

# 1490 nm DFB Laser Diode Chip for 3.125 Gb/s ML1005 series



## OVERVIEW

Modulight's ML1005 series is a high-performance Distributed Feedback (DFB) laser diode chip. The lasers emit at 1490 nm wavelength. Laser diode emission wavelength is controlled by an internal grating. The ML1005 series has been designed for digital optical communication networks with up to 3.125 Gb/s modulation speeds. The bare die product is available as two different versions, with 6 mW and 10 mW maximum rated power.



## ELECTRO-OPTICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit	Conditions *
Optical Output Power **	$P_{OPT}$	6/10	-	-	mW	0~70°C
Threshold Current ***	$I_{TH}$	-	18 35	28 50	mA	25°C 70°C
Operating Current	$I_{OP}$	-	38 65	46 90	mA	25°C, $P_{OPT}=5mW$ 70°C, $P_{OPT}=5mW$
Operating Voltage	$V_{OP}$	-	1.1	1.5	V	0~70°C, $P_{OPT}=5mW$
Slope Efficiency ****	$\eta$	0.18 0.10	0.26 0.16	-	W/A	25°C, $P_{OPT}=5mW$ 70°C, $P_{OPT}=5mW$
Peak Wavelength	$\lambda$	1487 1482	1490 -	1493 1498	nm	25°C, $P_{OPT}=5mW$ 0~70°C, $P_{OPT}=5mW$
Wavelength Temperature Coefficient	$\Delta\lambda/\Delta T$	-	0.11	-	nm/K	0~70°C, $P_{OPT}=5mW$
Spectral Width *****	$\Delta\lambda$	-	0.11 0.07	0.2 0.2	nm	25°C, $P_{OPT}=5mW$ 70°C, $P_{OPT}=5mW$
Parallel Beam Divergence (FWHM)	$\theta_{  }$	-	26	34	°	25°C, $P_{OPT}=5mW$
Perpendicular Beam Divergence (FWHM)	$\theta_{\perp}$	-	45	48	°	25°C, $P_{OPT}=5mW$
Side Mode Suppression Ratio *****	SMSR	30	40	-	dB	25°C, $P_{OPT}=5mW$
Modulation bandwidth ***	$f_{-3dB}$	6 4	- -	- -	GHz	25°C, $I_{OP}=I_{TH}+16mA$ 25°C, $I_{OP}=I_{TH}+16mA$
Serial Resistance ****	$R_s$	-	5	-	$\Omega$	25°C, $P_{OPT}=5mW$

\* All temperatures refer to heatsink temperature

\*\* Kink-free, demonstrated reliability. Two different product versions available.

\*\*\* 2<sup>nd</sup> derivative method

\*\*\*\*  $P_{LO}=1mW$ ,  $P_{HI}=7mW$

\*\*\*\*\* RMS, -20 dB

\*\*\*\*\* -20 dB

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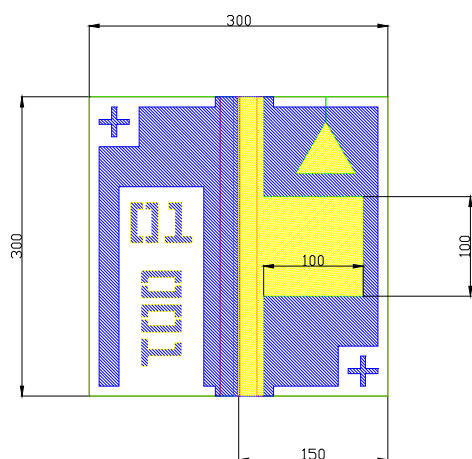
ML1005 series



## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating	Unit
Optical Output Power	$P_{OPT}$	50	mW
LD reverse voltage	$V_{RLD}$	2	V
LD forward current	$I_{FLD}$	200	mA
Operating temperature range	$T_{OP}$	0~70	°C

## MECHANICAL SPECIFICATIONS



All dimensions in microns  
Chip thickness  $100 \mu\text{m} \pm 10 \mu\text{m}$   
Polarity: p-contact (anode) up

## ORDERING INFORMATION

Sales Part	Rated optical power
ML1005	6 mW
ML1110	10 mW

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## SAFETY INFORMATION

- The laser light emitted from this laser diode is invisible but may be harmful to the human eye. Avoid eye 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 do not present device performance

## LIABILITY NOTE

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