Optoelectronic Solutions

PRODUCT SELECTION GUIDE

MACOM®

Partners from RF to Light

macom.com

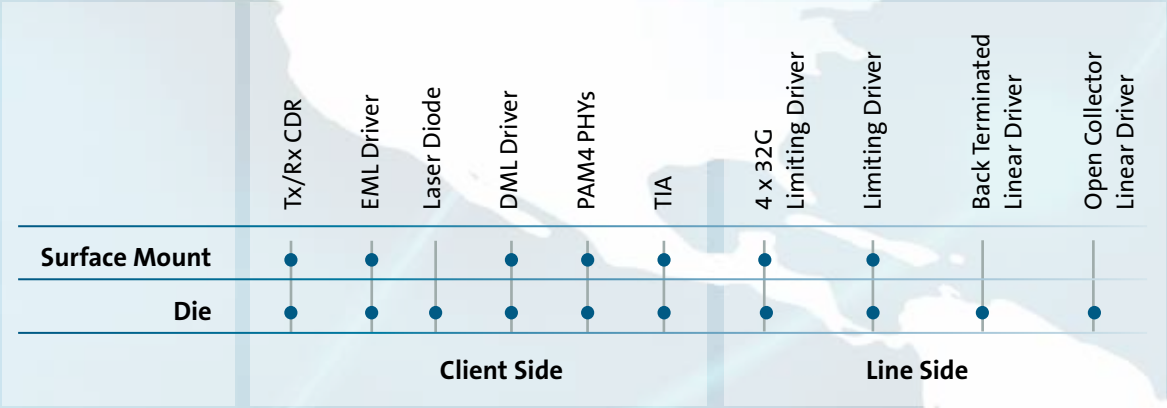
Table of Contents

Products and Technology to Meet the High Bandwidth and Low Latency Requirements of Cloud Data Centers and 5G Optical Networks

MACOM supports a large portfolio of electronic and lightwave components, lasers, and photodiodes for optical communications in a wide range of applications. These span from long haul core networks to Cloud Data Center to FTTx access, to wireless infrastructure.

The portfolio addresses the high performance analog interfaces between electrical and optical domains, providing solutions to meet the demanding size, power and signal integrity requirements of today's high speed networks — which are expanding to meet the continuously growing demand for data capacity. These products include high performance modulator drivers, transimpedance amplifiers, clock/data recovery circuits, APD and PIN photodiodes, FP and DFB lasers, Silicon Photonics, and PAM4 PHYs. Each of these product families includes variants specifically tailored for the unique needs of data centers, enterprise networks, and telecom optical systems operating up to 800 Gbps and beyond.

For FTTx, MACOM has the broadest portfolio of lasers, laser drivers, limiting amplifiers, photodiodes, and TIAs covering systems from GPON, EPON, XG-PON, and NG-PON.



Enabling Bandwidth Density in Optical Networks

MACOM PRODUCTS

- > CDRs
- > Gearbox
- > Lasers
- > Limiting Amplifiers
- > Silicon Photonics Components
- > MACsec
- > Modulator Drivers
- > OTN: Framer and Mapper
- > PAM4 PHY
- > Photodiodes
- > Physical Media Devices (PMDs)
- > TIAs

MACOM TECHNOLOGIES

- > SiPh
- > InP
- > GaAs
- > CMOS
- > SiGe

MACOM MARKETS


FTTx/PON

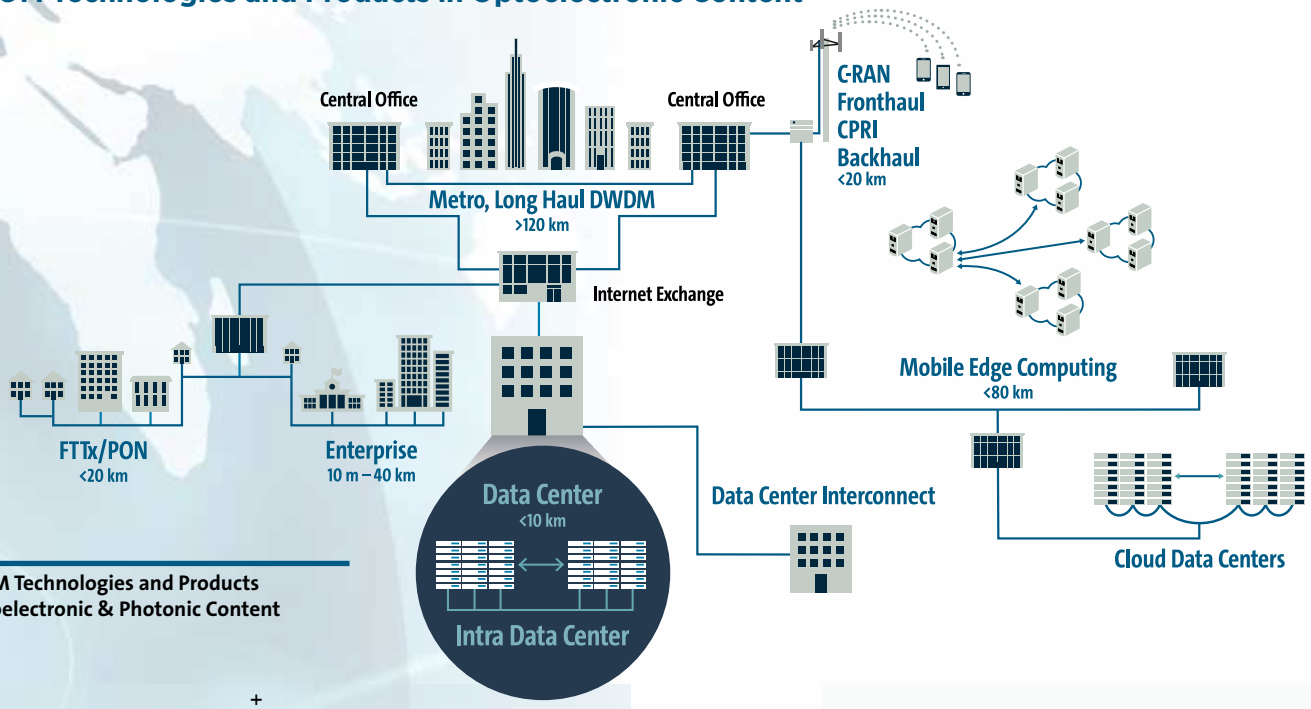

Wireless Fronthaul/ Backhaul


Cloud Data Center

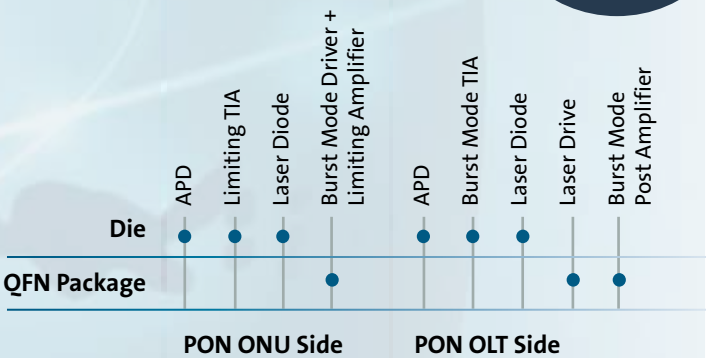

Metro

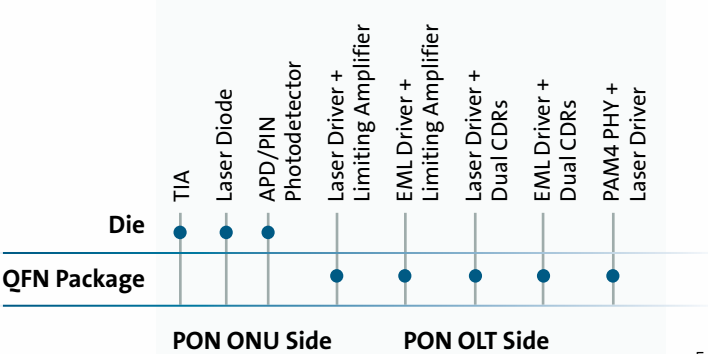

Long Haul

MACOM Technologies and Products in Optoelectronic Content



MACOM Technologies and Products in Optoelectronic & Photonic Content





Innovative Design Solutions to Solve Complex Challenges

Indium Phosphide (InP)

MACOM has assumed a key position in the market as a premier supplier of both photonic devices such as lasers, APD and PIN photodetectors, and optoelectronics products such as high speed modulator drivers, based on InP technology. *Key applications include laser diodes for silicon photonics, data centers, mobile backhaul, access networks and metro markets, and modulator drivers for high capacity, coherent systems in metro and data center interconnect applications.*

CMOS

MACOM utilizes CMOS technology for design in a range of applications from wireless infrastructure basestations to aerospace and defense, and complex Ethernet PHY devices. CMOS allows for the seamless integration of high-speed data transmission and complex digital functionality. Ethernet devices used in optical networking include DSP PHYs as well as IEEE 802.1AE MACsec, which solves the security issues of Ethernet networks by providing confidentiality, authenticity and integrity of data. *Typical CMOS products and applications include PAM4 PHYs, MACsec, mobile phone chipsets, cellular basestations/wireless infrastructure, satellite radio, GPS and DAB, 2.4 GHz and 5.0 GHz WLAN, VSAT, CATV and broadband, commercial and military radar, and multi-market applications.*

Silicon Germanium (SiGe)

Building upon a long history in designing integrated circuits and subsystems for radar and mmW markets, MACOM leads the way in applying SiGe BiCMOS technology to both commercial and military needs. SiGe is a high value, differentiating technology which we will continue to leverage in the company's core product segments. *Key applications include high-speed optical network transceivers, basestations, wired broadband communications, high speed crosspoint switches, and global positioning systems.*

Gallium Arsenide (GaAs)

For over three decades, MACOM has been the world leader in the advancement of GaAs technology, producing state-of-the-art, high performance discrete devices, control components, mixed signal processing and converters, driver amplifiers, CATV amplifiers, LNAs and power amplifiers as single purpose and multi-function MMICs. *Key applications include wireless backhaul, industrial, scientific and medical, global positioning system, CATV and wired broadband, aerospace and defense, and satellite communications.*

MACOM Evaluation Modules (EVMs) and Reference Design Kits Enhance New Product Development, Reduce Costs and Optimize Time-to-Market

