

LED Assortment 3 mm with accessories

Bundle-Item-No.: 24O195



This round LED assortment is perfect for standard applications and experiments with semiconductor light. Please note that LEDs always need to be driven with current-limitation (pre-resistor, selection see below or constant-current-source) to avoid any damages of the component. Anode = positive / Cathode = negative voltage. LEDs are not shock-sensitive and have a low power consumption.



Selection of pre-resistor if supply-voltage is DC constant voltage source

U_B = Source voltage (Volt) U_F = Forward voltage (Volt)
 I_F = Forward current (Ampere) R = Resistor Value (Ohm)

Example 1

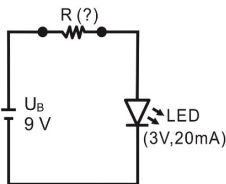
$U_B = 9\text{ V}$
 $LED = U_F \text{ typ. } 3\text{ V}, I_F \text{ max. } 20\text{ mA}$

$U_R = U_B - U_F = 6\text{ V}$

$$R = \frac{U_R}{I_F}$$

$$R = \frac{6\text{ V}}{0.02\text{ A}}$$

$$R = 300\Omega$$



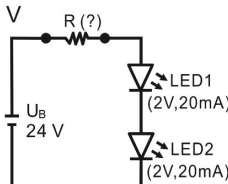
Example 2

$U_B = 24\text{ V}$
 $LED1 = U_F \text{ typ. } 2\text{ V}, I_F \text{ max. } 20\text{ mA}$
 $LED2 = U_F \text{ typ. } 2\text{ V}, I_F \text{ max. } 20\text{ mA}$
 $U_R = U_B - (U_{F1} + U_{F2}) = 20\text{ V}$

$$R = \frac{U_R}{I_F}$$

$$R = \frac{20\text{ V}}{0.02\text{ A}}$$

$$R = 1000\Omega$$

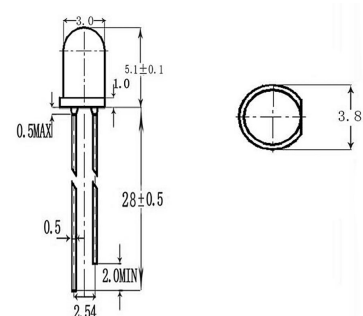


Attention: Please use the next bigger available resistor-value as pre-resistor. The max. power rating of the resistor should not be overdriven. Operation only within the operating parameters of the components.

Technical data: Operating-Temp.: -25 ... +85 °C · Lead soldering temp. max. 270 °C (5 s, one time only) · Storage-Temp.: -30 ... +100 °C · Reverse voltage: max. 5 V · Reverse current: max. 1.0 µA (@ $U_R = 5\text{ V}$) · Lifetime within the operating parameters: min. 50,000 h · Package type: diffused (White = clear) · Content per Set: 500 pcs.

LED Assortment 3 mm

LED-Ø	Color	Luminous int. I_v (max.)	Viewing angle (half light)	Package-type	Wavelength/ Color-Temp. (typ.)	Forward voltage U_F (typ.)	Forward current I_F (max.)	Content	Part-No. Single item
3 mm	Red	700 mcd	30 °	Diffused-Red	625 nm	2 V	20 mA	100 pcs.	2111O155
3 mm	Green	2500 mcd	30 °	Diffused-Green	520 nm	3 V	20 mA	100 pcs.	2111O152
3 mm	Yellow	700 mcd	30 °	Diffused-Yellow	590 nm	2 V	20 mA	100 pcs.	2111O154
3 mm	Blue	1300 mcd	30 °	Diffused-Blue	460 nm	3 V	20 mA	100 pcs.	2111O151
3 mm	White	8000 mcd	25 °	Clear	8000 K	3 V	20 mA	100 pcs.	2111O177

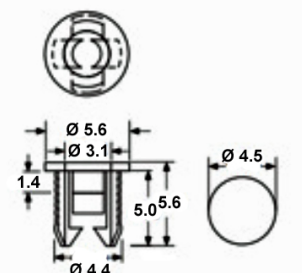


LED-holder for round LEDs 3 mm

This universal LED-holder series is perfect for placing round LEDs into front panel or similar.

