CORTINA

Product Brief

CS605x Family of Transport Processors

Key Features

- Transport and mapping of 100G, 40G, and 10G signals for OTN and Ethernet networks
- Aggregation & de-aggregation of up to ten 10GE/ODU2(e), and two 40GE/ ODU3(e) into OTU4 signals
- Standard G.709 and strong FEC (Ultra-FEC) support for 40G and 100G ports
- 100G High-Gain FEC supporting 7% (9.4 dB net coding gain) and 20% overhead ratios
- Direct interface to 100G and 40G optical modules supporting OTL4.10, CAUI, OTL3.4, and XLAUI interfaces
- 120G-capable Interlaken packet interface to NPU and FPGAs
- Support for IEEE 1588v2 Precision Time Protocol (PTP) Standard
- Integrated Jitter Attenuation Clean up PLLs

Target Markets and Applications

- DWDM Platforms
- Packet over Optical Transport Platforms
- Carrier Ethernet Switch Routers
- Submarine & Ultra Long Haul Platforms

Product Overview

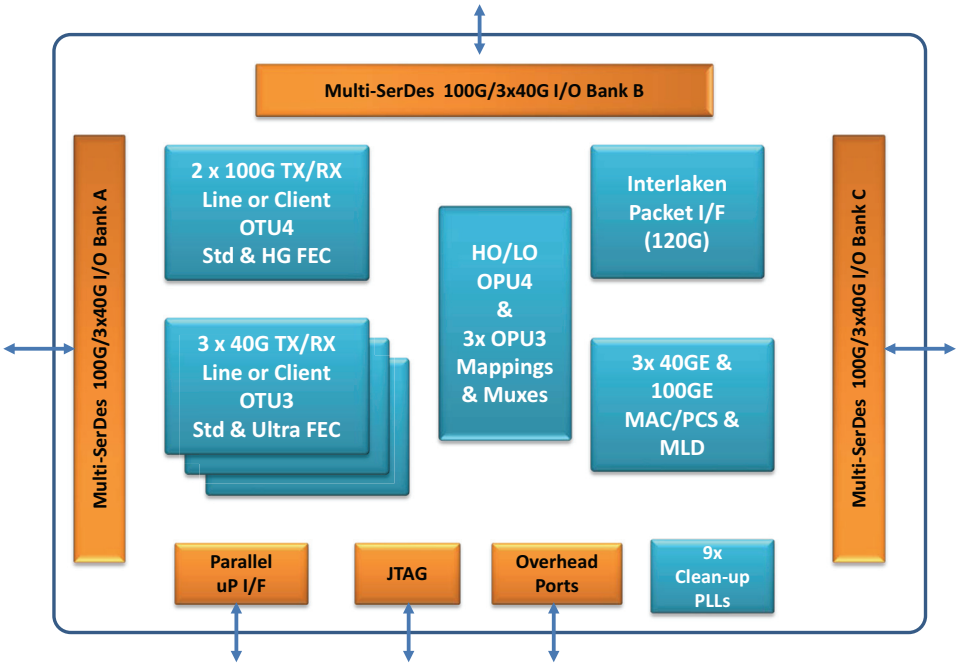
The explosive growth in bandwidth demand propelled by personalized services, such as video streaming, coupled with emerging cloud computing services, are driving service providers to upgrade to faster and more efficient networks deploying 40G and 100G transmission signals.

The CS605x, a family of highly integrated transport processors, supports the converged 100G market by delivering the most efficient solution for transport and aggregation of 10G, 40G, and 100G signals.

The CS605x Transport Processor family supports the latest Optical Transport Processor (OTN) standards for termination and mapping of two OTU4(V) and three OTU3(e)(V) ports with standard and advanced Forward Error Correction (FEC) technology. In addition, these devices provide termination, monitoring, and mapping of up to one 100GE and up to three 40GE interfaces.

Additional features include three 12-lane high-speed I/O banks (36 lanes in total) capable of operating in the 10-12.5 Gbps and 5-6.25 Gbps ranges supporting 100G-class (OTL4.10, CAUI, OTL4.20), and 40G-class interfaces (OTL3.4, XLAUI).

