Disclaimers

EFINIX DOES NOT PROVIDE ANY WARRANTY OF ACCURACY, COMPLETENESS, MERCHANTABILITY, OR NONINFRINGEMENT OF THIRD-PARTY RIGHTS ON THIS DOCUMENT. THE INFORMATION IN THIS DOCUMENT IS “AS IS”; IN NO EVENT WILL EFINIX BE LIABLE FOR ANY EXEMPLARY, SPECIAL, CONSEQUENTIAL, INDIRECT, OR INCIDENTAL DAMAGES, INCLUDING ANY LOSS OF DATA, LOSS OF PROFITS, LOSS OF INFORMATION, LOSS OF LIFE OR BUSINESS INTERRUPTION, ARISING FROM YOUR USE OF THIS DOCUMENT.

EFINIX shall make changes to this document at any time without notification. EFINIX assumes no obligation to correct any errors contained in this document or to advise any user of this document of any correction if such be made. EFINIX advises its customers to obtain the latest FPGA schematic before ordering so that no conflict of information correctness arises afterward.

Ti375N1156 Development Board REV A1

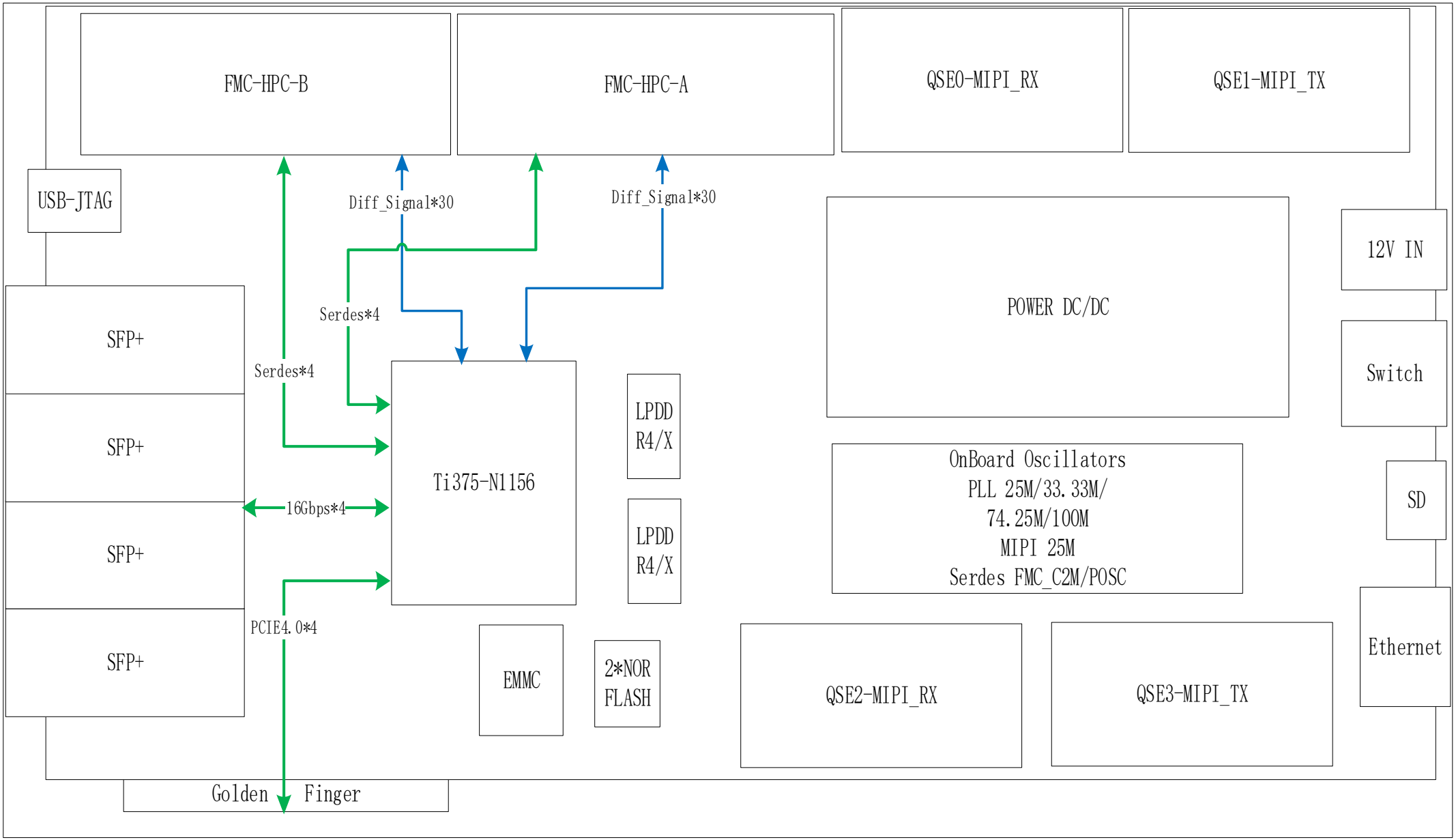
CONTENTS

DOCUMENT VERSION HISTORY

VER	DATE	EDITOR	DESCRIPTION
1.0	02/07/2024		Initial Release

Efinix Inc.
20400 Stevens Creek Boulevard,Suite 200
Cupertino,CA 95014

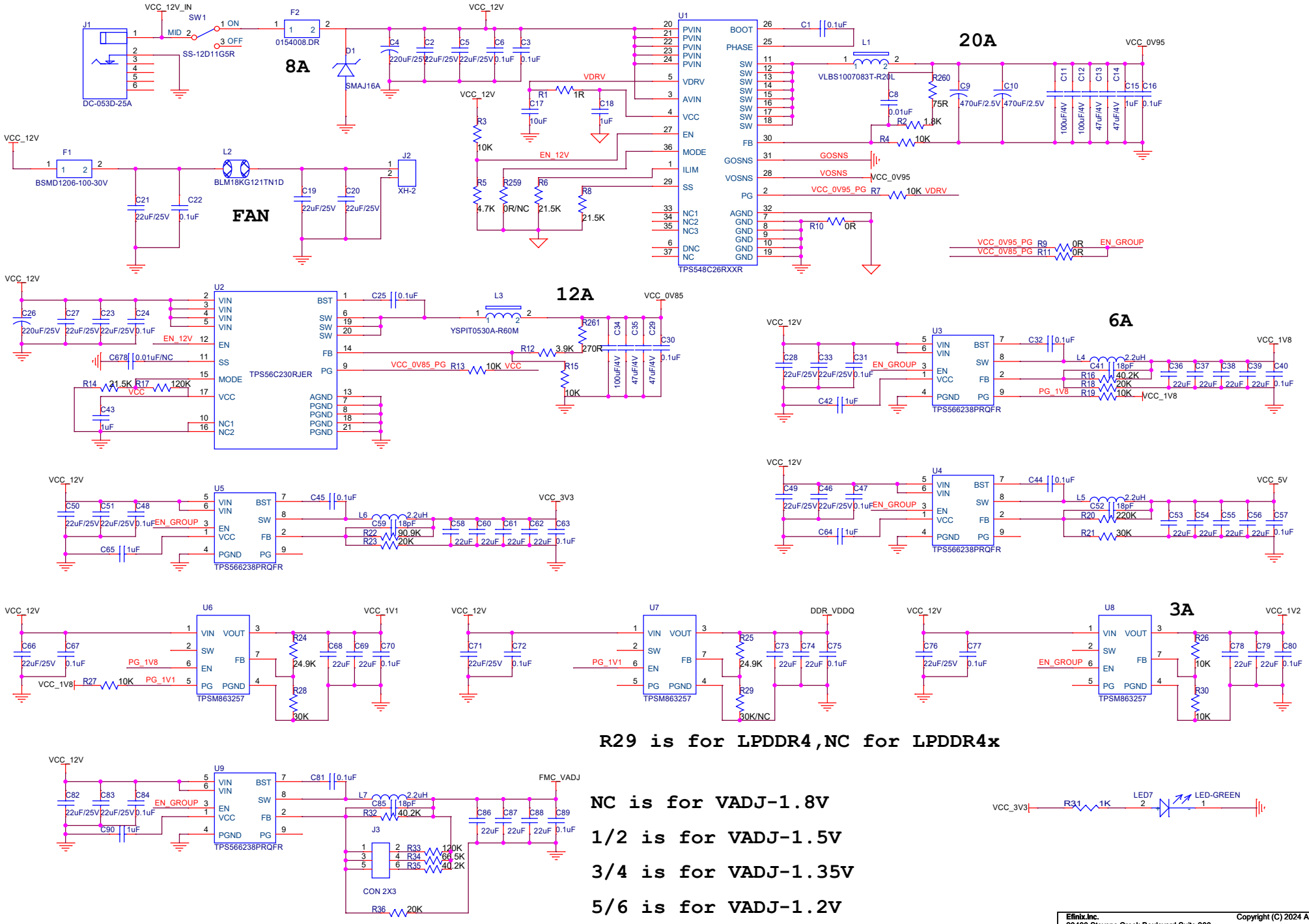
Title	Table of Contents	
Size: A3	Document Number: Ti375N1156 DEVELOPMENT BOARD	Rev: A1
Date: Thursday, August 22, 2024	Sheet 1 of 19	



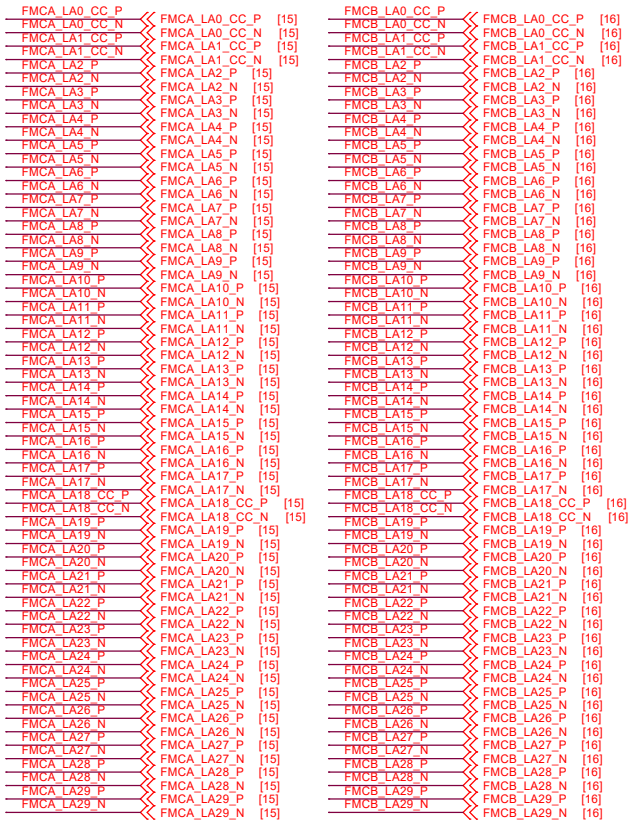
Title: Block Diagram

Size: A3 | Document Number: Ti375N1156 DEVELOPMENT BOARD | Rev: A1

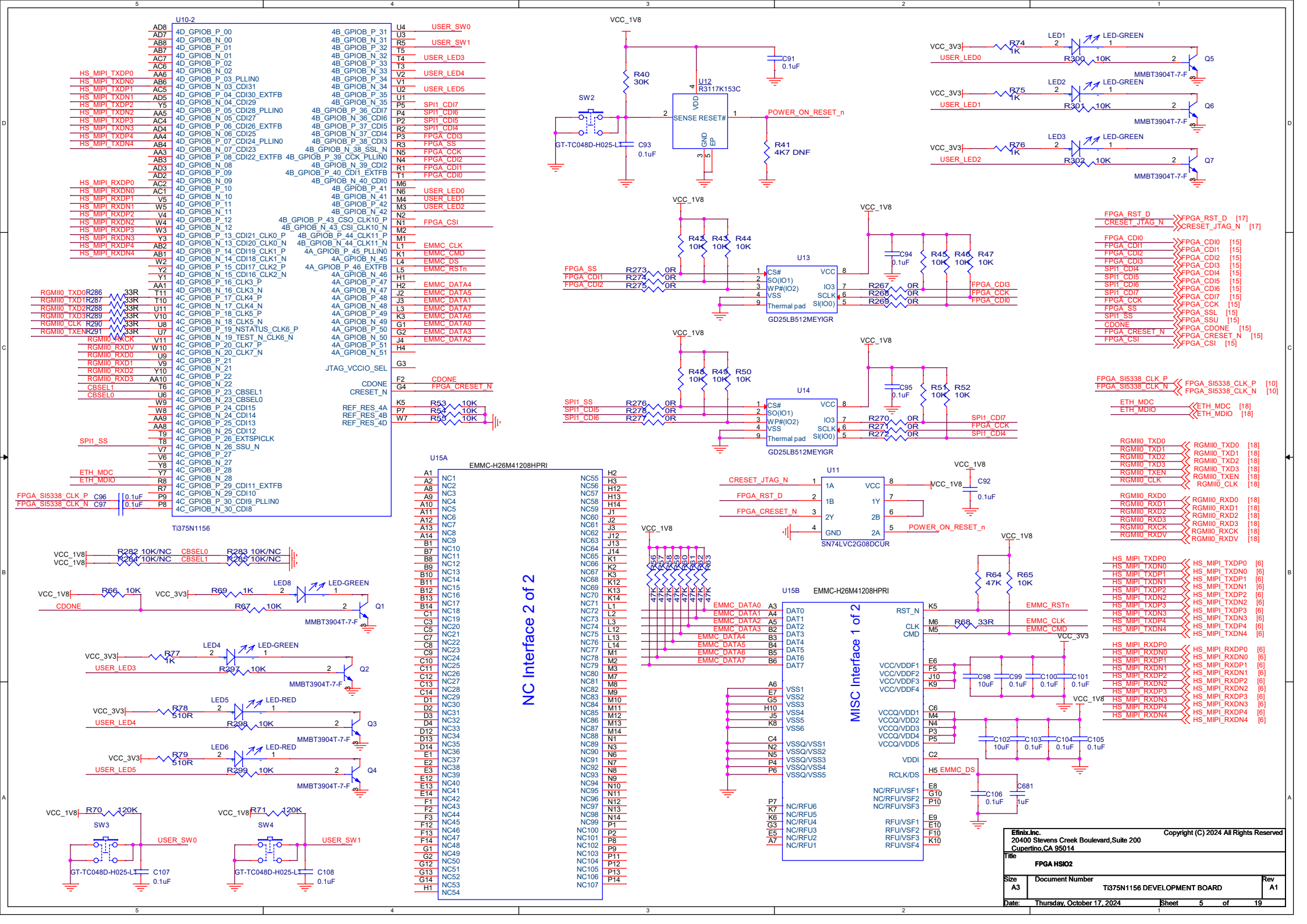
Date: Thursday, August 22, 2024 | Sheet 2 of 19

