

## Uncooled Multi-Mode Pump Module 4800 Series

**Key Features**

- High power up to 4 W
- 100  $\mu\text{m}$  aperture, 0.2 NA
- Low power dissipation
- Compact package design: 13 ( $\text{\O}$ ) x 12 mm (H)
- -5 to 70  $^{\circ}\text{C}$  operating range

**Applications**

- Er/Yb co-doped double cladding fiber pumping
- Yb doped fiber laser pumping
- High power EDFAs for CATV and FTTx

The JDSU 4800 Series 915 nm and 939 nm uncooled multi-mode pump modules simplify next-generation high-power erbium doped fiber amplifier (EDFA) designs for CATV and FTTx applications by eliminating the need for larger, less efficient, and costlier thermoelectric coolers and their control circuitry.

The 4800 Series single-emitter fiber-coupled laser diodes offer up to 4 W power from a 100  $\mu\text{m}$  fiber into 0.2 NA in an operating temperature range of -5 to 70  $^{\circ}\text{C}$ .

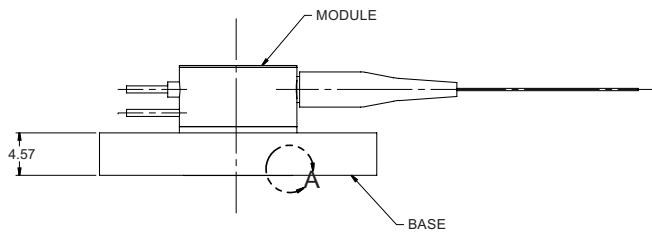
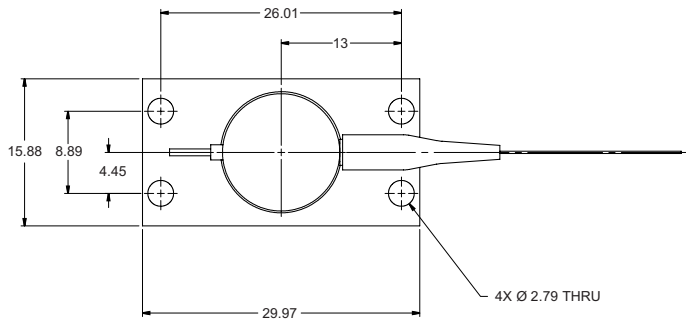
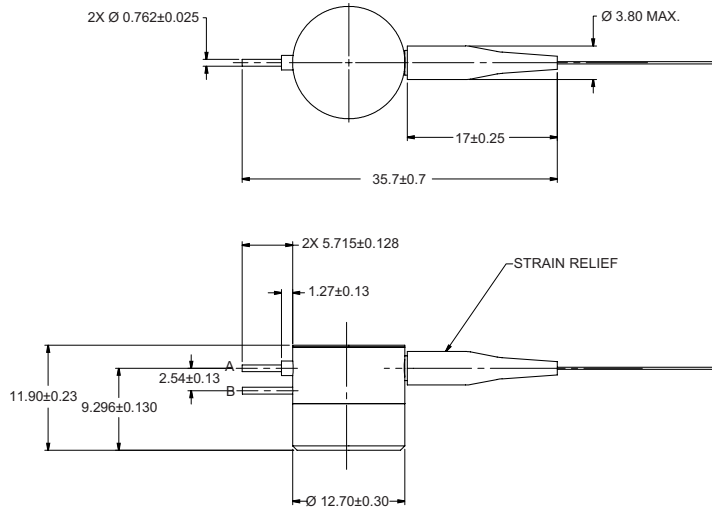
The 4800 Series pump module incorporates the JDSU 6390 laser diode for unmatched performance and reliability at high temperatures and power levels. Leveraged from the single-mode 980 nm telecom design, this package shares the same field-proven L3 platform and demonstrates excellent long term reliability.

The 4800 Series pump module is tested to Telcordia GR-468-CORE and meets the intended requirements of this telecommunication components standard.

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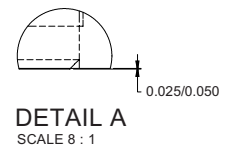
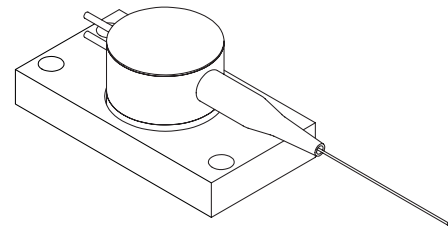
Dimensions Diagram

(Specifications in mm unless otherwise noted.)



