PRODUCT BRIEF

Intel® Ethernet Connection C827 and XL827

Retimers extend the reach for 10GbE and 25GbE signals

Key Features

- Single port 100GbE to 100GbE retimer
- Four port 25GbE to 25GbE retimer
- Single port 40GbE to 40GbE retimer
- Four port 10GbE to 10GbE retimer
- Supports independent lane speeds
- CPRI Specification V7.0
- Forward Error Correction (FEC)
- Physical Media Dependent (PMD) training
- Synchronous Ethernet (SyncE)
- Auto-negotiation
- 2.6 W (typical) at 4x 25GbE
- 14mm x 14mm FCBGA package

Overview

The Intel® Ethernet Connection C827 and XL827 family of retimers extends the reach of the Ethernet signals. Retimers enable system designers to optimize PCB material cost for longer channel routes on server and embedded designs.

These products offer three design options:

- 1x 100GbE or 4x 25GbE retimer at industrial temperature operation
- 1x 100GbE or 4x 25GbE retimer at commercial temperature operation
- 1x 40GbE or 4x 10GbE retimer at commercial temperature operation

By supporting a wide variety of IEEE and industry specifications for Ethernet, these retimers also enable maximum compatibility to Physical Layer (PHY) media types. The retimers also support Common Public Radio Interface (CPRI) to extend the reach between a base station and radio transceiver.

Unlike a redriver, these retimers are capable of recovering and reclocking the data. The retimers support Physical Media Dependent (PMD) control function for BASE-R training and Clause 73 Auto-Negotiation, and enable Forward Error Correction (FEC) independent of the host controller.

With the Intel Ethernet Connection C827 and XL827 family of retimers, the designer can expect a consistent link behavior compliant to IEEE specifications, and eliminate the requirement to manually tune the link on individual channels.

Operating Modes

Depending on data path requirements, the designer has the flexibility to operate the retimers in two operating modes:

Transparent mode retimes the data without decoding and re-encoding the PCS/FEC layers which lowers latency through the retimer. In addition, CPRI data rates are supported in transparent mode.

Terminated mode decodes/encodes the PCS and FEC layers. Terminated mode can enable FEC on a data path that did not originally implement this Bit Error Rate improvement algorithm. In addition, each link of the retimer can be independent which allows for the mixing and matching of different PMDs.

Platform Support

The Intel® Ethernet Connection C827 and XL827 retimers will be validated on future Intel® Reference Platforms supporting system-on-a-chip products.

Intel Reference Platforms help customers implement solutions with high speed data paths. Please contact your Intel Sales Representative for more information.

FEATURES	DESCRIPTION
Transparent mode	• Reduce latency with transparent mode by retiming data without decoding and re-encoding the PCS/FEC layers; CPRI supported
Terminated (protocol aware) mode	• PCS and FEC layers are terminated (decoded/encoded) enabling independent link segments
Forward Error Correction (FEC)	• To significantly reduce Bit Error Rate (BER), the retimer can add forward error correction (FEC) in Terminated mode; both RS-FEC (Reed Solomon) and KR-FEC are supported
Autonomous Adaptive Receiver Equalization	• Automatic receive optimization yields the best performance on any link, eliminating the need for manual training
IEEE 802.3 Auto-Negotiation and PMD Training	• For CR and KR PMDs, Auto-Negotiation selects the best operating speed and FEC mode, while PMD training optimizes transmitter equalization for the link partner and channel
Independent port enabling and link speeds	• Each port can be configured and operated at different speeds and in different modes
On-die thermal sensor	• Monitor on-die temperature; program a threshold temperature to generate an interrupt

INTERFACE	DESCRIPTION
Ethernet Interface Support	1GbE: 1000BASE-X/KX, SGMII 2.5GbE: 2500BASE-KX 10GbE: SFF-8431 SFI, 10GBASE-KR 25GbE: 25GBASE-KR/CR, 25GBASE-KR1/CR1, 25G-AUI, C2M 40GbE: XLAUI, XLPPI, 40GBASE-KR4/CR4 50GbE: 50GBASE-KR2/CR2 (Consortium) 100GbE: 100GBASE-KR4/CR4, CAUI-4
Common Public Radio Interface (CPRI) Specification V7.0	24330.24 Mb/s 12165.12 Mb/s 10137.6 Mb/s 9830.4 Mb/s 6144.0 Mb/s 4915.2 Mb/s 2457.6 Mb/s

MECHANICAL AND THERMAL	DESCRIPTION
Lead-free technology and RoHS-compliant	• Complies with the European Union directive 2011/65/EU to reduce the use of hazardous materials
Package	• 14mm x 14mm FCBGA
Commercial temperature SKU	• Intel® Ethernet Connection C827-AM will operate at 0°C to 70°C
Industrial temperature SKU	• For extreme temperature environments, Intel® Ethernet Connection C827-IM will operate at -40°C to 105°C

PRODUCT NAME	PRODUCT CODE
Intel® Ethernet Controller C827-AM	• EZC827AM
Intel® Ethernet Controller C827-IM	• EZC827IM
Intel® Ethernet Controller XL827-AM	• EZXL827AM

Warranty

Intel limited lifetime hardware warranty, 90-day money-back guarantee (U.S. and Canada) and worldwide support.

Product Information

For information about Intel® Ethernet Products, visit:
intel.com/ethernet

Customer Support

For customer support options in North America visit:
intel.com/content/www/us/en/support/contact-support.html

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