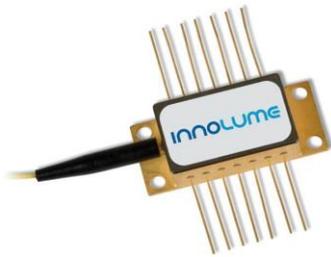


## DFB-10XX-YY-50

### Fiber Coupled Distributed-Feedback Laser Diode with Integrated Optical Amplifier



#### Features:

- 50mW output power ex-single mode fiber
- Available wavelength range 1020-1120nm
- Mode-hop free continuous tuning
- Proprietary mirror coating technology enabling high reliability
- PM980 or HI1060 fiber
- Individual burn-in and thermal cycling screening
- Optional monitor photodiode
- RoHS compliance

## SPECIFICATIONS

Test conditions: CW operation, chip temperature 25°C, the case is mounted on room temperature heatsink

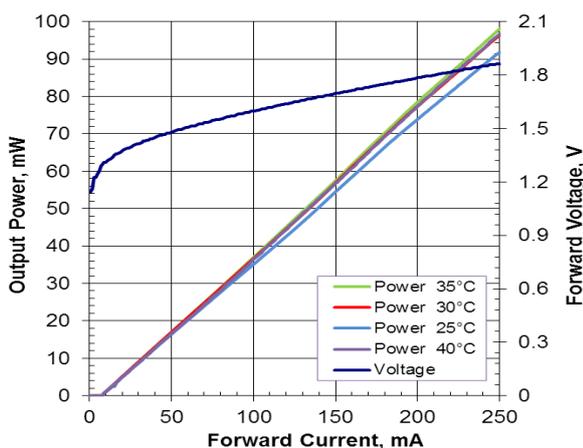
| Parameters                        | Symb.                    | Min.     | Typ.     | Max. | Unit  |
|-----------------------------------|--------------------------|----------|----------|------|-------|
| Operating Power                   | Pout                     | 50       |          |      | mW    |
| Operating Current                 | Iop                      |          | 150      | 200  | mA    |
| Operating Voltage                 | Vop                      |          | 1.7      | 3.5  | V     |
| Kink-free output power*           |                          | 1.1×Pout | 1.3×Pout |      | mW    |
| Central wavelength                | $\lambda$                | 1020     |          | 1120 | nm    |
| Linewidth at Pout                 | $\Delta\lambda$          |          |          | 5    | MHz   |
| Wavelength temperature tunability | $\Delta\lambda/\Delta T$ |          | 90       | 110  | pm/°C |
| Wavelength current tunability     | $\Delta\lambda/\Delta I$ |          | 4        | 6    | pm/mA |
| Sidemode suppression ratio        | SMSR                     | 45       |          |      | dB    |
| Threshold current                 | Ith                      |          | 25       | 50   | mA    |
| Polarization Extinction Ratio     | PER                      | 15       |          |      | dB    |

\*  $\Delta P/\Delta I > 0$  ( $\Delta I=1\text{mA}$ )

## TYPICAL PERFORMANCE for reference only\*

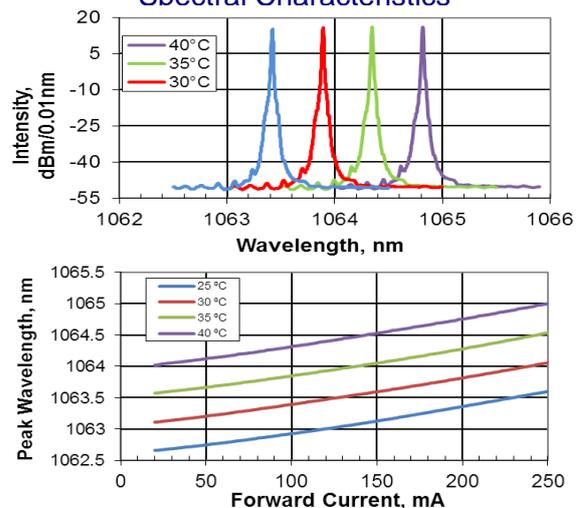
Test conditions: CW operation, the case is mounted on room temperature heatsink

### Light-Current-Voltage Characteristics



\* Performance is given for the DFB-1064-PM-50 device.

