

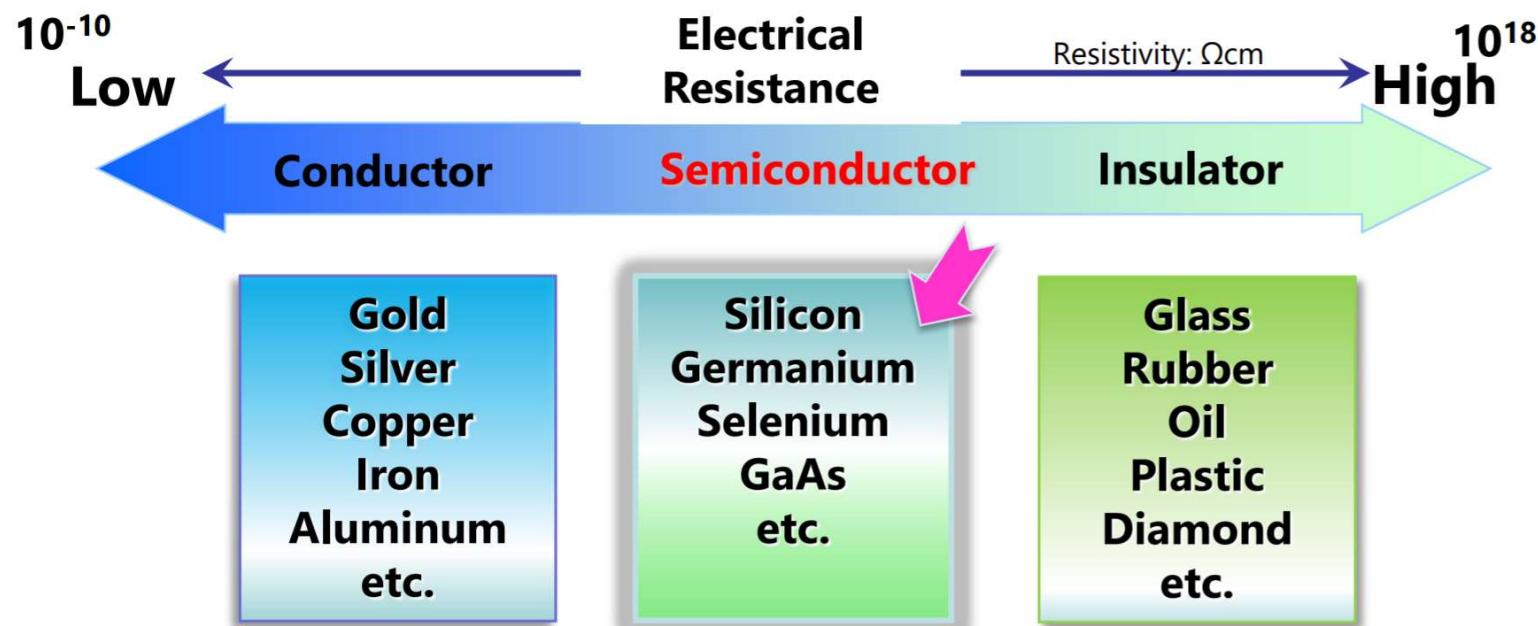
# Semiconductor Device

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LECTURE 1

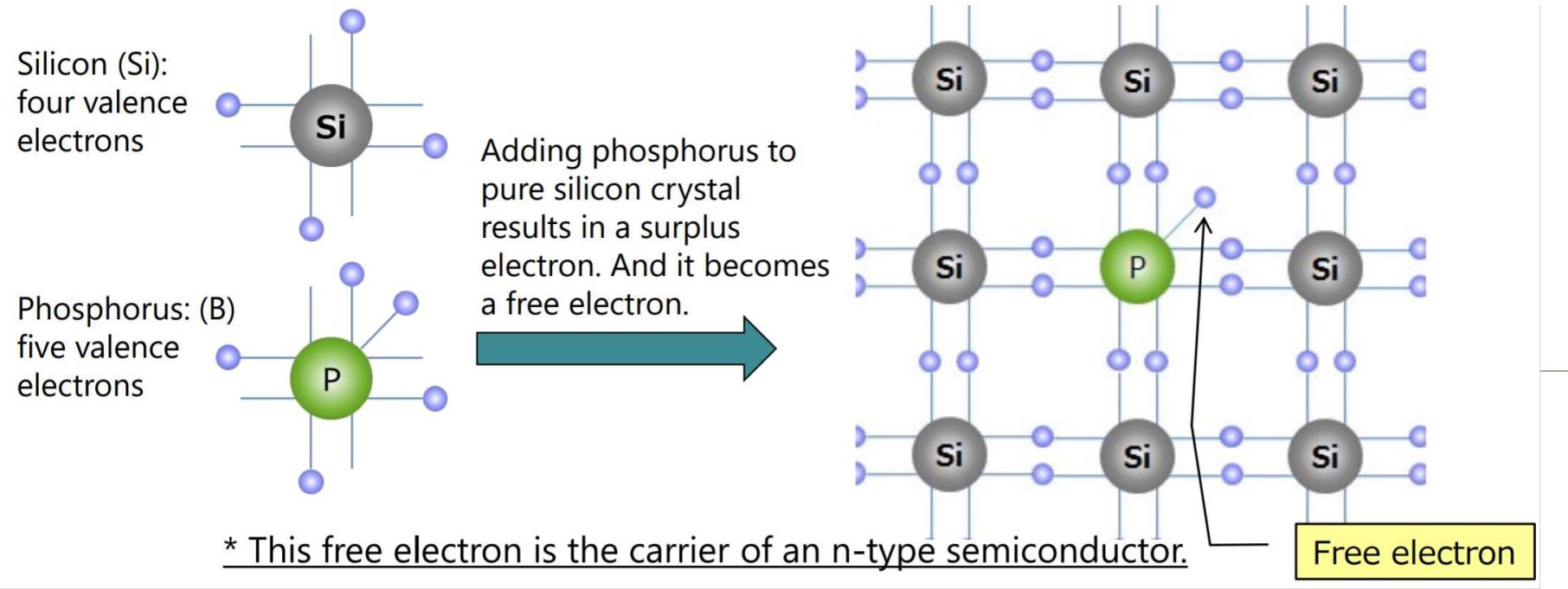
DR. SK WIJAYASEKARA

