SFP-WDM series

Bi-Directional Transceiver Module
LC Connector

Features:

- Compliant with Industry Standard RFT Electrical Connector and Cage
- 100Ω differential AC coupled CML Outputs
- SFP (Small Form-factor Pluggable) package with SC receptacle optical interface.
- Single + 3.3V Power Supply and TTL Logic Interface
- Compliant with 100/155M~1.25Gb/s bi-directional data link
  - 1310nmTx/1550nmRx
  - 1550nmTx/1310nmRx
  - 1310nmTx/1490nmRx
  - 1490nmTx/1310nmRx
  - 1490nmTx/1550nmRx
  - 1550nmTx/1490nmRx operating wavelength
- EEPROM with Serial ID Functionality
- 1310nm FP/DFB, 1490nm FP/DFB, 1550 FP/DFB Laser for up to 40Km transmission distance
- Extended Operating Temperature Range(0℃～70℃)
- Low EMI
- Class 1 Laser Product Compliant with the Requirements of IEC 60825-1 and IEC 60825-2
- RoHS compatible available

Applications:

- 100Base Fast Ethernet
- Gigabit Ethernet
- Fiber channel
- Switch to Switch interface
- File server interface

Absolute Maximum Ratings

Absolute Maximum Ratings **Parameter**	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Notes**
Storage Temperature	Ts	-40		85	℃	
Supply Voltage	VCC	-0.5		4	V	

Recommended Operating Conditions

Recommended Operating Conditions **Parameter**	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Notes**
Ambient Operating Temperature	TA	0		70	℃	
Supply Voltage	VCC	3.15	3.3	3.45	V	
Baud Rate		100/155		1250	Mbps	
Total Supply Current	ICC			300	mA	
Surge Current	I surge			+30	mA	

PERFORMANCE SPECIFICATIONS - ELECTRICAL
0ºC<Tc<+80°C; +3.15V<Vcc<+3.6V

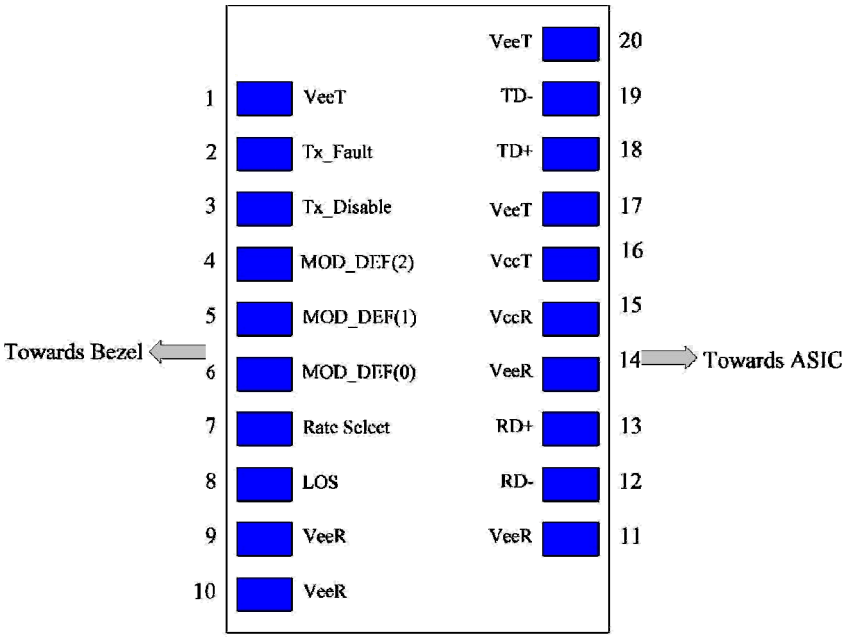
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
TRANSMITTER						
CML/PECL Inputs (Differential)	Vin	400		2500	mVpp	AC coupled inputs
Input Impedance (Differential)	Zin	85	100	115	ohms	Rin > 100 kohms @ DC
Tx_DISABLE Input Voltage - High		2		3.45	V	
Tx_DISABLE Input Voltage - Low		0		0.8	V	
Tx_FAULT Output Voltage -- High		Vcc-0.5		Vcc+0.3	V	Io = 400µA; Host Vcc
Tx_FAULT Output Voltage -- Low		0		0.5	V	Io = -4.0mA
RECEIVER						
CML Outputs (Differential)	Vout	400	800	1200	mVpp	AC coupled outputs
Output Impedance (Differential)	Zout	85	100	115	ohms	
Rx_LOS Output Voltage - High		Vcc-0.5		Vcc+0.3	V	lo = 400µA; Host Vcc
Rx_LOS Output Voltage - Low		0		0.8	V	lo = -4.0mA
MOD_DEF (0:2)	VoH	2.5			V	With Serial ID
	VoL	0		0.5	V	

