LineSpeed™ Flex Summary
100G PHY Family

PRODUCT BRIEF

LINESPEED FLEX PHY FAMILY SUMMARY

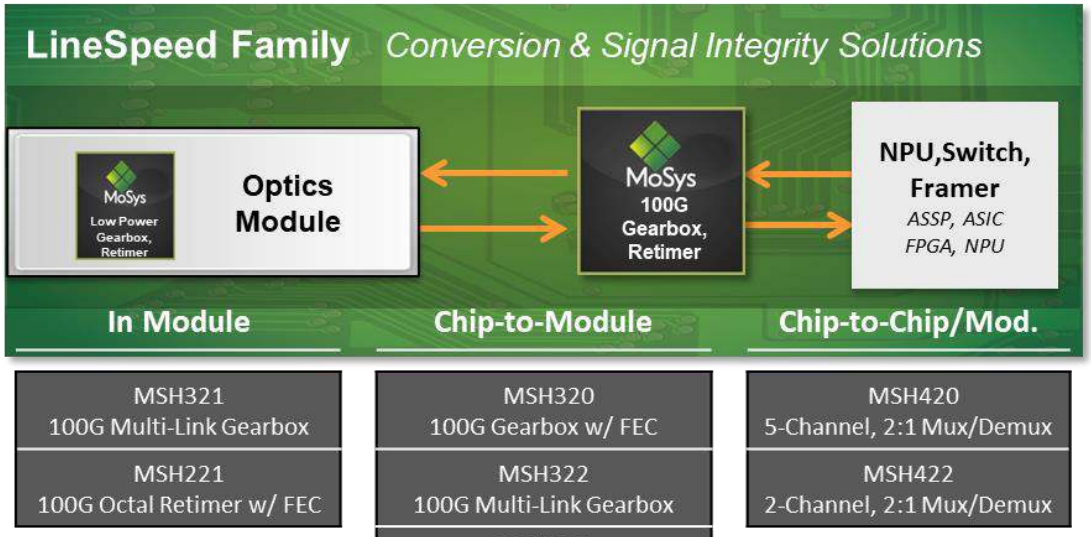
The LineSpeed FLEX family is a set of 100G PHY products to support a variety of retimer, gearbox, multiplexing, and redundant link functions. These are typically used on line cards or inside modules and support multiple data rates and industry standards. The products in the family all share the same register configurations and naming conventions, common package pinouts and are firmware / software compatible.

KEY FEATURES / PRODUCT TYPES

- Supports IEEE and OIF 10, 25, 40 and 100G standards
- Retimers are protocol independent and support a PLL per lane for mixed port speeds
- Self-adapting RX equalizers for ease of connection
- Optional 100G 802.3bj Clause 91 RS-FEC for IEEE 100GE and optical module MSA support (SR4, CWDM4, PSM4)
- Package and power options for line card, daughter card and module applications
- Evaluation and reference board schematics and layouts

Enables Modules / Adapters to Support:

- 10x10GE SR/LR (MLG)
- SR10 (GB)
- Integrated FEC (GB/Retimer)



PRODUCT OPTIONS

100G Gearbox: The Gearbox function translates the formatting of 100G data streams by multiplexing and demultiplexing 10x10G (100G) to 4x25G (100G) for Ethernet and OTN applications. The gearbox function is defined in IEEE 802.3ba.

Multi-Link Gearbox (MLG): The MLG function supports aggregating 10 independent 10Gb Ethernet links onto a single 4x25G (100G) link in both the receive and transmit direction. The device supports all lane marking and idle insertion/removal functions defined by the OIF MLG 1.0 standard.

Protocol Independent Retimer: The family supports devices with 8 lanes (up to 100G full duplex) and 20 lanes, where each lane is a RX/TX pair. Each lane is protocol independent and has an independent PLL per lane, which supports mixed port speeds within a device.

100GE RS-FEC OPTION

100GE RS-FEC: RS-FEC is supported on the 4x25G lanes on the 100G Gearbox and Retimer devices. The 100GE KR4 RS-FEC is encoded on the 4x25G transmit and decoded and corrected if needed on the 4x25G receive. The RS-FEC implementation follows IEEE 802.3bj Clause 91 specification for interoperability. RS-FEC is specified in 100G MSAs including SR4, CWDM4 and PSM4.

