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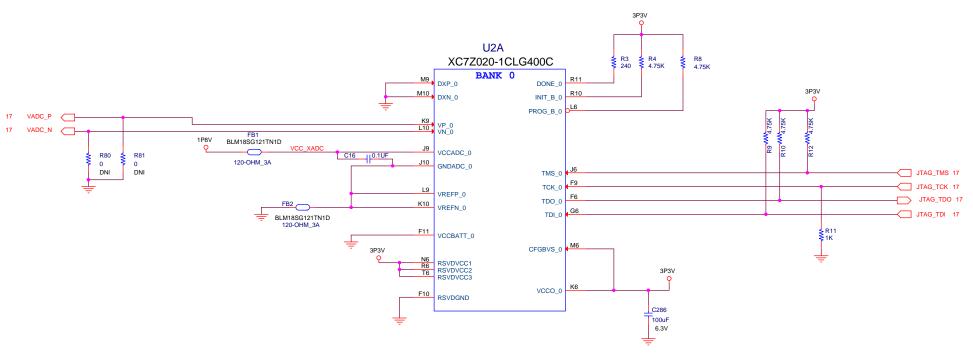
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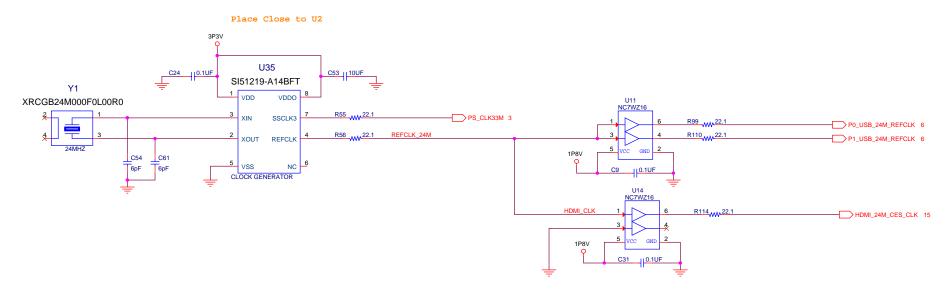
## **ZYNQ BANK0**

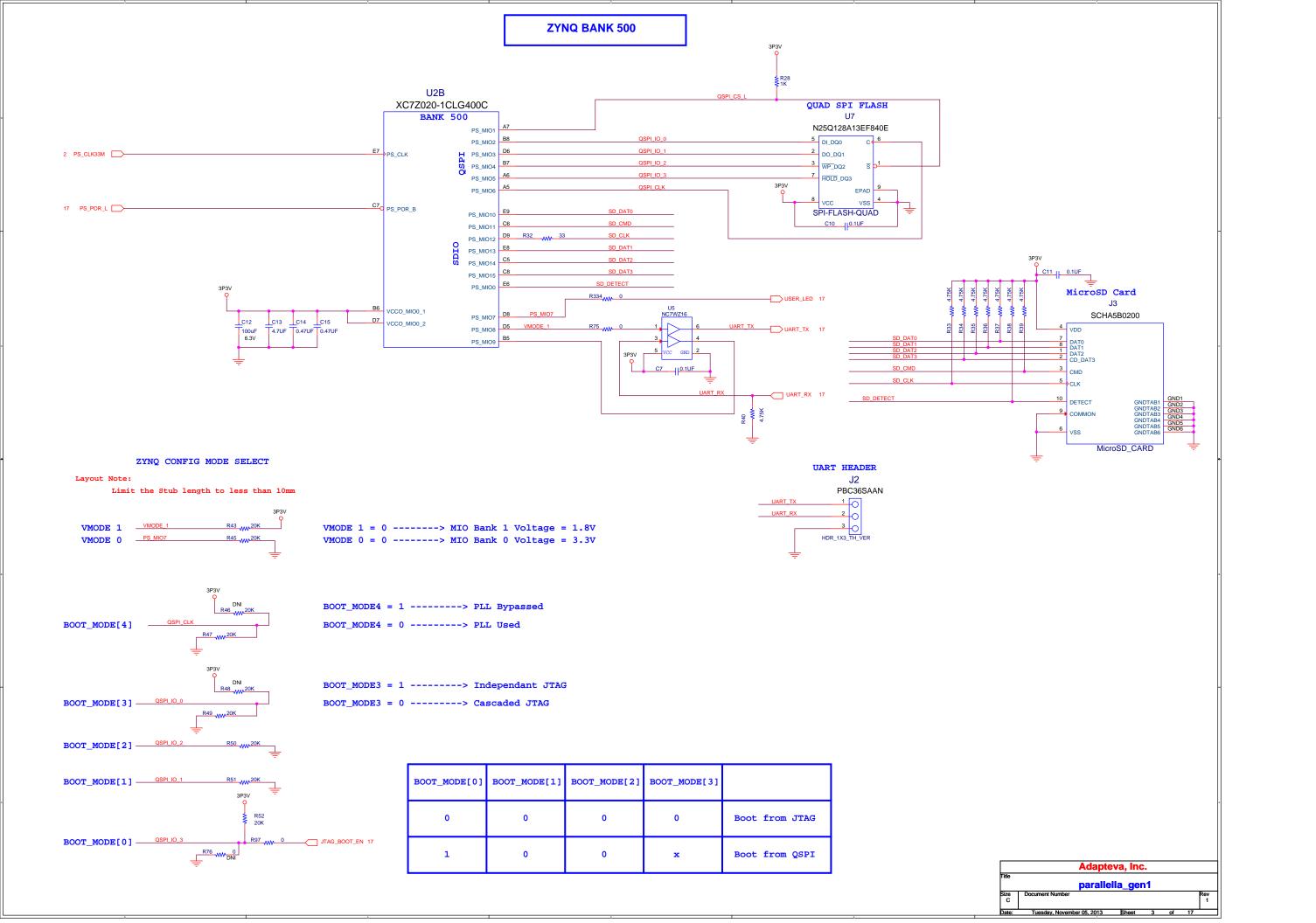


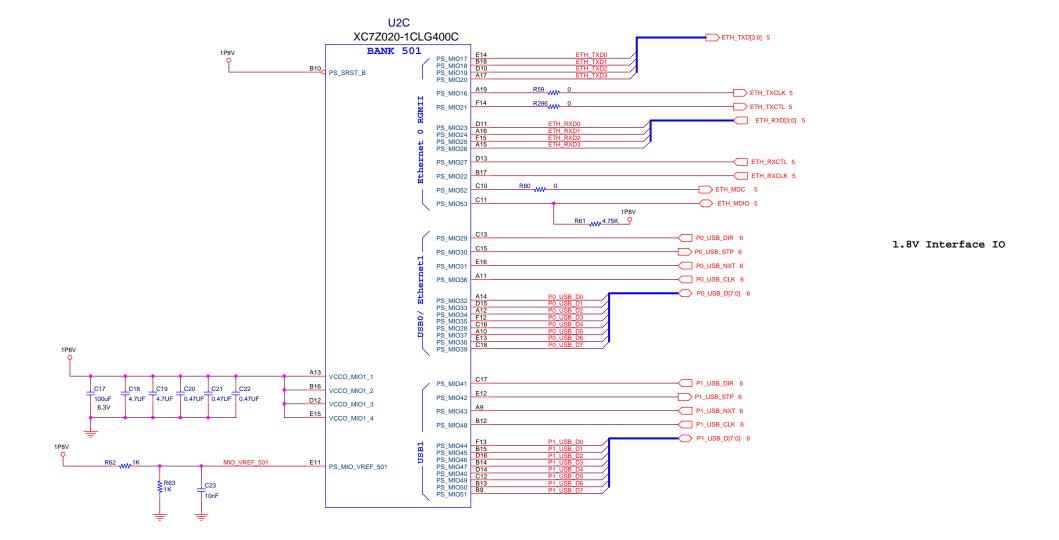
BANK 0 OPERATING VOLTAGE = 3.3V

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## PROGRAMMABLE CLOCK GENERATOR





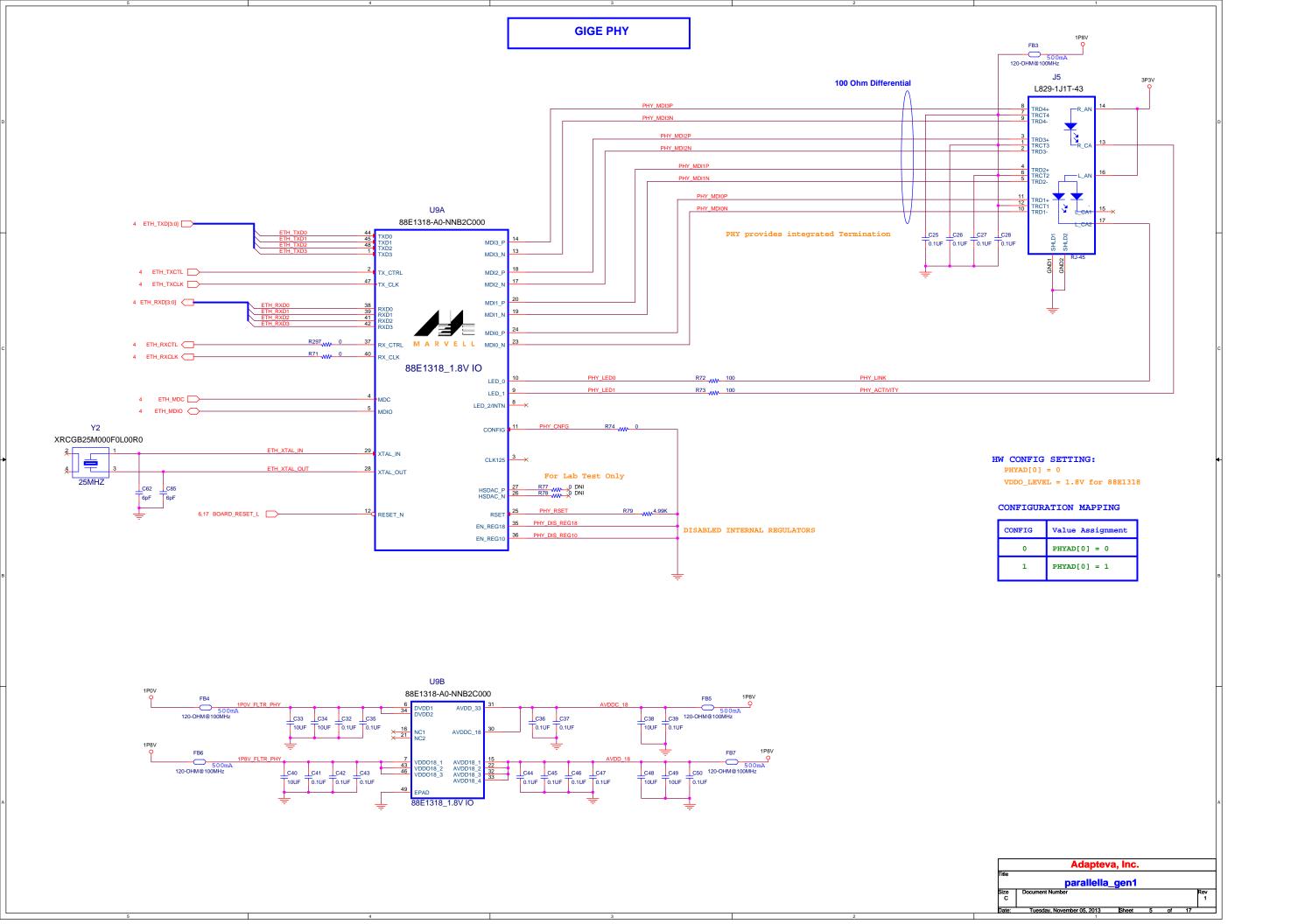


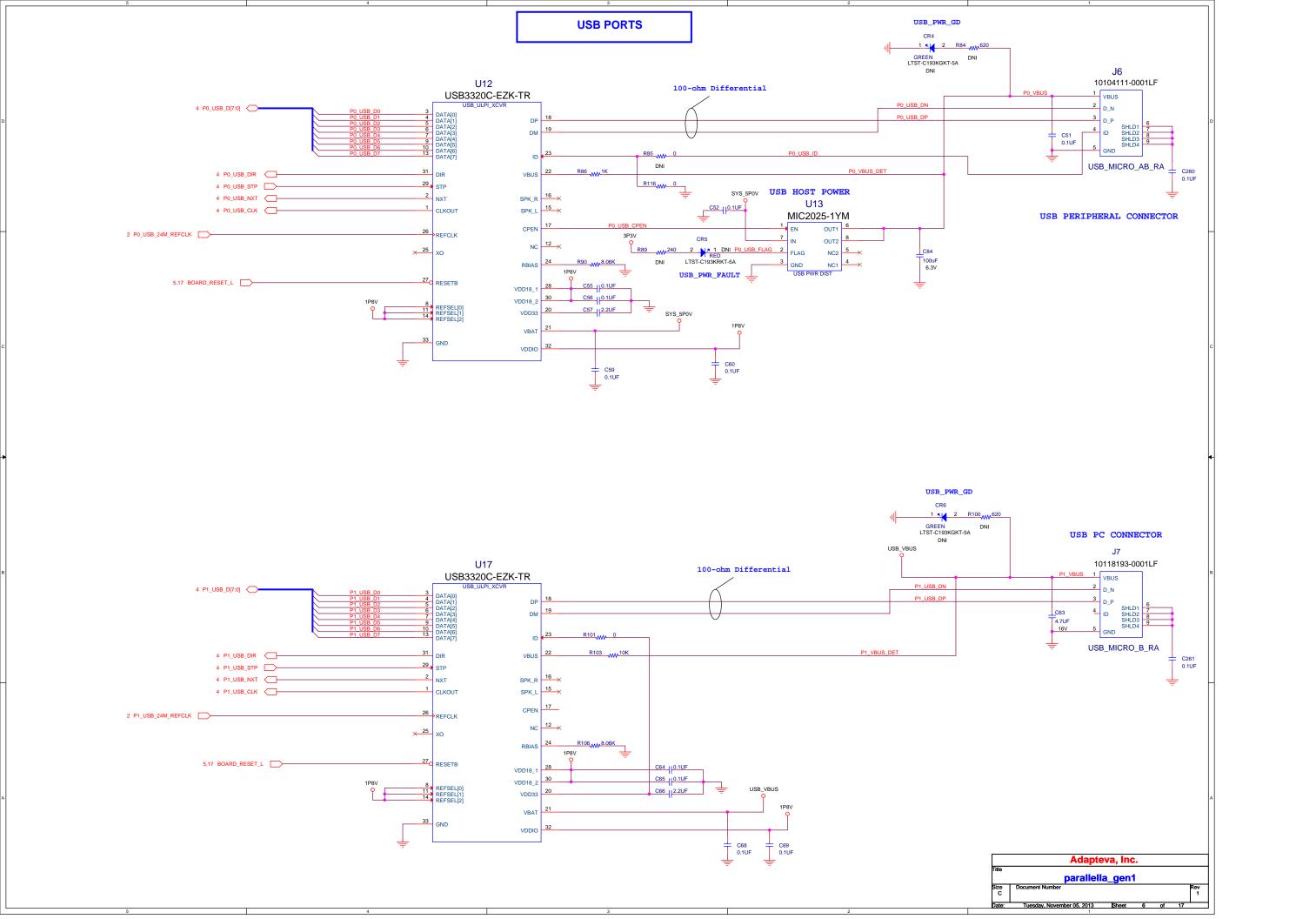
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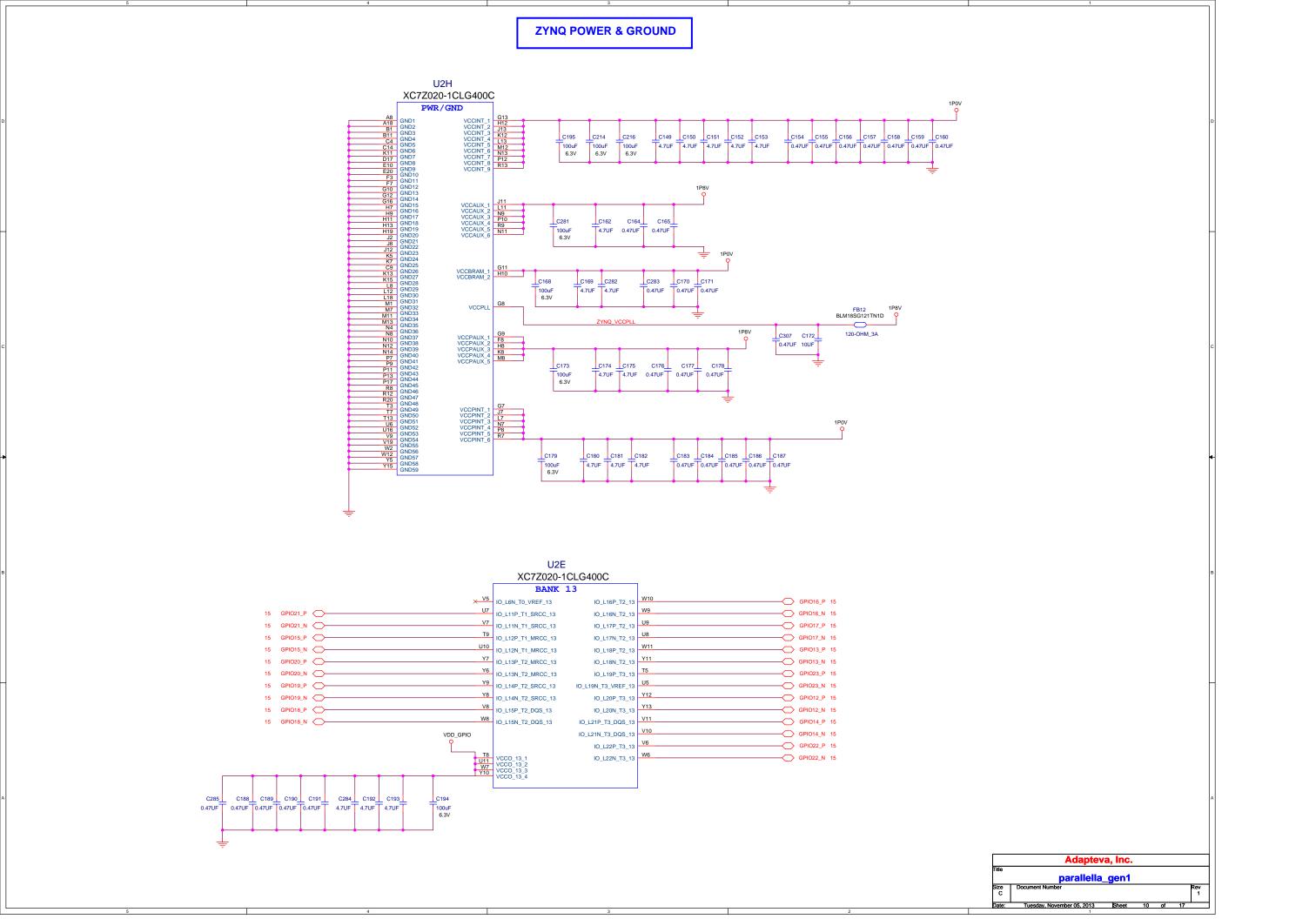


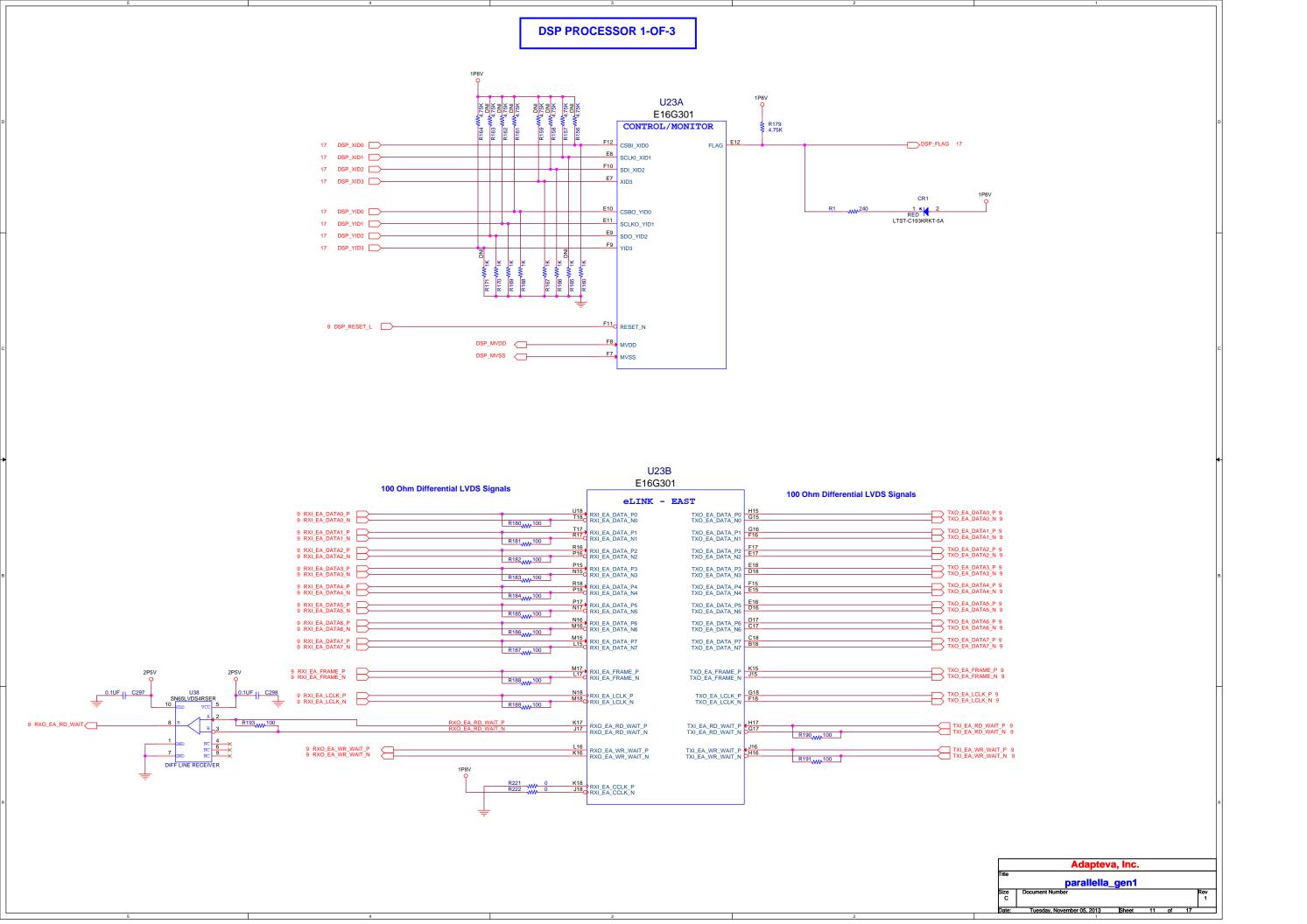
**ZYNQ BANK 502** U2D XC7Z020-1CLG400C DDR\_A[14:0] 8 8 DDR\_DQ[31:0] BANK 502 PS DDR A14 PS DDR A13 E4 PS DDR A12 G4 PS DDR A17 PS DDR A16 PS DDR A17 PS DDR A5 PS DDR A1 PS DDR A2 PS DDR A1 PS DDR A2 PS DDR A1 PS DDR A2 PS DDR A1 PS DR A1 PS\_DDR\_BA2 | J5 | DDR\_3 BA2 | R317 | W | 33 | DDR\_BA2 | 84 | DDR\_3 BA1 | R318 | W | 33 | DDR\_BA1 | R5\_DDR\_BA0 | BA1 | R5\_DDR\_BA0 | R319 | W | 33 | DDR\_BA0 | 8 PS\_DDR\_ODT | N5 | DDR3\_ODT | R320 | MM | 33 DDR\_ODT 8 DDR\_CS\_L 8 DDR\_WE\_L 8 DDR\_CAS\_L 8 PS\_DDR\_RAS\_B P4 DDR3\_RAS\_L R324 WM 33 DDR\_RAS\_L 8 W5 PS\_DDR\_DQS\_P3 PS\_DDR\_DQS\_N3 PS\_DDR\_CKE N3 DDR3\_CKE R325 WW 10 DDR\_CKE 8 R2 