

10GBASE-LR XFP 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.



tde[®] trans data elektronik GmbH

Headquarter address:

Lingener Str. 2
D-49626 Bippen/Ohrte
Tel.: +49 5435 9511 0
Fax.: +49 5435 9511 32

Sales office address:

Prinz-Friedrich-Karl-Str. 46
D-44135 Dortmund
Tel.: +49 231 914 36 99
Fax.: +49 231 914 31 29

info@tde.de | www.tde.de

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Technical Data

Features

- Supports 9.95Gb/s to 11.1Gb/s bit rates
- Hot-pluggable XFP footprint
- Maximum link length of 10km
- Uncooled 1310nm EML/DFB laser.
- Duplex LC connector
- Power dissipation <2.5W
- Built-in digital diagnostic functions
- Temperature range -5°C to 70°C

Applications

- SONET OC-192 SR-1, SDH STM I-64.1 at 9.953Gbps
- 10GBASE-LR/LW 10G Ethernet
- 1200-SM-LL-L 10G Fibre Channel
- 10GE over G.709 at 11.09Gbps
- OC192 over FEC at 10.709Gbps

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
Maximum Supply Voltage 1	Vcc3	-0.5	4.0	V
Maximum Supply Voltage 2	Vcc5	-0.5	6.0	V
Storage Temperature	TS	-40	85	°C
Case Operating Temperature	TOP	-5	70	°C

Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Unit
Operating Temperature	TOP	-5	70	°C
Supply Voltage 1	Vcc3	3.13	3.45	V
Supply Voltage 2	Vcc5	4.75	5.25	V

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Electrical Characteristics

	Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
	Main Supply Voltage	Vcc5			5.25	V	
	Supply Voltage #2	Vcc3			3.45	V	
	Supply Current – Vcc5 supply	Icc5			250	mA	
	Supply Current – Vcc3 supply	Icc3			500	mA	
	Module total power	P			2.5	W	
Transmitter	Input differential impedance	RIN		100		Ω	1
	Differential data input swing	Vin, pp	120		820	mV	
	Transmit Disable Voltage	VD	2.0		Vcc	V	
	Transmit Enable Voltage	VEN	GND		GND+ 0.8	V	
	Transmit Disable Assert Time				10	us	
Receiver	Differential data output swing	Vout, pp	340	650	850	mV	
	Data output rise time	tr			38	ps	2
	Data output fall time	tf			38	ps	2
	LOS Fault	VLOS fault	Vcc – 0.5		VccHOST	V	3
	LOS Normal	VLOS norm	GND		GND+0.5	V	3
	Power Supply Rejection	PSR					4

Notes:

1. After internal AC coupling.
2. 20 – 80 %
3. Loss Of Signal is open collector to be pulled up with a 4.7k – 10kohm resistor to 3.15 – 3.6V. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
4. Per Section 2.7.1. in the XFP MSA Specification.

Optical Characteristics

	Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter	Optical output Power	P	-6		0	dBm
	Optical Wavelength	λ	1290		1330	nm
	Optical Extinction Ratio	ER	6			dB
	Sidemode Supression ratio	SSRmin			30	dB

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	Average Launch power of OFF transmitter	POFF	-30			dBm
	Tx Jitter	Txj	Compliant with each standard requirements			
Receiver	Receiver Sensitivity (OMA) at 10.7Gb/s	RSENS			-14.5	dBm
	Maximum Input Power	PMAX	+0.5			dBm
	Optical Center Wavelength	λ_C	1270		1600	nm
	Receiver Reflectance	Rrx			-14	dB
	LOS De-Assert	LOSD			-18	dBm
	LOS Assert	LOSA	-32			dBm
	LOS Hysteresis		1			dB

Compliant with each standard requirements
Product variants & accessories

Art.-No.	Description
TDE-XFP-10G-LR	10GBASE-LR XFP Module SM LC 10km data range (1310nm) Cisco compatible