

Description

HC-9015 series module is 1550nm Non-WDM or WDM MQW DFB laser, The 9015 series modules are intended for use in the transmission of broadband analog signals or digital signals. The lasers built in optical isolator, TEC, thermistor, laser, and monitor photodiode are hermetically sealed in a butterfly package.

Features

- 1550nm, or WDM
- MQW DFB Laser diode module
- Directly Modulated DFB Lasers
- High-frequency response up to 18GHz
- SMA or K Connector RF port



Application

- Telecom/datacom
- RF over fiber
- Analog RF links transmission
- Test and measurement
- RF Delay line

Performance Absolute Maximum Ratings

Parameter	Symbol	Rating	Units	Test condition
Laser reverse voltage	V _{rl}	2.0	V	-
Photodiode reverse voltage	V _{rd}	20	V	-
Storage Temperature	T _s	-40~+85	°C	-
Operating Case Temperature	T _O	-20~+65	°C	-
TE Cooler Current	I _c	1.7	A	--
RF Input Max. power	P _{in}	20	dBm	--

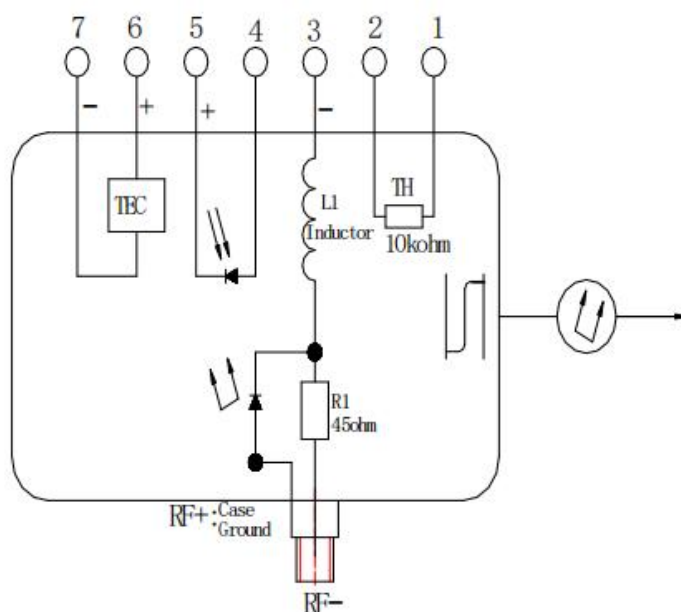
Electrical/Optical Characteristics (Tc=25°C)

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
I _{th}	Threshold Current	CW	-	-	25	mA
I _{op}	Operating Current	CW	-	-	100	mA
Z _{in}	Input impedance	IF=I _{op}	-	50	-	Ω
RT	Thermistor Resistance	@+25°C	9.5	10	10.5	kΩ
	Thermistor Temp. Coeff.	@+25°C	-	-4.4	-	%/°C
λ _c	Center Wavelength	NON-WDM	1530		1560	nm
	@+25°C	CWDM available	λ _c -3	λ _c	λ _c +3	nm
	100GHz spacing	DWDM available	λ _c -0.4	λ _c	λ _c +0.4	nm
PF	Optical Output Power from fiber	CW, IF=I _{op} See Options		10		mW
SMSR	Side Mode Suppression Ratio	CW, IF=I _{op}	34	-	-	dB
RIN	Relative intensity Noise	100MHz-3GHz		-150		dB/Hz
I _m	Monitor Current	-	10	-	200	uA/mW
	Optical Isolation	-	30			dB
NF	Noise figure	IF=I _{op} @18GHz	-		57	dB
S21	-3dB RF Bandwidth	Options C	12	-	-	GHz
		Options D	15	-	-	
		Options E	18	-	-	
S11	Return loss	DC-10GHZ	8.0			dB
		10-18GHZ	5.0			