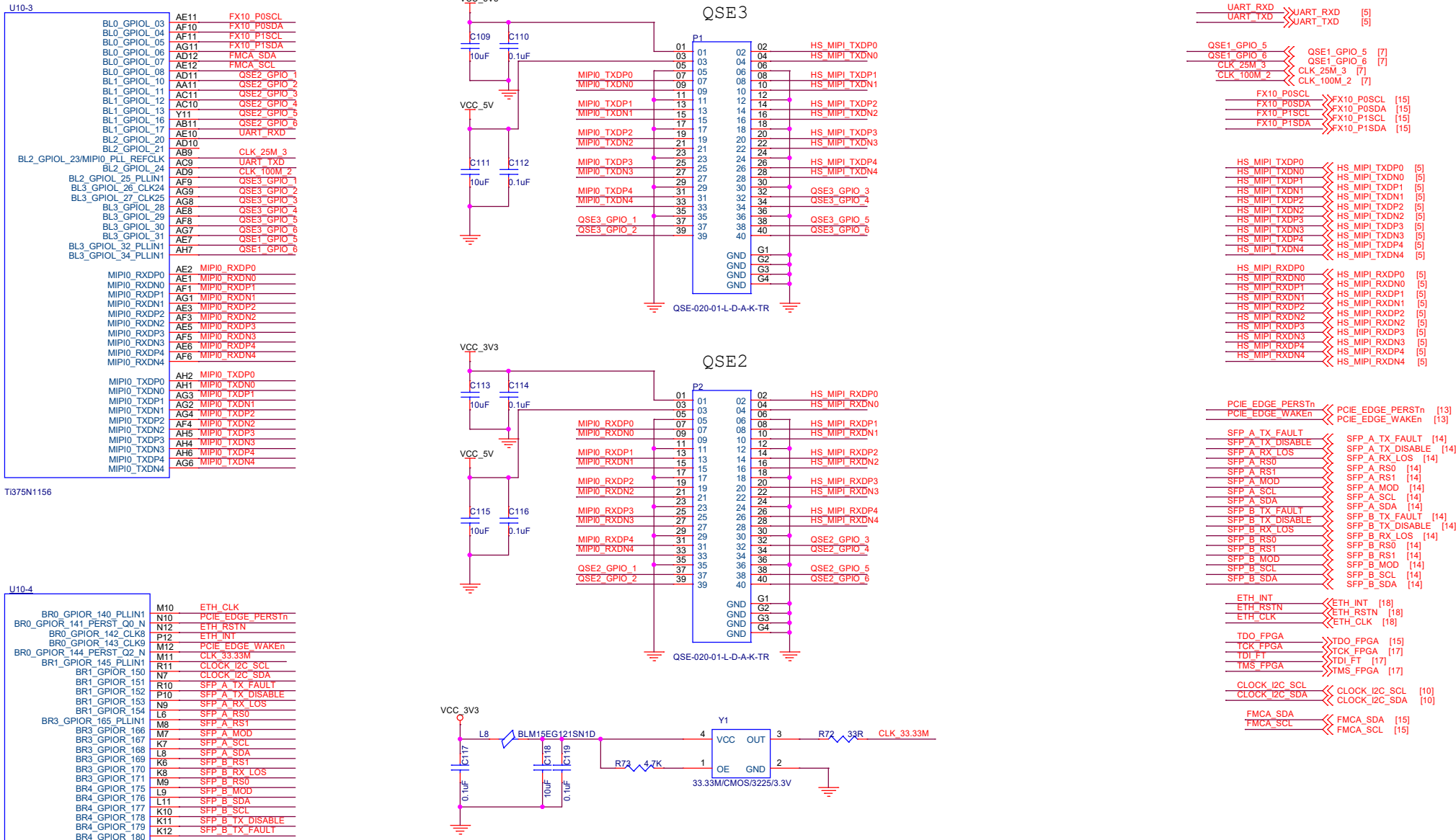


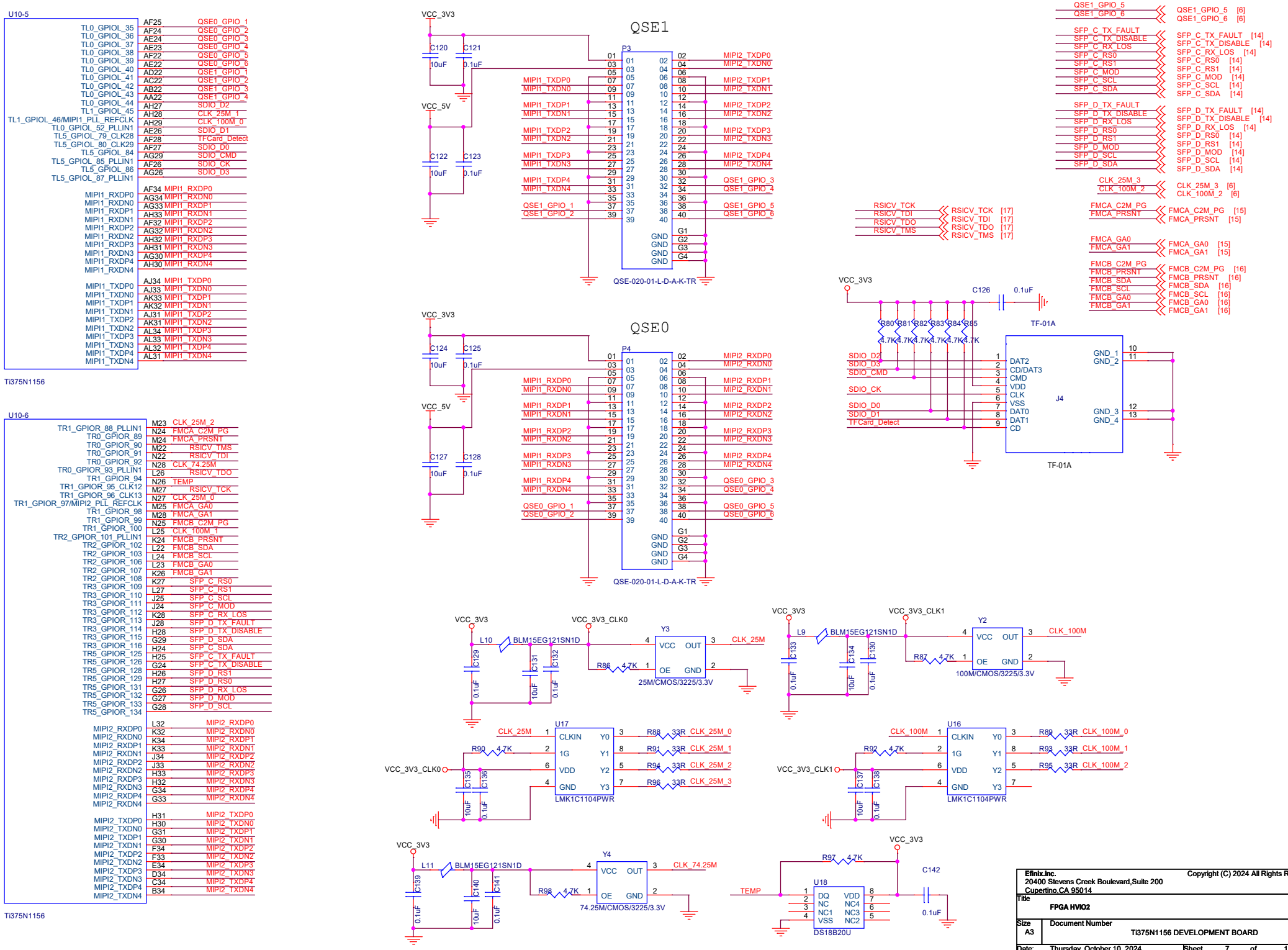
Title	POWER	
Size A3	Document Number Ti375N1156 DEVELOPMENT BOARD	Rev A1
Date: Thursday, August 22, 2024	Sheet 3 of 19	



Efinix.Inc. 20400 Stevens Creek Boulevard,Suite 200 Cupertino,CA 95014		Copyright (C) 2024 All Rights Reserved
Title: FPGA HSIO1		
Size: A3	Document Number: Ti375N1156 DEVELOPMENT BOARD	Rev: A1
Date: Thursday, August 22, 2024	Sheet 4 of 19	

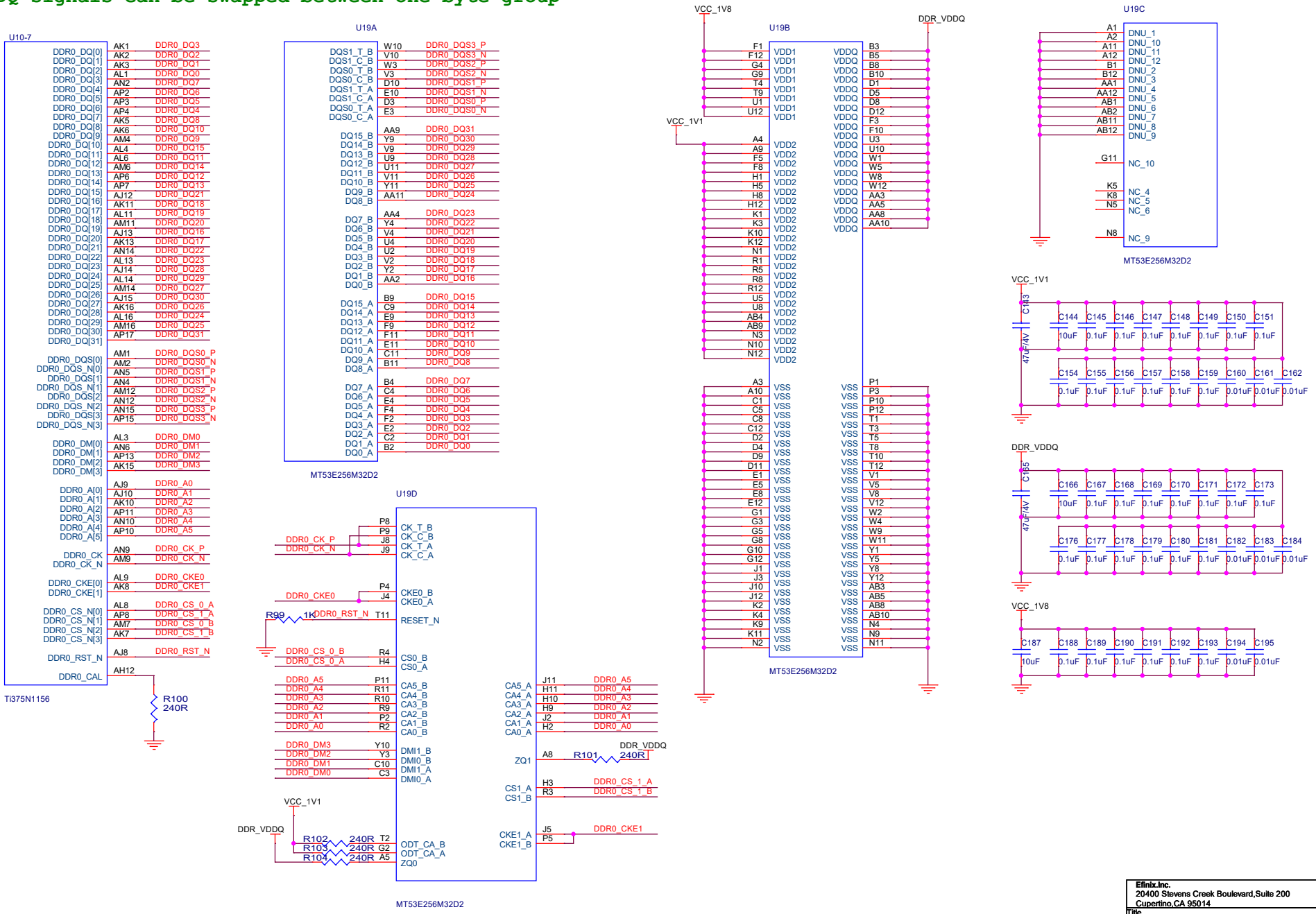

U10-2
Ti375N1156
U15A
EMMC-H26M41208HPRI
NC Interface 2 of 2
U15B
MISC Interface 1 of 2
U12
R3117K153C
U13
U14
GD25LB512MEYIGR
U11
SN74LVC2G08DCUR
SW2
SW3
SW4
GT-TC048D-H025-L1
VCC_1V8
VCC_3V3
POWER_ON_RESET_n
USER_SW0
USER_SW1
USER_LED0
USER_LED1
USER_LED2
USER_LED3
USER_LED4
USER_LED5
FPGA_CSI
EMMC_CLK
EMMC_CMD
EMMC_DS
EMMC_RSTn
CDONE
FPGA_CRESET_N
JTAG_VCCIO_SEL
REF_RES_4A
REF_RES_4B
REF_RES_4D
Efinix.Inc.
20400 Stevens Creek Boulevard,Suite 200
Cupertino,CA 95014
Copyright (C) 2024 All Rights Reserved
Title
FPGA HSIO2
Size A3
Document Number
Ti375N1156 DEVELOPMENT BOARD
Rev A1
Date: Thursday, October 17, 2024
Sheet 5 of 19


U10-3
BL0_GPIOL_03 AE11 FX10_P0SCL
BL0_GPIOL_04 AF10 FX10_P0SDA
BL0_GPIOL_05 AF11 FX10_P1SCL
BL0_GPIOL_06 AG11 FX10_P1SDA
BL0_GPIOL_07 AD12 FMCA_SDA
BL0_GPIOL_08 AE12 FMCA_SCL
BL1_GPIOL_10 AD11 QSE2_GPIO_1
BL1_GPIOL_11 AA11 QSE2_GPIO_2
BL1_GPIOL_12 AC11 QSE2_GPIO_3
BL1_GPIOL_13 AC10 QSE2_GPIO_4
BL1_GPIOL_16 Y11 QSE2_GPIO_5
BL1_GPIOL_17 AB11 QSE2_GPIO_6
BL2_GPIOL_20 AE10 UART_RXD
BL2_GPIOL_21 AD10
BL2_GPIOL_23/MIPI0_PLL_REFCLK AB9 CLK_25M_3
BL2_GPIOL_24 AC9 UART_TXD
BL2_GPIOL_25_PLLIN1 AD9 CLK_100M_2
BL3_GPIOL_26_CLK24 AF9 QSE3_GPIO_1
BL3_GPIOL_27_CLK25 AG9 QSE3_GPIO_2
BL3_GPIOL_28 AG8 QSE3_GPIO_3
BL3_GPIOL_29 AE8 QSE3_GPIO_4
BL3_GPIOL_30 AF8 QSE3_GPIO_5
BL3_GPIOL_31 AG7 QSE3_GPIO_6
BL3_GPIOL_32_PLLIN1 AE7 QSE1_GPIO_5
BL3_GPIOL_34_PLLIN1 AH7 QSE1_GPIO_6
MIPI0_RXDP0 AE2 MIPI0_RXDP0
MIPI0_RXDN0 AE1 MIPI0_RXDN0
MIPI0_RXDP1 AF1 MIPI0_RXDP1
MIPI0_RXDN1 AG1 MIPI0_RXDN1
MIPI0_RXDP2 AE3 MIPI0_RXDP2
MIPI0_RXDN2 AF3 MIPI0_RXDN2
MIPI0_RXDP3 AE5 MIPI0_RXDP3
MIPI0_RXDN3 AF5 MIPI0_RXDN3
MIPI0_RXDP4 AE6 MIPI0_RXDP4
MIPI0_RXDN4 AF6 MIPI0_RXDN4
MIPI0_TXDP0 AH2 MIPI0_TXDP0
MIPI0_TXDN0 AH1 MIPI0_TXDN0
MIPI0_TXDP1 AG3 MIPI0_TXDP1
MIPI0_TXDN1 AG2 MIPI0_TXDN1
MIPI0_TXDP2 AG4 MIPI0_TXDP2
MIPI0_TXDN2 AF4 MIPI0_TXDN2
MIPI0_TXDP3 AH5 MIPI0_TXDP3
MIPI0_TXDN3 AH4 MIPI0_TXDN3
MIPI0_TXDP4 AH6 MIPI0_TXDP4
MIPI0_TXDN4 AG6 MIPI0_TXDN4
Ti375N1156
U10-4
BR0_GPIOR_140_PLLIN1 M10 ETH_CLK
BR0_GPIOR_141_PERST_Q0_N N10 PCIE_EDGE_PERSTn
BR0_GPIOR_142_CLK8 N12 ETH_RSTN
BR0_GPIOR_143_CLK9 P12 ETH_INT
BR0_GPIOR_144_PERST_Q2_N M12 PCIE_EDGE_WAKEn
BR1_GPIOR_145_PLLIN1 M11 CLK_33.33M
BR1_GPIOR_150 R11 CLOCK_I2C_SCL
BR1_GPIOR_151 N7 CLOCK_I2C_SDA
BR1_GPIOR_152 R10 SFP_A_TX_FAULT
BR1_GPIOR_153 P10 SFP_A_TX_DISABLE
BR1_GPIOR_154 N9 SFP_A_RX_LOS
BR3_GPIOR_165_PLLIN1 L6 SFP_A_RS0
BR3_GPIOR_166 M8 SFP_A_RS1
BR3_GPIOR_167 M7 SFP_A_MOD
BR3_GPIOR_168 K7 SFP_A_SCL
BR3_GPIOR_169 L8 SFP_A_SDA
BR3_GPIOR_170 K6 SFP_B_RS1
BR3_GPIOR_171 K8 SFP_B_RX_LOS
BR4_GPIOR_175 M9 SFP_B_RS0
BR4_GPIOR_176 L9 SFP_B_MOD
BR4_GPIOR_177 L11 SFP_B_SDA
BR4_GPIOR_178 K10 SFP_B_SCL
BR4_GPIOR_179 K11 SFP_B_TX_DISABLE
BR4_GPIOR_180 K12 SFP_B_TX_FAULT
BR4_TDO J6 TDO_FPGA
BR4_TMS J5 TMS_FPGA
BR4_TCK H5 TCK_FPGA
BR4_TDI G5 TDI_FT
Ti375N1156
QSE3
VCC_3V3
C109 10uF
C110 0.1uF
VCC_5V
C111 10uF
C112 0.1uF
P1
MIPI0_TXDP0 MIPI0_TXDN0 MIPI0_TXDP1 MIPI0_TXDN1 MIPI0_TXDP2 MIPI0_TXDN2 MIPI0_TXDP3 MIPI0_TXDN3 MIPI0_TXDP4 MIPI0_TXDN4
QSE3_GPIO_1 QSE3_GPIO_2
HS_MIPI_TXDP0 HS_MIPI_TXDN0 HS_MIPI_TXDP1 HS_MIPI_TXDN1 HS_MIPI_TXDP2 HS_MIPI_TXDN2 HS_MIPI_TXDP3 HS_MIPI_TXDN3 HS_MIPI_TXDP4 HS_MIPI_TXDN4
QSE3_GPIO_3 QSE3_GPIO_4 QSE3_GPIO_5 QSE3_GPIO_6
GND
QSE-020-01-L-D-A-K-TR
QSE2
VCC_3V3
C113 10uF
C114 0.1uF
VCC_5V
C115 10uF
C116 0.1uF
P2
MIPI0_RXDP0 MIPI0_RXDN0 MIPI0_RXDP1 MIPI0_RXDN1 MIPI0_RXDP2 MIPI0_RXDN2 MIPI0_RXDP3 MIPI0_RXDN3 MIPI0_RXDP4 MIPI0_RXDN4
QSE2_GPIO_1 QSE2_GPIO_2
HS_MIPI_RXDP0 HS_MIPI_RXDN0 HS_MIPI_RXDP1 HS_MIPI_RXDN1 HS_MIPI_RXDP2 HS_MIPI_RXDN2 HS_MIPI_RXDP3 HS_MIPI_RXDN3 HS_MIPI_RXDP4 HS_MIPI_RXDN4
QSE2_GPIO_3 QSE2_GPIO_4 QSE2_GPIO_5 QSE2_GPIO_6
GND
QSE-020-01-L-D-A-K-TR
VCC_3V3
L8 BLM15EG121SN1D
C117 0.1uF
C118 10uF
C119 0.1uF
Y1
R73 4.7K
VCC OUT OE GND
33.33M/CMOS/3225/3.3V
R72 33R
CLK_33.33M
UART_RXD UART_TXD [5]
QSE1_GPIO_5 QSE1_GPIO_6 CLK_25M_3 CLK_100M_2 [7]
FX10_P0SCL FX10_P0SDA FX10_P1SCL FX10_P1SDA [15]
HS_MIPI_TXDP0 HS_MIPI_TXDN0 HS_MIPI_TXDP1 HS_MIPI_TXDN1 HS_MIPI_TXDP2 HS_MIPI_TXDN2 HS_MIPI_TXDP3 HS_MIPI_TXDN3 HS_MIPI_TXDP4 HS_MIPI_TXDN4 [5]
HS_MIPI_RXDP0 HS_MIPI_RXDN0 HS_MIPI_RXDP1 HS_MIPI_RXDN1 HS_MIPI_RXDP2 HS_MIPI_RXDN2 HS_MIPI_RXDP3 HS_MIPI_RXDN3 HS_MIPI_RXDP4 HS_MIPI_RXDN4 [5]
PCIE_EDGE_PERSTn PCIE_EDGE_WAKEn [13]
SFP_A_TX_FAULT SFP_A_TX_DISABLE SFP_A_RX_LOS SFP_A_RS0 SFP_A_RS1 SFP_A_MOD SFP_A_SCL SFP_A_SDA SFP_B_TX_FAULT SFP_B_TX_DISABLE SFP_B_RX_LOS SFP_B_RS0 SFP_B_RS1 SFP_B_MOD SFP_B_SCL SFP_B_SDA [14]
ETH_INT ETH_RSTN ETH_CLK [18]
TDO_FPGA TCK_FPGA TDI_FT TMS_FPGA [15] [17]
CLOCK_I2C_SCL CLOCK_I2C_SDA [10]
FMCA_SDA FMCA_SCL [15]
Efinix.Inc
20400 Stevens Creek Boulevard,Suite 200
Cupertino,CA 95014
Copyright (C) 2024 All Rights Reserved
Title
FPGA HVIO1
Size A3
Document Number
Ti375N1156 DEVELOPMENT BOARD
Rev A1
Date: Thursday, October 10, 2024
Sheet 6 of 19


