

**155 Mb/s, 1550 nm  
Single Mode, 20 – 120 km  
2x5 Dual LC Package**

**Description**

OptixCom's 2x5 SFF transceiver provides a low cost and compact solution for general data communication links. This single mode transceiver is designed with high performance 1550 nm laser. Dual LC connectors are used as the standard interface.

The transceiver modules use industry standard 2x5 pluggable package. These transceivers operate at 155 Mb/s for 20 - 120 km transmission distance with single mode fibers. The products are RoHS compliant.



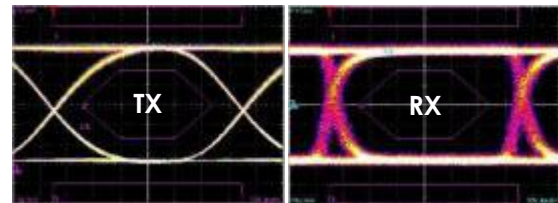
**SFF-155EX-DPXXK**  
**(XX = 20, 100, 120)**



**Key Features**

- 1550 nm single mode, 155 Mb/s
- 20 – 120 km reach, 19 – 35 dB power budget
- Duplex LC connector optical interface
- Industry standard 2x5 pluggable package
- DC coupling LVPECL differential I/O logics
- LVPECL Signal detect to monitor optical signals
- Single 3.3V power supply
- -40–85 °C operating temperatures available
- RoHS compliant

155 Mb/s, 2<sup>23</sup>-1 NRZ Data Eye Pattern



**Applications**

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ Fast Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Industrial Control Link
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

**Ordering Information**

**Part Number:** SFF-155EX-DPXXK

**Description:**

1550 nm 155 Mb/s, single mode, 2x5 SFF Fiber Optics Transceiver, XX km reach, 0-70°C

\* Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFF-155EX-DP20K-T.

**Operating Conditions**

| Parameter           | Min. | Typical | Max. | Units |
|---------------------|------|---------|------|-------|
| Operate Temperature | 0    | 25      | 70   | °C    |
| - T Transceivers    | -40  | 25      | 85   | °C    |
| Data Rate           | ---  | 155     | 200  | Mb/s  |
| Supply Voltage      | 3.1  | 3.3     | 3.5  | V     |

### Absolute Maximum Ratings

| Parameter                                | Symbol   | Min. | Max.     | Units |
|--|----------|------|----------|-------|
| Storage Temperature                      | $T_{st}$ | -40  | 85       | °C    |
| Supply Voltage                           | $V_{CC}$ | -0.5 | 4.0      | V     |
| Input Voltage                            | $V_{IN}$ | -0.5 | $V_{CC}$ | V     |
| Operating Current                        | $I_{OP}$ | ---  | 400      | mA    |
| Output Current                           | $I_O$    | ---  | 50       | mA    |
| Soldering Temperature (10 sec. on leads) | $T_{sd}$ | ---  | 260      | °C    |

### General Transmitter Characteristics

| Parameter                                 | Symbol       | Min.           | Typical | Max.           | Units   |
|---|--------------|----------------|---------|----------------|---------|
| Differential Input Voltage <sup>1</sup>   | $\Delta V_i$ | 0.3            | ---     | 1.6            | V       |
| Differential Input Impedance <sup>2</sup> | $Z$          | ---            | 100     | ---            | ohm     |
| Relative Intensity Noise                  | $RIN$        | ---            | ---     | -120           | dB/Hz   |
| Rise/Fall Time (10% - 90%)                | $T_r/T_f$    | ---            | 1       | 2              | ns      |
| Data Input Current - High                 | $I_{IH}$     | ---            | ---     | 350            | $\mu A$ |
| Data Input Current - Low                  | $I_{IL}$     | -350           | ---     | ---            | $\mu A$ |
| Data Input Voltage – High                 | $V_{IH}$     | $V_{CC} - 1.1$ | ---     | $V_{CC} - 0.7$ | V       |
| Data Input Voltage - Low                  | $V_{IL}$     | $V_{CC} - 2.0$ | ---     | $V_{CC} - 1.6$ | V       |

### General Receiver Characteristics

| Parameter                                 | Symbol             | Min.           | Typical | Max.           | Units |
|---|--------------------|----------------|---------|----------------|-------|
| Differential Output Voltage <sup>1</sup>  | $\Delta V_o$       | 0.3            | ---     | 1.6            | V     |
| Differential Input Impedance <sup>2</sup> | $Z$                | ---            | 100     | ---            | Ohm   |
| Optical Return Loss                       | $OL$               | 14             | ---     | ---            | dB    |
| Rise/Fall Time (10% - 90%)                | $T_r/T_f$          | ---            | 1       | 2              | ns    |
| Signal Detect Hysteresis                  | $P_{SD+} - P_{SD}$ | 1              | ---     | ---            | dB    |
| Signal Detect Output - Low                | $V_{SD-}$          | $V_{CC} - 2.0$ | ---     | $V_{CC} - 1.6$ | V     |
| Signal Detect Output - High               | $V_{SD+}$          | $V_{CC} - 1.1$ | ---     | $V_{CC} - 0.7$ | V     |
| Data Output Voltage – Low                 | $V_{OL}$           | $V_{CC} - 2.0$ | ---     | $V_{CC} - 1.6$ | V     |
| Data Output Voltage – High                | $V_{OH}$           | $V_{CC} - 1.1$ | ---     | $V_{CC} - 0.7$ | V     |

Notes:

1. Module is designed for DC LVPECL coupling. See the design guide for proper termination.
2. Single ended will be 50 ohm for each signal line.

### Transmitter Electro-Optical Characteristics

| Parameter                         | Symbol          | Min. | Typical | Max. | Units |
|-----------------------------------|-----------------|------|---------|------|-------|
| Optical Output Power <sup>1</sup> | $P_o$           | -5   | ---     | 0    | dBm   |
| Optical Wavelength                | $\lambda_o$     | 1530 | 1550    | 1570 | nm    |
| Extinction Ratio                  | $ET$            | 10   | ---     | ---  | dB    |
| Spectral Width (-20 dB)           | $\Delta\lambda$ | ---  | ---     | 1    | nm    |

### Receiver Electro-Optical Characteristics

| Parameter                         | Symbol      | Min. | Typical | Max. | Units |
|-----------------------------------|-------------|------|---------|------|-------|
| Operating Wavelength              | $\lambda_c$ | 1260 | ---     | 1610 | nm    |
| Receiver Overload                 | $P_{max}$   | 0    | ---     | ---  | dBm   |
| Receiver Sensitivity <sup>2</sup> | $P_I$       | ---  | ---     | -35  | dBm   |
| Signal Detect– Asserted           | $P_{SD+}$   | ---  | ---     | -35  | dBm   |
| Signal Detect– Deasserted         | $P_{SD-}$   | -45  | ---     | ---  | dBm   |

Notes:

1. Output of coupling optical power into 9/125  $\mu\text{m}$  SMF.
2. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 standard.
4. Maximum supply current for the transceiver from Vcc is 280 mA.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11

