Beam Homogenized Stub Laser

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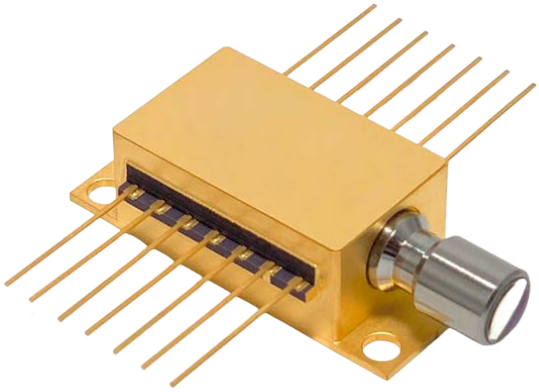

Our proprietary multimode wavelength stabilized laser diode features high output power with narrow spectral bandwidth with a shaped and homogenized beam profile that evenly spreads out the power density and shapes the beam for different spot sizes or to match the field of view of a camera. Designed
to replace expensive DFB, DBR, fiber, and external cavity lasers, the multimode Spectrum Stabilized Laser offers superior wavelength stability over time, temperature (0.007 nm/°C), and vibration, and is manufactured to meet the most demanding wavelength requirements.

Applications

This laser package is designed for OEM Integration and is ideal for:

- Hand-held Raman spectroscopy
- Solid state laser pumping
- Laser speckle contrast imaging
- Laser illumination

Key Features

The stabilized peak wavelength remains "locked" regardless of case temperature (15 to 45 °C). Devices can be spectrally tailored to suit application needs & offer SMSRs better than 40 dB, providing extremely high signal to noise ratio. Multimode lasers come standard with <0.1 nm (0.08nm typical) spectral linewidth.

- High Power Open Beam Multimode output power.
- Shaped & Homogenized Beam 1:1, 1:2, or 1:3 beam aspect ratio.
- Even Power Distribution
- Available standard in rectangle or square shape output beam (ask about custom shapes)
- Ultra-Narrow Spectral Bandwidth (< 0.1 nm FWHM, 0.07 nm typical).
- Stabilized Output Spectrum (< 0.007 nm/^{2}C)
- Low Power consumption
- 40 dB SMSR Typical
- 70 dB SMSR available upon request with additional filter

Standard Wavelengths

All specified wavelengths are measured "in-vacuum"

638 nm	785 nm	830nm
680nm	808 nm	1064 nm

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Specifications

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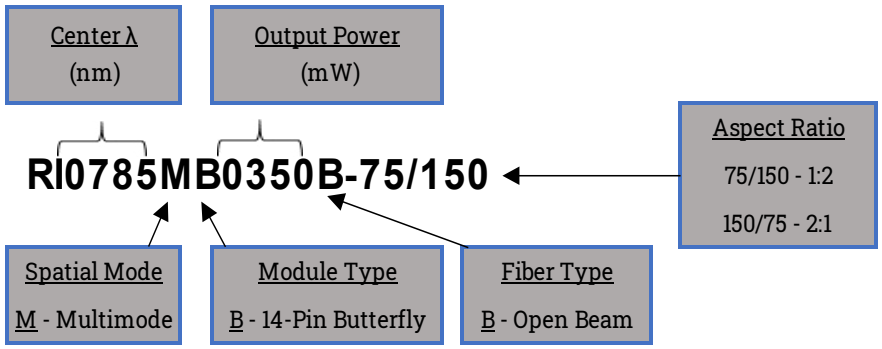
Wavelength Tolerance	+/- 0.5 nm
Spectral Linewidth	<0.1nm, 0.07nm typical
Wavelength Stability Range	15 C - 45 °C
SMSR	35 - 45 dB
SMSR w/integral laser line filter	60 - 70 dB
Power Stability	1% typ., depending on timescale & operating conditions
Beam Exit Angle	< 3° Typical
Beam Shape Aspect Ratio	Configurable
Fast Axis Beam Divergence	10 mrad typ., 20 mrad max.
Slow Axis Beam Divergence	5 mrad typ., 10 mrad max.

