MoSys Newsletter – Special Edition

Accelerating Data Intelligence

www.mosys.com
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A Message from MoSys

Welcome to a special edition of MoSys newsletter where we are featuring our complete line of LineSpeed™ 100G PHY products, including:

- Retimers with and without RS-FEC
- Gearbox with and without RS-FEC
- Multi-Link Gearbox (MLG)
- Multiplexing/Demultiplexing and Redundant Link

Key Features:

- Complies with IEEE, ITU and OIF industry standards
- RS-FEC for reliable data transfer
- Recommended initial register setting
- Automatic signal tuning (adaptation)
- Works over PCBs, connectors, optics
- *Available for less than $50 in volume gearbox applications*

The applications for these products are well known, so in this newsletter we will focus on:

- The most common uses where our device price point can achieve significant system cost savings
- Applications that are unique that can get you thinking out of the box.
- Areas where we can replace Broadcom or Inphi parts in your new designs

Hope you find this newsletter informative. Please feel free to provide feedback on the content or any new ideas that you might have.

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VP of LineSpeed Products
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Recent Blogs and Postings!

MoSys Releases New LineSpeed 100G PHY Design Support Package
Jan 28, 2020

MoSys Announces Global Distribution Agreement With Digi-Key Electronics
Mar 3, 2020

Dense 10GbE Breakout with MoSys LineSpeed™ Flex PHY
Apr 22, 2020

Enabling RS-FEC for 100GE with the MoSys LineSpeed™ Flex PHY
Aug 25, 2020

100G Gearbox with RS-FEC Solution for QSFP28-Based Optics with the MoSys LineSpeed™ Flex PHY IC
Sep 30, 2020

Multiplexing and Demultiplexing High-Speed Serial Links with MoSys LineSpeed™ Flex PHY
Oct 22, 2020

MoSys and Arrow Electronics Collaborate to Optimize System Memory on FPGA Designs
Jan 11, 2021

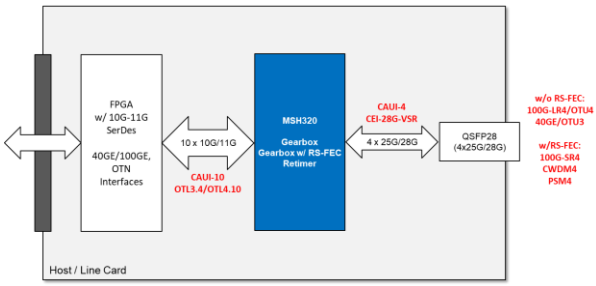
Featured Design Documents:

- MoSys LineSpeed™ Flex PHY Solutions – Successful Design and Bring-Up of a Serial Link
- High-Speed Board Design Guidelines

Product Description				Package	Functions							Reach	Supported Rates	
	Part Number	Description	Total Tx/Rx lanes	Package	Gearbox	MLG	Retimer	10x10G Retimer	4x25G Retimer	Clause 91 RSFEC	Redundant Link Mode	15-20dB w/o FEC	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							✓	✓	✓	✓

MoSys Design Support Center

100G Gearbox, with & without RS-FEC



The 10x10G-to-4x25G Gearbox function is integral to 100G interfaces, including IEEE and OTN standards. The MoSys Gearbox devices are:

- IEEE 802.3ba and ITU compliant
- Embedded 802.3bj RS-FEC Encode and Decode
- *Low-power and low-cost at <$50 in volume*

The best application for the gearbox are the following:

- QSFP28-based optical interfaces (both FEC and non-FEC)
- Bringing 100GbE/OTN to low-cost FPGAs

For more information,

Contact AppSupport

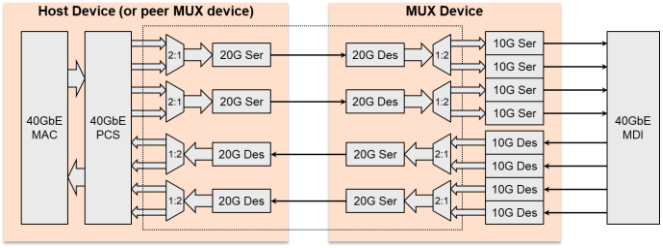
Multiplexing/Demultiplexing Serial Links

MoSys Multiplexing / Demultiplexing devices support combining 2 lower-speed serial links into a single link at twice the baud rate.

- Up to 5, bidirectional, Mux/Demux channels in a single device
- Agnostic payload support (protocol independent)
- Optional independent baud rates per channel

Some typical applications include:

- Supporting low-cost FPGAs with lower-speed transceivers by demultiplexing a high-speed serial link into two links at haft the baud rate.
- Combining low-speed speed links to double the throughput or halve the number of signals.
  - Example, carrying a 40GbE link over 2 x 20Gb signals rather than 4 x 10G (diagram below).



Dense 10GbE Breakout from a 100G Port

MoSys Multi-Link Gearbox (MLG) devices can bring dense 10Gb Ethernet ports to 100G networking equipment:

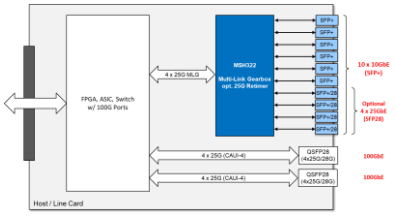
- OIF MLG 1.0 compliant
- Mux/Demux ten 10GbE links to/from a 4x25G link
- Synchronous Ethernet (SyncE) timing/clocking

The best application for the Multi-Link Gearbox are:

- Adding 10GbE to 100G (4x25G) switches/line-cards
- Maintaining 100Gbdz throughput of the 4x25G ports

For more information:

Contact AppSupport



Designing with MoSys LineSpeed PHYs

MoSys has included key support features in our products, including:

- Strong, Self-Adapting Receive Equalizers
- Independent Baud Rates per Lane
- Built-in PRBS generation and checking
- Pre-packaged and tested configurations / firmware

Designing with any type of LineSpeed products, the biggest problem is tuning the signal interface to the PC board characteristic.

MoSys solves this with our “Starter kit”. Here is where we supply a set of registers that:

- Based on our experience should work out of the box for general applications
- Guidelines and support for adjusting the registers

AND WE HAVE APPLICATION SUPPORT TO:

- Review your board schematics and layout
- Provide system architecture ideas
- Discuss any unique issues you may have

Differential trade between BGA (left) and QSFP28 (right)

Contact AppSupport

Collateral: LineSpeed Flex Overview
MSH221 Product Brief MSH222 Product Brief
MSH225 Product Brief MSH322 Product Brief
MSH320 Product Brief MSH321 Product Brief

Email us and we will arrange to have one of our technical specialists speak with you. You can also sign up for updates. Finally, please follow us on social media so we can keep in touch.