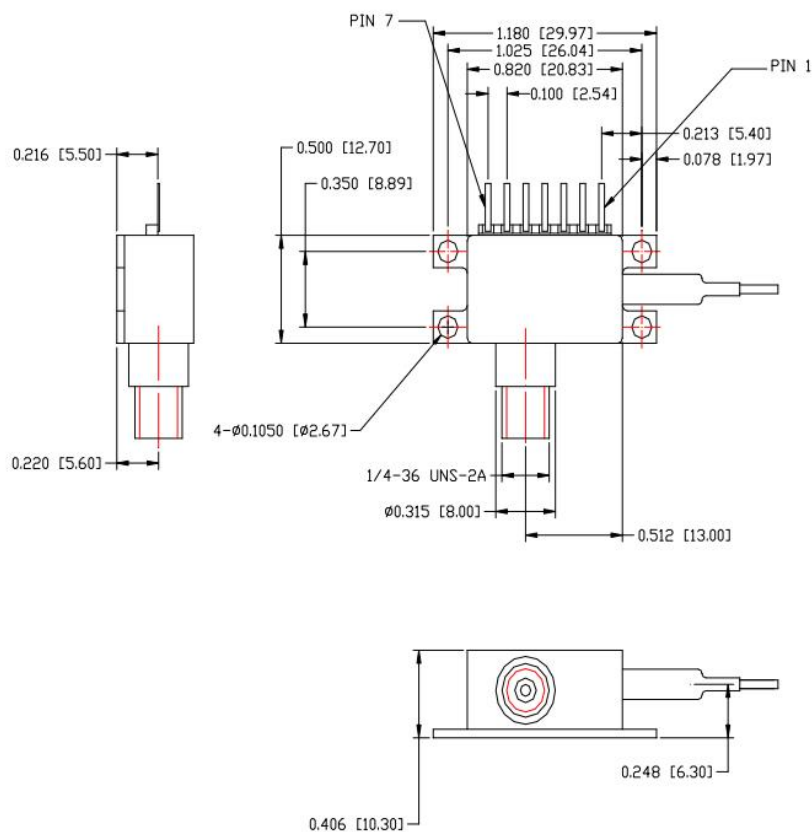
Notes

-  RF amplitude flatness tested Peak to Peak, optical path requires return loss better than 40dB.
-  NF test under No RF signal input.

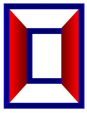
Electric schematics



Outline Drawing



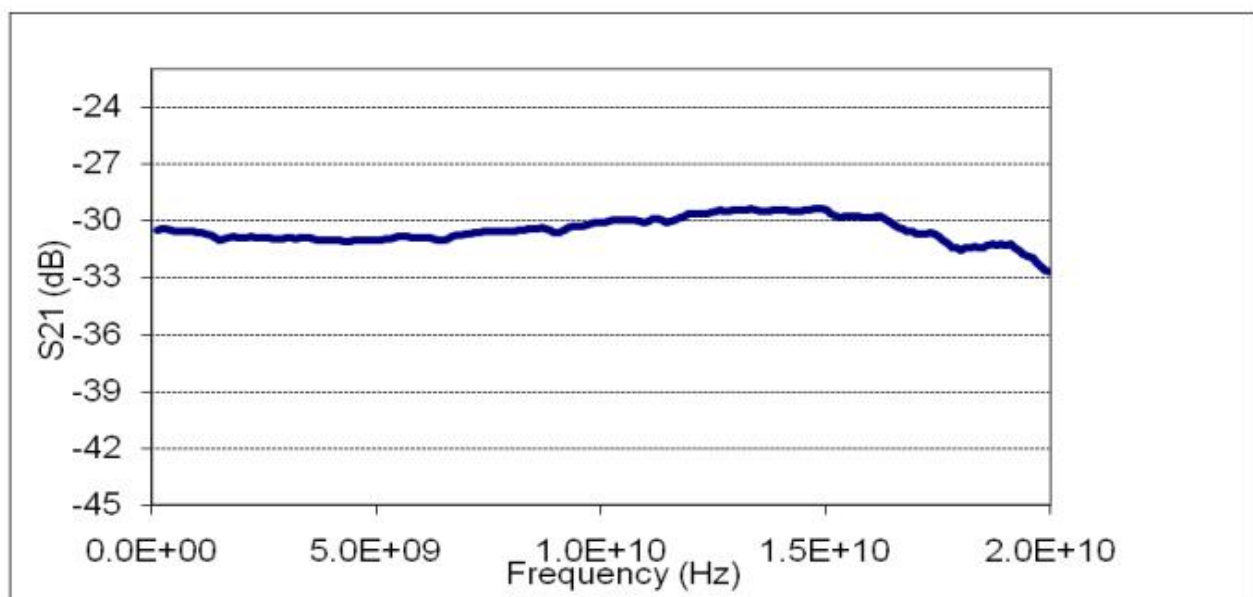
Unit : inch [mm]



