

# V00120

Die; 2222; 940; M; 3B; GD10X36; 3W; 895um X 1005um;

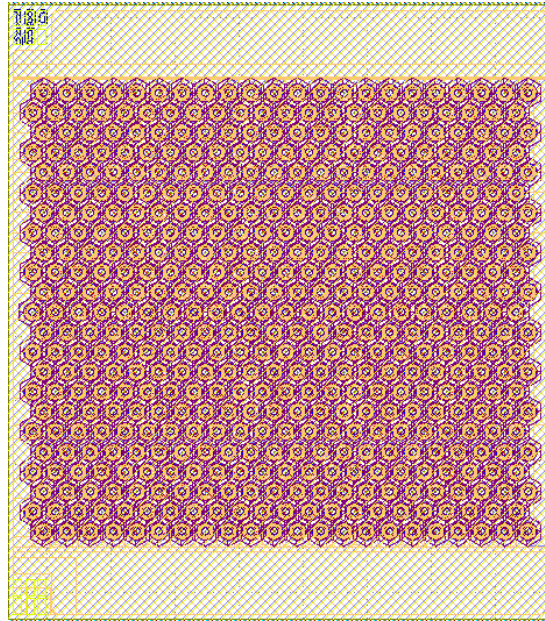


Figure 1 V00120

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

Model: Multi Mode Array VCSEL  
Center wavelength: 940nm  
Optical power without diffuser: 3 Watt

### Applications

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



COMPLIES WITH IEC 60825-1, 2<sup>nd</sup> 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 100 °C	
Operating temperature	-20°C to 85 °C	
Maximum package SMT solder reflow temperature	260°C, 10 seconds	
Maximum pulsed current	8A	≤ 200 μs pulse width, ≤ 1% 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.

## Electro-Optical Characteristics

VCSEL Operating Temp (T<sub>v</sub>) = 25 °C, Test condition: 100μs pulse width & 1% duty cycle, soldered onto Cu test board unless otherwise noted. **Die performance parameters require the VCSEL die to have adequate heat sinking and proper thermal management.**

Parameter	Symbol	Units	Min	Typ.	Max	Notes
Threshold current	I <sub>th</sub>	A	--	0.5	--	
Differential resistance	R <sub>s</sub>	Ω	--	0.3	--	
Operating voltage	V <sub>f</sub>	V	--	2.1	--	at I = 3.5 A
Optical operating power	L <sub>op</sub>	W	3.0	--	--	at I = 3.5 A
Slope efficiency	SE	W/A	1.0	--	--	at I = 3.5 A
Power conversion efficiency	PCE	%	41	--	--	at I = 3.5 A
Breakdown voltage	V <sub>rb</sub>	V	--	-10	-8	I <sub>rb</sub> = -1 μA
Beam divergence	FWHM	deg	--	18	--	
Beam divergence	1/e <sup>2</sup>	deg	--	22	--	
Operating peak wavelength	WL <sub>peak</sub>	nm	930	940	950	
Wavelength-Temp tuning		nm/°C	--	0.066	--	
Rise time		ps	--	--	800	20%-80%, Note 1
Fall time		ps	--	--	1000	20%-80%, Note 1

Note 1: Rise and Fall time will vary depending on driver board and electrical layout.