Technical data:

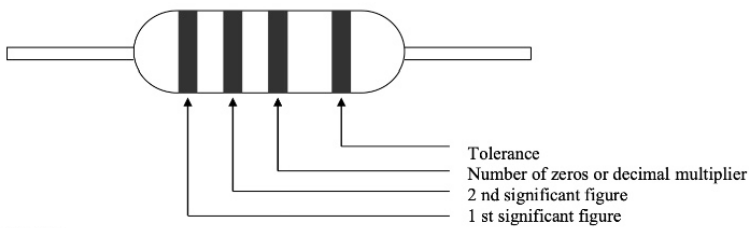
Designed for Ø 3 mm round LEDs · Mounting-hole Ø 4.5 mm · Color: Black · Total length: 5.6 mm · Panel thickness: appx. 1.4 mm · Material: Plastics · Content: 100 pcs.



Carbon Film Resistors Set 250 mW



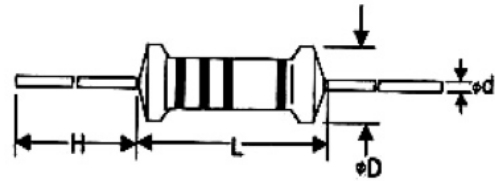
Resistor color code



Color refer

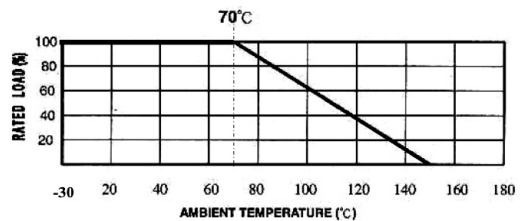
Color	1 st Band	2 nd Band	3 rd Band	4 th Band
Black	0	0	10^0	
Brown	1	1	10^1	
Red	2	2	10^2	$\pm 2.0\%$
Orange	3	3	10^3	
Yellow	4	4	10^4	
Green	5	5	10^5	
Blue	6	6	10^6	
Violet	7	7	10^7	
Grey	8	8	10^8	
White	9	9	10^9	
Gold			10^{-1}	$\pm 5.0\%$
Silver			10^{-2}	$\pm 10.0\%$

Resistor dimensions



$$L = 6.0 \pm 0.5 \text{ mm} / D = 2.3 \pm 0.3 \text{ mm} / H = 27 \pm 2 \text{ mm} / d = 0.33 \text{ mm}$$

Derating @ high temperature



Technical data:

Rated power: 0.25 W (Derating from $T_a = 70^\circ\text{C}$) • Tolerance: 5 % • Temp.-range: $-50 \dots 150^\circ\text{C}$ • Working voltage: 300 V • Dielectric withstanding/overload voltage: max. 600 V • Temp. coefficient max $\pm 350 \text{ ppm}/^\circ\text{C}$ ($< 100 \text{ k}\Omega$) / $0 \dots -700 \text{ ppm}/^\circ\text{C}$ ($100 \text{ k}\Omega \dots 1 \text{ M}\Omega$) • Solder ability: Dip the lead in to a solder bath having a Temperature of $260^\circ\text{C} \pm 5^\circ\text{C}$ up to $4 \pm 0.8 \text{ mm}$ from the body of the resistor and hold it for 5 ± 0.5 seconds then inspect.

Resistor values:

(10 pcs. per value) 1 Ω , 10 Ω , 47 Ω , 100 Ω , 150 Ω , 220 Ω , 330 Ω , 470 Ω , 1 k Ω , 1.5 k Ω , 2.2 k Ω , 4.7 k Ω , 10 k Ω , 22 k Ω , 33 k Ω , 47 k Ω , 100 k Ω , 220 k Ω , 470 k Ω , 1 M Ω .

Bending-tool

Bending components into shape is made much easier with this bending tool. Suitable for components such as diodes, resistors, coils or capacitors. Simply select the appropriate grid size, insert the component and bend it at the sides. Done - quick and easy.

Technical data:

Length 130 mm • Grid-dimension 7,5 / 10 / 12,5 / 15 / 17,5 mm • Color: green.

