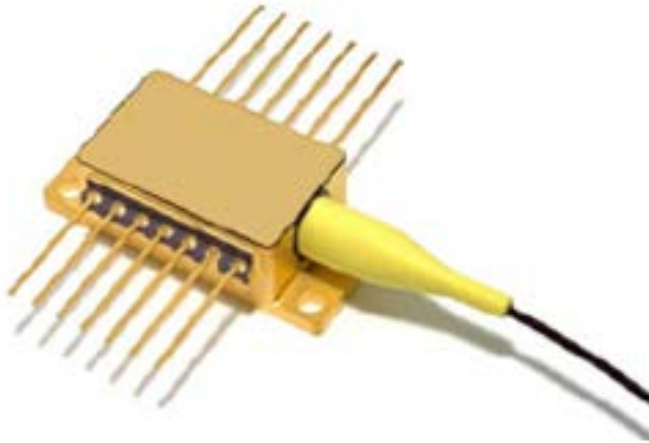


Single-Mode Fiber Coupled Butterfly Package



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 packaged 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)
- "Ultratrack" Linear Tracking Photodiode

Standard Wavelengths

633nm	780nm	830nm	1053nm
638nm	783nm	852nm	1064nm
660nm	785nm	976nm	
685nm	808nm	1030nm	

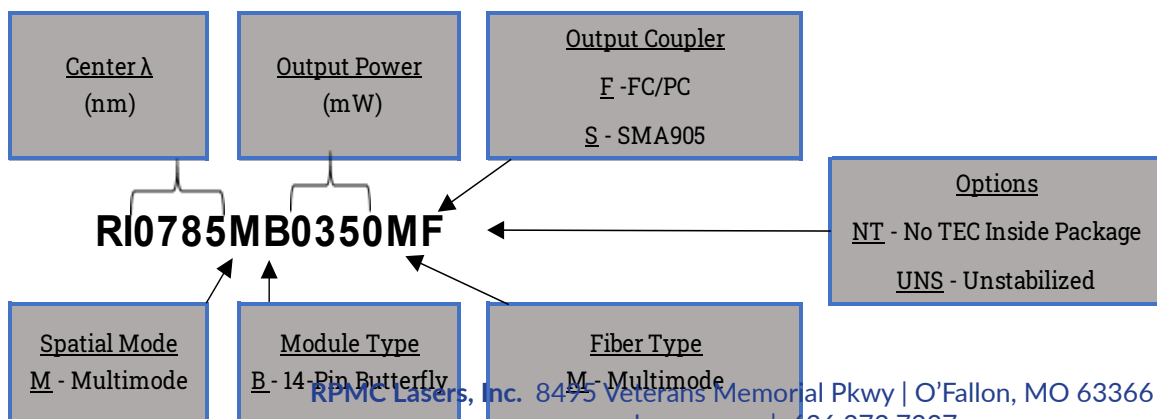
All specified wavelengths are measured "in-vacuum"

Specifications

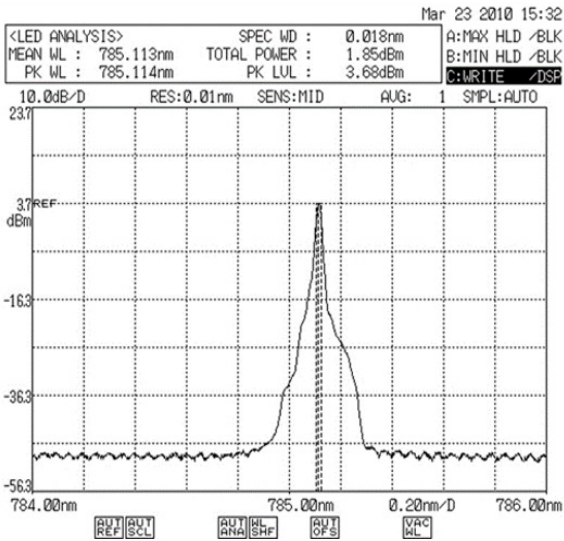
Wavelength Tolerance	+/- 0.5 nm	λ (nm)	Output Power (mW)	Base Part Number	Max Current, Voltage
Spectral Linewidth (DI)	~ 100 kHz* Typical	633	25	RI0633SB0025P	170 mA, 3.3V
Wavelength Stability Range	15 C - 45 °C	638	30	RI0638SB0030P	170 mA, 3.3V
SMSR	70 dB w/ laser line filter (40 dB without)	660	30	RI0660SB0030P	170 mA, 3.3V
Fiber Options	Single-Mode	685	20	RI0685SB0020P	170 mA, 3.3V
	Polarization Maintaining, Panda Type	780	50	RI0780SB0050P	220 mA, 2.3V
PER	>17dB, 20dB Typical	783	50	RI0783SB0050P	220 mA, 2.3V
		785	50	RI0785SB0050P	250 mA, 2.3V
Polarization Orientation	Standard is PM Slow Axis	785	75	RI0785SB0075P	400 mA, 2.5V
		808	100	RI0808SB0100P	400 mA, 2.5V
Output Power Stability	1% Typical	830	100	RI0830SB0100P	250 mA, 2.3V
		852	100	RI0852SB0100P	250 mA, 2.3V
*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		976	220	RI0976SB0220P	650 mA, 2.2V
		976	450	RI0976SB0450P	1000 mA, 2.2V
		1030	100	RI1030SB0100P	500 mA, 2.2V
		1030	280	RI1030SB0280P	1000 mA, 2.2V
		1053	120	RI1053SB0120P	400 mA, 2.2V
		1053	300	RI1053SB0300P	1000 mA, 2.2V
		1064.X	120	RI1064.XSB0120P	400 mA, 2.2V
		1064.X	300	RI1064.XSB0300P	1000 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)

