| REV | DATE | PAGES | DESCRIPTION |
|---|---|---|---|
| A | 07/14/2020 | All | Initial |
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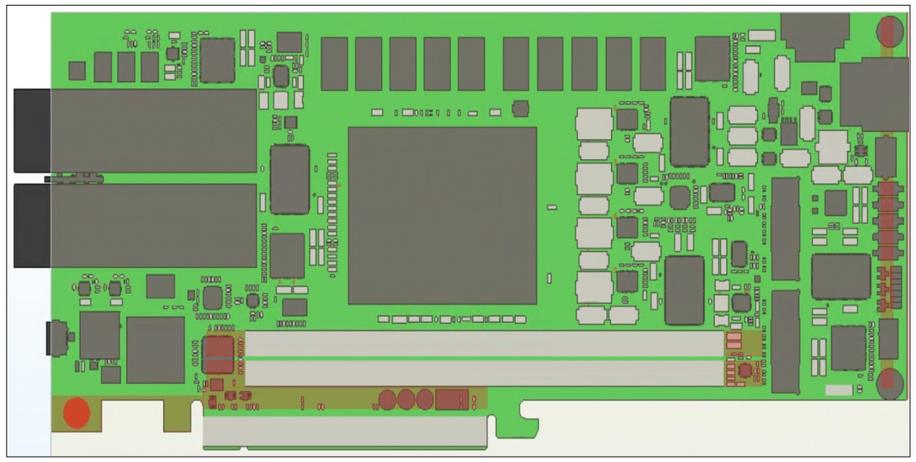
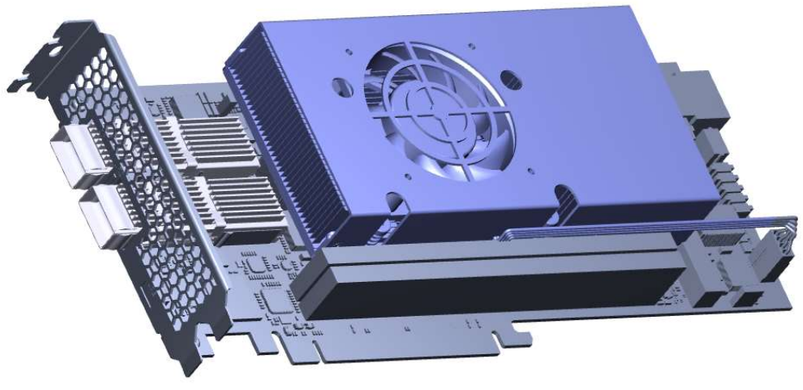
| PAGE | DESCRIPTION | PAGE | DESCRIPTION |
|---|---|---|---|
| 1 | Title, Notes, Rev. History | 39 | FPGA Power 3 |
| 2 | Block Diagram | 40 | FPGA GND1 |
| 3 | Power Tree Diagram | 41 | FPGA GND2 |
| 4 | Power Sequence Diagram | 42 | FPGA GND3 |
| 5 | Clock Tree Diagram | 43 | Clock 1 |
| 6 | I2C Diagram | 44 | Clock 2 |
| 7 | JTAG Diagram | 45 | Clock 3 |
| 8 | DDR4_DDR4 Pin Map | 46 | I2C and PMBUS |
| 9 | DDR4 CH0 Component 1 | 47 | LEDs for QDFPDD |
| 10 | DDR4 CH0 Component 2 | 48 | LEDs and Pushbuttons |
| 11 | DDR4 CH0 Comp Termination | 49 | System MAX10 1 |
| 12 | FPGA BANK 2B | 50 | System MAX10 2 |
| 13 | FPGA BANK 2E | 51 | System MAX10 3 |
| 14 | DDR4 CH1 Component 1 | 52 | Level Shifter |
| 15 | DDR4 CH1 Component 2 | 53 | Power inputs |
| 16 | DDR4 CH1 Comp Termination | 54 | PWR - VCC- 1 |
| 17 | FPGA BANK 2C | 55 | PWR - VCC- 2 |
| 18 | FPGA BANK 2F | 56 | PWR - VCC- 3 |
| 19 | DDR4/DDRT Dual DIMM-A | 57 | PWR - 12V to 5V |
| 20 | DDR4/DDRT Dual DIMM-B | 58 | PWR - 12V to 3.3V |
| 21 | FPGA BANK 3D | 59 | PWR - VCCR_CORE |
| 22 | FPGA BANK 3C | 60 | PWR - VCCED_GXR |
| 23 | FPGA BANK 3A | 61 | PWR - VCCERT_FGT_GXF |
| 24 | FPGA BANK 3B | 62 | PWR - VCCRT_GXR |
| 25 | QSFPDD0 | 63 | PWR - VCC_HSSI_GXR |
| 26 | QSFPDD1 | 64 | PWR - VCCH |
| 27 | QSFPDD IO | 65 | PWR - VCC_HSSI_GXF |
| 28 | FPGA BANK 12A | 66 | PWR - 1p8V |
| 29 | FPGA BANK 12A DNU | 67 | Blank |
| 30 | PCIe EP Edge Connector | 68 | PWR - IO_1p8V |
| 31 | FPGA BANK 14C | 69 | PWR - 1p2V_PRE |
| 32 | CXL Connector | 70 | PWR - VCCEHT_GXF |
| 33 | FPGA BANK 15C | 71 | PWR - 1p2V_DDR4_CH01 |
| 34 | FPGA BANK 15A | 72 | PWR - 1p2V_DDR4_CH2 |
| 35 | FPGA BANK CONFIG SDM | 73 | PWR - 0p6V_VTT/VREF |
| 36 | FPGA BANK HPS | 74 | PWR - 2p5V |
| 37 | FPGA Power 1 | 75 | PWR - VCCCLK_GXR |
| 38 | FPGA Power 2 | 76 | Decoupling Caps 1 |
| | | 77 | Decoupling Caps 2 |

SPEED Item

| | | |
|---|---|---|
| RAW PCB | M17467-001 | 100-0330672-A1 |
| Gerber Files | | 150-0330672-A1 |
| Schematic Design File | M17472 | 180-0330672-A1 |
| PBA BOM | M17471-100 | |





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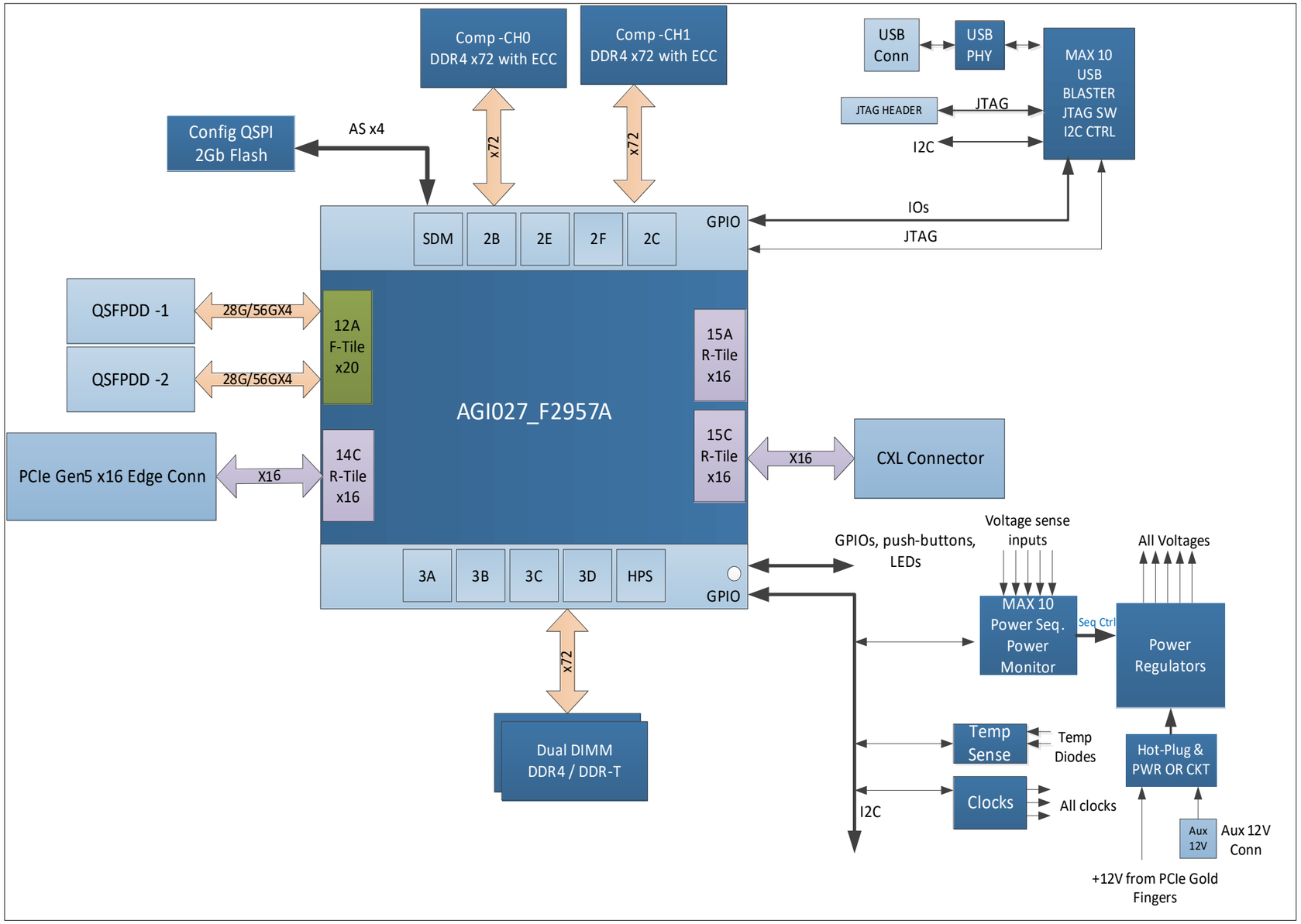
Size: B | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 1 of 77

# System Block Diagram

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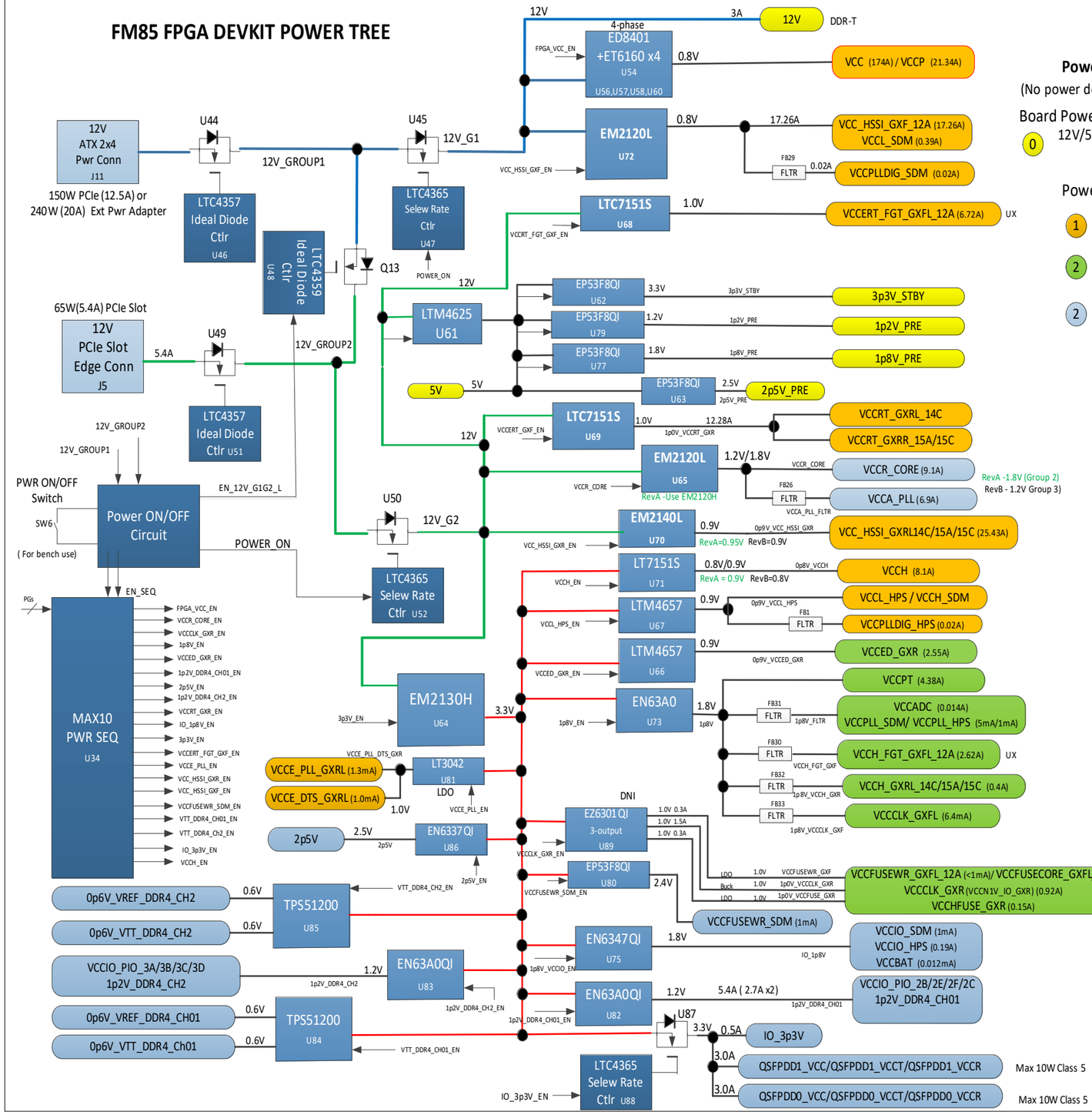
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 2 of 77

# FM85 FPGA DEVKIT POWER TREE




**Power-up Sequence:**

(No power down sequence requirment)

Board Power on

0 12V/5V/1p8V_PRE/3p3V_STBY/1p2V_PRE/ 2p5V_PRE

Power Sequence - Start

1 Group1

2 Group2

2 Group3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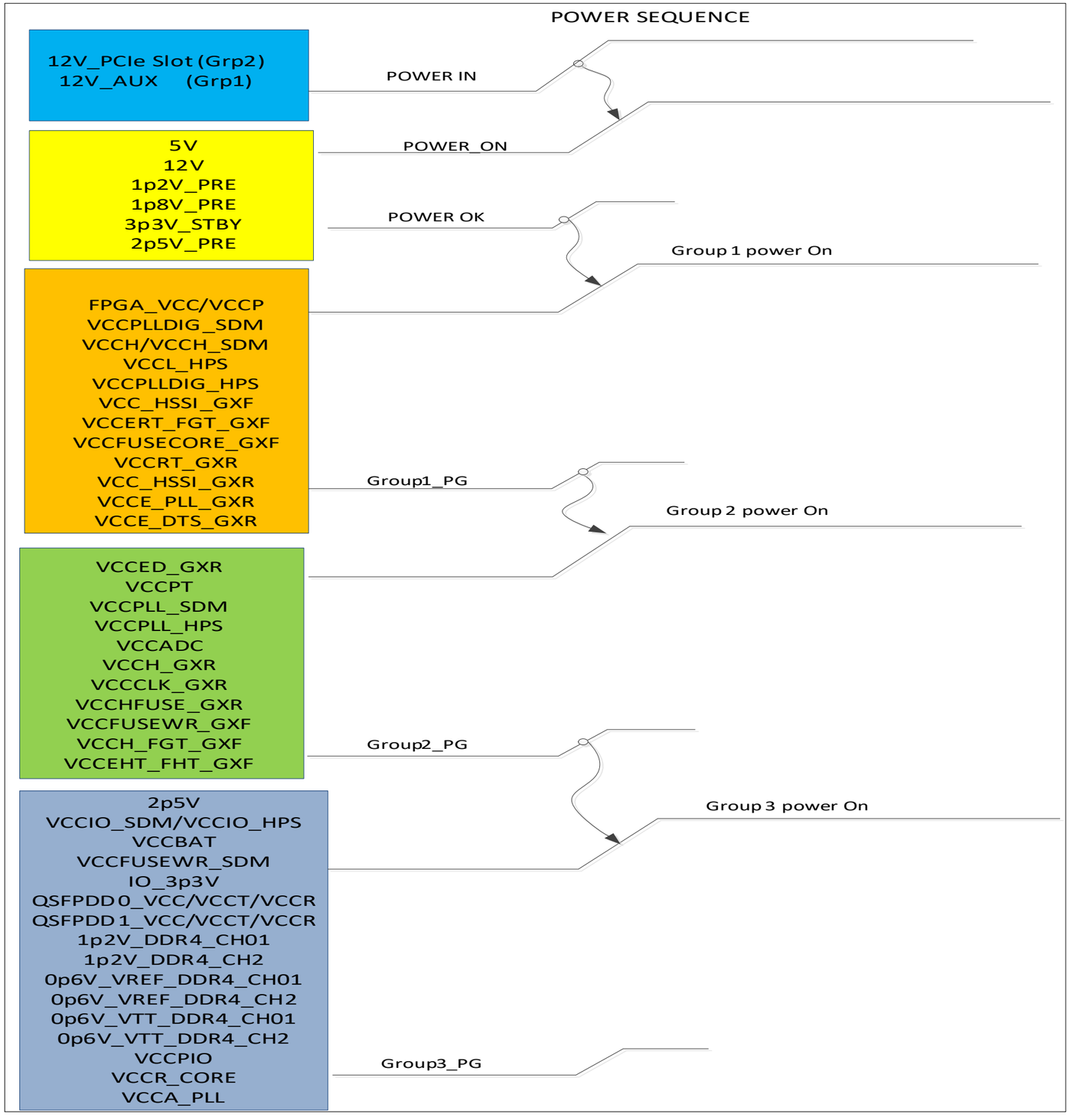
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 3 of 77

# Power Sequence Diagram

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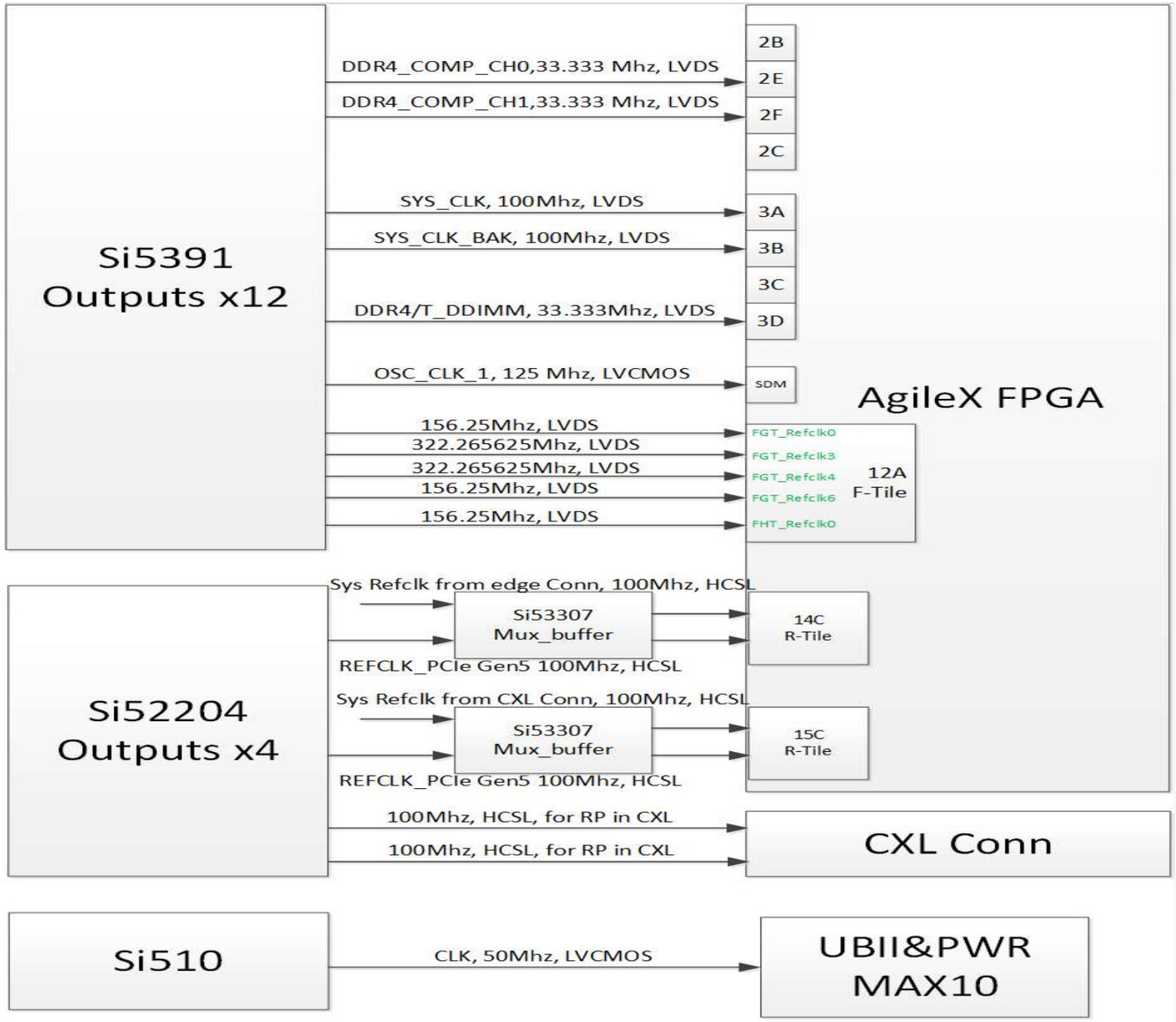
| |  | |
| Size: B | Document Number: M17472 (M17471-100) | Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 4 of 77 | |

# Clock Tree

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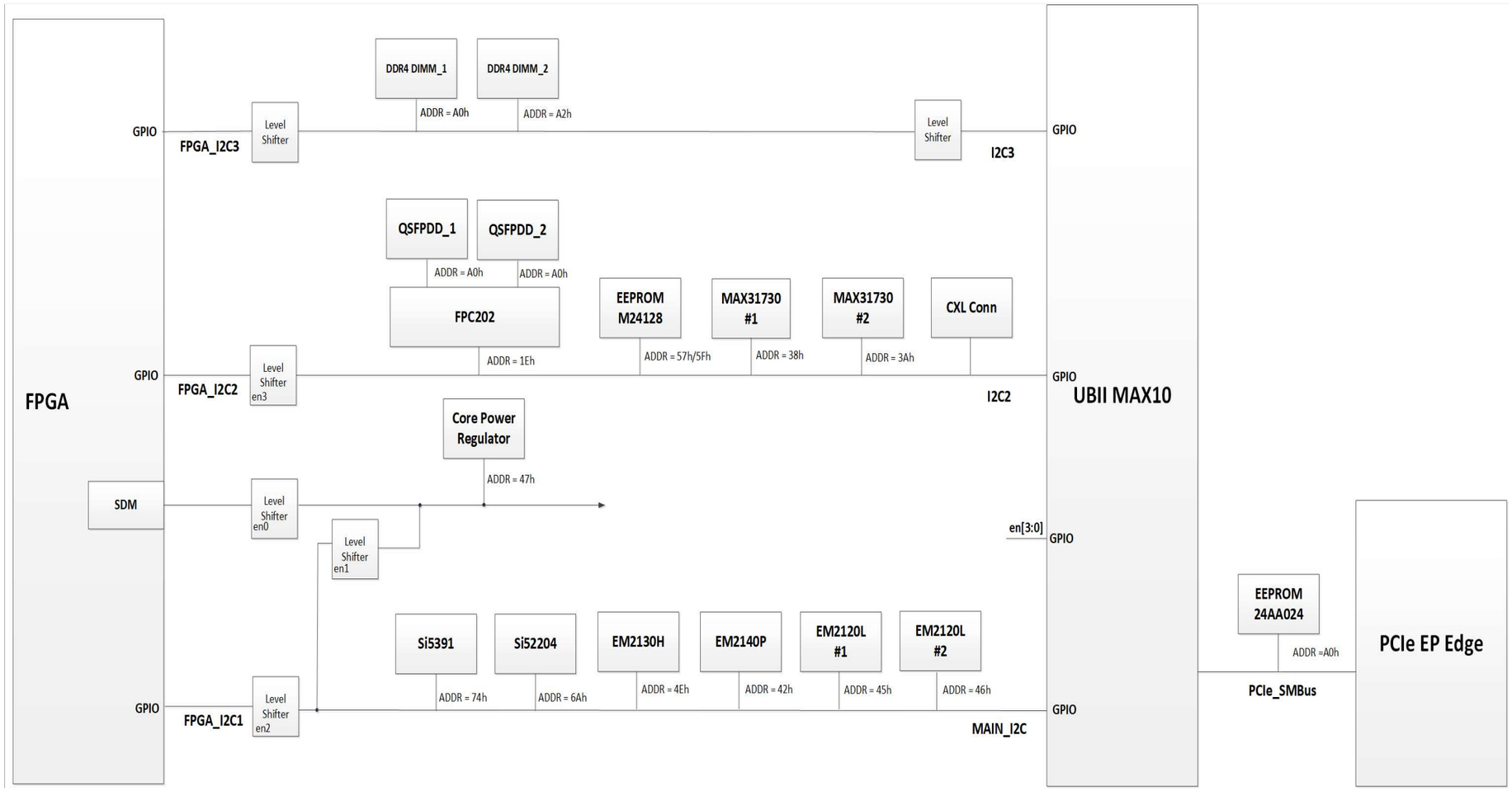
Title **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 5 of 77

# I2C Diagram

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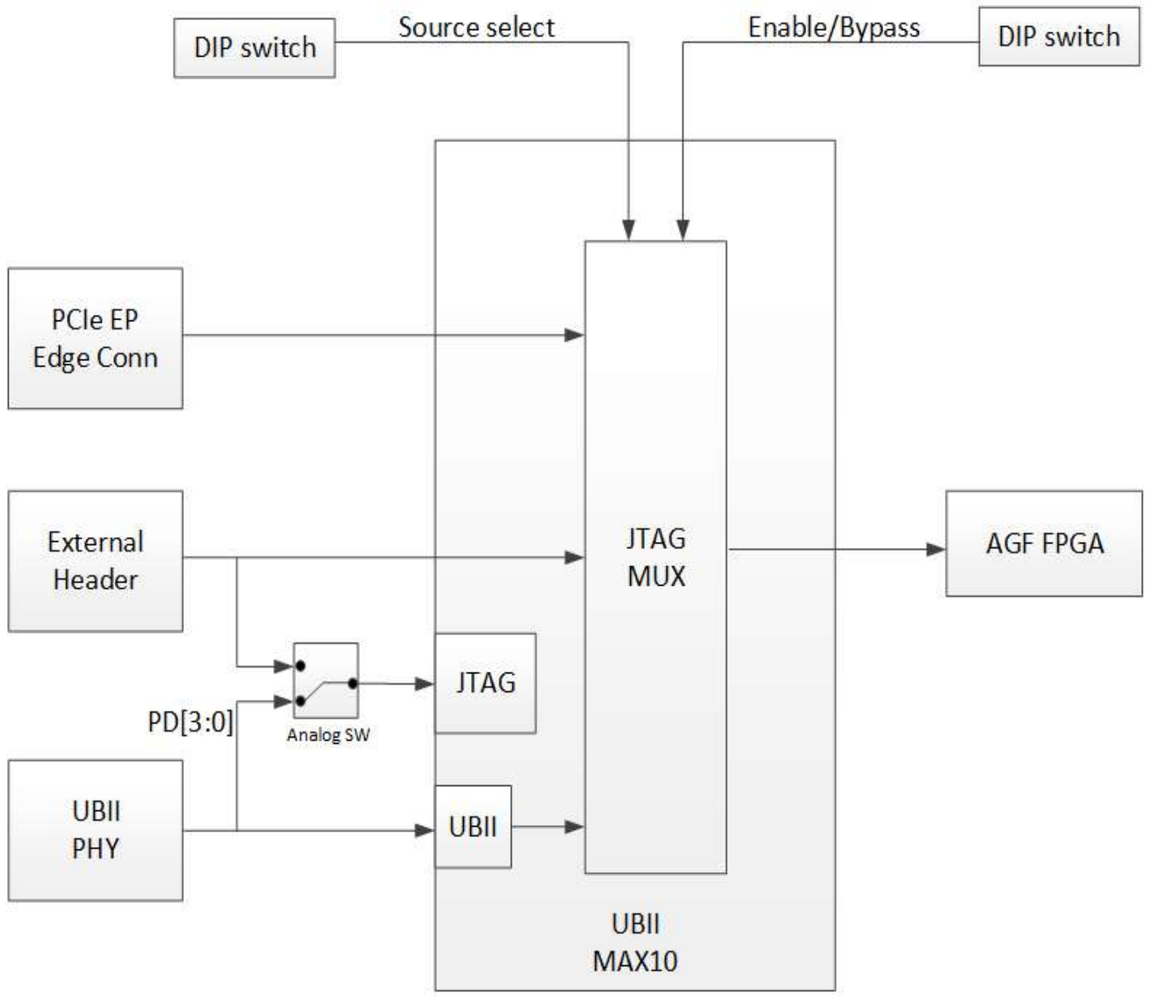
| Title: AgileX I-Series FPGA Dev Kit | | |
|  | | |
| Size: B | Document Number: M17472 (M17471-100) | Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 6 of 77 | |

# JTAG Block Diagrram



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|  | | |
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| Date: Wednesday, December 23, 2020 | Sheet 7 of 77 | |

# DDR4/DDR-T DIMM Pin Map

| Pin # | Front Side | Pin # | Back Side | Pin # | Front Side | Pin # | Back Side | Pin # | Front Side | Pin # | Back Side | Pin # | Front Side | Pin # | Back Side |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12V | 145 | 12V | 38 | DQ24 | 182 | VSS | 75 | CLK0# | 219 | CLK1# | 108 | DQ40 | 252 | VSS |
| 2 | VSS | 146 | VREFCA | 39 | VSS | 183 | DQ25 | 76 | VDD | 220 | VDD | 109 | VSS | 253 | DQ41 |
| 3 | DQ4 | 147 | VSS | 40 | DQS12 | 184 | VSS | 77 | VTT | 221 | VTT | 110 | DQS14 | 254 | VSS |
| 4 | VSS | 148 | DQ5 | 41 | DQS12# | 185 | DQS3# | KEY | | | | 111 | DQS14# | 255 | DQS5# |
| 5 | DQ0 | 149 | VSS | 42 | VSS | 186 | DQS3 | | | | | 112 | VSS | 256 | DQS5 |
| 6 | VSS | 150 | DQ1 | 43 | DQ30 | 187 | VSS | | | | | 113 | DQ46 | 257 | VSS |
| 7 | DQS0 | 151 | VSS | 44 | VSS | 188 | DQ31 | | | | | 114 | VSS | 258 | DQ47 |
| 8 | DQS0# | 152 | DQS0# | 45 | DQ26 | 189 | VSS | 78 | EVENT | 222 | PARITY | 115 | DQ42 | 259 | VSS |
| 9 | VSS | 153 | DQS0 | 46 | VSS | 190 | DQ27 | 79 | A0 | 223 | VDD | 116 | VSS | 260 | DQ43 |
| 10 | DQ6 | 154 | VSS | 47 | CB4 | 191 | VSS | 80 | VDD | 224 | BA1 | 117 | DQ52 | 261 | VSS |
| 11 | VSS | 155 | DQ7 | 48 | VSS | 192 | CB5 | 81 | BA0 | 225 | A10 | 118 | VSS | 262 | DQ53 |
| 12 | DQ2 | 156 | VSS | 49 | CB0 | 193 | VSS | 82 | RAS#/A16 | 226 | VDD | 119 | DQ48 | 263 | VSS |
| 13 | VSS | 157 | DQ3 | 50 | VSS | 194 | CB1 | 83 | VDD | 227 | RFU | 120 | VSS | 264 | DQ49 |
| 14 | DQ12 | 158 | VSS | 51 | DQS17 | 195 | VSS | 84 | CS0# | 228 | WE#/A14 | 121 | DQS15 | 265 | VSS |
| 15 | VSS | 159 | DQ13 | 52 | DQS17# | 196 | DQS8# | 85 | VDD | 229 | VDD | 122 | DQS15# | 266 | DQS6# |
| 16 | DQ8 | 160 | VSS | 53 | VSS | 197 | DQS8 | 86 | CAS#/A15 | 230 | SAVE# | 123 | VSS | 267 | DQS6 |
| 17 | VSS | 161 | DQ9 | 54 | CB6 | 198 | VSS | 87 | ODT0 | 231 | VDD | 124 | DQ54 | 268 | VSS |
| 18 | DQS10 | 162 | VSS | 55 | VSS | 199 | CB7 | 88 | VDD | 232 | A13 | 125 | VSS | 269 | DQ55 |
| 19 | DQS10# | 163 | DQS1# | 56 | CB2 | 200 | VSS | 89 | CS1# | 233 | VDD | 126 | DQ50 | 270 | VSS |
| 20 | VSS | 164 | DQS1 | 57 | VSS | 201 | CB3 | 90 | VDD | 234 | A17 | 127 | VSS | 271 | DQ51 |
| 21 | DQ14 | 165 | VSS | 58 | RESET# | 202 | VSS | 91 | ODT1 | 235 | C2 | 128 | DQ60 | 272 | VSS |
| 22 | VSS | 166 | DQ15 | 59 | VDD | 203 | CKE1 | 92 | VDD | 236 | VDD | 129 | VSS | 273 | DQ61 |
| 23 | DQ10 | 167 | VSS | 60 | CKE0 | 204 | VDD | 93 | C0 | 237 | C1 | 130 | DQ56 | 274 | VSS |
| 24 | VSS | 168 | DQ11 | 61 | VDD | 205 | RFU | 94 | VSS | 238 | SA2 | 131 | VSS | 275 | DQ57 |
| 25 | DQ20 | 169 | VSS | 62 | ACT# | 206 | VDD | 95 | DQ36 | 239 | VSS | 132 | DQS16 | 276 | VSS |
| 26 | VSS | 170 | DQ21 | 63 | BG0 | 207 | BG1 | 96 | VSS | 240 | DQ37 | 133 | DQS16# | 277 | DQS7# |
| 27 | DQ16 | 171 | VSS | 64 | VDD | 208 | ALERT# | 97 | DQ32 | 241 | VSS | 134 | VSS | 278 | DQS7 |
| 28 | VSS | 172 | DQ17 | 65 | A12 | 209 | VDD | 98 | VSS | 242 | DQ33 | 135 | DQ62 | 279 | VSS |
| 29 | DQS11 | 173 | VSS | 66 | A9 | 210 | A11 | 99 | DQS13 | 243 | VSS | 136 | VSS | 280 | DQ63 |
| 30 | DQS11# | 174 | DQS2# | 67 | VDD | 211 | A7 | 100 | DQS13# | 244 | DQS4# | 137 | DQ58 | 281 | VSS |
| 31 | VSS | 175 | DQS2 | 68 | A8 | 212 | VDD | 101 | VSS | 245 | DQS4 | 138 | VSS | 282 | DQ59 |
| 32 | DQ22 | 176 | VSS | 69 | A6 | 213 | A5 | 102 | DQ38 | 246 | VSS | 139 | SA0 | 283 | VSS |
| 33 | VSS | 177 | DQ23 | 70 | VDD | 214 | A4 | 103 | VSS | 247 | DQ39 | 140 | SA1 | 284 | VDDSPD |
| 34 | DQ18 | 178 | VSS | 71 | A3 | 215 | VDD | 104 | DQ34 | 248 | VSS | 141 | SCL | 285 | SDA |
| 35 | VSS | 179 | DQ19 | 72 | A1 | 216 | A2 | 105 | VSS | 249 | DQ35 | 142 | VPP | 286 | VPP |
| 36 | DQ28 | 180 | VSS | 73 | VDD | 217 | VDD | 106 | DQ44 | 250 | VSS | 143 | VPP | 287 | VPP |
| 37 | VSS | 181 | DQ29 | 74 | CLK0 | 218 | CLK1 | 107 | VSS | 251 | DQ45 | 144 | RFU | 288 | VPP |

DDR-T DIMM Pin Map is Identical to standard DDR4 DIMM Pin Map except the DDR-T protocol repurposes five of these pins:

CS1# (pin 89) : Grant, GNT# <0> Input

CKE1 (pin 203) : Request, REQ# <0> Output

ODT1 (pin 91) : Error, ERR# Output

CLK1 (pin 218):Early Read ID, ERID<0> Output

CLK1# (pin 219):Early Read ID, ERID<1> Output

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Size: B | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 8 of 77

# DDR4 COMPONENT #1/#2

DDR4_COMP_CH0_BG0 10,11,13
DDR4_COMP_CH0_BA[1:0] 10,11,13
DDR4_COMP_CH0_A[16:0] 10,11,13
DDR4_COMP_CH0_CS_N 10,11,13
DDR4_COMP_CH0_ODT 10,11,13
DDR4_COMP_CH0_ACT_N 10,11,13
DDR4_COMP_CH0_PAR 10,11,13
DDR4_COMP_CH0_CKE 10,11,13
DDR4_COMP_CH0_TEN 10,11
DDR4_COMP_CH0_BG1 10,11,13
DDR4_COMP_CH0_DQ[71:0] 10,11,12,13
DDR4_COMP_CH0_DBI_N[8:0] 10,11,12,13
DDR4_COMP_CH0_DQS_P[8:0] 10,11,12,13
DDR4_COMP_CH0_DQS_N[8:0] 10,11,12,13
DDR4_COMP_CH0_RESET_N 10,11,13
DDR4_COMP_CH0_CLK_P 10,11,13
DDR4_COMP_CH0_CLK_N 10,11,13
DDR4_COMP_CH0_ALERT_N 10,11,13

U1

DDR4_COMP_CH0_A0 P3 A0
DDR4_COMP_CH0_A1 P7 A1
DDR4_COMP_CH0_A2 R3 A2
DDR4_COMP_CH0_A3 N7 A3
DDR4_COMP_CH0_A4 N3 A4
DDR4_COMP_CH0_A5 P8 A5
DDR4_COMP_CH0_A6 P2 A6
DDR4_COMP_CH0_A7 R8 A7
DDR4_COMP_CH0_A8 R2 A8
DDR4_COMP_CH0_A9 R7 A9
DDR4_COMP_CH0_A10 M3 A10_AP
DDR4_COMP_CH0_A11 T2 A11
DDR4_COMP_CH0_A12 M7 A12_BC_n
DDR4_COMP_CH0_A13 T8 A13
DDR4_COMP_CH0_A14 L2 WE_n_A14
DDR4_COMP_CH0_A15 M8 CAS_n_A15
DDR4_COMP_CH0_A16 L8 RAS_n_A16
DDR4_COMP_CH0_BG0 M2 BG0
DDR4_COMP_CH0_BG1 M9 BG1
DDR4_COMP_CH0_BA0 N2 BA0
DDR4_COMP_CH0_BA1 N8 BA1
DDR4_COMP_CH0_CS_N L7 CS_n
DDR4_COMP_CH0_ODT K3 ODT
DDR4_COMP_CH0_ACT_N L3 ACT_n
DDR4_COMP_CH0_PAR T3 PAR
DDR4_COMP_CH0_CKE K2 CKE
DDR4_COMP_CH0_RESET_N P1 RESET_n
DDR4_COMP_CH0_CLK_P K7 CK_t
DDR4_COMP_CH0_CLK_N K8 CK_c
0p6V_VREF_DDR4_CH01 M1 VREFCA
C1 0.1uF
1p2V_DDR4_CH01 B3 VDD0 B9 VDD1 D1 VDD2 G7 VDD3 J1 VDD4 J9 VDD5 L1 VDD6 L9 VDD7 R1 VDD8 T9 VDD9
A1 VDDQ0 A9 VDDQ1 C1 VDDQ2 D9 VDDQ3 F2 VDDQ4 F8 VDDQ5 G1 VDDQ6 G9 VDDQ7 J2 VDDQ8 J8 VDDQ9

DQ0 G2 DDR4_COMP_CH0_DQ0
DQ1 F7 DDR4_COMP_CH0_DQ1
DQ2 H3 DDR4_COMP_CH0_DQ2
DQ3 H7 DDR4_COMP_CH0_DQ3
DQ4 H2 DDR4_COMP_CH0_DQ4
DQ5 H8 DDR4_COMP_CH0_DQ5
DQ6 J3 DDR4_COMP_CH0_DQ6
DQ7 J7 DDR4_COMP_CH0_DQ7
DQ8 A3 DDR4_COMP_CH0_DQ8
DQ9 B8 DDR4_COMP_CH0_DQ9
DQ10 C3 DDR4_COMP_CH0_DQ10
DQ11 C7 DDR4_COMP_CH0_DQ11
DQ12 C2 DDR4_COMP_CH0_DQ12
DQ13 C8 DDR4_COMP_CH0_DQ13
DQ14 D3 DDR4_COMP_CH0_DQ14
DQ15 D7 DDR4_COMP_CH0_DQ15
NF_UDM_n_UDBI_n E2 DDR4_COMP_CH0_DBI_N1
NF_LDM_n_LDBI_n E7 DDR4_COMP_CH0_DBI_N0
UDQS_t B7 DDR4_COMP_CH0_DQS_P1
UDQS_c A7 DDR4_COMP_CH0_DQS_N1
LDQS_t G3 DDR4_COMP_CH0_DQS_P0
LDQS_c F3 DDR4_COMP_CH0_DQS_N0
ALERT_n P9 DDR4_COMP_CH0_ALERT_N
ZQ0 F9 240 R1
ZQ1 E9 240 R3
VPP_2V5_1 R9 2p5V
VPP_2V5_0 B1
VSS0 B2 VSS1 E1 VSS2 T7 VSS3 G8 VSS4 K1 VSS5 K9 VSS6 N1 VSS7 T1
VSSQ0 A2 VSSQ1 A8 VSSQ2 C9 VSSQ3 D2 VSSQ4 D8 VSSQ5 E3 VSSQ6 E8 VSSQ7 F1 VSSQ8 H1 VSSQ9 H9
TEN_VSS N9 DDR4_COMP_CH0_TEN
2p5V
C3 0.47uF C4 0.47uF C5 22uF
MT40A1G16KNR-075:E

U2

DDR4_COMP_CH0_A0 P3 A0
DDR4_COMP_CH0_A1 P7 A1
DDR4_COMP_CH0_A2 R3 A2
DDR4_COMP_CH0_A3 N7 A3
DDR4_COMP_CH0_A4 N3 A4
DDR4_COMP_CH0_A5 P8 A5
DDR4_COMP_CH0_A6 P2 A6
DDR4_COMP_CH0_A7 R8 A7
DDR4_COMP_CH0_A8 R2 A8
DDR4_COMP_CH0_A9 R7 A9
DDR4_COMP_CH0_A10 M3 A10_AP
DDR4_COMP_CH0_A11 T2 A11
DDR4_COMP_CH0_A12 M7 A12_BC_n
DDR4_COMP_CH0_A13 T8 A13
DDR4_COMP_CH0_A14 L2 WE_n_A14
DDR4_COMP_CH0_A15 M8 CAS_n_A15
DDR4_COMP_CH0_A16 L8 RAS_n_A16
DDR4_COMP_CH0_BG0 M2 BG0
DDR4_COMP_CH0_BG1 M9 BG1
DDR4_COMP_CH0_BA0 N2 BA0
DDR4_COMP_CH0_BA1 N8 BA1
DDR4_COMP_CH0_CS_N L7 CS_n
DDR4_COMP_CH0_ODT K3 ODT
DDR4_COMP_CH0_ACT_N L3 ACT_n
DDR4_COMP_CH0_PAR T3 PAR
DDR4_COMP_CH0_CKE K2 CKE
DDR4_COMP_CH0_RESET_N P1 RESET_n
DDR4_COMP_CH0_CLK_P K7 CK_t
DDR4_COMP_CH0_CLK_N K8 CK_c
0p6V_VREF_DDR4_CH01 M1 VREFCA
C2 0.1uF
1p2V_DDR4_CH01 B3 VDD0 B9 VDD1 D1 VDD2 G7 VDD3 J1 VDD4 J9 VDD5 L1 VDD6 L9 VDD7 R1 VDD8 T9 VDD9
A1 VDDQ0 A9 VDDQ1 C1 VDDQ2 D9 VDDQ3 F2 VDDQ4 F8 VDDQ5 G1 VDDQ6 G9 VDDQ7 J2 VDDQ8 J8 VDDQ9

DQ0 G2 DDR4_COMP_CH0_DQ16
DQ1 F7 DDR4_COMP_CH0_DQ17
DQ2 H3 DDR4_COMP_CH0_DQ18
DQ3 H7 DDR4_COMP_CH0_DQ19
DQ4 H2 DDR4_COMP_CH0_DQ20
DQ5 H8 DDR4_COMP_CH0_DQ21
DQ6 J3 DDR4_COMP_CH0_DQ22
DQ7 J7 DDR4_COMP_CH0_DQ23
DQ8 A3 DDR4_COMP_CH0_DQ24
DQ9 B8 DDR4_COMP_CH0_DQ25
DQ10 C3 DDR4_COMP_CH0_DQ26
DQ11 C7 DDR4_COMP_CH0_DQ27
DQ12 C2 DDR4_COMP_CH0_DQ28
DQ13 C8 DDR4_COMP_CH0_DQ29
DQ14 D3 DDR4_COMP_CH0_DQ30
DQ15 D7 DDR4_COMP_CH0_DQ31
NF_UDM_n_UDBI_n E2 DDR4_COMP_CH0_DBI_N3
NF_LDM_n_LDBI_n E7 DDR4_COMP_CH0_DBI_N2
UDQS_t B7 DDR4_COMP_CH0_DQS_P3
UDQS_c A7 DDR4_COMP_CH0_DQS_N3
LDQS_t G3 DDR4_COMP_CH0_DQS_P2
LDQS_c F3 DDR4_COMP_CH0_DQS_N2
ALERT_n P9 DDR4_COMP_CH0_ALERT_N
ZQ0 F9 240 R2
ZQ1 E9 240 R4
VPP_2V5_1 R9 2p5V
VPP_2V5_0 B1
VSS0 B2 VSS1 E1 VSS2 T7 VSS3 G8 VSS4 K1 VSS5 K9 VSS6 N1 VSS7 T1
VSSQ0 A2 VSSQ1 A8 VSSQ2 C9 VSSQ3 D2 VSSQ4 D8 VSSQ5 E3 VSSQ6 E8 VSSQ7 F1 VSSQ8 H1 VSSQ9 H9
TEN_VSS N9 DDR4_COMP_CH0_TEN
2p5V
C6 0.47uF C7 0.47uF C8 22uF
MT40A1G16KNR-075:E

1p2V_DDR4_CH01
C9 2.2nF C10 2.2nF C11 2.2nF C12 2.2nF C13 2.2nF C14 2.2nF C15 2.2nF C16 2.2nF C17 2.2nF C18 3.3nF C19 3.3nF C20 4.7nF C21 4.7nF C22 4.7nF C23 0.47uF C24 0.47uF C25 0.47uF

1p2V_DDR4_CH01
C30 0.01uF C31 0.01uF C32 0.01uF C33 0.1uF C34 0.1uF C35 0.1uF C36 0.1uF C37 0.47uF C38 0.47uF C39 0.47uF C40 0.47uF C41 0.47uF C42 0.47uF C43 0.47uF C44 0.47uF C45 0.47uF C46 0.47uF

1p2V_DDR4_CH01
C26 22uF C27 22uF C28 1uF C29 1uF

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| Date: Wednesday, December 23, 2020 | Sheet 9 of 77 | |

# DDR4 COMPONENT #3/#4

DDR4_COMP_CH0_BG0 9,11,13
DDR4_COMP_CH0_BA[1:0] 9,11,13
DDR4_COMP_CH0_A[16:0] 9,11,13
DDR4_COMP_CH0_CS_N 9,11,13
DDR4_COMP_CH0_ODT 9,11,13
DDR4_COMP_CH0_ACT_N 9,11,13
DDR4_COMP_CH0_PAR 9,11,13
DDR4_COMP_CH0_CKE 9,11,13
DDR4_COMP_CH0_TEN 9,11
DDR4_COMP_CH0_BG1 9,11,13

DDR4_COMP_CH0_DQ[71:0] 9,11,12,13
DDR4_COMP_CH0_DBI_N[8:0] 9,11,12,13
DDR4_COMP_CH0_DQS_P[8:0] 9,11,12,13
DDR4_COMP_CH0_DQS_N[8:0] 9,11,12,13
DDR4_COMP_CH0_RESET_N 9,11,13
DDR4_COMP_CH0_CLK_P 9,11,13
DDR4_COMP_CH0_CLK_N 9,11,13
DDR4_COMP_CH0_ALERT_N 9,11,13

U3

DDR4_COMP_CH0_A0 P3 A0
DDR4_COMP_CH0_A1 P7 A1
DDR4_COMP_CH0_A2 R3 A2
DDR4_COMP_CH0_A3 N7 A3
DDR4_COMP_CH0_A4 N3 A4
DDR4_COMP_CH0_A5 P8 A5
DDR4_COMP_CH0_A6 P2 A6
DDR4_COMP_CH0_A7 R8 A7
DDR4_COMP_CH0_A8 R2 A8
DDR4_COMP_CH0_A9 R7 A9
DDR4_COMP_CH0_A10 M3 A10_AP
DDR4_COMP_CH0_A11 T2 A11
DDR4_COMP_CH0_A12 M7 A12_BC_n
DDR4_COMP_CH0_A13 T8 A13
DDR4_COMP_CH0_A14 L2 WE_n_A14
DDR4_COMP_CH0_A15 M8 CAS_n_A15
DDR4_COMP_CH0_A16 L8 RAS_n_A16

DDR4_COMP_CH0_BG0 M2 BG0
DDR4_COMP_CH0_BG1 M9 BG1
DDR4_COMP_CH0_BA0 N2 BA0
DDR4_COMP_CH0_BA1 N8 BA1

DDR4_COMP_CH0_CS_N L7 CS_n
DDR4_COMP_CH0_ODT K3 ODT
DDR4_COMP_CH0_ACT_N L3 ACT_n
DDR4_COMP_CH0_PAR T3 PAR
DDR4_COMP_CH0_CKE K2 CKE

DDR4_COMP_CH0_RESET_N P1 RESET_n

DDR4_COMP_CH0_CLK_P K7 CK_t
DDR4_COMP_CH0_CLK_N K8 CK_c

0p6V_VREF_DDR4_CH01
M1 VREFCA
C47 0.1uF

1p2V_DDR4_CH01
B3 VDD0
B9 VDD1
D1 VDD2
G7 VDD3
J1 VDD4
J9 VDD5
L1 VDD6
L9 VDD7
R1 VDD8
T9 VDD9

A1 VDDQ0
A9 VDDQ1
C1 VDDQ2
D9 VDDQ3
F2 VDDQ4
F8 VDDQ5
G1 VDDQ6
G9 VDDQ7
J2 VDDQ8
J8 VDDQ9

DQ0 G2 DDR4_COMP_CH0_DQ32
DQ1 F7 DDR4_COMP_CH0_DQ33
DQ2 H3 DDR4_COMP_CH0_DQ34
DQ3 H7 DDR4_COMP_CH0_DQ35
DQ4 H2 DDR4_COMP_CH0_DQ36
DQ5 H8 DDR4_COMP_CH0_DQ37
DQ6 J3 DDR4_COMP_CH0_DQ38
DQ7 J7 DDR4_COMP_CH0_DQ39
DQ8 A3 DDR4_COMP_CH0_DQ40
DQ9 B8 DDR4_COMP_CH0_DQ41
DQ10 C3 DDR4_COMP_CH0_DQ42
DQ11 C7 DDR4_COMP_CH0_DQ43
DQ12 C2 DDR4_COMP_CH0_DQ44
DQ13 C8 DDR4_COMP_CH0_DQ45
DQ14 D3 DDR4_COMP_CH0_DQ46
DQ15 D7 DDR4_COMP_CH0_DQ47

NF_UDM_n_UDBI_n E2 DDR4_COMP_CH0_DBI_N5
NF_LDM_n_LDBI_n E7 DDR4_COMP_CH0_DBI_N4

UDQS_t B7 DDR4_COMP_CH0_DQS_P5
UDQS_c A7 DDR4_COMP_CH0_DQS_N5
LDQS_t G3 DDR4_COMP_CH0_DQS_P4
LDQS_c F3 DDR4_COMP_CH0_DQS_N4

ALERT_n P9 DDR4_COMP_CH0_ALERT_N
ZQ0 F9 240 R7
ZQ1 E9 240 R9

VPP_2V5_1 R9 2p5V
VPP_2V5_0 B1

VSS0 B2
VSS1 E1
VSS2 T7
VSS3 G8
VSS4 K1
VSS5 K9
VSS6 N1
VSS7 T1

VSSQ0 A2
VSSQ1 A8
VSSQ2 C9
VSSQ3 D2
VSSQ4 D8
VSSQ5 E3
VSSQ6 E8
VSSQ7 F1
VSSQ8 H1
VSSQ9 H9

TEN_VSS N9 DDR4_COMP_CH0_TEN

2p5V
C49 0.47uF
C50 0.47uF
C51 22uF

MT40A1G16KNR-075:E

1p2V_DDR4_CH01
C55 2.2nF
C56 2.2nF
C57 2.2nF
C58 2.2nF
C59 2.2nF
C60 2.2nF
C61 2.2nF
C62 2.2nF
C63 2.2nF
C64 3.3nF
C65 3.3nF
C66 4.7nF
C67 4.7nF
C68 4.7nF
C69 0.47uF
C70 0.47uF
C71 0.47uF

1p2V_DDR4_CH01
C76 0.01uF
C77 0.01uF
C78 0.01uF
C79 0.1uF
C80 0.1uF
C81 0.1uF
C82 0.1uF
C83 0.47uF
C84 0.47uF
C85 0.47uF
C86 0.47uF
C87 0.47uF
C88 0.47uF
C89 0.47uF
C90 0.47uF
C91 0.47uF
C92 0.47uF

U4

DDR4_COMP_CH0_A0 P3 A0
DDR4_COMP_CH0_A1 P7 A1
DDR4_COMP_CH0_A2 R3 A2
DDR4_COMP_CH0_A3 N7 A3
DDR4_COMP_CH0_A4 N3 A4
DDR4_COMP_CH0_A5 P8 A5
DDR4_COMP_CH0_A6 P2 A6
DDR4_COMP_CH0_A7 R8 A7
DDR4_COMP_CH0_A8 R2 A8
DDR4_COMP_CH0_A9 R7 A9
DDR4_COMP_CH0_A10 M3 A10_AP
DDR4_COMP_CH0_A11 T2 A11
DDR4_COMP_CH0_A12 M7 A12_BC_n
DDR4_COMP_CH0_A13 T8 A13
DDR4_COMP_CH0_A14 L2 WE_n_A14
DDR4_COMP_CH0_A15 M8 CAS_n_A15
DDR4_COMP_CH0_A16 L8 RAS_n_A16

DDR4_COMP_CH0_BG0 M2 BG0
DDR4_COMP_CH0_BG1 M9 BG1
DDR4_COMP_CH0_BA0 N2 BA0
DDR4_COMP_CH0_BA1 N8 BA1

DDR4_COMP_CH0_CS_N L7 CS_n
DDR4_COMP_CH0_ODT K3 ODT
DDR4_COMP_CH0_ACT_N L3 ACT_n
DDR4_COMP_CH0_PAR T3 PAR
DDR4_COMP_CH0_CKE K2 CKE

DDR4_COMP_CH0_RESET_N P1 RESET_n

DDR4_COMP_CH0_CLK_P K7 CK_t
DDR4_COMP_CH0_CLK_N K8 CK_c

0p6V_VREF_DDR4_CH01
M1 VREFCA
C48 0.1uF

1p2V_DDR4_CH01
B3 VDD0
B9 VDD1
D1 VDD2
G7 VDD3
J1 VDD4
J9 VDD5
L1 VDD6
L9 VDD7
R1 VDD8
T9 VDD9

A1 VDDQ0
A9 VDDQ1
C1 VDDQ2
D9 VDDQ3
F2 VDDQ4
F8 VDDQ5
G1 VDDQ6
G9 VDDQ7
J2 VDDQ8
J8 VDDQ9

DQ0 G2 DDR4_COMP_CH0_DQ48
DQ1 F7 DDR4_COMP_CH0_DQ49
DQ2 H3 DDR4_COMP_CH0_DQ50
DQ3 H7 DDR4_COMP_CH0_DQ51
DQ4 H2 DDR4_COMP_CH0_DQ52
DQ5 H8 DDR4_COMP_CH0_DQ53
DQ6 J3 DDR4_COMP_CH0_DQ54
DQ7 J7 DDR4_COMP_CH0_DQ55
DQ8 A3 DDR4_COMP_CH0_DQ56
DQ9 B8 DDR4_COMP_CH0_DQ57
DQ10 C3 DDR4_COMP_CH0_DQ58
DQ11 C7 DDR4_COMP_CH0_DQ59
DQ12 C2 DDR4_COMP_CH0_DQ60
DQ13 C8 DDR4_COMP_CH0_DQ61
DQ14 D3 DDR4_COMP_CH0_DQ62
DQ15 D7 DDR4_COMP_CH0_DQ63

NF_UDM_n_UDBI_n E2 DDR4_COMP_CH0_DBI_N7
NF_LDM_n_LDBI_n E7 DDR4_COMP_CH0_DBI_N6

UDQS_t B7 DDR4_COMP_CH0_DQS_P7
UDQS_c A7 DDR4_COMP_CH0_DQS_N7
LDQS_t G3 DDR4_COMP_CH0_DQS_P6
LDQS_c F3 DDR4_COMP_CH0_DQS_N6

ALERT_n P9 DDR4_COMP_CH0_ALERT_N
ZQ0 F9 240 R8
ZQ1 E9 240 R10

VPP_2V5_1 R9 2p5V
VPP_2V5_0 B1

VSS0 B2
VSS1 E1
VSS2 T7
VSS3 G8
VSS4 K1
VSS5 K9
VSS6 N1
VSS7 T1

VSSQ0 A2
VSSQ1 A8
VSSQ2 C9
VSSQ3 D2
VSSQ4 D8
VSSQ5 E3
VSSQ6 E8
VSSQ7 F1
VSSQ8 H1
VSSQ9 H9

TEN_VSS N9 DDR4_COMP_CH0_TEN

2p5V
C52 0.47uF
C53 0.47uF
C54 22uF

MT40A1G16KNR-075:E

1p2V_DDR4_CH01
C72 22uF
C73 22uF
C74 1uF
C75 1uF

Intel Corporation,101 innovation Dr, San Jose, CA 95134

Title: AgileX I-Series FPGA Dev Kit



Size: B
Document Number: M17472 (M17471-100)
Rev: A0
Date: Wednesday, December 23, 2020
Sheet 10 of 77

# DDR4 COMPONENT #5 & Termination

DDR4_COMP_CH0_BG0 9,10,13
DDR4_COMP_CH0_BA[1:0] 9,10,13
DDR4_COMP_CH0_A[16:0] 9,10,13
DDR4_COMP_CH0_CS_N 9,10,13
DDR4_COMP_CH0_ODT 9,10,13
DDR4_COMP_CH0_ACT_N 9,10,13
DDR4_COMP_CH0_PAR 9,10,13
DDR4_COMP_CH0_CKE 9,10,13
DDR4_COMP_CH0_BG1 9,10,13
DDR4_COMP_CH0_DQ[71:0] 9,10,12,13
DDR4_COMP_CH0_DBI_N[8:0] 9,10,12,13
DDR4_COMP_CH0_DQS_P[8:0] 9,10,12,13
DDR4_COMP_CH0_DQS_N[8:0] 9,10,12,13
DDR4_COMP_CH0_RESET_N 9,10,13
DDR4_COMP_CH0_CLK_P 9,10,13
DDR4_COMP_CH0_CLK_N 9,10,13
DDR4_COMP_CH0_ALERT_N 9,10,13
DDR4_COMP_CH0_TEN 9,10

