

PAM4 DSPs, TIAs and Drivers Enable Next-Gen Fiber-Optic Modules

PAM4 DSPS

1.6T Rushmore (4nm)
MxL91782 1.6T
800G Keystone (5nm)
MxL93682 with (& 83 without) Integrated Driver
A & C versions: Gearbox & Reverse Gearbox
800G Keystone Multi-Mode (5nm)
MxL93684 with Integrated VCSEL Driver
400G Keystone (5nm)
MxL93642 with (& 43 without) Integrated Driver
A & C versions: Gearbox & Reverse Gearbox
400G Keystone Multi-Mode (5nm)
MxL93644 with Integrated VCSEL Driver
A & C versions: Gearbox & Reverse Gearbox

DSP FUNCTIONALITY INCLUDES:

- Line-side Tx digital pre-distortion (DPD)
- Transmit pre-emphasis (TX FIR)
- Continuous Time Linear Equalizer (CTLE)
- Receiver feed forward equalization (FFE)
- Decision feedback equalization (DFE)

RUSHMORE BENEFITS INCLUDE:

- 1.6Tb/s capacity enabled by 8 x 200Gb/s PAM4 optical/electrical links
- Bit rates supported: 53.125G-56.25G, 106.25G-112.5G, 212.5G-226.875G
- Enable sub-25W 1.6T optical modules
- Integrated 1.5V single-ended and > 3.0Vpp differential output, suitable for externally-modulated lasers (EMLs) and Mach-Zehnder modulators (MZMs)
- 6mm x 8mm known good die (KGD) for OSFP, OSFP-XD, QSFP-DD and AOC cable applications

TRANSIMPEDANCE AMPLIFIERS

Topanga TIAs	
MxL9164	56GBaud Quad Linear, 250µm, pitch
MxL9165	56GBaud Quad Linear, 500µm, pitch
MxL9168	56GBaud Octal Linear, 250µm, pitch
Washington TIAs	
MxL9174	112GBaud Quad Linear

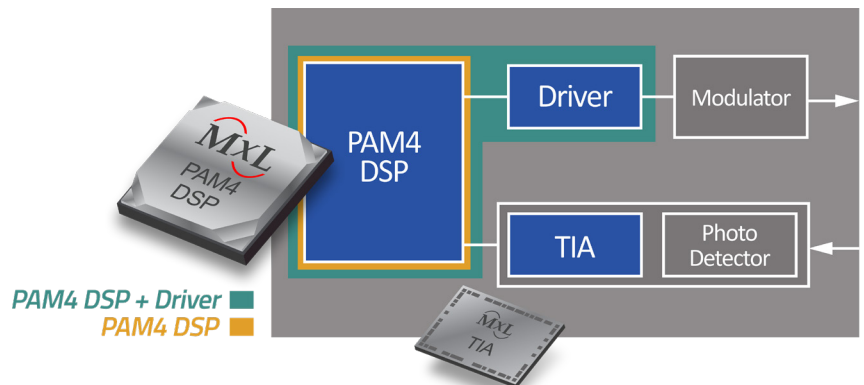


MaxLinear products accelerate network deployments for next-generation data centers, service providers and AI/ML applications

MaxLinear is a leading provider of Data Center Connectivity ICs that enables next generation optical modules for data center and hyperscale cloud networks. We build highly integrated semiconductor SoCs that move big data at ever increasing speeds.

MaxLinear provides a full range of PAM4 DSPs and TIAs for applications ranging from 100G to 1.6T, supporting 50G/lane, 100G/lane, and 200G/lane options on both the host and line side interfaces for data center connectivity.

