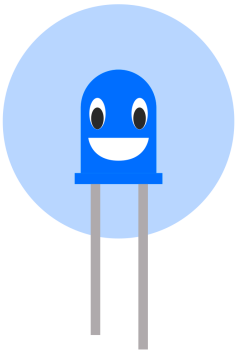
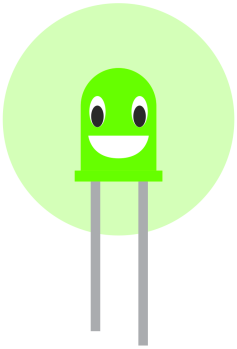
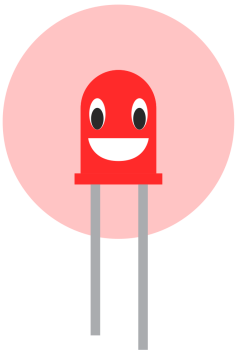


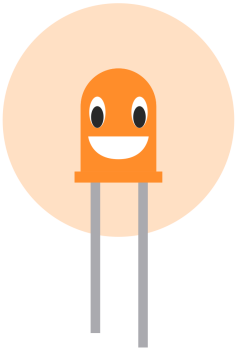
Color: Blue
Size: 5mm
Lens Color: Diffused Blue
Peak Wave Length (nm): 465 ~ 470
Forward Voltage (V): 3.2 ~ 3.4
Forward Current (mA): 30mA
Reverse Current (uA): <=30
Luminous Intensity Typ Iv (mcd): Average in 6000
Viewing Angle: 100 ~ 120 Degree



Color: Green
Size: 5mm
Lens Color: Water Clear
Peak Wave Length (nm): 515 ~ 517
Forward Voltage (V): 3.0 ~ 3.4
Forward Current (mA): 15mA ~ 20mA
Reverse Current (uA): <=30
Luminous Intensity Typ Iv (mcd): 10000(Typical) ~ 15000(Max)
Viewing Angle: 20 Degree



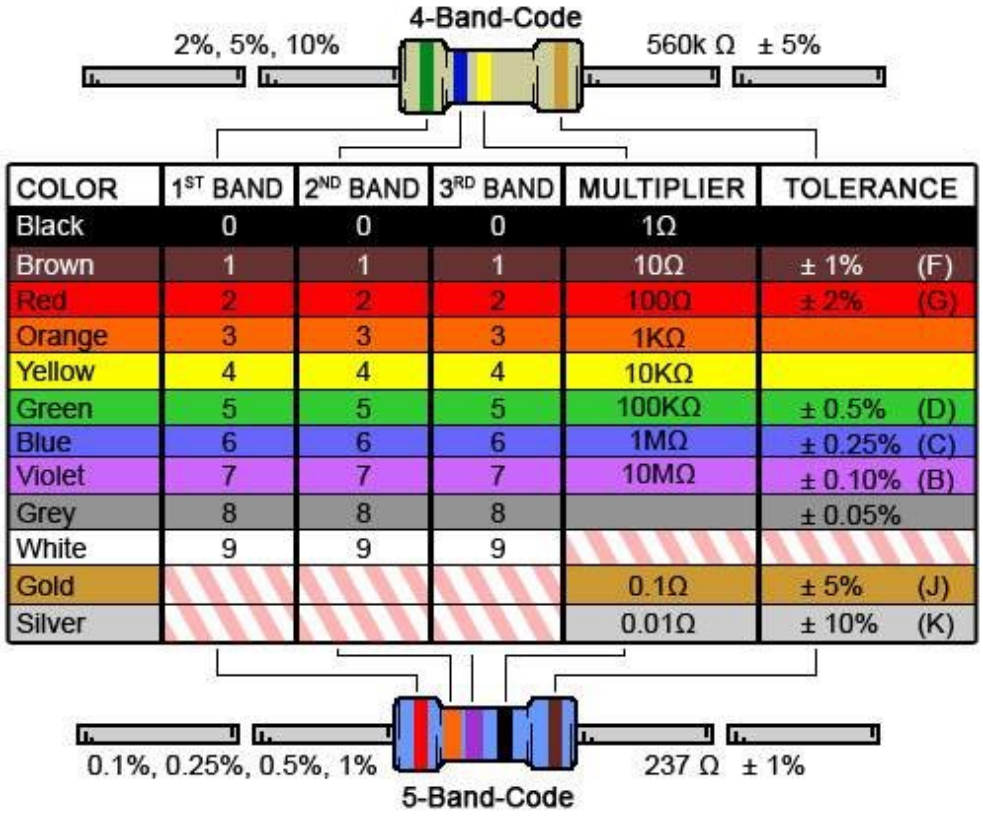
Color: Red in Flash
Flash Rate: about 0.7 second, about 80 times per minute
Size: 5mm
Lens Color: Red
Peak Wave Length (nm): 620 ~ 630
Forward Voltage (V): 1.8 ~ 2.2
Forward Current (mA): 20mA
Reverse Current (uA): <=30
Luminous Intensity Typ Iv (mcd): 2000(Typical) ~ 3000(Max)
Viewing Angle: 140-160 Degree



