

OTB155-xx20xxxR

155Mb/s 1x9 Bi-Directional Optical Transceiver, Single mode, 1310/1550nm, 20km, Simplex SC/ST/FC

Features

- Up to 155Mb/s data links
- Single Fiber Bi-Directional Transceiver
- Industry Standard 1×9 package
- Simplex SC, ST or FC connector
- A type: 1310nmTx/1550nmRx
B type: 1550nmTx/1310nmRx
- Single +3.3V or +5V Power Supply
- Up to 20 km over single mode fiber
- Standard PECL or LVPECL data output with signal detect indication
- Class 1 laser safety standard IEC 60825 compliant
- ROHS compliant and Lead Free
- Operating case temperature: Standard: 0 to +70°C, Industrial: -40 to +85°C



Applications

- ATM 155 Mbps Links
- SONET OC-3 & SDH STM-1
- 100Base-BX Fast Ethernet Links
- Fast Ethernet to Fiber media converters
- Industrial grade for industrial hardened Ethernet
- Digital video transmission system

Description

The OTB155-xx20xxCR series is high performance and cost-effective single mode Bi-Directional (BiDi) 1×9 optical transceiver for serial optical communication applications. They are suitable for 100Base-BX Fast Ethernet, SDH STM-1, SONET OC-3 and ATM (Asynchronous Transfer Mode) designs at the data rate of 155 Mb/s.

The BiDi 1×9 transceivers supports 20km 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 1310nm(or 1550nm) FP Laser and a driver circuit which converts Pseudo Emitter Coupled Logic(PECL) data to light signal, the receiver incorporates an efficient 1550nm (or 1310nm) InGaAs/InP PIN photodiode converting the light signal into an electrical current which is amplified and regenerated into PECL compatible data. The OTB155-xx20xxCR series provide the choice of single SC, FC or ST receptacle for the different client.

The OTB155-xx20xxxR family also provide the commercial grade for commonly application, and industrial grade for industrial hardened environment application such as industrial Ethernet Switch, Industrial computing, Industrial Ethernet media converters and so on. They are compliant with class 1 FDA, IEC60825-1 laser safety and RoHS.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Note
Storage Temperature	Ts	-40	85	°C	-
Power Supply Voltage	Vcc (3.3V)	0.5	4.0	V	OTB155-xx203xxR
	Vcc (5V)	0.5	6.0	V	OTB155-xx205xxR
Soldering Temperature	-	-	260	°C	10 seconds on leads only
Input Voltage	V _{in}	GND	Vcc	V	-

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units
Power Supply Voltage	Vcc	3.1	3.3	3.5	V
		4.75	5	5.25	
Operating Temperature	Standard	0	-	70	°C
	Industrial	-40	-	85	°C
Data Rate	-	-	155	-	Mbps
Power Supply Current	Icc	-	150	250	mA

Transmitter Specifications (0°C < T_{op} < 70°C)

Parameter	Symbol	Min.	Typ.	Max.	Units
Optical					
Optical Transmit Power	Po	-14	-	-3	dBm
Optical Center Wavelength	OTB155-3520xxxR	1270	1310	1350	nm
	OTB155-5320xxxR	1510	1550	1590	nm
Output Spectrum Width	Δλ	-	-	4	nm (RMS)
Extinction Ratio	E _R	10.0	-	-	dB
Output Eye	Compliant with ITU recommendation G.957 STM-1/OC-3				
Optical Rise Time	t _r	-	-	2	ns
Optical Fall Time	t _f	-	-	2	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

