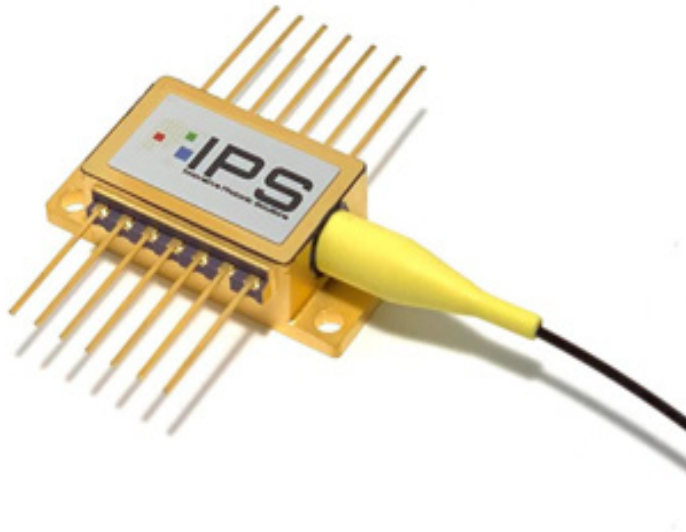


# Multi-Mode Fiber Coupled Butterfly



Innovative Photonic Solutions' proprietary multi-mode wavelength stabilized laser features high output power with ultra-narrow spectral bandwidth and a uniform intensity 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, and vibration, and is manufactured to meet the most demanding wavelength requirements. The laser's stabilized peak wavelength remains "locked" regardless of case temp. (15 to 45° 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

## Applications

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

- High Resolution Raman Spectroscopy
  - Portable Raman
  - Process Raman
- Direct-diode Frequency Doubling
- Fiber Laser Pumping
- Metrology & Interferometry
- Remote Sensing

## Key Features

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- Ultra-Narrow Spectral Bandwidth (< 0.1 nm FWHM, 0.08 nm typical)
- Stabilized Output Spectrum (< 0.007 nm/°C)
- "Ultra-Track" Linear Tracking Photodiode
- Low Power consumption
- 40 dB SMSR Typical
- Multi-mode laser diodes come standard with <0.1 nm (0.08 nm typical) spectral linewidth.
- Available with 105 micron core or 62.5 micron core fiber (105 micron core is standard)

## Standard Wavelengths

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|       |       |        |
|-------|-------|--------|
| 638nm | 785nm | 860nm  |
| 660nm | 808nm | 976nm  |
| 680nm | 830nm | 1064nm |

