DS100RT410, DS100DF410 PRODUCT BRIEF

ADVANCE INFORMATION
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Low Power 10GbE Quad Channel Retimer

General Description

The DS100RT410/DS100DF410 is a four-channel 10GbE retimer with integrated signal conditioning. Both the DS100RT410 and the DS100DF410 include an input Continuous-Time Linear Equalizer (CTLE) on each channel. The DS100DF410 also includes a five-tap Decision Feedback Equalizer (DFE) on each channel.

The DS100DF410 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 DS100RT410 can be used to achieve the same BER performance. The two devices are pin-compatible.

Each channel of the DS100RT410/DS100DF410 independently locks to 10GbE serial data at a data rate of 10.3125 Gbps or to 1GbE data at a data rate of 1.25 Gbps. A reference clock is not required, which simplifies system design and lowers overall cost. Both devices support either data rate. A protocol-select mode is available to speed up lock time.

Programmable transmit de-emphasis (up to -12 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

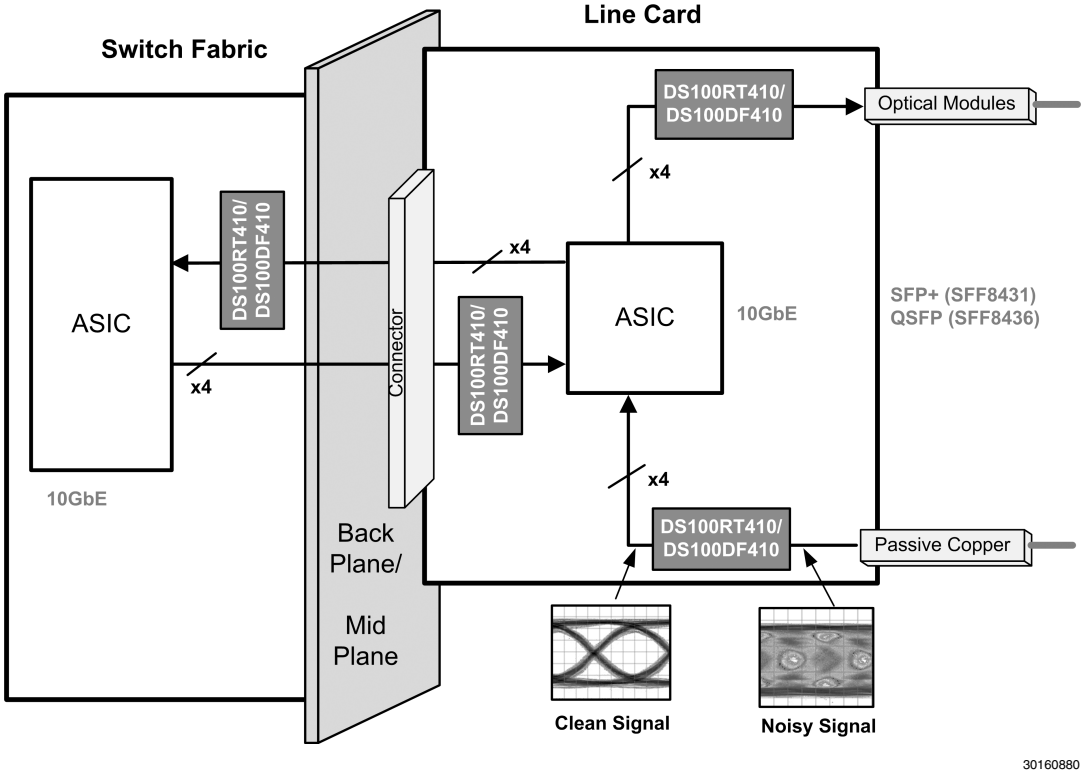
- All devices in the retimer family are pin compatible with each other and with the quad buffer-repeater. The pin-compatible device family includes the following:
  - DS100RT410 (EQ+CDR+DE): 10.3125 Gbps
  - DS100DF410 (EQ+DFE+CDR+DE): 10.3125 Gbps
  - DS110RT410 (EQ+CDR+DE): 8.5 - 11.3 Gbps
  - DS110DF410 (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 10.3125 Gbps and 1.25 Gbps 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 -12 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 (10GbE and 1GbE)
- Ethernet: 10GbE, 1GbE

For other data rates and data transmission protocols, other pin-compatible devices in the retimer family can be used.

Typical Application Diagram



Notes

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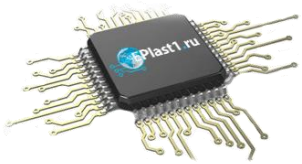

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