1.25 Gb/s, SFP LC Package, BIDI TX1490/RX1550, TX1550/RX1490 nm Single mode, 100 – 120 km Distance

OptixCom
Connect with Light

SFP Bi-Directional (BiDi) Transceivers

Description

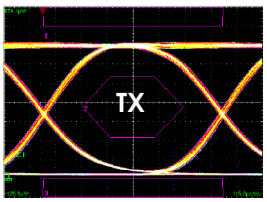
The bi-directional (BIDI) transceiver product is unique in that only one single fiber (single mode or multimode) is required to transmit and receive signals simultaneously. That means the total bandwidth capacity of an existing cable infrastructure can be doubled instantly. The typical design of a BIDI transceiver uses a 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.

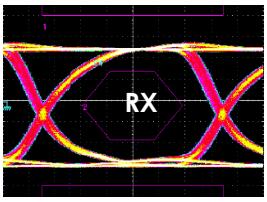
OptixCom's SFP transceivers are compliant with SFP Multi-Source Agreement (MSA). The BIDI transceivers utilize advanced filter optics to separate the two wavelength with more than 40 dB of isolation. These transceivers operate at 1.25 Gb/s for 100 - 120 km transmission distance with single mode fibers.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

Lead-Free

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

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

© 2016 Optix Communications, Inc.
http://www.OptixCom.com
http://www.OpticalTransceiver.com

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	V_{CC}	-0.5	4.0	V
Input Voltage	V_{IN}	-0.5	V_{CC}	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]	ΔV_i	0.4	---	1.8	V
Differential Input Impedance [2]	*Z*	---	100	---	ohm
Rise/Fall Time (20% -80%)	T_r/T_f	---	---	260	ps
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB
Relative Intensity Noise	*RIN*	---	---	-120	dB
Total Jitter	T_j	---	---	227	ps
TX Disable Power	P_{OFF}			-45	dBm
TX Disable Voltage – High	V_{DH}	2.0	---	V_{CC}	V
TX Disable Voltage - Low	V_{DL}	0	---	0.8	V
TX Fault Output - High	V_{FH}	2.0	---	V_{CC}	V
TX Fault Output - Low	V_{FL}	0	---	0.8	V
TX Disable Assert Time	T_{ass}	---	---	10	µs
TX Disable Deassert Time	T_{disass}	---	---	1.0	ms
Time to Initialize	T_{as}	---	---	300	ms
TX Fault from Fault to Assertion	T_{fault}	---	---	100	µs
TX Disable Time to Start Reset	T_{reset}	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

Underwriters Laboratories

TÜVRheinland

Lead-Free

© 2016 Optix Communications, Inc.

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%)	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.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

Underwriters Laboratories

TÜVRheinland

Lead-Free

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

© 2016 Optix Communications, Inc.

Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power [1]	P_O	0	---	+5	dBm
Optical Wavelength (BD7-1250T4R5-AT100K)	λ_O	1470	1490	1510	nm
Optical Wavelength (BD7-1250T5R4-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 (BD7-1250T4R5-AT100K)	λ_C	1530	1550	1570	nm
Optical Wavelength (BD7-1250T5R4-AT100K)	λ_C	1470	1490	1510	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

Underwriters Laboratories

TÜVRheinland

Lead-Free

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

© 2016 Optix Communications, Inc.