

Product Overview

1 × 9 Bi-directional Transceiver

Features

- Single Fiber Bi-directional Operation ,1 × 9 pin package and plastic package
- +5V/ +3.3V Signal power supply, PECL interface logic level
- Integrated WDM Filter, Isolation>35dB and Cross Talk>45dB
- Class I laser product compiles with IEC 60825-1
- Complies with Telcordia GR-468-CORE



Application

- SONET/SDH
- ATM
- Ethernet
- CCTV

Performance Specifications

Table1. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	Tst	-40	+85	°C
Input Voltage	Vin	GND	Vcc	V
Power Supply Voltage	Vcc-Vee	0	+6	V
		0	+3.6	V
Lead Soldering Temperature/Time	-	-	240/10	°C/S

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	SWTR3151-*5	+4.75	+5.25	V
		SWTR3151-*3	+3.1	+3.5	V
Ambient Operating Temperature	Top	SWTR3151-**-1	0	+70	°C
		SWTR3151-**-2	-40	+85	°C

Table 3. Optical and Electrical Characteristics

(T=25°C, Vcc=+4.85~+5.25V, Input PECL single)

Parameter	Symbol	Min	Typ	Max	Unit	Note	
Transmitter							
Center Wavelength	λ_p	SWTR3**1	1270	1310	1355		
		SWTR4**1	1460	1490	1560	nm	
		SWTR5**1	1480	1550	1580		
Spectral Width	$\Delta\lambda$	SWTR*1*1	-	-	7.7	nm	
		SWTR*2*1	-	-	1		
Average Optical Output Power	Po	SWTR**31-1*	-15	-	-8		
		SWTR**31-2*	-5	-	0		
		SWTR**31-4*	0	-	+5		
		SWTR**41-1*	-15	-	-8		
		SWTR**41-2*	-3	-	+2	dBm	
		SWTR**41-4*	0	-	+5		
		SWTR**51-1*	-10	-	-3		
		SWTR**51-2*	-3	-	+2		
Extinction Ratio	Er	SWTR*1*1	8.2	-	-	dB	
		SWTR*2*1	10	-	-		
Optical Rise/Fall Time	Tr/Tf	SWTR*2*1	-	-	0.4	ns	-
Side Mode Suppression Ratio	SMSR	SWTR*2*1	30	-	-	dB	
Operating Current	Icc	-	70	180	mA	1	
Output Eye	Compliant with Bellcore TR-NWT-000253 ITU recommendation G.957						
Data Inputs	PECL						
Receiver							
Parameter	Symbol	Min	Typ	Max	Unit	Note	
Sensitivity	Pr	SWTR**31	-	-36	-34		
		SWTR**41	-	-31	-28	dBm	2
		SWTR**51	-	-25	-23		
		SWTR**31-1*	-6	-	-		
		SWTR**31-2*	-3	0	-		
Maximum Input Power	Ps	SWTR**31-4*	0	-	-		
		SWTR**41-1*	-6	-	-	dBm	2
		SWTR**41-2*	-3	0	-		
Optical Isolation	Iso	SWTR**41-3*	-3	-	-		
		SWTR**51	-3	-	-	dB	
Signal Detect Assert Level	Pa(SD L-H)	SWTR**31	-50	-	-		
		SWTR**41	-45	-	-	dBm	Low-level:
Signal Detect Deassert Level	Pd(SD H-L)	SWTR**51	-35	-	-		
		SWTR**31	-	-	-36		
		SWTR**41	-	-	-28	dBm	Alarm
Signal Detect Hysteresis	-	SWTR**51	-	-	-23		
		-	-	3	-	dB	

Operating Current	I _{cc}	-	80	100	mA	1
Data Outputs					PECL	
Alarm Output					PECL/TTL	

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-

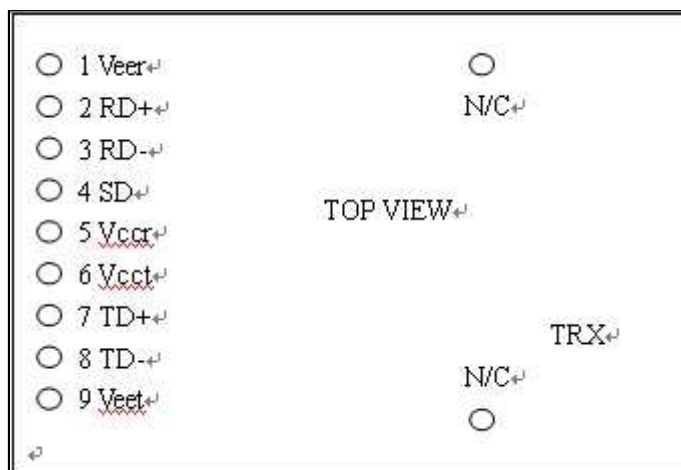
Parameter	Symbol	Min	Typ	Max	Unit	Note
LOW-level output voltage	V _{OL}	VCC - 1840	-	VCC - 1600	mV	3
HIGH-level output voltage	V _{OH}	VCC - 1100	-	VCC - 900	mV	3

Note :

- The current excludes the output load current.**
- Minimum Sensitivity and saturation levels for a 2³¹-1 PRBS with 72 ones and 72 zeros inserted recommendation G957)**
- RL=50R connected to a level of Vcc -2V.**

