What are semiconductors?

Semiconductors work tirelessly behind the scenes to power the world around us – from the technology in your house to the labs curing disease. How do we make all these chips?

1. Mask operations

- Silicon wafers are made from the silicon extracted from sand. These wafers, roughly a quarter-inch thick, are precut to size. Algorithms are run to determine how many chips can be cut to size from each wafer. A yield report is generated. The wafer is cut up into thousands of fingernail-size individual rectangles, each called a die or computer chip.

2. Fabrication

- In these facilities, diamond saws cut the wafers into wafers. These are sent to assembly and test plants. The clean room area in one typical fabrication facility is about the size of an American football field. The equivalent clean room area in one typical assembly and test plant is about the size of a basketball court. The equivalent clean room area in one typical packaging area is about the size of a third-grade classroom.

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3. Assembly and test

- From here, logistics professionals may send chips directly to some customers, such as system manufacturers. Or they ship boxed for retail sale. Here, the circuits get connected to pins. The pins go through a header. The header gets put on the package form. The package form goes over the solder. The solder gets attached to the package form. The package form gets attached to the wafer. The wafer and the package form get attached to the die/sort prep. The die/sort prep gets attached to the wafer. The wafer gets attached to the die/sort prep. The die/sort prep gets attached to the wafer. The wafer gets attached to the die/sort prep. The die/sort prep gets attached to the wafer. The wafer gets attached to the die/sort prep. The die/sort prep gets attached to the wafer. The wafer gets attached to the die/sort prep. The die/sort prep gets attached to the wafer. The wafer gets attached to the die/sort prep. The die/sort prep gets attached to the wafer. 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