U5

| | | | |
|---|---|---|---|
| DDR4_COMP_CH0_A0 | P3 | A0 | |
| DDR4_COMP_CH0_A1 | P7 | A1 | |
| DDR4_COMP_CH0_A2 | R3 | A2 | |
| DDR4_COMP_CH0_A3 | N7 | A3 | |
| DDR4_COMP_CH0_A4 | N3 | A4 | |
| DDR4_COMP_CH0_A5 | P8 | A5 | |
| DDR4_COMP_CH0_A6 | P2 | A6 | |
| DDR4_COMP_CH0_A7 | R8 | A7 | |
| DDR4_COMP_CH0_A8 | R2 | A8 | |
| DDR4_COMP_CH0_A9 | R7 | A9 | |
| DDR4_COMP_CH0_A10 | M3 | A10_AP | |
| DDR4_COMP_CH0_A11 | T2 | A11 | |
| DDR4_COMP_CH0_A12 | M7 | A12_BC_n | |
| DDR4_COMP_CH0_A13 | T8 | A13 | |
| DDR4_COMP_CH0_A14 | L2 | WE_n_A14 | |
| DDR4_COMP_CH0_A15 | M8 | CAS_n_A15 | |
| DDR4_COMP_CH0_A16 | L8 | RAS_n_A16 | |
| DDR4_COMP_CH0_BG0 | M2 | BG0 | |
| DDR4_COMP_CH0_BG1 | M9 | BG1 | |
| DDR4_COMP_CH0_BA0 | N2 | BA0 | |
| DDR4_COMP_CH0_BA1 | N8 | BA1 | |
| DDR4_COMP_CH0_CS_N | L7 | CS_n | |
| DDR4_COMP_CH0_ODT | K3 | ODT | |
| DDR4_COMP_CH0_ACT_N | L3 | ACT_n | |
| DDR4_COMP_CH0_PAR | T3 | PAR | |
| DDR4_COMP_CH0_CKE | K2 | CKE | |
| DDR4_COMP_CH0_RESET_N | P1 | RESET_n | |
| DDR4_COMP_CH0_CLK_P | K7 | CK_t | |
| DDR4_COMP_CH0_CLK_N | K8 | CK_c | |
| 0p6V_VREF_DDR4_CH01 | M1 | VREFCA | |
| 1p2V_DDR4_CH01 | B3 | VDD0 | |
| | B9 | VDD1 | |
| | D1 | VDD2 | |
| | G7 | VDD3 | |
| | J1 | VDD4 | |
| | J9 | VDD5 | |
| | L1 | VDD6 | |
| | L9 | VDD7 | |
| | R1 | VDD8 | |
| | T9 | VDD9 | |
| | A1 | VDDQ0 | |
| | A9 | VDDQ1 | |
| | C1 | VDDQ2 | |
| | D9 | VDDQ3 | |
| | F2 | VDDQ4 | |
| | F8 | VDDQ5 | |
| | G1 | VDDQ6 | |
| | G9 | VDDQ7 | |
| | J2 | VDDQ8 | |
| | J8 | VDDQ9 | |

C93 0.1uF

| | | | |
|---|---|---|---|
| DQ0 | G2 | DDR4_COMP_CH0_DQ64 | |
| DQ1 | F7 | DDR4_COMP_CH0_DQ65 | |
| DQ2 | H3 | DDR4_COMP_CH0_DQ66 | |
| DQ3 | H7 | DDR4_COMP_CH0_DQ67 | |
| DQ4 | H2 | DDR4_COMP_CH0_DQ68 | |
| DQ5 | H8 | DDR4_COMP_CH0_DQ69 | |
| DQ6 | J3 | DDR4_COMP_CH0_DQ70 | |
| DQ7 | J7 | DDR4_COMP_CH0_DQ71 | |
| DQ8 | A3 | R13 1K | |
| DQ9 | B8 | R14 1K | |
| DQ10 | C3 | R15 1K | |
| DQ11 | C7 | R16 1K | |
| DQ12 | C2 | R17 1K | |
| DQ13 | C8 | R18 1K | |
| DQ14 | D3 | R19 1K | |
| DQ15 | D7 | R20 1K | |
| NF_UDM_n_UDBI_n | E2 | R21 1K | |
| NF_LDM_n_LDBI_n | E7 | DDR4_COMP_CH0_DBI_N8 | |
| UDQS_t | B7 | R22 1K | |
| UDQS_c | A7 | R23 1K | |
| LDQS_t | G3 | DDR4_COMP_CH0_DQS_P8 | |
| LDQS_c | F3 | DDR4_COMP_CH0_DQS_N8 | |
| ALERT_n | P9 | DDR4_COMP_CH0_ALERT_N | |
| ZQ0 | F9 | 240 R24 | |
| ZQ1 | E9 | 240 R25 | |
| VPP_2V5_1 | R9 | 2p5V | |
| VPP_2V5_0 | B1 | | |
| VSS0 | B2 | | |
| VSS1 | E1 | | |
| VSS2 | T7 | | |
| VSS3 | G8 | | |
| VSS4 | K1 | | |
| VSS5 | K9 | | |
| VSS6 | N1 | | |
| VSS7 | T1 | | |
| VSSQ0 | A2 | | |
| VSSQ1 | A8 | | |
| VSSQ2 | C9 | | |
| VSSQ3 | D2 | | |
| VSSQ4 | D8 | | |
| VSSQ5 | E3 | | |
| VSSQ6 | E8 | | |
| VSSQ7 | F1 | | |
| VSSQ8 | H1 | | |
| VSSQ9 | H9 | | |
| TEN_VSS | N9 | DDR4_COMP_CH0_TEN | |

1p2V_DDR4_CH01
2p5V
C95 0.47uF C94 0.47uF C96 22uF

MT40A1G16KNR-075:E

0p6V_VTT_DDR4_CH01

| | | |
|---|---|---|
| DDR4_COMP_CH0_A0 | R868 | 36 |
| DDR4_COMP_CH0_A1 | R869 | 36 |
| DDR4_COMP_CH0_A2 | R870 | 36 |
| DDR4_COMP_CH0_A3 | R871 | 36 |
| DDR4_COMP_CH0_A4 | R872 | 36 |
| DDR4_COMP_CH0_A5 | R873 | 36 |
| DDR4_COMP_CH0_A6 | R874 | 36 |
| DDR4_COMP_CH0_A7 | R875 | 36 |
| DDR4_COMP_CH0_A8 | R876 | 36 |
| DDR4_COMP_CH0_A9 | R877 | 36 |
| DDR4_COMP_CH0_A10 | R878 | 36 |
| DDR4_COMP_CH0_A11 | R879 | 36 |
| DDR4_COMP_CH0_A12 | R880 | 36 |
| DDR4_COMP_CH0_A13 | R881 | 36 |
| DDR4_COMP_CH0_A14 | R882 | 36 |
| DDR4_COMP_CH0_A15 | R883 | 36 |
| DDR4_COMP_CH0_A16 | R884 | 36 |
| DDR4_COMP_CH0_BG0 | R885 | 36 |
| DDR4_COMP_CH0_BG1 | R886 | 36 |
| DDR4_COMP_CH0_BA0 | R887 | 36 |
| DDR4_COMP_CH0_BA1 | R888 | 36 |
| DDR4_COMP_CH0_CS_N | R889 | 36 |
| DDR4_COMP_CH0_ODT | R890 | 36 |
| DDR4_COMP_CH0_ACT_N | R891 | 36 |
| DDR4_COMP_CH0_PAR | R27 | 36 |

1p2V_DDR4_CH01

| | | |
|---|---|---|
| DDR4_COMP_CH0_ALERT_N | R28 | 1K |
| | R29 | DNI |
| DDR4_COMP_CH0_RESET_N | R30 | 1K |
| DDR4_COMP_CH0_CKE | R32 | DNI |
| 0p6V_VTT_DDR4_CH01 | R34 | 36 |

1p2V_DDR4_CH01
DDR4_COMP_CH0_TEN R31 DNI
R33 0

DDR4_COMP_CH0_CLK_P R35 36
DDR4_COMP_CH0_CLK_N R36 36
C98 0.01uF

0p6V_VTT_DDR4_CH01
CN1 C97 100uF 0.1uF
CN2 0.1uF
CN3 0.1uF

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| Date: Wednesday, December 23, 2020 | Sheet 11 of 77 |

# DDR4/T CH0 INTERFACE -- FPGA SIDE 3A

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| | | | |
|---|---|---|---|
| DDR4_COMP_CH0_DQ55 | MC63 | IO, DIFF_RX_2B1N, DQ32 | |
| DDR4_COMP_CH0_DQ51 | MD62 | IO, DIFF_RX_2B1P, DQ32 | |
| DDR4_COMP_CH0_DQ49 | MH62 | IO, DIFF_TX_2B1N, DQ32 | |
| DDR4_COMP_CH0_DQ53 | MK63 | IO, DIFF_TX_2B1P, DQ32 | |
| | MC61 | IO, DIFF_RX_2B2N, DQ32 | |
| DDR4_COMP_CH0_DBI_N6 | MD60 | IO, DIFF_RX_2B2P, DQ32 | |
| DDR4_COMP_CH0_DQS_N6 | MK61 | IO, DIFF_TX_2B2N, DQSN32 | |
| DDR4_COMP_CH0_DQS_P6 | MH60 | IO, DIFF_TX_2B2P, DQS32 | |
| DDR4_COMP_CH0_DQ54 | MD58 | IO, CDR, DIFF_RX_2B3N, DQ32 | |
| DDR4_COMP_CH0_DQ48 | MC59 | IO, CDR, DIFF_RX_2B3P, DQ32 | |
| DDR4_COMP_CH0_DQ52 | MH58 | IO, DIFF_TX_2B3N, DQ32 | |
| DDR4_COMP_CH0_DQ50 | MK59 | IO, DIFF_TX_2B3P, DQ32 | |
| DDR4_COMP_CH0_DQ71 | LN60 | IO, DIFF_RX_2B4N, DQ33 | |
| DDR4_COMP_CH0_DQ69 | LR59 | IO, DIFF_RX_2B4P, DQ33 | |
| DDR4_COMP_CH0_DQ65 | LW59 | IO, DIFF_TX_2B4N, DQ33 | |
| DDR4_COMP_CH0_DQ67 | MA60 | IO, DIFF_TX_2B4P, DQ33 | |
| | LN58 | IO, DIFF_RX_2B5N, DQ33 | |
| DDR4_COMP_CH0_DBI_N8 | LR57 | IO, DIFF_RX_2B5P, DQ33 | |
| DDR4_COMP_CH0_DQS_N8 | MA58 | IO, PLL_2B_T_CLKOUT1N, DIFF_TX_2B5N, DQSN33 | |
| DDR4_COMP_CH0_DQS_P8 | LW57 | IO, PLL_2B_T_CLKOUT1P, PLL_2B_T_CLKOUT1, PLL_2B_T_FB1, DIFF_TX_2B5P, DQS33 | |
| DDR4_COMP_CH0_DQ70 | LR55 | IO, CDR, DIFF_RX_2B6N, DQ33 | |
| DDR4_COMP_CH0_DQ66 | LN56 | IO, RZQ_T_2B, CDR, DIFF_RX_2B6P, DQ33 | |
| DDR4_COMP_CH0_DQ68 | LW55 | IO, CLK_T_2B_1N, DIFF_TX_2B6N, DQ33 | |
| DDR4_COMP_CH0_DQ64 | MA56 | IO, CLK_T_2B_1P, DIFF_TX_2B6P, DQ33 | |
| DDR4_COMP_CH0_DQ63 | MC57 | IO, CLK_T_2B_0N, DIFF_RX_2B7N, DQ34 | |
| DDR4_COMP_CH0_DQ57 | MD56 | IO, CLK_T_2B_0P, DIFF_RX_2B7P, DQ34 | |
| DDR4_COMP_CH0_DQ59 | MH56 | IO, DIFF_TX_2B7N, DQ34 | |
| DDR4_COMP_CH0_DQ61 | MK57 | IO, DIFF_TX_2B7P, DQ34 | |
| | MC55 | IO, PLL_2B_T_CLKOUT0N, DIFF_RX_2B8N, DQ34 | |
| DDR4_COMP_CH0_DBI_N7 | MD54 | IO, PLL_2B_T_CLKOUT0P, PLL_2B_T_CLKOUT0, PLL_2B_T_FB0, DIFF_RX_2B8P, DQ34 | |
| DDR4_COMP_CH0_DQS_N7 | MK55 | IO, DIFF_TX_2B8N, DQSN34 | |
| DDR4_COMP_CH0_DQS_P7 | MH54 | IO, DIFF_TX_2B8P, DQS34 | |
| DDR4_COMP_CH0_DQ62 | MD52 | IO, CDR, DIFF_RX_2B9N, DQ34 | |
| DDR4_COMP_CH0_DQ58 | MC53 | IO, CDR, DIFF_RX_2B9P, DQ34 | |
| DDR4_COMP_CH0_DQ60 | MH52 | IO, DIFF_TX_2B9N, DQ34 | |
| DDR4_COMP_CH0_DQ56 | MK53 | IO, DIFF_TX_2B9P, DQ34 | |
| DDR4_COMP_CH0_DQ47 | KW55 | IO, DIFF_RX_2B10N, DQ35 | |
| DDR4_COMP_CH0_DQ45 | LB54 | IO, DIFF_RX_2B10P, DQ35 | |
| DDR4_COMP_CH0_DQ43 | LH54 | IO, DIFF_TX_2B10N, DQ35 | |
| DDR4_COMP_CH0_DQ41 | LL55 | IO, DIFF_TX_2B10P, DQ35 | |
| | KW53 | IO, DIFF_RX_2B11N, DQ35 | |
| DDR4_COMP_CH0_DBI_N5 | LB52 | IO, DIFF_RX_2B11P, DQ35 | |
| DDR4_COMP_CH0_DQS_N5 | LL53 | IO, DIFF_TX_2B11N, DQSN35 | |
| DDR4_COMP_CH0_DQS_P5 | LH52 | IO, DIFF_TX_2B11P, DQS35 | |
| DDR4_COMP_CH0_DQ46 | LB50 | IO, CDR, DIFF_RX_2B12N, DQ35 | |
| DDR4_COMP_CH0_DQ42 | KW51 | IO, CDR, DIFF_RX_2B12P, DQ35 | |
| DDR4_COMP_CH0_DQ44 | LH50 | IO, DIFF_TX_2B12N, DQ35 | |
| DDR4_COMP_CH0_DQ40 | LL51 | IO, DIFF_TX_2B12P, DQ35 | |

TOP

| | | | |
|---|---|---|---|
| | | IO, CDR, DIFF_RX_2B16N, DQ37 | KF60 |
| | | IO, CDR, DIFF_RX_2B16P, DQ37 | KJ61 |
| | | IO, DIFF_TX_2B16N, DQ37 | KR61 |
| | | IO, DIFF_TX_2B16P, DQ37 | KU60 |
| | | IO, DIFF_RX_2B17N, DQ37 | KJ59 |
| | | IO, DIFF_RX_2B17P, DQ37 | KF58 |
| | | IO, PLL_2B_B_CLKOUT1N, DIFF_TX_2B17N, DQSN37 | KR59 |
| | | IO, PLL_2B_B_CLKOUT1P, PLL_2B_B_CLKOUT1, PLL_2B_B_FB1, DIFF_TX_2B17P, DQS37 | KU58 |
| | | IO, CDR, DIFF_RX_2B18N, DQ37 | KJ57 |
| | | IO, RZQ_B_2B, CDR, DIFF_RX_2B18P, DQ37 | KF56 |
| | | IO, CLK_B_2B_1N, DIFF_TX_2B18N, DQ37 | KR57 |
| | | IO, CLK_B_2B_1P, DIFF_TX_2B18P, DQ37 | KU56 |
| | | IO, CLK_B_2B_0N, CDR, DIFF_RX_2B19N, DQ38 | KW61 |
| | | IO, CLK_B_2B_0P, CDR, DIFF_RX_2B19P, DQ38 | LB60 |
| | | IO, DIFF_TX_2B19N, DQ38 | LH60 |
| | | IO, DIFF_TX_2B19P, DQ38 | LL61 |
| | | IO, PLL_2B_B_CLKOUT0N, DIFF_RX_2B20N, DQ38 | KW59 |
| | | IO, PLL_2B_B_CLKOUT0P, PLL_2B_B_CLKOUT0, PLL_2B_B_FB0, DIFF_RX_2B20P, DQ38 | LB58 |
| | | IO, DIFF_TX_2B20N, DQSN38 | LL59 |
| | | IO, DIFF_TX_2B20P, DQS38 | LH58 |
| | | IO, CDR, DIFF_RX_2B21N, DQ38 | KW57 |
| | | IO, CDR, DIFF_RX_2B21P, DQ38 | LB56 |
| | | IO, DIFF_TX_2B21N, DQ38 | LH56 |
| | | IO, DIFF_TX_2B21P, DQ38 | LL57 |
| | | IO, CDR, DIFF_RX_2B22N, DQ39 | KF54 |
| | | IO, CDR, DIFF_RX_2B22P, DQ39 | KJ55 |
| | | IO, DIFF_TX_2B22N, DQ39 | KR55 |
| | | IO, DIFF_TX_2B22P, DQ39 | KU54 |
| | | IO, DIFF_RX_2B23N, DQ39 | KJ53 |
| | | IO, DIFF_RX_2B23P, DQ39 | KF52 |
| | | IO, DIFF_TX_2B23N, DQSN39 | KR53 |
| | | IO, DIFF_TX_2B23P, DQS39 | KU52 |
| | | IO, CDR, DIFF_RX_2B24N, DQ39 | KJ51 |
| | | IO, CDR, DIFF_RX_2B24P, DQ39 | KF50 |
| | | IO, DIFF_TX_2B24N, DQ39 | KU50 |
| | | IO, DIFF_TX_2B24P, DQ39 | KR51 |

BOT

IO Bank 2B

AgileX-I_2957A

| | | |
|---|---|---|
| FPGA_I2C2_SCL | 46 | |
| QSFPDD_1V2_PORT_EN | 47 | |
| QSFPDD_1V2_PORT_INT_N | 47 | |
| FPGA_I2C2_EN | 46 | |
| FPGA_I2C2_SDA | 46 | |
| CPU_1V2_RESETn | 52 | |
| M10_1V2_SSN | 52 | |
| M10_1V2_CLK | 52 | |
| M10_1V2_DATA0 | 52 | |
| M10_1V2_DATA1 | 52 | |
| M10_1V2_DATA2 | 52 | |
| M10_1V2_DATA3 | 52 | |
| M10_1V2_GPIO0 | 52 | |
| M10_1V2_GPIO1 | 52 | |
| FPGA_I2C1_SCL | 46 | |
| FPGA_I2C_EN | 46 | |
| QSFPDD1_FPGA_LED2 | 47 | |
| QSFPDD1_FPGA_LED1 | 47 | |
| QSFPDD1_FPGA_LED0 | 47 | |
| QSFPDD0_FPGA_LED2 | 47 | |
| QSFPDD0_FPGA_LED1 | 47 | |
| QSFPDD0_FPGA_LED0 | 47 | |
| FPGA_I2C1_SDA | 46 | |
| FPGA_LED0 | 52 | |
| FPGA_LED1 | 52 | |
| FPGA_LED2 | 52 | |
| FPGA_LED3 | 52 | |

| | |
|---|---|
| 9,10,11,13 | DDR4_COMP_CH0_DBI_N[8:0] |
| 9,10,11,13 | DDR4_COMP_CH0_DQ[71:0] |
| 9,10,11,13 | DDR4_COMP_CH0_DQS_P[8:0] |
| 9,10,11,13 | DDR4_COMP_CH0_DQS_N[8:0] |

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Title: AgileX I-Series FPGA Dev Kit



Size: B | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 12 of 77

# DDR4/T CH1 INTERFACE -- FPGA SIDE 3B

U6D

| | | | |
|---|---|---|---|
| DDR4_COMP_CH0_DQ23 | MC51 | IO, DIFF_RX_2E1N, DQ24 | |
| DDR4_COMP_CH0_DQ19 | MD50 | IO, DIFF_RX_2E1P, DQ24 | |
| DDR4_COMP_CH0_DQ17 | MH50 | IO, DIFF_TX_2E1N, DQ24 | |
| DDR4_COMP_CH0_DQ21 | MK51 | IO, DIFF_TX_2E1P, DQ24 | |
| | MC49 | IO, DIFF_RX_2E2N, DQ24 | |
| DDR4_COMP_CH0_DBI_N2 | MD48 | IO, DIFF_RX_2E2P, DQ24 | |
| DDR4_COMP_CH0_DQS_N2 | MK49 | IO, DIFF_TX_2E2N, DQSN24 | |
| DDR4_COMP_CH0_DQS_P2 | MH48 | IO, DIFF_TX_2E2P, DQS24 | |
| DDR4_COMP_CH0_DQ22 | MD46 | IO, CDR, DIFF_RX_2E3N, DQ24 | |
| DDR4_COMP_CH0_DQ16 | MC47 | IO, CDR, DIFF_RX_2E3P, DQ24 | |
| DDR4_COMP_CH0_DQ20 | MH46 | IO, DIFF_TX_2E3N, DQ24 | |
| DDR4_COMP_CH0_DQ18 | MK47 | IO, DIFF_TX_2E3P, DQ24 | |
| | | | |
| DDR4_COMP_CH0_DQ25 | MD44 | IO, DIFF_RX_2E4N, DQ25 | |
| DDR4_COMP_CH0_DQ31 | MC45 | IO, DIFF_RX_2E4P, DQ25 | |
| DDR4_COMP_CH0_DQ27 | MH44 | IO, DIFF_TX_2E4N, DQ25 | |
| DDR4_COMP_CH0_DQ29 | MK45 | IO, DIFF_TX_2E4P, DQ25 | |
| | MC43 | IO, DIFF_RX_2E5N, DQ25 | |
| DDR4_COMP_CH0_DBI_N3 | MD42 | IO, DIFF_RX_2E5P, DQ25 | |
| DDR4_COMP_CH0_DQS_N3 | MK43 | IO, PLL_2E_T_CLKOUT1N, DIFF_TX_2E5N, DQSN25 | |
| DDR4_COMP_CH0_DQS_P3 | MH42 | IO, PLL_2E_T_CLKOUT1P, PLL_2E_T_CLKOUT1, PLL_2E_T_FB1, DIFF_TX_2E5P, DQS25 | |
| DDR4_COMP_CH0_DQ30 | MD40 | IO, CDR, DIFF_RX_2E6N, DQ25 | |
| DDR4_COMP_CH0_DQ26 | MC41 | IO, RZQ_T_2E, CDR, DIFF_RX_2E6P, DQ25 | |
| DDR4_COMP_CH0_DQ28 | MH40 | IO, CLK_T_2E_1N, DIFF_TX_2E6N, DQ25 | |
| DDR4_COMP_CH0_DQ24 | MK41 | IO, CLK_T_2E_1P, DIFF_TX_2E6P, DQ25 | |
| | | | |
| DDR4_COMP_CH0_DQ13 | LR41 | IO, CLK_T_2E_0N, DIFF_RX_2E7N, DQ26 | |
| DDR4_COMP_CH0_DQ15 | LN42 | IO, CLK_T_2E_0P, DIFF_RX_2E7P, DQ26 | |
| DDR4_COMP_CH0_DQ11 | LW41 | IO, DIFF_TX_2E7N, DQ26 | |
| DDR4_COMP_CH0_DQ9 | MA42 | IO, DIFF_TX_2E7P, DQ26 | |
| | LN40 | IO, PLL_2E_T_CLKOUT0N, DIFF_RX_2E8N, DQ26 | |
| DDR4_COMP_CH0_DBI_N1 | LR39 | IO, PLL_2E_T_CLKOUT0P, PLL_2E_T_CLKOUT0, PLL_2E_T_FB0, DIFF_RX_2E8P, DQ26 | |
| DDR4_COMP_CH0_DQS_N1 | MA40 | IO, DIFF_TX_2E8N, DQSN26 | |
| DDR4_COMP_CH0_DQS_P1 | LW39 | IO, DIFF_TX_2E8P, DQS26 | |
| DDR4_COMP_CH0_DQ14 | LR37 | IO, CDR, DIFF_RX_2E9N, DQ26 | |
| DDR4_COMP_CH0_DQ10 | LN38 | IO, CDR, DIFF_RX_2E9P, DQ26 | |
| DDR4_COMP_CH0_DQ8 | MA38 | IO, DIFF_TX_2E9N, DQ26 | |
| DDR4_COMP_CH0_DQ12 | LW37 | IO, DIFF_TX_2E9P, DQ26 | |
| | | | |
| DDR4_COMP_CH0_DQ7 | MC39 | IO, DIFF_RX_2E10N, DQ27 | |
| DDR4_COMP_CH0_DQ3 | MD38 | IO, DIFF_RX_2E10P, DQ27 | |
| DDR4_COMP_CH0_DQ1 | MH38 | IO, DIFF_TX_2E10N, DQ27 | |
| DDR4_COMP_CH0_DQ5 | MK39 | IO, DIFF_TX_2E10P, DQ27 | |
| | MC37 | IO, DIFF_RX_2E11N, DQ27 | |
| DDR4_COMP_CH0_DBI_N0 | MD36 | IO, DIFF_RX_2E11P, DQ27 | |
| DDR4_COMP_CH0_DQS_N0 | MK37 | IO, DIFF_TX_2E11N, DQSN27 | |
| DDR4_COMP_CH0_DQS_P0 | MH36 | IO, DIFF_TX_2E11P, DQS27 | |
| DDR4_COMP_CH0_DQ6 | MD34 | IO, CDR, DIFF_RX_2E12N, DQ27 | |
| DDR4_COMP_CH0_DQ0 | MC35 | IO, CDR, DIFF_RX_2E12P, DQ27 | |
| DDR4_COMP_CH0_DQ4 | MH34 | IO, DIFF_TX_2E12N, DQ27 | |
| DDR4_COMP_CH0_DQ2 | MK35 | IO, DIFF_TX_2E12P, DQ27 | |

TOP

| | | | |
|---|---|---|---|
| | | IO, CDR, DIFF_RX_2E13N, DQ28 | LN54 | DDR4_COMP_CH0_DQ39 |
| | | IO, CDR, DIFF_RX_2E13P, DQ28 | LR53 | DDR4_COMP_CH0_DQ37 |
| | | IO, DIFF_TX_2E13N, DQ28 | LW53 | DDR4_COMP_CH0_DQ33 |
| | | IO, DIFF_TX_2E13P, DQ28 | MA54 | DDR4_COMP_CH0_DQ35 |
| | | IO, DIFF_RX_2E14N, DQ28 | LN52 | |
| | | IO, DIFF_RX_2E14P, DQ28 | LR51 | DDR4_COMP_CH0_DBI_N4 |
| | | IO, DIFF_TX_2E14N, DQSN28 | MA52 | DDR4_COMP_CH0_DQS_N4 |
| | | IO, DIFF_TX_2E14P, DQS28 | LW51 | DDR4_COMP_CH0_DQS_P4 |
| | | IO, CDR, DIFF_RX_2E15N, DQ28 | LR49 | DDR4_COMP_CH0_DQ38 |
| | | IO, CDR, DIFF_RX_2E15P, DQ28 | LN50 | DDR4_COMP_CH0_DQ36 |
| | | IO, DIFF_TX_2E15N, DQ28 | LW49 | DDR4_COMP_CH0_DQ32 |
| | | IO, DIFF_TX_2E15P, DQ28 | MA50 | DDR4_COMP_CH0_DQ34 |
| | | | | |
| | | IO, CDR, DIFF_RX_2E16N, DQ29 | LR47 | DDR4_COMP_CH0_BG0 |
| | | IO, CDR, DIFF_RX_2E16P, DQ29 | LN48 | DDR4_COMP_CH0_BA1 |
| | | IO, DIFF_TX_2E16N, DQ29 | LW47 | DDR4_COMP_CH0_BA0 |
| | | IO, DIFF_TX_2E16P, DQ29 | MA48 | DDR4_COMP_CH0_ALERT_N |
| | | IO, DIFF_RX_2E17N, DQ29 | LN46 | DDR4_COMP_CH0_A16 |
| | | IO, DIFF_RX_2E17P, DQ29 | LR45 | DDR4_COMP_CH0_A15 |
| | | IO, PLL_2E_B_CLKOUT1N, DIFF_TX_2E17N, DQSN29 | MA46 | DDR4_COMP_CH0_A14 |
| | | IO, PLL_2E_B_CLKOUT1P, PLL_2E_B_CLKOUT1, PLL_2E_B_FB1, DIFF_TX_2E17P, DQS29 | LW45 | DDR4_COMP_CH0_A13 |
| | | IO, CDR, DIFF_RX_2E18N, DQ29 | LR43 | DDR4_COMP_CH0_A12 |
| | | IO, RZQ_B_2E, CDR, DIFF_RX_2E18P, DQ29 | LN44 | DDR4_COMP_CH0_RZQ |
| | | IO, CLK_B_2E_1N, DIFF_TX_2E18N, DQ29 | LW43 | 43 CLK_DDR4_CH0_N |
| | | IO, CLK_B_2E_1P, DIFF_TX_2E18P, DQ29 | MA44 | 43 CLK_DDR4_CH0_P |
| | | | | |
| | | IO, CLK_B_2E_0N, CDR, DIFF_RX_2E19N, DQ30 | KJ49 | DDR4_COMP_CH0_A11 |
| | | IO, CLK_B_2E_0P, CDR, DIFF_RX_2E19P, DQ30 | KF48 | DDR4_COMP_CH0_A10 |
| | | IO, DIFF_TX_2E19N, DQ30 | KU48 | DDR4_COMP_CH0_A9 |
| | | IO, DIFF_TX_2E19P, DQ30 | KR49 | DDR4_COMP_CH0_A8 |
| | | IO, PLL_2E_B_CLKOUT0N, DIFF_RX_2E20N, DQ30 | KJ47 | DDR4_COMP_CH0_A7 |
| | | IO, PLL_2E_B_CLKOUT0P, PLL_2E_B_CLKOUT0, PLL_2E_B_FB0, DIFF_RX_2E20P, DQ30 | KF46 | DDR4_COMP_CH0_A6 |
| | | IO, DIFF_TX_2E20N, DQSN30 | KR47 | DDR4_COMP_CH0_A5 |
| | | IO, DIFF_TX_2E20P, DQS30 | KU46 | DDR4_COMP_CH0_A4 |
| | | IO, CDR, DIFF_RX_2E21N, DQ30 | KF44 | DDR4_COMP_CH0_A3 |
| | | IO, CDR, DIFF_RX_2E21P, DQ30 | KJ45 | DDR4_COMP_CH0_A2 |
| | | IO, DIFF_TX_2E21N, DQ30 | KU44 | DDR4_COMP_CH0_A1 |
| | | IO, DIFF_TX_2E21P, DQ30 | KR45 | DDR4_COMP_CH0_A0 |
| | | | | |
| | | IO, CDR, DIFF_RX_2E22N, DQ31 | LB48 | DDR4_COMP_CH0_PAR |
| | | IO, CDR, DIFF_RX_2E22P, DQ31 | KW49 | |
| | | IO, DIFF_TX_2E22N, DQ31 | LL49 | DDR4_COMP_CH0_CLK_N |
| | | IO, DIFF_TX_2E22P, DQ31 | LH48 | DDR4_COMP_CH0_CLK_P |
| | | IO, DIFF_RX_2E23N, DQ31 | KW47 | |
| | | IO, DIFF_RX_2E23P, DQ31 | LB46 | DDR4_COMP_CH0_CKE |
| | | IO, DIFF_TX_2E23N, DQSN31 | LL47 | |
| | | IO, DIFF_TX_2E23P, DQS31 | LH46 | DDR4_COMP_CH0_ODT |
| | | IO, CDR, DIFF_RX_2E24N, DQ31 | KW45 | DDR4_COMP_CH0_ACT_N |
| | | IO, CDR, DIFF_RX_2E24P, DQ31 | LB44 | DDR4_COMP_CH0_CS_N |
| | | IO, DIFF_TX_2E24N, DQ31 | LL45 | DDR4_COMP_CH0_RESET_N |
| | | IO, DIFF_TX_2E24P, DQ31 | LH44 | DDR4_COMP_CH0_BG1 |

BOT

IO Bank 2E

AgileX-I_2957A

240 R37

CLK_DDR4_CH0_P R38 DNI CLK_DDR4_CH0_N

9,10,11 DDR4_COMP_CH0_BG1
9,10,11 DDR4_COMP_CH0_BG0
9,10,11 DDR4_COMP_CH0_BA[1:0]
9,10,11 DDR4_COMP_CH0_A[16:0]
9,10,11 DDR4_COMP_CH0_CS_N
9,10,11 DDR4_COMP_CH0_ODT
9,10,11 DDR4_COMP_CH0_ACT_N
9,10,11 DDR4_COMP_CH0_PAR
9,10,11 DDR4_COMP_CH0_CKE
9,10,11 DDR4_COMP_CH0_RESET_N
9,10,11 DDR4_COMP_CH0_CLK_P
9,10,11 DDR4_COMP_CH0_CLK_N

DDR4_COMP_CH0_DQ[71:0] 9,10,11,12
DDR4_COMP_CH0_DBI_N[8:0] 9,10,11,12
DDR4_COMP_CH0_DQS_P[8:0] 9,10,11,12
DDR4_COMP_CH0_DQS_N[8:0] 9,10,11,12
DDR4_COMP_CH0_ALERT_N 9,10,11

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| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 13 of 77

# DDR4 COMPONENT #1/#2

DDR4_COMP_CH1_BG0 15,16,18
DDR4_COMP_CH1_BA[1:0] 15,16,18
DDR4_COMP_CH1_A[16:0] 15,16,18
DDR4_COMP_CH1_CS_N 15,16,18
DDR4_COMP_CH1_ODT 15,16,18
DDR4_COMP_CH1_ACT_N 15,16,18
DDR4_COMP_CH1_PAR 15,16,18
DDR4_COMP_CH1_CKE 15,16,18
DDR4_COMP_CH1_TEN 15,16
DDR4_COMP_CH1_BG1 15,16,18
DDR4_COMP_CH1_DQ[71:0] 15,16,17,18
DDR4_COMP_CH1_DBI_N[8:0] 15,16,17,18
DDR4_COMP_CH1_DQS_P[8:0] 15,16,17,18
DDR4_COMP_CH1_DQS_N[8:0] 15,16,17,18
DDR4_COMP_CH1_RESET_N 15,16,18
DDR4_COMP_CH1_CLK_P 15,16,18
DDR4_COMP_CH1_CLK_N 15,16,18
DDR4_COMP_CH1_ALERT_N 15,16,18

U7

DDR4_COMP_CH1_A0 P3 → A0
DDR4_COMP_CH1_A1 P7 → A1
DDR4_COMP_CH1_A2 R3 → A2
DDR4_COMP_CH1_A3 N7 → A3
DDR4_COMP_CH1_A4 N3 → A4
DDR4_COMP_CH1_A5 P8 → A5
DDR4_COMP_CH1_A6 P2 → A6
DDR4_COMP_CH1_A7 R8 → A7
DDR4_COMP_CH1_A8 R2 → A8
DDR4_COMP_CH1_A9 R7 → A9
DDR4_COMP_CH1_A10 M3 → A10_AP
DDR4_COMP_CH1_A11 T2 → A11
DDR4_COMP_CH1_A12 M7 → A12_BC_n
DDR4_COMP_CH1_A13 T8 → A13
DDR4_COMP_CH1_A14 L2 → WE_n_A14
DDR4_COMP_CH1_A15 M8 → CAS_n_A15
DDR4_COMP_CH1_A16 L8 → RAS_n_A16
DDR4_COMP_CH1_BG0 M2 → BG0
DDR4_COMP_CH1_BG1 M9 → BG1
DDR4_COMP_CH1_BA0 N2 → BA0
DDR4_COMP_CH1_BA1 N8 → BA1
DDR4_COMP_CH1_CS_N L7 → CS_n
DDR4_COMP_CH1_ODT K3 → ODT
DDR4_COMP_CH1_ACT_N L3 → ACT_n
DDR4_COMP_CH1_PAR T3 → PAR
DDR4_COMP_CH1_CKE K2 → CKE
DDR4_COMP_CH1_RESET_N P1 → RESET_n
DDR4_COMP_CH1_CLK_P K7 → CK_t
DDR4_COMP_CH1_CLK_N K8 → CK_c
0p6V_VREF_DDR4_CH01 → M1 VREFCA
C99 0.1uF
1p2V_DDR4_CH01 → B3 VDD0, B9 VDD1, D1 VDD2, G7 VDD3, J1 VDD4, J9 VDD5, L1 VDD6, L9 VDD7, R1 VDD8, T9 VDD9
A1 VDDQ0, A9 VDDQ1, C1 VDDQ2, D9 VDDQ3, F2 VDDQ4, F8 VDDQ5, G1 VDDQ6, G9 VDDQ7, J2 VDDQ8, J8 VDDQ9

DQ0 G2 DDR4_COMP_CH1_DQ0
DQ1 F7 DDR4_COMP_CH1_DQ1
DQ2 H3 DDR4_COMP_CH1_DQ2
DQ3 H7 DDR4_COMP_CH1_DQ3
DQ4 H2 DDR4_COMP_CH1_DQ4
DQ5 H8 DDR4_COMP_CH1_DQ5
DQ6 J3 DDR4_COMP_CH1_DQ6
DQ7 J7 DDR4_COMP_CH1_DQ7
DQ8 A3 DDR4_COMP_CH1_DQ8
DQ9 B8 DDR4_COMP_CH1_DQ9
DQ10 C3 DDR4_COMP_CH1_DQ10
DQ11 C7 DDR4_COMP_CH1_DQ11
DQ12 C2 DDR4_COMP_CH1_DQ12
DQ13 C8 DDR4_COMP_CH1_DQ13
DQ14 D3 DDR4_COMP_CH1_DQ14
DQ15 D7 DDR4_COMP_CH1_DQ15
NF_UDM_n_UDBI_n E2 DDR4_COMP_CH1_DBI_N1
NF_LDM_n_LDBI_n E7 DDR4_COMP_CH1_DBI_N0
UDQS_t B7 DDR4_COMP_CH1_DQS_P1
UDQS_c A7 DDR4_COMP_CH1_DQS_N1
LDQS_t G3 DDR4_COMP_CH1_DQS_P0
LDQS_c F3 DDR4_COMP_CH1_DQS_N0
ALERT_n P9 DDR4_COMP_CH1_ALERT_N
ZQ0 F9 240 R39
ZQ1 E9 240 R41
VPP_2V5_1 R9 2p5V
VPP_2V5_0 B1
VSS0 B2, VSS1 E1, VSS2 T7, VSS3 G8, VSS4 K1, VSS5 K9, VSS6 N1, VSS7 T1
VSSQ0 A2, VSSQ1 A8, VSSQ2 C9, VSSQ3 D2, VSSQ4 D8, VSSQ5 E3, VSSQ6 E8, VSSQ7 F1, VSSQ8 H1, VSSQ9 H9
TEN_VSS N9 DDR4_COMP_CH1_TEN
2p5V
C101 0.47uF, C102 0.47uF, C103 22uF

MT40A1G16KNR-075:E

CAD Note: the footprint should be compatible with 16Gb part MT40A1G16KNR

U8

DDR4_COMP_CH1_A0 P3 → A0
DDR4_COMP_CH1_A1 P7 → A1
DDR4_COMP_CH1_A2 R3 → A2
DDR4_COMP_CH1_A3 N7 → A3
DDR4_COMP_CH1_A4 N3 → A4
DDR4_COMP_CH1_A5 P8 → A5
DDR4_COMP_CH1_A6 P2 → A6
DDR4_COMP_CH1_A7 R8 → A7
DDR4_COMP_CH1_A8 R2 → A8
DDR4_COMP_CH1_A9 R7 → A9
DDR4_COMP_CH1_A10 M3 → A10_AP
DDR4_COMP_CH1_A11 T2 → A11
DDR4_COMP_CH1_A12 M7 → A12_BC_n
DDR4_COMP_CH1_A13 T8 → A13
DDR4_COMP_CH1_A14 L2 → WE_n_A14
DDR4_COMP_CH1_A15 M8 → CAS_n_A15
DDR4_COMP_CH1_A16 L8 → RAS_n_A16
DDR4_COMP_CH1_BG0 M2 → BG0
DDR4_COMP_CH1_BG1 M9 → BG1
DDR4_COMP_CH1_BA0 N2 → BA0
DDR4_COMP_CH1_BA1 N8 → BA1
DDR4_COMP_CH1_CS_N L7 → CS_n
DDR4_COMP_CH1_ODT K3 → ODT
DDR4_COMP_CH1_ACT_N L3 → ACT_n
DDR4_COMP_CH1_PAR T3 → PAR
DDR4_COMP_CH1_CKE K2 → CKE
DDR4_COMP_CH1_RESET_N P1 → RESET_n
DDR4_COMP_CH1_CLK_P K7 → CK_t
DDR4_COMP_CH1_CLK_N K8 → CK_c
0p6V_VREF_DDR4_CH01 → M1 VREFCA
C100 0.1uF
1p2V_DDR4_CH01 → B3 VDD0, B9 VDD1, D1 VDD2, G7 VDD3, J1 VDD4, J9 VDD5, L1 VDD6, L9 VDD7, R1 VDD8, T9 VDD9
A1 VDDQ0, A9 VDDQ1, C1 VDDQ2, D9 VDDQ3, F2 VDDQ4, F8 VDDQ5, G1 VDDQ6, G9 VDDQ7, J2 VDDQ8, J8 VDDQ9

DQ0 G2 DDR4_COMP_CH1_DQ16
DQ1 F7 DDR4_COMP_CH1_DQ17
DQ2 H3 DDR4_COMP_CH1_DQ18
DQ3 H7 DDR4_COMP_CH1_DQ19
DQ4 H2 DDR4_COMP_CH1_DQ20
DQ5 H8 DDR4_COMP_CH1_DQ21
DQ6 J3 DDR4_COMP_CH1_DQ22
DQ7 J7 DDR4_COMP_CH1_DQ23
DQ8 A3 DDR4_COMP_CH1_DQ24
DQ9 B8 DDR4_COMP_CH1_DQ25
DQ10 C3 DDR4_COMP_CH1_DQ26
DQ11 C7 DDR4_COMP_CH1_DQ27
DQ12 C2 DDR4_COMP_CH1_DQ28
DQ13 C8 DDR4_COMP_CH1_DQ29
DQ14 D3 DDR4_COMP_CH1_DQ30
DQ15 D7 DDR4_COMP_CH1_DQ31
NF_UDM_n_UDBI_n E2 DDR4_COMP_CH1_DBI_N3
NF_LDM_n_LDBI_n E7 DDR4_COMP_CH1_DBI_N2
UDQS_t B7 DDR4_COMP_CH1_DQS_P3
UDQS_c A7 DDR4_COMP_CH1_DQS_N3
LDQS_t G3 DDR4_COMP_CH1_DQS_P2
LDQS_c F3 DDR4_COMP_CH1_DQS_N2
ALERT_n P9 DDR4_COMP_CH1_ALERT_N
ZQ0 F9 240 R40
ZQ1 E9 240 R42
VPP_2V5_1 R9 2p5V
VPP_2V5_0 B1
VSS0 B2, VSS1 E1, VSS2 T7, VSS3 G8, VSS4 K1, VSS5 K9, VSS6 N1, VSS7 T1
VSSQ0 A2, VSSQ1 A8, VSSQ2 C9, VSSQ3 D2, VSSQ4 D8, VSSQ5 E3, VSSQ6 E8, VSSQ7 F1, VSSQ8 H1, VSSQ9 H9
TEN_VSS N9 DDR4_COMP_CH1_TEN
2p5V
C104 0.47uF, C105 0.47uF, C106 22uF

MT40A1G16KNR-075:E

1p2V_DDR4_CH01
C107 2.2nF, C108 2.2nF, C109 2.2nF, C110 2.2nF, C111 2.2nF, C112 2.2nF, C113 2.2nF, C114 2.2nF, C115 2.2nF, C116 3.3nF, C117 3.3nF, C118 4.7nF, C119 4.7nF, C120 4.7nF, C121 0.47uF, C122 0.47uF, C123 0.47uF

1p2V_DDR4_CH01
C128 0.01uF, C129 0.01uF, C130 0.01uF, C131 0.1uF, C132 0.1uF, C133 0.1uF, C134 0.1uF, C135 0.47uF, C136 0.47uF, C137 0.47uF, C138 0.47uF, C139 0.47uF, C140 0.47uF, C141 0.47uF, C142 0.47uF, C143 0.47uF, C144 0.47uF

1p2V_DDR4_CH01
C124 22uF, C125 22uF, C126 1uF, C127 1uF

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| Intel Corporation,101 innovation Dr, San Jose, CA 95134 | | |
| Title: AgileX I-Series FPGA Dev Kit | | |
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| Size: B | Document Number: M17472 (M17471-100) | Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 14 of 77 | |

# DDR4 COMPONENT #3/#4

DDR4_COMP_CH1_BG0 14,16,18
DDR4_COMP_CH1_BA[1:0] 14,16,18
DDR4_COMP_CH1_A[16:0] 14,16,18
DDR4_COMP_CH1_CS_N 14,16,18
DDR4_COMP_CH1_ODT 14,16,18
DDR4_COMP_CH1_ACT_N 14,16,18
DDR4_COMP_CH1_PAR 14,16,18
DDR4_COMP_CH1_CKE 14,16,18
DDR4_COMP_CH1_TEN 14,16
DDR4_COMP_CH1_BG1 14,16,18

DDR4_COMP_CH1_DQ[71:0] 14,16,17,18
DDR4_COMP_CH1_DBI_N[8:0] 14,16,17,18
DDR4_COMP_CH1_DQS_P[8:0] 14,16,17,18
DDR4_COMP_CH1_DQS_N[8:0] 14,16,17,18
DDR4_COMP_CH1_RESET_N 14,16,18
DDR4_COMP_CH1_CLK_P 14,16,18
DDR4_COMP_CH1_CLK_N 14,16,18
DDR4_COMP_CH1_ALERT_N 14,16,18

U9

DDR4_COMP_CH1_A0 P3 A0
DDR4_COMP_CH1_A1 P7 A1
DDR4_COMP_CH1_A2 R3 A2
DDR4_COMP_CH1_A3 N7 A3
DDR4_COMP_CH1_A4 N3 A4
DDR4_COMP_CH1_A5 P8 A5
DDR4_COMP_CH1_A6 P2 A6
DDR4_COMP_CH1_A7 R8 A7
DDR4_COMP_CH1_A8 R2 A8
DDR4_COMP_CH1_A9 R7 A9
DDR4_COMP_CH1_A10 M3 A10_AP
DDR4_COMP_CH1_A11 T2 A11
DDR4_COMP_CH1_A12 M7 A12_BC_n
DDR4_COMP_CH1_A13 T8 A13
DDR4_COMP_CH1_A14 L2 WE_n_A14
DDR4_COMP_CH1_A15 M8 CAS_n_A15
DDR4_COMP_CH1_A16 L8 RAS_n_A16

DDR4_COMP_CH1_BG0 M2 BG0
DDR4_COMP_CH1_BG1 M9 BG1
DDR4_COMP_CH1_BA0 N2 BA0
DDR4_COMP_CH1_BA1 N8 BA1

DDR4_COMP_CH1_CS_N L7 CS_n
DDR4_COMP_CH1_ODT K3 ODT
DDR4_COMP_CH1_ACT_N L3 ACT_n
DDR4_COMP_CH1_PAR T3 PAR
DDR4_COMP_CH1_CKE K2 CKE

DDR4_COMP_CH1_RESET_N P1 RESET_n

DDR4_COMP_CH1_CLK_P K7 CK_t
DDR4_COMP_CH1_CLK_N K8 CK_c

0p6V_VREF_DDR4_CH01
M1 VREFCA

C145 0.1uF
1p2V_DDR4_CH01
B3 VDD0
B9 VDD1
D1 VDD2
G7 VDD3
J1 VDD4
J9 VDD5
L1 VDD6
L9 VDD7
R1 VDD8
T9 VDD9

A1 VDDQ0
A9 VDDQ1
C1 VDDQ2
D9 VDDQ3
F2 VDDQ4
F8 VDDQ5
G1 VDDQ6
G9 VDDQ7
J2 VDDQ8
J8 VDDQ9

DQ0 G2 DDR4_COMP_CH1_DQ32
DQ1 F7 DDR4_COMP_CH1_DQ33
DQ2 H3 DDR4_COMP_CH1_DQ34
DQ3 H7 DDR4_COMP_CH1_DQ35
DQ4 H2 DDR4_COMP_CH1_DQ36
DQ5 H8 DDR4_COMP_CH1_DQ37
DQ6 J3 DDR4_COMP_CH1_DQ38
DQ7 J7 DDR4_COMP_CH1_DQ39
DQ8 A3 DDR4_COMP_CH1_DQ40
DQ9 B8 DDR4_COMP_CH1_DQ41
DQ10 C3 DDR4_COMP_CH1_DQ42
DQ11 C7 DDR4_COMP_CH1_DQ43
DQ12 C2 DDR4_COMP_CH1_DQ44
DQ13 C8 DDR4_COMP_CH1_DQ45
DQ14 D3 DDR4_COMP_CH1_DQ46
DQ15 D7 DDR4_COMP_CH1_DQ47

NF_UDM_n_UDBI_n E2 DDR4_COMP_CH1_DBI_N5
NF_LDM_n_LDBI_n E7 DDR4_COMP_CH1_DBI_N4

UDQS_t B7 DDR4_COMP_CH1_DQS_P5
UDQS_c A7 DDR4_COMP_CH1_DQS_N5
LDQS_t G3 DDR4_COMP_CH1_DQS_P4
LDQS_c F3 DDR4_COMP_CH1_DQS_N4

ALERT_n P9 DDR4_COMP_CH1_ALERT_N
ZQ0 F9 240 R45
ZQ1 E9 240 R47

VPP_2V5_1 R9 2p5V
VPP_2V5_0 B1

VSS0 B2
VSS1 E1
VSS2 T7
VSS3 G8
VSS4 K1
VSS5 K9
VSS6 N1
VSS7 T1

VSSQ0 A2
VSSQ1 A8
VSSQ2 C9
VSSQ3 D2
VSSQ4 D8
VSSQ5 E3
VSSQ6 E8
VSSQ7 F1
VSSQ8 H1
VSSQ9 H9

TEN_VSS N9 DDR4_COMP_CH1_TEN

2p5V
C147 0.47uF
C148 0.47uF
C149 22uF

MT40A1G16KNR-075:E

1p2V_DDR4_CH01
C153 2.2nF
C154 2.2nF
C155 2.2nF
C156 2.2nF
C157 2.2nF
C158 2.2nF
C159 2.2nF
C160 2.2nF
C161 2.2nF
C162 3.3nF
C163 3.3nF
C164 4.7nF
C165 4.7nF
C166 4.7nF
C167 0.47uF
C168 0.47uF
C169 0.47uF

1p2V_DDR4_CH01
C174 0.01uF
C175 0.01uF
C176 0.01uF
C177 0.1uF
C178 0.1uF
C179 0.1uF
C180 0.1uF
C181 0.47uF
C182 0.47uF
C183 0.47uF
C184 0.47uF
C185 0.47uF
C186 0.47uF
C187 0.47uF
C188 0.47uF
C189 0.47uF
C190 0.47uF

U10

DDR4_COMP_CH1_A0 P3 A0
DDR4_COMP_CH1_A1 P7 A1
DDR4_COMP_CH1_A2 R3 A2
DDR4_COMP_CH1_A3 N7 A3
DDR4_COMP_CH1_A4 N3 A4
DDR4_COMP_CH1_A5 P8 A5
DDR4_COMP_CH1_A6 P2 A6
DDR4_COMP_CH1_A7 R8 A7
DDR4_COMP_CH1_A8 R2 A8
DDR4_COMP_CH1_A9 R7 A9
DDR4_COMP_CH1_A10 M3 A10_AP
DDR4_COMP_CH1_A11 T2 A11
DDR4_COMP_CH1_A12 M7 A12_BC_n
DDR4_COMP_CH1_A13 T8 A13
DDR4_COMP_CH1_A14 L2 WE_n_A14
DDR4_COMP_CH1_A15 M8 CAS_n_A15
DDR4_COMP_CH1_A16 L8 RAS_n_A16

DDR4_COMP_CH1_BG0 M2 BG0
DDR4_COMP_CH1_BG1 M9 BG1
DDR4_COMP_CH1_BA0 N2 BA0
DDR4_COMP_CH1_BA1 N8 BA1

DDR4_COMP_CH1_CS_N L7 CS_n
DDR4_COMP_CH1_ODT K3 ODT
DDR4_COMP_CH1_ACT_N L3 ACT_n
DDR4_COMP_CH1_PAR T3 PAR
DDR4_COMP_CH1_CKE K2 CKE

DDR4_COMP_CH1_RESET_N P1 RESET_n

DDR4_COMP_CH1_CLK_P K7 CK_t
DDR4_COMP_CH1_CLK_N K8 CK_c

0p6V_VREF_DDR4_CH01
M1 VREFCA

C146 0.1uF
1p2V_DDR4_CH01
B3 VDD0
B9 VDD1
D1 VDD2
G7 VDD3
J1 VDD4
J9 VDD5
L1 VDD6
L9 VDD7
R1 VDD8
T9 VDD9

A1 VDDQ0
A9 VDDQ1
C1 VDDQ2
D9 VDDQ3
F2 VDDQ4
F8 VDDQ5
G1 VDDQ6
G9 VDDQ7
J2 VDDQ8
J8 VDDQ9

DQ0 G2 DDR4_COMP_CH1_DQ48
DQ1 F7 DDR4_COMP_CH1_DQ49
DQ2 H3 DDR4_COMP_CH1_DQ50
DQ3 H7 DDR4_COMP_CH1_DQ51
DQ4 H2 DDR4_COMP_CH1_DQ52
DQ5 H8 DDR4_COMP_CH1_DQ53
DQ6 J3 DDR4_COMP_CH1_DQ54
DQ7 J7 DDR4_COMP_CH1_DQ55
DQ8 A3 DDR4_COMP_CH1_DQ56
DQ9 B8 DDR4_COMP_CH1_DQ57
DQ10 C3 DDR4_COMP_CH1_DQ58
DQ11 C7 DDR4_COMP_CH1_DQ59
DQ12 C2 DDR4_COMP_CH1_DQ60
DQ13 C8 DDR4_COMP_CH1_DQ61
DQ14 D3 DDR4_COMP_CH1_DQ62
DQ15 D7 DDR4_COMP_CH1_DQ63

NF_UDM_n_UDBI_n E2 DDR4_COMP_CH1_DBI_N7
NF_LDM_n_LDBI_n E7 DDR4_COMP_CH1_DBI_N6

UDQS_t B7 DDR4_COMP_CH1_DQS_P7
UDQS_c A7 DDR4_COMP_CH1_DQS_N7
LDQS_t G3 DDR4_COMP_CH1_DQS_P6
LDQS_c F3 DDR4_COMP_CH1_DQS_N6

ALERT_n P9 DDR4_COMP_CH1_ALERT_N
ZQ0 F9 240 R46
ZQ1 E9 240 R48

VPP_2V5_1 R9 2p5V
VPP_2V5_0 B1

VSS0 B2
VSS1 E1
VSS2 T7
VSS3 G8
VSS4 K1
VSS5 K9
VSS6 N1
VSS7 T1

VSSQ0 A2
VSSQ1 A8
VSSQ2 C9
VSSQ3 D2
VSSQ4 D8
VSSQ5 E3
VSSQ6 E8
VSSQ7 F1
VSSQ8 H1
VSSQ9 H9

TEN_VSS N9 DDR4_COMP_CH1_TEN

2p5V
C150 0.47uF
C151 0.47uF
C152 22uF

MT40A1G16KNR-075:E

1p2V_DDR4_CH01
C170 22uF
C171 22uF
C172 1uF
C173 1uF

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| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 15 of 77

# DDR4 COMPONENT #5 & Termination

DDR4_COMP_CH1_BG0 14,15,18
DDR4_COMP_CH1_BA[1:0] 14,15,18
DDR4_COMP_CH1_A[16:0] 14,15,18
DDR4_COMP_CH1_CS_N 14,15,18
DDR4_COMP_CH1_ODT 14,15,18
DDR4_COMP_CH1_ACT_N 14,15,18
DDR4_COMP_CH1_PAR 14,15,18
DDR4_COMP_CH1_CKE 14,15,18
DDR4_COMP_CH1_TEN 14,15
DDR4_COMP_CH1_BG1 14,15,18

DDR4_COMP_CH1_DQ[71:0] 14,15,17,18
DDR4_COMP_CH1_DBI_N[8:0] 14,15,17,18
DDR4_COMP_CH1_DQS_P[8:0] 14,15,17,18
DDR4_COMP_CH1_DQS_N[8:0] 14,15,17,18
DDR4_COMP_CH1_RESET_N 14,15,18
DDR4_COMP_CH1_CLK_P 14,15,18
DDR4_COMP_CH1_CLK_N 14,15,18
DDR4_COMP_CH1_ALERT_N 14,15,18

U11

| | | | |
|---|---|---|---|
| DDR4_COMP_CH1_A0 | P3 | A0 | |
| DDR4_COMP_CH1_A1 | P7 | A1 | |
| DDR4_COMP_CH1_A2 | R3 | A2 | |
| DDR4_COMP_CH1_A3 | N7 | A3 | |
| DDR4_COMP_CH1_A4 | N3 | A4 | |
| DDR4_COMP_CH1_A5 | P8 | A5 | |
| DDR4_COMP_CH1_A6 | P2 | A6 | |
| DDR4_COMP_CH1_A7 | R8 | A7 | |
| DDR4_COMP_CH1_A8 | R2 | A8 | |
| DDR4_COMP_CH1_A9 | R7 | A9 | |
| DDR4_COMP_CH1_A10 | M3 | A10_AP | |
| DDR4_COMP_CH1_A11 | T2 | A11 | |
| DDR4_COMP_CH1_A12 | M7 | A12_BC_n | |
| DDR4_COMP_CH1_A13 | T8 | A13 | |
| DDR4_COMP_CH1_A14 | L2 | WE_n_A14 | |
| DDR4_COMP_CH1_A15 | M8 | CAS_n_A15 | |
| DDR4_COMP_CH1_A16 | L8 | RAS_n_A16 | |
| DDR4_COMP_CH1_BG0 | M2 | BG0 | |
| DDR4_COMP_CH1_BG1 | M9 | BG1 | |
| DDR4_COMP_CH1_BA0 | N2 | BA0 | |
| DDR4_COMP_CH1_BA1 | N8 | BA1 | |
| DDR4_COMP_CH1_CS_N | L7 | CS_n | |
| DDR4_COMP_CH1_ODT | K3 | ODT | |
| DDR4_COMP_CH1_ACT_N | L3 | ACT_n | |
| DDR4_COMP_CH1_PAR | T3 | PAR | |
| DDR4_COMP_CH1_CKE | K2 | CKE | |
| DDR4_COMP_CH1_RESET_N | P1 | RESET_n | |
| DDR4_COMP_CH1_CLK_P | K7 | CK_t | |
| DDR4_COMP_CH1_CLK_N | K8 | CK_c | |
| 0p6V_VREF_DDR4_CH01 | M1 | VREFCA | |
| 1p2V_DDR4_CH01 | B3 | VDD0 | |
| | B9 | VDD1 | |
| | D1 | VDD2 | |
| | G7 | VDD3 | |
| | J1 | VDD4 | |
| | J9 | VDD5 | |
| | L1 | VDD6 | |
| | L9 | VDD7 | |
| | R1 | VDD8 | |
| | T9 | VDD9 | |
| | A1 | VDDQ0 | |
| | A9 | VDDQ1 | |
| | C1 | VDDQ2 | |
| | D9 | VDDQ3 | |
| | F2 | VDDQ4 | |
| | F8 | VDDQ5 | |
| | G1 | VDDQ6 | |
| | G9 | VDDQ7 | |
| | J2 | VDDQ8 | |
| | J8 | VDDQ9 | |