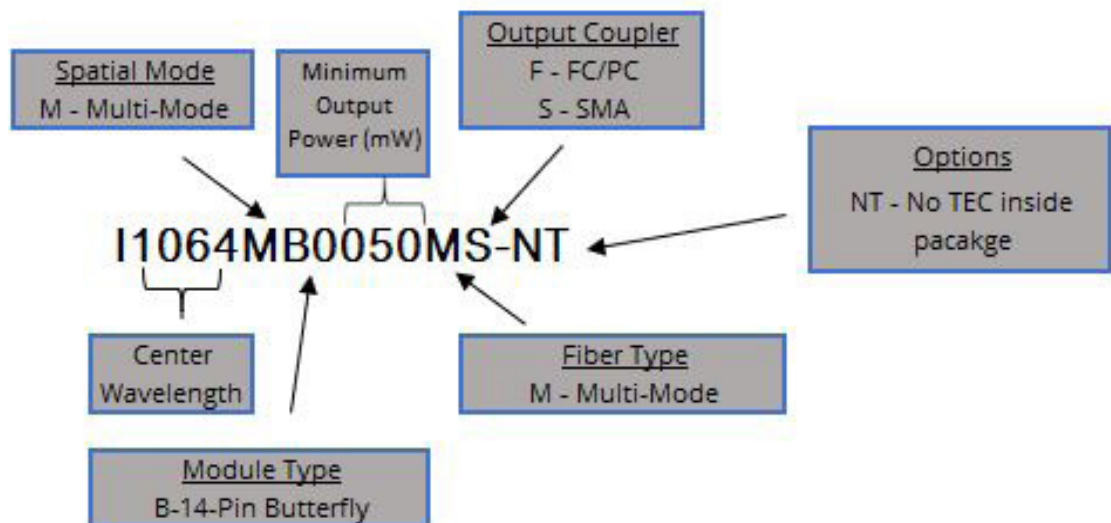
# Specifications



| Wavelength Tolerance       | +/- 0.5 nm                           | $\lambda$ (nm) | Min Power (mW) | Base Part Number | Max Current, Voltage |
|----------------------------|--------------------------------------|----------------|----------------|------------------|----------------------|
| Spectral Linewidth (DI)    | <0.1 nm (0.08nm typical)             | 638            | 350            | I0638MB0350MX    | 1000 mA, 3.3V        |
| Wavelength Stability Range | 15 - 45 °C                           | 660            | 250            | I0660MB0250MX    | 1000 mA, 3.3V        |
| SMSR                       | 35 - 45 dB                           | 680            | 300            | I0680MB0300MX    | 1000 mA, 3.3V        |
| Fiber                      | 105 micron core multi-mode(MM) fiber | 785            | 350            | I0785MB0350MX    | 1000 mA, 2.3V        |
|                            |                                      |                | 600            | I0785MB0600MX    | 1350 mA, 2.3V        |
|                            |                                      |                | 800            | I0785MB0800MX    | 1500 mA, 2.3V        |
| Output Power Stability     | 1% typical                           | 808            | 350            | I0808MB0350MX    | 1000 mA, 2.3V        |
|                            |                                      |                | 600            | I0808MB0600MX    | 1350 mA, 2.3V        |
|                            |                                      |                | 800            | I0808MB0800MX    | 1500 mA, 2.3V        |
|                            |                                      | 830            | 350            | I0830MB0350MX    | 6000 mA, 2.3V        |
|                            |                                      |                | 600            | I0830MB0600MX    | 1350mA, 2.3V         |
|                            |                                      |                | 800            | I0830MB0800MX    | 1500 mA, 2.3V        |
|                            |                                      | 860            | 350            | I0860MB0350MX    | 1000 mA, 2.3V        |
|                            |                                      |                | 600            | I0830MB0600MX    | 1350 mA, 2.3V        |
|                            |                                      | 976            | 800            | I0976MB0800MX    | 1500 mA, 2.3V        |
|                            |                                      |                | 4000           | I0976MB4000MX    | 6000 mA, 2.3V        |
|                            |                                      |                | 5000           | I0976MB5000MX    | 7000 mA, 2.3V        |
|                            |                                      | 1064           | 350            | I1064MB0350MX    | 1350 mA, 2.3V        |
|                            |                                      |                | 600            | I1064MB0600MX    | 1500 mA, 2.3V        |

# Part Schema

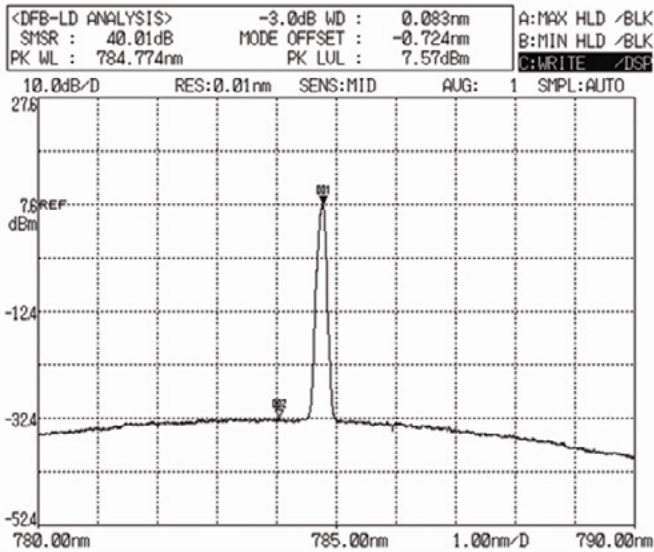
"X" - Output Coupler Type



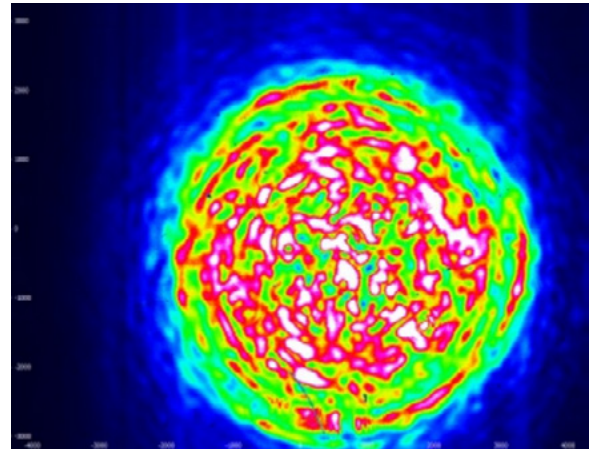
# Selected Data



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



Typical 785nm SS Laser Spectrum



Typical 785nm Beam Quality

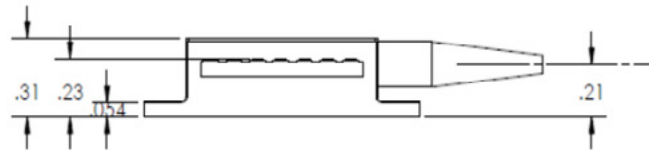
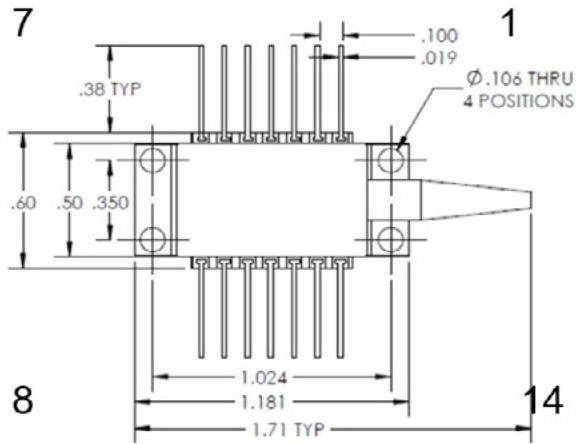
# Custom Capability

- Custom wavelengths available upon request
- FC/PC, SMA, or unterminated output coupler
- Various output fiber diameters available
- External TEC (e.g. No TEC inside of package optional)

# Electrical Specs

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

# Mechanical Drawings



**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

1. 14-pin BF should be mounted on a heat sink with a thermal compound (thermal grease).
2. 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.
3. Laser and TEC driver circuitry should be configured in a manner to prevent power /current / voltage surges and spikes.
4. IPS recommends not grounding anode and cathode as this can cause ground loops.
5. 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.

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