

SO-SFP-10GE-ZR-Cxx, -Cxx-E

SFP+, 10G Multirate, CWDM, DDM, 23dB, 80km, 1470nm-1610nm (8ch)

OVERVIEW

The SO-SFP-10GE-ZR-Cxx is a versatile CWDM transceiver supporting a wide range of traffic formats. The distance performance is in accordance with the industry standard 10GBASE-ZR and 10GBASE-ZW, providing a bridgeable distance of up to 80km for 10GbE-LAN and 10GbE-WAN services.

The transceiver is available in 8 CWDM wavelength versions, spanning from 1470nm to 1610nm in accordance with the G.694.2 standard. This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

The transceiver is available in two temperature range options, one being the Extended temperature range (E-temp): -20°C to +75°C (-4°F to +167°F).

TECHNICAL DATA

Technology	CWDM SFP+												
Transmission media	SM (2x LC)												
Typical reach	80 km												
Nominal wavelength	1470 nm - 1610 nm (8ch)												
Interface standards	10GBASE-ZR 10GBASE-ZW												
Bit rate range	0.6 - 11.3 Gbps												
Protocols	<table border="0"> <tr> <td>Eth:</td> <td>10GbE-LAN 10GbE-WAN GbE</td> </tr> <tr> <td>OTN:</td> <td>OTU2e OTU2 OTU1</td> </tr> <tr> <td>SDH/SONET:</td> <td>STM-64/OC-192 STM-16/OC-48 STM-4/OC-12</td> </tr> <tr> <td>FC:</td> <td>10G FC 8G FC 4G FC 1G FC</td> </tr> <tr> <td>CPRI:</td> <td>Opt 1 (0.6144 Gbps) Opt 2 (1.2288 Gbps) Opt 3 (2.4576 Gbps) Opt 4 (3.0720 Gbps) Opt 5 (4.9152 Gbps) Opt 6 (6.1440 Gbps) Opt 7 (9.8304 Gbps) Opt 7A (8.11008 Gbps) Opt 8 (10.1376 Gbps)</td> </tr> <tr> <td>OBSAI:</td> <td>1x (0.768 Gbps) 2x (1.536 Gbps) 4x (3.0720 Gbps) 8x (6.1440 Gbps)</td> </tr> </table>	Eth:	10GbE-LAN 10GbE-WAN GbE	OTN:	OTU2e OTU2 OTU1	SDH/SONET:	STM-64/OC-192 STM-16/OC-48 STM-4/OC-12	FC:	10G FC 8G FC 4G FC 1G FC	CPRI:	Opt 1 (0.6144 Gbps) Opt 2 (1.2288 Gbps) Opt 3 (2.4576 Gbps) Opt 4 (3.0720 Gbps) Opt 5 (4.9152 Gbps) Opt 6 (6.1440 Gbps) Opt 7 (9.8304 Gbps) Opt 7A (8.11008 Gbps) Opt 8 (10.1376 Gbps)	OBSAI:	1x (0.768 Gbps) 2x (1.536 Gbps) 4x (3.0720 Gbps) 8x (6.1440 Gbps)
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Power budget	12.0 - 23.0 dB												
Dispersion tolerance	1600 ps/nm ¹⁾												
Dispersion penalty	3.5 dB ¹⁾												
Temperature range	0°C to +70°C (Cxx) -20°C to +75°C (Cxx-E)												
Power consumption	< 1.5W												

Transmitter data	Output power:	Min: 0.0 dBm Max: +4.0 dBm
	Tx wavelength:	1470 - 1610 nm in 20nm steps (G.694.2)
Receiver data	Minimum input power:	-23.0 dBm ¹⁾
	Overload (max power):	-8.0 dBm
	Wavelength range:	1260 - 1620 nm
DDM		Yes
MSA compliance		SFF-8431 SFF-8432 SFF-8472

¹⁾ @ 10.3Gbps

Regulatory compliance

EMC CE	EN 55022:2010 EN 55024:2010
UL/Safety	UL 60950-1
FCC	47 CFR PART 15 OCT, 2013
RoHS	RoHS 6
TUV	EN 60950-1:2006+A11+A1+A12+A2 EN 60825-1:2014 EN 60825-2:2004+A1+A2

Storage temp. -40°C to +85°C

Note! See "Definitions" below.

Note: 10GBASE-ZR/ZW is an industry standard defined only at 1550 nm. The standard is referred to from bridgeable distance perspective for the other wavelengths within the CWDM band.