Pin Definitions

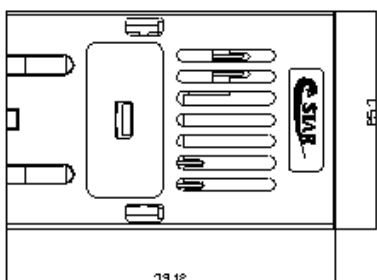
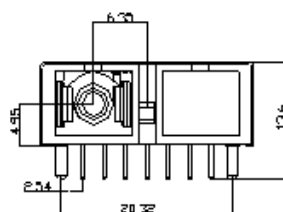
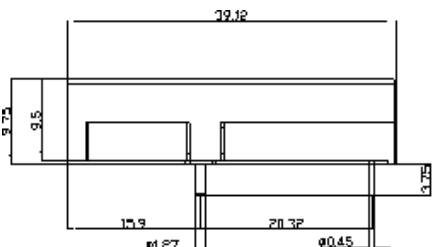
Pin Out Diagram



Pin Description

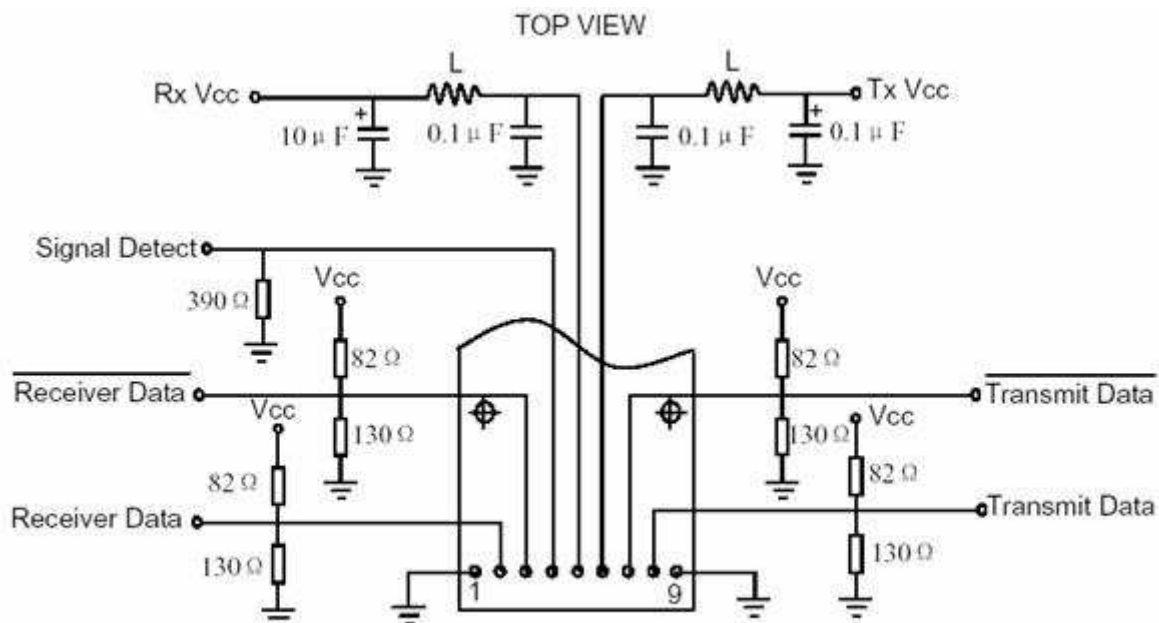
Pin#	Pin Name	Logic Level	Description
N/C	Mounting Studs		The two pins are not connected to the transceiver internal circuit.
1	VEER RX Ground	N/C	Directly connect this pin to receiver signal ground plane.
2	RD+ RX Output Data	PECL	
3	RD- RX Output Invert Data	PECL	

4	SD	RX Signal Detect	PECL	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 +5V/+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 +5V/+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	PECL	
8	TD+	TX Data Input	PECL	
9	VEET	TX Ground	N/C	Directly connect this pin to transmitter signal ground plane.



Package Information

Recommended Circuit



Ordering Information

SWTR □ □ □ **1** - □ □ - □ □ □ **P**

Wavelength (nm)	LD Type	Data Rate (Mb/s)	Package Type	Output power	Operation Voltage	Operation Temperature	Data/Alarm Interface	Connector	Pigtail
3:	1:	1:	1:	See figure3	3:	1:	1:	1:	P:
1310	FP	Ultra low	1*9		3.3V	0~70°C	Data/PECL Alarm/PECL	FC/PC	Pigtail
4:	2:	2:			5:	2:	2:	2:	
1490	DFB	52			5V	-45~+85°C	Data/PECL Alarm /TTL	FC/APC	
5:		3:						3:	
1550		155						SC/PC	
		4:						4:	
		622						SC/APC	
		5:						6:	
		1250						ST	

Figure 3

Code	1	2	3	4	Unit
Power range					
Specification					
SSTR**3*	-15~-8	-5~0	-	0~+5	dBm
SSTR**4*	-15~-8	-3~+2	-	0~+5	
SSTR**5*	-10~-3	-3~+2	0~+5	-	

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