C191 0.1uF

| | | | |
|---|---|---|---|
| | G2 | DDR4_COMP_CH1_DQ64 | |
| DQ0 | F7 | DDR4_COMP_CH1_DQ65 | |
| DQ1 | H3 | DDR4_COMP_CH1_DQ66 | |
| DQ2 | H7 | DDR4_COMP_CH1_DQ67 | |
| DQ3 | H2 | DDR4_COMP_CH1_DQ68 | |
| DQ4 | H8 | DDR4_COMP_CH1_DQ69 | |
| DQ5 | J3 | DDR4_COMP_CH1_DQ70 | |
| DQ6 | J7 | DDR4_COMP_CH1_DQ71 | |
| DQ7 | A3 | R51 1K | |
| DQ8 | B8 | R52 1K | |
| DQ9 | C3 | R53 1K | |
| DQ10 | C7 | R54 1K | |
| DQ11 | C2 | R55 1K | |
| DQ12 | C8 | R56 1K | |
| DQ13 | D3 | R57 1K | |
| DQ14 | D7 | R58 1K | |
| DQ15 | E2 | R59 1K | |
| NF_UDM_n_UDBI_n | E7 | DDR4_COMP_CH1_DBI_N8 | |
| NF_LDM_n_LDBI_n | | | |
| | | 1p2V_DDR4_CH01 | |
| UDQS_t | B7 | R60 1K | |
| UDQS_c | A7 | R61 1K | |
| LDQS_t | G3 | DDR4_COMP_CH1_DQS_P8 | |
| LDQS_c | F3 | DDR4_COMP_CH1_DQS_N8 | |
| ALERT_n | P9 | DDR4_COMP_CH1_ALERT_N | |
| ZQ0 | F9 | 240 R62 | |
| ZQ1 | E9 | 240 R63 | |
| VPP_2V5_1 | R9 | 2p5V | |
| VPP_2V5_0 | B1 | | |
| VSS0 | B2 | | |
| VSS1 | E1 | | |
| VSS2 | T7 | | |
| VSS3 | G8 | | |
| VSS4 | K1 | | |
| VSS5 | K9 | | |
| VSS6 | N1 | | |
| VSS7 | T1 | | |
| VSSQ0 | A2 | | |
| VSSQ1 | A8 | | |
| VSSQ2 | C9 | | |
| VSSQ3 | D2 | | |
| VSSQ4 | D8 | | |
| VSSQ5 | E3 | | |
| VSSQ6 | E8 | | |
| VSSQ7 | F1 | | |
| VSSQ8 | H1 | | |
| VSSQ9 | H9 | | |
| TEN_VSS | N9 | DDR4_COMP_CH1_TEN | |

2p5V
C194 0.47uF C192 0.47uF C193 22uF

MT40A1G16KNR-075:E

0p6V_VTT_DDR4_CH01

| | | |
|---|---|---|
| DDR4_COMP_CH1_A0 | R892 | 36 |
| DDR4_COMP_CH1_A1 | R893 | 36 |
| DDR4_COMP_CH1_A2 | R894 | 36 |
| DDR4_COMP_CH1_A3 | R895 | 36 |
| DDR4_COMP_CH1_A4 | R896 | 36 |
| DDR4_COMP_CH1_A5 | R897 | 36 |
| DDR4_COMP_CH1_A6 | R898 | 36 |
| DDR4_COMP_CH1_A7 | R899 | 36 |
| DDR4_COMP_CH1_A8 | R900 | 36 |
| DDR4_COMP_CH1_A9 | R901 | 36 |
| DDR4_COMP_CH1_A10 | R902 | 36 |
| DDR4_COMP_CH1_A11 | R903 | 36 |
| DDR4_COMP_CH1_A12 | R904 | 36 |
| DDR4_COMP_CH1_A13 | R905 | 36 |
| DDR4_COMP_CH1_A14 | R906 | 36 |
| DDR4_COMP_CH1_A15 | R907 | 36 |
| DDR4_COMP_CH1_A16 | R908 | 36 |
| DDR4_COMP_CH1_BG0 | R909 | 36 |
| DDR4_COMP_CH1_BG1 | R910 | 36 |
| DDR4_COMP_CH1_BA0 | R911 | 36 |
| DDR4_COMP_CH1_BA1 | R912 | 36 |
| DDR4_COMP_CH1_CS_N | R913 | 36 |
| DDR4_COMP_CH1_ODT | R914 | 36 |
| DDR4_COMP_CH1_ACT_N | R915 | 36 |
| DDR4_COMP_CH1_PAR | R65 | 36 |

1p2V_DDR4_CH01

| | | |
|---|---|---|
| DDR4_COMP_CH1_ALERT_N | R66 | 1K |
| | R67 | DNI |
| DDR4_COMP_CH1_RESET_N | R68 | 1K |
| DDR4_COMP_CH1_CKE | R70 | DNI |
| 0p6V_VTT_DDR4_CH01 | R72 | 36 |

1p2V_DDR4_CH01

| | | |
|---|---|---|
| DDR4_COMP_CH1_TEN | R69 | DNI |
| | R71 | 0 |

| | | |
|---|---|---|
| DDR4_COMP_CH1_CLK_P | R73 | 36 |
| DDR4_COMP_CH1_CLK_N | R74 | 36 |

C196 0.01uF

0p6V_VTT_DDR4_CH01
CN4 C195 100uF 0.1uF
CN5 0.1uF
CN6 0.1uF

| | |
|---|---|
| Intel Corporation,101 innovation Dr, San Jose, CA 95134 | |
| Title | AgileX I-Series FPGA Dev Kit |
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| Size B | Document Number M17472 (M17471-100) Rev A0 |
| Date: Wednesday, December 23, 2020 | Sheet 16 of 77 |

# DDR4/T CH2 INTERFACE -- FPGA SIDE 2A

U6B

| | | | |
|---|---|---|---|
| DDR4_COMP_CH1_DQ71 | LU4 | IO, DIFF_RX_2C1N, DQ8 | |
| DDR4_COMP_CH1_DQ67 | LW2 | IO, DIFF_RX_2C1P, DQ8 | |
| DDR4_COMP_CH1_DQ65 | MA4 | IO, DIFF_TX_2C1N, DQ8 | |
| DDR4_COMP_CH1_DQ69 | MC5 | IO, DIFF_TX_2C1P, DQ8 | |
| | LN7 | IO, DIFF_RX_2C2N, DQ8 | |
| DDR4_COMP_CH1_DBI_N8 | LR5 | IO, DIFF_RX_2C2P, DQ8 | |
| DDR4_COMP_CH1_DQS_N8 | MA7 | IO, DIFF_TX_2C2N, DQSN8 | |
| DDR4_COMP_CH1_DQS_P8 | LW5 | IO, DIFF_TX_2C2P, DQS8 | |
| DDR4_COMP_CH1_DQ70 | LN11 | IO, CDR, DIFF_RX_2C3N, DQ8 | |
| DDR4_COMP_CH1_DQ64 | LR9 | IO, CDR, DIFF_RX_2C3P, DQ8 | |
| DDR4_COMP_CH1_DQ66 | LW9 | IO, DIFF_TX_2C3N, DQ8 | |
| DDR4_COMP_CH1_DQ68 | MA11 | IO, DIFF_TX_2C3P, DQ8 | |
| | | | |
| DDR4_COMP_CH1_DQ50 | MC9 | IO, DIFF_RX_2C4N, DQ9 | |
| DDR4_COMP_CH1_DQ52 | MD7 | IO, DIFF_RX_2C4P, DQ9 | |
| DDR4_COMP_CH1_DQ54 | MF5 | IO, DIFF_TX_2C4N, DQ9 | |
| DDR4_COMP_CH1_DQ48 | MH7 | IO, DIFF_TX_2C4P, DQ9 | |
| | MC13 | IO, DIFF_RX_2C5N, DQ9 | |
| DDR4_COMP_CH1_DBI_N6 | MD11 | IO, DIFF_RX_2C5P, DQ9 | |
| DDR4_COMP_CH1_DQS_N6 | MK13 | IO, PLL_2C_T_CLKOUT1N, DIFF_TX_2C5N, DQSN9 | |
| DDR4_COMP_CH1_DQS_P6 | MH11 | IO, PLL_2C_T_CLKOUT1P, PLL_2C_T_CLKOUT1, PLL_2C_T_FB1, DIFF_TX_2C5P, DQS9 | |
| DDR4_COMP_CH1_DQ51 | MD15 | IO, CDR, DIFF_RX_2C6N, DQ9 | |
| DDR4_COMP_CH1_DQ55 | MC17 | IO, RZQ_T_2C, CDR, DIFF_RX_2C6P, DQ9 | |
| DDR4_COMP_CH1_DQ49 | MH15 | IO, CLK_T_2C_1N, DIFF_TX_2C6N, DQ9 | |
| DDR4_COMP_CH1_DQ53 | MK17 | IO, CLK_T_2C_1P, DIFF_TX_2C6P, DQ9 | |
| | | | |
| DDR4_COMP_CH1_DQ60 | LN15 | IO, CLK_T_2C_0N, DIFF_RX_2C7N, DQ10 | |
| DDR4_COMP_CH1_DQ56 | LR13 | IO, CLK_T_2C_0P, DIFF_RX_2C7P, DQ10 | |
| DDR4_COMP_CH1_DQ58 | LW13 | IO, DIFF_TX_2C7N, DQ10 | |
| DDR4_COMP_CH1_DQ62 | MA15 | IO, DIFF_TX_2C7P, DQ10 | |
| | LN19 | IO, PLL_2C_T_CLKOUT0N, DIFF_RX_2C8N, DQ10 | |
| DDR4_COMP_CH1_DBI_N7 | LR17 | IO, PLL_2C_T_CLKOUT0P, PLL_2C_T_CLKOUT0, PLL_2C_T_FB0, DIFF_RX_2C8P, DQ10 | |
| DDR4_COMP_CH1_DQS_N7 | MA19 | IO, DIFF_TX_2C8N, DQSN10 | |
| DDR4_COMP_CH1_DQS_P7 | LW17 | IO, DIFF_TX_2C8P, DQS10 | |
| DDR4_COMP_CH1_DQ63 | LN23 | IO, CDR, DIFF_RX_2C9N, DQ10 | |
| DDR4_COMP_CH1_DQ59 | LR21 | IO, CDR, DIFF_RX_2C9P, DQ10 | |
| DDR4_COMP_CH1_DQ57 | LW21 | IO, DIFF_TX_2C9N, DQ10 | |
| DDR4_COMP_CH1_DQ61 | MA23 | IO, DIFF_TX_2C9P, DQ10 | |
| | | | |
| DDR4_COMP_CH1_DQ22 | MC21 | IO, DIFF_RX_2C10N, DQ11 | |
| DDR4_COMP_CH1_DQ20 | MD19 | IO, DIFF_RX_2C10P, DQ11 | |
| DDR4_COMP_CH1_DQ16 | MH19 | IO, DIFF_TX_2C10N, DQ11 | |
| DDR4_COMP_CH1_DQ18 | MK21 | IO, DIFF_TX_2C10P, DQ11 | |
| | MC25 | IO, DIFF_RX_2C11N, DQ11 | |
| DDR4_COMP_CH1_DBI_N2 | MD23 | IO, DIFF_RX_2C11P, DQ11 | |
| DDR4_COMP_CH1_DQS_N2 | MK25 | IO, DIFF_TX_2C11N, DQSN11 | |
| DDR4_COMP_CH1_DQS_P2 | MH23 | IO, DIFF_TX_2C11P, DQS11 | |
| DDR4_COMP_CH1_DQ19 | MD26 | IO, CDR, DIFF_RX_2C12N, DQ11 | |
| DDR4_COMP_CH1_DQ23 | MC27 | IO, CDR, DIFF_RX_2C12P, DQ11 | |
| DDR4_COMP_CH1_DQ17 | MH26 | IO, DIFF_TX_2C12N, DQ11 | |
| DDR4_COMP_CH1_DQ21 | MK27 | IO, DIFF_TX_2C12P, DQ11 | |

TOP

| | | |
|---|---|---|
| | JL27 | IO, CDR, DIFF_RX_2C16N, DQ13 |
| | JP26 | IO, CDR, DIFF_RX_2C16P, DQ13 |
| | JY26 | IO, DIFF_TX_2C16N, DQ13 |
| | KC27 | IO, DIFF_TX_2C16P, DQ13 |
| | JL29 | IO, DIFF_RX_2C17N, DQ13 |
| | JP28 | IO, DIFF_RX_2C17P, DQ13 |
| | KC29 | IO, PLL_2C_B_CLKOUT1N, DIFF_TX_2C17N, DQSN13 |
| | JY28 | IO, PLL_2C_B_CLKOUT1P, PLL_2C_B_CLKOUT1, PLL_2C_B_FB1, DIFF_TX_2C17P, DQS13 |
| | JL31 | IO, CDR, DIFF_RX_2C18N, DQ13 |
| | JP30 | IO, RZQ_B_2C, CDR, DIFF_RX_2C18P, DQ13 |
| | JY30 | IO, CLK_B_2C_1N, DIFF_TX_2C18N, DQ13 |
| | KC31 | IO, CLK_B_2C_1P, DIFF_TX_2C18P, DQ13 |
| | | |
| | KF26 | IO, CLK_B_2C_0N, CDR, DIFF_RX_2C19N, DQ14 |
| | KJ27 | IO, CLK_B_2C_0P, CDR, DIFF_RX_2C19P, DQ14 |
| | KR27 | IO, DIFF_TX_2C19N, DQ14 |
| | KU26 | IO, DIFF_TX_2C19P, DQ14 |
| | KJ29 | IO, PLL_2C_B_CLKOUT0N, DIFF_RX_2C20N, DQ14 |
| | KF28 | IO, PLL_2C_B_CLKOUT0P, PLL_2C_B_CLKOUT0, PLL_2C_B_FB0, DIFF_RX_2C20P, DQ14 |
| | KR29 | IO, DIFF_TX_2C20N, DQSN14 |
| | KU28 | IO, DIFF_TX_2C20P, DQS14 |
| | KF30 | IO, CDR, DIFF_RX_2C21N, DQ14 |
| | KJ31 | IO, CDR, DIFF_RX_2C21P, DQ14 |
| | KR31 | IO, DIFF_TX_2C21N, DQ14 |
| | KU30 | IO, DIFF_TX_2C21P, DQ14 |
| | | |
| | KW27 | IO, CDR, DIFF_RX_2C22N, DQ15 |
| | LB26 | IO, CDR, DIFF_RX_2C22P, DQ15 |
| | LH26 | IO, DIFF_TX_2C22N, DQ15 |
| | LL27 | IO, DIFF_TX_2C22P, DQ15 |
| | KW29 | IO, DIFF_RX_2C23N, DQ15 |
| | LB28 | IO, DIFF_RX_2C23P, DQ15 |
| | LL29 | IO, DIFF_TX_2C23N, DQSN15 |
| | LH28 | IO, DIFF_TX_2C23P, DQS15 |
| | KW31 | IO, CDR, DIFF_RX_2C24N, DQ15 |
| | LB30 | IO, CDR, DIFF_RX_2C24P, DQ15 |
| | LH30 | IO, DIFF_TX_2C24N, DQ15 |
| | LL31 | IO, DIFF_TX_2C24P, DQ15 |

BOT

IO Bank 2C

AgileX-I_2957A

FPGA_CXL_PRSNTx1_N 32
FPGA_CXL_PRSNTx4_N 32
FPGA_CXL_PRSNTx8_N 32
FPGA_CXL_PRSNTx16_N 32

14,15,16,18 DDR4_COMP_CH1_DBI_N[8:0]
14,15,16,18 DDR4_COMP_CH1_DQ[71:0]
14,15,16,18 DDR4_COMP_CH1_DQS_P[8:0]
14,15,16,18 DDR4_COMP_CH1_DQS_N[8:0]



Title: AgileX I-Series FPGA Dev Kit



Size: B | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 17 of 77

# DDR4 DIMM CH1 Interface - FPGA Side 3C

U6C

| | | | |
|---|---|---|---|
| DDR4_COMP_CH1_DQ40 | LN26 | IO, DIFF_RX_2F1N, DQ16 | |
| DDR4_COMP_CH1_DQ44 | LR25 | IO, DIFF_RX_2F1P, DQ16 | |
| DDR4_COMP_CH1_DQ42 | LW25 | IO, DIFF_TX_2F1N, DQ16 | |
| DDR4_COMP_CH1_DQ46 | MA26 | IO, DIFF_TX_2F1P, DQ16 | |
| DDR4_COMP_CH1_DBI_N5 | LN28 | IO, DIFF_RX_2F2N, DQ16 | |
| DDR4_COMP_CH1_DQS_N5 | LR27 | IO, DIFF_RX_2F2P, DQ16 | |
| DDR4_COMP_CH1_DQS_P5 | MA28 | IO, DIFF_TX_2F2N, DQSN16 | |
| DDR4_COMP_CH1_DQ43 | LW27 | IO, DIFF_TX_2F2P, DQS16 | |
| DDR4_COMP_CH1_DQ45 | LR29 | IO, CDR, DIFF_RX_2F3N, DQ16 | |
| DDR4_COMP_CH1_DQ41 | LN30 | IO, CDR, DIFF_RX_2F3P, DQ16 | |
| DDR4_COMP_CH1_DQ47 | LW29 | IO, DIFF_TX_2F3N, DQ16 | |
| | MA30 | IO, DIFF_TX_2F3P, DQ16 | |
| DDR4_COMP_CH1_DQ0 | MC29 | IO, DIFF_RX_2F4N, DQ17 | |
| DDR4_COMP_CH1_DQ6 | MD28 | IO, DIFF_RX_2F4P, DQ17 | |
| DDR4_COMP_CH1_DQ4 | MH28 | IO, DIFF_TX_2F4N, DQ17 | |
| DDR4_COMP_CH1_DQ2 | MK29 | IO, DIFF_TX_2F4P, DQ17 | |
| DDR4_COMP_CH1_DBI_N0 | MC31 | IO, DIFF_RX_2F5N, DQ17 | |
| DDR4_COMP_CH1_DQS_N0 | MD30 | IO, DIFF_RX_2F5P, DQ17 | |
| DDR4_COMP_CH1_DQS_P0 | MK31 | IO, PLL_2F_T_CLKOUT1N, DIFF_TX_2F5N, DQSN17 | |
| DDR4_COMP_CH1_DQ3 | MH30 | IO, PLL_2F_T_CLKOUT1P, PLL_2F_T_CLKOUT1, PLL_2F_T_FB1, DIFF_TX_2F5P, DQS17 | |
| DDR4_COMP_CH1_DQ7 | MD32 | IO, CDR, DIFF_RX_2F6N, DQ17 | |
| DDR4_COMP_CH1_DQ1 | MC33 | IO, RZQ_T_2F, CDR, DIFF_RX_2F6P, DQ17 | |
| DDR4_COMP_CH1_DQ5 | MH32 | IO, CLK_T_2F_1N, DIFF_TX_2F6N, DQ17 | |
| | MK33 | IO, CLK_T_2F_1P, DIFF_TX_2F6P, DQ17 | |
| DDR4_COMP_CH1_DQ25 | KW33 | IO, CLK_T_2F_0N, DIFF_RX_2F7N, DQ18 | |
| DDR4_COMP_CH1_DQ28 | LB32 | IO, CLK_T_2F_0P, DIFF_RX_2F7P, DQ18 | |
| DDR4_COMP_CH1_DQ24 | LH32 | IO, DIFF_TX_2F7N, DQ18 | |
| DDR4_COMP_CH1_DQ26 | LL33 | IO, DIFF_TX_2F7P, DQ18 | |
| DDR4_COMP_CH1_DBI_N3 | KW35 | IO, PLL_2F_T_CLKOUT0N, DIFF_RX_2F8N, DQ18 | |
| DDR4_COMP_CH1_DQS_N3 | LB34 | IO, PLL_2F_T_CLKOUT0P, PLL_2F_T_CLKOUT0, PLL_2F_T_FB0, DIFF_RX_2F8P, DQ18 | |
| DDR4_COMP_CH1_DQS_P3 | LL35 | IO, DIFF_TX_2F8N, DQSN18 | |
| DDR4_COMP_CH1_DQ30 | LH34 | IO, DIFF_TX_2F8P, DQS18 | |
| DDR4_COMP_CH1_DQ31 | KW37 | IO, CDR, DIFF_RX_2F9N, DQ18 | |
| DDR4_COMP_CH1_DQ27 | LB36 | IO, CDR, DIFF_RX_2F9P, DQ18 | |
| DDR4_COMP_CH1_DQ29 | LH36 | IO, DIFF_TX_2F9N, DQ18 | |
| | LL37 | IO, DIFF_TX_2F9P, DQ18 | |
| DDR4_COMP_CH1_DQ8 | LN32 | IO, DIFF_RX_2F10N, DQ19 | |
| DDR4_COMP_CH1_DQ12 | LR31 | IO, DIFF_RX_2F10P, DQ19 | |
| DDR4_COMP_CH1_DQ10 | LW31 | IO, DIFF_TX_2F10N, DQ19 | |
| DDR4_COMP_CH1_DQ14 | MA32 | IO, DIFF_TX_2F10P, DQ19 | |
| DDR4_COMP_CH1_DBI_N1 | LN34 | IO, DIFF_RX_2F11N, DQ19 | |
| DDR4_COMP_CH1_DQS_N1 | LR33 | IO, DIFF_RX_2F11P, DQ19 | |
| DDR4_COMP_CH1_DQS_P1 | MA34 | IO, DIFF_TX_2F11N, DQSN19 | |
| DDR4_COMP_CH1_DQ13 | LW33 | IO, DIFF_TX_2F11P, DQS19 | |
| DDR4_COMP_CH1_DQ11 | LN36 | IO, CDR, DIFF_RX_2F12N, DQ19 | |
| DDR4_COMP_CH1_DQ9 | LR35 | IO, CDR, DIFF_RX_2F12P, DQ19 | |
| DDR4_COMP_CH1_DQ15 | LW35 | IO, DIFF_TX_2F12N, DQ19 | |
| | MA36 | IO, DIFF_TX_2F12P, DQ19 | |

TOP

| | | | |
|---|---|---|---|
| | | IO, CDR, DIFF_RX_2F13N, DQ20 | JL33 DDR4_COMP_CH1_DQ38 |
| | | IO, CDR, DIFF_RX_2F13P, DQ20 | JP32 DDR4_COMP_CH1_DQ36 |
| | | IO, DIFF_TX_2F13N, DQ20 | JY32 DDR4_COMP_CH1_DQ32 |
| | | IO, DIFF_TX_2F13P, DQ20 | KC33 DDR4_COMP_CH1_DQ34 |
| | | IO, DIFF_RX_2F14N, DQ20 | JL35 |
| | | IO, DIFF_RX_2F14P, DQ20 | JP34 DDR4_COMP_CH1_DBI_N4 |
| | | IO, DIFF_TX_2F14N, DQSN20 | KC35 DDR4_COMP_CH1_DQS_N4 |
| | | IO, DIFF_TX_2F14P, DQS20 | JY34 DDR4_COMP_CH1_DQS_P4 |
| | | IO, CDR, DIFF_RX_2F15N, DQ20 | JL37 DDR4_COMP_CH1_DQ39 |
| | | IO, CDR, DIFF_RX_2F15P, DQ20 | JP36 DDR4_COMP_CH1_DQ37 |
| | | IO, DIFF_TX_2F15N, DQ20 | JY36 DDR4_COMP_CH1_DQ33 |
| | | IO, DIFF_TX_2F15P, DQ20 | KC37 DDR4_COMP_CH1_DQ35 |
| | | IO, CDR, DIFF_RX_2F16N, DQ21 | KF32 DDR4_COMP_CH1_BG0 |
| | | IO, CDR, DIFF_RX_2F16P, DQ21 | KJ33 DDR4_COMP_CH1_BA1 |
| | | IO, DIFF_TX_2F16N, DQ21 | KR33 DDR4_COMP_CH1_BA0 |
| | | IO, DIFF_TX_2F16P, DQ21 | KU32 DDR4_COMP_CH1_ALERT_N |
| | | IO, DIFF_RX_2F17N, DQ21 | KJ35 DDR4_COMP_CH1_A16 |
| | | IO, DIFF_RX_2F17P, DQ21 | KF34 DDR4_COMP_CH1_A15 |
| | | IO, PLL_2F_B_CLKOUT1N, DIFF_TX_2F17N, DQSN21 | KR35 DDR4_COMP_CH1_A14 |
| | | IO, PLL_2F_B_CLKOUT1P, PLL_2F_B_CLKOUT1, PLL_2F_B_FB1, DIFF_TX_2F17P, DQS21 | KU34 DDR4_COMP_CH1_A13 |
| | | IO, CDR, DIFF_RX_2F18N, DQ21 | KF36 DDR4_COMP_CH1_A12 |
| | | IO, RZQ_B_2F, CDR, DIFF_RX_2F18P, DQ21 | KJ37 DDR4_COMP_CH1_RZQ |
| | | IO, CLK_B_2F_1N, DIFF_TX_2F18N, DQ21 | KR37 43 CLK_DDR4_CH1_N |
| | | IO, CLK_B_2F_1P, DIFF_TX_2F18P, DQ21 | KU36 43 CLK_DDR4_CH1_P |
| | | IO, CLK_B_2F_0N, CDR, DIFF_RX_2F19N, DQ22 | LB38 DDR4_COMP_CH1_A11 |
| | | IO, CLK_B_2F_0P, CDR, DIFF_RX_2F19P, DQ22 | KW39 DDR4_COMP_CH1_A10 |
| | | IO, DIFF_TX_2F19N, DQ22 | LL39 DDR4_COMP_CH1_A9 |
| | | IO, DIFF_TX_2F19P, DQ22 | LH38 DDR4_COMP_CH1_A8 |
| | | IO, PLL_2F_B_CLKOUT0N, DIFF_RX_2F20N, DQ22 | KW41 DDR4_COMP_CH1_A7 |
| | | IO, PLL_2F_B_CLKOUT0P, PLL_2F_B_CLKOUT0, PLL_2F_B_FB0, DIFF_RX_2F20P, DQ22 | LB40 DDR4_COMP_CH1_A6 |
| | | IO, DIFF_TX_2F20N, DQSN22 | LL41 DDR4_COMP_CH1_A5 |
| | | IO, DIFF_TX_2F20P, DQS22 | LH40 DDR4_COMP_CH1_A4 |
| | | IO, CDR, DIFF_RX_2F21N, DQ22 | LB42 DDR4_COMP_CH1_A3 |
| | | IO, CDR, DIFF_RX_2F21P, DQ22 | KW43 DDR4_COMP_CH1_A2 |
| | | IO, DIFF_TX_2F21N, DQ22 | LL43 DDR4_COMP_CH1_A1 |
| | | IO, DIFF_TX_2F21P, DQ22 | LH42 DDR4_COMP_CH1_A0 |
| | | IO, CDR, DIFF_RX_2F22N, DQ23 | KJ39 DDR4_COMP_CH1_PAR |
| | | IO, CDR, DIFF_RX_2F22P, DQ23 | KF38 |
| | | IO, DIFF_TX_2F22N, DQ23 | KU38 DDR4_COMP_CH1_CLK_N |
| | | IO, DIFF_TX_2F22P, DQ23 | KR39 DDR4_COMP_CH1_CLK_P |
| | | IO, DIFF_RX_2F23N, DQ23 | KJ41 |
| | | IO, DIFF_RX_2F23P, DQ23 | KF40 DDR4_COMP_CH1_CKE |
| | | IO, DIFF_TX_2F23N, DQSN23 | KR41 |
| | | IO, DIFF_TX_2F23P, DQS23 | KU40 DDR4_COMP_CH1_ODT |
| | | IO, CDR, DIFF_RX_2F24N, DQ23 | KJ43 DDR4_COMP_CH1_ACT_N |
| | | IO, CDR, DIFF_RX_2F24P, DQ23 | KF42 DDR4_COMP_CH1_CS_N |
| | | IO, DIFF_TX_2F24N, DQ23 | KU42 DDR4_COMP_CH1_RESET_N |
| | | IO, DIFF_TX_2F24P, DQ23 | KR43 DDR4_COMP_CH1_BG1 |

BOT

IO Bank 2F

AgileX-I_2957A

240 R75

CLK_DDR4_CH1_P R76 DNI CLK_DDR4_CH1_N

14,15,16 DDR4_COMP_CH1_BG1
14,15,16 DDR4_COMP_CH1_BG0
14,15,16 DDR4_COMP_CH1_BA[1:0]
14,15,16 DDR4_COMP_CH1_A[16:0]
14,15,16 DDR4_COMP_CH1_CS_N
14,15,16 DDR4_COMP_CH1_ODT
14,15,16 DDR4_COMP_CH1_ACT_N
14,15,16 DDR4_COMP_CH1_PAR
14,15,16 DDR4_COMP_CH1_CKE
14,15,16 DDR4_COMP_CH1_RESET_N
14,15,16 DDR4_COMP_CH1_CLK_P
14,15,16 DDR4_COMP_CH1_CLK_N

DDR4_COMP_CH1_DQ[71:0] 14,15,16,17
DDR4_COMP_CH1_DBI_N[8:0] 14,15,16,17
DDR4_COMP_CH1_DQS_P[8:0] 14,15,16,17
DDR4_COMP_CH1_DQS_N[8:0] 14,15,16,17
DDR4_COMP_CH1_ALERT_N 14,15,16



Title: AgileX I-Series FPGA Dev Kit



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 18 of 77

# DDR4/DDRT Dual DIMM A

x72bit DIMM Only

12V_G1 — R77 0 — R78 0

0p6V_VREF_DDR4_CH2

1p2V_DDR4_CH2

J1A

| | | | | | |
|---|---|---|---|---|---|
| 1 | 12V/NC | 12V/NC | 145 | | |
| 2 | Vss | Vrefca | 146 | | |
| 3 | DQ4 | Vss | 147 | | |
| 4 | Vss | DQ5 | 148 | DDR4_DDIMM_DQ5 | DDR4_DDIMM_DQ4 |
| 5 | DQ0 | Vss | 149 | | |
| 6 | Vss | DQ1 | 150 | DDR4_DDIMM_DQ1 | DDR4_DDIMM_DQ0 |
| 7 | DQS9_t/DM0_n/DBI0_n | Vss | 151 | | DDR4_DDIMM_DBI_N0 |
| 8 | DQS9_c | DQS0_c | 152 | DDR4_DDIMM_DQS_N0 | DDR4_DDIMM_TDQS_N9 |
| 9 | Vss | DQS0_t | 153 | DDR4_DDIMM_DQS_P0 | |
| 10 | DQ6 | Vss | 154 | | DDR4_DDIMM_DQ6 |
| 11 | Vss | DQ7 | 155 | DDR4_DDIMM_DQ7 | DDR4_DDIMM_DQ2 |
| 12 | DQ2 | Vss | 156 | | |
| 13 | Vss | DQ3 | 157 | DDR4_DDIMM_DQ3 | DDR4_DDIMM_DQ12 |
| 14 | DQ12 | Vss | 158 | | |
| 15 | Vss | DQ13 | 159 | DDR4_DDIMM_DQ13 | DDR4_DDIMM_DQ8 |
| 16 | DQ8 | Vss | 160 | | |
| 17 | Vss | DQ9 | 161 | DDR4_DDIMM_DQ9 | DDR4_DDIMM_DBI_N1 |
| 18 | DQS10_t/DM1_n/DBI1_n | Vss | 162 | | DDR4_DDIMM_TDQS_N10 |
| 19 | DQS10_c | DQS1_c | 163 | DDR4_DDIMM_DQS_N1 | |
| 20 | Vss | DQS1_t | 164 | DDR4_DDIMM_DQS_P1 | |
| 21 | DQ14 | Vss | 165 | | DDR4_DDIMM_DQ14 |
| 22 | Vss | DQ15 | 166 | DDR4_DDIMM_DQ15 | DDR4_DDIMM_DQ10 |
| 23 | DQ10 | Vss | 167 | | |
| 24 | Vss | DQ11 | 168 | DDR4_DDIMM_DQ11 | DDR4_DDIMM_DQ20 |
| 25 | DQ20 | Vss | 169 | | |
| 26 | Vss | DQ21 | 170 | DDR4_DDIMM_DQ21 | DDR4_DDIMM_DQ16 |
| 27 | DQ16 | Vss | 171 | | |
| 28 | Vss | DQ17 | 172 | DDR4_DDIMM_DQ17 | DDR4_DDIMM_DBI_N2 |
| 29 | DQS11_t/DM2_n/DBI2_n | Vss | 173 | | DDR4_DDIMM_TDQS_N11 |
| 30 | DQS11_c | DQS2_c | 174 | DDR4_DDIMM_DQS_N2 | |
| 31 | Vss | DQS2_t | 175 | DDR4_DDIMM_DQS_P2 | |
| 32 | DQ22 | Vss | 176 | | DDR4_DDIMM_DQ22 |
| 33 | Vss | DQ23 | 177 | DDR4_DDIMM_DQ23 | DDR4_DDIMM_DQ18 |
| 34 | DQ18 | Vss | 178 | | |
| 35 | Vss | DQ19 | 179 | DDR4_DDIMM_DQ19 | DDR4_DDIMM_DQ28 |
| 36 | DQ28 | Vss | 180 | | |
| 37 | Vss | DQ29 | 181 | DDR4_DDIMM_DQ29 | DDR4_DDIMM_DQ24 |
| 38 | DQ24 | Vss | 182 | | |
| 39 | Vss | DQ25 | 183 | DDR4_DDIMM_DQ25 | DDR4_DDIMM_DBI_N3 |
| 40 | DQS12_t/DM3_n/DBI3_n | Vss | 184 | | DDR4_DDIMM_TDQS_N12 |
| 41 | DQS12_c | DQS3_c | 185 | DDR4_DDIMM_DQS_N3 | |
| 42 | Vss | DQS3_t | 186 | DDR4_DDIMM_DQS_P3 | |
| 43 | DQ30 | Vss | 187 | | DDR4_DDIMM_DQ30 |
| 44 | Vss | DQ31 | 188 | DDR4_DDIMM_DQ31 | DDR4_DDIMM_DQ26 |
| 45 | DQ26 | Vss | 189 | | |
| 46 | Vss | DQ27 | 190 | DDR4_DDIMM_DQ27 | DDR4_DDIMM_DQ68 |
| 47 | CB4/NC | Vss | 191 | | |
| 48 | Vss | CB5/NC | 192 | DDR4_DDIMM_DQ69 | DDR4_DDIMM_DQ64 |
| 49 | CB0/NC | Vss | 193 | | |
| 50 | Vss | CB1/NC | 194 | DDR4_DDIMM_DQ65 | DDR4_DDIMM_DBI_N8 |
| 51 | DQS17_t/DM8_n/DBI8_n | Vss | 195 | | DDR4_DDIMM_TDQS_N17 |
| 52 | DQS17_c | DQS8_c | 196 | DDR4_DDIMM_DQS_N8 | |
| 53 | Vss | DQS8_t | 197 | DDR4_DDIMM_DQS_P8 | |
| 54 | CB6/NC | Vss | 198 | | DDR4_DDIMM_DQ70 |
| 55 | Vss | CB7/NC | 199 | DDR4_DDIMM_DQ71 | DDR4_DDIMM_DQ66 |
| 56 | CB2/NC | Vss | 200 | | |
| 57 | Vss | CB3/NC | 201 | DDR4_DDIMM_DQ67 | DDR4_DDIMM_RESET_N |
| 58 | RESET_n | Vss | 202 | | |
| 59 | Vdd | CKE1 | 203 | DDR4_DIMMA_CKE1 | |
| 60 | CKE0 | Vdd | 204 | | DDR4_DIMMA_CKE0 |
| 61 | Vdd | RFU2 | 205 | | |
| 62 | ACT_n | Vdd | 206 | | DDR4_DDIMM_ACT_N |
| 63 | BG0 | Vdd | 207 | DDR4_DDIMM_BG1 | DDR4_DDIMM_BG0 |
| 64 | Vdd | BG1 | 208 | DDR4_DDIMM_ALERT_N | |
| 65 | A12 | ALERT_n | 209 | | DDR4_DDIMM_A12 |
| 66 | A9 | Vdd | 210 | DDR4_DDIMM_A11 | DDR4_DDIMM_A9 |
| 67 | Vdd | A11 | 211 | DDR4_DDIMM_A7 | |
| 68 | A8 | A7 | 212 | | DDR4_DDIMM_A8 |
| 69 | A6 | Vdd | 213 | DDR4_DDIMM_A5 | DDR4_DDIMM_A6 |
| 70 | Vdd | A5 | 214 | DDR4_DDIMM_A4 | |
| 71 | A3 | A4 | 215 | | DDR4_DDIMM_A3 |
| 72 | A1 | Vdd | 216 | DDR4_DDIMM_A2 | DDR4_DDIMM_A1 |
| 73 | Vdd | A2 | 217 | | |
| 74 | CK0_t | Vdd | 218 | DDR4_DDIMM_CK_P1 | DDR4_DDIMM_CK_P0 |
| 75 | CK0_c | CK1_t | 219 | DDR4_DDIMM_CK_N1 | DDR4_DDIMM_CK_N0 |
| 76 | Vdd | CK1_c | 220 | | |
| 77 | Vtt | Vdd | 221 | | 0p6V_VTT_DDR4_CH2 |
| | | Vtt | | 0p6V_VTT_DDR4_CH2 | |

DDR4x72x288

1p2V_DDR4_CH2

J1B

| | | | | | |
|---|---|---|---|---|---|
| 78 | EVENT_n | PARITY | 222 | DDR4_DDIMM_PAR | |
| 79 | A0 | Vdd | 223 | | |
| 80 | Vdd | BA1 | 224 | DDR4_DDIMM_BA1 | DDR4_DDIMM_EVENT_N |
| 81 | BA0 | A10/AP | 225 | DDR4_DDIMM_A10 | DDR4_DDIMM_A0 |
| 82 | RAS_n/A16 | Vdd | 226 | | DDR4_DDIMM_BA0 |
| 83 | Vdd | RFU3 | 227 | | DDR4_DDIMM_A16 |
| 84 | S0_n | WE_n/A14 | 228 | DDR4_DDIMM_A14 | |
| 85 | Vdd | Vdd | 229 | | DDR4_DDIMM_CS_N0 |
| 86 | CAS_n/A15 | SAVE_n/NC | 230 | DDR4_DIMMA_SAVE_N | |
| 87 | ODT0 | Vdd | 231 | | DDR4_DDIMM_A15 |
| 88 | Vdd | A13 | 232 | DDR4_DDIMM_A13 | DDR4_DIMMA_ODT0 |
| 89 | S1_n | Vdd | 233 | | |
| 90 | Vdd | A17/NC | 234 | DDR4_DDIMM_A17 | DDR4_DIMMA_CS_N1 |
| 91 | ODT1 | C2/NC | 235 | R79 0 | |
| 92 | Vdd | Vdd | 236 | | DDR4_DIMMA_ODT1 |
| 93 | S2_n/C0 | S3_n/C1 | 237 | DDR4_DDIMM_C1 | |
| 94 | Vss | SA2/RFU | 238 | DDR4_DIMMA_SA2 | DDR4_DDIMM_C0 |
| 95 | DQ36 | Vss | 239 | | |
| 96 | Vss | DQ37 | 240 | DDR4_DDIMM_DQ37 | DDR4_DDIMM_DQ36 |
| 97 | DQ32 | Vss | 241 | | |
| 98 | Vss | DQ33 | 242 | DDR4_DDIMM_DQ33 | DDR4_DDIMM_DQ32 |
| 99 | DQS13_t/DM4_n/DBI4_n | Vss | 243 | | DDR4_DDIMM_DBI_N4 |
| 100 | DQS13_c | DQS4_c | 244 | DDR4_DDIMM_DQS_N4 | DDR4_DDIMM_TDQS_N13 |
| 101 | Vss | DQS4_t | 245 | DDR4_DDIMM_DQS_P4 | |
| 102 | DQ38 | Vss | 246 | | DDR4_DDIMM_DQ38 |
| 103 | Vss | DQ39 | 247 | DDR4_DDIMM_DQ39 | DDR4_DDIMM_DQ34 |
| 104 | DQ34 | Vss | 248 | | |
| 105 | Vss | DQ35 | 249 | DDR4_DDIMM_DQ35 | DDR4_DDIMM_DQ44 |
| 106 | DQ44 | Vss | 250 | | |
| 107 | Vss | DQ45 | 251 | DDR4_DDIMM_DQ45 | DDR4_DDIMM_DQ40 |
| 108 | DQ40 | Vss | 252 | | |
| 109 | Vss | DQ41 | 253 | DDR4_DDIMM_DQ41 | DDR4_DDIMM_DBI_N5 |
| 110 | DQS14_t/DM5_n/DBI5_n | Vss | 254 | | DDR4_DDIMM_TDQS_N14 |
| 111 | DQS14_c | DQS5_c | 255 | DDR4_DDIMM_DQS_N5 | |
| 112 | Vss | DQS5_t | 256 | DDR4_DDIMM_DQS_P5 | |
| 113 | DQ46 | Vss | 257 | | DDR4_DDIMM_DQ46 |
| 114 | Vss | DQ47 | 258 | DDR4_DDIMM_DQ47 | DDR4_DDIMM_DQ42 |
| 115 | DQ42 | Vss | 259 | | |
| 116 | Vss | DQ43 | 260 | DDR4_DDIMM_DQ43 | DDR4_DDIMM_DQ52 |
| 117 | DQ52 | Vss | 261 | | |
| 118 | Vss | DQ53 | 262 | DDR4_DDIMM_DQ53 | DDR4_DDIMM_DQ48 |
| 119 | DQ48 | Vss | 263 | | |
| 120 | Vss | DQ49 | 264 | DDR4_DDIMM_DQ49 | DDR4_DDIMM_DBI_N6 |
| 121 | DQS15_t/DM6_n/DBI6_n | Vss | 265 | | DDR4_DDIMM_TDQS_N15 |
| 122 | DQS15_c | DQS6_c | 266 | DDR4_DDIMM_DQS_N6 | |
| 123 | Vss | DQS6_t | 267 | DDR4_DDIMM_DQS_P6 | |
| 124 | DQ54 | Vss | 268 | | DDR4_DDIMM_DQ54 |
| 125 | Vss | DQ55 | 269 | DDR4_DDIMM_DQ55 | DDR4_DDIMM_DQ50 |
| 126 | DQ50 | Vss | 270 | | |
| 127 | Vss | DQ51 | 271 | DDR4_DDIMM_DQ51 | DDR4_DDIMM_DQ60 |
| 128 | DQ60 | Vss | 272 | | |
| 129 | Vss | DQ61 | 273 | DDR4_DDIMM_DQ61 | DDR4_DDIMM_DQ56 |
| 130 | DQ56 | Vss | 274 | | |
| 131 | Vss | DQ57 | 275 | DDR4_DDIMM_DQ57 | DDR4_DDIMM_DBI_N7 |
| 132 | DQS16_t/DM7_n/DBI7_n | Vss | 276 | | DDR4_DDIMM_TDQS_N16 |
| 133 | DQS16_c | DQS7_c | 277 | DDR4_DDIMM_DQS_N7 | |
| 134 | Vss | DQS7_t | 278 | DDR4_DDIMM_DQS_P7 | |
| 135 | DQ62 | Vss | 279 | | DDR4_DDIMM_DQ62 |
| 136 | Vss | DQ63 | 280 | DDR4_DDIMM_DQ63 | |
| 137 | DQ58 | Vss | 281 | | DDR4_DDIMM_DQ58 |
| 138 | Vss | DQ59 | 282 | DDR4_DDIMM_DQ59 | |
| 139 | SA0 | Vss | 283 | | DDR4_DIMMA_SA0 |
| 140 | SA1 | Vddspd | 284 | | DDR4_DIMMA_SA1 |
| 141 | SCL | SDA | 285 | DDR4_DIMM_SDA | DDR4_DIMM_SCL |
| 142 | Vpp | Vpp | 286 | | |
| 143 | Vpp | Vpp | 287 | | 2p5V |
| 144 | RFU1 | Vpp | 288 | R94 0 | |

2p5V

1p2V_DDR4_CH2

C197 1uF — C198 0.1uF

2p5V

1p2V_DDR4_CH2 — C199 0.1uF

U12 — MAX3378E

| | | | |
|---|---|---|---|
| 14 | VCC | VL | 1 |
| DDR4_DIMMA_EVENT_N 13 | IOVCC1 | IOVL1 | 2 FPGA_DIMMA_EVENT_N |
| DDR4_DIMMA_SAVE_N 12 | IOVCC2 | IOVL2 | 3 FPGA_DIMMA_SAVE_N |
| DDR4_DIMM_SCL 11 | IOVCC3 | IOVL3 | 4 FPGA_DIMM_SCL |
| DDR4_DIMM_SDA 10 | IOVCC4 | IOVL4 | 5 FPGA_DIMM_SDA |
| 9 | NC1 | NC0 | 6 |
| 1p2V_DDR4_CH2 8 | TSn | GND | 7 |

1p2V_DDR4_CH2

FPGA_DIMM_SCL — R80 10.0K

FPGA_DIMM_SDA — R81 10.0K

## DDR4 DIMM IF

| | | | |
|---|---|---|---|
| | | 20,21 | DDR4_DDIMM_A[17:0] |
| 2p5V | | | |
| DDR4_DIMMA_SAVE_N | R82 DNI | 21 | DDR4_DIMMA_CK_P0 |
| DDR4_DIMMA_EVENT_N | R83 10.0K | 21 | DDR4_DIMMA_CK_N0 |
| | | 21 | DDR4_DIMMA_CKE[1:0] |
| | | 20,21 | DDR4_DDIMM_RESET_N |
| DDR4_DIMMA_SA0 | R84 0 | 20,21 | DDR4_DDIMM_ACT_N |
| DDR4_DIMMA_SA1 | R85 0 | 21 | DDR4_DIMMA_ODT[1:0] |
| DDR4_DIMMA_SA2 | R86 0 | 20,21 | DDR4_DDIMM_BG[1:0] |
| | | 20,21 | DDR4_DDIMM_BA[1:0] |
| I2C Addr: 0xA0 | | 21 | DDR4_DIMMA_CS_N[1:0] |
| | | 20,21 | DDR4_DDIMM_PAR |
| 1p2V_DDR4_CH2 | | 20,21 | DDR4_DDIMM_ALERT_N |
| DDR4_DDIMM_RESET_N | R87 10.0K / R88 DNI | 20,21,22 | DDR4_DDIMM_DBI_N[8:0] |
| | | 20,21,22 | DDR4_DDIMM_DQ[71:0] |
| DDR4_DIMMA_CKE0 | R89 DNI | 20,21,22 | DDR4_DDIMM_DQS_P[8:0] |
| DDR4_DIMMA_CKE1 | R90 DNI | 20,21,22 | DDR4_DDIMM_DQS_N[8:0] |
| | | 20,21,22 | DDR4_DDIMM_TDQS_N[17:9] |
| 1p2V_DDR4_CH2 | | 20,46 | DDR4_DIMM_SCL |
| | | 20,46 | DDR4_DIMM_SDA |
| DDR4_DDIMM_ALERT_N | R91 10.0K | 22 | FPGA_DIMMA_EVENT_N |
| | | 22 | FPGA_DIMMA_SAVE_N |
| | | 20,21 | DDR4_DDIMM_C[1:0] |
| 2p5V | | | |
| DDR4_DIMMA_CK_P0 | R92 DNI | 22 | FPGA_DIMM_SCL |
| DDR4_DIMMA_CK_P1 | | 22 | FPGA_DIMM_SDA |
| 2p5V | | | |
| DDR4_DIMMA_CK_N0 | R93 DNI | | |
| DDR4_DIMMA_CK_N1 | | | |

1p2V_DDR4_CH2 — 0p6V_VTT_DDR4_CH2

1p2V_DDR4_CH2 — 1p2V_DDR4_CH2

DDR4x72x288

C200 10nF — C201 0.1uF — C202 10nF — C203 0.1uF — C204 10nF — C205 0.1uF — C206 10nF — C207 0.1uF — C208 10nF — C209 0.1uF — C210 10nF — C211 0.1uF

Put caps on VDD pins which are close to DIMM A/C pins

0p6V_VTT_DDR4_CH2

C212 100uF — C213 1uF

1p2V_DDR4_CH2

C216 100uF 1206 6.3V X6T — C217 100uF 1206 6.3V X6T — C218 10uF — C219 10uF — C220 0.1uF — C221 0.1uF — C222 10nF — C225 10nF

0p6V_VREF_DDR4_CH2

C214 0.1uF — C223 0.1uF

0p6V_VTT_DDR4_CH2

C215 0.1uF — C224 10nF — C226 0.1uF

2p5V

C227 100uF 1206 6.3V X6T — C228 10uF — C229 0.1uF — C230 10nF

Intel Corporation,101 innovation Dr, San Jose, CA 95134

Title: AgileX I-Series FPGA Dev Kit



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 19 of 77

# DDR4/DDRT Dual DIMM B

x72bit DIMM Only

12V_G1 — R95 0 — R96 0

J2A

| | | | | | |
|---|---|---|---|---|---|
| 1 | 12V/NC | 12V/NC | 145 | | |
| 2 | Vss | Vrefca | 146 | | |
| 3 | DQ4 | Vss | 147 | | |
| 4 | Vss | DQ5 | 148 | DDR4_DDIMM_DQ5 | DDR4_DDIMM_DQ4 |
| 5 | DQ0 | Vss | 149 | | |
| 6 | Vss | DQ1 | 150 | DDR4_DDIMM_DQ1 | DDR4_DDIMM_DQ0 |
| 7 | DQS9_t/DM0_n/DBI0_n | Vss | 151 | | DDR4_DDIMM_DBI_N0 |
| 8 | DQS9_c | DQS0_c | 152 | DDR4_DDIMM_DQS_N0 | DDR4_DDIMM_TDQS_N9 |
| 9 | Vss | DQS0_t | 153 | DDR4_DDIMM_DQS_P0 | |
| 10 | DQ6 | Vss | 154 | | DDR4_DDIMM_DQ6 |
| 11 | Vss | DQ7 | 155 | DDR4_DDIMM_DQ7 | DDR4_DDIMM_DQ2 |
| 12 | DQ2 | Vss | 156 | | |
| 13 | Vss | DQ3 | 157 | DDR4_DDIMM_DQ3 | DDR4_DDIMM_DQ12 |
| 14 | DQ12 | Vss | 158 | | |
| 15 | Vss | DQ13 | 159 | DDR4_DDIMM_DQ13 | DDR4_DDIMM_DQ8 |
| 16 | DQ8 | Vss | 160 | | |
| 17 | Vss | DQ9 | 161 | DDR4_DDIMM_DQ9 | DDR4_DDIMM_DBI_N1 |
| 18 | DQS10_t/DM1_n/DBI1_n | Vss | 162 | | DDR4_DDIMM_TDQS_N10 |
| 19 | DQS10_c | DQS1_c | 163 | DDR4_DDIMM_DQS_N1 | |
| 20 | Vss | DQS1_t | 164 | DDR4_DDIMM_DQS_P1 | |
| 21 | DQ14 | Vss | 165 | | DDR4_DDIMM_DQ14 |
| 22 | Vss | DQ15 | 166 | DDR4_DDIMM_DQ15 | DDR4_DDIMM_DQ10 |
| 23 | DQ10 | Vss | 167 | | |
| 24 | Vss | DQ11 | 168 | DDR4_DDIMM_DQ11 | DDR4_DDIMM_DQ20 |
| 25 | DQ20 | Vss | 169 | | |
| 26 | Vss | DQ21 | 170 | DDR4_DDIMM_DQ21 | DDR4_DDIMM_DQ16 |
| 27 | DQ16 | Vss | 171 | | |
| 28 | Vss | DQ17 | 172 | DDR4_DDIMM_DQ17 | DDR4_DDIMM_DBI_N2 |
| 29 | DQS11_t/DM2_n/DBI2_n | Vss | 173 | | DDR4_DDIMM_TDQS_N11 |
| 30 | DQS11_c | DQS2_c | 174 | DDR4_DDIMM_DQS_N2 | |
| 31 | Vss | DQS2_t | 175 | DDR4_DDIMM_DQS_P2 | |
| 32 | DQ22 | Vss | 176 | | DDR4_DDIMM_DQ22 |
| 33 | Vss | DQ23 | 177 | DDR4_DDIMM_DQ23 | DDR4_DDIMM_DQ18 |
| 34 | DQ18 | Vss | 178 | | |
| 35 | Vss | DQ19 | 179 | DDR4_DDIMM_DQ19 | DDR4_DDIMM_DQ28 |
| 36 | DQ28 | Vss | 180 | | |
| 37 | Vss | DQ29 | 181 | DDR4_DDIMM_DQ29 | DDR4_DDIMM_DQ24 |
| 38 | DQ24 | Vss | 182 | | |
| 39 | Vss | DQ25 | 183 | DDR4_DDIMM_DQ25 | DDR4_DDIMM_DBI_N3 |
| 40 | DQS12_t/DM3_n/DBI3_n | Vss | 184 | | DDR4_DDIMM_TDQS_N12 |
| 41 | DQS12_c | DQS3_c | 185 | DDR4_DDIMM_DQS_N3 | |
| 42 | Vss | DQS3_t | 186 | DDR4_DDIMM_DQS_P3 | |
| 43 | DQ30 | Vss | 187 | | DDR4_DDIMM_DQ30 |
| 44 | Vss | DQ31 | 188 | DDR4_DDIMM_DQ31 | DDR4_DDIMM_DQ26 |
| 45 | DQ26 | Vss | 189 | | |
| 46 | Vss | DQ27 | 190 | DDR4_DDIMM_DQ27 | DDR4_DDIMM_DQ68 |
| 47 | CB4/NC | Vss | 191 | | |
| 48 | Vss | CB5/NC | 192 | DDR4_DDIMM_DQ69 | DDR4_DDIMM_DQ64 |
| 49 | CB0/NC | Vss | 193 | | |
| 50 | Vss | CB1/NC | 194 | DDR4_DDIMM_DQ65 | DDR4_DDIMM_DBI_N8 |
| 51 | DQS17_t/DM8_n/DBI8_n | Vss | 195 | | DDR4_DDIMM_TDQS_N17 |
| 52 | DQS17_c | DQS8_c | 196 | DDR4_DDIMM_DQS_N8 | |
| 53 | Vss | DQS8_t | 197 | DDR4_DDIMM_DQS_P8 | |
| 54 | CB6/NC | Vss | 198 | | DDR4_DDIMM_DQ70 |
| 55 | Vss | CB7/NC | 199 | DDR4_DDIMM_DQ71 | DDR4_DDIMM_DQ66 |
| 56 | CB2/NC | Vss | 200 | | |
| 57 | Vss | CB3/NC | 201 | DDR4_DDIMM_DQ67 | DDR4_DDIMM_RESET_N |
| 58 | RESET_n | Vss | 202 | | |
| 59 | Vdd | CKE1 | 203 | DDR4_DIMMB_CKE1 | DDR4_DIMMB_CKE0 |
| 60 | CKE0 | Vdd | 204 | | |
| 61 | Vdd | RFU2 | 205 | | DDR4_DDIMM_ACT_N |
| 62 | ACT_n | Vdd | 206 | | DDR4_DDIMM_BG0 |
| 63 | BG0 | BG1 | 207 | DDR4_DDIMM_BG1 | |
| 64 | Vdd | ALERT_n | 208 | DDR4_DDIMM_ALERT_N | |
| 65 | A12 | Vdd | 209 | | DDR4_DDIMM_A12 |
| 66 | A9 | A11 | 210 | DDR4_DDIMM_A11 | DDR4_DDIMM_A9 |
| 67 | Vdd | A7 | 211 | DDR4_DDIMM_A7 | |
| 68 | A8 | Vdd | 212 | | DDR4_DDIMM_A8 |
| 69 | A6 | A5 | 213 | DDR4_DDIMM_A5 | DDR4_DDIMM_A6 |
| 70 | Vdd | A4 | 214 | DDR4_DDIMM_A4 | |
| 71 | A3 | Vdd | 215 | | DDR4_DDIMM_A3 |
| 72 | A1 | A2 | 216 | DDR4_DDIMM_A2 | DDR4_DDIMM_A1 |
| 73 | Vdd | Vdd | 217 | | |
| 74 | CK0_t | CK1_t | 218 | DDR4_DDIMM_CK_P1 | DDR4_DDIMM_CK_P0 |
| 75 | CK0_c | CK1_c | 219 | DDR4_DDIMM_CK_N1 | DDR4_DDIMM_CK_N0 |
| 76 | Vdd | Vdd | 220 | | |
| 77 | Vtt | Vtt | 221 | | 0p6V_VTT_DDR4_CH2 |

DDR4x72x288

0p6V_VREF_DDR4_CH2

1p2V_DDR4_CH2

J2B

| | | | | | |
|---|---|---|---|---|---|
| 78 | EVENT_n | PARITY | 222 | DDR4_DDIMM_PAR | DDR4_DIMMB_EVENT_N |
| 79 | A0 | Vdd | 223 | | DDR4_DDIMM_A0 |
| 80 | Vdd | BA1 | 224 | DDR4_DDIMM_BA1 | |
| 81 | BA0 | A10/AP | 225 | DDR4_DDIMM_A10 | DDR4_DDIMM_BA0 |
| 82 | RAS_n/A16 | Vdd | 226 | | DDR4_DDIMM_A16 |
| 83 | Vdd | RFU3 | 227 | | |
| 84 | S0_n | WE_n/A14 | 228 | DDR4_DDIMM_A14 | DDR4_DDIMM_CS_N0 |
| 85 | Vdd | Vdd | 229 | | |
| 86 | CAS_n/A15 | SAVE_n/NC | 230 | DDR4_DIMMB_SAVE_N | DDR4_DDIMM_A15 |
| 87 | ODT0 | Vdd | 231 | | DDR4_DDIMM_ODT0 |
| 88 | Vdd | A13 | 232 | DDR4_DDIMM_A13 | |
| 89 | S1_n | Vdd | 233 | | DDR4_DIMMB_CS_N1 |
| 90 | Vdd | A17/NC | 234 | DDR4_DDIMM_A17 | |
| 91 | ODT1 | C2/NC | 235 | R97 0 | DDR4_DIMMB_ODT1 |
| 92 | Vdd | Vdd | 236 | | |
| 93 | S2_n/C0 | S3_n/C1 | 237 | DDR4_DDIMM_C1 | DDR4_DDIMM_C0 |
| 94 | Vss | SA2/RFU | 238 | DDR4_DIMMB_SA2 | |
| 95 | DQ36 | Vss | 239 | | DDR4_DDIMM_DQ36 |
| 96 | Vss | DQ37 | 240 | DDR4_DDIMM_DQ37 | |
| 97 | DQ32 | Vss | 241 | | DDR4_DDIMM_DQ32 |
| 98 | Vss | DQ33 | 242 | DDR4_DDIMM_DQ33 | |
| 99 | DQS13_t/DM4_n/DBI4_n | Vss | 243 | | DDR4_DDIMM_DBI_N4 |
| 100 | DQS13_c | DQS4_c | 244 | DDR4_DDIMM_DQS_N4 | DDR4_DDIMM_TDQS_N13 |
| 101 | Vss | DQS4_t | 245 | DDR4_DDIMM_DQS_P4 | |
| 102 | DQ38 | Vss | 246 | | DDR4_DDIMM_DQ38 |
| 103 | Vss | DQ39 | 247 | DDR4_DDIMM_DQ39 | |
| 104 | DQ34 | Vss | 248 | | DDR4_DDIMM_DQ34 |
| 105 | Vss | DQ35 | 249 | DDR4_DDIMM_DQ35 | |
| 106 | DQ44 | Vss | 250 | | DDR4_DDIMM_DQ44 |
| 107 | Vss | DQ45 | 251 | DDR4_DDIMM_DQ45 | |
| 108 | DQ40 | Vss | 252 | | DDR4_DDIMM_DQ40 |
| 109 | Vss | DQ41 | 253 | DDR4_DDIMM_DQ41 | |
| 110 | DQS14_t/DM5_n/DBI5_n | Vss | 254 | | DDR4_DDIMM_DBI_N5 |
| 111 | DQS14_c | DQS5_c | 255 | DDR4_DDIMM_DQS_N5 | DDR4_DDIMM_TDQS_N14 |
| 112 | Vss | DQS5_t | 256 | DDR4_DDIMM_DQS_P5 | |
| 113 | DQ46 | Vss | 257 | | DDR4_DDIMM_DQ46 |
| 114 | Vss | DQ47 | 258 | DDR4_DDIMM_DQ47 | |
| 115 | DQ42 | Vss | 259 | | DDR4_DDIMM_DQ42 |
| 116 | Vss | DQ43 | 260 | DDR4_DDIMM_DQ43 | |
| 117 | DQ52 | Vss | 261 | | DDR4_DDIMM_DQ52 |
| 118 | Vss | DQ53 | 262 | DDR4_DDIMM_DQ53 | |
| 119 | DQ48 | Vss | 263 | | DDR4_DDIMM_DQ48 |
| 120 | Vss | DQ49 | 264 | DDR4_DDIMM_DQ49 | |
| 121 | DQS15_t/DM6_n/DBI6_n | Vss | 265 | | DDR4_DDIMM_DBI_N6 |
| 122 | DQS15_c | DQS6_c | 266 | DDR4_DDIMM_DQS_N6 | DDR4_DDIMM_TDQS_N15 |
| 123 | Vss | DQS6_t | 267 | DDR4_DDIMM_DQS_P6 | |
| 124 | DQ54 | Vss | 268 | | DDR4_DDIMM_DQ54 |
| 125 | Vss | DQ55 | 269 | DDR4_DDIMM_DQ55 | |
| 126 | DQ50 | Vss | 270 | | DDR4_DDIMM_DQ50 |
| 127 | Vss | DQ51 | 271 | DDR4_DDIMM_DQ51 | |
| 128 | DQ60 | Vss | 272 | | DDR4_DDIMM_DQ60 |
| 129 | Vss | DQ61 | 273 | DDR4_DDIMM_DQ61 | |
| 130 | DQ56 | Vss | 274 | | DDR4_DDIMM_DQ56 |
| 131 | Vss | DQ57 | 275 | DDR4_DDIMM_DQ57 | |
| 132 | DQS16_t/DM7_n/DBI7_n | Vss | 276 | | DDR4_DDIMM_DBI_N7 |
| 133 | DQS16_c | DQS7_c | 277 | DDR4_DDIMM_DQS_N7 | DDR4_DDIMM_TDQS_N16 |
| 134 | Vss | DQS7_t | 278 | DDR4_DDIMM_DQS_P7 | |
| 135 | DQ62 | Vss | 279 | | DDR4_DDIMM_DQ62 |
| 136 | Vss | DQ63 | 280 | DDR4_DDIMM_DQ63 | |
| 137 | DQ58 | Vss | 281 | | DDR4_DDIMM_DQ58 |
| 138 | Vss | DQ59 | 282 | DDR4_DDIMM_DQ59 | |
| 139 | SA0 | Vss | 283 | | DDR4_DIMMB_SA0 |
| 140 | SA1 | Vddspd | 284 | | DDR4_DIMMB_SA1 |
| 141 | SCL | SDA | 285 | DDR4_DIMM_SDA | DDR4_DIMM_SCL |
| 142 | Vpp | Vpp | 286 | | |
| 143 | Vpp | Vpp | 287 | | 2p5V |
| 144 | RFU1 | Vpp | 288 | R107 0 | |