U10-5
TL0_GPIOL_35 AF25 QSE0_GPIO_1
TL0_GPIOL_36 AF24 QSE0_GPIO_2
TL0_GPIOL_37 AE24 QSE0_GPIO_3
TL0_GPIOL_38 AE23 QSE0_GPIO_4
TL0_GPIOL_39 AF22 QSE0_GPIO_5
TL0_GPIOL_40 AE22 QSE0_GPIO_6
TL0_GPIOL_41 AD22 QSE1_GPIO_1
TL0_GPIOL_42 AC22 QSE1_GPIO_2
TL0_GPIOL_43 AB22 QSE1_GPIO_3
TL0_GPIOL_44 AA22 QSE1_GPIO_4
TL0_GPIOL_45 AH27 SDIO_D2
TL1_GPIOL_46/MIPI1_PLL_REFCLK AH28 CLK_25M_1
TL0_GPIOL_52_PLLIN1 AH29 CLK_100M_0
TL5_GPIOL_79_CLK28 AE26 SDIO_D1
TL5_GPIOL_80_CLK29 AF28 TFCard_Detect
TL5_GPIOL_84 AF27 SDIO_D0
TL5_GPIOL_85_PLLIN1 AG29 SDIO_CMD
TL5_GPIOL_86 AF26 SDIO_CK
TL5_GPIOL_87_PLLIN1 AG26 SDIO_D3
MIPI1_RXDP0 AF34 MIPI1_RXDP0
MIPI1_RXDN0 AG34 MIPI1_RXDN0
MIPI1_RXDP1 AG33 MIPI1_RXDP1
MIPI1_RXDN1 AH33 MIPI1_RXDN1
MIPI1_RXDP2 AF32 MIPI1_RXDP2
MIPI1_RXDN2 AG32 MIPI1_RXDN2
MIPI1_RXDP3 AH32 MIPI1_RXDP3
MIPI1_RXDN3 AH31 MIPI1_RXDN3
MIPI1_RXDP4 AG30 MIPI1_RXDP4
MIPI1_RXDN4 AH30 MIPI1_RXDN4
MIPI1_TXDP0 AJ34 MIPI1_TXDP0
MIPI1_TXDN0 AJ33 MIPI1_TXDN0
MIPI1_TXDP1 AK33 MIPI1_TXDP1
MIPI1_TXDN1 AK32 MIPI1_TXDN1
MIPI1_TXDP2 AJ31 MIPI1_TXDP2
MIPI1_TXDN2 AK31 MIPI1_TXDN2
MIPI1_TXDP3 AL34 MIPI1_TXDP3
MIPI1_TXDN3 AL33 MIPI1_TXDN3
MIPI1_TXDP4 AL32 MIPI1_TXDP4
MIPI1_TXDN4 AL31 MIPI1_TXDN4
Ti375N1156
U10-6
TR1_GPIOR_88_PLLIN1 M23 CLK_25M_2
TR0_GPIOR_89 N24 FMCA_C2M_PG
TR0_GPIOR_90 M24 FMCA_PRSNT
TR0_GPIOR_91 M22 RSICV_TMS
TR0_GPIOR_92 N22 RSICV_TDI
TR0_GPIOR_93_PLLIN1 N28 CLK_74.25M
TR1_GPIOR_94 L26 RSICV_TDO
TR1_GPIOR_95_CLK12 N26 TEMP
TR1_GPIOR_96_CLK13 M27 RSICV_TCK
TR1_GPIOR_97/MIPI2_PLL_REFCLK N27 CLK_25M_0
TR1_GPIOR_98 M25 FMCA_GA0
TR1_GPIOR_99 M28 FMCA_GA1
TR1_GPIOR_100 N25 FMCB_C2M_PG
TR2_GPIOR_101_PLLIN1 L25 CLK_100M_1
TR2_GPIOR_102 K24 FMCB_PRSNT
TR2_GPIOR_103 L22 FMCB_SDA
TR2_GPIOR_106 L24 FMCB_SCL
TR2_GPIOR_107 L23 FMCB_GA0
TR2_GPIOR_108 K26 FMCB_GA1
TR3_GPIOR_109 K27 SFP_C_RS0
TR3_GPIOR_110 L27 SFP_C_RS1
TR3_GPIOR_111 J25 SFP_C_SCL
TR3_GPIOR_112 J24 SFP_C_MOD
TR3_GPIOR_113 K28 SFP_C_RX_LOS
TR3_GPIOR_114 J28 SFP_D_TX_FAULT
TR3_GPIOR_115 H28 SFP_D_TX_DISABLE
TR3_GPIOR_116 G29 SFP_D_SDA
TR5_GPIOR_125 H24 SFP_C_SDA
TR5_GPIOR_126 H25 SFP_C_TX_FAULT
TR5_GPIOR_128 G24 SFP_C_TX_DISABLE
TR5_GPIOR_129 H26 SFP_D_RS1
TR5_GPIOR_131 H27 SFP_D_RS0
TR5_GPIOR_132 G26 SFP_D_RX_LOS
TR5_GPIOR_133 G27 SFP_D_MOD
TR5_GPIOR_134 G28 SFP_D_SCL
MIPI2_RXDP0 L32 MIPI2_RXDP0
MIPI2_RXDN0 K32 MIPI2_RXDN0
MIPI2_RXDP1 K34 MIPI2_RXDP1
MIPI2_RXDN1 K33 MIPI2_RXDN1
MIPI2_RXDP2 J34 MIPI2_RXDP2
MIPI2_RXDN2 J33 MIPI2_RXDN2
MIPI2_RXDP3 H33 MIPI2_RXDP3
MIPI2_RXDN3 H32 MIPI2_RXDN3
MIPI2_RXDP4 G34 MIPI2_RXDP4
MIPI2_RXDN4 G33 MIPI2_RXDN4
MIPI2_TXDP0 H31 MIPI2_TXDP0
MIPI2_TXDN0 H30 MIPI2_TXDN0
MIPI2_TXDP1 G31 MIPI2_TXDP1
MIPI2_TXDN1 G30 MIPI2_TXDN1
MIPI2_TXDP2 F34 MIPI2_TXDP2
MIPI2_TXDN2 F33 MIPI2_TXDN2
MIPI2_TXDP3 E34 MIPI2_TXDP3
MIPI2_TXDN3 D34 MIPI2_TXDN3
MIPI2_TXDP4 C34 MIPI2_TXDP4
MIPI2_TXDN4 B34 MIPI2_TXDN4
Ti375N1156
QSE1
VCC_3V3
C120 10uF
C121 0.1uF
VCC_5V
C122 10uF
C123 0.1uF
P3
MIPI1_TXDP0 MIPI1_TXDN0 MIPI1_TXDP1 MIPI1_TXDN1 MIPI1_TXDP2 MIPI1_TXDN2 MIPI1_TXDP3 MIPI1_TXDN3 MIPI1_TXDP4 MIPI1_TXDN4 QSE1_GPIO_1 QSE1_GPIO_2
MIPI2_TXDP0 MIPI2_TXDN0 MIPI2_TXDP1 MIPI2_TXDN1 MIPI2_TXDP2 MIPI2_TXDN2 MIPI2_TXDP3 MIPI2_TXDN3 MIPI2_TXDP4 MIPI2_TXDN4 QSE1_GPIO_3 QSE1_GPIO_4 QSE1_GPIO_5 QSE1_GPIO_6
GND G1 GND G2 GND G3 GND G4
QSE-020-01-L-D-A-K-TR
QSE0
VCC_3V3
C124 10uF
C125 0.1uF
VCC_5V
C127 10uF
C128 0.1uF
P4
MIPI1_RXDP0 MIPI1_RXDN0 MIPI1_RXDP1 MIPI1_RXDN1 MIPI1_RXDP2 MIPI1_RXDN2 MIPI1_RXDP3 MIPI1_RXDN3 MIPI1_RXDP4 MIPI1_RXDN4 QSE0_GPIO_1 QSE0_GPIO_2
MIPI2_RXDP0 MIPI2_RXDN0 MIPI2_RXDP1 MIPI2_RXDN1 MIPI2_RXDP2 MIPI2_RXDN2 MIPI2_RXDP3 MIPI2_RXDN3 MIPI2_RXDP4 MIPI2_RXDN4 QSE0_GPIO_3 QSE0_GPIO_4 QSE0_GPIO_5 QSE0_GPIO_6
GND G1 GND G2 GND G3 GND G4
QSE-020-01-L-D-A-K-TR
QSE1_GPIO_5 [6]
QSE1_GPIO_6 [6]
SFP_C_TX_FAULT [14]
SFP_C_TX_DISABLE [14]
SFP_C_RX_LOS [14]
SFP_C_RS0 [14]
SFP_C_RS1 [14]
SFP_C_MOD [14]
SFP_C_SCL [14]
SFP_C_SDA [14]
SFP_D_TX_FAULT [14]
SFP_D_TX_DISABLE [14]
SFP_D_RX_LOS [14]
SFP_D_RS0 [14]
SFP_D_RS1 [14]
SFP_D_MOD [14]
SFP_D_SCL [14]
SFP_D_SDA [14]
CLK_25M_3 [6]
CLK_100M_2 [6]
FMCA_C2M_PG [15]
FMCA_PRSNT [15]
FMCA_GA0 [15]
FMCA_GA1 [15]
FMCB_C2M_PG [16]
FMCB_PRSNT [16]
FMCB_SDA [16]
FMCB_SCL [16]
FMCB_GA0 [16]
FMCB_GA1 [16]
RSICV_TCK [17]
RSICV_TDI [17]
RSICV_TDO [17]
RSICV_TMS [17]
VCC_3V3
C126 0.1uF
R80 4.7K R81 4.7K R82 4.7K R83 4.7K R84 4.7K R85 4.7K
TF-01A
SDIO_D2 SDIO_D3 SDIO_CMD SDIO_CK SDIO_D0 SDIO_D1 TFCard_Detect
DAT2 CD/DAT3 CMD VDD CLK VSS DAT0 DAT1 CD
GND_1 GND_2 GND_3 GND_4
J4
TF-01A
VCC_3V3
VCC_3V3_CLK0
L10 BLM15EG121SN1D
C129 0.1uF C131 10uF C132 0.1uF
Y3
R86 4.7K
VCC OUT OE GND
CLK_25M
25M/CMOS/3225/3.3V
CLK_25M
U17
CLKIN 1G VDD GND Y0 Y1 Y2 Y3
R90 4.7K
R88 33R CLK_25M_0
R91 33R CLK_25M_1
R94 33R CLK_25M_2
R96 33R CLK_25M_3
C135 10uF C136 0.1uF
LMK1C1104PWR
VCC_3V3
VCC_3V3_CLK1
L9 BLM15EG121SN1D
C133 0.1uF C134 10uF C130 0.1uF
Y2
R87 4.7K
VCC OUT OE GND
CLK_100M
100M/CMOS/3225/3.3V
CLK_100M
U16
CLKIN 1G VDD GND Y0 Y1 Y2 Y3
R92 4.7K
R89 33R CLK_100M_0
R93 33R CLK_100M_1
R95 33R CLK_100M_2
C137 10uF C138 0.1uF
LMK1C1104PWR
VCC_3V3
L11 BLM15EG121SN1D
C139 0.1uF C140 10uF C141 0.1uF
Y4
R98 4.7K
VCC OUT OE GND
CLK_74.25M
74.25M/CMOS/3225/3.3V
TEMP
R97 4.7K
U18
DQ NC NC1 VSS VDD NC4 NC3 NC2
DS18B20U
C142 0.1uF
Efinix.Inc.
20400 Stevens Creek Boulevard,Suite 200
Cupertino,CA 95014
Copyright (C) 2024 All Rights Reserved
Title
FPGA HVIO2
Size A3
Document Number
Ti375N1156 DEVELOPMENT BOARD
Rev A1
Date: Thursday, October 10, 2024
Sheet 7 of 19

