

PHOTON

1550TX/1310RX,5V(3.3V)/155Mbps Single-Fiber Transceiver

PT8552-31-1

PT8552-33-1

Features

- Single Fiber Bi-Directional Transceiver
- MQW F-P 1550nm laser diode as transmitter
- InGaAs PIN with TIA and post amplifier receiver
- 1550nm wavelength output, output power -10dBm typically
- 1310nm wavelength input, sensitivity -37dBm typically
- Optical Isolation $> 30\text{dB}$
- Cross talk $< -45\text{dB}$
- 1X9 compatible package single mode fiber package with SC/PC receptacle connector
- Operate temperature from 0°C to $+70^{\circ}\text{C}$

Application

- WDM 155Mb/s Links
- SONET/SDH Equipment Interconnect
- Fast Ethernet 100Mb/s Links

Description

The PT8552 series is high performance module for single fiber communications by using 1550nm transmitter and 1310 nm receiver. The transmitter section uses a multiple quantum well 1550 FP laser diode. The receiver section uses an integrated 1310nm detector preamplifier mounted in an optical header and a limiting post-amplifier. A PECL logic interface simplifies interface to external circuitry.

The block Diagram as follows.

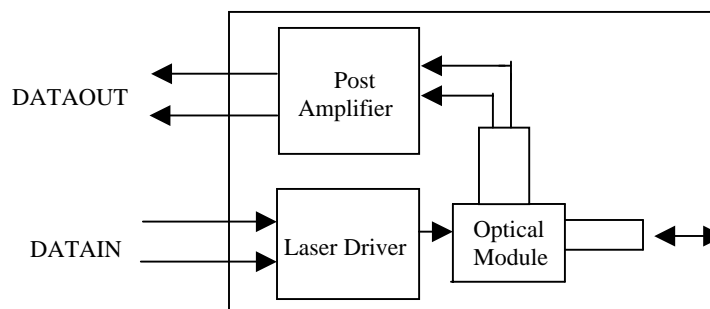


Figure 1. Block Diagram

Performance Specifications

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Storage Temperature	Tst	-40	+85	$^{\circ}\text{C}$
Operating Temperature	Top	0	+70	$^{\circ}\text{C}$
Input Voltage	-	GND	Vcc	V

Power Supply Voltage	Vcc-Vee	PT8552-31	0	+6	V
		PT8552-33	0	+3.6	
Lead Soldering Temperature/Time	-	-	240/10	°C/S	

Operating Environment

Parameter	Symbol	Min	Max	Unit	
Power Supply Voltage	Vcc	PT8552-31	+4.75	+5.25	V
		PT8552-33	+3.1	+3.5	
Ambient Operating Temperature	T	0	+70	°C	

Transmitter Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Note
Center Wavelength	λ	1430	1550	1576	nm	
Power	Po	-15	-10	-8	dBm	
Spectral Width(RMS)	$\Delta\lambda$	-	-	2.5	nm	
Extinction Ratio	Er	8.2	-	-	dB	
Output Eye	Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957					
Operating Current	Icc		100	120	mA	1

Receiver Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Note
Wavelength	λ	1260	1310	1360	nm	
Full-duplex Sensitivity	Pr	-	-	-35	dBm	2
Signal Detect Assert Level	-	-45	-	-	dBm	
Signal Detect Deassert Level	-	-	-	-36	dBm	
Signal Detect-Hysteresis		1.0		4.0	dB	
Operating Current	Icc	-	80	100	mA	1

PECL Input Pins TD+ and TD-

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Note
Input HIGH Voltage	VIH	VCC-1165	-	VCC-880	mV	3
Input LOW Voltage	VIL	VCC-1810	-	VCC-1475	mV	3

