

## Features

- Operating Data Rate up to 1.25Gbps
- 18-Wavelength CWDM DFB LD Transmitter from 1270nm to 1610nm, with Step 20nm
- Single 3.3V Power Supply and TTL Control Logic Interface
- Hot-Pluggable SFP Footprint Duplex LC Connector Interface
- Class 1 FDA and IEC60825-1 Laser Safety-Compliant
- Industrial operating temperature range: -40°C to 85°C
- Compliant with SFP MSA Specification
- Compliant with SFF-8472 Digital Diagnostic Monitor Interface



## Applications

- Gigabit Ethernet Switches and Routers
- Fiber Channel Switch Infrastructure
- Other Optical Links

## 1. Absolute Maximum Ratings

Operation in excess of any absolute maximum ratings might cause permanent damage to this module.

Parameter	Symbol	Min	Typ	Max	Units
Storage Temperature	TS	-40		+85	°C
Power Supply Voltage	VCC	-0.5		4	V
Relative Humidity	RH	0		95	%

## 2. Recommended Operating Environment

Parameter	Symbol	Min	Typ	Max	Unit
Case operating Temperature	TC	-40		85	°C
Supply Voltage	VCC	3.15	3.3	3.45	V
Supply Current	Icc			300	mA
Data Rate	GBE			1.25	Gbps
	FC			1.063	

### 3. Electrical Characteristics

(TOP = -40 to 85°C, VCC = 3.135 to 3.465 Volts)

Parameter	Symbol	Min	Typ	Max	Unit	Note
<b>Transmitter Section:</b>						
LVPECL Inputs (Differential)	Vin	400	-	2000	mVpp	AC coupled inputs*(note5)
Input Impedance (Differential)	Zin	85	100	115	ohm	Rin > 100 kohm @ DC
TX_Dis	Disable	2		Vcc+0.3	V	
	Enable	0		0.8		
TX_Fault	Fault	2		Vcc+0.3	V	
	Normal	0		0.8		
<b>Receiver Section:</b>						
LVPECL Outputs (Differential)	Vout	400	-	2000	mVpp	AC coupled inputs*(note5)
Output Impedance (Differential)	Zout	85	100	115	ohm	
RX_Los	LOS	2		Vcc+0.3	V	
	Normal	0		0.8		
MOD_DEF (0:2)	VoH	2.5	-	-	V	With Serial ID
	VoL	0	-	0.5	V	

### 4. Optical Parameters

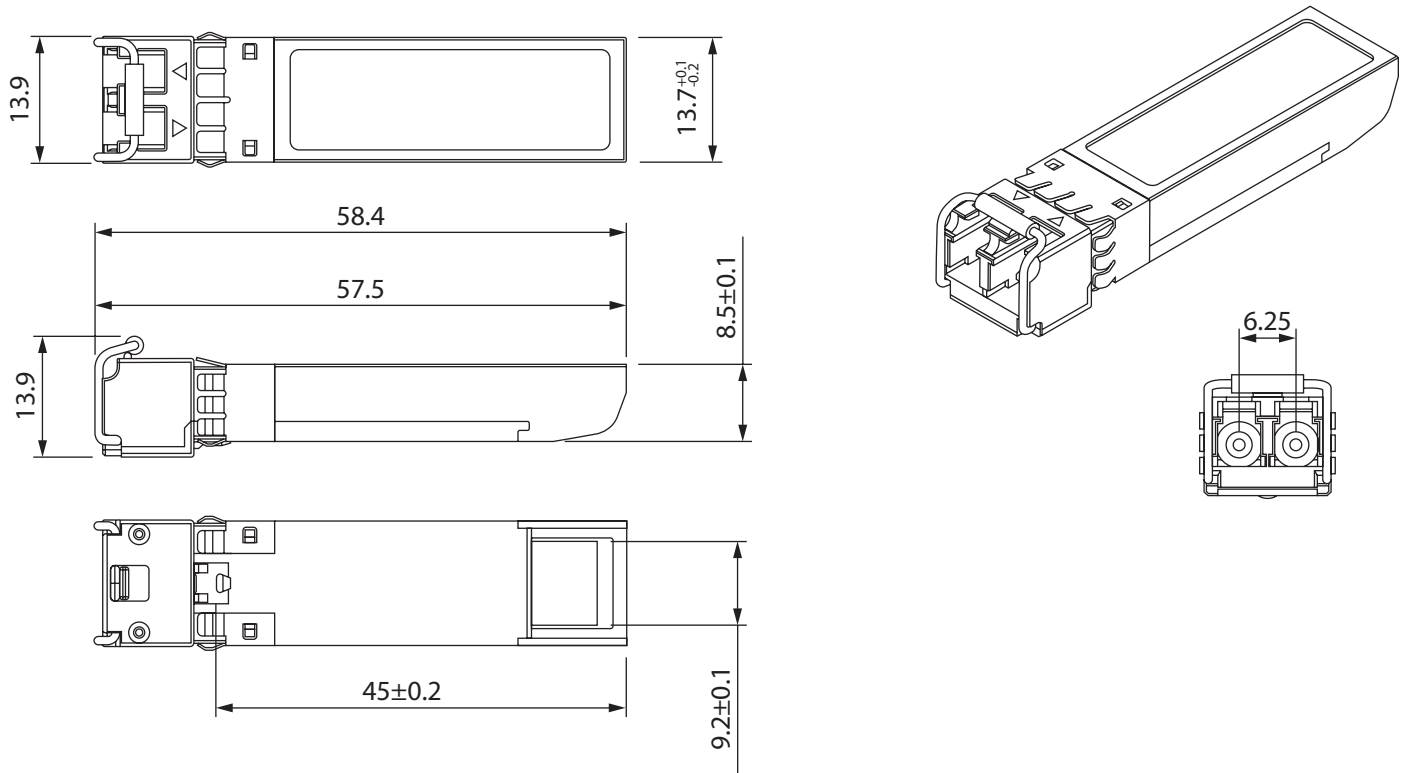
Parameter	Symbol	Min	Typ	Max	Unit
<b>Transmitter Section:</b>					
Center Wavelength	$\lambda_c$	$\lambda_c-6$	$\lambda$	$\lambda_c+7.5$	nm
Spectral Width	$\sigma$			1	nm
Side Mode Supression Ratio	SMSR	30			dB
Optical Output Power	Pout	4		7	dBm
Extinction Ratio	ER	8.2			dB
Optical Rise/Fall Time	tr / tf			0.26	ns
Relative Intensity Noise	RIN			-120	dB/Hz
Total Jitter	TJ			56.5	ps
TX_Disable Assert Time	t_off			10	us
Pout@TX Disable Asserted	Pout			-45	dBm
Output Eye Mask	Compliant with IEEE802.3 z (class 1 laser safety)				

