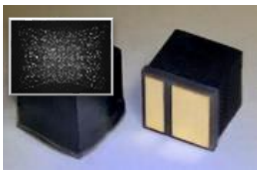
VDOE850COB9K

850nm 750mW VCSEL with 9072-Random Dots Pattern



Description

The Lasermate VDOE850COB9K is an 850nm wavelength, VCSEL integrated with advanced 9,072-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

- 850nm wavelength VCSEL
- Ultra-small COB package
- Standard solder reflow-able
- Low power consumption
- IEC 60825 eye safety standards
- High uniform 9,072-dot pattern

Applications

- Portable device
- Structured light for 3D sensing

Specifications

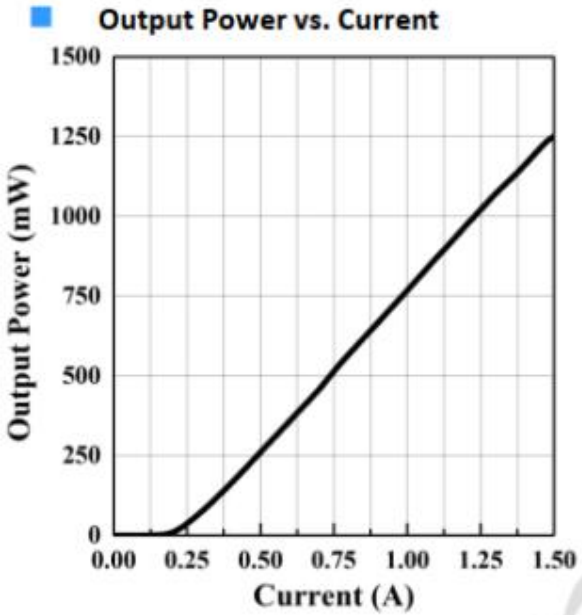
Electrical-Optical Characteristics						
Parameter	Symbol	Min.	Typ.	Max	Unit	Conditions
Operating temperature	T_{op}	0	35	60	°C	Measured at the bottom of the VCSEL die substrate during typical operating conditions
CW output power	P_o	-	750	-	mW	I_F=1.0A, t_p=10ms
	P_o	-	75	-	mW	I_F=0.3A, t_p=10ms
	P_o	-	35	-	mW	I_F=0.25A, t_p=10ms
	P_o	-	5	-	mW	I_F=0.2A, t_p=10ms
Threshold current	I_{th}		200		mA	
Forward voltage	V_f	1.65	1.95	2.25	V	I_F=1.0A, t_p=10ms
Center wavelength	λ_c	840	850	860	nm	I_F=1.0A, t_p=10ms
Spectral width (FWHM)			3	5	nm	I_F=1.0A, t_p=10ms
Slope efficiency	η_s		0.95		W/A	I_F=1.0A, t_p=10ms
Power conversion efficiency	PCE	34.5	38.5	42.5	%	I_F=1.0A, t_p=10ms

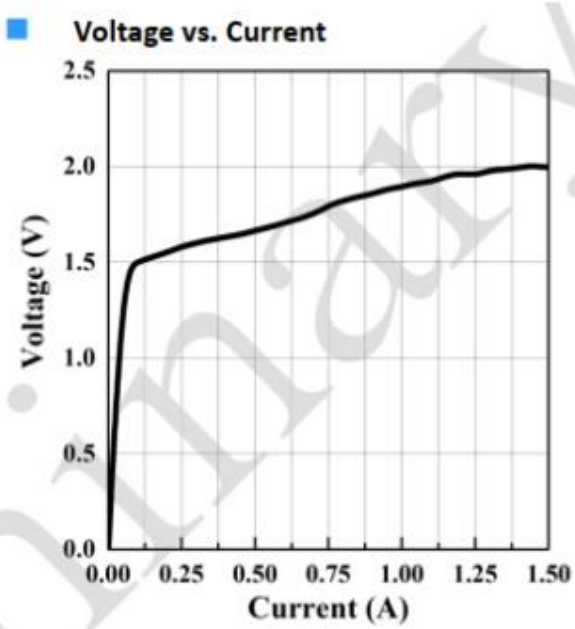
DOE Specifications	
Pattern size @ 1000mm	1652.6 x 1019mm (HxV)
Total dots	9,072
Field of View (FOV)	76° x 54° (HxV)
Contrast[1]	≧7.5
Uniformity[2]	≧35%

