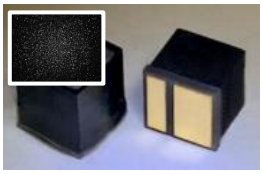
VDOE940COB9K

940nm 600mW VCSEL with 9,800-Random Dots Pattern



Description

The Lasermate VDOE940COB9K is a 940nm wavelength, VCSEL integrated with advanced 9,800-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
- High uniform pattern
- Ultra-small COB package
- Standard solder reflow-able
- Low power consumption
- IEC 60825 eye safety standards
- 9,800-dot pattern

Applications

- Portable device
- Structured light for 3D sensing

Specifications

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

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

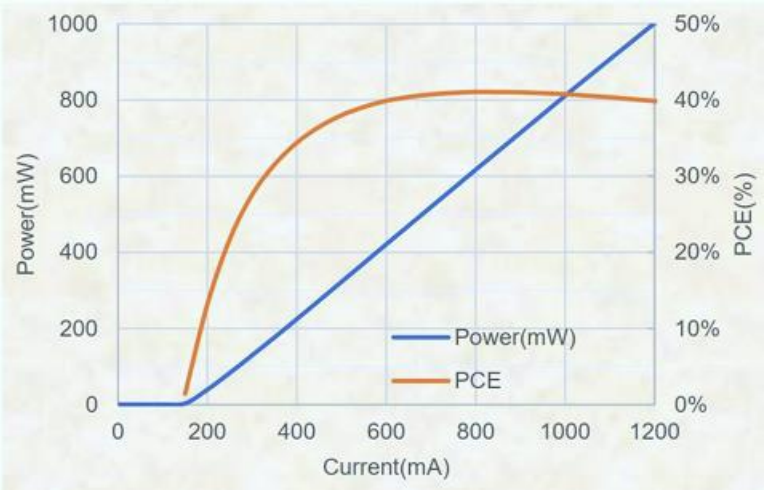
DOE Specifications	
Pattern size @ 100cm	1708x1323 mm (HxV)
Total dots	9,800
Field of View (FOV)	81° x 67° (HxV)
Contrast[1]	≧9
Uniformity[2]	≧50%

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

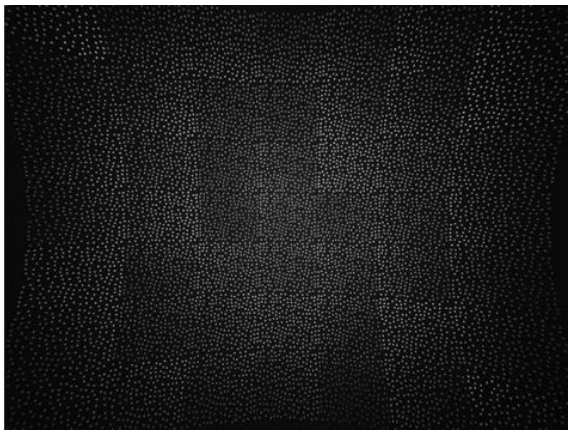
[2] Uniformity: the ratio of the grayscale value of the area at a given location to the grayscale value of the area in the center of the pattern, $U=I_{each\ area}/I_{max\ of\ each\ area}$

Typical Characteristic Curves

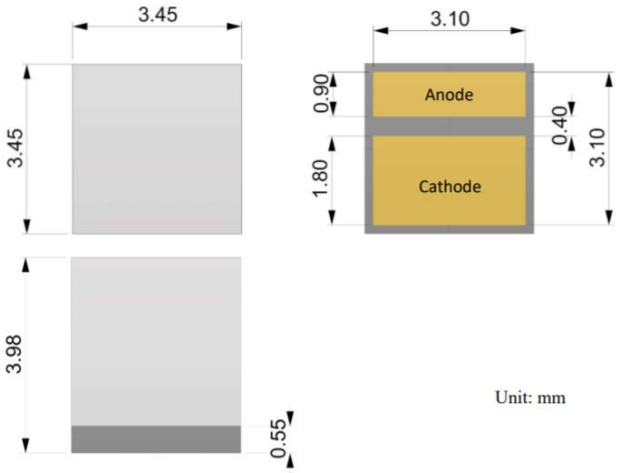
Typical LI Curve



Projecting Pattern



Mechanical Dimensions



Orientation of Field of View

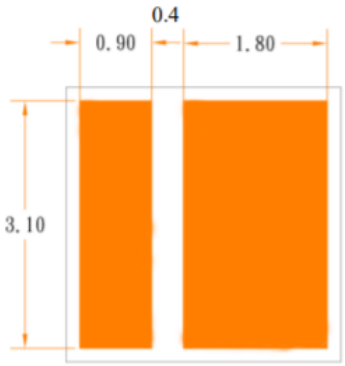
67 ° Vertical

81 ° Horizontal

Vertical

Horizontal

Recommended Solder Pad (unit: mm)



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 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.
- Specifications are subject to change without notice.