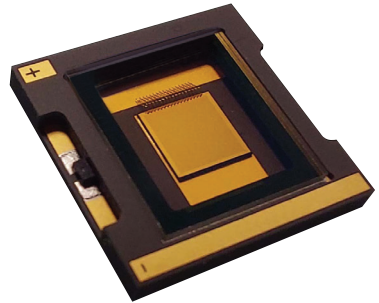


# VCSEL

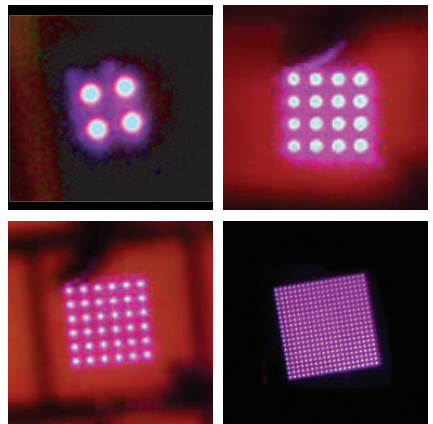
## Laser Diode Arrays

Leonardo's Vertical Cavity Surface Emitting Laser arrays (VCSEL) are a new generation of laser diodes. Applications include illumination, structured light and pumping of solid-state lasers. VCSELs are particularly well suited for high volume automotive lidar applications.



### KEY FEATURES

- 800 nm to 980 nm
- High intensity ( $>10 \text{ kW/cm}^2$ )
- Low temperature dependence ( $<0.07 \text{ nm/}^\circ\text{C}$ )
- Maximum repetition rate ( $>200 \text{ kHz}$ )
- Pulse widths (ns to CW)
- Custom emitter geometries
- Individually addressable
- Advanced beam conditioning



### PACKAGING

Leonardo offers custom packaging options that can be AEC Q102 qualified.

## TYPICAL SPECIFICATIONS

800 nm - 980 nm		
Typical Parameters (at 25°C)	Units	Typical Value
Pulse Width	ns	<5
Output Intensity	kW/cm <sup>2</sup>	10
Wavelength	nm	800 to 980
Operating Voltage	V	<3
Beam Divergence (1/e <sup>2</sup> )	°	<30 (circular)
Spectral Width	nm	<3
Power Conversion Efficiency	%	35

## ACCESSORIES

Leonardo's VCSEL and edge emitting arrays can be fully integrated with drive electronics, power boards and housings.

## AUTOMOTIVE QUALITY SOLUTIONS

### AEC-Q102

Leonardo offers stress-tested products for automotive applications.

### IATF 16949 Certified

Leonardo uses automotive-approved, process oriented, quality systems.

## ABOUT US

Leonardo Electronics US enables next-gen technologies in defense, security, medical, automotive and industrial segments. For over 20 years, the Tucson, AZ based facility has driven robust laser design and innovation resulting in enabling technology to support market leaders worldwide.

520.744.5700 | [sales@leonardo.us](mailto:sales@leonardo.us)

### Patent Numbers:

US 7,660,335 | US 7,864,825  
US 6,352,873 | US 6,295,307

### Certifications:

AS9100D including ISO 9001:2015  
ISO 13485:2016 Medical  
IATF 16949:2016 Automotive  
ISO14001:2016 Environmental Management System

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