PE10G2BPT-CX4

Dual Port Copper (CX4) 10 Gigabit Ethernet TOE PCI Express Bypass Server Adapter Broadcom® BCM57710 Based

Product Description

Silicom's dual port copper (CX4) 10 Gigabit Ethernet TOE Bypass server adapter is a PCI-Express X8 network interface card that contains two 10 Gigabit Ethernet ports on a PCI-E adapter.

The Silicom's dual port copper 10Gigabit Ethernet Bypass server adapter is targeted to inline network system that maintains network connectivity when system fails. Silicom's dual port copper (CX4) 10 Gigabit Ethernet Bypass server adapter supports Normal and Bypass modes.

In Normal mode, the ports are independent interfaces. In Bypass mode, all packets received from one port are transmitted to the adjacent port. Silicom's dual port copper (CX4) 10 Gigabit Ethernet Bypass server adapter can Bypass its Ethernet ports on a host system failure, power off, or upon software request.

In Bypass mode, the connections of the Ethernet ports are disconnected from the system and switched over to the other port to create a crossed connection loop-back between the Ethernet ports. Hence, in bypass mode all packets received from one port are transmitted to the adjacent port and vice versa.

This feature enables to bypass a failed system and provides maximum up time for the network. Silicom's dual port copper 10 Gigabit Ethernet Bypass server adapter includes an on board WDT (Watch Dog Timer) controller.

The adapter's software drivers or software application can write commands to the on board WDT controller. The adapter's software drivers, WDT controller and the Bypass circuitry provide an interface that control and manage the mode of the adapter.

Silicom 10Gigabit Ethernet TOE PCI Express Bypass Server adapters is Silicom's forth -generation solution for high performance server network application. Silicom 10Gigabit Ethernet Bypass PCI Express TOE server adapter is based on Broadcom BCM57710 10Gigabit Ethernet controller that features an industry first support for single chip TOE"\ 10Gigabit Ethernet NIC with TCP / IP offload Engine, RDMA NIC (RNIC)*, iSCSI 1.0* /iSER HBA*.

TCP Offload Engine

Silicom 10Gigabit Ethernet TOE PCI Express Bypass Server adapters include dedicated hardware and processors to process the frame that traverse it functionality. On the transmit path, the TOE controller Copied the data directly from the highest hierarchy of buffers available, execute the TCP/IP, adds lower level headers. On the receive, path, the TOE controller process frame up to the higest layer supported present in the frame, removes lower level headers, posts the data directly to application buffers. The tramsmit and the receive TOE functionality relieves the host CPI from the from these time consuming operations.

Convergence NIC

The Silicom 10Gigabit Ethernet TOE PCI Express Bypass Server adapters enable convergence of all networked communication possible in a server, such as data network (LAN), storage network, or file (CIFS / NFS), clustering for high performance commuting or inter process communication by support of RDMA* over TCP. The Silicom TOE server adapter is a convergence networking interface card and allows one network connection to provide access to all information types. Silicom TOE Gigabit Ethernet server adapters can simultaneously support the following functions:

Reliability, Availability, Serviceability

Silicom 10Gigabit Ethernet TOE PCI Express Bypass Server adapters enables fault-tolerant via teaming. Traffic from the failed port is routed through up to seven other members of the team. Silicom 10Gigabit Ethernet TOE PCI Express Bypass Server adapters are the ideal solution for implementing multiple network segments, mission-critical high-powered networking applications and environments within high performance servers.

Key Features

Bypass:

- Bypass Ethernet ports on Power Fail, System Hangs or Software Application Hangs

- Software programmable Bypass or Normal Mode

- On Board Watch Dog Timer (WDT) Controller

- Software programmable time out interval

- Software Programmable WDT Enable / Disable counter

- Software programmable Bypass Capability Enable / Disable

- Programmable state (Bypass mode or Normal mode) at Power up

- Programmable state (Bypass or Normal) at Power off

- Emulates standard NIC

Copper 10Gigabit Ethernet 10GBASE-CX4:

- Short distance Copper 10 Gigabit Ethernet port supports 10Gbase-CX4

- CX4 connector

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TCP offload Engine*:

- Full fast path TCP offload for IPV4 and IPV6

- Zero Copy capable hardware

iSCSI Controller*:

- iSCSI initirator

- iSER (iSCSI over RDMA)

RDMA Controller (RNIC)*:

- RDMA over TCP (iWARP) – RDMAC 1.0 compliant

- Hardware-based data placement in application buffers without CPU intervention (user andkernel modes)

Performance Features:

- Full fast path TCP offload Extremely Low CPU utilization for TCP/IP applications – Host CPU is free to run application code

- Microsoft TCP Chimeny compliant*

- Accelerated IP based storage*

    o Lower CPU utilization for file level storage protocol such as CIFS and NFS

    o iSCSI functionality with low CPU utilization

- RDMA support for data placement in application buffers reduces CPU utilization and lower data transits latencies.*

- Receive Side Scaling (RSS)

- TCP, IP checksum

- TCP segmentation

- Adaptive Interrupts

- Message Signal Interrupts (MSI)

- Host Interface standard support PCI Express 1.1.