OPTICAL SPECIFICATIONS

0ºC<Tc<+80°C; +3.15V<Vcc<+3.6V

Parameter		Symbol	Min.	Typ.	Max	Unit	Notes	
9μm Core Diameter SMF					80	Km	BER<1.0E-12 @ 1.25/1.0625GBaud	
TRANSMITTER								
Optical Center Wavelength		λ	1260	1310	1360	nm		
			1480	1490	1500			
			1500	1550	1580			
Spectral Width		Δλ			3	nm	RMS, FP laser	
					1	nm	RMS,DFB laser	
Optical Transmit Power		Po	-13		-8	dBm	1310FP	20km@155Mbps
			-13		-8		1550FP	
			-9		-4		1310FP	10km@1.25Gbps
			-9		-4		1550DFB	
			-5		-2		1310FP	20km@1.25Gbps
			-8		-2		1490DFB	
			-5.5		-3		1310FP	20km@1.25Gbps
			-9		-4		1550DFB	
			-4		0		1310DFB	40km@1.25Gbps
			-4		0		1490DFB	
			-5		0		1490DFB	40km@1.25Gbps
			-5		0		1550DFB	
			-3		0		1310DFB	40km@1.25Gbps
			-3		0		1550DFB	
			-3		5		1490DFB	80km@1.25Gbps
			-3		5		1550DFB	
Extinction Ratio		ER	9			dB	P1/P0	
Total Jitter		TJ			100	ps	Measured with 27- 1 PRBS@1.25Gbps	
Output Rise/Fall Time	1310nm	tR, tF			160	ps	20-80%;measured unfiltered@1.25Gbps	
	1550nm				160			
	1490nm				160			
RECEIVER								
Max. Receiver Sensitivity		20km	-30			dB	BER<10E-12 @ 155Mbps	
		20km	-20			dB	BER<10E-12 @ 1.25/1.0625Gbps	
		40km	-22			dB	BER<10E-12 @ 1.25/1.0625Gbps	
		80km	-24			dB	BER<10E-12 @ 1.25/1.0625Gbps	

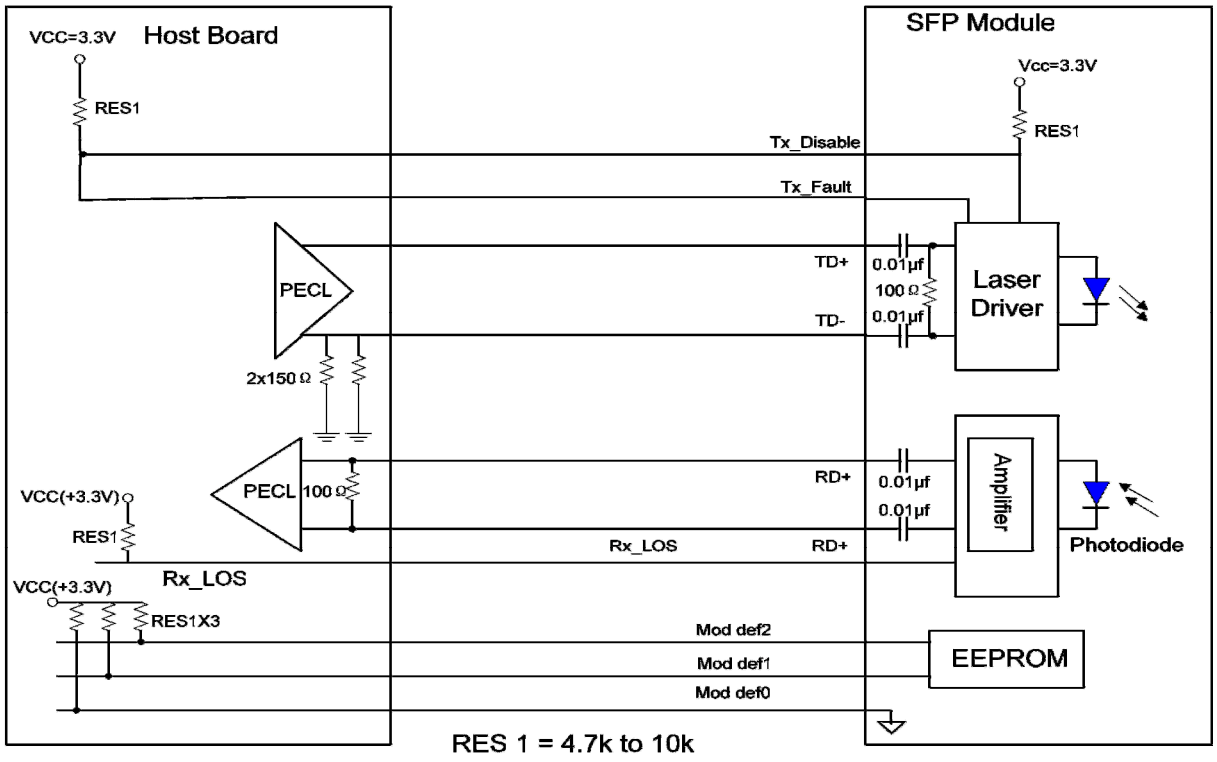
SFP Transceiver Electrical Pad Layout



Pin Function Definitions

Pin Num.	Name	FUNCTION	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	TX Fault	Transmitter Fault Indication	3	Note 1
3	TX Disable	Transmitter Disable	3	Note 2, Module disables on high or open
4	MOD-DEF2	Module Definition 2	3	Note 3, Data line for Serial ID.
5	MOD-DEF1	Module Definition 1	3	Note 3, Clock line for Serial ID.
6	MOD-DEF0	Module Definition 0	3	Note 3, Grounded within the module.
7	Rate Select	Not Connect	3	Function not available
8	LOS	Loss of Signal	3	Note 4
9	VeeR	Receiver Ground	1	Note 5
10	VeeR	Receiver Ground	1	Note 5
11	VeeR	Receiver Ground	1	Note 5
12	RD-	Inv. Received Data Out	3	Note 6
13	RD+	Received Data Out	3	Note 7
14	VeeR	Receiver Ground	1	Note 5
15	VccR	Receiver Power	2	3.3 ± 5%, Note 7
16	VccT	Transmitter Power	2	3.3 ± 5%, Note 7
17	VeeT	Transmitter Ground	1	Note 5
18	TD+	Transmit Data In	3	Note 8
19	TD-	Inv. Transmit Data In	3	Note 8
20	VeeT	Transmitter Ground	1	Note 5

Recommend Circuit Schematic



Mechanical Specifications