PS\_DDR\_DQS\_P2 PS\_DDR\_DQS\_N2 G2 PS\_DDR\_DQS\_P1 PS\_DDR\_DQS\_N1 PS\_DDR\_DM3 PS\_DDR\_DM2 PS\_DDR\_DM1 PS\_DDR\_DM0 C2 PS\_DDR\_DQS\_P0 PS\_DDR\_DQS\_N0 8 DDR\_DQS\_P0 8 DDR\_DQS\_N0 PS\_DDR\_DRST\_B B4 DDR\_RST\_L 8 1P35V R111<sub>WW</sub>4.75K 1P35V C72 C73 C74 C75 C76 C77 C78 C79 C80 C81

4.7UF 4.7UF 0.47UF 0.47UF 0.47UF 0.47UF 0.47UF 0.47UF 0.47UF C70 C71 100uF 6.3V 6.3V PS\_DDR\_VRN PS\_DDR\_VRP G5 H5 PS\_DDR\_VREF0 P6
PS\_DDR\_VREF1 C82 C83 R67 1K Adapteva, Inc. parallella\_gen1 Tuesday, November 05, 2013 Sheet

DDR3 - 256M X 32 7 DDR\_DQ[31:0] U20 MT41K256M32SLD-125:E 7 DDR\_A[14:0] DQ0 A4 DQ1 C2 DQ2 B4 DQ3 E2 DQ4 E4 DQ5 F2 DQ6 F4 DQ16 DQ17 DQ18 DQ19 DQ20 DQ21 DQ22 DQ23 DDR3\_256MX32 H3 ODT 7 DDR\_ODT H4 CS\_L 7 DDR\_CS\_L G4 RAS\_L 7 DDR\_RAS\_L DQ24 M4 DQ25 N2 DQ26 N4 DQ27 R2 DQ28 T2 DQ30 DQ31 U4 G3<sub>C</sub> CAS\_L 7 DDR\_CAS\_L 7 DDR\_WE\_L 1P35V \_\_\_\_\_C95 \_\_\_\_\_C96 \_\_\_\_\_0.1UF VREFDQ J1 P3 DQS3 DQS3\_L 1P35V C97 4.7UF VDD1 A12 VDD2 G1 VDD3 G12 VDD4 L1 VDD5 L12 VDD6 VDD7 VDD8 C98 4.7UF C99 4.7UF C100 0.47UF 7 DDR\_CKE VDD01 B12 VDD02 B12 VDD02 G12 VDD03 G12 VDD04 C101 0.47UF C102 0.47UF C103 0.47UF 7 DDR\_RST\_L \_\_\_ RESET\_L C104 0.047UF C105 0.047UF C106 0.047UF C107 0.047UF C108 0.047UF C109 0.047UF C110 0.047UF C111 0.047UF C112 0.047UF VSSQ1 VSSQ1 VSSQ1 VSSQ2 VSSQ3 VSSQ3 VSSQ3 VSSQ1 C113 0.047UF Adapteva, Inc. parallella\_gen1

