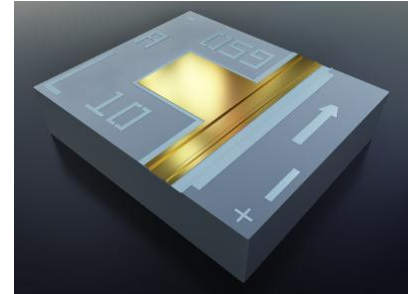


ML1005

1490 nm DFB Laser Chip for up to 3.125 Gb/s modulation

Overview

Modulight's ML1005 series are 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.



Applications

Communications

Digital optical communication networks

Electro-optical Characteristics ¹

Parameter	Symbol	Min	Typical	Max	Unit
Peak Wavelength (25°C, P _{OP} = 5mW)	λ	1487	1490	1493	nm
Peak Wavelength (0...70°C, P _{OP} = 5mW)	λ	1482	-	1498	nm
Rated Optical Power (kink-free)	P _R	6/10	-	-	mW
Operating Current (25°C, P _{OP} = 5mW)	I _{OP}	-	38	32	mA
Operating Current (70°C, P _{OP} = 5mW)	I _{OP,70}	-	65	90	mA
Operating Voltage (P _{OP} = 5mW)	V _{OP}	-	1.1	1.6	V
Slope Efficiency (25°C, P _{OP} = 5mW)	η	0.18	0.26	-	W/A
Slope Efficiency ² (70°C, P _{OP} = 5mW)	η	0.10	0.16	-	W/A
Serial resistance (25°C, P _{OP} = 5mW)	R _s	-	5	-	Ω
Threshold Current ²	I _{TH}	-	18	28	mA
Threshold Current ² (70°C)	I _{TH,70}	-	35	50	mA
Spectral Width ³	$\delta\lambda$	-	0.11	0.2	nm
Spectral Width ³ (70°C)	$\delta\lambda_{70}$	-	0.07	0.2	nm
Wavelength - Temp. Coefficient	$\Delta\lambda/\Delta T$	-	0.11	-	nm/K
Parallel Beam Divergence (FWHM)	$\theta_{ }$	-	26	34	°
Perpendicular Beam Divergence (FWHM)	θ_{\perp}	-	45	48	°
Modulation Bandwidth (kink-free, 25°C)	f _{-3dB}	6	-	-	GHz
Modulation Bandwidth (70°C)	f _{-3dB,70}	4	-	-	GHz

¹ Unless otherwise noted, the above values represent operation @ 25°C. All temperatures refer to case temperature, T_C.

² 2nd derivative method

³ RMS, -20 dB

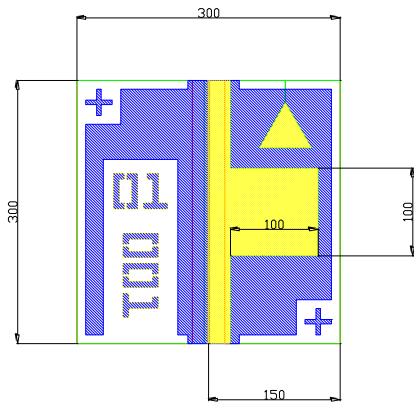
⁴ Distance from the lens or reference plane (see mechanical specification) to focal point. Applicable to ball and aspheric lens cap types only.

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Optical Output Power	P_{OP}	50	mW
LD Reverse Voltage	V_{RLD}	2	V
LD Forward Current	I_{FLD}	200	mA
Operating case temperature	T_c	0-70°C ¹	°C
Storage temperature	T_{STG}	-40-85°C	°C

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

Mechanical Specifications



All dimensions in microns
 Chip thickness 100 μm ± 10 μm
 Polarity: p-contact (anode) up

Ordering information

Product	Rated optical power
ML1005	6 mW
ML1110	10 mW

Safety Information

- The laser light emitted from this laser device 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.

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