

## NYDMD Series - DWDM Microwave DFB Laser Module

### ✧ Product Features

**High-Dynamic-Range**

**18 GHz Bandwidth**

**Wavelength: DWDM(ITU)**

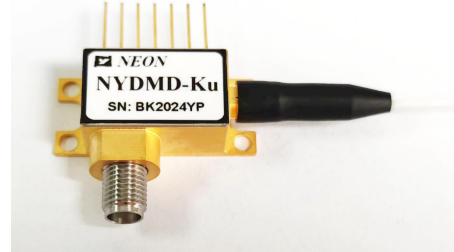
**Low threshold current**

**High output power**

**7pin butterfly package with SMA connector**

**Operating case temperature: -40 to 70°C**

**High reliability**



### ✧ Product Applications

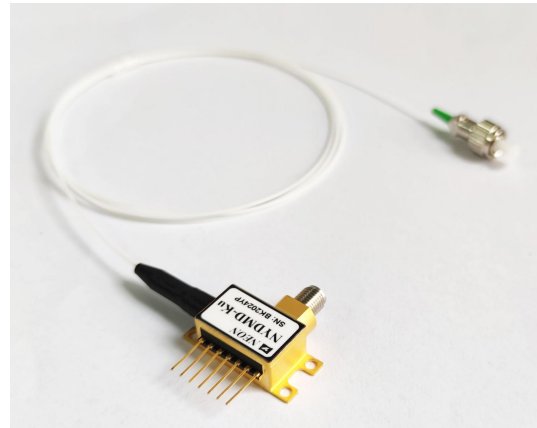
**Antenna Remoting**

**Cellular and PCS Networks**

**Analog RF links transmission**

**Military Communications**

**Tracking, Telemetry, and Control**



### ✧ Introduce Of NYDMD

NYDMD series module is a directly modulated DFB laser which provides exceptional performance for linear fiber optics communications in very wide bandwidth applications. NYDMD's linear fiber optic lasers are an excellent alternative to using coaxial cable systems to transmit 12 GHz or 18 GHz signals. They offer significant improvements in reliability of microwave communications networks by transmitting the RF signal in its original format. As a result of these properties, laser products provides significant improvements in signal quality for a wide variety of applications including antenna remoting, telemetry, timing and reference signal distribution, measurement and delay lines

The NYDMD series laser built in optical isolator, TEC, thermistor, laser diode chip, and monitor photodiode are hermetically sealed in a 7PIN butterfly package.

## ✧ Performance Specifications

Absolute Maximum Ratings				
Parameter	Symbol	Min.	Max.	Unit
Laser diode forward current	$I_f$	-	120	mA
Laser diode reverse voltage	V	-	1	V
Front power	$P_f$	-	20	dBm
PD reverse voltage	V	-	15	V
Forward current (PD)	$I_m$	-	2	mA
Operation temperature	$T_o$	-40	+70	°C
Storage temperature	$T_s$	-55	+85	°C
Storage relative humidity	$S_r$	-	85	%