FPGA DDR0 LPDDR4/4X INTERFACE

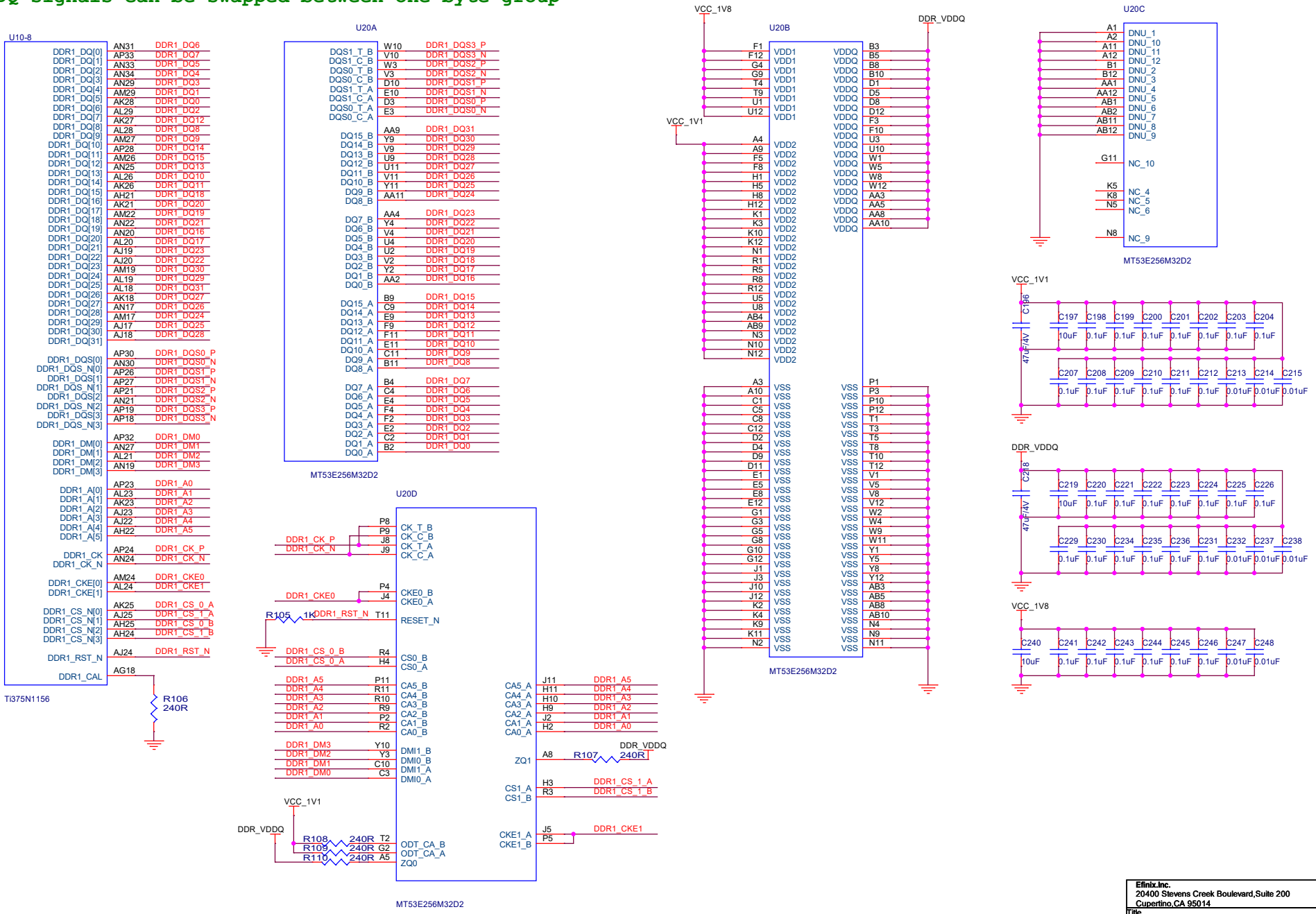
DQ signals can be swapped between one byte group



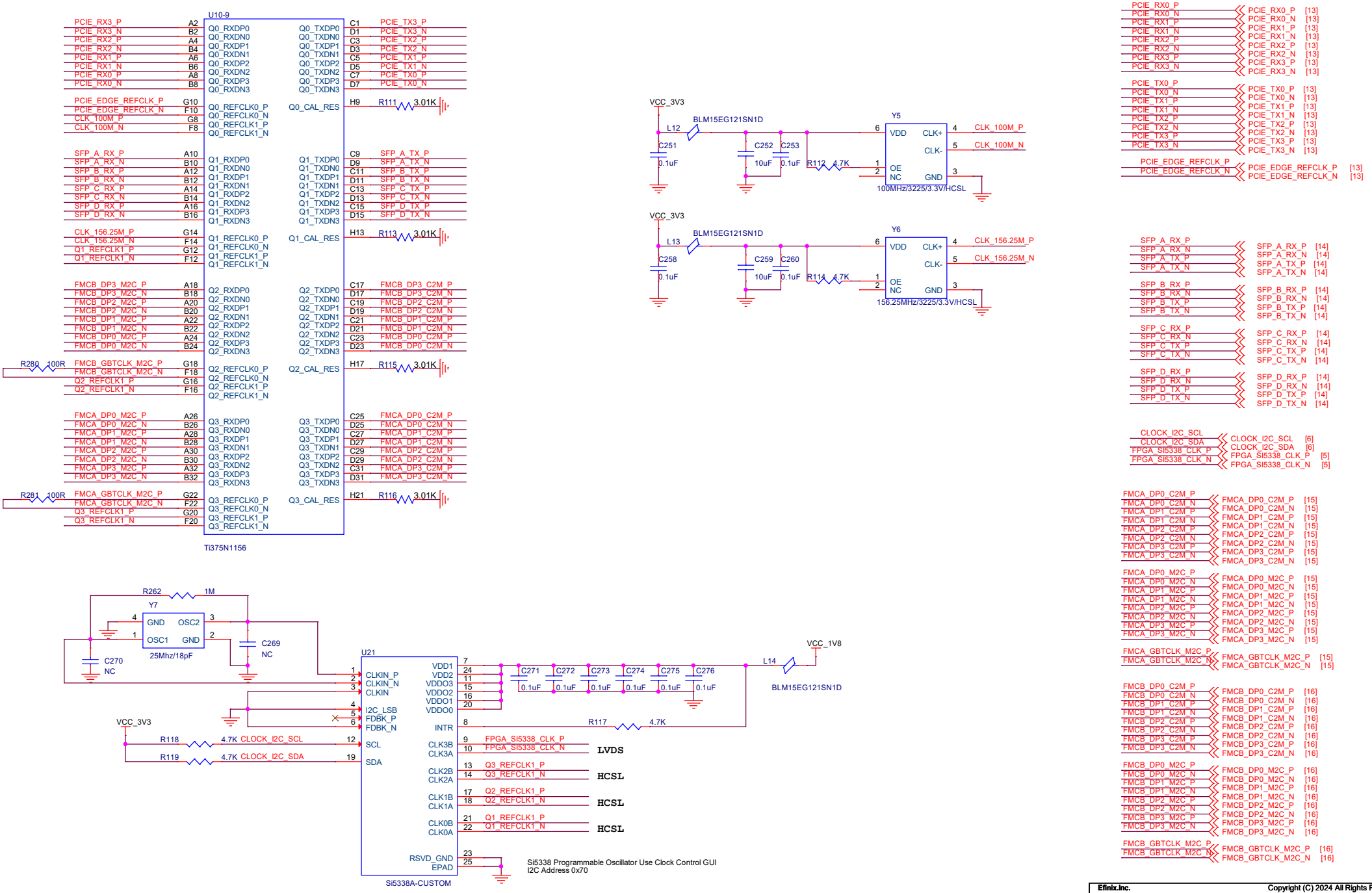
Efinix.Inc. 20400 Stevens Creek Boulevard,Suite 200 Cupertino,CA 95014			Copyright (C) 2024 All Rights Reserved
Title: FPGA LPDDR4/X-0			
Size: A3	Document Number: Ti375N1156 DEVELOPMENT BOARD		Rev: A1
Date: Thursday, August 22, 2024	Sheet 8 of 19		

FPGA DDR1 LPDDR4/4X INTERFACE

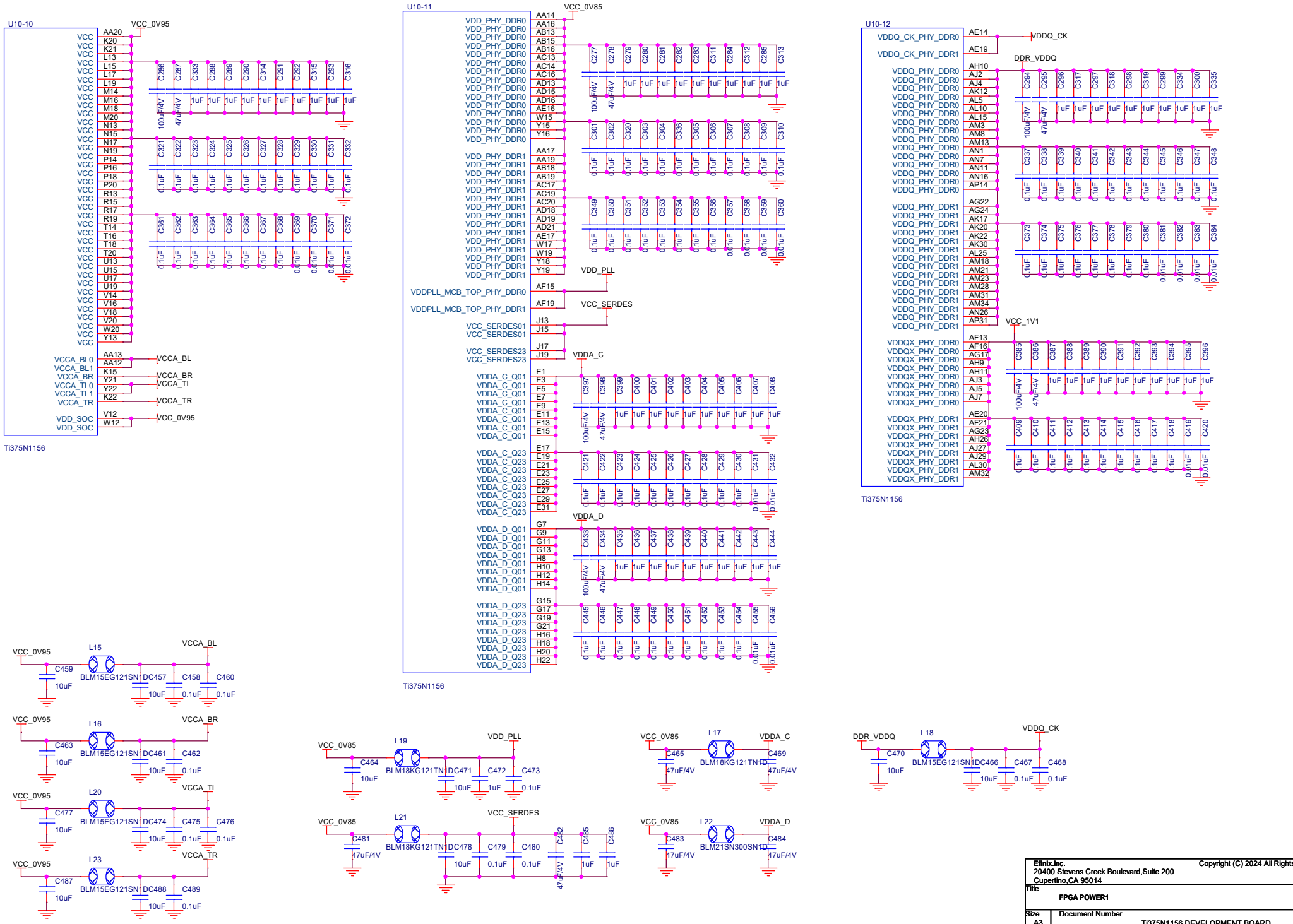
DQ signals can be swapped between one byte group

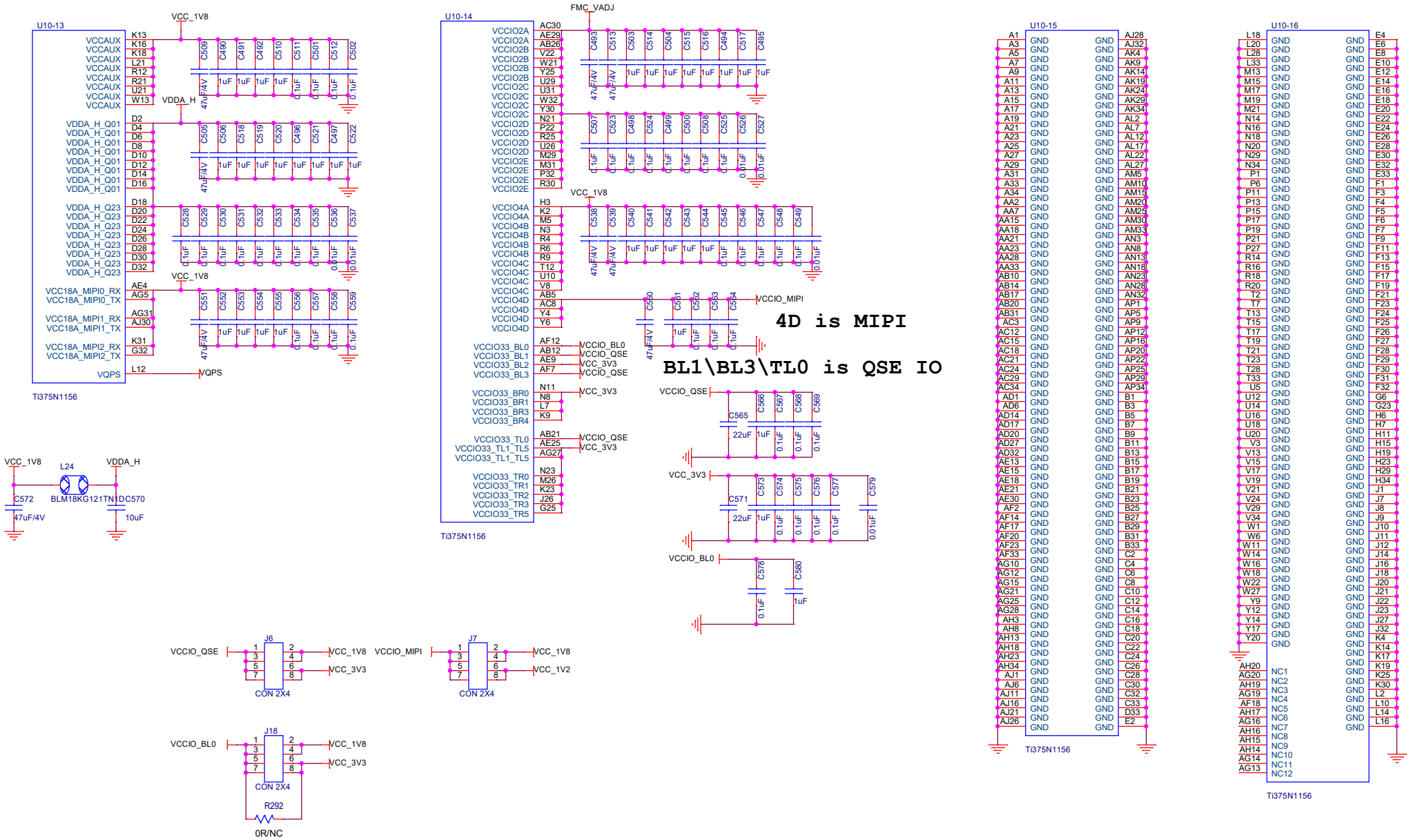


Title	FPGA LPDDR4/X-1	
Size A3	Document Number: Ti375N1156 DEVELOPMENT BOARD	Rev A1
Date: Thursday, August 22, 2024	Sheet 9 of 19	



Title	FPGA SERDES	
Size A3	Document Number: Ti375N1156 DEVELOPMENT BOARD	Rev A1
Date: Thursday, August 22, 2024	Sheet 10 of 19	

