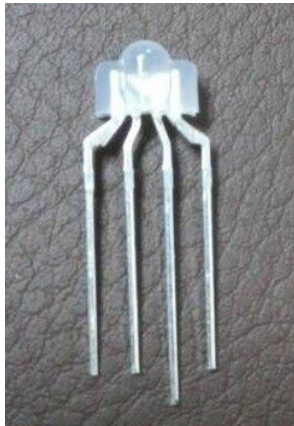
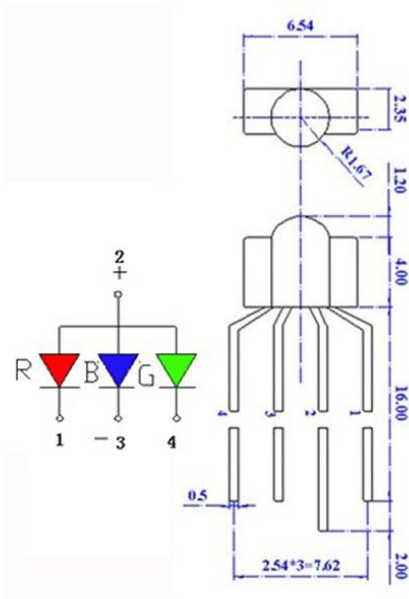


3MM 4 Pin Common Anode Diffused RGB LED

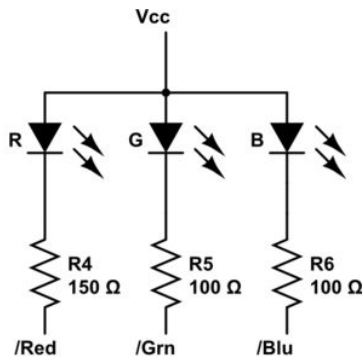


RGB LEDs are actually three LEDs, red, green, and blue, inside one package. Instead of 2 wires coming out, there are 4 wires coming out: The longest one is + Voltage (in these Common Anode diodes), and the 3 others correspond to red, green, and blue.

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	Value
Package	3mm Nipple
Forward Voltage Vf (V)	
Red	1.9 - 2.1V
Green	3.1 - 3.3V
Blue	3 - 3.2V
Working Current	20 mA
Dominant Wavelength	
Red	620-625
Green	520-525
Blue	460-470
Luminous Intensity (mcd)	
Red	600-1000
Green	3000-4000
Blue	600-800
Viewing Angle	30 degrees
Tested at IF=20mA	



Common Anode Circuit

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

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/digikeyledcalc>

Resources:

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

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