DS125RT410, DS125DF410 PRODUCT BRIEF

ADVANCE INFORMATION
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Low Power Multi-Rate Quad Channel Retimer

General Description

The DS125RT410/DS125DF410 is a four-channel multi-rate retimer with integrated signal conditioning. Both the DS125RT410 and the DS125DF410 include an input Continuous-Time Linear Equalizer (CTLE) on each channel. The DS125DF410 also includes a five-tap Decision Feedback Equalizer (DFE) on each channel.

The DS125DF410 can enhance the reach and robustness of long, lossy, crosstalk-impaired high speed serial links to achieve BER < 1×10^{-15}. For less demanding applications/interconnects, the non-DFE variant DS125RT410 can be used to achieve the same BER performance. The two devices are pin-compatible.

Each channel of the DS125RT410/DS125DF410 independently locks to serial data at data rates from 9.8 to 12.5 Gbps or to any supported submultiple of these data rates. A reference clock is not required, which simplifies system design and lowers overall cost. Both the DS125RT410/DS125DF410 support half-rate, quarter-rate and one-eighth-rate for backward compatibility. A protocol select mode is available to speed up lock time.

Programmable transmit de-emphasis (up to -15 dB), transmit V_{OD} (up to 1300 mVp-p) and adaptive receive equalization (up to 34 dB boost at 5 GHz) enable data transmission over lossy copper cables of typical lengths greater than 10 m or backplanes with multiple connectors and typical trace lengths greater than 40 inches. The CDR function is ideal for use in parallel optical modules to reset the jitter budget and retime high speed serial data.

The programmable settings can be applied easily using the SMBus interface or they can be loaded via an external EEPROM. An on-chip eye monitor and a PRBS generator allow real-time measurement of high speed serial data for system bring-up or field tuning.

The device is offered in a 48-pin LLP, 7 mm x 7 mm flow-through package.

Notice: This document is not a full datasheet. For more information regarding this product or to order samples please contact your local Texas Instruments sales office or visit http://www.ti.com.

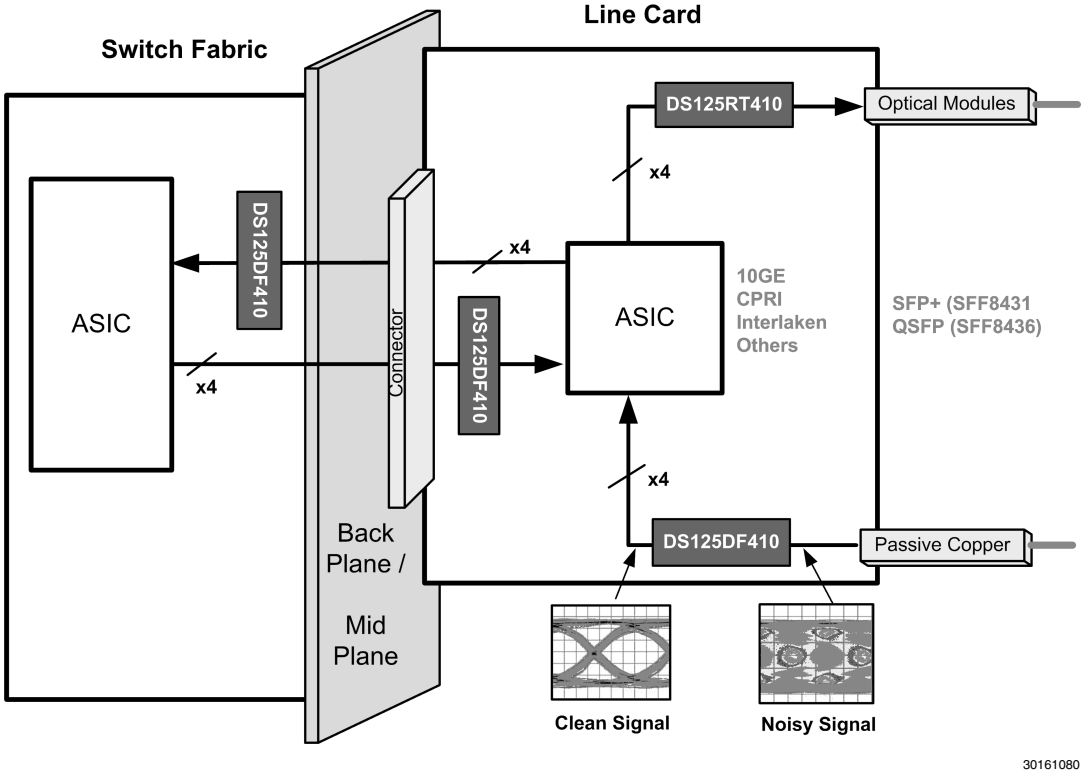
Features

- All devices in the retimer family are pin compatible with each other and with the quad buffer-repeater. The pin-compatible device family includes the following:
  - DS100RT410 (EQ+CDR+DE): 10.3125 Gbps
  - DS100DF410 (EQ+DFE+CDR+DE): 10.3125 Gbps
  - DS110RT410 (EQ+CDR+DE): 8.5 - 11.3 Gbps
  - DS110DF410 (EQ+DFE+CDR+DE): 8.5 - 11.3 Gbps
  - DS125RT410 (EQ+CDR+DE): 9.8 - 12.5 Gbps
  - DS125DF410 (EQ+DFE+CDR+DE): 9.8 - 12.5 Gbps
  - DS100BR410 (EQ+DE): Up to 10.3125 Gbps
- Typical Power Dissipation (EQ+CDR+DE): 150 mW / channel
- Typical Power Dissipation (EQ+DFE+CDR+DE): 180 mW / channel
- Locks to 1/2, 1/4, 1/8 legacy data rates
- Fast lock operation based on protocol select mode
- Adaptive equalization up to 34 dB boost at 5 GHz
- Adjustable transmit V_{OD} : 600 to 1300 mVp-p
- Adjustable transmit de-emphasis to -15 dB
- Programmable output polarity inversion
- Input signal detection, CDR lock detection/indicator
- On-chip Eye Monitor (EOM), PRBS generator
- Single 2.5 V ±5% power supply
- SMBus/EEPROM configuration modes

Applications

- Host-side front-port and backplane interface, SFF-8431, SFF-8436
- Ethernet: 10GbE, 1GbE
- CPRI: Line bit rate options 3–7
- Interlaken: All lane bit rates

Typical Application Diagram



Notes

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