

## LASER DIODE

# LD4B-660-FP-50

### OVERVIEW

Laser diode coupled to an optical fiber and packaged into a hermetic case.

### MAIN FEATURES

- Wavelength: 660 nm
- Cavity type: Fabry-Perot
- Optical power in CW mode in single-mode fiber: 50 mW
- Package types: coaxial, coaxial with bracket, 14 pins DIL, 14 pins BTF
- Built-in monitor photodiode

### ORDERING INFORMATION

**LD4B-660-FP-50-X-X-X-X-X-X**

#### Case type

**COAX:** compact coaxial (low duty cycle pulse mode only)

**COAXB:** compact coaxial with a bracket

**TH:** compact coaxial with a bracket compatible to Thorlabs mount

**DIL:** common 14-pins DIL for active thermal stabilization (TEC and thermistor)

**DILRAD:** 14-pins DIL for active thermal stabilization (TEC and thermistor) with wall radiator

**BTF:** 14-pins BTF type 1 (Pump) for active thermal stabilization (TEC and thermistor)

#### Pinout code

**18:** see more details on page 5

#### Fiber type

**SM04:** SM, [Coherent 630-HP](#), furcation tubing Ø0.9 mm

**SMP04:** PM, [Coherent PM630-HP](#), furcation tubing Ø0.9 mm

**MM5:** MM, [50/125. OM3](#), furcation tubing Ø0.9 mm

**MM6:** MM, [62.5/125. OM1](#), furcation tubing Ø0.9 mm

Other type on request

#### Connector type

**FU:** FC/UPC (SM04, SMP04)

**FA:** FC/APC (SM04, SMP04)

**N:** no connector (scissors cut)

Other type: on request

#### Test measurements

**CW:** CW mode (electro-optical parameters at T=25±5 C and spectrum)

**P:** Pulse mode (pulse duration 5 us, duty cycle 1%, at T=25±5 C)

**CWP:** both CW and pulse mode

#### Fiber length

**0.5:** 500±50 mm

**1.0:** 1000±100 mm

Other length on request

Version 24.3

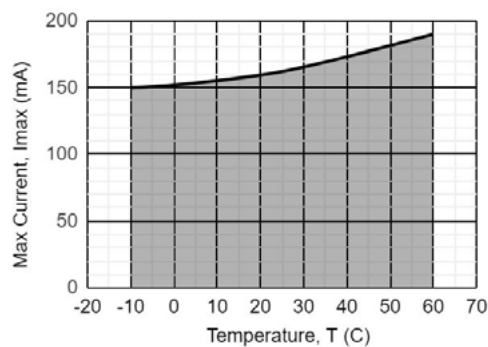
## LASER DIODE

# LD4B-660-FP-50

### ABSOLUTE MAXIMUM RATINGS

| Parameter                    |            | Value     | Unit               | Conditions                                                       |
|------------------------------|------------|-----------|--------------------|------------------------------------------------------------------|
| Laser diode forward current* | $I_{max}$  | 162       | mA                 | CW, $T = 25^{\circ}\text{C}$                                     |
| Laser diode forward current* | $I_{pmax}$ | 260       | mA                 | Pulse, 5 $\mu\text{s}$ , duty cycle 1%, $T = 25^{\circ}\text{C}$ |
| Laser diode reverse voltage  | $V_{RL}$   | 2         | V                  |                                                                  |
| Operating temperature**      | $T_{OP}$   | -10 - +60 | $^{\circ}\text{C}$ | Coaxial package                                                  |
| Operating temperature**      | $T_{OP}$   | -40 - +60 | $^{\circ}\text{C}$ | DIL, BTF ( $T_{st} = 25^{\circ}\text{C}$ )                       |
| Storage temperature          | $T_{stg}$  | -20 - +60 | $^{\circ}\text{C}$ |                                                                  |
| Soldering temperature        | $T_{sold}$ | 260       | $^{\circ}\text{C}$ | Max. 5 seconds                                                   |

\*Maximal laser diode forward current depends on the operating temperature. Please, refer to the figure below.



\*\*Operating temperature is defined by the case temperature. It is recommended to ensure sufficient heat dissipation so that the module's maximum operating temperature is not exceeded.

Operating temperature for the DIL, DILRAD and BTF 14-pins case T with TEC is defined for internal temperature stabilization at  $T_{st} = 25^{\circ}\text{C}$  that corresponds to thermistor resistance  $R_t = 10 \text{ k}\Omega$ .

