

OTB1250-xx803xxR

1x9 Bidirectional Optical Transceiver, 1.25Gb/s, Single Mode, 80km Reach

Features

- Single fiber Bi-Directional transceiver
- Single SC/ST/FC connector
- Super high isolation between two wavelengths
- Differential LVPECL inputs & outputs
- LVPECL signal detection output
- Distance up to 80km
- Industry standard 1×9 Package
- Single 3.3V power supply
- DFB laser and PIN receiver
- Operating Temperature: Standard 0~70°C Extended -10~85°C Industrial -40~85°C



Applications

- Switch to Switch Interface
- Switched Backbone Applications
- WDM fiber media converter (gigabit)
- 1000BASE-BX80 Gigabit Ethernet
- 1x Fibre Channel

Description

The OTB1250-xx803xxR series are high performance and cost-effective single mode Bi-Directional (BiDi) 1×9 optical transceiver. They are designed for long reach serial optical communication applications that require data rates of 1.25Gbps, such as Gigabit Ethernet and 1x Fibre Channel applications.

This series transceivers provide 80km transmission distance over single strand of single-mode fiber. They adopt Wavelength-Division Multiplexing (WDM) technology, enabling Bi-Directional communication over a single strand fiber, essentially doubling the capacity of your existing fiber cabling infrastructure without having to install new fiber cables, which will save half cabling cost for you.

Each BiDi 1×9 transceiver module consists of a transmitter section and a receiver section. The transmitter incorporates a highly reliable 1550nm(or 1310nm) DFB Laser and a driver circuit which converts Pseudo Emitter Coupled Logic(PECL) data to light signal, the receiver incorporates an efficient 1310nm(or 1550nm) PIN photodiode converting the light signal into an electrical current which is amplified and regenerated into PECL compatible data.

The OTB1250-xx803xxR series features a simplex SC or ST or FC connector receptacle, which provide the choice of different connector for client. The OTB1250-xx803xxR family provide 3 types for different applications:

- Standard type (0~70°C) for commonly commercial application, provided with lowest cost
- Extended type (-10~85°C) for extended temperature application, provides wider operating temperature
- Industrial grade (-40~85°C) is made with robust and reliable components, to meet the needs of Industrial Ethernet application under harsh environmental conditions. It is designed for industrial media converter, Industrial Ethernet

Switches, rugged switch and other industrial fiber connection equipment.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Note
Storage Temperature	Ts	-40	85	°C	-
Power Supply Voltage	Vcc	0.5	4	V	-
Soldering Temperature	-	-	260	°C	10 seconds on leads only
Input Voltage	Vin	GND	Vcc	V	-

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units
Power Supply Voltage	Vcc	3.1	3.3	3.5	V
Operating Temperature	Standard	0	-	70	°C
	Extended	-10	-	85	°C
	Industrial	-40	-	85	°C
Data Rate	-	-	1250	-	Mbps
Power Supply Current	Icc	-	150	300	mA

Transmitter Specifications (0°C < Top < 70°C, 3.1V < Vcc < 3.5V)

Parameter	Symbol	Min.	Typ.	Max.	Units
Optical					
Optical Transmit Power	Po	-2	-	+3	dBm
Optical Center Wavelength	OTB1250-45403xxR	1480	1490	1500	nm
	OTB1250-54403xxR	1520	1550	1580	nm
Output Spectrum Width	$\Delta\lambda$ (1490 DFB)	-	-	1	nm (RMS)
	$\Delta\lambda$ (1550 DFB)	-	-	1	nm (RMS)
Extinction Ratio	ER	9.0	-	-	dB
Output Eye	Compliant with Bellcore GR-253-CORE and ITU recommendation G.957				
Optical Rise Time	tr	-	-	0.26	ns
Optical Fall Time	tf	-	-	0.26	ns
Electrical					
Differential Input Voltage	V _{IH} -V _{IL}	0.3	-	2.2	V
Common-mode Input Voltage	V _{COM} -V _{CC}	-1.38	-	-0.47	V
PECL Output Voltage-Low	V _{OL} -V _{CC}	-1.810	-	-1.620	V