1p2V_DDR4_CH2 — R97 0

2p5V — C231 1uF — C232 0.1uF

1p2V_DDR4_CH2 — C233 0.1uF

U13 MAX3378E

| | | | |
|---|---|---|---|
| 14 | VCC | VL | 1 |
| DDR4_DIMMB_EVENT_N 13 | IOVCC1 | IOVL1 | 2 FPGA_DIMMB_EVENT_N |
| DDR4_DIMMB_SAVE_N 12 | IOVCC2 | IOVL2 | 3 FPGA_DIMMB_SAVE_N |
| 11 | IOVCC3 | IOVL3 | 4 |
| 10 | IOVCC4 | IOVL4 | 5 |
| 1p2V_DDR4_CH2 9 | NC1 | NC0 | 6 |
| 8 | TSn | GND | 7 |

## DDR4 DIMM IF

| | | | |
|---|---|---|---|
| 2p5V | | | 19,21 DDR4_DDIMM_A[17:0] |
| DDR4_DIMMB_SAVE_N | R98 | DNI | 21 DDR4_DDIMM_CK_P0 |
| DDR4_DIMMB_EVENT_N | R99 | 10.0K | 21 DDR4_DDIMM_CK_N0 |
| | | | 21 DDR4_DDIMM_CKE[1:0] |
| | | | 19,21 DDR4_DDIMM_RESET_N |
| DDR4_DIMMB_SA0 | R100 | 10.0K | 19,21 DDR4_DDIMM_ACT_N |
| DDR4_DIMMB_SA1 | R101 | 0 | 21 DDR4_DDIMM_ODT[1:0] |
| DDR4_DIMMB_SA2 | R102 | 0 | 19,21 DDR4_DDIMM_BG[1:0] |
| I2C Addr: 0xA2 | | | 19,21 DDR4_DDIMM_BA[1:0] |
| | | | 21 DDR4_DDIMM_CS_N[1:0] |
| | | | 19,21 DDR4_DDIMM_PAR |
| | | | 19,21 DDR4_DDIMM_ALERT_N |
| | | | 19,21,22 DDR4_DDIMM_DBI_N[8:0] |
| | | | 19,21,22 DDR4_DDIMM_DQ[71:0] |
| DDR4_DIMMB_CKE0 | R103 | DNI | 19,21,22 DDR4_DDIMM_DQS_P[8:0] |
| DDR4_DIMMB_CKE1 | R104 | DNI | 19,21,22 DDR4_DDIMM_DQS_N[8:0] |
| | | | 19,21,22 DDR4_DDIMM_TDQS_N[17:9] |
| | | | 19,46 DDR4_DIMM_SCL |
| | | | 19,46 DDR4_DIMM_SDA |
| | | | 22 FPGA_DIMMB_EVENT_N |
| | | | 22 FPGA_DIMMB_SAVE_N |
| | | | 19,21 DDR4_DDIMM_C[1:0] |

2p5V — DDR4_DIMMB_CK_P0 R105 DNI — DDR4_DIMMB_CK_P1

2p5V — DDR4_DIMMB_CK_N0 R106 DNI — DDR4_DIMMB_CK_N1

1p2V_DDR4_CH2 — DDR4x72x288

C234 10nF — C235 0.1uF — C236 10nF — C237 0.1uF — C238 10nF — C239 0.1uF — C240 10nF — C241 0.1uF — C242 10nF — C243 0.1uF — C244 10nF — C245 0.1uF

Put caps on VDD pins which are close to DIMM A/C pins

0p6V_VTT_DDR4_CH2 — C246 100uF — C247 1uF

1p2V_DDR4_CH2 — C252 100uF 1206 6.3V X6T — C253 100uF 1206 6.3V X6T — C254 10uF — C255 10uF — C256 0.1uF — C257 0.1uF — C258 10nF — C259 10nF

0p6V_VREF_DDR4_CH2 — C248 0.1uF — C250 0.1uF

0p6V_VTT_DDR4_CH2 — C249 0.1uF — C251 10nF — C260 0.1uF

2p5V — C261 100uF 1206 6.3V X6T — C262 10uF — C263 0.1uF — C264 10nF

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|---|---|---|---|
| Title | AgileX I-Series FPGA Dev Kit | | |
| |  | | |
| Size B | Document Number M17472 (M17471-100) | | Rev A0 |
| Date: Wednesday, December 23, 2020 | Sheet 20 of 77 | | |

# DDR4/T CH3 INTERFACE -- FPGA SIDE 2C

U6F

| | | | |
|---|---|---|---|
| DDR4_DIMMB_CK_N0 | W4 | IO, DIFF_RX_3D1N, DQ48 | |
| DDR4_DIMMB_CK_P0 | U2 | IO, DIFF_RX_3D1P, DQ48 | |
| | L4 | IO, DIFF_TX_3D1N, DQ48 | |
| DDR4_DDIMM_ALERT_N | N2 | IO, DIFF_TX_3D1P, DQ48 | |
| DDR4_DIMMB_CS_N1 | W7 | IO, DIFF_RX_3D2N, DQ48 | |
| FPGA_DDR4_CS_N2 | U5 | IO, DIFF_RX_3D2P, DQ48 | |
| DDR4_DIMMB_CKE1 | L7 | IO, DIFF_TX_3D2N, DQSN48 | |
| FPGA_DDR4_CKE2 | N5 | IO, DIFF_TX_3D2P, DQS48 | |
| DDR4_DIMMB_ODT1 | W11 | IO, CDR, DIFF_RX_3D3N, DQ48 | |
| FPGA_DDR4_ODT2 | U9 | IO, CDR, DIFF_RX_3D3P, DQ48 | |
| DDR4_DDIMM_C1 | L11 | IO, DIFF_TX_3D3N, DQ48 | |
| DDR4_DDIMM_C0 | N9 | IO, DIFF_TX_3D3P, DQ48 | |
| DDR4_DDIMM_BG0 | J9 | IO, DIFF_RX_3D4N, DQ49 | |
| DDR4_DDIMM_BA1 | H7 | IO, DIFF_RX_3D4P, DQ49 | |
| DDR4_DDIMM_BA0 | H11 | IO, DIFF_TX_3D4N, DQ49 | |
| DDR4_DDIMM_A17 | D11 | IO, DIFF_TX_3D4P, DQ49 | |
| DDR4_DDIMM_A16 | H15 | IO, DIFF_RX_3D5N, DQ49 | |
| DDR4_DDIMM_A15 | J13 | IO, DIFF_RX_3D5P, DQ49 | |
| DDR4_DDIMM_A14 | D15 | IO, PLL_3D_T_CLKOUT1N, DIFF_TX_3D5N, DQSN49 | |
| DDR4_DDIMM_A13 | B13 | IO, PLL_3D_T_CLKOUT1P, PLL_3D_T_CLKOUT1, PLL_3D_T_FB1, DIFF_TX_3D5P, DQS49 | |
| DDR4_DDIMM_A12 | H19 | IO, CDR, DIFF_RX_3D6N, DQ49 | |
| DDR4_DDIMM_RZQ | J17 | IO, RZQ_T_3D, CDR, DIFF_RX_3D6P, DQ49 | |
| CLK_DDR4_CH2_N 43 | D19 | IO, CLK_T_3D_1N, DIFF_TX_3D6N, DQ49 | |
| CLK_DDR4_CH2_P 43 | B17 | IO, CLK_T_3D_1P, DIFF_TX_3D6P, DQ49 | |
| DDR4_DDIMM_A11 | H23 | IO, CLK_T_3D_0N, DIFF_RX_3D7N, DQ50 | |
| DDR4_DDIMM_A10 | J21 | IO, CLK_T_3D_0P, DIFF_RX_3D7P, DQ50 | |
| DDR4_DDIMM_A9 | D23 | IO, DIFF_TX_3D7N, DQ50 | |
| DDR4_DDIMM_A8 | B21 | IO, DIFF_TX_3D7P, DQ50 | |
| DDR4_DDIMM_A7 | H26 | IO, PLL_3D_T_CLKOUT0N, DIFF_RX_3D8N, DQ50 | |
| DDR4_DDIMM_A6 | J25 | IO, PLL_3D_T_CLKOUT0P, PLL_3D_T_CLKOUT0, PLL_3D_T_FB0, DIFF_RX_3D8P, DQ50 | |
| DDR4_DDIMM_A5 | D26 | IO, DIFF_TX_3D8N, DQSN50 | |
| DDR4_DDIMM_A4 | B25 | IO, DIFF_TX_3D8P, DQS50 | |
| DDR4_DDIMM_A3 | H28 | IO, CDR, DIFF_RX_3D9N, DQ50 | |
| DDR4_DDIMM_A2 | J27 | IO, CDR, DIFF_RX_3D9P, DQ50 | |
| DDR4_DDIMM_A1 | D28 | IO, DIFF_TX_3D9N, DQ50 | |
| DDR4_DDIMM_A0 | B27 | IO, DIFF_TX_3D9P, DQ50 | |
| DDR4_DDIMM_PAR | H30 | IO, DIFF_RX_3D10N, DQ51 | |
| FPGA_DDR4_CS_N1 | J29 | IO, DIFF_RX_3D10P, DQ51 | |
| DDR4_DIMMA_CK_N0 | D30 | IO, DIFF_TX_3D10N, DQ51 | |
| DDR4_DIMMA_CK_P0 | B29 | IO, DIFF_TX_3D10P, DQ51 | |
| FPGA_DDR4_CKE1 | H32 | IO, DIFF_RX_3D11N, DQ51 | |
| DDR4_DIMMA_CKE0 | J31 | IO, DIFF_RX_3D11P, DQ51 | |
| FPGA_DDR4_ODT1 | D32 | IO, DIFF_TX_3D11N, DQSN51 | |
| DDR4_DIMMA_ODT0 | B31 | IO, DIFF_TX_3D11P, DQS51 | |
| DDR4_DDIMM_ACT_N | H34 | IO, CDR, DIFF_RX_3D12N, DQ51 | |
| DDR4_DIMMA_CS_N0 | J33 | IO, CDR, DIFF_RX_3D12P, DQ51 | |
| DDR4_DDIMM_RESET_N | D34 | IO, DIFF_TX_3D12N, DQ51 | |
| DDR4_DDIMM_BG1 | B33 | IO, DIFF_TX_3D12P, DQ51 | |

TOP

| | | | |
|---|---|---|---|
| IO, CDR, DIFF_RX_3D13N, DQ52 | BF28 | DDR4_DDIMM_DQ21 | |
| IO, CDR, DIFF_RX_3D13P, DQ52 | BC27 | DDR4_DDIMM_DQ20 | |
| IO, DIFF_TX_3D13N, DQ52 | AT28 | DDR4_DDIMM_DQ23 | |
| IO, DIFF_TX_3D13P, DQ52 | AV27 | DDR4_DDIMM_DQ22 | |
| IO, DIFF_RX_3D14N, DQ52 | BF30 | DDR4_DDIMM_TDQS_N11 | |
| IO, DIFF_RX_3D14P, DQ52 | BC29 | DDR4_DDIMM_DBI_N2 | |
| IO, DIFF_TX_3D14N, DQSN52 | AT30 | DDR4_DDIMM_DQS_N2 | |
| IO, DIFF_TX_3D14P, DQS52 | AV29 | DDR4_DDIMM_DQS_P2 | |
| IO, CDR, DIFF_RX_3D15N, DQ52 | BF32 | DDR4_DDIMM_DQ17 | |
| IO, CDR, DIFF_RX_3D15P, DQ52 | BC31 | DDR4_DDIMM_DQ16 | |
| IO, DIFF_TX_3D15N, DQ52 | AT32 | DDR4_DDIMM_DQ19 | |
| IO, DIFF_TX_3D15P, DQ52 | AV31 | DDR4_DDIMM_DQ18 | |
| IO, CDR, DIFF_RX_3D16N, DQ53 | AK28 | DDR4_DDIMM_DQ5 | |
| IO, CDR, DIFF_RX_3D16P, DQ53 | AN27 | DDR4_DDIMM_DQ4 | |
| IO, DIFF_TX_3D16N, DQ53 | AD28 | DDR4_DDIMM_DQ7 | |
| IO, DIFF_TX_3D16P, DQ53 | AA27 | DDR4_DDIMM_DQ6 | |
| IO, DIFF_RX_3D17N, DQ53 | AK30 | DDR4_DDIMM_TDQS_N9 | |
| IO, DIFF_RX_3D17P, DQ53 | AN29 | DDR4_DDIMM_DBI_N0 | |
| IO, PLL_3D_B_CLKOUT1N, DIFF_TX_3D17N, DQSN53 | AD30 | DDR4_DDIMM_DQS_N0 | |
| IO, PLL_3D_B_CLKOUT1P, PLL_3D_B_CLKOUT1, PLL_3D_B_FB1, DIFF_TX_3D17P, DQS53 | AA29 | DDR4_DDIMM_DQS_P0 | |
| IO, CDR, DIFF_RX_3D18N, DQ53 | AK32 | DDR4_DDIMM_DQ1 | |
| IO, RZQ_B_3D, CDR, DIFF_RX_3D18P, DQ53 | AN31 | DDR4_DDIMM_DQ0 | |
| IO, CLK_B_3D_1N, DIFF_TX_3D18N, DQ53 | AD32 | DDR4_DDIMM_DQ3 | |
| IO, CLK_B_3D_1P, DIFF_TX_3D18P, DQ53 | AA31 | DDR4_DDIMM_DQ2 | |
| IO, CLK_B_3D_0N, CDR, DIFF_RX_3D19N, DQ54 | W30 | DDR4_DDIMM_DQ9 | |
| IO, CLK_B_3D_0P, CDR, DIFF_RX_3D19P, DQ54 | U29 | DDR4_DDIMM_DQ8 | |
| IO, DIFF_TX_3D19N, DQ54 | L30 | DDR4_DDIMM_DQ13 | |
| IO, DIFF_TX_3D19P, DQ54 | N29 | DDR4_DDIMM_DQ12 | |
| IO, PLL_3D_B_CLKOUT0N, DIFF_RX_3D20N, DQ54 | W32 | DDR4_DDIMM_TDQS_N10 | |
| IO, PLL_3D_B_CLKOUT0P, PLL_3D_B_CLKOUT0, PLL_3D_B_FB0, DIFF_RX_3D20P, DQ54 | U31 | DDR4_DDIMM_DBI_N1 | |
| IO, DIFF_TX_3D20N, DQSN54 | L32 | DDR4_DDIMM_DQS_N1 | |
| IO, DIFF_TX_3D20P, DQS54 | N31 | DDR4_DDIMM_DQS_P1 | |
| IO, CDR, DIFF_RX_3D21N, DQ54 | W34 | DDR4_DDIMM_DQ11 | |
| IO, CDR, DIFF_RX_3D21P, DQ54 | U33 | DDR4_DDIMM_DQ10 | |
| IO, DIFF_TX_3D21N, DQ54 | L34 | DDR4_DDIMM_DQ15 | |
| IO, DIFF_TX_3D21P, DQ54 | N33 | DDR4_DDIMM_DQ14 | |
| IO, CDR, DIFF_RX_3D22N, DQ55 | BF34 | DDR4_DDIMM_DQ29 | |
| IO, CDR, DIFF_RX_3D22P, DQ55 | BC33 | DDR4_DDIMM_DQ28 | |
| IO, DIFF_TX_3D22N, DQ55 | AT34 | DDR4_DDIMM_DQ31 | |
| IO, DIFF_TX_3D22P, DQ55 | AV33 | DDR4_DDIMM_DQ30 | |
| IO, DIFF_RX_3D23N, DQ55 | BF36 | DDR4_DDIMM_TDQS_N12 | |
| IO, DIFF_RX_3D23P, DQ55 | BC35 | DDR4_DDIMM_DBI_N3 | |
| IO, DIFF_TX_3D23N, DQSN55 | AT36 | DDR4_DDIMM_DQS_N3 | |
| IO, DIFF_TX_3D23P, DQS55 | AV35 | DDR4_DDIMM_DQS_P3 | |
| IO, CDR, DIFF_RX_3D24N, DQ55 | BF38 | DDR4_DDIMM_DQ25 | |
| IO, CDR, DIFF_RX_3D24P, DQ55 | BC37 | DDR4_DDIMM_DQ24 | |
| IO, DIFF_TX_3D24N, DQ55 | AT38 | DDR4_DDIMM_DQ27 | |
| IO, DIFF_TX_3D24P, DQ55 | AV37 | DDR4_DDIMM_DQ26 | |

BOT

IO Bank 3D

AgileX-I_2957A

240 R108 CLK_DDR4_CH2_N 43, CLK_DDR4_CH2_P 43

CLK_DDR4_CH2_P R112 DNI CLK_DDR4_CH2_N

19 DDR4_DIMMA_CK_P0
19 DDR4_DIMMA_CK_N0

19 DDR4_DIMMA_CS_N[1:0]
19 DDR4_DIMMA_ODT[1:0]

19 DDR4_DIMMA_CKE[1:0]

19,20 DDR4_DDIMM_A[17:0]
19,20 DDR4_DDIMM_BG[1:0]
19,20 DDR4_DDIMM_BA[1:0]
19,20 DDR4_DDIMM_C[1:0]

19,20 DDR4_DDIMM_RESET_N
19,20 DDR4_DDIMM_ACT_N
19,20 DDR4_DDIMM_PAR
19,20 DDR4_DDIMM_ALERT_N

20 DDR4_DIMMB_CK_P0
20 DDR4_DIMMB_CK_N0

20 DDR4_DIMMB_CS_N[1:0]
20 DDR4_DIMMB_ODT[1:0]

20 DDR4_DIMMB_CKE[1:0]

19,20,22 DDR4_DDIMM_DBI_N[8:0]
19,20,22 DDR4_DDIMM_DQ[71:0]
19,20,22 DDR4_DDIMM_DQS_P[8:0]
19,20,22 DDR4_DDIMM_DQS_N[8:0]
19,20,22 DDR4_DDIMM_TDQS_N[17:9]

FPGA_DDR4_CS_N1 R109 0 DDR4_DIMMA_CS_N1
R110 DNI DDR4_DIMMB_CS_N0
FPGA_DDR4_CS_N2 R111 0

FPGA_DDR4_ODT1 R113 0 DDR4_DIMMA_ODT1
R114 DNI DDR4_DIMMB_ODT0
FPGA_DDR4_ODT2 R115 0

FPGA_DDR4_CKE1 R116 0 DDR4_DIMMA_CKE1
R117 DNI DDR4_DIMMB_CKE0
FPGA_DDR4_CKE2 R118 0

Layout notes: Place these resistors near to DIMM

| Type | Option |
|---|---|
| Single DIMM (Single&Dual Rank) | J1. R109, R111, R113, R115, R116, R118 |
| DDR4 w/ 3DS Dual DIMMs (Single&Dual Rank) | J1,J2. R109, R111, R113, R115, R116, R118 |
| DDR-T Dual DIMM | J1,J2. R109, R111, R113, R115, R116, R118 |
| Non-3DS DDR4 Dual DIMM Single Rank only | J1,J2. R110, R114, R117 |

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Size: B | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 21 of 77

# DDR4 CH1 Interface - FPGA Side 3D

U6G

| | | | | | |
|---|---|---|---|---|---|
| 19 FPGA_DIMM_SCL | H36 | IO, DIFF_RX_3C1N, DQ56 | IO, CDR, DIFF_RX_3C13N, DQ60 | AK34 | DDR4_DDIMM_DQ47 |
| | J35 | IO, DIFF_RX_3C1P, DQ56 | IO, CDR, DIFF_RX_3C13P, DQ60 | AN33 | DDR4_DDIMM_DQ46 |
| | D36 | IO, DIFF_TX_3C1N, DQ56 | IO, DIFF_TX_3C13N, DQ60 | AD34 | DDR4_DDIMM_DQ45 |
| 19 FPGA_DIMMA_EVENT_N | B35 | IO, DIFF_TX_3C1P, DQ56 | IO, DIFF_TX_3C13P, DQ60 | AA33 | DDR4_DDIMM_DQ44 |
| 19 FPGA_DIMMA_SAVE_N | H38 | IO, DIFF_RX_3C2N, DQ56 | IO, DIFF_RX_3C14N, DQ60 | AK36 | DDR4_DDIMM_TDQS_N14 |
| | J37 | IO, DIFF_RX_3C2P, DQ56 | IO, DIFF_RX_3C14P, DQ60 | AN35 | DDR4_DDIMM_DBI_N5 |
| | D38 | IO, DIFF_TX_3C2N, DQSN56 | IO, DIFF_TX_3C14N, DQSN60 | AD36 | DDR4_DDIMM_DQS_N5 |
| | B37 | IO, DIFF_TX_3C2P, DQS56 | IO, DIFF_TX_3C14P, DQS60 | AA35 | DDR4_DDIMM_DQS_P5 |
| 19 FPGA_DIMM_SDA | H40 | IO, CDR, DIFF_RX_3C3N, DQ56 | IO, CDR, DIFF_RX_3C15N, DQ60 | AK38 | DDR4_DDIMM_DQ43 |
| | J39 | IO, CDR, DIFF_RX_3C3P, DQ56 | IO, CDR, DIFF_RX_3C15P, DQ60 | AN37 | DDR4_DDIMM_DQ42 |
| | D40 | IO, DIFF_TX_3C3N, DQ56 | IO, DIFF_TX_3C15N, DQ60 | AD38 | DDR4_DDIMM_DQ41 |
| | B39 | IO, DIFF_TX_3C3P, DQ56 | IO, DIFF_TX_3C15P, DQ60 | AA37 | DDR4_DDIMM_DQ40 |
| 20 FPGA_DIMMB_EVENT_N | W42 | IO, DIFF_RX_3C4N, DQ57 | IO, CDR, DIFF_RX_3C16N, DQ61 | W36 | DDR4_DDIMM_DQ55 |
| | U41 | IO, DIFF_RX_3C4P, DQ57 | IO, CDR, DIFF_RX_3C16P, DQ61 | U35 | DDR4_DDIMM_DQ54 |
| 20 FPGA_DIMMB_SAVE_N | L42 | IO, DIFF_TX_3C4N, DQ57 | IO, DIFF_TX_3C16N, DQ61 | L36 | DDR4_DDIMM_DQ53 |
| | N41 | IO, DIFF_TX_3C4P, DQ57 | IO, DIFF_TX_3C16P, DQ61 | N35 | DDR4_DDIMM_DQ52 |
| | W44 | IO, DIFF_RX_3C5N, DQ57 | IO, DIFF_RX_3C17N, DQ61 | W38 | DDR4_DDIMM_TDQS_N15 |
| | U43 | IO, DIFF_RX_3C5P, DQ57 | IO, DIFF_RX_3C17P, DQ61 | U37 | DDR4_DDIMM_DBI_N6 |
| | L44 | IO, PLL_3C_T_CLKOUT1N, DIFF_TX_3C5N, DQSN57 | IO, PLL_3C_B_CLKOUT1N, DIFF_TX_3C17N, DQSN61 | L38 | DDR4_DDIMM_DQS_N6 |
| | N43 | IO, PLL_3C_T_CLKOUT1P, PLL_3C_T_CLKOUT1, PLL_3C_T_FB1, DIFF_TX_3C5P, DQS57 | IO, PLL_3C_B_CLKOUT1P, PLL_3C_B_CLKOUT1, PLL_3C_B_FB1, DIFF_TX_3C17P, DQS61 | N37 | DDR4_DDIMM_DQS_P6 |
| 52 FPGA_CXL_RSTn | W46 | IO, CDR, DIFF_RX_3C6N, DQ57 | IO, CDR, DIFF_RX_3C18N, DQ61 | W40 | DDR4_DDIMM_DQ51 |
| | U45 | IO, RZQ_T_3C, CDR, DIFF_RX_3C6P, DQ57 | IO, RZQ_B_3C, CDR, DIFF_RX_3C18P, DQ61 | U39 | DDR4_DDIMM_DQ50 |
| | L46 | IO, CLK_T_3C_1N, DIFF_TX_3C6N, DQ57 | IO, CLK_B_3C_1N, DIFF_TX_3C18N, DQ61 | L40 | DDR4_DDIMM_DQ49 |
| | N45 | IO, CLK_T_3C_1P, DIFF_TX_3C6P, DQ57 | IO, CLK_B_3C_1P, DIFF_TX_3C18P, DQ61 | N39 | DDR4_DDIMM_DQ48 |
| DDR4_DDIMM_DQ71 | H42 | IO, CLK_T_3C_0N, DIFF_RX_3C7N, DQ58 | IO, CLK_B_3C_0N, CDR, DIFF_RX_3C19N, DQ62 | BF40 | DDR4_DDIMM_DQ39 |
| DDR4_DDIMM_DQ70 | J41 | IO, CLK_T_3C_0P, DIFF_RX_3C7P, DQ58 | IO, CLK_B_3C_0P, CDR, DIFF_RX_3C19P, DQ62 | BC39 | DDR4_DDIMM_DQ38 |
| DDR4_DDIMM_DQ69 | D42 | IO, DIFF_TX_3C7N, DQ58 | IO, DIFF_TX_3C19N, DQ62 | AT40 | DDR4_DDIMM_DQ37 |
| DDR4_DDIMM_DQ68 | B41 | IO, DIFF_TX_3C7P, DQ58 | IO, DIFF_TX_3C19P, DQ62 | AV39 | DDR4_DDIMM_DQ36 |
| DDR4_DDIMM_TDQS_N17 | H44 | IO, PLL_3C_T_CLKOUT0N, DIFF_RX_3C8N, DQ58 | IO, PLL_3C_B_CLKOUT0N, DIFF_RX_3C20N, DQ62 | BF42 | DDR4_DDIMM_TDQS_N13 |
| DDR4_DDIMM_DBI_N8 | J43 | IO, PLL_3C_T_CLKOUT0P, PLL_3C_T_CLKOUT0, PLL_3C_T_FB0, DIFF_RX_3C8P, DQ58 | IO, PLL_3C_B_CLKOUT0P, PLL_3C_B_CLKOUT0, PLL_3C_B_FB0, DIFF_RX_3C20P, DQ62 | BC41 | DDR4_DDIMM_DBI_N4 |
| DDR4_DDIMM_DQS_N8 | D44 | IO, DIFF_TX_3C8N, DQSN58 | IO, DIFF_TX_3C20N, DQSN62 | AT42 | DDR4_DDIMM_DQS_N4 |
| DDR4_DDIMM_DQS_P8 | B43 | IO, DIFF_TX_3C8P, DQS58 | IO, DIFF_TX_3C20P, DQS62 | AV41 | DDR4_DDIMM_DQS_P4 |
| DDR4_DDIMM_DQ67 | H46 | IO, CDR, DIFF_RX_3C9N, DQ58 | IO, CDR, DIFF_RX_3C21N, DQ62 | BF44 | DDR4_DDIMM_DQ35 |
| DDR4_DDIMM_DQ66 | J45 | IO, CDR, DIFF_RX_3C9P, DQ58 | IO, CDR, DIFF_RX_3C21P, DQ62 | BC43 | DDR4_DDIMM_DQ34 |
| DDR4_DDIMM_DQ65 | D46 | IO, DIFF_TX_3C9N, DQ58 | IO, DIFF_TX_3C21N, DQ62 | AT44 | DDR4_DDIMM_DQ33 |
| DDR4_DDIMM_DQ64 | B45 | IO, DIFF_TX_3C9P, DQ58 | IO, DIFF_TX_3C21P, DQ62 | AV43 | DDR4_DDIMM_DQ32 |
| | | | IO, CDR, DIFF_RX_3C22N, DQ63 | AK40 | DDR4_DDIMM_DQ61 |
| | | | IO, CDR, DIFF_RX_3C22P, DQ63 | AN39 | DDR4_DDIMM_DQ60 |
| | | | IO, DIFF_TX_3C22N, DQ63 | AD40 | DDR4_DDIMM_DQ63 |
| | | | IO, DIFF_TX_3C22P, DQ63 | AA39 | DDR4_DDIMM_DQ62 |
| | | | IO, DIFF_RX_3C23N, DQ63 | AK42 | DDR4_DDIMM_TDQS_N16 |
| | | | IO, DIFF_RX_3C23P, DQ63 | AN41 | DDR4_DDIMM_DBI_N7 |
| | | | IO, DIFF_TX_3C23N, DQSN63 | AD42 | DDR4_DDIMM_DQS_N7 |
| | | | IO, DIFF_TX_3C23P, DQS63 | AA41 | DDR4_DDIMM_DQS_P7 |
| | | | IO, CDR, DIFF_RX_3C24N, DQ63 | AK44 | DDR4_DDIMM_DQ59 |
| | | | IO, CDR, DIFF_RX_3C24P, DQ63 | AN43 | DDR4_DDIMM_DQ58 |
| | | | IO, DIFF_TX_3C24N, DQ63 | AD44 | DDR4_DDIMM_DQ57 |
| | | | IO, DIFF_TX_3C24P, DQ63 | AA43 | DDR4_DDIMM_DQ56 |

TOP BOT

IO Bank 3C

AgileX-I_2957A

19,20,21 DDR4_DDIMM_DBI_N[8:0]

19,20,21 DDR4_DDIMM_DQ[71:0]

19,20,21 DDR4_DDIMM_DQS_P[8:0]

19,20,21 DDR4_DDIMM_DQS_N[8:0]

19,20,21 DDR4_DDIMM_TDQS_N[17:9]

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Title: AgileX I-Series FPGA Dev Kit



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 22 of 77

# FPGA BANK 3A

U6I

| | | | |
|---|---|---|---|
| BM70 | | | BV62 |
| BJ68 | IO, DIFF_RX_3A1N, DQ88 | IO, CDR, DIFF_RX_3A13N, DQ92 | CA61 |
| AY70 | IO, DIFF_RX_3A1P, DQ88 | IO, CDR, DIFF_RX_3A13P, DQ92 | BM62 |
| BC68 | IO, DIFF_TX_3A1N, DQ88 | IO, DIFF_TX_3A13N, DQ92 | BJ61 |
| BM66 | IO, DIFF_TX_3A1P, DQ88 | IO, DIFF_TX_3A13P, DQ92 | BV60 |
| BJ65 | IO, DIFF_RX_3A2N, DQ88 | IO, DIFF_RX_3A14N, DQ92 | CA59 |
| AY66 | IO, DIFF_RX_3A2P, DQ88, AVST_READY | IO, DIFF_RX_3A14P, DQ92 | BM60 |
| BC65 | IO, DIFF_TX_3A2N, DQSN88, AVST_DATA31 | IO, DIFF_TX_3A14N, DQSN92 | BJ59 |
| BM64 | IO, DIFF_TX_3A2P, DQS88, AVST_DATA30 | IO, DIFF_TX_3A14P, DQS92 | BV58 |
| BJ63 | IO, CDR, DIFF_RX_3A3N, DQ88, AVST_DATA29 | IO, CDR, DIFF_RX_3A15N, DQ92 | CA57 |
| AY64 | IO, CDR, DIFF_RX_3A3P, DQ88, AVST_DATA28 | IO, CDR, DIFF_RX_3A15P, DQ92 | BM58 |
| BC63 | IO, DIFF_TX_3A3N, DQ88, AVST_DATA27 | IO, DIFF_TX_3A15N, DQ92 | BJ57 |
| | IO, DIFF_TX_3A3P, DQ88, AVST_DATA26 | IO, DIFF_TX_3A15P, DQ92 | |
| AT70 | | | BF62 |
| AV68 | IO, DIFF_RX_3A4N, DQ89, AVST_DATA25 | IO, CDR, DIFF_RX_3A16N, DQ93 | BC61 |
| AK70 | IO, DIFF_RX_3A4P, DQ89, AVST_DATA24 | IO, CDR, DIFF_RX_3A16P, DQ93 | AT62 |
| AG68 | IO, DIFF_TX_3A4N, DQ89, AVST_DATA23 | IO, DIFF_TX_3A16N, DQ93 | AV61 |
| AT66 | IO, DIFF_TX_3A4P, DQ89, AVST_DATA22 | IO, DIFF_TX_3A16P, DQ93 | BF60 |
| AV65 | IO, DIFF_RX_3A5N, DQ89, AVST_DATA21 | IO, DIFF_RX_3A17N, DQ93 | BC59 |
| AK66 | IO, DIFF_RX_3A5P, DQ89, AVST_DATA20 | IO, DIFF_RX_3A17P, DQ93 | AT60 |
| AG65 | IO, PLL_3A_T_CLKOUT1N, DIFF_TX_3A5N, DQSN89, AVST_DATA19 | IO, PLL_3A_B_CLKOUT1N, DIFF_TX_3A17N, DQSN93 | AV59 |
| AT64 | IO, PLL_3A_T_CLKOUT1P, PLL_3A_T_CLKOUT1, PLL_3A_T_FB1, DIFF_TX_3A5P, DQS89, AVST_DATA18 | IO, PLL_3A_B_CLKOUT1P, PLL_3A_B_CLKOUT1, PLL_3A_B_FB1, DIFF_TX_3A17P, DQS93 | BF58 |
| AV63 | IO, CDR, DIFF_RX_3A6N, DQ89, AVST_DATA17 | IO, CDR, DIFF_RX_3A18N, DQ93 | BC57 |
| AK64 | IO, RZQ_T_3A, CDR, DIFF_RX_3A6P, DQ89, AVST_DATA16 | IO, RZQ_B_3A, CDR, DIFF_RX_3A18P, DQ93 | AT58 |
| AG63 | IO, CLK_T_3A_1N, DIFF_TX_3A6N, DQ89 | IO, CLK_B_3A_1N, DIFF_TX_3A18N, DQ93 | AV57 |
| | IO, CLK_T_3A_1P, DIFF_TX_3A6P, DQ89 | IO, CLK_B_3A_1P, DIFF_TX_3A18P, DQ93 | |
| W64 | | | AK62 |
| U63 | IO, CLK_T_3A_0N, DIFF_RX_3A7N, DQ90 | IO, CLK_B_3A_0N, CDR, DIFF_RX_3A19N, DQ94 | AN61 |
| L64 | IO, CLK_T_3A_0P, DIFF_RX_3A7P, DQ90 | IO, CLK_B_3A_0P, CDR, DIFF_RX_3A19P, DQ94 | AD62 |
| N63 | IO, DIFF_TX_3A7N, DQ90 | IO, DIFF_TX_3A19N, DQ94 | AA61 |
| W62 | IO, DIFF_TX_3A7P, DQ90 | IO, DIFF_TX_3A19P, DQ94 | AK60 |
| U61 | IO, PLL_3A_T_CLKOUT0N, DIFF_RX_3A8N, DQ90 | IO, PLL_3A_B_CLKOUT0N, DIFF_RX_3A20N, DQ94 | AN59 |
| L62 | IO, PLL_3A_T_CLKOUT0P, PLL_3A_T_CLKOUT0, PLL_3A_T_FB0, DIFF_RX_3A8P, DQ90 | IO, PLL_3A_B_CLKOUT0P, PLL_3A_B_CLKOUT0, PLL_3A_B_FB0, DIFF_RX_3A20P, DQ94 | AD60 |
| N61 | IO, DIFF_TX_3A8N, DQSN90, AVST_CLK | IO, DIFF_TX_3A20N, DQSN94 | AA59 |
| W60 | IO, DIFF_TX_3A8P, DQS90, AVST_DATA15 | IO, DIFF_TX_3A20P, DQS94 | AK58 |
| U59 | IO, CDR, DIFF_RX_3A9N, DQ90, AVST_DATA14 | IO, CDR, DIFF_RX_3A21N, DQ94 | AN57 |
| L60 | IO, CDR, DIFF_RX_3A9P, DQ90, AVST_DATA13 | IO, CDR, DIFF_RX_3A21P, DQ94 | AD58 |
| N59 | IO, DIFF_TX_3A9N, DQ90, AVST_DATA12 | IO, DIFF_TX_3A21N, DQ94 | AA57 |
| | IO, DIFF_TX_3A9P, DQ90, AVST_DATA11 | IO, DIFF_TX_3A21P, DQ94 | |
| H64 | | | W58 |
| J63 | IO, DIFF_RX_3A10N, DQ91, AVST_DATA10 | IO, CDR, DIFF_RX_3A22N, DQ95 | U57 |
| D64 | IO, DIFF_RX_3A10P, DQ91, AVST_DATA9 | IO, CDR, DIFF_RX_3A22P, DQ95 | L58 |
| B63 | IO, DIFF_TX_3A10N, DQ91, AVST_DATA8 | IO, DIFF_TX_3A22N, DQ95 | N57 |
| H62 | IO, DIFF_TX_3A10P, DQ91, AVST_VALID | IO, DIFF_TX_3A22P, DQ95 | W56 |
| J61 | IO, DIFF_RX_3A11N, DQ91, AVST_DATA7 | IO, DIFF_RX_3A23N, DQ95 | U55 |
| D62 | IO, DIFF_RX_3A11P, DQ91, AVST_DATA6 | IO, DIFF_RX_3A23P, DQ95 | L56 |
| B61 | IO, DIFF_TX_3A11N, DQSN91, AVST_DATA5 | IO, DIFF_TX_3A23N, DQSN95 | N55 |
| H60 | IO, DIFF_TX_3A11P, DQS91, AVST_DATA4 | IO, DIFF_TX_3A23P, DQS95 | W54 |
| J59 | IO, CDR, DIFF_RX_3A12N, DQ91, AVST_DATA3 | IO, CDR, DIFF_RX_3A24N, DQ95 | U53 |
| D60 | IO, CDR, DIFF_RX_3A12P, DQ91, AVST_DATA2 | IO, CDR, DIFF_RX_3A24P, DQ95 | L54 |
| B59 | IO, DIFF_TX_3A12N, DQ91, AVST_DATA1 | IO, DIFF_TX_3A24N, DQ95 | N53 |
| | IO, DIFF_TX_3A12P, DQ91, AVST_DATA0 | IO, DIFF_TX_3A24P, DQ95 | |

TOP BOT

IO Bank 3A

PCIE_1V2_CLKREQn 30

PCIE_EP_WAKEN 30

CLK_SYS_100M_N 43

CLK_SYS_100M_P 43

R119 DNI

AgileX-I_2957A


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Title: AgileX I-Series FPGA Dev Kit





Size: B | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 23 of 77

# FPGA BANK 3B

U6H

| | | | |
|---|---|---|---|
| H58 | IO, DIFF_RX_3B1N, DQ80 | IO, CDR, DIFF_RX_3B13N, DQ84 | AK56 |
| J57 | IO, DIFF_RX_3B1P, DQ80 | IO, CDR, DIFF_RX_3B13P, DQ84 | AN55 |
| D58 | IO, DIFF_TX_3B1N, DQ80 | IO, DIFF_TX_3B13N, DQ84 | AD56 |
| B57 | IO, DIFF_TX_3B1P, DQ80 | IO, DIFF_TX_3B13P, DQ84 | AA55 |
| H56 | IO, DIFF_RX_3B2N, DQ80 | IO, DIFF_RX_3B14N, DQ84 | AK54 |
| J55 | IO, DIFF_RX_3B2P, DQ80 | IO, DIFF_RX_3B14P, DQ84 | AN53 |
| D56 | IO, DIFF_TX_3B2N, DQSN80 | IO, DIFF_TX_3B14N, DQSN84 | AD54 |
| B55 | IO, DIFF_TX_3B2P, DQS80 | IO, DIFF_TX_3B14P, DQS84 | AA53 |
| H54 | IO, CDR, DIFF_RX_3B3N, DQ80 | IO, CDR, DIFF_RX_3B15N, DQ84 | AK52 |
| J53 | IO, CDR, DIFF_RX_3B3P, DQ80 | IO, CDR, DIFF_RX_3B15P, DQ84 | AN51 |
| D54 | IO, DIFF_TX_3B3N, DQ80 | IO, DIFF_TX_3B15N, DQ84 | AD52 |
| B53 | IO, DIFF_TX_3B3P, DQ80 | IO, DIFF_TX_3B15P, DQ84 | AA51 |
| H52 | | | BF56 |
| J51 | IO, DIFF_RX_3B4N, DQ81 | IO, CDR, DIFF_RX_3B16N, DQ85 | BC55 |
| D52 | IO, DIFF_RX_3B4P, DQ81 | IO, CDR, DIFF_RX_3B16P, DQ85 | AT56 |
| B51 | IO, DIFF_TX_3B4N, DQ81 | IO, DIFF_TX_3B16N, DQ85 | AV55 |
| H50 | IO, DIFF_TX_3B4P, DQ81 | IO, DIFF_TX_3B16P, DQ85 | BF54 |
| J49 | IO, DIFF_RX_3B5N, DQ81 | IO, DIFF_RX_3B17N, DQ85 | BC53 |
| D50 | IO, DIFF_RX_3B5P, DQ81 | IO, DIFF_RX_3B17P, DQ85 | AT54 |
| B49 | IO, PLL_3B_T_CLKOUT1N, DIFF_TX_3B5N, DQSN81 | IO, PLL_3B_B_CLKOUT1N, DIFF_TX_3B17N, DQSN85 | AV53 |
| H48 | IO, PLL_3B_T_CLKOUT1P, PLL_3B_T_CLKOUT1, PLL_3B_T_FB1, DIFF_TX_3B5P, DQS81 | IO, PLL_3B_B_CLKOUT1P, PLL_3B_B_CLKOUT1, PLL_3B_B_FB1, DIFF_TX_3B17P, DQS85 | BF52 |
| J47 | IO, CDR, DIFF_RX_3B6N, DQ81 | IO, CDR, DIFF_RX_3B18N, DQ85 | BC51 |
| D48 | IO, RZQ_T_3B, CDR, DIFF_RX_3B6P, DQ81 | IO, RZQ_B_3B, CDR, DIFF_RX_3B18P, DQ85 | AT52 |
| B47 | IO, CLK_T_3B_1N, DIFF_TX_3B6N, DQ81 | IO, CLK_B_3B_1N, DIFF_TX_3B18N, DQ85 | AV51 |
| | IO, CLK_T_3B_1P, DIFF_TX_3B6P, DQ81 | IO, CLK_B_3B_1P, DIFF_TX_3B18P, DQ85 | |
| W52 | | | AK50 |
| U51 | IO, CLK_T_3B_0N, DIFF_RX_3B7N, DQ82 | IO, CLK_B_3B_0N, CDR, DIFF_RX_3B19N, DQ86 | AN49 |
| L52 | IO, CLK_T_3B_0P, DIFF_RX_3B7P, DQ82 | IO, CLK_B_3B_0P, CDR, DIFF_RX_3B19P, DQ86 | AD50 |
| N51 | IO, DIFF_TX_3B7N, DQ82 | IO, DIFF_TX_3B19N, DQ86 | AA49 |
| W50 | IO, DIFF_TX_3B7P, DQ82 | IO, DIFF_TX_3B19P, DQ86 | AK48 |
| U49 | IO, PLL_3B_T_CLKOUT0N, DIFF_RX_3B8N, DQ82 | IO, PLL_3B_B_CLKOUT0N, DIFF_RX_3B20N, DQ86 | AN47 |
| L50 | IO, PLL_3B_T_CLKOUT0P, PLL_3B_T_CLKOUT0, PLL_3B_T_FB0, DIFF_RX_3B8P, DQ82 | IO, PLL_3B_B_CLKOUT0P, PLL_3B_B_CLKOUT0, PLL_3B_B_FB0, DIFF_RX_3B20P, DQ86 | AD48 |
| N49 | IO, DIFF_TX_3B8N, DQSN82 | IO, DIFF_TX_3B20N, DQSN86 | AA47 |
| W48 | IO, DIFF_TX_3B8P, DQS82 | IO, DIFF_TX_3B20P, DQS86 | AK46 |
| U47 | IO, CDR, DIFF_RX_3B9N, DQ82 | IO, CDR, DIFF_RX_3B21N, DQ86 | AN45 |
| L48 | IO, CDR, DIFF_RX_3B9P, DQ82 | IO, CDR, DIFF_RX_3B21P, DQ86 | AD46 |
| N47 | IO, DIFF_TX_3B9N, DQ82 | IO, DIFF_TX_3B21N, DQ86 | AA45 |
| | IO, DIFF_TX_3B9P, DQ82 | IO, DIFF_TX_3B21P, DQ86 | |
| | | | BF50 |
| | | IO, CDR, DIFF_RX_3B22N, DQ87 | BC49 |
| | | IO, CDR, DIFF_RX_3B22P, DQ87 | AT50 |
| | | IO, DIFF_TX_3B22N, DQ87 | AV49 |
| | | IO, DIFF_TX_3B22P, DQ87 | BF48 |
| | | IO, DIFF_RX_3B23N, DQ87 | BC47 |
| | | IO, DIFF_RX_3B23P, DQ87 | AT48 |
| | | IO, DIFF_TX_3B23N, DQSN87 | AV47 |
| | | IO, DIFF_TX_3B23P, DQS87 | BF46 |
| | | IO, CDR, DIFF_RX_3B24N, DQ87 | BC45 |
| | | IO, CDR, DIFF_RX_3B24P, DQ87 | AT46 |
| | | IO, DIFF_TX_3B24N, DQ87 | AV45 |
| | | IO, DIFF_TX_3B24P, DQ87 | |

R120 DNI

43 CLK_SYS_BAK_50M_N

43 CLK_SYS_BAK_50M_P

TOP BOT

IO Bank 3B

AgileX-I_2957A



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Title: AgileX I-Series FPGA Dev Kit



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 24 of 77

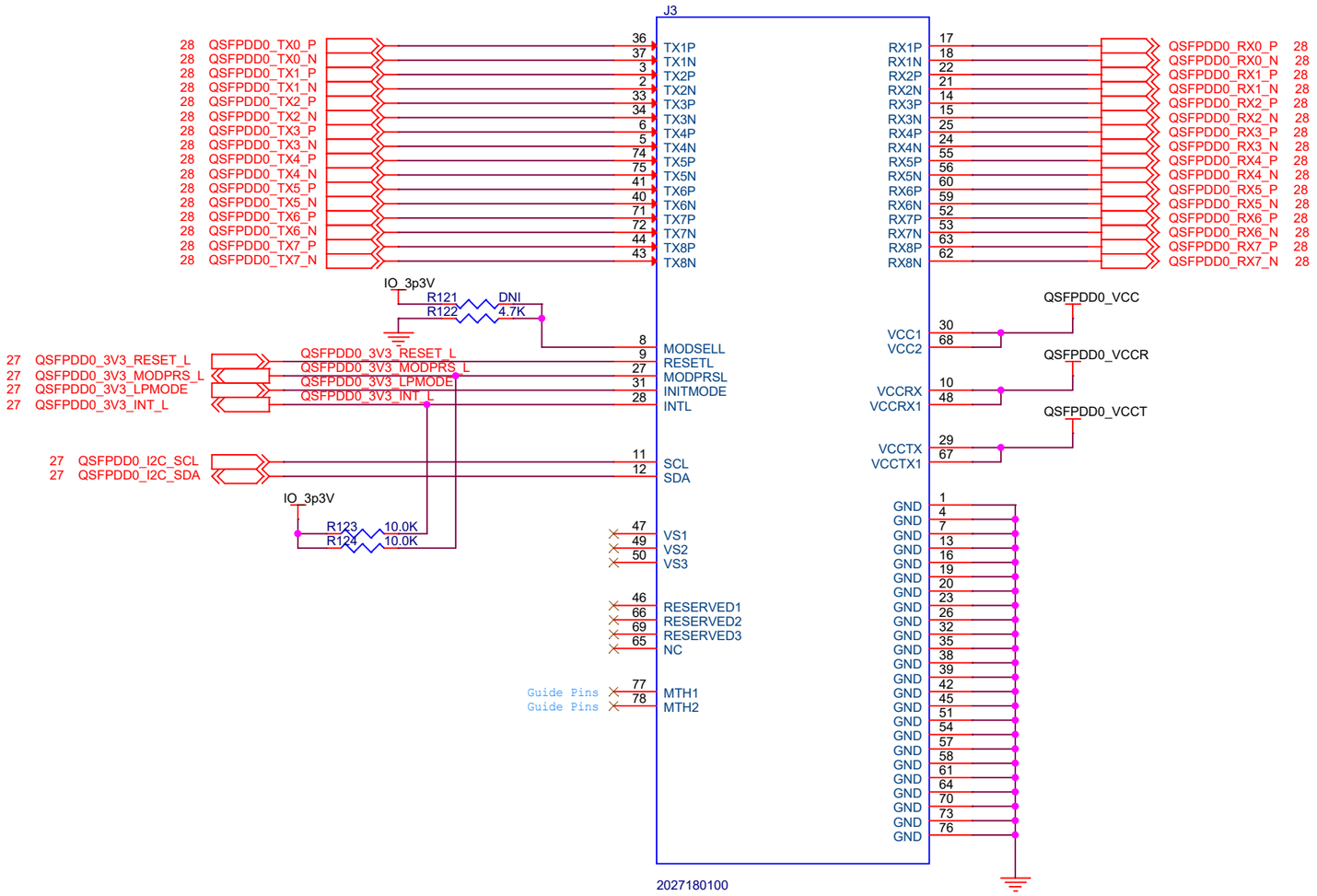
# QSFPDD0

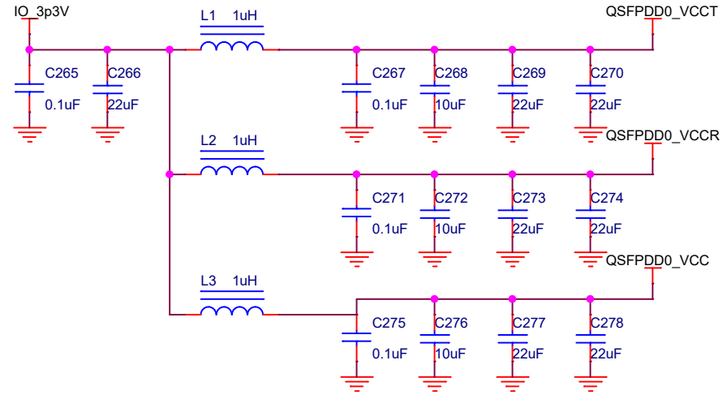
NOTE 1: Bypass Capacitors should be placed as close to the associated 20-pin connector as possible.

NOTE 2: zQSFP 100-ohm termination is implemented via the FPGA on-chip termination.

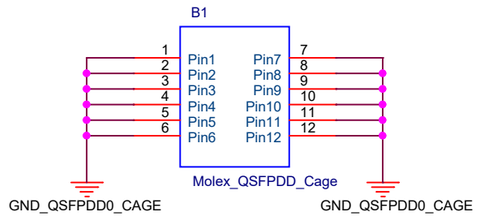
NOTE 3: DC blocking capacitors are in the module for RX and TX.

NOTE 4: 1uH inductors should have a DC Resistance of less than 0.1-ohm.

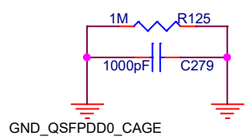



Place close to QSFPDD Connector




MOLEX MPN 2031431355






Title: AgileX I-Series FPGA Dev Kit

| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 25 of 77

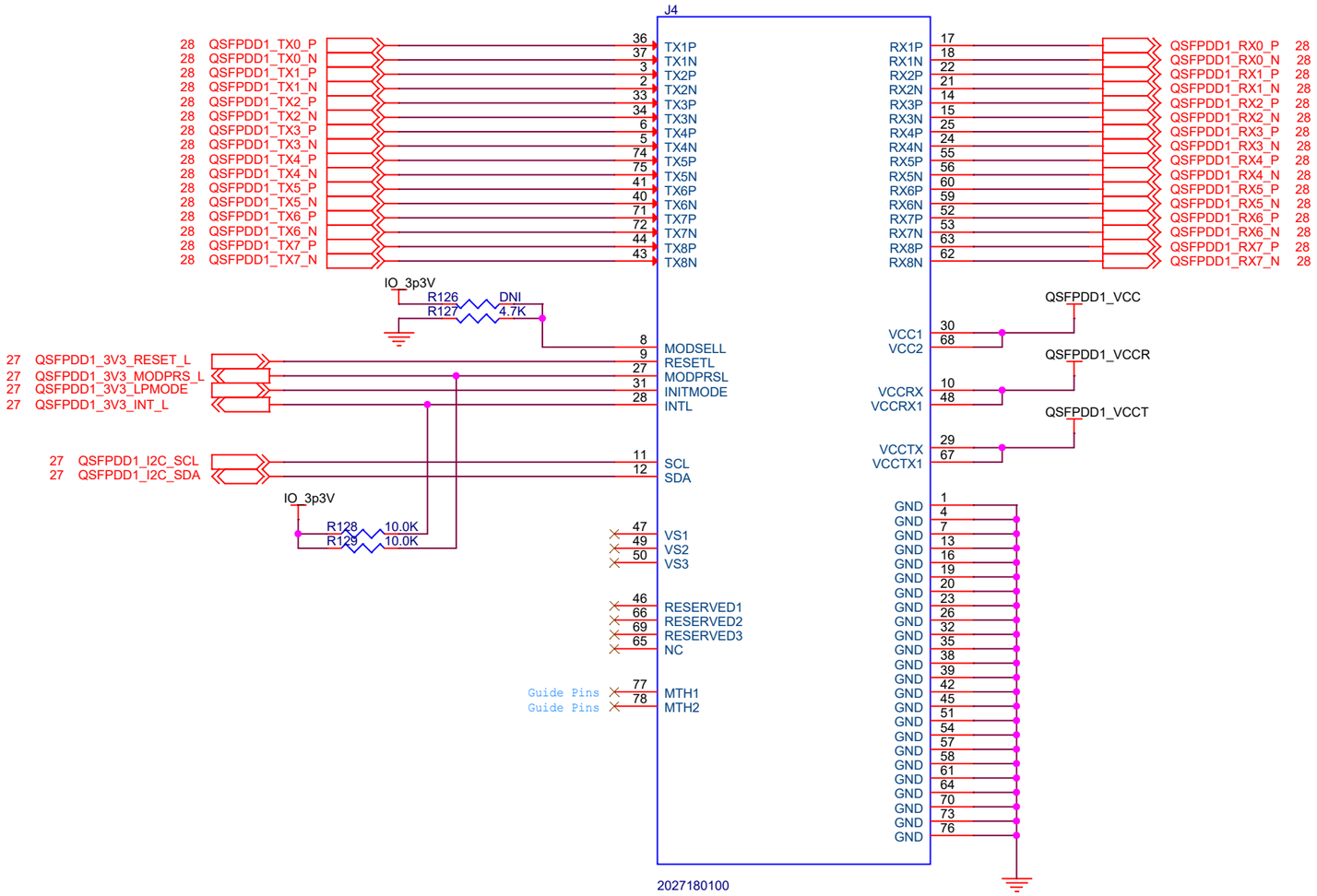
# QSFPDD1

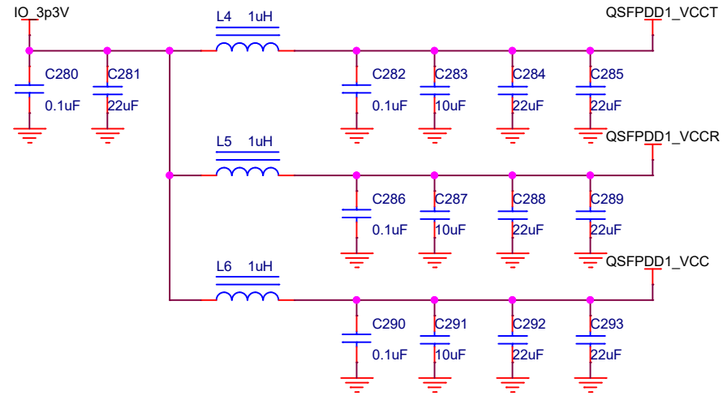
NOTE 1: Bypass Capacitors should be placed as close to the associated 20-pin connector as possible.

NOTE 2: zQSFP 100-ohm termination is implemented via the FPGA on-chip termination.

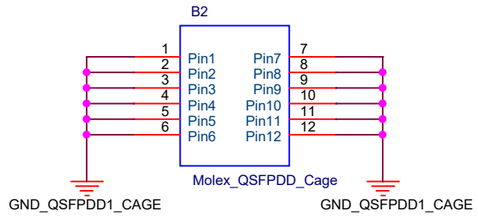
NOTE 3: DC blocking capacitors are in the module for RX and TX.

NOTE 4: 1uH inductors should have a DC Resistance of less than 0.1-ohm.

