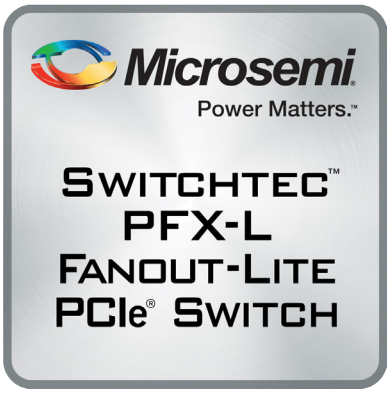
Switchtec PFX-L Fanout-Lite PCIe Gen3 Switch Family

PM8566, PM8565, PM8564, PM8563, PM8562, and PM8561

The Switchtec PFX-L Fanout-Lite PCIe Gen3 Switch Family is composed of PCIe Base Specification 3.1-compliant switches supporting up to 96 lanes, six virtual switch partitions, two non-transparent bridges (NTBs), six hot-plug controllers, and comprehensive diagnostics and debug capabilities.

Typical applications for the PFX-L include data center equipment, defense and industrial servers, workstations, test equipment, video production and broadcasting equipment, cellular infrastructure, access networks, metro networks, and core networking.



Features

High-Performance Non-Blocking Switches

- Up to 174 GB/s switching capacity
- 96-lane, 80-lane, 64-lane, 48-lane, 32-lane, and 24-lane variants
- Ports bifurcate to x4/x8/x16 lanes
- Up to two NTBs assignable to any port
- Logical non-transparent (NT) interconnect allows for larger topologies
- Supports 1+1 and N+1 failover mechanisms
- NT address translation using direct windows and multiple sub-windows per BAR
- Supports multicast groups per port

Error Containment

- Advanced Error Reporting (AER) on all ports
- Hot-plug controllers
- GPIOs configurable for different cable/connector standards

PCIe Interfaces

- Passive, managed, and optical cables
- SHPC-enabled slot and edge connectors

Diagnostics and Debug

- Transaction Layer Packet (TLP) generator for testing and debugging of links and error handling
- Real-time eye capture
- Any-to-any port mirroring for debug purposes
- External loopback at PHY and TLP layers
- Errors, statistics, performance, and TLP latency counters

Peripheral I/O Interfaces

- Up to two (master/slave) two-wire interfaces (TWIs) with SMBus support
- Up to 78 parallel GPIO pins
- 1 UART
- 1 QSPI with optional inline ECC
- JTAG and EJTAG interface

Highlights

- Hot-plug controllers, end-to-end data integrity protection, high-quality, and low-power fifth-generation SERDES
- Comprehensive diagnostics and debugging: PCIe generator and analyzer, per-port performance and error counters, multiple loopback modes, and real-time eye capture
- Up to 24 ports, two NTBs, and six virtual switch partitions
- Flexible x4, x8, and x16 port bifurcation with no restrictions on configuring ports as either upstream or downstream, or on mapping ports to NTBs

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High-Speed I/O

- PCIe Gen3 8 GT/s
- Supports PCIe-compliant link training and manual PHY configuration

Power Management

- Active State Power Management (ASPM)
- Software controlled power management

Chiplink Diagnostic Tools

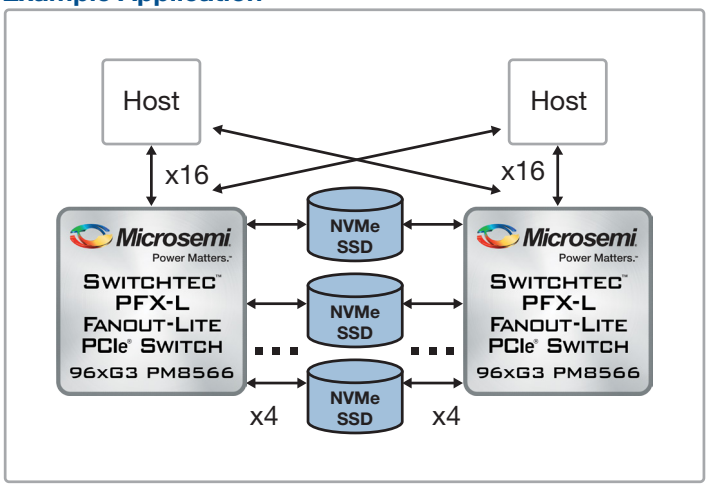
- Extensive debug, diagnostics, configuration, and analysis tools with an intuitive GUI
- Access to configuration data, management capabilities, and signal integrity analysis tools (such as real-time eye capture)
- Connects to device over in-band PCIe or sideband signals (UART, TWI, and EJTAG)

Evaluation Kit

The evaluation kit is a device evaluation environment supporting multiple host and SSD interfaces. The following kits are available for evaluating PFX, PSX, and PFX-L features using the populated PSX 96xG3 device on the PM5461-KIT and the PSX 48xG3 device on the PM5462-KIT:

- PM5461-KIT—PSX/PFX/PFX-L 96/80/64xG3, 1-Slot, 16 HD Evaluation Kit (PMC-2151996)
- PM5462-KIT—PSX/PFX/PFX-L 48/32/24xG3, 3-Slot Evaluation Kit (PMC-2151645)

Example Application



Ordering Information

Product	Lanes	Ports/NTBs	Virtual Switch Partitions	Hot-Plug Controllers	Package	Ordering Number
PFX-L 96xG3	96	24/2	6	6	37.5 mm × 37.5 mm	PM8566B-FEI
PFX-L 80xG3	80	20/2	6		37.5 mm × 37.5 mm	PM8565B-FEI
PFX-L 64xG3	64	16/2	6		37.5 mm × 37.5 mm	PM8564B-FEI
PFX-L 48xG3	48	12/2	6		27 mm × 27 mm	PM8563B-F3EI
PFX-L 32xG3	32	28/2	4		27 mm × 27 mm	PM8562B-F3EI
PFX-L 24xG3	24	6/2	3		27 mm × 27 mm	PM8561B-F3EI

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