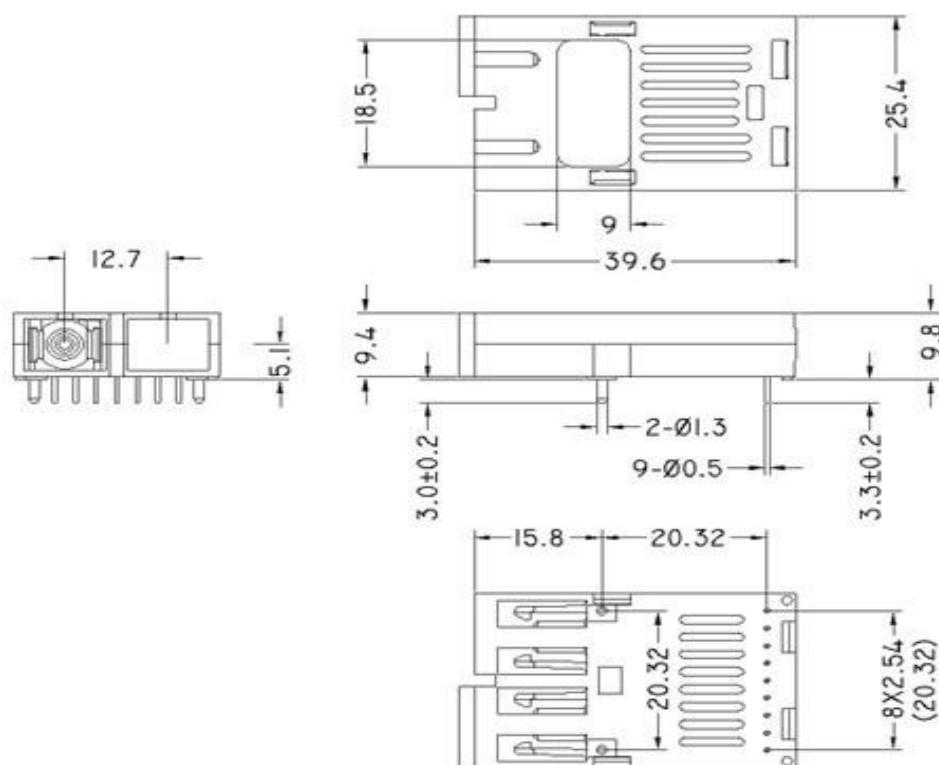
Receiver Specifications (0°C < T_{op} < 70°C)

Parameter	Symbol	Min.	Typ.	Max.	Units
Optical					
Sensitivity	Sen	-	-	-34	dBm
Maximum Input Power(Saturation)	P _{MAX}	-3	-	-	dBm
Signal Detect – Asserted	P _a	-	-	-34	dBm
Signal Detect – Deasserted	P _d	-45	-	-	dBm
Signal Detect – Hysteresis	P _{hys}	1	-	4	dB
Wavelength of Operation	OTB155-3520xxxR	1500	1550	1600	nm
	OTB155-5320xxxR	1260	1310	1360	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