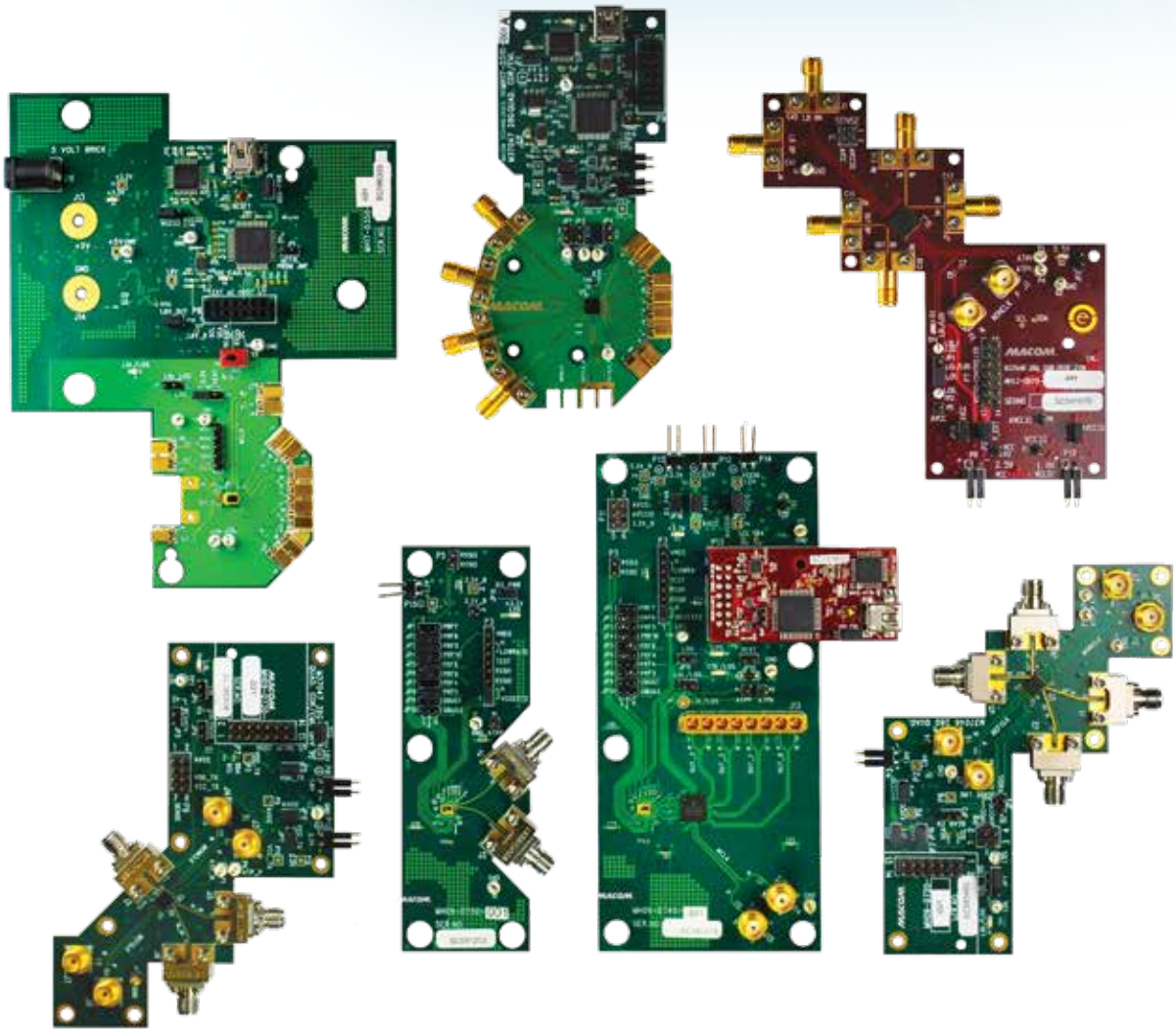
In addition to the support of our world-class application team, MACOM offers a number of custom reference design kits, Evaluation Modules (EVMs) and design guides which enhance the development of new products, reduce costs and optimize time-to-market.

MACOM EVMs provide customers with a vehicle to test product features, measure product performance, and help design the product into their application. From backplanes to line cards and optical modules, MACOM reference design kits and EVMs are built to ease the evaluation of our latest solutions into the application environments of our customers and partners.

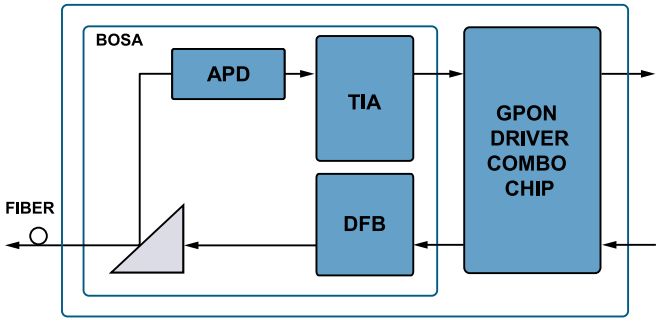
We package these offerings with our extensive GUI support as well. In addition to the EVM and the required software and user guide, schematics of circuit boards and modules, and supporting documents are provided.

From low-speed solutions to those operating at 100G and above, MACOM offers hardware expertise and design support to enable innovative, next-generation optical products in a wide variety of markets.

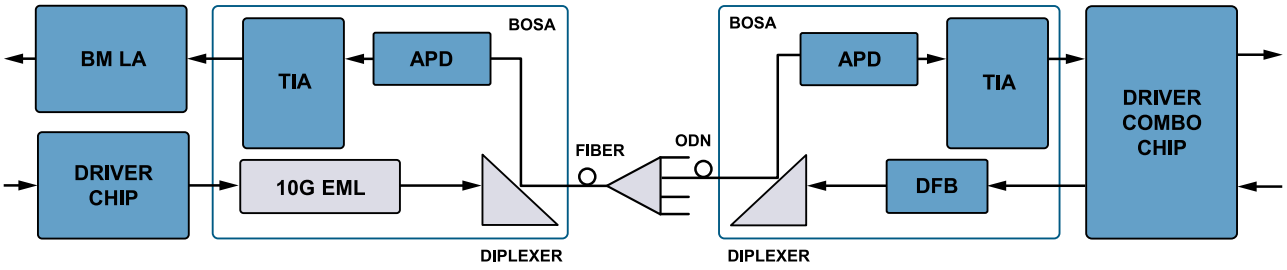
Contact the MACOM sales team (**sales.info@macom.com**) to learn more.



