DRIVENETS

DATA SHEET



Optical Transceivers Portfolio

High-performance pluggable optics for AI clusters, data centers, switch-to-router and service-provider interconnect.

1G – 1.6T per port

50 m to 10 km reach

SFP · QSFP28 · QSFP112 · OSFP112 · OSFP224

1.6T LRO at 16 W max

OVERVIEW

DriveNets offers a portfolio of high-performance optical transceivers for AI cluster, data center, switch-to-router and service-provider interconnect, with speeds from 1G to 1.6T and reaches from 50 m over multimode fiber to 10 km over single-mode fiber. The portfolio covers the SFP, SFP+, QSFP28, QSFP112, OSFP112 and OSFP224 form factors. The QSFP112, OSFP112 and OSFP224 modules are available with a riding heat sink (RHS) or an integrated heat sink (IHS, closed top or open top) to match the host cage, and are managed through OIF-CMIS with per-lane digital diagnostics; the SFP, SFP+ and QSFP28 modules use SFF-8472 and SFF-8636 management. Every module is hot-pluggable and built on IEEE 802.3 and the SFP, QSFP and OSFP MSA specifications. Linear receive optics (LRO) variants lower 1.6T module power to 16 W max, against 26 W max with a receive DSP.

Six form factors, matched cooling

SFP, SFP+, QSFP28, QSFP112, OSFP112 and OSFP224. High-speed modules ship with a riding or integrated heat sink (closed or open top) to fit the host cage; optics are identical across cooling variants.

Per-lane digital diagnostics

OIF-CMIS management on QSFP112, OSFP112 and OSFP224 with per-lane monitoring of temperature, supply voltage, Tx bias and optical power; SFF-8472 and SFF-8636 on SFP, SFP+ and QSFP28.

Linear receive optics at 1.6T

LRO variants replace the receive-side DSP with a linear TIA output, cutting 1.6T module power from 26 W to 16 W max on LRO-capable hosts, per IEEE P802.3dj and the OIF LRO implementation agreement.

PORTFOLIO

Options overview

Each row is one module type. Where several cooling variants exist, the optical specification is identical and only the mechanical top differs; see the ordering information for product numbers.

TYPE	REACH AND INTERFACE	COOLING VARIANTS
1G and 10G SFP / SFP+		
1G LX	Up to 10 km over single-mode fiber; duplex LC; 1270 to 1355 nm; Gigabit Ethernet and Gigabit Fiber Channel	n/a
10G LR	Up to 10 km over single-mode fiber; duplex LC; 1310 nm DFB; 10GBASE-LR/LW, 10G Ethernet, 10GFC and 8GFC	n/a
100G QSFP28		
100G DR1	Up to 500 m over single-mode fiber; duplex LC; cooled EML laser; 100GBASE-DR1 Ethernet	n/a
400G QSFP112		
400G DR4	Up to 500 m over single-mode fiber; MPO-12 (8° APC); 4 × 106.25 Gbps PAM4 lanes; 400GBASE-DR4 Ethernet	RHS
400G VR4	Up to 50 m over multimode fiber; MPO-12; 850 nm VCSEL; 4 × 106.25 Gbps PAM4 lanes; 400GBASE-VR4 Ethernet	RHS
400G OSFP112		
400G DR4	Up to 500 m over single-mode fiber; MPO-12 (8° APC); 4 × 106.25 Gbps PAM4 lanes; 400GBASE-DR4 Ethernet and InfiniBand	RHS
400G VR4	Up to 50 m over multimode fiber; MPO-12; 850 nm VCSEL; 4 × 106.25 Gbps PAM4 lanes; 400GBASE-VR4 Ethernet	RHS
800G OSFP112		
800G 2×DR4	Up to 500 m over single-mode fiber; dual MPO-12 (8° APC); 8 × 106.25 Gbps PAM4 lanes; 800GBASE Ethernet	RHS / IHS closed top
800G 2×VR4	Up to 50 m over multimode fiber; dual MPO-12; 850 nm VCSEL; 8 × 106.25 Gbps PAM4 lanes	RHS / IHS closed top
800G 2×FR4	Up to 2 km over single-mode fiber; dual duplex LC; four CWDM wavelengths per link; 800G or 2×400G Ethernet	IHS closed top / IHS open top
800G DR4	Up to 500 m over single-mode fiber; MPO-12 (8° APC); 4 × 212.5 Gbps PAM4 optical lanes from 8 × 53.125 GBd host lanes	RHS
800G OSFP224		
800G DR4	Up to 500 m over single-mode fiber; MPO-12 (8° APC); 4 × 212.5 Gbps PAM4 lanes; 800GBASE-DR4 Ethernet	RHS
1.6T OSFP224		
1.6T 2×DR4	Two independent 800G DR4 links, up to 500 m over single-mode fiber; dual MPO-12 (8° APC); 8 × 212.5 Gbps PAM4 lanes	RHS / IHS closed top
1.6T 2×DR4 LRO	As 1.6T 2×DR4, with linear receive optics (no receive DSP) for 16 W max power (26 W max with a receive DSP); requires an LRO-capable host	RHS / IHS closed top
1.6T 2×FR4	Two 800G FR4 links, up to 2 km over single-mode fiber; dual duplex LC; four CWDM wavelengths per link	RHS / IHS closed top
1.6T DR8	Up to 500 m over single-mode fiber; MPO-16 (8° APC); 8 × 212.5 Gbps PAM4 lanes; 1600GBASE-DR8 Ethernet and IB XDR links	RHS / IHS closed top
1.6T DR8 LRO	As 1.6T DR8, with linear receive optics (no receive DSP) for 16 W max power; requires an LRO-capable host	RHS