PECL Output Voltage-High	$V_{OH}-V_{CC}$	-1.025	-	-0.880	V
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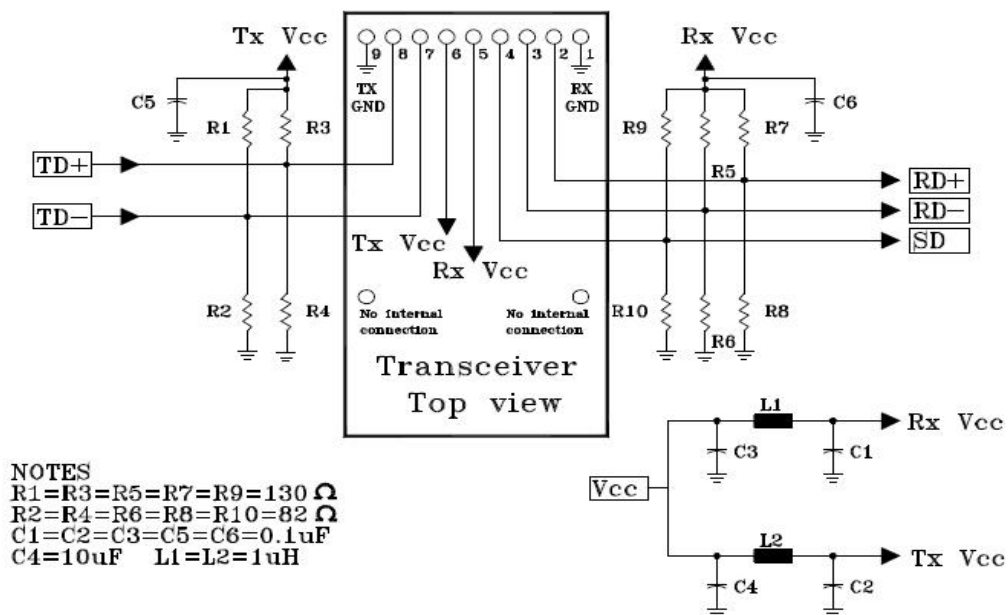
Receiver Specifications (0°C < Top < 70°C, 3.1V < Vcc < 3.5V)

Parameter	Symbol	Min.	Typ.	Max.	Units
Optical					
Sensitivity	Sen	-	-	-26	dBm
Maximum Input Power(Saturation)	P_{MAX}	0	-	-	dBm
Signal Detect – Asserted	P_a	-	-	-27	dBm
Signal Detect – Deasserted	P_d	-35	-	-	dBm
Signal Detect – Hysteresis	P_{hys}	1	-	4	dB
Wavelength of Operation	<i>OTB1250-45403xxR</i>	1510	1550	1590	nm
	<i>OTB1250-54403xxR</i>	1470	1490	1510	nm
Electrical					
Data Output Voltage – Low	$V_{IL}-V_{CC}$	-1.83	-	-1.555	V
Data Output Voltage – High	$V_{IH}-V_{CC}$	-1.085	-	-0.88	V
Signal Detect Output Voltage-Low	$V_{SIL}-V_{CC}$	-2.0	-	-1.58	V
Signal Detect Output Voltage-High	$V_{SIH}-V_{CC}$	-1.1	-	-0.74	V