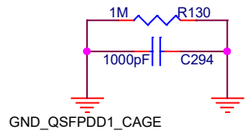



Place close to QSFPDD Connector




MOLEX MPN 2031431355

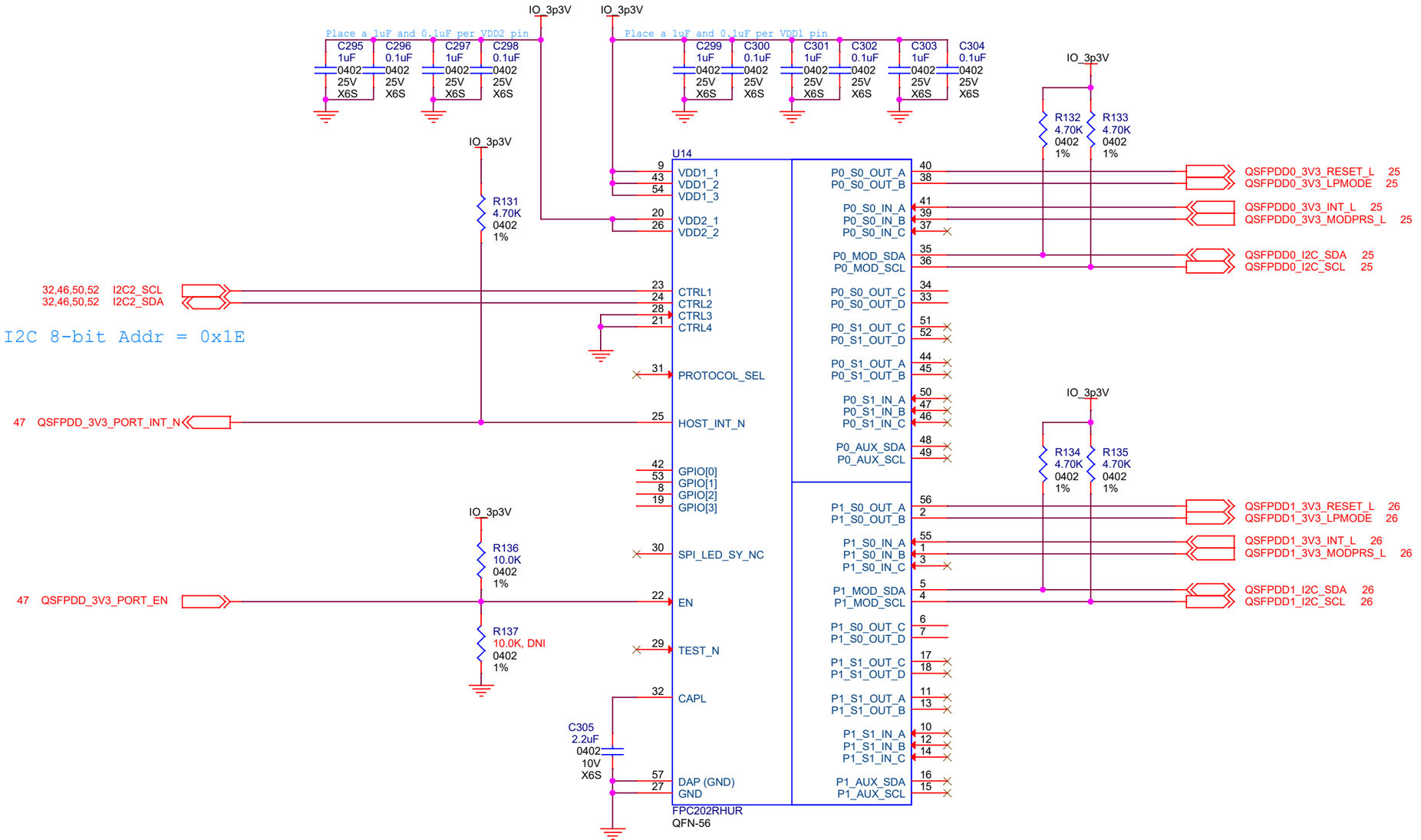





Title: AgileX I-Series FPGA Dev Kit

| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 26 of 77




Intel Corporation,101 innovation Dr, San Jose, CA 95134

Title: **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 27 of 77

# F-TILE BANK 12A

U6K

| | | | |
|---|---|---|---|
| FL79 | FHTL12A_RX_CH0N | FHTL12A_TX_CH0N | FU81 |
| FH78 | FHTL12A_RX_CH0P | FHTL12A_TX_CH0P | FP82 |
| EW79 | FHTL12A_RX_CH1N | FHTL12A_TX_CH1N | FE81 |
| ET78 | FHTL12A_RX_CH1P | FHTL12A_TX_CH1P | FB82 |
| EF79 | FHTL12A_RX_CH2N | FHTL12A_TX_CH2N | EN81 |
| EC78 | FHTL12A_RX_CH2P | FHTL12A_TX_CH2P | EK82 |
| DP79 | FHTL12A_RX_CH3N | FHTL12A_TX_CH3N | DY81 |
| DL78 | FHTL12A_RX_CH3P | FHTL12A_TX_CH3P | DU82 |
| | | 12A_GXF_RCOMP_N_FHT | EK74 — R139 1.50K +/-0.1% |
| | | 12A_GXF_RCOMP_P_FHT | EF73 |
| FB76 | REFCLK_FHTL12A_CH0N | VCC_SENSE_FHT_12A_GXF | DY73 |
| EW75 | REFCLK_FHTL12A_CH0P | VSS_SENSE_FHT_12A_GXF | EC74 |
| EK76 | REFCLK_FHTL12A_CH1N | | |
| EC76 | REFCLK_FHTL12A_CH1P | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25 | QSFPDD0_RX0_N | QSFPDD0_RX0_N | ME76 | FGTL12A_RX_Q0_CH0N | FGTL12A_TX_Q0_CH0N | ME69 QSFPDD0_TX0_N 25 QSFPDD0_TX0_N |
| 25 | QSFPDD0_RX0_P | QSFPDD0_RX0_P | MB77 | FGTL12A_RX_Q0_CH0P | FGTL12A_TX_Q0_CH0P | MB71 QSFPDD0_TX0_P 25 QSFPDD0_TX0_P |
| 25 | QSFPDD0_RX1_N | QSFPDD0_RX1_N | LT76 | FGTL12A_RX_Q0_CH1N | FGTL12A_TX_Q0_CH1N | MG73 QSFPDD0_TX1_N 25 QSFPDD0_TX1_N |
| 25 | QSFPDD0_RX1_P | QSFPDD0_RX1_P | LP77 | FGTL12A_RX_Q0_CH1P | FGTL12A_TX_Q0_CH1P | MJ74 QSFPDD0_TX1_P 25 QSFPDD0_TX1_P |
| 25 | QSFPDD0_RX2_N | QSFPDD0_RX2_N | LV79 | FGTL12A_RX_Q0_CH2N | FGTL12A_TX_Q0_CH2N | LV73 QSFPDD0_TX2_N 25 QSFPDD0_TX2_N |
| 25 | QSFPDD0_RX2_P | QSFPDD0_RX2_P | LY80 | FGTL12A_RX_Q0_CH2P | FGTL12A_TX_Q0_CH2P | LY74 QSFPDD0_TX2_P 25 QSFPDD0_TX2_P |
| 25 | QSFPDD0_RX3_N | QSFPDD0_RX3_N | LT82 | FGTL12A_RX_Q0_CH3N | FGTL12A_TX_Q0_CH3N | LK73 QSFPDD0_TX3_N 25 QSFPDD0_TX3_N |
| 25 | QSFPDD0_RX3_P | QSFPDD0_RX3_P | LP83 | FGTL12A_RX_Q0_CH3P | FGTL12A_TX_Q0_CH3P | LM74 QSFPDD0_TX3_P 25 QSFPDD0_TX3_P |
| 25 | QSFPDD0_RX4_N | QSFPDD0_RX4_N | LK79 | FGTL12A_RX_Q1_CH0N | FGTL12A_TX_Q1_CH0N | LG76 QSFPDD0_TX4_N 25 QSFPDD0_TX4_N |
| 25 | QSFPDD0_RX4_P | QSFPDD0_RX4_P | LM80 | FGTL12A_RX_Q1_CH0P | FGTL12A_TX_Q1_CH0P | LD77 QSFPDD0_TX4_P 25 QSFPDD0_TX4_P |
| 25 | QSFPDD0_RX5_N | QSFPDD0_RX5_N | LG82 | FGTL12A_RX_Q1_CH1N | FGTL12A_TX_Q1_CH1N | KV73 QSFPDD0_TX5_N 25 QSFPDD0_TX5_N |
| 25 | QSFPDD0_RX5_P | QSFPDD0_RX5_P | LD83 | FGTL12A_RX_Q1_CH1P | FGTL12A_TX_Q1_CH1P | LA74 QSFPDD0_TX5_P 25 QSFPDD0_TX5_P |
| 25 | QSFPDD0_RX6_N | QSFPDD0_RX6_N | KV79 | FGTL12A_RX_Q1_CH2N | FGTL12A_TX_Q1_CH2N | KP76 QSFPDD0_TX6_N 25 QSFPDD0_TX6_N |
| 25 | QSFPDD0_RX6_P | QSFPDD0_RX6_P | LA80 | FGTL12A_RX_Q1_CH2P | FGTL12A_TX_Q1_CH2P | KL77 QSFPDD0_TX6_P 25 QSFPDD0_TX6_P |
| 25 | QSFPDD0_RX7_N | QSFPDD0_RX7_N | KP82 | FGTL12A_RX_Q1_CH3N | FGTL12A_TX_Q1_CH3N | KE73 QSFPDD0_TX7_N 25 QSFPDD0_TX7_N |
| 25 | QSFPDD0_RX7_P | QSFPDD0_RX7_P | KL83 | FGTL12A_RX_Q1_CH3P | FGTL12A_TX_Q1_CH3P | KH74 QSFPDD0_TX7_P 25 QSFPDD0_TX7_P |
| 26 | QSFPDD1_RX0_N | QSFPDD1_RX0_N | KE79 | FGTL12A_RX_Q2_CH0N | FGTL12A_TX_Q2_CH0N | KB76 QSFPDD1_TX0_N 26 QSFPDD1_TX0_N |
| 26 | QSFPDD1_RX0_P | QSFPDD1_RX0_P | KH80 | FGTL12A_RX_Q2_CH0P | FGTL12A_TX_Q2_CH0P | JW77 QSFPDD1_TX0_P 26 QSFPDD1_TX0_P |
| 26 | QSFPDD1_RX1_N | QSFPDD1_RX1_N | KB82 | FGTL12A_RX_Q2_CH1N | FGTL12A_TX_Q2_CH1N | JN73 QSFPDD1_TX1_N 26 QSFPDD1_TX1_N |
| 26 | QSFPDD1_RX1_P | QSFPDD1_RX1_P | JW83 | FGTL12A_RX_Q2_CH1P | FGTL12A_TX_Q2_CH1P | JT74 QSFPDD1_TX1_P 26 QSFPDD1_TX1_P |
| 26 | QSFPDD1_RX2_N | QSFPDD1_RX2_N | JN79 | FGTL12A_RX_Q2_CH2N | FGTL12A_TX_Q2_CH2N | JK76 QSFPDD1_TX2_N 26 QSFPDD1_TX2_N |
| 26 | QSFPDD1_RX2_P | QSFPDD1_RX2_P | JT80 | FGTL12A_RX_Q2_CH2P | FGTL12A_TX_Q2_CH2P | JG77 QSFPDD1_TX2_P 26 QSFPDD1_TX2_P |
| 26 | QSFPDD1_RX3_N | QSFPDD1_RX3_N | JK82 | FGTL12A_RX_Q2_CH3N | FGTL12A_TX_Q2_CH3N | HU76 QSFPDD1_TX3_N 26 QSFPDD1_TX3_N |
| 26 | QSFPDD1_RX3_P | QSFPDD1_RX3_P | JG83 | FGTL12A_RX_Q2_CH3P | FGTL12A_TX_Q2_CH3P | HP77 QSFPDD1_TX3_P 26 QSFPDD1_TX3_P |
| 26 | QSFPDD1_RX4_N | QSFPDD1_RX4_N | JA79 | FGTL12A_RX_Q3_CH0N | FGTL12A_TX_Q3_CH0N | HH79 QSFPDD1_TX4_N 26 QSFPDD1_TX4_N |
| 26 | QSFPDD1_RX4_P | QSFPDD1_RX4_P | JD80 | FGTL12A_RX_Q3_CH0P | FGTL12A_TX_Q3_CH0P | HL80 QSFPDD1_TX4_P 26 QSFPDD1_TX4_P |
| 26 | QSFPDD1_RX5_N | QSFPDD1_RX5_N | HU82 | FGTL12A_RX_Q3_CH1N | FGTL12A_TX_Q3_CH1N | HE76 QSFPDD1_TX5_N 26 QSFPDD1_TX5_N |
| 26 | QSFPDD1_RX5_P | QSFPDD1_RX5_P | HP83 | FGTL12A_RX_Q3_CH1P | FGTL12A_TX_Q3_CH1P | HB77 QSFPDD1_TX5_P 26 QSFPDD1_TX5_P |
| 26 | QSFPDD1_RX6_N | QSFPDD1_RX6_N | HE82 | FGTL12A_RX_Q3_CH2N | FGTL12A_TX_Q3_CH2N | GT79 QSFPDD1_TX6_N 26 QSFPDD1_TX6_N |
| 26 | QSFPDD1_RX6_P | QSFPDD1_RX6_P | HB83 | FGTL12A_RX_Q3_CH2P | FGTL12A_TX_Q3_CH2P | GW80 QSFPDD1_TX6_P 26 QSFPDD1_TX6_P |
| 26 | QSFPDD1_RX7_N | QSFPDD1_RX7_N | GN82 | FGTL12A_RX_Q3_CH3N | FGTL12A_TX_Q3_CH3N | GK77 QSFPDD1_TX7_N 26 QSFPDD1_TX7_N |
| 26 | QSFPDD1_RX7_P | QSFPDD1_RX7_P | GK83 | FGTL12A_RX_Q3_CH3P | FGTL12A_TX_Q3_CH3P | GG78 QSFPDD1_TX7_P 26 QSFPDD1_TX7_P |

R140 DNI

| | | | |
|---|---|---|---|
| 43 | REFCLK_FGT12ACH0_N | REFCLK_FGTL12A_Q0_RX_CH0N | JP70 |
| 43 | REFCLK_FGT12ACH0_P | REFCLK_FGTL12A_Q0_RX_CH0P | JH70 |
| | | REFCLK_FGTL12A_Q0_RX_CH1N | JE68 |
| | | REFCLK_FGTL12A_Q0_RX_CH1P | JB70 |
| | | REFCLK_FGTL12A_Q1_RX_CH2N | HR68 |
| | | REFCLK_FGTL12A_Q1_RX_CH2P | HY68 |
| | | REFCLK_FGTL12A_Q1_RX_CH3N | HM70 |
| | | REFCLK_FGTL12A_Q1_RX_CH3P | HJ68 |
| | | REFCLK_FGTL12A_Q2_RX_CH4N | JA73 |
| | | REFCLK_FGTL12A_Q2_RX_CH4P | JD74 |
| | | REFCLK_FGTL12A_Q2_RX_CH5N | HH73 |
| | | REFCLK_FGTL12A_Q2_RX_CH5P | HL74 |
| | | REFCLK_FGTL12A_Q3_RX_CH6N | FU73 |
| | | REFCLK_FGTL12A_Q3_RX_CH6P | FP74 |
| | | REFCLK_FGTL12A_Q3_RX_CH7N | FM70 |
| | | REFCLK_FGTL12A_Q3_RX_CH7P | FV70 |
| | | REFCLK_FGTL12A_Q2_CH8N | GP70 |
| | | REFCLK_FGTL12A_Q2_CH8P | GY70 |
| | | REFCLK_FGTL12A_Q3_CH9N | FL73 |
| | | REFCLK_FGTL12A_Q3_CH9P | FE73 |
| | | 12A_GXF_IO_PLL_REFCLK | JH60 |

R143 DNI, R142 DNI, R144 DNI, R138 DNI

| | | | |
|---|---|---|---|
| 43 | REFCLK_FGT12ACH3_N | 12A_GXF_RCOMP_N_Q2_CH1_FGT | HP73 — R141 499 +/-1% |
| 43 | REFCLK_FGT12ACH3_P | 12A_GXF_RCOMP_P_Q2_CH1_FGT | HU74 |
| 43 | REFCLK_FGT12ACH4_N | | |
| 43 | REFCLK_FGT12ACH4_P | I_PIN_PERST_N_12A_GXF | JL61 — R856 10.0K — 1p8V_VCCCLK_GXF — GXF_PERSTn 48 |
| 43 | REFCLK_FGT12ACH5_N | TEMPDIODE1P | HJ59 — FPGA_TEMP1p 52 |
| 43 | REFCLK_FGT12ACH5_P | TEMPDIODE1N | HM60 — FPGA_TEMP1n 52 |
| 43 | REFCLK_FGT12ACH6_N | APROBE_GXF_FGT12A_Q0_CH3 | HC68 |
| 43 | REFCLK_FGT12ACH6_P | APROBE_GXF_FGT12A_Q2_CH3 | HF70 |
| | | APROBE_GXF_FGT12A_Q3_CH3 | FY72 |
| | | APROBE2_GXF_FGT12A_Q3_CH3 | FP72 |
| | | APROBE1_GXF_FHT12A | EN73 |
| | | APROBE2_GXF_FHT12A | EK72 |
| | | GND | JY64 |
| | | GND | JU61 — R865 0 — DFX_1_TOG 50 |

R866 1K

Layout Note: place the res under BGA ball

F-TILE Bank 12A

AgileX-I_2957A



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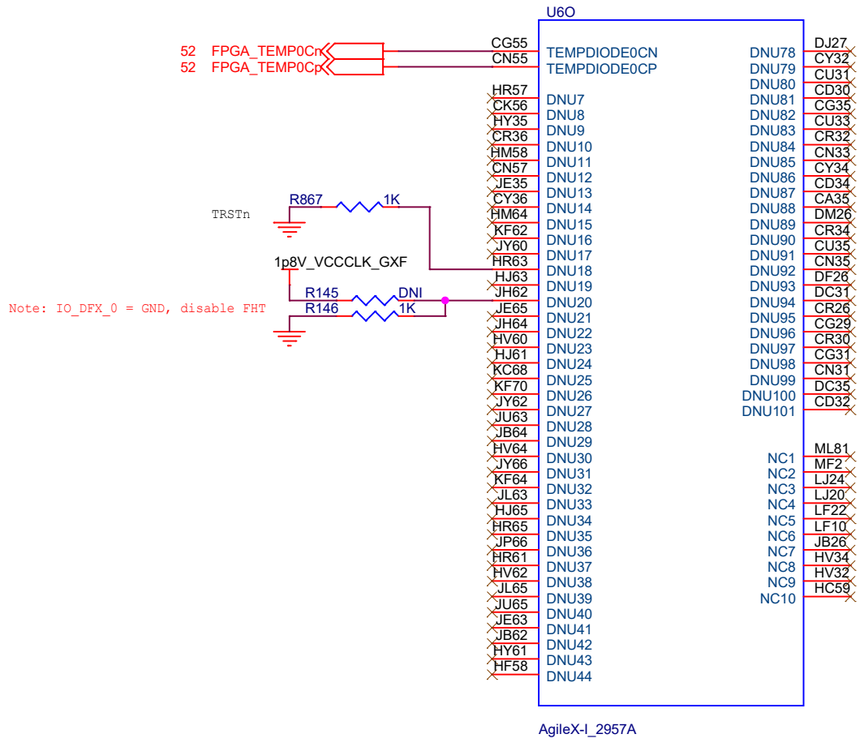
Title: AgileX I-Series FPGA Dev Kit



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 28 of 77

# F-TILE BANK 12A DNU

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Title **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 29 of 77

# PCIe Endpoint Edge Connector

J5

PCIE_Slot

KEY

PCIe TX to FPGA RX
P/N Lane Reversal during layout is allowed

PCIE RX from FPGA TX
P/N Lane Reversal during layout is allowed

PCIe TX/RX signal naming convention with respect to CPU

SW1 TDA04H0SB1

Notes: Close --> select;
Open --> deselect

U15 MAX3378E

Note: Place near to golden finger

move R794 to near U26 or U30 for easy power split of 3p3V_STBY

FRUID

U16 24AA024-I/SN SOIC-8

Addr = A0h
400Khz max



Title: AgileX I-Series FPGA Dev Kit

| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 30 of 77

# R-TILE BANK 14C

U6L

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 30 | PCIE_EP_TX_N0 | PCIE_EP_TX_N0 | DB83 | GXRL14C_RX_CH0N | GXRL14C_TX_CH0N | DH73 | PCIE_EP_RX_N0 |
| 30 | PCIE_EP_TX_P0 | PCIE_EP_TX_P0 | DE82 | GXRL14C_RX_CH0P | GXRL14C_TX_CH0P | DL74 | PCIE_EP_RX_P0 |
| 30 | PCIE_EP_TX_N1 | PCIE_EP_TX_N1 | CT79 | GXRL14C_RX_CH1N | GXRL14C_TX_CH1N | DE76 | PCIE_EP_RX_N1 |
| 30 | PCIE_EP_TX_P1 | PCIE_EP_TX_P1 | CW80 | GXRL14C_RX_CH1P | GXRL14C_TX_CH1P | DB77 | PCIE_EP_RX_P1 |
| 30 | PCIE_EP_TX_N2 | PCIE_EP_TX_N2 | CJ83 | GXRL14C_RX_CH2N | GXRL14C_TX_CH2N | CT73 | PCIE_EP_RX_N2 |
| 30 | PCIE_EP_TX_P2 | PCIE_EP_TX_P2 | CM82 | GXRL14C_RX_CH2P | GXRL14C_TX_CH2P | CW74 | PCIE_EP_RX_P2 |
| 30 | PCIE_EP_TX_N3 | PCIE_EP_TX_N3 | CC79 | GXRL14C_RX_CH3N | GXRL14C_TX_CH3N | CM76 | PCIE_EP_RX_N3 |
| 30 | PCIE_EP_TX_P3 | PCIE_EP_TX_P3 | CF80 | GXRL14C_RX_CH3P | GXRL14C_TX_CH3P | CJ77 | PCIE_EP_RX_P3 |
| 30 | PCIE_EP_TX_N4 | PCIE_EP_TX_N4 | BU83 | GXRL14C_RX_CH4N | GXRL14C_TX_CH4N | CC73 | PCIE_EP_RX_N4 |
| 30 | PCIE_EP_TX_P4 | PCIE_EP_TX_P4 | BY82 | GXRL14C_RX_CH4P | GXRL14C_TX_CH4P | CF74 | PCIE_EP_RX_P4 |
| 30 | PCIE_EP_TX_N5 | PCIE_EP_TX_N5 | BL79 | GXRL14C_RX_CH5N | GXRL14C_TX_CH5N | BY76 | PCIE_EP_RX_N5 |
| 30 | PCIE_EP_TX_P5 | PCIE_EP_TX_P5 | BP80 | GXRL14C_RX_CH5P | GXRL14C_TX_CH5P | BU77 | PCIE_EP_RX_P5 |
| 30 | PCIE_EP_TX_N6 | PCIE_EP_TX_N6 | BE83 | GXRL14C_RX_CH6N | GXRL14C_TX_CH6N | BL73 | PCIE_EP_RX_N6 |
| 30 | PCIE_EP_TX_P6 | PCIE_EP_TX_P6 | BH82 | GXRL14C_RX_CH6P | GXRL14C_TX_CH6P | BP74 | PCIE_EP_RX_P6 |
| 30 | PCIE_EP_TX_N7 | PCIE_EP_TX_N7 | AW79 | GXRL14C_RX_CH7N | GXRL14C_TX_CH7N | BH76 | PCIE_EP_RX_N7 |
| 30 | PCIE_EP_TX_P7 | PCIE_EP_TX_P7 | BB80 | GXRL14C_RX_CH7P | GXRL14C_TX_CH7P | BE77 | PCIE_EP_RX_P7 |
| 30 | PCIE_EP_TX_N8 | PCIE_EP_TX_N8 | AM83 | GXRL14C_RX_CH8N | GXRL14C_TX_CH8N | AW73 | PCIE_EP_RX_N8 |
| 30 | PCIE_EP_TX_P8 | PCIE_EP_TX_P8 | AR82 | GXRL14C_RX_CH8P | GXRL14C_TX_CH8P | BB74 | PCIE_EP_RX_P8 |
| 30 | PCIE_EP_TX_N9 | PCIE_EP_TX_N9 | AF79 | GXRL14C_RX_CH9N | GXRL14C_TX_CH9N | AR76 | PCIE_EP_RX_N9 |
| 30 | PCIE_EP_TX_P9 | PCIE_EP_TX_P9 | AJ80 | GXRL14C_RX_CH9P | GXRL14C_TX_CH9P | AM77 | PCIE_EP_RX_P9 |
| 30 | PCIE_EP_TX_N10 | PCIE_EP_TX_N10 | Y83 | GXRL14C_RX_CH10N | GXRL14C_TX_CH10N | AF73 | PCIE_EP_RX_N10 |
| 30 | PCIE_EP_TX_P10 | PCIE_EP_TX_P10 | AC82 | GXRL14C_RX_CH10P | GXRL14C_TX_CH10P | AJ74 | PCIE_EP_RX_P10 |
| 30 | PCIE_EP_TX_N11 | PCIE_EP_TX_N11 | T79 | GXRL14C_RX_CH11N | GXRL14C_TX_CH11N | AC76 | PCIE_EP_RX_N11 |
| 30 | PCIE_EP_TX_P11 | PCIE_EP_TX_P11 | V80 | GXRL14C_RX_CH11P | GXRL14C_TX_CH11P | Y77 | PCIE_EP_RX_P11 |
| 30 | PCIE_EP_TX_N12 | PCIE_EP_TX_N12 | M83 | GXRL14C_RX_CH12N | GXRL14C_TX_CH12N | T73 | PCIE_EP_RX_N12 |
| 30 | PCIE_EP_TX_P12 | PCIE_EP_TX_P12 | P82 | GXRL14C_RX_CH12P | GXRL14C_TX_CH12P | V74 | PCIE_EP_RX_P12 |
| 30 | PCIE_EP_TX_N13 | PCIE_EP_TX_N13 | G79 | GXRL14C_RX_CH13N | GXRL14C_TX_CH13N | G73 | PCIE_EP_RX_N13 |
| 30 | PCIE_EP_TX_P13 | PCIE_EP_TX_P13 | K80 | GXRL14C_RX_CH13P | GXRL14C_TX_CH13P | K74 | PCIE_EP_RX_P13 |
| 30 | PCIE_EP_TX_N14 | PCIE_EP_TX_N14 | P76 | GXRL14C_RX_CH14N | GXRL14C_TX_CH14N | E69 | PCIE_EP_RX_N14 |
| 30 | PCIE_EP_TX_P14 | PCIE_EP_TX_P14 | M77 | GXRL14C_RX_CH14P | GXRL14C_TX_CH14P | C71 | PCIE_EP_RX_P14 |
| 30 | PCIE_EP_TX_N15 | PCIE_EP_TX_N15 | E76 | GXRL14C_RX_CH15N | GXRL14C_TX_CH15N | P69 | PCIE_EP_RX_N15 |
| 30 | PCIE_EP_TX_P15 | PCIE_EP_TX_P15 | C77 | GXRL14C_RX_CH15P | GXRL14C_TX_CH15P | M71 | PCIE_EP_RX_P15 |

| | | | |
|---|---|---|---|
| 44 | REFCLK_PCIE_14C_CH0_N | DM70 | REFCLK_GXRL14C_CH0N |
| 44 | REFCLK_PCIE_14C_CH0_P | DR68 | REFCLK_GXRL14C_CH0P |
| 44 | REFCLK_PCIE_14C_CH1_N | CR70 | REFCLK_GXRL14C_CH1N |
| 44 | REFCLK_PCIE_14C_CH1_P | CU68 | REFCLK_GXRL14C_CH1P |

R178 49.9
R936 49.9
R179 49.9
R937 49.9

| | | | |
|---|---|---|---|
| 52 | FPGA_TEMP3p | BR68 | TEMPDIODE3P |
| 52 | FPGA_TEMP3n | BV66 | TEMPDIODE3N |

R182 150 +/-1%

| | | |
|---|---|---|
| | DV70 | 14C_GXR_IO_RCOMP_N_0 |
| | EA68 | 14C_GXR_IO_RCOMP_P_0 |
| FPGA_PCIE_PERSTN | CD58 | I_PIN_PERST_N_14C_GXR |

| | | |
|---|---|---|
| DNU45 | CG59 | |
| DNU46 | DF70 | |
| DNU47 | DJ68 | |
| DNU48 | CG57 | |
| DNU49 | CD56 | |
| DNU50 | CD70 | |
| DNU51 | CG68 | |
| DNU52 | BV64 | |
| DNU53 | BV70 | |
| DNU54 | BR63 | |
| DNU55 | BR65 | |
| GND | CD60 | |

R-TILE Bank 14C

AgileX-I_2957A

IO_3p3V
R1001 DNI 0402 1%
30,49 PCIE_EP_PERSTN
R1000 0
48 PCIE_PERSTn
U17
SN74AUP1G08DCKR
1p0V_VCCCLK_GXR
C353 0402 0.1uF 25V
R184 0
1p0V_VCCCLK_GXR
R183 10.0K 0402 1%
FPGA_PCIE_PERSTN

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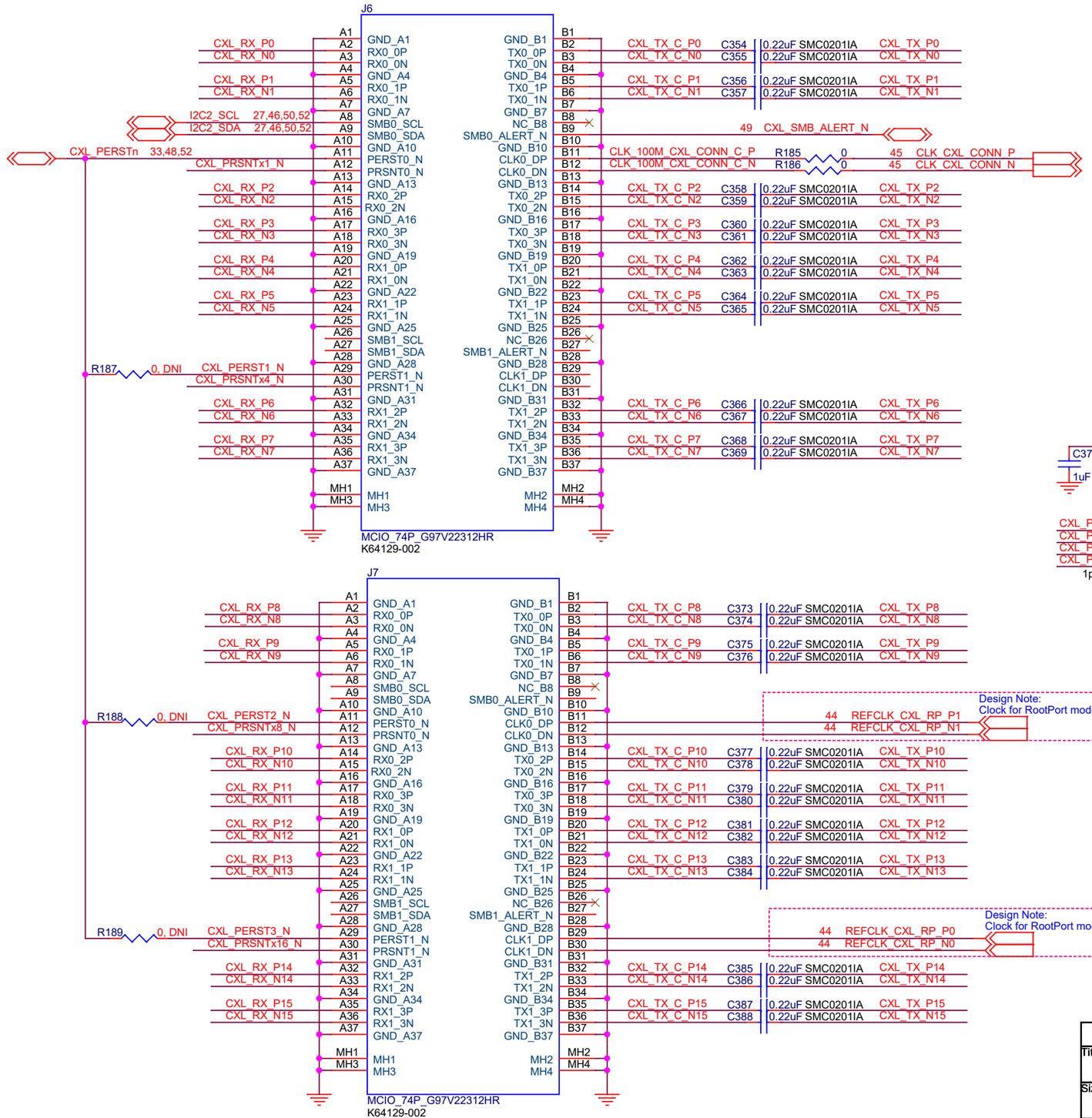
Title: AgileX I-Series FPGA Dev Kit

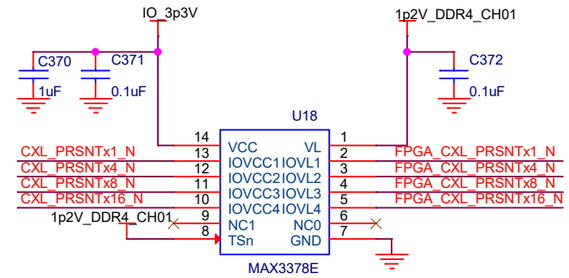


| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 31 of 77

# CXL Connector




17 FPGA_CXL_PRSNTx1_N
17 FPGA_CXL_PRSNTx4_N
17 FPGA_CXL_PRSNTx8_N
17 FPGA_CXL_PRSNTx16_N

33 CXL_TX_P[15:0]
33 CXL_TX_N[15:0]

33 CXL_RX_P[15:0]
33 CXL_RX_N[15:0]

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| | | |
|---|---|---|
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| Size B | Document Number M17472 (M17471-100) | Rev A0 |
| Date: Wednesday, December 23, 2020 | Sheet 32 of 77 | |

# R-TILE BANK 15C

U6N

| | | | | | |
|---|---|---|---|---|---|
| CXL_RX_N0 | AH10 | GXRR15C_RX_CH0N | GXRR15C_TX_CH0N | AH22 | CXL_TX_N0 |
| CXL_RX_P0 | AL8 | GXRR15C_RX_CH0P | GXRR15C_TX_CH0P | AL20 | CXL_TX_P0 |
| CXL_RX_N1 | AU3 | GXRR15C_RX_CH1N | GXRR15C_TX_CH1N | AU16 | CXL_TX_N1 |
| CXL_RX_P1 | AP1 | GXRR15C_RX_CH1P | GXRR15C_TX_CH1P | AP14 | CXL_TX_P1 |
| CXL_RX_N2 | BA10 | GXRR15C_RX_CH2N | GXRR15C_TX_CH2N | BA22 | CXL_TX_N2 |
| CXL_RX_P2 | BD8 | GXRR15C_RX_CH2P | GXRR15C_TX_CH2P | BD20 | CXL_TX_P2 |
| CXL_RX_N3 | BK3 | GXRR15C_RX_CH3N | GXRR15C_TX_CH3N | BK16 | CXL_TX_N3 |
| CXL_RX_P3 | BG1 | GXRR15C_RX_CH3P | GXRR15C_TX_CH3P | BG14 | CXL_TX_P3 |
| CXL_RX_N4 | BN10 | GXRR15C_RX_CH4N | GXRR15C_TX_CH4N | BN22 | CXL_TX_N4 |
| CXL_RX_P4 | BT8 | GXRR15C_RX_CH4P | GXRR15C_TX_CH4P | BT20 | CXL_TX_P4 |
| CXL_RX_N5 | CB3 | GXRR15C_RX_CH5N | GXRR15C_TX_CH5N | CB16 | CXL_TX_N5 |
| CXL_RX_P5 | BW1 | GXRR15C_RX_CH5P | GXRR15C_TX_CH5P | BW14 | CXL_TX_P5 |
| CXL_RX_N6 | CE10 | GXRR15C_RX_CH6N | GXRR15C_TX_CH6N | CE22 | CXL_TX_N6 |
| CXL_RX_P6 | CH8 | GXRR15C_RX_CH6P | GXRR15C_TX_CH6P | CH20 | CXL_TX_P6 |
| CXL_RX_N7 | CP3 | GXRR15C_RX_CH7N | GXRR15C_TX_CH7N | CP16 | CXL_TX_N7 |
| CXL_RX_P7 | CL1 | GXRR15C_RX_CH7P | GXRR15C_TX_CH7P | CL14 | CXL_TX_P7 |
| CXL_RX_N8 | CV10 | GXRR15C_RX_CH8N | GXRR15C_TX_CH8N | CV22 | CXL_TX_N8 |
| CXL_RX_P8 | DA8 | GXRR15C_RX_CH8P | GXRR15C_TX_CH8P | DA20 | CXL_TX_P8 |
| CXL_RX_N9 | DG3 | GXRR15C_RX_CH9N | GXRR15C_TX_CH9N | DG16 | CXL_TX_N9 |
| CXL_RX_P9 | DD1 | GXRR15C_RX_CH9P | GXRR15C_TX_CH9P | DD14 | CXL_TX_P9 |
| CXL_RX_N10 | DK10 | GXRR15C_RX_CH10N | GXRR15C_TX_CH10N | DK22 | CXL_TX_N10 |
| CXL_RX_P10 | DN8 | GXRR15C_RX_CH10P | GXRR15C_TX_CH10P | DN20 | CXL_TX_P10 |
| CXL_RX_N11 | DW3 | GXRR15C_RX_CH11N | GXRR15C_TX_CH11N | DW16 | CXL_TX_N11 |
| CXL_RX_P11 | DT1 | GXRR15C_RX_CH11P | GXRR15C_TX_CH11P | DT14 | CXL_TX_P11 |
| CXL_RX_N12 | EB10 | GXRR15C_RX_CH12N | GXRR15C_TX_CH12N | EB22 | CXL_TX_N12 |
| CXL_RX_P12 | EE8 | GXRR15C_RX_CH12P | GXRR15C_TX_CH12P | EE20 | CXL_TX_P12 |
| CXL_RX_N13 | EM3 | GXRR15C_RX_CH13N | GXRR15C_TX_CH13N | EM16 | CXL_TX_N13 |
| CXL_RX_P13 | EH1 | GXRR15C_RX_CH13P | GXRR15C_TX_CH13P | EH14 | CXL_TX_P13 |
| CXL_RX_N14 | ER10 | GXRR15C_RX_CH14N | GXRR15C_TX_CH14N | ER22 | CXL_TX_N14 |
| CXL_RX_P14 | EV8 | GXRR15C_RX_CH14P | GXRR15C_TX_CH14P | EV20 | CXL_TX_P14 |
| CXL_RX_N15 | FD3 | GXRR15C_RX_CH15N | GXRR15C_TX_CH15N | FD16 | CXL_TX_N15 |
| CXL_RX_P15 | FA1 | GXRR15C_RX_CH15P | GXRR15C_TX_CH15P | FA14 | CXL_TX_P15 |

32 CXL_RX_P[15:0]
32 CXL_RX_N[15:0]
32 CXL_TX_P[15:0]
32 CXL_TX_N[15:0]

45 REFCLK_CXL_15C_CH0_N
45 REFCLK_CXL_15C_CH0_P
45 REFCLK_CXL_15C_CH1_N
45 REFCLK_CXL_15C_CH1_P

ED26 REFCLK_GXRR15C_CH0N
EG27 REFCLK_GXRR15C_CH0P
EY26 REFCLK_GXRR15C_CH1N
FC27 REFCLK_GXRR15C_CH1P

R190 49.9
R939 49.9
R191 49.9
R941 49.9

52 FPGA_TEMP6p
52 FPGA_TEMP6n
FF26 TEMPDIODE6P
FJ27 TEMPDIODE6N

R194 150 +/-1%
EP26 15C_GXR_IO_RCOMP_N_0
EU27 15C_GXR_IO_RCOMP_P_0

FPGA_CXL_PERSTN CY30 I_PIN_PERST_N_15C_GXR

DNU67 CU27
DNU68 EJ26
DNU69 EL27
DNU70 CN29
DNU71 DC29
DNU72 CY26
DNU73 DC27
DNU74 DF28
DNU75 CG33
DNU76 DR27
DNU77 CY28

GND CR28

R-TILE Bank 15C

AgileX-I_2957A

1p0V_VCCCLK_GXR
R927 10.0K 0402 1%

U19
SN74AUP1G126DCK
1 OE
2 A
3 GND
4 Y
5 VCC

32,48,52 CXL_PERSTn
R196 0
1p0V_VCCCLK_GXR
R195 10.0K 0402 1%
FPGA_CXL_PERSTN

1p0V_VCCCLK_GXR
C389 0402 0.1uF 25V X6S



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| Size | Document Number | Rev |
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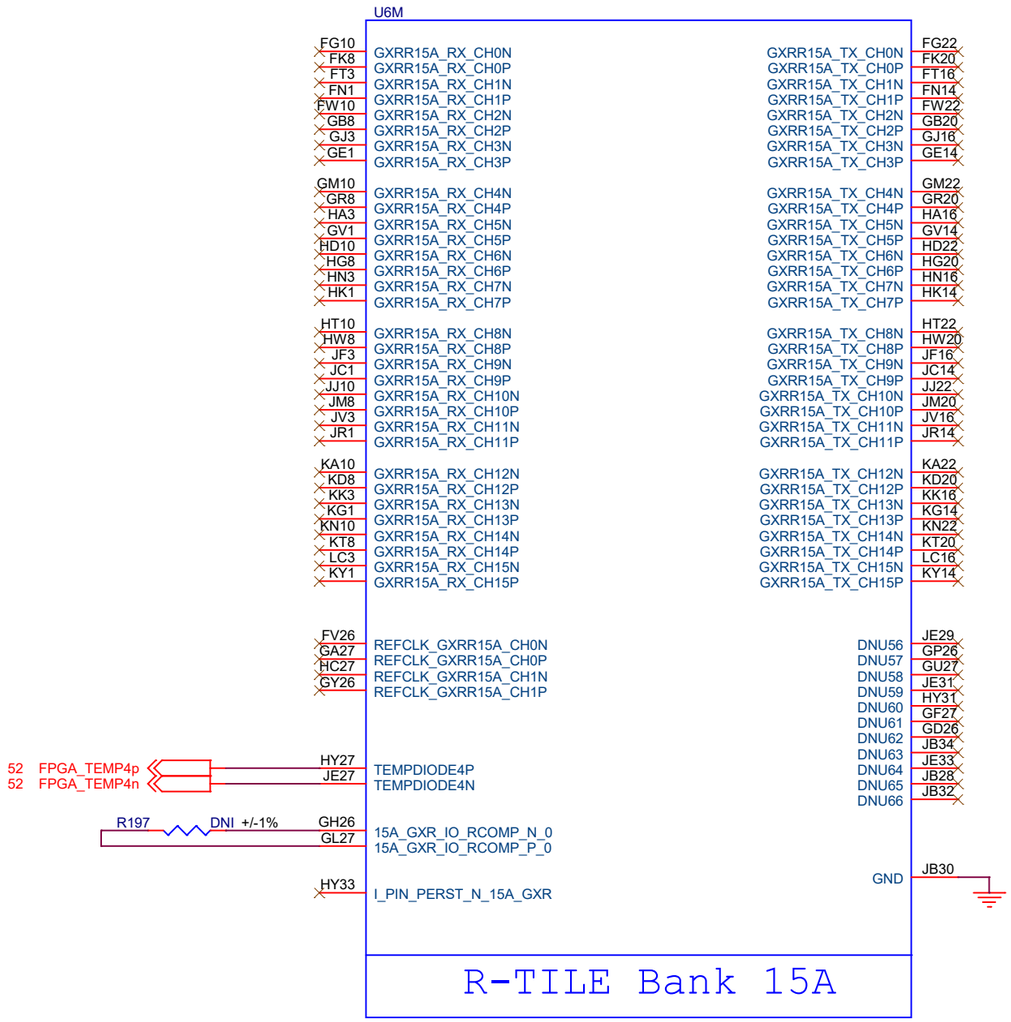
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 33 of 77

# R-TILE BANK 15A





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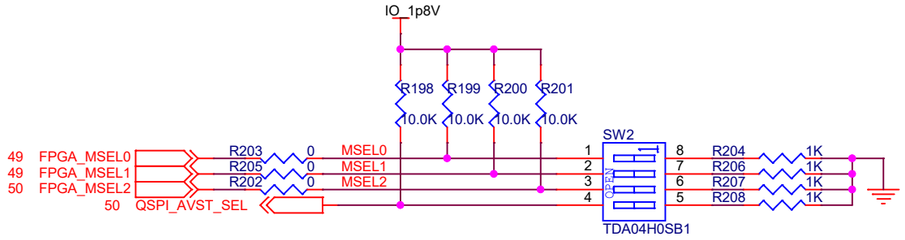
Size: B | Document Number: M17472 (M17471-100) | Rev: A0

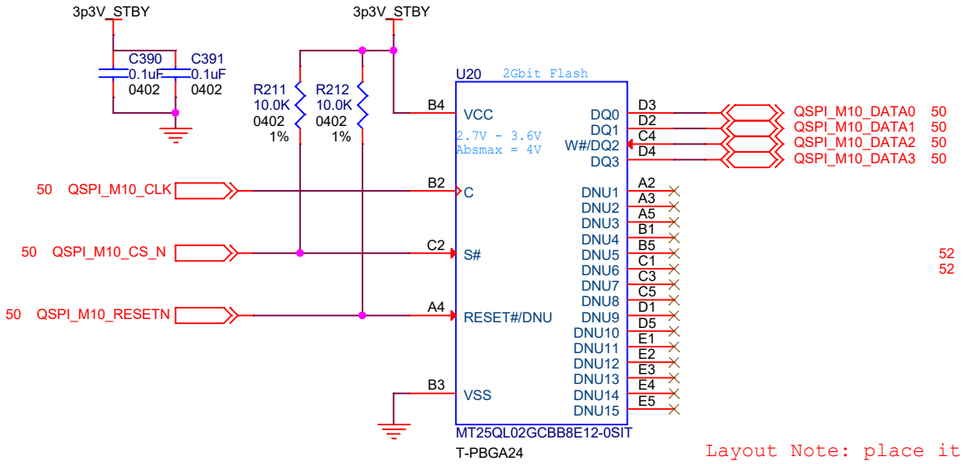
Date: Wednesday, December 23, 2020 | Sheet 34 of 77

# SDM & Configuration



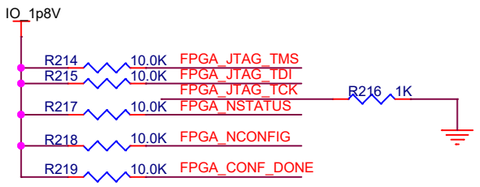

Close = 0, Open = 1

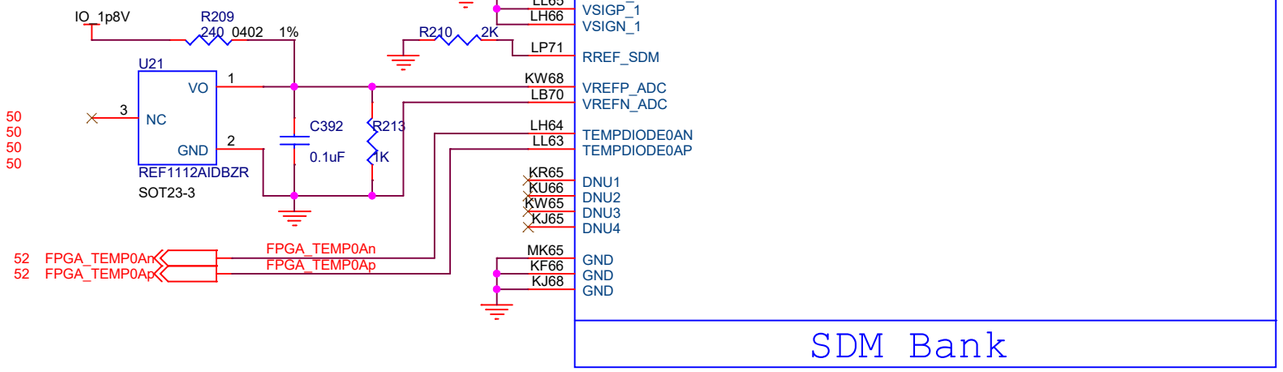
| Config Mode | MSEL2 | MSEL1 | MSEL0 |
|---|---|---|---|
| JTAG | 1 | 1 | 1 |
| AVST x8 | 1 | 1 | 0 |


2Gb Serial Flash

Layout Note: place it near to max10







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Size: B | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 35 of 77

# Bank HPS&NC

U6J

| | |
|---|---|
| BM34 | |
| AB18 | HPS_IOA_1, GPIO0_IO0, SPIM0_SS1_N, SPIS0_CLK, UART0_CTS_N, NAND_ADQ0, USB0_CLK, SDMMC_CCLK |
| BJ33 | HPS_IOA_2, GPIO0_IO1, SPIM1_SS1_N, SPIS0_MOSI, UART0_RTS_N, NAND_ADQ1, USB0_STP, SDMMC_CMD |
| AE16 | HPS_IOA_3, GPIO0_IO2, SPIS0_SS0_N, UART0_TX, I2C1_SDA, NAND_WE_N, USB0_DIR, SDMMC_DATA0 |
| BM26 | HPS_IOA_4, GPIO0_IO3, SPIS0_MISO, UART0_RX, I2C1_SCL, NAND_RE_N, USB0_DATA0, SDMMC_DATA1 |
| AB14 | HPS_IOA_5, GPIO0_IO4, SPIM0_CLK, UART1_CTS_N, I2C0_SDA, NAND_WP_N, USB0_DATA1, SDMMC_DATA2 |
| CD28 | HPS_IOA_6, GPIO0_IO5, SPIM0_MOSI, UART1_RTS_N, I2C0_SCL, NAND_ADQ2, USB0_NXT, SDMMC_DATA3 |
| AB6 | HPS_IOA_7, GPIO0_IO6, SPIM0_MISO, MDIO2_MDIO, UART1_TX, I2C_EMAC2_SDA, NAND_ADQ3, USB0_DATA2, SDMMC_DATA4 |
| CA27 | HPS_IOA_8, GPIO0_IO7, SPIM0_SS0_N, MDIO2_MDC, UART1_RX, I2C_EMAC2_SCL, NAND_CLE, USB0_DATA3, SDMMC_DATA5 |
| AE3 | HPS_IOA_9, GPIO0_IO8, SPIM1_CLK, SPIS1_CLK, MDIO1_MDIO, I2C_EMAC1_SDA, NAND_ADQ4, USB0_DATA4, SDMMC_DATA6 |
| BV28 | HPS_IOA_10, GPIO0_IO9, SPIM1_MOSI, SPIS1_MOSI, MDIO1_MDC, I2C_EMAC1_SCL, NAND_ADQ5, USB0_DATA5, SDMMC_DATA7 |
| AB1 | HPS_IOA_11, GPIO0_IO10, SPIM1_MISO, SPIS1_SS0_N, MDIO0_MDIO, I2C_EMAC0_SDA, NAND_ADQ6, USB0_DATA6 |
| CA29 | HPS_IOA_12, GPIO0_IO11, SPIM1_SS0_N, SPIS1_MISO, MDIO0_MDC, I2C_EMAC0_SCL, NAND_ADQ7, USB0_DATA7 |
| CN27 | HPS_IOA_13, GPIO0_IO12, NAND_ALE, USB1_CLK, EMAC0_TX_CLK |
| BV30 | HPS_IOA_14, GPIO0_IO13, NAND_RB, USB1_STP, EMAC0_TX_CTL |
| CG27 | HPS_IOA_15, GPIO0_IO14, NAND_CE_N, USB1_DIR, EMAC0_RX_CLK |
| CA31 | HPS_IOA_16, GPIO0_IO15, USB1_DATA0, EMAC0_RX_CTL |
| J5 | HPS_IOA_17, GPIO0_IO16, NAND_ADQ8, USB1_DATA1, EMAC0_TXD0 |
| BV32 | HPS_IOA_18, GPIO0_IO17, NAND_ADQ9, USB1_NXT, EMAC0_TXD1 |
| CD26 | HPS_IOA_19, GPIO0_IO18, NAND_ADQ10, USB1_DATA2, EMAC0_RXD0 |
| BV26 | HPS_IOA_20, GPIO0_IO19, SPIM1_SS1_N, NAND_ADQ11, USB1_DATA3, EMAC0_RXD1 |
| D7 | HPS_IOA_21, GPIO0_IO20, SPIM1_CLK, SPIS0_CLK, UART0_CTS_N, I2C1_SDA, NAND_ADQ12, USB1_DATA4, EMAC0_TXD2 |
| BM28 | HPS_IOA_22, GPIO0_IO21, SPIM1_MOSI, SPIS0_MOSI, UART0_RTS_N, I2C1_SCL, NAND_ADQ13, USB1_DATA5, EMAC0_TXD3 |
| U13 | HPS_IOA_23, GPIO0_IO22, SPIM1_MISO, SPIS0_SS0_N, UART0_TX, I2C0_SDA, NAND_ADQ14, USB1_DATA6, EMAC0_RXD2 |
| BJ27 | HPS_IOA_24, GPIO0_IO23, SPIM1_SS0_N, SPIS0_MISO, UART0_RX, I2C0_SCL, NAND_ADQ15, USB1_DATA7, EMAC0_RXD3 |
| N13 | HPS_IOB_1, GPIO1_IO0, SPIM1_CLK, UART0_CTS_N, NAND_ADQ0, EMAC1_TX_CLK |
| BF26 | HPS_IOB_2, GPIO1_IO1, SPIM1_MOSI, UART0_RTS_N, NAND_ADQ1, EMAC1_TX_CTL |
| L15 | HPS_IOB_3, GPIO1_IO2, SPIM1_MISO, UART0_TX, I2C0_SDA, NAND_WE_N, EMAC1_RX_CLK |
| AT26 | HPS_IOB_4, GPIO1_IO3, SPIM1_SS0_N, UART0_RX, I2C0_SCL, NAND_RE_N, EMAC1_RX_CTL |
| U17 | HPS_IOB_5, GPIO1_IO4, SPIM1_SS1_N, SPIS1_CLK, UART1_CTS_N, NAND_WP_N, EMAC1_TXD0 |
| AD26 | HPS_IOB_6, GPIO1_IO5, SPIS1_MOSI, UART1_RTS_N, NAND_ADQ2, EMAC1_TXD1 |
| N17 | HPS_IOB_7, GPIO1_IO6, SPIS1_SS0_N, UART1_TX, I2C1_SDA, NAND_ADQ3, EMAC1_RXD0 |
| BM30 | HPS_IOB_8, GPIO1_IO7, SPIS1_MISO, UART1_RX, I2C1_SCL, NAND_CLE, EMAC1_RXD1 |
| L19 | HPS_IOB_9, GPIO1_IO8, JTAG_TCK, SPIS0_CLK, MDIO2_MDIO, I2C_EMAC2_SDA, NAND_ADQ4, EMAC1_TXD2 |
| BJ29 | HPS_IOB_10, GPIO1_IO9, JTAG_TMS, SPIS0_MOSI, MDIO2_MDC, I2C_EMAC2_SCL, NAND_ADQ5, EMAC1_TXD3 |
| U21 | HPS_IOB_11, GPIO1_IO10, JTAG_TDO, SPIS0_SS0_N, MDIO0_MDIO, I2C_EMAC0_SDA, NAND_ADQ6, EMAC1_RXD2 |
| L28 | HPS_IOB_12, GPIO1_IO11, JTAG_TDI, SPIS0_MISO, MDIO0_MDC, I2C_EMAC0_SCL, NAND_ADQ7, EMAC1_RXD3 |
| N21 | HPS_IOB_13, GPIO1_IO12, I2C1_SDA, NAND_ALE, SDMMC_DATA0, EMAC2_TX_CLK |
| N27 | HPS_IOB_14, GPIO1_IO13, I2C1_SCL, NAND_RB, SDMMC_CMD, EMAC2_TX_CTL |
| L23 | HPS_IOB_15, GPIO1_IO14, UART1_TX, NAND_CE_N, SDMMC_CCLK, EMAC2_RX_CLK |
| U27 | HPS_IOB_16, GPIO1_IO15, UART1_RX, SDMMC_DATA1, EMAC2_RX_CTL |
| W26 | HPS_IOB_17, GPIO1_IO16, UART1_CTS_N, NAND_ADQ8, SDMMC_DATA2, EMAC2_TXD0 |
| W28 | HPS_IOB_18, GPIO1_IO17, SPIM0_SS1_N, UART1_RTS_N, NAND_ADQ9, SDMMC_DATA3, EMAC2_TXD1 |
| U25 | HPS_IOB_19, GPIO1_IO18, SPIM0_MISO, MDIO1_MDIO, I2C_EMAC1_SDA, NAND_ADQ10, SDMMC_DATA4, EMAC2_RXD0 |
| BM32 | HPS_IOB_20, GPIO1_IO19, SPIM0_SS0_N, MDIO1_MDC, I2C_EMAC1_SCL, NAND_ADQ11, SDMMC_DATA5, EMAC2_RXD1 |
| N25 | HPS_IOB_21, GPIO1_IO20, SPIM0_CLK, SPIS1_CLK, I2C_EMAC2_SDA, NAND_ADQ12, SDMMC_DATA6, EMAC2_TXD2 |
| BJ31 | HPS_IOB_22, GPIO1_IO21, SPIM0_MOSI, SPIS1_MOSI, I2C_EMAC2_SCL, NAND_ADQ13, SDMMC_DATA7, EMAC2_TXD3 |
| L26 | HPS_IOB_23, GPIO1_IO22, SPIM0_MISO, SPIS1_SS0_N, MDIO0_MDIO, I2C_EMAC0_SDA, NAND_ADQ14, EMAC2_RXD2 |
| | HPS_IOB_24, GPIO1_IO23, SPIM0_SS0_N, SPIS1_MISO, MDIO0_MDC, I2C_EMAC0_SCL, NAND_ADQ15, EMAC2_RXD3 |
| BV34 | |
| CA33 | DNU5 |
| | DNU6 |

43 HPS_OSC_CLK

HPS Bank

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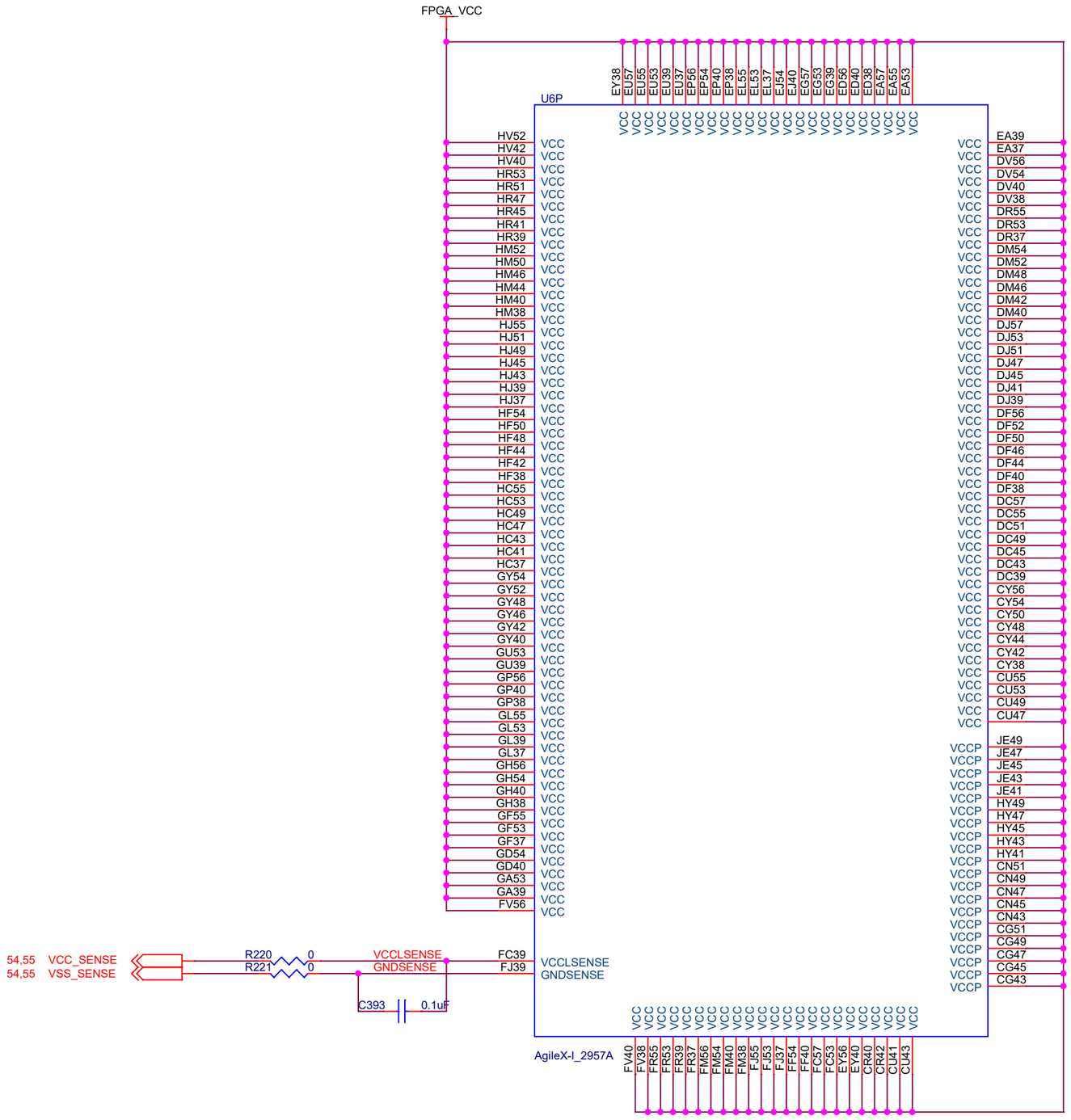
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 36 of 77