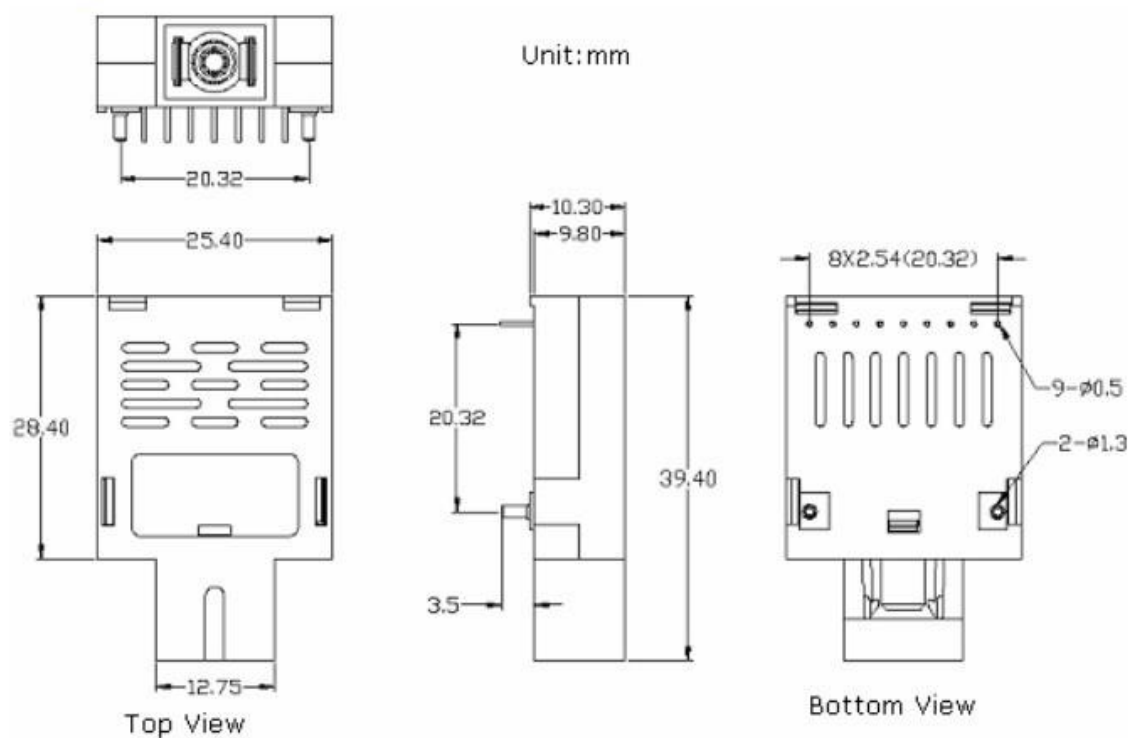
Pin Definitions

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	

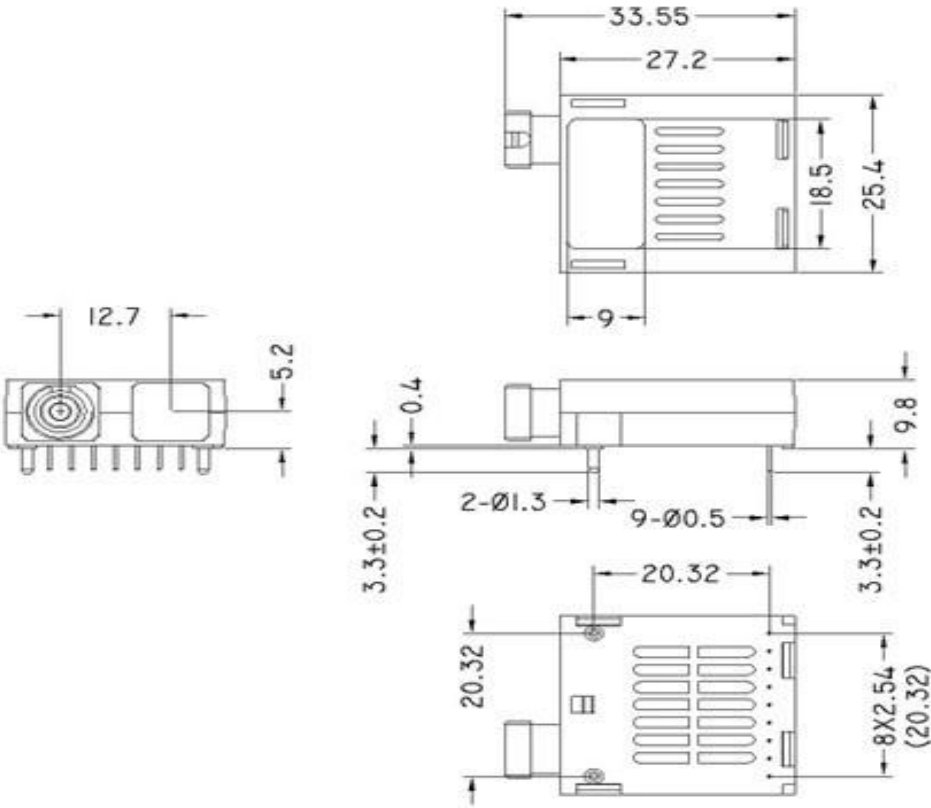
Mechanical Dimensions



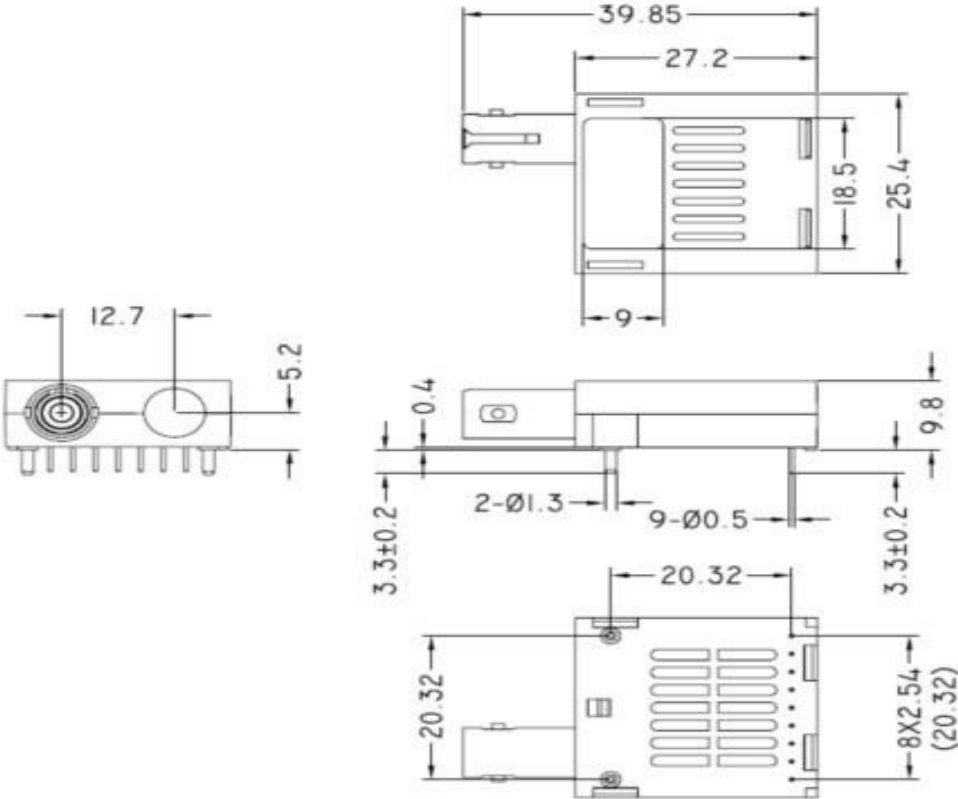
SC Connector (Type 1)



SC Connector (Type 2)



FC Connector



ST Connector

Ordering information

Part number	Description
OTB155-35203SCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,3.3V,SC,0~ 70°C
OTB155-53203SCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,3.3V,SC,0~ 70°C
OTB155-35203FCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,3.3V,FC,0~ 70°C
OTB155-53203FCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,3.3V,FC,0~ 70°C
OTB155-35203TCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,3.3V,ST,0~ 70°C
OTB155-53203TCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,3.3V,ST,0~ 70°C
OTB155-35205SCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,5V,SC,0~ 70°C
OTB155-53205SCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,5V,SC,0~ 70°C
OTB155-35205FCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,5V,FC,0~ 70°C
OTB155-53205FCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,5V,FC,0~ 70°C
OTB155-35205TCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,5V,ST,0~ 70°C
OTB155-53205TCR	155Mbps BiDi 1×9 Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,5V,ST,0~ 70°C
OTB155-35203STR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,3.3V,SC,-40~85°C
OTB155-53203STR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,3.3V,SC,-40~85°C
OTB155-35203FTR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,3.3V,FC,-40~85°C
OTB155-53203FTR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,3.3V,FC,-40~85°C
OTB155-35203TTR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,3.3V,ST,-40~85°C
OTB155-53203TTR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,3.3V,ST,-40~85°C
OTB155-35205STR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,5V,SC,-40~85°C
OTB155-53205STR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,5V,SC,-40~85°C
OTB155-35205FTR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,5V,FC,-40~85°C
OTB155-53205FTR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,5V,FC,-40~85°C
OTB155-35205TTR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1310nm/Rx:1550nm,20km,5V,ST,-40~85°C
OTB155-53205TTR	155Mbps BiDi 1×9 Industrial Transceiver,SMF,Tx:1550nm/Rx:1310nm,20km,5V,ST,-40~85°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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