

## SFP-1G-EX

1000BASE, SFP, EX, SMF TRANSCEIVER  
1310nm, 40 km REACH, DUPLEX LC CONNECTOR

# SFP-1G-EX

## 1000Base SFP EX 1310nm SMF 40km Transceiver

### Product Features

- Up to 1.25Gb/s Data Links
- Hot-Pluggable SFP
- Duplex LC connector
- Up to 40km on 9/125µm SMF
- 1310nm DFB laser transmitter
- Single +3.3V Power Supply
- Low power dissipation <1W typically
- Available operating temperature ranges:
  - Commercial: 0°C to 70°C
  - Industrial: -40°C to 85°C



### Product Applications

- 1000Base-EX Ethernet
- FC

### I. Maximum Ratings

Exceeding the limits below may damage the transceiver module permanently.

Parameter	Symbol	Min.	Typ.	Max.	Units
Storage Temperature	TS	-40		+85	°C
Power Supply Voltage	Vcc	-0.5		4	V
Relative Humidity	RH	0		85	%

### II. Operating / Environment Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units
Case Operating Temperature	Commercial	0		+70	°C
	Industrial	-40		+85	°C
Supply Voltage	VCC	3.135		3.465	V
Supply Current	Icc			300	mA
Inrush Current	I <sub>surge</sub>			I <sub>cc</sub> +30	mA
Maximum Power	P <sub>max</sub>			1	W

### III. Optical Characteristics (TOP = -40 to 85°C, VCC = 3.135 to 3.465 Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Rate	BR		1.25		Gb/s	
Bit Error Rate	BER			10 <sup>-12</sup>		
Max. Supported Link Length on 9/125µm SMF@1.25Gb/s	LMAX		40		km	
Total System Budget	LB	22			dB	
<b>Transmitter</b>						
Center Wavelength	$\lambda_c$	1270	1310	1360	nm	
Spectral Width	$\sigma$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Output Power	P <sub>out</sub>	-2		+3	dBm	1
Extinction Ratio	ER	9			dB	
Optical Rise/Fall Time	t <sub>r</sub> / t <sub>f</sub>			260	ps	2
Relative Intensity Noise	RIN			-120	dB/Hz	
Output Eye Mask	Compliant with IEEE802.3 z (class 1 laser safety)					
<b>Receiver</b>						
Optical Input Wavelength	$\lambda_c$	1260		1360	nm	
Receiver Overload	P <sub>ol</sub>	-3			dBm	3
RX Sensitivity	Sen			-24	dBm	3
RX_LOS Assert	LOS A	-40			dBm	
RX_LOS De-assert	LOS D			-25	dBm	
RX_LOS Hysteresis	LOS H	0.5			dB	

## Notes:

1. The optical power is launched into SMF.
2. 20-80%.
3. Measured with PRBS 27-1 at 10-12 BER

#### IV. Electrical Characteristics (TOP = -40 to 85°C, VCC = 3.135 to 3.465 Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Input differential impedance	RIN	90	100	110		1
Single ended data input swing	Vin PP	250		1200	mVpp	
Transmit Disable Voltage	VD	Vcc-1.3		Vcc	V	2
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	
Transmit Disable Assert Time	Tdessert			10	us	
<b>Receiver</b>						
Single ended data output swing	Vout,pp	250		800	mV	3
LOS Fault	Vlofault	Vcc-0.5		VCC_host	V	5
LOS Normal	Vlo norm	Vee		Vee+0.5	V	5
Power Supply Rejection	PSR	100			mVpp	

**Notes:**

1. AC Coupled.
2. Or Open Circuit.
3. Into 100 ohm differential termination.
4. 20-80%
5. LOS is LVTTTL. Logic 0 indicates normal operation: logic 1 indicates no signal detected.

**Warranty**

All transceivers feature a limited lifetime warranty.

**Disclaimer**

External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.