TO-56 & GUTS Package

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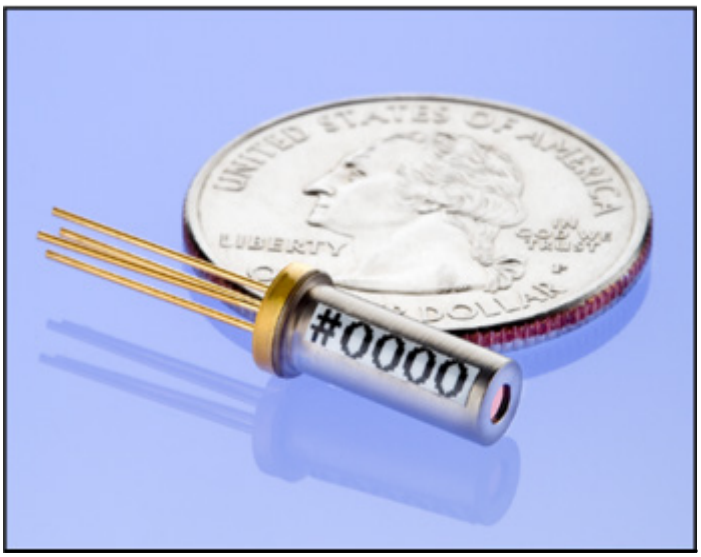

Our proprietary single-mode wavelength stabilized laser diode features high output power with ultra-narrow spectral bandwidth and a diffraction limited output beam. Designed to replace expensive DFB, DBR, fiber, and external cavity lasers, the Single-Mode Spectrum Stabilized Laser offers superior wavelength stability over time, temperature, and vibration; and is manufactured to meet the most demanding wavelength requirements.

Standard Wavelengths

633 nm	685nm	785nm	852nm
638nm	780nm	808nm	976nm
660nm	783nm	830nm	1053nm
			1064nm

Custom wavelengths available upon request

All specified wavelengths are measured "in-vacuum"

Applications

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

- High-Resolution Raman Spectroscopy
  - Handheld Raman Spectroscopy
  - Confocal Microscopy
  - Raman Imaging
  - Portable Raman
  - Process Raman
- Metrology/Interferometry
- Remote Sensing
- Laser speckle contrast imaging
- Laser illumination

Key Features

The TO-56 packaged product line comes standard with a circularized and collimated output beam, internal thermistor and ESD protection. Lasing wavelength can be accurately specified and repeatedly manufactured to within +/-0.1 nm upon request.

- High-Power Single-Spatial-Mode, Single-Frequency Output
- Ultra-Narrow Spectral Linewidth (~100 kHz)
- Stabilized Output Spectrum (< 0.007 nm/°C)
- Gaussian TEM00 Spatial Mode
- Circularized and Collimated Output Beam
- Integral ESD Protection & Thermistor
- Integral Laser Line Filter
- SMSR 70 dB w/ laser line filter (40 dB without)

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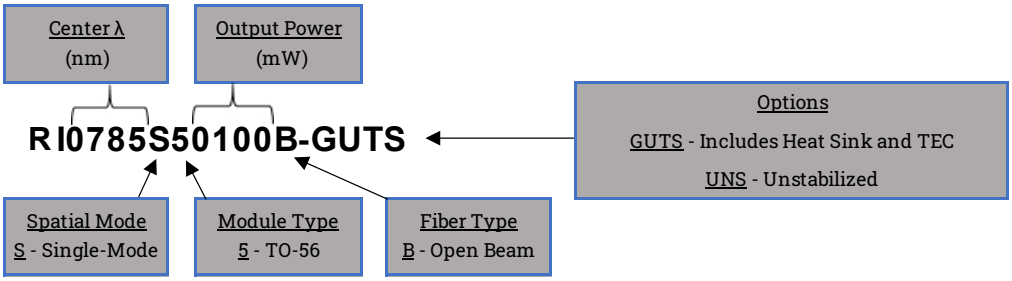
Specifications

Wavelength Tolerance	+/- 0.5 nm
Spectral Linewidth	~100kHz* Instantaneous
Wavelength Stability Range	15° C - 45° C
SMSR	35 - 45 dB
SMSR w/integral laser line filter	70 dB
Power Stability	1% typical
Beam Exit Angle	< 3°
Beam Quality ($M^2/1/e^2$)	< 1.2
Beam Ellipticity	< 1:5:1
Polarization Extinction Ratio (PER)	>17 db
Polarization Orientation	Parallel to V-notches
Beam Divergence (Typical)	~ 2 mrad ~ 4 mrad for 785nm
Spatial Profile	TEM00

