

SO-SFP-10GE-LRM

SFP+, 10G Multirate, 1310nm MM, DDM, 3.5dB, 220m

OVERVIEW

The SO-SFP-10GE-LRM is a versatile 1310nm transceiver for MultiMode (MM) fiber supporting a wide range of traffic formats. The optical performance is in accordance with the IEEE 802.3ae LRM-standard, providing a bridgeable distance of up to 220m for 10GbE-LAN (10GBASE-LRM) services. The host system must have Electronic Dispersion Compensation (EDC) to fulfil the 10GBASE-LRM distance performance.

The transceiver has no minimum distance (i.e. no minimum attenuation) which is ideal for intra-office connections since extra attenuators need not be considered.

This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

TECHNICAL DATA

| Parameter | Value |
|-----------------------|--|
| Technology | Grey SFP |
| Transmission media | MM (2x LC) |
| Interface standard | 10GBASE-LRM ¹⁾ |
| Typical reach | 220m ¹⁾ |
| Nominal wavelengths | 1310nm |
| Bit rate range | 614Mbps – 11.3Gbps |
| Protocol support | 10GbE-LAN, 10GbE-WAN, GbE STM-16/-4/-1, OC48/OC12/OC3 OTU2e, OTU2, OTU1 10G FC, 8G FC, 4G FC, 2G FC, 1G FC CPRI Opt 1 (0.6144Gbps) CPRI Opt 2 (1.2288Gbps) CPRI Opt 3 (2.4576Gbps) CPRI Opt 5 (4.9152Gbps) CPRI Opt 6 (6.1440Gbps) CPRI Opt 7 (9.8304Gbps) CPRI Opt 7A (8.11008Gbps) CPRI Opt 8 (10.1376Gbps) OBSAI 0.768Gbps OBSAI 1.536Gbps OBSAI 3.0720Gbps OBSAI 6.1440Gbps |
| Power budget | 0 – 3.5 dB |
| Power consumption | < 1 W |
| Operating temperature | 0°C to +70°C |
| Storage temperature | -40°C to +85°C |

| Parameter | Value |
|--------------------------|--|
| Transmitter data: | |
| Output power | Min: -6.5dBm ³⁾ Max: +0.5dBm ³⁾ |
| Transmit wavelength | 1260 to 1355nm |
| Receiver data: | |
| Minimum input power | -10dBm ²⁾ ³⁾ |
| Overload (max power) | +1.5dBm ²⁾ ³⁾ |
| Wavelength range | 1260 – 1565nm |
| LOS Assert | Min -25dBm |
| LOS De-assert | Max -11dBm |
| DDM | Yes |
| MSA compliance | SFP 8431 SFF-8472 |

¹⁾ 10GBASE-LRM requires EDC to fulfil distance 220m

over 50/125 MMF with a modal bandwidth of 2000MHz*km

²⁾ Measured at 10.3Gbps using PRBS31 @ BER 1x10⁻¹²

³⁾ Average power

Safety/regulatory compliance:

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

RoHS compliance



ORDERING INFORMATION

| Ordering number | Description |
|-----------------|--|
| SO-SFP-10GE-LRM | SFP+, 10G Multirate, 1310nm MM, DDM, 3.5dB, 220m |

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. AOC: Active Optical Cable. 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 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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