# What is a Semiconductor?



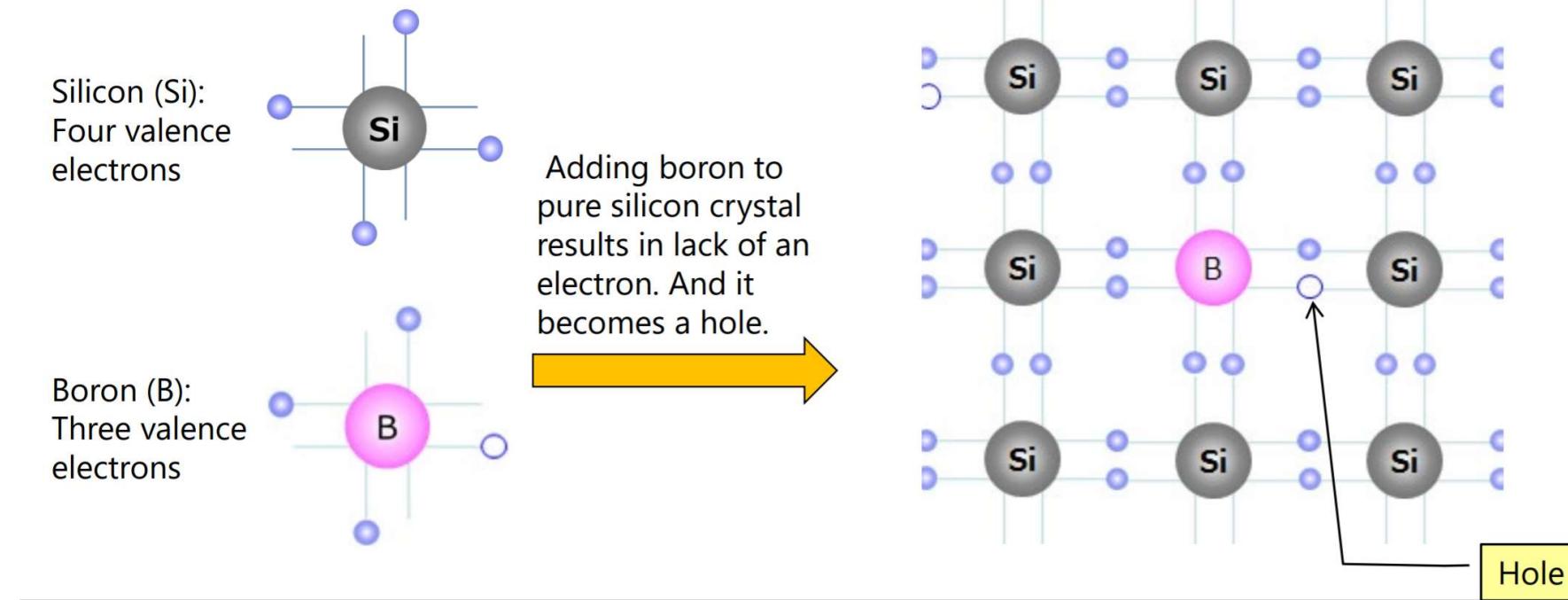
Source : Toshiba Electronic Devices & Storage Corporation

# n-type Semiconductor



Source : Toshiba Electronic Devices & Storage Corporation

# p-type Semiconductor



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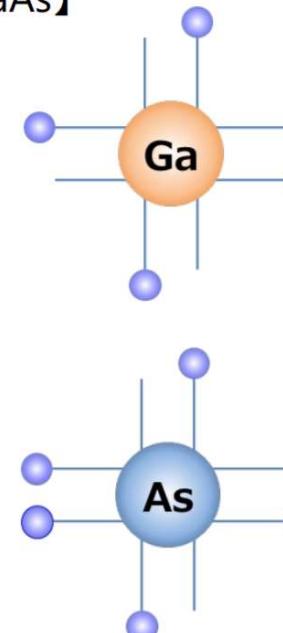
# What is a Compound Semiconductor?

