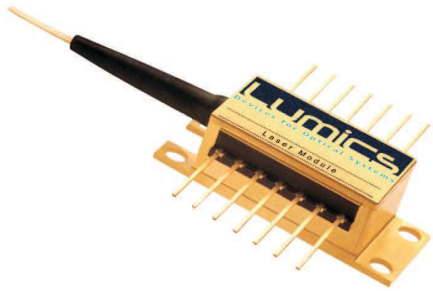


LU1064M450 1064 nm Single Mode Laser Module up to 450 mW c.w. Operating Power



Description:

The Lumics single mode laser module contains an optimized GaAs substrate based quantum well high power laser diode. It has been designed for customer specific applications and is available with special FBG's and fibers. The extremely stringent reliability requirements are achieved through our patent pending innovative technology. This includes careful design, exactly defined manufacturing and extensive testing. The qualification contains a set of optoelectronic, thermal and mechanical tests. Each laser diode module is individually serialized for traceability and is shipped with a specified set of test data.

Features & Functions:

- Single mode pigtail
- Cooled 14pin package
- Telcordia compliant package
- RoHS compliant

Options:

- Low rise <1 ns
- Narrow and ultranarrow linewidth
- Connector incl. 900µm protection tube

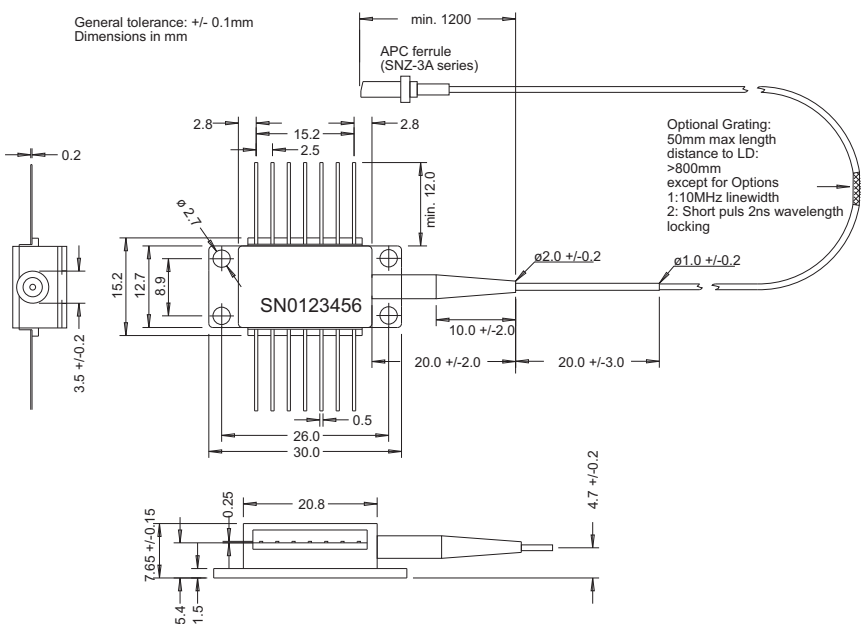
Benefits:

- All laser welded
- Field proven reliability
- Hermetic sealing

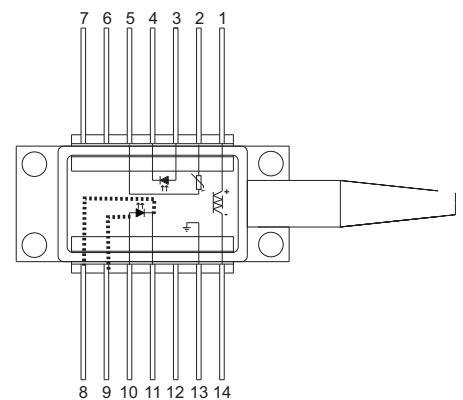
Applications:

- Sensor applications
- Analytical instruments
- Pumping and seeding
- Printing

Module Drawing (Dimensions in mm)



Pin Connections



| Pin | Function | Pin | Function |
|-----|----------------|-----|--------------------|
| 1 | Cooler (+) | 8 | (*) LD Cathode (-) |
| 2 | Thermistor | 9 | (*) LD Anode (+) |
| 3 | PD Anode (+) | 10 | LD Anode (+) |
| 4 | PD Cathode (-) | 11 | LD Cathode (-) |
| 5 | Thermistor | 12 | nc |
| 6 | nc | 13 | Case ground |
| 7 | nc | 14 | Cooler (-) |

(*) Optional low inductive

We manufacture diode lasers.

