

Editorial

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Integrated circuits (IC) are an indispensable part of our lives today. Be it is a cell phone, washing machine, TV, laptop computer, camera, car, airplane, or a missile, a number of ICs are embedded in it. The world of electronics has been revolutionized by the invention of the IC. An IC is an electronic circuit etched on a piece of semiconductor material, most commonly germanium or silicon. Cost and performance are the two main advantages of ICs over discrete electronic circuits. Although producing a few ICs is extremely expensive, producing them in bulk reduces their cost considerably. Since the devices are small and are located close to each other on an IC, switching times are low and hence performance is high.



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The history of development of ICs goes back to 1949. The German engineer, Werner Jacobi, filed a patent for an IC-like semiconductor-based amplifying device, but no report of such a device having been built is available. Later, Geoffrey W A Dummer of Britain suggested in the early 1950s that an entire electronic circuit could be made as a single block, but efforts to build such a device in 1956 failed completely. It was *Jack Kilby*, an electrical engineer at the Texas Instruments, who laid the foundations for the explosive and astonishing growth of electronics by demonstrating the working of the first IC in September 1958. He was awarded the Nobel Prize in physics in the year 2000 for his part in the invention of the integrated circuit. He died in June 2005.

Resonance salutes this great engineer-cum-scientist who changed the world with his remarkable invention. This issue of *Resonance* is dedicated to Kilby and contains two articles related to him and his invention. The first one entitled 'Jack St. Clair Kilby – Chip and Dare Saga' is a delightful story of his life and achievements and is written by Navakanta Bhat. The second article, 'Invention of the Integrated Circuit', is reprinted from the July 1976 issue of *IEEE Transactions on Electron Devices*. It describes the developments that led to the invention of the integrated circuit and is from the pen of the inventor himself.