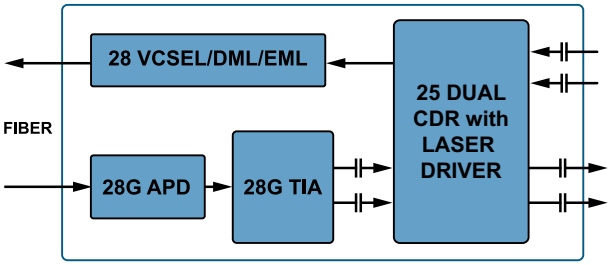
GPON ONU BOSA-on-Board A



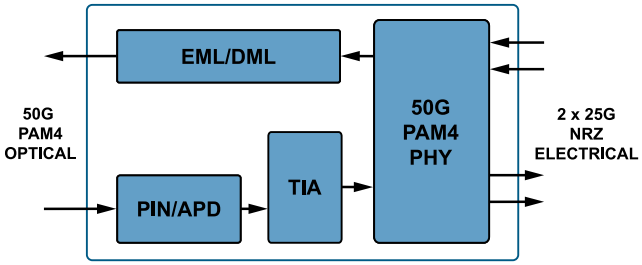
PON ONU/OLT B



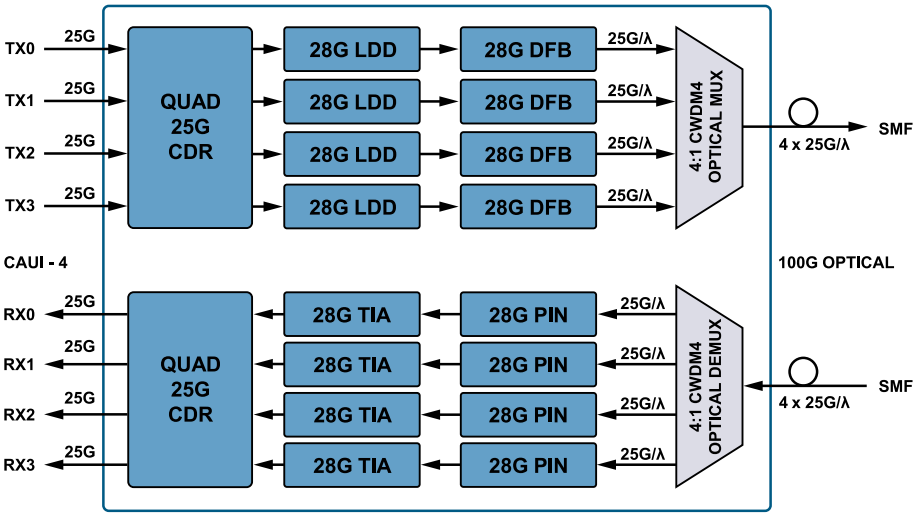
25G Chipset: SFP28 SR/LR/ER C



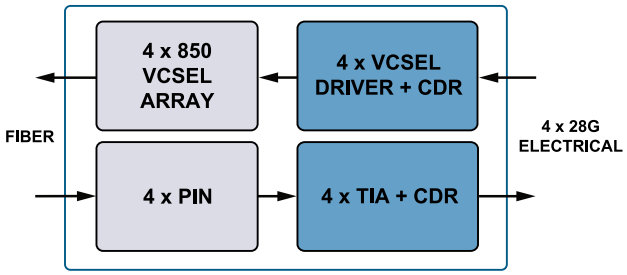
50 Gbps PAM4 FR/LR/ER E



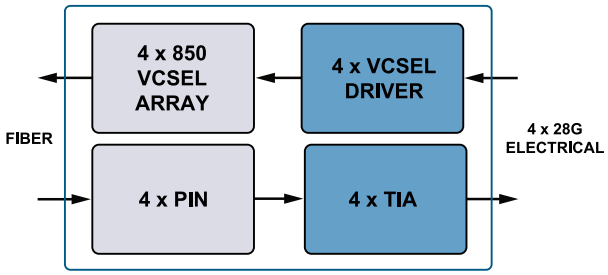
100G Chipset: CWDM4 Solution D



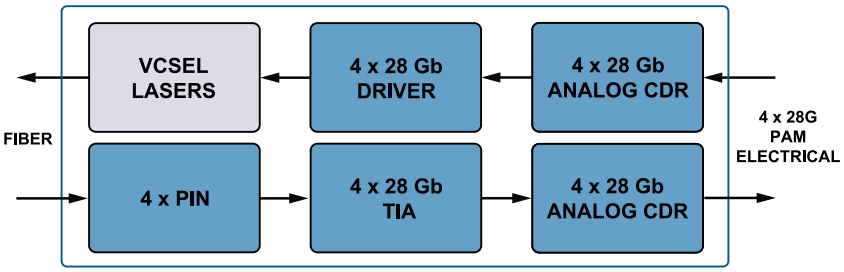
100G SR4 VCSEL Chipsets F



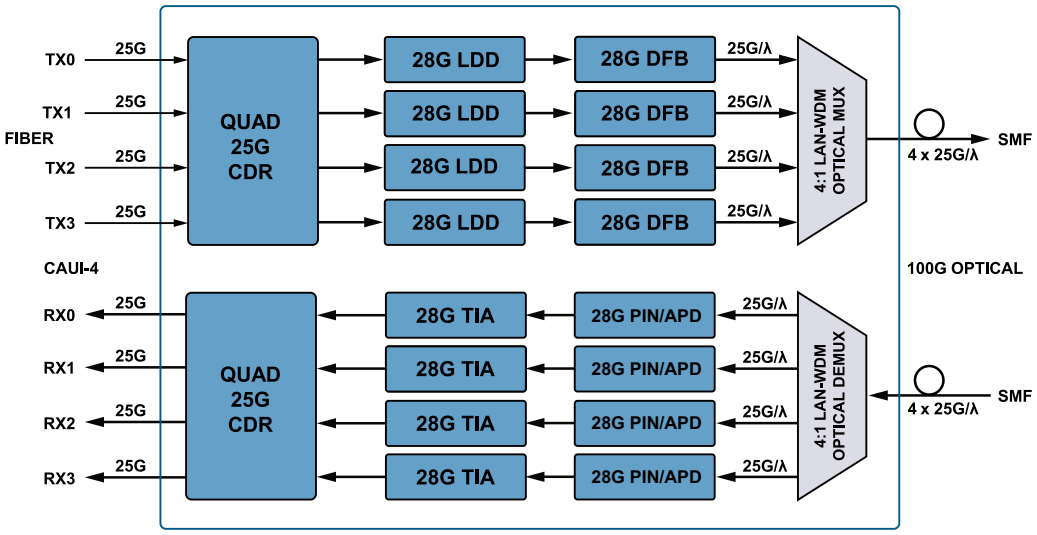
100G SR4 VCSEL Chipsets G



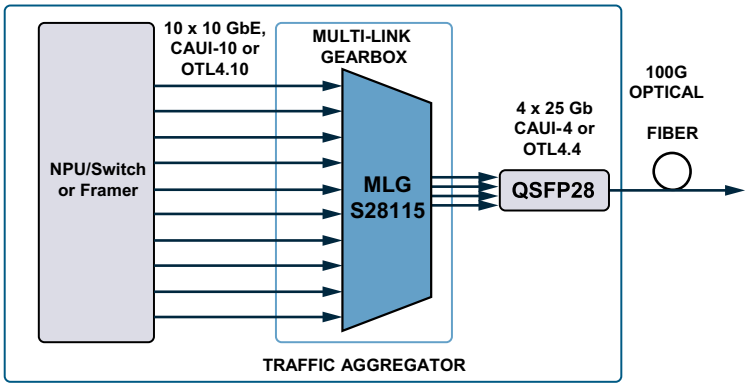
200/400G SR4 VCSEL Chipset H



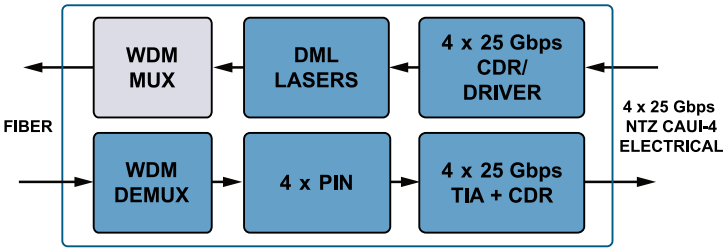
100G BASE-LR 4/ER 4 (QSFP28) I



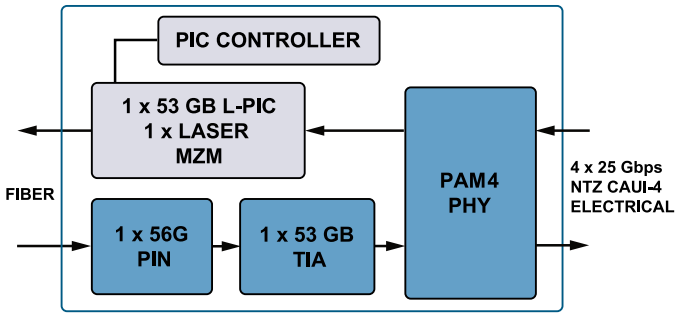
Gearbox Traffic Aggregator – 10 x 10G to 4 x 25G Q



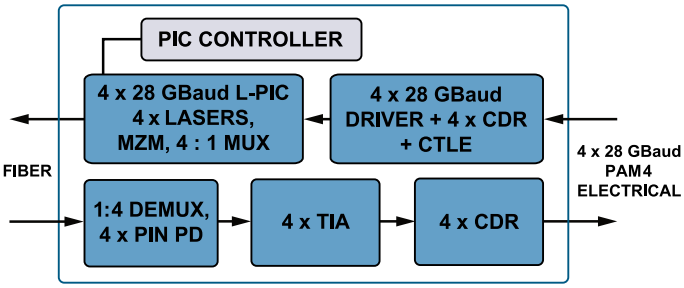
100G Gbps CWDM4 DML-Based Chipset (J)



100G Single Lambda (K)

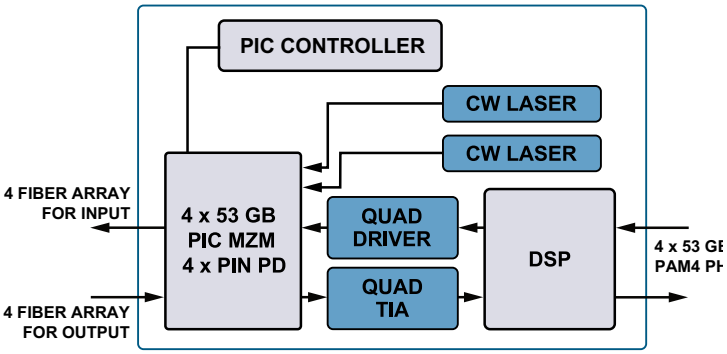


200 Gbps SMF Chipset (M)

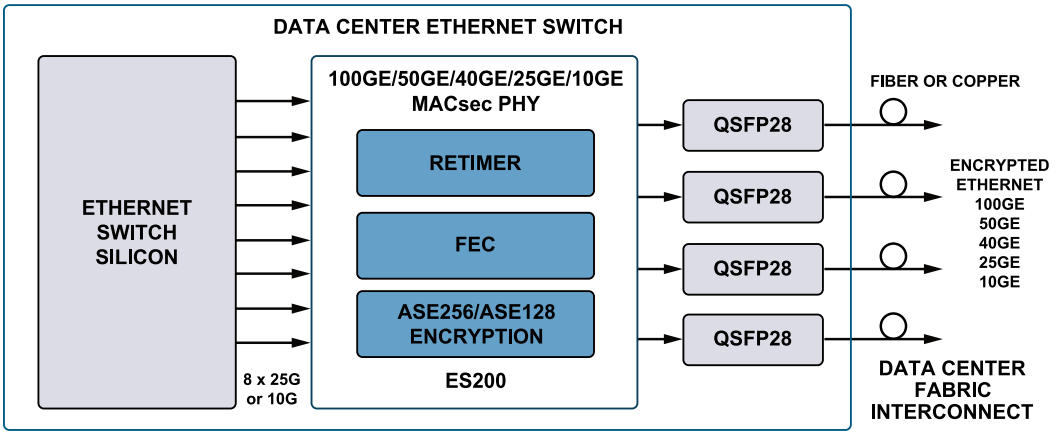


Silicon Photonic 100GBASE-DR/FR Compliant (Single 53 GBaud PAM4 Data Lane)
Chipset Provides Automated PIC Calibration and Monitoring and Build in Self Test (BiST)

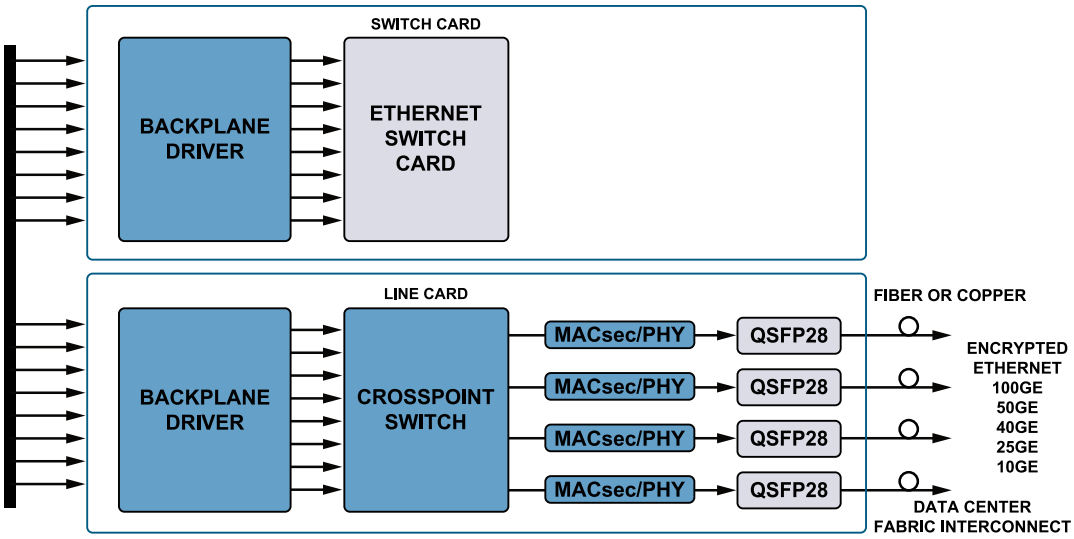
400G BASE-DR4 (L)



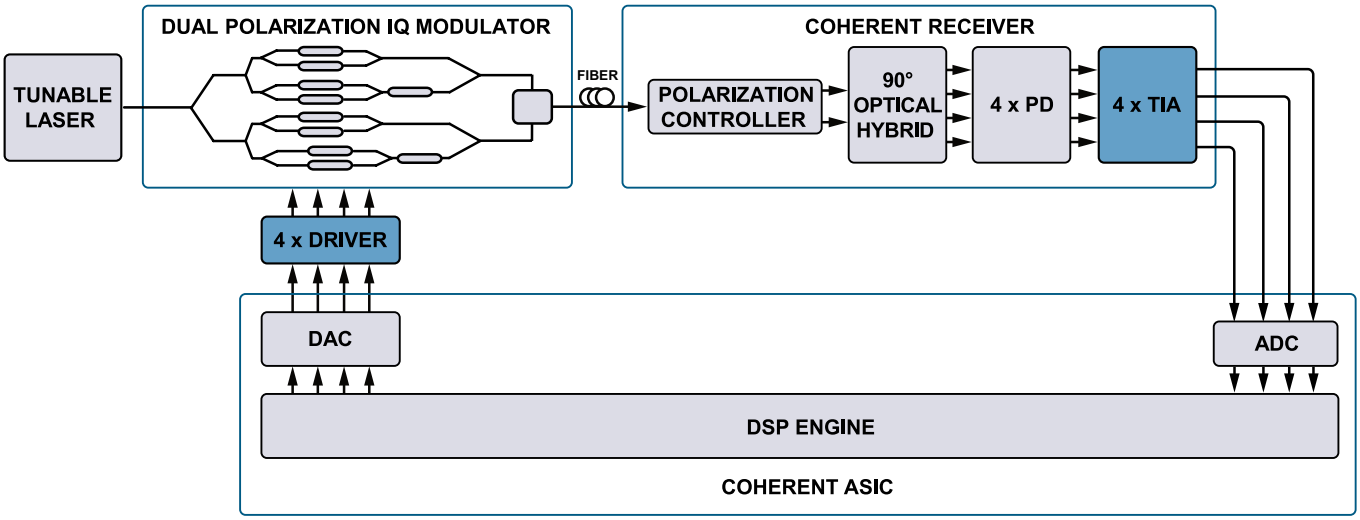
Data Center Switch Interconnect Security Solution (N)