*Requires driver electronics with very low noise analog laser driver along with a design for dual TECs for improved temperature control. Refer to the Linewidth White Paper on our website for further details

λ (nm)	Output Power (mW)	Base Part Number	Max Current, Voltage
633	50	RI0633S50050B	175 mA, 3.0V
638	60	RI0638S50060B	250mA, 3.2V
660	60	RI0660S50060B	175mA, 3.3V
685	40	RI0685S50040B	60 mA, 3.0V
780	100	RI0780S50100B	220mA, 3.3V
783	100	RI0783S50100B	200mA, 2.2V
785	100	RI0785S50100B	200mA, 2.2V
	150	RI0785S50150B	400mA, 3.0V
808	150	RI0808S50150B	400mA, 3.0V
830	150	RI0830S50150B	500mA, 2.2V
852	150	RI0852S50150B	500mA, 2.2V
976	150	RI0976S50150B	500mA, 2.2V
1053	150	RI1053S50150B	500mA, 2.2V
1064	150	RI1064S50150B	500mA, 2.2V

Part Schema

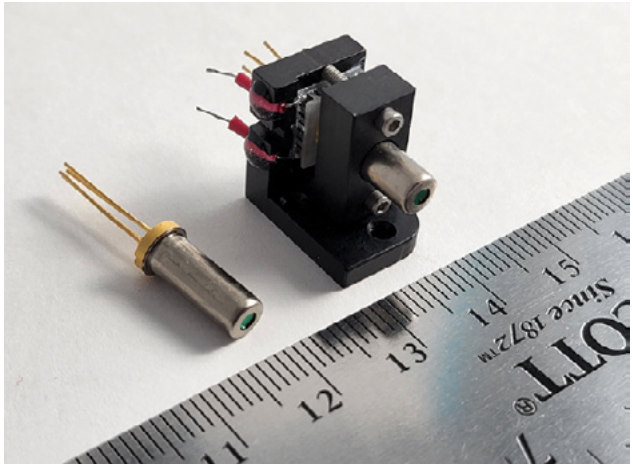


GUTS Package

A Convenient Method For Heat Sinking Your Laser

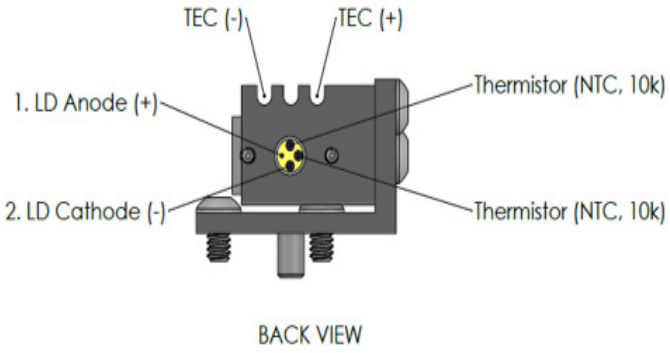
Features:

- Integrates TEC, heat sink and TO-56 laser into one component.
- Offers 2-axis alignment in both pitch and yaw.



Electrical Specs

Pin 1	LD Anode (+), Case Ground
Pin 2	LD Cathode (-)
Pin 3	Thermistor - 10kOhm @ 25° C
Pin 4	Thermistor - 10kOhm @ 25°C

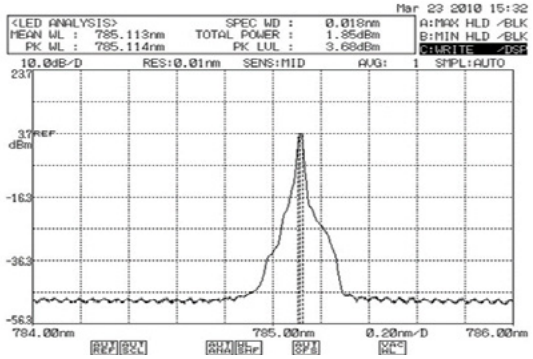


BACK VIEW

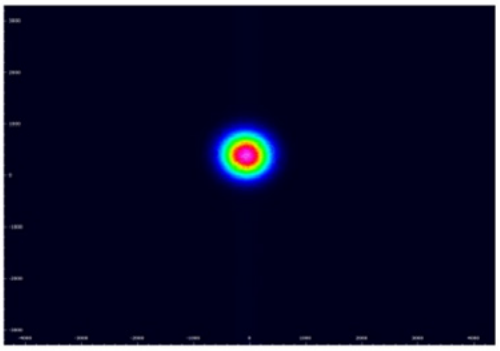
GUTS TEC Current Limit	1.3A
GUTS TEC Voltage Limit	3.0V
Integral Thermistor	Betatherm 10K3CG3

