

# The History of VCSEL Technology

2016

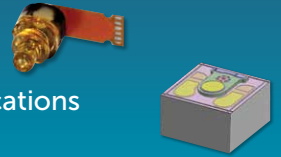


High Power 2D VCSEL Arrays for 3D Sensing General Availability  
 10G and 25G SWDM VCSELs General Availability  
 Single Mode VCSELs for Consumer and Scientific Applications Introduced



2015

56G+ NRZ Demonstration with IBM  
 940nm High Power 2D VCSEL Arrays Introduced for Consumer Applications  
 10G and 25G SWDM VCSELs Introduced



2014



Next Generation 10G VCSEL Demonstrated with 95°C Temperature Operation  
 16G VCSEL Released to Mass Production  
 25G 850nm VCSEL Introduced



2013

850nm High Power 2D VCSEL Arrays Introduced for Consumer Applications

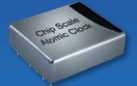
2012



High Powered VCSELs; 980nm VCSELs; Chip on Flex TOSA  
 Finisar introduced high powered VCSELs targeting Gesture Recognition and 3D imaging and also packaging capabilities like Chip on Flex, Chip on Board, and Chip on lead-frame.

2011

Atomic Clock VCSELs; 910, 825, 800, 780nm VCSELs  
 Finisar introduced several new VCSELs for diversifying into many different markets. Finisar now has single mode and multi-mode VCSELs that cover 780nm to 1050nm wavelength range and speeds up to 25 Gbps.



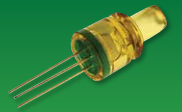
2010



16 Gbps Fiber Channel  
 Finisar introduced the 14-16 Gbps VCSEL based on Oxide Isolated VCSEL technology.

2007

8 Gbps Fiber Channel  
 Finisar introduced an 8 Gbps VCSEL based on Oxide Isolated VCSEL technology.



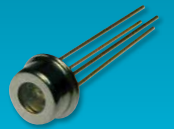
2006



Finisar Opens New Manufacturing Plant  
 Finisar Opens New Manufacturing Plant in Allen, Texas to support increasing VCSEL demand.



Reflective Sensor  
 Continuing with the endeavor to look for additional VCSEL-based businesses, Finisar marketed TO-46 can based sensor components using laser chips. These components were enablers in many applications like label printers, coin detectors in slot machines, and textile mills.



2005

10 Gbps  
 Finisar introduced the 10 Gbps VCSEL based on Oxide Isolated VCSEL technology

2004

Finisar Acquires Honeywell VCSEL Group  
 The Honeywell VCSEL group was acquired by Finisar in March of 2004 as part of its vertical integration strategy.



2003

4 Gbps  
 Finisar introduced a 4 Gbps VCSEL based on Oxide Isolated VCSEL technology.

2002

STABILAZE™  
 Finisar established the trade name Stabilaze for the world's first VCSEL devices that were burned-in for performance stabilization in wafer form. Finisar holds a patent for this technology and is still the only company in the world to successfully burn-in VCSELs in wafer form. This has also contributed to setting the Finisar VCSEL apart from the competition.



2001

Single Mode VCSEL  
 Finisar introduced its first single mode VCSEL in 2001. This was an 850nm VCSEL and marked the initial effort to look for applications outside of the traditional datacom market. This product was designed into a high-end encoder application and still ships in volume today. Again, Finisar reliability was key to the success of this product.

2000

Oxide VCSEL; Reliability Paper; 1x4 and 1x12 Arrays  
 Finisar introduced its first oxide VCSEL capable of 2.5 Gbps. In conjunction, Finisar published the data in a world-class reliability paper reinforcing the company's reputation for reliable VCSELs. Finisar also introduced the world's first 1x4 and 1x12 VCSEL arrays demonstrating robustness in non-hermetic environments.

1998

VCSEL TOSA  
 Finisar introduced TOSA and ROSA components designed specifically for easier integration into optical transceivers.



1996

First Commercial Product; Industry First Reliability Paper  
 Honeywell VCSELs became synonymous with the industry's 'most reliable VCSEL' and to this date, our VCSELs are held as the gold standard in the industry for reliability. This first paper by Honeywell was the foundation for that reputation.

1995

VCSEL Production Transferred to Texas  
 The VCSEL technology was moved to the Semiconductor Fab in Richardson, Texas to enable production support of the VCSELs. This initial VCSEL device capable of modulation up to 1 Gbps was based on Proton Implanted technology.



1993

Research Begins at Honeywell Technology Center  
 VCSEL research starts at Honeywell and a new group is established in Minneapolis, MN. In 1996, this group was the first to commercialize VCSELs and the development continued here until the early 2000's when R&D was moved to Richardson, Texas.



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