

Features

- Transceiver unit with independent
 - 1550nm DFB Laser diode transmitter
 - InGaAs PIN photodiode receiver
- Duplex SC receptacle and plastic package
- +3.3V Signal power supply, LVPECL interface logic level
- Operates data rates from 5Mb/S to 200Mb/s (NRZ)
- Long reach SONET/SDH OC-3/STM-1 compliant
- LVPECL logic interface simplifies interface to external circuitry

Application

- SONET/SDH
- ATM

General

The optical transceiver is a high performance, cost effective module for serial optical data communication application. It is designed to provide a SONET/SDH compliant link for OC-3/STM-1 long reach links.

Transmitter Section

Transmitter is designed for single mode fiber and operates at a nominal wavelength of 1550nm. The transmitter module uses a DFB laser diode and full IEC825 and CDRH class 1 eye safety. It contains APC function, temperature compensation circuit and PECL logic interface as shown in figure 1.

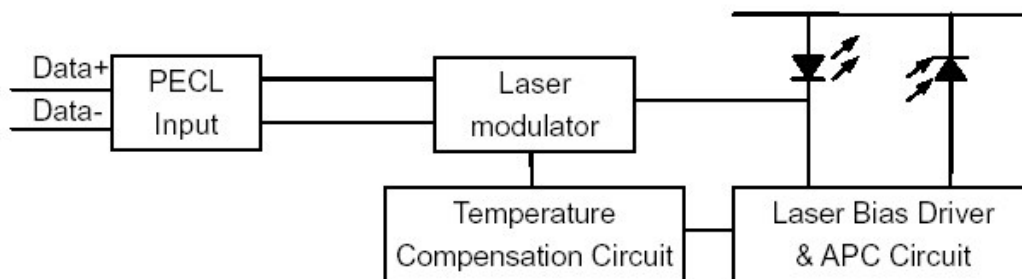


Figure 1. Transmitter Block Diagram

Receiver Section

The receiver section uses a hermetic packaged front and receiver (InGaAs PIN and preamplifier). The postamplifier is ac coupled to preamplifier through a capacitor and a low pass filter, as shown in figure 2. The capacitor and LPF are enough to pass the signal from 5Mb/s to 200Mb/s without significant distortion or performance penalty. The LPF limits the preamplifier bandwidth to improve receiver sensitivity. Figure 2 shows the receiver section, which proves PECL logic differential outputs and a signal detect output.

As the input optical is decreased, Signal Detect will switch from high to low (deassert point). As the input optical power is increased from very low levels, Signal Detect will switch back from low to high (assert point). The assert level will be at least 0.5dB higher than the de-assert level.

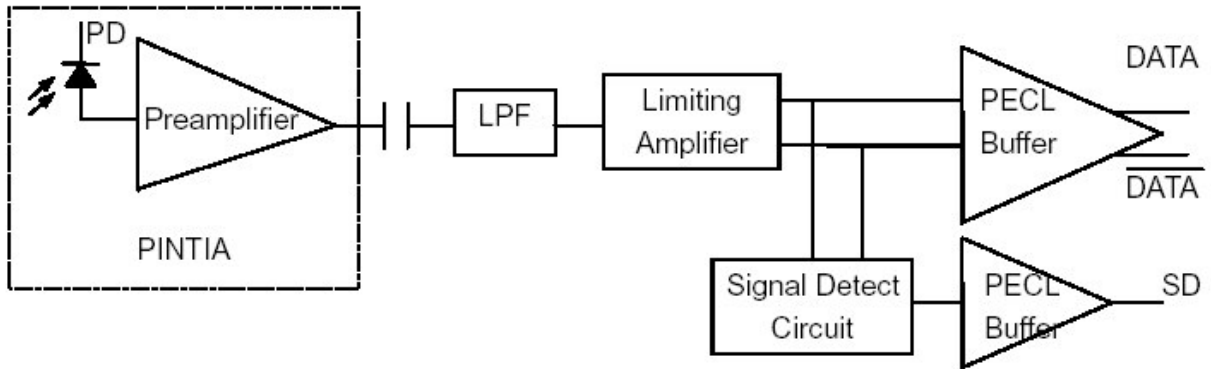


Figure 2. Receiver Block Diagram

Performance Specifications

Table1. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	Tst	-40	+85	°C
Input Voltage	-	GND	Vcc	V
Power Supply Voltage	Vcc-Vee	0	+3.6	V
Lead Soldering Temperature/Time	-	-	240/10	°C/S
Operating Temperature		0	+70	°C

