

QV-PCI32RDK-208 Data Sheet



Development Kit for the 32-Bit PCI Devices in 208 PQFP Packages

last updated 12/15/99

FEATURES

High-Speed 32-bit PCI Add-In Card

- 5V PCI Card
- Programmable Local Clock Speeds (28 MHz to 114 MHz)
- Local clock speed controlled by logic in the QuickPCI device
- 60-pin Expansion Connector (32-bit bus + control)
- 8K deep, 32-bit Synchronous FIFO connected to the QuickPCI device and the expansion connector.
- Serial EPROM for QuickPCI power-on RAM initialization (optional)
- 8 LEDs connected to QuickPCI device
- 208 pin socket for easy prototyping of QuickPCI devices

PCI32RDK - 208

Software Drivers

- QLREF is used to test and demonstrate all QuickLogic's RDK boards and devices
- QLREF supports Windows 95, Windows 98, Windows NT, and Windows 2000
- QLREF uses a driver to communicate with all QuickPCI devices

Complete Documentation

- Source code for software driver and application
- Gerber files and Orcad schematics for the PCB design
- QuickWorks design files for the QuickPCI reference design
- The 32-Bit QuickPCI Design Guide
- The PCI32RDK User's Guide

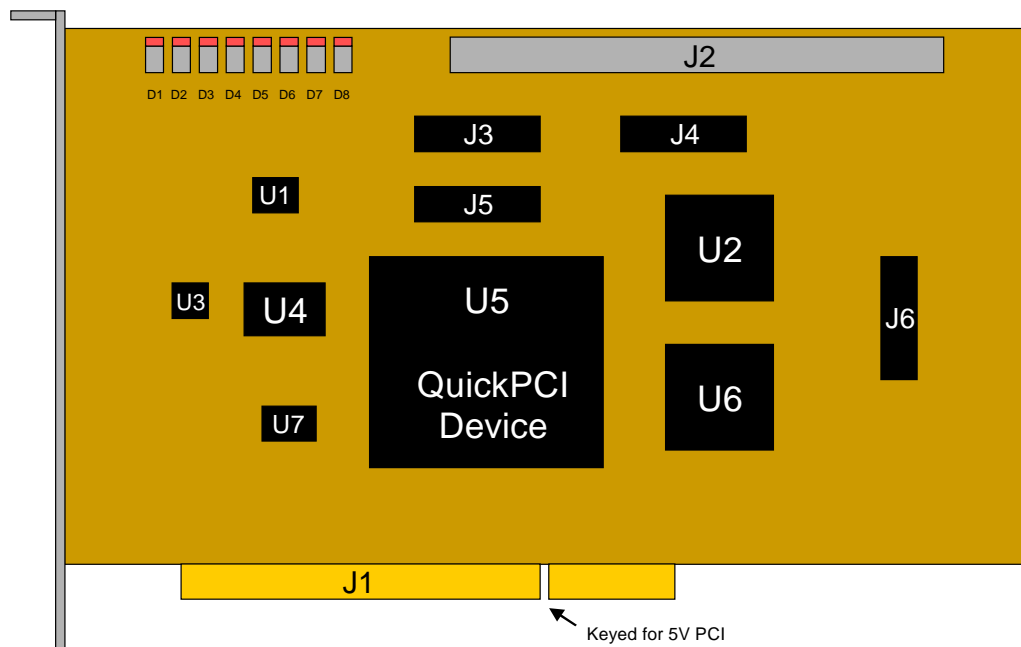


FIGURE 1. QV-PCI32RDK-208 Diagram



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See Figure 1 for the RDK layout diagram and Table 1 for description of major components.