TECHNICAL SPECIFICATIONS

Optical specifications

Tx power is the average launch power range per lane (P_{AVG}; 1G LX: end of life); Rx power is the average receive power range per lane (1G LX: receiver sensitivity to overload). Power is the maximum module power consumption. Full optical, electrical and mechanical characteristics are in the datasheet of each module.



1G SFP LX / 10G SFP+ LR, duplex LC

1G and 10G SFP / SFP+

TYPE	CONNECTOR	WAVELENGTH (NM)	FIBER	DATA RATE	TX POWER (DBM/LANE)	RX POWER (DBM/LANE)	MAX REACH	POWER (W)	VARIANTS (PRODUCT NO.)
1G LX	Duplex LC	1270 – 1355	SMF	1.25 / 1.0625 Gbps	-9 to -3	-20 to -3	10 km	1 max	**DNOT00020**
10G LR	Duplex LC	1260 – 1355	SMF	8.5 to 10.52 Gb/s	-8.2 to 0.5	-14.4 to +0.5	10 km	1 max	**DNOT00023**

1G LX: Gigabit Ethernet and Gigabit Fiber Channel data rates; 10G LR: 8.5 to 10.52 Gb/s (10.3125 Gb/s typical). Both duplex LC over single-mode fiber, 10 km.

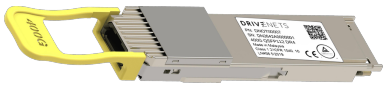


100G QSFP28 DR1, duplex LC

100G QSFP28

TYPE	CONNECTOR	WAVELENGTH (NM)	FIBER	LANES	TX POWER (DBM/LANE)	RX POWER (DBM/LANE)	MAX REACH	POWER (W)	VARIANTS (PRODUCT NO.)
100G DR1	Duplex LC	1304.5 – 1317.5	SMF	1 × 106.25G PAM4	-2.9 to 4	-5.9 to 4	500 m	4.5 max	**DNOT00024**

100G DR1: single 106.25 Gbps PAM4 lane (53.125 GBd), cooled EML laser, SFF-8636 management.



