



TECHNOLOGIE OPTIC.CA INC.

25 Gigabit SFP28 Active Optical Cable

AVC765-11100S · 25GBASE-SR · 5m · SFP28-to-SFP28 · 850 nm VCSEL · DDM · Optic.ca S28-AO5M-NT-OC

The Optic.ca AVC765-11100S is a 25 Gigabit Ethernet SFP28 active optical cable (AOC) for short-reach, high-density interconnect. It integrates an 850 nm VCSEL transmitter and PIN photodetector with internal clock-and-data recovery on both the transmit and receive paths, joined by a fixed 5 m multimode optical cable terminated in SFP28 connectors at both ends. It delivers 25.78 Gb/s transport compliant with IEEE 802.3by 25GBASE-SR, draws less than 1 W per terminal, and supports digital diagnostic monitoring. The embedded VCSEL sources are enclosed within the sealed assembly, making it a Class 1 laser product. Each assembly is individually serialized, factory-coded for host-platform compatibility, and validated prior to shipment, and is backed by the Optic.ca lifetime warranty.

Key Features

- IEEE 802.3by 25GBASE-SR compliant; 25.78 Gb/s line rate
- Embedded 850 nm VCSEL transmitter and PIN photodetector
- Internal clock-and-data recovery (CDR) on transmit and receive paths
- Fixed 5 m active optical cable; SFP28 connectors at both ends
- Less than 1 W per terminal; single 3.3 V supply
- Digital diagnostic monitoring (DDM) per SFF-8472
- Class 1 laser product; embedded, non-user-accessible optics
- Commercial operating case temperature range: 0 °C to +70 °C
- TAA compliant (Country of Origin: Taiwan); RoHS and REACH compliant; Class 1 laser per IEC/EN 60825-1:2014
- Certified compatible with NETGEAR® switching platforms

Target Applications

- 25 Gigabit Ethernet top-of-rack interconnect
- Switch-to-server and switch-to-switch links
- EMI-sensitive runs where copper twinax is impractical
- High-density data-center and HPC fabrics

Ordering Information

Part Number	Description
AVC765-11100S	25GBASE-SR SFP28 active optical cable, 5 m, 850 nm, SFP28-to-SFP28, DDM; NETGEAR® Certified Compatible

Standards Compliance

The AVC765-11100S 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	

Standard / Program	Detail
IEEE 802.3by	25GBASE-SR (Clause 112)
SFP28 SFF-8402	SFP28 form factor and high-speed interface
SFP28 SFF-8432	SFP28 mechanical and connector specification
SFF-8472	Digital diagnostic monitoring (DDM/DOM)
OIF CEI-28G-VSR	Host electrical interface
Safety	
IEC/EN 60825-1:2014	Class 1 laser product
21 CFR 1040.10 and 1040.11	Complies except for deviations pursuant to Laser Notice No. 56 (May 8, 2019)
IEC/EN 62368-1	Designed to conform — AV/ICT equipment safety
Electromagnetic Compatibility	
FCC 47 CFR 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	
EU RoHS (2011/65/EU, incl. 2015/863)	Compliant
REACH (EC 1907/2006)	Compliant
Trade Agreements Act (TAA)	Compliant — Country of Origin: Taiwan

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

NETGEAR® Certified Compatible — validated for interoperability with NETGEAR switching platforms. NETGEAR® is a registered trademark of NETGEAR, Inc. This Technologie Optic.ca Inc. product is certified compatible under NETGEAR's certification program; it is not a NETGEAR-branded product.