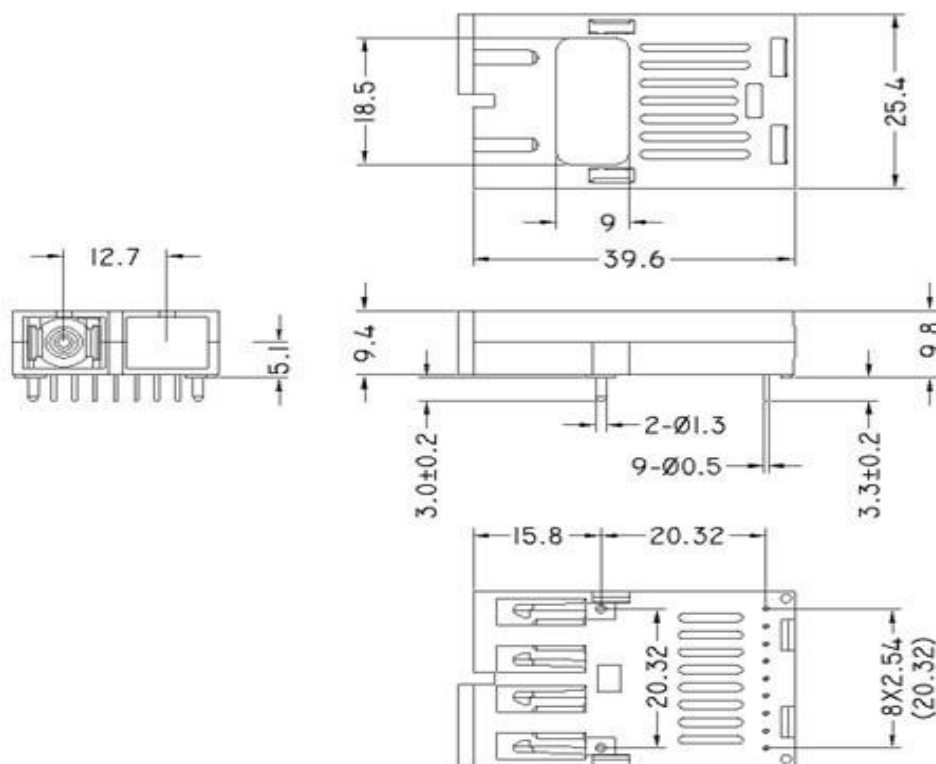
Pin Definitions

1 Receiver Signal Ground	
2 Receiver Data Out	O N.C.
3 Receiver Data Out Bar	
4 Signal Detect	
5 Receiver Power Supply	Top View
6 Transmitter Power Supply	
7 Transmitter Data In Bar	
8 Transmitter Data In	O N.C.
9 Transmitter Signal Ground	

