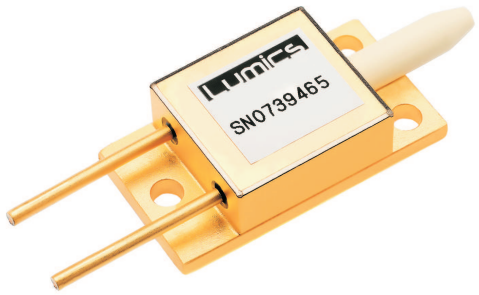


LU0790T040 Industrial Laser Diode
Up to 4W Operation Power @ 790nm



The multi mode fiber pigtailed flat pin laser diode module contains an optimized GaAs substrate based quantum well high power laser diode. 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

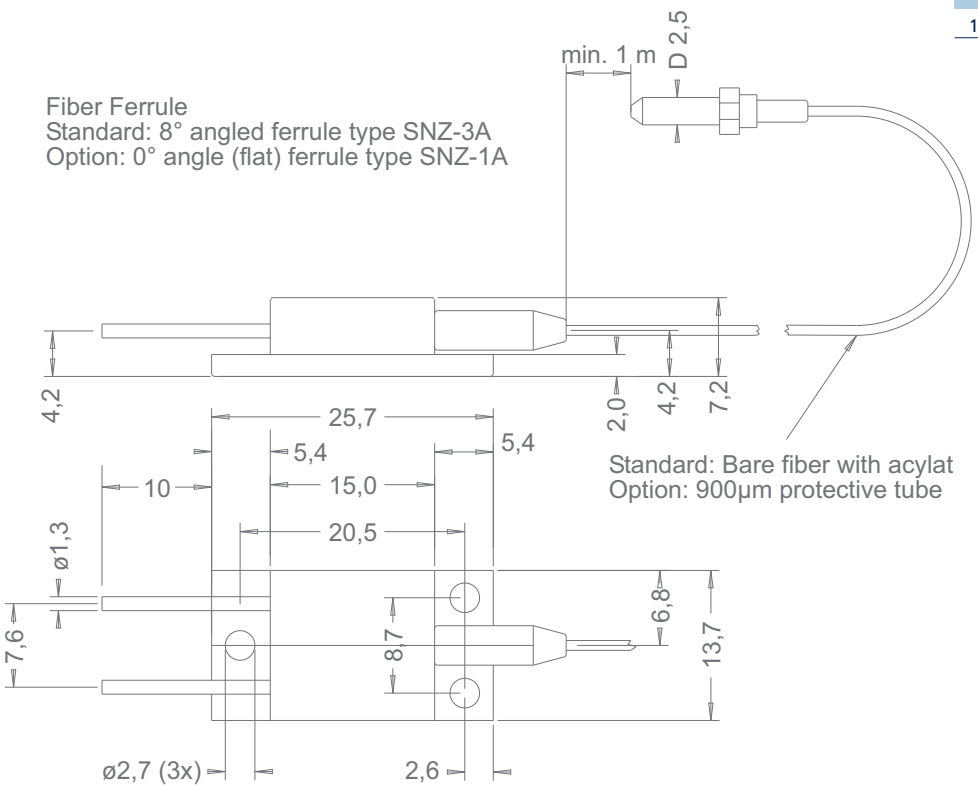
Features & Functions:
- Wavelength 790nm
- 105µm core NA 0.15 or 0.22 fiber
- Hermetically sealed single emitter
- Floating anode / cathode
- Direct modulation up to 20 MHz
- Rise / Fall time <20ns

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

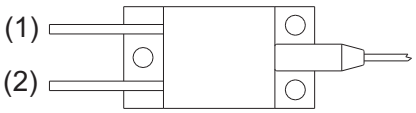
Applications:
- Pumping
- Materials processing
- Illumination
- Medical Laser treatment

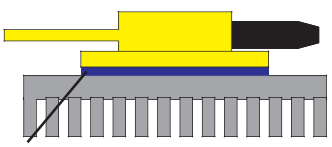
Module Drawing (dimensions in mm)



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.	$P_{op\ (c.w.)}$	4	W
Peak Wavelength at P_{op}	I_{peak}	790 +/-5	nm
Spectral Width (FWHM)	λ_{FWHM}	2	nm
Threshold Current	I_{th}	900	mA
Operating Current	I_{op}	5.2	A
Operating Voltage	V_{op}	1.9	V
Rise and Fall Time	tr	20	nsec
Connector Type		FC/PC ferrule	
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		1.0	nm / W
Fiber Specifications			
Fiber Core Diameter		105	µm
Fiber Numerical Aperture	NA	0.15 or 0.22	
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.	$I_{op,\ max}$		6	A
LD Reverse Voltage	$V_{R,\ max}$		2	V
Rel. Humidity		0	85	%

Note:

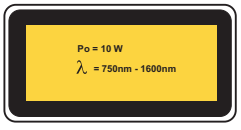
(1) Absolute Maximum Ratings may be applied to the laser module for short period of time only. Exposure to maximum ratings for extended period of time or exposure above one or more max ratings may cause damage or affect the reliability of the device

(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







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