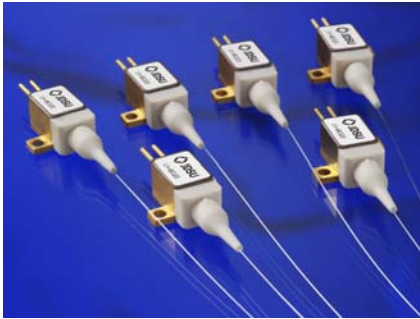


## High-Power 4.5 W 808 nm Fiber-Coupled Diode Laser 2495-L4 Series

**Key Features**

- 4.0 W output power at 808 nm
- 4.5 W output power at 812 nm
- High reliability
- 105  $\mu\text{m}$  aperture
- 0.22 NA
- Isolated electrical contacts

**Applications**

- Solid-state laser pumping
- Medical procedures
- Direct-diode application

The highly reliable JDSU 2495-L4 series diode lasers offer 4 W of laser power from a 105- $\mu\text{m}$  fiber into a 0.22 numerical aperture (NA) at 808 nm. It is an ideal source for pumping solid-state materials such as Nd: YAG and Nd: Vanadate. In addition, a 4.5 W version is available at 812 nm for applications with broader wavelength tolerances such as medical and dental.

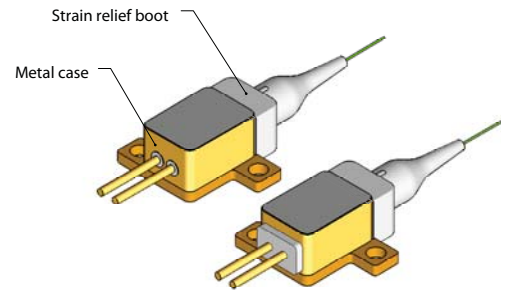
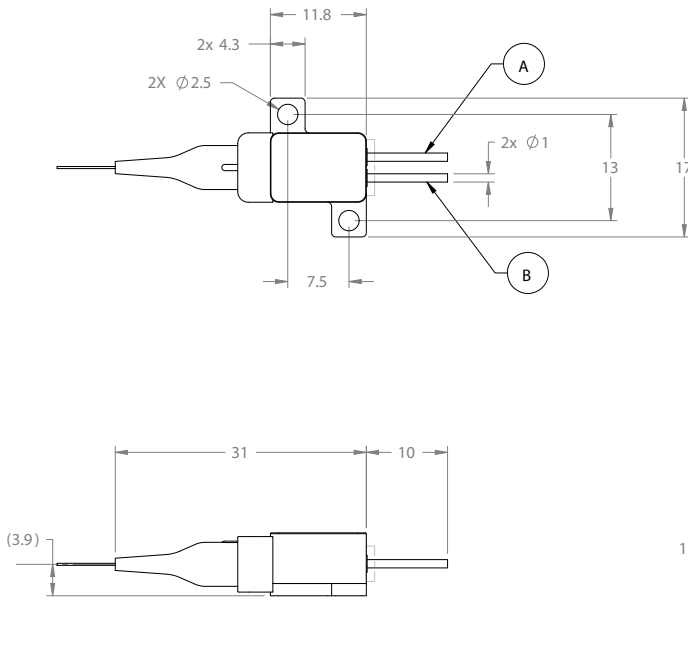
The L4 multimode pump module is based on single-emitter diode lasers, and allows for a radical departure from standard bar-based pumping architectures. Hundreds of watts of highly reliable pump power can be achieved with a distributed architecture using multiple L4 diode lasers and a multimode fiber coupler or fiber bundle. In a distributed architecture, cascading failure modes are avoided, and ensemble statistics can be used to predict pump assembly lifetimes. The L4 multimode pump module eases thermal management by distributing the diode lasers (heat sources), allowing for a simple air- or water-cooled architecture in laser pumps and direct diode applications.

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**Dimensions Diagram**

(Specifications in mm unless otherwise noted.)

Standard Tolerances  
 mm: x.x = ±0.5  
 x.xx = ±0.25



**Pinout**

Pin	Description
A	Laser cathode (-)
B	Laser anode (+)

## 3

Specifications for 808 nm<sup>1</sup>

Parameter	Symbol	Minimum	Typical	Maximum
<b>Laser Characteristics</b>				
CW output power, 0.22 NA	P <sub>o</sub>	4.0 W	-	-
Mean wavelength <sup>2</sup>	$\lambda_p$	805 nm	808 nm	811 nm
Spectral width (90% integrated power)	$\Delta\lambda$	-	2 nm	5 nm
Slope efficiency	$\eta_D$	-	1.0 W/A	-
Conversion efficiency	$\eta$	-	43%	-
Threshold current	I <sub>th</sub>	-	950 mA	1100 mA
Operating current (BOL)	I <sub>op</sub>	-	4.8 A	5.7 A
Forward voltage	V <sub>f</sub>	-	2.0 V	2.1V
Series resistance	R <sub>s</sub>	-	0.07 $\Omega$	-
Recommended case temperature	T <sub>c</sub>	18°C	25°C	35°C
Wavelength tuning vs. temperature <sup>3</sup>	$\Delta\lambda/\Delta T$	-	0.3 nm/°C	-
Wavelength tuning vs. output power	$\Delta\lambda/\Delta P$	-	1.6 nm/W	-
<b>Fiber Characteristics</b>				
Fiber core diameter	d <sub>c</sub>	-	105 $\mu\text{m}$	-
Fiber numerical aperture	NA	0.20	0.22	0.24
Fiber cladding	d <sub>cl</sub>	-	125 $\mu\text{m}$	-
Fiber buffer	d <sub>b</sub>	-	250 $\mu\text{m}$	-
Fiber length	l <sub>f</sub>	0.9 m	1 m	-