λ (nm)	Output Power (mW)	Base Part Number	Beam Aspect Ratio	Max Current, Voltage	Rectangle Direction
638	300*	RI0638MB0300B	1:2 (75/150)	1000mA,2.3V	Vertical
680	300	RI0680MB0300B		1350mA,2.3V	
785	350	RI0785MB0350B		1000mA,2.3V	
	600	RI0785MB0600B		1350mA, 2.3V	
808	350	RI0808MB0350B		1000mA, 2.3V	
	600	RI0808MB0600B		1350mA, 2.3V	
830	350	RI0830MB0350B		1000mA, 2.3V	
	600	RI0830MB0600B		1350mA, 2.3V	
1064	600	RI1064MB0600B		1350mA, 2.3V	
638	300	RI0638MB0300B	2:1 (150/75)	1000mA, 2.3V	Horizontal
680	300	RI0680MB0300B		1350mA, 2.3V	
785	350	RI0785MB0350B		1000mA, 2.3V	
	600	RI0785MB0600B		1350mA, 2.3V	
808	350	RI0808MB0350B		1000mA, 2.3V	
	600	RI0808MB0600B		1350mA, 2.3V	
830	350	RI0830MB0350B		1000mA, 2.3V	
	600	RI0830MB0600B		1350mA, 2.3V	
1064	600	RI1064MB0600B		1350mA, 2.2V	

*Reduced wavelength stability range

Part Schema



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Selected Data

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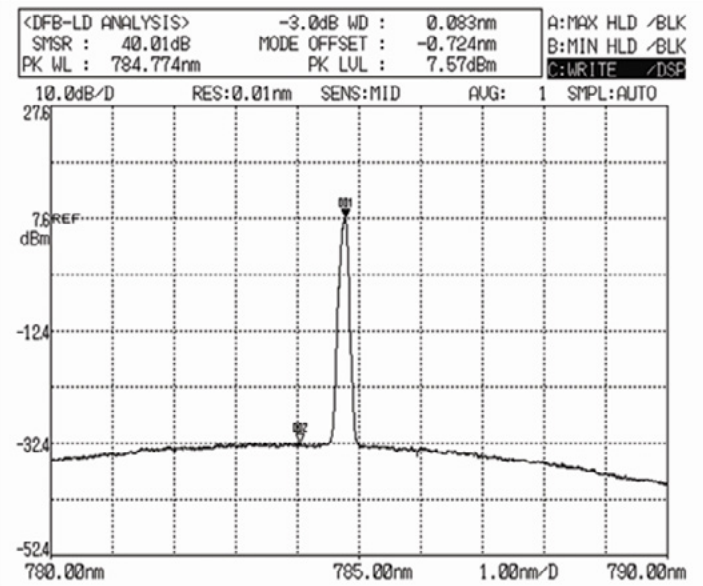
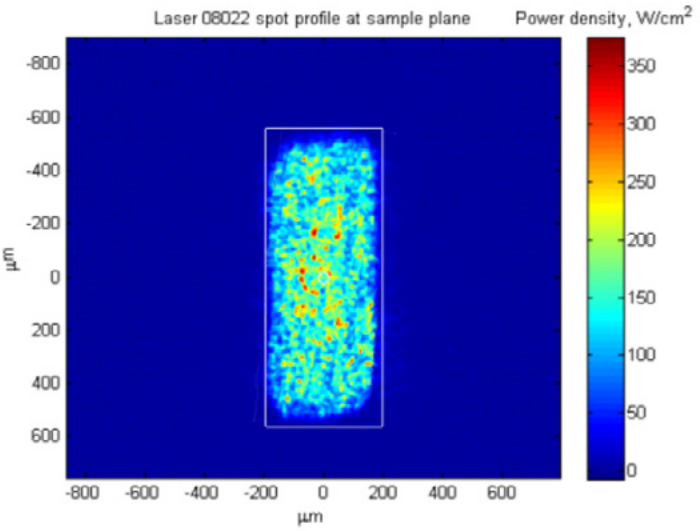
λ

