

Product Overview

WFT's SFP transceiver modules is specifically designed for the high performance and cost-effectiveness integrated duplex data link over a single fiber. The high-speed laser diode and photo diode are provided as a light source and a detector, Respectively. Am EEPROM is used to store the required data via the 2-wire serial CMOS EEPROM protocol. These Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). WFT provides not only a total solution from low data rates up to 2.5G, but also OEM/ODM, manufacturing services for fiber applications.

Features

- Up to 1.25Gb/s bi-directional data links
- Simplex LC connector
- Transmitter disable input
- Receiver Loss of Signal output
- Compliant with Fiber Channel 100-SM-LC-L
- Compliant with IEEE 802.3z Gigabit Ethernet Standard
- Single 3.3V power supply
- Metal enclosure for low EMI
- Class 1 laser product complies with EN 60825-1
- Hot-Pluggable SFP footprint
- Low power dissipation

Application

- FTTx
- Gigabit Ethernet
- 1x Fiber Channel
- High Speed I/O for file server
- Switched backbone application

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Absolute maximum ratings

PARAMETER	SYMBOL	UNITS	MIN	MAX
Storage Temperature	T _S	°C	-40	+85
Supply Voltage	V _{CC}	V	-0.5	4.0
Storage Relative Humidity	RH	%	5	95

Recommended operating conditions

PARAMETER	SYMBOL	UNITS	MIN	Typ	MAX
Case Operating Temperature	T _c	°C	0	---	70
Supply Voltage	V _{ccT} / v _{ccR}	V	3.1	3.3	3.5
Supply Current	I _{TX} + I _{RX}	mA	---	---	250
Data rate	Gbps			1.25	

Transmitter Electro-optical Characteristics

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Output Optical Power	P _{out}	-9	---	-3	dBm	1
Extinction Ratio	ER	9	---	---	dB	1
Center Wavelength	λ _c	1270	1310	1360	nm	
Spectral Width (FWHM)	Δλ	---	---	2.5	nm	RMS(σ)
Optical Rise/Fall Time	T _r / T _f	---	---	260	ps	2
Output Eye	Compliant with IEEE 802.3z					
Total jitter	T _j	---	---	227	ps	
Relative Intensity Noise	RIN	---	---	-120	dB/Hz	
Max.P _{out} TX-Disable Asserted	P _{OFF}	---	---	-45	dBm	
Differential Input Voltage	V _{DIFF}	0.4	---	2.0	V	

Notes:

1. All of data is measured with at 1250Mbps, PRBS 2⁷-1 NRZ.
2. 20% to 80% Values.

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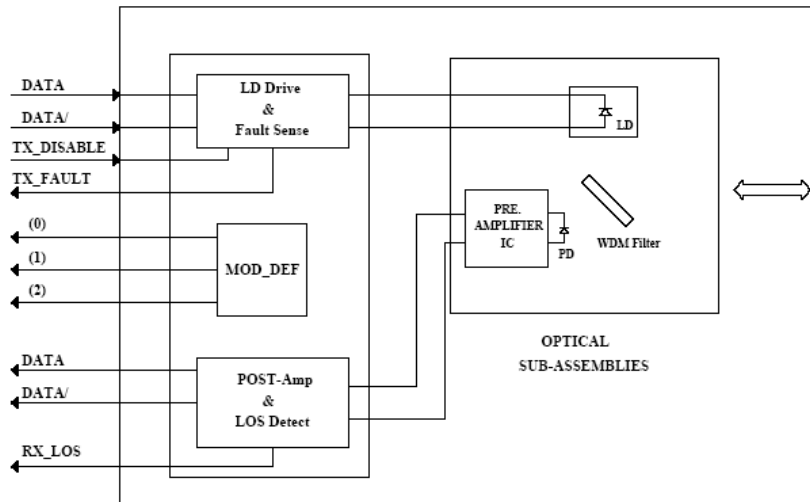
Receiver Electro-optical Characteristics

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Maximum Input Power	P_{IN}	-1	---	---	dBm	1
Receiver Sensitivity	P_{IN}	---	---	-21	dBm	1
Center Wavelength	λ_C	1480	---	1580	nm	
Optical Return Loss	ORL	14			dBm	
Signal Detect Asserted	P_A	---	---	-21	dBm	
Signal Detect De-asserted	P_D	-35	---	---	dBm	
Signal Detect Hysteresis	$P_A - P_D$	0.5	---	---	dB	
Differential Output Voltage	V_{DIFF}	0.5	---	1.2	V	
Data output Rise/Fall Time	T_r/T_f	---	---	0.35	ns	2
Receiver Loss of Signal Output Voltage-Low	RX_LOS _L	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	RX_LOS _H	2.4	---	V _{cc}	V	

Notes:

1. With BER better than or equal to 1×10^{-12} , measured in the center of the eye opening with PRBS $2^7 - 1$ NRZ..
2. 20% to 80% Values

Block Diagram of Transceiver



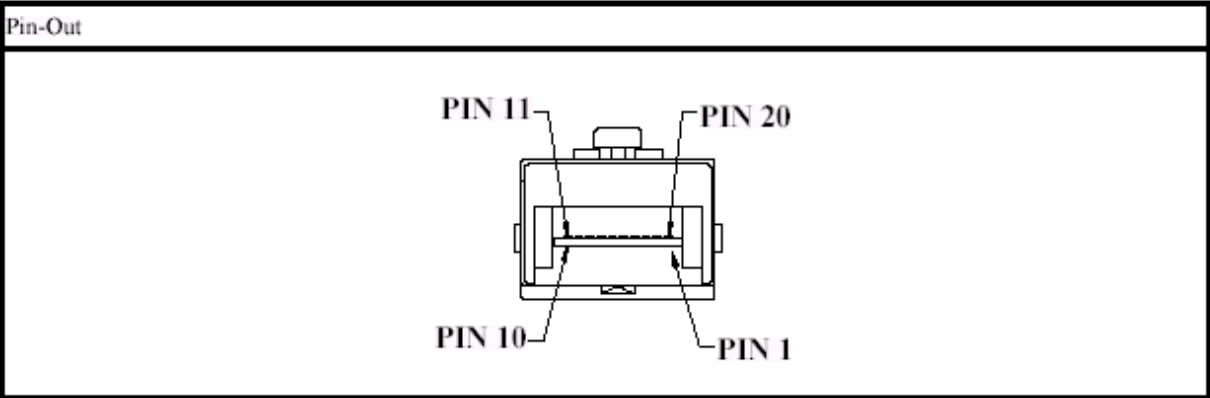
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Pin Assignment