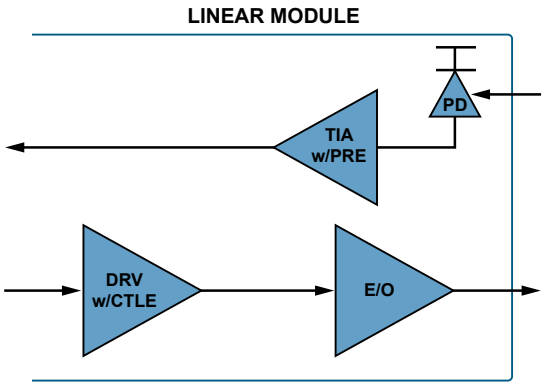
Backplane Drivers (O)



100G – 800G Long Haul/Metro/DCI Application Solution (P)



MACOM PURE DRIVE™ Linear Architecture (R)



Lasers and Modulator Drivers

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Supply Voltage (V)	Power Consumption (W)	Channels (#)	Max Output Mod Current (mA)	Max Output Bias Current (mA)	Package Type and Size
M02097	500 Mbps, 3.3/5 V LED Driver/Limiting Amp	**A**	0.5	3.3, 5	0.12	1	120	10	QFN
M02095	1.25 Gbps, 3.3/5 V Laser Driver/Limiting Amp	**A**	1.25	3.3, 5	0.31	1	85	100	QFN, 5 mm
M02090	2.5 Gbps, 3.3 V Burst Mode Laser Driver/ Limiting Amp	**A**	2.5	3.3	0.48	1	100	80	QFN, 5 mm
M02098	Burst Mode Laser Driver/Limiting Amp	**A**	2.67	3.3	0.28	1	100	80	QFN, 5 mm
M02077	3.1 Gbps Laser Driver/Limiting Amp	**A**	3.1	3.3	0.20	1	100	100	QFN, 4 mm
M02099	Burst Mode Laser Driver/Limiting Amp + DDMI Controller and APD DC – DC Controller	**A**	3.1	3.3	0.22	1	100	100	QFN, 4 mm
M02100	Burst Mode Laser Driver/Limiting Amp + DDMI Controller and APD DC – DC Controller & Amp, EEPROM	**A**	3.1	3.3	0.22	1	100	100	QFN, 4 mm
MALD-02101	3.1 Gbps Low Power Dual Closed Loop Burst Mode Laser Driver with Integrated Limiting Amp	**A**	3.1	3.3	0.23	1	100	100	QFN, 4 mm
MALD-02103C	3.1 Gbps Low Power Dual Closed Loop Burst Mode Laser Driver with Integrated Limiting Amp	**A**	3.1	3.3	0.27	1	100	100	QFN, 4 mm
M02061	4.3 Gbps, 3.3 or 5 V Laser Driver	**A**	4.3	3.3, 5	0.11	1	100	100	QFN
M02096	4.3 Gbps, 3.3/5 V Laser Driver/Limiting Amp	**A**	4.3	3.3, 5	0.22	1	85	100	QFN, 5 mm
M02172	11.3 Gbps EML Driver	**—**	11.3	3.3	0.28	1	2.5 (V)	180	QFN, 5 mm
MALD-02184A	Tx CDR + Modulator Driver with Dual-Output Burst Mode Limiting Amp	**B**	11.3	3.3	0.66	1	—	—	QFN, 5 mm
MALD-02186A	Tx CDR + Modulator Driver and Dual-Output Burst Mode Limiting Amplifier with DC – DC Controller and Diagnostics	**B**	11.3	3.3	0.66	1	—	—	QFN, 5 mm
M02193	12.5 Gbps Low Power Laser Driver and Limiting Amp with DC – DC Controller and EEPROM with Digital Diagnostics	**—**	12.5	3.3	0.31	1	100	100	QFN, 4.5 mm
M02180	Burst Mode Laser Driver/Limiting Amp + Rx CDR + DDMI Controller and APD DC – DC Controller & Amp; EEPROM	**B**	12.5	3.3	0.4	1	100	100	QFN, 4.5 mm
MALD-02181	12.5G Burst Mode Laser and LIA + DC – DC Controller, EEPROM and DDMI Controller	**B**	12.5	3.3	0.33	1	100	100	QFN, 4.5 mm
MALD-02182	12.5G Burst Mode Laser and LIA + DC – DC Controller and DDMI Controller	**B**	12.5	3.3	0.33	1	100	100	QFN, 4.5 mm
MALD-02183	12.5G Burst Mode Laser and LIA + DC – DC Controller and DDMI Controller	**B**	12.5	3.3	0.33	1	100	100	QFN, 4 mm
MALD-02194	12.5G Laser and LIA +DDMI Controller	**—**	12.5	3.3	0.33	1	100	100	QFN, 4.5 mm
MALD-37030	26 Gbps Multi-Rate Laser Driver with LIA/CDR	**C**	26.5	3.3	CONTACT MACOM	1	76	100	CONTACT MACOM
MAOM-37032	Dual 28 Gbps CDR with Integrated EML Driver	**C**	26.5	1.8, 3.3	CONTACT MACOM	1		CONTACT MACOM	
MALD-37345B	Quad 28G VCSEL Driver with Input Equalizer	**F, G**	28	1.8, 3.3	0.5	4	12.8	15	DIE, 2 x 3 mm
MALD-38435	Quad 53G VCSEL Driver with Input Equalizer	**H**	28	1.8, 3.3	0.5	4	12.8	15	DIE, 2 x 3 mm
MALD-37045	Four Channel 25G/28G CDR with Integrated VCSEL Driver	**F**	28	1.8, 3.3	0.7	4	—	—	DIE, 3 x 2 mm
MALD-37145	Four Channel 25G/28G CDR with Integrated VCSEL Driver	**F**	28	1.8, 3.3	0.7	4	—	—	DIE, 3 x 2 mm
MALD-38045	Quad 28 GBaud PAM4/NRZ VCSEL Driver with Integrated CDR	**F**	28	1.8, 3.3	1.1	4	—	—	DIE, 4 x 2 mm
MALD-37845	Four Channel Transmit and Four Channel Receive 25G/28G CDR with Integrated VCSEL Drivers and TIAs	**F**	28.1	1.8, 3.3	1.5	4 Tx & 4 Rx	—	—	DIE, 3.4 x 4 mm
MALD-37031	28 Gbps Multi-Rate Laser Driver with LIA/CDR	**C**	28.1	3.3	CONTACT MACOM	1	76	100	CONTACT MACOM

*Refer to Block Diagrams on pages 8 – 11

Detailed specifications can be found quickly on our website at **macom.com** by typing the part number into the search box. All specifications are subject to change.

Lasers and Modulator Drivers (continued)

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Supply Voltage (V)	Power Consumption (W)	Channels (#)	Max Output Mod Current (mA)	Max Output Bias Current (mA)	Package Type and Size
MALD-37035	26 Gbps Multi-Rate Burst Mode Laser Driver with Limiting Amplifier, Dual CDR, PMIC and DDMI	B	26	3.3	0.693	1	76	100	5 x 6 mm LGA

Lasers and Modulator Drivers: Client Side

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Channels (#)	Max Output Voltage (V)	Min Input Voltage (mVpp)	Supply Voltage (V)	RF I/O Interface	Power Dissipation (W)	Package Type and Size (mm)
MAOM-002301-DIE	Single Channel 28 Gbps Direct, Modulated Laser Driver IC, Die	C, D, I	28	1	—	500	3	Differential/ Single-Ended	0.255	DIE
MAOM-002322-DIE	Single Channel 28 Gbps Direct Modulated Laser Driver IC, Die	D, E, I	28	1	—	600	3.3	Differential/ Single-Ended	0.25/ch	DIE
MAOM-002326	Single Channel 28 Gbps Direct Modulated Laser Driver IC	D, E, I	28	1	—	800	3.3	Differential/ Differential	0.33/ch	LGA, 4 x 4 x 1.33
MAOM-003119	Single Channel 28 GBaud Linear EML Driver	—	28	1	2	500	3.3	Differential/ Single-Ended	0.46/ch	SMD, 4 x 6 x 0.98
MAOM-002304-DIE	Quad Channel 28 Gbps Direct Modulated Laser Driver IC, Die	D, I	28	4	—	500	3	Differential/ Single-Ended	0.255/ch	DIE
MAOM-002422-DIE	Quad Channel 28 Gbps Direct Modulated Laser Driver IC, Die	D, E, I	28	4	—	600	3.3	Differential/ Single-Ended	0.25/ch	DIE
MAOM-005321	Single Channel 56 GBaud Linear EML Driver		53/56	1	1.8	1000 (max)	3	Differential/ Single-Ended	0.4/ch	LGA, 3 x 5 x 1.1
MAOM-005421	Quad Channel 56 GBaud Linear EML Driver	L	53/56	4	1.8	1000 (max)	3	Differential/ Single-Ended	0.4/ch	SMD, 7 x 7.2 x 0.73
MAOM-005324	Single Channel 56 GBaud Linear DML/SiPh Driver	—	53/56	1	1000 (max)	3.6	3	Differential/ Differential	0.4/ch	LGA, 3 x 5 x 1.1
MAOM-005424	Quad Channel 56 GBaud Linear DML/SiPh Driver	L	53/56	4	3.6	1000 (max)	3	Differential/ Differential	0.4/ch	SMD, 5 x 7 x 1.11
MAOM-005320-DIE	Single Channel 56 Gbps Direct Modulated Laser Driver IC, Die	D, E, I	56	1	—	600	3.3	Differential/ Single-Ended	0.25/ch	DIE
MAOM-005420-DIE	Quad Channel 56 Gbps Direct Modulated Laser Driver IC, Die	D, E, I	56	4	—	600	3.3	Differential/ Single-Ended	0.25/ch	DIE
MAOM-005413	Quad Channel 56 GBaud Linear EML Driver	L	56	4	1.8	1000 (max)	3.3	Differential/ Single-Ended	0.4/ch	SMD, 6 x 6.3 x 0.915
MAOM-005408-DIE	Quad Channel 56 GBaud Linear SiPh Driver, Die	R	56	4	3	800 (max)	3.3	Differential/ Differential	0.35/ch	DIE/ Flip Chip
MAOM-05408L-DIE	Quad Channel 56 GBaud Linear SiPh Driver, Die	R	56	4	3	800 (max)	3.3	Differential/ Differential	0.35/ch	DIE/ Flip Chip
MAOM-005429	Quad Channel 56 GBaud Linear SiPh Driver, Die	L	56	4	4	800 (max)	3.3	Differential/ Differential	0.6/ch	DIE/ Flip Chip
MAOM-005808	Eight Channel 56 Gbaud Linear SiPh Driver, 500 µm Channel Pitch, Die	—	56	8	3	800 (max)	3.3	Differential/ Differential	0.35/ch	DIE
MAOM-005818	Eight Channel 56 Gbaud Linear SiPh Driver, 625 µm Channel Pitch, Die	—	56	8	3	800 (max)	3.3	Differential/ Differential	0.35/ch	DIE
MAOM-011112	Single Channel 112 Gbaud Linear EML Driver, Die	—	112	1	1.2	1000 (max)	3	Differential/ Single-Ended	0.4/ch	Flip Chip
MALD-39076	Quad 53 GB Equalizer + EML/ SiP Driver	R	53 Gbaud	4	3	250	3.3	Differential/ Differential	0.38/ch	DIE 4.12 x 2.12
MALD-39077	Quad 53 GB Equalizer + EML/ SiP Driver with Integrated AC Coupling and HF BiasT	R	53 Gbaud	4	3	250	3.3	Differential/ Differential	0.38/ch	LGA, 6.9 x 6.0
MAOM-010404	Quad Channel 112 GBaud Linear SiPh Driver, Die	—	112	4	3.3	800 (max)	4	Differential/ Differential	0.54/ch	DIE/ Flip Chip
MALD-38482	Quad 26 GBaud PAM4/NRZ VCSEL Driver	N/A	112	4	—	—	3.3	—	800	DIE