# FPGA Power 1




| | | |
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| Title: AgileX I-Series FPGA Dev Kit | | |
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| Size: B | Document Number: M17472 (M17471-100) | Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 37 of 77 | |

# FPGA Power 2

Note: connect to GND as default

0p9V_VCCL_HPS
VCCPLLDIG_HPS
FB1
220ohm
0.9V
C394 10uF
C395 0.47uF

U6Q

0p9V_VCCL_HPS
0.9V CU39 VCCL_HPS
CU37 VCCL_HPS
CN39 VCCL_HPS
CN37 VCCL_HPS
CG39 VCCL_HPS
(Group1)

VCCPLLDIG_HPS
0.9V CA39 VCCPLLDIG_HPS
BV38 VCCPLLDIG_HPS

0p8V_VCC_HSSI_GXF
0.8V JE55 VCCL_SDM
JE53 VCCL_SDM
HY55 VCCL_SDM
HY53 VCCL_SDM

VCCPLLDIG_SDM
0.8V JE57 VCCPLLDIG_SDM
HY57 VCCPLLDIG_SDM

0p8V_VCCH
RevA = 0.9V
RevB = 0.8V
HC57 VCCH
GL57 VCCH
GA57 VCCH
FJ57 VCCH
EP58 VCCH
ED58 VCCH
DM58 VCCH
CY58 VCCH
HF36 VCCH
GP36 VCCH
GD36 VCCH
FM36 VCCH
EY36 VCCH
EJ36 VCCH
DV36 VCCH
DF36 VCCH
(Group1)
FM67 - NC

0p9V_VCCL_HPS
0.9V HV54 VCCH_SDM

0p8V_VCC_HSSI_GXF
1uF C1285
0.8V
GY60 GY58 GP60 GP58 GL59 GH60 GF59 GD60 GD58 GA59 FV58 FM58 FJ59 FF60 FF58 FC59 EU59 EP60
VCC_HSSI_GXFL_12A
(Group1)

VCCEHT_FHT_GXFL_12A
EY66 EY64 EU65 EU63 EP66 EP64

VCCH_FGT_GXF
VCCH_FGT_GXFL_12A
GY66 GU65 GP66 GH66 GF65 GD66 GA65 FV66
1.8V
(Group2)

VCCERT1_FHT_GXFL_12A
FR61 FM64 FM62 FJ61 FF64 FC61 EY62 EU61 FM66 FF66

VCCERT2_FHT_GXFL_12A

1p0V_VCCERT_FGT_GXF
VCCERT_FGT_GXFL_12A
GU63 GP64 GP62 GL63 GD64 GD62 GA63 FR63
1.0V
(Group1)

VCCFUSECORE_GXFL_12A
HC61 1.0V

VCCFUSEWR_GXF
C397 1uF
VCCFUSEWR_GXFL_12A
HF62 1.0V

1p8V_VCCCLK_GXF
C1043 1uF
VCCCLK_GXFL_12A
HF64 HC65 1.8V
C1272 1uF
C1273 1uF

Place caps under FPGA pins

AgileX-I_2957A

0p9V_VCCED_GXR
(Group2)
0.9V DF62 VCCED_GXRL_14C
CY62 VCCED_GXRL_14C
GY32 VCCED_GXRR_15A
GP32 VCCED_GXRR_15A
EP32 VCCED_GXRR_15C
EJ32 VCCED_GXRR_15C

1p8V_VCCH_GXR
(Group2)
1.8V CU65 VCCH_GXRL_14C
CU63 VCCH_GXRL_14C
CR64 VCCH_GXRL_14C
CN65 VCCH_GXRL_14C
CK64 VCCH_GXRL_14C
CG65 VCCH_GXRL_14C
CG63 VCCH_GXRL_14C
HR31 VCCH_GXRR_15A
HR29 VCCH_GXRR_15A
HM30 VCCH_GXRR_15A
HJ29 VCCH_GXRR_15A
HF30 VCCH_GXRR_15A
HC31 VCCH_GXRR_15A
HC29 VCCH_GXRR_15A
FJ31 VCCH_GXRR_15A
FJ29 VCCH_GXRR_15C
FF30 VCCH_GXRR_15C
FC29 VCCH_GXRR_15C
EY30 VCCH_GXRR_15C
EU31 VCCH_GXRR_15C
EU29 VCCH_GXRR_15C

0p9V_VCC_HSSI_GXR
Rev A , 0.95V
Rev B, 0.9V
(Group1)
EA61 DV60 DR61 DR59 DM60 DJ61 DJ59 CY60 CU61 CU59 CR60 CN61 HJ33 HF34 HC35 HC33 GY34 GL35 GL33 GH34 GF35 GF33 GD34 GA33 FC33 EY34 EU35 EU33 EP34 EG35 EG33 ED34 EA35 EA33 DV34 DR33
VCC_HSSI_GXRL_14C
VCC_HSSI_GXRR_15A
VCC_HSSI_GXRR_15C

U6R

1p0V_VCCRT_GXR
1.0V
VCCRT_GXRL_14C
EA65 DV64 DR65 DR63 DM64 DJ65 DJ63 DF64 DC65 GU29
VCCRT_GXRR_15A
GP30 GL31 GL29 GH30 GF31 GF29 GD30 GA29 EL29
VCCRT_GXRR_15C
EJ30 EG31 EG29 ED30 EA31 EA29 DV30 DR29
(Group1)

VCCE_PLL_DTS_GXR
VCCE_DTS_GXRL_14C
VCCE_PLL_GXRL_14C
EG61 ED60
1.0V
C1271 4.7uF 0402
C396 4.7uF 0402
VCCE_DTS_GXRR_15A
VCCE_PLL_GXRR_15A
FR33 FV34
VCCE_DTS_GXRR_15C
VCCE_PLL_GXRR_15C
DJ33 DM34
(Group2)
Place caps under FPGA pins

1p0V_VCCFUSE_GXR
VCCHFUSE_GXRL_14C
EG63 ED64
1.0V
1uF C1279
1uF C1280
VCCHFUSE_GXRR_15A
FV30 FR31 DM30
VCCHFUSE_GXRR_15C
DJ31
(Group2)
Place caps under FPGA pins

VCCEHT_PG0_GXRL_14C
VCCEHT_PG1_GXRL_14C
VCCEHT_PG0_GXRR_15A
VCCEHT_PG1_GXRR_15A
VCCEHT_PG0_GXRR_15C
VCCEHT_PG1_GXRR_15C
DC68 CY70 HF26 HJ27 DV26 EA27

1p0V_VCCCLK_GXR
VCCCLK_GXRL_14C
VCCCLK_GXRR_15A
VCCCLK_GXRR_15C
EJ62 ED62 FV32 FM32 DM32 DF32
1.0V
VCCN1V_IO_GXR (Group2)

AgileX-I_2957A


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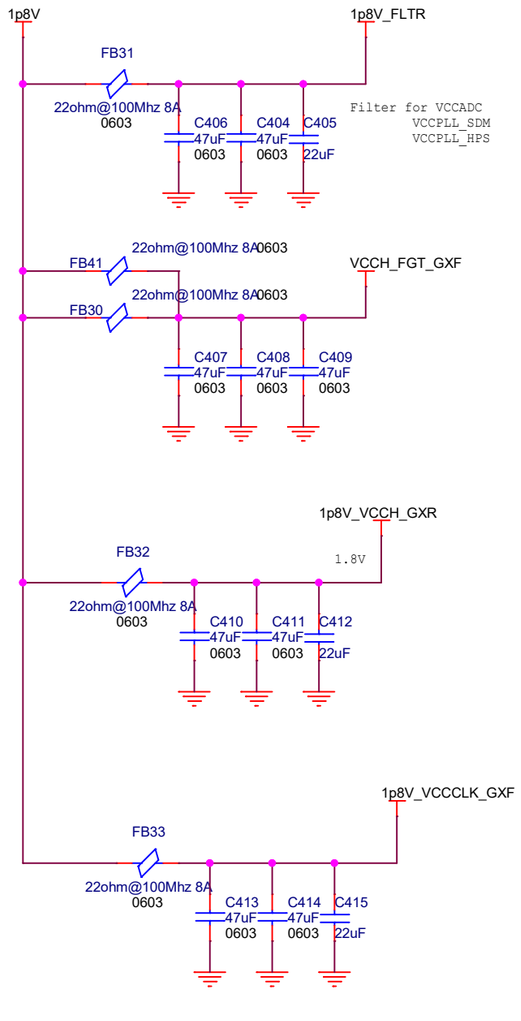
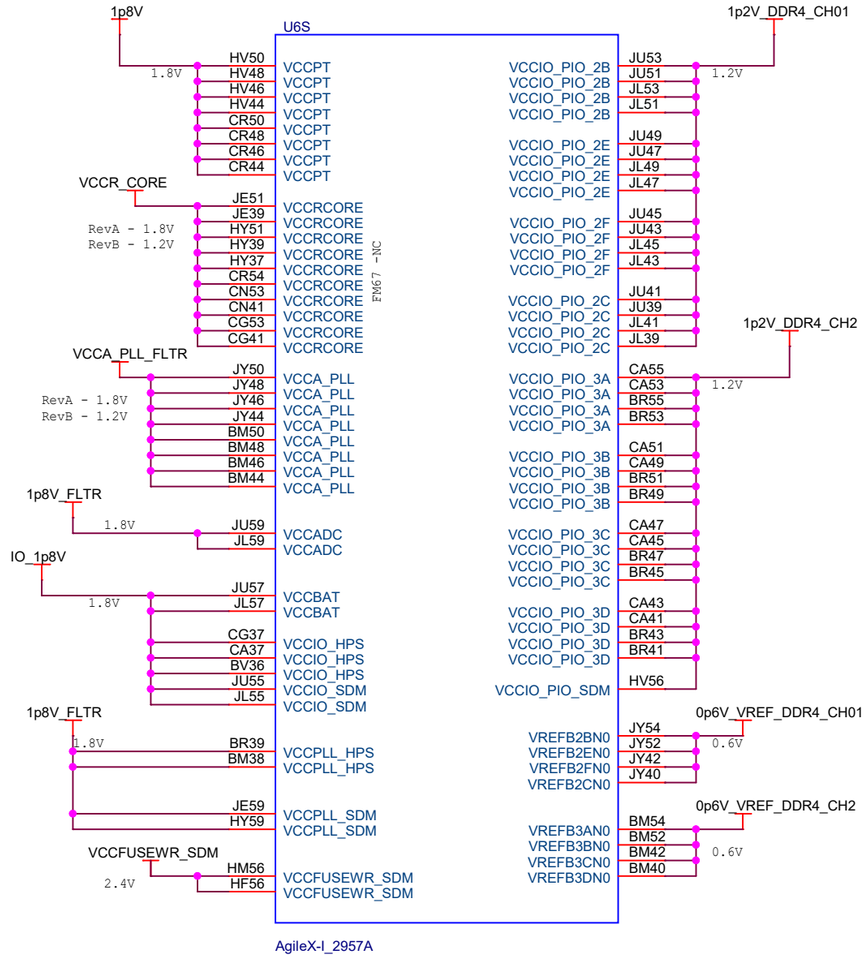
Title: AgileX I-Series FPGA Dev Kit



Size: B | Document Number: M17472 (M17471-100) | Rev: A0
Date: Wednesday, December 23, 2020 | Sheet 38 of 77

# FPGA Power 3

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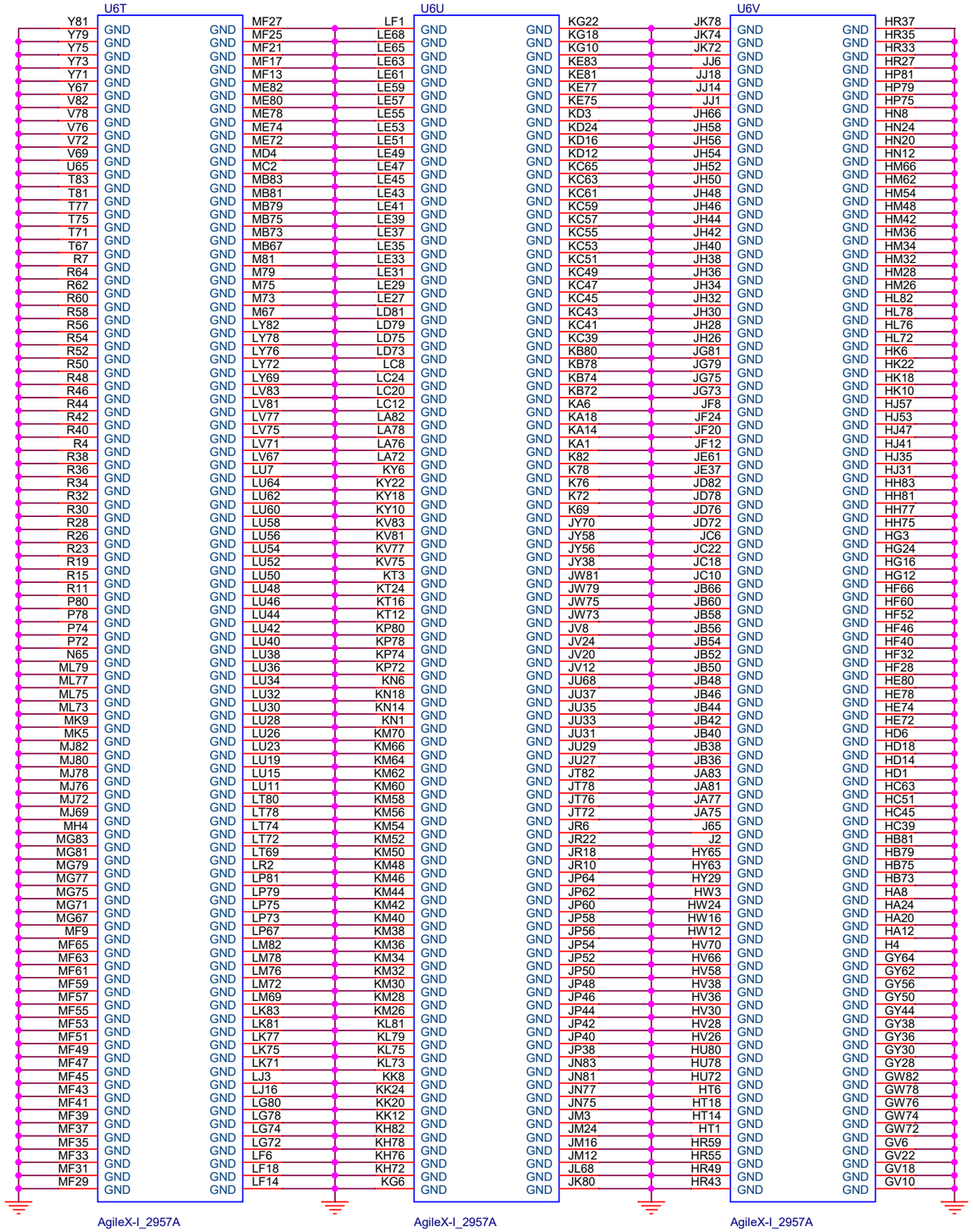
Title: **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 39 of 77

# FPGA GND 1

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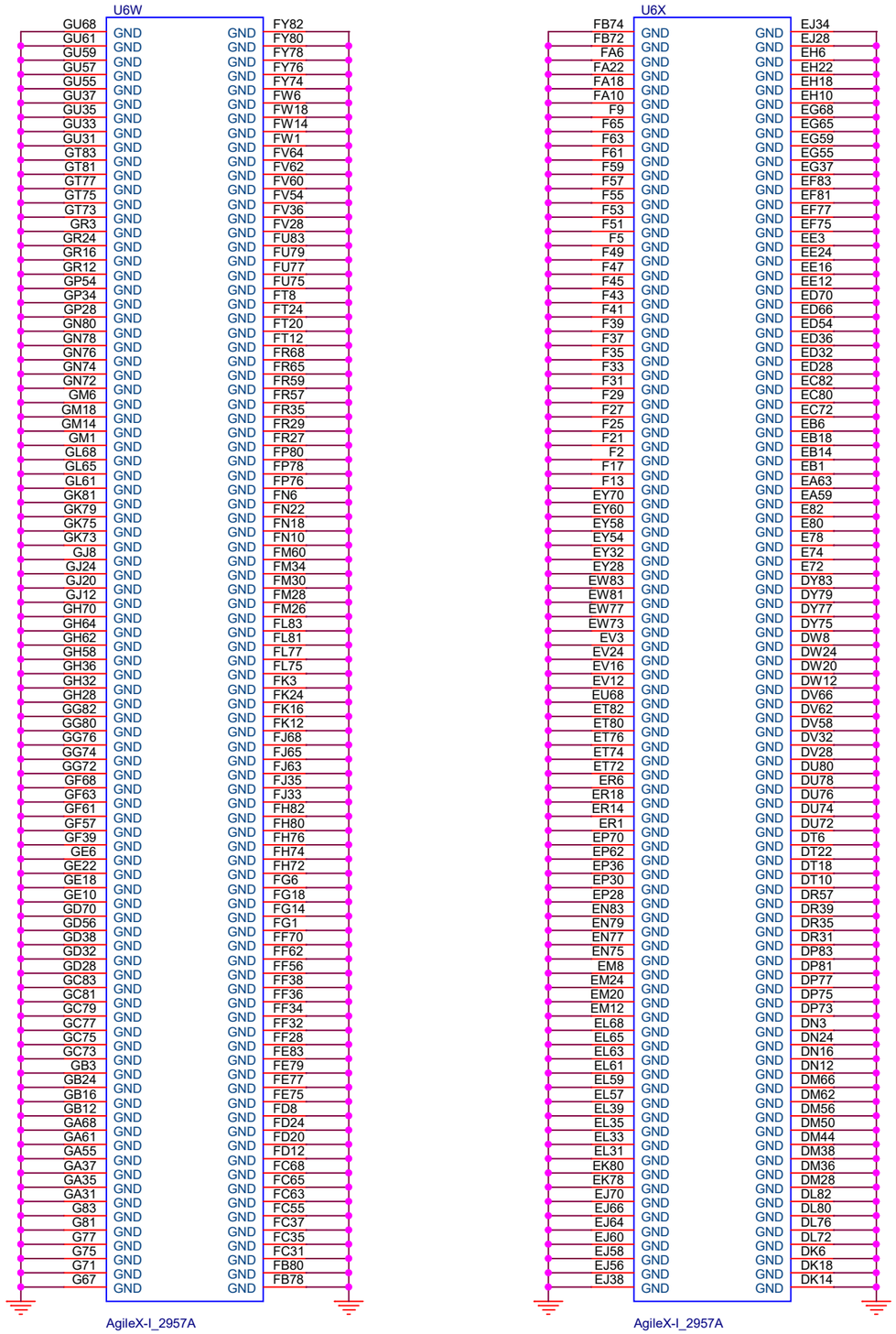
Title: **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 40 of 77

# FPGA GND 2

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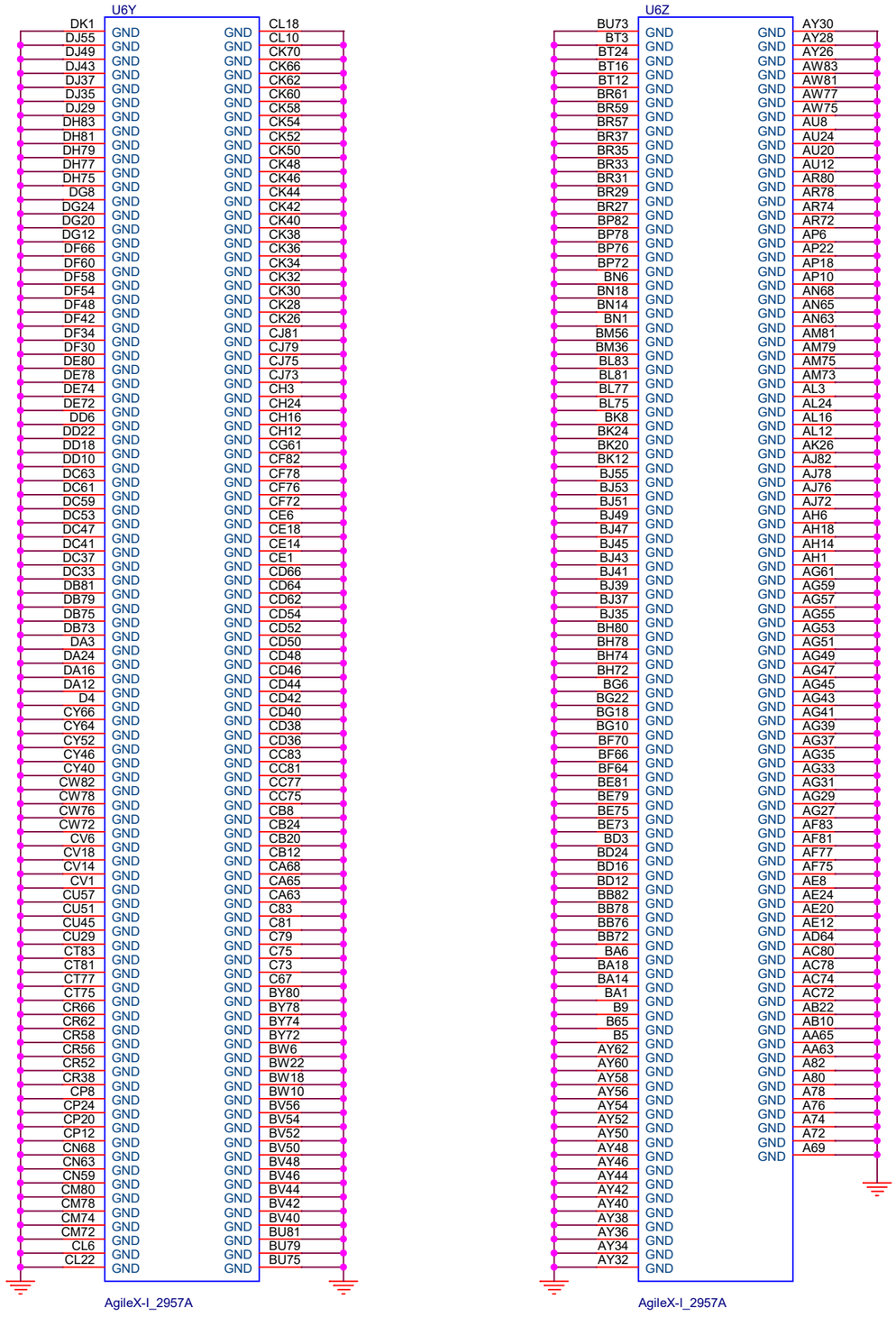
Title: **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 41 of 77

# FPGA GND 3







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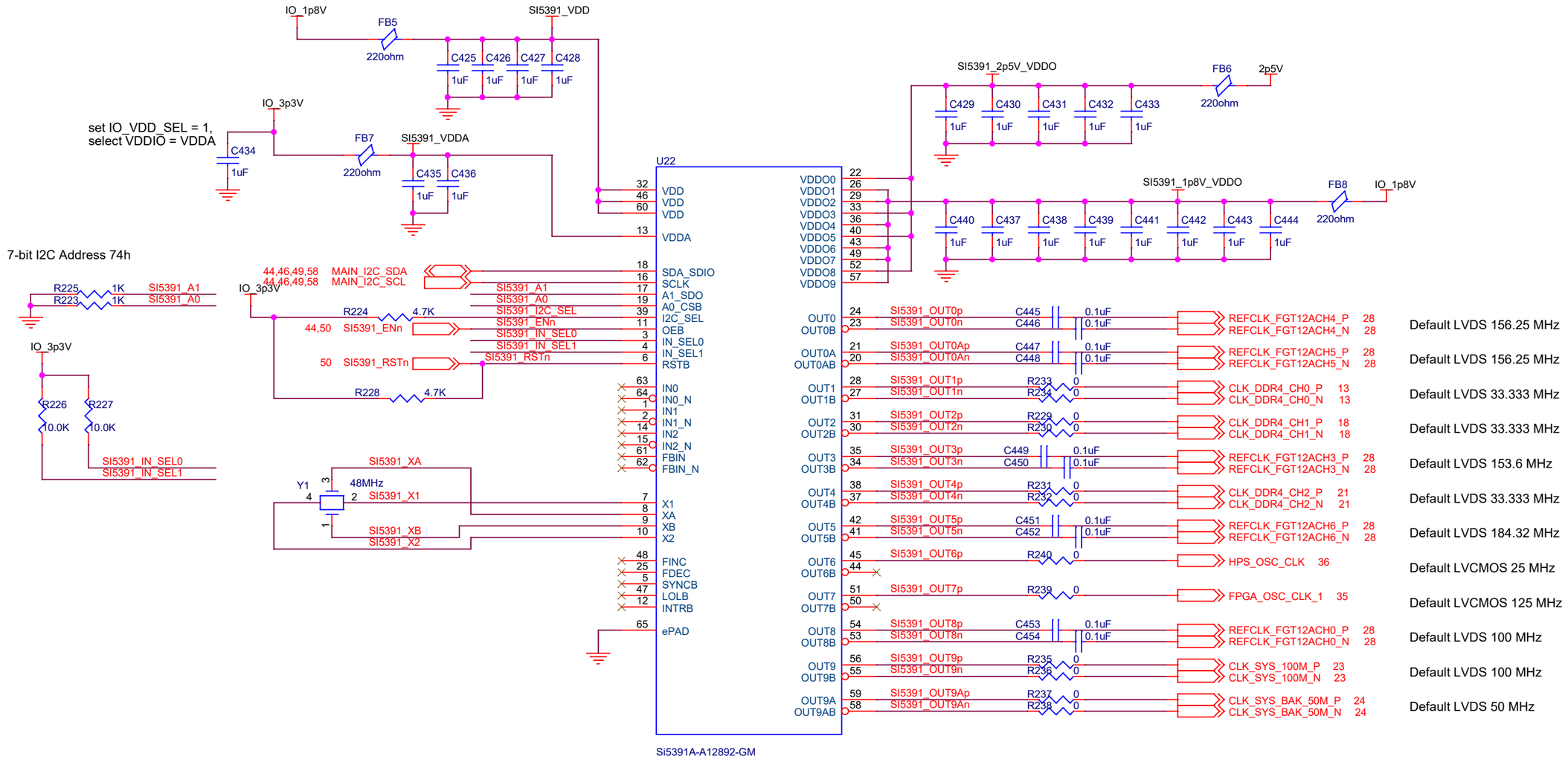
| Title: AgileX I-Series FPGA Dev Kit | | | |
|  | | | |
| Size: B | Document Number: M17472 (M17471-100) | | Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 42 of 77 | | |

# Clock 1

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Title: **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 43 of 77

# Clock 2

IO_1p8V
R241 DNI
R242 1K SI52204_OE0n
R245 DNI
R246 1K SI52204_OE1n
R247 DNI
R248 1K SI52204_OE2n
R243 DNI
R244 1K SI52204_OE3n

IO_1p8V
R251 1K
R253 1K SI52204_SSEN

IO_1p8V
R257 DNI
R260 1K SI52204_FS

IO_1p8V
R263 1K
R264 DNI SI52204_SA

C455 18pF
C464 18pF
Y2 25.00MHz

U23
XIN/CLKIN 3
XOUT 4
PWRGD/PWRDNb 2
OE_0b 14
OE_1b 16
OE_2b 23
OE_3b 27
FS 11
SS_EN 1
REF/SA 7
SCLK 10
SDA 9
NC0 20
NC1 28
NC2 30
VDD0 19
VDD1 29
VDDX 5
VDDR 6
VDDA 31
VDD_IO0 15
VDD_IO1 24
DIFF_0 12
DIFF_0b 13
DIFF_1 17
DIFF_1b 18
DIFF_2 21
DIFF_2b 22
DIFF_3 25
DIFF_3b 26
VSSR 8
GNDA 32
GND PAD 33

Si52204-A01BGM

SI52204_PWRDNB
SI52204_OE0n
SI52204_OE1n
SI52204_OE2n
SI52204_OE3n
SI52204_FS
SI52204_SSEN
SI52204_SA
43,46,49,58 MAIN_I2C_SCL
43,46,49,58 MAIN_I2C_SDA
R258 0 5% 0402
R261 0 5% 0402

1p8V_SI52204
IO_1p8V
FB9 220ohm
C460 1uF
C461 1uF
C456 1uF
C457 0.1uF
C458 0.1uF
C459 0.1uF
C462 0.1uF
C463 4.7uF

SI2204_OUT0p R249 0 REFCLK_PCIE_EP_P
SI2204_OUT0n R250 0 REFCLK_PCIE_EP_N
SI2204_OUT1p R252 0 REFCLK_CXL_EP_P
SI2204_OUT1n R254 0 REFCLK_CXL_EP_N
SI2204_OUT2p R255 0 REFCLK_CXL_RP_P0
SI2204_OUT2n R256 0 REFCLK_CXL_RP_N0
SI2204_OUT3p R259 0 REFCLK_CXL_RP_P1
SI2204_OUT3n R262 0 REFCLK_CXL_RP_N1

REFCLK_CXL_EP_P 45
REFCLK_CXL_EP_N 45
REFCLK_CXL_RP_P0 32
REFCLK_CXL_RP_N0 32
REFCLK_CXL_RP_P1 32
REFCLK_CXL_RP_N1 32

CLK_SEL Input
0 CLKIN2
1 CLKIN1

U24
CLK_SEL 20
IMP_SEL 19
BUFF1_OE0N 31
BUFF1_OE1N 32
BUFF1_OE2N 36
BUFF1_OE3N 37
OEb_OUT0
OEb_OUT1
OEb_OUT2
OEb_OUT3
CLK_IN1 2
CLK_IN1b 3
CLK_IN2 7
CLK_IN2b 8
NC1 5
NC2 6
NC3 26
NC4 27
NC5 28
NC6 29
NC7 30
NC8 33
NC9 34
NC10 35
NC11 38
NC12 39
NC13 40
VDD_DIG 1
VDD 4
VDDA 9
VDDO0 15
VDDO1 18
VDDO2 25
OUT0 14
OUT0b 13
OUT1 17
OUT1b 16
OUT2 22
OUT2b 21
OUT3 24
OUT3b 23
LOS 10
GND1 11
GND2 12
GND_PAD 41

Si53254A-D02AM

SEL_PCIE_REFCLK
BUFF1_IMP_SEL
BUFF1_OE0N
BUFF1_OE1N
BUFF1_OE2N
BUFF1_OE3N

IO_1p8V_SI53254_1
IO_1p8V
FB10 220ohm
C1293 1uF
C1294 1uF
C1389 1uF
C1390 1uF
C1391 1uF
C1392 1uF

30 REFCLK_PCIE_EP_EDGE_P
30 REFCLK_PCIE_EP_EDGE_N
C465 0.1uF
C466 0.1uF
BUF1_CLK0_P
BUF1_CLK0_N

REFCLK_PCIE_EP_P
REFCLK_PCIE_EP_N
C467 0.1uF
C468 0.1uF
BUF1_CLK1_P
BUF1_CLK1_N

C1393 0.1uF
C1394 0.1uF
R985 49.9
R986 49.9
R987 49.9
R988 49.9

BUF1_Q0_P R928 0 REFCLK_PCIE_14C_CH0_P 31
BUF1_Q0_N R929 0 REFCLK_PCIE_14C_CH0_N 31
BUF1_Q1_P R930 0 REFCLK_PCIE_14C_CH1_P 31
BUF1_Q1_N R931 0 REFCLK_PCIE_14C_CH1_N 31

IO_1p8V
R268 DNI
R267 1K BUFF1_IMP_SEL

IO_1p8V
R269 DNI
R270 1K BUFF1_OE0N

IO_1p8V
R271 DNI
R272 1K BUFF1_OE1N

IO_1p8V
R983 1K BUFF1_OE2N
R984 1K BUFF1_OE3N

IO_3p3V
R281 10.0K
IO_1p8V
R282 10.0K
R283 10.0K

SW3
SI52204_PWRDNB 4
SEL_PCIE_REFCLK 3
SI5391_ENn 2
1
5 R284 1K
6 R285 1K
7 R286 1K
8 R287 1K
OPEN
DIPSWITCH4

45 SEL_CXL_REFCLK
43,50 SI5391_ENn
R288 10.0K
3p3V_STBY

OPEN = Enable
Closed = Disable



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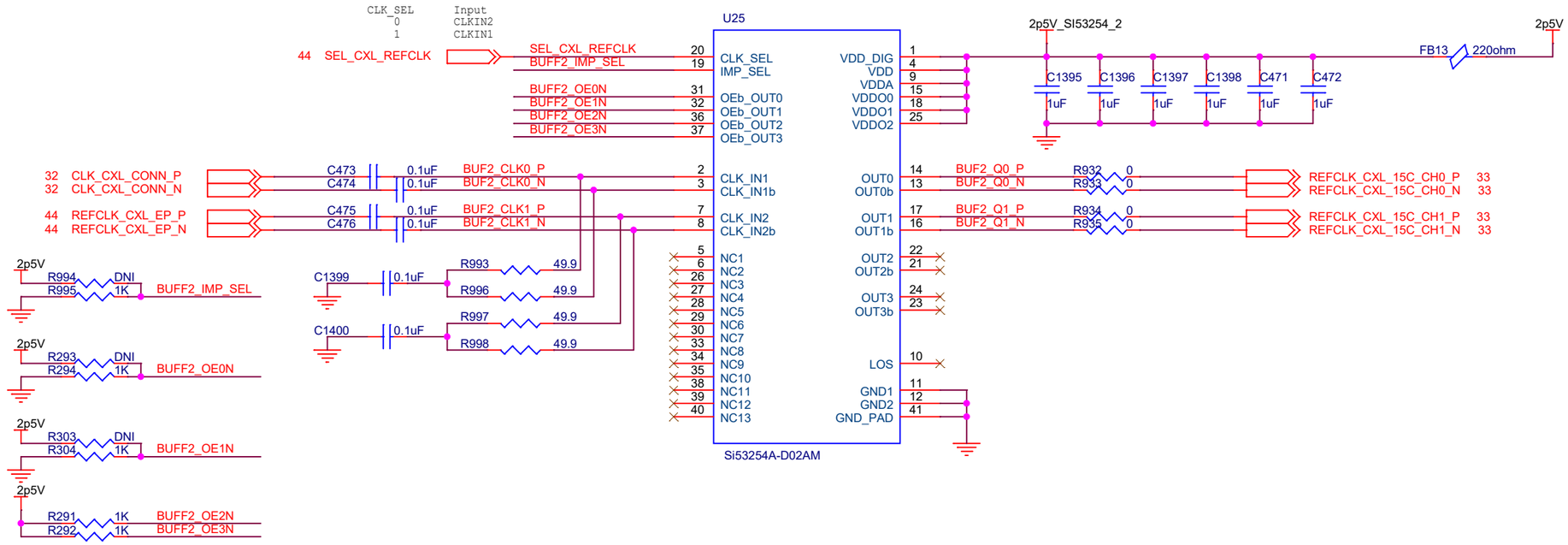
| | | |
|---|---|---|
| Title | AgileX I-Series FPGA Dev Kit | |
| Size B | Document Number M17472 (M17471-100) | Rev A0 |
| Date: Wednesday, December 23, 2020 | Sheet 44 of 77 | |

# Clock 3





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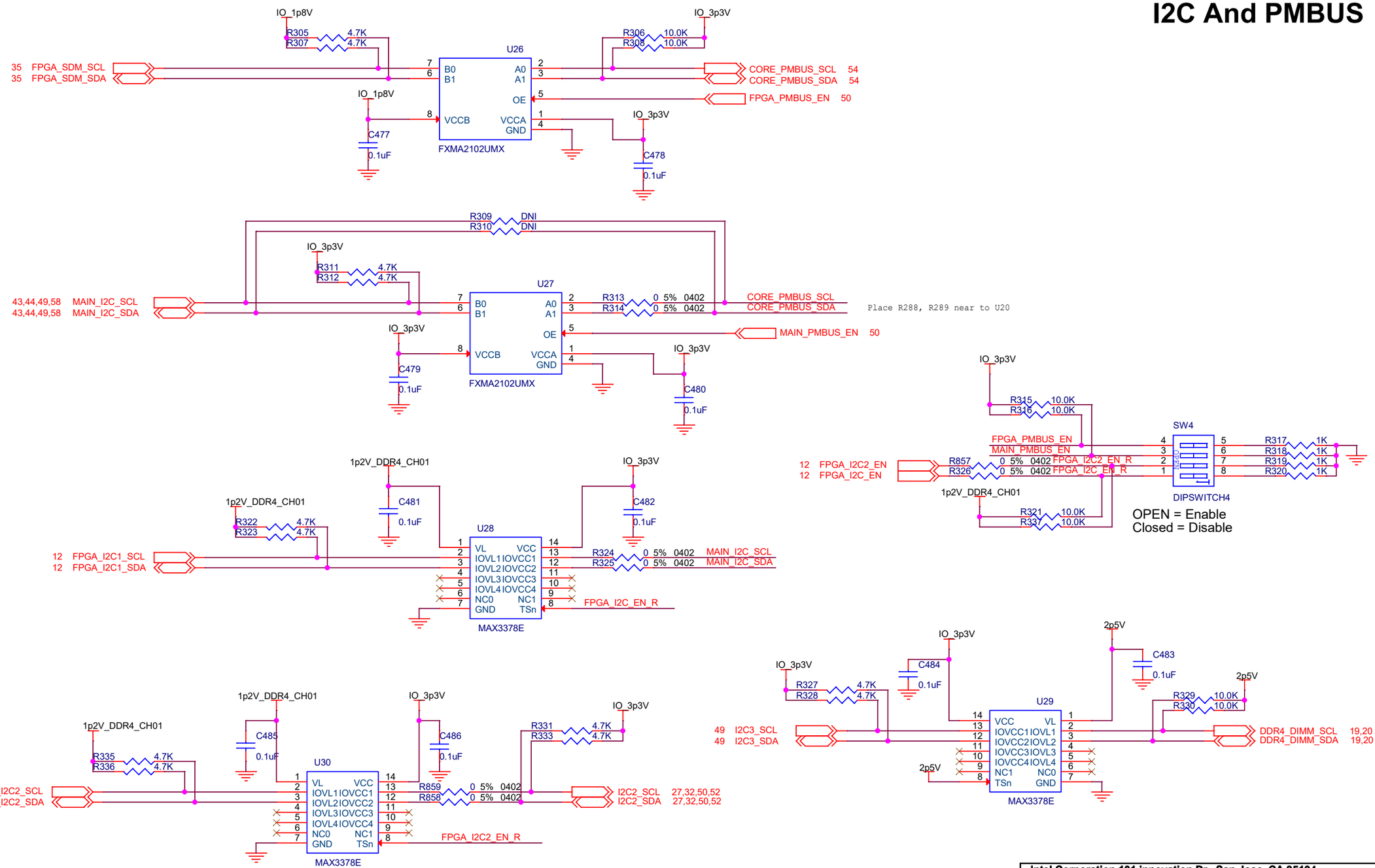
Title: AgileX I-Series FPGA Dev Kit



Size: B | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 45 of 77

# I2C And PMBUS

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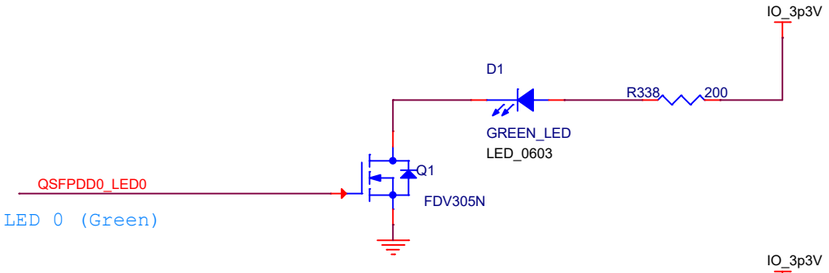
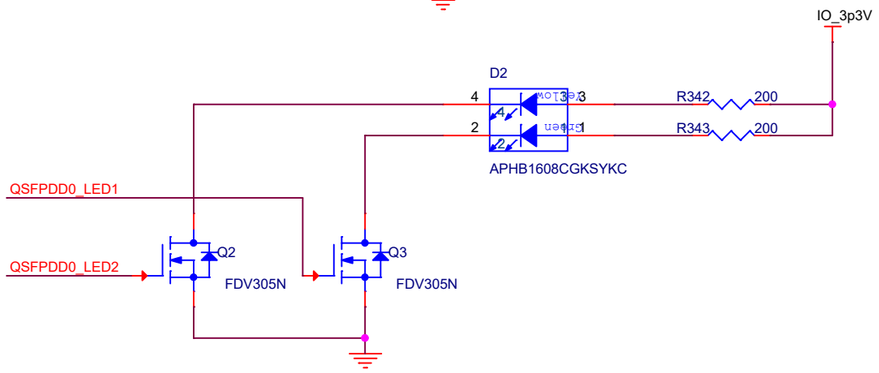
| Title | AgileX I-Series FPGA Dev Kit |
|  | |
| Size: B | Document Number: M17472 (M17471-100) Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 46 of 77 |

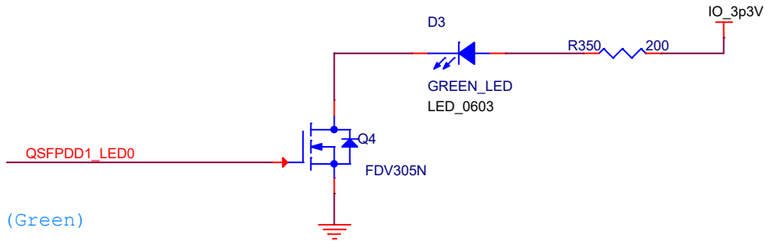
# QSFPDD LED



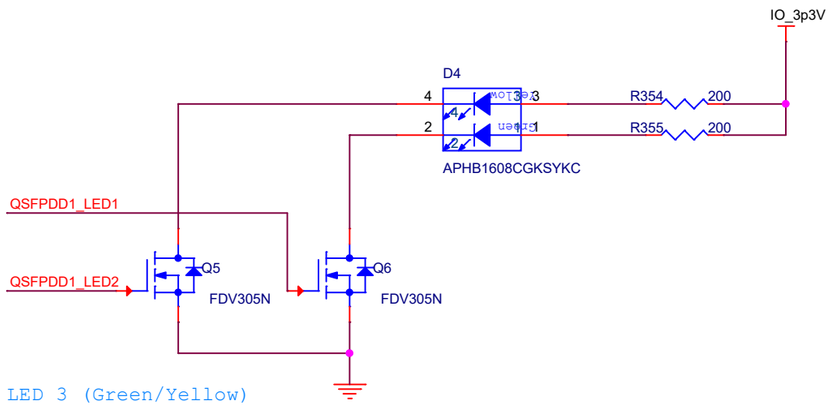

LED 0 (Green)



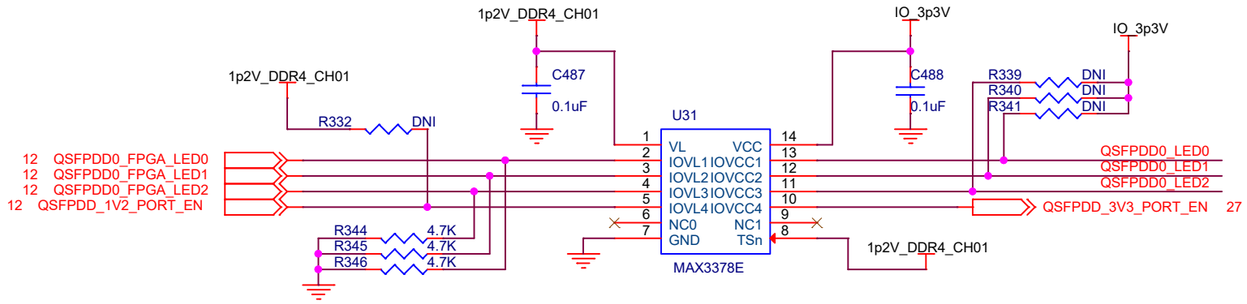

LED 1 (Green/Yellow)

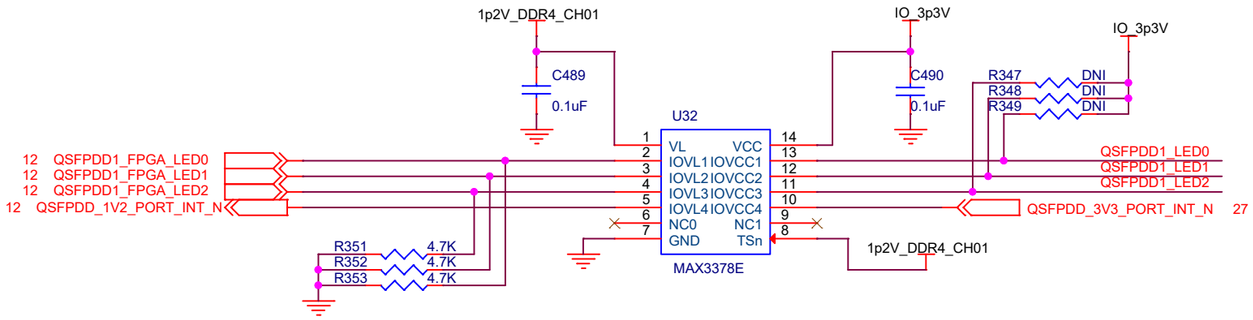


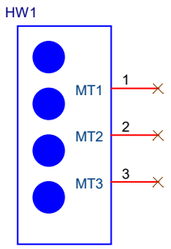

LED 2 (Green)




LED 3 (Green/Yellow)




LED3 (Green/Yellow) Port A Link

LED2 (Green) Port A Act.

LED1 (Green/Yellow) Port B Link

LED0 (Green) Port B Act.

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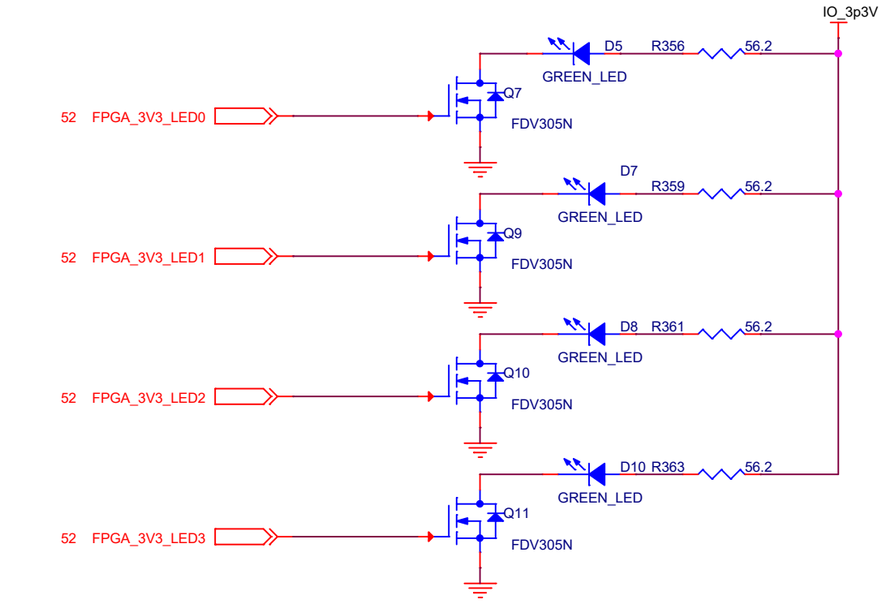
Title: **AgileX I-Series FPGA Dev Kit**

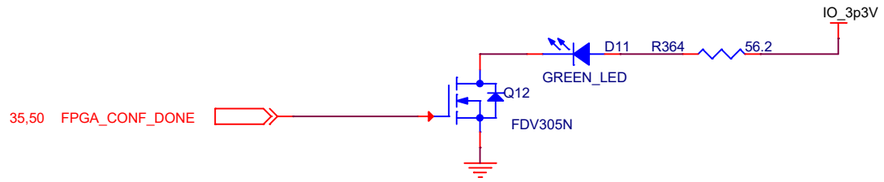


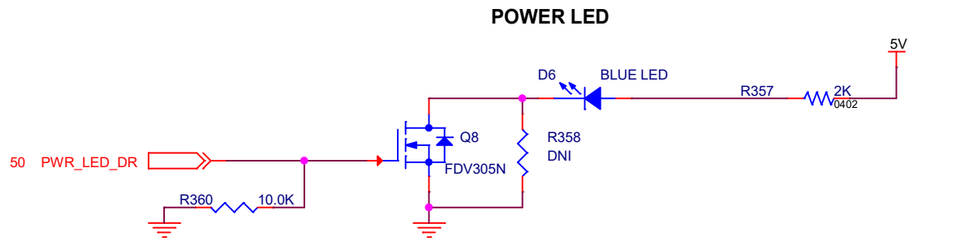
| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

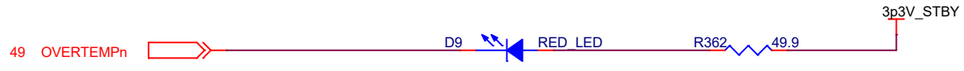
Date: Wednesday, December 23, 2020 Sheet 47 of 77

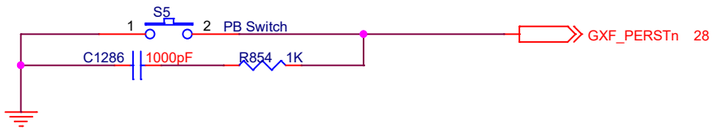
# LEDs And PushButtons

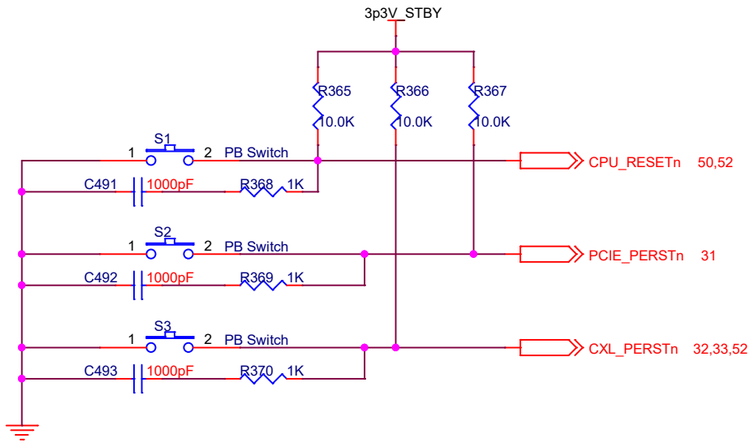


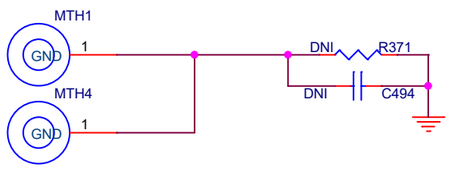



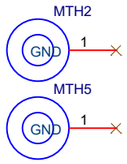




Large Mounting holes on the rear of board




Large Mounting holes on the front of board

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Title: **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 48 of 77

# UBII-MAX10 1

J8
MICRO_USB_CONN
VBUS
D-
D+
ID
VBUS_5V
FX2_D_N
FX2_D_P
R373 DNI
R375 0
4.7nF C496
U35
TPD2EUSB30
D+
D-
GND
FX2_SDA R372 0 MAX_SDA
3p3V_USBPHY
C495 0.1uF
U33
GND VCC
RESET MR
MAX811
100K R374 FX2_RESETn
S4
PB Switch
3p3V_USBPHY
U36
AVCC RESET
AVCC SCL
SDA
VCC WAKEUP
CTL0
CTL1
CTL2
DMINUS RDY0
DPLUS RDY1
IFCLK CLKOUT
XTALIN
XTALOUT
PA0 PB0
PA1 PB1
PA2 PB2
PA3 PB3
PA4 PB4
PA5 PB5
PA6 PB6
PA7 PB7
RESERVED PD0
PD1
PD2
PD3
PD4
PD5
PD6
PD7
AGND
GND
GND EXPOSED_PAD
CY7C68013A_QFN
FX2_RESETn
FX2_SCL R376 2.00K
FX2_SDA R377 2.00K
3p3V_USBPHY
FX2_WAKEUP
FX2_FLAGA
FX2_FLAGB
FX2_FLAGC
FX2_SLRDn
FX2_SLWRn
Y3
24.00MHz
C497 12pF
C498 12pF
IFCLK = 48MHz
USB_T_CLK R378 22 24M_XTALIN
24M_XTALOUT
FX2_PA0
FX2_PA1
FX2_PA2
FX2_PA3
FX2_PA4
FX2_PA5
FX2_PA6
FX2_PA7
FX2_PB0
FX2_PB1
FX2_PB2
FX2_PB3
FX2_PB4
FX2_PB5
FX2_PB6
FX2_PB7
FX2_PD0
FX2_PD1
FX2_PD2
FX2_PD3
FX2_PD4
FX2_PD5
FX2_PD6
FX2_PD7

U34-2
FX2_PA0 F5 IO_1A_F5/ADC1IN1/DIFFIO_RX_L1N
FX2_PA1 C4 IO_1A_C4/ADC2IN1/DIFFIO_RX_L2N
FX2_PA2 F4 IO_1A_F4/ADC1IN2/DIFFIO_RX_L1P
FX2_PA3 C3 IO_1A_C3/ADC2IN8/DIFFIO_RX_L2P
FX2_PA4 H5 IO_1A_H5/ADC1IN3/DIFFIO_RX_L3N
FX2_PA5 E3 IO_1A_E3/ADC2IN3/DIFFIO_RX_L4N
FX2_PA6 G5 IO_1A_G5/ADC1IN4/DIFFIO_RX_L3P
FX2_PA7 F2 IO_1A_F2/ADC2IN4/DIFFIO_RX_L4P
FX2_PB0 G2 IO_1A_G2/ADC1IN5/DIFFIO_RX_L5N
FX2_PB1 C2 IO_1A_C2/ADC2IN5/DIFFIO_RX_L6N
FX2_PB2 F1 IO_1A_F1/ADC1IN6/DIFFIO_RX_L5P
FX2_PB3 B2 IO_1A_B2/ADC2IN6/DIFFIO_RX_L6P
FX2_PB4 E1 IO_1A_E1/ADC1IN7/DIFFIO_RX_L7N
FX2_PB5 B1 IO_1A_B1/ADC2IN7/DIFFIO_RX_L8N
FX2_PB6 D1 IO_1A_D1/ADC1IN8/DIFFIO_RX_L7P
FX2_PB7 C1 IO_1A_C1/ADC2IN2/DIFFIO_RX_L8P
FX2_FLAGA J5
FX2_FLAGB H6 IO_1B_J5/DIFFIO_RX_L20N
FX2_FLAGC J3 IO_1B_H6/DIFFIO_RX_L20P
FX2_RESETn J2 IO_1B_J3/DIFFIO_RX_L22N
IO_1B_J2/DIFFIO_RX_L22P
3.3V
10M50DAF256C7G

U34-10
64 VCCH_EN
64 VCCH_PG
FX2_SCL
MAX_SDA
FX2_SLRDn
FX2_SLWRn
35 FPGA_MSEL1
CLK_MAX10_50M
32 CXL_SMB_ALERT_N
46 I2C3_SCL
USB_T_CLK
46 I2C3_SDA
73 IO_3p3V_EN
52 M10_DATA1
43,44,46,58 MAIN_I2C_SCL
43,44,46,58 MAIN_I2C_SDA
52 BMC_BUF_TCK
52 BMC_BUF_TDI
R379 0
48 OVERTEMPn
30,31 PCIE_EP_PERSTN
35 FPGA_MSEL0
74 VCCFUSE_GXR_PG
52 M10_GPIO0
R380 0
72 VTT_DDR4_CH01_EN
72 VTT_DDR4_CH2_EN
54 ED_PMBUS_ALERTn
M3 IO_2_M3/CLK0N/DIFFIO_RX_L28N
L3 IO_2_L3/CLK0P/DIFFIO_RX_L28P
J6 IO_2_J6/CLK1N/DIFFIO_RX_L36N
K6 IO_2_K6/CLK1P/DIFFIO_RX_L36P
N2 IO_2_N2/DPCLK0/DIFFIO_RX_L38N
P1 IO_2_P1/DPCLK1/DIFFIO_RX_L38P
P9 IO_3_P9/CLK6N/DIFFIO_TX_RX_B18N
P8 IO_3_P8/CLK6P/DIFFIO_TX_RX_B18P
M8 IO_3_M8/CLK7N/DIFFIO_TX_RX_B20N
M9 IO_3_M9/CLK7P/DIFFIO_TX_RX_B20P
J11 IO_6_J11/CLK2P/DIFFIO_RX_R38P
J12 IO_6_J12/CLK2N/DIFFIO_RX_R38N
J15 IO_6_J15/CLK3P/DIFFIO_RX_R40P
J16 IO_6_J16/CLK3N/DIFFIO_RX_R40N
G11 IO_6_G11/DPCLK3/DIFFIO_RX_R50P/DQS2R
G12 IO_6_G12/DPCLK2/DIFFIO_RX_R50N/DQSN2R
D9 IO_8_D9/CLK4P/DIFFIO_RX_T38P
C9 IO_8_C9/CLK4N/DIFFIO_RX_T38N
F9 IO_8_F9/DIFFIO_RX_T40P
E9 IO_8_E9/CLK5N/DIFFIO_RX_T40N
J1 IO_1B_J1/VREFB1N0
M1 IO_2_M1/VREFB2N0
T7 IO_3_T7/VREFB3N0
T13 IO_4_T13/VREFB4N0
R16 IO_5_R16/VREFB5N0
B15 IO_6_B15/VREFB6N0
A15 IO_7_A15/VREFB7N0
A9 IO_8_A9/VREFB8N0
3.3V
1.8V
3.3V
10M50DAF256C7G

FX2_PD[7:0] 51

3p3V_USBPHY
R381 DNI
VBUS_5V R382 10.0K FX2_WAKEUP
R383 20.0K C499 0.1uF

1p8V_PRE
R384 10.0K
X1
EN VCC
GND OUT
50MHz
ECS-3518-500-B-xx
R385 22.0 CLK_MAX10_50M
C500 2.2uF 0603
C501 0.1uF 0402

3p3V_STBY
FB16
600 Ohm, 0.5A, 0.35DCR
0603
3p3V_USBPHY
PLACE NEAR CY7C68013A
C502 22uF 0603
C503 0.1uF
C504 0.1uF
C505 0.1uF
C506 0.1uF
C507 0.1uF
C508 0.1uF
C509 0.1uF
C510 0.1uF

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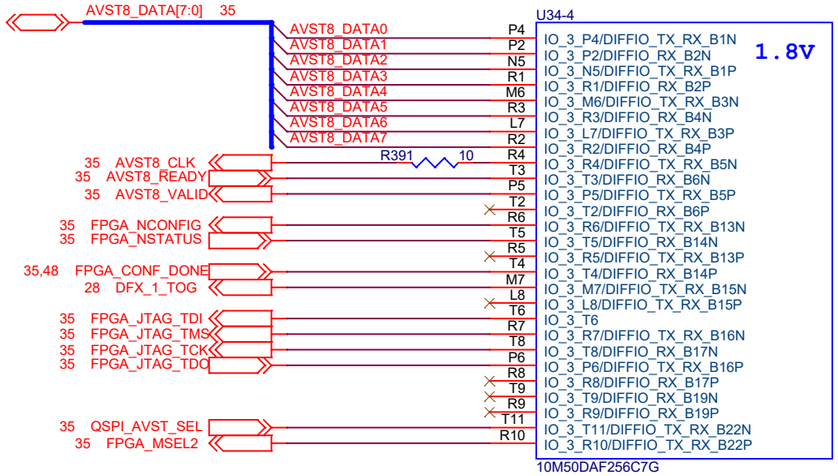
Title: AgileX I-Series FPGA Dev Kit

