

Narrow Linewidth Laser Diodes Datasheet

1. Product information

Part Number : NLLD-155005S22-01(50KHz)

Product Description: The NLLD series directly modulated external cavity laser is cost effective solution for 2.5 Gbits/s digital transmission in SMF-28 fiber. This is fabricated in a hermetically sealed 14-pin butterfly package that contains thermoelectric cooler (TEC), thermistor, monitor photodiode, optical isolator.

The NLLD provides substantially lower dispersion penalty and lower chirp than a directly modulated DFB. The wavelength stability is assured by design, eliminating the need for wavelength lockers and complex feedback control circuits.

Applications:

- Metro and Long Haul DWDM, 100 GHz spaced networks
- SONET/SDH OC-48/STM16 ring and meshed applications
- Drop-side of DWDM long-haul transport equipment
- Optical Test and Instrumentation
- Microwave Photonics
- CATV networks
- Sensors

Features:

- ITU wavelengths across C-band
- 100 GHz channel spacing
- SONET/SDH OC-48/STM16 ring and meshed applications
- Low dispersion provides
- Low transient chirp provides unique narrow dynamic spectrum
- Excellent long-term wavelength stability eliminates the need for a wavelength locker

Reliability: Telcordia GR-468. RoHS

2 · Performance Specifications

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet.

Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Storage temperature	T _S	-	-40	-	85	°C
Operating case temperature	T _{OP}	-	-15	-	75	°C
Forward Current	I _F	CW	-	-	280	mA
Reverse Voltage	V _R	-	-	-	2	V
Photodiode Forward Current	I _{FDP}	-	-	-	2	mA
Photodiode Reverse Voltage	V _{RDP}	-	-	-	10	V
TEC current	I _{TEC}	-	-	0.8	1.5	A
TEC voltage	V _{TEC}	-	-	1.5	3.0	V

Optical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	λ_c	TL=17 ~ 35°C CW	1545	1550	1555	nm
Peak Optical Output Power	P_O	-	5	-	-	mW
Spectral linewidth	LW	-	-	50	75	KHz
Side-mode Suppression Ratio	SMSR	CW	30	40	-	dB
Optical Isolation	-	-10 < T _c < +70 °C	30	-	-	dB
Relative Intensity Noise	RIN	CW, output power 5mW	-	-	-135	dB
Wavelength drift with case (-10 to 70 °C) temperature	$\Delta\lambda$	TEC temperature at 15°C to 35°C	-	-	±30	pm
Wavelength Temperature coefficient	$\Delta\lambda/\Delta T$	TEC temperature at 15°C to 35°C	-	15	30	pm/°C
Wavelength Current coefficient	$\Delta\lambda/\Delta I$	-	-	1.5	2	pm/mA