Typical laser specifications at 25°C (*) (at 25°C (T_{chip} and T_{case}) and Begin of Life (BOL)):

| Parameter | Conditions | Symbol | Min | Typ | Max | Unit |
|---------------------------------------|---|---------------------|------|------|------|---------|
| Operating power (1) | c.w. | P _{op} | | 450 | | mW |
| Operating current | c.w. | I _{op} | | 760 | 900 | mA |
| Pulsed operating peak power | < 500ns / duty cycle <5% | P _{op} | | 1200 | | mW |
| Pulsed operating peak current | < 500ns / duty cycle <5% | I _{op} | | | 2 | A |
| Rise and fall time (2) | | | | 2 | | nsec |
| Threshold current | | I _{th} | | 75 | | mA |
| Forward voltage | at I _{op} | V _{op} | | 1.62 | 1.95 | V |
| Peak wavelength λ _{peak} (3) | at P _{op} without FBG | λ | 1059 | 1064 | 1069 | nm |
| Spectral width (FWHM) (3) | at P _{op} without FBG | Δλ | | 2 | | nm |
| Optical power stability | at I _{op} , t = 60 sec | P _{op} / t | | | 0.5 | % |
| Spectral shift with internal temp. | without FBG, internal T _{chip} | Δ / T | | 0.3 | | nm/ °C |
| Spectral shift with current no FBG | (c.w.) | | | 5 | | nm/A |
| Spectral shift with current no FBG | (100ns / duty cycle 1%) | | | 1 | | nm/A |
| Side mode suppression (3) | at P _{op} | | | 20 | | dB |
| Monitor responsivity | | R | 0.1 | 0.5 | 10 | μA / mW |
| Monitor dark current | | | | 5 | 40 | nA |
| TEC current | chip 25°C, case 70°C | I _{TEC} | | 1.1 | | A |
| TEC voltage | chip 25°C, case 70°C | V _{TEC} | | 1.9 | | V |
| Thermistor resistance | T=25°C | R _{th} | 9.5 | 10 | 10.5 | kOhm |
| Thermistor B constant | | B | 3850 | 3950 | 4050 | K |
| Steinhart-Hart-Equation coefficients | C ₁ = 1.1292E-03 / C ₂ = 2.3411E-04 / C ₃ = 8.7755E-08 | | | | | |
| Large signal modulation bandwidth | | | | | 200 | MHz |
| Fiber Specifications | | | | | | |
| Fiber type | single mode (similar to HI 1060) | | | | | |

Notes:

- (*) Wavelength is measured in air. The spectral measurement is always done at operating power and outgoing inspection checks spectral properties at that power value only with the fiber pigtail fully coiled with a radius of about 50mm .
- Ensure sufficient protection against high energy back reflection pulses from solid state lasers. High energy back reflection damages the diode (for example stimulated Brillouin scattering). Typical damage threshold for 8ns pulsed @200KHz is 0.05μJ (this level is not covered under warranty).
 - Rise and fall times depend on appropriate driver and can be lower than 1ns with the low inductive version.
 - Without wavelength stabilisation by a fiber bragg grating(FBG) multiple peaks (side modes) around the average wavelength for a specific current in a range of (1-3) nm are observed. The full width have maximum (FWHM) of those peaks can suddenly narrow or broaden. Side mode suppression counts the first side peaks next to the main peak. A peak is defined by significant lower values left and right to this peak.
 - Intensity noise of light from modules with PM fiber after polarizer increases with lower polarization extinction ratio (example 6 /10/13 dB can result in intensity noise as high as 50/20/5 %). The intensity noise is sensitive to varying stress (by mechanical and temperature effects) introduced to the PM fiber.

General Parameters / Accessories

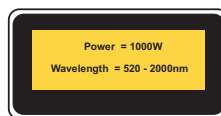
| Parameter | Symbol | Min | Typ | Max | Unit |
|------------------------------|-----------------------|-----|-----|-----|------|
| Storage temp. | T _{max} | -40 | | 85 | °C |
| Operating case temp. | T _{op, case} | -20 | | 70 | °C |
| Operating chip temp. | T _{op, chip} | 20 | | 40 | °C |
| Soldering temp. (max. 10sec) | | 260 | | | °C |
| LD reverse voltage | VR, max | | | 2 | V |
| Monitor forward current | IF, PD | | | 5 | mA |
| Monitor reverse voltage | VR, PD | | | 20 | V |
| TEC current | ITEC | | | 2.5 | A |
| TEC voltage | VTEC | | | 3.2 | V |
| ESD damage (1) | | 500 | | V | |
| Fiber pigtail bend radius | | 25 | | | mm |

(1) A standard human body model (1.5kOhm, 1000pF) is used for ESD thresholds

Note:

Absolute maximum rating for the laser diode operating current in cw mode may be applied for short period of time only (<10s). Exposure to maximum ratings for extended period of time or exposure above one or more max ratings may cause damage or affect the reliability of the device.

User Safety



Important Note Read and carefully follow operating manual instructions. Especially, whenever power supply is switched on or off, always disconnect from laser module. See manual for details. Uncontrolled on / off switching may cause spikes and result in fatal device damage. This product is not certified by with IEC 60825-1 or 21CFR1040.10/ 21CFR1040.11 and must comply with the applicable regulations by the Purchaser if sold as laser product.

We manufacture diode lasers.