## Typical Performance

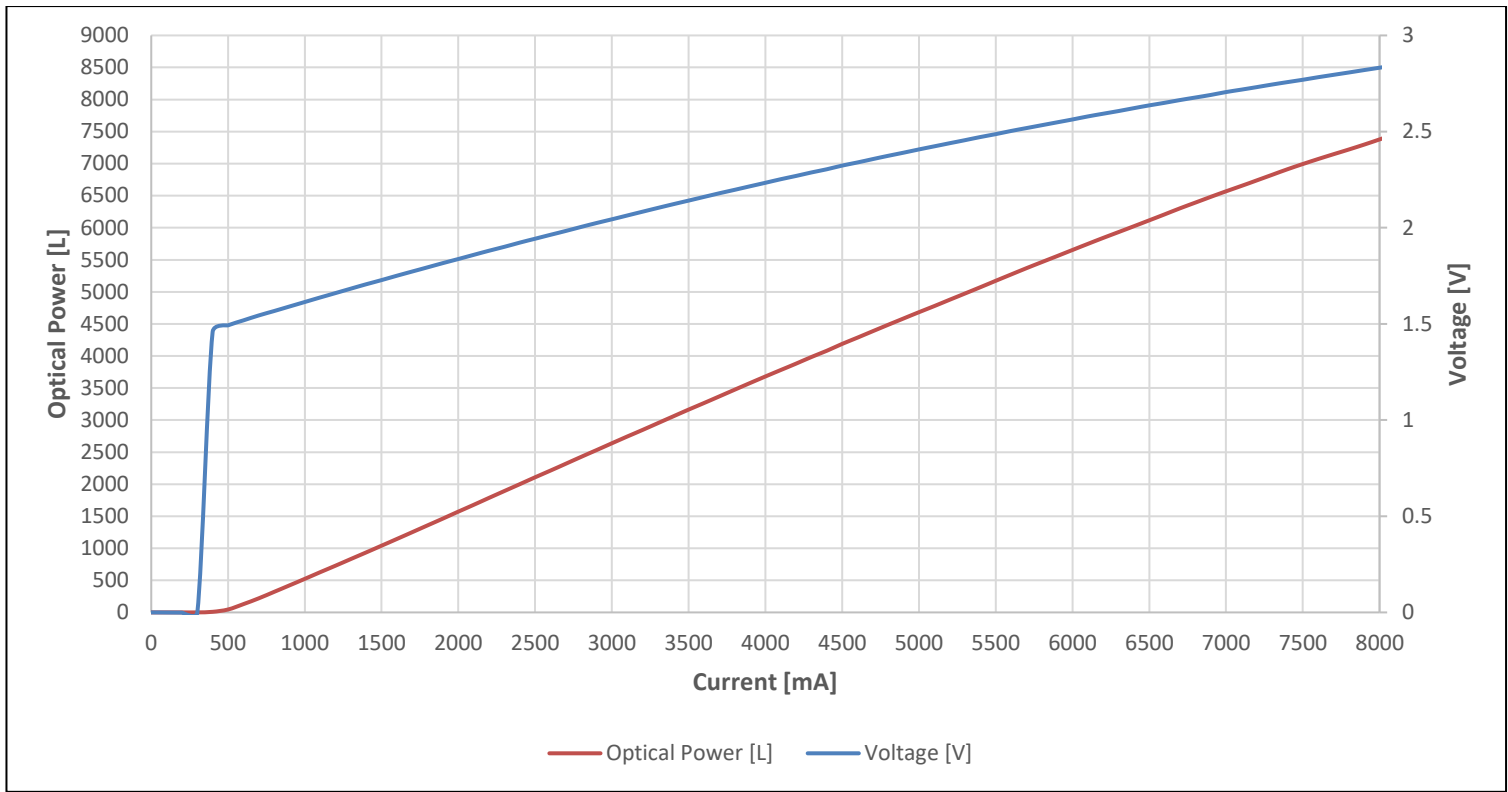


Figure 2 Typical V00120 performance

## Beam Profile

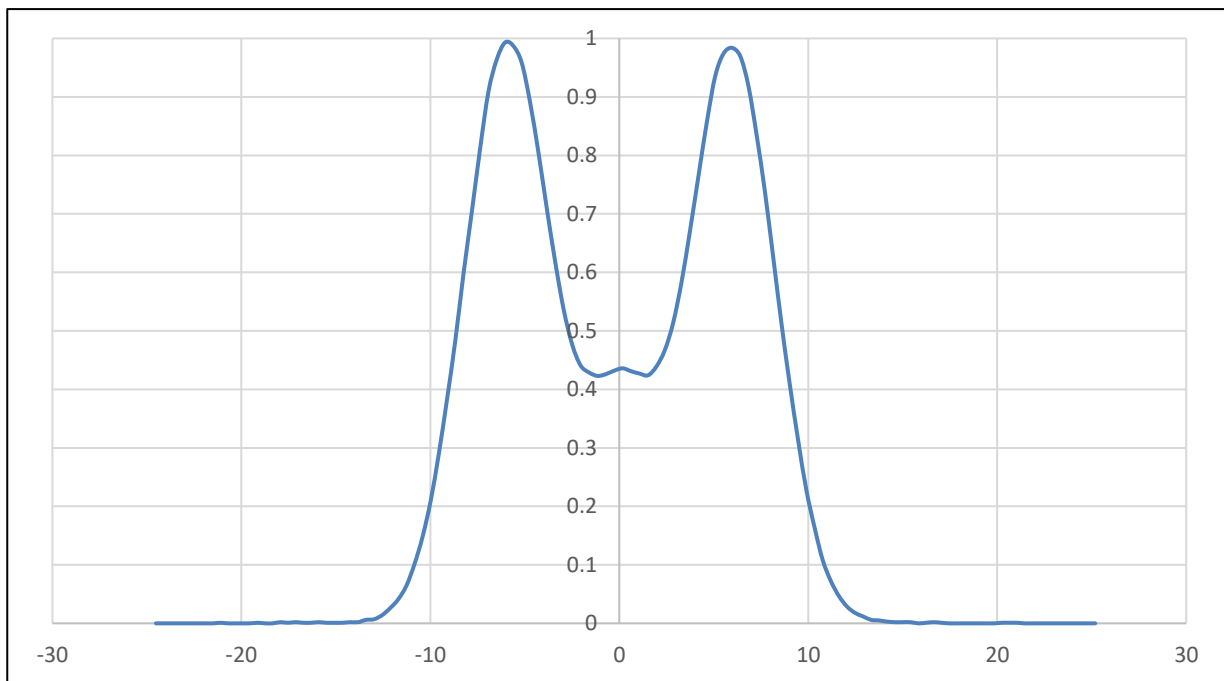
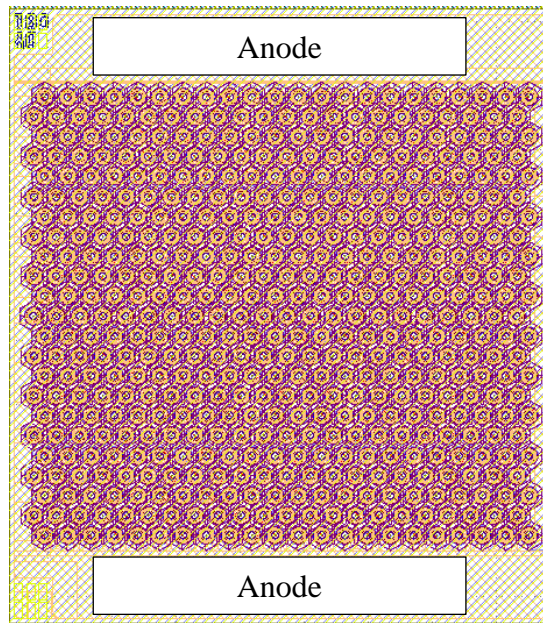


Figure 3 Typical beam divergence V00120

**VCSEL Mechanical Specifications.**



*Note: Backside pad of VCSEL is cathode*

Parameter	Specification
Die size (x / y) final	895um X 1005um
Number of Apertures	506
Die thickness	100µm
Substrate	GaAs
Backside pad material (Cathode)	PdGe/Au
Topside pad material (Anode)	TiAu

**Ordering Information**

Description	Part Number
Die; 2222; 940; M; 3B; GD10X36; 3W; 895um X 1005um;	V00120

**Vixar**  
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