Instantly Double Your Bandwidth Capacity of Fiber Optics Networks!

Features

- One single fiber to transmit and receive simultaneously
- Single mode and multimode applications
- 1310/1550 nm, 1310/1490, and 1490/1550 nm pair
- Up to 80 km for 1.25 and 2.5 Gb/s, and 120 km for 155 Mb/s
- Single LC connector, Z-axis hot pluggable package
- AC coupling LVPECL differential I/Os, TTL RX_LOS signal detect

Applications

- ✓ FTTH, FTTX, ATM/SONET, SDH, Ethernet
- ✓ High speed I/O bus extension, systems interconnects
- ✓ Video over fiber links, media converters
- ✓ Data Communication for SAN and LAN
- ✓ Routers and switches, computer cluster cross-connect

Only one single fiber is needed for Bi-Directional data communication!!

Products Selection Guide

Part Number *	TX Wavelength	Data Rate	Power Budget	Distance**	Temp. Range
155 Mb/s & 1.25 Gb/s Multimode Applications, 500 m – 2 km					
BD7-155T3R5-ATM2K	1310 nm	155 Mb/s	18 dB	2 km	0 – 70/-40 – 85°C
BD7-155T5R3-ATM2K	1550 nm	155 Mb/s	18 dB	2 km	0 – 70/-40 – 85°C
BD7-1250T3R5-ATM500M	1310 nm	1.25 Gb/s	10 dB	500 m	0 – 70°C
BD7-1250T5R3-ATM500M	1550 nm	1.25 Gb/s	10 dB	500 m	0 – 70°C
155 Mb/s Single Mode Applications, 10 – 120 km					
BD7-155T3R5-AT10K	1310 nm	155 Mb/s	14 dB	10 km	0 – 70/-40 – 85°C
BD7-155T5R3-AT10K	1550 nm	155 Mb/s	14 dB	10 km	0 – 70/-40 – 85°C
BD7-155T3R5-AT20K	1310 nm	155 Mb/s	18 dB	20 km	0 – 70/-40 – 85°C
BD7-155T5R3-AT20K	1550 nm	155 Mb/s	18 dB	20 km	0 – 70/-40 – 85°C
BD7-155T3R5-AT40K	1310 nm	155 Mb/s	27 dB	40 km	0 – 70/-40 – 85°C
BD7-155T5R3-AT40K	1550 nm	155 Mb/s	27 dB	40 km	0 – 70/-40 – 85°C
BD7-155T4R5-AT60K	1490 nm	155 Mb/s	25 dB	60 km	0 – 70/-40 – 85°C
BD7-155T5R4-AT60K	1550 nm	155 Mb/s	25 dB	60 km	0 – 70/-40 – 85°C

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Email: Support@OptixCom.com

Products Selection Guide (Cont'd)					
Part Number *	**TX Wavelength**	**Data Rate**	**Power Budget**	**Distance****	**Temp. Range**
155 Mb/s Single Mode Applications, 15 – 120 km (Cont'd)					
BD7-155T4R5-AT80K	1490 nm	155 Mb/s	27 dB	80 km	0 – 70/-40 – 85°C
BD7-155T5R4-AT80K	1550 nm	155 Mb/s	27 dB	80 km	0 – 70/-40 – 85°C
BD7-155T4R5-AT100K	1490 nm	155 Mb/s	30 dB	100 km	0 – 70°C
BD7-155T5R4-AT100K	1550 nm	155 Mb/s	30 dB	100 km	0 – 70°C
BD7-155T4R5-AT120K	1490 nm	155 Mb/s	32 dB	120 km	0 – 70°C
BD7-155T5R4-AT120K	1550 nm	155 Mb/s	32 dB	120 km	0 – 70°C
1.25 Gb/s Single Mode Applications, 2 – 120 km					
BD7-1250T3R5-AT2K	1310 nm	1.25 Gb/s	12 dB	2 km	0 – 70/-40 – 85°C
BD7-1250T5R3-AT2K	1550 nm	1.25 Gb/s	12 dB	2 km	0 – 70/-40 – 85°C
BD7-1250T3R5-AT10K	1310 nm	1.25 Gb/s	12 dB	10 km	0 – 70/-40 – 85°C
BD7-1250T5R3-AT10K	1550 nm	1.25 Gb/s	12 dB	10 km	0 – 70/-40 – 85°C
BD7-1250T3R5-AT20K	1310 nm	1.25 Gb/s	16 dB	20 km	0 – 70/-40 – 85°C
BD7-1250T5R3-AT20K	1550 nm	1.25 Gb/s	16 dB	20 km	0 – 70/-40 – 85°C
BD7-1250T3R5-AT40K	1310 nm	1.25 Gb/s	20 dB	40 km	0 – 70/-40 – 85°C
BD7-1250T5R3-AT40K	1550 nm	1.25 Gb/s	20 dB	40 km	0 – 70/-40 – 85°C
BD7-1250T4R5-AT60K	1490 nm	1.25 Gb/s	20 dB	60 km	0 – 70°C
BD7-1250T5R4-AT60K	1550 nm	1.25 Gb/s	20 dB	60 km	0 – 70°C
BD7-1250T4R5-AT80K	1490 nm	1.25 Gb/s	24 dB	80 km	0 – 70°C
BD7-1250T5R4-AT80K	1550 nm	1.25 Gb/s	24 dB	80 km	0 – 70°C
BD7-1250T4R5-AT100K	1490 nm	1.25 Gb/s	27 dB	100 km	0 – 70°C
BD7-1250T5R4-AT100K	1550 nm	1.25 Gb/s	27 dB	100 km	0 – 70°C
BD7-1250T4R5-AT120K	1490 nm	1.25 Gb/s	30 dB	120 km	0 – 70°C
BD7-1250T5R4-AT120K	1550 nm	1.25 Gb/s	30 dB	120 km	0 – 70°C

*: Add "-T" in the Part Number for products with extended temperature range -40–85 °C. For example, BD7-155T3R5-AT15K-T.

**: The indicated distance is for reference only, not guaranteed specifications. The actual transmission distance depends on system configuration and power budget. For single mode fibers, the typical loss is 0.25 dB/km @ 1550 nm and 0.35 dB/km @ 1310 nm.