U1	Programmable PLL Clock Generator Quality Semiconductor: QS5925 Datasheet: http://www.qualitysemi.com/products/clock/3.3Vdrivers.html If the above link is out of date, search from the home page: www.qualitysemi.com
U2, U6	Synchronous FIFO, 8K x 16 Integrated Device Technology: IDT72255 Datasheet: http://www.idt.com/products/pages/FIFO-72255.html If the above link is out of date, search from the home page: www.idt.com
U3	3.3V Regulator (generates 3.3V from 5V PCI supply) Motorola: MC33269DT-33 Datasheet: http://scgproducts.motorola.com/ProdSum.asp?base=MC33269 If the above link is out of date, search from the home page: mot-sps.com
U4	Crystal Oscillator, 14.31818 MHz Epson: SG8002JA Datasheet: http://www.eea.epson.com/products/qd/qdcystalosc.htm If the above link is out of date, search from the home page: www.epson.com
U5	QL5xxx QuickPCI Device (in 208 PQFP socket) QuickLogic: QL5130, QL5032, QL5232 Datasheet: http://www.quicklogic.com/devices/PCI/Default.htm If the above link is out of date, search from the home page: www.quicklogic.com
U7	Serial EEPROM, 64K x 1 Atmel: AT17LV65-10PC8P3 Datasheet: http://www.atmel.com/atmel/products/prod22.htm If the above link is out of date, search from the home page: www.atmel.com
J1	PCI Edge Connector Keyed for 5V PCI only
J2	Ribbon Cable Connector, 60 pin AMP: 1-103308-2 Datasheet: http://connect.amp.com/AMP/bin/AMP.Connect?C=1&M=BYPN&I=13&PN=1-103308-2 If the above link is out of date, search from the home page: www.amp.com
J3-J6	MICTOR High Density Logic Analyzer Probe Connectors, 38-bit AMP: 2-767004-2 Datasheet: http://connect.amp.com/AMP/bin/AMP.Connect?C=1&M=BYPN&I=13&PN=2-767004-2 If the above link is out of date, search from the home page: www.amp.com Second source: HP E5346-68701 (set of 5)
D1-D8	LEDs, 3.3V, Red

TABLE 1. Major Components of PCI32RDK-208

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ARCHITECTURE OVERVIEW

The QV-PCI32RDK-208 Reference Board allows for demonstration, testing, and debugging of QuickPCI designs which use 208 pin PQFP packages. QuickPCI devices that use this package include the QL5130 (target), QL5032 (master/target), and the QL5232 (master/target).

Eight LEDs visible from the top edge of the card are provided for testing and to help the evaluation process. Test connectors (AMP 2-767004-2) compatible with Hewlett Packard or Tektronix logic analyzers are provided to give the developer total access to the busses and control signals.

A 32-bit multiplexed address/data bus is provided on the local interface to the QL5XXX (U5). 100-MHz synchronous FIFOs (32-bit x 8K deep, U2, U6) is connected to the local bus (in a loop back mode) as well as to a 60-pin connector (J2), which can be used for benchmarking, measurements, connection of a simple add-on card, or debugging.

The local bus operates synchronously to the local clock, which is derived from a programmable clock circuit (Quality Semiconductor QS5925, U1). This

clock generator derives its clock from a 14.318 MHz crystal, can drive the clock from 28 MHz to 114 MHz with a configurable PLL. The control for the PLL can be driven from the programmable region of the QL5XXX device.

A serial EEPROM socket (U7) and interface is provided to configure the QL5XXX RAM modules on power-up, based on the application.

The card form factor is compliant with PCI 2.2, (106.68 x 174.63 mm Short Card).

EXPANSION CONNECTOR (J2) PINOUT

Most of the pins on the connector are attached to the QuickPCI device. This allows a daughter-board to be built in order to expand the functionality of the reference board.

See Figure 2 for the expansion connector (J2) pinout, and refer to Table 2 for pinout descriptions.

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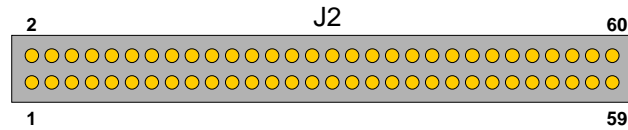