400G QSFP112 DR4 RHS, MPO-12

400G QSFP112

TYPE	CONNECTOR	WAVELENGTH (NM)	FIBER	LANES	TX POWER (DBM/LANE)	RX POWER (DBM/LANE)	MAX REACH	POWER (W)	VARIANTS (PRODUCT NO.)
400G DR4	MPO-12, 8° APC	1304.5 – 1317.5	SMF	4 × 106.25G PAM4	-2.9 to 4	-5.9 to 4	500 m	9 max	RHS (**DNOT00007**)
400G VR4	MPO-12, 8° APC	840 – 870 (850 typ.)	MMF	4 × 106.25G PAM4	-4.6 to 4	-6.3 to 4	50 m	9 max	RHS (**DNOT00008**)

400G VR4: operating case temperature +25 °C to +70 °C, OIF-CMIS 4.0 or later. 400G DR4: 0 °C to +70 °C, OIF-CMIS 5.2.

400G OSFP112

TYPE	CONNECTOR	WAVELENGTH (NM)	FIBER	LANES	TX POWER (DBM/LANE)	RX POWER (DBM/LANE)	MAX REACH	POWER (W)	VARIANTS (PRODUCT NO.)
400G DR4	MPO-12, 8° APC	1304.5 – 1317.5 (1311 typ.)	SMF	4 × 106.25G PAM4	-2.9 to 4	-5.9 to 4	500 m	9 max	RHS (**DNOT00021**)
400G VR4	MPO-12, 8° APC	840 – 870 (850 typ.)	MMF	4 × 106.25G PAM4	-4.6 to 4	-6.3 to 4	50 m	9 max	RHS (**DNOT00022**)

400G VR4: operating case temperature +25 °C to +70 °C, OIF-CMIS Rev 4.0 or later. 400G DR4: 0 °C to +70 °C, OIF-CMIS Rev 5.2 or later.

TECHNICAL SPECIFICATIONS

Optical specifications, continued

800G modules in the OSFP112 and OSFP224 form factors and 1.6T OSFP224 modules, including linear receive optics (LRO) variants.



800G OSFP112 2×DR4 RHS, dual MPO-12



800G OSFP112 2×FR4 IHS open top, dual duplex LC

800G OSFP112

TYPE	CONNECTOR	WAVELENGTH (NM)	FIBER	LANES	TX POWER (DBM/LANE)	RX POWER (DBM/LANE)	MAX REACH	POWER (W)	VARIANTS (PRODUCT NO.)
800G 2×DR4	Dual MPO-12, 8° APC	1304.5 – 1317.5	SMF	8 × 106.25G PAM4	-2.9 to 4	-5.9 to 4	500 m	16 max	RHS (**DNOT00011**); IHS closed top (**DNOT00009**)
800G 2×VR4	Dual MPO-12, multimode	840 – 870 (850 typ.)	MMF	8 × 106.25G PAM4	-4.6 to 4	-6.3 to 4	50 m	16 max	RHS (**DNOT00012**); IHS closed top (**DNOT00010**)
800G 2×FR4	Dual duplex LC	1271 / 1291 / 1311 / 1331	SMF	8 × 106.25G PAM4	-3.2 to 4.4	-7.2 to 4.4	2 km	16 max	IHS closed top (**DNOT00013**); IHS open top (**DNOT00019**)
800G DR4	MPO-12, 8° APC	1304.5 – 1317.5	SMF	4 × 212.5G PAM4	-3.1 to 4	-6.1 to 4	500 m	12 max	RHS (**DNOT00017**)

2×VR4: operating case temperature +25 °C to +70 °C; all other 800G modules 0 °C to +70 °C. 2×FR4 is offered with a closed-top or an open-top integrated heat sink. 800G OSFP112 DR4 maps 8 × 53.125 GBd host lanes onto 4 × 212.5 Gbps optical lanes.