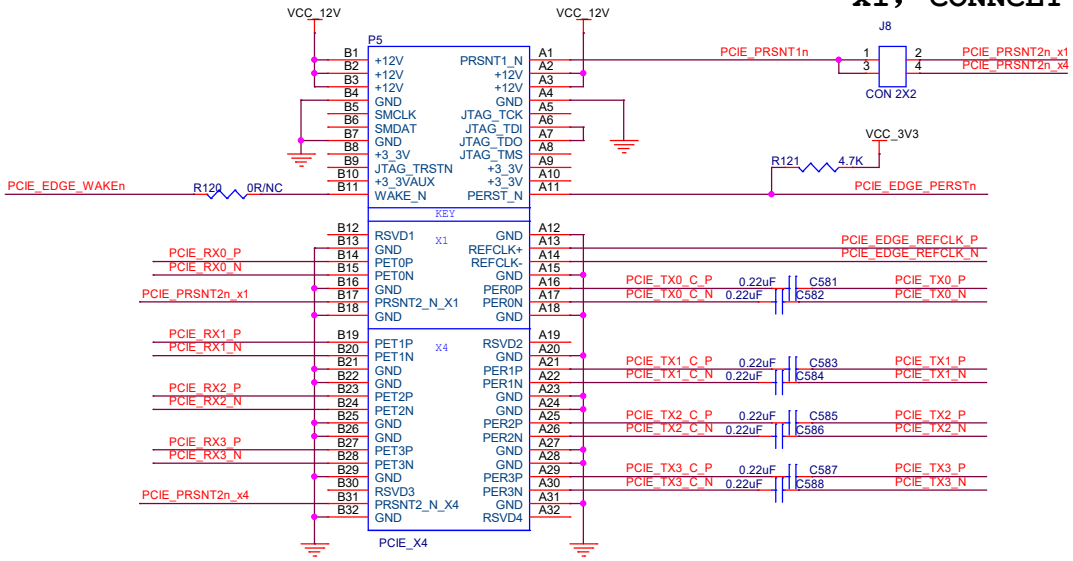

U10-10
VCC_0V95
VCCA_BL
VCCA_BR
VCCA_TL
VCCA_TR
Ti375N1156
U10-11
VCC_0V85
VDD_PLL
VCC_SERDES
VDDA_C
VDDA_D
Ti375N1156
U10-12
VDDQ_CK
DDR_VDDQ
VCC_1V1
Ti375N1156
L15
L16
L17
L18
L19
L20
L21
L22
L23
BLM15EG121SN1D
BLM18KG121TN1D
BLM21SN300SN1D
Efinix.Inc.
20400 Stevens Creek Boulevard,Suite 200
Cupertino,CA 95014
Copyright (C) 2024 All Rights Reserved
Title
FPGA POWER1
Size A3
Document Number
Ti375N1156 DEVELOPMENT BOARD
Rev A1
Date: Thursday, August 22, 2024
Sheet 11 of 19

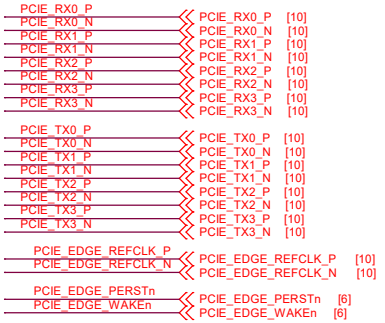


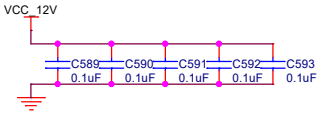
Efinix.Inc. 20400 Stevens Creek Boulevard,Suite 200 Cupertino,CA 95014			Copyright (C) 2024 All Rights Reserved
Title: FPGA POWER2			
Size: A3	Document Number: Ti375N1156 DEVELOPMENT BOARD		Rev: A1
Date: Thursday, August 22, 2024	Sheet 12 of 19		

PCI Express Edge Connector

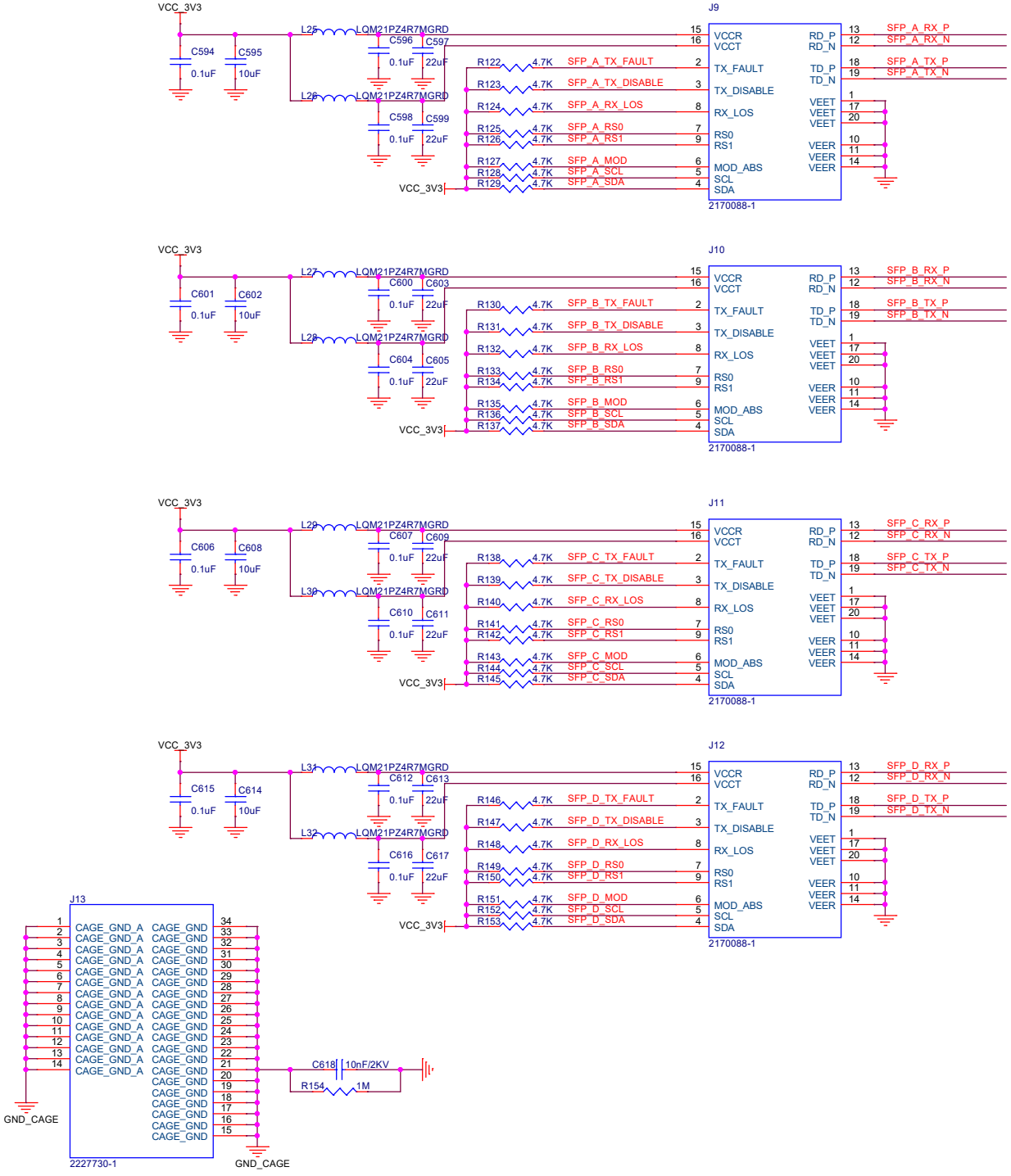
x1, CONNCET 1/2; x4, CONNECT 3/4







Efinix.Inc. 20400 Stevens Creek Boulevard,Suite 200 Cupertino,CA 95014	Copyright (C) 2024 All Rights Reserved	
Title: PCIE EDGE		
Size: A3	Document Number: Ti375N1156 DEVELOPMENT BOARD	Rev: A1
Date: Thursday, August 22, 2024	Sheet 13 of 19	



Efinix.Inc. 20400 Stevens Creek Boulevard,Suite 200 Cupertino,CA 95014	Copyright (C) 2024 All Rights Reserved	
Title: SFP+ Interface		
Size: A3	Document Number: Ti375N1156 DEVELOPMENT BOARD	Rev: A1
Date: Thursday, August 22, 2024	Sheet 14 of 19	

LVDS P/N NEED TO BE MATCHED BY +/-10ps WITH COMPENSATION ON BOARD FOR PACKAGE DELAYS.

J14A

FMCA_LA0_CC_P G6
FMCA_LA0_CC_N G7
FMCA_LA1_CC_P D8
FMCA_LA1_CC_N D9
FMCA_LA2_P H7
FMCA_LA2_N H8
FMCA_LA3_P G9
FMCA_LA3_N G10
FMCA_LA4_P H10
FMCA_LA4_N H11
FMCA_LA5_P D11
FMCA_LA5_N D12
FMCA_LA6_P C10
FMCA_LA6_N C11
FMCA_LA7_P H13
FMCA_LA7_N H14
FMCA_LA8_P G12
FMCA_LA8_N G13
FMCA_LA9_P D14
FMCA_LA9_N D15
FMCA_LA10_P C14
FMCA_LA10_N C15
FMCA_LA11_P H16
FMCA_LA11_N H17
FMCA_LA12_P G15
FMCA_LA12_N G16
FMCA_LA13_P D17
FMCA_LA13_N D18
FMCA_LA14_P C18
FMCA_LA14_N C19
FMCA_LA15_P H19
FMCA_LA15_N H20

LA_P0_CC LA_N0_CC LA_P1_CC LA_N1_CC LA_P2 LA_N2 LA_P3 LA_N3 LA_P4 LA_N4 LA_P5 LA_N5 LA_P6 LA_N6 LA_P7 LA_N7 LA_P8 LA_N8 LA_P9 LA_N9 LA_P10 LA_N10 LA_P11 LA_N11 LA_P12 LA_N12 LA_P13 LA_N13 LA_P14 LA_N14 LA_P15 LA_N15

LA_P16 LA_N16 LA_P17 LA_N17 LA_P18_CC LA_N18_CC LA_P19 LA_N19 LA_P20 LA_N20 LA_P21 LA_N21 LA_P22 LA_N22 LA_P23 LA_N23 LA_P24 LA_N24 LA_P25 LA_N25 LA_P26 LA_N26 LA_P27 LA_N27 LA_P28 LA_N28 LA_P29 LA_N29 LA_P30 LA_N30 LA_P31 LA_N31 LA_P32 LA_N32 LA_P33 LA_N33

G18 FMCA_LA16_P
G19 FMCA_LA16_N
D20 FMCA_LA17_P_T
D21 FMCA_LA17_N_T
C22 FMCA_LA18_CC_P_T
C23 FMCA_LA18_CC_N_T
H22 FMCA_LA19_P_T
H23 FMCA_LA19_N_T
G21 FMCA_LA20_P_T
G22 FMCA_LA20_N_T
H25 FMCA_LA21_P_T
H26 FMCA_LA21_N_T
G24 FMCA_LA22_P
G25 FMCA_LA22_N
D23 FMCA_LA23_P
D24 FMCA_LA23_N
H28 FMCA_LA24_P_T
H29 FMCA_LA24_N_T
G27 FMCA_LA25_P
G28 FMCA_LA25_N
D26 FMCA_LA26_P
D27 FMCA_LA26_N
C26 FMCA_LA27_P
C27 FMCA_LA27_N
H31 FMCA_LA28_P
H32 FMCA_LA28_N
G30 FMCA_LA29_P
G31 FMCA_LA29_N

H34 R223 33R/NC FX10_CDI2
H35 R224 33R/NC FX10_CDI3
G33 R225 33R/NC FX10_CDI0
G34 R226 33R/NC FX10_CDI1
H37 R227 33R/NC FX10_CDI6
H38 R228 33R/NC FX10_CDI7
G36 R229 33R/NC FX10_CDI4
G37 R230 33R/NC FX10_CDI5

ASP-134486-01

J14B

F4 F5 E2 E3 K7 K8 J6 J7 F7 F8 E6 E7 K10 K11 J9 J10 F10 F11 E9 E10 K13 K14 J12 J13

HA_P0_CC HA_N0_CC HA_P1_CC HA_N1_CC HA_P2 HA_N2 HA_P3 HA_N3 HA_P4 HA_N4 HA_P5 HA_N5 HA_P6 HA_N6 HA_P7 HA_N7 HA_P8 HA_N8 HA_P9 HA_N9 HA_P10 HA_N10 HA_P11 HA_N11

HA_P12 HA_N12 HA_P13 HA_N13 HA_P14 HA_N14 HA_P15 HA_N15 HA_P16 HA_N16 HA_P17_CC HA_N17_CC HA_P18 HA_N18 HA_P19 HA_N19 HA_P20 HA_N20 HA_P21 HA_N21 HA_P22 HA_N22 HA_P23 HA_N23

F13 F14 E12 E13 J15 J16 F16 F17 E15 E16 K16 K17 J18 J19 F19 F20 E18 E19 K19 K20 J21 J22 K22 K23

ASP-134486-01

J14C

K25 K26 J24 J25 F22 F23 E21 E22 F25 F26 E24 E25 K28 K29 J27 J28 F28 F29 E27 E28 K31 K32

HB_P0_CC HB_N0_CC HB_P1 HB_N1 HB_P2 HB_N2 HB_P3 HB_N3 HB_P4 HB_N4 HB_P5 HB_N5 HB_P6_CC HB_N6_CC HB_P7 HB_N7 HB_P8 HB_N8 HB_P9 HB_N9 HB_P10 HB_N10

HB_P11 HB_N11 HB_P12 HB_N12 HB_P13 HB_N13 HB_P14 HB_N14 HB_P15 HB_N15 HB_P16_CC HB_N16_CC HB_P17 HB_N17 HB_P18 HB_N18 HB_P19 HB_N19 HB_P20 HB_N20 HB_P21 HB_N21

J30 J31 F31 F32 E30 E31 K34 K35 J33 J34 F34 F35 K37 K38 J36 J37 E33 E34 F37 F38 E36 E37

ASP-134486-01

J14F

E20 E23 E26 E29 E38 E32 E35 E40 K2 K3 K6 K9 K12 K15 K18 K21 K24 K27 K30 K33 K36 K39 J1 J4 J5 J8 J11 J14 J17 J20 J23 J26 J29 J32 J35 J38 J40 H3 H6 H9 H12 H15 H18 H21 H24 H27 H30 H33 H36 H39 D2 D3 D6 D7 D10 D13 D16 D19 D22 D25 D28 D37 D39 C1 C4 C5 C8 C9 C12 C13 C16 C17 C20 C21 C24 C25 C28 C29 C32 C33

GND

E17 E14 E11 E8 E5 E4 E1 F39 F36 F33 F30 F27 F24 F21 F18 F15 F12 F9 F6 F3 F2 G40 G38 G35 G32 G29 G26 G23 G20 G17 G14 G11 G8 G5 G4 G1 A40 A37 A36 A33 A32 A29 A28 A25 A24 A21 A20 A17 A16 A13 A12 A9 A8 A5 A4 A1 B39 B38 B35 B34 B31 B30 B27 B26 B23 B22 B19 B18 B15 B14 B11 B10 B7 B6 B3 B2 C40 C38 C36

ASP-134486-01

FMCA_LA18_CC_P R237 0R FMCA_LA18_CC_P_T R221 33R/NC FX10_CCK
FMCA_LA18_CC_N R236 0R FMCA_LA18_CC_N_T R222 0R/NC FX10_SSL_N
FMCA_LA19_P R235 0R FMCA_LA19_P_T R216 0R/NC FX10_SSL_N
FMCA_LA19_N R234 0R FMCA_LA19_N_T R217 0R/NC FX10_SSU_N
FMCA_LA21_P R233 0R FMCA_LA21_P_T R218 0R/NC FX10_CDONE
FMCA_LA21_N R232 0R FMCA_LA21_N_T R219 0R/NC FX10_CRESET_N
FMCA_LA24_N R231 0R FMCA_LA24_N_T R220 0R/NC FX10_CSI
FMCA_LA24_P R238 0R FMCA_LA24_P_T
FMCA_LA17_P R241 0R FMCA_LA17_P_T R243 0R/NC FX10_P0SDA
FMCA_LA17_N R240 0R FMCA_LA17_N_T R244 0R/NC FX10_P0SCL
FMCA_LA20_P R239 0R FMCA_LA20_P_T R245 0R/NC FX10_P1SDA
FMCA_LA20_N R242 0R FMCA_LA20_N_T R246 0R/NC FX10_P1SCL

FX10_CSI R251 1K/NC
FX10_SSL_N R252 1K/NC

J14E

FMC_VADJ

VCC_3V3 D32 D40 C39 D36 D38
VCC_12V C35 C37

3P3VAUX 3P3V 3P3V 3P3V 3P3V 12P0V 12P0V

VADJ VADJ VADJ VADJ E39 F40 G39 H40
VIO_B_M2C VIO_B_M2C K40 J39
VREF_B_M2C VREF_A_M2C K1 H1

PG_M2C only on High Pincount versions.