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Products Selection Guide (Cont'd)					
Part Number *	**TX Wavelength**	**Data Rate**	**Power Budget**	**Distance****	**Temp. Range**
2.5 Gb/s Single Mode Applications, 20 – 80 km					
BD7-2500T3R5-AT20K	1310 nm	2.5 Gb/s	13 dB	20 km	0 – 70/-40 – 85°C
BD7-2500T5R3-AT20K	1550 nm	2.5 Gb/s	13 dB	20 km	0 – 70/-40 – 85°C
BD7-2500T3R5-AT40K	1310 nm	2.5 Gb/s	16 dB	40 km	0 – 70/-40 – 85°C
BD7-2500T5R3-AT40K	1550 nm	2.5 Gb/s	16 dB	40 km	0 – 70/-40 – 85°C
BD7-2500T4R5-AT60K	1490 nm	2.5 Gb/s	20 dB	60 km	0 – 70°C
BD7-2500T5R4-AT60K	1550 nm	2.5 Gb/s	20 dB	60 km	0 – 70°C
BD7-2500T4R5-AT80K	1490 nm	2.5 Gb/s	24 dB	80 km	0 – 70°C
BD7-2500T5R4-AT80K	1550 nm	2.5 Gb/s	24 dB	80 km	0 – 70°C

*: Add "-T" in the Part Number for products with extended temperature range -40–85 °C. For example, BD7-155T3R5-AT15K-T.

**: The indicated distance is for reference only, not guaranteed specifications. The actual transmission distance depends on system configuration and power budget. For single mode fibers, the typical loss is 0.25 dB/km @ 1550 nm and 0.35 dB/km @ 1310 nm.

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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 1310 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1310 nm to receive and 1550 nm to transmit) at the other end to make a complete link.

OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 155 Mb/s for 2 km transmission distance with multimode fibers. The products are RoHS compliant.

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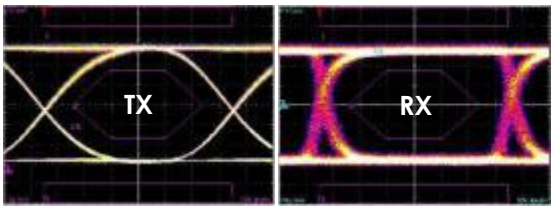
BD7-155T3R5-ATM2K
BD7-155T5R3-ATM2K

155 Mb/s, 2^{23}-1 NRZ Data Eye pattern



Key Features

- Multimode, 155 M/s data rate
- TX1310/RX1550 and TX1550/RX1310 nm wavelength
- 2 km reach and single 3.3 V power supply
- 18 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- -40–85 °C extended temperatures available
- RoHS compliant

Ordering Information

Part Number: BD7-155T3R5-ATM2K
155 Mb/s, Multimode, SFP BIDI Transceiver, TX 1310 nm and RX 1550 nm, 2 km reach, 0 – 70 °C.

Part Number: BD7-155T5R3-ATM2K
155 Mb/s, Multimode, SFP BIDI Transceiver, TX 1550 nm and RX 1310 nm, 2km reach, 0 – 70 °C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., BD7-155T3R5-ATM2K-T.

Applications

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ High speed I/O for file server
- ✓ Media converter, bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

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	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	300	mA

Transmitter Electro-Optical Characteristics (FP Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	2.0	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (10% - 90%)	*Tr/Tf*	---	1	2	ns
Optical Output Power [3]	*Po*	-10	---	0	dBm
Optical Wavelength (BD7-155T3R5-ATM2K)	*λo*	1260	1310	1360	nm
Optical Wavelength (BD7-155T5R3-ATM2K)	*λo*	1480	1550	1580	nm
Extinction Ratio	*ET*	8.2	---	---	dB
Spectral Width (rms)	*Δλ*	---	---	7	nm
TX Disable Voltage – High	*VDH*	2.4	---	Vcc	V
TX Disable Voltage - Low	*VDL*	0	---	0.5	V
TX Fault Output - High	*VFH*	2.4	---	Vcc	V
TX Fault Output - Low	*VFL*	0	---	0.5	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.
3. Output of coupling optical power into 50/125 or 62.5/125 µm MMF.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.5	---	1.2	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Operating Wavelength (BD7-155T3R5-ATM2K)	λ_C	1480	---	1600	nm
Operating Wavelength (BD7-155T5R3-ATM2K)	λ_C	1260	---	1360	nm
Receiver Overload	P_{max}	0	---	---	dBm
Receiver Sensitivity [3]	P_I	---	---	-28	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-28	dBm
RX Signal Loss – Deasserted	P_{RL-}	-45	---	---	dBm
Rise/Fall Time (10% - 90%)	T_r/T_f	---	1	2	ns
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.4	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.5	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.
3. Test at 155 Mb/s, $2^{23} - 1$ PRBS data pattern, and > $1x10^{-10}$ of Bit-Error-Rate (BER).
4. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 standard.
5. Maximum supply current for the transceiver from Vcc is 200 mA.

Class 1 Laser Product
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Description

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OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 1.25 Gb/s for 500m transmission distance with multimode fibers. The products are RoHS compliant.

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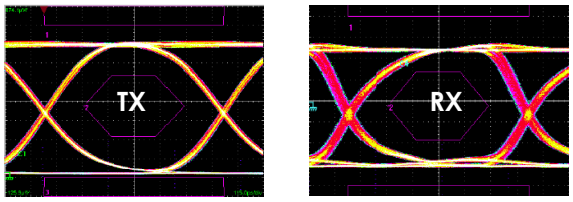
BD7-1250T3R5-ATM500M
BD7-1250T5R3-ATM500M

Key Features

- Multimode, 1.25 G/s data rate
- TX1310/RX1550 and TX1550/RX1310 nm wavelength
- 500 m reach and single 3.3 V power supply
- 10 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- RoHS compliant

1.25 Gb/s, 2^7-1 NRZ Data Eye pattern



Ordering Information

Part Number: BD7-1250T3R5-ATM500M
Description:
1.25 Gb/s, Multimode, SFP BIDI Transceiver, TX 1310 nm and RX 1550 nm, 500 m reach, 0 – 70 °C.

Part Number: BD7-1250T5R3-ATM500M
Description:
1.25 Gb/s, Multimode, SFP BIDI Transceiver, TX 1550 nm and RX 1310 nm, 500 m reach, 0 – 70 °C.

