

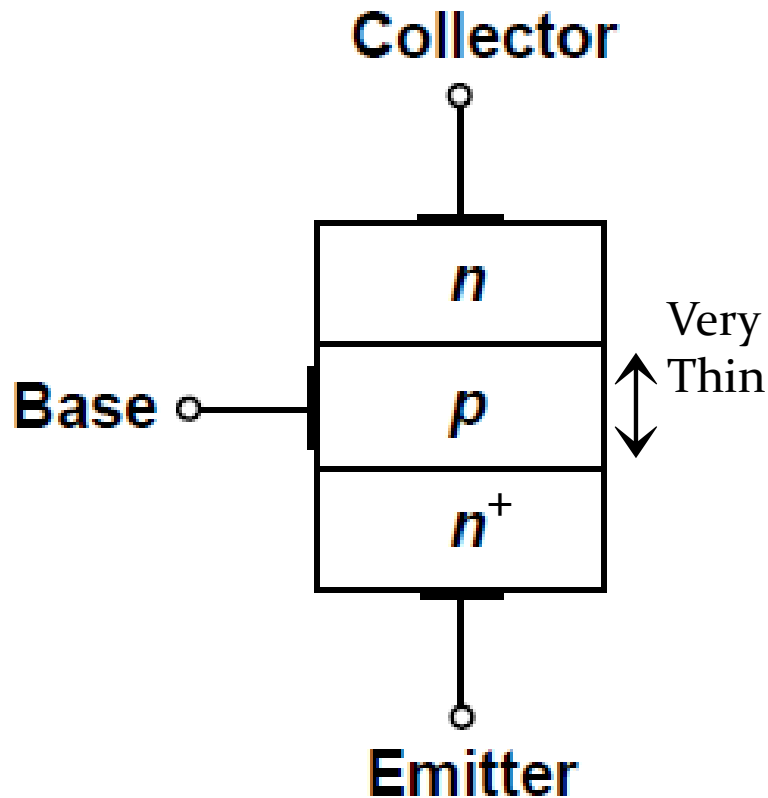


# **Lesson 11.**

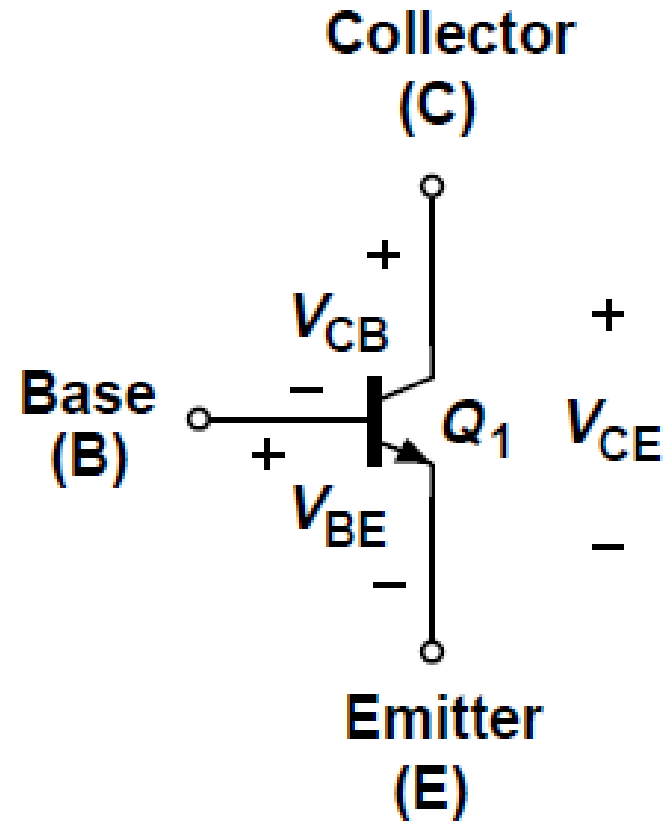
# **Bipolar Transistor**

**2012142127 Ha Eun-ji**

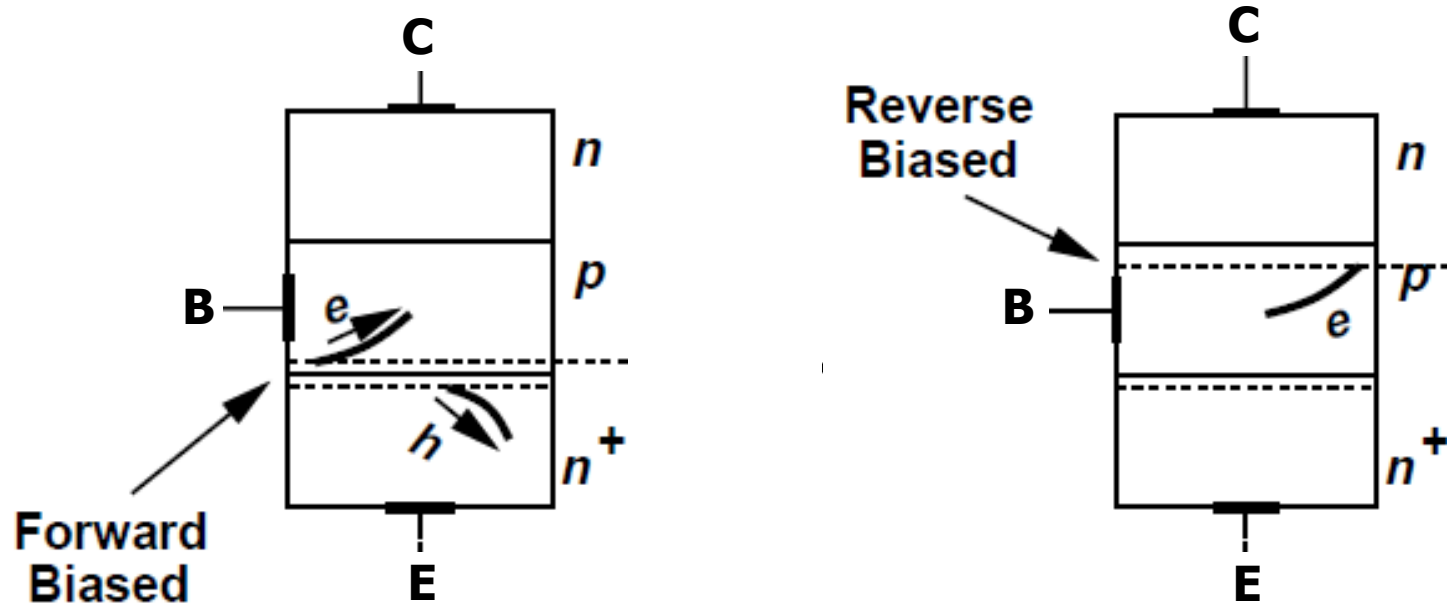
