PE310G6SPI9

Six Port Fiber SFP+ 10 Gigabit Ethernet PCI Express Network Interface Card Intel® 82599ES Based

Product Description

Silicom's 10 Gigabit Ethernet PCI Express server adapters are designed for Servers and high-end appliances. The Silicom 10 Gigabit Ethernet PCI Express Server adapters offer simple integration into any PCI Express X16 to 10Gigabit Networks.

The performance is optimized so that system I/O is not the bottleneck in high-performance networking applications.

The Silicom 10GB NIC Ethernet PCI Express Network Interface Cards are based on Intel 82599ES Ethernet controller with two fully integrated Gigabit Ethernet Media Access Control (MAC) and SFI ports.

In addition to managing MAC and PHY Ethernet layer functions, the controller manages PCI Express packet traffic across its transaction, link, and physical/logical layers. Using hardware acceleration, the controller offloads tasks from the host, such as TCP/UDP/IP checksum calculations and TCP segmentation.

Silicom's 10 Gigabit Ethernet Cards are the ideal solution for implementing multiple network segments, mission-critical high-powered networking applications and environments within high performance servers.

Key Features

SFP+ 10Gigabit Ethernet:

10Gigabit Ethernet Adapter with SFP cage support:

-XR: Copper 10SFP+Cu (Passive Direct Attach Cable):

- Compliant with the SFP+ MSA SFF-8431 specification
- Up to 10 meters

-SR: Fiber 10 Gigabit Ethernet 10GBASE-SR:

- 10BASE-SR with 10Gigabit 850nM Small form Factor Pluggable (SFP+)

-LR: Fiber 10 Gigabit Ethernet 10GBASE-LR:

- 10BASE-LR with 10Gigabit 1310nM Small form Factor Pluggable (SFP+)

-SRD: Fiber 1/10 Gigabit Ethernet 1000Base-SX / 10GBASE-SR:

- 1000BASE-SX with 1G 850nM Small form Factor Pluggable (SFP+)
- 10GBASE-SR with 10Gigabit 850nM Small form Factor Pluggable (SFP+)

-LRD: Fiber 1/10 Gigabit Ethernet 1000Base-LX / 10GBASE-LR:

- 1000BASE-LX with 1G 1310nM Small form Factor Pluggable (SFP+)
- 10GBASE-LR with 10Gigabit 1310nM Small form Factor Pluggable (SFP+)

-SR: Fiber 10 Gigabit Ethernet 10GBASE-SR:

- 10 Gigabit Fiber Ethernet port supports 10GBASE-SR (850nM LAN PHY)
- 10 Gigabit 850nM Small form Factor Pluggable (SFP+)

-LR: Fiber 10 Gigabit Ethernet 10GBASE-LR:

- 10 Gigabit Fiber Ethernet port supports 10GBASE-LR (1310nM LAN PHY)
- 10 Gigabit 1310nM Small form Factor Pluggable (SFP+)

-SRD: Fiber 1/10 Gigabit Ethernet 1000Base-SX / 10GBASE-SR:

- 10 Gigabit Fiber Ethernet port supports 10GBASE-SR (850nM LAN PHY)
- 1 Gigabit Fiber Ethernet port supports 1000BASE-SX (850nM LAN PHY)
- 1/10Gigabit 850nM Small form Factor Pluggable (SFP+)

-LRD: Fiber 1/10 Gigabit Ethernet 1000Base-LX / 10GBASE-LR:

- 10 Gigabit Fiber Ethernet port supports 10GBASE-LR (1310nM LAN PHY)
- 1 Gigabit Fiber Ethernet port supports 1000BASE-LX (1310nM LAN PHY)
- 1/10 Gigabit 1310nM Small form Factor Pluggable (SFP+)

Host Interface:

- PCI Express X16 lanes
- Support PCI Express Base Specification 3.0 (8GT/s)
- Low-Profile Adapter
- Low power
- SFP+ cage

Performance Features:

- IPV4 and IPV6 Supports for IP/ TCP and IP/UDP Receive Checksum offload
- Fragmented UDP checksum offload for Packet Reassembly
- CPU utilization- the 82599 supports reduction in CPU utilization, mainly by supporting Receive Side Coalescing (RSC)