Recommended Electrical Connector (Not Included)	
Description	**Thorlabs Part Number**
Ø9 mm 4-Pin Laser Diode Socket	S8060-4

Selected Data



Typical 785nm SS Laser Spectrum



Typical 785nm Beam Quality

Mechanical Drawings

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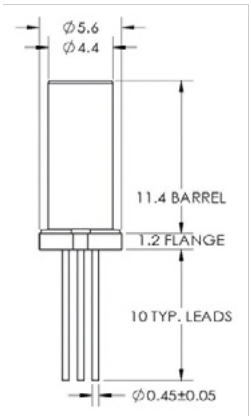
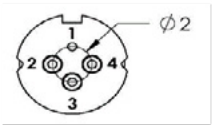
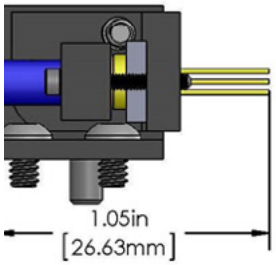
Side View

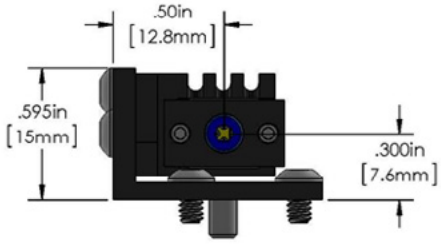


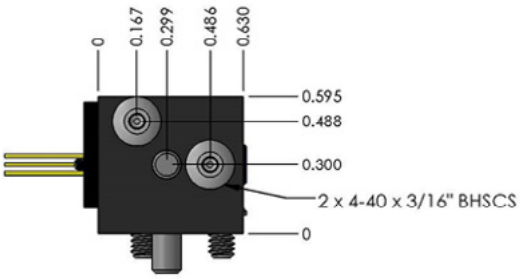
Top View

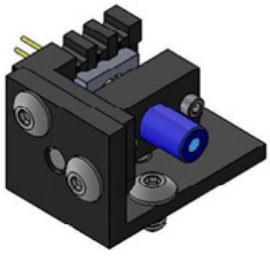
Bottom View

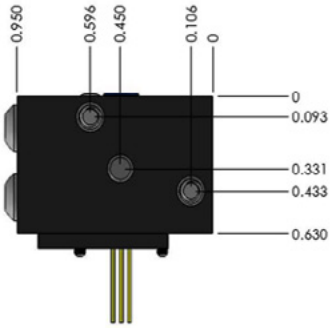


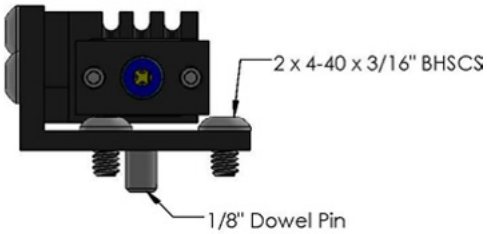


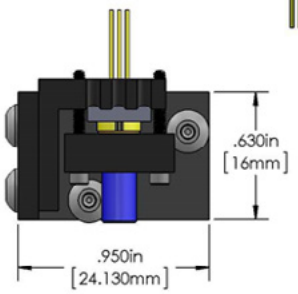












OEM Laser Product:
This laser module is designed for use as a component (or replacement) part and is thereby exempt from 21 CFR1040.10 and 1 040.11 provisions.

Operational Notes

1. Laser must be compression mounted on a Thermo-Electric Cooler (TEC) and heat sink to guarantee wavelength stable performance
2. Laser will operate in single frequency mode at set-points between 10 and 45 degrees, however, optimal operating set point must be determined for each laser diode to avoid mode-hopping (see note 4)
3. Do not retro-reflect beam! This can cause Catastrophic Optical Damage (COD) and is not covered under warranty
4. To determine optimal operating point, plot wavelength vs temperature and wavelength vs. current to determine where mode-hop locations are. Set operating temperature and current halfway between mode-hops. This will ensure the most stable operation (See Mode Hop Whitepaper for more details).