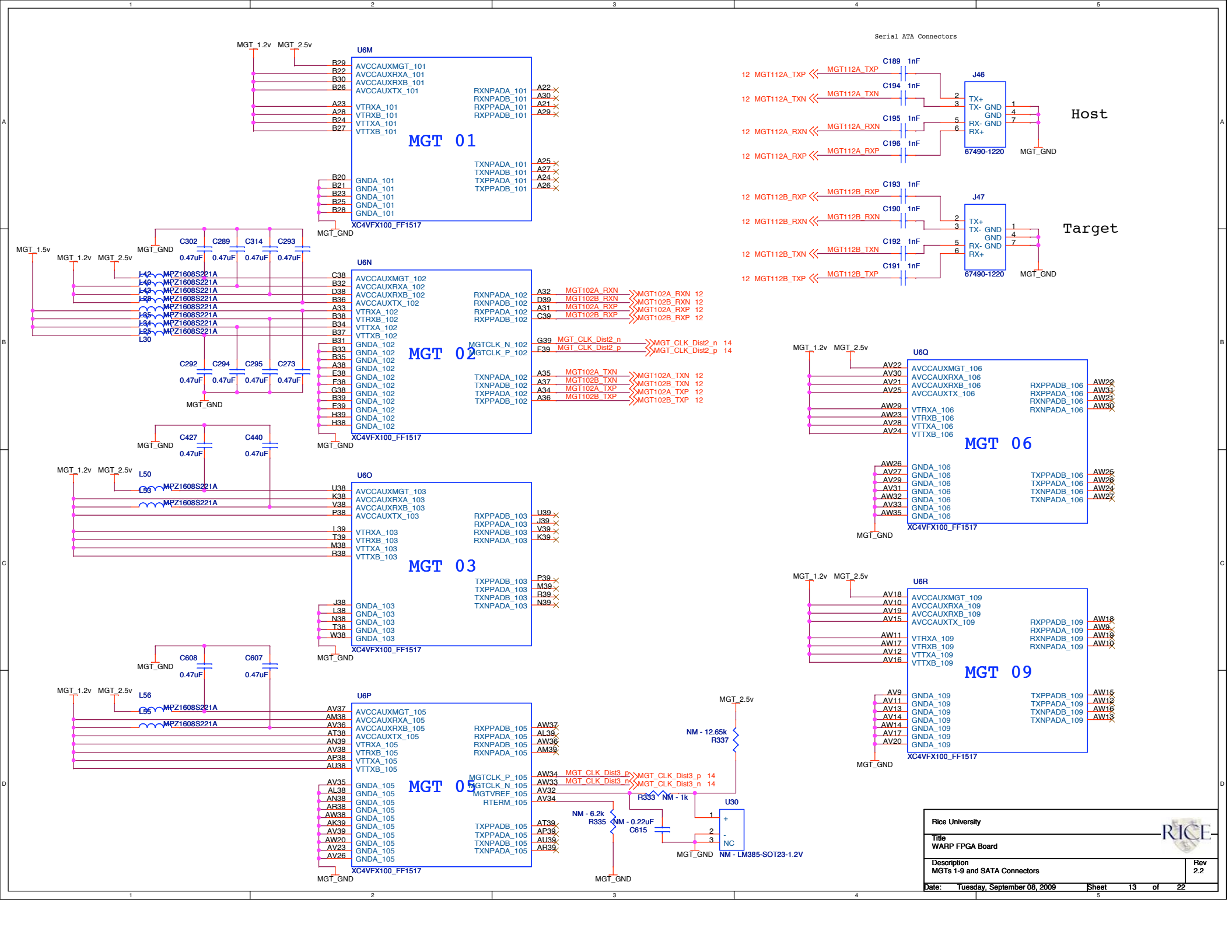
Serial ATA Connectors
Host
Target
MGT 01
MGT 02
MGT 03
MGT 05
MGT 06
MGT 09
XC4VFX100_FF1517
67490-1220
NM - LM385-SOT23-1.2V
Rice University
WARP FPGA Board
MGTs 1-9 and SATA Connectors
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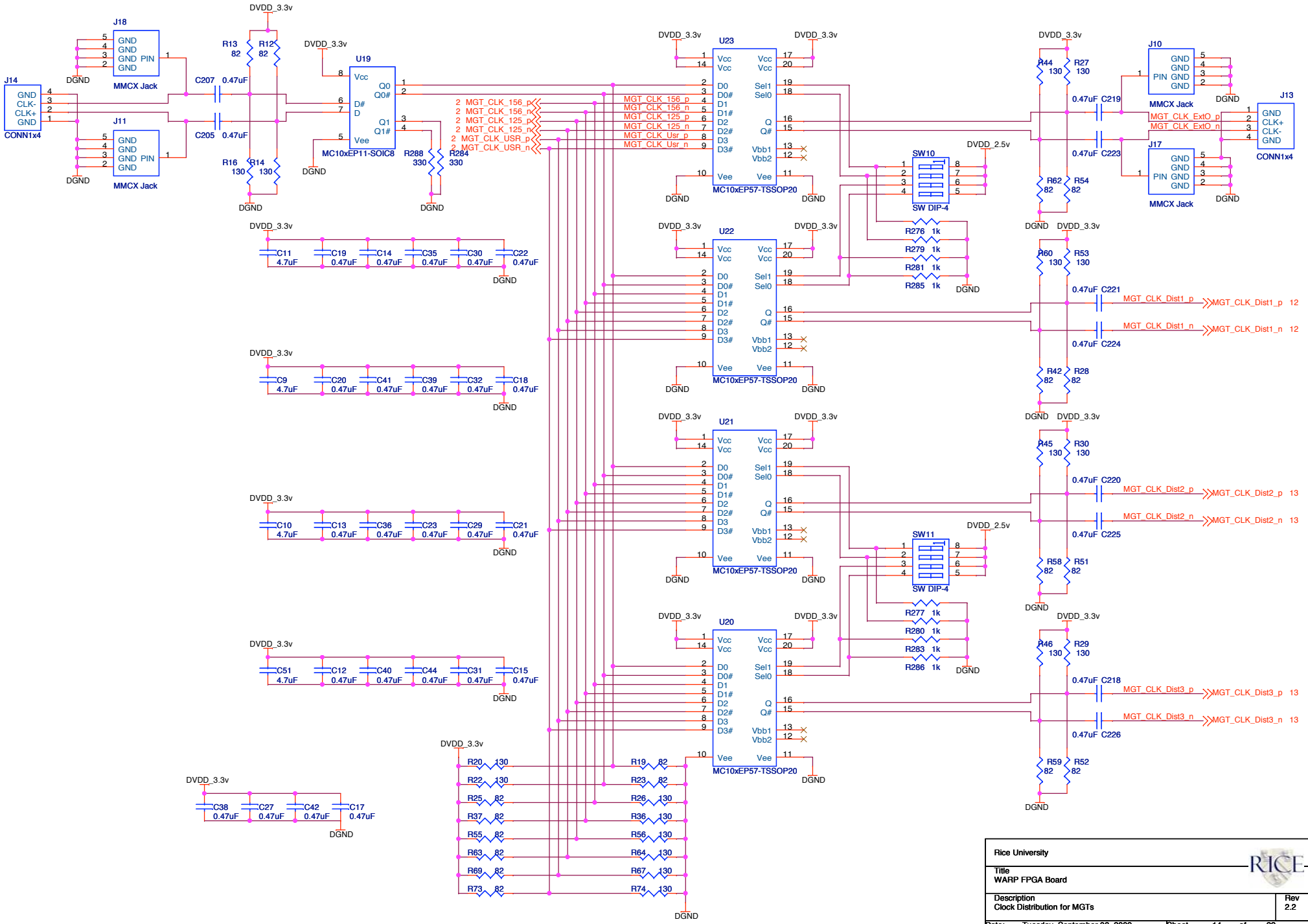
J18
J14
J11
CONN1x4
MMCX Jack
GND
CLK-
CLK+
PIN
DGND
DVDD_3.3v
R13 82
R12 82
R16 130
R14 130
C207 0.47uF
C205 0.47uF
U19
MC10xEP11-SOIC8
Vcc
Vee
Q0
Q0#
Q1
Q1#
D#
D
R288 330
R284 330
2 MGT_CLK_156_p
2 MGT_CLK_156_n
2 MGT_CLK_125_p
2 MGT_CLK_125_n
2 MGT_CLK_USR_p
2 MGT_CLK_USR_n
MGT_CLK_156_p
MGT_CLK_156_n
MGT_CLK_125_p
MGT_CLK_125_n
MGT_CLK_Usr_p
MGT_CLK_Usr_n
U23
U22
U21
U20
MC10xEP57-TSSOP20
Vcc
Vbb1
Vbb2
Sel1
Sel0
Q#
SW10
SW11
SW DIP-4