Typical compound semiconductors

**Group II-VI:** ZnSe    **Group III-V:** GaAs, GaN, InP, InGaAlP, InGaN    **Group IV-IV:** SiC, SiGe

【Example of GaAs】

Gallium:  
three valence  
electrons

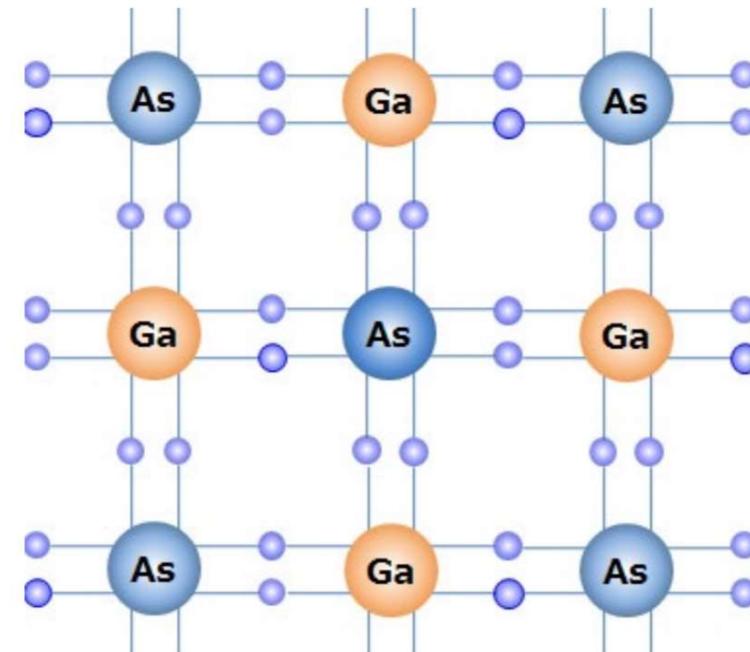


More gallium than arsenic  
makes  
p-type semiconductor.



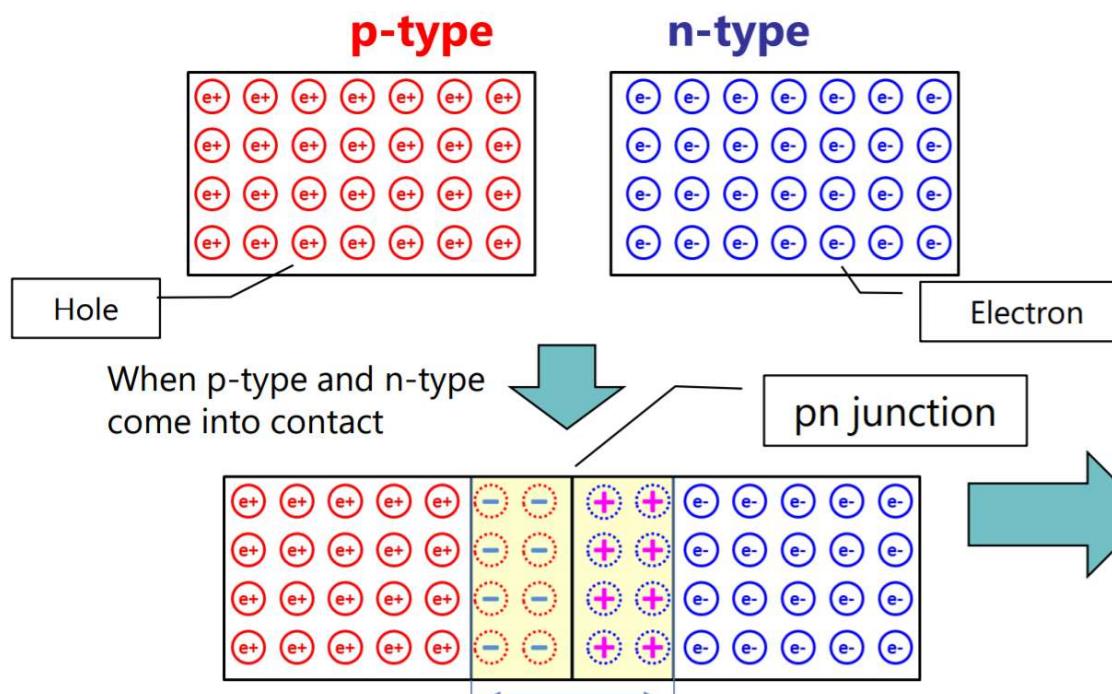
Arsenic:  
five valence  
electrons

More arsenic than gallium  
makes  
n-type semiconductor.

