



TECHNOLOGIE OPTIC.CA INC.

AVM761-11100S

25 Gigabit SFP28 SR Optical Transceiver

850 nm · OM3/OM4 MMF · Duplex LC · DDM · Optic.ca S28-SR-NT-OC

The Optic.ca AVM761-11100S is a 25 Gigabit Ethernet SFP28 transceiver engineered for short-reach multimode links in datacenter, storage, and high-density rack environments. Built around an 850 nm VCSEL transmitter and a high sensitivity PIN photodetector, it delivers reliable 25.78 Gb/s transport over OM3 and OM4 fiber and is designed for seamless interoperability with standards-compliant SFP28 ports, with full validation against NETGEAR® switching platforms. Each unit is individually coded, serialized, traffic-tested and validated for host platform compatibility prior to shipment, with full SFF-8472 digital diagnostics, and is backed by the Optic.ca lifetime warranty.

Key Features

- 25GBASE-SR compliant per IEEE 802.3by (Clause 112)
- 25.78 Gb/s line rate over duplex OM3/OM4 multimode fiber
- 850 nm VCSEL transmitter and PIN photodetector, duplex LC interface
- Reach to 70 m (OM3) / 100 m (OM4) with host RS-FEC enabled
- OIF CEI-28G-VSR compliant electrical interface
- Full SFF-8472 digital diagnostic monitoring (DDM/DOM)
- Certified compatible with NETGEAR® switching platforms
- Single +3.3 V supply; ≤1.0 W power consumption
- Commercial temperature range, 0 to 70 °C
- All-metal housing for superior EMI performance
- TAA compliant (Country of Origin: Taiwan); RoHS and REACH compliant; Class 1 laser per IEC/EN 60825-1:2014

Target Applications

- 25G storage-area networks
- Server and compute-cluster interconnect
- Top-of-rack and inter-rack aggregation
- High-density data-center fabrics

Ordering Information

Part Number	Description
AVM761-11100S	25GBASE-SR SFP28 transceiver, 850 nm, OM3/OM4 MMF, duplex LC, full DDM, bail latch; NETGEAR® Certified Compatible

Standards Compliance

The AVM761-11100S is designed and manufactured to comply with the applicable standards listed below. These statements indicate conformance to the referenced specifications; they do not constitute third-party certification, agency listing, registration, or regulatory approval unless explicitly stated otherwise.

Standard / Program	Detail
Interface & MSA	
IEEE 802.3by	25GBASE-SR (Clause 112)
SFP28 MSA	SFF-8402 form factor
SFF-8472	Digital diagnostic monitoring (DDM/DOM)
SFF-8431 / SFF-8432	Applicable electrical and mechanical portions
OIF CEI-28G-VSR	Very-short-reach electrical interface
Safety	
21 CFR 1040.10 and 1040.11	Complies except for deviations pursuant to Laser Notice No. 56 (May 8, 2019)
IEC/EN 60825-1:2014	Class 1 laser product
IEC/EN 62368-1	Designed to conform — AV/ICT equipment safety
Electromagnetic Compatibility	
FCC Part 15, Subpart B	Designed to conform to Class A limits (USA)
ICES-003	Designed to conform to Class A limits (Canada)
CISPR 32 / EN 55032	Designed to conform — emissions limits
CISPR 35 / EN 55035	Designed to conform — immunity requirements
Environmental & Trade	
RoHS	Directive (EU) 2015/863
REACH	Regulation (EC) No 1907/2006
Trade Agreements Act (TAA)	Compliant — Country of Origin: Taiwan

Note: EMC and product safety for a pluggable component are determined at the host-equipment level. The module is designed to conform to the listed limits and requirements when installed in compliant host equipment.

Operating Distance

Fiber Type	Wavelength	Supported Distance
OM4 (50 μ m, 3500 MHz·km)	850 nm	0.5 to 100 m
OM3 (50 μ m, 2000 MHz·km)	850 nm	0.5 to 70 m

Note 1. Host-side RS-FEC is required to achieve the maximum supported reach.

Optical Specifications

Defined over the recommended operating conditions unless otherwise noted.

