



Unit 6 Why Electronics?

* Glossary

(to) overcome: to be successful in dealing with something

lightweight: not heavy

hearing aid: a device for people who do not hear well

 **History of Transistors**

The transistor was invented by John Bardeen, Walter Brattain and William Shockley at Bell Labs in December, 1947. Announced to the public in June, 1948, this new device had characteristics which could be used to **overcome** many of the fundamental limitations of vacuum tubes - transistors had very long life, were small, **lightweight** and mechanically rugged, and required no filament current. The commercial use of transistors increased dramatically in the 1950s, beginning with telephone switching equipment and military computers in 1952, **hearing aids** in 1953, and portable radios in 1954. In 1953, over 1,000,000 transistors were manufactured; in 1955, 3,500,000 transistors were manufactured, and by 1957, annual production had increased to 29,000,000 units. The rapid rise of transistor technology in the 1950s can be attributed to the contributions of a few major companies, including Bell Labs/Western Electric, General Electric, Motorola, Philco, Raytheon, RCA, Sylvania and Texas Instruments.

The first types of transistors available in the 1950s were made from germanium – this is an element known as a semiconductor, which is a category of material that is neither fully conducting nor fully insulating when an electrical voltage is applied. Semiconductors are ideally suited for the construction of amplifying crystals, as the earliest transistors were sometimes described. Another element recognized as important to transistors was silicon. Extensive research on silicon was carried out in the early 1950s. It was found that transistors made with silicon performed better and at higher operating temperatures than other elements.

By 1954, commercial silicon transistors were available from Texas Instruments and the basic concepts used in the development of these devices have been continuously improved upon over the decades and have lead directly to the development of today's integrated circuit and microprocessor devices.

(Adapted from Jack Ward, "A Brief History of Transistors", <http://semiconductormuseum.com/>, 2009)





Understanding the text

1. Find verbs in the text which mean much the same as the following.

1. superare
2. aumentare
3. fabbricare
4. riconoscere
5. migliorare

2. Choose the correct synonym for each of the adjectives in bold.

1. **Fundamental** (*basic • secondary • auxiliary*) limitations
2. **Rapid** (*slow • fast • delayed*) rise
3. **Major** (*extreme • high • large*) companies
4. **Extensive** (*broad • in-depth • detailed*) research
5. **Superior** (*poor • strong • excellent*) performance

3. Write questions for the following answers.

1.
In 1947.
2.
In the 1950s.
3.
29,000,000.
4.
Bell Labs, General Electric, Motorola and others.
5.
Germanium.
6.
For its superior performance.