*Refer to Block Diagrams on pages 8 – 11

Lasers and Modulator Drivers: Client Side (continued)

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Channels (#)	Max Output Voltage (V)	Min Input Voltage (mVpp)	Supply Voltage (V)	RF I/O Interface	Power Dissipation (W)	Package Type and Size (mm)
MALD-39435	Quad 53 GBaud PAM4/NRZ VCSEL Driver	**N/A**	112	4	—	—	3.3	—	800	DIE
MALD-39437	Quad 53 GBaud PAM4/NRZ VCSEL Driver	**N/A**	112	4	—	—	3.3	—	800	DIE
MAOM-010408	Quad Channel 112 GBaud Linear SiPh Driver, Die	**—**	112	4	3.3	800 (max)	3	Differential/ Differential	0.36/ch	DIE/ Flip Chip

Lasers and Modulator Drivers: Metro/Line Side

Part Number	Description	Block Diagram Key*	Max Baud Rate (Baud)	Max Output Voltage (V)	Min Input Voltage (mVpp)	Channels (#)	Supply Voltage (V)	RF I/O Interface	Power Dissipation (W)	Package Type and Size (mm)
MAOM-003408	Quad Channel 32 GBaud Limiting Modulator Driver, Die	**—**	32	2.7	800 (max)	4	3.3	Differential/ Differential	0.17/ch	DIE
MAOM-03417L	Quad Channel Low Power Linear Modulator Driver	**P**	32	3.3	700 (max)	4	3.3	Differential/ Single-ended	0.6/ch	SMD, 9.1 x 14 x 2.29
MAOM-003409	Quad Channel 32 GBaud Limiting Modulator Driver, Die	**—**	32	3.5	800 (max)	4	3.3	Differential/ Differential	0.2/ch	DIE
MAOM-03409B	32 GBaud Linear Differential Modulator Driver IC	**P**	32	4	300 (max)	4	3.6/4.5	Differential/ Differential	0.75/ch	SMD, 9.1 x 14 x 2.29
MAOM-03409D	32 GBaud Linear Differential Modulator Driver IC	**P**	32	4	700 (max)	4	3.6/4.5	Differential/ Single-Ended	0.75/ch	SMD, 9.1 x 14 x 2.29
MAOM-03417B	Quad Channel 32 GBaud Linear Modulator Driver	**P**	32	4.5	500 (max)	4	3.3/5	Differential/ Single-ended	1.15/ch	SMD, 9.1 x 14 x 2.85
MAOM-003417	Quad Channel 32 GBaud Linear Modulator Driver	**P**	32	4.5	700 (max)	4	3.3/5	Differential/ Single-Ended	1.13/ch	SMD, 9.1 x 14 x 2.29
MAOM-003407	Quad Channel 32 GBaud Limiting MZ Modulator Driver	**P**	32	6	300 (max)	4	6.5	Differential/ Single-ended	1.6/ch	SMD, 13 x 19 x 2.46
MAOM-003405	Quad Channel 32 GBaud Limiting MZ Modulator Driver	**P**	32	7	300/600 (max)	4	6.5	Differential/ Single-ended	0.95/ch @ 5 Vout	SMD, 13 x 19 x 2.46
MAOM-002105	32 GBaud Limiting MZ Modulator Driver	**P**	32	8	350	1	6	Single-Ended/ Single-Ended	1.8	SMD, 14.4 x 7 x 2.3
MAOM-006408	Quad Channel 64 GBaud Linear Modulator Driver, Die	**P**	64	3	800 (max)	4	3.3	Differential/ Differential	0.4/ch	DIE
MAOM-006409	Quad Channel 64 GBaud Linear Open Collector Modulator Driver, Die	**P**	64	4	800 (max)	4	3.3	Differential/ Differential	0.65/ch	DIE
MAOM-006416	Quad Channel 64 GBaud MZ Modulator Driver	**P**	64	4.5	1100 (max)	4	3.3/5	Differential/ Single-ended	1.1/ch	SMD, 14 x 9.1 x 2.85
MAOM-006418	Quad Channel 64 GBaud Linear Modulator Driver	**P**	64	4.5	1100 (max)	4	3.3/5	Differential/ Single-ended	1.1/ch	SMD, 14 x 9.1 x 2.85
MAOM-009408	Quad Channel 96 GBaud Linear Open Collector Modulator Driver, Die	**P**	96	3	800 (max)	4	3.3	Differential/ Differential	0.54/ch	DIE
MAOM-009409	Quad Channel 96 GBaud Linear Modulator Driver, Die	**P**	96	4	800 (max)	4	3.3	Differential/ Differential	1.0/ch	DIE
MAOM-012404	Quad Channel 128 GBaud Linear Terminated Modulator Driver, Die	**P**	128	2	800 (max)	4	3.3	Differential/ Single-Ended	0.75/ch	DIE
MAOM-012408	Quad Channel 128 GBaud Linear Open Collector Modulator Driver, Die	**P**	128	2.8	800 (max)	4	3.3	Differential/ Differential	0.6/ch	DIE/ Flip Chip
MAOM-012409	Quad Channel 128 GBaud Linear Open Collector Modulator Driver, Die	**P**	128	4	800 (max)	4	3.3	Differential/ Differential	0.6/ch	Flip Chip

*Refer to Block Diagrams on pages 8 – 11

Detailed specifications can be found quickly on our website at **macom.com** by typing the part number into the search box. All specifications are subject to change.

Transimpedance Amplifiers (TIAs)

Part Number	Data Rate (Gbps)	Diff Gain (dB)	Input Over Load (mApp)	On Chip AGC	Current (mA)	Power Supply (V)	Package
CGY2102UH/C2	2.5	76	2.5	Yes	45	+3.3	DIE
CGY2110UH/C1/S2	10	72	2.0	Yes	70	+5.0	DIE
CGY2116UH/C1	10.7	74	2.5	Yes	83	+5.0	DIE
CGY2144UH/C2	43	49	3.5	No	100	+5.0	DIE

Transimpedance Amplifiers (TIAs): Coherent

Part Number	Description	Block Diagram Key*	Max Baud Rate (Baud)	Differential Transimpedance Gain (kΩ)	Small Signal Bandwidth (GHz)	Input Overload Current (mA)	Input Referred Noise (IRN, RMS nA) (nA)	Output Swing Voltage (mV)	Power Dissipation (W)	Supply Voltage (V)
MATA-006806	64 GBaud Dual Channel Linear TIA for 400G and 600G Coherent Receivers	P	64	2	45	3	16	700	0.315/ch	3.3
MATA-006406	64 GBaud Quad Channel Linear TIA for 400G and 600G Coherent Receivers	P	64	6	45	3	16	700	0.33/ch	3.3
MATA-009406	96 GBaud Quad Channel Linear TIA for 400G, 600G, and 800G Coherent Receivers	P	96	6	60	4	18	700	0.400/ch	3.3
MATA-012803	128 GBaud Dual Channel Linear TIA for 800G Coherent Receivers	P	128	2.5	80	3	20	500	0.45/ch	3.3
MATA-012403	128 GBaud Quad Channel Linear TIA for 800G Coherent Receivers	P	128	2.5	80	3	20	500	0.45/ch	3.3

Transimpedance Amplifiers (TIAs): Client Side

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Differential Transimpedance Gain (kΩ)	Small Signal Bandwidth (GHz)	Input Overload Current (mA)	Input Referred Noise (IRN, RMS nA) (nA)	Output Swing Voltage (mV)	Power Consumption (W)
M02007	Low-Noise TIA with AGC	—	0.2	62	0.14	2.8	8	300	—
M02006	155 Mbps AGC Prep-Amp	—	0.2	260	0.1	2.2	8	300	275
M02038	1.3 Gbps Burst Mode CMOS TIA B 1.2	B	1.2	8.5	0.85	4	350	275	0.082
M02016	1.25 Gbps AGC Pre-Amp	—	1.3	24	14	130	140	0.096	3.3
M02036	2.5 Gbps Burst Mode G PON OLT TIA	B	1.3	3.8	0.8	2.5	170	—	—
M02035	Burst Mode OLT TIA	B	2.5	3.6	1.7	1.5	250	—	0.15
M02015	2.5 Gbps AGC Pre-Amp	—	2.5	9	1.4	4	290	140	0.07
M02025	100 Mbps to 3.125 Gbps Multi-Rate CMOS TIA with AGC	—	3.2	20	1.45	4	120	50	0.096
M02020	4 Gbps CMOS TIA with AGC	—	4.3	3.6	3.4	4	550	140	0.14
MATA-02135	6/8/10/11.3 Gbps TIA with AGC	B	10	3.5	9	3	750	230	—
MATA-02240	2.5G/10G Gbps AGC TIA for PON ONU	B	10	5	7	1.6	7.5	260	0.145
MATA-02240	2.5G/10G Gbps AGC TIA for PON ONU	B	10	5	7	1.6	7.5	260	0.1
MATA-02239	2.5G/10G Gbps Burst Mode TIA with Rate Select	B	10	5	7	1.6	8.5	260	—
MATA-02239	2.5G/10G Gbps Burst Mode TIA with Rate Select	B	10	5	7	1.6	8.5	260	0.1
M03002	28 Gbps TIA	C, D, G, I	28	2.9	22	3.5	CONTACT MACOM		
MATA-03003	28 Gbps Quad Channel	C, D, G, I	28	3.8	21	4	CONTACT MACOM		
MATA-03006	28G Single Channel TIA for APD	I	28	3.8	21	4	CONTACT MACOM		
MATA-03013	28 Gbps Quad Channel TIA	C, D, G, I	28	3.8	21	4	1400	—	—
MATA-03106	28G Quad Channel TIA for APD	I	28	3.8	21	4	1400	CONTACT MACOM	
MATA-39136	Quad Linear 53 GBaud PAM4 TIA	N/A	112	5000	37	—	2	—	800
MATA-40734	Quad Linear 212 Gbps PAM4 TIA	N/A	227	3100	50	—	2.4	—	1200

*Refer to Block Diagrams on pages 8 – 11

Transimpedance Amplifiers (TIAs): Client Side (continued)