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## LASER DIODE

# LD4B-660-FP-50

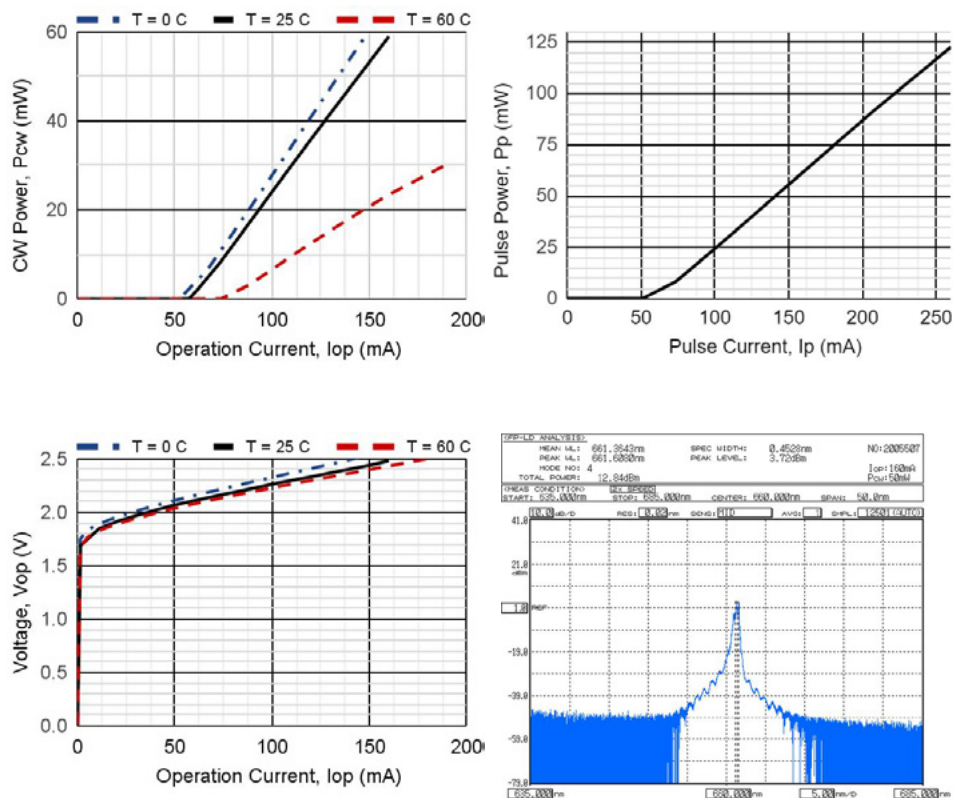
### ELECTRICAL-OPTICAL CHARACTERISTICS (T = 25 °C)

| Parameter                          |                 | MIN  | TYP  | MAX | Unit  | Conditions                                                   |
|------------------------------------|-----------------|------|------|-----|-------|--------------------------------------------------------------|
| Optical power (CW)                 | P <sub>cw</sub> | 50   | 55   |     | mW    | CW, I <sub>op</sub> = 160 mA, SM04                           |
| Optical power (pulse)              | P <sub>p</sub>  | 120  | 130  |     | mW    | Pulse, I <sub>p</sub> = 250 mA, duration 5 us, duty cycle 1% |
| Mean wavelength                    | λ               | 655  | 660  | 665 | nm    | CW, I <sub>op</sub> = 160 mA                                 |
| Spectral width                     | Δλ              |      | 1    | 3   | nm    | CW, I <sub>op</sub> = 160 mA                                 |
| Wavelength-temperature coefficient | dλ/dT           |      | 0.18 |     | nm/°C | CW, I <sub>op</sub> = 160 mA                                 |
| Threshold current                  | I <sub>th</sub> |      | 60   | 75  | mA    |                                                              |
| Slope efficiency                   | S <sub>e</sub>  | 0.55 | 0.60 |     | mW/mA | CW, SM04                                                     |
| Operating voltage                  | V <sub>op</sub> |      | 2.5  | 3.3 | V     | CW, I <sub>op</sub> = 160 mA                                 |
| Polarization extinction ratio      | PER             | 17   |      |     |       | CW, I <sub>op</sub> = 160 mA, SMP04                          |



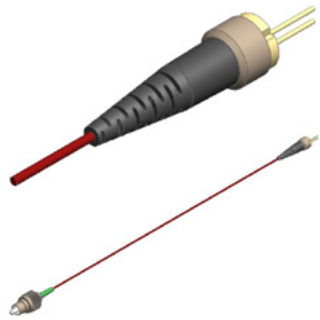
## LASER DIODE

### LD4B-660-FP-50



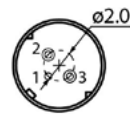
## LASER DIODE

### LD4B-660-FP-50



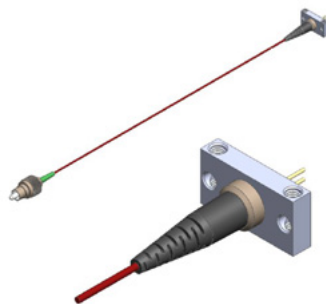
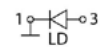
#### COAX

