

## Features

- Up to 11.3Gbps Data Links
- Up to 80km transmission on SMF
- Power dissipation < 1.5W
- CWDM EML Laser 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



## Applications

- 10G Ethernet
- 10G SONET/SDH, OTU2/2e and 10G FC

## Standard

- Compliant to SFF-8431
- 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

## 3. Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
<b>Transmitter</b>						
Average Optical Power	Pout	-1		4	dBm	1
Center Wavelength Spacing			100		GHz	
Optical Wavelength	$\lambda_c$	$\lambda_c-6.5$		$\lambda_c+6.5$	nm	2
Optical Extinction Ratio	ER	6.0			dB	
Side Mode Supression Ratio	SMSR	30			dB	
Average Launch Power	Poff			-30	dBm	
Transmitter and Dispersion Penalty	TDP			3.0	dB	
Output Eye Mask	Compliant with IEEE 802.3ae					
<b>Receiver</b>						
Wavelength Range	$\lambda_c$	1270		1610	nm	
Receiver Sensitivity	Rsen			-23	dBm	3
Input Saturation Power (Overload)	Psat	-6			dBm	
LOS Assert	LOSA	-35			dBm	
LOS De-assert	LOSD			-26	dBm	
LOS Detect Hysteresis	PHYS	0.5			dB	

### Notes:

- Class 1 Laser Safety per FDA/CDRH and IEC-825-1 regulations.
- " $\lambda$ " is: 1470,1490,1510,1530,1550,1570,1590,1610, please see the "ordering information" .
- Measured with a PRBS 2<sup>31</sup>-1 test pattern, @10.325Gb/s, BER<10<sup>-12</sup>.

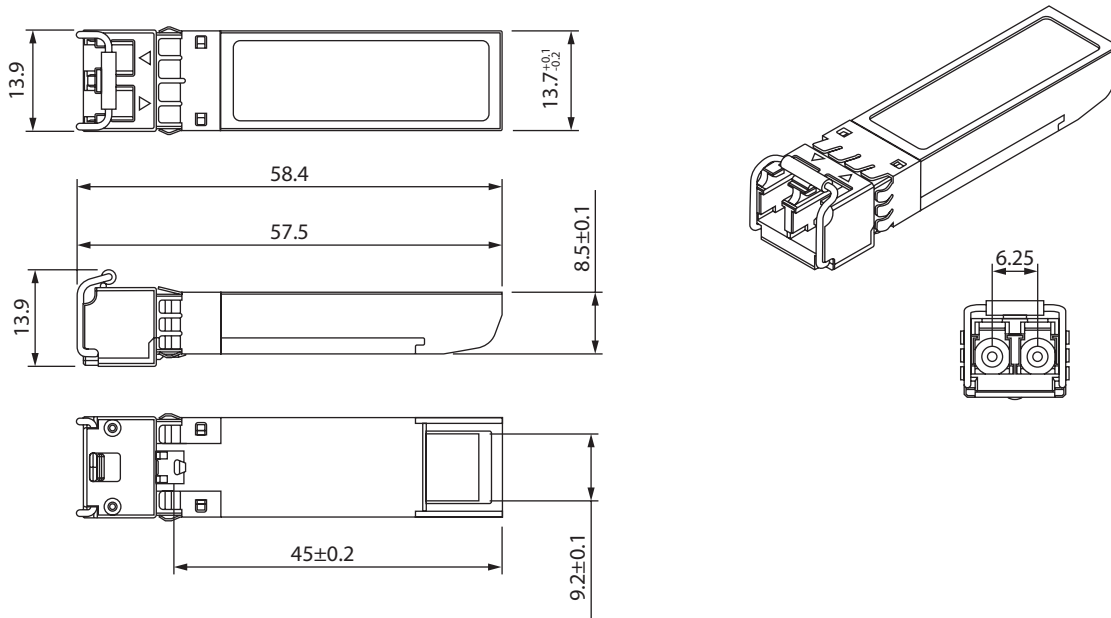
## 4. Electrical Characteristics

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		1200	mV	
Transmit Disable Voltage	VD	Vcc-1.3		Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee+ 0.8	V	2
TX_FAULT Voltage-High		Vcc-1.3		Vcc		
TX_FAULT Voltage-Low		Vee		Vee+ 0.8		
Transmit Disable Assert Time				10	us	
<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

