

## NY13D Series - 1310nm Microwave DFB Laser Module

### ✧ Product Features

High-Dynamic-Range

18 GHz Bandwidth

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 NY13D

NY13D series module is a directly modulated DFB laser which provides exceptional performance for linear fiber optics communications in very wide bandwidth applications. NY13D'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 NY13D 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	%

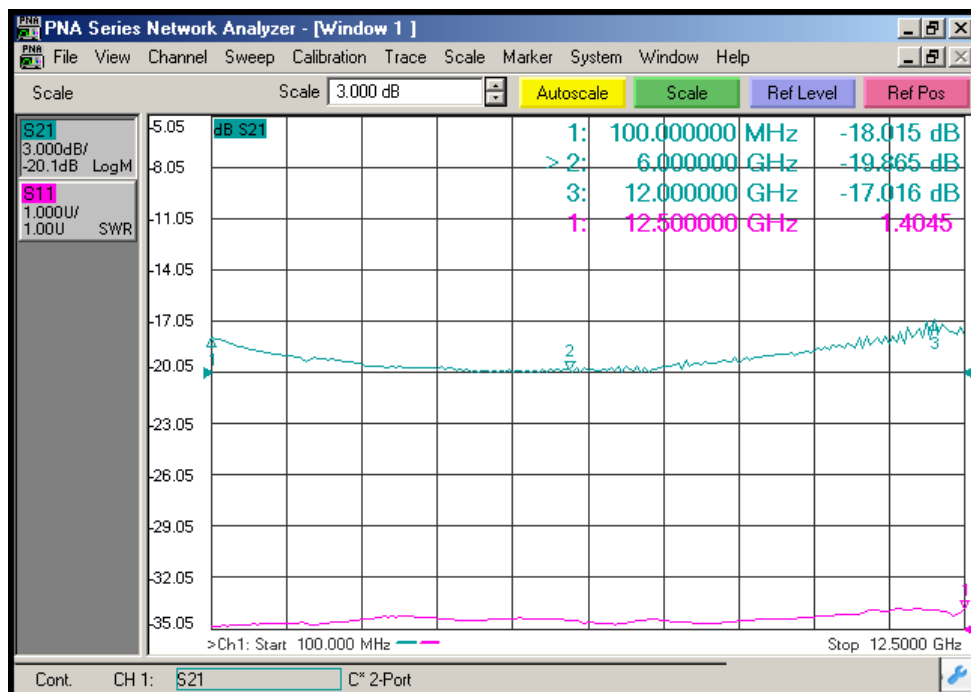
Optical and Electrical Specification (Tc=25 °C)							
Parameter	Symbol	Test Condition	Min	Typ	Max	Units	Not
Wavelength	$\lambda$	$I_F = I_{OP}, T = T_{OP}$	-	1310	-	nm	
Frequency	-	X Option	0.1	-	12	GHz	-
		Ku option	1	-	18		
Optical Output Power	P	$I_F=I_{op}$	-	10	-	mW	1
Thershold current	$I_{th}$	$\lambda =1310nm$	-	-	10	mA	-
Operation current	$I_{op}$	$\lambda =1310nm$	-	55	100	mA	-
Operation voltage	$V_{op}$	$\lambda =1310nm$	-	1.5	2.5	V	-
Slope efficiency	SE	-	0.2	-	-	W/A	-
Side-mode suppression ratio	SMSR	$\lambda =1310nm, I_F=I_{op}$	30	-	-	dB	-
Rative Intensity Noise	$R_{IN}$	-	-	-	-130	dB/Hz	-
Bandwidth (-3dB,I=60mA)	$S_{21}$	X Option	-	12	-	GHz	-
		Ku option	-	18	-		
Return loss (VSWR)	VSWR	X Option	-	-	2	dB	-
		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	-

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.

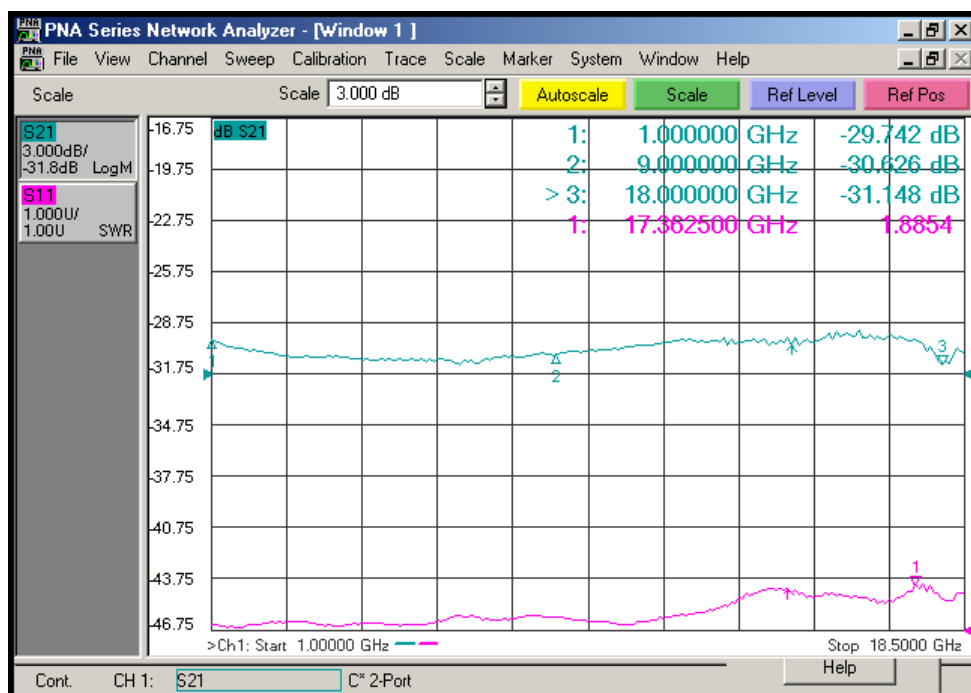
1. Laser temperature set 25°C, bias current at 55mA
2. Operation case temperature -40~70°C

