May 10, 1954

History of Innovation

1954: TI Produces First Commercial Silicon Transistor

On May 10, 1954, TI announced the commercial availability of grown-junction silicon transistors. These first silicon transistors were constructed by cutting a rectangular bar from a silicon crystal that was grown from a melt containing impurities. The impurities were chosen to pro-duce the desired current-carrying characteristics in the resulting transistor.

Context

The transistor was invented in December 1947, at Bell Telephone Laboratories by John Bardeen, Walter H. Brattain and William Shockley. It was smaller, used less electricity and operated more reliably than vacuum tubes. TI's development of a process for "growing" pure silicon crystals resulted in the availability of low-cost, dependable silicon transistors.

Additional Information

Heat dissipation in complex commercial and military electronic equipment was a problem limiting the application of germanium transistors. The first silicon transistors operated with little change up to 150° C. The ability to produce low cost transistors that tolerated higher heat levels was an important factor in the transition of computers and other electronic equipment from bulky vacuum-tube systems to more compact, reliable solid-state systems.

Dr. Gordon K. Teal led the development of silicon semiconductor material. The commercial production of transistors was spearheaded by Mark Shepherd.