### 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.

## 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
Adtran	1442471F1-A	Cyan	280-0469-00-A
Adtran	1442471F2-A	Cyan	280-0470-00-A
Adtran	1442471F3-A	Juniper	CWDM-SFP-10GE-1270-80-A
Adtran	1442471F4-A	Juniper	CWDM-SFP-10GE-1290-80-A
Adtran	1442471F5-A	Juniper	CWDM-SFP-10GE-1310-80-A
Adtran	1442471F6-A	Juniper	CWDM-SFP-10GE-1330-80-A
Adtran	1442471F7-A	Juniper	CWDM-SFP-10GE-1350-80-A
Adtran	1442471F8-A	Juniper	CWDM-SFP-10GE-1370-80-A
Adtran	10GSFP+E1610CWDM70-ADN	Juniper	CWDM-SFP-10GE-1390-80-A
Ciena	XCVR-S80V55-CW47-A	Juniper	CWDM-SFP-10GE-1410-80-A
Ciena	XCVR-S80V55-CW49-A	Juniper	CWDM-SFP-10GE-1430-80-A
Ciena	XCVR-S80V55-CW51-A	Juniper	CWDM-SFP-10GE-1450-80-A
Ciena	XCVR-S80V55-CW53-A	Juniper	CWDM-SFP-10GE-1470-80-A
Ciena	XCVR-S80V55-CW55-A	Juniper	CWDM-SFP-10GE-1490-80-A
Ciena	XCVR-S80V55-CW57-A	Juniper	CWDM-SFP-10GE-1510-80-A
Ciena	XCVR-S80V55-CW59-A	Juniper	CWDM-SFP-10GE-1530-80-A

Ciena	XCVR-S80V55-CW61-A	Juniper	CWDM-SFP-10GE-1550-80-A
Ciena	160-9211-900-A	Juniper	CWDM-SFP-10GE-1570-80-A
Ciena	160-9212-900-A	Juniper	CWDM-SFP-10GE-1590-80-A
Ciena	160-9213-900-A	Juniper	CWDM-SFP-10GE-1610-80-A
Ciena	160-9214-900-A	Juniper	SFPP-10G-CWDM1470-80KM-C1
Ciena	160-9215-900-A	Juniper	SFPP-10G-CWDM1490-80KM-C1
Ciena	160-9216-900-A	Juniper	SFPP-10G-CWDM1510-80KM-C1
Ciena	160-9217-900-A	Juniper	SFPP-10G-CWDM1530-80KM-C1
Ciena	160-9218-900-A	Juniper	SFPP-10G-CWDM1570-80KM-C1
Ciena	XCVR-C70D47-C1	Juniper	SFPP-10G-CWDM1590-80KM-C1
Ciena	XCVR-C70D49-C1	Juniper	SFPP-10G-CWDM1610-80KM-C1
Ciena	XCVR-C70D51-C1	MSA Champion ONE	10GSFP+E1XX0CWDM70
Ciena	XCVR-C70D53-C1	MSA Champion ONE	10GSFP+E1290CWDM60-E
Ciena	XCVR-C70D55-C1	MSA Champion ONE	10GSFP+E1330CWDM60-E
Ciena	XCVR-C70D57-C1	MSA Champion ONE	10GSFP+E1470CWDM70
Ciena	XCVR-C70D59-C1	MSA Champion ONE	10GSFP+E1470CWDM70-H
Ciena	XCVR-C70D61-C1	MSA Champion ONE	10GSFP+E1510CWDM70
Cisco	CWDM-SFP10G-1270-80-A	MSA Champion ONE	10GSFP+E1510CWDM70-H
Cisco	CWDM-SFP10G-1290-80-A	MSA Champion ONE	10GSFP+E1530CWDM70
Cisco	CWDM-SFP10G-1310-80-A	MSA Champion ONE	10GSFP+E1530CWDM70-H
Cisco	CWDM-SFP10G-1330-80-A	MSA Champion ONE	10GSFP+E1550CWDM70
Cisco	CWDM-SFP10G-1350-80-A	MSA Champion ONE	10GSFP+E1550CWDM70-H
Cisco	CWDM-SFP10G-1370-80-A	MSA Champion ONE	10GSFP+E1570CWDM70
Cisco	CWDM-SFP10G-1390-80-A	MSA Champion ONE	10GSFP+E1570CWDM70-H
Cisco	CWDM-SFP10G-1410-80-A	MSA Champion ONE	10GSFP+E1590CWDM70
Cisco	CWDM-SFP10G-1430-80-A	MSA Champion ONE	10GSFP+E1590CWDM70-H
Cisco	CWDM-SFP10G-1450-80-A	MSA Champion ONE	10GSFP+E1610CWDM70
Cisco	CWDM-SFP10G-1470-80-A	MSA Champion ONE	10GSFP+E1610CWDM70-H
Cisco	CWDM-SFP10G-1490-80-A	MSA Champion ONE	10GSFP+E1490CWDM70
Cisco	CWDM-SFP10G-1510-80-A	MSA Champion ONE	10GSFP+E1490CWDM70-H
Cisco	CWDM-SFP10G-1530-80-A	MSA Generic	CWDM-SFPP-80-I-27-A
Cisco	CWDM-SFP10G-1550-80-A	MSA Generic	CWDM-SFPP-80-I-29-A
Cisco	CWDM-SFP10G-1570-80-A	MSA Generic	CWDM-SFPP-80-I-31-A
Cisco	CWDM-SFP10G-1590-80-A	MSA Generic	CWDM-SFPP-80-I-33-A
Cisco	CWDM-SFP10G-1610-80-A	MSA Generic	CWDM-SFPP-80-I-35-A
Cisco	10GS-C47-70-CSC	MSA Generic	CWDM-SFPP-80-I-37-A
Cisco	CWDM-SFP-10GE-1470-80-C1	MSA Generic	CWDM-SFPP-80-I-39-A