- **Structure**



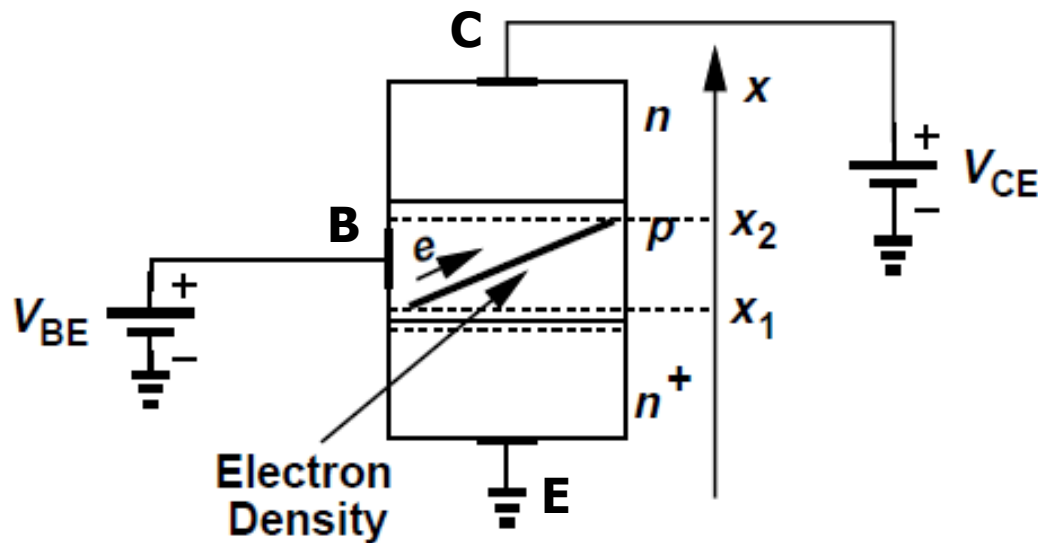
- **Symbol**



- **Active Forward Region**



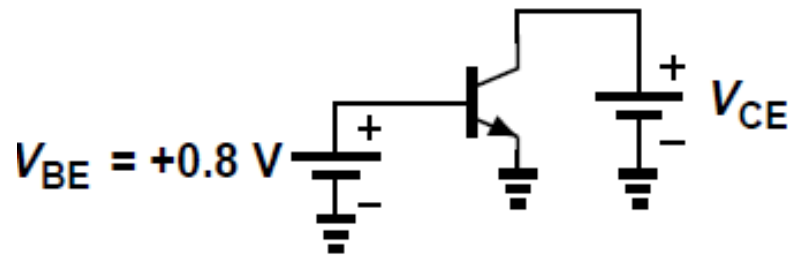
- **Active Forward Region**