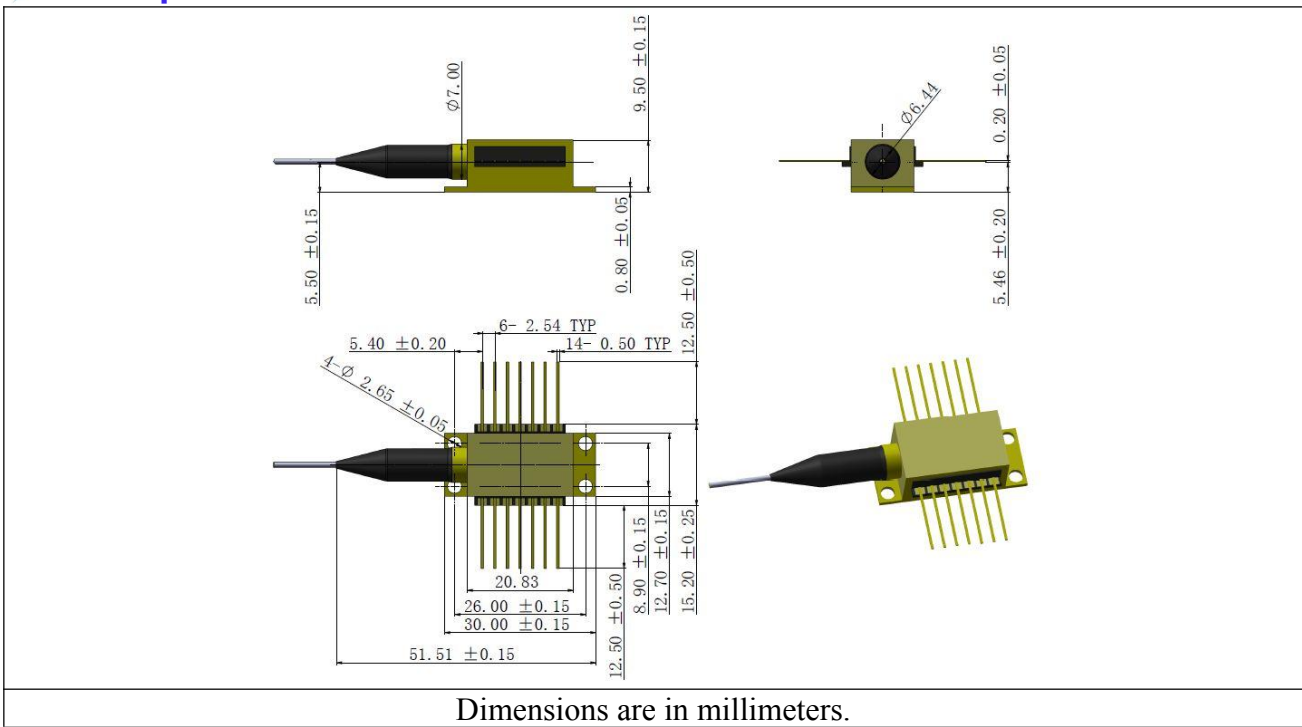
Electrical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Threshold Current	I_{TH}	-	-	15	25	mA
Slope Efficiency	η	CW output power 5 mW	0.064	0.1	-	mW/mA
Operating current	I_{op}	CW	-	150	200	mA
TEC set temperature	T_S	-	15	-	35	°C
Laser Forward Voltage	V_F	CW output power 5 mW	-	1.3	1.8	V
Monitor Dark Current	I_D	-	-	-	0.1	μA
Input Impedance	Z_{IN}	-	22	25	28	Ω
Thermistor Current	I_{TC}	-	10	-	100	μA
Thermistor Resistance	R_{TH}	T _L = 25 °C	9.5	10	10.5	KΩ
TEC Current	I_{TEC}	T _L = 25 °C, T _c = 70 °C	-	-	1.8	A
TEC Voltage	V_{TEC}	T _L = 25 °C, T _c = 70 °C	-	-	3.5	V
TEC capacity	ΔT	T _c = 70°C	-	-	50	°C
Thermistor temperature	-	-	-	-	100	°C

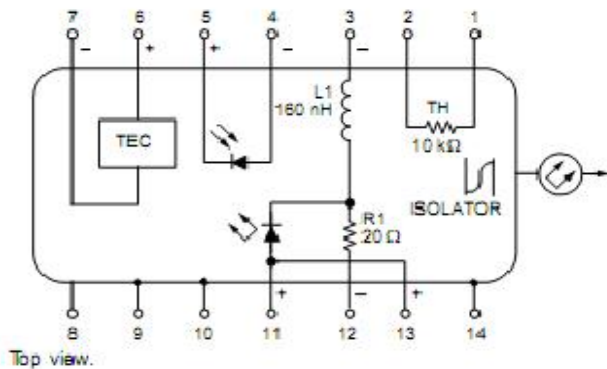
Fiber Pigtail Specifications

Parameters	Description
Fiber Type	SMF-28e
Jacket Type	900μm tight tube
Fiber Length Between Isolator and LPM	≤620mm
Fiber Length Beyond Isolator	400mm-500mm
Connector Type	FC/APC

3. Package drawing (Mechanical Dimensions):



4. Pin Assignments:



1	Thermistor
2	Thermistor
3	Laser dc Bias Cathode(-)
4	Back-facet Monitor Anode (-)
5	Back-facet Monitor Cathode (+)
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
8	NC
9	Case Ground
10	Case Ground
11	Laser Anode (+)
12	Laser RF Cathode (-)
13	Laser Anode (+)
14	Case Ground

5. Test Report: The test report should be provided when the products are delivered. Following characteristic test data should be included : -Optical Output Power, Center Wavelength, P-I curve, Pin Assignments.

6. Packaging: Vacuumize anti-static plastic package. Following items should be indicated on the outer packaging surface :

- Product Name
- Product Number
- Serial Number

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