PECL Output Pins SD, RD+ and RD-

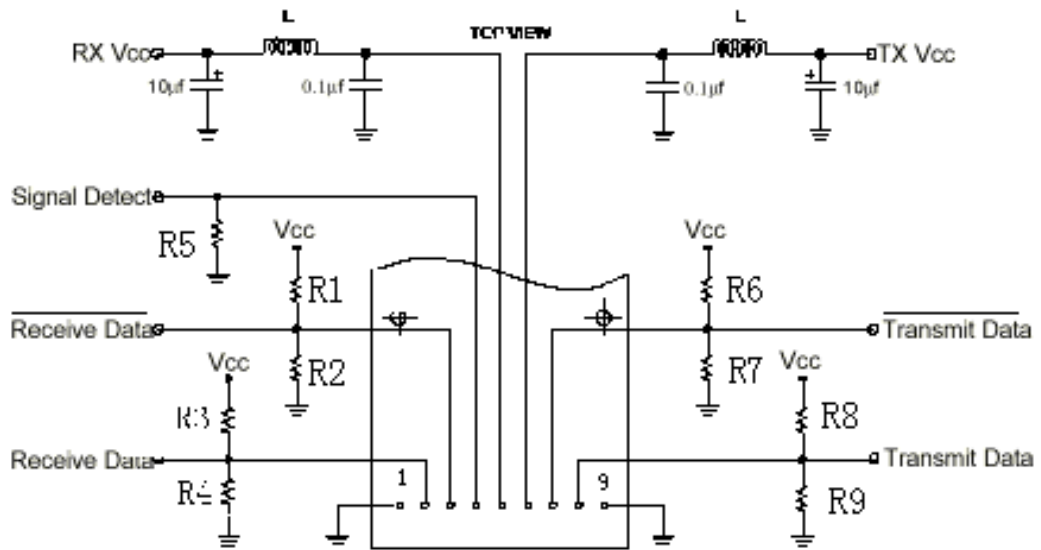
Parameter	Symbol	Minimum	Typical	Maximum	Unit	Note
LOW-level output voltage	VOL	VCC - 1840	-	VCC - 1600	mV	3
HIGH-level output voltage	VOH	VCC - 1100	-	VCC - 900	mV	3

Notes:

- The current excludes the output load current
- Minimum Sensitivity and saturation levels for a $2^{23}-1$ PRBS with 72 ones and 72 zeros inserted (ITU recommendation G958)

3. $R_L = 50R$ (Ohms) connected to a level of $V_{CC} - 2V$

Recommended Circuit:



