



TECHNOLOGIE OPTIC.CA INC.

AVM762-11100S

25 Gigabit SFP28 LR Optical Transceiver

1310 nm · Single-mode (G.652) · Duplex LC · DDM · Optic.ca S28-LR-NT-OC

The Optic.ca AVM762-11100S is a 25 Gigabit Ethernet SFP28 transceiver engineered for long-reach links over single-mode fiber in data-center, metro-access, and high-density rack environments. Built around a 1310 nm DFB transmitter and a high-sensitivity PIN photodetector, it delivers reliable 25.78 Gb/s transport to 10 km over G.652 single-mode 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-LR compliant per IEEE 802.3cc (Clause 114)
- 25.78 Gb/s line rate over duplex single-mode fiber (G.652)
- 1310 nm DFB transmitter and PIN photodetector, duplex LC interface
- Reach up to 10 km over G.652 single-mode fiber
- 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; ≤1.5 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
AVM762-11100S	25GBASE-LR SFP28 transceiver, 1310 nm, single-mode (G.652), 10 km, duplex LC, full DDM, bail latch; NETGEAR® Certified Compatible

Standards Compliance

The AVM762-11100S 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 802.3cc	25GBASE-LR (Clause 114)
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
Single-mode (G.652)	1310 nm	Up to 10 km

Optical Specifications

Defined over the recommended operating conditions unless otherwise noted.

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter						
Center wavelength	λ_t	1295	—	1325	nm	—
Side-mode suppression ratio	SMSR	30	—	—	dB	—
Average optical power	P_{avg}	-7	—	2	dBm	—
Optical modulation amplitude (OMA)	POMA	-4	—	2.2	dBm	1
Launch power in OMA minus TDP	—	-5	—	—	dBm	—
Transmitter dispersion penalty	TDP	—	—	2.7	dB	—
Extinction ratio	ER	3.5	—	—	dB	—
Relative intensity noise	RIN20OMA	—	—	-130	dB/Hz	—
Optical return loss tolerance	TOL	—	—	20	dB	—
Transmitter reflectance	RT	—	—	-12	dB	—
Average launch power, TX off	P_{off}	—	—	-30	dBm	—
TX eye mask {X1,X2,X3,Y1,Y2,Y3}	—	{0.31, 0.40, 0.45, 0.34, 0.38, 0.40}	—	—	—	2
Receiver						
Center wavelength	λ_r	1260	—	1350	nm	—
Damage threshold	THd	—	—	3.5	dBm	3
Average receive power	—	-13.3	—	2	dBm	—
Receive power (OMA)	—	—	—	2.2	dBm	—
Receiver sensitivity (OMA)	SEN	—	—	-11.3	dBm	4
Stressed receiver sensitivity (OMA)	—	—	—	-8.8	dBm	5
Receiver reflectance	RR	—	—	-26	dB	—
LOS assert	LOSA	-30	—	—	dBm	—
LOS deassert	LOSD	—	—	-14	dBm	—
LOS hysteresis	LOSH	0.5	—	—	dB	—
Receiver 3 dB upper cutoff frequency	F_c	—	—	31	GHz	—

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

Note 2. Eye-mask hit ratio 5×10^{-5} per sample.

Note 3. Maximum continuous optical input the receiver tolerates without damage on one lane; correct operation is not guaranteed at this level.

Note 4. Receiver sensitivity is specified for BER = 5×10^{-5} .

Note 5. Stressed sensitivity is measured with a conformance test signal for BER = 5×10^{-5} ; the stressed-eye conditions (vertical eye-closure penalty 1.9 dB, J2 0.27 UI, J4 0.39 UI, SRS eye mask {0.24, 0.50, 0.50, 0.24, 0.24, 0.40}) are test conditions, not required receiver characteristics.

Electrical Specifications

Defined over the recommended operating conditions unless otherwise noted.

Parameter	Test Point	Min	Typ	Max	Unit
Power consumption	—	—	—	1.5	W
Supply current	I _{cc}	—	—	450	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–30 GHz)	—	—	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	T _s	-40	85	°C
Operating case temperature	T _c	0	70	°C
Power supply voltage	V _{cc}	0	3.6	V
Relative humidity (non-condensing)	RH	5	85	%
Optical damage threshold	THd	3.5	—	dBm

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Operating case temperature	T _{op}	0	—	70	°C
Power supply voltage	V _{cc}	3.135	3.3	3.465	V
Signaling rate	—	—	25.78125	—	Gb/s
Signaling rate tolerance	—	-100	—	+100	ppm
Control input voltage, high	V _{IH}	2	—	V _{cc}	V
Control input voltage, low	V _{IL}	0	—	0.8	V
Link distance over G.652 SMF	—	0.002	—	10	km

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 a 1310 nm DFB laser. 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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