

XF-SM27WD010D-SDH-GP

XF-SM33WD010D-SDH-GP

Tx: 1270nm/Rx: 1330nm BIDI XFP Transceiver for 10GbE/10FC

Tx: 1330nm/Rx: 1270nm BIDI XFP Transceiver for 10GbE/10FC

RoHS 6 Compliant

Features

- ◆ Supports 9.95Gb/s to 10.5Gb/s data rates
- ◆ Power budget 9dB at least
- ◆ Two types:
 - A: 1270nm DFB Transmitter/ 1330nm Receiver
 - B: 1330nm DFB Transmitter/ 1270nm Receiver
- ◆ LC Connector
- ◆ +3.3V power supply only
- ◆ Power dissipation <1.5W
- ◆ Built-in digital diagnostic functions
- ◆ Case temperature range:
 - Standard: 0~+70°C
- ◆ Complaint with XFP MSA
- ◆ Complaint with IEEE 802.3ae 10GBASE-LR/LW
- ◆ Complaint with 10GFC 1200-SM-LL-L

Applications

- ◆ 10GBASE-LR 10G Ethernet at 10.3125Gbps
- ◆ 10GBASE-LW 10G Ethernet at 9.953Gbps
- ◆ 1200-SM-LL-L 10G Fiber Channel at 10.51875Gbps

Ordering information

| Part No. | Description |
|----------------------|--|
| XF-SM27WD010D-SDH-GP | XFP BIDI SM 1270nm/1330nm LC 10km 10Gb |
| XF-SM33WD010D-SDH-GP | XFP BIDI SM 1330nm/1270nm LC 10km 10Gb |

Absolute Maximum Ratings*

| Parameter | Symbol | Min | Max | Unit |
|----------------------------|-------------------------|------|-----|------|
| Maximum Supply Voltage | V _{cc} | -0.5 | 4.0 | V |
| Storage Temperature | T _s | -40 | 85 | °C |
| Case Operating Temperature | XF-SM27/33WD010D-SDH-GP | 0 | 70 | °C |

*Note3: Exceeding any one of these values may destroy the device permanently.

Recommend operating condition

| Parameter | Symbol | Min | Typ | Max | Units |
|----------------------------|-------------------------|------|-----|------|-------|
| Case Operating Temperature | XF-SM27/33WD010D-SDH-GP | 0 | - | 70 | °C |
| Power Supply Current | I _{cc} | - | - | 580 | mA |
| Supply Voltage | V _{cc} | 3.13 | - | 3.45 | V |

Electrical Characteristics

(T_C = -10 to 85°C, V_{CC} = 3.15V to 3.45V)

| Parameter | Symbol | Min | Typ | Max | Unit |
|--|------------------------|------|-----|-----------------|------|
| Transmitter | | | | | |
| Data Rate | | 9.95 | - | 10.52 | Gbps |
| Input differential impedance | R _{in} | 90 | 100 | 110 | Ω |
| Differential data input swing* <small>Note4</small> | V _{in,pp} | 120 | - | 820 | mV |
| Transmit Disable Voltage | V _D | 2.0 | - | V _{cc} | V |
| Transmit Enable Voltage | V _{EN} | GND | - | GND+ 0.8 | V |
| Transmit Disable Assert Time | | - | - | 10 | us |
| Receiver | | | | | |
| Differential data output swing* <small>Note4</small> | V _{out,pp} | 340 | 650 | 850 | mV |
| Data output rise time* <small>Note5</small> | t _r | - | - | 38 | ps |
| Data output fall time* <small>Note5</small> | t _f | - | - | 38 | ps |
| LOS Fault | V _{LOS fault} | 2.4 | - | V _{cc} | V |
| LOS Normal | V _{LOS norm} | GND | - | GND+0.5 | V |

*Note4. Internal AC coupling.

*Note5. 20 – 80 %.

