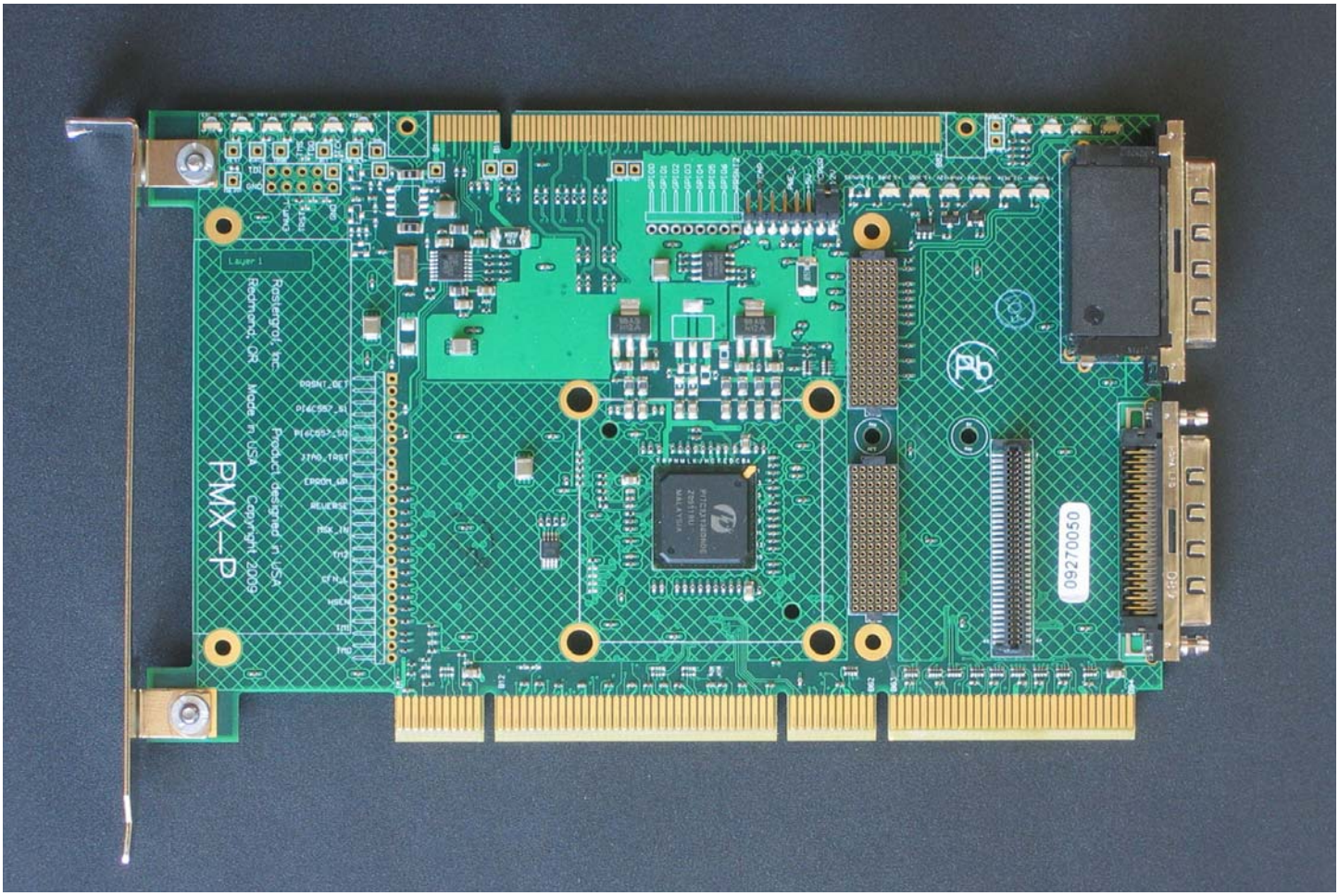
Rastergraf

PMX-P

XMC to PCI / PCI-X Adapter Board



Features

- x1, x2, and x4 PCI Express 1.1 (PCIe) compatibility
- 32 and 64-bit PCI/PCI-X compatibility
- PCI-X supported up to 64-bit, 133 MHz
- Test Points and Power and Status LEDs
- XMC Pn6 and PMC Pn4 I/O connectors follow VITA 46.9
- PCIe to PCI/PCI-X version also available (PME-P)

Applications

- Eases debugging of PCIe boards
- Enables use of the PCIe boards in older PCs

PMX-P

The PMX-P is a single site XMC/VITA 42.3 (PCI Express (PCIe) to PCI/PCI-X adapter board. It enables a x1, x2, or x4 XMC/VITA 42.3 board module to be plugged into any Universal PCI 2.3 32 or 64-bit PCI or PCI-X slot.