The CS605x Transport Processor family also provides a 120G capable Interlaken packet interface and support for IEEE 1588v2 for seamless connectivity to NPU and FPGAs and support for Carrier Ethernet Switch and Router markets.

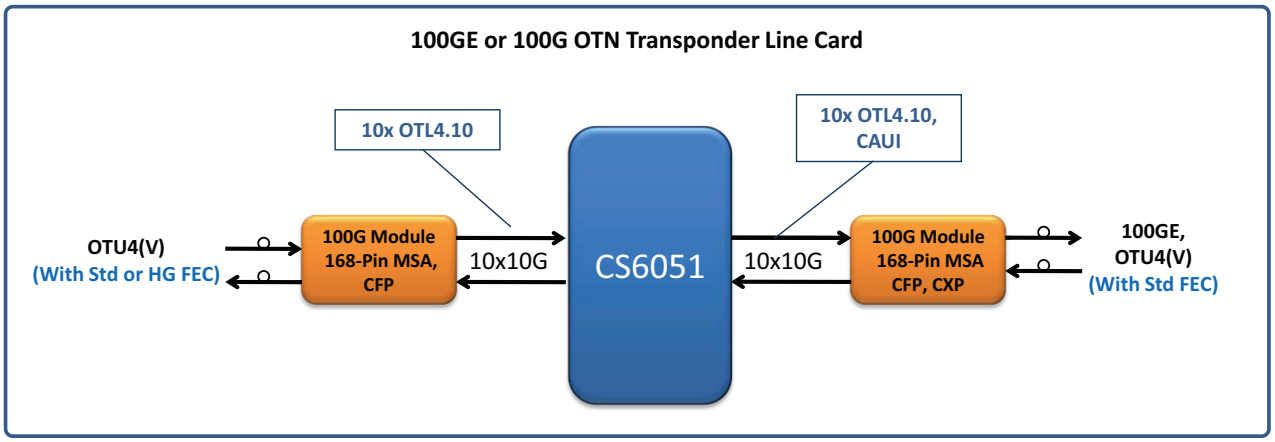


CS605x Block Diagram

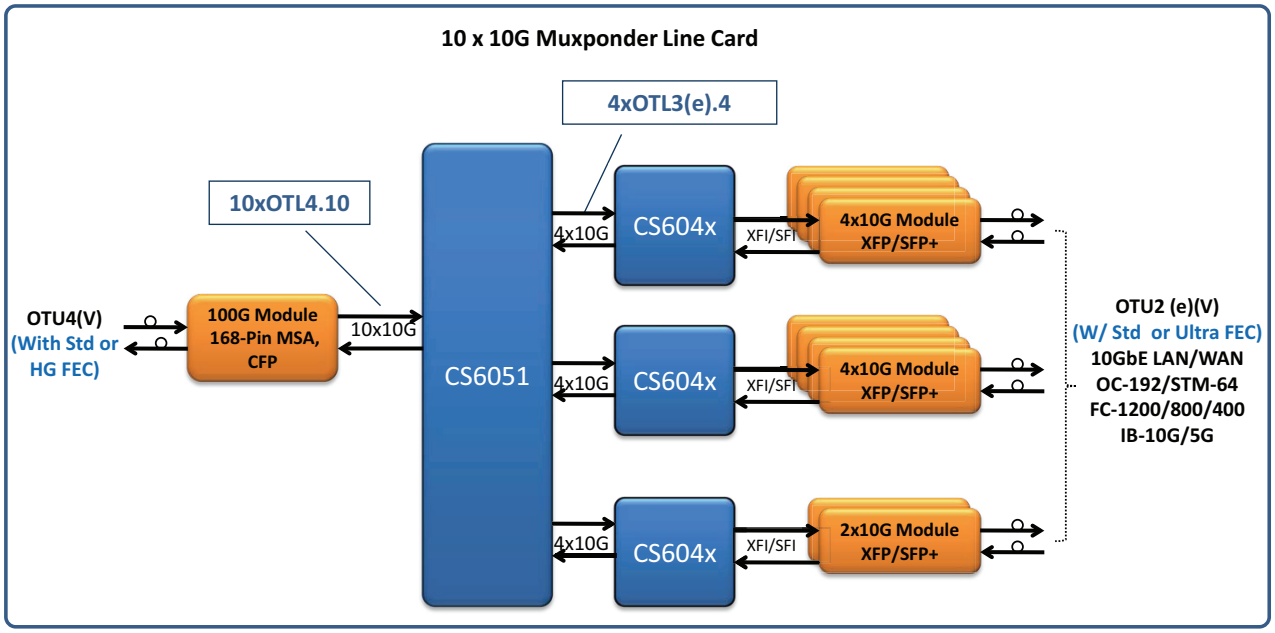
Function	Features
OTN Support and Mapping	• Full G.709 OH termination, mapping, and performance monitoring for two OTU4(V) and three OTU3(e)(V) ports • Aggregation of up to ten ODU2(e)/ODUflex and two ODU3(e) signals into OTU4
Forward Error Correction	• Standard G.709 (RS-255, 239) FEC support for two 100G and three 40G interfaces • Advanced Ultra-FEC support on three independent OTU3(V) and 100G OTU4(V) interfaces based on ITU G.975.1 I.7 with configurable overhead rates of 7%, 13%, 15%, 17%, & 20% • Advanced High-Gain FEC support for 100G OTU4 interface with 9.4 dB net coding gain at 7% overhead
Ethernet Networking	• Support for one 100GE and three 40GE signals • Full termination of the PCS, RS, and MAC layers • Support for IEEE 1588v2 (2008) Specification • Detailed statistics gathering
Ethernet Mapping	• Mapping and transport of Ethernet through the OTN network • 3 × 40GE into Low Order OTU3 using GMP • 100GE into Low Order OTU4 using GMP • Non-intrusive performance monitoring of 40GE and 100GE signals concurrently in Egress and Ingress directions
Clocking & Synchronization	• Integrated jitter attenuation clean-up PLLs for CBR client demapping and for line/loop timing clocking resulting in significant savings in board real estate, cost, and power reduction • Integrated fractional dividers generate all the required pilot tones, line and client backup clocks allowing use of single reference clock
100G & 40G Class Interfaces	• Two independent OTL4.10 Interfaces • One CAUI interface • Three independent OTL3.4 Interfaces • Three independent XLAUI interfaces
System Interface	• One Interlaken interface capable of operating at 12.5 Gpbs with up to 12 Lanes or operating at 6.35 Gpbs with up to 24 lanes • 3 × 32 kB Ingress and 6 × 165 kB Egress Buffers
Management Interfaces	• 16-bit general purpose microprocessor interface • Flexible general purpose overhead serial interfaces (GCC, FEC Statistics, etc.) • Dedicated overhead management ports for TOH byes real time insertion and extraction

