

DT-SFP-SM-DX-LC-M-1.25G

SFP (Single Form Factor Pluggable) Optical Transceiver Module, Single Mode Compatibility, LC Connections, Duplex, 1.25GBPS

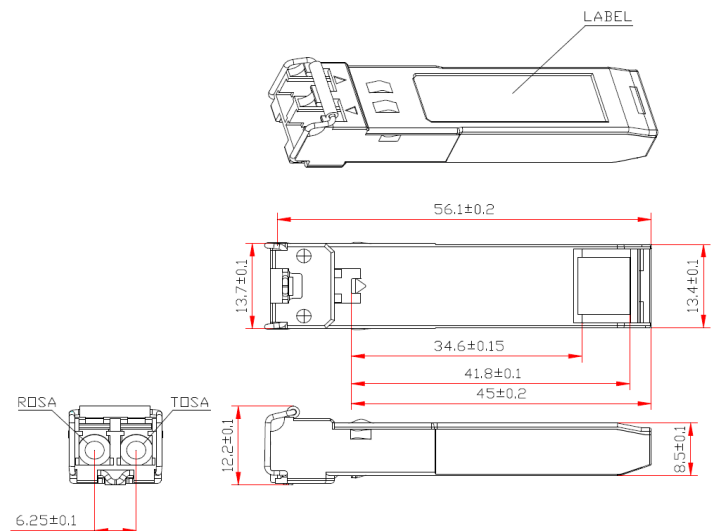
This DataTronix SFP Optical Transceiver Module provides reliable, high-speed bi-directional data links up to 1.25Gbps, ideal for Gigabit Ethernet Fiber Channel applications. With a 1310nm Fabry-Perot laser transmitter and LC duplex connector, it supports single-mode transmission over distances up to 10km on 9/125 μ m SMF. Its hot-pluggable design and compact SFP footprint allow for flexible integration into a variety of networking environments. Featuring low jitter, low power dissipation <700mW, and EMI protection, this module is well-suited for switch-to-switch interfaces, router/server connections, and other optical transmission systems.



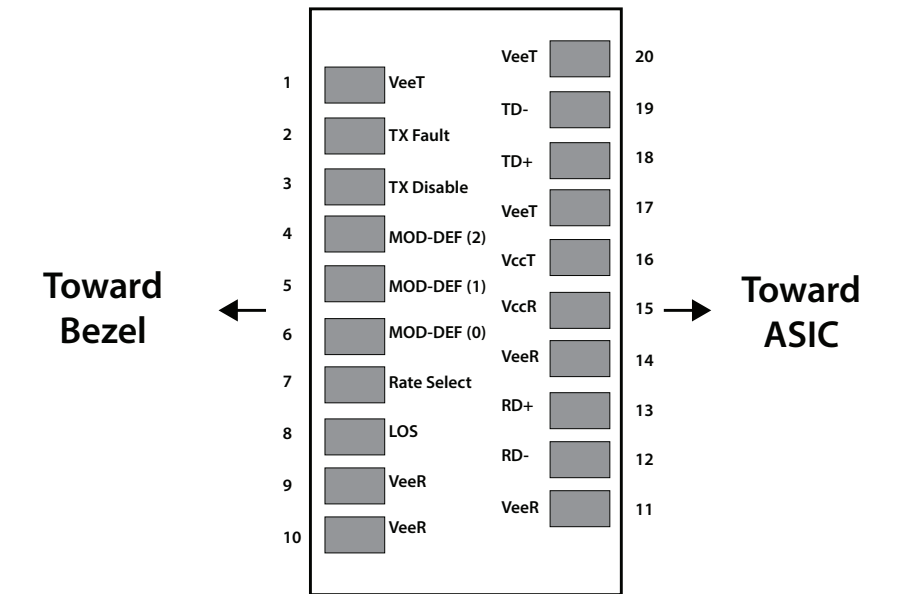
Key Features:

- Supports up to 1.25Gbps bi-directional data links
- Hot-pluggable SFP footprint
- 1310nm Fabry-Perot laser transmitter
- Duplex LC connector
- Very low jitter for stable data transmission
- No Rate Select input required for Fiber Channel 1x operation
- Operates over distances of up to 10km on 9/125 μ m SMF (Single-Mode Fiber)
- Metal enclosure for reduced EMI (Electromagnetic Interference)
- Low power dissipation, typically <700mW
- Compliant with FCC and RoHS Standards

Mechanical Diagram:



DT-SFP-SM-DX-LC-M-1.25G SFP (Single Form Factor Pluggable) Optical Transceiver Module, Single Mode Compatibility, LC Connections, Duplex, 1.25GBPS