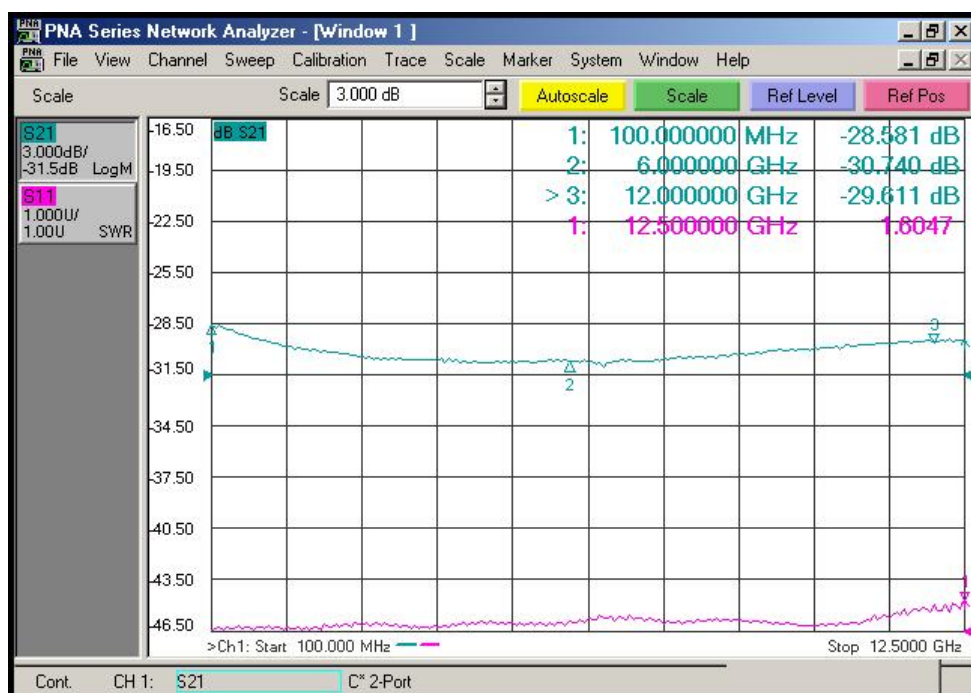
Optical and Electrical Specification (Tc=25°C)							
Parameter	Symbol	Test Condition	Min	Typ	Max	Units	Not
Wavelength	$\lambda$	$I_F = I_{OP}, T = T_{OP}$	DWDM (ITU)			nm	
Frequency	-	X Option	0.1	-	12	GHz	-
		Ku option	1	-	18		
Optical Output Power	P	$I_F = I_{op}$	-	10	-	mW	1
Thershold current	$I_{th}$	$\lambda = 1550nm$	-	-	10	mA	-
Operation current	$I_{op}$	$\lambda = 1550nm$	-	55	100	mA	-
Operation voltage	$V_{op}$	$\lambda = 1550nm$	-	1.5	2.5	V	-
Slope efficiency	SE	-	0.2	-	-	W/A	-
Side-mode suppression ratio	SMSR	$\lambda = 1550nm, I_F = I_{op}$	30	-	-	dB	-
Rative Intensity Noise	$R_{IN}$		-	-150	-130	dB/Hz	-
Bandwidth (-3dB,I=60mA)	$S_{21}$	X Option	-	12	-	GHz	-
		Ku option	-	18	-		
VSWR	VSWR	X Option	-	-	2	-	-
		Ku option	-	-	2.2		
Input 1 dB Compression		-	15	-	-	dBm	-
Thermistor Resistance	$R_{th}$	@25°C	-	10	-	Kohm	-
TEC current	$I_t$	-	-	-	1.2	A	2
TEC voltage	$V_t$		-	-	2.5	V	2
Capacitance (PD)	$C_t$		-	-	20	pF	-
Monitoring current	$I_m$	-	0.10	-	2.0	mA	-
Dark current (PD)	$I_d$		-	-	50	nA	-
Output Impedance	$R_L$	-	-	50	-	$\Omega$	-

Notes: All laser chips come from wafers that have been certified using a representative lot of devices that must achieve an acceptable yield for burn-in.

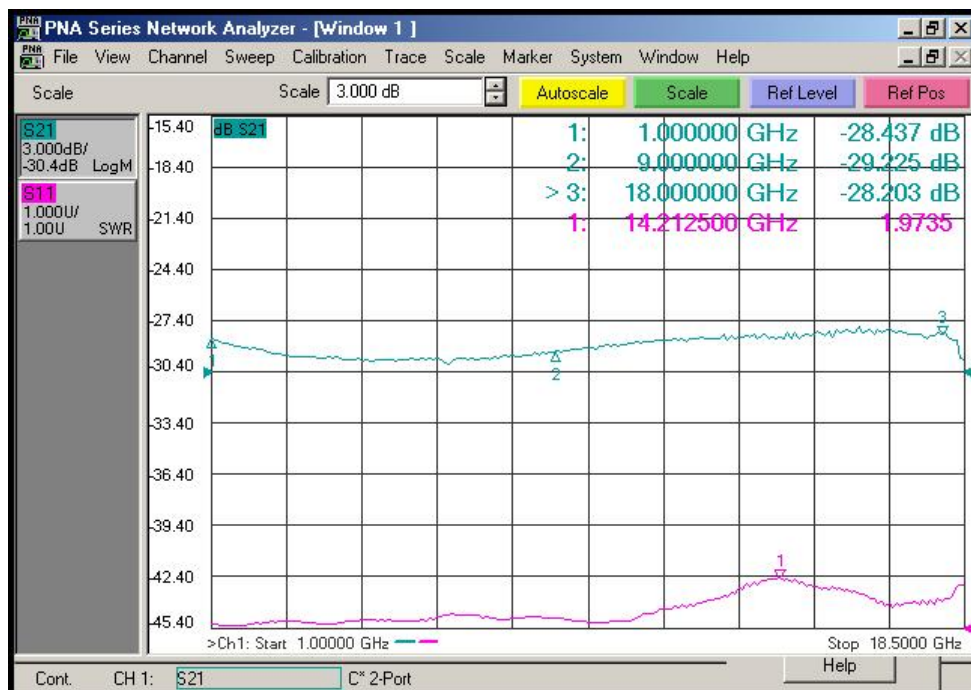
1. Laser temperature set 25°C, bias current at 55mA
2. Operation case temperature -40~70°C

