

O·S·D

OPTOELECTRONICS • SENSORS • DISCRETES

REPORT

2010

**A Market Analysis and Forecast for
Optoelectronics, Sensors/Actuators, and Discretives**

- ▶ **One-of-a-kind report on the "non-IC" semiconductor markets**
- ▶ **Market, unit, and pricing forecasts through 2014**
- ▶ **Review of applications and technologies, including MEMS**
- ▶ **Impact analysis of industry recession and recovery on market segments**
- ▶ **Free call-in privileges on information presented**

MAJOR FINDINGS INCLUDE:

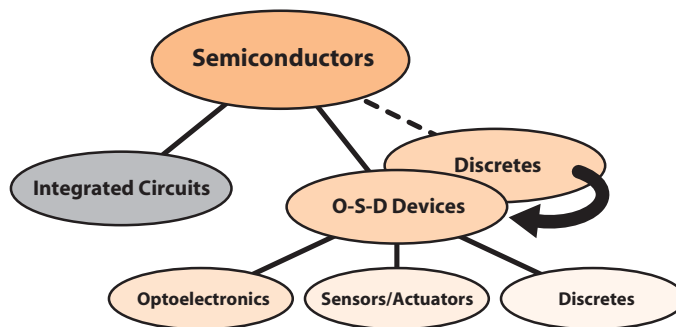
- 1** The stage is now set in 2010 for extremely strong annual growth in optoelectronics, sensors/actuators, and discretives sales, with combined O-S-D revenues forecast to rise 29%—the highest one-year increase since early last decade.
- 2** Solid-state sensors/actuators—driven by MEMS technology—will be the fastest-growing semiconductor market coming out of the 2008-2009 industry recession (17% annually). Shipments of MEMS-based sensors and actuators set a new record in 2009 with over 2 billion devices delivered worldwide.
- 3** LED sales continued double-digit growth throughout the 2009 downturn year thanks to strong demand for high-brightness devices in LCD-TVs and new solid-state lighting applications.
- 4** Power transistors now account for 55% of revenues generated by discretives, with 42% coming from MOSFET and IGBT products in 2009.
- 5** CMOS image sensors have overtaken CCDs in total revenue and are forecast to represent 71% of units in the image sensor market by 2014.

Great complement to the IC market data provided in *The McClean Report*

Discover New Business Opportunities in Optoelectronics, Sensors, and Discretes

The semiconductor universe consists of integrated circuits (ICs) and optoelectronic, sensor/actuator, and discrete (O•S•D) components. Although oftentimes overlooked, the O•S•D market plays a vital role in the overall health and advancement of the semiconductor and electronic systems industries. IC Insights' 2010 *O•S•D Report* uncovers little-known but revealing trends in this marketplace and sheds light on the growing importance of these devices. In 2009, O•S•D products accounted for more than 16% of total semiconductor revenues compared to about 13% a decade ago.

Generic "Discretes" Label No Longer Relevant



Until recently, products falling outside of mainstream integrated circuit categories have often been lumped into a market melting pot called "discretes." However, high growth in optoelectronics, sensors, and actuator device markets has created a need to further segment the category previously labeled as discretes in order to perform more in-depth analyses. In addition, a growing number of optoelectronic, sensor, and actuator products are actually integrated circuits, making the general "discrete" label obsolete.

CONTENTS

280 PAGES

220 CHARTS, GRAPHS, ILLUSTRATIONS

- Global Semiconductor Market Outlook and Cycles
 - Extensive Tables of Market, Unit, and Pricing Data to 2014
 - End-Use Application and Regional Market Analysis
 - Leading Supplier Rankings for 2009
 - Device History and Technology Trends
 - Diagrams and Illustrations of Devices and Packages
- And More!**

About The Author

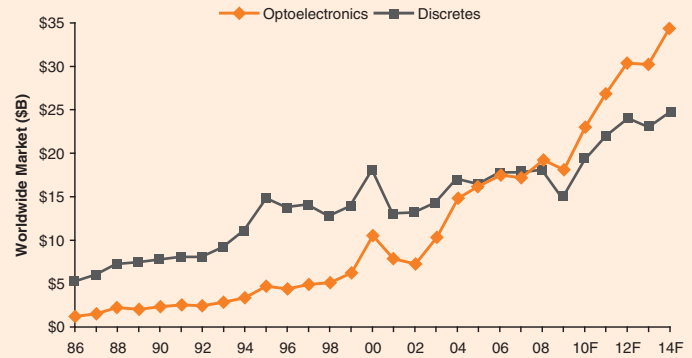
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OPTOELECTRONICS