Part Number	Description	Block Diagram Key*	Max Available Bandwidth (nA)	Channels (#)	Wirebond or Flip Chip (µm)	Pad Spacing	PIN or APD	Max Gain (dB/Ω)	Noise at Gain (µA RMS)	Supply Current (mA @ 2.9 V 3.3 V)
MATA-03809	26 to 28 Gbaud Linear TIA 53 to 56 Gbps PAM4	**E, K**	~19	1	Wirebond	N/A	PIN & APD	~4500	1.5	71
MATA-38019	Quad 26 to 28 GBaud Linear TIA 53 Gbps to 56 Gbps	**E, K**	~19	1	Wirebond	750	PIN	~4500	1.59	265
MATA-03819	Quad 26 to 56 GBaud Linear TIA 53 to 112 Gbps PAM4, Wirebond, PIN PD	**H, M**	~30	4	Wirebond	750	PIN	~4500	1.5	265
MATA-03820	Quad 26 to 56 GBaud Linear TIA 53 to 112 Gbps PAM4, Flip Chip, PIN PD	**H, M**	~30	4	Flip Chip	750	PIN	~4500	1.5	265
MATA-03919	Quad 26 to 56 GBaud Linear TIA 53 to 112 Gbps PAM4, Wirebond, APD	**H, M**	~30	4	Wirebond	750	APD	~4500	1.5	265
MATA-03920	Quad 26 to 56 GBaud Linear TIA 53 to 112 Gbps PAM4, Flip Chip, APD	**H, M**	~30	4	Flip Chip	750	APD	~4500	1.5	265
MATA-38134	Quad Linear 26/53 GBaud PAM4/ NRZ TIA, 500 µm	**H, M**	~30	4	Wirebond	500	PIN	~4500	1.5	265
MATA-38434	Quad Linear 26 GBaud PAM4 TIA, 250 µm	**H**	~30	4	Wirebond	250	PIN	~4500	1.5	265
MATA-38834	Octal 26 to 56 GBaud Linear TIA, 500 µm, Wirebond	**—**	~30	8	Wirebond	520	PIN	~4500	1.5	265
MATA-38836	Octal 26 to 56 GBaud Linear TIA, 500 µm, Flip Chip	**—**	~30	8	Flip Chip	520	PIN	~4500	1.5	265
MATA-05819	Linear 53 GBaud PAM4 TIA	**E, K**	~35	1	Wirebond	N/A	PIN & APD	~4500	1.5	71
MATA-03821	Bandwidth/Gain Optimized	**H, M**	~40	4	Wirebond	750	PIN	~5400	1.59	274
MATA-03822	Bandwidth/Gain Optimized	**H, M**	~40	4	Flip Chip	750	PIN	~5400	1.59	274
MATA-05817	Bandwidth/Gain Optimized	**K**	~45	1	Wirebond	N/A	PIN & APD	~5400	1.59	73
MATA-05827	Bandwidth/Gain Optimized	**K**	~45	1	Flip Chip	N/A	PIN & APD	~5400	1.59	73

Part Number	Number of Channels	Wirebond/Flip Chip	Max Bandwidth (GHz)	Pin Polarity	Pad Spacing (µm)	PIN or APD	Max Gain (Ω)	Noise µA (RMS)
MATA-39434	4 x 56 GB	Wirebond	~30	Standard	250	PIN	~4,000	~1.84
MATA-40736	4 x 113 GB	Flip-Chip	45	Standard	750	PIN	~3,500	<2.25
MATA-39534	4 x 56 GB	Wirebond	~35	Reversed	250	PIN	~4,800	~2.00
MATA-39134	4 x 56 GB	Wirebond	~37	Standard	500	PIN	~4,800	~2.00
MATA-39138	4 x 56 GB	Wirebond	~37	Reversed	500	PIN	~4,800	~2.00

Clock & Data Recovery

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Supply Voltage (V)	Power Consumption (W)	Channels (#)	Package Type and Size
M21012	42 Mbps to 3.2 Gbps Quad Multi-Rate CDR	**—**	3.2	1.8 – 3.3	0.47	4 x 4	QFN, 10 mm 72-pin
MAOM-38053	28 Gbps Quad Channel Transimpedance Amplifier (TIA)	**—**	28	3.3	—	4	DIE
MASC-37028	Multi-Rate, Dual 28 Gbps CDR with Integrated Laser Driver	**—**	26.5	1.8, 3.3	—	2	LGA, 5 mm
MATA-37244	Four Channel 25G/28G CDR with Integrated TIA/Limiting Amplifier	**—**	28	1.8, 3.3	—	4	DIE, 2 x 3 mm
MATA-37644	Multi-Rate 28G CDR with TIA/LA Integrated	**—**	28	1.8	0.26	1	DIE, 2.3 x 1.4 mm
M37046	Quad 24G/26G TIA/LA with Integrated CDR	**D, I**	28	1.8	0.4	4	CSP, 4 x 4.5 mm
MASC-37048	Four Channel 25G/28G CDR	**—**	28	1.8	0.4	4	CSP, 4 x 4.5 mm
MALD-37645	Multi-Rate 28G VCSEL Driver/CDR with Input Equalizer	**F, G**	28	1.8	0.26	1	DIE, 2.3 x 1.4 mm
M37049	Four Channel 25G/28G CDR with Integrated Input Equalizer	**F**	28	1.8	0.4	4	CSP, 4 x 4.5 mm
MALD-38435	Quad 53G VCSEL Driver with Input Equalizer	**D, F, I**	28	1.8, 3.3	0.5	4	DIE, 2 x 3 mm
MATA-37144	Four Channel 25G/28G CDR with Integrated VCSEL Driver	**D, F, I**	28	—	0.7	4	DIE, 2 x 3 mm

*Refer to Block Diagrams on pages 8 – 11

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Clock & Data Recovery (continued)

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Supply Voltage (V)	Power Consumption (W)	Channels (#)	Package Type and Size
MALD-37045	Four Channel 25G/28G CDR with Integrated VCSEL Driver	D, F, I	28	1.8, 3.3	0.7	4	DIE, 3 x 2 mm
MALD-37545	Four Channel 25G/28G CDR with Integrated VCSEL Driver for SAS 4.0 for Max Data Rate 22.5	—	28	1.8, 3.3	0.7	4	DIE, 3 x 2 mm
MALD-37445	Quad 25G/26G CDR/VCSEL Driver with Input Equalizer	F, G	28	1.8, 3.3	0.7	4	DIE, 3 x 2 mm
MAOM-037057	Quad 25G/28G CDR with Integrated Equalization and Amplifier, EML Driver	I	28	1.8	1.1	4	SMT, 5.6 x 9.6 mm
MAOM-37051A	Quad 25G/28G CDR with Integrated Equalization and EML Driver	F, G	28	1.8	1.1	4	SMT, 7 x 11 mm
MALD-38045	Quad 28 GBaud PAM4/NRZ VCSEL Driver with Integrated CDR	F	28	1.8, 3.3	1.1	4	DIE, 4 x 2 mm
M37047	Four Channel 25G/28G CDR with Integrated EML Driver	F	28	1.8, 3.3	1.2	4	CSP, 4 x 4.5 mm
MALD-37059	Four Channel 25G/28G CDR with Integrated DML Driver	D, F, I	28	1.8, 3.3	1.8	4	BGA, 5.5 x 6.5 mm
MASC-37029	Multi-Rate, Dual 28 Gbps CDR with Integrated Laser Driver	—	28.1	1.8, 3.3	—	2	LGA, 5 mm
MALD-37845	Four Channel Transmit and Four Channel Receive 25G/28G CDR with Integrated VCSEL Drivers and TIAs	—	28.1	1.8, 3.3	1.5	4 Tx & 4 Rx	DIE, 3.4 x 4 mm
MASC-38040	Quad 4 x 28 GBaud PAM4 (56 Gbit) Receiver CDR	—	56	1.8	0.4	4	QFN, 5.2 mm
MATA-37044	Four Channel 25G/ 28G CDR with integrated TIA	—	28	1.8, 3.3	—	4	DIE, 3 x 2 mm
MATA-37044	Four Channel 25G/28G CDR with Integrated TIA	—	28	1.8, 3.3	—	4	DIE 3 x 2 mm
MATA-37244	Four Channel 25G/28G CDR with Integrated TIA/Limiting Amplifier	—	28	1.8, 3.3	—	4	DIE 2 x 3 mm
MATA-37442	Quad 24G/26G TIA/LA with Integrated CDR	—	26	1.8, 3.3	—	4	DIE 3 x 2 mm
MATA-37444	Quad 24G/26G TIA/LA with Integrated CDR	—	26	1.8, 3.3	—	4	DIE 3 x 2 mm
MATA-37644	Multi-Rate 28G CDR with TIA/LA Integrated	—	28	1.8	0.26	1	DIE 2.3 x 1.4 mm
MATA-38044	Quad 28 GBaud Linear TIA with Integrated CDR	—	28	1.8, 3.3	1.5	4	DIE 4 x 2 mm

Post Amplifiers

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Supply Voltage (V)	Power Consumption (W)	Channels (#)	Input Sensitivity (mVpp)(mV)	Output Swing Voltage (V)	Package Type and Size
M02142	11.3 Gbps Limiting Amp	A	11.3	3.3	0.191	1	3	680	QFN, 3 mm

LED/Laser Drivers for Display

Part Number	Description	Max Current (A)	Current Per Channel (A)	Channels (#)	Programmable Internal PWM Generator (Y/N)	Input Integrated PMIC (Y/N)	Automatic Power Control (Y/N)	Electronic Laser Despeckle (Y/N)
M08980	LED Driver and PMIC and Stepper Motor Driver for TI DLP® Displays	1.2	1.2	3	No	Yes	No	No
M09000	LED Driver and PMIC for TI DLP® Displays in QFN Package	1.2	1.2	3	No	Yes	No	No
M09001	LED Driver and PMIC for TI DLP® Displays	1.2	1.2	3	No	Yes	No	No
M08889	High-Performance 2A RGB LED/Laser Driver with Integrated Buck-Boost Converter for LCD/LCoS/TI DLP® Projection Displays	2	2	3	Yes	Yes	Yes	No
M08886	High-Performance RGB LED/Laser Driver with Despeckle Technology for LCD/LCoS/TI DLP® Projection Displays	4	2	3	Yes	No	Yes	Yes
M08888	High-Performance 2A RGB LED/Laser Driver for LCD/LCoS/TI DLP® Projection Displays	6	2	3	Yes	No	Yes	No
M08890	Three Channel 2A LED/Laser Driver for Panel Based Projectors	6	2	3	Yes	No	No	No
M08898	Four Channel 2A LED/Laser Driver for Panel Based Projectors	8	2	4	Yes	No	No	No

*Refer to Block Diagrams on pages 8 – 11

25G Fabry-Perot Lasers

Part Number	Description and Applications	Block Diagram Key*	Max Data Rate (Gbps)	Wavelength (nm)	Temp Options (°C)	Package Type and Size (µm)
MAOD-131F25IL1T0	1310 nm FP Laser, Die on Tape, 25 Gbps **Applications:** 5G Fronthaul LR-Lite	**C**	25	1310	-40 to 95	DIE, 250 x 250 x 100

2.5G Distributed Feedback Lasers

Part Number	Description and Applications	Block Diagram Key*	Max Data Rate (Gbps)	Wavelength (nm)	Temp Options (°C)	Package Type and Size (µm)
131D-02E-VCT11-50x	Laser, 2.5G DFB NFF, Small Size, Chip on Tape, Die **Applications:** PON, Access, Optical Ethernet, SDH	**—**	2.5	1310	-20 to 85	DIE, 265 x 250 x 100