Applications

- ✓ FTTH, FTTX, Gigabit Ethernet, SONET, ATM
- ✓ 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

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

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Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

General Transmitter Characteristics (FP Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	2.0	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% -80%)	*Tr/Tf*	---	---	260	ps
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB
Relative Intensity Noise	*RIN*	---	---	-120	dB
Total Jitter	*Tj*	---	---	227	ps
TX Disable Power	*PAT*			-45	dBm
TX Disable Voltage – High	*VDH*	2.4	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.5	V
TX Fault Output - High	*VFH*	2.4	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.5	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.

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General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.5	---	1.2	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% -80%)	Tr/Tf	---	---	350	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.4	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.5	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.

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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-8	---	0	dBm
Optical Wavelength (BD7-1250T3R5-ATM500M)	λ_O	1260	1310	1360	nm
Optical Wavelength (BD7-1250T5R3-ATM500M)	λ_O	1480	1550	1580	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	4	nm

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength (BD7-1250T3R5-ATM500M)	λ_C	1500	---	1600	nm
Operating Wavelength (BD7-1250T5R3-ATM500M)	λ_C	1260	---	1360	nm
Receiver Overload	P_{max}	0	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-18	dBm
Signal Detect– Asserted	P_{SD+}	---	---	-18	dBm
Signal Detect– Deasserted	P_{SD-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 50/125 or 62.5/125 μm MMF.
2. Test at 1.25 Gb/s, $2^7 - 1$ 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

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http://www.OptixCom.com
http://www.OpticalTransceiver.com

155 Mb/s, SFP LC Package, BIDI
TX1310/RX1550, TX1550/RX1310 nm
Single mode, 10 – 40 km Distance

OptixCom Connect with Light

SFP Bi-Directional (BiDi) Transceivers

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 1310 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1310 nm to receive and 1550 nm to transmit) at the other end to make a complete link.

OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 155 Mb/s for 10 - 40 km transmission distance with single mode fibers. The products are RoHS compliant.

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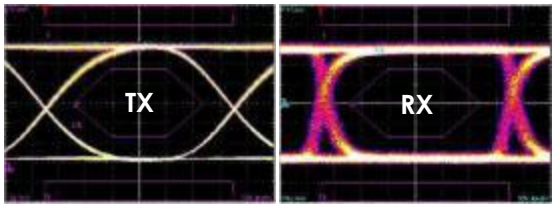
BD7-155T3R5-AT*XX*K
BD7-155T5R3-AT*XX*K
(*XX* = 10, 20, 40)

155 Mb/s, 2^{23}-1 NRZ Data Eye pattern



Key Features

- Single mode, 155 M/s data rate
- TX1310/RX1550 and TX1550/RX1310 nm wavelength
- 10 - 40 km reach and single 3.3 V power supply
- 14 – 27 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- -40–85 °C extended temperatures available
- RoHS compliant

Applications

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ High speed I/O for file server
- ✓ Media converter, bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

Ordering Information

Part Number: BD7-155T3R5-AT***XX***K

155 Mb/s, Single mode, SFP BIDI Transceiver, TX 1310 nm and RX 1550 nm, ***XX*** km reach, 0 – 70 °C.

Part Number: BD7-155T5R3-AT***XX***K

155 Mb/s, Single mode, SFP BIDI Transceiver, TX 1550 nm and RX 1310 nm, ***XX*** km reach, 0 – 70 °C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., BD7-155T3R5-AT10K-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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http://www.OptixCom.com
http://www.OpticalTransceiver.com

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

General Transmitter Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% - 80%)	*Tr/Tf*	---	---	1.3	ns
TX Disable Voltage – High	*VDH*	2.0	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.8	V
TX Fault Output - High	*VFH*	2.0	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.8	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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Lead-Free

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17901 Von Karman Avenue, Suite 600,
Irvine, CA 92614, USA
Email: Support@OptixCom.com

http://www.OptixCom.com
http://www.OpticalTransceiver.com

General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% - 80%)	Tr/Tf	---	---	1.3	ns
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	4	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.0	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.

Class 1 Laser Product
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Transmitter Electro-Optical Characteristics (FP Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-16	---	-8	dBm
Optical Wavelength (BD7-155T3R5-AT10K)	λ_O	1260	1310	1360	nm
Optical Wavelength (BD7-155T5R3-AT10K)	λ_O	1480	1550	1580	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	4	nm

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength (BD7-155T3R5-AT10K)	λ_C	1480	---	1600	nm
Operating Wavelength (BD7-155T5R3-AT10K)	λ_C	1260	---	1360	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-30	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-30	dBm
RX Signal Loss – Deasserted	P_{RL-}	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 155 Mb/s, 2^{23} – 1 PRBS data pattern, and > $1x10^{-10}$ 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 200 mA.

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Transmitter Electro-Optical Characteristics (FP Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-14	---	-8	dBm
Optical Wavelength (BD7-155T3R5-AT20K)	λ_O	1260	1310	1360	nm
Optical Wavelength (BD7-155T5R3-AT20K)	λ_O	1480	1550	1580	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	4	nm

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength (BD7-155T3R5-AT25K)	λ_C	1480	---	1600	nm
Operating Wavelength (BD7-155T5R3-AT25K)	λ_C	1260	---	1360	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-32	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-32	dBm
RX Signal Loss – Deasserted	P_{RL-}	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 155 Mb/s, 2^{23} – 1 PRBS data pattern, and > $1x10^{-10}$ 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 220 mA.

Class 1 Laser Product
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Transmitter Electro-Optical Characteristics (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-5	---	0	dBm
Optical Wavelength (BD7-155T3R5-AT40K)	λ_O	1280	1310	1355	nm
Optical Wavelength (BD7-155T5R3-AT40K)	λ_O	1530	1550	1570	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	4	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength (BD7-155T3R5-AT40K)	λ_C	1480	---	1600	nm
Operating Wavelength (BD7-155T5R3-AT40K)	λ_C	1260	---	1360	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-32	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-32	dBm
RX Signal Loss – Deasserted	P_{RL-}	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 155 Mb/s, 2^{23} – 1 PRBS data pattern, and > $1x10^{-10}$ 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 250 mA.

Class 1 Laser Product
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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 1490 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1550 nm to receive and 1490 nm to transmit) at the other end to make a complete link.

OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 155 Mb/s for 60 - 80 km transmission distance with single mode fibers. The products are RoHS compliant.

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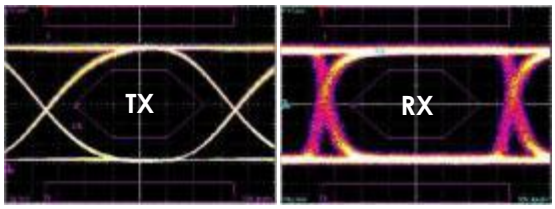
BD7-155T4R5-AT*XX*K
BD7-155T5R4-AT*XX*K
(*XX* = 60, 80)

155 Mb/s, 2^{23}-1 NRZ Data Eye Pattern



Key Features

- Single mode, 155 M/s data rate
- TX1490/RX1550 and TX1550/RX1490 nm wavelength
- 60 - 80 km reach and single 3.3 V power supply
- 25 – 27 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- RoHS compliant

Applications

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ High speed I/O for file server
- ✓ Media converter, bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

Ordering Information

Part Number: BD7-155T4R5-AT***XX***K
Description:
155 Mb/s, Single mode, SFP BIDI Transceiver, TX 1490 nm and RX 1550 nm, ***XX*** km reach, 0 – 70 °C.

Part Number: BD7-155T5R4-AT***XX***K
Description:
155 Mb/s, Single mode, SFP BIDI Transceiver, TX 1550 nm and RX 1490 nm, ***XX*** km reach, 0 – 70 °C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., BD7-155T4R5-AT80K-T.

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	155	200	Mb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	200	300	mA

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Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

General Transmitter Characteristics (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% - 80%)	*Tr/Tf*	---	---	1.3	ns
TX Disable Voltage – High	*VDH*	2.0	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.8	V
TX Fault Output - High	*VFH*	2.0	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.8	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% - 80%)	Tr/Tf	---	---	1.3	ns
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	4	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.0	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.

Class 1 Laser Product
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Transmitter Electro-Optical Characteristics (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-5	---	0	dBm
Optical Wavelength (BD7-155T4R5-AT60K)	λ_O	1470	1490	1510	nm
Optical Wavelength (BD7-155T5R4-AT60K)	λ_O	1530	1550	1570	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength (BD7-155T4R5-AT60K)	λ_C	1530	---	1570	nm
Operating Wavelength (BD7-155T5R4-AT60K)	λ_C	1470	---	1510	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-30	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-30	dBm
RX Signal Loss – Deasserted	P_{RL-}	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 155 Mb/s, 2^{23} – 1 PRBS data pattern, and > $1x10^{-10}$ 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 300 mA.

Class 1 Laser Product
Complies with
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Transmitter Electro-Optical Characteristics (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-5	---	0	dBm
Optical Wavelength (BD7-155T4R5-AT80K)	λ_O	1470	1490	1510	nm
Optical Wavelength (BD7-155T5R4-AT80K)	λ_O	1530	1550	1570	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength (BD7-155T4R5-AT80K)	λ_C	1530	---	1570	nm
Operating Wavelength (BD7-155T5R4-AT80K)	λ_C	1470	---	1510	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-32	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-32	dBm
RX Signal Loss – Deasserted	P_{RL-}	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 155 Mb/s, 2^{23} – 1 PRBS data pattern, and > $1x10^{-10}$ 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 300 mA.

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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 1490 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1550 nm to receive and 1490 nm to transmit) at the other end to make a complete link.

OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 155 Mb/s for 100 - 120 km transmission distance with single mode fibers. The products are RoHS compliant.

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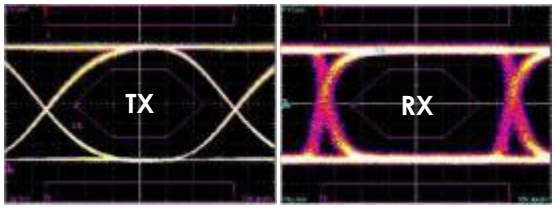
BD7-155T4R5-AT*XXX*K
BD7-155T5R4-AT*XXX*K
(*XXX* = 100, 120)

155 Mb/s, 2^{23}-1 NRZ Data Eye Pattern



Key Features

- Single mode, 155 M/s data rate
- TX1490/RX1550 and TX1550/RX1490 nm wavelength
- 100 - 120 km reach and single 3.3 V power supply
- 30 – 32 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- RoHS compliant

Applications

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ High speed I/O for file server
- ✓ Media converter, bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

Ordering Information

Part Number: BD7-155T4R5-AT***XXX***K
Description:
155 Mb/s, Single mode, SFP BIDI Transceiver, TX 1490 nm and RX 1550 nm, ***XXX*** km reach, 0 – 70 °C.

Part Number: BD7-155T5R4-AT***XXX***K
Description:
155 Mb/s, Single mode, SFP BIDI Transceiver, TX 1550 nm and RX 1490 nm, ***XXX*** km reach, 0 – 70 °C.

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	155	200	Mb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	200	300	mA

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Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

General Transmitter Characteristics (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% - 80%)	*Tr/Tf*	---	---	1.3	ns
TX Disable Voltage – High	*VDH*	2.0	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.8	V
TX Fault Output - High	*VFH*	2.0	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.8	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% - 80%)	Tr/Tf	---	---	1.3	ns
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	4	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.0	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.