Note: Stress in excess of maximum absolute ratings can cause permanent damage to the module

Table2. Operating Environment

Parameter	Symbol	Min	Max	Unit
Power Supply Voltage	Vcc	+3.1	+3.5	V
Ambient Operating Temperature	-	0	+70	°C

Table 3. Optical and Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter						
Center Wavelength	λ_p	1480	1550	1580	nm	
Spectral Width	$\Delta\lambda$ (-20dB)	-	-	1	nm	
Average Optical Output Power	Po	-5	-	0	dBm	
Extinction Ratio	EXT	10	-	-	dB	
Power Supply Current	Icc	-	70	180	mA	1
Output Eye	Compliant with Bellcore TR- NWT-000253 and ITU recommendation G.957					
Data Input	LVPECL					
Receiver						
Parameter	Symbol	Min	Typ	Max	Unit	Note
Sensitivity	Pr	-	-36	-34	dBm	2
Maximum input power	Ps	0	-	-	dBm	2
Signal Detect Assert Level	-	-48	-	-	dBm	Low-level: Alarm
Signal Detect Deassert Level	-	-	-	-35	dBm	
Signal Detect Hysteresis	-	0.5	3	-	dB	
Operating Current	Icc	-	80	180	mA	1
Data Outputs	LVPECL					
Alarm Output	LVPECL					

PECL Input Pins SD, TD+ and TD-

Parameter	Symbol	Min	Typ	Max	Unit	Note
Input HIGH voltage	V _{IH}	VCC - 1165	-	VCC - 880	mV	3
Input LOW voltage	V _{IL}	VCC - 1810	-	VCC - 1475	mV	3

PECL Output Pins SD, RD+ and RD-

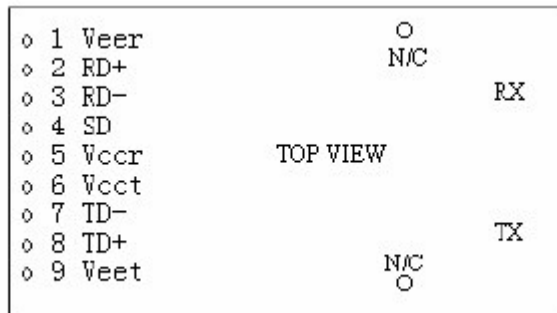
Parameter	Symbol	Min	Typ	Max	Unit	Note
LOW-level output voltage	V _{OL}	VCC - 1840	-	VCC - 1600	mV	3
HIGH-level output voltage	V _{OH}	VCC - 1100	-	VCC - 900	mV	3

Note:

1. The current excludes the output load current.
2. Minimum Sensitivity and saturation levels for a $2^{23} - 1$ PRBS with 72 ones and 72 zeros inserted (ITU recommendation G958)
3. RL=50R connected to a level of Vcc -2V.

