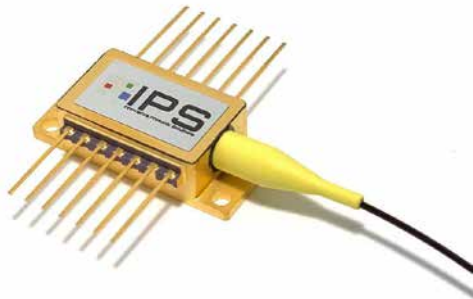


# Multi-Mode Fiber Coupled 14-Pin Butterfly Package



## Standard Wavelengths

- 638 nm
- 680 nm
- 785 nm
- 808 nm
- 830 nm
- 1064 nm

Additional wavelengths may be available upon request

Innovative Photonic Solution’s proprietary multi-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 multi-mode 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.

The laser’s stabilized peak wavelength remains “locked” regardless of case temperature (15 to 45 deg. C). Devices can be spectrally tailored to suit application needs and offer side mode suppression ratios (SMSRs) better than 40 dB, thereby providing extremely high signal to noise ratio and making these sources ideal for Raman spectroscopy.

Multi-mode laser diodes come standard with <0.1 nm (0.08 nm typical) spectral linewidth.



## Features

- Ultra-Narrow Spectral Bandwidth (< 0.1 nm FWHM, 0.08 nm typical)
- Stabilized Output Spectrum (< 0.007 nm/OC)
- “Ultra-Track” Linear Tracking Photodiode
- Low Power consumption
- 40 dB SMSR Typical
- Available with 105 micron core or 62.5 micron core fiber (105 micron core is standard)

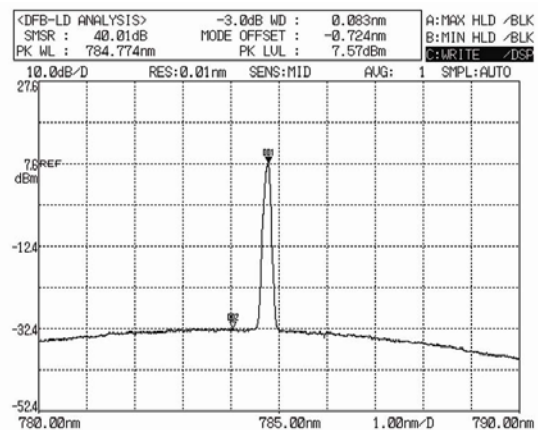
## General Optical Specifications

Wavelength Tolerance	+/- 0.5 nm
Spectral Linewidth ( $\Delta\lambda$ )	<0.1 nm (0.08 nm typical)
Fiber	105 micron core multi-mode (MM) fiber
Wavelength Stability Range	15 C - 45 C
SMSR	35 -45 dB
Output Power Stability	1% typical

## Electrical Performance Specifications

TEC Current Limit	3.2 A
TEC Voltage Limit	5.8 V
Photodiode Current	30 uA
Integral Thermistor	See Thermistor information on p.3

## Typical Spectral Plot

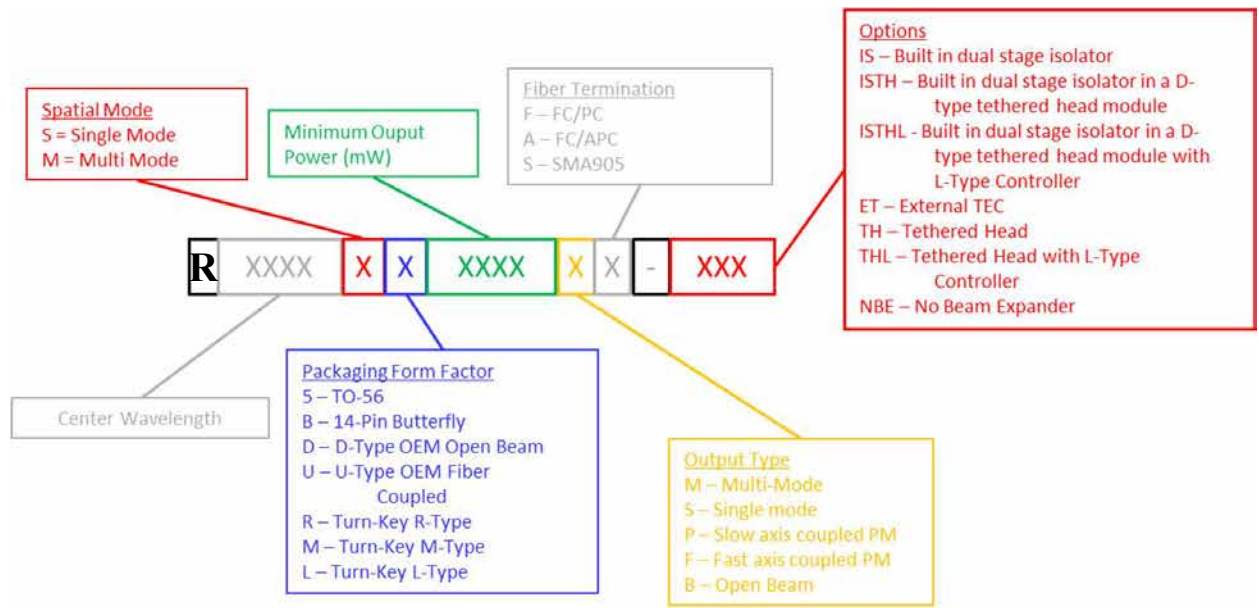


Typical 785 nm SS Laser Spectrum (SMSR > 40 dB)

