

## Features

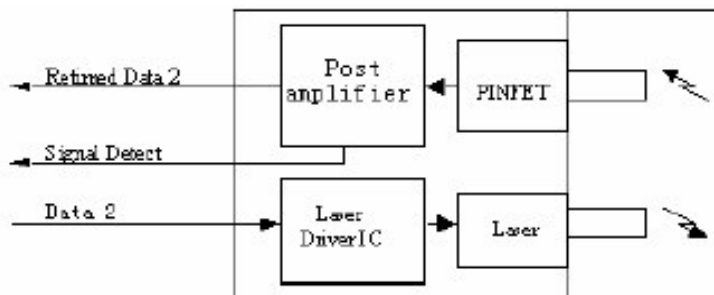
- Transceiver unit with independent
  - 1550nm MQW FP Laser diode transmitter
  - InGaAs PIN photodiode receiver
- Duplex SC receptacle and plastic package
- +5V Signal power supply, PECL interface logic level
- Operate data rates from 5Mb/s to 1270Mb/s (NRZ)
- Links of 60km with 9/125  $\mu\text{m}$  signal mode fiber(SMF)

## Application

- SONET
- ATM
- Fiber Channel
- Ethernet
- Switches
- Routers
- Hubs

## General

The optical transceiver is a high performance, cost effective module for serial optical data communication applications. It is designed to provide a SONET/IEEE 802.3 compliant link for OC-24/Gigabit Ethernet intermediate and long reach links. This compact transceiver requires a signal +5V sources and contains monitoring features as depicted Figure 1



**Figure 1. Block Diagram**

### 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. The transmitter module uses differential PECL driver signals.

### Receiver Section

The receiver section uses a hermetic packaged front end receiver (InGaAs PIN and preamplifier). It provides differential retimed data outputs and a signal detect output.

### Receiver Signal Detect

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 0.5 dB higher than the de-assert level. This single-ended low-power PECL output is designed to driver a standard PECL load.

**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	+6	V
Lead Soldering Temperature/Time	-	-	240/10	°C/S
Operating Temperature	To	0	+70	°C

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

**Tabel2. Operating Environment**

Parameter	Symbol	Min	Max	Unit
Power Supply Voltage	Vcc	+4.75	+5.25	V
Ambient Operating Temperature	Tc	0	+70	°C

**Tabel 3. Optical and Electrical Characteristics**

Parameter	Symbol	Min	Typ	Max	Unit	Note
<b>Transmitter</b>						
Center Wavelength	$\lambda_p$	1480	1550	1580	nm	-
Spectral Width	$\Delta\lambda(\text{RMS})$	-	-	1	nm	-
Average Optical Output Power	Po	-3	-	+2	dBm	-
Extinction Ratio	EXT	8.2	-	-	Db	-
Power Supply Current	Icc	-	70	180	Ma	1
Optical Rise/Fall Time	Tr/tf	-	-	0.26	ns	-
Data Inputs	PECL					
<b>Receiver</b>						
Parameter	Symbol	Min	Typ	Max	Unit	Note
Sensitivity	Pr	-	-25	-23	dBm	2
Maximum input power	Ps	-3	-	-	dBm	2
Signal Detect Assert Level	-	-35	-	-	dBm	Low Level: Alarm
Signal Detect Deassert Level	-	-	-	-25	dBm	
Signal Detect Hysteresis	-	-	3	-	dB	
Power Supply Current	Icc	-	80	100	mA	1
Data Outputs	PECL					
Alarm Output	PECL					

**PECL Input Pins SD, TD+ and TD-**

Parameter	Symbol	Min	Typ	Max	Unit	Note
Input HIGH voltage	V <sub>IH</sub>	VCC - 1165	-	VCC - 880	mV	3
Input LOW voltage	V <sub>IL</sub>	VCC - 1810	-	VCC - 1475	mV	3

**PECL Output Pins SD, RD+ and RD-**

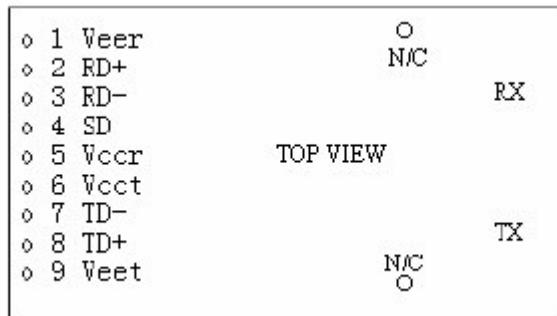
Parameter	Symbol	Min	Typ	Max	Unit	Note
LOW-level output voltage	V <sub>OL</sub>	VCC - 1840	-	VCC - 1600	mV	3
HIGH-level output voltage	V <sub>OH</sub>	VCC - 1100	-	VCC - 900	mV	3

**Note :**

1. The current excludes the output load current.
2. Minimum Sensitivity and saturation levels for a 2<sup>23</sup>-1 PRBS with 72 ones and 72 zeros inserted (ITU recommendation G958)
3. RL=50 R (Ohms) connected to a level of VCC-2V

**Pin Definitions**

**Pin Diagram**

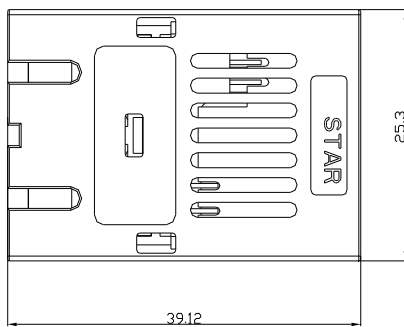
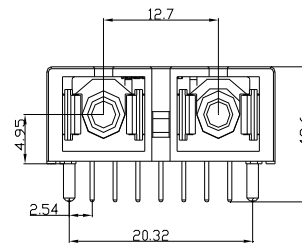