Optical Characteristics

(XF-SM27WD010D-SDH-GP, 1270nm DFB & PIN/TIA)

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|------------------------------------|-----------------|------|---------------|--------------|----------|
| Power budget | | 9 | | | dB |
| Data Rate | | | 9.953/10.3125 | | Gbps |
| Transmitter | | | | | |
| Centre Wavelength | λ_C | 1260 | 1270 | 1280 | nm |
| Spectral Width (-20dB) | $\Delta\lambda$ | | | 1 | nm |
| Average Output Power*note6 | $P_{out, AVG}$ | -5 | | 0 | dBm |
| Extinction Ratio | ER | 3.5 | | | dB |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB |
| Transmitter and Dispersion Penalty | TDP | | | 2 | dB |
| Average Power of OFF Transmitter | | | | -30 | dBm |
| Relative Intensity Noise | RIN | | | -128 | dB/Hz |
| Input Differential Impedance | Z_{IN} | 90 | 100 | 110 | Ω |
| TX Disable | Disable | | 2.0 | $V_{CC}+0.3$ | V |
| | Enable | | 0 | 0.8 | |
| TX Fault | Fault | | 2.0 | $V_{CC}+0.3$ | V |
| | Normal | | 0 | 0.8 | |
| TX Disable Assert Time | t_{off} | | | 10 | us |
| Receiver | | | | | |
| Centre Wavelength | λ_C | 1320 | | 1340 | nm |
| Sensitivity*note7 | P_{IN} | | | -14 | dBm |
| Receiver Overload | P_{MAX} | 0.5 | | | dBm |
| Output Differential Impedance | P_{IN} | 90 | 100 | 110 | Ω |
| LOS De-Assert | LOS_D | | | -18 | dBm |
| LOS Assert | LOS_A | -28 | | | dBm |
| LOS | High | | 2.0 | $V_{CC}+0.3$ | V |
| | Low | | 0 | 0.8 | |

(XF-SM33WD010D-SDH-GP, 1330nm DFB & PIN/TIA)

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|------------------------------------|-----------------|------|---------------|------|-------|
| Power budget | | 9 | | | dB |
| Data Rate | | | 9.953/10.3125 | | Gbps |
| Transmitter | | | | | |
| Centre Wavelength | λ_C | 1320 | 1330 | 1340 | nm |
| Spectral Width (-20dB) | $\Delta\lambda$ | | | 1 | nm |
| Average Output Power*note6 | $P_{out, AVG}$ | -5 | | 0 | dBm |
| Extinction Ratio | ER | 3.5 | | | dB |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB |
| Transmitter and Dispersion Penalty | TDP | | | 2 | dB |
| Average Power of OFF Transmitter | | | | -30 | dBm |
| Relative Intensity Noise | RIN | | | -128 | dB/Hz |

| | | | | | | |
|-------------------------------|---------|------------------|------|-----|----------------------|-----|
| Input Differential Impedance | | Z _{IN} | 90 | 100 | 110 | Ω |
| TX Disable | Disable | | 2.0 | | V _{CC} +0.3 | V |
| | Enable | | 0 | | 0.8 | |
| TX Fault | Fault | | 2.0 | | V _{CC} +0.3 | V |
| | Normal | | 0 | | 0.8 | |
| TX Disable Assert Time | | t _{off} | | | 10 | us |
| Receiver | | | | | | |
| Centre Wavelength | | λ _C | 1260 | | 1280 | nm |
| Sensitivity*note7 | | P _{IN} | | | -14 | dBm |
| Receiver Overload | | P _{MAX} | 0.5 | | | dBm |
| Output Differential Impedance | | P _{IN} | 90 | 100 | 110 | Ω |
| LOS De-Assert | | LOS _D | | | -18 | dBm |
| LOS Assert | | LOS _A | -28 | | | dBm |
| LOS | High | | 2.0 | | V _{CC} +0.3 | V |
| | Low | | 0 | | 0.8 | |

*Note6. Output is coupled into a 9/125um SMF.

*Note7: Measured with a PRBS 2³¹-1 test pattern @10.3125Gbps.

Mechanical Specifications

