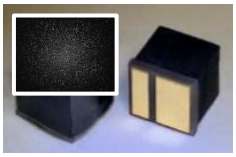
VDOE940COB12K

9400nm VCSEL Structured Light Projector, 12800-Dot Pattern

Data Sheet



Description

The Lasermate VDOE940COB12K is a 940nm wavelength, VCSEL integrated with advanced 12,800-dot pattern diffractive optical element (DOE). The VCSEL is specially designed for open-space 3D structure light. With ultra-small thermally efficient COB package, its compact footprint enables economics of scale and excellent integration flexibility.

Features

- 940nm wavelength VCSEL
- Ultra-small COB package
- Standard solder reflow-able
- Low power consumption
- IEC 60825 eye safety standards
- High uniform 12,800-dot pattern

Applications

- Portable device
- Structured light for 3D sensing

Electrical-Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max	Unit	Conditions
Operating temperature	T_{op}	0	35	60	°C	Measured at the bottom of the VCSEL die substrate during typical operating conditions
Output power	P	-	600	-	mW	I_f=800mA
Threshold current	I_{th}	-	200	-	mA	
Slope efficiency	η		1		W/A	
Forward voltage	V_f		1.9		V	I_f=800mA
Power conversion efficiency	PCE		40		%	I_f=800mA
Center wavelength	λ_c	930	940	950	nm	
Wavelength shift			0.07		nm/°C	

Note: All parameters are measured at 25°C. Pulse operation (pulse width=0.3ms, duty cycle=1%)

DOE Specifications

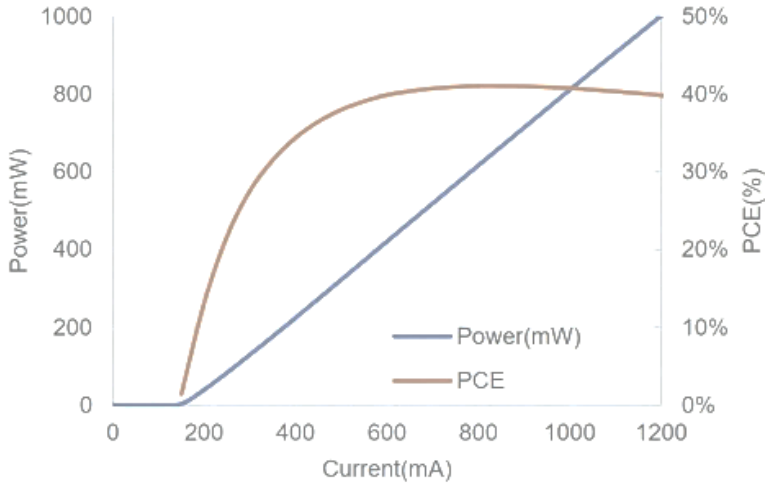
Pattern size @ 100cm	2221 x 1648mm (HxV)
Total dots	12,800
Field of View (FOV)	96° x 79° (HxV)
Contrast[1]	≧5
Uniformity[2] in FOV at 1m	≧26%

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

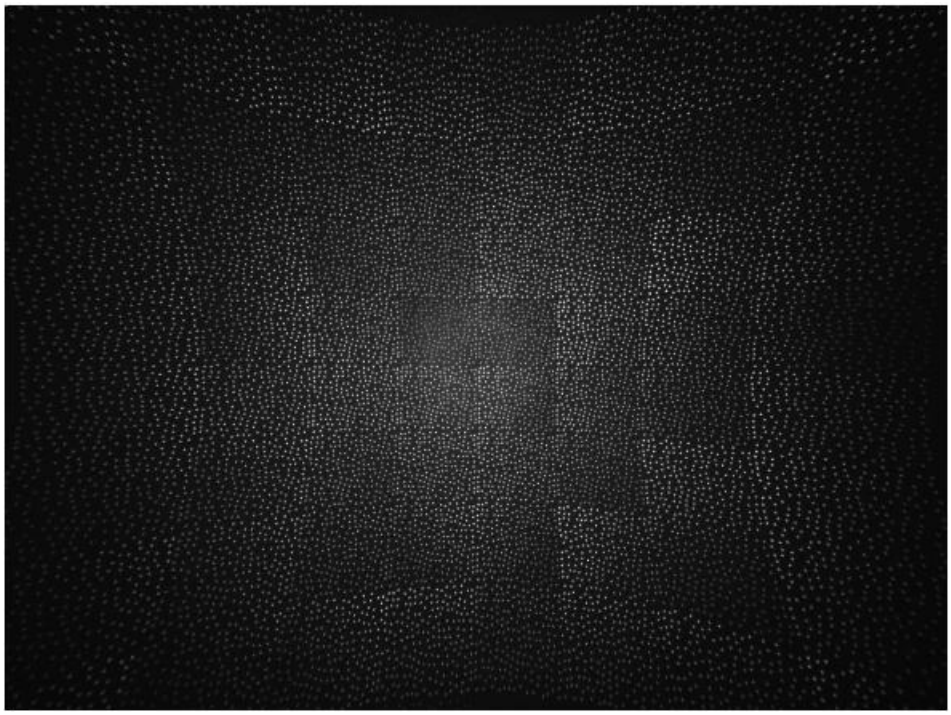
[2] Uniformity: the ratio of the grayscale value of the area at a given location to the grayscale value of the area in the center of the pattern, $U=I_{each\ area}/I_{max\ of\ each\ area}$

