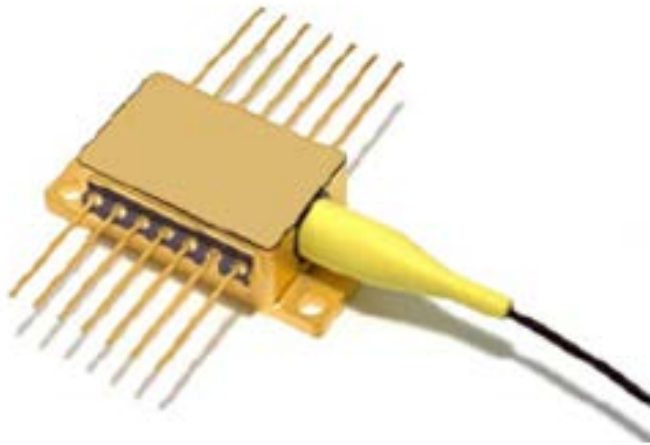


Single-Mode Fiber Coupled Butterfly Package with Optical Isolator



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

Applications

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

- High Resolution Raman Spectroscopy
Confocal Microscopy
Raman Imaging
Portable Raman
Process Raman
- Direct-Diode Frequency Doubling
- Fiber Laser Seeding
- Metrology & Interferometry
- Remote Sensing

Key Features

- High-Power Single-Spatial-Mode, Single-Frequency Output
- Ultra-Narrow Spectral Linewidth (< 100 kHz)
- Stabilized Output Spectrum (< 0.007 nm/°C)
- Excellent Beam Quality ($M^2 < 1.1$)
- Integral ESD Protection & Thermistor
- Integral Laser Line Filter
- SMSR 70 dB w/ laser line filter (40 dB without)
- Integral single stage optical isolator
- Dual stage optical isolators available > 1,000 nm
- "Ultratrack" Linear Tracking Photodiode

Standard Wavelengths

780nm	852nm
783nm	1030nm
785nm	1053nm
808nm	1064nm

All specified wavelengths are measured "in-vacuum"

Specifications

Wavelength Tolerance	+/- 0.5 nm
Spectral Linewidth (DI)	~ 100 kHz* Typical
Wavelength Stability Range	15 C - 45 °C
SMSR	70 dB w/ laser line filter (40 dB without)
Fiber Options	Single-Mode
	Polarization Maintaining, Panda Type
Polarization Extinction (PER)	>17dB, 20dB Typical
Polarization Orientation	Standard is PM Slow Axis
Output Power Stability	1% Typical

λ (nm)	Output Power (mW)	Base Part Number	Max Current, Voltage
780	25	RI0780SB0025P-IS	250 mA, 2.3V
783	25	RI0783SB0025P-IS	250 mA, 2.3V
785	25	RI0785SB0025P-IS	250 mA, 2.3V
808	25	RI0808SB0025P-IS	400 mA, 2.3V
852	20	RI0852SB0020P-IS	400 mA, 2.3V
1030	50	RI1030SB0050P-IS	500 mA, 2.2V
1053	50	RI1053SB0050P-IS	350 mA, 2.2V
1064.X	50	RI1064.XSB0050P-IS	350 mA, 2.2V

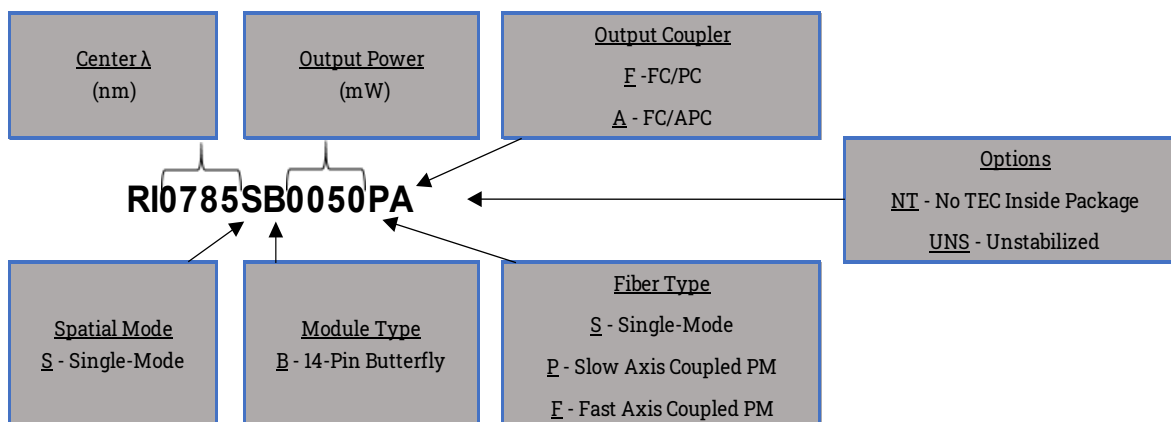
*Add A after P in part number for FC/APC Connector.