DVDD_2.5v
R276 1k
R279 1k
R281 1k
R285 1k
R277 1k
R280 1k
R283 1k
R286 1k
J10
J13
J17
MGT_CLK_ExtO_p
MGT_CLK_ExtO_n
R44 130
R27 130
R62 82
R54 82
0.47uF C219
0.47uF C223
R60 130
R53 130
R42 82
R28 82
0.47uF C221
0.47uF C224
MGT_CLK_Dist1_p
MGT_CLK_Dist1_n
R45 130
R30 130
R58 82
R51 82
0.47uF C220
0.47uF C225
MGT_CLK_Dist2_p
MGT_CLK_Dist2_n
R46 130
R29 130
R59 82
R52 82
0.47uF C218
0.47uF C226
MGT_CLK_Dist3_p
MGT_CLK_Dist3_n
C11 4.7uF
C19 0.47uF
C14 0.47uF
C35 0.47uF
C30 0.47uF
C22 0.47uF
C9 4.7uF
C20 0.47uF
C41 0.47uF
C39 0.47uF
C32 0.47uF
C18 0.47uF
C10 4.7uF
C13 0.47uF
C36 0.47uF
C23 0.47uF
C29 0.47uF
C21 0.47uF
C51 4.7uF
C12 0.47uF
C40 0.47uF
C44 0.47uF
C31 0.47uF
C15 0.47uF
C38 0.47uF
C27 0.47uF
C42 0.47uF
C17 0.47uF
R20 130
R22 130
R25 82
R37 82
