

## *Product Bulletin*



The JDS Uniphase 2500 Series 980 nm pump module is currently deployed in many of today's DWDM systems and CATV distribution systems. This module has proven reliability with Telcordia GR-468-CORE qualification and more than 100 million field deployed hours of operation.

The 2500 Series pump module uses fiber Bragg grating stabilization to “lock” the emission wavelength and provides a noise-free narrow band spectrum even under changes in temperature, drive current and optical feedback.

### **2500 Series Pumps** Up to 170 mW fiber Bragg grating stabilized 980 nm pump modules

#### **Key Features**

- High kink-free powers to 170 mW
- Fiber Bragg grating stabilized
- Wavelength selection available
- Superior tracking error and tracking ratio
- Integrated TEC and thermistor

#### **Applications**

- DWDM EDFAs
- High bit rate, high channel count EDFAs
- CATV distribution

#### **Compliance**

- Telcordia™ GR-468-CORE

## Absolute Maximum Ratings

Parameter	Condition	Min	Max	Units
<b>Laser Diode</b>				
Forward Current			500	mA
Forward Current Transient	1μs max		1	A
Reverse Voltage			4.5	V
Reverse Current			20	μA
<b>Monitor Photodiode</b>				
Reverse Current			5E-9	A
Reverse Voltage			20	V
MPD Forward Current			5	mA
<b>Thermistor</b>				
Voltage			5	V
Current			2	mA
<b>Thermoelectric Cooler</b>				
Voltage			4	V
Current			2.5	A
<b>Package</b>				
Storage Temperature		-40	+75	°C
Operating Temperature		-20	+70	°C
<b>Fiber Pigtail</b>				
Fiber Temperature		-40	+85	°C
Tensile Stress			5	N
Bend Radius			12.5	mm

## Operating Powers

Product Number	Operating Power	Maximum Operating Current	Maximum Kink-Free Power
	P <sub>op</sub> (mW)	I <sub>op</sub> (mA)	P <sub>max</sub> (mW)
SDLO-2564-80	70	230	80
SDLO-2564-90	80	230	90
SDLO-2564-100	90	230	100
SDLO-2564-110	100	240	110
SDLO-2564-125	115	250	125
SDLO-2564-130	120	270	130
SDLO-2564-135	120	270	135
SDLO-2564-140	125	280	140
SDLO-2564-145	130	290	145
SDLO-2564-150	135	300	150
SDLO-2564-155	140	310	155
SDLO-2564-160	145	320	160
SDLO-2564-165	150	330	165
SDLO-2564-170	150	330	170

## Electro-Optical Performance

Parameter	Symbol	Test Condition	Min.	Max.	Units
<b>Spectrum</b>					
Peak Wavelength	$\lambda_c$	(see Note 1)	974	986	nm
Power in Band	P <sub>band</sub>	P <sub>op</sub> < P <sub>f</sub> < P <sub>max</sub>	90		%
Spectral Shift w/temperature	$\Delta\lambda/\Delta T$		-	0.02	nm/°C
Spectrum Stability	$\Delta\lambda/\Delta t$	25°C, I <sub>max</sub> , t = 60 seconds		0.1	nm
Optical Power Stability	$\Delta P_{opt}/\Delta t$	25°C, I <sub>max</sub> , t = 60 seconds	-	0.5	%
<b>Laser Diode</b>					
Threshold Current	I <sub>th</sub>	-	-	25	mA
Slope Deviation	$\Delta L/\Delta I$	50 mA < I < I <sub>max</sub>	no negative slope		
Laser diode forward voltage	V <sub>fwdLD</sub>	I <sub>max</sub>	-	2.5	volts
<b>Monitor Photodiode</b>					
Current	I <sub>mpd</sub>		50	-	μA
<b>Thermoelectric Cooler Operation</b>					
TEC voltage	V <sub>TEC</sub>	$\Delta T=45^\circ\text{C}$ , I <sub>max</sub>	-	2.5	volts
TEC current	I <sub>TEC</sub>	$\Delta T=45^\circ\text{C}$ , I <sub>max</sub>	-	1.5	amps
Thermistor resistance	R <sub>therm</sub>		9.5	10.5	KΩ