VCC_3V3 R155 10K FMCA_C2M_PG D1
R157 10K FMCA_PRSNT H2
VCCIO_BL0 R159 10K FMCA_SDA C31
R160 10K FMCA_SCL C30

PG_C2M PRSNT_M2C_L SDA SCL

PG_M2C F1 R156 10K VCC_3V3
D34 R158 10K
TRST D33 TMS_FMCA
TMS D31 TDO_FMCA
TDO D30 TDO_FPGA
TDI D29 TCK_FMCA
TCK

K4 CLK2_BIDIR_P
K5 CLK2_BIDIR_N
J2 CLK3_BIDIR_P
J3 CLK3_BIDIR_N
B1 CLK_DIR

CLK0_M2C_P H4 FMCA_CLK0_M2C_P
CLK0_M2C_N H5 FMCA_CLK0_M2C_N
CLK1_M2C_P G2 FMCA_CLK1_M2C_P
CLK1_M2C_N G3 FMCA_CLK1_M2C_N

FMCA_GA0 C34
FMCA_GA1 D35
GA0 GA1
RES0 B40

ASP-134486-01

J14D

FMCA_DP0_C2M_P C2
FMCA_DP0_C2M_N C3
FMCA_DP1_C2M_P A22
FMCA_DP1_C2M_N A23
FMCA_DP2_C2M_P A26
FMCA_DP2_C2M_N A27
FMCA_DP3_C2M_P A30
FMCA_DP3_C2M_N A31

DP0_C2M_P DP0_C2M_N DP1_C2M_P DP1_C2M_N DP2_C2M_P DP2_C2M_N DP3_C2M_P DP3_C2M_N

DP0_M2C_P C6 FMCA_DP0_M2C_P
DP0_M2C_N C7 FMCA_DP0_M2C_N
DP1_M2C_P A2 FMCA_DP1_M2C_P
DP1_M2C_N A3 FMCA_DP1_M2C_N
DP2_M2C_P A6 FMCA_DP2_M2C_P
DP2_M2C_N A7 FMCA_DP2_M2C_N
DP3_M2C_P A10 FMCA_DP3_M2C_P
DP3_M2C_N A11 FMCA_DP3_M2C_N

A34 A35 A14 A15

A38 A39 B36 B37 B32 B33 B28 B29 B24 B25

DP5_C2M_P DP5_C2M_N DP6_C2M_P DP6_C2M_N DP7_C2M_P DP7_C2M_N DP8_C2M_P DP8_C2M_N DP9_C2M_P DP9_C2M_N

DP5_M2C_P A18 DP5_M2C_N A19 DP6_M2C_P B16 DP6_M2C_N B17 DP7_M2C_P B12 DP7_M2C_N B13 DP8_M2C_P B8 DP8_M2C_N B9 DP9_M2C_P B4 DP9_M2C_N B5

GBTCLK0_M2C_P D4 FMCA_GBTCLK_M2C_P
GBTCLK0_M2C_N D5 FMCA_GBTCLK_M2C_N
GBTCLK1_M2C_P B20
GBTCLK1_M2C_N B21

ASP-134486-01

TDO_FPGA 1
TDO_FMCA 2
3

U22
S VCC 5
D
GND SEL 4 FMCA_PRSNT
RS2166XC5

VCC_3V3 C619 0.1uF

VCC_12V C620 22uF/25V C621 0.1uF
VCC_3V3 C622 22uF C623 0.1uF
FMC_VADJ C624 22uF C625 0.1uF

FX10_CDI0 FPGA_CDI0 [5]
FX10_CDI1 FPGA_CDI1 [5]
FX10_CDI2 FPGA_CDI2 [5]
FX10_CDI3 FPGA_CDI3 [5]
FX10_CDI4 FPGA_CDI4 [5]
FX10_CDI5 FPGA_CDI5 [5]
FX10_CDI6 FPGA_CDI6 [5]
FX10_CDI7 FPGA_CDI7 [5]
FX10_CCK FPGA_CCK [5]
FX10_SSL_N FPGA_SSL [5]
FX10_SSU_N FPGA_SSU [5]
FX10_CDONE FPGA_CDONE [5]
FX10_CRESET_N FPGA_CRESET_N [5]
FX10_CSI FPGA_CSI [5]
FX10_P0SCL FX10_P0SCL [6]
FX10_P0SDA FX10_P0SDA [6]
FX10_P1SCL FX10_P1SCL [6]
FX10_P1SDA FX10_P1SDA [6]

FMCA_LA0_CC_P FMCA_LA0_CC_P [4]
FMCA_LA0_CC_N FMCA_LA0_CC_N [4]
FMCA_LA1_CC_P FMCA_LA1_CC_P [4]
FMCA_LA1_CC_N FMCA_LA1_CC_N [4]
FMCA_LA2_P FMCA_LA2_P [4]
FMCA_LA2_N FMCA_LA2_N [4]
FMCA_LA3_P FMCA_LA3_P [4]
FMCA_LA3_N FMCA_LA3_N [4]
FMCA_LA4_P FMCA_LA4_P [4]
FMCA_LA4_N FMCA_LA4_N [4]
FMCA_LA5_P FMCA_LA5_P [4]
FMCA_LA5_N FMCA_LA5_N [4]
FMCA_LA6_P FMCA_LA6_P [4]
FMCA_LA6_N FMCA_LA6_N [4]
FMCA_LA7_P FMCA_LA7_P [4]
FMCA_LA7_N FMCA_LA7_N [4]
FMCA_LA8_P FMCA_LA8_P [4]
FMCA_LA8_N FMCA_LA8_N [4]
FMCA_LA9_P FMCA_LA9_P [4]
FMCA_LA9_N FMCA_LA9_N [4]
FMCA_LA10_P FMCA_LA10_P [4]
FMCA_LA10_N FMCA_LA10_N [4]
FMCA_LA11_P FMCA_LA11_P [4]
FMCA_LA11_N FMCA_LA11_N [4]
FMCA_LA12_P FMCA_LA12_P [4]
FMCA_LA12_N FMCA_LA12_N [4]
FMCA_LA13_P FMCA_LA13_P [4]
FMCA_LA13_N FMCA_LA13_N [4]
FMCA_LA14_P FMCA_LA14_P [4]
FMCA_LA14_N FMCA_LA14_N [4]
FMCA_LA15_P FMCA_LA15_P [4]
FMCA_LA15_N FMCA_LA15_N [4]
FMCA_LA16_P FMCA_LA16_P [4]
FMCA_LA16_N FMCA_LA16_N [4]
FMCA_LA17_P FMCA_LA17_P [4]
FMCA_LA17_N FMCA_LA17_N [4]
FMCA_LA18_CC_P FMCA_LA18_CC_P [4]
FMCA_LA18_CC_N FMCA_LA18_CC_N [4]
FMCA_LA19_P FMCA_LA19_P [4]
FMCA_LA19_N FMCA_LA19_N [4]
FMCA_LA20_P FMCA_LA20_P [4]
FMCA_LA20_N FMCA_LA20_N [4]
FMCA_LA21_P FMCA_LA21_P [4]
FMCA_LA21_N FMCA_LA21_N [4]
FMCA_LA22_P FMCA_LA22_P [4]
FMCA_LA22_N FMCA_LA22_N [4]
FMCA_LA23_P FMCA_LA23_P [4]
FMCA_LA23_N FMCA_LA23_N [4]
FMCA_LA24_P FMCA_LA24_P [4]
FMCA_LA24_N FMCA_LA24_N [4]
FMCA_LA25_P FMCA_LA25_P [4]
FMCA_LA25_N FMCA_LA25_N [4]
FMCA_LA26_P FMCA_LA26_P [4]
FMCA_LA26_N FMCA_LA26_N [4]
FMCA_LA27_P FMCA_LA27_P [4]
FMCA_LA27_N FMCA_LA27_N [4]
FMCA_LA28_P FMCA_LA28_P [4]
FMCA_LA28_N FMCA_LA28_N [4]
FMCA_LA29_P FMCA_LA29_P [4]
FMCA_LA29_N FMCA_LA29_N [4]

FMCA_CLK0_M2C_P FMCA_CLK0_M2C_P [4]
FMCA_CLK0_M2C_N FMCA_CLK0_M2C_N [4]
FMCA_CLK1_M2C_P FMCA_CLK1_M2C_P [4]
FMCA_CLK1_M2C_N FMCA_CLK1_M2C_N [4]

FMCA_DP0_C2M_P FMCA_DP0_C2M_P [10]
FMCA_DP0_C2M_N FMCA_DP0_C2M_N [10]
FMCA_DP1_C2M_P FMCA_DP1_C2M_P [10]
FMCA_DP1_C2M_N FMCA_DP1_C2M_N [10]
FMCA_DP2_C2M_P FMCA_DP2_C2M_P [10]
FMCA_DP2_C2M_N FMCA_DP2_C2M_N [10]
FMCA_DP3_C2M_P FMCA_DP3_C2M_P [10]
FMCA_DP3_C2M_N FMCA_DP3_C2M_N [10]

FMCA_DP0_M2C_P FMCA_DP0_M2C_P [10]
FMCA_DP0_M2C_N FMCA_DP0_M2C_N [10]
FMCA_DP1_M2C_P FMCA_DP1_M2C_P [10]
FMCA_DP1_M2C_N FMCA_DP1_M2C_N [10]
FMCA_DP2_M2C_P FMCA_DP2_M2C_P [10]
FMCA_DP2_M2C_N FMCA_DP2_M2C_N [10]
FMCA_DP3_M2C_P FMCA_DP3_M2C_P [10]
FMCA_DP3_M2C_N FMCA_DP3_M2C_N [10]

FMCA_GBTCLK_M2C_P FMCA_GBTCLK_M2C_P [10]
FMCA_GBTCLK_M2C_N FMCA_GBTCLK_M2C_N [10]
TDO_FPGA TDO_FPGA [6]
TCK_FMCA TCK_FMCA [17]
TDO_FMCA TDO_FMCA [16]
TMS_FMCA TMS_FMCA [17]

FMCA_C2M_PG FMCA_C2M_PG [7]
FMCA_PRSNT FMCA_PRSNT [7]
FMCA_SDA FMCA_SDA [6]
FMCA_SCL FMCA_SCL [6]
FMCA_GA0 FMCA_GA0 [7]
FMCA_GA1 FMCA_GA1 [7]

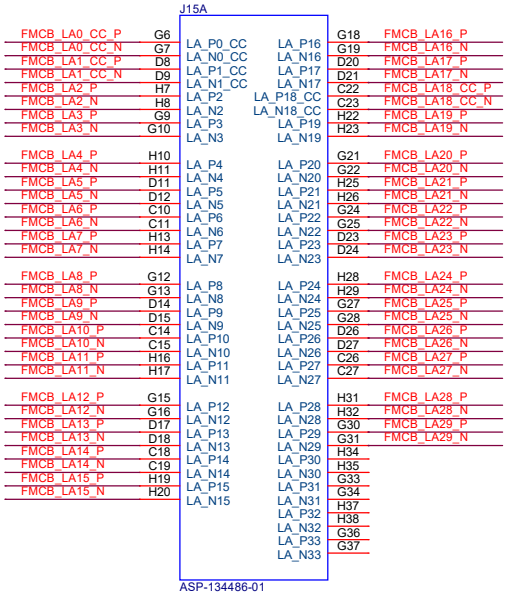
Efinix.Inc.
20400 Stevens Creek Boulevard,Suite 200
Cupertino,CA 95014

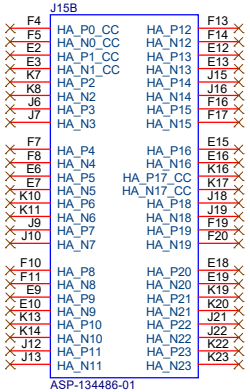
Title: FMCA

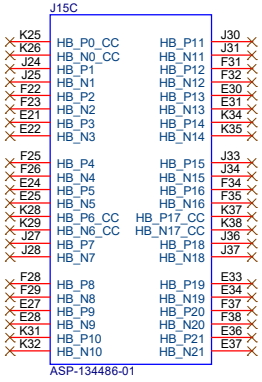
Size: A3 | Document Number: Ti375N1156 DEVELOPMENT BOARD | Rev: A1

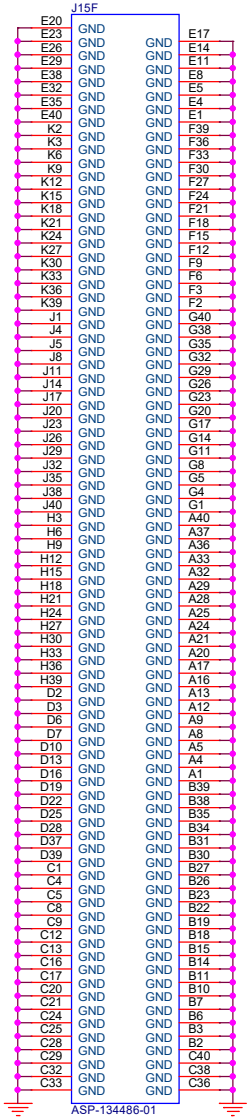
Date: Thursday, August 22, 2024 | Sheet 15 of 19

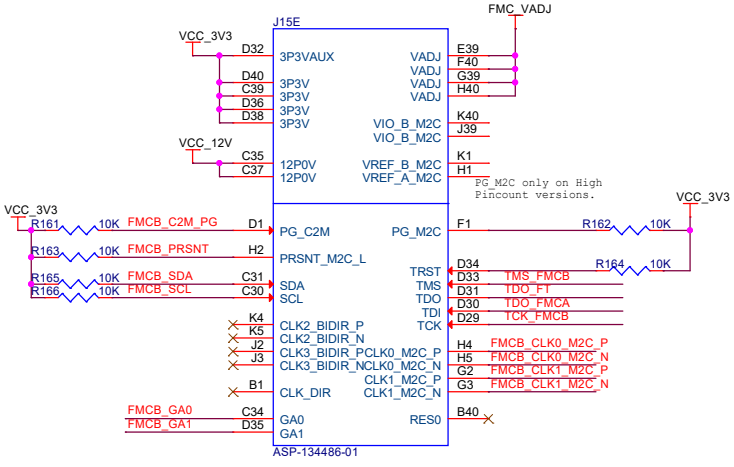
LVDS P/N NEED TO BE MATCHED BY +/-10ps WITH COMPENSATION ON BOARD FOR PACKAGE DELAYS.

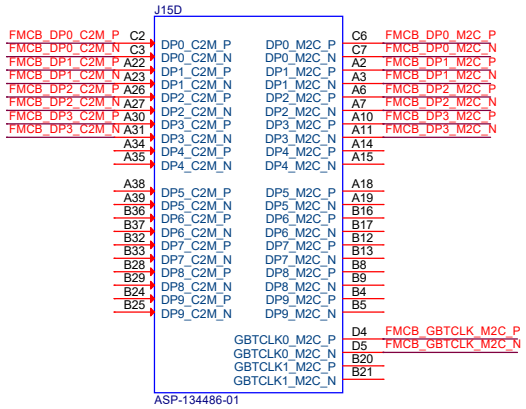


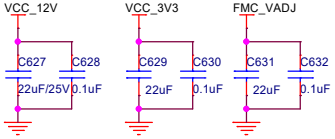


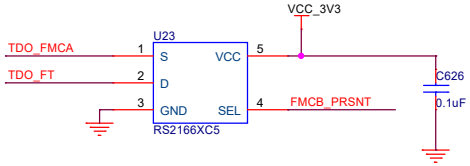












TDO_FT
TCK_FMCB
TDO_FMCA
TMS_FMCB
FMCB_C2M_PG
FMCB_PRSNT
FMCB_SDA
FMCB_SCL
FMCB_GA0
FMCB_GA1

FMCB_LA0_CC_P
FMCB_LA0_CC_N
FMCB_LA1_CC_P
FMCB_LA1_CC_N
FMCB_LA2_P
FMCB_LA2_N
FMCB_LA3_P
FMCB_LA3_N
FMCB_LA4_P
FMCB_LA4_N
FMCB_LA5_P
FMCB_LA5_N
FMCB_LA6_P
FMCB_LA6_N
FMCB_LA7_P
FMCB_LA7_N
FMCB_LA8_P
FMCB_LA8_N
FMCB_LA9_P
FMCB_LA9_N
FMCB_LA10_P
FMCB_LA10_N
FMCB_LA11_P
FMCB_LA11_N
FMCB_LA12_P
FMCB_LA12_N
FMCB_LA13_P
FMCB_LA13_N
FMCB_LA14_P
FMCB_LA14_N
FMCB_LA15_P
FMCB_LA15_N
FMCB_LA16_P
FMCB_LA16_N
FMCB_LA17_P
FMCB_LA17_N
FMCB_LA18_CC_P
FMCB_LA18_CC_N
FMCB_LA19_P
FMCB_LA19_N
FMCB_LA20_P
FMCB_LA20_N
FMCB_LA21_P
FMCB_LA21_N
FMCB_LA22_P
FMCB_LA22_N
FMCB_LA23_P
FMCB_LA23_N
FMCB_LA24_P
FMCB_LA24_N
FMCB_LA25_P
FMCB_LA25_N
FMCB_LA26_P
FMCB_LA26_N
FMCB_LA27_P
FMCB_LA27_N
FMCB_LA28_P
FMCB_LA28_N
FMCB_LA29_P
FMCB_LA29_N