✧ Typical Data

( $\lambda=1310\text{nm}$  ,  $TC =25\text{ }^\circ\text{C}$ )



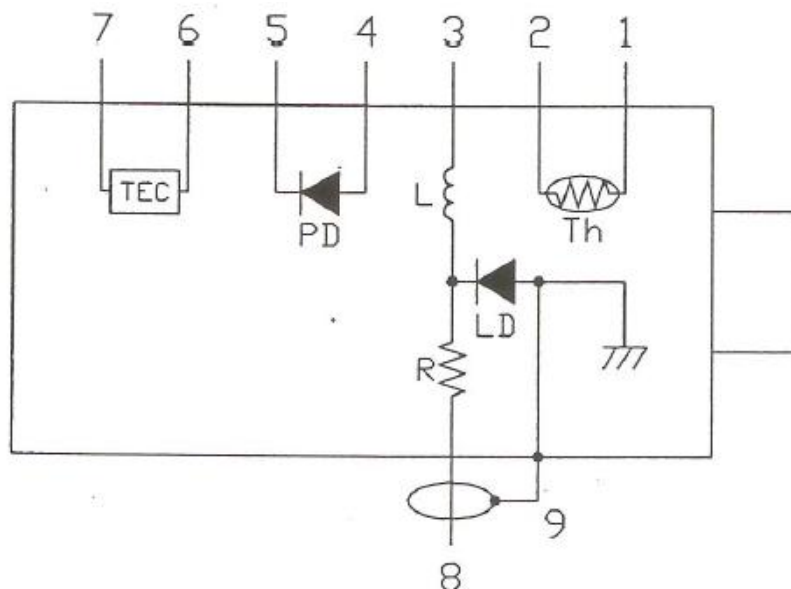
( Fig . 1 X- Band S11 and S22 data )



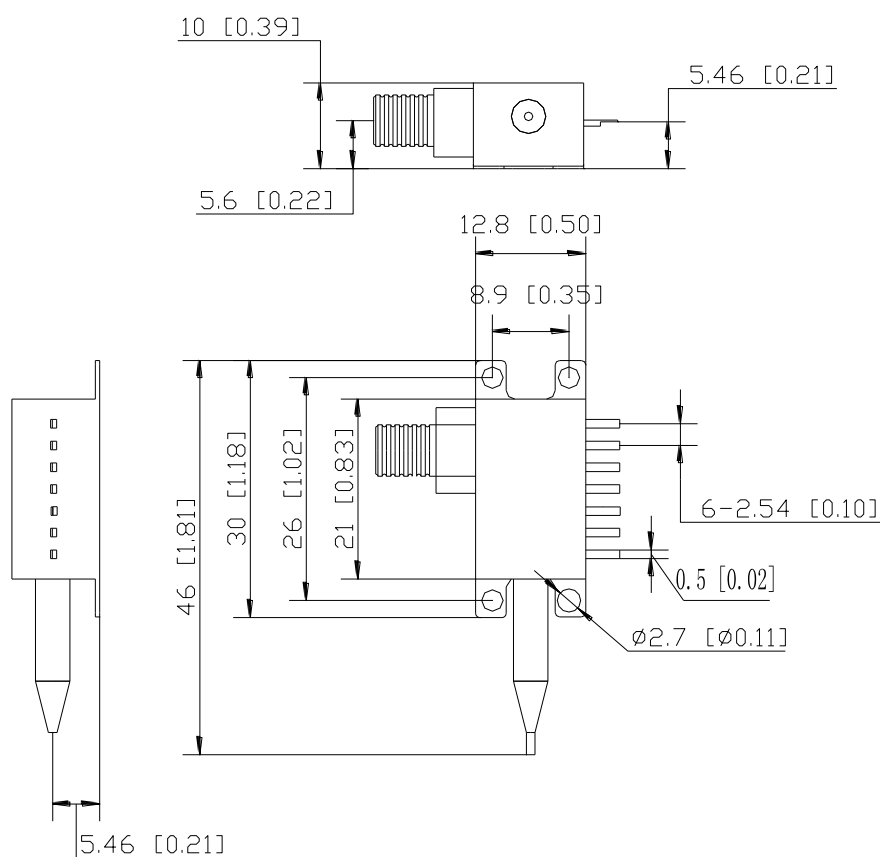
( Fig . 2 Ku- Band S11 and S22 data )

✧ Electrical schematic

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

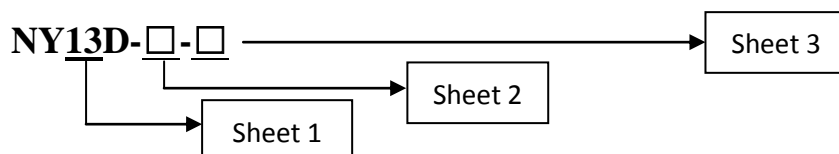


✧ Outline drawings(Unit: mm[inch])



RF Connector: SMA

### ✧ Ordering Information



Sheet 1:

Code	Typical Wavelength
13	1310nm 7PIN butterfly package

Sheet 2:

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

Sheet 3:

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

### ✧ 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 .**