For PT8552-31-1

$R_1=R_3=R_6=R_8=82\ \Omega$, $R_2=R_4=R_7=R_8=130\ \Omega$, $R_5=330\ \Omega$

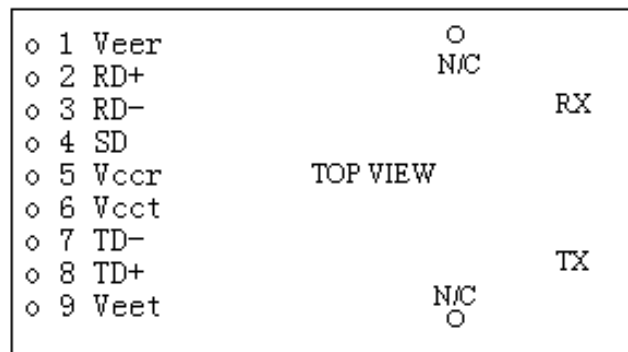
For PT8552-33-1

$R_1=R_3=R_6=R_8=130\ \Omega$, $R_2=R_4=R_7=R_8=82\ \Omega$, $R_5=130\ \Omega$

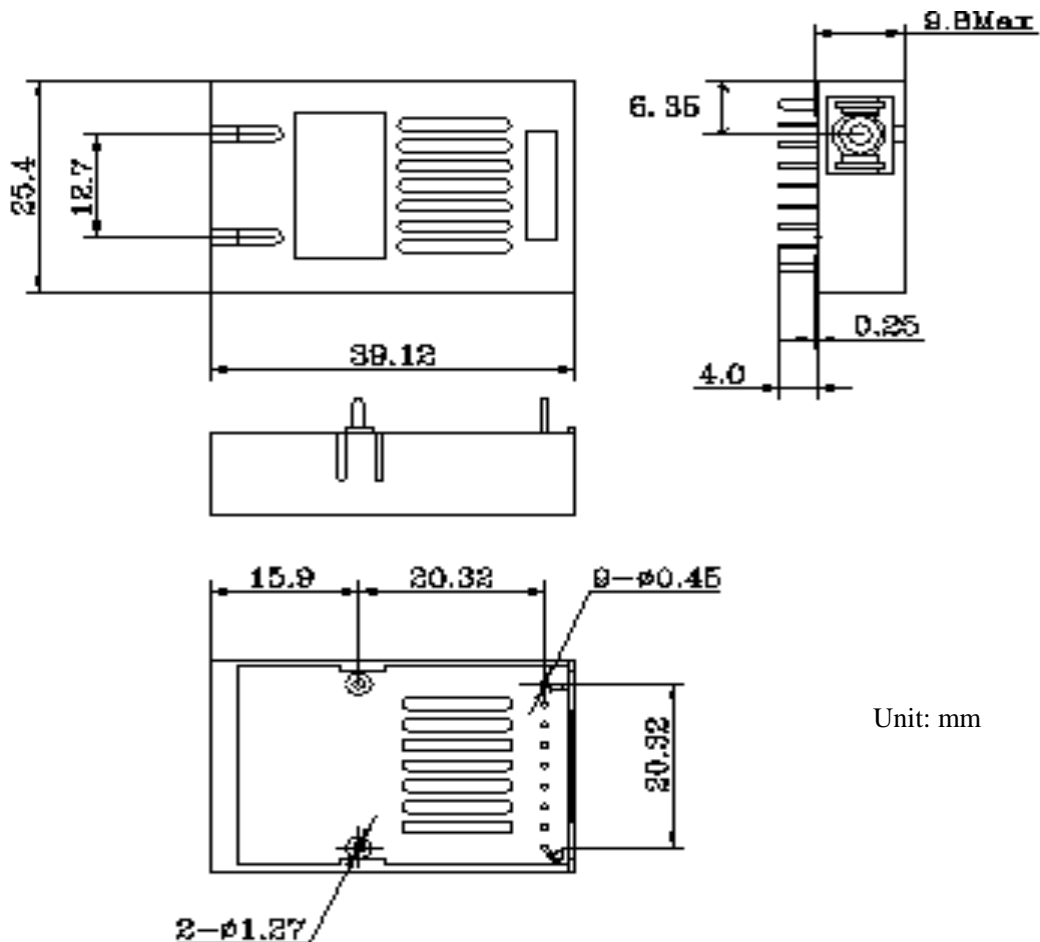
Pin Description

Pin #	Pin Name		Logic Level	Description
N/C	Mounting Studs			The two pins are not connected to the transceiver internal circuit.
1	Rx Ground	V_{EER}	N/C	Directly connect this pin to receiver signal ground plane.
2	Rx Output Data	$RD+$	PECL	
3	Rx Output Inverted Data	$RD-$	PECL	
4	Rx Signal Detect	SD	PECL	Normal Operation: Logic “1” Output, represents that optical is present at receiver input. Fault Condition: Logic “0” output
5	Rx Power Supply	V_{CCR}	N/C	Provide Vcc DC through the recommended power supply filter circuit. Place the filter circuit as close as possible to the V_{CCR} pin.

6	Tx Power Supply	V _{CCT}	N/C	Provide Vcc DC through the recommended power supply filter circuit. Place the filter circuit as close as possible to the V _{CCT} pin.
7	Tx Inverted Data Input	TD-	PECL	
8	Tx Data Input	TD+	PECL	
9	Tx Ground	V _{EET}	N/C	Directly connect this pin to transmitter signal ground plane.



Package information



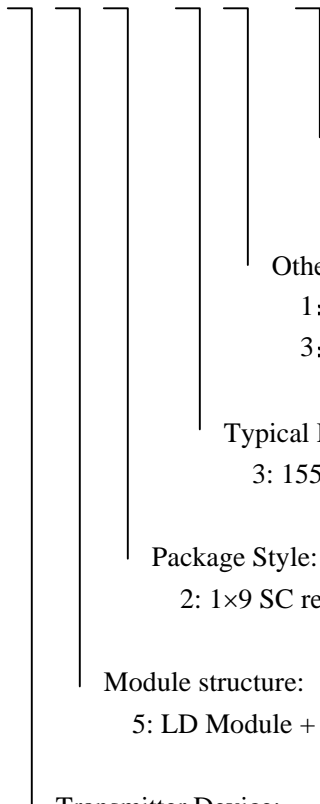
Unit: mm

Ordering information:

PT8***: Bidirectional Diplexer

PT 8 5 5 2 - 3 1 - 1

For example: PT8552-31-1



Optical output power:

1: -15 ~ -8dBm;

Other Characteristic:

1: 5V, 0 ~ 70°C

3: 3.3V, 0 ~ 70°C

Typical Data Rate:

3: 155 Mb/s

Package Style:

2: 1×9 SC receptacle

Module structure:

5: LD Module + Driver + PIN + TIA + Post Amp. (Dual Wavelength)

Transmitter Device:

5: 1550nm FP-LD