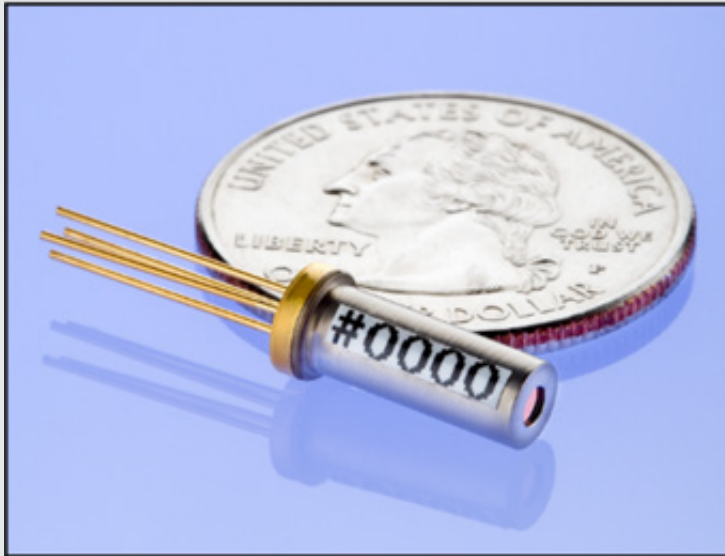


TO-56 & GUTS Package



Innovative Photonic Solutions' proprietary single-mode wavelength stabilized laser 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.

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)

Standard Wavelengths

633 nm
638nm
780nm

783nm
785nm
808nm

830nm
1053nm
1064 nm

Specifications

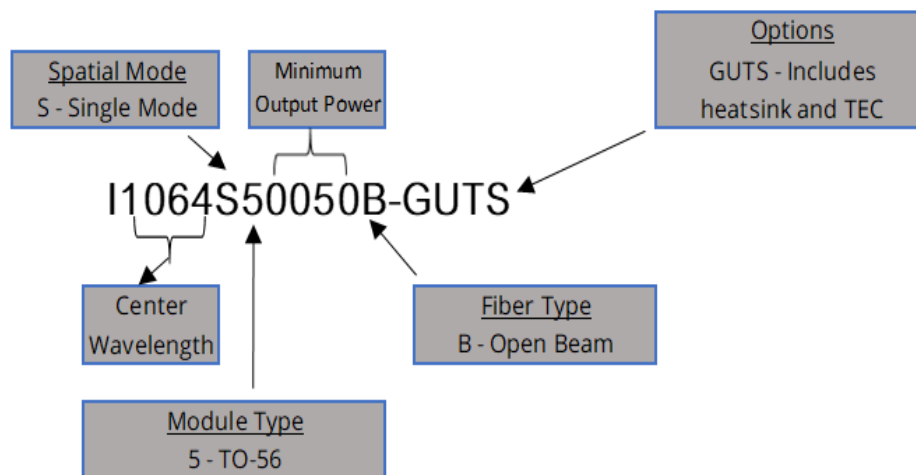


Wavelength Tolerance	+/- 0.5 nm
Spectral Linewidth ($\Delta\lambda$)	~100kHz Instantaneous
Wavelength Stability Range	15 C - 45 °C
SMSR	35 - 45 dB
SMSR w/ integral laser line filter	70dB
Power Stability	1% typical
Beam Exit Angle	< 3 degrees
Beam Quality ($M^2/1/e^2$)	< 1.2
Beam Ellipticity	< 1:5:1
PER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

λ (nm)	Min. Power (mW)	Base Part Number	Max Current, Voltage
633	50	I0633S50050B	175 mA, 3.0V
638	60	I0638S50060B	170mA, 3.3V
780	100	I0780S50100B	220mA, 3.3V
783	100	I0783S50100B	200mA, 2.2V
785	100	0785S50100B	200mA, 2.2V
	175	I0785S50175B	400mA, 3.0V
808	100	I0808S50100B	200mA, 2.2V
830	100	I0830S50100B	300mA, 2.2V
1053	150	I1053S50150B	300mA, 2.2V
1064	150	I1064S50150B	300mA, 2.2V

