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MaxLinear's Telluride PAM4 SoC Demonstrated by Molex for New 100G and 400G Data Center Optical Modules

- *Molex has built and demonstrated new transceiver modules for data center interconnects using MaxLinear PAM4 DSPs*

CARLSBAD, Calif.--(BUSINESS WIRE)-- MaxLinear, Inc. (NYSE: MXL), a leading provider of radio frequency (RF), analog and mixed-signal integrated circuits for the connected home, wired and wireless infrastructure, and industrial and multimarket applications, today announced Molex, LLC has demonstrated MaxLinear's "Telluride" (MxL935xx) pulse-amplitude-modulation (PAM4) digital signal processing (DSP) systems-on-chip (SoCs) for next generation 400G-DR4 and 100G-DR optical modules.

Molex's 400G-DR4 and 100G-DR modules will be part of a broad offering of data center connectivity solutions leveraging copper and optics, both inside and outside the rack. Molex's knowledge and experience in data center connectivity drive industry standards, including QSFP-DD, QSFP28, SFP-DD and 100G Lambda. Molex support for the Open19 Initiative with the Molex Impel Customized Data Cable solution aims to establish a new open standard for data center servers by delivering a flexible, scalable and secure platform.

MaxLinear's MxL935xx Telluride family of SoCs are key components in the development of high-speed hyperscale data centers based on 100Gbps single lambda optical interconnects. The MxL935xx Telluride family of chips are the world's first DSP SoCs with integrated electro-absorption modulated laser (EA-EML) drivers for 100/400Gbps optical interconnects and breakout mode clocking support for 400Gbps DR4 optical modules. The MxL935xx allows companies like Molex to develop a 100/400Gbps optical interconnect module in a compact form factor for intra-data center applications with a transmission distance up to 2 kilometers.

"With the exponential growth of data traffic within hyperscale cloud networks, there is massive demand to deploy higher speed networks, making 100/400Gbps transceiver modules like these essential in next-generation hyperscale data centers," said Will Torgerson, Vice President and General Manager of MaxLinear's High-Speed Interconnect Group. "Telluride is the industry's only solution designed with an integrated EA-EML driver and break-out mode support to simplify complex module designs while offering superior link-margin performance in a low-power consumption SoC."

Technical Details

The Telluride family features several operating modes, allowing them to interface with

multiple generations of switch ASICs (128x25G NRZ, 256x25G NRZ or 256x50G PAM4). This versatility enables 3.2Tbps, 6.4Tbps or 12.8Tbps front panel capacity per data center rack unit. These SoCs are suitable for use within QSFP-DD, OSFP and COBO module form factors.

The integrated laser driver delivers greater than 1.8V of single-ended driver output swing necessary for EA-EML lasers. This output swing easily meets the optical modulation amplitude (OMA) specification requirements across the wide operating temperature and bias ranges of all EA-EML lasers. The chip package also includes all the high frequency components required for driver and modulator biasing.

Asynchronous breakout mode clocking is an essential feature for hyperscale data center customers initiating 400G DR4 deployments. MaxLinear's 400G Telluride DSPs (MxL9354x) are currently the only PAM4 DSP SoCs that successfully integrate this clocking requirement.

MaxLinear has engineered a very high-performance DSP engine in both the transmit and receive data paths. The resulting superior link-margin enables single-lane 100Gbps optical wavelength technology by mitigating many of the limitations of mass production optical components.

The devices feature a comprehensive digital pre-distortion (DPD) engine in the transmit direction to compensate for laser non-linearity and to cancel packaging limitations that cause reflections and bandwidth degradation at these extremely high signal frequencies. On the receive path, the DSP includes an auto-adaptive signal enhancement engine, which integrates a continuous time linear equalizer (CTLE), automatic gain control (AGC), a feed forward equalizer (FFE), and a decision feedback equalizer (DFE).

About Molex

Molex brings together innovation and technology to deliver electronic solutions to customers worldwide. With a presence in more than 40 countries, Molex offers a full suite of solutions and services for many markets, including data communications, consumer electronics, industrial, automotive, commercial vehicle and medical. For more information, please visit www.molex.com.

About MaxLinear, Inc.

MaxLinear, Inc. (NYSE: MXL), is a leading provider of radio frequency (RF), analog and mixed-signal integrated circuits for the connected home, wired and wireless infrastructure, and industrial and multimarket applications. MaxLinear is headquartered in Carlsbad, California. For more information, please visit www.maxlinear.com.

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Cautionary Note About Forward-Looking Statements

This press release contains "forward-looking" statements within the meaning of federal securities laws. Forward-looking statements include, among others, statements concerning or implying future financial performance, anticipated product performance and functionality, or trends and growth opportunities affecting MaxLinear, in particular statements relating to

MaxLinear's Telluride family of products, including but not limited to potential market opportunities, functionality, and the benefits of use of such products, alone and in connection with Molex's products. These forward-looking statements involve known and unknown risks, uncertainties, and other factors that may cause actual results to differ materially from any future results expressed or implied by these forward-looking statements. We cannot predict whether or to what extent the availability of our Telluride products will affect our future revenues or financial performance. Forward-looking statements are based on management's current, preliminary expectations and are subject to various risks and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. Forward-looking statements may contain words such as "will be," "will," "expected," "anticipate," "continue," or similar expressions and include the assumptions that underlie such statements. The following factors, among others, could cause actual results to differ materially from those described in the forward-looking statements: intense competition in our industry and product markets; risks relating to the development, testing, and commercial introduction of new products and product functionalities; the ability of our customers to cancel or reduce orders; uncertainties concerning how end user markets for our products will develop; our lack of long-term supply contracts and dependence on limited sources of supply; potential decreases in average selling prices for our products; and the potential for intellectual property litigation, which is prevalent in our industry. In addition to these risks and uncertainties, investors should review the risks and uncertainties contained in MaxLinear's filings with the United States Securities and Exchange Commission, including risks and uncertainties identified in our Annual Report on Form 10-K for the year ended December 31, 2018. All forward-looking statements are qualified in their entirety by this cautionary statement. MaxLinear is providing this information as of the date of this release and does not undertake any obligation to update any forward-looking statements contained in this release as a result of new information, future events, or otherwise.

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