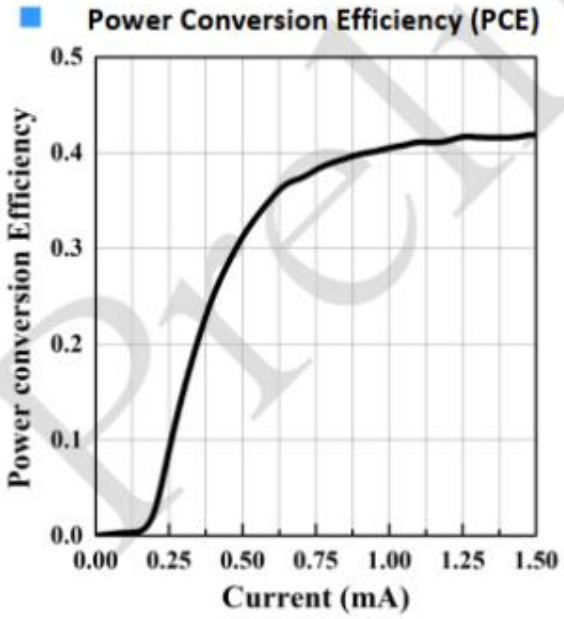
[1] Contrast: in the defined area, the ratio of the 95th percentile of the grayscale value over the mode grayscale value of the background, $C=I_{95\%}/I_{median}$

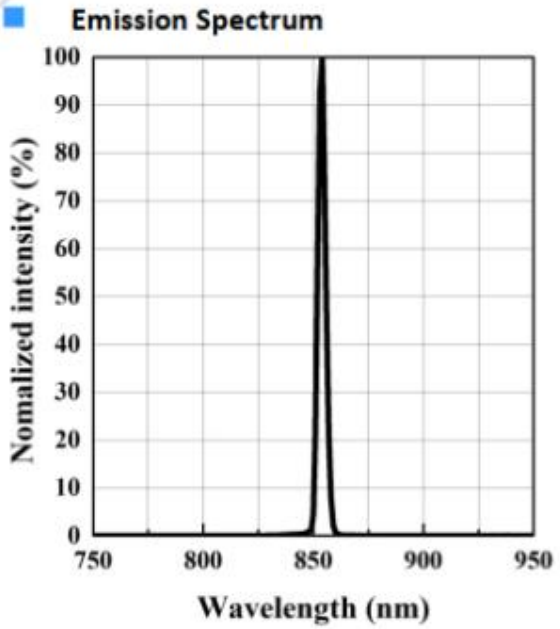
[2] Uniformity: the ratio of the grayscale value of the area at a given location to the grayscale value of the area in the center of the pattern, $U=I_{each\ area}/I_{max\ of\ each\ area}$

Typical Characteristic Curves

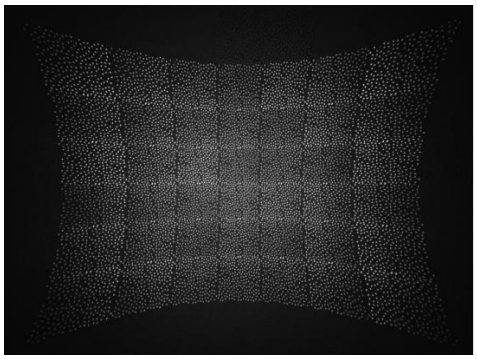




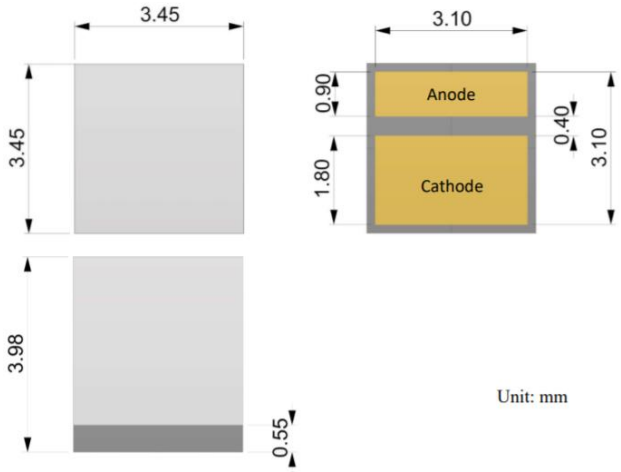




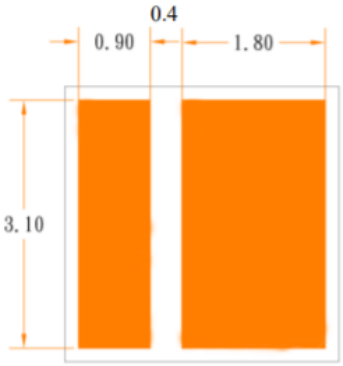
Projecting Pattern



Mechanical Dimensions



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.