Pin Descriptions			
Pin	Signal Name	I/O Typ.	Funcational Description
1	VeeT		Transmitter Ground
2	TX Fault		Transmitter Fault Indication, Logic high, open collecto Compatible , 4.7K to 10K Ohm pull up to VDDT on host
3	TX Disable		Transmitter Disable – Module disable on high or open (No Used)
4	MOD_DEF(2)	I/O	Module Definition 2 Two wire serial ID interface SDA, 4.7K to 10K Ohm pull up to VDDT on host
5	MOD_DEF(1)	Input	Module Definition 1 Two wire serial ID interface SCL, 4.7K to 10K Ohm pull up to VDDT on host
6	MOD_DEF(0)	Output	Module Definition 0 TTL Low
7	Rate Select	Input	Select between full or reduced receiver bandwidth The undefined
8	LOS		Receiver Loss of Signal, Logic high, Open collector compatible 4.7K to 10K Ohm pull up to VDDT on host.
9	VeeR		Receiver Ground
10	VeeR		Receiver Ground
11	VeeR		Receiver Ground
12	RD-	Output	Inverse Received Data Out, Differential PECL, at AC couple
13	RD+	Output	Received Data Out, Differential PECL, at AC couple
14	VeeR		Receiver Ground
15	VccR	Input	Receiver Power
16	VccT	Input	Transmitter Power
17	VeeT		Receiver Ground
18	TD+	Input	Transmitter Data In, Differential PECL, AC couple
19	TD-	Input	Inverse Transmitter Data In, Differential PECL, AC couple
20	VeeT		Transmitter Ground

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Notes:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k - 10 kohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF(0) pulls line low to indicate module is plugged in.
4. DT-SFP-SM-DX-LC-M-1.25G transceivers operate on 1x Fiber Channel and Gigabit Ethernet data rates and respective protocols without active control.
5. LOS is open collector output. Should be pulled up with 4.7k – 10 kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Ref.
Maximum Supply Voltage	Vcc	0.5	4.5	V	
Storage Temperature	TS	-40/-40	212/100	°F/°C	
Case Operating Temperature	TOP	-40/-40	185/85	°F/°C	
Relative Humidity	RH	0	85	%	1

Electrical Characteristics (TOP = -40 - 185°F (-40 to 85°C), VCC = 3.00 to 3.60 Volts)

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Supply Voltage	Vcc	3.00		3.60	V	
Supply Current	Icc		200	300	°mA	
Transmitter						
Input differential impedance	Rin		100		Ω	2
Single ended data input swing	Vin, pp	250		1200	mV	
Transmit Disable Voltage	VD	Vcc-1.3		Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee +0.8	V	3
Transmit Disable Assert Time				10	us	
Receiver						
Single ended data output swing	Vout, pp	300	400	800	mV	4
Data output rise time	tr		100	175	ps	5
Data output fall time	tf		100	175	ps	5
LOS Fault	VLOS Fault	Vcc-0.5		VccHOST	V	6
LOS Normal	VLOS Norm	Vee		Vee+0.5	V	6
Power Supply Rejection	PSR	100			mVpp	7
Deterministic Jitter Contribution	RX Δ DJ			51.7	ps	8
Total Jitter Contribution	RX Δ TJ			122.4	ps	

Notes:

1. Non condensing.
2. AC coupled.
3. Or open circuit.
4. Into 100 ohm differential termination.
5. 20 – 80 %
6. LOS is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
7. All transceiver specifications are compliant with a power supply sinusoidal modulation of 20 Hz to 1.5 MHz up to specified value applied through the power supply filtering network shown on page 23 of the Small Form-factor Pluggable (SFP) Transceiver MultiSource Agreement (MSA), September 14, 2000.
8. Measured with DJ-free data input signal. In actual application, output DJ will be the sum of input DJ and Δ DJ.

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Optical Characteristics (TOP = -40 - 185°F (-40 to 85°C), VCC = 3.00 to 3.60 Volts)						
Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Output Opt. Power	POUT	-9		-3	dBm	1
Optical Wavelength	λ	1270	1310	1360	nm	2
Spectral Width	σ			4	nm	2
Optical Modulation Amplitude	OMA	174			μ W	2, 3
Optical Rise/Fall Time	tr/ tf		100	160	ps	4
RIN				-120	dB/Hz	
Deterministic Jitter Contribution	TX Δ DJ		20	56.5	ps	5
Total Jitter Contribution	TX Δ TJ		70	119	ps	
Optical Extinction Ratio	ER	8.2			dB	
Receiver						
Average Rx Sensitivity @ 1.25 Gb/s (Gigabit Ethernet)	RSENS2			-22	dBm	6, 7
Average Rx Sensitivity @ 1.06 Gb/s (1X Fiber Channel)	RSENS1			-23	dBm	6, 7
Average Received Power	RxMAX			0	dBm	
Receiver Elec. 3 dB cutoff freq.				1500	MHz	
Optical Center Wavelength	λ C	1265		1600	nm	
Return Loss		12			dB	
LOS De-Assert	LOSD			-24	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
2. Also specified to meet curves in FC-PI 13.0 Figures 18 and 19, which allow trade-off between wavelength, spectral width and OMA.
3. Equivalent extinction ratio specification for Fiber Channel. Allows smaller ER at higher average power.
4. Unfiltered, 20-80%. Complies with IEEE 802.3 (Gig. E), FC 1x eye masks when filtered.
5. Measured with DJ-free data input signal. In actual application, output DJ will be the sum of input DJ and Δ DJ.
6. Measured with conformance signals defined in FC-PI 13.0 specifications.
7. Measured with PRBS 2⁷-1 at 10⁻¹² BER

Environmental Specifications					
Parameter	Symbol	Min	Max	Unit	Ref.
Case Operating Temperature	Top	-40/-40	185/85	°F/°C	
Storage Temperature	Tsto	-40/-40	212/100	°F/°C	