Application Examples

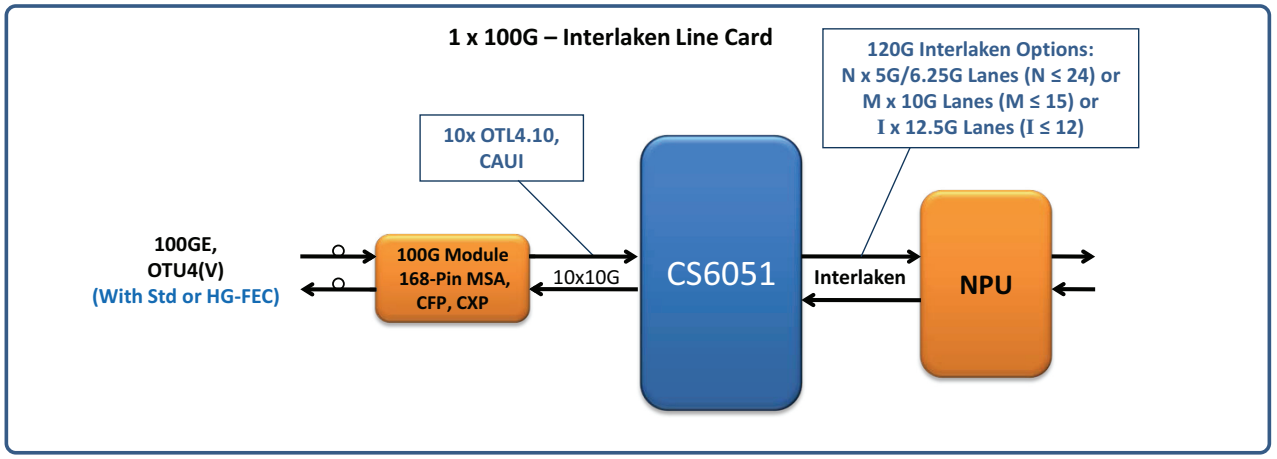
DWDM, Long Haul



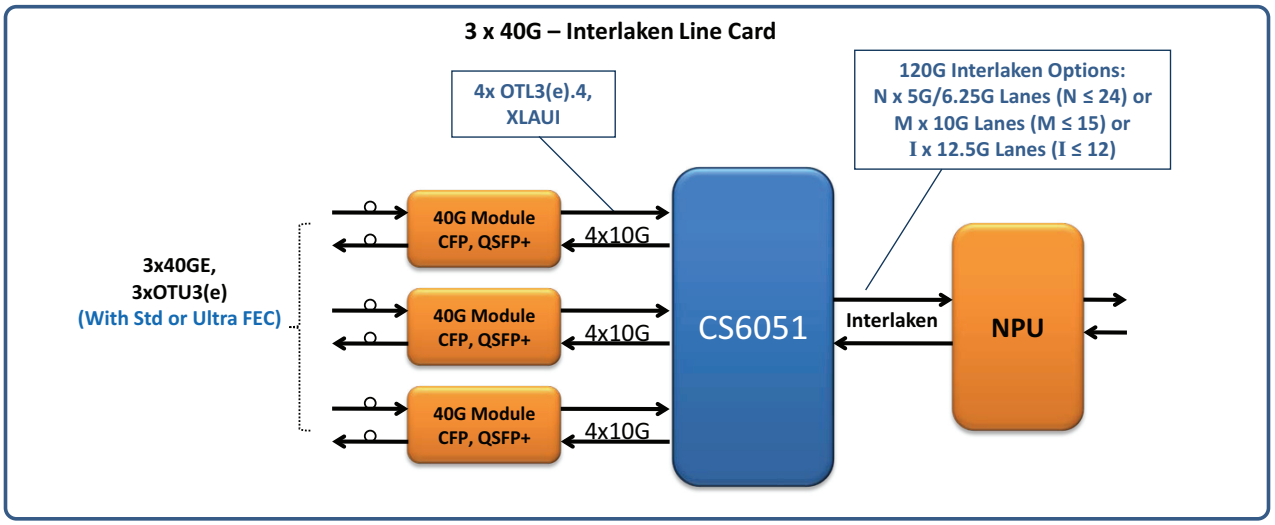
Metro, Short Haul



Carrier Ethernet Switch Routers



Application Examples



Product Matrix

Feature	Description	CS6051	CS6053	CS6052	CS6054
FEC	Standard (G.709RS-255)	✓	✓	✓	
	Ultra FEC (G.975.1 I.7)	✓		✓	
	100G High Gain FEC	✓		✓	
OTN Termination	3 × OTU3(e)(V) 2 × OTU4(V)	✓	✓	✓ 1×OTU4(V)	
OTN Aggregation & Mapping	(N × 10G + P × 40G) or 100GE → 100G 3 × 40GE → 3 × 40G	✓	✓		
100GE/40GE	Monitoring & Termination	✓	✓	✓	✓
Interfaces	OTL4.10, OTL3.4	✓	✓	✓	
	OTL4.20	✓	✓		
	XLAUI, CAUI	✓	✓	✓	✓
	Interlaken (10G & 6.25G Class)	✓	✓	✓	✓
Package	40 × 40 mm, FC-BGA (Pb-Free)	✓	✓	✓	✓

Cortina in Communications

Cortina Systems, Inc. is a leading provider of high-performance communications semiconductor solutions enabling next generation network connectivity and efficient bandwidth from the core network to the home network. Our broad product portfolio includes carrier-class semiconductor devices for next generation optical transport and passive optical network systems, as well as data center connectivity and digital home solutions.

*Other names and brands may be claimed as the property of others.

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