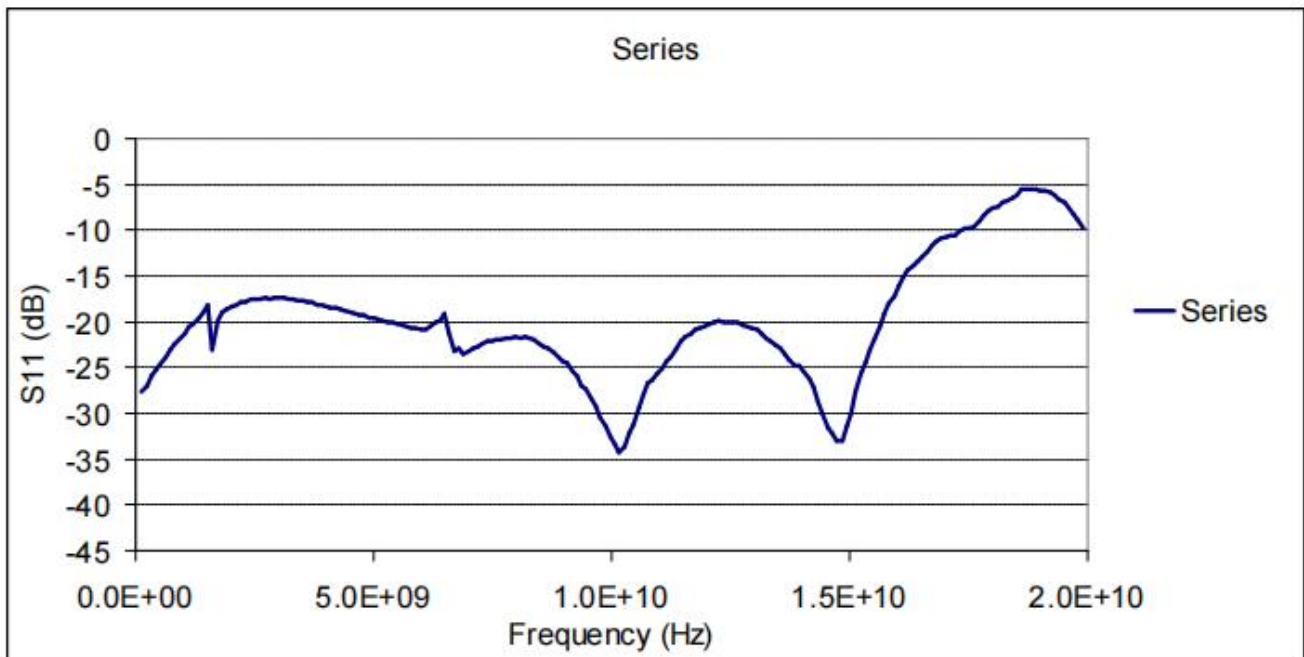
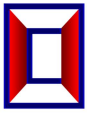
Connection