10G/16G Distributed Feedback Lasers

Part Number	Description and Applications	Block Diagram Key*	Max Data Rate (Gbps)	Wavelength (nm)	Temp Options (°C)	Package Type and Size (µm)
MAOD-127D10I-LCT5	10G DFB Edge Emitting Laser for XGS-PON, 1270 nm **Applications:** XGS-PON	**B**	10	1270	-40 to 95	DIE, 200 x 250 x 100
MAOD-1xxD10I-LCT2	10G DFB Edge-Emitting Lasers for 4G BiDi, 1310 nm **Applications:** Wireless 4G	**Q**	10	1271, 1291, 1311, 1331	-40 to 95	DIE, 200 x 250 x 100
MAOD-1xxD10G-LCT2	10G DFB Edge-Emitting Lasers for 40GBASE-CWDM4 **Applications:** Data Center, 40G	**Q**	10	1271, 1291, 1311, 1331	0 to 85	DIE, 200 x 250 x 100
MAOD-1xxD16I-LCT2	16G DFB Edge-Emitting Lasers for 4G BiDi, 1310 nm **Applications:** Wireless 4G	**Q**	16	1271, 1311, 1331	-40 to 95	DIE, 200 x 250 x 100

25G/50G Distributed Feedback Lasers

Part Number	Description and Applications	Block Diagram Key*	Max Data Rate (Gbps)	Wavelength (nm)	Temp Options (°C)	Package Type and Size (µm)
MAOD-1xxD50X-LCT8	50G DFB Edge-Emitting Lasers for 5G BiDi, CWDM6 **Applications:** Wireless 5G FH CWDM6	**E**	10	1271, 1291, 1311, 1331, 1351, 1371	-40 to 95	DIE, 200 x 250 x 100
MAOD-1xxD25G-LCT2	Laser, 25G DFB, 1271, 1291, 1311, 1331, 1351, 1371, Die **Applications:** 5G Fronthaul CWDM6, 100G CWDM4	**—**	25	1271, 1291, 1311, 1331, 1351, 1371	-5 to 85	DIE, 200 x 250 x 100
MAOD-xxxD25B-LCT0	Laser, 25G DFB, Die **Applications:** 5G Fronthaul MWDM12	**—**	25	1267.5, 1274.5, 1287.5, 1294.5, 1307.5, 1314.5, 1327.5, 1334.5, 1347.5, 1354.5, 1367.5, 1374.5	50	DIE, 200 x 250 x 100
MAOD-xxxD25B-LCT1	Laser, 25G DFB, Die **Applications:** 5G Fronthaul LWDM12	**—**	25	1290 — 1320	50	DIE, 200 x 250 x 100
MAOD-xxxD25B-LCT7	Laser, 25G DFB, 1295, 1300, 1305, 1309, Chip on Tape, Die **Applications:** Data Center, 100GBase-LR4	**C, I**	25	1295, 1300, 1305, 1309	50	DIE, 200 x 250 x 100

Photodiodes: APD

Part Number	Description and Applications	Block Diagram Key*	Model	Bandwidth (GHz)	Wavelength (nm)	Responsivity (A/W)	Sensitivity (dBm)	Capacitance (fF)	Package Type
32445-01	10G APD, Backside Illuminated, Integrated Lens Option Standard and Enhanced Sensitivity, Die and Chip on Carrier Options **Applications:** 10G PON OLT/ONU	**B**	APD10B/CoC	12	1250 – 1650	0.8	-31	95	CoC
32447-02			APD10B-ES/Lens	11	1250 – 1650	13	-32.5	90	DIE
32445-02			APD10B-ES/CoC	11	1250 – 1650	13	-32.5	90	CoC
32448-02			APD10B-ES/Lens/CoC	11	1250 – 1650	13	-32.5	90	CoC
MARP-FSAPD10A	10G APD, Frontside Illuminated **Applications:** 10G PON OLT/ONU	**B**	FSAPD10A	10	1250 – 1650	0.8	-30	190	DIE
MARP-FSAPD10B			FSAPD10B	10	1250 – 1650	13	-32	170	DIE
MARP-BA56-011LD	56G APD, Backside Illuminated, Integrated Lens, and Carrier Options **Applications:** 50G-PON, 100G/200G/400G Data Center	**K**	BA56	30	1250-1650	4.2	-16	30	DIE
MARP-BA56-011LC1			BA56/LC1	30	1250-1650	4.2	-16	30	CoC
MARP-BA56-011LC2			BA56/LC2	30	1250-1650	4.2	-16	30	CoC

*Refer to Block Diagrams on pages 8 – 11

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Photodiodes: APD

Part Number	Description and Applications	Block Diagram Key*	Model	Bandwidth (GHz)	Wavelength (nm)	Responsivity (A/W)	Sensitivity (dBm)	Capacitance (fF)	Package Type
32391-03	25G APD, Backside Illuminated, Integrated Lens Option Die and Carrier Options **Applications:** 5G Fronthaul/ Midhaul/Backhaul, 25G PONOLT/ONU, 200G/400G/800G Data Center	**C, E, I**	APD28A	20	1250 – 1650	0.8	-22	50	DIE
32411-03			APD28A/CoC	20	1250 – 1650	0.8	-22	50	CoC
32411-04			APD28A/CoC2	20	1250 – 1650	0.8	-22	50	CoC
32392-03			APD28A/Lens	20	1250 – 1650	0.8	-22	50	DIE
32412-03			APD28A/Lens/CoC	20	1250 – 1650	0.8	-22	50	CoC
32412-04			APD28A/Lens/CoC2	20	1250 – 1650	0.8	-22	50	CoC
32411-07			APD28A/QCoC	20	1250 – 1650	0.8	-22	50	CoC
32411-08			APD28A/QCoC2	20	1250 – 1650	0.8	-22	50	CoC
32411-05			APD28A/Lens/QCoC	20	1250 – 1650	0.8	-22	50	CoC
32411-06			APD28A/Lens/QCoc2	20	1250 – 1650	0.8	-22	50	CoC
32444-01		**B**	APD10B	12	1250 – 1650	0.8	-31	95	Die
32444-02		**B**	APD10B/Lens	12	1250 – 1650	0.8	-31	95	Die
32447-01		**B**	APD10B/ES/Lens	11	1250 – 1650	13	-32.5	90	Die
32448-01		**B**	APD10B/CoC	12	1250 – 1650	0.8	-31	95	CoC

Photodiodes: PIN

Part Number	Description and Applications	Block Diagram Key*	Model	Bandwidth (GHz)	Wavelength (nm)	Responsivity (A/W)	Sensitivity (dBm)	Capacitance (fF)	Package Type
32437-01	56G PIN, Backside Illuminated, Die and Carrier Options **Applications:** 100G PAM4, 200G/400G/800G Data Center	**E, K, M**	BSP56B/16/Lens	35	1200 – 1650	0.85	—	50	DIE
32439-01			BSP56B/16/Lens/CoC	35	1200 – 1650	0.85	—	50	CoC
32439-06			BSP56B/16/Lens/CoC2	35	1200 – 1650	0.85	—	50	CoC
MARP-FP28-011D-P	28G Frontside Illuminated PIN **Applications:** 5G Fronthaul, 100/200G Data Center, PAM4	**D, E, I, J, K, M**	FP28	25	1200 – 1650	0.85	—	—	DIE
MARP-FP28-024D-P			FP28 1x4x250	25	1200 – 1650	0.85	—	—	DIE
MARP-FP56-011D-P	28G Frontside Illuminated PIN **Applications:** 100/400G Data Center, PAM4	**E, K, M**	FP56	35	1200 – 1650	0.6	—	—	DIE
MARP-FP56-014D-P			FP56 1 x4 x 500	35	1200 – 1650	0.6	—	—	DIE
MARP-FP56-024D-P			FP56 1 x 4 x 750	35	1200 – 1650	0.6	—	—	DIE
MARP-FP56-018D-P			FP56 1 x 8 x 250	35	1200 – 1650	0.6	—	—	DIE
MARP-FMP100-011D-P	100 Gbps Frontside Illuminated PIN Photodiode, usable at 850 nm **Applications:** Multimode Datacom, 400G SR4, PAM4	**H**	FMP100	30	840 – 950	0.65	—	—	DIE
MARP-FMP100-012D-P			FMP100 1 x 2 x 250	30	840 – 950	0.65	—	—	DIE
MARP-FMP100-014D-P		—	FMP100 1 x 24 x 250	30	840 – 950	0.65	—	—	DIE
MARP-BP112-011D-P	112 Gbaud/200 Gbps Backside Illuminated PIN **Appllications:** PAM4, 200G, 800G and 1.2T Ethernet	—	BP112	55	1200 – 1650	0.65	—	—	DIE
MARP-BP112-012D-P		—	BP112 Type 2	55	1200 – 1650	0.65	—	—	DIE

*Refer to Block Diagrams on pages 8 – 11

OTN: Framer/Mapper/FEC

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Switch Matrix Size I/O Matrix	Supply Voltage (V)	Channels (#)	Embedded CDR (Y/N)	Embedded SerDes (Y/N)	Package Type and Size
S10123	10G OTN Framer/Mapper/FEC	—	11.3	1 x 1	2.5, 1.8, 1.2	1	Yes	Yes	FCBGA, 19 mm 324-pin
S10124	10G OTN Framer/Mapper/FEC	—	11.3	1 x 2	2.5, 1.8, 1.2	1	Yes	Yes	FCBGA, 25 mm 576-pin
S10126	10G OTN Framer/Mapper/FEC	—	11.3	1 x 1	2.5, 1.8, 1.2	1	Yes	Yes	FCBGA, 19 mm 324-pin
S20101	PQ20T: 2 x 10G OTN Framer/Mapper/FEC	—	11.3	2 x 2	2.5, 1.2, 0.9	4	Yes	Yes	FCBGA, 35 mm 1155-pin
S40101	PQ40T: 4 x 10G/40G OTN Framer/ Mapper/FEC	—	11.3	4 x 4	2.5, 1.2, 0.9	4	Yes	Yes	FCBGA, 35 mm 1155-pin
S50101	PQ50T: 6 x 10G/40G OTN Framer/ Mapper/FEC	—	11.3	6 x 6	2.5, 1.2, 0.9	6	Yes	Yes	FCBGA, 35 mm 1155-pin
S60101	PQ60E: 6 x 10G/40G OTN Framer/ Mapper/FEC	—	11.3	6 x 6	2.5, 1.2, 0.9	6	Yes	Yes	FCBGA, 35 mm 1155-pin
S12312	24 x 10G/40G/100G OTN & MACsec	O	11.2	24 x 24	1.8, 1.5, 1.2, 0.9	24	Yes	Yes	FCBGA, 42.5 mm 1680-pin
S12412	24 x 10G/40G/100G OTN & MACsec	O	28	24 x 24	1.8, 1.5, 1.2, 0.9	24	Yes	Yes	FCBGA, 42.5 mm 1680-pin
S12311	12 x 10G/40G/100G OTN & MACsec	O	11.2	12 x 12	1.8, 1.5, 1.2, 0.9	12	Yes	Yes	FCBGA, 29 mm 783-pin
S12411	12 x 10G/40G/100G OTN & MACsec	O	28	12 x 12	1.8, 1.5, 1.2, 0.9	12	Yes	Yes	FCBGA, 29 mm 783-pin