✧ Typical Data

( $\lambda=1550\text{nm}$  ,  $TC =25\text{ }^\circ\text{C}$ )



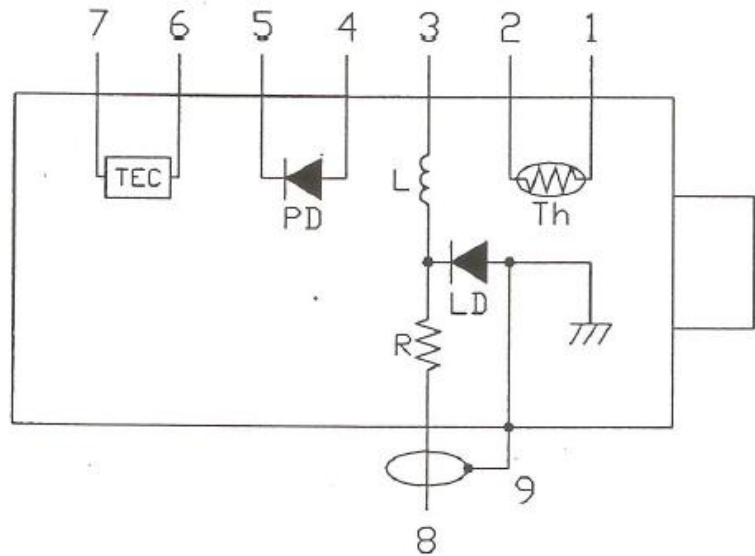
( Fig . 1 X- Band S11 and S22 data )



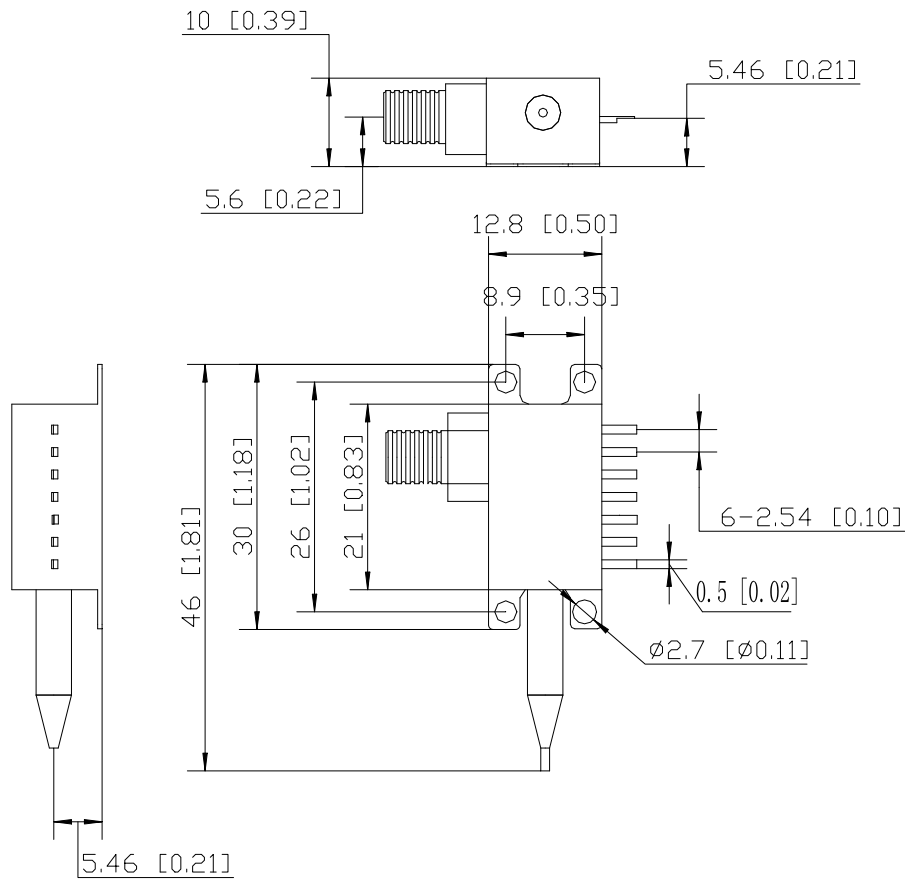
( Fig . 2 Ku- Band S11 and S22 data )