λ (nm)	Min. Power (mW)	Base Part Number
633	50	I0633S50050B-GUTS
638	60	I0638S50060B-GUTS
780	100	I0780S50100B-GUTS
783	100	I0783S50100B-GUTS
785	100	I0785S50100B-GUTS
	175	I0785S50175B-GUTS
808	100	I0808S50100B-GUTS
830	100	I0830S50100B-GUTS
1053	150	I1053S50150B-GUTS
1064	150	I1064S50150B-GUTS

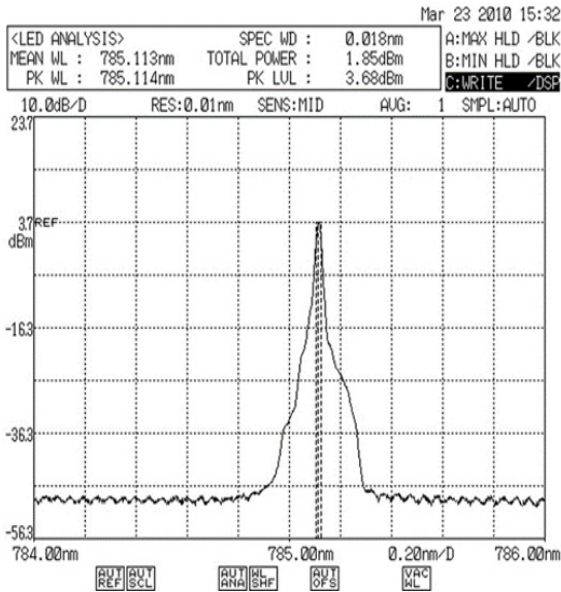
Part Schema



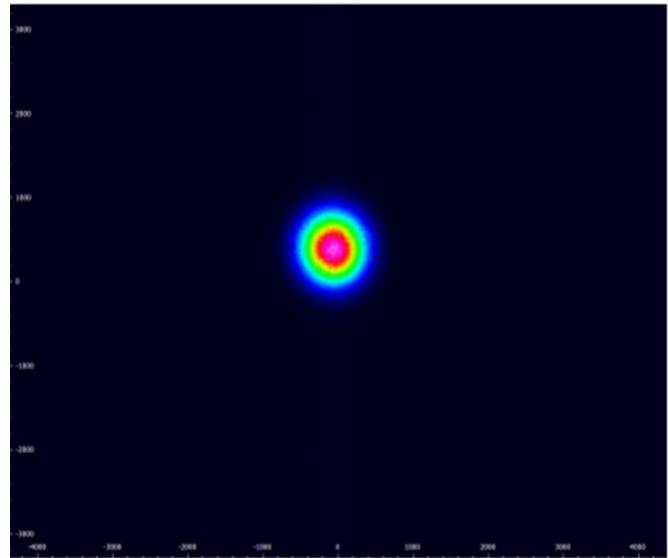
Selected Data



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



Typical 785nm SS Laser Spectrum



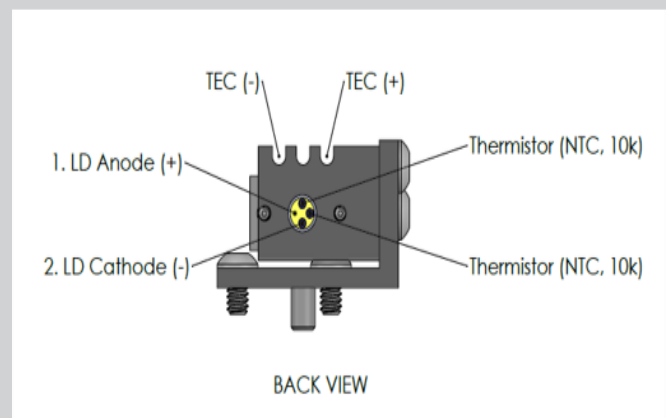
Typical 785nm Beam Quality

Custom Capability

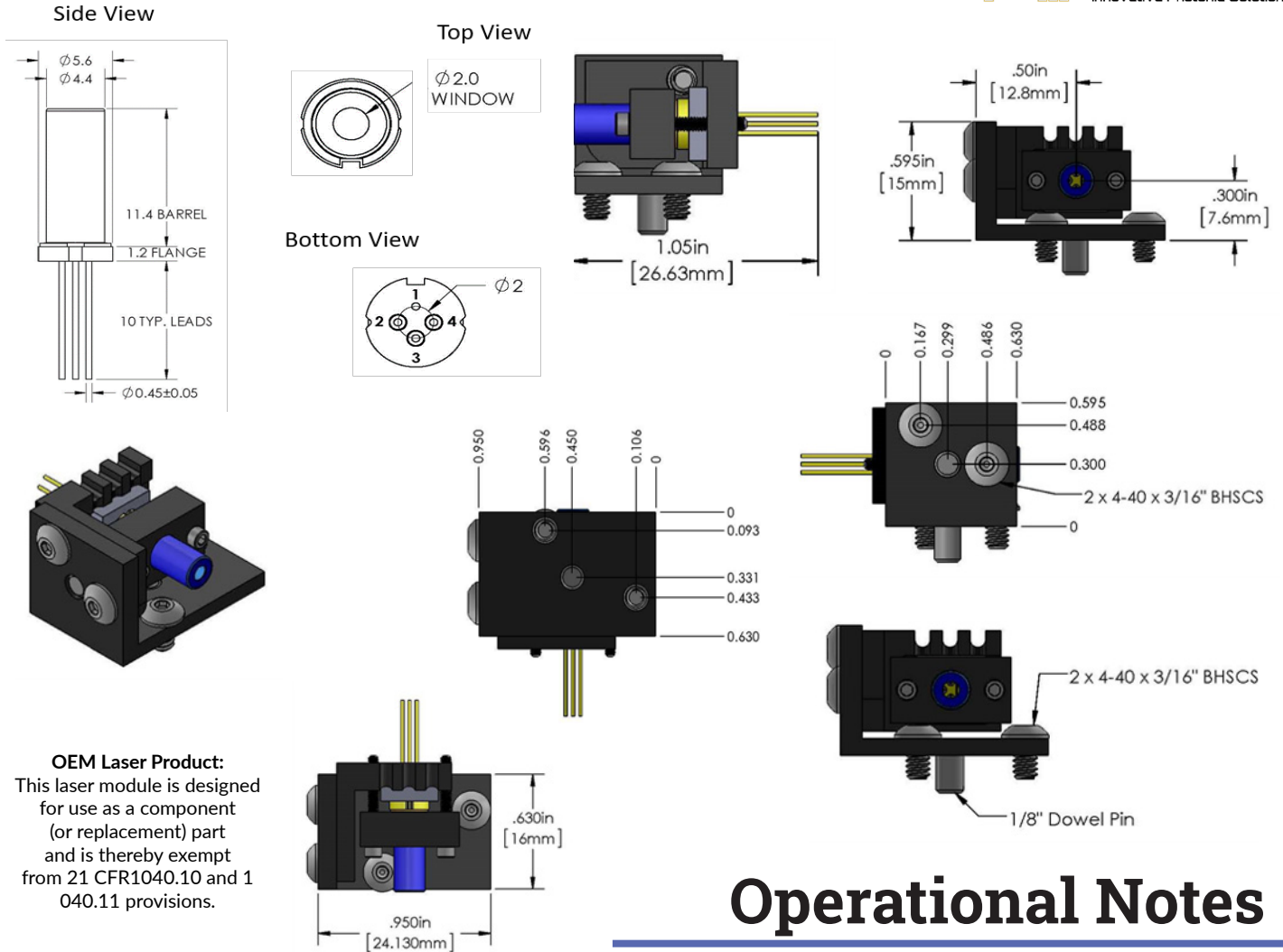
- Custom wavelengths available upon request.
- Guts package allows 2 axis alignment in pitch and yaw.

Electrical Specs

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



Mechanical Drawings



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 to determine where mode-hop locations are. Set operating temperature halfway between mode-hops. This will ensure the most stable operation (IPS can offer the option of determining this optimal operating point for each diode)
5. IPS can offer the TO-56 mounted with TEC and heat sink in our A-type gimbal (-GUTS option).

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