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter						
Center wavelength	λ_t	840	—	860	nm	—
RMS spectral width	—	—	—	0.6	nm	—
Average optical power	P_{avg}	-8.4	—	2.4	dBm	—
Optical modulation amplitude (OMA)	POMA	-6.4	—	3	dBm	1
Launch power in OMA minus TDEC	—	-7.3	—	—	dBm	—
Transmitter & dispersion eye closure	TDEC	—	—	4.3	dB	—
Extinction ratio	ER	2	—	—	dB	—
Optical return loss tolerance	—	—	—	12	dB	—
Average launch power, TX off	Poff	—	—	-30	dBm	—
Encircled flux	—	$\geq 86\%$ at 19 μm ; $\leq 30\%$ at 4.5 μm	—	—	—	2
TX eye mask {X1,X2,X3,Y1,Y2,Y3}	—	{0.30, 0.38, 0.45, 0.35, 0.41, 0.50}; hit ratio 1.5×10^{-3}	—	—	—	3
Receiver						
Center wavelength	λ_r	840	850	860	nm	—
Damage threshold	—	—	—	3.4	dBm	4
Average receiver power	—	-10.3	—	—	dBm	5
Average receiver power (overload)	—	—	—	2.4	dBm	—
Receiver power, OMA (overload)	—	—	—	3	dBm	—
Receiver sensitivity (OMA)	SEN	—	—	-9.2	dBm	6
Stressed receiver sensitivity (OMA)	—	—	—	-5.2	dBm	—
Receiver reflectance	—	—	—	-12	dB	—
LOS assert	LOSA	-30	—	—	dBm	—
LOS deassert	LOSD	—	—	-12	dBm	—
LOS hysteresis	LOSH	0.5	—	—	dB	—

Note 1. Even where TDEC < 0.9 dB, OMA (min) must meet the value specified.

Note 2. Measured per IEC 61280-1-4 into Type A1a.2 / A1a.3 50 μm fiber.

Note 3. Mask margin shall exceed 5%.

Note 4. Maximum continuous optical input the receiver tolerates without damage on one lane; correct operation is not guaranteed at this level.

Note 5. Informative; average receive power below this value cannot be compliant, but a value above it does not by itself ensure compliance.

Note 6. For BER = 5×10^{-5} , per the applicable IEEE 802.3 multimode receiver conformance methodology.

Electrical Specifications

Defined over the recommended operating conditions unless otherwise noted.

Parameter	Test Point	Min	Typ	Max	Unit
Power consumption	—	—	—	1.0	W
Supply current	I _{cc}	—	—	300	mA
Transmitter input (host → module)					
Overload differential voltage, pk-pk	TP1a	900	—	—	mV
Common-mode voltage (V _{cm})	TP1	–350	—	2850	mV
Differential termination mismatch (@1 MHz)	TP1	—	—	10	%
Differential return loss (SDD11)	TP1	per OIF CEI-28G-VSR Eq. 13-19	—	—	—
Mode conversion (SDC11 / SCD11)	TP1	per OIF CEI-28G-VSR Eq. 13-20	—	—	—
Stressed input test	TP1a	per OIF CEI-28G-VSR §13.3.11.2.1	—	—	—
Receiver output (module → host)					
Differential voltage, pk-pk	TP4	—	—	900	mV
Common-mode voltage (V _{cm})	TP4	–350	—	2850	mV
Common-mode noise, RMS	TP4	—	—	17.5	mV
Differential termination mismatch (@1 MHz)	TP4	—	—	10	%
Differential return loss (SDD22)	TP4	per OIF CEI-28G-VSR Eq. 13-19	—	—	—
Mode conversion (SDC22 / SCD22)	TP4	per OIF CEI-28G-VSR Eq. 13-21	—	—	—
Common-mode return loss (SCC22)	TP4	–2 (250 MHz–30GHz)	—	—	dB
Transition time, 20–80%	TP4	9.5	—	—	ps
Vertical eye closure (VEC)	TP4	—	—	5.5	dB
Eye width (EW15)	TP4	0.57	—	—	UI
Eye height (EH15)	TP4	228	—	—	mV

Absolute Maximum Ratings

Stress beyond any single rating below may cause permanent damage. These are stress ratings only; functional operation is not implied at these limits.

Parameter	Symbol	Min	Max	Unit
Storage temperature	Ts	-40	85	°C
Operating case temperature	Tc	0	70	°C
Power supply voltage	Vcc	0	3.6	V
Relative humidity (non-condensing)	RH	5	85	%
Optical damage threshold	THd	3.4	—	dBm

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Operating case temperature	Top	0	—	70	°C	—
Power supply voltage	Vcc	3.135	3.3	3.465	V	—
Signaling rate	—	—	25.78125	—	Gb/s	—
Signaling rate tolerance	—	-100	—	+100	ppm	—
Bit error ratio, pre-FEC	—	—	—	5×10^{-5}	—	—
Bit error ratio, post-FEC	—	—	—	1×10^{-12}	—	1
Control input voltage, high	VIH	2	—	Vcc	V	—
Control input voltage, low	VIL	0	—	0.8	V	—

Note 1. Achieved with RS-FEC provided by the host system.