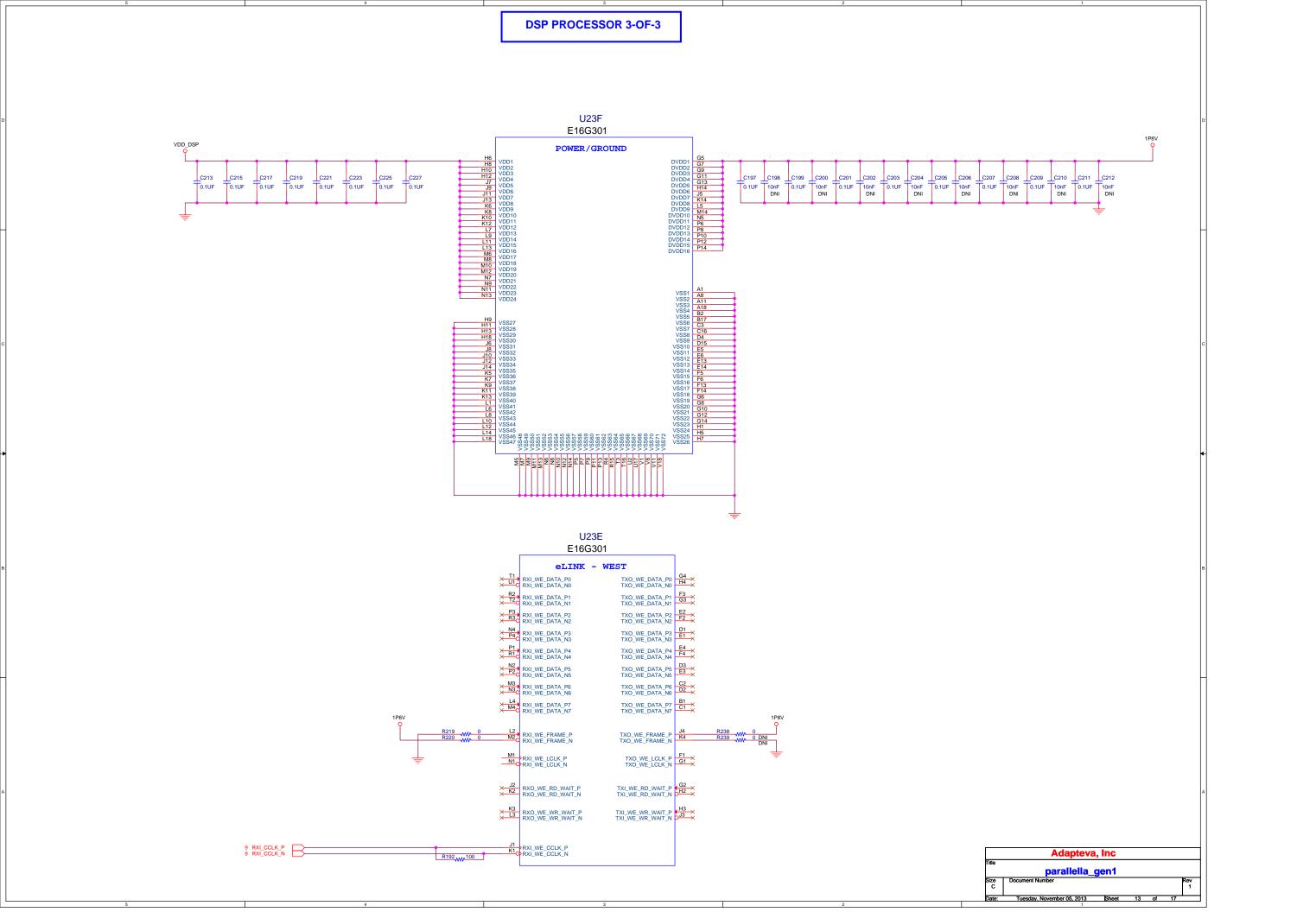
**BANKS 34 & 35** Enable 100-ohm internal termination on all LVDS inputs 15 HDMI\_D[23:8] U2F U2G XC7Z020-1CLG400C XC7Z020-1CLG400C BANK 34 VDD GPIO BANK 35 R19 IO\_0\_34 R20 <sub>MM</sub> 4.75K IO 25 34 IO\_25\_34 J15 11 DSP\_RESET\_L \_\_\_ RXO\_EA\_RD\_WAIT 11 PS\_I2C\_SCL 15 IO\_L13P\_T2\_MRCC\_34 N18 15 GPIO11\_P \_\_\_\_ IO\_L1P\_T0\_34 11 RXI\_EA\_DATA1\_P RXI\_CCLK\_P 13 T10 IO\_L1N\_T0\_34 IO\_L13N\_T2\_MRCC\_34 P19 15 GPIO11\_N \_\_\_\_ 11 RXI\_EA\_DATA1\_N \_\_\_\_ RXI\_CCLK\_N 13 T12 IO\_L2P\_T0\_34 PROG\_IO 17 11 RXI\_EA\_DATA0\_P RXO\_EA\_WR\_WAIT\_P 11 U12 IO\_L2N\_T0\_34 IO\_L14N\_T2\_SRCC\_34 P20 15 GPIO10\_N — HDMI\_INT 15 11 RXI\_EA\_DATA0\_N \_\_\_\_ RXO\_EA\_WR\_WAIT\_N 11 15 GPIO8\_P 🔷 IO\_L3P\_T0\_DQS\_PUDC\_B\_34 IO\_L15P\_T2\_DQS\_34 11 RXI\_EA\_DATA4\_P RXI EA DATA5 P 11 GPIO8 N IO\_L3N\_T0\_DQS\_34 IO\_L15N\_T2\_DQS\_34 D18 IO\_L3N\_T0\_DQS\_AD1N<u>IO5</u>L15N\_T2\_DQS\_AD12N\_35 F20 11 RXI\_EA\_DATA4\_N RXI\_EA\_DATA5\_N 11 V12 IO\_L4P\_T0\_34 IO\_L16P\_T2\_34 V20 GPIO9\_P < D19 IO\_L4P\_T0\_35 IO\_L16P\_T2\_35 G17 RXI\_EA\_DATA6\_P 11 11 RXI\_EA\_DATA2\_P W13 IO\_L4N\_T0\_34 IO\_L16N\_T2\_34 W20 GPIO9\_N < D20 