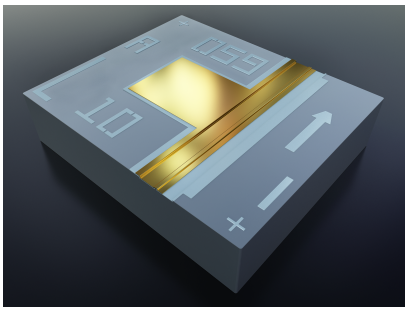
ML1001

1310 nm DFB laser diode chip for 1.25 Gb/s and 2.5 Gb/s

Overview

ML1001 is a 1310 nm DFB (distributed feedback) laser chip with excellent high-temperature performance. The product is designed for intermediate and long reach optical transceivers with up to 2.5 Gb/s data rates. Wavelength selection and stabilization are done by a built-in optical grating. The products are shipped as bare dies.



Applications

Communications	
Gigabit Ethernet transceivers 1X/2X Fibre Channel	SONET OC-48 SR SDH STM-I-16

Electro-optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Central Wavelength (P_{OPT} = 5 mW)	λ	1287	1307	1327	nm
Optical Output Power	P_{OPT}	7	-	-	mW
Operating Current (P_{OPT} = 5 mW)	I_{OP}	-	26	40	mA
Operating Voltage (P_{OPT} = 5 mW)	V_{OP}	-	1.15	1.3	V
Slope Efficiency (P_{OPT} = 5 mW)	η	0.22	0.38	-	W/A
Threshold Current	I_{TH}	-	12	18	mA
Spectral Width *)	$\Delta\lambda$	-	0.07	0.2	nm
Wavelength Temperature Coefficient	$\Delta\lambda/\Delta T$	-	0.09	-	nm/K
Parallel Beam Divergence (FWHM)	$\theta\|\|$	-	27	35	°
Perpendicular Beam Divergence (FWHM)	$\theta\perp$	-	35	45	°
Modulation bandwidth **) (I_{OP} =I_{TH} + 16 mA)	f_{-3dB}	5	-	-	GHz

All above values are typical for CW operation @ 25°C.

*) Measured by optical spectrum analyzer with limited accuracy.

**) Chip-on carrier, ground-signal-ground microwave probe.

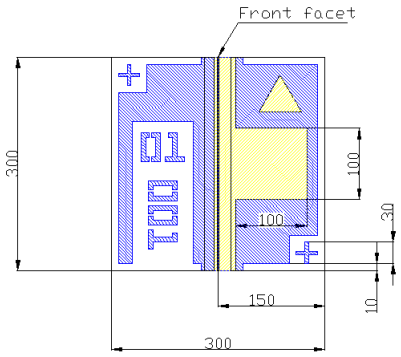
Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
LD Forward Current	I_{FLD}	200	mA
Optical Output Power	P_{OPT}	20	mW
LD Reverse Voltage	V_{RLD}	2	V
Operating Temperature Range	T_{OP}	0…70 [1]	°C
Operating Temperature Range	T_{ST}	-40…85	°C

[1] A non-condensing environment should be ensured over the useful temperature range.

Mechanical Specifications

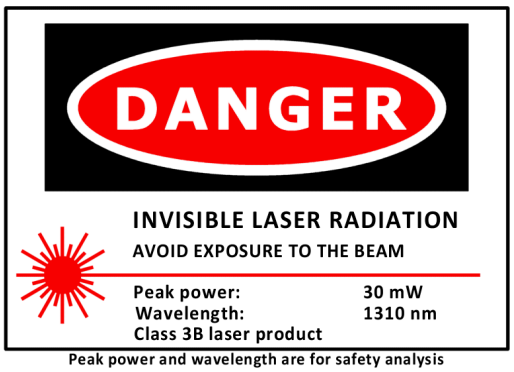
Parameter	Symbol	Value	Unit
Cavity Length	L	300	µm
Chip Width	W	300	µm
Chip Thickness	H	100	µm



All dimensions in micrometers (µm). Polarity: p-contact (anode) up.

Safety Information

- The laser light emitted from this laser diode is invisible and potentially harmful to the human eye. Avoid eye and skin exposure to the beam, both direct and reflected.
- Products are subject to the risks normally associated with sensitive electronic devices including static discharge, transients, and overload. Please ensure ESD protection prior to handling the products.
- These Modulight products are not intended for use in systems where product malfunction can reasonably be expected to result in personal injury.



Peak power and wavelength are for safety analysis only, not to present device performance.

Liability note