

Features

- Hot-pluggable XFP footprint
- Supports 9.95Gb/s to 11.3Gb/s bit rates
- Supports Lineside and XFI loopback
- RoHS-6 Compliant (lead-free)
- Power dissipation <3.5W
- Case temperature range:0°C to 70°C
- Maximum link length of 40km
- Cooled DWDM EML and PIN Receiver
- Full Duplex LC connector
- No Reference Clock required
- Built-in digital diagnostic functions
- Standard bail release mechanism



Applications

- 10GBASE-ER/EW 10G Ethernet
- 40KM 10G Fiber Channel
- SONET OC-192 &SDH STM 64

Absolute Maximum Ratings

| Parameter | Symbol | Min | Typ | Max | Unit | NOTE |
|----------------------------|--------|------|-----|-----|------|------|
| Maximum Supply Voltage 1 | Vcc3 | -0.5 | | 4.0 | V | |
| Maximum Supply Voltage 2 | Vcc5 | -0.5 | | 6.0 | V | |
| Storage Temperature | TS | -40 | | 85 | °C | |
| Case Operating Temperature | Tcase | 0 | | 70 | °C | |

Electrical Characteristics

| Parameter | Symbol | Min | Typ | Max | Unit | NOTE |
|--------------------------------|------------|-----------|-----|------------------|------|------|
| Main Supply Voltage | Vcc5 | 4.75 | | 5.25 | V | |
| Supply Voltage #2 | Vcc3 | 3.13 | | 3.45 | V | |
| Supply Current – Vcc5 supply | Icc5 | | | 320 | mA | |
| Supply Current – Vcc3 supply | Icc3 | | | 450 | mA | |
| Module total power | P | | | 3.5 | W | 1 |
| Transmitter | | | | | | |
| Input differential impedance | Rin | | 100 | | Ω | 2 |
| Differential data input swing | Vin,pp | 120 | | 820 | mV | |
| Transmit Disable Voltage | VD | 2.0 | | Vcc | V | 3 |
| Transmit Enable Voltage | VEN | GND | | GND+ 0.8 | V | |
| Transmit Disable Assert Time | | | | 10 | us | |
| Receiver | | | | | | |
| Differential data output swing | Vout,pp | 340 | 650 | 850 | mV | 4 |
| Data output rise time | tr | | | 38 | ps | 5 |
| Data output fall time | tf | | | 38 | ps | 5 |
| LOS Fault | VLOS fault | Vcc – 0.5 | | VccHOST | V | 6 |
| LOS Normal | VLOS norm | GND | | GND+0.5 | V | 6 |
| Power Supply Rejection | PSR | | | See Note 6 below | | 7 |

Notes:

1. Maximum total power value is specified across the full temperature and voltage range.

2. After internal AC coupling.
3. Or open circuit.
4. Into 100 ohms differential termination.
5. These are unfiltered 20-80% values
6. Loss Of Signal is open collector to be pulled up with a 4.7k – 10kohm resistor to 3.15 – 3.6V. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
7. Per Section 2.7.1. in the XFP MSA Specification1.

Optical Characteristics

| Parameter | Symbol | Min | Typ | Max | Unit | NOTE |
|---|-------------|-------------------|-----|-------------------|-------|------|
| Transmitter | | | | | | |
| Average Optical Power | Pf | 0 | | 4 | dBm | |
| Optical Wavelength | λ_c | $\lambda_c - 0.1$ | | $\lambda_c + 0.1$ | nm | |
| Center Wavelength Spacing | | | 100 | | GHz | 2 |
| Side mode Suppression ratio | SMSR | 30 | | | dB | |
| Optical Extinction Ratio | ER | 8.2 | | | dB | |
| Transmitter and Dispersion Penalty | TDP | | | 2 | dB | |
| Average Launch power of OFF transmitter | POFF | | | -30 | dBm | |
| Relative Intensity Noise | RIN | | | -130 | dB/Hz | |
| Receiver | | | | | | |
| Receiver Sensitivity | Psen | | | -16.5 | dBm | 1 |
| Input Saturation Power (Overload) | Psat | +0.5 | | | dBm | |
| Wavelength Range | λ_c | 1260 | | 1600 | nm | |
| Receiver Reflectance | Rrx | | | -27 | dB | |
| LOS De-Assert | LOSD | | | -22 | dBm | |
| LOS Assert | LOSA | -28 | | | dBm | |
| LOS Hysteresis | | 0.5 | | | dB | |

