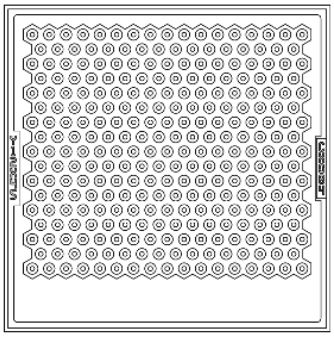
V00027

Die; 850; MM; Y12X45; 2W; 0.87mm X 0.87mm;



Near Infra-Red Vertical Cavity Surface Emitting Laser (VCSEL)

Model: Multi Mode Array VCSEL
Center wavelength: 850nm
Optical power: 2 Watts

Applications

- Motion Control
- Time of Flight
- Automotive Sensing
- 3D Scanning
- Gesture Recognition
- IR illumination for Security

COMPLIES WITH IEC 60825-1, 2nd Edition 2007.
COMPLIES WITH 21 CFR 1040.10 AND 1040-10.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO.50 DATED 27 MAY 2001.

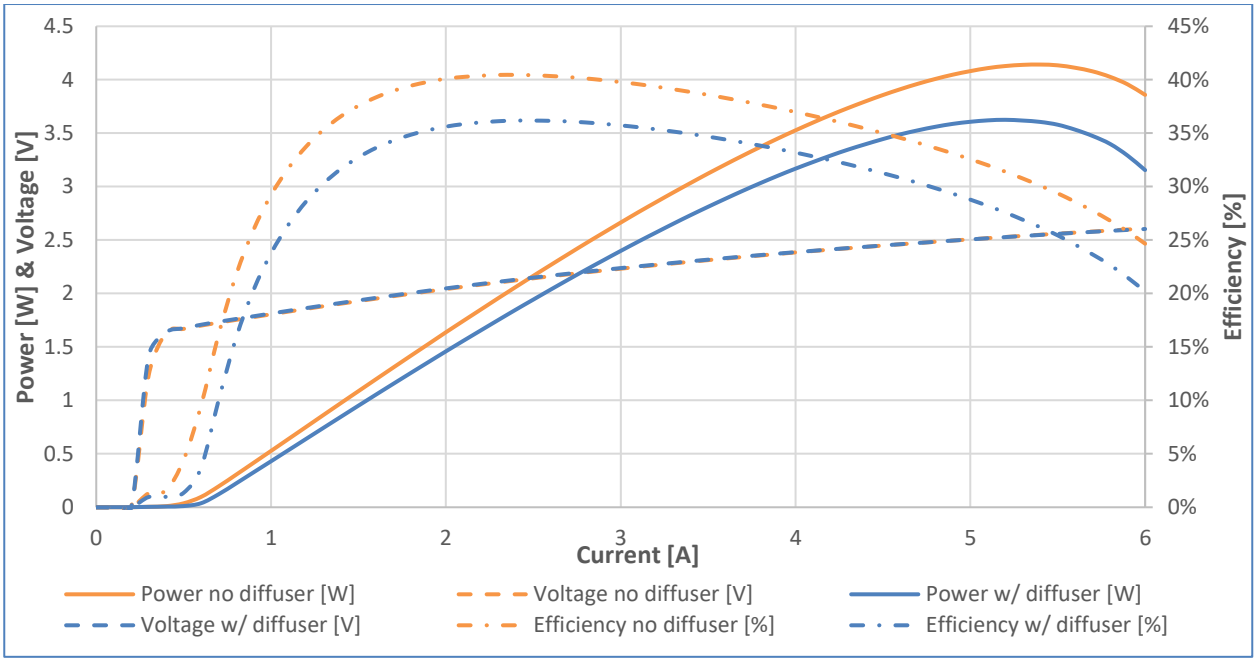
Absolute Maximum Ratings

Parameter	Rating	Notes
Storage temperature	-40°C to 110 °C	
Operating temperature (VCSEL)	-40°C to 110 °C	
Maximum package SMT solder reflow temperature	260°C, 10 seconds	
Maximum pulsed current	5 A	≤ 200 µs pulse width, ≤ 10% duty cycle, Temp ≤ 40 °C,
ESD damage threshold	±2kV	MIL_STD-883D, Method 3015.7 human body model,

Note Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated for extended periods of time may affect device reliability.