The PMX-P features the Pericom PI7C9X130 PCI Express to PCI-X Reversible Bridge. Among others, the PI7C9X130 is compliant with the PCI Express Base Specification, Revision 1.1 and the PCI Express to PCI/PCI-X Bridge Specification, Revision 1.0. PI7C9X130 supports transparent and non-transparent mode of operations.

The PI7C9X130 is used on the PMX-P as a reverse bridge (PCIe to a PCI/PCI-X host system). In reverse bridge mode, PI7C9X130 has a 64-bit PCI-X upstream port and an x4 PCI Express downstream port (2.5Gb/s data rate). PI7C9X130 configuration registers are backward compatible with existing PCI bridge software and firmware.

The PMX-P's conventional (PCI/PCI-X) connector is Universal PCI 2.3/PCI-X 1.0 compatible. It supports 32 or 64 bit data, 33 or 66 MHz (PCI and PCI-X), 100 and 133 MHz (PCI-X), and 3.3V or 5V VIO signaling. The PMX-P interface is 5V I/O tolerant and, in keeping with PCI 2.3, the I/O buffers are powered by a 3.3V supply.

The board's XMC/VITA 42.3 site supports x1, x2, or x4 PCIe 1.1 boards. Boards with x8 or x16 can also be installed but only (up to) a x4 path is supported.

XMC Pn4 (PMC) and Pn6 (XMC) rear-panel I/O connector access is provided (see following pages for pinout tables):

Pn4 follows VITA 46.9 "P64S" routing. The signals are connected as 32 matched-length pairs to a 68-pin VHDCI connector.

Pn6 follows a modified VITA 46.9 "X8+12d38s" routing. The signals are connected as 39 matched-length pairs to two 68-pin VHDCI connectors.

Separate power planes are provided for +3.3V, +1.8V (PI7C9X130 core), and ground. Bypass capacitors are located at regular intervals across the board and at all connector power pins.

To aid in debugging, the PMX-P has Test Point pins and LED indicators for all major power sources, +12V, -12V, +5V, +3.3V, a variety of +1.8V sources, and VIO.

Jumpers allow the user to select either +5 or +12 for the XMC VPWR pins. Current is limited by Polyswitch resettable fuses for +5 (2.6A Hold, 5A Trip, 5s trip time) and +12V (1.25A Hold, 2.5A Trip, .4s trip time)

Due to the fact that the PI7C9X130 BGA footprint is laid out to support optimal placement in a PCI/PCI-X to PCIe adapter (the reverse of the PME-P), the PCI bus signal lengths must unavoidably exceed the PCI 2.3 standard. There is no bridge chip made that is optimized for PCIe to PCI/PCI-X. However, the extra length has not been found to be a problem on the PMX-P, even when tested at 133 MHz PCI-X on a high-quality extender card.

Other Rastergraf carrier products include:

PME-P, an active (bridged) single PCIe (x1/x2/x4) to PCI/PCI-X carrier;

PMA-P, a passive (bridgeless) single PMC to PCI carrier;

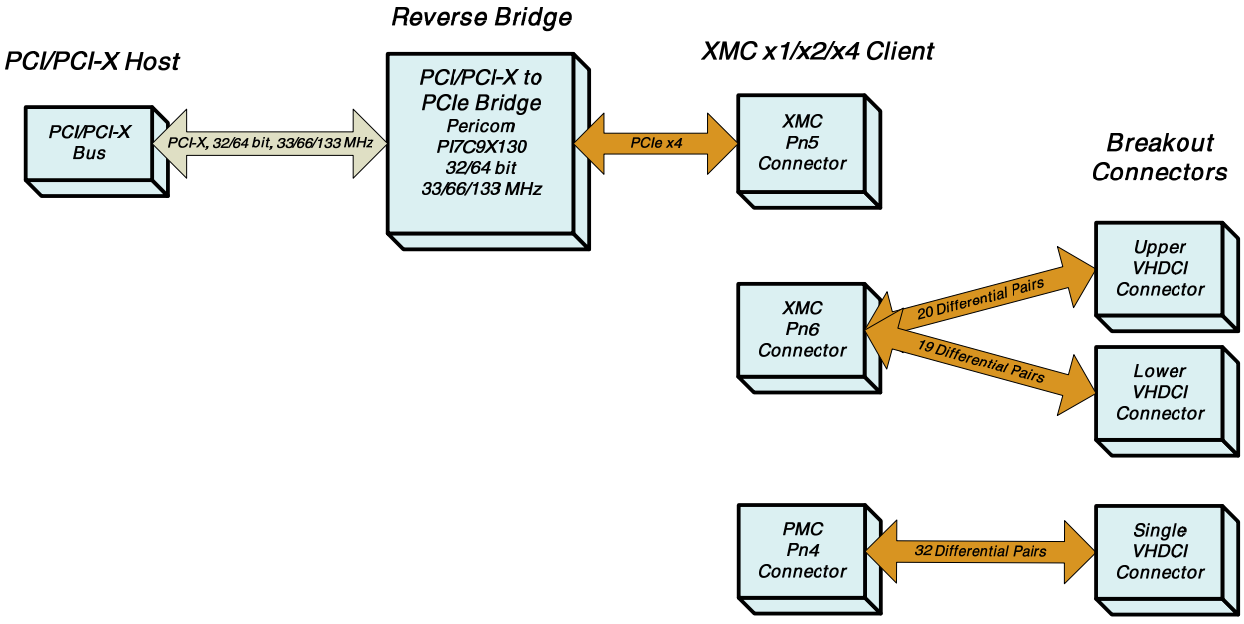
PMB-P, an active (bridged) single PMC to PCI carrier;