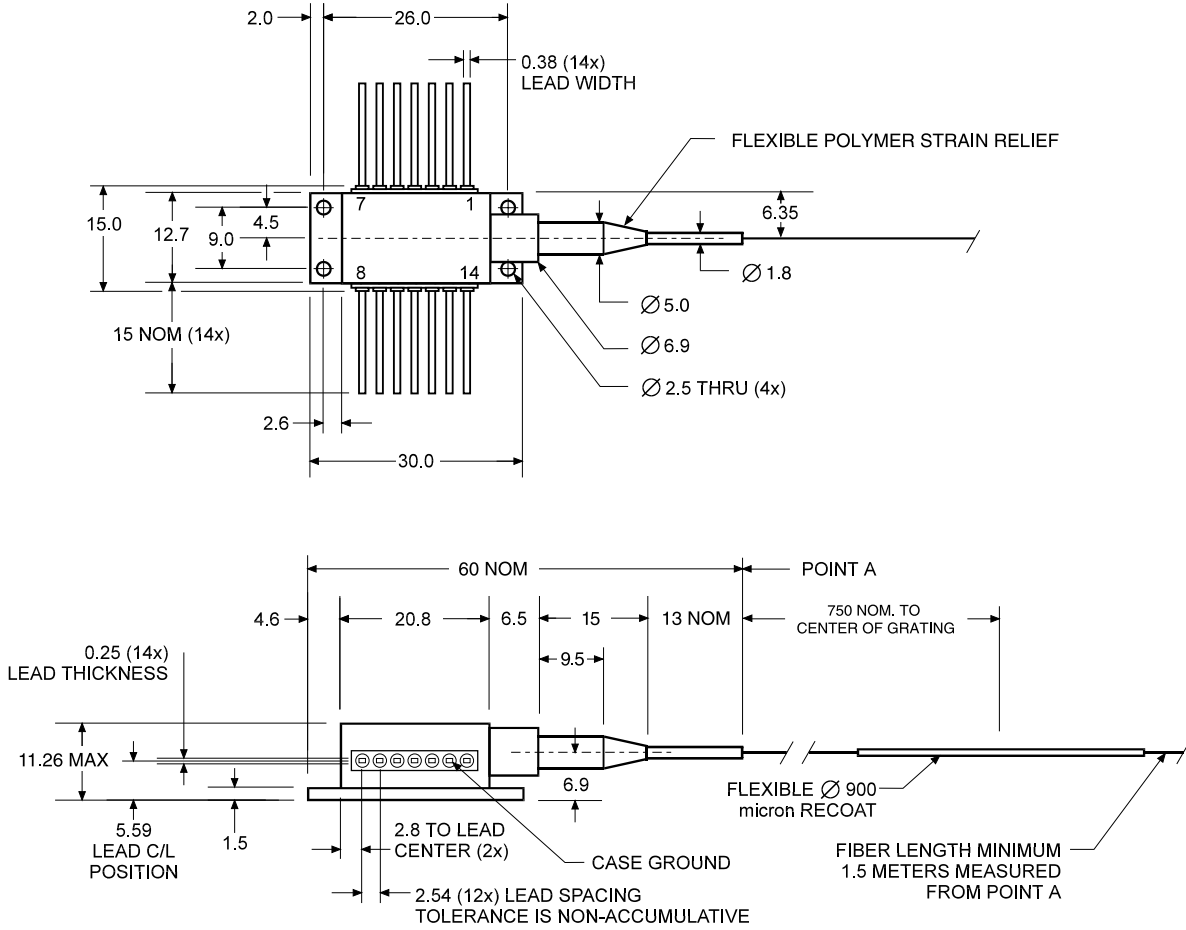
Parameter	Specification	Units
<b>Fiber Pigtail Specifications</b>		
Type	SM	-
Mode-field Diameter	6.5 ±1	μm
Cladding Diameter	125 ±2	μm
Jacket Diameter	250	μm

1. Wavelength selection available

2. All specifications are at BOL for an operating temperature range For T<sub>case</sub> = 0 to 70 °C and back reflection < -50 dB.

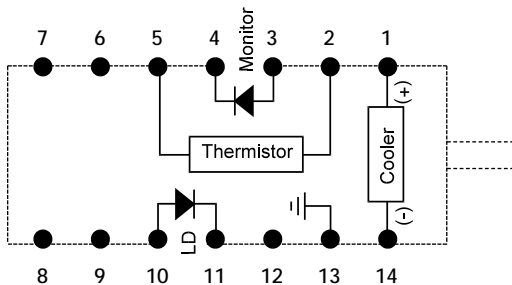
### Package Dimensions

Dimensions in millimeters except where indicated



### Lead Connection

Electrical Schematic  
(Package Viewed From Top)



### Lead Connections

- 1 Cooler (+)
- 2 Thermistor
- 3 Monitor PD Anode
- 4 Monitor PD Cathode
- 5 Thermistor
- 6 N/C
- 7 N/C
- 8 N/C
- 9 N/C
- 10 Laser Anode
- 11 Laser Cathode
- 12 N/C
- 13 Case Ground
- 14 Cooler (-)

## 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 fiber 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 using power supplies, the laser diode should be connected with the main power on and the output voltage at zero. The current should be increased slowly while monitoring the laser diode output power and the drive current.

Careful attention to heatsinking and proper mounting of this device is required to insure specified performance over its operating life. To maximize thermal transfer to the heatsink, the heatsink mounting surface must be flat to within .001" and the mounting screws must be torqued down to 1.5 in.-lb.

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

### Ordering information

For more information on this or other products and their availability, please contact your local JDS Uniphase sales representative or JDS Uniphase directly at 408 943-4200, or by fax 408 943-4252, or via email at [sales.ca@us.jdsuniphase.com](mailto:sales.ca@us.jdsuniphase.com). Visit our Web site at [www.jdsuniphase.com](http://www.jdsuniphase.com).

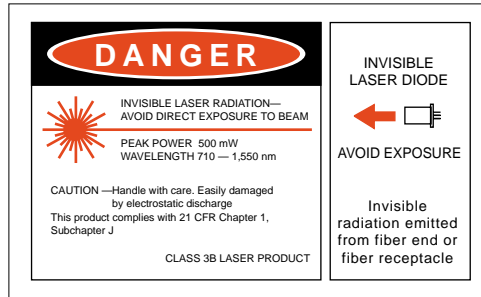
### 21 CFR 1040.10 Compliance

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 radiations control for health and safety act of 1968.

#### SERIAL NUMBER IDENTIFICATION LABEL



#### OUTPUT POWER AND LASER EMISSION INDICATOR LABEL



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2500 Rev. A 03/01 Printed in USA