Receiver Section:					
Optical Input Wavelength	$\lambda_c$	1260		1600	nm
Receiver Overload	Pol	-10			dBm
RX Sensitivity	Sen			-37	dBm
Return Loss		12			dB
Optical Path Penalty*(note7)				1	dB
RX_LOS De-assert	LOSD			-38	dBm
RX_LOS Assert	LOSA	-45			dBm
RX_LOS Hysteresis	LOSH	0.5			dB
General Specifications:					
Data Rate	BR		1.25		Gb/s
Link Budget		41	-	-	dB
Max. Supported Link Length on 9/125 $\mu$ m SMF@1.25Gb/s	LMAX		160		Km

**Notes:**

3. Output is coupled into a 9/125um single-mode fiber.
4. Filtered, measured with a PRBS 27-1 test pattern @1.25Gbps
5. LVPECL logic, internally AC coupled.
6. Minimum average optical power measured at BER less than 1E-12, with a 27-1 PRBS and ER=9dB.
7. Measured with a PRBS 27-1 test pattern @1.25Gbps, BER 1x10-12.
8. Eye Pattern Mask

## 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	CWDM-SFP-1470-160-A	Nokia (Alcatel)	3HE00070CF-160-A
Cisco	CWDM-SFP-1490-160-A	Nokia (Alcatel)	3HE00070CG-160-A
Cisco	CWDM-SFP-1510-160-A	Nokia (Alcatel)	3HE00070CH-160-A
Cisco	CWDM-SFP-1530-160-A	MSA Generic	CWDM-SFP-160-47-A
Cisco	CWDM-SFP-1550-160-A	MSA Generic	CWDM-SFP-160-49-A
Cisco	CWDM-SFP-1570-160-A	MSA Generic	CWDM-SFP-160-51-A
Cisco	CWDM-SFP-1590-160-A	MSA Generic	CWDM-SFP-160-53-A
Cisco	CWDM-SFP-1610-160-A	MSA Generic	CWDM-SFP-160-55-A
Juniper	SFP-GE160KCW1470-A	MSA Generic	CWDM-SFP-160-57-A
Juniper	SFP-GE160KCW1490-A	MSA Generic	CWDM-SFP-160-59-A
Juniper	SFP-GE160KCW1510-A	MSA Generic	CWDM-SFP-160-61-A
Juniper	SFP-GE160KCW1530-A	OnePort	OP-CWDM-SFP-160-47

Juniper	SFP-GE160KCW1550-A	OnePort	OP-CWDM-SFP-160-49
Juniper	SFP-GE160KCW1570-A	OnePort	OP-CWDM-SFP-160-51
Juniper	SFP-GE160KCW1590-A	OnePort	OP-CWDM-SFP-160-53
Juniper	SFP-GE160KCW1610-A	OnePort	OP-CWDM-SFP-160-55
Nokia (Alcatel)	3HE00070CA-160-A	OnePort	OP-CWDM-SFP-160-57
Nokia (Alcatel)	3HE00070CB-160-A	OnePort	OP-CWDM-SFP-160-59
Nokia (Alcatel)	3HE00070CC-160-A	OnePort	OP-CWDM-SFP-160-61
Nokia (Alcatel)	3HE00070CD-160-A	MSA Champion ONE	1000SFP1470CWDM160
Nokia (Alcatel)	3HE00070CE-160-A	MSA Champion ONE	1000SFP1610CWDM160

## 7. Contact Information

Tel: 800.590.9535

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