

Writing Sample A (excerpt from R. L. Boylestad and L. Nashelsky, Electronic Devices and Circuit Theory, 10th Edition, Pearson Education, 2009.)

(1) In the first few decades following the discovery of the diode in 1939 and the transistor in 1947 germanium was used almost exclusively because it was relatively easy to find and was available in fairly large quantities. (2) It was also relatively easy to refine to obtain very high levels of purity, an important aspect in the fabrication process. (3) However, it was discovered in the early years that diodes and transistors constructed using germanium as the base material suffered from low levels of reliability due primarily to its sensitivity to changes in temperature. (4) At the time, scientists were aware that another material, silicon, had improved temperature sensitivities, but the refining process for manufacturing silicon of very high levels of purity was still in the development stages. (5) Finally, however, in 1954 the first silicon transistor was introduced, and silicon quickly became the semiconductor material of choice. (6) Not only is silicon less temperature sensitive, but it is one of the most abundant materials on earth, removing any concerns about availability. (7) The flood gates now opened to this new material, and the manufacturing and design technology improved steadily through the following years to the current high level of sophistication.