IO\_L4N\_T0\_35 IO\_L16N\_T2\_35 G18 11 RXI\_EA\_DATA2\_N \_\_\_\_ T14 IO\_L5P\_T0\_34 GPIO5\_P 🔷 IO\_L17P\_T2\_34 11 RXI\_EA\_DATA3\_P IO\_L5P\_T0\_AD9P\_35 IO\_L17P\_T2\_AD5P\_35 J20\_ TXO\_EA\_FRAME\_P 11 T15 IO\_L5N\_T0\_34 GPIO5\_N 🔷 IO\_L17N\_T2\_34 IO\_L17N\_T2\_AD5N\_35 H20 IO L5N T0 AD9N 35 TXO\_EA\_FRAME\_N 11 P14 IO\_L6P\_T0\_34 GPIO4\_P 🔷 IO\_L18P\_T2\_34 —— GPIO1\_P 15 11 RXI\_EA\_LCLK\_P \_\_\_\_ IO\_L18P\_T2\_AD13P\_35 G19 RXI\_EA\_DATA7\_P 11 IO\_L6P\_T0\_35 R14 IO\_L6N\_T0\_VREF\_34 IO\_L18N\_T2\_34 W16 GPIO4\_N 🔷 —— GPIO1\_N 15 F17 IO\_L6N\_T0\_VREF\_35 11 RXI\_EA\_LCLK\_N \_\_\_\_ IO\_L18N\_T2\_AD13N\_35 G20 RXI\_EA\_DATA7\_N 11 Y16 IO\_L7P\_T1\_34 IO\_L19P\_T3\_34 R16 SPDIF \_\_\_\_ TURBO\_MODE 16,17 M19 IO\_L7P\_T1\_AD2P\_35 IO\_L19P\_T3\_35 H15 RXI\_EA\_FRAME\_P 11 Y17 IO\_L7N\_T1\_34 15 HDMI\_DE \_\_\_\_ HDMI\_CLK 15 M20 IO\_L7N\_T1\_AD2N\_35 RXI\_EA\_FRAME\_N 11 W14 IO\_L8P\_T1\_34 HDMI\_HSYNC 15 GPIO7\_P 🔷 M17 IO\_L8P\_T1\_AD10P\_35 TXI\_EA\_RD\_WAIT\_P 11 Y14 IO\_L8N\_T1\_34 GPIO7\_N 🔷 M18 IO\_L8N\_T1\_AD10N\_35 GPIO0\_P — HDMI\_VSYNC 15 L19 IO\_L9P\_T1\_DQS\_AD3P\_I66\_L21P\_T3\_DQS\_AD14P\_35 N15 IO\_L21N\_T3\_DQS\_34 V18 HDMI\_D10 11 TXO\_EA\_DATA4\_P U17 | IO\_L9N\_T1\_DQS\_34 L20 IO\_L9N\_T1\_DQS\_AD3N<u>I</u>95L21N\_T3\_DQS\_AD14N\_35 N16 