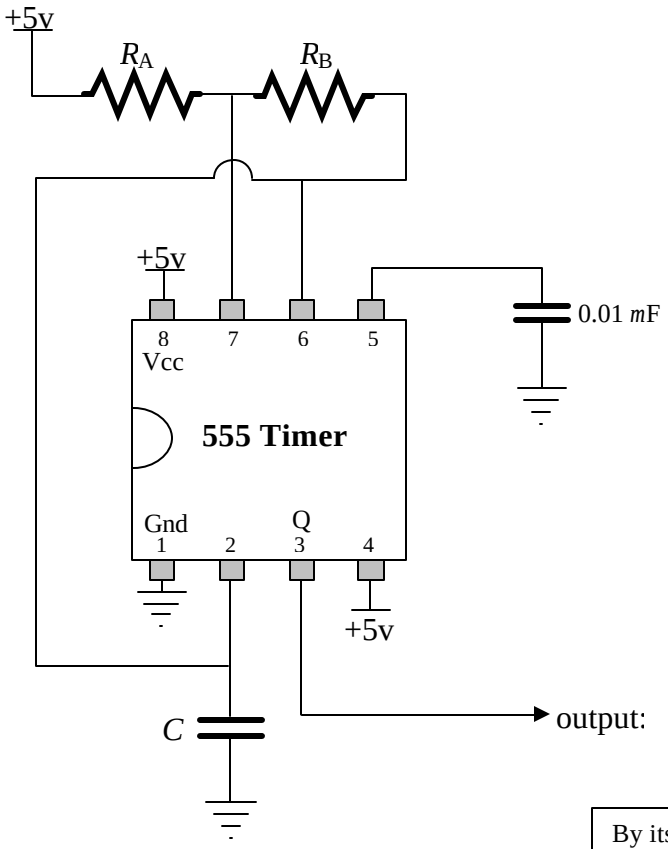
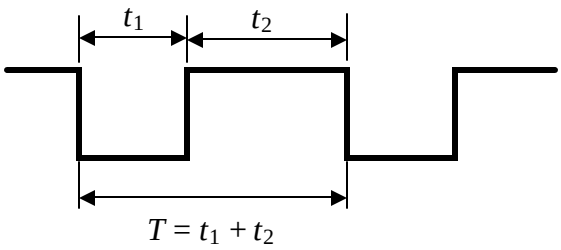


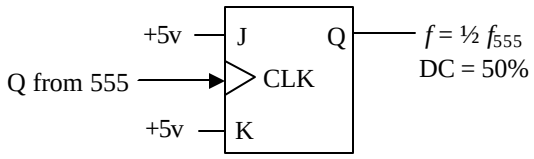
Restrictions:
$C \geq 500$ pF $= 500 \times 10^{-12}$ F
$R_A \geq 1$ kΩ $= 1000$ Ω
$R_A + R_B \leq 6.6$ MΩ $= 6.6 \times 10^6$ Ω

Results:
$t_1 = 0.693 R_B C$
$t_2 = 0.693(R_A + R_B)C$
$T = 0.693(R_A + 2R_B)C$
$f = \frac{1}{T} = \frac{1.443}{(R_A + 2R_B)C}$



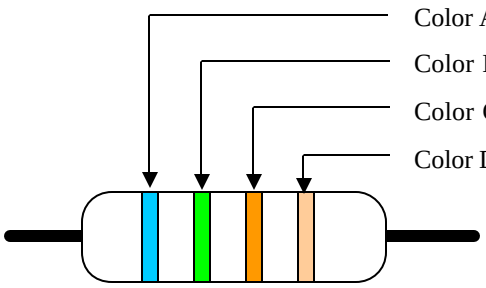
Example: We want $T = 1$ sec ($f = 1$ hz)
Given $R_A = 1$MΩ, and $C = 0.47$ mF
Then $R_B = 1.04$M Ω
The closest R we have to this is $R_B = 1$MΩ
So, the actual $T = 0.977$ sec

By itself, the 555 timer can never generate a pulse train with a 50% duty cycle. However, if you connect the output (pin 3) to the CLK of a JK Flip Flop operating in toggle mode, the output of the flip flop will be a pulse train having a 50% duty cycle (but with half the frequency of the 555 timer).



Determining Resistor Values

Color	Value
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Gray	8
White	9



Color D is usually silver or gold, and indicates how close the actual resistance will be to the expected value.

$$R = (10A + B) \times 10^C \ \Omega$$

Examples: Given colors A, B, and C:
Blue Green Orange: $R = (10 \cdot \mathbf{6} + \mathbf{5}) \times 10^{\mathbf{3}}$ Ω $= 65000\Omega = 65$ kΩ
Blue Blue Violet: $R = (10 \cdot \mathbf{6} + \mathbf{6}) \times 10^{\mathbf{7}}$ Ω $= 660000000\Omega = 660$ MΩ
Brown Black Red: $R = (10 \cdot \mathbf{1} + \mathbf{0}) \times 10^{\mathbf{2}}$ Ω $= 1000$ Ω