Part Schema



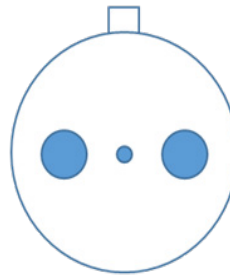
Selected Data



Typical 785nm SS Laser Spectrum

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

Fiber Alignment Key



“F” – PM Fast Axis Coupled

Fiber Alignment Key



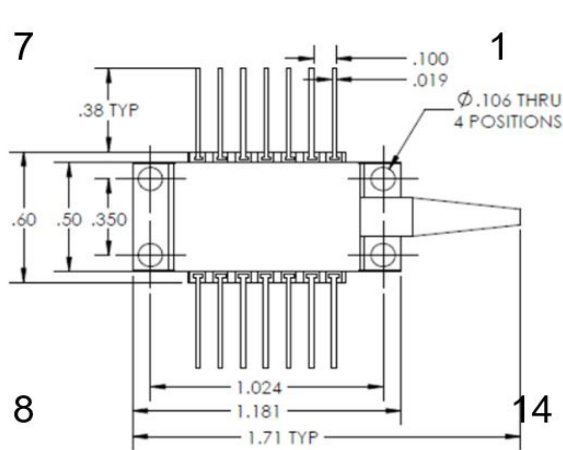
“P” – PM Slow Axis Coupled

Custom Capability

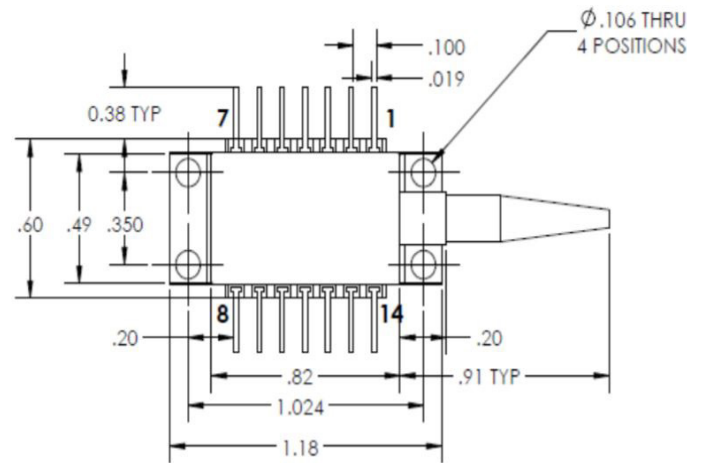
- Custom wavelengths available upon request
- FC/PC, FC/APC, or unterminated output coupler
- Single-mode or Polarization-maintaining fiber available with orientation in either fast or slow axis
- Integral optical isolator available (Will utilize extended tube BF package.)
- External TEC (e.g. No TEC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

Electrical Specs

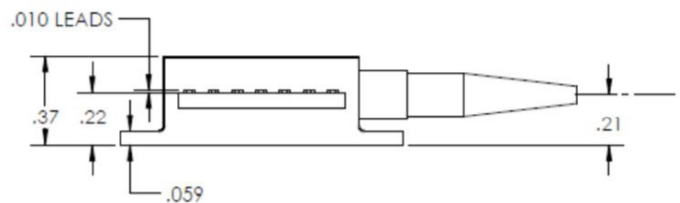
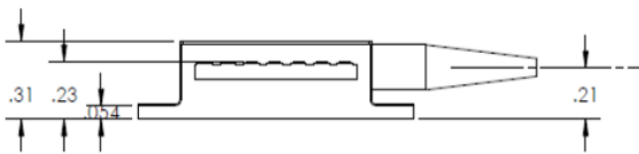
Pin 1	TEC+
Pin 2	Thermistor (10kOhm @25°C)
Pin 3	PD Anode
Pin 4	PD Cathode
Pin 5	Thermistor
Pin 6-8	NC
Pin 9	Laser Cathode (-)
Pin 10	Laser Anode (+)
Pin 11	Laser Cathode (-)
Pin 12	NC
Pin 13	Case Ground
Pin 14	TEC -



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).

