

Beam Homogenized Stub Laser



Innovative Photonic Solutions' 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.

Standard Wavelengths

All specified wavelengths are measured "in-vacuum"

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/°C)
- Low Power consumption
- 40 dB SMSR Typical
- 70 dB SMSR available upon request with additional filter
- "Ultra-track" Linear Tracking Photodiode

638 nm
680nm

785 nm
808 nm

830nm
1064 nm

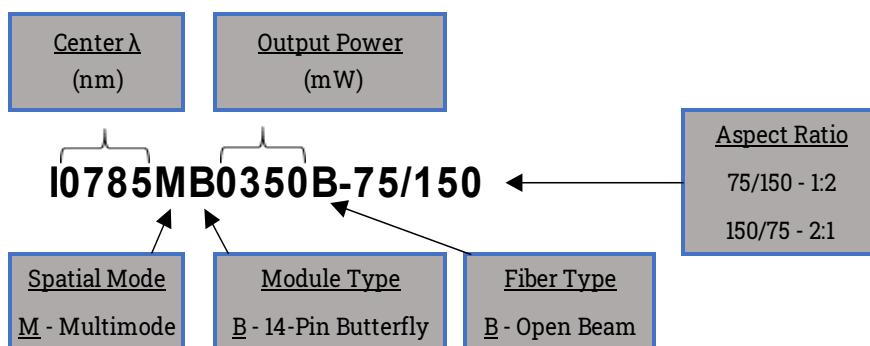
Specifications



Wavelength Tolerance	+/- 0.5 nm	λ (nm)	Output Power (mW)	Base Part Number	Beam Aspect Ratio	Max Current, Voltage	Rectangle Direction
Spectral Linewidth	<0.1nm, 0.07nm typical	638	300*	I0638MB0300B	1:2 (75/150)	1000mA, 2.3V	Vertical
Wavelength Stability Range	15 C - 45 °C	680	300	I0680MB0300B		1350mA, 2.3V	
SMSR	35 - 45 dB	785	350	I0785MB0350B		1000mA, 2.3V	
SMSR w/integral laser line filter	60 - 70 dB		600	I0785MB0600B		1350mA, 2.3V	
Power Stability	1% typ., depending on timescale & operating conditions	808	350	I0808MB0350B		1000mA, 2.3V	
			600	I0808MB0600B		1350mA, 2.3V	
Beam Exit Angle	< 3° Typical	830	350	I0830MB0350B		1000mA, 2.3V	
			600	I0830MB0600B		1350mA, 2.3V	
Beam Shape Aspect Ratio	Configurable	1064	600	I1064MB0600B		1350mA, 2.3V	
Fast Axis Beam Divergence	10 mrad typ., 20 mrad max.	638	300	I0638MB0300B		2:1 (150/75)	
			300	I0680MB0300B	1350mA, 2.3V		
		785	350	I0785MB0350B	1000mA, 2.3V		
			600	I0785MB0600B	1350mA, 2.3V		
		808	350	I0808MB0350B	1000mA, 2.3V		
			600	I0808MB0600B	1350mA, 2.3V		
		830	350	I0830MB0350B	1000mA, 2.3V		
			600	I0830MB0600B	1350mA, 2.3V		
		1064	600	I1064MB0600B	1350mA, 2.2V		

