

1000BASE-LX/LH SFP Module SM LC 10km data range (1310nm) Cisco compatible



GBIC-, SFP-, XFP-, XENPAK-Transceiver

The tde Small Form Pluggable Optical Transceiver are easy installed for enterprise and telecom applications. The tde SFP modular line provides a fully compatible, highly reliable and volume accessible supply of quality transceiver products with excellent performance for design-in manufacturing and end-user enterprise applications.



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Technical Data

Features

- Operating data rate up to 1.25Gbps
- 1310 nm FP LD Transmitter
- Distance up to 10km
- Single 3.3V Power supply and TTL Logic Interface
- Duplex LC Connector Interface
- Hot Pluggable
- Operating Case Temperature Industrial: -40°C~+85°C
- Compliant with MSA SFP Specification
- Digital diagnostic monitor interface Compatible with SFF-8472

Applications

- Gigabit Ethernet Switches and Routers
- Fiber Channel Switch Infrastructure
- XDSL Applications
- Metro Edge Switching

Regulatory Compliance

Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>500 V) Isolation with the case
Electromagnetic Interference (EMI)	FCC Part 15 Class B	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2	Compatible with Class I laser product. Compatible with T üV standards
Component Recognition	UL and CUL	UL file E317337
Green Products	RoHS	RoHS6

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	°C
Supply Voltage	Vcc	-0.5	3.6	V

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Case Temperature	TA	-40		+85	°C
Power Supply Voltage	Vcc	3.15	3.3	3.45	V
Power Supply Current	Icc			300	mA
Surge Current	ISurge			+30	mA
Baud Rate			1.25		GBaud

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Performance Specifications - Electrical

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
LVPECL Inputs (Differential)	V _{in}	400		2500	mVp	AC coupled inputs
Input Impedance (Differential)	Z _{in}	85	100	115	ohms	R _{in} > 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		2		V _{cc} +0.3	V	I _o = 400µA; Host V _{cc}
Tx_FAULT Output Voltage - Low		0		0.5	V	I _o = -4.0mA
Receiver:						
LVPECL Outputs (Differential)	V _{out}	400	800	1200	mVpp	AC coupled outputs
Output Impedance (Differential)	Z _{out}	85	100	115	ohms	
Rx_LOS Output Voltage - High		2		V _{cc} +0.3	V	I _o = 400µA; Host V _{cc}
Rx_LOS Output Voltage - Low		0		0.8	V	I _o = -4.0mA
MOD_DEF (0:2)	VoH VoL	2.5 0		0.5	V V	With Serial ID

Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
9µm Core Diameter SMF				10	km
Data Rate			1.25		Gbps
Transmitter					
Centre Wavelength	λ _c	1260	1310	1360	nm
Spectral Width (RMS)	σ			3	nm
Average Output Power	P _{Out}	-10		-3	dBm
Extinction Ratio	EX	9			dB
Rise/Fall Time (20% – 80%)	tr/tf			1.2	ns
Total Jitter	TJ			56.5	ps
Output Optical Eye	ITU-T G.957 Compliant				
Data Input Swing Differential	V _{IN}	500		2000	mV
Input Differential Impedance	Z _{IN}	90	100	110	Ω
TX Disable - Disable		2.0		V _{CC} +0.3	V
- Enable		0		0.8	V
TX_Fault - Fault		2.0		V _{CC} +0.3	V
- Normal		0		0.8	V

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TX_Disable Assert Time t_off			10	us
Receiver				
Centre Wavelength	λ_c	1100	1600	nm
Receiver Sensitivity	PIN		-20	dBm
Output Differential Impedance	P IN	90	100	110 Ω
Data Output Swing Differential	VOUT	370	2000	mV
Rise/Fall Time	Tr/tf		2.2	ns
LOS De-Assert	LOSD		-24	dBm
LOS Assert	LOSA	-40		dBm
LOS - High		2.0	VCC+0.3	V
LOS - Low		0	0.8	V

Product variants & accessories

Art.-No.	Description
TDE-SFP-GE-L	1000BASE-LX/LH SFP Module SM LC 10km data range (1310nm) Cisco compatible