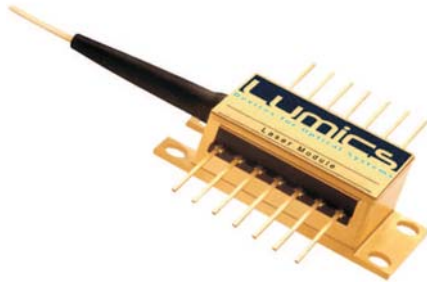




## LU1025M300 1025nm Single Mode Laser Module, Seed Laser c.w. or pulsed mode



### Description:

The Lumics LU1025M300 laser diode 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:

- Wavelength 1025nm
- Up to 300mW c.w. operating power
- Up to 1W peak power
- Short pulses 5nsec - 500nsec
- Single mode pigtail
- Cooled 14pin package
- FBG-options
- PM-fiber option

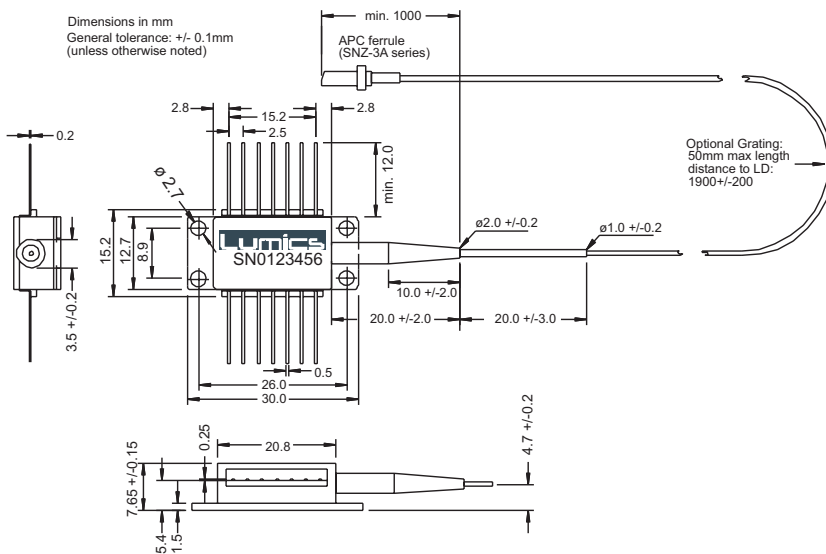
### Benefits:

- All Laser welded
- High reliability
- Field proven reliability

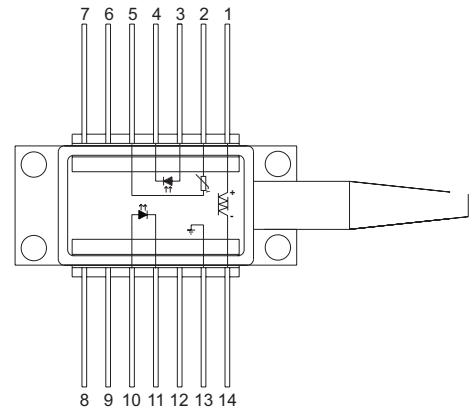
### Applications:

- Pumping
- Seeder laser amplifiers
- Sensor applications

### Module Drawing (dimensions in mm)



### Pin Connections



| Pin | Function       | Pin | Function       |
|-----|----------------|-----|----------------|
| 1   | Cooler (+)     | 8   | nc             |
| 2   | Thermistor     | 9   | nc             |
| 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 (-)     |

Your ideas are welcome.