Complete Module Solutions



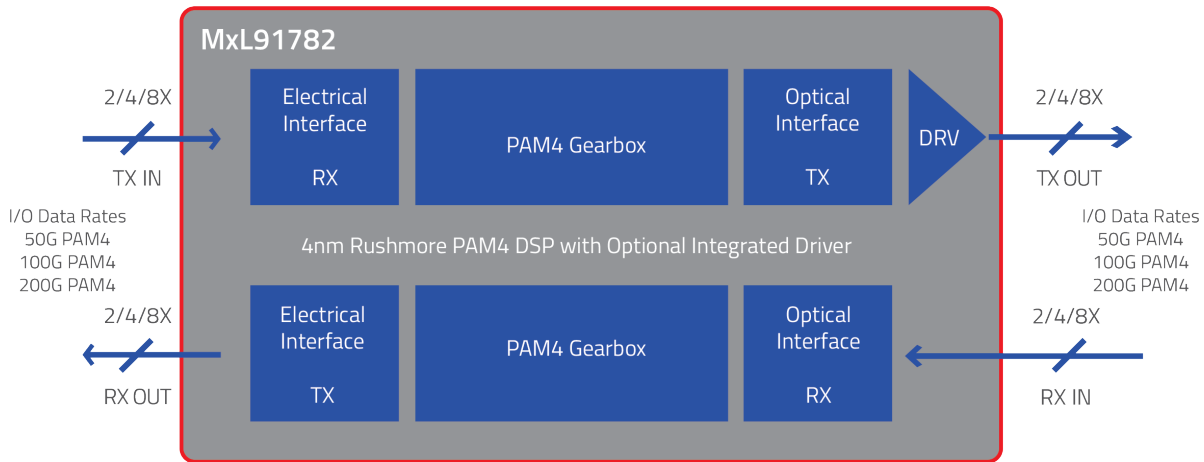
PAM4 DSPs

Family	Product	Integrated Driver	Module Capacity	Electrical I/O per Lane	Optical I/O per Lane	Gearbox	Reverse-Gearbox	Reach Profiles	Form Factor	Cable Type	Package (mm)				
Rushmore	MxL91782	*	1.6T	8x200G	8x200G			DR8, 2xFR4	OSFP, OSFP-XD, QSFP-DD	Optical Modules, AOC	8x6 KGD				
Keystone	MxL91682	SiPH, EML	800G	8x100G	8x100G			DR8, 2xFR4, 2xLR4	OBO, CPO, QSFP-DD800, OSFP	Optical Modules, AEC/ACC, AOC	12x13 FC-FBGA				
	MxL93682							DR8, 2xFR4, 2xLR4, 2xVR4/SR4	QSFP-DD800, OSFP						
	MxL93683														
	MxL93684	VCSEL	400G	4x100G	4x100G			DR4, FR4, LR4, VR4/SR4	QSFP112						
	MxL93642	SiPH, EML								8x50G	4x100G	•		SR8, 2xSR4	QSFP-DD, OSFP
	MxL93642A														
	MxL93642C		4x100G	8x50G		•			QSFP112						
	MxL93643	**	400G	4x100G	4x100G			DR4, FR4, LR4, VR4/SR4	QSFP112						
	MxL93643A									8x50G	4x100G	•		SR8, 2xSR4	QSFP-DD, OSFP
MxL93643C															
Keystone Multi-Mode	MxL93644	VCSEL	400G	4x100G	4x100G			VR4/SR4	QSFP-DD, OSFP						
	MxL93644A									8x50G	4x100G	•			
	MxL93644C													SR8, 2xSR4	

Notes:

* MxL91782 supports externally-modulated lasers (EMLs) and Mach-Zehnder modulators (MZMs)

** MxL93643, MxL93643A, and MxL93643C support externally-modulated lasers (EMLs) and silicon photonics (SiPHs)



Rushmore PAM4 DSP General Block Diagram

For additional product information, visit www.maxlinear.com/DCC



Corporate Headquarters:
 5966 La Place Court
 Suite 100
 Carlsbad, CA 92008
 Tel.: +1 (760) 692-0711
 Fax: +1 (760) 444-8598
www.maxlinear.com

The content of this document is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by MaxLinear, Inc. MaxLinear, Inc. assumes no responsibility or liability for any errors or inaccuracies that may appear in the informational content contained in this document.

Reproduction, in part or whole, without the prior written consent of MaxLinear, Inc. is prohibited. MaxLinear, the MaxLinear logo, and any other MaxLinear trademarks (including but not limited to MxL, Full-Spectrum Capture, FSC, AirPHY, Puma, and AnyWAN, VectorBoost, MXL WARE, and Panther) are all property of MaxLinear, Inc. or one of MaxLinear's subsidiaries in the U.S.A. and other countries. All rights reserved. All third-party marks and logos are trademarks™ or registered® trademarks of their respective holders/owners.

© 2025 MaxLinear, Inc. All rights reserved.