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Wavelength (nm)	Min. Power (mW)	Part number	Max Current, Compliance Voltage	Connector
638	300	R0638MB 0300M	800 mA, 3.3V	unterminated
		R0638MB 0300MF		FC/PC
		R0638MB 0300MS		S MA
680	300	R0680MB 0300M	1350 mA, 3.3V	unterminated
		R0680MB 0300MF		FC/PC
		R0680MB 0300MS		S MA
785	350	R0785MB 0350M	1000 mA, 2.3V	unterminated
		R0785MB 0350MF		FC/PC
		R0785MB 0350MS		S MA
	600	R0785MB 0600M	1350 mA, 2.3V	unterminated
		R0785MB 0600MF		FC/PC
		R0785MB 0600MS		S MA
808	350	R0808MB 350M	1000 mA, 2.3V	unterminated
		R0808MB 0350MF		FC/PC
		R0808MB 0350MS		S MA
	600	R0808MB 0600M	1350 mA, 2.3V	unterminated
		R0808MB 0600MF		FC/PC
		R0808MB 0600MS		S MA
830	350	R0830MB 0350M	1000 mA, 2.3V	unterminated
		R0830MB 0350MF		FC/PC
		R0830MB 0350MS		S MA
	600	R0830MB 0600M	1350 mA, 2.3V	unterminated
		R0830MB 0600MF		FC/PC
		R0830MB 0600MS		S MA
1064	600	R1064MB 0600M	1350 mA, 2.2V	unterminated
		R1064MB 0600MF		FC/PC
		R1064MB 0600MS		S MA

**Part Numbering Schema**



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### Electrical Pinout

1	TEC +
2	THERMISTOR (10K Ohm @ 25C)
3	PD ANODE
4	PD CATHODE
5	THERMISTOR
6	NC
7	NC
8	NC
9	LASER CATHODE (-)
10	LASER ANODE (+)
11	LASER CATHODE (-)
12	NC
13	CASE GROUND
14	TEC -

### Thermistor

#### Formula for calculating T based upon Resistance

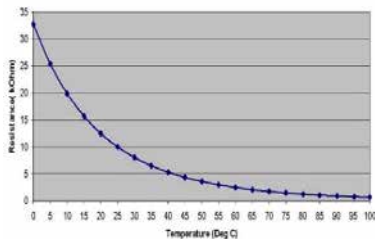
$$1/(C1+C2*LN(kOhm*1000)+C3*(LN(kOhm*1000))^3)-273.15$$

#### Thermistor (Betatherm 10K3CG3)

C1 0.00113  
C2 0.000234  
C3 8.78E-08

Temperature [C]	Resistance [kOhm]
100	0.68
95	0.78
90	0.91
85	1.07
80	1.25
75	1.48
70	1.75
65	2.08
60	2.49
55	2.99
50	3.6
45	4.37
40	5.32
35	6.54
30	8.05
25	10
20	12.5
15	15.7
10	19.9
5	25.4
0	32.7

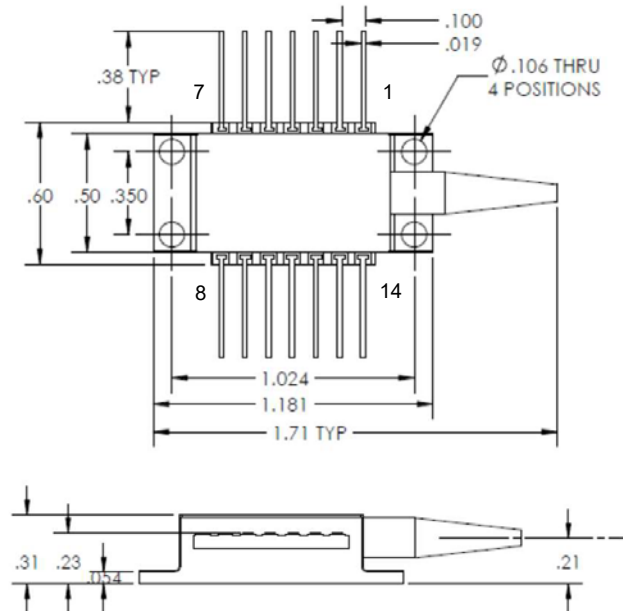
Plot of Temperature vs Resistance



### 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.
- 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.

### Mechanical Specifications



#### 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.



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