R55 82
R63 82
R69 82
R73 82
R19 82
R23 82
R26 130
R36 130
R56 130
R64 130
R67 130
R74 130
Rice University
Title
WARP FPGA Board
Description
Clock Distribution for MGTs
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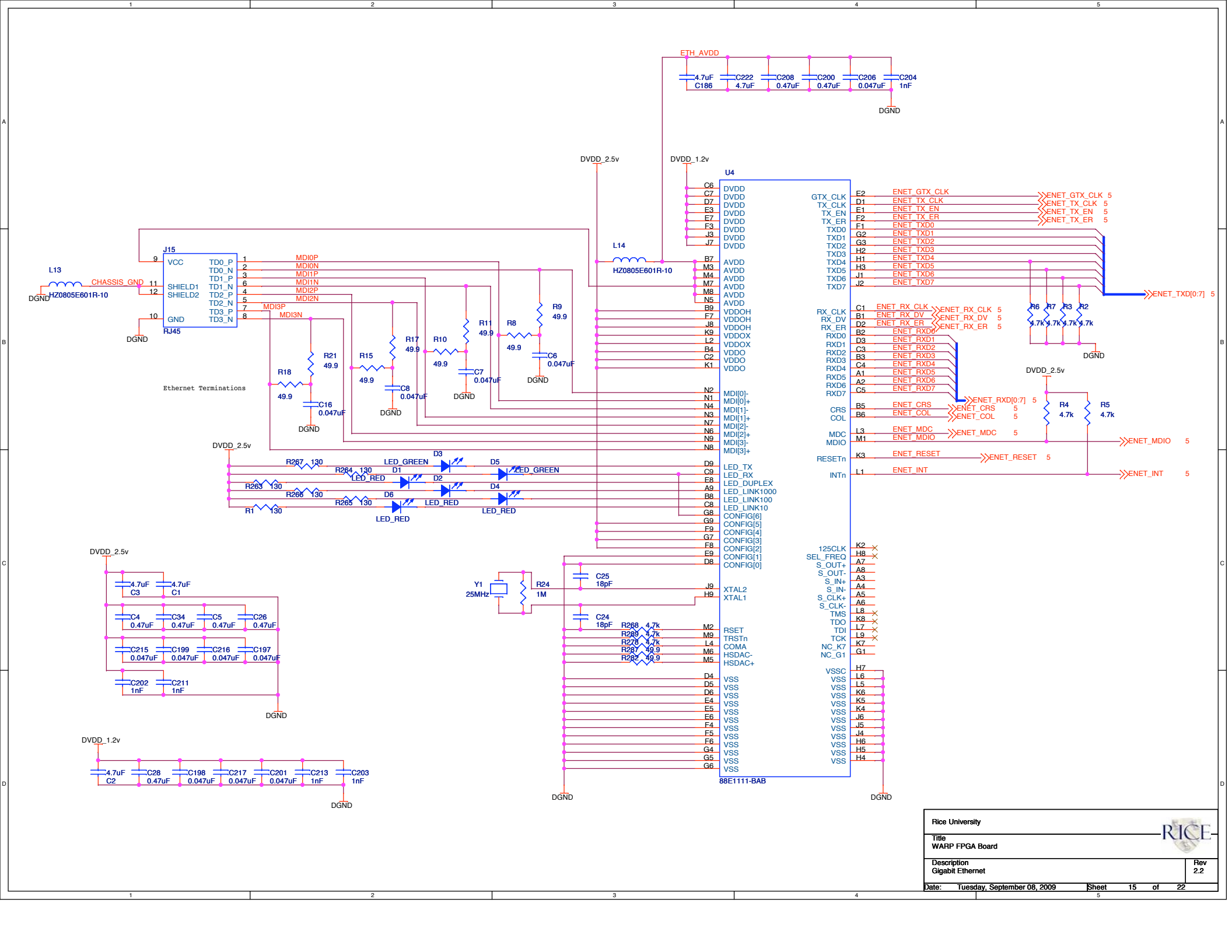
ETH_AVDD
4.7uF C186
C222 4.7uF
C208 0.47uF
C200 0.47uF
C206 0.047uF
C204 1nF
DGND
DVDD_2.5v
DVDD_1.2v
U4
L13
CHASSIS_GND
HZ0805E601R-10
L14
HZ0805E601R-10
J15
RJ45
VCC
SHIELD1
SHIELD2
GND
TD0_P
TD0_N
TD1_P
TD1_N
TD2_P
TD2_N
TD3_P
TD3_N
MDI0P
MDI0N
MDI1P
MDI1N
MDI2P
MDI2N
MDI3P
MDI3N
Ethernet Terminations
R18 49.9
R21 49.9
R15 49.9
R17 49.9
R10 49.9
R11 49.9
R8 49.9
R9 49.9
C16 0.047uF
C8 0.047uF
C7 0.047uF
C6 0.047uF
DVDD
AVDD
VDDOH
VDDOX
VDDO
MDI[0]-
MDI[0]+
MDI[1]-
MDI[1]+
MDI[2]-
MDI[2]+
