

A major application of metal-oxide silicon (MOS) systems is the Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET). The use of MOSFETs in integrated circuits has been a major development in the implementation and permeation of fast and low-cost digital circuits. The MOSFET also known as the Insulated Gate FET (IGFET), finds extensive use as a digital switching element and in semiconductor memories.

The advantages of MOSFETs as compared to BJTs are twofold: first, their dimensions, for executing a certain function, are smaller than requiring an increase in the component density; second the manufacture of these devices requires fewer fabrication processes. They are therefore less expensive to manufacture than BJTs for an equivalent circuit function. A more comprehensive comparison between the two devices will be made at the end of the next chapter.

Another important application of the MOS system is in charge-coupled devices (CCD). These devices consist of arrays of precision capacitors and are used in the conversion of analog signals to digital representation. One application that has generated extensive interest is their use as solid-state imagers or video cameras for home and industrial application.

We will return to this chapter in the study of the operation of the MOSFET.