Digital Diagnostic Monitoring

The module reports real-time temperature, supply voltage, transmit bias current, transmit optical power, and receive optical power over the 2-wire serial interface, per SFF-8472.

Monitored Parameter	Symbol	Accuracy	Conditions
Temperature monitor	°C	±3	Over operating temperature range
Supply-voltage monitor	V	±0.1	Full operating range
RX optical-power monitor	dB	±2	See note 1
TX bias-current monitor	—	±10% of reading	—
TX optical-power monitor	dB	±2	See note 1

Note 1. Optical-power monitor accuracy may vary by an additional ±1 dB depending on the characteristics of the connected fiber.

Functional Overview

On the transmit path, the module accepts a 25 Gb/s differential CML data stream (TD+/TD-), retimes it through an integrated clock-and-data-recovery (CDR) stage, and drives an 850 nm VCSEL. An internal automatic power-control loop holds optical output constant across supply and temperature. Asserting TX_Dis high (or leaving it open) disables the laser; the open-drain TX_Fault output asserts high on a transmitter or safety fault.

On the receive path, incoming light is converted by the PIN photodiode, amplified by a transimpedance amplifier, and retimed by a limiting amplifier with Rx CDR before being presented to the host as differential CML data (RD+/RD-). The open-drain RX_LOS output asserts high when the received signal falls below the specified threshold — typically indicating an unplugged or broken fiber, or a disabled or failed transmitter at the far end.

An on-board microcontroller manages serial identification, digital diagnostics, and control functions through the 2-wire interface. The module operates from a single +3.3 V supply, is hot-pluggable, and mates with the host in ground-power-signal sequence.

Host Interface & Pin Assignment

The module is hot-pluggable and conforms to the SFP28 MSA (SFF-8402). Open-drain status outputs (TX_Fault, RX_LOS) and the 2-wire interface lines are pulled up on the host to 3.15–3.45 V through 4.7–10 kΩ resistors. Module ground pins are isolated from the case.

Pin	Symbol	Logic	Description
1	VeeT	—	Transmitter ground
2	TX_Fault	LVTTL-O	Transmitter fault indication (open-drain, active high)
3	TX_Dis	LVTTL-I	Transmitter disable; high or open turns the laser off
4	SDA	LVTTL-I/O	2-wire serial interface data
5	SCL	LVTTL-I	2-wire serial interface clock
6	MOD_ABS	—	Module absent; grounded within the module
7	RS0	LVTTL-I	Rate select 0
8	RX_LOS	LVTTL-O	Receiver loss of signal (open-drain, asserted high on signal loss)
9	RS1	LVTTL-I	Rate select 1 (not used)
10	VeeR	—	Receiver ground
11	VeeR	—	Receiver ground
12	RD-	CML-O	Receiver inverted data output
13	RD+	CML-O	Receiver non-inverted data output
14	VeeR	—	Receiver ground

15	VccR	—	Receiver +3.3 V supply
16	VccT	—	Transmitter +3.3 V supply
17	VeeT	—	Transmitter ground
18	TD+	CML-I	Transmitter non-inverted data input
19	TD-	CML-I	Transmitter inverted data input
20	VeeT	—	Transmitter ground

Mechanical Dimensions

Per the SFP28 MSA mechanical outline (SFF-8402). Key mechanical dimensions are summarized below.

Parameter	Value	Unit
Form factor	SFP28 (SFF-8402)	—
Body length	56.50	mm
Body width	13.70 ± 0.10	mm
Body height	8.50 ± 0.15	mm
Optical connector	Duplex LC	—
Latch	Bail	—

Handling, ESD & Laser Safety

Electrostatic Discharge

The module withstands 1 kV on high-speed data pins and 2 kV on all other electrical pins per MIL-STD-883 Method 3015.4 / JESD22-A114-A (HBM). Standard ESD precautions still apply: remove the module from its protective packaging only within an ESD-protected environment.

Laser Safety

This is a Class 1 laser product per IEC/EN 60825-1:2014.

It complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 56 (May 8, 2019).

Use of controls, adjustments, or procedures other than those specified herein may result in hazardous radiation exposure.

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