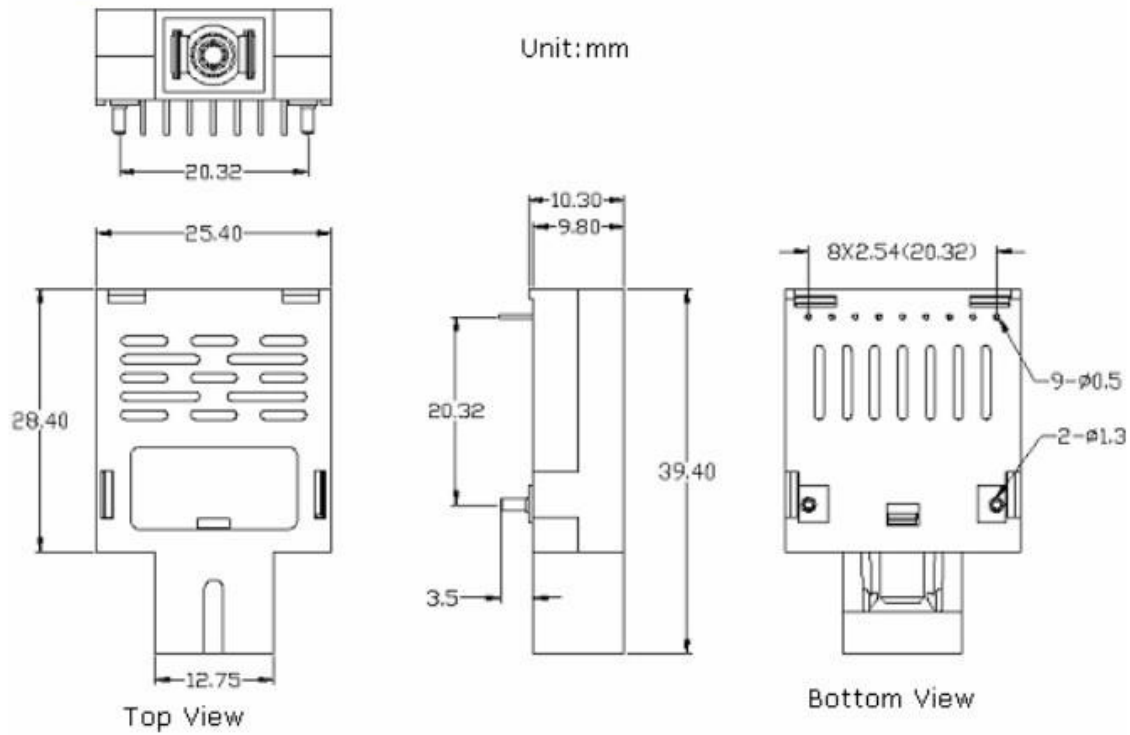
Recommended Circuit



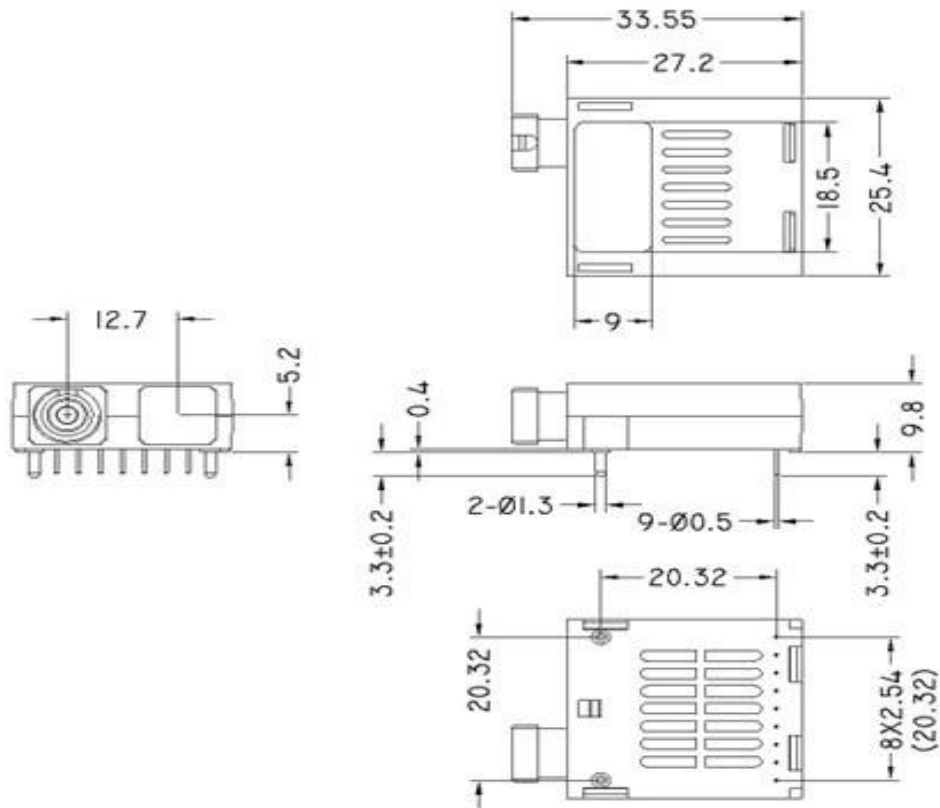
Mechanical Dimensions



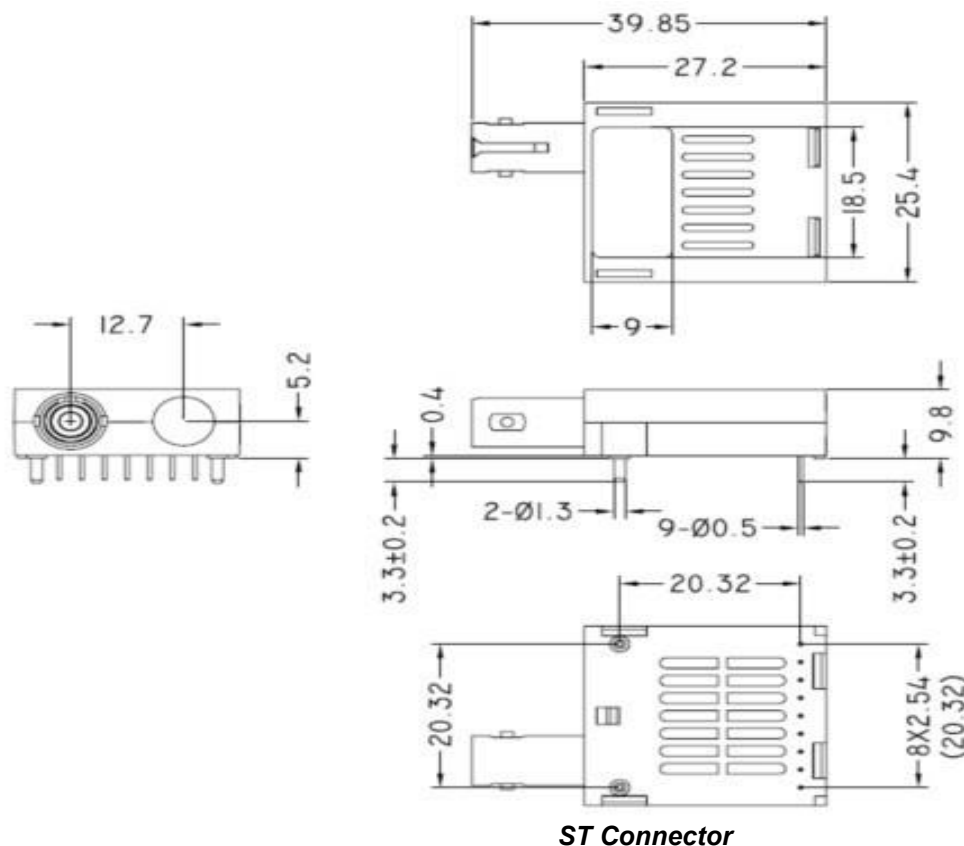
SC Connector (Type 1)



