

APRIL 7, 2021

Semiconductor Units Forecast To Exceed 1 Trillion Devices Again in 2021

A 13% increase is expected to lift total semiconductor shipments to a new record high.

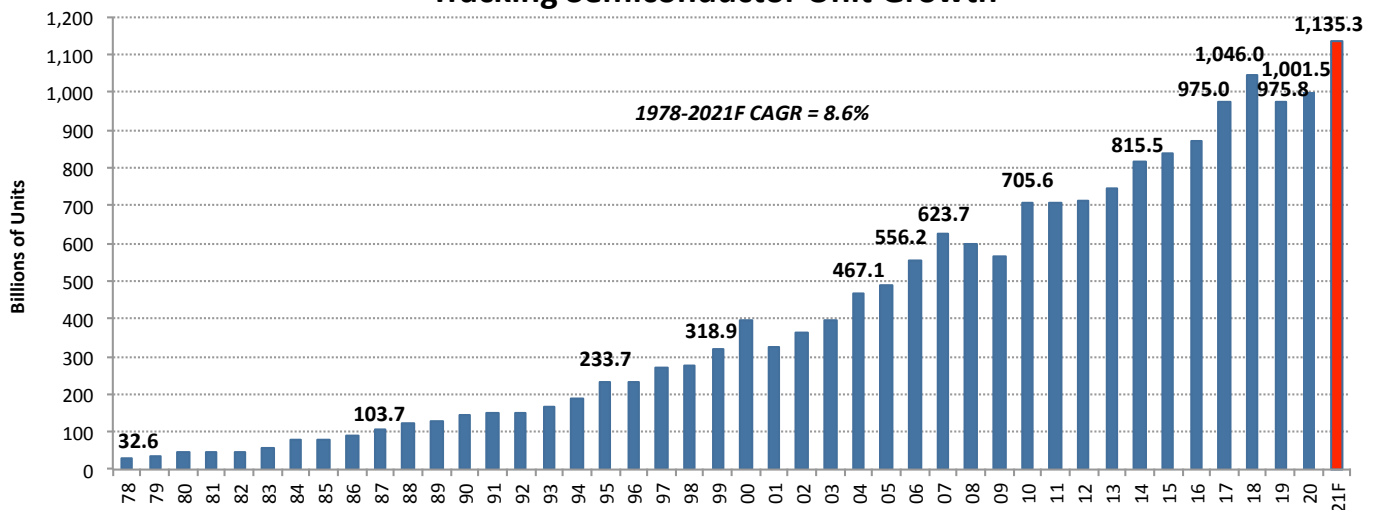
Total semiconductor unit shipments, which include integrated circuits as well as optoelectronics, sensor/actuator, and discrete (O-S-D) devices, are forecast to rise 13% in 2021, to 1,135.3 billion (1.1353 trillion) units to set a new all-time annual record, based on data presented in the 2021 edition of IC Insights' *McClean Report—A Complete Analysis and Forecast of the Integrated Circuit Industry*, which was released in January 2021. It would mark the third time that semiconductor units have surpassed one trillion units in a calendar year—the first time being in 2018 (Figure 1).

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The 13% increase to 1,135.3 billion semiconductor units follows a 3% increase in 2020 as the Covid-19 pandemic was wreaking havoc across many segments of the economy. From 1978, when 32.6 billion units were shipped, through 2021, the compound annual growth rate (CAGR) for semiconductor units is forecast to be 8.6%—an impressive 43-year annual growth rate even though the growth rate has waned for many key semiconductor applications such as PCs and cellphones. The strong CAGR also demonstrates that new market drivers continue to emerge that fuel demand for more semiconductors.

Tracking Semiconductor Unit Growth



Source: IC Insights

Figure 1

Between 2004 and 2007, semiconductor shipments broke through the 400-, 500-, and 600-billion unit levels before the global financial meltdown led to a steep decline in semiconductor shipments in 2008 and 2009. Unit growth rebounded sharply in 2010 with a 25% increase and surpassed 700 billion devices that year. Another strong increase in 2017 (12% growth) lifted semiconductor unit shipments beyond the 900-billion level before the one-trillion mark was surpassed in 2018.

The largest annual unit growth rate across the 43-year span shown in Figure 1 was 34% in 1984 and the second-highest growth rate was 25% in 2010. In contrast, the largest annual decline was 19% in 2001 following the dot-com bust. The global financial meltdown and ensuing recession caused semiconductor shipments to fall in both 2008 and 2009; the only time there have been consecutive years of unit shipment declines.

Total semiconductor shipments are forecast to remain heavily weighted toward O-S-D devices in 2021 (Figure 2). O-S-D devices are forecast to account for 67% of total semiconductor shipments compared to 33% for ICs. With 38% share, discrete devices are expected to account for the largest portion of semiconductor shipments followed by optoelectronics (26%), and analog IC devices (18%). Product categories that are forecast to see some of the strongest unit growth in 2021 are components that target network and cloud computing systems, contactless (touchless) systems, automotive electronics including autonomous systems, and devices that are essential to the rollout of 5G technology applications.

2021F Semiconductor Unit Shipments

(1,035.3B)

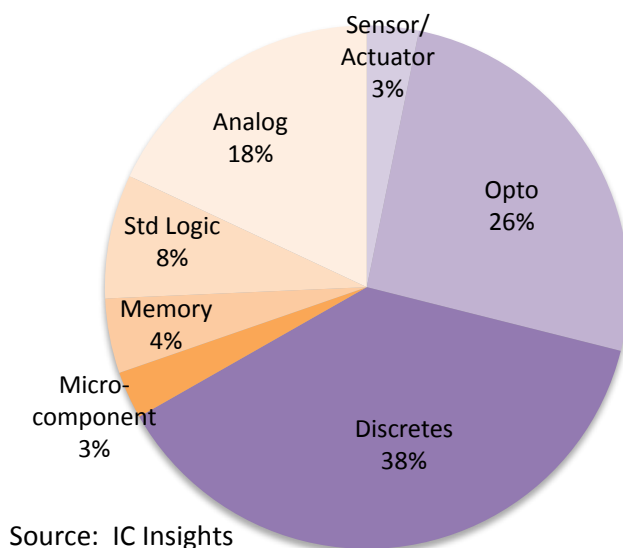


Figure 2

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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