

Intrinsic conduction

Pure silicon, a semi-conducting material, contains two types of charge carrier, one is negative, the other is positive. The diagram shows how neighbouring silicon atoms are bonded together. There are no spare electrons available for conduction.

However, as the temperature of the silicon is increased, the vibrating atoms cause some of the electrons to break free. The greater the temperature, the greater the number of free electrons and the better the silicon conducts electricity.

When an electron breaks free, there is a hole which behaves as if it has a positive charge. As the free electrons move through the silicon, so the positive holes move through the silicon. The free electrons and positive holes produce the intrinsic conduction.