SPECIALTY MODES

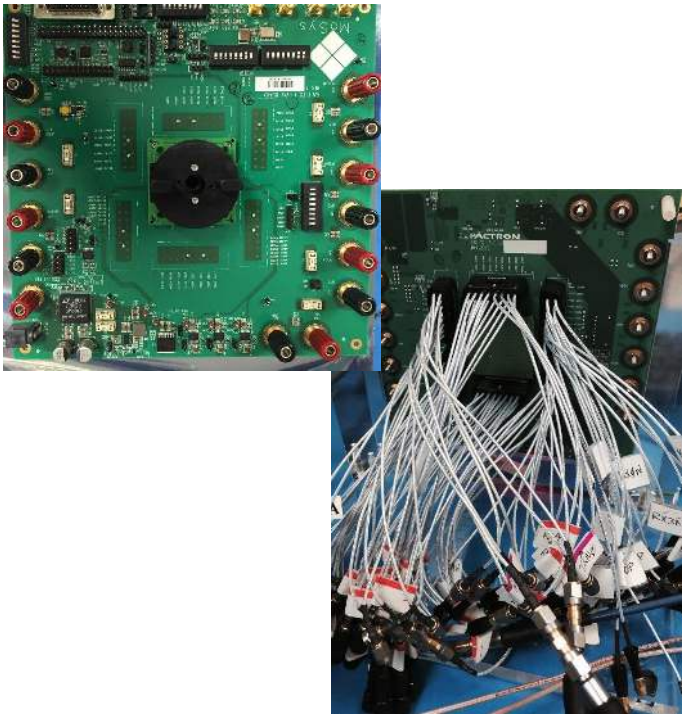
Mux/Demux: Supports multiplexing and demultiplexing of two serial links to form a single link at twice the baud rate.
Redundant Link Mode: Supports 1:2 duplication and 2:1 selection of redundant serial links for high-availability applications.

LINESPEED FLEX PRODUCT OPTIONS

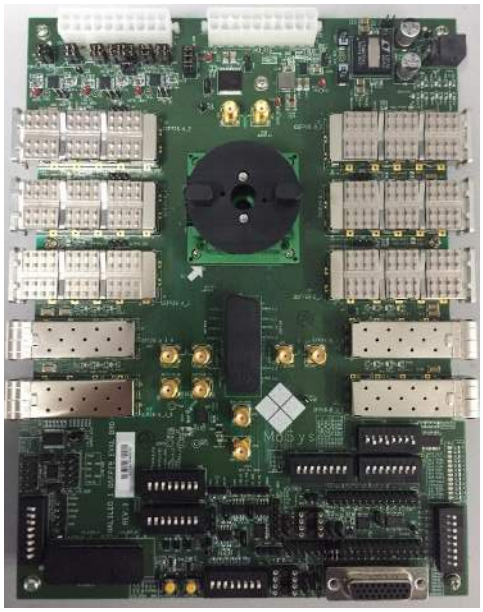
Product Description					Functions						Rates	
	Part Number	Description	TX/RX Lanes	Package	Gearbox	MLG	Retimer	RSFEC	Mux/ Demux	Redundant Link Mode	10-14G	25-28G
Retimers	MSH221SF	100G Octal Retimer w/ FEC	8	12x12mm			✓	✓			✓	✓
	MSH222S	100G Full Duplex Retimer	8	13x13mm			✓				✓	✓
	MSH222SF	100G Full Duplex Retimer w/ FEC	8	13x13mm			✓	✓			✓	✓
	MSH225S	10 Lane Full Duplex Retimer	20	17x17mm			✓				✓	✓
Gearbox	MSH320S	100G Gearbox	20	17x17mm	✓		✓				✓	✓
	MSH320SF	100G Gearbox w/ FEC	20	17x17mm	✓		✓	✓			✓	✓
	MSH321S	100G MLG Gearbox	14	12x12mm	✓	✓					✓	✓
	MSH322S	100G MLG Gearbox	14	17x17mm	✓	✓					✓	✓
Mux	MSH420S	10:5 Mux/Demux	20	17x17mm					✓	✓	✓	✓
	MSH422S	4:2 Mux/Demux	8	13x13mm					✓	✓	✓	✓

Note: Common package sizes are pin compatible

EVALUATION BOARDS & REFERENCE PLATFORMS



Eval Boards with Huber Suhner SMA connectors



17x17mm QSFP28 Evaluation Board and reference

PACKAGE OPTIONS

12x12mm, 0.5mm pitch, 529 Ball FCBGA
13x13mm, 1mm pitch, 144 ball FCBGA
17x17mm, 1mm pitch, 256ball FCBGA

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