

Product Overview

SFF Bi-directional Transceiver

Features

- Single Fiber Bi-directional Operation
- Integrated WDM (Wave Division Multiplex) coupler
- Single +3.3V or +5V Power Supply
- MSA compliant 2*5/2*10 SFF package with single SC receptacle
- Isolation > 35dB and Cross talk < -45dB, full-duplex sensitivity -31dBm
- Complies with Telcordia GR-468-CORE
- Very low EMI and certified ESD protection



Application

- WDM application
- Fast Ethernet
- Point to point FTTH application

Regulatory Compliance

- Compliant with Industrial Standard SFF MSA

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-	0	+6	V
	Vee	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	+4.75	+5.25	V

		SWFF3151-*3	+3.1	+3.5	V
Ambient Operating Temperature	Top	SWFF3151-**-1	0	+70	°C
		SWFF3151-**-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	SWFF3**1	1261	1310	1360		
		SWFF4**1	1460	1490	1560	nm	
		SWFF5**1	1480	1550	1580		
Spectral Width	$\Delta\lambda$	SWFF*1*1	-	-	7.7	nm	
		SWFF*2*1	-	-	1		
Average Optical Output Power	Po	SWFF**31-1*	-15	-	-8		
		SWFF**31-2*	-5	-	0		
		SWFF**31-4*	0	-	+5		
		SWFF**41-1*	-15	-	-8		
		SWFF**41-2*	-3	-	+2	dBm	
		SWFF**41-4*	0	-	+5		
		SWFF**51-1*	-10	-	-3		
		SWFF**51-2*	-3	-	+2		
Extinction Ratio	Er	SWFF*1*1	8.2	-	-	dB	
		SWFF*2*1	10	-	-		
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	SWFF**31	-	-36	-34		
		SWFF**41	-	-31	-28	dBm	2
		SWFF**51	-	-25	-23		
Optical Isolation	Iso	35	-	-	dB		
Signal Detect Assert Level	Pa(SD L-H)	SWFF**31	-50	-	-		
		SWFF**41	-45	-	-	dBm	Low-level:
		SWFF**51	-35	-	-		
Signal Detect Deassert Level	Pd(SD H-L)	SWFF**31	-	-	-36		
		SWFF**41	-	-	-28	dBm	Alarm
		SWFF**51	-	-	-23		
Signal Detect Hysteresis	-	-	3	-	dB		
Operating Current	Icc	-	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

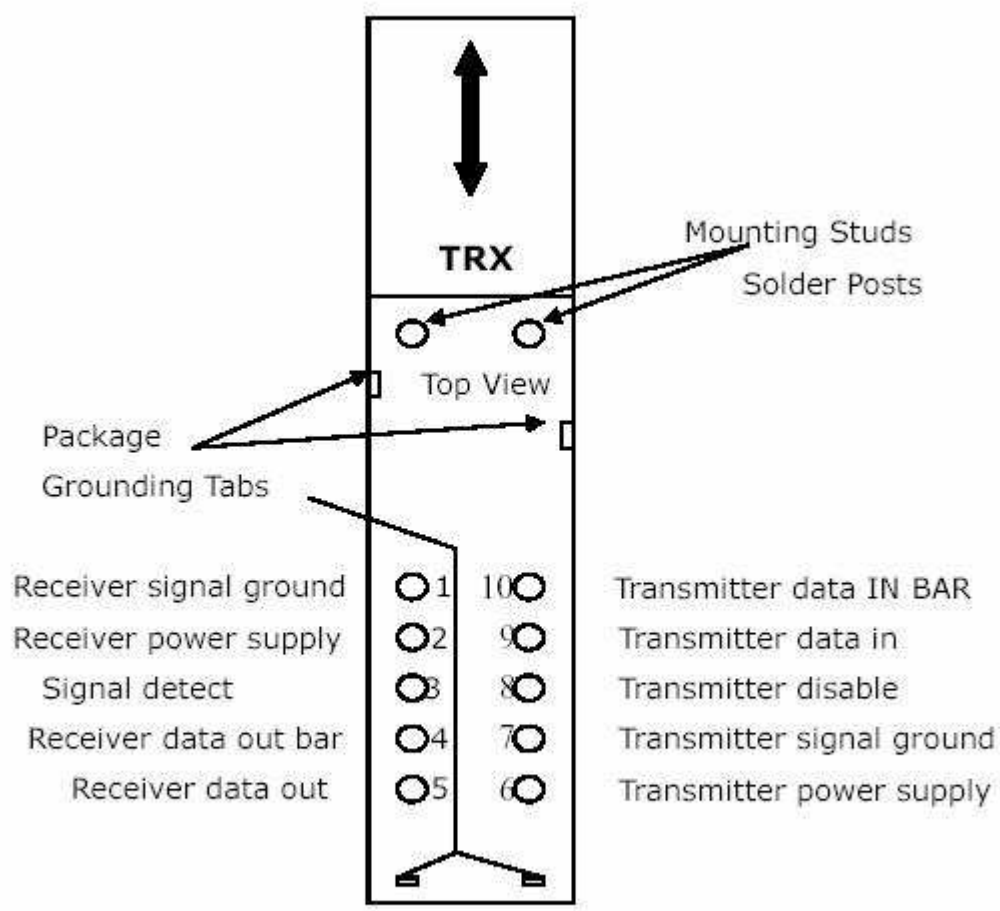
PECL Output Pins SD, RD+ and RD-

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 $2^{21}-1$ PRBS with 72 ones and 72 zeros inserted (recommendation G958)**
- RL=50R connected to a level of Vcc -2V.**