IO\_L22P\_T3\_34 W18 HDMI\_D9 11 TXO\_EA\_DATA4\_N V15 IO\_L10P\_T1\_34 VDD\_GPIO K19 IO\_L10P\_T1\_AD11P\_35 IO\_L22P\_T3\_AD7P\_35 11 TXO\_EA\_DATAO\_P TXO\_EA\_DATA1\_P 11 W15 IO\_L10N\_T1\_34 IO\_L22N\_T3\_34 W19\_ R18 4.75K J19 IO\_L10N\_T1\_AD11N\_35 IO\_L22N\_T3\_AD7N\_35 11 TXO\_EA\_DATAO\_N TXO\_EA\_DATA1\_N 11 U14 IO\_L11P\_T1\_SRCC\_34 GPIO6\_P — IO\_L23P\_T3\_34 IO\_L23P\_T3\_35 M14 L16 IO\_L11P\_T1\_SRCC\_35 TXO EA DATA3 P 11 11 TXO\_EA\_DATA2\_P U15 IO\_L11N\_T1\_SRCC\_34 IO\_L23N\_T3\_34 P18 GPIO6 N > L17 IO\_L11N\_T1\_SRCC\_35 IO\_L23N\_T3\_35 M15 11 TXO\_EA\_DATA2\_N TXO\_EA\_DATA3\_N 11 U18 IO\_L12P\_T1\_MRCC\_34 GPIO3 P IO\_L24P\_T3\_34 → GPIO2 P 15 K17 IO\_L12P\_T1\_MRCC\_35 IO\_L24P\_T3\_AD15P\_35 K16 TXI\_EA\_WR\_WAIT\_P 11 11 TXO\_EA\_LCLK\_P \_\_\_\_ U19 IO\_L12N\_T1\_MRCC\_34 IO\_L24N\_T3\_34 P16 → GPIO2\_N 15 K18 | IO\_L12N\_T1\_MRCC\_35 | IO\_L24N\_T3\_AD15N\_35 | J16 TXI\_EA\_WR\_WAIT\_N 11 11 TXO\_EA\_LCLK\_N VDD\_GPIO C126 C127 C128 C129 C130 C131 C132 C133 C135 C136 C137 C138 C139 C140 C141 C142 0.47UF 0.47UF 0.47UF 4.7UF 4.7UF 4.7UF 4.7UF 0.47UF 0.47UF 0.47UF 0.47UF 4.7UF 4.7UF 4.7UF 4.7UF 100uF 6.3V Adapteva, Inc. parallella\_gen1



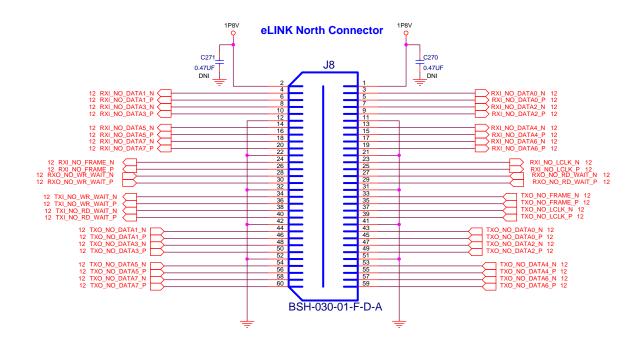


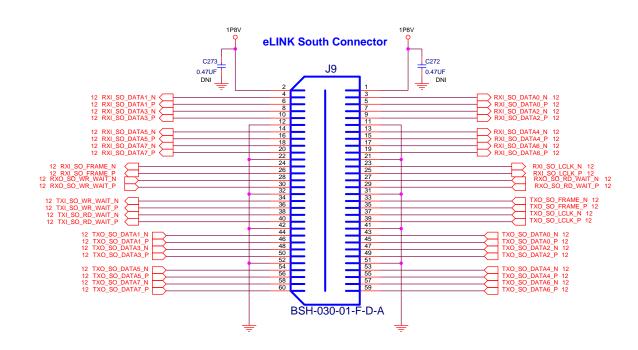
