2.5 Gb/s, SFP LC, Dual BiDi
TX 1310/RX1490, TX 1490/RX1310 nm
Single Mode, 20 km Distance

OptixCom Connect with Light

Dual BiDi SFP Transceiver (CSFP)

Description

This compact SFP has dual-channel Bi-Directional (BiDi) optics for single mode applications. This compact module increases by 4x instantly the total bandwidth capacity of an existing fiber cable infrastructure. Built upon OptixCom's advanced Bidi technology, this compact design has set a new standard for increasing port density requirement in the networking industry.

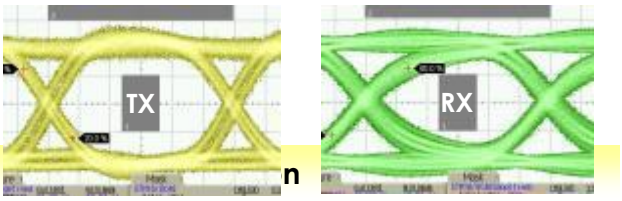
This optical transceiver integrates two BiDi channels transmitting at 1310 nm and receiving at 1490 nm wavelength, and vice versa for the matching one (1310 nm to receive and 1490 nm to transmit) at the other end to make a complete link.

It operates at 2.5 Gb/s with 20 km of transmission distance and > 14 dB power budget. The product is compliant with CSFP MSA Option 2 and SFF-8472. It's RoHS compliant.

Lead-Free

CBD-2500T3R4-AT20K
CBD-2500T4R3-AT20K

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



Key Features

- 2x Bi-Directional channels in one SFP package
- Single Mode, 2.5 Gb/s
- TX1310/RX1490 and TX1490/RX1310 nm wavelength
- > 14 dB power budget, 20 km reach
- Single 3.3 V power supply
- Z-axis hot pluggable
- Compliant with CSFP MSA Option 2
- Dual LC connector optical interface
- AC coupling LVPECL differential I/O logics
- RoHS compliant

Part Number: CBD-2500T3R4-AT20K
Description:
2.5 Gb/s, Single Mode, SFP Dual BIDI Optical Transceiver, TX 1310 nm /RX 1490 nm, 20 km, 0 -70°C.

Part Number: CBD-2050T4R3-AT20K
Description:
2.5 Gb/s, Single Mode, SFP Dual BIDI Optical Transceiver, TX 1490 nm /RX 1310 nm, 20 km, 0 -70°C.

Applications

- ✓ Fiber Channel, Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Data Communication for SAN and LAN
- ✓ Industrial Control Link
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Data Rate	---	2.488	2.5	Gb/s
Supply Voltage	3.13	3.3	3.47	V
Supply Current	---	500	550	mA

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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} + 0.3	V
Output Current	*Io*	---	50	mA
Relative Humidity	*R.H.*	0	85	%

Transmitter Electro-Optical 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
Optical Output Power [3]	P_O	-5	---	0	dBm
Optical Wavelength (CBD-1250T3R4-AT20K)	λ_O	1260	1310	1360	nm
Optical Wavelength (CBD-1250T4R3-AT20K)	λ_O	1470	1490	1510	nm
Rise/Fall Time (20%~80%)	*Tr/Tf*	---	---	0.26	ns
Extinction Ratio	*ET*	9	---	---	dB
TX Disable Power	P_{TD}	---	---	-30	dBm
Spectral Width (20 dB)	$\Delta\lambda$	---	---	1	nm
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	*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. Applied to AC LVPECL I/O 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.

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Impedance	Z	---	100	---	Ohm
Differential Output Voltage [1]	ΔV_O	0.4	---	1.8	V
Optical Wavelength (CBD-1250T3R4-AT20K)	λ_O	1470	1490	1510	nm
Optical Wavelength (CBD-1250T4R3-AT20K)	λ_O	1260	1310	1360	nm
Receiver Overload	P_{max}	0	---	---	dBm
Receiver Sensitivity [2]	P_I	---	---	-19	dBm
Optical Return Loss	OL	12	---	---	dB
RX Signal Loss – Deasserted	P_{RL-}	-30	---	---	dBm
RX Signal Loss – Asserted	P_{RL+}	---	---	-19	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1	---	4	dB
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs
RX Signal Loss Output - High	V_{RL+}	2.0	---	V_{CC}	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V

Notes:

1. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Test at 1.25 Gb/s, $2^7 - 1$ PRBS data pattern, and > $1x10^{-12}$ of Bit-Error-Rate (BER)

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

Underwriters Laboratories

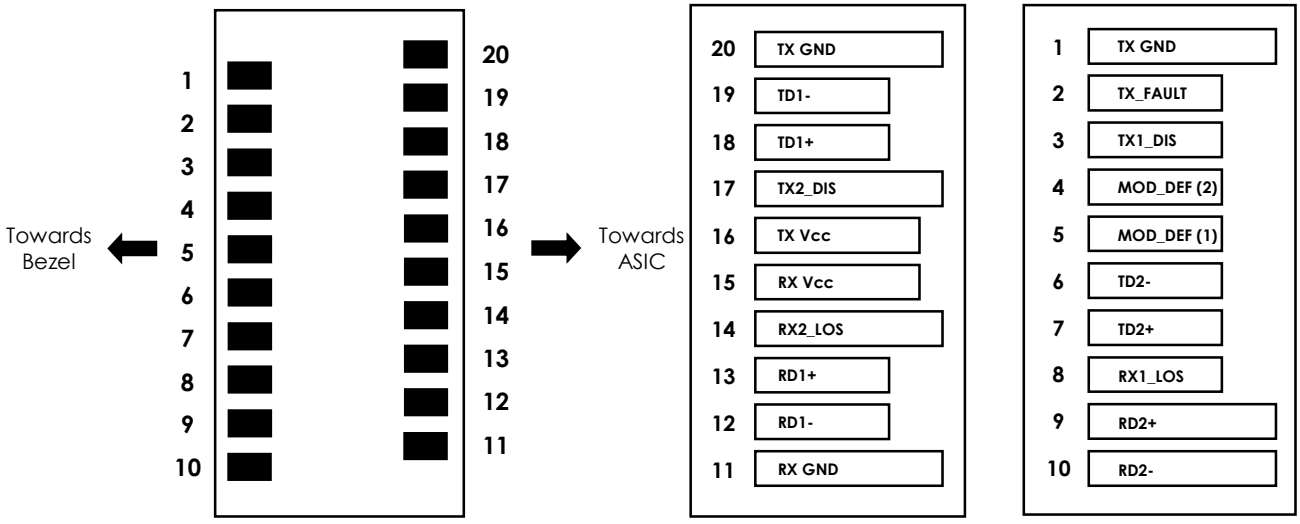
TÜVRheinland

Lead-Free

PIN Assignment and Description

The SFP transceiver contains a printed circuit board that mates with the SFP electrical connector. The pads are designed for a sequenced mating:

- First mate ground contacts
- Second mate power contacts
- Third mate signal contacts



Host Board Connector Pad Layout

Dual BiDi SFP Transceiver Pad Layout