

# SFP10G-ZR

10GBASE, SFP+, ZR, SMF TRANSCEIVER  
1550nm, 80km REACH, DUPLEX LC CONNECTOR

## Features

- Up to 11.1Gbps Data Links
- Up to 80km transmission on SMF
- EML transmitter and APD receiver
- 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
- Power dissipation < 1.5 W



## Applications

- 10GBASE-ZR/ZW

## Standard

- Compliant to SFF-8431
- Compliant to SFF 8472
- RoHS Compliant.

## 1. Absolute Maximum Ratings

Any stress beyond the maximum ratings can result in permanent damage. The device specifications are guaranteed only under the recommended operating conditions.

Parameter	Symbol	Min	Typ	Max	Unit
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	Commercial
Power Supply Voltage	VCC	3.14	3.3	3.47	V	
Power Supply Current	ICC	-		450	mA	
Data Rate	BR		10.3125		Gbps	
Transmission Distance	TD		-	80	Km	
Coupled fiber	Single mode fiber					9/125um SMF

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### 3. Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
<b>Transmitter</b>						
Average Launched Power	Pout	-1		4	dBm	1
Extinction Ratio	ER	6			dB	
Optical Wavelength	$\lambda$	1530	1550	1565	nm	
Spectrum Bandwidth	$\sigma$			1.0	Nm	
SMSR		30			dB	
Transmitter OFF Output Power	Poff			-30	dBm	
Transmitter and Dispersion Penalty	TDP			3.0	dB	
Output Eye Mask	Compliant with IEEE 802.3ae					
<b>Receiver</b>						
Input Optical Wavelength	$\lambda_c$	1270		1610	nm	
Receiver Sensitivity	Psen			-23	dBm	2
Input Saturation Power (Overload)	Psat	-6			dBm	
Receiver Reflectance	Rrx			-27		
LOS Assert	LOSA	-35			dBm	
LOS De-assert	LOSD			-26	dBm	
LOS Detect Hysteresis	PHYS	0.5			dB	

#### Notes:

1. Launched power (avg.) is power coupled into a single mode fiber with master connector.
2. Measured with conformance test signal for BER =  $10^{-12}$ .@10.3125Gbps, PRBS=2<sup>31</sup>-1,NRZ

### 4. Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Supply Voltage	Vcc	3.14	3.3	3.46	V	
Supply Current	Icc			450	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	
<b>Receiver</b>						
Differential data output swing	Vout,pp	300		850	mV	3

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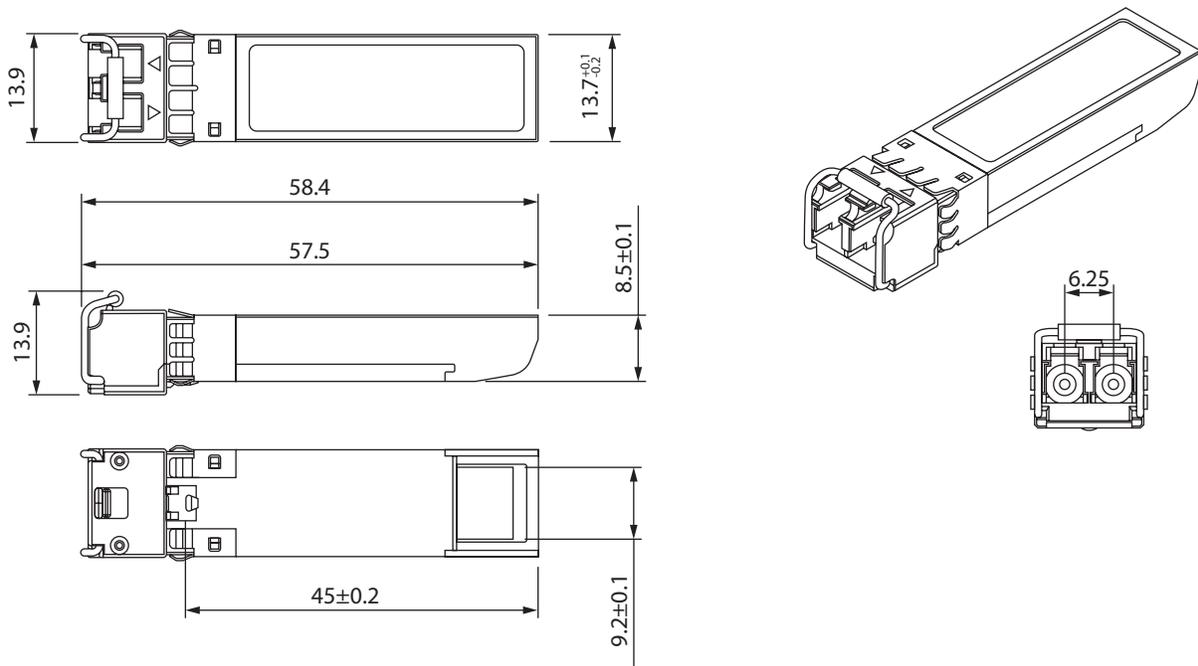
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Data output rise time	tr	28			ps	4
Data output fall time	tf	28			ps	4
LOS Fault	VLOS fault	Vcc-1.3		VccHOST	V	5
LOS Normal	VLOS norm	Vee		Vee+0.8	V	5
Power Supply Rejection	PSR	100			mVpp	6