Notes:

1. Measured with BER 10^{-12} @ 10.3Gbps, $2^{31} - 1$ PRBS.
2. Corresponds to approximately 0.8 nm.

General Specifications

| Parameter | Symbol | Min | Typ | Max | Units | NOTE |
|----------------------------|--------|------|-----|------------|-------|------|
| Bit Rate | BR | 9.95 | | 11.3 | Gb/s | 1 |
| Bit Error Ratio | BER | | | 10^{-12} | | 2 |
| Max. Supported Link Length | LMAX | | | 40 | km | 1 |

Notes:

1. 10GBASE-ER/EW.
2. Tested with 10.3Gbps, $2^{31} - 1$ PRBS

DWDM Wavelength Guide

| ITU Channel Product Code | Frequency (THz) | Center Wavelength(nm) | ITU Channel Product Code | Frequency (THz) | Center Wavelength(nm) |
|--------------------------|-----------------|-----------------------|--------------------------|-----------------|-----------------------|
| 17 | 191.7 | 1563.86 | 40 | 194.0 | 1545.32 |
| 18 | 191.8 | 1563.05 | 41 | 194.1 | 1544.53 |

| | | | | | |
|----|-------|---------|----|-------|---------|
| 19 | 191.9 | 1562.23 | 42 | 194.2 | 1543.73 |
| 20 | 192.0 | 1561.42 | 43 | 194.3 | 1542.94 |
| 21 | 192.1 | 1560.61 | 44 | 194.4 | 1542.14 |
| 22 | 192.2 | 1559.79 | 45 | 194.5 | 1541.35 |
| 23 | 192.3 | 1558.98 | 46 | 194.6 | 1540.56 |
| 24 | 192.4 | 1558.17 | 47 | 194.7 | 1539.77 |
| 25 | 192.5 | 1557.36 | 48 | 194.8 | 1538.98 |
| 26 | 192.6 | 1556.55 | 49 | 194.9 | 1538.19 |
| 27 | 192.7 | 1555.75 | 50 | 195.0 | 1537.40 |
| 28 | 192.8 | 1554.94 | 51 | 195.1 | 1536.61 |
| 29 | 192.9 | 1554.13 | 52 | 195.2 | 1535.82 |
| 30 | 193.0 | 1553.33 | 53 | 195.3 | 1535.04 |
| 31 | 193.1 | 1552.52 | 54 | 195.4 | 1534.25 |
| 32 | 193.2 | 1551.72 | 55 | 195.5 | 1533.47 |
| 33 | 193.3 | 1550.92 | 56 | 195.6 | 1532.68 |
| 34 | 193.4 | 1550.12 | 57 | 195.7 | 1531.90 |
| 35 | 193.5 | 1549.32 | 58 | 195.8 | 1531.12 |
| 36 | 193.6 | 1548.51 | 59 | 195.9 | 1530.33 |
| 37 | 193.7 | 1547.72 | 60 | 196.0 | 1529.55 |
| 38 | 193.8 | 1546.92 | 61 | 196.1 | 1528.77 |
| 39 | 193.9 | 1546.12 | | | |

Ordering Information

| Part number | Description | TX Power (dBm) | RX Sens. (dBm) | Fiber Budget (dB) | Distance (km) | DDM |
|------------------|---|----------------|----------------|-------------------|---------------|-----|
| SV-XFP-10GER4D## | Starview XFP module with Digital Diagnostic Monitoring (DDM), Data rate from 9.95Gbps to 11.1Gbps supporting OC-192/ STM-64/ 10G LAN/ 10G FC and OC192 with FEC DWDM, SM (LC) with 100GHz spacing, ####nm SM (LC), distance up to 40km, where ## denotes *[see DWDM Wavelength Guide] | 0 to 4 | -16.5 to 0.5 | 16.5 | 40 | YES |