

Brocade-Foundry Compatible 10G-SFP-ER Quick Spec:

| | |
|-------------------|--|
| Part Number: | 10G-SFP-ER 10G-SFP-ER-EXT 10G-SFP-ER-IND |
| Form Factor: | SFP+ |
| TX Wavelength: | 1550nm |
| Reach: | 40km |
| Cable Type: | SMF |
| Rate Category: | 10GBase |
| Interface Type: | ER |
| DDM: | Yes |
| Connector Type: | Dual-LC |
| Power Budget: | 11.10 dB |
| TX Power Min/Max: | -3.00 to 3.00 |
| RX Power Min/Max: | -14.10 to -1.00 |



Brocade-Foundry Compatible 10G-SFP-ER Features

- Compliant with SFF-8413 and IEEE802.3ae
- Data rate selectable ≤ 4.25 Gbps or 9.95Gbps to 10.3Gbps bit rates
- Cooled EML transmitter and PIN receiver
- Low Power Dissipation 1.5W Maximum
- Single 3.3V power supply
- Voltages, laser bias current, transmit optical power, receive optical power
- Operating Case Temperature:
 - Standard: 0°C to +70 °C
 - Extended -5°C to +85 °C
 - Industrial -40°C to +85 °C

Brocade-Foundry Compatible 10G-SFP-ER Applications

- 10GBASE-ER at 10.3125Gbps
- 10GBASE-EW at 9.953Gbps
- Other Optical Links

Electrical Characteristics (Condition: Ta=TOP)

| Parameter | Symbol | Min. | Typ | Max. | Unit | Notes |
|---------------------------------|--------|------|-----|---------|--------|---------------------|
| CML Inputs(Differential) | Vin | 150 | | 1200 | mV p-p | AC coupled inputs |
| Supply Current | ICC | | | 300 | mA | |
| Input Impedance (Differential) | Zin | 85 | 100 | 115 | ohm | Rin > 100 kohm @ DC |
| Tx_Disable Input Voltage – Low | VIL | 0 | | 0.8 | V | |
| Tx_Disable Input Voltage – High | VIH | 2.0 | | 3.45 | V | |
| Tx_Fault Output Voltage – Low | VOL | 0 | | 0.5 | V | |
| Tx_Fault Output Voltage – High | VOH | 2.0 | | Vcc+0.3 | V | |
| CML Outputs (Differential) | Vout | 350 | | 700 | mV pp | AC coupled outputs |
| Output Impedance (Differential) | Zout | 85 | 100 | 115 | ohms | |
| Rx_LOS Output Voltage- Low | VOL | 0 | | 0.5 | V | |
| Rx_LOS Output Voltage- High | VOH | 2.5 | | | V | |

Optical Characteristics (Condition: Ta=TOP)

| TX | | | | | | |
|----------------------------------|---------|------------------|------|------|---------|----------|
| Parameter | | Symbol | Min | Typ | Max | Unit |
| Data Rate | | | - | 10.3 | - | Gb/s |
| 9µm Core Diameter SMF | | | | 10 | | Km |
| Centre wavelength | | λ_c | 1530 | 1550 | 1565 | nm |
| Output Spectral Width(-20dB) | | $\Delta\lambda$ | - | - | 1 | nm |
| Average Output Power | | P _{out} | -3 | - | +3 | dBm |
| Extinction Ratio | | ER | 6 | - | - | dB |
| Average Power of OFF Transmitter | | | | | -30 | dBm |
| Side Mode Suppression Ratio | | SMSR | 30 | | | dB |
| Input Differential Impedance | | Zin | 90 | 100 | 110 | Ω |
| TX Disable | Disable | | 2.0 | | Vcc+0.3 | V |
| | Enable | | 0 | | 0.8 | |
| TX Fault | Fault | | 2.0 | | Vcc+0.3 | V |
| | Normal | | 0 | | 0.8 | |

| TX Disable Assert Time | | t _{off} | | | 10 | us |
|--------------------------------------|--------------------|------------------|-----|----------------------|----------|----|
| RX | | | | | | |
| Parameter | Symbol | Min | Typ | Max | Unit | |
| Center Wavelength | λ_c | 1530 | | 1565 | nm | |
| Receive Sensitivity | P _{in} | - | - | -14.1 | dBm | |
| Maximum Input Power | P _{MAX} | -1.0 | 0 | - | dBm | |
| Signal Detect Threshold-Assertion: | SD _{HIGH} | - | - | -16 | dBm | |
| Signal Detect Threshold-Deassertion: | SD _{LOW} | -25 | - | - | dBm | |
| Output Differential Impedance | P _{in} | 90 | 100 | 110 | Ω | |
| Receiver Overload | P _{max} | 0.5 | | | dBm | |
| Optical Return Loss | ORL | | | -16 | dB | |
| LOS | High | 2.0 | | V _{cc} +0.3 | V | |
| | Low | 0 | | 0.8 | | |

Absolute Maximum Ratings (T_C=25°C)

| Parameter | Symbol | Min | Max | Unit |
|------------------------------------|-----------------|-----|-----|------|
| Storage Temperature | T _{ST} | -40 | +85 | °C |
| Operating Temperature (Com) | T _{IP} | 0 | +70 | °C |
| Operating Temperature (Industrial) | | -40 | +85 | |
| Input Voltage | T _{CC} | 0 | 5 | V |

Recommend Operation Environment

| Parameter | Symbol | Min | Typ | Max | Unit |
|-----------------------|-----------------|-------|-----|-------|------|
| Supply Voltage | V _{CC} | +3.15 | 3.3 | +3.45 | V |
| Operating Temperature | T _{OP} | 0 | - | +70 | °C |
| Operating Temperature | | -40 | - | +85 | |

Licensing

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U.S. Patent Nos: 7,184,668, 7,079,775, 6,957,021, 7,058,310, 6,952,531, 7,162,160, 7,050,720