Class 1 Laser Product
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Transmitter Electro-Optical Characteristics (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	0	---	+5	dBm
Optical Wavelength (BD7-155T4R5-AT100K)	λ_O	1470	1490	1510	nm
Optical Wavelength (BD7-155T5R4-AT100K)	λ_O	1530	1550	1570	nm
Extinction Ratio	*ET*	9	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength (BD7-155T4R5-AT100K)	λ_C	1530	---	1570	nm
Operating Wavelength (BD7-155T5R4-AT100K)	λ_C	1470	---	1510	nm
Receiver Overload	*Pmax*	-3	---	---	dBm
Receiver Sensitivity [2]	*PI*	---	---	-30	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-30	dBm
RX Signal Loss – Deasserted	P_{RL-}	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 155 Mb/s, 2^{23} – 1 PRBS data pattern, and > $1x10^{-10}$ 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 300 mA.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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Transmitter Electro-Optical Characteristics (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	0	---	+5	dBm
Optical Wavelength (BD7-155T4R5-AT120K)	λ_O	1470	1490	1510	nm
Optical Wavelength (BD7-155T5R4-AT120K)	λ_O	1530	1550	1570	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength (BD7-155T4R5-AT120K)	λ_C	1530	---	1570	nm
Operating Wavelength (BD7-155T5R4-AT120K)	λ_C	1470	---	1510	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-32	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-32	dBm
RX Signal Loss – Deasserted	P_{RL-}	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 155 Mb/s, 2^{23} – 1 PRBS data pattern, and > $1x10^{-10}$ 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 300 mA.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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Description

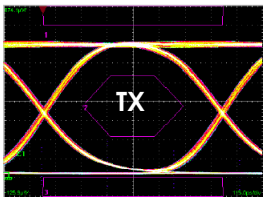
The bi-directional (BIDI) transceiver product is unique in that only one single fiber (single mode or multimode) is required to transmit and receive signals simultaneously. That means the total bandwidth capacity of an existing cable infrastructure can be doubled instantly. The typical design of a BIDI transceiver uses a 1310 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1310 nm to receive and 1550 nm to transmit) at the other end to make a complete link.

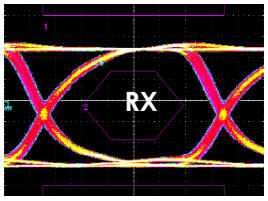
OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 1.25 Gb/s for 2 km transmission distance with single mode fibers. The products are RoHS compliant.

Lead-Free

BD7-1250T3R5-AT2K
BD7-1250T5R3-AT2K

1.25 Gb/s, 2^7-1 NRZ Data Eye pattern





Key Features

- Single mode, 1.25 G/s data rate
- TX1310/RX1550 and TX1550/RX1310 nm wavelength
- 2 km reach with 12 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- -40–85 °C extended temperatures available
- RoHS compliant

Applications

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ High speed I/O for file server
- ✓ Media converter, bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

Ordering Information

Part Number: BD7-1250T3R5-AT2K
1.25 Gb/s single mode, SFP BIDI Transceiver, TX 1310 nm and RX 1550 nm, 2 km reach, 0 – 70 °C.

Part Number: BD7-1250T5R3-AT2K
1.25 Gb/s single mode, SFP BIDI Transceiver, TX 1550 nm and RX 1310 nm, 2 km reach, 0 – 70 °C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., BD7-1250T3R5-AT2K-T.

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Supply Current	---	200	300	mA
Supply Voltage	3.1	3.3	3.5	V

Phone: (949) 679-5712 Fax: (949) 420-2134
17901 Von Karman Avenue, Suite 600,
Irvine, CA 92614, USA
Email: Support@OptixCom.com

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

Transmitter Electro-Optical Characteristics (FP Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Optical Output Power [3]	*Po*	-10	---	-4	dBm
Optical Wavelength	*λo*	1280	1310	1355	nm
Extinction Ratio	*ET*	9	---	---	dB
Spectral Width (rms)	*Δλ*	---	---	4	nm
Rise/Fall Time (20% -80%)	*Tr/Tf*	---	---	260	ps
Total Jitter	*Tj*	---	---	227	ps
TX Disable Power	*POFF*			-45	dBm
TX Disable Voltage – High	*VDH*	2.0	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.8	V
TX Fault Output - High	*VFH*	2.0	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.8	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.
3. Output of coupling optical power into 9/125 µm SMF.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Wavelength	λ_C	1530	1550	1570	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [3]	P_I	---	---	-22	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-23	dBm
RX Signal Loss – Deasserted	P_{RL-}	-35	---	---	dBm
Rise/Fall Time (20% -80%)	T_r/T_f	---	---	350	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.0	---	V_{CC}	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.
3. Test at 1.25 Gb/s, $2^7 - 1$ PRBS data pattern, and > $1x10^{-12}$ of Bit-Error-Rate (BER).
4. Optical eye diagram is compliant with IEEE 802.3z standard.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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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 1310 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1310 nm to receive and 1550 nm to transmit) at the other end to make a complete link.

OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 1.25 Gb/s for 10 - 40 km transmission distance with single mode fibers. The products are RoHS compliant.

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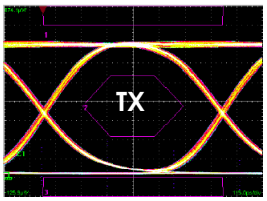
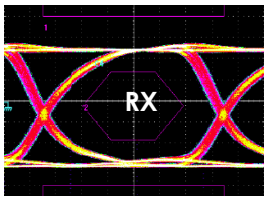
BD7-1250T3R5-AT*XX*K
BD7-1250T5R3-AT*XX*K
(XX = 10, 20, 40)

1.25 Gb/s, 2^7-1 NRZ Data Eye pattern





Key Features

- Single mode, 1.25 G/s data rate
- TX1310/RX1550 and TX1550/RX1310 nm wavelength
- 10 - 40 km reach and single 3.3 V power supply
- 12 – 20 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- -40–85 °C extended temperatures available
- RoHS compliant

Applications

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ High speed I/O for file server
- ✓ Media converter, bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

Ordering Information

Part Number: BD7-1250T3R5-AT***XX***K

1.25 Gb/s single mode, SFP BIDI Transceiver, TX 1310 nm and RX 1550 nm, ***XX*** km reach, 0 – 70 °C.

Part Number: BD7-1250T5R3-AT***XX***K

1.25 Gb/s single mode, SFP BIDI Transceiver, TX 1550 nm and RX 1310 nm, ***XX*** km reach, 0 – 70 °C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., BD7-1250T3R5-AT10K-T.

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Data Rate	---	1.25	1.3	Gb/s
Supply Voltage	3.1	3.3	3.5	V

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Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

General Transmitter Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% -80%)	*Tr/Tf*	---	---	260	ps
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB
Relative Intensity Noise	*RIN*	---	---	-120	dB
Total Jitter	*Tj*	---	---	227	ps
TX Disable Power	*POFF*			-45	dBm
TX Disable Voltage – High	*VDH*	2.0	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.8	V
TX Fault Output - High	*VFH*	2.0	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.8	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% -80%)	Tr/Tf	---	---	350	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	4	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.0	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.

