

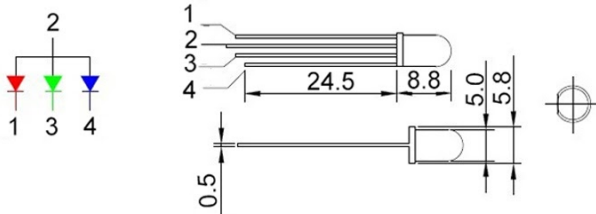


5MM T1-3/4 4 Pin Common Anode Clear / Diffused RGB LED



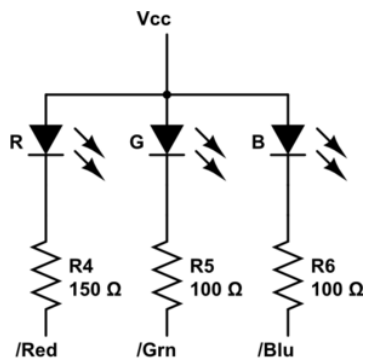
RGB LEDs are actually three LEDs, red, green, and blue, inside one package. Instead of 2 wires coming out, there are 4 wires coming out: The longest one is + Voltage (in these Common Anode diodes), and the 3 others correspond to red, green, and blue.

By varying the brightness of each LED, a single RGB LED can display the full spectrum of color. A specific color can be set through the choice of resistors in series with each color wire. By using the PWM outputs of an Arduino or other microcontroller, the brightness of each of the three LEDs can be controlled independently. A PWM value of 0.0 would be off and a 1.0 full on for each color LED. This allows a program to vary both the color and brightness level of the LED, providing dynamic control of the LED's output color and brightness.



Parameter	Clear	Diffused
Forward Voltage Vf (V)		
Red	2.25	
Green	3.5	
Blue	3.5	
Reverse Current	100µA Max.	
Dominant Wavelength		
Red	630-640	
Green	515-525	
Blue	465-475	
Luminous Intensity (mcd)		
Red	1000-1200	
Green	3000-5000	
Blue	2000-3000	
Viewing Angle	60 degrees	120 degrees
Tested at IF=20mA		

Operation: +V is connected to the anode pin "2", Ground is connected to the remaining three pins corresponding to each color.



Common Anode Circuit

A voltage dropping resistor is needed to drop the output voltage of a digital logic signal to the operating voltage of the LED and to limit the current. See the example at left. These resistor values are examples only. The values required for your application may vary. The value of the required dropping resistor can be calculated so that it drops down the voltage by the required amount from the digital logic output level (5 or 3.3V). Resistor values are typically around 100-330 ohms. The three LEDs inside a single RGB LED have different operating voltages. The voltage drop tends to rise as the frequency of the light wave increases.

The equations used to compute the correct resistance for an LED can be found in this Wikipedia series resistance formula: <http://envistia.info/wikiledcalc>

or use this web page calculator: <http://envistia.info/digikyleddcalc>

Resources:

RGB LED Tutorial: <http://envistia.info/rgbledtutorial>

Using RGB LEDs: <http://envistia.info/usingrgbleds>