RESEARCH BULLETIN

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Surges Seen in Sensors and Discrete Semiconductors This Year

Tight supplies drive up prices and sales of many widely used parts in these market segments, but moderate growth in CMOS image sensors holds back upswing in optoelectronics, says Update.

A year after the deadly Covid-19 pandemic began in 2020 causing lockdowns worldwide and a deep global economic recession, sales of sensors, actuators, and discrete semiconductors are sharply higher in 2021 due to a resurgence in demand across many rebounding end-use markets and significant price increases for parts in short supply. However, optoelectronics sales growth has been somewhat muted in 2021 by the lack of a surge in CMOS image sensors, partly because of trade frictions between the U.S. and China.

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Worldwide sales of optoelectronics, sensors/actuators, and discretes (O-S-D) are now expected to grow 18% in 2021 to $104.3 billion from $88.3 billion in 2020, when this semiconductor market group increased by less than 3% during the Covid-19 virus outbreak year, according to IC Insights' *October Update* to *The McClean Report*. Total O-S-D sales are forecast to rise 11% in 2022 to $115.5 billion (Figure 1). O-S-D products generate about 18% of the world's total semiconductor sales with the rest (82%) coming from integrated circuits. Less than 13% of semiconductor revenues came from O-S-D products 25 years ago.

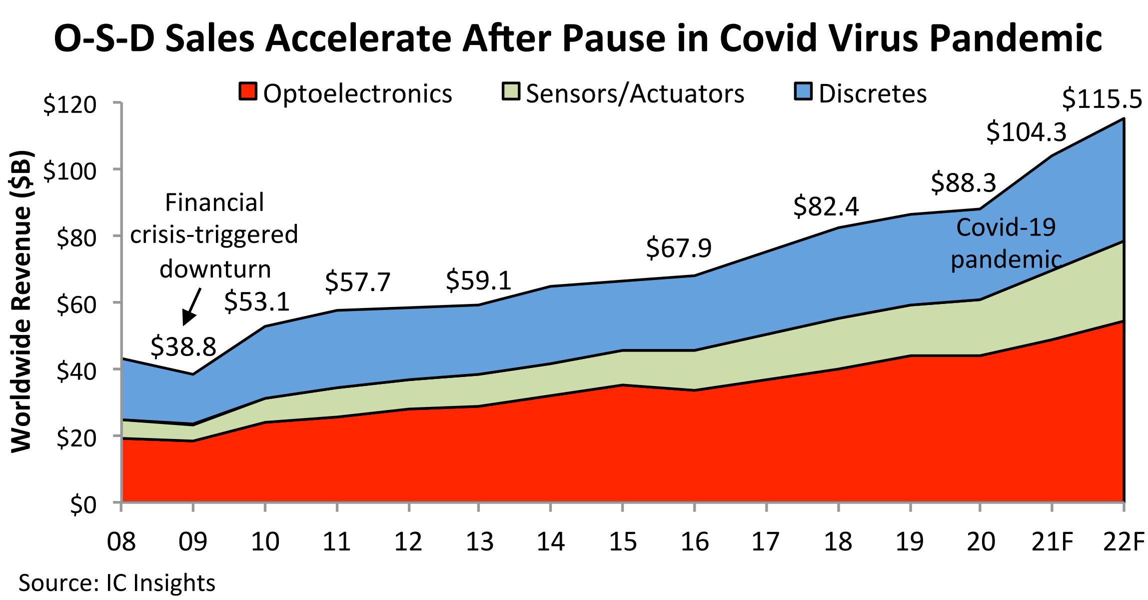

Figure 1

The O-S-D market group has gradually accounted for a higher share of semiconductor revenues since the mid-1990s because of steady and often strong annual growth in sensors, actuators, CMOS image sensors, laser transmitters, and high-brightness light-emitting diodes (LEDs) during the past few decades. O-S-D sales have been driven by mobile systems—in particular smartphones, which are packed with digital cameras and sensors—as well as high-speed communications, the Internet of Things (IoT), and the recent explosion of embedded artificial intelligence (AI) in more systems.

Optoelectronics sales in 2021 are expected to grow 10% to a record-high $48.4 billion after being about flat in 2020 at $44.0 billion. The total optoelectronics market is expected to be held back by sales growth of just 7% in CMOS image sensors this year. CMOS image sensor leader Sony blames softer growth conditions in 2021 on trade frictions between the U.S. and China and a "deterioration of product mix." CMOS image sensor sales have also been impacted by market fluctuations in some end-use applications, and shortages of ICs and other components used in digital-imaging systems.

Sales of non-optical sensors and total actuator devices are forecast to climb nearly 27% in 2021 to reach an all-time high of $20.9 billion compared to $16.5 billion in 2019, when revenues grew 11%. Worldwide discretes revenues are expected to surge about 26% to $35.0 billion in 2021—which will be the fourth largest annual percentage increase in the last 40 years for this commodity-filled semiconductor segment—after growing less than 3% in 2020 to $27.8 billion.

In the 2021 economic rebound from the 2020 coronavirus-driven recession, the broad comeback in semiconductor demand has overwhelmed chipmakers and the global supply chain, causing lead times for delivery of many O-S-D products to exceed four or five *months* versus six to eight weeks in normal market conditions. About a dozen commodity and widely used O-S-D product categories are expected to display very high sales growth this year primarily because of strong increases in average selling prices (ASPs) and high demand for units as many systems manufacturers—including carmakers—struggle to keep up with their own market recoveries. A total of 16 O-S-D product categories and segments are expected to achieve new record-high sales levels in 2021—tying the most in a year (2018) since 2000.

Report Details: The *2021 McClean Report*

The 2021 edition of *The McClean Report—A Complete Analysis and Forecast of the Integrated Circuit Industry* was released in January 2021. A subscription to *The McClean Report* includes **free** monthly updates from March through November (including a 180+ page *Mid-Year Update*), and **free** access to subscriber-only pre-recorded webcasts through November. An individual user license to the 2021 edition of *The McClean Report* is available for $5,390 and a multi-user worldwide corporate license is available for $8,590. The Internet access password and the information accessible to download will be available through November 2021.

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