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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-9	---	-3	dBm
Optical Wavelength (BD7-1250T3R5-AT10K)	λ_O	1280	1310	1355	nm
Optical Wavelength (BD7-1250T5R3-AT10K)	λ_O	1530	1550	1570	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (rms) (BD7-1250T3R5-AT10K)	$\Delta\lambda$	---	---	2.5	nm
Spectral Width (-20dB) (BD7-1250T5R3-AT10K)	$\Delta\lambda$	---	---	1	nm

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Wavelength (BD7-1250T3R5-AT10K)	λ_C	1500	---	1600	nm
Optical Wavelength (BD7-1250T5R3-AT10K)	λ_C	1260	---	1360	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-21	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-21	dBm
RX Signal Loss – Deasserted	P_{RL-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 1.25 Gb/s, $2^7 - 1$ 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 250 mA.

Class 1 Laser Product
Complies with
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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-8	---	-3	dBm
Optical Wavelength (BD7-1250T3R5-AT20K)	λ_O	1280	1310	1355	nm
Optical Wavelength (BD7-1250T5R3-AT20K)	λ_O	1530	1550	1570	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (rms) (BD7-1250T3R5-AT20K)	$\Delta\lambda$	---	---	2.5	nm
Spectral Width (-20dB) (BD7-1250T5R3-AT20K)	$\Delta\lambda$	---	---	1	nm

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Wavelength (BD7-1250T3R5-AT20K)	λ_C	1500	---	1600	nm
Optical Wavelength (BD7-1250T5R3-AT20K)	λ_C	1260	---	1360	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-24	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-24	dBm
RX Signal Loss – Deasserted	P_{RL-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 1.25 Gb/s, $2^7 - 1$ 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
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21 CFR 1040.10 and 1040.11

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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-4	---	0	dBm
Optical Wavelength (BD7-1250T3R5-AT40K)	λ_O	1290	1310	1330	nm
Optical Wavelength (BD7-1250T5R3-AT40K)	λ_O	1530	1550	1570	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (-20dB) (BD7-1250T3R5-AT40K)	$\Delta\lambda$	---	---	1	nm
Spectral Width (-20dB) (BD7-1250T5R3-AT40K)	$\Delta\lambda$	---	---	1	nm

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Wavelength (BD7-1250T3R5-AT40K)	λ_C	1480	1550	1580	nm
Optical Wavelength (BD7-1250T5R3-AT40K)	λ_C	1260	1310	1360	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-24	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-24	dBm
RX Signal Loss – Deasserted	P_{RL-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 1.25 Gb/s, $2^7 - 1$ 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
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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 1490 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1490 nm to receive and 1550 nm to transmit) at the other end to make a complete link.

OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 1.25 Gb/s for 60 - 80 km transmission distance with single mode fibers. The products are RoHS compliant.

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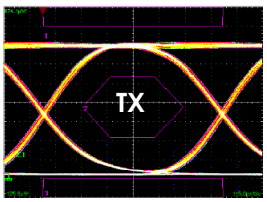
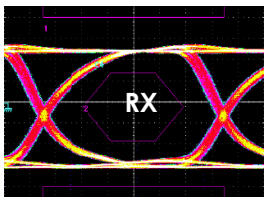
BD7-1250T4R5-AT*XX*K
BD7-1250T5R4-AT*XX*K
(XX = 60, 80)

1.25 Gb/s, 2^7-1 NRZ Data Eye pattern





Key Features

- Single mode, 1.25 G/s data rate
- TX1490/RX1550 and TX1550/RX1490 nm wavelength
- 60 - 80 km reach and single 3.3 V power supply
- 20 – 24 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- RoHS compliant

Ordering Information

Part Number: BD7-1250T4R5-AT***XX***K
1.25 Gb/s single mode, SFP BIDI Transceiver, TX 1490 nm and RX 1550 nm, ***XX*** km reach, 0 – 70 °C.

Part Number: BD7-1250T5R4-AT***XX***K
1.25 Gb/s single mode, SFP BIDI Transceiver, TX 1550 nm and RX 1490 nm, ***XX*** km reach, 0 – 70 °C.

Applications

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ High speed I/O for file server
- ✓ Media converter, bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Data Rate	---	1.25	1.3	Gb/s
Supply Voltage	3.1	3.3	3.5	V

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Email: Support@OptixCom.com

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

General Transmitter Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% -80%)	*Tr/Tf*	---	---	260	ps
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB
Relative Intensity Noise	*RIN*	---	---	-120	dB
Total Jitter	*Tj*	---	---	227	ps
TX Disable Power	*POFF*			-45	dBm
TX Disable Voltage – High	*VDH*	2.0	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.8	V
TX Fault Output - High	*VFH*	2.0	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.8	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.

Class 1 Laser Product
Complies with
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General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% -80%)	Tr/Tf	---	---	350	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.0	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.

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Complies with
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Phone: (949) 679-5712 Fax: (949) 420-2134
17901 Von Karman Avenue, Suite 600,
Irvine, CA 92614, USA
Email: Support@OptixCom.com

Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-2	---	+3	dBm
Optical Wavelength (BD7-1250T3R5-AT60K)	λ_O	1290	1310	1330	nm
Optical Wavelength (BD7-1250T5R3-AT60K)	λ_O	1530	1550	1570	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 (BD7-1250T3R5-AT60K)	λ_C	1480	1550	1580	nm
Optical Wavelength (BD7-1250T5R3-AT60K)	λ_C	1260	1310	1360	nm
Receiver Overload	P_{max}	0	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-22	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-22	dBm
RX Signal Loss – Deasserted	P_{RL-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 1.25 Gb/s, $2^7 - 1$ 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
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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-2	---	+3	dBm
Optical Wavelength (BD7-1250T3R5-AT60K)	λ_O	1290	1310	1330	nm
Optical Wavelength (BD7-1250T5R3-AT60K)	λ_O	1530	1550	1570	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 (BD7-1250T3R5-AT60K)	λ_C	1480	1550	1580	nm
Optical Wavelength (BD7-1250T5R3-AT60K)	λ_C	1260	1310	1360	nm
Receiver Overload	P_{max}	0	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-26	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-26	dBm
RX Signal Loss – Deasserted	P_{RL-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 1.25 Gb/s, $2^7 - 1$ 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.