BACK VIEW



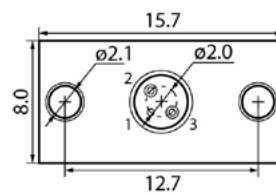
PINOUT  
#18

2°



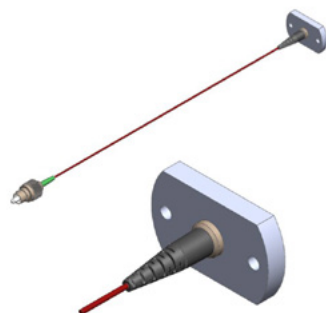
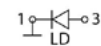
#### COAXB

BACK VIEW



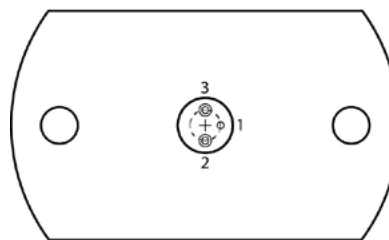
PINOUT  
#18

2°

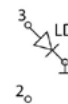


#### PACKAGE TH

BACK VIEW



PINOUT  
#18  
Thorlabs Pin Code H

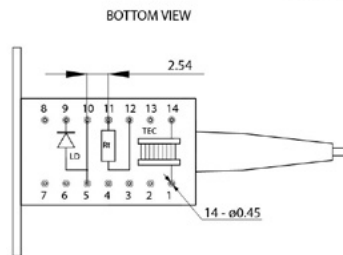
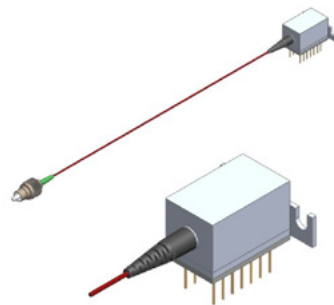


Compatible to Thorlabs  
LDM9LP mount

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### LD4B-660-FP-50

#### DIL



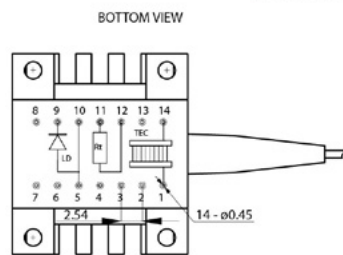
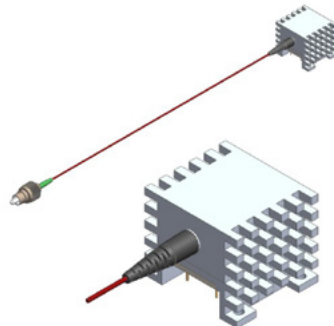
PINOUT #4, #18, #21, #31

- 1.TEC Anode
- 2.-
- 3.-
- 4.-
- 5.LD Anode
- 6.-
- 7.-
- 8.-
- 9.LD Cathode
- 10.LD Anode
- 11.Thermistor
- 12.Thermistor
- 13.-
- 14.TEC Cathode

TEC HP:  $I_{max}=1.4A$ ,  $U_{max}=3.9V$ ,  $Q_{max}=3.3W$ ,  
AC R = 2.0 Ohm,  $\Delta T_{max}=69K$

Thermistor:  
 $R_t=10 \cdot \text{EXP}(3600 \cdot \{1/T[K]-1/298\}) \text{ kOhm}$

#### DILRAD



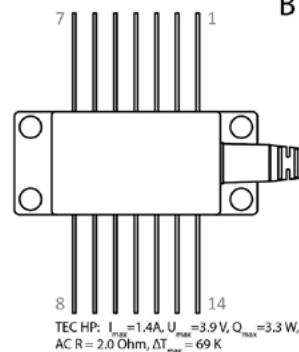
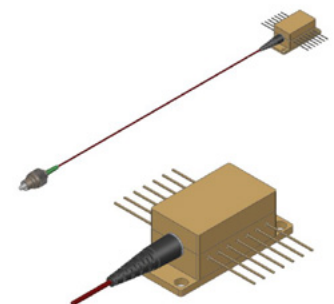
PINOUT #4, #18, #21, #31

- 1.TEC Anode
- 2.-
- 3.-
- 4.-
- 5.LD Anode
- 6.-
- 7.-
- 8.-
- 9.LD Cathode
- 10.LD Anode
- 11.Thermistor
- 12.Thermistor
- 13.-
- 14.TEC Cathode

TEC HP:  $I_{max}=1.4A$ ,  $U_{max}=3.9V$ ,  $Q_{max}=3.3W$ ,  
AC R = 2.0 Ohm,  $\Delta T_{max}=69K$

Thermistor:  
 $R_t=10 \cdot \text{EXP}(3600 \cdot \{1/T[K]-1/298\}) \text{ kOhm}$

#### BTF



- 1.TEC+
- 2.Thermistor
- 3.NC
- 4.NC
- 5.Thermistor
- 6.NC
- 7.NC
- 8.NC
- 9.NC
- 10.LD/SLD Anode
- 11.LD/SLD Cathode
- 12.NC
- 13.Case Ground
- 14.TEC -

Thermistor:  
 $R_t=10 \cdot \text{EXP}(3600 \cdot \{1/T[K]-1/298\}) \text{ kOhm}$