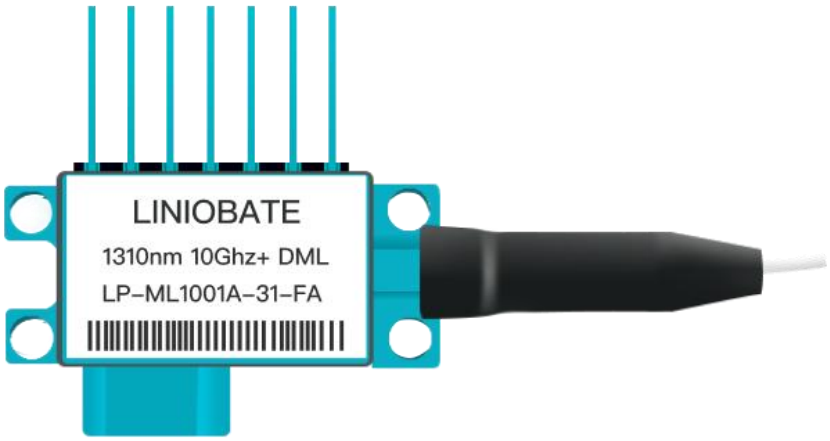
# 1310 nm High-Speed 10 GHz+ directly-modulated lasers

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## Overview

Microwave Distributed Feedback (DFB) Laser provides exceptional performance for linear fiber optics communications in very wide bandwidth applications. ML1001 linear fiber optic lasers are an excellent alternative to using coaxial cable systems to transmit 10 MHz to 18 GHz signals. They offer significant improvements in reliability of microwave communications networks by transmitting the RF signal in its original format. Liniobate offers DFB lasers with a 3dB frequency response bandwidth above 10 GHz for applications that rely on high-speed direct modulation.These lasers are offered in standard 7-pin butterfly package with RF (K) connector, internal thermoelectric cooler, with isolator, and polarization maintaining (PM) fiber pigtail with FC/APC connectors.Other configurations ( no-isolator, single mode fiber, etc) are available upon request.

## Features

- High-Dynamic-Range
- 10 MHz to 18 GHz Bandwidth
- Low threshold current
- High output power
- 7pin butterfly package with SMA connector
- Operating case temperature: -40 to 85 °C

## Standard Specifications

| Optical and Electrical Specification (Tc=25°C) | | | | | | |
|---|---|---|---|---|---|---|
| Parameter | Symbol | Min | Typ | Max | Units | Note |
| Optical Output Power | P | 8 | 10 | | dBm | 1 |
| Thershold current | Ith | | 10 | | mA | - |
| Operation current | Iop | | 55 | 100 | mA | |
| Operation voltage | Vop | | 1.5 | 2.5 | V | - |
| Peak wavelength | λ | - | 1310 | - | nm | |
| Slope efficiency | SE | 0.2 | | | W/A | |
| Side-mode suppression ratio | SMSR | 30 | | | dB | |
| Rative Intensity Noise | RIN | | -150 | -130 | dB/Hz | |
| Bandwidth (-3dB,I=60mA) | S21 | | 10 | | Ghz | - |
| Return loss | S11 | | -10 | -6 | dB | |
| Input 1 dB Compression | | | 18 | | dBm | |
| Thermistor Resistance | Rth | | 10 | | Kohm | @25C,NTC, Beta 3930k |
| TEC current | It | | | 1.2 | A | 2 |
| TEC voltage | Vt | | | 2.5 | V | 2 |
| Capacitance (PD) | Ct | | | 20 | pF | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Monitoring current | Im | 0.05 | | 2.0 | mA | |
| Dark current (PD) | Id | | | 50 | nA | |
| Capacitance (PD) | Ct | | | 20 | pF | |
| Optical Isolation | ISO | | 30 | | dB | No isolator option |
| Polarization Extinction ratio | PER | 17 | 20 | 25 | dB | |
| Optical output connector | NA | FC/APC (PM Key aligned to slow axis) | | | | |
| RF input connector | NA | K102F/2.92 mm (K) Female | | | | |
| Input Impedance Matching | Ω | | 50 | | ohm | |

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.