MDI[3]-
MDI[3]+
LED_TX
LED_RX
LED_DUPLEX
LED_LINK1000
LED_LINK100
LED_LINK10
CONFIG[6]
CONFIG[5]
CONFIG[4]
CONFIG[3]
CONFIG[2]
CONFIG[1]
CONFIG[0]
XTAL2
XTAL1
RSET
TRSTn
COMA
HSDAC-
HSDAC+
VSS
88E1111-BAB
GTX_CLK
TX_CLK
TX_EN
TX_ER
TXD0
TXD1
TXD2
TXD3
TXD4
TXD5
TXD6
TXD7
RX_CLK
RX_DV
RX_ER
RXD0
RXD1
RXD2
RXD3
RXD4
RXD5
RXD6
RXD7
CRS
COL
MDC
MDIO
RESETn
INTn
125CLK
SEL_FREQ
S_OUT+
S_OUT-
S_IN+
S_IN-
S_CLK+
S_CLK-
TMS
TDO
TDI
TCK
NC_K7
NC_G1
VSSC
ENET_GTX_CLK
ENET_TX_CLK
ENET_TX_EN
ENET_TX_ER
ENET_TXD0
ENET_TXD1
ENET_TXD2
ENET_TXD3
ENET_TXD4
ENET_TXD5
ENET_TXD6
ENET_TXD7
ENET_TXD[0:7]
ENET_RX_CLK
ENET_RX_DV
ENET_RX_ER
ENET_RXD0
ENET_RXD1
ENET_RXD2
ENET_RXD3
ENET_RXD4
ENET_RXD5
ENET_RXD6
ENET_RXD7
ENET_RXD[0:7]
ENET_CRS
ENET_COL
ENET_MDC
ENET_MDIO
ENET_RESET