Cisco	CWDM-SFP-10GE-1490-80-C1	MSA Generic	CWDM-SFPP-80-I-41-A
Cisco	CWDM-SFP-10GE-1510-80-C1	MSA Generic	CWDM-SFPP-80-I-43-A
Cisco	CWDM-SFP-10GE-1530-80-C1	MSA Generic	CWDM-SFPP-80-I-45-A
Cisco	CWDM-SFP-10GE-1550-80-C1	MSA Generic	CWDM-SFPP-80-I-47-A
Cisco	CWDM-SFP-10GE-1570-80-C1	MSA Generic	CWDM-SFPP-80-I-49-A
Cisco	CWDM-SFP-10GE-1590-80-C1	MSA Generic	CWDM-SFPP-80-I-51-A
Cisco	CWDM-SFP-10GE-1610-80-C1	MSA Generic	CWDM-SFPP-80-I-53-A
Cisco	10GS-C49-70-CSC	MSA Generic	CWDM-SFPP-80-I-55-A
Cisco	10GS-C55-70-CSC	MSA Generic	CWDM-SFPP-80-I-57-A
Cisco	10GS-C57-70-CSC	MSA Generic	CWDM-SFPP-80-I-59-A
Cisco	10GS-C59-70-CSC	MSA Generic	CWDM-SFPP-80-I-61-A
Cisco	10GS-C61-70-CSC	Nokia (Alcatel)	3HE07161CA-80-A
Cyan	280-0463-00-A	Nokia (Alcatel)	3HE07161CB-80-A
Cyan	280-0464-00-A	Nokia (Alcatel)	3HE07161CC-80-A
Cyan	280-0465-00-A	Nokia (Alcatel)	3HE07161CD-80-A
Cyan	280-0466-00-A	Nokia (Alcatel)	3HE07161CE-80-A
Cyan	280-0467-00-A	Nokia (Alcatel)	3HE07161CF-80-A
Cyan	280-0468-00-A	Nokia (Alcatel)	3HE07161CG-80-A
		Nokia (Alcatel)	3HE07161CH-80-A

## 7. Contact Information

Tel: 800.590.9535

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