1. All performance data is measured at 25°C, beginning of life (BOL).

2. Weighted average "center of mass" spectral point at 25°C at P<sub>o</sub>

3. Change in  $\Delta\lambda$  mean with case temperature over T<sub>op</sub>

Specifications for 812 nm<sup>1</sup>

Parameter	Symbol	Minimum	Typical	Maximum
<b>Laser Characteristics</b>				
CW output power, 0.22 NA	P <sub>o</sub>	4.5 W	-	-
Mean wavelength <sup>2</sup>	$\lambda_p$	804 nm	812 nm	820 nm
Spectral width (90% integrated power)	$\Delta\lambda$	-	2 nm	6 nm
Slope efficiency	$\eta_D$	-	1.0 W/A	-
Conversion efficiency	$\eta$	-	43%	-
Threshold current	I <sub>th</sub>	-	950 mA	1100 mA
Operating current (BOL)	I <sub>op 915 nm</sub>	-	5.3 A	6.3 A
Forward voltage	V <sub>f</sub>	-	2.0 V	2.1 V
Series resistance	R <sub>s</sub>	-	0.07 $\Omega$	-
Recommended case temperature	T <sub>c</sub>	18°C	25°C	35°C
Wavelength tuning vs. temperature <sup>3</sup>	$\Delta\lambda/\Delta T$	-	0.3 nm/°C	-
Wavelength tuning vs. output power	$\Delta\lambda/\Delta P$	-	1.6 nm/W	-
<b>Fiber Characteristics</b>				
Fiber core diameter	d <sub>c</sub>	-	105 $\mu\text{m}$	-
Fiber numerical aperture	NA	0.20	0.22	0.24
Fiber cladding	d <sub>cl</sub>	-	125 $\mu\text{m}$	-
Fiber buffer	d <sub>b</sub>	-	250 $\mu\text{m}$	-
Fiber length	l <sub>f</sub>	0.9 m	1 m	-

1. All performance data is measured at 25°C, beginning of life (BOL).

2. Weighted average "center of mass" spectral point at 25°C at P<sub>o</sub>

3. Change in  $\Delta\lambda$  mean with case temperature over T<sub>op</sub>

## 4

**Absolute Maximum Ratings**

Parameter	Symbol	Minimum	Typical	Maximum
Operating current	$I_{op}$	-	-	6.5 A
Reverse voltage	$V_{rvs}$	-	-	2.0 V
Case operating temperature <sup>1</sup>	$T_{op}$	15°C	-	40°C
Storage temperature <sup>2</sup>	$T_{stg}$	-30°C	-	70°C
Lead soldering temperature, 10 s max	$T_{ls}$	-	-	300°C
Relative humidity, non-condensing, ambient < 45°C	RH	-	-	85%
Electrostatic discharge (ESD) <sup>3</sup>	$V_{esd}$	-	-	500 V
Fiber bend radius (long term deployment) <sup>4</sup>		30 mm	-	-
Fiber axial pull force, 15 s		-	-	5 N
Fiber side pull force, 15 s		-	-	2.5 N

1. Non-condensing, maximum

2. Non-condensing, 2000 hours

3. C = 100 pF, R = 1.5 kΩ, human body model, shown to be not damaging to its LI characteristics or its reliability, I-V curves may change in this ESD environment

4. Minimum bend radius of 30 mm is for long term mechanical fiber reliability

**Configurations**

Product Code	Wavelength Range	Fiber NA
L4-2495-001	804 – 820 nm	0.22
L4-2495-002	805 – 811 nm	0.22

**Ordering Information**

For more information on this or other products and their availability, please contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide, or via e-mail at [customer.service@jdsu.com](mailto:customer.service@jdsu.com).

**Sample: L4-2495-001**

**User Safety**
**Safety and Operating Considerations**

The laser light emitted from this diode laser is invisible and may be harmful to the human eye. Avoid looking directly into the diode laser or into the collimated beam along its optical axis when the device is in operation.

**CAUTION: THE USE OF OPTICAL INSTRUMENTS WITH THIS PRODUCT WILL INCREASE EYE HAZARD.**

Operating the diode laser outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the component must be employed such that the maximum peak optical power cannot be exceeded. CW diode lasers may be damaged by excessive drive current or switching transients. When power supplies are used, the diode laser should be connected with the main power on and the output voltage at zero. The current should be increased slowly while the diode laser output power and the drive current are monitored.

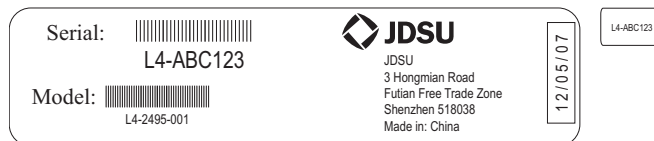
Device degradation accelerates with increased temperature, and therefore careful attention to minimizing the case temperature is advised. For example, life expectancy will decrease by a factor of four if the case is operated at 50 °C rather than 25 °C.

A proper heatsink for the diode laser on a thermal radiator will greatly enhance laser life. Firmly mount the laser on a radiator with a thermal impedance of less than 0.5 °C/W for increased reliability.

**ESD PROTECTION**—Electrostatic discharge is the primary cause of unexpected diode laser failure. Take extreme precaution to prevent ESD. Use wrist straps, grounded work surfaces, and rigorous antistatic techniques when handling diode lasers.

**Labeling**
**21 CFR 1040.10 Compliance**

Because of the small size of these devices, each of the labels shown is attached to the individual shipping container. They are illustrated here to comply with 21 CFR 1040.10 as applicable under the Radiation Control for Health and Safety Act of 1968.

**Serial Number Identification Label**

**Output Power Danger Label**