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 disable on high or open
4	MOD DEF 2	Module Definition 2	3	Note 3 2 wire serial ID interface
5	MOD DEF 1	Module Definition 1	3	Note 3 2 wire serial ID interface
6	MOD DEF 0	Module Definition 0	3	Note 3 Ground in Module
7	Rate Select	Select between full or reduced receiver bandwidth	3	No User Connection reserved for future Function
8	LOS	Loss of Signal	3	Note 4
9	VeeR	Receiver Ground	1	
10	VeeR	Receiver Ground	1	
11	VeeR	Receiver Ground	1	
12	RD-	Inv. Receive Data	3	Note 5
13	RD+	Receive Data out	3	Note 5
14	VeeR	Receiver Ground	1	
15	V _{CC} R	Receiver Power	2	3.3V±5%
16	V _{CC} T	Transmitter Power	2	3.3V±5%
17	VeeT	Transmitter Ground	1	
18	TD+	Transmit Data in	3	Note 6
19	TD-	Inv. Transmit Data	3	Note 6
20	VeeT	Transmitter Ground	1	



Note

Plug Seq.: Pin engagement during hot plugging.

- 1) Tx Fault is an open collector output that shall be pulled up with a 4.7k - 10k Ω resistor on the host board. Pull up voltage between 2.0V and $V_{ccT}+0.3V$. When high, output indicates a laser fault of some kind. Low indicates normal operation.

Tx Fault is asserted when bias current of laser exceeds the factory-calibrated threshold level. The laser output is not turned off in case of TX Fault.

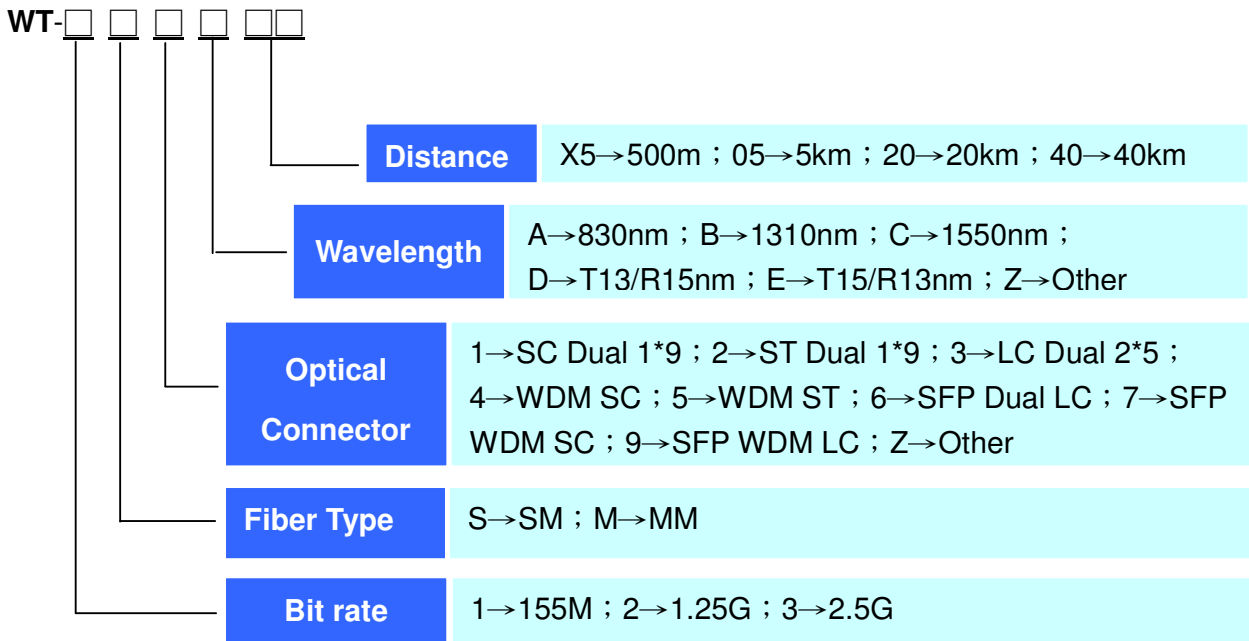
- 2) Tx Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7k Ω resistor.
- 3) Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7k - 10k Ω resistor on the host board. The pull-up voltage shall be V_{ccT} or V_{ccR} .
Mod-Def 0 indicates that the module is present
Mod-Def 1 is the clock line of two wire serial interface for serial ID
Mod-Def 2 is the data line of two wire serial interface for serial ID
- 4) LOS (Loss of Signal) is an open collector output that shall be pulled up with a 4.7k - 10k Ω resistor. Pull up voltage between 2.0V and $V_{ccR}+0.3V$. Low indicates normal operation.
- 5) RD-/+ : These are the differential receiver outputs. They are AC coupled 100 Ω differential lines which should be terminated with 100 Ω (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board.
- 6) TD-/+ : These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on the host board.

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Ordering Information



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