

Intel® Integrated Solution for OC-48/STM 16 Network Element with Forward Error Correction

Utilizing Intel® IXF30025 Device and GD16523/GD16524** Chipset

Application Overview

Incoming Optical Transport Networking (OTN) technology enables the direct transport of various heterogeneous types of signals on optical backbones, across multiple wavelengths. To facilitate quick design and implementation of equipment manufacturers' products in the OTN space, Intel has developed an off-the-shelf solution for OC-48 and OC-192 applications.

The Intel® IXF30025 is a Digital Wrapper/Forward Error Correction Device for 2.5Gbps Fiber Optical Transmission Systems, whereas the Intel® IXF30005 is targeted for 10Gbps Fiber Optical Transmission Systems.

The Intel IXF30025 feature set will be similar to Intel IXF30005, and pin-layout is identical, which enables easy and seamless migration from IXF30005 to IXF30025 or visa versa.

The Intel IXF30025 digital wrapper device enables the design and development of next-generation OTN elements that provide all the functions required to transport a client signal over an optical channel. The Intel solution is based on the digital signal wrapping technique defined in ITU-T's G.709 recommendation and provides transmission protection using Forward Error Correction (FEC).

For added flexibility, the Intel IXF30025 can be operated in three ways:

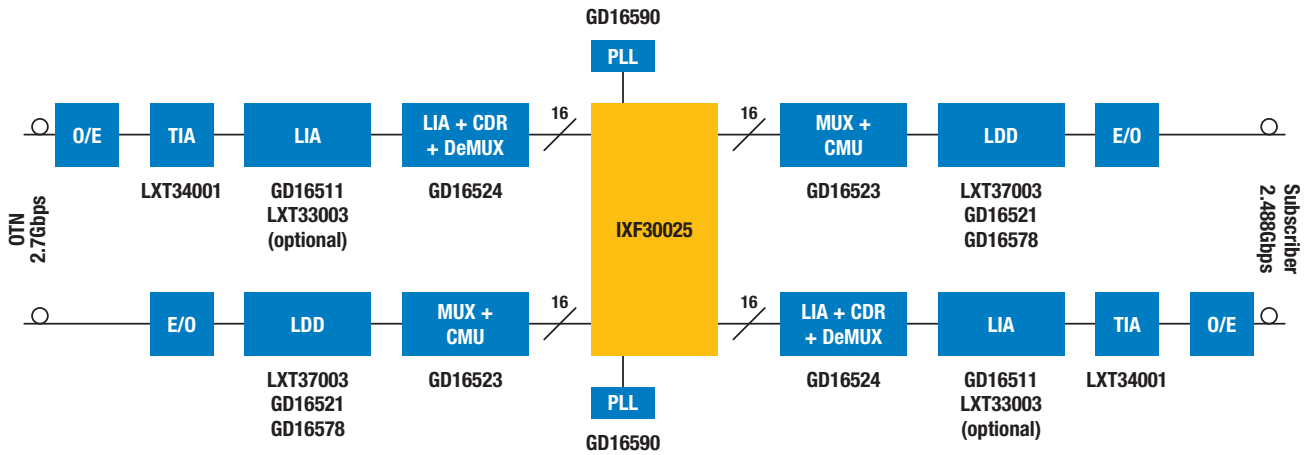
- As a *bridge*, interfacing between existing legacy systems such as SONET/SDH, ATM, 1GbE; and ITU-T G.709-compliant OTN systems

- As a *gateway*, connecting two separate G.709-based OTN networks that run on different clocks
- As a *network element* inside a G.709-compliant OTN, providing all required capabilities for managing the OTN

High-Performance Chipset

The Intel® GD16523 transmitter and Intel® GD16524 receiver combine to deliver a high-performance chipset for various optical telecommunications systems. The chipset supports multiple line-rates designed for standard SONET OC-3/12/48, SDH STM 1/4/16 line rates, as well as Gigabit Ethernet. The GD16524 receiver features high-speed serial loop-back input, peak detection for signal level monitoring and Automatic Gain Control (AGC), Consecutive Identical Bit Sequence (CID), and Bit Error Rate (BER) detection. The GD16523 transmitter features double Phase Locked Loop (PLL) with forward clocking, FIFO and loop-back functionalities. The GD16523 transmitter can also be configured for dynamic phase alignment.

The GD16523/24 chipset exceeds ITU-T and Telcordia requirements and is manufactured using a well-proven silicon bipolar technology. This offers the performance, stability and reliability customers demand for optical communication systems. In addition, the GD16523/24 chipset uses 40 percent less power than the GD16556/57 chipset, a benefit that makes the GD16523/24 an ideal solution when integrating the Intel IXF30025 device.



Chipset Features

	GD16523/24	GD16556/57
Interface	16-bit LVPECL	16-bit LVDS
Size	100 lead TQFP (14x14 mm)	100 lead TQFP (14x14 mm)
Power Consumption (for each device)	800mW @ 3.3V	1.3W @ 3.3V
Digital Wrapping	—	+ (15/14, 16/15, 32/31 divider ratio)
Receiver input sensitivity	5mV, differential	5mV, differential

Features

- Fully OIF/ITU-T compliant
- Bridges SONET/SDH networks to OTN
- Forward Error Correction (FEC) capability (6dB coding gain)
- Supports OC-48/STM 4 and OC-192/STM 16 and is pin compatible with IXF30005 for OC-192/STM 16 support
- Multi-rate Serializer/Deserializer (SerDes) chipset compatible with FEC data rates
- Low-power consumption

Benefits

- Market acceptance
- Existing SONET/SDH networks can be reutilized, providing cost savings for equipment manufacturers
- Cost-effective optics, longer distance
- Enables re-use of design
- Simple solution for standard SONET/SDH and FEC applications
- Eases mechanical systems design and power management

Note: The GD16523/24 and GD16556/57 SerDes chipsets and IXF30025 also support OC-3/12 and STM 4/16 rates.

Key Applications

Telecommunication Systems

- SONET OC-48
- SDH STM 16

Submarine Systems

Optical Transport Network

DWDM Systems

- DWDM transmission equipment and terminals
- DWDM regenerators
- DWDM cards on SONET/SDH add/drop multiplexers and cross connect

Support Collateral

Item	Description	Order Number
Product Brief	■ Intel® IXF30025 Product Brief	250439
Flyer Card	■ Intel® 2.5G Applications Brochure	
The following documents are available only subject to NDA		
Data Sheet	■ Intel® IXF30025	Please contact your local rep.
Specification Update	■ Intel® IXF30025	Please contact your local rep.
Application Note	■ Intel® 2.5Gbps ITU-T G.709 and G.975 FEC/WRAP Transponder Architectures	Please contact your local rep.
Software Models	■ Intel® IXF30025	Please contact your local rep.
Data Sheet Evaluation System	■ Intel® IXD80202 Data Sheet	Please contact your local rep.
How-to-get-started	■ Intel® IXD80202 How to Get Started Evaluation System	Please contact your local rep.
Software	■ Intel® IXD80202 Software	Please contact your local rep.

Intel in Communications

Intel is a leading supplier of communications building blocks, adding value at many levels of integration. Through continuous innovation and advancements in Ethernet connectivity and processing in the network, Intel is delivering, along with its customers and developer community, a wide choice of solutions that enable faster time-to-market, longer time-in-market, and increased revenue opportunity.

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**GD indicates an Intel part that retains the branding of Intel's former GiGA subsidiary.

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