Pin Definitions

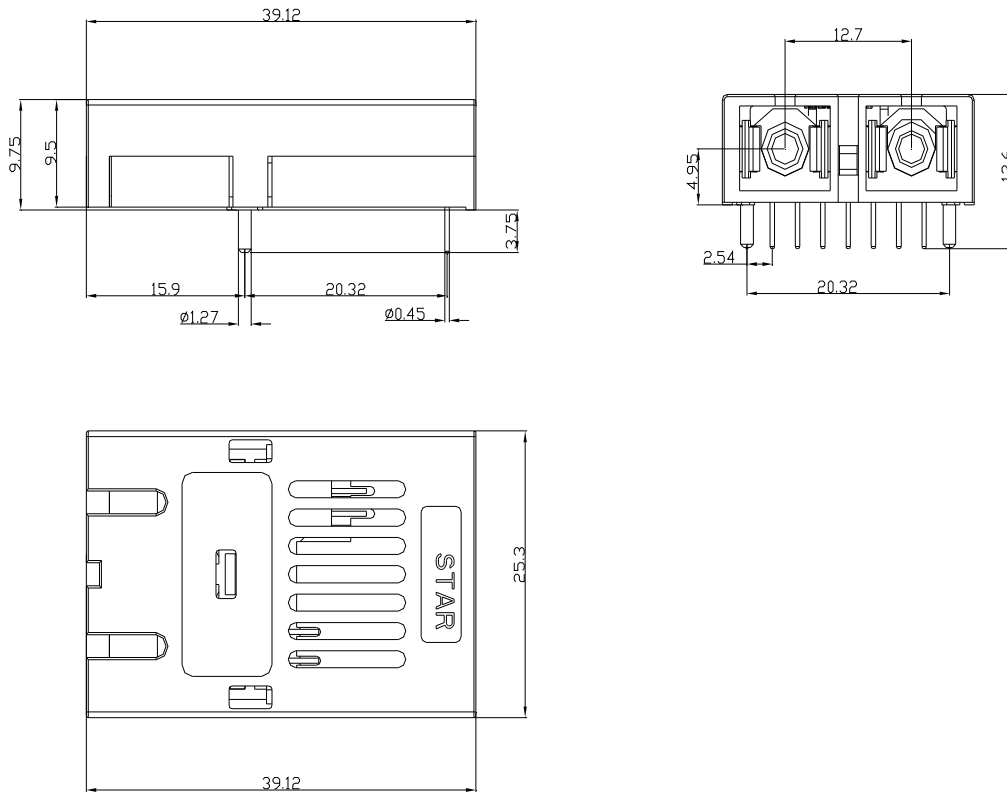
Pin Out Diagram



Pin Description

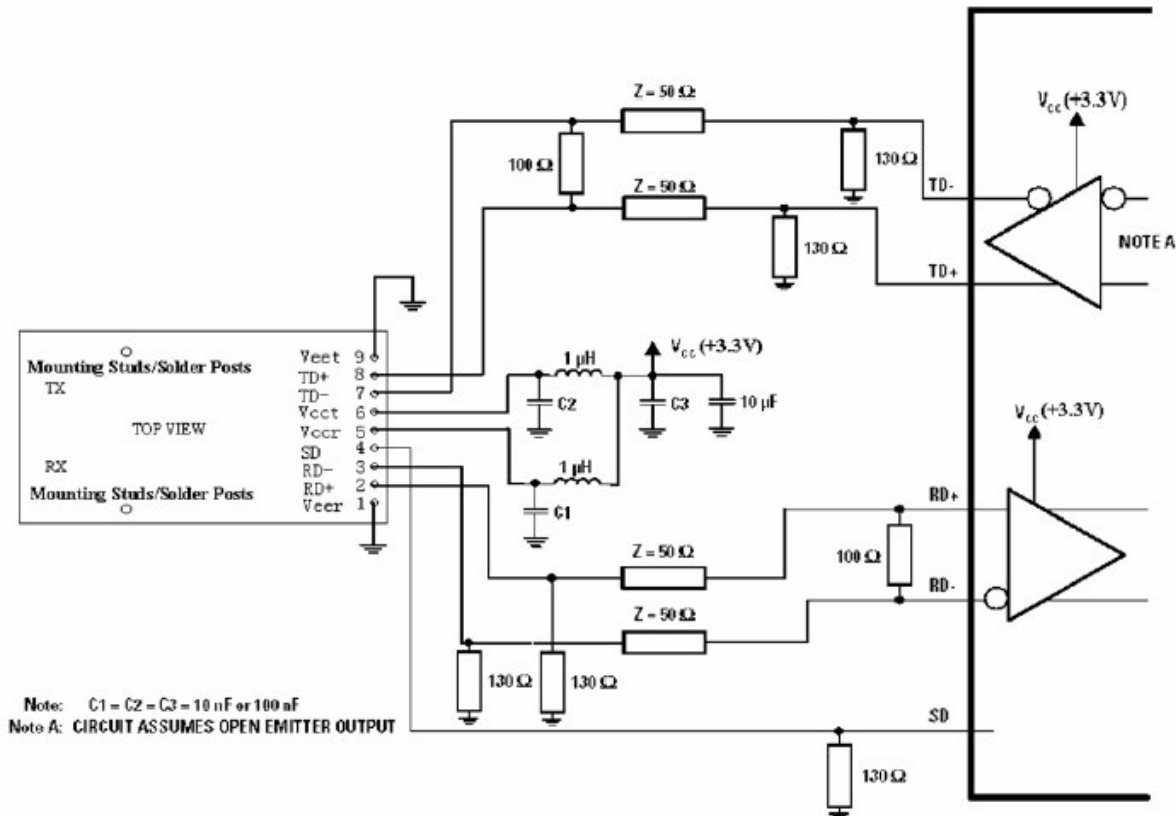
Pin#	Pin Name		Logic Level	Description
N/C	Mounting Studs			The two pins are not connected to the transceiver internal circuit.
1	VEER	RX Ground	N/C	Directly connect this pin to receiver signal ground plane.
2	RD+	RX Output Data	LVPECL	
3	RD-	RX Output Invert Data	LVPECL	
4	SD	RX Signal Detect	LVPECL	Normal Operation: Logic "1" Out put , represents that optical is present at receiver input. Fault Condition: Logic "0" output
5	VCCR	RX Power Supply	N/C	Provide +3.3V DC through the recommended power supply filter circuit. Place the filter circuit as close as possible to the VCCR pin.
6	VCCT	TX Power Supply	N/C	Provide +3.3V DC through the recommended power supply filter circuit. Place the filter circuit as close as possible to the VCCT pin