Subject to change without notice.

For more information visit smaroptics.com.

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ORDERING INFORMATION

Part number	Description
SO-SFP-10GE-ZR-C47	SFP+, 10G Multirate, CWDM 1470nm, SM, DDM, 23dB, 80km
SO-SFP-10GE-ZR-C49	SFP+, 10G Multirate, CWDM 1490nm, SM, DDM, 23dB, 80km
SO-SFP-10GE-ZR-C51	SFP+, 10G Multirate, CWDM 1510nm, SM, DDM, 23dB, 80km
SO-SFP-10GE-ZR-C53	SFP+, 10G Multirate, CWDM 1530nm, SM, DDM, 23dB, 80km
SO-SFP-10GE-ZR-C55	SFP+, 10G Multirate, CWDM 1550nm, SM, DDM, 23dB, 80km
SO-SFP-10GE-ZR-C57	SFP+, 10G Multirate, CWDM 1570nm, SM, DDM, 23dB, 80km
SO-SFP-10GE-ZR-C59	SFP+, 10G Multirate, CWDM 1590nm, SM, DDM, 23dB, 80km
SO-SFP-10GE-ZR-C61	SFP+, 10G Multirate, CWDM 1610nm, SM, DDM, 23dB, 80km
SO-SFP-10GE-ZR-C47-E	SFP+, 10G Multirate, CWDM 1470nm, SM, DDM, 23dB, 80km, I-temp
SO-SFP-10GE-ZR-C49-E	SFP+, 10G Multirate, CWDM 1490nm, SM, DDM, 23dB, 80km, I-temp
SO-SFP-10GE-ZR-C51-E	SFP+, 10G Multirate, CWDM 1510nm, SM, DDM, 23dB, 80km, I-temp
SO-SFP-10GE-ZR-C53-E	SFP+, 10G Multirate, CWDM 1530nm, SM, DDM, 23dB, 80km, I-temp
SO-SFP-10GE-ZR-C55-E	SFP+, 10G Multirate, CWDM 1550nm, SM, DDM, 23dB, 80km, I-temp
SO-SFP-10GE-ZR-C57-E	SFP+, 10G Multirate, CWDM 1570nm, SM, DDM, 23dB, 80km, I-temp
SO-SFP-10GE-ZR-C59-E	SFP+, 10G Multirate, CWDM 1590nm, SM, DDM, 23dB, 80km, I-temp
SO-SFP-10GE-ZR-C61-E	SFP+, 10G Multirate, CWDM 1610nm, SM, DDM, 23dB, 80km, I-temp

DEFINITIONS

Technology:	Grey; Transceiver type for non-WDM applications. Electrical or optical. CWDM; Transceiver type for CWDM applications using G.694.2 channel grid. DWDM; Transceiver type for DWDM applications using G.694.1 channel grid. BiDi; Transceiver pair using two different wavelength channels operating on a single-fiber. DAC: Direct Attach Cable. Electrical or optical cable with attached connectors.
Transmission Media:	Type of fiber, e.g. Multimode (MM) or Singlemode (SM). Number of and connector type within brackets (e.g. 2x LC, 1x MPO).
Typical reach:	Nominal distance performance based on dispersion and power budget properties, i.e. w/o dispersion compensation and optical amplification.
Bit rate range:	Supported bit rate range in Gigabit or Megabit per second (Gbps or Mbps).
Protocols:	Protocols within supported bit rate range.
Nominal wavelength:	Typical wavelength from transmitter.
Interface standards:	Referenced interface standards e.g. IEEE 802.3 standard for 10GbE services.
Power budget:	Min and max power budget between Transmitter and Receiver. Excluding any dispersion penalty.
Dispersion tolerance/penalty:	Maximum amount of tolerated dispersion and required reduction of power budget to maintain BER better than $1E^{-12}$. Defined at a specific bit rate.
Temperature range:	Max operating case temperature range. Standard temperature range: Typically 0°C to +70°C (32°F to +158°F) Extended temperature range (E-temp): Typically -20°C to +75°C (-4°F to +167°F) Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F)
Power consumption:	Worst case power consumption.
Transmitter Output power:	Average output power. Provided in min and max values.
Receiver minimum input power:	Minimum average input power at specified BER, normally $1E^{-12}$.
Receiver max input power:	Maximum average input power at specified BER, normally $1E^{-12}$.
DDM:	Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.