- Support for 16 virtual machine Device Queues (VMDq) per port
- Support Direct Cache Access (DCA)
- Advanced memory architecture reduces latency by preceding TSO packets. A TSO packet may be interleaved with other packets going to the wire
- Minimized device I/O interrupts using MSI and MSI-X
- Offload of TCP / IP / UDP checksum calculation and TCP segmentation
- Large on chip receive packet buffer (512 KB)
- Large on chip transmit packet buffer (160KB)
- Supports the VPD (Vital Product Data) capability defined in the PCI specification ver. 3.0
- Time sync- IEEE1588- Precision Time Protocol (PTP)
- Supports the BCN (Backward Congestion Notification) protocol in addition to the EEDC functionality

LAN Features:

- IEEE 802.x flow control support
- IEEE 802.1q VLAN tagging support
- IEEE 802.1p layer 2 priority encoding
- Jumbo Frame (up to 15.5KB)
- Link Aggregation and Load Balancing
- RFC2819 RMON MIB statistics
- TCP Segmentation Offload Up to 256KB
- Ipv6 Support for IP/TCP Receive Checksum Offload
- LEDs indicator for link/Activity

Technical Specifications

SFP+ 10Gigabit Ethernet Technical Specifications Adapters:	
SFP+ (Small Form Factor Pluggable) supports:	SFI interfaces supports 10GBase-R PCS and 10 Gigabit PMA in order to connect with SFP+ to 10GBase-SR / / 1000Base-SX / 10GBase-LR and SFP+ Direct Attach
10GBase-SR SFP+: **IEEE Standard / Network topology:**	Fiber 10Gigabit Ethernet, 10GBASE-SR (850nM LAN PHY)
10GBase-SR SFP+: **Data Transfer Rate :**	10.3125GBd
10GBase-SR SFP+:	62.5um, 160MHz/Km 26m

Cables and Operating distance Up to:	62.5um, (OM1)200MHz/Km 33m 50um, 400MHz/Km 66m 50um, (OM2)500 MHz/Km 82m 50um, (OM3)2000MHz/Km 300m
10GBase-LR SFP+: IEEE Standard / Network topology:	Fiber 10Gigabit Ethernet, 10GBASE-LR (1310nM LAN PHY)
10GBase-LR SFP+: Data Transfer Rate:	10.3125GBd
10GBase-LR SFP+: Cables and Operating distance Up to:	Single-Mode: 10000m at 9um
10GSFP+Cu : IEEE Standard / Network topology:	Copper 10Gigabit Ethernet, 10GSFP+Cu (Direct Attach)
1000Base-SX / 10GBase-SR SFP+: IEEE Standard / Network topology:	Fiber Gigabit Ethernet, 1000Base-SX (850nM LAN PHY) Fiber 10Gigabit Ethernet, 10GBASE-SR (850nM LAN PHY)
1000Base-SX / 10GBase-SR SFP+: Data Transfer Rate:	10.3125GBd / 1.25GBd
10000Base-SX / 10GBase-SR SFP+: Cables and Operating distance Up to:	**10000Base-SX:** 62.5um, 160MHz/Km 220m 62.5um, (OM1)200MHz/Km 275m 50um, 400MHz/Km 500m 50um, (OM2)500 MHz/Km 550m 50um, (OM3)2000MHz/Km >550m **10GBase-SR:** 62.5um, 160MHz/Km 26m 62.5um, (OM1)200MHz/Km 33m 50um, 400MHz/Km 66m 50um, (OM2)500 MHz/Km 82m 50um, (OM3)2000MHz/Km 300m
1000Base-LX / 10GBase-LR SFP+:	Fiber Gigabit Ethernet, 1000Base-LX (1310nM LAN PHY) Fiber 10Gigabit Ethernet, 10GBASE-LR (1310nM LAN PHY)