FIGURE 2. Expansion Connector (J2) Pinout

Pin	Name	Function/Connectivity
1	GND	Ground plane
3	GND	Ground plane
5	LADS	See QuickPCI Device Pinout (U5 pin 142)
7	LAST	See QuickPCI Device Pinout (U5 pin 153)
9	LINTI	See QuickPCI Device Pinout (U5 pin 144)
11	LDMACK0	See QuickPCI Device Pinout (U5 pin 148)
13	LDMAREQ1	See QuickPCI Device Pinout (U5 pin 150)
15	LEOT1	See QuickPCI Device Pinout (U5 pin 152)
17	LBE[1]	See QuickPCI Device Pinout (U5 pin 112)
19	GND	Ground plane
21	LBE[3]	See QuickPCI Device Pinout (U5 pin 139)
23	LAD[0]	See QuickPCI Device Pinout (U5 pin 91)
25	LAD[2]	See QuickPCI Device Pinout (U5 pin 93)
27	LAD[4]	See QuickPCI Device Pinout (U5 pin 96)
29	LAD[6]	See QuickPCI Device Pinout (U5 pin 99)
31	+5V	5V VCC plane
33	LAD[8]	See QuickPCI Device Pinout (U5 pin 102)
35	LAD[10]	See QuickPCI Device Pinout (U5 pin 106)
37	LAD[12]	See QuickPCI Device Pinout (U5 pin 108)
39	LAD[14]	See QuickPCI Device Pinout (U5 pin 110)
41	LAD[16]	See QuickPCI Device Pinout (U5 pin 113)
43	LAD[18]	See QuickPCI Device Pinout (U5 pin 117)
45	GND	Ground plane
47	LAD[20]	See QuickPCI Device Pinout (U5 pin 119)
49	LAD[22]	See QuickPCI Device Pinout (U5 pin 121)
51	LAD[24]	See QuickPCI Device Pinout (U5 pin 124)
53	LAD[26]	See QuickPCI Device Pinout (U5 pin 126)
55	LAD[28]	See QuickPCI Device Pinout (U5 pin 135)
57	LAD[30]	See QuickPCI Device Pinout (U5 pin 137)
59	GND	Ground plane

Pin	Name	Function/Connectivity
2	LCLK2	Local Bus Clock. Driven by the QS5925 Programmable Clock Generator (U1 pin 14)
4	LRESET	See QuickPCI Device Pinout (U5 pin 140)
6	LWR	See QuickPCI Device Pinout (U5 pin 141)
8	LREADY	See QuickPCI Device Pinout (U5 pin 143)
10	LDMAREQ0	See QuickPCI Device Pinout (U5 pin 146)
12	LEOT0	See QuickPCI Device Pinout (U5 pin 149)
14	LDMACK1	See QuickPCI Device Pinout (U5 pin 151)
16	LBE[0]	See QuickPCI Device Pinout (U5 pin 101)
18	LBE[2]	See QuickPCI Device Pinout (U5 pin 123)
20	GND	Ground plane
22	NC	No connect
24	LAD[1]	See QuickPCI Device Pinout (U5 pin 92)
26	LAD[3]	See QuickPCI Device Pinout (U5 pin 94)
28	LAD[5]	See QuickPCI Device Pinout (U5 pin 98)
30	LAD[7]	See QuickPCI Device Pinout (U5 pin 100)
32	+5V	5V VCC plane
34	LAD[9]	See QuickPCI Device Pinout (U5 pin 105)
36	LAD[11]	See QuickPCI Device Pinout (U5 pin 107)
38	LAD[13]	See QuickPCI Device Pinout (U5 pin 109)
40	LAD[15]	See QuickPCI Device Pinout (U5 pin 111)
42	LAD[17]	See QuickPCI Device Pinout (U5 pin 115)
44	LAD[19]	See QuickPCI Device Pinout (U5 pin 118)
46	GND	Ground plane
48	LAD[21]	See QuickPCI Device Pinout (U5 pin 120)
50	LAD[23]	See QuickPCI Device Pinout (U5 pin 122)
52	LAD[25]	See QuickPCI Device Pinout (U5 pin 125)
54	LAD[27]	See QuickPCI Device Pinout (U5 pin 128)
56	LAD[29]	See QuickPCI Device Pinout (U5 pin 136)
58	LAD[31]	See QuickPCI Device Pinout (U5 pin 138)
60	GND	Ground plane

TABLE 2. Expansion connector (J2) Pinout Table

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LOGIC ANALYZER HIGH-DENSITY ADAPTER (J3-J6) PINOUTS

On the PCB, J3 through J6 are known as MICTOR Connectors (Matched-Impedance Connectors), or high-density connectors for logic analyzers. Each connector has 38 pins (32 data, 2 clocks, and 4 others). These connectors are pinned to work with High Density Adapters from HP and Tektronics (Fluke High Density Adapters use a different pinout). Table 3 shows the pinouts of the HP and Tektronics Logic Analyzer Adapters.

