


# LU0808T020-RI
## Industrial Laser Diode
# Up to 2W Operation Power @ 808nm




**Description:**
The LU0808T020 series offers an optical power of 2W from a 50µm core, NA 0.12 multi-mode fiber. At this common wavelength our Laser Diode offers a very competitive price-performance value for applications in materials processing, illumination and medicine. Very high life time is achieved due to the Lumics proprietary laser diode facet passivation technology and due to extensive burn-in testing.

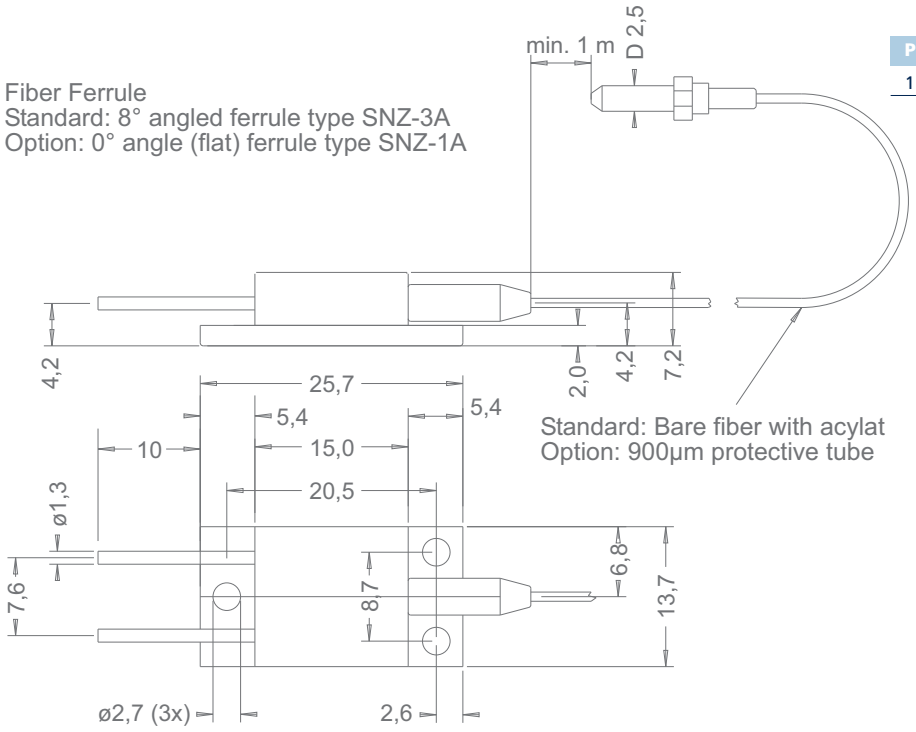
**Features & Functions:**
- Wavelength 808nm
- 50µm core NA 0.12 fiber
- Hermetically sealed single emitter
- Floating anode / cathode
- Direct modulation up to 20 MHz
- Rise / Fall time <20ns

**Options:**
- 900µm protective tube
- Flat 0° FC/PC ferrule
- Fiber ferrule fixing nut

**Benefits:**
- Ultra long lifetime
- Burn-in tested
- Cost-effective
- Robust design
- Easy to mount

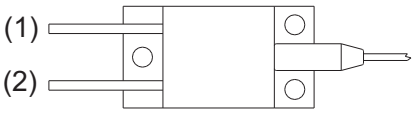
**Applications:**
- Pumping
- Materials processing
- Illumination
- Medical Laser treatment

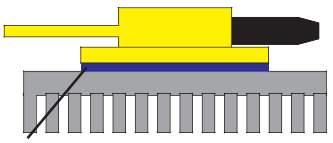
## Module Drawing (dimensions in mm)




## Pin Connections

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | LD Anode (+) | 2 | LD Cathode (-) |



Thermal contact heat resistance <0.1K/W

**We manufacture diode lasers.**

## Electrical and Optical Characteristics
### Typical laser specifications at 25°C

| Parameter | Symbol | Typical | Unit |
|---|---|---|---|
| Output Power c.w. | $P_{op\ (c.w.)}$ | 2 | W |
| Peak Wavelength at $P_{op}$ | $I_{peak}$ | 808 +/-10 | nm |
| Spectral Width (FWHM) | $\lambda_{FWHM}$ | 2 | nm |
| Threshold Current | $I_{th}$ | 450 | mA |
| Operating Current | $I_{op}$ | 2.7 | A |
| Operating Voltage | $V_{op}$ | 1.82 | V |
| Rise and Fall time | Tr | 20 | nsec |
| Connector Type (optional) | | APC ferrule (*SMA, FC/APC, FC/PC connector) | |
| Heat Resistance LD to bottom of base plate | $R_H$ | 3.5 | K / W |
| Power Conversion Efficiency | | 45 | % |
| Recommended Case Temperature | $T_{op}$ | 20 - 30 | °C |
| Wavelength Shift vs. Temperature | | 0.35 | nm / K |
| Wavelength Shift vs. Power | | 1.2 | nm / W |
| **Fiber Specifications** | | | |
| Fiber Core Diameter | | 50 | µm |
| Fiber Numerical Aperture | NA | 0.12 | |
| Fiber Cladding Diameter | | 125 | µm |
| Fiber Buffer Diameter | | 250 | µm |
| Fiber Length | | 1 | m |
| Min. Bend Radius | Short / Long Term | >15 / >30 | mm |

**Application Note:**

(1) For pulsed operation max peak power can be 1.2xPop if pulse time is <5µsec and average power is lower than Pop (c.w.)

(2) Keep the heat sink at <= 35°. The heat sink should have a flatness of better than 0.02mm and a roughness grade not less than N7 (i.e. Ra=1.6µm)

(3) A conductive material between TO-220 laser diode module and the module base is highly recommended. The thermally conductive material should have a sufficient thickness and elasticity to compensate for the non-planarity between the module base and the heat sink surface

(4) Electrostatic discharge (ESD) can lead to latent or catastrophic failure of a multimode laser diode module

(5) The power supply should have a transient suppression and an over-voltage protection. Before connecting the module to the power supply and during Power-off the power supply output should be short circuited

(6) By no means should the fiber be touched by hot solder because this can lead to lower output performance and reliability. During the soldering process the fiber temperature should always be below 85°C

(7) A bending radius of 30mm is guaranteed for 125µm fiber diameter. Please take into account a possible output power reduction of up to 2% at long term bending radius. No power reduction occours above a bending radius of 60 times the fiber cladding diameter.

(8) The intensity profile at the fiber end facet and the far field ex fiber may vary between a gaussian shape and a donut shape.

## Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| Storage Temperature | $T_{max}$ | -30 | 80 | °C |
| Operating Case Temp. | $T_{op,\ case\ temp.}$ | -10 | 70 | °C |
| Pin Soldering Temp max 10sec. | $T_{pin,\ soldering}$ | | 250 | °C |
| LD Forward Current c.w. | $I_{op,\ max}$ | | 3.2 | A |
| LD Reverse Voltage | $V_{R,\ max}$ | | 2 | V |
| Rel. Humidity | | 0 | 85 | % |

**Note:**

(1) Absolute Maximum Ratings may be applied to the laser module for short period of time only. 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

(2) Improper pin bending can crack the glass sealing between pin and the package and hermeticity of the package may be lost and may damage the laser diode by humidity level below the dew point inside the package. If pin bending is necessary pins must be fixed mechanically over a short length in the original flat position such that the bending force is absorbed by a mechanical fixing tool (claw etc.).

## User Safety







