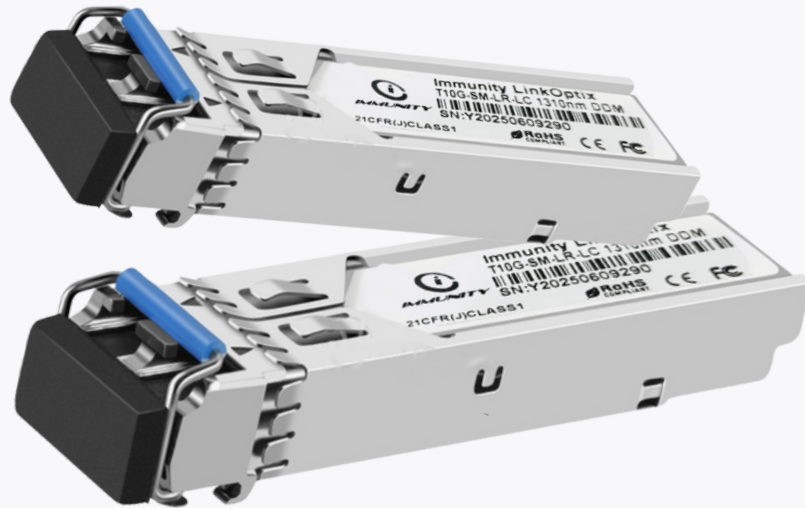


Model:

T10G: Immunity LinkOptix



A Compact, Plug-and-Play

The complete solution for data centers and enterprises,
delivering exceptional value.



10G SFP+ Optical Transceiver compliant
with IEEE 802.3ae 10GBASE-LR standard



Digital Diagnostics Monitoring (DDM) per
SFF-8472 – monitors temperature, voltage,
TX power, RX power, and bias current



Operates at 1310 nm wavelength using
DFB laser technology.



Duplex LC optical interface for standard
connectivity.



Built-in Automatic Power Control (APC)
for stable optical output.



TX_Fault & RX_LOS signals for proactive
fault detection and link status monitoring.





Low power consumption (<1W) as per SFF-8472 standards.



PRODUCT OVERVIEW

The **T10G-SM-LR-LC** is a high-performance, cost-effective 10G SFP+ transceiver supporting up to 10.3125 Gbps over 10 km on single-mode fiber. It features a 1310 nm DFB laser transmitter and a PIN photodiode receiver with integrated TIA and limiting amplifier. Hot-pluggable and LVTTTL-compatible, it offers 100 Ω differential AC-coupled interfaces, digital diagnostics monitoring, and status indicators for TX Fault and RX Loss of Signal.

FEATURES

- Supports 10GBASE-LR Ethernet links up to 10 km over SMF.
- Hot-pluggable SFP+ form factor for high port density.
- Data rate up to 10.3125 Gbps.
- Low power consumption: < 1.0 W.
- Operating case temperature: 0°C to +70°C.
- Compliant with IEEE 802.3ae and SFF-8431.
- Built-in digital diagnostics monitoring (DDM).
- Duplex LC optical interface.

STANDARDS COMPLIANCE

- Compliant with IEEE 802.3ae - 2002
- Compliant MSA SFF-8431
- Compliant MSA SFF-8472
- RoHS compliant
- FC Compliant
- CE Compliant

APPLICATIONS

- 10 Gigabit Ethernet (10GBASE-LR).
- Data center and cloud networking.
- Enterprise network backbones.
- Metro and access networks.

OPTICAL CHARACTERISTICS

Transmitter:

- Wavelength: 1260–1355 nm (typical 1310 nm).
- Optical power: -7 to +1 dBm.
- Extinction ratio: ≥ 3.5 dB.
- Side mode suppression: ≥ 30 dB.

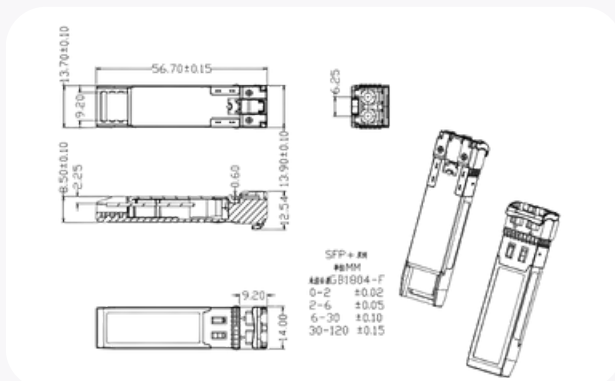
Receiver:

- Wavelength: 1260–1620 nm.
- Receiver sensitivity: ≤ -14 dBm.
- Overload: ≤ 0.5 dBm.

DIGITAL DIAGNOSTICS (DDM)

- Real-time monitoring of temperature, supply voltage, bias current, TX power, and RX power.
- Accuracy: $\pm 3^\circ\text{C}$ for temperature, $\pm 3\%$ for voltage, ± 3 dB for optical power, $\pm 10\%$ for bias current.
- Accessible via 2-wire I²C interface per SFF-8472.