Tektronics P6434 Adapter Pinout				HP E5346A Adapter Pinout			
Pin	Logic Analyzer Channel	Logic Analyzer Channel	Pin	Pin	Logic Analyzer Channel	Logic Analyzer Channel	Pin
1	NC	NC	38	1	+5V	NC	2
2	NC	NC	37	3	GND	NC	4
3	CLK	CLK	36	5	CLK:even	CLK:odd	6
4	D3:7	D1:7	35	7	D15:even	D15:odd	8
5	D3:6	D1:6	34	9	D14:even	D14:odd	10
6	D3:5	D1:5	33	11	D13:even	D13:odd	12
7	D3:4	D1:4	32	13	D12:even	D12:odd	14
8	D3:3	D1:3	31	15	D11:even	D11:odd	16
9	D3:2	D1:2	30	17	D10:even	D10:odd	18
10	D3:1	D1:1	29	19	D9:even	D9:odd	20
11	D3:0	D1:0	28	21	D8:even	D8:odd	22
12	D2:7	D0:7	27	23	D7:even	D7:odd	24
13	D2:6	D0:6	26	25	D6:even	D6:odd	26
14	D2:5	D0:5	25	27	D5:even	D5:odd	28
15	D2:4	D0:4	24	29	D4:even	D4:odd	30
16	D2:3	D0:3	23	31	D3:even	D3:odd	32
17	D2:2	D0:2	22	33	D2:even	D2:odd	34
18	D2:1	D0:1	21	35	D1:even	D1:odd	36
19	D2:0	D0:0	20	37	D0:even	D0:odd	38

TABLE 3. Logic Analyzer Adapters Pinouts

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The pinouts in Table 4 are for the MICTOR connectors on the RDK board. These pinouts use pin numbering that is consistent with the HP pinout table. Use the tables above for cross-reference if you are using a Tektronics analyzer. See the QuickPCI Device Pinout Table in the PCI32RDK User's Guide for signal descriptions. Reference to the corresponding QuickPCI device pin number is shown for each signal in Table 4, with the exception of LCLK1, which is not connected to the QuickPCI device and is instead connected to the Programmable PLL Clock Generator (U1), Test Point 11 (TP11), and a pull-up to 3.3V and pull-down to GND.

J3 MICTOR Connector Local Bus Control Signals			
Pin	Name	Name	Pin
1	NC	NC	2
3	NC	NC	4
5	NC	LCLK1	6
7	NC	LBE[3] (U5 pin 139)	8
9	NC	LBE[2] (U5 pin)	10
11	NC	LBE[1] (U5 pin)	12
13	NC	LBE[0] (U5 pin)	14
15	NC	LEOT1 (U5 pin 152)	16
17	NC	LDMACK1 (U5 pin 151)	18
19	NC	LDMAREQ1 (U5 pin 150)	20
21	NC	LEOT0 (U5 pin 149)	22
23	NC	LDMACK0 (U5 pin 148)	24
25	NC	LDMAREQ0 (U5 pin 146)	26
27	NC	LINTI (U5 pin 144)	28
29	NC	LAST (U5 pin 153)	30
31	NC	LREADY (U5 pin 143)	32
33	NC	LWR (U5 pin 141)	34
35	NC	LADS (U5 pin 142)	36
37	NC	LRESET (U5 pin 140)	38