ENET_INT
R6 4.7k
R7 4.7k
R3 4.7k
R2 4.7k
R4 4.7k
R5 4.7k
LED_GREEN
LED_RED
D1
D2
D3
D4
D5
D6
R267 130
R264 130
R263 130
R266 130
R265 130
R1 130
Y1 25MHz
R24 1M
C25 18pF
C24 18pF
R268 4.7k
R289 4.7k
R278 4.7k
R287 49.9
R282 49.9
C3 4.7uF
C1 4.7uF
C4 0.47uF
C34 0.47uF
C5 0.47uF
C26 0.47uF
C215 0.047uF
C199 0.047uF
C216 0.047uF
C197 0.047uF
C202 1nF
C211 1nF
C2 4.7uF
C28 0.47uF
C198 0.047uF
C217 0.047uF
C201 0.047uF
C213 1nF
C203 1nF
Rice University
Title
WARP FPGA Board
Description
Gigabit Ethernet
Rev
2.2
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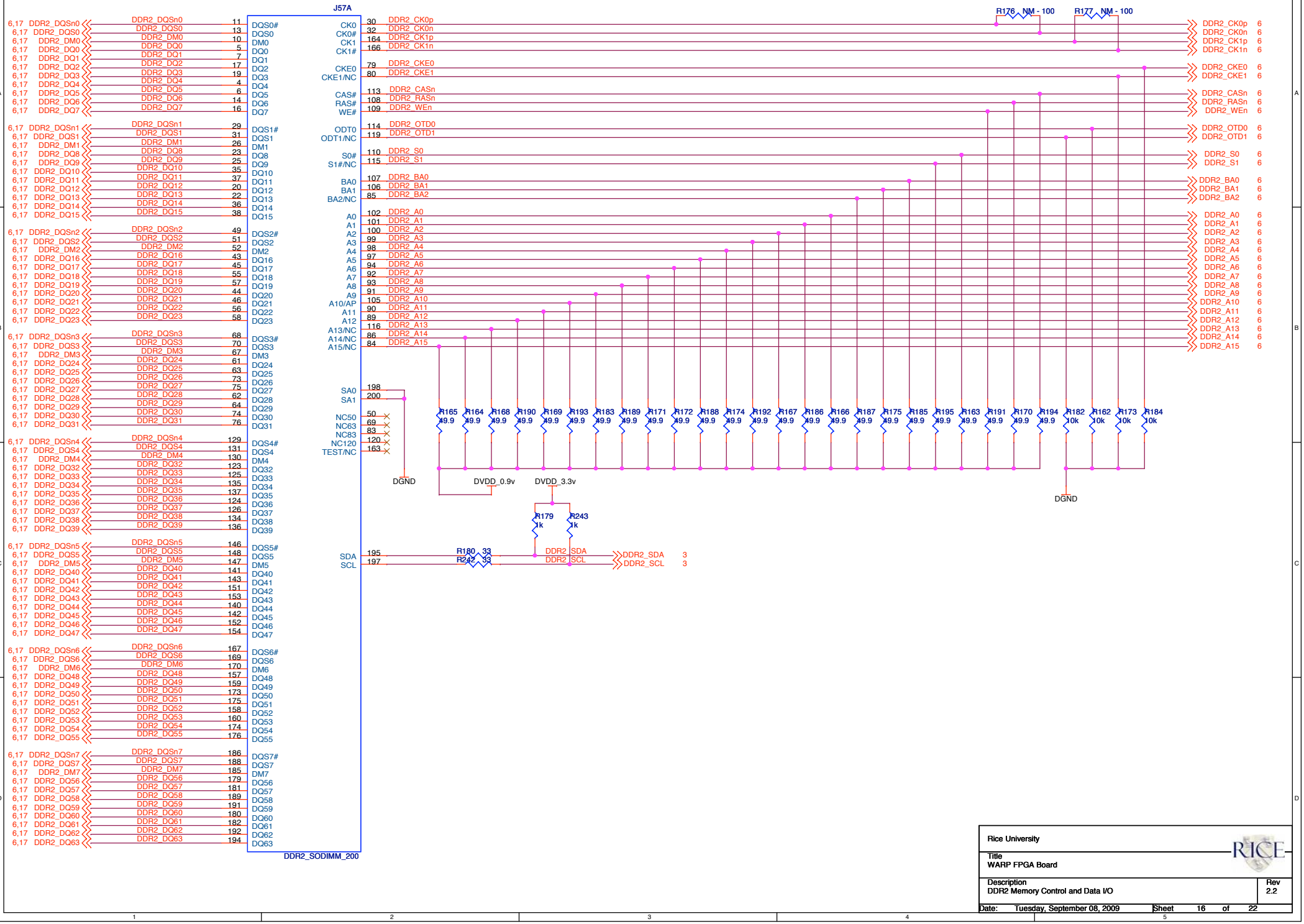
J57A
DDR2_SODIMM_200
R176 NM - 100
R177 NM - 100
R165 R164 R168 R190 R169 R193 R183 R189 R171 R172 R188 R174 R192 R167 R186 R166 R187 R175 R185 R195 R163 R191 R170 R194 R182 R162 R173 R184