FMCB_CLK0_M2C_P
FMCB_CLK0_M2C_N
FMCB_CLK1_M2C_P
FMCB_CLK1_M2C_N

FMCB_DP0_C2M_P
FMCB_DP0_C2M_N
FMCB_DP1_C2M_P
FMCB_DP1_C2M_N
FMCB_DP2_C2M_P
FMCB_DP2_C2M_N
FMCB_DP3_C2M_P
FMCB_DP3_C2M_N

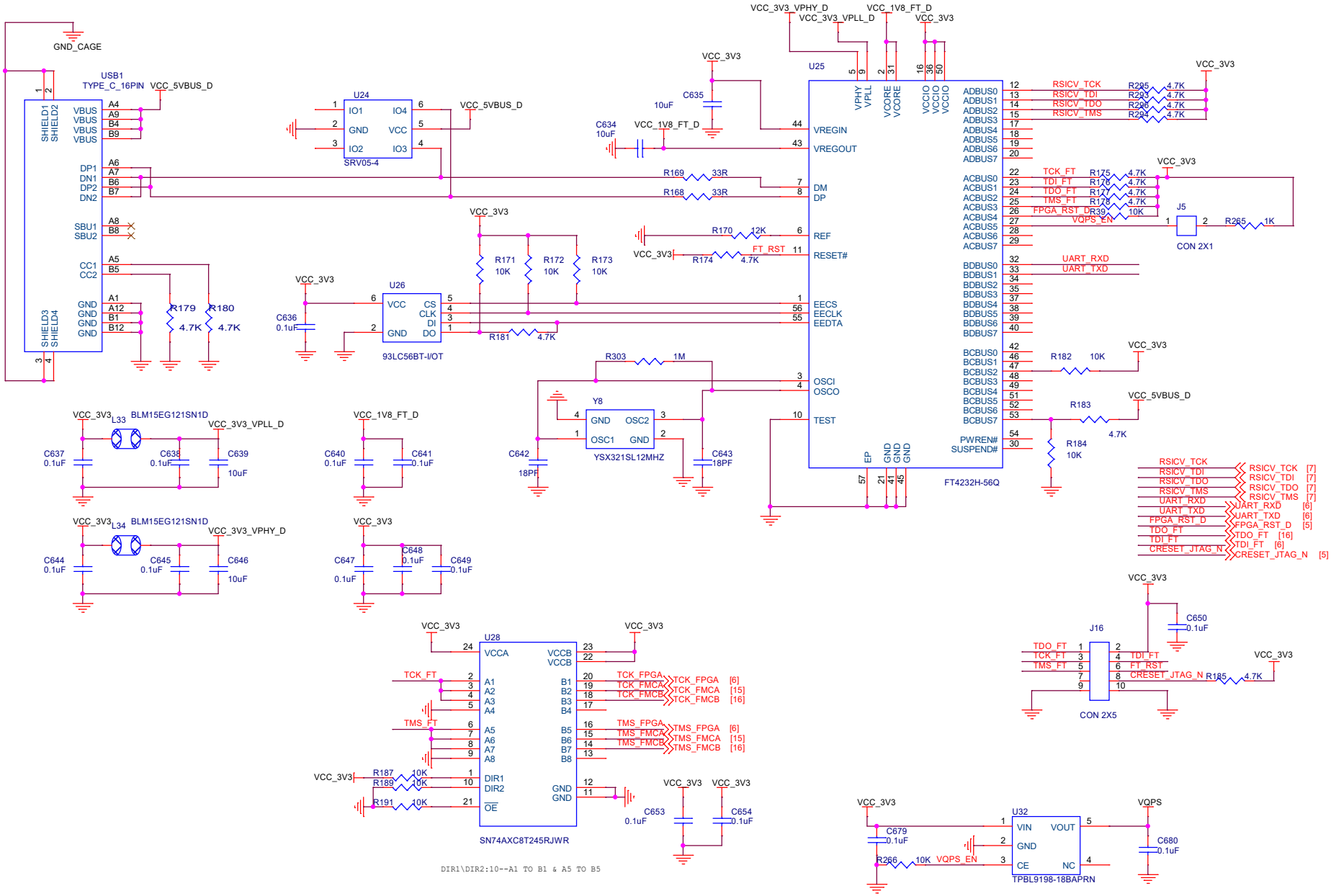
FMCB_DP0_M2C_P
FMCB_DP0_M2C_N
FMCB_DP1_M2C_P
FMCB_DP1_M2C_N
FMCB_DP2_M2C_P
FMCB_DP2_M2C_N
FMCB_DP3_M2C_P
FMCB_DP3_M2C_N

FMCB_GBTCLK_M2C_P
FMCB_GBTCLK_M2C_N

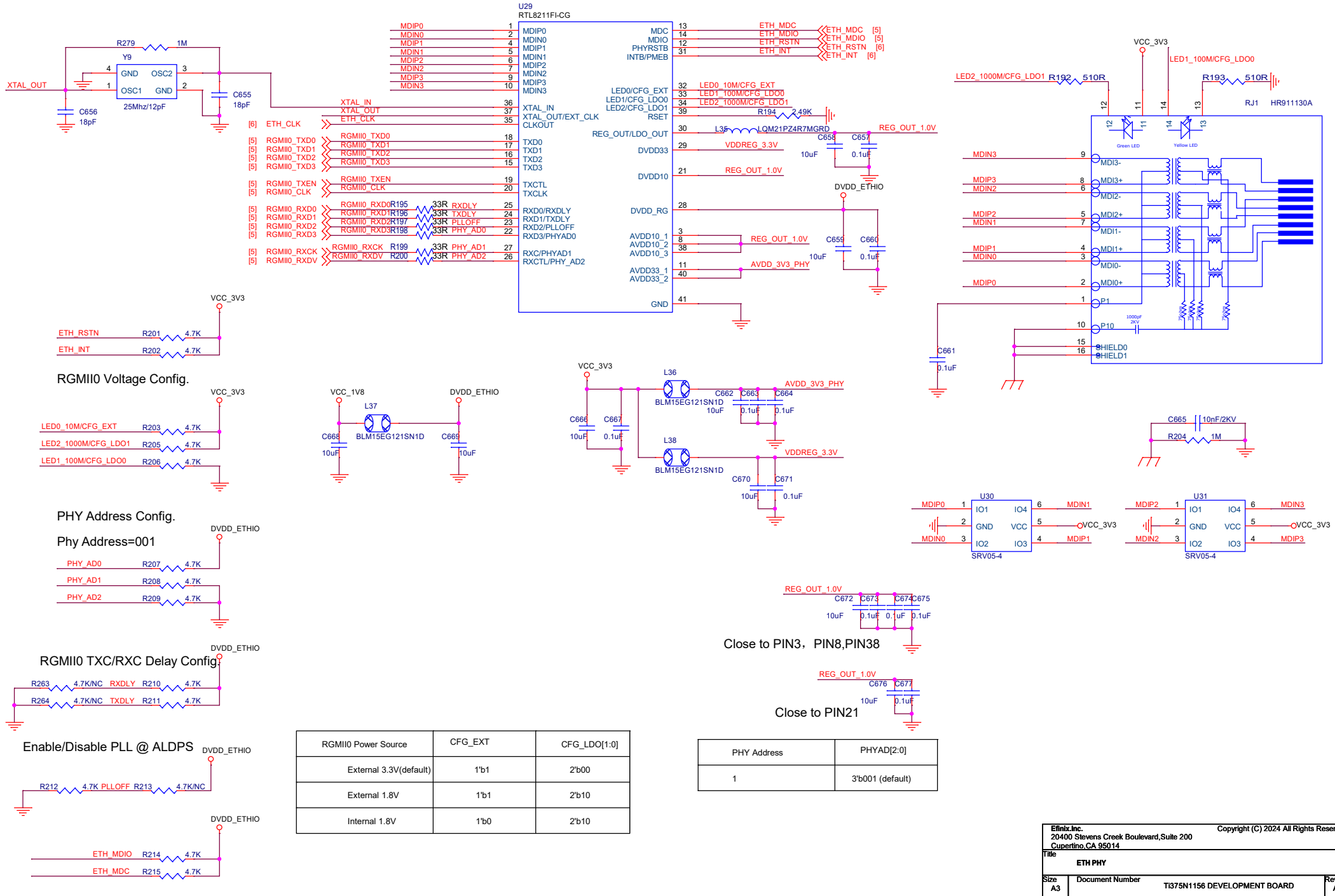
Title: FMCB

Size	Document Number	Rev
A3	Ti375N1156 DEVELOPMENT BOARD	A1

Date: Thursday, August 22, 2024 Sheet 16 of 19



Efinix.Inc. 20400 Stevens Creek Boulevard,Suite 200 Cupertino,CA 95014		Copyright (C) 2024 All Rights Reserved
Title: USB DEBUG		
Size: A3	Document Number: Ti375N1156 DEVELOPMENT BOARD	Rev: A1
Date: Thursday, August 22, 2024	Sheet 17 of 19	



RGMII0 Power Source	CFG_EXT	CFG_LDO[1:0]
External 3.3V(default)	1'b1	2'b00
External 1.8V	1'b1	2'b10
Internal 1.8V	1'b0	2'b10

PHY Address	PHYAD[2:0]
1	3'b001 (default)

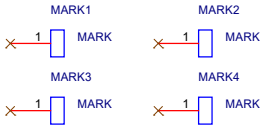
Efinix.Inc.
20400 Stevens Creek Boulevard,Suite 200
Cupertino,CA 95014

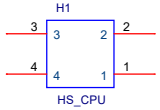
Title: ETH PHY

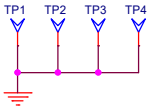
Size: A3 | Document Number: Ti375N1156 DEVELOPMENT BOARD | Rev: A1

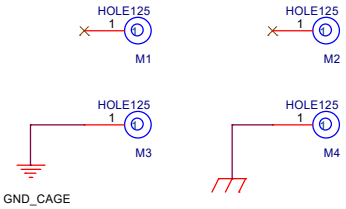
Date: Thursday, August 22, 2024 | Sheet 18 of 19

MARK Point for SMD









Title	OTHER	
Size A3	Document Number Ti375N1156 DEVELOPMENT BOARD	Rev A1
Date: Thursday, August 22, 2024	Sheet 19 of 19	

Item	Qty	Part Type	Description	Value	Reference	Footprint	Manufacturing PN
1	328	CAPACITOR	MLCC 100NF ±10% 50V X7R SMD 0402	50V/X7R	C1,C3,C6,C16,C22,C24,C25,C30,C31,C32,C40,C44,C45,C47,C48, C57,C63,C67,C70,C72,C75,C77,C80,C81,C84,C89,C91,C92,C93, C94,C95,C96,C97,C99,C100,C101,C103,C104,C105,C106,C107, C108,C110,C112,C114,C116,C117,C119,C121,C123,C125,C126, C128,C129,C130,C132,C133,C136,C138,C139,C141,C142,C145, C146,C147,C148,C149,C150,C151,C154,C155,C156,C157,C158, C159,C167,C168,C169,C170,C171,C172,C173,C176,C177,C178, C179,C180,C181,C188,C189,C190,C191,C192,C193,C198,C199, C200,C201,C202,C203,C204,C207,C208,C209,C210,C211,C212, C220,C221,C222,C223,C224,C225,C226,C229,C230,C231,C234, C235,C236,C241,C242,C243,C244,C245,C246,C251,C253,C258, C260,C271,C272,C273,C274,C275,C276,C301,C302,C303,C304, C305,C306,C307,C308,C309,C310,C320,C321,C322,C323,C324, C325,C326,C327,C328,C329,C330,C331,C332,C336,C337,C338, C339,C340,C341,C342,C343,C344,C345,C346,C347,C348,C349, C350,C351,C352,C353,C354,C355,C356,C361,C362,C363,C364, C365,C366,C367,C368,C373,C374,C375,C376,C377,C378,C379, C380,C409,C410,C411,C412,C413,C414,C415,C416,C417,C418, C421,C422,C423,C424,C425,C426,C427,C428,C429,C430,C445, C446,C447,C448,C449,C450,C451,C452,C453,C454,C458,C460, C462,C467,C468,C473,C475,C476,C479,C480,C489,C498,C499, C500,C501,C502,C507,C508,C511,C512,C523,C524,C525,C528, C529,C530,C531,C532,C533,C534,C535,C545,C546,C547,C548, C549,C556,C557,C558,C559,C562,C563,C564,C567,C568,C569, C574,C575,C576,C577,C578,C589,C590,C591,C592,C593,C594, C596,C598,C600,C601,C604,C606,C607,C610,C612,C615,C616, C619,C621,C623,C625,C626,C628,C630,C632,C636,C637,C638, C640,C641,C644,C645,C647,C648,C649,C650,C653,C654,C657, C660,C661,C663,C664,C667,C671,C673,C674,C675,C677,C679, C680	C0402	CC0402KRX7R9BB104
2	9	CAPACITOR	MLCC 100UF ±20% 6.3V X5R SMD 0805	6.3V/X5R	C11,C12,C34,C277,C286,C294,C385,C397,C433	C0805	GRM21BR60J107ME15L
3	29	CAPACITOR	MLCC 47UF ±20% 6.3V X5R SMD 0603	6.3V/X5R	C13,C14,C29,C35,C143,C165,C196,C218,C278,C287,C295,C386, C398,C434,C465,C469,C481,C482,C483,C484,C493,C505,C509, C513,C538,C539,C551,C560,C572	C0603	CL10A476MQ8QRNC

Item	Qty	Part Type	Description	Value	Reference	Footprint	Manufacturing PN
4	104	CAPACITOR	MLCC 1UF ±10% 10V X7R SMD 0402	10V/X7R	C15,C18,C42,C43,C64,C65,C90,C279,C280,C281,C282,C283, C284,C285,C288,C289,C290,C291,C292,C293,C296,C297,C298, C299,C300,C311,C312,C313,C314,C315,C316,C317,C318,C319, C333,C334,C335,C387,C388,C389,C390,C391,C392,C393,C394, C395,C396,C399,C400,C401,C402,C403,C404,C405,C406,C407, C408,C435,C436,C437,C438,C439,C440,C441,C442,C443,C444, C472,C485,C486,C490,C491,C492,C494,C495,C496,C497,C503, C504,C506,C510,C514,C515,C516,C517,C518,C519,C520,C521, C522,C540,C541,C542,C543,C544,C552,C553,C554,C555,C561, C566,C573,C580,C681	C0402	MBK0402B105K100NT
5	56	CAPACITOR	CAP CER 10UF 10V X5R 0402	10V/X5R	C17,C98,C102,C109,C111,C113,C115,C118,C120,C122,C124, C127,C131,C134,C135,C137,C140,C144,C166,C187,C197,C219, C240,C252,C259,C457,C459,C461,C463,C464,C466,C470,C471, C474,C477,C478,C487,C488,C570,C595,C602,C608,C614,C634, C635,C639,C646,C658,C659,C662,C666,C668,C669,C670,C672, C676	C0402	CC0402MRX5R6BB106
6	20	CAPACITOR	MLCC 22UF ±20% 25V X5R SMD 0805	25V/X5R	C2,C5,C19,C20,C21,C23,C27,C28,C33,C46,C49,C50,C51,C66, C71,C76,C82,C83,C620,C627	C0805	CL21A226MAQNNNE
7	35	CAPACITOR	MLCC 22UF ±20% 10V X5R SMD 0603	10V/X5R	C36,C37,C38,C39,C53,C54,C55,C56,C58,C60,C61,C62,C68,C69, C73,C74,C78,C79,C86,C87,C88,C565,C571,C597,C599,C603, C605,C609,C611,C613,C617,C622,C624,C629,C631	C0603	CL10A226MP8NUNE
8	2	CAPACITOR	CAP ALUM 220UF ±20% 25V SMD 6.3mmx7.7mm	25V/150mA	C4,C26	radial_63x77	RVT1E221M0607
9	8	CAPACITOR	MLCC 18PF ±1% 50V NP0 SMD 0402	50V/C0G	C41,C52,C59,C85,C642,C643,C655,C656	C0402	CC0402FRNPO9BN180
10	8	CAPACITOR	CAP CER 0.22UF 16V X7R 0402	16V/X7R	C581,C582,C583,C584,C585,C586,C587,C588	C0402	CC0402KRX7R7BB224
11	2	CAPACITOR	MLCC X7R 10NF±10% 2KV SMD1210	2KV/X7R	C618,C665	C1210	1210B103K202NT
12	41	CAPACITOR	MLCC 10NF 10% 50V X7R SMD0402	50V/X7R	C8,C160,C161,C162,C182,C183,C184,C194,C195,C213,C214, C215,C232,C237,C238,C247,C248,C357,C358,C359,C360,C369, C370,C371,C372,C381,C382,C383,C384,C419,C420,C431,C432, C455,C456,C526,C527,C536,C537,C550,C579	C0402	CC0402KRX7R9BB103
13	2	CAPACITOR	TANTALUM POLYMER 470UF ±20% 2.5V 7mΩ SMD7343	2.5V/7mΩ	C9,C10	C7343	2R5TPE470M7
14	1	DIODE	TVS DIODE 16VWM 26VC SMA	–	D1	SMA_DO_214A	SMAJ16A
15	1	FUSE	PTC FUSE 1A 30V SMD 1206	1A 30V Slow blow	F1	F1206	BSMD1206-100-30V
16	1	FUSE	FUSE BRD MNT 8A 125VAC/VDC 2SMD	8A 125VAC/VDC 2 SMD	F2	F97_50	0154008.DR
17	1	CONNECTOR	CONN PWR JACK 2.5X6.5MM SOLDER, 10A, Horizontal, Surface Mount (SMT), DC Power Jack Connector	16V/10A	J1	DC-053D-25A	DC-053D-25A
18	1	CONNECTOR	CONN ZSFP+ CAGE 1X4 PRESSFIT R/A	–	J13	SAMTEC_SFP_CAGE	G282N4Y002-01R
19	2	CONNECTOR	CONN ARRAY RCPT 400POS SMD GOLD	–	J14,J15	10x40_ASP_Vita57	ASP-134486-01
20	1	CONNECTOR	CONN HEADER VERT 10POS 2.54MM	–	J16	CON2X5-2_54A	A2541WV-2X5P
21	1	CONNECTOR	CONN HEADER VERT 2POS 2.5MM	2PIN XH Socket	J2	XH-2_2_5	XH-2A