Pin Assignments	
Pin	Function
1	Thermistor
2	Thermistor
3	DC Bias Laser cathode (-)
4	MPD Anode
5	MPD Cathode
6	TEC (+)
7	TEC (-)
RF connector	Laser cathode RF
Case ground	Laser Anode

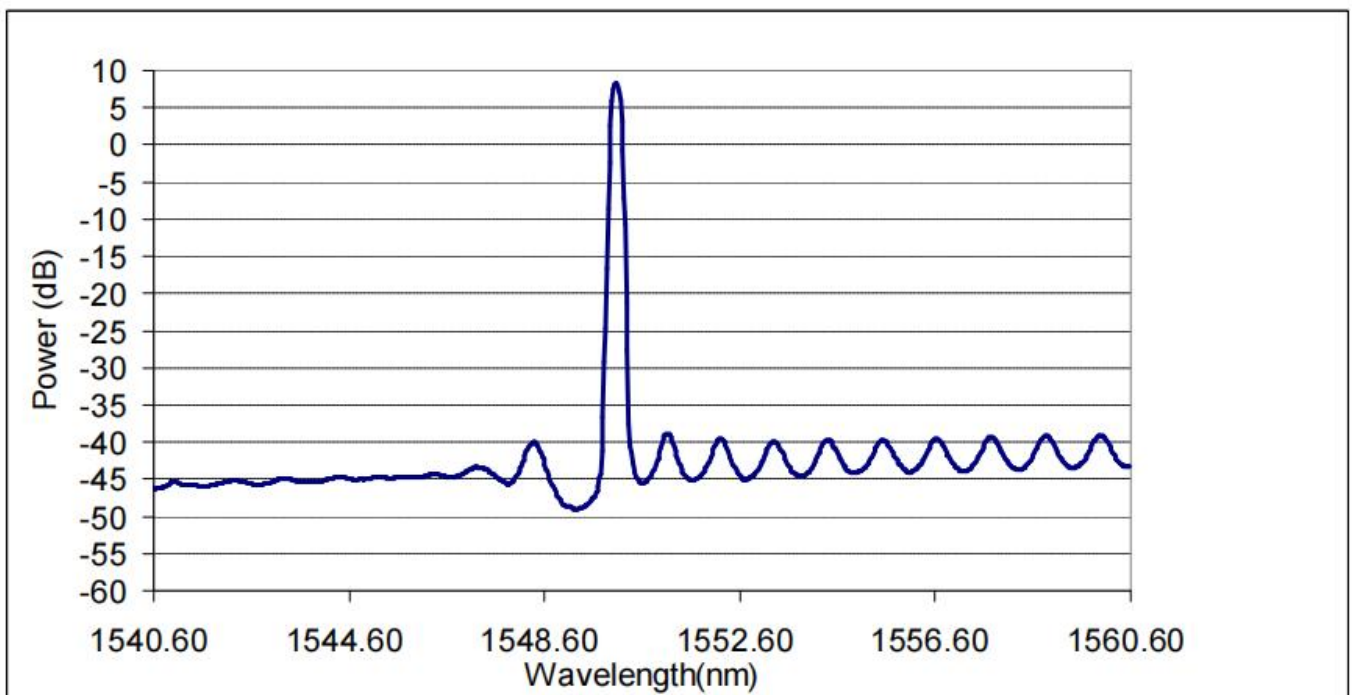
S21 Data



S11 data



Typical Spectrum data

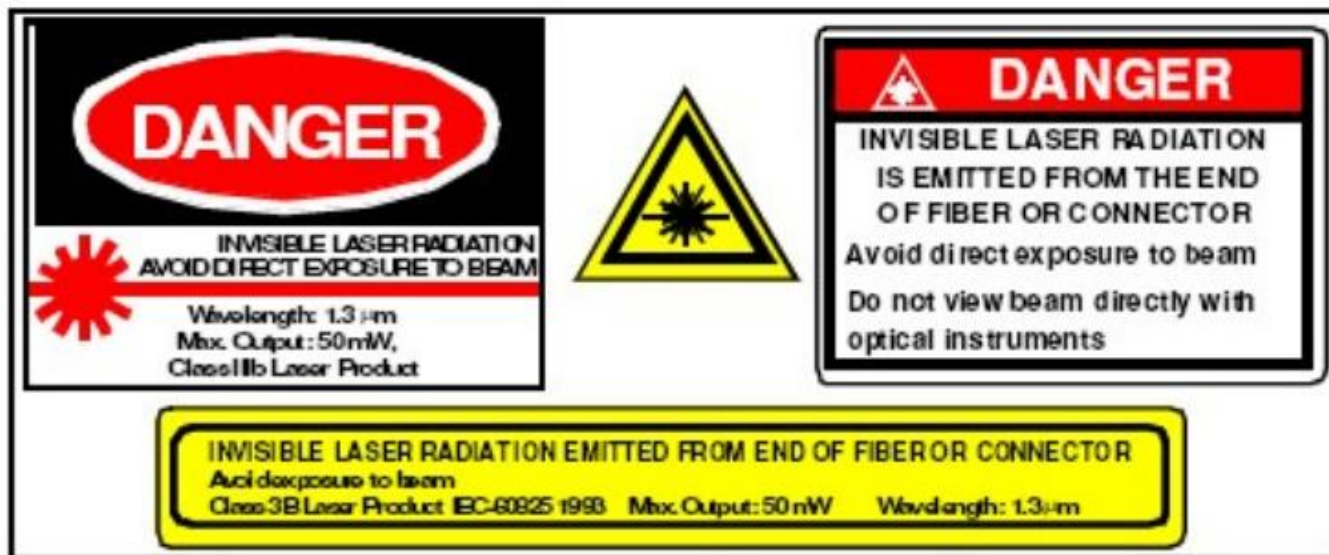


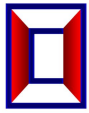
Fiber Characteristic

-  Type: single mode SMF28E, Hytel 900um diameter
-  Fiber length: 900mm minimum

Laser Safety

-  FDA/CDRH Class IIb laser product. All versions are Class IIb laser products per CDHR 1040 Laser Safety Requirements. All versions are class 3B laser products per IEC_60825-1:1993. The device has been classified with the FDA under accession number 220191.
-  This product complies with 21 CFR 1040.10 and 1040.11.
-  PM fiber pigtail
-  Wavelength = 1550nm
-  Maximum power = 50 mW
-  Because of size constraints, laser safety labeling (including an FDA class IIb label) is not affixed to the module but attached to the outside of the shipping carton.
-  Product is not shipped with power supply.
-  Caution: Use of controls, adjustments and procedures other than those specified herein may result in hazardous laser radiation exposure.





Ordering information

9015□—□□□—□□□—□□

Optical Connector

C1 = FC/APC

C2 = SC/APC

C0= None

Optical power(mw)

P08: 8 mW

P10: 10 mW

Central Wavelength (nm)

CWDM	Cxx	47:	1470nm
		49:	1490nm
		51:	1510nm
		53:	1530nm
		55:	1550nm
		57:	1570nm
		59:	1590nm
		61:	1610nm

DWDM OPTION(1527-1562nm) 0.8nm space available

Application

C: 12GHz

D: 15GHz

E: 18GHz

1550nm CWDM/DWDM Butterfly packaged Laser module

- 9015E-P10-C1 means 18GHZ 1550nm Non-WDM laser module,
- 9015E-C49-P10-C1 means 18GHZ 1490nm CWDM laser module,
- 9015E-W34-P10-C1 means 18GHZ 1550.12nm DWDM laser module,