Typical Characteristic Curves

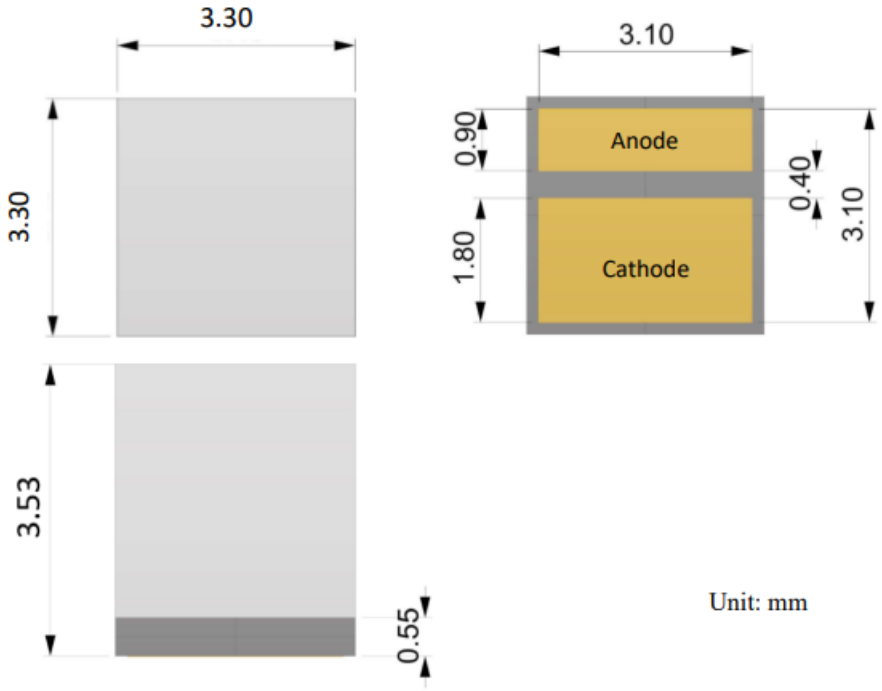
Typical LI Curve



Projection Pattern



Mechanical Dimensions



Orientation of Field of View

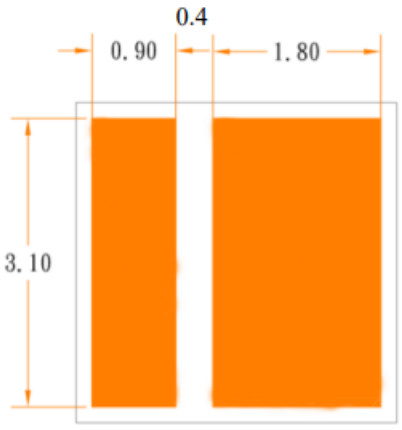
79 ° Vertical

96 ° Horizontal

Vertical

Horizontal

Recommended Solder Pad (unit: mm)



Additional Notes

1. Treat heat dissipation before setting the module to full power
2. Avoid touching the emitting area or optical components of the module.
3. Never look directly at the light from the emitting area.
4. The VCSELs 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.
5. Specifications are subject to change without notice.