General Specifications

Parameter	Value
Data rate	25.78125 Gb/s
Supply voltage (Vcc)	3.13 V / 3.3 V / 3.47 V (min / nom / max)
Supply current (Icc)	300 mA (max)
Power consumption	< 1 W per terminal
Operating case temperature	0 °C to +70 °C
Storage temperature	–40 °C to +85 °C
Cable length	5 m (fixed)
Cable outer diameter	3.0 mm
Connectors	SFP28 at both ends
Management interface	2-wire serial (I ² C); SFF-8472 DDM

Optical Characteristics — Transmitter

Vcc = 3.13–3.47 V, Tc = 0–70 °C

Parameter	Symbol	Min.	Typ.	Max.	Units
Data rate	BR	—	25.78	—	Gb/s
Centre wavelength	λ_c	840	850	860	nm
Spectral width (–20 dB)	σ	—	—	0.6	nm
Average output power	P _{avg}	–8.4	—	2.4	dBm
Output optical power (OMA)	P _{oma}	–6.4	—	3	dBm
Extinction ratio	ER	2	—	—	dB
Differential input swing (pk-pk)	V _{in}	40	—	1000	mV
Input differential impedance	Z _{in}	90	100	110	Ω

Optical Characteristics — Receiver

V_{CC} = 3.13–3.47 V, T_c = 0–70 °C

Parameter	Symbol	Min.	Typ.	Max.	Units
Data rate	BR	—	25.78	—	Gb/s
Centre wavelength	λ_c	840	850	860	nm
Receiver sensitivity (OMA)	P _{sens}	—	—	–10	dBm
Stressed sensitivity (OMA)	—	—	—	–5.2	dBm
Maximum input power (OMA)	—	—	—	3	dBm
LOS de-assert	LOSD	–13	—	—	dBm
LOS assert	LOSA	—	—	–30	dBm
LOS hysteresis	—	0.5	—	—	dB
Differential output swing (pk-pk)	V _{out}	300	—	850	mV

Receiver sensitivity measured with a PRBS31 pattern at 25.78125 Gb/s, BER 1×10^{-5} .

Digital Diagnostic Monitoring

Parameter	Range	Accuracy	Calibration
Temperature	0 to +70 °C	±3 °C	Internal / external
Supply voltage	3.0 to 3.6 V	±3 %	Internal / external
Bias current	0 to 20 mA	±10 %	Internal / external
TX optical power	–8 to 3 dBm	±3 dB	Internal / external
RX optical power	–14 to 0 dBm	±3 dB	Internal / external

Diagnostics accessed over the 2-wire serial interface per SFF-8472: address A0h holds the serial-ID (96 bytes) and vendor area; address A2h holds alarm/warning thresholds, calibration constants, real-time diagnostics, and user EEPROM.

Cable Construction

Parameter	Value
Cable type	Active optical cable (multimode fiber, embedded optics)
Optical source	850 nm VCSEL (embedded, non-user-accessible)
Cable length	5 m (fixed)
Cable outer diameter	3.0 mm
Connectors	SFP28 at both ends

Parameter	Value
Laser class	Class 1 per IEC/EN 60825-1:2014

Pin Assignment — SFP28 Connector

PIN	Symbol	Description
1	VeeT	Transmitter ground
2	TX_Fault	Module transmitter fault
3	TX_Disable	Transmitter disable; turns off transmitter laser output
4	SDA	2-wire serial interface data line
5	SCL	2-wire serial interface clock
6	MOD_ABS	Module definition; grounded within the module
7	RS0	Receiver rate select
8	RX_LOS	Receiver loss-of-signal; logic 0 = normal operation
9	RS1	Transmitter rate select
10	VeeR	Receiver ground
11	VeeR	Receiver ground
12	RD-	Receiver inverted data output
13	RD+	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+	Transmitter non-inverted data input
19	TD-	Transmitter inverted data input
20	VeeT	Transmitter ground

Laser Safety

The AVC765-11100S is a Class 1 laser product per IEC/EN 60825-1:2014 and complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 56 (May 8, 2019). The 850 nm VCSEL sources are permanently enclosed within the sealed cable assembly and are not user-accessible; under normal operation and reasonably foreseeable single-fault conditions, no hazardous optical radiation is emitted. Do not open the connector housings or view internal optical emissions with magnifying instruments. Observe standard ESD precautions when handling the assembly.

Handling

- Hold the connector by its sides when inserting it into the switch port.
- Do not handle the assembly by the cable.
- Do not over-bend the cable behind the connector.
- Do not twist or kink the cable.
- Do not flex the cable up and down behind the connector.
- Observe standard ESD precautions; the assembly contains active components.

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