- High performance, reliability, and low power use in Broadcom BCM57710 TOE controller

- Server class reliability, availability and performance features:

- Link Aggregation and Load Balancing:

    o Switch dependent: 802.3ad (LACP), Generic Trunking (GEC / FEC)

    o Switch and NIC Independent

    o Failover

- Ultra deep packet buffer per channel lowers CPU utilization

- Virtual LANs –802.1q VLAN tagging

- Jumbo Frame (9KB)

- 802.x flow control

Silicom Ltd. Connectivity Solutions

- Boot ROM embedded or optional can be used for Boot ROM applications

- PCI Power Management Interface. (v1.1)

- LEDs indicator for link/Activity

- LEDs indicators for link /Activity/ Bypass status

Technical Specifications

Bypass Specifications:	
WDT Interval (Software Programmable):	3,276,800 mSec (3,276.8 Sec): Maximum100 mSec (0.1 Sec) : Minimum WDT Interval = (2^wdt_interval_parameter)*(0.1) sec.wdt_interval_parameter: { Valid Range: 0-15}
Copper CX4 10Gigabit Ethernet Technical Specifications – (10GBASE-CX4) Adapters:	
IEEE Standard / Network topology:	Copper 10Gigabit Ethernet, 10GBase-CX4
Data Transfer Rate:	3.125GBd per one lane, X4 transmit, X4 receive
Cables and Operating distance: (Up to)	CX4 Cable 5m
Operating Systems Support	
Operating system support:	Windows Linux
General Technical Specifications	
Interface Standard:	PCI-Express Base Specification Revision 1.1
Board Size:	Standard height short PCI add in card:167.64mm X 111.15mm (6.60"X 4.376")
PCI Express Card Type:	X8 Lane
PCI Express Voltage:	+3.3V +-9%, +12V +- 8%
PCI Connector:	X8 Lane
Controller:	Broadcom: BCM57710

Holder:	Metal Bracket Full Height and low profile
Operating Humidity:	0%–90%, non-condensing
Operating Temperature:	0°C – 50°C (32°F – 122°F)
Storage:	-20°C–65°C (-4°F–149°F)
EMC Certifications:	FCC Part 15, Subpart B Class B Conducted Emissions Radiated Emissions CE EN 55022: 1998 Class B Amendments A1: 2000; A2: 2003 Conducted Emissions Radiated Emissions CE EN 55024: 1998 Amendments A1: 2000; A2: 2003 Immunity for ITE Amendment A1: 2001 CE EN 61000-3-2 2000, Class A Harmonic Current Emissions CE EN 61000 3-3 1995, Amendment A1: 2001 Voltage Fluctuations and Flicker CE IEC 6100-4-2: 1995 ESD Air Discharge 8kV. Contact Discharge 4kV CE IEC 6100-4-3:1995 Radiated Immunity (80-1000Mhz), 3V/m 80% A.M. by 1kHz CE IEC 6100-4-4:1995 EFT/B: Immunity to electrical fast transients 1kV Power Leads, 0.5Kv Signals Leads CE IEC 6100-4-5:1995 Immunity to conductive surges COM Mode; 2kV, Dif. Mode 1kV CE IEC 6100-4-6:1996 Conducted immunity (0.15-80 MHz) 3VRMS 80% A.M.By 1kHz CE IEC 6100-4-11:1994 Voltage Dips and Short Interruptions V reduc >95%, 30% >95% Duration 0.5per, 25per, 250per

LEDs	
LEDs:	LED per port Link / ACT / Bypass: Turns on link, Blink on activity (green) Turns on bypass mode (yellow)
LEDs location:	LED is located on the PCB, visible via holes in the metal bracket holder

Connectors:	CX4

Order Information

P/N	Description	Notes
PE10G2BPT-CX4	Copper (CX4) 10 Gigabit Ethernet TOE PCI Express Bypass Server Adapter*	X8, Based on Broadcom BCM57710, RoHS compliant

*iSCSI, iSER and RDMA are not released. TOE is not released. When TOE will be released it will support it will support Windows Chimeny only. Initial release will be L2 legacy drivers

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