**DSP PROCESSOR 2-OF-3** U23C E16G301 100 Ohm Differential LVDS Signals 100 Ohm Differential LVDS Signals eLINK - NORTH TXO\_NO\_DATA0\_P 14 TXO\_NO\_DATA0\_N 14 14 RXI\_NO\_DATA0\_P 14 RXI\_NO\_DATA0\_N RXI\_NO\_DATA\_P0 RXI\_NO\_DATA\_N0 TXO\_NO\_DATA\_P0 D12 D11 TXO\_NO\_DATA\_N0 R233<sub>WW</sub> 100 DNI R194<sub>MM</sub>100 TXO\_NO\_DATA\_P1 C12
TXO\_NO\_DATA\_N1 TXO\_NO\_DATA1\_P 14
TXO\_NO\_DATA1\_N 14 R232<sub>WW</sub> 100 R195<sub>MM</sub>100 TXO\_NO\_DATA2\_P 14
TXO\_NO\_DATA2\_N 14 C5 RXI\_NO\_DATA\_P2 RXI\_NO\_DATA\_N2 TXO\_NO\_DATA\_P2 TXO\_NO\_DATA\_N2 R231<sub>WW</sub>100 DNI R196<sub>MM</sub>100 TXO\_NO\_DATA3\_P 14
TXO\_NO\_DATA3\_N 14 R197<sub>WW</sub>100 R230<sub>MM</sub>100 DNI TXO\_NO\_DATA\_P4 D13
TXO\_NO\_DATA\_N4 14 RXI\_NO\_DATA4\_P 14 RXI\_NO\_DATA4\_N TXO\_NO\_DATA4\_P 14
TXO\_NO\_DATA4\_N 14 R198<sub>MM</sub>100 R229<sub>WW</sub> 100 DNI TXO\_NO\_DATA\_P5
TXO\_NO\_DATA\_N5

C15
C14 TXO\_NO\_DATA5\_P 14
TXO\_NO\_DATA5\_N 14 14 RXI\_NO\_DATA5\_P 14 RXI\_NO\_DATA5\_N R199<sub>WM</sub>100 R228<sub>WW</sub>100 DNI TXO\_NO\_DATA\_P6 B16
TXO\_NO\_DATA\_N6 TXO\_NO\_DATA6\_P 14
TXO\_NO\_DATA6\_N 14 14 RXI\_NO\_DATA6\_P 14 RXI\_NO\_DATA6\_N RXI\_NO\_DATA\_P6
RXI\_NO\_DATA\_N6 R227<sub>WW</sub> 100 DNI R200<sub>WW</sub>100 TXO\_NO\_DATA\_P7
TXO\_NO\_DATA\_N7 TXO\_NO\_DATA7\_P 14
