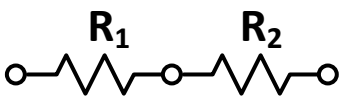
(a) Series:

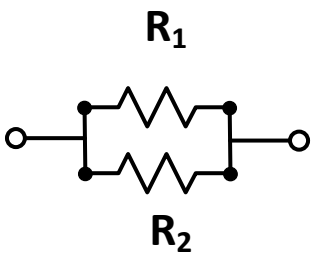
$$R_{eq} = \sum_{k=1}^{N} R_k$$



$$R_{eq} = R_1 + R_2$$

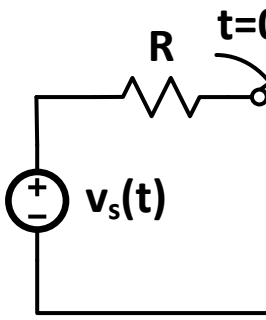
(b) Parallel:

$$\frac{1}{R_{eq}} = \sum_{k=1}^{N} \frac{1}{R_k}$$

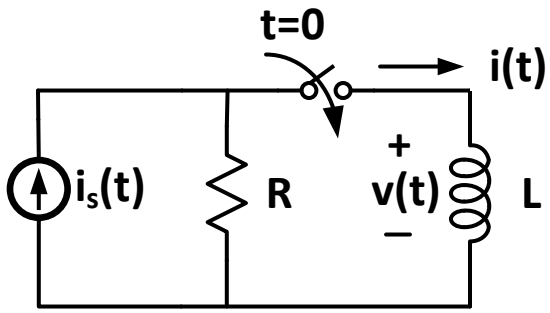


$$R_{eq} = \frac{R_1 R_2}{R_1 + R_2}$$

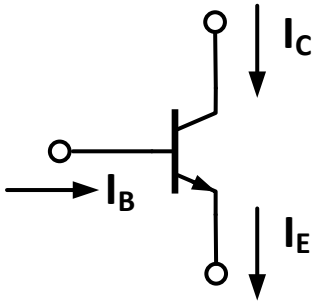
RC and RL Circuits



$$\tau = RC$$



$$\tau = \frac{L}{R}$$

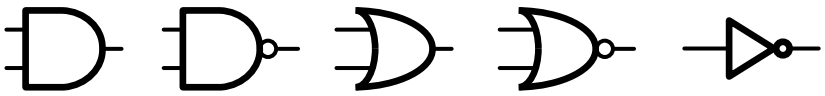


OFF: $V_{BE} < V_{BE}(on)$, $I_B = I_C = I_E = 0$

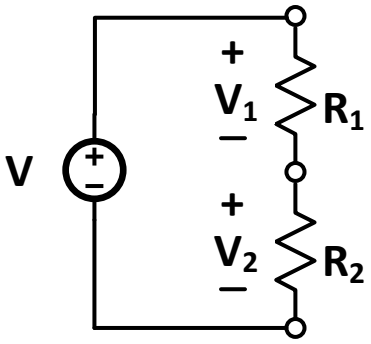
FA: $V_{BE} = V_{BE}(on)$, $I_C = \beta I_B$

SAT: $V_{BE} = V_{BE}(on)$, $V_{CE} = V_{CE}(sat)$

Basic Gates:

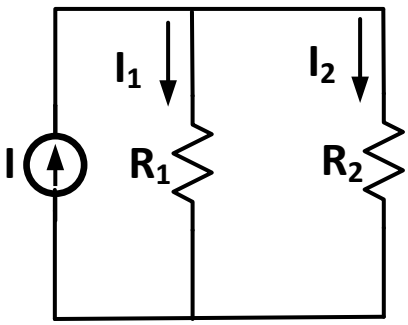


Voltage/Current Divider



$$V_1 = \frac{VR_1}{R_1 + R_2}$$

$$V_2 = \frac{VR_2}{R_1 + R_2}$$



$$I_1 = \frac{IR_2}{R_1 + R_2}$$

$$I_2 = \frac{IR_1}{R_1 + R_2}$$

Selected rules of boolean algebra:

$(a.b).c = a.(b.c);\ (a+b)+c = a+(b+c)$

$a.b = b.a\ ;\ a+b = b+a$

$a.(b+c) = a.b + a.c$

$NOT(NOT(a)) = a$

$a + \bar{a}.b = a + b$