- CCD AND CMOS IMAGE SENSORS
- LASER TRANSMITTERS AND PICK-UPS
- SOLID-STATE LAMPS AND LEDs
- INFRARED DEVICES
- COUPLERS, ISOLATORS, AND OPTICAL SWITCHES
- DIGITAL CHARACTER DISPLAYS
- OTHER OPTO DEVICES

For nearly 30 years, solid-state optoelectronic devices have lived in the shadow of discrete semiconductors. Historically, optoelectronics was considered a small but fast-growing branch of the “greater” discretes marketplace, but that is no longer the case. Consistently higher growth rates enabled optoelectronics sales to exceed discretes by more than \$3 billion in 2009. Optoelectronics revenues topped the discretes market size in 2008 for the first time in history—an amazing milestone, considering that optoelectronics sales were only one-fourth to one-half the dollar volume of discretes in the 1980s and 1990s. By 2014, optoelectronics sales are expected to exceed discrete revenues by nearly \$10 billion. Strong growth in optoelectronics is being driven by image sensors, solid-state lamp devices (LEDs), and laser transmitters for fiber-optic networks.

Optoelectronics Pull Ahead of Discretes

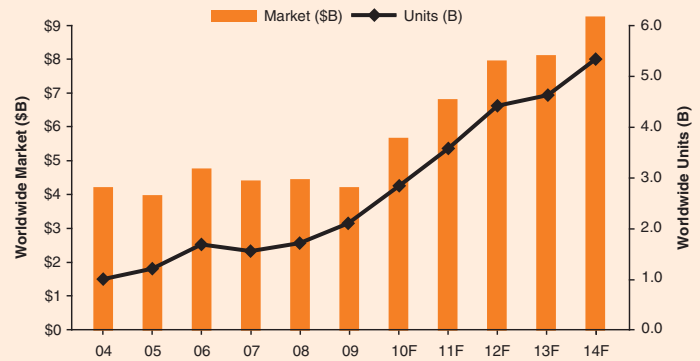


SENSORS/ACTUATORS

- PRESSURE SENSORS (INCLUDING MEMS-BASED)
- ACCELERATION/YAW SENSORS (INCLUDING MEMS-BASED)
- MAGNETIC-FIELD SENSORS
- ACTUATORS (INCLUDING MEMS-BASED)
- OTHER SENSORS (e.g., TEMPERATURE SENSORS AND FINGERPRINT ID CHIPS)

Solid-state sensors have been around for decades, often performing real-time measurements in embedded-control applications. But, it was not until 2001 that sensors were fully recognized as a fast-growing product segment within the semiconductor industry. Prior to 2001, sensors were mostly seen as an adjunct to the larger discrete semiconductor segment. MEMS-based products account for 82% of the revenues in the sensor/actuator segment. With more devices being used in consumer electronics and cellphones, MEMS-based unit shipments in this category are forecast to grow at a CAGR of 19% per year in the 2009-2014 timeframe.

MEMS-based Sensors & Actuators Growth

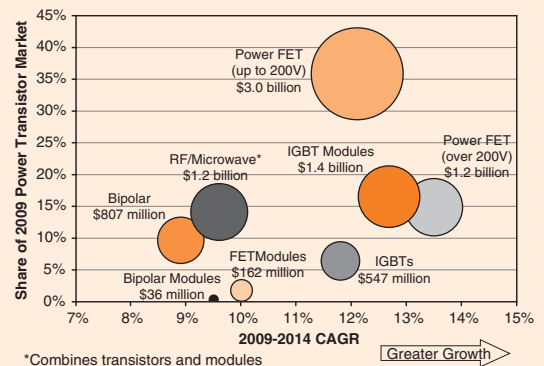


DISCRETES

- POWER TRANSISTORS/MODULES
- SMALL-SIGNAL TRANSISTORS
- SWITCHING TRANSISTORS
- DIODES, RECTIFIERS, AND THYRISTORS
- RF/MICROWAVE TRANSISTORS/MODULES

A half-century ago, transistors began as small-signal devices, aimed primarily at replacing bulky vacuum tubes in switching and amplification applications. Ten years later, transistors developed into integrated circuits, which then began to eliminate the need for many small-signal discrete devices. However, with 298 billion discretes shipped in 2009, the advent of ICs certainly has not stopped the growth of transistor products and other commodity solid-state discretes. In fact, discretes are seeing increased use in portable electronics applications such as laptop PCs, PDAs, and cellphones, which need more power transistors and other discretes in power management, switching power supplies, and battery-charging systems.

Power Transistor Market Snapshot



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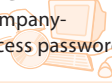


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