

**DATASHEET 5.1****SO-SFP-10GE-ZR-50GHZ-Dxxxx****SFP+, 10G Multirate, DWDM 100GHz, DDM, 14dB, 40km, D921-D960 (40ch)****OVERVIEW**

The SO-SFP-10GE-ZR-50GHZ-Dxxxx is a versatile DWDM transceiver supporting a wide range of traffic formats ranging from 600 Mbps to 11.3 Gbps. The transceiver is provided in 80 channel versions at the 50GHz DWDM grid as specified in the ITU-T 694.1 standard.

The distance performance is in accordance with the industry ZR/ZW-standard, providing a bridgeable distance (without dispersion compensation) of up to 80km for 10GbE-LAN (10GBASE-ZR) and 10GbE-WAN (10GBASE-ZW) services.

This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification. The transceiver module is compliant to RoHS-6/6.

## TECHNICAL DATA

Parameter	Value
Technology	DWDM SFP+ 50GHz
Transmission media	SM (2x LC)
Typical reach	80km
Nominal wavelength	192.00 - 195.95THz (80ch)
Bit rate support	0.6Gbps to 11.3Gbps
Interface standards	10GBASE-ZR, 10GBASE-ZW
Protocol support	GbE, 10GbE-LAN, 10GbE-WAN OTU1, OTU2, OTU2e STM-64/OC192 STM-16/OC48, STM-4/OC12 1G, 2G, 4G, 8G, 10G FC CPRI Opt, 1, 2, 3, 4, 5, 6, 7, 7A, 8 OBSAI 1x, 2x, 4x, 8x
Power budget	13 – 23dB
Dispersion penalty	Max 3.5dB
Dispersion tolerance	+1600ps/nm
Power consumption	< 1.5W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

Parameter	Value
<b>Transmitter data:</b>	
Output power	Min: 0.0dBm <sup>1)</sup> Max: +5.0dBm <sup>1)</sup>
Transmit wavelength	192.00 - 195.95THz (G.694.1)
<b>Receiver data:</b>	
Minimum input power	-23.0dBm <sup>1)2)</sup>
Overload (max power)	-8.0dBm <sup>1)2)</sup>
Wavelength range	1480nm – 1580nm
LOS assert	Min -35dBm
LOS de-assert	Max -24dBm
DDM	Yes
MSA compliance	SFF-8431, -8432, -8472

1). Average power.

2). @ 10.3Gbps, BER 1x10<sup>-12</sup>, PRBS 2<sup>31</sup>-1, back-to-back.

### Safety/regulatory compliance:

TUV/UL/FDA (contact Smartoptics for latest certification information)

RoHS compliance

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 DWDM band.

## ORDERING INFORMATION

Part number	Freq. THz	λ nm	Part number	Freq. THz	λ nm
SO-SFP-10GE-ZR-50G-D9200	192.00	1561.42	SO-SFP-10GE-ZR-50G-D9400	194.00	1545.32
SO-SFP-10GE-ZR-50G-D9205	192.05	1561.01	SO-SFP-10GE-ZR-50G-D9405	194.05	1544.92
SO-SFP-10GE-ZR-50G-D9210	192.10	1560.61	SO-SFP-10GE-ZR-50G-D9410	194.10	1544.53
SO-SFP-10GE-ZR-50G-D9215	192.15	1560.20	SO-SFP-10GE-ZR-50G-D9415	194.15	1544.13
SO-SFP-10GE-ZR-50G-D9220	192.20	1559.79	SO-SFP-10GE-ZR-50G-D9420	194.20	1543.73
SO-SFP-10GE-ZR-50G-D9225	192.25	1559.39	SO-SFP-10GE-ZR-50G-D9425	194.25	1543.33
SO-SFP-10GE-ZR-50G-D9230	192.30	1558.98	SO-SFP-10GE-ZR-50G-D9430	194.30	1542.94
SO-SFP-10GE-ZR-50G-D9235	192.35	1558.58	SO-SFP-10GE-ZR-50G-D9435	194.35	1542.54
SO-SFP-10GE-ZR-50G-D9240	192.40	1558.17	SO-SFP-10GE-ZR-50G-D9440	194.40	1542.14