800G OSFP224

TYPE	CONNECTOR	WAVELENGTH (NM)	FIBER	LANES	TX POWER (DBM/LANE)	RX POWER (DBM/LANE)	MAX REACH	POWER (W)	VARIANTS (PRODUCT NO.)
800G DR4	MPO-12, 8° APC	1304.5 – 1317.5	SMF	4 × 212.5G PAM4	-3.1 to 4	-6.1 to 4	500 m	16 max	RHS (**DNOT00016**)



1.6T OSFP224 DR8 IHS closed top, MPO-16

1.6T OSFP224

TYPE	CONNECTOR	WAVELENGTH (NM)	FIBER	LANES	TX POWER (DBM/LANE)	RX POWER (DBM/LANE)	MAX REACH	POWER (W)	VARIANTS (PRODUCT NO.)
1.6T 2×DR4	Dual MPO-12, 8° APC	1304.5 – 1317.5	SMF	8 × 212.5G PAM4	-3.1 to 4	-6.1 to 4	500 m	26 max	RHS (**DNOT00001**); IHS closed top (**DNOT00003**)
1.6T 2×DR4 LRO	Dual MPO-12, 8° APC	1304.5 – 1317.5	SMF	8 × 212.5G PAM4	-3.3 to 4	-6.3 to 4	500 m	16 max	RHS (**DNOT00002**); IHS closed top (**DNOT00005**)
1.6T 2×FR4	Dual duplex LC	1271 / 1291 / 1311 / 1331	SMF	8 × 212.5G PAM4	-2.2 to 4.9	-6.2 to 4.9	2 km	26 max	RHS (**DNOT00004**); IHS closed top (**DNOT00006**)
1.6T DR8	MPO-16, 8° APC	1304.5 – 1317.5	SMF	8 × 212.5G PAM4	-3.1 to 4	-6.1 to 4	500 m	26 max	RHS (**DNOT00014**); IHS closed top (**DNOT00018**)
1.6T DR8 LRO	MPO-16, 8° APC	1304.5 – 1317.5	SMF	8 × 212.5G PAM4	-3.3 to 4	-6.3 to 4	500 m	16 max	RHS (**DNOT00015**)

LRO modules replace the receive-side DSP with a linear TIA output (0.25 to 0.5 V VMA, host-requestable 300 to 700 mVpp) and follow IEEE P802.3dj D2.0 and the OIF 2024.522.02 LRO implementation agreement; the host must support linear receive optics. 2×FR4 modules use CWDM wavelengths 1271, 1291, 1311 and 1331 nm on each of two duplex LC interfaces.

TECHNICAL SPECIFICATIONS

Common characteristics

Electrical, environmental and management characteristics shared across each module family. Mechanical package outlines are in the datasheet of each module.

QSFP112, OSFP112 and OSFP224 modules

Form factors	QSFP112 (QSFP-112 MSA V2.0 / Rev 2.1), OSFP112 and OSFP224 (OSFP MSA Rev 5.0 / 5.2)
Host interface	38-contact edge connector (QSFP112); 60-contact edge connector (OSFP112, OSFP224)
Cooling	Riding heat sink (RHS, flat top, cooled by the host heat sink) or integrated heat sink (IHS), closed top or open top
Optical connectors	MPO-12 (8° APC), dual MPO-12 (8° APC), MPO-16 (8° APC), dual duplex LC; MPO-12 multimode for VR4 and dual MPO-12 multimode for 2×VR4
Operating case temperature	0 °C to +70 °C (VR4 and 2×VR4: +25 °C to +70 °C)
Storage temperature, humidity	-40 °C to +85 °C; 5% to 85%
Supply voltage	3.3 V (3.135 to 3.465 V); absolute maximum -0.3 V to +3.6 V
Management	2-wire serial (SCL / SDA); OIF-CMIS 5.2 or 5.3 per module; 400G VR4: OIF-CMIS 4.0 or later; 400G OSFP112 DR4: OIF-CMIS Rev 5.2 or later
DDM accuracy	Temperature ±3 °C; supply voltage ±0.1 V; Tx bias current ±10% per lane; Tx and Rx optical power ±3 dB per lane

