

**1.25 Gb/s, 2x5 SFF Package, BIDI
TX 1510/RX 1570, TX 1570/RX 1510 nm
Single mode, 80 km Distance**

Description

The bi-directional (BIDI) transceiver product is unique in that only one single fiber (single mode or multimode) is required to transmit and receive signals simultaneously. That means the total bandwidth capacity of an existing cable infrastructure can be doubled instantly. The typical design of a BIDI transceiver uses a 1510 nm LD to transmit and 1570 nm PD to receive, and vice versa for the matching one (1510 nm to receive and 1570 nm to transmit) at the other end to make a complete link.

OptixCom's BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 45 dB of isolation. The products use industry standard 2x5 pluggable package. These transceivers operate at 1.25 Gb/s for 80 km transmission distance with single mode fibers. The products are RoHS compliant.

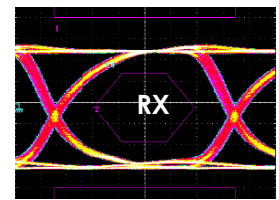
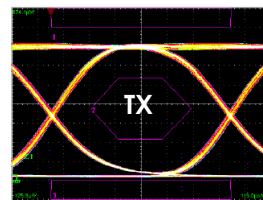


Lead-Free

**BD5-1250T1R7-AT80K
BD5-1250T7R1-AT80K**



1.25 Gb/s, 2⁷-1 NRZ Data Eye Pattern



Key Features

- Single mode, 1.25 G/s data rate
- TX 1510/RX 1570 and TX 1570/RX1510 matching pair
- 80 km reach and single 3.3 V power supply
- 24 dB power budget
- Industry standard 2x5 pluggable package
- Single SC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL Signal detect to monitor optical signals
- RoHS compliant

Applications

- ✓ FTTH, FTTX, Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Media converter, bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

Ordering Information

Part Number: BD5-1250T1R7-AT80K

Description:

1.25 Gb/s single mode, 2x5 BIDI Transceiver, TX 1510 nm and RX 1570 nm, 80 km reach, 0 – 70 °C.

Part Number: BD5-1250T7R1-AT80K

Description:

1.25 Gb/s single mode, 2x5 BIDI Transceiver, TX 1570 nm and RX 1510 nm, 80 km reach, 0 – 70 °C.

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	1.25	1.3	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	200	300	mA

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 (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage ¹	ΔV_i	0.3	---	2.0	V
Differential Input Impedance ²	Z	---	100	---	ohm
Relative Intensity Noise	RIN	---	---	-120	dB/Hz
Rise/Fall Time (20% - 80%)	T_r/T_f	---	---	260	ps
Data Input Current - High	I_{IH}	---	---	350	μA
Data Input Current - Low	I_{IL}	-350	---	---	μA
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage ¹	ΔV_o	1.0	---	1.8	V
Differential Input Impedance ²	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% - 80%)	T_r/T_f	---	---	350	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Crosstalk		---	---	-45	dB
Signal Detect Output - High	V_{SD+}	2.4	---	V_{cc}	V
Signal Detect Output - Low	V_{SD-}	0	---	0.5	V

Notes:

1. Module is designed for AC 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 ¹	P_o	-2	---	+3	dBm
Optical Wavelength (BD5-1250T1R7-AT80K)	λ_o	1500	1510	1520	nm
Optical Wavelength (BD5-1250T7R1-AT80K)	λ_o	1560	1570	1580	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (-20dB)	$\Delta\lambda$	---	---	1	nm

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Wavelength (BD5-1250T1R7-AT80K)	λ_c	1560	1570	1580	nm
Optical Wavelength (BD5-1250T7R1-AT80K)	λ_c	1510	1520	1530	nm
Receiver Overload	P_{max}	-1	---	---	dBm
Receiver Sensitivity ²	P_I	---	---	-26	dBm
Signal Detect– Asserted	P_{SD+}	---	---	-26	dBm
Signal Detect– Deasserted	P_{SD-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μ m SMF.
2. Test at 1.25 Gb/s, 2⁷ – 1 PRBS data pattern, and > 1x10⁻¹² of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with IEEE 802.3z standard.
4. Maximum supply current for the transceiver from Vcc is 300 mA.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