**Pin Description**

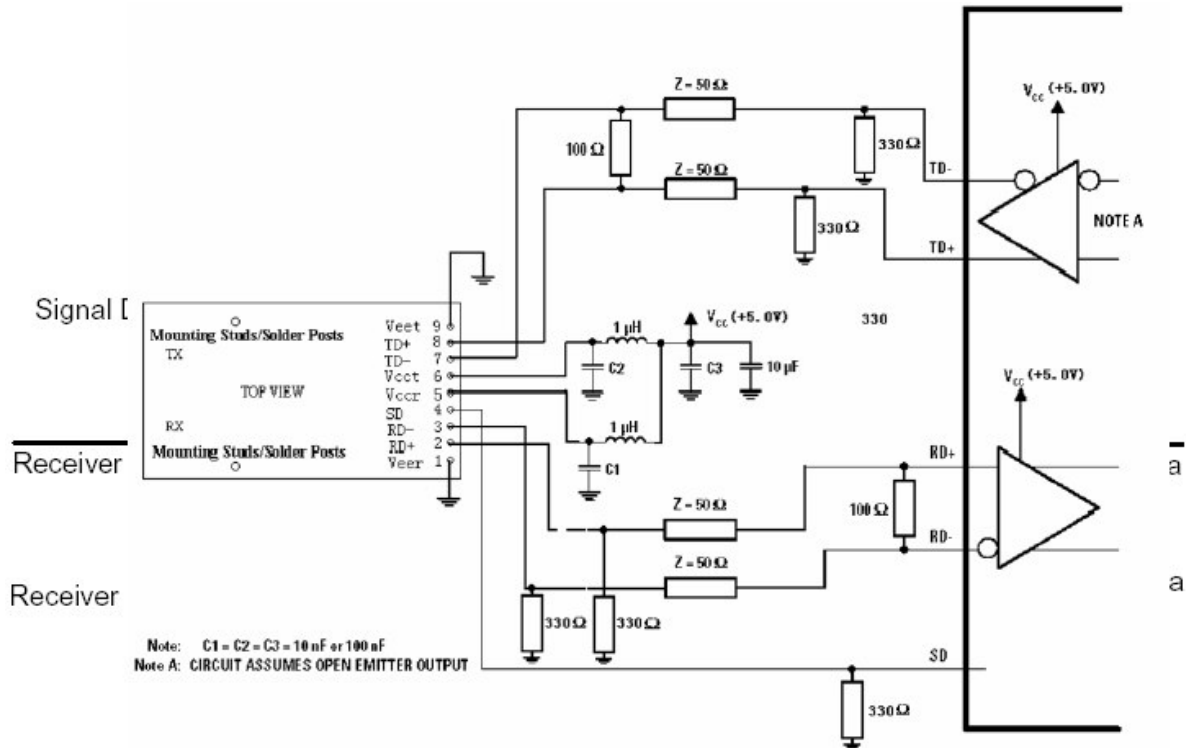
Pin#	Pin Name		Logic Level	Description
N/C	Mounting Studs		-	The two pins are not connected to the transceiver internal circuit.
1	VEER	RX Ground	N/C	Directly connect this pin to receiver signal ground plane.
2	RD+	RX Output Data	PECL	
3	RD-	RX Output Inverted Data	PECL	
4	SD	RX Signal Detect	PECL	Normal Operation: Logic "1" output, represents that optical is present at receiver input. Fault Condition: Logic "0" output
5	VCCR	RX Power Supply	N/C	Provide +5V 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 +5V 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	PECL	-
8	TD+	TX Data Input	PECL	-
9	VEET	TX Ground	N/C	Directly connect this pin to transmitter signal ground plane.

**Package Information**

Unit: mm



**Recommended Circuit**



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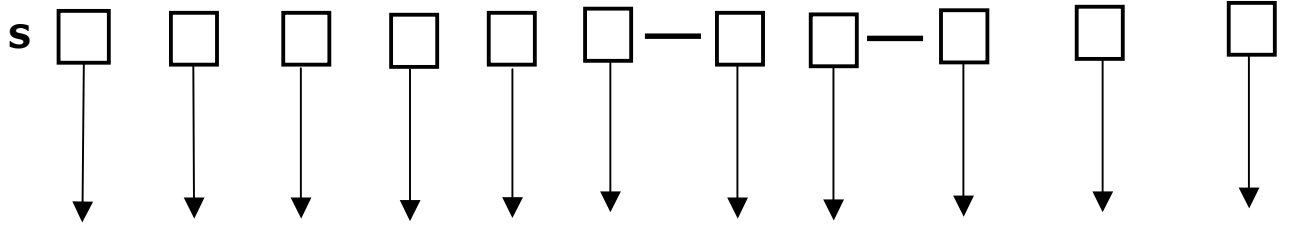
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**Ordering Information**



Classification:	Type:	Wavelength:	LD Type:	Data	Pack	Output	Power:	Operate	Signal	3:SC/PC
S: General	TR	5:1550nm	1: FP	rate :	1:1*9(TR)	Power:	5:5V	Temperature:	Detect:	
Information	.			5:1.25G		-3~+2		1: 0~70℃	1: PECL	
						(dBm)			Signal/	
									PECL	
									Alarm	

Part number	Product Information
SSTR5151-25-113	1550nm 1.25Gb/s 1*9 0~70℃