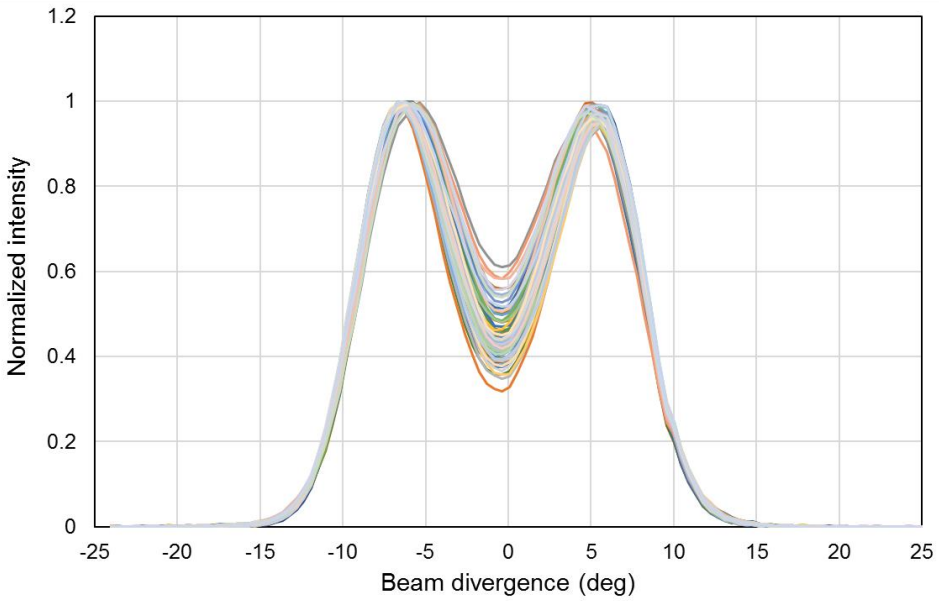
Parameter	Symbol	Units	Min	Typ.	Max	Notes
Threshold current	Ith	A	--	0.5	--	
Differential resistance	Rs	Ω	--	0.3	--	
Operating voltage	Vf	V	--	2.2	2.6	at I = 2.3 A
Optical operating power	Lop	W	--	2.0	--	at I = 2.3 A
Slope efficiency	SE	W/A	0.9	1.0	--	at I = 2.3 A
Power conversion efficiency	PCE	%	35	41	--	at I = 2.3 A
Breakdown voltage	Vrb	V	--	-10	-8	Irb = -1 µA
Beam divergence	FWHM	deg	--	20	--	
Beam divergence	$1/e^2$	deg	--	25	--	
Operating peak wavelength	WLpeak	nm	840	850	860	
Wavelength-Temp tuning		nm/°C	--	0.059	--	
Rise time		ps	--	--	800	20%-80%, Note 1
Fall time		ps	--	--	1000	20%-80%, Note 1

Typical Performance



Typical 850nm 2W L-I-V at Operational mode: 100µs pulse, 10% duty cycle 25°C.

Beam Profile

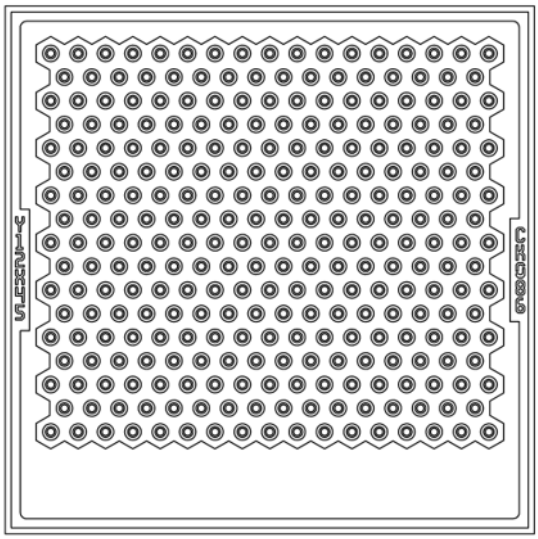


Typical beam divergence of bare die at 40 °C,3A

Note: Beam divergence data for many VCSEL arrays are shown.

2D Beam profile

VCSEL Mechanical Specification



Parameter	Specification
Die size (x / y) final	0.870 mm X 0.870 mm
Number of Apertures	281
Die thickness	150µm

Ordering Information

Description	Part Number
Die; 850; MM; Y12X45; 2W; 0.87mm X 0.87mm	V00027

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