Beam Quality
Stability λ + Power A

TEC Current Limit	3.2 A
TEC Voltage Limit	5.8 V
Photodiode Current	30uA
Integral Thermistor	Betatherm 10K3CG3





Custom Capability

- Custom wavelengths available upon request
- External TEC (e.g. No TEC inside of package optional)
- Additonal Beam Homogenizer Option:

Beam Aspect Ratio	NA
150 x 300 µm	0.22 NA
75 x 150 µm	0.22 NA
50 x 150 µm	0.21 NA
33 x 100 µm	0.15 NA
50 x 50 µm	0.22 NA

Electrical Specs

Pin 1	TEC +
Pin 2	Thermistor - 10K Ohm @ 25 C°
Pin 3	PD Anode
Pin 4	PD Cathode
Pin 5	Thermistor
Pin 6 - 8	NC
Pin 9	Laser Cathode (-)
Pin 10	Laser Anode (+)
Pin 11	Laser Cathode (-)
Pin 12	NC
Pin 13	Case Ground
Pin 14	TEC -

Mechanical Drawings

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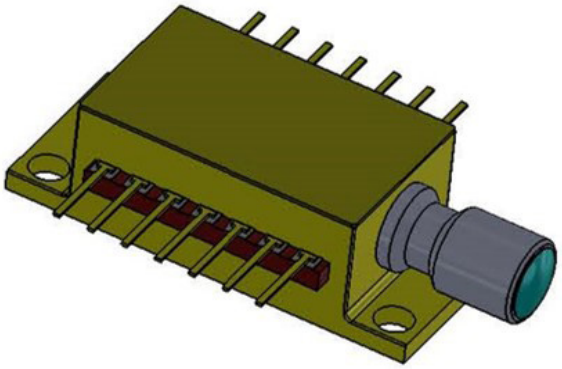

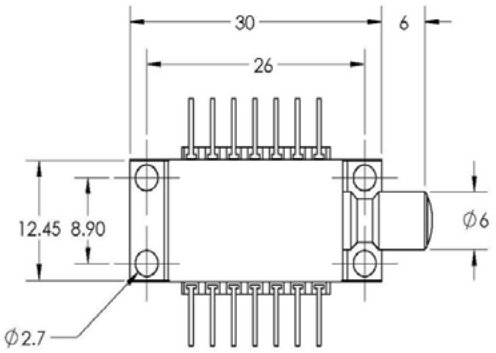

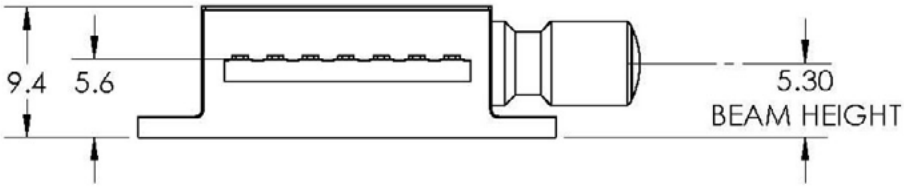

OEM Laser Product: This laser module is designed for use as a component (or replacement) part and is thereby exempt from 21 CFR1040.10 and 1040.11 provisions.

Operational Notes

1. 14-pin BF should be mounted on a heat sink with a thermal compound (thermal grease).
2. Take care not to over-tighten screws when mounting. This can bend the BF package causing damage and hindering performance, and is not covered under warranty.
3. Laser and TEC driver circuitry should be configured in a manner to prevent power /current / voltage surges and spikes.
4. We recommend not grounding anode and cathode as this can cause ground loops.
5. TECs require optimization of PID controller parameters in customer specific application (e.g. ambient temperature, TEC controller, heat sinking etc.) to prevent overtemperature surges that could damage the laser diode.
6. Spot starts out rectangular and has a lens with a focal length of 7.5 mm. We recommend adding a second lens to image the rectangular beam to the spot size that you would like. The laser is focused to infinity.