J4 MICTOR Connector FIFO Control Signals and Spare QuickPCI Device Pins			
Pin	Name	Name	Pin
1	NC	NC	2
3	NC	NC	4
5	LCLK1	LCLK1	6
7	NC	NC	8
9	NC	NC	10
11	NC	FS (U5 pin 154)	12
13	NC	FWFT (U5 pin 155)	14
15	NC	LD (U5 pin 166)	16
17	NC	RT (U5 pin 164)	18
19	NC	OR_N/EF (U5 pin 171)	20
21	NC	PAE_N (U5 pin 170)	22
23	NC	HF_N (U5 pin 169)	24
25	NC	PAF_N (U5 pin 168)	26
27	SPARE[37] (U5 pin 208)	IR_N/FF (U5 pin 167)	28
29	SPARE[36] (U5 pin 206)	OE (U5 pin 162)	30
31	SPARE[35] (U5 pin 205)	REN (U5 pin 161)	32
33	SPARE[34] (U5 pin 204)	WEN (U5 pin 160)	34
35	SPARE[33] (U5 pin 203)	PRS (U5 pin 159)	36
37	SPARE[32] (U5 pin 202)	MRS (U5 pin 156)	38

J5 MICTOR Connector Spare QuickPCI Device Pins			
Pin	Name	Name	Pin
1	NC	NC	2
3	NC	NC	4
5	LCLK1	LCLK1	6
7	SPARE[31] (U5 pin 200)	SPARE[15] (U5 pin 181)	8
9	SPARE[30] (U5 pin 198)	SPARE[14] (U5 pin 180)	10
11	SPARE[29] (U5 pin 197)	SPARE[13] (U5 pin 179)	12
13	SPARE[28] (U5 pin 196)	SPARE[12] (U5 pin 178)	14
15	SPARE[27] (U5 pin 195)	SPARE[11] (U5 pin 176)	16
17	SPARE[26] (U5 pin 194)	SPARE[10] (U5 pin 175)	18
19	SPARE[25] (U5 pin 193)	SPARE[9] (U5 pin 174)	20
21	SPARE[24] (U5 pin 192)	SPARE[8] (U5 pin 173)	22
23	SPARE[23] (U5 pin 191)	SPARE[7] (U5 pin 172)	24
25	SPARE[22] (U5 pin 190)	SPARE[6] (U5 pin 7)	26
27	SPARE[21] (U5 pin 189)	SPARE[5] (U5 pin 6)	28
29	SPARE[20] (U5 pin 188)	SPARE[4] (U5 pin 5)	30
31	SPARE[19] (U5 pin 186)	SPARE[3] (U5 pin 4)	32
33	SPARE[18] (U5 pin 185)	SPARE[2] (U5 pin 3)	34
35	SPARE[17] (U5 pin 184)	SPARE[1] (U5 pin 2)	36
37	SPARE[16] (U5 pin 183)	SPARE[0] (U5 pin 1)	38

J6 MICTOR Connector Local Bus Data Signals			
Pin	Name	Name	Pin
1	NC	NC	2
3	NC	NC	4
5	LCLK0 (U5 pin 133)	LCLK0 (U5 pin 133)	6
7	LAD[31] (U5 pin 138)	LAD[15] (U5 pin 111)	8
9	LAD[30] (U5 pin 137)	LAD[14] (U5 pin 110)	10
11	LAD[29] (U5 pin 136)	LAD[13] (U5 pin 109)	12
13	LAD[28] (U5 pin 135)	LAD[12] (U5 pin 108)	14
15	LAD[27] (U5 pin 128)	LAD[11] (U5 pin 107)	16
17	LAD[26] (U5 pin 126)	LAD[10] (U5 pin 106)	18
19	LAD[25] (U5 pin 125)	LAD[9] (U5 pin 105)	20
21	LAD[24] (U5 pin 124)	LAD[8] (U5 pin 102)	22
23	LAD[23] (U5 pin 122)	LAD[7] (U5 pin 100)	24
25	LAD[22] (U5 pin 121)	LAD[6] (U5 pin 99)	26
27	LAD[21] (U5 pin 120)	LAD[5] (U5 pin 98)	28
29	LAD[20] (U5 pin 119)	LAD[4] (U5 pin 96)	30
31	LAD[19] (U5 pin 118)	LAD[3] (U5 pin 94)	32
33	LAD[18] (U5 pin 117)	LAD[2] (U5 pin 93)	34
35	LAD[17] (U5 pin 115)	LAD[1] (U5 pin 92)	36
37	LAD[16] (U5 pin 113)	LAD[0] (U5 pin 91)	38

TABLE 4. Pinouts for the MICTOR Connectors on the RDK board