MECHANICAL SPECIFICATIONS



GROSS WEIGHT

24 to 30 gm

ORDERING INFORMATION

Cloud Management	Hardware Warranty	Tech Support	SFP
12 Mo 36 Mo 60 Mo	12 Mo 36 Mo 60 Mo	8*5 Remote 24*7 Remote	1
		15 Onsite Visits 45 Onsite Visits	

PROVEN TESTING

TX/RX SIGNAL QUALITY TESTING

- Average Output Power
- OMA
- Extinction Ratio
- Receiver Sensitivity

RELIABILITY AND STABILITY TESTING

- Commercial: 0 °C to 70 °C
- Industrial: -40 °C to 85 °C

TRANSFER RATE AND PROTOCOL TESTING

- Ethernet
- Fibre Channel
- SDH/SONET
- CPRI

OPTICAL SPECTRUM EVALUATION

- Center Wavelength
- SMSR
- Spectrum Width

INDUSTRY WE SERVE

Our optical transceivers are designed for high-performance networking applications across multiple sectors.



Service Providers

Scale with cutting-edge optics and meet increasing bandwidth demands



Enterprise

Enable secured, real-time data and get an edge over your competitors



Data Centers

Future-proof interconnects between center, state and local institutions



Government

Build trusted, pro-active networks for servers, switches, and storages

PRODUCT SPECIFICATIONS

Detailed technical parameters defining the electrical, optical, and mechanical performance of the transceiver.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit	Notes
Storage Temperature	TS	-40	+85	°C	—
Supply Voltage	VCC3	0	3.6	V	—
Relative Humidity	RH	5	85	%	Note1
Rx Input Avg Power	Pmax	—	+1.5	dBm	—

Note:
[1] Non condensing state

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temp	TC	0	25	+70	°C
Power Supply Voltage	VCC3	3.13	3.3	3.47	V
	ICC3	—	—	300	mA
Power Dissipation	PD	—	—	1.0	W
Data Rate			10.3125		Gbps

DIGITAL DIAGNOSTIC FUNCTIONS

Parameter	Symbol	Min	Max	Unit	Notes
Temperature Monitor Absolute Error	DMI_Temp	-3	3	°C	Over operating temp
Laser Power Monitor Absolute Error	DMI_TX	-3	3	dB	
RX Power Monitor Absolute Error	DMI_RX	-3	3	dB	
Supply Voltage Monitor Absolute Error	DMI_VCC	-3%	+ - 3%	V	
Bias Current Monitor Absolute Error	DMI_Ibias	-10%	10%	mA	

CONTROL & STATUS I/O TIMING CHARACTERISTICS

Parameter	Symbol	Min	Max	Unit	Notes
TX Disable Assert Time	t _{off}	—	100	µs	Note 1
TX Disable Negate Time	t _{on}	—	2	ms	Note 2
Time to Initialize including reset of TX_Fault	t _{init}	—	300	ms	Note 3
TX Fault Assert Time	t _{fault_on}	—	1	ms	Note 4
TX Fault Reset Time	t _{reset}	10	—	µs	Note 5
LOS Assert Time	t _{loss_on}	—	100	µs	Note 6
LOS Deassert Time	t _{loss_off}	—	100	µs	Note 7

Notes:

[1] Time from rising edge of TX Disable to when the optical output falls below 10% of nominal

[2] Time from falling edge of TX Disable to when the modulated optical output rises above 90% of nominal

[3] From power on or negation of TX Fault using TX Disable

[4] Time from fault to TX fault on

[5] Time from TX fault to TX nominal

[6] Time from LOS state to RX LOS assert

[7] Time from non-LOS state to RX LOS deassert

TRANSMITTER OPERATING CHARACTERISTIC-OPTICAL, ELECTRICAL

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Centre Wavelength	λ_C	1260	1310	1355	nm	—
Spectral Width	$\Delta\lambda$			1	nm	DFB
Side Mode Suppression Ratio	SMSR	30	—	—	dB	—
Laser Off Power	P _{off}	—	—	-30	dBm	—
Average Optical Power	P _{avg}	-7	—	+1	dBm	—
Extinction Ratio	ER	3.5	—	—	dB	—
Transmitter Dispersion Penalty	TDP	—	—	3.2	dB	—
Relative Intensity Noise	RIN _{120MA}	—	—	-128	dB/Hz	—
Optical Return Loss Tolerance	ORLT	—	—	12	dB	—
Operating Data Rate		—	10.3125	—	Gbps	—
Optical Eye Mask	Compliant with IEEE 802.3ae-2002					
Tx Input Diff Voltage	V _I	180	600	1000	mV	—
Tx Fault	V _{oL}	-0.3	—	0.4	V	—
	V _{oH}	2.4	—	V _{cc} +0.3		—

RECEIVER OPERATING CHARACTERISTIC-OPTICAL, ELECTRICAL

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Center Wavelength	λ_r	1260		1620	nm	—
Receive Sensitivity in Average Power	P _{sen}	—	—	-14	dBm	—
Receiver Sensitivity in OMA		—	—	-12.6	dBm	Note 1
Stressed Receiver Sensitivity in OMA		—	—	-10.3	dBm	Note 1
LOS Assert	LosA	-28	—		dBm	—
LOS Deassert	LosD	—	—	-20	dBm	—
LOS Hysteresis	LosH	0.5	—	6	dB	—
Overload	P _{sat}	—	—	0.5	dBm	—
Receiver Reflectance		—	—	-12	dB	—
Operating Data Rate	—	—	10.3125	—	Gbps	—
Rx Output Diff Voltage	V _o	300	600	1200	mV	—

Note:

[1] Receiver sensitivity is informative. Stressed receiver sensitivity shall be measured with conformance test signal for BER = 1 × 10⁻¹².