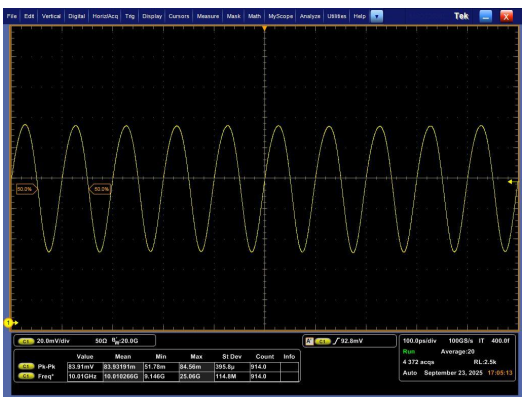
1. Laser temperature set 25C, bias current at 55mA;

2. Operation case temperature -5~75°C

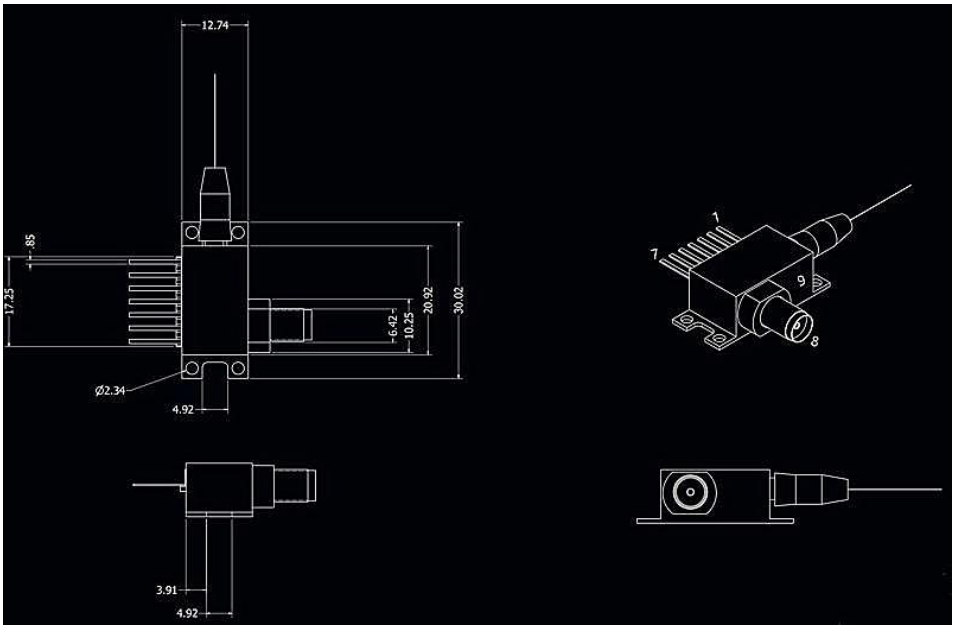
## Performance Specifications

| Absolute Maximum Ratings | | | | |
|---|---|---|---|---|
| Parameter | Symbol | Min. | Max. | Unit |
| Laser diode forward current | If | | 120 | mA |
| Laser diode reverse voltage | V | | 1 | V |
| Front power | Pf | | 20 | dBm |
| PD reverse voltage | V | | 15 | V |
| Forward current (PD) | Im | | 2 | mA |
| Operation temperature | To | -40 | +85 | °C |
| Storage temperature | Ts | -40 | +85 | °C |
| Storage relative humdity | Sr | | 85 | % |

## Typical Data



## Dimensions and Pin definitions（Unit in mm)




## Ordering info

PN# LP-ML1001A-31-FA 1310 nm High-Speed 10 GHz+ directly-modulated lasers FC/APC Connector,Output Fiber:PM1310 fibers with Slow axis alignment，PER＞18dB,Modulation Bandwidth: ＞10Ghz,Output Power:＞8dBm,RF input connector:2.92 mm (K) Female,With Isolator