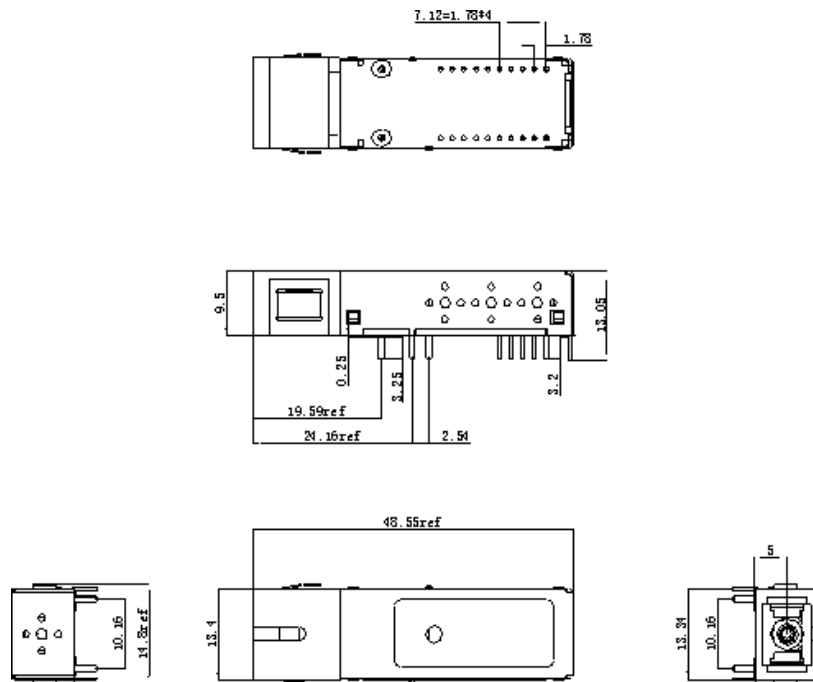
Pin Definitions



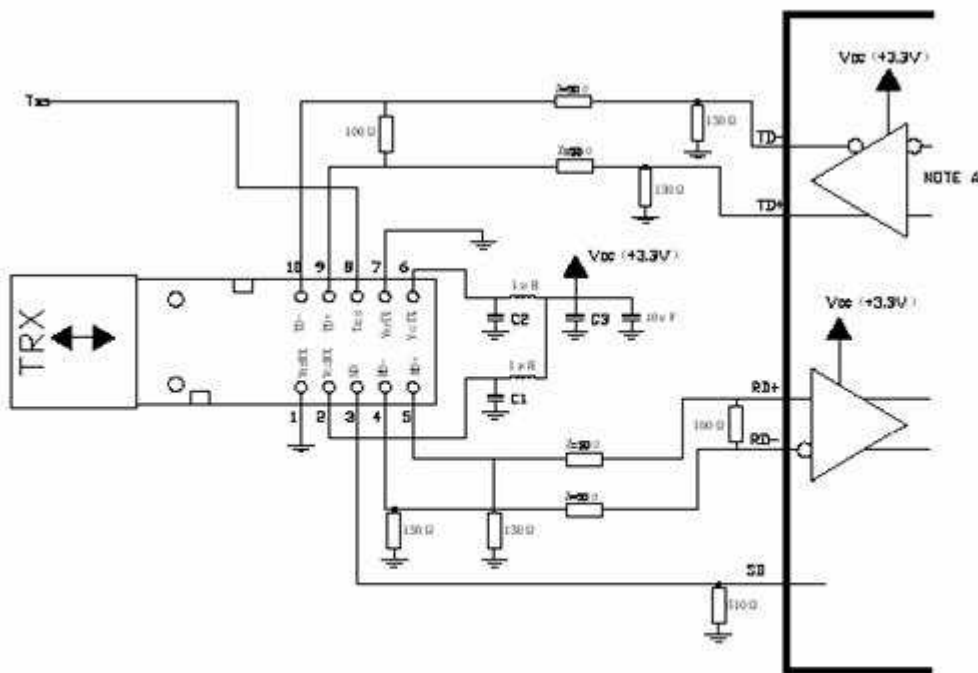
Pin Function Definitions

Pin#	Pin Name	Description
1	V_{EER}	Rx Ground
2	V_{CCR}	Rx Power Supply
		Rx Signal Detect
3	SD	Normal Operation : Logic "1" Output, represents that optical is present at receiver input. Fault Condition : Logic "0" output.
4	RD-	Rx Output Inverted Data
5	RD+	Rx Output Data
6	V_{CCT}	Tx Power Supply
7	V_{EET}	Tx Ground
8	TxDis	Tx Disable
9	TD+	Tx Data Input
10	TD-	Tx Inverted Data Input

Mechanical Design Diagram (Unit : mm)



Recommended Circuit



Ordering Information

SWFF - - **P**

Wavelength (nm)	LD Type	Data Rate (Mb/s)	Package Type	Output power	Operation Voltage	Operation Temperature	Data/ Alarm Interface	Connector	Pigtail
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3:	1:	3:	1:	See figure3	3:	1:	1:	3:	P:
1310	FP	155	2*5		3.3V	0~70℃	Data/PECL Alarm/PECL	SC/PC	Pigtail
4:	2:	4:	2:		5:	2:	2:	5: LC/PC	
1490	DFB	622	2*10		5V	-45~+85℃	Data/PECL Alarm /TTL		
5:		5:							
1550		1250							
6:									
1310/1310									

Figure 3

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

Products:

Tel:0086-755-89933548

Fax:0086-755-89933512

E-mail:

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