49.9
10k
R179 1k
R243 1k
R180 33
R242 33
DGND
DVDD_0.9v
DVDD_3.3v
Rice University
Title
WARP FPGA Board
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DDR2 Memory Control and Data I/O
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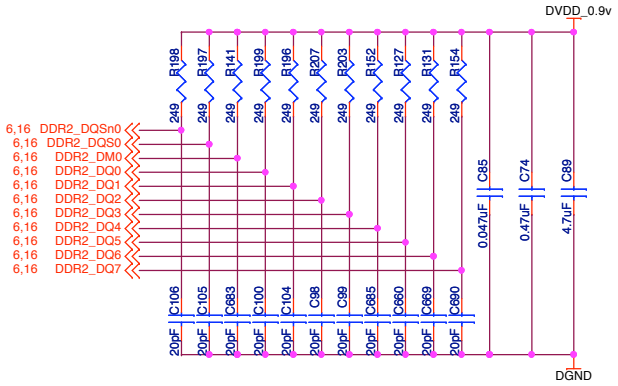
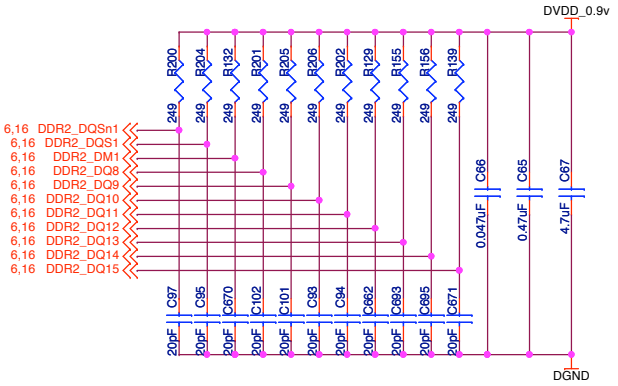
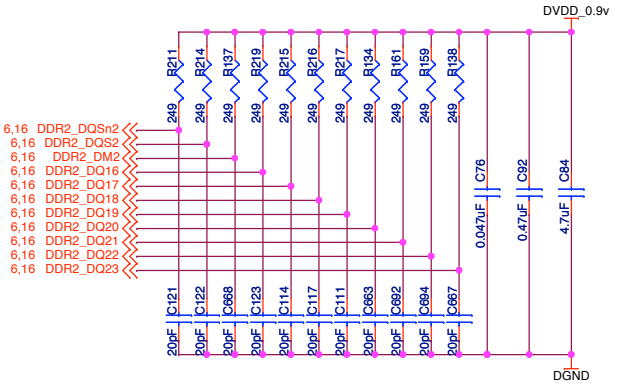
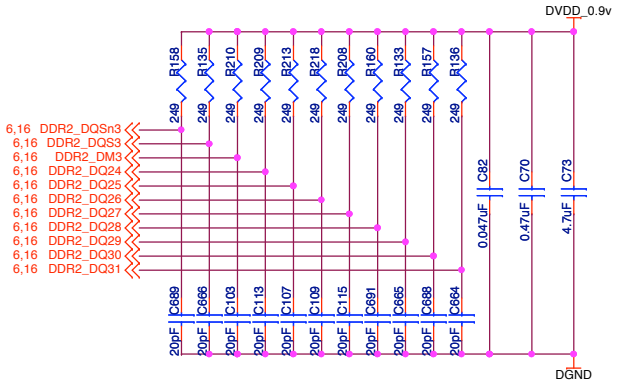
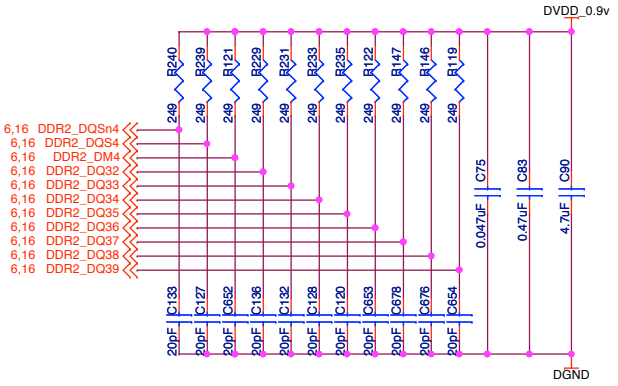
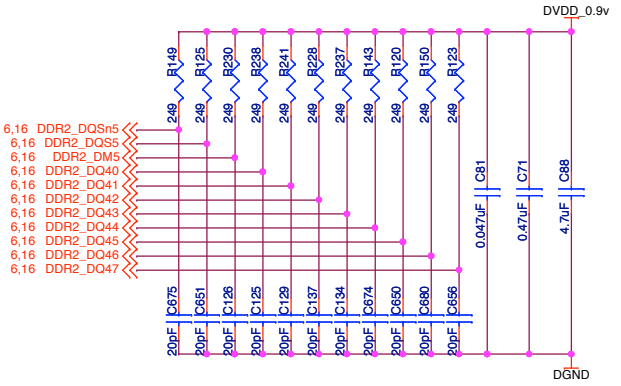


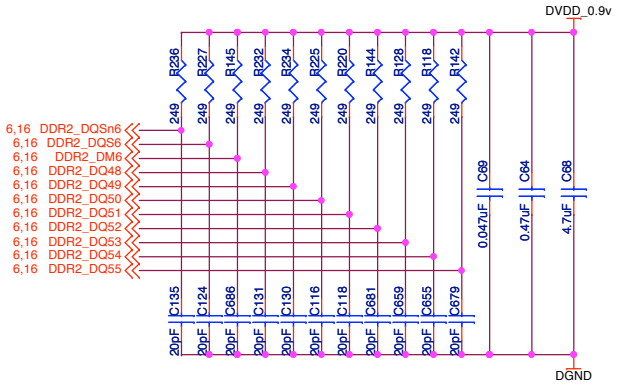


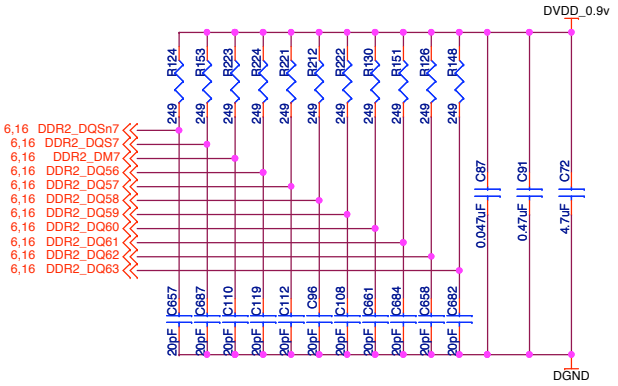




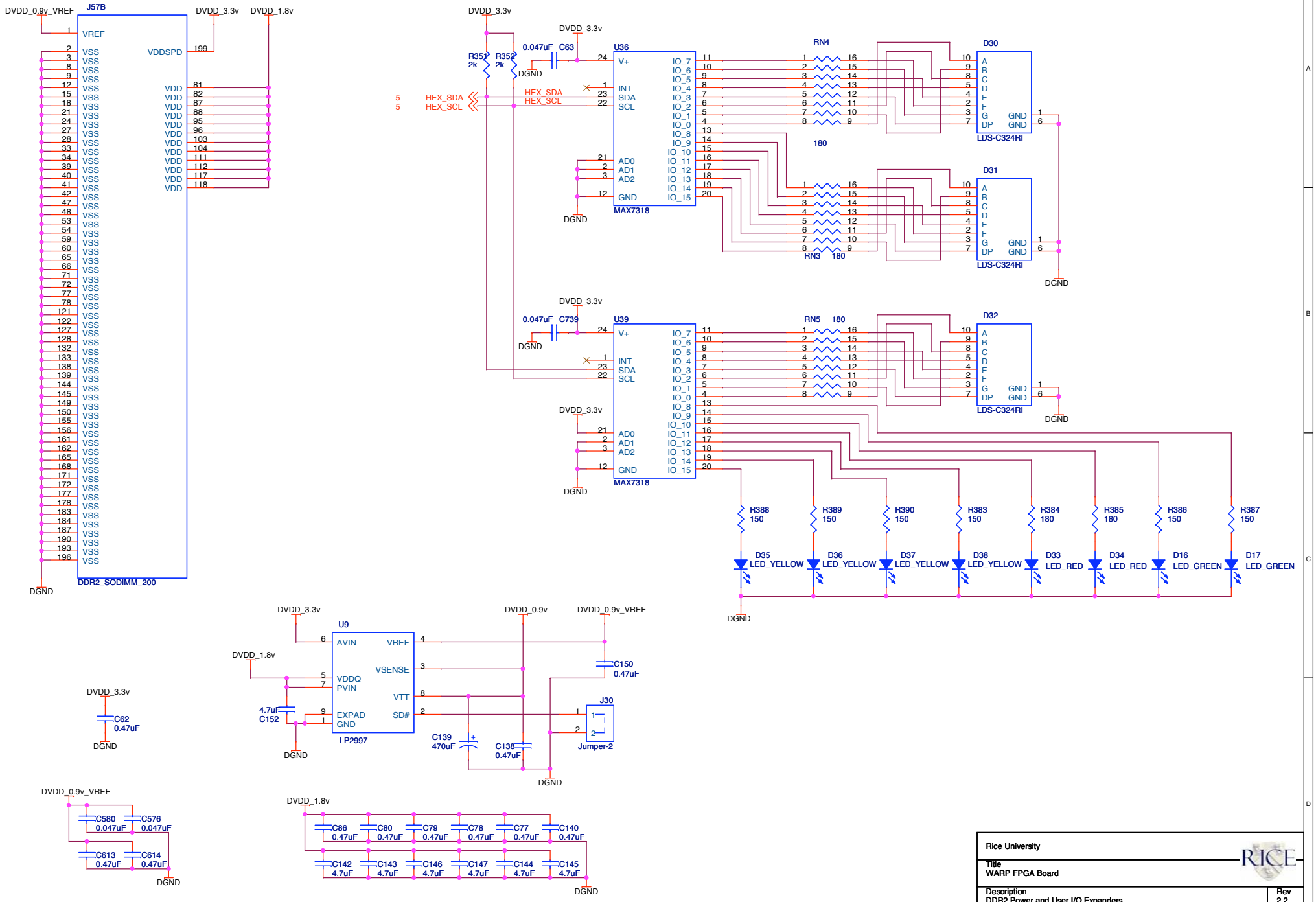








Rice University		
Title WARP FPGA Board		
Description DDR2 Termination		Rev 2.2
