

# 155 Mb/s, 1550 nm Single Mode, 20 – 120 km 1x9 Dual SC Package



## Description

OptixCom's 1x9 DSC 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 SC connectors are used as the standard interface.

The transceiver modules use industry standard 1x9 pluggable package. These transceivers operate at 155 Mb/s for 20 - 120 km transmission distance with single mode fibers. The products are RoHS compliant.



Lead-Free

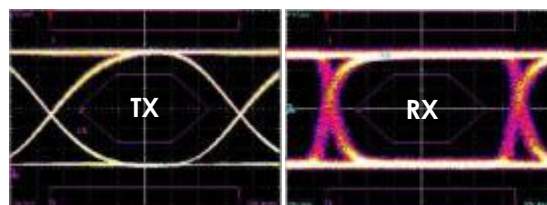
**DSC-155EX-DPXXK**  
(XX = 20, 100, 120)



## Key Features

- 1550 nm single mode, 155 Mb/s
- 20 – 120 km reach, 19 – 35 dB power budget
- Duplex SC connector optical interface
- Industry standard 1x9 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:** DSC-155EX-DPXXK

### Description:

1550 nm 155 Mb/s, single mode, 1x9 DSC Fiber Optics Transceiver, XX km reach, 0-70°C

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

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### 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**

