

## 850 nm VCSEL

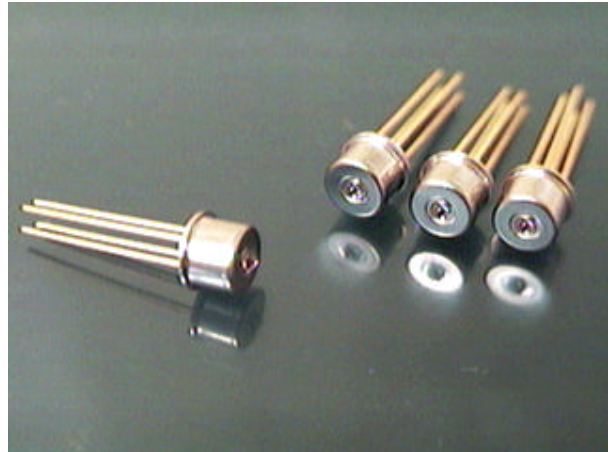
### Features

- High speed  $\approx$  1 GHz.
- Photodiode for monitoring laser output.
- TO-46 hermetic packaging with a lens cap.
- Common anode pin-out.

### Applications

- Optical communication system
  - Gigabit Ethernet
  - Fiber Channels
  - ATM transceiver modules

*Preliminary*



### Handling and Safety Precautions

Anti-static protection, such as ionized air blowers or grounded wrist straps with a 1 mega series resistor, should be used at all times when handling laser diode. In addition, soldering irons should be well grounded.

Overheating caused by soldering of the leads of a laser diode must be prevented. Recommend soldering iron temperature and maximum exposure time are below 260 °C and 10 seconds.

### Description

The MCE-8V4C-312 is a high performance, near infrared 850 nm Vertical Cavity Surface Emitting Laser (VCSEL) that offers high coupling powers in fiber optic transmission applications. This product is designed to meet the needs of high speed data communications and other applications.

The MCE-8V4C-312 is compatible with industry standard wave or hand solder processes.

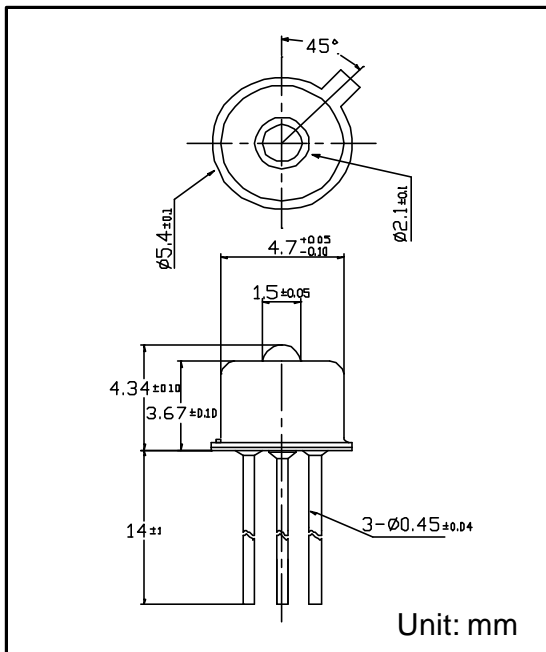
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**Absolute Maximum Ratings (Tc = 25 °C)**

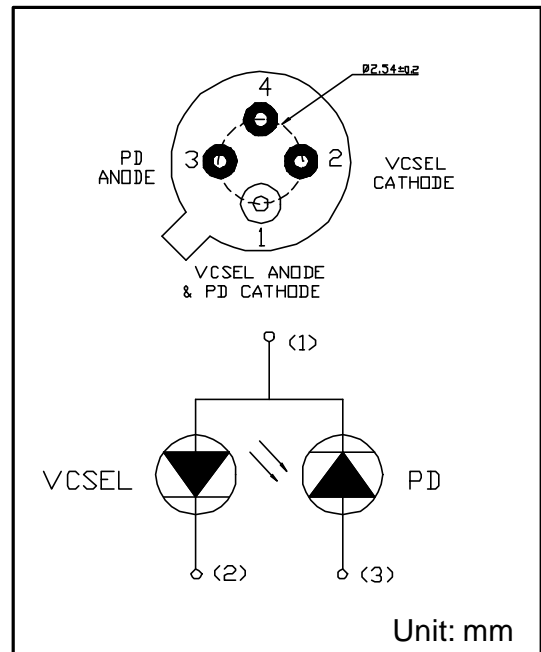
| Parameter                  | Symbol    | Rated Value  | Unit |
|----------------------------|-----------|--------------|------|
| LD reverse voltage         | $V_{rL}$  | 5            | V    |
| PD reverse voltage         | $V_{rP}$  | 20           | V    |
| PD Forward current         | $I_{fP}$  | 10           | mA   |
| Operating case temperature | $T_{op}$  | 0 to +85     | °C   |
| Storage temperature        | $T_{STG}$ | - 40 to +100 | °C   |

**Optical & Electrical Characteristics (Tc = 25 °C)**

| Parameter               | Symbol      | Test Conditions                           | Min.          | Typ.          | Max.          | Unit  |
|-------------------------|-------------|---|---------------|---------------|---------------|-------|
| Optical output power    | $P_o$       | $I_{th} + 6 \text{ mA}$                   | 500           | $\frac{3}{4}$ | 2000          | iW    |
| Threshold current       | $I_{th}$    |   | 1             | $\frac{3}{4}$ | 3             | mA    |
| Operating voltage       | $V_{op}$    | $I_{th} + 6 \text{ mA}$                   | $\frac{3}{4}$ | 2.0           | 2.2           | V     |
| Differential Resistance | $R_s$       | $I_{th}$ to $I_{th} + 6 \text{ mA}$       | $\frac{3}{4}$ | 40            | 55            | ohm   |
| Lasing Wavelength       | $\lambda_p$ | @2 mW                                     | 830           | 845           | 860           | nm    |
| Beam divergence         | $q$         | Full width, $1/e^2$                       | $\frac{3}{4}$ | $\frac{3}{4}$ | 30            | deg.  |
| Rise /Fall time         | tr/tf       | $I_{bias} = I_{th}$ , 20~80 %             | $\frac{3}{4}$ | 100/120       | $\frac{3}{4}$ | ps    |
| Slope efficiency        | $h$         | $I_{th}$ to $I_{th} + 6 \text{ mA}$       | 0.05          | $\frac{3}{4}$ | $\frac{3}{4}$ | mW/mA |
| PD Monitor current      | $I_m$       | $P_o = 2 \text{ mW}$                      | 50            | $\frac{3}{4}$ | 400           | iA    |
| PD Dark Current         | $I_D$       | $V_{rP} = 20 \text{ V}$                   | $\frac{3}{4}$ | $\frac{3}{4}$ | 10            | nA    |
| PD Capacitance          | $C_t$       | $V_{rP} = 5 \text{ V}, f = 1 \text{ MHz}$ | $\frac{3}{4}$ | $\frac{3}{4}$ | 2             | pF    |



**Package Dimensions**



**Pin Connections ( Bottom View )**

NOTE: Specifications are subjected to change without notice.

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For prototype and Production call

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REV. A1 3/4/2003