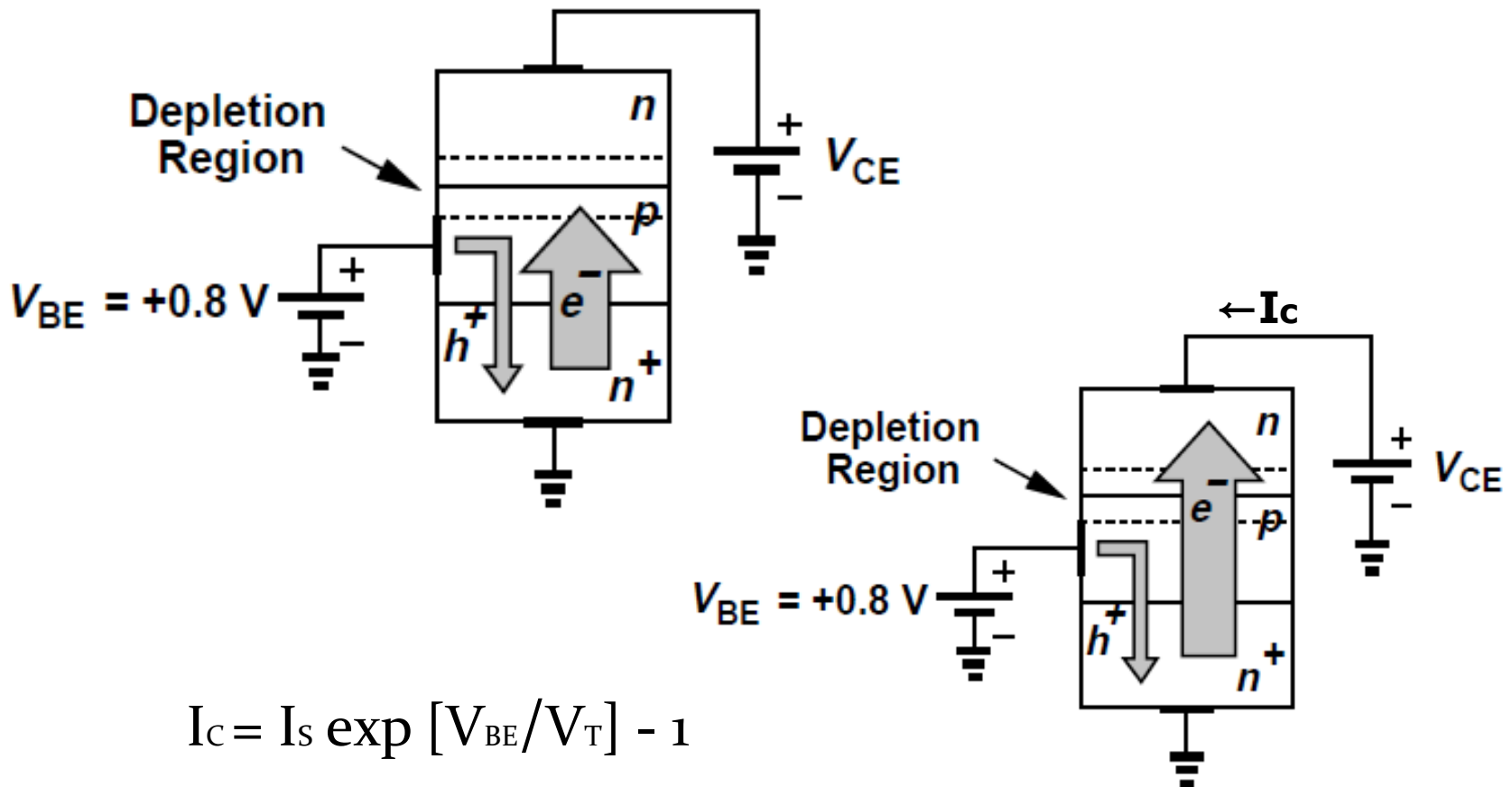
$$V_{BE} \geq 0.8V$$

$$V_{CB} = V_{CE} - V_{BE} \geq 0$$

$$\Rightarrow V_{CE} \geq V_{BE}$$



# • Operation of Bipolar Transistor



$$I_C = I_S \exp [V_{BE}/V_T] - 1$$