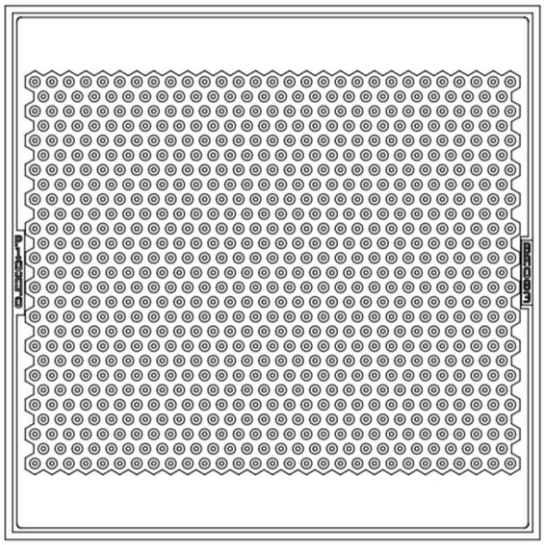
Part Number V00029

Die; 850; M; P10X40; 4W; 1.26mm X 1.26mm



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

Model: Multi Mode Array VCSEL
Center wavelength: 850nm
Optical power without diffuser: 4 Watts

Applications

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

REACH COMPLIANT

RoHS COMPLIANT

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.

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May 17th, 2019

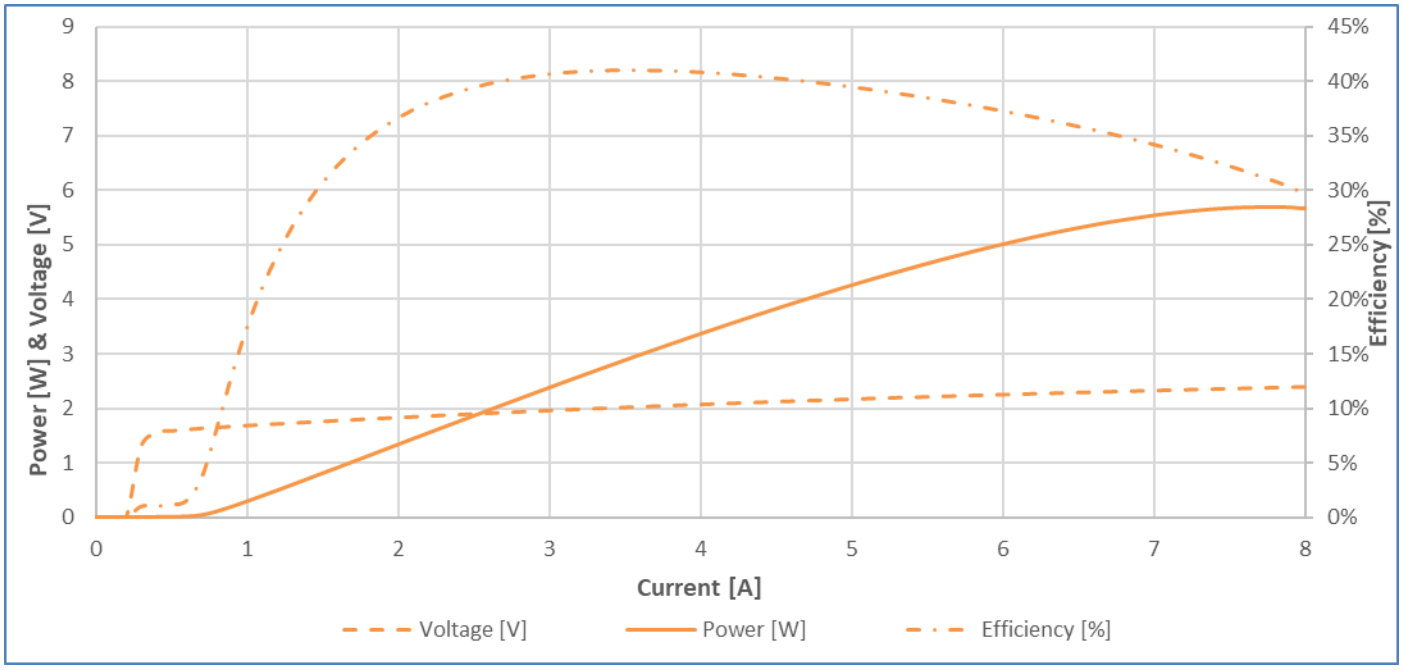
Absolute Maximum Ratings

Parameter	Rating	Notes
Storage temperature	-40 to 110 °C	
Operating temperature (VCSEL)	-20 to 110 °C	
Maximum package SMT solder reflow temperature	260°C, 10 seconds	
Maximum pulsed current	8 A	≤ 200 µs pulse width, ≤ 10% duty cycle, Temp ≤ 40 °C, Note 1
Laser reverse voltage	5 V	Note 1

Note 1 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.