PMA-C, a passive (bridgeless) single PMC to CompactPCI carrier; and

PMB-C, an active (bridged) dual-PMC site CompactPCI carrier.

Please check our web site for more information:
http://www.rastergraf.com.

PMX-P Block Diagram



PMX-P PMC Pn4 Breakout Connector

The PMC Pn4 Breakout Connector pinout is derived from the VITA 46.9 P64s pinout. Since the V46 connector is not appropriate for this product, the 64 pins are mapped as 32 differential pairs wired to a Honda HDRA-EC68LFDT-S-SL+ VHDCI (.8MM) connector.

The pair grouping on PMC Pn4 connector are adjacent pins on the same side of the connector (1,3; 2,4). The pairs are length matched both by pair and over the signal set at 28.425 mm +/- .125 mm (via to via).

Connections are routed as 100 ohm differential pairs. If used as single-ended, one line in each pair MUST be grounded.

When used as differential pairs, 100 Ohm round cable (discrete twisted pair cable) MUST BE USED. Ribbon (IDC) cable CANNOT be used because routing limitations prevented matching circuit pairs with ribbon cable pairs.

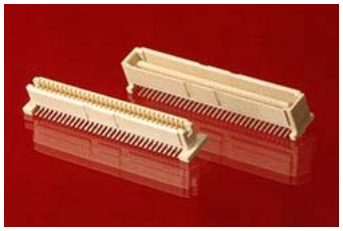
PMC Pn4

1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20
21	22
23	24
25	26
27	28
29	30
31	32
33	34
35	36
37	38
39	40
41	42
43	44
45	46
47	48
49	50
51	52
53	54
55	56
57	58
59	60
61	62
63	64

PMC Pn4	VHDCI-68
	1, 35 GND
1, 3	2, 3
2, 4	36, 37
5, 7	4, 5
6, 8	38, 39
9, 11	6, 7
10, 12	40, 41
13, 15	8, 9
14, 16	42, 43
17, 19	10, 11
18, 20	44, 45
21, 23	12, 13
22, 24	46, 47
25, 27	14, 15
26, 28	48, 49
29, 31	16, 17
30, 32	50, 51
33, 35	18, 19
34, 36	52, 53
37, 39	20, 21
38, 40	54, 55
41, 43	22, 23
42, 44	56, 57
45, 47	24, 25
46, 48	58, 59
49, 51	26, 27
50, 52	60, 61
53, 55	28, 29
54, 56	62, 63
57, 59	30, 31
58, 60	64, 65
61, 63	32, 33
62, 64	66, 67
	34, 68 GND

VHDCI 68

1	2	35	36
3	4	37	38
5	6	39	40
7	8	41	42
9	10	43	44
11	12	45	46
13	14	47	48
15	16	49	50
17	18	51	52
19	20	53	54
21	22	55	56
23	24	57	58
25	26	59	60
27	28	61	62
29	30	63	64
31	32	65	66
33	34	67	68



Molex PMC Connectors

Honda HDRA-EC68LFDT
VHCDCI Connector

PMX-P XMC Pn6 Breakout Connector

The XMC Pn6 Breakout Connector pinout is is derived from the VITA 46.9 X8+12d38s pinout. Since the V46 connector is not appropriate, the 78 signal pins are mapped as 39 differential pairs wired to a Honda HDRA-E68W1LFDT1EC-SL+ VHDCI (.8MM) with dual 68-pin connectors.

