

**DATASHEET 6.0****SFP28 25G DWDM 15km TUNABLE****SFP28, 25G, DWDM 100GHz Tunable 192.1-196.0THz (40ch), 15km, 18dB, E-temp, LC****TS2016-TUNE-SO**

The TS2016-TUNE-SO is a tunable SFP28 form-factor DWDM transceiver for 25 Gbps Ethernet applications. The transceiver is able to tune to 40 channels in the 100GHz C-band grid as specified in the ITU-T 694.1. The transceiver is intended for use in interconnect applications between data centers with switches, routers, storage equipment etc. The optical performance supports distances up to 15km over a SingleMode (SM) fiber without dispersion compensation.

TS2016-TUNE-SO also supports the high data rate CPRI option 10 for fronthaul applications having a bit rate of 24.33024 Gbps.

As stipulated by the 25G Ethernet standards, Forward Error Correction (FEC) is required to be implemented by the host equipment in order to ensure reliable system operation. The optical parameters below will provide a bit error ratio (BER) of  $5 \times 10^{-5}$  for 25G Ethernet. FEC will provide the required quality for secure service.

This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification. The transceiver supports the Extended temperature range (E-temp): -20°C to 85°C (-40°F to 185°F). **Transceiver can cold start at -40°C**

## TECHNICAL DATA

Parameter	Value
Technology	DWDM SFP28 Tunable
Transmission media	SM (2x LC)
Typical reach	15km
Nominal wavelength	192.10 - 196.00THz (40ch)
Bit rate support	25.78Gbps <sup>1)</sup> 24.33Gbps <sup>2)</sup>
Protocol support	25GbE CPRI opt 10
Power budget	8 – 18dB <sup>4)</sup>
Dispersion tolerance	-232 to +232ps/nm
Power consumption	< 3.0W
Operating temperature	-20°C to +85°C <sup>5)</sup>
Storage temperature	-40°C to +85°C

- 1). 25GbE
- 2). CPRI opt 10
- 3). Average power
- 4). at 25.78 Gbps (25GbE) and BER 5x10<sup>-5</sup> using PRBS31
- 5). Module supports cold start at -40°C with initialization time of max 90s.

### Safety/regulatory compliance:

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

RoHS compliance

Parameter	Value
<b>Transmitter data:</b>	
Output power	Min: 0dBm <sup>3)</sup> Max: +3.0dBm <sup>3)</sup>
Transmit wavelength	192.10 - 196.00THz 100GHz steps (G.694.1)
<b>Receiver data:</b>	
Minimum input power	-18.0dBm <sup>3)4)</sup>
OSNR tolerance	30dB
Overload (max power)	-8.0dBm <sup>3)4)</sup>
Dispersion penalty	Max: 2.5dB
Wavelength range	1527 – 1569nm
LOS Assert	Min -34dBm
LOS De-assert	Max -22.5dBm
LOS Hysteresis	Min 0.5dB
DDM	Yes
MSA compliance	SFF-8431, -8432, -8690, -8472



## ORDERING INFORMATION

Part number	Description
TS2016-TUNE-SO	SFP28, 25G 24.33-25.78Gbps, DWDM 100GHz Tunable 192.1-196.0THz (40ch), 15km, 18dB, E-temp, LC

## GENERAL DEFINITIONS

Parameter	Description
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 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 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 e.g. SFF-8472 MSA.

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