SC Connector (Type 2)



FC Connector



Ordering information

Part number	Description
OTB1250-45803SCR	1.25Gbps BiDi 1x9 Transceiver, Single mode, Tx:1490nm/Rx:1550nm, 80km, 3.3V, SC, 0°C ~ +70°C
OTB1250-54803SCR	1.25Gbps BiDi 1x9 Transceiver, Single mode, Tx:1550nm/Rx:1490nm, 80km, 3.3V, SC, 0°C ~ +70°C
OTB1250-45803TCR	1.25Gbps BiDi 1x9 Transceiver, Single mode, Tx:1490nm/Rx:1550nm, 80km, 3.3V, ST, 0°C ~ +70°C
OTB1250-54803TCR	1.25Gbps BiDi 1x9 Transceiver, Single mode, Tx:1550nm/Rx:1490nm, 80km, 3.3V, ST, 0°C ~ +70°C
OTB1250-45803FCR	1.25Gbps BiDi 1x9 Transceiver, Single mode, Tx:1490nm/Rx:1550nm, 80km, 3.3V, FC, 0°C ~ +70°C
OTB1250-54803FCR	1.25Gbps BiDi 1x9 Transceiver, Single mode, Tx:1550nm/Rx:1490nm, 80km, 3.3V, FC, 0°C ~ +70°C
OTB1250-45803SER	1.25Gbps BiDi 1x9 Transceiver, Single mode, Tx:1490nm/Rx:1550nm, 80km, 3.3V, SC, , Extended Temperature -10°C ~ +85°C
OTB1250-54803SER	1.25Gbps BiDi 1x9 Transceiver, Single mode, Tx:1550nm/Rx:1490nm, 80km, 3.3V, SC, Extended Temperature -10°C ~ +85°C
OTB1250-45803TER	1.25Gbps BiDi 1x9 Transceiver, Single mode, Tx:1490nm/Rx:1550nm, 80km, 3.3V, ST, Extended Temperature -10°C ~ +85°C

OTB1250-54803TER	1.25Gbps BiDi 1×9 Transceiver, Single mode, Tx:1550nm/Rx:1490nm, 80km, 3.3V, ST, Extended Temperature -10°C ~ +85°C
OTB1250-45803FER	1.25Gbps BiDi 1×9 Transceiver, Single mode, Tx:1490nm/Rx:1550nm, 80km, 3.3V, FC, Extended Temperature -10°C ~ +85°C
OTB1250-54803FER	1.25Gbps BiDi 1×9 Transceiver, Single mode, Tx:1550nm/Rx:1490nm, 80km, 3.3V, FC, Extended Temperature -10°C ~ +85°C
OTB1250-45803STR	1.25Gbps BiDi 1×9 Industrial Transceiver, Single mode, Tx:1490nm/Rx:1550nm, 80km, 3.3V, SC, Industrial Temperature -40°C ~ +85°C
OTB1250-54803STR	1.25Gbps BiDi 1×9 Industrial Transceiver, Single mode, Tx:1550nm/Rx:1490nm, 80km, 3.3V, SC, Industrial Temperature -40°C ~ +85°C
OTB1250-45803TTR	1.25Gbps BiDi 1×9 Industrial Transceiver, Single mode, Tx:1490nm/Rx:1550nm, 80km, 3.3V, ST, Industrial Temperature -40°C ~ +85°C
OTB1250-54803TTR	1.25Gbps BiDi 1×9 Industrial Transceiver, Single mode, Tx:1550nm/Rx:1490nm, 80km, 3.3V, ST, Industrial Temperature -40°C ~ +85°C
OTB1250-45803FTR	1.25Gbps BiDi 1×9 Industrial Transceiver, Single mode, Tx:1490nm/Rx:1550nm, 80km, 3.3V, FC, Industrial Temperature -40°C ~ +85°C
OTB1250-54803FTR	1.25Gbps BiDi 1×9 Industrial Transceiver, Single mode, Tx:1550nm/Rx:1490nm, 80km, 3.3V, FC, Industrial Temperature -40°C ~ +85°C

Warnings

Process plug

The transceiver optics is supplied with a dust cover. This plug protects the transceiver optics during standard manufacturing processes by preventing contamination from air borne particles. It is recommended that the dust cover remain in the transceiver whenever an optical fiber connector is not inserted.

Handling Precautions

The transceiver optics is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety

The transceiver optics is a Class 1 laser product per international standard IEC 60825-1. Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

For more product information, visit us on the web at www.optcore.net



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