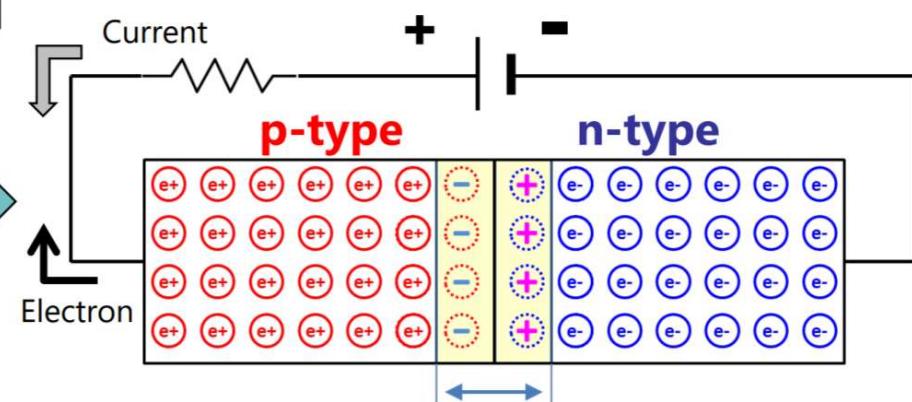


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# What is a pn Junction?

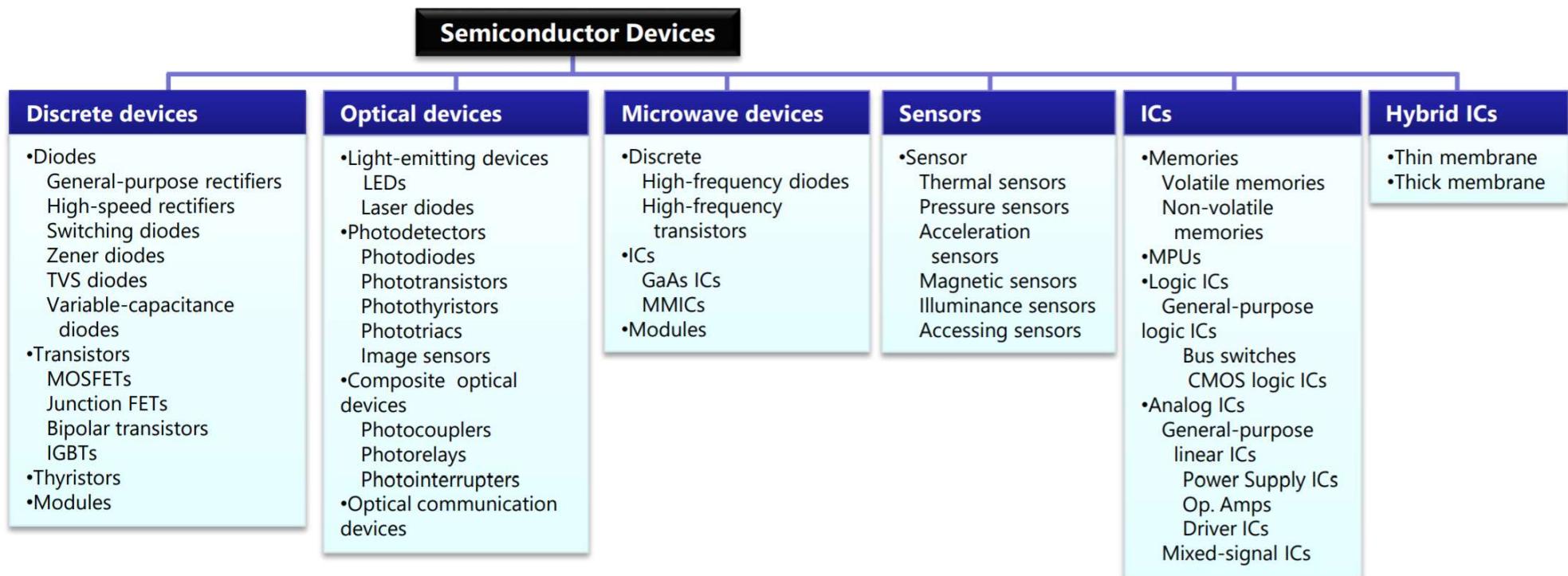


Applying voltage by connecting p-type to "+" and n-type to "-" enables current to flow.



Source : Toshiba Electronic Devices & Storage Corporation

# Types of Semiconductor Devices



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Thank You

