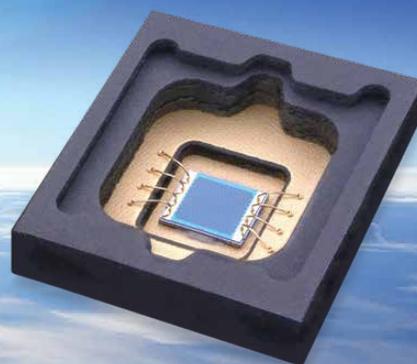


# VCSEL Technology for 3D Sensing Applications



**FINISAR®**

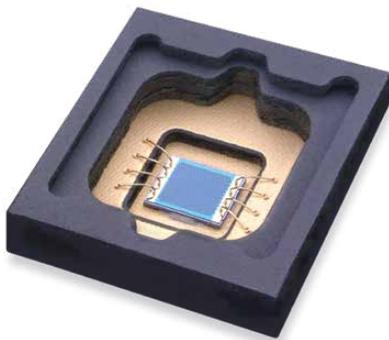
VCSEL Industry Leader  
Performance, Quality and Reliability

# FINISAR®



## Infrared Light for Measuring, Sensing and Controlling our Environment

VCSEL technology is extending the possibilities of consumer and scientific applications including 3D facial recognition, augmented reality, automotive in-cabin sensing and automotive LIDAR. Finisar's rich history and expertise in this technology spans more than two decades of engineering research, development, design and manufacturing experience.



*High Power Sensor VCSEL in Package*



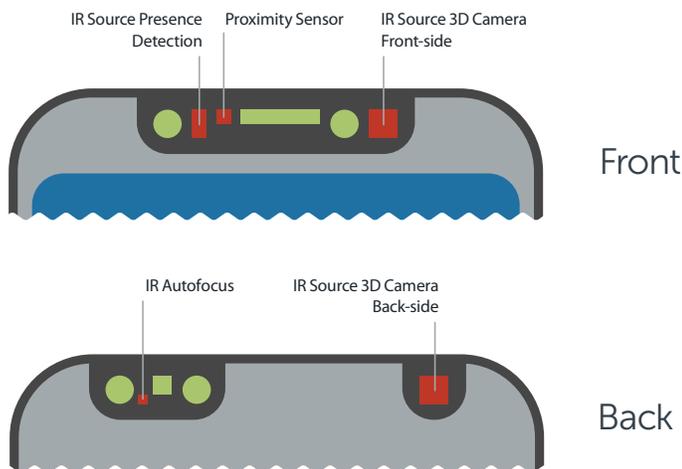
## What is VCSEL Technology?

Finisar's Vertical Cavity Surface Emitting Laser (VCSEL) technology brings together the advantages of low cost and high efficiency within a small footprint. VCSELs have the advantage of wavelength stability over temperature and are directionally focused to maximize output efficiency. With its narrow divergence and coherent light, a VCSEL is 10 times more efficient than an LED in similar packaging.

## Benefits of VCSEL Technology

- Scalable output power
- High quality optical beam
- Two available modes of operation:
  - Continuous Wave (CW) or Quasi-CW mode
  - Pulsed mode
- Higher wall-plug efficiency versus LED
- Stable wavelength over temperature and narrow spectral width
- Easy to package
- Multi-emitter increases ESD robustness and lifetime

## VCSELs in a Smartphone



## How Does It Work?

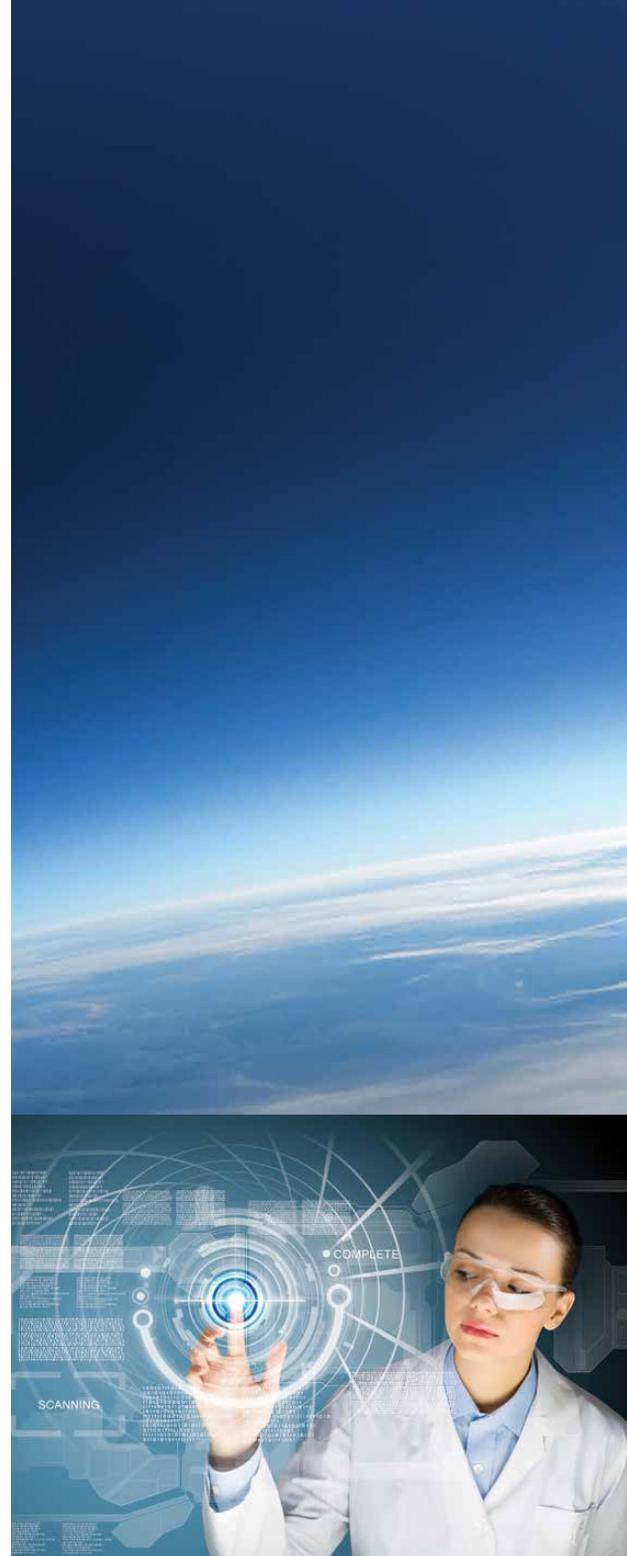
By passing unseen, infrared light through an optical element (which spreads the light into a structured pattern or a sheet of light), systems are able to capture depth information across an entire room. This enables a person to control games or their entire entertainment center with physical gestures.

In mobile devices, 3D sensing will augment camera capabilities to enable object recognition, capture depth data in an image or augment reality as seen through the device's camera.

## About II-VI

II-VI Incorporated, a global leader in engineered materials and optoelectronic components, is a vertically integrated manufacturing company that develops innovative products for diversified applications in communications, materials processing, aerospace & defense, semiconductor capital equipment, life sciences, consumer electronics, and automotive markets. Headquartered in Saxonburg, Pennsylvania, the Company has research and development, manufacturing, sales, service, and distribution facilities worldwide. The Company produces a wide variety of application-specific photonic and electronic materials and components, and deploys them in various forms, including integrated with advanced software to support our customers. For more information, please visit us at [www.ii-vi.com](http://www.ii-vi.com).

Technology Innovator.  
Broad Product Portfolio.  
Trusted Partner.



## Finisar is Now Part of II-VI



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