SFP, SFP+ and QSFP28 modules

Form factors	SFP (SFP MSA INF-8074i), SFP+ (SFF-8431), QSFP28 (QSFP28 MSA)
Host interface	20-contact SFP connector (1G LX); 20-contact SFP+ connector (10G LR); 38-pin connector (100G DR1)
Optical connectors	Duplex LC (1G LX per IEC 61754-20; 10G LR; 100G DR1)
Operating case temperature	0 °C to +70 °C
Storage temperature, humidity	-40 °C to +85 °C; 5% to 95% (1G LX), 0% to 95% (10G LR), 5% to 85% (100G DR1)
Supply voltage	3.3 V (3.135 to 3.465 V); absolute maximum -0.5 V to +4 V (1G LX), -0.3 V to +4 V (10G LR), -0.3 V to +3.6 V (100G DR1)
Management	2-wire serial; INF-8074i and SFF-8472 Rev 12.4 (1G LX), SFF-8472 Rev 10.4 (10G LR), SFF-8636 R2.10a (100G DR1)
DDM accuracy	Temperature ±3 °C; supply voltage ±0.1 V; Tx bias current ±10%; Tx and Rx optical power ±3 dB; external calibration (1G LX, 10G LR)

STANDARDS COMPLIANCE

IEEE, MSA and OIF

IEEE

IEEE 802.3ae · 802.3db · 802.3df · 802.3z Gigabit Ethernet · P802.3ck D3.0 · P802.3dj D2.0 · P802.3dj D3.0 · Std 802.3ck D3.0 · Std 802.3ck-2022 · Std 802.3cu · Std 802.3cu-2022 · Std 802.3db-2022 · Std 802.3df · Std 802.3df-2024

MSA and SFF

OSFP MSA Rev 5.0 / 5.2 · QSFP-112 MSA V2.0 / Rev 2.1 · QSFP28 MSA · SFF-8431 Rev 3.0 · SFF-8432 Rev 5.0 · SFF-8472 Rev 10.4 / v12.4 · SFF-8636 · SFP MSA (INF-8074i)

OIF and Fibre Channel

CEI-28G-VSR · OIF 2024.522.02 LRO · OIF-CEI-112G-VSR-PAM4 · OIF-CMIS 4.0 or later · OIF-CMIS 5.2 · OIF-CMIS 5.3 · OIF-CMIS Rev 5.2 or later · 10GFC Rev 4.0 · FC-PI v2.0 · FC-PI-4 Rev 8.0

REGULATORY COMPLIANCE

EMC, safety and environmental

QSFP28, QSFP112, OSFP112 and OSFP224

EMC: FCC 47 CFR Part 15 Class B; EN 55032:2015+A11:2020+A1:2020; EN 55035:2017+A11:2020; IEC 61000-4-3:2020; ESD IEC EN 61000-4-2:2008

Safety: CB IEC 62368-1:2018, TÜV EN IEC 62368-1:2020+A11, UL 62368-1:2019 R10.21, CSA C22.2 No. 62368-1:19

Laser: Class 1 laser product (FDA/CDRH, IEC 60825-1:2014, IEC 60825-2:2021, EN 60825-1:2014+A11)

Environmental: RoHS II Directive 2011/65/EU

1G SFP LX

EMI: CISPR 22 ITE Class B, FCC Class B, CENELEC EN 55022, VCCI Class 1; immunity IEC 61000-4-3 Class 2; ESD IEC 61000-4-2 level 4 and MIL-STD-883E Method 3015.7 Class 1 (human body model)

Safety: EN/IEC 60950-1, UL; Class 1 laser product (CDRH 21 CFR 1040, EN/IEC 60825-1 and 60825-2)

Environmental: RoHS test methods BS EN 1122, US EPA 3050B / 3052 / 3060A

10G SFP+ LR

EMI: CISPR 22 ITE Class B, EN 55022 Class B, FCC Class B; immunity IEC 61000-4-3 Class 2, EN 55024; ESD per IEC 61000-4-2 level 4 and MIL-STD-883C Method 3015.7 Class 1

Safety: FDA, UL, TÜV, CE

Environmental: EU RoHS Directive 2011/65/EU, BS EN 1122:2001, US EPA 3050B / 3052 / 3060A

ORDERING INFORMATION

Product numbers

Each product number has its own datasheet with key specifications, optical and electrical characteristics, pin assignment, mechanical outline and regulatory compliance. Datasheet edition: November 2026.