## Electrical and Optical Characteristics (at 25°C (T<sub>chip</sub> and T<sub>case</sub>) and Begin of Life (BOL)):

| Parameter                            | Conditions  | Symbol              | Min  | Typ  | Max  | Unit    |
|--------------------------------------|---|---------------------|------|------|------|---------|
| Operating Power                      | c.w.  | P <sub>op</sub>     |      | 300  |      | mW      |
| Operating Current                    | c.w.  | I <sub>op</sub>     |      | 490  | 540  | mA      |
| Pulsed Operating Peak Power          | < 500ns / duty cycle <5%  | P <sub>op</sub>     |      | 1000 |      | mW      |
| Pulsed Operating Peak Current        | < 500ns / duty cycle <5%  | I <sub>op</sub>     |      |      | 2    | A       |
| Rise and Fall Time                   |   |                     |      | 2    |      | nsec    |
| Threshold Current                    |   | I <sub>th</sub>     |      | 56   | 80   | mA      |
| Forward Voltage                      | at I <sub>op</sub>  | V <sub>op</sub>     |      | 1.62 | 1.95 | V       |
| Peak Wavelength λ <sub>peak</sub>    | at P <sub>op</sub>  | λ                   | 1020 | 1025 | 1030 | nm      |
| Spectral Width (FWHM)                | at P <sub>op</sub> , with FBG   | Δλ                  |      |      | 1    | nm      |
| Optical Power Stability              | at I <sub>op</sub> , t = 60 sec   | P <sub>op</sub> / t |      |      | 0.5  | %       |
| Polarization Extinction Ratio        | PM fiber version  |                     | 12   |      |      | dB      |
| Spectral Shift with Temp.            | FBG Temp.   | Δ / T               |      |      | 0.01 | nm/ °C  |
| Side Mode Suppression                | at P <sub>op</sub> , with FBG   |                     | -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 <sub>TEC</sub>    |      | 0.8  |      | A       |
| TEC Voltage                          | chip 25°C, case 70°C  | V <sub>TEC</sub>    |      | 2.1  |      | V       |
| Thermistor Resistance                | T=25°C  | R <sub>th</sub>     | 9.5  | 10   | 10.5 | kOhm    |
| Thermistor B Constant                |   | B                   | 3850 | 3950 | 4050 | K       |
| Steinhart-Hart-Equation Coefficients | C <sub>1</sub> = 1.1292E-03 / C <sub>2</sub> = 2.3411E-04 / C <sub>3</sub> = 8.7755E-08 |                     |      |      |      |         |
| Large Signal Modulation Bandwidth    |   |                     |      | 200  |      | MHz     |

### Fiber Specifications

Fiber Type: single mode (similar to HI 1060, fiber PM 980 on request)

## Absolute Maximum Ratings

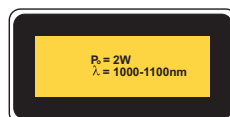
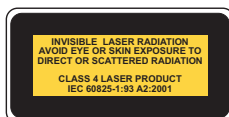
| Parameter                                | Symbol                | Min | Max | Unit |
|--|-----------------------|-----|-----|------|
| Storage temp.                            | T <sub>max</sub>      | -40 | 85  | °C   |
| Operating case temp.                     | T <sub>op, case</sub> | -20 | 60  | °C   |
| Operating chip temp.                     | T <sub>op, chip</sub> | 20  | 40  | °C   |
| Soldering temp. (max. 10sec)             |                       | 260 |     | °C   |
| LD Forward current (c.w.)                | I <sub>op, max</sub>  |     | 800 | mA   |
| LD Forward current (Pulse 500ns 5% D.C.) |                       |     | 2.0 | A    |
| LD Reverse voltage                       | V <sub>R, max</sub>   |     | 2   | V    |
| Monitor forward current                  | I <sub>F, PD</sub>    |     | 5   | mA   |
| Monitor reverse voltage                  | V <sub>R, PD</sub>    |     | 20  | V    |
| TEC Current                              | I <sub>TEC</sub>      |     | 1.8 | A    |
| TEC Voltage                              | V <sub>TEC</sub>      |     | 3.2 | V    |
| ESD Damage (2)                           |                       |     | 500 | V    |
| Fiber pigtail bend radius                | HI 1060               |     | 25  | mm   |
| Maximum transient (<3μs) forward current |                       |     | 1   | A    |

(2) A standard human body model (1.5kOhm, 100pF) is used for ESD thresholds

### Note:

Absolute maximum ratings may be applied to the laser module for short periods of time only. Exposure to maximum ratings for extended periods of time or exposure above one or more maximum ratings may cause damage or affect the reliability of the device.

## User Safety



Your ideas are welcome.