Part number	Freq. THz	$\lambda$ nm	Part number	Freq. THz	$\lambda$ nm
SO-SFP-10GE-ZR-50G-D9245	192.45	1557.77	SO-SFP-10GE-ZR-50G-D9445	194.45	1541.75
SO-SFP-10GE-ZR-50G-D9250	192.50	1557.36	SO-SFP-10GE-ZR-50G-D9450	194.50	1541.35
SO-SFP-10GE-ZR-50G-D9255	192.55	1556.96	SO-SFP-10GE-ZR-50G-D9455	194.55	1540.95
SO-SFP-10GE-ZR-50G-D9260	192.60	1556.55	SO-SFP-10GE-ZR-50G-D9460	194.60	1540.56
SO-SFP-10GE-ZR-50G-D9265	192.65	1556.15	SO-SFP-10GE-ZR-50G-D9465	194.65	1540.16
SO-SFP-10GE-ZR-50G-D9270	192.70	1555.75	SO-SFP-10GE-ZR-50G-D9470	194.70	1539.77
SO-SFP-10GE-ZR-50G-D9275	192.75	1555.34	SO-SFP-10GE-ZR-50G-D9475	194.75	1539.37
SO-SFP-10GE-ZR-50G-D9280	192.80	1554.94	SO-SFP-10GE-ZR-50G-D9480	194.80	1538.98
SO-SFP-10GE-ZR-50G-D9285	192.85	1554.54	SO-SFP-10GE-ZR-50G-D9485	194.85	1538.58
SO-SFP-10GE-ZR-50G-D9290	192.90	1554.13	SO-SFP-10GE-ZR-50G-D9490	194.90	1538.18
SO-SFP-10GE-ZR-50G-D9295	192.95	1553.73	SO-SFP-10GE-ZR-50G-D9495	194.95	1537.79
SO-SFP-10GE-ZR-50G-D9300	193.00	1553.33	SO-SFP-10GE-ZR-50G-D9500	195.00	1537.40
SO-SFP-10GE-ZR-50G-D9305	193.05	1552.93	SO-SFP-10GE-ZR-50G-D9505	195.05	1537.00
SO-SFP-10GE-ZR-50G-D9310	193.10	1552.52	SO-SFP-10GE-ZR-50G-D9510	195.10	1536.61
SO-SFP-10GE-ZR-50G-D9315	193.15	1552.12	SO-SFP-10GE-ZR-50G-D9515	195.15	1536.22
SO-SFP-10GE-ZR-50G-D9320	193.20	1551.72	SO-SFP-10GE-ZR-50G-D9520	195.20	1535.82
SO-SFP-10GE-ZR-50G-D9325	193.25	1551.32	SO-SFP-10GE-ZR-50G-D9525	195.25	1535.43
SO-SFP-10GE-ZR-50G-D9330	193.30	1550.92	SO-SFP-10GE-ZR-50G-D9530	195.30	1535.04
SO-SFP-10GE-ZR-50G-D9335	193.35	1550.52	SO-SFP-10GE-ZR-50G-D9535	195.35	1534.64
SO-SFP-10GE-ZR-50G-D9340	193.40	1550.12	SO-SFP-10GE-ZR-50G-D9540	195.40	1534.25
SO-SFP-10GE-ZR-50G-D9345	193.45	1549.72	SO-SFP-10GE-ZR-50G-D9545	195.45	1533.86
SO-SFP-10GE-ZR-50G-D9350	193.50	1549.32	SO-SFP-10GE-ZR-50G-D9550	195.50	1533.47
SO-SFP-10GE-ZR-50G-D9355	193.55	1548.91	SO-SFP-10GE-ZR-50G-D9555	195.55	1533.07
SO-SFP-10GE-ZR-50G-D9360	193.60	1548.51	SO-SFP-10GE-ZR-50G-D9560	195.60	1532.68
SO-SFP-10GE-ZR-50G-D9365	193.65	1548.11	SO-SFP-10GE-ZR-50G-D9565	195.65	1532.29
SO-SFP-10GE-ZR-50G-D9370	193.70	1547.72	SO-SFP-10GE-ZR-50G-D9570	195.70	1531.90
SO-SFP-10GE-ZR-50G-D9375	193.75	1547.32	SO-SFP-10GE-ZR-50G-D9575	195.75	1531.51
SO-SFP-10GE-ZR-50G-D9380	193.80	1546.92	SO-SFP-10GE-ZR-50G-D9580	195.80	1531.12
SO-SFP-10GE-ZR-50G-D9385	193.85	1546.52	SO-SFP-10GE-ZR-50G-D9585	195.85	1530.72
SO-SFP-10GE-ZR-50G-D9390	193.90	1546.12	SO-SFP-10GE-ZR-50G-D9590	195.90	1530.33
SO-SFP-10GE-ZR-50G-D9395	193.95	1545.72	SO-SFP-10GE-ZR-50G-D9595	195.95	1529.94

## GENERAL DEFINITIONS

Parameter	Description
Technology	CWDM; Transceiver type for CWDM applications using G.694.2 channel grid. DWDM; Transceiver type for DWDM applications using G.694.1 channel grid.
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 typical fiber dispersion, fiber loss and power budget properties, i.e. w/o dispersion compensation and optical amplification. Actual distance is dependent on actual optical path loss and dispersion properties.
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(s) from transmitter.
Interface standards	Referenced interface standards or MSA's, e.g. IEEE 802.3 standard for 10GbE services or 100G 4WDM-10 etc.
Power budget	Min and max power budget between Transmitter and Receiver w/o optical path penalties.
Dispersion tolerance/penalty	Maximum amount of tolerated dispersion and required reduction of power budget to maintain stipulated Bit Error Rate (BER) and at a given bit rate.
Temperature range	Max operating case temperature range. Standard temperature range (C-temp): 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. Will vary over temperature.
Transmitter Output power	Average output power. Provided in min and max values.
Receiver minimum input power	Minimum average input power at specified BER, normally $1E^{-12}$ . Note that some protocols require FEC to achieve sufficient BER.
Receiver max input power	Maximum average input power giving a BER, normally $1E^{-12}$ .
DDM	Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.

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