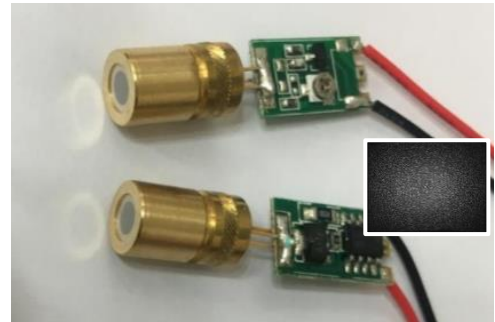




# 850nm Diffractive Optical Element (DOE) Laser Module with 10,000-Random Dot Pattern, 80° x 64.4° FOV, 3V PCB Driver

**MDOE850B200R103**



## Overview

The Lasermate MDOE850B200R103 laser module is an 850nm laser module integrated with 10,000-random dots pattern diffractive optical element (DOE). Designed for R&D purposes, the laser module comes with an adjustable focusing lens and with adjustable current to set the output power within a certain range.

## Features

- 850nm diffractive optical element (DOE) laser module
- 10,000-random dot pattern
- Field of View (FOV): 80° x 64.4° (H x V)
- Low distortion and high uniform pattern
- Flexible package for R&D evaluation
- Distance tunable projection
- PWM drivable
- Class 1 laser

## Applications

- Structured light for 3D sensing
- Machine vision

## Specifications

| Electrical-Optical Characteristics |                  |                            |      |          |        |   |
|------------------------------------|------------------|----------------------------|------|----------|--------|---|
| Parameter                          | Sym              | Min                        | Typ. | Ma       | Uni    | Conditions  |
| Threshold current                  | I <sub>th</sub>  | -                          | 120  | 130      | mA     | 25°C  |
| Operating current                  | I <sub>op</sub>  | -                          | 230  | 270      | mA     |   |
| Center wavelength                  | λ <sub>c</sub>   | 840                        | 850  | 860      | nm     |   |
| Optical output power               | P <sub>D</sub>   |                            | 100  |          | m      | After DOE   |
| Optical output power               | P <sub>o</sub>   |                            | 0.5  | 0.7<br>8 | m<br>W | Measured at 10cm distance by the power meter with dia. 7mm aperture |
| Focus                              |                  | Adjustable                 |      |          |        |   |
| Wire connection                    |                  | Red wire: +; black wire: - |      |          |        |   |
| Operating voltage                  | V <sub>o</sub>   |                            | 3.0  | 3.3      | V      |   |
| Operating temperature              | T <sub>op</sub>  | -10                        |      | 60       | °C     |   |
| Storage temperature                | T <sub>stg</sub> | -40                        |      | 85       | °C     |   |

| Mechanical Characteristics |                       |
|----------------------------|-----------------------|
| Diameter                   | 8mm                   |
| Length                     | 14~15mm               |
| PCB driver                 | 9(W) x 12(L) x 3(H)mm |

### Notes:

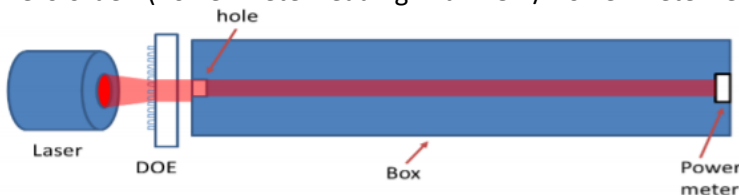
- Length varies as the position of the collimating lens varies case by case.
- Total module length varies with the length of metal pins left after welding.

| Optical Specifications               |                   |
|--------------------------------------|-------------------|
| Total dots                           | 10,000            |
| Field of View (FOV)                  | 80° x 64.4° (HxV) |
| Contrast <sup>1</sup>                | ≥3                |
| Uniformity <sup>2</sup> in FOV at 1m | ≥15%              |
| Zero order                           | ≤0.2%             |

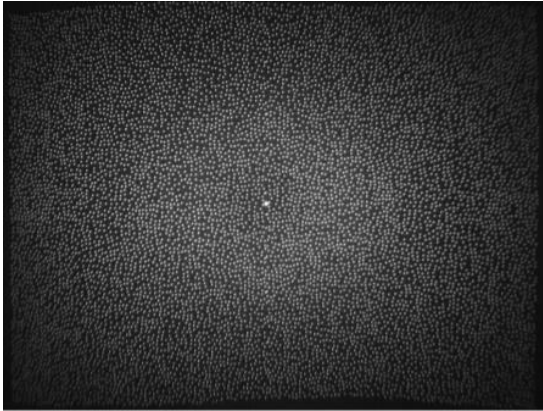
<sup>1</sup> Contrast: in the defined area, the ratio of the 95th percentile of the grayscale value over the mode grayscale value of the background,  $C = I_{95\%} / I_{\text{median}}$

<sup>2</sup> Uniformity: the ratio of the grayscale value of the area at a given location to the grayscale value of the area in the center of the pattern,  $U = I_{\text{each area}} / I_{\text{max of each area}}$

<sup>3</sup> Zero order: (Power meter reading with DOE / Power meter reading without DOE) x 100%



## Projection Pattern



### Caution

- Treat heat dissipation before setting the module to full power
- Avoid touching the emitting area or optical components of the module.
- Never look directly at the light from the emitting area.

### Additional Notes

- The laser modules are designated solely as OEM components for incorporation into the customer's end products. Therefore, it is the customer's responsibility to comply with the appropriate requirements of FDA 21CFR, section 1040.10 and 1040.11 for complete laser products. For the code of FDA regulations, please refer to [FDA Performance Standards for Light-Emitting Products](#) for detailed information.
- Specifications are subject to change without notice.



**Lasermate Group, Inc.**  
19608 Camino De Rosa  
Walnut, CA 91789 USA  
Tel: (909)718-0999  
Fax: (909)718-0998  
[sales@lasermate.com](mailto:sales@lasermate.com)  
[www.lasermate.com](http://www.lasermate.com)