*Reduced wavelength stability range

Part Schema



Selected Data

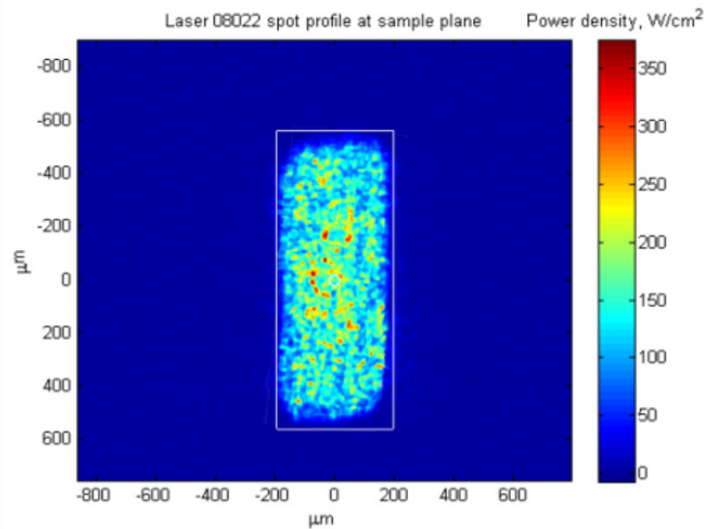
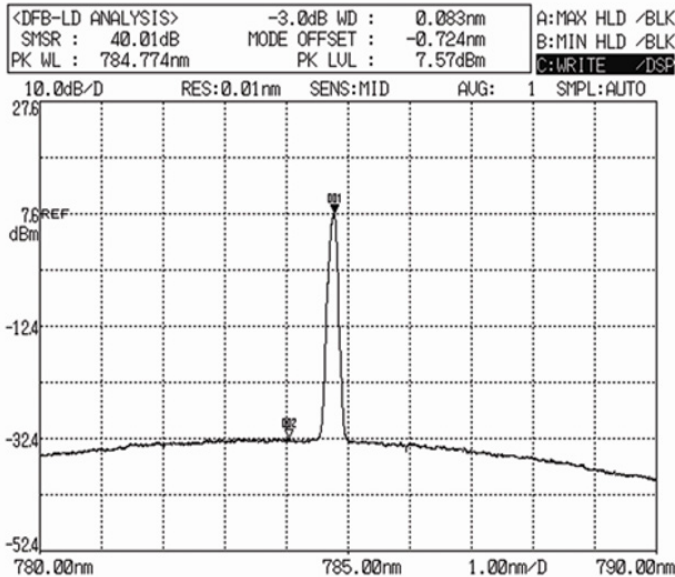
λ

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

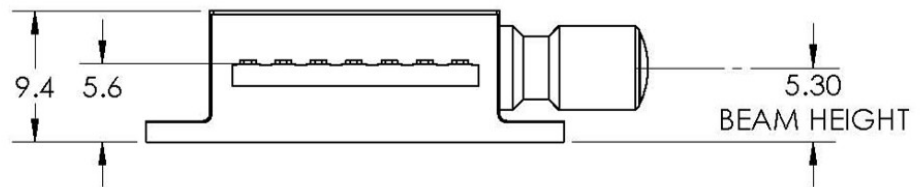
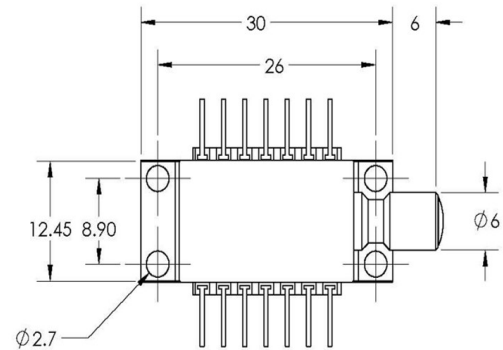
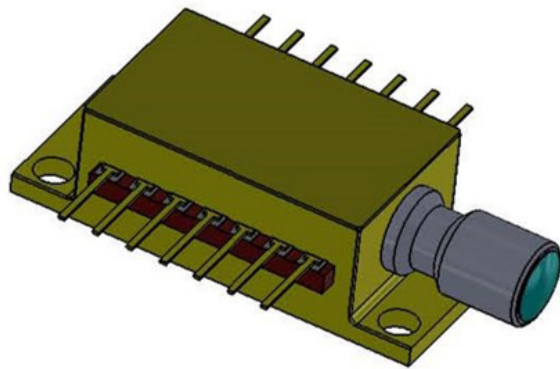
- Custom wavelengths available upon request
- External TEC (e.g. No TEC inside of package optional)
- Additional Beam Homogenizer Option:

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



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. IPS recommends 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.

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