

Technical Specifications

TL-10GSFP-MM300

Features at a Glance

- Hot-pluggable SFP+ footprint
- Supports 9.95 to 10.5 Gb/s bit rates
- Power dissipation < 1W
- RoHS-6 compliant (lead-free)
- Commercial temperature range 0 to 70°C
- Single 3.3V power supply
- Maximum link length of 300m on 2000 MHZ-km OM3 MMF
- Heated 850nm VCSEL laser
- Receiver limiting electrical interface
- Duplex LC connector
- Built-in digital diagnostic functions



The 10GSFP-MM300 transceivers are designed for use in 10-Gigabit Ethernet links over multimode fiber. They are compliant with SFF-8431, SFF-8432, IEEE 802.3ae 10GBASE-SR/SW and 10G Fibre Channel 1200-Mx-SN-I. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

The transceiver is a “limiting module”, i.e., it employs a limiting receiver. Host board designers using an EDC PHY IC should follow the IC manufacturer's recommended settings for interoperating the host-board EDC PHY with a limiting receiver SFP+ module. The optical transceivers are compliant per the RoHS Directive 2011/65/EU.

| Basic Specifications | |
|------------------------------|-------------------------|
| Form Type | SFP+ |
| Max Data Rate | 10.3125 Gbps |
| Wavelength | 850nm |
| Max Cable Distance | 300m over OM3 MMF |
| Interface | LC duplex |
| Optical Components | VCSEL 850nm |
| Cable Type | MMF |
| DOM Support | Yes |
| TX Power | -7.3~-1dBm |
| Receiver Sensitivity | < -11.1dBm |
| Commercial Temperature Range | 0 to 70°C (32 to 158°F) |

Specifications

| General Product Characteristics | | | | | |
|--|-----------------------------------|-------------------------------|------|-----------------------|------------------|
| Parameter | Symbol | Min | Typ. | Max | Unit |
| Bit Rate | BR | 9.95 | | 10.5 | Gbps |
| Bit Error Ratio | BER | | | 10^{-12} | |
| Max. Supported Link Length on 50 μ m Fiber OM2 | L _{MAX} | | | 82 | m |
| Max. Supported Link Length on 50 μ m Fiber OM3 | L _{MAX} | | | 300 | m |
| Max. Supported Link Length on 50 μ m Fiber OM4 | L _{MAX} | | | 400 | m |
| Absolute Maximum Ratings | | | | | |
| Parameter | Symbol | Min | Typ. | Max | Unit |
| Storage Temperature | T _S | -40 | | +85 | °C |
| Case Operating Temperature | T _A | -40 | | +85 | °C |
| Supply Voltage | V _{CC} | -0.5 | | 4.0 | V |
| Operating Relative Humidity | RH | 0 | | 85 | % |
| Electrical Characteristics (TOP = 0 to 70°C, V _{CC} = 3.14 to 3.46 V) | | | | | |
| Parameter | Symbol | Min | Typ. | Max | Unit |
| Power Supply Voltage | V _{CC} | 3.15 | 3.3 | 3.45 | V |
| Power Supply Current | I _{CC} | | | 300 | Ma |
| Transmitter | | | | | |
| Parameter | Symbol | Min | Typ. | Max | Unit |
| Input Differential Impedance | R _{in} | | 100 | | Ω |
| Differential Data Input Swing | V _{in,pp} | 180 | | 700 | mV |
| Transmit Disable Voltage | V _D | 2 | | V _{CC} | V |
| Transmit Enable Voltage | V _{EN} | V _{ee} | | V _{ee} + 0.8 | V |
| Receiver | | | | | |
| Parameter | Symbol | Min | Typ. | Max | Unit |
| Differential Data Output Swing | V _{out,pp} | 300 | | 850 | mV |
| Output Rise Time and Fall Time | t _r | 28 | | | ps |
| LOS De-Assert | V _{LOS norm} | V _{ee} | | V _{ee} + 0.8 | V |
| LOS Assert | V _{LOS fault} | 2 | | V _{CCHOST} | V |
| Power Supply Noise Tolerance | V _{cc T/V_{cc}R} | Per SFF-8431 Rev 4.1 | | | mV _{pp} |
| Optical Characteristics (TOP = 0 to 70°C, V _{CC} = 3.14 to 3.46 V) | | | | | |
| Transmitter | | | | | |
| Parameter | Symbol | Min | Typ. | Max | Unit |
| Optical Modulation Amplitude | P _{OMA} | | -1.5 | | dBm |
| Average Launch Power | P _{AVE} | -5 | | -1 | dBm |
| Optical Wavelength | λ | 840 | 850 | 860 | nm |
| RMS Spectral Width | $\Delta\lambda_{rms}$ | | | 0.45 | dB |
| Optical Extinction Ratio | ER | 3.0 | 5.5 | | dB |
| Transmitter and Dispersion Penalty | TDP | | | 3.9 | dB |
| Average Launch Power of OFF Transmitter | P _{OFF} | | | -30 | dBm |
| Tx Jitter | Tx _j | Per IEEE 802.3ae requirements | | | |
| Encircled Flux | <4.5 μ m <19 μ m | 86 | | 30 | % |
| Relative Intensity Noise | RIN ₁₂ OMA | | | -128 | dB/Hz |
| Receiver | | | | | |
| Parameter | Symbol | Min | Typ. | Max | Unit |
| Receiver Sensitivity (OMA) @ 10.3 Gbps | R _{SENS1} | | | -11.1 | dBm |
| Stressed Receiver Sensitivity (OMA) @ 10.3 Gbps | R _{SENS2} | | | -7.5 | dBm |
| Maximum Input Power | P _{MAX} | +0.5 | | | dBm |
| Wavelength Range | λ_c | 840 | | 860 | Nm |
| Receiver Reflectance | LOS _D | | | -12 | dB |
| LOS De-Assert | LOS _A | | | -14 | dBm |
| LOS Assert | LOS _A | -30 | -23 | | dBm |
| LOS Hysteresis | | 0.5 | | | dB |

Dimensional Drawings

