



## **830nm Diffractive Optical Element (DOE) Laser Module with 15,000-Random Dot Pattern, 3V PCB Driver**

**MDOE830A200R153**



### **Overview**

The Lasermate MDOE830A200R153 is an 830nm DOE laser module featuring a 15,000-random dot pattern. Designed for R&D and advanced applications, it includes an adjustable focusing lens and adjustable current control to set output power within a specified range. The module's compact 3V PCB driver ensures stable and reliable structured light projection, ideal for depth sensing, gesture recognition, and machine vision.

### **Features**

- 830nm diffractive optical element (DOE) laser module
- 15,000-random dot pattern
- Field of View (FOV): 60° x 46.8° (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	$I_{th}$	30	50	85	mA	25 °C
Operating current	$I_{op}$	180	220	240	mA	$P_o=200mW$
Operating voltage	$V_{op}$	1.8	2.1	2.5	V	$P_o=200mW$
Slope efficiency	SE	0.8	1.0	1.4	mW/mA	$P_o=200mW$
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:

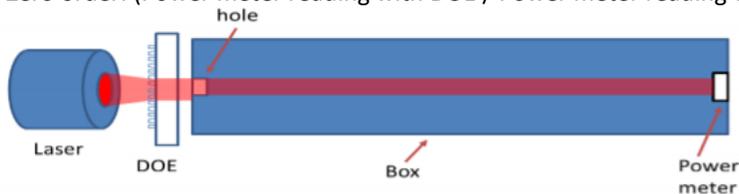
- Length varies as the position of the collimating lens varies case by case.
- Total module length varies with the length of metal pins left after welding.

Optical Specifications	
Total dots	15,000
Field of View (FOV)	60° x 46.8° (HxV)
Contrast <sup>1</sup>	$\geq 10$
Uniformity <sup>2</sup> in FOV at 1m	$\geq 45\%$
Zero order <sup>3</sup>	$\leq 0.2\%$

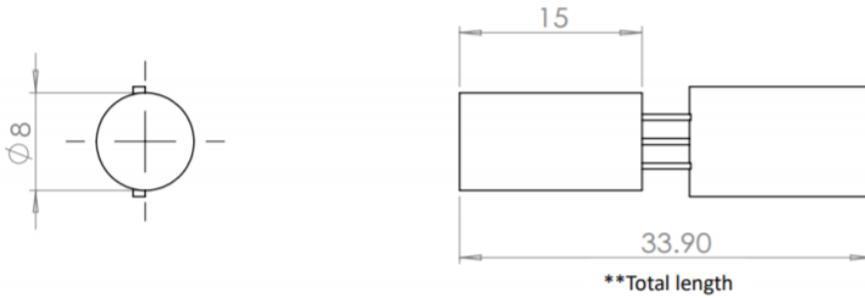
<sup>1</sup> Contrast: in the defined area, the ratio of the 95th percentile of the grayscale value over the mode grayscale value of the background,  $C=I_{95\%}/I_{median}$

<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%

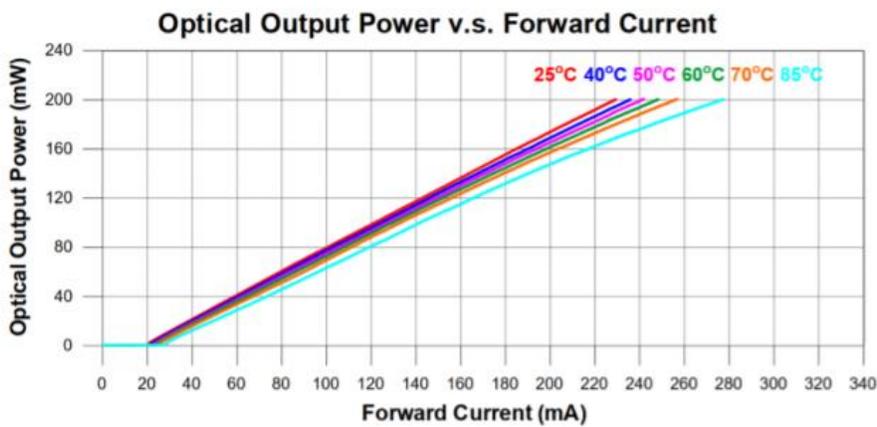


**Outline Dimensions (unit: mm)**



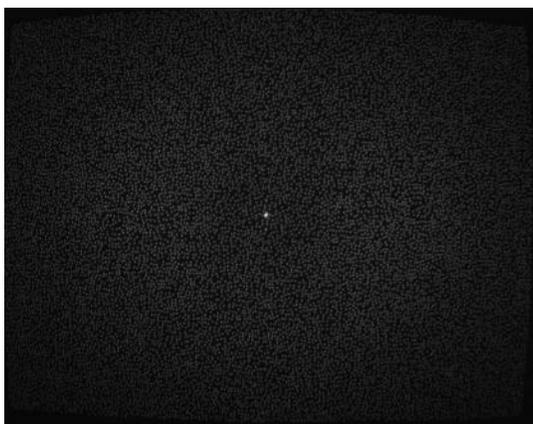
**Typical Characteristics**

**I-P Curve of Chip**



Note: Module optical power output is lower.

**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**

- 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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