

SFP 10Gbps Modul SM LC, distance reach: 10 km, 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.

### Features

- Compliant with SFF-8413 and IEEE802.3ae
- Data rate selectable ≤9.95Gbps to 10.52Gbps bit rates
- Uncooled DFP-1310 Transmitter and PIN Receiver
- Link length up to 10km
- Low Power Dissipation 1.0W Maximum
- -5°C to 70°C Operating Case Temperature
- Single 3.3V power supply
- Diagnostic Performance Monitoring of module temperature, supply Voltages, laser bias current, transmit optical power, receive optical power
- RoHS compliant and lead free

### Applications



**tde<sup>®</sup>** 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 8805 61 13  
Fax.: +49 231 8805 61 15

info@tde.de | www.tde.de

## SFP 10Gbps Modul SM LC, distance reach: 10 km, Cisco compatible

- 10GBASE-LR/LW
- 10G Fiber Channel
- Other High Speed Data Connections

### Functional Description

TDE-SFP-10G-LR Transceiver is designed for 10GBASE-LR/LW, and 8.5G/10G Fiber- Channel applications. The transceiver consists of two sections: The transmitter section incorporates an uncooled DFB laser. And the receiver section consists of a PIN photodiode integrated with a TIA. All modules satisfy Class I Laser safety requirements. TDE-SFP-10G-LR Digital Diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472, which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage.

## Technical Data

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.
Supply Voltage	Vcc	-0.5 V	3.8 V
Storage Temperature	Tst	-40°C	85°C
Relative Humidity	Rh	0 %	85 %

### Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.
Supply Voltage	Vcc	3.13 V	3.3 V	3.47 V
Supply Current	Icc		360 mA	450 mA
Operating Case Temperature	Tca	-5°C		70°C
Module Power Dissipation	Pm	-	1.0 W	-

### Notes:

1. Supply current is shared between VCCTX and VCCRFX.
2. In-rush is defined as current level above steady state current requirements.

### Transmitter Specifications Electrical

Parameter	Symbol	Min.	Typ.	Max.
Data Rate	Mra	-	10.3 Gbps	11.3 Gbps
Input differential Impedance	Rim	-	100 Ω	-
Differential Data Input	VtxDIFF	120 mV	-	850 Mv
Transmit Disable Voltage	VD	2.0 V	-	Vcc3+0.3 V
Transmit Enable Voltage	Ven	0 V	-	+0.8 V

## SFP 10Gbps Modul SM LC, distance reach: 10 km, Cisco compatible

Transmit Disable Assert Time	Vn	-	-	100 µs
------------------------------	----	---	---	--------

### Receiver Specifications Electrical

Parameter	Symbol	Min.	Typ.	Max.
Data Rate	Mra	-	10.3 Gbps	11.3 Gbps
Differential Output Swing	Vout P-P	350 mV	-	850 mV
Rise/Fall Time	Tr/Tf	24 Ps	-	-
Loss of Signal Asserted	VOH	2 V	-	Vcc3+0.3 V
Loss of Signal Negated	VOL	0 V	-	+0.4 V

### Transmitter Specifications Optical

Parameter	Symbol	Min.	Typ.	Max.
Center Wavelength	λc	1260 nm	-	1355 nm
Optical Average Power	Po	-8.2 dBm	-	0,5 dBm
Optical OMA Power	Pom	-5.2 dBm	-	-
Side Mode Suppression Ratio	SMSR	30 dB	-	-
Optical Transmit Power (disabled)	PTX_DISABLE	-	-	-30 dBm
Extinction Ratio	ER	-	3.5	-
RIN <sub>21</sub> OMA (RIN measurement is made with a return loss at 12 dB)				-128 dB/Hz
Optical Return Loss Tolerance				12 dB

### Receiver Specifications Optical

Parameter	Symbol	Min.	Typ.	Max.
Input Operating Wavelength	λ	1260 nm	-	1355 nm
Average receive power		-	-	-1.0 dBm
Receiver sensitivity in OMA		-	-	-12.6 dBm
Stressed receiver sensitivity in OMA [1]				-10.3 dBm
Maximum Input Power	RX-overload	-	-	-1 dBm
Reflectance	Rrx	-	-	-12 dB
Loss of Signal Asserted		-25 dBm	-	-
LOS De-Asserted		-	-	-
LOS Hysteresis		0.5 dB	-	-

#### Notes:

[1] Measured with conformance test signal for BER = 10<sup>-12</sup>. The stressed sensitivity values in the table are for system level BER measurements which include the effects of CDR circuits. It is recommended that at least 0.4 dB additional margin be allocated if

SFP 10Gbps Modul SM LC, distance reach: 10 km, Cisco compatible

component level measurements are made without the effects of CDR circuits.

## Product variants & accessories

Art.-No.	Description
TDE-SFP10G-LR	SFP 10Gbps Modul SM LC, distance reach: 10 km, Cisco compatible