Pinout

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



1. BASE OF MODULE PROTRUDES .025 TO .050 MM BELOW BASE. SEE DETAIL 'A'.
2. BASE IS ALUMINUM, NICKEL-PLATED.

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**Absolute Maximum/Minimum Ratings**

Parameter	Symbol	Test Conditions	Minimum	Maximum
Operating case temperature	T <sub>op</sub>	-	-10 °C	75 °C
Storage temperature	T <sub>stg</sub>	2000 hours	-40 °C	85 °C
Laser diode forward current	I <sub>f_max</sub>	CW	-	8000 mA
Laser diode reverse voltage	V <sub>revLD</sub>	-	-	2 volts
Laser transient current		1 μs maximum	-	8500 mA
Ex-fiber power		-5 ~ 70 °C, 1 hour maximum	-	5 W
Pigtail axial pull force		3 X 10 seconds	-	5.0 N
Pigtail side pull force		3 X 10 seconds	-	2.5 N
Pigtail bend radius			20 mm	-
Relative humidity	RH	Non-condensing	5	70%
Lead soldering time		260 °C	-	10 seconds

**Operating Powers**

(Over -5 to 70 °C case temperature.)

Product Code	Operating Powers P <sub>op</sub>	Maximum I <sub>op</sub> (BOL) at P <sub>op</sub>	Maximum I <sub>op</sub> (EOL) at P <sub>op</sub>
48-1540-4000-BS	4.0 W	6500 mA	7200 mA
48-3940-4000-BS	4.0 W	6500 mA	7200 mA

**Available Wavelength Selection**

(Over -5 to 70 °C case temperature and rated power.)

Product Code	Minimum Wavelength	Maximum Wavelength
48-1540-4000-BS	895 nm	935 nm
48-3940-4000-BS	919 nm	959 nm

**Operating Conditions**

Parameter	Symbol	Minimum	Maximum
Operating case temperature	T <sub>c</sub>	-5 °C	70 °C
Return reflection		-	-50 dB
Fiber bending radius		45 mm	-

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**Electro-Optical Performance**

(Over -5 to 70 °C case temperature unless otherwise noted.)

Parameter	Symbol	Test Conditions	Minimum	Typical	Maximum
Optical power (fiber)	$P_f$	$I_{op}$ , into 0.20 NA	4000 mW	-	-
	$P_f$	$I_{op}$ , into 0.15 NA	-	3700 mW	-
Center wavelength	$\lambda_c$	35 °C, $P_f$	-	915±8 nm or 939±8 nm	-
Spectral width (FWHM)	$\Delta\lambda$	35 °C, $P_f$	-	5 nm	8 nm
Threshold	$I_{th}$		-	450 mA	700 mA
Operating current	$I_{op}$		-	5200 mA	6500 mA
Wavelength shift with temperature	$\Delta\lambda/T$		-	0.3 nm/°C	-
Wavelength shift with power exit fiber	$\Delta\lambda/P_f$		-	2.4 nm/W	-
Laser diode forward voltage	$V_{fwd}$		-	-	2.0 Volts
Power dissipation	$P_{diss}$		-	5 W	10 W

**Fiber Pigtail Properties**

Parameter	Minimum	Typical	Maximum
Fiber NA	-	0.22	-
Fiber core diameter	-	105 μm	-
Fiber cladding diameter	-	125 μm	-
Buffer diameter	-	250 μm	-
Fiber length	1.0	1.2 m	-

**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: 48-1540-4000-BS**

Product Code	Description
48-1540-4000-BS	895 to 935 nm, 4 W, with base plate
48-3940-4000-BS	919 to 959 nm, 4 W, with base plate

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

The laser light emitted from this laser diode is invisible and may be harmful to the human eye. Avoid looking directly into the laser diode 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 laser diode 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 laser diodes may be damaged by excessive drive current or switching transients. When power supplies are used, the laser diode should be connected with the main power on and the output voltage at zero. The current should be increased slowly while the laser diode 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 30 °C.

A proper heatsink for the laser diode 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.

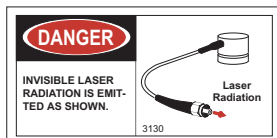
ESD PROTECTION - Electrostatic discharge is the primary cause of unexpected laser diode failure. Take extreme precaution to prevent ESD. Use wrist straps, grounded work surfaces, and rigorous antistatic techniques when handling laser diodes.

**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.

**Output Power Danger Label**

**Serial Number Identification Label**

**Package Aperture Labels**


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