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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 1490 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1490 nm to receive and 1550 nm to transmit) at the other end to make a complete link.

OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 1.25 Gb/s for 100 - 120 km transmission distance with single mode fibers. The products are RoHS compliant.

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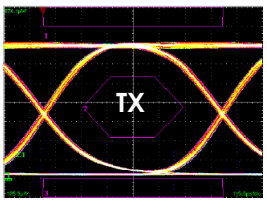
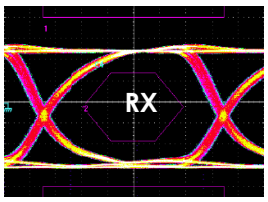
BD7-1250T4R5-AT*XXX*K
BD7-1250T5R4-AT*XXX*K
(*XXX* = 100, 120)

1.25 Gb/s, 2^7-1 NRZ Data Eye pattern





Key Features

- Single mode, 1.25 G/s data rate
- TX1490/RX1550 and TX1550/RX1490 nm wavelength
- 100 - 120 km reach and single 3.3 V power supply
- 27 – 30 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- RoHS compliant

Ordering Information

Part Number: BD7-1250T4R5-AT***XXX***K
1.25 Gb/s single mode, SFP BIDI Transceiver, TX 1490 nm and RX 1550 nm, ***XXX*** km reach, 0 – 70 °C.

Part Number: BD7-1250T5R4-AT***XXX***K
1.25 Gb/s single mode, SFP BIDI Transceiver, TX 1550 nm and RX 1490 nm, ***XXX*** km reach, 0 – 70 °C.

Applications

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ High speed I/O for file server
- ✓ Media converter, bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Data Rate	---	1.25	1.3	Gb/s
Supply Voltage	3.1	3.3	3.5	V

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Email: Support@OptixCom.com

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

General Transmitter Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% -80%)	*Tr/Tf*	---	---	260	ps
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB
Relative Intensity Noise	*RIN*	---	---	-120	dB
Total Jitter	*Tj*	---	---	227	ps
TX Disable Power	*POFF*			-45	dBm
TX Disable Voltage – High	*VDH*	2.0	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.8	V
TX Fault Output - High	*VFH*	2.0	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.8	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% -80%)	Tr/Tf	---	---	350	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.0	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.

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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	0	---	+5	dBm
Optical Wavelength (BD7-1250T3R5-AT100K)	λ_O	1290	1310	1330	nm
Optical Wavelength (BD7-1250T5R3-AT100K)	λ_O	1530	1550	1570	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 (BD7-1250T3R5-AT100K)	λ_C	1480	1550	1580	nm
Optical Wavelength (BD7-1250T5R3-AT100K)	λ_C	1260	1310	1360	nm
Receiver Overload	P_{max}	-9	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-27	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-27	dBm
RX Signal Loss – Deasserted	P_{RL-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 1.25 Gb/s, $2^7 - 1$ 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

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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	0	---	+5	dBm
Optical Wavelength (BD7-1250T3R5-AT120K)	λ_O	1290	1310	1330	nm
Optical Wavelength (BD7-1250T5R3-AT120K)	λ_O	1530	1550	1570	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 (BD7-1250T3R5-AT120K)	λ_C	1480	1550	1580	nm
Optical Wavelength (BD7-1250T5R3-AT120K)	λ_C	1260	1310	1360	nm
Receiver Overload	P_{max}	-9	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-30	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-30	dBm
RX Signal Loss – Deasserted	P_{RL-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 1.25 Gb/s, $2^7 - 1$ 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.

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2.5 Gb/s, SFP LC Package, BIDI TX1310/RX1550, TX1550/RX1310 nm Single mode, 20 – 40 km Distance

OptixCom Connect with Light

SFP Bi-Directional (BiDi) Transceivers

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 1310 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1310 nm to receive and 1550 nm to transmit) at the other end to make a complete link.

OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 2.5 Gb/s for 20 - 40 km transmission distance with single mode fibers. The products are RoHS compliant.

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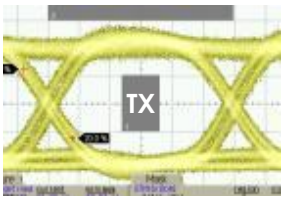
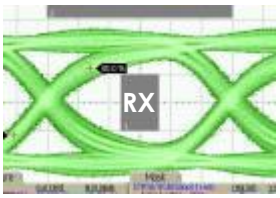
BD7-2500T3R5-AT*XX*K
BD7-2500T5R3-AT*XX*K
(*XX* = 20, 40)

2.5 Gb/s, 2^7-1 NRZ Data Eye Pattern





Key Features

- Single mode, 2.5 G/s data rate
- TX1310/RX1550 and TX1550/RX1310 nm wavelength
- 20 - 40 km reach and single 3.3 V power supply
- 13 - 16 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- RoHS compliant

Applications

- ✓ FTTH, FTTX, SONET OC48, ATM/STM-16
- ✓ 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: BD7-2500T3R5-AT***XX***K
2.5 Gb/s single mode, SFP BIDI Transceiver, TX 1310 nm and RX 1550 nm, ***XX*** km reach, 0 – 70 °C.

Part Number: BD7-2500T5R3-AT***XX***K
2.5 Gb/s single mode, SFP BIDI Transceiver, TX 1550 nm and RX 1310 nm, ***XX*** km reach, 0 – 70 °C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., BD7-2500T3R5-AT20K-T.

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	2.488	---	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	200	300	mA

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Email: Support@OptixCom.com

http://www.OptixCom.com
http://www.OpticalTransceiver.com

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

General Transmitter Characteristics (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% -80%)	*Tr/Tf*	---	---	160	ps
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB
Relative Intensity Noise	*RIN*	---	---	-120	dB
Total Jitter	*Tj*	---	---	0.1	UIp-p
TX Disable Power	*POFF*			-45	dBm
TX Disable Voltage – High	*VDH*	2.0	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.8	V
TX Fault Output - High	*VFH*	2.0	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.8	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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Email: Support@OptixCom.com

General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% -80%)	Tr/Tf	---	---	250	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.0	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.

