

Model:

T1G: Immunity LinkOptix



A Compact, Plug-and-Play

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



1G SFP+ Optical Transceiver compliant with IEEE 802.3ae 10GBASE-LR standard



Basic Digital Diagnostics (DD) data as per SFF-8472 – monitors temperature, voltage, TX power, RX power, and bias current



Operates at 1310 nm wavelength using FP laser technology.



Duplex LC optical interface for standard connectivity.



Built-in Automatic Power Control (APC) for stable optical output across voltage and temperature variations.



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 **T1G-SM-LR-LC** is a high-performance, cost-effective 1G SFP+ transceiver supporting up to 1.25 Gbps over 10 km on single-mode fiber. It features a 1310nm FP 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

- Up to 10km transmission on SMF
- Up to 1.25 Gbps
- 1310nm FP laser and PIN receiver
- 2-wire interface for integrated Digital
- Diagnostic monitoring
- Hot pluggable
- Very low EMI and excellent ESD protection
- +3.3V power supply
- Power consumption less than 1.0W
- Operating case temperature: 0~+70°C

STANDARDS COMPLIANCE

- Compliant with IEEE 802.3Z
- Compliant with MSA SFF-8472
- Compliant with SFP MSA
- RoHS compliant
- FC Compliant
- CE Compliant

APPLICATIONS

- High-speed storage area networks
- Computer cluster cross-connect
- Custom high-speed data pipes

OPTICAL CHARACTERISTICS

Transmitter:

- Wavelength: 1260–1355 nm (typical 1310 nm).
- Optical power: -9 dBm to -3 dBm.
- Extinction ratio: ≥ 8.2 dB.
- Laser off power: ≤ -40 dBm

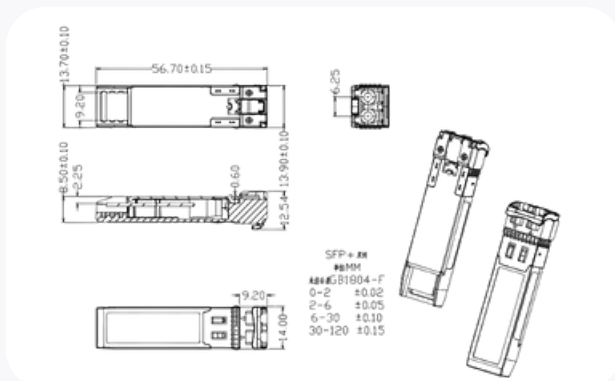
Receiver:

- Wavelength: 1260–1620 nm.
- Receiver sensitivity: ≤ -22 dBm.
- Overload: ≤ -3 dBm.
- LOS deassert: ≥ -23 dBm
- LOS hysteresis: 0.5 – 6 dB

DIGITAL DIAGNOSTICS (DDM)

- Temperature monitor accuracy: $\pm 3^\circ\text{C}$
- Supply voltage monitor: $\pm 3\%$
- Bias current monitor: $\pm 10\%$
- TX Power monitor: ± 3 dB
- RX Power monitor: ± 3 dB

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

- Input overload
- LOS detection
- 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
- Differential Impedance
- Stable Initialization

OPTICAL SPECTRUM EVALUATION

- Center Wavelength
- APC Loop Control
- 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



Buld 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	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			1.25		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	$\Delta\lambda$			4	nm	FP (RMS)
Average Optical Power	P_{avg}	-9	—	-3	dBm	—
Laser Off Power	P_{off}	—	—	-40	dBm	—
Extinction Ratio	ER	8.2	—	—	dB	—
Operating Data Rate		—	1.25	—	Gbps	—
Optical Eye Mask	Compliant with IEEE 802.3z eye mask when filtered					
Tx Input Diff Voltage	V_I	500	—	2400	mV	—
Tx Fault Output Voltage	V_{oL}	-0.3	—	0.4	V	—
	V_{oH}	2.4	—	$V_{cc}+0.3$	V	—

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}	—	—	-22	dBm	—
LOS Assert	$LosA$	-35	—	—	dBm	—
LOS Deassert	$LosD$	—	—	-23	dBm	—
LOS Hysteresis	$LosH$	0.5	—	6	dB	—
Overload	P_{sat}	—	—	-3	dBm	—
Rx Output Diff Voltage	V_o	370	—	2000	mV	—
Operating Data Rate	—	—	1.25	—	Gbps	—