

# Case Study of Semiconducting Material

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**Abstract:** *This electronic document is a “live” template and already There is no doubt that semiconductors changed the world beyond anything that could have been imagined before them. Although people have probably always needed to communicate and process data, it is thanks to the semiconductors that these two important tasks have become easy and take up infinitely less time than, e.g., at the time of vacuum tubes. Semiconductor materials are the building blocks of the entire electronics and computer industry. Small, lightweight, high speed, and low power consumption devices would not be possible without integrated circuits (chips), which consist of semiconductor materials. This paper provides a general discussion of semiconductor materials, their history, classification and the temperature effects in semiconductors. In this section we provide details about the impact of temperature on the MOSFET energy band gap, carrier density, mobility, carrier diffusion, velocity saturation, current density, threshold voltage, leakage current and interconnect resistance. We also provide the applications of semiconductor materials in different sectors of modern electronics and communications.*

**Keywords:** Semiconductor; History of Semiconductor; Temperature effects in semiconductors; Applications of Semiconductors

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