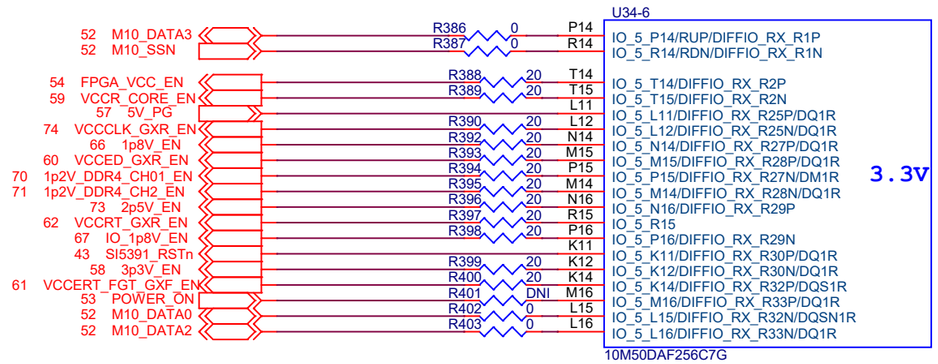


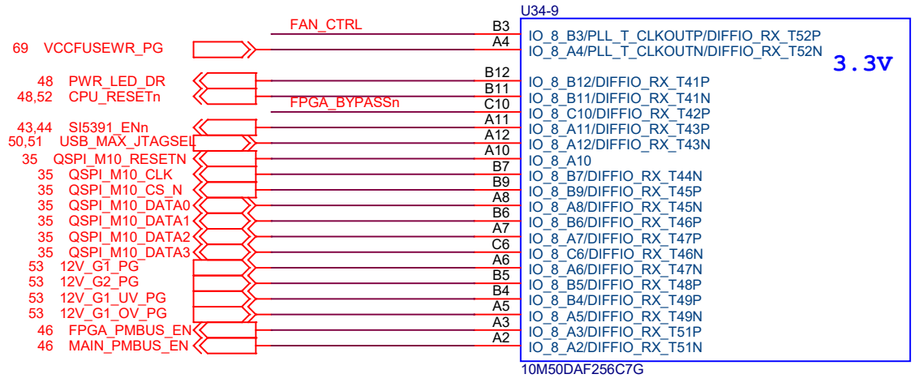
Size: B
Document Number: M17472 (M17471-100)
Rev: A0
Date: Wednesday, December 23, 2020
Sheet 49 of 77

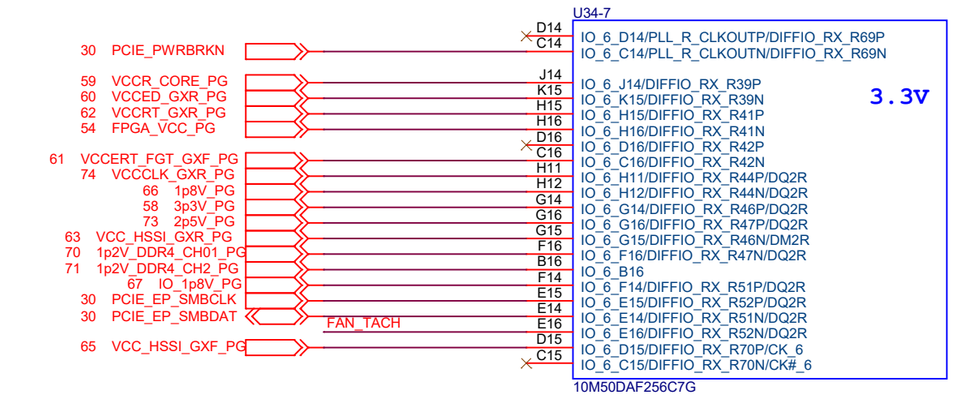
# UBII-MAX10 2

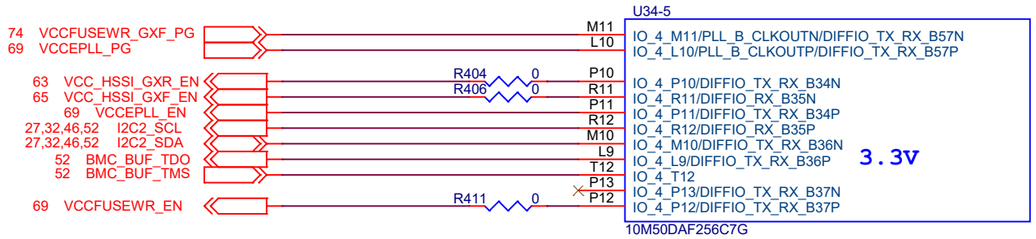
AVST_READY must be double registered inside MAX10 for syncronization to AVST_CLK

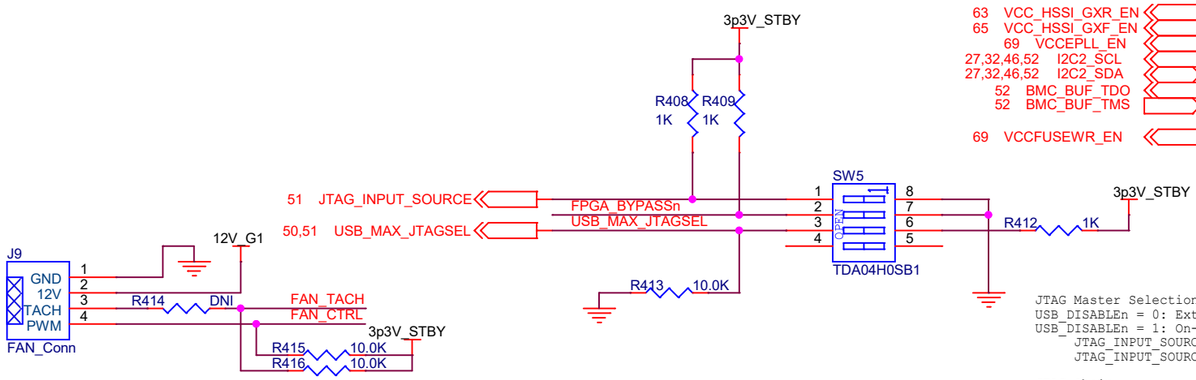



```
JTAG Master Selection:
USB_DISABLEn = 0: External JTAG
USB_DISABLEn = 1: On-Board UBII/PCIe EP Edge
     JTAG_INPUT_SOURCE = 0: PCIe EP edge
     JTAG_INPUT_SOURCE = 1: On-Board UBII

JTAG Chain:
SW4_2 = Low : Bypass
SW4_2 = High: Enable
```

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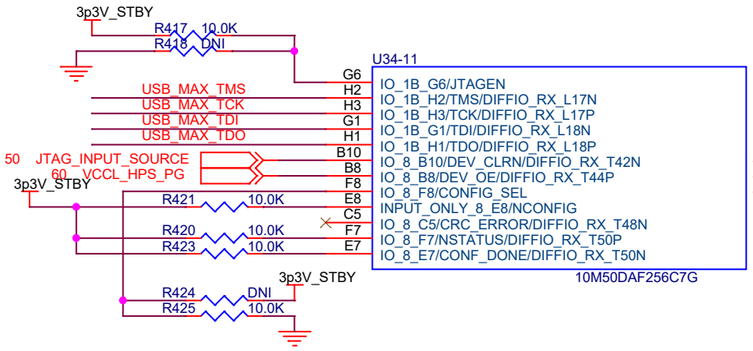
Title: AgileX I-Series FPGA Dev Kit

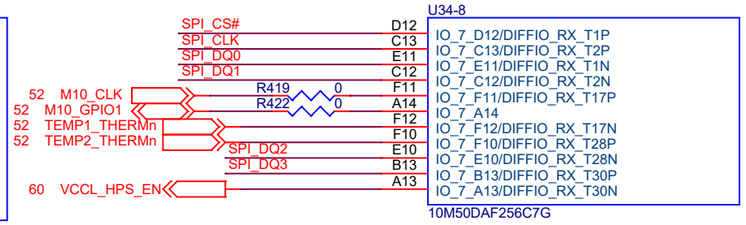


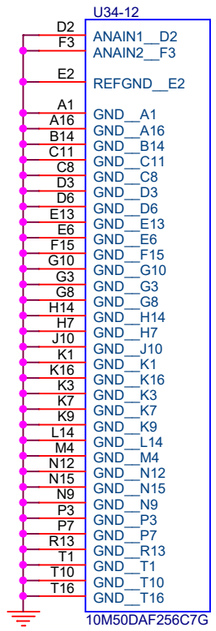
| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

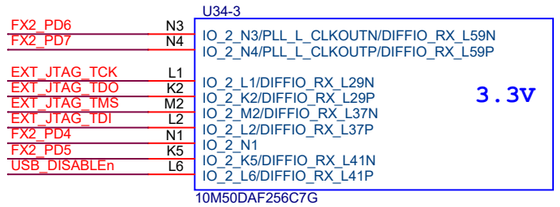
Date: Wednesday, December 23, 2020 Sheet 50 of 77

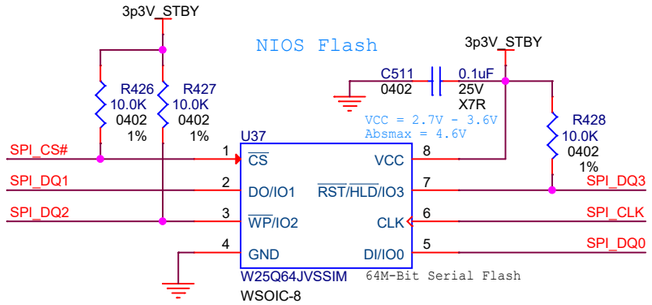
# MAX 10 PWR Manager 1



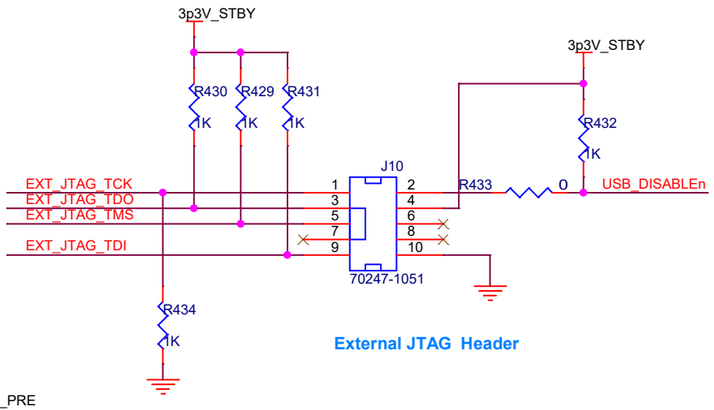



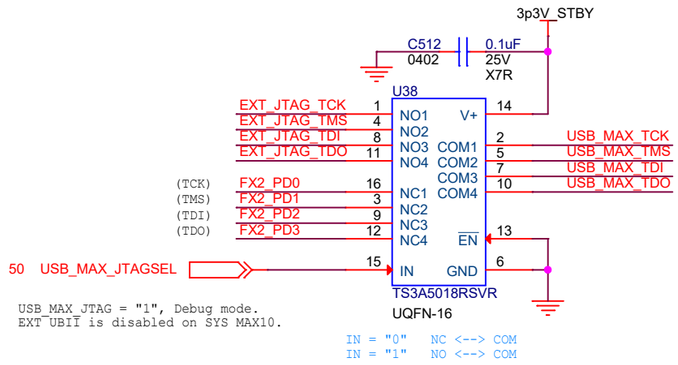



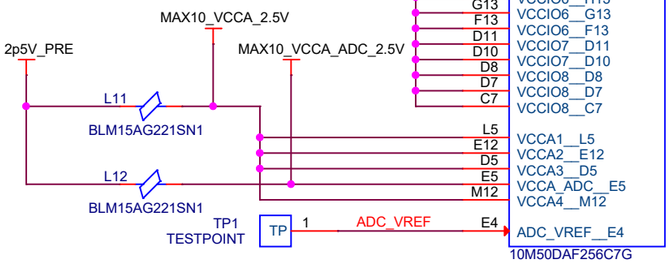





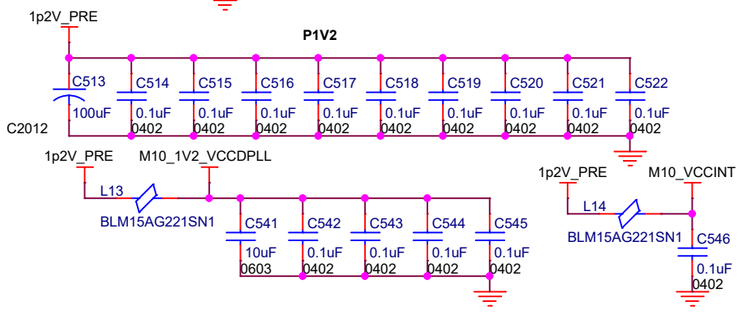


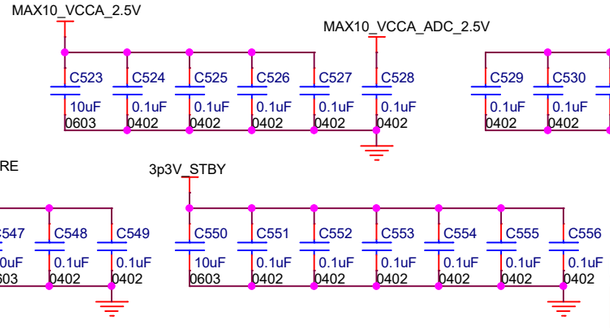



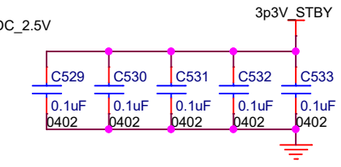



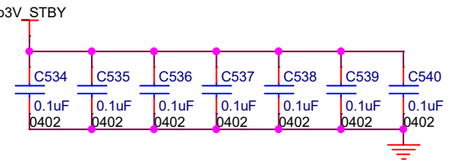








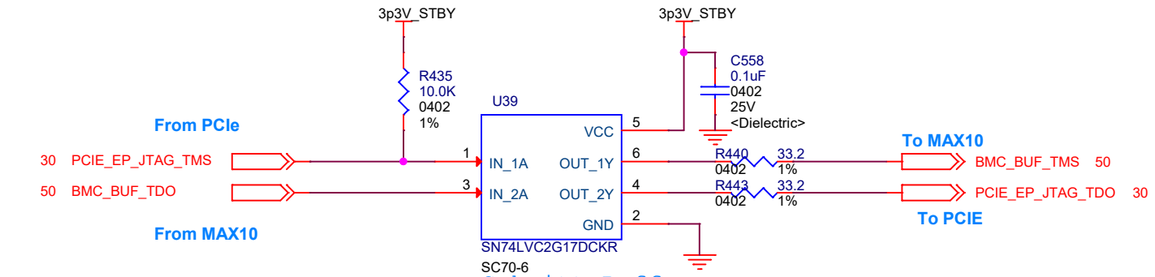

Title: **AgileX I-Series FPGA Dev Kit**

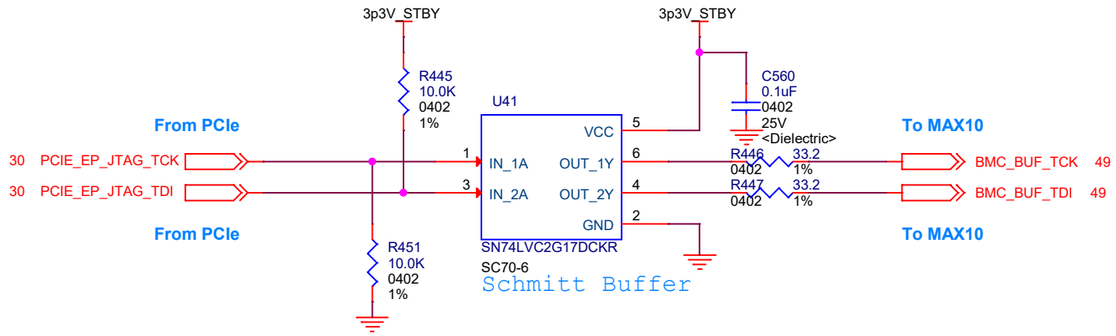


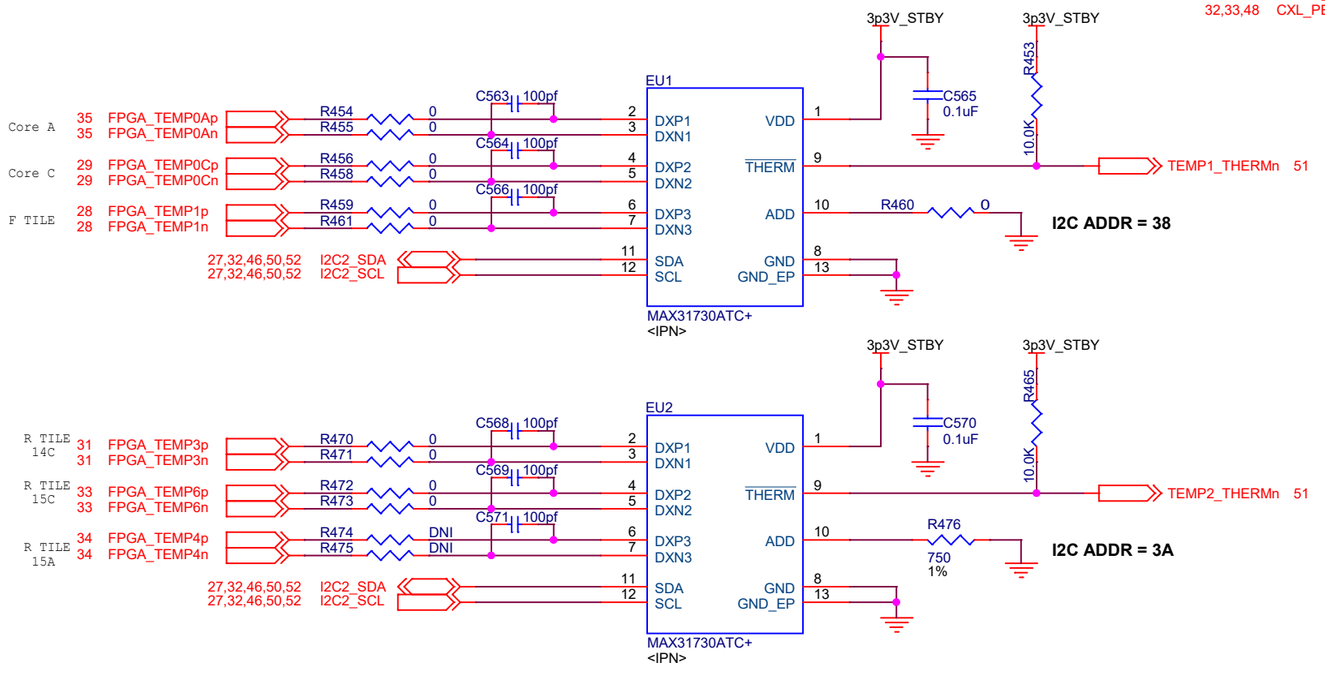
| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

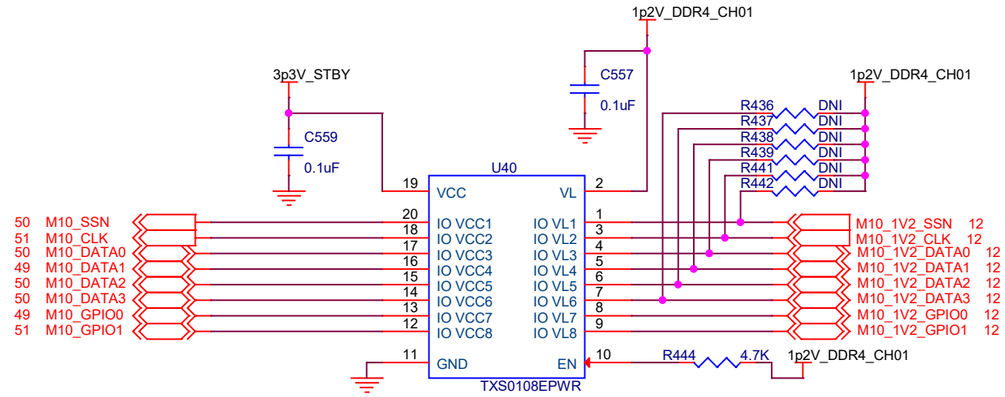
Date: Wednesday, December 23, 2020 Sheet 51 of 77

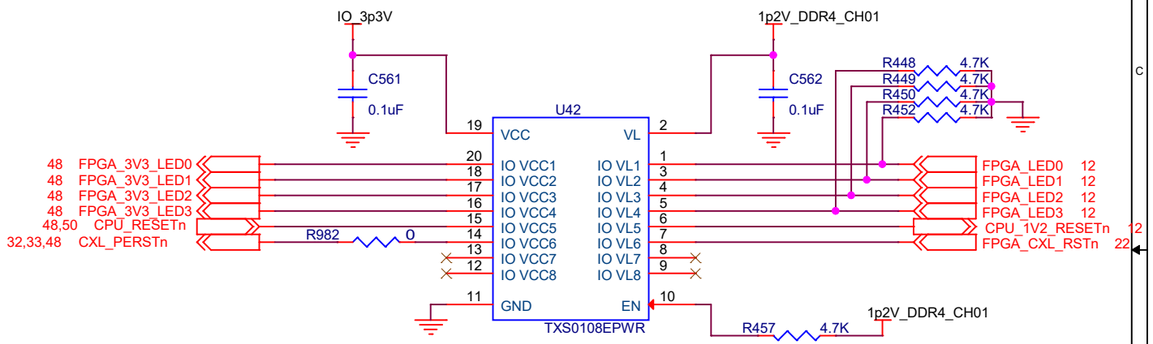
# Level Shifter

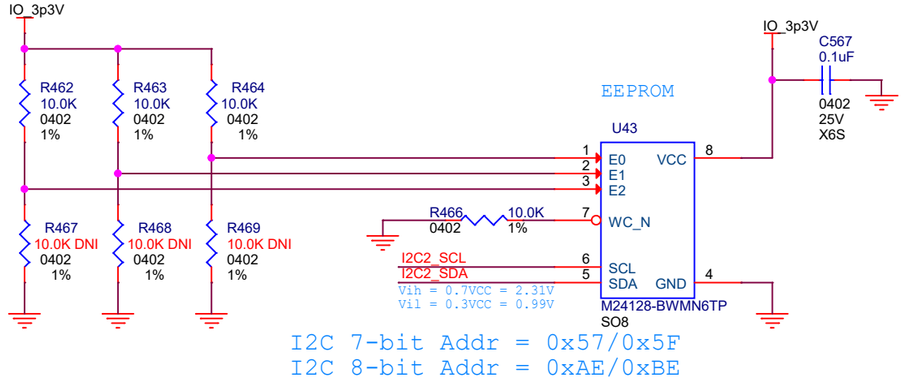
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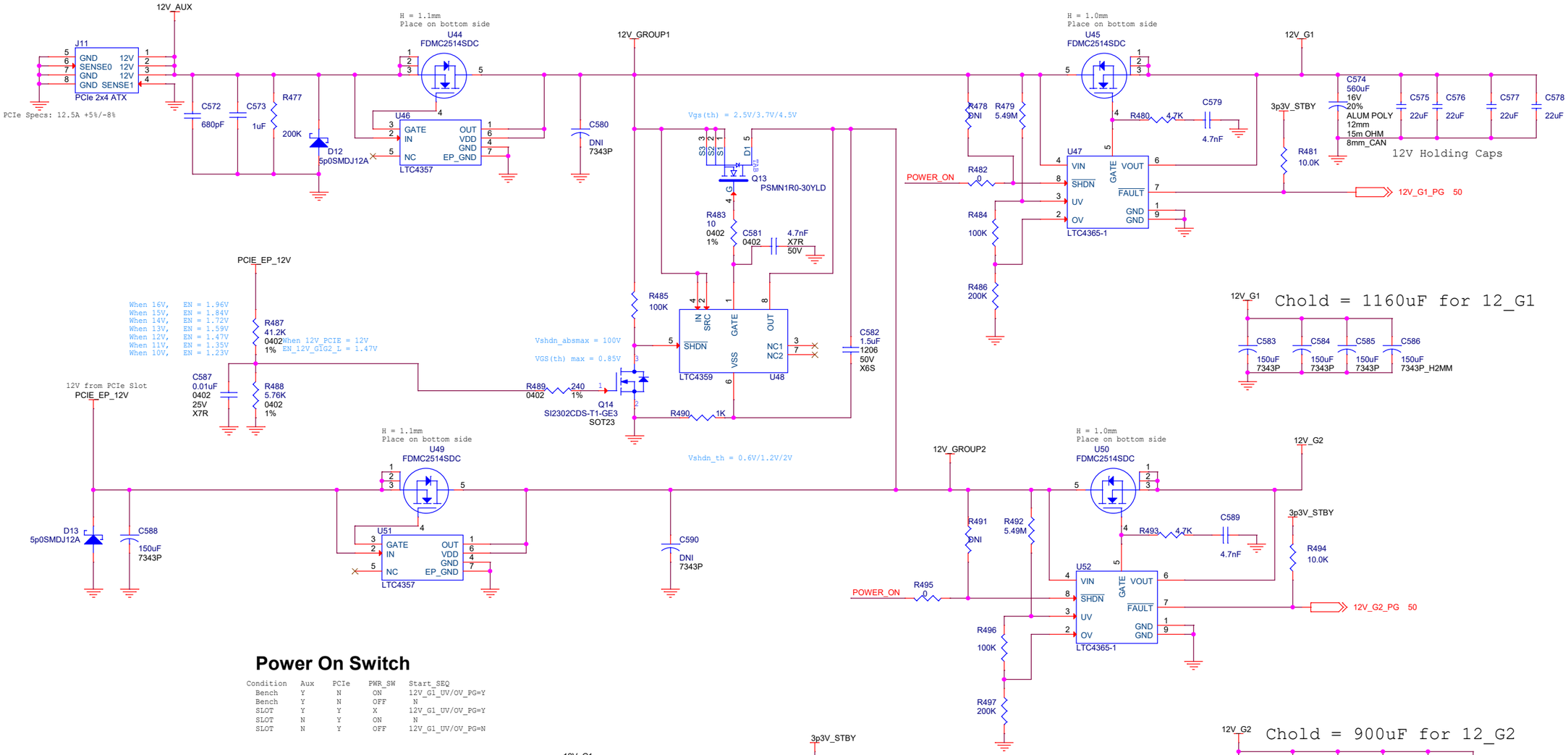
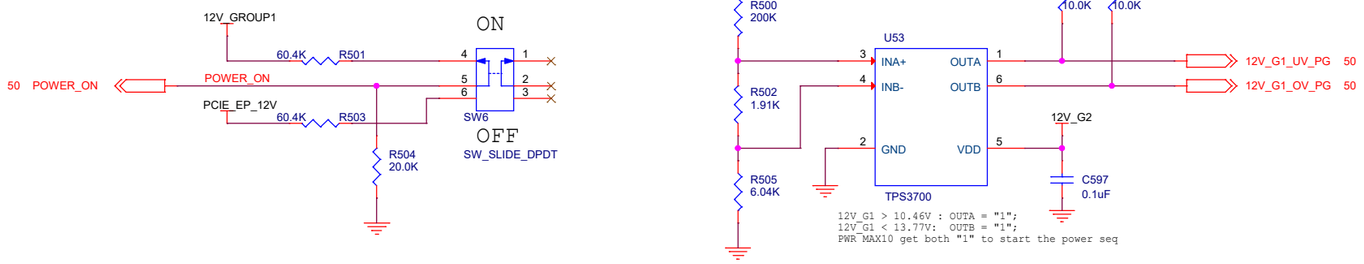
| | | |
|---|---|---|
| Title | AgileX I-Series FPGA Dev Kit | |
| Size: B | Document Number: M17472 (M17471-100) | Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 52 of 77 | |

# Power - Select Power Input




## Power On Switch

| Condition | Aux | PCIe | PWR_SW | Start_SEQ |
|---|---|---|---|---|
| Bench | Y | N | ON | 12V_G1_UV/OV_PG=Y |
| Bench | Y | N | OFF | N |
| SLOT | Y | Y | X | 12V_G1_UV/OV_PG=Y |
| SLOT | N | Y | ON | N |
| SLOT | N | Y | OFF | 12V_G1_UV/OV_PG=N |




| | |
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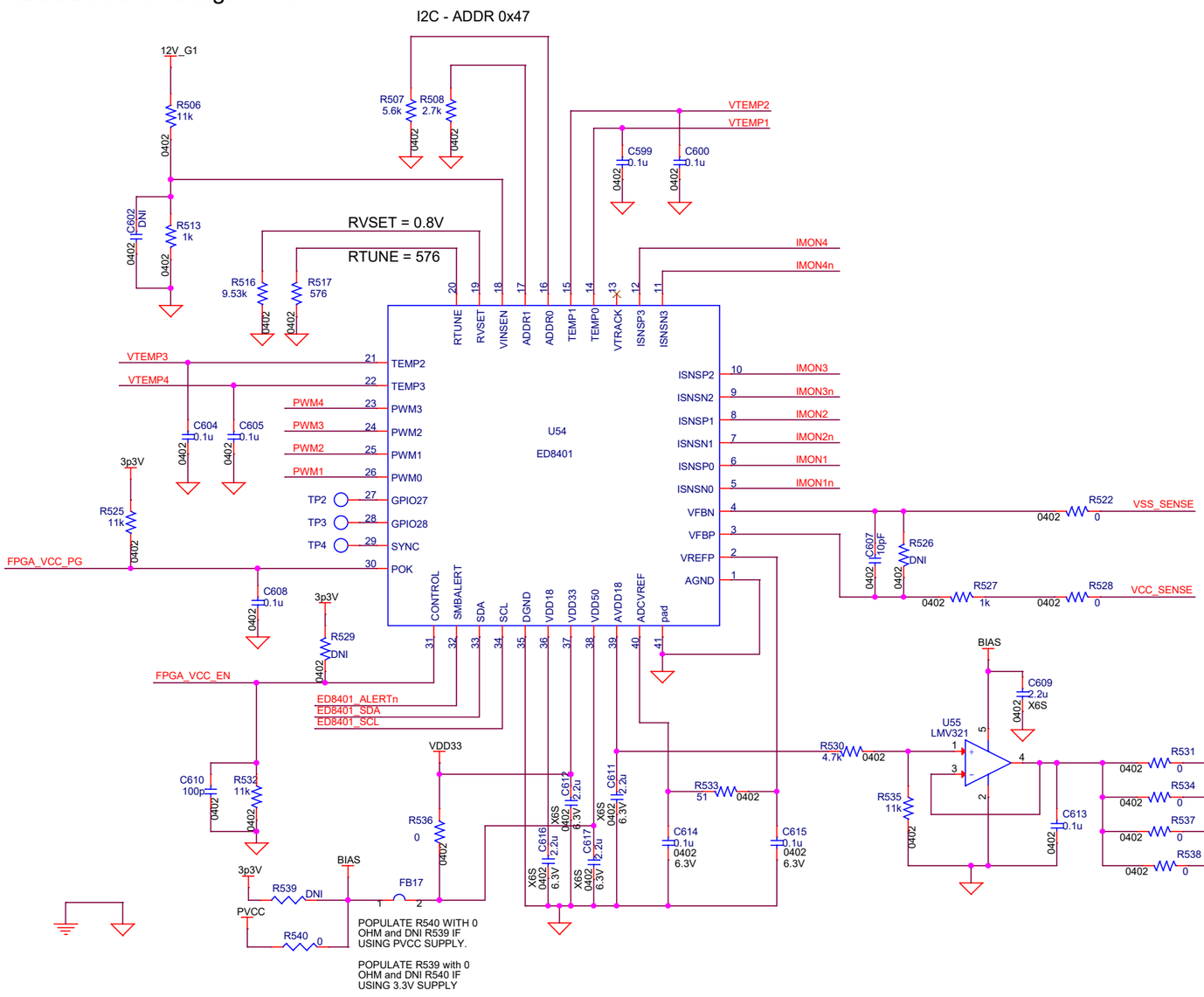
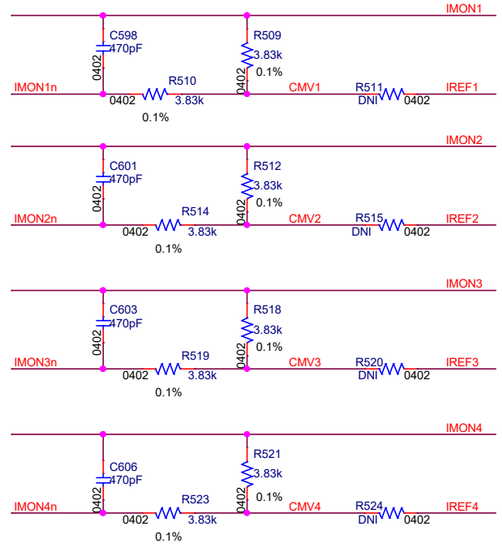
| Size: Custom | Document Number: M17472 (M17471-100) Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 53 of 77 |

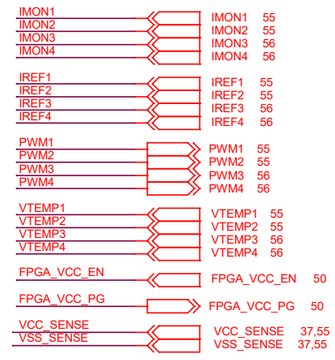
# VCC Core Controller

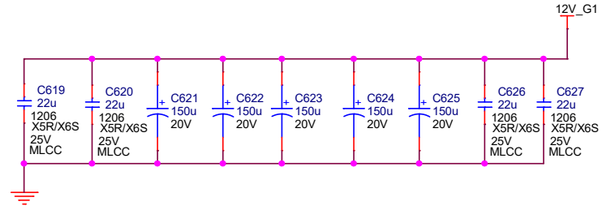
Default Core Voltage = 0.8V

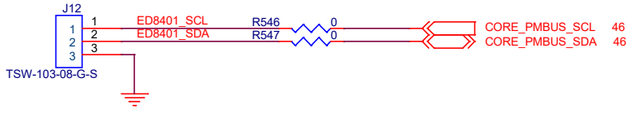
I2C - ADDR 0x47

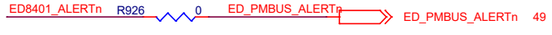
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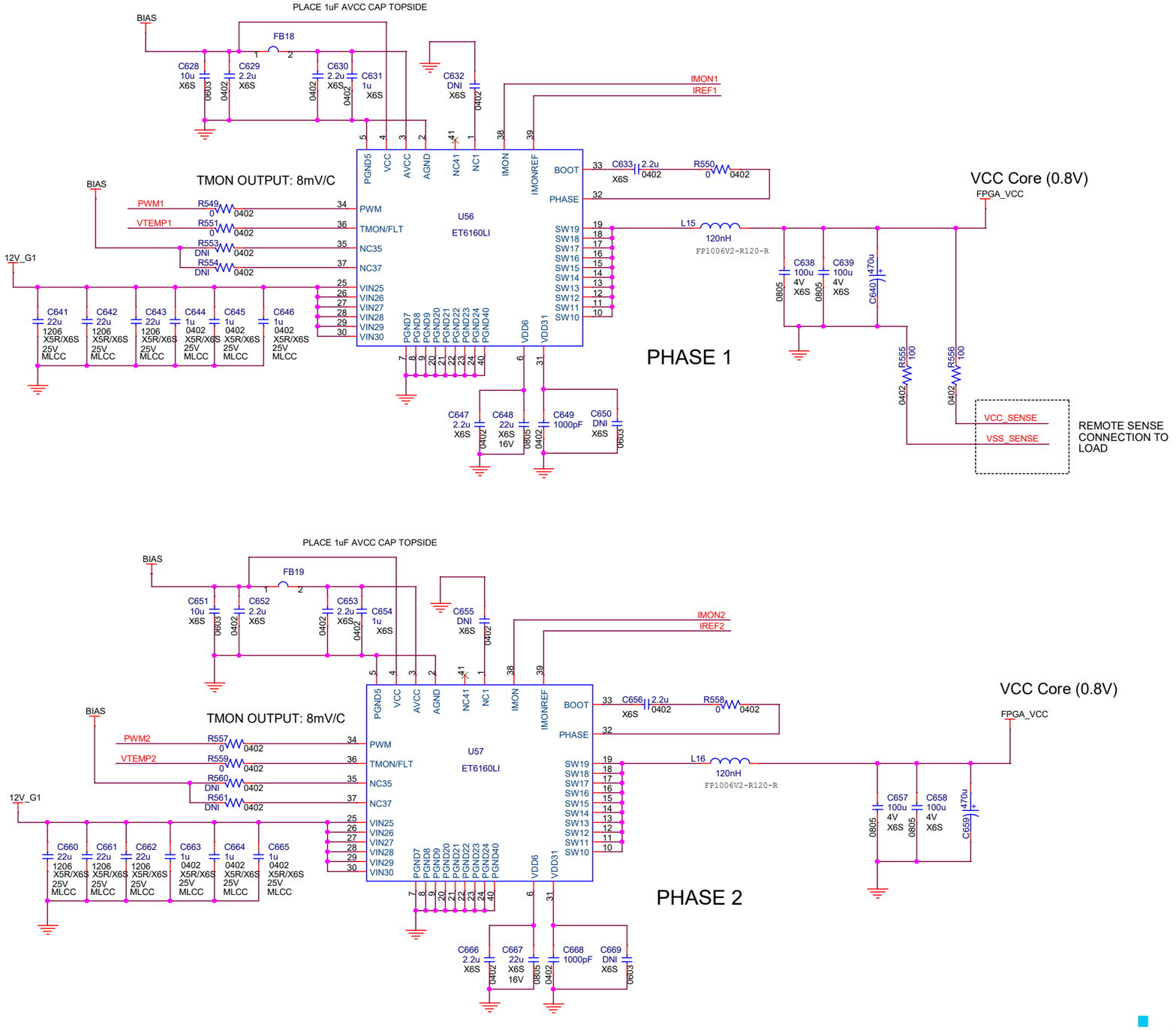
Title: AgileX I-Series FPGA Dev Kit

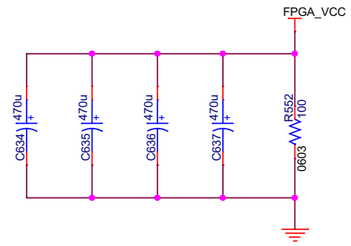


Size: Custom | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 54 of 77

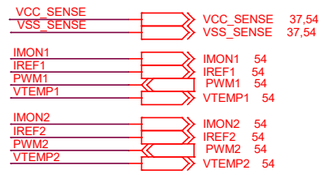
# VCC Core Phase 1 - 2




NOTE: Part Attributes of components on this page may not match up to the component's manufacturer's part number!

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Title: **AgileX I-Series FPGA Dev Kit**

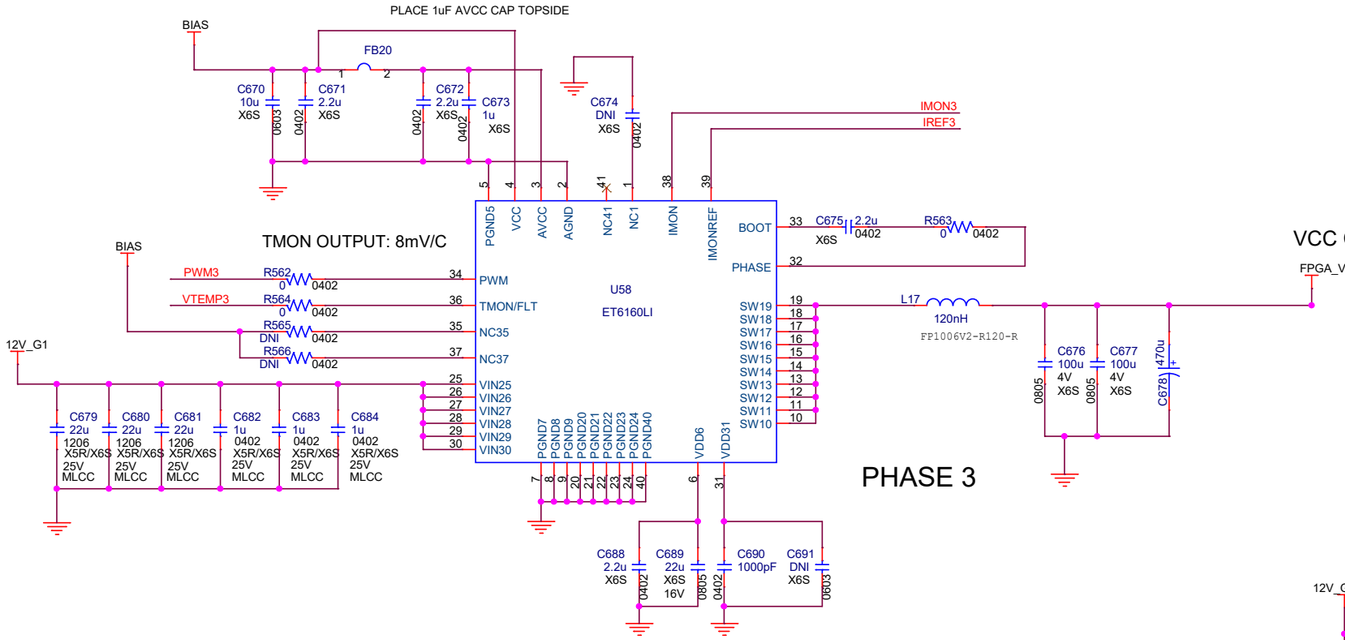


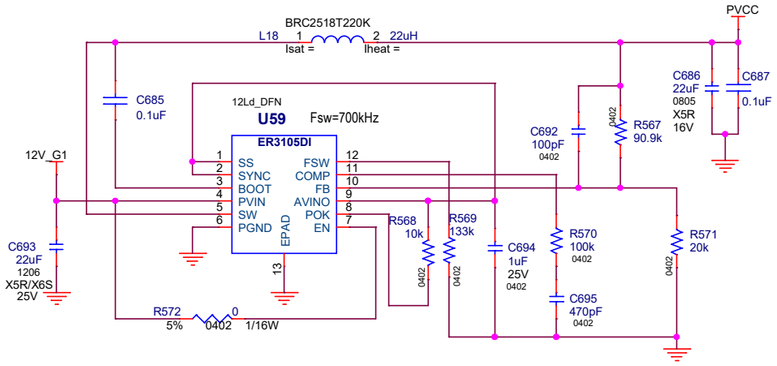
Size: Custom | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 55 of 77

# VCC Core Phase 3 - 4

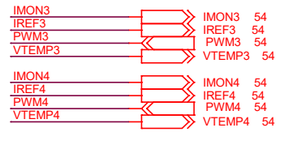
NOTE: Part Attributes of components on this page may not match up to the component's manufacturer's part number!







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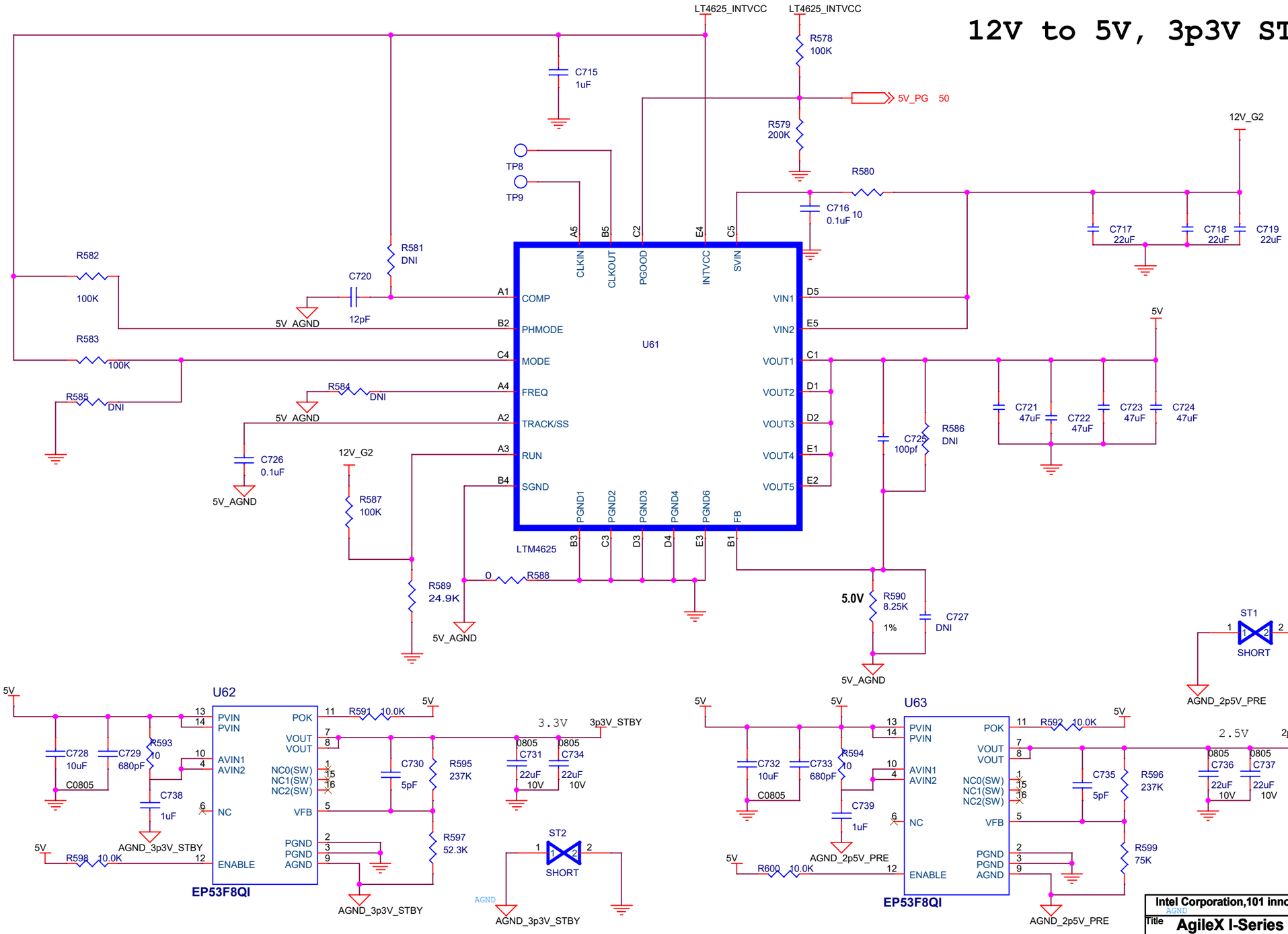
Title: AgileX I-Series FPGA Dev Kit



Size: Custom | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 56 of 77

# 12V to 5V, 3p3V STBY, 2p5V_PRE







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Title: **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 57 of 77

# MAIN 12V to 3.3V

TP10
TESTPOINT
TP (Top Side 30mil pad, No Via)

VDD33_OUT1
R601 10.0K
50 3p3V_PG

3.3V output
R603 576 0402
R602 0
3p3V_AGND 3p3V_AGND

50 3p3V_EN
R604 4.7K
VDD33_OUT1
R612 10.0K
R613 DNI
R614 DNI

PMBus Address = 0X4E
R606 2.74K 0402
R607 22K 0402
3p3V_AGND

59,63,65 EM_PMBUS_ALERTn
R617 0
59,63,65 EM_SDA
59,63,65 EM_SCL

R615 DNI 0402
VDD33_OUT1

12V_G2

C752 22uF
C753 22uF
C754 22uF
C755 22uF
C756 22uF
C757 22uF
C758 22uF

R619 11K 0402 0.1%
R620 1K 0402 0.1%
C760 DNI 0402
3p3V_AGND
3p3V_AGND

C759 10uF 1206

**U64**
**EM2130H**

VOUT_PAD 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82

| | | | |
|---|---|---|---|
| 1 | VOUT | VOUT | 81 |
| 2 | VOUT | VOUT | 80 |
| 3 | VOUT | VOUT | 79 |
| 4 | RVSET | VCCSEN | 78 |
| 5 | RTUNE | VTRACK | 77 |
| 6 | VINSEN | NC76 | 76 |
| 7 | ADDR1 | NC75 | 75 |
| 8 | ADDR0 | NC74 | 74 |
| 9 | PWM | NC73 | 73 |
| 10 | SYNC | VSENN | 72 |
| 11 | PGOOD | VSENP | 71 |
| 12 | CONTROL | AGND_PAD | 102 |
| 13 | SMBALERT | AGND | 70 |
| 14 | SDA | DGND | 69 |
| 15 | SCL | NC68 | 68 |
| 16 | VDD33 | NC67 | 67 |
| 17 | PVIN | VCC | 66 |
| 18 | PVIN | PVCC | 65 |
| 19 | PVIN | PVIN_PAD | 103 |
| 20 | PVIN | PVIN | 64 |
| 21 | PVIN | PVIN | 63 |
| 22 | PVIN | PVIN | 62 |
| 23 | PGND | PVIN | 61 |
| 24 | PGND | PVIN | 60 |
| 25 | PGND | PGND | 59 |
| 26 | PGND | PGND | 58 |
| 27 | PGND | PGND | 57 |
| 28 | PGND | PGND | 56 |
| 29 | PGND | PGND | 55 |
| 30 | PGND | PGND | 54 |
| 31 | PGND | PGND | 53 |
| 104 | PGND_PAD | PGND | 52 |
| | | PGND | 51 |

PGND 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

H = 6.6mm
Place on Top side

3p3V
3.3V
26A

C741 220uF 6.3V
C742 220uF 6.3V
C740 47UF
C743 47UF
C744 47UF
C745 47UF
C746 47UF
C747 47UF
C748 DNI
C749 1uF 0603

R608 10.0K
R609 3.3k 0402
R611 DNI 0402
VDD33_OUT1
3p3V_AGND

R610 0
R605 0
Place sense lines at the load

C750 DNI 0402
R616 1K 0402
R618 2K 0402

3p3V_AGND
FB24 742792780 0402
5V
C751 2.2uF 10V X6S

ST3
1 2
SHORT
AGND
PGND
3p3V_AGND

Enpirion Dongle

J13
1 EM_SCL R621 0 MAIN_I2C_SCL 43,44,46,49
2 EM_SDA R622 0 MAIN_I2C_SDA 43,44,46,49
3
TSW-103-08-G-S

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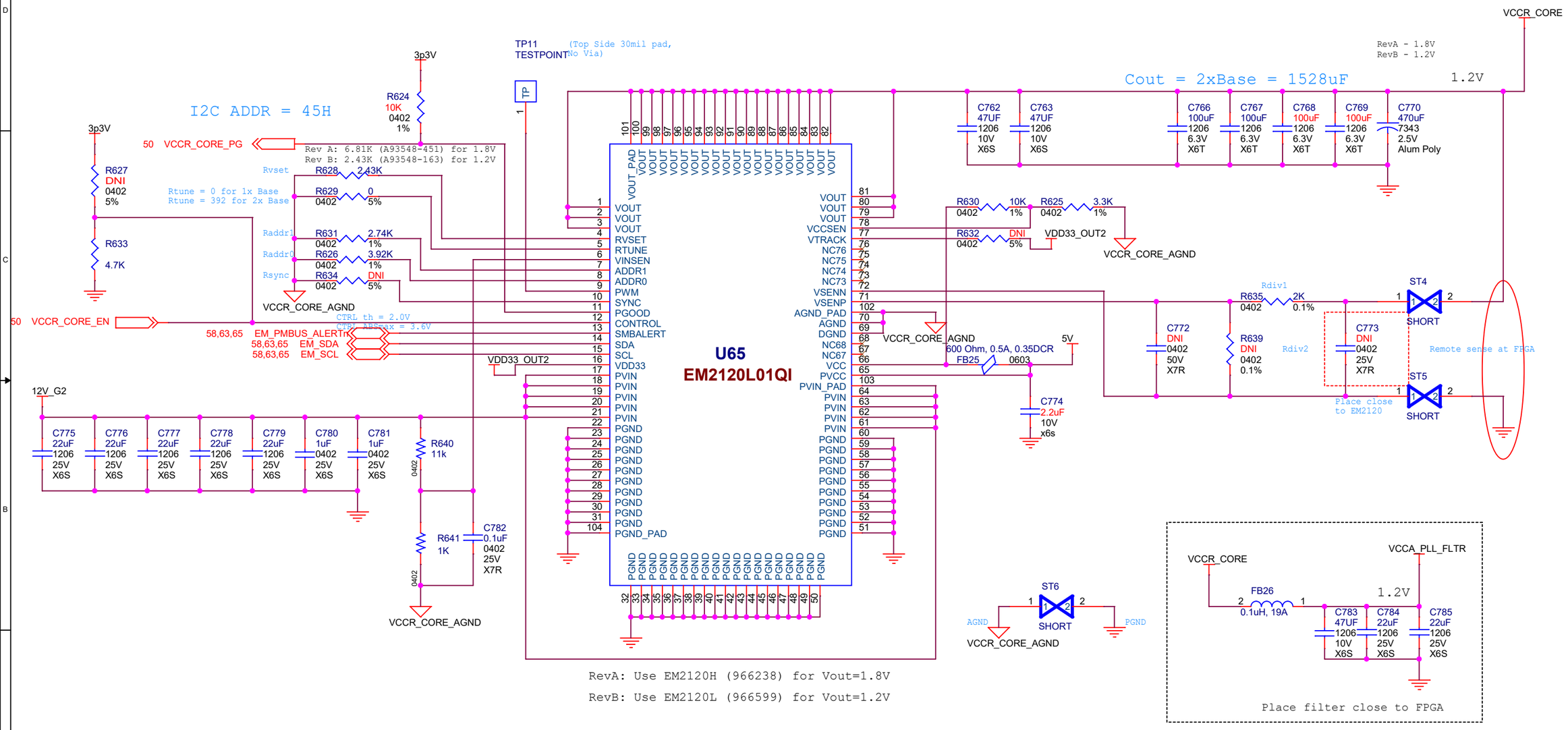
| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 58 of 77

# PWR - VCCR_CORE, VCCA_PLL




RevA: Use EM2120H (966238) for Vout=1.8V

RevB: Use EM2120L (966599) for Vout=1.2V

| | | |
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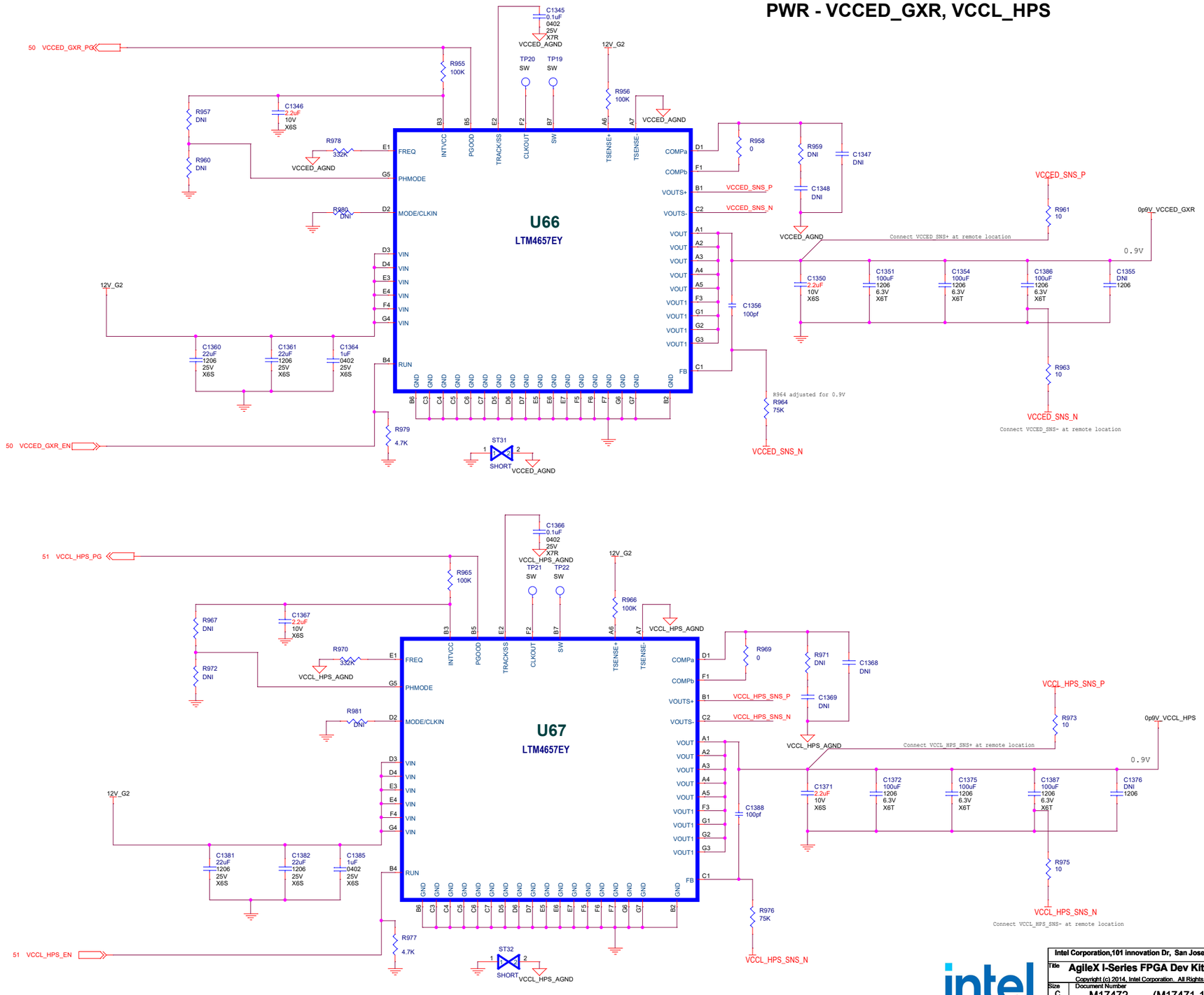
| Date: Wednesday, December 23, 2020 | Sheet 59 of 77 | |