The pairs are length matched both by pair and over the signal and are routed as 100 ohm differential pairs. If used as single-ended, one line in each pair MUST be grounded.

When used as differential pairs, 100 Ohm round cable (discrete twisted pair cable) MUST BE USED. Ribbon (IDC) cable CANNOT be used because routing limitations prevented matching circuit pairs with ribbon cable pairs.

XMC Pn6

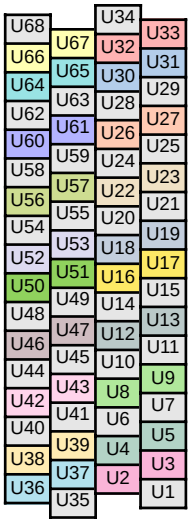
A1	B1	C1	D1	E1	F1
A2	B2	C2	D2	E2	F2
A3	B3	C3	D3	E3	F3
A4	B4	C4	D4	E4	F4
A5	B5	C5	D5	E5	F5
A6	B6	C6	D6	E6	F6
A7	B7	C7	D7	E7	F7
A8	B8	C8	D8	E8	F8
A9	B9	C9	D9	E9	F9
A10	B10	C10	D10	E10	F10
A11	B11	C11	D11	E11	F11
A12	B12	C12	D12	E12	F12
A13	B13	C13	D13	E13	F13
A14	B14	C14	D14	E14	F14
A15	B15	C15	D15	E15	F15
A16	B16	C16	D16	E16	F16
A17	B17	C17	D17	E17	F17
A18	B18	C18	D18	E18	F18
A19	B19	C19	D19	E19	F19

Samtec XMC Connectors

XMC Pn6	Upper VHDCI-68
A2, B2, D2, E2 - GND	U68, U34 - GND
A1, B1	U67, U66
D1, E1	U33, U32
A3, B3	U65, U64
D3, E3	U31, U30
A4, B4, D4, E4 - GND	U63, U62, U29, U28 - GND
A5, B5	U61, U60
D5, E5	U27, U26
A6, B6, D6, E6 - GND	U59, U58, U25, U24 - GND
A7, B7	U57, U56
D7, E7	U23, U22
A8, B8, D8, E8 - GND	U55, U54, U21, U20 - GND
A9, B9	U53, U52
D9, E9	U19, U18
A11, B11	U51, U50
D11, E11	U17, U16
A10, B10, D10, E10, A12, B12, D12, E12 - GND	U49, U48, U15, U14 - GND
A13, B13	U47, U46
D13, E13	U13, U12
A14, B14, D14, E14 - GND	U45, U44, U11, U10 - GND
A15, B15	U43, U42
D15, E15	U9, U8
A16, B16, D16, E16 - GND	U41, U40, U7, U6 - GND
A17, B17	U39, U38
D17, E17	U5, U4
A19, B19	U37, U36
D19, E19	U3, U2
A18, B18, D18, E18 - GND	U35, U1 - GND

XMC Pn6	Lower VHDCI-68
	1, 35 - GND
C1, F1	2, 3
n/c	36, 37
C2, C3	4, 5
F2, F3	38, 39
	6, 7, 40, 41 - GND
C4, C5	8, 9
F4, F5	42, 43
	10, 11, 44, 45 - GND
C6, C7	12, 13
F6, F7	46, 47
	14, 15, 48, 49 - GND
C8, C9	16, 17
F8, F9	50, 51
C10, C11	18, 19
F10, F11	52, 53
	20, 21, 54, 55 - GND
C12, C13	22, 23
F12, F13	56, 57
	24, 25, 58, 59 - GND
C14, C15	26, 27
F14, F15	60. 61
	28, 29, 62, 63 - GND
C16, C17	30, 31
F16, F17	64, 65
C18, C19	32, 33
F18, F19	66. 67
	34, 68 - GND

Upper VHDCI-68



Lower VHDCI-68

Honda HDRA-E68W1LFDT VHDCI Connector

Product Specifications

Form Factor	Single slot PCI, short card Width: 0.6 inches (15.24 mm) Depth: 6.9 inches (175.26 mm) Height: 4.2 inches (106.68 mm)
PCI Compatibility	Revision 2.3, 33/66 MHz, 32/64 bit PCI Supports 66/100/133 MHz, 32/64 bit PCI-X Universal signaling (3.3V or 5V).
PCI Express Compatibility	PCI Express 1.1 x1, x2, or x4 data lane width
Environment	Operating temperature: 0°C to 70°C Storage temperature: -40°C to +85°C Humidity: 5% - 95% non-condensing

Ordering Information

Standard Configurations:

PMX-P
Single-slot XMC-to-PCI adapter board

Important Notices:
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