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32 Bit PCI Master/Target

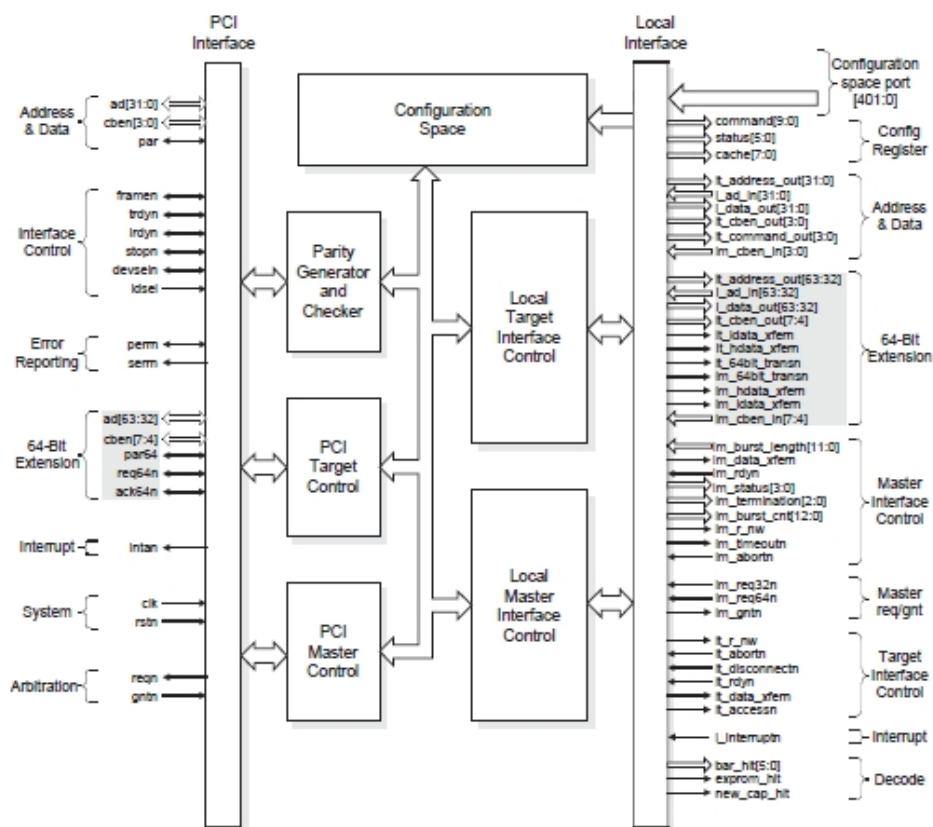
Overview

Peripheral Component Interconnect (PCI) is a widely accepted bus standard that is used in many applications including telecommunications, embedded systems, high performance peripheral cards, and networking.



Lattice's PCI IP core provides an ideal solution that meets the needs of today's high performance PCI applications. It is fully compliant with the PCI Local Bus Specification, revision 2.2 for speeds up to 66MHz. The PCI core provides a **customizable 32/64-bit master/target** or target solution. The core bridges the gap between the PCI interface and a specific design application, providing an integrated PCI solution. The PCI solution allows designers to focus on the application rather than on the PCI specification, resulting in a faster time-to-market.

The Lattice PCI offering is available in a number of configurations covering 32-bit PCI, 64-bit PCI, 32-bit local bus, 64-bit local bus, master/target and target applications. In this document, details of 64-bit operation and master operation only apply when relevant. The appendix to the user's guide shows what cores are available on which devices.



Note: Signals in shaded boxes are used for 64-bit PCI Cores.

Features

Available as 32/64-Bit PCI Bus and 32/64-Bit Local Bus
 PCI SIG Local Bus Specification, Revision 3.0 Compliant
 64-Bit Addressing Support (Dual Address Cycle)

Fast Back-to-Back Transaction Support
 Supports Zero Wait State Transactions
 Special Cycle Transaction Support

Capabilities List Pointer Support

Customizable Configuration Space

Parity Error Detection

Up to 66MHz PCI

Up to Six Base Address Registers (BARs)

Fully Synchronous Design

Performance and Resource Utilization

LatticeECP3¹

Bus Width	IPexpress Mode	Slices	LUTs	Registers	sysMEM EBRs	External Pins	f _{MAX} (MHz)
32-bit	Master/Target 33 MHz	683	1059	640	-	50	33
32-bit	Master/Target 66 MHz	1076	1691	661	-	50	66

1. Performance and utilization data are generated using an LFE3-95EA-7FN1156CES device with Lattice Diamond 1.0 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeECP3 family.

