

## Features

- Up to 11.1Gbps Data Links
- Up to 40km 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-ER/EW & 10G Ethernet

## 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	Without air flow
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		-	40	km	
Coupled fiber	Single mode fiber					9/125um SMF

## 3. Optical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit	Notes
<b>Transmitter</b>						
Average Launched Power	Pout	-1		+3	dBm	1
Extinction Ratio	ER	6			dB	
Center Wavelength	$\lambda_c$	1530	1550	1565	nm	
Spectrum Band Width (-20dB)	$\sigma$			1.0	nm	
Side Mode Suppression Ratio	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	$\lambda$	1270		1610	nm	
Receiver Sensitivity	Psen			-15.8	dBm	2
Input Saturation Power (Overload)	Psat	0.5			dBm	
LOS Assert	LOSA	-28			dBm	
LOS De-assert	LOSD			-19	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<sup>-12</sup>.@10.3125Gbps, PRBS=2<sup>31</sup>-1,NRZ

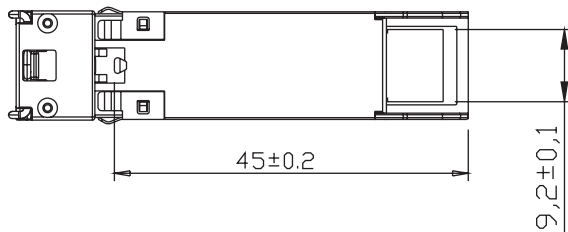
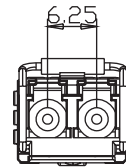
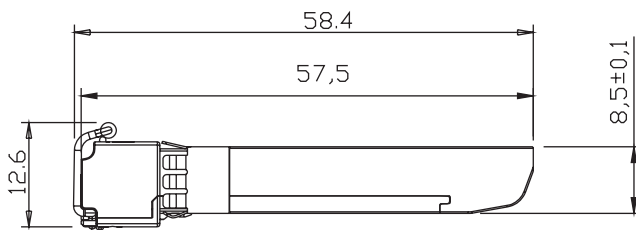
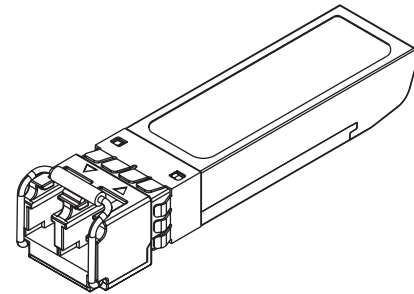
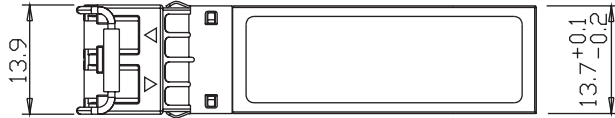
## 4. Electrical Characteristics

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		Ω	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
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:

1. Connected directly to TX data input pins. AC coupled thereafter.
2. Or open circuit.
3. Into 100 ohms differential termination.
4. 20 – 80 %.
5. 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



Units in MM

**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
Accedian	7SP-500-A	Cisco	10GESFPP-ER-CSC
Adtran	1442440G1-A	Cisco	SFP-10G-ER-S-C1
Adtran	1442440F1-A	Cyan	280-0276-00-A
ADVA	1061701861-01-A	Data Center Optics	AN-SFP10G-ER
Alcatel	SFP-10G-ER-AL-A	Data Center Optics	AN-SFP10G-ER-I
Alcatel	SFP-10G-ER-ALCATEL-A	DEL	407-BBOV-A
Alcatel	3HE05036AA-A	DELL	407-BBOP-40KM-A
Alcatel	3FE65831AA-A	Enterasys	10GBASE-ER-SFPP-A
Alcatel	3HE09328AA-A	Ericsson	SFP-10G-ER-ERIC-A
Alcatel	3HE14158AA-A	Extreme	10309-A

Alcatel-Lucent	ISFP-10G-ER-A	Extreme	10G-SFP-ER-A
Alcatel-Lucent	ISFP-10G-EL-A	Finisar	FTLX1672M3BCL-A
Alcatel-Lucent	ISFP-10G-ER-C1	Finisar	FTLX1671D3BCL-A
Alcatel-Lucent	10GESFPP-ER-ALU	Finisar	FTLX1671D3BTL-A
Allied Telesis	SP10ER40/I-A	Force10	GP-10GSFP-1E-A
Arista	SFP-10G-ER-ARISTA-A	Gigamon	SFP-534-A
Arista	SFP-10G-ER-AN-A	HP	JW147A-A
Aruba	SFP-10GE-ER-ARUBA-A	HP	10GESFPP-ER-HP
Avaya	AA1403013-E6-A	Huawei	34060711-A
Brocade	10G-SFPP-ER-A	Huawei	34060518-A
Brocade-Foundry	XBR-000174-ER-A	Huawei	OSX040N01-A
Brocade-Foundry	10G-SFPP-ER-C1	IBM	90Y9415-A
Calix	100-01510-A	Juniper	SFP-10GE-ER-A
Calix	100-01510-A	Juniper	SFPP-10GE-ER-A
Calix	100-01511-A	Juniper	EX-SFP-10GE-ER-A
Calix	10GXFP40H-CLX	Juniper	EX-SFP-10GE-ER-C1
Ciena	XCVR-40V55-A	Meraki	MA-SFP-10GB-ER-A
Ciena	160-9104-900-A	MRV	SFP-10GD-ER-A
Ciena	XCVR-S40V55-A	MSA Champion ONE	10GSFP+E-ER2
Cisco	SFP-10G-ER-A	MSA Champion ONE	10GSFP+M31-ER
Cisco	SFP-10G-ER-C1	NoviFlow	400000508-A
Cisco	ONS-SC+-10G-ER-A	OnePort	OP-SFP10G-ER
Cisco	SFP-10G-ER-A	Palo Alto	PAN-SFP-PLUS-ER-A
Cisco	SFP-10G-ER-S-A	Transition Networks	TN-SFP-10G-ER-A
Cisco	DS-SFP-FC8G-ER-A		

## 7. Contact Information

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