### Spectral Characteristics



| ABSOLUTE MAXIMUM RATINGS         |      |        |      |
|----------------------------------|------|--------|------|
| Parameters                       | Min. | Max.   | Unit |
| Laser Diode reverse voltage      | -    | 2      | V    |
| Laser Diode CW forward current   | -    | 10p+50 | mA   |
| Thermo Electric Cooler current   | -    | 3      | A    |
| Thermo Electric Cooler voltage   | -    | 4      | V    |
| Fiber bend radius                | -    | 3      | cm   |
| Chip operating temperature range | 5    | 45     | °C   |
| Case operating temperature range | 0    | 70     | °C   |
| Storage temperature range        | -40  | 85     | °C   |

| THERMISTOR SPECIFICATION  |          |      | FIBER SPECIFICATION                           |                     |           |      |
|---|----------|------|---|---------------------|-----------|------|
| Parameters  | Value    | Unit | Parameters                                    | HI1060              | PM980     | Unit |
| Thermistor type   | NTC      | -    | Numerical aperture (Typical)                  | 0.14                | 0.12      |      |
| Resistance @25°C  | 10 ± 0.1 | kOhm | Cutoff wavelength                             | 920±50              | 900±70    | nm   |
| Beta 0-50°C   | 3375±1%  | K    | Mode-field diameter (@1060nm)                 | 6.2±0.3             | 6.6±0.3   | µm   |
|   |          |      | Cladding diameter                             | 125±1               | 125±1     | µm   |
|   |          |      | Coating diameter                              | 245±15              | 245±15    | µm   |
|   |          |      | Length  | 1.0 ± 0.1           | 1.0 ± 0.1 | m    |
|   |          |      | Connector                                     | FC/APC (narrow key) |           |      |
|   |          |      | <p>Connector alignment to the PANDA fiber</p> |                     |           |      |
| <p>The output light is polarized along the slow axis of PM fiber.</p> |          |      |   |                     |           |      |

| DIMENSIONS (in mm) |  |
|--------------------|--|
|                    | <p><b>Pin identification:</b></p> <ul style="list-style-type: none"> <li>1 TEC "+"</li> <li>2 Thermistor</li> <li>3 Monitor PD anode (optional)</li> <li>4 Monitor PD cathode (optional)</li> <li>5 Thermistor</li> <li>6 -</li> <li>7 -</li> <li>8 -</li> <li>9 -</li> <li>10 Laser Diode anode "+"</li> <li>11 Laser Diode cathode "-"</li> <li>12 -</li> <li>13 Case</li> <li>14 TEC "-"</li> </ul> |

## SAFETY AND OPERATING INSTRUCTIONS

The light emitted from this device is invisible and can be harmful to the human eye. Avoid looking directly into the fiber connector when the device is in operation. Proper laser safety eyewear must be worn during operation with open connector.

Absolute Maximum Ratings may be applied to the Laser Diode for short period of time only. Exposure to maximum ratings for extended period of time or exposure to more than one maximum rating may cause damage or affect the reliability of the device. Operating the Laser Diode outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the component must be employed such that the maximum forward current cannot be exceeded.

A proper heatsink for the Laser Diode on thermal radiator is required. The Laser Diode must be mounted on radiator with 4 screws (bolt down in X-style fashion with initial torque set to 0.075Nm and final X-style bolt down at 0.15Nm) or with clamps. The deviation from flatness of radiator surface must be less than 0.05mm. It's recommended using of Indium foil or thermal conductive and soft material between bottom of the case and heatsink for thermal interface. It's undesirable to use thermal grease for this.

Avoid back reflection to the Laser Diode. It may give impact on the device performance in aspects of spectrum and power stability. It also may cause fatal laser diode facet damage. Using of optical isolators is highly recommended to block back reflection.

Do not pull the fiber. Do not bend a fiber with a radius smaller than 3 cm. Operate the laser module with clean fiber connector only. Periodically check and clean the connector if necessary. To clean the connector use a clean-room compatible tissue only, put some Isopropyl alcohol onto it and carefully clean the facet of the connector, or use special fiber cleaning tools. Perform cleaning only with the laser current switched off.

Electrostatic discharge can lead to device failure. Take necessary precautions to prevent ESD.



## Example of Part Number Identification

DFB-1064-PM-50 -> 50mW output power at wavelength 1064nm, PM-980 fiber

DFB-1064-HI-50 -> 50mW output power at wavelength 1064nm, HI-1060 fiber

DFB-1030-PM-50 -> 50mW output power at wavelength 1030nm, PM-980 fiber

**NOTE:** Innolume product specifications are subject to change without notice