

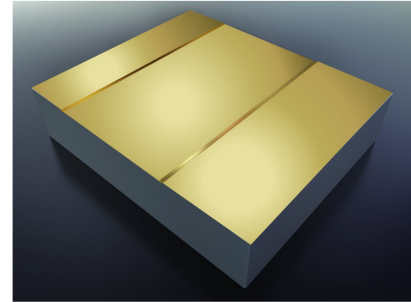
ChiliLase Chips

632...690 nm high-power laser unmounted chips for CW applications

Overview

Red laser chips, a part of Modulight's ChiliLase product family, are available within the wavelength range 632...690 nm. Bare die chips are well suited for customers targeting high production volumes, or customized mounting and wire bonding options.

These multimode high-power laser diodes are designed for CW operation, offering high power conversion efficiency. Due to the inherent thermal sensitivity of the red lasers, proper cooling must be ensured during operation.



Applications

| Industrial | Medical |
|---|---|
| Illumination Imaging Laser Projectors | Low-intensity laser therapy Aesthetic Treatments |

Electro-optical Characteristics, Typical Values

| Parameter | Symbol | ML1837 ¹ | ML1389 ² | ML1524 ² | ML1887 ¹ | ML1892 ^{1,3} | ML1465 ¹ | Unit |
|--------------------------------------|--------------------------|---------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------|
| Peak Wavelength | λ | 632 ± 3 | 633 ± 3 | 633 ± 3 | 650 ± 5 | 680 ± 5 | 690 ± 3 | nm |
| Optical Output Power | P_{OPT} | 200 | 220 | 500 | 500 | 500 | 350 | mW |
| Operating Current | I_{OP} | 525 | 420 | 1200 | 1150 | 1200 | 500 | mA |
| Operating Voltage | V_{OP} | 2.2 | 2.2 | 2.2 | 2.1 | 2.0 | 2.0 | V |
| Threshold Current | I_{TH} | 275 | 200 | 600 | 600 | 500 | 150 | mA |
| Slope Efficiency | η | 0.8 | 1.0 | 0.9 | 0.9 | 0.75 | 1.0 | W/A |
| Wavelength- Temp. Coefficient | $\Delta\lambda/\Delta T$ | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | nm/K |
| Spectral Width | $\delta\lambda$ | 1.2 | 1.2 | 1.5 | 1.5 | 1.5 | 1 | nm |
| Parallel Beam Divergence (FWHM) | $\theta_{ }$ | 5 | 5 | 4 | 4 | 5 | 4 | ° |
| Perpendicular Beam Divergence (FWHM) | θ_{\perp} | 40 | 40 | 40 | 35 | 32 | 32 | ° |

¹ Values of ML1837, ML1887 and ML1892 are typical for CW operation @ 20°C.

² Values of ML1389, ML1524 and ML1465 are typical for CW operation @ 15°C.

³ Product ML1892 is preliminary.

Absolute Maximum Ratings

| Parameter | Symbol | ML1837 | ML1389 | ML1524 | ML1887 | ML1892 | ML1465 | Unit |
|-----------------------|-----------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------|
| LD Reverse Voltage | V_{RLD} | 0 | 0 | 0 | 0 | 0 | 0 | V |
| LD Forward Current | I_{FLD} | 600 | 500 | 1500 | 1500 | 1600 | 600 | mA |
| Optical Output Power | P_{OPT} | 250 | 270 | 600 | 600 | 600 | 400 | mW |
| Operating Temperature | T_{OP} | 0...20 ¹ | 0...20 ¹ | 0...20 ¹ | 0...25 ¹ | 0...25 ¹ | 0...25 ¹ | °C |
| Storage Temperature | T_{STG} | -40...85 | -40...85 | -40...85 | -40...85 | -40...85 | -40...85 | °C |

¹ A non-condensing environment is required for operation temperatures below the dew point.

Mechanical Specifications

| Parameter | Symbol | ML1837 | ML1389 | ML1524 | ML1887 | ML1892 | ML1465 | Unit |
|----------------|--------|--------|--------|--------|--------|--------|--------|------|
| Cavity Length | L | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | µm |
| Chip Width | W | 500 | 500 | 500 | 500 | 500 | 500 | µm |
| Emitter Width | W_E | 50 | 50 | 150 | 150 | 150 | 50 | µm |
| Chip Thickness | H | 130 | 130 | 130 | 130 | 130 | 130 | µm |

Safety Information

- The laser light emitted from this laser diode, although visible, is 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

This document is sole property of Modulight, Inc. No part of this document may be copied without written acceptance of Modulight, Inc. All statements related to the products herein are believed to be reliable and accurate. However, the accuracy is not guaranteed and no responsibility is assumed for any inaccuracies or omissions. Modulight, Inc. reserves the right to make changes in the specifications at any time without prior notice.