



## **850nm Diffractive Optical Element (DOE) Laser Module with 30,000-Random Dot Pattern, 80° x 64.4° FOV, 3V PCB Driver**

**MDOE850C200R303**



### **Overview**

The Lasermate MDOE850C200R303 laser module is an 850nm infrared laser module integrated with a diffractive optical element (DOE) that projects a 30,000-random dot pattern. Designed for structured light projection and R&D applications, the module features an adjustable focusing lens, adjustable current control, and a compact 3V PCB driver for easy integration and customization.

### **Features**

- 850nm diffractive optical element (DOE) laser module
- 30,000-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
- IEC 60825 eye safety standards

### **Applications**

- Structured light for 3D sensing
- Machine vision

## Specifications

Electrical-Optical Characteristics						
Parameter	Symbol	Min.	Typ.	Max	Unit	Conditions
Threshold current	$I_{th}$	-	120	130	mA	25 °C
Operating current	$I_{op}$	-	430	470	mA	
Operating voltage	$V_{op}$	-	1.95	-	V	
Center wavelength	$\lambda_c$	840	850	860	nm	
Power input with PCB			3	3	V	25 °C, variable resistor included

Laser Diode Power Ratings					
Parameter	Symbol	Rating	Unit	Conditions	
CW output power (max)		200	mW		
Operating temperature	$T_{op}$	-10 to 60	°C		
Storage temperature	$T_{stg}$	-40 to 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	30,000
Field of View (FOV)	80° x 64.4° (HxV)
Contrast <sup>1</sup>	$\geq 3$
Uniformity <sup>2</sup> in FOV at 1m	$\geq 30\%$
Zero order <sup>3</sup>	$\leq 0.2\%$

<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,  $C=I_{95\%}/I_{median}$

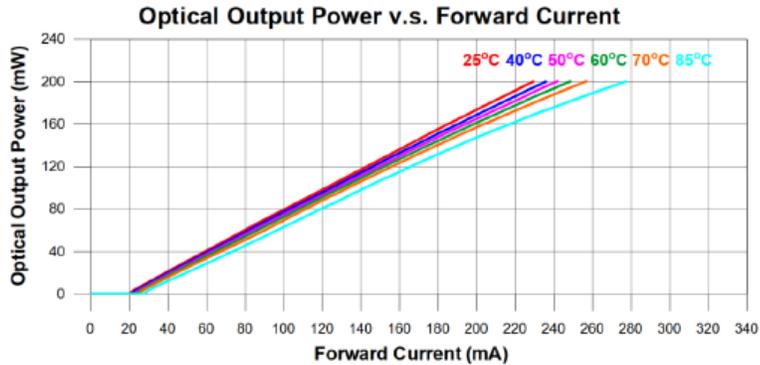
<sup>2</sup> Uniformity: the ratio of the grayscale value of the area at a given location to the grayscale value of the area in the center of the pattern,  $U=I_{each\ area}/I_{max\ of\ each\ area}$

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



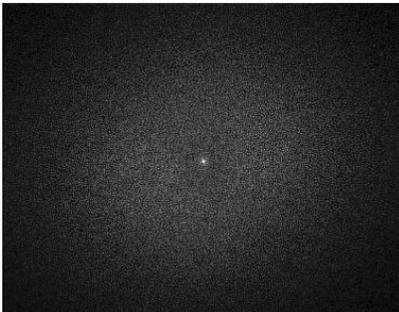
## Typical Characteristics

### I-P Curve of Chip



Note: Module optical power output is lower.

### Projection Pattern



### Additional Notes

- 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.
- 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.



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