Item	Qty	Part Type	Description	Value	Reference	Footprint	Manufacturing PN
22	1	CONNECTOR	CONN HEADER VERT 2X3POS	2X3_2.54 pins	J3	CON2X3-2_54A	PZ254V-12-6P
23	1	CONNECTOR	MICRO SD PUSH-PUSH, SMT, 1.40MM, 9 (8 + 1) Position Card Connector Secure Digital, Right Angle	MicroSD card (TF card)	J4	TF01-A	TF-01A
24	1	CONNECTOR	CONN HEADER VERT 2X1 POS	2X1_2.54 pins	J5	CON2X1-2_54A	PZ254V-11-02P
25	3	CONNECTOR	CONN HEADER VERT 2X4POS	2X4_2.54 pins	J6,J7,J18	CON2X4-2_54A	PZ254V-12-8P
26	1	CONNECTOR	CONN HEADER VERT 2X2POS	2X2_2.54 pins	J8	CON2X2-2_54A	PZ254V-12-4P
27	4	CONNECTOR	CONN ZSFP+ RCPT 20POS SLD RA SMD	-	J9,J10,J11,J12	SAMTEC_SFP_MECT20	2170088-1
28	1	INDUCTOR	FIXED IND 200NH 70A 0.18MOHM	200nH/70A	L1	L_10MM_7MM	VLBS1007083T-R20L
29	5	INDUCTOR	FERRITE BEAD 120OHM @ 100 MHz 0603 1LN 3A	120Ω@100MHz/3A	L2,L17,L19,L21,L24	L0603	BLM18KG121TN1D
30	1	INDUCTOR	FERRITE BEAD 30OHM@100MHZ 0805 1LN 8.5A	30Ω@100MHz/8.5A	L22	L0805	BLM21SN300SN1D
31	9	INDUCTOR	FIXED IND 4.7UH 800MA 230mOHM SMD0805	4.7uH/0.8A	L25,L26,L27,L28,L29,L30,L31,L32,L35	L0805	LQM21PZ4R7MGRD
32	1	INDUCTOR	SMD Power Inductors 600nH/22A	600nH/22A	L3	L_55_53	YSPIT0530A-R60M
33	4	INDUCTOR	FIXED IND 2.2UH 9.5A 15MOHM SMD	2.2uH/9.5A	L4,L5,L6,L7	L_66_70	MWSA0603S-2R2MT
34	17	INDUCTOR	FERRITE BEAD 120OHM@100MHZ 0402 1LN 1.5A	120Ω@100MHz/1.5A	L8,L9,L10,L11,L12,L13,L14,L15,L16,L18,L20,L23,L33,L34,L36,L37,L38	L0402	BLM15EG121SN1D
35	6	LED	LED GREEN SMD0603 630nm 2V	-	LED1,LED2,LED3,LED4,LED7,LED8	LED0603	NCD0603G1
36	2	LED	LED RED SMD0603 630nm 2V	-	LED5,LED6	LED0603	NCD0603R1
37	4	CONNECTOR	0.80 mm Q Strip High-Speed Ground Plane Socket Strip	-	P1,P2,P3,P4	QSE-020-01-X-D-A	QSE-020-01-L-D-A-K-TR
38	7	TRANSISTOR	60V NPN SMALL SIGNAL TRANSISTOR IN SOT523	-	Q1,Q2,Q3,Q4,Q5,Q6,Q7	SOT523	MMBT3904T-7-F
39	1	RESISTOR	RES 1 OHM 1% 1/16W 0402	0402, ±1% tolerance	R1	R0402	RC0402FR-071RL
40	10	RESISTOR	RES 240 OHM 1% 1/16W 0402	0402, ±1% tolerance	R100,R101,R102,R103,R104,R106,R107,R108,R109,R110	R0402	RC0402FR-07240RL
41	4	RESISTOR	RES 3.01K OHM 1% 1/16W 0402	0402, ±1% tolerance	R111,R113,R115,R116	R0402	RC0402FR-073K01L
42	1	RESISTOR	RES 3.9K OHM 1% 1/16W 0402	0402, ±1% tolerance	R12	R0402	RC0402FR-073K9L
43	2	RESISTOR	RES 1M OHM 1% 1W 1812 WIDE	1812, ±1% tolerance	R154,R204	R1812	RC1218FK-071ML
44	3	RESISTOR	RES 40.2K OHM 1% 1/16W 0402	0402, ±1% tolerance	R16,R32,R35	R0402	RC0402FR-0740K2L
45	5	RESISTOR	RES 120K OHM 1% 1/16W 0402	0402, ±1% tolerance	R17,R33,R40,R70,R71	R0402	RC0402FR-07120KL
46	1	RESISTOR	RES 1/16W 12K 1% SMD0402	0402, ±1% tolerance	R170	R0402	RC0402FR-0712KL
47	3	RESISTOR	RES 20K OHM 1% 1/16W 0402	0402, ±1% tolerance	R18,R23,R36	R0402	RC0402FR-0720KL
48	1	RESISTOR	RES 2.49K 1% 1/16W SMD0402	0402, ±1% tolerance	R194	R0402	RC0402FR-072K49L
49	1	RESISTOR	RES 1.8K OHM 1% 1/16W 0402	0402, ±1% tolerance	R2	R0402	RC0402FR-071K8L
50	1	RESISTOR	RES 220K OHM 1% 1/16W 0402	0402, ±1% tolerance	R20	R0402	RC0402FR-07220KL
51	2	RESISTOR	RES 30K OHM 1% 1/16W 0402	0402, ±1% tolerance	R21,R28	R0402	RC0402FR-0730KL
52	1	RESISTOR	RES 90.9K OHM 1% 1/16W 0402	0402, ±1% tolerance	R22	R0402	RC0402FR-0790K9L
53	2	RESISTOR	RES 24.9K OHM 1% 1/16W 0402	0402, ±1% tolerance	R24,R25	R0402	RC0402FR-0724K9L
54	1	RESISTOR	RES 75 OHM 1% 1/16W 0402	0402, ±1% tolerance	R260	R0402	RC0402FR-0775RL
55	1	RESISTOR	RES 270 OHM 1% 1/16W 0402	0402, ±1% tolerance	R261	R0402	RC0402FR-07270RL
56	3	RESISTOR	RES 1/16W 1M 1% SMD0402	0402, ±1% tolerance	R262,R279,R303	R0402	RC0402FR-071ML
57	2	RESISTOR	RES 1/16W 100R 1% SMD0402	0402, ±1% tolerance	R280,R281	R0402	RC0402FR-07100RL

Item	Qty	Part Type	Description	Value	Reference	Footprint	Manufacturing PN
58	56	RESISTOR	RES 1/16W 10K 1% SMD0402	0402, ±1% tolerance	R3,R4,R7,R13,R15,R19,R26,R27,R30,R37,R38,R39,R42,R43, R44,R45,R46,R47,R48,R49,R50,R51,R52,R53,R54,R55,R65,R66, R67,R155,R156,R157,R158,R159,R160,R161,R162,R163,R164, R165,R166,R171,R172,R173,R182,R184,R187,R189,R191,R266, R297,R298,R299,R300,R301,R302	R0402	RC0402FR-0710KL
59	9	RESISTOR	RES 1/16W 1K 1% SMD0402	0402, ±1% tolerance	R31,R69,R74,R75,R76,R77,R99,R105,R265	R0402	RC0402FR-071KL
60	1	RESISTOR	RES 66.5K OHM 1% 1/16W 0402	0402, ±1% tolerance	R34	R0402	RC0402FR-0766K5L
61	79	RESISTOR	RES 1/16W 4K7 1% SMD0402	0402, ±1% tolerance	R5,R73,R80,R81,R82,R83,R84,R85,R86,R87,R90,R92,R97,R98, R112,R114,R117,R118,R119,R121,R122,R123,R124,R125,R126, R127,R128,R129,R130,R131,R132,R133,R134,R135,R136,R137, R138,R139,R140,R141,R142,R143,R144,R145,R146,R147,R148, R149,R150,R151,R152,R153,R174,R175,R176,R177,R178,R179, R180,R181,R183,R185,R201,R202,R203,R205,R206,R207,R208, R209,R210,R211,R212,R214,R215,R293,R294,R295,R296	R0402	RC0402FR-074K7L
62	9	RESISTOR	RES 47K OHM 1% 1/16W 0402	0402, ±1% tolerance	R56,R57,R58,R59,R60,R61,R62,R63,R64	R0402	RC0402FR-0747KL
63	3	RESISTOR	RES 21.5K OHM 1% 1/16W 0402	0402, ±1% tolerance	R6,R8,R14	R0402	RC0402FR-0721K5L
64	23	RESISTOR	RES 1/16W 33R 1% SMD0402	0402, ±1% tolerance	R68,R72,R88,R89,R91,R93,R94,R95,R96,R168,R169,R195,R196, R197,R198,R199,R200,R286,R287,R288,R289,R290,R291	R0402	RC0402FR-0733RL
65	4	RESISTOR	RES 510 OHM 1% 1/16W 0402	0402, ±1% tolerance	R78,R79,R192,R193	R0402	RC0402FR-07510RL
66	27	RESISTOR	RES 1/16W 0R SMD0402	0402, ±1% tolerance	R9,R10,R11,R231,R232,R233,R234,R235,R236,R237,R238,R239, R240,R241,R242,R267,R268,R269,R270,R271,R272,R273,R274, R275,R276,R277,R278	R0402	RC0402JR-070RL
67	1	RJ45	RJ45 X-FMR 10/100/1000 BASE-T 8P8C 1PORT green-yellow right-angle	Gigabit Ethernet port	RJ1	RJ45-TH_HR911130A	HR911130A
68	1	SWITCH	SPDT, 3PIN, AC-125V,DC-50V, 3A, DIP SW3_13X6.8MM_TM	125V/3A	SW1	SS_12D11G5R	SS-12D11G5R
69	3	SWITCH	SWITCH TACTILE SPST-NO 0.05A 16V	16V/0.05A	SW2,SW3,SW4	PTS810	GT-TC048D-H025-L1
70	1	IC	IC REG BUCK ADJ 35A 37WQFN	–	U1	WQFN-FCRLF	TPS548C26RXXR
71	1	IC	ELITESTEK FPGA	FPGA	U10	N1156_35X35_1	–
72	1	IC	IC GATE AND 2CH 2-INP 8VSSOP	–	U11	VSSOP_8	SN74LVC2G08DCUR
73	1	IC	IC SUPERVISOR 1 CHANNEL 4DFN	–	U12	X2SON4	R3117K153C-TR
74	2	IC	IC FLASH 512MBIT SPI/QUAD 8WSON	–	U13,U14	WSON-8	GD25LB512MEYIGR
75	1	IC	IC E-NAND/FLASH -40??-85??/NAND/STACK/8GBX1/153FBGA	–	U15	FBGA-153	H26M41208HPRI
76	2	IC	IC CLK BUFFER 1:4 250MHZ 8TSSOP	–	U16,U17	TSSOP-8	LMK1C1104PWR
77	1	IC	Temperature Sensor Digital, Local -55°C ~ 125°C, 11 b, 8-MSOP	–	U18	MSOP8	DS18B20U
78	2	IC	IC DRAM 8GBIT 2.133GHZ 200WFBGA	MT53E256M32D2DS-053	U19,U20	WFBGA-200P	MT53E256M32D2DS-046 AAT:B TR
79	1	IC	IC REG BUCK ADJ 12A 20VQFN	–	U2	20pin-VQFN	TPS56C230RJER
80	1	IC	IC CLK GEN I2C BUS PROG 24QFN	–	U21	QFN24	SI5338A-B-GM
81	2	IC	4.5Ω Single Bilateral SPST Analog Switch	–	U22,U23	SOT353	RS2166XC5

Item	Qty	Part Type	Description	Value	Reference	Footprint	Manufacturing PN
82	3	IC	TVS DIODE 5V VBR MIN 6V SOT-23	-	U24,U30,U31	SOT23_6	SRV05-4
83	1	IC	IC USB TO UART/MPSSE QUAD 56VQFN	-	U25	56VQFN	FT4232H-56Q-REEL
84	1	IC	IC EEPROM 2KBIT MIC WIRE SOT23-6	-	U26	SOT23_6_A	93LC56BT-I/OT
85	1	IC	IC TRANSLATION TXRX 3.6V 24UQFN	-	U28	UQFN_24	SN74AXC8T245RJWR
86	1	IC	GE PHY 1PORT 10/100/1000Mb/s 2.97V~3.63V 40-QFN(5x5mm)	-	U29	QFN40_8211FI	RTL8211FDI-CG
87	4	IC	IC REG BUCK ADJ 6A 9VQFN	-	U3,U4,U5,U9	VQFN-HR	TPS566238PRQFR
88	1	IC	300mA Ultra-low Noise, Ultra-Fast CMOS LDO Regulator	-	U32	SOT23_5	TPBL9198-18BAPRN
89	3	IC	Non-Isolated PoL Module DC-DC Converter， 1 Output 0.6 ~ 5.5V, 3A, 3V - 17V Input	-	U6,U7,U8	QFN_FCMOD_7	TPSM863257RDXR
90	1	TYPE-C CONN	USB2.0 TYPE-C SOCKET 16PIN SMD	-	USB1	TYPE_C_16P	TYPE-C16PIN
91	1	OSC	XTAL OSC 33.3333MHZ HCMOS SMD3225	OT2EL4C4JI-111OLP-33.3333M/OT322533.3333MJBA4SL	Y1	XTAL4-3_2x2_5m	OT2-Y5LSJI-111-33.3333M
92	1	OSC	XTAL OSC 100.00MHZ HCMOS SMD3225	OT2EL89CJI-111YLC-100M	Y2	XTAL4-3_2x2_5m	OT2-Y5LSJI-111-100M
93	1	OSC	XTAL OSC 25.0000MHZ HCMOS SMD3225	OT2EL4C4JI-111OLP-25M	Y3	XTAL4-3_2x2_5m	OT2-Y5LSJI-111-25M
94	1	OSC	XTAL OSC 74.2500MHZ HCMOS SMD3225	-	Y4	XTAL4-3_2x2_5m	O92-Y5LSEI-112-74.25M
95	1	OSC	XTAL OSC XO 100MHZ 3.3V HCSL	-	Y5	XTAL-3_2x2_5m	AX3HAF1-100.0000T
96	1	OSC	XTAL OSC XO 156.25MHZ 3.3V HCSL	-	Y6	XTAL-3_2x2_5m	AX3HAF1-156.2500T
97	1	CRYSTAL	CRYSTAL 25.0000MHZ 18PF SMD3225	X322525MRB4SI	Y7	SMD3225_4P	XL2-Y5LSRI-111-25M
98	1	CRYSTAL	CRYSTAL 12.0000MHZ 12PF SMD3225	X322512MOB4SI	Y8	SMD3225_4P	XL2-Y5LSOI-111-12M
99	1	CRYSTAL	CRYSTAL 25.0000MHZ 12PF SMD3225	X322525MOB4SI	Y9	SMD3225_4P	XL2-Y5LSOI-111-25M