Because GaAs is a compound semiconductor, there is sharing between the two different atoms, as shown in Fig (1-3).

The free electrons in a material due to external causes are referred to as intrinsic carriers.

![Covalent bonding of the silicon atom](image1)

Fig (1-2) Covalent bonding of the silicon atom

The relative mobility ($\mu_n$) of free carriers in the material, that is, the ability of the free carriers to move throughout the material, $\mu_n$ for GaAs is five times in Si.

![Covalent bonding of the GaAs crystal](image2)

Fig (1-3) Covalent bonding of the GaAs crystal