

Conductor
(a)

Partially Filled
Conduction Band

No gap

Fermi Level



Core

Semiconductor
(b)

Conduction Band

Band gap $E_g \geq k_B T$

Completely Filled
Valence Band



Core

Insulator
(c)

Conduction Band

Band gap
 $E_g \gg k_B T$

Completely Filled
Valence Band



Core