IEEE Standard / Network topology:	
1000Base-LX / 10GBase-LR SFP+: **Data Transfer Rate:**	10.3125GBd / 1.25GBd
1000Base-LX / 10GBase-LR SFP+: **Cables and Operating distance Up to:**	**10000Base-LX:** Single-Mode: 5000m at 9um **10GBase-LR:** Single-Mode: 10000m at 9um
-SRD: Fiber 1000BASE-SX / 10GBASE-SR Technical Specifications:	
Optical Output Power (1G):	Minimum: -9.5 dBm
Optical Receive Sensitivity (1G):	Maximum: -17 dBm
Maximum Input Power (1G):	Maximum: +0.5dBm
Output Transmit Power (10G):	Minimum: -5 dBm
Optical Receive Sensitivity (10G):	Maximum: -11.1 dBm
Maximum Input Power (10G):	Maximum: +0.5dBm
-LRD: Fiber 1000BASE-LX / 10GBASE-LR Technical Specifications:	
Optical Output Power (1G):	Minimum: -11 dBm
Optical Receive Sensitivity (1G):	Maximum: -19 dBm
Maximum Input Power (1G):	Maximum: +0.5dBm
Output Transmit Power (10G):	Minimum: -8.2 dBm
Optical Receive Sensitivity (10G):	Maximum: -12.5 dBm

Maximum Input Power (10G):	Maximum: +0.5dBm
Operating Systems Support:	
Operating system support:	Windows Linux FreeBSD VMware
PE310G6SPi9-XR: General Technical Specifications	
Interface Standard:	PCI-Express Base Specification Revision 3.0 (8 GT/s)
Board Size:	Standard height short add-in card: 167.64mm x 111.15mm (6.6”X 4.376”)
PCI Express Card Type:	X16 Lane
On Board Connector Voltage	+12V +/-8%
PCI Connector:	X16 Lane
Controllers:	3 X Intel 82599ES
Holder:	Metal Bracket
Weight:	270gr(9.524 oz.)
Power Consumption (SR):	25.5W, 2.12 at 12V: Typical all ports operate at 10Gb/s, 25.2W, 2.1 A at 12V: Typical No link at all ports
Power Consumption (LR):	25.8W, 2.15 at 12V: Typical all ports operate at 10Gb/s, 25.2W, 2.1 A at 12V: Typical No link at all ports
Operating Temperature:	0°C – 45°C (32°F – 113°F)
Air Flow Requirements:	200 ft./min
Storage:	-40°C–65°C (-40°F–149°F)
EMC Certifications:	FCC Part 15, Subpart B Class A Conducted Emissions Radiated Emissions CE EN 55022: 1998 Class A Amendments A1: 2000; A2: 2003

	Conducted Emissions Radiated Emissions CE EN 55024: 1998 Amendements 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, Amendement 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 reduce >95%, 30% >95% Duration 0.5per, 25per, 250per
MTBF*:	With transceivers MTBF(Years): 40 Without transceivers (Years): 74 * According to Telcordia SR-332 Issue 2. Environmental condition – GB (Ground, Fixed, and Controlled). Ambient temperature 40°C
LEDs	
LEDs:	(2) LEDs per port Upper LED : Link Speed: Turns on Blue 10G Link. Turns on Yellow 1G Link Lower LED: Link/Act : Turns on link (Blue), Blinks on activity (Green)
LEDs location:	LEDs are located on the PCB, visible via holes in the metal bracket. Each Blue Link/Act and LED and Yellow/ Blue Link Speed LED is located above its own SFP connector port by light pipes

Connectors:	(6) SFP+ cage

Order Information

P/N	Description	Notes
PE310G6SPi9-XR	Six Port SFP+ 10 Gigabit Ethernet PCI Express Server Adapter	X16 Gen3 , Standard height short add-in card, Based on Intel 82599ES, Support Direct Attached Copper cable, Support Silicom SFP+ approved transceiver. RoHS compliant
PE310G6SPi9-SR	Six Port Fiber (SR) 10 Gigabit Ethernet PCI Express Server Adapter	X16 Gen3, Based on Intel 82599ES, Standard height short add-in card, on board support for Fiber SR, RoHS compliant
PE310G6SPi9-LR	Six Port Fiber (LR) 10 Gigabit Ethernet PCI Express Server Adapter	X16 Gen3, Based on Intel 82599ES, Standard height short add-in card, on board support for Fiber LR, RoHS compliant
PE310G6SPi9-SRD	Six Port Fibre (SX/SR) 1/10 Gigabit Ethernet PCI Express Server Adapter	X16 Gen3, Based on Intel 82599ES, Standard height short add-in card, on board support for Fiber SX/SR, RoHS compliant
PE310G6SPi9-LRD	Six Port Fibre (LX/LR) 1/10 Gigabit Ethernet PCI Express Server Adapter	X16 Gen3, Based on Intel 82599ES, Standard height short add-in card, on board support for Fiber LX/LR, RoHS compliant

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