Ethernet MACsec PHY

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Switch Matrix Size I/O Matrix	Supply Voltage (V)	Channels (#)	Embedded CDR (Y/N)	Embedded SerDes (Y/N)	Package Type and Size
S12611	12 x 10G/40G/100G MACsec	N, O	27.96	12 x 12	1.8, 1.5, 1.2, 0.9	12	Yes	Yes	FCBGA, 29 mm 783-pin
S12612	12 x 10G/40G/100G OTN & MACSsec		27.96	24 x 24	1.8, 1.5, 1.2, 0.9	24	Yes	Yes	FCBGA, 42.5 mm 1680-pin
S20020	Dual 100G/50G/40G/50G/25G/10G MACsec PHY		26.56	8 x 8	1.8, 0.9	8	Yes	Yes	HFCBGA, 17 mm 256-pin

Ethernet PHY

Part Number	Description	Block Diagram Key*	Max Data Rate (Gbps)	Switch Matrix Size I/O Matrix	Supply Voltage (V)	Channels (#)	Embedded CDR (Y/N)	Embedded SerDes (Y/N)	Package Type and Size
QT2025	10GE Serial to XAUI PHY for 10GBASE-LRM, LR, SR, 10GBASE-KR (SFP+ and Serial Backplane)	—	10.52	1 x 1	1.8, 1.2	1	Yes	Yes	PBGA, 13 mm 144-pin
QT2225	Dual 10GE Serial to XAUI PHY for 10GBASE-LRM, LR, SR, 10GBASE-KR (SFP+ and Serial Backplane)	—	10.52	2 x 2	1.8, 1.2	2	Yes	Yes	BGA, 23 mm 484-pin
S28115	100 Gbps Multi-Link Gearbox (MLG) Supporting 10 x 10 GE	Q	28.0	10 x 10	2.5, 1.2, 0.9	10	Yes	Yes	HFCBGA, 19 mm 324-pin
MATP-05025	PRISM-50: 2 x 25G NRZ to 1 x 26 GBaud PAM4 PHY with Integrated Laser Driver	E	53.125	1 x 1	1.8, 1.0, 0.75	1	Yes	Yes	HFCBGA, 10 mm 177-pin
MATP-05026	PRISM-50: 2 x 24/26G NRZ to 1 x 26 GBaud PAM4 PHY with Integrated Laser Driver	E	53.125	1 x 1	1.8, 1.0, 0.75	1	Yes	Yes	9 mm x 6.4 mm 99-pin
MATP-10025	PRISM: 4 x 25G NRZ to 1 x 53 GBaud PAM4 PHY with FEC and Integrated Laser Driver	K	106.25	1 x 1	1.8, 1.0, 0.75	1	Yes	Yes	HFCBGA, 10 mm 177-pin

Embedded Processors

Part Number	Description	Clock Frequency (GHz)	DDR3 + ECC	10/100/100 Ethernet	Typical Power (W)	USB 2.0 with PHY	Package Type and Size (mm)
APM86391	Single Core Power™ Processor	600 MHz – 1	32b	2 GbE: 2 RGMII	Single Core 4.09 W @ 1 GHz	3	FC-PBGA, 27 x 27
APM86392	Dual Core Power™ Processor	600 MHz – 1	32b	2 GbE: 2 RGMII	Dual Core 5 W @ 1 GHz	3	FC-PBGA, 27 x 27
APM86491	Single Core Power™ Processor	800 MHz – 1	16b/32b	2 GbE: 2 RGMII	3.65 W @ 1 GHz	2 (USB 3.0)	WB-PBGA, 19 x 19
APM86290	Dual Core Power™ Processor	800 MHz – 1.2	64b/32b	2 GbE: 2 RGMII	Dual Core 7.06 W @ 1 GHz	3	FC-PBGA, 27 x 27

*Refer to Block Diagrams on pages 8 – 11

Detailed specifications can be found quickly on our website at **macom.com** by typing the part number into the search box. All specifications are subject to change.

High Speed Optical Receiver Modules

Part Number	Description	Type	Bandwidth (GHz)	Wavelength (nm)	Sensitivity (dBm)	Responsivity (A/W)	Gain (V/W)
11153-02	AT-10SFA/17LP/AC/MM/FC	APD Photoreceiver	8.9	1250 – 1650	-26	0.7	1870
MARP-AT12C-01	AT-12C/5MMLC/8FPC	APD Photoreceiver	9.5	1250 – 1650	-28.5	0.8	28000
11233-01	AT-10SFH/17LP/AC/MM/FC	APD Photoreceiver	10.5	1250 – 1650	-28.5	0.7	12000
11132-03	PT-15SFA/17LP/AC/LC	IR Photoreceiver	12.2	1200 – 1650	-16.5	0.75	650
11012-05P	DG-15ir-FC	IR Instrument	20	950 – 1650	—	0.6	—
11069-02	P-18A/3K/Z50/FC	IR Photodetector	20	1200 – 1650	—	0.9	—
MARP-PT28G-01	PT-28G/10DGPPO/AC/FC	XR Photoreceiver	25 – 35	850 – 1575	—	0.55	75 – 2400
MARP-PT28E-02	PT-28E/V2/12XLMD/AC/FC	IR Photoreceiver	25 – 35	1200 – 1650	—	0.73	110 – 3000
11204-01	DGM-32xr-FC	XR Photodetector	28	800 – 1600	—	0.77	—
11204-05	DGM-32xr-DMD	XR Photodetector	28	800 – 1600	—	0.77	—
11204-06	DGM-32xr-SC	XR Photodetector	28	800 – 1600	—	0.77	—
11206-01	DG-32xr-FC	XR Instrument	28	800 – 1600	—	0.77	—
11112-04	P-40HPA/8V/Z50/AC/SC	IR Photodetector	40	1200 – 1650	—	0.65	—
11113-04	P-40HPA/8V/Z50/DC/SC	IR Photodetector	40	1200 – 1650	—	0.65	—
11113-05	P-40HPA/8V/Z50/DC/FC	IR Photodetector	40	1200 – 1650	—	0.65	—
11174-04	PT-40G/8LDGPPO/AC/LC/B1	IR Photoreceiver	40	1200 – 1650	-10.5	0.65	1300
11057-02	D-8ir-FC	IR Instrument	50	950 – 1650	—	0.7	—
11088-05	P-50A/8V/Z50/DC/FC	IR Photodetector	50	1200 – 1650	—	0.5	—
11238-01	P-50C/8V/Z50/DC/FC	IR Photodetector	50	1200 – 1650	—	0.75	—
11243-01	PT-50A/8V/DC/FC	IR Photoreceiver	50	1200 – 1650	—	0.56	100
11241-01P	P-70A/8V/Z50/FC	IR Photodetector	70	1200 – 1650	—	0.5	—
MPR0020	Microwave Photonics Receiver	Receiver	26	1300-1600	—	0.9	—
APRR530	Microwave Photonics Receiver	Receiver	32	1300-1600	—	—	40
MARP-PT28E-03	PT-28E/V2/12XLMD/PK/AC/FC	IR Photoreceiver	25-35	1200-1650	—	0.73	110-3000
MARP-PT28E-06	PT-28E/V2/8XLMD/PK/AC/FC	IR Photoreceiver	25-35	1200-1650	—	0.73	110-3000
MARP-PT28E-06CB	Control Ass'y, PT-28E/ V2/8XLMD/PK/AC/FC	IR Photoreceiver	25-35	1200-1650	—	0.73	110-3000
MARP-AT12C-03	AT-12C/5MMFP	APD Photoreceiver	9.5	1250-1650	-28.5	0.8	28000
MARP-PT12G-01	PT-12G/8SMA/FC	XR Photoreceiver	14	750-1650	NA	0.55	215
MARP-PT12G-02	PT-12G/PK/8SMA/FC	XR Photoreceiver	14	750-1650	NA	0.55	215
11174-05	PT-40G/8XLMD/AC/LC	IR Photoreceiver	40	1200-1650	-10.5	0.65	1300
11174-06	PT-40G/8XLMD/AC/FC/B1	IR Photoreceiver	40	1200-1650	-10.5	0.65	1300
11174-07	PT-40G/8XLMD/AC/FC	IR Photoreceiver	40	1200-1650	-10.5	0.65	1300
11212-01P	D-32xr-FC Instrument Photodetector	XR Instrument	28	800-1600	NA	0.48	NA
11215-01P	AT-2.5SFB/17LP/AC/MM/FC	APD Photoreceiver	1.7	1250-1650	-33	0.7	14000

OPTOELECTRONIC SOLUTIONS

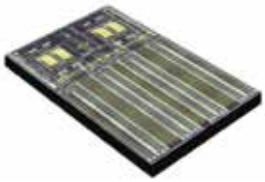
Photonics

Die

Detectors Lasers

TO-CAN TO56, TO46

L-PIC Silicon Photonic Die



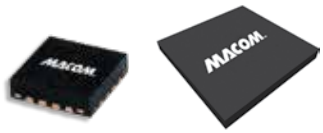
OTN Framer/Mapper/FEC

Ethernet MACsec PHY

Ethernet PHY

Optoelectronics

4 x 4.5 mm CSP
3 mm QFN
4 mm QFN
5 mm QFN
10 mm 72-pin QFN



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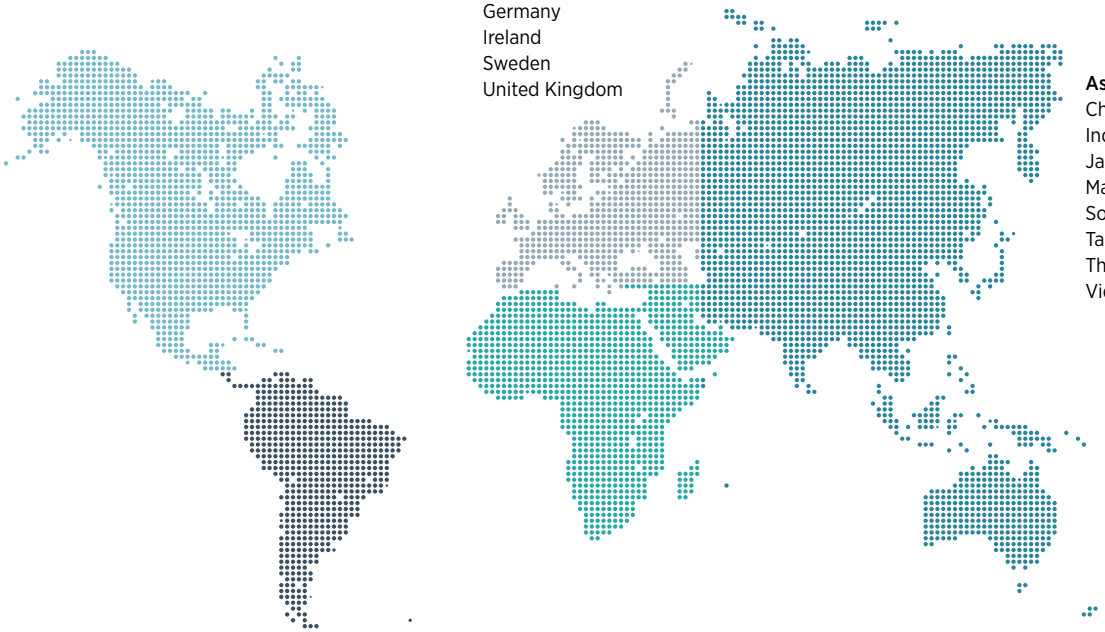

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