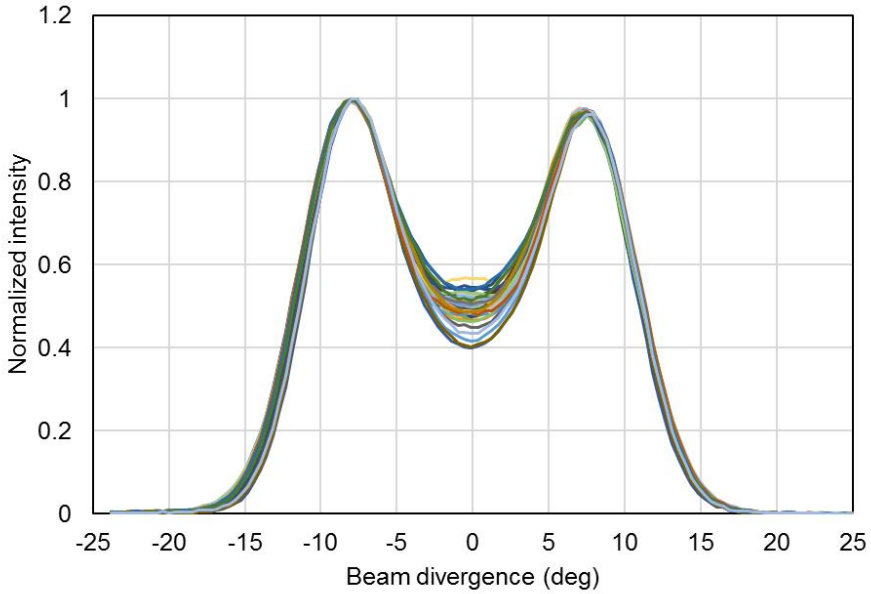
Parameter	Symbol	Units	Min	Typ.	Max	Notes
Threshold current	Ith	A	--	0.80	--	
Differential resistance	Rs	Ω	--	0.2	--	
Operating voltage	Vf	V	--	2.1	2.5	at I = 5 A
Optical operating power	Lop	W	--	4.2	--	at I = 5 A
Slope efficiency	SE	W/A	--	0.85	--	at I = 5 A
Power conversion efficiency	PCE	%	--	40	--	at I = 5 A
Breakdown voltage	Vrb	V	--	-10	-8	Irb = -1 µA
Beam divergence	FWHM	deg	17	23	29	
Beam divergence	$1/e^2$	deg	22	28	34	
Operating peak wavelength	WLpeak	nm	840	850	860	
Wavelength-Temp tuning		nm/°C	--	0.059	--	
Rise time		ps	--	--	800	10%-90%, Note 2
Fall time		ps	--	--	1000	10%-90%, Note 2

Typical Performance



Typical 850nm 4W LIV at 25°C, 100µs pulse width, 1% Duty Cycle

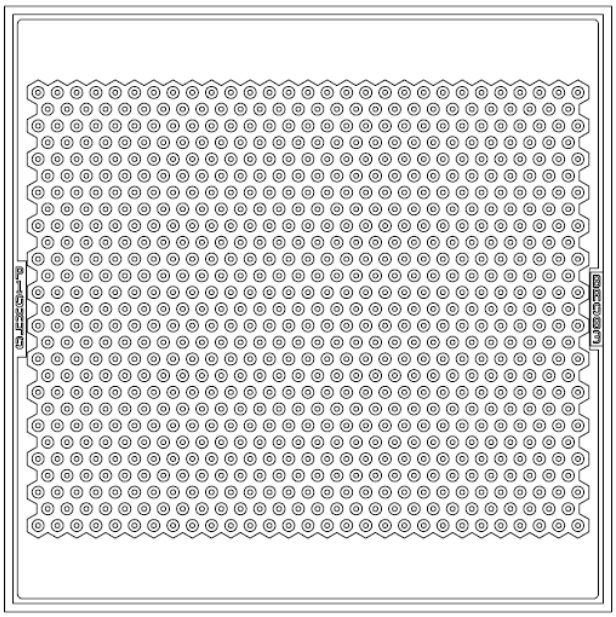
Beam Profile



Typical beam divergence of bare die (without diffuser) at 100µS, 1% Duty Cycle, 40°C with a 5A current injection

2D Beam profile

VCSEL Mechanical Specifications



Parameter	Specification
Die size (x / y) final	1.26 mm X 1.26 mm
Number of Apertures	770
Die thickness	100µm

Ordering Information

Description	Part Number
Die; 850; MM; P10X40; 4W;1.26mm x 1.26mm;	V00029

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