TXO\_NO\_DATA7\_N 14 D8 D7 RXI\_NO\_DATA\_P7 RXI\_NO\_DATA\_N7 14 RXI\_NO\_DATA7\_P 14 RXI\_NO\_DATA7\_N R226<sub>WW</sub> 100 DNI R201 4444 100 R243 \_\_\_\_\_\_10K TXO\_NO\_FRAME\_P 14 TXO\_NO\_FRAME\_N 14 14 RXI\_NO\_FRAME\_P 14 RXI\_NO\_FRAME\_N TXO\_NO\_FRAME\_P D9
TXO\_NO\_FRAME\_N R202 1P8VO R242 WW 10K TXO\_NO\_LCLK\_P 14
TXO\_NO\_LCLK\_N 14 R203<sub>AAA</sub>100 R206<sub>WM</sub> 100 R241 \_\_\_\_\_10K R204<sub>WW</sub>100 R240 WW 10K R205<sub>WM</sub>100 U23D E16G301 100 Ohm Differential LVDS Signals 100 Ohm Differential LVDS Signals eLINK - SOUTH TXO\_SO\_DATA0\_P 14
TXO\_SO\_DATA0\_N 14 R207<sub>MM</sub>100 U3 U4 RXI\_SO\_DATA\_P1 RXI\_SO\_DATA\_N1 TXO\_SO\_DATA\_P1 T13
TXO\_SO\_DATA\_N1 TXO\_SO\_DATA1\_P 14
TXO\_SO\_DATA1\_N 14 14 RXI\_SO\_DATA1\_P 14 RXI\_SO\_DATA1\_N R208<sub>MM</sub>100 RXI\_SO\_DATA\_P2 RXI\_SO\_DATA\_N2 TXO\_SO\_DATA2\_P 14 TXO\_SO\_DATA2\_N 14 TXO\_SO\_DATA\_P2
TXO\_SO\_DATA\_N2
U13
U14 14 RXI\_SO\_DATA2\_P 14 RXI\_SO\_DATA2\_N R209<sub>MM</sub>100 TXO\_SO\_DATA\_P3 V15
TXO\_SO\_DATA\_N3 TXO\_SO\_DATA3\_P 14 TXO\_SO\_DATA3\_N 14 RXI\_SO\_DATA\_P3 RXI\_SO\_DATA\_N3 14 RXI\_SO\_DATA3\_P 14 RXI\_SO\_DATA3\_N R210<sub>MM</sub>100 TXO\_SO\_DATA\_P4
TXO\_SO\_DATA\_N4
R13
R14 RXI\_SO\_DATA\_P4