LatticeECP2M¹

Bus Width	IPexpress Mode	Slices	LUTs	Registers	sysMEM EBRs	External Pins	f _{MAX} (MHz)
32-bit	Master/Target 33 MHz	856	1068	642	-	50	33
32-bit	Master/Target 66 MHz	1086	1700	663	-	50	66

1. Performance and utilization data are generated using an LFE2M-35E-6F672C device with Lattice Diamond 1.0 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeECP2M family.

LatticeECP2¹

Bus Width	IPexpress Mode	Slices	LUTs	Registers	sysMEM EBRs	External Pins	f _{MAX} (MHz)
32-bit	Master/Target 33 MHz	856	1068	642	-	50	33
32-bit	Master/Target 66 MHz	1086	1700	663	-	50	66

1. Performance and utilization data are generated using an LFE2-20E-6F672C device with Lattice Diamond 1.0 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeECP2 family.

LatticeEC/P¹

Bus Width	IPexpress Mode	Slices	LUTs	Registers	sysMEM EBRs	External Pins	f _{MAX} (MHz)
32-bit	Master/Target 33 MHz	846	1060	642	-	50	33
32-bit	Master/Target 66 MHz	1083	1690	663	-	50	66

1. Performance and utilization data are generated using an LFEC33E-5F672C device with Lattice Diamond 1.0 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeEC/EC family.

LatticeSC¹

Bus Width	IPexpress Mode	Slices	LUTs	Registers	sysMEM EBRs	External Pins	f _{MAX} (MHz)
32-bit	Master/Target 33 MHz	724	1050	640	-	50	33
32-bit	Master/Target 66 MHz	1085	1722	663	-	50	66

Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeSC family.

MachXO2¹

Bus Width	IPexpress Mode	Slices	LUTs	Registers	sysMEM EBRs	External Pins	f _{MAX} (MHz)
32-bit	Master/Target 33 MHz	406	803	582	-	50	33

1. Preliminary information. Performance and utilization data are generated using an LCMXO2-1200HC-6TG144CES device with Lattice Diamond 1.0 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the MachXO2 family.

MachXO¹

Bus Width	IPexpress Mode	Slices	LUTs	Registers	sysMEM EBRs	External Pins	f _{MAX} (MHz)
32-bit	Master/Target 33 MHz	542	1060	642	-	50	33

1. Performance and utilization data are generated using an LCMXO2280C-5FT324C device with Lattice Diamond 1.0 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the MachXO family.

LatticeXP2¹

Bus Width	IPexpress Mode	Slices	LUTs	Registers	sysMEM EBRs	External Pins	f _{MAX} (MHz)
32-bit	Master/Target 33 MHz	851	1060	640	-	50	33
32-bit	Master/Target 66 MHz	1081	1692	661	-	50	66

1. Performance and utilization data are generated using an LFXP2-17E-6F484C device with Lattice Diamond 1.0 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeXP2 family.

LatticeXP¹

Bus Width	IPexpress Mode	Slices	LUTs	Registers	sysMEM EBRs	External Pins	f _{MAX} (MHz)
32-bit	Master/Target 33 MHz	846	1060	642	-	50	33
32-bit	Master/Target 66 MHz	1083	1690	663	-	50	66

1. Performance and utilization data are generated using an LFXP20C-5F484C device with Lattice Diamond 1.0 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeXP family.

Ordering Information

Family	Bus Width	Bus Speed	Master / Target Part Number
LatticeECP3	32-bit	33MHz, 66MHz	PCI-MT32-E3-U6
LatticeECP2M	32-bit	33MHz, 66MHz	PCI-MT32-PM-U6
LatticeECP2	32-bit	33MHz, 66MHz	PCI-MT32-P2-U6
LatticeECP/EC	32-bit	33MHz, 66MHz	PCI-MT32-E2-U6
LatticeSC	32-bit	33MHz, 66MHz	PCI-MT32-SC-U6
MachXO2	32-bit	33MHz	PCI-MT32-M2-U1
MachXO	32-bit	33MHz	PCI-MT32-XO-U6
LatticeXP2	32-bit	33MHz, 66MHz	PCI-MT32-X2-U6
LatticeXP	32-bit	33MHz, 66MHz	PCI-MT32-XM-U6

IP Version: PCI Master/Target 33MHz = 6.6, PCI Master/Target 66MHz = 6.4

Evaluate: To download a full evaluation version of this IP, go to the Lattice IP Server tab in the IPexpress Main Window. All ispLeverCORE IP cores and modules available for download are visible on this tab. *PCI cores for ORCA and

ispXPGA, devices are supported by the Lattice factory-configurable design flow.

Purchase: To find out how to purchase the IP Core, please contact your [local Lattice Sales Office](#).