✧ Electrical schematic

Lead#	Function
1	Thermistor
2	Thermistor
3	LD-(Bias)
4	PD+
5	PD-
6	Cooler+
7	Cooler-
8	LD-(RF)
9	Ground

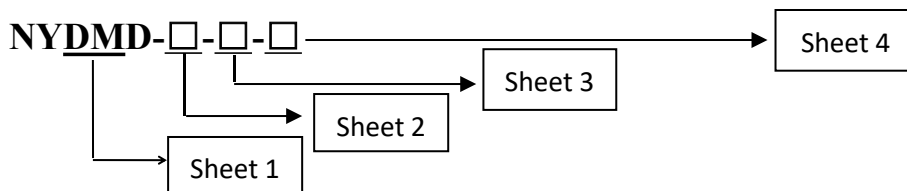


✧ Outline drawings(Unit: mm[inch])



**RF Connector: SMA**

## ✧ Ordering Information



### Sheet 1:

Code	Description
DM	DWDM (Dense Wavelength Division Multiplexing) 7 PIN butterfly package

### Sheet 2:

Code	Analog Bandwidth
X	0.1 ~ 12 GHz
Ku	1 ~ 18 GHz

### Sheet 3:

Channel	Frequency (THz)	Center Wavelength (nm)	Channel	Frequency (THz)	Center Wavelength (nm)
C01	Any desired custom wavelength		C37	193.7	1547.72
C02	Non-ITU, 1547 nm – 1560 nm		C38	193.8	1546.92
C03	Non-ITU, 1557 nm – 1560 nm		C39	193.9	1546.12
C04	Non-ITU, 1530 nm – 1560 nm		C40	194	1545.32
C15	191.5	1565.50	C41	194.1	1544.53
C16	191.6	1564.68	C42	194.2	1543.73
C17	191.7	1563.86	C43	194.3	1542.94
C18	191.8	1563.05	C44	194.4	1542.14
C19	191.9	1562.23	C45	194.5	1541.35
C20	192	1561.41	C46	194.6	1540.56
C21	192.1	1560.61	C47	194.7	1539.77
C22	192.2	1559.79	C48	194.8	1538.98
C23	192.3	1558.98	C49	194.9	1538.19
C24	192.4	1558.17	C50	195	1537.4
C25	192.5	1557.36	C51	195.1	1536.61
C26	192.6	1556.55	C52	195.2	1535.82
C27	192.7	1555.75	C53	195.3	1535.04
C28	192.8	1554.94	C54	195.4	1534.25
C29	192.9	1554.13	C55	195.5	1533.47
C30	193	1553.33	C56	195.6	1532.68
C31	193.1	1552.52	C57	195.7	1531.9



<b>C32</b>	<b>193.2</b>	<b>1551.72</b>	<b>C58</b>	<b>195.8</b>	<b>1531.12</b>
<b>C33</b>	<b>193.3</b>	<b>1550.92</b>	<b>C59</b>	<b>195.9</b>	<b>1530.33</b>
<b>C34</b>	<b>193.4</b>	<b>1550.12</b>	<b>C60</b>	<b>196</b>	<b>1529.55</b>
<b>C35</b>	<b>193.5</b>	<b>1549.32</b>	<b>C61</b>	<b>196.1</b>	<b>1528.77</b>
<b>C36</b>	<b>193.6</b>	<b>1548.51</b>	<b>C62</b>	<b>196.2</b>	<b>1527.99</b>

**Sheet 4:**

<b>Code</b>	<b>Connector Type</b>	<b>Remark</b>
<b>A</b>	<b>FC / APC</b>	<b>Single-mode 9 / 125 μm fiber pigtail, 0.9mm, 1m length</b>
<b>S</b>	<b>SC/APC</b>	
<b>N</b>	<b>No Connector</b>	

✧ **Precautions**

- The fiber bending radius no less than 20 mm for avoiding fiber damaged .**
- Be sure the fiber coupling facet is clean before connecting it to opto-circuit .**
- The suitable ESD protection is required in storage, transportation and using .**