7	TD-	TX Invert Data Input	LVPECL	
8	TD+	TX Data Input	LVPECL	
9	VEET	TX Ground	N/C	Directly connect this pin to transmitter signal ground plane.

Package Information



Unit: mm

Recommended Circuit



Obtaining Document

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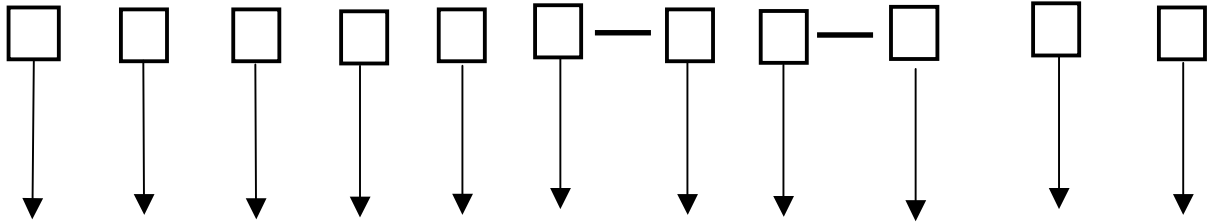
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Ordering Information

S



Classification:	Type:	Wavelength:	LD Type:	Data	Pack	Output	Power:	Operate	Signal	3:SC/PC
S: General	TR	5:1550nm	2:DFB	rate :	1:1*9(TR)	Power:	3:3.3V	Temperature:	Detect:	
Product				3:155M		5~0		1: 0~70℃	1: PECL	
						(dBm)			Signal/	
									PECL	
									Alarm	

Part number	Product Information
SSTR5231-33-113	1550nm 1*9 155Mb/s 0~70℃