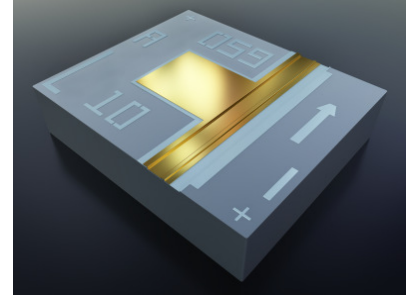


ML1006

1550 nm DFB Laser Diode for up to 3.125 Gb/s

Overview

Modulight's ML1006 is a high-performance distributed feedback (DFB) laser diode chip. The bare die laser emits at 1550 nm wavelength with 5 mW maximum rated power. Laser diode emission wavelength is controlled by an internal grating. ML1006 has been designed for digital optical communication networks with up to 3.125 Gb/s modulation speeds.



Applications

Communications

Digital optical communication networks

Electro-optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit
Central Wavelength ($P_{OP} = 5mW$)	λ	1535	1550	1560	nm
Central Wavelength ¹ ($P_{OP} = 5mW$)	$\lambda_{20...70}$	-	-	1565	nm
Rated Output Power (kink-free)	P_R	5	-	-	mW
Rated Output Power (70°C, kink-free)	$P_{R,70}$	3	-	-	mW
Operating Current ($P_{OP} = 5mW$)	I_{OP}	-	28	45	mA
Operating Current (70°C, $P_{OP} = 5mW$)	$I_{OP,70}$	-	-	80	mA
Operating Voltage ¹ ($P_{OP} = 5mW$)	V_{OP}	-	1.2	1.9	V
Slope Efficiency	η	0.18	0.3	-	W/A
Threshold Current ²	I_{TH}	-	15	30	mA
Threshold Current ² (70°C)	$I_{TH,70}$	-	-	50	mA
Spectral Width ³	$\delta\lambda$	-	0.1	0.3	nm
Spectral Width ³ (70°C)	$\delta\lambda_{70}$	-	4	-	nm
Wavelength - Temp. Coefficient ¹	$\Delta\lambda/\Delta T$	-	0.12	-	nm/K
Parallel Beam Divergence (FWHM)	$\theta_{ }$	-	40	50	°
Perpendicular Beam Divergence (FWHM)	θ_{\perp}	-	23	35	°
Side Mode Suppression Ratio ⁴	SMSR	30	40	-	DB
Modulation Bandwidth ⁵	f_{-3dB}	6	-	-	GHz
Modulation Bandwidth ⁵ (70°C)	$f_{-3dB,70}$	4	-	-	GHz

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

¹ 20...70°C, $P_{OP} = 5 mW$

² Half maximum of the 1st derivative method

³ RMS, -20 dB

⁴ -20 dB

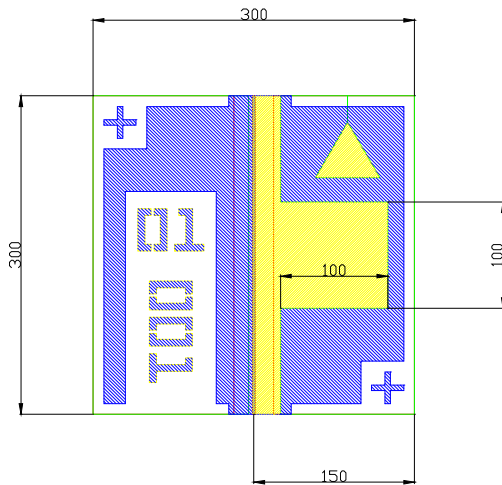
⁵ $I_{OP} = I_{TH} + 16 mA$

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 Temperature	T_{OP}	20...70 ¹	°C
Storage Temperature	T_{STG}	-40...85	°C

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

Mechanical Specification



Parameter	Symbol	Value	Unit
Cavity Length	L	300	μm
Chip Width	W	300	μm
Chip Thickness	H	100	μm
Top and bottomside outer Au metal layer	-	300	nm
Polarity		p-contact (anode) up	

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.

DANGER

INVISIBLE LASER RADIATION
AVOID EXPOSURE TO THE BEAM

Peak power:	50 mW
Wavelength:	1550 nm
Class 3B laser product	

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

Liability note

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