

## Features

- Up to 11.1Gbps Data Links
- Maximum link length of 220M MMF
- Power dissipation < 1W
- 1310nm FP transmitter, PIN photo-detector
- Metal enclosure, for lower EMI
- 2-wire interface with integrated Digital Diagnostic monitoring | Hot-pluggable SFP+ footprint
- Specifications compliant with SFF 8472
- Compliant with SFP+ MSA with LC connector
- Single 3.3V power supply
- Case operating temperature range: 0°C to 70°C



## Applications

- 10GBASE-LRM

## Standard

- Compliant to SFP+ SFF-8431
- Compliant to 802.3aq 10GBASE-LRM
- RoHS Compliant.

## 1. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Temperature	Ts	-40	-	85	°C	
Relative Humidity	RH	5	-	95	%	
Power Supply Voltage	VCC	-0.3	-	4	V	
Signal Input Voltage		Vcc-0.3	-	Vcc+0.3	V	

## 2. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Case Operating Temperature	Tcase	0	-	70	°C	Without air flow
Power Supply Voltage	VCC	3.14	3.3	3.47	V	
Power Supply Current	ICC	-		300	mA	

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Rate	BR		10.3125		Gbps	
Transmission Distance	TD		-	220	m	
Coupled Fiber	Multi mode fiber					MMF

### 3. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Average Launch Power	Pout	-6.5		0.5	dBm	1
Optical Wavelength	$\lambda$	1260		1355	nm	
Optical Extinction Ratio	ER	3.5			dB	
RIN	RIN			-128	dB/Hz	
Output Eye Mask	Compliant with IEEE 802.3aq					
<b>Receiver</b>						
Receiver Sensitivity	Sen			-10	dBm	2
Input Saturation Power	Psat	1.5			dBm	
Wavelength Range	$\lambda_C$	1260		1335	nm	
LOS De -Assert	LOSD			-11	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5			dB	

#### Notes:

1. Average power figures are informative only, per IEEE802.3aq
2. Conditions of stressed receiver tests per IEEE802.3aq.

### 4. Electrical Characteristics

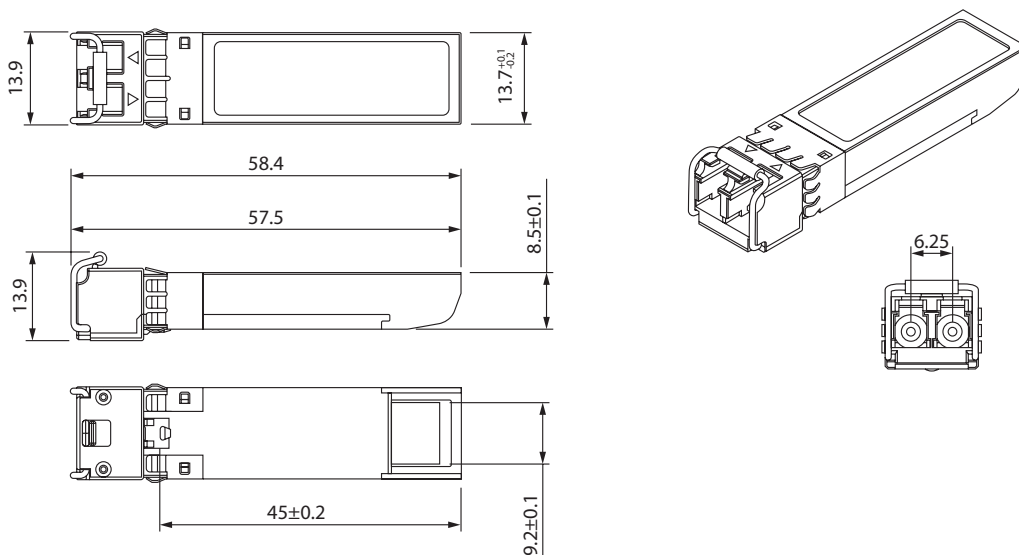
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	Vcc	3.14	3.3	3.46	V	
Supply Current	Icc			300	mA	
<b>Transmitter</b>						
Input differential impedance	Rin		100		$\Omega$	1
Single ended data input swing	Vin,pp	180		700	mV	
Transmit Disable Voltage	VD	Vcc-1.3		Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	2
Transmit Disable Assert Time				10	us	

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Receiver</b>						
Differential data output swing	Vout,pp	300		850	mV	3
Data output rise time	tr	30			ps	4
Data output fall time	tf	30			ps	4
LOS Fault	VLOS fault	Vcc-1.3		VccHOST	V	5
LOS Normal	VLOS norm	Vee		Vee+0.8	V	5
Power Supply Rejection	PSR	100			mVpp	6

**Notes:**

1. Connected directly to TX data input pins. AC coupled thereafter.
2. Or open circuit.
3. Into 100 ohms differential termination.
4. These are unfiltered 20-80% values
5. Loss Of Signal is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
6. Receiver sensitivity is compliant with power supply sinusoidal modulation of 20 Hz to 1.5 MHz up to specified value applied through the recommended power supply filtering network.

**5. Mechanical Diagram**



**Note:** 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.

## 6. Ordering Information

OEM	Part Number	OEM	Part Number
Cisco	SFP-10G-LRM-A		

## 7. Contact Information

Tel: 800.590.9535

Web: <http://www.approvednetworks.com>