

JULY 21, 2016

Sensor Sales Keep Hitting New Records But Price Erosion Curbs Growth

Double-digit unit shipment increases continue with demand being strong for low-cost sensors in wearable systems, Internet of Things, and automated embedded control.

Despite strong double-digit percentage increases in annual unit shipments, semiconductor sensor sales growth has become uncharacteristically lethargic because of steep price erosion in several major product categories. Strong unit demand is being fueled by new wearable systems, greater automation in vehicles, and the much-anticipated Internet of Things (IoT), but sharply falling average selling prices (ASPs) on accelerometers, gyroscope chips, and magnetic-field measuring devices are capping annual growth of total sensor revenues in the low- to mid-single digit range, based on data in IC Insights' *2016 O-S-D Report—A Market Analysis and Forecast for Optoelectronics, Sensors/Actuators, and Discretes*.

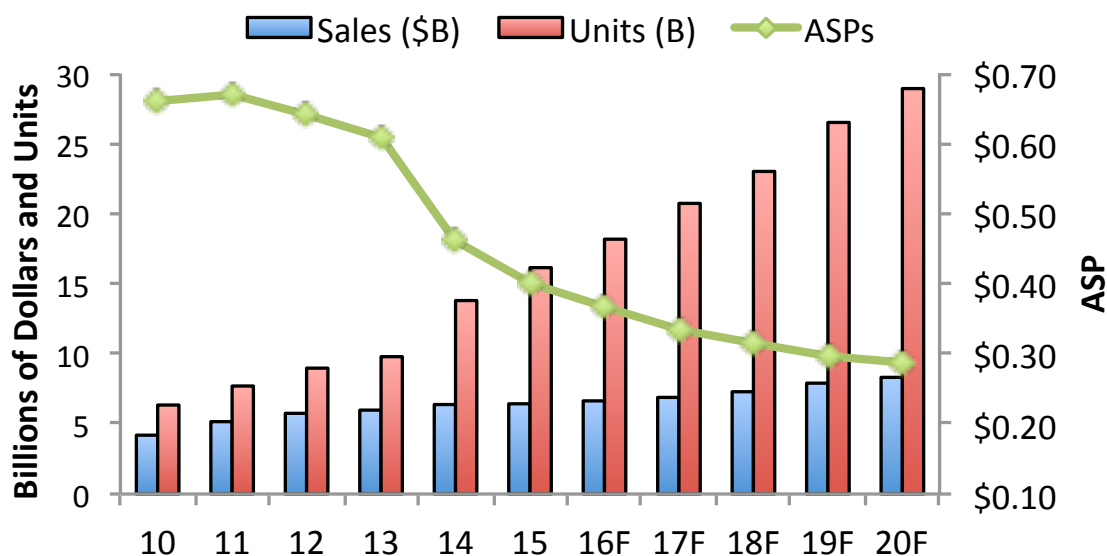
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The *2016 O-S-D Report* shows worldwide dollar-volume revenues for sensors rising by a compound annual growth rate (CAGR) of 5.3% between 2015 and 2020 compared to an 8.9% annual rate in the last five years. In contrast, total sensor unit shipments are expected to climb by a CAGR of 12.4% in the five-year forecast period compared to a blistering 20.5% rate of increase in the 2010-2015 period, when new sensing, navigation, and automated embedded control functions in smartphones drove up strong growth along with steady increases in automotive and industrial applications.

Despite recent years of weak sales growth—just 1% in 2015 to \$6.4 billion—the sensor market is expected to end this decade with 10 consecutive years of record-high revenues and reach \$8.3 billion in 2020 (Figure 1). Unit shipments of sensors have reached record high levels each year since the beginning of the last decade—even in the 2009 downturn year, when worldwide unit volume grew 9% while sensor revenues dropped 3%. Record sensor shipments are expected to continue for another five years, reaching 28.9 billion units in 2020, according to the 360-page *2016 O-S-D Report*, which contains a detailed five-year forecast of sales, unit volume, and ASPs for more than 30 individual product types and device categories in optoelectronics, sensors/actuators, and discretes.

Sensor Units Climb as Prices Plunge



Source: IC Insights

Figure 1

Competition between suppliers and requirements for low-cost sensors in new high-volume applications drove down ASPs from about \$0.66 in 2010 to \$0.40 in 2015. The need to squeeze more sensing solutions into wearable systems, far-flung IoT-connected applications, and multi-sensor packages for increased accuracy and multi-dimensional measurements is exerting more pricing pressure in the market, concludes the *2016 O-S-D Report*. The report's forecast shows sensor ASPs dropping by a CAGR of -6.3% in the next five years to only \$0.29.

Total sensor sales are expected to grow by about 3% in 2016 to \$6.6 billion with worldwide shipments rising 13% to nearly 18.2 billion units this year. Sales of sensors made with microelectromechanical systems (MEMS) technology (i.e., accelerometers, gyroscope devices, and pressure sensors, including microphone chips)—are expected to grow by 4% in 2016 to \$4.8 billion with unit shipments increasing 10% to 7.6 billion. The *2016 O-S-D Report* projects MEMS-based sensor sales rising by a CAGR of 5.5% in the next five years to \$6.1 billion in 2020 with unit shipments growing by an annual rate of 11.9% to nearly 13.4 billion. ASPs for MEMS-based sensors are expected to decline by a CAGR of -5.7% to \$0.45 in 2020 from \$0.61 in 2015, according to the annual *O-S-D Report*.

Report Details: *The 2016 O-S-D Report*

In a one-of-a-kind study, IC Insights continues to expand its coverage of the semiconductor industry with detailed analysis of trends and growth rates in the optoelectronics, sensors/actuators, and discretes market segments in its newly revised 360-page *O-S-D Report—A Market Analysis and Forecast for the Optoelectronics, Sensors/Actuators, and Discretes*.

Now in its 11th annual edition, the *2016 O-S-D Report* contains a detailed forecast of sales, unit shipments, and selling prices for more than 30 individual product types and categories through 2020. Also included is a review of technology trends for each of the segments. The *2016 O-S-D Report*, with more than 240 charts and figures, is attractively priced at \$3,390 for an individual-user license and \$6,490 for a multi-user corporate license.

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