Date: Tuesday, September 08, 2009	Sheet 17 of 22	



Rice University

Title
WARP FPGA Board

Description
DDR2 Power and User I/O Expanders

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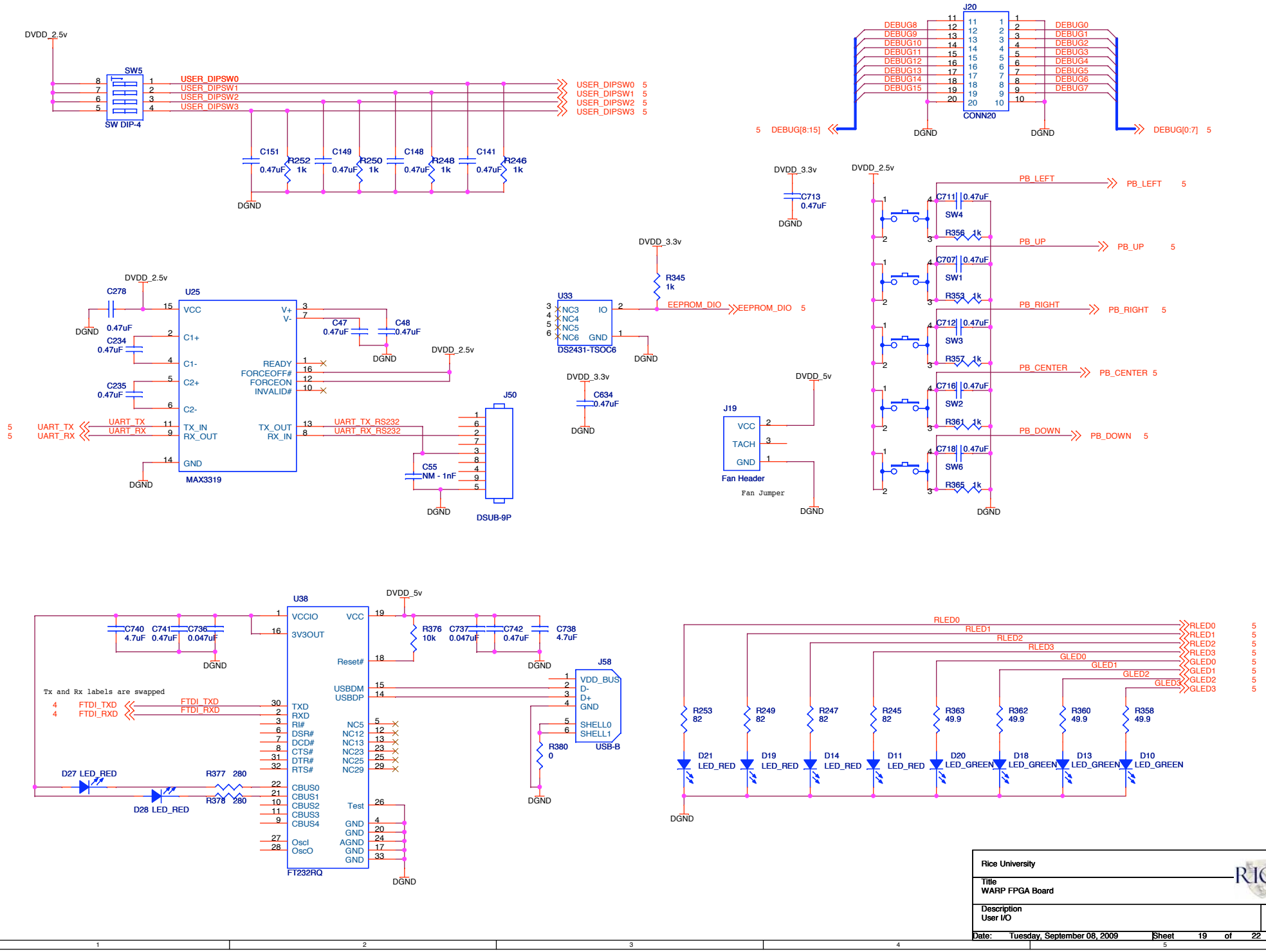

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Title: WARP FPGA Board	
Description: User I/O	Rev: 2.2
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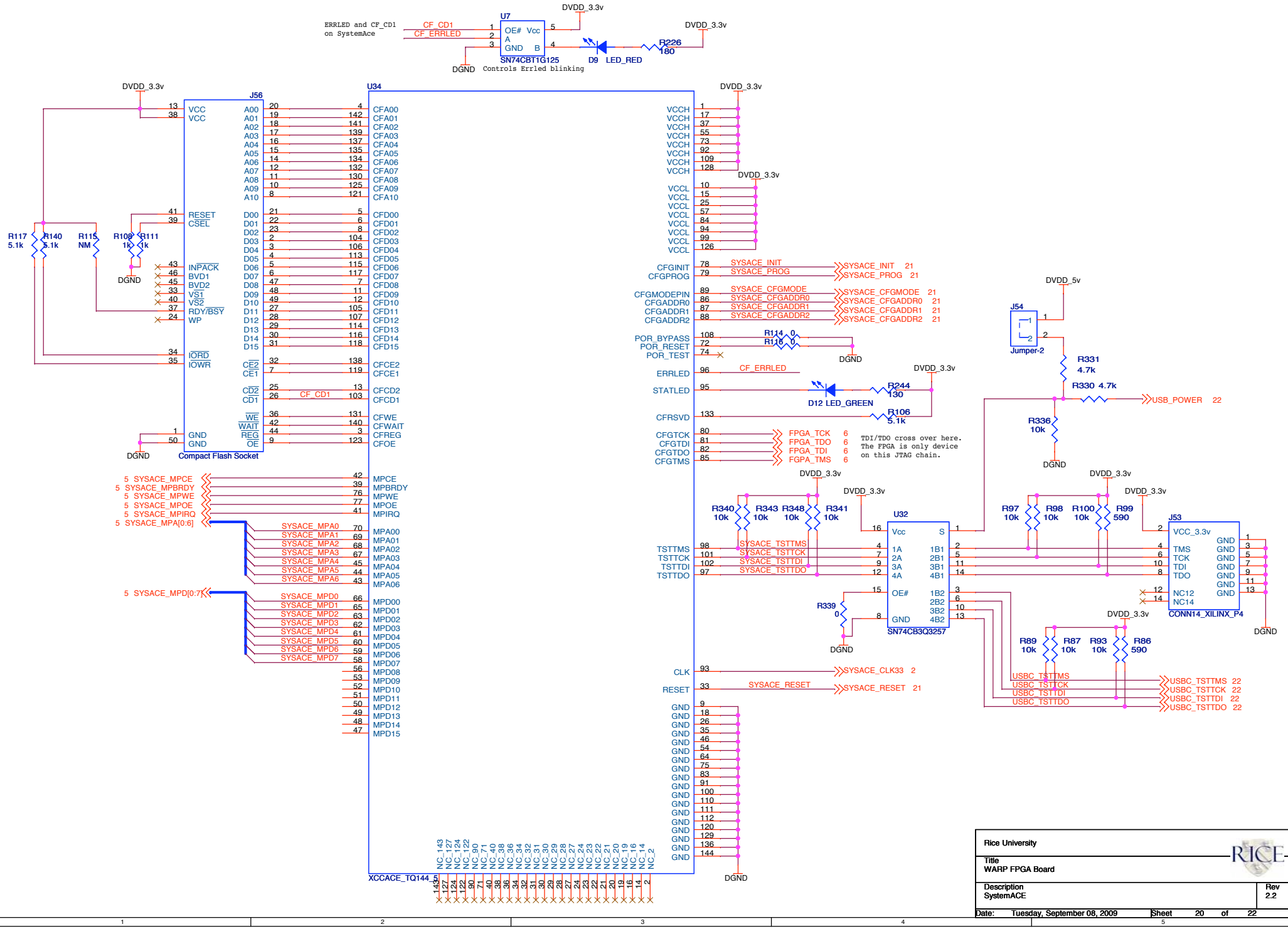
ERRLED and CF_CD1 on SystemAce
CF_CD1
CF_ERRLED
U7
OE# Vcc
A
GND B
SN74CBT1G125
DVDD_3.3v
D9 LED_RED
R226 180
DGND Controls Errled blinking
J56
Compact Flash Socket
U34
XCCACE_TQ144_5
R117 5.1k
R140 5.1k
R115 NM
R108 1k
R111 1k
R114 0
R118 0
R244 130
D12 LED_GREEN
R106 5.1k
TDI/TDO cross over here. The FPGA is only device on this JTAG chain.