RXI\_SO\_DATA\_N4 14 RXI\_SO\_DATA4\_P 14 RXI\_SO\_DATA4\_N R211<sub>WW</sub>100 TXO\_SO\_DATA5\_P 14 TXO\_SO\_DATA5\_N 14 TXO\_SO\_DATA\_P5 TXO\_SO\_DATA\_N5 14 RXI\_SO\_DATA5\_P 14 RXI\_SO\_DATA5\_N RXI\_SO\_DATA\_P5
RXI\_SO\_DATA\_N5 R212<sub>WW</sub>100 TXO\_SO\_DATA6\_P 14 TXO\_SO\_DATA6\_N 14 14 RXI\_SO\_DATA6\_P 14 RXI\_SO\_DATA6\_N T6 T7 RXI\_SO\_DATA\_P6 RXI\_SO\_DATA\_N6 TXO\_SO\_DATA\_P6
TXO\_SO\_DATA\_N6
U15
U16 R213<sub>MM</sub>100 RXI\_SO\_DATA\_P7 RXI\_SO\_DATA\_N7 TXO\_SO\_DATA\_P7 V16
TXO\_SO\_DATA\_N7 14 RXI\_SO\_DATA7\_P 14 RXI\_SO\_DATA7\_N TXO\_SO\_DATA7\_P 14
TXO\_SO\_DATA7\_N 14 R214<sub>MM</sub>100 R246 WW 10K TXO\_SO\_FRAME\_P TXO\_SO\_FRAME\_N R236\_WM\_100 14 RXI\_SO\_FRAME\_P 14 RXI\_SO\_FRAME\_N R215<sub>WW</sub>100 1P8VO R247 WW 10K R244 WW 10K O1P8V TXO\_SO\_LCLK\_P 14
TXO\_SO\_LCLK\_N 14 R216<sub>WW</sub>100 U9 RXO\_SO\_RD\_WAIT\_P RXO\_SO\_RD\_WAIT\_N TXI\_SO\_RD\_WAIT\_P
TXI\_SO\_RD\_WAIT\_N TXI\_SO\_RD\_WAIT\_P 14
TXI\_SO\_RD\_WAIT\_N 14 R234<sub>WW</sub> 100 DNI R217<sub>AAA</sub>100 14 RXO\_SO\_WR\_WAIT\_P
14 RXO\_SO\_WR\_WAIT\_N TXI\_SO\_WR\_WAIT\_P 14
TXI\_SO\_WR\_WAIT\_N 14 RXO\_SO\_WR\_WAIT\_P RXO\_SO\_WR\_WAIT\_N R235<sub>MM</sub>100 R218<sub>MM</sub>100 Adapteva, Inc. parallella\_gen1



## **DSP eLINK CONNECTORS**





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