*Substitute "X" for 0, 1, 3, 4, wavelength measured in vacuum)

*Butterfly packages with internal isolators utilize an extended tube design

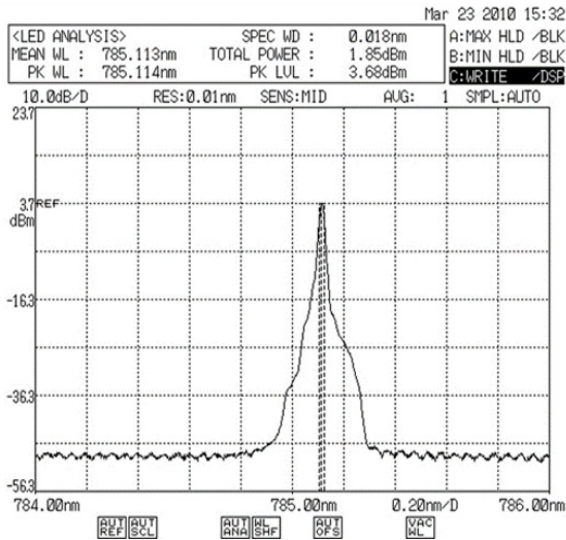
*Requires driver electronics with very low noise analog laser driver along with a design for dual TECs for improved temperature control. Refer to the [Linewidth White Paper](#) on our website for further details

Part Schema



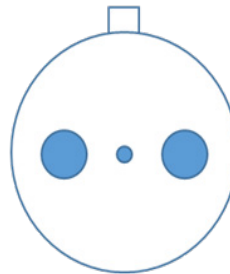
Selected Data

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



Typical 785nm SS Laser Spectrum

Fiber Alignment Key



“F” – PM Fast Axis Coupled

Fiber Alignment Key



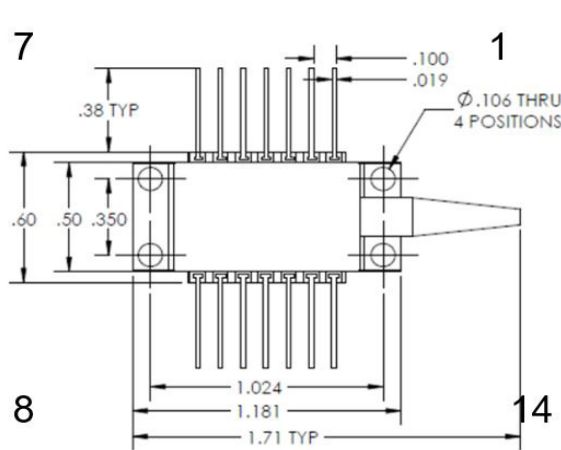
“P” – PM Slow Axis Coupled

Custom Capability

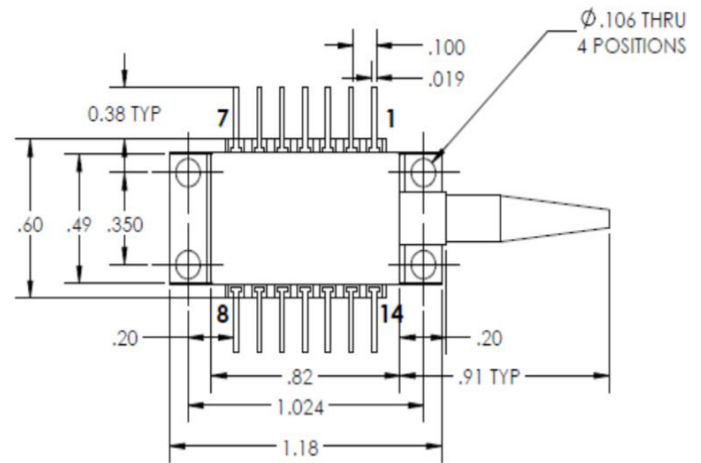
- Custom wavelengths available upon request
- FC/PC, FC/APC, or unterminated output coupler
- Single-mode or Polarization-maintaining fiber available with orientation in either fast or slow axis
- External TEC (e.g. No TEC inside of package optional)

Electrical Specs

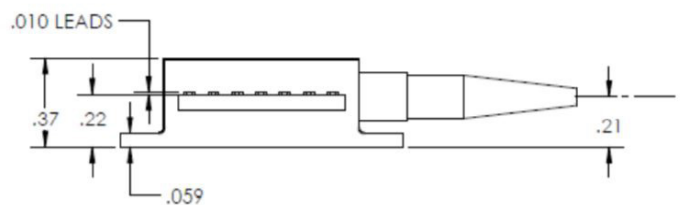
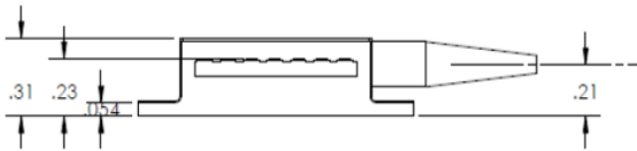
Pin 1	TEC+
Pin 2	Thermistor (10kOhm @25°C)
Pin 3	PD Anode
Pin 4	PD Cathode
Pin 5	Thermistor
Pin 6-8	NC
Pin 9	Laser Cathode (-)
Pin 10	Laser Anode (+)
Pin 11	Laser Cathode (-)
Pin 12	NC
Pin 13	Case Ground
Pin 14	TEC -



Standard Package



Extended Tube Package



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

- 14-pin BF should be mounted on a heat sink with a thermal compound (thermal grease).
- 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.
- Laser and TEC driver circuitry should be configured in a manner to prevent power /current / voltage surges and spikes.
- IPS recommends not grounding anode and cathode as this can cause ground loops.
- Laser and TEC driver circuitry should be configured in a manner to prevent power /current / voltage surges and spikes.
- Do not retro-reflect beam! This can cause Catastrophic Optical Damage (COD) and is not covered under warranty.
- Laser will operate in single frequency mode at set-points between 10 and 45°C, however, optimal operating set point must be determined for each laser diode to avoid mode-hopping (see note 8).
- 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).



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OEM Laser Product