J54
Jumper-2
DVDD_5v
R331 4.7k
R330 4.7k
R336 10k
USB_POWER 22
R340 10k
R343 10k
R348 10k
R341 10k
U32
SN74CB3Q3257
R339 0
R97 10k
R98 10k
R100 10k
R99 590
J53
CONN14_XILINX_P4
R89 10k
R87 10k
R93 10k
R86 590
USBC_TSTTMS
USBC_TSTTCK
USBC_TSTTDI
USBC_TSTTDO
Rice University
Title
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Description
SystemACE
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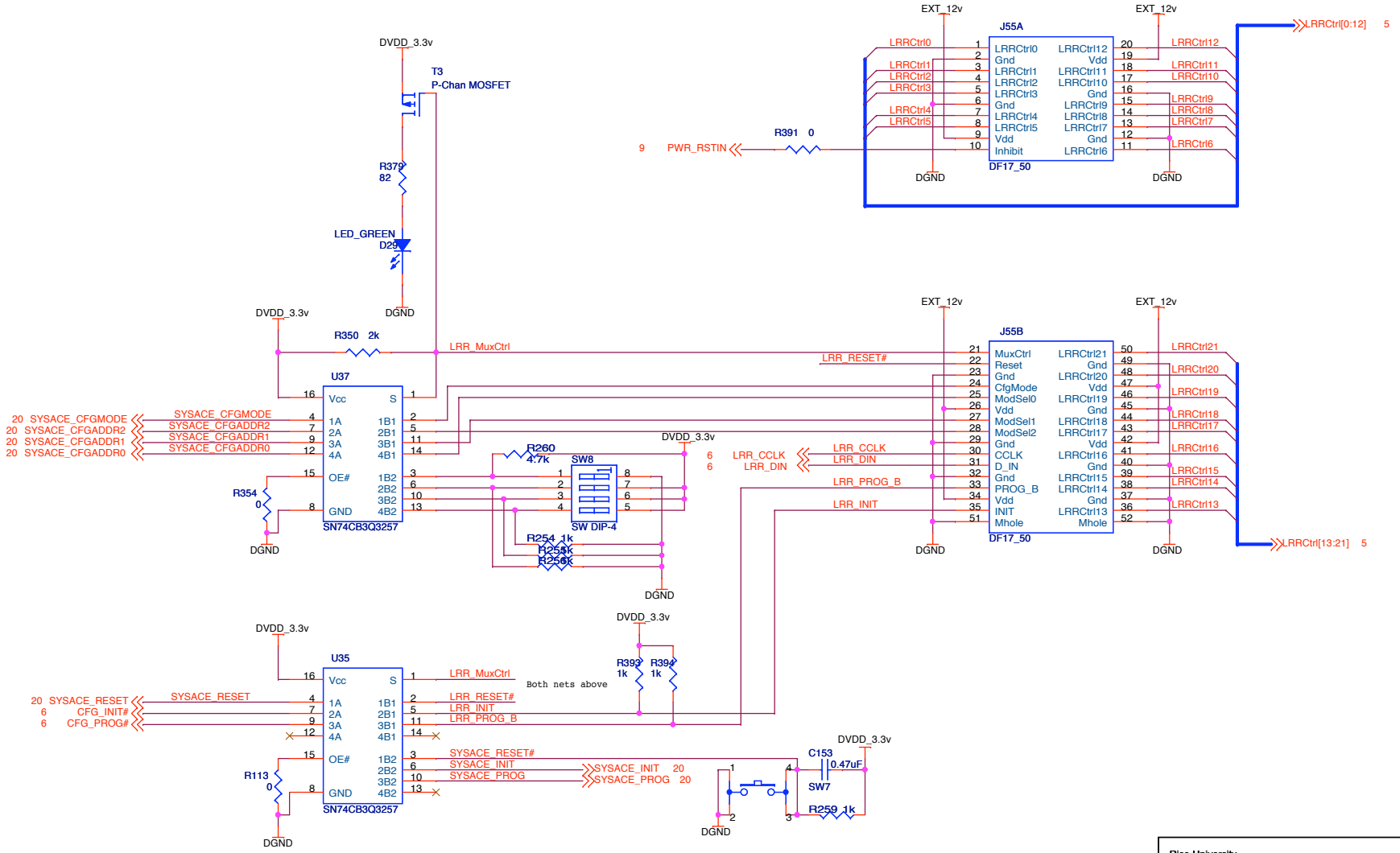

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Title: WARP FPGA Board		
Description: Auxiliary Header		Rev: 2.2
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