Color: Orange Flicker
Size: 5mm
Lens Color: Water Clear
Peak Wave Length (nm): 605 ~ 610
Forward Voltage (V): 1.8 ~ 2.2
Forward Current (mA): 20mA
Reverse Current (uA): <=30
Luminous Intensity Typ Iv (mcd): 4000(Typical) ~ 6000(Max)
Viewing Angle: 20 Degree

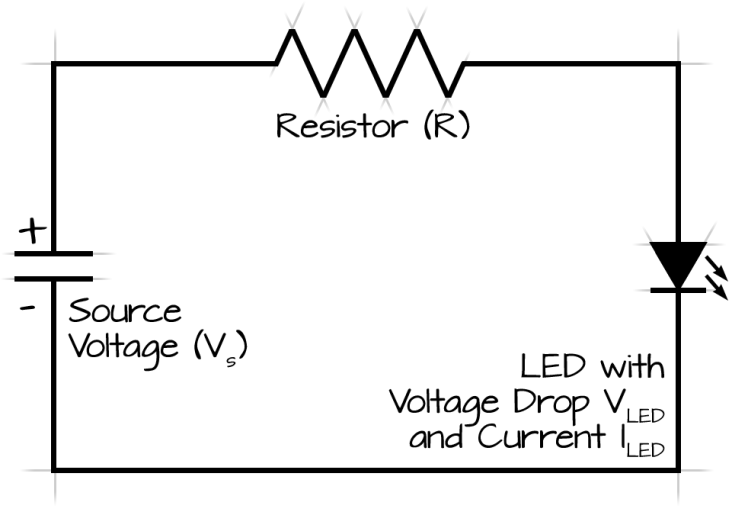
2.2 ohm = red red gold gold

47 ohm = yellow violet black gold



COLOR	1ST BAND	2ND BAND	3RD BAND	MULTIPLIER	TOLERANCE
Black	0	0	0	1Ω	
Brown	1	1	1	10Ω	± 1% (F)
Red	2	2	2	100Ω	± 2% (G)
Orange	3	3	3	1KΩ	
Yellow	4	4	4	10KΩ	
Green	5	5	5	100KΩ	± 0.5% (D)
Blue	6	6	6	1MΩ	± 0.25% (C)
Violet	7	7	7	10MΩ	± 0.10% (B)
Grey	8	8	8		± 0.05%
White	9	9	9		
Gold				0.1Ω	± 5% (J)
Silver				0.01Ω	± 10% (K)

http://www.digikey.com/en/resources/conversion-calculators/conversion-calculator-resistor-color-code-4-band



To calculate the resistor needed for a simple LED circuit, simply take the voltage drop away from the source voltage then apply Ohm's Law. In other words...

$$R = \frac{(V_s - V_{LED})}{I_{LED}}$$

where:

- **VS** is the source voltage, measured in volts (V),
- **VLED** is the voltage drop across the LED, measured in volts (V),
- **ILED** is the current through the LED*, measured in Amperes (Amps/A), and
- **R** is the resistance, measured in Ohms (Ω).

Voltage Source (V_S)	3	Volts (V)
Voltage drop from LED (V_{LED})	2	Volts (V)
Current through the LED (I_{LED})	30	milliamps (m
Resistance (R)	33.33333	ohms (Ω)

Since resistors do not come in every possible value, we chose something close to 33.33333 ohms. In this case, a 47 ohm resistor will work just fine…