# PWR - VCCED_GXR, VCCL_HPS

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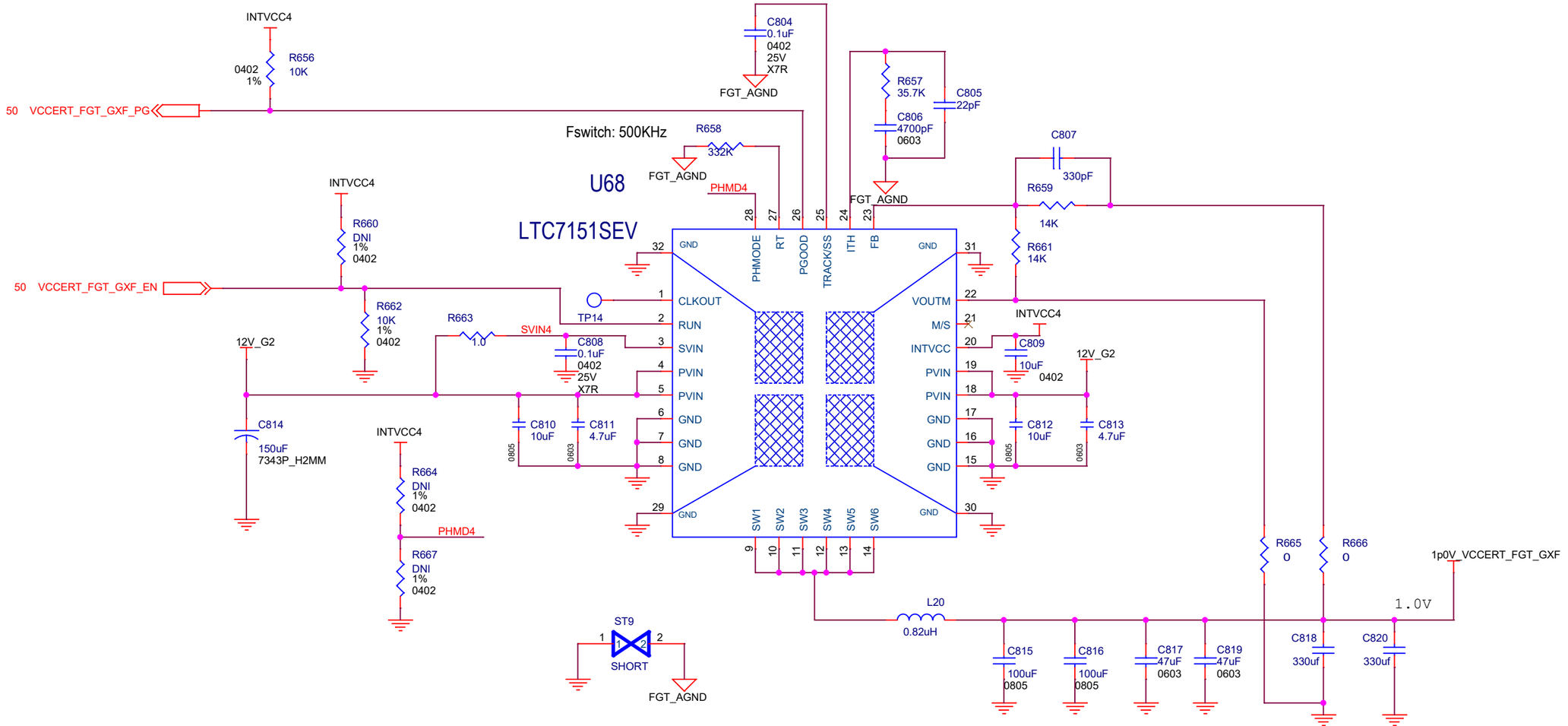
| Size | Document Number | Rev |
|---|---|---|
| C | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 60 of 77

# PWR - VCCERT_FGT_GXF

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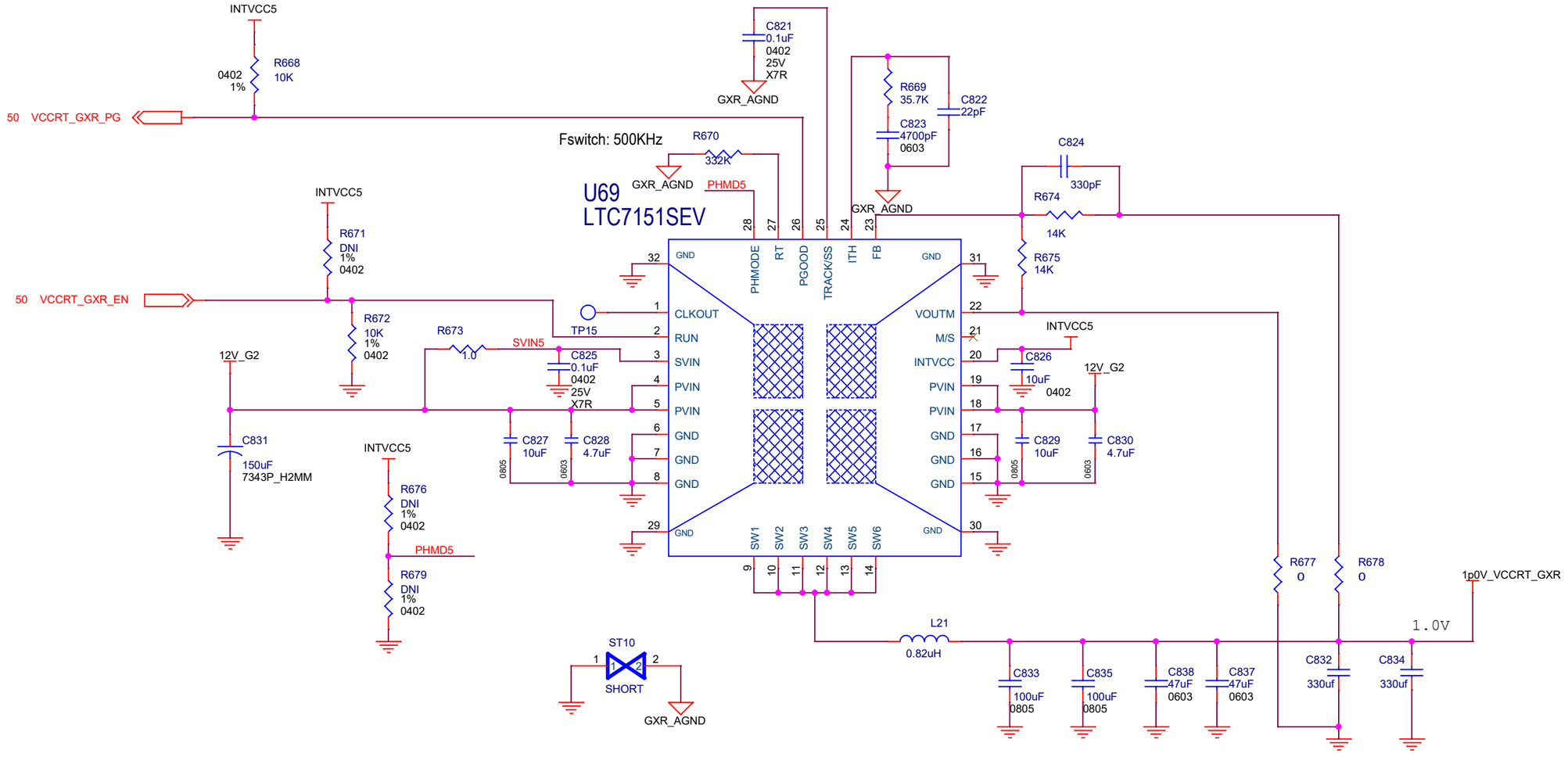
| Date: Wednesday, December 23, 2020 | Sheet 61 of 77 |

# PWR - VCCRT_GXR

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| Date: Wednesday, December 23, 2020 | Sheet 62 of 77 |

# PWR - VCC_HSSI_GXR





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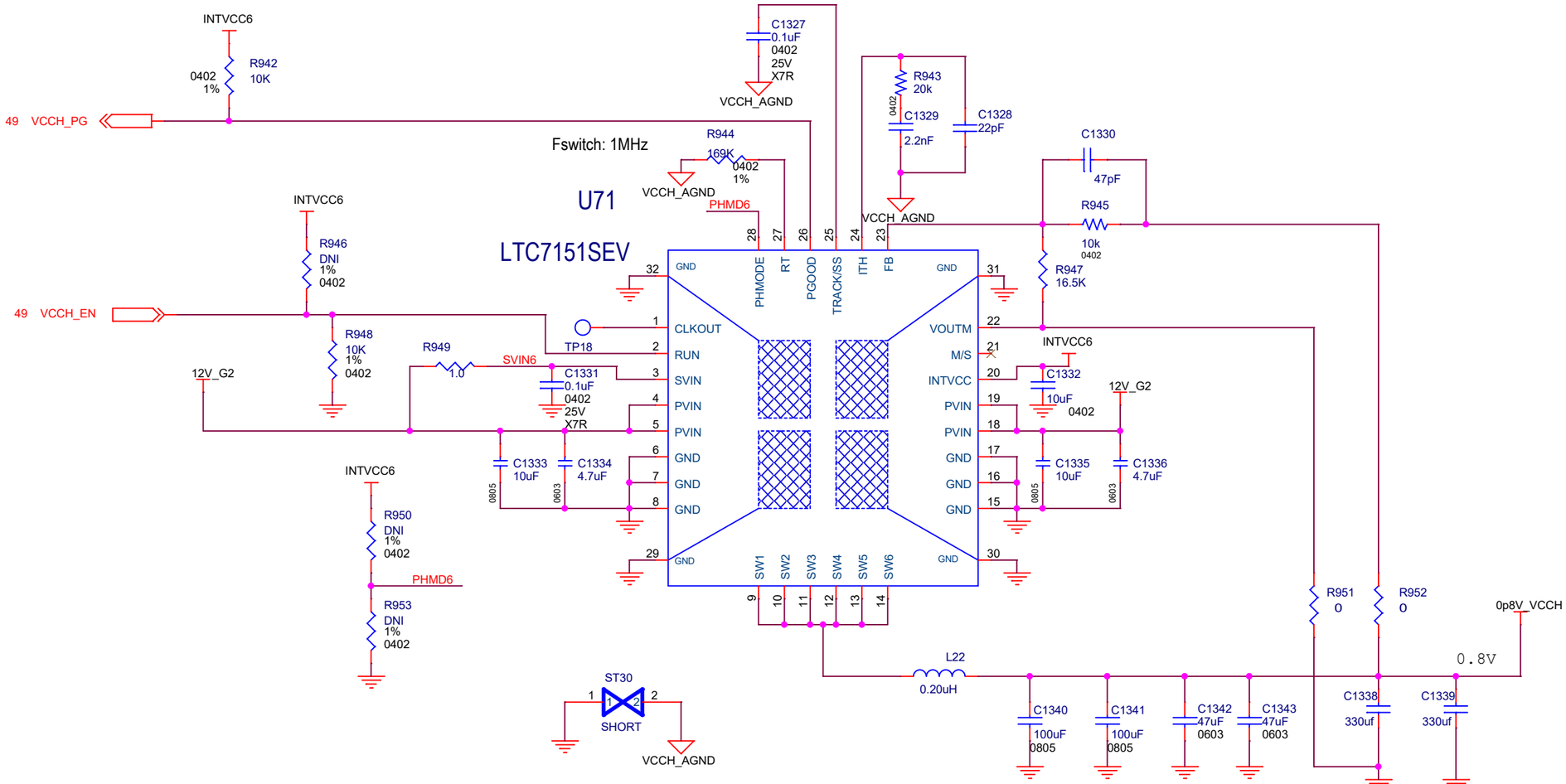
Title: AgileX I-Series FPGA Dev Kit



Size: B | Document Number: M17472 (M17471-100) | Rev: A0

Date: Wednesday, December 23, 2020 | Sheet 63 of 77

# Power - VCCH

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| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 64 of 77

# PWR - VCC_HSSI_GXF, VCCPLLDIG_SDM

Speed

I2C ADDR = 46H

3p3V

50 VCC_HSSI_GXF_PG

R713 DNI 0402 5%

R719 4.7K

Rvset
Set for 0.8V
Rtune = 0 for 1x Base
Rtune = 392 for 2x Base

R=15.8K for Vout 0.8V

R714 15.8K
R715 0 0402 5%
R717 2.74K 0402 1%
R712 4.7K
R720 DNI 0402 5%

Raddr1
Raddr0
Rsync

HSSI_GXF_AGND

50 VCC_HSSI_GXF_EN
58,59,63 EM_PMBUS_ALERTn
58,59,63 EM_SDA
58,59,63 EM_SCL

CTRL th = 2.0V
CTRL ABSmax = 3.6V

3p3V TP17 TESTPOINT (Top Side 30mil pad, No Via)

R710 10K 0402 1%

TP 1

VDD33_OUT4

12V_G2

C883 22uF 1206 25V X6S
C884 22uF 1206 25V X6S
C885 22uF 1206 25V X6S
C886 22uF 1206 25V X6S
C887 22uF 1206 25V X6S
C888 1uF 0402 25V X6S
C889 1uF 0402 25V X6S

R726 11k 0402

R727 1K 0402
C890 0.1uF 0402 25V X7R

HSSI_GXF_AGND

**U72**
**EM2120L01QI**

| | | | |
|---|---|---|---|
| 1 | VOUT | VOUT | 81 |
| 2 | VOUT | VOUT | 80 |
| 3 | VOUT | VOUT | 79 |
| 4 | RVSET | VCCSEN | 78 |
| 5 | RTUNE | VTRACK | 77 |
| 6 | VINSEN | NC76 | 76 |
| 7 | ADDR1 | NC75 | 75 |
| 8 | ADDR0 | NC74 | 74 |
| 9 | PWM | NC73 | 73 |
| 10 | SYNC | VSENN | 72 |
| 11 | PGOOD | VSENP | 71 |
| 12 | CONTROL | AGND_PAD | 102 |
| 13 | SMBALERT | AGND | 70 |
| 14 | SDA | DGND | 69 |
| 15 | SCL | NC68 | 68 |
| 16 | VDD33 | NC67 | 67 |
| 17 | PVIN | VCC | 66 HSSI_GXF_AGND_FB28 |
| 18 | PVIN | PVCC | 65 |
| 19 | PVIN | PVIN_PAD | 103 |
| 20 | PVIN | PVIN | 64 |
| 21 | PVIN | PVIN | 63 |
| 22 | PVIN | PVIN | 62 |
| 23 | PGND | PVIN | 61 |
| 24 | PGND | PVIN | 60 |
| 25 | PGND | PGND | 59 |
| 26 | PGND | PGND | 58 |
| 27 | PGND | PGND | 57 |
| 28 | PGND | PGND | 56 |
| 29 | PGND | PGND | 55 |
| 30 | PGND | PGND | 54 |
| 31 | PGND | PGND | 53 |
| 104 | PGND_PAD | PGND | 52 |
| | | PGND | 51 |

VOUT_PAD: 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82

PGND: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

0p8V_VCC_HSSI_GXF

Cout = 2xBase = 1528uF

0.8V

C870 47UF 1206 10V X6S
C871 47UF 1206 10V X6S
C874 100uF 1206 6.3V X6T
C875 100uF 1206 6.3V X6T
C876 100uF 1206 6.3V X6T
C877 100uF 1206 6.3V X6T
C878 470uF 7343 2.5V Alum Poly

R716 10K 0402 1%
R711 3.3K 0402 1%
R718 DNI 0402 5%

VDD33_OUT4

HSSI_GXF_AGND

600 Ohm, 0.5A, 0.35DCR 0603

5V

C882 2.2uF 10V x6s

Rdiv1
R721 2K 0402 0.1%

Rdiv2
R725 DNI 0402 0.1%

C880 DNI 0402 50V X7R
C881 DNI 0402 25V X7R

Place close to EM2120

ST15 SHORT
ST16 SHORT

Remote sense at FBGA

ST17 SHORT

AGND
PGND
HSSI_GXF_AGND

0p8V_VCC_HSSI_GXF
FB29 120ohm, 800mA
0.8V
C891 10uF
C892 0.47uF
VCCPLLDIG_SDM

Place filter close to FPGA

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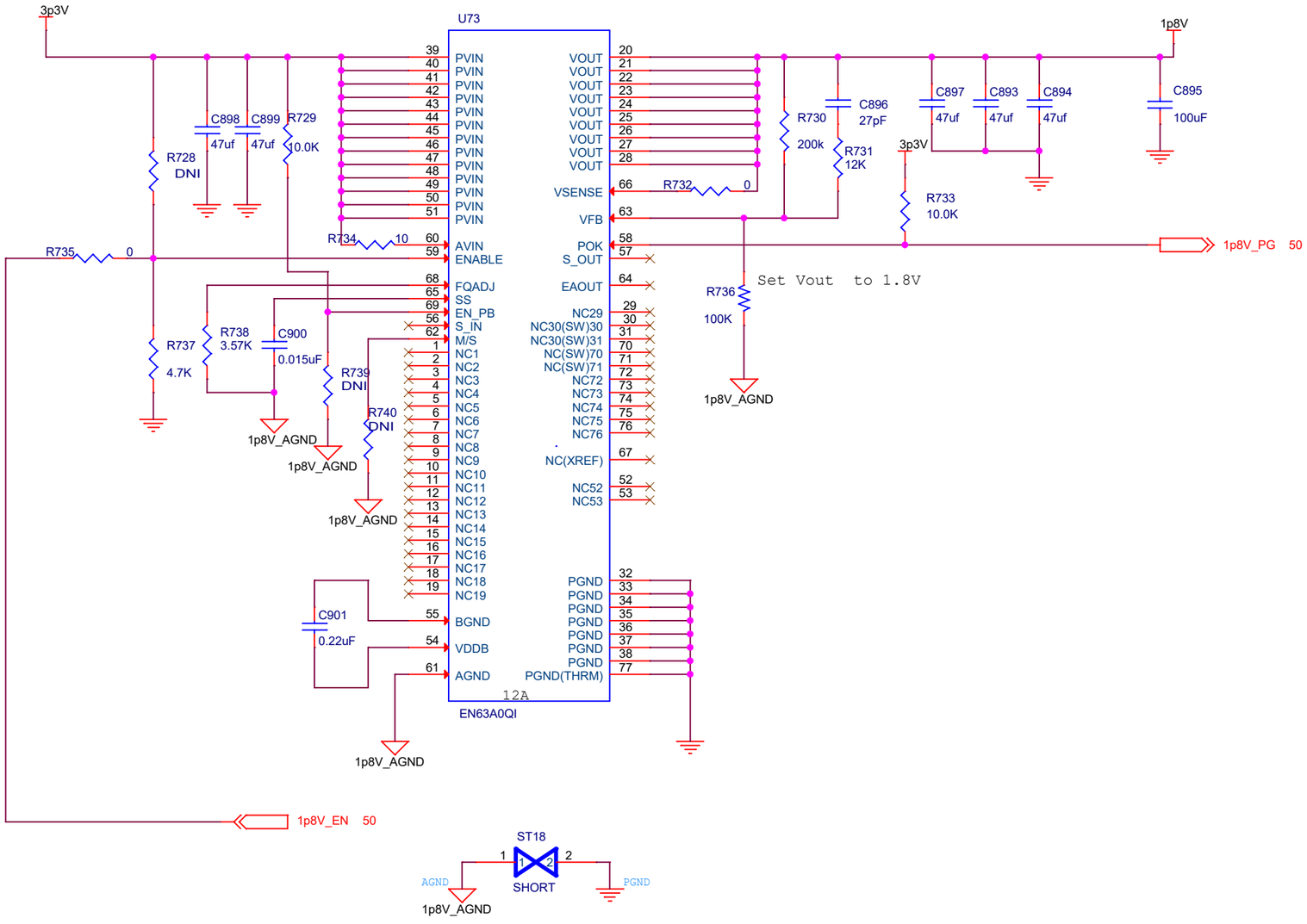
| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 65 of 77

# PWR - 1p8V

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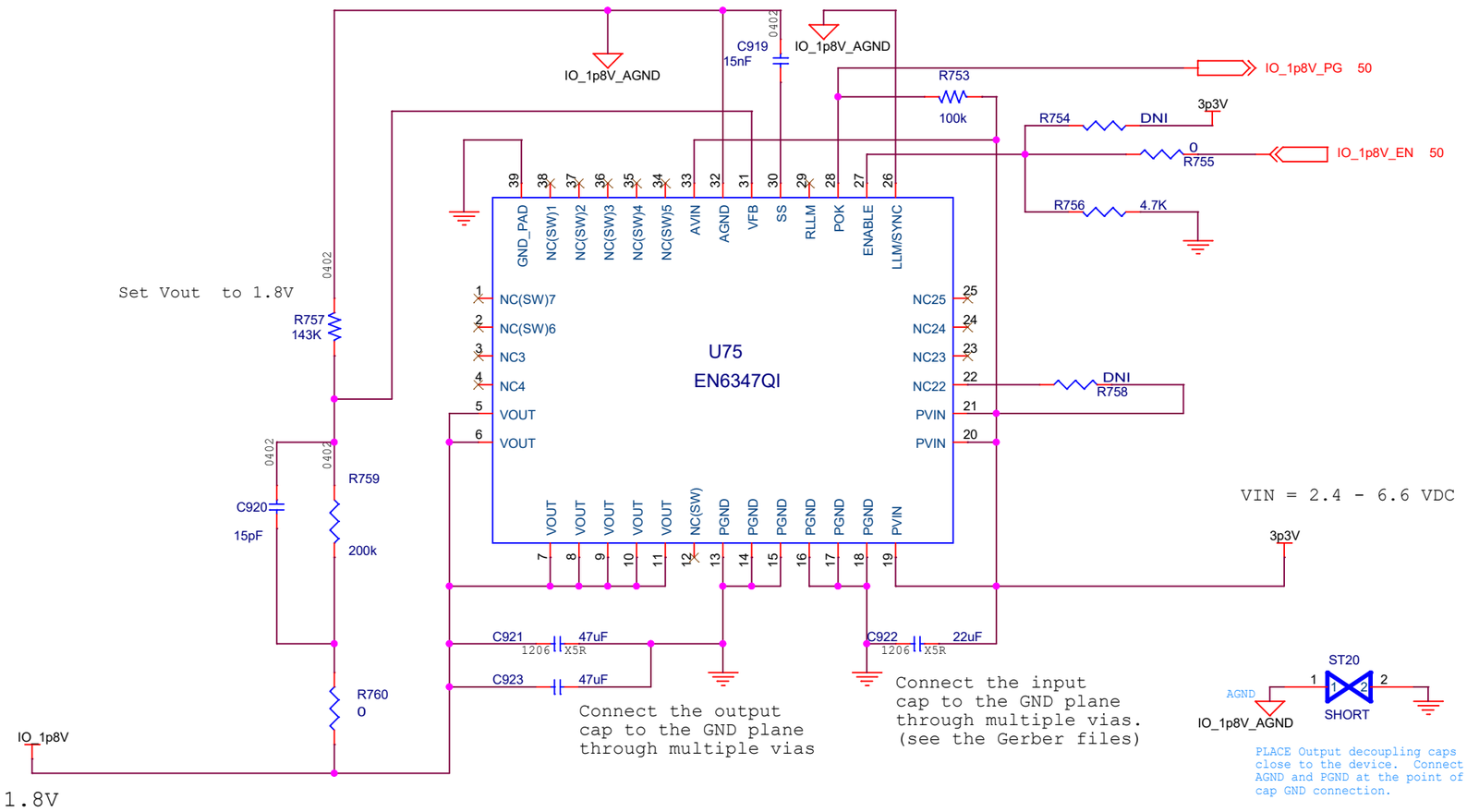
| Date: Wednesday, December 23, 2020 | Sheet 66 of 77 | |

# PWR - IO_1p8V for VCCIO_SDM, VCCIO_HPS, VCCBAT

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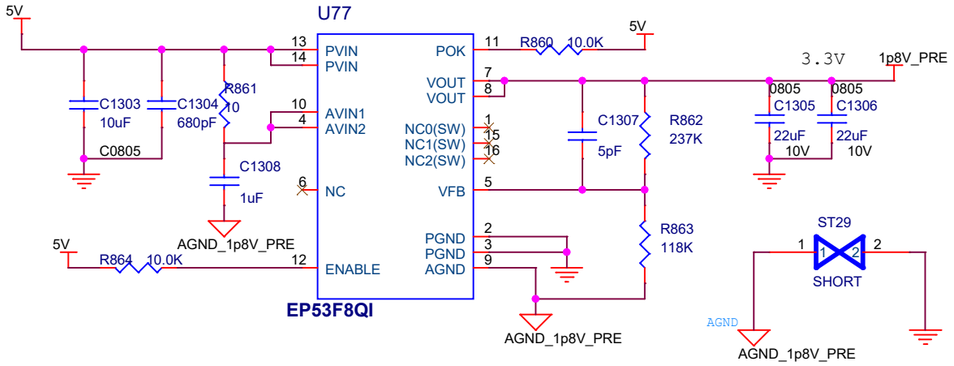
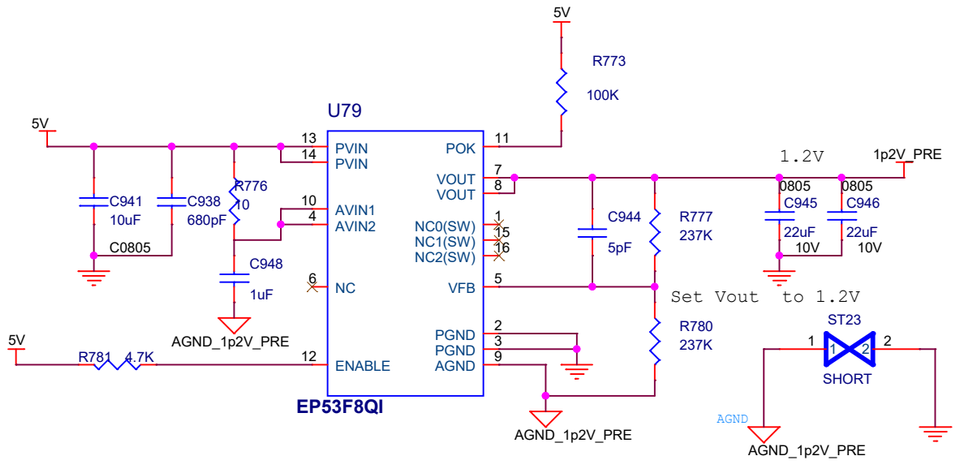
| Date: Wednesday, December 23, 2020 | Sheet 67 of 77 | |

# PWR - 1p8V_PRE,1p2V_PRE



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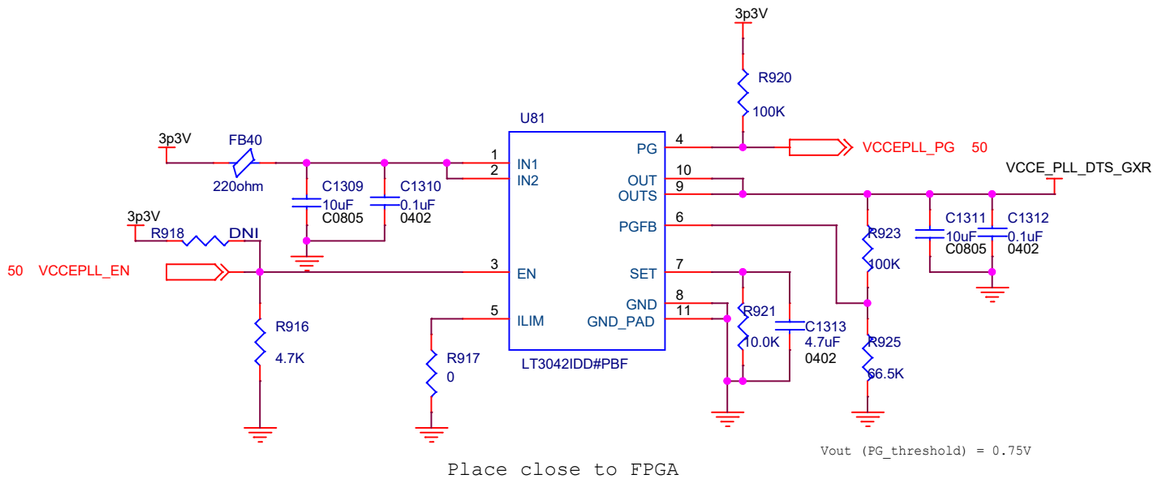
Size: B | Document Number: M17472 (M17471-100) | Rev: A0

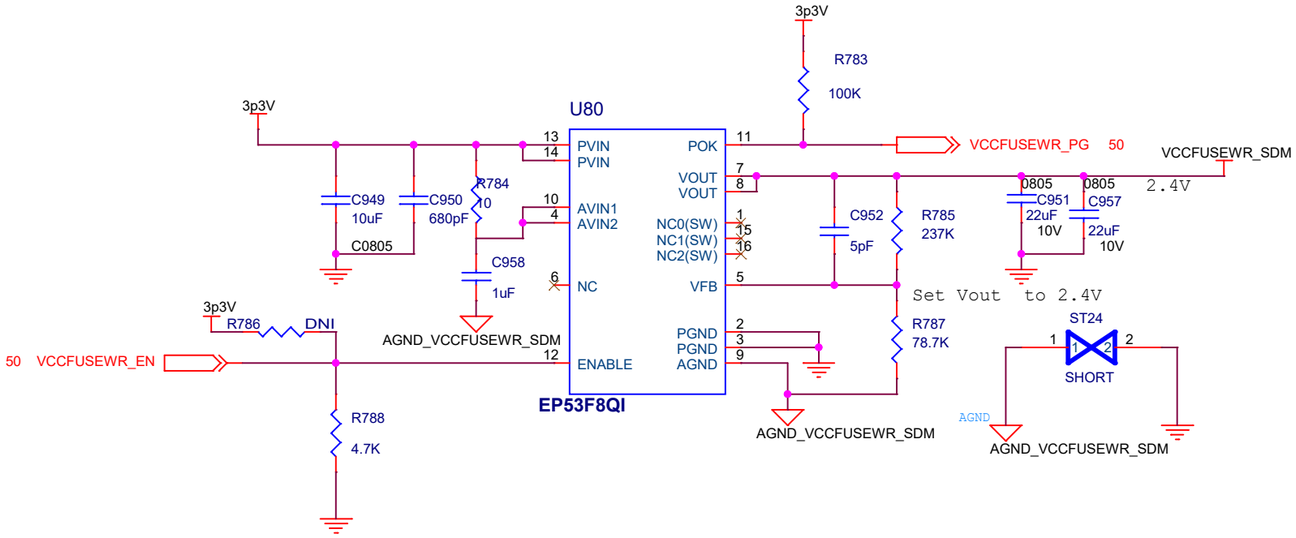
Date: Wednesday, December 23, 2020 | Sheet 68 of 77

# PWR - VCCFUSEWR_SDM




## PWR - VCCE_PLL_GXR, VCCE_DTS_GXR

## PWR - VCCFUSEWR_SDM

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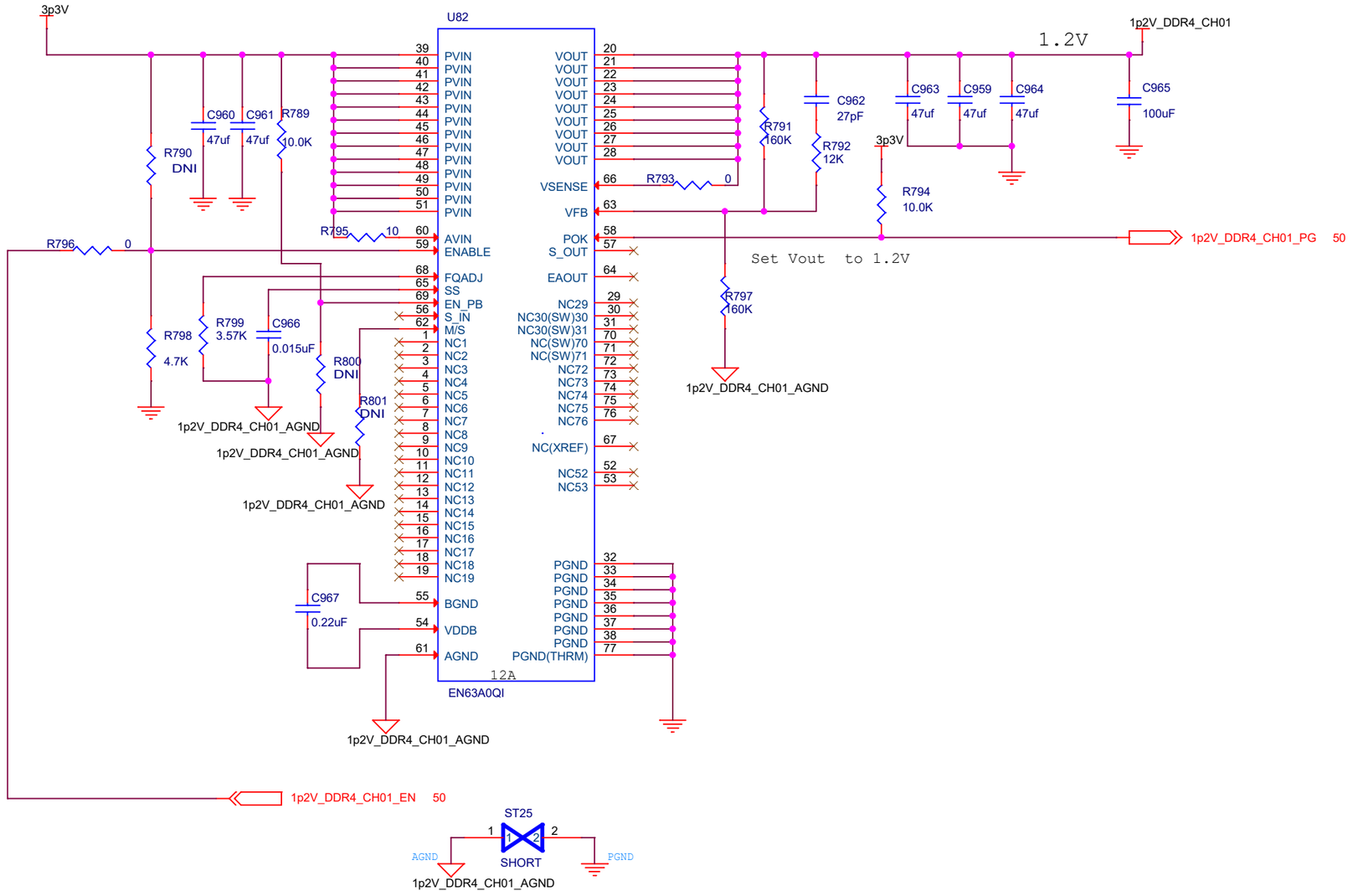
| Size: B | Document Number: M17472 (M17471-100) | Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 69 of 77 | |

# PWR - 1p2V_DDR4_CH01, VCCIO_PIO_2B/2E/2F/2C

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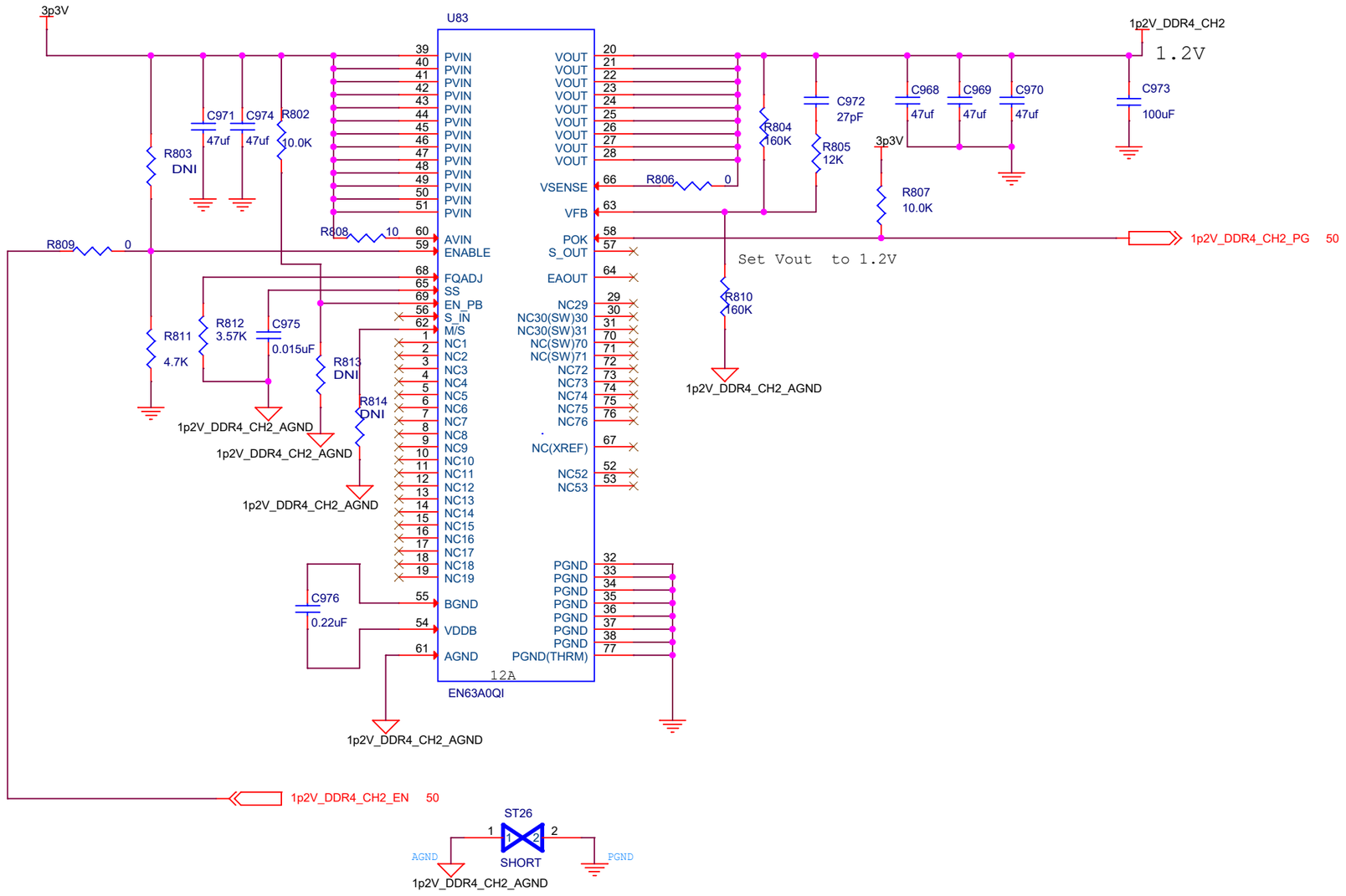
| Size: B | Document Number: M17472 (M17471-100) Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 70 of 77 |

# PWR - 1p2V_DDR4_CH2, VCCIO_PIO_3A/3B/3C/3D

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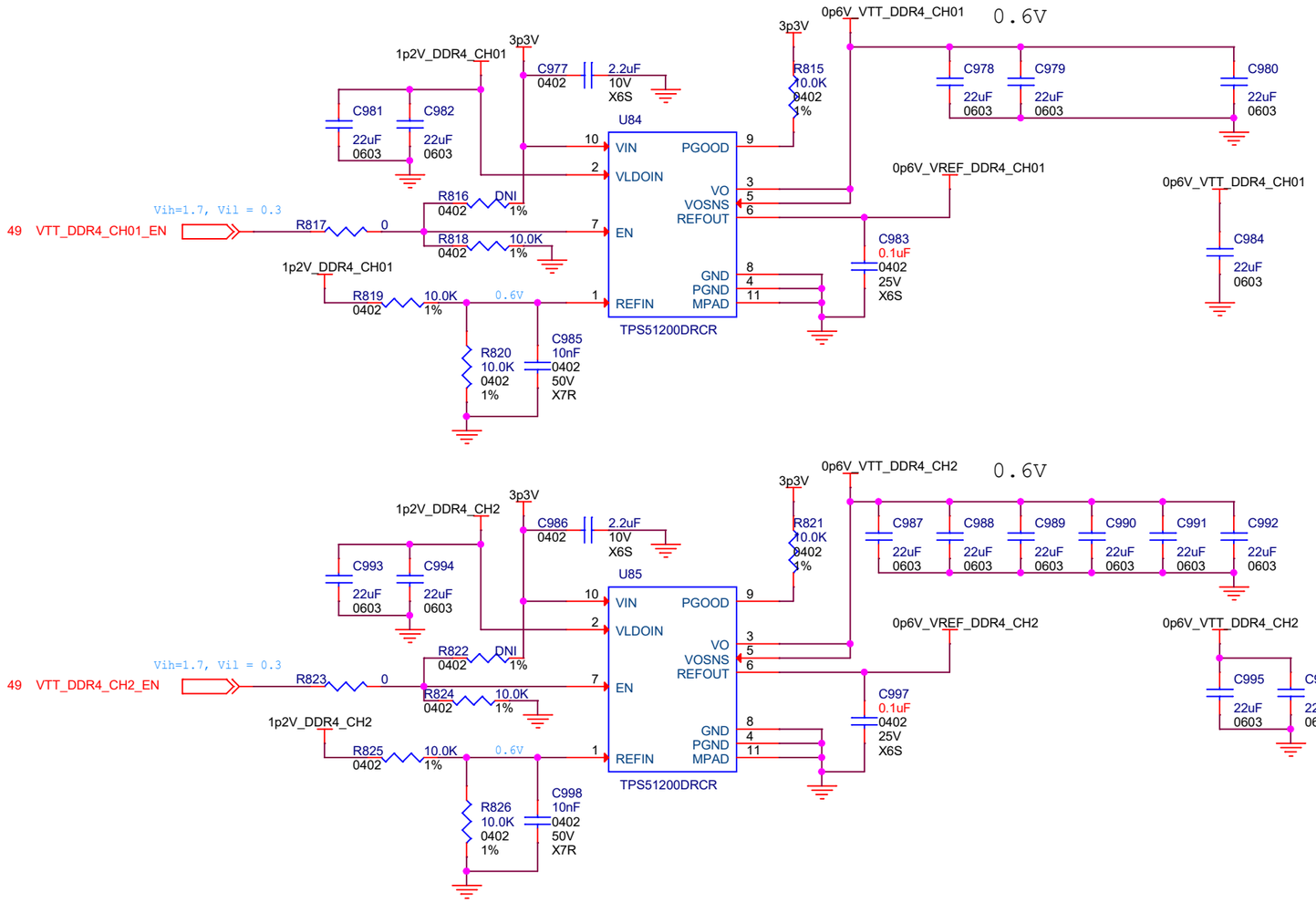
| Size: B | Document Number: M17472 (M17471-100) Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 71 of 77 |

# PWR - DDR4 VREF/VTT

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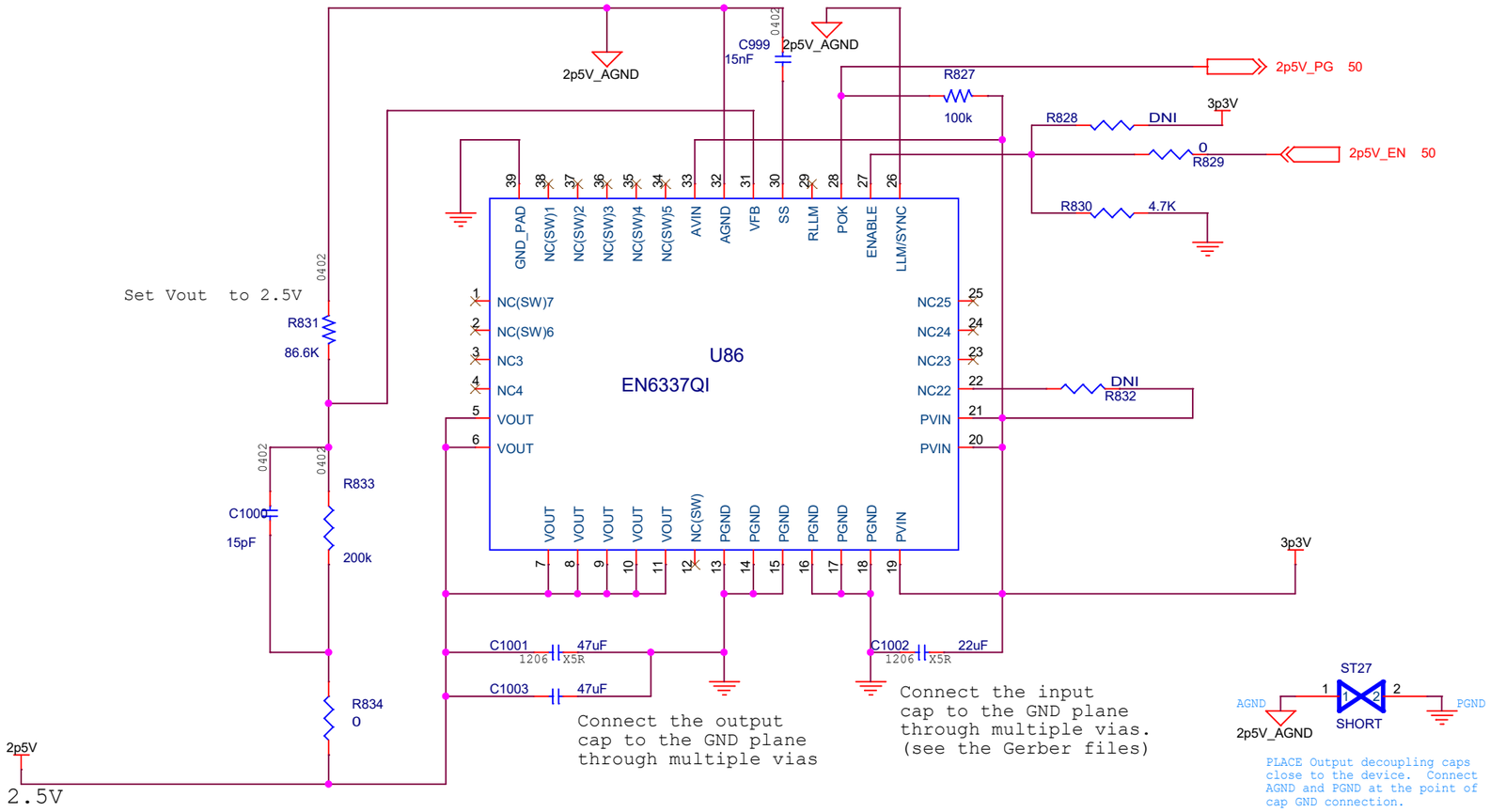
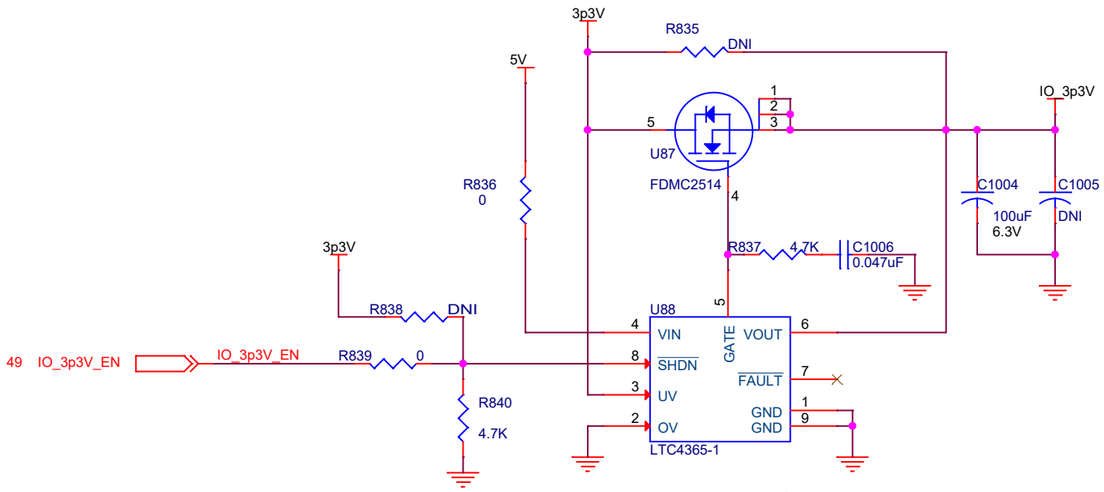
| Date: Wednesday, December 23, 2020 | Sheet 72 of 77 | | |

# PWR - 2p5V




3.3V Enable Circuit

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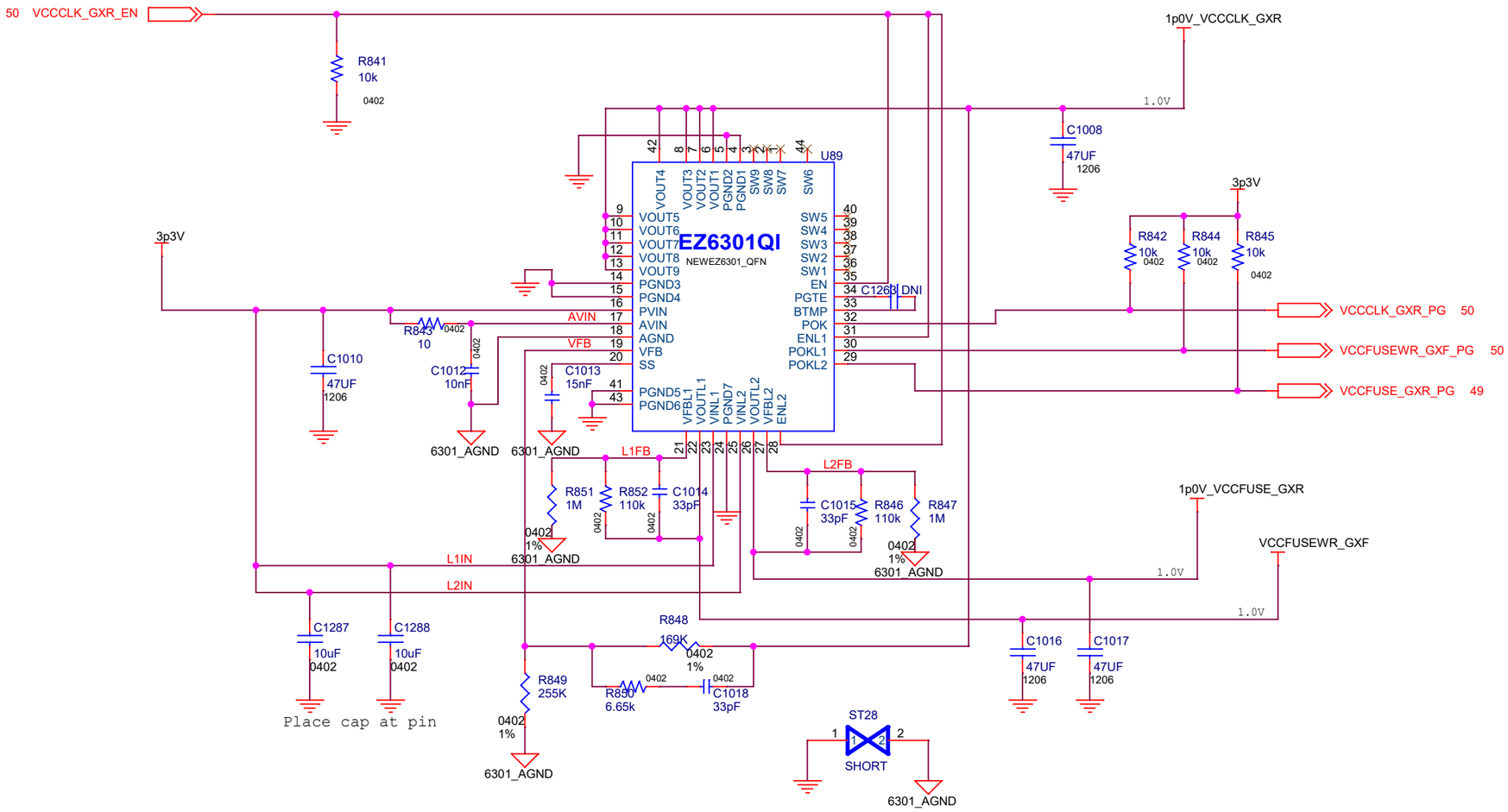
|  | | |
| Size: B | Document Number: M17472 (M17471-100) | Rev: A0 |
| Date: Wednesday, December 23, 2020 | Sheet 73 of 77 | |

# PWR - VCCCLK_GXR, VCCFUSEWR_GXF, VCCFUSE_GXR

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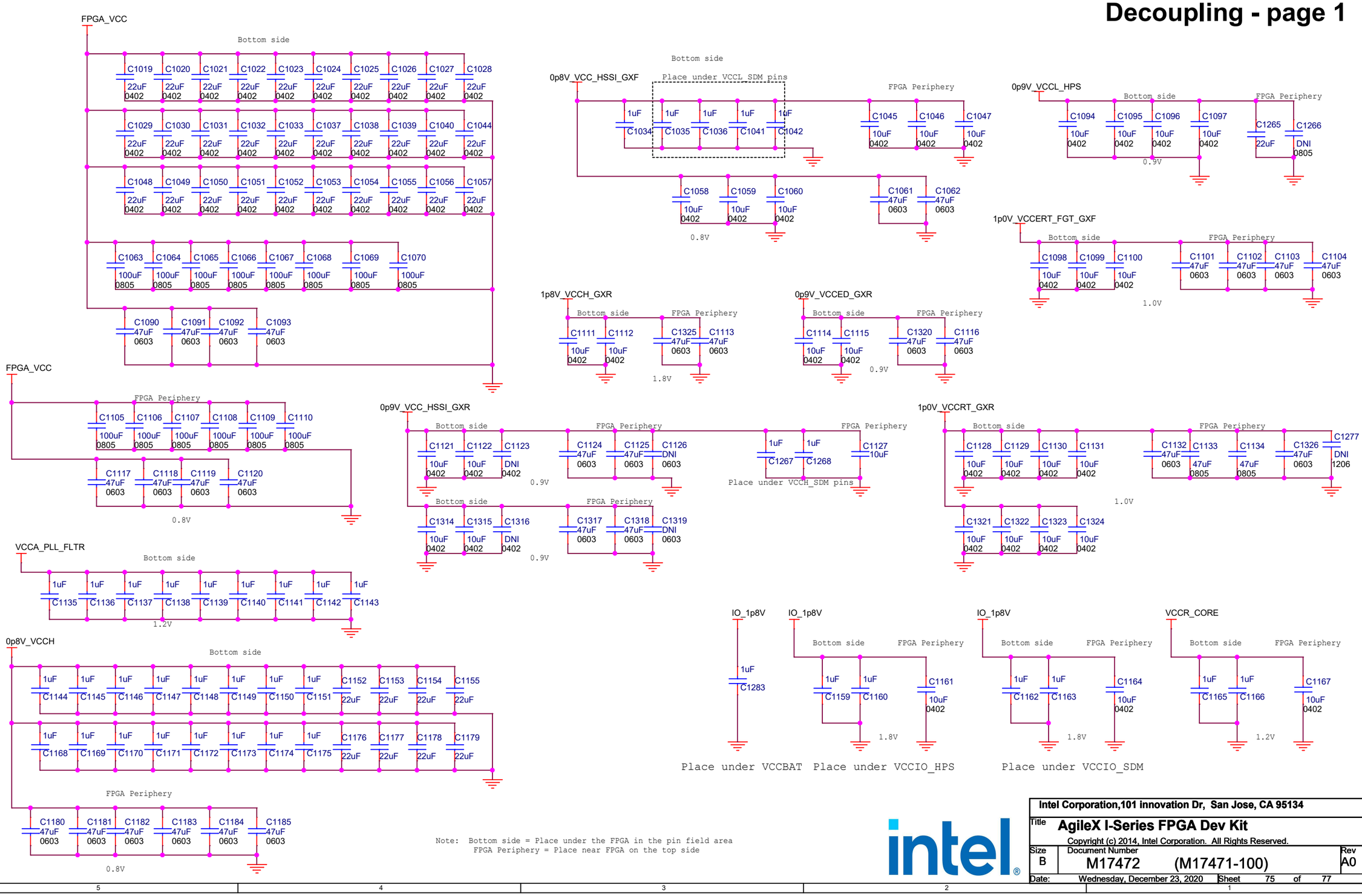
| Date: Wednesday, December 23, 2020 | Sheet 74 of 77 | | |

# Decoupling - page 1




Note: Bottom side = Place under the FPGA in the pin field area
FPGA Periphery = Place near FPGA on the top side

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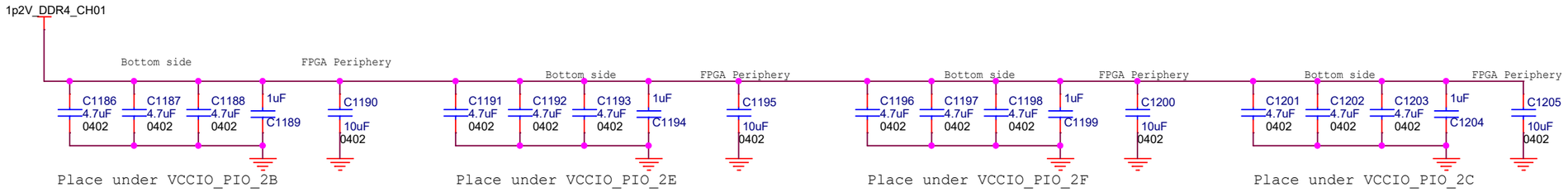
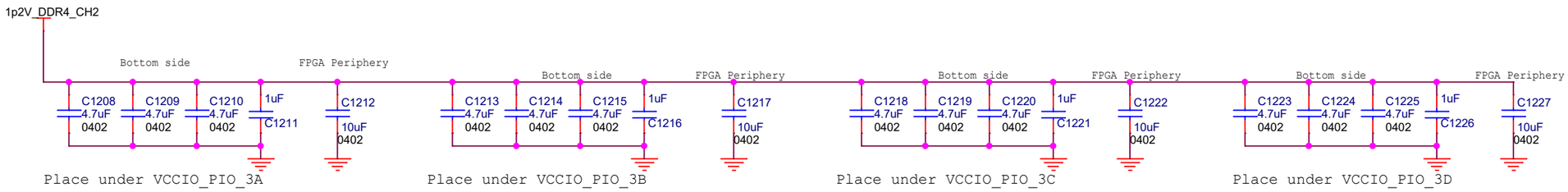
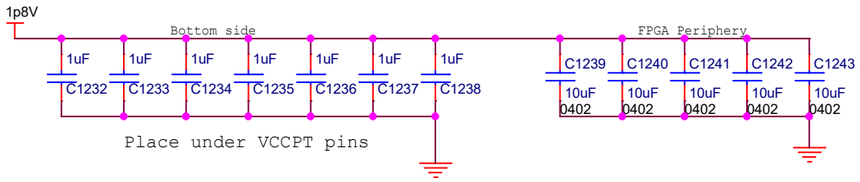
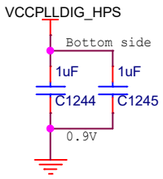
| Title | AgileX I-Series FPGA Dev Kit |
| Size | B |
| Document Number | M17472 (M17471-100) |
| Rev | A0 |
| Date: | Wednesday, December 23, 2020 |
| Sheet | 75 of 77 |

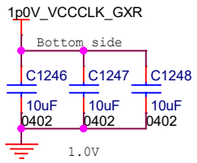
# Decoupling - page 2

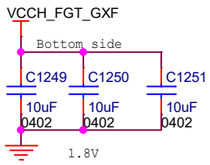


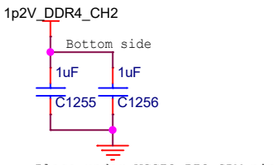



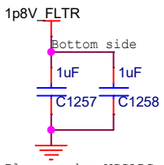



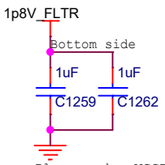



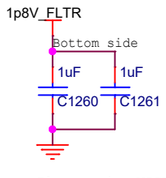



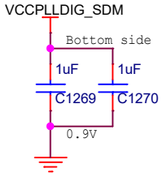



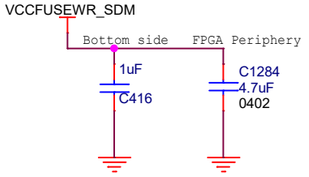



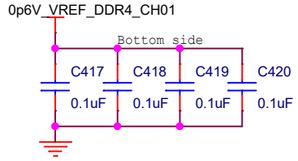



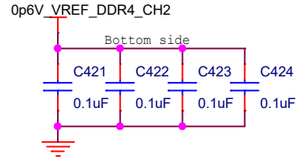

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FPGA Periphery = Place near FPGA on the top side



Title: **AgileX I-Series FPGA Dev Kit**



| Size | Document Number | Rev |
|---|---|---|
| B | M17472 (M17471-100) | A0 |

Date: Wednesday, December 23, 2020 Sheet 76 of 77

FPGA_VCC

Bottom side

C1401 C1402 C1403 C1404 C1405 C1406 C1407 C1408 C1409 C1410
22uF 0402

C1411 C1412 C1413 C1414 C1415 C1416 C1417 C1418 C1419 C1420
22uF 0402

C1421 C1422 C1423 C1424 C1425 C1426 C1427 C1428 C1429 C1430
22uF 0402

C1431 47uF 0603
C1439 47uF 0603

In the Cavity

C1432 330uF
C1433 330uF
C1435 330uF
C1436 330uF
C1437 330uF
C1450 100u 4V X6S 0805

Near the VR

C1440 330uF
C1441 330uF
C1442 330uF
C1438 220uF 4V
C1443 220uF 4V
C1444 220uF 4V
C1445 47uF 0603
C1446 47uF 0603

In the Peripheral

1p0V_VCCRT_GXR
C1447 1uF

0p9V_VCC_HSSI_GXR
C1448 1uF

0p8V_VCCH
C1449 1uF



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Date: Wednesday, December 23, 2020 | Sheet 77 of 77

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