PRODUCT NUMBER	PRODUCT DESCRIPTION
1G and 10G SFP / SFP+	
DNOT00020	1G LX SFP transceiver, duplex LC, up to 10 km over single-mode fiber
DNOT00023	10G LR SFP+ transceiver, duplex LC, up to 10 km over single-mode fiber
100G QSFP28	
DNOT00024	100G DR1 QSFP28 transceiver, duplex LC, up to 500 m over single-mode fiber
400G QSFP112	
DNOT00007	400G DR4 QSFP112 transceiver, riding heat sink (RHS), MPO-12, 8° APC, up to 500 m over single-mode fiber
DNOT00008	400G VR4 QSFP112 transceiver, riding heat sink (RHS), MPO-12, 8° APC, up to 50 m over multimode fiber
400G OSFP112	
DNOT00021	400G DR4 OSFP112 transceiver, riding heat sink (RHS), MPO-12, 8° APC, up to 500 m over single-mode fiber
DNOT00022	400G VR4 OSFP112 transceiver, riding heat sink (RHS), MPO-12, 8° APC, up to 50 m over multimode fiber
800G OSFP112	
DNOT00011	800G 2×DR4 OSFP112 transceiver, riding heat sink (RHS), dual MPO-12, 8° APC, up to 500 m over single-mode fiber
DNOT00009	800G 2×DR4 OSFP112 transceiver, integrated heat sink, closed top (IHS), dual MPO-12, 8° APC, up to 500 m over single-mode fiber
DNOT00012	800G 2×VR4 OSFP112 transceiver, riding heat sink (RHS), dual MPO-12, multimode, up to 50 m over multimode fiber
DNOT00010	800G 2×VR4 OSFP112 transceiver, integrated heat sink, closed top (IHS), dual MPO-12, multimode, up to 50 m over multimode fiber
DNOT00013	800G 2×FR4 OSFP112 transceiver, integrated heat sink, closed top (IHS), dual duplex LC, up to 2 km over single-mode fiber
DNOT00019	800G 2×FR4 OSFP112 transceiver, integrated heat sink, open top (IHS), dual duplex LC, up to 2 km over single-mode fiber
DNOT00017	800G DR4 OSFP112 transceiver, riding heat sink (RHS), MPO-12, 8° APC, up to 500 m over single-mode fiber
800G OSFP224	
DNOT00016	800G DR4 OSFP224 transceiver, riding heat sink (RHS), MPO-12, 8° APC, up to 500 m over single-mode fiber
1.6T OSFP224	
DNOT00001	1.6T 2×DR4 OSFP224 transceiver, riding heat sink (RHS), dual MPO-12, 8° APC, up to 500 m over single-mode fiber
DNOT00003	1.6T 2×DR4 OSFP224 transceiver, integrated heat sink, closed top (IHS), dual MPO-12, 8° APC, up to 500 m over single-mode fiber
DNOT00002	1.6T 2×DR4 linear receive optics (LRO) OSFP224 transceiver, riding heat sink (RHS), dual MPO-12, 8° APC, up to 500 m over single-mode fiber
DNOT00005	1.6T 2×DR4 linear receive optics (LRO) OSFP224 transceiver, integrated heat sink, closed top (IHS), dual MPO-12, 8° APC, up to 500 m over single-mode fiber
DNOT00004	1.6T 2×FR4 OSFP224 transceiver, riding heat sink (RHS), dual duplex LC, up to 2 km over single-mode fiber
DNOT00006	1.6T 2×FR4 OSFP224 transceiver, integrated heat sink, closed top (IHS), dual duplex LC, up to 2 km over single-mode fiber
DNOT00014	1.6T DR8 OSFP224 transceiver, riding heat sink (RHS), MPO-16, 8° APC, up to 500 m over single-mode fiber
DNOT00018	1.6T DR8 OSFP224 transceiver, integrated heat sink, closed top (IHS), MPO-16, 8° APC, up to 500 m over single-mode fiber
DNOT00015	1.6T DR8 linear receive optics (LRO) OSFP224 transceiver, riding heat sink (RHS), MPO-16, 8° APC, up to 500 m over single-mode fiber