**Notes:**

2. Connected directly to TX data input pins. AC coupled thereafter.
3. Or open circuit.
4. Into 100 ohms differential termination.
5. 5. 20 – 80 %.
6. Loss Of Signal is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected. 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.

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### 6. Ordering Information

OEM	Part Number	OEM	Part Number
Accedian	7SP-402-L	Cisco	SFP-10G-ZR-L
Adtran	1442480F1-L	Cyan	280-0277-00-L
Adtran	1442480G1C-L	Dell	407-BBRK-L
Adtran	1442480G1-L	Dell	407-BBOP-80KM-L
ADVA	1061701812-L	Enterasys	10GB-ZR-SFPP-L
Alcatel-Lucent	SFP-10G-ZR-ALCATEL-L	Ericsson	SFP-10G-ZR-ERIC-L
Alcatel-Lucent	3HE05833CA-L	Extreme	10310-L
Alcatel-Lucent	3FE65832AA-L	Extreme	10G-SFP-ZR-L
Alcatel-Lucent	3HE09329AA-L	Finisar	FTLX1871D3BNL-L
Alcatel-Lucent	3HE05894AA-L	Finisar	FTLX1871D3BCL-L
Alcatel-Lucent	SFP-10G-ZR-ALCATEL-I-L	Finisar	FTLX1871M3BCL-L
Allied Telesis	AT-SP10ZR80/I-L	Fortinet	FG-TRAN-SFP+ZR-L
Arista	SFP-10G-ZR-ARISTA-L	Huawei	34060672-L
Arista	SFP-10G-ZR-AN-L	Infinera	TRX100115-L
Aruba	SFP-10GE-ZR-ARUBA-L	Infinera	TOM-10G-SFPP-LR2-L
Avaya	AA1403016-E6-L	JDSU	JSH-01ZWAA1-L
Brocade-Foundry	10G-SFPP-ZR-L	Juniper	SFP-10GE-ZR-L
Brocade-Foundry	10G-SFPP-ZRE-L	Juniper	QFX-SFP-10GE-ZR-L
Calix	100-01971-L	Juniper	EX-SFP-10GE-ZR-L
Calix	100-01971-ER-L	Juniper	SFPP-10GE-ZR-L
Calix	100-01970-L	Keysight	US-SFP10G-ZR-L
Ciena	160-9105-900-L	Meraki	MA-SFP-10GB-ZR-LR-L
Ciena	XCVR-S80V55-L	MRV	SFP-10GD-ZR-L
Cisco	SFP-10G-ZR-S-L	MSA	L-SFP10G-ZR-I
Cisco	SFP-10G-ZRL-L	MSA	L-SFP10G-ZR
Cisco	ONS-SC-10G-ZR-L	OnePort	OP-SFP10G-ZR
Cisco	DS-SFP8G-ZR-L	Transition Networks	TN-SFP-10G-ZR-L
Cisco	DS-SFP-FC8G-ZR-L		