Class 1 Laser Product
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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-5	---	+0	dBm
Optical Wavelength (BD7-2500T3R5-AT20K)	λ_O	1285	1310	1335	nm
Optical Wavelength (BD7-2500T5R3-AT20K)	λ_O	1530	1550	1570	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 (BD7-2500T3R5-AT20K)	λ_C	1480	1550	1580	nm
Optical Wavelength (BD7-2500T5R3-AT20K)	λ_C	1290	1310	1330	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-18	dBm
Signal Detect– Asserted	P_{SD+}	---	---	-18	dBm
Signal Detect– Deasserted	P_{SD-}	-30	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 2.5 Gb/s, $2^7 - 1$ 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
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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	-2	---	+3	dBm
Optical Wavelength (BD7-2500T3R5-AT40K)	λ_O	1285	1310	1335	nm
Optical Wavelength (BD7-2500T5R3-AT40K)	λ_O	1530	1550	1570	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 (BD7-2500T3R5-AT40K)	λ_C	1480	1550	1580	nm
Optical Wavelength (BD7-2500T5R3-AT40K)	λ_C	1290	1310	1330	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-18	dBm
Signal Detect– Asserted	P_{SD+}	---	---	-18	dBm
Signal Detect– Deasserted	P_{SD-}	-30	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 2.5 Gb/s, $2^7 - 1$ 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.

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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 1490 nm LD to transmit and 1550 nm PD to receive, and vice versa for the matching one (1490 nm to receive and 1550 nm to transmit) at the other end to make a complete link.

OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 2.5 Gb/s for 60 - 80 km transmission distance with single mode fibers. The products are RoHS compliant.

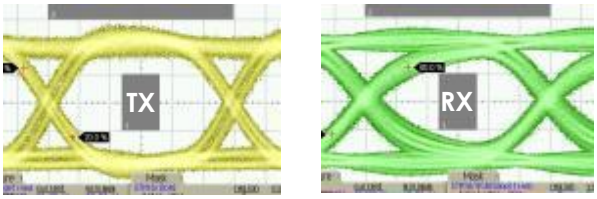
Lead-Free

BD7-2500T4R5-AT*XX*K
BD7-2500T5R4-AT*XX*K
(*XX* = 60, 80)

Key Features

- Single mode, 2.5 G/s data rate
- TX1490/RX1550 and TX1550/RX1490 nm wavelength
- 60 - 80 km reach and single 3.3 V power supply
- 20 - 24 dB power budget
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- Single LC connector optical interface
- AC coupling LVPECL differential I/O logics
- TTL RX_LOS signal detect to monitor optical signals
- RoHS compliant

2.5 Gb/s, 2^7-1 NRZ Data Eye Pattern



Applications

- ✓ FTTH, FTTX, SONET OC48, ATM/STM-16
- ✓ 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: BD7-2500T4R5-AT***XX***K
2.5 Gb/s single mode, SFP BIDI Transceiver, TX 1490 nm and RX 1550 nm, ***XX*** km reach, 0 – 70 °C.

Part Number: BD7-2500T5R4-AT***XX***K
2.5 Gb/s single mode, SFP BIDI Transceiver, TX 1550 nm and RX 1490 nm, ***XX*** km reach, 0 – 70 °C.

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	2.488	---	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	200	300	mA

Phone: (949) 679-5712 Fax: (949) 420-2134
17901 Von Karman Avenue, Suite 600,
Irvine, CA 92614, USA
Email: Support@OptixCom.com

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	*Vcc*	-0.5	4.0	V
Input Voltage	*VIN*	-0.5	Vcc	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

General Transmitter Characteristics (DFB Laser)

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	*ΔVi*	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% -80%)	*Tr/Tf*	---	---	160	ps
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB
Relative Intensity Noise	*RIN*	---	---	-120	dB
Total Jitter	*Tj*	---	---	0.1	UIp-p
TX Disable Power	*POFF*			-45	dBm
TX Disable Voltage – High	*VDH*	2.0	---	*Vcc*	V
TX Disable Voltage - Low	*VDL*	0	---	0.8	V
TX Fault Output - High	*VFH*	2.0	---	*Vcc*	V
TX Fault Output - Low	*VFL*	0	---	0.8	V
TX Disable Assert Time	*Tass*	---	---	10	µs
TX Disable Deassert Time	*Tdisass*	---	---	1.0	ms
Time to Initialize	*Tas*	---	---	300	ms
TX Fault from Fault to Assertion	*Tfault*	---	---	100	µs
TX Disable Time to Start Reset	*Treset*	10	---	---	µs

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.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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17901 Von Karman Avenue, Suite 600,
Irvine, CA 92614, USA
Email: Support@OptixCom.com

General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Differential Input Impedance [2]	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% -80%)	Tr/Tf	---	---	250	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Crosstalk		---	---	-40	dB
RX Signal Loss Output - High	V_{RL+}	2.0	---	Vcc	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
Serial ID Clock Rate	f_C	---	---	100	kHz

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.

Class 1 Laser Product
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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	0	---	+5	dBm
Optical Wavelength (BD7-2500T4R5-AT60K)	λ_O	1470	1490	1510	nm
Optical Wavelength (BD7-2500T5R4-AT60K)	λ_O	1530	1550	1570	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 (BD7-2500T4R5-AT60K)	λ_C	1530	1550	1570	nm
Optical Wavelength (BD7-2500T5R4-AT60K)	λ_C	1470	1490	1510	nm
Receiver Overload	P_{max}	-9	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-20	dBm
Signal Detect– Asserted	P_{SD+}	---	---	-20	dBm
Signal Detect– Deasserted	P_{SD-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 2.5 Gb/s, $2^7 - 1$ 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

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Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	0	---	+5	dBm
Optical Wavelength (BD7-2500T4R5-AT80K)	λ_O	1470	1490	1510	nm
Optical Wavelength (BD7-2500T5R4-AT80K)	λ_O	1530	1550	1570	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 (BD7-2500T4R5-AT80K)	λ_C	1530	1550	1570	nm
Optical Wavelength (BD7-2500T5R4-AT80K)	λ_C	1470	1490	1510	nm
Receiver Overload	P_{max}	-9	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-24	dBm
Signal Detect– Asserted	P_{SD+}	---	---	-24	dBm
Signal Detect– Deasserted	P_{SD-}	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125 μm SMF.
2. Test at 2.5 Gb/s, $2^7 - 1$ PRBS data pattern, and > $1x10^{-12}$ of Bit-Error-Rate (BER).
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